# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| Applicant | : | Cameo Communications Inc. |
| Address | : | 5F, No. 158, Ruihu St., Neihu Dist., Taipei City 114, Taiwan |
| Equipment | : | 11ac 3x3 WIFI Adapter |
| Model No. | : | CLM-3000-1300 |
| Trade Name | : | CAMEO |
| FCC ID | : | NHPCLM30001300 |

**I HEREBY CERTIFY THAT :**

**The sample was received on Sep. 30, 2016 and the testing was carried out on Oct. 07, 2016 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.**

Approved by:

Ray Chou / Assistant Manager

Tested by:

Spree Yei / Engineer

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

# Contents

# History of this test report

| Report No. | Issue Date | Description |
|---|---|---|
| TEFI1608215 | Oct. 11, 2016 | Original |
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# 1. Summary of Test Procedure and Test Results

## 1.1 Applicable Standards

**ANSI C63.4:2014**

**ANSI C63.10:2013**

**FCC Rules and Regulations Part 15 Subpart C §15.247**

**KDB558074**

**KDB662911**

| FCC Rule | . Description of Test | Result |
|---|---|---|
| 15.203 | . Antenna Requirement | Pass |
| 15.207 | . AC Power Line Conducted Emission | Pass |
| 15.209<br>15.205 | . Radiated Spurious Emission | Pass |
| 15.247(d) | . Conducted Spurious Emission | Pass |
| 15.247(a)(2) | . 6dB Bandwidth | Pass |
| 15.247(b) | . Maximum Peak and Average Output Power | Pass |
| 15.247(e) | . Power Spectral Density | Pass |

This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report.

# 2. Test Configuration of Equipment under Test

## 2.1 Feature of Equipment under Test

| | |
|---|---|
| Equipment | 11ac 3x3 WIFI Adapter |
| Model No. | CLM-3000-1300 |
| Brand Name | CAMEO |
| Modulation Type | DSSS, OFDM |
| Frequency Range | 802.11b/g/n: 2412-2462MHz<br>802.11a/an/ac: 5150-5250MHz, 5725-5850MHz |
| Data Rate | 802.11b: 1, 2, 5.5, 11Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps<br>802.11n: 6.5Mbps to 450Mbsp (MCS0 – MCS23, HT20/40)<br>802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps<br>802.11ac: 13Mbps to 1300Mbps (MCS0 – MCS9, VHT 20/40/80) |
| Antenna Type | Dipole Antenna |
| Antenna Gain | 802.11b/g/n/a/an/ac:<br>Antenna 1: 2.0 dBi<br>Antenna 2: 2.0 dBi<br>Antenna 3: 2.0 dBi |
| Product Description | Please refer to User's Manual. |
| Connecting I/O Port(s) | Please refer to User's Manual. |

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 2.2 Carrier Frequency of Channels

802.11b, 802.11g, 802.11n HT 20, 802.11ac VHT 20 (2412MHz~2462MHz)

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| ***01** | **2412** | 07 | 2442 |
| 02 | 2417 | 08 | 2447 |
| 03 | 2422 | 09 | 2452 |
| 04 | 2427 | 10 | 2457 |
| 05 | 2432 | ***11** | **2462** |
| ***06** | **2437** | --- | --- |

802.11n HT40, 802.11ac VHT40 (2422MHz~2452MHz)

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| --- | --- | 07 | 2442 |
| --- | --- | 08 | 2447 |
| ***03** | **2422** | ***09** | **2452** |
| 04 | 2427 | --- | --- |
| 05 | 2432 | --- | --- |
| ***06** | **2437** | --- | --- |

Note: Channels remarked * are selected to perform test.

## 2.3 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The complete test system included Notebook and EUT for RF test.
c. An executive program," ART2-GUI" under WIN 7 was executed to transmit and receive data via WLAN.
d. The following test modes were performed for the test:
   Mode 1: 802.11b (1Mbps)
   Mode 2: 802.11g (6Mbps)
   Mode 3: 802.11n HT20 (6.5Mbps)
   Mode 4: 802.11n HT40 (13.5Mbps)
   Mode 5: 802.11ac VHT20 (6.5Mbps)
   Mode 6: 802.11ac VHT40 (13.5Mbps)
   For conducted test, "Test Mode 2" generated the worst case, it was reported as the final data.
   For radiated test (below 1GHz), "Test Mode 2" generated the worst case, it was reported as the final data.
   For radiated test (above 1GHz), "Test Mode 1、2、5、6" were reported as the final data.

## 2.4 Description of Test System

| Device | Manufacturer | Model No. | Description |
|---|---|---|---|
| Notebook | DELL | Latitude E6430 | Power Cable, Unshielding, 1.8m |

## 2.5 General Information of Test

| | | |
|---|---|---|
| Test Site | **Cerpass Technology Corporation Test Laboratory**<br>Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.)<br>Tel:+886-3-3226-888<br>Fax:+886-3-3226-881<br>Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C.<br>Tel: +886-2-2663-8582 | |
| | FCC | TW1079, TW1061, 390316, 228391, 641184 |
| | IC | 4934E-1, 4934E-2 |
| | VCCI | T-2205 for Telecommunication Test<br>C-4663 for Conducted emission test<br>R-4218, R-4399 for Radiated emission test<br>G-812, G-813 for radiated disturbance above 1GHz |
| Frequency Range Investigated: | Conducted: from 150kHz to 30 MHz<br>Radiation: from 30 MHz to 25,000MHz | |
| Test Distance: | The test distance of radiated emission from antenna to EUT is 3 M. | |

## 2.6 Measurement Uncertainty

| Measurement Item | Measurement Frequency | Polarization | Uncertainty |
|---|---|---|---|
| Conducted Emission | 9 kHz ~ 30 MHz | Line / Neutral | ±2.9076 dB |
| Radiated Emission | 9 kHz ~ 25,000 MHz | Vertical / Horizontal | ±0.948 dB |
| Spurious Emission (Conducted) | - | - | ±4.011 dB |
| Maximum Peak and Average Output Power | - | - | ±0.322 dB |
| Power Spectral Density | - | - | ±0.322 dB |
| Bandwidth | - | - | 74.224Hz |

## 3. Test Equipment and Ancillaries Used for Tests

| Instrument | Model No. | Manufacturer | Serial No. | Calibration Date | Valid Date |
|---|---|---|---|---|---|
| EMI Receiver | R&S | ESCI3 | 100443 | 2016/03/28 | 2017/03/27 |
| LISN | Schwarzbeck | NSLK 8127 | 8127-740 | 2016/08/30 | 2017/08/29 |
| LISN | Schwarzbeck | NSLK 8127 | 8127-516 | 2016/09/06 | 2017/09/05 |
| Pulse Limiter | R&S | ESH3-Z2 | 101934 | 2016/03/09 | 2017/03/08 |
| Bilog Antenna | Schwarzbeck | VULB9168 | 369 | 2016/03/22 | 2017/03/21 |
| Active Loop Antenna | EMCO | 6507 | 40855 | 2016/05/11 | 2017/05/10 |
| Horn Antenna | EMCO | 3115 | 31601 | 2016/09/05 | 2017/09/04 |
| Horn Antenna | EMCO | 3116 | 31970 | 2016/03/18 | 2017/03/17 |
| EXA Signal Analyzer | KEYSIGHT | N9010A | MY54200207 | 2016/03/16 | 2017/03/15 |
| Preamplifier | EM | EM330 | 60660 | 2016/03/16 | 2017/03/15 |
| Preamplifier | EMC INSTRUMENTS | EMC051845 SE | 980333 | 2016/09/13 | 2017/09/12 |
| Preamplifier | Agilent | 8449B | 3008A01954 | 2016/03/04 | 2017/03/03 |
| Preamplifier | MITEQ | AMF-7D-001 0100-30-10P | 1860212 | 2016/03/16 | 2017/03/15 |
| Preamplifier | EMC INSTRUMENTS | EMC184045 | 980065 | 2015/11/04 | 2016/11/03 |
| MXG MW Analog Signal Generator | KEYSIGHT | N5183A | MY50142931 | 2016/03/18 | 2017/03/17 |
| Spectrum Analyzer | R&S | FSP40 | 100219 | 2016/09/01 | 2017/08/31 |
| Bluetooth Tester | R&S | CBT | 101133 | 2016/03/18 | 2017/03/17 |
| Attenuator | KEYSIGHT | 8491B | MY39250703 | 2016/03/07 | 2017/03/06 |
| Rotary Attenuator | Agilent | 8494B | MY42154466 | 2016/03/08 | 2017/03/07 |
| Rotary Attenuator | Agilent | 8495B | MY42146680 | 2016/03/08 | 2017/03/07 |
| Temp & Humi chamber | T-MACHINE | TMJ-9712 | T-12-040111 | 2016/09/05 | 2017/09/04 |
| Series Power Meter | Anritsu | ML2495A | 1224005 | 2016/03/03 | 2017/03/02 |
| Power Sensor | Anritsu | MA2411B | 1207295 | 2016/03/03 | 2017/03/02 |
| Cable | HUBER SUHNER | SUCOFLEX 102 | 28422/2 | 2016/03/15 | 2017/03/14 |
| Cable | HUBER SUHNER | SUCOFLEX 102 | 28418/2 | 2016/03/16 | 2017/03/15 |
| Cable | HUBER SUHNER | SUCOFLEX 102 | 28417/2 | 2016/03/04 | 2017/03/03 |
| Software | Farad | Ez-EMC | ver.ct3a1 | N/A | N/A |
| Software | AUDIX | E3 | V8.2014-8-6 | N/A | N/A |
| Software | Keysight | N7607B Signal Studio | v2.0.0.1 | N/A | N/A |
| Software | Keysight | Inservice MonitorUtility | N/A | N/A | N/A |

# 4. Antenna Requirements

## 4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if 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 exceeds 6dBi.

## 4.2 Antenna Construction and Directional Gain

| Antenna Type | Antenna Gain |
|---|---|
| Dipole Antenna | Antenna 1: 2.0 dBi |
| | Antenna 2: 2.0 dBi |
| | Antenna 3: 2.0 dBi |

For Power directional gain= $G_{ant}$= 2dBi

For PSD directional gain = $G_{ant}$ + 10log(N) dBi

= 2 + 10log(3)

= 6.77 (dBi)

# 5. Test of AC Power Line Conducted Emission

## 5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

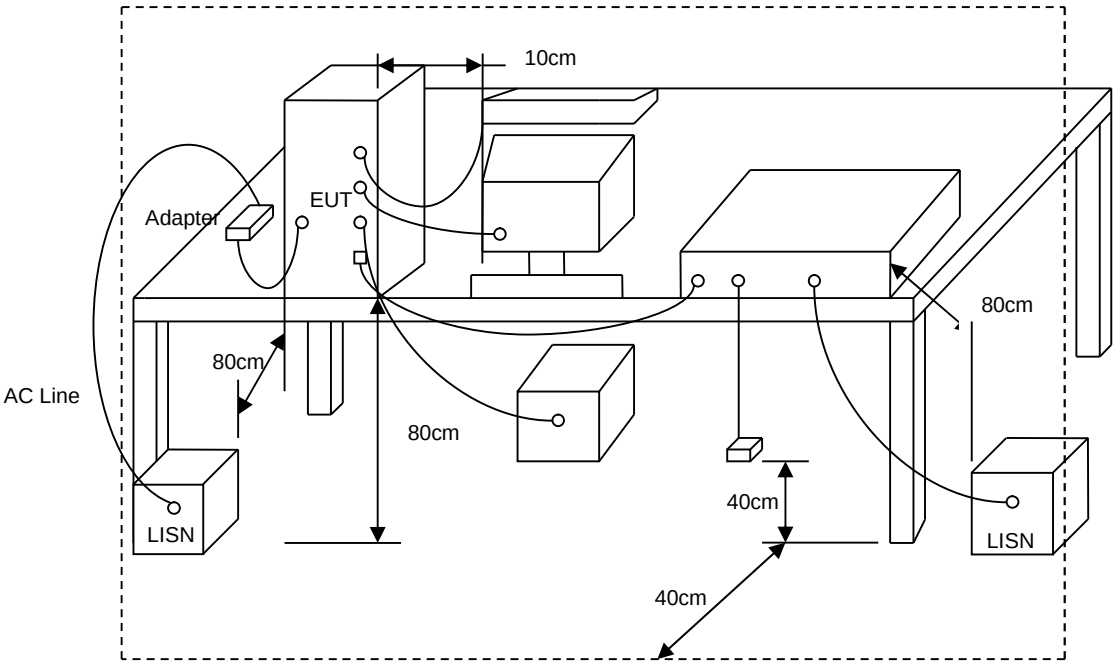
| Frequency (MHz) | Quasi Peak (dB μ V) | Average (dB μ V) |
|---|---|---|
| 0.15 – 0.5 | 66-56* | 56-46* |
| 0.5 – 5.0 | 56 | 46 |
| 5.0 – 30.0 | 60 | 50 |

*Decreases with the logarithm of the frequency.

## 5.2 Test Procedures

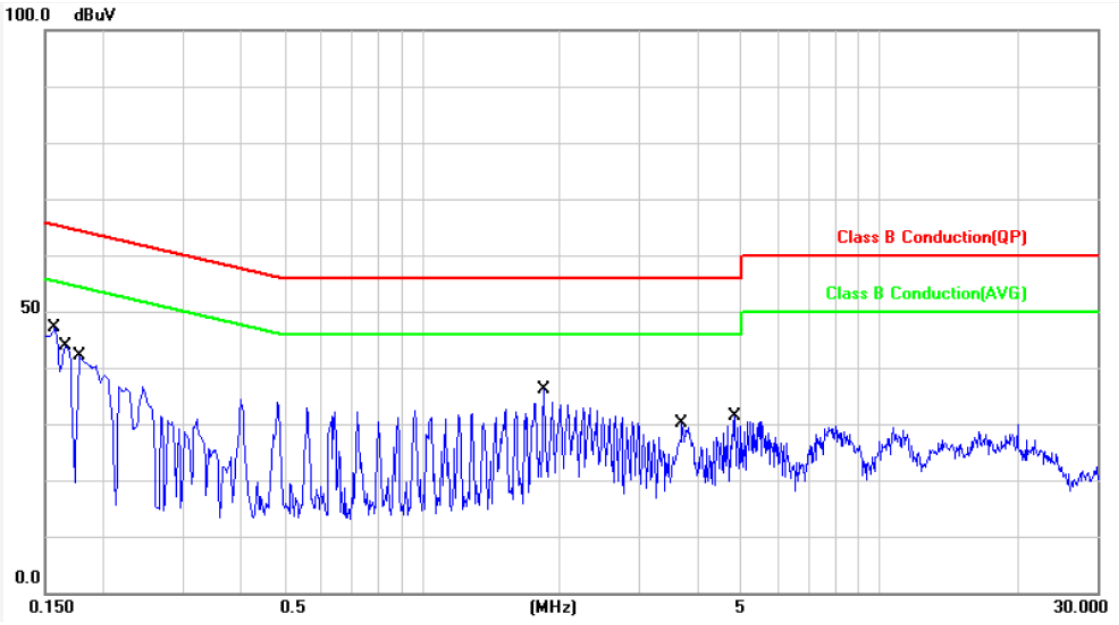
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

## 5.3 Typical Test Setup



## 5.4 Test Result and Data

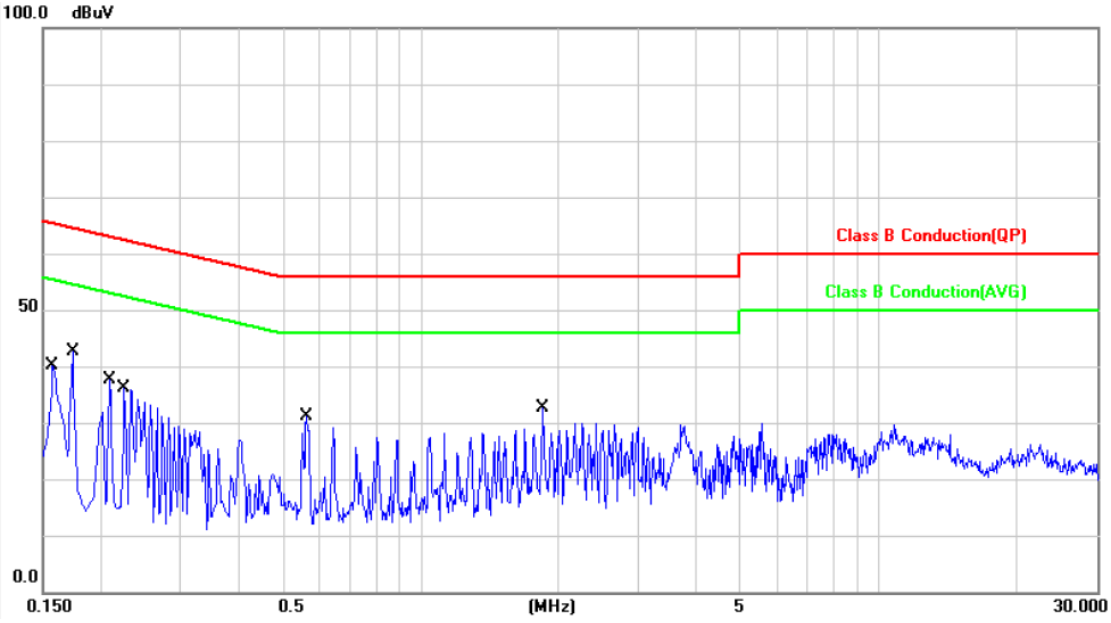
| | | | | | |
|---|---|---|---|---|---|
| Power | : | AC 120V | Pol/Phase | : | LINE |
| Test Mode | : | Mode 2 | Temperature | : | 20 °C |
| Test date | : | Oct. 07, 2016 | Humidity | : | 57 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1008 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1580 | 9.98 | 29.53 | 39.51 | 65.56 | -26.05 | QP | P |
| 2 | 0.1580 | 9.98 | 23.77 | 33.75 | 55.56 | -21.81 | AVG | P |
| 3 | 0.1660 | 9.98 | 27.61 | 37.59 | 65.15 | -27.56 | QP | P |
| 4 | 0.1660 | 9.98 | 19.90 | 29.88 | 55.15 | -25.27 | AVG | P |
| 5 | 0.1780 | 9.97 | 25.65 | 35.62 | 64.57 | -28.95 | QP | P |
| 6 | 0.1780 | 9.97 | 2.40 | 12.37 | 54.57 | -42.20 | AVG | P |
| 7 | 1.8540 | 10.06 | 24.84 | 34.90 | 56.00 | -21.10 | QP | P |
| 8 | 1.8540 | 10.06 | 22.66 | 32.72 | 46.00 | -13.28 | AVG | P |
| 9 | 3.7060 | 10.14 | 16.16 | 26.30 | 56.00 | -29.70 | QP | P |
| 10 | 3.7060 | 10.14 | 9.85 | 19.99 | 46.00 | -26.01 | AVG | P |
| 11 | 4.8260 | 10.18 | 14.67 | 24.85 | 56.00 | -31.15 | QP | P |
| 12 | 4.8260 | 10.18 | 10.14 | 20.32 | 46.00 | -25.68 | AVG | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss+ Attenuator

| | | | | | |
|---|---|---|---|---|---|
| Power | : | AC 120V | Pol/Phase | : | NEUTRAL |
| Test Mode | : | Mode 2 | Temperature | : | 20 °C |
| Test date | : | Oct. 07, 2016 | Humidity | : | 57 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1008 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1580 | 9.98 | 28.34 | 38.32 | 65.56 | -27.24 | QP | P |
| 2 | 0.1580 | 9.98 | 17.23 | 27.21 | 55.56 | -28.35 | AVG | P |
| 3 | 0.1740 | 9.98 | 25.89 | 35.87 | 64.76 | -28.89 | QP | P |
| 4 | 0.1740 | 9.98 | 2.76 | 12.74 | 54.76 | -42.02 | AVG | P |
| 5 | 0.2100 | 9.98 | 21.39 | 31.37 | 63.20 | -31.83 | QP | P |
| 6 | 0.2100 | 9.98 | 0.43 | 10.41 | 53.20 | -42.79 | AVG | P |
| 7 | 0.2260 | 9.97 | 19.71 | 29.68 | 62.59 | -32.91 | QP | P |
| 8 | 0.2260 | 9.97 | 0.34 | 10.31 | 52.59 | -42.28 | AVG | P |
| 9 | 0.5660 | 9.95 | 20.01 | 29.96 | 56.00 | -26.04 | QP | P |
| 10 | 0.5660 | 9.95 | 19.21 | 29.16 | 46.00 | -16.84 | AVG | P |
| 11 | 1.8540 | 10.03 | 19.77 | 29.80 | 56.00 | -26.20 | QP | P |
| 12 | 1.8540 | 10.03 | 15.44 | 25.47 | 46.00 | -20.53 | AVG | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss+ Attenuator

# 6. Test of Radiated Spurious Emission

## 6.1 Test Limit

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

| Frequency (MHz) | Field Strength (microvolt/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 |
| 1.705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 | 3 |
| 88 ~ 216 | 150 | 3 |
| 216 ~ 960 | 200 | 3 |
| Above 960 | 500 | 3 |

## 6.2 Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.

f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.

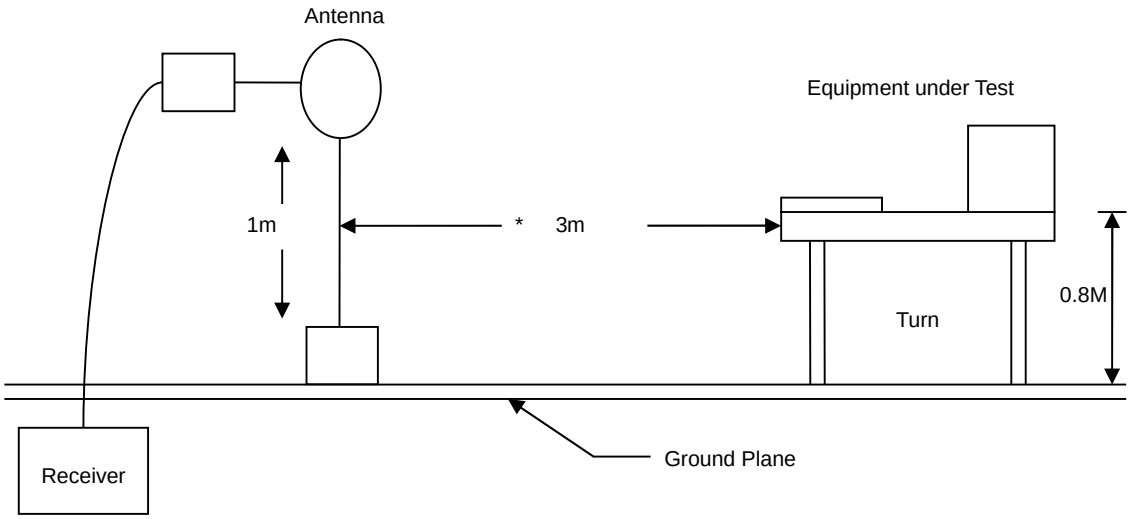
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

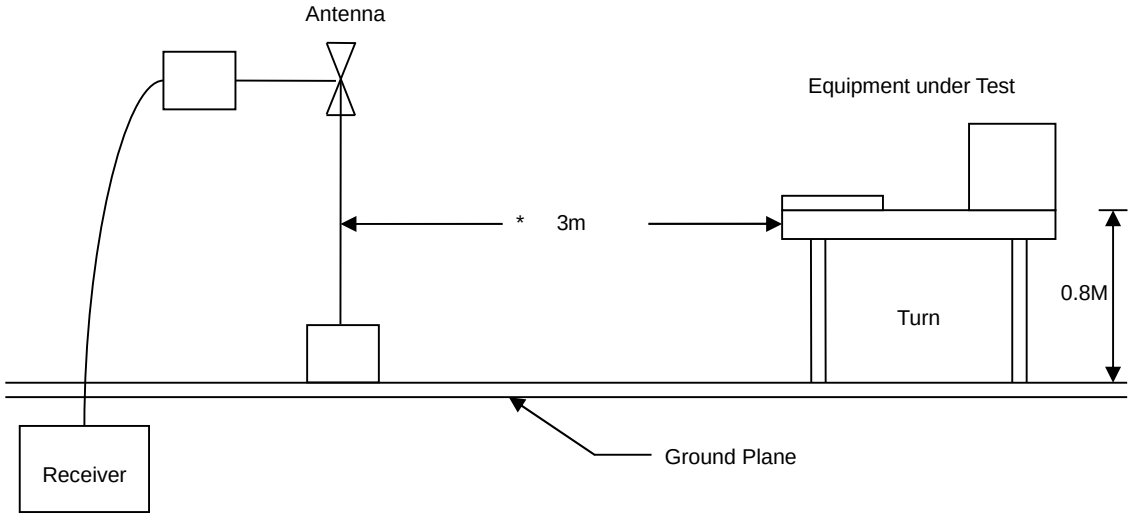
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

## 6.3 Typical Test Setup

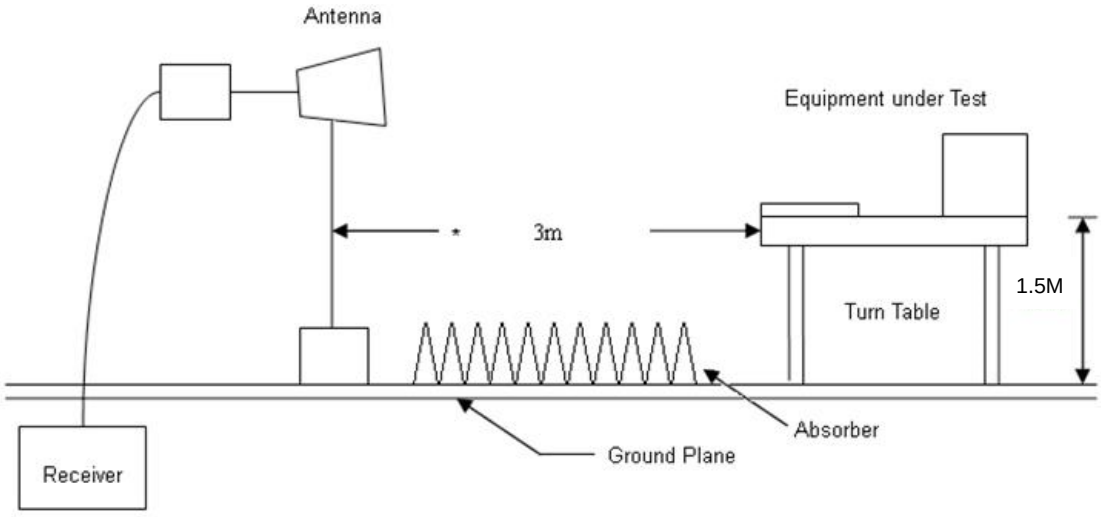
Below 30MHz test setup




30MHz- 1GHz Test Setup




Above 1GHz Test Setup

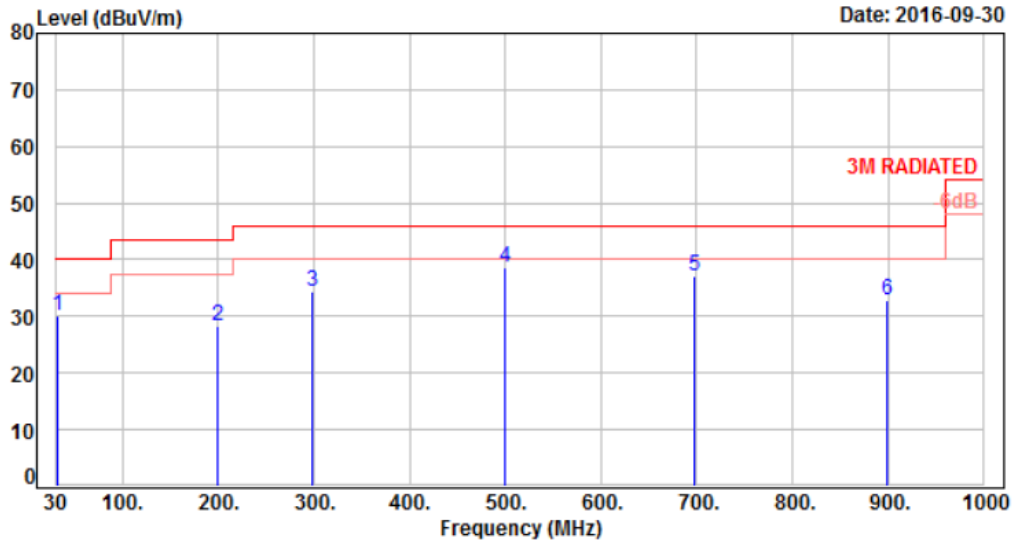


## 6.4 Test Result and Data (9KHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

## 6.5 Test Result and Data (30MHz ~ 1GHz)

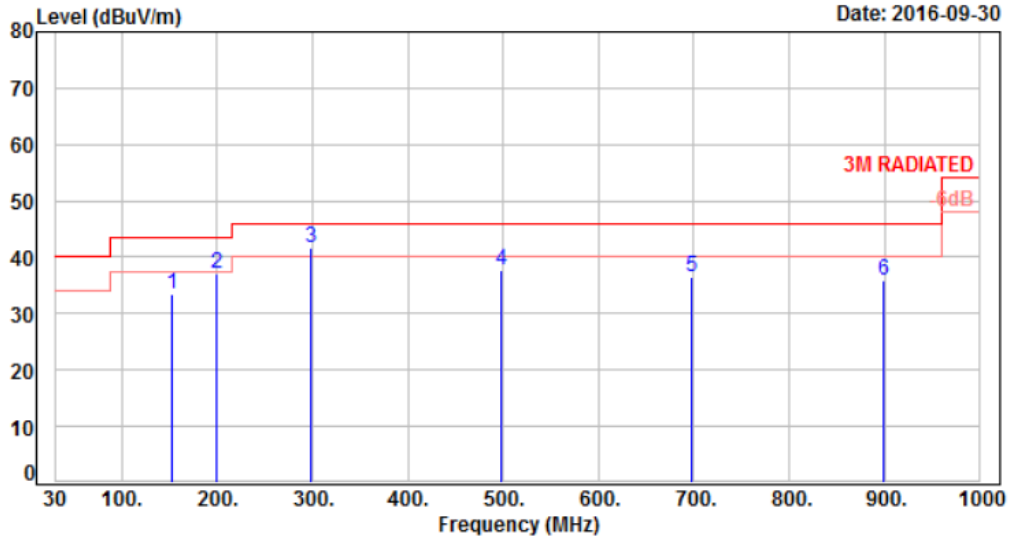
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Sep. 30, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 31.94 | -10.66 | 40.63 | 29.97 | 40.00 | -10.03 | Peak | 400 | 0 | P |
| 2 | 198.78 | -12.50 | 40.71 | 28.21 | 43.50 | -15.29 | Peak | 400 | 0 | P |
| 3 | 297.72 | -9.12 | 43.53 | 34.41 | 46.00 | -11.59 | Peak | 400 | 0 | P |
| 4 | 499.48 | -4.19 | 42.93 | 38.74 | 46.00 | -7.26 | Peak | 400 | 0 | P |
| 5 | 697.36 | -0.72 | 37.68 | 36.96 | 46.00 | -9.04 | Peak | 400 | 0 | P |
| 6 | 899.12 | 2.12 | 30.78 | 32.90 | 46.00 | -13.10 | Peak | 400 | 0 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Sep. 30, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |

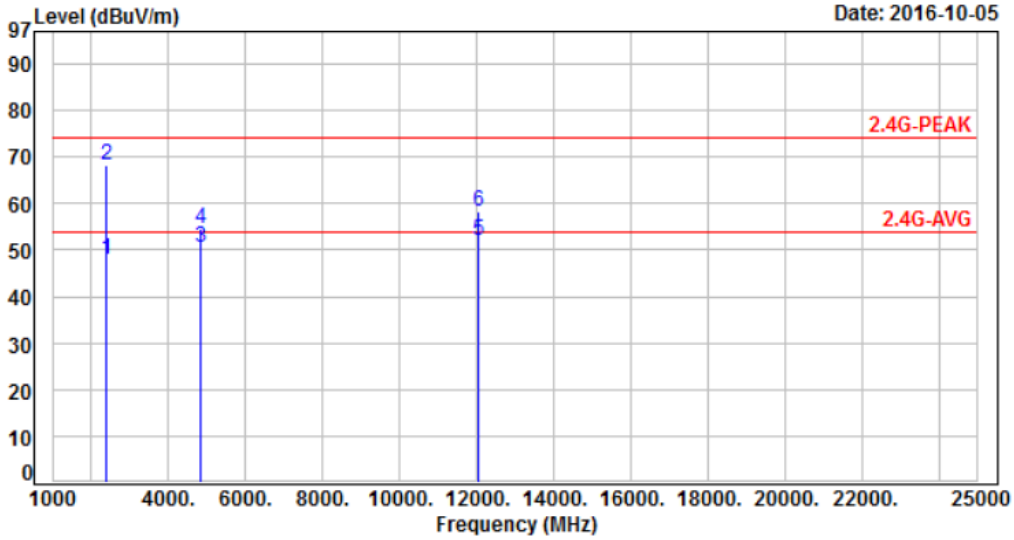



| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 152.22 | -9.99 | 43.50 | 33.51 | 43.50 | -9.99 | Peak | 400 | 0 | P |
| 2 | 198.78 | -12.50 | 49.50 | 37.00 | 43.50 | -6.50 | Peak | 400 | 0 | P |
| 3 | 297.72 | -9.12 | 50.80 | 41.68 | 46.00 | -4.32 | QP | 124 | 256 | P |
| 4 | 497.54 | -4.22 | 41.87 | 37.65 | 46.00 | -8.35 | Peak | 400 | 0 | P |
| 5 | 697.36 | -0.72 | 37.19 | 36.47 | 46.00 | -9.53 | Peak | 400 | 0 | P |
| 6 | 899.12 | 2.12 | 33.81 | 35.93 | 46.00 | -10.07 | Peak | 400 | 0 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

## 6.6 Test Result and Data (1GHz ~ 25GHz)

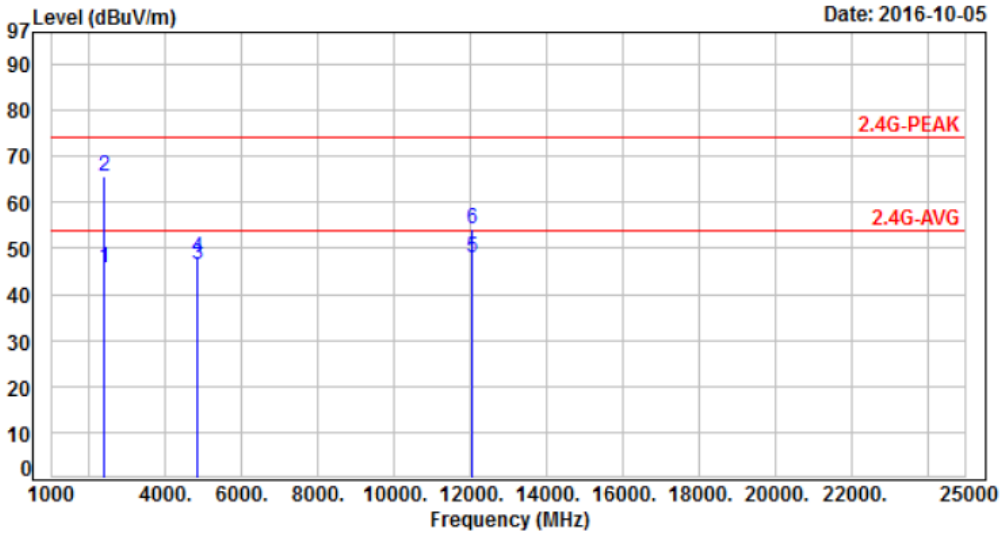
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 63.81 | 47.87 | 54.00 | -6.13 | Average | 130 | 241 | P |
| 2 | 2390.00 | -15.94 | 84.26 | 68.32 | 74.00 | -5.68 | Peak | 130 | 241 | P |
| 3 | 4824.00 | -8.33 | 58.77 | 50.44 | 54.00 | -3.56 | Average | 100 | 163 | P |
| 4 | 4824.00 | -8.33 | 63.02 | 54.69 | 74.00 | -19.31 | Peak | 100 | 163 | P |
| 5 | 12060.00 | 1.91 | 50.12 | 52.03 | 54.00 | -1.97 | Average | 206 | 189 | P |
| 6 | 12060.00 | 1.91 | 56.33 | 58.24 | 74.00 | -15.76 | Peak | 206 | 189 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

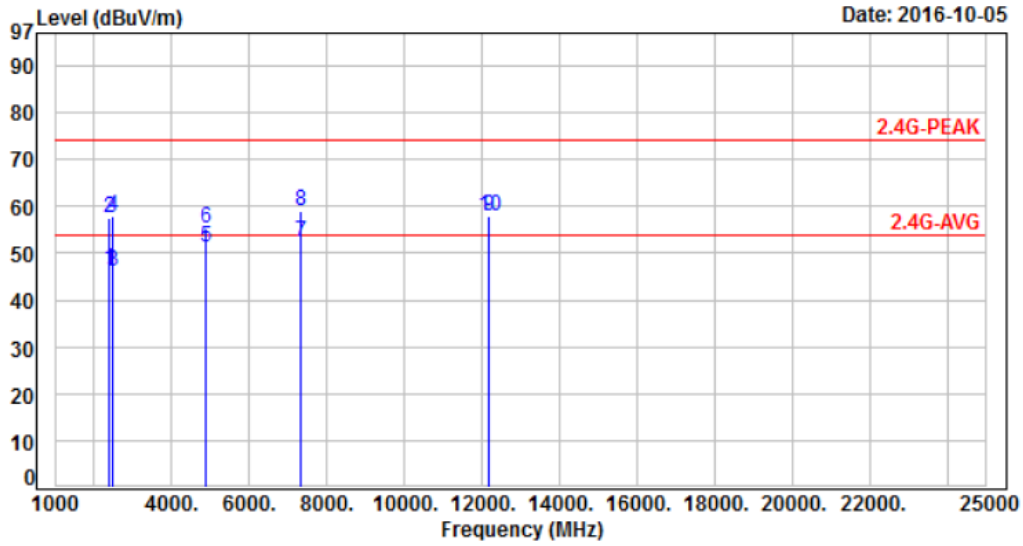
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 61.60 | 45.66 | 54.00 | -8.34 | Average | 153 | 256 | P |
| 2 | 2390.00 | -15.94 | 81.54 | 65.60 | 74.00 | -8.40 | Peak | 153 | 256 | P |
| 3 | 4824.00 | -8.33 | 54.77 | 46.44 | 54.00 | -7.56 | Average | 179 | 134 | P |
| 4 | 4824.00 | -8.33 | 56.36 | 48.03 | 74.00 | -25.97 | Peak | 179 | 134 | P |
| 5 | 12060.00 | 1.91 | 46.12 | 48.03 | 54.00 | -5.97 | Average | 202 | 194 | P |
| 6 | 12060.00 | 1.91 | 52.33 | 54.24 | 74.00 | -19.76 | Peak | 202 | 194 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

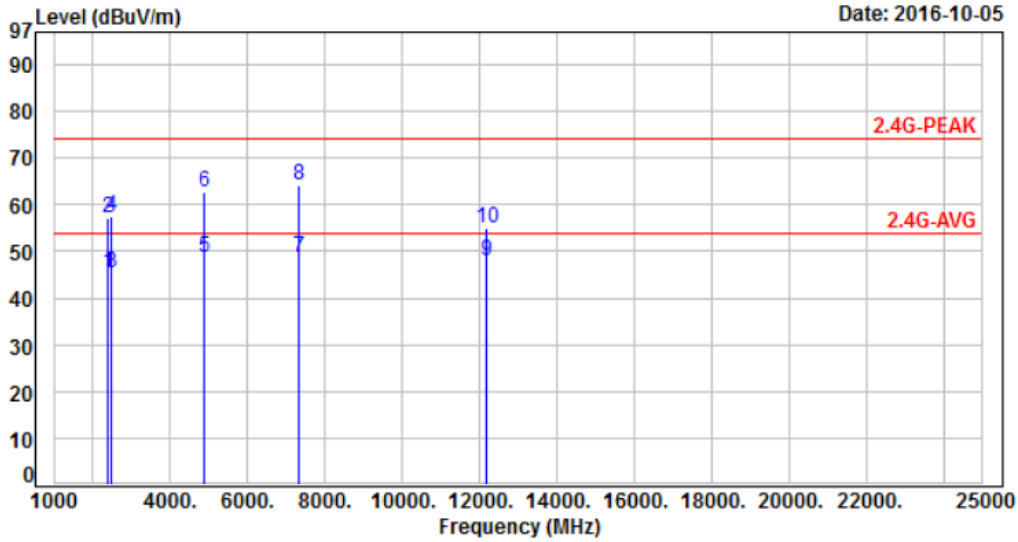
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.75 | 62.16 | 46.41 | 54.00 | -7.59 | Average | 290 | 55 | P |
| 2 | 2390.00 | -15.75 | 73.46 | 57.71 | 74.00 | -16.29 | Peak | 290 | 55 | P |
| 3 | 2483.50 | -15.48 | 61.62 | 46.14 | 54.00 | -7.86 | Average | 394 | 322 | P |
| 4 | 2483.50 | -15.48 | 73.26 | 57.78 | 74.00 | -16.22 | Peak | 394 | 322 | P |
| 5 | 4874.00 | -7.39 | 58.63 | 51.24 | 54.00 | -2.76 | Average | 287 | 224 | P |
| 6 | 4874.00 | -7.39 | 62.86 | 55.47 | 74.00 | -18.53 | Peak | 287 | 224 | P |
| 7 | 7311.00 | -3.50 | 55.81 | 52.31 | 54.00 | -1.69 | Average | 155 | 271 | P |
| 8 | 7311.00 | -3.50 | 62.58 | 59.08 | 74.00 | -14.92 | Peak | 155 | 271 | P |
| 9 | 12185.00 | 2.37 | 55.50 | 57.87 | 54.00 | 3.87 | Average | 127 | 229 | F |
| 10 | 12185.00 | 2.37 | 55.50 | 57.87 | 74.00 | -16.13 | Peak | 127 | 229 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

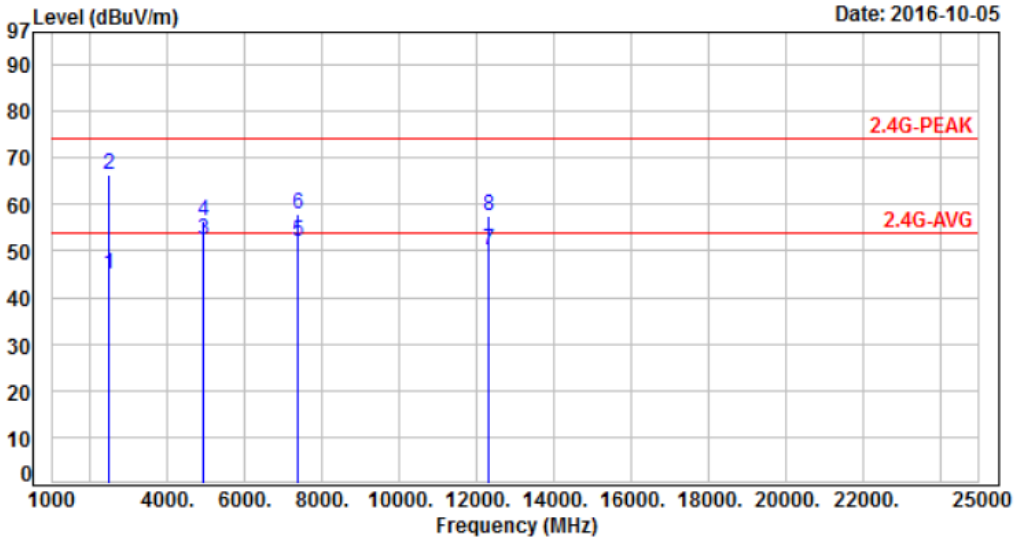
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.75 | 61.12 | 45.37 | 54.00 | -8.63 | Average | 147 | 102 | P |
| 2 | 2390.00 | -15.75 | 73.03 | 57.28 | 74.00 | -16.72 | Peak | 147 | 102 | P |
| 3 | 2483.50 | -15.48 | 60.92 | 45.44 | 54.00 | -8.56 | Average | 305 | 257 | P |
| 4 | 2483.50 | -15.48 | 73.05 | 57.57 | 74.00 | -16.43 | Peak | 305 | 257 | P |
| 5 | 4874.00 | -7.39 | 55.90 | 48.51 | 54.00 | -5.49 | Average | 125 | 302 | P |
| 6 | 4874.00 | -7.39 | 70.16 | 62.77 | 74.00 | -11.23 | Peak | 125 | 302 | P |
| 7 | 7311.00 | -3.50 | 52.36 | 48.86 | 54.00 | -5.14 | Average | 155 | 135 | P |
| 8 | 7311.00 | -3.50 | 67.55 | 64.05 | 74.00 | -9.95 | Peak | 155 | 135 | P |
| 9 | 12185.00 | 2.37 | 45.40 | 47.77 | 54.00 | -6.23 | Average | 125 | 259 | P |
| 10 | 12185.00 | 2.37 | 52.50 | 54.87 | 74.00 | -19.13 | Peak | 125 | 259 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

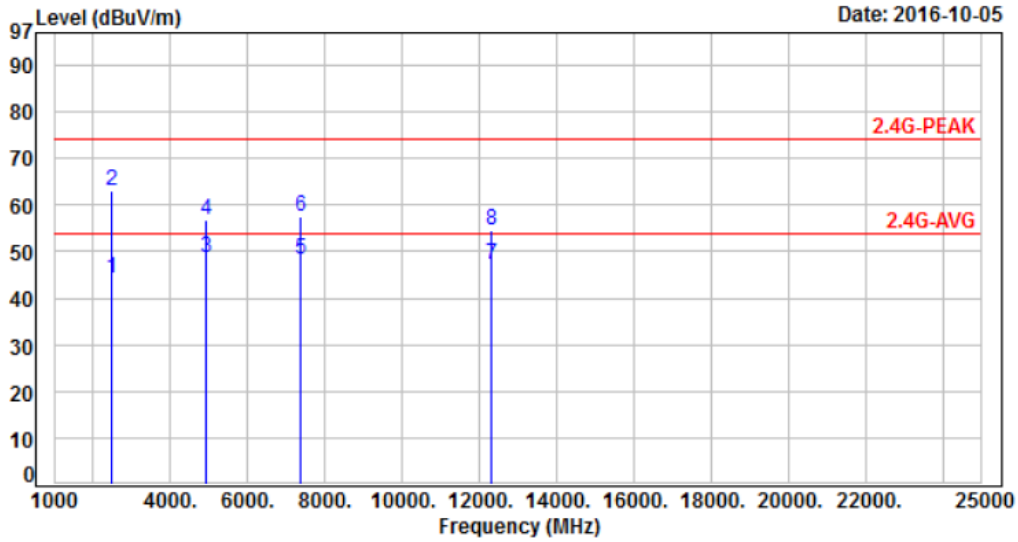
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 60.72 | 45.04 | 54.00 | -8.96 | Average | 102 | 167 | P |
| 2 | 2483.50 | -15.68 | 82.19 | 66.51 | 74.00 | -7.49 | Peak | 102 | 167 | P |
| 3 | 4924.00 | -7.98 | 60.45 | 52.47 | 54.00 | -1.53 | Average | 215 | 150 | P |
| 4 | 4924.00 | -7.98 | 64.59 | 56.61 | 74.00 | -17.39 | Peak | 215 | 150 | P |
| 5 | 7386.00 | -5.07 | 57.12 | 52.05 | 54.00 | -1.95 | Average | 100 | 231 | P |
| 6 | 7386.00 | -5.07 | 62.97 | 57.90 | 74.00 | -16.10 | Peak | 100 | 231 | P |
| 7 | 12310.00 | 1.97 | 48.35 | 50.32 | 54.00 | -3.68 | Average | 389 | 101 | P |
| 8 | 12310.00 | 1.97 | 55.68 | 57.65 | 74.00 | -16.35 | Peak | 389 | 101 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

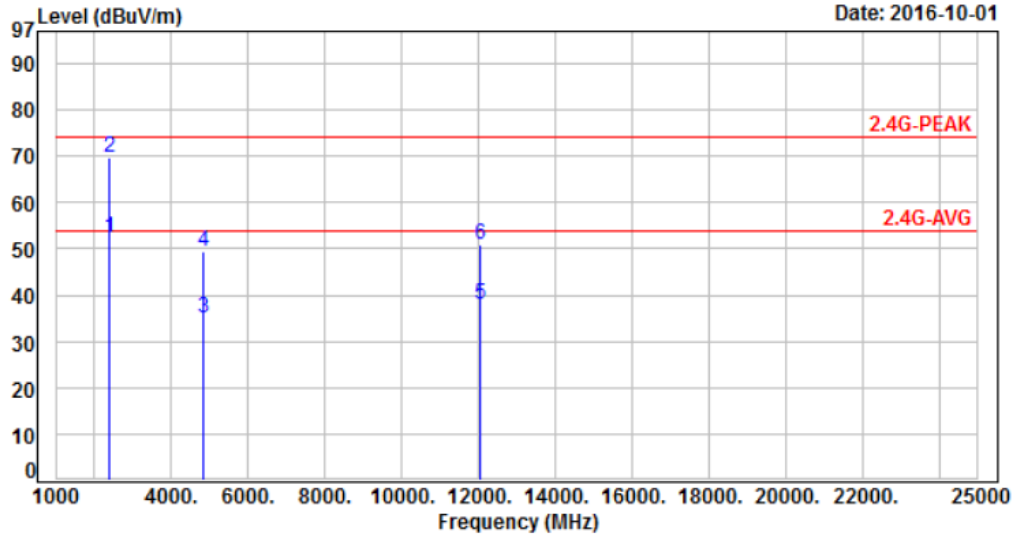
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 1 | Temperature | : | 24 °C |
| Test Date | : | Oct. 05, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 59.92 | 44.24 | 54.00 | -9.76 | Average | 137 | 224 | P |
| 2 | 2483.50 | -15.68 | 78.59 | 62.91 | 74.00 | -11.09 | Peak | 137 | 224 | P |
| 3 | 4924.00 | -7.98 | 56.62 | 48.64 | 54.00 | -5.36 | Average | 198 | 202 | P |
| 4 | 4924.00 | -7.98 | 64.88 | 56.90 | 74.00 | -17.10 | Peak | 198 | 202 | P |
| 5 | 7386.00 | -5.07 | 53.34 | 48.27 | 54.00 | -5.73 | Average | 121 | 187 | P |
| 6 | 7386.00 | -5.07 | 62.49 | 57.42 | 74.00 | -16.58 | Peak | 121 | 187 | P |
| 7 | 12310.00 | 1.97 | 45.35 | 47.32 | 54.00 | -6.68 | Average | 160 | 187 | P |
| 8 | 12310.00 | 1.97 | 52.68 | 54.65 | 74.00 | -19.35 | Peak | 160 | 187 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

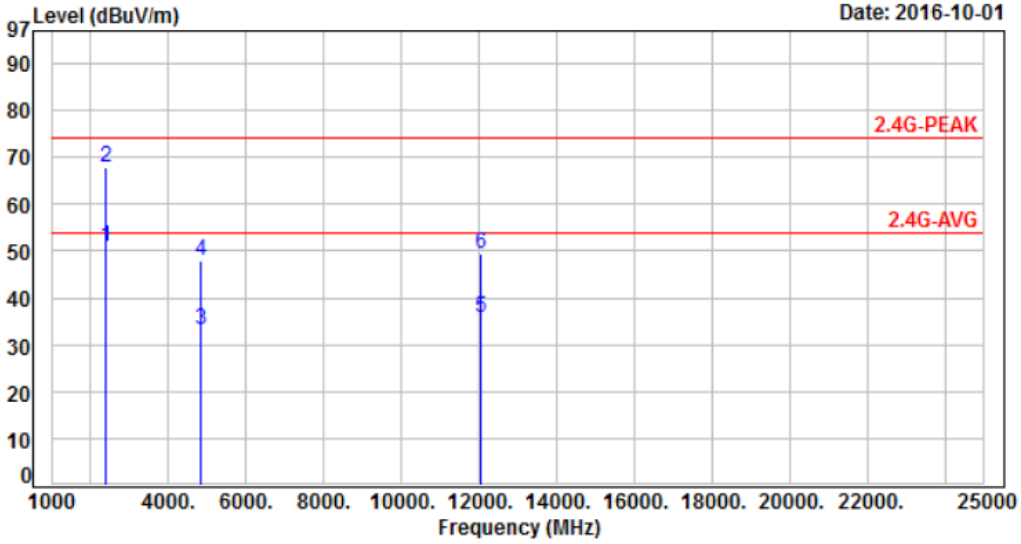
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 68.35 | 52.41 | 54.00 | -1.59 | Average | 145 | 250 | P |
| 2 | 2390.00 | -15.94 | 85.56 | 69.62 | 74.00 | -4.38 | Peak | 145 | 250 | P |
| 3 | 4824.00 | -8.33 | 43.41 | 35.08 | 54.00 | -18.92 | Average | 173 | 165 | P |
| 4 | 4824.00 | -8.33 | 57.92 | 49.59 | 74.00 | -24.41 | Peak | 173 | 165 | P |
| 5 | 12060.00 | 1.91 | 35.96 | 37.87 | 54.00 | -16.13 | Average | 216 | 105 | P |
| 6 | 12060.00 | 1.91 | 49.14 | 51.05 | 74.00 | -22.95 | Peak | 216 | 105 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

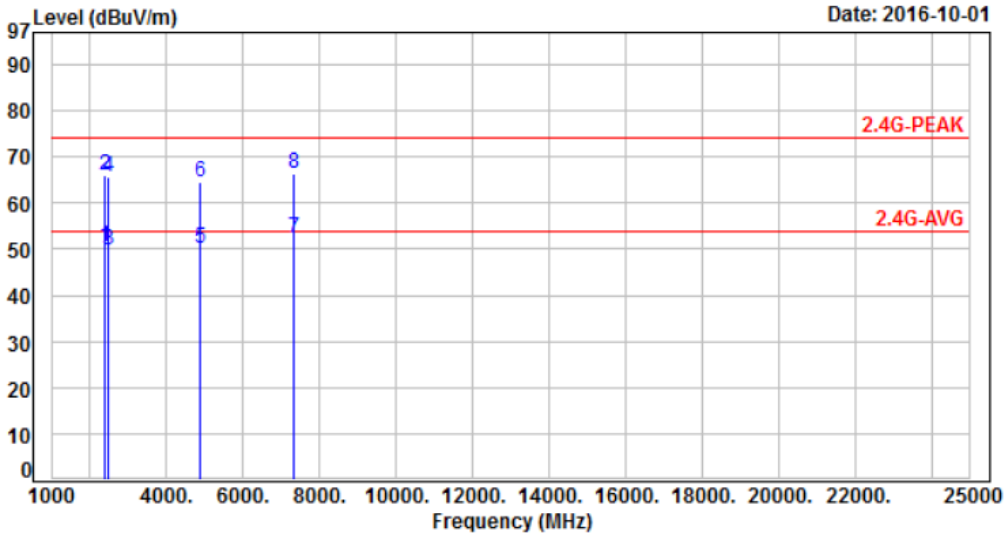
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 66.77 | 50.83 | 54.00 | -3.17 | Average | 166 | 183 | P |
| 2 | 2390.00 | -15.94 | 83.79 | 67.85 | 74.00 | -6.15 | Peak | 166 | 183 | P |
| 3 | 4824.00 | -8.33 | 41.64 | 33.31 | 54.00 | -20.69 | Average | 152 | 303 | P |
| 4 | 4824.00 | -8.33 | 56.31 | 47.98 | 74.00 | -26.02 | Peak | 152 | 303 | P |
| 5 | 12060.00 | 1.91 | 34.02 | 35.93 | 54.00 | -18.07 | Average | 198 | 185 | P |
| 6 | 12060.00 | 1.91 | 47.62 | 49.53 | 74.00 | -24.47 | Peak | 198 | 185 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

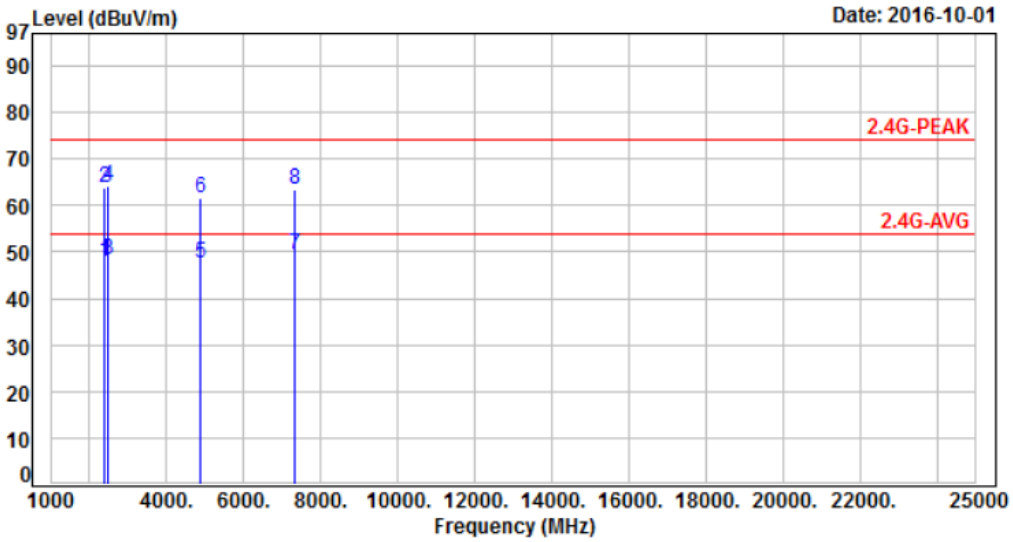
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 66.55 | 50.61 | 54.00 | -3.39 | Average | 142 | 162 | P |
| 2 | 2390.00 | -15.94 | 82.12 | 66.18 | 74.00 | -7.82 | Peak | 142 | 162 | P |
| 3 | 2483.50 | -15.68 | 65.31 | 49.63 | 54.00 | -4.37 | Average | 165 | 200 | P |
| 4 | 2483.50 | -15.68 | 81.33 | 65.65 | 74.00 | -8.35 | Peak | 165 | 200 | P |
| 5 | 4874.00 | -8.16 | 58.23 | 50.07 | 54.00 | -3.93 | Average | 369 | 113 | P |
| 6 | 4874.00 | -8.16 | 72.77 | 64.61 | 74.00 | -9.39 | Peak | 369 | 113 | P |
| 7 | 7311.00 | -5.23 | 57.43 | 52.20 | 54.00 | -1.80 | Average | 169 | 316 | P |
| 8 | 7311.00 | -5.23 | 71.69 | 66.46 | 74.00 | -7.54 | Peak | 169 | 316 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

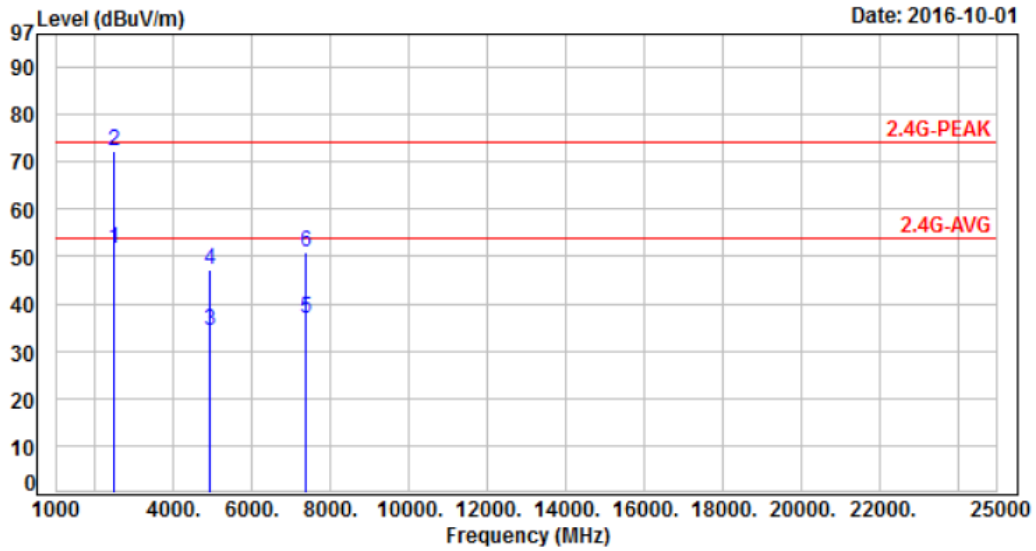
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 63.97 | 48.03 | 54.00 | -5.97 | Average | 242 | 189 | P |
| 2 | 2390.00 | -15.94 | 79.63 | 63.69 | 74.00 | -10.31 | Peak | 242 | 189 | P |
| 3 | 2483.50 | -15.68 | 63.87 | 48.19 | 54.00 | -5.81 | Average | 124 | 98 | P |
| 4 | 2483.50 | -15.68 | 79.69 | 64.01 | 74.00 | -9.99 | Peak | 124 | 98 | P |
| 5 | 4874.00 | -8.16 | 55.74 | 47.58 | 54.00 | -6.42 | Average | 305 | 212 | P |
| 6 | 4874.00 | -8.16 | 69.93 | 61.77 | 74.00 | -12.23 | Peak | 305 | 212 | P |
| 7 | 7311.00 | -5.23 | 54.68 | 49.45 | 54.00 | -4.55 | Average | 173 | 245 | P |
| 8 | 7311.00 | -5.23 | 68.81 | 63.58 | 74.00 | -10.42 | Peak | 173 | 245 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

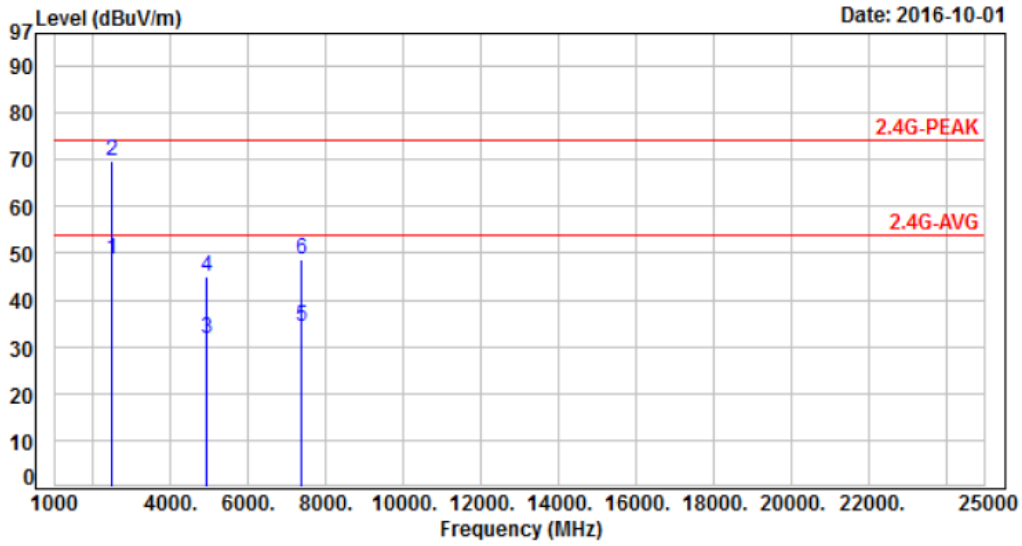
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 67.34 | 51.66 | 54.00 | -2.34 | Average | 100 | 138 | P |
| 2 | 2483.50 | -15.68 | 88.07 | 72.39 | 74.00 | -1.61 | Peak | 100 | 138 | P |
| 3 | 4924.00 | -7.98 | 42.30 | 34.32 | 54.00 | -19.68 | Average | 305 | 247 | P |
| 4 | 4924.00 | -7.98 | 55.10 | 47.12 | 74.00 | -26.88 | Peak | 305 | 247 | P |
| 5 | 7386.00 | -5.07 | 41.77 | 36.70 | 54.00 | -17.30 | Average | 213 | 196 | P |
| 6 | 7386.00 | -5.07 | 55.89 | 50.82 | 74.00 | -23.18 | Peak | 213 | 196 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

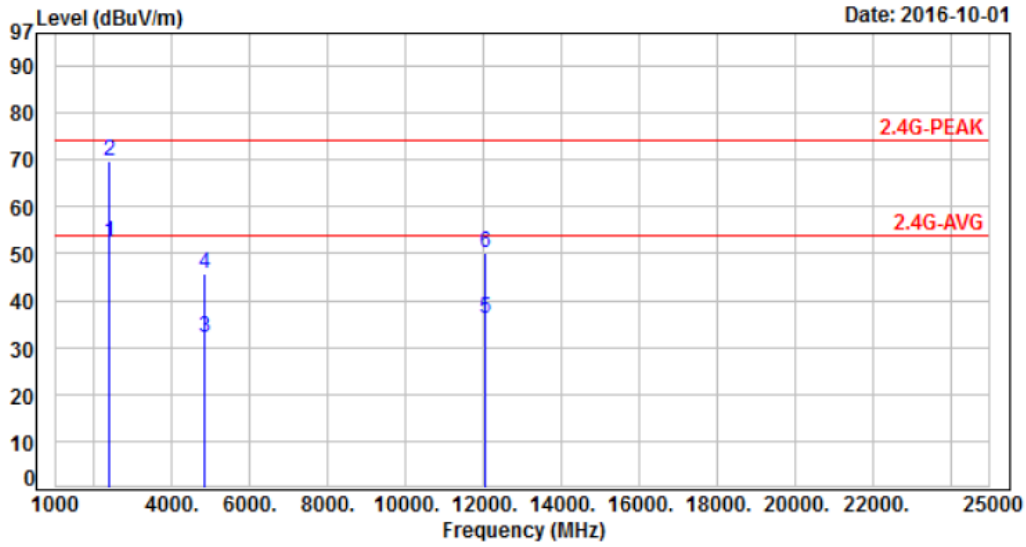
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 2 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 64.52 | 48.84 | 54.00 | -5.16 | Average | 149 | 206 | P |
| 2 | 2483.50 | -15.68 | 85.24 | 69.56 | 74.00 | -4.44 | Peak | 149 | 206 | P |
| 3 | 4924.00 | -7.98 | 39.79 | 31.81 | 54.00 | -22.19 | Average | 212 | 198 | P |
| 4 | 4924.00 | -7.98 | 52.83 | 44.85 | 74.00 | -29.15 | Peak | 212 | 198 | P |
| 5 | 7386.00 | -5.07 | 39.25 | 34.18 | 54.00 | -19.82 | Average | 103 | 316 | P |
| 6 | 7386.00 | -5.07 | 53.66 | 48.59 | 74.00 | -25.41 | Peak | 103 | 316 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

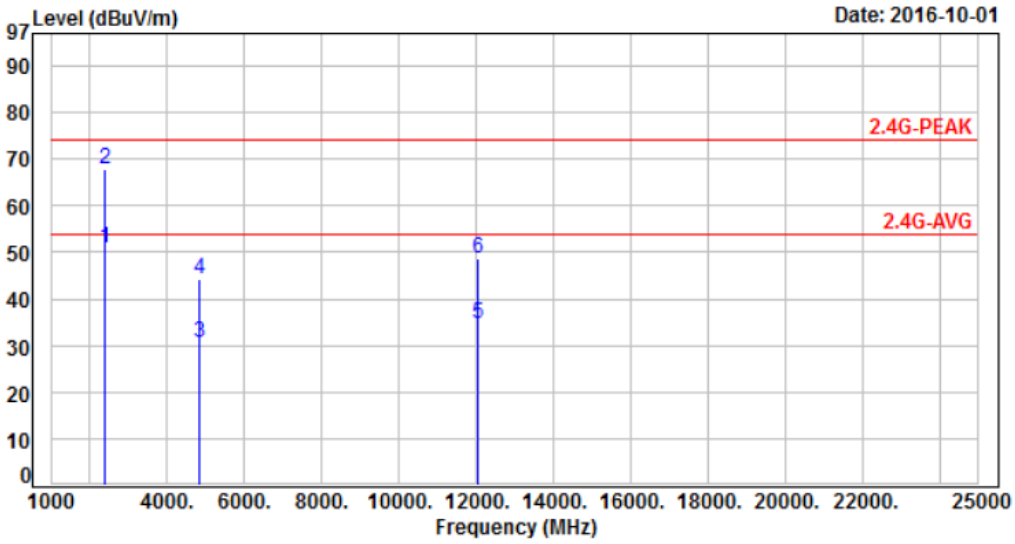
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 68.39 | 52.45 | 54.00 | -1.55 | Average | 202 | 260 | P |
| 2 | 2390.00 | -15.94 | 85.64 | 69.70 | 74.00 | -4.30 | Peak | 202 | 260 | P |
| 3 | 4824.00 | -8.33 | 40.53 | 32.20 | 54.00 | -21.80 | Average | 135 | 206 | P |
| 4 | 4824.00 | -8.33 | 54.11 | 45.78 | 74.00 | -28.22 | Peak | 135 | 206 | P |
| 5 | 12060.00 | 1.91 | 34.18 | 36.09 | 54.00 | -17.91 | Average | 283 | 292 | P |
| 6 | 12060.00 | 1.91 | 48.17 | 50.08 | 74.00 | -23.92 | Peak | 283 | 292 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

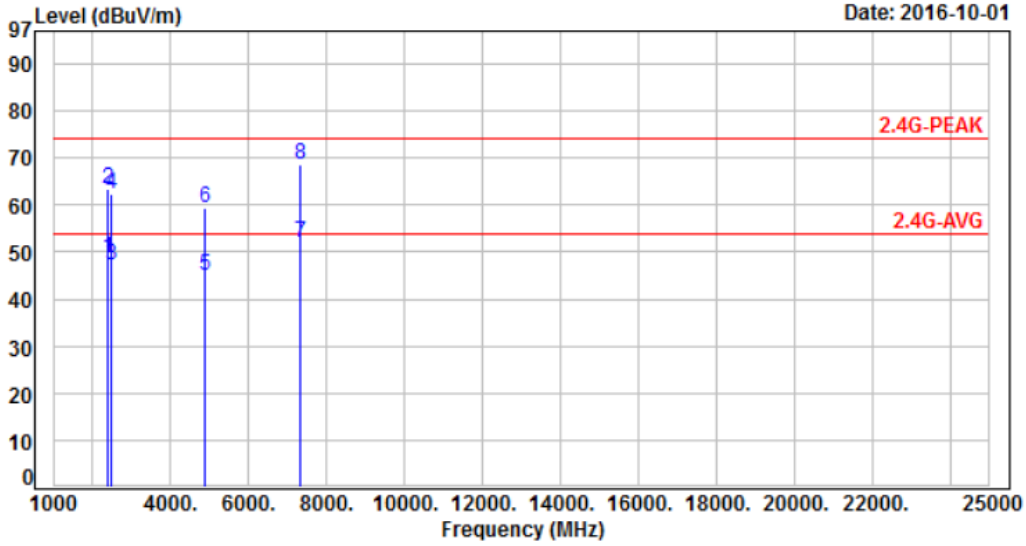
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 01 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 66.70 | 50.76 | 54.00 | -3.24 | Average | 163 | 155 | P |
| 2 | 2390.00 | -15.94 | 83.92 | 67.98 | 74.00 | -6.02 | Peak | 163 | 155 | P |
| 3 | 4824.00 | -8.33 | 38.84 | 30.51 | 54.00 | -23.49 | Average | 187 | 302 | P |
| 4 | 4824.00 | -8.33 | 52.67 | 44.34 | 74.00 | -29.66 | Peak | 187 | 302 | P |
| 5 | 12060.00 | 1.91 | 32.72 | 34.63 | 54.00 | -19.37 | Average | 305 | 119 | P |
| 6 | 12060.00 | 1.91 | 46.84 | 48.75 | 74.00 | -25.25 | Peak | 305 | 119 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

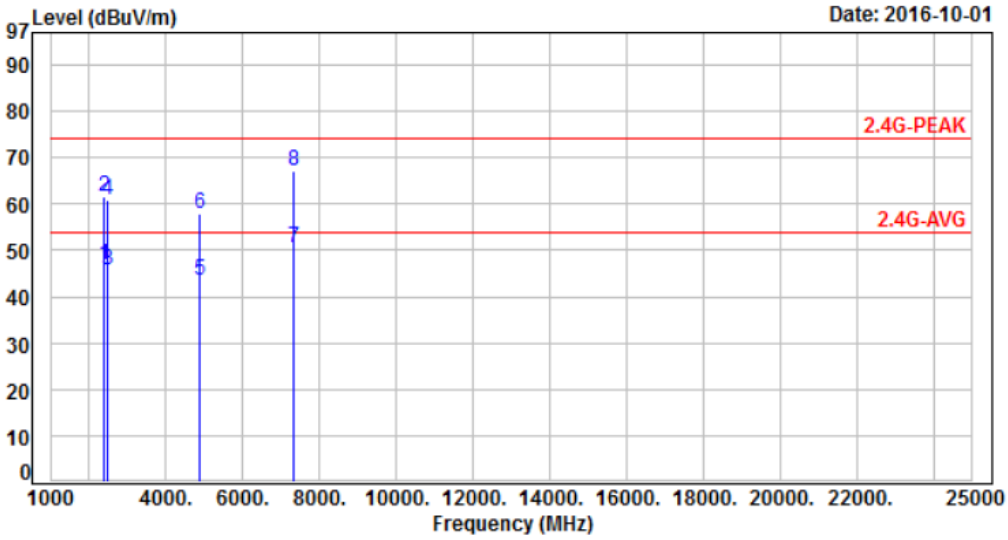
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 64.76 | 48.82 | 54.00 | -5.18 | Average | 149 | 164 | P |
| 2 | 2390.00 | -15.94 | 79.26 | 63.32 | 74.00 | -10.68 | Peak | 149 | 164 | P |
| 3 | 2483.50 | -15.68 | 63.02 | 47.34 | 54.00 | -6.66 | Average | 100 | 265 | P |
| 4 | 2483.50 | -15.68 | 77.91 | 62.23 | 74.00 | -11.77 | Peak | 100 | 265 | P |
| 5 | 4874.00 | -8.16 | 53.29 | 45.13 | 54.00 | -8.87 | Average | 100 | 169 | P |
| 6 | 4874.00 | -8.16 | 67.45 | 59.29 | 74.00 | -14.71 | Peak | 100 | 169 | P |
| 7 | 7311.00 | -5.23 | 57.29 | 52.06 | 54.00 | -1.94 | Average | 129 | 285 | P |
| 8 | 7311.00 | -5.23 | 73.87 | 68.64 | 74.00 | -5.36 | Peak | 129 | 285 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

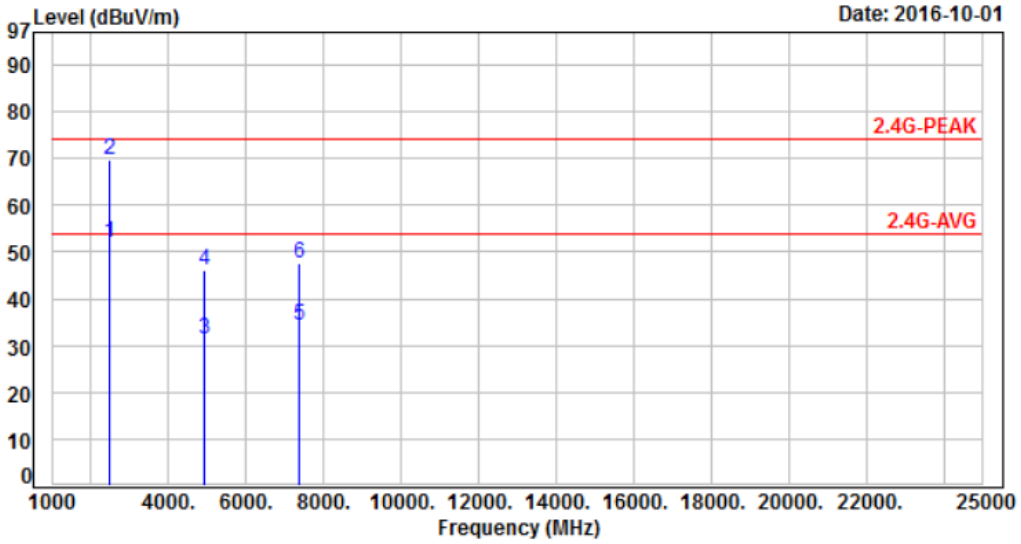
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 62.91 | 46.97 | 54.00 | -7.03 | Average | 162 | 224 | P |
| 2 | 2390.00 | -15.94 | 77.63 | 61.69 | 74.00 | -12.31 | Peak | 162 | 224 | P |
| 3 | 2483.50 | -15.68 | 61.37 | 45.69 | 54.00 | -8.31 | Average | 169 | 145 | P |
| 4 | 2483.50 | -15.68 | 76.48 | 60.80 | 74.00 | -13.20 | Peak | 169 | 145 | P |
| 5 | 4874.00 | -8.16 | 51.75 | 43.59 | 54.00 | -10.41 | Average | 125 | 302 | P |
| 6 | 4874.00 | -8.16 | 65.89 | 57.73 | 74.00 | -16.27 | Peak | 125 | 302 | P |
| 7 | 7311.00 | -5.23 | 55.64 | 50.41 | 54.00 | -3.59 | Average | 137 | 299 | P |
| 8 | 7311.00 | -5.23 | 72.25 | 67.02 | 74.00 | -6.98 | Peak | 137 | 299 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

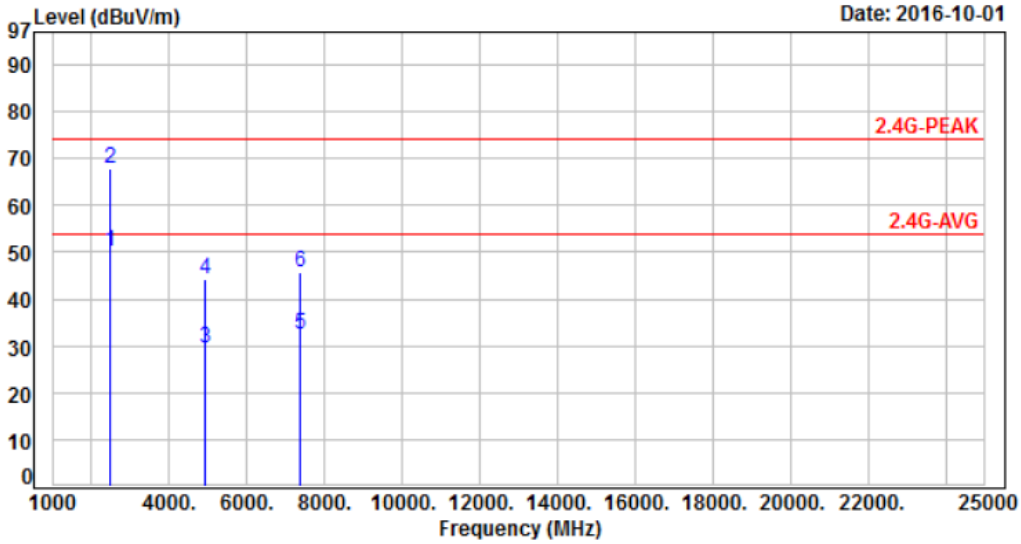
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 67.71 | 52.03 | 54.00 | -1.97 | Average | 139 | 246 | P |
| 2 | 2483.50 | -15.68 | 85.42 | 69.74 | 74.00 | -4.26 | Peak | 139 | 246 | P |
| 3 | 4924.00 | -7.98 | 39.40 | 31.42 | 54.00 | -22.58 | Average | 188 | 248 | P |
| 4 | 4924.00 | -7.98 | 53.98 | 46.00 | 74.00 | -28.00 | Peak | 188 | 248 | P |
| 5 | 7386.00 | -5.07 | 39.39 | 34.32 | 54.00 | -19.68 | Average | 241 | 324 | P |
| 6 | 7386.00 | -5.07 | 52.72 | 47.65 | 74.00 | -26.35 | Peak | 241 | 324 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

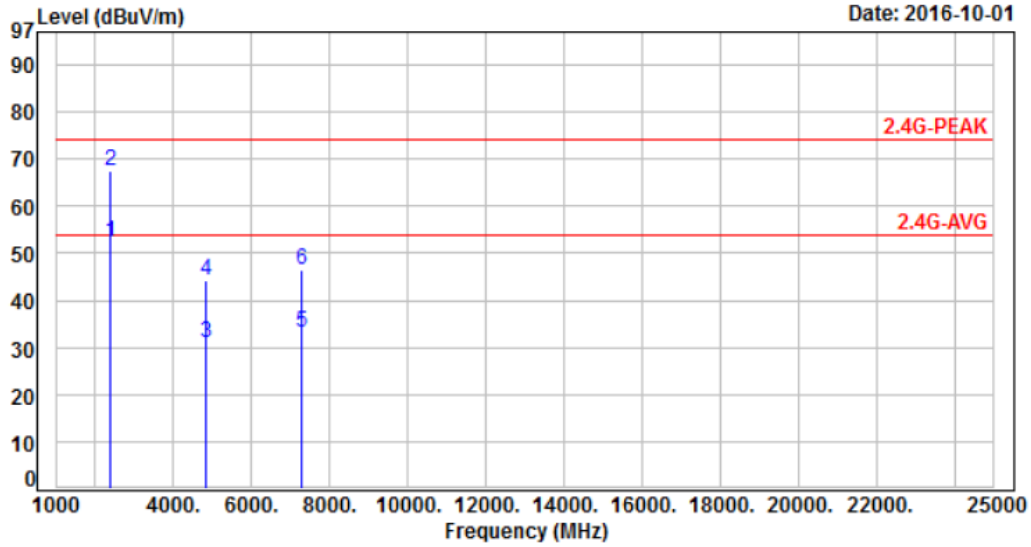
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 5 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 11 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 65.96 | 50.28 | 54.00 | -3.72 | Average | 198 | 311 | P |
| 2 | 2483.50 | -15.68 | 83.71 | 68.03 | 74.00 | -5.97 | Peak | 198 | 311 | P |
| 3 | 4924.00 | -7.98 | 37.64 | 29.66 | 54.00 | -24.34 | Average | 202 | 218 | P |
| 4 | 4924.00 | -7.98 | 52.39 | 44.41 | 74.00 | -29.59 | Peak | 202 | 218 | P |
| 5 | 7386.00 | -5.07 | 37.64 | 32.57 | 54.00 | -21.43 | Average | 302 | 183 | P |
| 6 | 7386.00 | -5.07 | 50.94 | 45.87 | 74.00 | -28.13 | Peak | 302 | 183 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

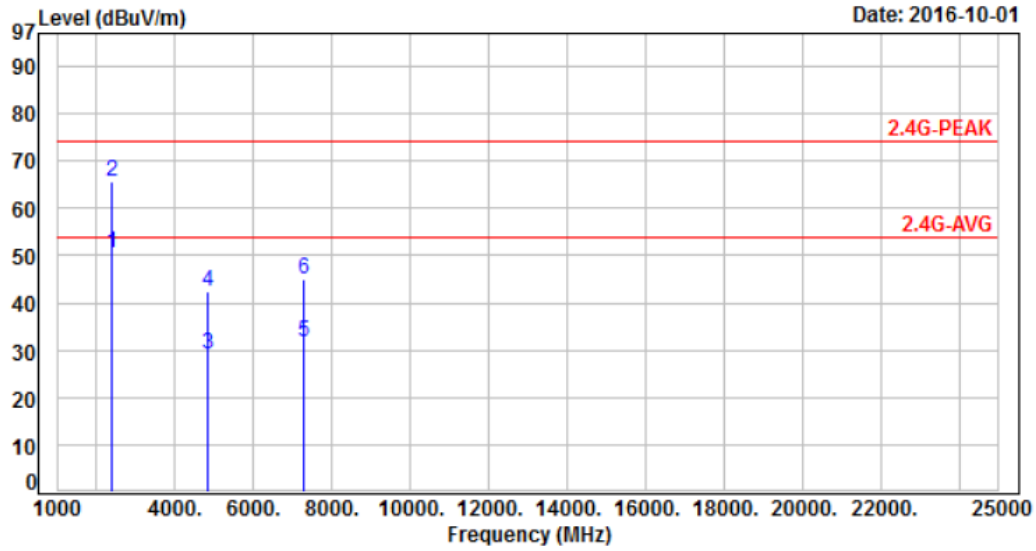
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 03 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 68.42 | 52.48 | 54.00 | -1.52 | Average | 203 | 261 | P |
| 2 | 2390.00 | -15.94 | 83.43 | 67.49 | 74.00 | -6.51 | Peak | 203 | 261 | P |
| 3 | 4844.00 | -8.26 | 39.41 | 31.15 | 54.00 | -22.85 | Average | 325 | 188 | P |
| 4 | 4844.00 | -8.26 | 52.38 | 44.12 | 74.00 | -29.88 | Peak | 325 | 188 | P |
| 5 | 7266.00 | -5.32 | 38.50 | 33.18 | 54.00 | -20.82 | Average | 289 | 256 | P |
| 6 | 7266.00 | -5.32 | 51.89 | 46.57 | 74.00 | -27.43 | Peak | 289 | 256 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

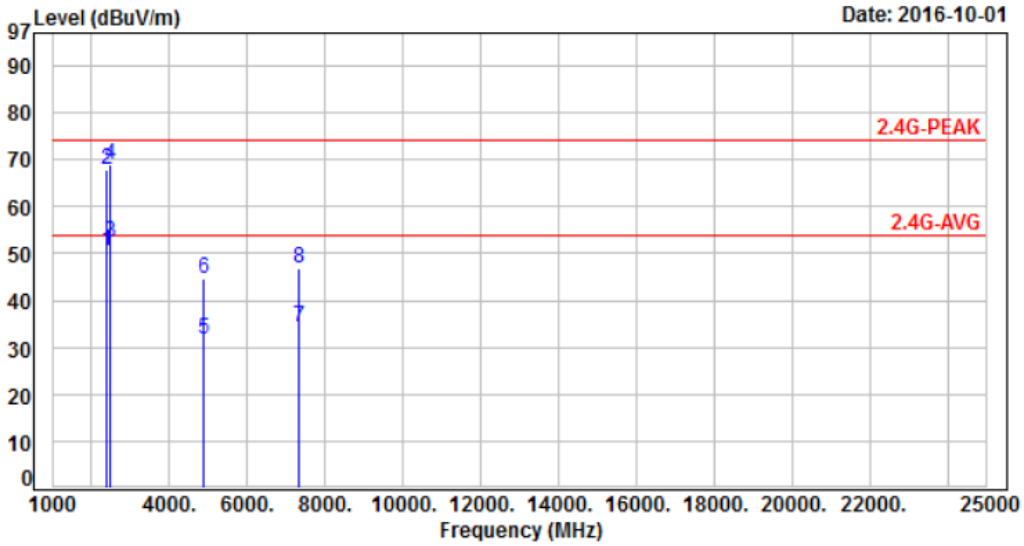
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 03 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 66.58 | 50.64 | 54.00 | -3.36 | Average | 198 | 110 | P |
| 2 | 2390.00 | -15.94 | 81.69 | 65.75 | 74.00 | -8.25 | Peak | 198 | 110 | P |
| 3 | 4844.00 | -8.26 | 37.58 | 29.32 | 54.00 | -24.68 | Average | 252 | 237 | P |
| 4 | 4844.00 | -8.26 | 50.49 | 42.23 | 74.00 | -31.77 | Peak | 252 | 237 | P |
| 5 | 7266.00 | -5.32 | 36.98 | 31.66 | 54.00 | -22.34 | Average | 131 | 162 | P |
| 6 | 7266.00 | -5.32 | 50.21 | 44.89 | 74.00 | -29.11 | Peak | 131 | 162 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

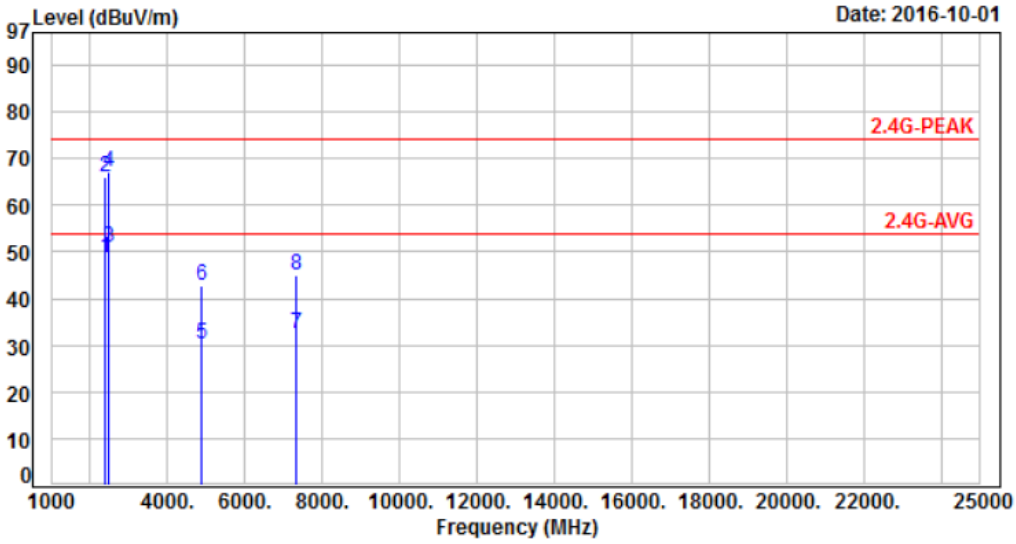
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 66.33 | 50.39 | 54.00 | -3.61 | Average | 218 | 240 | P |
| 2 | 2390.00 | -15.94 | 83.74 | 67.80 | 74.00 | -6.20 | Peak | 218 | 240 | P |
| 3 | 2483.50 | -15.68 | 68.16 | 52.48 | 54.00 | -1.52 | Average | 116 | 192 | P |
| 4 | 2483.50 | -15.68 | 84.66 | 68.98 | 74.00 | -5.02 | Peak | 116 | 192 | P |
| 5 | 4874.00 | -8.16 | 39.89 | 31.73 | 54.00 | -22.27 | Average | 312 | 148 | P |
| 6 | 4874.00 | -8.16 | 52.62 | 44.46 | 74.00 | -29.54 | Peak | 312 | 148 | P |
| 7 | 7311.00 | -5.23 | 39.44 | 34.21 | 54.00 | -19.79 | Average | 249 | 118 | P |
| 8 | 7311.00 | -5.23 | 52.21 | 46.98 | 74.00 | -27.02 | Peak | 249 | 118 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

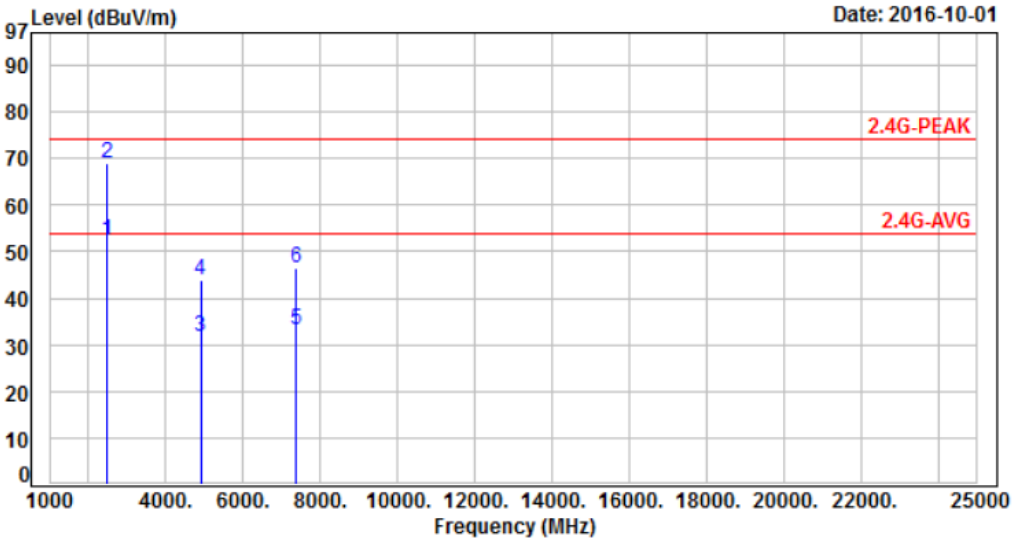
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 06 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.00 | -15.94 | 64.48 | 48.54 | 54.00 | -5.46 | Average | 137 | 122 | P |
| 2 | 2390.00 | -15.94 | 81.92 | 65.98 | 74.00 | -8.02 | Peak | 137 | 122 | P |
| 3 | 2483.50 | -15.68 | 66.55 | 50.87 | 54.00 | -3.13 | Average | 202 | 211 | P |
| 4 | 2483.50 | -15.68 | 82.81 | 67.13 | 74.00 | -6.87 | Peak | 202 | 211 | P |
| 5 | 4874.00 | -8.16 | 38.26 | 30.10 | 54.00 | -23.90 | Average | 288 | 165 | P |
| 6 | 4874.00 | -8.16 | 50.99 | 42.83 | 74.00 | -31.17 | Peak | 288 | 165 | P |
| 7 | 7311.00 | -5.23 | 37.68 | 32.45 | 54.00 | -21.55 | Average | 300 | 198 | P |
| 8 | 7311.00 | -5.23 | 50.37 | 45.14 | 74.00 | -28.86 | Peak | 300 | 198 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

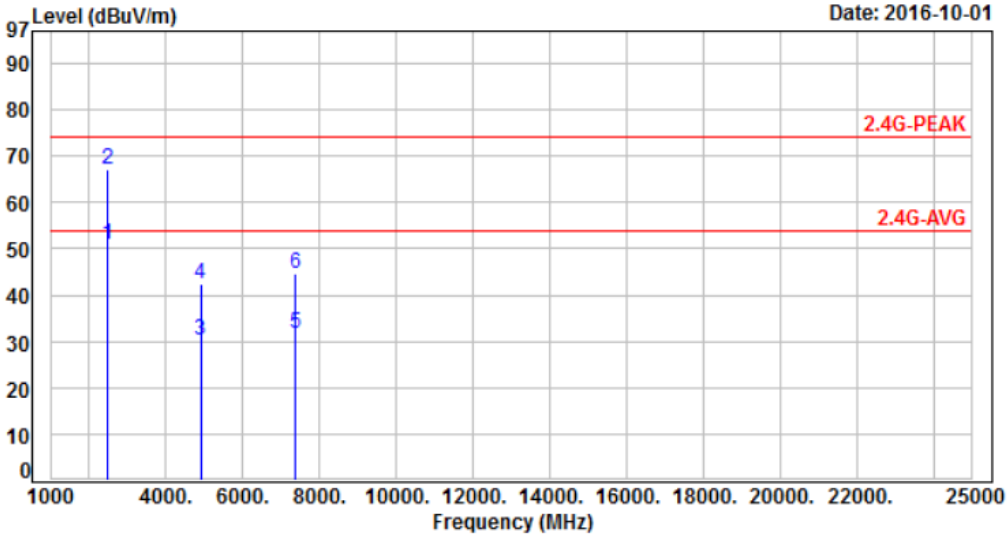
| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | VERTICAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 09 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 68.03 | 52.35 | 54.00 | -1.65 | Average | 149 | 163 | P |
| 2 | 2483.50 | -15.68 | 84.57 | 68.89 | 74.00 | -5.11 | Peak | 149 | 163 | P |
| 3 | 4904.00 | -8.04 | 39.94 | 31.90 | 54.00 | -22.10 | Average | 202 | 198 | P |
| 4 | 4904.00 | -8.04 | 52.09 | 44.05 | 74.00 | -29.95 | Peak | 202 | 198 | P |
| 5 | 7356.00 | -5.12 | 38.45 | 33.33 | 54.00 | -20.67 | Average | 246 | 209 | P |
| 6 | 7356.00 | -5.12 | 51.49 | 46.37 | 74.00 | -27.63 | Peak | 246 | 209 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

| | | | | | |
|---|---|---|---|---|---|
| Power | : | DC 5V | Pol/Phase | : | HORIZONTAL |
| Test Mode | : | Mode 6 | Temperature | : | 24 °C |
| Test Date | : | Oct. 01, 2016 | Humidity | : | 63 % |
| Memo | : | CH 09 | Atmospheric Pressure | : | 1035 hPa |




| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | Height (cm) | Azimuth (deg) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | -15.68 | 66.62 | 50.94 | 54.00 | -3.06 | Average | 183 | 211 | P |
| 2 | 2483.50 | -15.68 | 82.92 | 67.24 | 74.00 | -6.76 | Peak | 183 | 211 | P |
| 3 | 4904.00 | -8.04 | 38.34 | 30.30 | 54.00 | -23.70 | Average | 302 | 225 | P |
| 4 | 4904.00 | -8.04 | 50.60 | 42.56 | 74.00 | -31.44 | Peak | 302 | 225 | P |
| 5 | 7356.00 | -5.12 | 36.83 | 31.71 | 54.00 | -22.29 | Average | 152 | 149 | P |
| 6 | 7356.00 | -5.12 | 49.76 | 44.64 | 74.00 | -29.36 | Peak | 152 | 149 | P |

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss - Amplifier Factor

## 6.7 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.09000 – 0.11000 | 16.42000 – 16.42300 | 399.9 – 410.0 | 4.500 – 5.250 |
| 0.49500 – 0.505** | 16.69475 – 16.69525 | 608.0 – 614.0 | 5.350 – 5.460 |
| 2.17350 – 2.19050 | 16.80425 – 16.80475 | 960.0 – 1240.0 | 7.250 – 7.750 |
| 4.12500 – 4.12800 | 25.50000 – 25.67000 | 1300.0 – 1427.0 | 8.025 – 8.500 |
| 4.17725 – 4.17775 | 37.50000 – 38.25000 | 1435.0 – 1626.5 | 9.000 – 9.200 |
| 4.20725 – 4.20775 | 73.00000 – 74.60000 | 1645.5 – 1646.5 | 9.300 – 9.500 |
| 6.21500 – 6.21800 | 74.80000 – 75.20000 | 1660.0 – 1710.0 | 10.600 – 12.700 |
| 6.26775 – 6.26825 | 108.00000 – 121.94000 | 1718.8 – 1722.2 | 13.250 – 13.400 |
| 6.31175 – 6.31225 | 123.00000 – 138.00000 | 2200.0 – 2300.0 | 14.470 – 14.500 |
| 8.29100 – 8.29400 | 149.90000 – 150.05000 | 2310.0 – 2390.0 | 15.350 – 16.200 |
| 8.36200 – 8.36600 | 156.52475 – 156.52525 | 2483.5 – 2500.0 | 17.700 – 21.400 |
| 8.37625 – 8.38675 | 156.70000 – 156.90000 | 2655.0 – 2900.0 | 22.010 – 23.120 |
| 8.41425 – 8.41475 | 162.01250 – 167.17000 | 3260.0 – 3267.0 | 23.600 – 24.000 |
| 12.29000 – 12.29300 | 167.72000 – 173.20000 | 3332.0 – 3339.0 | 31.200 – 31.800 |
| 12.51975 – 12.52025 | 240.00000 – 285.00000 | 3345.8 – 3358.0 | 36.430 – 36.500 |
| 12.57675 – 12.57725 | 322.00000 – 335.40000 | 3600.0 – 4400.0 | Above 38.6 |
| 13.36000 – 13.41000 | | | |

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

# 7. Test of Conducted Spurious Emission

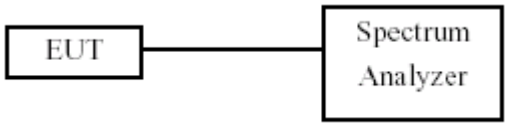
## 7.1 Test Limit

Below –20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

## 7.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
c. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20dB relative to the maximum measured in-band peak PSD level.
d. The band edges was measured and recorded.

## 7.3 Test Setup Layout



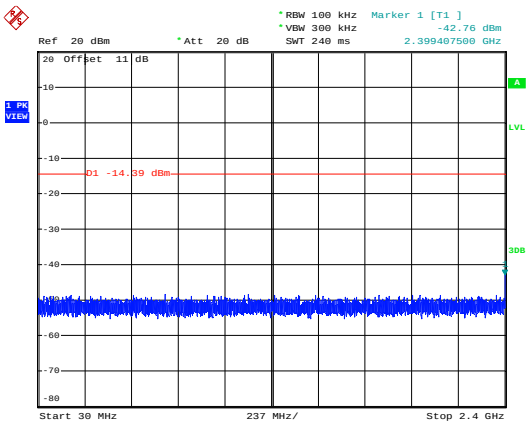

## 7.4 Test Result and Data

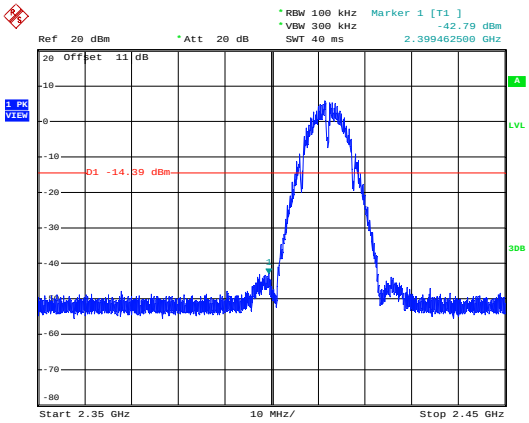
| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | Oct. 04, 2016 | Temperature | : | 23°C |
| Atmospheric pressure | : | 1015 hPa | Humidity | : | 64% |
| Test Result | : | PASS | | | |

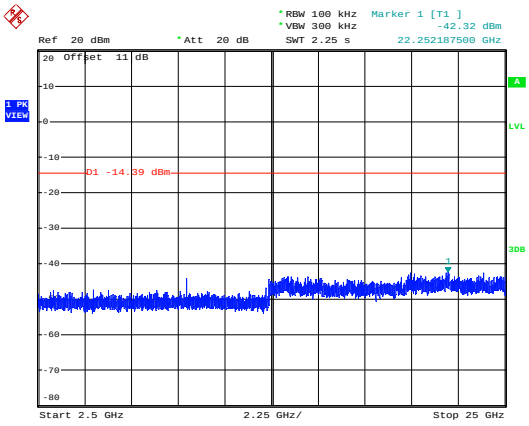
Note: Test plots refers to the following pages.

Antenna 1

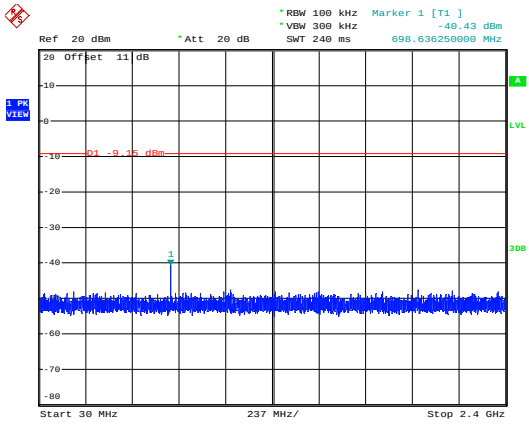
Modulation Type: 802.11b, CH 01

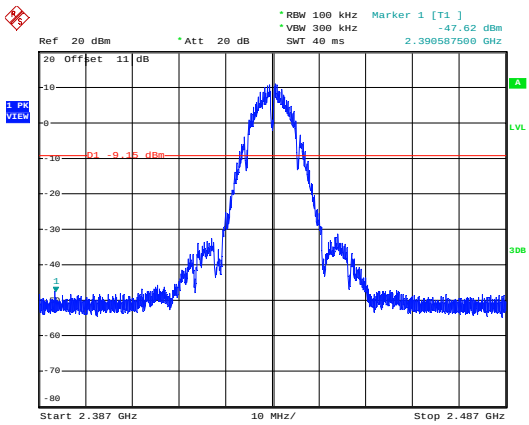


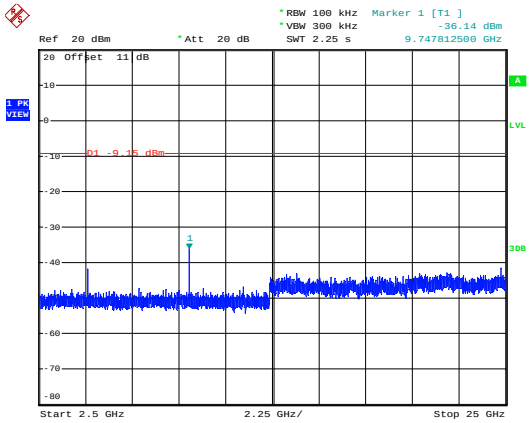




Modulation Type: 802.11b, CH 06

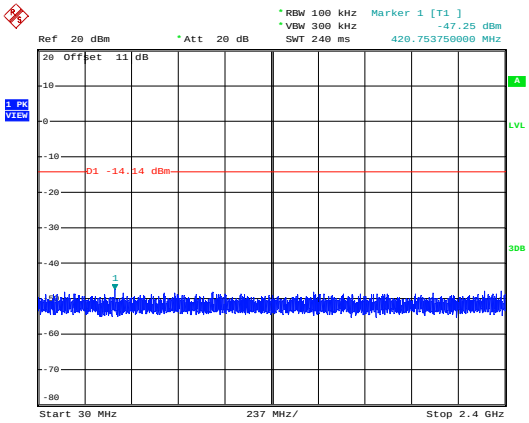


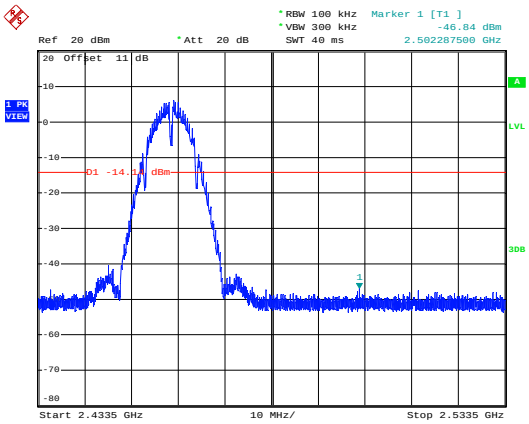



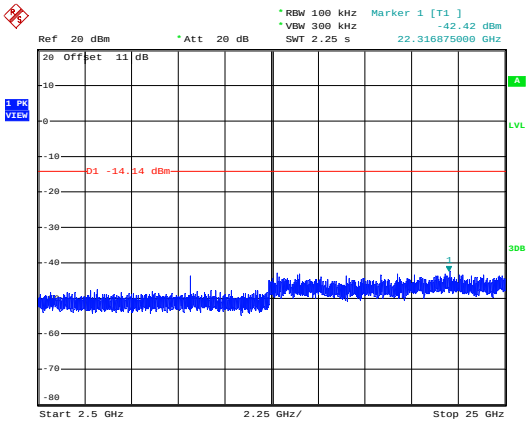



Antenna 1

Modulation Type: 802.11b, CH 11

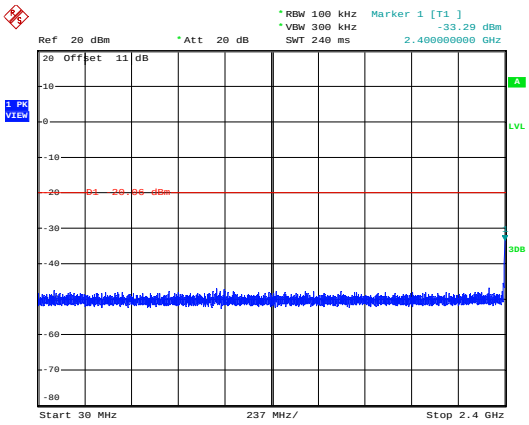


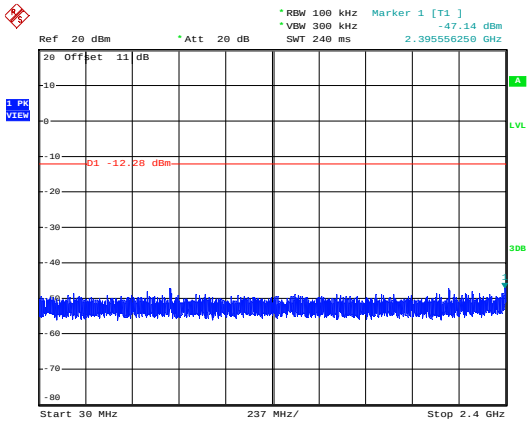



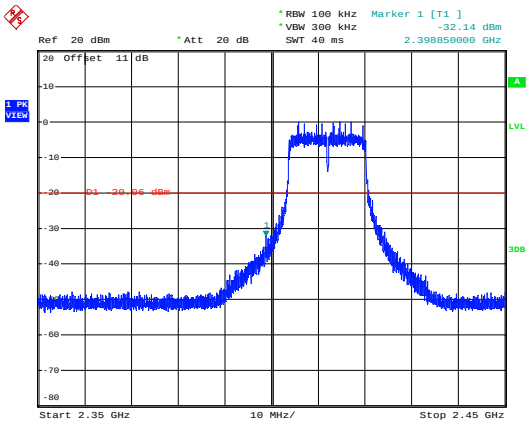
Antenna 1

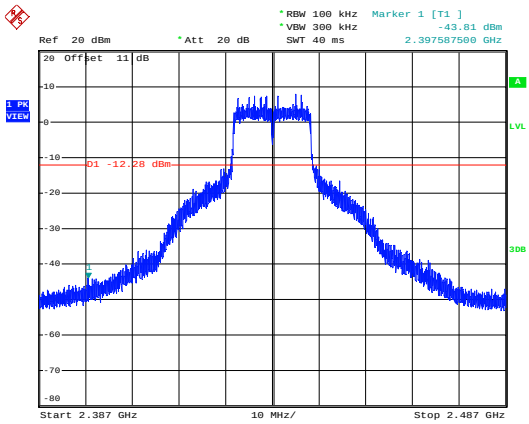
Modulation Type: 802.11g, CH 01

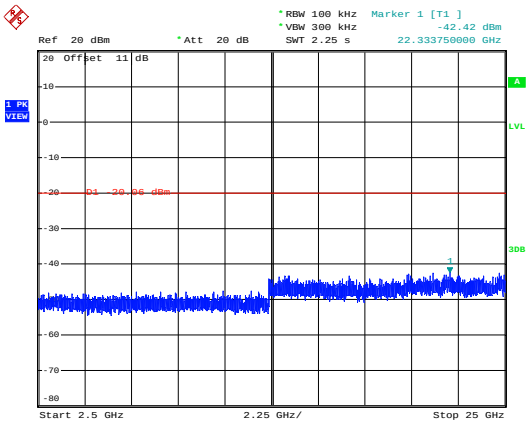


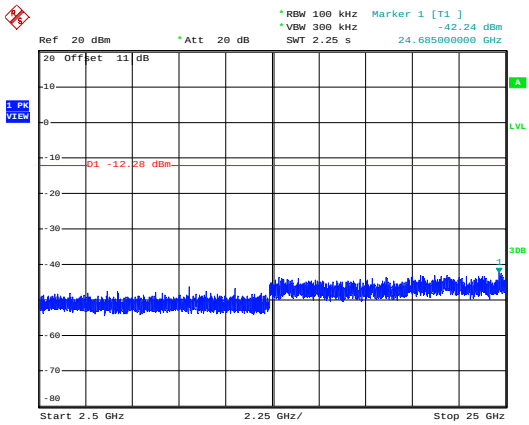

Modulation Type: 802.11g, CH 06



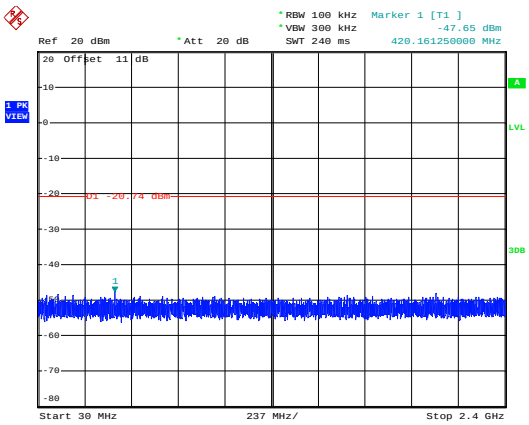



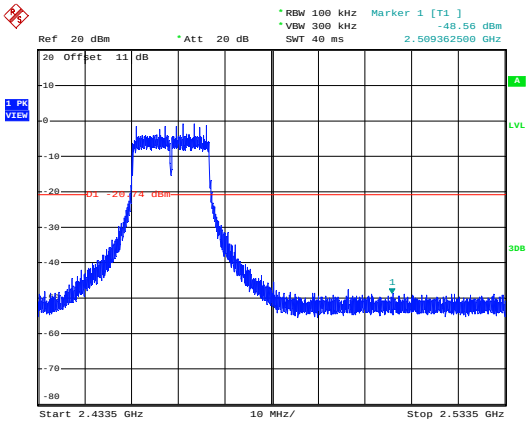



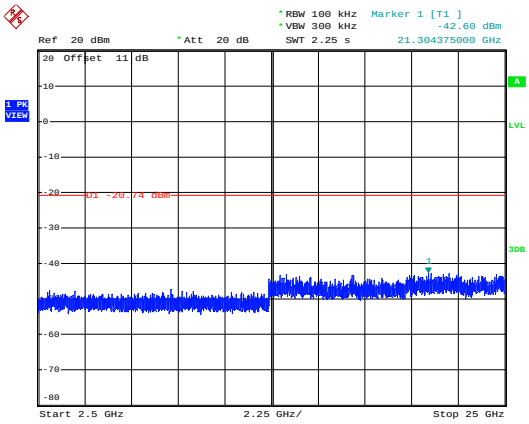



Antenna 1

Modulation Type: 802.11g, CH 11

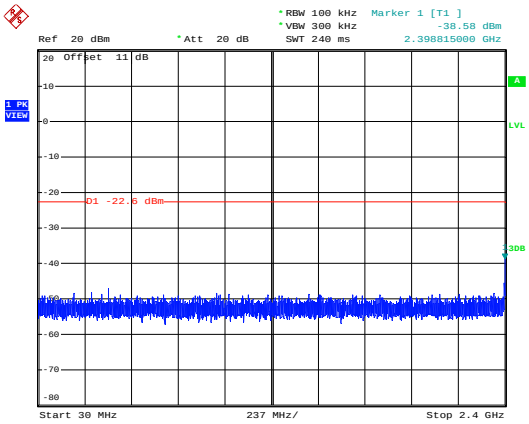


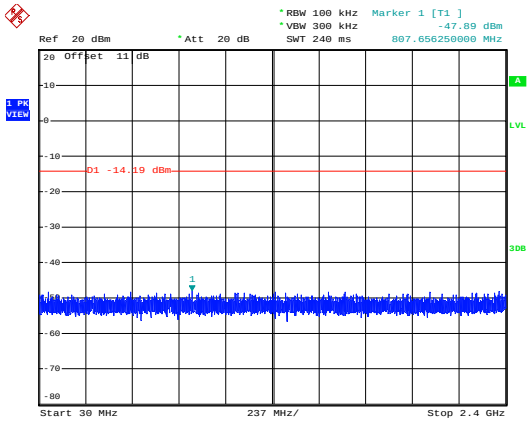



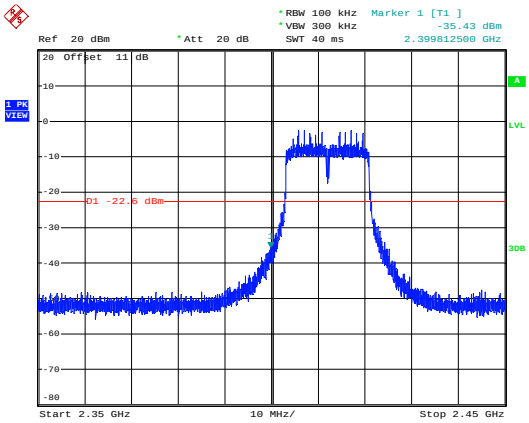
Antenna 1

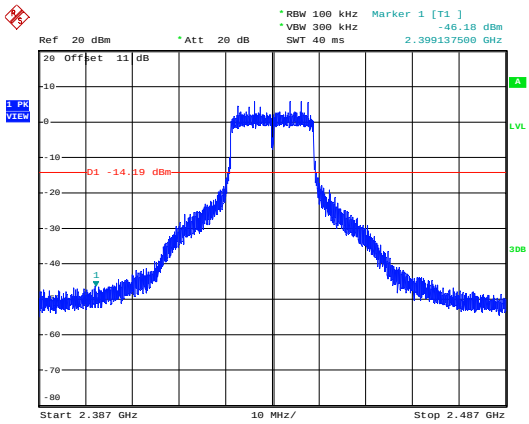
Modulation Type: 802.11ac VHT20, CH 01

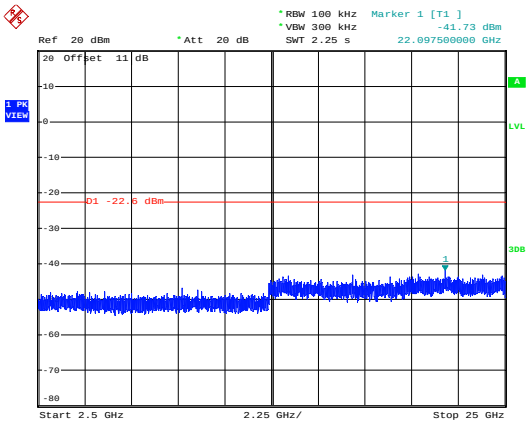


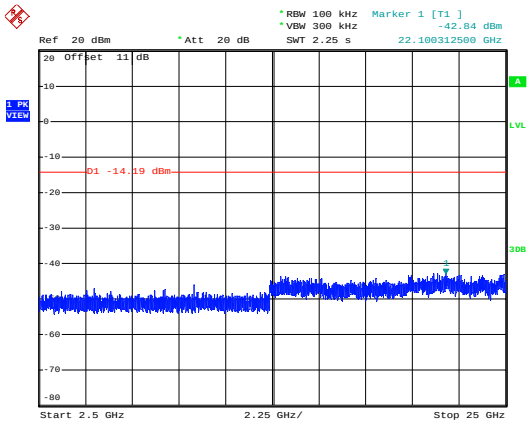

Modulation Type: 802.11ac VHT20, CH 06



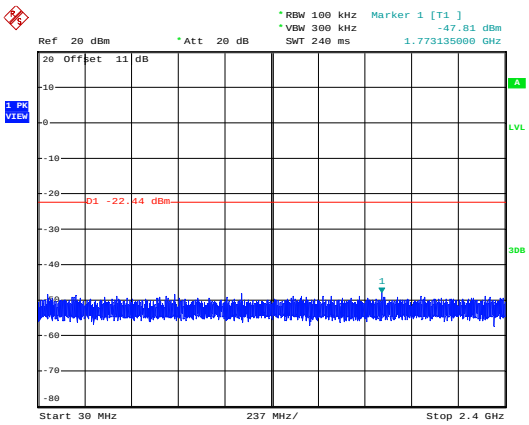



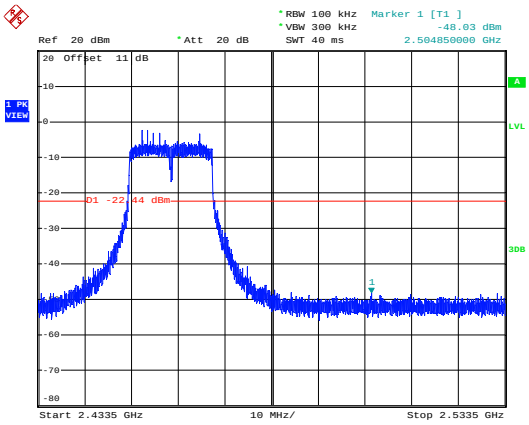



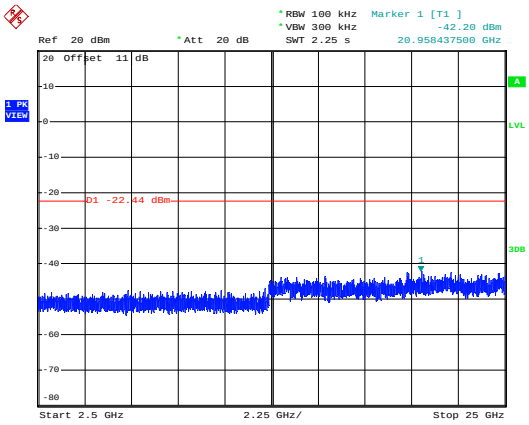



Antenna 1

Modulation Type: 802.11ac VHT20, CH 11

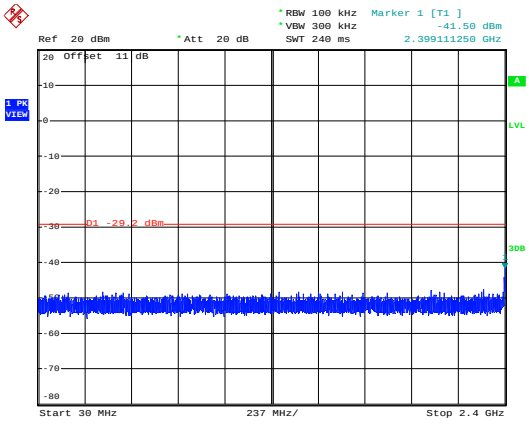


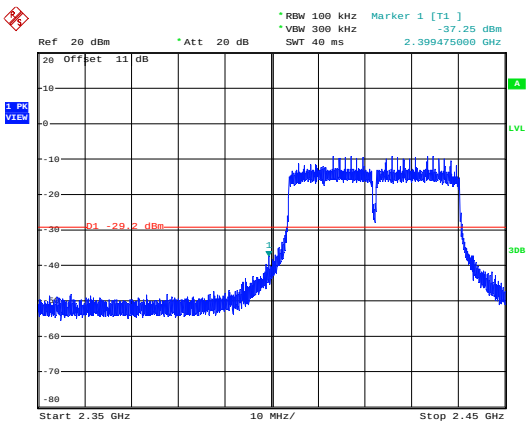



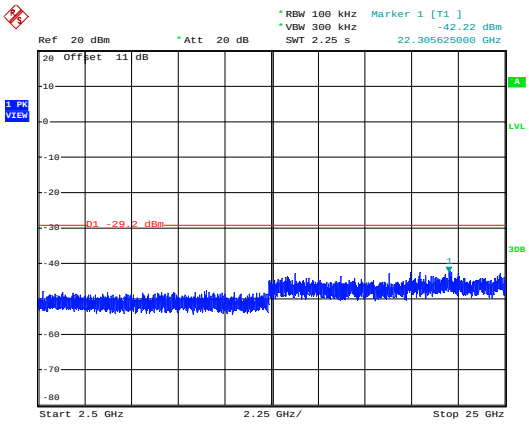



Antenna 1

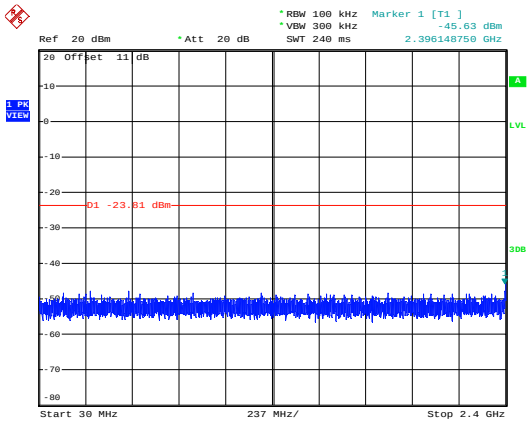
Modulation Type: 802.11ac VHT40, CH 03

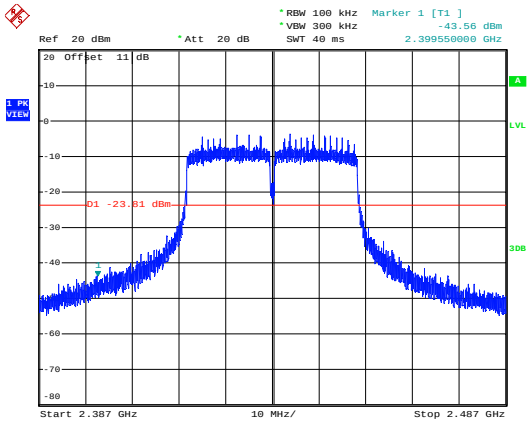


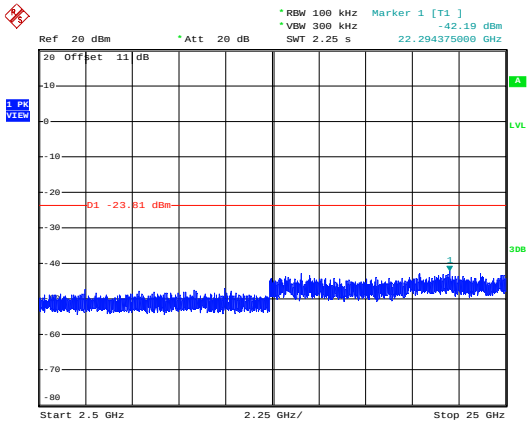




Modulation Type: 802.11ac VHT40, CH 06

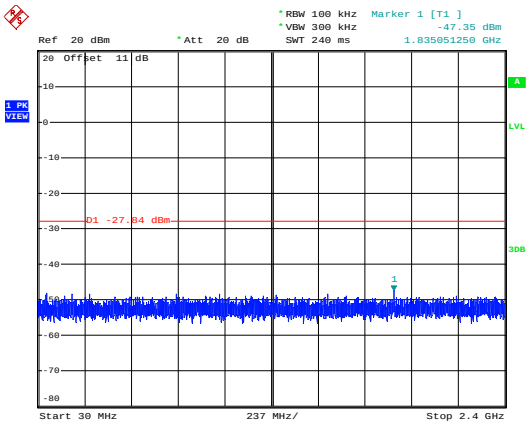


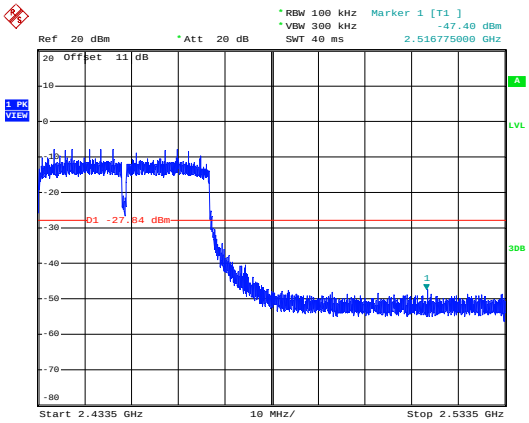



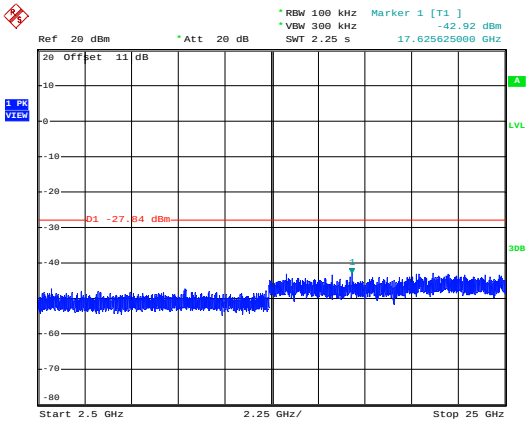



Antenna 1

Modulation Type: 802.11ac VHT40, CH 09

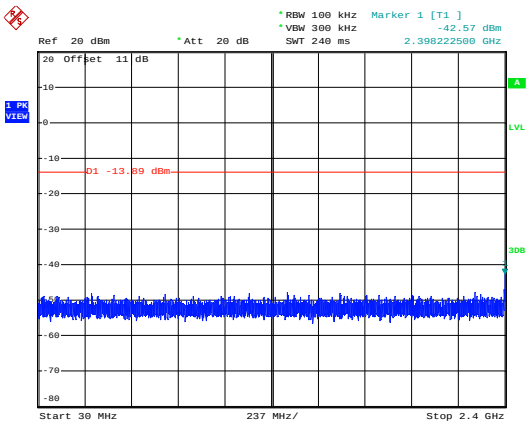


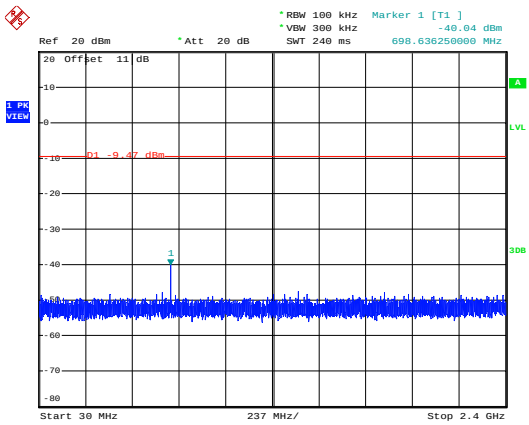



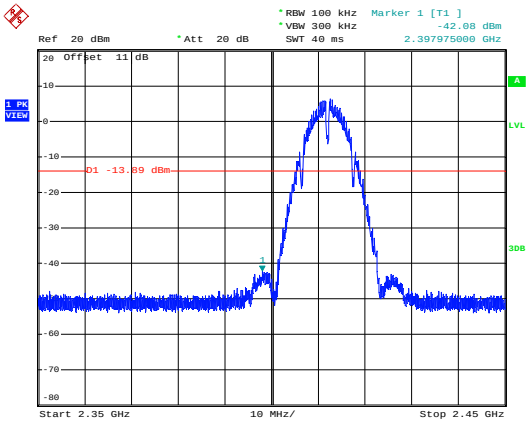
Antenna 2

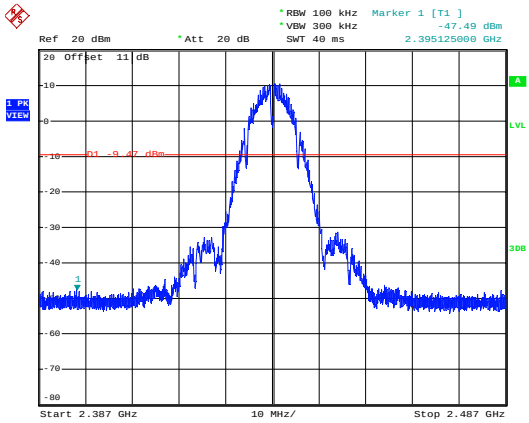
Modulation Type: 802.11b, CH 01

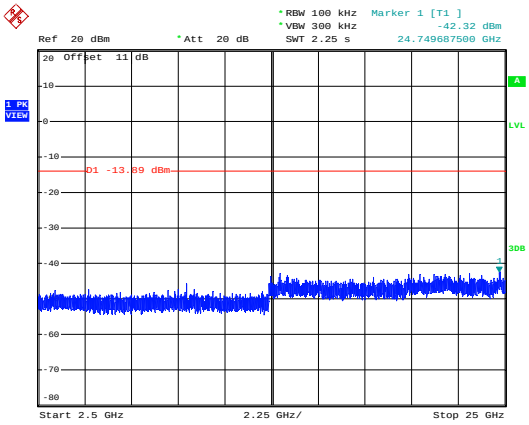


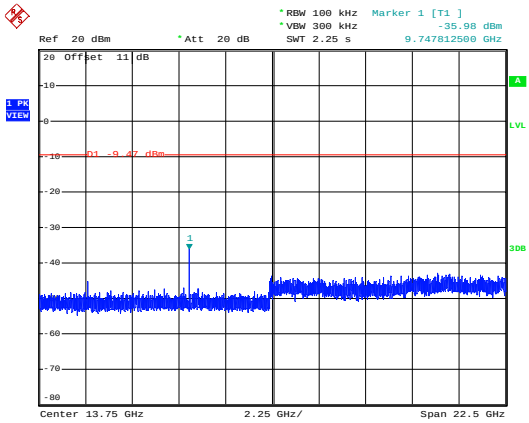

Modulation Type: 802.11b, CH 06



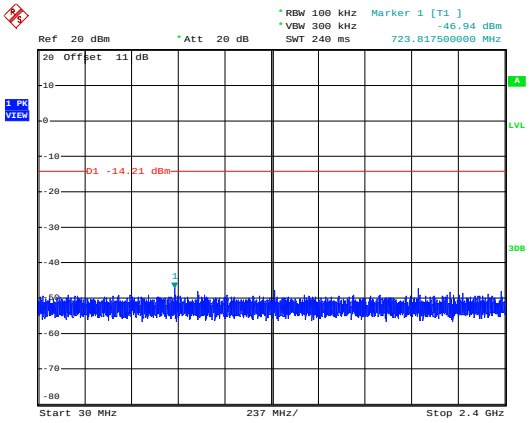



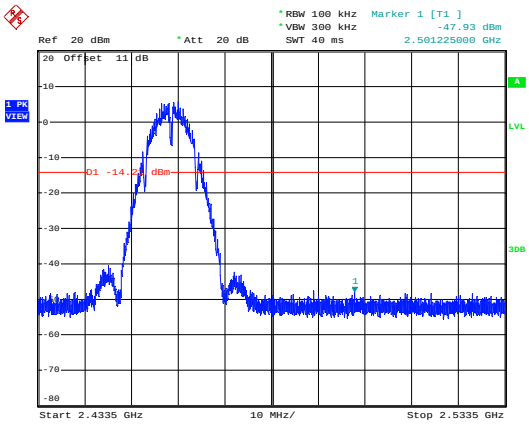



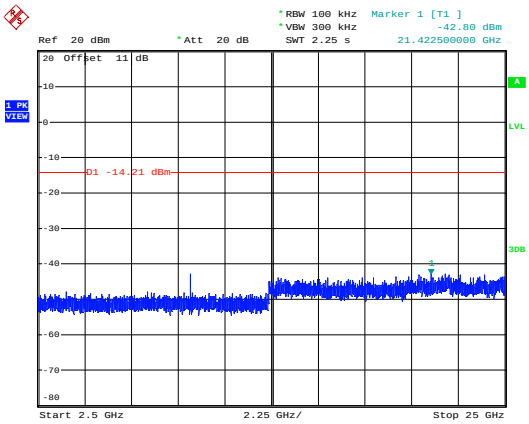



Antenna 2

Modulation Type: 802.11b, CH 11

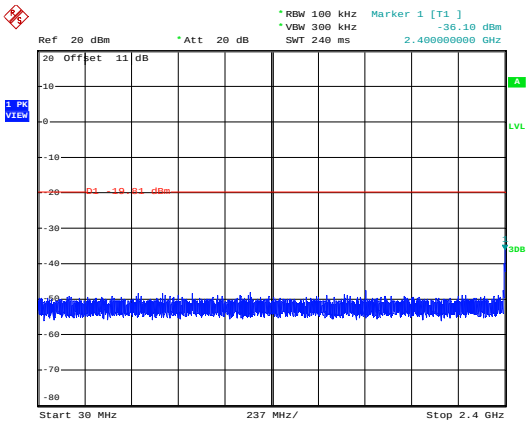


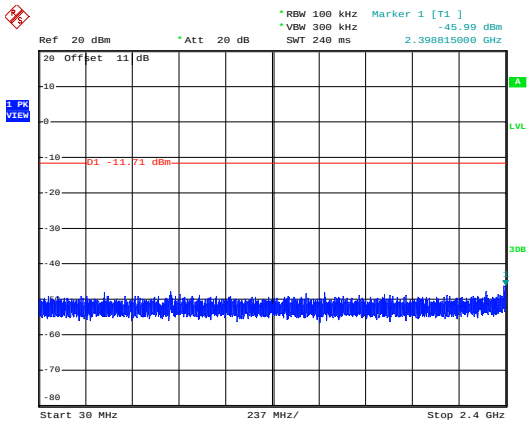



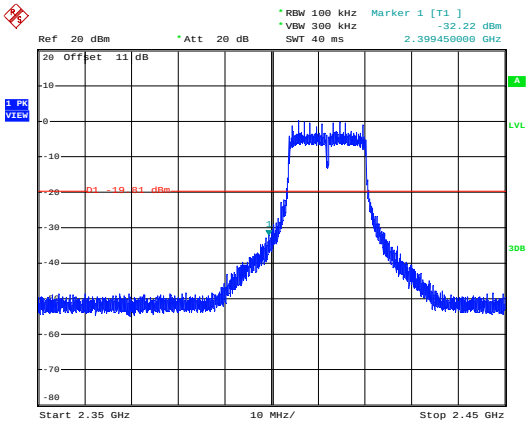
Antenna 2

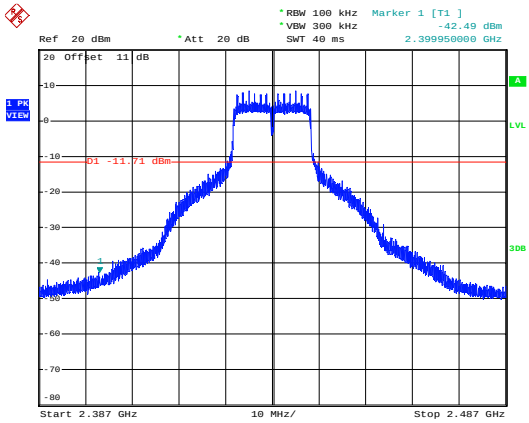
Modulation Type: 802.11g, CH 01

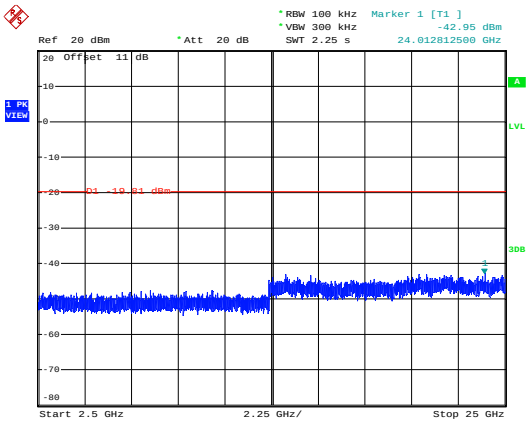


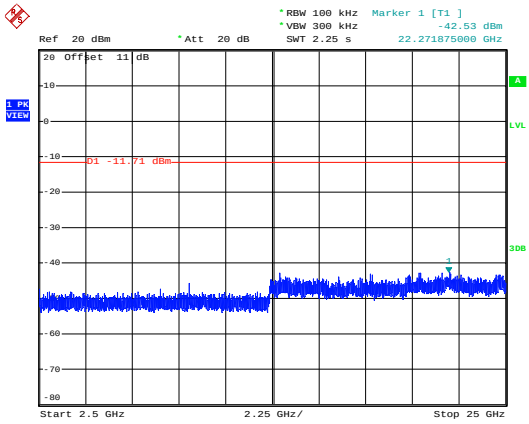

Modulation Type: 802.11g, CH 06



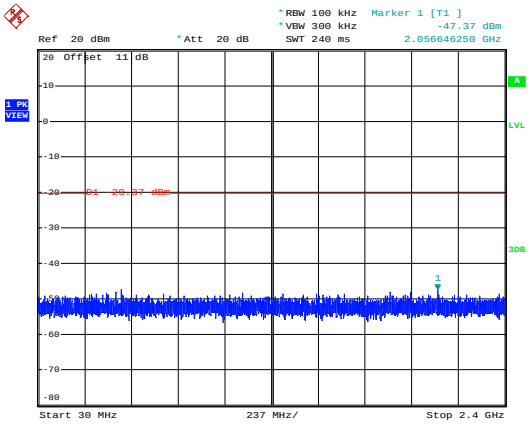



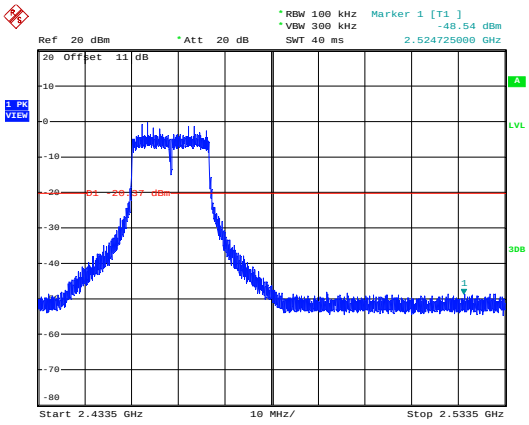



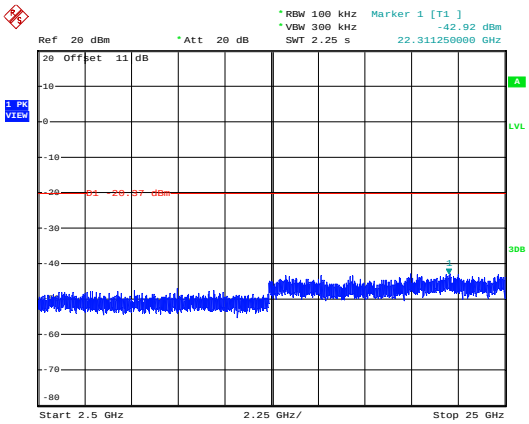



Antenna 2

Modulation Type: 802.11g, CH 11

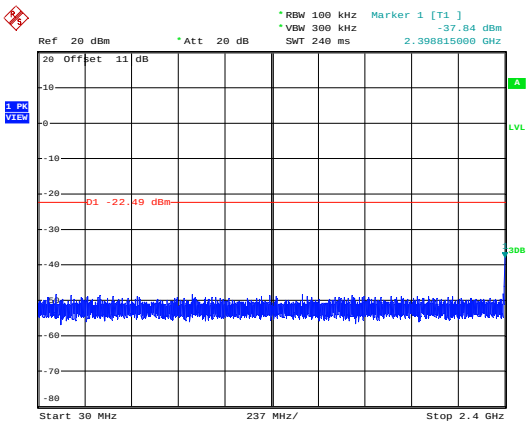


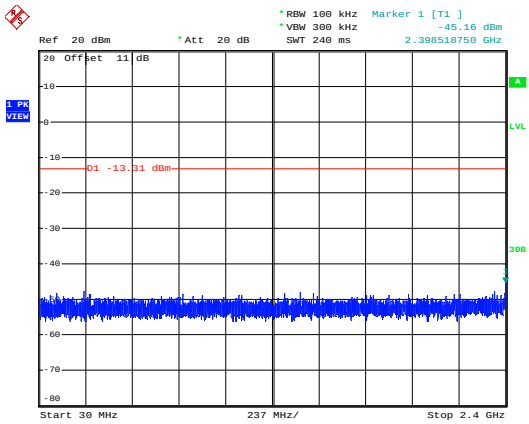



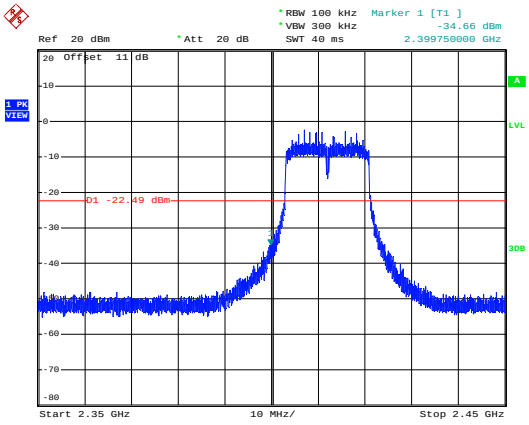
Antenna 2

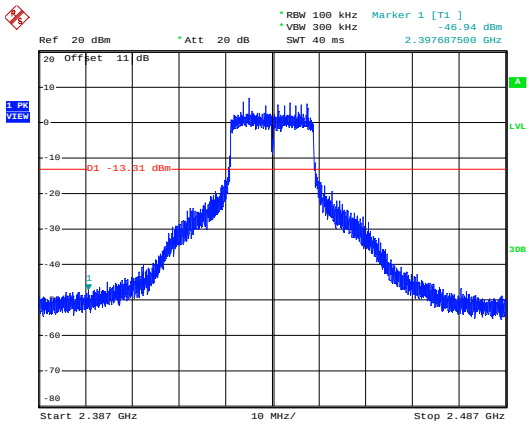
Modulation Type: 802.11ac VHT20, CH 01

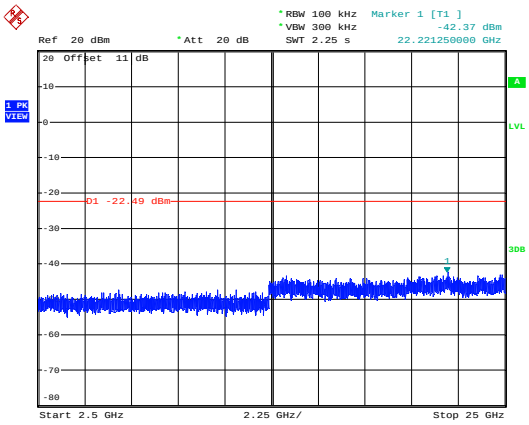


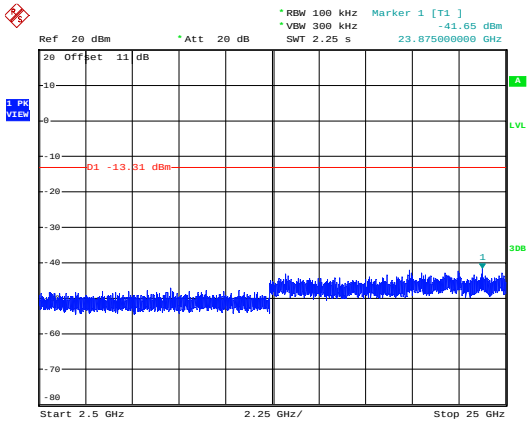

Modulation Type: 802.11ac VHT20, CH 06



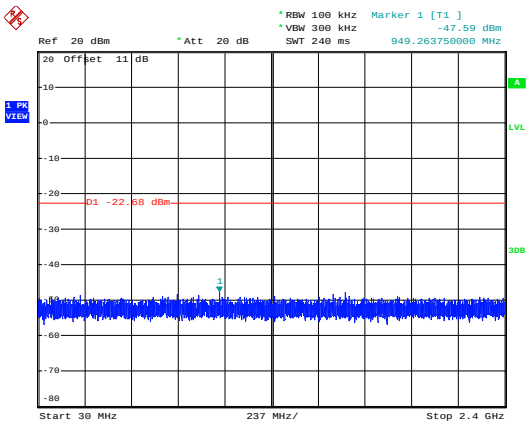



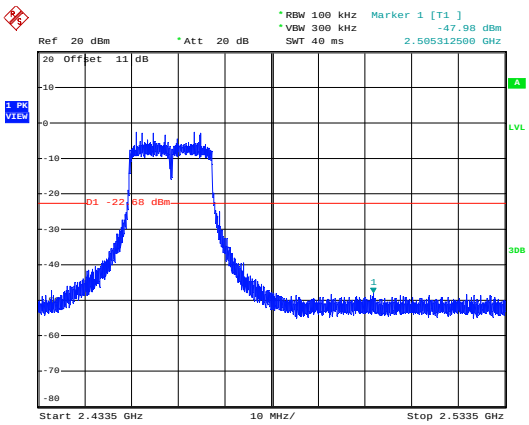



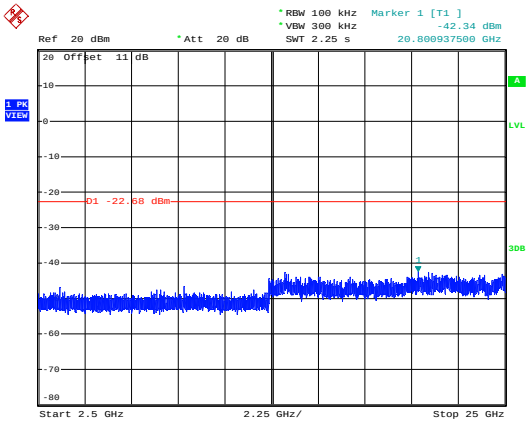



Antenna 2

Modulation Type: 802.11ac VHT20, CH 11

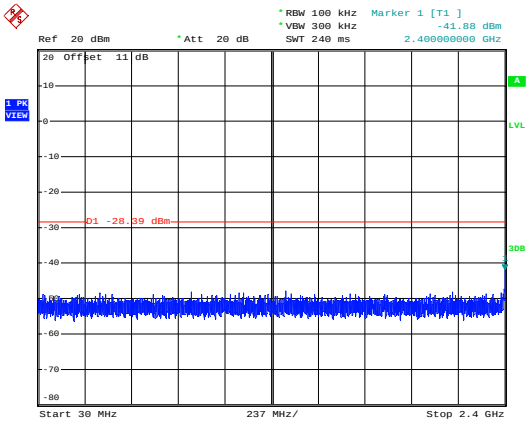


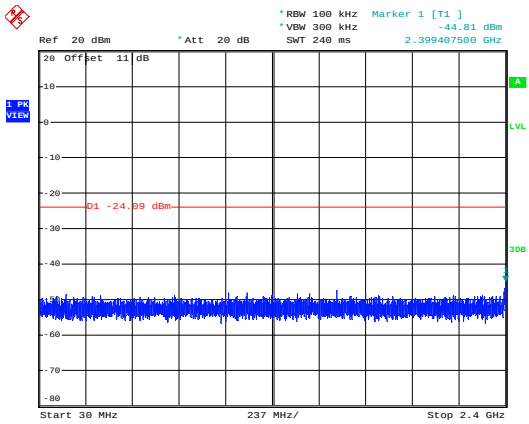



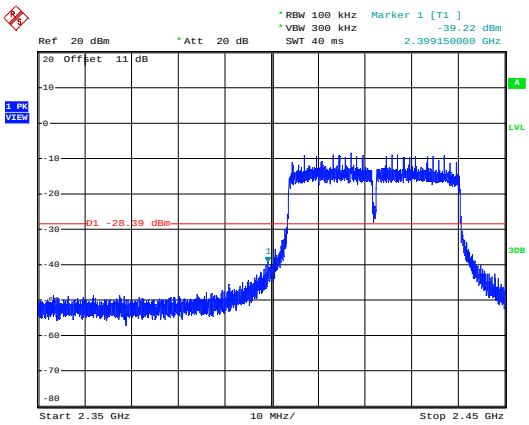
Antenna 2

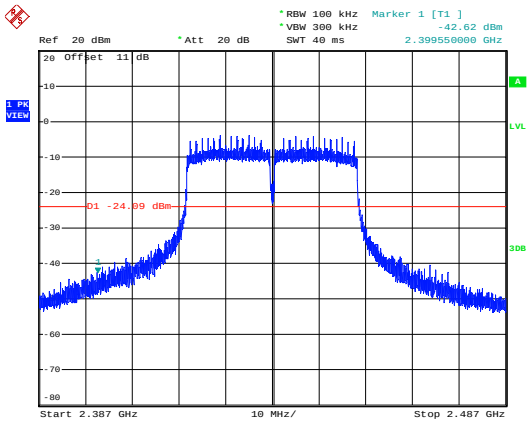
Modulation Type: 802.11ac VHT40, CH 03

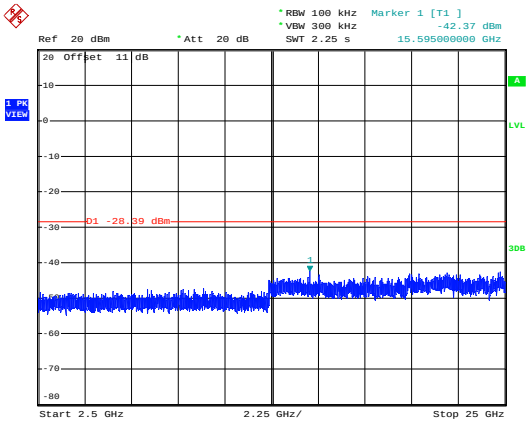


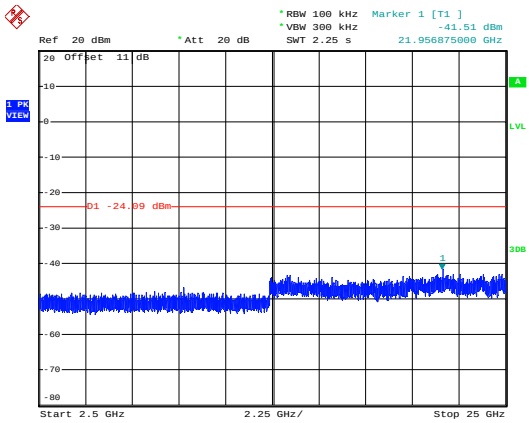

Modulation Type: 802.11ac VHT40, CH 06



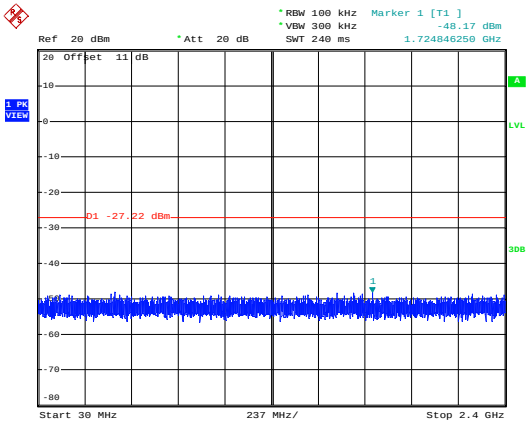



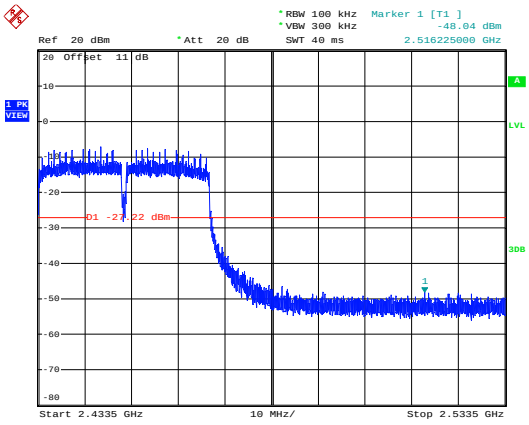



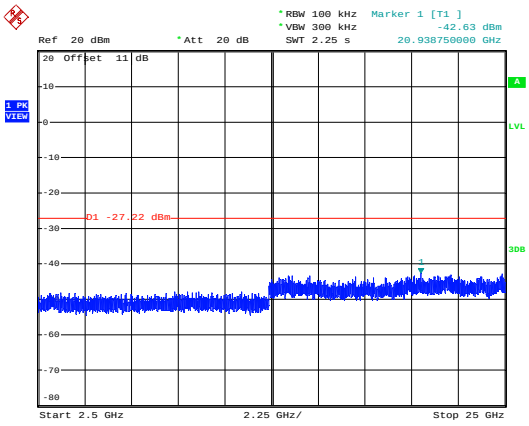



Antenna 2

Modulation Type: 802.11ac VHT40, CH 09

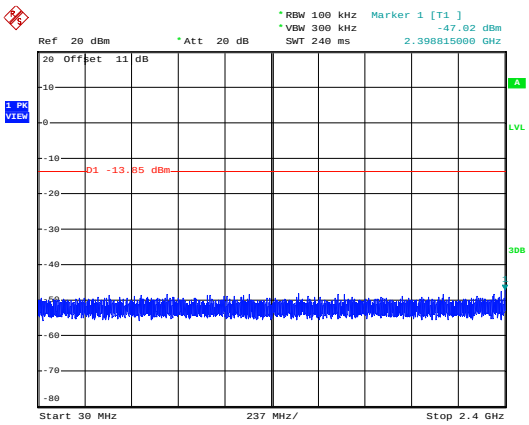


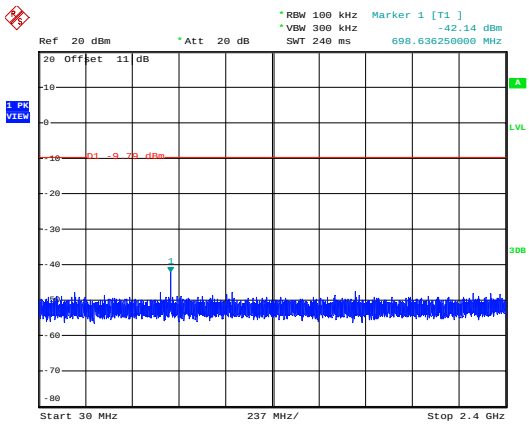



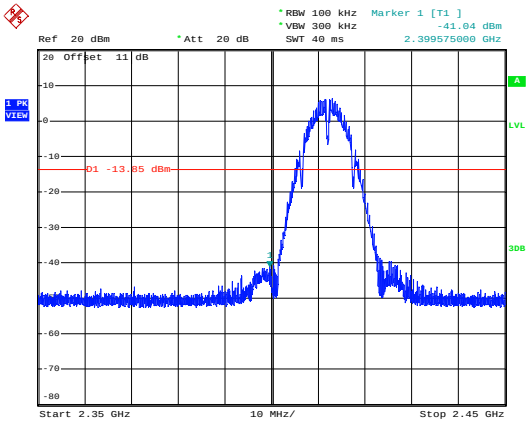
Antenna 3

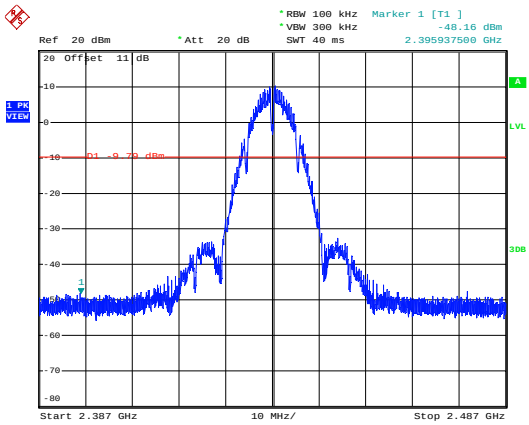
Modulation Type: 802.11b, CH 01

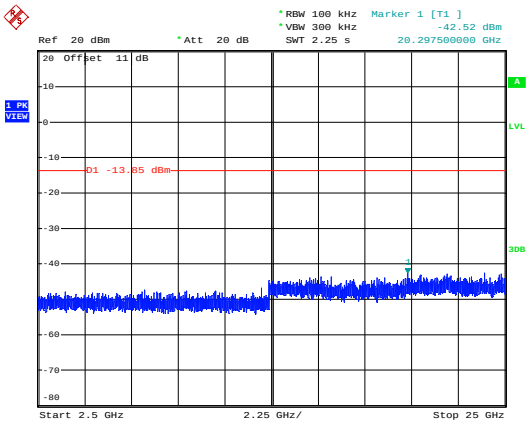


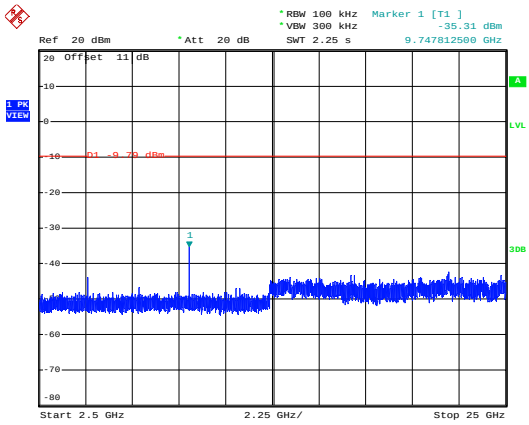

Modulation Type: 802.11b, CH 06



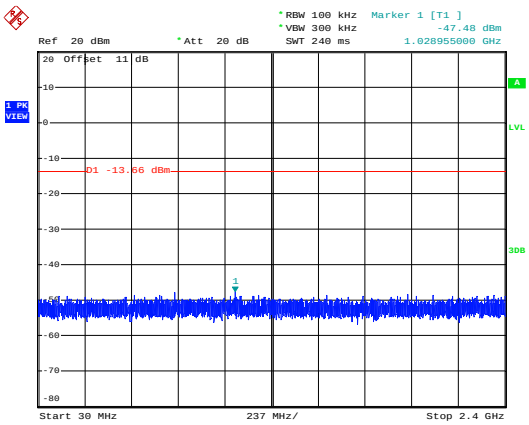



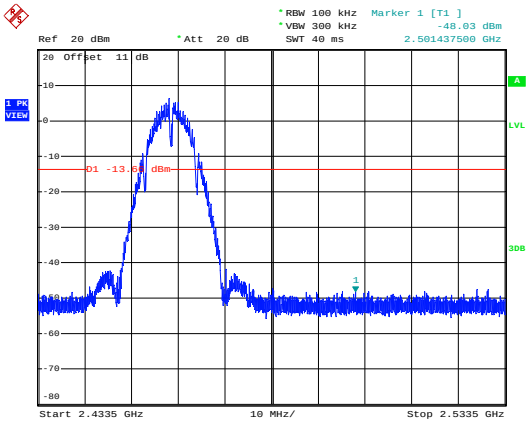



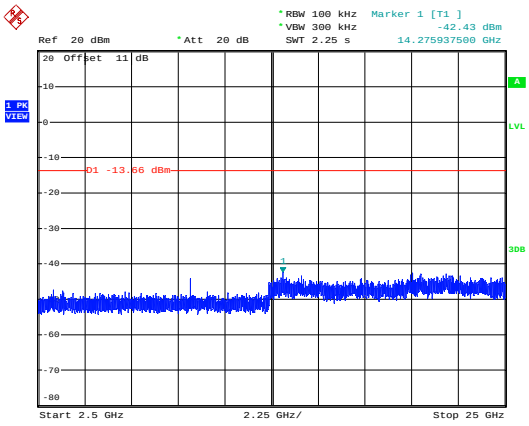



Antenna 3

Modulation Type: 802.11b, CH 11

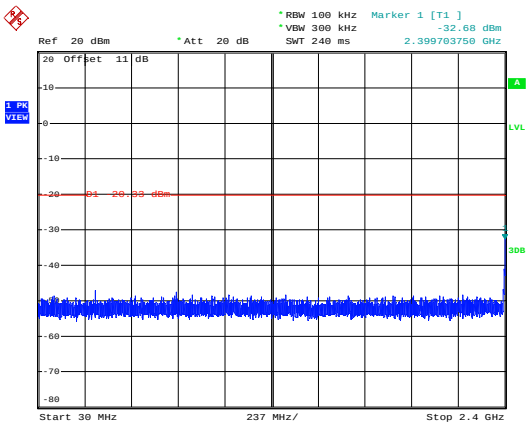


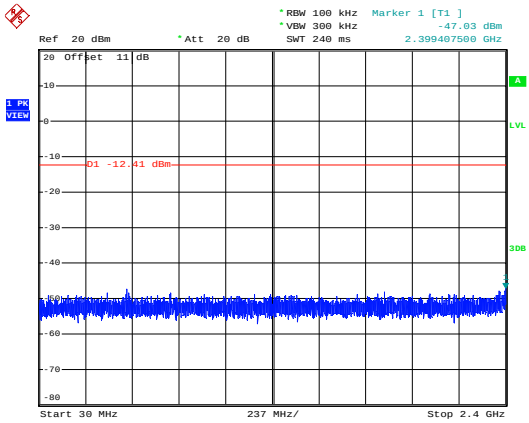



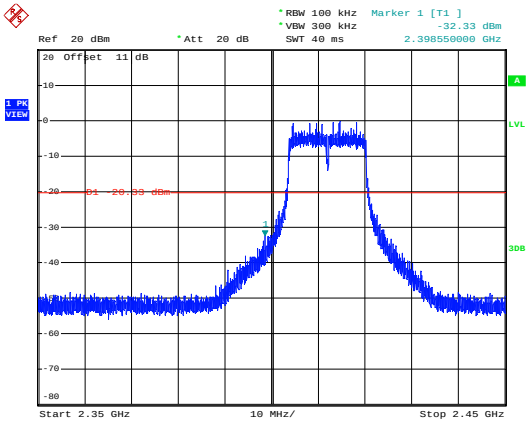
Antenna 3

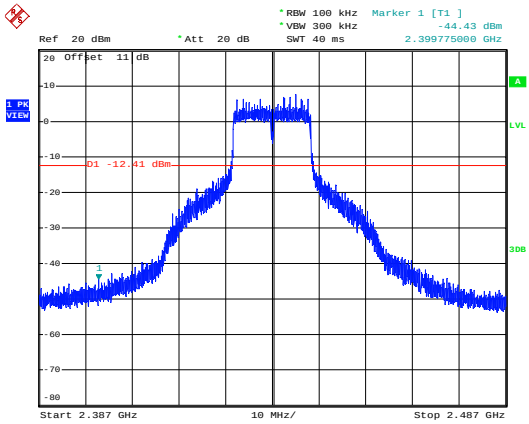
Modulation Type: 802.11g, CH 01

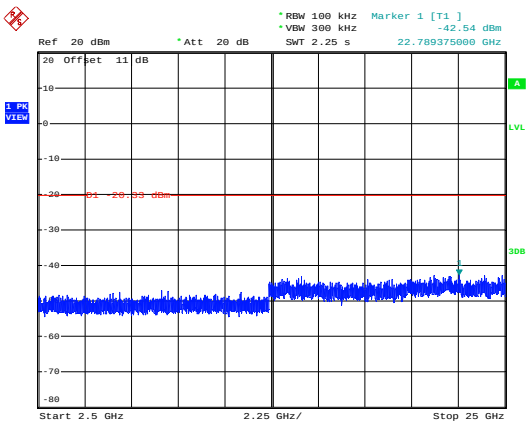


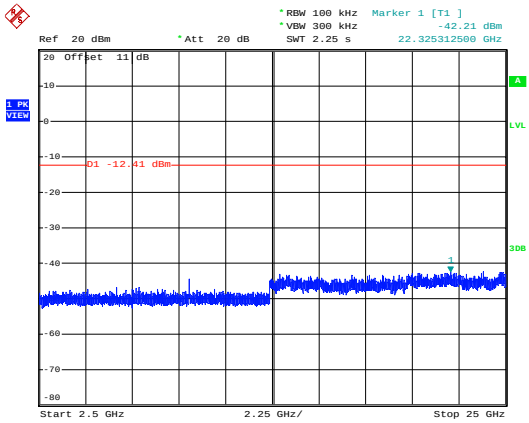

Modulation Type: 802.11g, CH 06



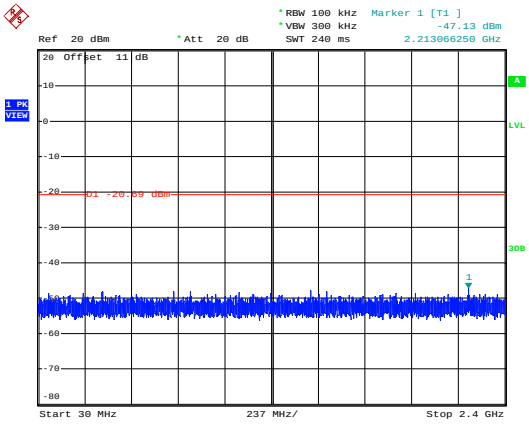



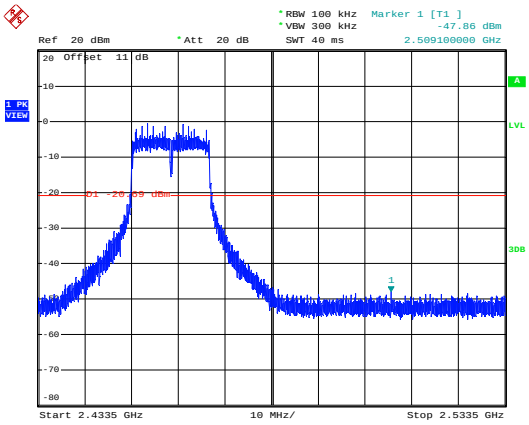



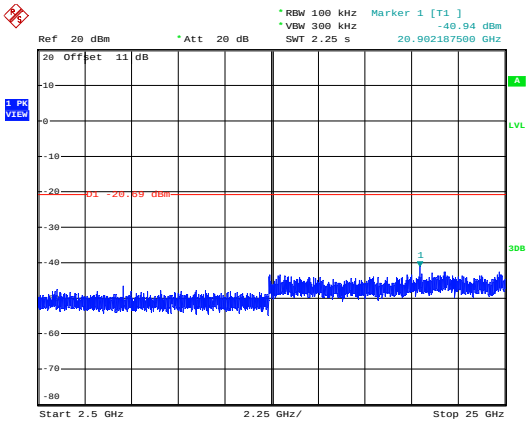



Antenna 3

Modulation Type: 802.11g, CH 11

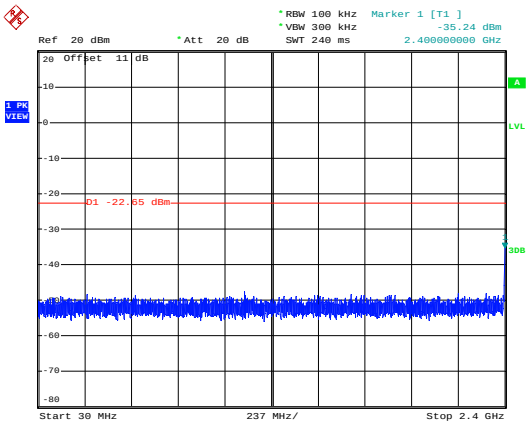


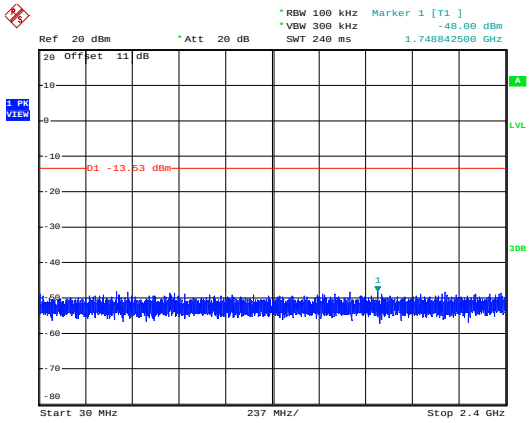



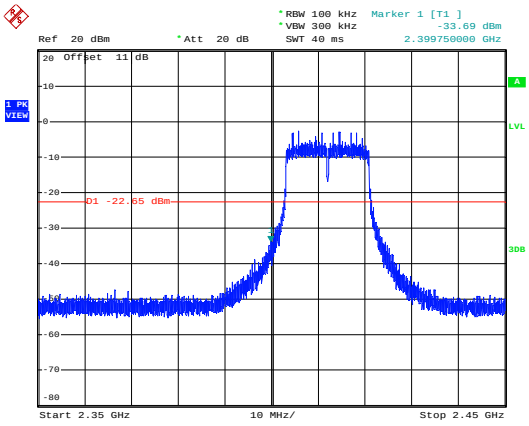
Antenna 3

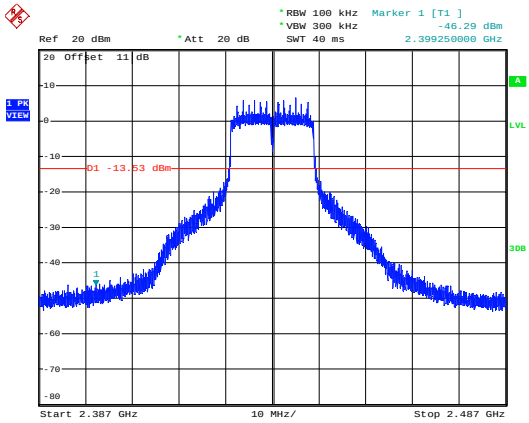
Modulation Type: 802.11ac VHT20, CH 01

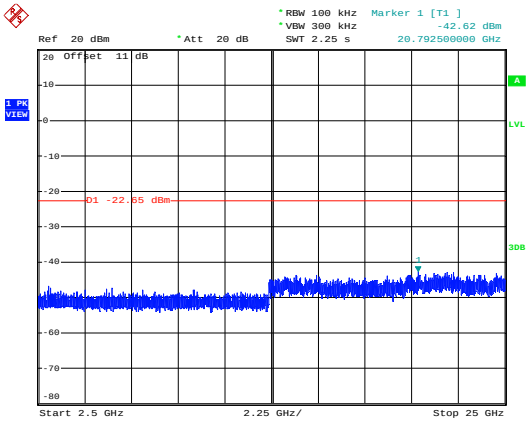


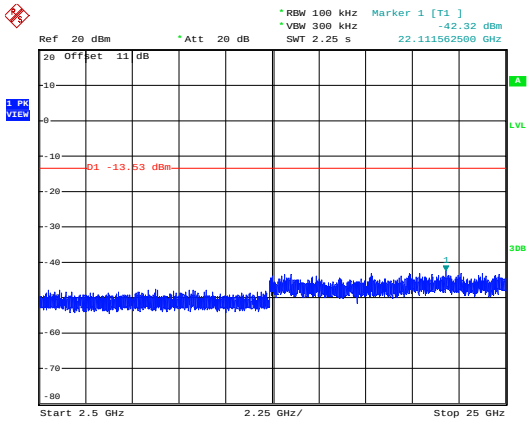

Modulation Type: 802.11ac VHT20, CH 06



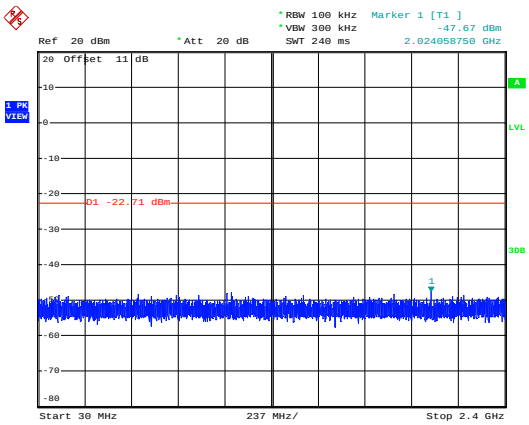



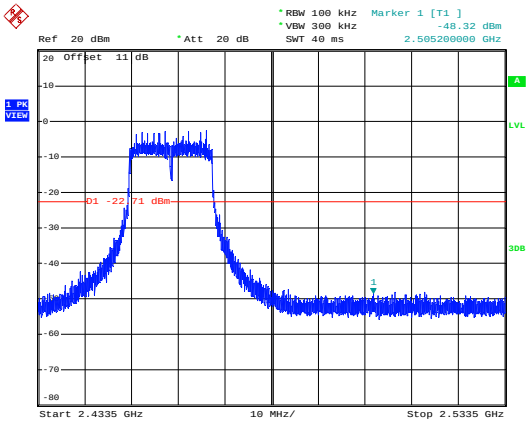



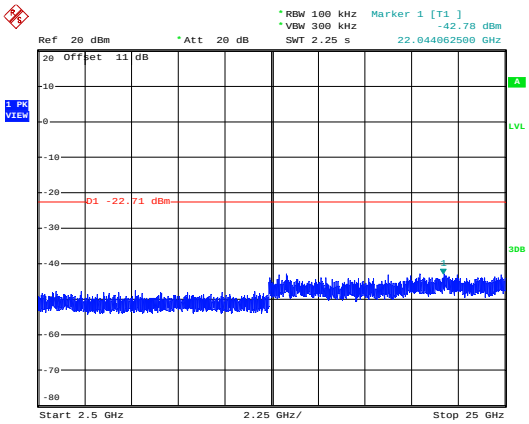



Antenna 3

Modulation Type: 802.11ac VHT20, CH 11

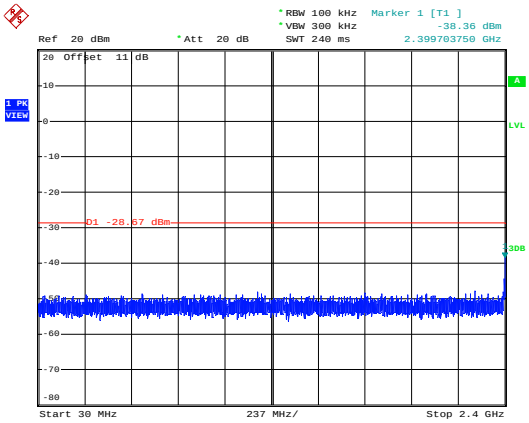


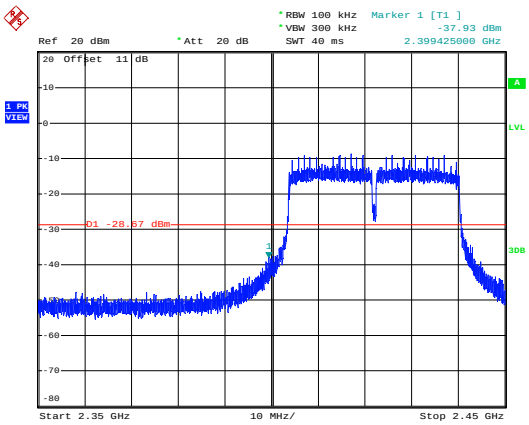



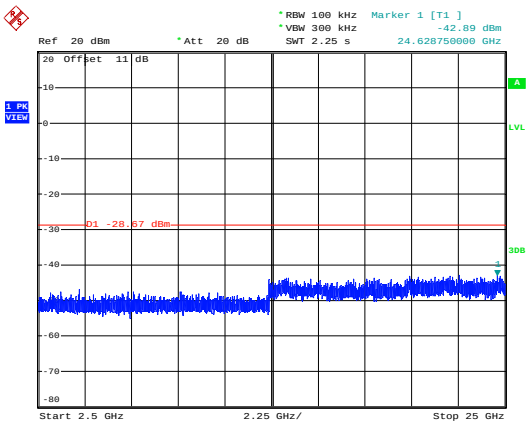



Antenna 3

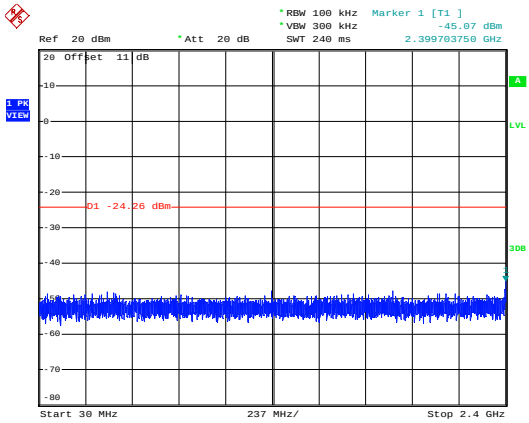
Modulation Type: 802.11ac VHT40, CH 03

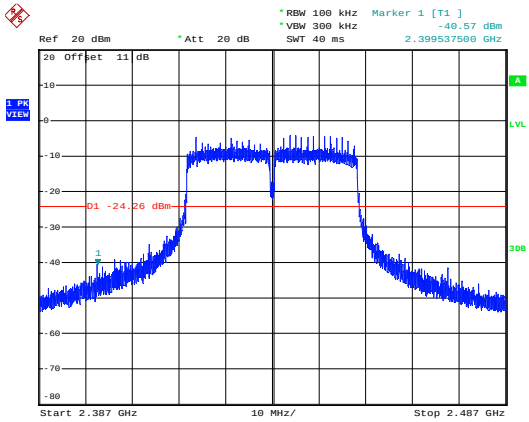


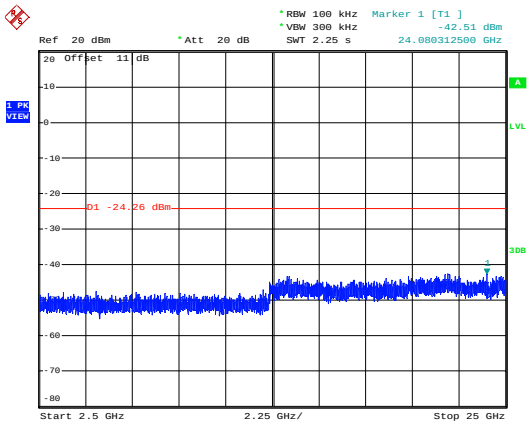




Modulation Type: 802.11ac VHT40, CH 06

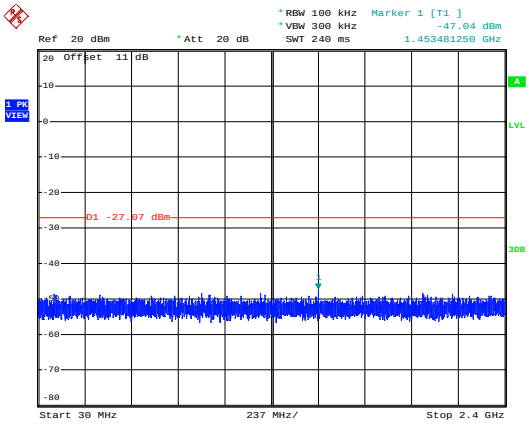


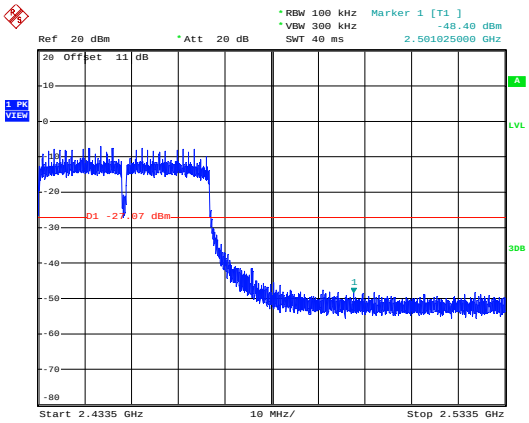



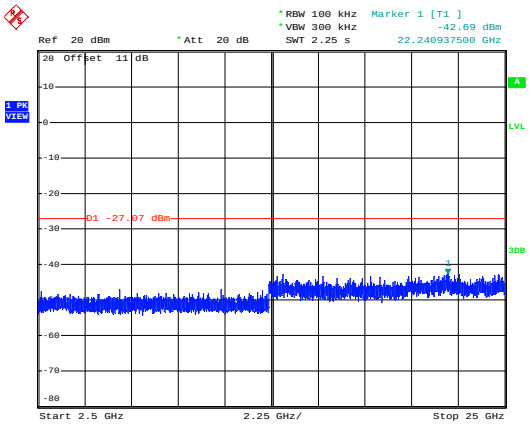



Antenna 3

Modulation Type: 802.11ac VHT40, CH 09



# 8. 6dB Bandwidth Measurement Data

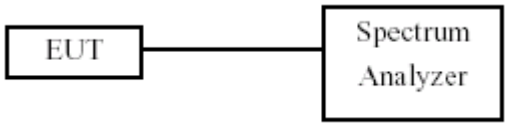
## 8.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

## 8.2 Test Procedures

j. The transmitter output was connected to the spectrum analyzer.
k. Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and VBW ≥ 3x RBW.
l. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
m. The 6dB Bandwidth was measured and recorded.

## 8.3 Test Setup Layout




## 8.4 Test Result and Data

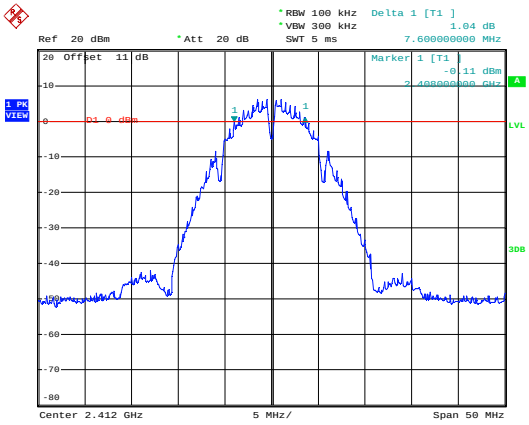
| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | Oct. 04, 2016 | Temperature | : | 23°C |
| Atmospheric pressure | : | 1015 hPa | Humidity | : | 64% |

| Modulation Type | Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | | |
|---|---|---|---|---|---|
| | | | ANT 1 | ANT 2 | ANT 3 |
| IEEE 802.11b (1Mbps) | 01 | 2412 | 7.60 | 7.10 | 8.00 |
| | 06 | 2437 | 8.00 | 7.50 | 8.00 |
| | 11 | 2462 | 7.50 | 7.50 | 8.00 |
| IEEE 802.11g (6Mbps) | 01 | 2412 | 16.40 | 16.40 | 16.40 |
| | 06 | 2437 | 16.40 | 16.40 | 16.40 |
| | 11 | 2462 | 16.30 | 16.40 | 16.40 |
| IEEE 802.11ac VHT20 (6.5Mbps) | 01 | 2412 | 17.60 | 17.60 | 17.60 |
| | 06 | 2437 | 17.60 | 17.60 | 17.60 |
| | 11 | 2462 | 17.50 | 17.60 | 17.60 |
| IEEE 802.11ac VHT40 (13.5Mbps) | 03 | 2422 | 36.20 | 36.40 | 36.00 |
| | 06 | 2437 | 36.40 | 36.20 | 36.20 |
| | 09 | 2452 | 36.40 | 36.20 | 36.40 |

Antenna 1

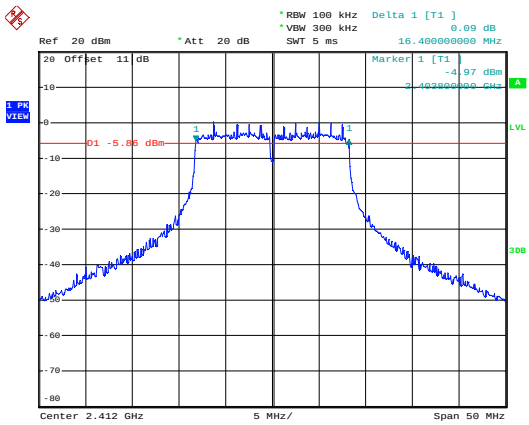
Modulation Type: 802.11b

CH01

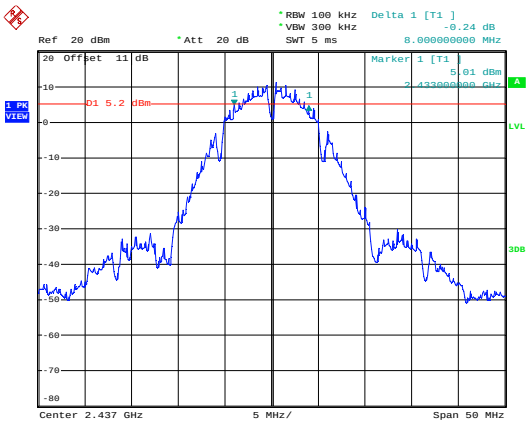



Modulation Type: 802.11g

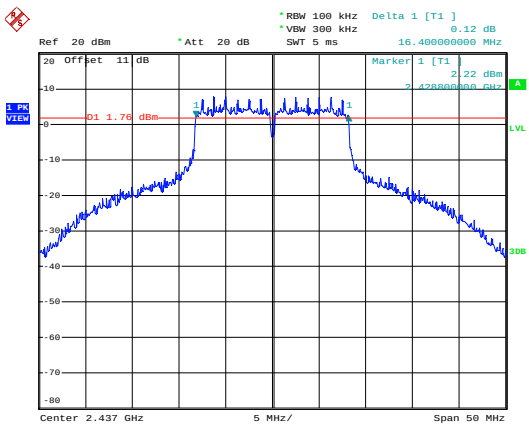
CH01



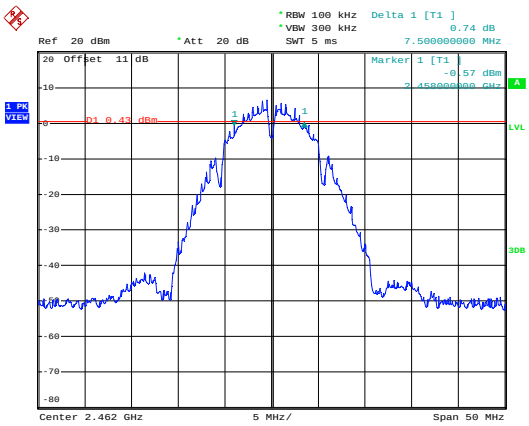

CH06



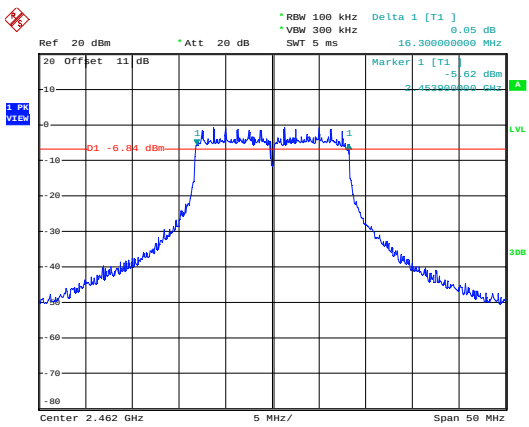

CH06




CH11

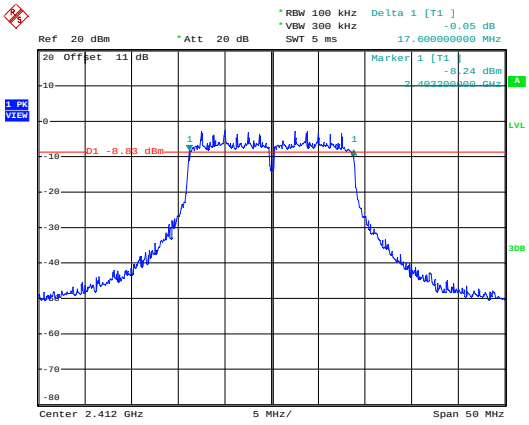



CH11

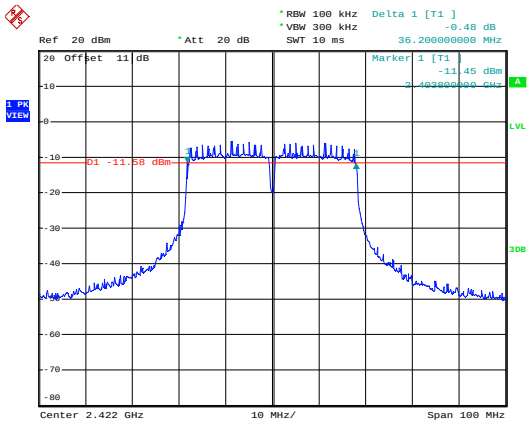


Antenna 1

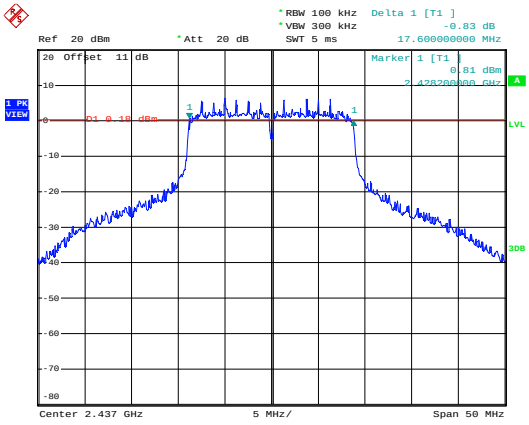
Modulation Type: 802.11ac VHT20
CH01



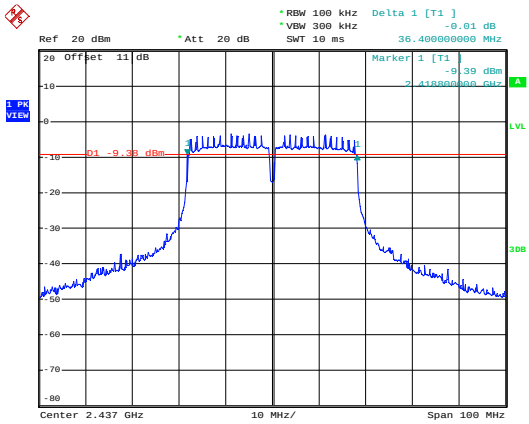

Modulation Type: 802.11ac VHT40
CH03



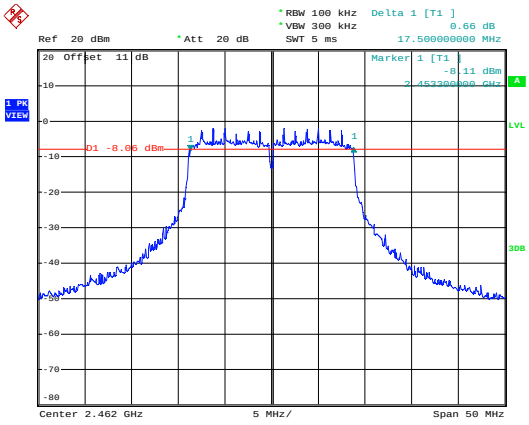

CH06



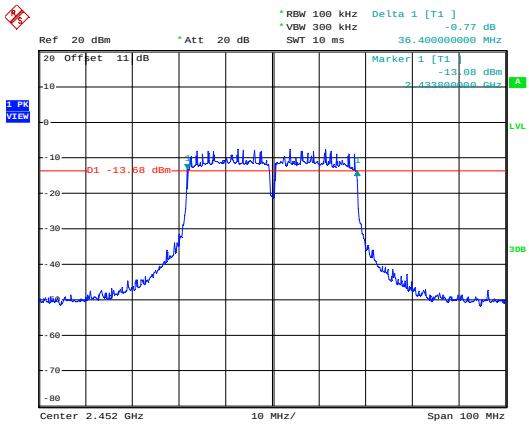

CH06




CH11

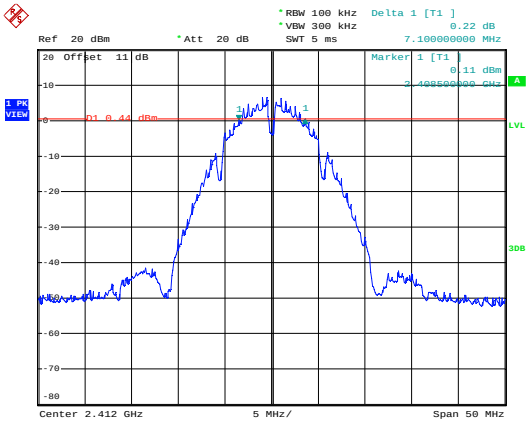



CH09

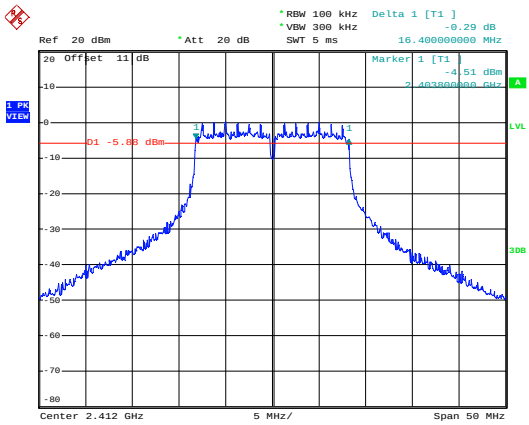


Antenna 2

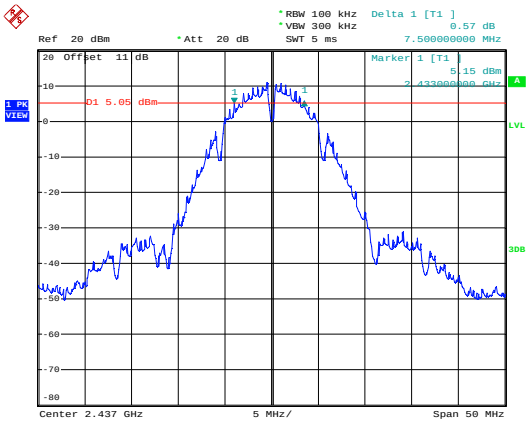
Modulation Type: 802.11b
CH01



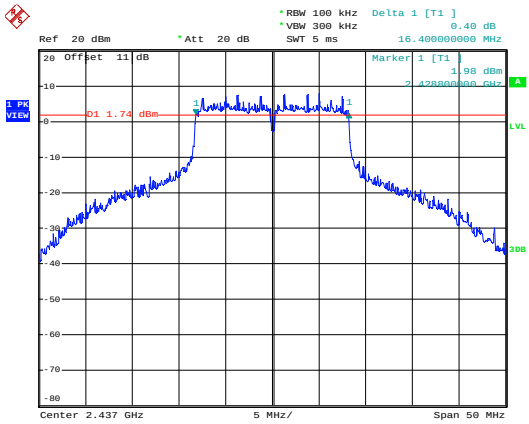

Modulation Type: 802.11g
CH01



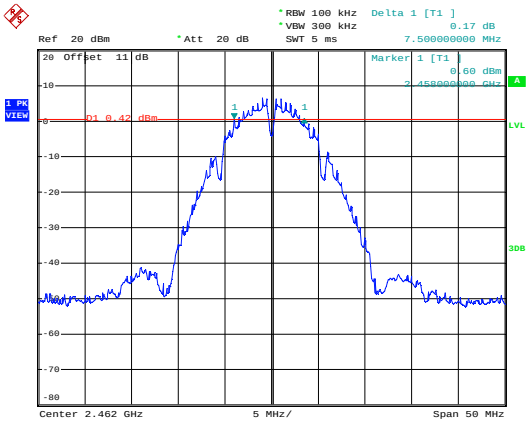

CH06



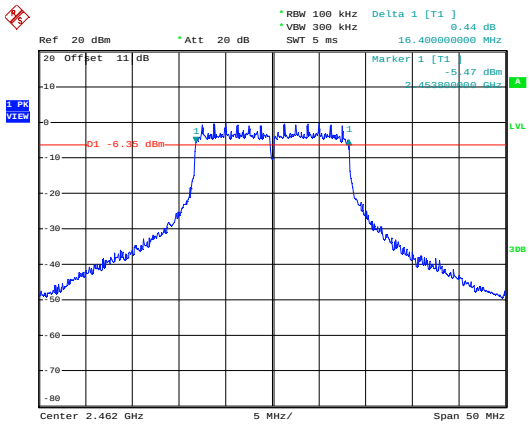

CH06




CH11

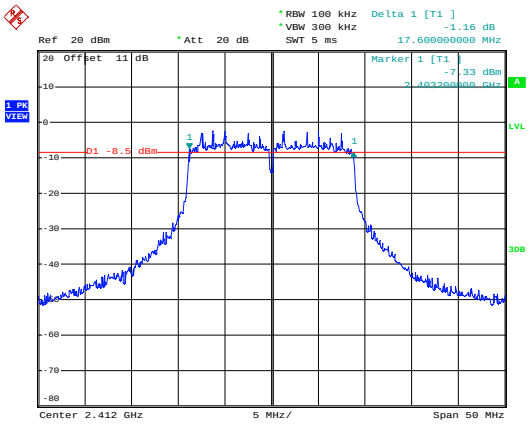



CH11

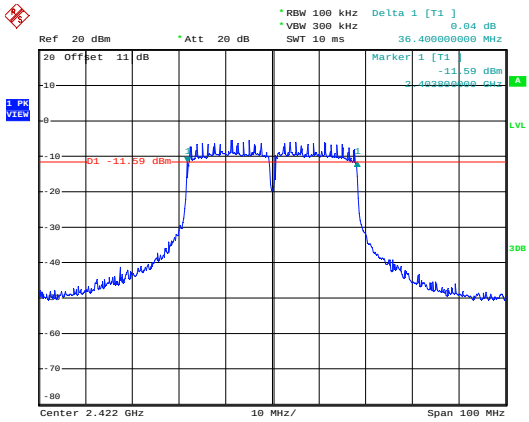


Antenna 2

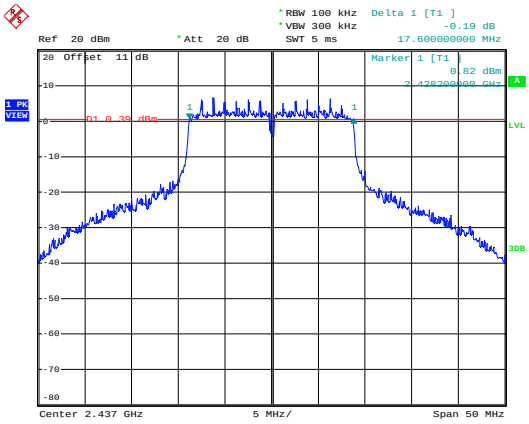
Modulation Type: 802.11ac VHT20
CH01



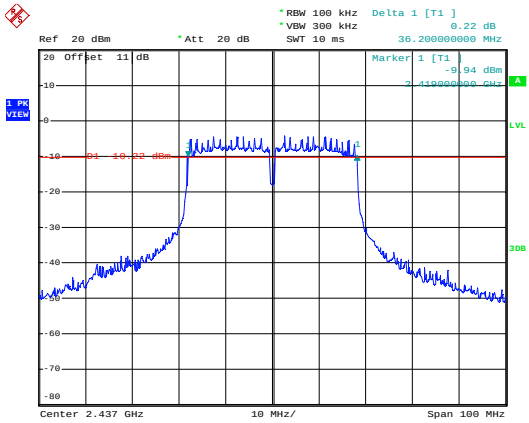

Modulation Type: 802.11ac VHT40
CH03



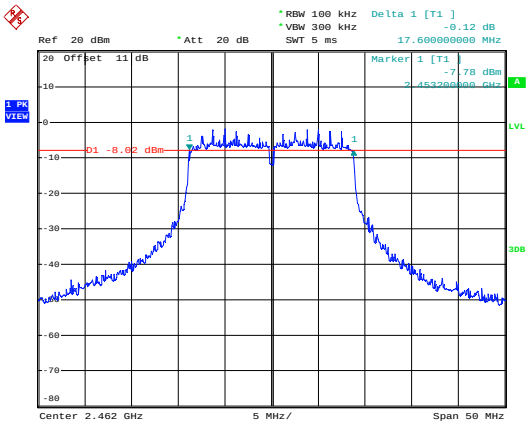

CH06



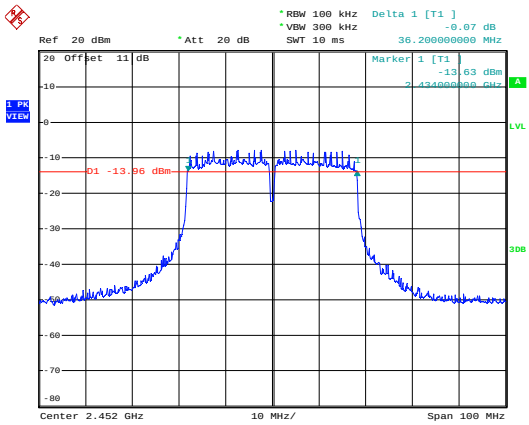

CH06




CH11

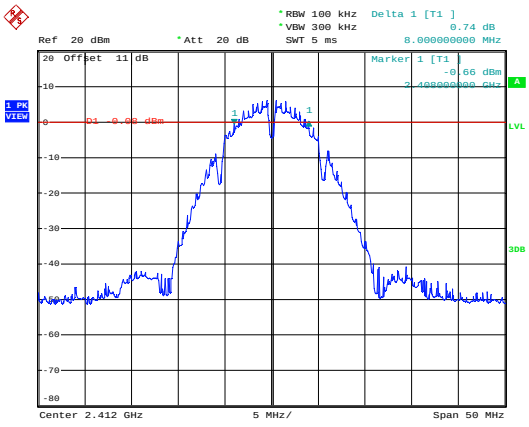



CH09

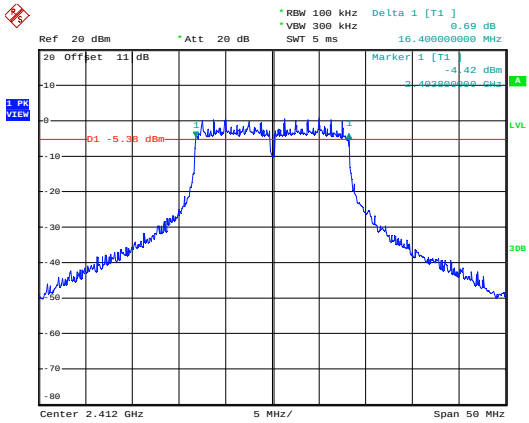


Antenna 3

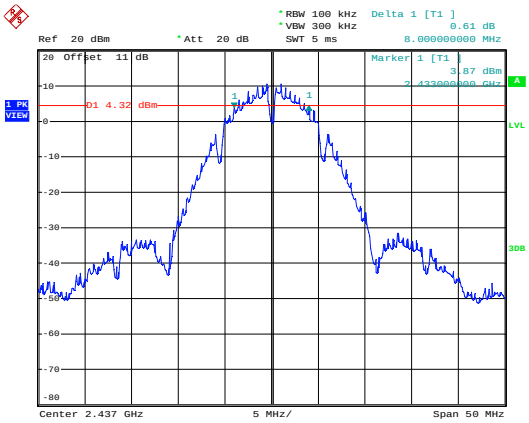
Modulation Type: 802.11b
CH01



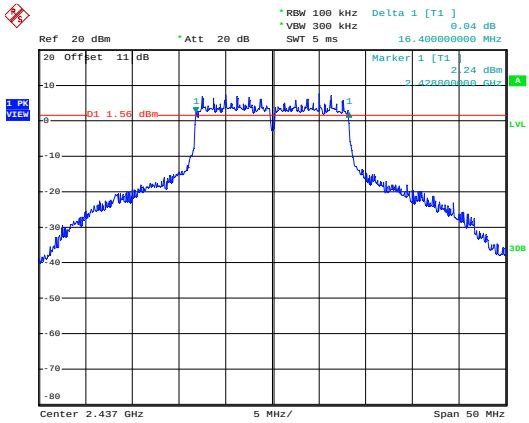

Modulation Type: 802.11g
CH01



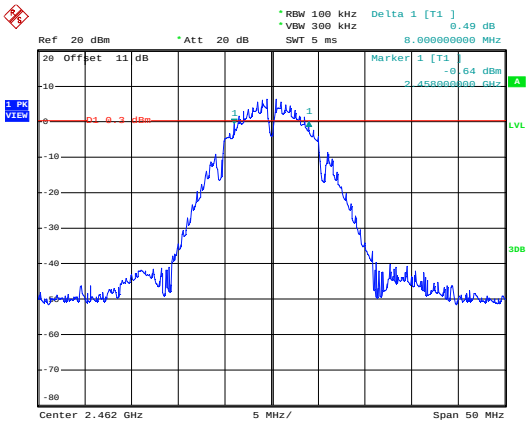

CH06



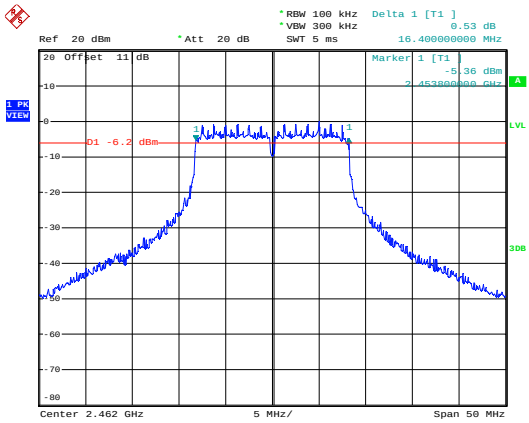

CH06




CH11

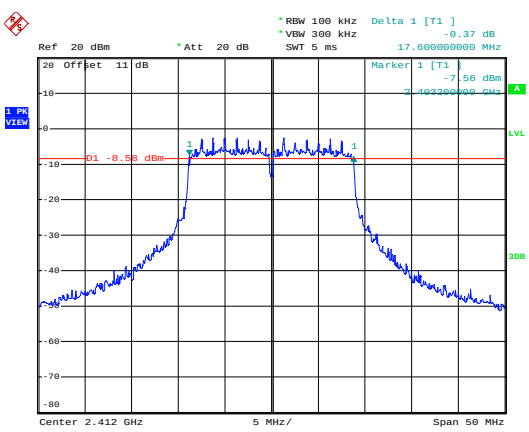



CH11

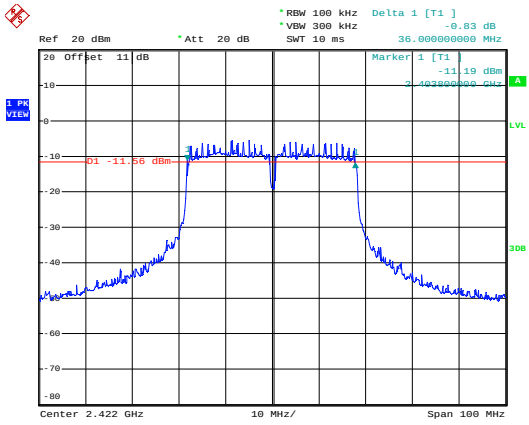


Antenna 3

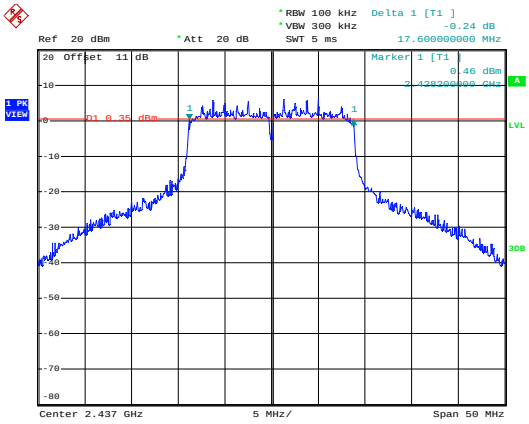
Modulation Type: 802.11ac VHT20
CH01



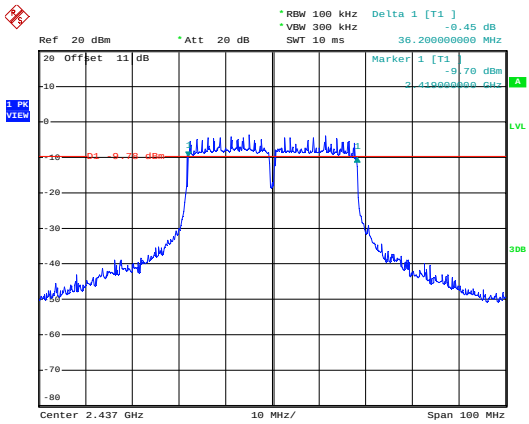

Modulation Type: 802.11ac VHT40
CH03



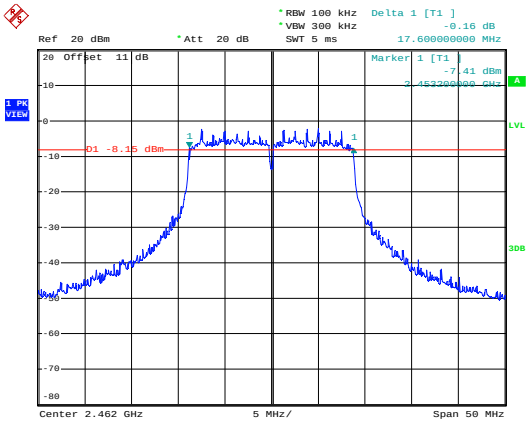

CH06



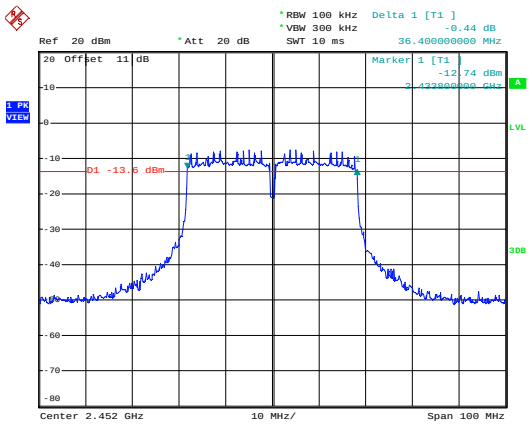

CH06




CH11




CH09



# 9. Maximum Peak and Average Output Power

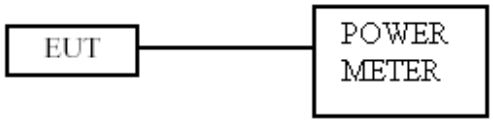
## 9.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.
If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

## 9.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

## 9.3 Test Setup Layout



## 9.4 Test Result and Data

Test Date : Oct. 04, 2016 Temperature : 23°C

Atmospheric pressure : 1015 hPa Humidity : 64%

| Modulation Type | Channel | Frequency (MHz) | Peak Power Output (dBm) | | | | Peak Power Output (mW) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ANT 1 | ANT 2 | ANT 3 | 1+2+3 | ANT 1 | ANT 2 | ANT 3 | 1+2+3 |
| IEEE 802.11b (1Mbps) | 01 | 2412 | 16.67 | 17.01 | 16.79 | 21.60 | 46.45 | 50.23 | 47.75 | 144.44 |
| | 06 | 2437 | 21.49 | 21.55 | 21.07 | 26.15 | 140.93 | 142.89 | 127.94 | 411.76 |
| | 11 | 2462 | 16.13 | 16.49 | 16.33 | 21.09 | 41.02 | 44.57 | 42.95 | 128.54 |
| IEEE 802.11g (6Mbps) | 01 | 2412 | 16.07 | 16.57 | 16.48 | 21.15 | 40.46 | 45.39 | 44.46 | 130.31 |
| | 06 | 2437 | 22.23 | 22.58 | 21.98 | 27.04 | 167.11 | 181.13 | 157.76 | 506.00 |
| | 11 | 2462 | 15.55 | 15.97 | 15.73 | 20.52 | 35.89 | 39.54 | 37.41 | 112.84 |
| IEEE 802.11n HT20 (6.5Mbps) | 01 | 2412 | 13.67 | 14.08 | 14.12 | 18.73 | 23.28 | 25.59 | 25.82 | 74.69 |
| | 06 | 2437 | 21.67 | 22.01 | 21.49 | 26.50 | 146.89 | 158.85 | 140.93 | 446.68 |
| | 11 | 2462 | 14.12 | 14.48 | 14.28 | 19.07 | 25.82 | 28.05 | 26.79 | 80.67 |
| IEEE 802.11n HT40 (13.5Mbps) | 03 | 2422 | 10.49 | 10.88 | 10.91 | 15.54 | 11.19 | 12.25 | 12.33 | 35.77 |
| | 06 | 2437 | 15.62 | 15.73 | 15.43 | 20.37 | 36.48 | 37.41 | 34.91 | 108.80 |
| | 09 | 2452 | 11.88 | 12.19 | 12.24 | 16.88 | 15.42 | 16.56 | 16.75 | 48.72 |
| IEEE 802.11ac VHT20 (6.5Mbps) | 01 | 2412 | 13.7 | 14.13 | 14.15 | 18.77 | 23.44 | 25.88 | 26.00 | 75.33 |
| | 06 | 2437 | 21.7 | 22.03 | 21.54 | 26.53 | 147.91 | 159.59 | 142.56 | 450.06 |
| | 11 | 2462 | 14.14 | 14.56 | 14.31 | 19.11 | 25.94 | 28.58 | 26.98 | 81.50 |
| IEEE 802.11ac VHT40 (13.5Mbps) | 03 | 2422 | 10.52 | 10.94 | 10.95 | 15.58 | 11.27 | 12.42 | 12.45 | 36.13 |
| | 06 | 2437 | 15.67 | 15.8 | 15.5 | 20.43 | 36.90 | 38.02 | 35.48 | 110.40 |
| | 09 | 2452 | 11.92 | 12.23 | 12.28 | 16.92 | 15.56 | 16.71 | 16.90 | 49.17 |

| Modulation Type | Channel | Frequency (MHz) | Avg. Power Output (dBm) | | | | Avg. Power Output (mW) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ANT 1 | ANT 2 | ANT 3 | 1+2+3 | ANT 1 | ANT 2 | ANT 3 | 1+2+3 |
| IEEE 802.11b (1Mbps) | 01 | 2412 | 10.83 | 11.16 | 11.03 | 15.78 | 12.11 | 13.06 | 12.68 | 37.84 |
| | 06 | 2437 | 16.06 | 16.05 | 15.61 | 20.68 | 40.36 | 40.27 | 36.39 | 117.03 |
| | 11 | 2462 | 10.2 | 10.59 | 10.48 | 15.20 | 10.47 | 11.46 | 11.17 | 33.10 |
| IEEE 802.11g (6Mbps) | 01 | 2412 | 10.2 | 10.76 | 10.73 | 15.34 | 10.47 | 11.91 | 11.83 | 34.21 |
| | 06 | 2437 | 17.92 | 18.29 | 17.67 | 22.74 | 61.94 | 67.45 | 58.48 | 187.88 |
| | 11 | 2462 | 9.67 | 10.12 | 9.96 | 14.69 | 9.27 | 10.28 | 9.91 | 29.46 |
| IEEE 802.11n HT20 (6.5Mbps) | 01 | 2412 | 7.79 | 8.21 | 8.31 | 12.88 | 6.01 | 6.62 | 6.78 | 19.41 |
| | 06 | 2437 | 16.61 | 17.01 | 16.51 | 21.49 | 45.81 | 50.23 | 44.77 | 140.82 |
| | 11 | 2462 | 8.19 | 8.61 | 8.41 | 13.18 | 6.59 | 7.26 | 6.93 | 20.79 |
| IEEE 802.11n HT40 (13.5Mbps) | 03 | 2422 | 4.51 | 4.97 | 4.99 | 9.60 | 2.82 | 3.14 | 3.16 | 9.12 |
| | 06 | 2437 | 9.69 | 9.78 | 9.61 | 14.47 | 9.31 | 9.51 | 9.14 | 27.96 |
| | 09 | 2452 | 5.85 | 6.18 | 6.28 | 10.88 | 3.85 | 4.15 | 4.25 | 12.24 |
| IEEE 802.11ac VHT20 (6.5Mbps) | 01 | 2412 | 7.81 | 8.28 | 8.35 | 12.92 | 6.04 | 6.73 | 6.84 | 19.61 |
| | 06 | 2437 | 16.65 | 17.04 | 16.54 | 21.52 | 46.24 | 50.58 | 45.08 | 141.90 |
| | 11 | 2462 | 8.23 | 8.67 | 8.49 | 13.24 | 6.65 | 7.36 | 7.06 | 21.08 |
| IEEE 802.11ac VHT40 (13.5Mbps) | 03 | 2422 | 4.59 | 5.01 | 5.02 | 9.65 | 2.88 | 3.17 | 3.18 | 9.22 |
| | 06 | 2437 | 9.72 | 9.86 | 9.65 | 14.52 | 9.38 | 9.68 | 9.23 | 28.28 |
| | 09 | 2452 | 5.89 | 6.21 | 6.34 | 10.92 | 3.88 | 4.18 | 4.31 | 12.37 |

# 10. Power Spectral Density

## 10.1 Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

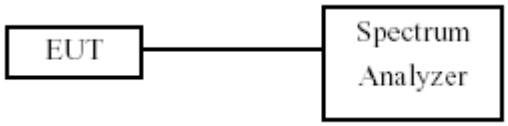
## 10.2 Test Procedures

a. The transmitter output was connected to spectrum analyzer.

b. The spectrum analyzer's resolution bandwidth were set at 3kHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.

c. The power spectral density was measured and recorded.

## 10.3 Test Setup Layout



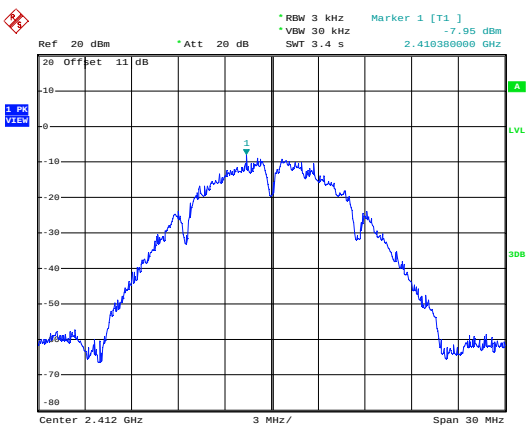

## 10.4 Test Result and Data

| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | Oct. 04, 2016 | Temperature | : | 23°C |
| Atmospheric pressure | : | 1015 hPa | Humidity | : | 64% |

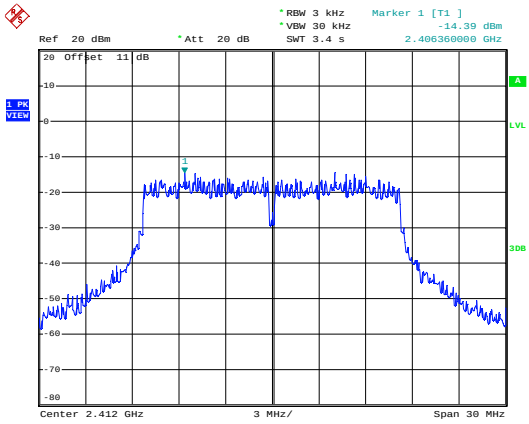
| Modulation Type | Channel | Frequency (MHz) | Maximum Power Density of 3 kHz Bandwidth (dBm) | | | |
|---|---|---|---|---|---|---|
| | | | ANT1 | ANT 2 | ANT 3 | 1+2+3 |
| IEEE 802.11b (1Mbps) | 01 | 2412 | -7.95 | -6.59 | -8.13 | -2.73 |
| | 06 | 2437 | -2.97 | -4.1 | -3.53 | 1.26 |
| | 11 | 2462 | -8.65 | -7.41 | -7.42 | -3.02 |
| IEEE 802.11g (6Mbps) | 01 | 2412 | -14.39 | -14.66 | -14.08 | -9.60 |
| | 06 | 2437 | -7.42 | -5.46 | -7.44 | -1.90 |
| | 11 | 2462 | -14.55 | -15.22 | -15.12 | -10.18 |
| IEEE 802.11ac VHT20 (6.5Mbps) | 01 | 2412 | -17.02 | -18.18 | -16.88 | -12.55 |
| | 06 | 2437 | -8.91 | -8.83 | -7.8 | -3.71 |
| | 11 | 2462 | -15.76 | -17.26 | -15.84 | -11.46 |
| IEEE 802.11ac VHT40 (13.5Mbps) | 03 | 2422 | -20.33 | -20.49 | -20.63 | -15.71 |
| | 06 | 2437 | -17.57 | -18.48 | -18.81 | -13.48 |
| | 09 | 2452 | -22.23 | -22.13 | -22.45 | -17.50 |

Antenna 1

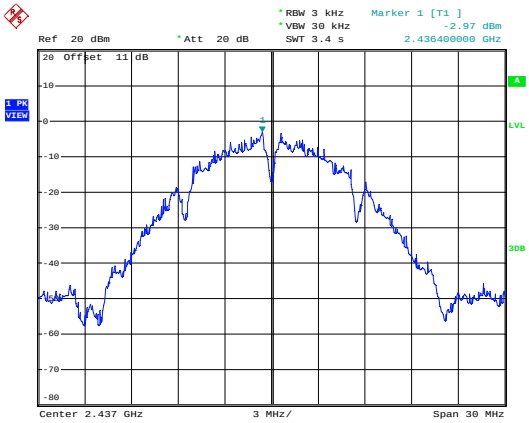
Modulation Type: 802.11b
CH01



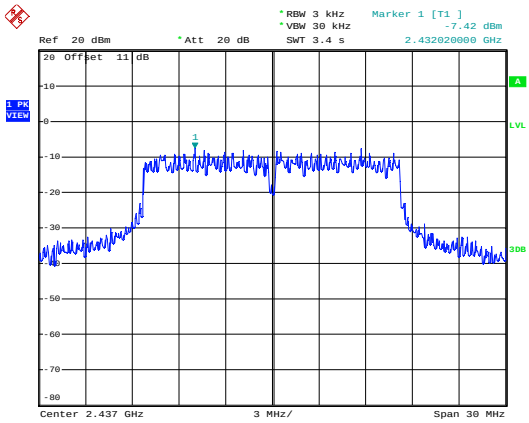

Modulation Type: 802.11g
CH01



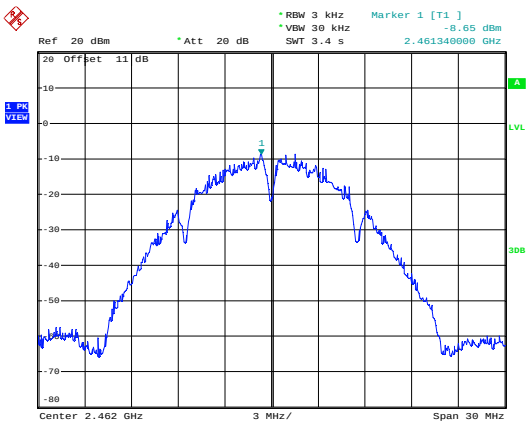

CH06



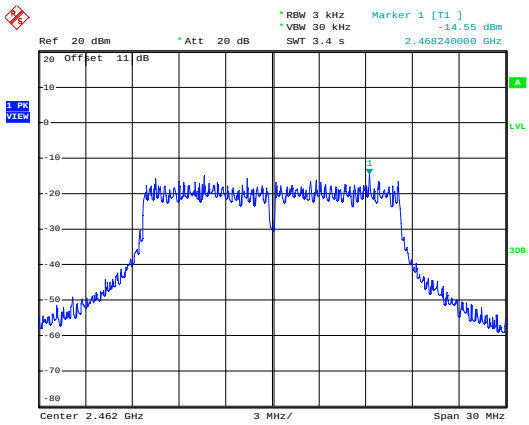

CH06




CH11

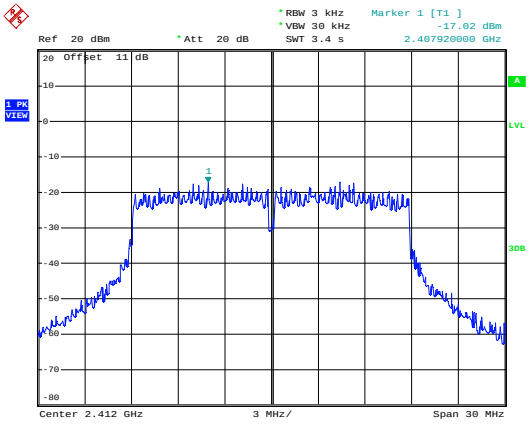



CH11

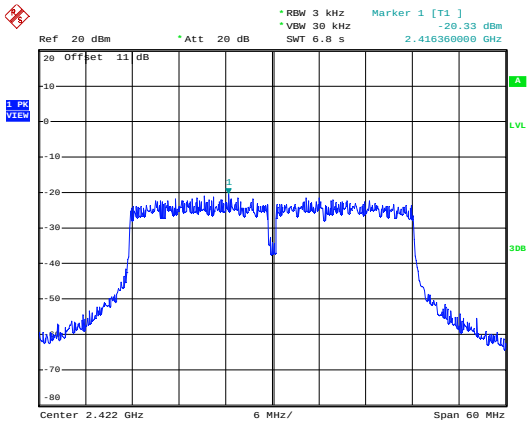


Antenna 1

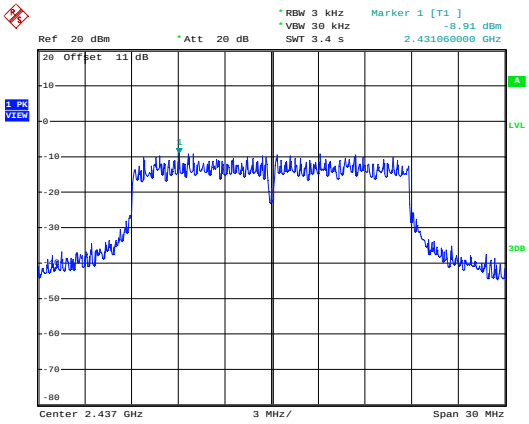
Modulation Type: 802.11ac VHT20
CH01



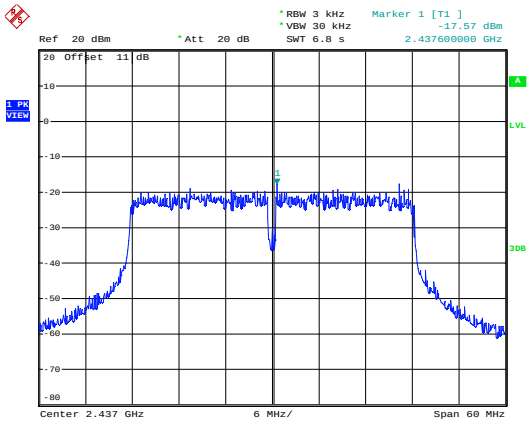

Modulation Type: 802.11ac VHT40
CH03



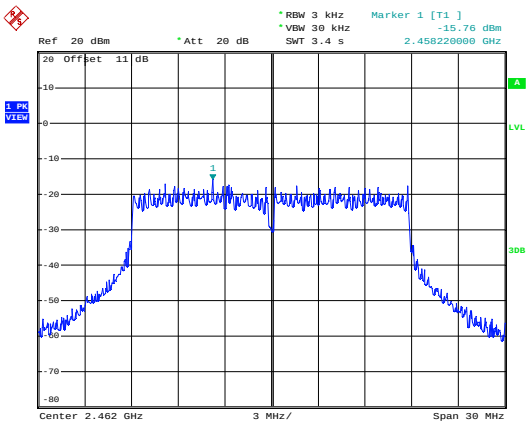

CH06



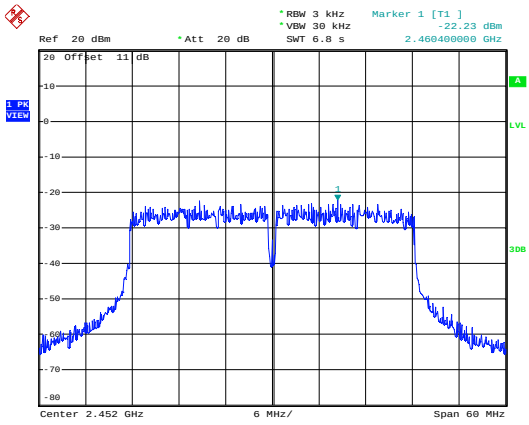

CH06




CH11

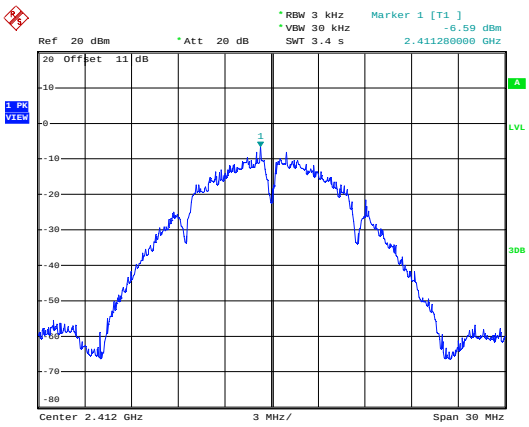



CH09

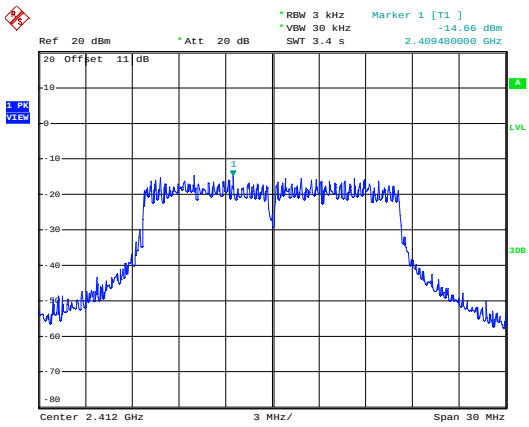


Antenna 2

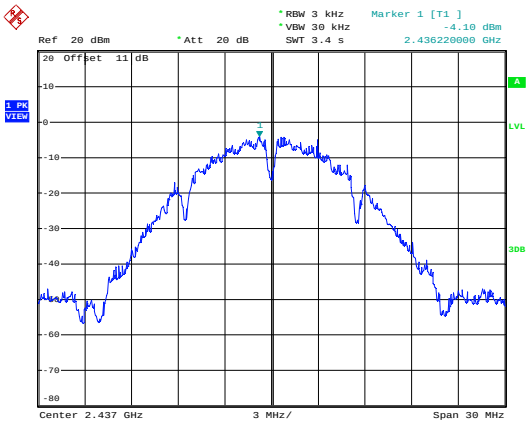
Modulation Type: 802.11b
CH01



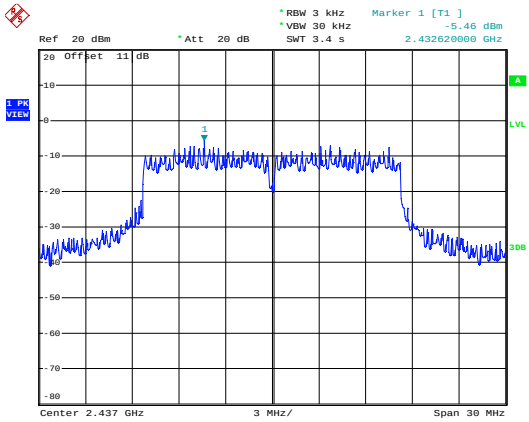

Modulation Type: 802.11g
CH01



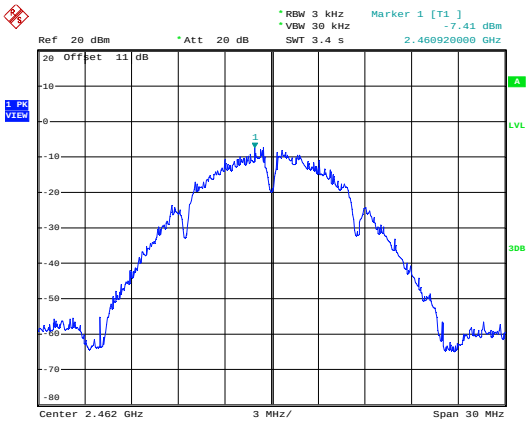

CH06




CH06




CH11

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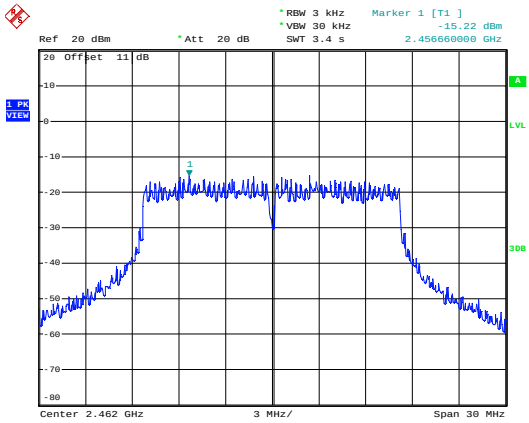
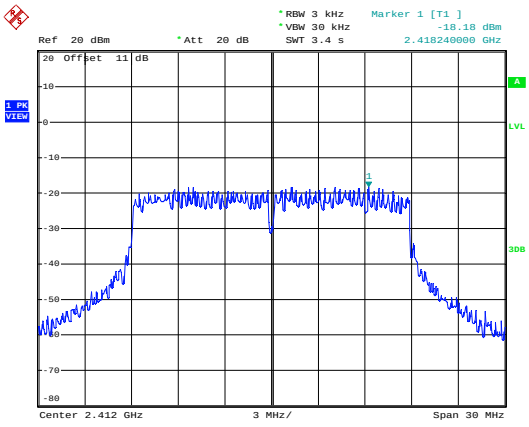
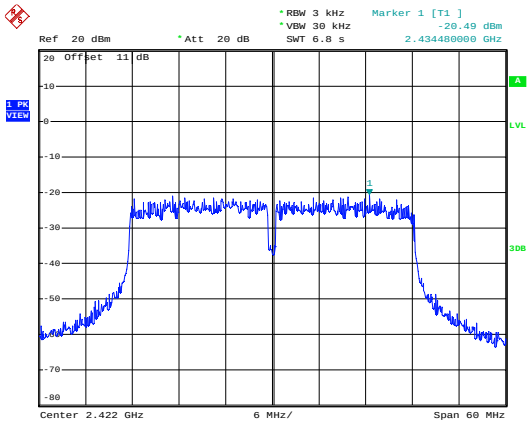


Antenna 2

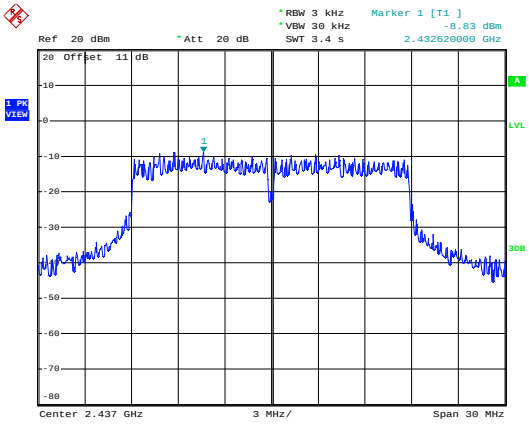
Modulation Type: 802.11ac VHT20
CH01




Modulation Type: 802.11ac VHT40
CH03




CH06

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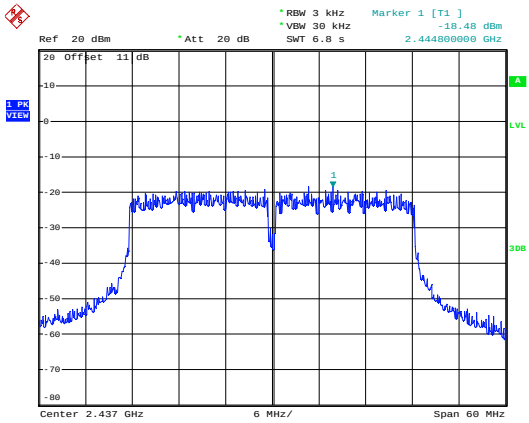


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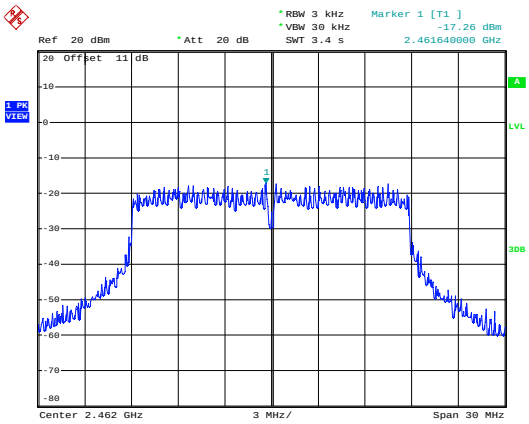
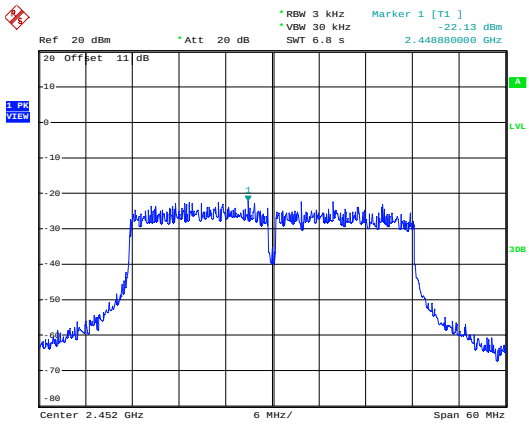
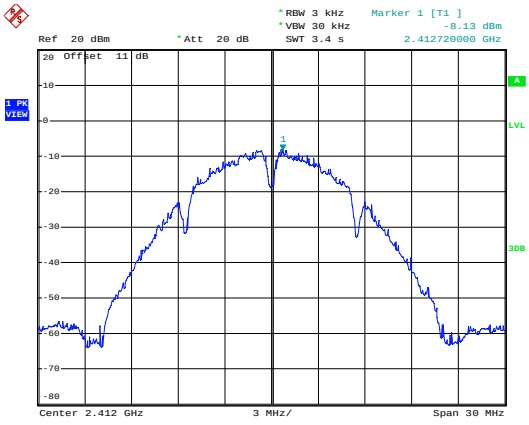



CH09

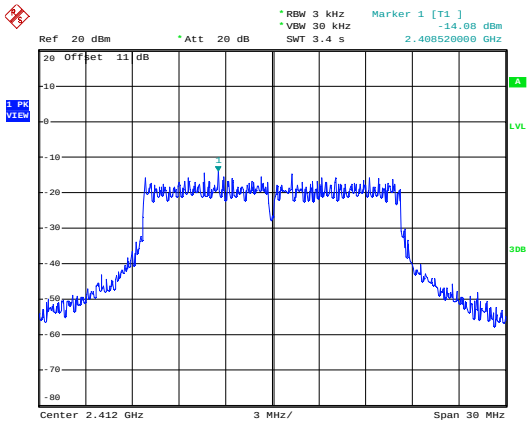


Antenna 3

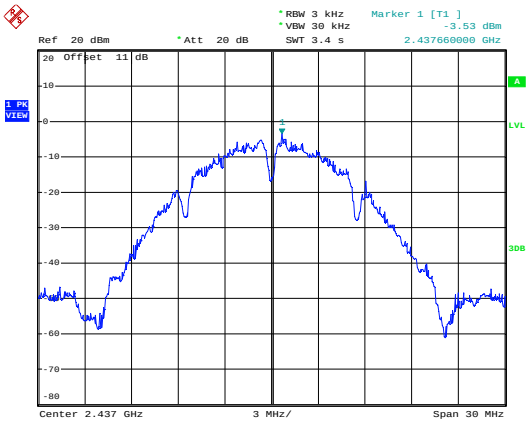
Modulation Type: 802.11b
CH01



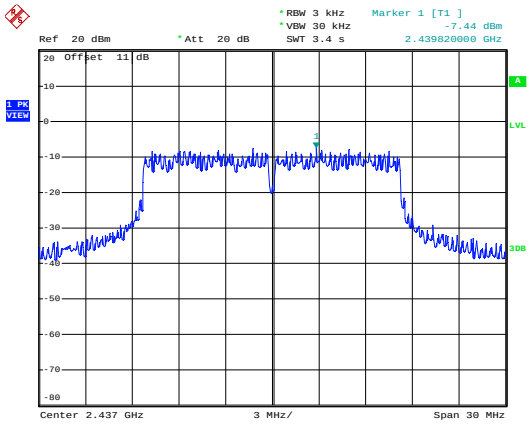

Modulation Type: 802.11g
CH01




CH06




CH06

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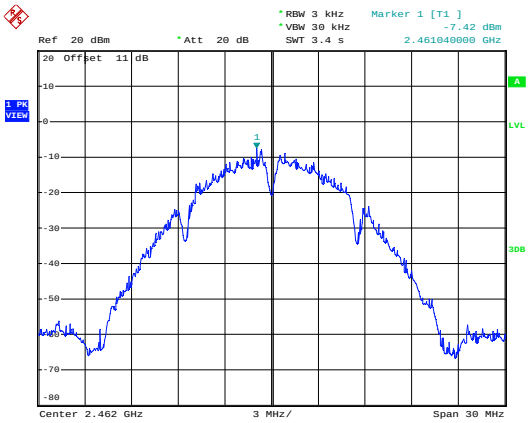
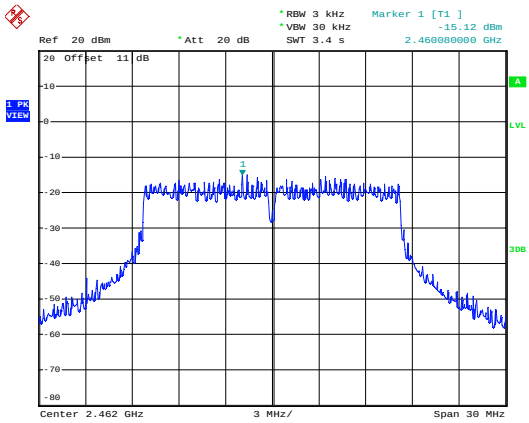
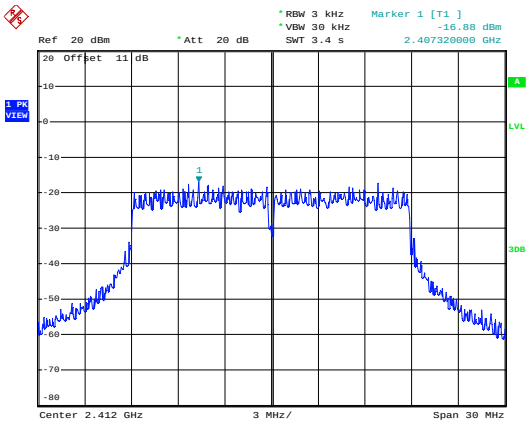



CH11

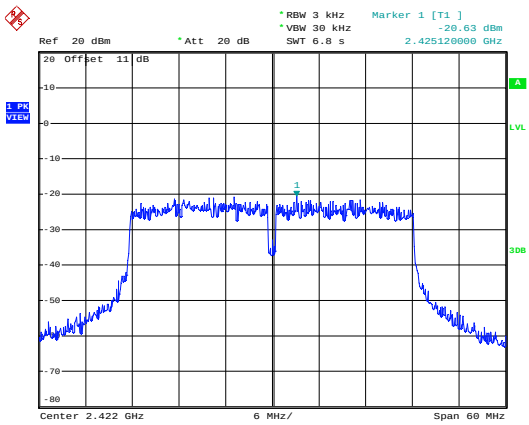


Antenna 3

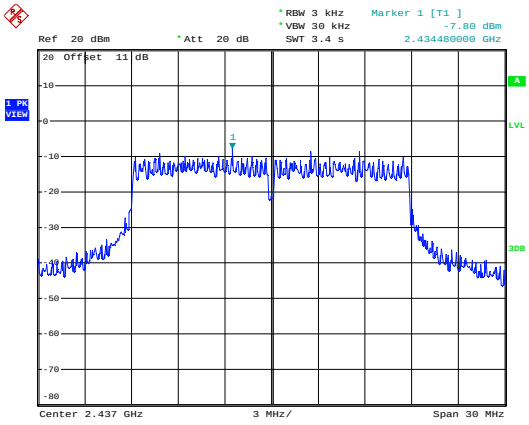
Modulation Type: 802.11av VHT20
CH01



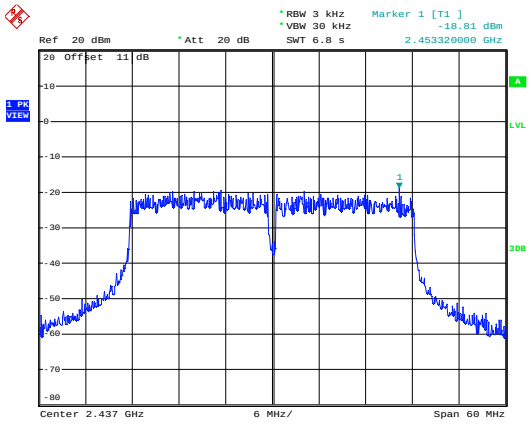

Modulation Type: 802.11ac VHT40
CH03




CH06




CH06

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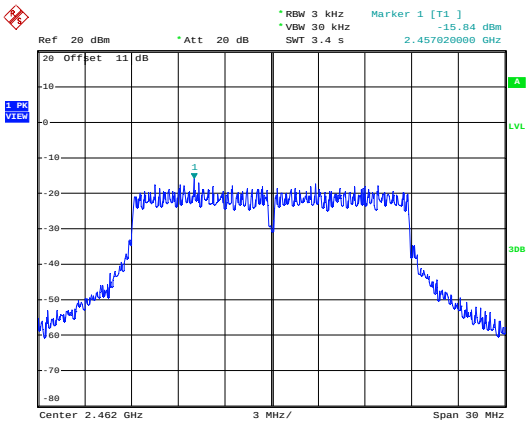


CH09