



## FCC Part 15.247

## TEST REPORT

For

### DT Research Inc.

6F., NO.1, Ning-Po E. Street, Taipei 100, Taiwan.

**FCC ID: YE3800J**  
**Model:DT395CR, Atlas 91i**

|                                                                                                                                                                                                                     |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| <b>Report Type:</b><br>Original Report                                                                                                                                                                              | <b>Product Type:</b><br>Mobile Tablet |
| <b>Report Producer:</b> Kaylee Chiang <i>Kaylee Chiang</i>                                                                                                                                                          |                                       |
| <b>Report Number:</b> RTWD161214002-00A                                                                                                                                                                             |                                       |
| <b>Report Date:</b> 2017-01-07                                                                                                                                                                                      |                                       |
| <b>Reviewed By:</b> Jerry Chang <i>Jerry Chang</i>                                                                                                                                                                  |                                       |
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Taiwan)

**REVISION HISTORY**

| Revision | Issue Date  | Description |
|----------|-------------|-------------|
| 1.0      | 2017.01. 07 | Original    |
|          |             |             |
|          |             |             |

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## 1 General Information

### 1.1 Product Description for Equipment Under Test (EUT)

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant:</b>             | DT Research Inc.<br>6F., NO. 1, Ning-Po E. Street, Taipei 100, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Manufacturer:</b>          | DT Research Inc.<br>6F., NO. 1, Ning-Po E. Street, Taipei 100, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Product:</b>               | Mobile Tablet                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Model:</b>                 | DT395CR, Atlas 91i                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Trade Name:</b>            | DT Research Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Frequency Range:</b>       | IEEE 802.11b/g / IEEE 802.11n HT20 MHz Mode: 2412 ~ 2462 MHz<br>IEEE 802.11n HT40 MHz Mode: 2422 ~ 2452 MHz<br>IEEE 802.11b Mode: 17.42 dBm (0.055W)<br>IEEE 802.11g Mode: 20.88 dBm (0.122W)                                                                                                                                                                                                                                                                                  |
| <b>Transmit Power:</b>        | IEEE 802.11n HT20 MHz Mode: 20.52 dBm (0.112W)<br>IEEE 802.11n HT40 MHz Mode: 21.47 dBm (0.140W)<br>BT BLE Mode: 6.11 dBm (0.00408W)                                                                                                                                                                                                                                                                                                                                           |
| <b>Modulation Technique:</b>  | IEEE 802.11b: DSSS<br>IEEE 802.11g: OFDM<br>IEEE 802.11n HT20 MHz Mode: OFDM<br>IEEE 802.11n HT40 MHz Mode: OFDM<br>BT BLE Mode: GFSK                                                                                                                                                                                                                                                                                                                                          |
| <b>Transmit Data Rate:</b>    | IEEE 802.11b Mode: 11, 5.5, 2, 1 Mbps<br>IEEE 802.11g Mode: 54, 48, 36, 24, 18, 12, 11, 9, 6Mbps<br>IEEE 802.11n HT 20 MHz Channel mode: 6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps<br>IEEE 802.11n HT 40 MHz Channel mode: 13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps<br>BT BLE Mode: 1 Mbps |
| <b>Number of Channels:</b>    | IEEE 802.11b/g / IEEE 802.11n HT20 MHz Mode: 11 Channels<br>IEEE 802.11n HT40 MHz Mode: 7 Channels<br>BT BLE Mode: 40 Channels                                                                                                                                                                                                                                                                                                                                                 |
| <b>Antenna Specification:</b> | PCB Antenna/Main Gain: 4.1 dBi<br>PCB Antenna/Aux Gain: 4.2 dBi                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Voltage Range:</b>         | I/P: 100-240Vac, 1.7A<br>O/P: 19Vdc, 3.42A                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Date of Test:</b>          | Dec 20, 2016~Jan 04, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

*\*All measurement and test data in this report was gathered from production sample serial number: 161214002*

*(Assigned by BACL, Taiwan) The EUT supplied by the applicant was received on 2016-12-07.*

**Model Difference:** The major electrical and mechanical constructions of series models are identical to the basic model, except different model name and colors. The model, DT395CR is the testing sample, and the final test data are shown on this test report.

## 1.2 Objective

This report is prepared on behalf of *DT Research Inc.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commission's rules.

The tests were performed in order to determine the Bluetooth BLE mode of EUT compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

## 1.3 Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, and FCC Part 15.407 NII submission with FCC ID:YE3800J

## 1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

## 1.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Taiwan) to collect test data is located on the 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Test site at Bay Area Compliance Laboratories Corp. (Taiwan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 431084. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## 2 System Test Configuration

### 2.1 Description of Test Configuration

For WIFI mode, 11 channels are provided to testing:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2412            | 7       | 2442            |
| 2       | 2417            | 8       | 2447            |
| 3       | 2422            | 9       | 2452            |
| 4       | 2427            | 10      | 2457            |
| 5       | 2432            | 11      | 2462            |
| 6       | 2437            |         |                 |

For 802.11 b/g/n20 Modes were tested with channel 1,6 and 11

For 802.11n40 Mode were tested with channel 3,6 and 9

The device supports SISO at all modes and MIMO at 802.11n modes

For BT BLE mode, 40 channels are provided to testing:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2402            | 21      | 2442            |
| 2       | 2404            | --      | --              |
| 3       | 2406            | --      | --              |
| 4       | 2408            | 38      | 2476            |
| --      | --              | 39      | 2478            |
| 20      | 2440            | 40      | 2480            |

For BLE Mode were tested with channel 1,20 and 40

### 2.2 Equipment Modifications

No modification was made to the EUT

### 2.3 EUT Exercise Software

Used "Diagnostics and Regulatory Testing Utility v1.7.4-1041" software.

WIFI

| Test Software Version |               | Engineering Mode |     |      |
|-----------------------|---------------|------------------|-----|------|
|                       |               | Chain0           |     |      |
| Test Frequency        |               | Low              | Mid | High |
| Power Level Setting   | B Mode SISO   | 14               | 14  | 14   |
|                       | G Mode SISO   | 10.5             | 13  | 8    |
|                       | N20 Mode SISO | 10.5             | 13  | 9    |
|                       | N40 Mode SISO | 12               | 14  | 10   |
|                       | N20 Mode MIMO | 9.5              | 10  | 8    |

|                     |               |         |      |      |
|---------------------|---------------|---------|------|------|
|                     | N40 Mode MIMO | 8       | 10.5 | 7.5  |
|                     |               | Chain 1 |      |      |
| Test Frequency      |               | Low     | Mid  | High |
| Power Level Setting | B Mode SISO   | 13.5    | 13.5 | 12.5 |
|                     | G Mode SISO   | 11.5    | 11.5 | 8    |
|                     | N20 Mode SISO | 11      | 12   | 8.5  |
|                     | N40 Mode SISO | 11      | 13   | 8    |
|                     | N20 Mode MIMO | 9.5     | 10   | 8    |
|                     | N40 Mode MIMO | 8       | 10.5 | 7.5  |

BLE

|                       |      |                  |         |         |
|-----------------------|------|------------------|---------|---------|
| Test Software Version |      | Engineering Mode |         |         |
| Test Frequency        |      | 2402MHz          | 2440MHz | 2480MHz |
| Power Level Setting   | GFSK | 0                | 0       | 0       |

The EUT was configured for testing in an engineering mode which was provided by the manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

802.11b:1Mbps  
 802.11g:6Mbps  
 802.11n ht20 SISO:MCS0  
 802.11n ht20 MIMO: MCS8  
 802.11n ht40 SISO: MCS0  
 802.11n ht40 MIMO: MCS8

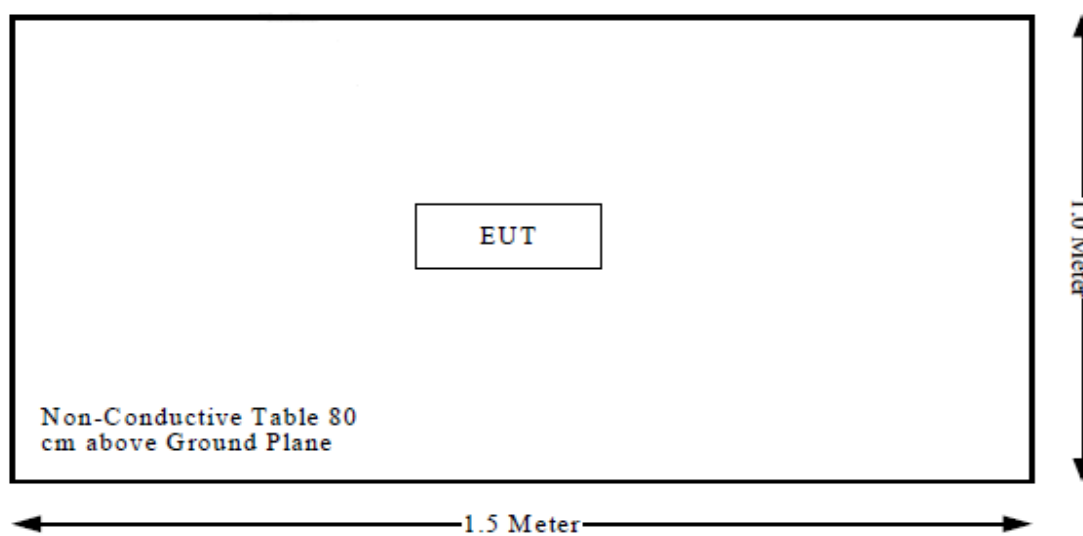
## 2.4 Support Equipment List and Details

| Description | Manufacturer | Model Number | BSMI | FCC ID | S/N |
|-------------|--------------|--------------|------|--------|-----|
| N/A         | N/A          | N/A          | N/A  | N/A    | N/A |

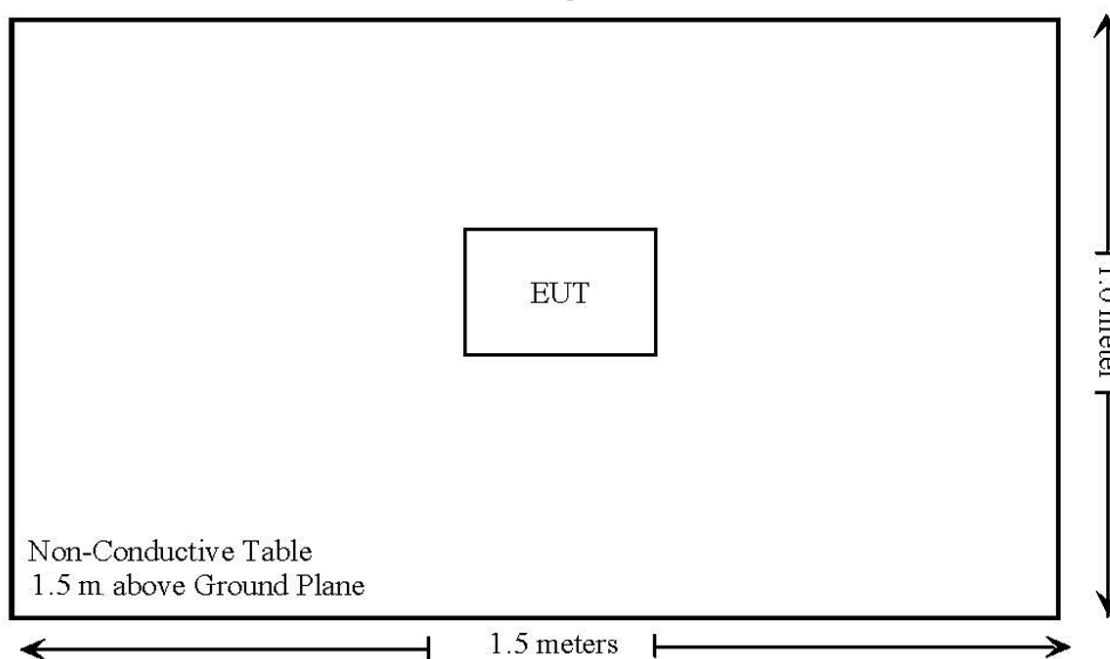
## 2.5 Block Diagram of Test Setup

See test photographs attached in Exhibit A for the actual connections between EUT and support equipment.

Below 1GHz:

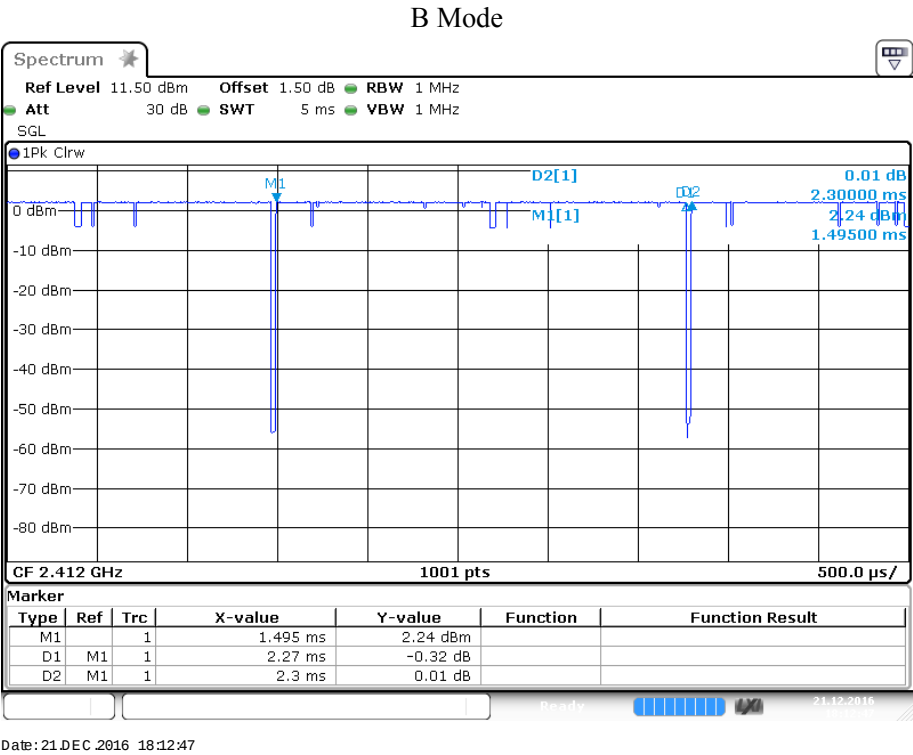


Above 1GHz:

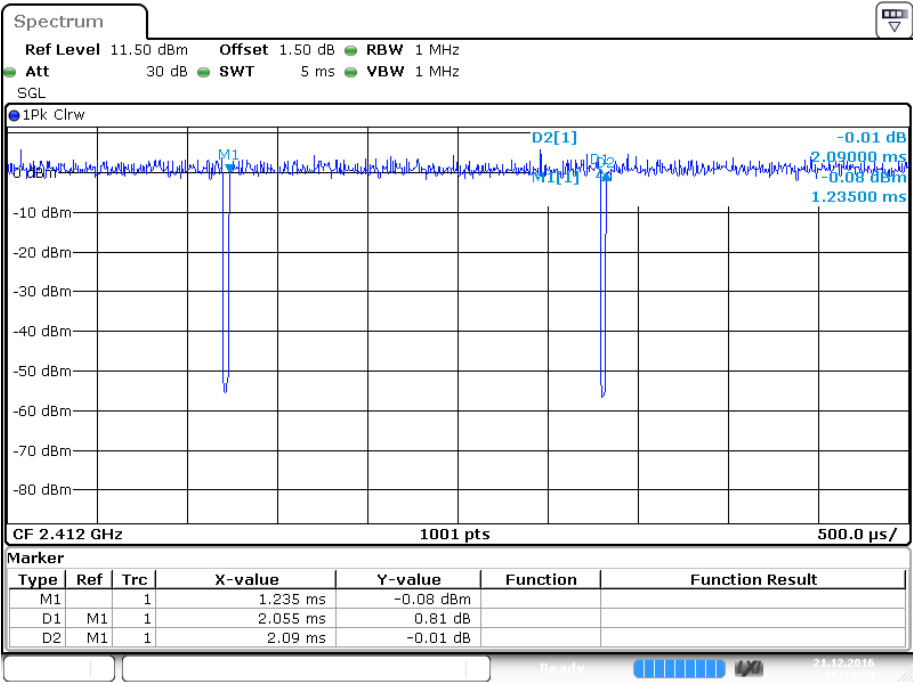


2.6 Duty Cycle

Duty cycle of test signal is < 98%, duty factor shall be considered.  
B Mode: Duty cycle = 0.99  
G Mode: Duty cycle = 0.98  
N20 Mode: Duty cycle = 0.98  
N40 Mode: Duty cycle = 0.98  
BLE: Duty cycle = 0.62, Duty factor =  $10 * \log(1/x) = 2.07$  , SA VBW setting 3kHz

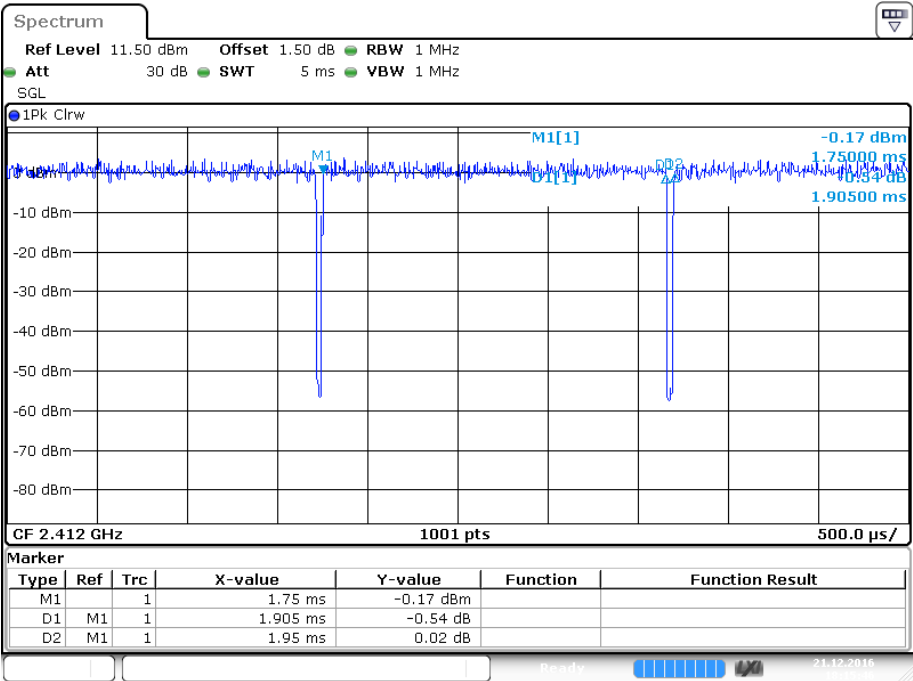


G Mode



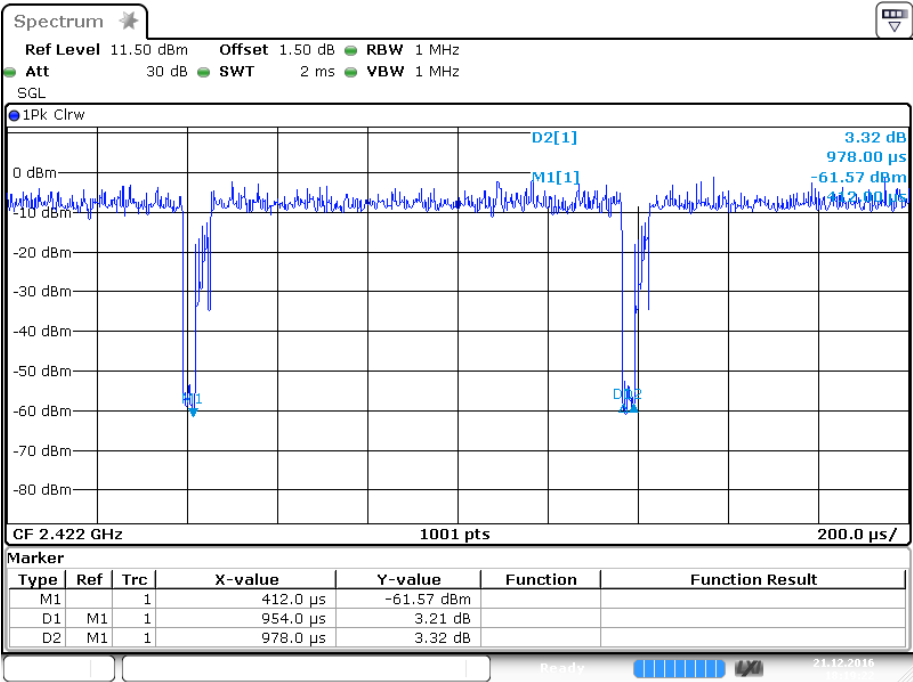
Date: 21 DEC 2016 18:14:24

N20 Mode



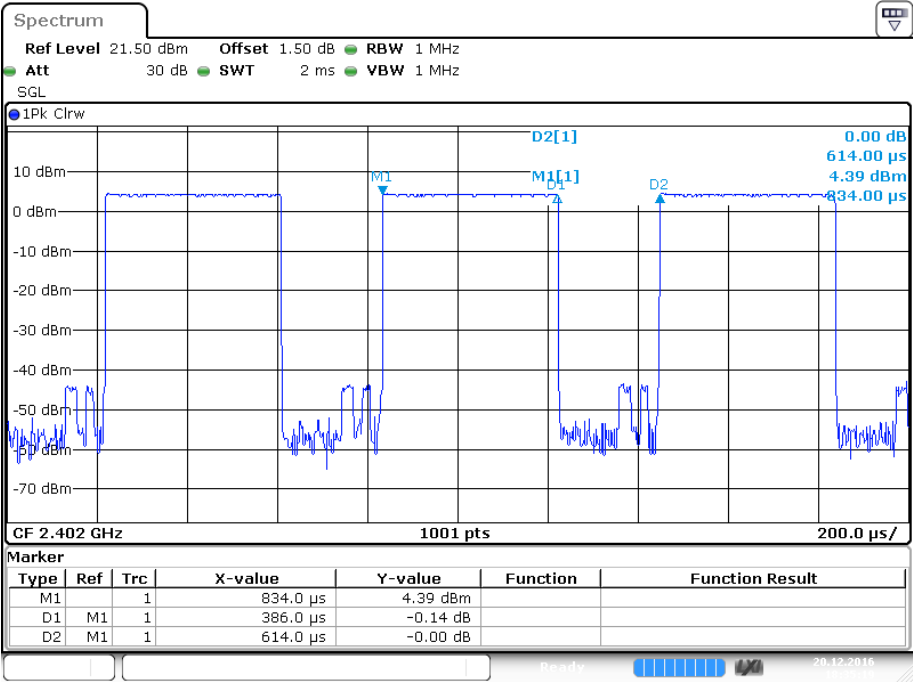
Date: 21 DEC 2016 18:15:46

N40 Mode



Date: 21 DEC 2016 18:19:22

BLE Mode



Date: 20 DEC 2016 18:35:19

### 3 Summary of Test Results

| FCC Rules                   | Description of Test                      | Result     |
|-----------------------------|------------------------------------------|------------|
| §15.247(i),§2.1093          | RF Exposure                              | Compliance |
| §15.203                     | Antenna Requirement                      | Compliance |
| §15.207(a)                  | AC Line Conducted Emissions              | Compliance |
| §15.205, §15.209,§15.247(d) | Spurious Emissions                       | Compliance |
| §15.247(a)(2)               | 6 dB Emission Bandwidth                  | Compliance |
| §15.247(b)(3)               | Maximum Peak Output Power                | Compliance |
| §15.247(d)                  | 100 kHz Bandwidth of Frequency Band Edge | Compliance |
| §15.247(e)                  | Power Spectral Density                   | Compliance |

## 4 FCC §15.247(i)&2.1093- RF EXPOSURE

---

### 4.1 Applicable Standard

According to FCC §15.247(i)

Systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})]}{[\sqrt{f(\text{GHz})}]} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

1.  $f(\text{GHz})$  is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test Exclusion.

### 4.2 RF Exposure Evaluation Result

The SAR data please refer to the SAR report, report No.: RTWD161214002-00E.

## 5 FCC §15.203– Antenna Requirements

### 5.1 Applicable Standard

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 user of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna does not exceed 6 dBi.

### 5.2 Antenna List and Details

The EUT has two internal antenna arrangement for WLAN, and the Bluetooth use the AUX antenna in common, fulfill the requirement of this section. The antenna parameters please refer below table.

| Antenna Type | Manufacturer                     | Model   | Type        | Antenna Gain | Result     |
|--------------|----------------------------------|---------|-------------|--------------|------------|
| Main         | Taiwan AnJie Electronics Co.,Ltd | DT395CR | PCB Antenna | 4.1 dBi      | Compliance |
| Aux.         | Taiwan AnJie Electronics Co.,Ltd | DT395CR | PCB Antenna | 4.2 dBi      | Compliance |

The EUT has one integral antenna arrangement, which was permanently attached; fulfill the requirement of this section. Please refer to the internal photos.

## 6 FCC §15.207(a) –AC Line Conducted Emissions

### 6.1 Applicable Standard

According to §15.207

### 6.2 Measurement Uncertainty

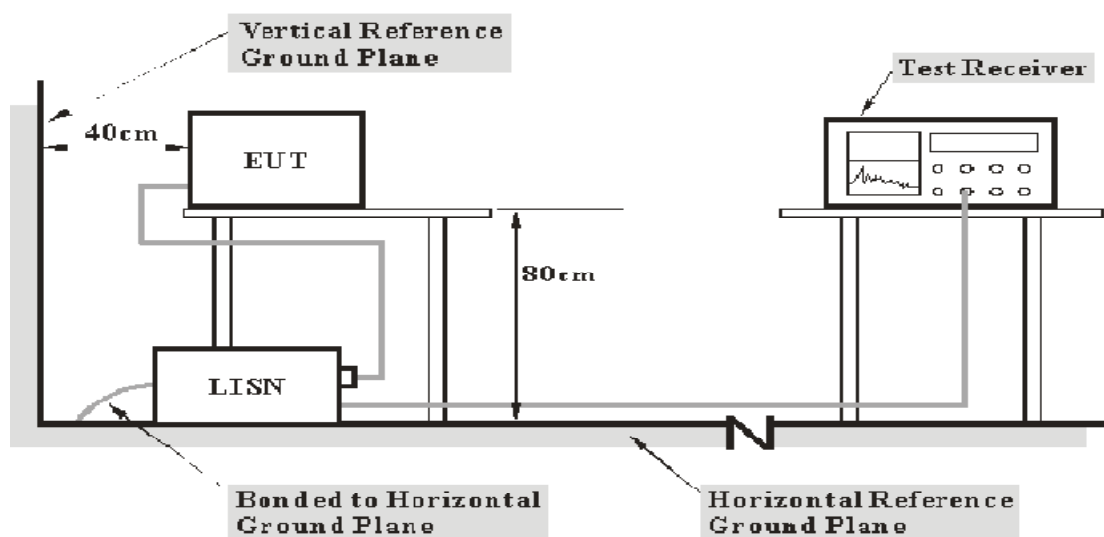
Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Table 1 – Values of  $U_{\text{Cispr}}$

| Measurement                                                       | $U_{\text{Cispr}}$ |
|-------------------------------------------------------------------|--------------------|
| Conducted disturbance at mains port using AMN (150 kHz to 30 MHz) | 2.71B              |

### 6.3 EUT Setup



- Note:** 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

#### 6.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

| Frequency Range  | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz  |

#### 6.5 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

#### 6.6 Corrected Factor & Margin Calculation

The basic equation is as follows:

$$V_c = V_R + A_c + VDF$$

Herein,

$V_c$ : corrected voltage amplitude

$V_R$ : reading voltage amplitude

$A_c$ : attenuation caused by cable loss

$VDF$ : voltage division factor of AMN or ISN

The “**Over Limit**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit.

The equation for margin calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

#### 6.7 Test Equipment List and Details

| Manufacturer      | Description     | Model   | Serial Number | Calibration Date | Calibration Due Date |
|-------------------|-----------------|---------|---------------|------------------|----------------------|
| LISN              | Rohde & Schwarz | ENV216  | 101248        | 2016/7/27        | 2017/7/26            |
| LISN              | EMCO            | 3816/2  | 75848         | 2016/8/4         | 2017/8/3             |
| EMI Test Receiver | Rohde & Schwarz | ESCI    | 100540        | 2016/7/22        | 2017/7/21            |
| Pulse Limiter     | Rohde & Schwarz | ESH3Z2  | TXZEM025      | 2016/8/19        | 2017/8/18            |
| RF Cable          | EMEC            | EM-CB5D | 001           | 2016/7/27        | 2017/7/26            |
| Software          | AUDIX           | E3      | V9.150826k    | N.C.R            | N.C.R                |

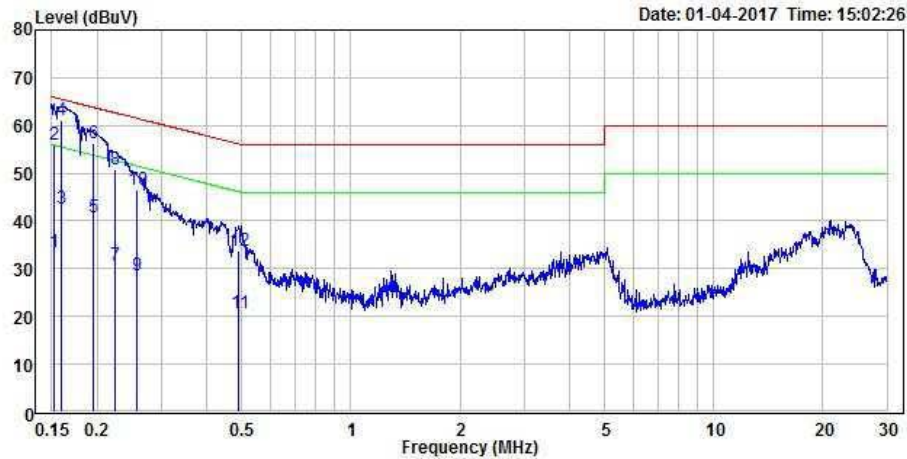
#### 6.8 Test Data

##### Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 55 %     |
| ATM Pressure:      | 1010 hPa |

The testing was performed by David Hsu on 2017-01-04.

Test Mode: Transmitting  
AC120 V, 60 Hz, Line:



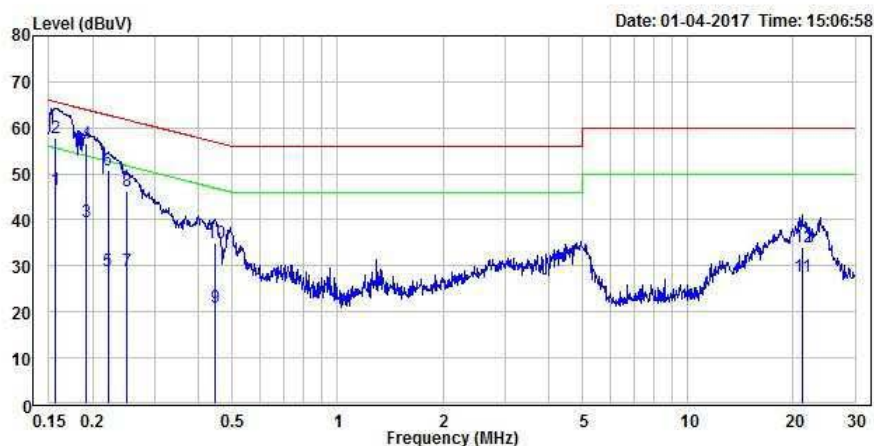
Condition: Line

EUT :

Mode :

Note : 120V/60Hz

|    | Freq  | Level | Limit | Over   |        | Read  |         |           |
|----|-------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz   | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    | MHz   | dBuV  | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.152 | 33.45 | 55.90 | -22.45 | 19.56  | 13.89 | Average | Line      |
| 2  | 0.152 | 55.98 | 65.90 | -9.92  | 19.56  | 36.42 | QP      | Line      |
| 3  | 0.160 | 42.57 | 55.47 | -12.90 | 19.56  | 23.01 | Average | Line      |
| 4  | 0.160 | 61.27 | 65.47 | -4.20  | 19.56  | 41.71 | QP      | Line      |
| 5  | 0.194 | 40.62 | 53.84 | -13.22 | 19.58  | 21.04 | Average | Line      |
| 6  | 0.194 | 56.17 | 63.84 | -7.67  | 19.58  | 36.59 | QP      | Line      |
| 7  | 0.224 | 30.87 | 52.68 | -21.81 | 19.57  | 11.30 | Average | Line      |
| 8  | 0.224 | 50.93 | 62.68 | -11.75 | 19.57  | 31.36 | QP      | Line      |
| 9  | 0.257 | 28.58 | 51.52 | -22.94 | 19.56  | 9.02  | Average | Line      |
| 10 | 0.257 | 46.68 | 61.52 | -14.84 | 19.56  | 27.12 | QP      | Line      |
| 11 | 0.491 | 20.57 | 46.15 | -25.58 | 19.55  | 1.02  | Average | Line      |
| 12 | 0.491 | 33.86 | 56.15 | -22.29 | 19.55  | 14.31 | QP      | Line      |

**AC120 V, 60 Hz, Neutral:**

Condition: Neutral

EUT :

Mode :

Note : 120V/60Hz

|    | Freq   | Level | Limit | Over   |        | Read  |         |           |
|----|--------|-------|-------|--------|--------|-------|---------|-----------|
|    | MHz    | dBuV  | Line  | Limit  | Factor | Level | Remark  | Pol/Phase |
|    |        |       | dBuV  | dB     | dB     | dBuV  |         |           |
| 1  | 0.156  | 46.43 | 55.67 | -9.24  | 19.55  | 26.88 | Average | Neutral   |
| 2  | 0.156  | 57.79 | 65.67 | -7.88  | 19.55  | 38.24 | QP      | Neutral   |
| 3  | 0.191  | 39.69 | 53.98 | -14.29 | 19.53  | 20.16 | Average | Neutral   |
| 4  | 0.191  | 56.44 | 63.98 | -7.54  | 19.53  | 36.91 | QP      | Neutral   |
| 5  | 0.221  | 29.00 | 52.78 | -23.78 | 19.52  | 9.48  | Average | Neutral   |
| 6  | 0.221  | 50.72 | 62.78 | -12.06 | 19.52  | 31.20 | QP      | Neutral   |
| 7  | 0.250  | 28.88 | 51.76 | -22.88 | 19.52  | 9.36  | Average | Neutral   |
| 8  | 0.250  | 46.19 | 61.76 | -15.57 | 19.52  | 26.67 | QP      | Neutral   |
| 9  | 0.448  | 20.98 | 46.91 | -25.93 | 19.54  | 1.44  | Average | Neutral   |
| 10 | 0.448  | 34.90 | 56.91 | -22.01 | 19.54  | 15.36 | QP      | Neutral   |
| 11 | 21.196 | 27.67 | 50.00 | -22.33 | 20.03  | 7.64  | Average | Neutral   |
| 12 | 21.196 | 34.20 | 60.00 | -25.80 | 20.03  | 14.17 | QP      | Neutral   |

## 7 FCC §15.209, §15.205 , §15.247(d)– Spurious Emissions

### 7.1 Applicable Standard

FCC§15.247 (d); §15.209; §15.205

### 7.2 Measurement Uncertainty

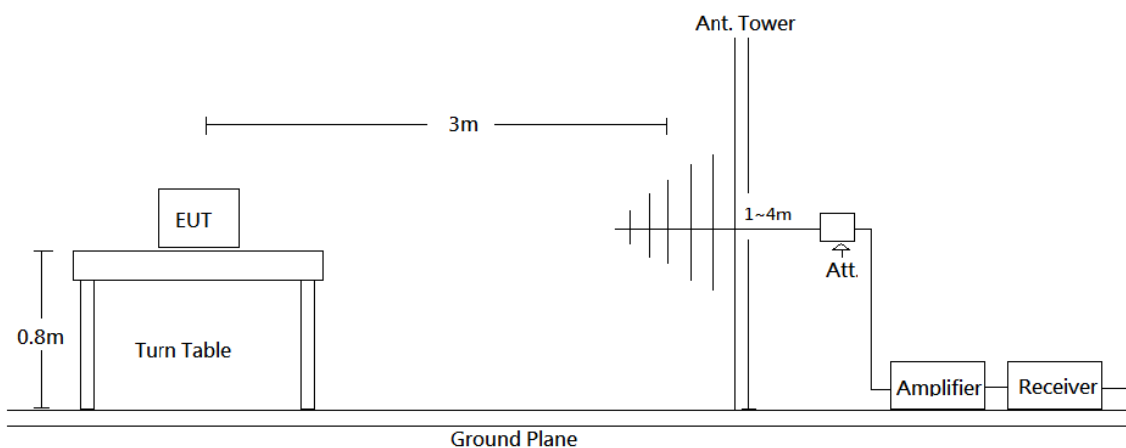
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report.

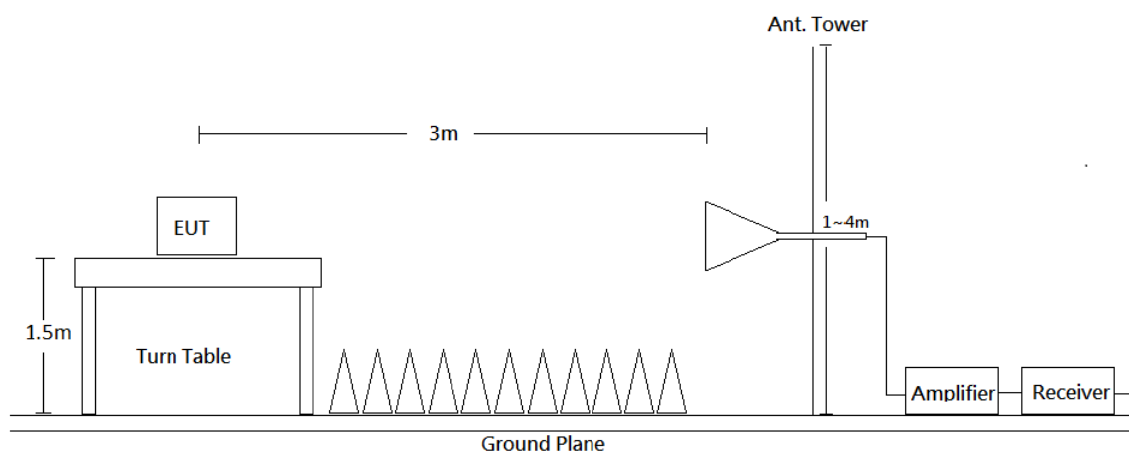
| Frequency      | Measurement uncertainty                |
|----------------|----------------------------------------|
| 30 MHz~200 MHz | 4.21 dB (k=2, 95% level of confidence) |
| 200 MHz~1 GHz  | 4.41 dB (k=2, 95% level of confidence) |
| 1 GHz~6 GHz    | 4.51 dB (k=2, 95% level of confidence) |
| 6 GHz~18 GHz   | 4.88 dB (k=2, 95% level of confidence) |
| 18 GHz~26 GHz  | 4.30 dB (k=2, 95% level of confidence) |
| 26 GHz~40 GHz  | 4.30 dB (k=2, 95% level of confidence) |

### 7.3 EUT Setup

Blow 1 GHz:



Above 1GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

#### 7.4 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Set RBW = 1 MHz, VBW= 3MHz for  $f > 1$  GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent.  $\text{VBW} \geq 1/T$ , when duty cycle is less than 98 percent where T is 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.

| Frequency Range | RBW     | VBW     | IF BW   | Detector | Duty cycle |
|-----------------|---------|---------|---------|----------|------------|
| 30-1000 MHz     | 100 kHz | 300 kHz | 120 kHz | QP       |            |
| Above 1 GHz     | 1 MHz   | 3 MHz   | /       | PK       |            |
|                 | 1 MHz   | 10 Hz   | /       | Ave      | >98%       |
|                 | 1 MHz   | 1/T     | /       | Ave      | <98%       |

#### 7.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

## 7.6 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Result} - \text{Limit}$$

## 7.7 Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.209 Limit. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U(L_m) \leq L_{\text{lim}} + U_{\text{cispr}}$$

In BACL,  $U(L_m)$  is less than  $U_{\text{cispr}}$ , if  $L_m$  is less than  $L_{\text{lim}}$ , it implies that the EUT complies with the limit.

## 7.8 Test Equipment List and Details

| Description       | Manufacturer    | Model                    | Serial Number          | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------------------------|------------------------|------------------|----------------------|
| Broadband Antenna | Sunol Sciences  | JB6                      | A050115                | 2016/11/16       | 2017/11/15           |
| Amplifier         | Sonoma          | 310N                     | 130602                 | 2016/7/15        | 2017/7/14            |
| EMI Test Receiver | Rohde & Schwarz | ESR7                     | 101419                 | 2016/11/3        | 2017/11/2            |
| Mircoflex Cable   | UTIFLEX         | UFB311A-Q-1440-300300    | 220490-006             | 2016/11/3        | 2017/11/2            |
| Mircoflex Cable   | UTIFLEX         | UFB197C-1-2362-70U-70U   | 225757-001             | 2016/7/15        | 2017/7/14            |
| Mircoflex Cable   | UTIFLEX         | UFA210A-1-3149-300300    | MFR64639<br>226389-001 | 2016/12/1        | 2017/11/30           |
| Turn Table        | Champro         | TT-2000                  | 060772-T               | N.C.R            | N.C.R                |
| Antenna Tower     | Champro         | AM-BS-4500-B             | 060772-A               | N.C.R            | N.C.R                |
| Controller        | Champro         | EM1000                   | 060772                 | N.C.R            | N.C.R                |
| Software          | Farad           | EZ EMC                   | BACL-03A1              | N.C.R            | N.C.R                |
| Horn Antenna      | EMCO            | 3115                     | 9311-4158              | 2016/5/10        | 2017/5/9             |
| Horn Antenna      | ETS-Lindgren    | 3116                     | 00062638               | 2016/9/5         | 2017/9/4             |
| Preamplifier      | EMEC            | EM01G18G                 | 060657                 | 2016/12/13       | 2017/12/12           |
| Preamplifier      | EMEC            | EM18G40G                 | 060656                 | 2016/12/13       | 2017/12/12           |
| Spectrum Analyzer | Rohde & Schwarz | FSEK30                   | 825084/006             | 2016/7/14        | 2017/7/13            |
| Mircoflex Cable   | ROSNAL          | K1K50-UP0264-K1K50-80CM  | 160309-2               | 2016/3/24        | 2017/3/23            |
| Mircoflex Cable   | ROSNAL          | K1K50-UP0264-K1K50-450CM | 160309-1               | 2016/3/24        | 2017/3/23            |
| Spectrum Analyzer | Rohde & Schwarz | FSV40                    | 101203                 | 2016/7/14        | 2017/7/13            |
| Cable             | WOKEN           | SFL402                   | 00100A1F6A19<br>2S     | N.C.R            | N.C.R                |

**\*Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## 7.9 Test Environmental Conditions

|                           |          |
|---------------------------|----------|
| <b>Temperature:</b>       | 25 °C    |
| <b>Relative Humidity:</b> | 55 %     |
| <b>ATM Pressure:</b>      | 1010 hPa |

The testing was performed by David Hsu on 2016-12-20 to 2016-12-23.

## 7.10 Test Results

Mode: Test Mode WIF+BLE (30MHz ~1GHz)

### Horizontal

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 135.7300           | 37.00             | -10.77                  | 26.23              | 43.50             | -17.27         | 100            | 76            | QP     |
| 2   | 311.3000           | 36.09             | -9.59                   | 26.50              | 46.00             | -19.50         | 100            | 73            | QP     |
| 3   | 353.0100           | 35.85             | -8.71                   | 27.14              | 46.00             | -18.86         | 100            | 315           | QP     |
| 4   | 414.1200           | 38.14             | -7.39                   | 30.75              | 46.00             | -15.25         | 100            | 156           | QP     |
| 5   | 737.1300           | 39.26             | -2.07                   | 37.19              | 46.00             | -8.81          | 100            | 235           | QP     |
| 6   | 960.2300           | 35.36             | 2.92                    | 38.28              | 54.00             | -15.72         | 100            | 39            | QP     |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

### Vertical

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 109.5400           | 40.53             | -12.07                  | 28.46              | 43.50             | -15.04         | 100            | 351           | QP     |
| 2   | 299.6600           | 31.32             | -9.84                   | 21.48              | 46.00             | -24.52         | 100            | 317           | QP     |
| 3   | 529.5500           | 32.10             | -5.29                   | 26.81              | 46.00             | -19.19         | 100            | 320           | QP     |
| 4   | 721.6100           | 28.98             | -2.38                   | 26.60              | 46.00             | -19.40         | 100            | 236           | QP     |
| 5   | 892.3300           | 33.57             | 1.25                    | 34.82              | 46.00             | -11.18         | 100            | 27            | QP     |
| 6   | 966.0500           | 25.96             | 3.07                    | 29.03              | 54.00             | -24.97         | 100            | 224           | QP     |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**B Mode (1GHz ~25GHz)**  
**2412MHz**
**Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 58.31             | -4.89                   | 53.42              | 74.00             | -20.58         | 100            | 360           | peak   |
| 2   | 2390.000           | 46.66             | -4.89                   | 41.77              | 54.00             | -12.23         | 100            | 360           | AVG    |
| 3   | 2412.000           | 101.61            | -4.84                   | 96.77              | NA                | NA             | 100            | 360           | peak   |
| 4   | 2412.000           | 98.30             | -4.84                   | 93.46              | NA                | NA             | 100            | 360           | AVG    |
| 5   | 4824.000           | 44.43             | 1.05                    | 45.48              | 74.00             | -28.52         | 100            | 194           | peak   |
| 6   | 4824.000           | 35.09             | 1.05                    | 36.14              | 54.00             | -17.86         | 100            | 194           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 57.15             | -4.89                   | 52.26              | 74.00             | -21.74         | 100            | 107           | peak   |
| 2   | 2390.000           | 45.20             | -4.89                   | 40.31              | 54.00             | -13.69         | 100            | 107           | AVG    |
| 3   | 2412.000           | 96.87             | -4.84                   | 92.03              | NA                | NA             | 100            | 107           | peak   |
| 4   | 2412.000           | 93.45             | -4.84                   | 88.61              | NA                | NA             | 100            | 107           | AVG    |
| 5   | 4824.000           | 45.38             | 1.05                    | 46.43              | 74.00             | -27.57         | 100            | 111           | peak   |
| 6   | 4824.000           | 36.44             | 1.05                    | 37.49              | 54.00             | -16.51         | 100            | 111           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2437MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 101.37            | -4.78                   | 96.59              | NA                | NA             | 100            | 1             | peak   |
| 2   | 2437.000           | 98.62             | -4.78                   | 93.84              | NA                | NA             | 100            | 1             | AVG    |
| 3   | 4874.000           | 41.36             | 1.23                    | 42.59              | 74.00             | -31.41         | 100            | 247           | peak   |
| 4   | 4874.000           | 32.32             | 1.23                    | 33.55              | 54.00             | -20.45         | 100            | 247           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 96.42             | -4.78                   | 91.64              | NA                | NA             | 100            | 107           | peak   |
| 2   | 2437.000           | 93.77             | -4.78                   | 88.99              | NA                | NA             | 100            | 107           | AVG    |
| 3   | 4874.000           | 40.88             | 1.23                    | 42.11              | 74.00             | -31.89         | 100            | 226           | peak   |
| 4   | 4874.000           | 31.83             | 1.23                    | 33.06              | 54.00             | -20.94         | 100            | 226           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2462 MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 101.71            | -4.72                   | 96.99              | NA                | NA             | 100            | 359           | peak   |
| 2   | 2462.000           | 98.57             | -4.72                   | 93.85              | NA                | NA             | 100            | 359           | AVG    |
| 3   | 2483.500           | 58.10             | -4.69                   | 53.41              | 74.00             | -20.59         | 100            | 359           | peak   |
| 4   | 2483.500           | 48.51             | -4.69                   | 43.82              | 54.00             | -10.18         | 100            | 359           | AVG    |
| 5   | 4924.000           | 43.00             | 1.40                    | 44.40              | 74.00             | -29.60         | 100            | 178           | peak   |
| 6   | 4924.000           | 33.80             | 1.40                    | 35.20              | 54.00             | -18.80         | 100            | 178           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 96.24             | -4.72                   | 91.52              | NA                | NA             | 100            | 260           | peak   |
| 2   | 2462.000           | 93.20             | -4.72                   | 88.48              | NA                | NA             | 100            | 260           | AVG    |
| 3   | 2483.500           | 57.77             | -4.69                   | 53.08              | 74.00             | -20.92         | 100            | 260           | peak   |
| 4   | 2483.500           | 46.10             | -4.69                   | 21.41              | 54.00             | -32.59         | 100            | 260           | AVG    |
| 5   | 4924.000           | 46.41             | 1.40                    | 47.81              | 74.00             | -26.19         | 100            | 301           | peak   |
| 6   | 4924.000           | 38.88             | 1.40                    | 40.28              | 54.00             | -13.72         | 100            | 301           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**G Mode (1GHz ~25GHz)**  
**2412MHz**
**Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 60.93             | -4.89                   | 56.04              | 74.00             | -17.96         | 100            | 360           | peak   |
| 2   | 2390.000           | 49.68             | -4.89                   | 44.79              | 54.00             | -9.21          | 100            | 360           | AVG    |
| 3   | 2412.000           | 104.23            | -4.84                   | 99.39              | NA                | NA             | 100            | 360           | peak   |
| 4   | 2412.000           | 94.97             | -4.84                   | 90.13              | NA                | NA             | 100            | 360           | AVG    |
| 5   | 4824.000           | 40.80             | 1.05                    | 41.85              | 74.00             | -32.15         | 100            | 270           | peak   |
| 6   | 4824.000           | 27.10             | 1.05                    | 28.15              | 54.00             | -25.85         | 100            | 270           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 57.72             | -4.89                   | 52.83              | 74.00             | -21.17         | 100            | 330           | peak   |
| 2   | 2390.000           | 45.81             | -4.89                   | 40.92              | 54.00             | -13.08         | 100            | 330           | AVG    |
| 3   | 2412.000           | 100.57            | -4.84                   | 95.73              | NA                | NA             | 100            | 330           | peak   |
| 4   | 2412.000           | 90.94             | -4.84                   | 86.10              | NA                | NA             | 100            | 330           | AVG    |
| 5   | 4824.000           | 41.47             | 1.05                    | 42.52              | 74.00             | -31.48         | 100            | 156           | peak   |
| 6   | 4824.000           | 28.45             | 1.05                    | 29.50              | 54.00             | -24.50         | 100            | 156           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2437MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 104.03            | -4.78                   | 99.25              | NA                | NA             | 100            | 1             | peak   |
| 2   | 2437.000           | 94.70             | -4.78                   | 89.92              | NA                | NA             | 100            | 1             | AVG    |
| 3   | 4874.000           | 39.96             | 1.23                    | 41.19              | 74.00             | -32.81         | 100            | 128           | peak   |
| 4   | 4874.000           | 25.77             | 1.23                    | 27.00              | 54.00             | -27.00         | 100            | 128           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 97.66             | -4.78                   | 92.88              | NA                | NA             | 100            | 328           | peak   |
| 2   | 2437.000           | 88.46             | -4.78                   | 83.68              | NA                | NA             | 100            | 328           | AVG    |
| 3   | 4874.000           | 40.63             | 1.23                    | 41.86              | 74.00             | -32.14         | 100            | 326           | peak   |
| 4   | 4874.000           | 27.67             | 1.23                    | 28.90              | 54.00             | -25.10         | 100            | 326           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2462 MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 98.81             | -4.72                   | 94.09              | NA                | NA             | 100            | 359           | peak   |
| 2   | 2462.000           | 89.32             | -4.72                   | 84.60              | NA                | NA             | 100            | 359           | AVG    |
| 3   | 2483.500           | 58.56             | -4.69                   | 53.87              | 74.00             | -20.13         | 100            | 359           | peak   |
| 4   | 2483.500           | 46.73             | -4.69                   | 42.04              | 54.00             | -11.96         | 100            | 359           | AVG    |
| 5   | 4924.000           | 39.67             | 1.40                    | 41.07              | 74.00             | -32.93         | 100            | 50            | peak   |
| 6   | 4924.000           | 27.66             | 1.40                    | 29.06              | 54.00             | -24.94         | 100            | 50            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 93.45             | -4.72                   | 88.73              | NA                | NA             | 100            | 327           | peak   |
| 2   | 2462.000           | 84.59             | -4.72                   | 79.87              | NA                | NA             | 100            | 327           | AVG    |
| 3   | 2483.500           | 57.73             | -4.69                   | 53.04              | 74.00             | -20.96         | 100            | 327           | peak   |
| 4   | 2483.500           | 46.02             | -4.69                   | 41.33              | 54.00             | -12.67         | 100            | 327           | AVG    |
| 5   | 4924.000           | 40.33             | 1.40                    | 41.73              | 74.00             | -32.27         | 100            | 253           | peak   |
| 6   | 4924.000           | 27.19             | 1.40                    | 28.59              | 54.00             | -25.41         | 100            | 253           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**N20 Mode (1GHz ~25GHz) (Per pretest, MIMO mode was the worst and reported below:)  
2412MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 57.78             | -4.89                   | 52.89              | 74.00             | -21.11         | 100            | 286           | peak   |
| 2   | 2390.000           | 46.44             | -4.89                   | 41.55              | 54.00             | -12.45         | 100            | 286           | AVG    |
| 3   | 2412.000           | 100.50            | -4.84                   | 95.66              | NA                | NA             | 100            | 286           | peak   |
| 4   | 2412.000           | 88.35             | -4.84                   | 83.51              | NA                | NA             | 100            | 286           | AVG    |
| 5   | 4824.000           | 40.54             | 1.05                    | 41.59              | 74.00             | -32.41         | 100            | 264           | peak   |
| 6   | 4824.000           | 28.02             | 1.05                    | 29.07              | 54.00             | -24.93         | 100            | 264           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 57.61             | -4.89                   | 52.72              | 74.00             | -21.28         | 100            | 328           | peak   |
| 2   | 2390.000           | 45.72             | -4.89                   | 40.83              | 54.00             | -13.17         | 100            | 328           | AVG    |
| 3   | 2412.000           | 97.60             | -4.84                   | 92.76              | NA                | NA             | 100            | 328           | peak   |
| 4   | 2412.000           | 87.11             | -4.84                   | 82.27              | NA                | NA             | 100            | 328           | AVG    |
| 5   | 4824.000           | 40.90             | 1.05                    | 41.95              | 74.00             | -32.05         | 100            | 123           | peak   |
| 6   | 4824.000           | 27.79             | 1.05                    | 28.84              | 54.00             | -25.16         | 100            | 123           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2437MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 102.65            | -4.78                   | 97.87              | NA                | NA             | 100            | 288           | peak   |
| 2   | 2437.000           | 90.72             | -4.78                   | 85.94              | NA                | NA             | 100            | 288           | AVG    |
| 3   | 4874.000           | 39.62             | 1.23                    | 40.85              | 74.00             | -33.15         | 100            | 254           | peak   |
| 4   | 4874.000           | 27.39             | 1.23                    | 28.62              | 54.00             | -25.38         | 100            | 254           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 98.78             | -4.78                   | 94.00              | NA                | NA             | 100            | 328           | peak   |
| 2   | 2437.000           | 87.52             | -4.78                   | 82.74              | NA                | NA             | 100            | 328           | AVG    |
| 3   | 4874.000           | 39.74             | 1.23                    | 40.97              | 74.00             | -33.03         | 100            | 296           | peak   |
| 4   | 4874.000           | 27.31             | 1.23                    | 28.54              | 54.00             | -25.46         | 100            | 296           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2462 MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 99.75             | -4.72                   | 95.03              | NA                | NA             | 100            | 1             | peak   |
| 2   | 2462.000           | 88.39             | -4.72                   | 83.67              | NA                | NA             | 100            | 1             | AVG    |
| 3   | 2483.500           | 60.87             | -4.69                   | 56.18              | 74.00             | -17.82         | 100            | 1             | peak   |
| 4   | 2483.500           | 47.27             | -4.69                   | 42.58              | 54.00             | -11.42         | 100            | 1             | AVG    |
| 5   | 4924.000           | 40.13             | 1.40                    | 41.53              | 74.00             | -32.47         | 100            | 325           | peak   |
| 6   | 4924.000           | 27.44             | 1.40                    | 28.84              | 54.00             | -25.16         | 100            | 325           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2462.000           | 97.94             | -4.72                   | 93.22              | NA                | NA             | 100            | 104           | peak   |
| 2   | 2462.000           | 85.45             | -4.72                   | 80.73              | NA                | NA             | 100            | 104           | AVG    |
| 3   | 2483.500           | 61.61             | -4.69                   | 56.92              | 74.00             | -17.08         | 100            | 104           | peak   |
| 4   | 2483.500           | 47.63             | -4.69                   | 42.94              | 54.00             | -11.06         | 100            | 104           | AVG    |
| 5   | 4924.000           | 40.39             | 1.40                    | 41.79              | 74.00             | -32.21         | 100            | 250           | peak   |
| 6   | 4924.000           | 28.71             | 1.40                    | 30.11              | 54.00             | -23.89         | 100            | 250           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**N40 Mode (1GHz ~25GHz) (Per pretest, MIMO mode was the worst and reported below:)  
2422MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 58.84             | -4.89                   | 53.95              | 74.00             | -20.05         | 100            | 288           | peak   |
| 2   | 2390.000           | 46.85             | -4.89                   | 41.96              | 54.00             | -12.04         | 100            | 288           | AVG    |
| 3   | 2422.000           | 97.16             | -4.81                   | 92.35              | NA                | NA             | 100            | 288           | peak   |
| 4   | 2422.000           | 83.37             | -4.81                   | 78.56              | NA                | NA             | 100            | 288           | AVG    |
| 5   | 4844.000           | 40.04             | 1.12                    | 41.16              | 74.00             | -32.84         | 100            | 308           | peak   |
| 6   | 4844.000           | 28.90             | 1.12                    | 30.02              | 54.00             | -23.98         | 100            | 308           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 58.21             | -4.89                   | 53.32              | 74.00             | -20.68         | 100            | 327           | peak   |
| 2   | 2390.000           | 46.39             | -4.89                   | 41.50              | 54.00             | -12.50         | 100            | 327           | AVG    |
| 3   | 2422.000           | 94.08             | -4.81                   | 89.27              | NA                | NA             | 100            | 327           | peak   |
| 4   | 2422.000           | 83.35             | -4.81                   | 78.54              | NA                | NA             | 100            | 327           | AVG    |
| 5   | 4844.000           | 39.97             | 1.12                    | 41.09              | 74.00             | -32.91         | 100            | 88            | peak   |
| 6   | 4844.000           | 27.82             | 1.12                    | 28.94              | 54.00             | -25.06         | 100            | 88            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2437MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 99.60             | -4.78                   | 94.82              | NA                | NA             | 100            | 284           | peak   |
| 2   | 2437.000           | 86.79             | -4.78                   | 82.01              | NA                | NA             | 100            | 284           | AVG    |
| 3   | 4874.000           | 40.34             | 1.23                    | 41.57              | 74.00             | -32.43         | 100            | 42            | peak   |
| 4   | 4874.000           | 28.29             | 1.23                    | 29.52              | 54.00             | -24.48         | 100            | 42            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2437.000           | 96.78             | -4.78                   | 92.00              | NA                | NA             | 100            | 328           | peak   |
| 2   | 2437.000           | 84.61             | -4.78                   | 79.83              | NA                | NA             | 100            | 328           | AVG    |
| 3   | 4874.000           | 40.03             | 1.23                    | 41.26              | 74.00             | -32.74         | 100            | 24            | peak   |
| 4   | 4874.000           | 27.46             | 1.23                    | 28.69              | 54.00             | -25.31         | 100            | 24            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2452 MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2452.000           | 96.81             | -4.75                   | 92.06              | NA                | NA             | 100            | 283           | peak   |
| 2   | 2452.000           | 83.88             | -4.75                   | 79.13              | NA                | NA             | 100            | 283           | AVG    |
| 3   | 2483.500           | 59.94             | -4.69                   | 55.25              | 74.00             | -18.75         | 100            | 283           | peak   |
| 4   | 2483.500           | 48.98             | -4.69                   | 44.29              | 54.00             | -9.71          | 100            | 283           | AVG    |
| 5   | 4904.000           | 40.19             | 1.33                    | 41.52              | 74.00             | -32.48         | 100            | 0             | peak   |
| 6   | 4904.000           | 27.40             | 1.33                    | 28.73              | 54.00             | -25.27         | 100            | 0             | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2452.000           | 94.00             | -4.75                   | 89.25              | NA                | NA             | 100            | 329           | peak   |
| 2   | 2452.000           | 81.82             | -4.75                   | 77.07              | NA                | NA             | 100            | 329           | AVG    |
| 3   | 2483.500           | 60.31             | -4.69                   | 55.62              | 74.00             | -18.38         | 100            | 329           | peak   |
| 4   | 2483.500           | 48.52             | -4.69                   | 43.83              | 54.00             | -10.17         | 100            | 329           | AVG    |
| 5   | 4904.000           | 40.84             | 1.33                    | 42.17              | 74.00             | -31.83         | 100            | 69            | peak   |
| 6   | 4904.000           | 27.21             | 1.33                    | 28.54              | 54.00             | -25.46         | 100            | 69            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**BLE Mode (1GHz ~25GHz)  
2402MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 56.88             | -4.89                   | 51.99              | 74.00             | -22.01         | 100            | 182           | peak   |
| 2   | 2390.000           | 45.38             | -4.89                   | 40.49              | 54.00             | -13.51         | 100            | 182           | AVG    |
| 3   | 2402.000           | 95.06             | -4.86                   | 90.20              | NA                | NA             | 100            | 182           | peak   |
| 4   | 2402.000           | 93.05             | -4.86                   | 88.19              | NA                | NA             | 100            | 182           | AVG    |
| 5   | 4804.000           | 41.04             | 0.98                    | 42.02              | 74.00             | -31.98         | 100            | 147           | peak   |
| 6   | 4804.000           | 32.68             | 0.98                    | 33.66              | 54.00             | -20.34         | 100            | 147           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2390.000           | 56.69             | -4.89                   | 51.80              | 74.00             | -22.20         | 100            | 27            | peak   |
| 2   | 2390.000           | 45.58             | -4.89                   | 40.69              | 54.00             | -13.31         | 100            | 27            | AVG    |
| 3   | 2402.000           | 92.22             | -4.86                   | 87.36              | NA                | NA             | 100            | 27            | peak   |
| 4   | 2402.000           | 93.08             | -4.86                   | 88.22              | NA                | NA             | 100            | 27            | AVG    |
| 5   | 4804.000           | 40.55             | 0.98                    | 41.53              | 74.00             | -32.47         | 100            | 234           | peak   |
| 6   | 4804.000           | 32.92             | 0.98                    | 33.90              | 54.00             | -20.10         | 100            | 234           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2440MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2440.000           | 95.04             | -4.78                   | 90.26              | NA                | NA             | 100            | 162           | peak   |
| 2   | 2440.000           | 94.54             | -4.78                   | 89.76              | NA                | NA             | 100            | 162           | AVG    |
| 3   | 4880.000           | 40.61             | 1.24                    | 41.85              | 74.00             | -32.15         | 100            | 289           | peak   |
| 4   | 4880.000           | 31.47             | 1.24                    | 32.71              | 54.00             | -21.29         | 100            | 289           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2440.000           | 92.20             | -4.78                   | 87.42              | NA                | NA             | 100            | 352           | peak   |
| 2   | 2440.000           | 91.05             | -4.78                   | 86.27              | NA                | NA             | 100            | 352           | AVG    |
| 3   | 4880.000           | 39.86             | 1.24                    | 41.10              | 74.00             | -32.90         | 100            | 309           | peak   |
| 4   | 4880.000           | 31.28             | 1.24                    | 32.52              | 54.00             | -21.48         | 100            | 309           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**2480 MHz****Horizontal**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2480.000           | 95.76             | -4.68                   | 91.08              | NA                | NA             | 100            | 152           | peak   |
| 2   | 2480.000           | 94.95             | -4.68                   | 90.27              | NA                | NA             | 100            | 152           | AVG    |
| 3   | 2483.500           | 56.92             | -4.69                   | 52.23              | 74.00             | -21.77         | 100            | 152           | peak   |
| 4   | 2483.500           | 46.11             | -4.69                   | 41.42              | 54.00             | -12.58         | 100            | 152           | AVG    |
| 5   | 4960.000           | 39.91             | 1.51                    | 41.42              | 74.00             | -32.58         | 100            | 95            | peak   |
| 6   | 4960.000           | 29.17             | 1.51                    | 30.68              | 54.00             | -23.32         | 100            | 95            | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

**Vertical**

| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|---------------|--------|
| 1   | 2480.000           | 94.10             | -4.68                   | 89.42              | NA                | NA             | 100            | 25            | peak   |
| 2   | 2480.000           | 93.30             | -4.68                   | 88.62              | NA                | NA             | 100            | 25            | AVG    |
| 3   | 2483.500           | 58.66             | -4.69                   | 53.97              | 74.00             | -20.03         | 100            | 25            | peak   |
| 4   | 2483.500           | 45.65             | -4.69                   | 40.96              | 54.00             | -13.04         | 100            | 25            | AVG    |
| 5   | 4960.000           | 39.20             | 1.51                    | 40.71              | 74.00             | -33.29         | 100            | 201           | peak   |
| 6   | 4960.000           | 29.71             | 1.51                    | 31.22              | 54.00             | -22.78         | 100            | 201           | AVG    |

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The other emission levels were very low against the limit.

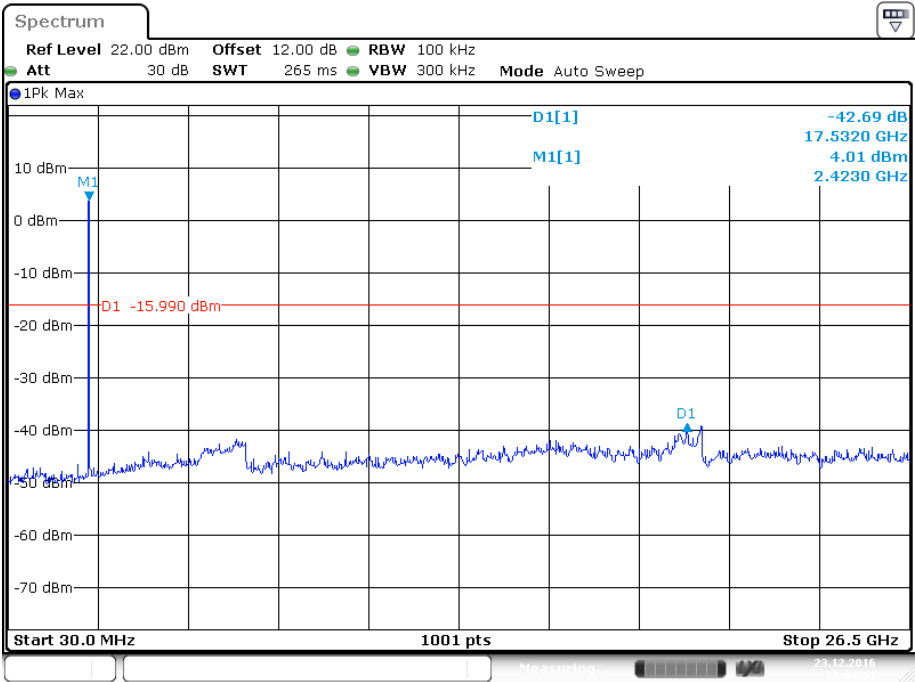
**Conducted Spurious Emissions:****WIFI**

| Channel  | Frequency<br>(MHz) | Delta Peak to<br>Band Emission<br>(dBc) |         | Limit<br>(dBc) | RESULT |
|----------|--------------------|-----------------------------------------|---------|----------------|--------|
|          |                    | Chain 0                                 | Chain 1 |                |        |
| B Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 42.69                                   | 44.78   | ≥ 20           | PASS   |
| Mid      | 2437               | 43.42                                   | 44.86   | ≥ 20           | PASS   |
| High     | 2462               | 44.38                                   | 44.73   | ≥ 20           | PASS   |
| G Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 38.65                                   | 37.14   | ≥ 20           | PASS   |
| Mid      | 2437               | 42.41                                   | 38.91   | ≥ 20           | PASS   |
| High     | 2462               | 40.93                                   | 36.05   | ≥ 20           | PASS   |
| N20 Mode |                    |                                         |         |                |        |
| Low      | 2412               | 38.18                                   | 39.40   | ≥ 20           | PASS   |
| Mid      | 2437               | 40.84                                   | 37.88   | ≥ 20           | PASS   |
| High     | 2462               | 36.81                                   | 35.86   | ≥ 20           | PASS   |
| N40 Mode |                    |                                         |         |                |        |
| Low      | 2422               | 37.39                                   | 36.26   | ≥ 20           | PASS   |
| Mid      | 2437               | 37.18                                   | 35.76   | ≥ 20           | PASS   |
| High     | 2452               | 36.18                                   | 34.57   | ≥ 20           | PASS   |

**BLE**

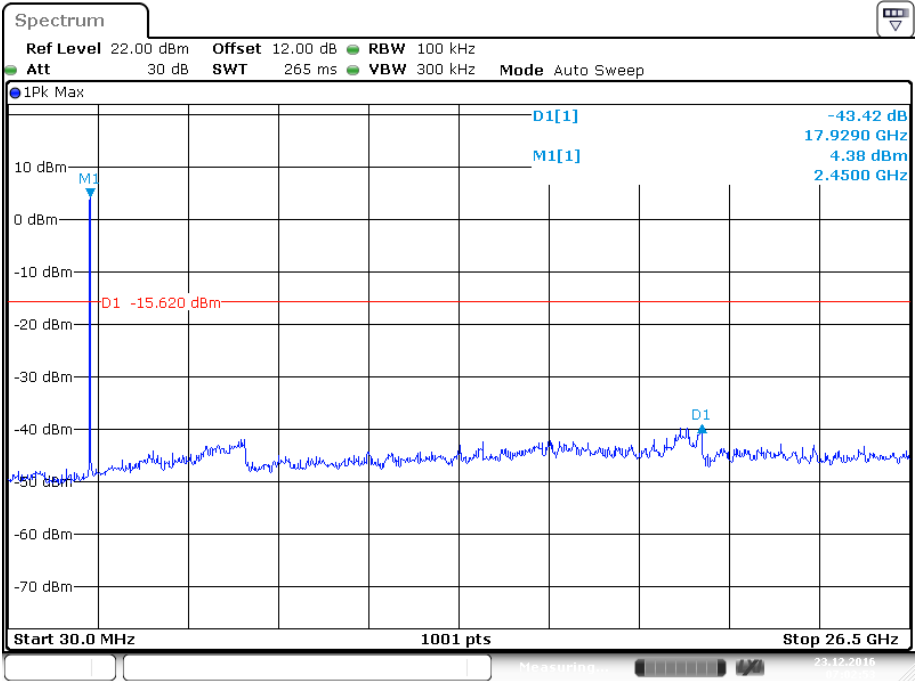
| Channel | Frequency (MHz) | Delta Peak to Band Emission (dBc) | Limit (dBc) | RESULT |
|---------|-----------------|-----------------------------------|-------------|--------|
| Low     | 2402            | 46.34                             | $\geq 20$   | PASS   |
| Mid     | 2440            | 48.79                             | $\geq 20$   | PASS   |
| High    | 2480            | 48.49                             | $\geq 20$   | PASS   |

Low Channel (B Mode / Chain 0)



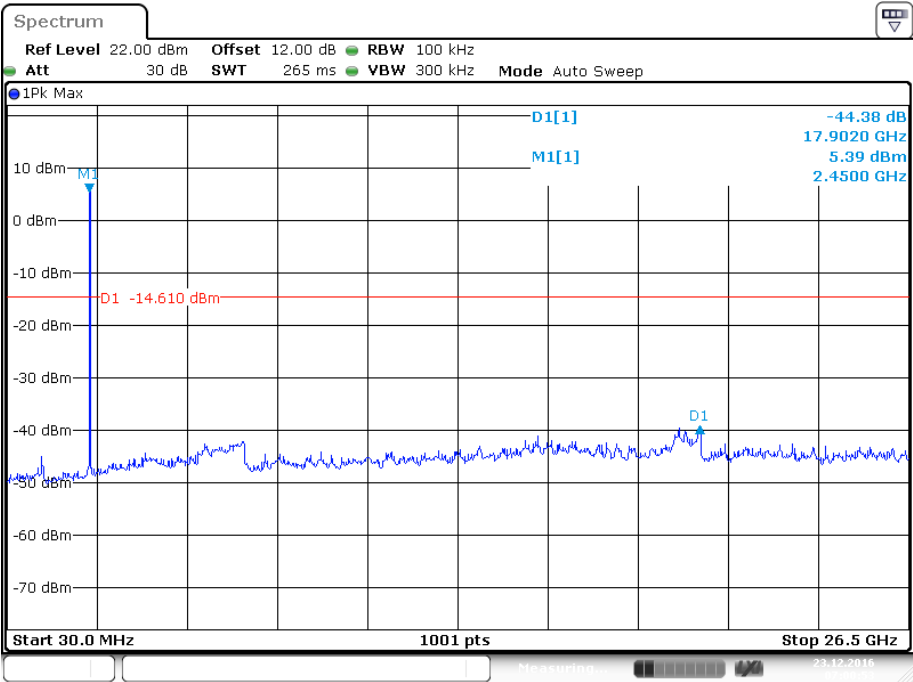
Date: 23 DEC 2016 07:04:01

Middle Channel (B Mode / Chain 0)



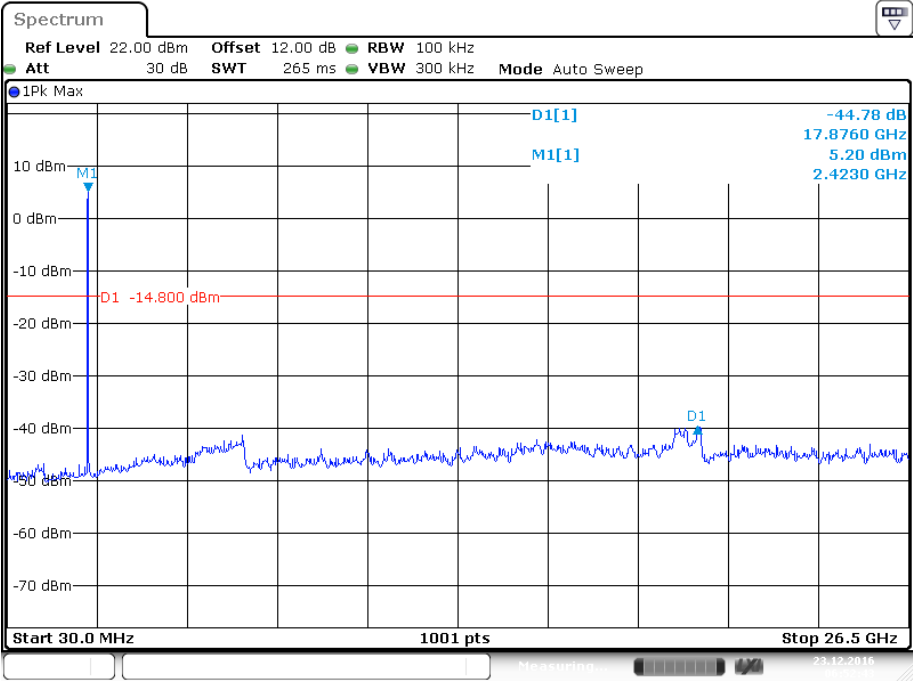
Date: 23 DEC 2016 07:02:53

High Channel(B Mode / Chain 0)



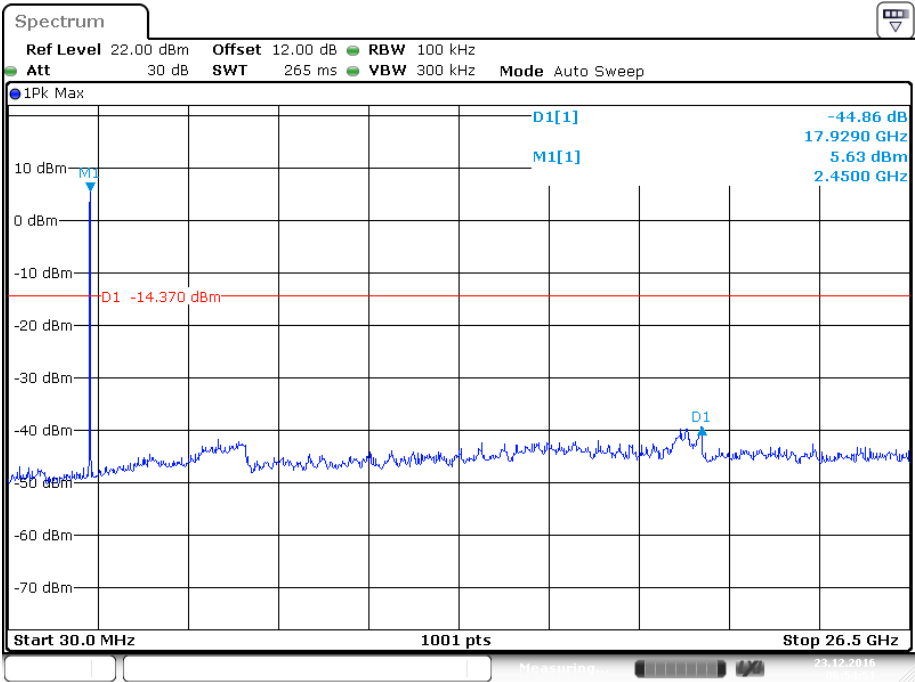
Date: 23 DEC 2016 07:00:54

Low Channel (B Mode / Chain 1)



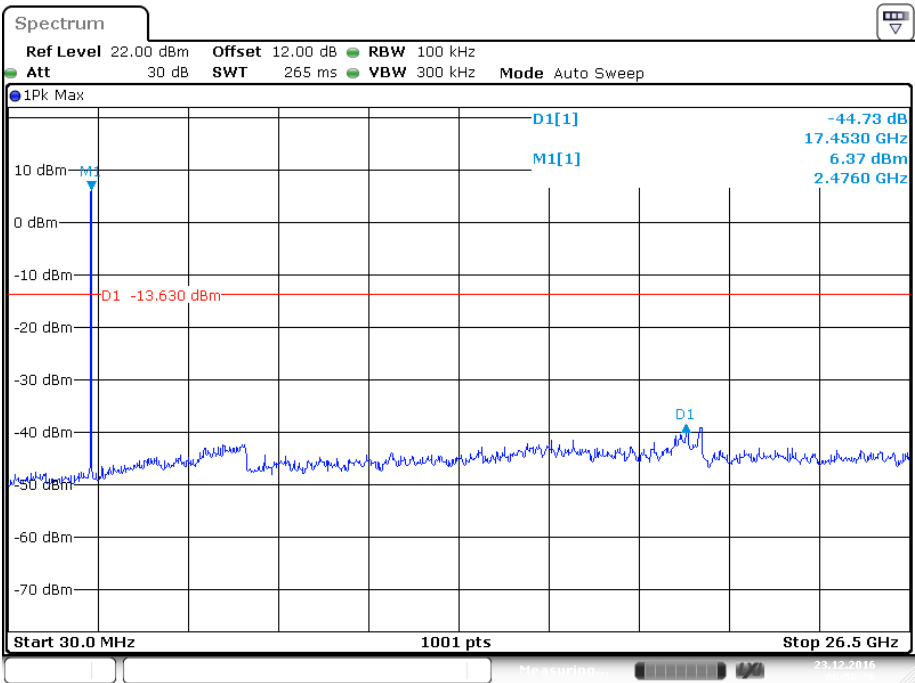
Date: 23 DEC 2016 06:52:43

Middle Channel (B Mode / Chain 1)



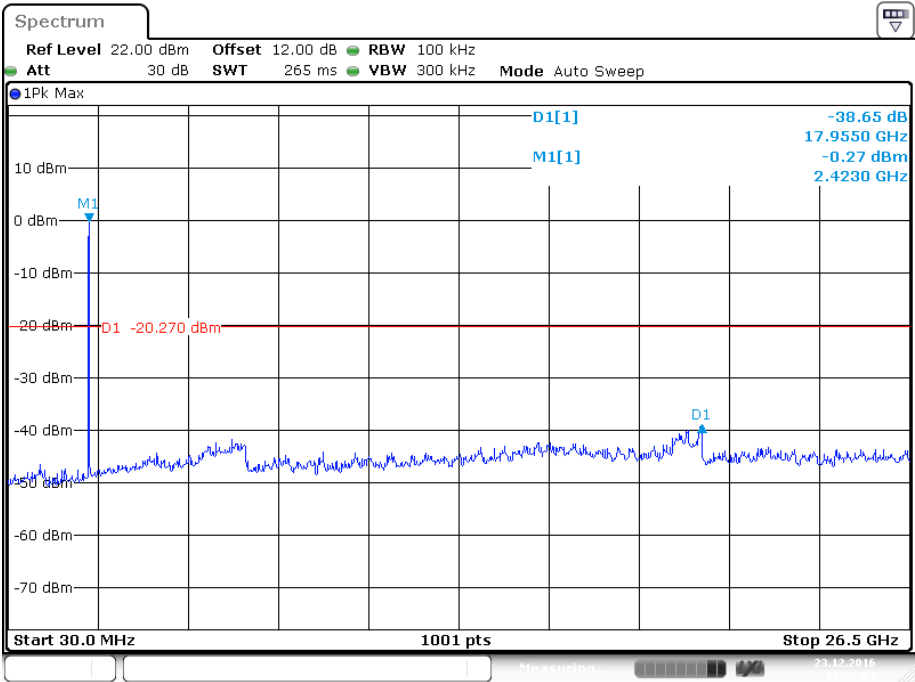
Date: 23 DEC 2016 06:54:52

High Channel (B Mode / Chain 1)



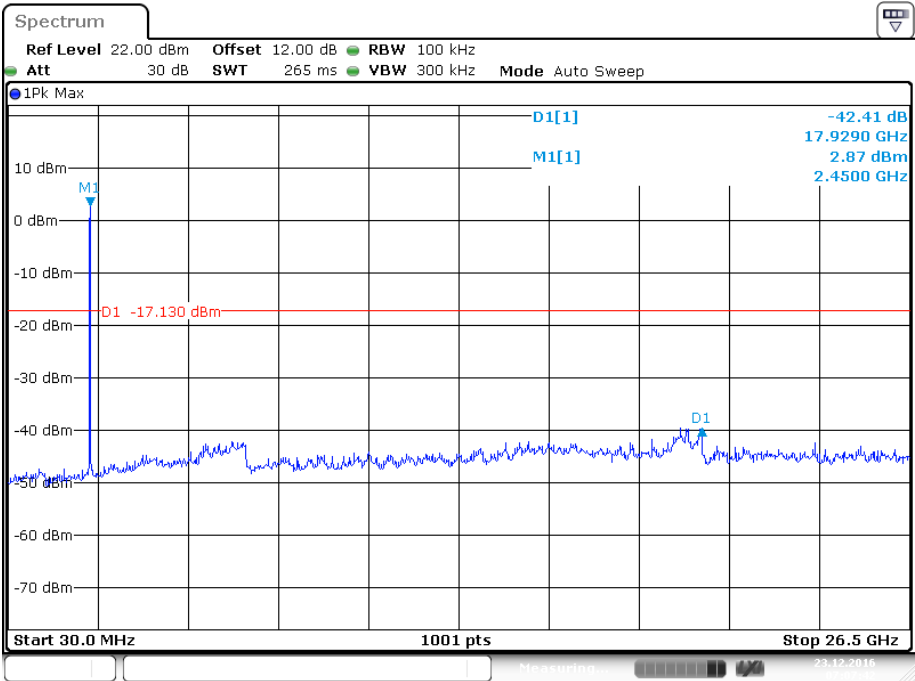
Date: 23 DEC 2016 06:56:26

Low Channel (G Mode / Chain 0)



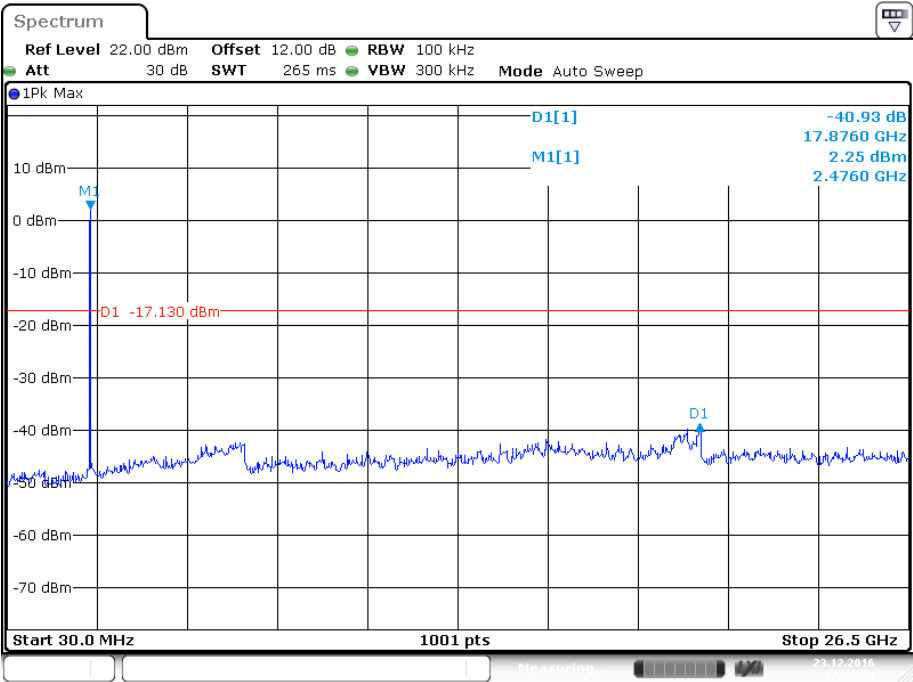
Date: 23 DEC 2016 07:06:04

Middle Channel (G Mode / Chain 0)



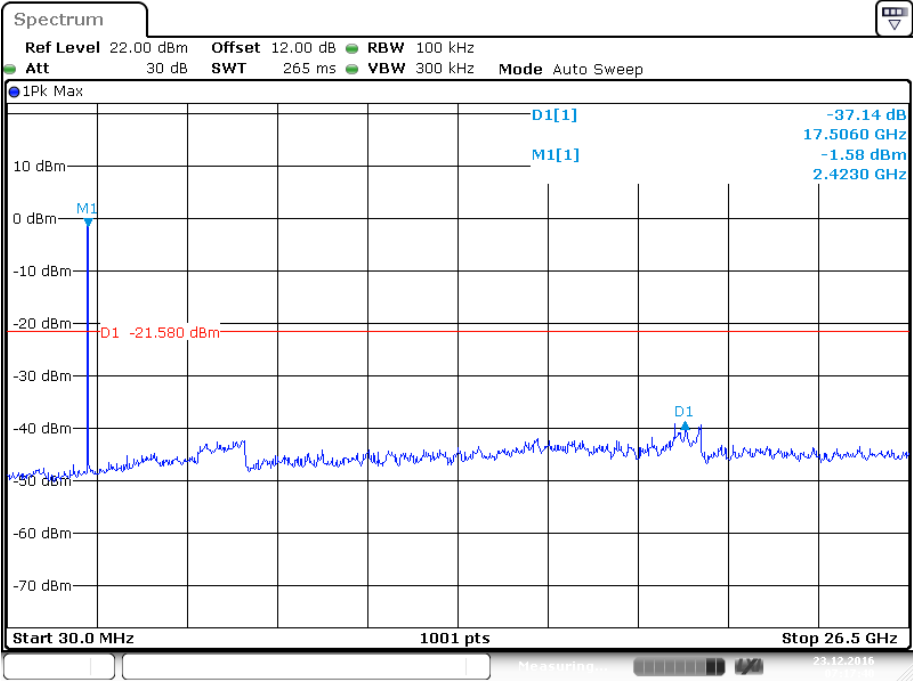
Date: 23 DEC 2016 07:07:43

High Channel (G Mode / Chain 0)



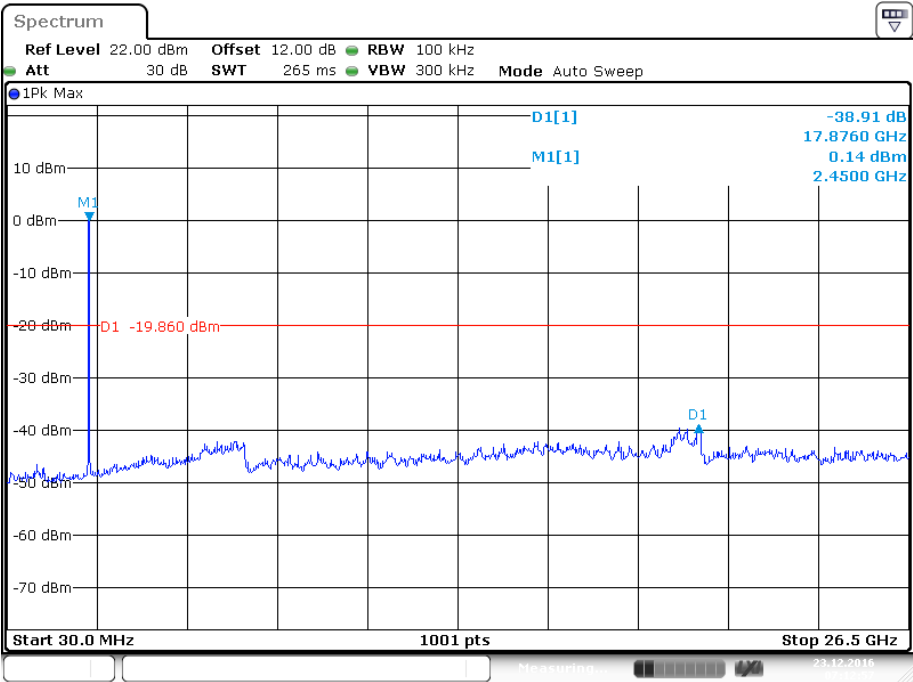
Date: 23 DEC 2016 07:08:55

Low Channel (G Mode / Chain 1)



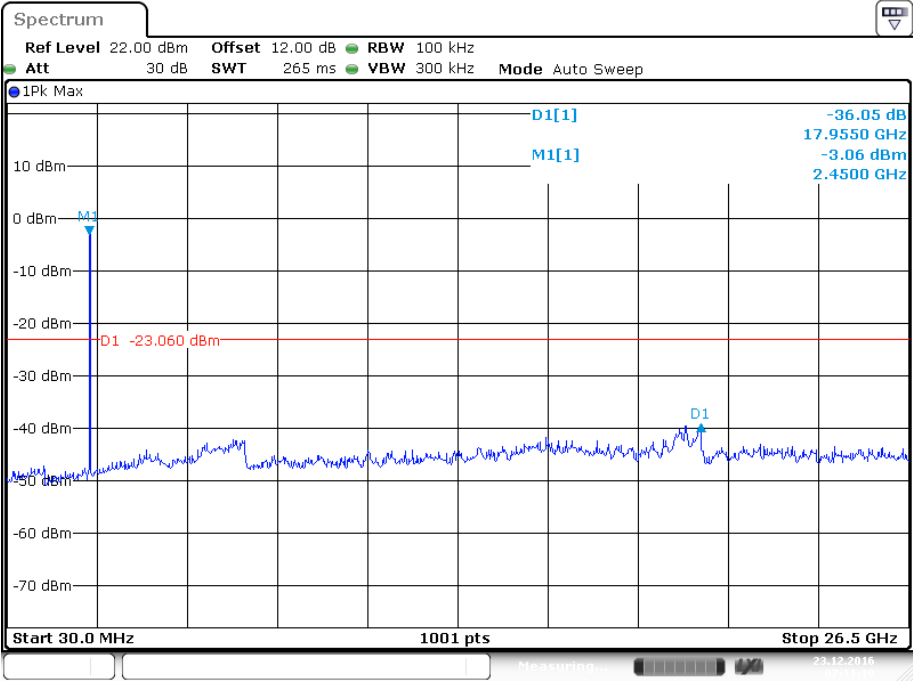
Date: 23 DEC 2016 07:17:41

Middle Channel (G Mode / Chain 1)



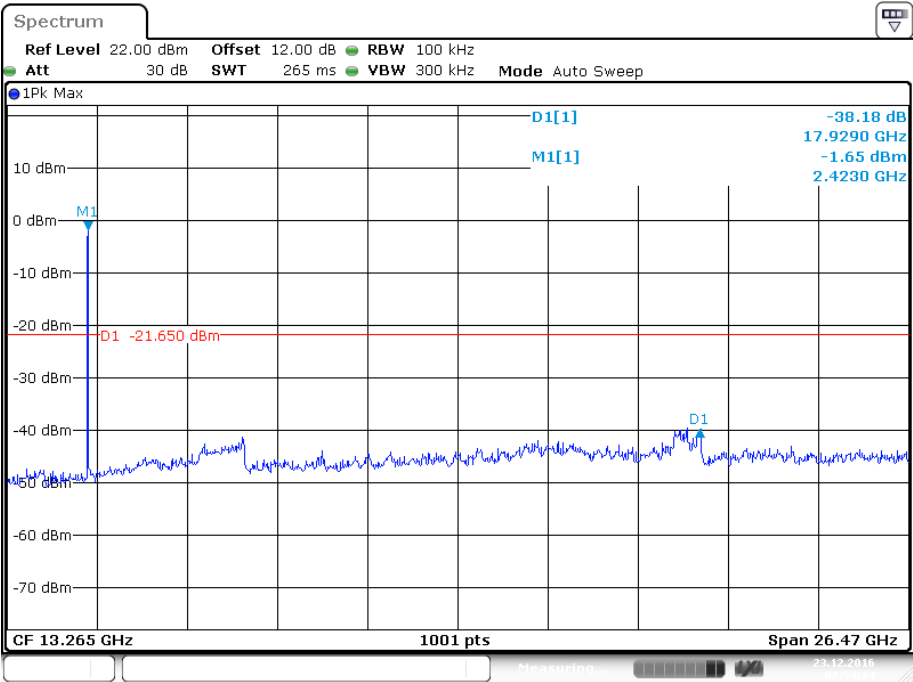
Date: 23 DEC 2016 07:12:58

High Channel (G Mode / Chain 1)



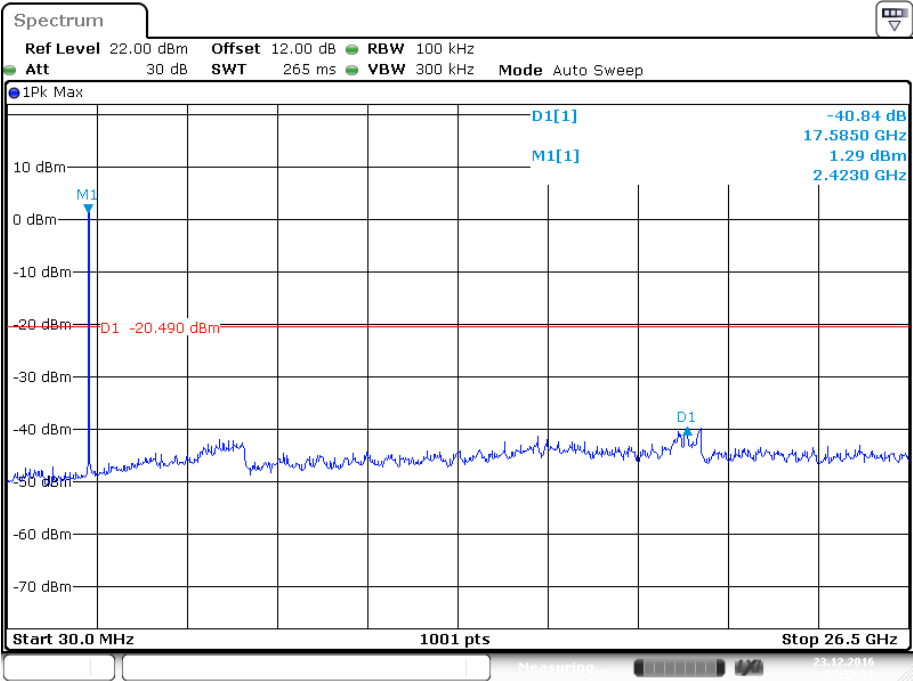
Date: 23 DEC 2016 07:11:20

Low Channel (N20 Mode / Chain 0)



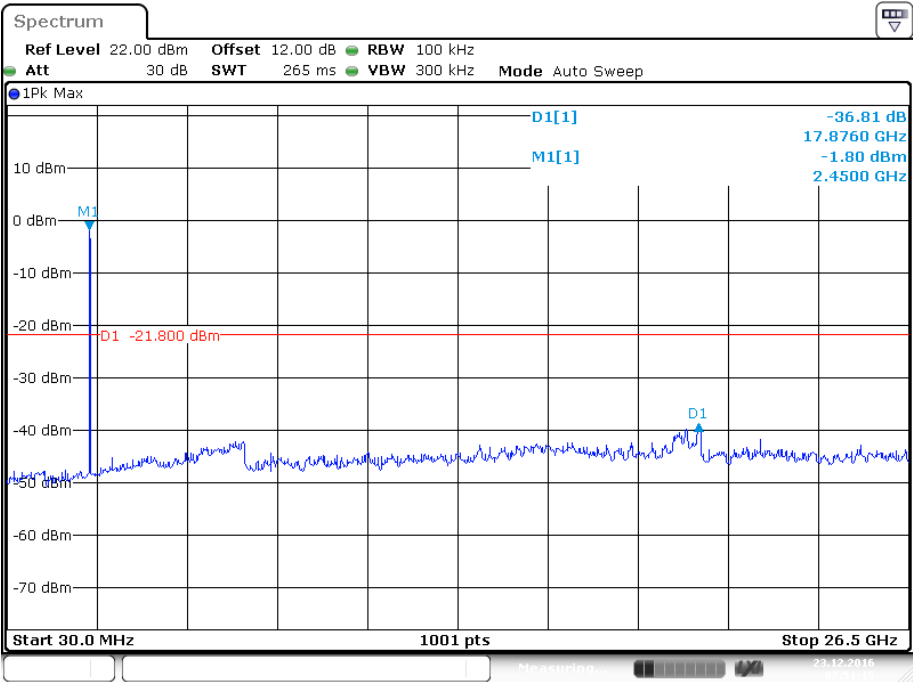
Date: 23 DEC 2016 07:54:14

Middle Channel (N20 Mode / Chain 0)



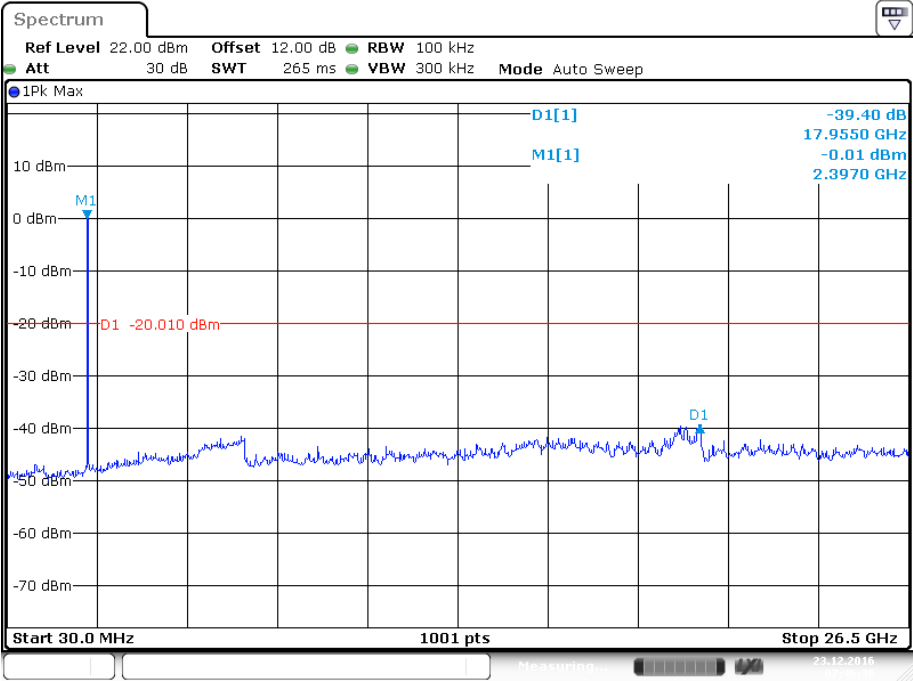
Date: 23 DEC 2016 07:52:51

High Channel (N20 Mode / Chain 0)



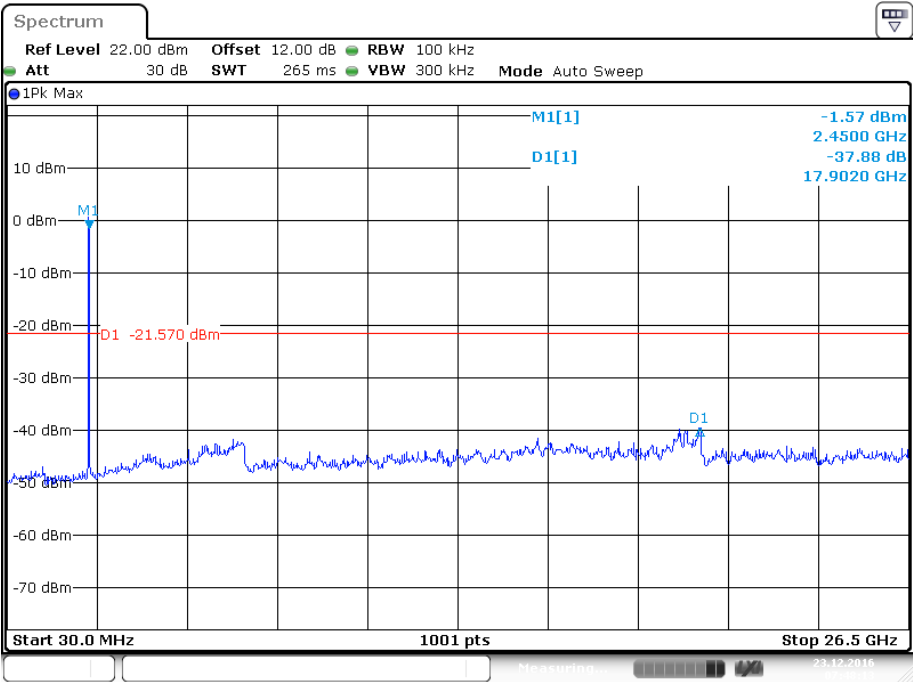
Date: 23 DEC 2016 07:51:16

Low Channel (N20 Mode / Chain 1)



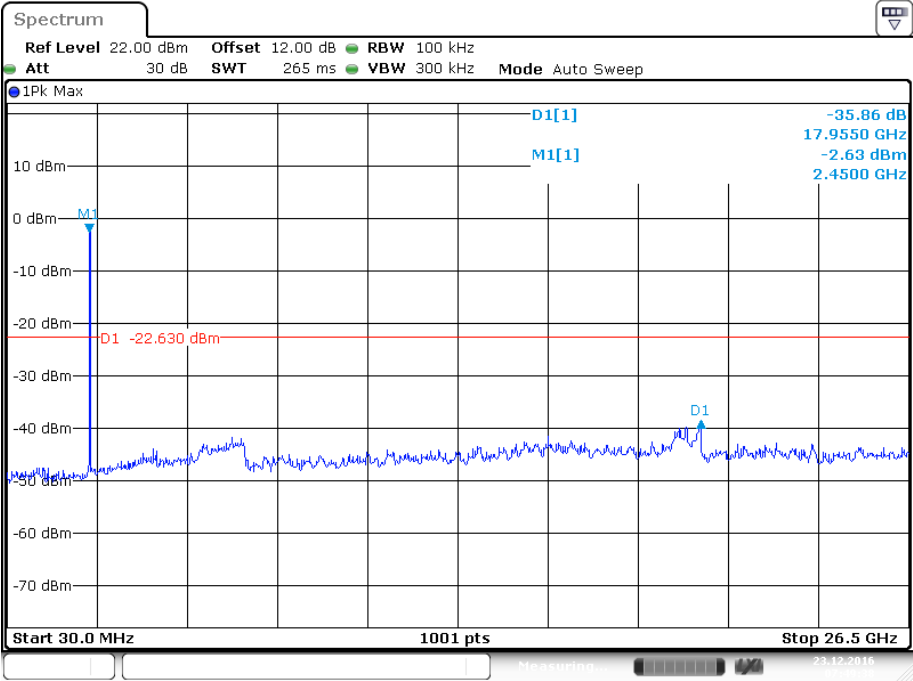
Date: 23 DEC 2016 07:46:37

Middle Channel (N20 Mode / Chain 1)



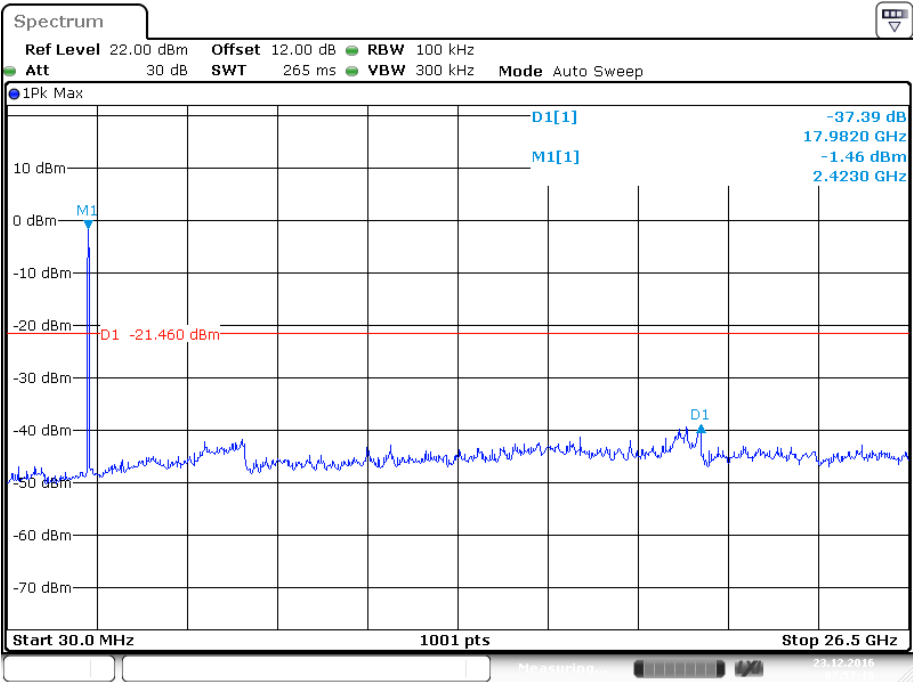
Date: 23 DEC 2016 07:48:13

High Channel (N20 Mode / Chain 1)



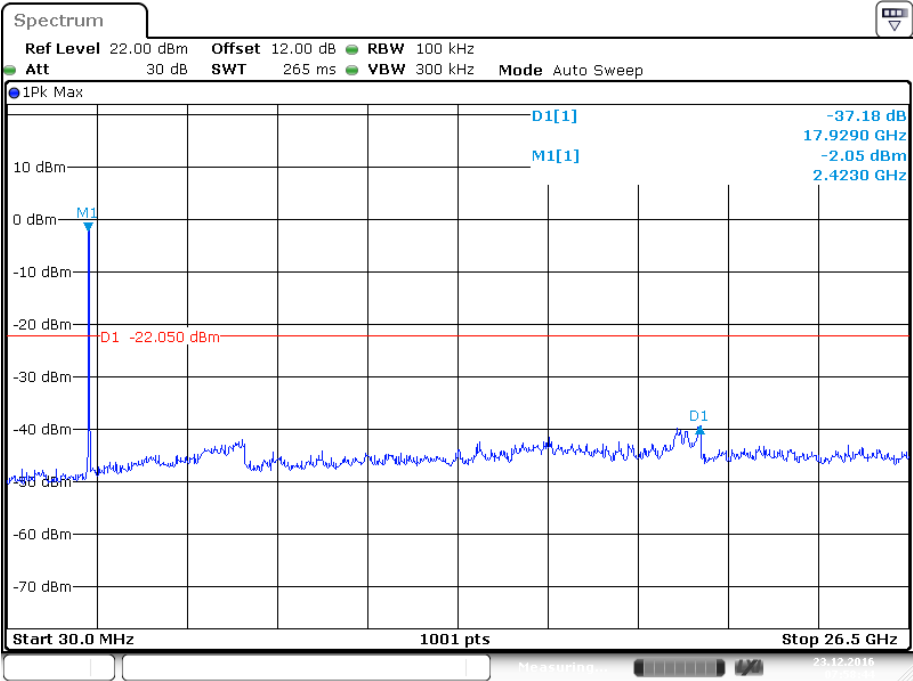
Date: 23 DEC 2016 07:49:38

Low Channel (N40 Mode / Chain 0)



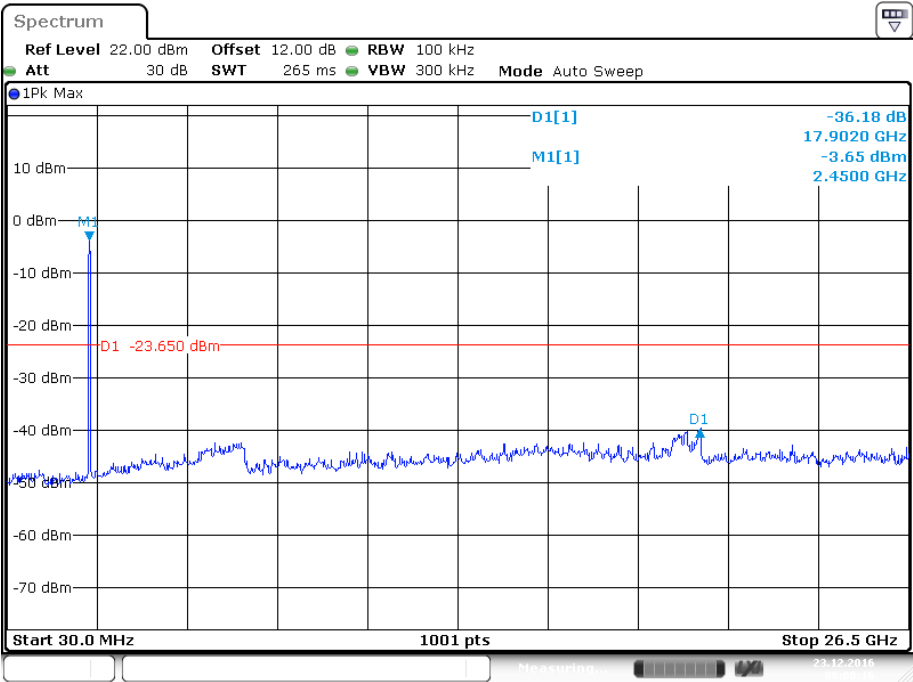
Date: 23 DEC 2016 07:57:19

Middle Channel (N40 Mode / Chain 0)



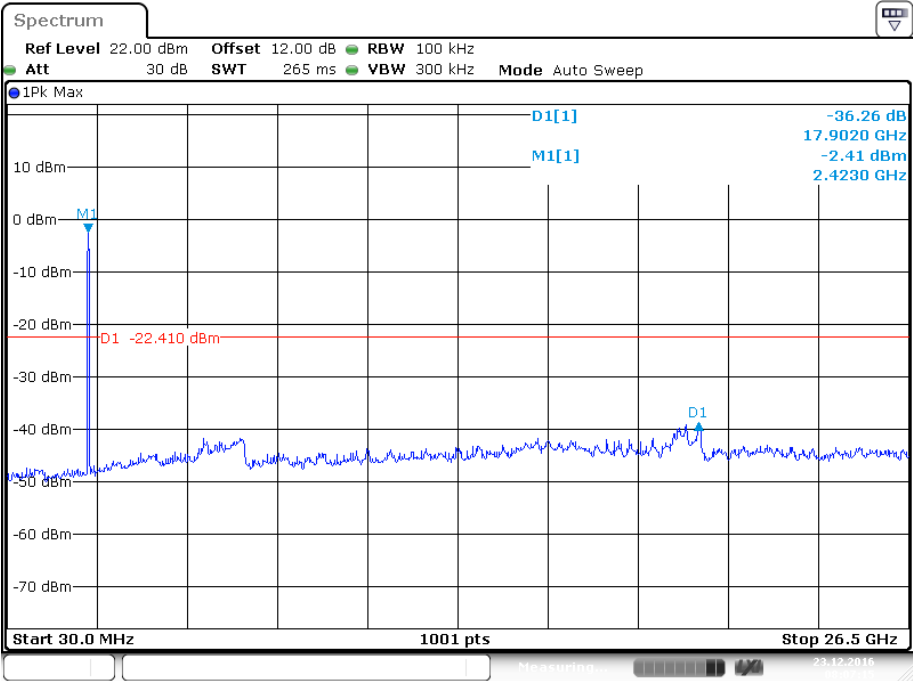
Date: 23 DEC 2016 07:58:44

High Channel (N40 Mode / Chain 0)



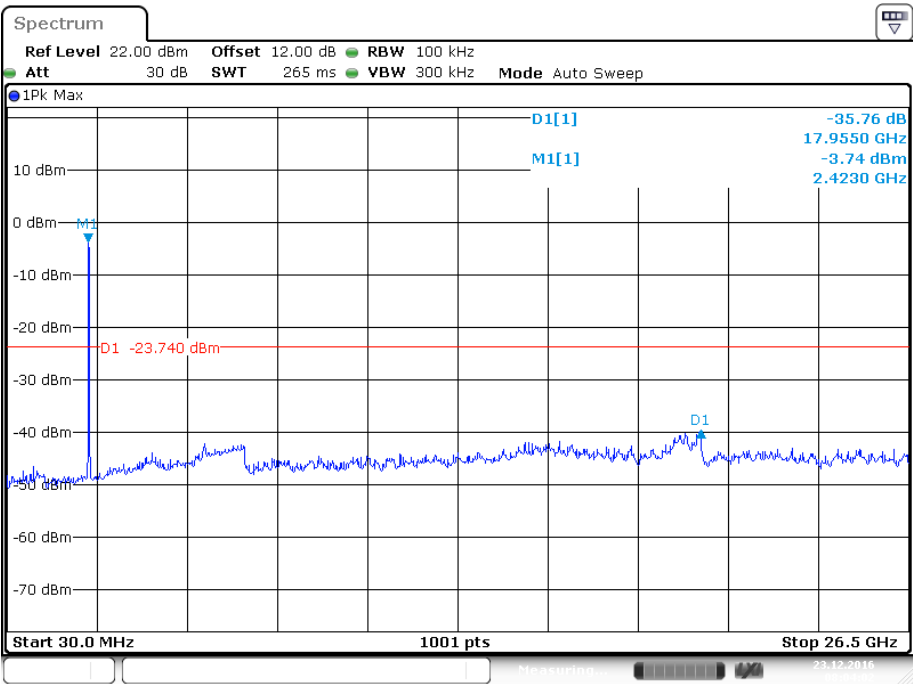
Date: 23 DEC 2016 08:00:16

Low Channel (N40 Mode / Chain 1)



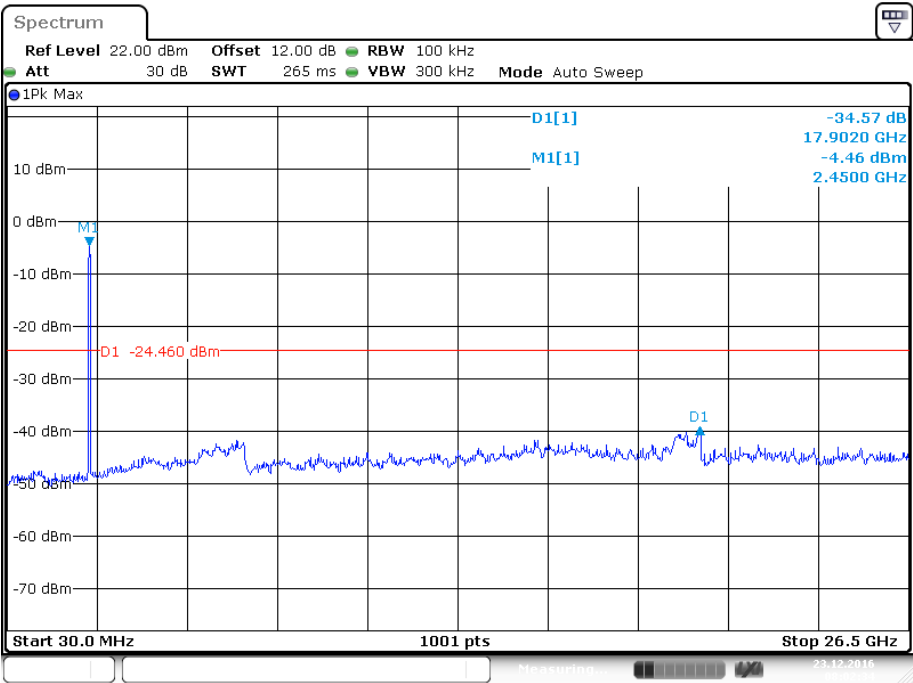
Date: 23 DEC 2016 08:07:15

Middle Channel (N40 Mode / Chain 1)



Date: 23 DEC 2016 08:04:02

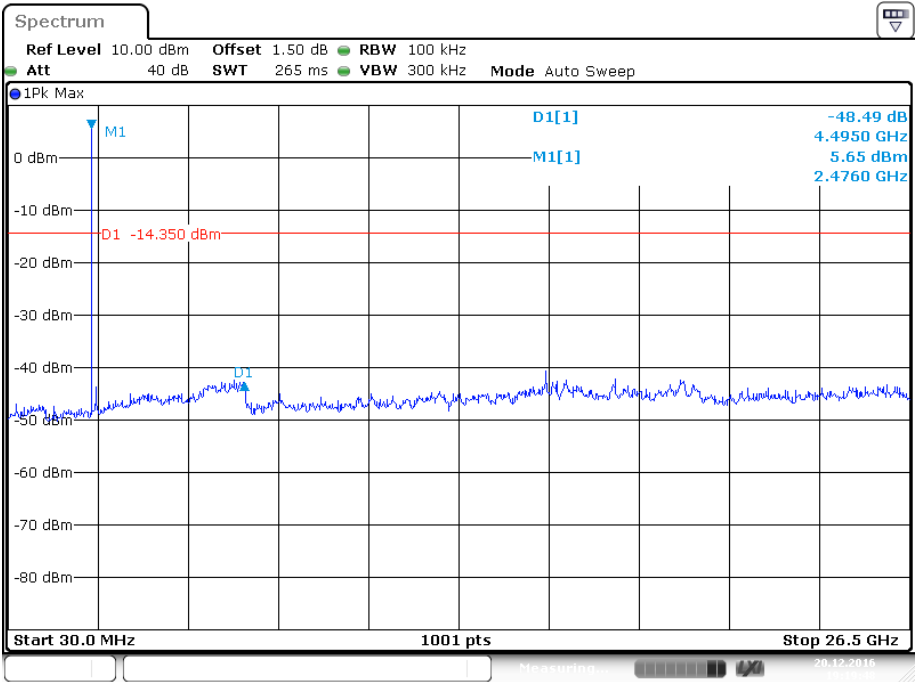
High Channel (N40 Mode / Chain 1)



Date: 23 DEC 2016 08:02:35



High Channel(BLE)



Date:20 DEC 2016 19:19:49

## 8 FCC §15.247(a)(2)– 6 dB Emission Bandwidth

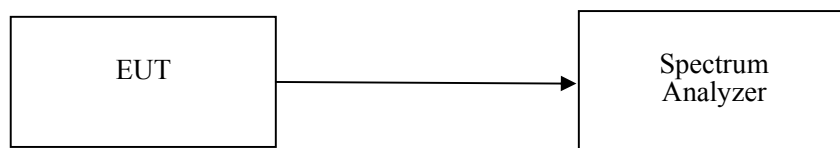
### 8.1 Applicable Standard

According to FCC §15.247(a)(2).

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 8.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



### 8.3 Test Equipment List and Details

| Descriptions      | Manufacturers   | Models | Serial Numbers | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------|----------------|------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSV40  | 101203         | 2016/7/14        | 2017/7/13            |
| Cable             | WOKEN           | SFL402 | 00100A1F6A192S | N.C.R            | N.C.R                |

**\*Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### 8.4 Test Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 55 %     |
| ATM Pressure:      | 1010 hPa |

The testing was performed by David Hsu on 2016-12-20 to 2016-12-22.

**8.5 Test Results****WIFI**

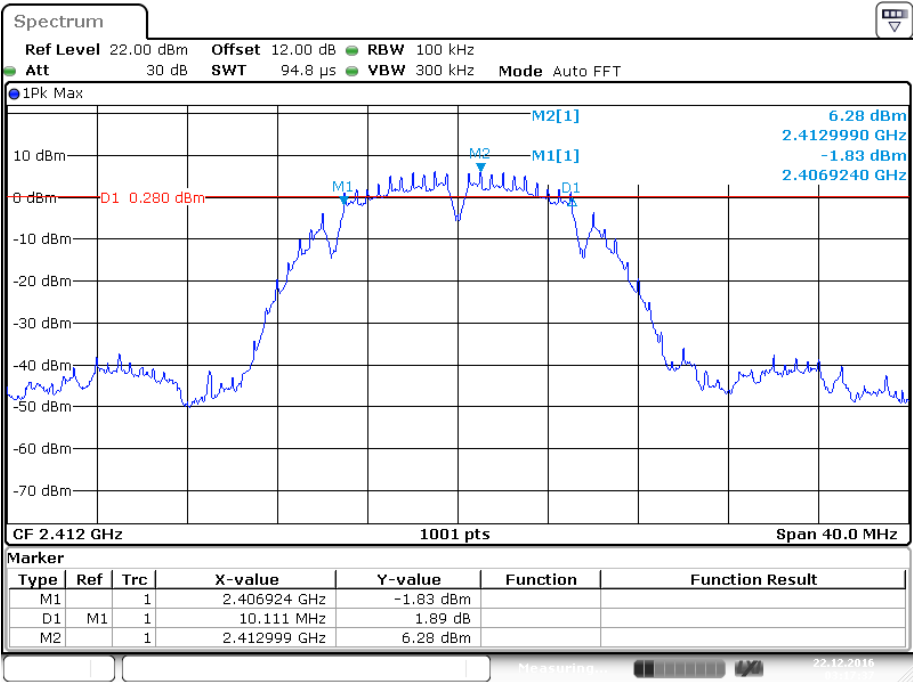
| Channel  | Frequency<br>(MHz) | 6 dB OBW<br>(MHz) |         | Limit<br>(MHz) | RESULT |
|----------|--------------------|-------------------|---------|----------------|--------|
|          |                    | Chain 0           | Chain 1 |                |        |
| B Mode   |                    |                   |         |                |        |
| Low      | 2412               | 10.11             | 10.11   | ≥ 0.5          | PASS   |
| Mid      | 2437               | 10.13             | 10.13   | ≥ 0.5          | PASS   |
| High     | 2462               | 10.10             | 10.11   | ≥ 0.5          | PASS   |
| G Mode   |                    |                   |         |                |        |
| Low      | 2412               | 15.93             | 15.78   | ≥ 0.5          | PASS   |
| Mid      | 2437               | 15.80             | 15.80   | ≥ 0.5          | PASS   |
| High     | 2462               | 15.77             | 15.77   | ≥ 0.5          | PASS   |
| N20 Mode |                    |                   |         |                |        |
| Low      | 2412               | 15.94             | 15.14   | ≥ 0.5          | PASS   |
| Mid      | 2437               | 15.80             | 17.28   | ≥ 0.5          | PASS   |
| High     | 2462               | 17.05             | 15.46   | ≥ 0.5          | PASS   |
| N40 Mode |                    |                   |         |                |        |
| Low      | 2422               | 35.12             | 35.51   | ≥ 0.5          | PASS   |
| Mid      | 2437               | 35.44             | 35.44   | ≥ 0.5          | PASS   |
| High     | 2452               | 35.12             | 35.51   | ≥ 0.5          | PASS   |

**BLE**

| Channel | Frequency (MHz) | 6 dB OBW (MHz) | Limit (MHz) | Result     |
|---------|-----------------|----------------|-------------|------------|
| Low     | 2402            | 0.65           | $> 0.5$     | Compliance |
| Middle  | 2440            | 0.66           | $> 0.5$     | Compliance |
| High    | 2480            | 0.67           | $> 0.5$     | Compliance |

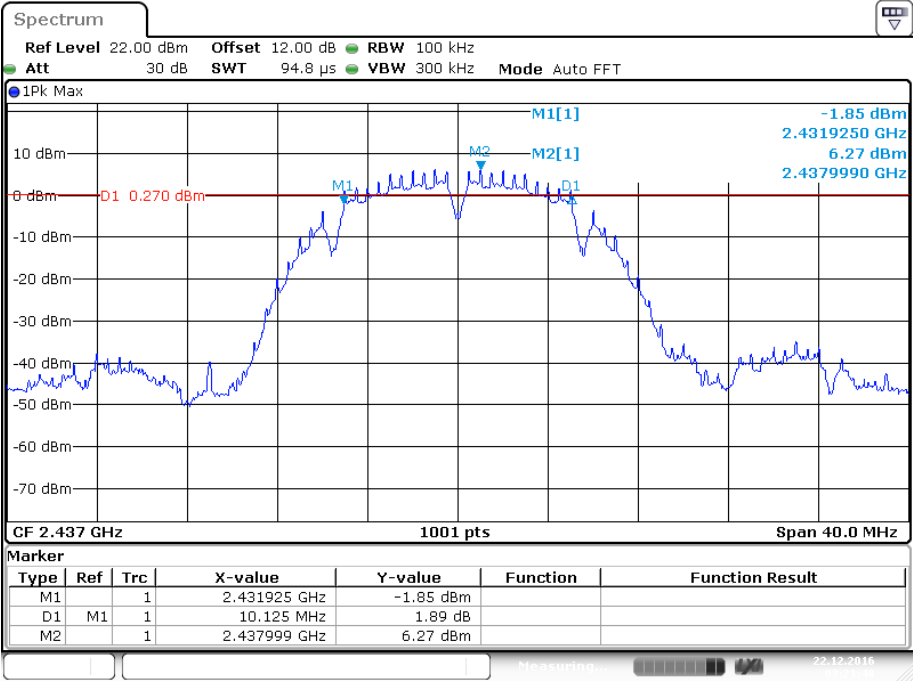
Please refer to the following plots

Low Channel (B Mode / Chain 0)



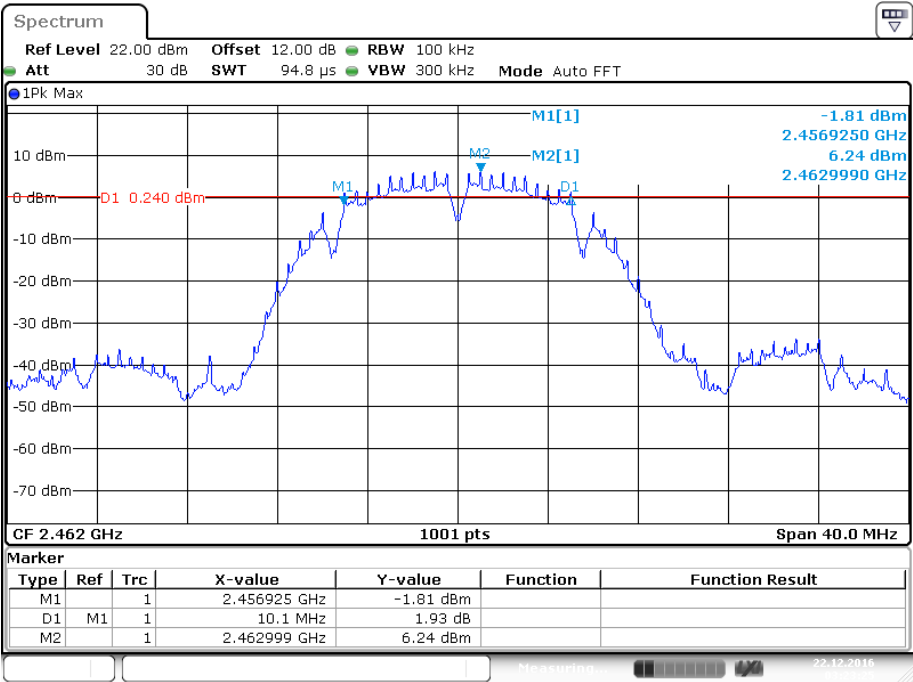
Date: 22 DEC 2016 03:17:38

Middle Channel (B Mode / Chain 0)



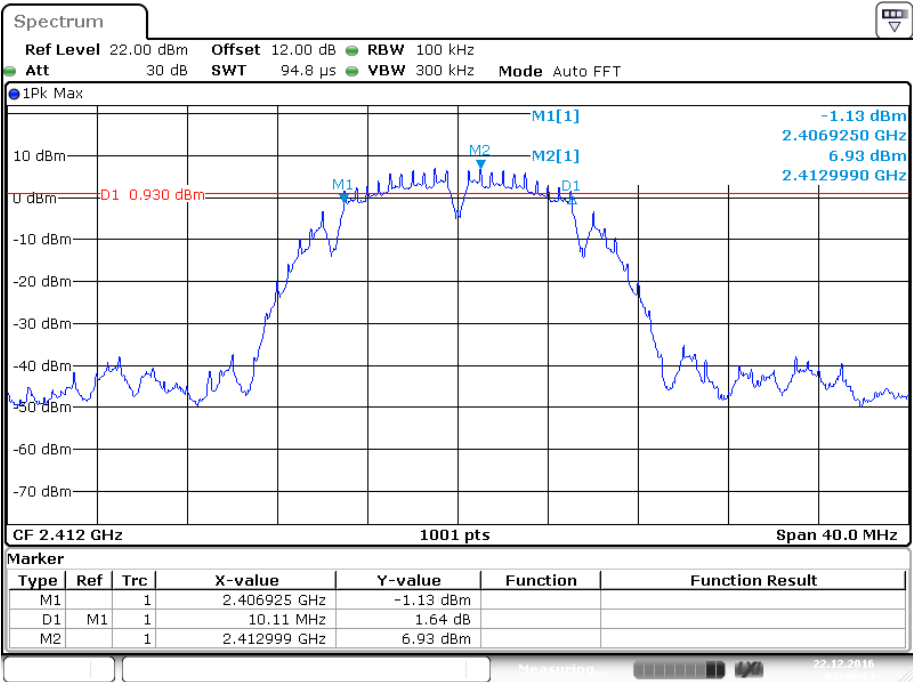
Date: 22 DEC 2016 03:21:48

High Channel (B Mode / Chain 0)



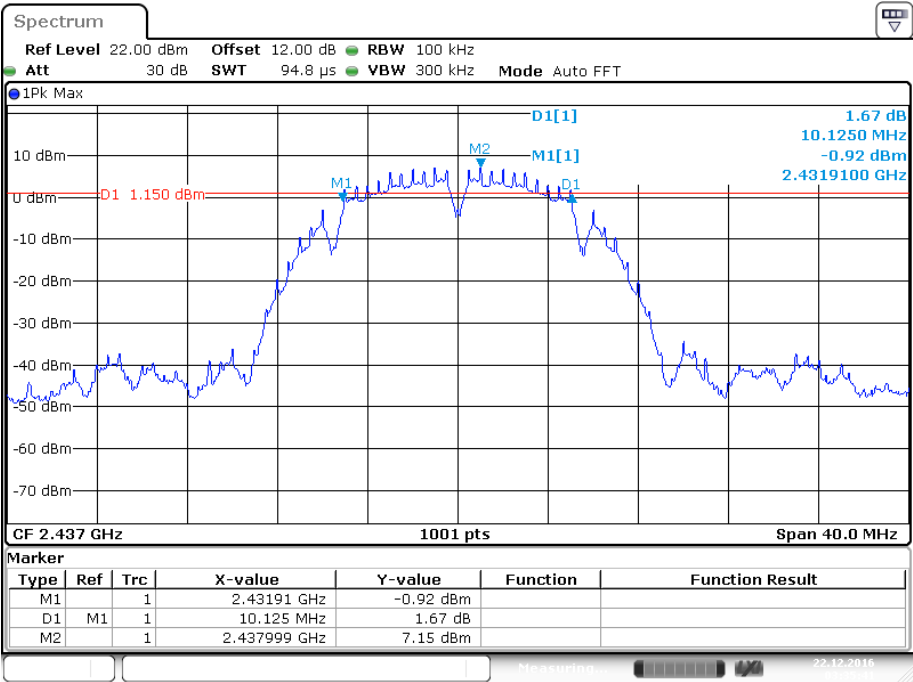
Date: 22 DEC 2016 03:23:26

Low Channel (B Mode / Chain 1)



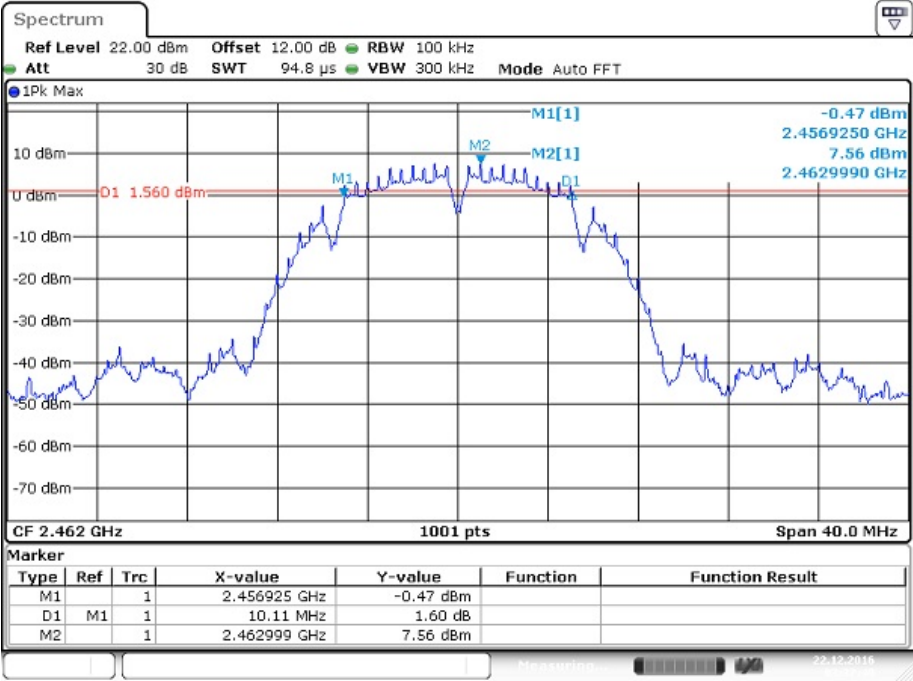
Date: 22 DEC 2016 03:40:13

Middle Channel (B Mode / Chain 1)



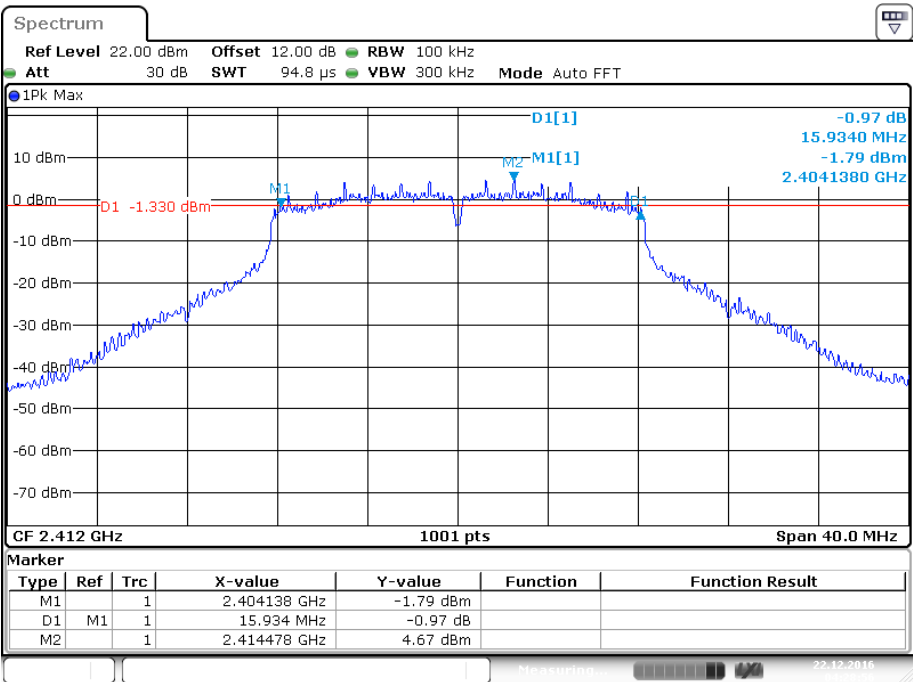
Date: 22 DEC 2016 03:35:41

High Channel (B Mode / Chain 1)



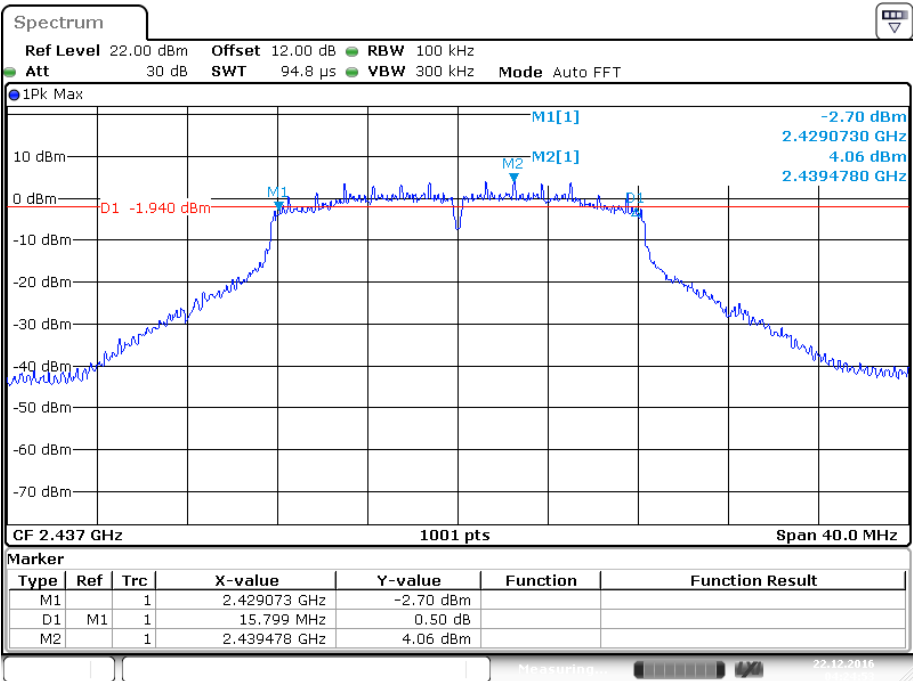
Date: 22 DEC 2016 03:27:40

Low Channel (G Mode / Chain 0)



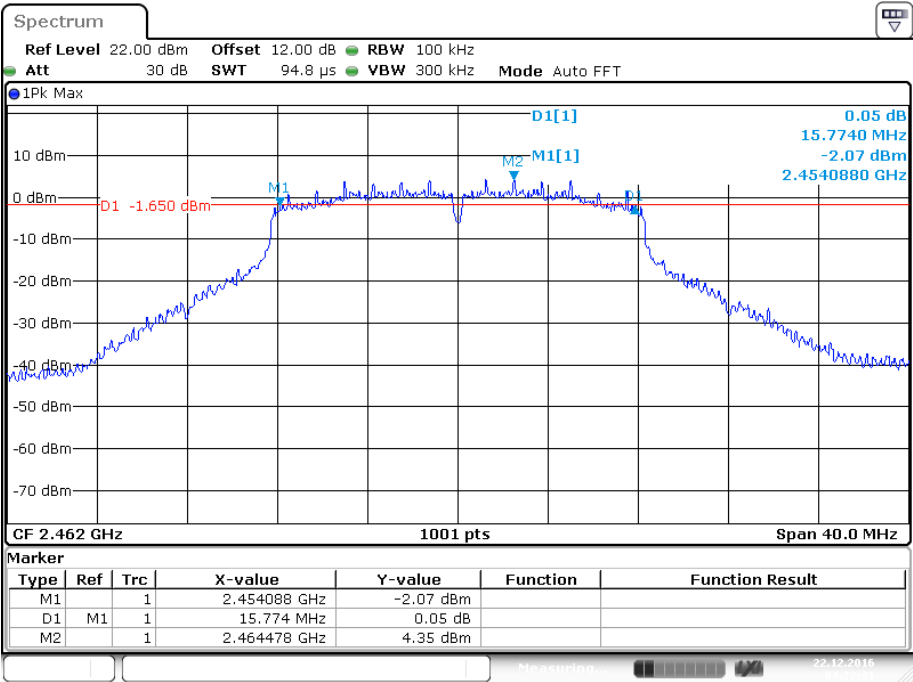
Date: 22 DEC 2016 04:28:56

Middle Channel (G Mode / Chain 0)



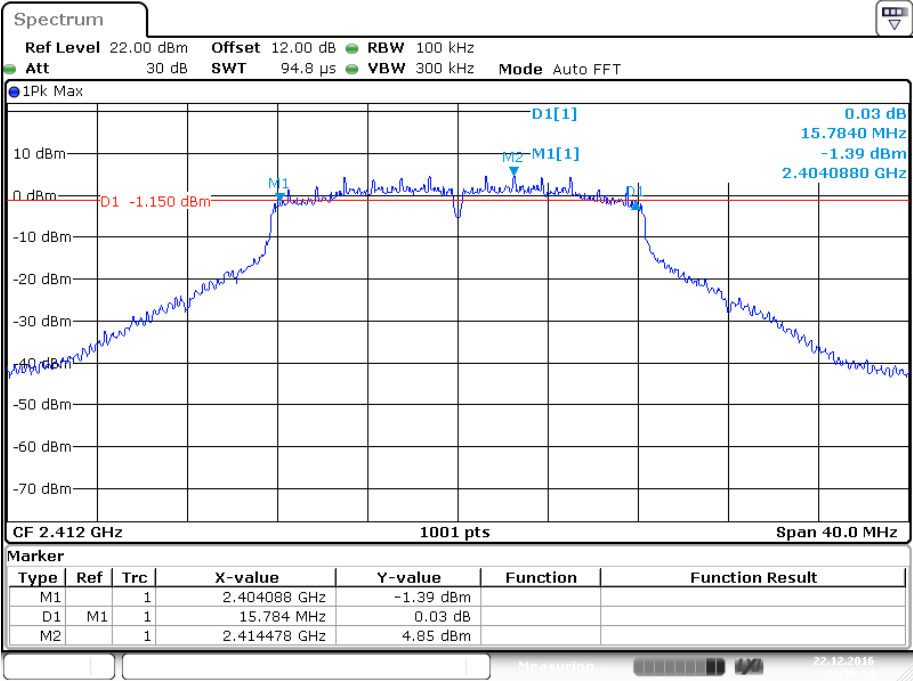
Date: 22 DEC 2016 04:24:54

High Channel (G Mode / Chain 0)



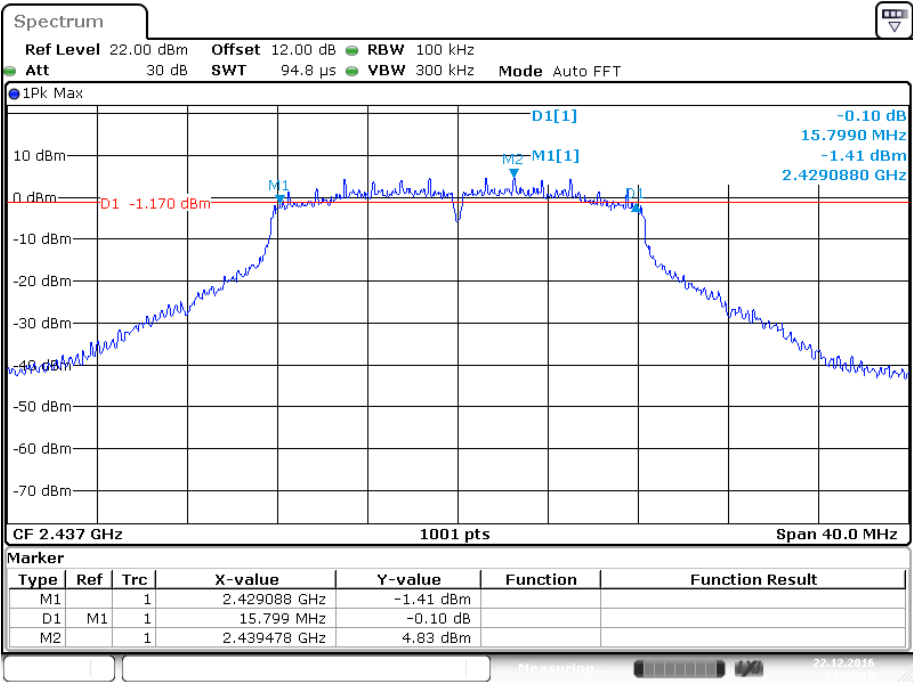
Date: 22 DEC 2016 04:22:31

Low Channel (G Mode / Chain 1)



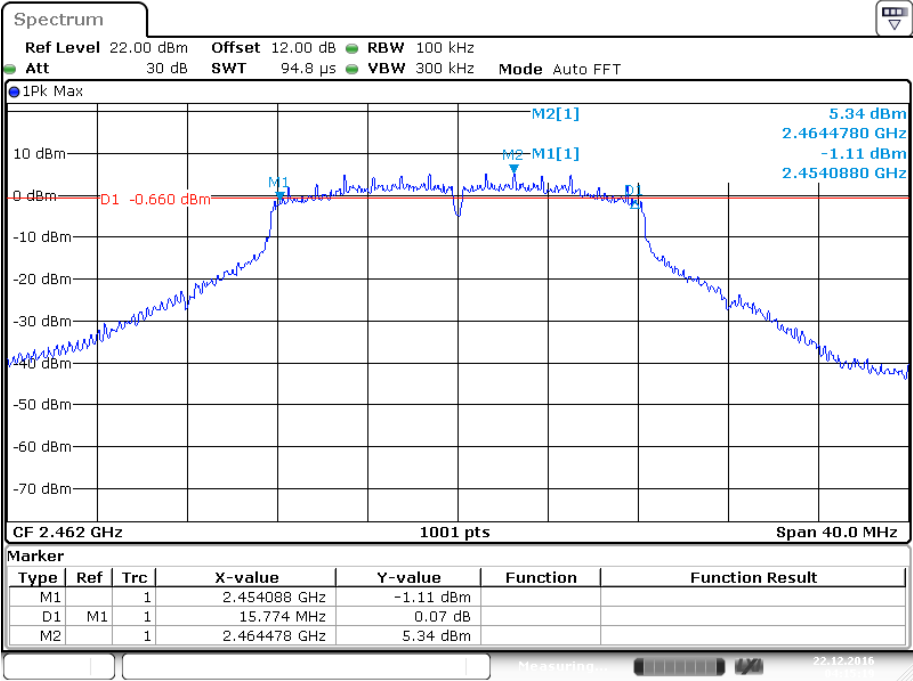
Date: 22 DEC 2016 03:56:15

Middle Channel (G Mode / Chain 1)



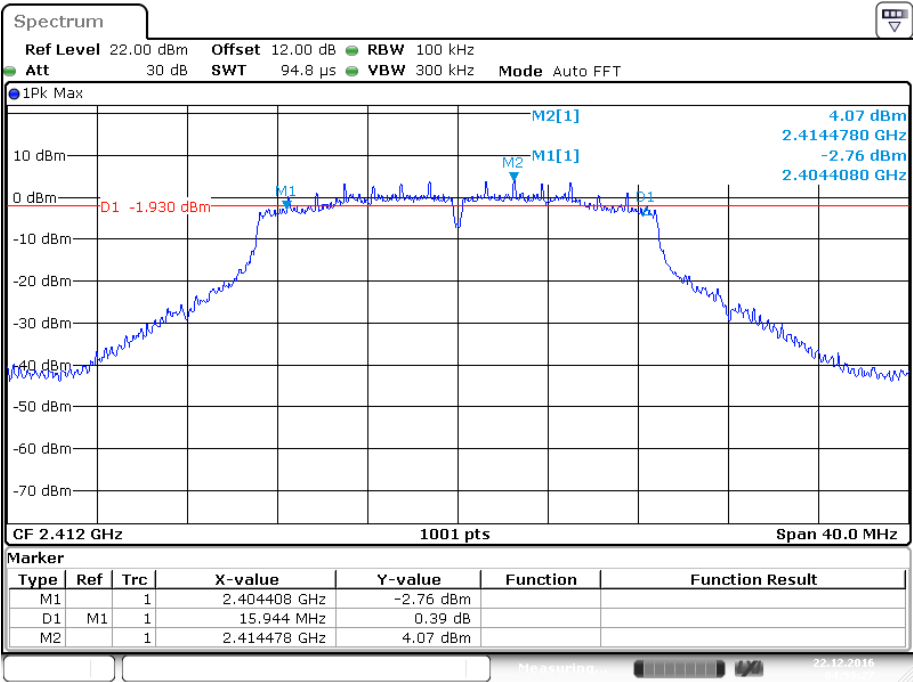
Date: 22 DEC 2016 04:00:16

High Channel (G Mode / Chain 1)



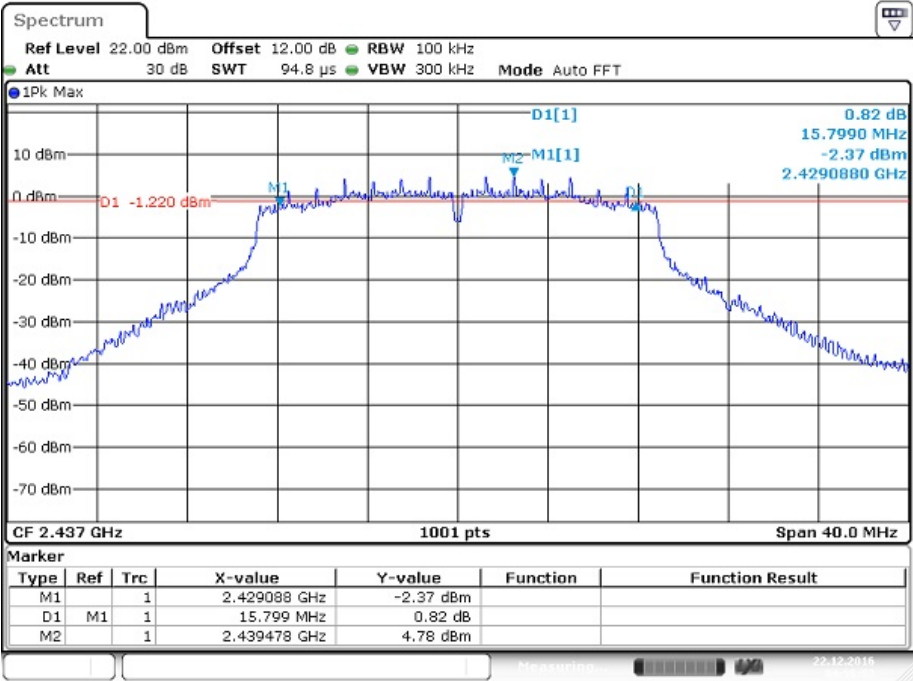
Date: 22 DEC 2016 04:15:19

Low Channel (N20 Mode / Chain 0)



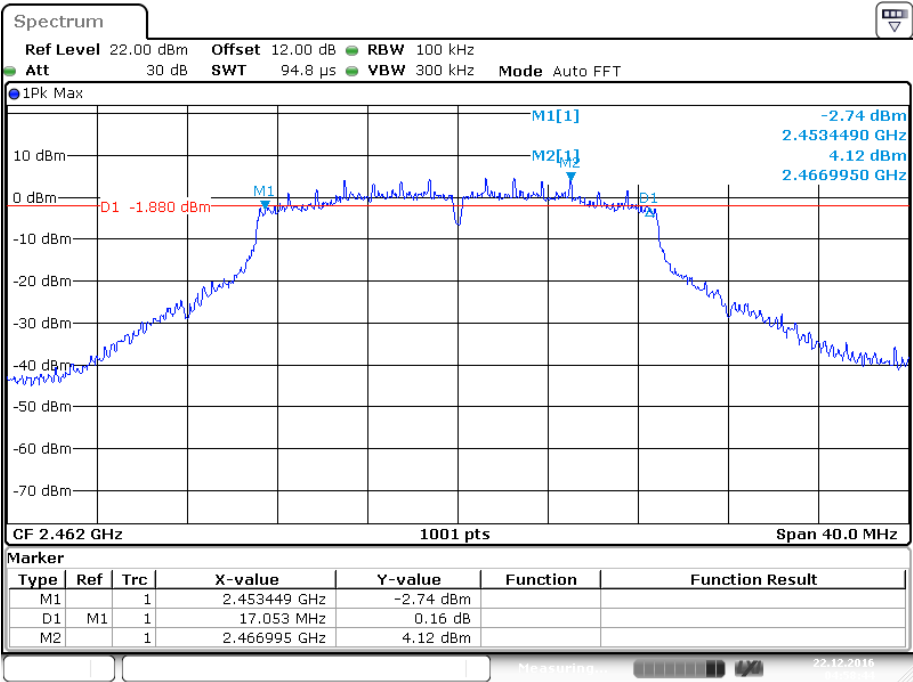
Date: 22 DEC 2016 04:53:27

Middle Channel (N20 Mode / Chain 0)



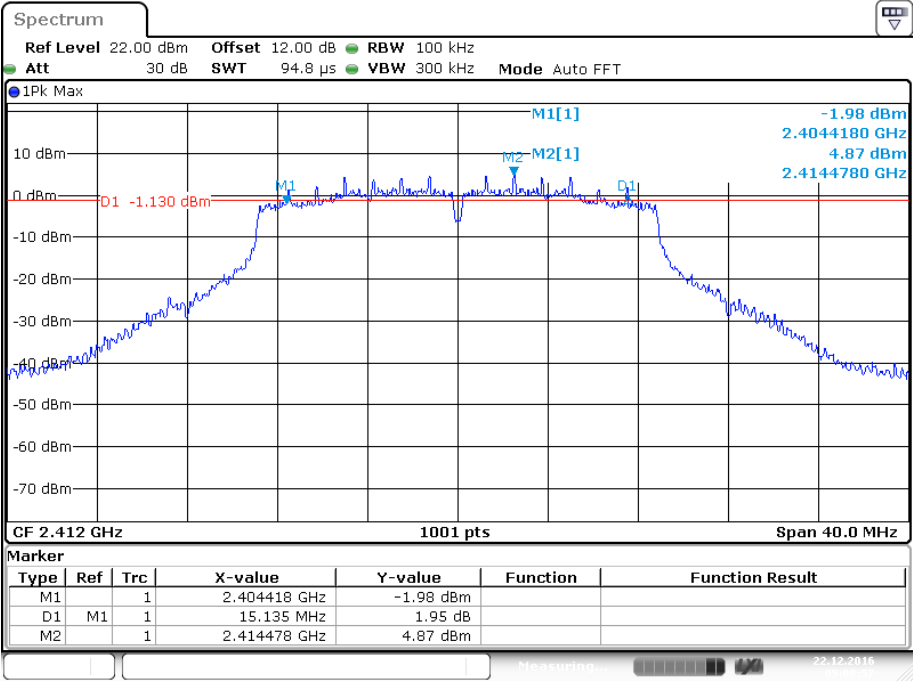
Date: 22 DEC 2016 04:56:52

High Channel (N20 Mode / Chain 0)



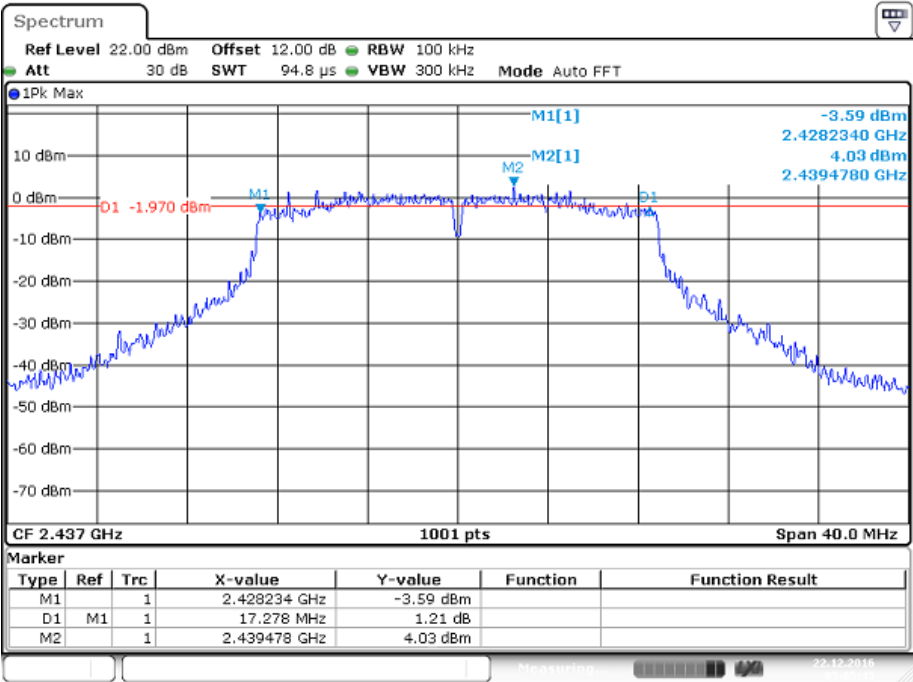
Date: 22 DEC 2016 04:58:45

Low Channel (N20 Mode / Chain 1)



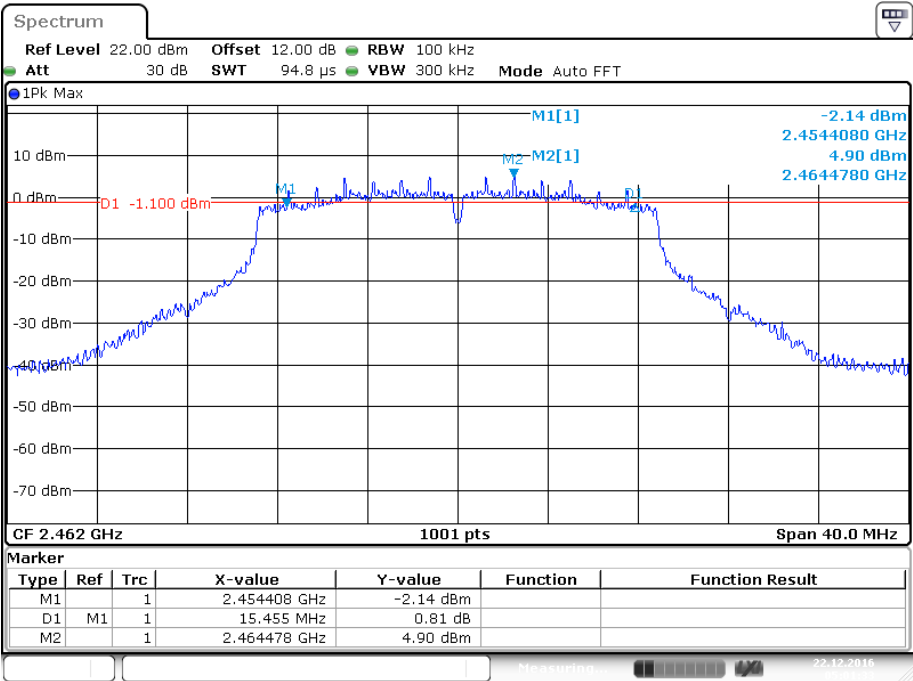
Date: 22 DEC 2016 05:08:57

Middle Channel (N20 Mode / Chain 1)



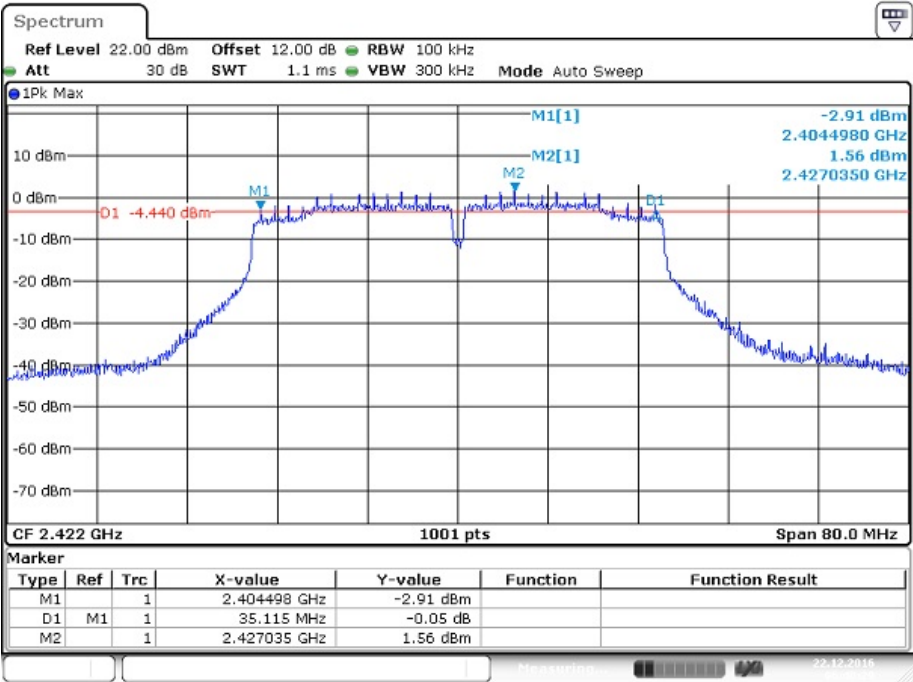
Date: 22 DEC 2016 05:05:45

High Channel (N20 Mode / Chain 1)



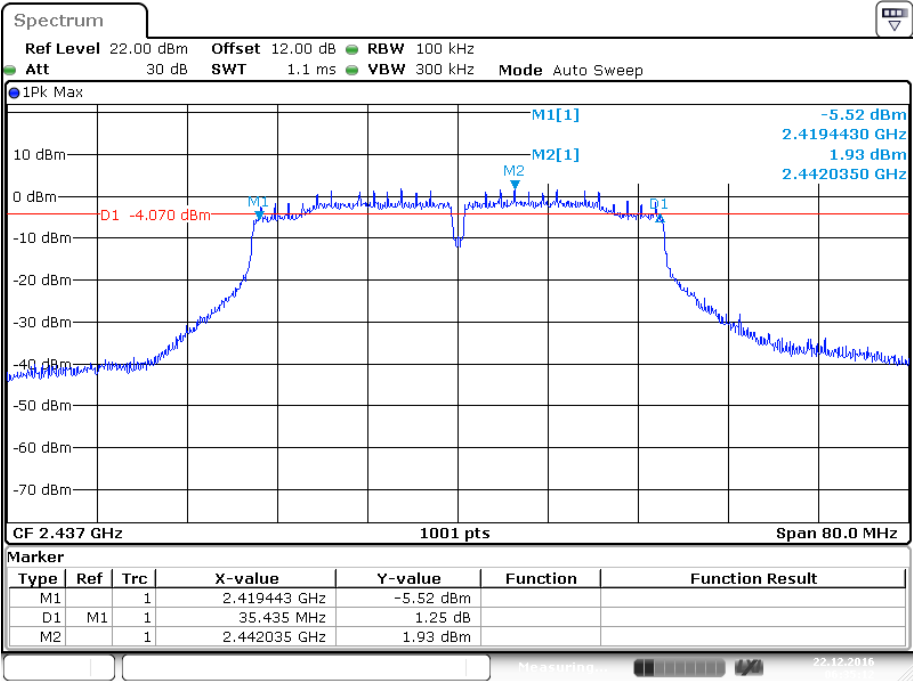
Date: 22 DEC 2016 05:01:33

Low Channel (N40 Mode / Chain 0)



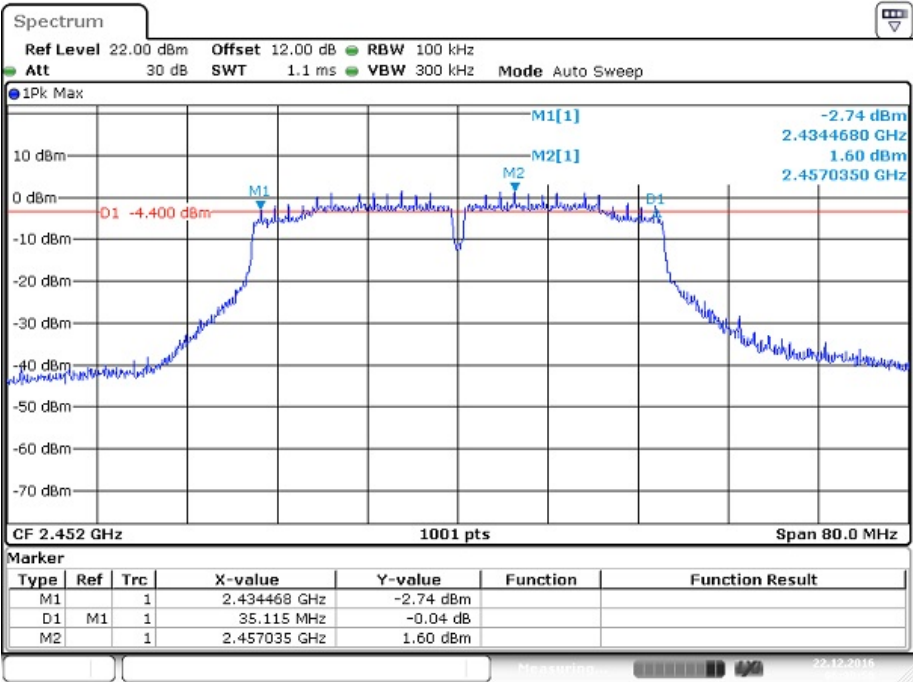
Date: 22 DEC 2016 06:40:29

Middle Channel (N40 Mode / Chain 0)



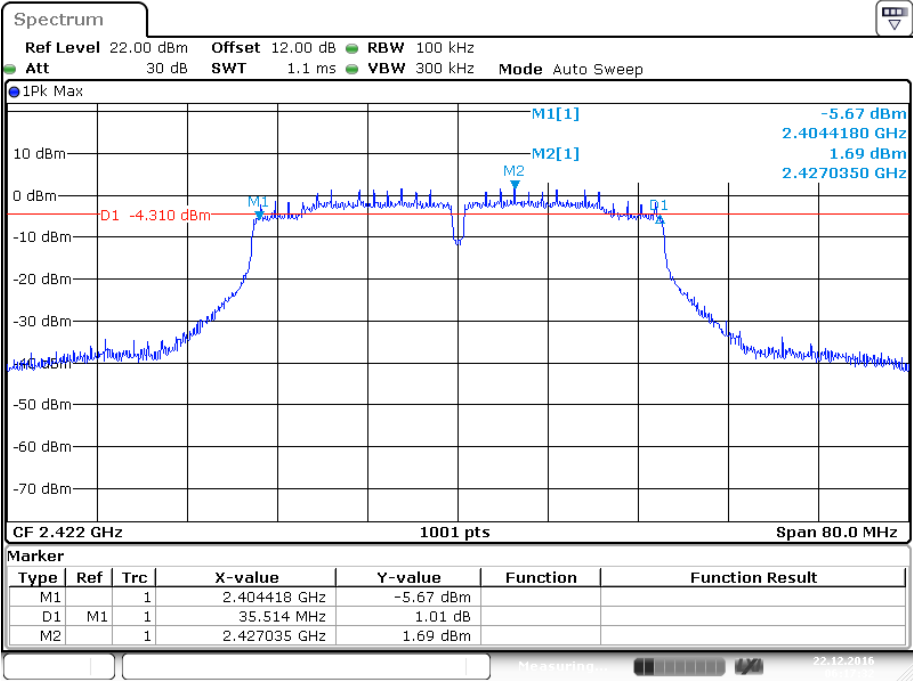
Date: 22 DEC 2016 06:35:12

High Channel (N40 Mode / Chain 0)



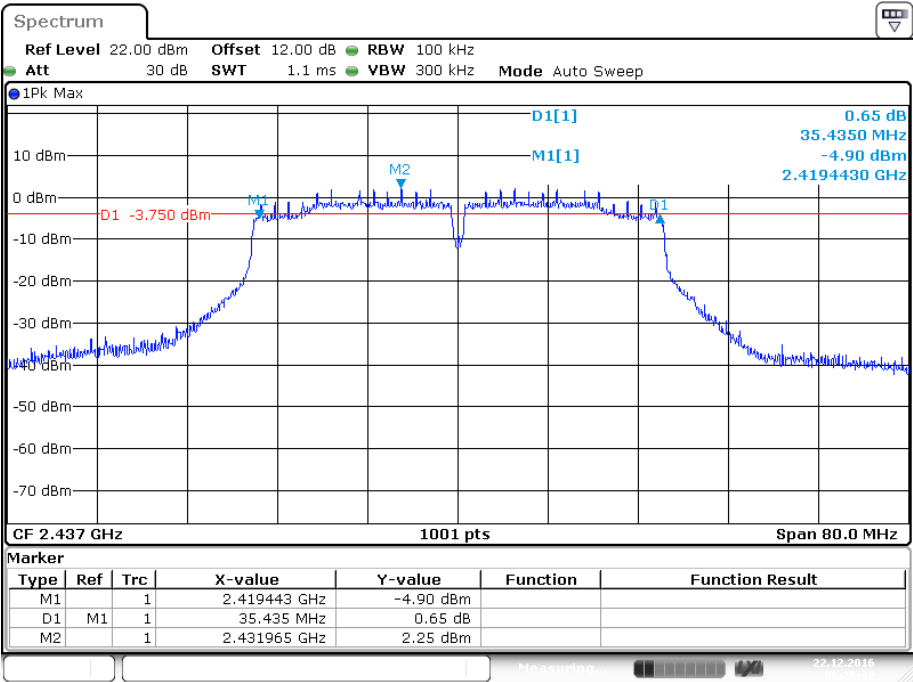
Date: 22 DEC 2016 06:30:56

Low Channel (N40 Mode / Chain 1)



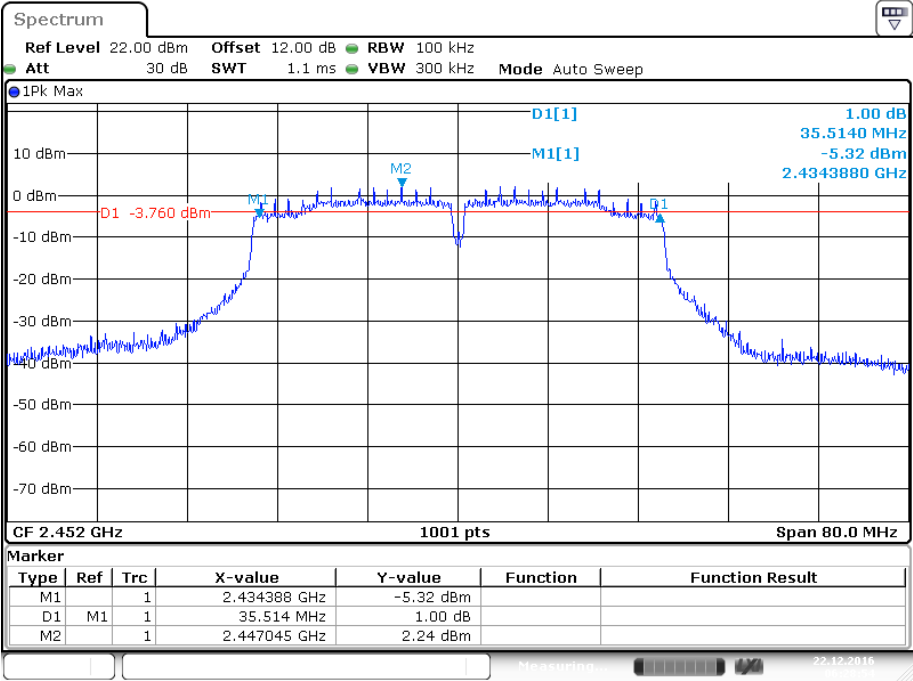
Date: 22 DEC 2016 06:17:32

Middle Channel (N40 Mode / Chain 1)



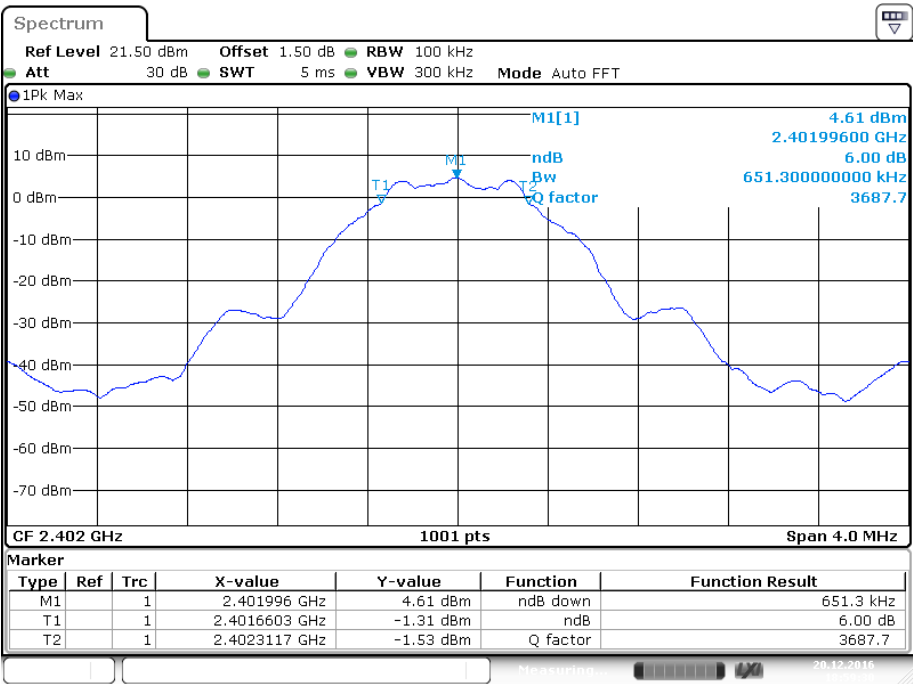
Date: 22 DEC 2016 06:26:32

High Channel (N40 Mode / Chain 1)



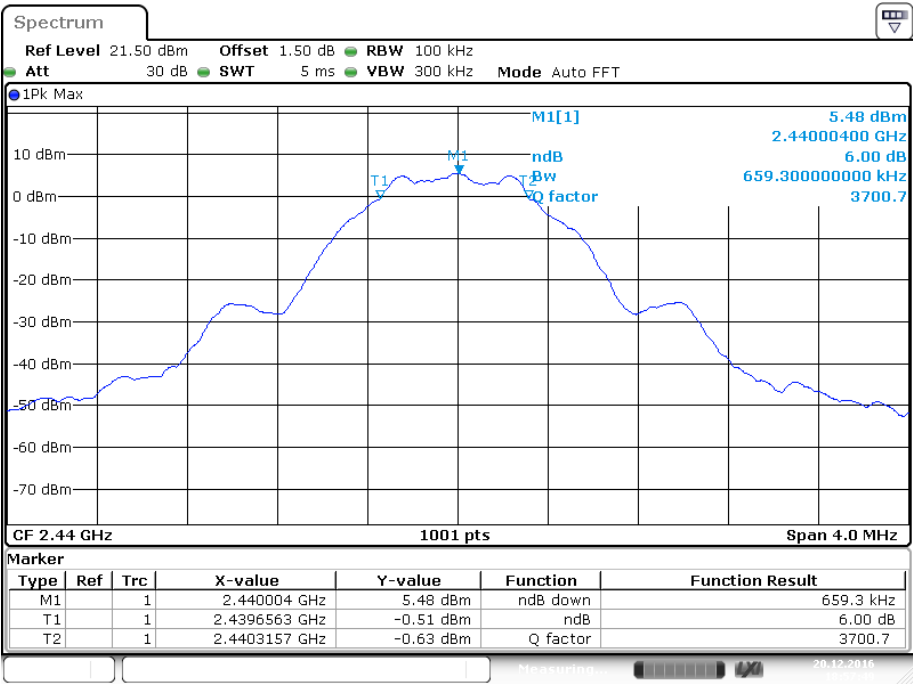
Date: 22 DEC 2016 06:28:54

Low Channel (BLE)



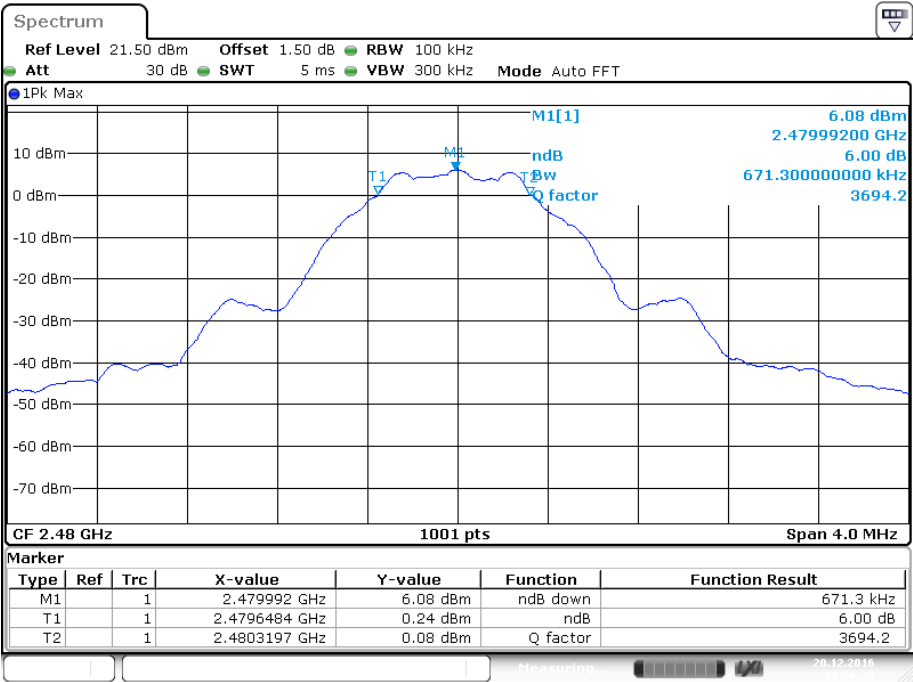
Date: 20 DEC 2016 18:59:29

Middle Channel (BLE)



Date: 20 DEC 2016 18:57:50

High Channel (BLE)



Date: 20 DEC 2016 18:56:31

## 9 FCC §15.247(b)(3)– Maximum Output Power

### 9.1 Applicable Standard

According to FCC §15.247(b)(3).

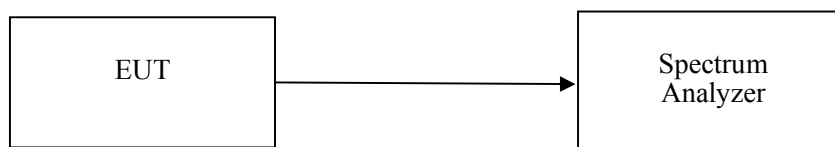
Systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### 9.2 Test Procedure

Wifi according to ANSI C63.10-2013 chapter 11.9.1.2 & 11.9.2.2.2

BLE according to ANSI C63.10-2013 chapter 11.9.1.1

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.
3. Add a correction factor to the display.



### 9.3 Test Equipment List and Details

| Descriptions      | Manufacturers   | Models | Serial Numbers | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------|----------------|------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSV40  | 101203         | 2016/7/14        | 2017/7/13            |
| Cable             | WOKEN           | SFL402 | 00100A1F6A192S | N.C.R            | N.C.R                |

**\*Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### 9.4 Test Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 55 %     |
| ATM Pressure:      | 1010 hPa |

The testing was performed by David Hsu on 2016-12-20 to 2016-12-22.

**9.5 Test Results****SISO Mode**

| Channel  | Frequency<br>(MHz) | Conducted Peak Output Power<br>(dBm)    |         | Limit<br>(dBm) | RESULT |
|----------|--------------------|-----------------------------------------|---------|----------------|--------|
|          |                    | Chain 0                                 | Chain 1 |                |        |
| B Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 17.42                                   | 17.25   | 30             | PASS   |
| Mid      | 2437               | 17.41                                   | 16.51   | 30             | PASS   |
| High     | 2462               | 17.35                                   | 17.01   | 30             | PASS   |
| G Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 18.37                                   | 18.60   | 30             | PASS   |
| Mid      | 2437               | 20.88                                   | 19.60   | 30             | PASS   |
| High     | 2462               | 16.83                                   | 16.75   | 30             | PASS   |
| N20 Mode |                    |                                         |         |                |        |
| Low      | 2412               | 18.21                                   | 18.79   | 30             | PASS   |
| Mid      | 2437               | 20.52                                   | 19.91   | 30             | PASS   |
| High     | 2462               | 16.83                                   | 16.88   | 30             | PASS   |
| N40 Mode |                    |                                         |         |                |        |
| Low      | 2422               | 18.39                                   | 18.69   | 30             | PASS   |
| Mid      | 2437               | 21.47                                   | 20.61   | 30             | PASS   |
| High     | 2452               | 17.61                                   | 16.14   | 30             | PASS   |
| Channel  | Frequency<br>(MHz) | Conducted Average Output<br>Power (dBm) |         | Limit<br>(dBm) | RESULT |
|          |                    | Chain 0                                 | Chain 1 |                |        |
| B Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 15.35                                   | 15.18   | 30             | PASS   |
| Mid      | 2437               | 15.34                                   | 14.67   | 30             | PASS   |
| High     | 2462               | 15.14                                   | 14.69   | 30             | PASS   |
| G Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 15.48                                   | 15.71   | 30             | PASS   |
| Mid      | 2437               | 17.82                                   | 16.57   | 30             | PASS   |
| High     | 2462               | 14.02                                   | 13.83   | 30             | PASS   |
| N20 Mode |                    |                                         |         |                |        |
| Low      | 2412               | 15.41                                   | 15.90   | 30             | PASS   |
| Mid      | 2437               | 17.70                                   | 17.10   | 30             | PASS   |
| High     | 2462               | 13.94                                   | 13.88   | 30             | PASS   |
| N40 Mode |                    |                                         |         |                |        |
| Low      | 2422               | 15.56                                   | 15.94   | 30             | PASS   |
| Mid      | 2437               | 18.70                                   | 17.86   | 30             | PASS   |
| High     | 2452               | 14.69                                   | 13.37   | 30             | PASS   |

## MIMO Mode

| Channel  | Frequency (MHz) | Conducted Peak Output Power (dBm)    |         |       | Limit (dBm) | RESULT |
|----------|-----------------|--------------------------------------|---------|-------|-------------|--------|
|          |                 |                                      |         |       |             |        |
|          |                 | Chain 0                              | Chain 1 | Total |             |        |
| N20 Mode |                 |                                      |         |       |             |        |
| Low      | 2412            | 16.55                                | 16.54   | 19.56 | 30          | PASS   |
| Mid      | 2437            | 18.53                                | 18.36   | 21.46 | 30          | PASS   |
| High     | 2462            | 15.68                                | 16.56   | 19.15 | 30          | PASS   |
| N40 Mode |                 |                                      |         |       |             |        |
| Low      | 2422            | 15.01                                | 15.96   | 18.52 | 30          | PASS   |
| Mid      | 2437            | 18.32                                | 18.62   | 21.48 | 30          | PASS   |
| High     | 2452            | 15.03                                | 16.06   | 18.59 | 30          | PASS   |
| Channel  | Frequency (MHz) | Conducted Average Output Power (dBm) |         |       | Limit (dBm) | RESULT |
|          |                 |                                      |         |       |             |        |
|          |                 | Chain 0                              | Chain 1 | Total |             |        |
| N20 Mode |                 |                                      |         |       |             |        |
| Low      | 2412            | 13.55                                | 13.75   | 16.66 | 30          | PASS   |
| Mid      | 2437            | 15.41                                | 15.53   | 18.48 | 30          | PASS   |
| High     | 2462            | 13.02                                | 13.88   | 16.48 | 30          | PASS   |
| N40 Mode |                 |                                      |         |       |             |        |
| Low      | 2422            | 12.27                                | 13.24   | 15.79 | 30          | PASS   |
| Mid      | 2437            | 14.94                                | 15.57   | 18.28 | 30          | PASS   |
| High     | 2452            | 12.22                                | 13.40   | 15.86 | 30          | PASS   |

The device is a client device. the 2 antenna maximum antenna gain are 4.2dBi, and employed Cyclic Delay

Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on the devices:

Array Gain = 0 dB for NANT  $\leq 4$ ;

So:

Directional gain = GANT + Array Gain = 4.2+0 =4.2 dBi <6 dBi

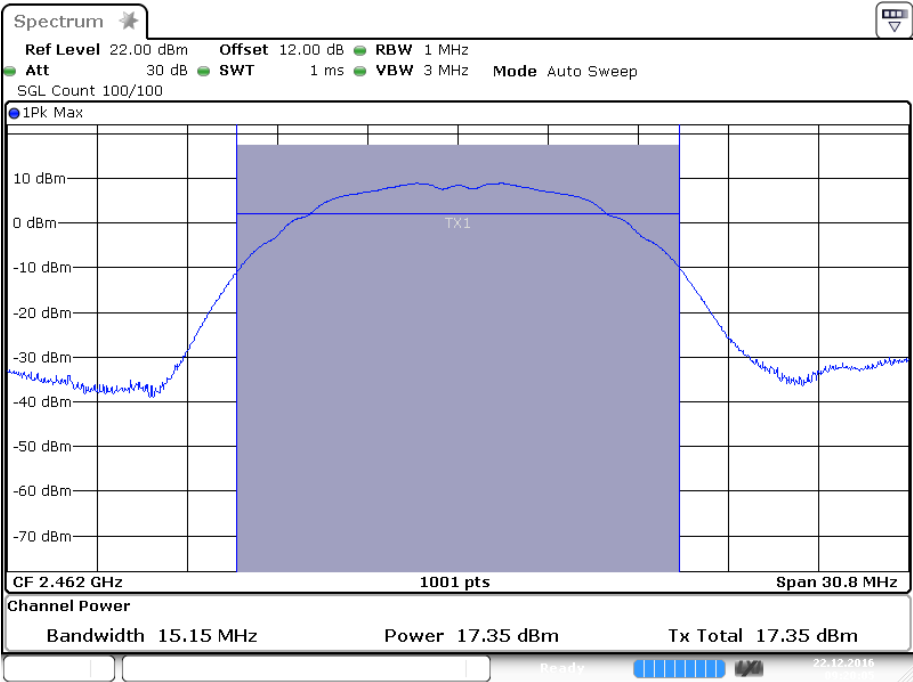
## BLE

| Channel | Frequency (MHz) | Conducted Output Power (dBm) | Conducted Output Power (W) | Limit (dBm) | Result     |
|---------|-----------------|------------------------------|----------------------------|-------------|------------|
| Low     | 2402            | 4.63                         | 0.00290                    | 30          | Compliance |
| Middle  | 2440            | 5.57                         | 0.00361                    | 30          | Compliance |
| High    | 2480            | 6.11                         | 0.00408                    | 30          | Compliance |

Please refer to the following plots

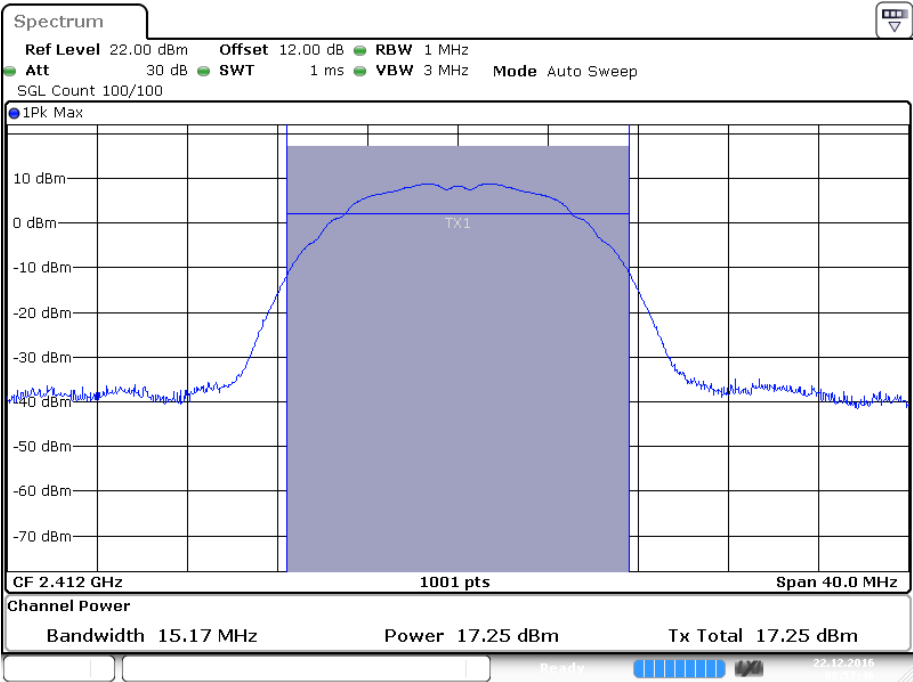


High Channel (B-SISO Mode / Chain 0)



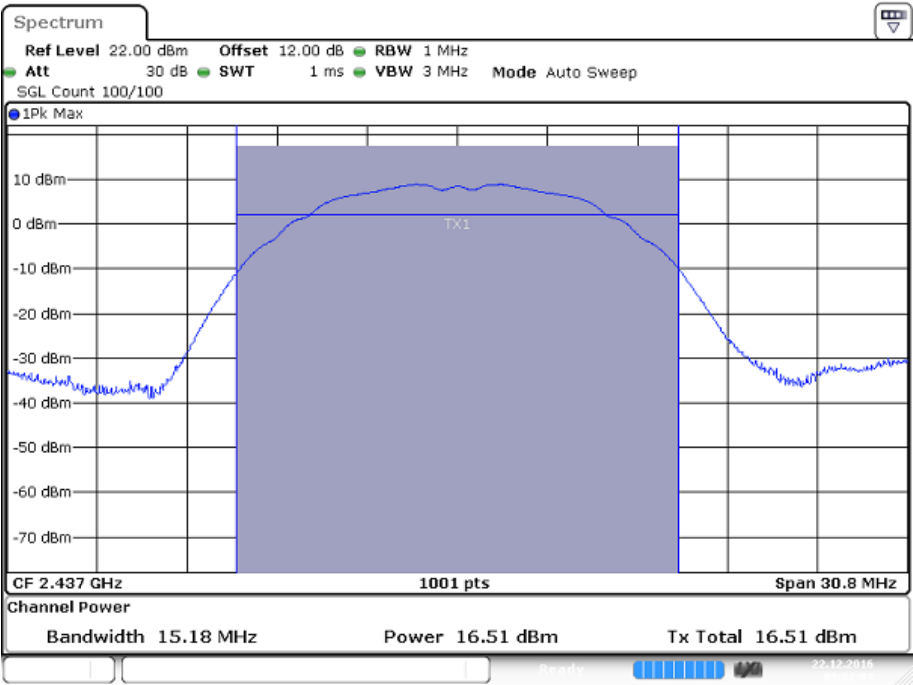
Date: 22 DEC 2016 09:20:05

Low Channel (B-SISO Mode / Chain 1)



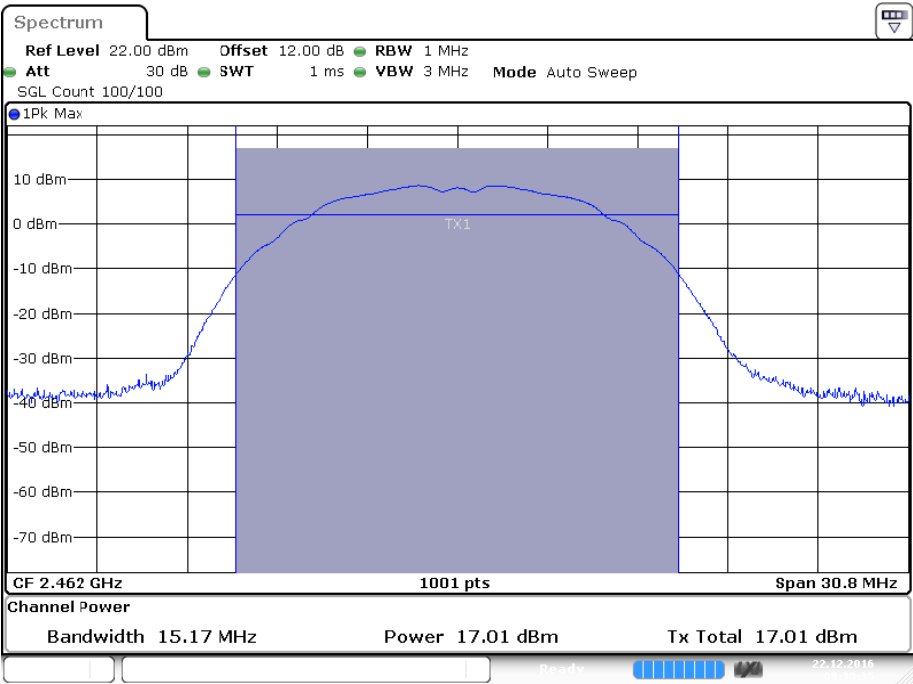
Date: 22 DEC 2016 08:57:47

Middle Channel (B-SISO Mode / Chain 1)



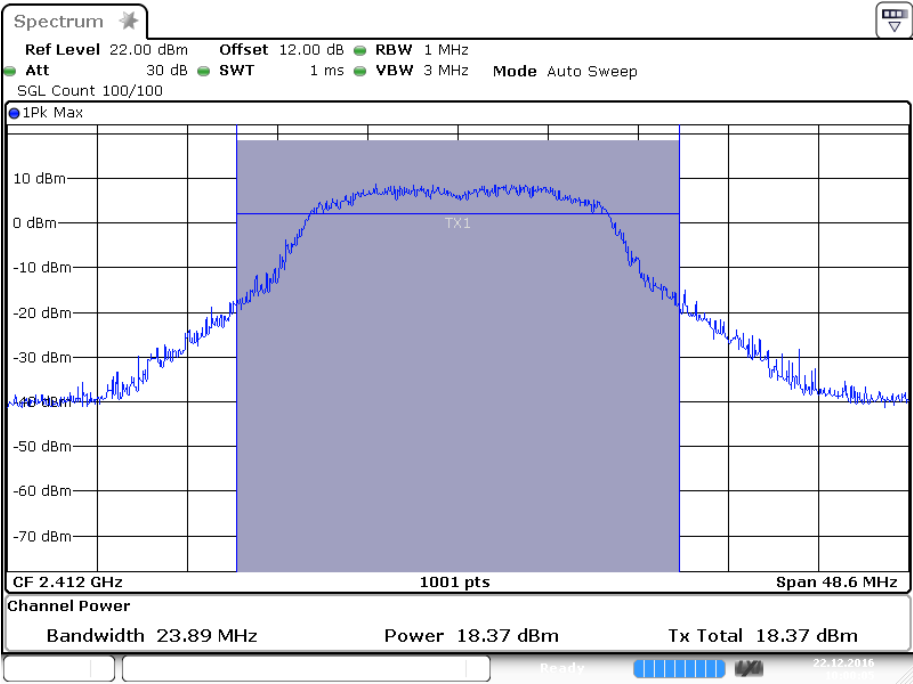
Date: 22 DEC 2016 09:02:08

High Channel (B-SISO Mode / Chain 1)



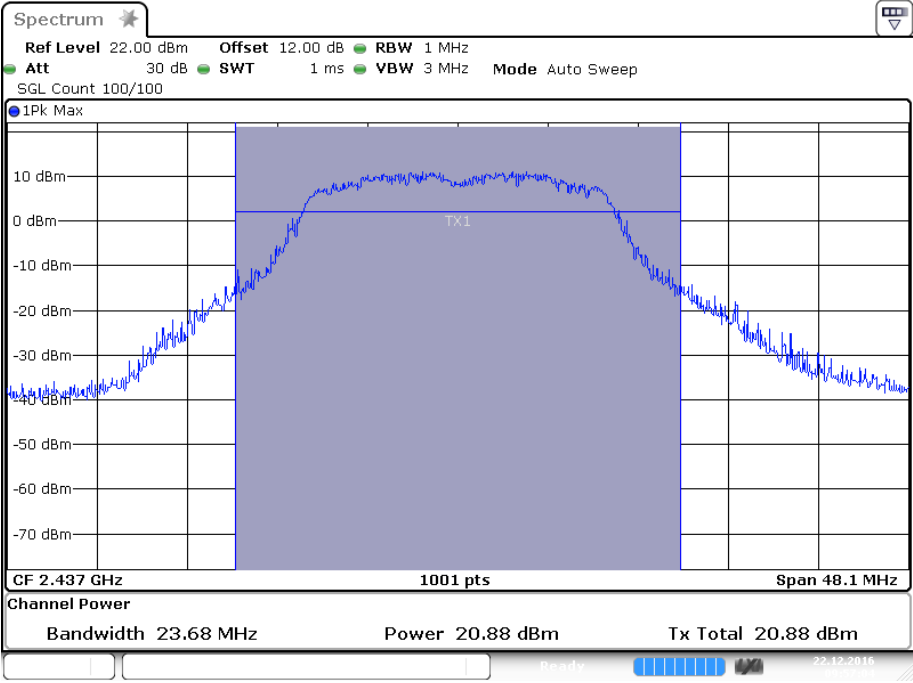
Date: 22 DEC 2016 09:30:35

Low Channel (G-SISO Mode / Chain 0)



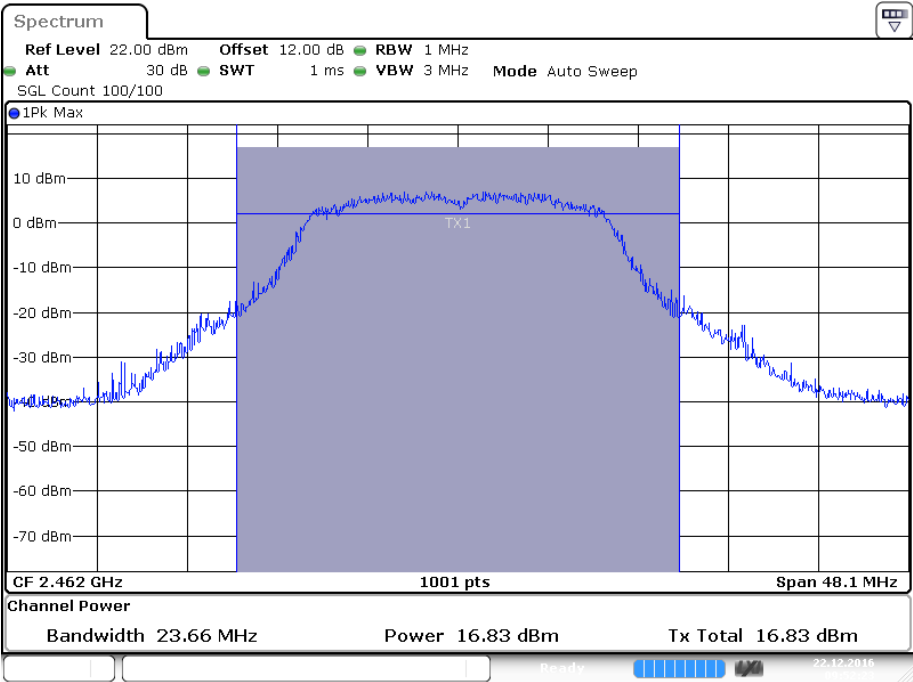
Date: 22 DEC 2016 10:00:06

Middle Channel (G-SISO Mode / Chain 0)



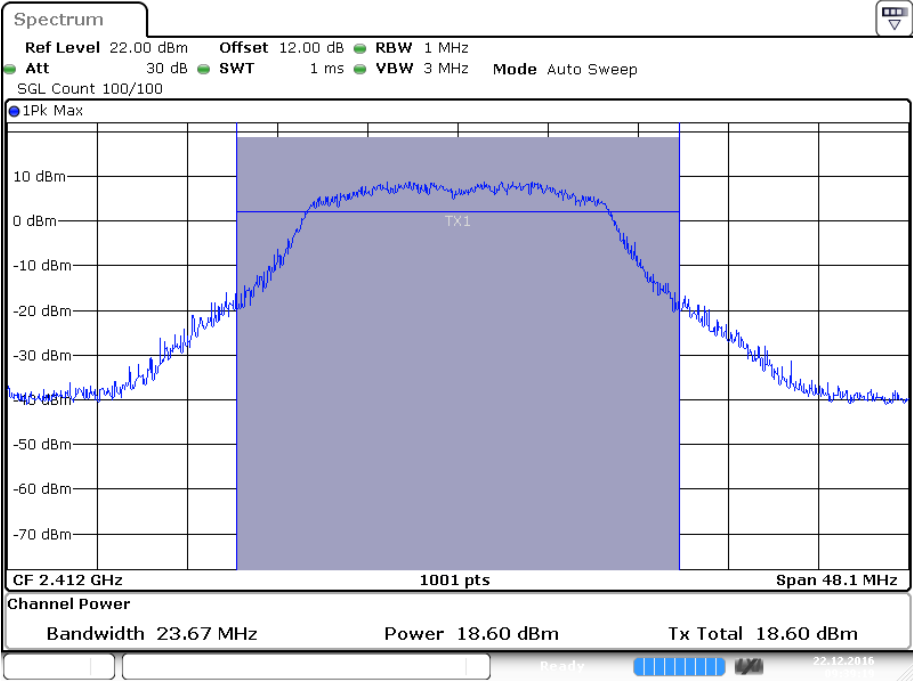
Date: 22 DEC 2016 09:57:03

High Channel (G-SISO Mode / Chain 0)



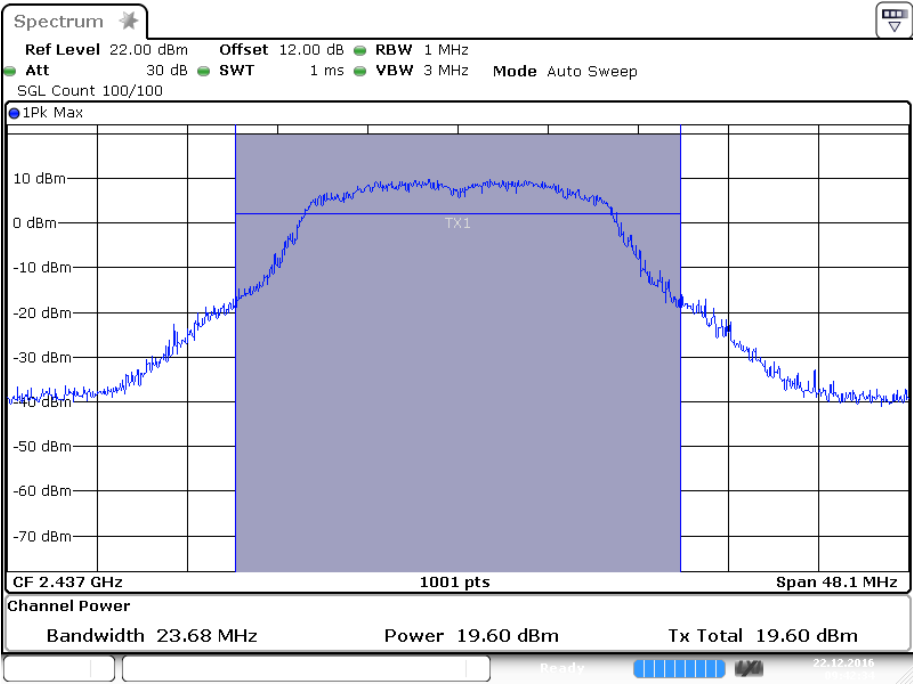
Date: 22 DEC 2016 09:52:23

Low Channel (G-SISO Mode / Chain 1)



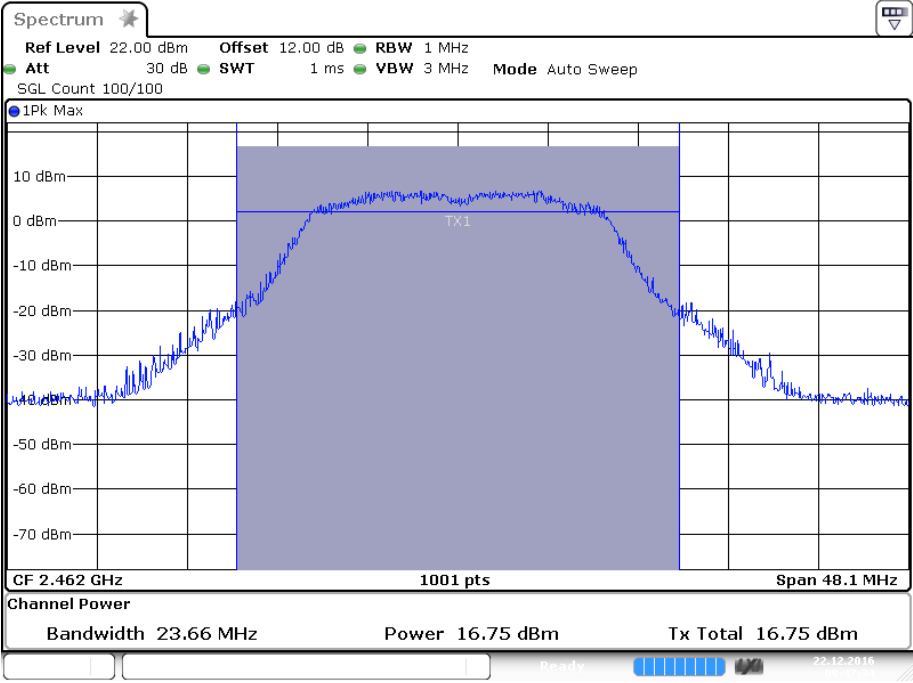
Date: 22 DEC 2016 09:39:20

Middle Channel (G-SISO Mode / Chain 1)



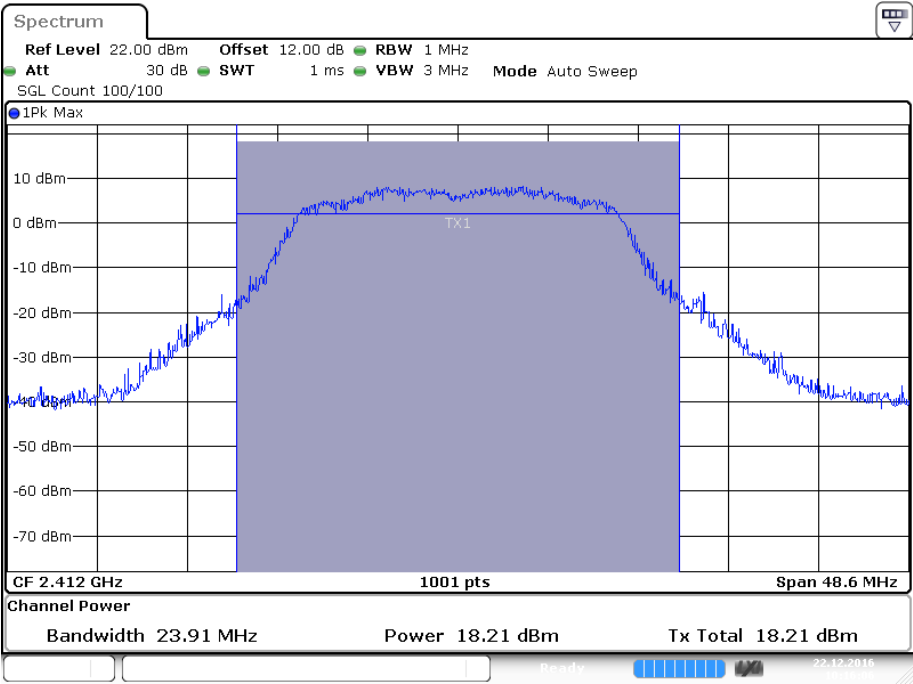
Date: 22 DEC 2016 09:42:35

High Channel (G-SISO Mode / Chain 1)



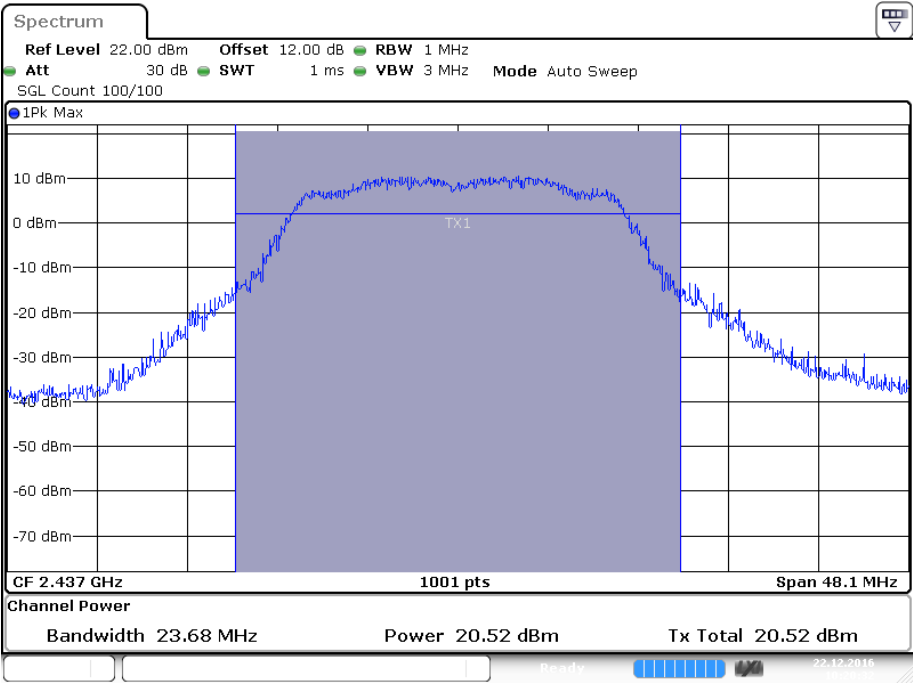
Date: 22 DEC 2016 09:47:34

Low Channel (N20-SISO Mode / Chain 0)



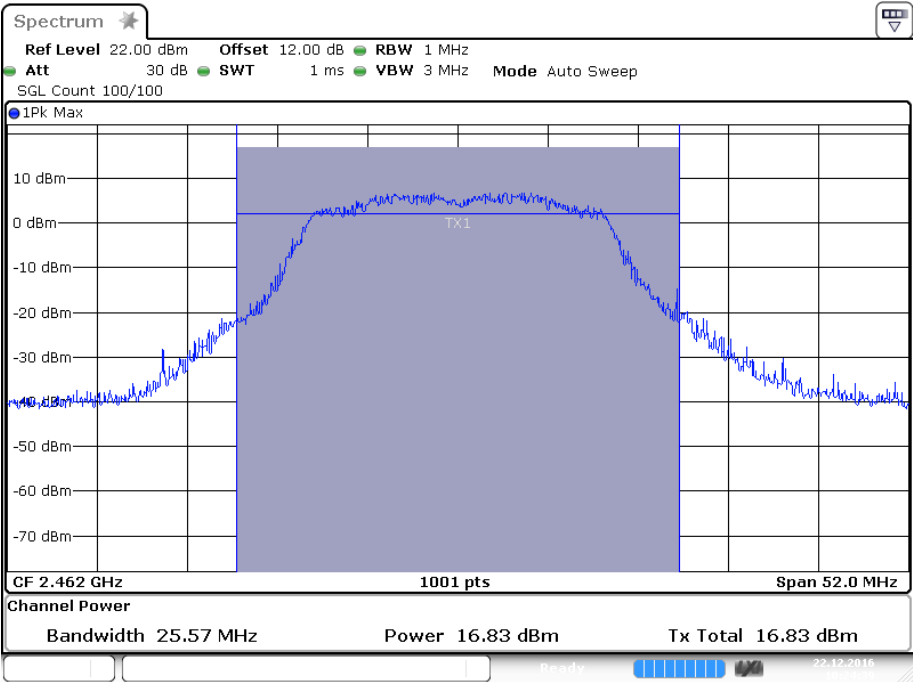
Date: 22 DEC 2016 10:16:07

Middle Channel (N20-SISO Mode / Chain 0)



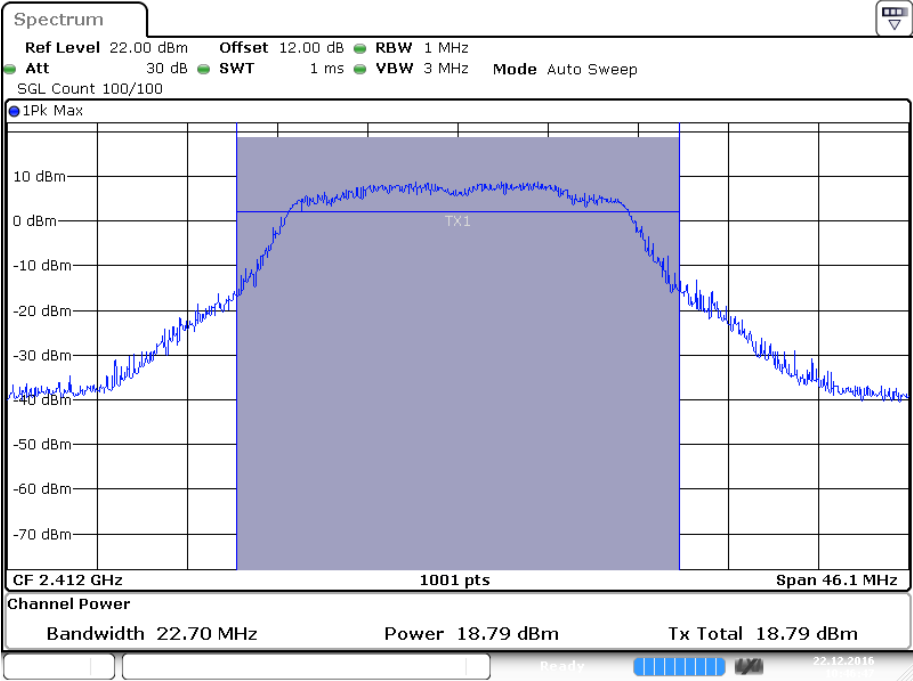
Date: 22 DEC 2016 10:20:32

High Channel (N20-SISO Mode / Chain 0)



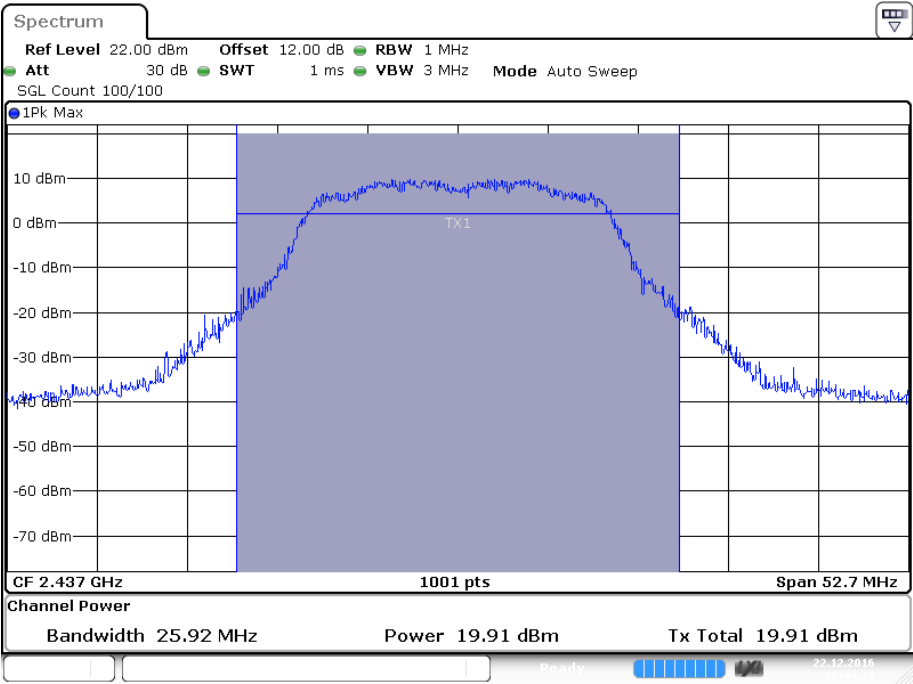
Date: 22 DEC 2016 10:24:40

Low Channel (N20-SISO Mode / Chain 1)



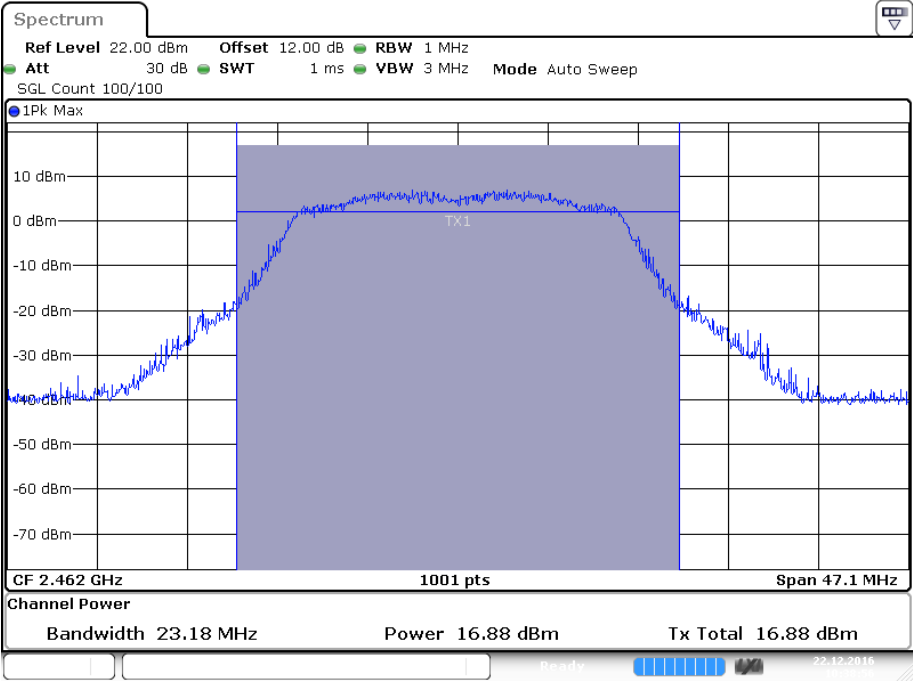
Date: 22 DEC 2016 10:46:47

Middle Channel (N20-SISO Mode / Chain 1)



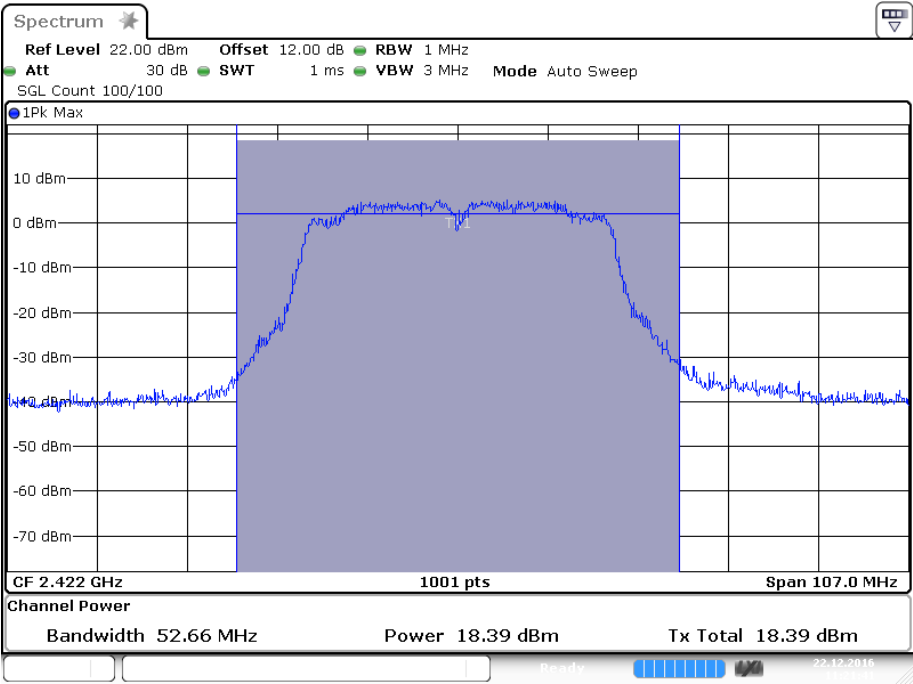
Date: 22 DEC 2016 10:44:21

High Channel (N20-SISO Mode / Chain 1)



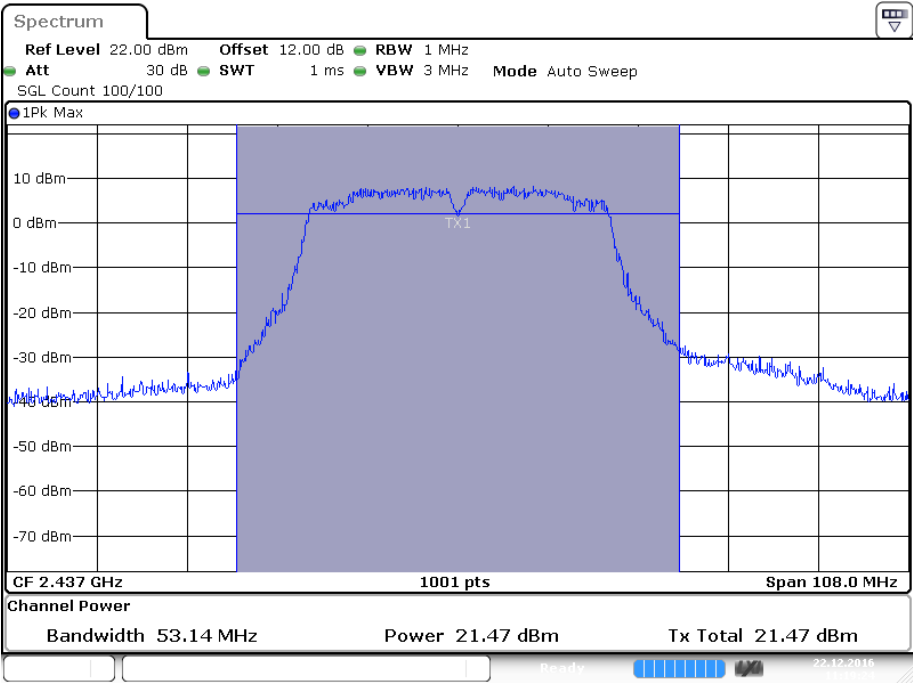
Date: 22 DEC 2016 10:38:56

Low Channel (N40-SISO Mode / Chain 0)



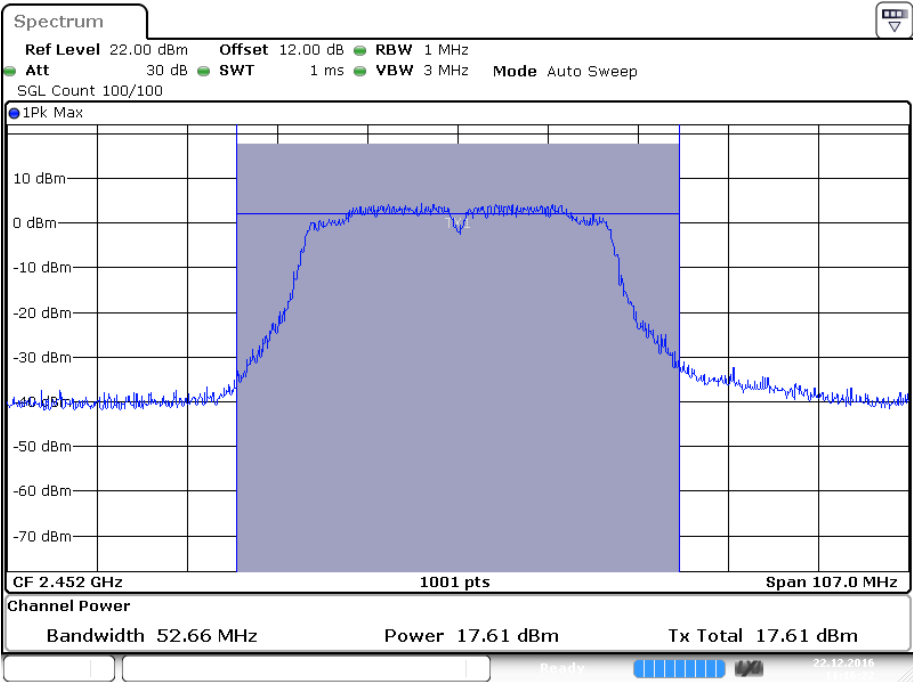
Date: 22 DEC 2016 11:21:41

Middle Channel (N40-SISO Mode / Chain 0)



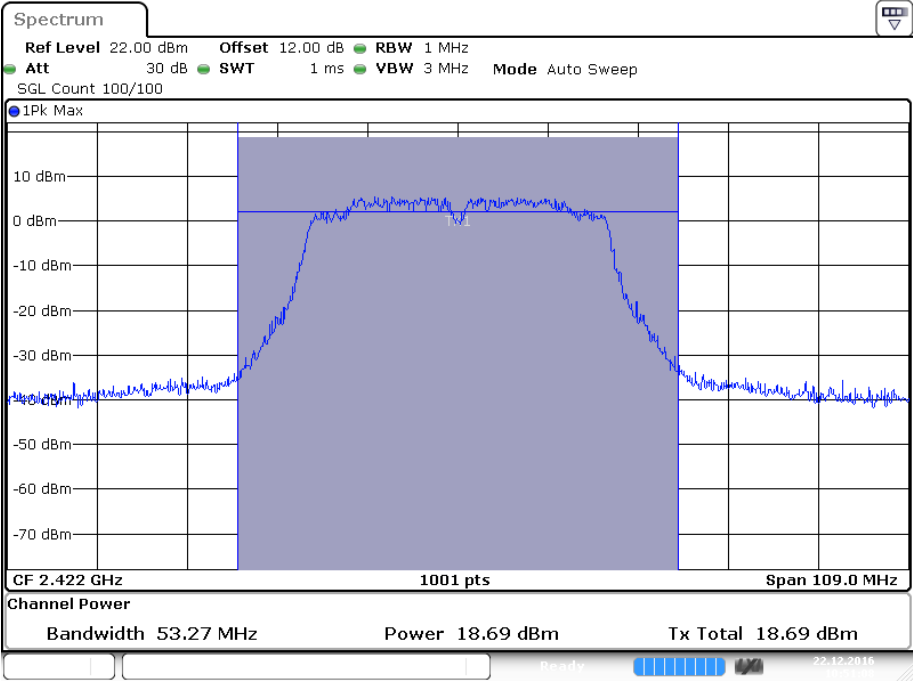
Date: 22 DEC 2016 11:19:24

High Channel (N40-SISO Mode / Chain 0)



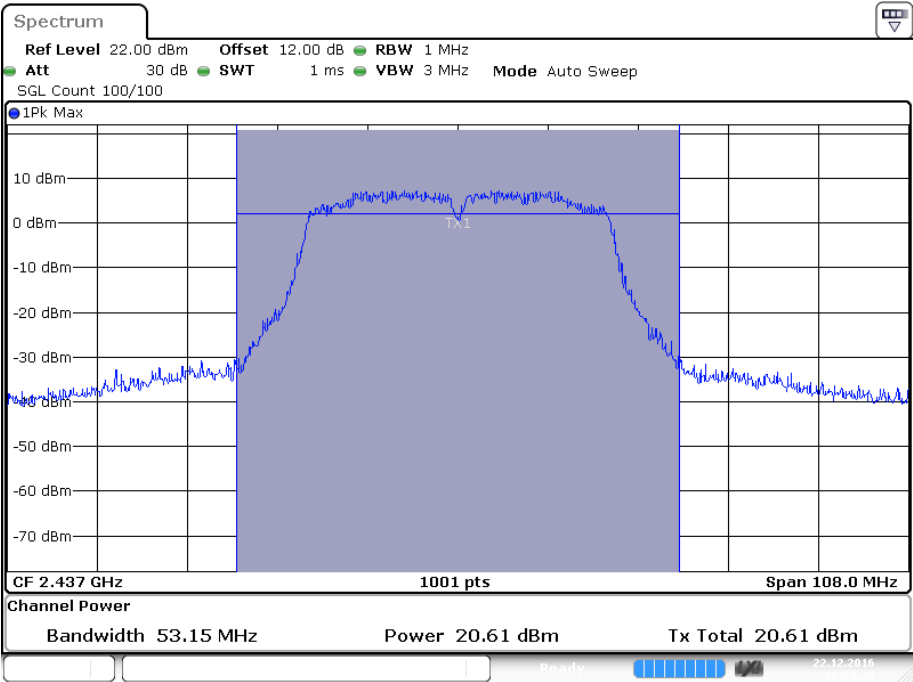
Date: 22 DEC 2016 11:16:22

Low Channel (N40-SISO Mode / Chain 1)



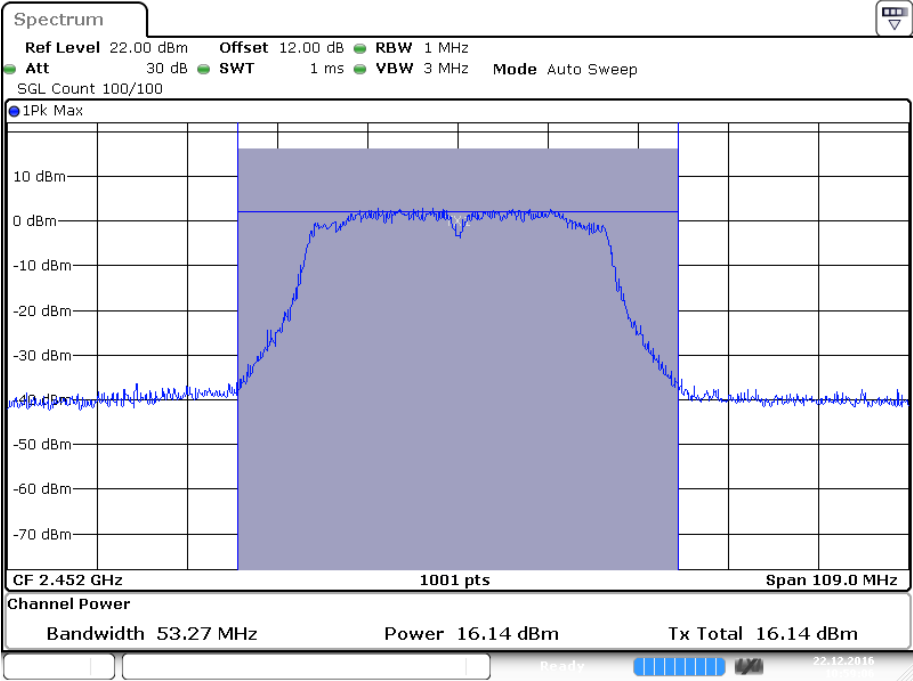
Date: 22 DEC 2016 10:51:09

Middle Channel (N40-SISO Mode / Chain 1)



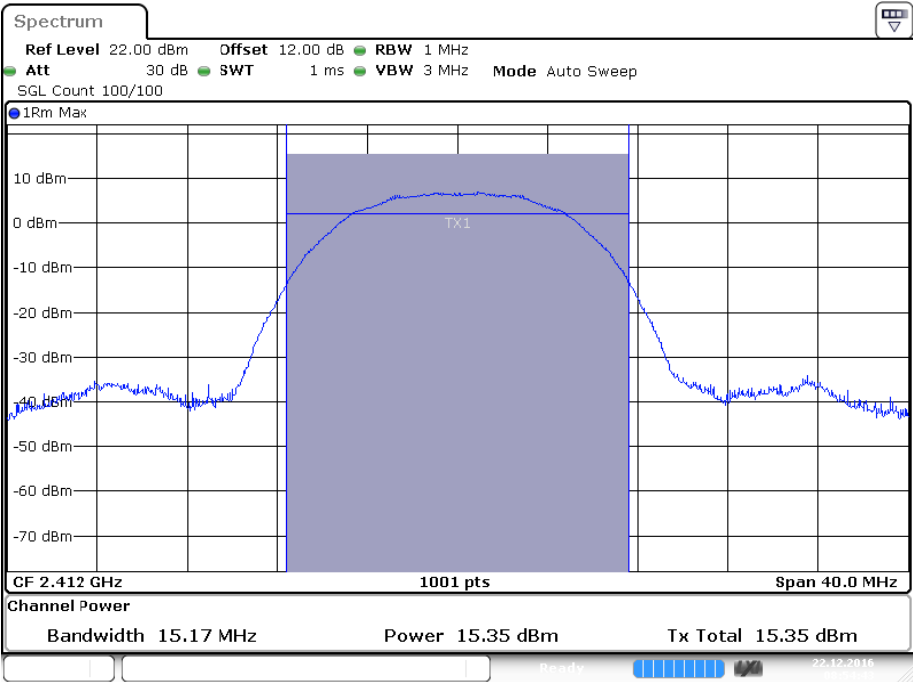
Date: 22 DEC 2016 10:53:36

High Channel (N40-SISO Mode / Chain 1)



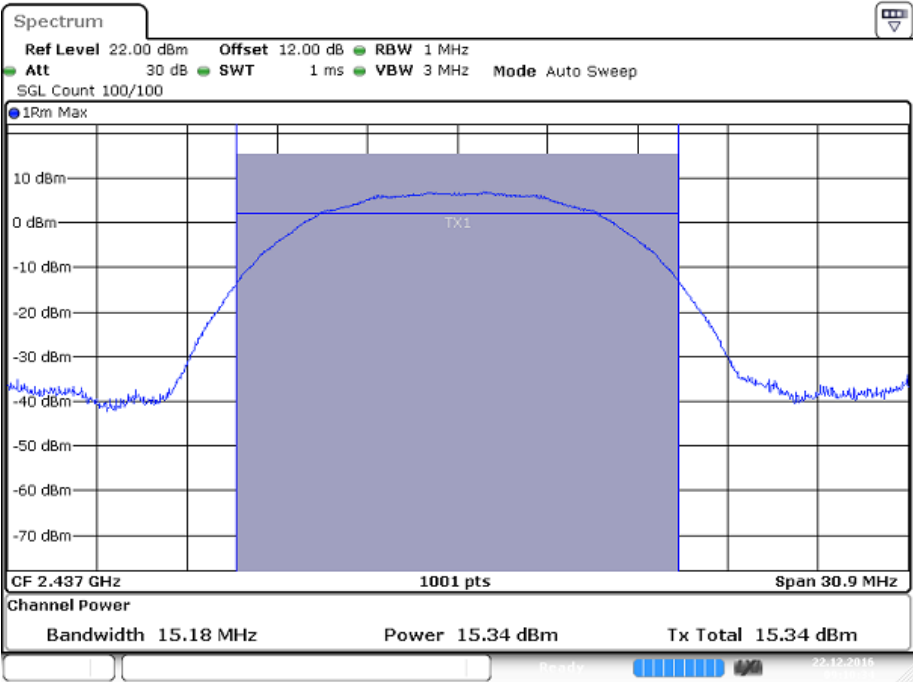
Date: 22 DEC 2016 10:59:06

Conducted Average Output Power  
Low Channel (B-SISO Mode / Chain 0)



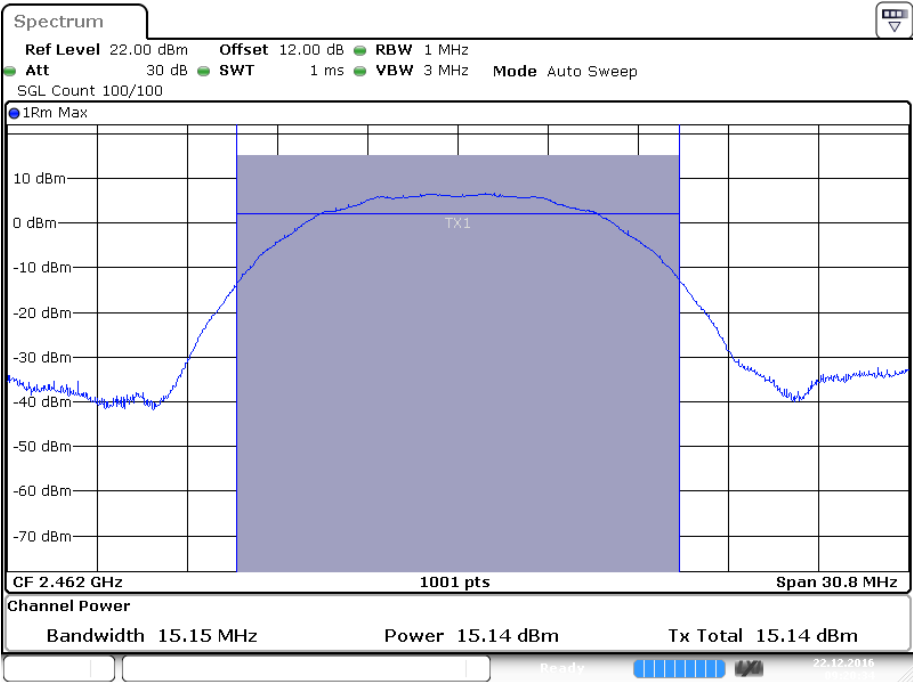
Date: 22 DEC 2016 08:54:43

Middle Channel (B-SISO Mode / Chain 0)



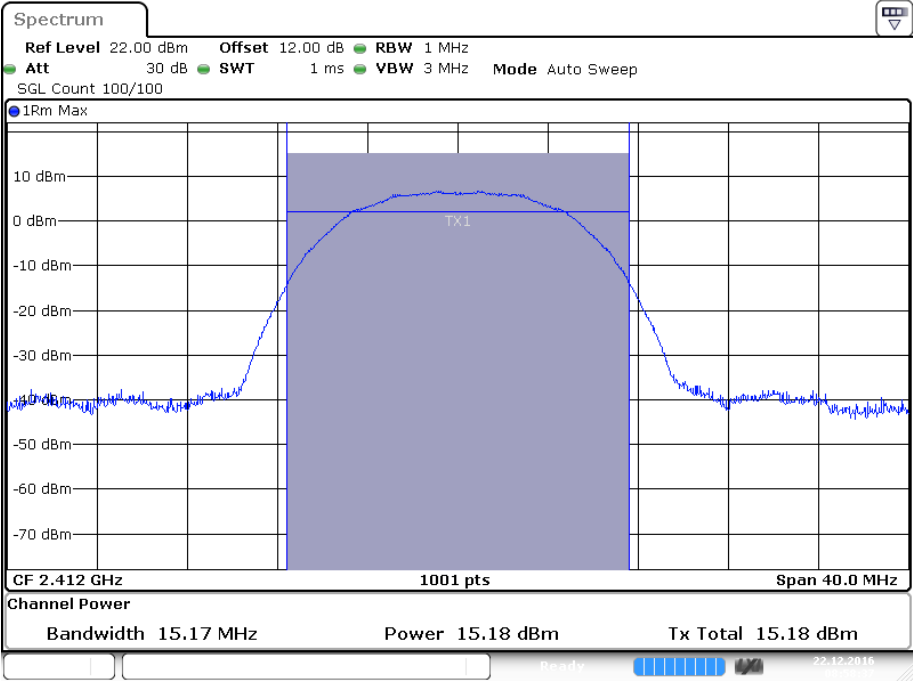
Date: 22 DEC 2016 09:10:34

High Channel (B-SISO Mode / Chain 0)



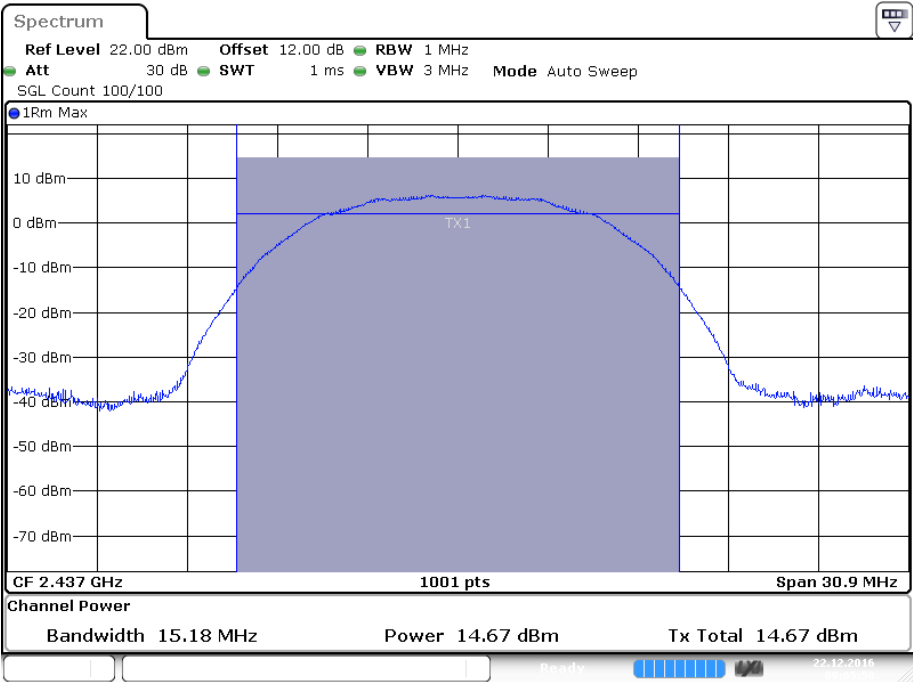
Date: 22 DEC 2016 09:20:34

Low Channel (B-SISO Mode / Chain 1)



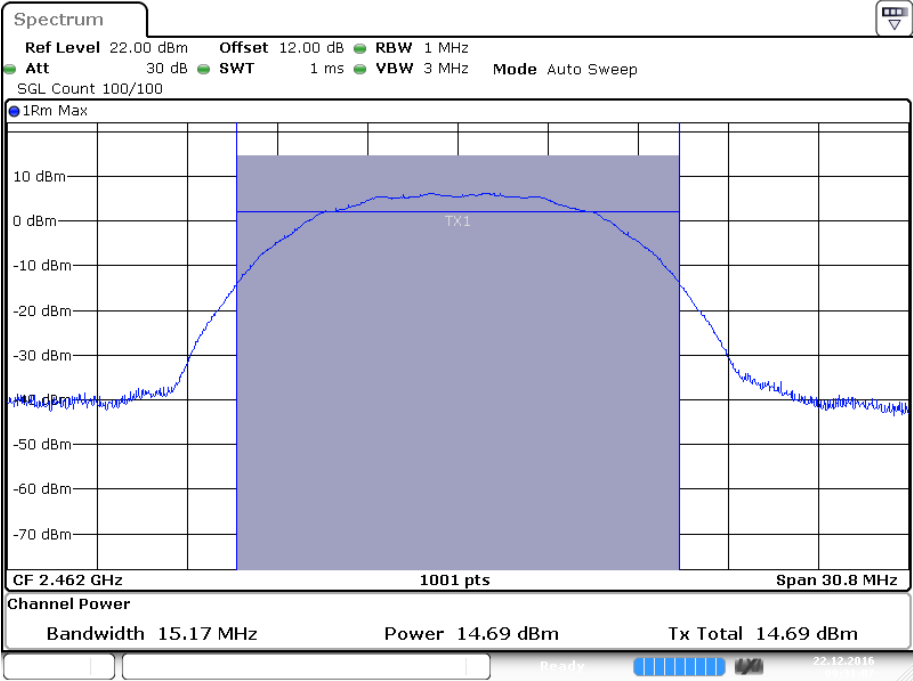
Date: 22 DEC 2016 08:58:37

Middle Channel (B-SISO Mode / Chain 1)



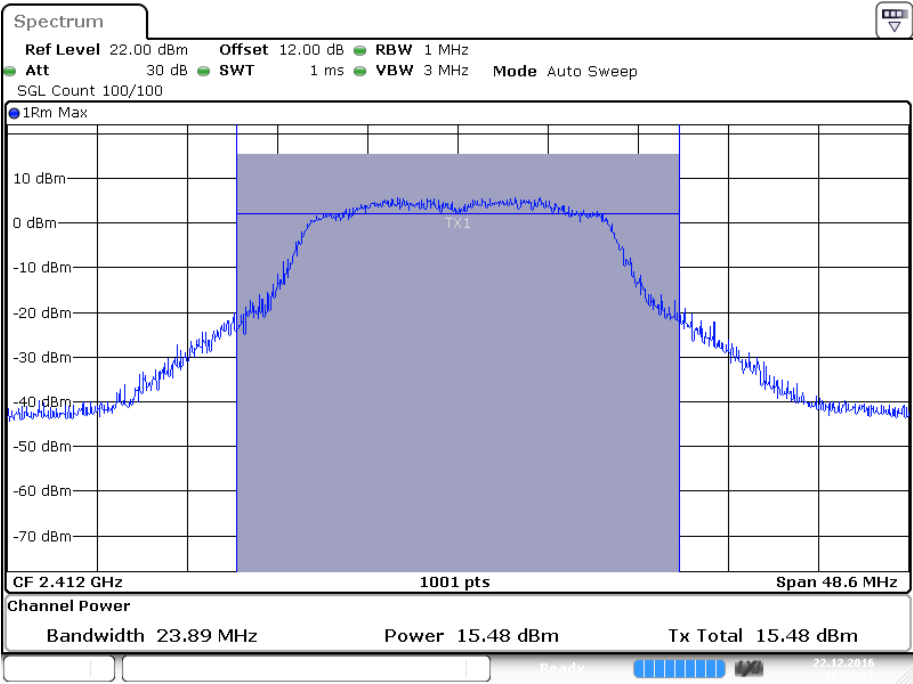
Date: 22 DEC 2016 09:55:59

High Channel (B-SISO Mode / Chain 1)



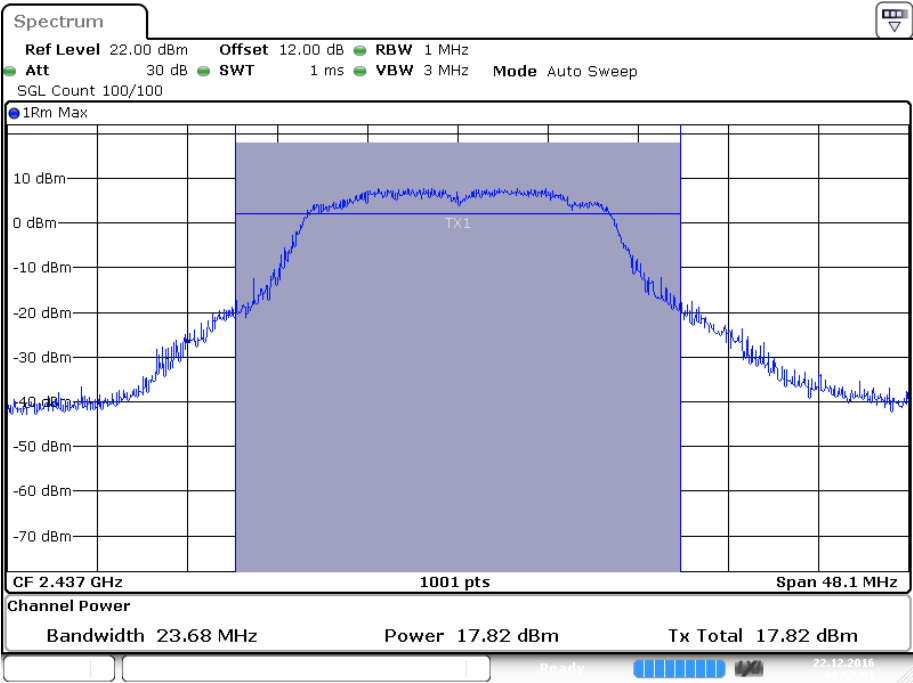
Date: 22 DEC 2016 09:31:08

Low Channel (G-SISO Mode / Chain 0)



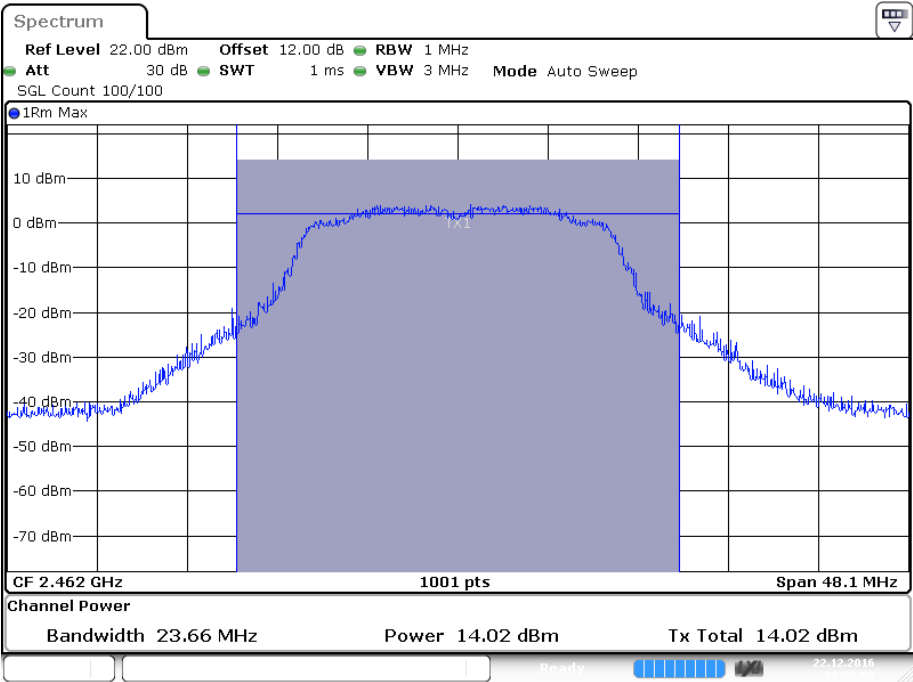
Date: 22 DEC 2016 10:00:38

Middle Channel (G-SISO Mode / Chain 0)



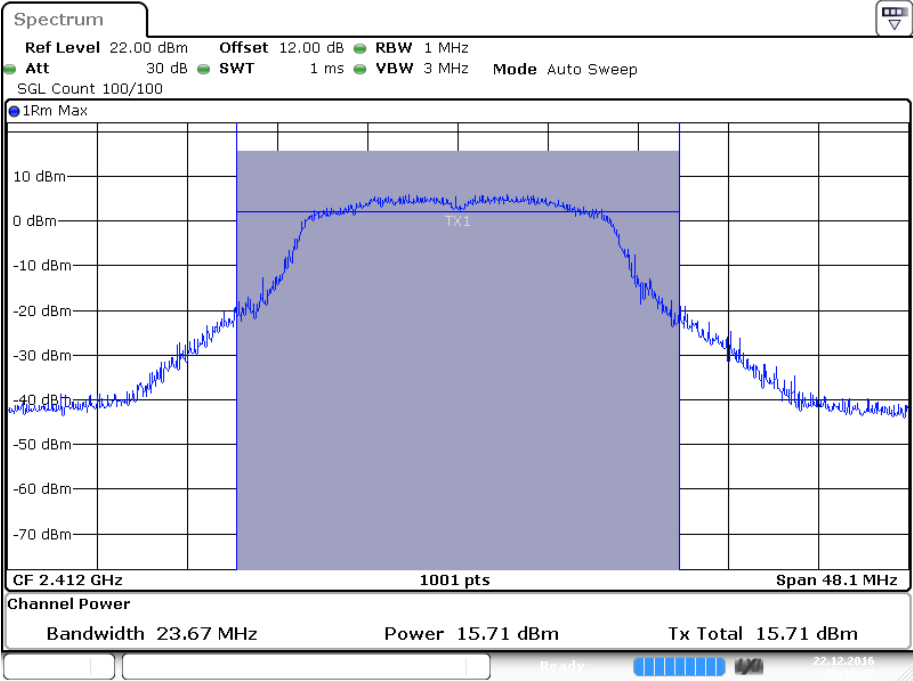
Date: 22 DEC 2016 09:57:52

High Channel (G-SISO Mode / Chain 0)



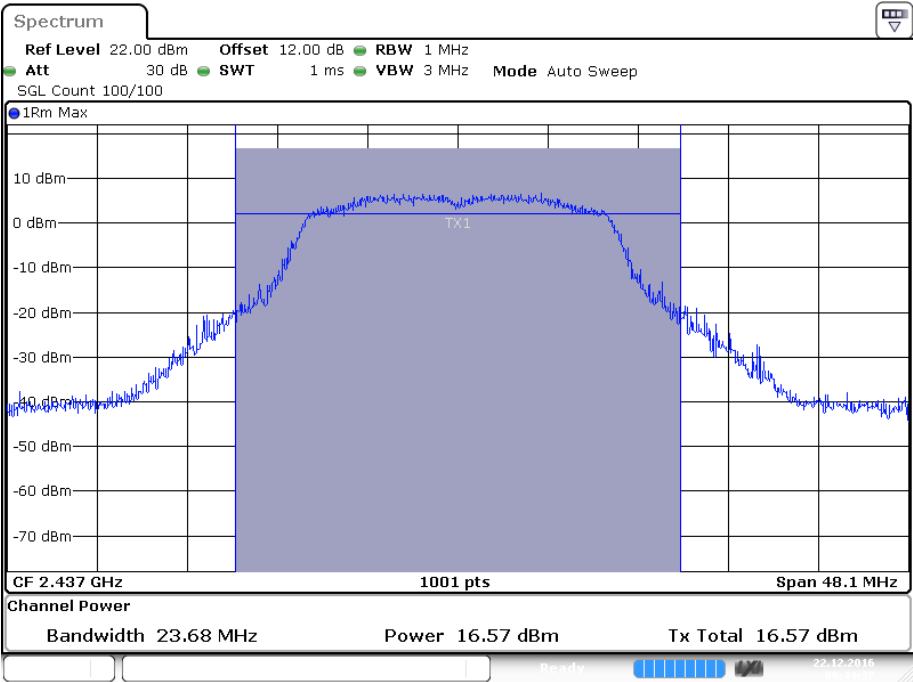
Date: 22 DEC 2016 09:52:59

Low Channel (G-SISO Mode / Chain 1)



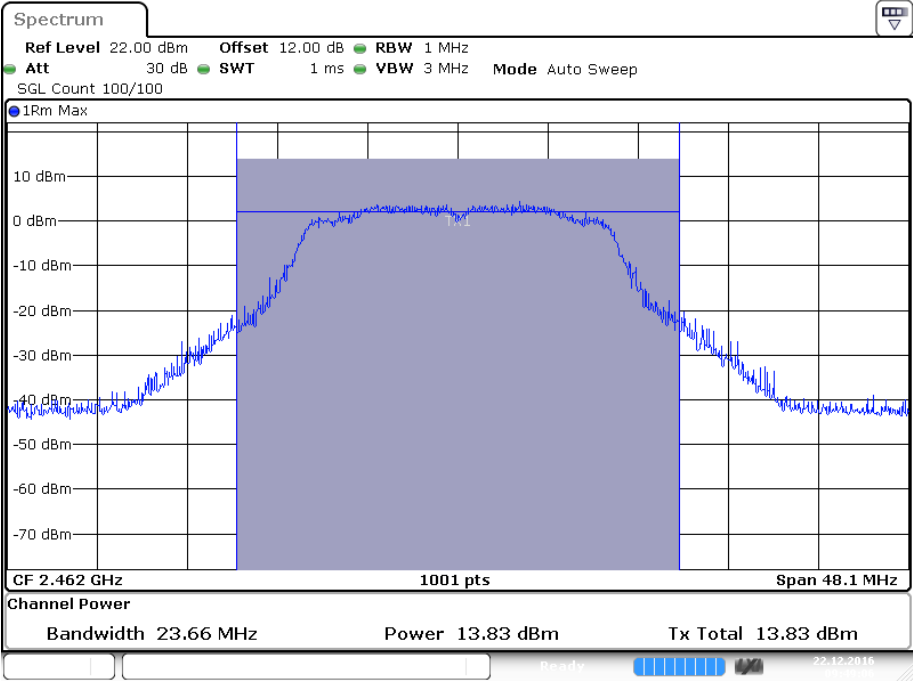
Date: 22 DEC 2016 09:39:48

Middle Channel (G-SISO Mode / Chain 1)



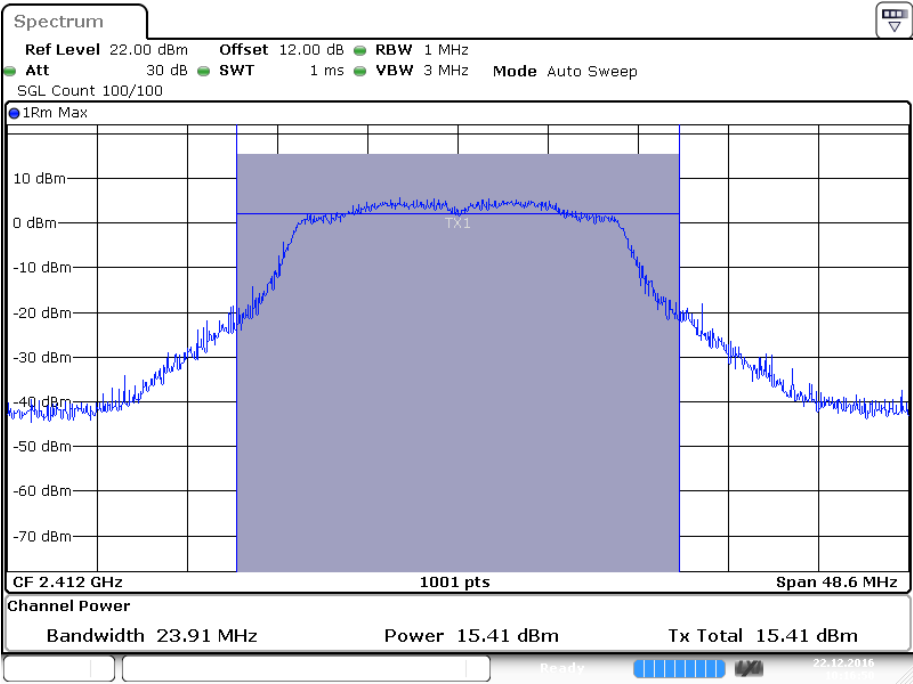
Date: 22 DEC 2016 09:44:38

High Channel (G-SISO Mode / Chain 1)



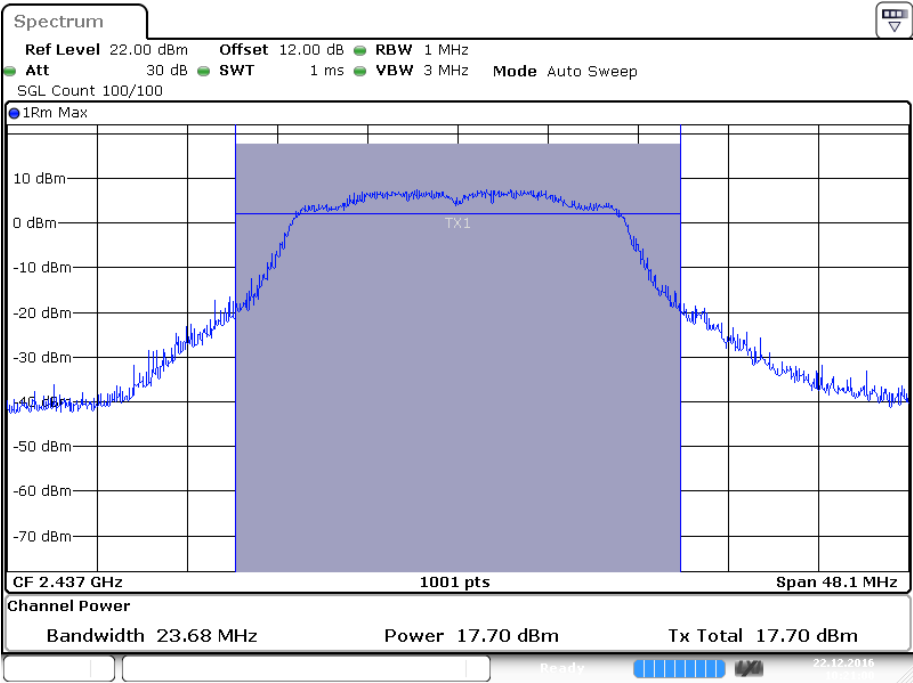
Date: 22 DEC 2016 09:49:06

Low Channel (N20-SISO Mode / Chain 0)



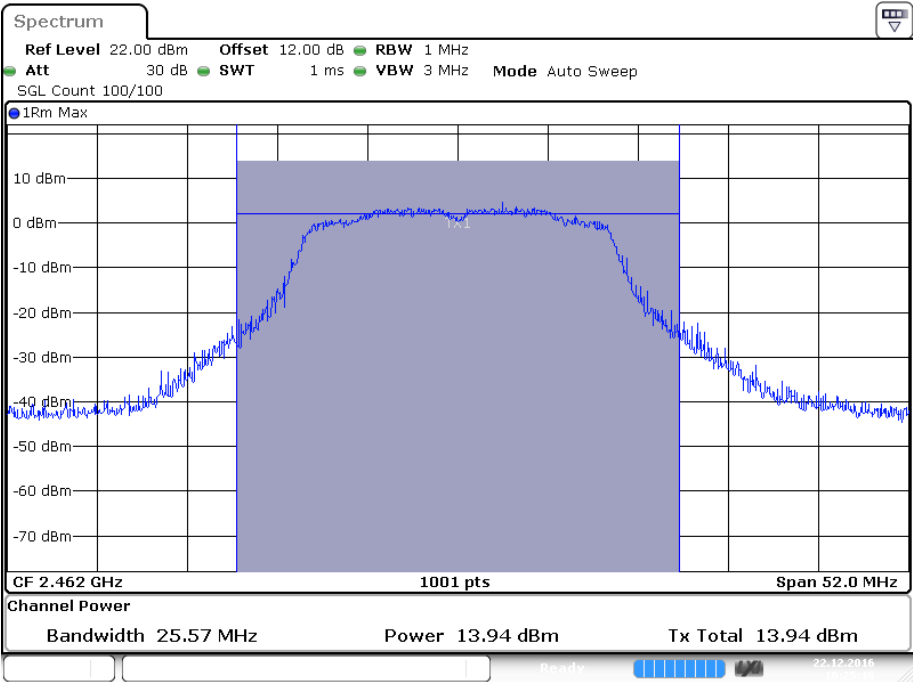
Date: 22 DEC 2016 10:16:50

Middle Channel (N20-SISO Mode / Chain 0)



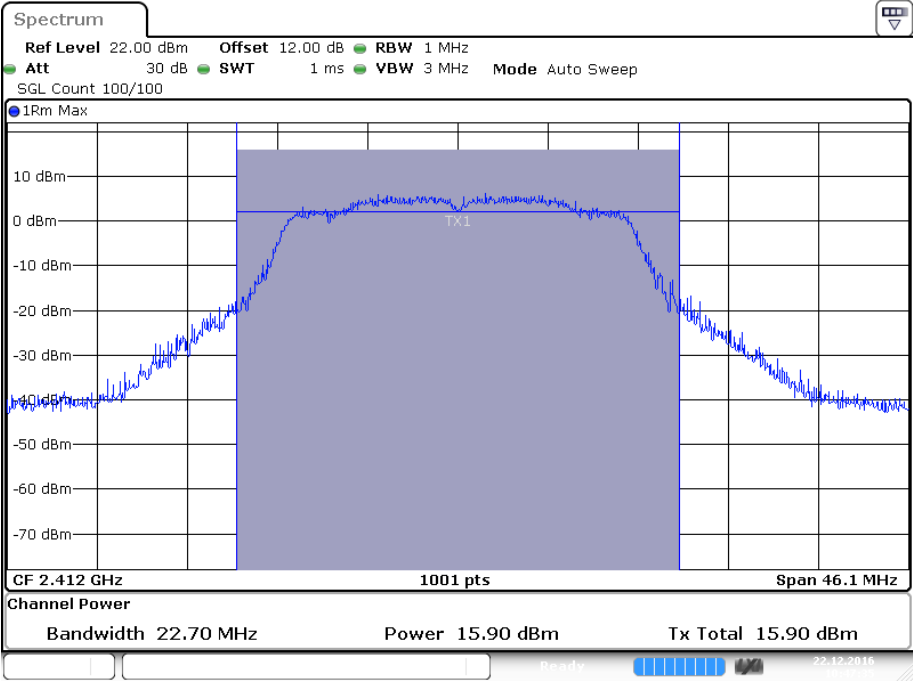
Date: 22 DEC 2016 10:21:00

High Channel (N20-SISO Mode / Chain 0)



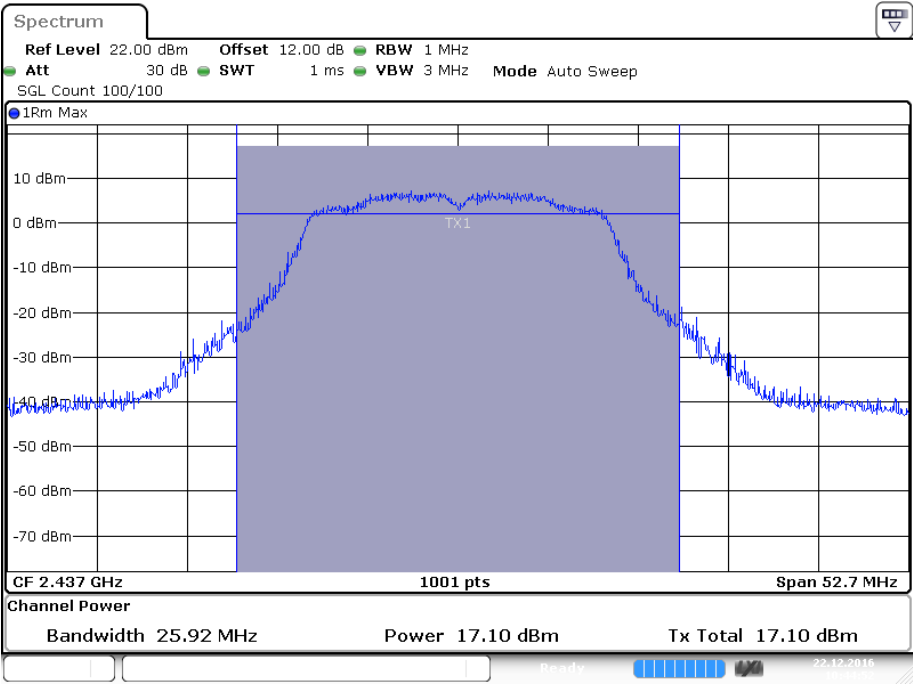
Date: 22 DEC 2016 10:25:18

Low Channel (N20-SISO Mode / Chain 1)



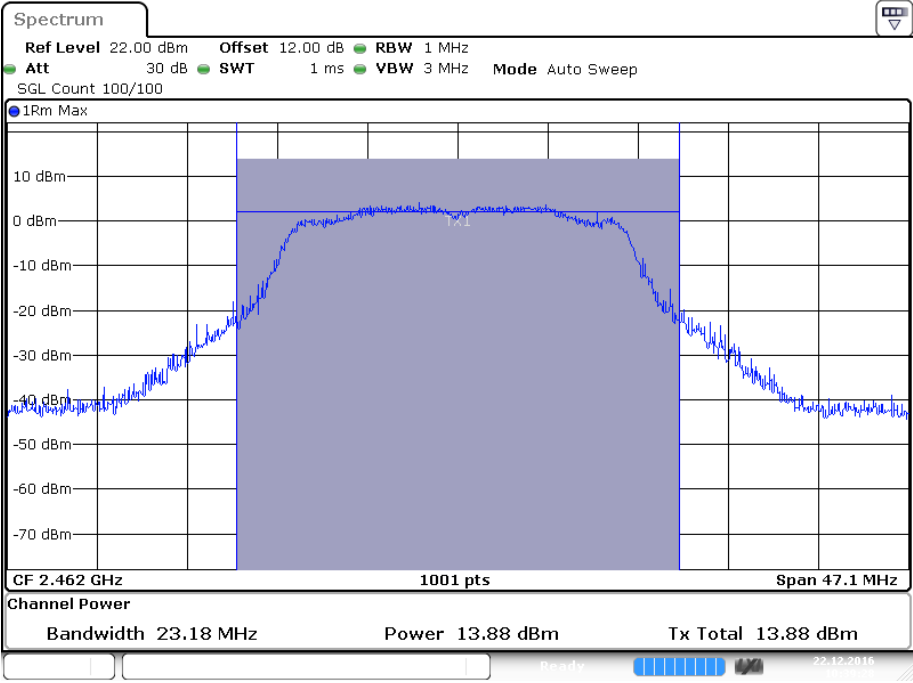
Date: 22 DEC 2016 10:47:36

Middle Channel (N20-SISO Mode / Chain 1)



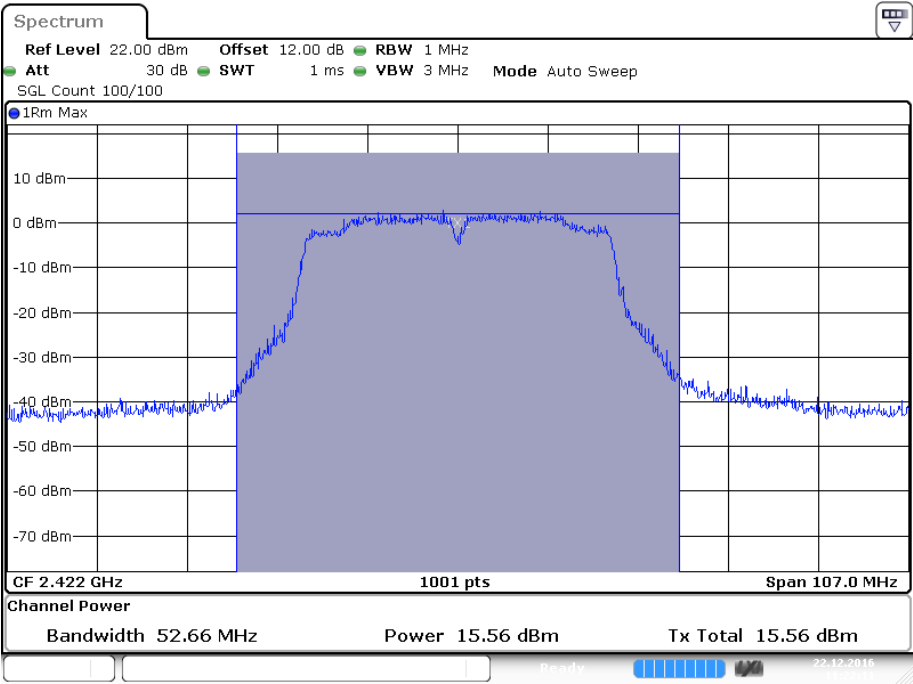
Date: 22 DEC 2016 10:44:52

High Channel (N20-SISO Mode / Chain 1)



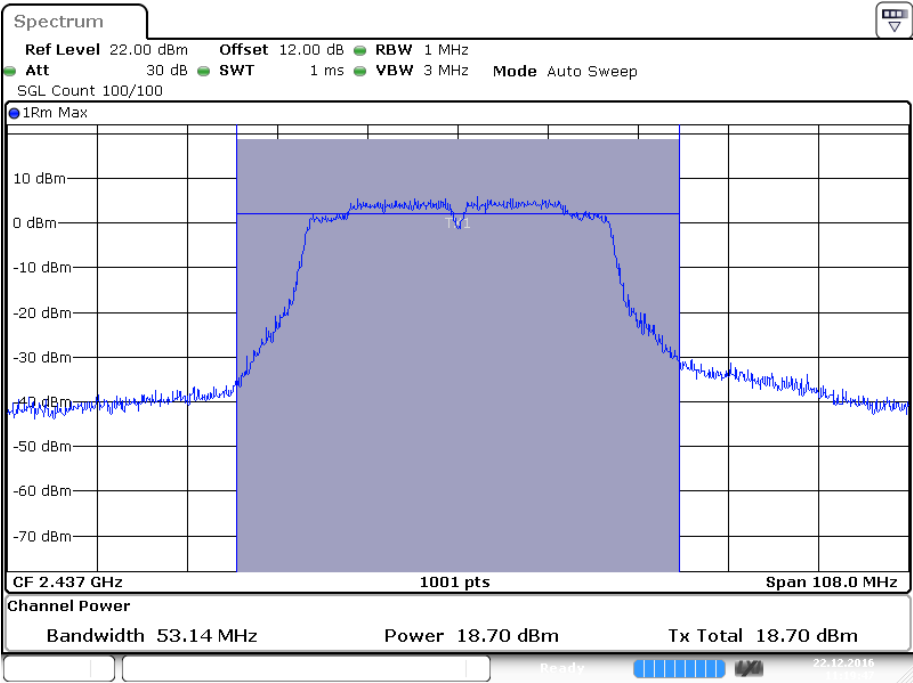
Date: 22 DEC 2016 10:39:28

Low Channel (N40-SISO Mode / Chain 0)



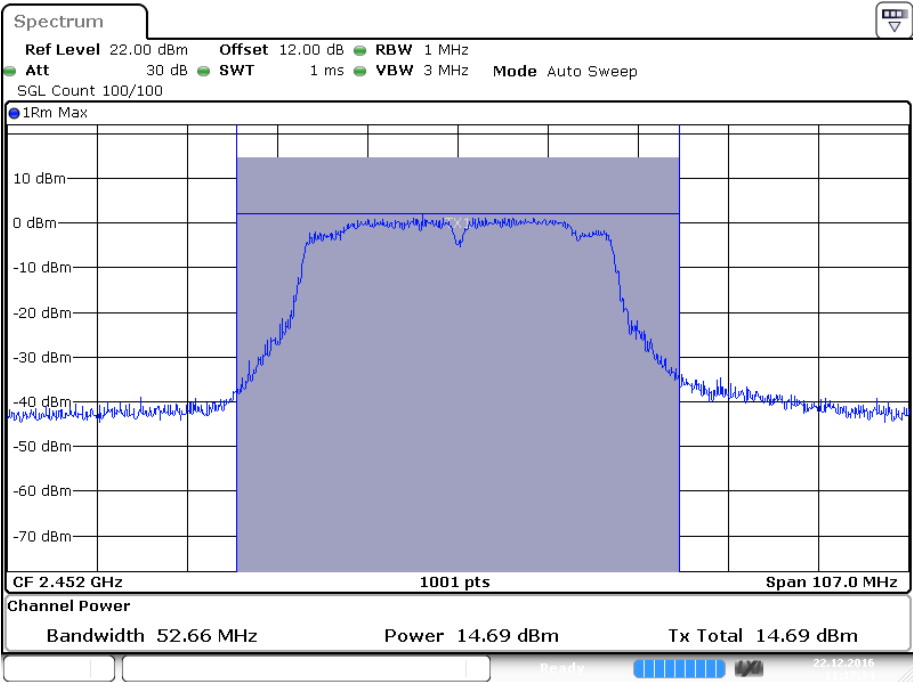
Date: 22 DEC 2016 11:22:11

Middle Channel (N40-SISO Mode / Chain 0)



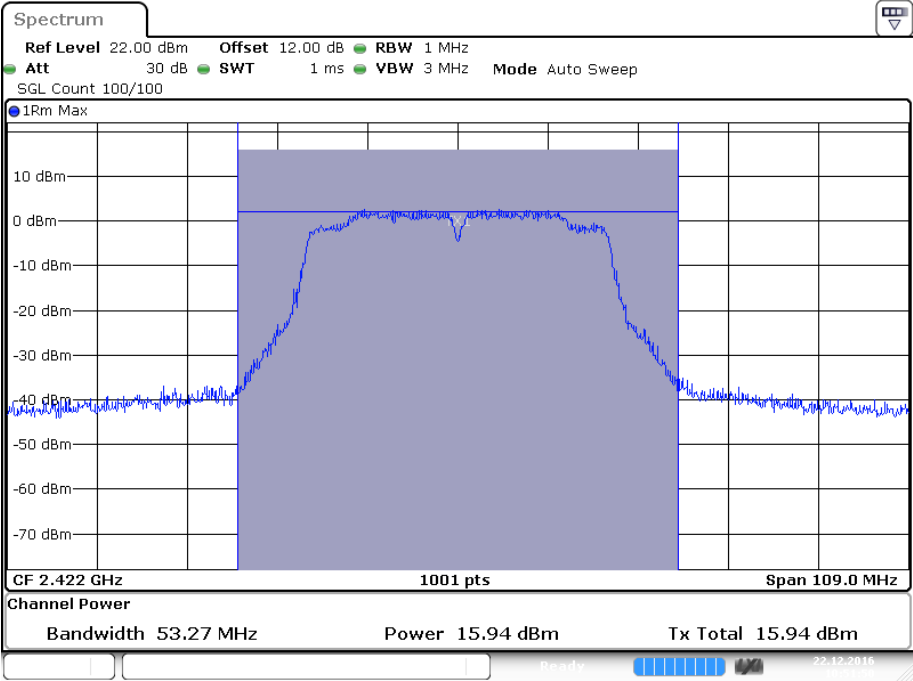
Date: 22 DEC 2016 11:19:47

High Channel (N40-SISO Mode / Chain 0)



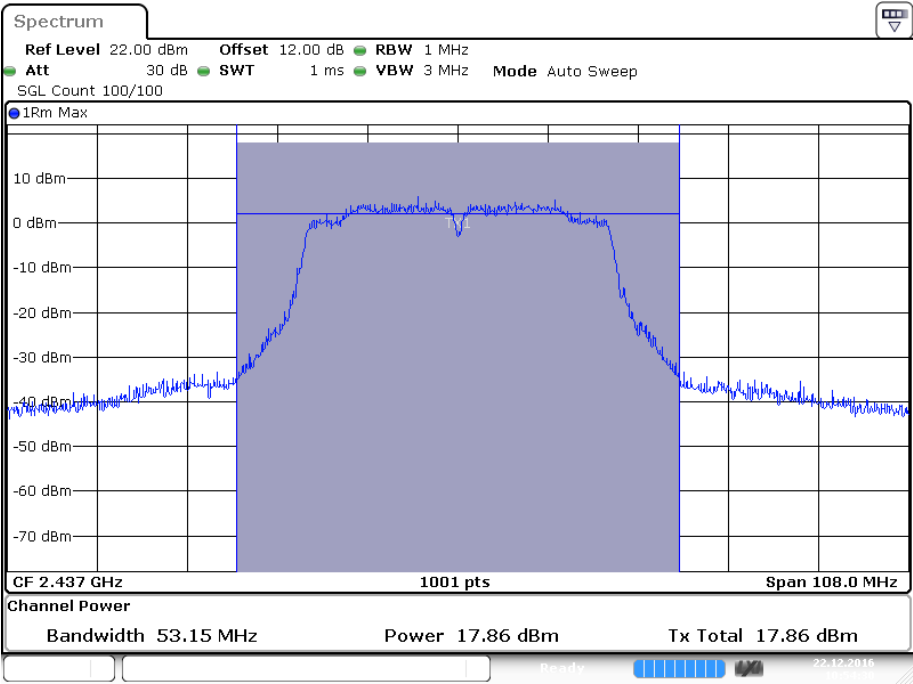
Date: 22 DEC 2016 11:17:35

Low Channel (N40-SISO Mode / Chain 1)



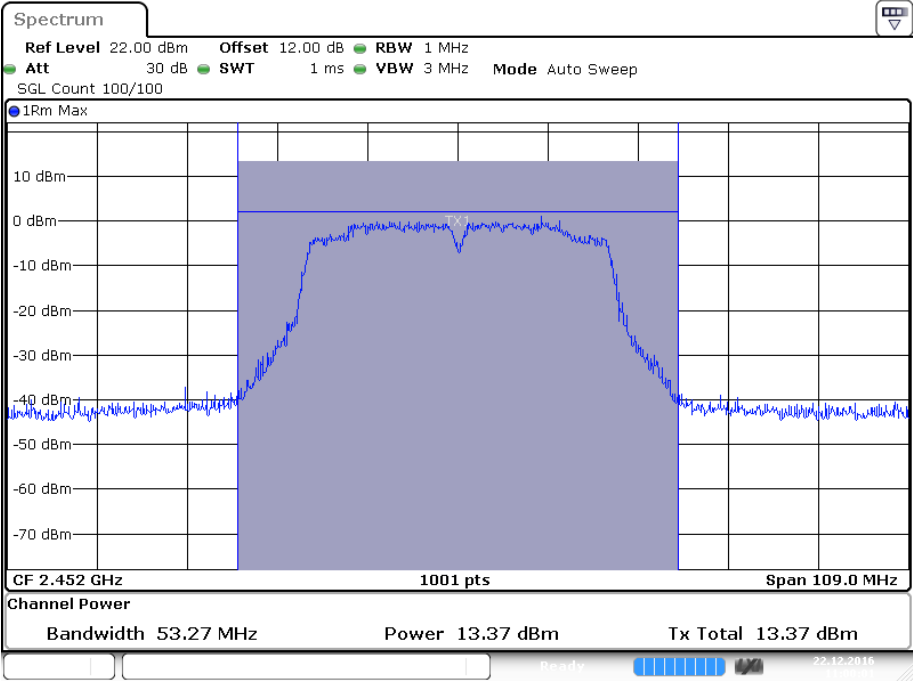
Date: 22 DEC 2016 10:51:50

Middle Channel (N40-SISO Mode / Chain 1)



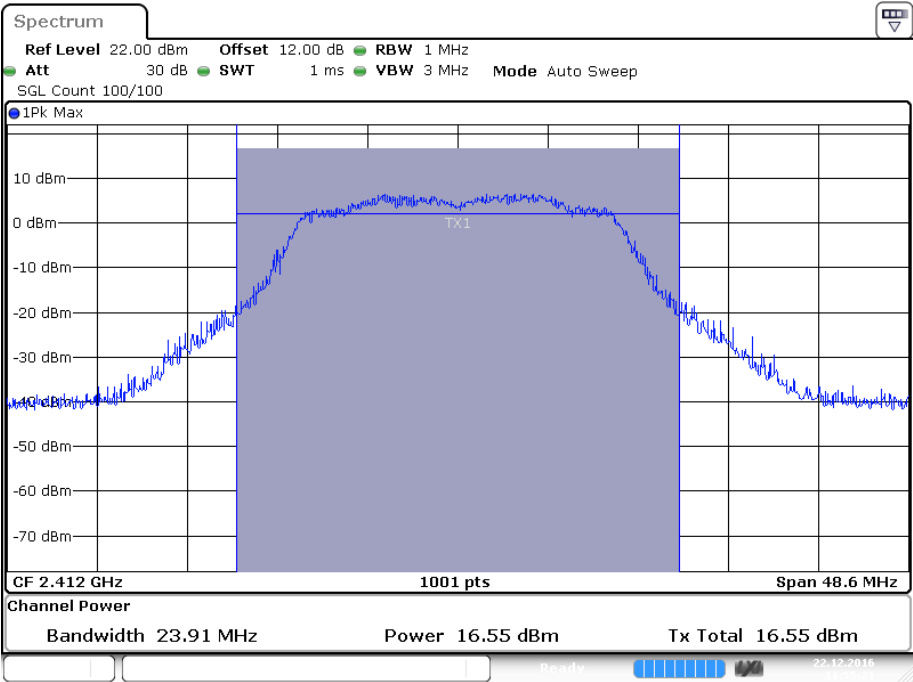
Date: 22 DEC 2016 10:54:31

High Channel (N40-SISO Mode / Chain 1)



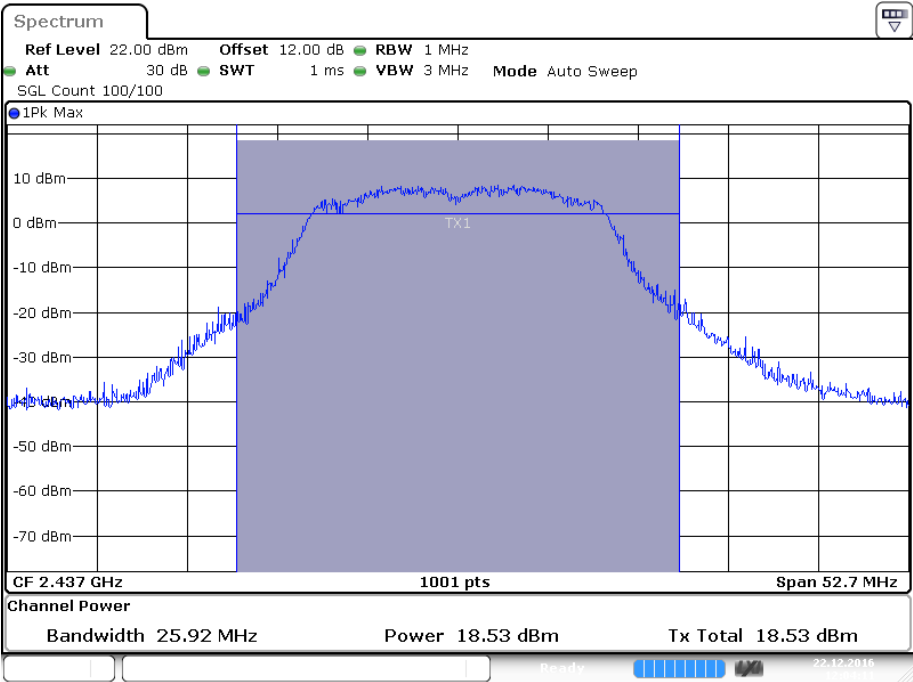
Date: 22 DEC 2016 11:00:01

Conducted Peak Output Power  
Low Channel (N20-MIMO Mode / Chain 0)



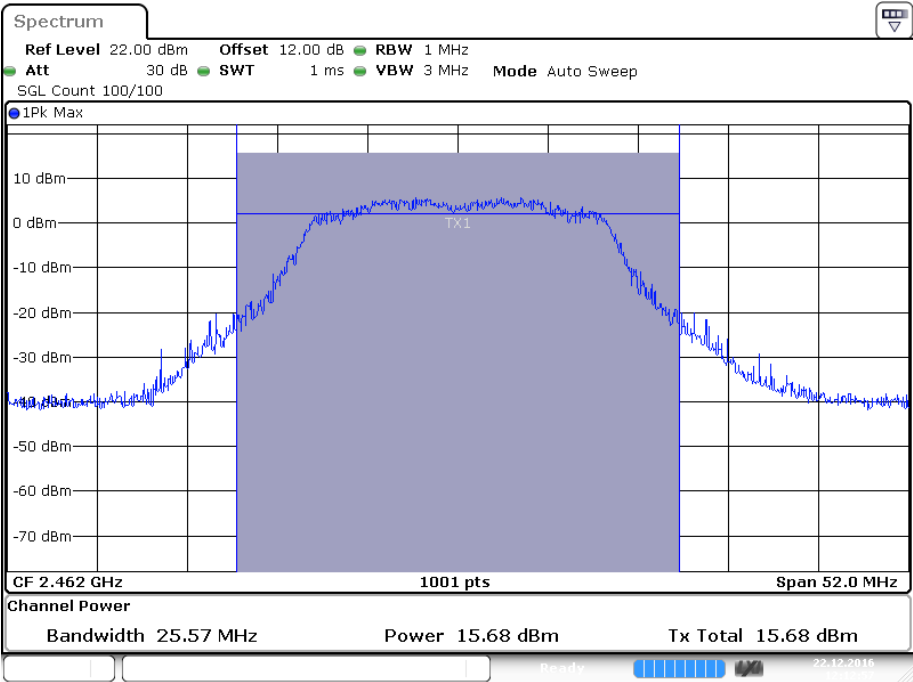
Date: 22 DEC 2016 11:55:21

Middle Channel (N20-MIMO Mode / Chain 0)



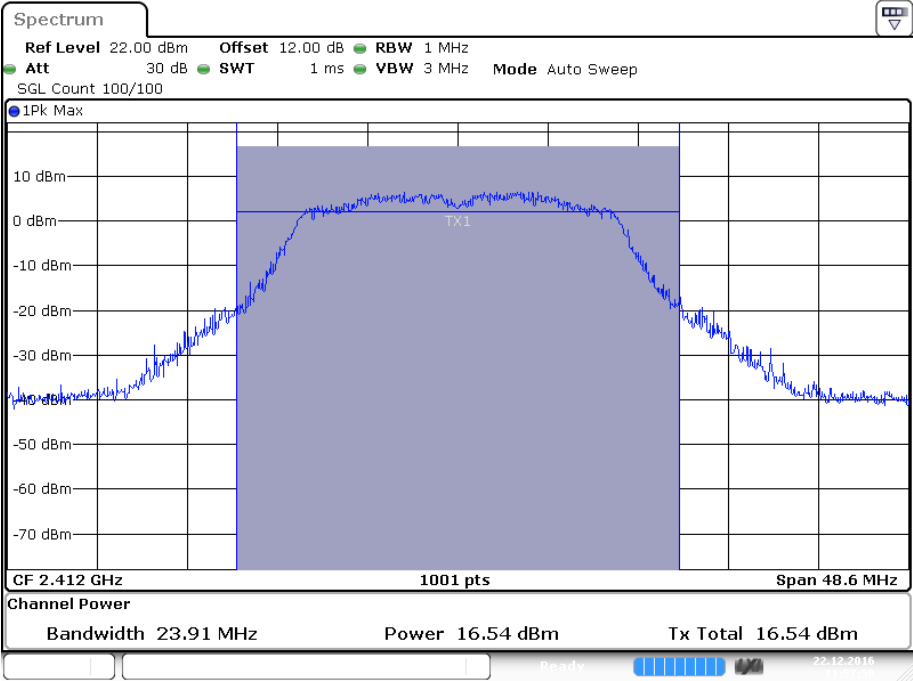
Date: 22 DEC 2016 12:04:12

High Channel (N20-MIMO Mode / Chain 0)



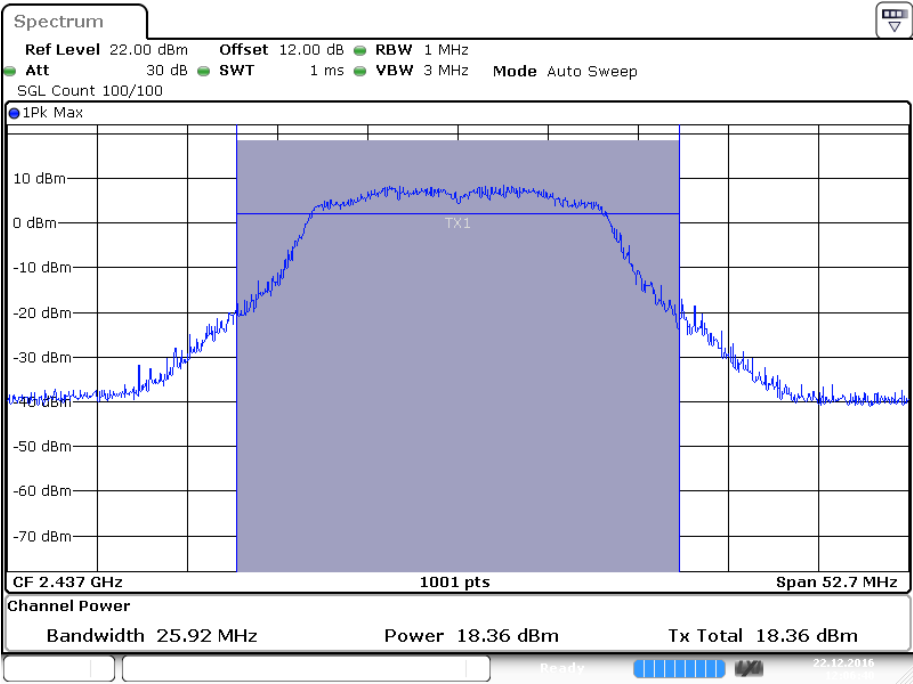
Date: 22 DEC 2016 12:12:58

Low Channel (N20-MIMO Mode / Chain 1)



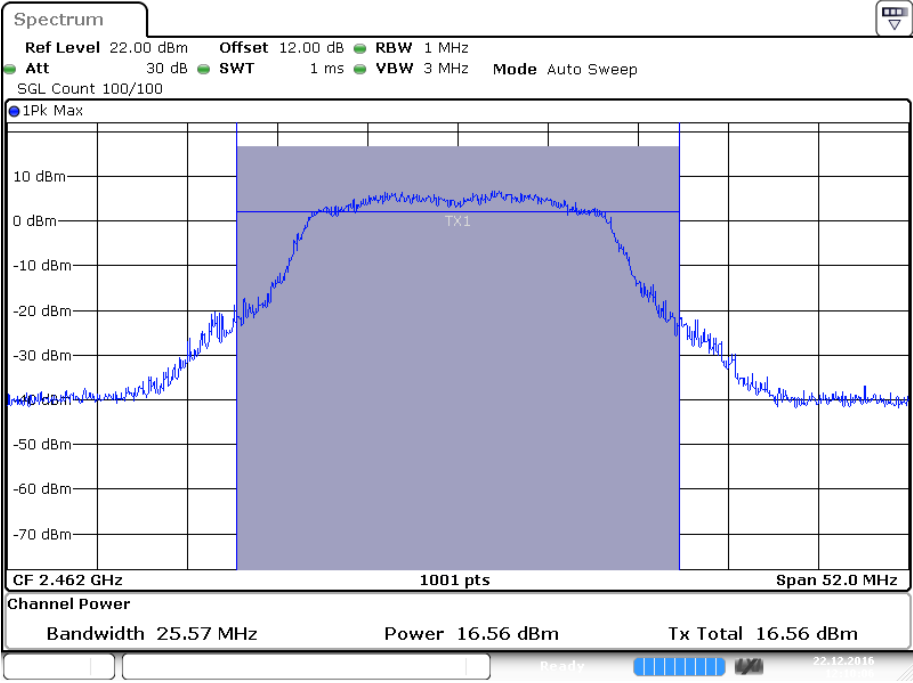
Date: 22 DEC 2016 11:57:50

Middle Channel (N20-MIMO Mode / Chain 1)



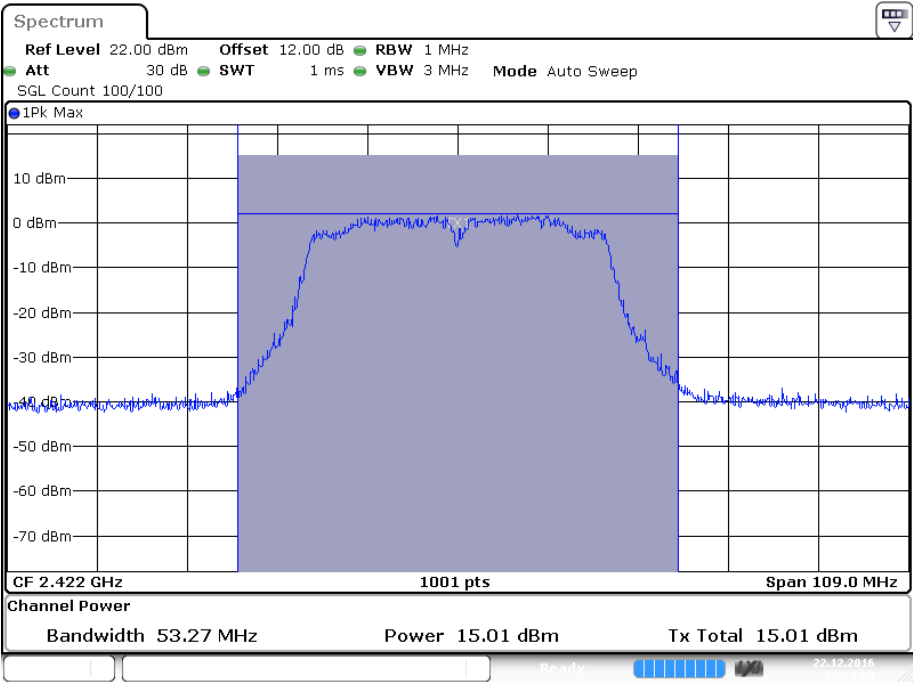
Date: 22 DEC 2016 12:06:40

High Channel (N20-MIMO Mode / Chain 1)



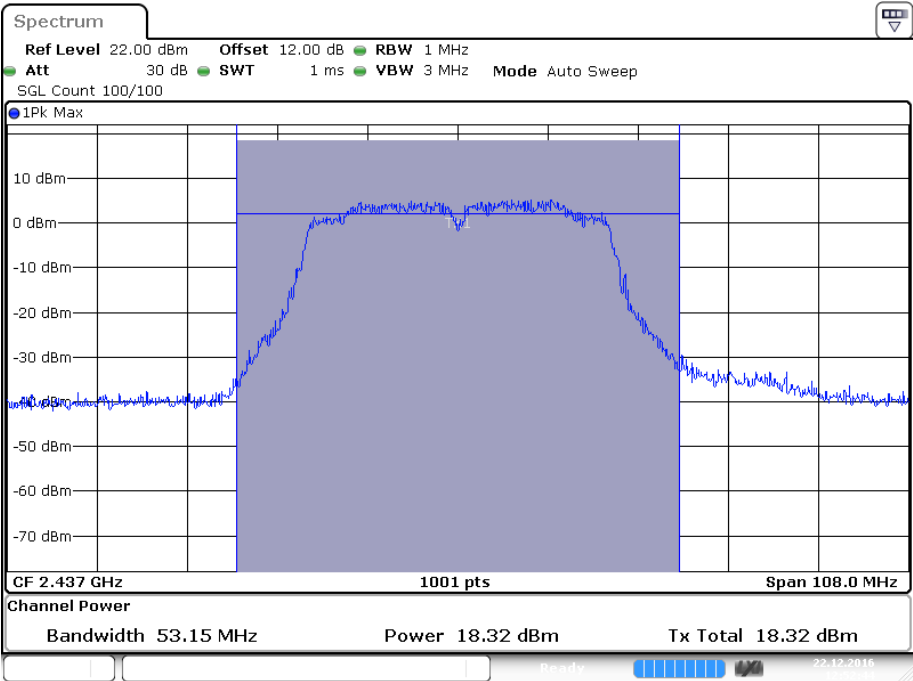
Date: 22 DEC 2016 12:10:06

Low Channel (N40-MIMO Mode / Chain 0)



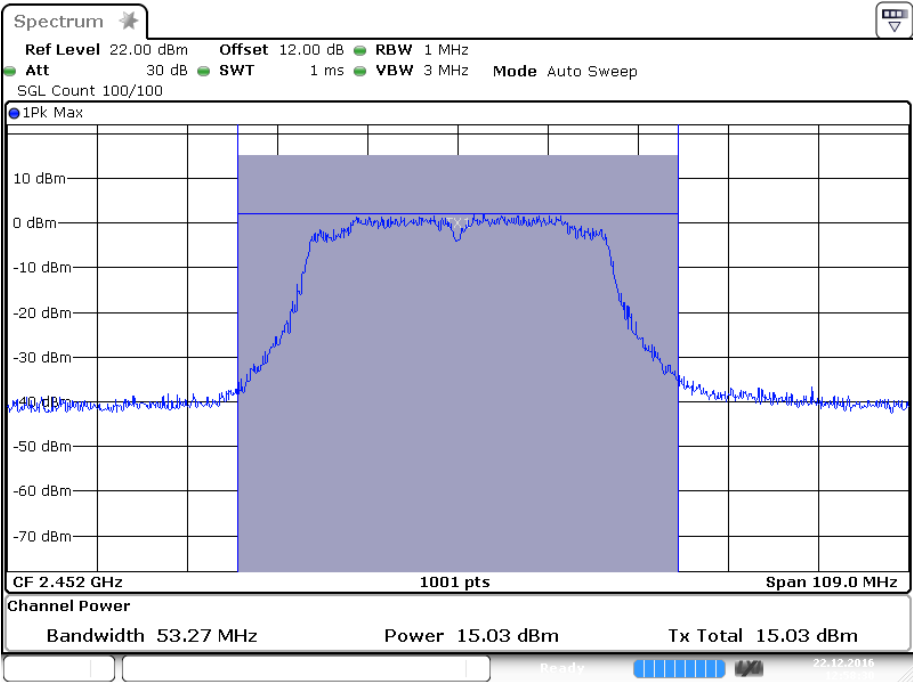
Date: 22 DEC 2016 12:24:09

Middle Channel (N40-MIMO Mode / Chain 0)



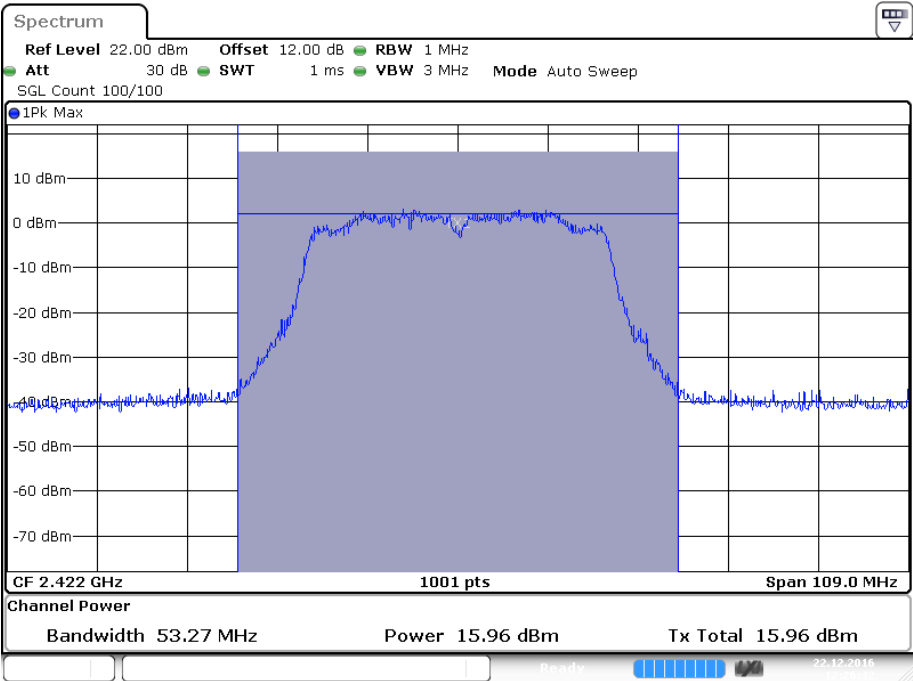
Date: 22 DEC 2016 12:52:45

High Channel (N40-MIMO Mode / Chain 0)



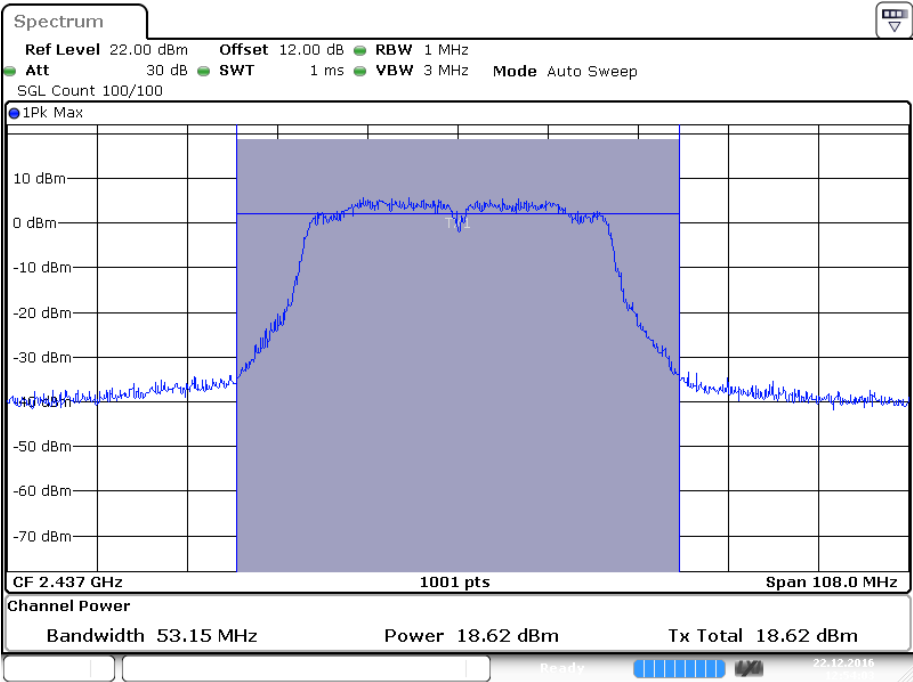
Date: 22 DEC 2016 12:58:30

Low Channel (N40-MIMO Mode / Chain 1)



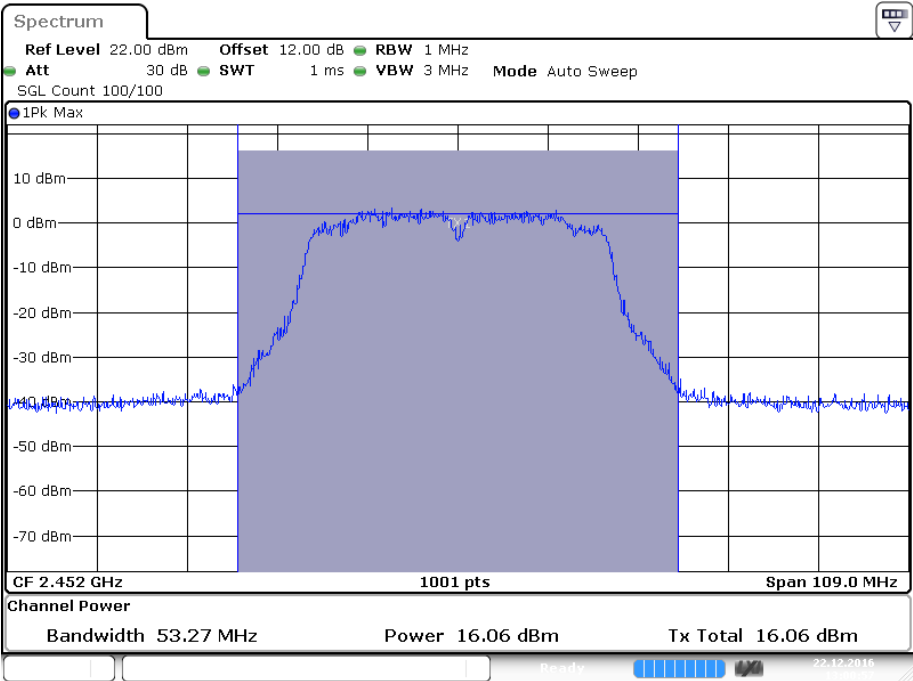
Date: 22 DEC 2016 12:26:33

Middle Channel (N40-MIMO Mode / Chain 1)



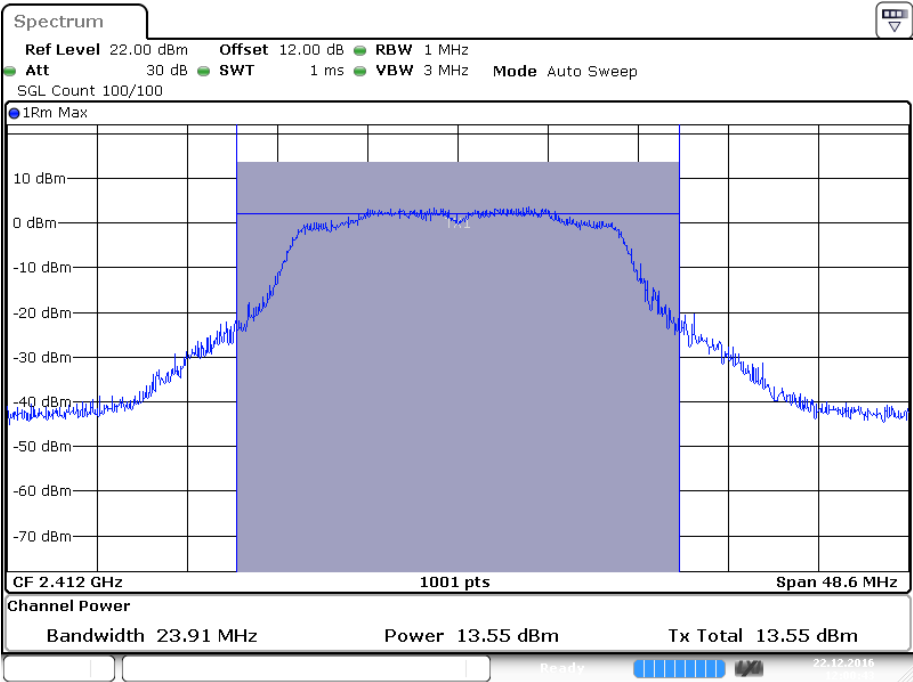
Date: 22 DEC 2016 12:54:04

High Channel (N40-MIMO Mode / Chain 1)



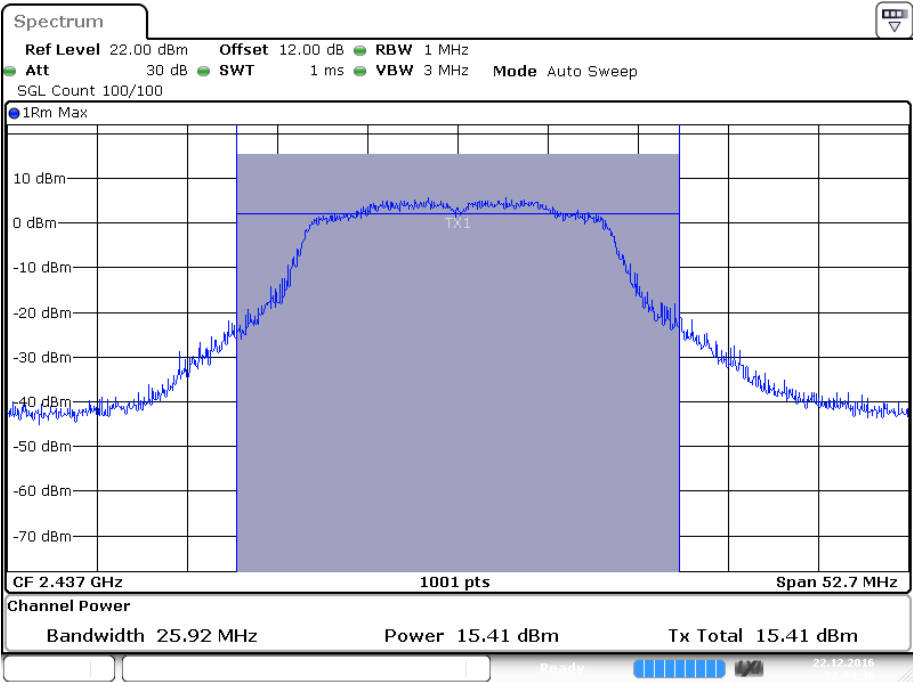
Date: 22 DEC 2016 13:00:57

Conducted Average Output Power  
Low Channel (N20-MIMO Mode / Chain 0)



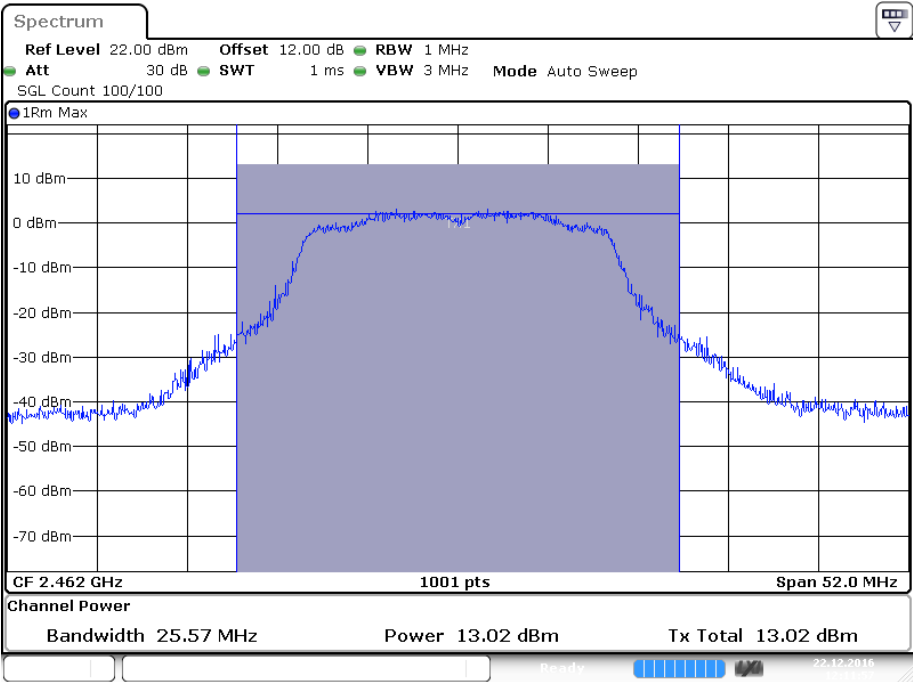
Date: 22 DEC 2016 12:00:43

Middle Channel (N20-MIM Mode / Chain 0)



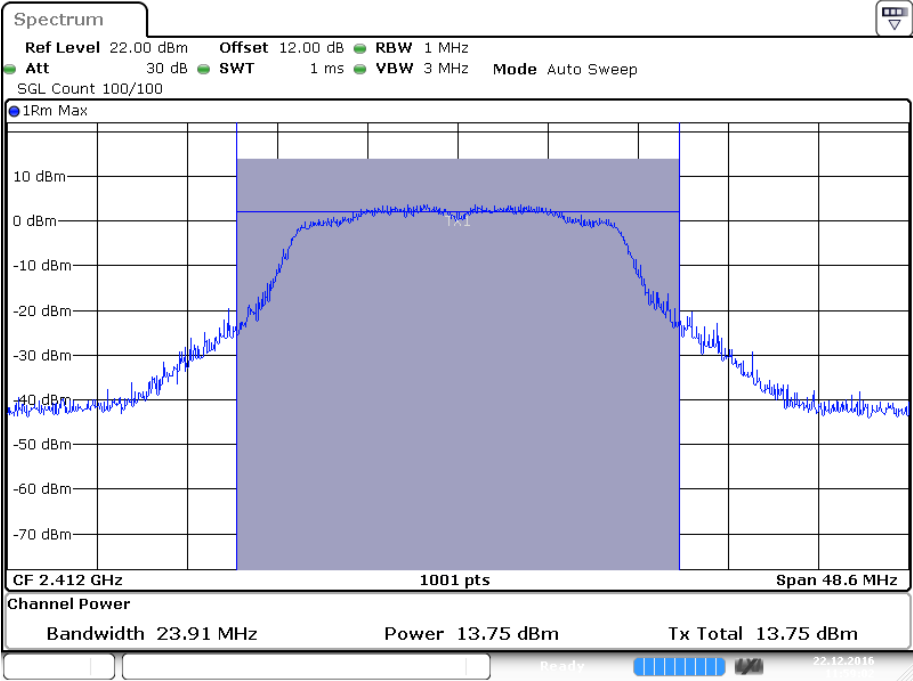
Date: 22 DEC 2016 12:04:47

High Channel (N20-MIMO Mode / Chain 0)



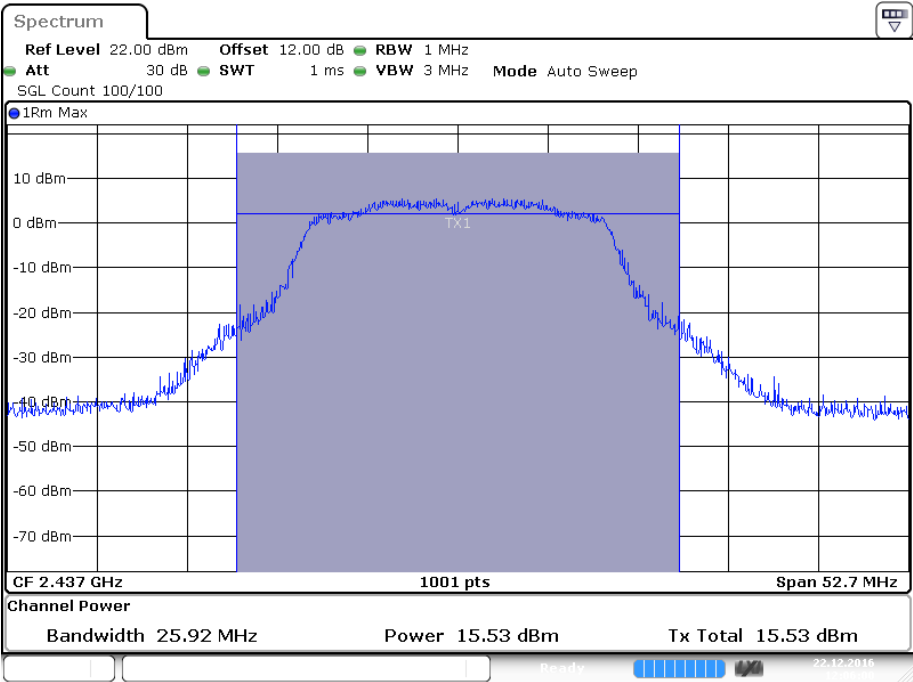
Date: 22 DEC 2016 12:11:58

Low Channel (N20-MIMO Mode / Chain 1)



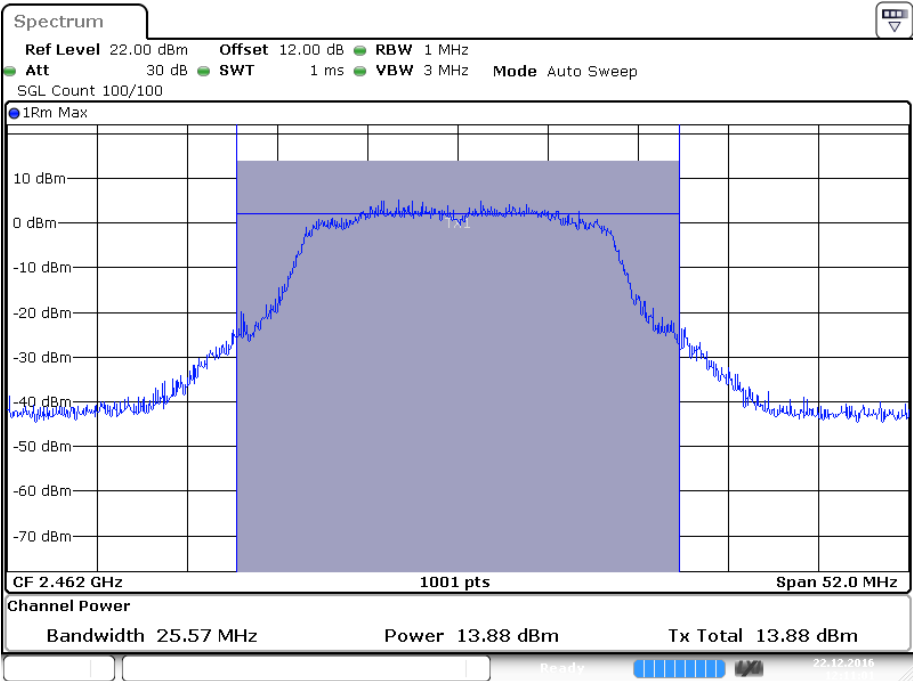
Date: 22 DEC 2016 11:59:02

Middle Channel (N20-MIMO Mode / Chain 1)



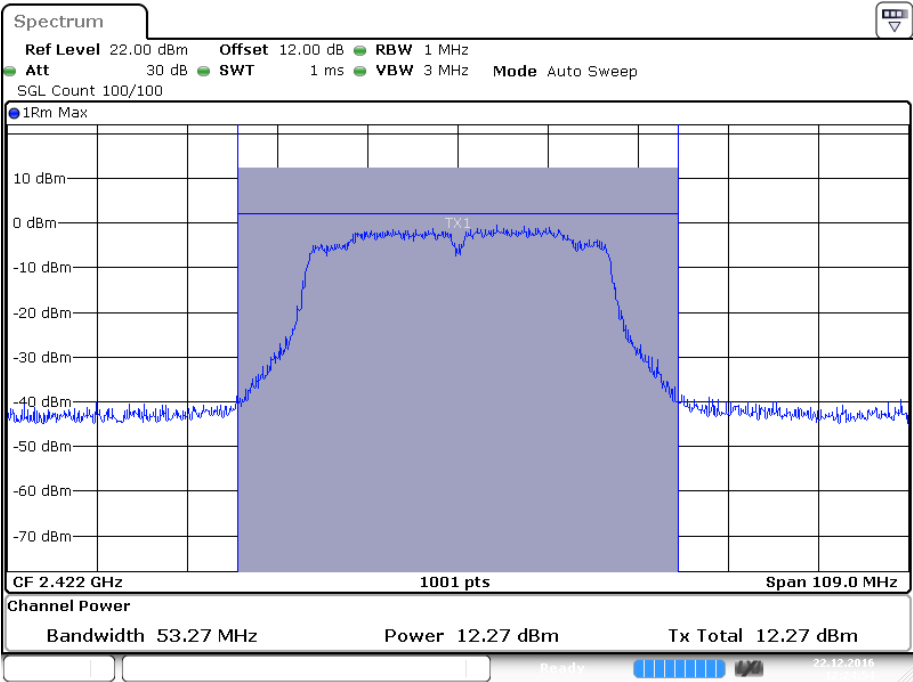
Date: 22 DEC 2016 12:06:01

High Channel (N20-MIMO Mode / Chain 1)



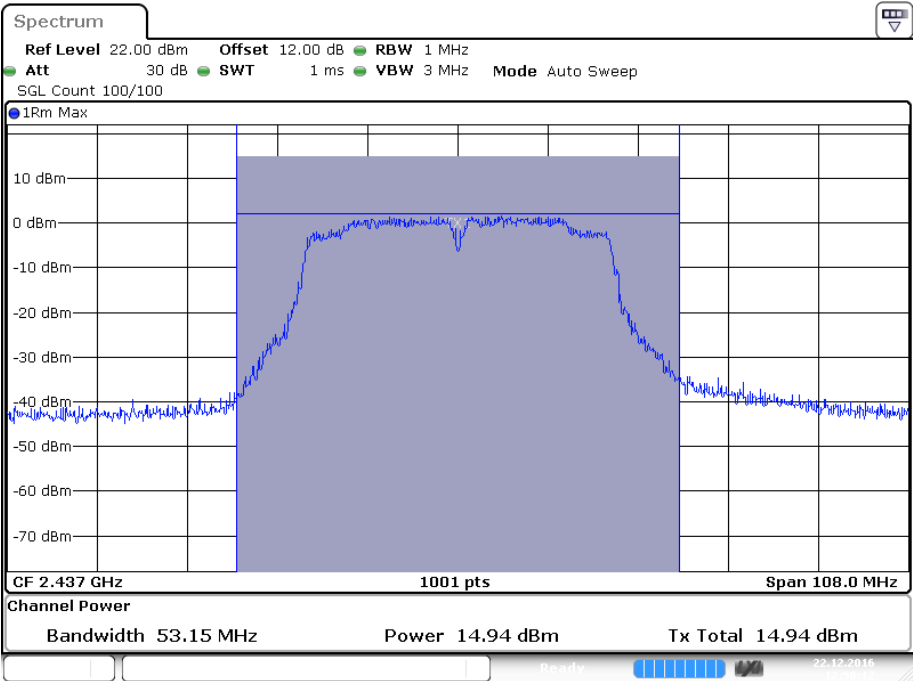
Date: 22 DEC 2016 12:11:01

Low Channel (N40-MIMO Mode / Chain 0)



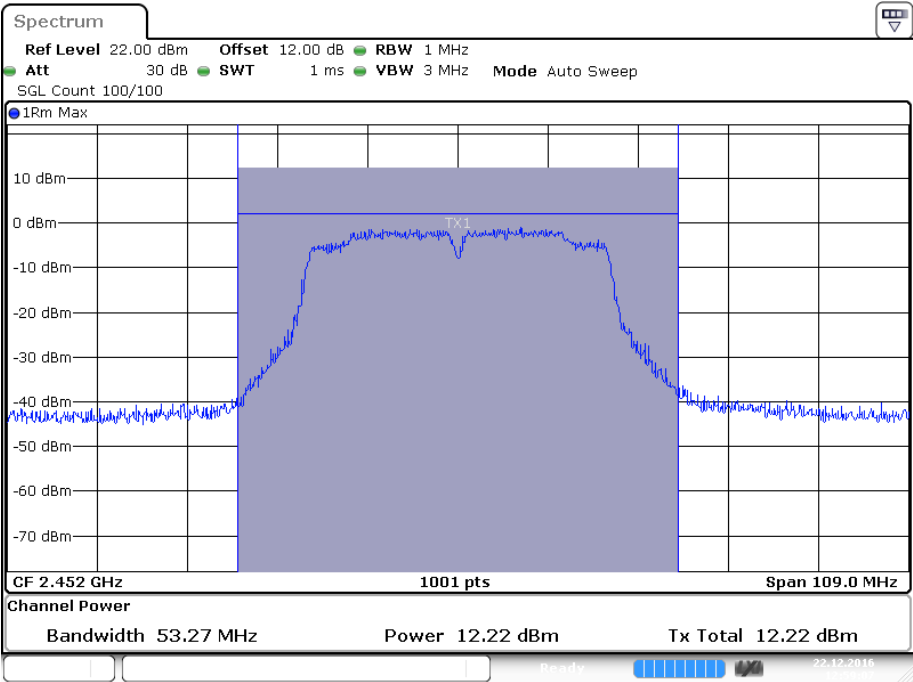
Date: 22 DEC 2016 12:24:54

Middle Channel (N40-MIMO Mode / Chain 0)



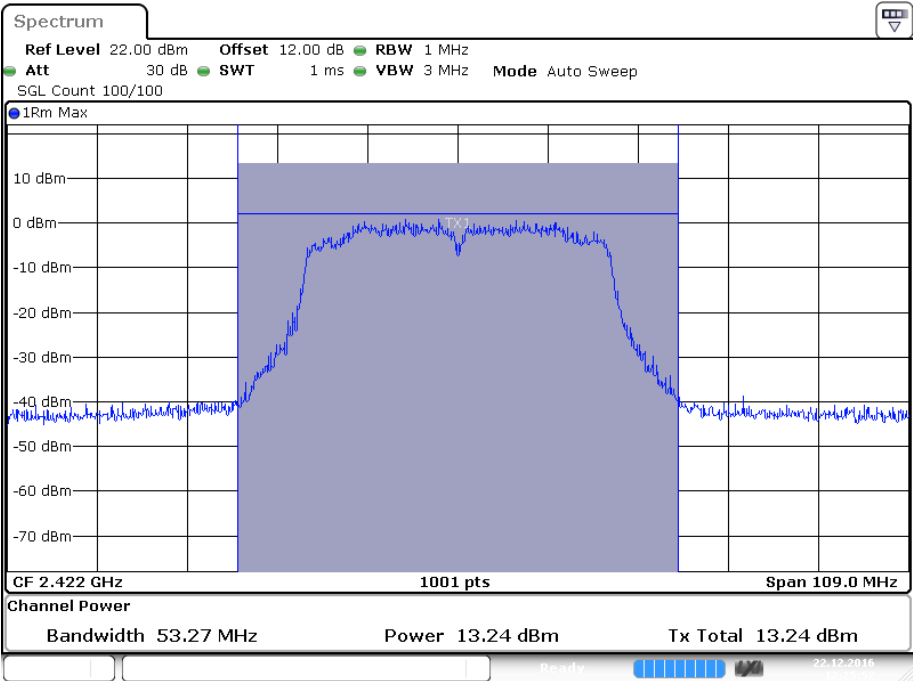
Date: 22 DEC 2016 12:50:12

High Channel (N40-MIMO Mode / Chain 0)



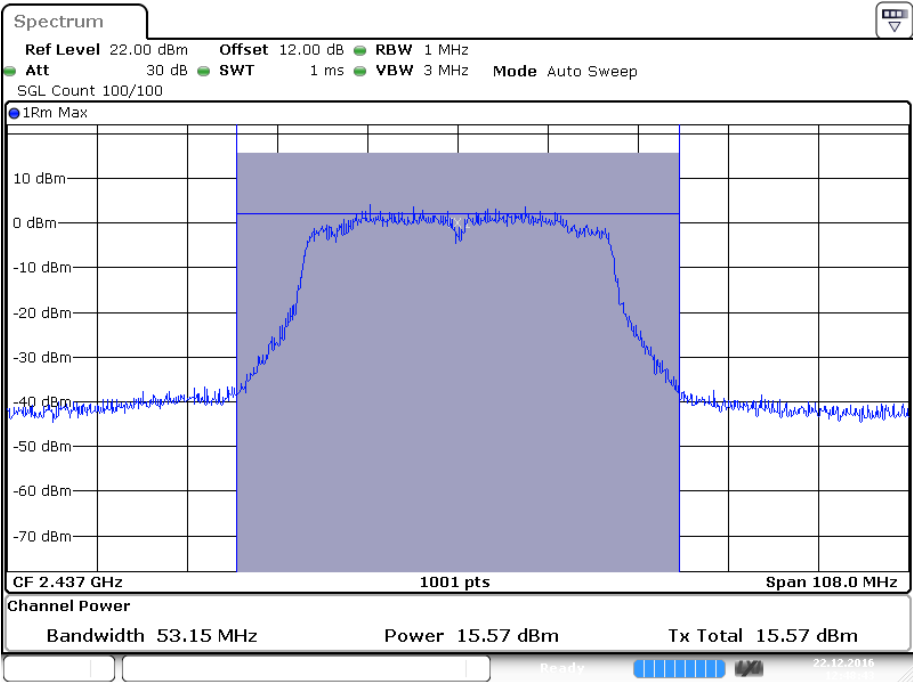
Date: 22 DEC 2016 12:59:08

Low Channel (N40-MIMO Mode / Chain 1)



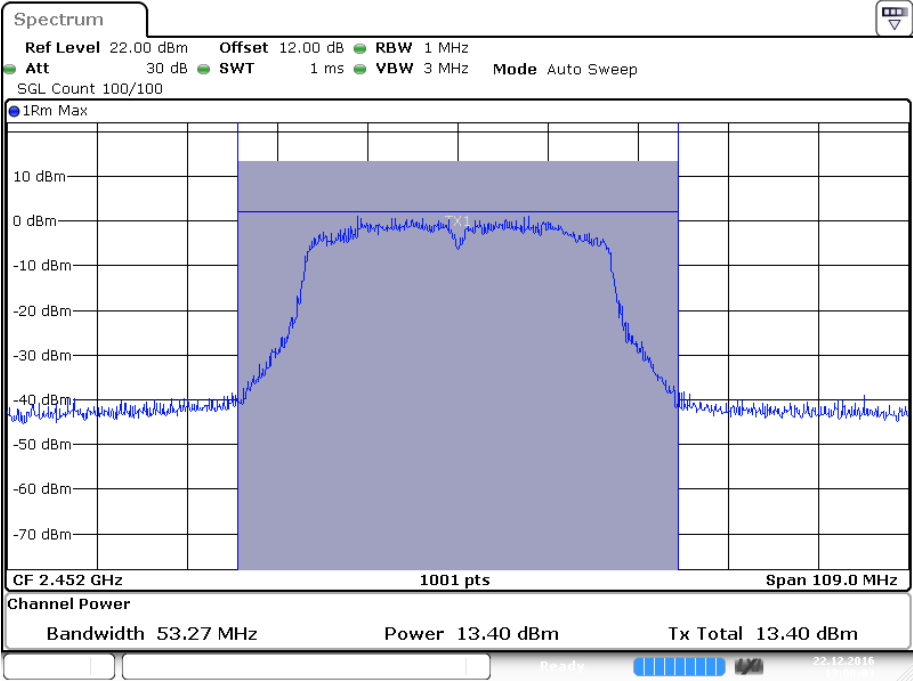
Date: 22 DEC 2016 12:25:52

Middle Channel (N40-MIMO Mode / Chain 1)



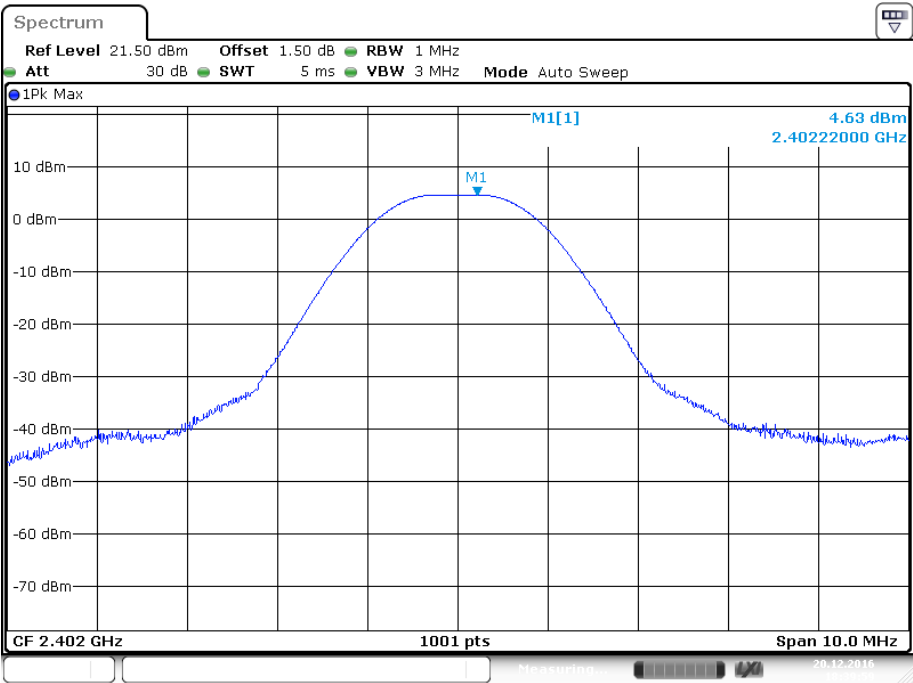
Date: 22 DEC 2016 12:48:43

High Channel (N40-MIMO Mode / Chain 1)



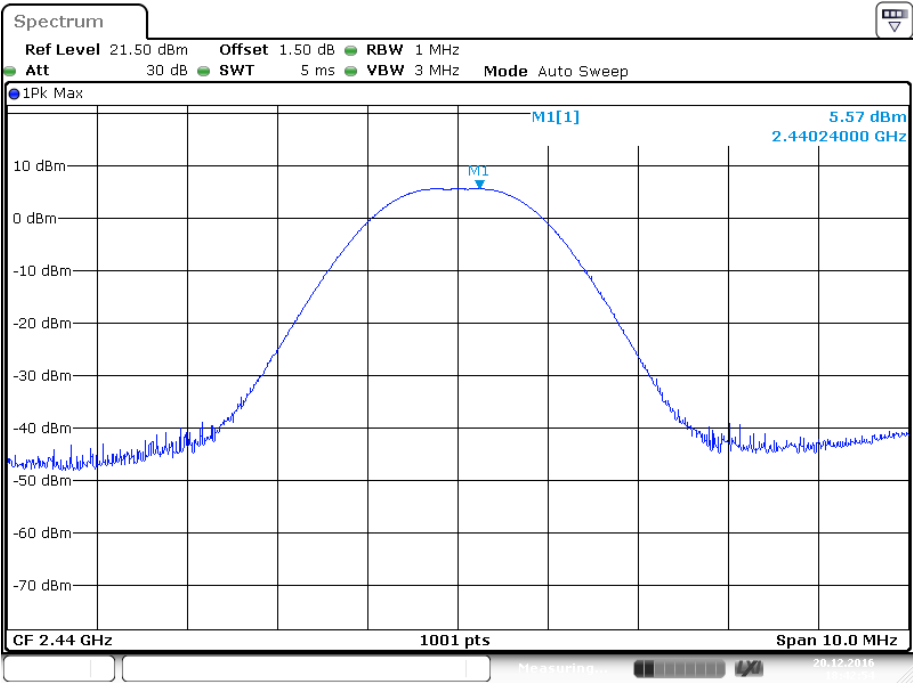
Date: 22 DEC 2016 13:00:04

Conducted Peak Output Power  
Low Channel (BLE)



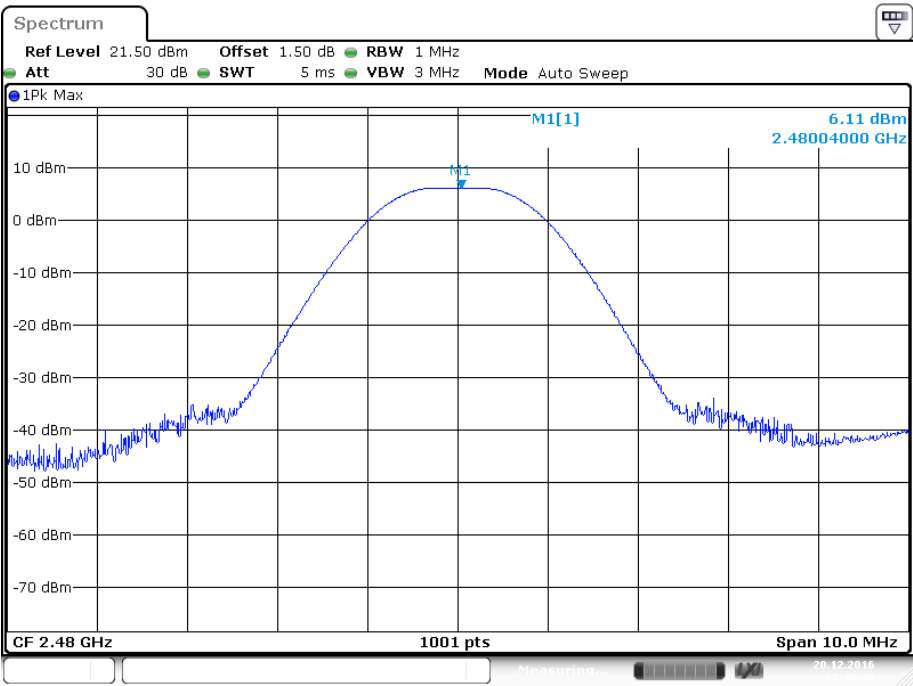
Date: 20 DEC 2016 18:40:00

Middle Channel (BLE)



Date: 20 DEC 2016 18:42:54

High Channel (BLE)



Date: 20 DEC 2016 18:49:48

## 10 FCC §15.247(d) –100 kHz Bandwidth of Frequency Band Edge

### 10.1 Applicable Standard

According to FCC §15.247(d).

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### 10.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

### 10.3 Test Equipment List and Details

| Descriptions      | Manufacturers   | Models | Serial Numbers | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------|----------------|------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSV40  | 101203         | 2016/7/14        | 2017/7/13            |
| Cable             | WOKEN           | SFL402 | 00100A1F6A192S | N.C.R            | N.C.R                |

**\*Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### 10.4 Test Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 55 %     |
| ATM Pressure:      | 1010 hPa |

The testing was performed by David Hsu on 2016-12-20 to 2016-12-23.

**10.5 Test Results****WIFI**

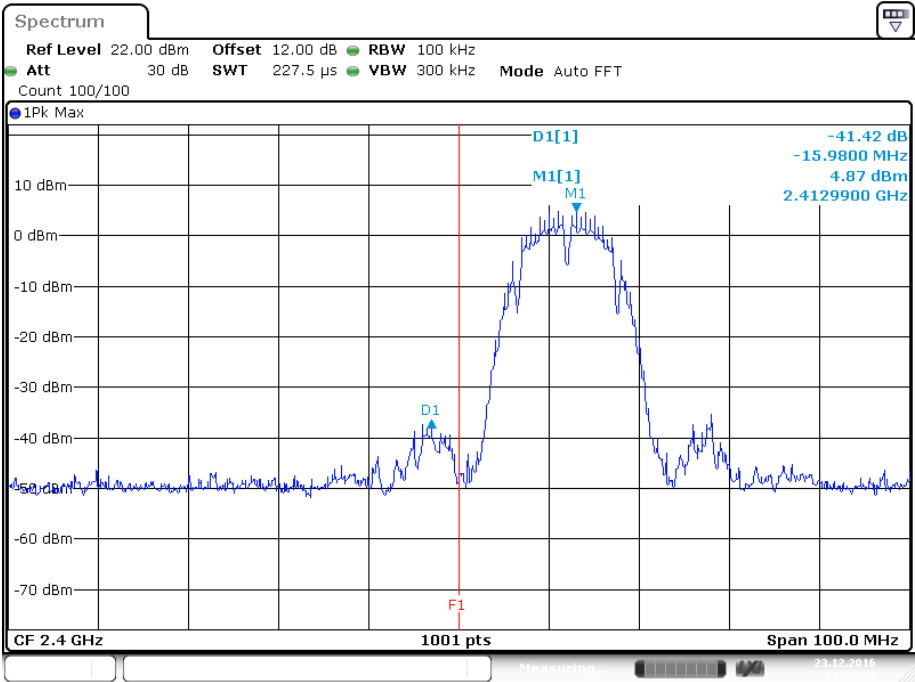
| Channel  | Frequency<br>(MHz) | Delta Peak to<br>Band Emission<br>(dBc) |         | Limit<br>(dBc) | RESULT |
|----------|--------------------|-----------------------------------------|---------|----------------|--------|
|          |                    | Chain 0                                 | Chain 1 |                |        |
| B Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 41.42                                   | 47.85   | ≥ 20           | PASS   |
| High     | 2462               | 49.02                                   | 52.43   | ≥ 20           | PASS   |
| G Mode   |                    |                                         |         |                |        |
| Low      | 2412               | 30.62                                   | 30.62   | ≥ 20           | PASS   |
| High     | 2462               | 43.32                                   | 45.72   | ≥ 20           | PASS   |
| N20 Mode |                    |                                         |         |                |        |
| Low      | 2412               | 31.78                                   | 29.68   | ≥ 20           | PASS   |
| High     | 2462               | 46.63                                   | 48.42   | ≥ 20           | PASS   |
| N40 Mode |                    |                                         |         |                |        |
| Low      | 2422               | 32.39                                   | 31.24   | ≥ 20           | PASS   |
| High     | 2452               | 38.28                                   | 41.49   | ≥ 20           | PASS   |

**BLE**

| Channel | Frequency (MHz) | Delta Peak to Band Emission (dBc) | Limit (dBc) | RESULT |
|---------|-----------------|-----------------------------------|-------------|--------|
| Low     | 2402            | 44.08                             | $\geq 20$   | PASS   |
| High    | 2480            | 48.38                             | $\geq 20$   | PASS   |

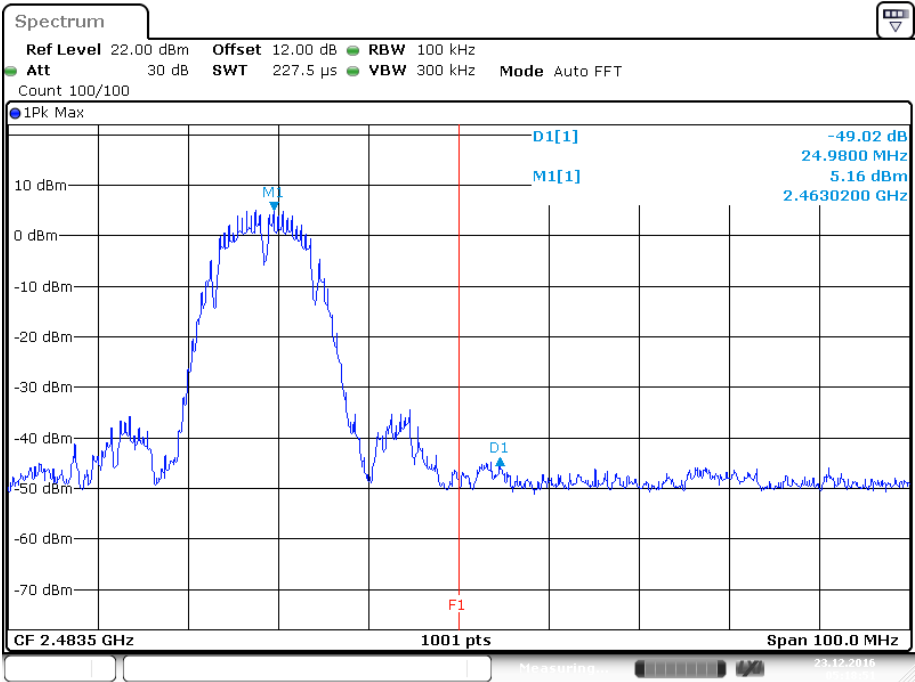
Please refer to the following plots

Band Edge, CH low (B Mode / Chain 0)



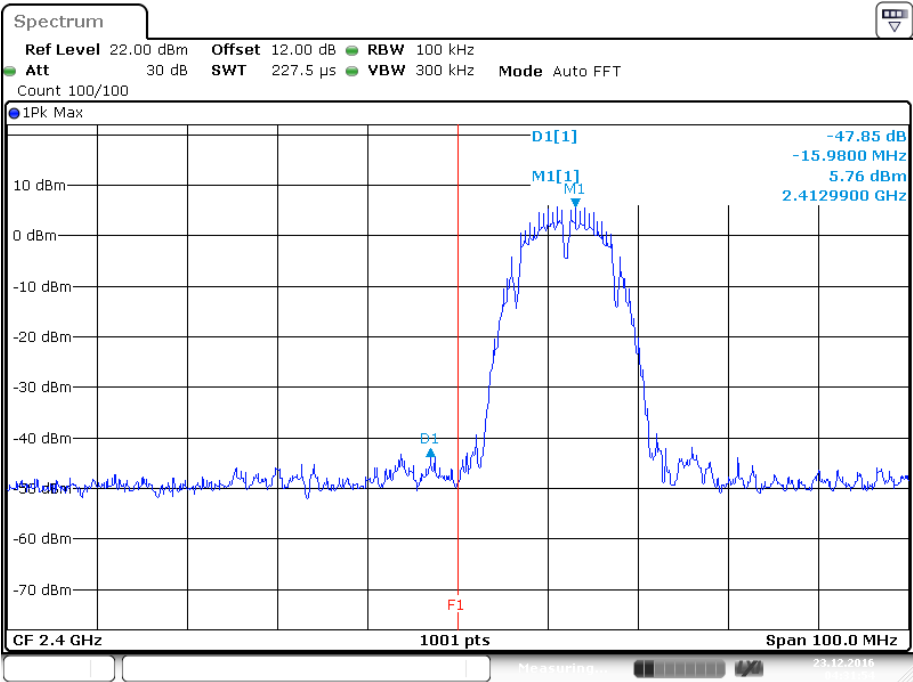
Date: 23 DEC 2016 04:30:28

Band Edge, CH High(B Mode / Chain 0)

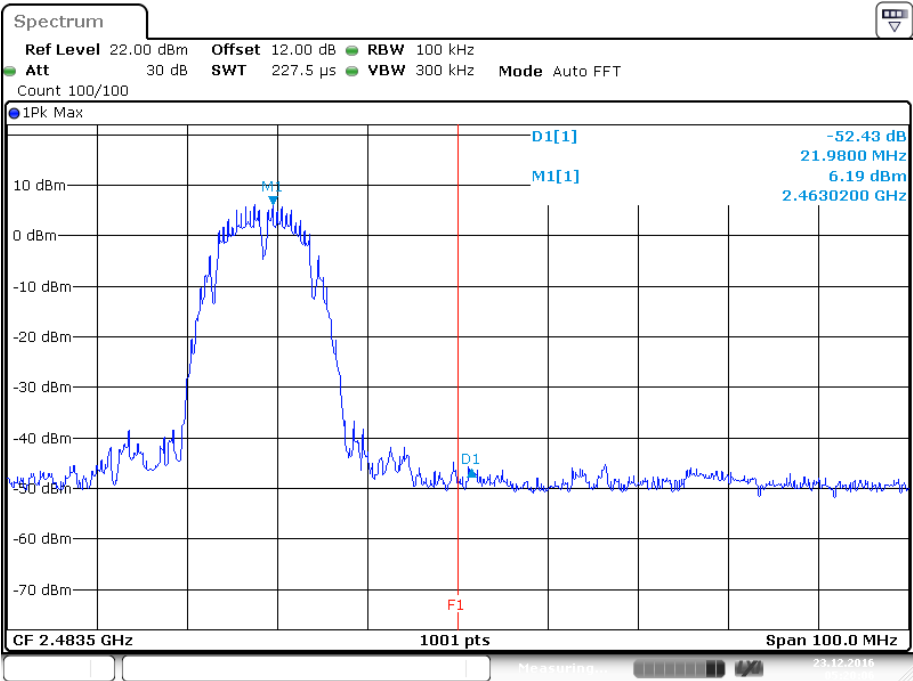


Date: 23 DEC 2016 05:18:51

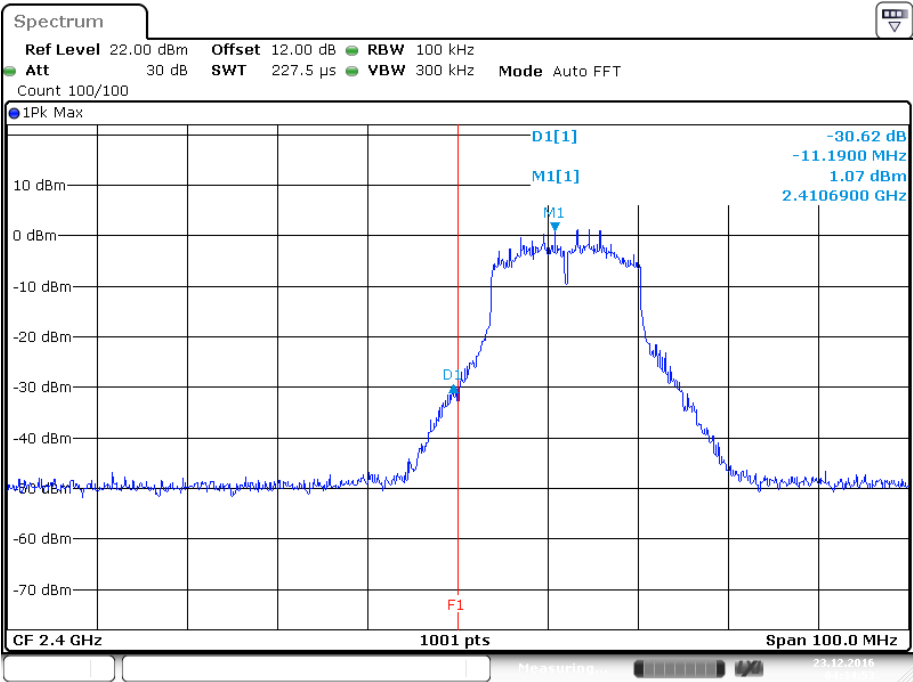
Band Edge, CH low (B Mode / Chain 1)



Band Edge, CH High(B Mode / Chain 1)

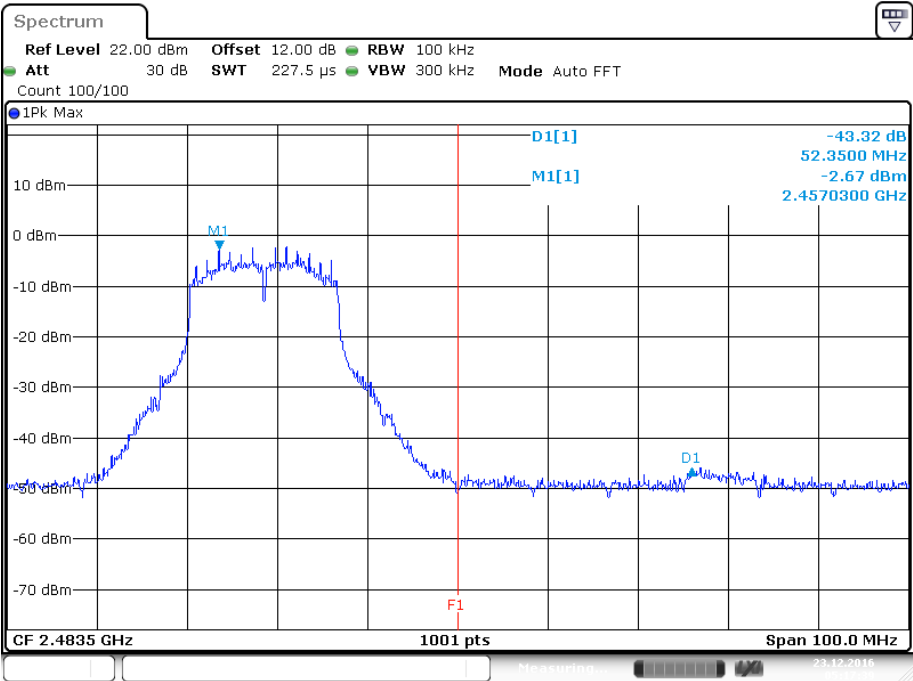


Band Edge, CH low (G Mode / Chain 0)



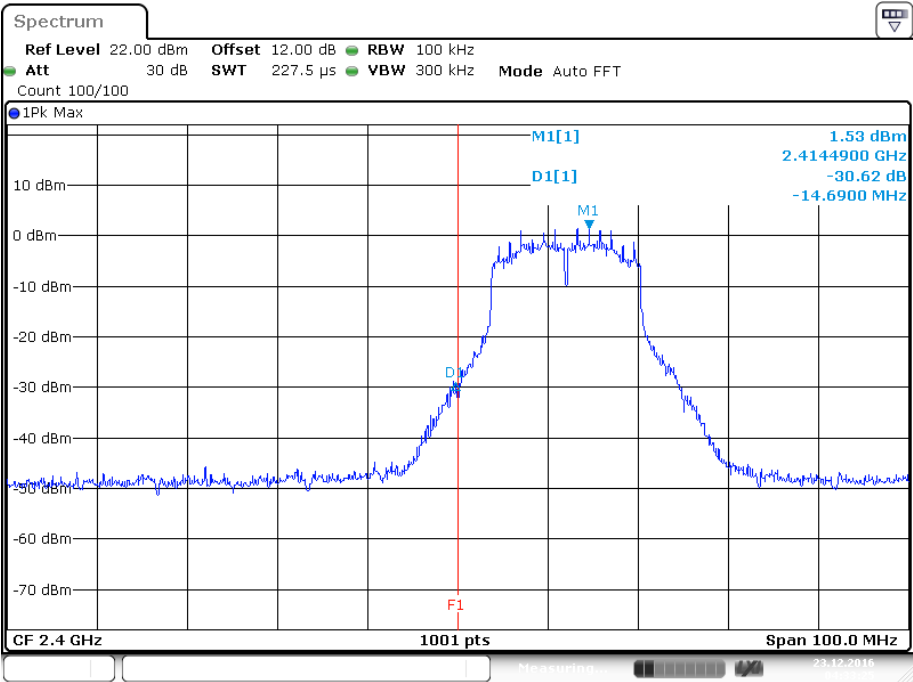
Date: 23 DEC 2016 04:34:54

Band Edge, CH High(G Mode / Chain 0)



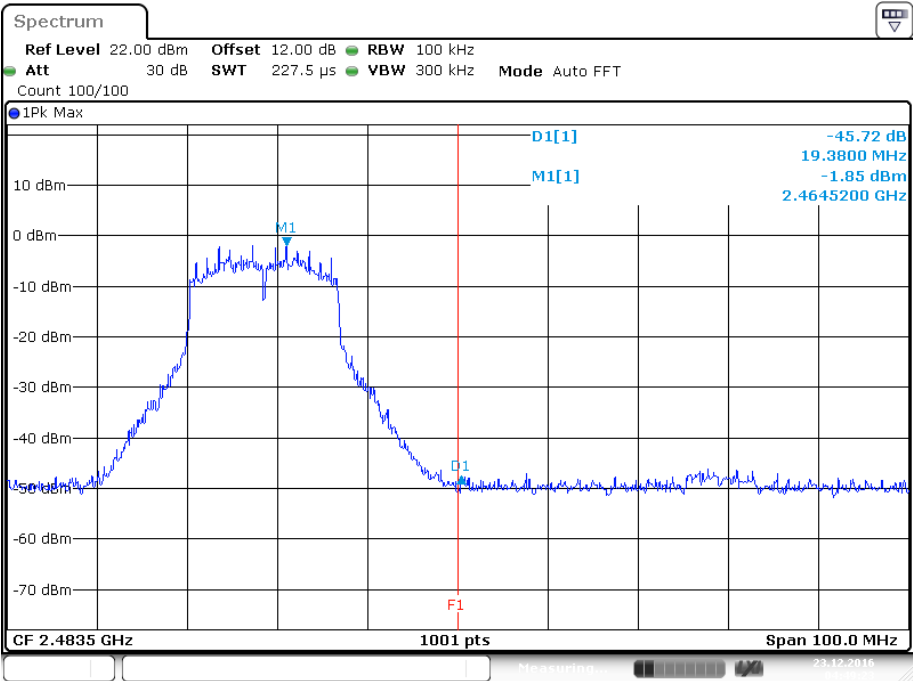
Date: 23 DEC 2016 05:17:39

Band Edge, CH low (G Mode / Chain 1)



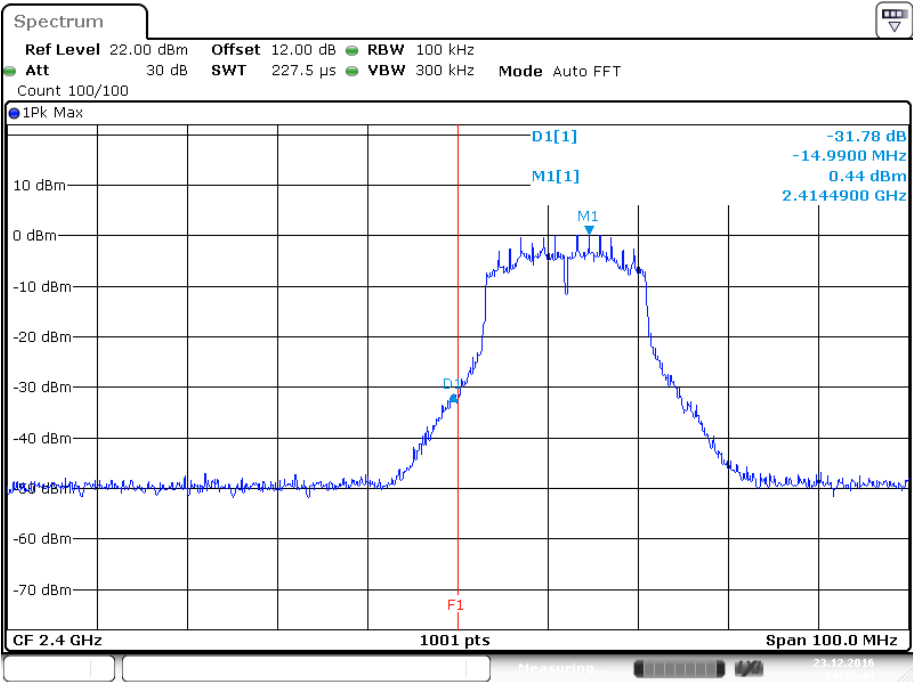
Date: 23 DEC 2016 04:33:25

Band Edge, CH High(G Mode / Chain 1)

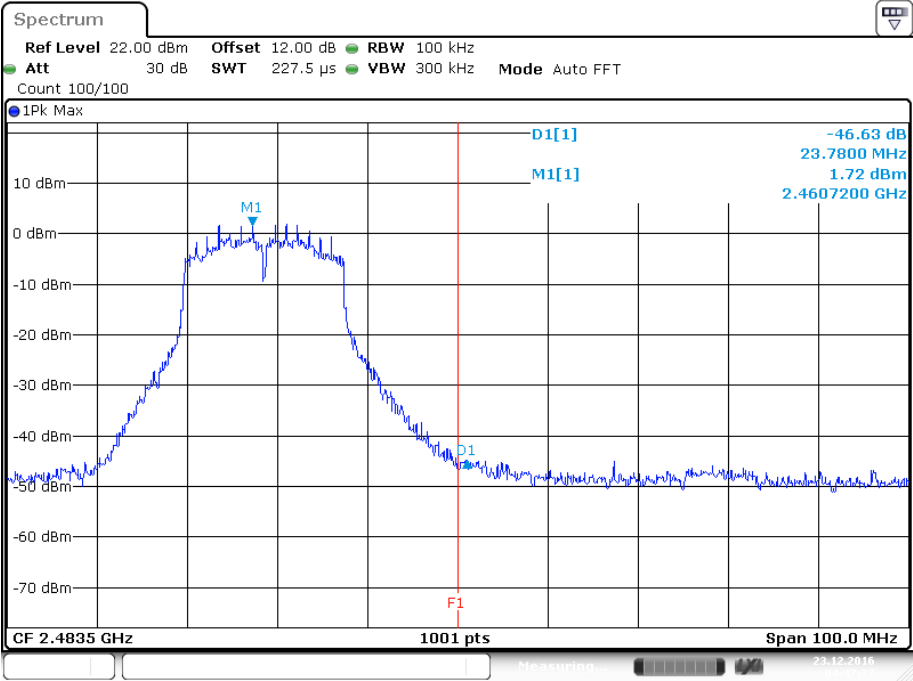


Date: 23 DEC 2016 04:49:24

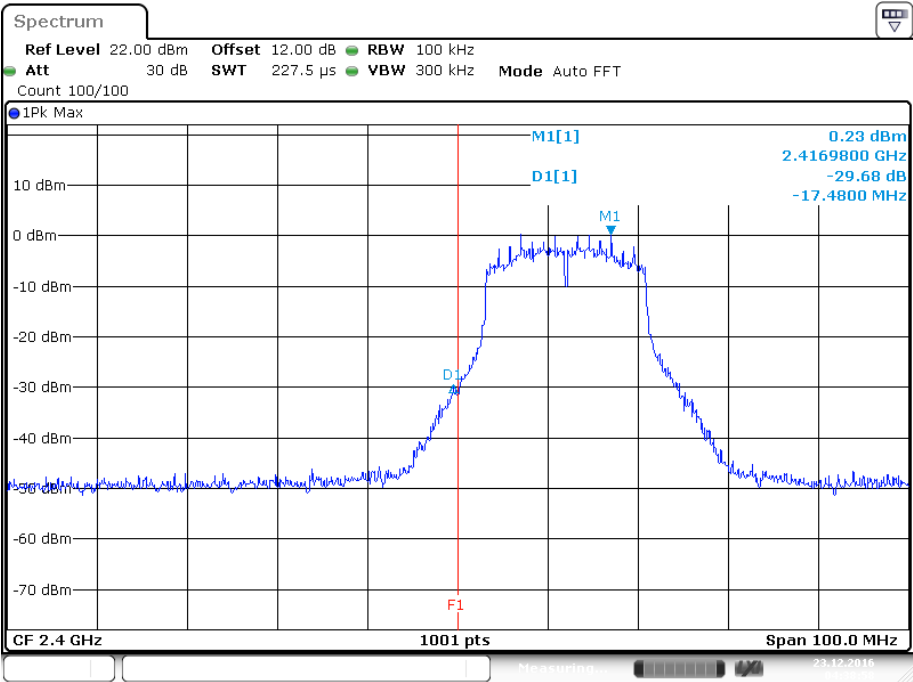
Band Edge, CH low (N20 Mode / Chain 0)



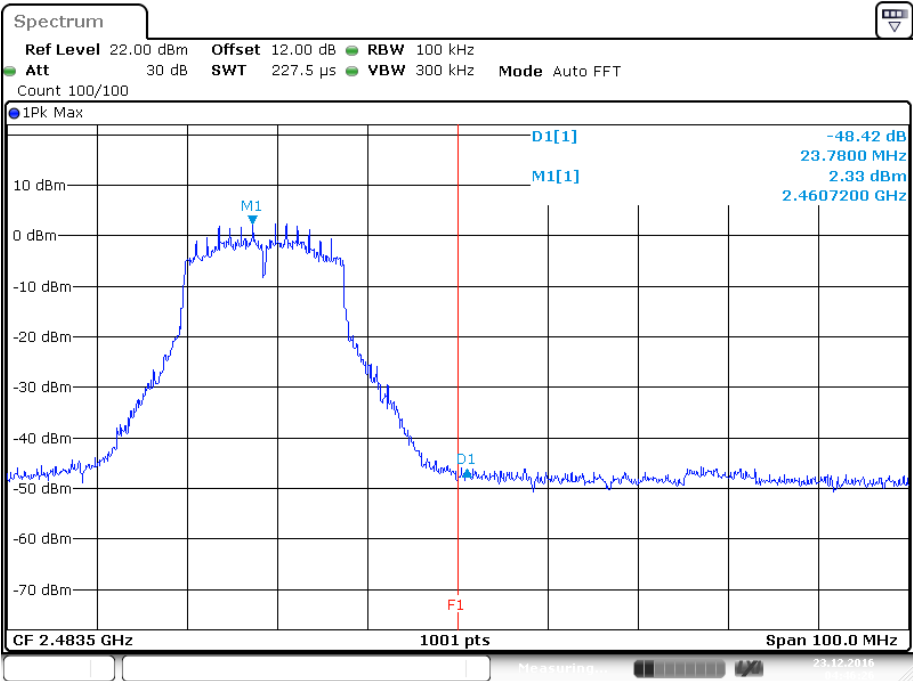
Band Edge, CH High(N20 Mode / Chain 0)



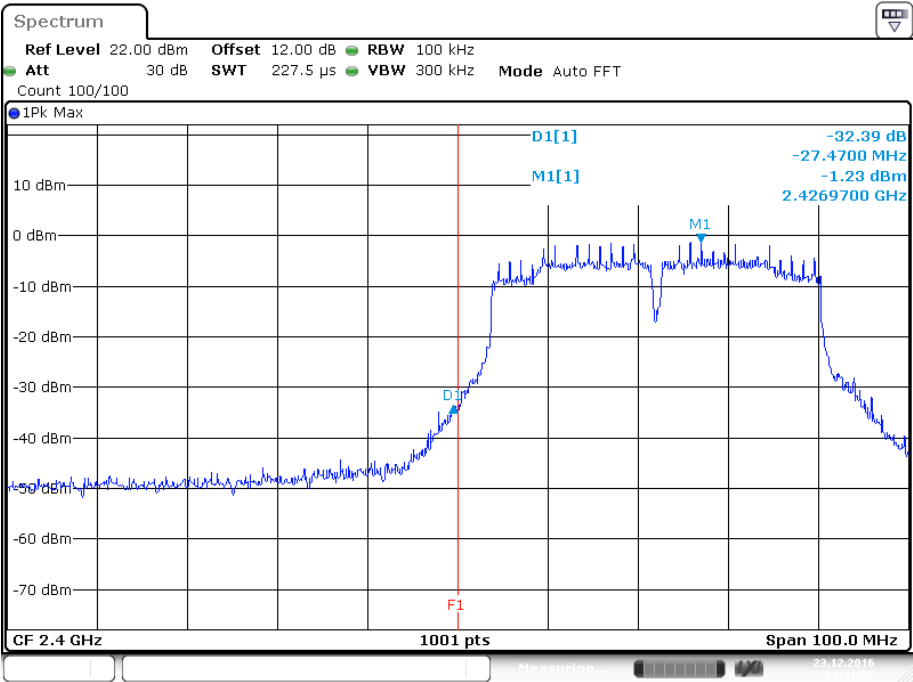
Band Edge, CH low (N20 Mode / Chain 1)



Band Edge, CH High(N20 Mode / Chain 1)

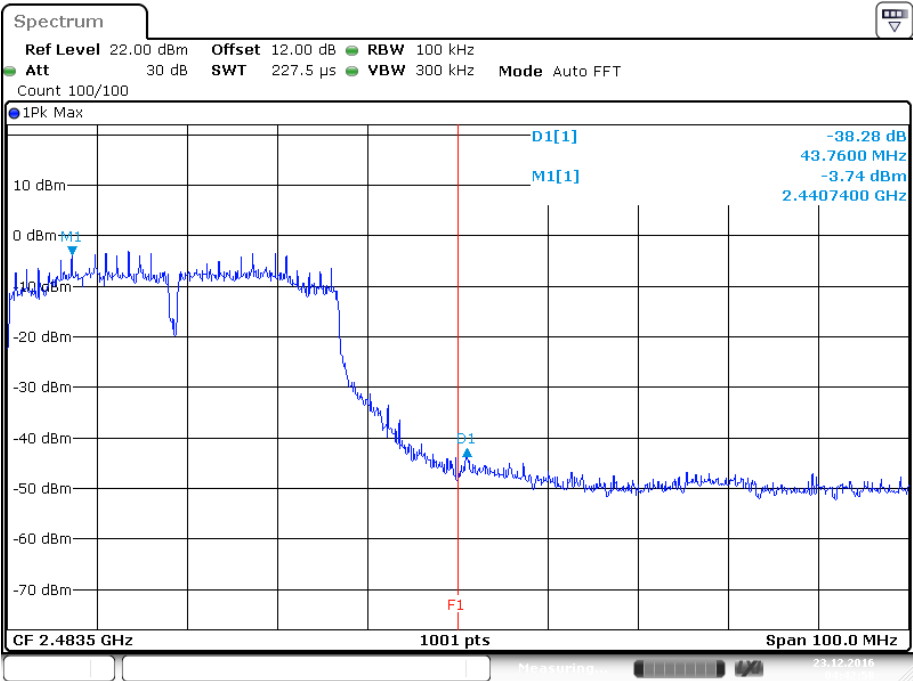


Band Edge, CH low (N40 Mode / Chain 0)



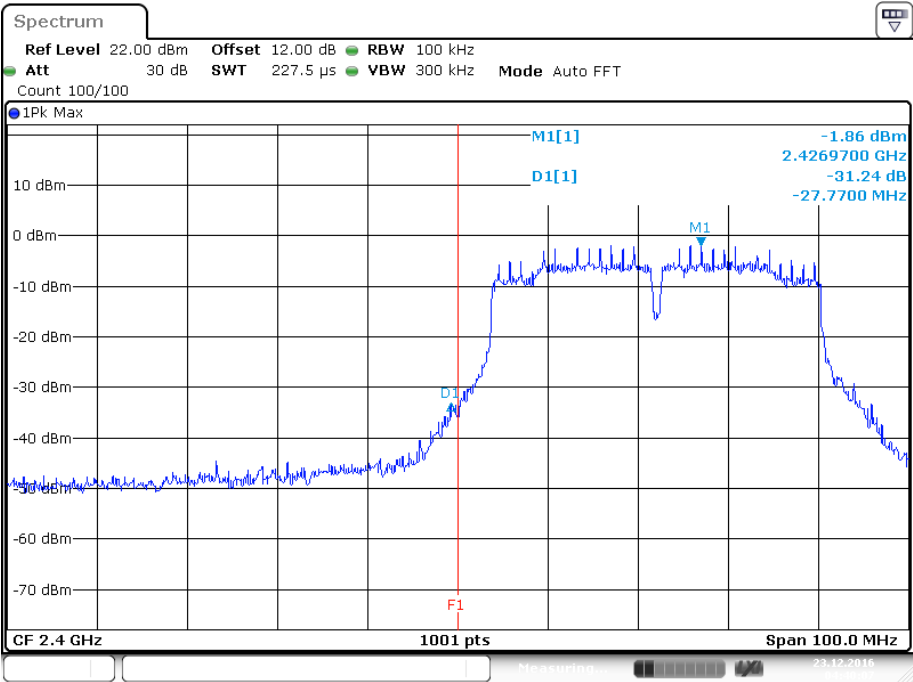
Date: 23 DEC 2016 04:41:33

Band Edge, CH High(N40 Mode / Chain 0)



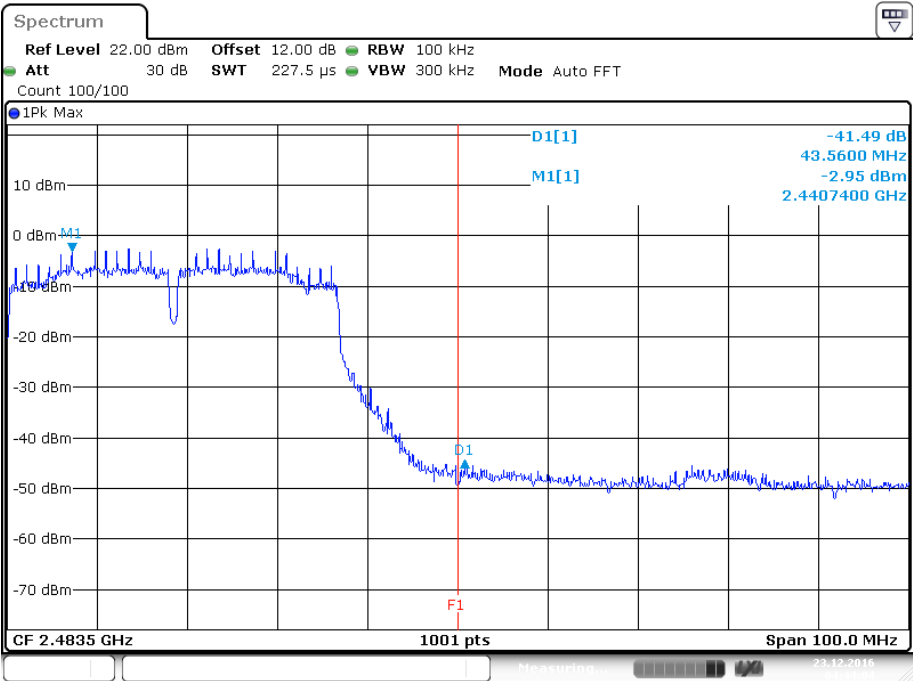
Date: 23 DEC 2016 04:42:59

Band Edge, CH low (N40 Mode / Chain 1)



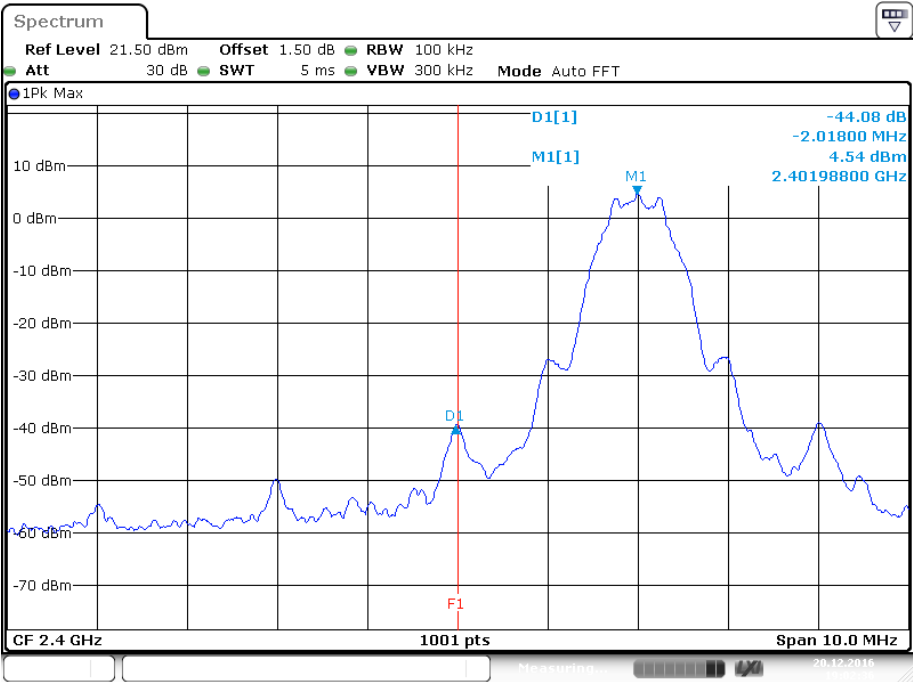
Date: 23 DEC 2016 04:40:07

Band Edge, CH High(N40 Mode / Chain 1)



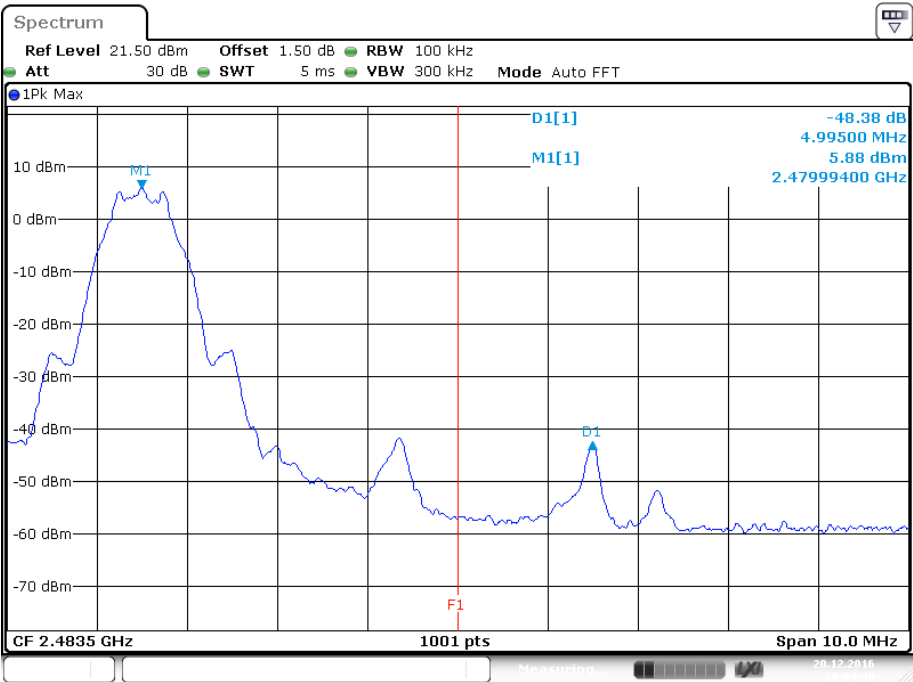
Date: 23 DEC 2016 04:44:05

Band Edge, CH low (BLE)



Date: 20 DEC 2016 19:02:36

Band Edge, CH High (BLE)



Date: 20 DEC 2016 19:04:48

## 11 FCC §15.247(e)– Power Spectral Density

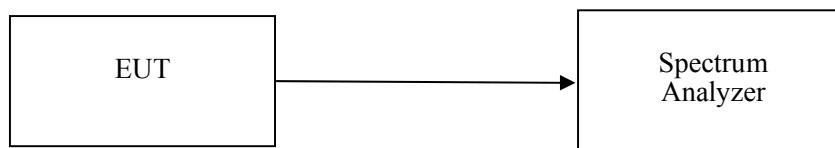
### 11.1 Applicable Standard

According to FCC §15.247(e).

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 11.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 1.5MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Repeat above procedures until all frequencies measured were complete.



### Test Equipment List and Details

| Descriptions      | Manufacturers   | Models | Serial Numbers | Calibration Date | Calibration Due Date |
|-------------------|-----------------|--------|----------------|------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSV40  | 101203         | 2016/7/14        | 2017/7/13            |
| Cable             | WOKEN           | SFL402 | 00100A1F6A192S | N.C.R            | N.C.R                |

**\*Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### 11.3 Test Environmental Conditions

|                    |          |
|--------------------|----------|
| Temperature:       | 25 °C    |
| Relative Humidity: | 55 %     |
| ATM Pressure:      | 1010 hPa |

The testing was performed by David Hsu on 2016-20-20 to 2016-12-23.

## 11.4 Test Results

Test Mode: Transmitting

WIFI

Note: for 802.11n mode, per output power test, the SISO mode was the worst at each antenna chain, so only SISO mode was test for this item, and used to evaluate MIMO mode compliance.

Test Result: Compliant. Please refer to the following table and plots

| Channel  | Frequency (MHz) | Power Spectral Density (dBm/3kHz) |         |        | Limit (MHz) | RESULT |
|----------|-----------------|-----------------------------------|---------|--------|-------------|--------|
|          |                 | Chain 0                           | Chain 1 | Total  |             |        |
| B Mode   |                 |                                   |         |        |             |        |
| Low      | 2412            | -9.22                             | -9.43   | N/A    | 8           | PASS   |
| Mid      | 2437            | -8.95                             | -9.53   | N/A    | 8           | PASS   |
| High     | 2462            | -9.08                             | -9.77   | N/A    | 8           | PASS   |
| G Mode   |                 |                                   |         |        |             |        |
| Low      | 2412            | -14.10                            | -12.19  | N/A    | 8           | PASS   |
| Mid      | 2437            | -11.69                            | -11.67  | N/A    | 8           | PASS   |
| High     | 2462            | -15.98                            | -12.77  | N/A    | 8           | PASS   |
| N20 Mode |                 |                                   |         |        |             |        |
| Low      | 2412            | -12.63                            | -12.43  | -9.52  | 6.79        | PASS   |
| Mid      | 2437            | -11.91                            | -11.67  | -8.78  | 6.79        | PASS   |
| High     | 2462            | -13.57                            | -14.89  | -11.19 | 6.79        | PASS   |
| N40 Mode |                 |                                   |         |        |             |        |
| Low      | 2422            | -15.09                            | -15.12  | -12.09 | 6.79        | PASS   |
| Mid      | 2437            | -13.98                            | -14.09  | -11.02 | 6.79        | PASS   |
| High     | 2452            | -17.12                            | -17.54  | -14.32 | 6.79        | PASS   |

The device is a client device. the 2 antenna maximum antenna gain are 4.2dBi, and employed Cyclic Delay

Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

Array Gain =  $10 \log(\text{NANT}/\text{NSS})$  dB.

So:

Directional gain = GANT + Array Gain =  $4.2 + 10 * \log(2) = 7.21$  dBi

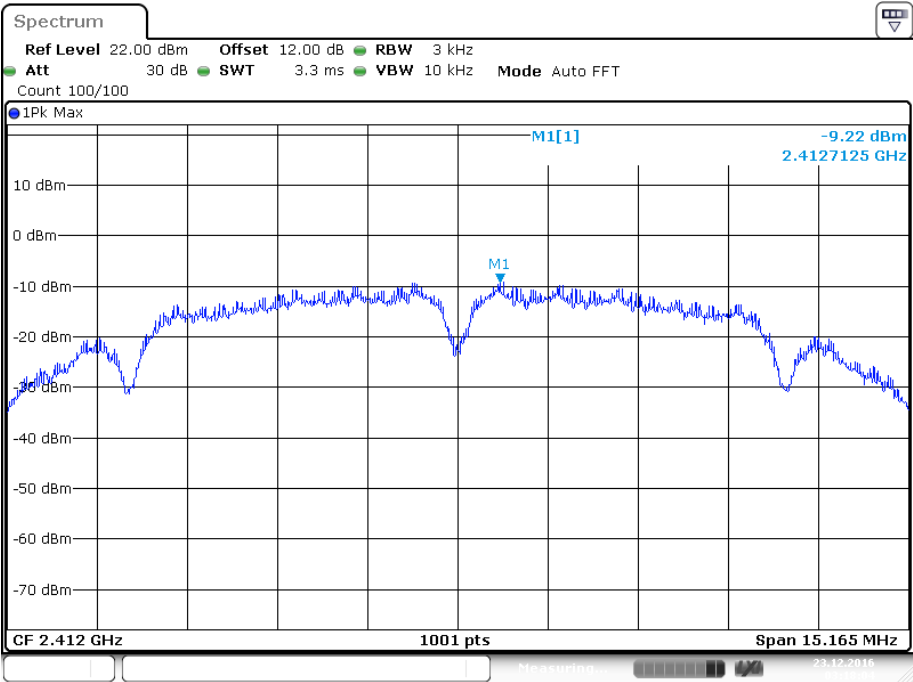
The Power density Limits was reduce 1.21dB

BLE

| Channel | Frequency (MHz) | PSD (dBm/3 kHz) | Limit (dBm/3 kHz) | Result     |
|---------|-----------------|-----------------|-------------------|------------|
| Low     | 2402            | -11.33          | 8                 | Compliance |
| Middle  | 2440            | -10.34          | 8                 | Compliance |
| High    | 2480            | -9.33           | 8                 | Compliance |

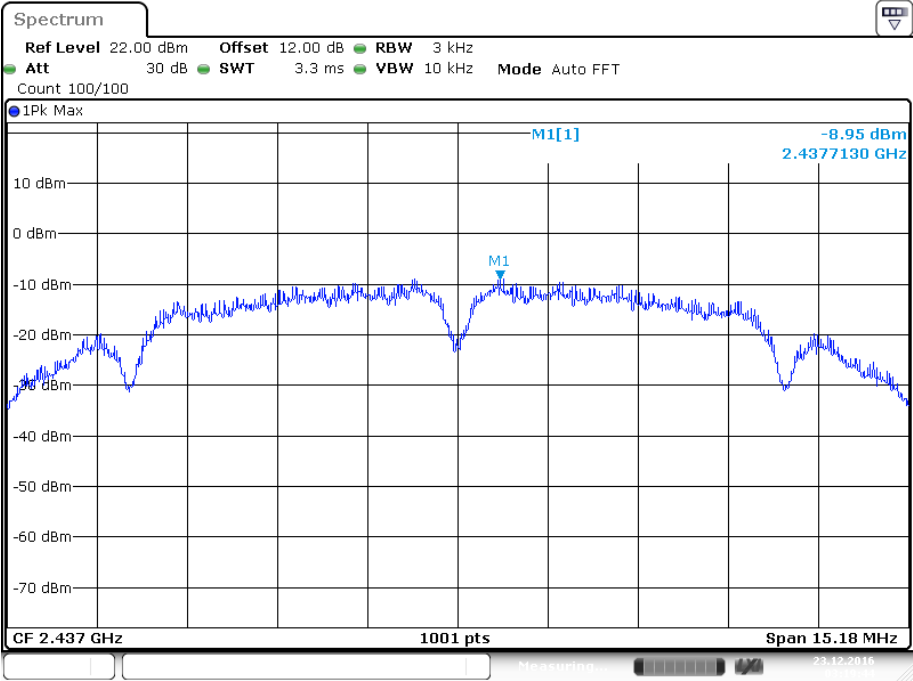
Please refer to the following plots

Low Channel (B Mode / Chain 0)



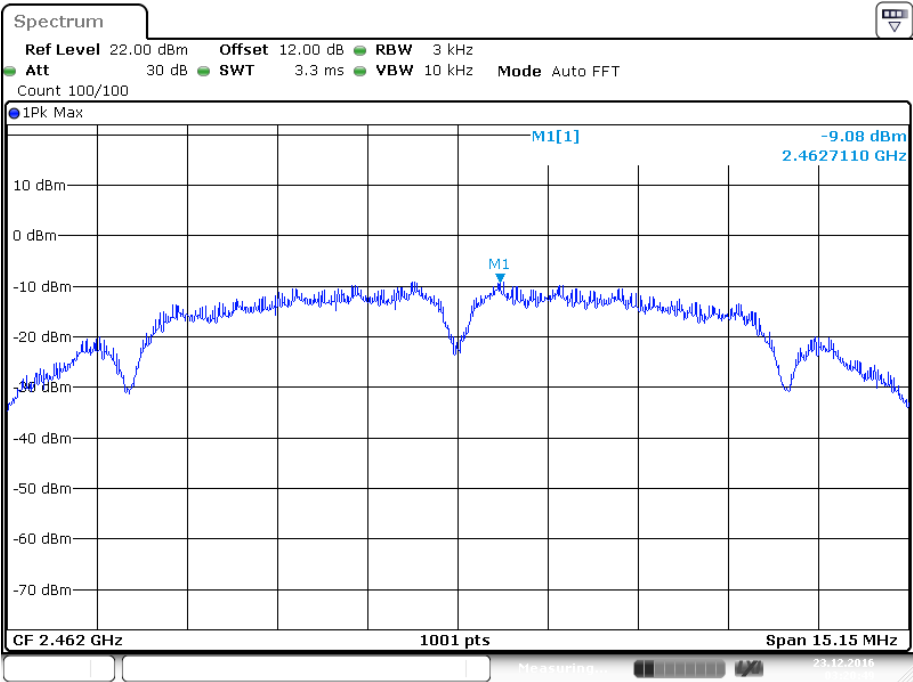
Date: 23 DEC 2016 03:18:04

Middle Channel (B Mode / Chain 0)



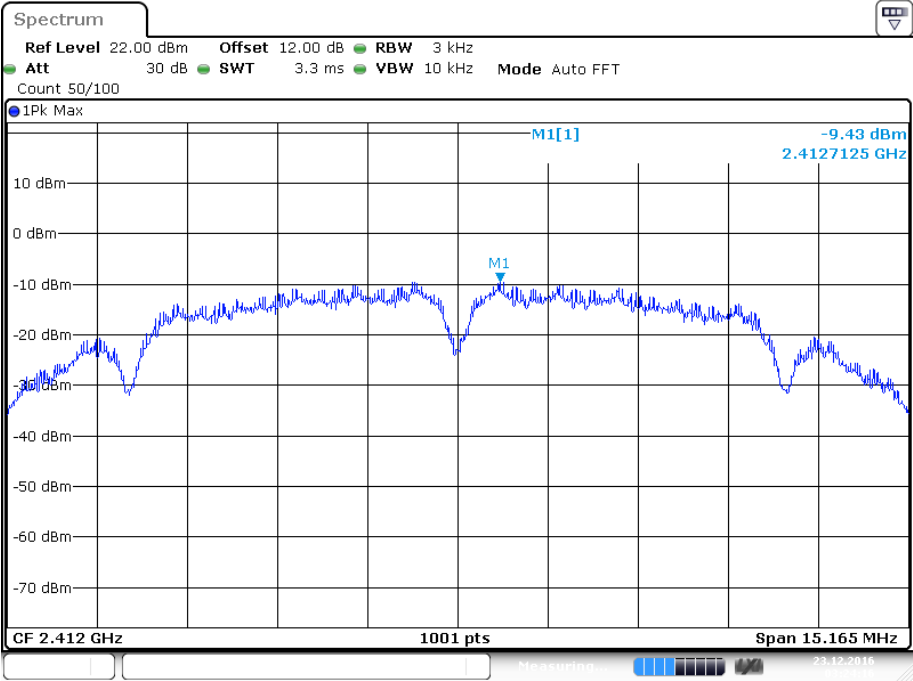
Date: 23 DEC 2016 03:19:45

High Channel (B Mode / Chain 0)



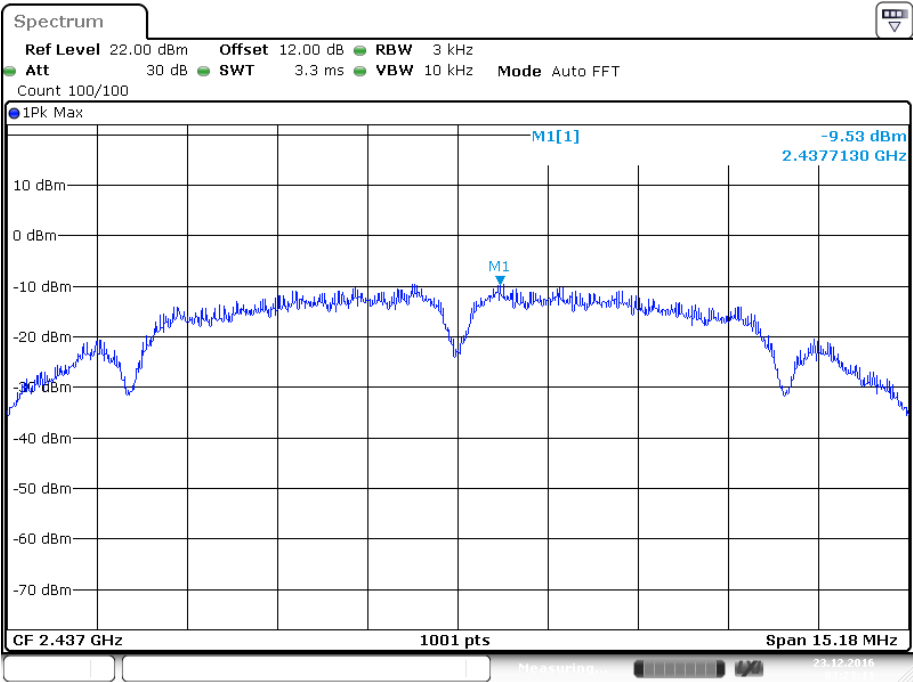
Date: 23 DEC 2016 03:20:49

Low Channel (B Mode / Chain 1)



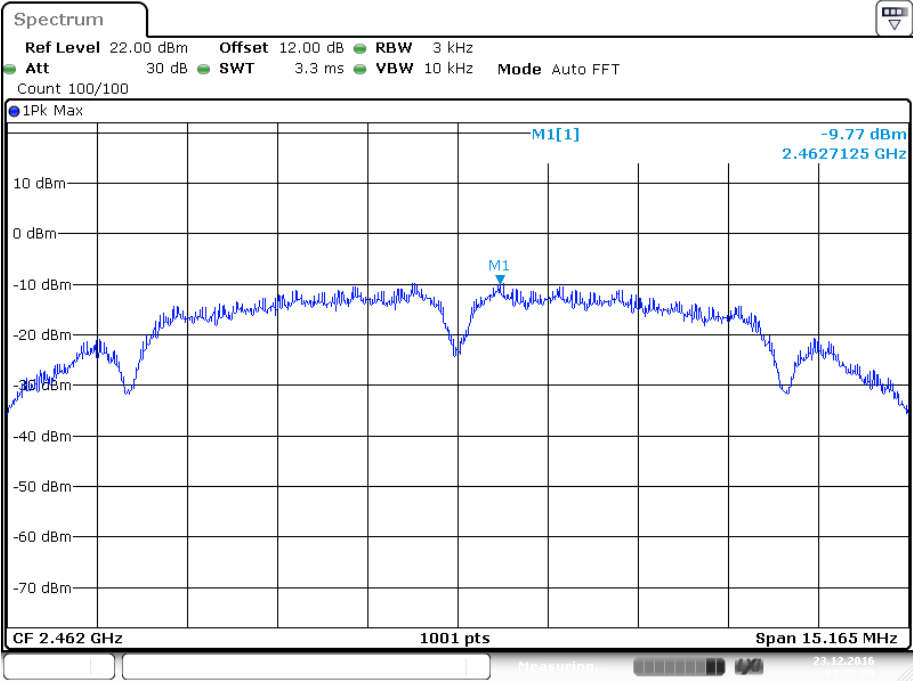
Date: 23 DEC 2016 03:24:16

Middle Channel (B Mode / Chain 1)



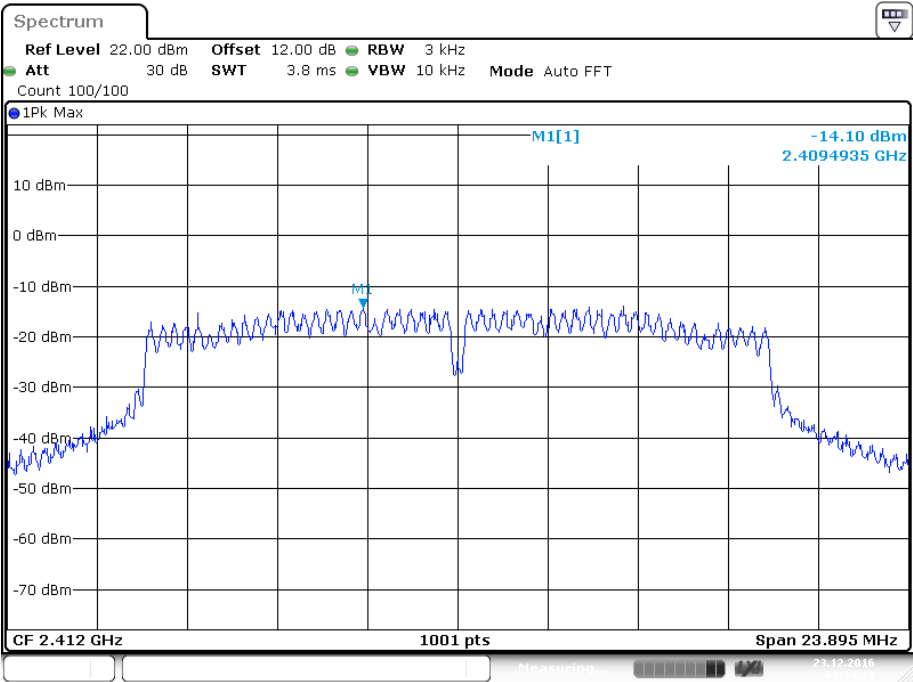
Date: 23 DEC 2016 03:23:11

High Channel (B Mode / Chain 1)



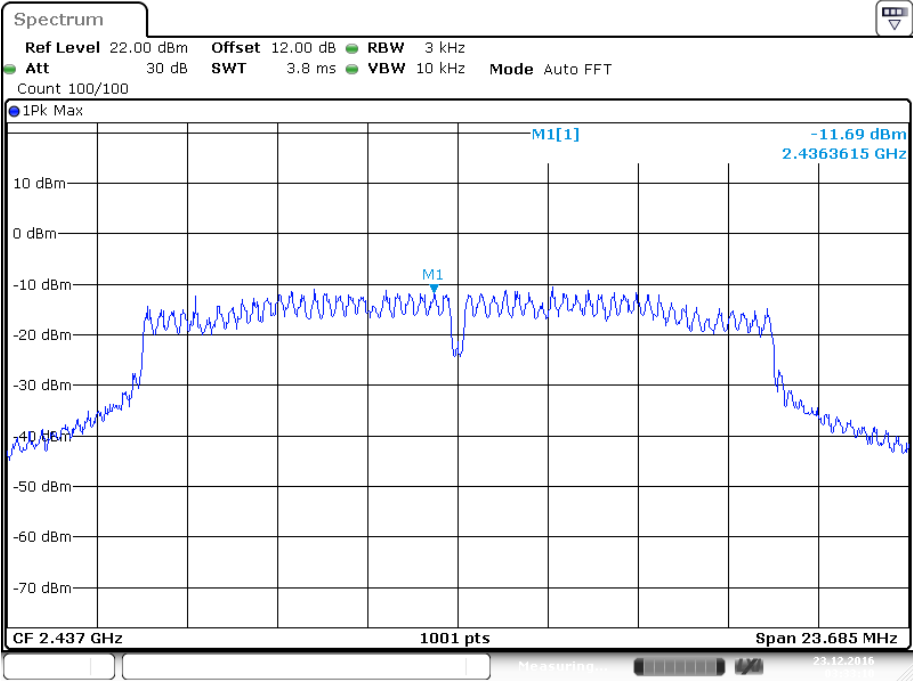
Date: 23 DEC 2016 03:22:10

Low Channel (G Mode / Chain 0)



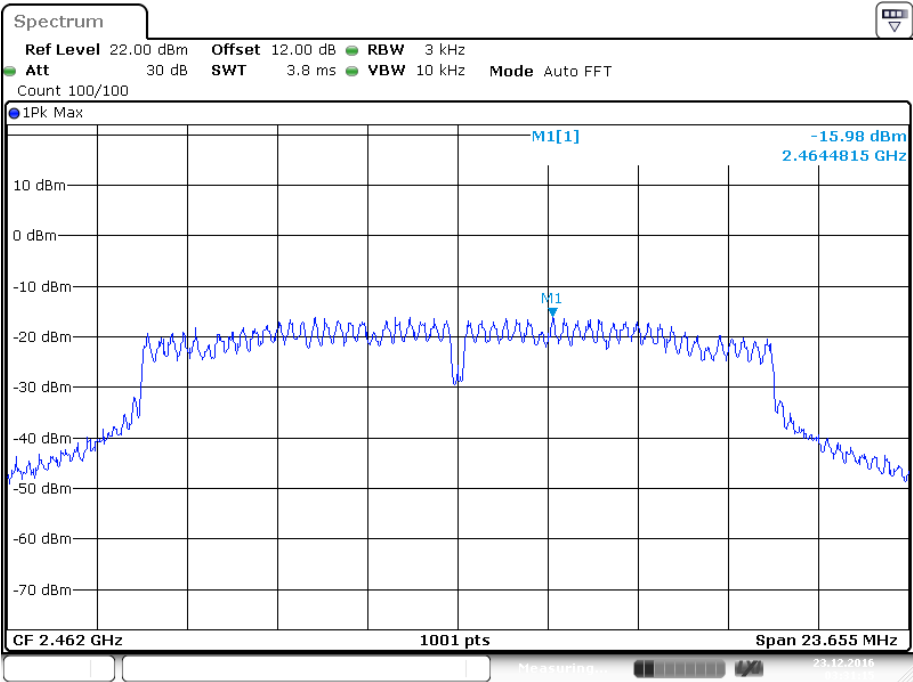
Date: 23 DEC 2016 03:34:24

Middle Channel (G Mode / Chain 0)



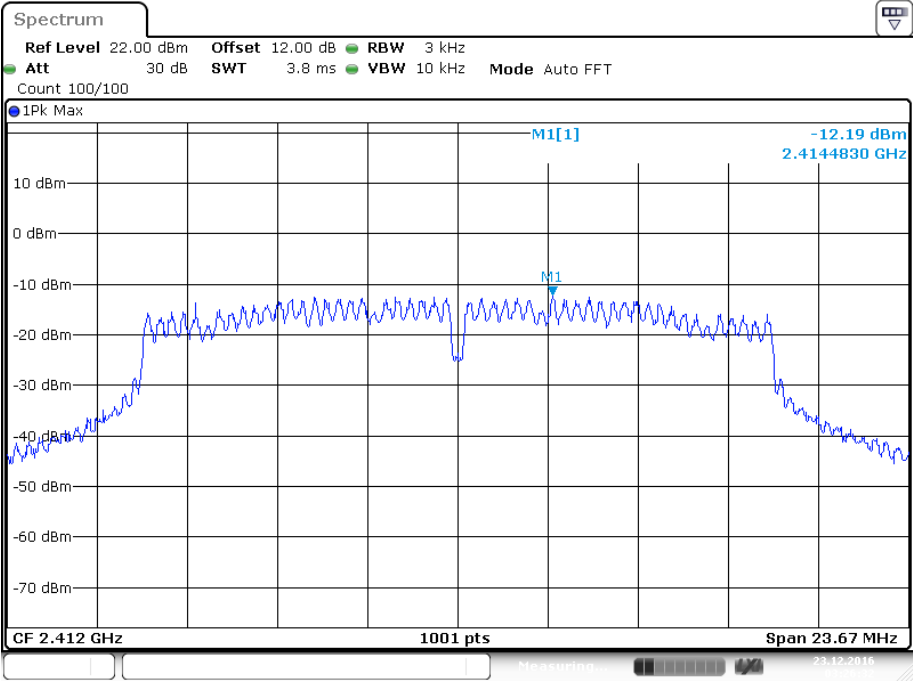
Date: 23 DEC 2016 03:33:11

High Channel (G Mode / Chain 0)



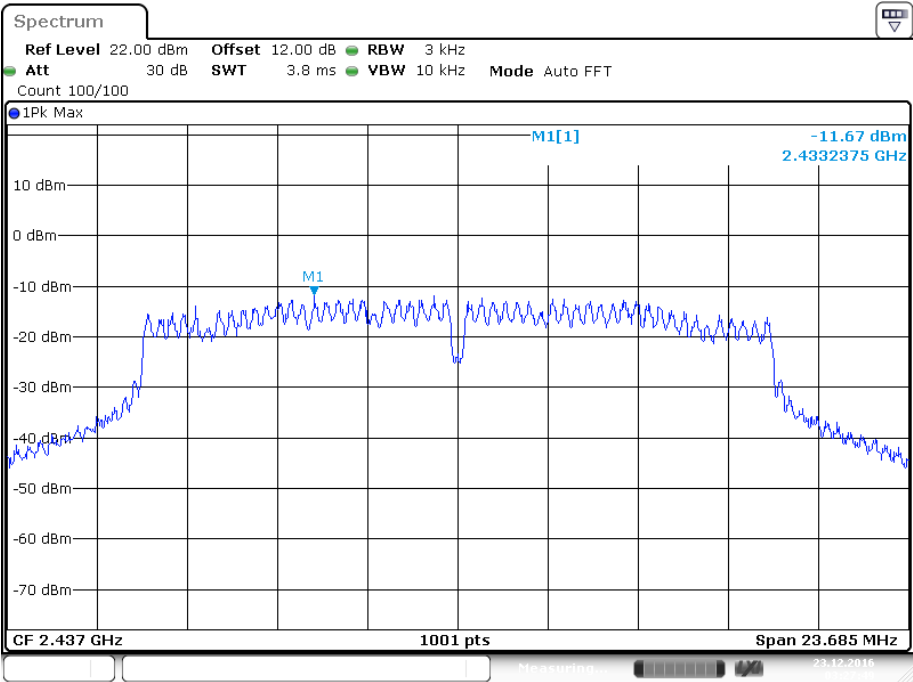
Date: 23 DEC 2016 03:31:15

Low Channel (G Mode / Chain 1)



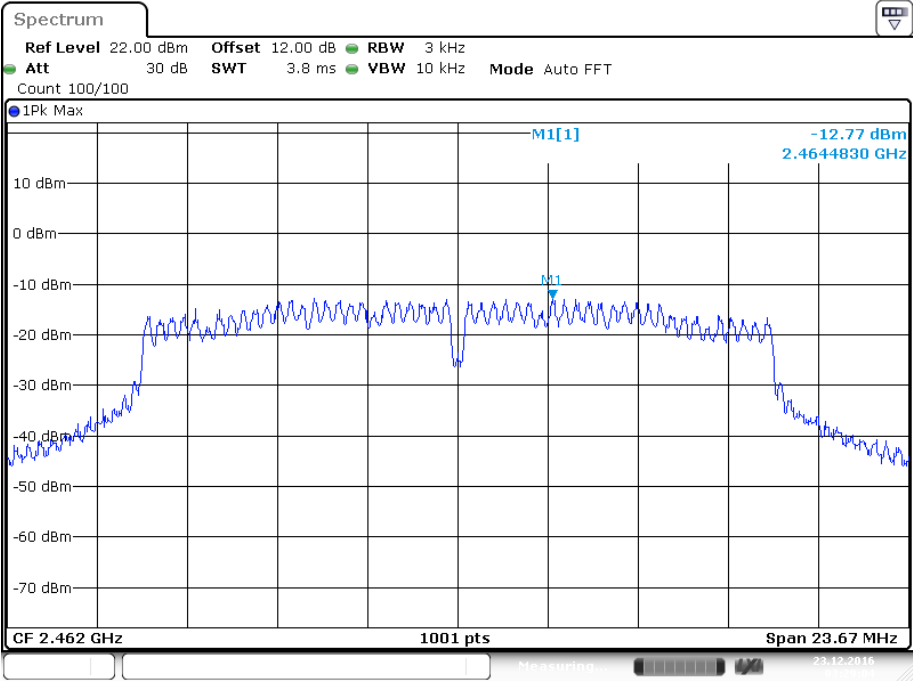
Date: 23 DEC 2016 03:26:32

Middle Channel (G Mode / Chain 1)



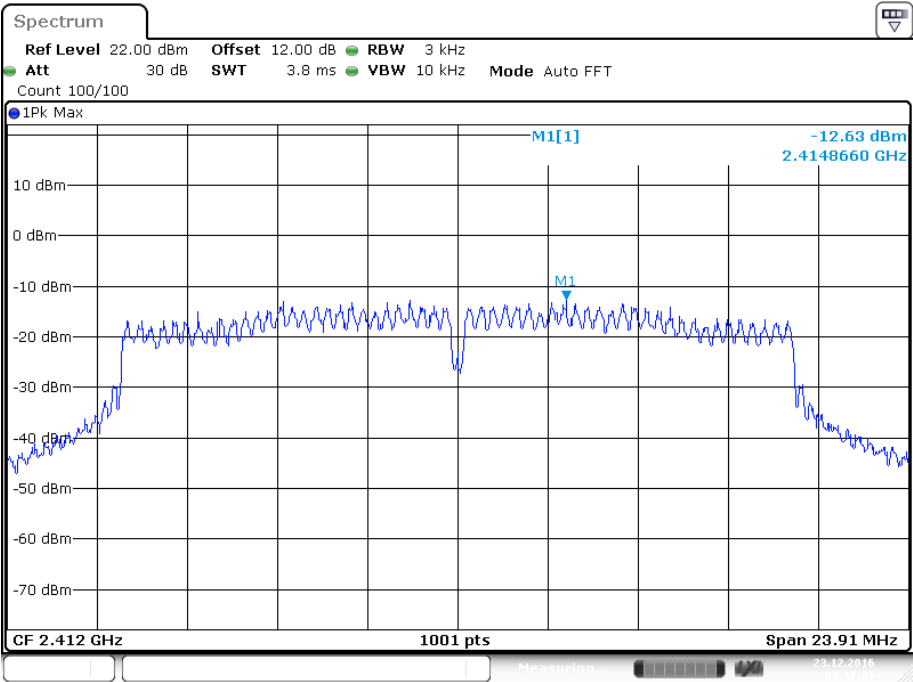
Date: 23 DEC 2016 03:27:49

High Channel (G Mode / Chain 1)



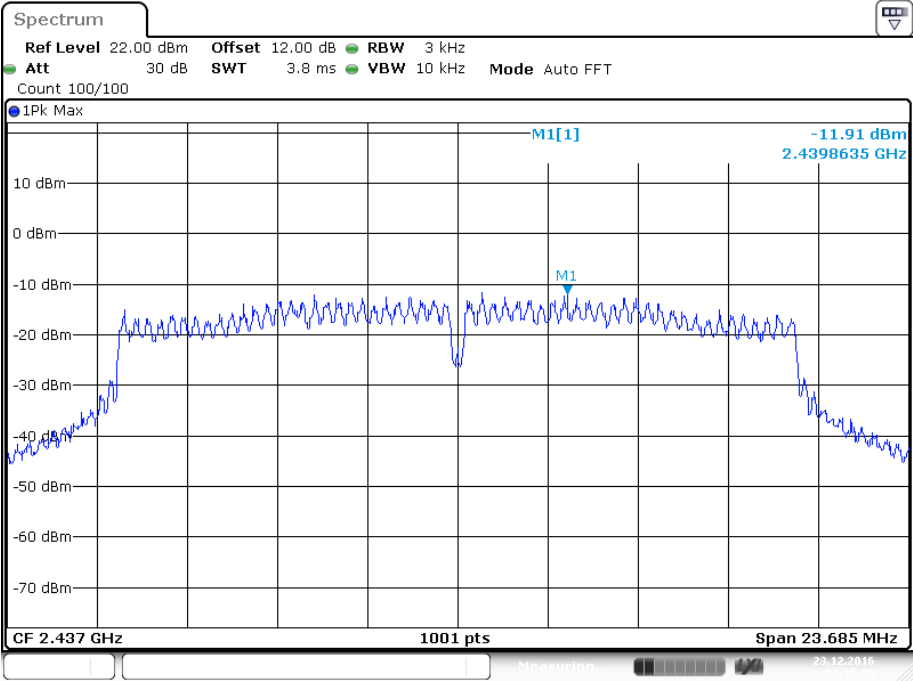
Date: 23 DEC 2016 03:29:04

Low Channel (N20 Mode / Chain 0)



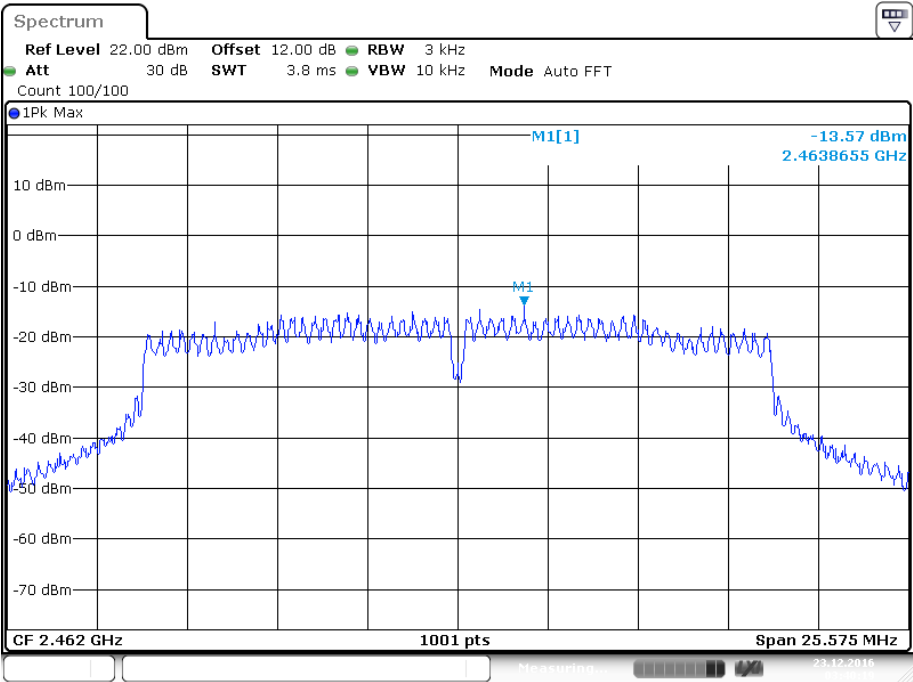
Date: 23 DEC 2016 03:37:02

Middle Channel (N20 Mode / Chain 0)



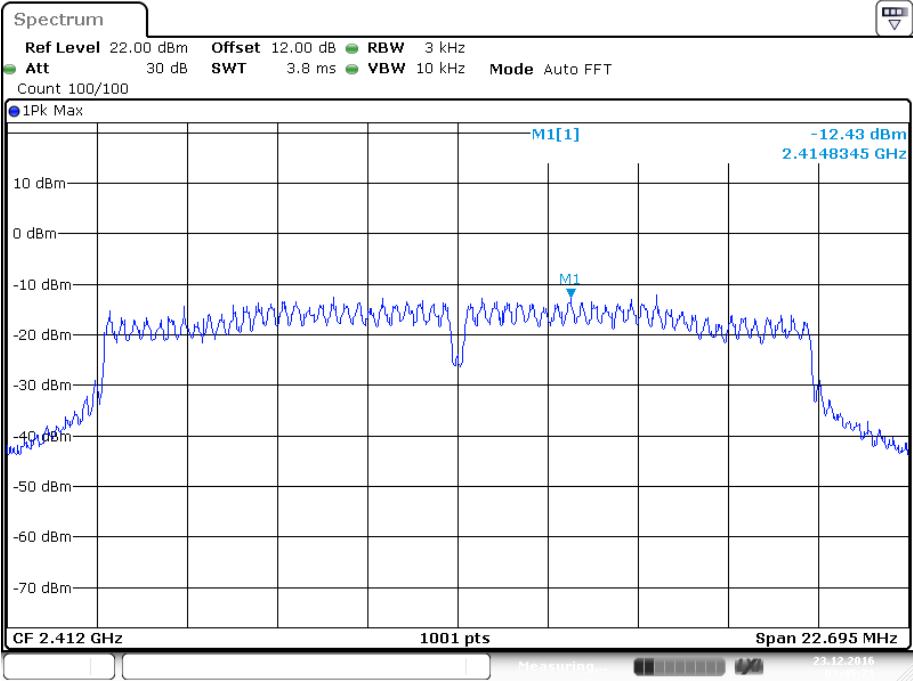
Date: 23 DEC 2016 03:38:35

High Channel (N20 Mode / Chain 0)



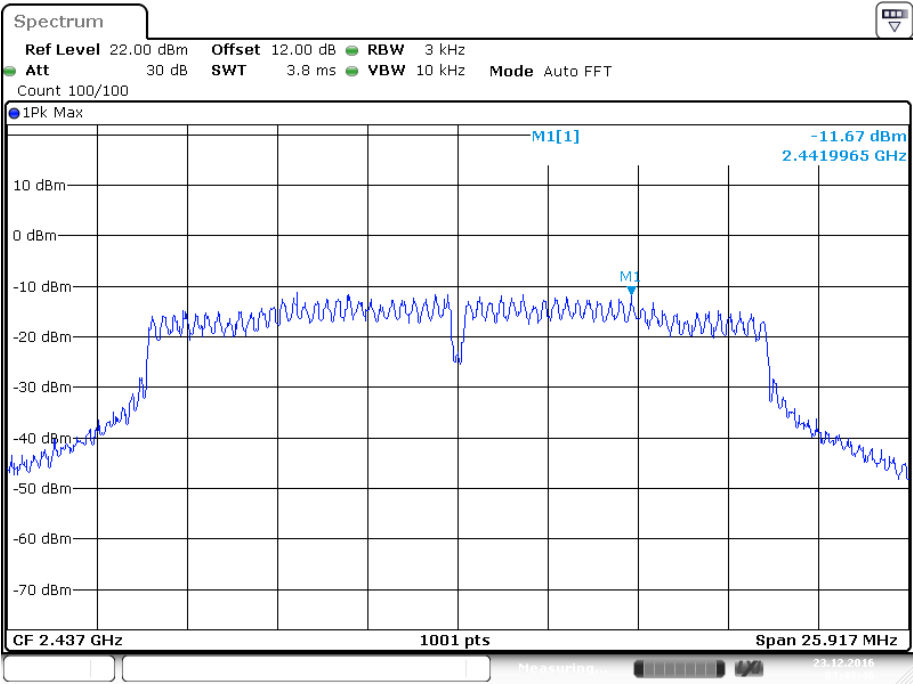
Date: 23 DEC 2016 03:40:20

Low Channel (N20 Mode / Chain 1)



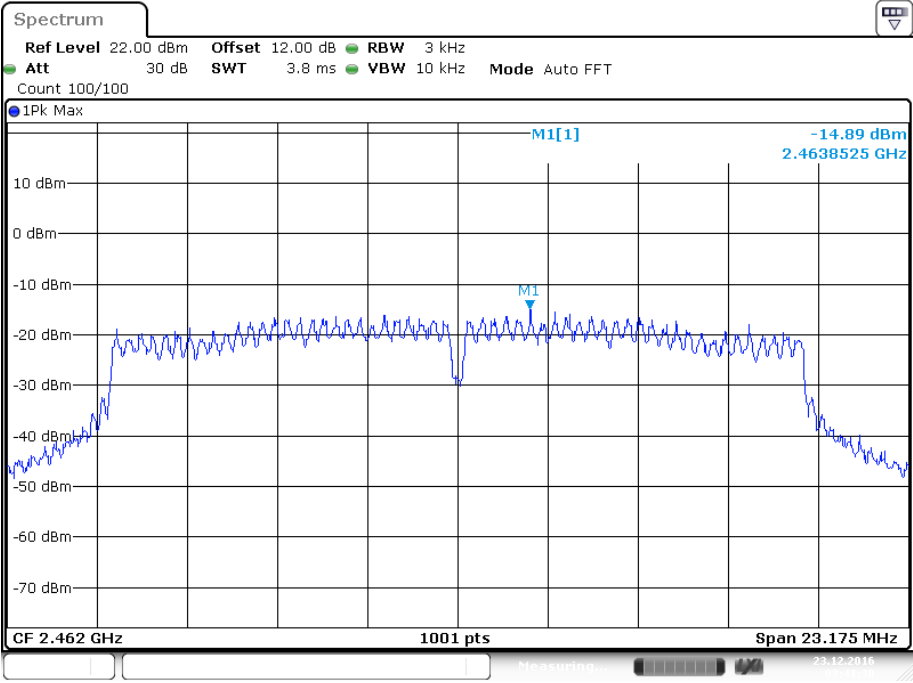
Date: 23 DEC 2016 03:45:22

Middle Channel (N20 Mode / Chain 1)



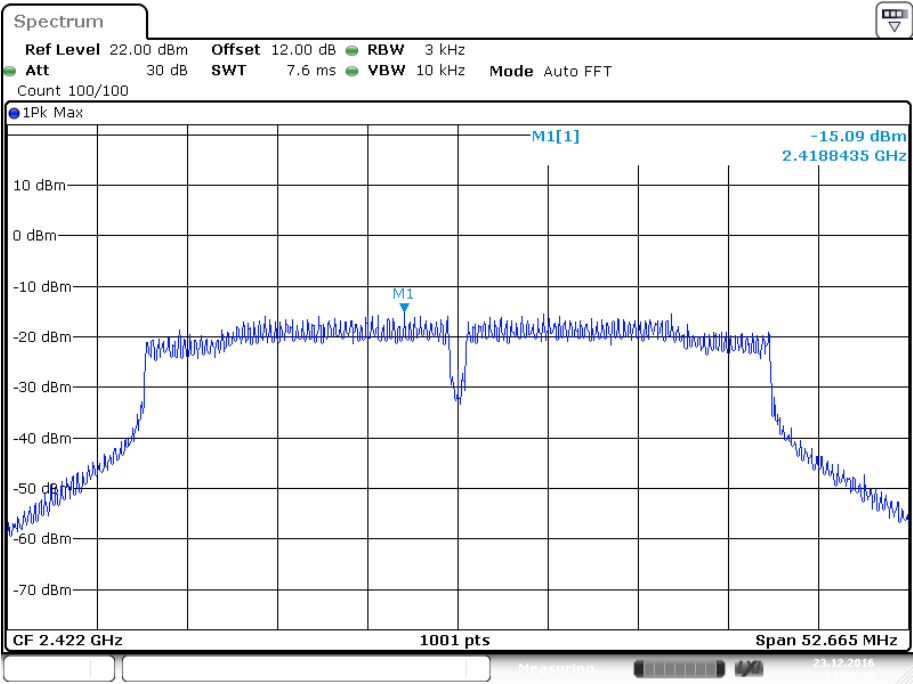
Date: 23 DEC 2016 03:43:46

High Channel (N20 Mode / Chain 1)



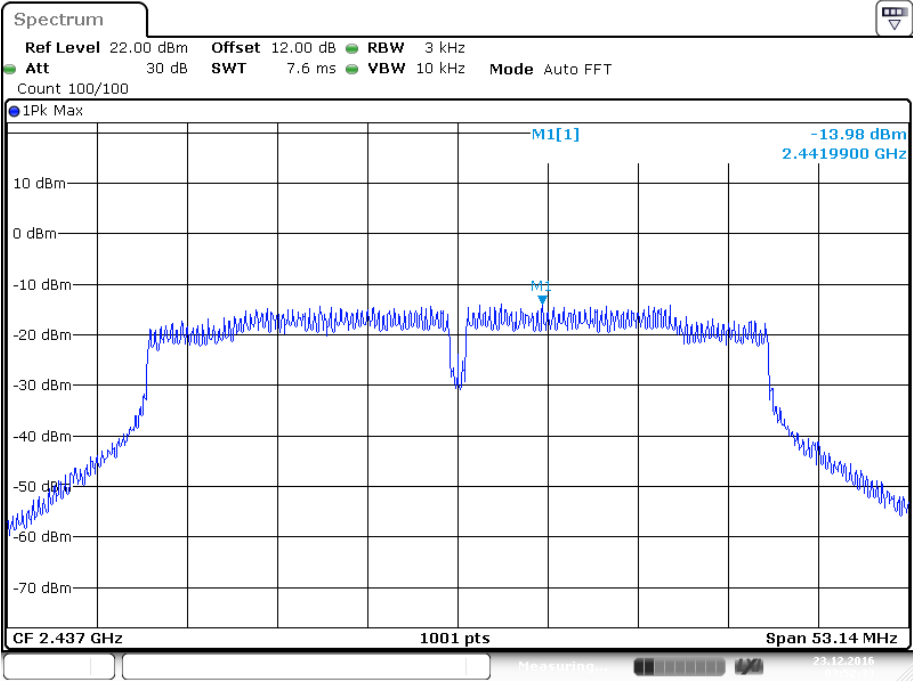
Date: 23 DEC 2016 03:41:31

Low Channel (N40 Mode / Chain 0)



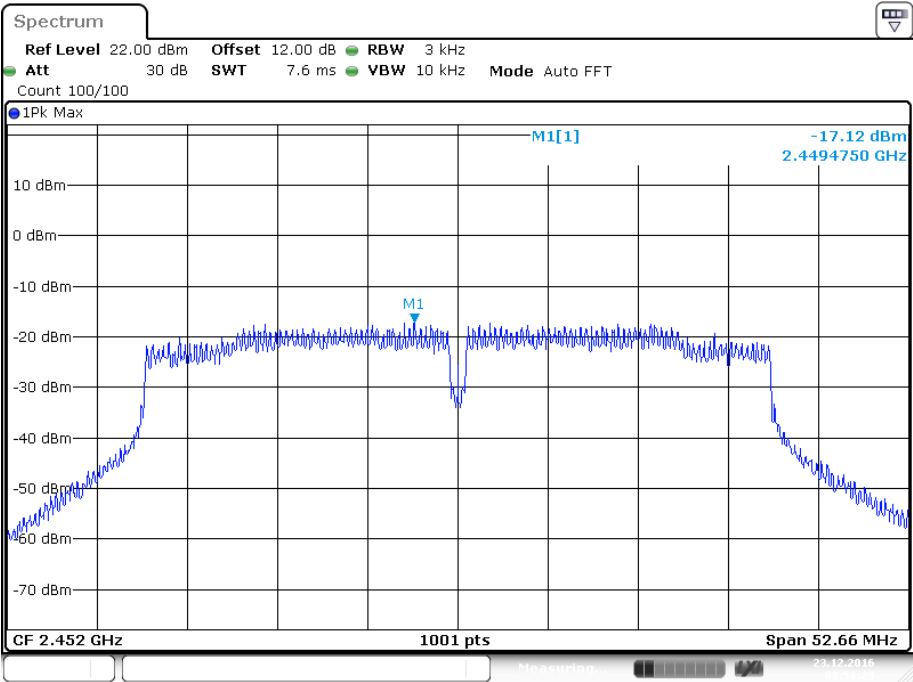
Date: 23 DEC 2016 03:53:33

Middle Channel (N40 Mode / Chain 0)



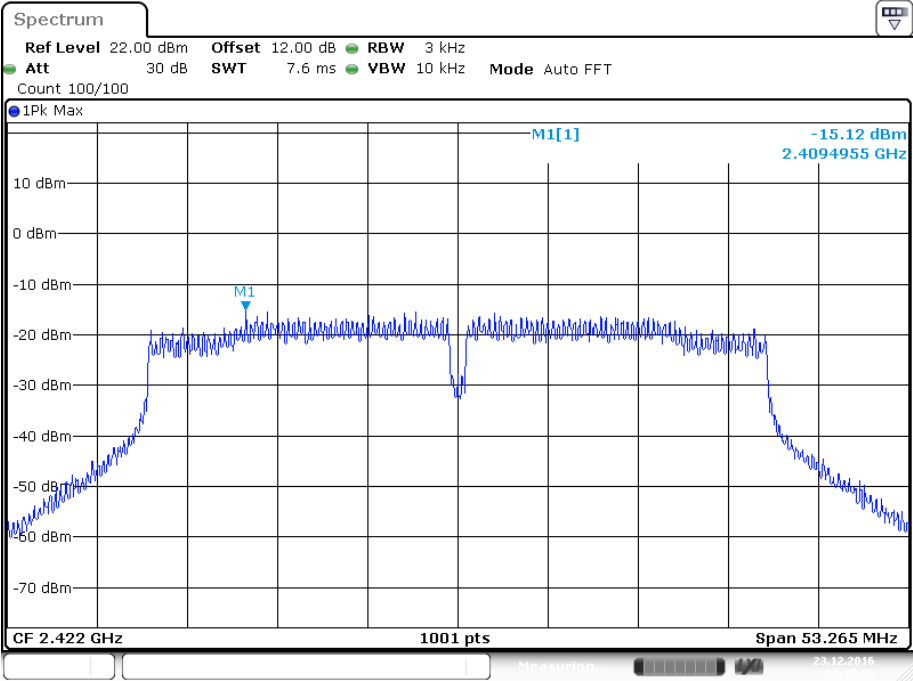
Date: 23 DEC 2016 03:52:33

High Channel (N40 Mode / Chain 0)



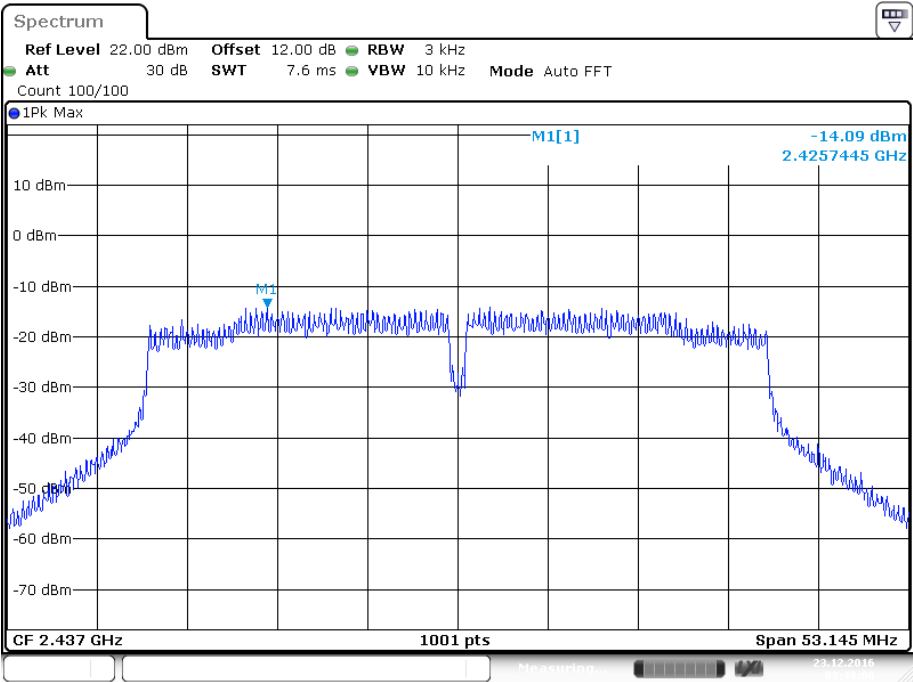
Date: 23 DEC 2016 03:51:30

Low Channel (N40 Mode / Chain 1)



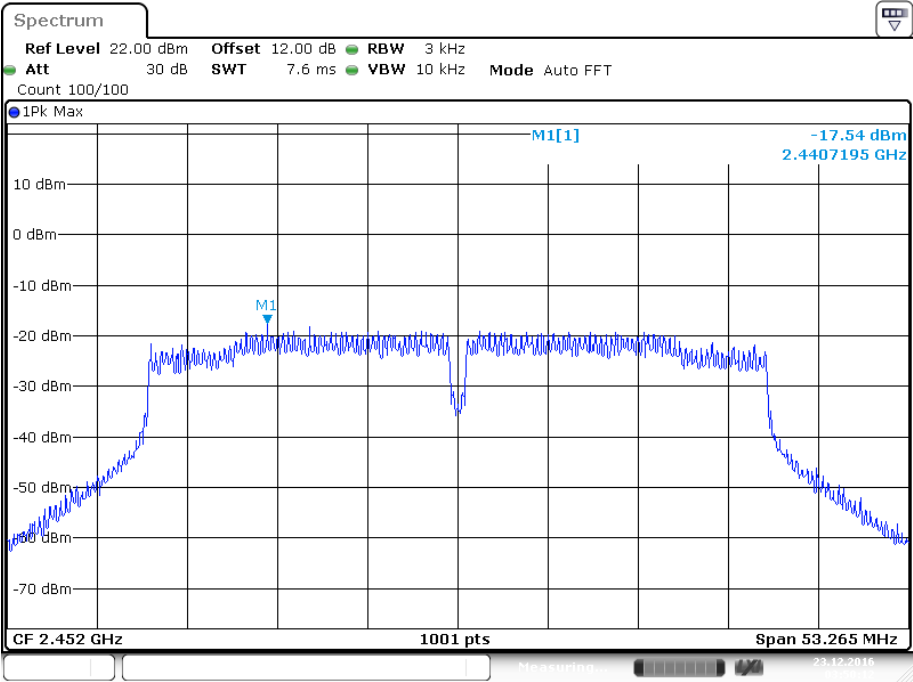
Date: 23 DEC 2016 03:47:05

Middle Channel (N40 Mode / Chain 1)



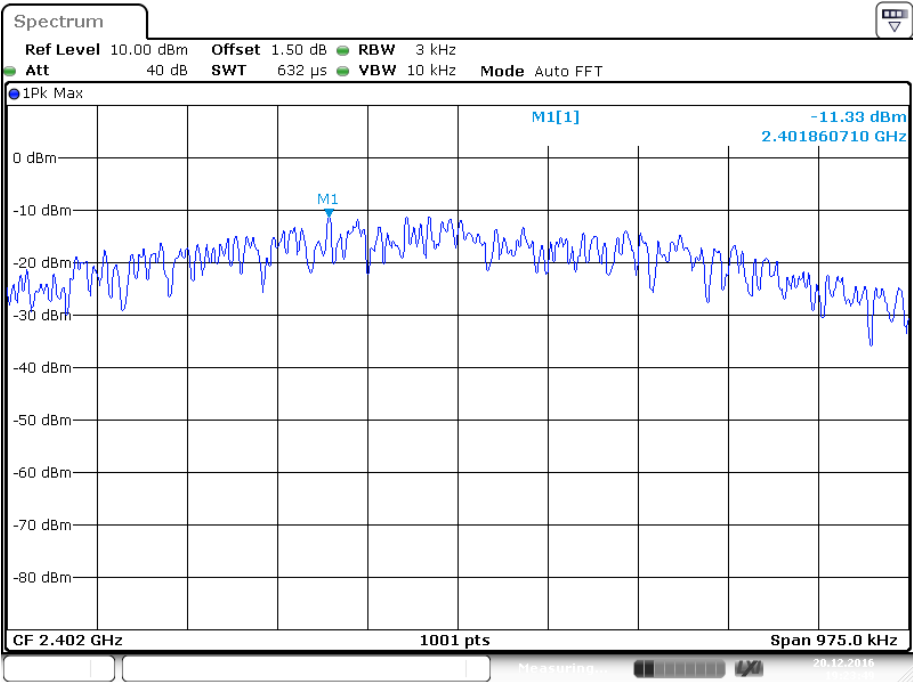
Date: 23 DEC 2016 03:49:01

High Channel (N40 Mode / Chain 1)



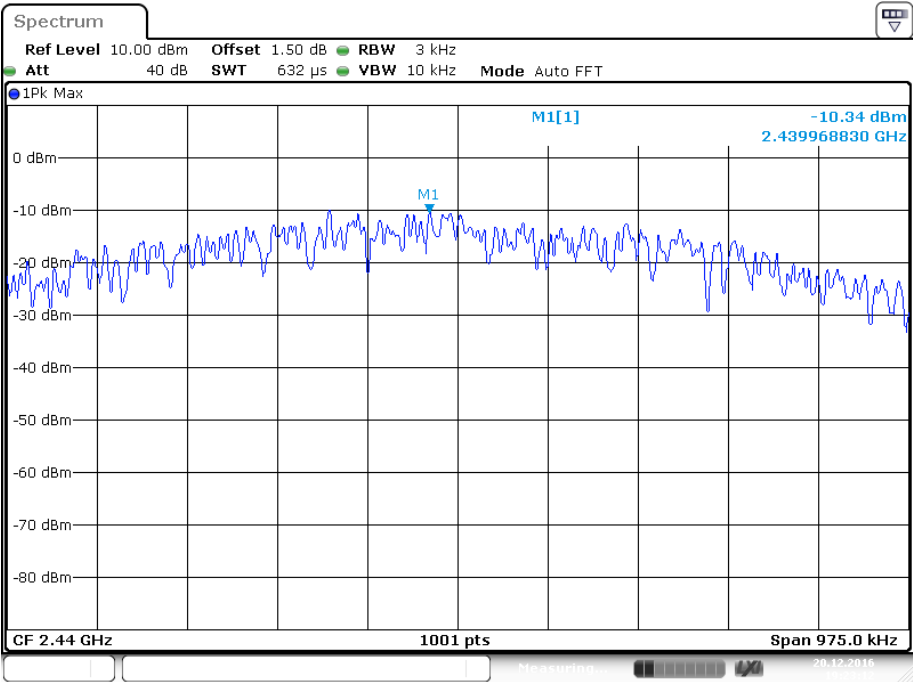
Date: 23 DEC 2016 03:50:13

Low Channel (BLE)



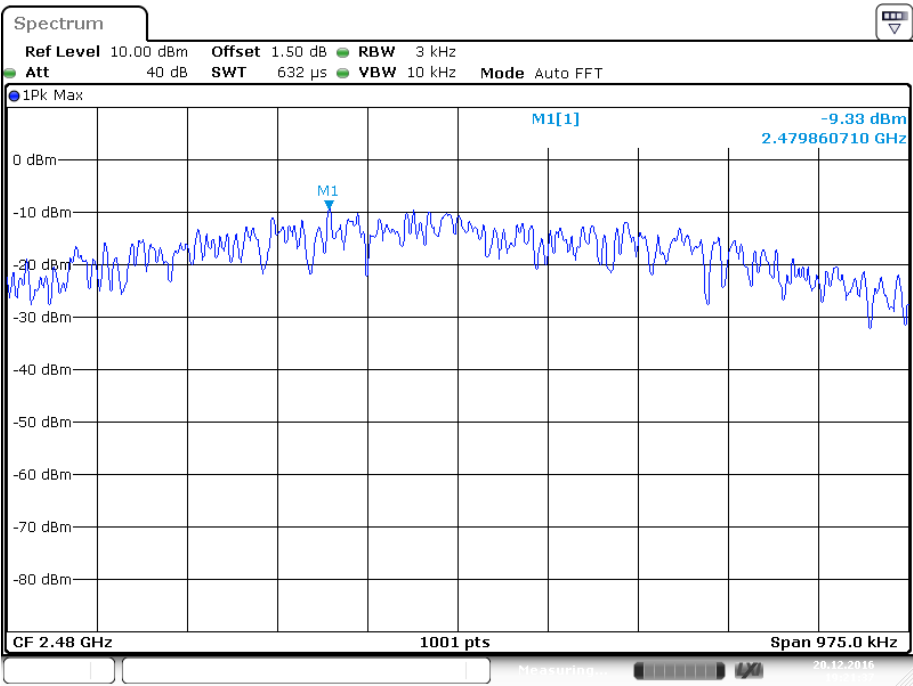
Date: 20 DEC 2016 19:23:49

Middle Channel (BLE)



Date: 20 DEC 2016 19:23:13

High Channel (BLE)



Date:20 DEC 2016 19:21:37

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