



TEST REPORT

| | | |
|--|--|---|
| <p>KCTL Inc. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p> | <p>Report No.: KR17-SRF0056-B Page (1) of (450)</p> |  |
| <p>1. Client</p> <ul style="list-style-type: none"> ◦ Name : Vieworks Co., Ltd. ◦ Address : (Gwangyang-dong) 41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-060 Republic of Korea ◦ Date of Receipt : 2017-01-17 <p>2. Use of Report : -</p> <p>3. Name of Product and Model : 802.11ac Dual Band Module / WLE900VX 7AA000S-VW</p> <p>4. Manufacturer and Country of Origin : Compex (Suzhou) Co. Ltd / China</p> <p>5. FCC ID : PFRWLE900VXVW</p> <p>6. IC : 11233A-WLE900VXVW</p> <p>7. Date of Test : 2017-03-20 to 2017-04-20</p> <p>8. Test Standards : FCC Part 15 Subpart E, 15.407 RSS-247 Issue 1 May 2015 RSS GEN Issue 4 November 2014</p> <p>9. Test Results : Refer to the test result in the test report</p> | | |
| <p>Affirmation</p> | <p>Tested by Name : Taeyoung Kim </p> | <p>Technical Manager Name : Bongok Ko  (Signature)</p> |
| <p style="text-align: right;">2017-07-18</p> | | |
| <p style="text-align: center;">KCTL Inc.</p> <p>As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.</p> | | |

REPORT REVISION HISTORY

| Date | Revision | Page No |
|------------|---|--------------|
| 2016-06-20 | Originally issued | - |
| 2017-07-11 | Revised all not ok comment | Several page |
| 2017-07-18 | Added antenna connector specification and test jig note | 7, 11 |
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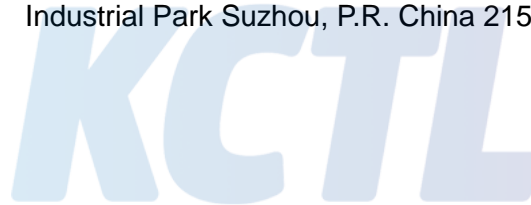
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1. Client information

Applicant: Vieworks Co., Ltd.
Address: (Gwanyang-dong) 41-3, Burim-ro 170beon-gil, Dongan-gu,
Anyang-si, Gyeonggi-do, 431-060 Republic of Korea
Telephone number: 82-70-4496-1859
Facsimile number: 82-31-386-8631
Contact person: Jordin Kim / trubloomer@vieworks.com

Manufacturer: Compex (Suzhou) Co. Ltd
Address: 12 ChuangTou Industrial Square Lou Feng North, Suzhou
Industrial Park Suzhou, P.R. China 215122



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2. Laboratory information

Address

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Telephone Number: 82 31 285 0894

Facsimile Number: 82 505 299 8311

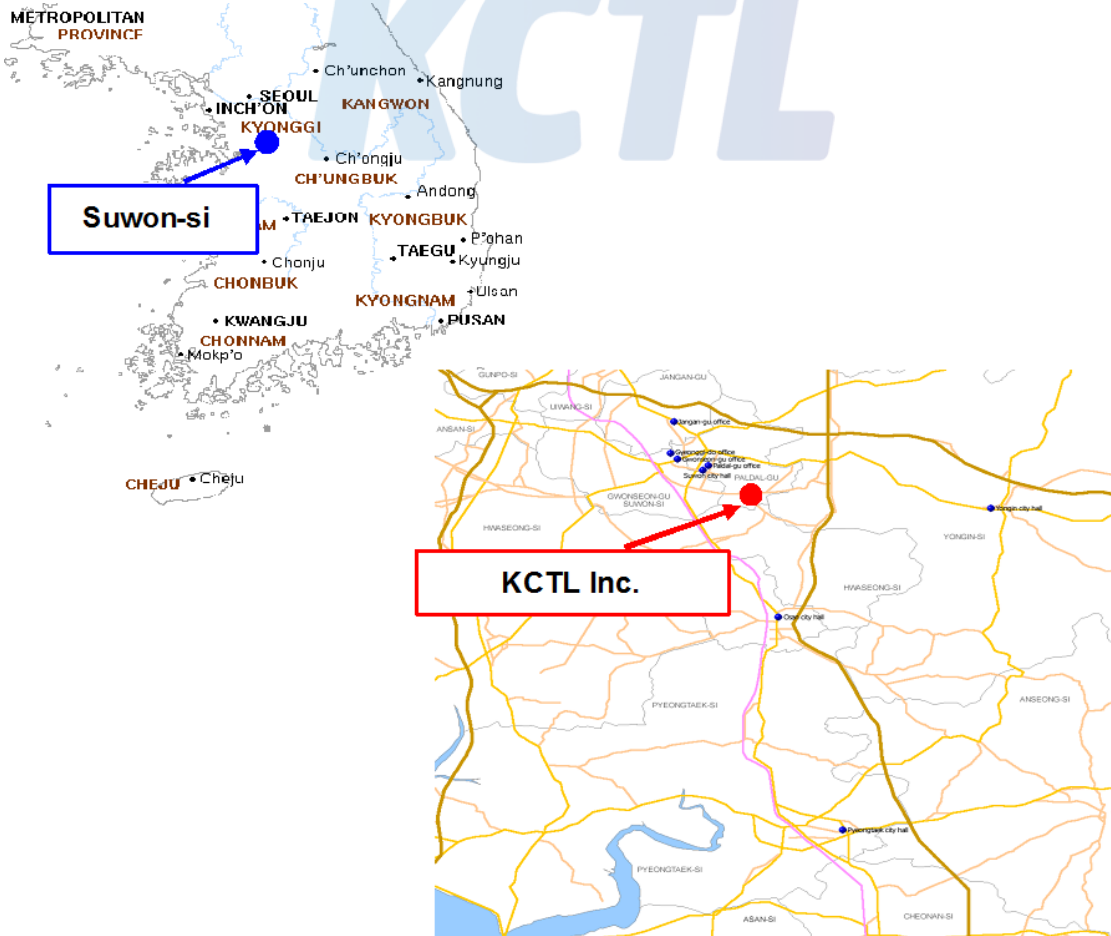
FCC Site Designation No: KR0040, FCC Site Registration No: 687132

VCCI Registration No. : R-3327, G-198, C-3706, T-1849

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP



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3. Description of E.U.T.

3.1 Basic description

| | |
|-------------------------|--|
| Applicant | Vieworks Co., Ltd. |
| Address of Applicant | (Gwanyang-dong) 41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-060 Republic of Korea |
| Manufacturer | Compex (Suzhou) Co. Ltd |
| Address of Manufacturer | 12 ChuangTou Industrial Square Lou Feng North, Suzhou Industrial Park Suzhou, P.R. China 215122 |
| Type of equipment | 802.11ac Dual Band Module |
| Basic Model | WLE900VX 7AA000S-VW |
| Serial number | N/A |

3.2 General description

| | |
|------------------------|---|
| Frequency Range | <p>2 412 MHz ~ 2 462 MHz (802.11b/g/n_HT20) 2 422 MHz ~ 2 452 MHz (802.11n_HT40) 5 180 MHz ~ 5 240 MHz (802.11a/n_HT20/ac_VHT20) 5 190 MHz ~ 5 230 MHz (802.11n_HT40/ac_VHT40) 5 210 MHz (802.11ac_VHT80) 5 745 MHz ~ 5 825 MHz (802.11a/n_HT20/ac_VHT20) 5 755 MHz ~ 5 795 MHz (802.11n_HT40/ac_VHT40) 5 775 MHz (802.11ac_VHT80)</p> |
| Type of Modulation | 802.11b : DSSS, 802.11a/g/n/ac : OFDM |
| The number of channels | <p>2.4 GHz: 11 ch (802.11b/g/n_HT20), 7 ch (802.11n_HT40) 5 GHz: 5 150 MHz Band: 4 (802.11a/n_HT20/ac_VHT20) 5 150 MHz Band: 2 (802.11n_HT40/ac_VHT40) 5 150 MHz Band: 1 (802.11ac_VHT80) 5 725 MHz Band: 4 (802.11a/n_HT20/ac_VHT20) 5 725 MHz Band: 2 (802.11n_HT40/ac_VHT40) 5 725 MHz Band: 1 (802.11ac_VHT40)</p> |

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| | |
|-----------------------------|--|
| Type of Antenna | Conected PCB Antenna (3 x U.FL) |
| Antenna Gain | <p>2.4 GHz: 2.83 dBi (2 400 MHz ~ 2 483.5 MHz)_ANT 0 2.38 dBi (2 400 MHz ~ 2 483.5 MHz)_ANT 1 2.19 dBi (2 400 MHz ~ 2 483.5 MHz)_ANT 2</p> <p>5 GHz: 1.99 dBi (5 150 MHz ~ 5 250 MHz)_ANT 0 1.40 dBi (5 150 MHz ~ 5 250 MHz)_ANT 1 1.89 dBi (5 150 MHz ~ 5 250 MHz)_ANT 2 3.89 dBi (5 725 MHz ~ 5 850 MHz)_ANT 0 2.59 dBi (5 725 MHz ~ 5 850 MHz)_ANT 1 2.80 dBi (5 725 MHz ~ 5 850 MHz)_ANT 2</p> |
| Transmit Power | 19.29 dBm |
| Power supply | DC 5.00 V |
| Product SW/HW version | V1.0.0.6TS / D04 |
| Radio SW/HW version | V1.01 / V1.01 |
| Test SW Version | CTS2 v1043 |
| RF power setting in TEST SW | <p>- ANT 0 5 150 MHz Band : 802.11a: 17 802.11n HT20/ac VHT20 : 16.5 802.11n HT40/ac VHT40 : 14 802.11ac VHT80 : 12</p> <p>5 725 MHz Band : 802.11a: 20 802.11n HT20/ac VHT20 : 19.5 802.11n HT40/ac VHT40 : 19.5 802.11ac VHT80 : 19.5</p> <p>- ANT 1 5 150 MHz Band : 802.11n HT20/ac VHT20 : 13.5 802.11n HT40/ac VHT40 : 11.5 802.11ac VHT80 : 9.5 5 725 MHz Band : 802.11n HT20/ac VHT20 : 16.5 802.11n HT40/ac VHT40 : 16.5 802.11ac VHT80 : 16.5</p> <p>- ANT 2 5 150 MHz Band : 802.11n HT20/ac VHT20 : 11.5 802.11n HT40/ac VHT40 : 9.5 802.11ac VHT80 : 8 5 725 MHz Band : 802.11n HT20/ac VHT20 : 14.5 802.11n HT40/ac VHT40 : 14.5 802.11ac VHT80 : 14.5</p> |

Note : The above EUT information was declared by the manufacturer.

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3.3 Test frequency

- 802.11a/n/ac HT20/VHT20

| Frequency | Band 1 | Band 4 |
|-------------------|-----------|-----------|
| Lowest frequency | 5 180 MHz | 5 745 MHz |
| Middle frequency | 5 200 MHz | 5 785 MHz |
| Highest frequency | 5 240 MHz | 5 825 MHz |

- 802.11n/ac HT40/VHT40

| Frequency | Band 1 | Band 4 |
|------------------|-----------|-----------|
| Lowest frequency | 5 190 MHz | 5 755 MHz |
| Middle frequency | 5 230 MHz | 5 795 MHz |

- 802.11ac VHT80

| Frequency | Band 1 | Band 4 |
|------------------|-----------|-----------|
| Lowest frequency | 5 210 MHz | 5 775 MHz |

3.4 Test Voltage

| Mode | Voltage |
|-----------------|-----------|
| Nominal Voltage | DC 5.00 V |

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4. Summary of test results

4.1 Standards & results

| FCC Rule | IC Rule | Parameter | Report Section | Test Result |
|---|----------------------------------|---|----------------|-------------|
| 15.203 15.407(a)(1)(2)(3) | - | Antenna Requirement | 5.1 | C |
| 15.407(a)(1)(2) | RSS-247, 5.4 | Maximum Conducted Output Power | 5.2 | C |
| 15.403(i), 15.407(e) | RSS-247, 5.1 RSS-GEN, 6.6 | Bandwidth Measurement | 5.3 | C |
| 15.407(a)(1)(2)(5) | RSS-247, 5.3, (2) | Peak Power Spectral Density | 5.4 | C |
| 15.205(a), 15.209(a), 15.407(b)(1), 15.407(b)(2), 15.407(b)(3) | RSS-247, 5.5 RSS-GEN, 8.9, 10 | Spurious Emission, Band Edge and Restricted bands | 5.5 | C |
| 15.407(g) | RSS-GEN, 6.11 | Frequency Stability | 5.6 | C |
| 15.207(a) | RSS-GEN, 8.8 | Conducted Emissions | 5.7 | C |
| 15.407(h) | RSS-247, 6.3 | Dynamic Frequency Selection | - | NA |
| Note: C = complies NC = Not complies NT = Not tested NA = Not Applicable | | | | |

Note: The general test methods used to test this device is ANSI C63.10:2013

4.2 Uncertainty

| Measurement Item | Expanded Uncertainty $U = kUc (k = 2)$ | |
|------------------------------|---|--------------------|
| Conducted RF power | 1.44 dB | |
| Conducted Spurious Emissions | 1.52 dB | |
| Radiated Spurious Emissions | 30 MHz ~ 300 MHz: | +4.94 dB, -5.06 dB |
| | | +4.93 dB, -5.05 dB |
| | 300 MHz ~ 1 000 MHz: | +4.97 dB, -5.08 dB |
| | | +4.84 dB, -4.96 dB |
| Conducted Emissions | 1 GHz ~ 25 GHz: | +6.03 dB, -6.05 dB |
| | 9 kHz ~ 150 kHz: | 3.75 dB |
| | 150 kHz ~ 30 MHz: | 3.36 dB |

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5. Test results

5.1 Antenna Requirement

5.1.1 Regulation

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to §15.407(a)(1)(2)(3), If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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5.1.2 Result

-Complied

The transmitter has Connected PCB Antenna (3 x U.FL) antenna(external antenna).

The total directional peak gain of the antenna not exceeds 6.0 dBi

| | 5 150 MHz Band | 5 725 MHz Band |
|------------|----------------|----------------|
| ANT 0 Gain | 1.99 dBi | 3.89 dBi |
| ANT 1 Gain | 1.40 dBi | 2.59 dBi |
| ANT 2 Gain | 1.89 dBi | 2.80 dBi |

According to KDB 662911 D01 Multiple Transmitter Output v02r01

- Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power measurements on IEEE 802.11 devices

- 5 150 MHz Band

In case of 2 Tx MIMO

For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log(N_{ANT}/N_{SS}) \text{ dB.}$$

$$\text{Total gain} = 5.00 \text{ dBi (individual gain(1.99 dBi) + Array gain(3.01 dBi))}$$

For power measurements on IEEE 802.11 devices

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for } N_{ANT} \leq 4;$$

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any } N_{ANT};$$

$$\text{Array Gain} = 5 \log(N_{ANT}/N_{SS}) \text{ dB or } 3 \text{ dB, whichever is less, for } 20\text{-MHz channel widths with } N_{ANT} \geq 5.$$

$$\text{Total gain} = 1.99 \text{ dBi (individual gain(1.99 dBi) + Array gain(0 dBi))}$$

For power measurements on all other devices:

$$\text{Array Gain} = 10 \log(N_{ANT}/N_{SS}) \text{ dB.}$$

In case of 3 Tx MIMO

For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

$$\text{Total gain} = 6.76 \text{ dBi (individual gain (1.99 dBi) + Array gain (4.77 dBi))}$$

For power measurements on IEEE 802.11 devices

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for } N_{\text{ANT}} \leq 4;$$

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any } N_{\text{ANT}};$$

$$\text{Array Gain} = 5 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB or } 3 \text{ dB, whichever is less, for } 20\text{-MHz channel widths with } N_{\text{ANT}} \geq 5.$$

$$\text{Total gain} = 1.99 \text{ dBi (individual gain(1.99 dBi) + Array gain(0 dBi))}$$

For power measurements on all other devices:

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

- 5 725 MHz Band**In case of 2 Tx MIMO**

For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

$$\text{Total gain} = 6.90 \text{ dBi (individual gain(3.89 dBi) + Array gain(3.01 dBi))}$$

For power measurements on IEEE 802.11 devices

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for } N_{\text{ANT}} \leq 4;$$

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any } N_{\text{ANT}};$$

$$\text{Array Gain} = 5 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB or } 3 \text{ dB, whichever is less, for } 20\text{-MHz channel widths with } N_{\text{ANT}} \geq 5.$$

$$\text{Total gain} = 3.89 \text{ dBi (individual gain(3.89 dBi) + Array gain(0 dBi))}$$

For power measurements on all other devices:

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

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In case of 3 Tx MIMO

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB.

Total gain = 6.76 dBi (individual gain (3.89 dBi) + Array gain (4.77 dBi))

For power measurements on IEEE 802.11 devices

Array Gain = 0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{\text{ANT}} \geq 5$.

Total gain = 8.66 dBi (individual gain(3.89 dBi) + Array gain(0 dBi))

For power measurements on all other devices:

Array Gain = $10 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB.

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5.2 Maximum Conducted Output Power

5.2.1 Regulation

According to §15.407(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.407(a) (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.407(a) (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2.2 Measurement Procedure

These test measurement settings are specified in section C of 789033 D02 General UNII Test Procedures.

5.2.2.1 Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1 MHz.
- (iii) Set VBW \geq 3 MHz.
- (iv) Number of points in sweep $\geq 2 \times$ span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.
- (vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle \geq 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
- (viii) Trace average at least 100 traces in power averaging (rms) mode.
- (ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

5.2.2.2 Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

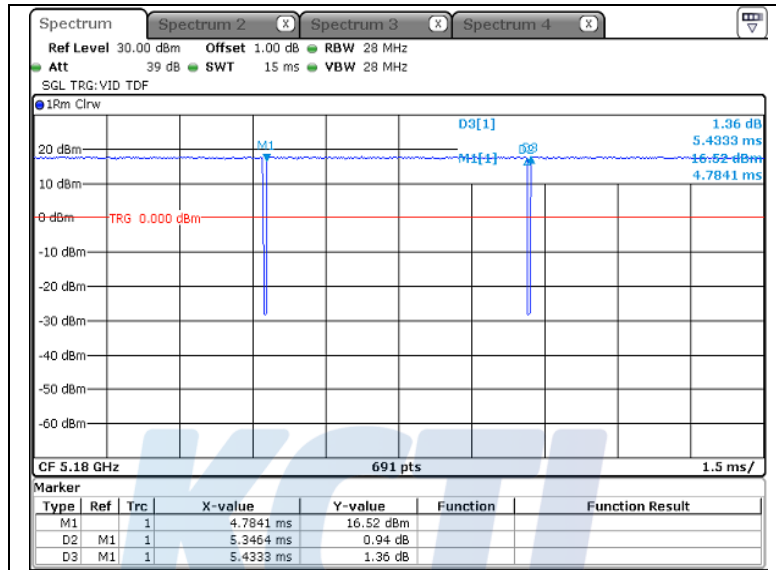
- (i) Measure the duty cycle, x , of the transmitter output signal as described in section II.B.
- (ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (iii) Set RBW = 1 MHz.
- (iv) Set VBW \geq 3 MHz.
- (v) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
- (vi) Sweep time = auto.
- (vii) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- (viii) Do not use sweep triggering. Allow the sweep to “free run.”
- (ix) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
- (x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (xi) Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add $10 \log (1/0.25) = 6 \text{ dB}$ if the duty cycle is 25 %.

- Duty Cycle Correction Factor

- 5 150 Band

- ANT 0, 1, 2

- 802.11a

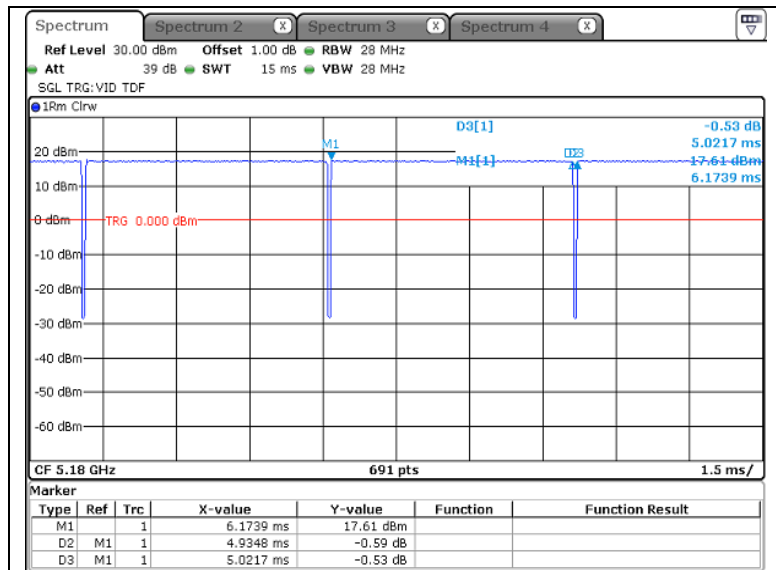


Note₁) : period : 5.43 ms, On time : 5.35 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(5.43 / 5.35) = 0.07$, $x = 0.98$

Note₃) : 802.11a is a continuous transmission (duty cycle $\geq 98\%$)"

- 802.11n HT20

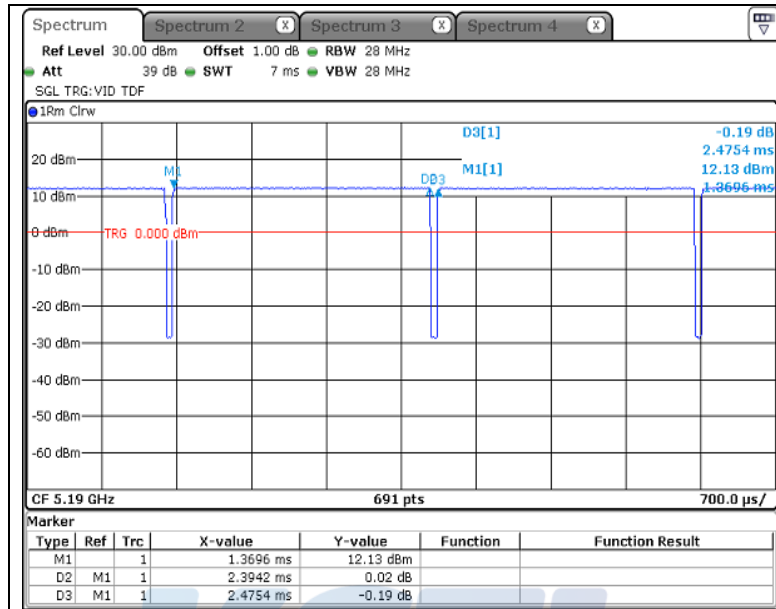


Note₁) : period : 5.02 ms, On time : 4.93 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(5.02 / 4.93) = 0.08$, $x = 0.98$

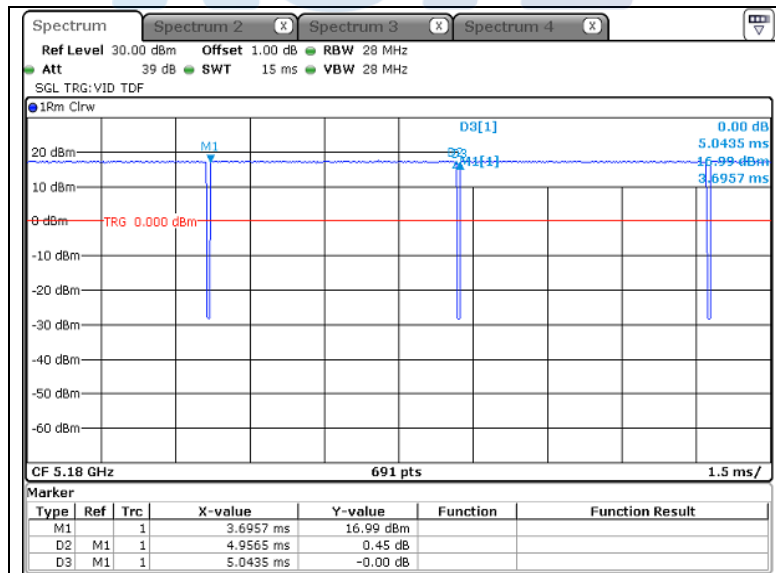
Note₃) : 802.11n HT20 is a continuous transmission (duty cycle $\geq 98\%$)"

- 802.11n HT40



Note₁) : period : 2.48 ms, On time : 2.39 ms
 Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.48 / 2.39) = 0.14$, $x = 0.97$

- 802.11ac VHT20



Note₁) : period : 5.04 ms, On time : 4.96 ms
 Note₂) : DCCF = $10 \log(1 / x) = 10 \log(5.04 / 4.96) = 0.08$, $x = 0.98$
 Note₃) : 802.11ac VHT20 is a continuous transmission (duty cycle $\geq 98\%$)"

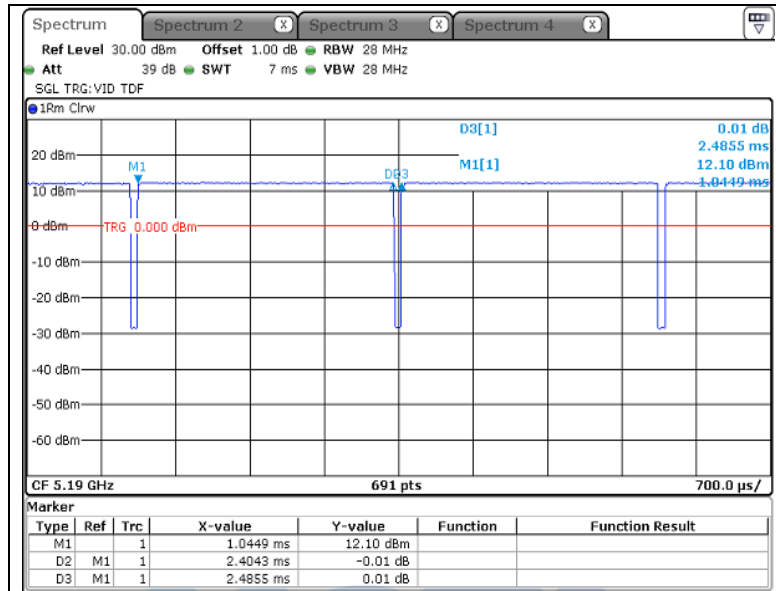
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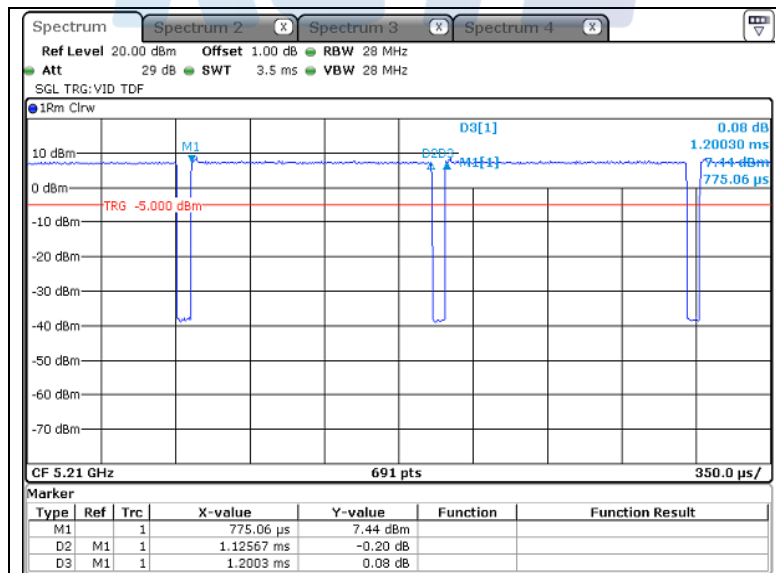
- 802.11ac VHT40



Note₁) : period : 2.49 ms, On time : 2.40 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.49 / 2.40) = 0.14$, $x = 0.97$

- 802.11ac VHT80



Note₁) : period : 1.20 ms, On time : 1.13 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.20 / 1.13) = 0.28$, $x = 0.94$

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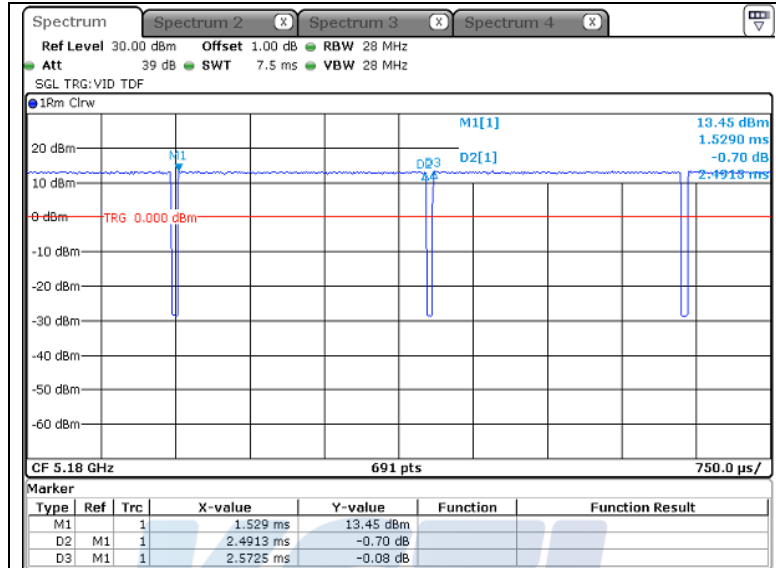
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- MIMO (ANT 0+1)

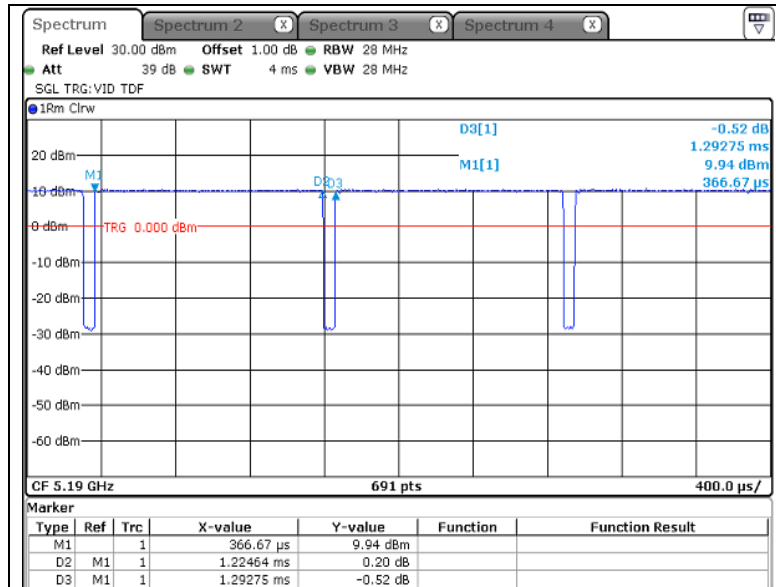
- 802.11n HT20



Note₁) : period : 2.57 ms, On time : 2.49 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.57 / 2.49) = 0.14$, $x = 0.97$

- 802.11n HT40



Note₁) : period : 1.29 ms, On time : 1.22 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.29 / 1.22) = 0.24$, $x = 0.95$

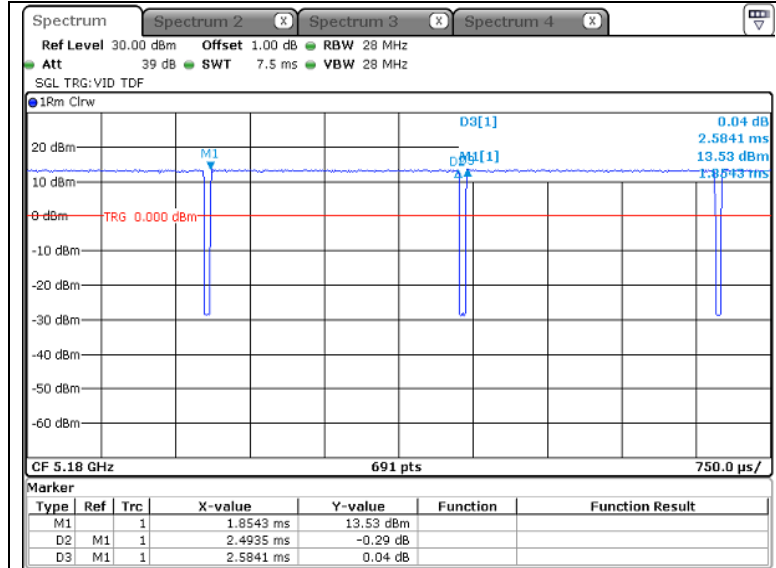
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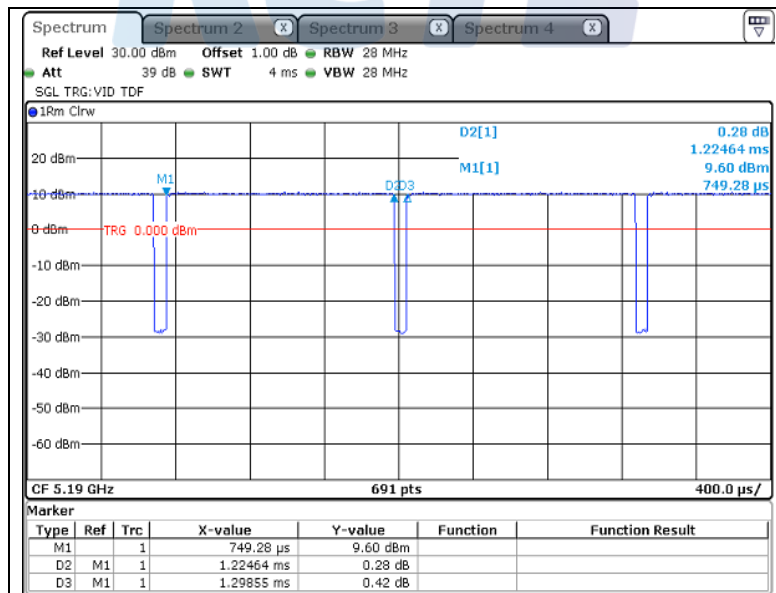
- 802.11ac VHT20



Note₁) : period : 2.58 ms, On time : 2.49 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.58 / 2.49) = 0.15$, $x = 0.96$

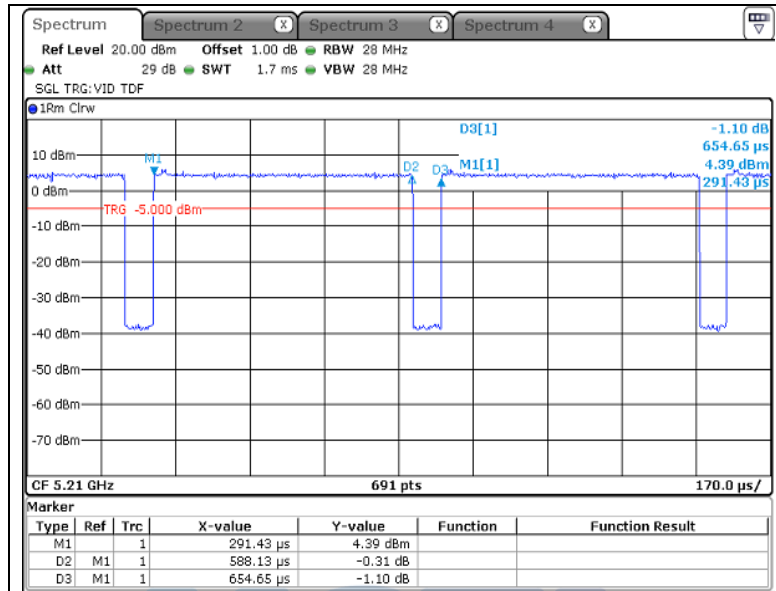
- 802.11ac VHT40



Note₁) : period : 1.30 ms, On time : 1.22 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.30 / 1.22) = 0.25$, $x = 0.94$

- 802.11ac VHT80

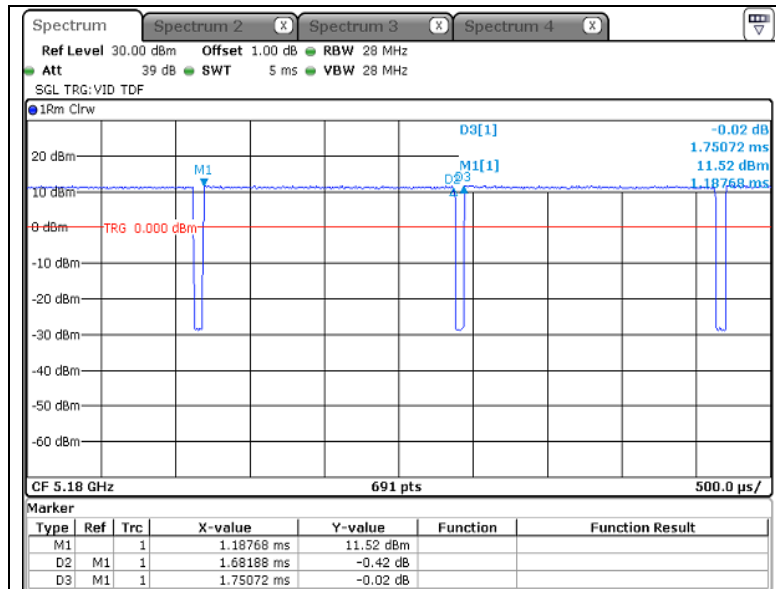


Note₁) : period : 0.65 ms, On time : 0.59 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(0.65 / 0.59) = 0.47$, $x = 0.90$

- MIMO (ANT 0+1+2)

- 802.11n HT20



Note₁) : period : 1.75 ms, On time : 1.68 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.75 / 1.68) = 0.17$, $x = 0.96$

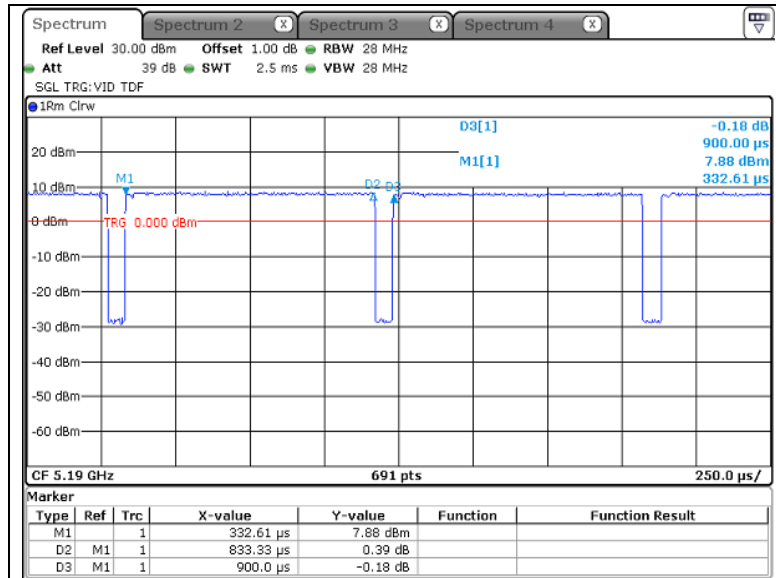
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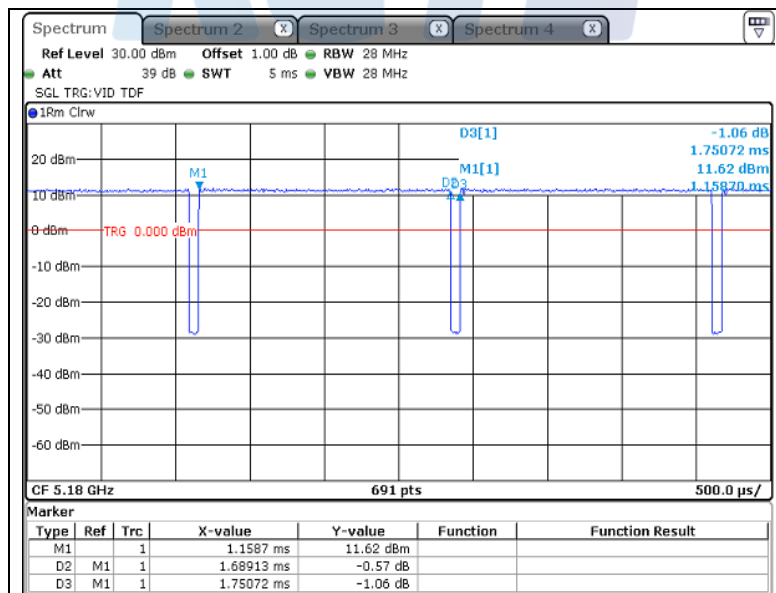
- 802.11n HT40



Note₁) : period : 0.90 ms, On time : 0.83 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(0.90 / 0.83) = 0.33$, $x = 0.93$

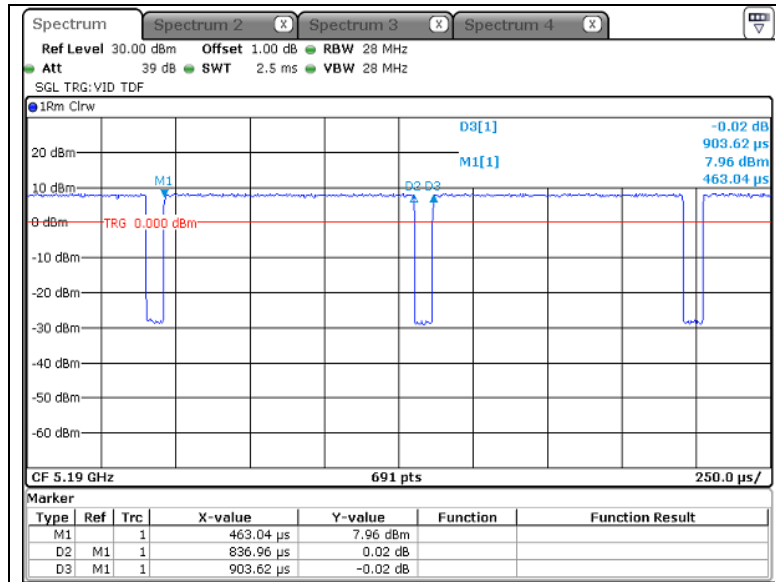
- 802.11ac VHT20



Note₁) : period : 1.75 ms, On time : 1.69 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.75 / 1.69) = 0.16$, $x = 0.96$

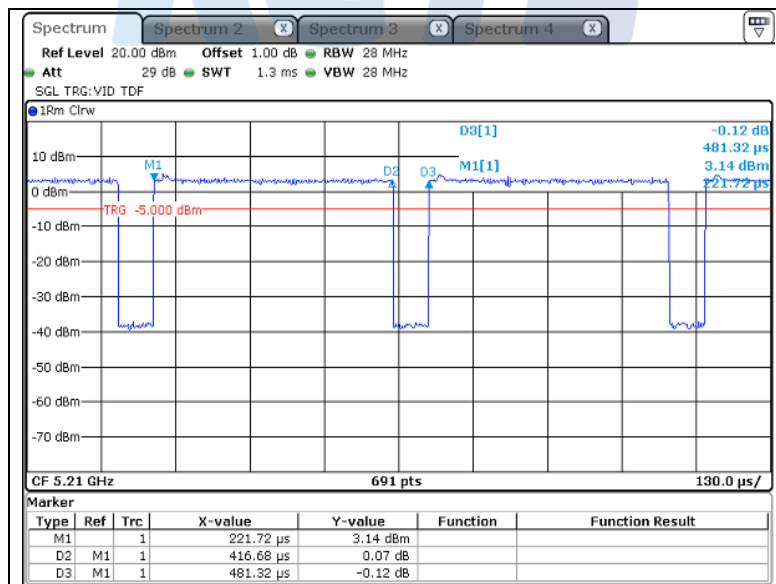
- 802.11ac VHT40



Note₁) : period : 0.90 ms, On time : 0.84 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(0.90 / 0.84) = 0.33$, $x = 0.93$

- 802.11ac VHT80



Note₁) : period : 0.48 ms, On time : 0.42 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(0.48 / 0.42) = 0.63$, $x = 0.87$

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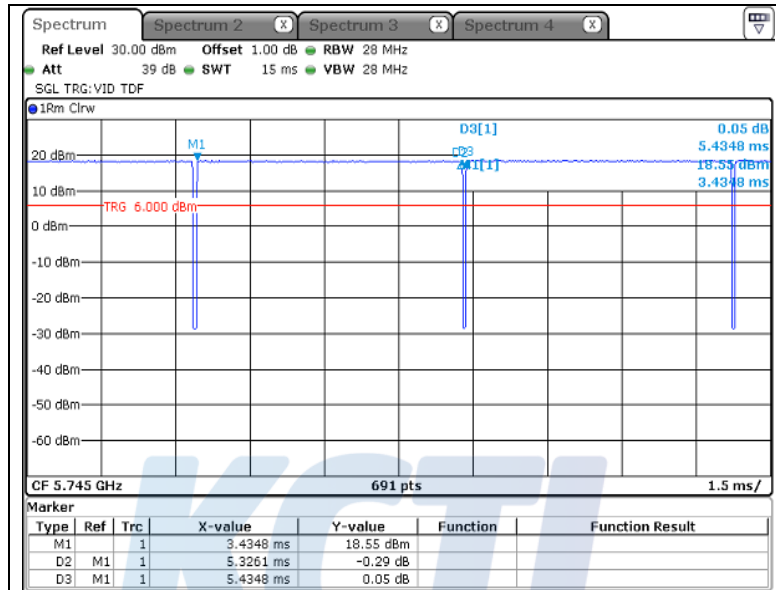
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- 5 725 Band

- ANT 0, 1, 2

- 802.11a

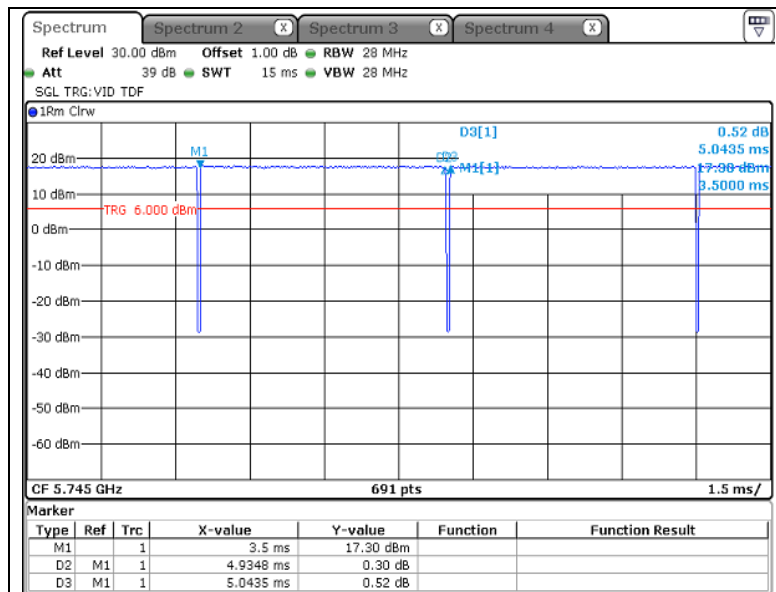


Note₁) : period : 5.43 ms, On time : 5.33 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(5.43 / 5.33) = 0.09$, $x = 0.98$

Note₃) : 802.11a is a continuous transmission (duty cycle $\geq 98\%$)"

- 802.11n HT20



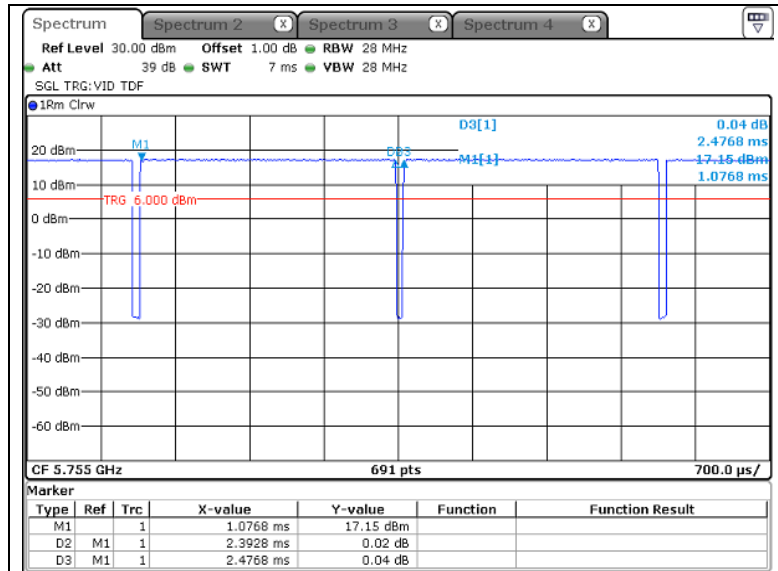
Note₁) : period : 5.04 ms, On time : 4.93 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(5.04 / 4.93) = 0.09$, $x = 0.98$

Note₃) : 802.11n HT20 is a continuous transmission (duty cycle $\geq 98\%$)"

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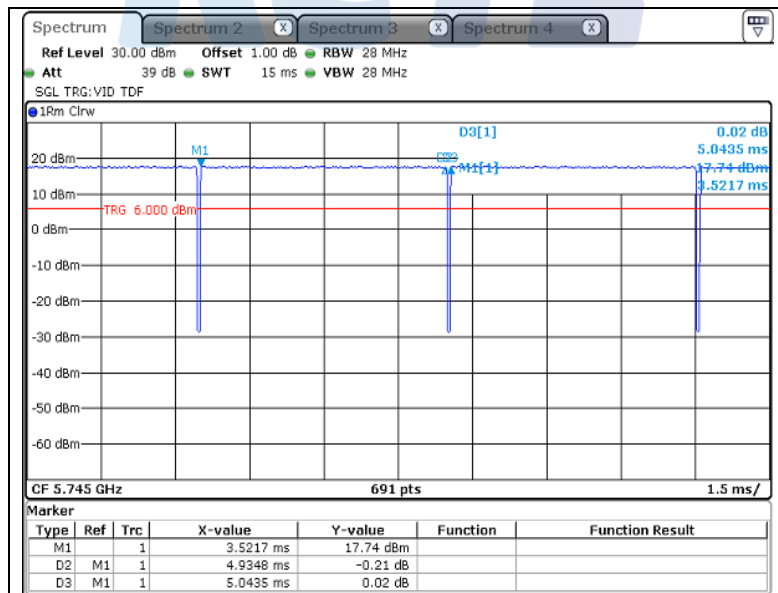
- 802.11n HT40



Note₁ : period : 2.48 ms, On time : 2.39 ms

Note₂ : DCCF = $10 \log(1 / x) = 10 \log(2.48 / 2.39) = 0.15$, $x = 0.97$

- 802.11ac VHT20

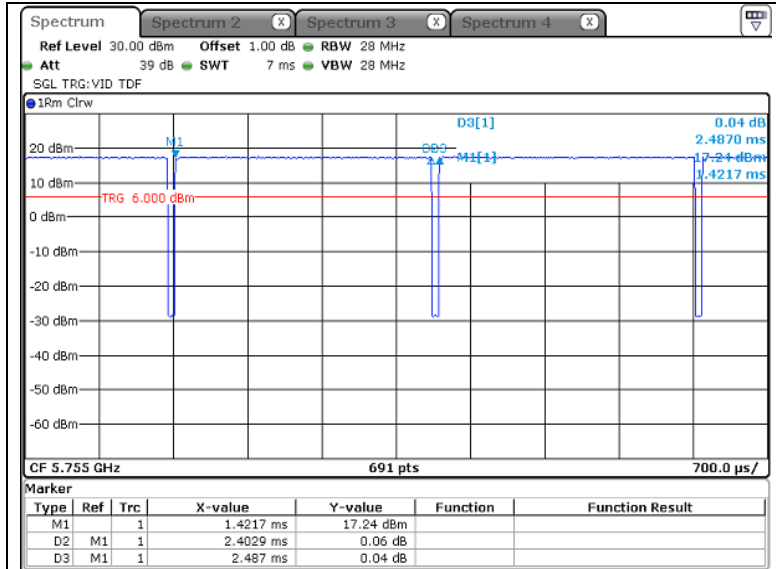


Note₁ : period : 5.04 ms, On time : 4.93 ms

Note₂ : DCCF = $10 \log(1 / x) = 10 \log(5.04 / 4.93) = 0.09$, $x = 0.98$

Note₃ : 802.11ac VHT20 is a continuous transmission (duty cycle $\geq 98\%$)"

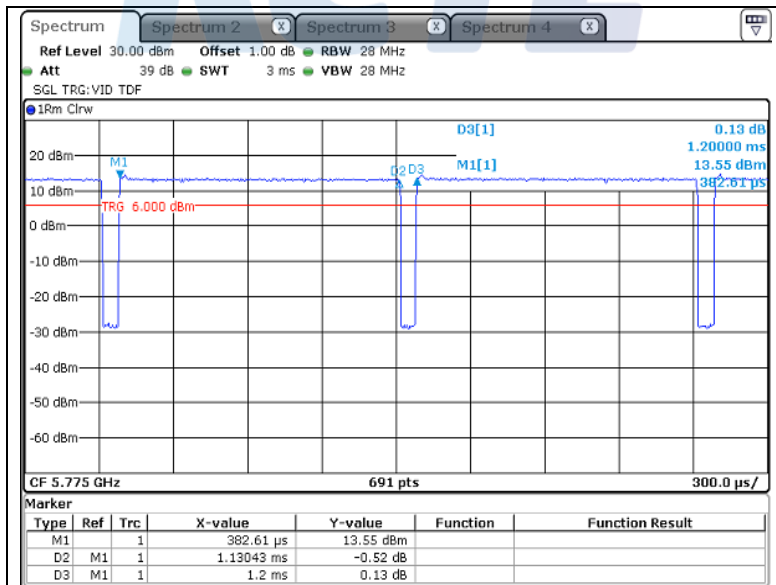
- 802.11ac VHT40



Note₁) : period : 2.49 ms, On time : 2.40 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.49 / 2.40) = 0.15$, $x = 0.97$

- 802.11ac VHT80



Note₁) : period : 1.20 ms, On time : 1.13 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.20 / 1.13) = 0.26$, $x = 0.94$

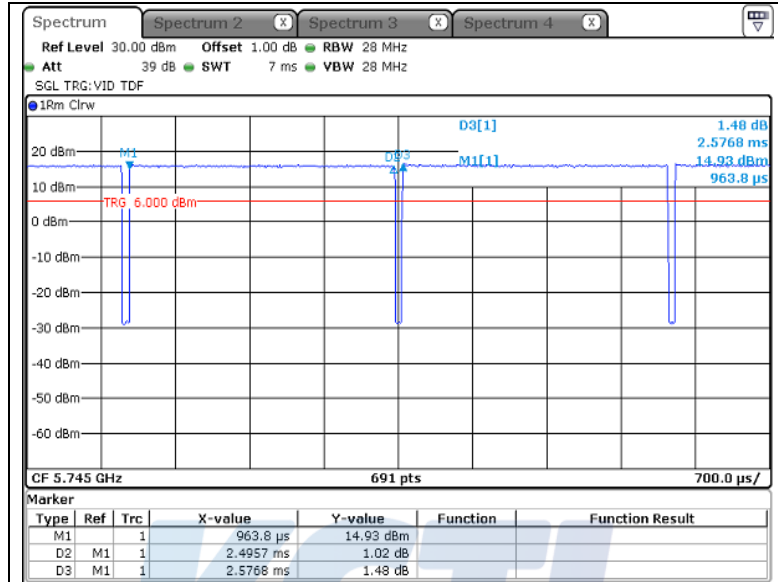
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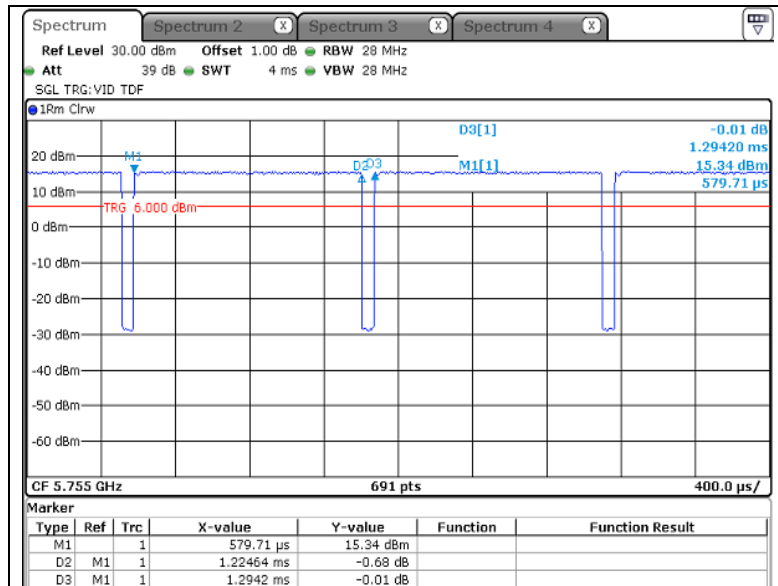


- MIMO (ANT 0+1)
- 802.11n HT20



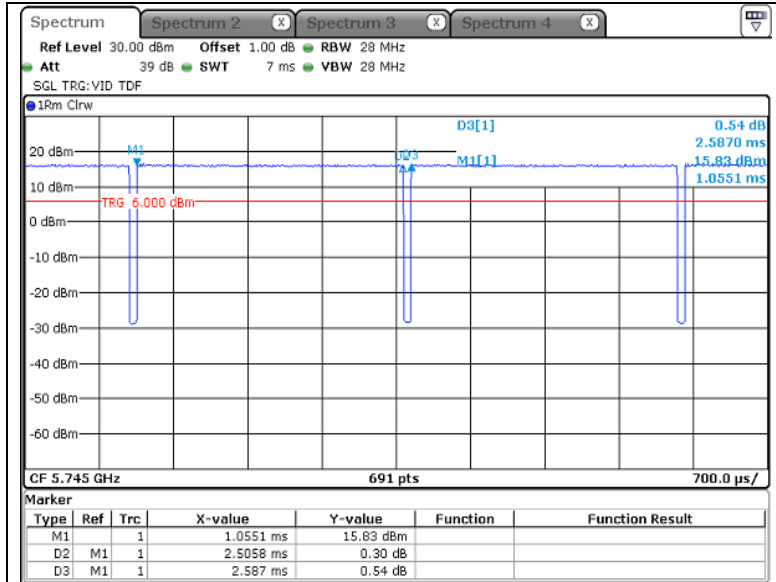
Note₁ : period : 2.58 ms, On time : 2.50 ms
Note₂ : DCCF = $10 \log(1 / x) = 10 \log(2.58 / 2.50) = 0.14$, $x = 0.97$

- 802.11n HT40



Note₁ : period : 1.29 ms, On time : 1.22 ms
Note₂ : DCCF = $10 \log(1 / x) = 10 \log(1.29 / 1.22) = 0.24$, $x = 0.95$

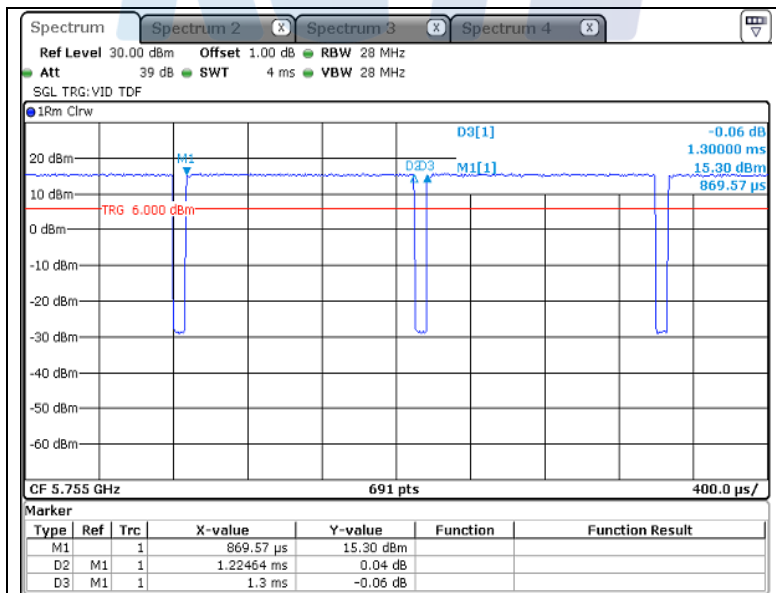
- 802.11ac VHT20



Note₁) : period : 2.59 ms, On time : 2.51 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(2.59 / 2.51) = 0.14$, $x = 0.97$

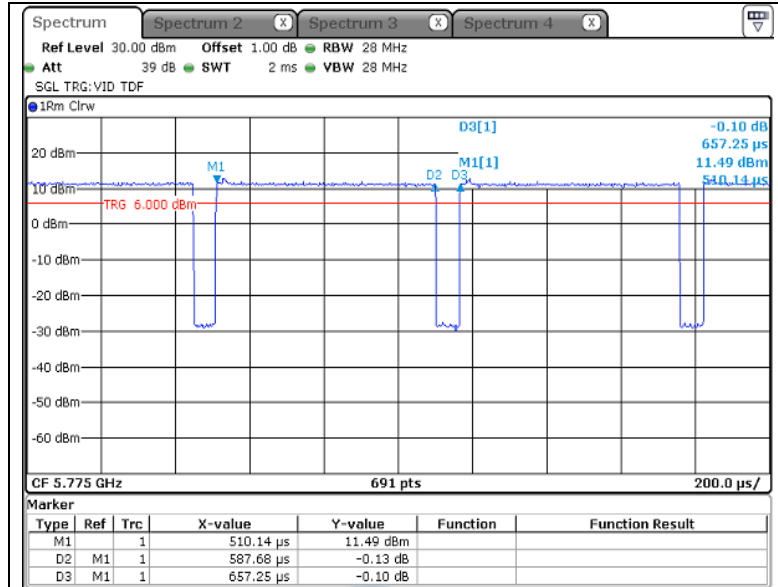
- 802.11ac VHT40



Note₁) : period : 1.30 ms, On time : 1.22 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.30 / 1.22) = 0.26$, $x = 0.94$

- 802.11ac VHT80

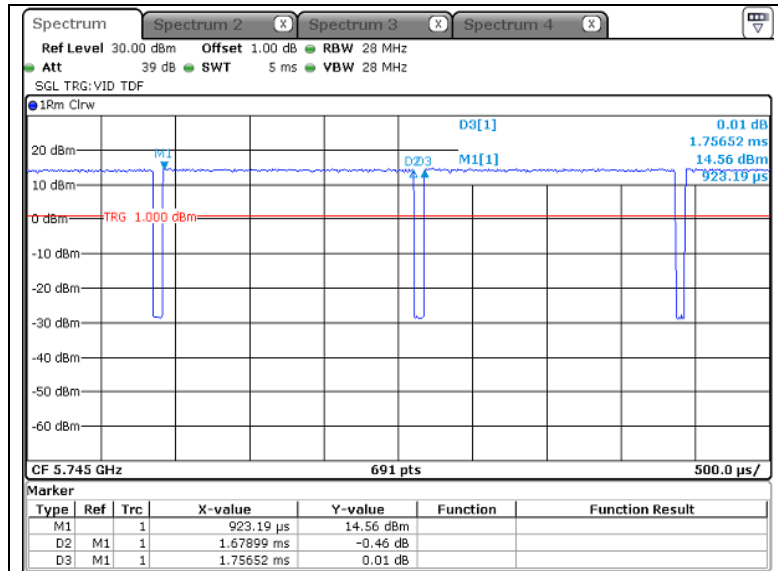


Note₁) : period : 0.66 ms, On time : 0.59 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(0.66 / 0.59) = 0.49$, $x = 0.89$

- MIMO (ANT 0+1+2)

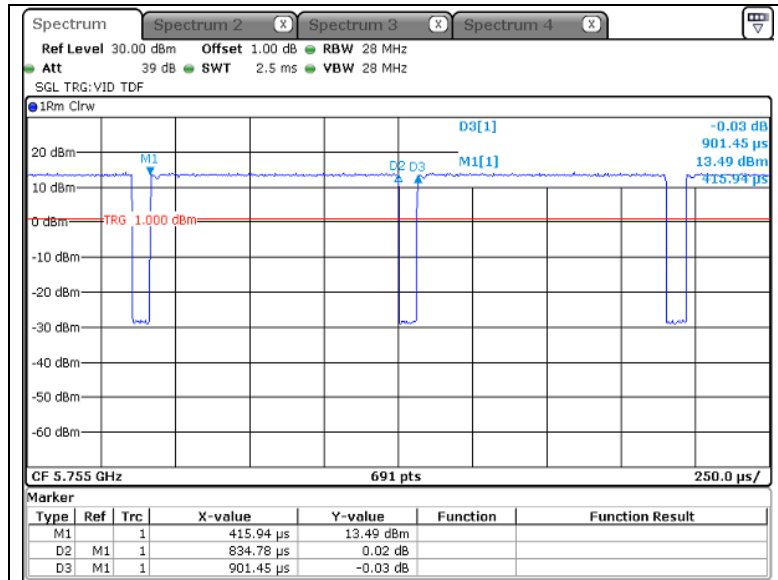
- 802.11n HT20



Note₁) : period : 1.76 ms, On time : 1.68 ms

Note₂) : DCCF = $10 \log(1 / x) = 10 \log(1.76 / 1.68) = 0.20$, $x = 0.96$

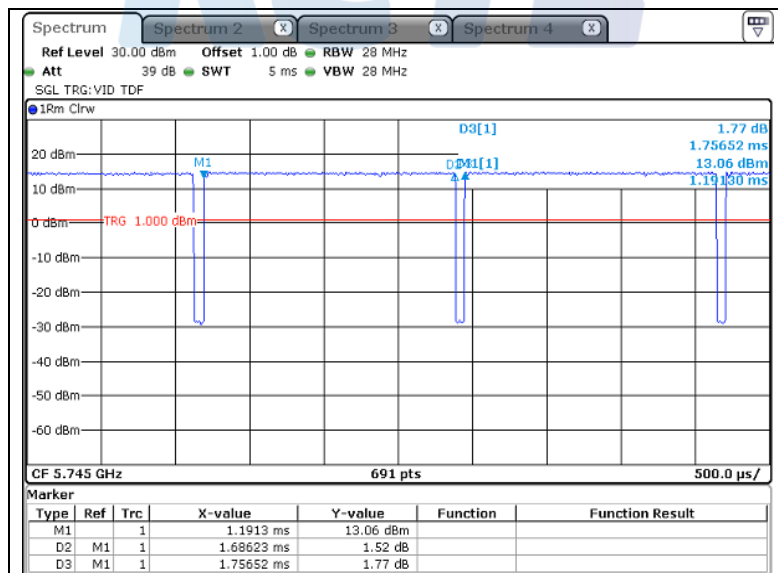
- 802.11n HT40



Note₁) : period : 0.90 ms, On time : 0.83 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(0.90 / 0.83) = 0.33$, $x = 0.93$

- 802.11ac VHT20



Note₁) : period : 1.76 ms, On time : 1.69 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(1.76 / 1.69) = 0.18$, $x = 0.96$

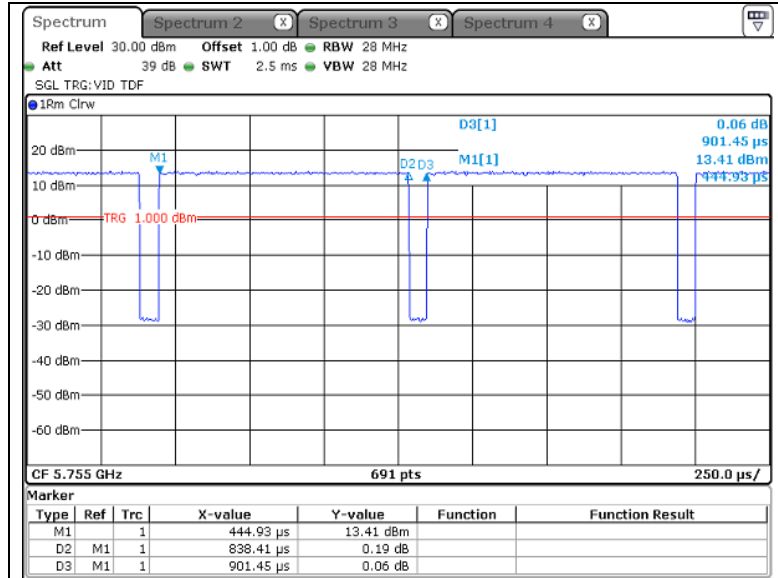
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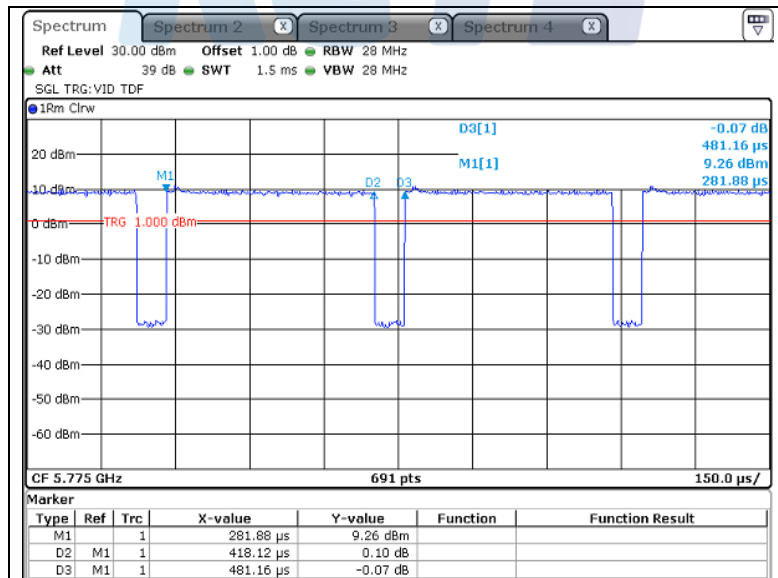
- 802.11ac VHT40



Note₁) : period : 0.90 ms, On time : 0.84 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(0.90 / 0.84) = 0.31$, $x = 0.93$

- 802.11ac VHT80



Note₁) : period : 0.48 ms, On time : 0.42 ms

Note₂) : $DCCF = 10 \log(1 / x) = 10 \log(0.48 / 0.42) = 0.61$, $x = 0.87$

5.2.3 Test Result

-Complied

- 5 150 Band

- Ant 0

-802.11a

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.74 | 0.07 | 17.81 | 30.00 | 12.19 |
| Middle | 5 200 | 17.82 | 0.07 | 17.89 | 30.00 | 12.11 |
| Highest | 5 240 | 17.75 | 0.07 | 17.82 | 30.00 | 12.18 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.34 | 0.08 | 17.42 | 30.00 | 12.58 |
| Middle | 5 200 | 17.25 | 0.08 | 17.33 | 30.00 | 12.67 |
| Highest | 5 240 | 17.26 | 0.08 | 17.34 | 30.00 | 12.66 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.63 | 0.14 | 13.77 | 30.00 | 16.23 |
| Middle | 5 230 | 14.18 | 0.14 | 14.32 | 30.00 | 15.68 |

-802.11ac VHT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.24 | 0.08 | 17.32 | 30.00 | 12.68 |
| Middle | 5 200 | 17.29 | 0.08 | 17.37 | 30.00 | 12.63 |
| Highest | 5 240 | 17.26 | 0.08 | 17.34 | 30.00 | 12.66 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.63 | 0.14 | 13.77 | 30.00 | 16.23 |
| Middle | 5 230 | 14.13 | 0.14 | 14.27 | 30.00 | 15.73 |

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**-802.11ac VHT80**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 210 | 12.05 | 0.28 | 12.33 | 30.00 | 17.67 |

- Ant 1

-802.11a

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.64 | 0.07 | 17.71 | 30.00 | 12.29 |
| Middle | 5 200 | 17.61 | 0.07 | 17.68 | 30.00 | 12.32 |
| Highest | 5 240 | 17.60 | 0.07 | 17.67 | 30.00 | 12.33 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.14 | 0.08 | 17.22 | 30.00 | 12.78 |
| Middle | 5 200 | 15.75 | 0.08 | 15.83 | 30.00 | 14.17 |
| Highest | 5 240 | 16.65 | 0.08 | 16.73 | 30.00 | 13.27 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.28 | 0.14 | 13.42 | 30.00 | 16.58 |
| Middle | 5 230 | 13.60 | 0.14 | 13.74 | 30.00 | 16.26 |

-802.11ac VHT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.19 | 0.08 | 17.27 | 30.00 | 12.73 |
| Middle | 5 200 | 15.71 | 0.08 | 15.79 | 30.00 | 14.21 |
| Highest | 5 240 | 16.20 | 0.08 | 16.28 | 30.00 | 13.72 |

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**-802.11ac VHT40**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.23 | 0.14 | 13.37 | 30.00 | 16.63 |
| Middle | 5 230 | 13.55 | 0.14 | 13.69 | 30.00 | 16.31 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 210 | 12.02 | 0.28 | 12.30 | 30.00 | 17.70 |

- Ant 2**-802.11a**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 17.14 | 0.07 | 17.21 | 30.00 | 12.79 |
| Middle | 5 200 | 17.62 | 0.07 | 17.69 | 30.00 | 12.31 |
| Highest | 5 240 | 17.60 | 0.07 | 17.67 | 30.00 | 12.33 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 16.51 | 0.08 | 16.59 | 30.00 | 13.41 |
| Middle | 5 200 | 17.04 | 0.08 | 17.12 | 30.00 | 12.88 |
| Highest | 5 240 | 17.15 | 0.08 | 17.23 | 30.00 | 12.77 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.45 | 0.14 | 13.59 | 30.00 | 16.41 |
| Middle | 5 230 | 13.82 | 0.14 | 13.96 | 30.00 | 16.04 |

-802.11ac VHT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 16.43 | 0.08 | 16.51 | 30.00 | 13.49 |
| Middle | 5 200 | 16.82 | 0.08 | 16.90 | 30.00 | 13.10 |
| Highest | 5 240 | 16.92 | 0.08 | 17.00 | 30.00 | 13.00 |

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**-802.11ac VHT40**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 13.44 | 0.14 | 13.58 | 30.00 | 16.42 |
| Middle | 5 230 | 13.84 | 0.14 | 13.98 | 30.00 | 16.02 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 210 | 12.09 | 0.28 | 12.37 | 30.00 | 17.63 |

- MIMO (ANT 0+1)**-802.11n HT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 13.01 | 13.26 | 0.14 | 16.29 | 30.00 | 13.71 |
| Middle | 5 200 | 13.52 | 13.76 | 0.14 | 16.79 | 30.00 | 13.21 |
| Highest | 5 240 | 13.72 | 13.71 | 0.14 | 16.86 | 30.00 | 13.14 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 10.19 | 10.61 | 0.24 | 13.65 | 30.00 | 16.35 |
| Middle | 5 230 | 10.13 | 10.55 | 0.24 | 13.59 | 30.00 | 16.41 |

-802.11ac VHT20

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 13.02 | 13.74 | 0.15 | 16.56 | 30.00 | 13.44 |
| Middle | 5 200 | 13.61 | 14.14 | 0.15 | 17.05 | 30.00 | 12.95 |
| Highest | 5 240 | 13.78 | 14.12 | 0.15 | 17.12 | 30.00 | 12.88 |

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**-802.11ac VHT40**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 10.20 | 10.75 | 0.25 | 13.75 | 30.00 | 16.25 |
| Middle | 5 230 | 10.68 | 10.98 | 0.25 | 14.10 | 30.00 | 15.90 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 210 | 8.81 | 9.28 | 0.47 | 12.53 | 30.00 | 17.47 |

- MIMO (ANT 0+1+2)**-802.11n HT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 11.30 | 11.67 | 11.15 | 0.17 | 16.32 | 30.00 | 13.68 |
| Middle | 5 200 | 11.98 | 12.17 | 11.89 | 0.17 | 16.96 | 30.00 | 13.04 |
| Highest | 5 240 | 11.80 | 12.15 | 11.79 | 0.17 | 16.86 | 30.00 | 13.14 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 8.68 | 8.89 | 8.47 | 0.33 | 13.79 | 30.00 | 16.21 |
| Middle | 5 230 | 9.23 | 9.26 | 9.29 | 0.33 | 14.37 | 30.00 | 15.63 |

-802.11ac VHT20

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 180 | 11.23 | 11.52 | 11.03 | 0.16 | 16.19 | 30.00 | 13.81 |
| Middle | 5 200 | 11.53 | 11.94 | 11.56 | 0.16 | 16.61 | 30.00 | 13.39 |
| Highest | 5 240 | 12.11 | 11.97 | 11.56 | 0.16 | 16.81 | 30.00 | 13.19 |

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**-802.11ac VHT40**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 190 | 8.69 | 8.85 | 9.33 | 0.33 | 14.07 | 30.00 | 15.93 |
| Middle | 5 230 | 9.09 | 9.14 | 9.21 | 0.33 | 14.25 | 30.00 | 15.75 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 210 | 7.39 | 7.13 | 7.26 | 0.63 | 12.66 | 30.00 | 17.34 |

- 5 725 Band

- Ant 0

-802.11a

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 19.08 | 0.09 | 19.17 | 30.00 | 10.83 |
| Middle | 5 785 | 19.20 | 0.09 | 19.29 | 30.00 | 10.71 |
| Highest | 5 825 | 19.11 | 0.09 | 19.20 | 30.00 | 10.80 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.76 | 0.09 | 18.85 | 30.00 | 11.15 |
| Middle | 5 785 | 18.75 | 0.09 | 18.84 | 30.00 | 11.16 |
| Highest | 5 825 | 18.60 | 0.09 | 18.69 | 30.00 | 11.31 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.55 | 0.15 | 18.70 | 30.00 | 11.30 |
| Middle | 5 795 | 18.87 | 0.15 | 19.02 | 30.00 | 10.98 |

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**-802.11ac VHT20**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.83 | 0.09 | 18.92 | 30.00 | 11.08 |
| Middle | 5 785 | 18.66 | 0.09 | 18.75 | 30.00 | 11.25 |
| Highest | 5 825 | 18.68 | 0.09 | 18.77 | 30.00 | 11.23 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.63 | 0.15 | 18.78 | 30.00 | 11.22 |
| Middle | 5 795 | 18.59 | 0.15 | 18.74 | 30.00 | 11.26 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 775 | 18.63 | 0.26 | 18.89 | 30.00 | 11.11 |

- Ant 1**-802.11a**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 19.05 | 0.09 | 19.14 | 30.00 | 10.86 |
| Middle | 5 785 | 19.09 | 0.09 | 19.18 | 30.00 | 10.82 |
| Highest | 5 825 | 19.02 | 0.09 | 19.11 | 30.00 | 10.89 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.69 | 0.09 | 18.78 | 30.00 | 11.22 |
| Middle | 5 785 | 18.71 | 0.09 | 18.80 | 30.00 | 11.20 |
| Highest | 5 825 | 18.58 | 0.09 | 18.67 | 30.00 | 11.33 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.75 | 0.15 | 18.90 | 30.00 | 11.10 |
| Middle | 5 795 | 18.83 | 0.15 | 18.98 | 30.00 | 11.02 |

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**-802.11ac VHT20**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.66 | 0.09 | 18.75 | 30.00 | 11.25 |
| Middle | 5 785 | 18.91 | 0.09 | 19.00 | 30.00 | 11.00 |
| Highest | 5 825 | 18.76 | 0.09 | 18.85 | 30.00 | 11.15 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.50 | 0.15 | 18.65 | 30.00 | 11.35 |
| Middle | 5 795 | 18.75 | 0.15 | 18.90 | 30.00 | 11.10 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 775 | 18.56 | 0.26 | 18.82 | 30.00 | 11.18 |

- Ant 2**-802.11a**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 19.16 | 0.09 | 19.25 | 30.00 | 10.75 |
| Middle | 5 785 | 19.03 | 0.09 | 19.12 | 30.00 | 10.88 |
| Highest | 5 825 | 19.14 | 0.09 | 19.23 | 30.00 | 10.77 |

-802.11n HT20

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.56 | 0.09 | 18.65 | 30.00 | 11.35 |
| Middle | 5 785 | 18.61 | 0.09 | 18.70 | 30.00 | 11.30 |
| Highest | 5 825 | 18.43 | 0.09 | 18.52 | 30.00 | 11.48 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.67 | 0.15 | 18.82 | 30.00 | 11.18 |
| Middle | 5 795 | 18.83 | 0.15 | 18.98 | 30.00 | 11.02 |

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**-802.11ac VHT20**

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 18.56 | 0.09 | 18.65 | 30.00 | 11.35 |
| Middle | 5 785 | 18.66 | 0.09 | 18.75 | 30.00 | 11.25 |
| Highest | 5 825 | 18.57 | 0.09 | 18.66 | 30.00 | 11.34 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 18.65 | 0.15 | 18.80 | 30.00 | 11.20 |
| Middle | 5 795 | 18.81 | 0.15 | 18.96 | 30.00 | 11.04 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|---------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 775 | 18.68 | 0.26 | 18.94 | 30.00 | 11.06 |

- MIMO (ANT 0+1)**-802.11n HT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 15.20 | 15.63 | 0.14 | 18.57 | 30.00 | 11.43 |
| Middle | 5 785 | 15.27 | 15.60 | 0.14 | 18.59 | 30.00 | 11.41 |
| Highest | 5 825 | 15.35 | 15.66 | 0.14 | 18.66 | 30.00 | 11.34 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 15.14 | 15.68 | 0.24 | 18.67 | 30.00 | 11.33 |
| Middle | 5 795 | 15.21 | 15.63 | 0.24 | 18.68 | 30.00 | 11.32 |

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**-802.11ac VHT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 15.24 | 15.62 | 0.14 | 18.58 | 30.00 | 11.42 |
| Middle | 5 785 | 15.31 | 15.59 | 0.14 | 18.60 | 30.00 | 11.40 |
| Highest | 5 825 | 15.31 | 15.54 | 0.14 | 18.58 | 30.00 | 11.42 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 15.35 | 15.77 | 0.26 | 18.83 | 30.00 | 11.17 |
| Middle | 5 795 | 15.27 | 15.76 | 0.26 | 18.79 | 30.00 | 11.21 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 775 | 14.75 | 15.84 | 0.49 | 18.83 | 30.00 | 11.17 |

- MIMO (ANT 0+1+2)**-802.11n HT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 13.21 | 13.77 | 14.08 | 0.20 | 18.67 | 30.00 | 11.33 |
| Middle | 5 785 | 13.14 | 13.86 | 14.32 | 0.20 | 18.77 | 30.00 | 11.23 |
| Highest | 5 825 | 13.20 | 13.75 | 14.28 | 0.20 | 18.73 | 30.00 | 11.27 |

-802.11n HT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 14.05 | 14.03 | 13.99 | 0.33 | 19.13 | 30.00 | 10.87 |
| Middle | 5 795 | 13.70 | 14.19 | 13.61 | 0.33 | 18.95 | 30.00 | 11.05 |

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**-802.11ac VHT20**

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 745 | 13.20 | 13.39 | 14.37 | 0.18 | 18.63 | 30.00 | 11.37 |
| Middle | 5 785 | 13.25 | 13.58 | 14.28 | 0.18 | 18.67 | 30.00 | 11.33 |
| Highest | 5 825 | 13.52 | 13.57 | 13.91 | 0.18 | 18.62 | 30.00 | 11.38 |

-802.11ac VHT40

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 755 | 13.53 | 14.18 | 13.99 | 0.31 | 18.99 | 30.00 | 11.01 |
| Middle | 5 795 | 13.70 | 13.94 | 13.47 | 0.31 | 18.79 | 30.00 | 11.21 |

-802.11ac VHT80

| Channel | Frequency [MHz] | Average power _ANT 0 [dBm] | Average power _ANT 1 [dBm] | Average power _ANT 2 [dBm] | D.C.C.F [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|---------|-----------------|----------------------------|----------------------------|----------------------------|--------------|--------------|-------------|-------------|
| Lowest | 5 775 | 12.69 | 14.07 | 14.03 | 0.61 | 19.02 | 30.00 | 10.98 |

Note: D.C.C.F = Duty cycle correction factor = $10\log(1/\text{Duty Cycle})$

5.2.4 Test Plot

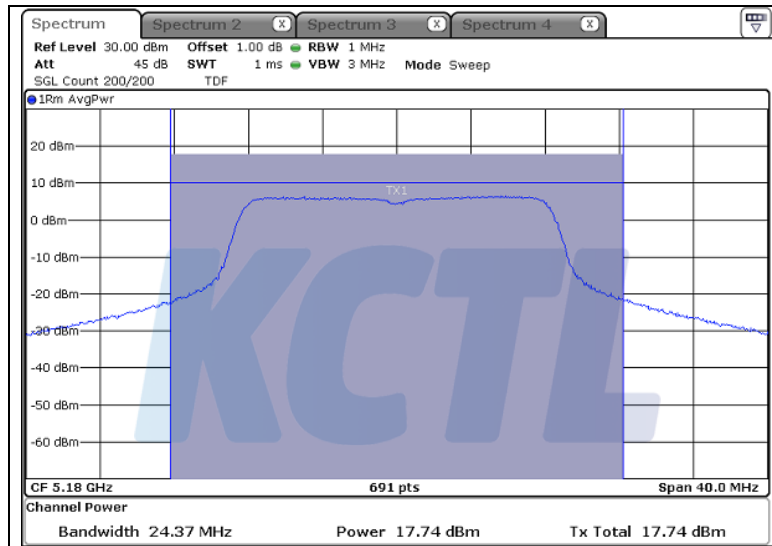
Figure 1. Conducted Output Power

- 5 150 Band

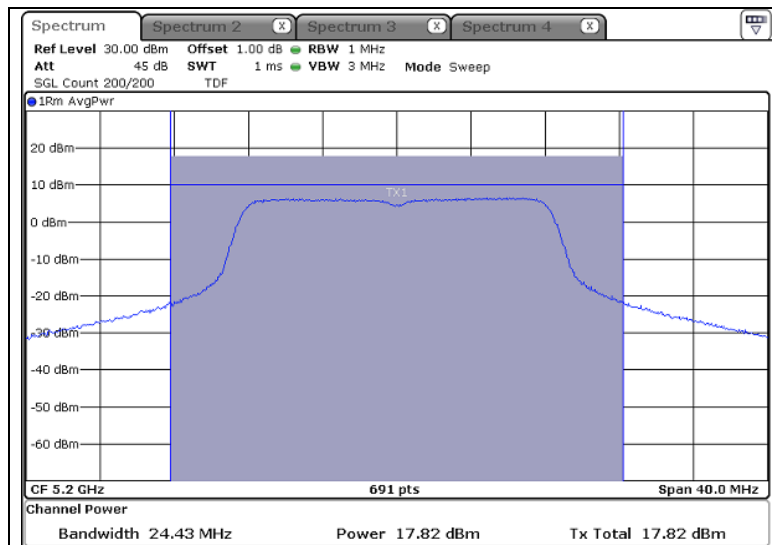
- ANT 0

-802.11a

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



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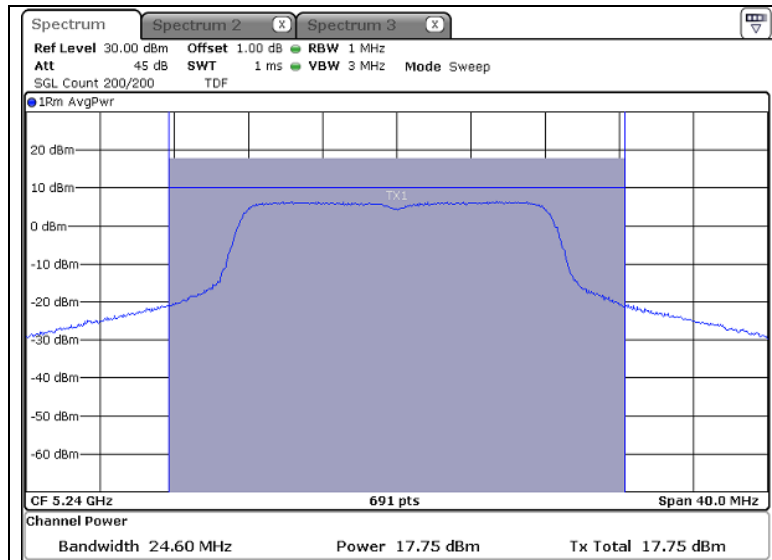
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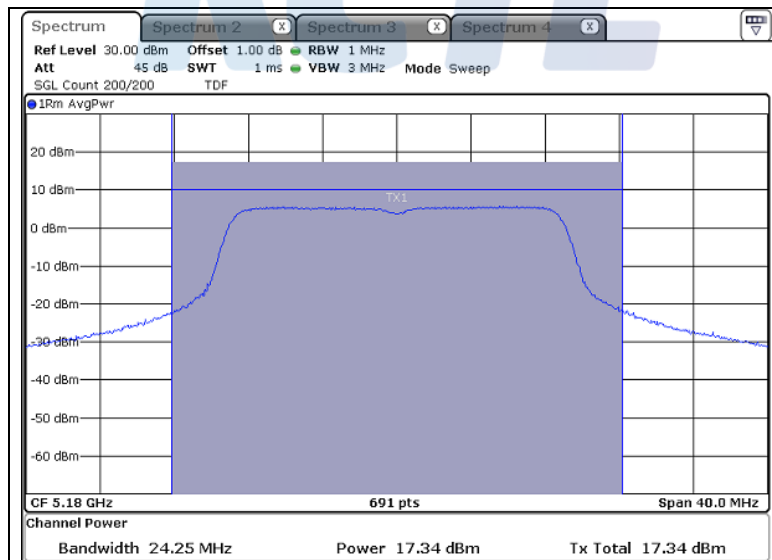


Highest Channel (5 240 MHz)



-802.11n HT20

Lowest Channel (5 180 MHz)



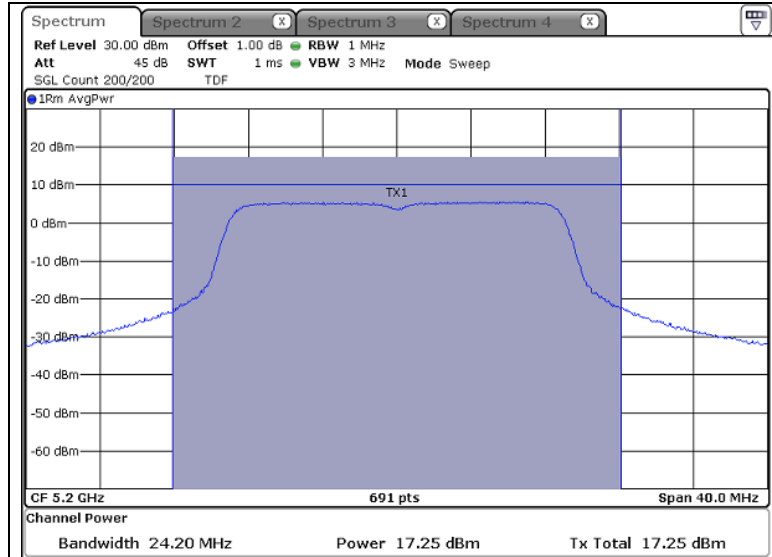
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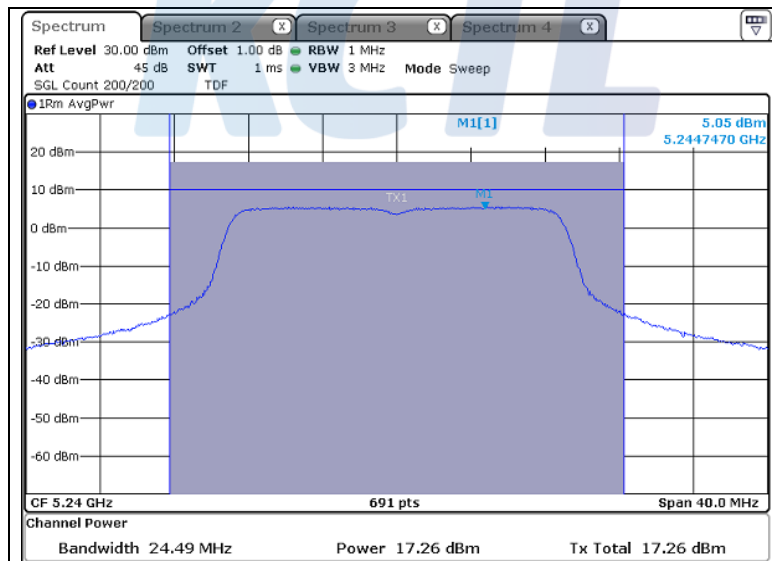
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



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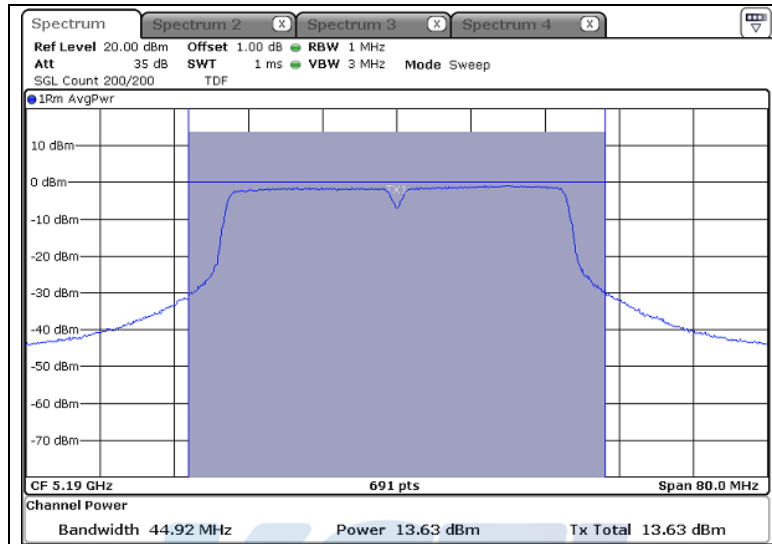
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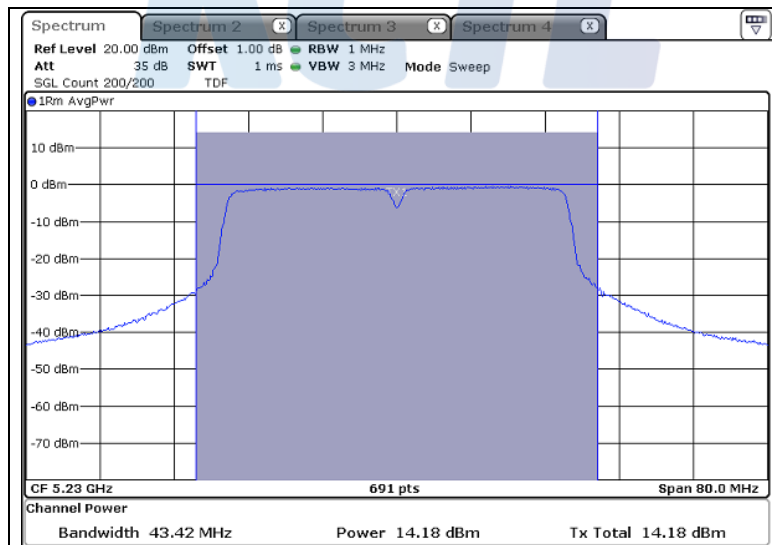


-802.11n_HT40

Lowest Channel (5 190 MHz)



Middle Channel (5 230 MHz)



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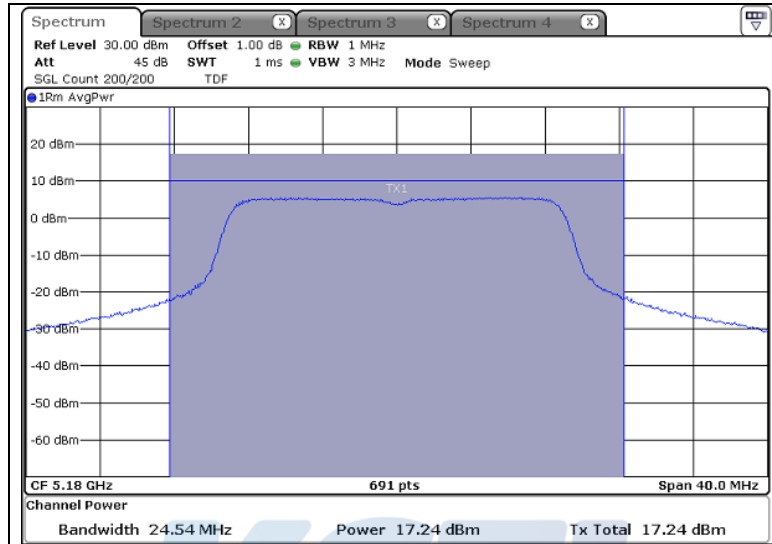
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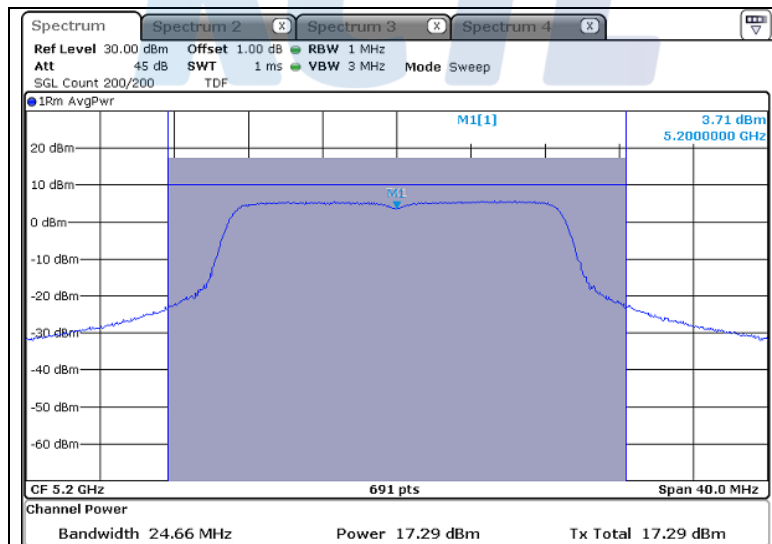


-802.11ac VHT20

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



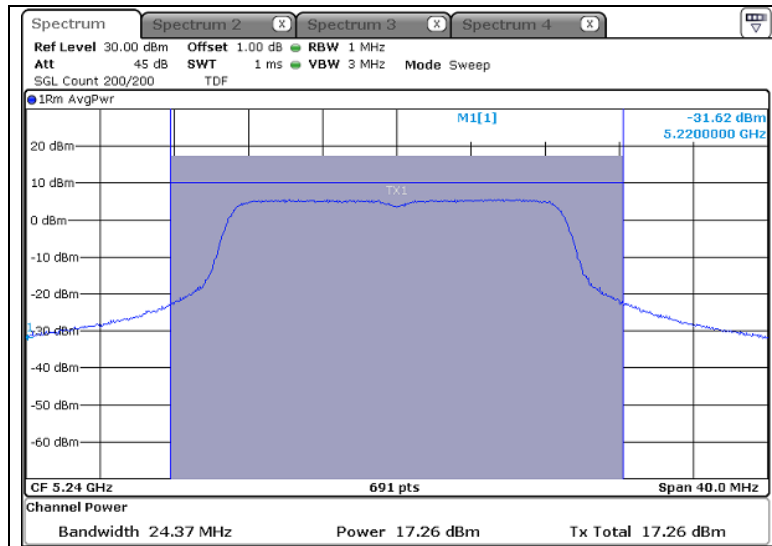
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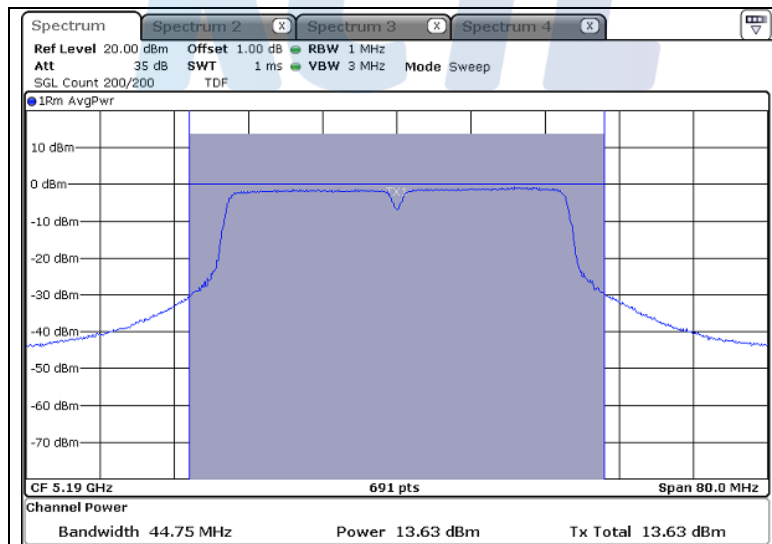


Highest Channel (5 240 MHz)



-802.11ac VHT40

Lowest Channel (5 190 MHz)



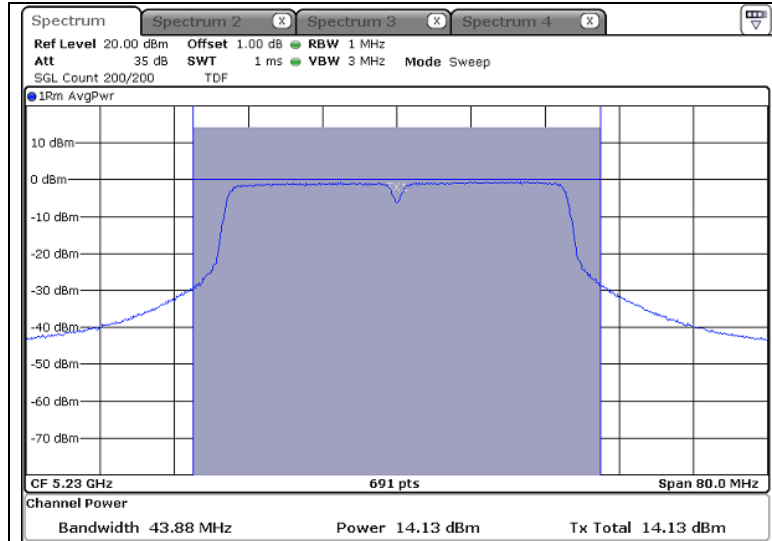
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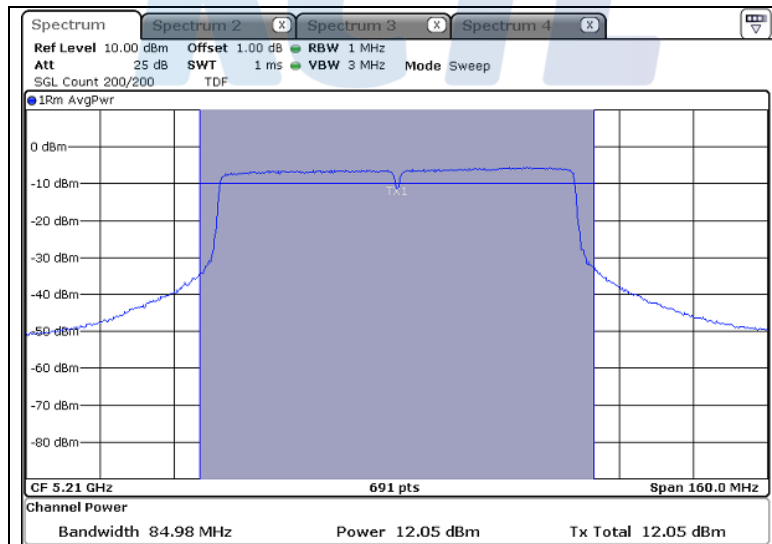


Highest Channel (5 230 MHz)



-802.11ac VHT80

Lowest Channel (5 210 MHz)



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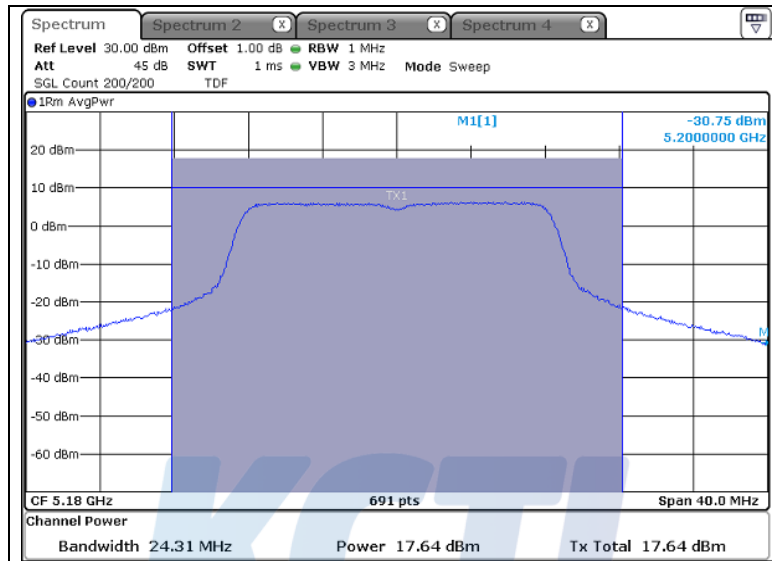
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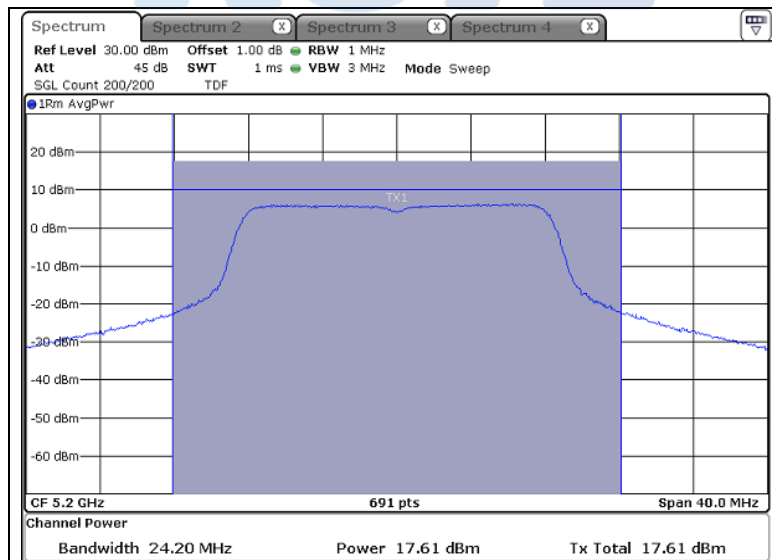
- ANT 1

-802.11a

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



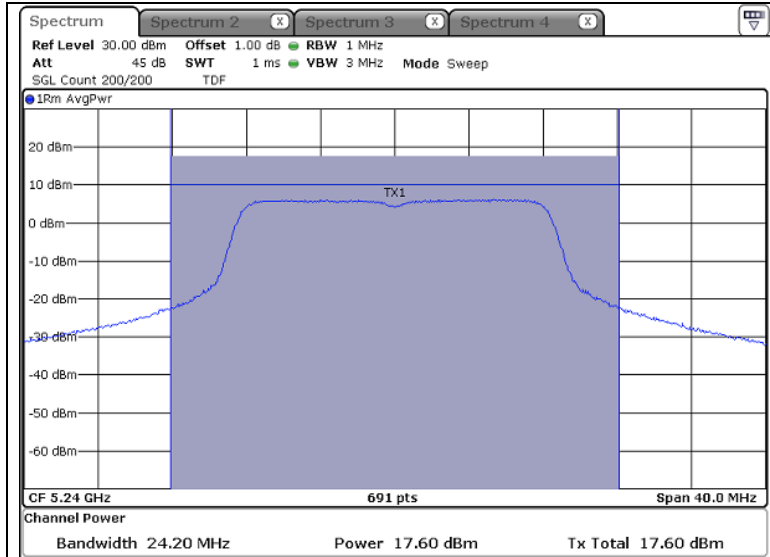
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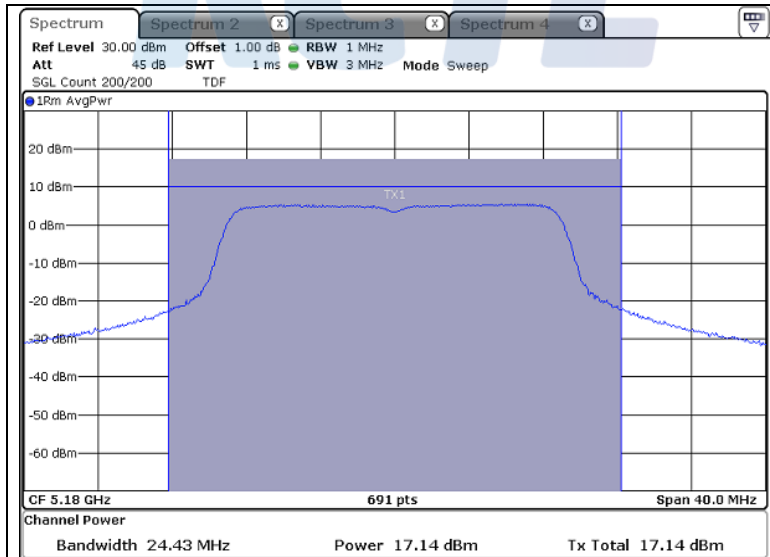


Highest Channel (5 240 MHz)



-802.11n HT20

Lowest Channel (5 180 MHz)



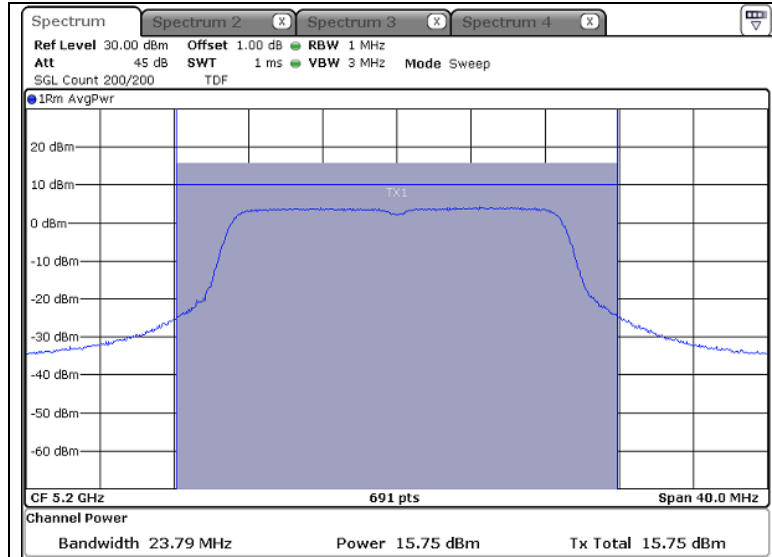
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Suwon-si, Gyeonggi-do, 16677, Korea
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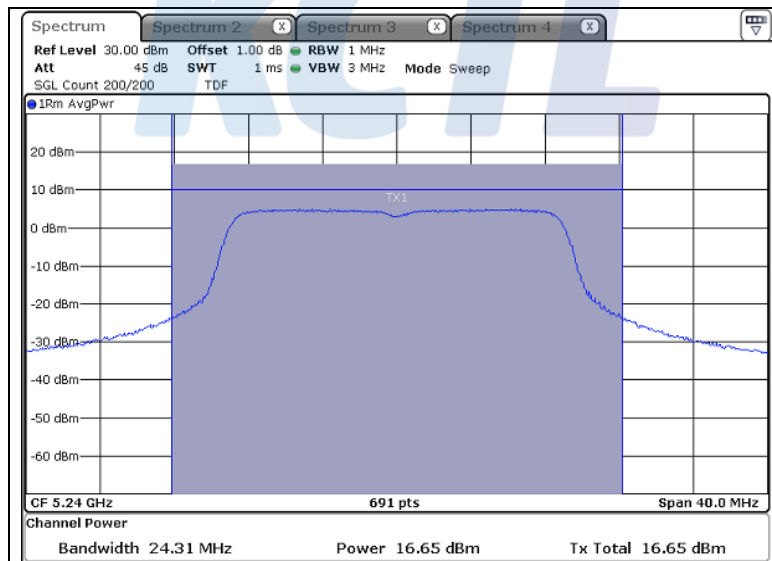
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



KCTL Inc.

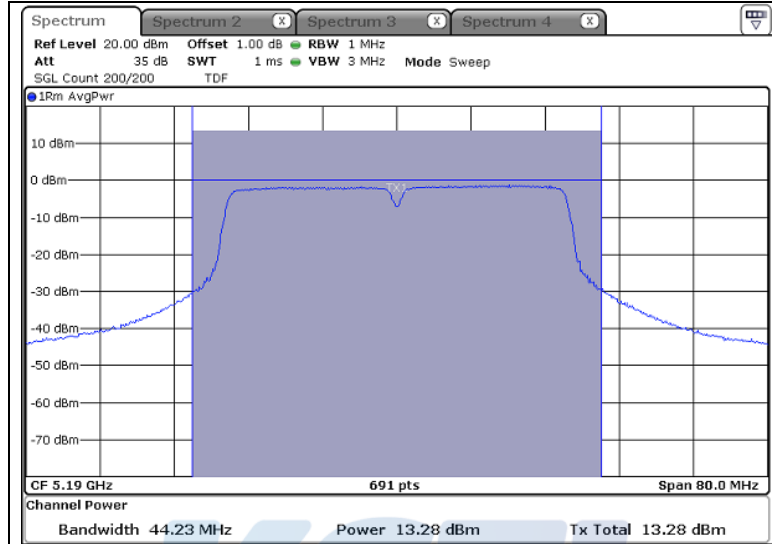
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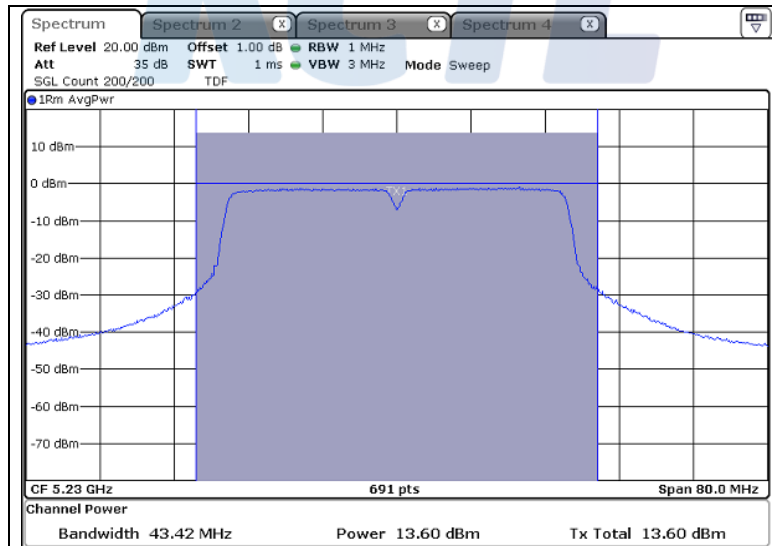


-802.11n_HT40

Lowest Channel (5 190 MHz)



Middle Channel (5 230 MHz)



KCTL Inc.

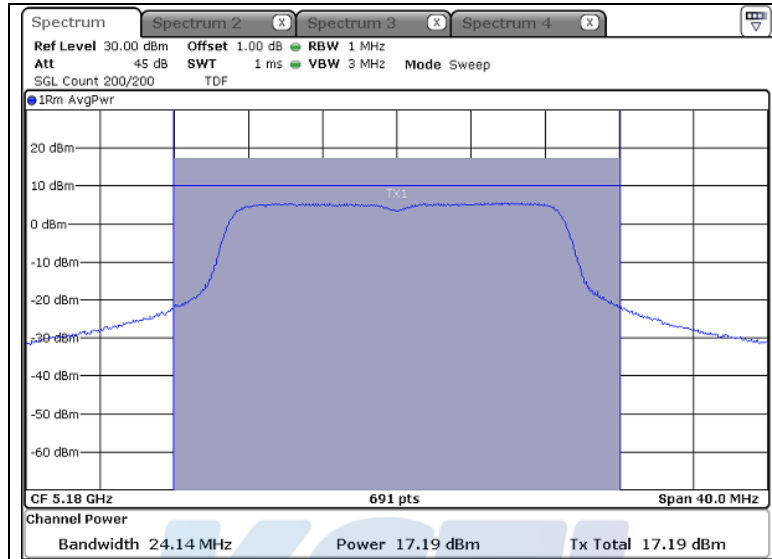
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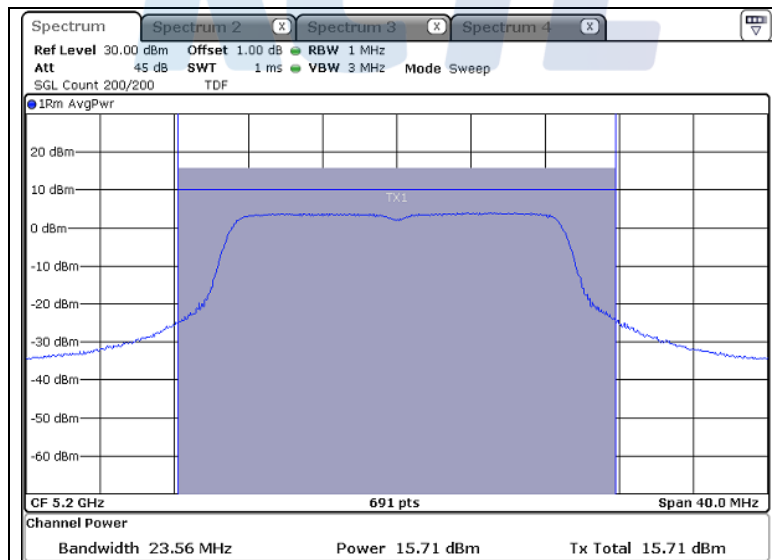


-802.11ac VHT20

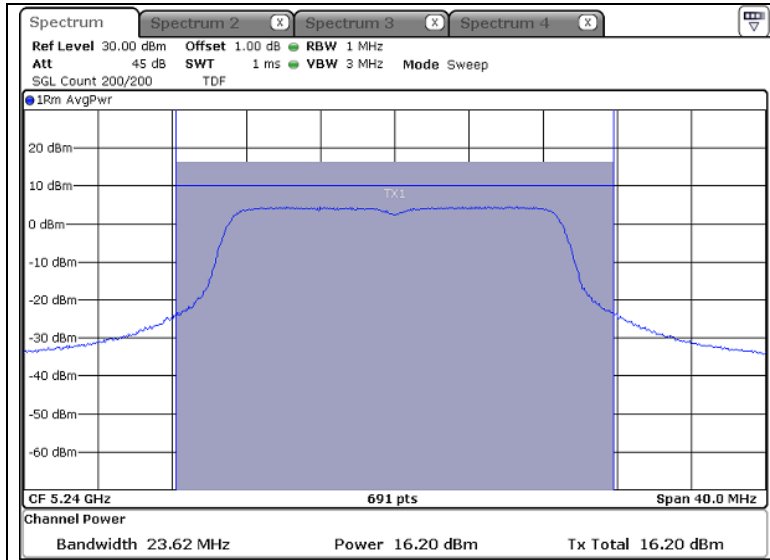
Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)

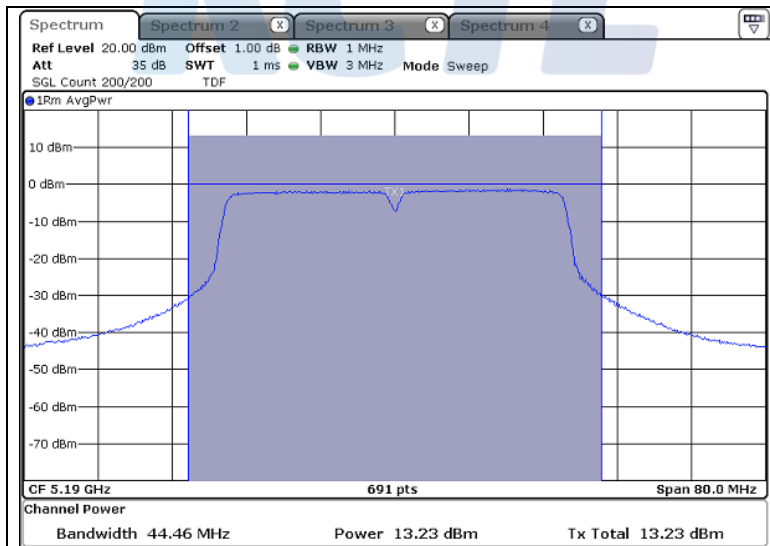


Highest Channel (5 240 MHz)



-802.11ac VHT40

Lowest Channel (5 190 MHz)



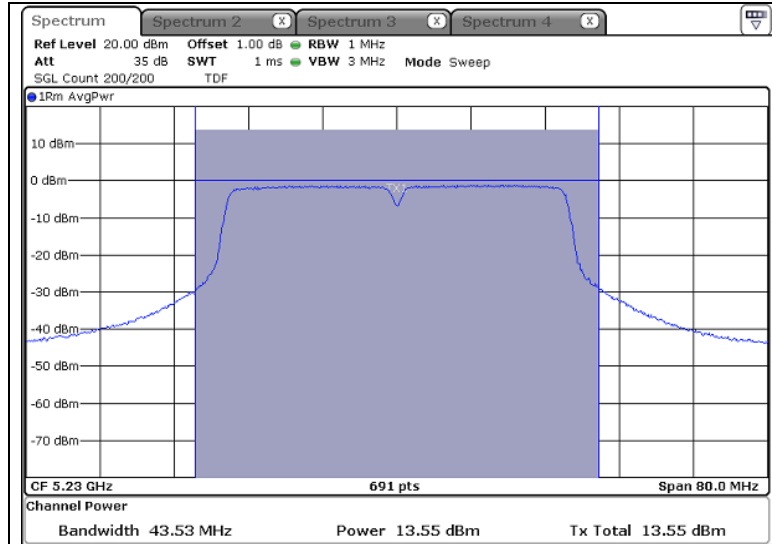
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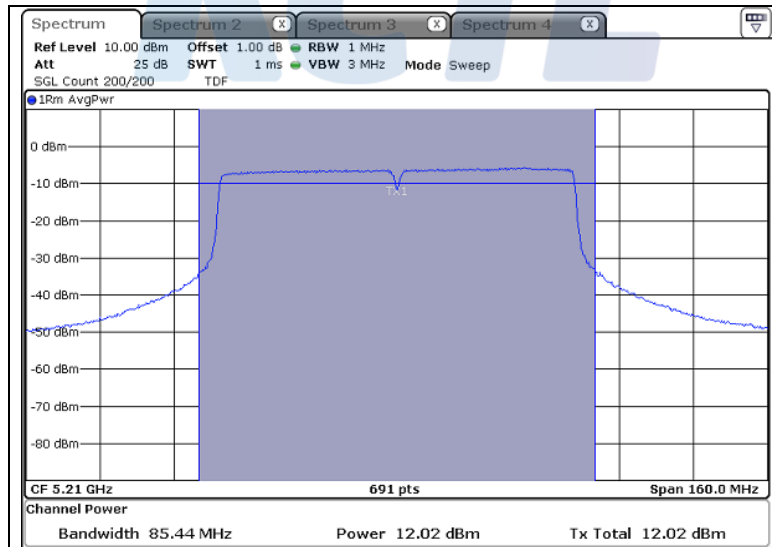


Highest Channel (5 230 MHz)



-802.11ac VHT80

Lowest Channel (5 210 MHz)



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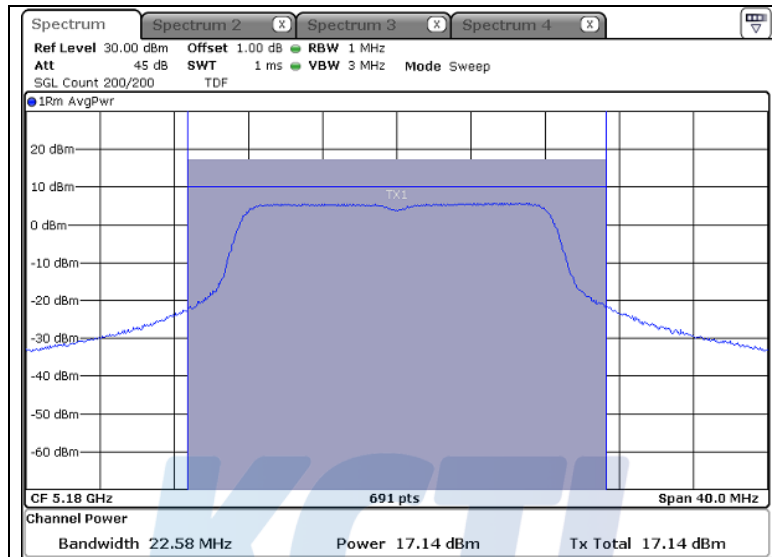
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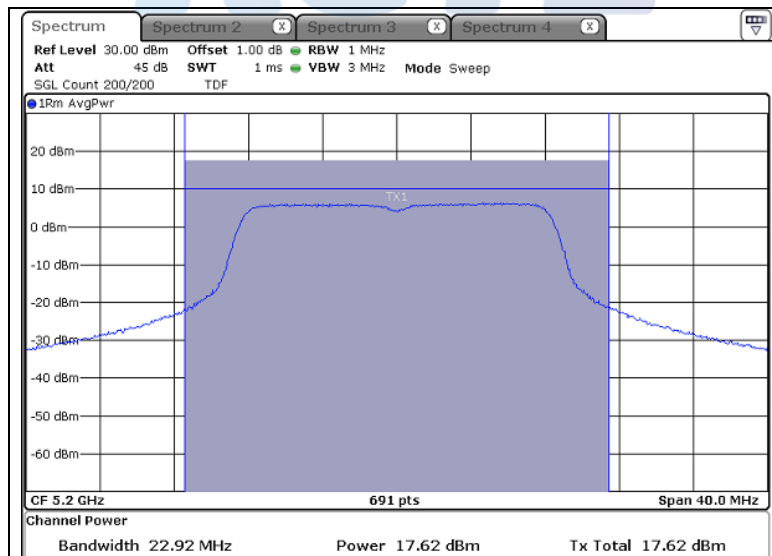
- ANT 2

-802.11a

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



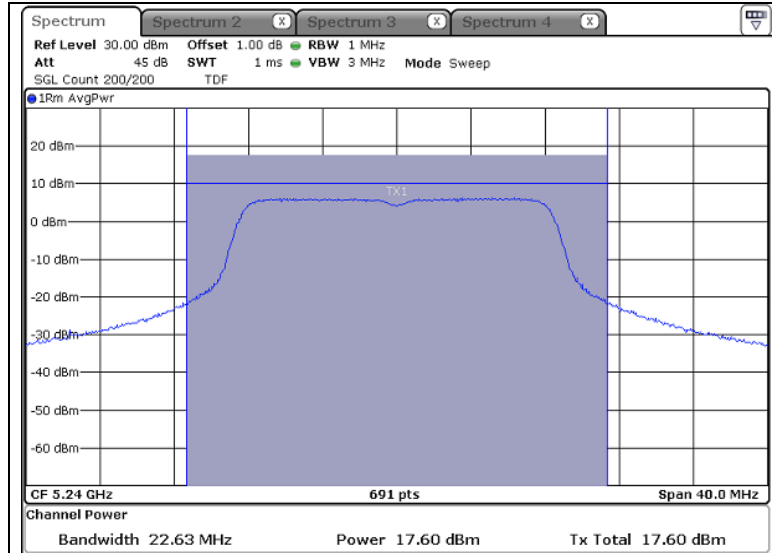
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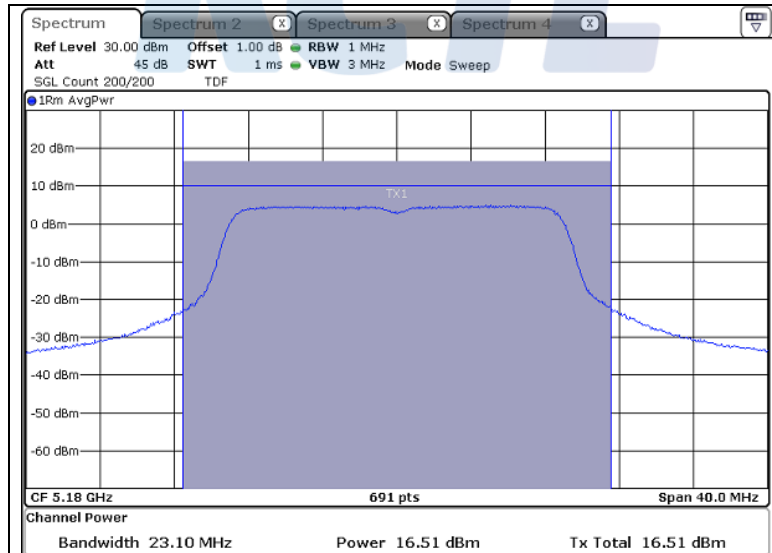


Highest Channel (5 240 MHz)



-802.11n HT20

Lowest Channel (5 180 MHz)



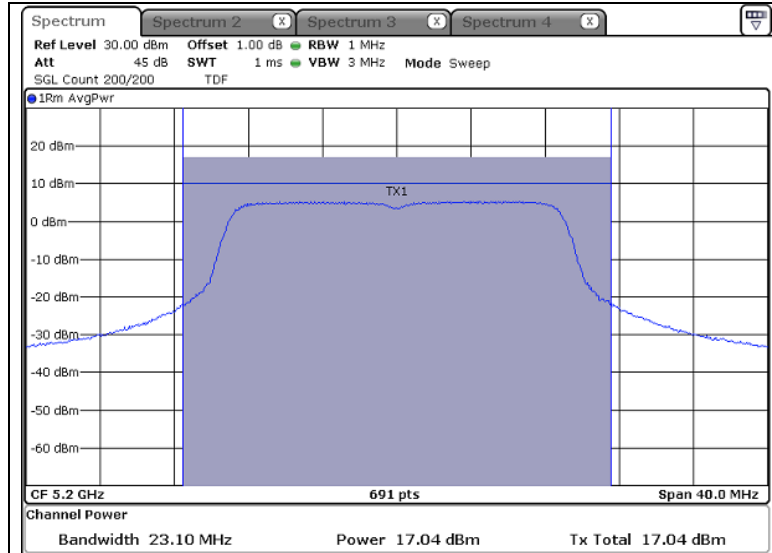
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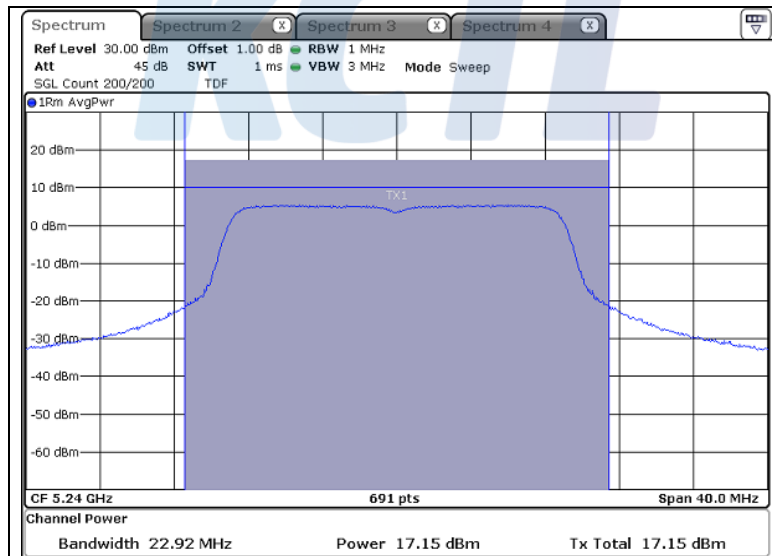
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



KCTL Inc.

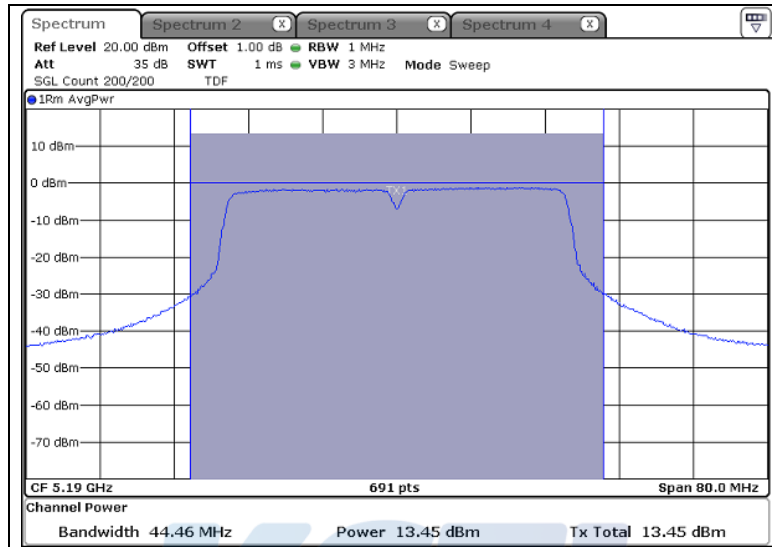
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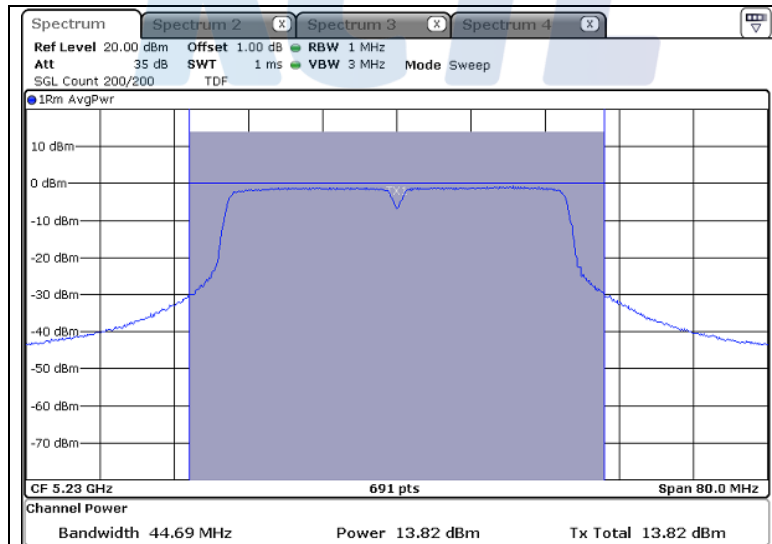


-802.11n_HT40

Lowest Channel (5 190 MHz)



Middle Channel (5 230 MHz)



KCTL Inc.

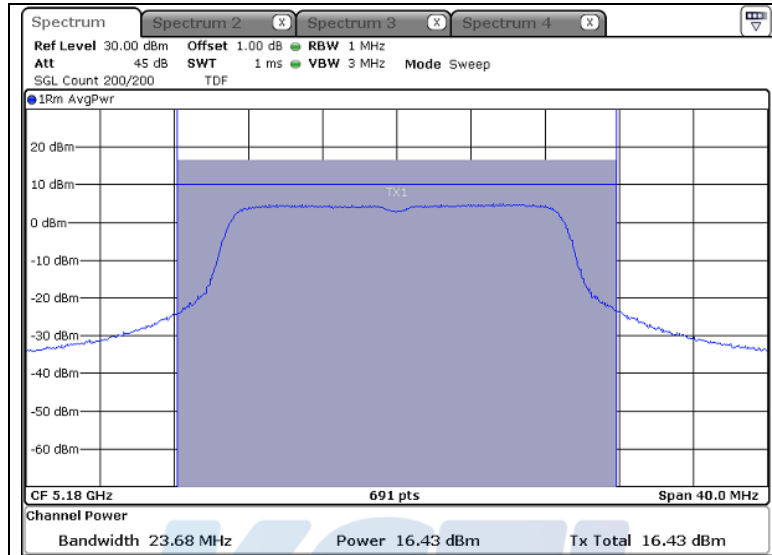
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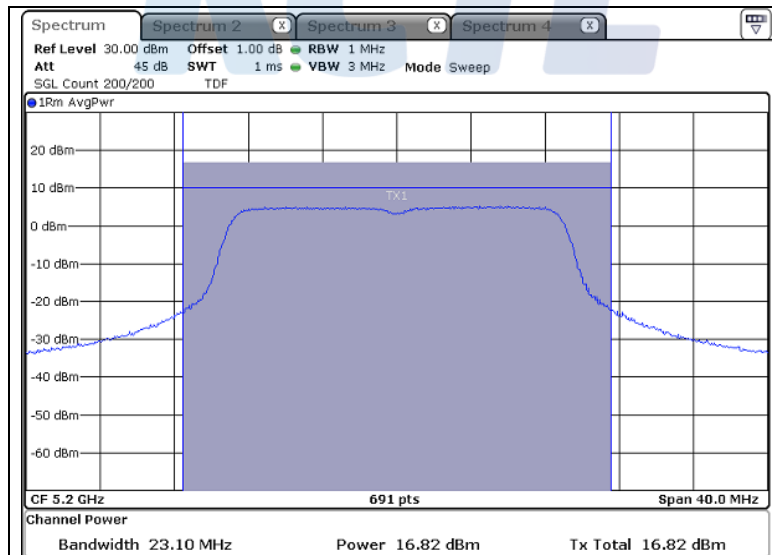


-802.11ac VHT20

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



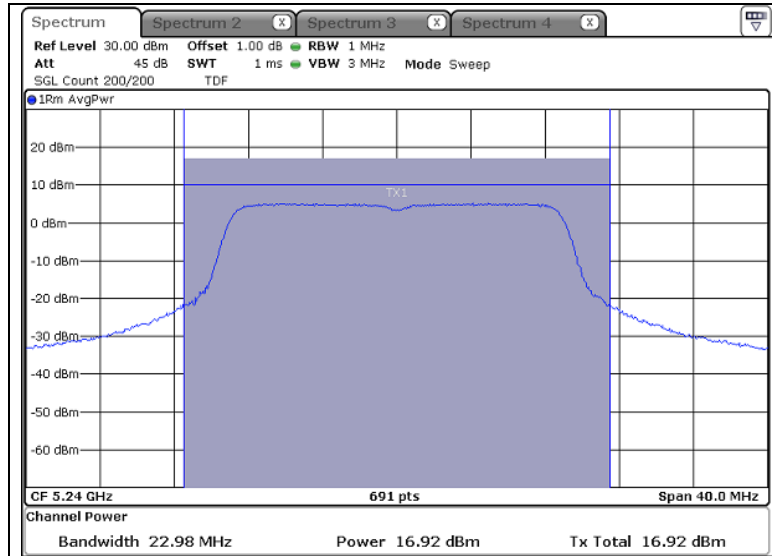
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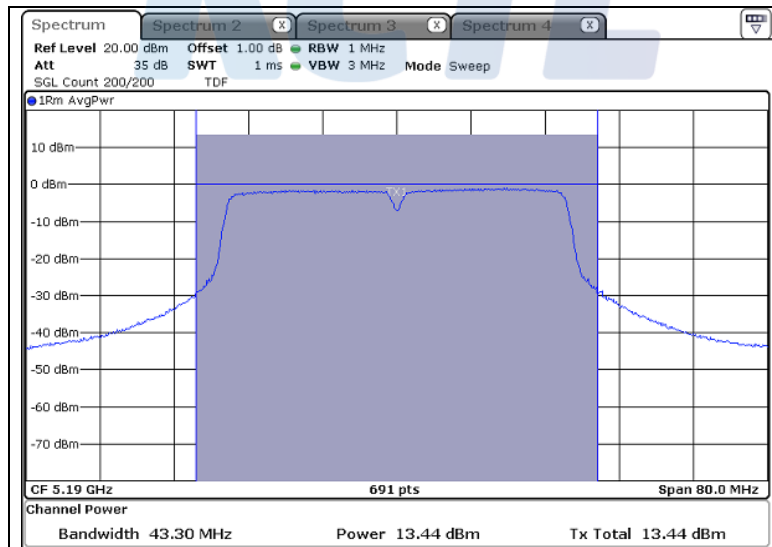


Highest Channel (5 240 MHz)



-802.11ac VHT40

Lowest Channel (5 190 MHz)



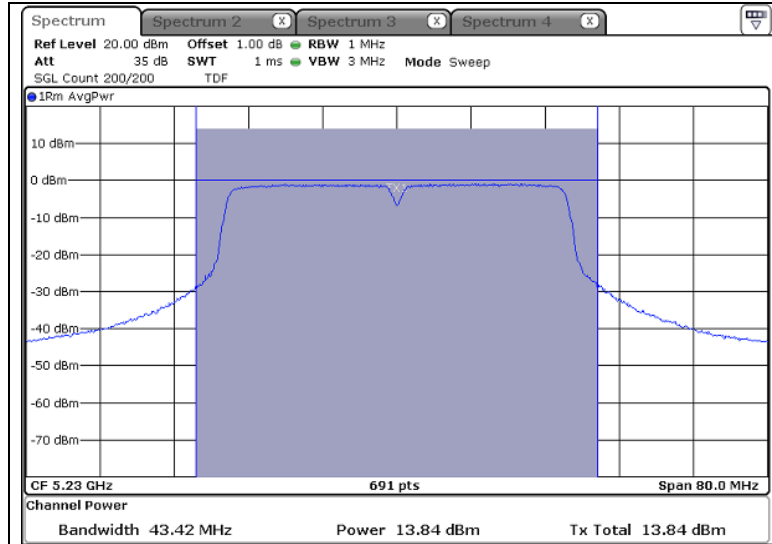
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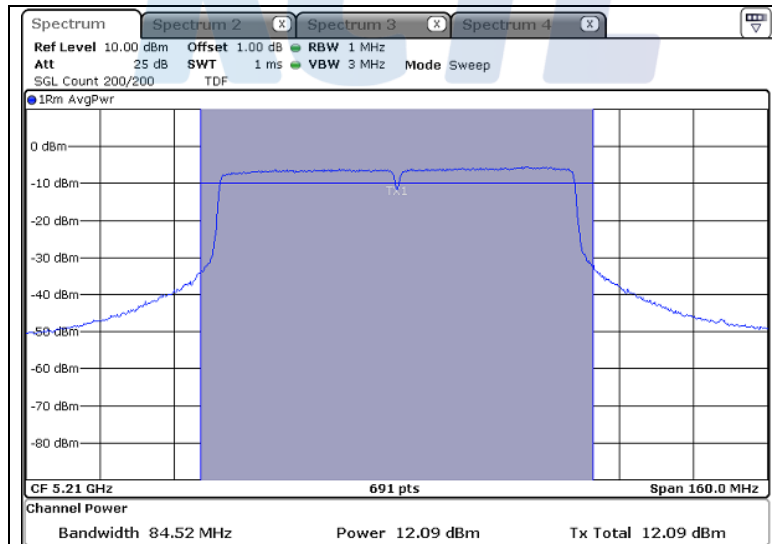


Highest Channel (5 230 MHz)



-802.11ac VHT80

Lowest Channel (5 210 MHz)



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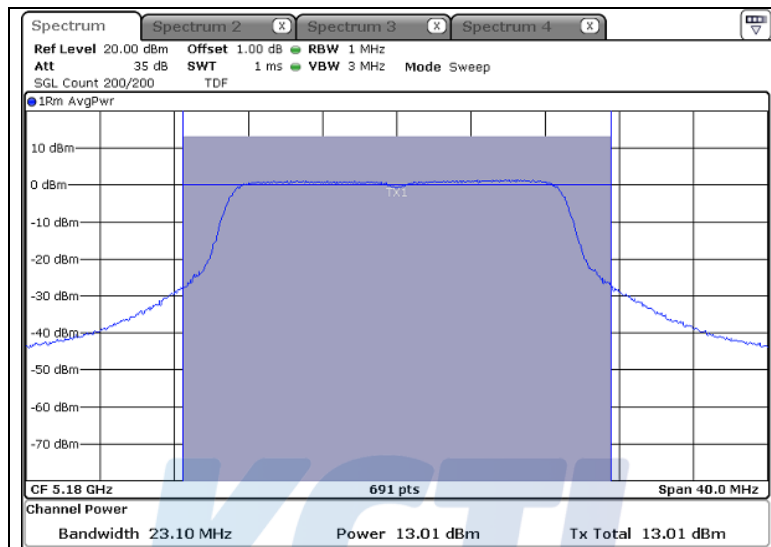
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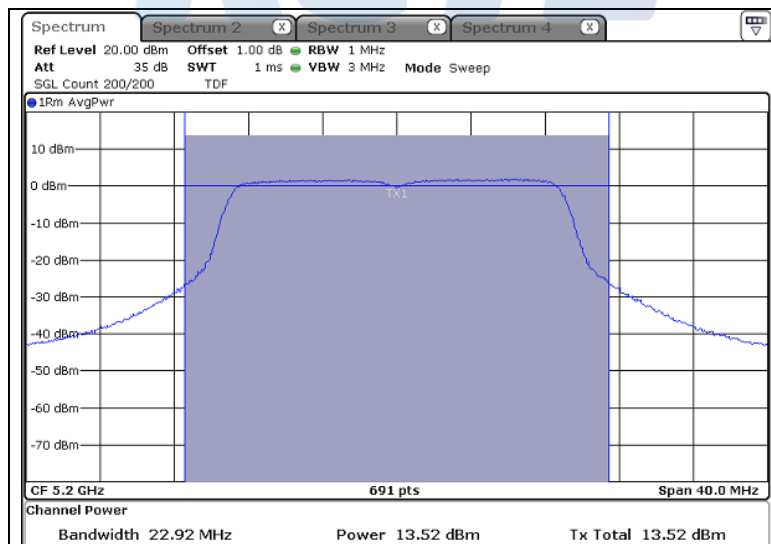
- MIMO 2 Tx (ANT 0)

-802.11n HT20

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



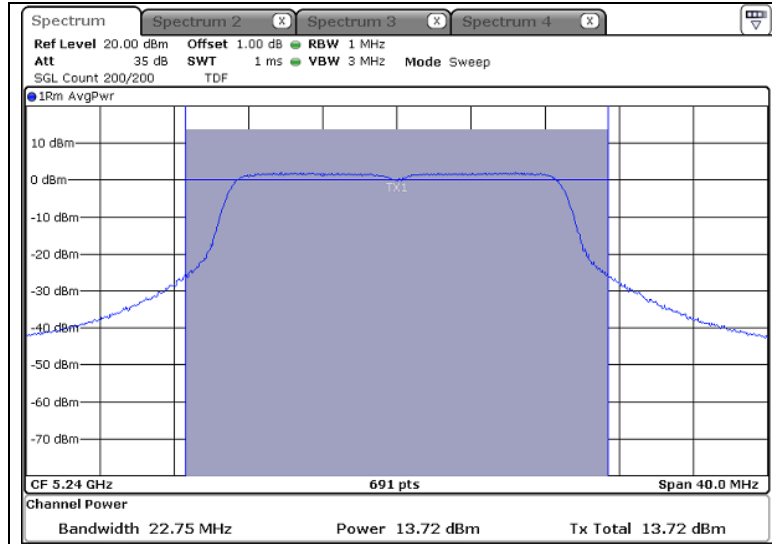
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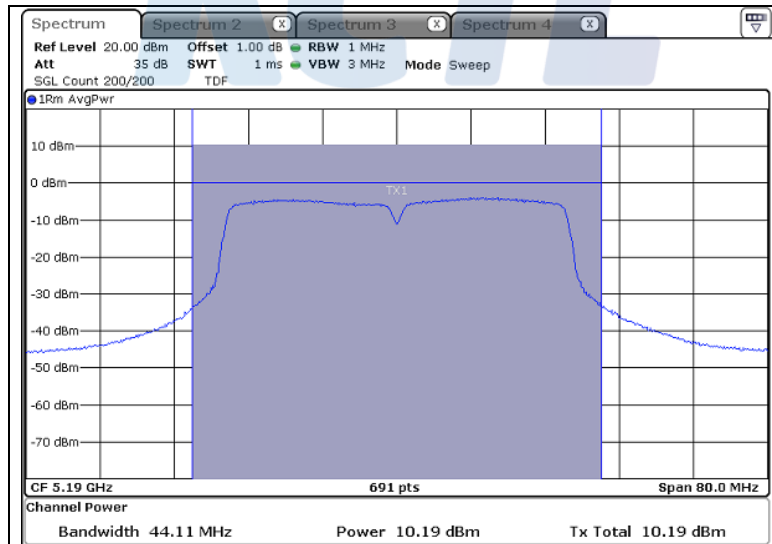


Highest Channel (5 240 MHz)



-802.11n_HT40

Lowest Channel (5 190 MHz)



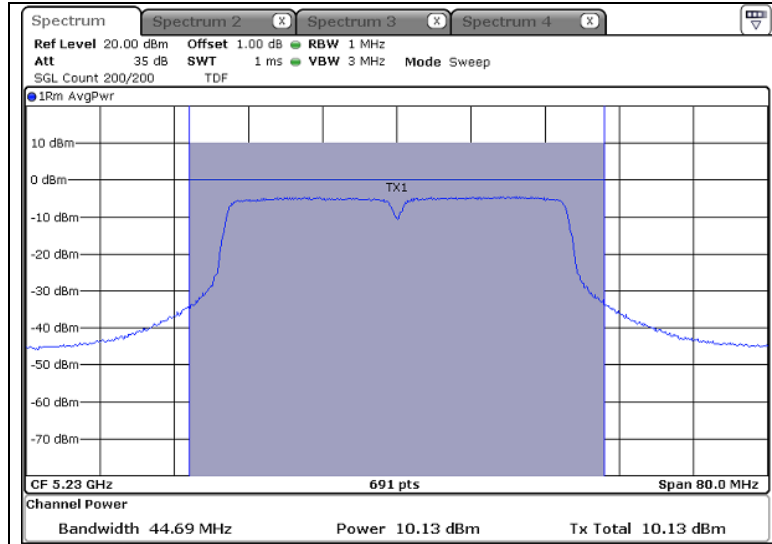
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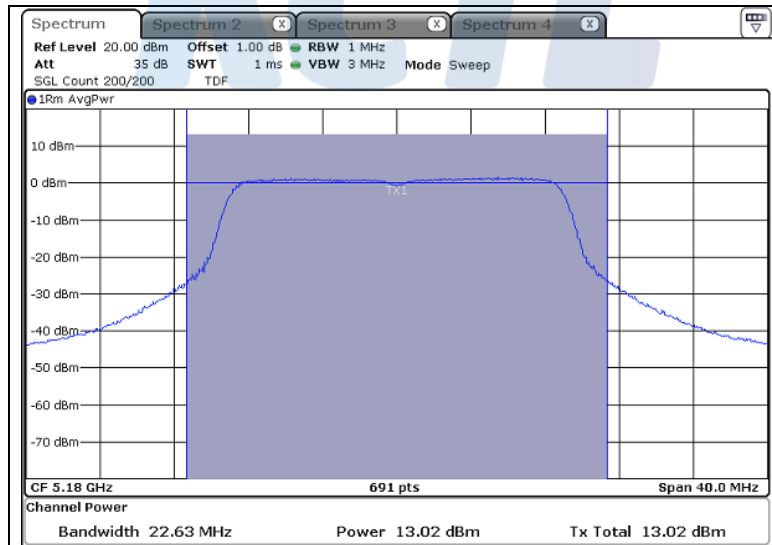


Middle Channel (5 230 MHz)



-802.11ac VHT20

Lowest Channel (5 180 MHz)



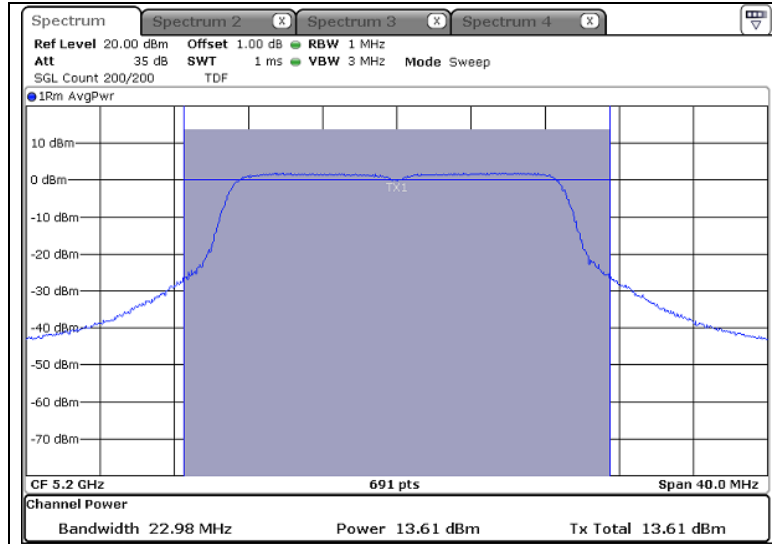
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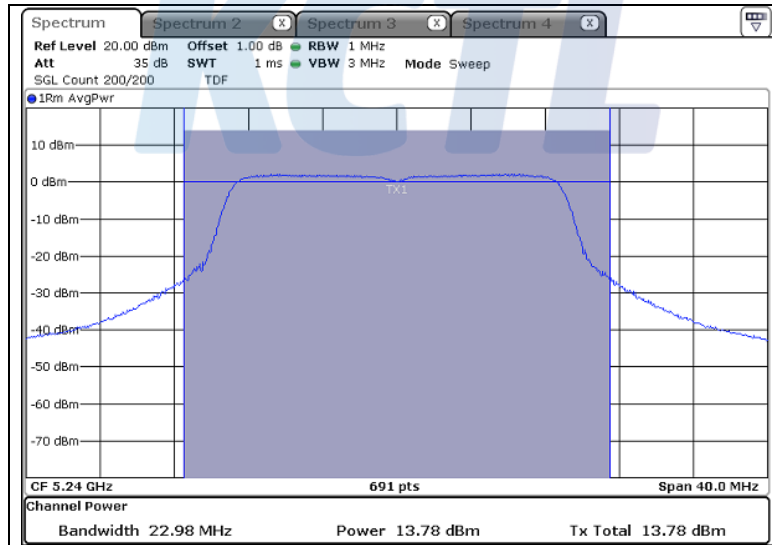
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



KCTL Inc.

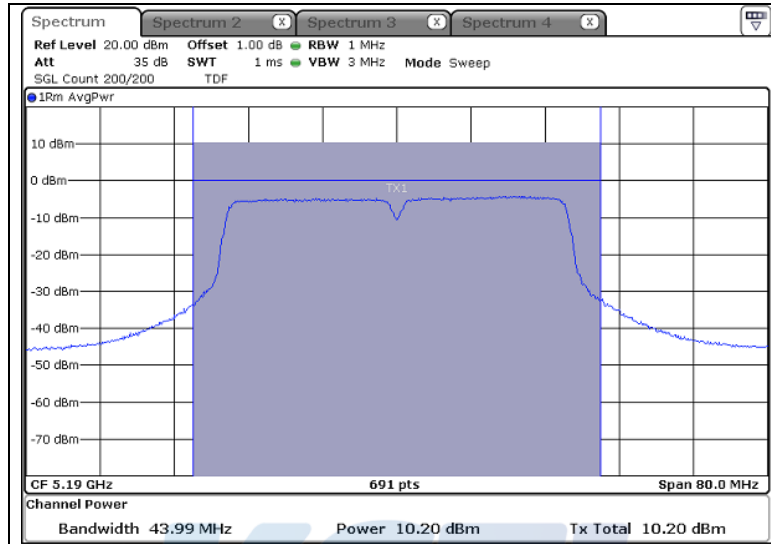
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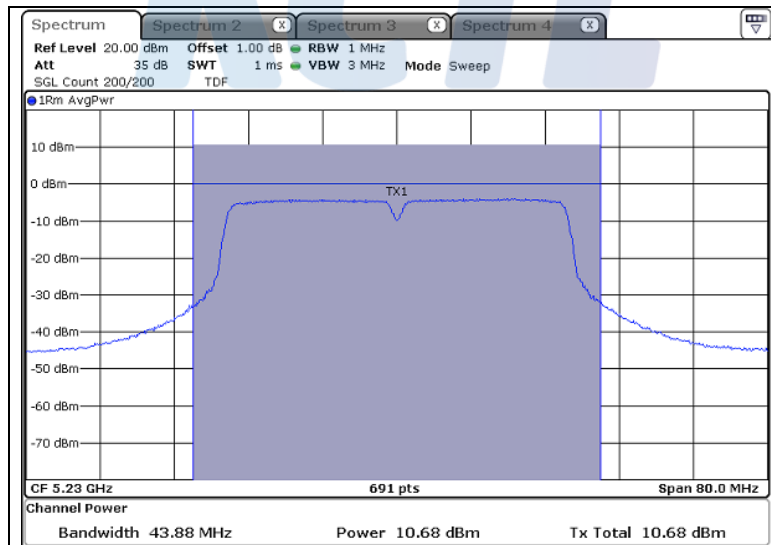


-802.11ac VHT40

Lowest Channel (5 190 MHz)



Highest Channel (5 230 MHz)



KCTL Inc.

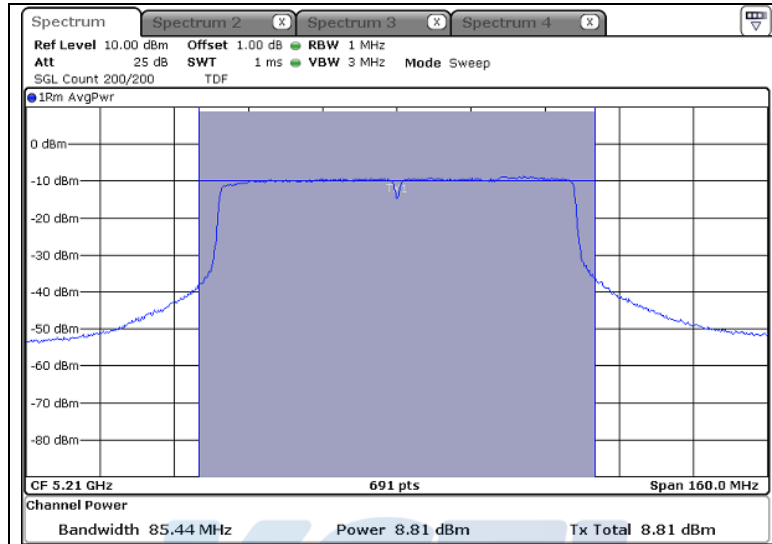
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-802.11ac VHT80

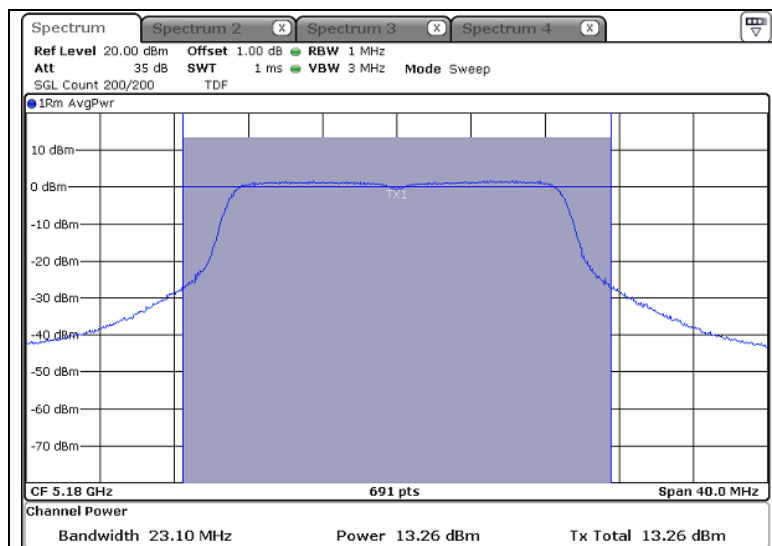
Lowest Channel (5 210 MHz)



- MIMO 2 Tx (ANT 1)

-802.11n HT20

Lowest Channel (5 180 MHz)



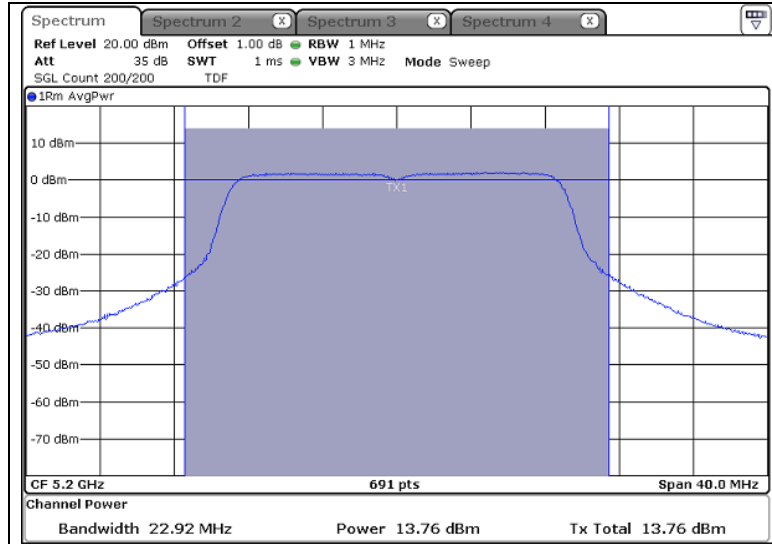
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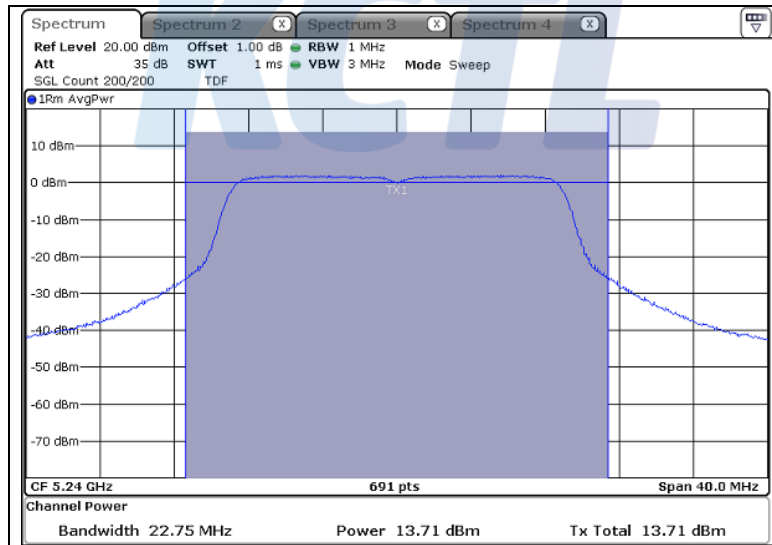
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KR17-SRF0056-B
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



KCTL Inc.

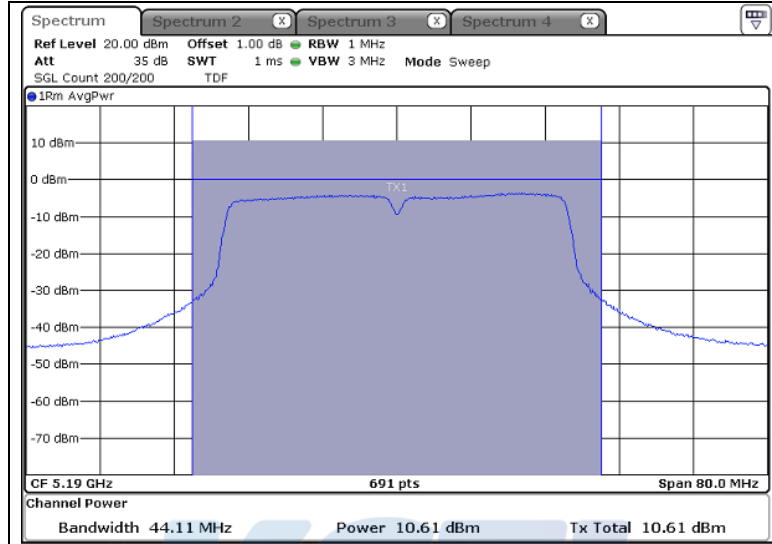
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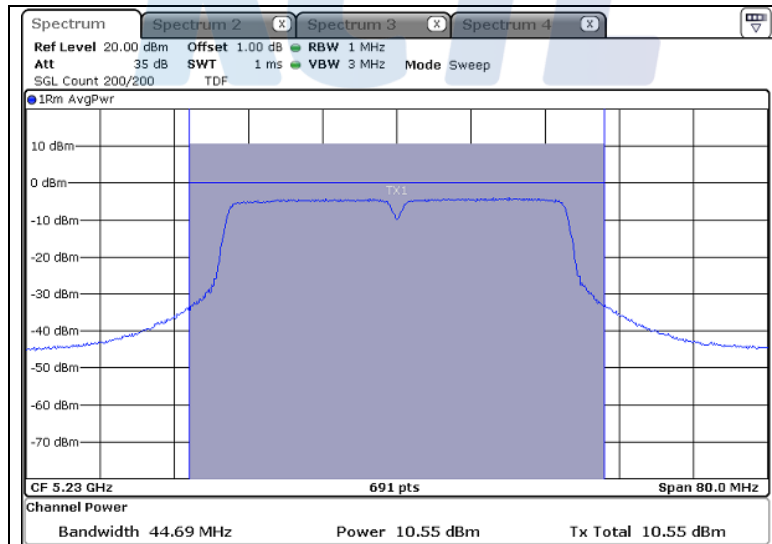


-802.11n HT40

Lowest Channel (5 190 MHz)



Middle Channel (5 230 MHz)



KCTL Inc.

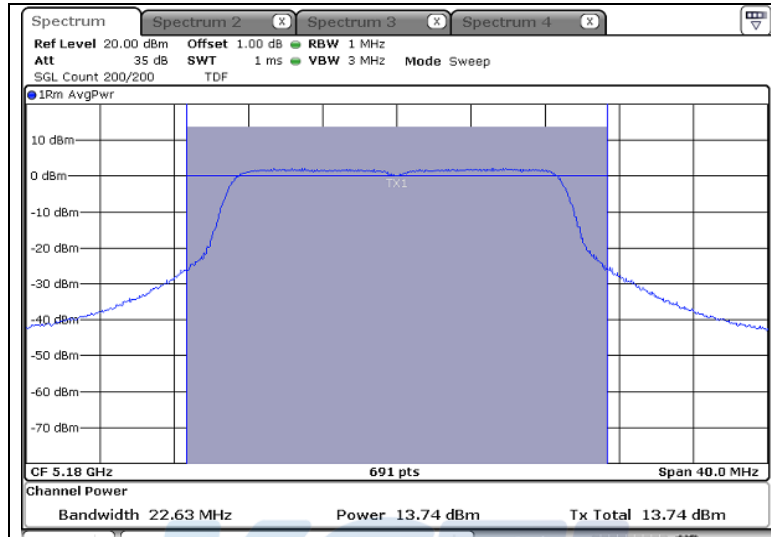
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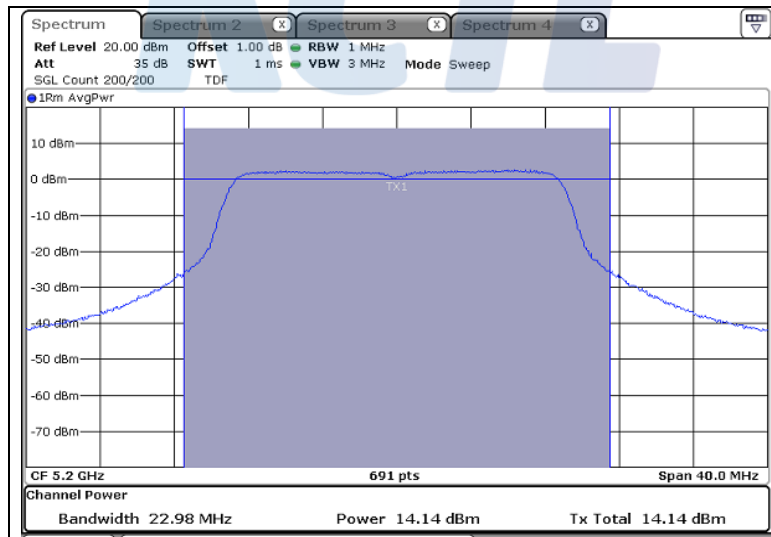


-802.11ac VHT20

Lowest Channel (5 180 MHz)



Middle Channel (5 200 MHz)



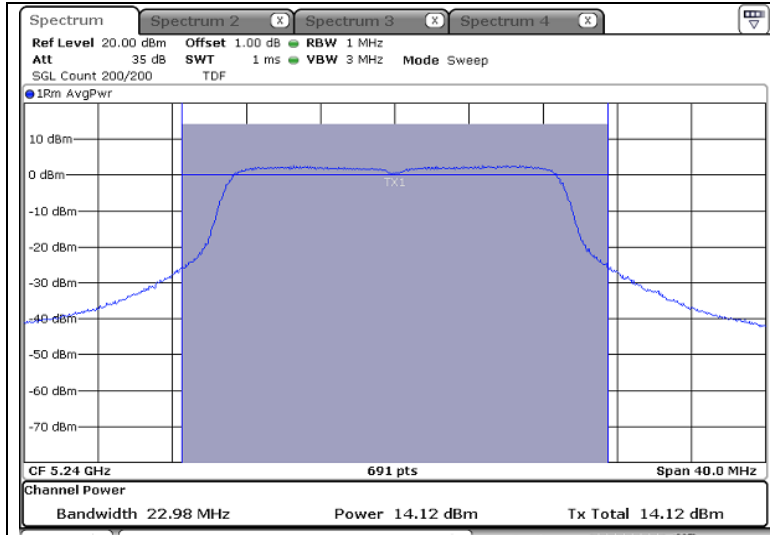
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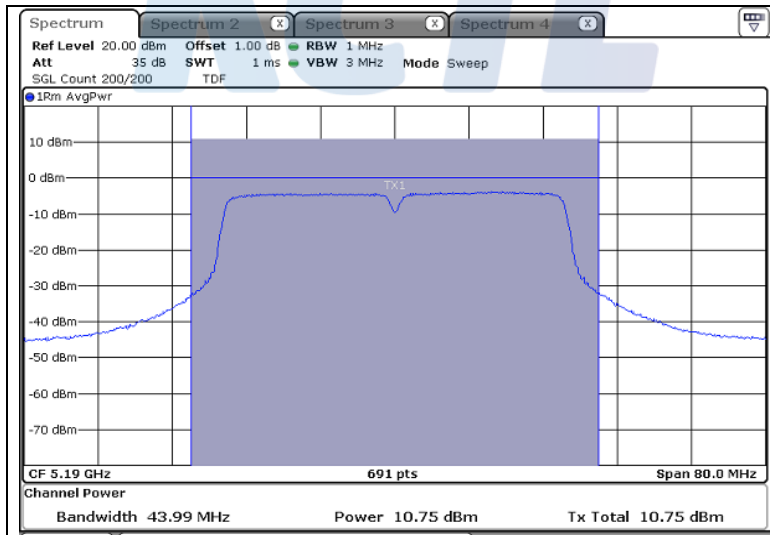


Highest Channel (5 240 MHz)



-802.11ac VHT40

Lowest Channel (5 190 MHz)



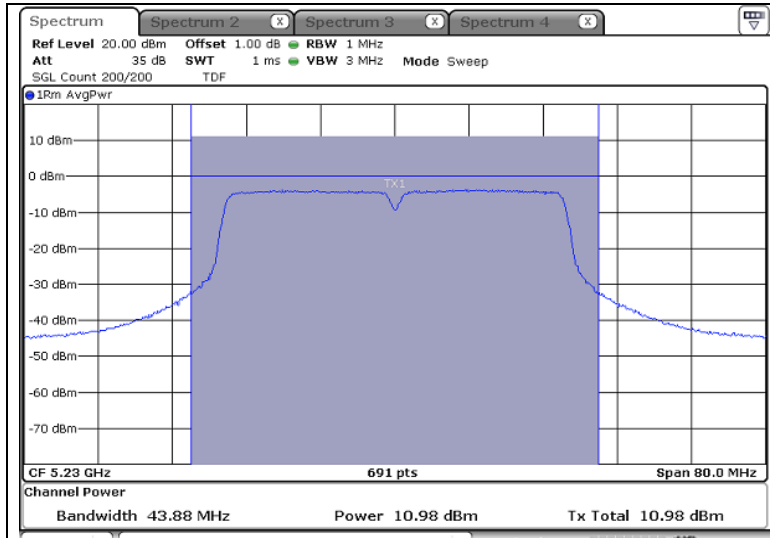
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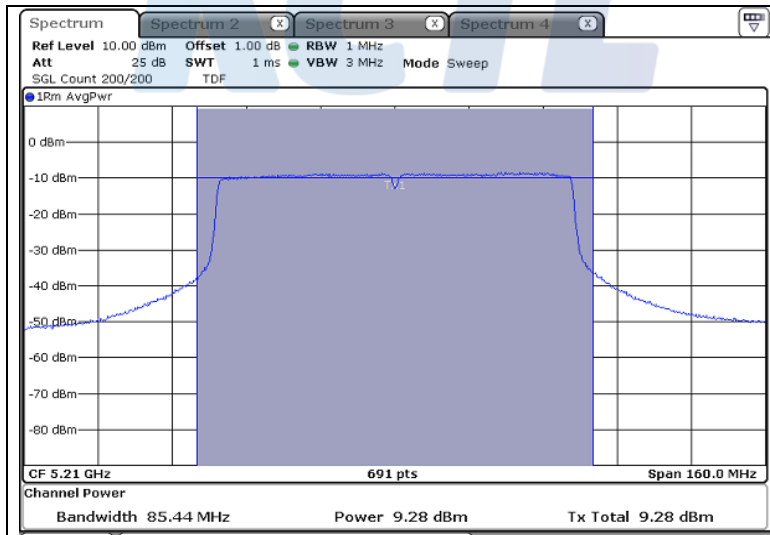


Highest Channel (5 230 MHz)



-802.11ac VHT80

Lowest Channel (5 210 MHz)



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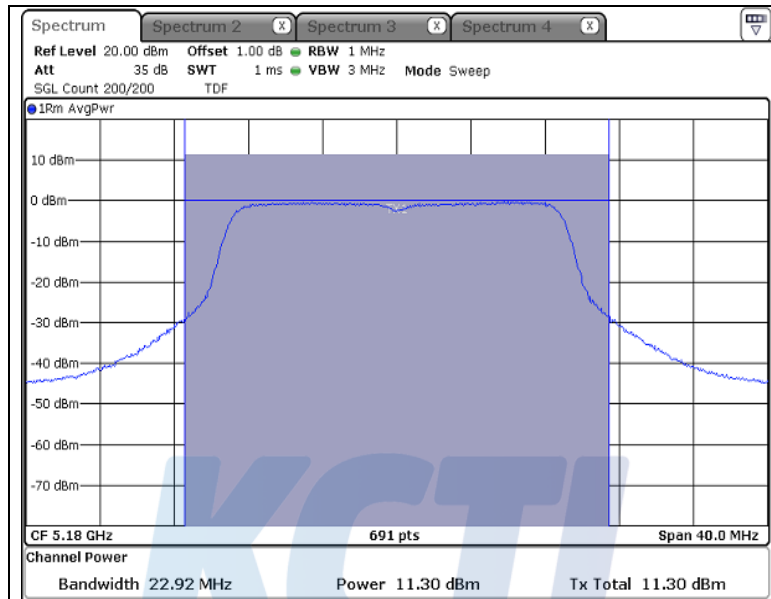
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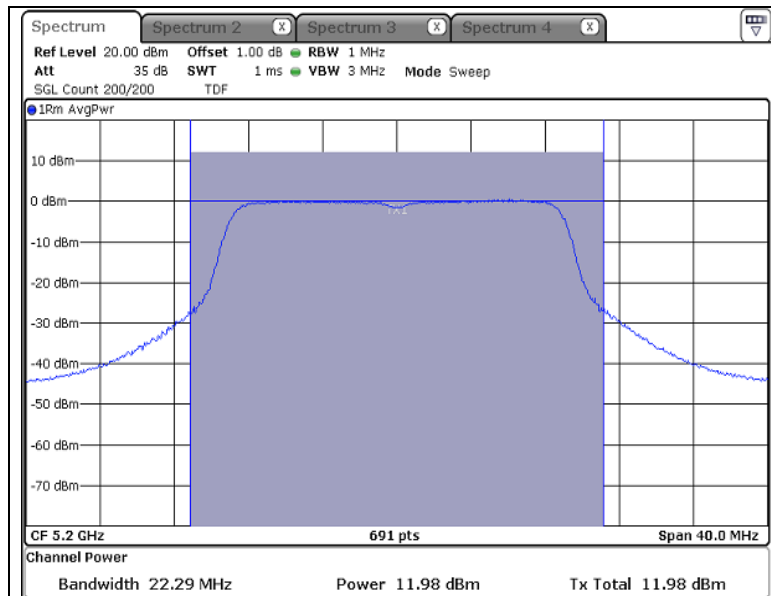
- MIMO 3 Tx (ANT 0)

-802.11n HT20

Lowest Channel (5 180 MHz)

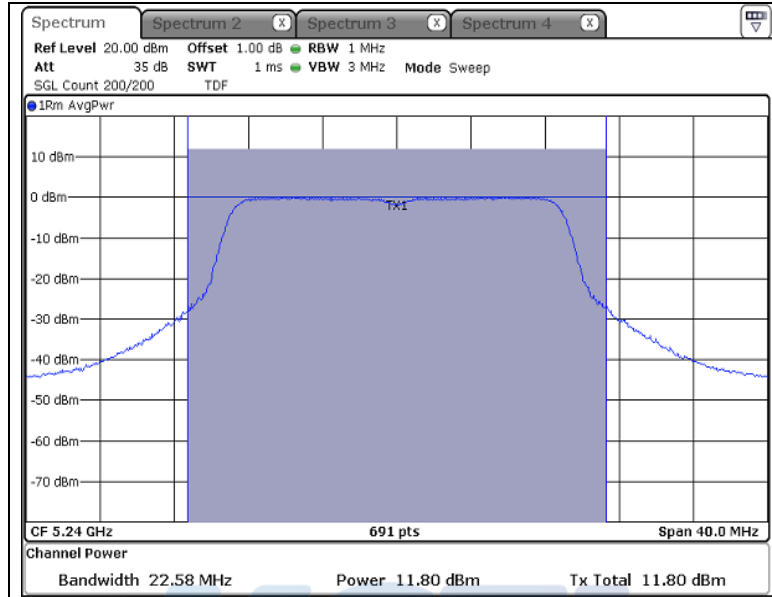


Middle Channel (5 200 MHz)



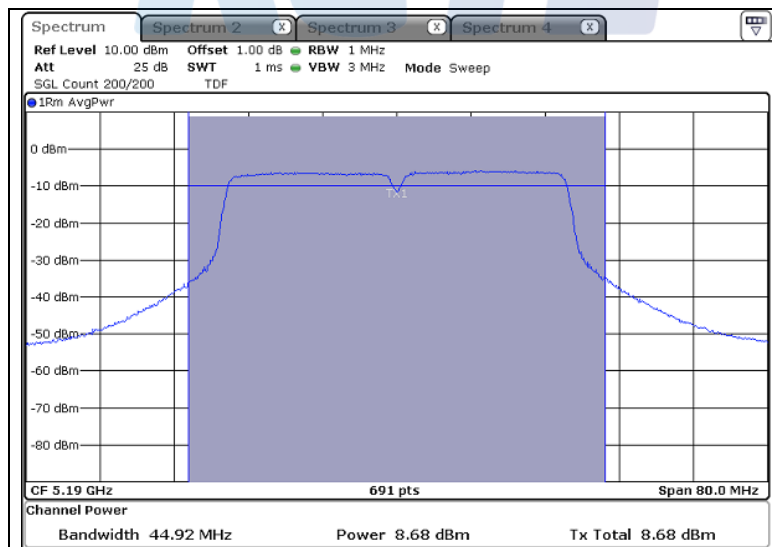
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Highest Channel (5 240 MHz)



-802.11n_HT40

Lowest Channel (5 190 MHz)



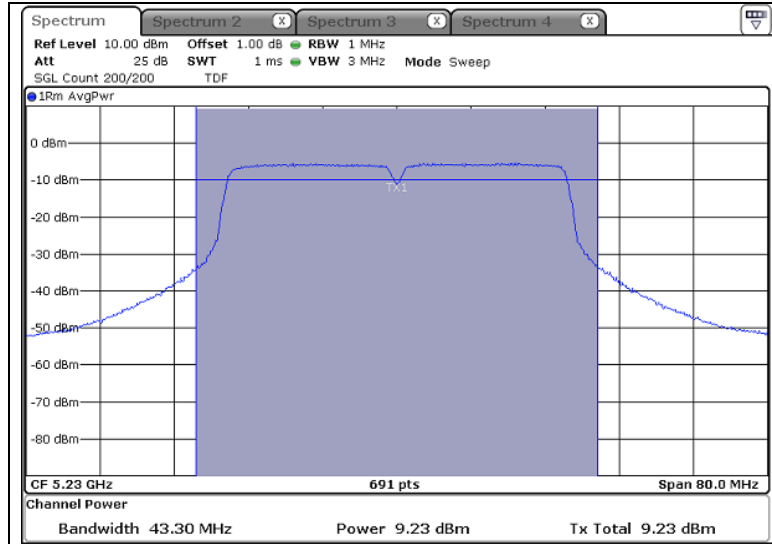
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
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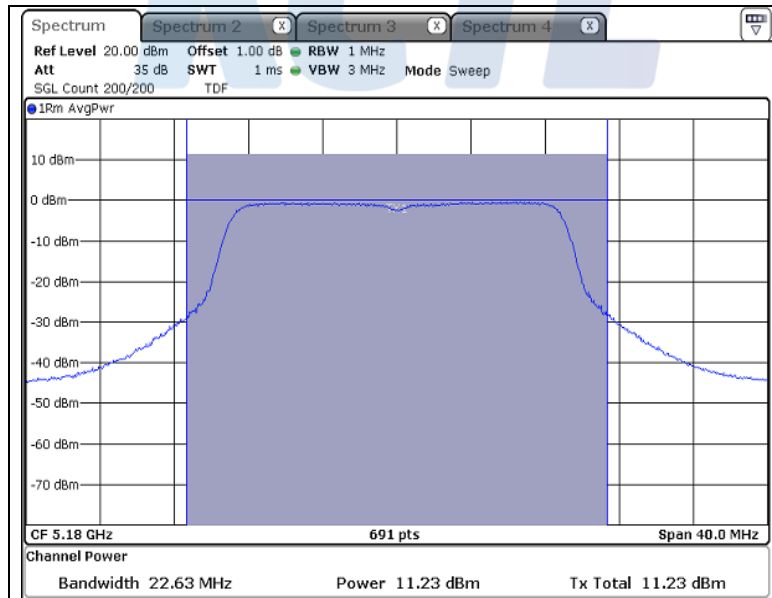


Middle Channel (5 230 MHz)



-802.11ac VHT20

Lowest Channel (5 180 MHz)



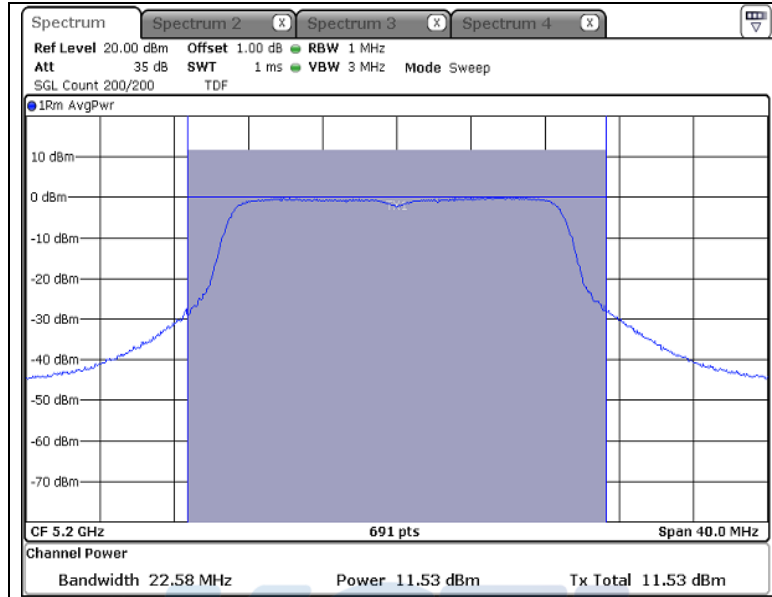
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Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
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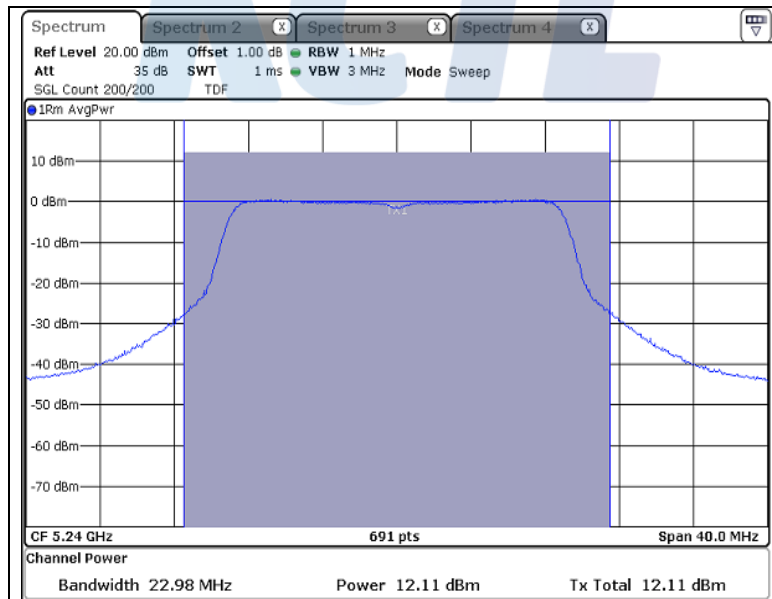
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)



KCTL Inc.

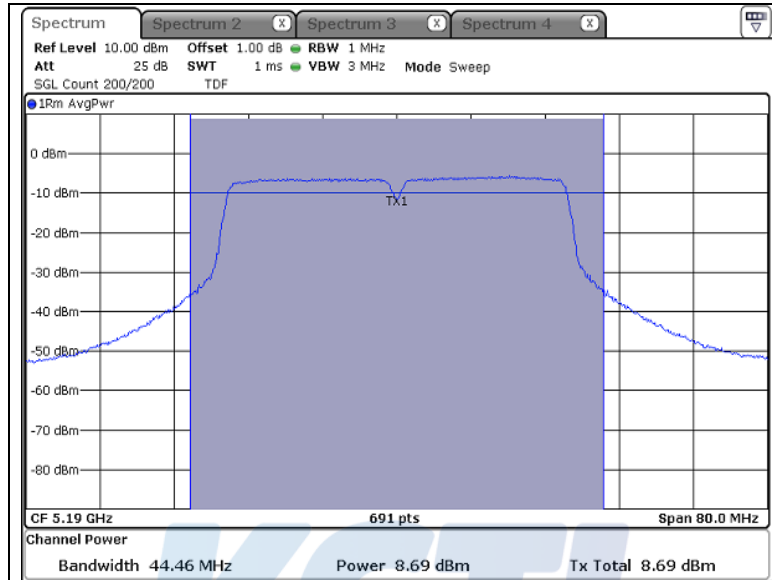
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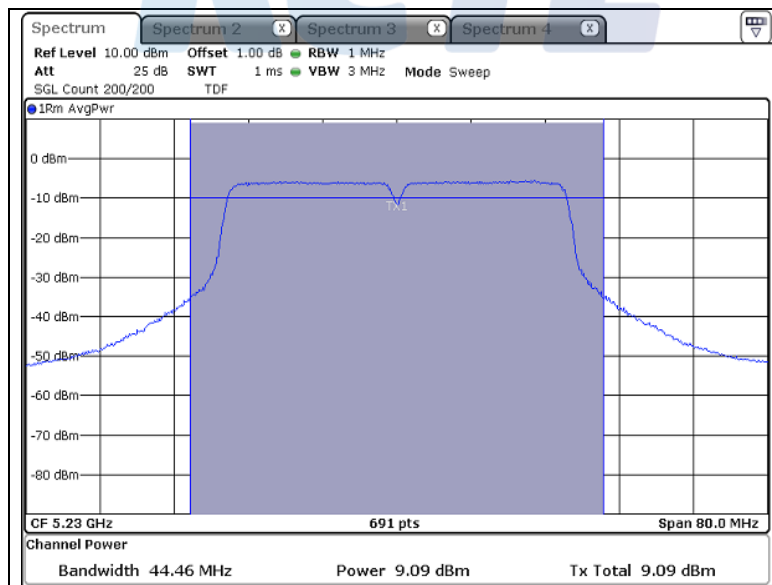


-802.11ac VHT40

Lowest Channel (5 190 MHz)

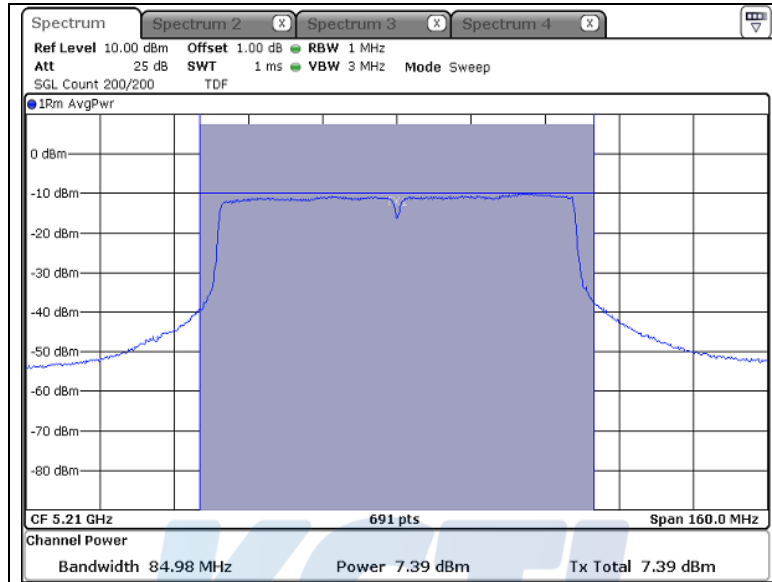


Highest Channel (5 230 MHz)



-802.11ac VHT80

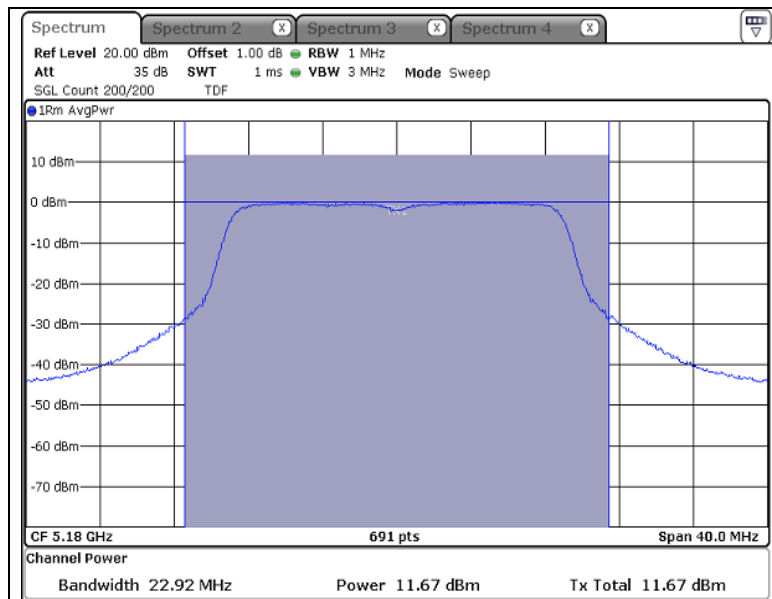
Lowest Channel (5 210 MHz)



- MIMO 3 Tx (ANT 1)

-802.11n HT20

Lowest Channel (5 180 MHz)



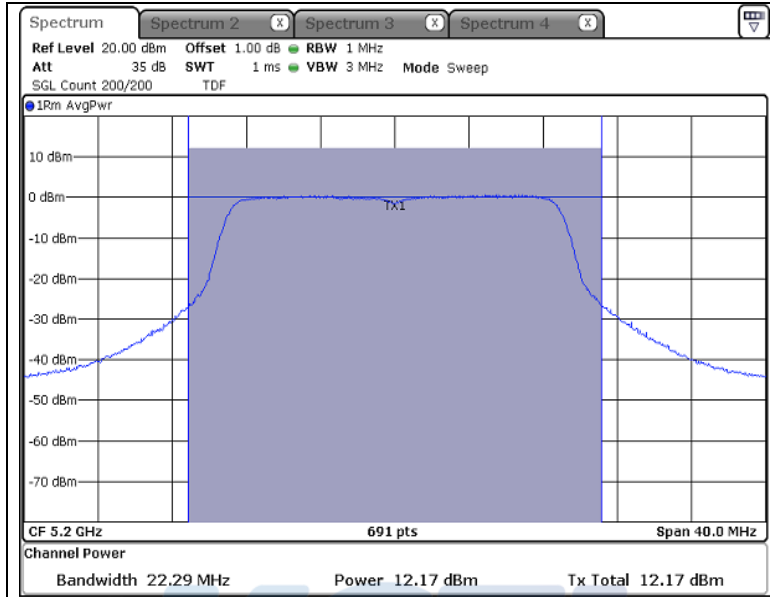
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Middle Channel (5 200 MHz)



Highest Channel (5 240 MHz)

