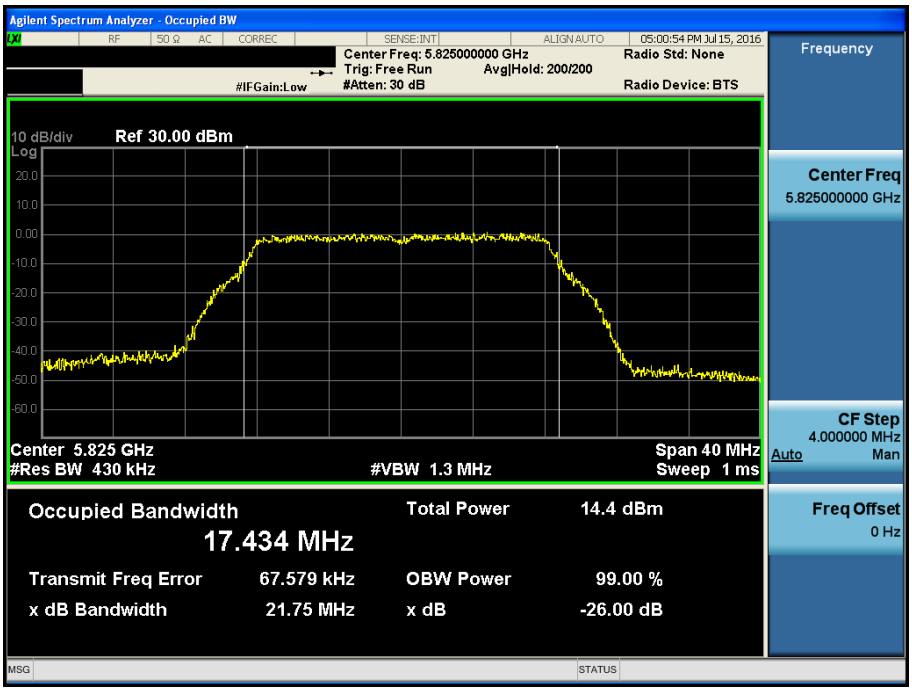
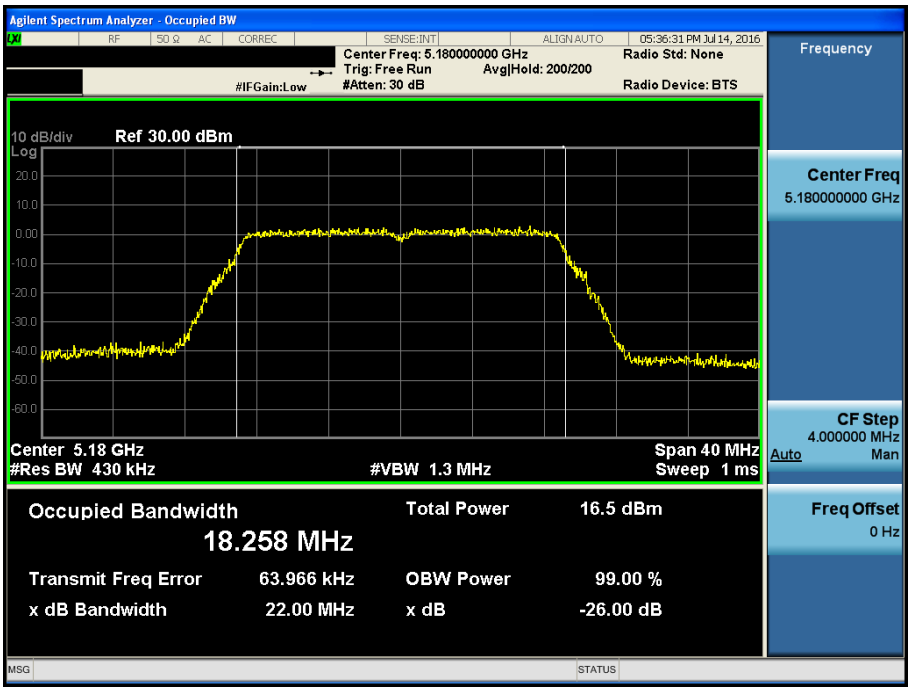
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 1 & Ch.165



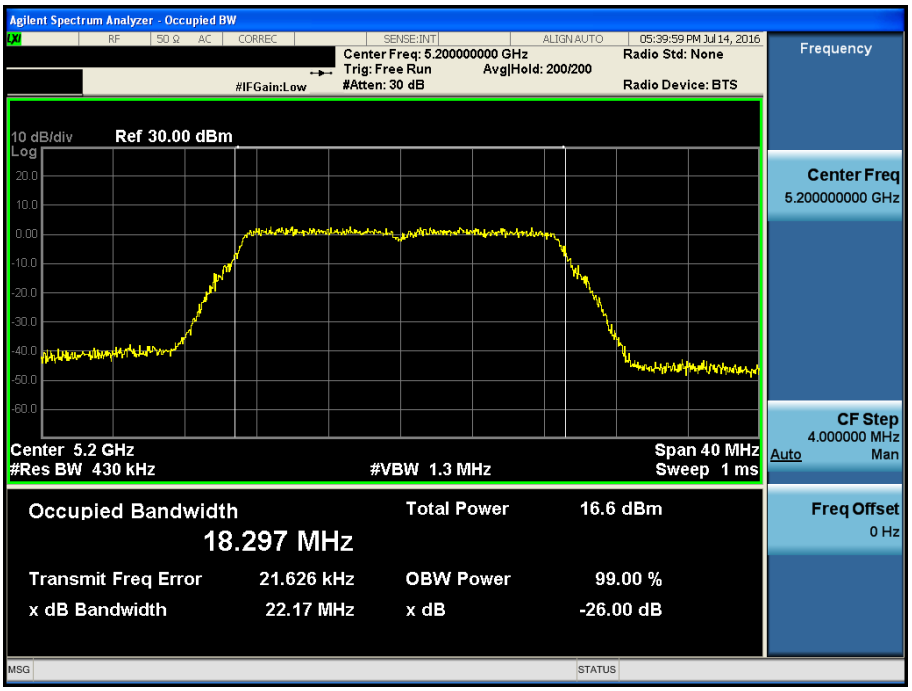
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.36




## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.40

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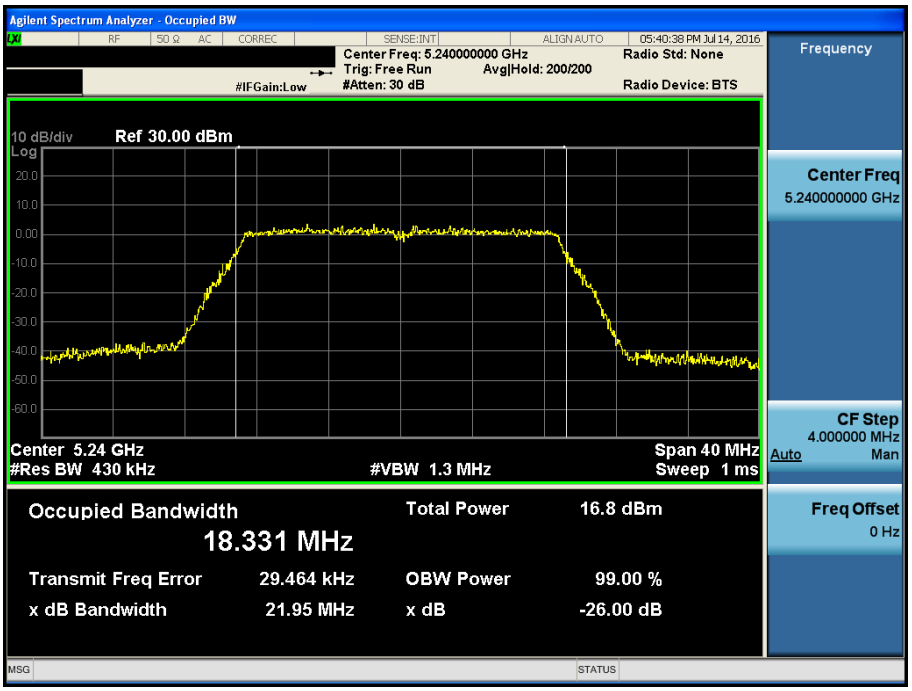
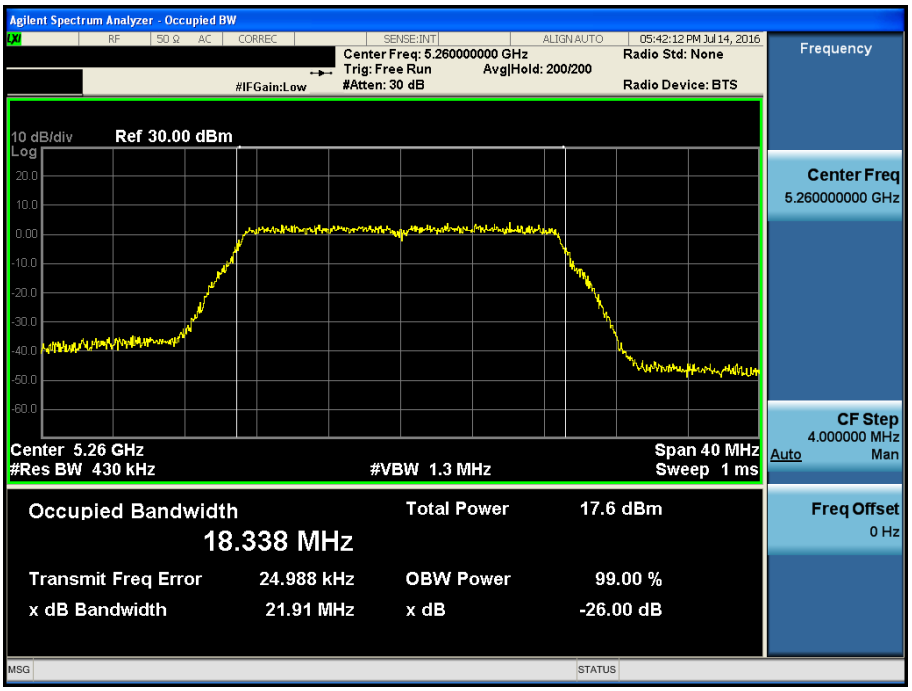
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.48



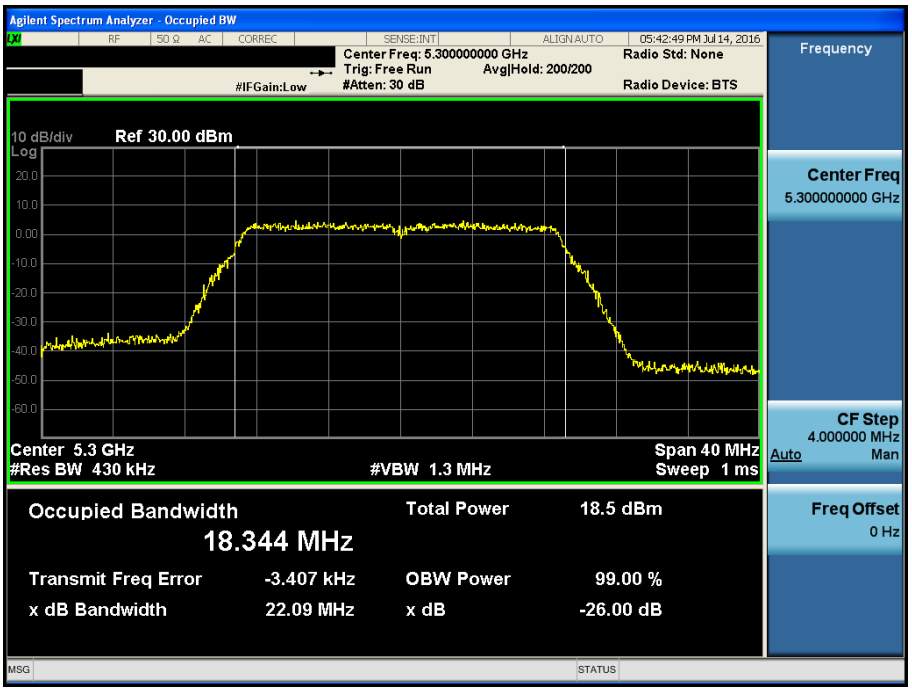
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.52



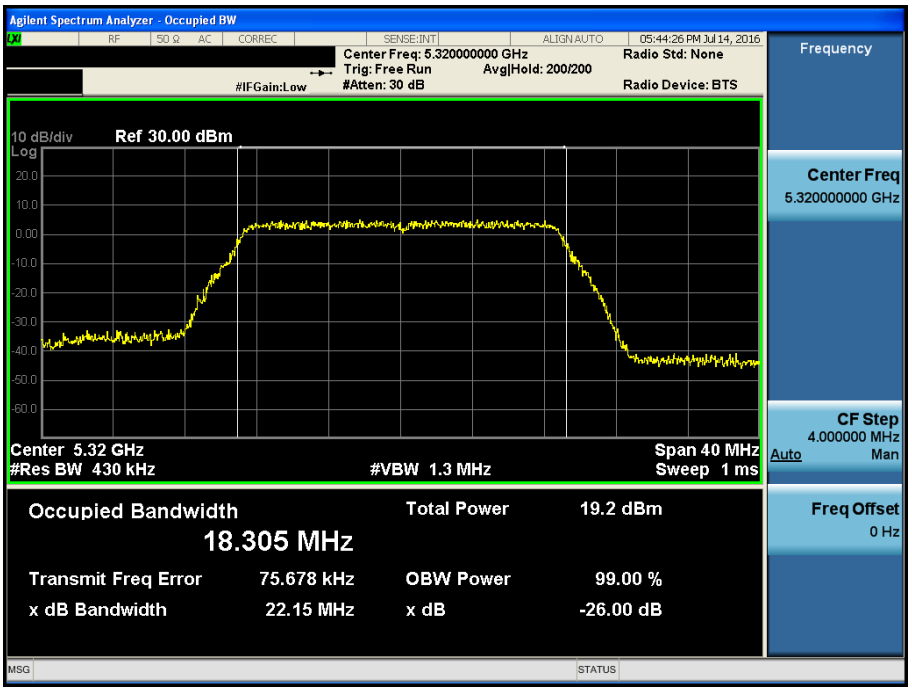

## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.60



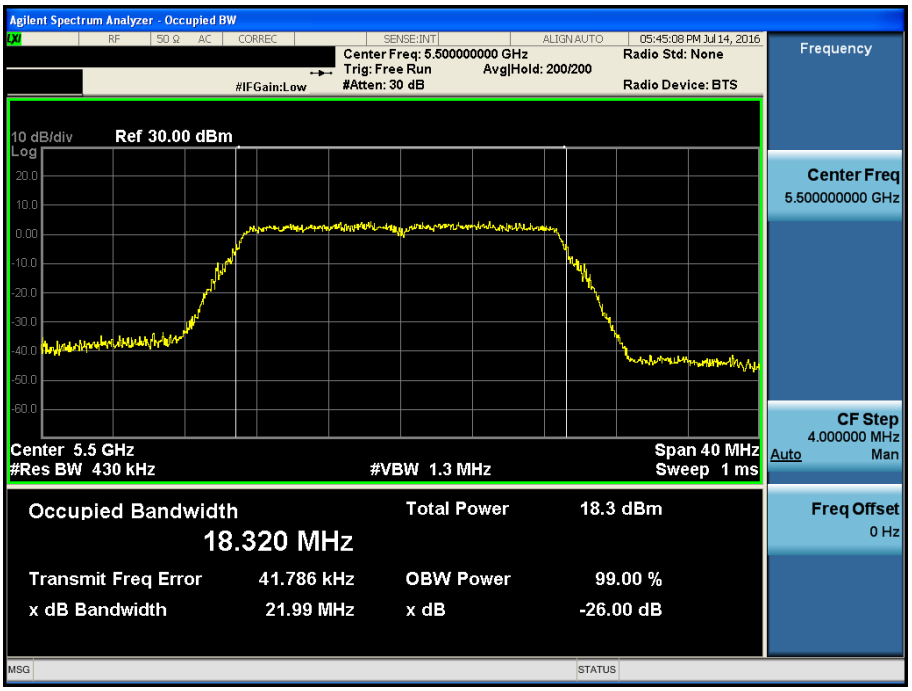
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.64



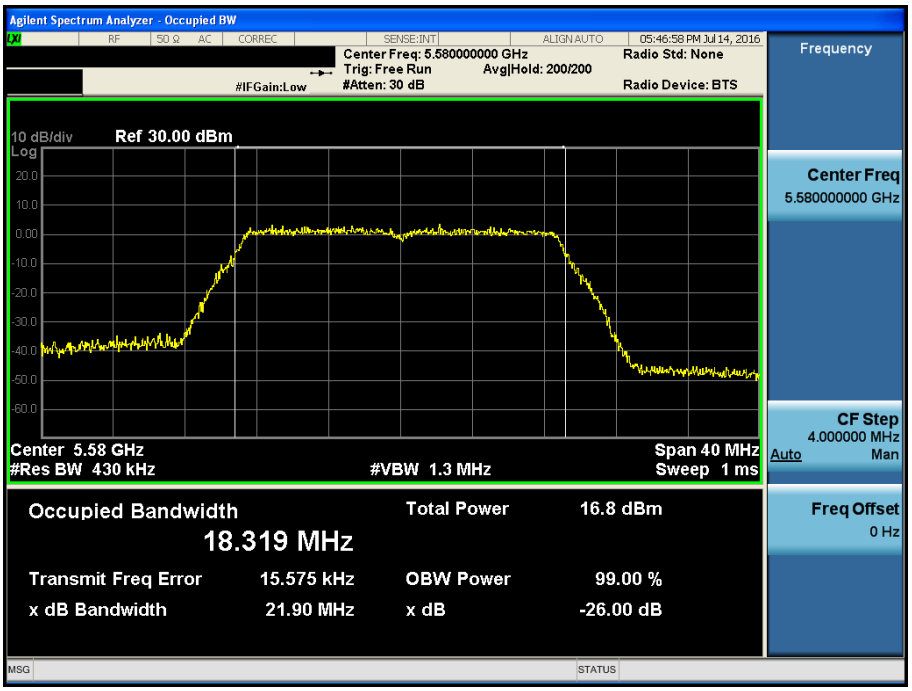
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.100




## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.116

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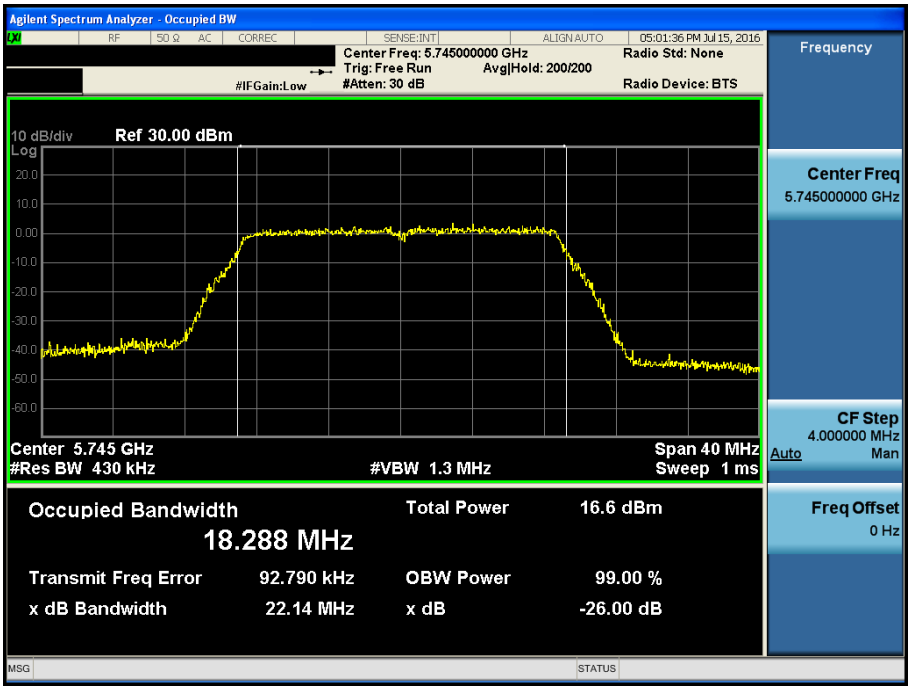
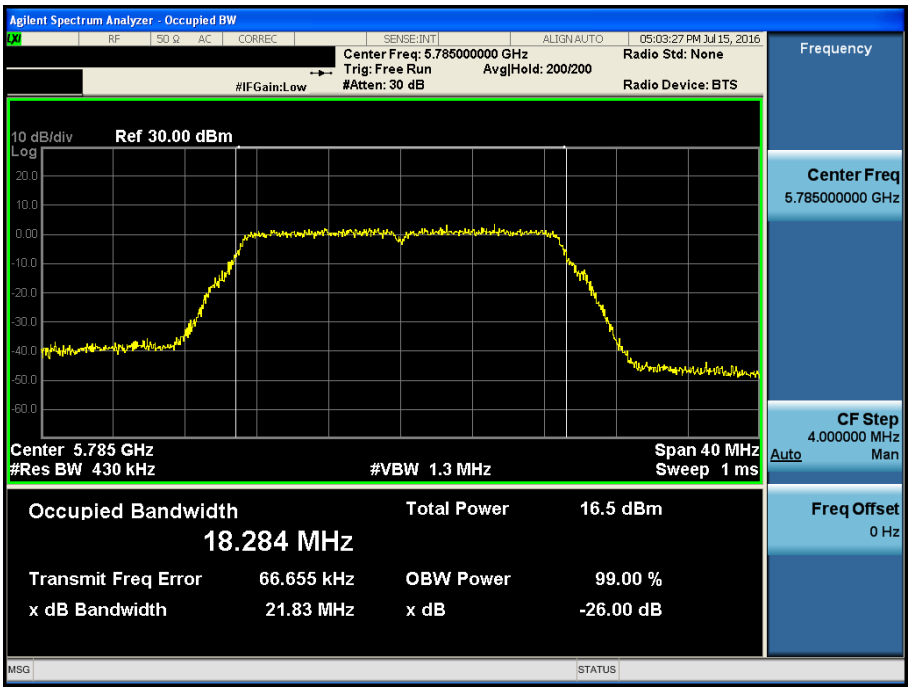
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.149




## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.157

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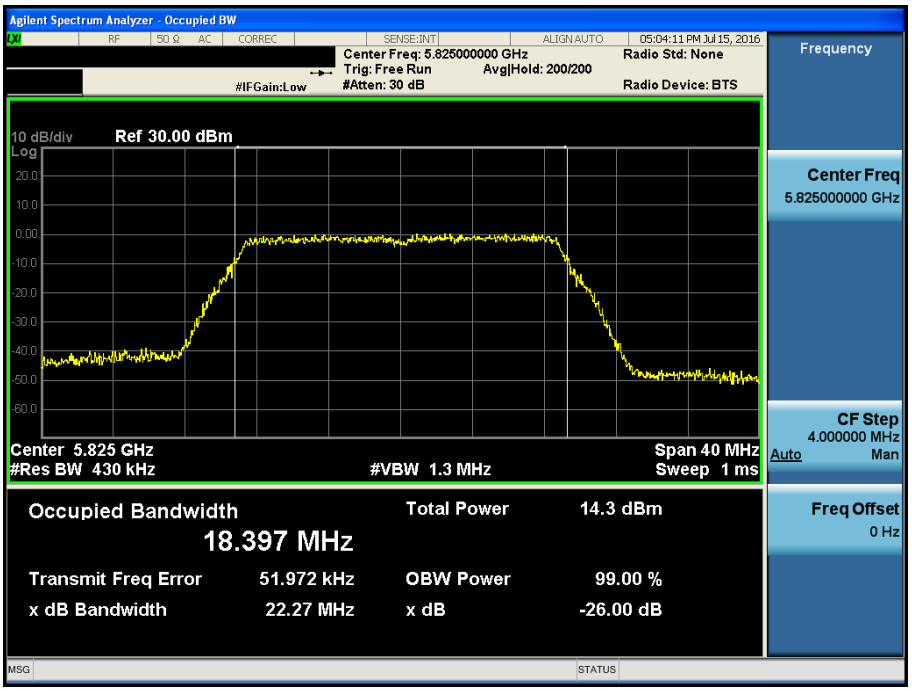
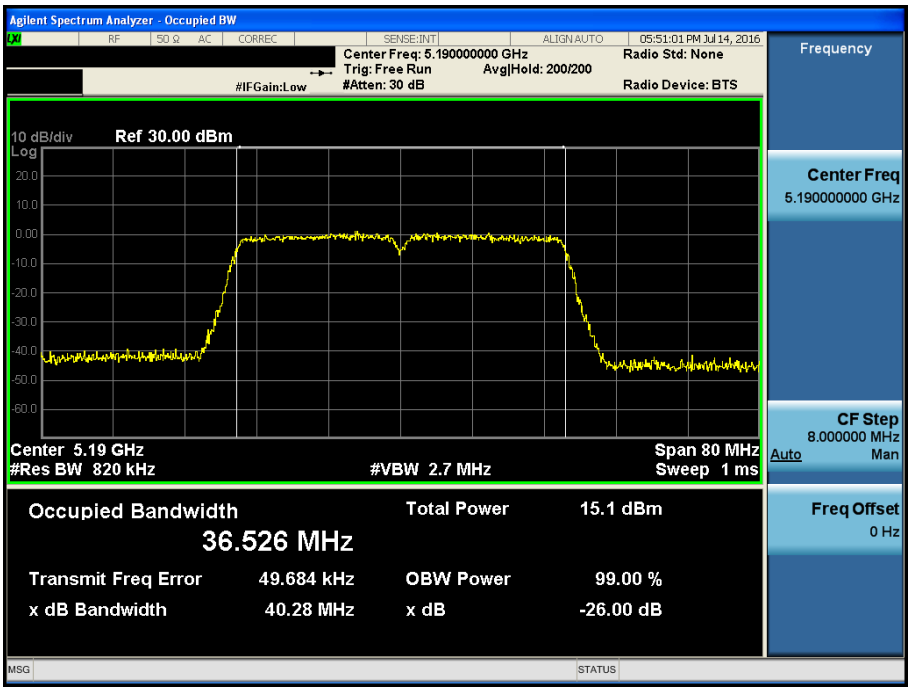
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.165



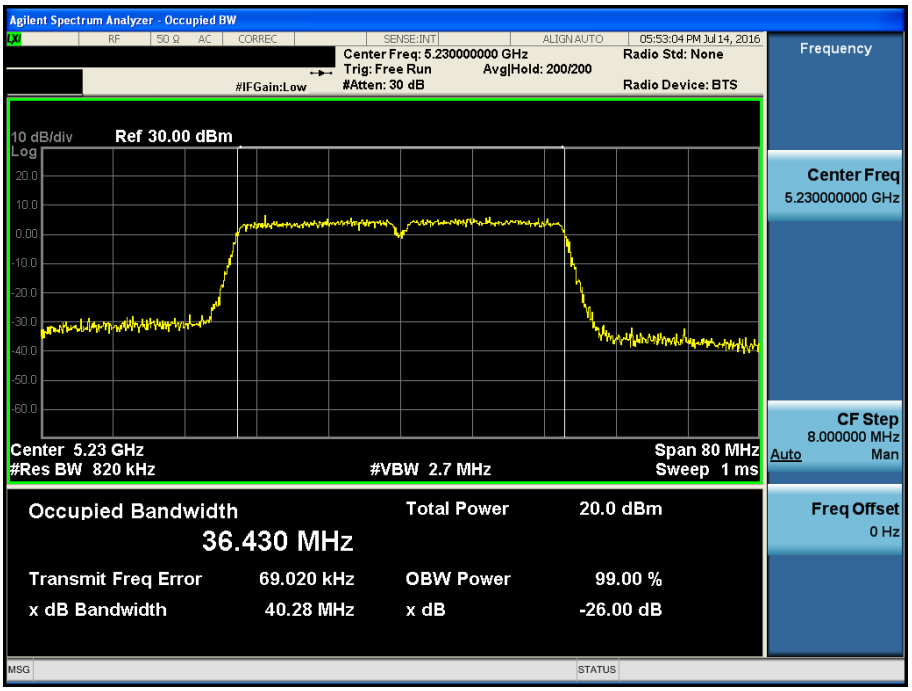
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.38



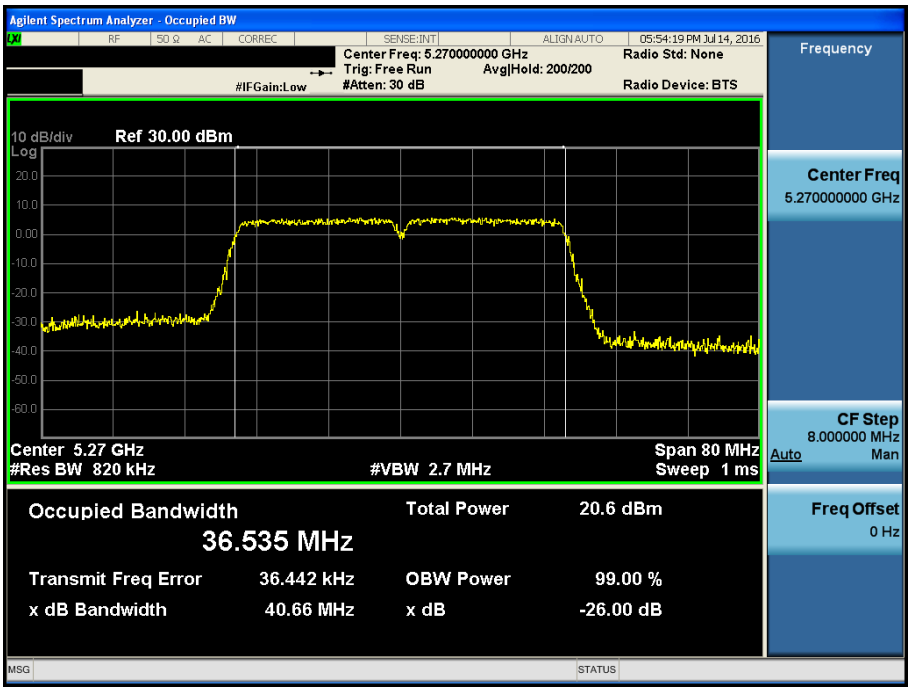

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.46



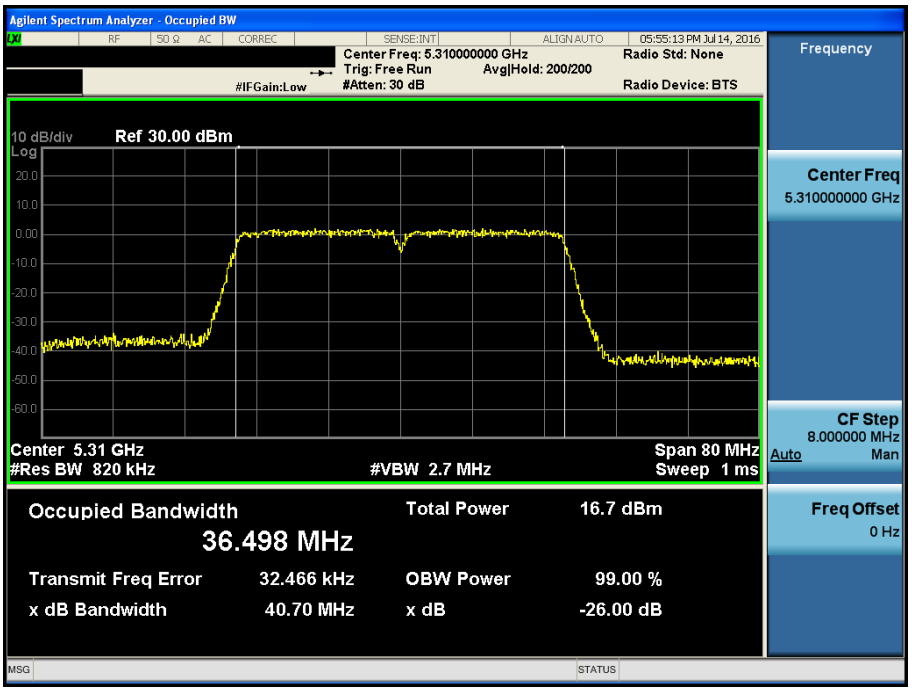
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.54



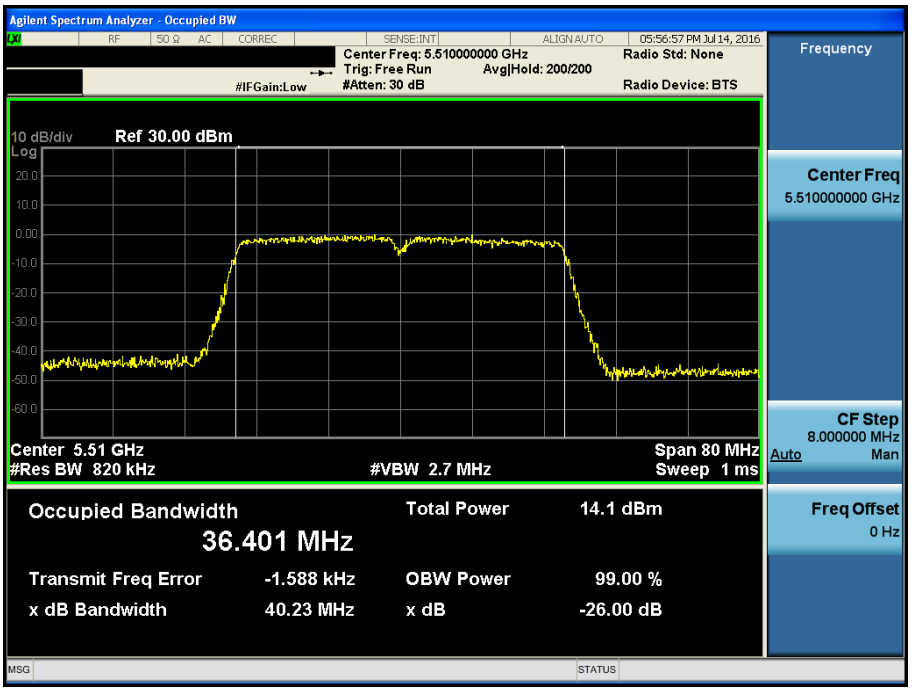

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.62



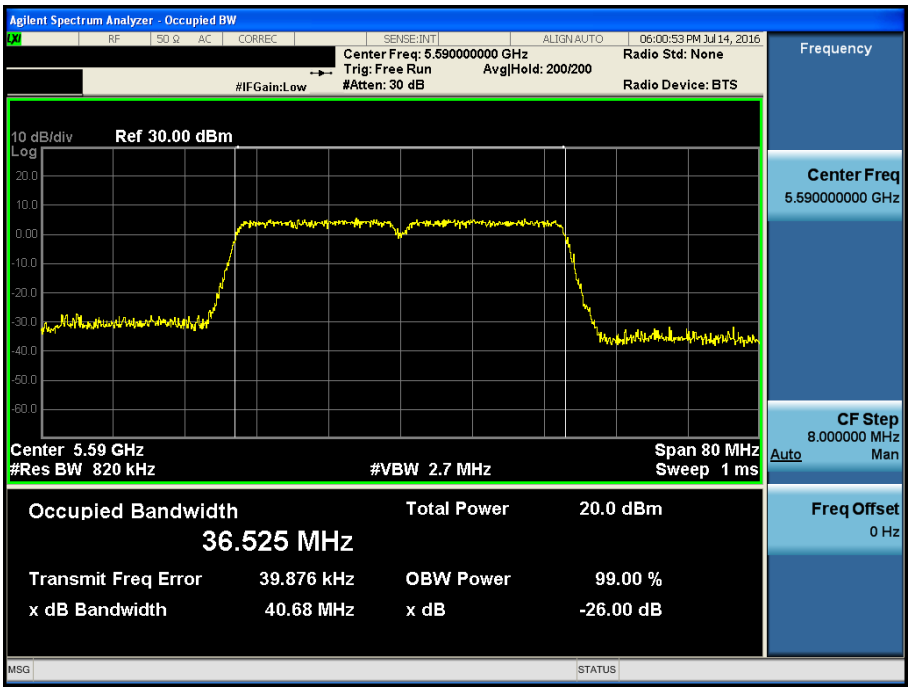
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.102




## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.118

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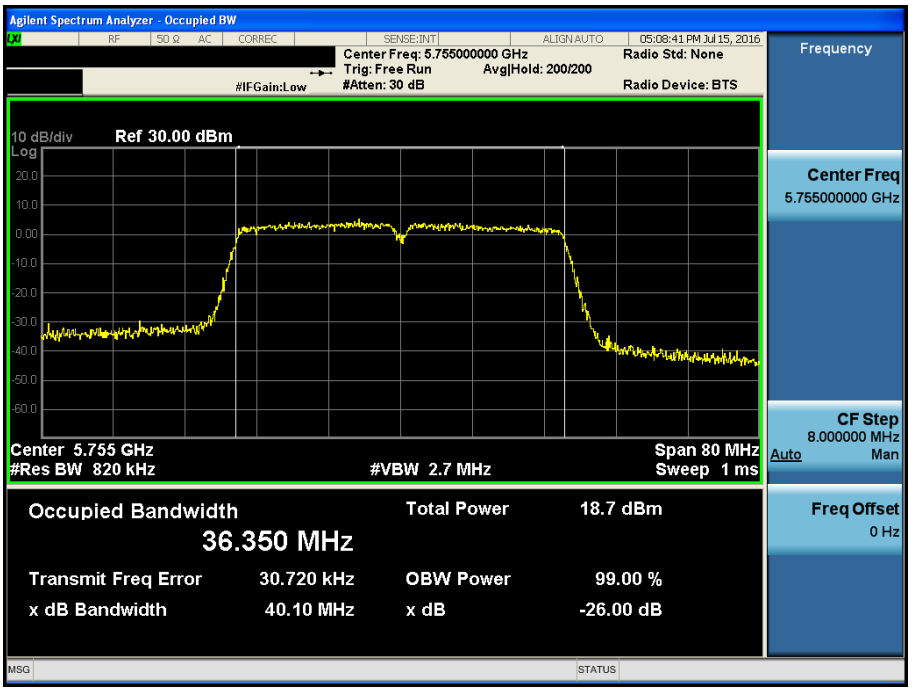
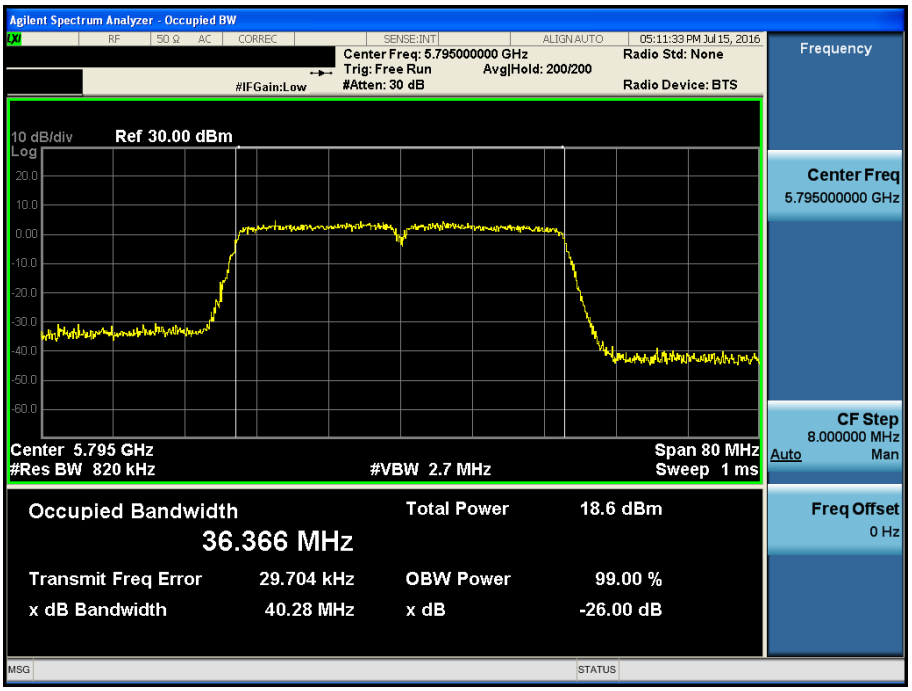
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.151



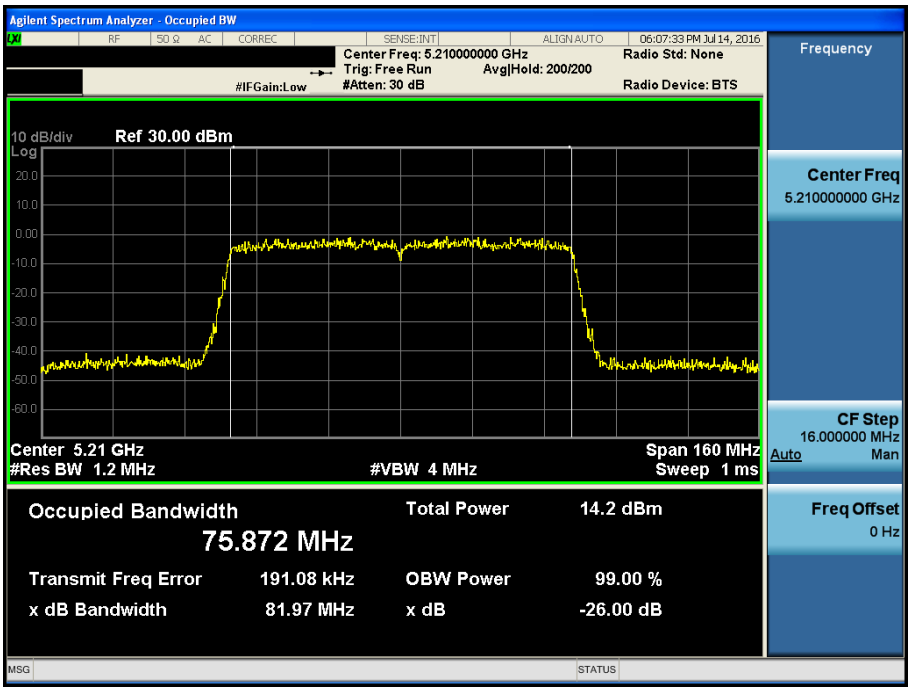

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.159



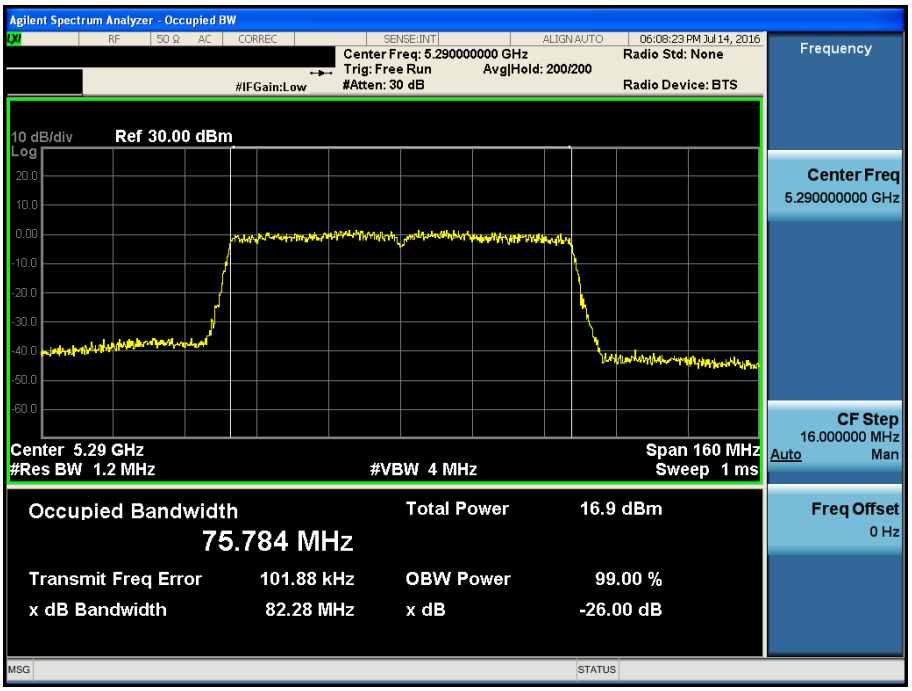
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 1 & Ch.42



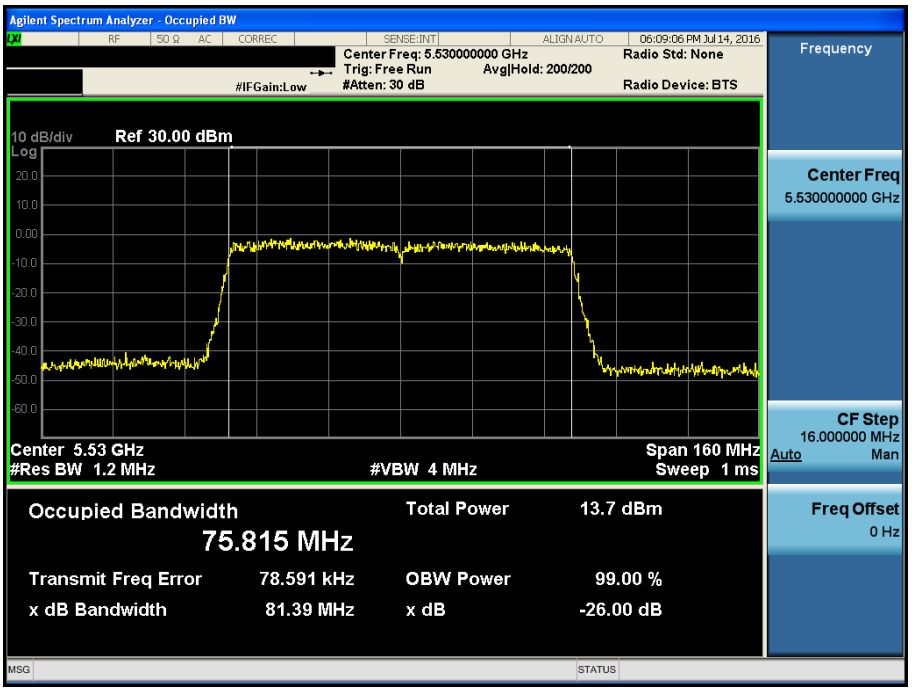

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 1 & Ch.58



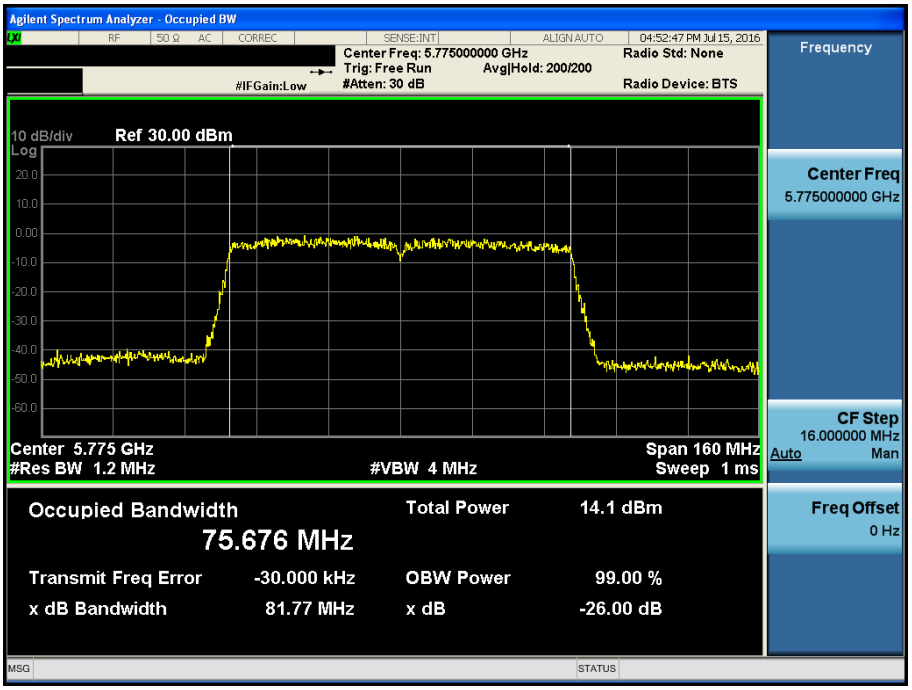
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 1 & Ch.106



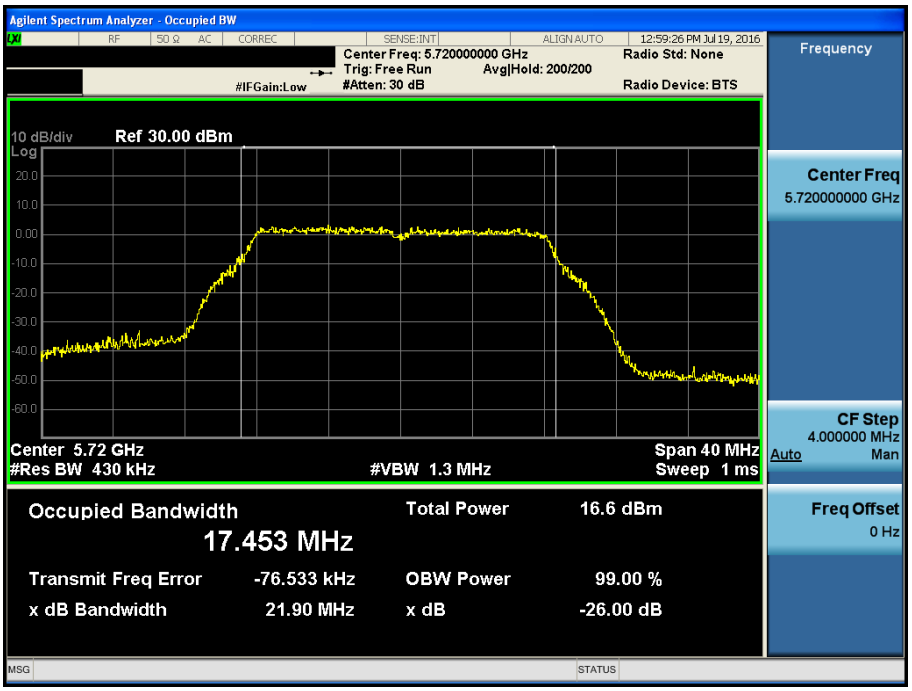

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 1 & Ch.155



## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 1 & Ch.144




## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT20 & ANT 1 & Ch.144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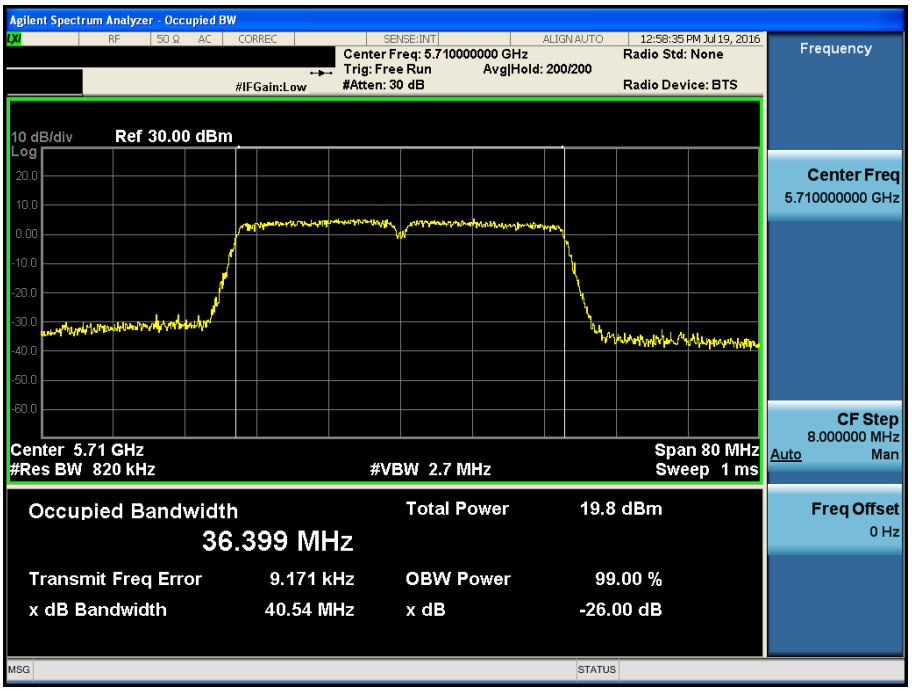
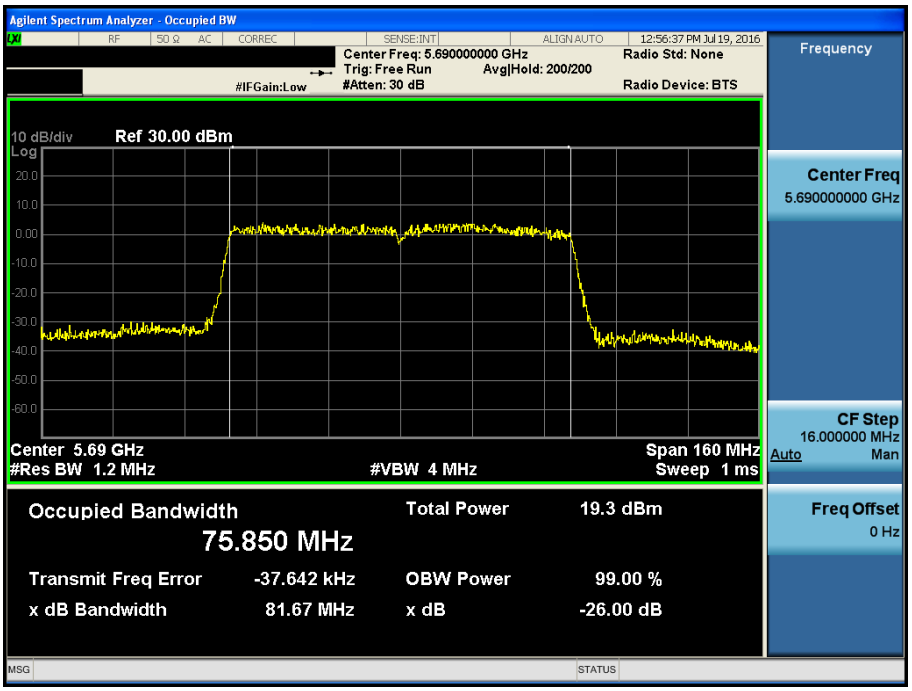
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.142



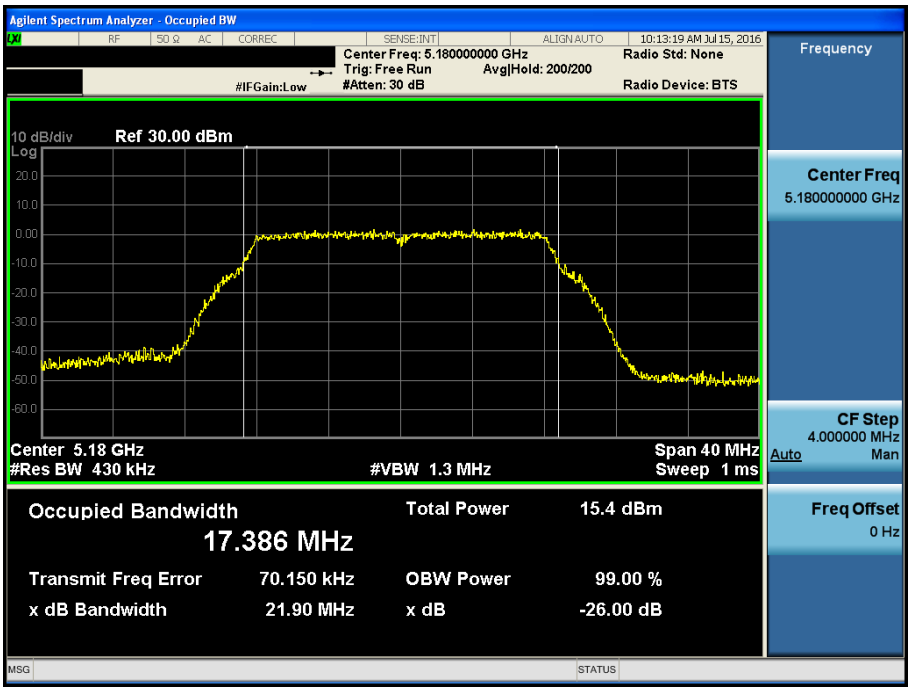

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 1 & Ch.138



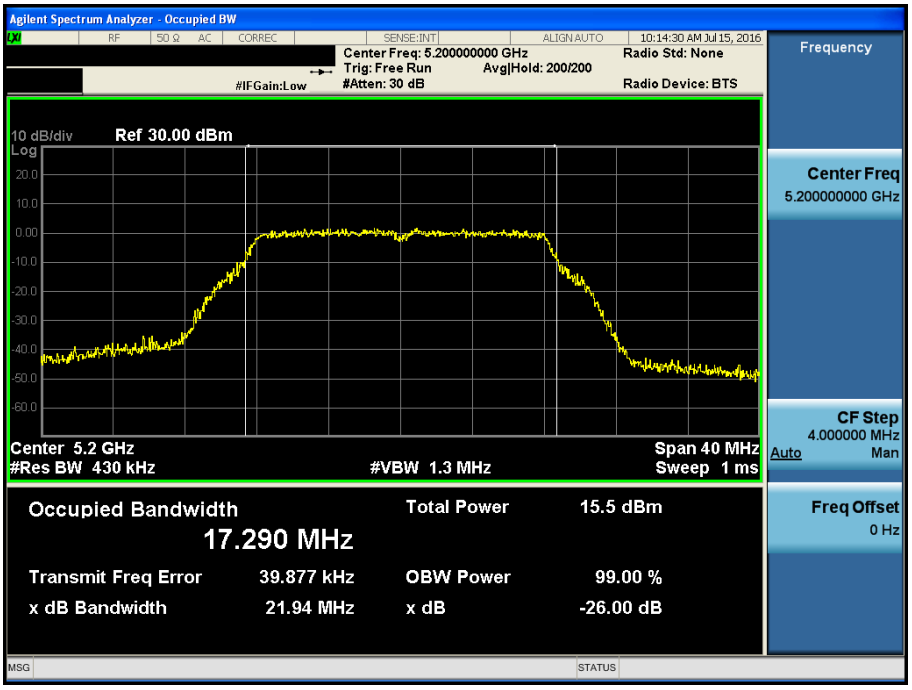
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.36



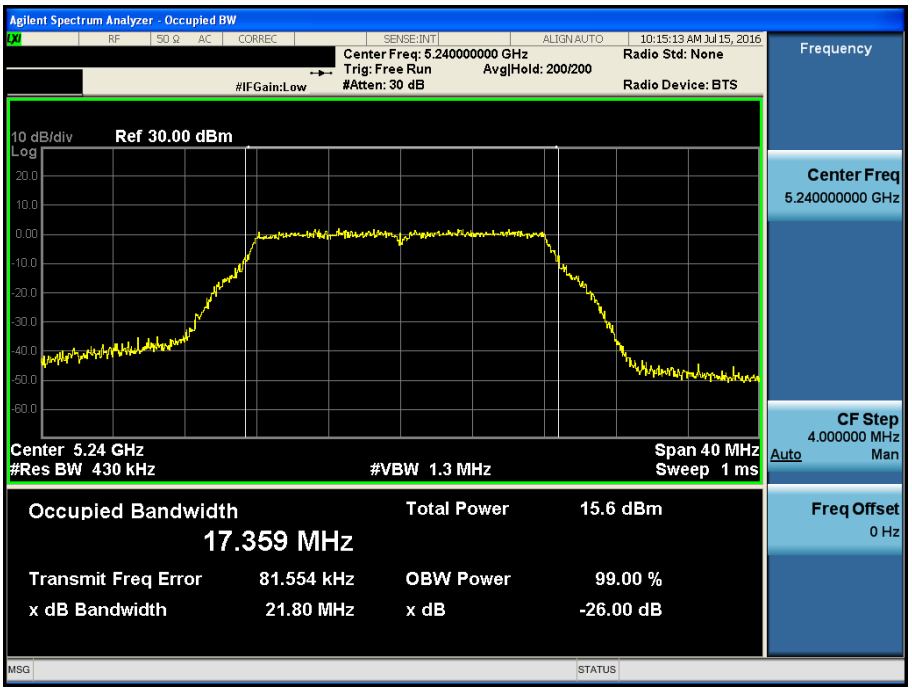

## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.40



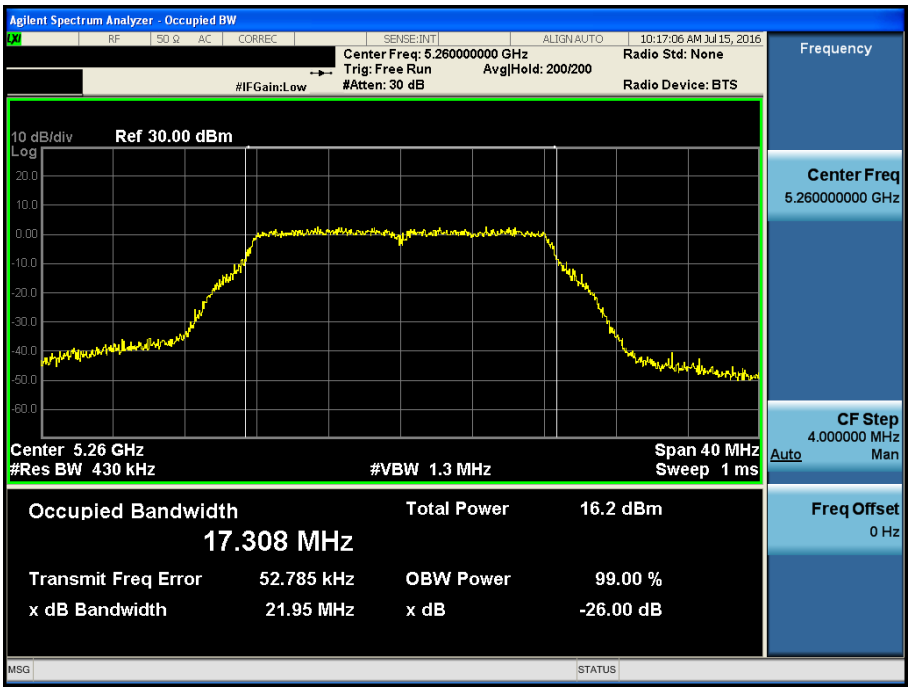
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.48



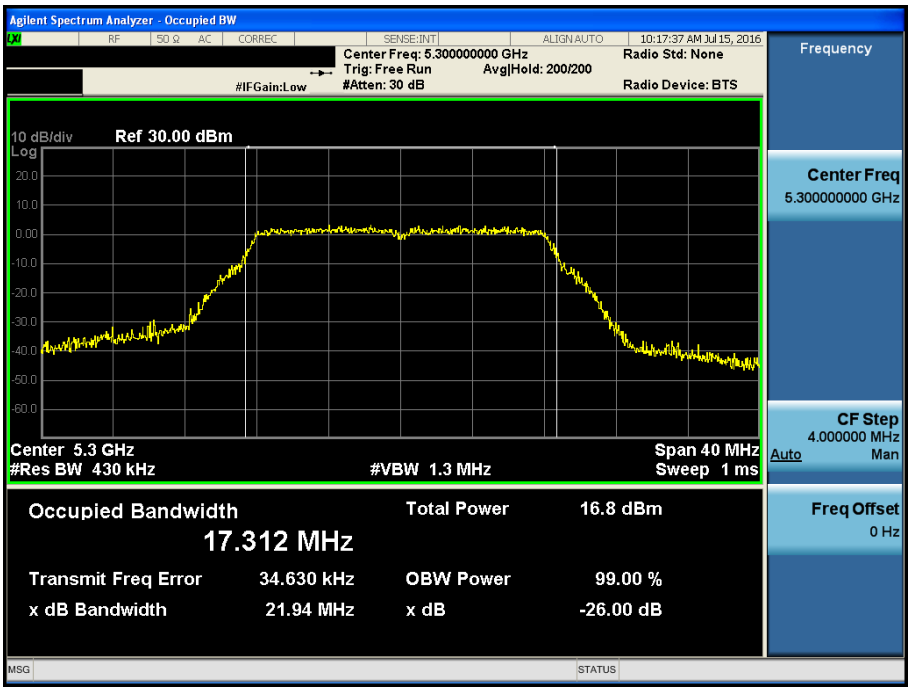
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.52




## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.60

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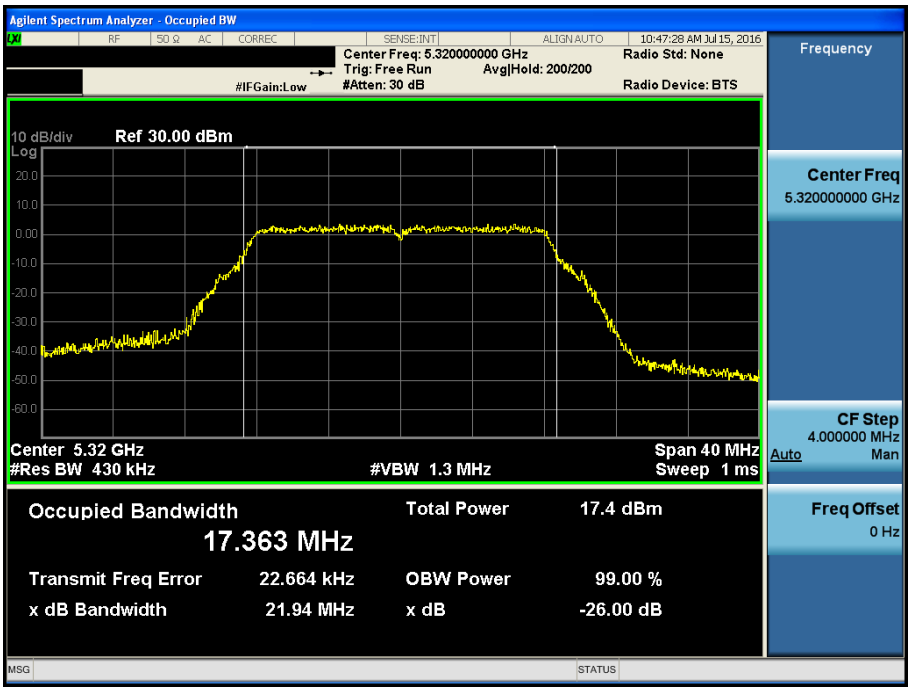
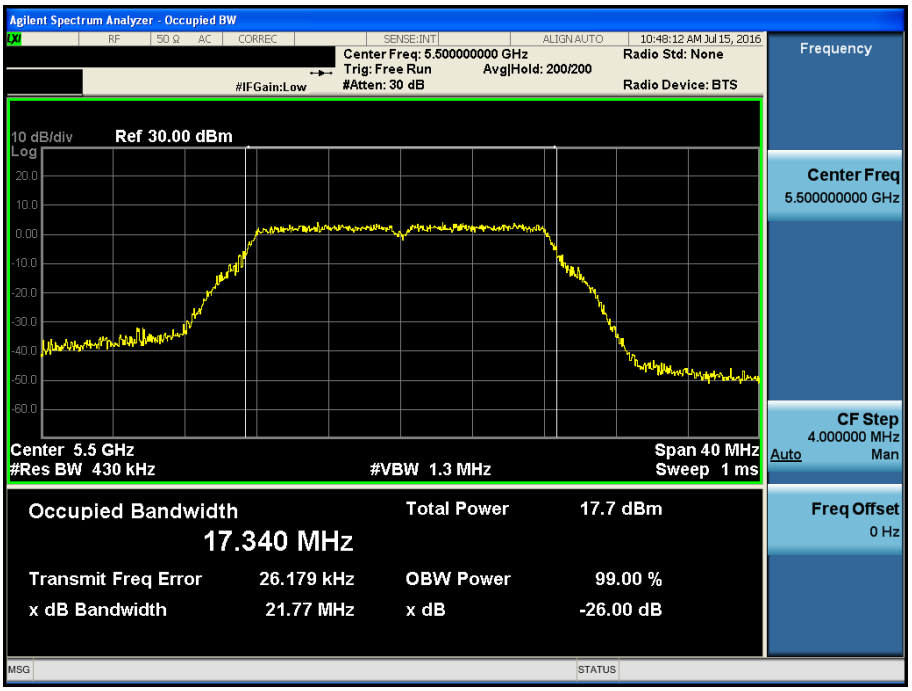
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.64



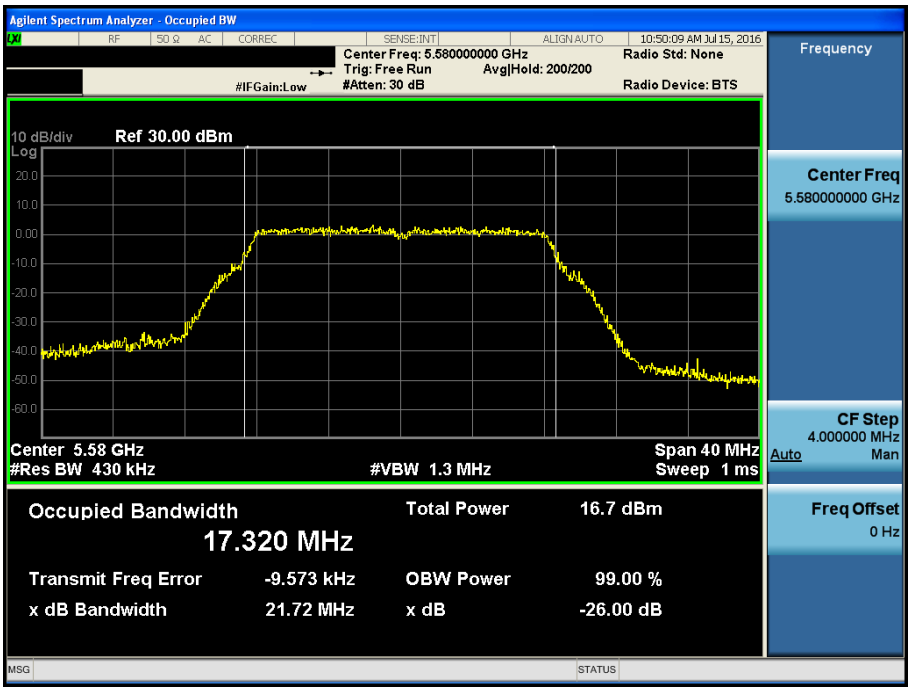
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.100



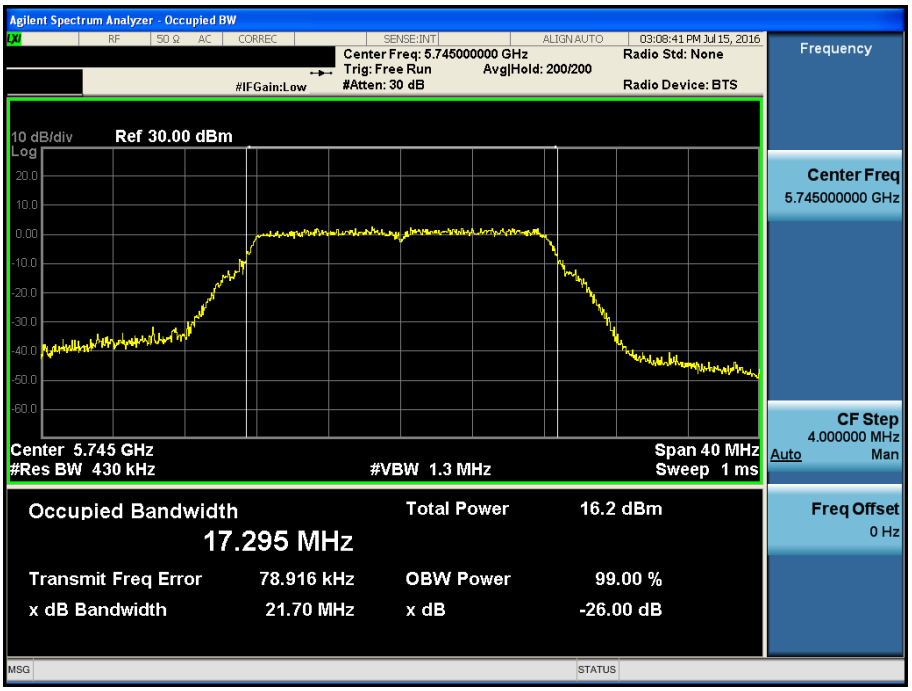

## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.116



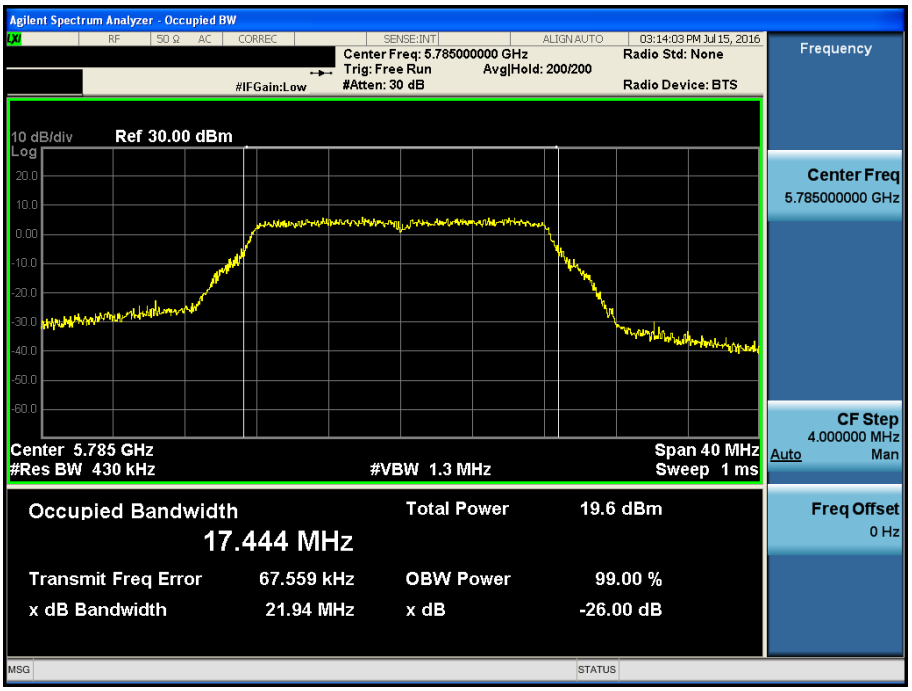
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.149

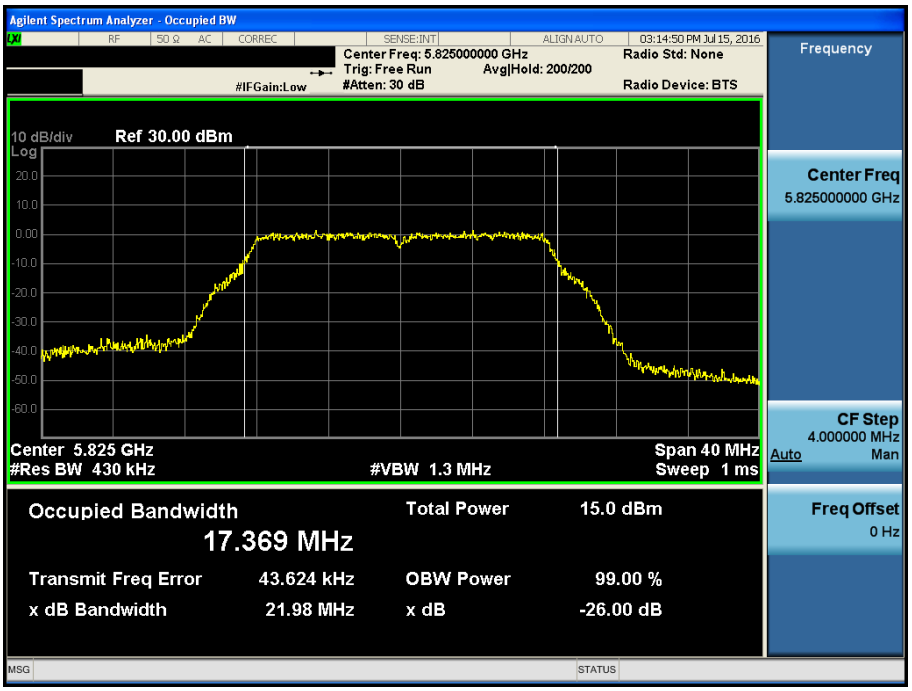



## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.157

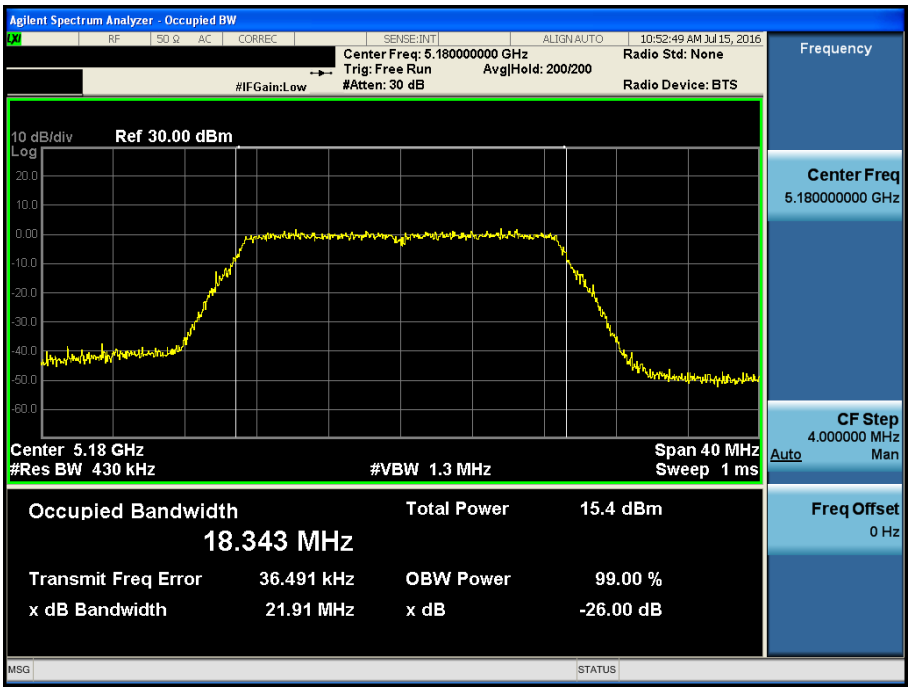


**Occupied Bandwidth 99%** Test Mode: 802.11a & ANT 2 & Ch.165



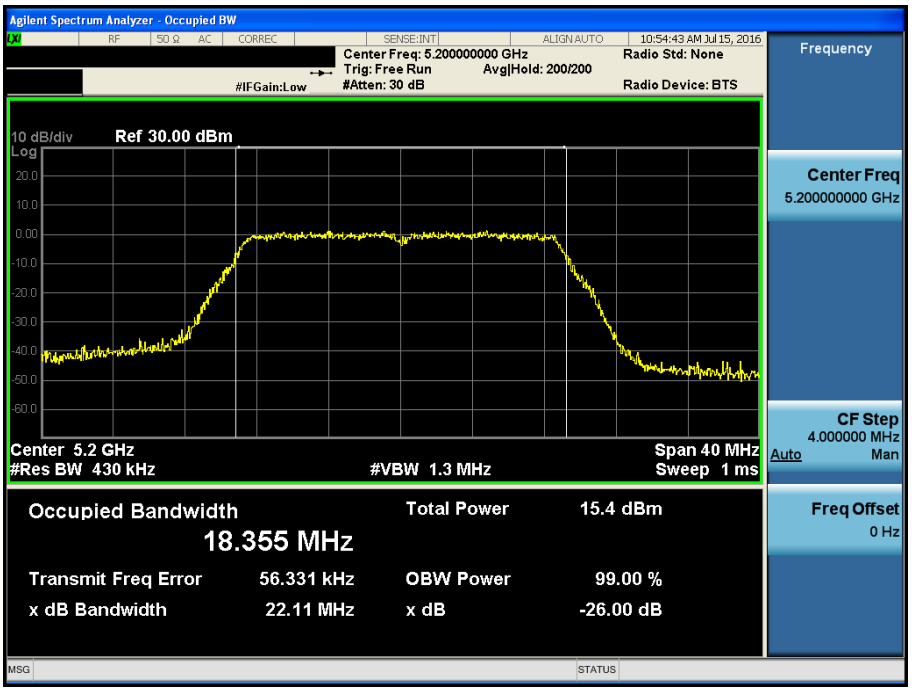
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.36




## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.40

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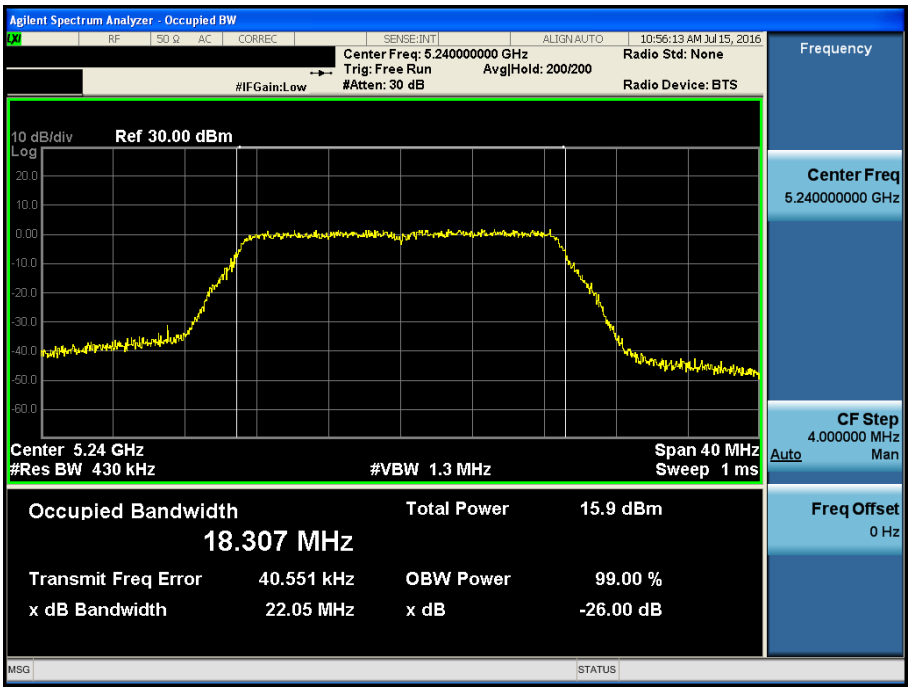
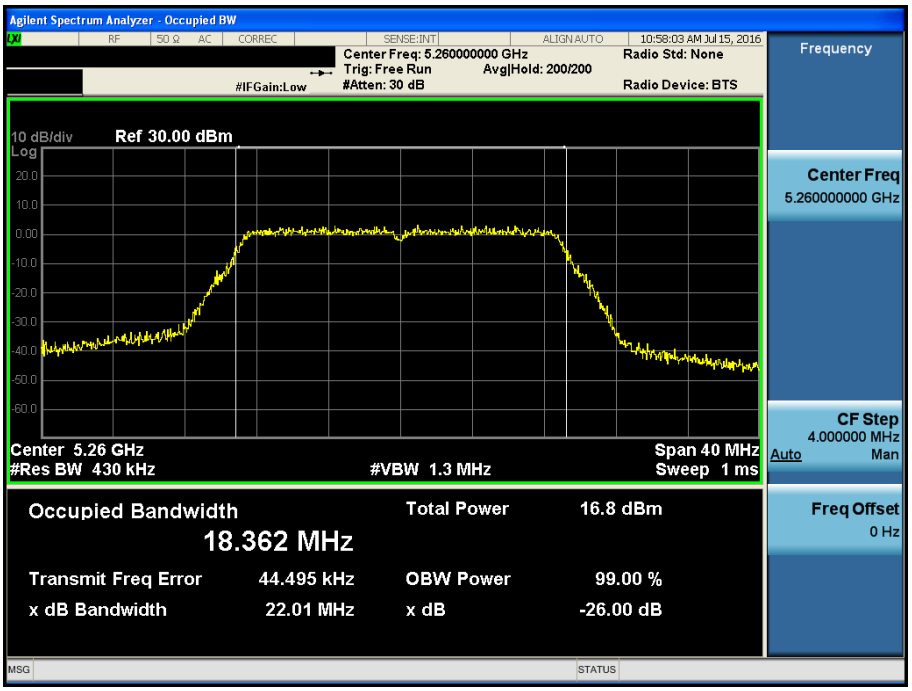
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.48



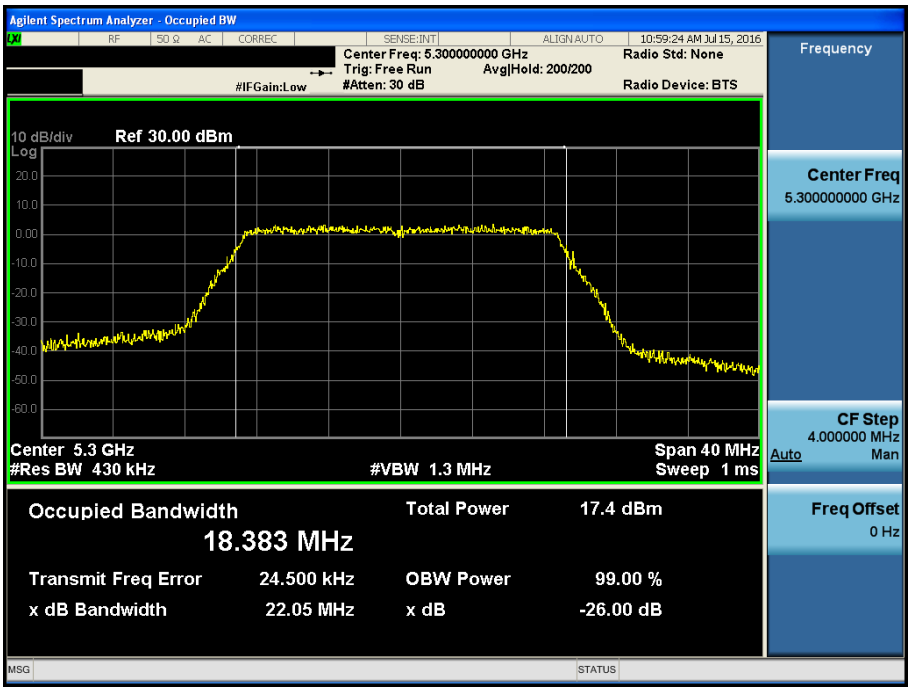
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.52



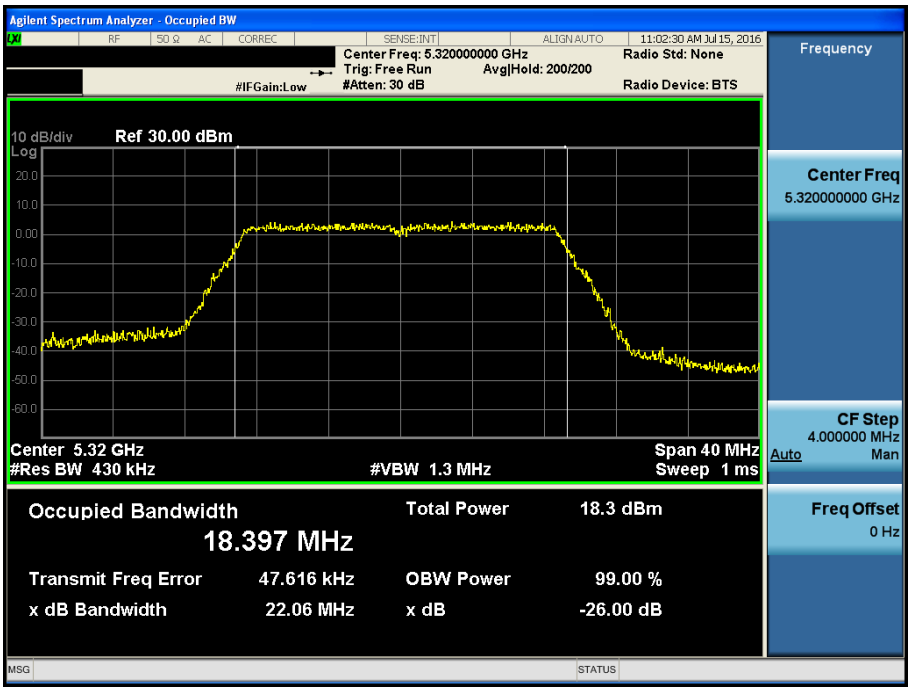

## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.60



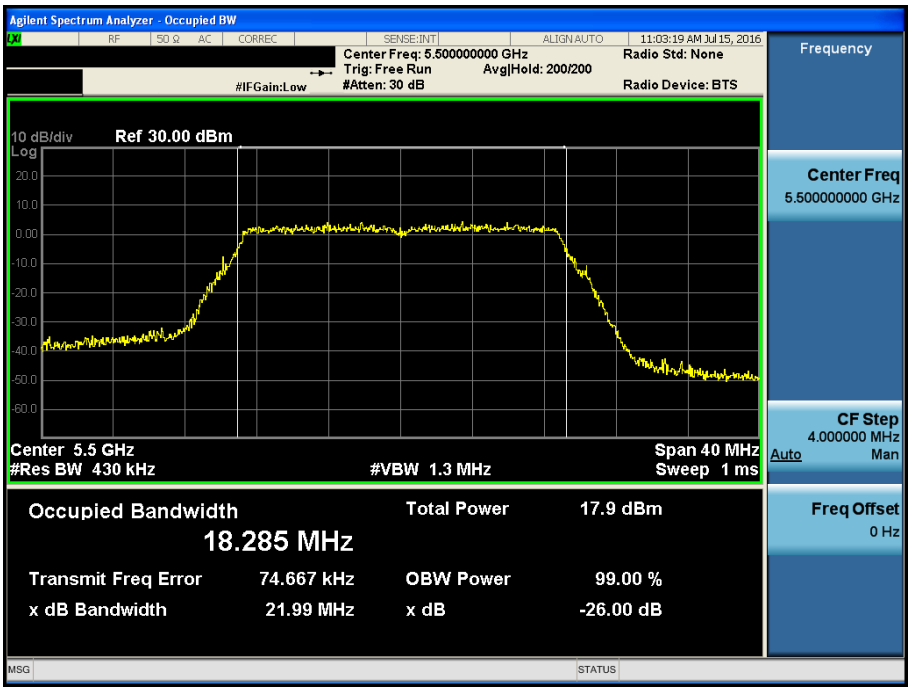
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.64



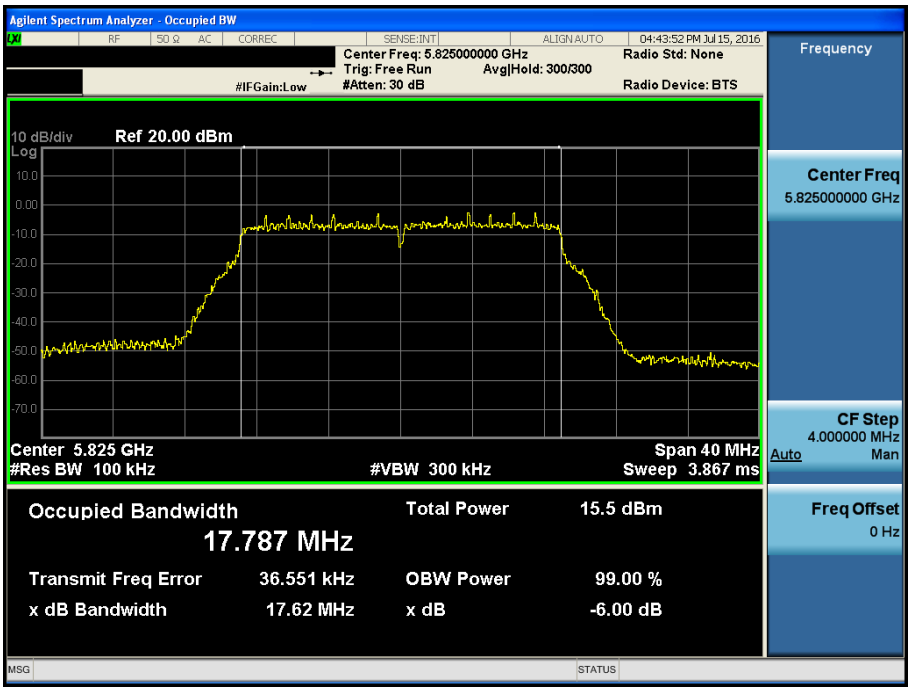
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.100




## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.116

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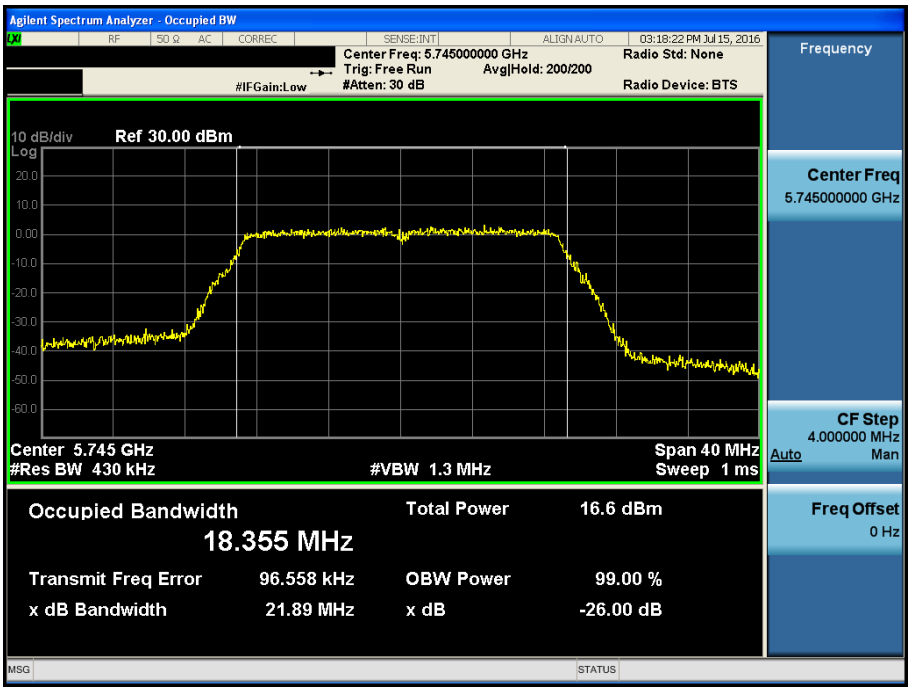
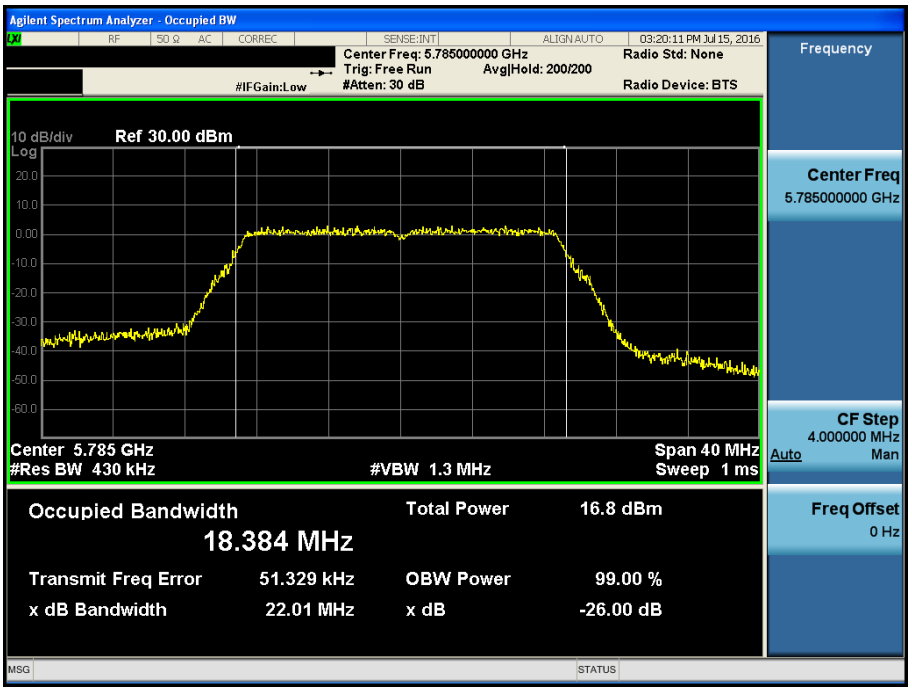
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.149



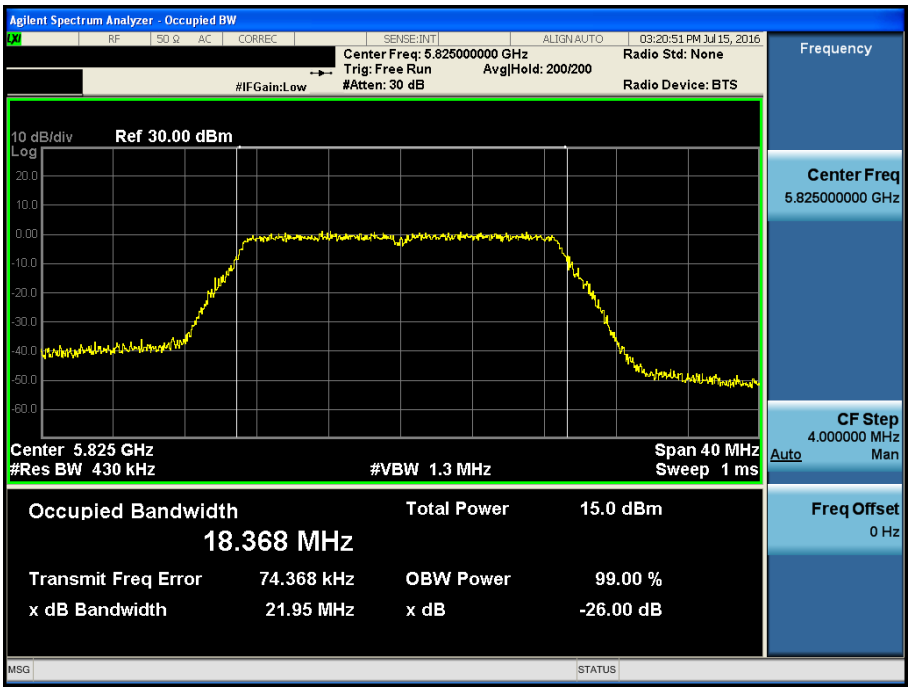

## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.157



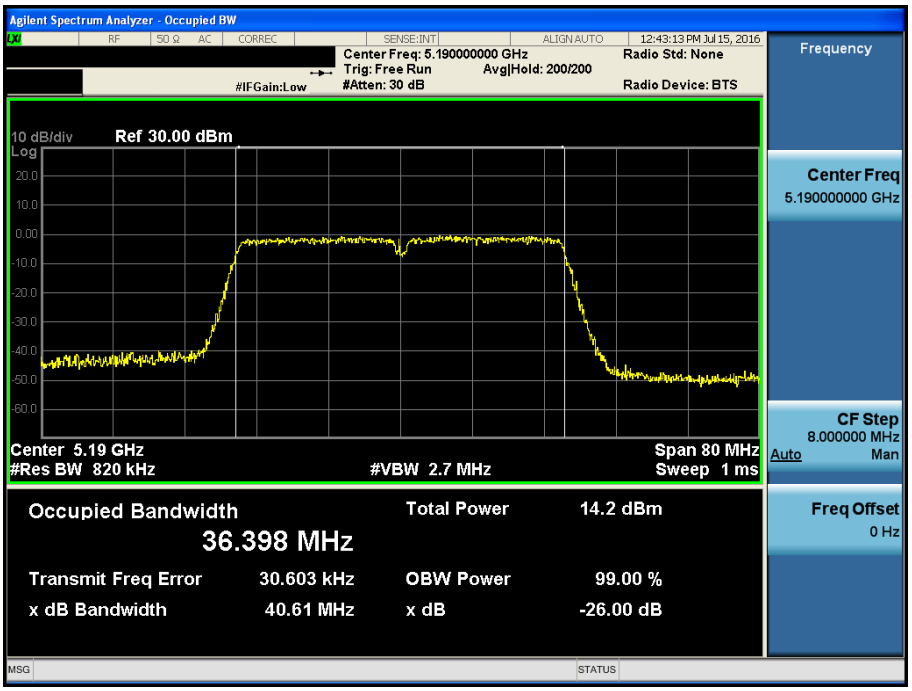
## Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.165



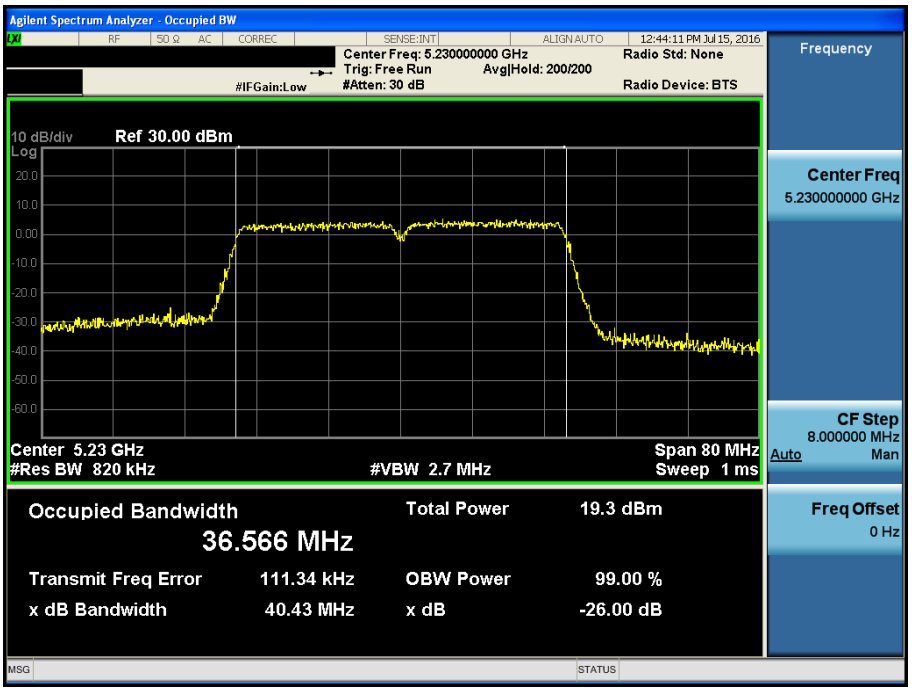
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.38



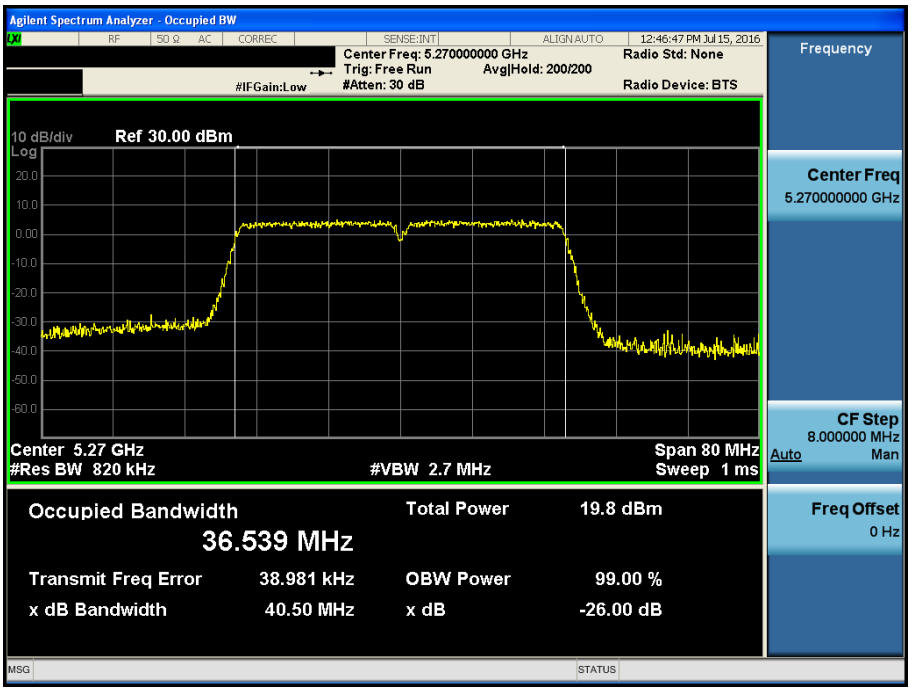

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.46



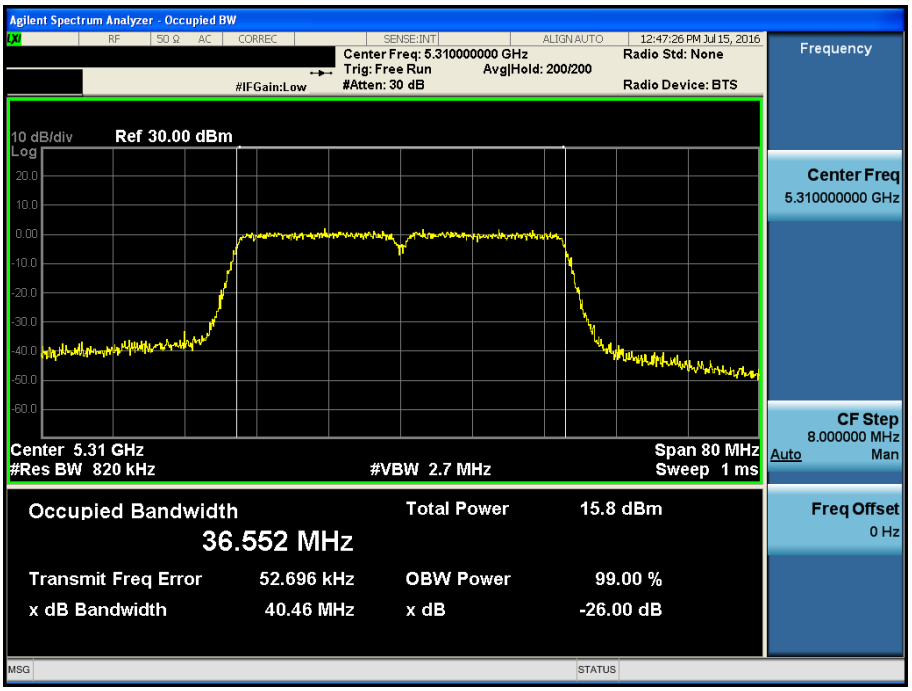
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.54



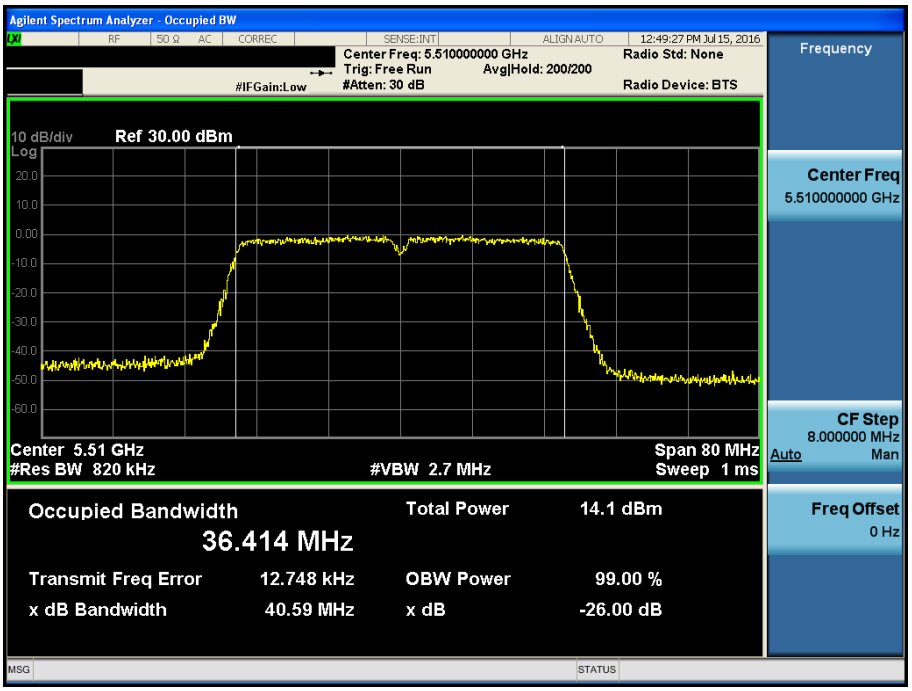

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.62



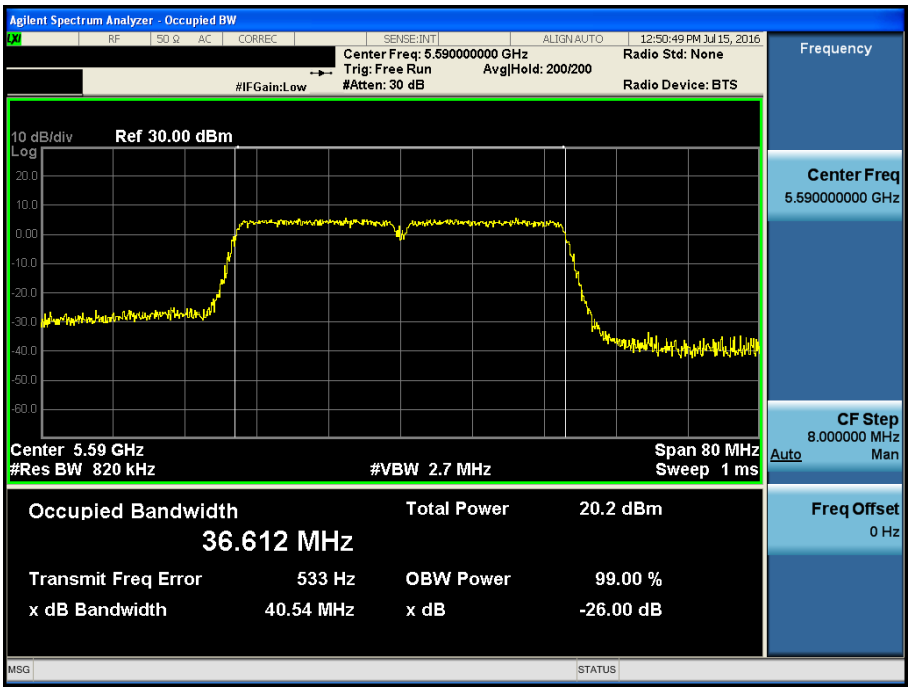
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.102



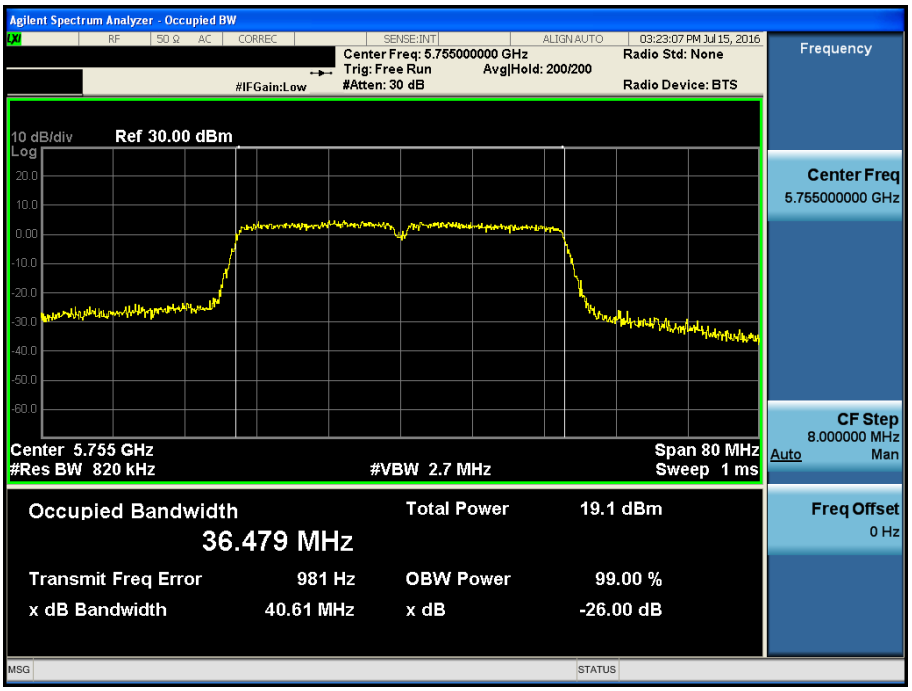

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.118



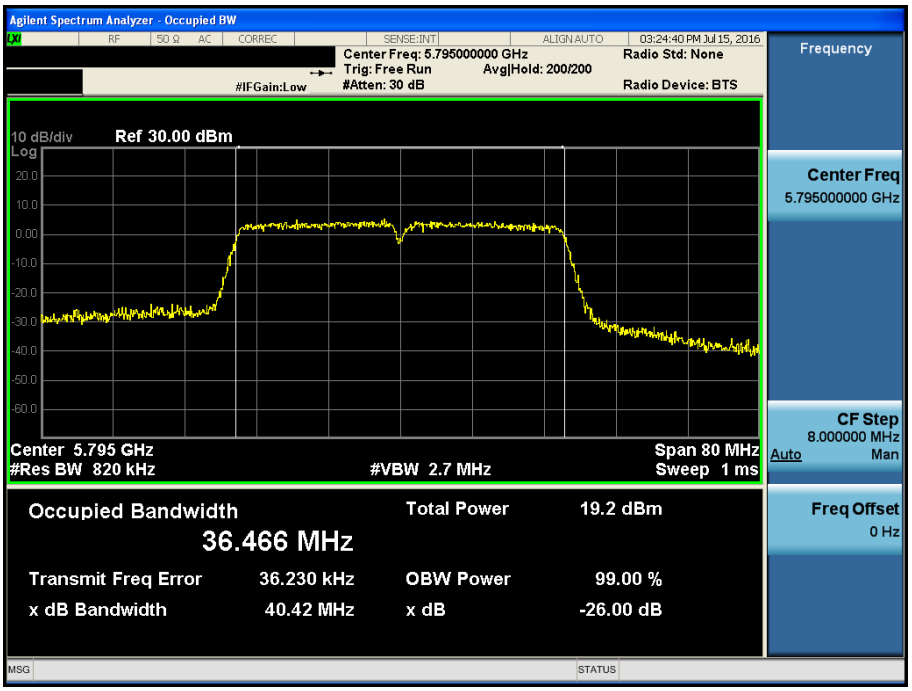
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.151



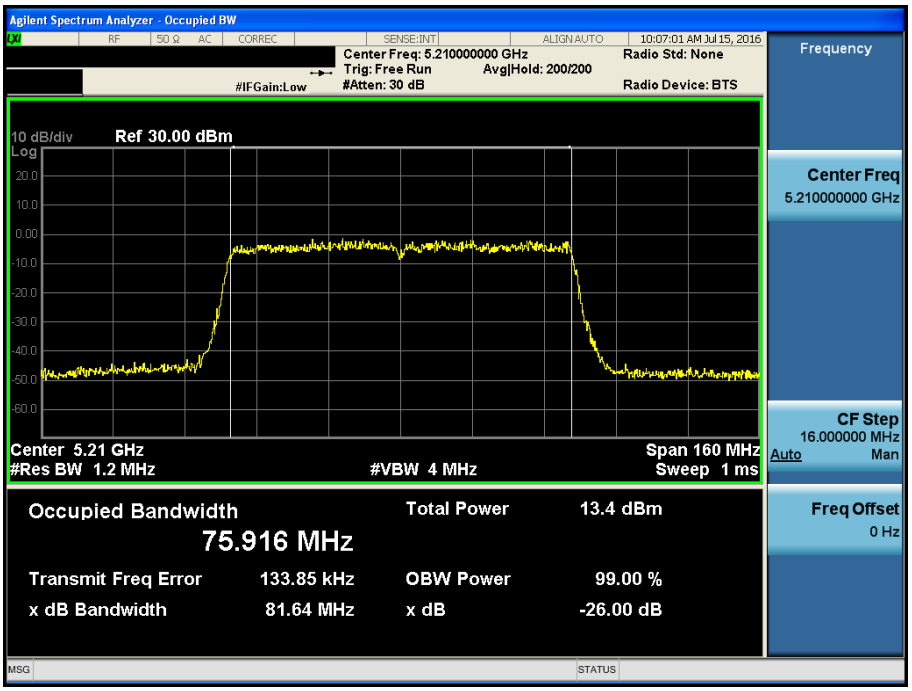

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.159



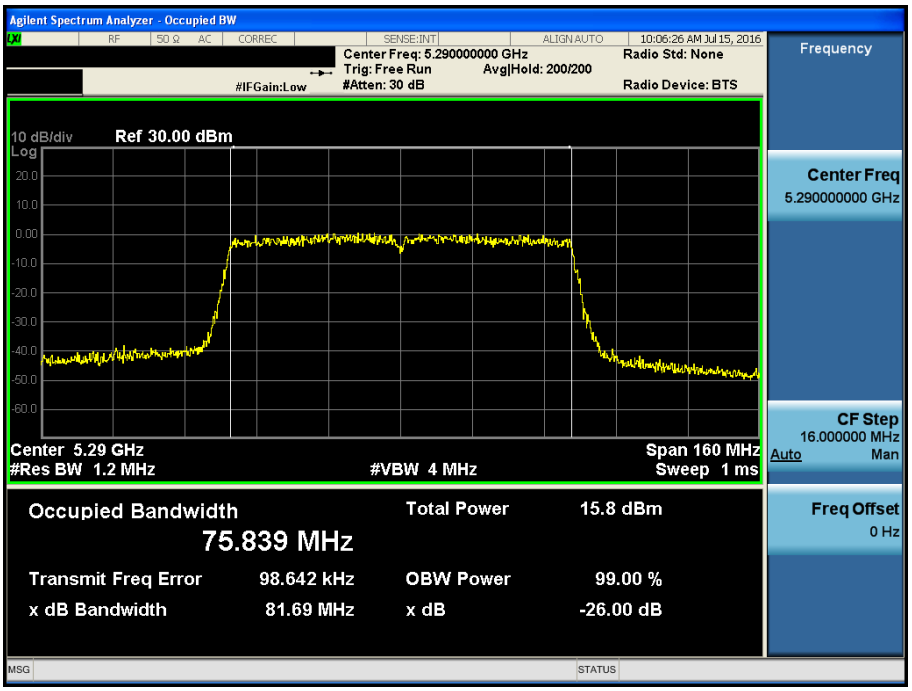
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 2 & Ch.42



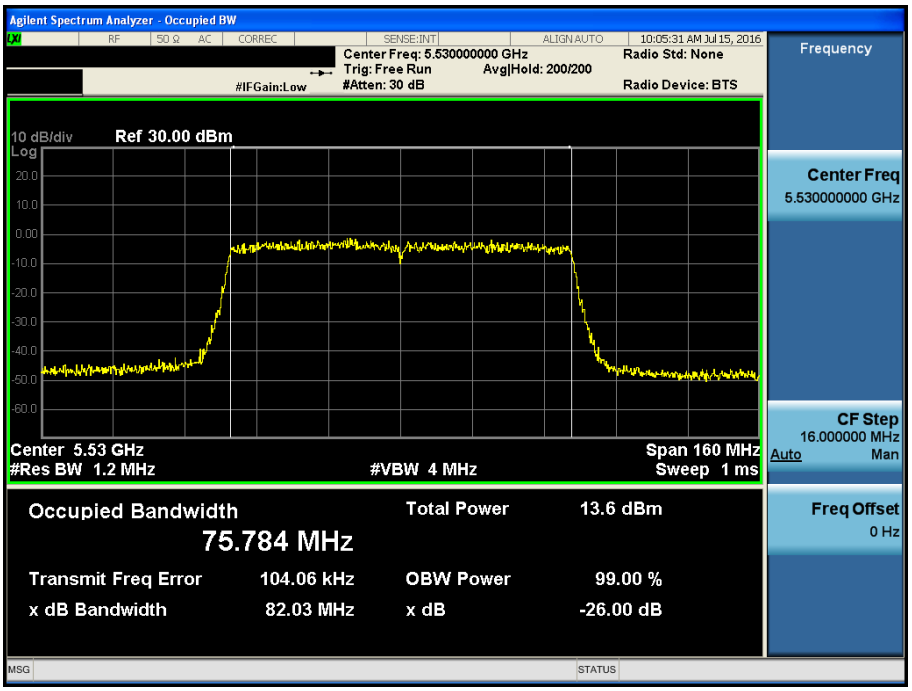

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 2 & Ch.58



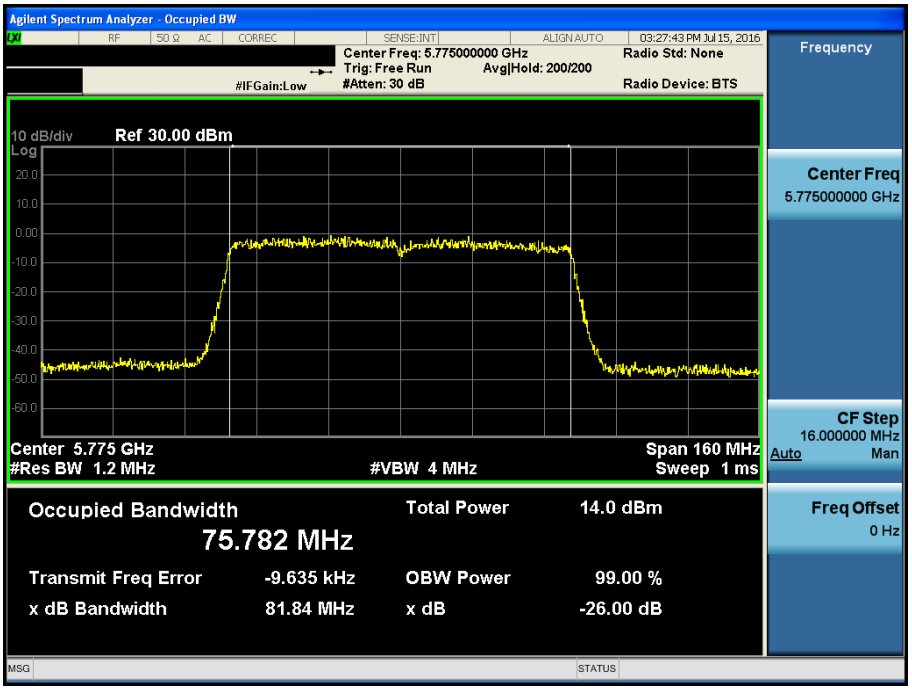
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 2 & Ch.106




## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 2 & Ch.155





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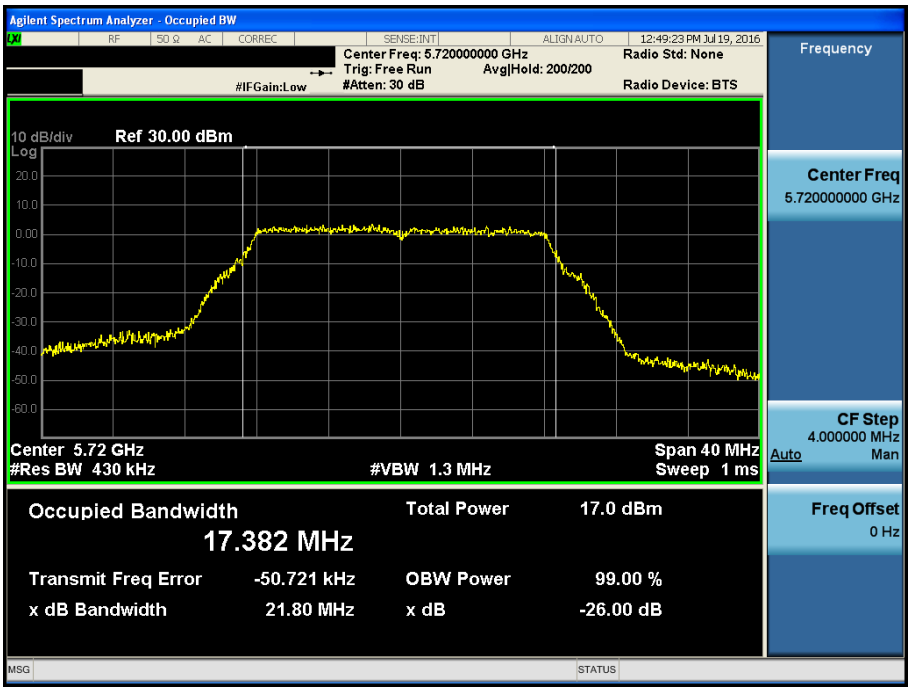
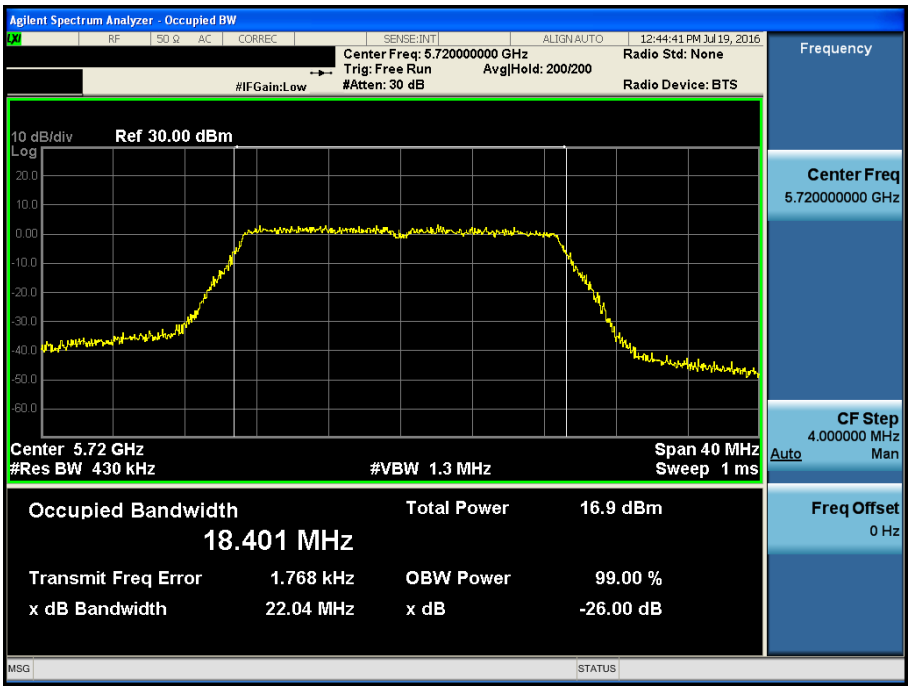
## Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.144



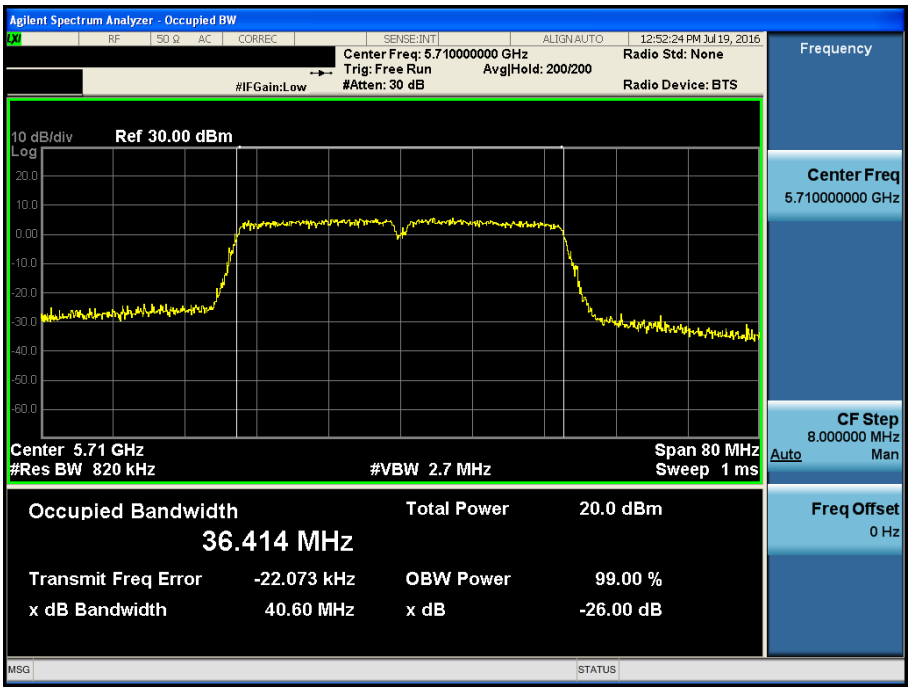

## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT20 & ANT 2 & Ch.144



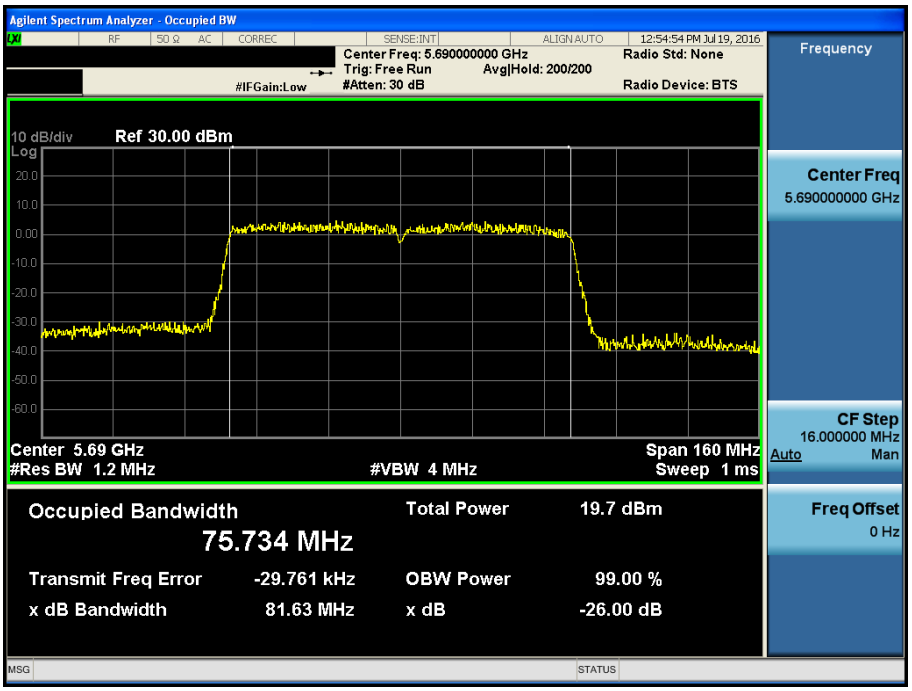
## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.142




## Occupied Bandwidth 99%

Test Mode: 802.11ac VHT80 & ANT 2 & Ch.138





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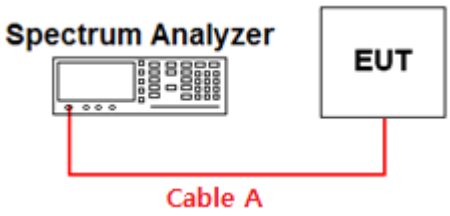
# 9. LIST OF TEST EQUIPMENT

| Type | Manufacturer | Model | Cal.Date (yy/mm/dd) | Next.Cal.Date (yy/mm/dd) | S/N |
|---|---|---|---|---|---|
| MXA Signal Analyzer | Agilent | N9020A | 15/09/14 | 16/09/14 | MY50200834 |
| PXA Signal Analyzer | Agilent Technologies | N9030A | 15/10/19 | 16/10/19 | MY53310140 |
| DIGITAL MULTIMETER | Agilent | 34401A | 16/01/05 | 17/01/05 | US36099541 |
| Dynamic Measurement DC Source | Agilent | 66332A | 15/09/23 | 16/09/23 | US37473305 |
| Vector Signal Generator | Rohde Schwarz | SMBV100A | 16/01/05 | 17/01/05 | 255571 |
| Signal Generator | Rohde Schwarz | SMF100A | 15/06/29 | 16/06/29 | 102341 |
| | | | 16/06/23 | 17/06/23 | |
| Thermohygrometer | BODYCOM | BJ5478 | 16/04/22 | 17/04/22 | 120612-2 |
| Loop Antenna | Schwarzbeck | FMZB1513 | 16/04/22 | 18/04/22 | 1513-128 |
| TRILOG Broadband Test-Antenna | SCHWARZBECK | VULB 9160 | 16/05/13 | 18/05/13 | 3357 |
| Horn Antenna | ETS-LINDGREN | 3115 | 15/02/09 | 17/02/09 | 9202-3820 |
| Horn Antenna | A.H.Systems Inc. | SAS-574 | 15/09/03 | 17/09/03 | 155 |
| PreAmplifier | Agilent | 8449B | 16/02/24 | 17/02/24 | 3008A00370 |
| Low Noise Pre Amplifier | tsj | MLA-010K01-B01-27 | 16/03/10 | 17/03/10 | 1844539 |
| PreAmplifier(18~40GHz) | A.H. SYSTEMS | PAM-1840VH | 15/12/03 | 16/12/03 | 163 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESR7 | 16/02/25 | 17/02/25 | 101061 |
| EMI TEST RECEIVER | R&S | ESCI | 16/02/25 | 17/02/25 | 100364 |
| Highpass Filter | Wainwright Instruments | WHKX12-2580-3000-18000-80SS | 15/09/23 | 16/09/23 | 3 |
| Highpass Filter | Wainwright Instruments | WHNX6-6320-8000-26500-40CC | 15/09/23 | 16/09/23 | 1 |
| Temp & Humi Test Chamber | SJ Science | SJ-TH-S50 | 15/09/10 | 16/09/10 | U5542113 |
| Power Meter & Wide Bandwidth Sensor | Anritsu | ML2495A | 16/05/02 | 17/05/02 | 1306007 |
| Power Meter & Wide Bandwidth Sensor | Anritsu | MA2490A | 16/05/02 | 17/05/02 | 1249001 |
| ARTIFICIAL MAINS NETWORK | Narda S.T.S. / PMM | PMM L2-16B | 16/06/22 | 17/06/22 | 000WX20305 |
| SINGLE-PHASE MASTER | NF | 4420 | 15/09/09 | 16/09/09 | 3049354420023 |

# APPENDIX I

## Conducted Test set up Diagram

- **Conducted Measurement**




# APPENDIX II

## Duty Cycle Information

▣ **Test Procedure**

**Duty Cycle [X = On Time / ( On + Off time )]** is measured using Measurement Procedure **of KDB789033 D02**

1. Set the center frequency of the spectrum analyzer to the center frequency of the transmission.
2. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW ≥ RBW. Set detector = peak.
4. Note : The zero-span measurement method shall not be used unless both **RBW and VBW are > 50/*T***, where *T* is defined in section II.B.1.a), and **the number of sweep points across duration *T* exceeds 100**. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

*T* : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
(***T* = On time** of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

## ▣ Test Results:

**Multiple Transmit**

| Mode | Channel | Tested Frequency [MHz] | Maximum Achievable Duty Cycle (*x*) = On / (On+Off) | | | Duty Cycle Correction Factor [dB] | 50/*T* [kHz] |
|---|---|---|---|---|---|---|---|
| | | | On Time [ms] | On+OffTime [ms] | *x* | | |
| 802.11a | 36 | 5180 | 2.07 | 2.17 | 95.07 | 0.22 | 2.07 |
| 802.11n (HT20) | 36 | 5180 | 0.98 | 1.08 | 90.75 | 0.43 | 0.98 |
| 802.11ac (VHT40) | 38 | 5190 | 0.50 | 0.53 | 94.33 | 0.26 | 0.50 |
| 802.11ac (VHT80) | 42 | 5210 | 0.26 | 0.29 | 89.67 | 0.48 | 0.26 |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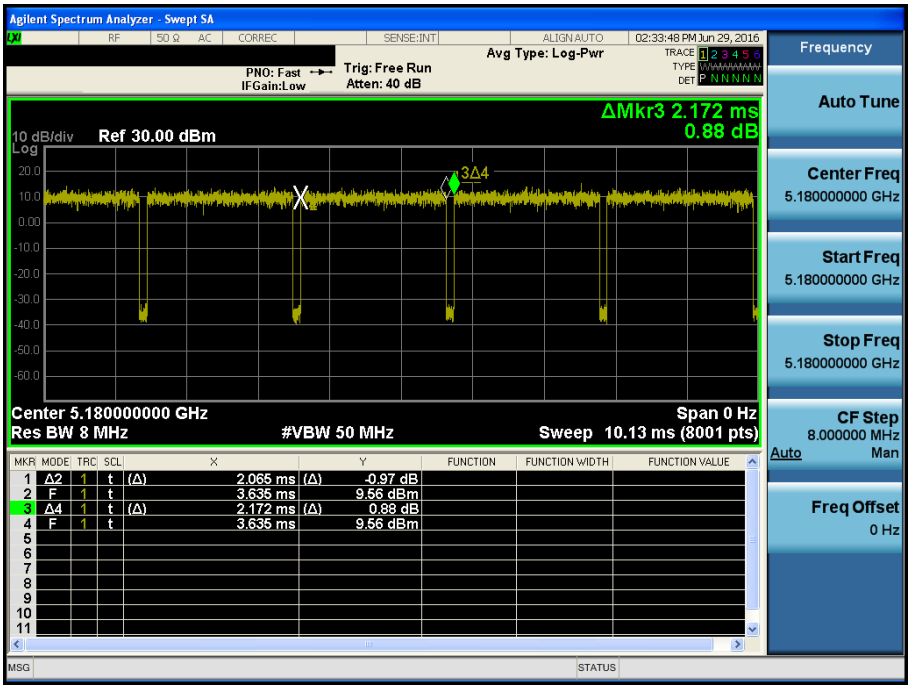
## Multiple Transmit

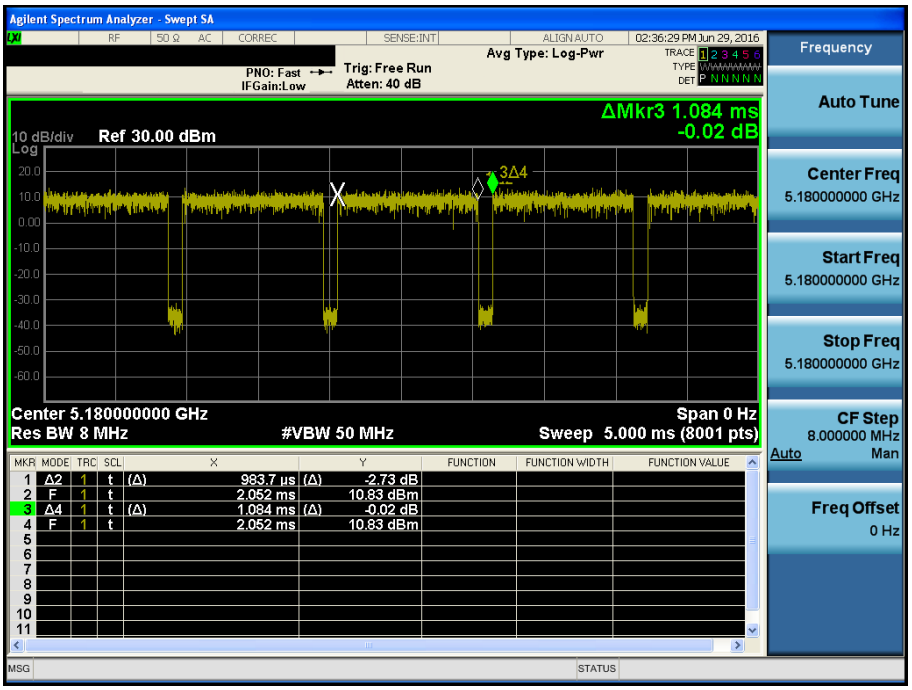
### Duty Cycle

Test Mode: 802.11a & Ch.36



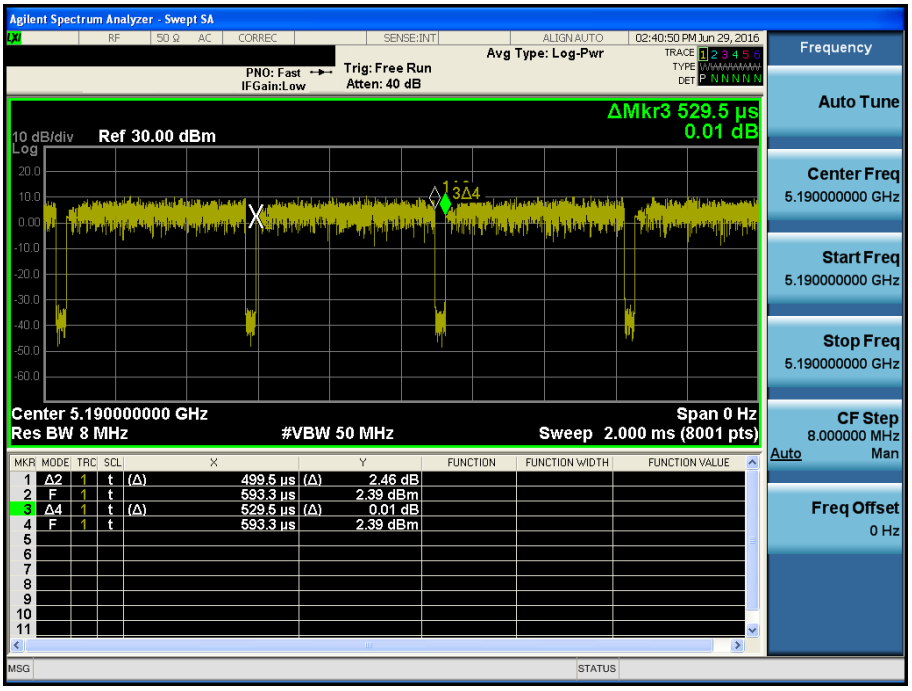

### Duty Cycle

Test Mode: 802.11n HT20 & Ch.36



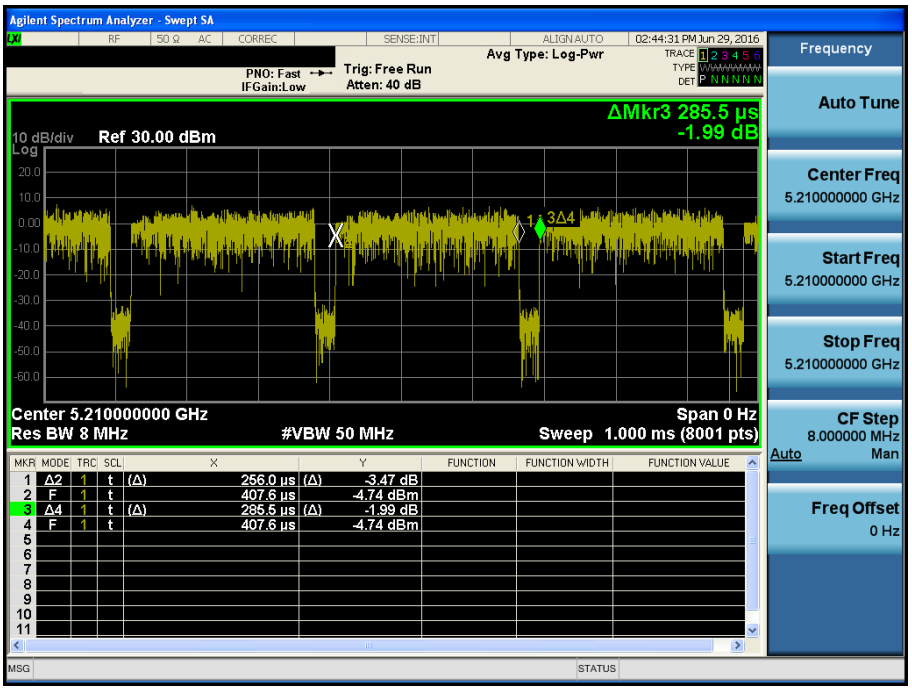
## Duty Cycle

Test Mode: 802.11ac VHT40 & Ch.38




## Duty Cycle

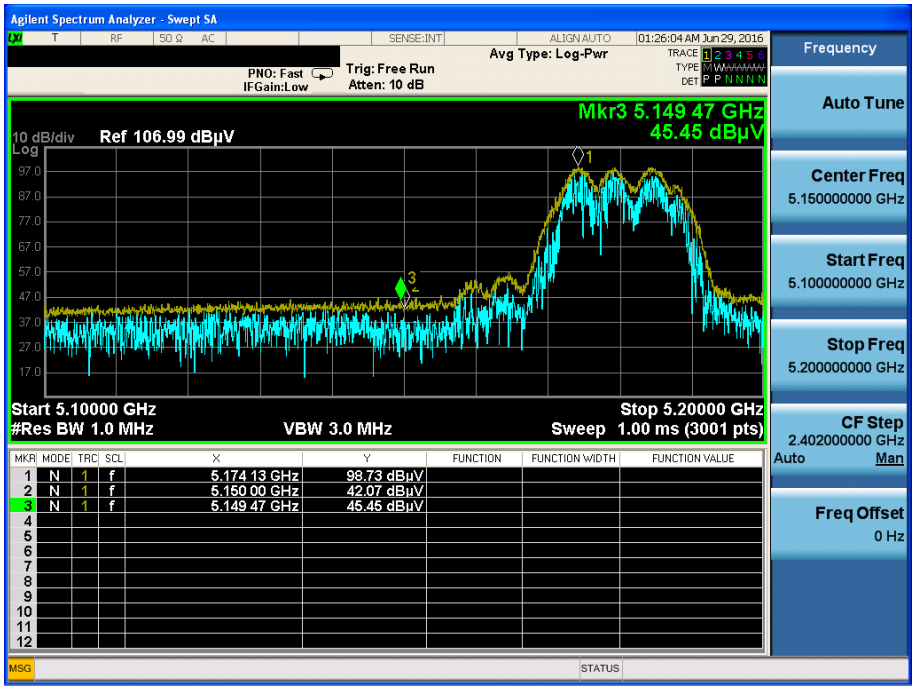
Test Mode: 802.11ac VHT80 & Ch.42



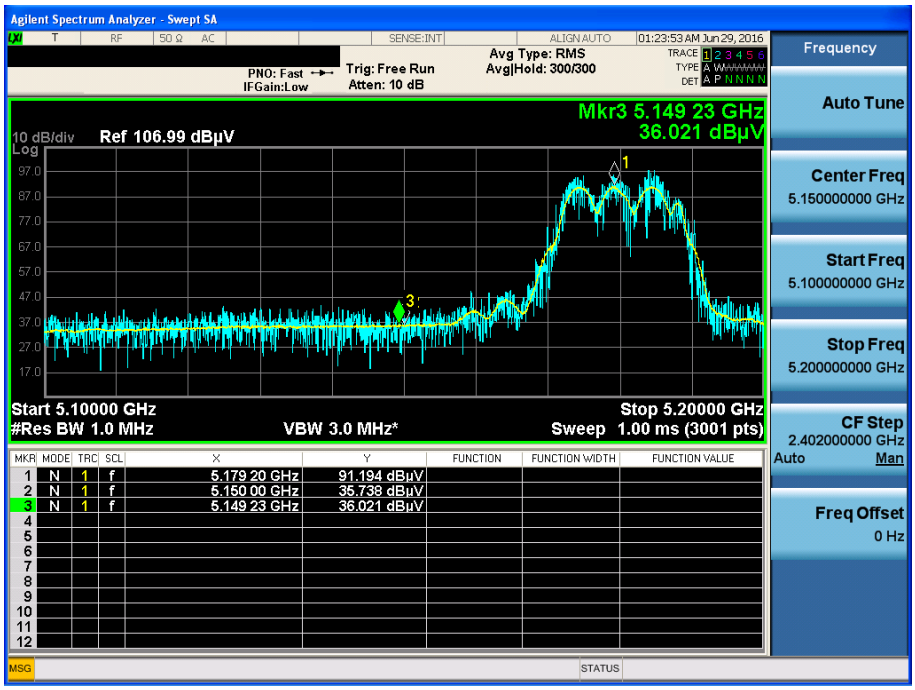
# APPENDIX III

## Unwanted Emissions (Radiated) Test Plot _ Multiple Transmit

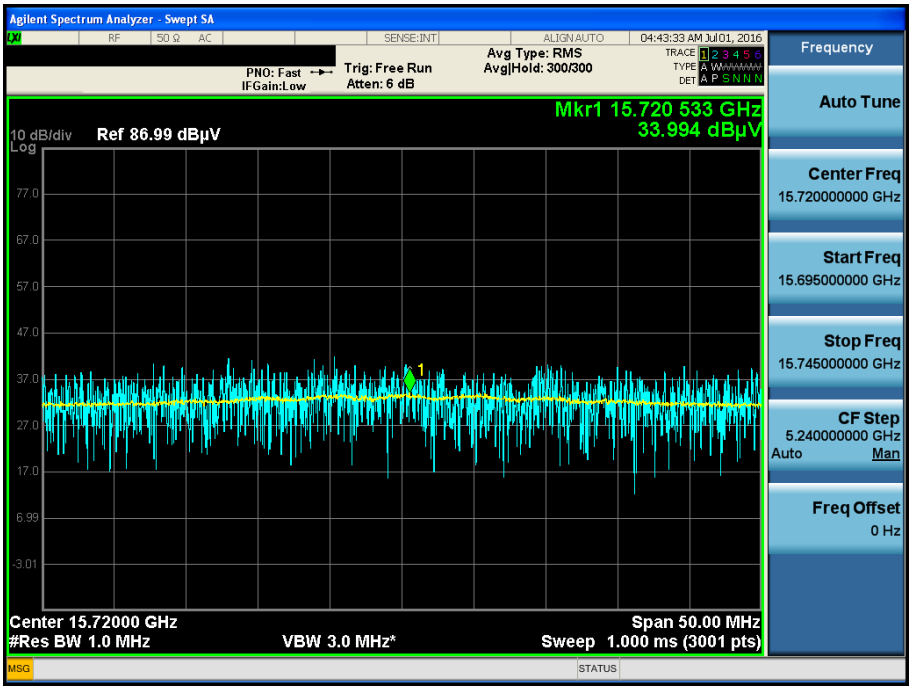
### 802.11a & U-NII 1 & Ch.36 & X axis & Hor — Detector Mode : PK



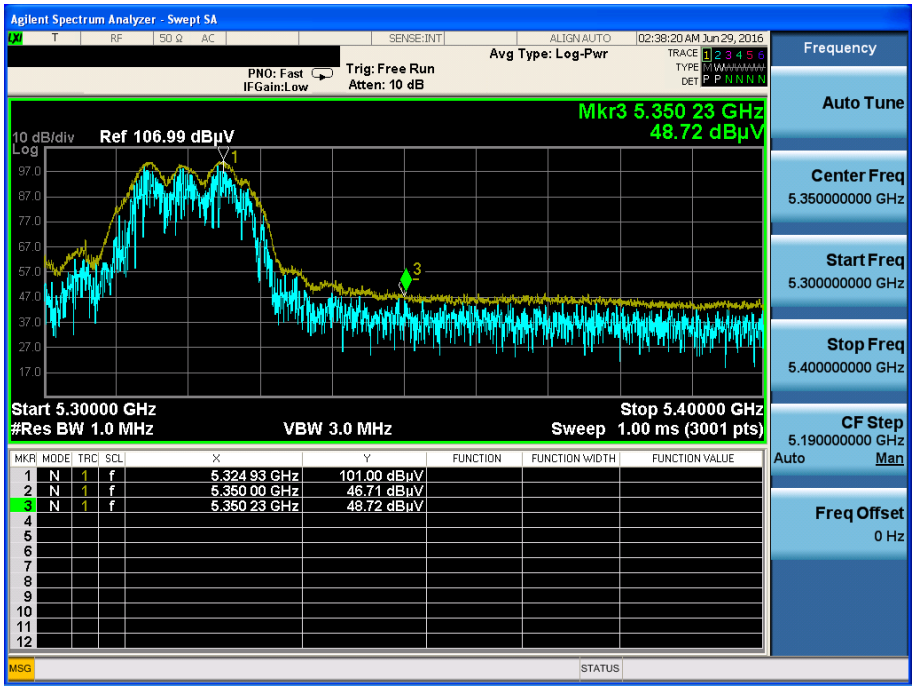

### 802.11a & U-NII 1 & Ch.36 & X axis & Hor — Detector Mode : AV



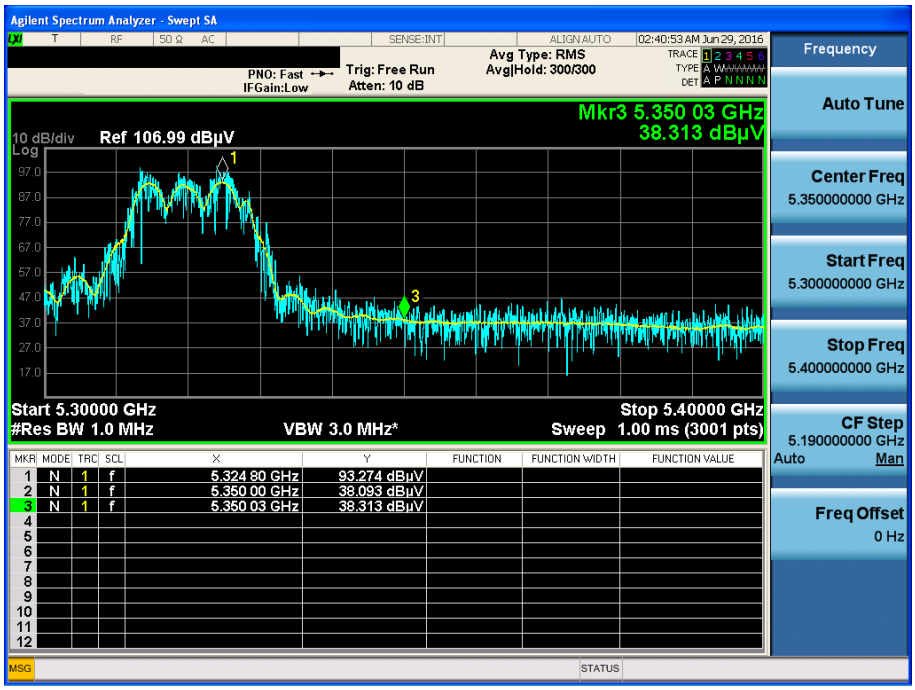
**802.11a & U-NII 1 & Ch.48 & X axis & Ver** **Detector Mode : AV**



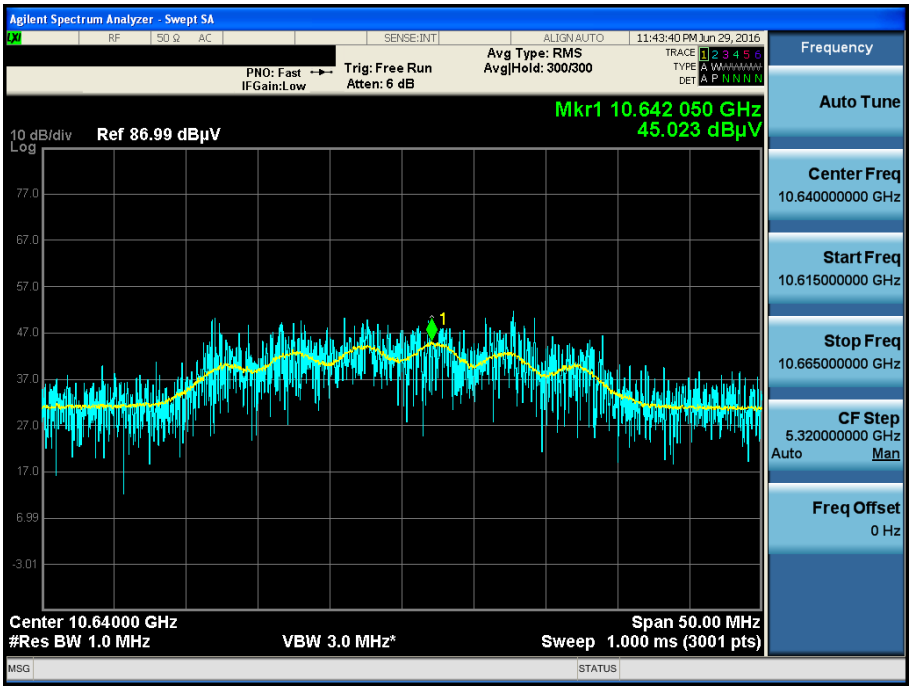
## 802.11a & U-NII 2A & Ch.52 & X axis & Hor Detector Mode : PK



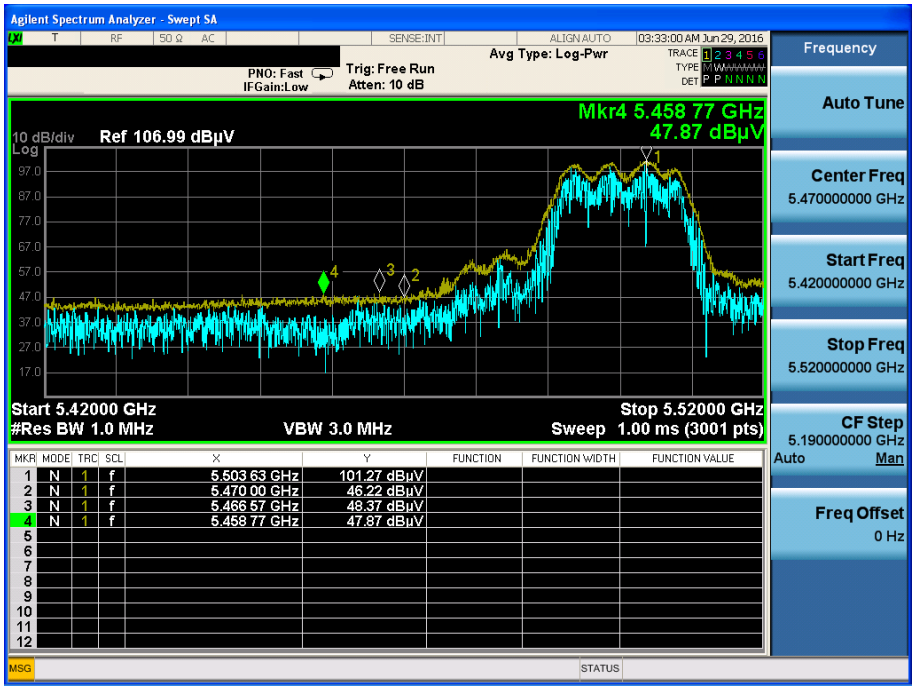

## 802.11a & U-NII 2A & Ch.52 & X axis & Hor Detector Mode : AV



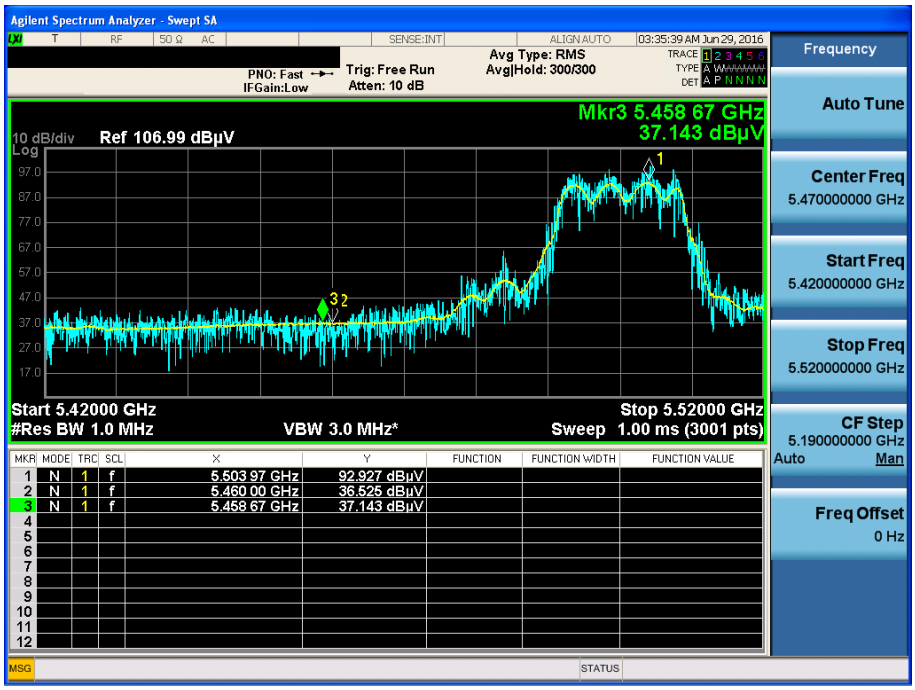
**802.11a & U-NII 2A & Ch.64 & Z axis & Ver** **Detector Mode : AV**



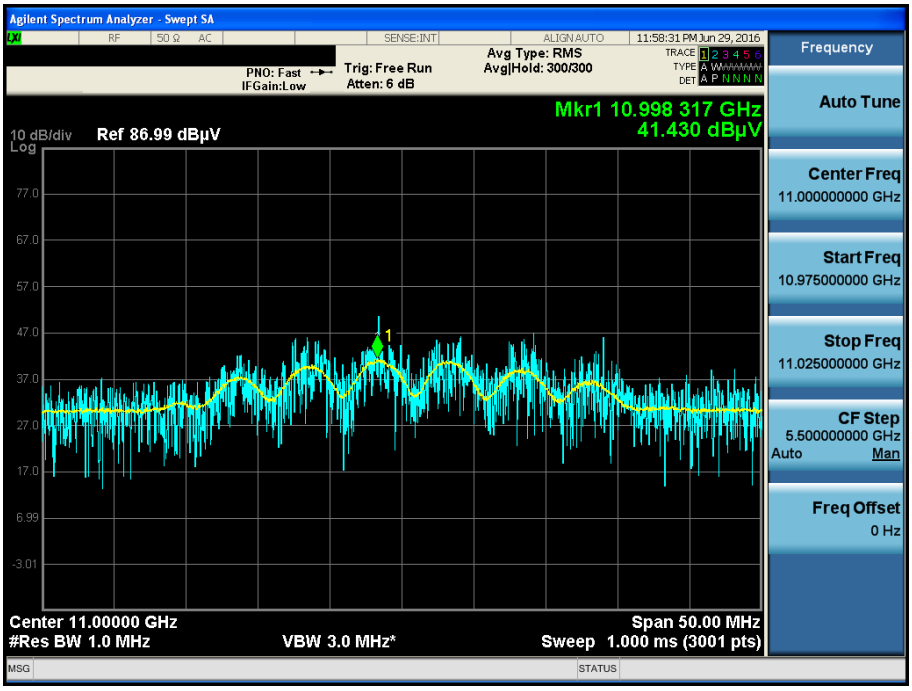
## 802.11a & U-NII 2C & Ch.100 & X axis & Hor Detector Mode : PK




## 802.11a & U-NII 2C & Ch.100 & X axis & Hor Detector Mode : AV

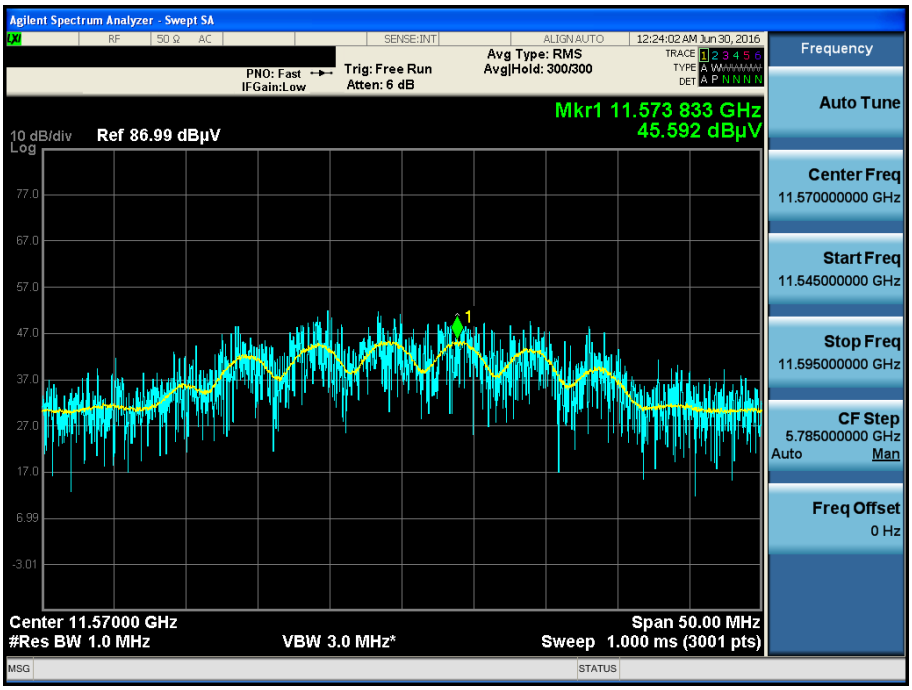


**802.11a & U-NII 2C & Ch.100 & Z axis & Ver** **Detector Mode : AV**

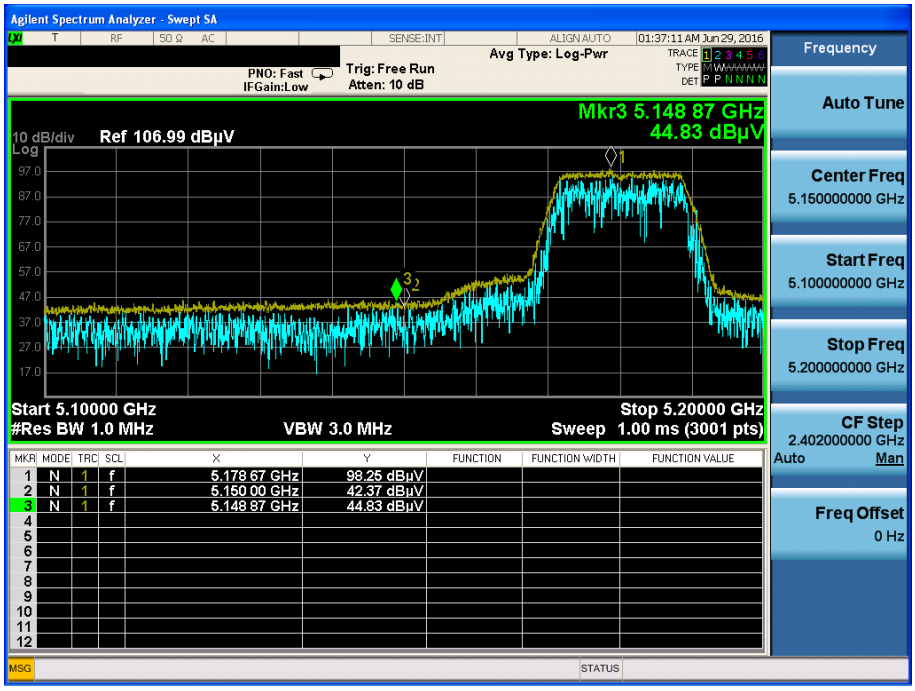


## 802.11a & U-NII 3 & Ch.149 & X axis & Hor Detector Mode : PK

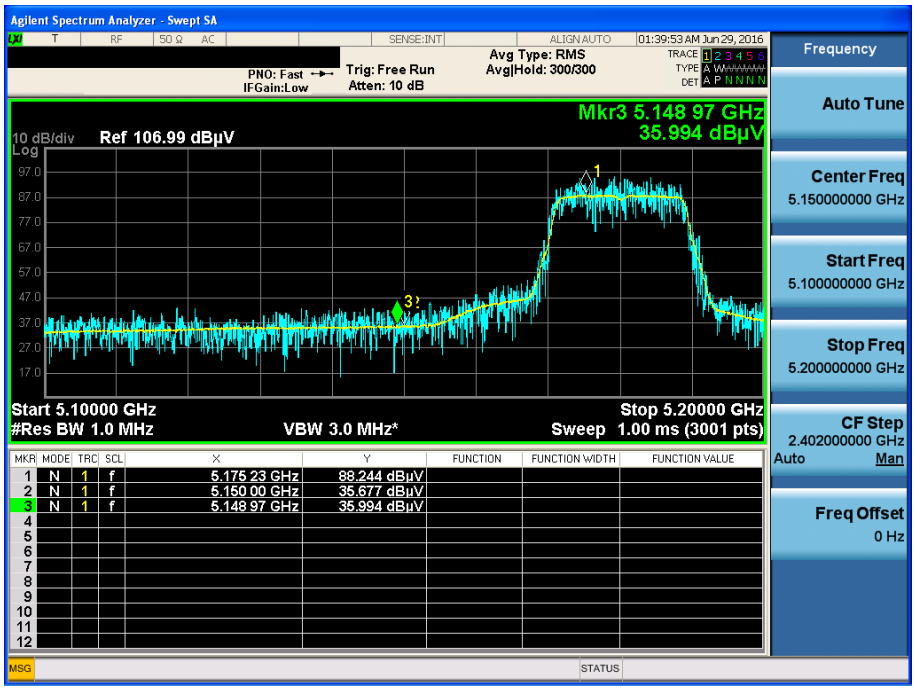

## 802.11a & U-NII 3 & Ch.157 & Z axis & Ver Detector Mode : AV



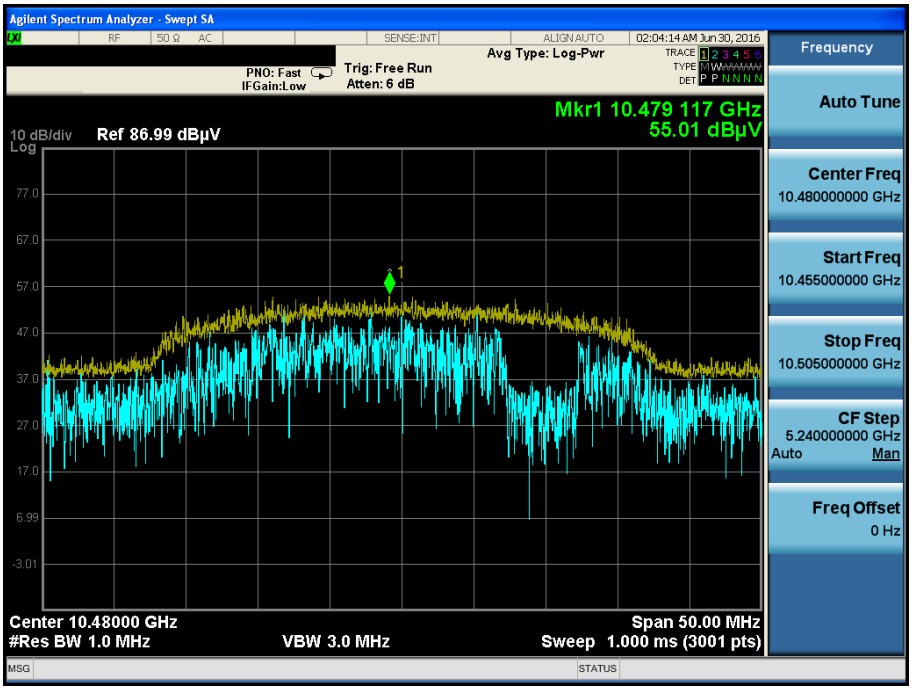
## 802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor Detector Mode : PK



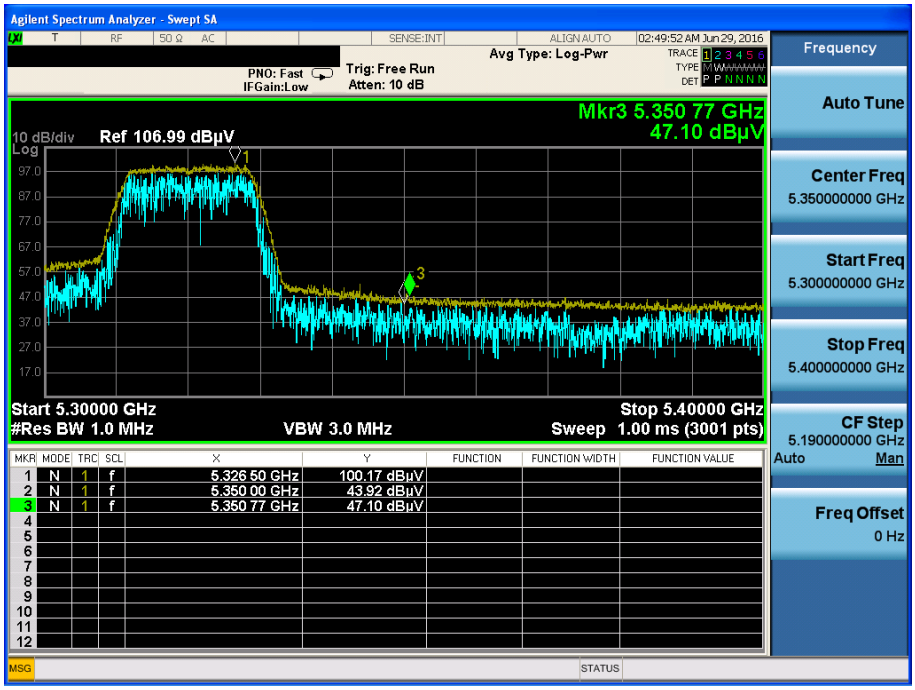

## 802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor Detector Mode : AV



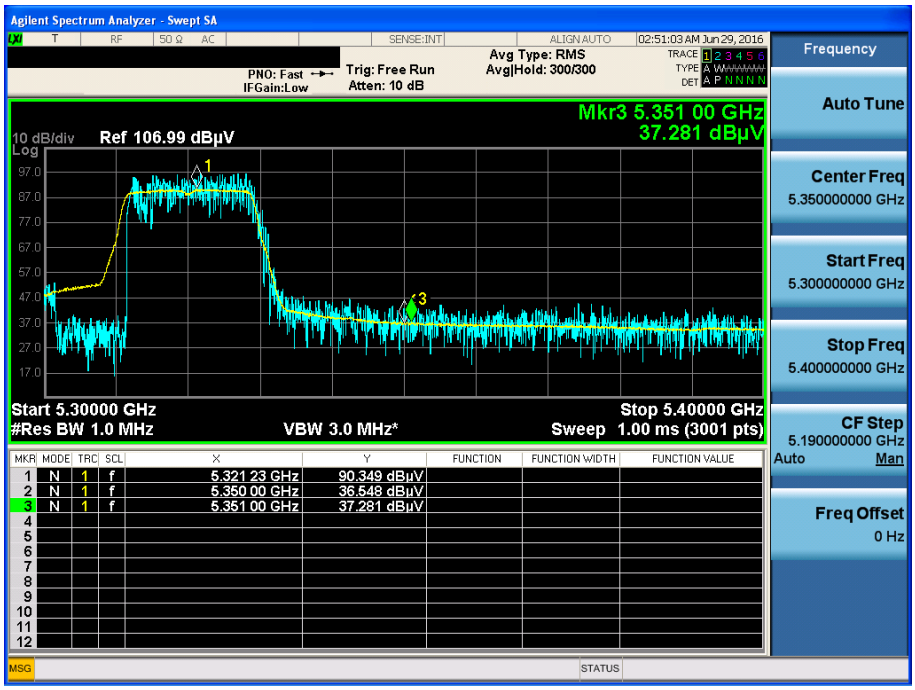
**802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Ver Detector Mode : PK**



**802.11n(HT20) & U-NII 2A & Ch.64 & X axis & Hor** **Detector Mode : PK**




**802.11n(HT20) & U-NII 2A & Ch.64 & X axis & Hor** **Detector Mode : AV**

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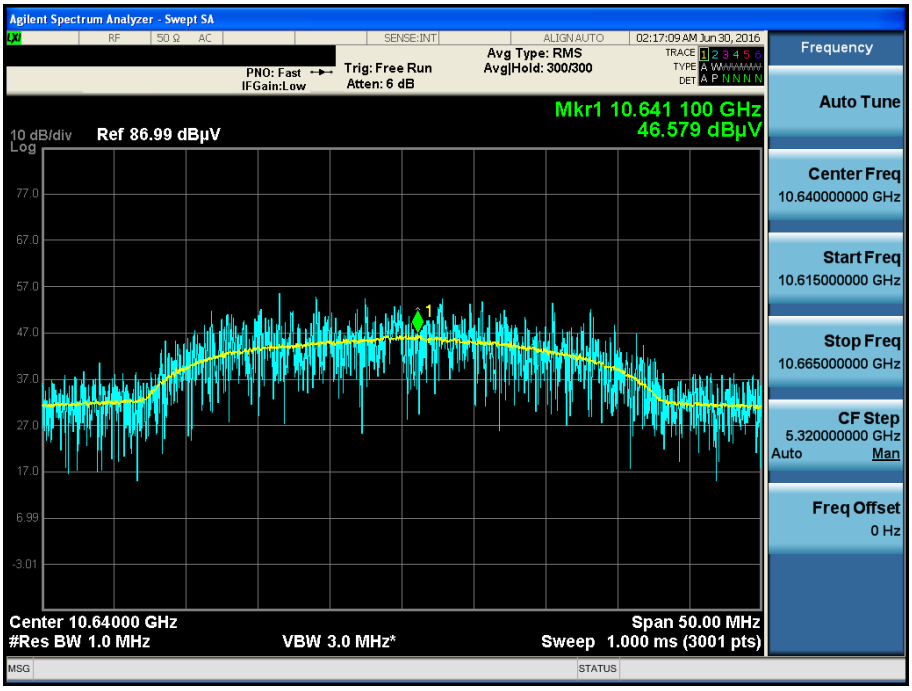
**802.11n(HT20) & U-NII 2A & Ch.64 & Z axis & Ver Detector Mode : AV**

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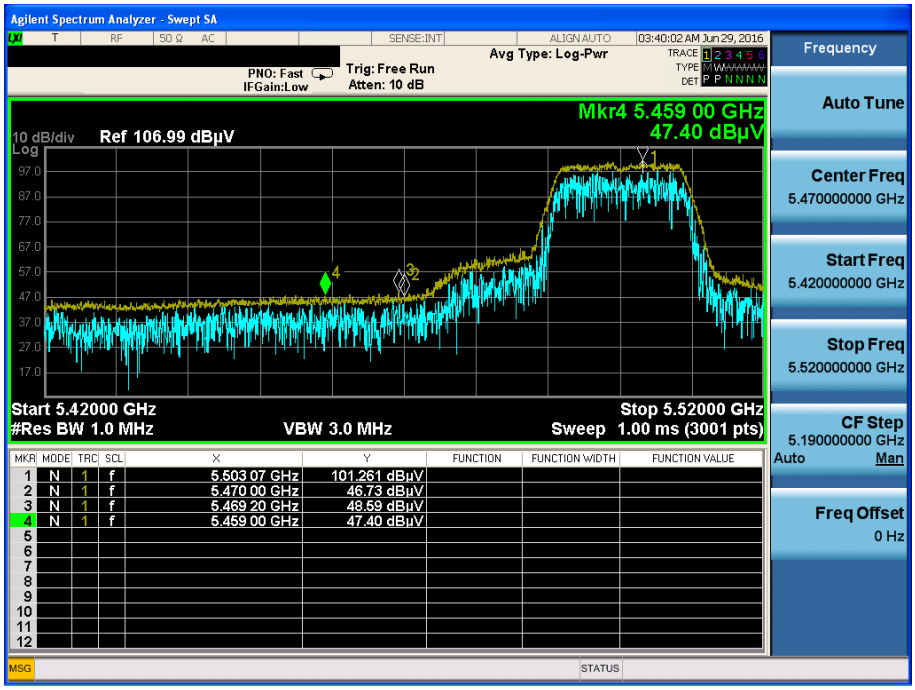
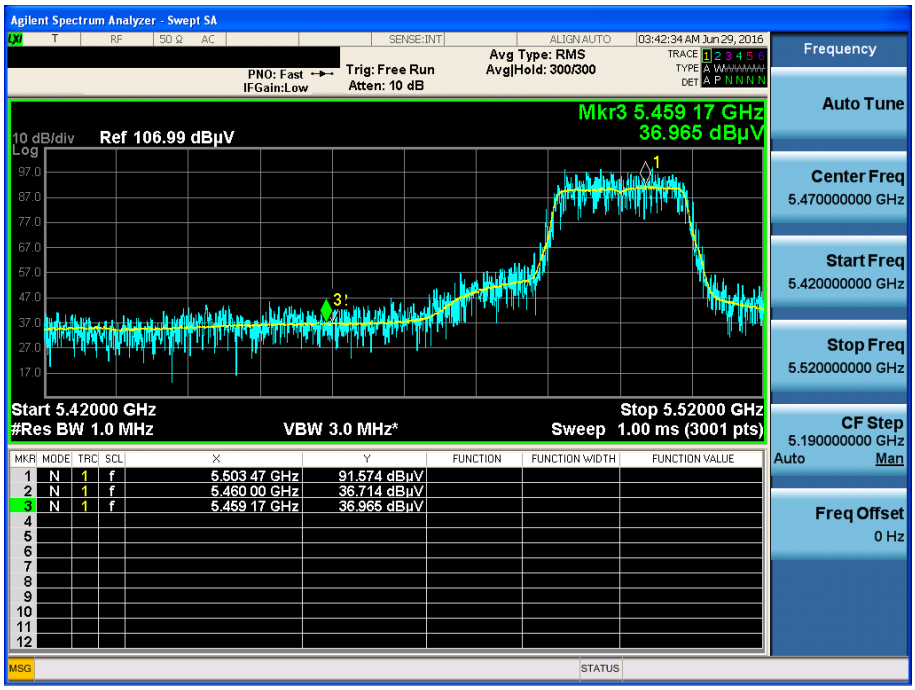
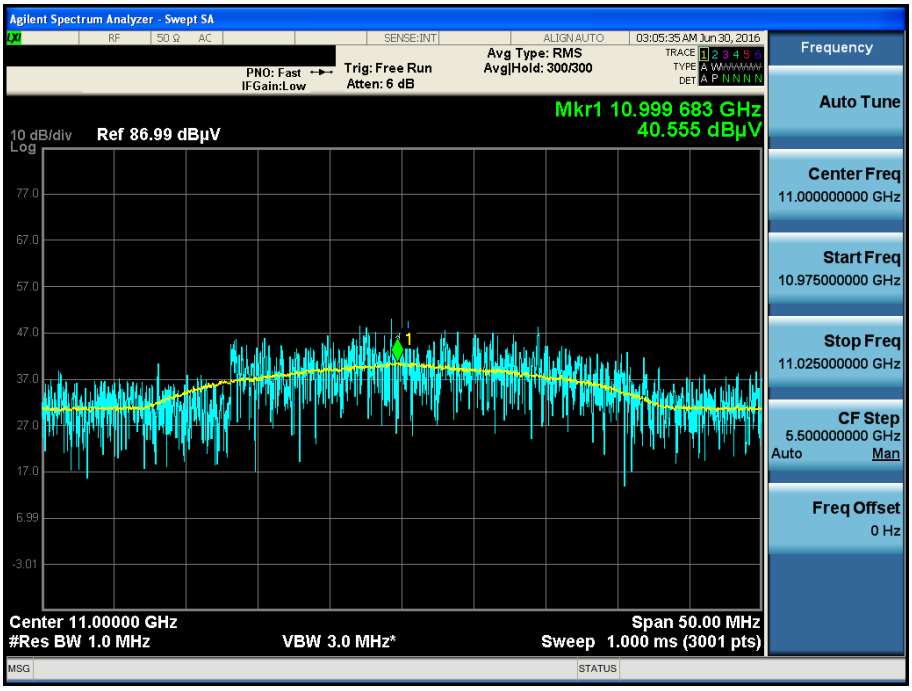
**802.11n(HT20) & U-NII 2C & Ch.100 & X axis & Hor Detector Mode : PK**



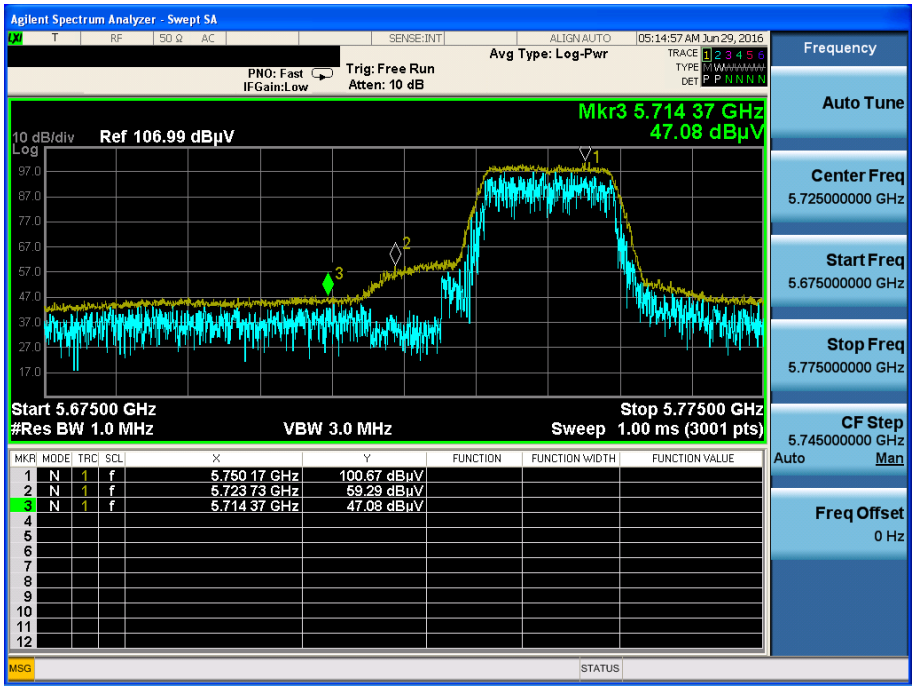

**802.11n(HT20) & U-NII 2C & Ch.100 & X axis & Hor Detector Mode : AV**



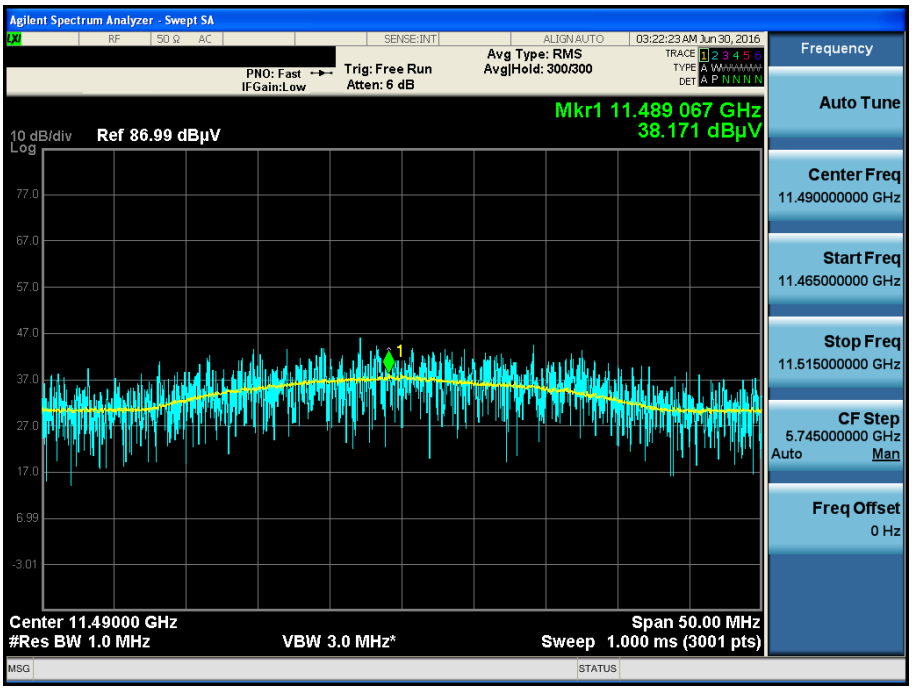
**802.11n(HT20) & U-NII 2C & Ch.100 & Z axis & Ver Detector Mode : AV**



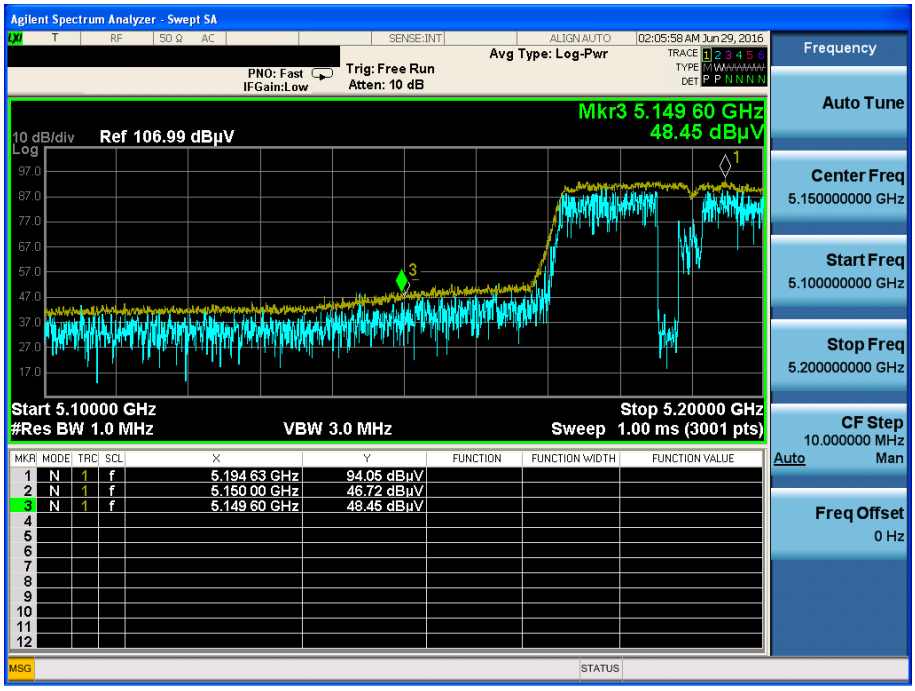
## 802.11n(HT20) & U-NII 3 & Ch.149 & X axis & Hor Detector Mode : PK



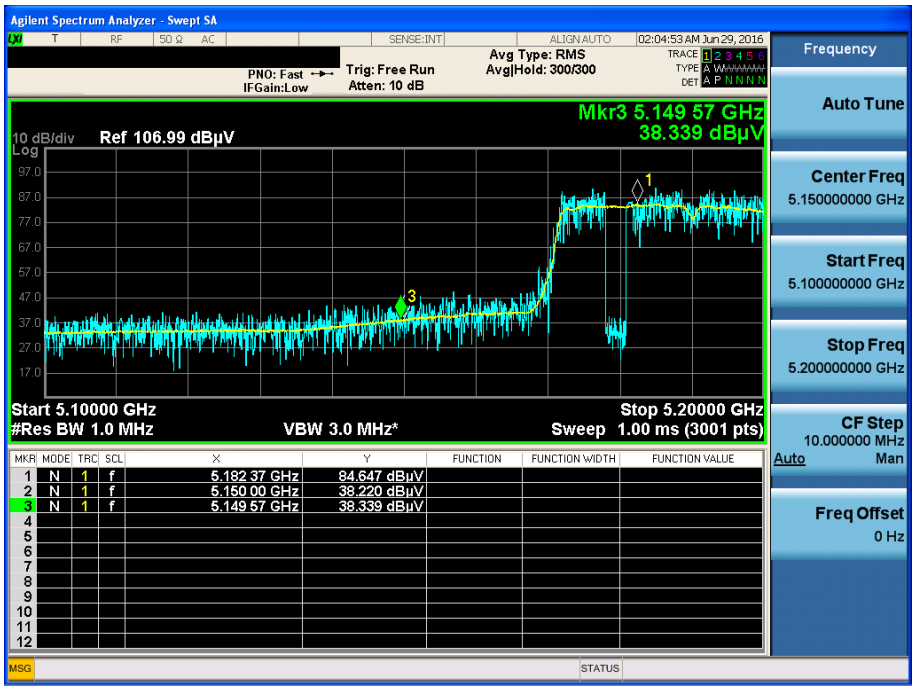

## 802.11n(HT20) & U-NII 3 & Ch.149 & Z axis & Ver Detector Mode : AV



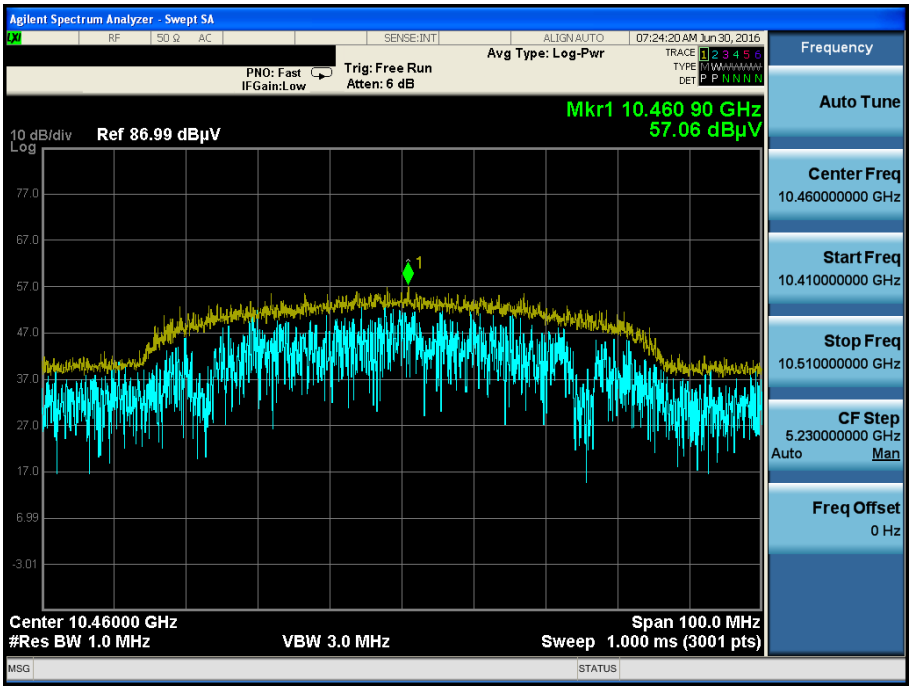
## 802.11ac(VHT40) & U-NII 1 & Ch.38 & X axis & Hor Detector Mode : PK



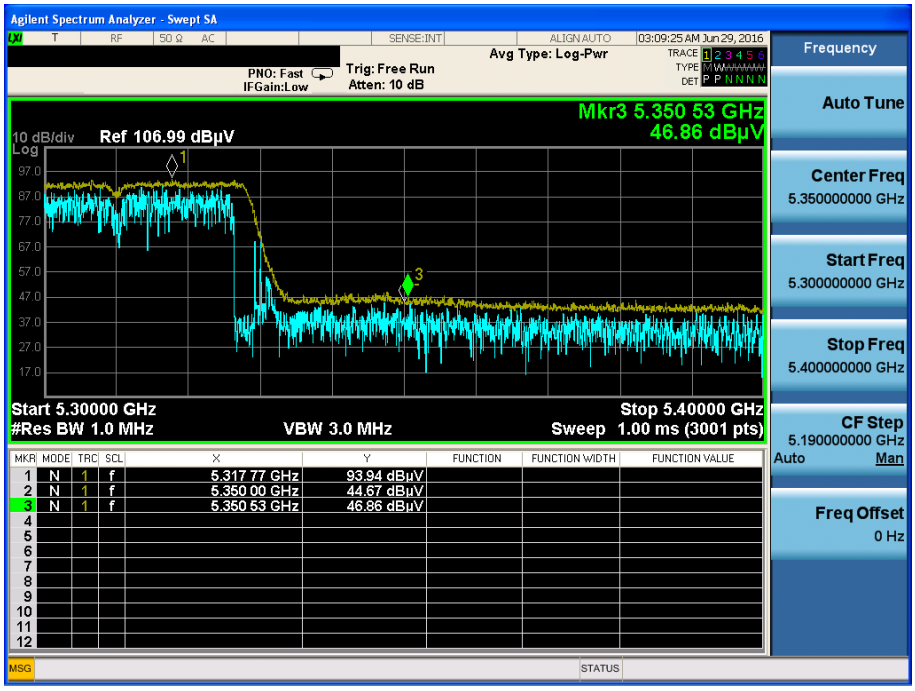

## 802.11ac(VHT40) & U-NII 1 & Ch.38 & X axis & Hor Detector Mode : AV



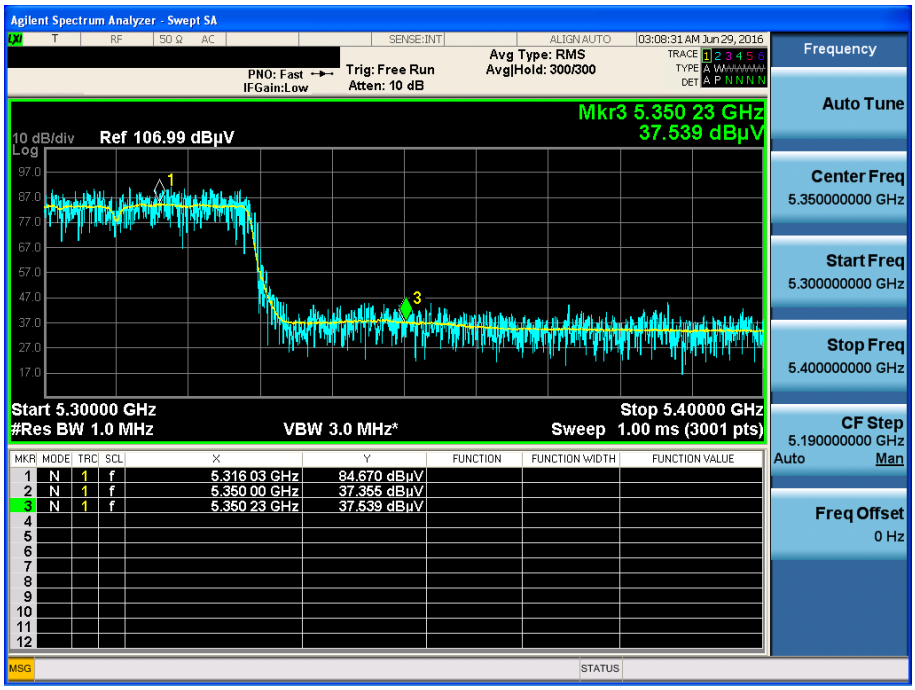
**802.11ac(VHT40) & U-NII 1 & Ch.46 & Z axis & Ver Detector Mode : PK**



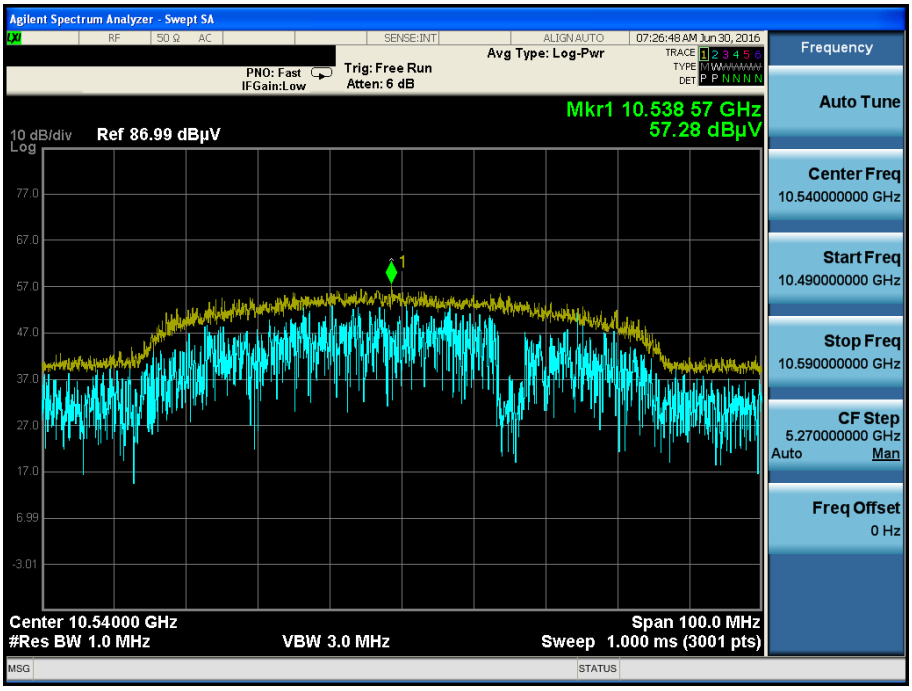
## 802.11ac(VHT40) & U-NII 2A & Ch.62 & X axis & Hor Detector Mode : PK



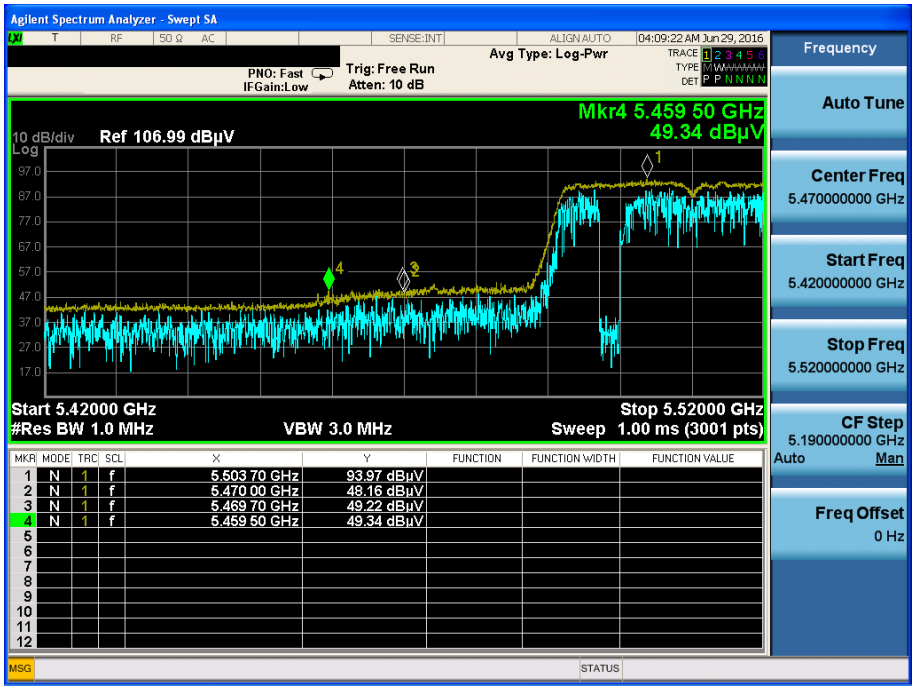

## 802.11ac(VHT40) & U-NII 2A & Ch.62 & X axis & Hor Detector Mode : AV



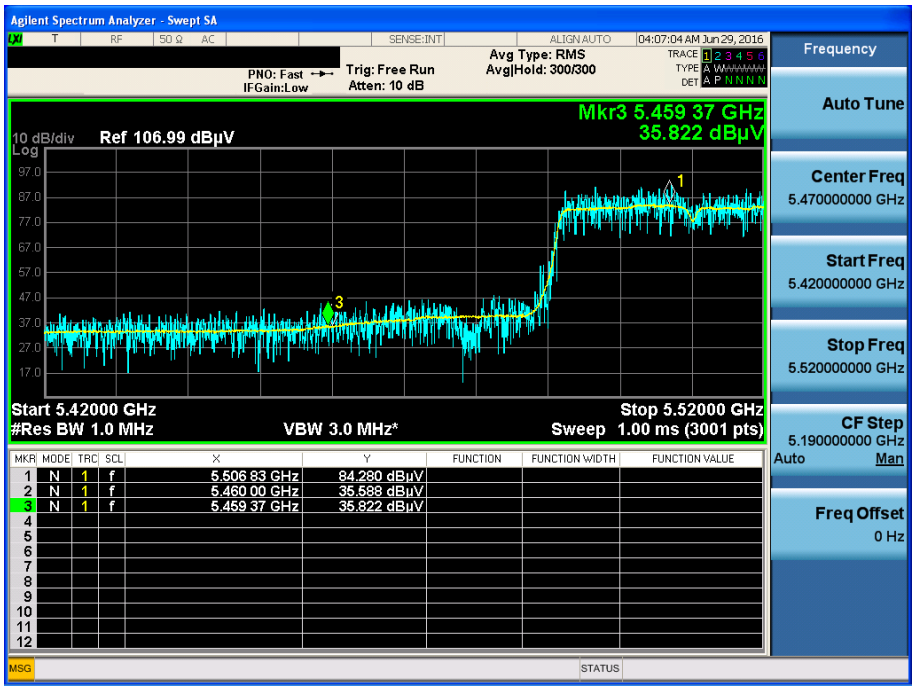
**802.11ac(VHT40) & U-NII 2A & Ch.54 & Z axis & Ver Detector Mode : PK**



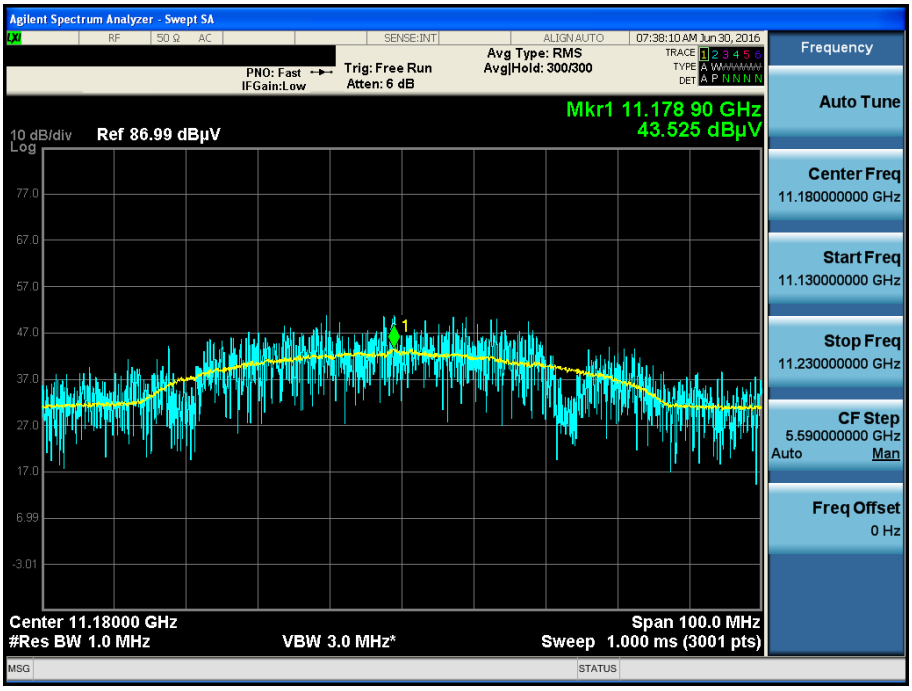
**802.11ac(VHT40) & U-NII 2C & Ch.102 & X axis & Hor Detector Mode : PK**



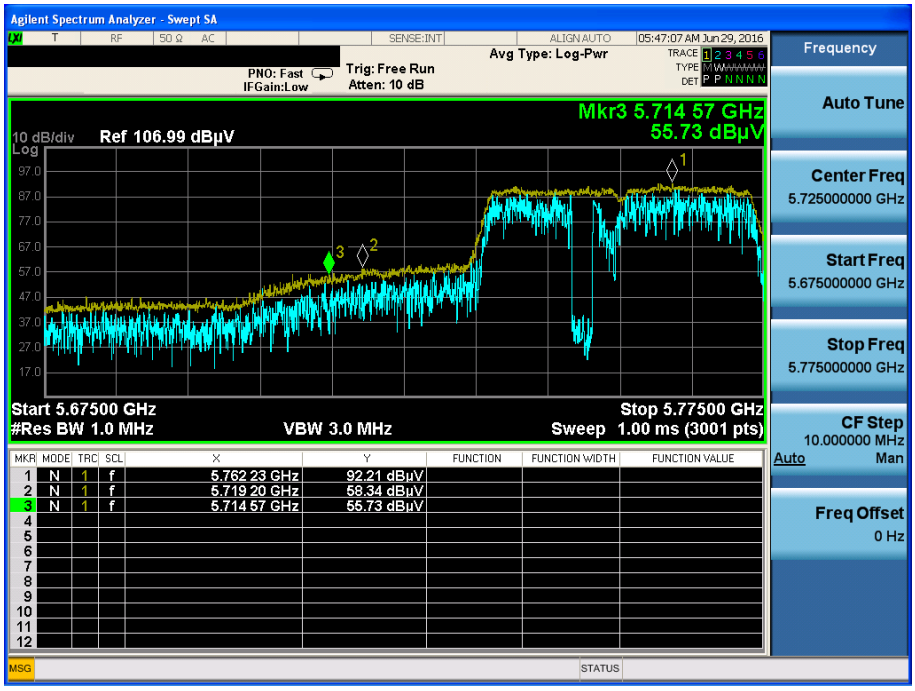

**802.11ac(VHT40) & U-NII 2C & Ch.102 & X axis & Hor Detector Mode : AV**



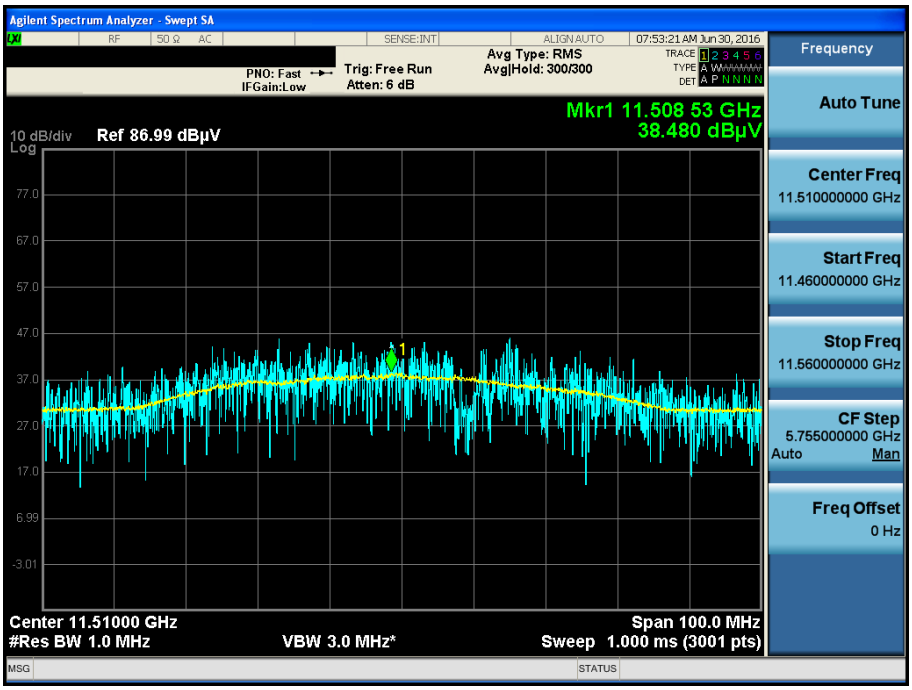
**802.11ac(VHT40) & U-NII 2C & Ch.118 & Z axis & Ver Detector Mode : AV**



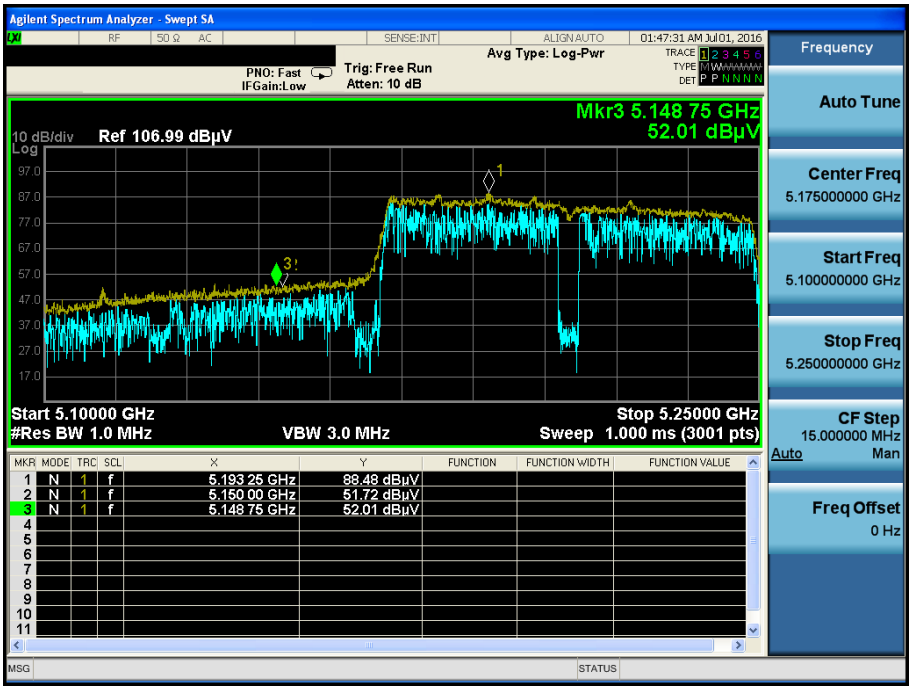
## 802.11ac(VHT40) & U-NII 3 & Ch.151 & X axis & Hor Detector Mode : PK



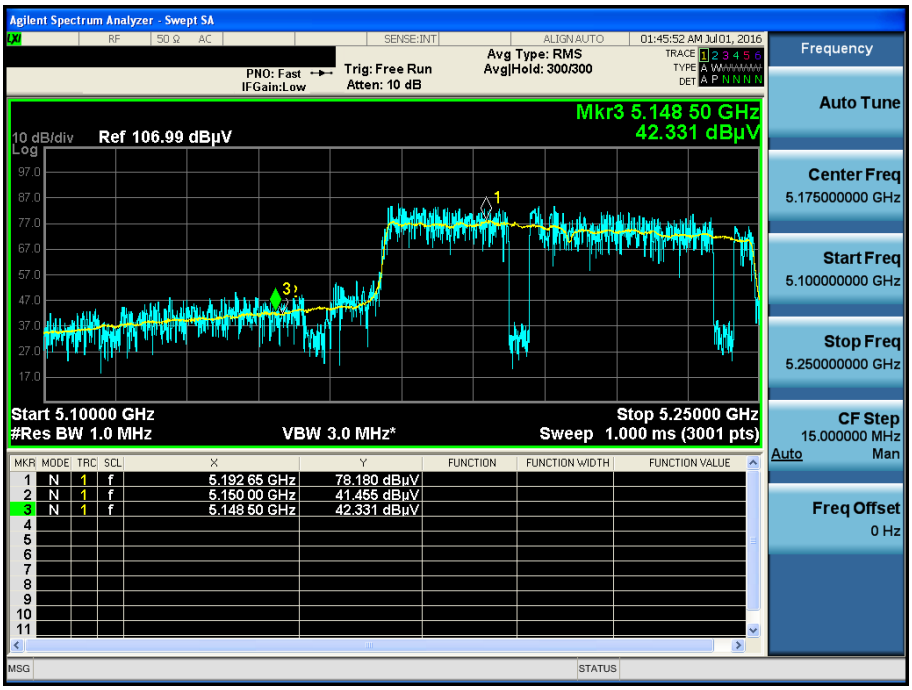

## 802.11ac(VHT40) & U-NII 3 & Ch.151 & Z axis & Ver Detector Mode : AV



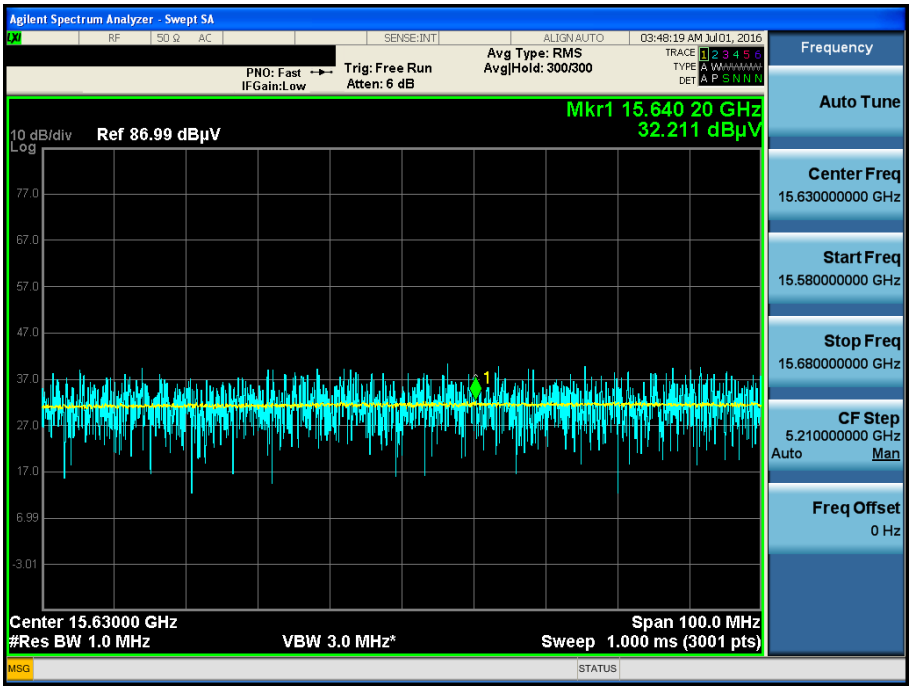
**802.11ac(VHT80) & U-NII 1 & Ch.42 & X axis & Hor** **Detector Mode : PK**



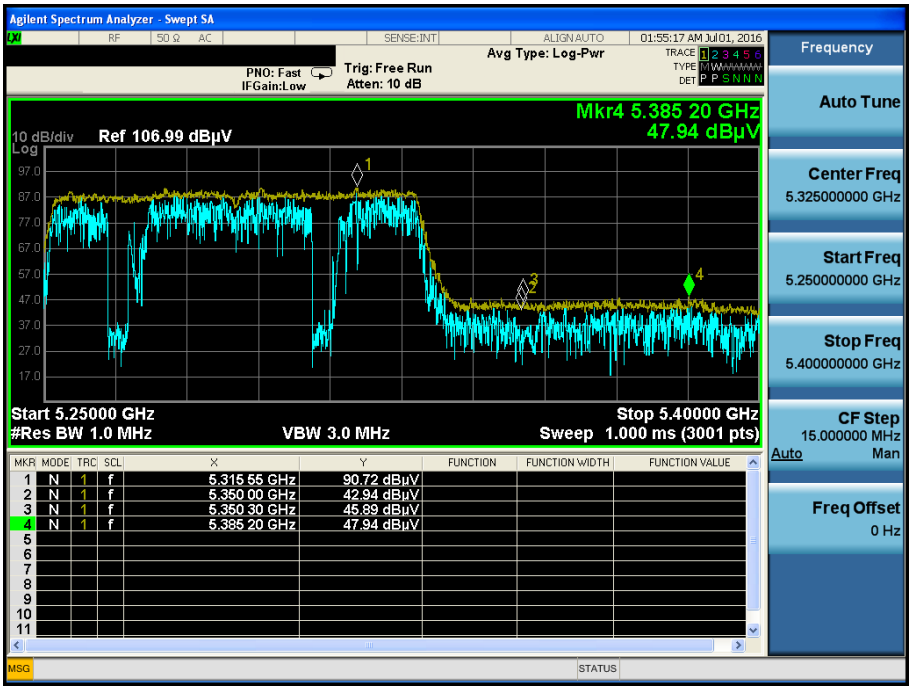

**802.11ac(VHT80) & U-NII 1 & Ch.42 & X axis & Hor** **Detector Mode : AV**



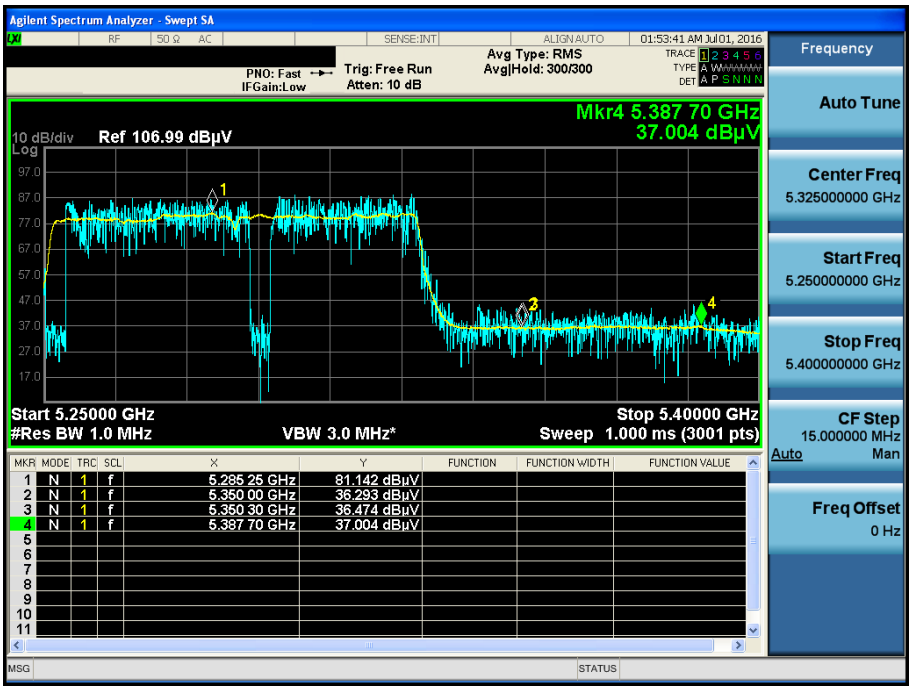
**802.11ac(VHT80) & U-NII 1 & Ch.42 & X axis & Ver Detector Mode : AV**



**802.11ac(VHT80) & U-NII 2A & Ch.58 & X axis & Hor Detector Mode : PK**




**802.11ac(VHT80) & U-NII 2A & Ch.58 & X axis & Hor Detector Mode : AV**

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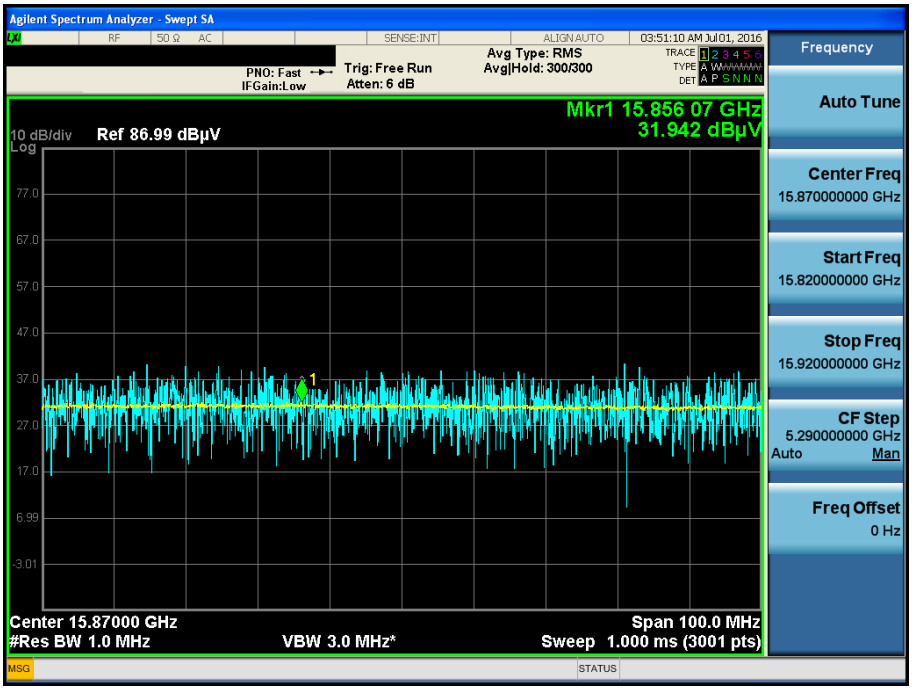
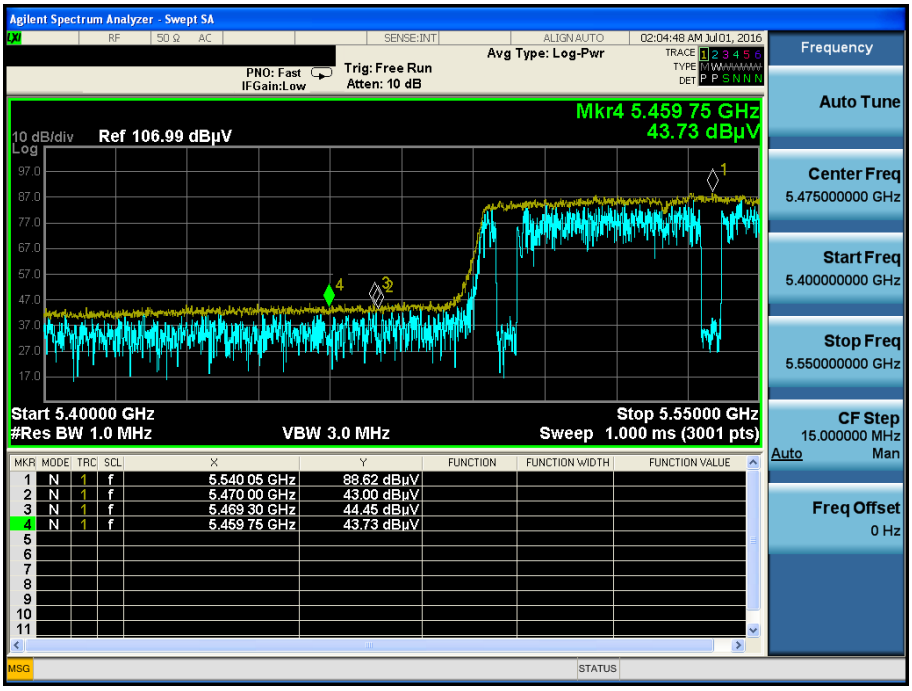
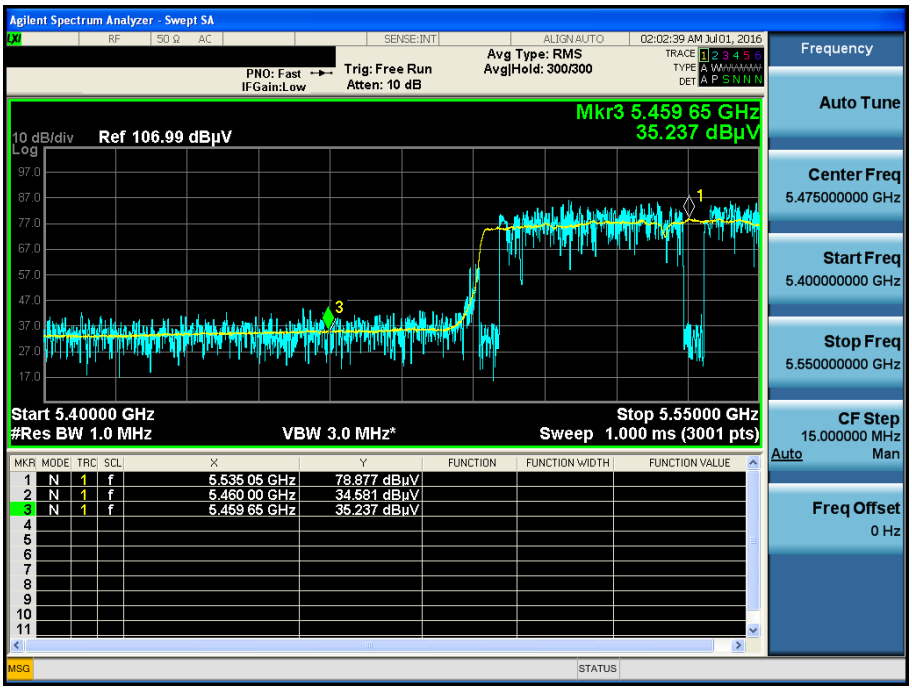
**802.11ac(VHT80) & U-NII 2A & Ch.58 & X axis & Ver Detector Mode : AV**



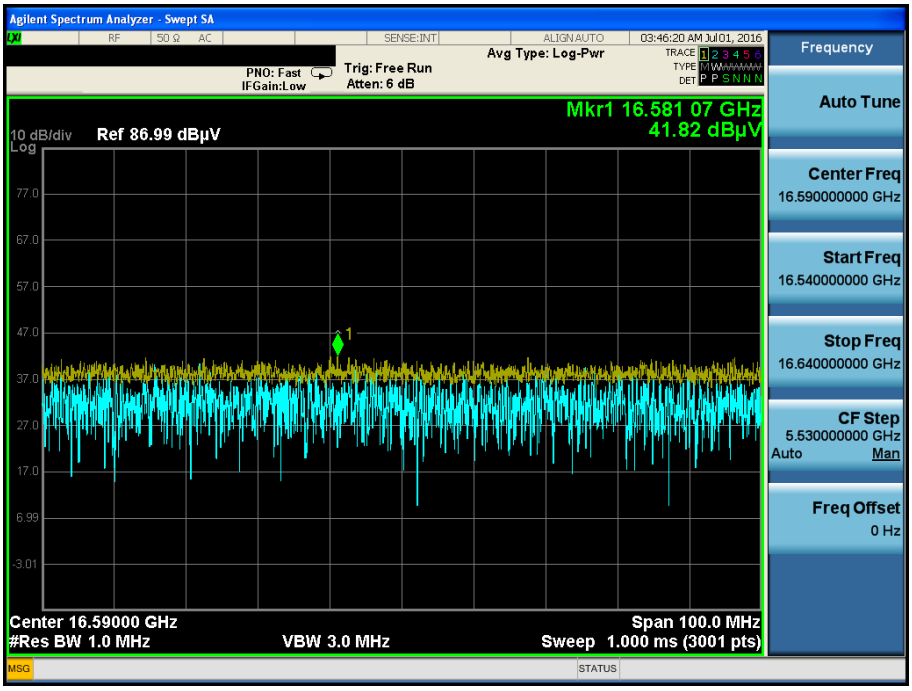
## 802.11ac(VHT80) & U-NII 2A & Ch.106 & X axis & Hor Detector Mode : PK



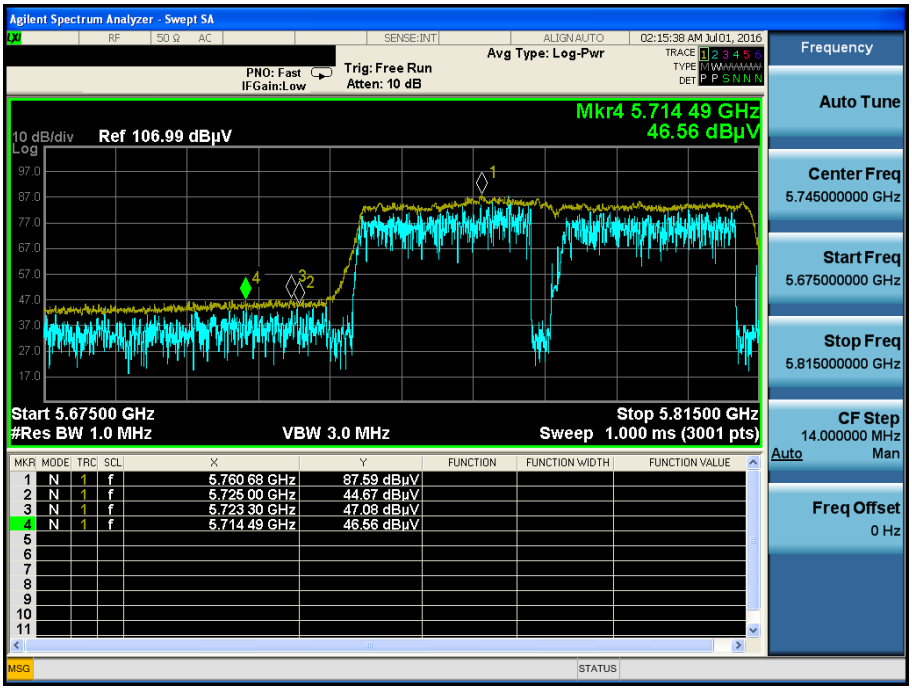

## 802.11ac(VHT80) & U-NII 2A & Ch.106 & X axis & Hor Detector Mode : AV



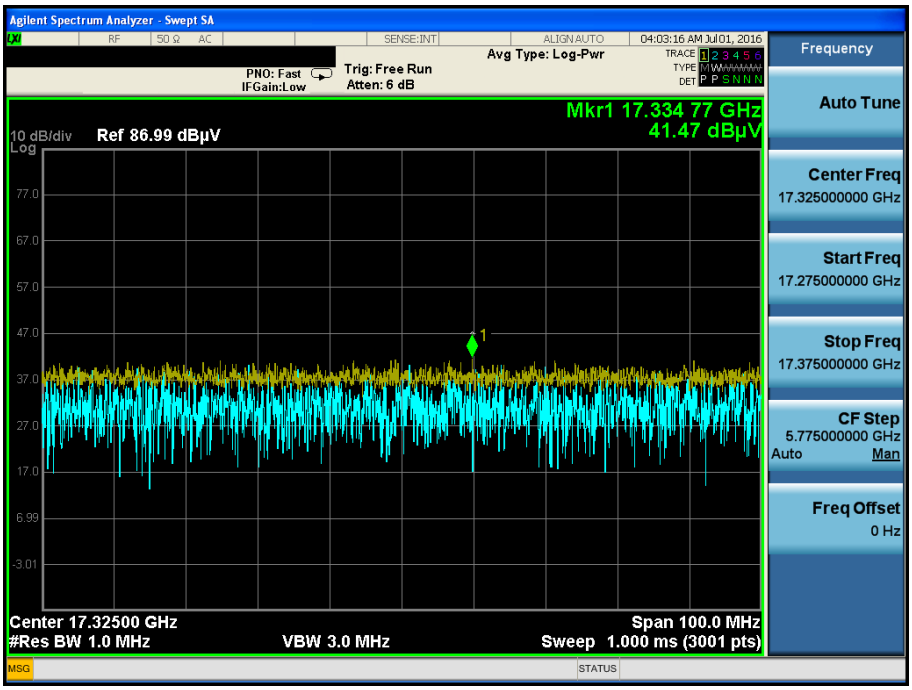
**802.11ac(VHT80) & U-NII 2A & Ch.106 & X axis & Ver Detector Mode : PK**



**802.11ac(VHT80) & U-NII 3 & Ch.155 & X axis & Hor Detector Mode : PK**




**802.11ac(VHT80) & U-NII 3 & Ch.155 & X axis & Ver Detector Mode : PK**

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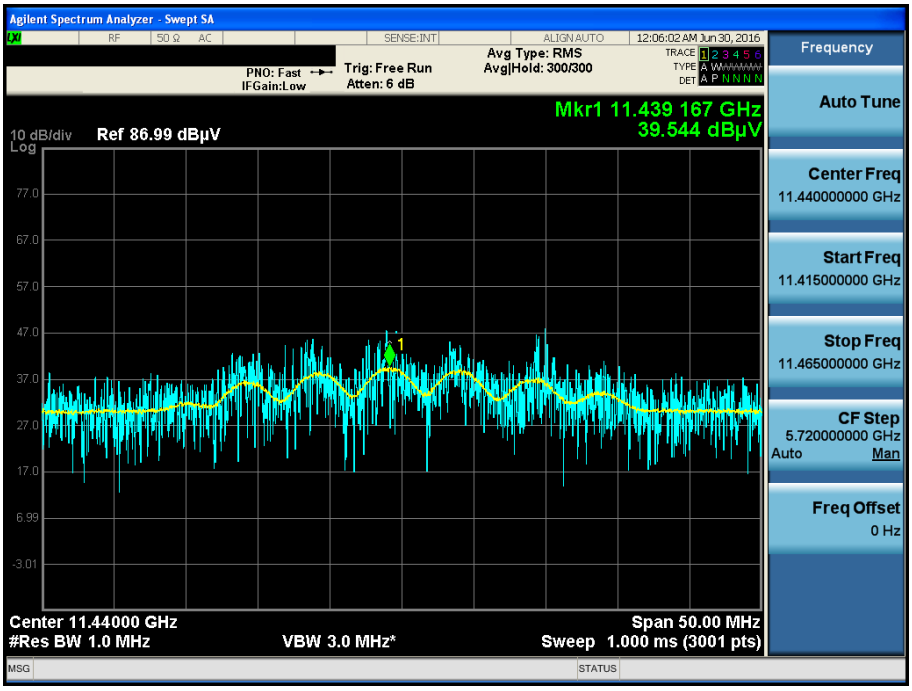
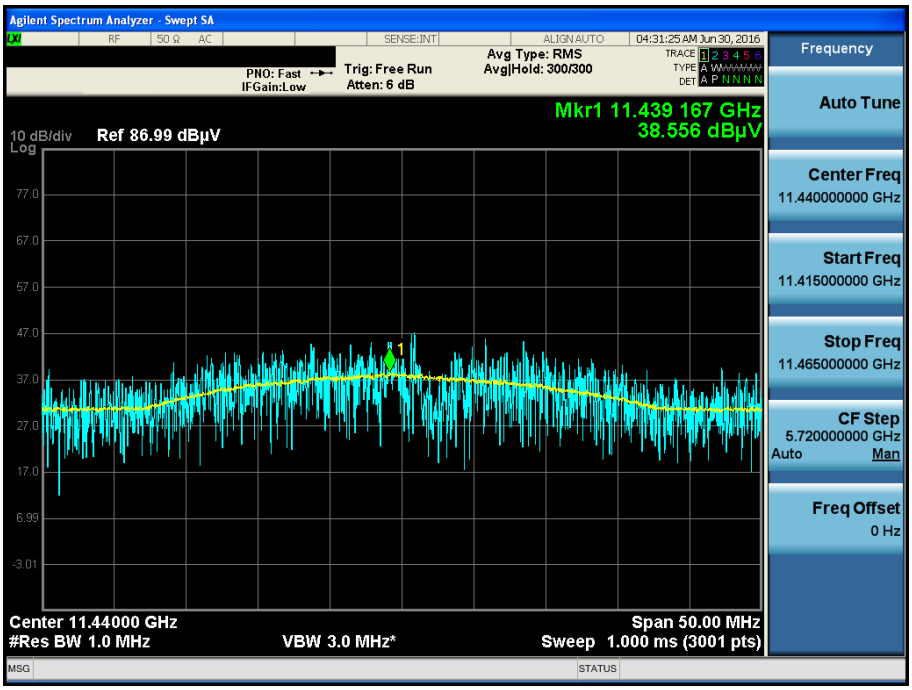
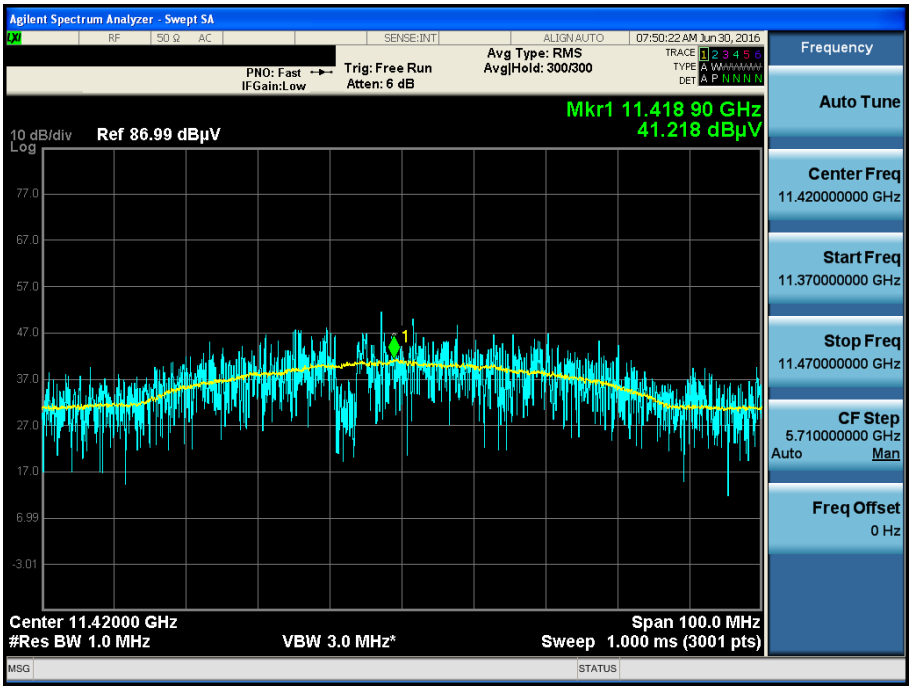
**802.11a & Cross & Ch.144 & Z axis & Ver** **Detector Mode : AV**




**802.11ac(VHT20) & Cross & Ch.144 & Z axis & Ver** **Detector Mode : AV**



**802.11ac(VHT40) & Cross & Ch.142 & Z axis & Ver Detector Mode : AV**




**802.11ac(VHT80) & Cross & Ch.138 & Z axis & Ver Detector Mode : AV**