

# FCC&IC Radio Test Report

## FCC ID: HLEMS916BT

This report concerns (check one): ☒ Original Grant ☐ Class II Change

**Project No.** : 1503001  
**Equipment** : Wireless Pocket Laser Scanner  
**Model Name** : MS916  
**Applicant** : unitech electronics co., ltd.  
**Address** : 5F, No. 136, Lane 235, Pao-Chiao Rd., Hsin-Tien  
City, New Taipei City, Taiwan

**Date of Receipt** : Mar. 03, 2015  
**Date of Test** : Mar. 03, 2015 ~ Mar. 25, 2015  
**Issued Date** : Mar. 26, 2015  
**Tested by** : BTL Inc.

**Testing Engineer** : Rush Kao  
(Rush Kao)

**Technical Manager** : Jeff Yang  
(Jeff Yang)

**Authorized Signatory** : Andy Chiu  
(Andy Chiu)

# **B T L I N C .**

B1, No.37, Lane 365, Yang Guang St.,  
Nei-Hu District, Taipei City 114, Taiwan.  
TEL:+886-2-2657-3299 FAX: +886-2- 2657-3331

### **Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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### REPORT ISSUED HISTORY

| Issued No.         | Description     | Issued Date   |
|--------------------|-----------------|---------------|
| BTL-FCCP-1-1503001 | Original Issue. | Mar. 26, 2015 |

## 1. CERTIFICATION

Equipment : Wireless Pocket Laser Scanner  
Brand Name : unitech  
Model Name : MS916  
Applicant : unitech electronics co., ltd.  
Date of Test : Mar. 03, 2015 ~ Mar. 25, 2015  
Test Sample : ENGINEERING SAMPLE  
Standard(s) : FCC Part15, Subpart C: 2014 (15.247) /ANSI C63.4 : 2009 /  
FCC Public Notice DA 00-705, March 30, 2000.

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc..

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1503001 ) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| Applied Standard(s): 47 CFR Part 15, Subpart C: 2014 |                                     |          |        |
|------------------------------------------------------|-------------------------------------|----------|--------|
| Standard(s) Section                                  | Test Item                           | Judgment | Remark |
| FCC                                                  |                                     |          |        |
| 15.207                                               | Conducted Emission                  | PASS     |        |
| 15.247(d)                                            | Antenna conducted Spurious Emission | PASS     |        |
| 15.247 (a)(1)                                        | Hopping Channel Separation          | PASS     |        |
| 15.247 (b)(1)                                        | Peak Output Power                   | PASS     |        |
| 15.247(d)<br>15.209                                  | Radiated Spurious Emission          | PASS     |        |
| 15.247 (a)(1)(iii)                                   | Number of Hopping Frequency         | PASS     |        |
| 15.247 (a)(1)(iii)                                   | Dwell Time                          | PASS     |        |
| 15.205                                               | Restricted Bands                    | PASS     |        |
| 15.203                                               | Antenna Requirement                 | PASS     |        |

Note:

(1) "N/A" denotes test is not applicable in this test report

(2) According to FCC Public Notice DA 00-705, March 30, 2000.



## 2.1 TEST FACILITY

### Conducted emission Test:

**C02:** (VCCI RN: C-3477; FCC RN: 614388; FCC DN: TW1054)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

### Radiated emission Test (Below 1 GHz):

**CB08:** (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

### Radiated emission Test (Above 1 GHz):

**CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

**The measurement uncertainty is not specified by FCC rules and Canada Industry for reference only.**

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

### A. Conducted emission test:

| Test Site | Measurement Frequency Range | U , (dB) | NOTE |
|-----------|-----------------------------|----------|------|
| C02       | 150 kHz ~ 30 MHz            | 1.94     |      |

### B. Radiated emission test:

| Test Site | Item                    | Measurement Frequency Range | Uncertainty   | NOTE    |
|-----------|-------------------------|-----------------------------|---------------|---------|
| CB08      | Radiated emission at 3m | Horizontal Polarization     | 30 - 200MHz   | 3.35 dB |
|           |                         |                             | 200 - 1000MHz | 3.11 dB |
|           |                         |                             | 1 - 18GHz     | 3.97 dB |
|           |                         |                             | 18 - 40GHz    | 4.01 dB |
|           | Vertical Polarization   |                             | 30 - 200MHz   | 3.22 dB |
|           |                         |                             | 200 - 1000MHz | 3.24 dB |
|           |                         |                             | 1 - 18GHz     | 4.05 dB |
|           |                         |                             | 18 - 40GHz    | 4.04 dB |

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{CISPR}$ , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our  $U_{lab}$  values are smaller than  $U_{CISPR}$ .

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                     |                                                               |                                                        |
|---------------------|---------------------------------------------------------------|--------------------------------------------------------|
| Equipment           | Wireless Pocket Laser Scanner                                 |                                                        |
| Brand Name          | unitech                                                       |                                                        |
| Model Name          | MS916                                                         |                                                        |
| Model Difference    | N/A                                                           |                                                        |
| Output Power (Max.) | Operation Frequency                                           | 2402~2480 MHz                                          |
|                     | Modulation Technology                                         | GFSK(1Mbps)<br>$\pi$ /4-DQPSK(2Mbps)                   |
|                     | Bit Rate of Transmitter                                       | 8-DPSK(3Mbps)                                          |
|                     | Output Power Max.                                             | 5.30 dBm(0.0034W) (1Mbps)<br>3.11 dBm(0.0020W) (3Mbps) |
| PowerSource         | #1 Supplied from USB port.<br>#2 Supplied from Li-ion Battery |                                                        |
| Power Rating        | #1 DC 5V<br>#2 DC 3.7V 770mAh                                 |                                                        |

Note:

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

2.

| Channel List |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 00           | 2402            | 27      | 2429            | 54      | 2456            |
| 01           | 2403            | 28      | 2430            | 55      | 2457            |
| 02           | 2404            | 29      | 2431            | 56      | 2458            |
| 03           | 2405            | 30      | 2432            | 57      | 2459            |
| 04           | 2406            | 31      | 2433            | 58      | 2460            |
| 05           | 2407            | 32      | 2434            | 59      | 2461            |
| 06           | 2408            | 33      | 2435            | 60      | 2462            |
| 07           | 2409            | 34      | 2436            | 61      | 2463            |
| 08           | 2410            | 35      | 2437            | 62      | 2464            |
| 09           | 2411            | 36      | 2438            | 63      | 2465            |
| 10           | 2412            | 37      | 2439            | 64      | 2466            |
| 11           | 2413            | 38      | 2440            | 65      | 2467            |
| 12           | 2414            | 39      | 2441            | 66      | 2468            |
| 13           | 2415            | 40      | 2442            | 67      | 2469            |
| 14           | 2416            | 41      | 2443            | 68      | 2470            |
| 15           | 2417            | 42      | 2444            | 69      | 2471            |
| 16           | 2418            | 43      | 2445            | 70      | 2472            |
| 17           | 2419            | 44      | 2446            | 71      | 2473            |
| 18           | 2420            | 45      | 2447            | 72      | 2474            |
| 19           | 2421            | 46      | 2448            | 73      | 2475            |
| 20           | 2422            | 47      | 2449            | 74      | 2476            |
| 21           | 2423            | 48      | 2450            | 75      | 2477            |
| 22           | 2424            | 49      | 2451            | 76      | 2478            |
| 23           | 2425            | 50      | 2452            | 77      | 2479            |
| 24           | 2426            | 51      | 2453            | 78      | 2480            |
| 25           | 2427            | 52      | 2454            |         |                 |
| 26           | 2428            | 53      | 2455            |         |                 |

3. Table for Filed Antenna

| Ant. | Brand                                                                               | Model Name     | Antenna Type | Connector | Gain (dBi) |
|------|-------------------------------------------------------------------------------------|----------------|--------------|-----------|------------|
| 1    |  | AT9520-B2R4HAA | Chip         | N/A       | 3.00       |

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description             |
|--------------|-------------------------|
| Mode 1       | TX Mode <b>Note (1)</b> |
| Mode 2       | Bluetooth               |

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

| For Conducted Emission |             |
|------------------------|-------------|
| Final Test Mode        | Description |
| Mode 2                 | Bluetooth   |

| For Radiated Emission |                         |
|-----------------------|-------------------------|
| Final Test Mode       | Description             |
| Mode 1                | TX Mode <b>Note (1)</b> |

**Note:**

- (1) The measurements are performed at the high, middle, low available channels.
- (2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

### 3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

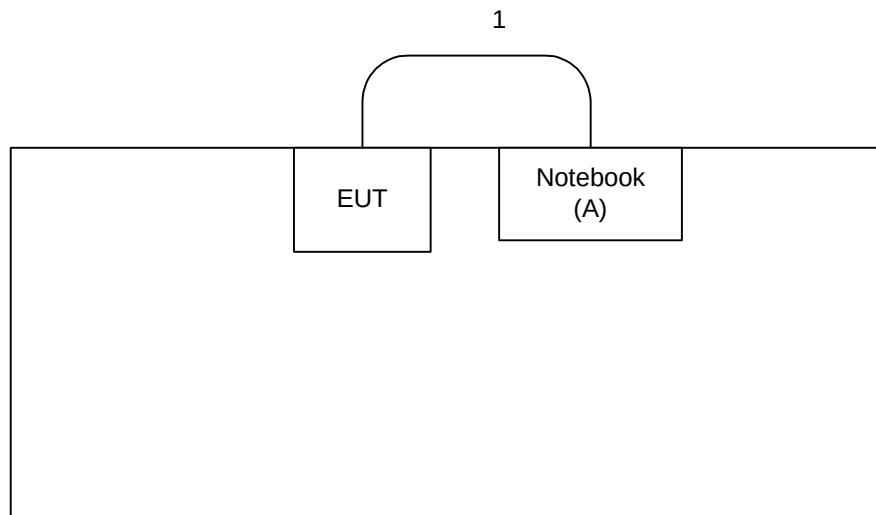
1Mbps

| Test Software Version | CSR  |      |      |
|-----------------------|------|------|------|
| Frequency (MHz)       | 2402 | 2441 | 2480 |
| Parameters            | 63   | 63   | 63   |

3Mbps

| Test Software Version | CSR  |      |      |
|-----------------------|------|------|------|
| Frequency (MHz)       | 2402 | 2441 | 2480 |
| Parameters            | 120  | 120  | 120  |

### 3.4 BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment   | Mfr/Brand | Model/Type No. | FCC ID/IC | Series No. | Note |
|------|-------------|-----------|----------------|-----------|------------|------|
| A    | Notebook PC | DELL      | PP18L          | DOC       | PF329 A01  |      |

| Item | Shielded Type | Ferrite Core | Length | Note      |
|------|---------------|--------------|--------|-----------|
| 1    | YES           | YES          | 1m     | USB Cable |

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

| Frequency of Emission (MHz) | Conducted Limit (dBμV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15 -0.5                   | 66 to 56*              | 56 to 46* |
| 0.50 -5.0                   | 56                     | 46        |
| 5.0 -30.0                   | 60                     | 50        |

Note:

- (1) The limit of " \* " decreases with the logarithm of the frequency
- (2) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)  
 Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 KHz    |

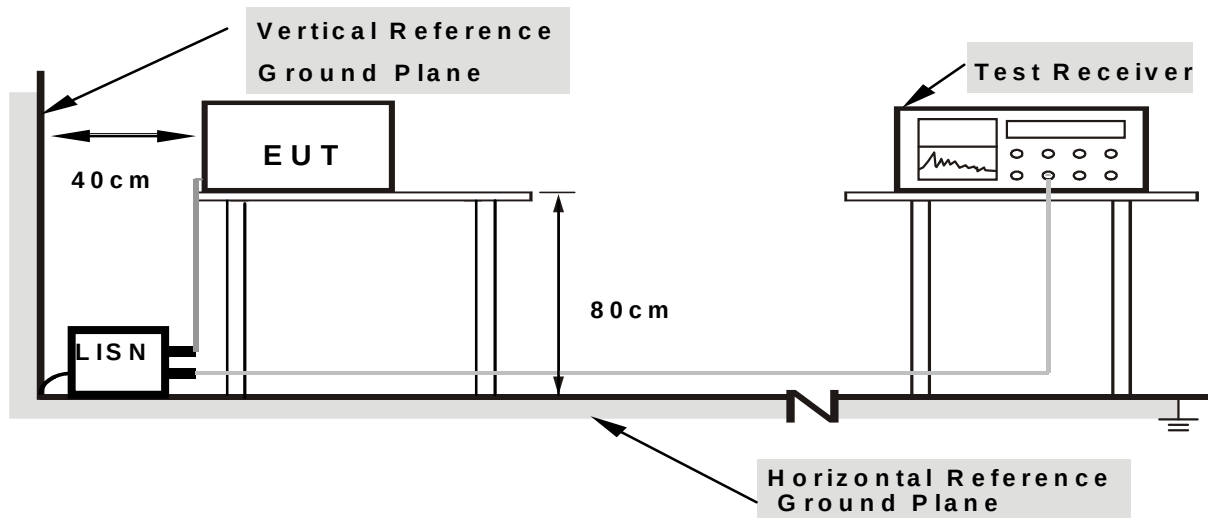
#### 4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the groundplane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.3 DEVIATIONFROMTESTSTANDARD

No deviation

#### 4.1.4 TESTSETUP



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

#### 4.1.5 EUT OPERATINGCONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it),EUT was programmed to be in continuously transmitting/receiving data or hopping on mode.

#### 4.1.6 EUT TEST CONDITIONS

Temperature: N/A°C  
 Relative Humidity: N/A%  
 Test Voltage: N/A

#### 4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits,the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "\*" marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz -1000MHz)

20dB in any 100 KHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) & RSS-Gen limit in the table below has to be followed.

| Frequency (MHz) | Field Strength (microvolts/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                             |
| 960~1000        | 500                               | 3                             |

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| Frequency (MHz) | dB(uV/m) (at 3 meters) |         |
|-----------------|------------------------|---------|
|                 | Peak                   | Average |
| Above 1000      | 74                     | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

| Spectrum Parameter                         | Setting                                        |
|--------------------------------------------|------------------------------------------------|
| Attenuation                                | Auto                                           |
| Start Frequency                            | 1000 MHz                                       |
| Stop Frequency                             | 10th carrier harmonic                          |
| RBW / VBW<br>(emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |

| Spectrum Receiver Parameter | Setting                           |
|-----------------------------|-----------------------------------|
| Attenuation                 | Auto                              |
| Start ~ Stop Frequency      | 9KHz ~90KHzfor PK/AVG detector    |
| Start ~ Stop Frequency      | 90KHz ~110KHzfor QP detector      |
| Start ~ Stop Frequency      | 110KHz ~490KHzfor PK/AVG detector |
| Start ~ Stop Frequency      | 490KHz ~30MHzfor QP detector      |
| Start ~ Stop Frequency      | 30MHz~1000MHz for QP detector     |

#### **4.2.2 TEST PROCEDURE**

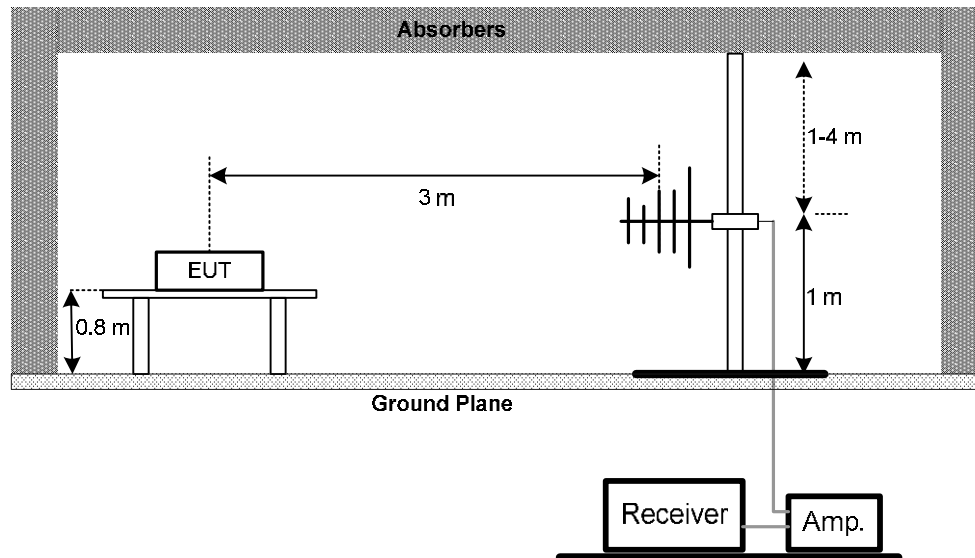
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### **4.2.3 DEVIATION FROM TEST STANDARD**

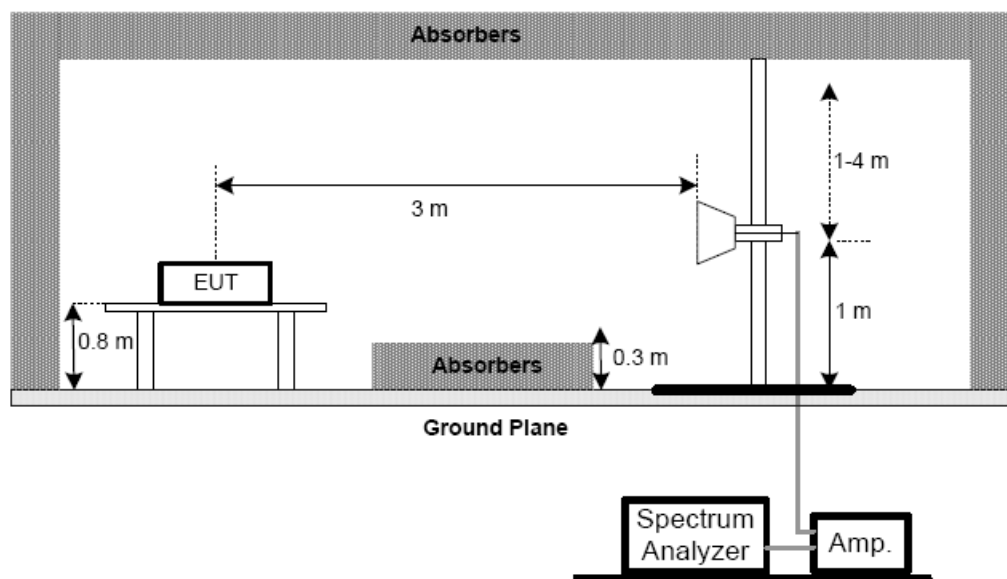
No deviation

#### 4.2.4 TESTSETUP

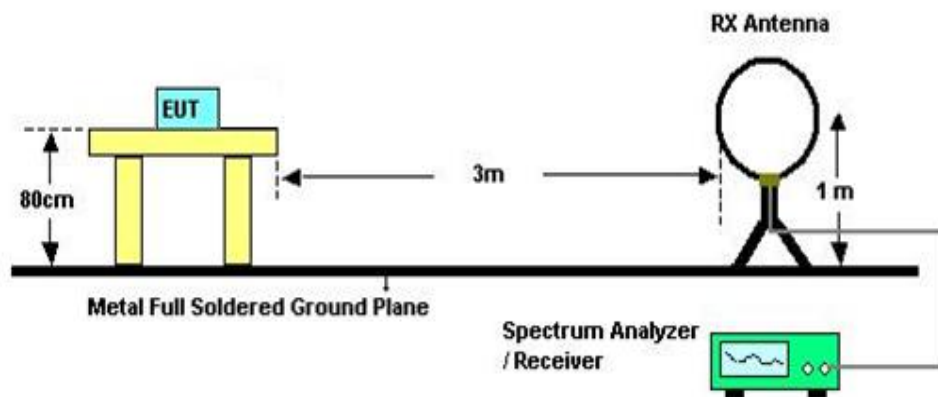
##### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



##### (B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 21°C

Relative Humidity: 62%

Test Voltage: DC 3.7V

#### 4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

#### **4.2.8 TEST RESULTS(BETWEEN 30MHZ TO 1000 MHZ)**

**Please refer to the Attachment C.**

Remark:

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Modewith Detector BW=120KHz; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

#### **4.2.9 TEST RESULTS(ABOVE 1000 MHZ)**

**Please refer to the Attachment D.**

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (3) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (4) EUT Orthogonal Axis:  
"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand
- (5) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (6) No limit:This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 5.NUMBER OF HOPPING CHANNEL

### 5.1APPLIED PROCEDURES

| FCC Part15 (15.247) , Subpart C                         |                           |                       |        |
|---------------------------------------------------------|---------------------------|-----------------------|--------|
| Section                                                 | Test Item                 | Frequency Range (MHz) | Result |
| 15.247(a)(1)(iii)<br>RSS-210, Issue 8, Annex 8, A8.1(d) | Number of Hopping Channel | 2400-2483.5           | PASS   |

| Spectrum Parameters | Setting                     |
|---------------------|-----------------------------|
| Attenuation         | Auto                        |
| Span Frequency      | > Operating Frequency Range |
| RBW                 | 100KHz                      |
| VBW                 | 100KHz                      |
| Detector            | Peak                        |
| Trace               | Max Hold                    |
| Sweep Time          | Auto                        |

#### 5.1.1TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW=100KHz, VBW=100KHz, Sweep time = Auto.

#### 5.1.2DEVIATION FROM STANDARD

No deviation.

#### 5.1.3TEST SETUP



#### 5.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 5.1.5EUT TEST CONDITIONS

Temperature: 25°C  
Relative Humidity: 55%  
Test Voltage: DC 3.7V

#### 5.1.6TEST RESULTS

Please refer to the Attachment E

## 6.AVERAGE TIME OF OCCUPANCY

### 6.1APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C                         |                           |        |                       |        |
|---------------------------------------------------------|---------------------------|--------|-----------------------|--------|
| Section                                                 | Test Item                 | Limit  | Frequency Range (MHz) | Result |
| 15.247(a)(1)(iii)<br>RSS-210, Issue 8, Annex 8, A8.1(d) | Average Time of Occupancy | 0.4sec | 2400-2483.5           | PASS   |

#### 6.1.1TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slotsTX, 1 time slot RX).So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds.
- DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slotsTX, 1 time slot RX).So, the dwell time is the time duration of the pulse times  $5.06 \times 31.6 = 160$  within 31.6 seconds.
- DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot TX, 1 time slot RX).So, the dwell time is the time duration of the pulse times  $10.12 \times 31.6 = 320$  within 31.6 seconds.

#### 6.1.2DEVIATION FROM STANDARD

No deviation.

#### 6.1.3TEST SETUP



**6.1.4EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

**6.1.5EUT TEST CONDITIONS**

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: DC 3.7V

**6.1.6TEST RESULTS**

**Please refer to the Attachment F**



## 7.HOPPING CHANNEL SEPARATION MEASUREMENT

### 7.1APPLIED PROCEDURES /LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

| Spectrum Parameter | Setting                                       |
|--------------------|-----------------------------------------------|
| Attenuation        | Auto                                          |
| Span Frequency     | > Measurement Bandwidth or Channel Separation |
| RBW                | 30 KHz                                        |
| VBW                | 100 KHz                                       |
| Detector           | Peak                                          |
| Trace              | Max Hold                                      |
| Sweep Time         | Auto                                          |

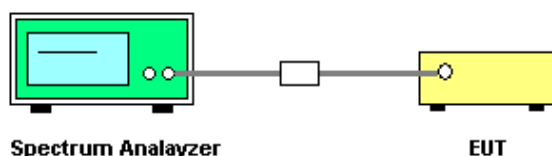
#### 7.1.1TEST PROCEDURE

- a. The EUT must have its hopping function enabled
- b. Span = wide enough to capture the peaks of two adjacent channels
  - Resolution (or IF) Bandwidth (RBW)  $\geq$  1% of the span
  - Video (or Average) Bandwidth (VBW)  $\geq$  RBW
  - Sweep = Auto
  - Detector function = Peak
  - Trace = Max Hold

#### 7.1.2DEVIATION FROM STANDARD

No deviation.

#### 7.1.3TEST SETUP



#### 7.1.4EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 7.1.5TEST RESULTS

Please refer to the Attachment G

## 8.BANDWIDTH TEST

### 8.1APPLIED PROCEDURES

| FCC Part15 (15.247) , Subpart C |           |                       |
|---------------------------------|-----------|-----------------------|
| Section                         | Test Item | Frequency Range (MHz) |
| 15.247(a)(2)                    | Bandwidth | 2400-2483.5           |

| Spectrum Parameter | Setting                                               |
|--------------------|-------------------------------------------------------|
| Attenuation        | Auto                                                  |
| Span Frequency     | > Measurement Bandwidth or Channel Separation         |
| RBW                | 30KHz (20dB Bandwidth) / 30KHz (Channel Separation)   |
| VBW                | 100KHz (20dB Bandwidth) / 100KHz (Channel Separation) |
| Detector           | Peak                                                  |
| Trace              | Max Hold                                              |
| Sweep Time         | Auto                                                  |

#### 8.1.1TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep Time = Auto.

#### 8.1.2DEVIATION FROM STANDARD

No deviation.

#### 8.1.3TEST SETUP



#### 8.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 8.1.5EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 8.1.6TEST RESULTS

Please refer to the Attachment H

## 9. PEAK OUTPUT POWER TEST

### 9.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                   |                |                       |        |
|---------------------------------|-------------------|----------------|-----------------------|--------|
| Section                         | Test Item         | Limit          | Frequency Range (MHz) | Result |
| 15.247(b)(1)                    | Peak Output Power | 1Watt or 30dBm | 2400-2483.5           | PASS   |

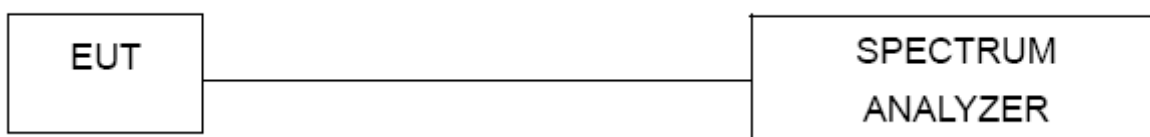
#### 9.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 1MHz/3MHz, VBW= 1MHz/3MHz, Sweep time = Auto.

#### 9.1.2 DEVIATION FROM STANDARD

No deviation.

#### 9.1.3 TEST SETUP



#### 9.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 9.1.5 EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 9.1.6 TEST RESULTS

Please refer to the Attachment I

## **10.ANTENNA CONDUCTED SPURIOUS EMISSION**

### **10.1APPLIED PROCEDURES / LIMIT**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

#### **10.1.1TEST PROCEDURE**

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### **10.1.2DEVIATION FROM STANDARD**

No deviation.

#### **10.1.3TEST SETUP**



#### **10.1.4EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### **10.1.5EUT TEST CONDITIONS**

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: DC 3.7V

#### **10.1.6TEST RESULTS**

**Please refer to the Attachment J**

## 11. MEASUREMENT INSTRUMENTS LIST

| Conducted Emission Measurement |                      |              |                         |            |                  |
|--------------------------------|----------------------|--------------|-------------------------|------------|------------------|
| Item                           | Kind of Equipment    | Manufacturer | Type No.                | Serial No. | Calibrated until |
| 1                              | LISN                 | R&S          | ENV216                  | 101050     | Nov. 22, 2015    |
| 2                              | Test Cable           | TIMES        | CFD300-NL               | C01        | Jun. 15, 2015    |
| 3                              | EMI Test Receiver    | R&S          | ESCI                    | 100082     | Apr. 13, 2015    |
| 4                              | Measurement Software | EZ           | EZ EMC (Version NB-02A) | N/A        | N/A              |

| Radiated Emission Measurement |                         |                    |                  |            |                  |
|-------------------------------|-------------------------|--------------------|------------------|------------|------------------|
| Item                          | Kind of Equipment       | Manufacturer       | Type No.         | Serial No. | Calibrated until |
| 1                             | Spectrum Analyzer       | R&S                | FSP-40           | 100129     | Jan. 07, 2016    |
| 2                             | Horn Antenna            | Schwarzbeck        | BBHA 9120        | D-325      | Jun. 14, 2015    |
| 3                             | Microwave Pre_amplifier | Agilent            | 8449B            | 3008A01714 | Apr. 15, 2015    |
| 4                             | Microflex Cable         | Harbour industries | 27478LL142       | 1m         | May. 12, 2015    |
| 5                             | Microflex Cable         | EMC                | S104-SMA         | 8m         | May. 14, 2015    |
| 6                             | Microflex Cable         | Harbour industries | 27478LL142       | 3m         | May. 12, 2015    |
| 7                             | Test Cable              | LMR                | LMR-400          | 12m        | May. 13, 2015    |
| 8                             | Test Cable              | LMR                | LMR-400          | 3m         | May. 13, 2015    |
| 9                             | Pre-Amplifier           | Anritsu            | MH648A           | M92649     | Jun. 17, 2015    |
| 10                            | Log-Bicon Antenna       | Schwarzbeck        | VULB9168-35<br>2 | 9168-352   | Jul. 10, 2015    |
| 11                            | Loop Antenna            | EMCO               | 6502             | 00042960   | Nov. 06, 2015    |

| Number of Hopping Channel |                   |              |          |            |                  |
|---------------------------|-------------------|--------------|----------|------------|------------------|
| Item                      | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1                         | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

| Average Time of Occupancy |                   |              |          |            |                  |
|---------------------------|-------------------|--------------|----------|------------|------------------|
| Item                      | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1                         | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

### Hopping Channel Separation Measurement

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

### Bandwidth

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

### Peak Output Power

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

### Antenna Conducted Spurious Emission

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP-40   | 100129     | Jan. 07, 2016    |

Remark: "N/A" denotes no model name, serial no. or calibration specified.  
All calibration period of equipment list is one year.

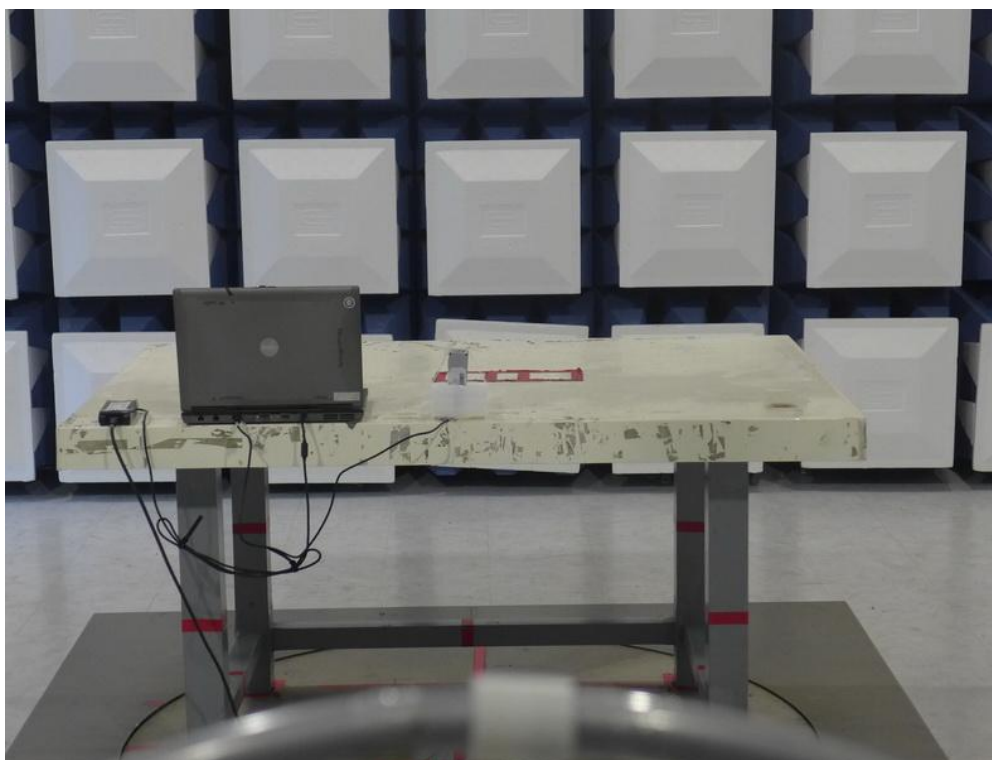
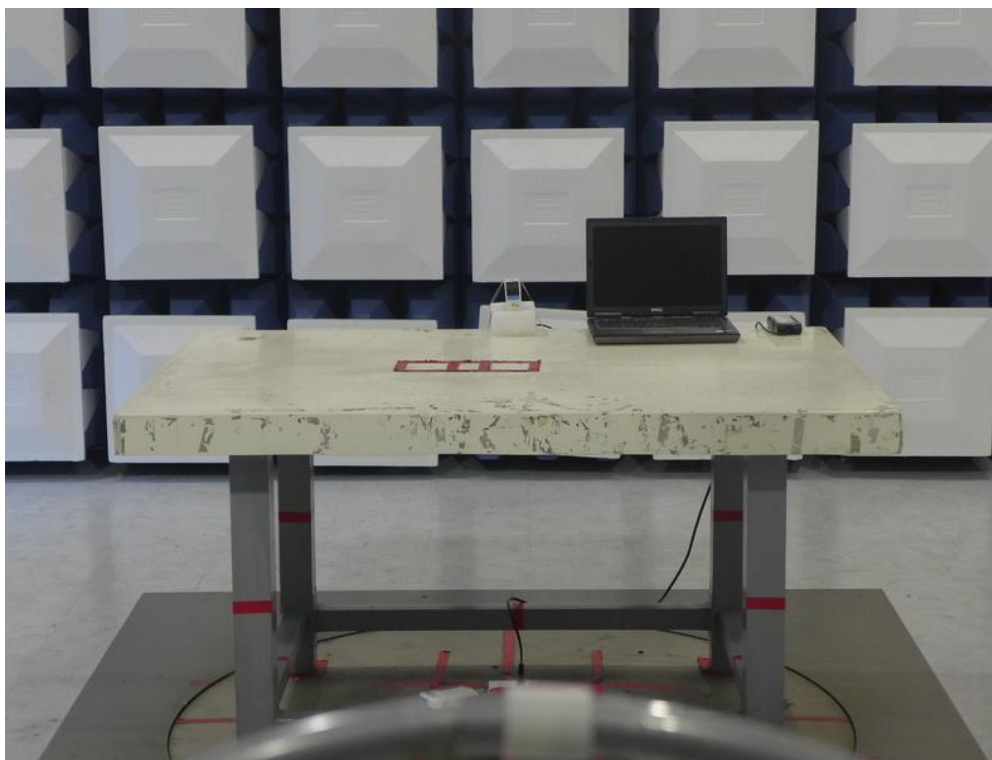
## 12.EUT TEST PHOTO

### Conducted Measurement Photos



## Radiated Measurement Photos

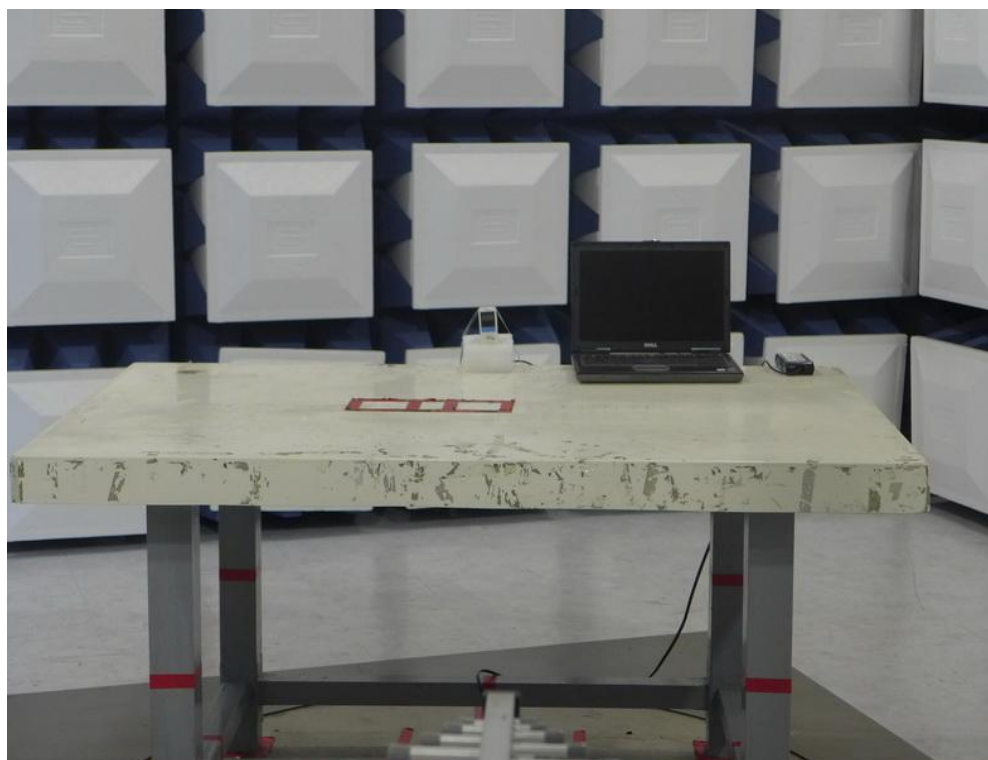
9K-30MHz





## Radiated Measurement Photos

30MHz-1G



## Radiated Measurement Photos

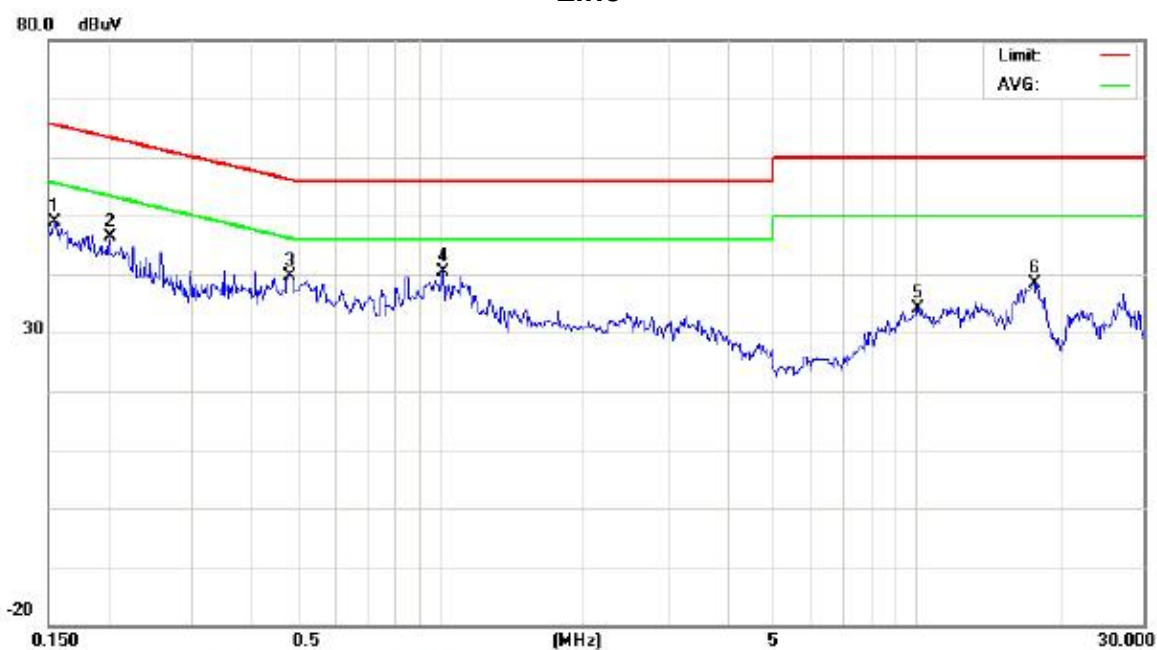
### Above 1G



## **ATTACHMENT A - CONDUCTED EMISSION**

Test Mode: TX Mode

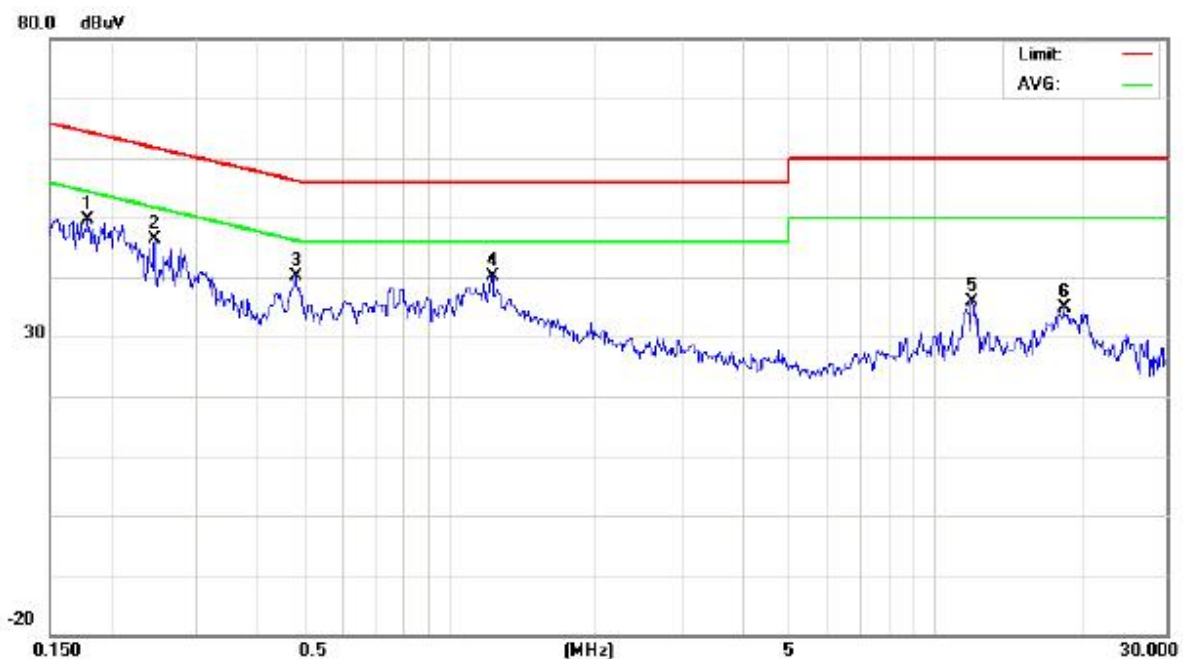
# Line



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 0.1544       | 39.16                    | 9.72                    | 48.88                    | 65.76         | -16.88       | peak     |         |
| 2   |     | 0.2010       | 36.64                    | 9.71                    | 46.35                    | 63.57         | -17.22       | peak     |         |
| 3   |     | 0.4817       | 30.02                    | 9.73                    | 39.75                    | 56.31         | -16.56       | peak     |         |
| 4   | *   | 1.0130       | 30.66                    | 9.75                    | 40.41                    | 56.00         | -15.59       | peak     |         |
| 5   |     | 10.0500      | 24.24                    | 10.01                   | 34.25                    | 60.00         | -25.75       | peak     |         |
| 6   |     | 17.6000      | 28.47                    | 9.90                    | 38.37                    | 60.00         | -21.63       | peak     |         |

Test Mode: TX Mode

### Neutral



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   | *   | 0.1791       | 39.89                    | 9.77                    | 49.66                    | 64.53         | -14.87       | peak     |         |
| 2   |     | 0.2465       | 36.50                    | 9.77                    | 46.27                    | 61.87         | -15.60       | peak     |         |
| 3   |     | 0.4803       | 30.24                    | 9.78                    | 40.02                    | 56.33         | -16.31       | peak     |         |
| 4   |     | 1.2199       | 30.25                    | 9.82                    | 40.07                    | 56.00         | -15.93       | peak     |         |
| 5   |     | 11.8999      | 25.73                    | 10.05                   | 35.78                    | 60.00         | -24.22       | peak     |         |
| 6   |     | 18.3999      | 24.81                    | 10.03                   | 34.84                    | 60.00         | -25.16       | peak     |         |

## **ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)**

|            |         |
|------------|---------|
| Test Mode: | TX Mode |
|------------|---------|

| Frequency (MHz) | Ant 0°/90° | Read level dBuV/m | Factor (dB) | Measured(FS) (dBuV/m) | Limit(QP) (dBuV/m) | Margin (dB) | Note |
|-----------------|------------|-------------------|-------------|-----------------------|--------------------|-------------|------|
| 0.1150          | 0°         | 42.68             | 12.27       | 54.95                 | 86.39              | -31.44      | AVG  |
| 0.1150          | 0°         | 53.24             | 12.27       | 65.51                 | 106.39             | -40.88      | PK   |
| 0.2930          | 0°         | 38.11             | 11.14       | 49.25                 | 78.27              | -29.02      | AVG  |
| 0.2930          | 0°         | 46.59             | 11.14       | 57.73                 | 98.27              | -40.54      | PK   |
| 0.4340          | 0°         | 40.02             | 11.18       | 51.20                 | 74.85              | -23.66      | AVG  |
| 0.4340          | 0°         | 48.89             | 11.18       | 60.07                 | 94.85              | -34.79      | PK   |
| 0.7450          | 0°         | 43.35             | 11.30       | 54.65                 | 90.55              | -35.90      | QP   |
| 0.7820          | 0°         | 40.11             | 11.33       | 51.44                 | 69.74              | -18.30      | QP   |
| 1.3560          | 0°         | 38.02             | 11.53       | 49.55                 | 64.96              | -15.41      | QP   |

| Frequency (MHz) | Ant 0°/90° | Read level dBuV/m | Factor (dB) | Measured(FS) (dBuV/m) | Limit(QP) (dBuV/m) | Margin (dB) | Note |
|-----------------|------------|-------------------|-------------|-----------------------|--------------------|-------------|------|
| 0.1150          | 90°        | 42.77             | 12.27       | 55.04                 | 86.39              | -31.35      | AVG  |
| 0.1150          | 90°        | 53.02             | 12.27       | 65.29                 | 106.39             | -41.10      | PK   |
| 0.2930          | 90°        | 38.24             | 11.14       | 49.38                 | 78.27              | -28.89      | AVG  |
| 0.2930          | 90°        | 46.88             | 11.14       | 58.02                 | 98.27              | -40.25      | PK   |
| 0.4340          | 90°        | 40.13             | 11.18       | 51.31                 | 74.85              | -23.55      | AVG  |
| 0.4340          | 90°        | 48.36             | 11.18       | 59.54                 | 94.85              | -35.32      | PK   |
| 0.7450          | 90°        | 43.66             | 11.30       | 54.96                 | 90.55              | -35.59      | QP   |
| 0.7820          | 90°        | 40.27             | 11.33       | 51.60                 | 69.74              | -18.14      | QP   |
| 1.3560          | 90°        | 38.15             | 11.53       | 49.68                 | 64.96              | -15.28      | QP   |

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

## **ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)**



Test Mode: TX 2441MHz\_CH39\_1Mbps

## Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 78.5000      | 48.74                    | -17.83                  | 30.91                    | 40.00         | -9.09        | peak     |         |
| 2   |     | 357.3750     | 43.28                    | -12.13                  | 31.15                    | 46.00         | -14.85       | peak     |         |
| 3   | *   | 456.8000     | 46.80                    | -9.62                   | 37.18                    | 46.00         | -8.82        | peak     |         |
| 4   |     | 665.3500     | 40.93                    | -6.46                   | 34.47                    | 46.00         | -11.53       | peak     |         |
| 5   |     | 898.1500     | 39.25                    | -2.87                   | 36.38                    | 46.00         | -9.62        | peak     |         |
| 6   |     | 997.5750     | 43.67                    | -1.30                   | 42.37                    | 54.00         | -11.63       | peak     |         |

Test Mode: TX 2441MHz\_CH39\_1Mbps

## Horizontal

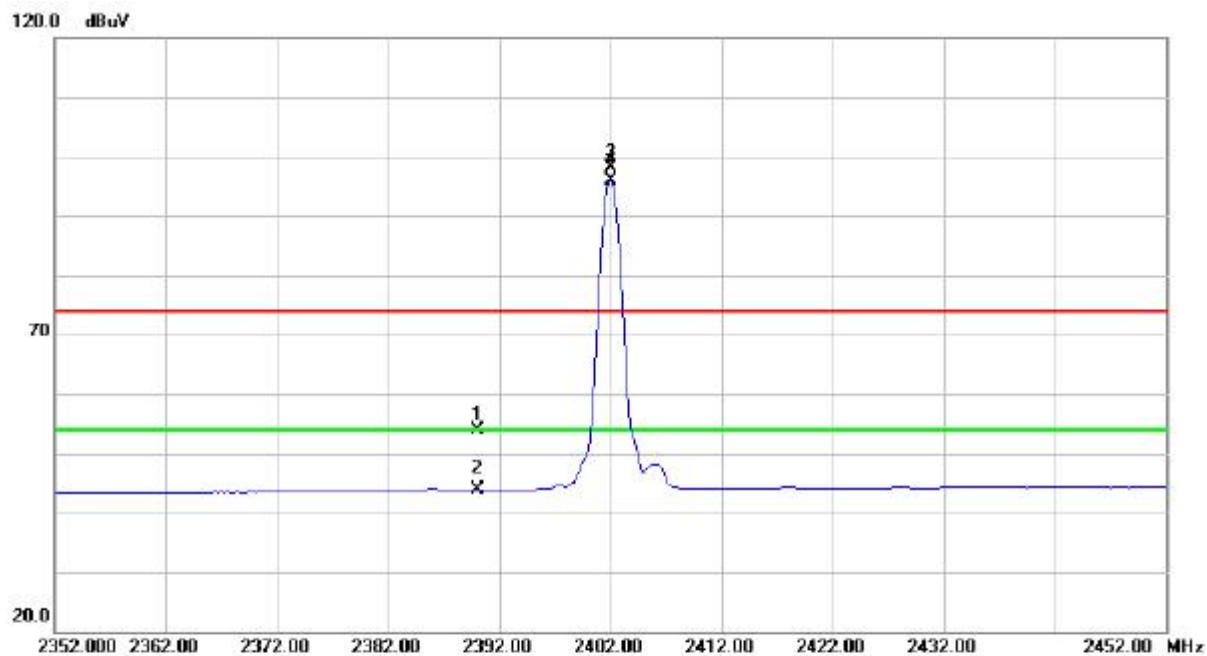


| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 80.9250      | 54.06                    | -18.31                  | 35.75                    | 40.00         | -4.25        | peak     |         |
| 2   |     | 357.3750     | 53.81                    | -12.13                  | 41.68                    | 46.00         | -4.32        | peak     |         |
| 3   | *   | 466.5000     | 52.13                    | -9.55                   | 42.58                    | 46.00         | -3.42        | peak     |         |
| 4   |     | 534.4000     | 40.83                    | -8.39                   | 32.44                    | 46.00         | -13.56       | peak     |         |
| 5   |     | 903.0000     | 39.88                    | -2.77                   | 37.11                    | 46.00         | -8.89        | peak     |         |
| 6   |     | 1000.000     | 40.25                    | -1.28                   | 38.97                    | 54.00         | -15.03       | peak     |         |

## **ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)**

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_1Mbps |

### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   |     | 2390.000     | 22.90                    | 31.02                   | 53.92                    | 74.00         | -20.08       | peak     |          |
| 2   |     | 2390.000     | 12.81                    | 31.02                   | 43.83                    | 54.00         | -10.17       | AVG      |          |
| 3   | X   | 2402.000     | 67.16                    | 31.08                   | 98.24                    | 74.00         | 24.24        | peak     | No Limit |
| 4   | *   | 2402.000     | 64.83                    | 31.08                   | 95.91                    | 54.00         | 41.91        | AVG      | No Limit |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_1Mbps |

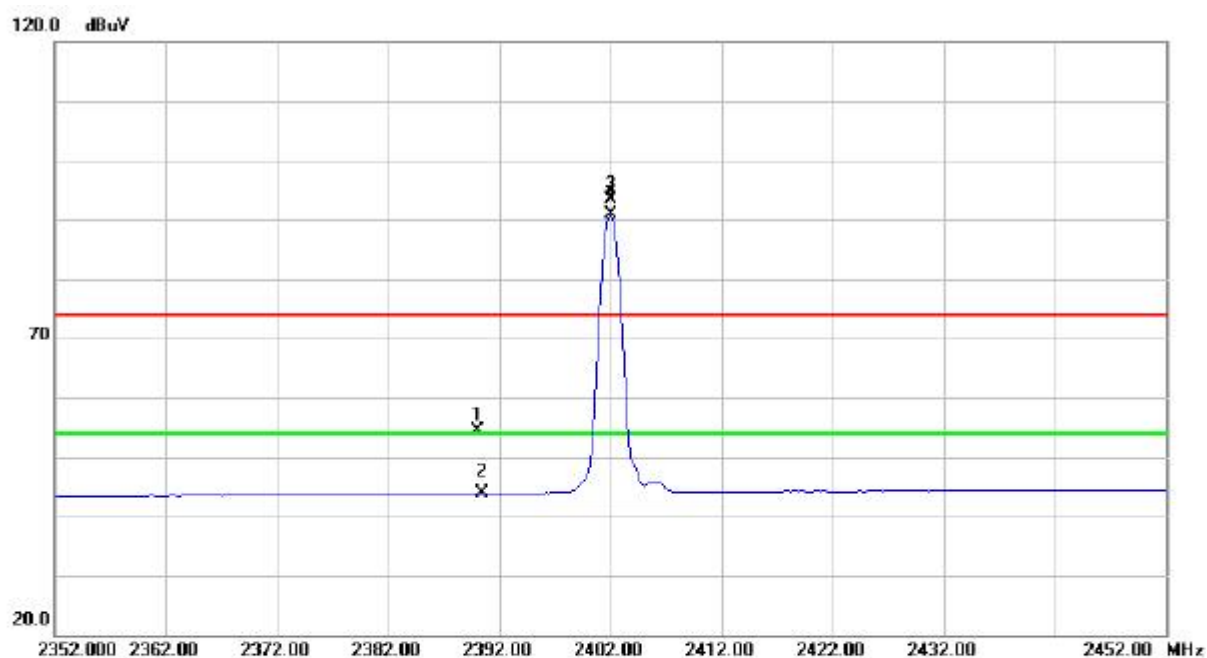
### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4803.875     | 45.99                    | 6.78                    | 52.77                    | 74.00         | -21.23       | peak     |         |
| 2   |     | 4803.875     | 36.89                    | 6.78                    | 43.67                    | 54.00         | -10.33       | AVG      |         |
| 3   |     | 7205.225     | 41.68                    | 15.01                   | 56.69                    | 74.00         | -17.31       | peak     |         |
| 4   | *   | 7205.225     | 31.35                    | 15.01                   | 46.36                    | 54.00         | -7.64        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_1Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   |     | 2390.000     | 23.34                    | 31.02                   | 54.36                    | 74.00         | -19.64       | peak     |          |
| 2   |     | 2390.000     | 12.84                    | 31.02                   | 43.86                    | 54.00         | -10.14       | AVG      |          |
| 3   | X   | 2402.000     | 62.18                    | 31.08                   | 93.26                    | 74.00         | 19.26        | peak     | No Limit |
| 4   | *   | 2402.000     | 59.87                    | 31.08                   | 90.95                    | 54.00         | 36.95        | AVG      | No Limit |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_1Mbps |

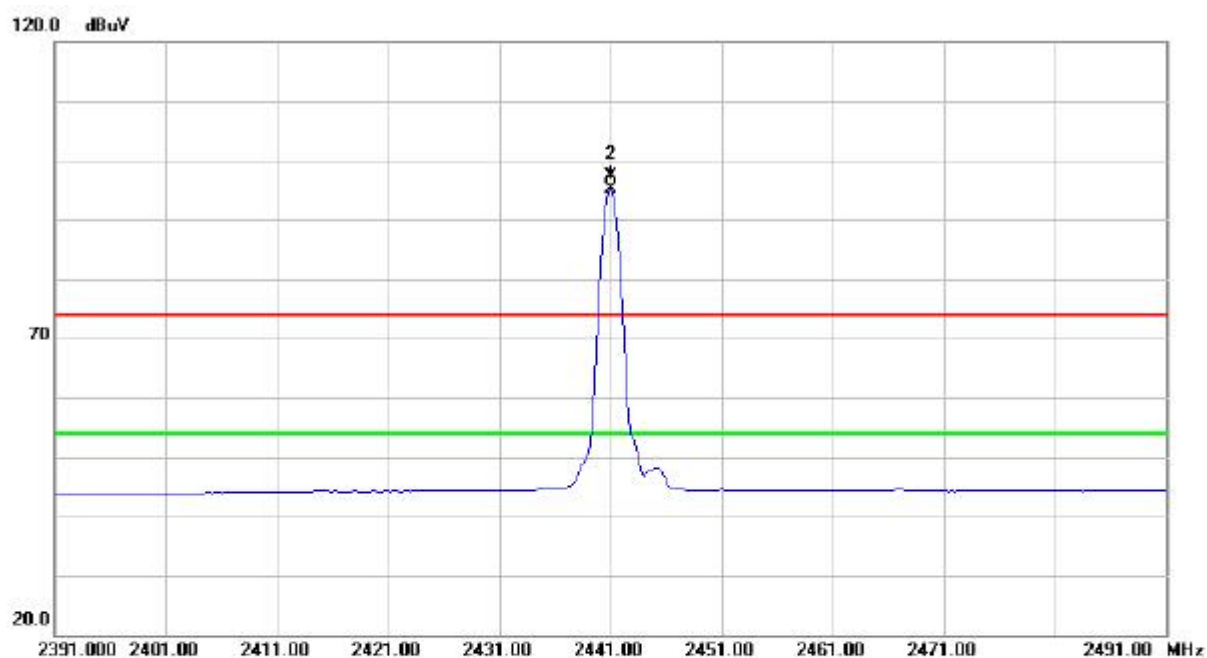
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4804.000     | 48.71                    | 6.78                    | 55.49                    | 74.00         | -18.51       | peak     |         |
| 2   | *   | 4804.000     | 39.88                    | 6.78                    | 46.66                    | 54.00         | -7.34        | AVG      |         |
| 3   |     | 7208.425     | 42.45                    | 15.03                   | 57.48                    | 74.00         | -16.52       | peak     |         |
| 4   |     | 7208.425     | 31.30                    | 15.03                   | 46.33                    | 54.00         | -7.67        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_1Mbps |

### Vertical

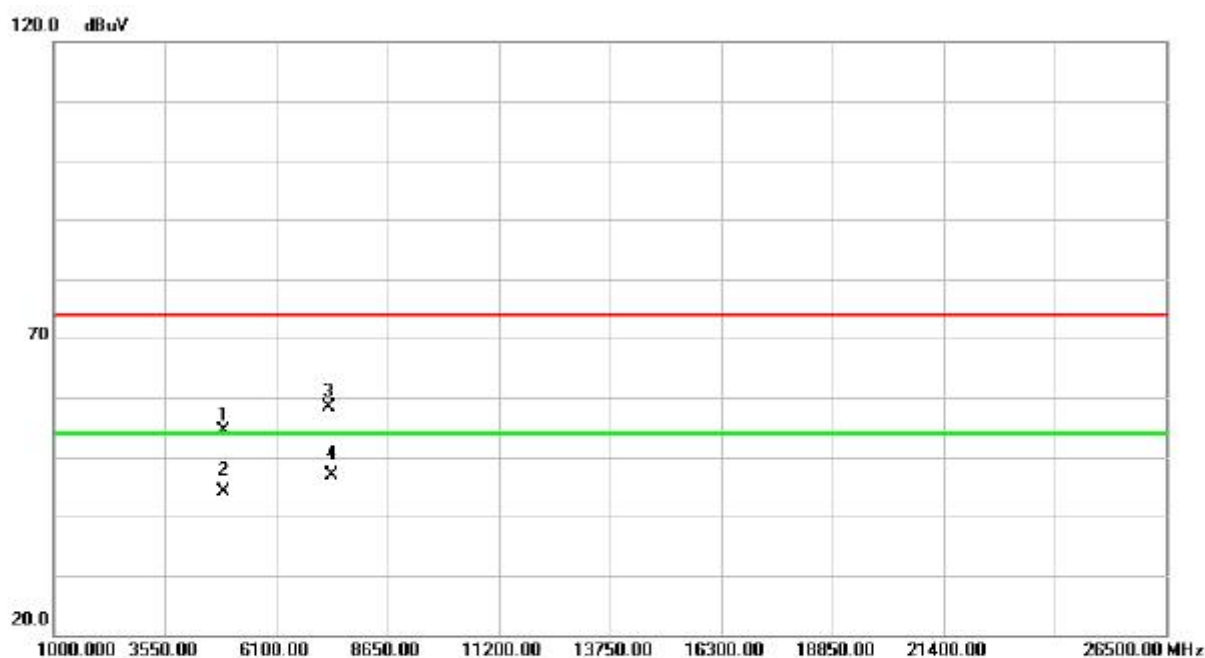


| No. | Mk. | Freq.    | Reading | Correct | Measure- | Limit | Margin |          |          |
|-----|-----|----------|---------|---------|----------|-------|--------|----------|----------|
|     |     | MHz      | Level   | Factor  | ment     |       |        | Detector | Comment  |
|     |     |          | dBuV    | dB      | dBuV     | dBuV  | dB     |          |          |
| 1   | X   | 2441.000 | 63.90   | 31.26   | 95.16    | 74.00 | 21.16  | peak     | No Limit |
| 2   | *   | 2441.000 | 66.22   | 31.26   | 97.48    | 54.00 | 43.48  | AVG      | No Limit |



|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_1Mbps |

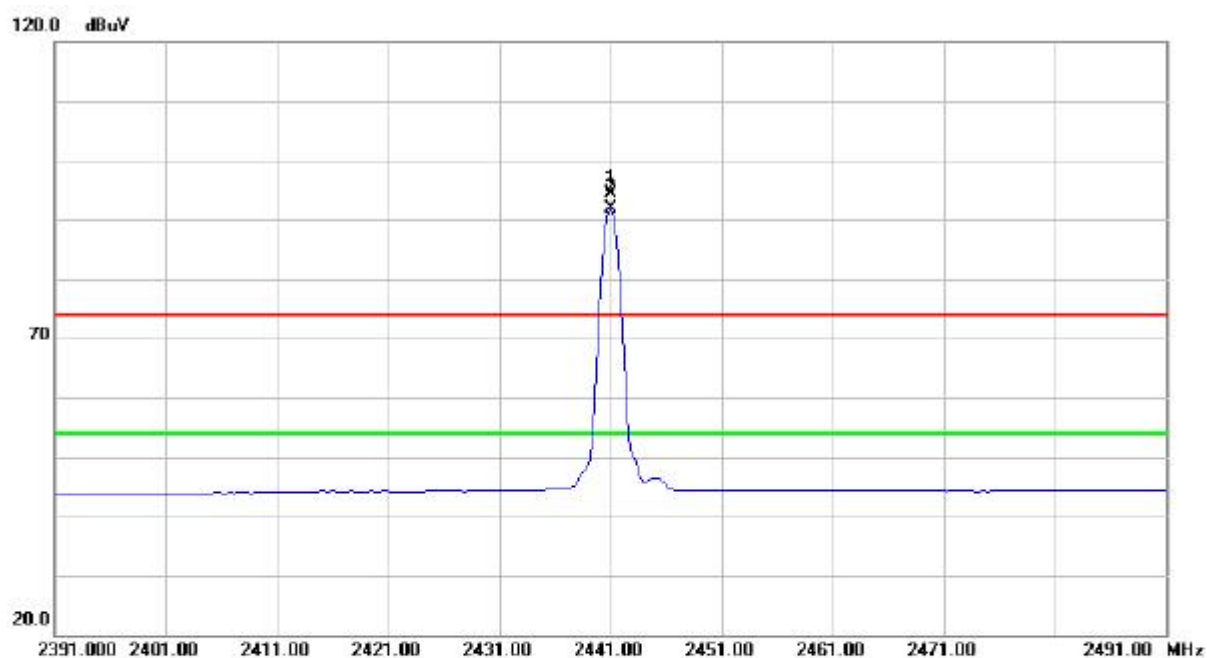
### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4881.837     | 47.71                    | 6.77                    | 54.48                    | 74.00         | -19.52       | peak     |         |
| 2   |     | 4881.837     | 37.47                    | 6.77                    | 44.24                    | 54.00         | -9.76        | AVG      |         |
| 3   |     | 7322.550     | 42.75                    | 15.65                   | 58.40                    | 74.00         | -15.60       | peak     |         |
| 4   | *   | 7322.550     | 31.22                    | 15.65                   | 46.87                    | 54.00         | -7.13        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_1Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2441.000     | 63.01                    | 31.26                   | 94.27                    | 74.00         | 20.27        | peak     | No Limit |
| 2   | *   | 2441.000     | 60.58                    | 31.26                   | 91.84                    | 54.00         | 37.84        | AVG      | No Limit |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_1Mbps |

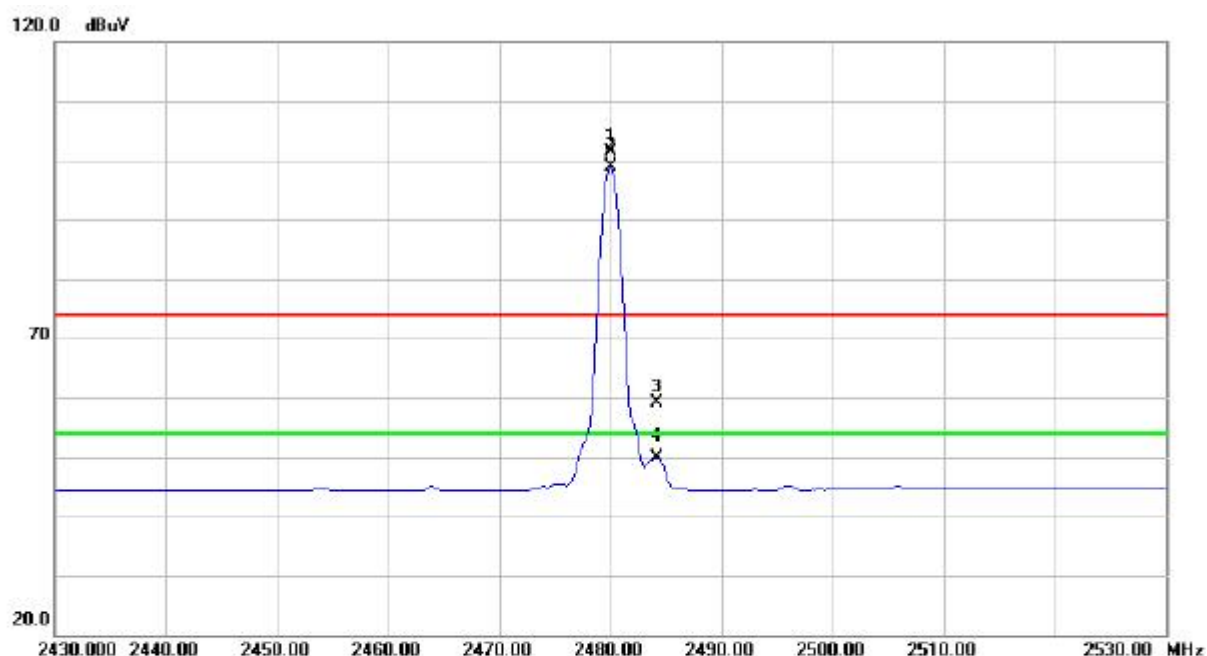
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4881.863     | 52.75                    | 6.77                    | 59.52                    | 74.00         | -14.48       | peak     |         |
| 2   | *   | 4881.863     | 42.78                    | 6.77                    | 49.55                    | 54.00         | -4.45        | AVG      |         |
| 3   |     | 7321.288     | 43.57                    | 15.63                   | 59.20                    | 74.00         | -14.80       | peak     |         |
| 4   |     | 7321.288     | 31.13                    | 15.63                   | 46.76                    | 54.00         | -7.24        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_1Mbps |

### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2480.000     | 69.88                    | 31.44                   | 101.32                   | 74.00         | 27.32        | peak     | No Limit |
| 2   | *   | 2480.000     | 67.45                    | 31.44                   | 98.89                    | 54.00         | 44.89        | AVG      | No Limit |
| 3   |     | 2484.250     | 27.78                    | 31.47                   | 59.25                    | 74.00         | -14.75       | peak     |          |
| 4   |     | 2484.250     | 18.39                    | 31.47                   | 49.86                    | 54.00         | -4.14        | AVG      |          |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_1Mbps |

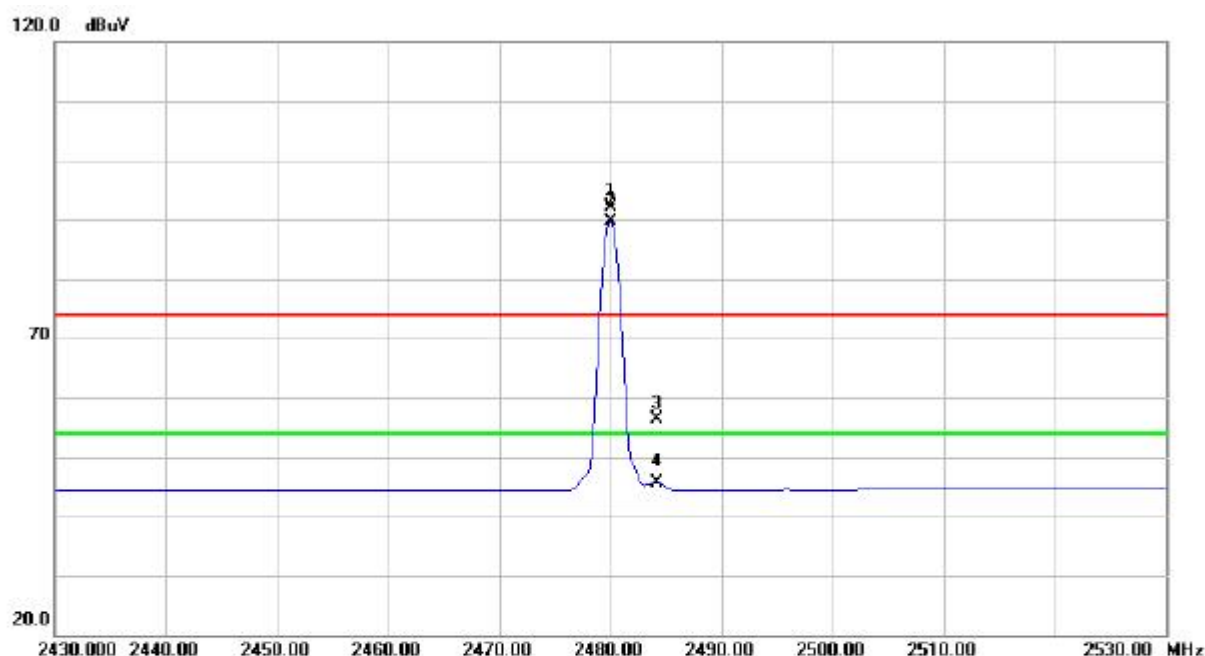
### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4959.950     | 49.07                    | 6.76                    | 55.83                    | 74.00         | -18.17       | peak     |         |
| 2   |     | 4959.950     | 38.85                    | 6.76                    | 45.61                    | 54.00         | -8.39        | AVG      |         |
| 3   |     | 7440.238     | 44.06                    | 16.28                   | 60.34                    | 74.00         | -13.66       | peak     |         |
| 4   | *   | 7440.238     | 31.69                    | 16.28                   | 47.97                    | 54.00         | -6.03        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_1Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2480.000     | 60.59                    | 31.44                   | 92.03                    | 74.00         | 18.03        | peak     | No Limit |
| 2   | *   | 2480.000     | 58.28                    | 31.44                   | 89.72                    | 54.00         | 35.72        | AVG      | No Limit |
| 3   |     | 2484.250     | 24.81                    | 31.47                   | 56.28                    | 74.00         | -17.72       | peak     |          |
| 4   |     | 2484.250     | 14.20                    | 31.47                   | 45.67                    | 54.00         | -8.33        | AVG      |          |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_1Mbps |

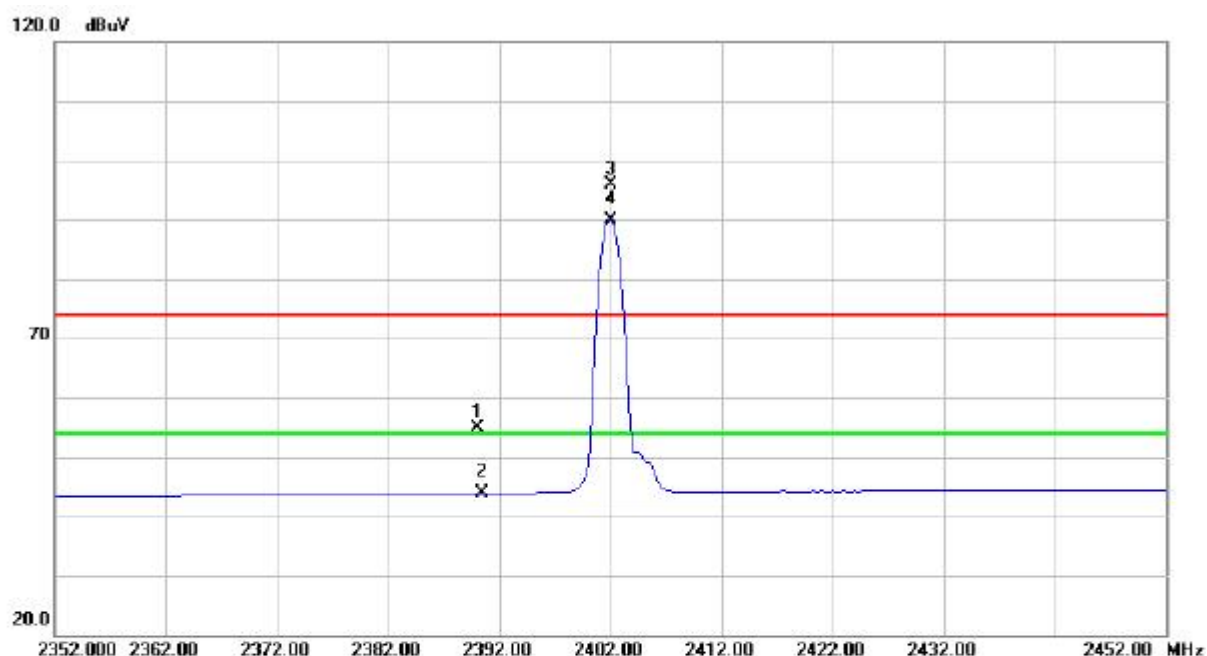
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4960.038     | 50.15                    | 6.76                    | 56.91                    | 74.00         | -17.09       | peak     |         |
| 2   |     | 4960.038     | 41.01                    | 6.76                    | 47.77                    | 54.00         | -6.23        | AVG      |         |
| 3   |     | 7437.863     | 43.08                    | 16.26                   | 59.34                    | 74.00         | -14.66       | peak     |         |
| 4   | *   | 7437.863     | 31.68                    | 16.26                   | 47.94                    | 54.00         | -6.06        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_3Mbps |

### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   |     | 2390.000     | 23.97                    | 31.02                   | 54.99                    | 74.00         | -19.01       | peak     |          |
| 2   |     | 2390.000     | 12.85                    | 31.02                   | 43.87                    | 54.00         | -10.13       | AVG      |          |
| 3   | X   | 2402.000     | 64.68                    | 31.08                   | 95.76                    | 74.00         | 21.76        | peak     | No Limit |
| 4   | *   | 2402.000     | 58.92                    | 31.08                   | 90.00                    | 54.00         | 36.00        | AVG      | No Limit |



|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_3Mbps |

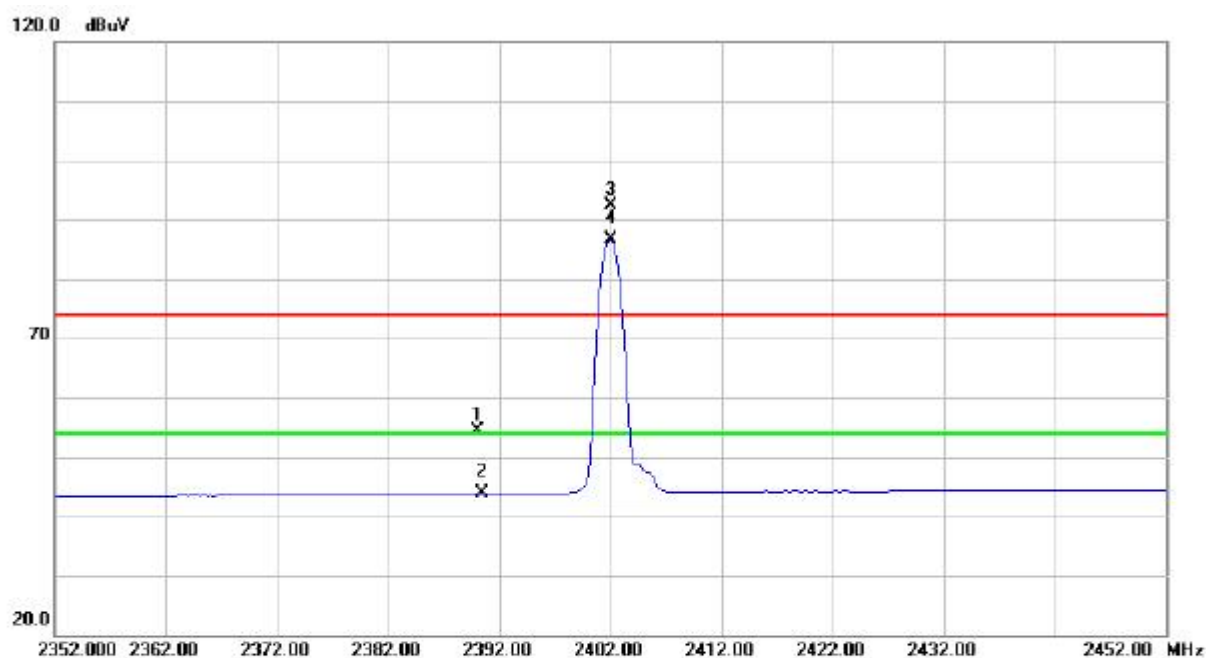
### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4803.900     | 43.30                    | 6.78                    | 50.08                    | 74.00         | -23.92       | peak     |         |
| 2   |     | 4803.900     | 31.61                    | 6.78                    | 38.39                    | 54.00         | -15.61       | AVG      |         |
| 3   |     | 7205.988     | 42.35                    | 15.01                   | 57.36                    | 74.00         | -16.64       | peak     |         |
| 4   | *   | 7205.988     | 30.97                    | 15.01                   | 45.98                    | 54.00         | -8.02        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_3Mbps |

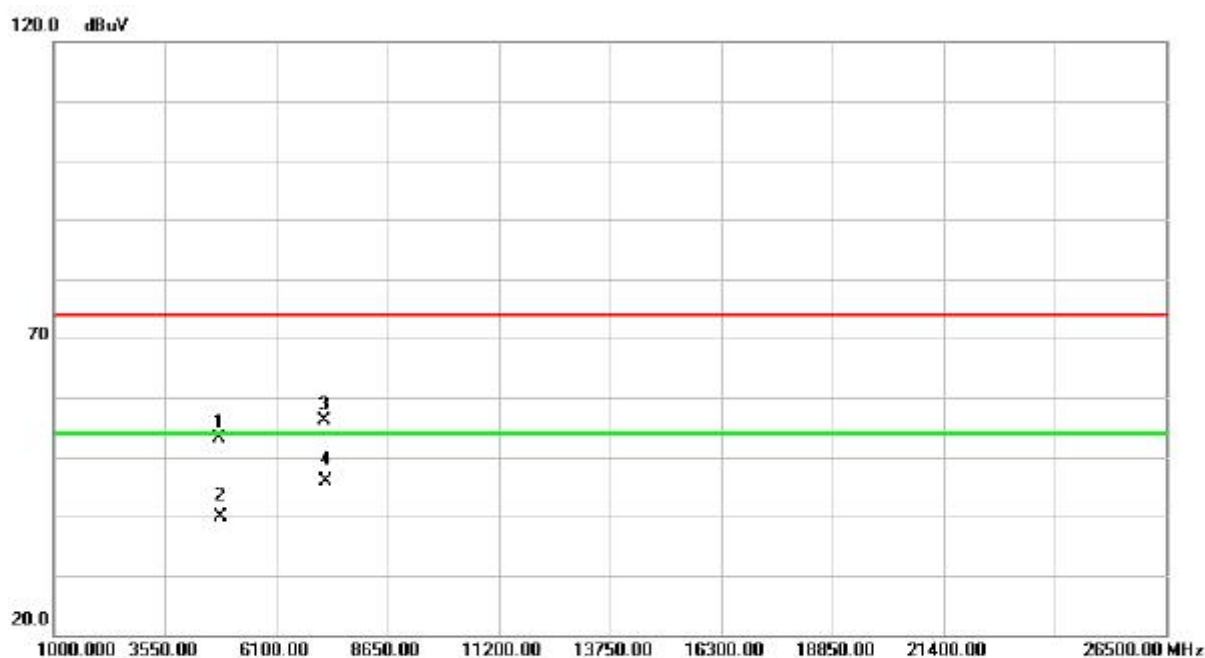
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   |     | 2390.000     | 23.32                    | 31.02                   | 54.34                    | 74.00         | -19.66       | peak     |          |
| 2   |     | 2390.000     | 12.80                    | 31.02                   | 43.82                    | 54.00         | -10.18       | AVG      |          |
| 3   | X   | 2402.000     | 61.35                    | 31.08                   | 92.43                    | 74.00         | 18.43        | peak     | No Limit |
| 4   | *   | 2402.000     | 55.53                    | 31.08                   | 86.61                    | 54.00         | 32.61        | AVG      | No Limit |

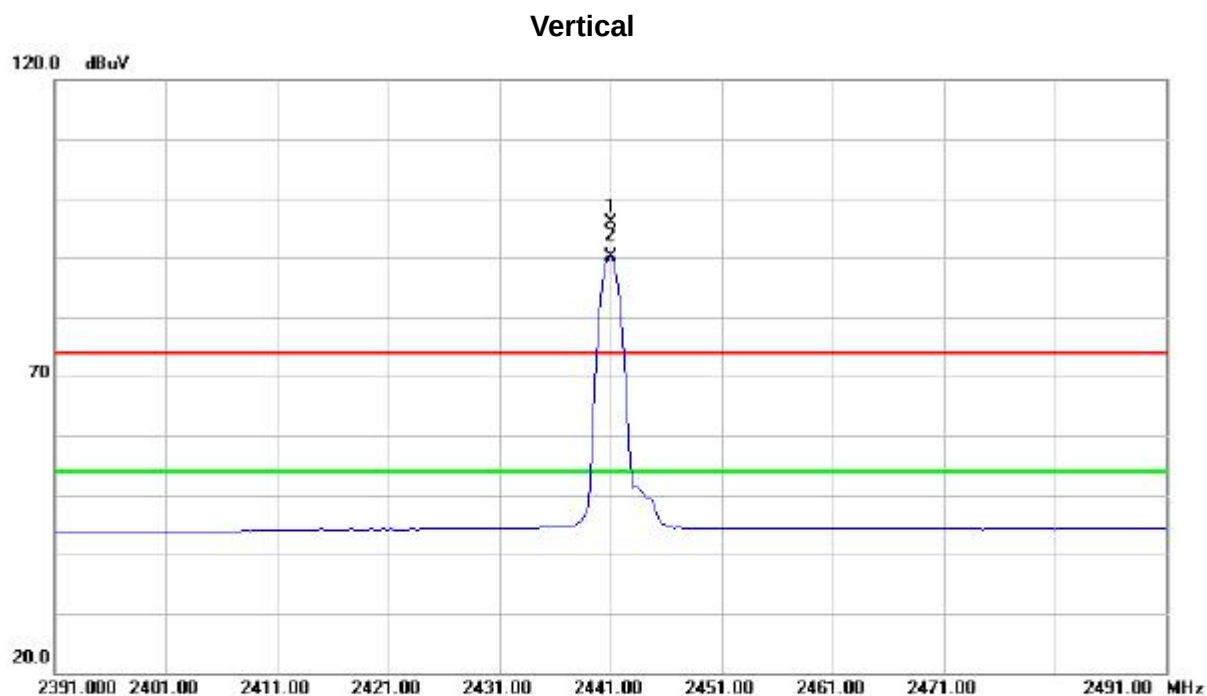
|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2402MHz_CH00_3Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4803.975     | 46.29                    | 6.78                    | 53.07                    | 74.00         | -20.93       | peak     |         |
| 2   |     | 4803.975     | 33.05                    | 6.78                    | 39.83                    | 54.00         | -14.17       | AVG      |         |
| 3   |     | 7206.337     | 41.14                    | 15.01                   | 56.15                    | 74.00         | -17.85       | peak     |         |
| 4   | *   | 7206.337     | 30.95                    | 15.01                   | 45.96                    | 54.00         | -8.04        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_3Mbps |



| No. | Mk. | Freq.    | Reading | Correct | Measure- | Limit | Margin |          |          |
|-----|-----|----------|---------|---------|----------|-------|--------|----------|----------|
|     |     | MHz      | Level   | Factor  | ment     |       |        | Detector | Comment  |
|     |     |          | dBuV    | dB      | dBuV     | dBuV  | dB     |          |          |
| 1   | X   | 2441.000 | 64.55   | 31.26   | 95.81    | 74.00 | 21.81  | peak     | No Limit |
| 2   | *   | 2441.000 | 58.80   | 31.26   | 90.06    | 54.00 | 36.06  | AVG      | No Limit |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_3Mbps |

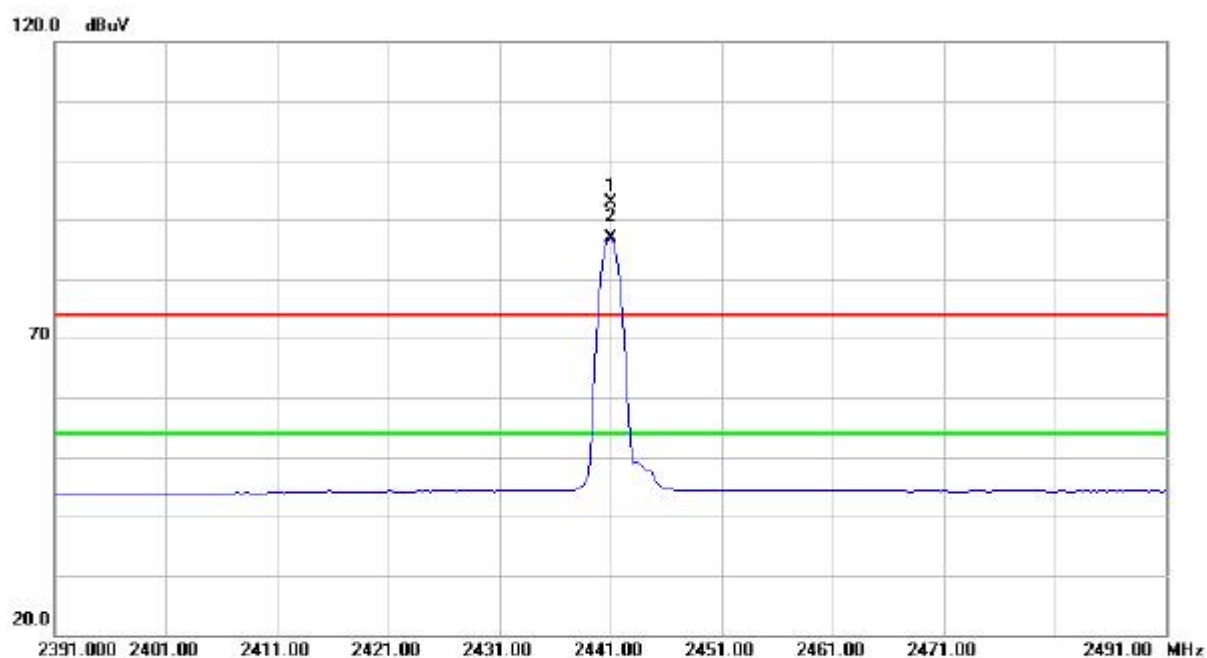
### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4882.038     | 42.07                    | 6.77                    | 48.84                    | 74.00         | -25.16       | peak     |         |
| 2   |     | 4882.038     | 31.44                    | 6.77                    | 38.21                    | 54.00         | -15.79       | AVG      |         |
| 3   |     | 7324.387     | 41.30                    | 15.65                   | 56.95                    | 74.00         | -17.05       | peak     |         |
| 4   | *   | 7324.387     | 31.00                    | 15.65                   | 46.65                    | 54.00         | -7.35        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_3Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2441.000     | 61.56                    | 31.26                   | 92.82                    | 74.00         | 18.82        | peak     | No Limit |
| 2   | *   | 2441.000     | 55.72                    | 31.26                   | 86.98                    | 54.00         | 32.98        | AVG      | No Limit |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2441MHz_CH39_3Mbps |

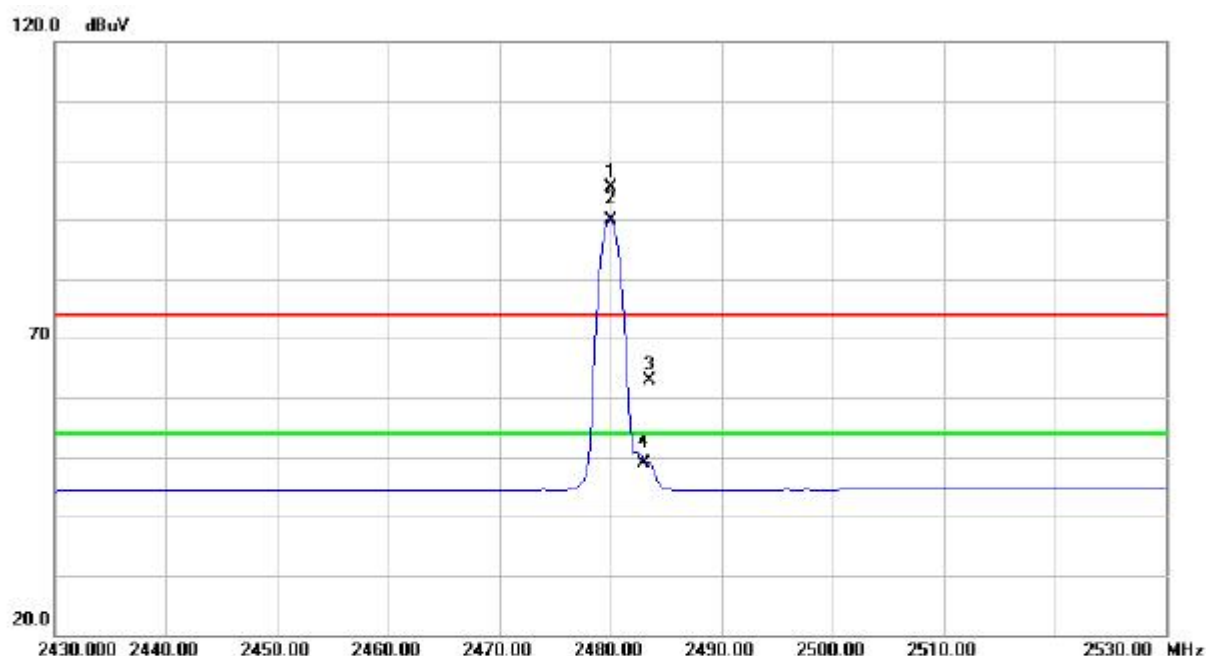
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4882.025     | 46.50                    | 6.77                    | 53.27                    | 74.00         | -20.73       | peak     |         |
| 2   |     | 4882.025     | 32.78                    | 6.77                    | 39.55                    | 54.00         | -14.45       | AVG      |         |
| 3   |     | 7323.250     | 41.23                    | 15.65                   | 56.88                    | 74.00         | -17.12       | peak     |         |
| 4   | *   | 7323.250     | 30.94                    | 15.65                   | 46.59                    | 54.00         | -7.41        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_3Mbps |

### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2480.000     | 64.02                    | 31.44                   | 95.46                    | 74.00         | 21.46        | peak     | No Limit |
| 2   | *   | 2480.000     | 58.48                    | 31.44                   | 89.92                    | 54.00         | 35.92        | AVG      | No Limit |
| 3   |     | 2483.500     | 31.46                    | 31.46                   | 62.92                    | 74.00         | -11.08       | peak     |          |
| 4   |     | 2483.500     | 17.54                    | 31.46                   | 49.00                    | 54.00         | -5.00        | AVG      |          |



|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_3Mbps |

### Vertical



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4959.962     | 42.69                    | 6.76                    | 49.45                    | 74.00         | -24.55       | peak     |         |
| 2   |     | 4959.962     | 31.58                    | 6.76                    | 38.34                    | 54.00         | -15.66       | AVG      |         |
| 3   |     | 7439.913     | 41.86                    | 16.28                   | 58.14                    | 74.00         | -15.86       | peak     |         |
| 4   | *   | 7439.913     | 31.69                    | 16.28                   | 47.97                    | 54.00         | -6.03        | AVG      |         |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_3Mbps |

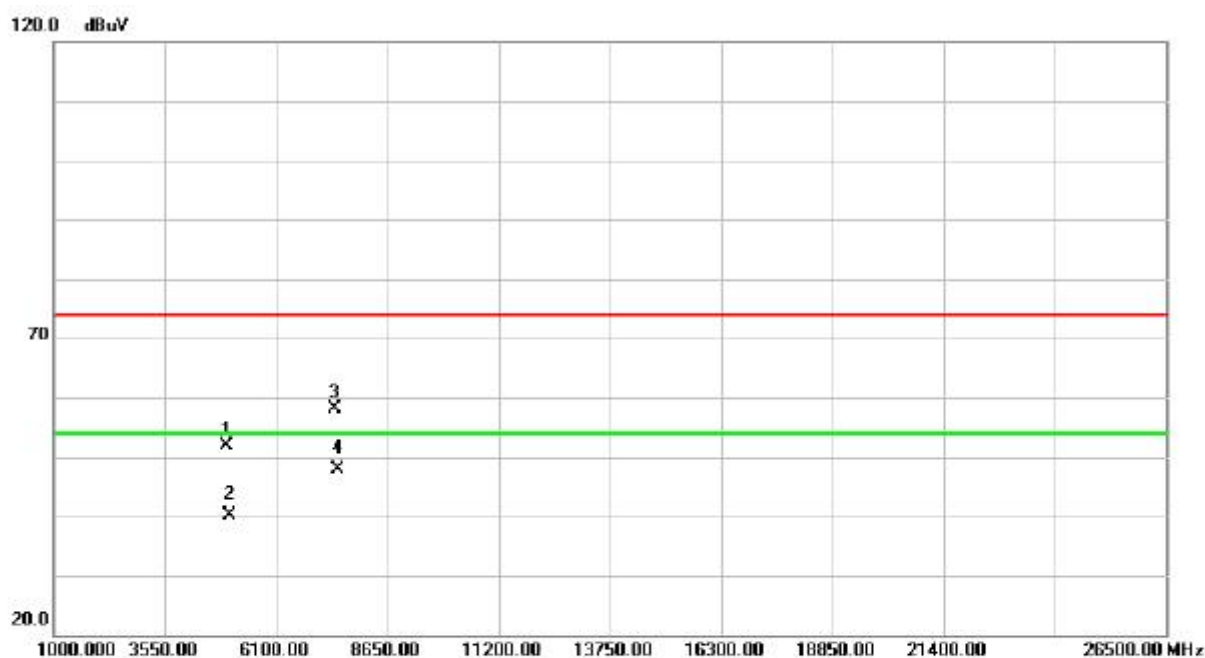
### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment  |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|----------|
| 1   | X   | 2480.000     | 60.57                    | 31.44                   | 92.01                    | 74.00         | 18.01        | peak     | No Limit |
| 2   | *   | 2480.000     | 54.96                    | 31.44                   | 86.40                    | 54.00         | 32.40        | AVG      | No Limit |
| 3   |     | 2483.500     | 27.50                    | 31.46                   | 58.96                    | 74.00         | -15.04       | peak     |          |
| 4   |     | 2483.500     | 15.84                    | 31.46                   | 47.30                    | 54.00         | -6.70        | AVG      |          |

|                   |                       |
|-------------------|-----------------------|
| Orthogonal Axis : | X                     |
| Test Mode :       | TX 2480MHz_CH78_3Mbps |

### Horizontal



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Margin<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|--------------|----------|---------|
| 1   |     | 4960.012     | 45.22                    | 6.76                    | 51.98                    | 74.00         | -22.02       | peak     |         |
| 2   |     | 4960.012     | 33.47                    | 6.76                    | 40.23                    | 54.00         | -13.77       | AVG      |         |
| 3   |     | 7439.725     | 41.84                    | 16.28                   | 58.12                    | 74.00         | -15.88       | peak     |         |
| 4   | *   | 7439.725     | 31.68                    | 16.28                   | 47.96                    | 54.00         | -6.04        | AVG      |         |

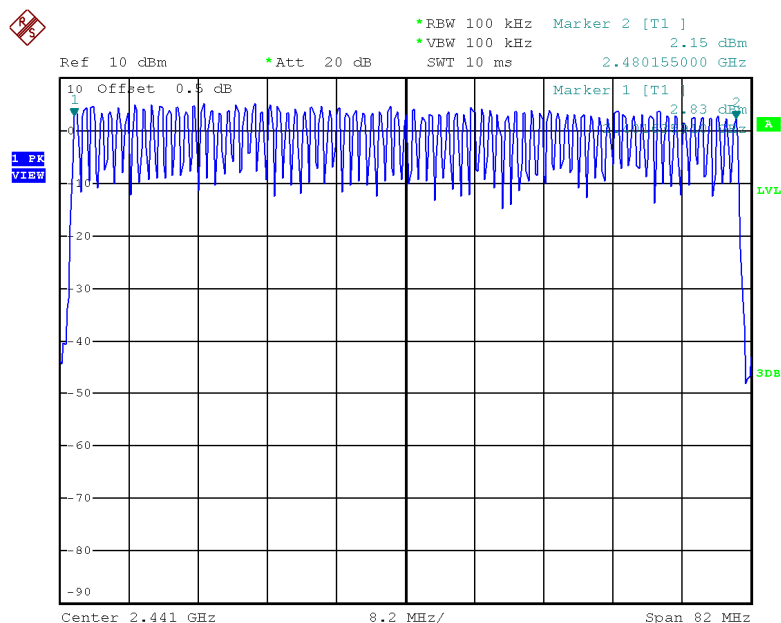
## **ATTACHMENT E - NUMBER OF HOPPING CHANNEL**

# Test Mode

# Hopping Mode\_1Mbps

Number of Hopping Channel

79



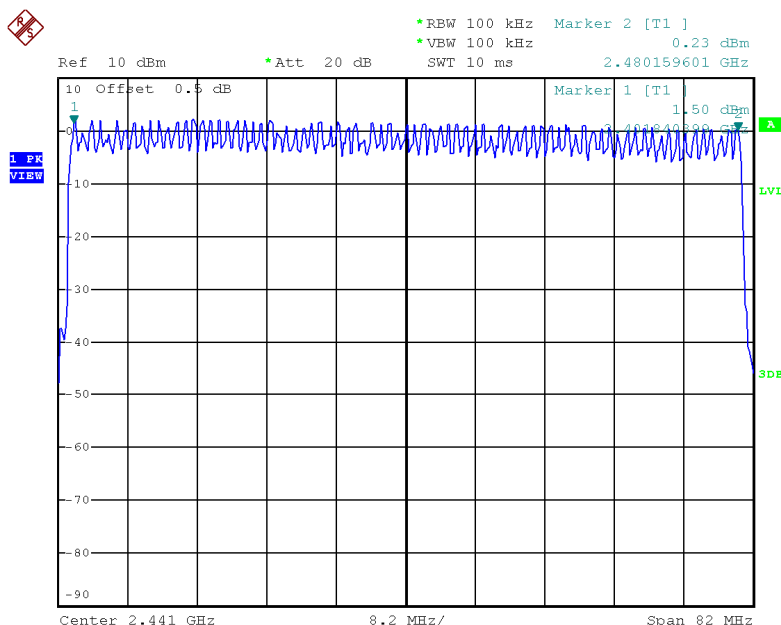
Date: 18.MAR.2015 20:46:58

# Test Mode

# Hopping Mode\_3Mbps

Number of Hopping Channel

79



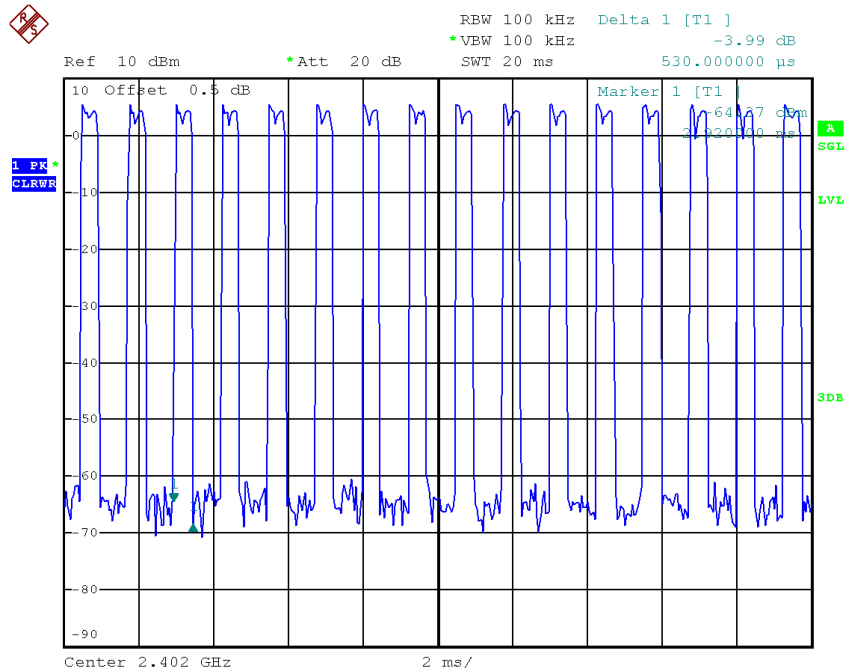
Date: 18.MAR.2015 21:26:29

## **ATTACHMENT F - AVERAGE TIME OF OCCUPANCY**

|             |               |
|-------------|---------------|
| Test Mode : | TX Mode_1Mbps |
|-------------|---------------|

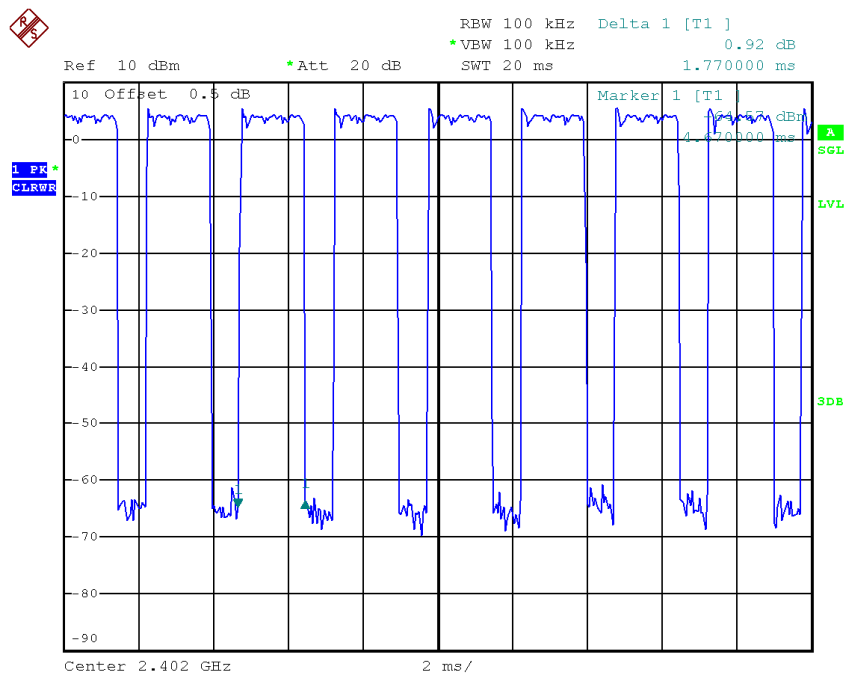
| Data Packet | Frequency (MHz) | Pulse Duration (ms) | Dwell Time (s) | Limits (s) | Test Result |
|-------------|-----------------|---------------------|----------------|------------|-------------|
| DH5         | 2402            | 3.0200              | 0.3221         | 0.4000     | Complies    |
| DH3         | 2402            | 1.7700              | 0.2832         | 0.4000     | Complies    |
| DH1         | 2402            | 0.5300              | 0.1696         | 0.4000     | Complies    |
| DH5         | 2441            | 3.0400              | 0.3243         | 0.4000     | Complies    |
| DH3         | 2441            | 1.7600              | 0.2816         | 0.4000     | Complies    |
| DH1         | 2441            | 0.5400              | 0.1728         | 0.4000     | Complies    |
| DH5         | 2480            | 3.0700              | 0.3275         | 0.4000     | Complies    |
| DH3         | 2480            | 1.8400              | 0.2944         | 0.4000     | Complies    |
| DH1         | 2480            | 0.5400              | 0.1728         | 0.4000     | Complies    |

### CH00-DH1



Date: 18.MAR.2015 20:27:11

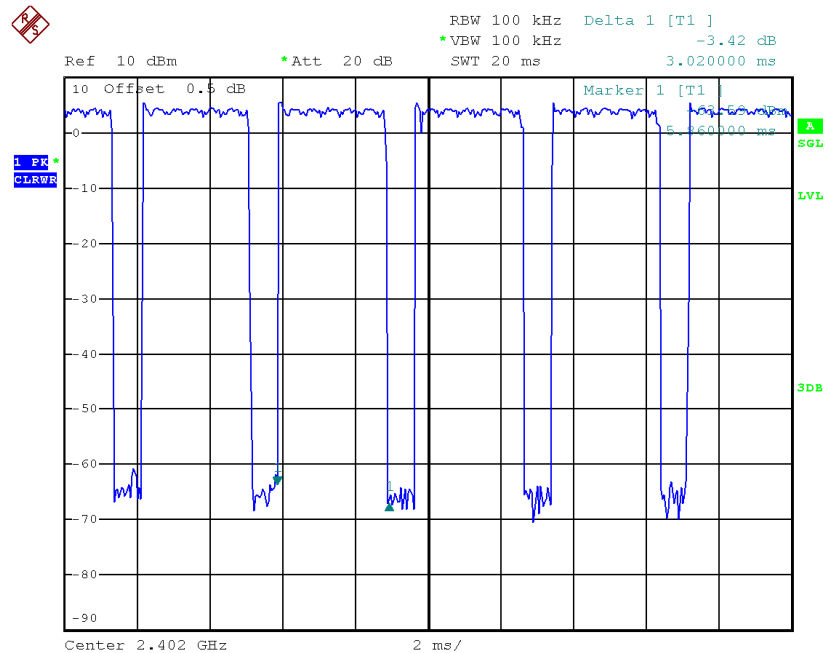
### CH00-DH3



Date: 18.MAR.2015 20:28:22

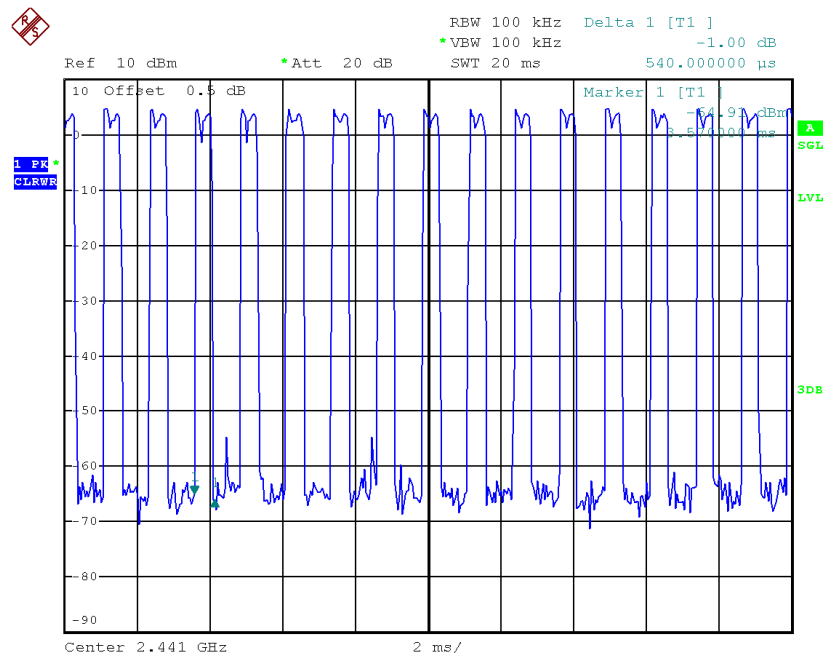


### CH00-DH5



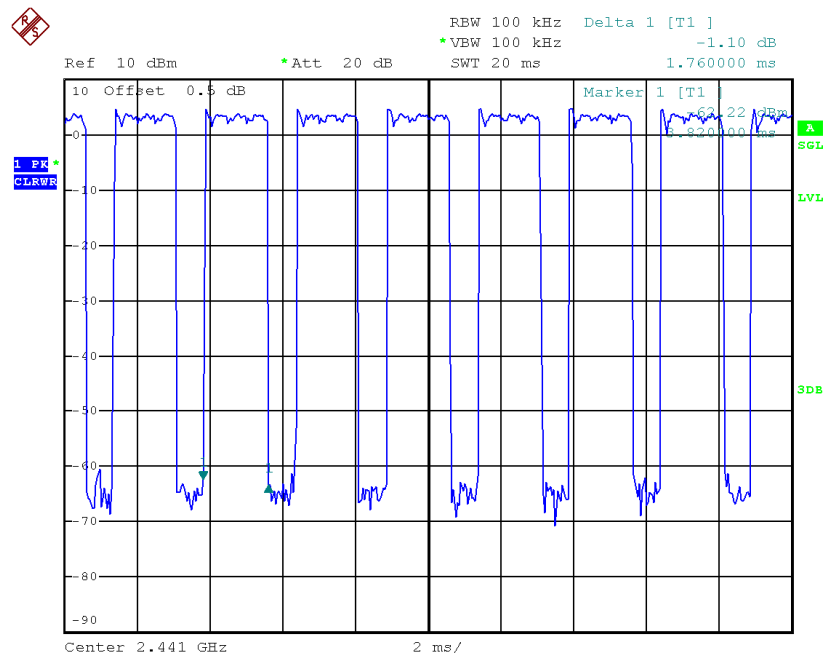
Date: 18.MAR.2015 20:22:53

### CH39-DH1



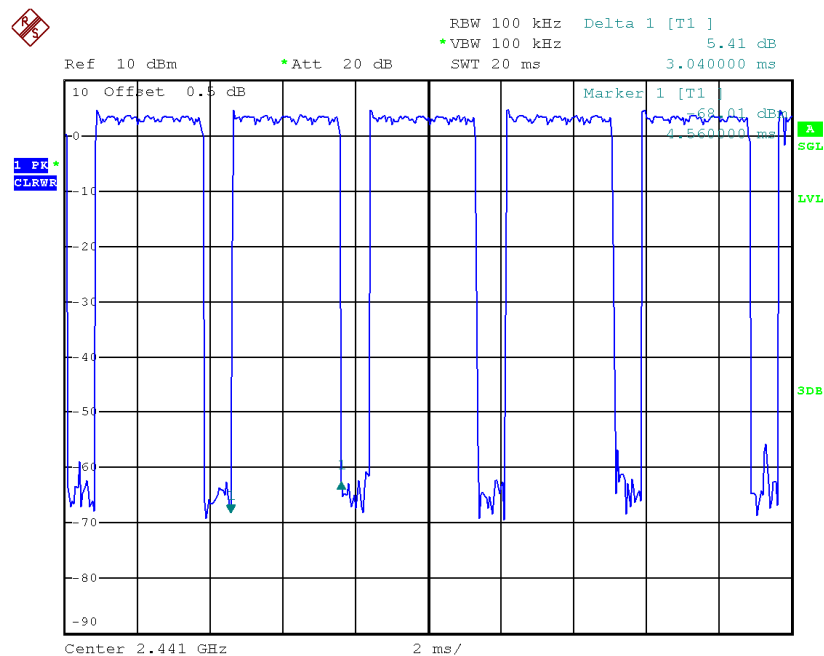
Date: 18.MAR.2015 20:34:36

### CH39-DH3



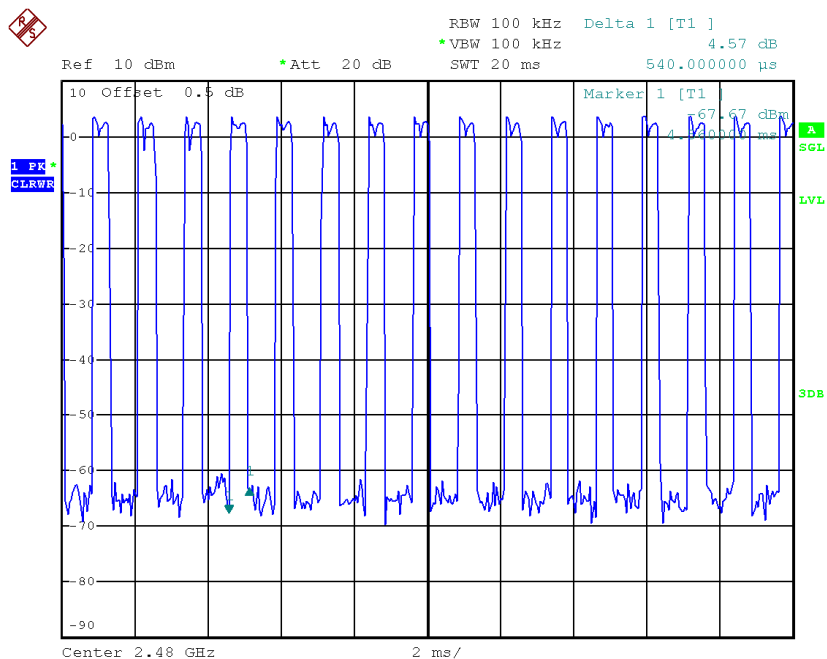
Date: 18.MAR.2015 20:36:24

### CH39-DH5



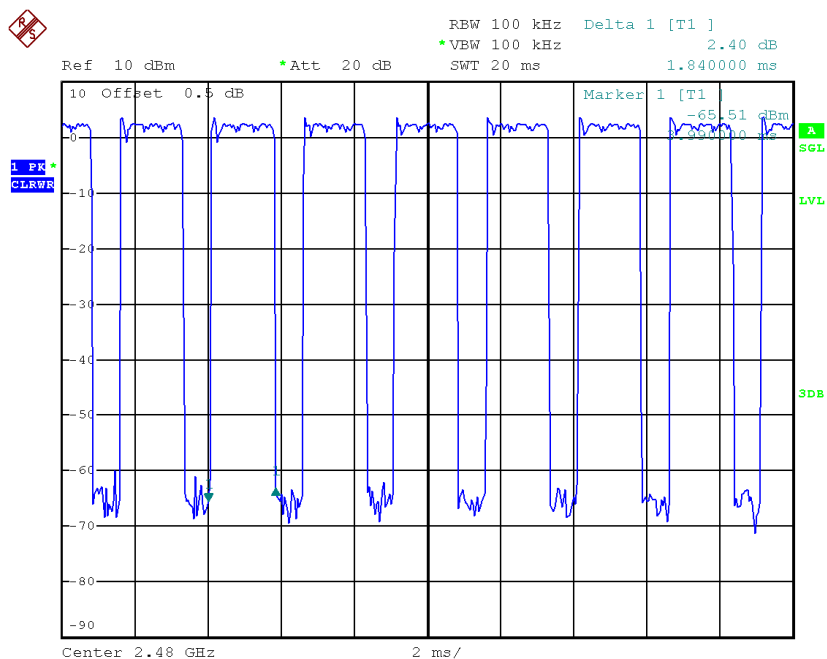
Date: 18.MAR.2015 20:32:54

### CH78-DH1



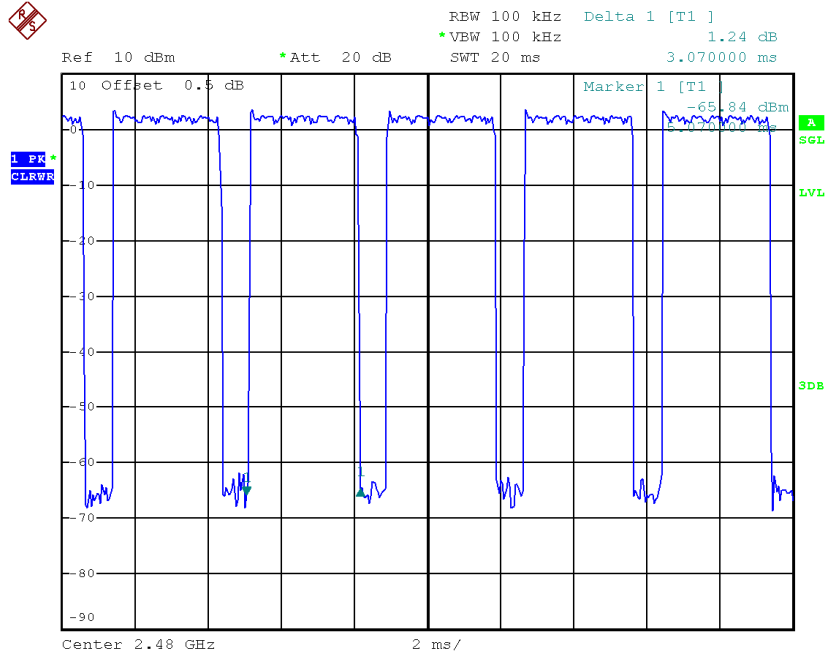
Date: 18.MAR.2015 20:44:24

### CH78-DH3



Date: 18.MAR.2015 20:45:07

# CH78-DH5

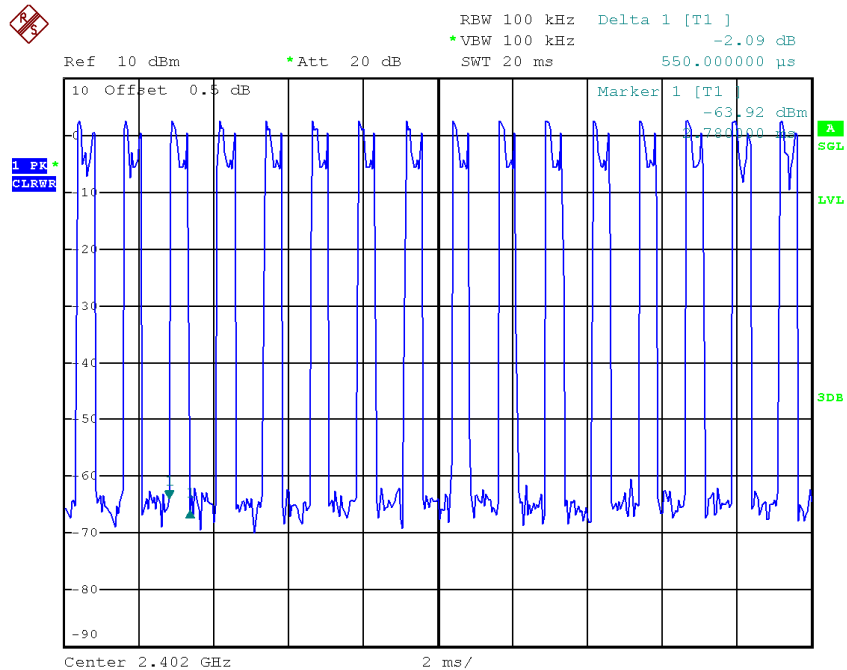


Date: 18.MAR.2015 20:42:35

|             |               |
|-------------|---------------|
| Test Mode : | TX Mode_3Mbps |
|-------------|---------------|

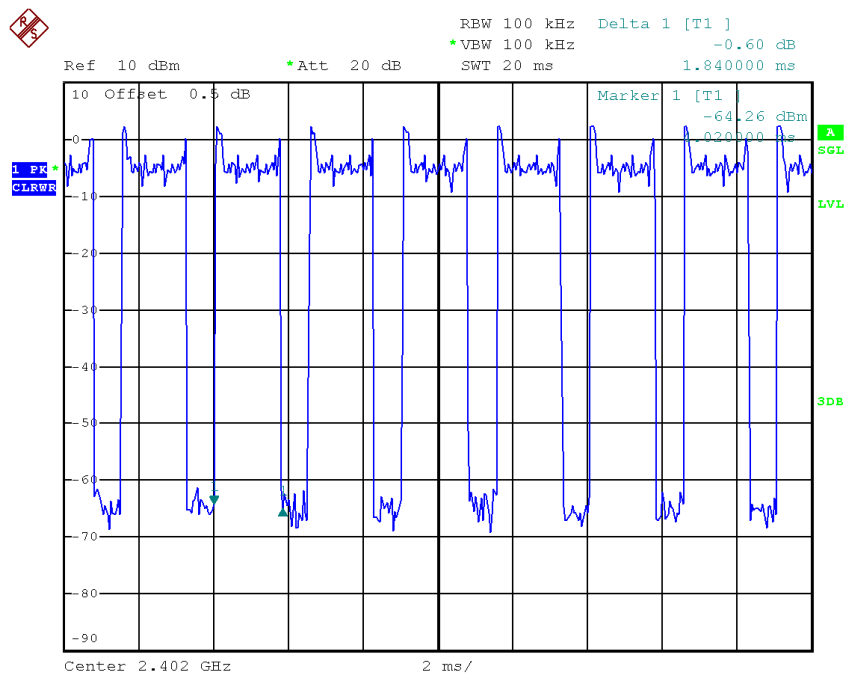
| Data Packet | Frequency (MHz) | Pulse Duration (ms) | Dwell Time (s) | Limits (s) | Test Result |
|-------------|-----------------|---------------------|----------------|------------|-------------|
| DH5         | 2402            | 3.0400              | 0.3243         | 0.4000     | Complies    |
| DH3         | 2402            | 1.8400              | 0.2944         | 0.4000     | Complies    |
| DH1         | 2402            | 0.5500              | 0.1760         | 0.4000     | Complies    |
| DH5         | 2441            | 3.0900              | 0.3296         | 0.4000     | Complies    |
| DH3         | 2441            | 1.7800              | 0.2848         | 0.4000     | Complies    |
| DH1         | 2441            | 0.5300              | 0.1696         | 0.4000     | Complies    |
| DH5         | 2480            | 3.0200              | 0.3221         | 0.4000     | Complies    |
| DH3         | 2480            | 1.8400              | 0.2944         | 0.4000     | Complies    |
| DH1         | 2480            | 0.5400              | 0.1728         | 0.4000     | Complies    |

### CH00-DH1



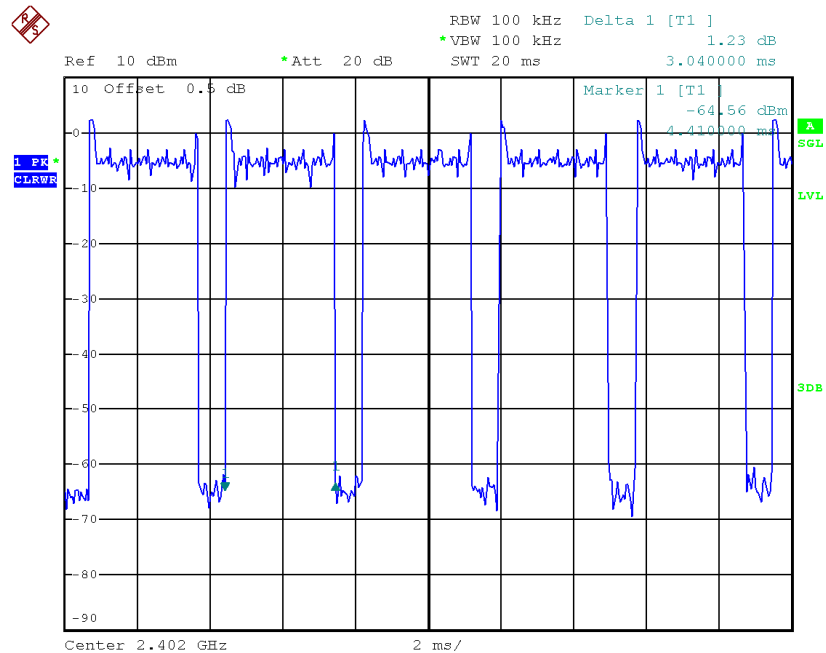
Date: 18.MAR.2015 20:54:06

### CH00-DH3



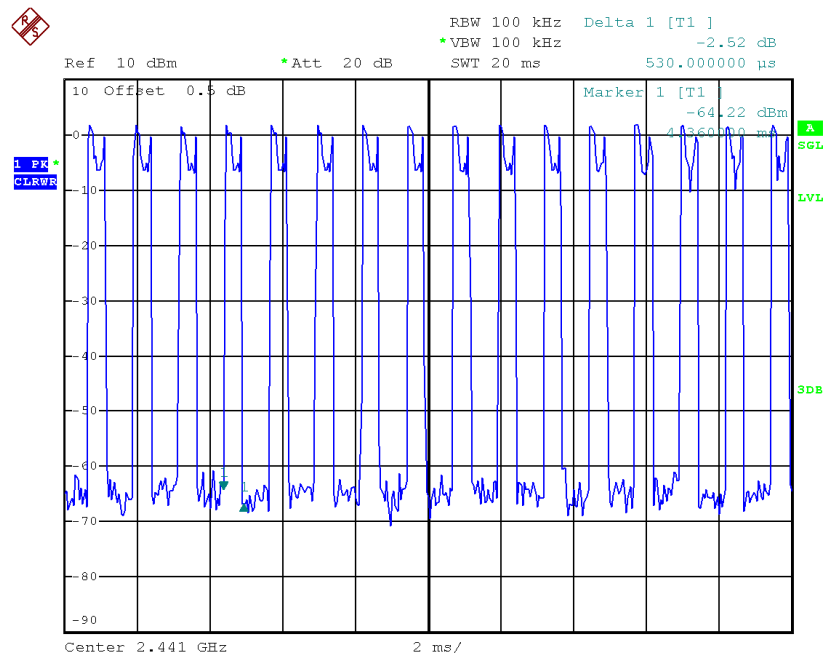
Date: 18.MAR.2015 20:54:50

### CH00-DH5



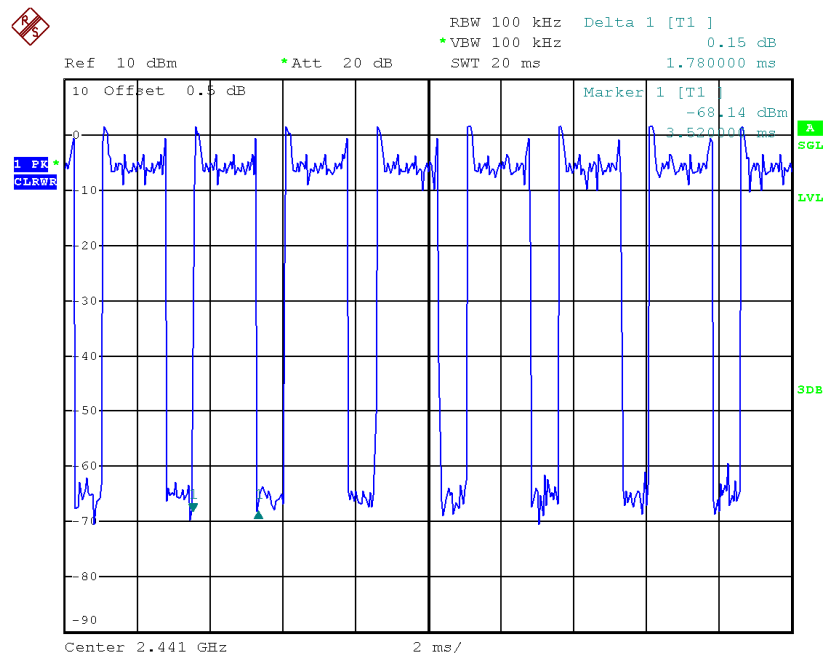
Date: 18.MAR.2015 20:51:38

### CH39-DH1



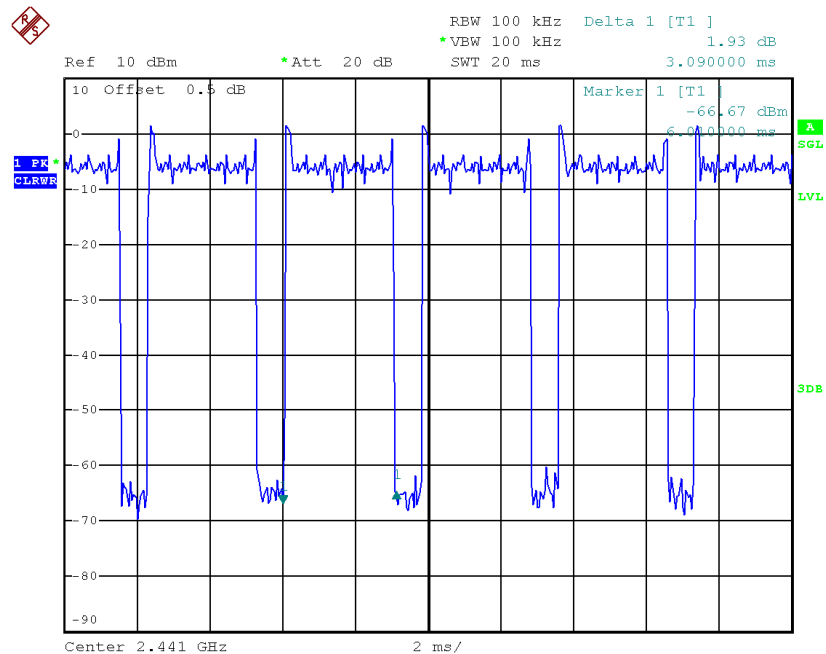
Date: 18.MAR.2015 21:06:57

### CH39-DH3



Date: 18.MAR.2015 21:09:25

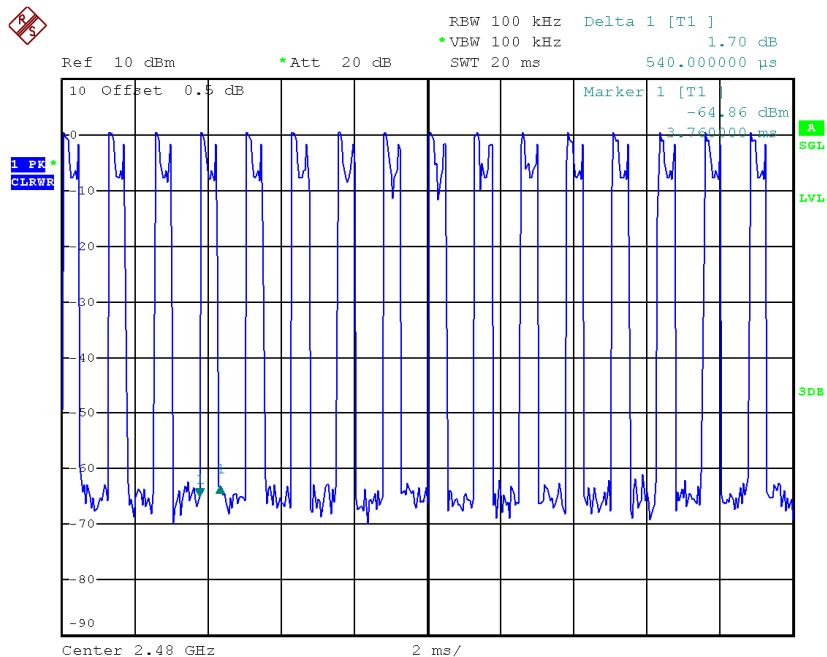
### CH39-DH5



Date: 18.MAR.2015 21:04:15

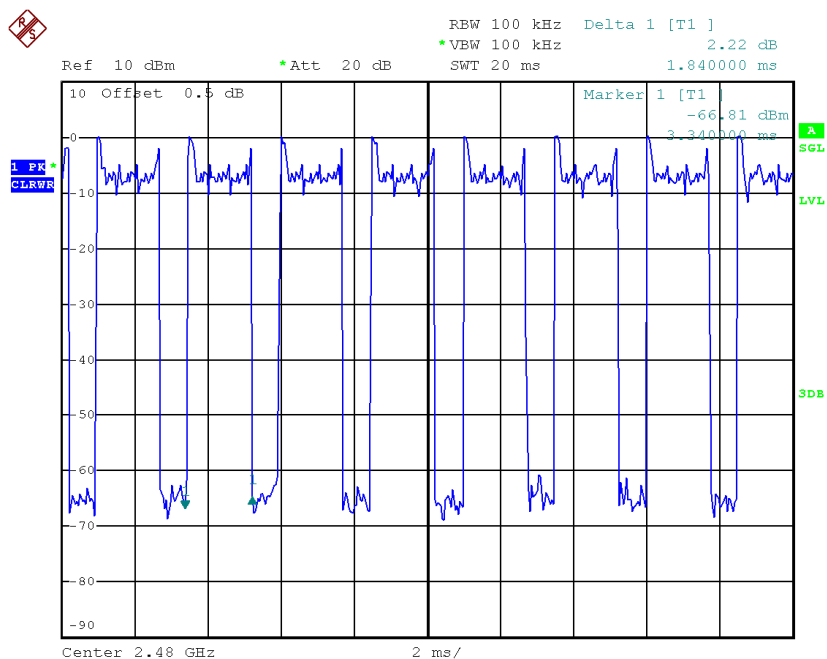


# CH78-DH1



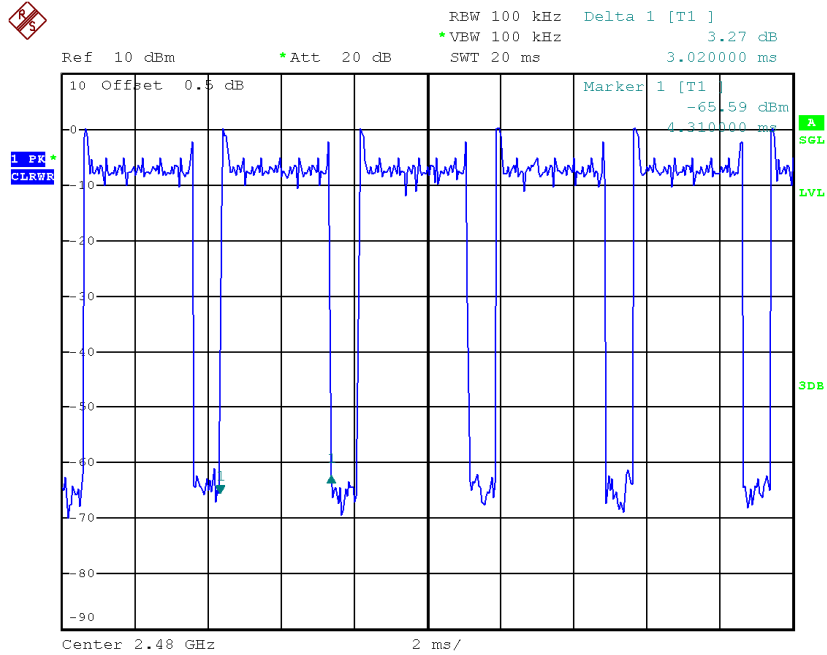
Date: 18.MAR.2015 21:21:06

# CH78-DH3



Date: 18.MAR.2015 21:21:58

# CH78-DH5

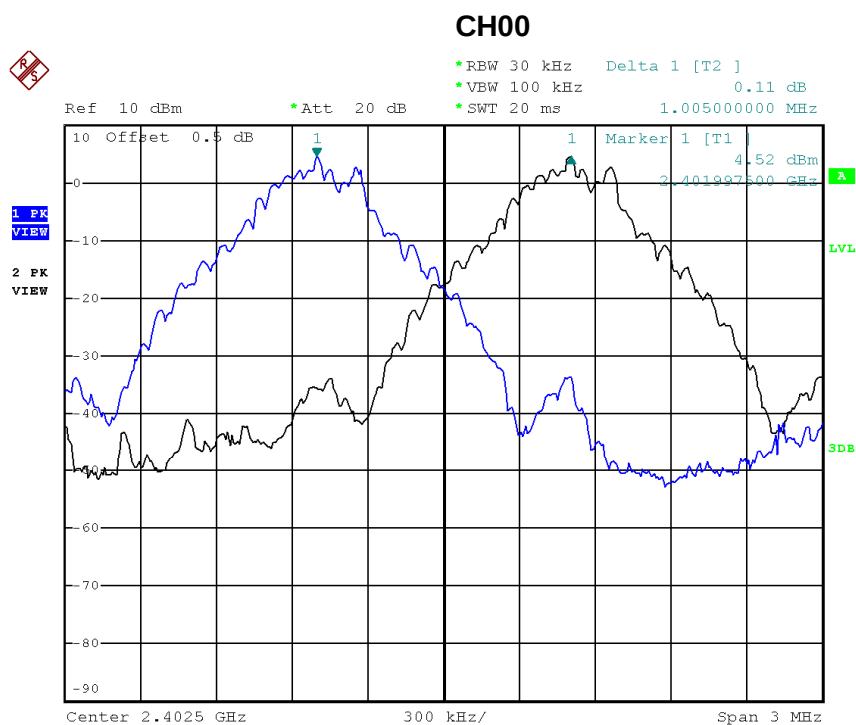


Date: 18.MAR.2015 21:19:12

## **ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT**

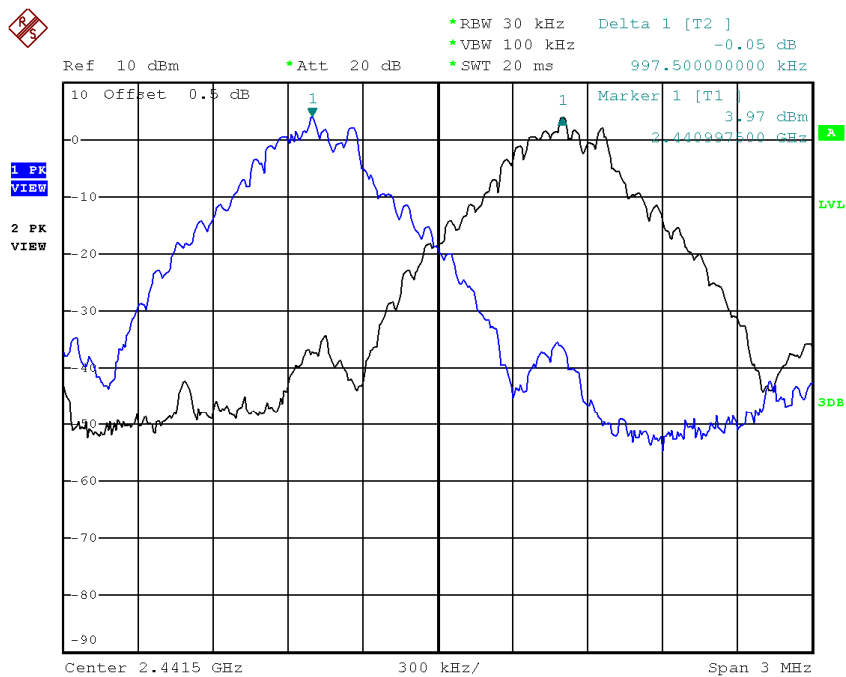
|             |                   |
|-------------|-------------------|
| Test Mode : | Hopping on _1Mbps |
|-------------|-------------------|

| Frequency (MHz) | Channel Separation (MHz) | 2/3 of 20dB Bandwidth (MHz) | Test Result |
|-----------------|--------------------------|-----------------------------|-------------|
| 2402            | 1.005                    | 0.618                       | Complies    |
| 2441            | 0.998                    | 0.632                       | Complies    |
| 2480            | 0.998                    | 0.652                       | Complies    |



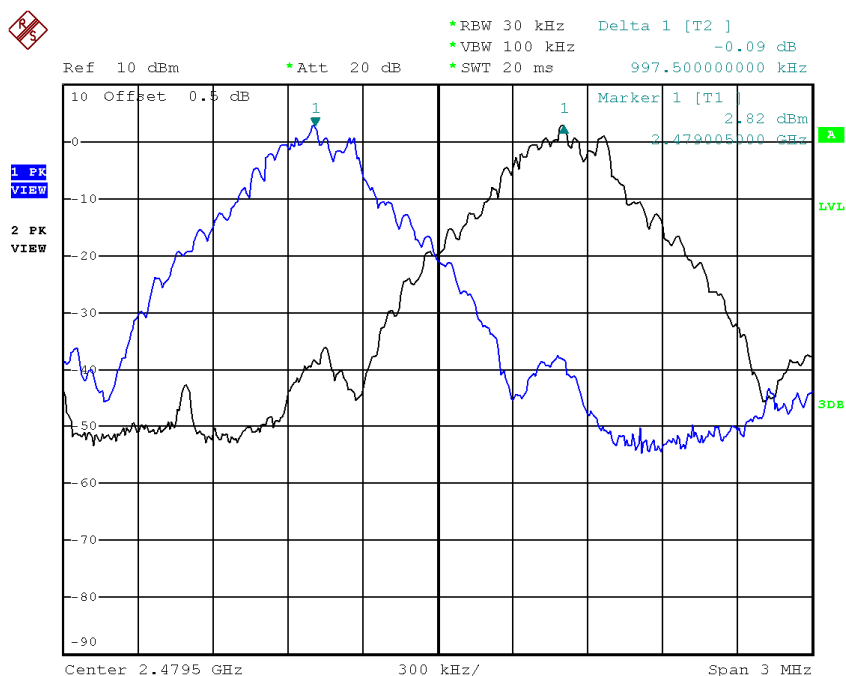
Date: 18.MAR.2015 20:25:03

### CH39



Date: 18.MAR.2015 20:33:16

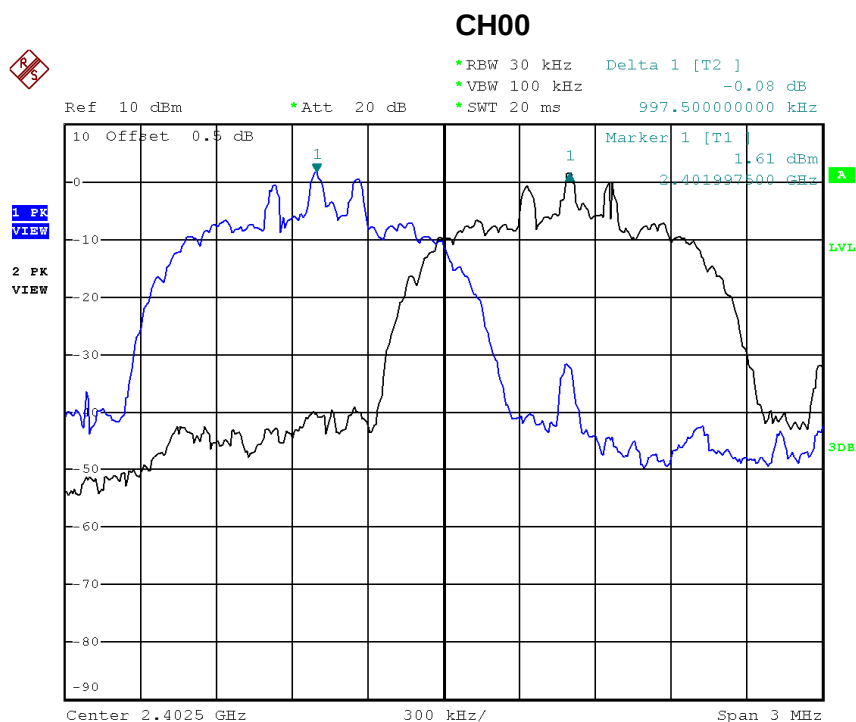
### CH78



Date: 18.MAR.2015 20:43:24

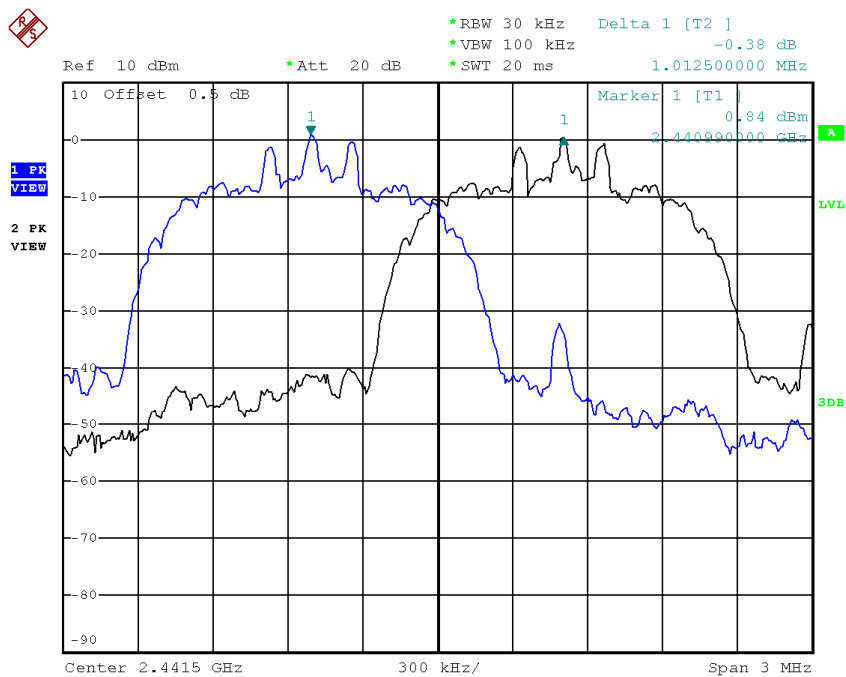
|             |                   |
|-------------|-------------------|
| Test Mode : | Hopping on _3Mbps |
|-------------|-------------------|

| Frequency (MHz) | Channel Separation (MHz) | 2/3 of 20dB Bandwidth (MHz) | Test Result |
|-----------------|--------------------------|-----------------------------|-------------|
| 2402            | 0.998                    | 0.845                       | Complies    |
| 2441            | 1.013                    | 0.838                       | Complies    |
| 2480            | 1.005                    | 0.841                       | Complies    |



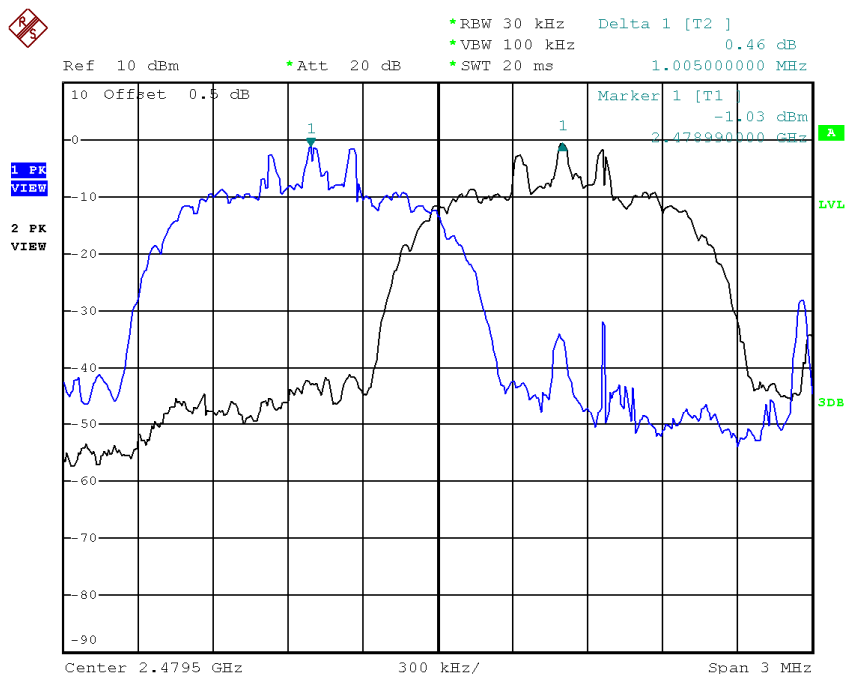
Date: 18.MAR.2015 20:53:08

### CH39



Date: 18.MAR.2015 21:05:44

### CH78



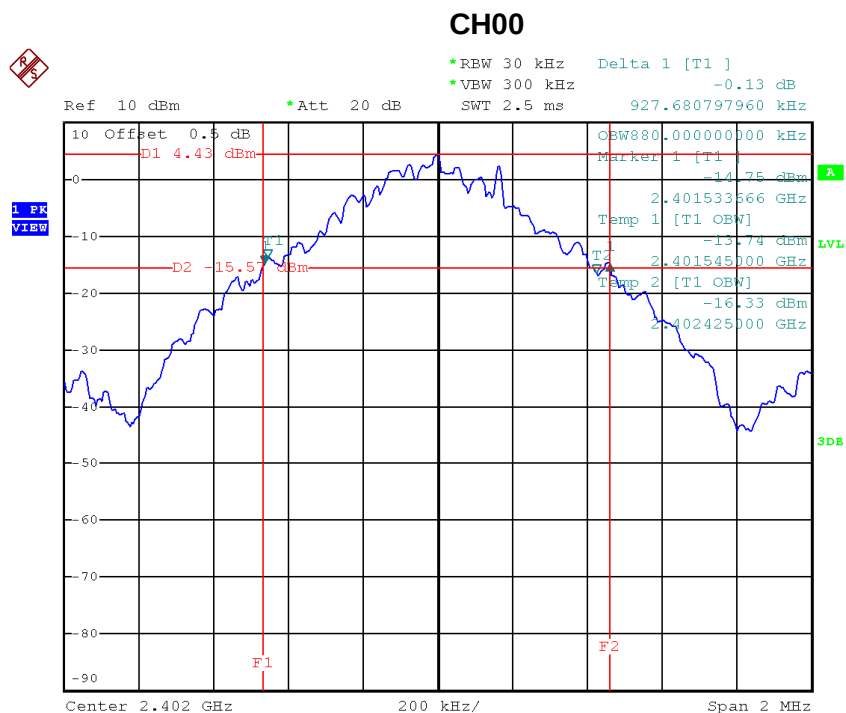
Date: 18.MAR.2015 21:27:52

## **ATTACHMENT H - BANDWIDTH**

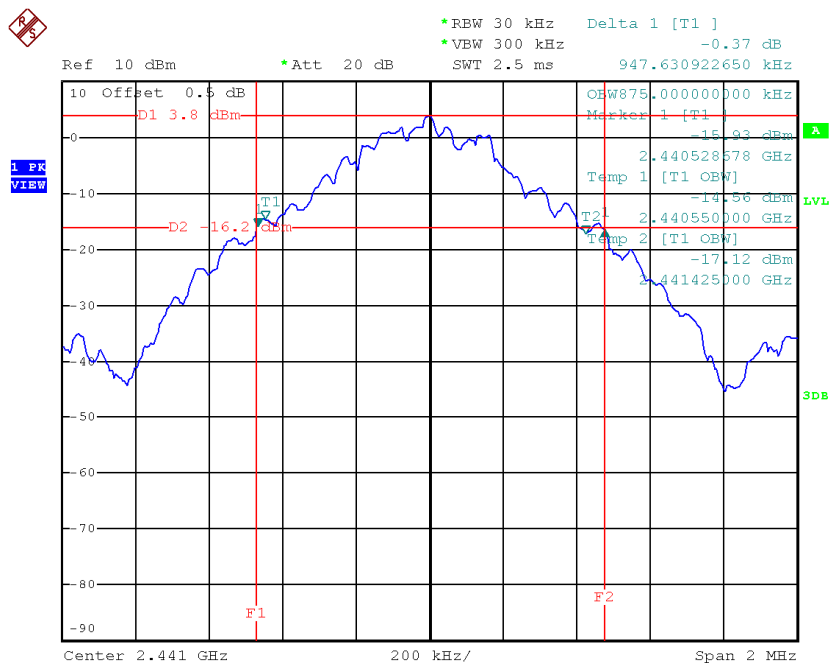


|             |                |
|-------------|----------------|
| Test Mode : | TX Mode _1Mbps |
|-------------|----------------|

| Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Occupied BW (MHz) | Test Result |
|-----------------|----------------------|-----------------------|-------------|
| 2402            | 0.928                | 0.880                 | Complies    |
| 2441            | 0.948                | 0.875                 | Complies    |
| 2480            | 0.978                | 0.890                 | Complies    |

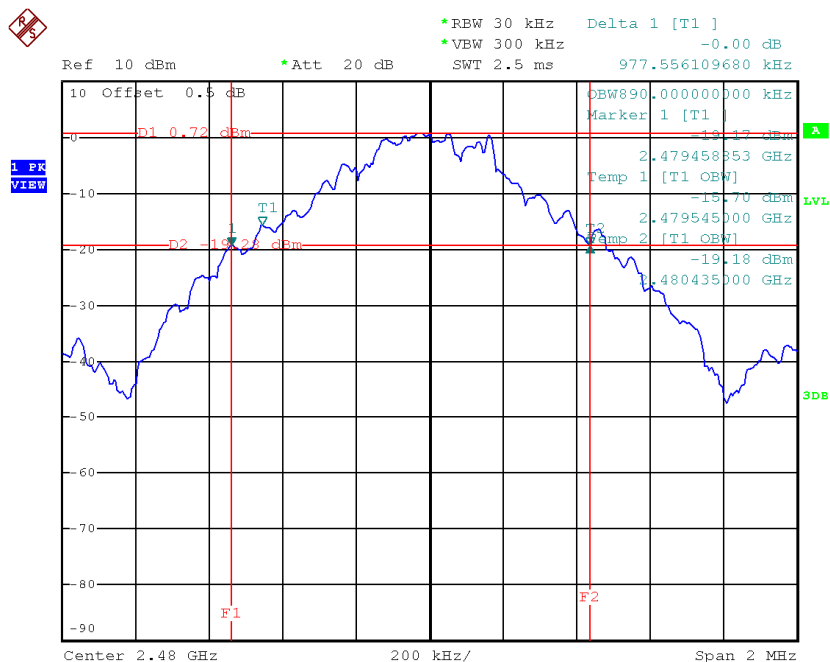


### CH39



Date: 18.MAR.2015 20:32:23

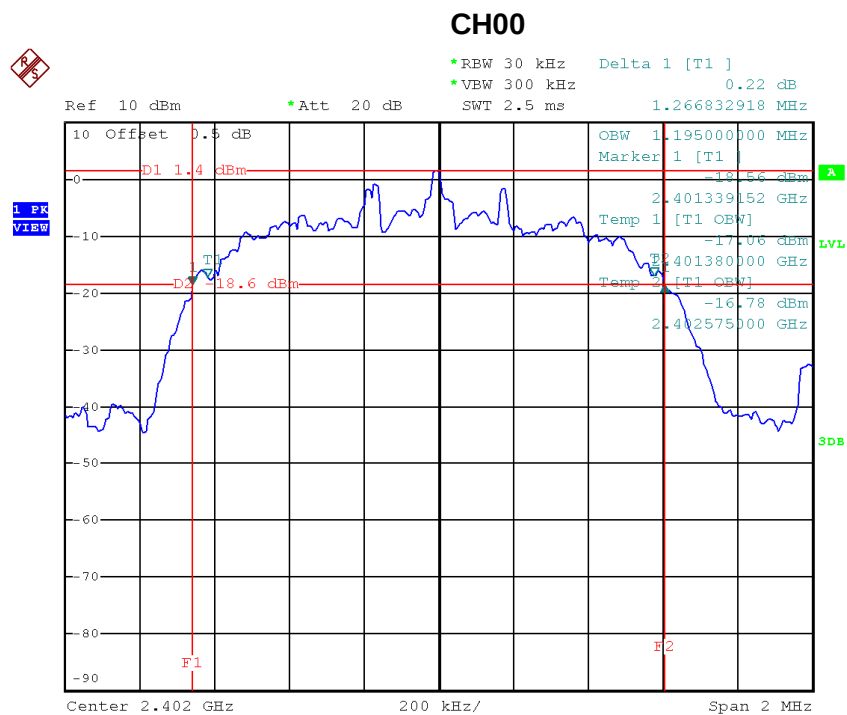
### CH78



Date: 18.MAR.2015 20:41:44

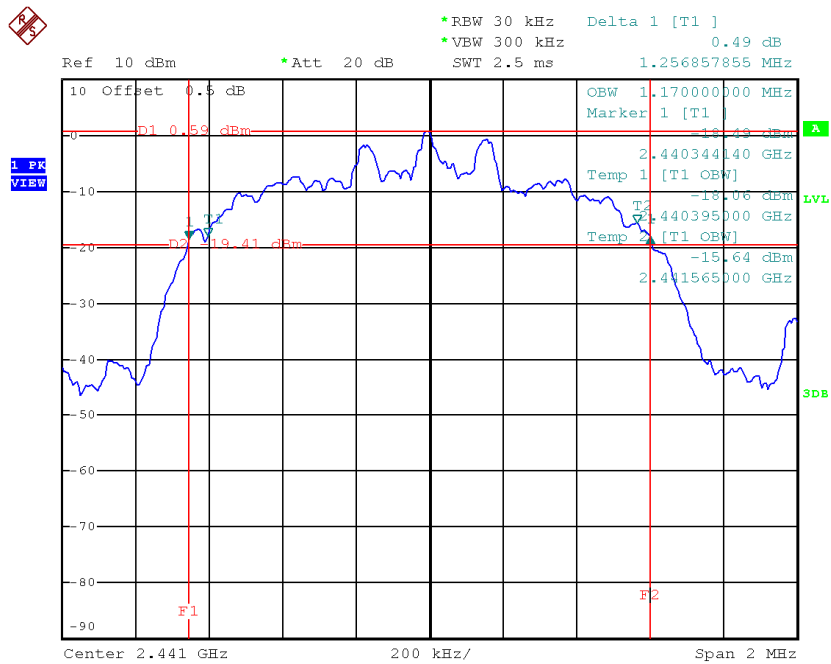
|             |                |
|-------------|----------------|
| Test Mode : | TX Mode _3Mbps |
|-------------|----------------|

| Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Occupied BW (MHz) | Test Result |
|-----------------|----------------------|-----------------------|-------------|
| 2402            | 1.267                | 1.195                 | Complies    |
| 2441            | 1.257                | 1.170                 | Complies    |
| 2480            | 1.262                | 1.170                 | Complies    |



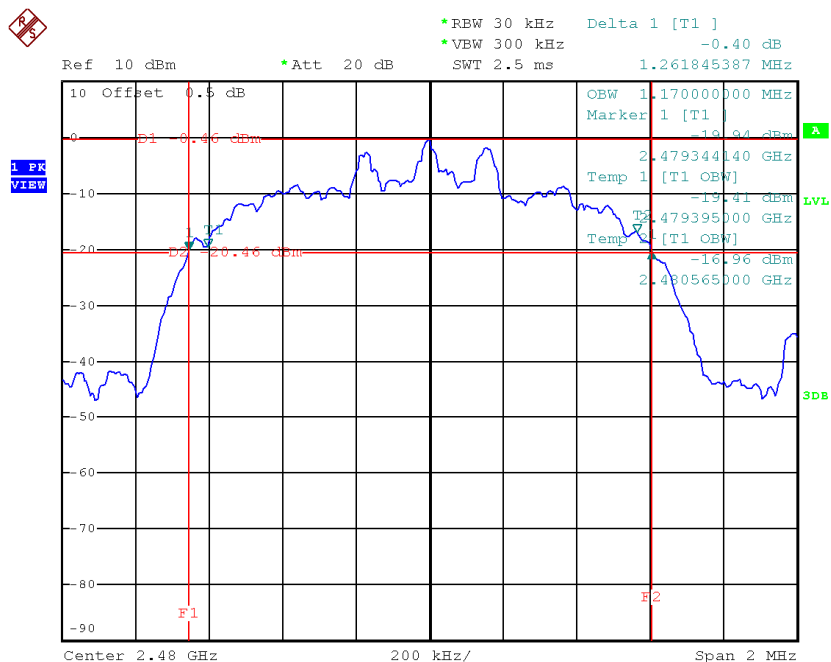
Date: 18.MAR.2015 20:52:30

### CH39



Date: 18.MAR.2015 21:03:42

### CH78

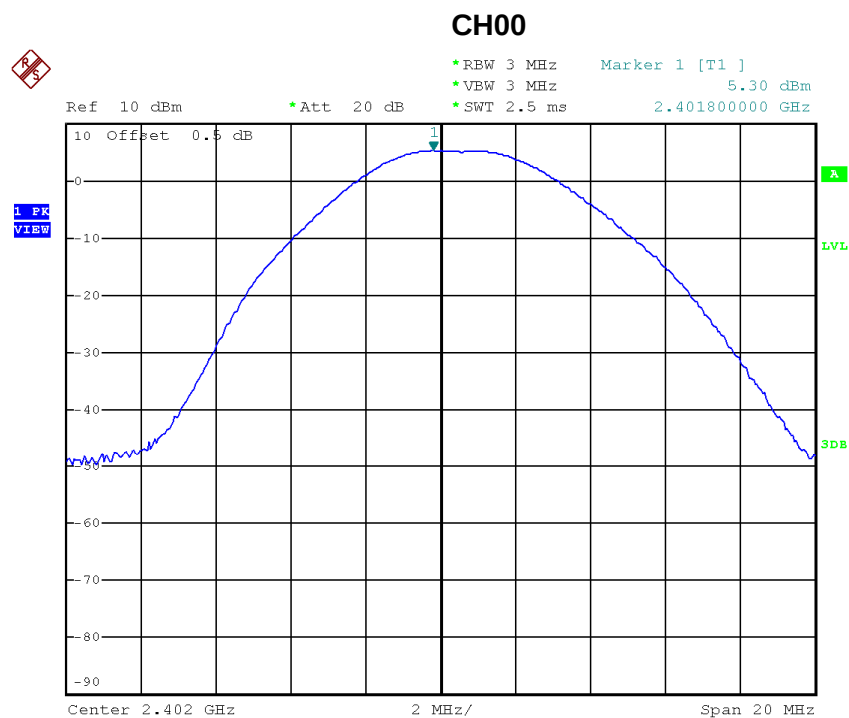


Date: 18.MAR.2015 21:18:00

## **ATTACHMENT I - PEAK OUTPUT POWER**

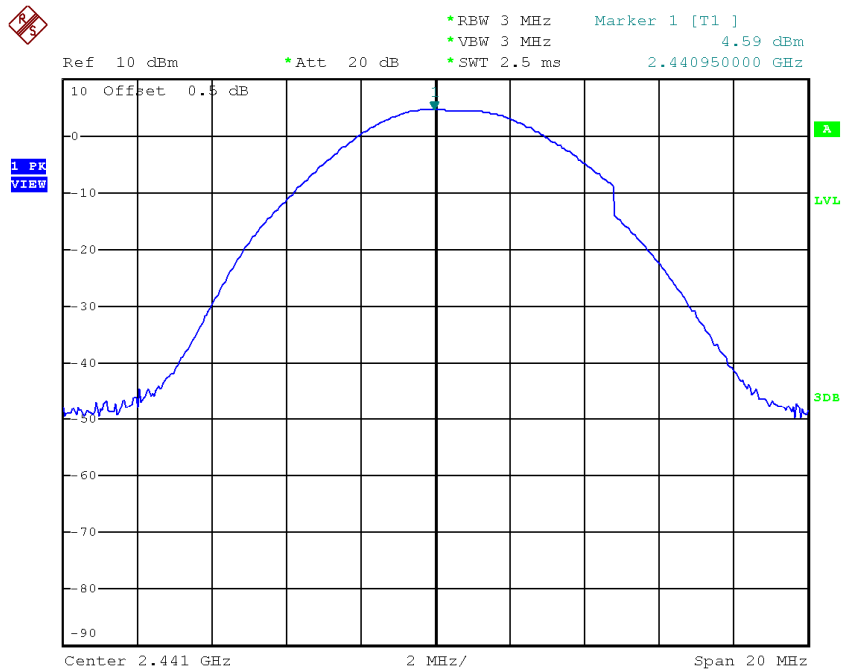
|             |                |
|-------------|----------------|
| Test Mode : | TX Mode _1Mbps |
|-------------|----------------|

| Frequency (MHz) | Conducted Power (dBm) | Conducted Power (Watt) | Max. Limit (dBm) | Max. Limit (Watt) | Test Result |
|-----------------|-----------------------|------------------------|------------------|-------------------|-------------|
| 2402            | 5.30                  | 0.0034                 | 30.00            | 1.0000            | Complies    |
| 2441            | 4.59                  | 0.0029                 | 30.00            | 1.0000            | Complies    |
| 2480            | 3.43                  | 0.0022                 | 30.00            | 1.0000            | Complies    |



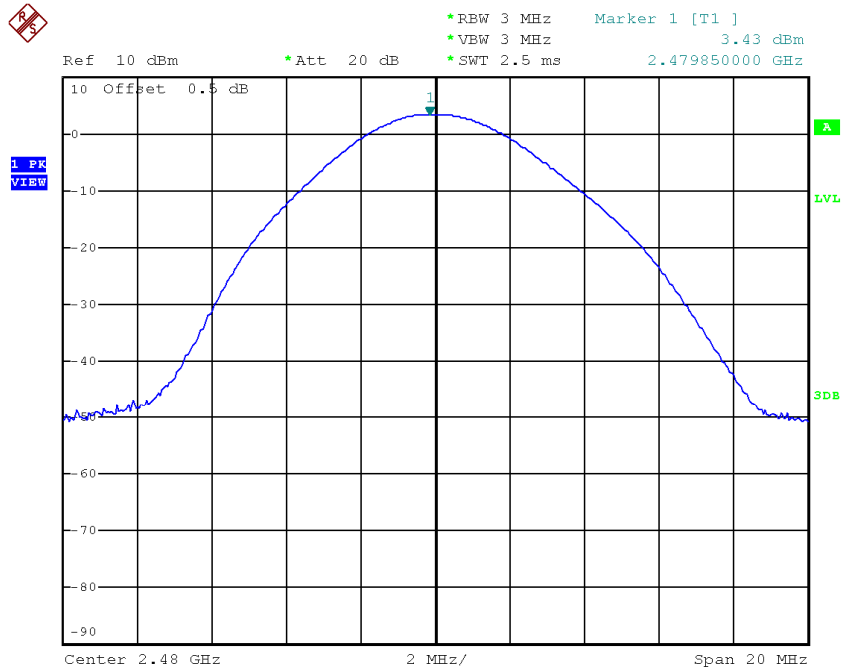
Date: 18.MAR.2015 20:23:07

### CH39



Date: 18.MAR.2015 20:37:32

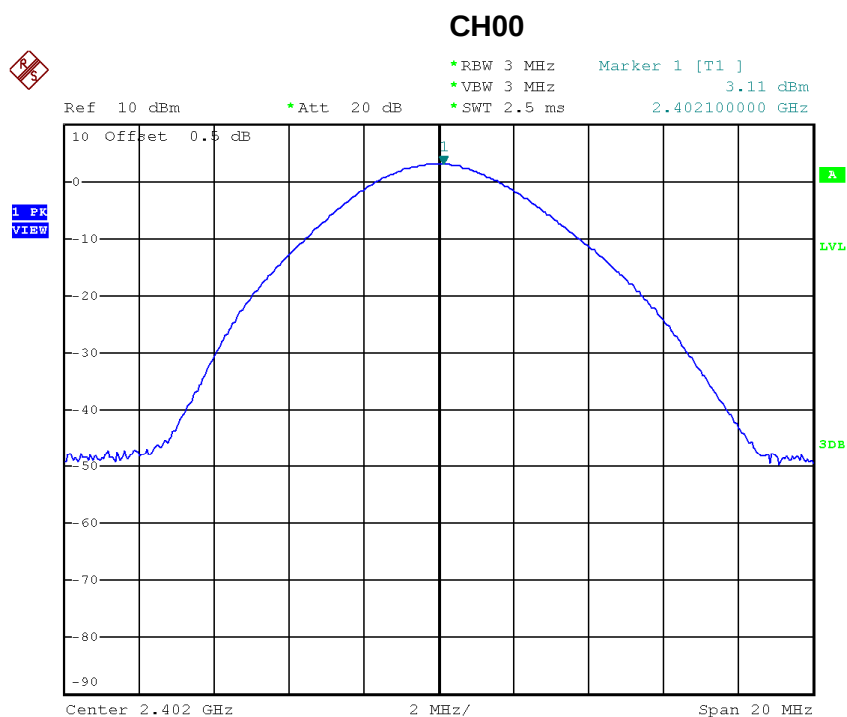
### CH78



Date: 18.MAR.2015 20:42:51

Test Mode : TX Mode \_3Mbps

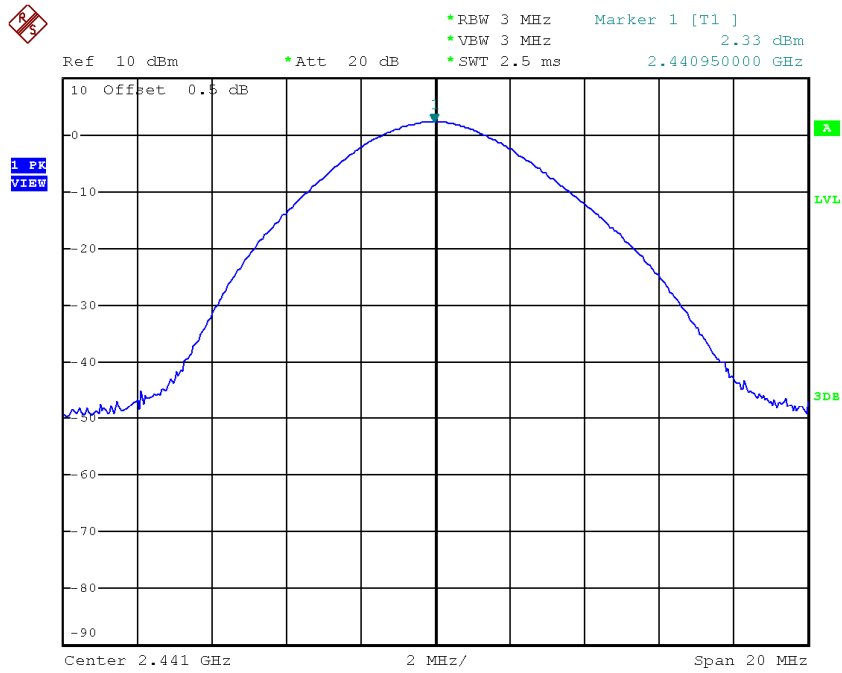
| Frequency (MHz) | Conducted Power (dBm) | Conducted Power (Watt) | Max. Limit (dBm) | Max. Limit (Watt) | Test Result |
|-----------------|-----------------------|------------------------|------------------|-------------------|-------------|
| 2402            | 3.11                  | 0.0020                 | 30.00            | 1.0000            | Complies    |
| 2441            | 2.33                  | 0.0017                 | 30.00            | 1.0000            | Complies    |
| 2480            | 1.05                  | 0.0013                 | 30.00            | 1.0000            | Complies    |



Date: 18.MAR.2015 20:52:03

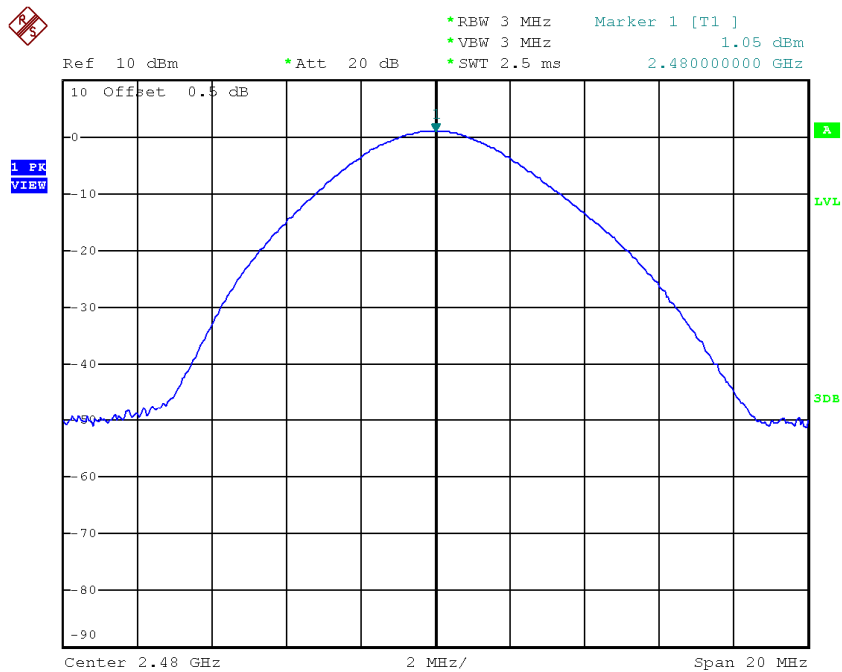


### CH39



Date: 18.MAR.2015 21:04:31

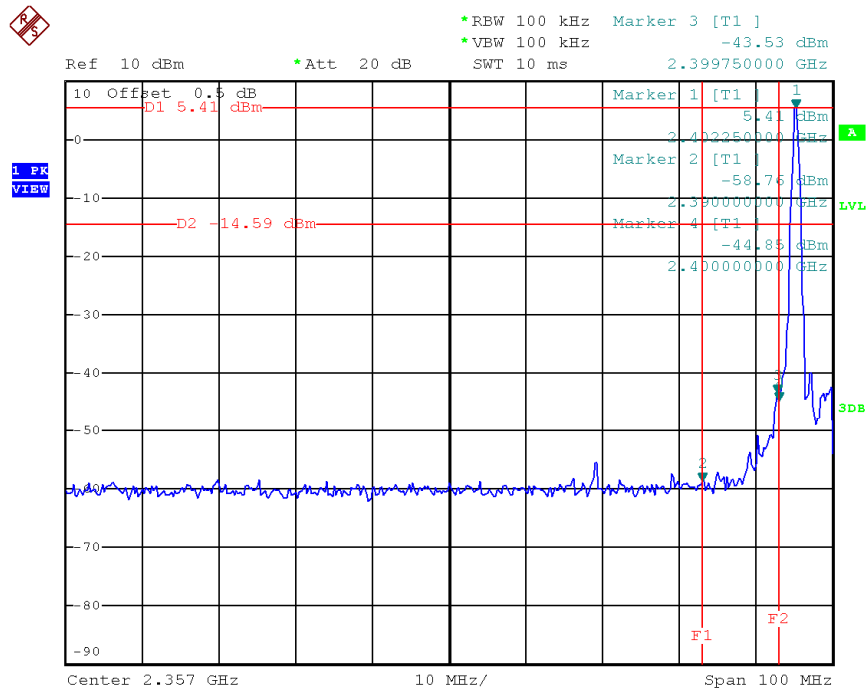
### CH78



Date: 18.MAR.2015 21:19:31

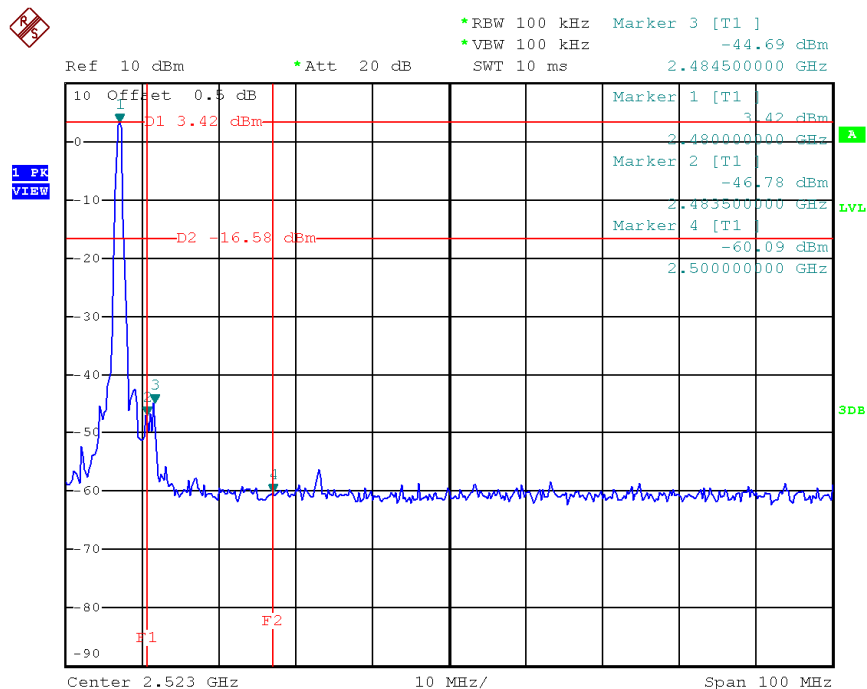
## **ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION**

### CH00 (Lower)\_1Mbps



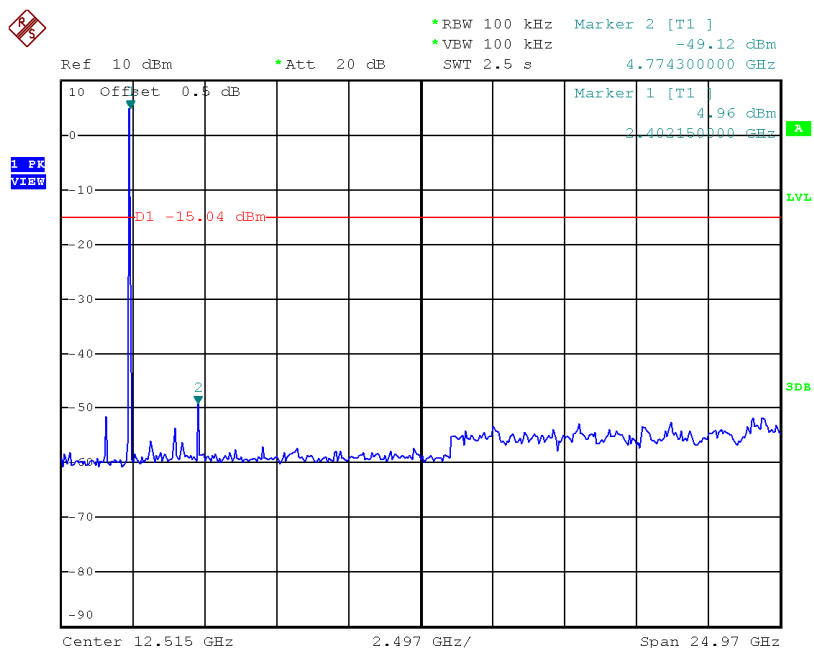
Date: 18.MAR.2015 20:20:29

### CH78 (Upper)\_1Mbps



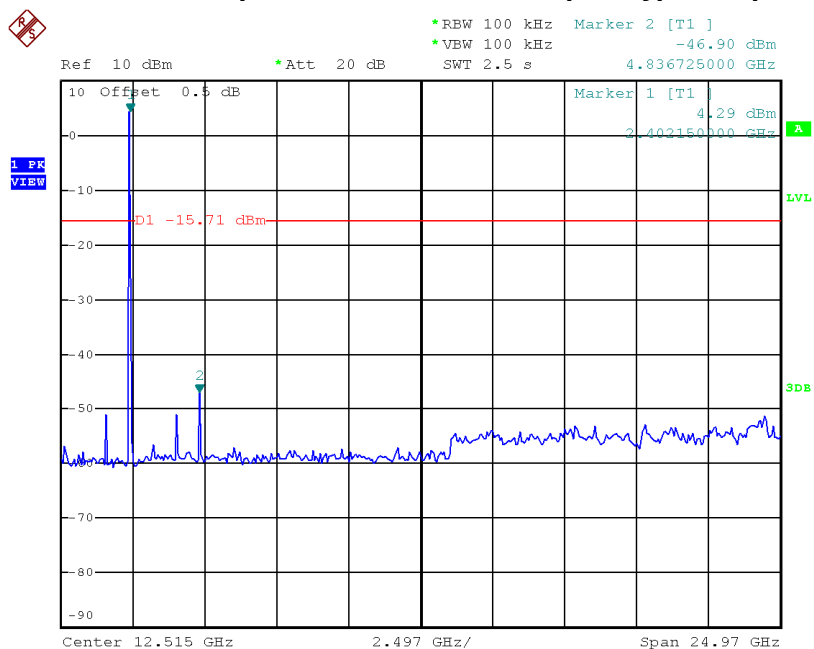
Date: 18.MAR.2015 20:42:01

### CH00 (10 Harmonic of the frequency) \_1Mbps



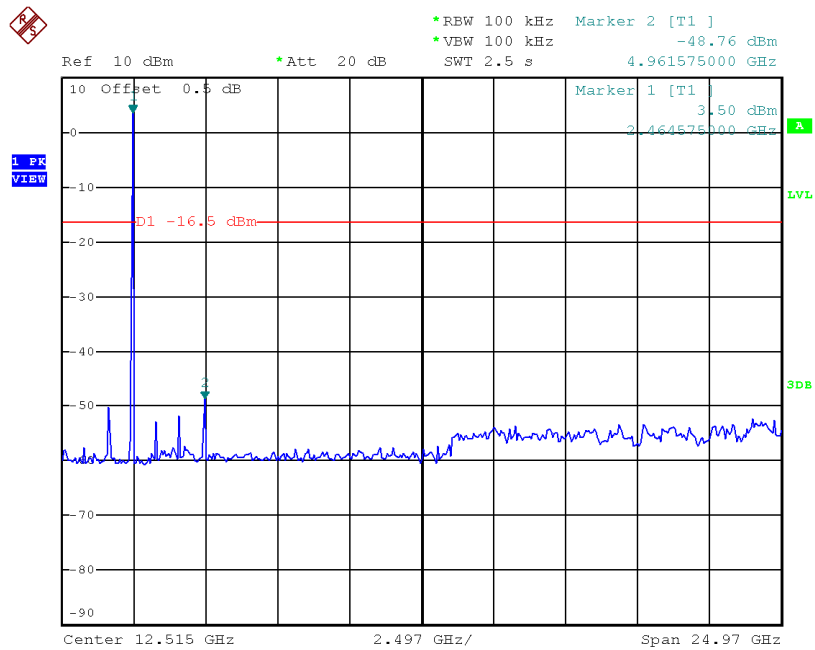
Date: 18.MAR.2015 20:20:11

### CH39 (10 Harmonic of the frequency) \_1Mbps



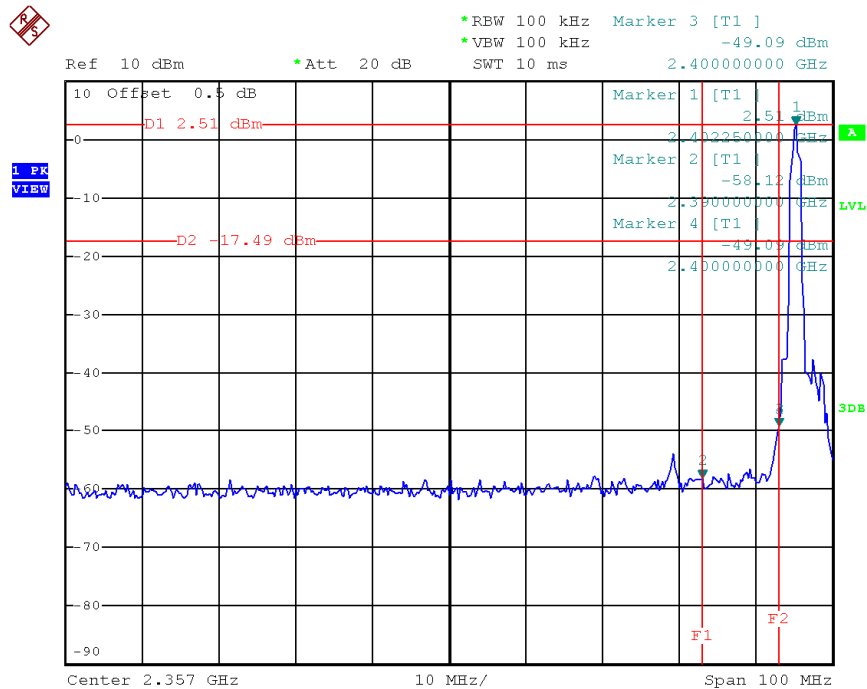
Date: 18.MAR.2015 20:32:04

### CH78 (10 Harmonic of the frequency) \_1Mbps



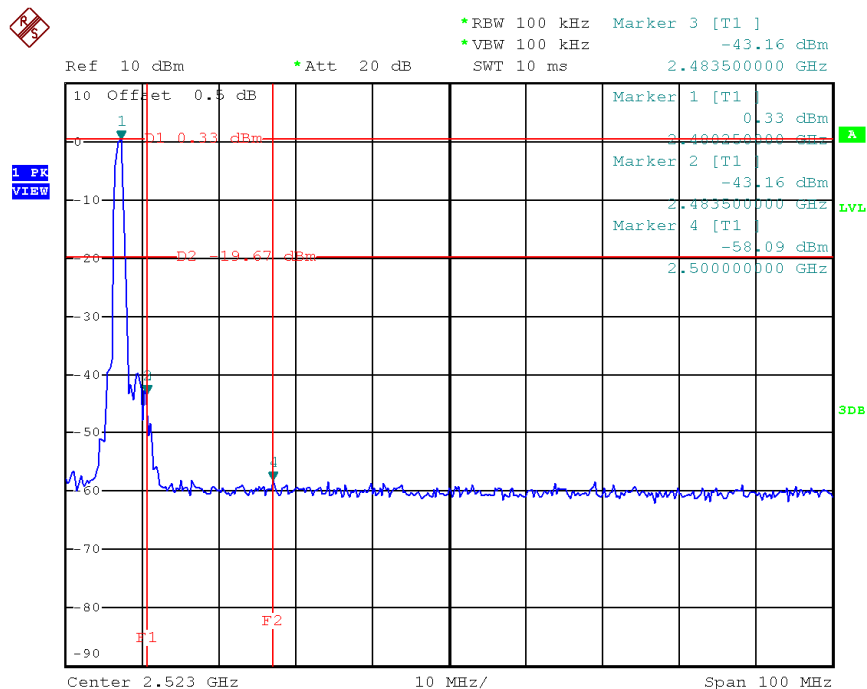
Date: 18.MAR.2015 20:41:02

### CH00 (Lower) \_3Mbps



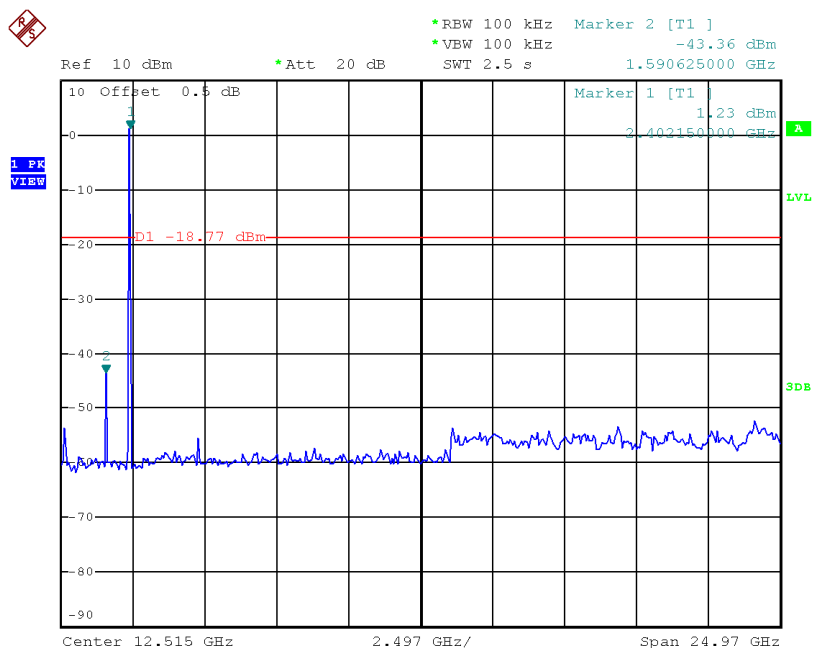
Date: 18.MAR.2015 20:51:11

### CH78 (Upper) \_3Mbps



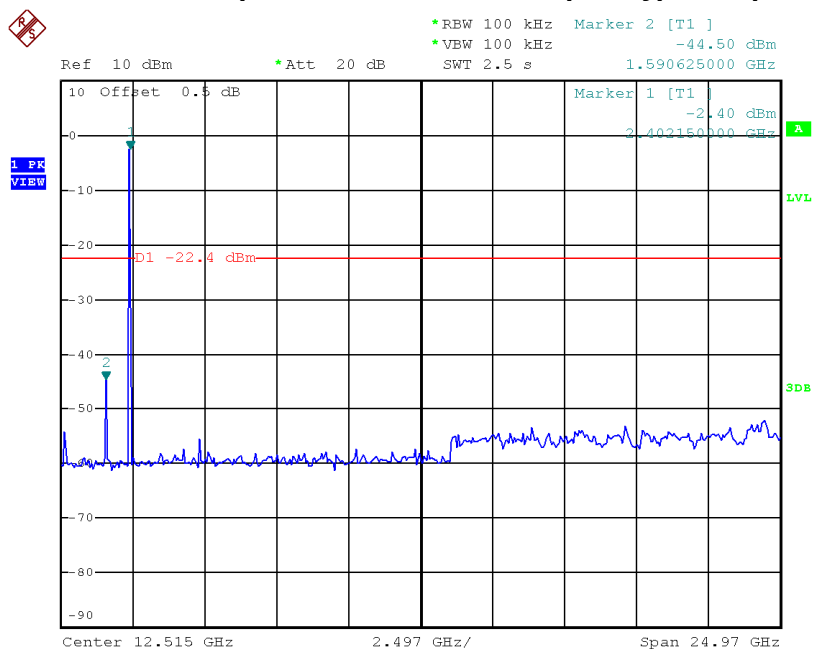
Date: 18.MAR.2015 21:18:19

### CH00 (10 Harmonic of the frequency) \_3Mbps



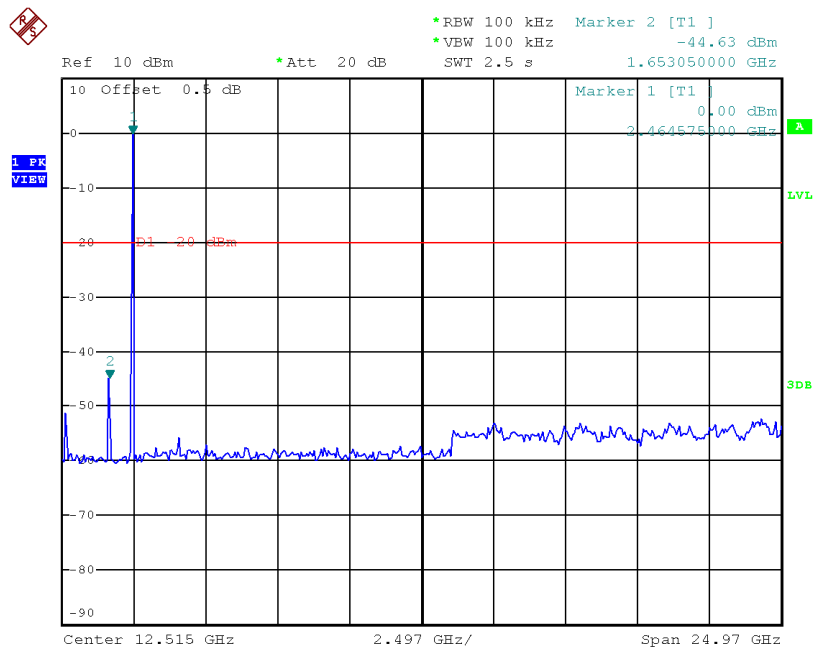
Date: 18.MAR.2015 20:50:46

### CH39 (10 Harmonic of the frequency) \_3Mbps



Date: 18.MAR.2015 21:02:47

# CH78 (10 Harmonic of the frequency) \_3Mbps



Date: 18.MAR.2015 21:17:22