# Application for FCC Certification
On behalf of

Hisense Electric Co., Ltd.

Product Name: Sero 7 Pro

Model No.: M470BSA

FCC ID: W9HPADP0001

Prepared For : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

Prepared By :Audix Technology (Shanghai) Co., Ltd.
3F 34Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F13035
Date of Test : Mar. 07 – 30, 2013
Date of Report : Mar. 31, 2013

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# TEST REPORT FOR FCC CERTIFICATE

| | | |
|---|---|---|
| Applicant | : | Hisense Electric Co., Ltd. |
| Manufacturer | : | Hisense Electric Co., Ltd. |
| EUT Description | : | Sero 7 Pro |
| | (A) Model No. | : M470BSA |
| | (B) Test Voltage | : AC 120V/60Hz, DC 5V (USB Power) |

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2012 AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: M470BSA), which was tested on Mar. 07 – 30, 2013 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

***The test results for EUT's other function are contained in No. EM-F1020201, a FCC Doc report; for EUT's DTS function are contained in No. F12036, a Certification report; for EUT's UNII function are contained in No. F12037, a Certification report.***

Date of Test : Mar. 07 – 30, 2013 Date of Report : Mar. 31, 2013

Producer : Kathy Wang
KATHY WANG / Assistant

Review : Dio Yang
DIO YANG / Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN/ Deputy Manager

# 1 SUMMARY OF STANDARDS AND RESULTS

## 1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Description / Test Item | Test Standard | Results | Meets Limit |
|---|---|---|---|
| **EMISSION** | | | |
| Conducted Emission Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 | Pass | 15.207 |
| Spurious Radiated Emissions Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND DA 00-705 | Pass | 15.209(a) 15.205(a)(c) |
| 20 dB Bandwidth Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(a)(1) |
| Peak Output Power Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(b)(1) |
| Spurious RF Conducted Emissions Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(d) |
| Band-edge Compliance of RF Conducted Emissions Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(d) |
| Number of Hopping Frequencies Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(a)(1) |
| Carrier Frequency Separation Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(a)(1) |
| Dwell Time Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND DA 00-705 | Pass | 15.247(a)(1) |

# 2 GENERAL INFORMATION

## 2.1 Description of Equipment Under Test

| | | |
|---|---|---|
| Description | : | Sero 7 Pro |
| Type of EUT | | ☐ Production ☑ Pre-product ☐ Pro-type |
| Model Number | : | M470BSA |
| Radio Tech | : | Bluetooth |
| Standard | : | BTv3.0+HS |
| Data Rate | : | 1Mbps (GPSK)/2Mbps (π/4 QPSK)/3Mbps (8DPSK)<br>We evaluated and find the **1Mbps (GPSK) mode** is the worst mode.<br>We selected 1Mbps (GFSK) and 3Mbps (8DPSK) to test and recorded in the report. |
| Note | : | In the report, NON-EDR mode as GFSK and EDR mode as 8DPSK. |
| Freq. Band | : | 2402 MHz ~ 2480 MHz<br>Total 79 Channels |
| Tested Freq. | : | 2402 MHz (Channel 00)<br>2441 MHz (Channel 39)<br>2480 MHz (Channel 78) |
| Antenna Gain | : | 2.77 dBi |
| Adapter | : | Manufacturer : Meic<br>Model Number : MN-A110-L120<br>Input : 100-240V~, 50/60Hz 0.3A max<br>Output : 5V ⎓ 2A |
| USB cable | : | Shielded, Detachable, 1.2m |
| Applicant | : | Hisense Electric Co., Ltd.<br>No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China |
| Manufacturer | : | Hisense Electric Co., Ltd.<br>No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China |

## 2.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Mar 16, 2012 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

## 2.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 3.42 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.14dB (Horizontal)
U = 4.28dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.18dB (Horizontal)
U = 4.26dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):
U= 4.50 dB (Horizontal)
U= 4.16 dB (Vertical)
20 dB Bandwidth Expanded Uncertainty : U = 0.05 kHz
Peak Output Power Expanded Uncertainty : U = 0.30 dB
Spurious RF Conducted Emissions Expanded Uncertainty : U = 0.15 dB

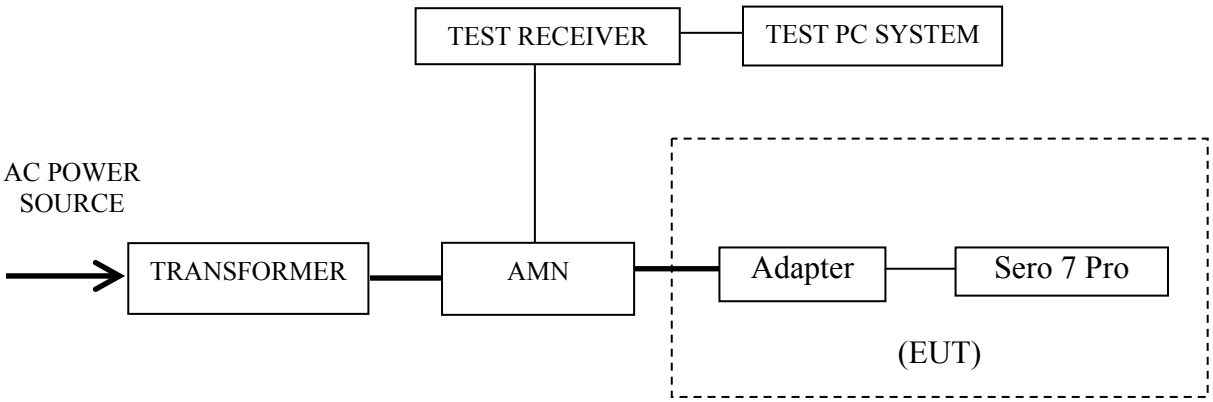
# 3 CONDUCTED EMISSION TEST

## 3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 100841 | Mar 22, 2012 | Mar 22, 2013 |
| 2. | Artificial Mains Network (AMN) | R&S | ESH2-Z5 | 843890/011 | Feb 25, 2013 | Feb 25, 2014 |
| 3. | 50Ω Coaxial Switch | Anritsu | MP59B | 6200426389 | Sep 18, 2012 | Mar 18, 2013 |
| 4. | Software | Audix | E3 | SET00200 9804M592 | -- | -- |

## 3.2 Block Diagram of Test Setup




—— : Signal Line
▬ : Power Line

## 3.3 Conducted Emission Limits [FCC Part 15 Subpart C 15.207]

| Frequency Range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 ~ 0.5 | 66~56* | 56~46* |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |
| NOTE – *Decreases with the logarithm of the frequency. | | |

## 3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

## 3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the EUT on the test mode (Transmitting), and then test.

## 3.6 Test Procedures

The EUT was connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

## 3.7 Test Results

**< PASS >**

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst emission is detected at 0.322 MHz (Average Value) with corrected signal level of 25.44 dB (μV) (limit is 49.66 dB (μV)), when the Neutral of the EUT is connected to AMN.

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 24℃ | |
| Model No. | : | M470BSA | Humidity | : | 44%RH |
| Test Mode | : | Transmitting | Date of Test | : | Mar. 13, 2013 |

| Test Line | Frequency (MHz) | Meter Reading dB(μV) | Factor (dB) | Emission Level dB(μV) | Limits dB(μV) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| Line | 0.152 | 36.87 | 0.23 | 37.10 | 65.91 | 28.81 | QP |
| | 0.329 | 34.72 | 0.30 | 35.02 | 59.49 | 24.47 | |
| | 0.779 | 30.92 | 0.22 | 31.14 | 56.00 | 24.86 | |
| | 2.155 | 28.12 | 0.39 | 28.51 | 56.00 | 27.49 | |
| | 5.112 | 21.48 | 0.50 | 21.98 | 60.00 | 38.02 | |
| | 13.841 | 26.03 | 0.83 | 26.86 | 60.00 | 33.14 | |
| | 0.152 | 26.30 | 0.23 | 26.53 | 55.91 | 29.38 | AV |
| | 0.329 | 24.50 | 0.30 | 24.80 | 49.49 | 24.69 | |
| | 0.779 | 20.10 | 0.22 | 20.32 | 46.00 | 25.68 | |
| | 2.155 | 18.50 | 0.39 | 18.89 | 46.00 | 27.11 | |
| | 5.112 | 11.25 | 0.50 | 11.75 | 50.00 | 38.25 | |
| | 13.841 | 16.50 | 0.83 | 17.33 | 50.00 | 32.67 | |
| Neutral | 0.151 | 37.00 | 0.13 | 37.13 | 65.96 | 28.83 | QP |
| | 0.322 | 35.16 | 0.14 | 35.30 | 59.66 | 24.36 | |
| | 1.324 | 30.27 | 0.21 | 30.48 | 56.00 | 25.52 | |
| | 2.110 | 28.65 | 0.17 | 28.82 | 56.00 | 27.18 | |
| | 5.362 | 22.63 | 0.44 | 23.07 | 60.00 | 36.93 | |
| | 20.162 | 27.85 | 0.82 | 28.67 | 60.00 | 31.33 | |
| | 0.151 | 26.90 | 0.13 | 27.03 | 55.96 | 28.93 | AV |
| | **0.322** | **25.30** | **0.14** | **25.44** | **49.66** | **24.22** | |
| | 1.324 | 20.10 | 0.21 | 20.31 | 46.00 | 25.69 | |
| | 2.110 | 18.20 | 0.17 | 18.37 | 46.00 | 27.63 | |
| | 5.362 | 12.80 | 0.44 | 13.24 | 50.00 | 36.76 | |
| | 20.162 | 17.50 | 0.82 | 18.32 | 50.00 | 31.68 | |

TEST ENGINEER: JOE YE

# 4 RADIATED EMISSION TEST

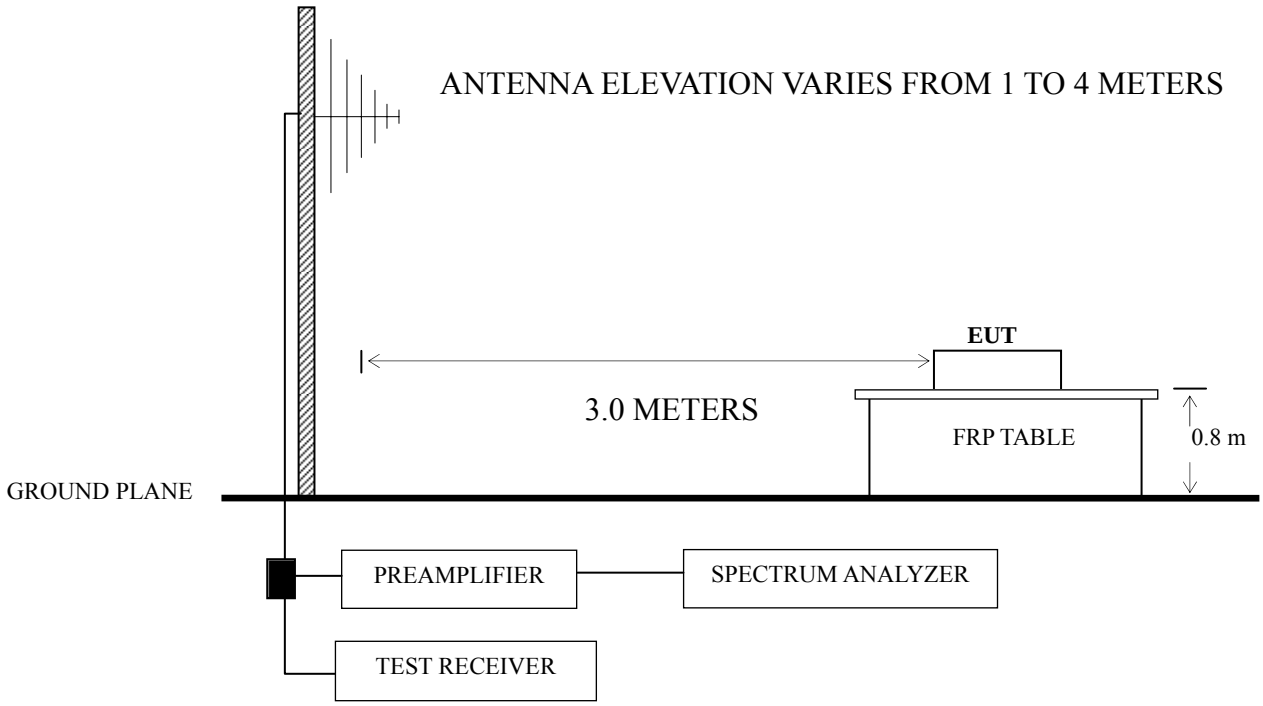
## 4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Preamplifier | Agilent | 8447D | 2944A10548 | Mar 18, 2013 | Sep 18, 2013 |
| 2. | Preamplifier | HP | 8449B | 3008A00864 | Apr 29, 2012 | Apr 29, 2013 |
| 3. | Spectrum Analyzer | Agilent | E7405A | MY45106600 | Mar 22, 2013 | Mar 22, 2014 |
| 4. | Test Receiver | R&S | ESVS10 | 844594/001 | Mar 22, 2013 | Mar 22, 2014 |
| 5. | Bi-log Antenna | TESEQ | CBL6112D | 23193 | May 03, 2012 | May 03, 2013 |
| 6. | Horn Antenna | EMCO | 3115 | 9607-4878 | May 03, 2012 | May 03, 2013 |
| 7. | Horn Antenna | EMCO | 3116 | 00062643 | Jul 21, 2012 | Jul 21, 2013 |
| 8. | 50Ω Coaxial Switch | Anritsu | MP59B | 6200426390 | Mar 18, 2013 | Sep 18, 2013 |
| 9. | Software | Audix | E3 | SET00200 9912M295-2 | - | - |

## 4.2 Block Diagram of Test Setup

### 4.2.1 Test Setup




■ : 50 ohm Coaxial Switch

## 4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

| Frequency (MHz) | Distance (m) | Field strength limits (μV/m) | |
|---|---|---|---|
| | | (μV/m) | dB(μV/m) |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

## 4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

## 4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 4.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

## 4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz for Spectrum Agilent E7405A.

The frequency range from 30 MHz to 25 GHz (Up to $10^{th}$ harmonics from fundamental frequency) was checked.

The EUT was tested under the following test modes:

| Mode | Operation | Channel | Frequency |
|---|---|---|---|
| 1. | Transmitting | 00 | 2402 MHz |
| 2. | | 39 | 2441 MHz |
| 3. | | 78 | 2480 MHz |
| 4. | Receiving | -- | -- |
| 5. | Transmitting Band-Edge | 00 | 2402 MHz |
| 6. | | 78 | 2480 MHz |

All the test results are listed in Sec.4.7.

## 4.7 Test Results

**<PASS>**

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

| No. | Operation | Channel | Frequency | Data Page |
|---|---|---|---|---|
| 1. | Worst case emission < 1GHz | | | P15 |
| 2. | Transmitting | 00 | 2402 MHz | P16 |
| 3. | | 39 | 2441 MHz | P17 |
| 4. | | 78 | 2480 MHz | P18 |
| 5. | Receiving | -- | -- | P19 |
| 6. | Transmitting | Band Edge | | P20-35 |

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)
NOTE 2 – Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor (>1GHz)
NOTE 3 – EUT configured in Lying, Side & Stand direction were all evaluated. The emission levels recorded below is data of EUT configured in **Lying** direction, for Lying direction was the maximum emission direction during the test.
NOTE 4 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

## Worst case emission < 1GHz

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | Transmitting | Date of Test : | Mar 30, 2013 |

NON-EDR

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 99.84 | 11.97 | 10.32 | 1.34 | -- | 23.63 | 43.50 | 19.87 | QP |
| | 184.23 | 15.23 | 8.28 | 1.86 | -- | 25.37 | 43.50 | 18.13 | |
| | 332.64 | 13.11 | 14.53 | 2.60 | -- | 30.24 | 46.00 | 15.76 | |
| | **458.74** | **16.21** | **17.20** | **2.86** | **--** | **36.27** | **46.00** | **9.73** | |
| | 722.58 | 7.04 | 19.27 | 3.56 | -- | 29.87 | 46.00 | 16.13 | |
| | 858.38 | 7.31 | 20.70 | 4.08 | -- | 32.09 | 46.00 | 13.91 | |
| Vertical | **47.46** | **22.81** | **8.30** | **0.84** | **--** | **31.95** | **40.00** | **8.05** | QP |
| | 108.57 | 11.64 | 11.72 | 1.40 | -- | 24.76 | 43.50 | 18.74 | |
| | 145.43 | 15.21 | 10.28 | 1.62 | -- | 27.11 | 43.50 | 16.39 | |
| | 286.08 | 17.21 | 12.37 | 2.46 | -- | 32.04 | 46.00 | 13.96 | |
| | 429.64 | 10.08 | 17.60 | 2.78 | -- | 30.46 | 46.00 | 15.54 | |
| | 855.47 | 9.77 | 20.80 | 4.08 | -- | 34.65 | 46.00 | 11.35 | |

EDR

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 118.27 | 9.67 | 11.46 | 1.47 | -- | 22.60 | 43.50 | 20.90 | QP |
| | 184.23 | 12.88 | 8.28 | 1.86 | -- | 23.02 | 43.50 | 20.48 | |
| | 263.77 | 13.82 | 12.90 | 2.30 | -- | 29.02 | 46.00 | 16.98 | |
| | 357.86 | 15.29 | 14.95 | 2.63 | -- | 32.87 | 46.00 | 13.13 | |
| | **460.68** | **13.83** | **17.30** | **2.86** | **--** | **33.99** | **46.00** | **12.01** | |
| | 723.55 | 6.85 | 19.27 | 3.56 | -- | 29.68 | 46.00 | 16.32 | |
| Vertical | 33.88 | 7.75 | 16.12 | 0.70 | -- | 24.57 | 40.00 | 15.43 | QP |
| | 110.51 | 14.05 | 11.87 | 1.41 | -- | 27.33 | 43.50 | 16.17 | |
| | 181.32 | 15.48 | 8.22 | 1.84 | -- | 25.54 | 43.50 | 17.96 | |
| | 361.74 | 14.52 | 14.97 | 2.64 | -- | 32.13 | 46.00 | 13.87 | |
| | 435.46 | 8.02 | 17.47 | 2.78 | -- | 28.27 | 46.00 | 17.73 | |
| | **855.47** | **9.87** | **20.80** | **4.08** | **--** | **34.75** | **46.00** | **11.25** | |

TEST ENGINEER: RAVEN JIN

## Radiated Emission > 1GHz

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | Transmitting | Date of Test : | Mar 30, 2013 |

NON-EDR Ch00

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1225.00 | 51.06 | 24.65 | 5.20 | 37.68 | 43.23 | 74.00 | 30.77 | PK |
| | 1990.00 | 48.09 | 30.91 | 6.19 | 36.11 | 49.08 | 74.00 | 24.92 | |
| | 3691.00 | 45.78 | 31.57 | 8.32 | 35.46 | 50.21 | 74.00 | 23.79 | |
| | 5554.00 | 44.16 | 33.41 | 8.68 | 34.73 | 51.52 | 74.00 | 22.48 | |
| Vertical | 1234.00 | 52.64 | 24.70 | 5.20 | 37.65 | 44.89 | 74.00 | 29.11 | PK |
| | 2665.00 | 47.97 | 28.50 | 6.68 | 35.83 | 47.32 | 74.00 | 26.68 | |
| | 3781.00 | 45.70 | 31.92 | 8.35 | 35.44 | 50.53 | 74.00 | 23.47 | |
| | 5392.00 | 44.31 | 32.68 | 8.71 | 34.79 | 50.91 | 74.00 | 23.09 | |

EDR Ch00

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1225.00 | 53.17 | 24.65 | 5.20 | 37.68 | 45.34 | 74.00 | 28.66 | PK |
| | 1999.00 | 48.90 | 31.00 | 6.20 | 36.10 | 50.00 | 74.00 | 24.00 | |
| | 3475.00 | 45.87 | 30.74 | 8.22 | 35.51 | 49.32 | 74.00 | 24.68 | |
| | 4078.00 | 45.07 | 32.45 | 8.56 | 35.37 | 50.71 | 74.00 | 23.29 | |
| Vertical | 1333.00 | 52.03 | 25.11 | 5.47 | 37.39 | 45.22 | 74.00 | 28.78 | PK |
| | 1810.00 | 48.35 | 29.23 | 6.16 | 36.33 | 47.41 | 74.00 | 26.59 | |
| | 3691.00 | 45.63 | 31.57 | 8.32 | 35.46 | 50.06 | 74.00 | 23.94 | |
| | 5797.00 | 44.85 | 32.95 | 8.90 | 34.66 | 52.04 | 74.00 | 21.96 | |

NON-EDR Ch39

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1225.00 | 51.93 | 24.65 | 5.20 | 37.68 | 44.10 | 74.00 | 29.90 | PK |
| | 1684.00 | 49.99 | 27.67 | 5.97 | 36.53 | 47.10 | 74.00 | 26.90 | |
| | 4015.00 | 44.37 | 32.66 | 8.52 | 35.39 | 50.16 | 74.00 | 23.84 | |
| | 5743.00 | 44.32 | 33.05 | 8.82 | 34.67 | 51.52 | 74.00 | 22.48 | |
| Vertical | 1333.00 | 52.50 | 25.11 | 5.47 | 37.39 | 45.69 | 74.00 | 28.31 | PK |
| | 2107.00 | 46.76 | 30.41 | 6.26 | 36.06 | 47.37 | 74.00 | 26.63 | |
| | 3655.00 | 45.73 | 31.40 | 8.29 | 35.47 | 49.95 | 74.00 | 24.05 | |
| | 5626.00 | 44.81 | 33.27 | 8.75 | 34.71 | 52.12 | 74.00 | 21.88 | |

EDR Ch39

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1234.00 | 51.37 | 24.70 | 5.20 | 37.65 | 43.62 | 74.00 | 30.38 | PK |
| | 1990.00 | 49.92 | 30.91 | 6.19 | 36.11 | 50.91 | 74.00 | 23.09 | |
| | 3790.00 | 45.37 | 31.97 | 8.38 | 35.44 | 50.28 | 74.00 | 23.72 | |
| | 5464.00 | 44.27 | 33.27 | 8.61 | 34.76 | 51.39 | 74.00 | 22.61 | |
| Vertical | 1225.00 | 52.41 | 24.65 | 5.20 | 37.68 | 44.58 | 74.00 | 29.42 | PK |
| | 1828.00 | 49.32 | 29.46 | 6.16 | 36.31 | 48.63 | 74.00 | 25.37 | |
| | 3763.00 | 45.47 | 31.84 | 8.35 | 35.44 | 50.22 | 74.00 | 23.78 | |
| | 4528.00 | 45.67 | 30.80 | 8.88 | 35.18 | 50.17 | 74.00 | 23.83 | |

NON-EDR Ch78

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1252.00 | 51.25 | 24.79 | 5.25 | 37.61 | 43.68 | 74.00 | 30.32 | PK |
| | 1657.00 | 51.61 | 27.37 | 5.89 | 36.57 | 48.30 | 74.00 | 25.70 | |
| | 3376.00 | 45.56 | 30.41 | 8.00 | 35.54 | 48.43 | 74.00 | 25.57 | |
| | 5644.00 | 44.61 | 33.24 | 8.75 | 34.70 | 51.90 | 74.00 | 22.10 | |
| Vertical | 1225.00 | 53.03 | 24.65 | 5.20 | 37.68 | 45.20 | 74.00 | 28.80 | PK |
| | 2197.00 | 46.46 | 29.89 | 6.32 | 36.03 | 46.64 | 74.00 | 27.36 | |
| | 3808.00 | 45.39 | 32.05 | 8.38 | 35.44 | 50.38 | 74.00 | 23.62 | |
| | 5518.00 | 44.08 | 33.47 | 8.68 | 34.75 | 51.48 | 74.00 | 22.52 | |

EDR Ch78

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1666.00 | 51.94 | 27.49 | 5.89 | 36.56 | 48.76 | 74.00 | 25.24 | PK |
| | 1990.00 | 49.92 | 30.91 | 6.19 | 36.11 | 50.91 | 74.00 | 23.09 | |
| | 4195.00 | 45.07 | 31.99 | 8.66 | 35.32 | 50.40 | 74.00 | 23.60 | |
| | 5536.00 | 45.39 | 33.44 | 8.68 | 34.74 | 52.77 | 74.00 | 21.23 | |
| Vertical | 1234.00 | 53.40 | 24.70 | 5.20 | 37.65 | 45.65 | 74.00 | 28.35 | PK |
| | 1666.00 | 54.65 | 27.49 | 5.89 | 36.56 | 51.47 | 74.00 | 22.53 | |
| | 3520.00 | 45.79 | 30.88 | 8.24 | 35.50 | 49.41 | 74.00 | 24.59 | |
| | 5482.00 | 44.60 | 33.39 | 8.61 | 34.76 | 51.84 | 74.00 | 22.16 | |

TEST ENGINEER: RAVEN JIN

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | Receiving | Date of Test : | Mar 30, 2013 |

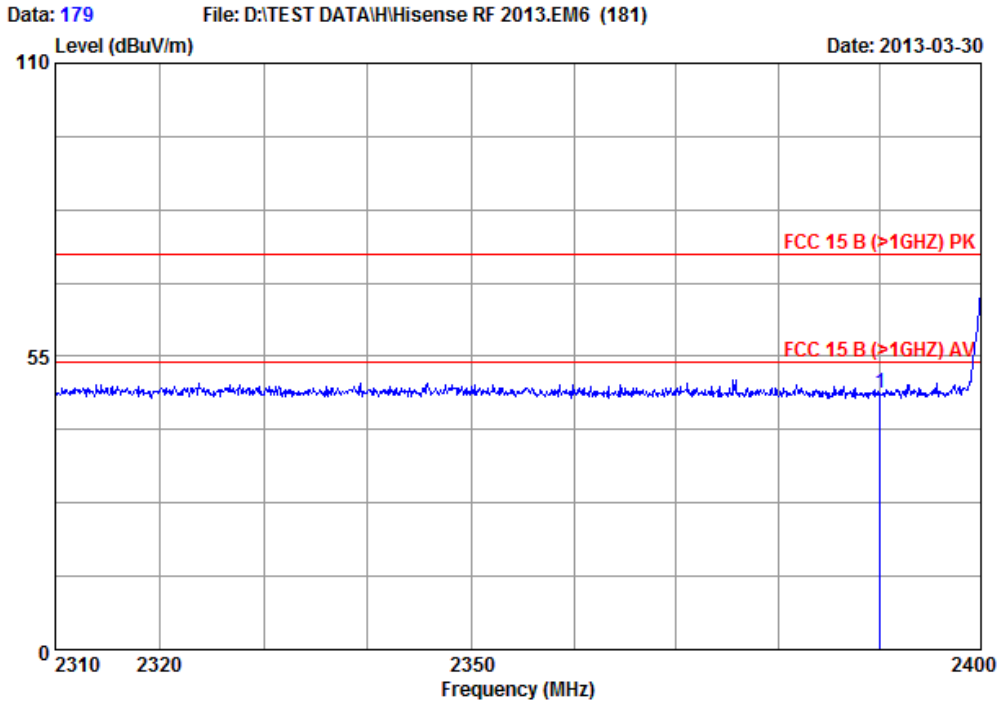
| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1216.00 | 53.69 | 24.61 | 5.15 | 37.70 | 45.75 | 74.00 | 28.25 | PK |
| | 1990.00 | 49.71 | 30.91 | 6.19 | 36.11 | 50.70 | 74.00 | 23.30 | |
| | 3655.00 | 45.89 | 31.40 | 8.29 | 35.47 | 50.11 | 74.00 | 23.89 | |
| | 4069.00 | 44.59 | 32.45 | 8.56 | 35.37 | 50.23 | 74.00 | 23.77 | |
| Vertical | 1234.00 | 53.51 | 24.70 | 5.20 | 37.65 | 45.76 | 74.00 | 28.24 | PK |
| | 1828.00 | 52.51 | 29.46 | 6.16 | 36.31 | 51.82 | 74.00 | 22.18 | |
| | 3655.00 | 46.05 | 31.40 | 8.29 | 35.47 | 50.27 | 74.00 | 23.73 | |
| | 5698.00 | 45.03 | 33.15 | 8.82 | 34.69 | 52.31 | 74.00 | 21.69 | |

TEST ENGINEER: RAVEN JIN

# Radiated Band Edge measurement:

## For NON-EDR mode:

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

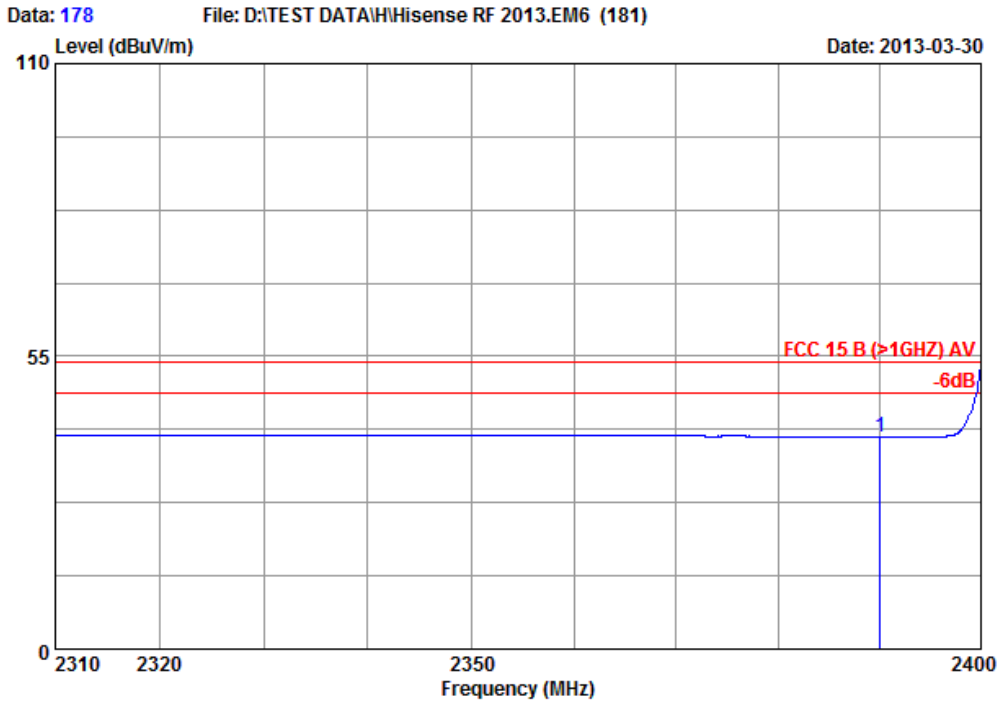



Site no : Audix ACI (3m Chamber) Data no. : 179
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 48.73 | 48.00 | 74.00 | 26.00 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

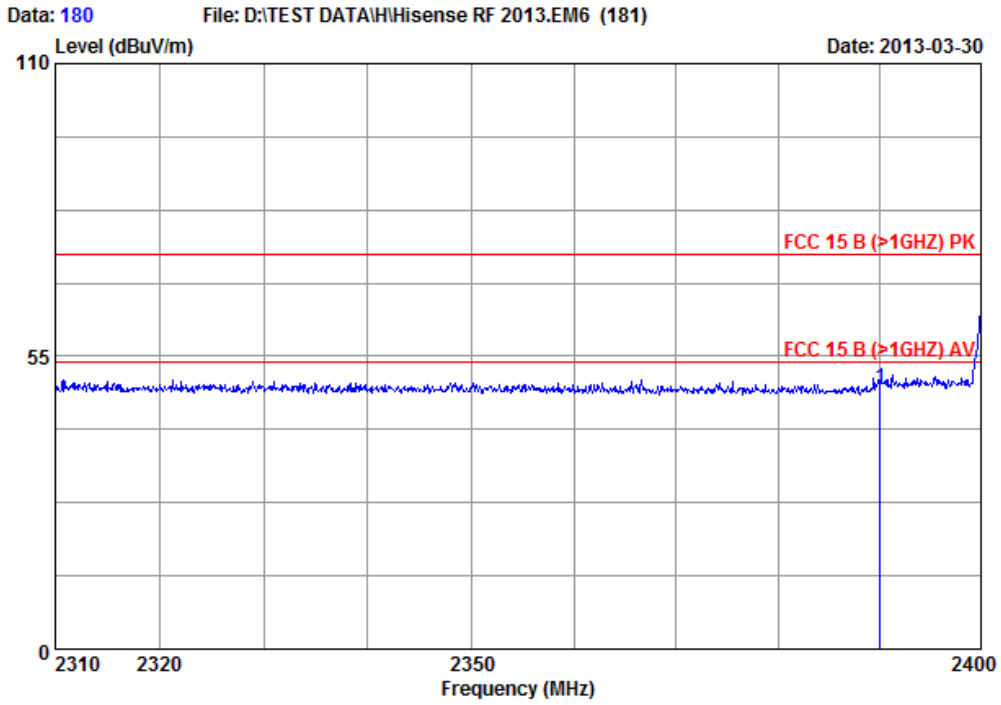



Site no : Audix ACI (3m Chamber) Data no. : 178
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 40.63 | 39.90 | 54.00 | 14.10 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

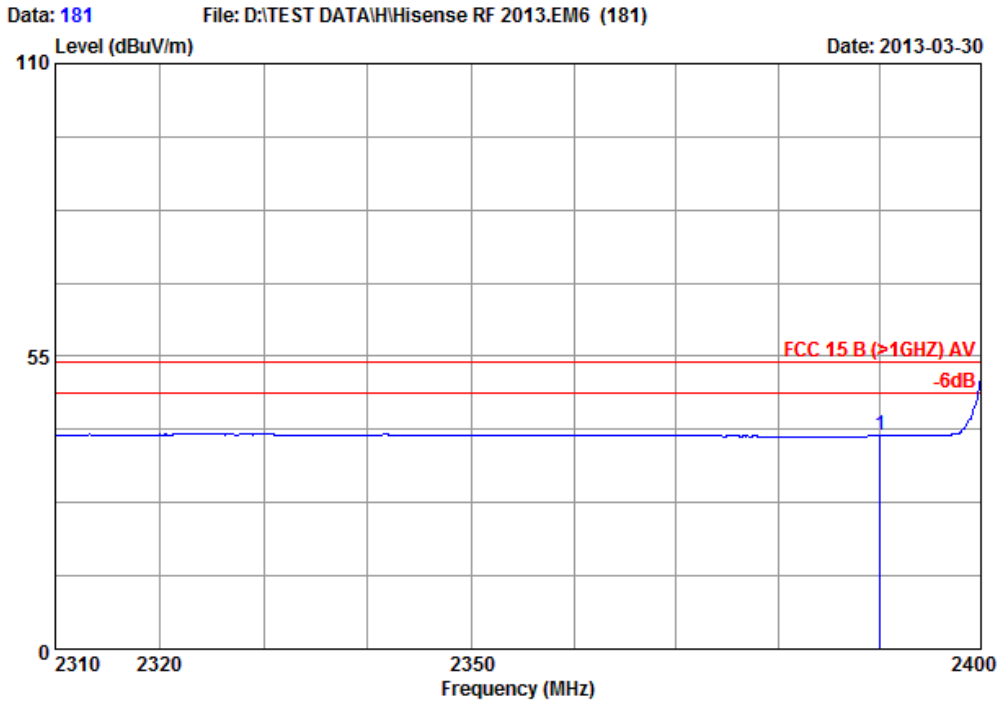



Site no : Audix ACI (3m Chamber) Data no. : 180
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 49.67 | 48.94 | 74.00 | 25.06 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

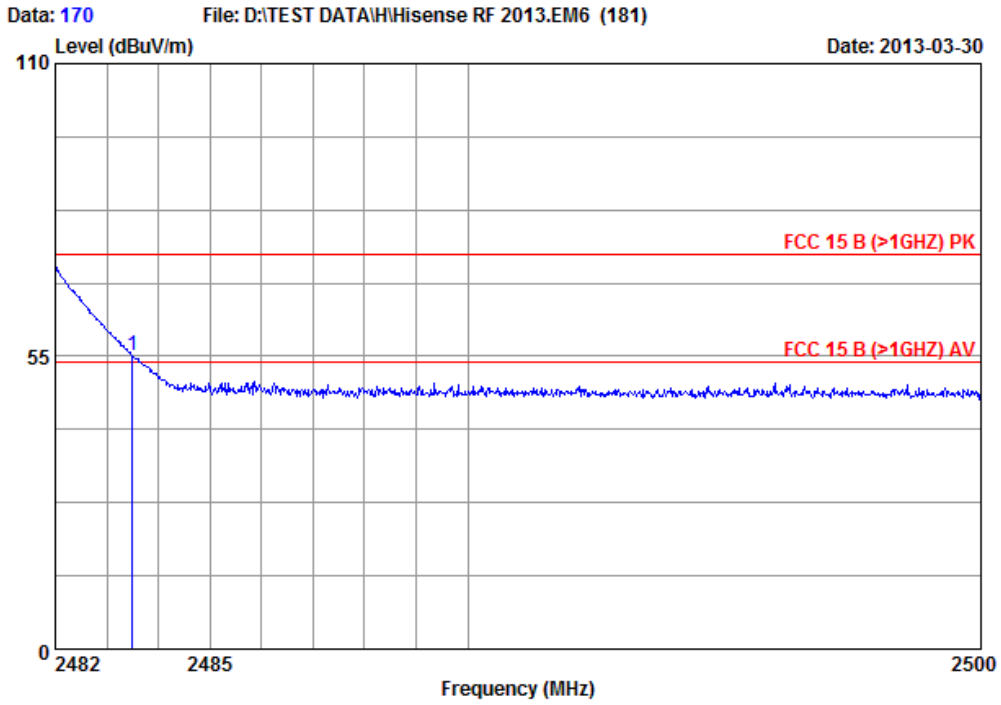



Site no : Audix ACI (3m Chamber) Data no. : 181
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 40.84 | 40.11 | 54.00 | 13.89 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

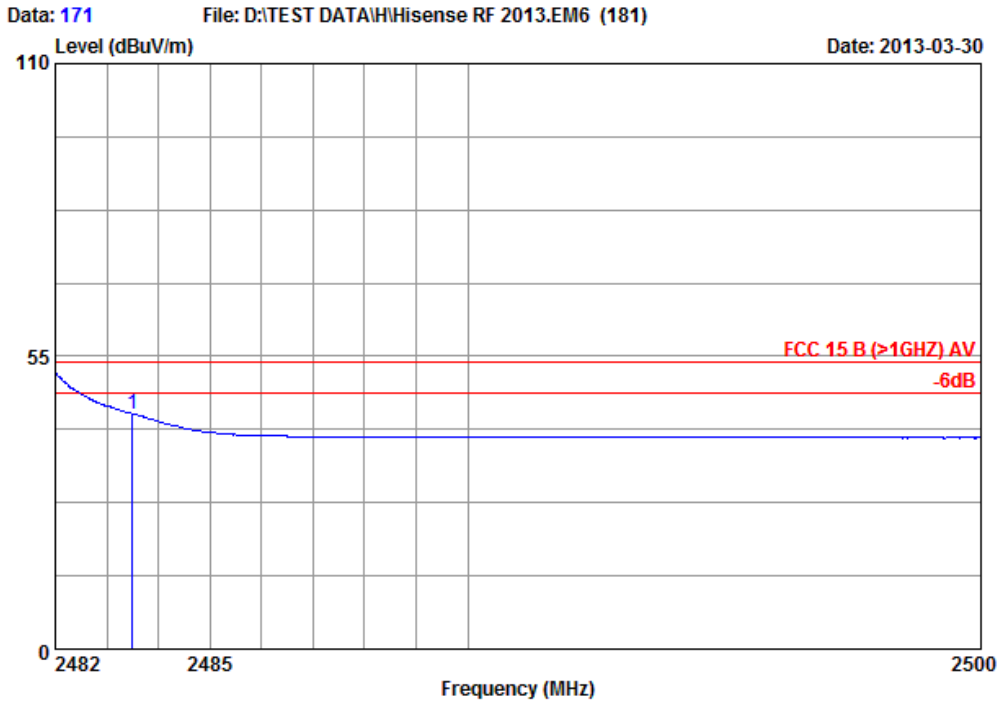



Site no : Audix ACI (3m Chamber) Data no. : 170
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 56.15 | 55.05 | 74.00 | 18.95 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

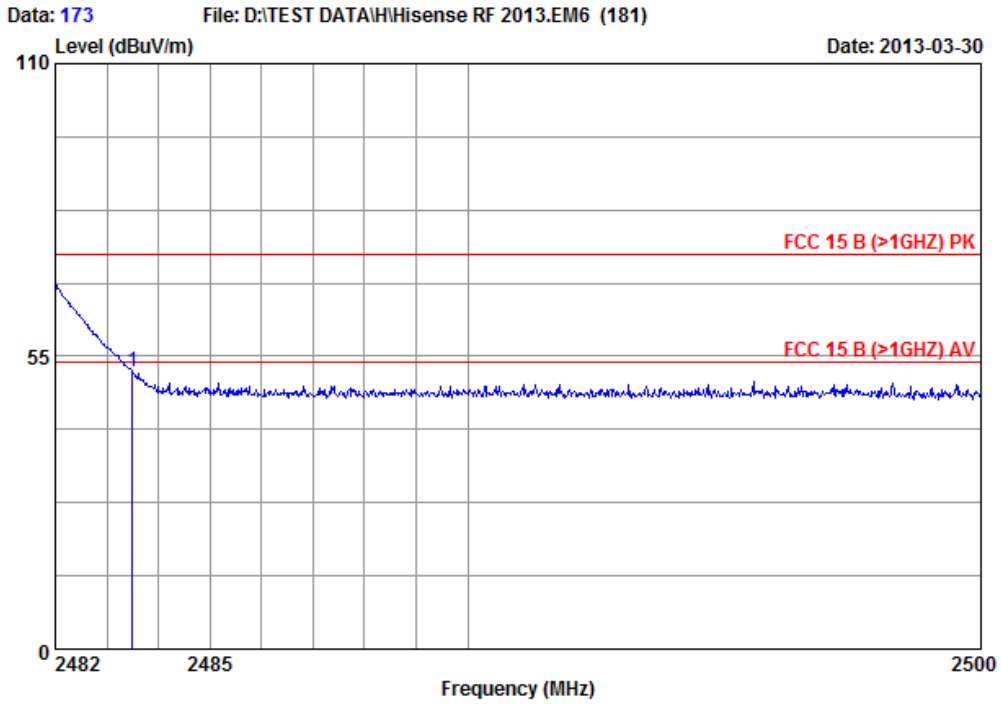



Site no : Audix ACI (3m Chamber) Data no. : 171
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 45.28 | 44.18 | 54.00 | 9.82 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

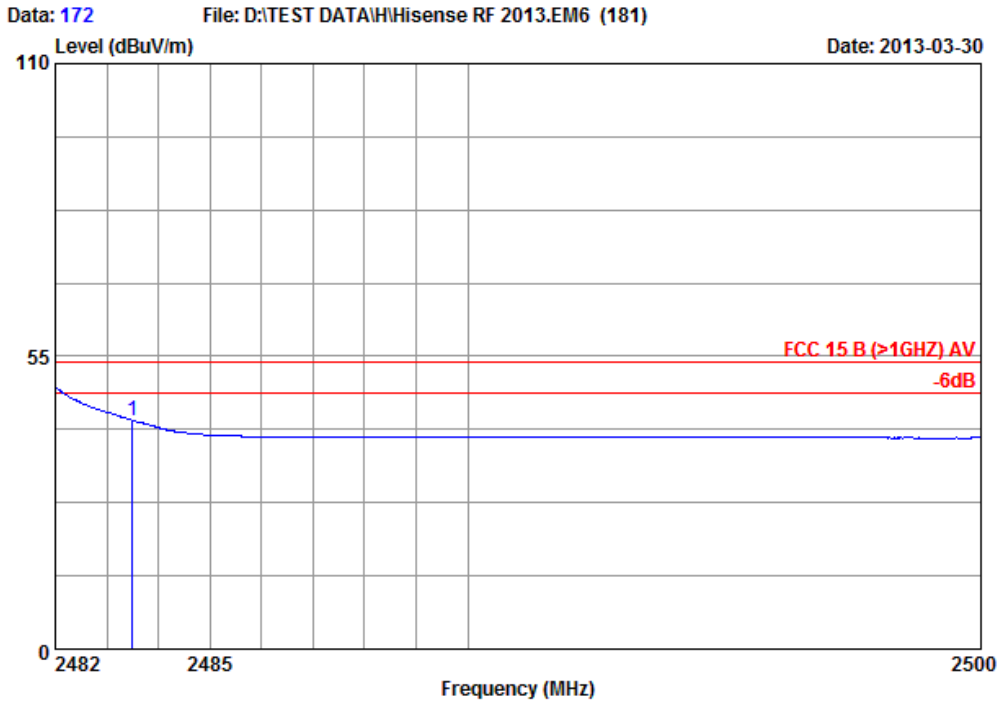



Site no : Audix ACI (3m Chamber) Data no. : 173
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 53.24 | 52.14 | 74.00 | 21.86 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com



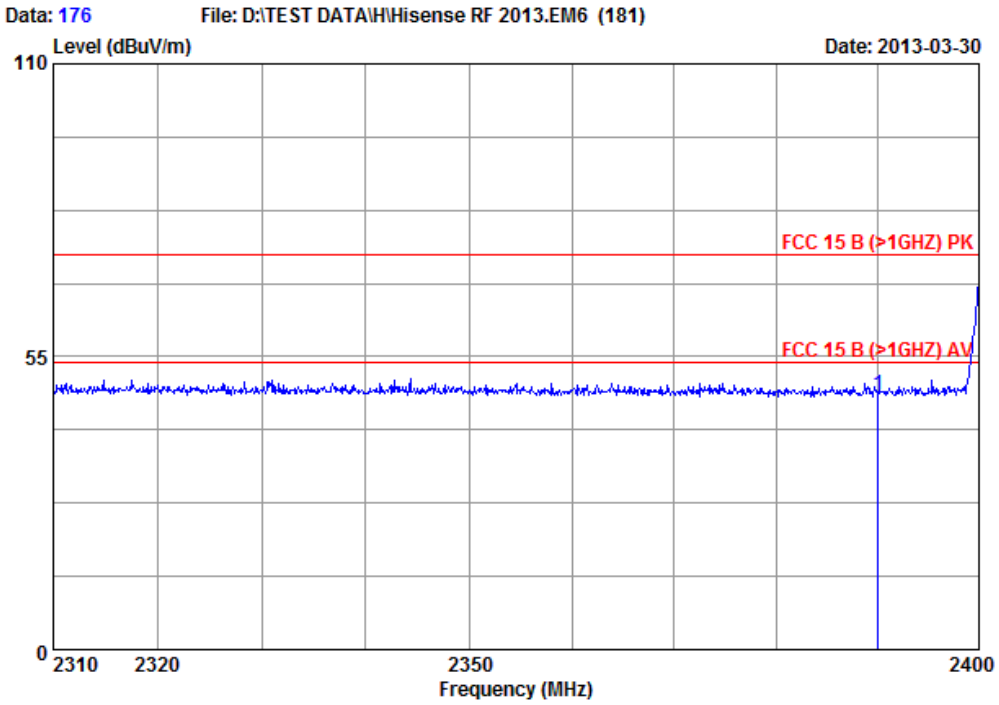

Site no : Audix ACI (3m Chamber) Data no. : 172
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT NON-EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 44.08 | 42.98 | 54.00 | 11.02 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

**For EDR mode:**

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

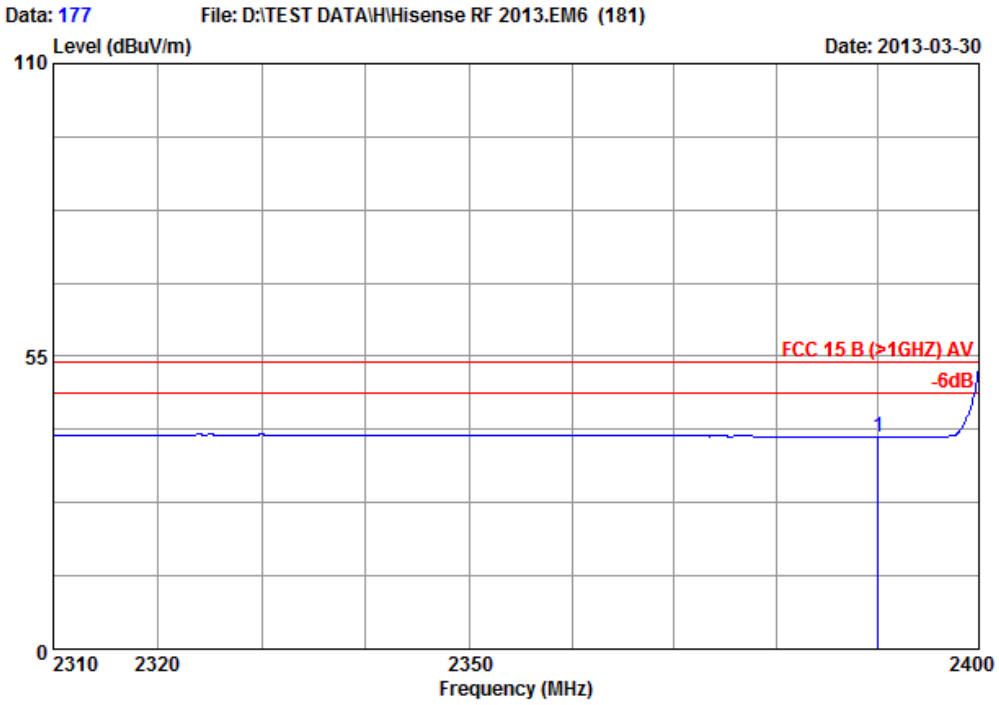



Site no : Audix ACI (3m Chamber) Data no. : 176
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 48.63 | 47.90 | 74.00 | 26.10 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

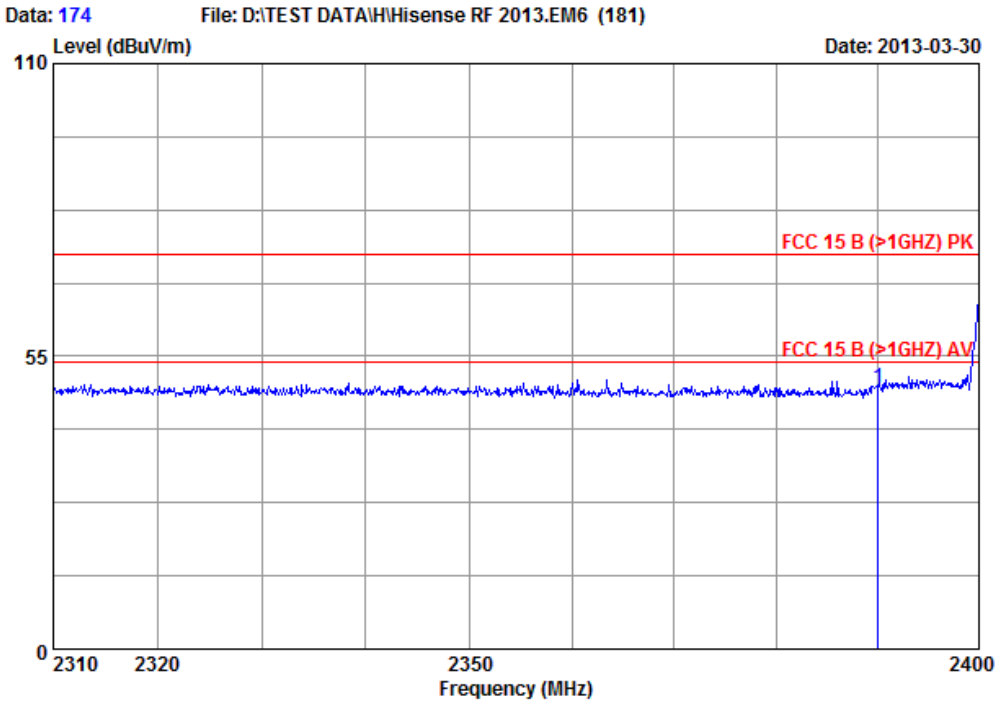



Site no : Audix ACI (3m Chamber) Data no. : 177
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 40.63 | 39.90 | 54.00 | 14.10 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

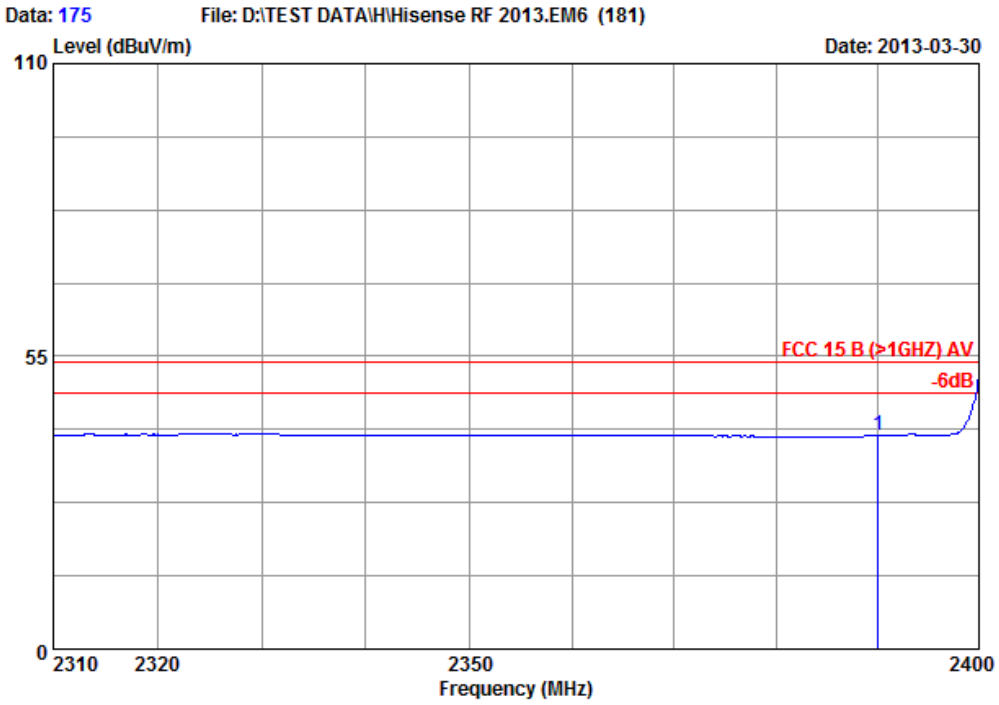



Site no : Audix ACI (3m Chamber) Data no. : 174
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.000 | 28.80 | 35.95 | 6.42 | 49.62 | 48.89 | 74.00 | 25.11 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

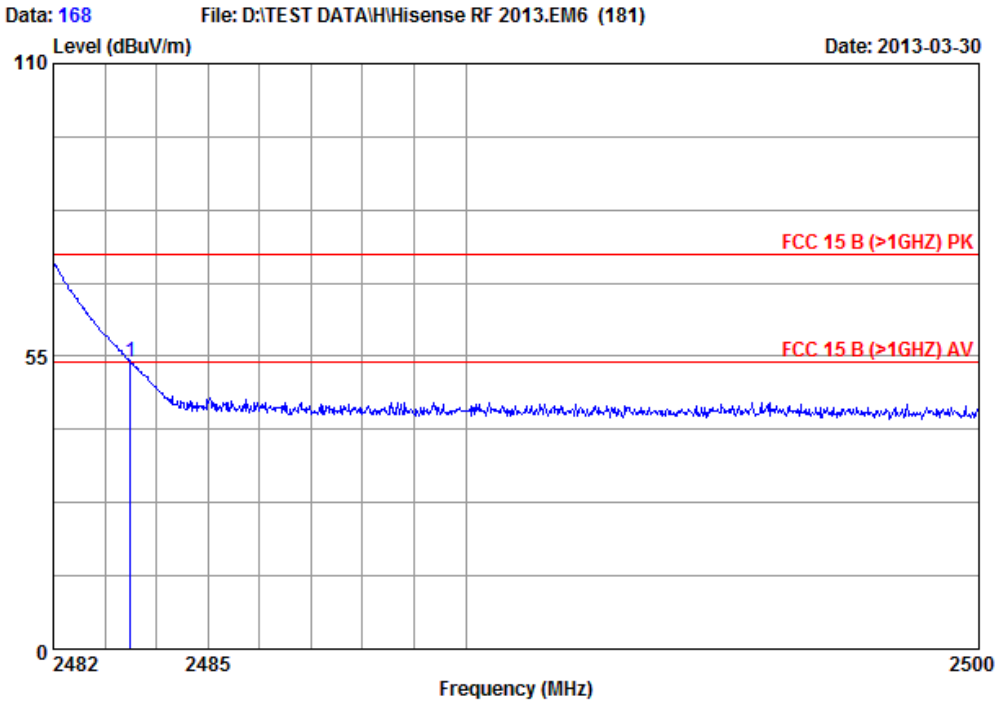



Site no : Audix ACI (3m Chamber) Data no. : 175
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2402

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2390.040 | 28.80 | 35.95 | 6.42 | 40.89 | 40.16 | 54.00 | 13.84 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

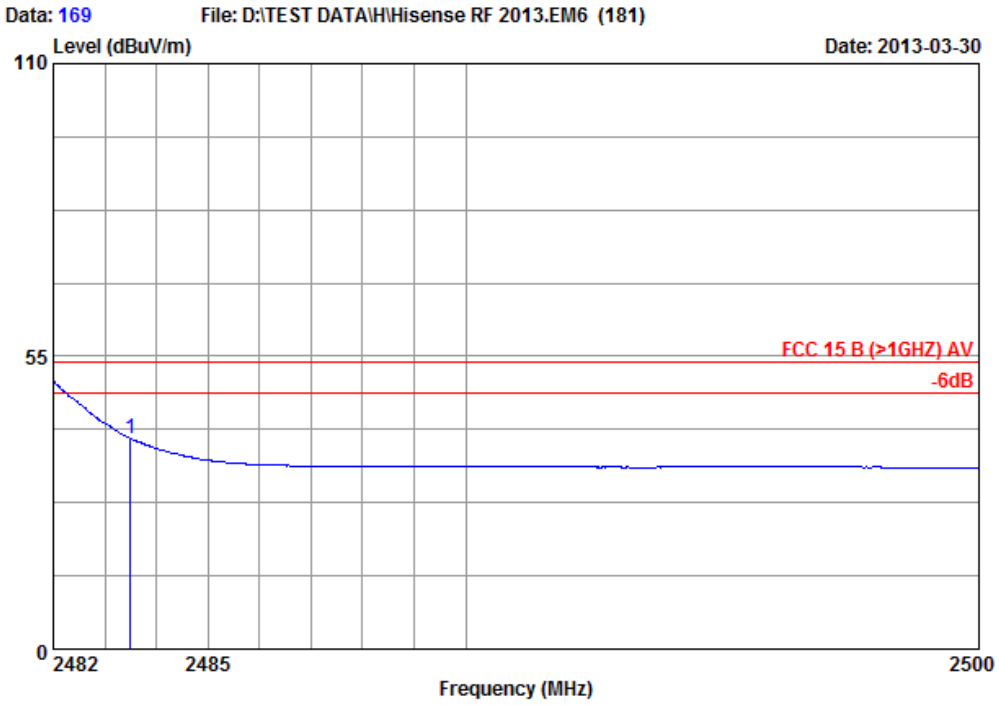



Site no : Audix ACI (3m Chamber) Data no. : 168
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 55.08 | 53.98 | 74.00 | 20.02 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

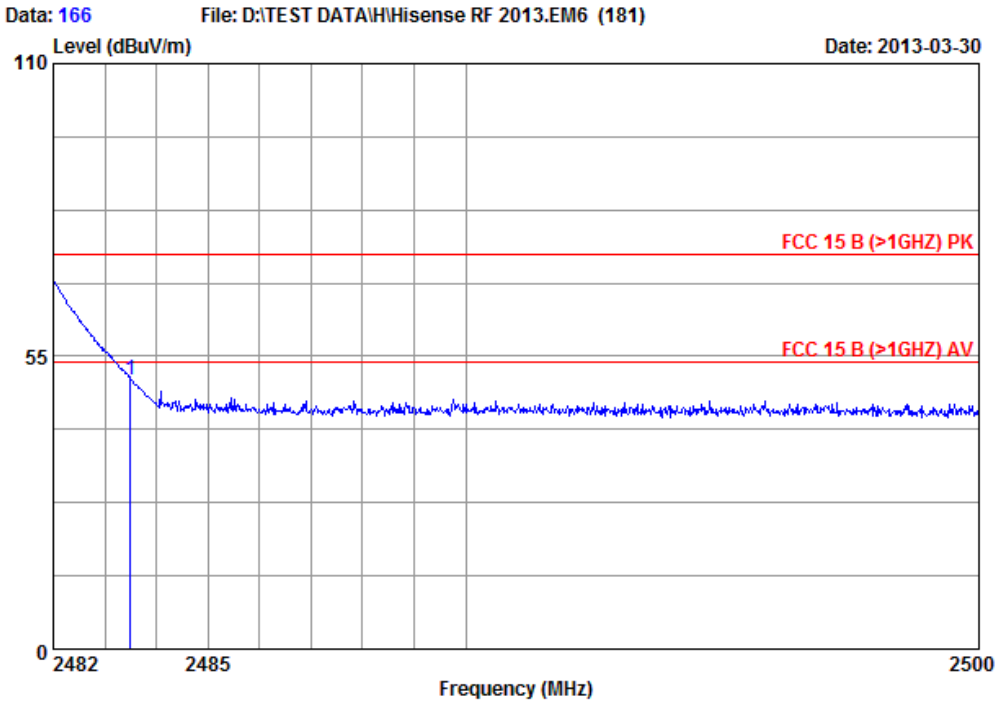



Site no : Audix ACI (3m Chamber) Data no. : 169
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 40.63 | 39.53 | 54.00 | 14.47 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 166
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 51.75 | 50.65 | 74.00 | 23.35 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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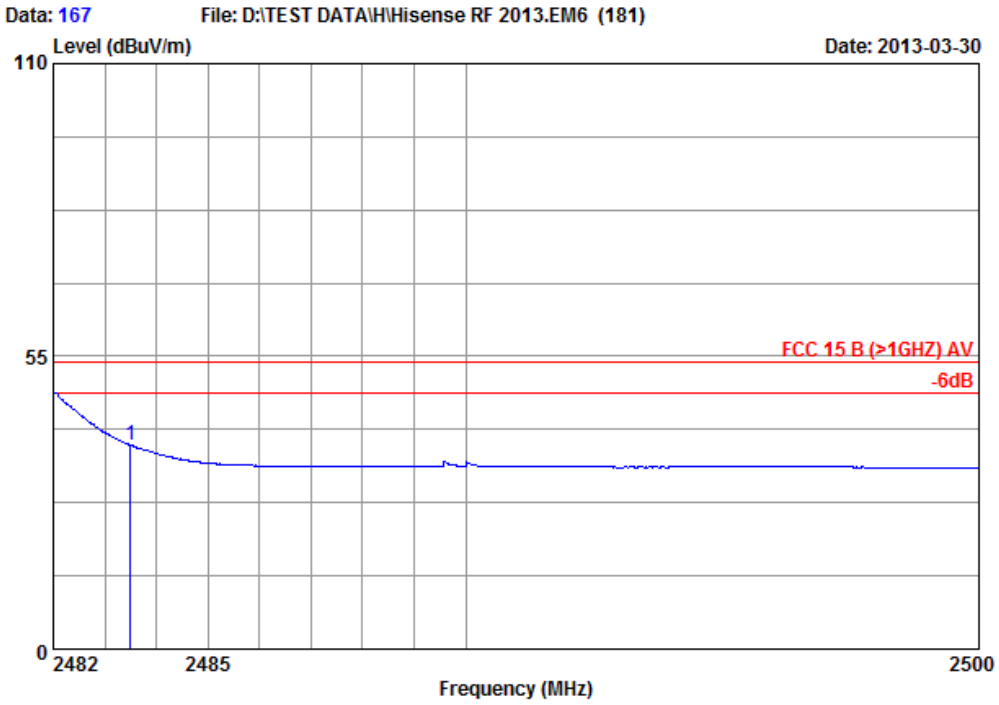
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 167
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : BT EDR 2480

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 28.36 | 35.91 | 6.45 | 39.44 | 38.34 | 54.00 | 15.66 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

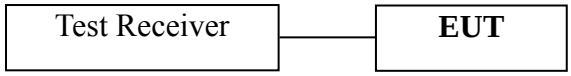
# 5 20 dB BANDWIDTH MEASUREMENT

## 5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 5.2 Block Diagram of Test Setup




## 5.3 Specification Limits (§15.247(a)(1))

For frequency hopping systems, hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

## 5.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT to transmit data at different channel frequency individually.

## 5.5 Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer.
The bandwidth of the fundamental frequency was measured by spectrum analyzer.
Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
The test procedure is defined in DA 00-705.

## 5.6 Test Results

**PASSED.**

All the test results are attached in next pages.

(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

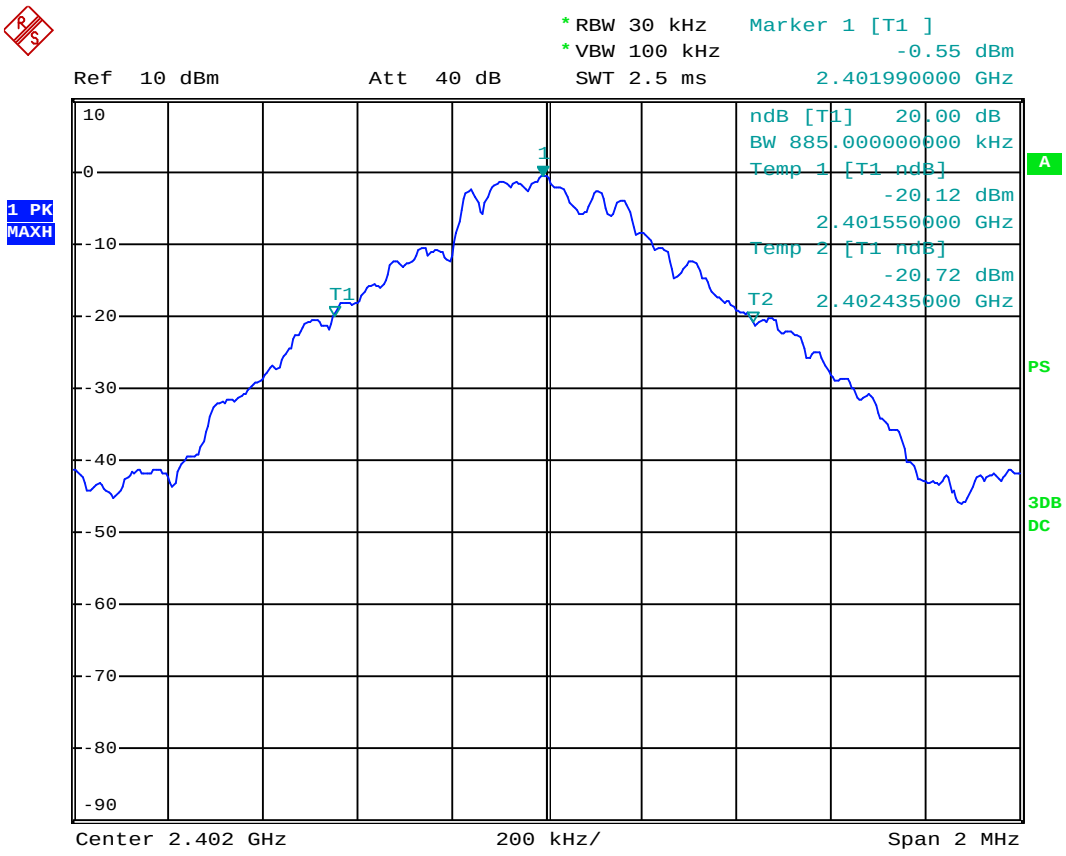
For Non-EDR

| Channel | Frequency | **20dB Bandwidth** |
|---|---|---|
| 00 | 2402 MHz | **0.885 MHz** |
| 39 | 2441 MHz | **0.885 MHz** |
| 78 | 2480 MHz | **0.885 MHz** |

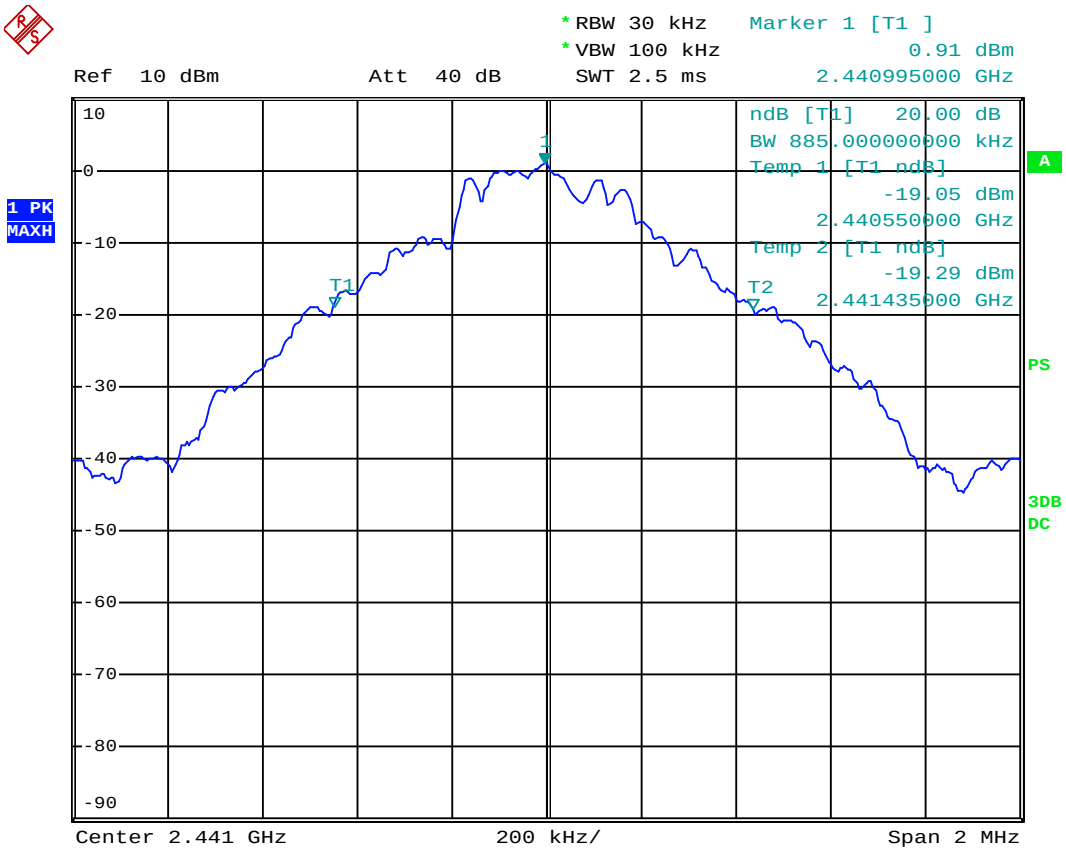
For EDR

| Channel | Frequency | **20dB Bandwidth** |
|---|---|---|
| 00 | 2402 MHz | **1.345 MHz** |
| 39 | 2441 MHz | **1.340 MHz** |
| 78 | 2480 MHz | **1.330 MHz** |

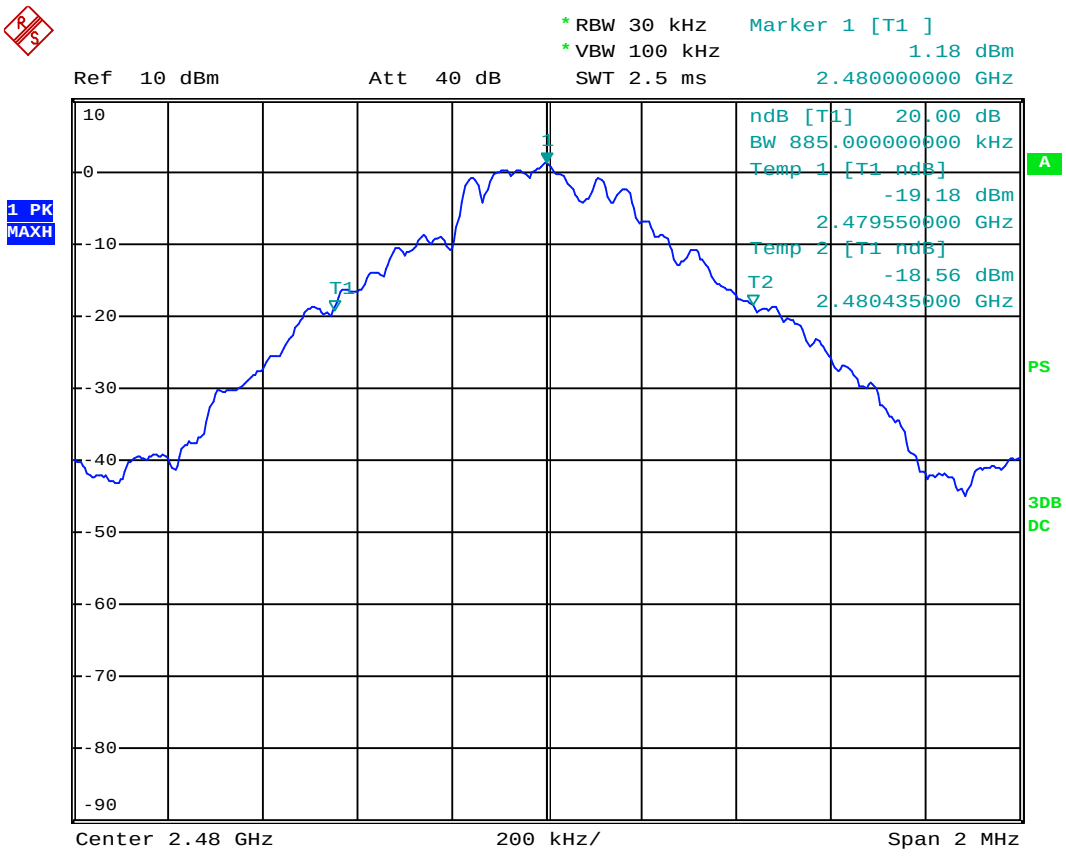
## Ch 00 (2402 MHz) NON-EDR



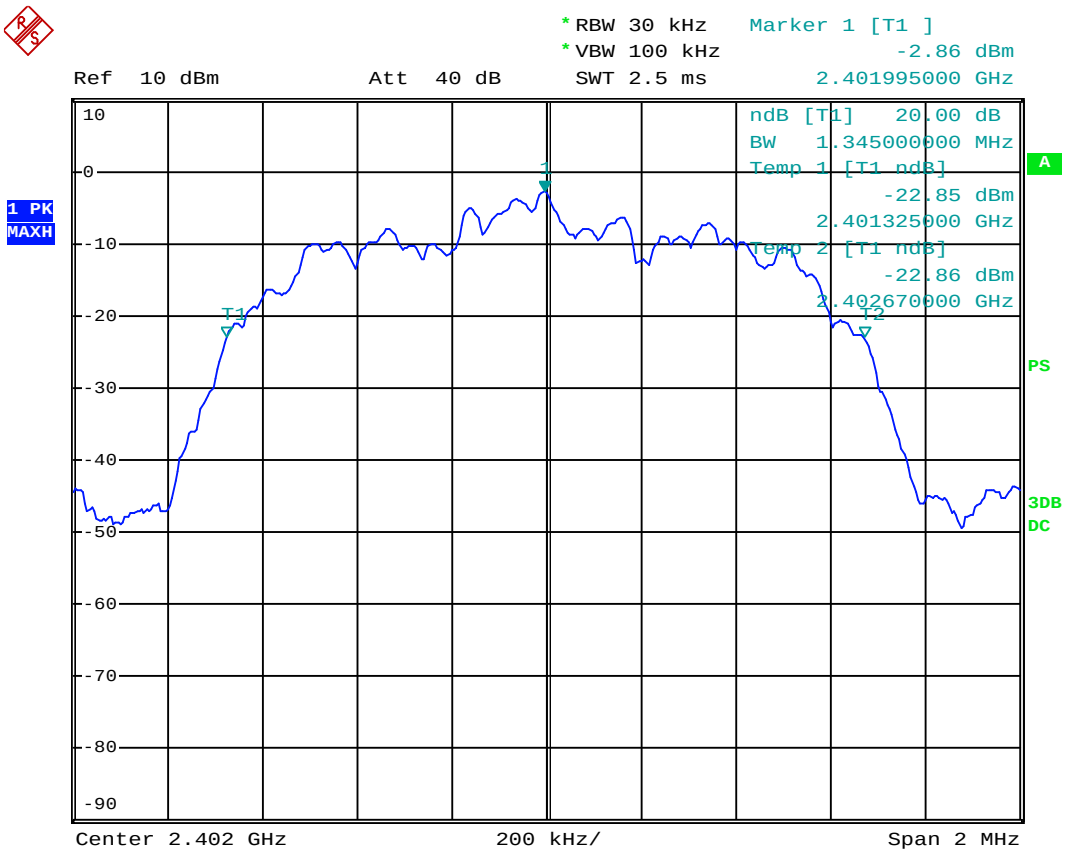

## Ch 39 (2441 MHz) NON-EDR



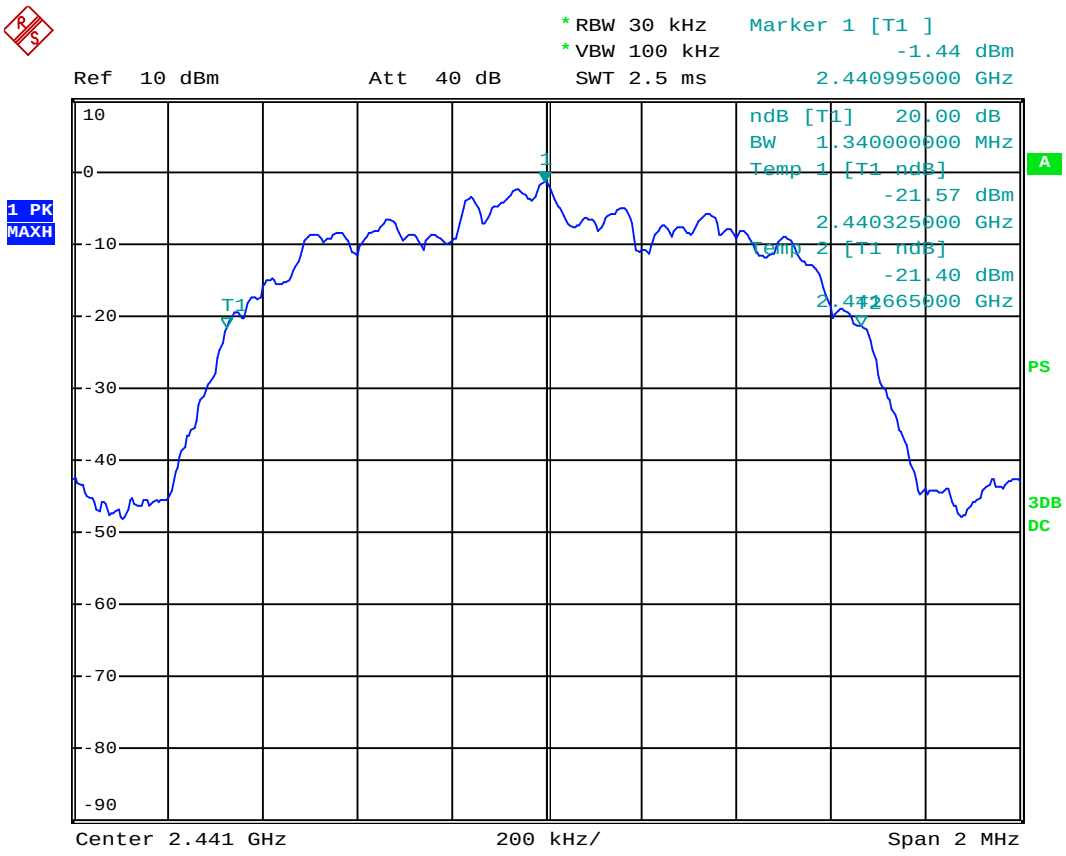
## Ch 78 (2480 MHz) NON-EDR



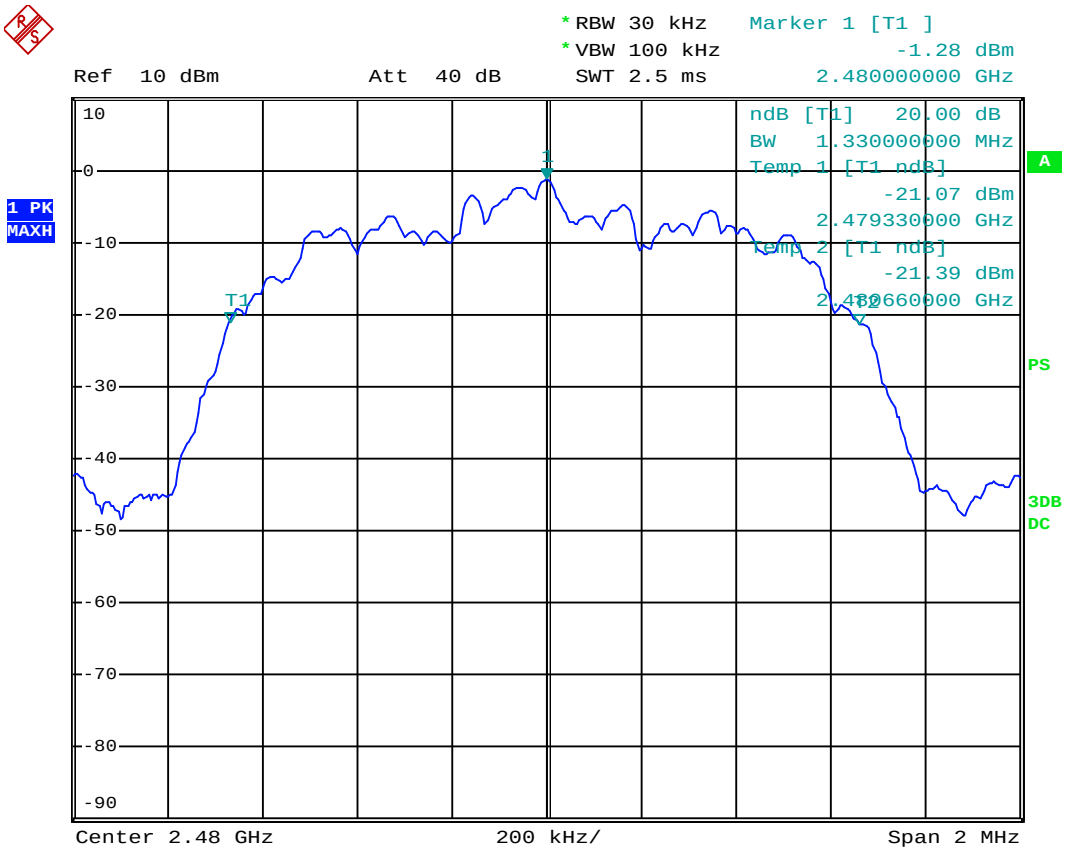

## Ch 00 (2402 MHz) EDR



## Ch 39 (2441 MHz) EDR




## Ch 78 (2480 MHz) EDR



# 6 PEAK OUTPUT POWER MEASUREMENT

## 6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 6.2 Block Diagram of Test Setup

The same as section.5.2.

## 6.3 Specification Limits ((§15.247(b)(1))

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. (30 dBm)

## 6.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT to transmit data at different channel frequency individually.

## 6.5 Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. The test receiver / spectrum analyzer was set as RBW ≥ the 20 dB bandwidth of the emission being measured, VBW ≥ RBW, span to approximately 5 times the 20 dB bandwidth, centered on a hopping channel. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.
The test procedure is defined in DA 00-705.

## 6.6 Test Results

**PASSED.**

(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

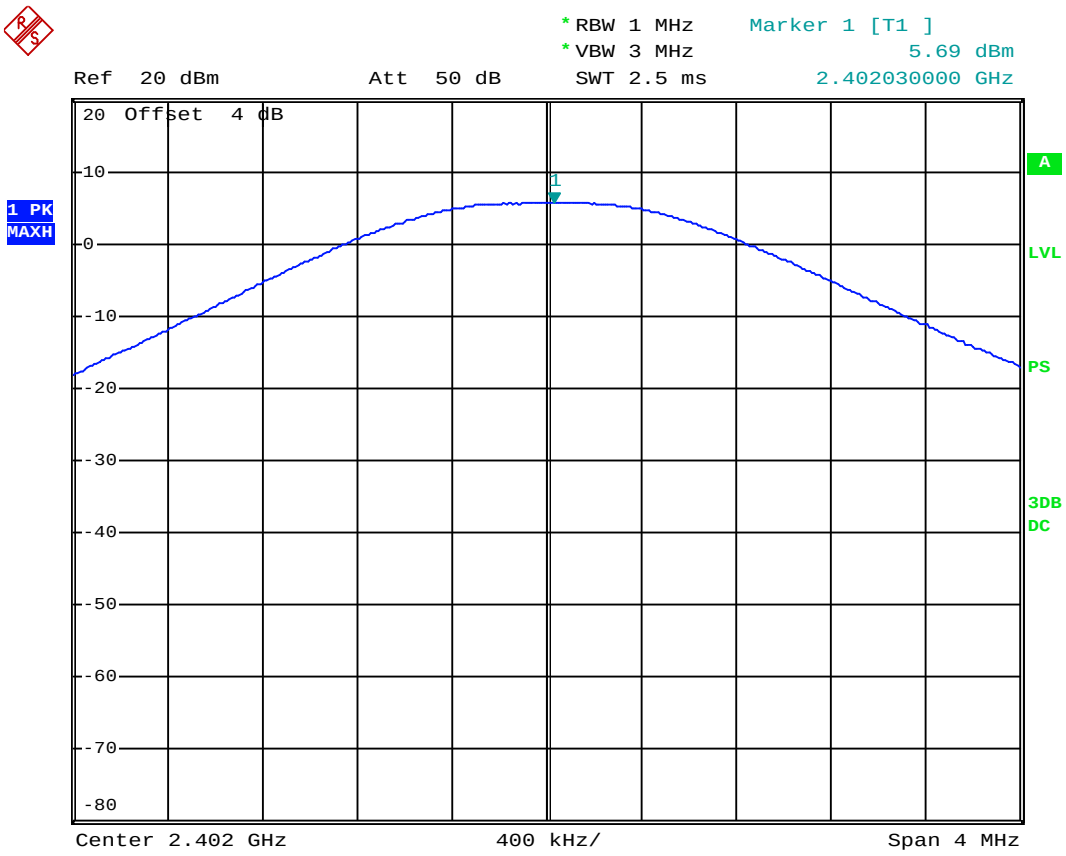
For Non-EDR

| Channel | Frequency | **Peak Output Power** | Limit |
|---|---|---|---|
| 00 | 2402 MHz | **5.96 dBm** | 30 dBm |
| 39 | 2441 MHz | **6.94 dBm** | 30 dBm |
| 78 | 2480 MHz | **7.23 dBm** | 30 dBm |

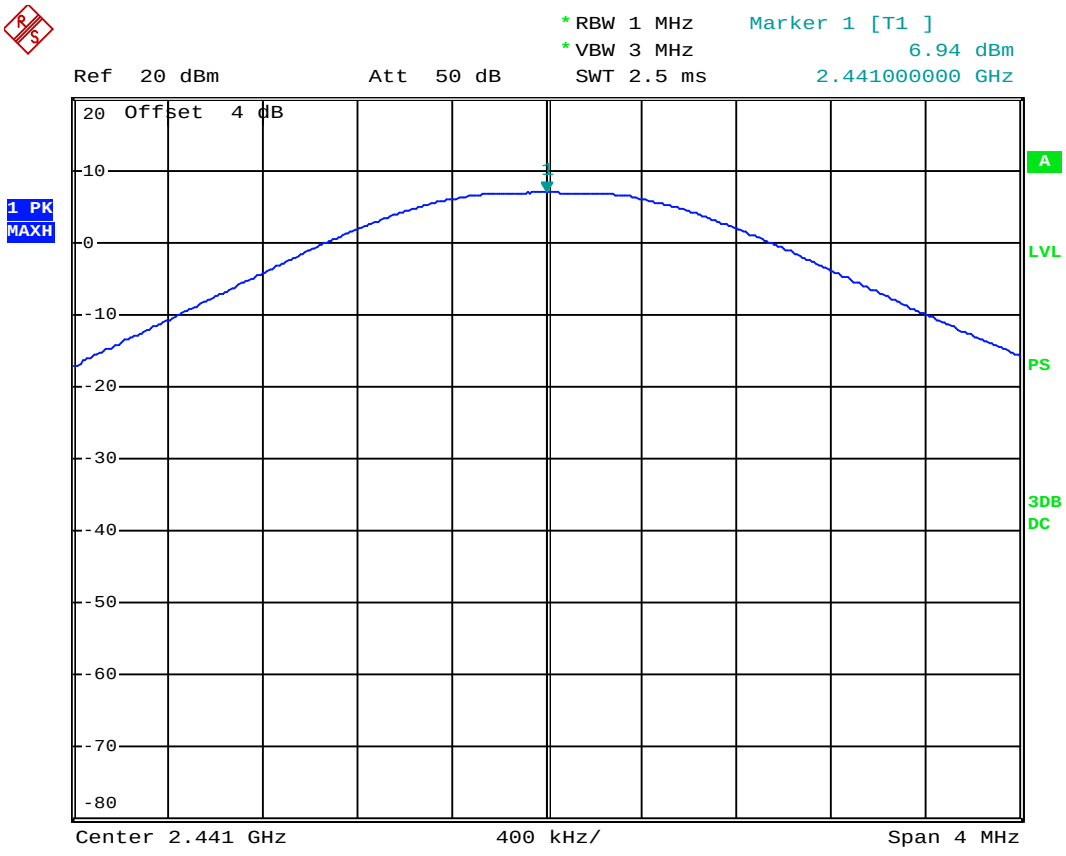
For EDR

| Channel | Frequency | **Peak Output Power** | Limit |
|---|---|---|---|
| 00 | 2402 MHz | **5.48 dBm** | 30 dBm |
| 39 | 2441 MHz | **6.94 dBm** | 30 dBm |
| 78 | 2480 MHz | **7.07 dBm** | 30 dBm |

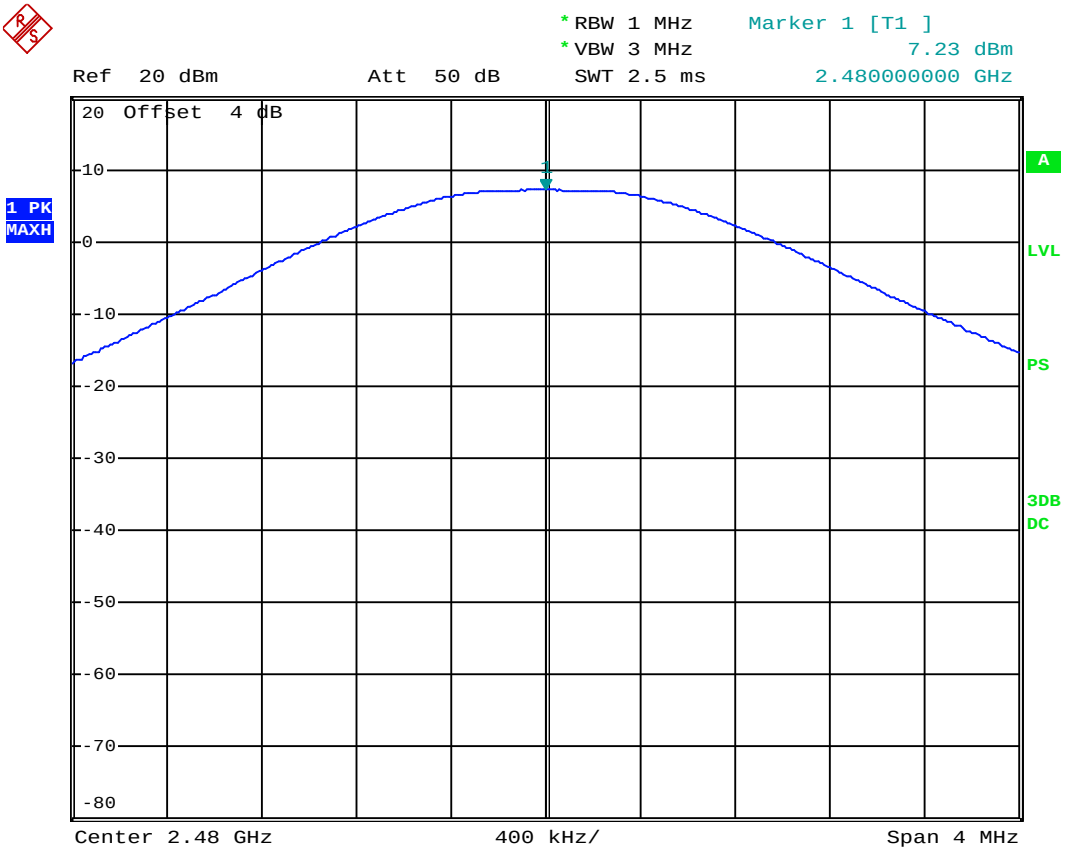
## Ch 00 (2402 MHz) NON-EDR



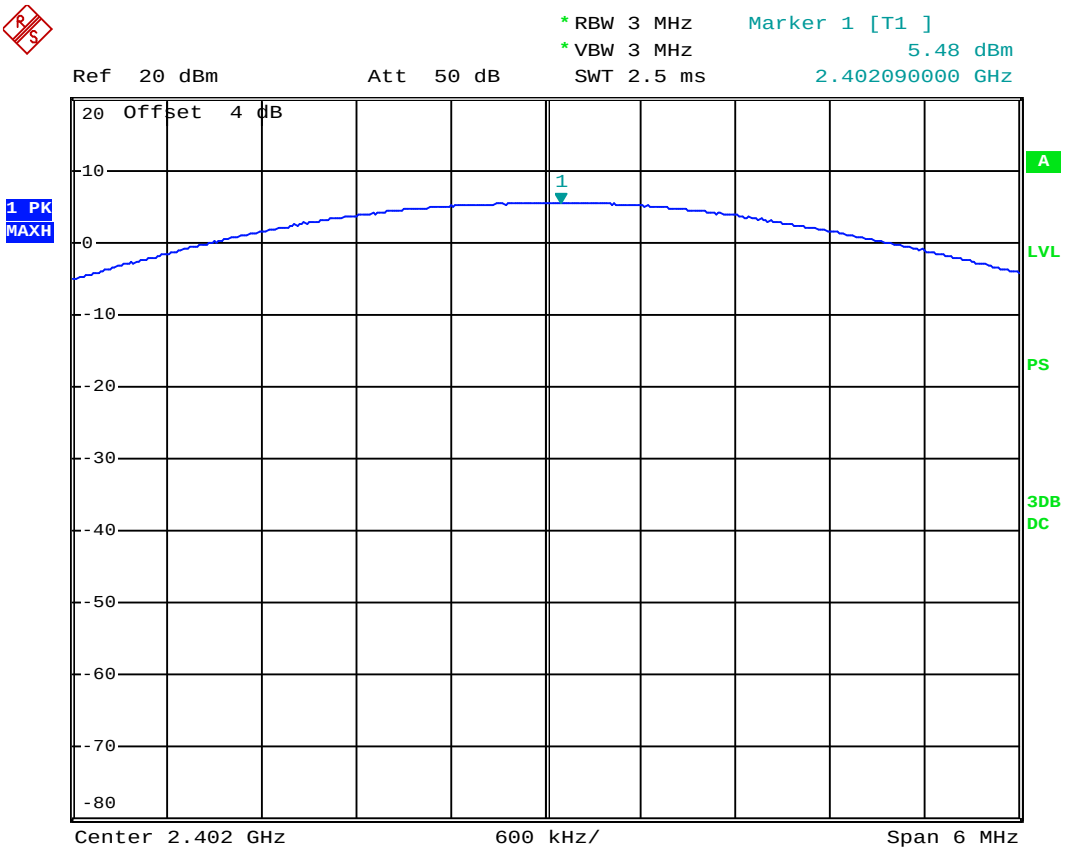

## Ch 39 (2441 MHz) NON-EDR



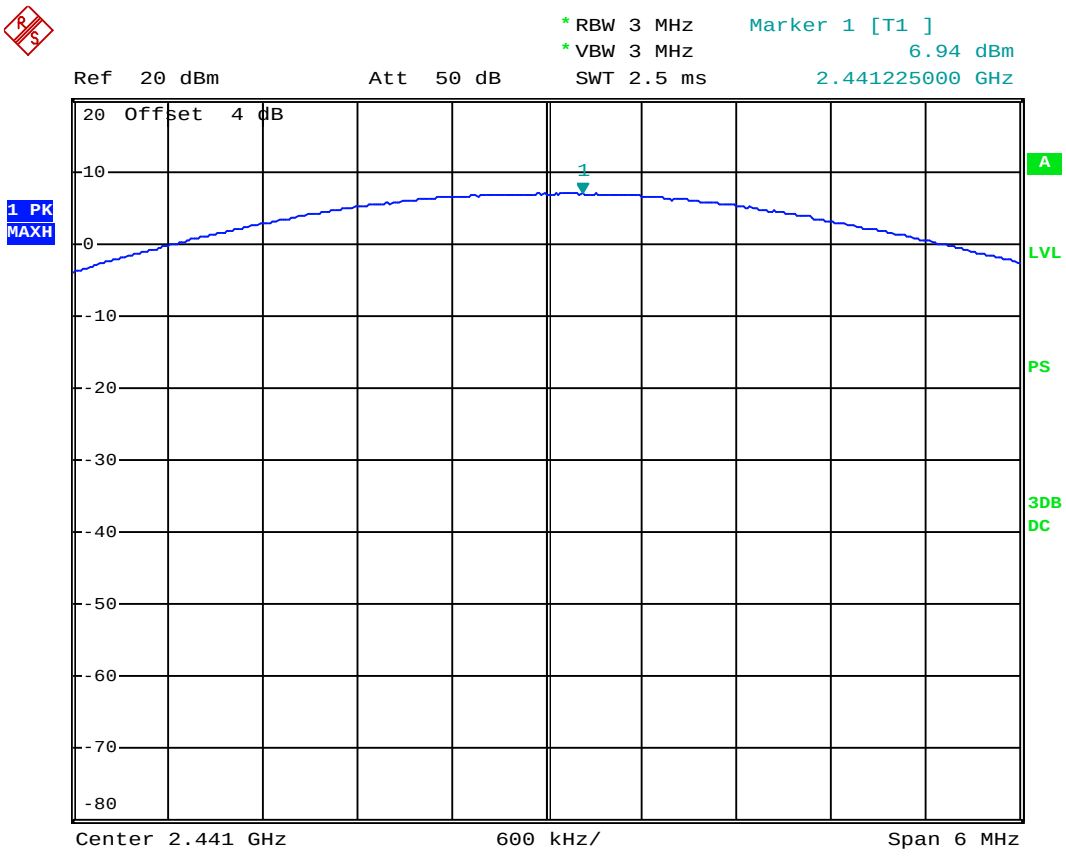
## Ch 78 (2480 MHz) NON-EDR



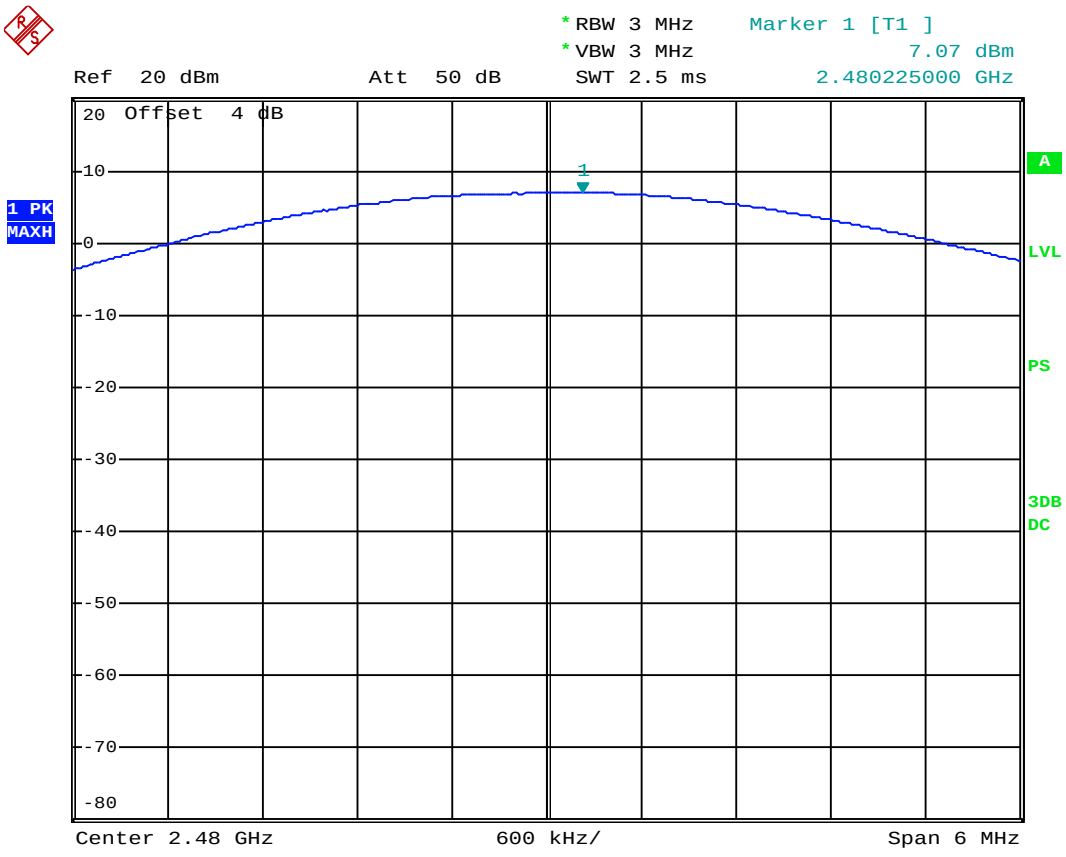

## Ch 00 (2402 MHz) EDR



## Ch 39 (2441 MHz) EDR




## Ch 78 (2480 MHz) EDR



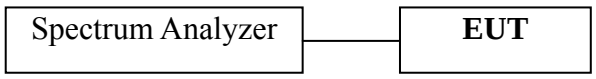
# 7 SPURIOUS RF CONDUCTED EMISSIONS MEASUREMENT

## 7.1 Test Equipment

The following test equipment was used during the emission limitations test：

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Agilent | E7405A | MY45106600 | Mar 22, 2012 | Mar 22, 2013 |

## 7.2 Block Diagram of Test Setup




## 7.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※This test result attaching to Section. 4.7)

## 7.4 Operating Condition of EUT

The test program “adb shell” was used to enable the EUT to transmit data at different channel frequency individually.

## 7.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set RBW = 100 kHz, VBW = 300 kHz, scan up through $10^{th}$ harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
The test procedure is defined in DA 00-705.

## 7.6 Test Results

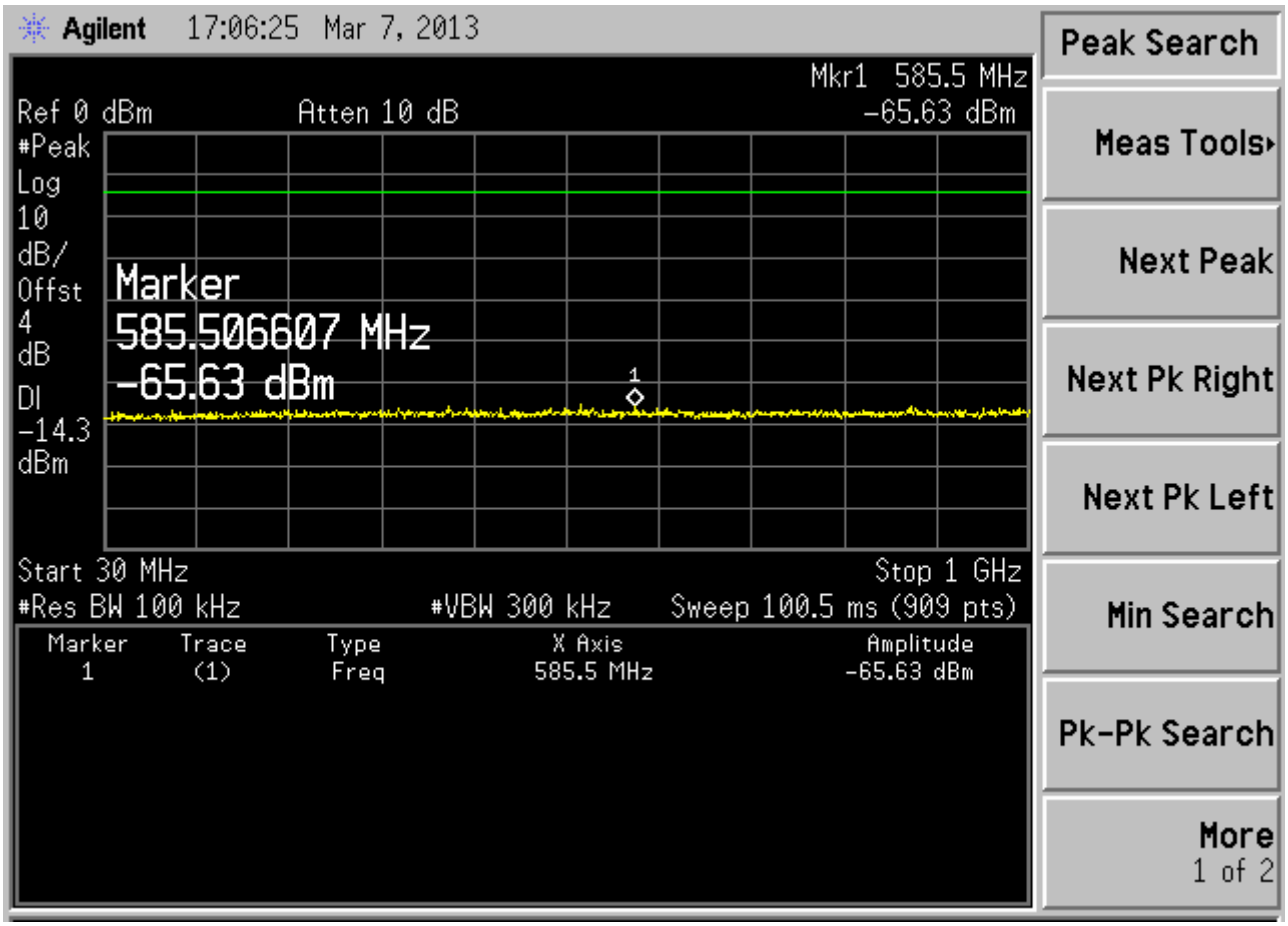
**PASSED**.

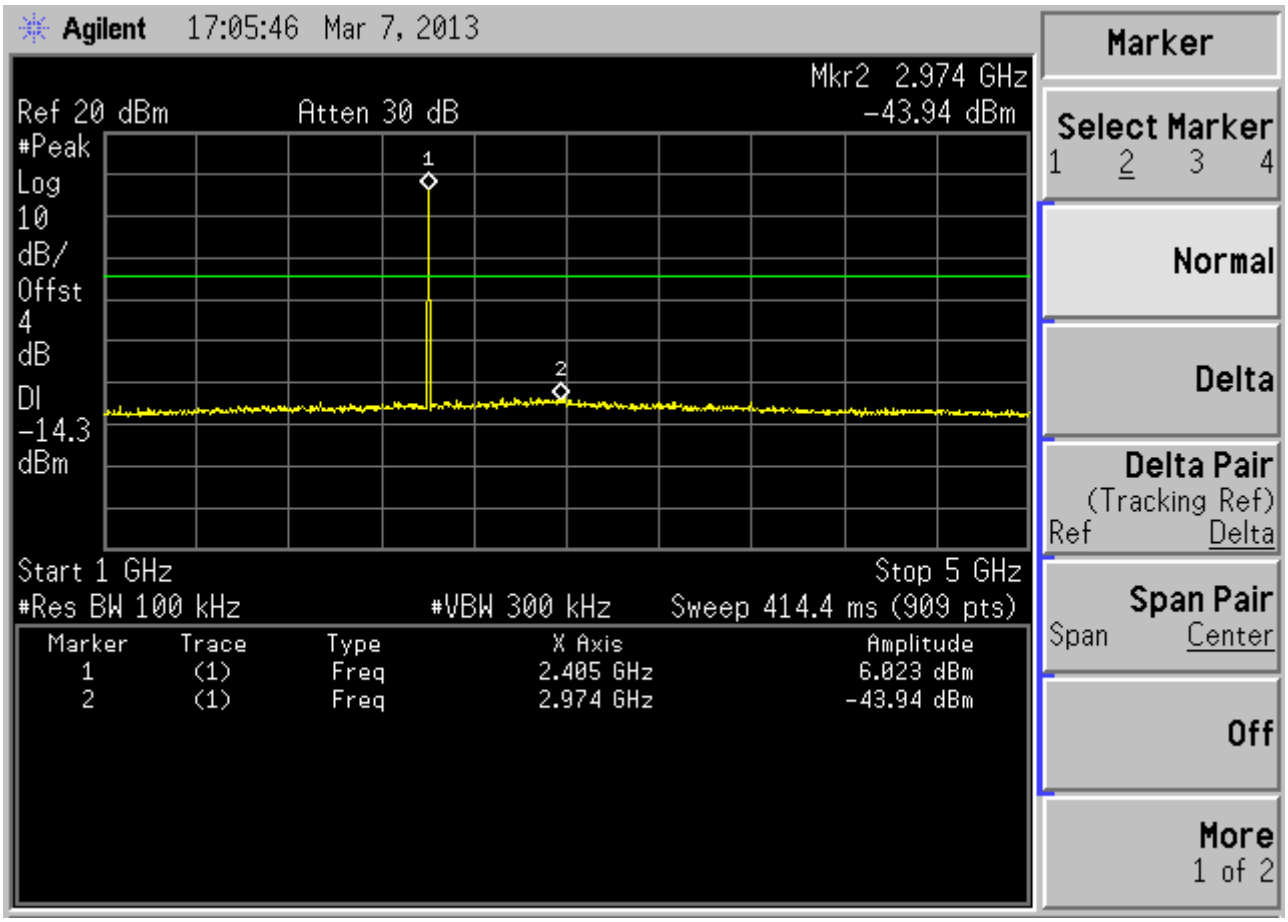
The test data was attached in the next pages.

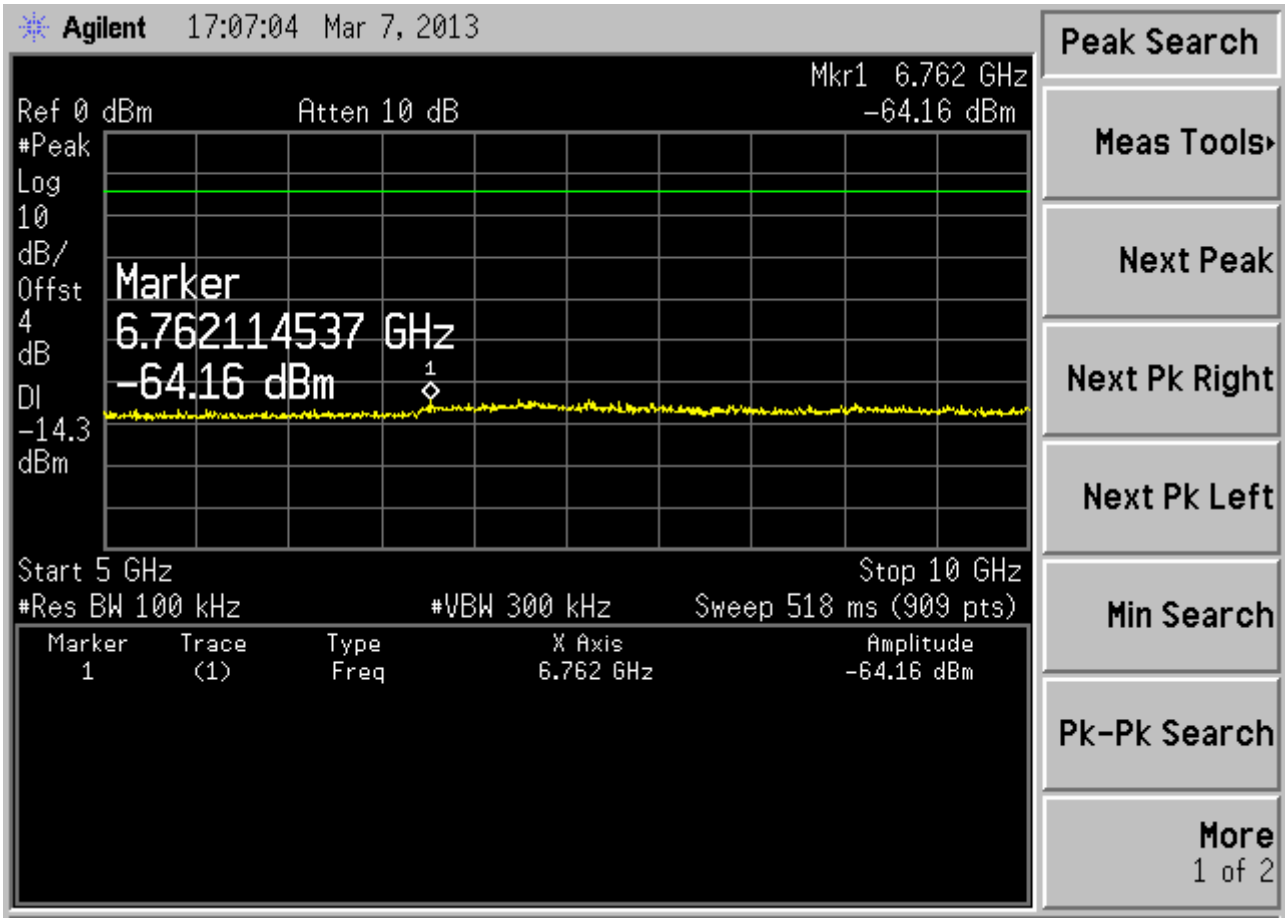
(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

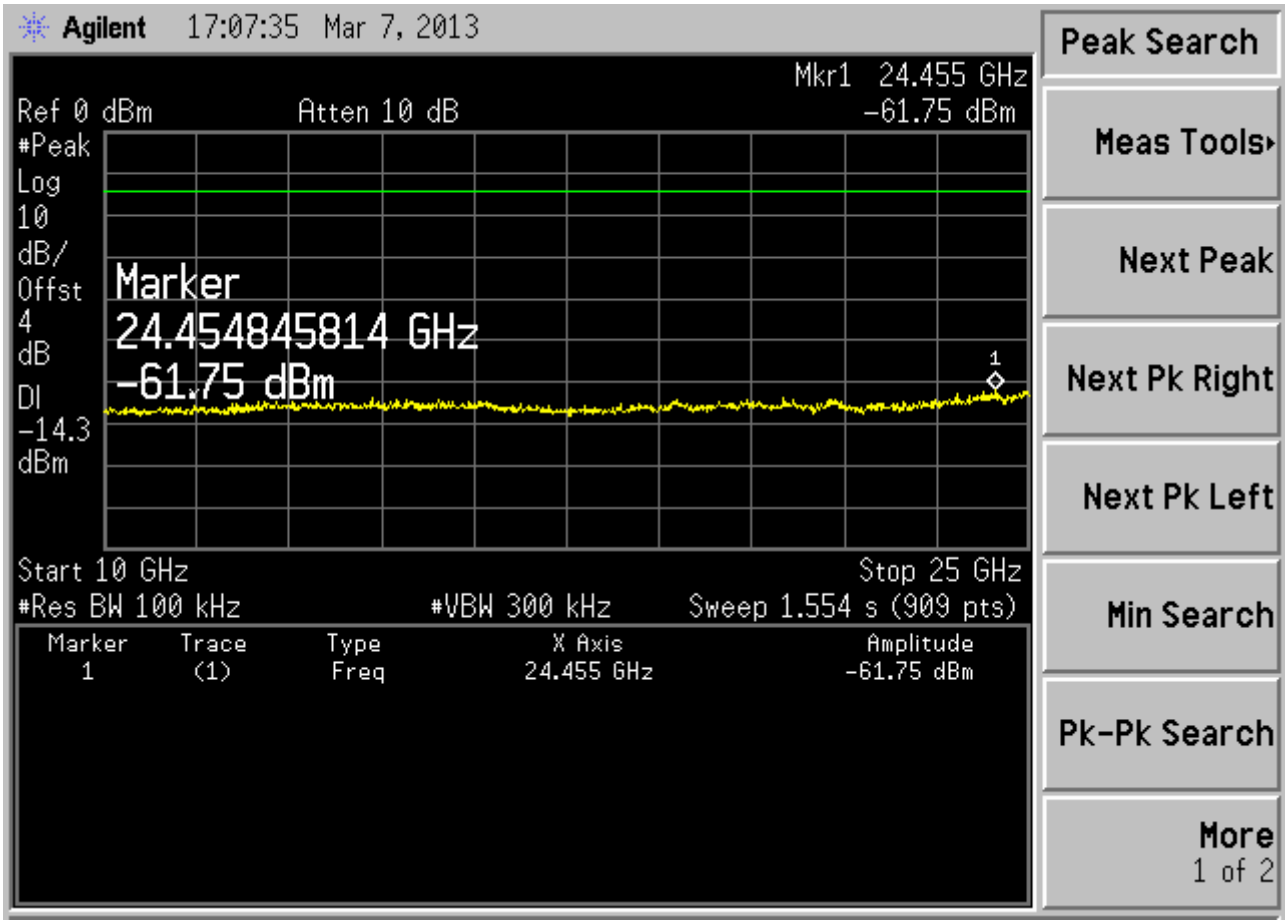
| Modulation | Data Page |
|---|---|
| NON-EDR | P47-52 |
| EDR | P53-58 |

**NON-EDR Ch 00 (2402 MHz)**

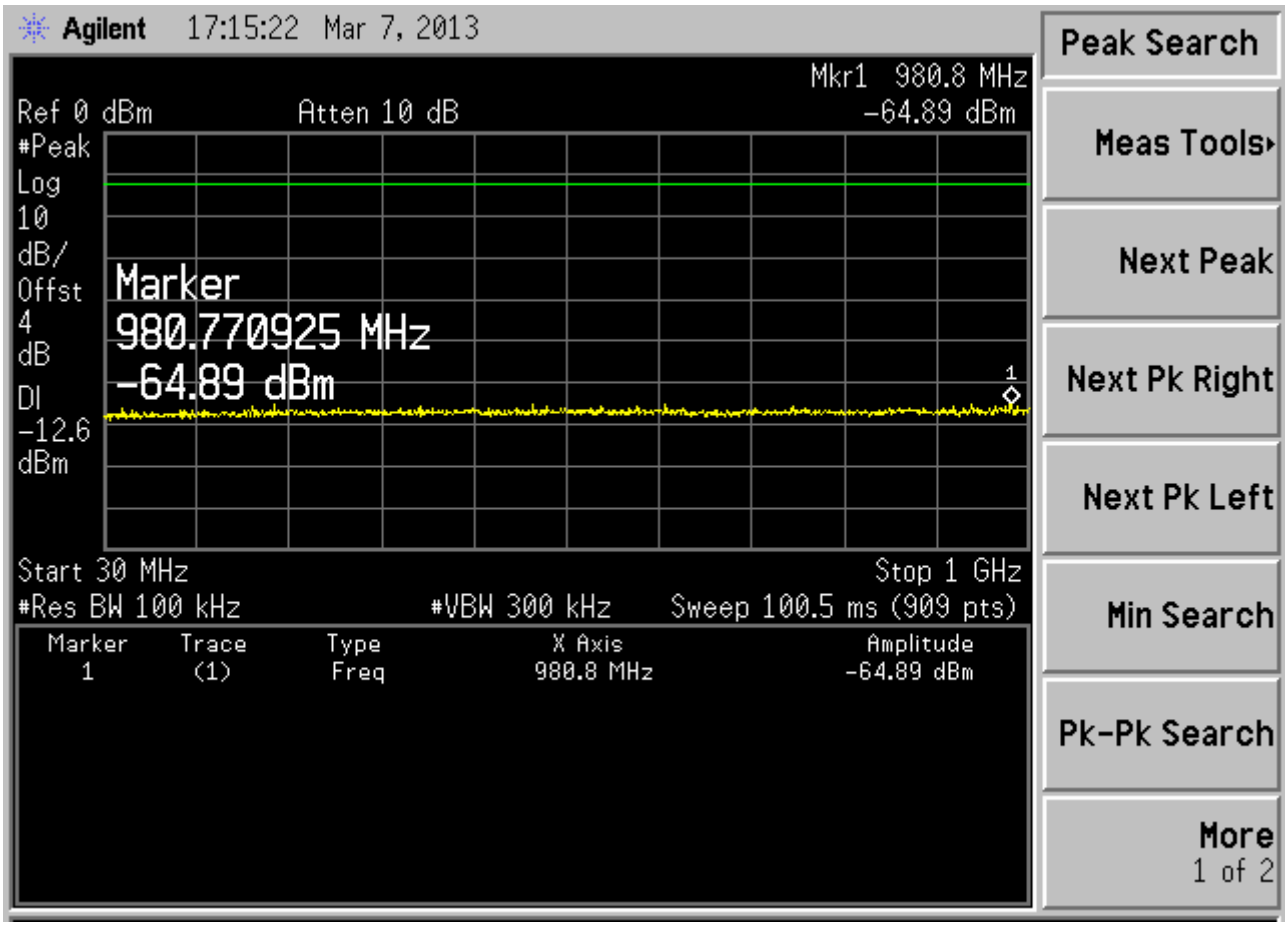


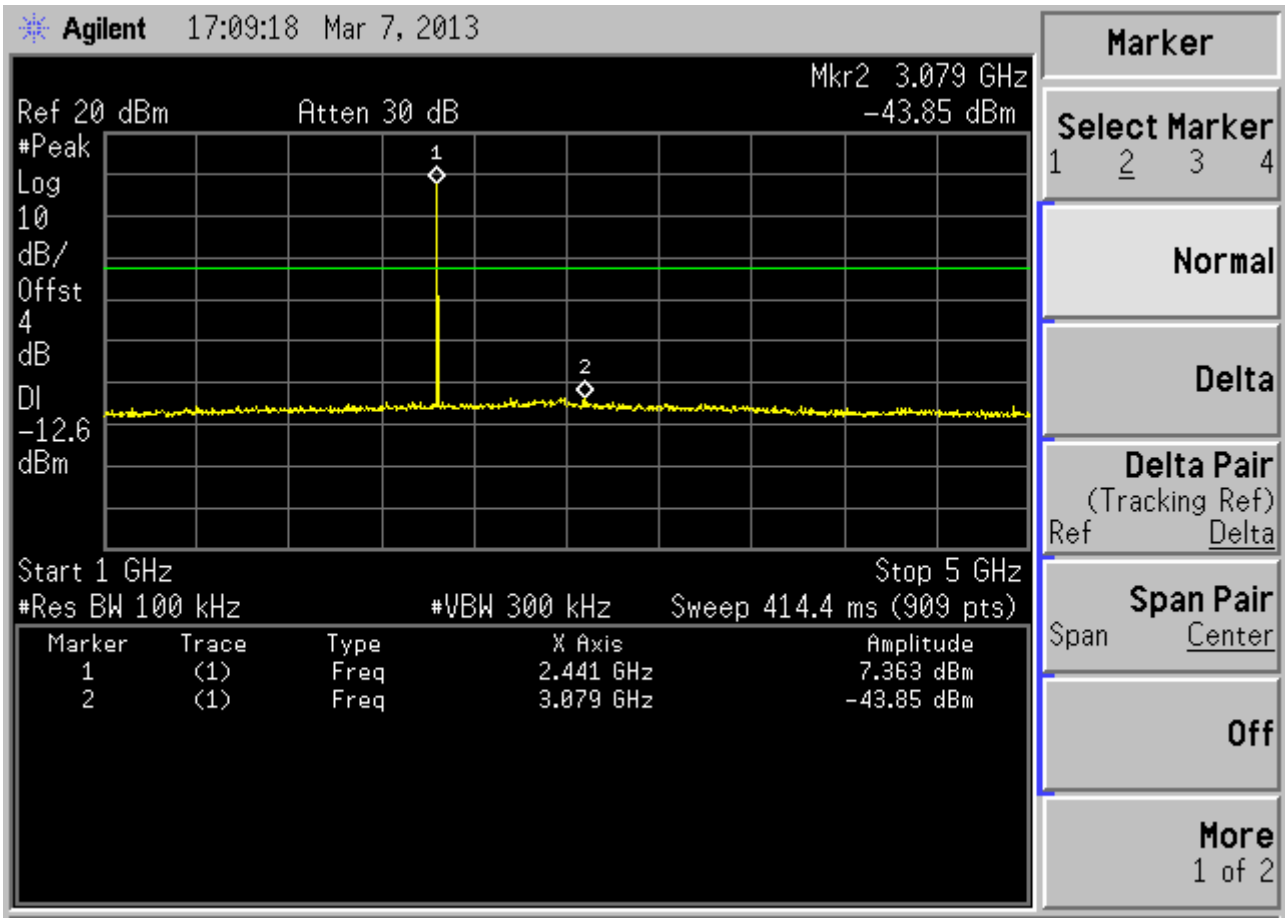



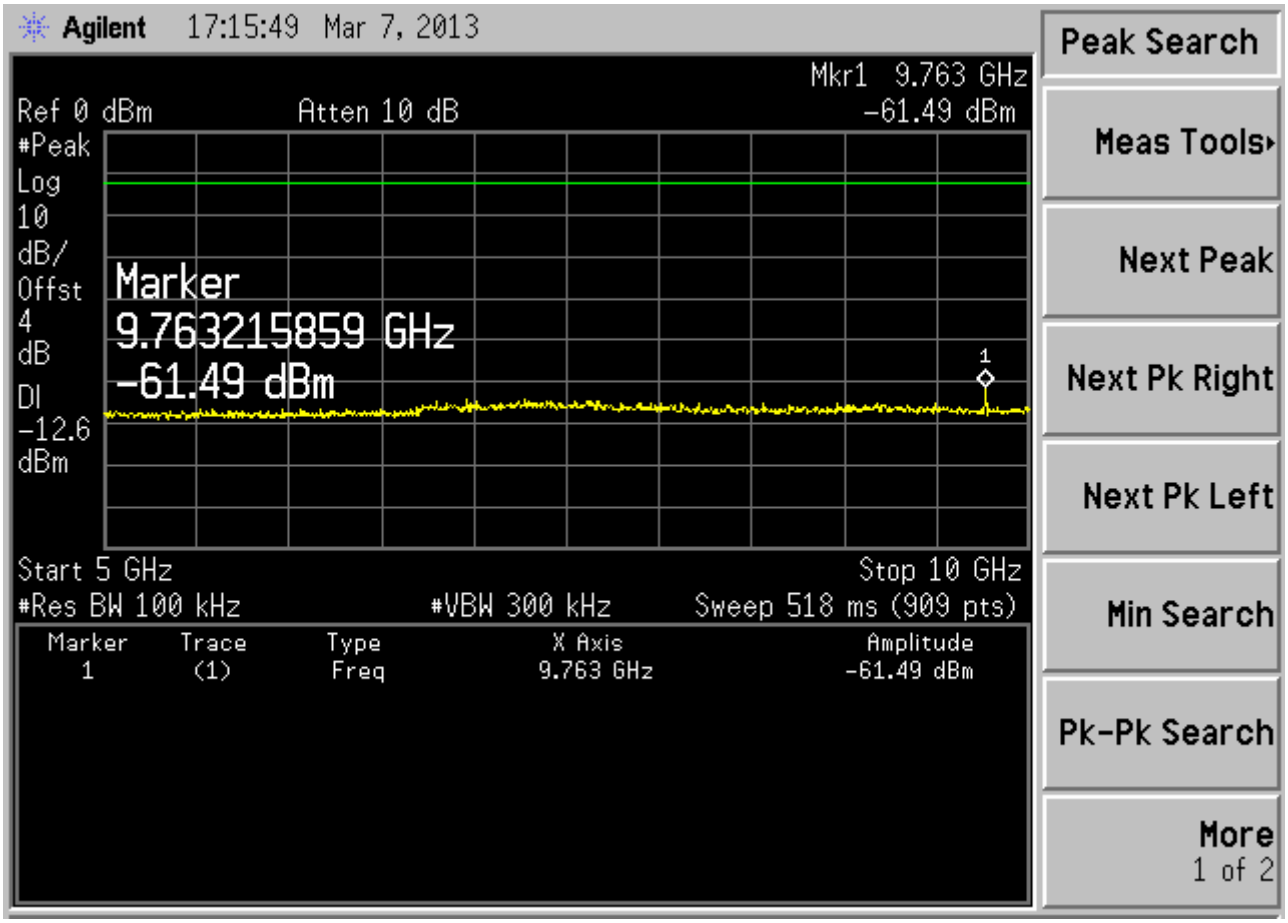

Agilent 17:07:04 Mar 7, 2013
Mkr1 6.762 GHz
Ref 0 dBm
Atten 10 dB
-64.16 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-14.3
dBm
Marker
6.762114537 GHz
-64.16 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 6.762 GHz -64.16 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

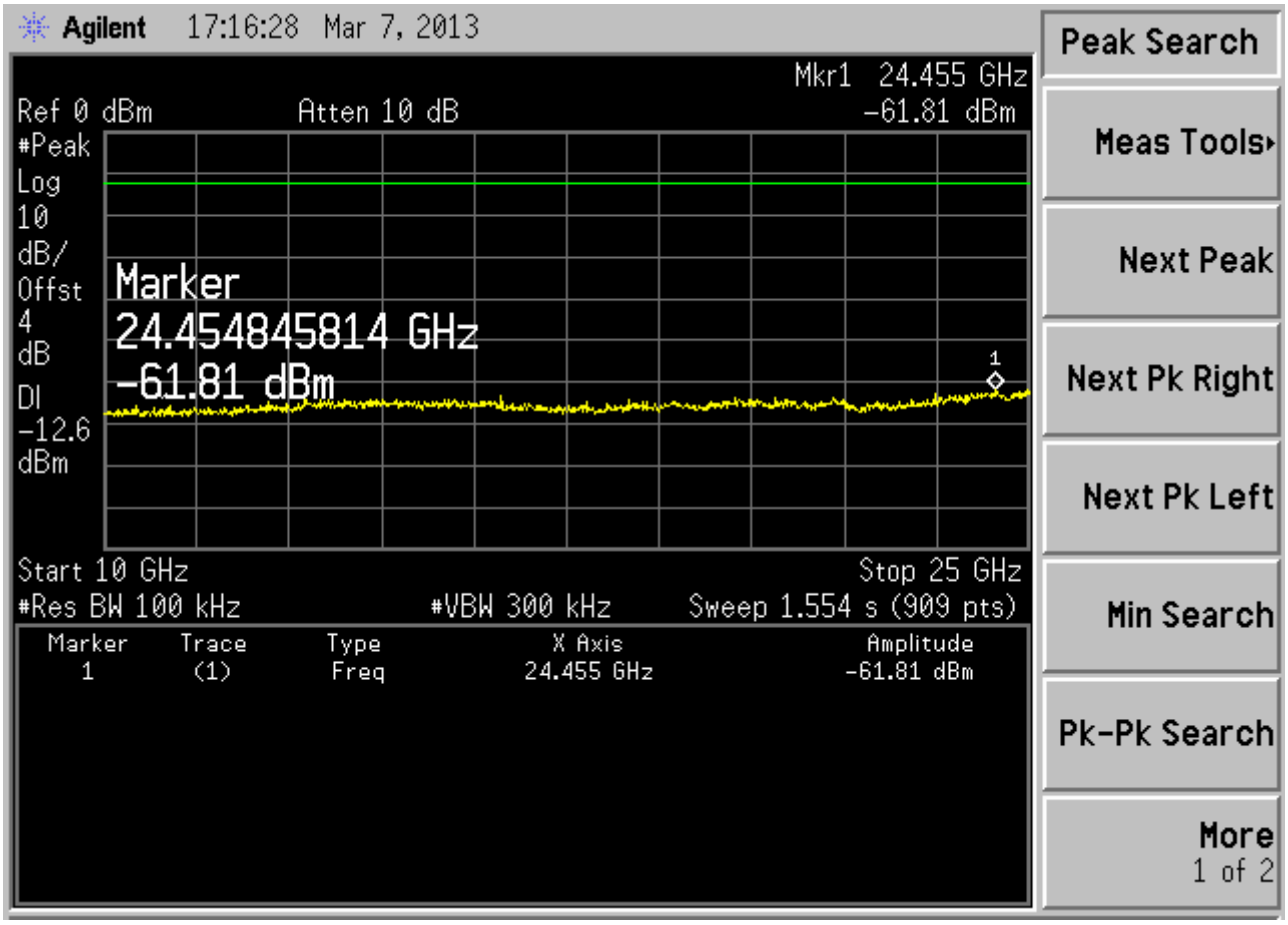

Agilent 17:07:35 Mar 7, 2013
Mkr1 24.455 GHz
Ref 0 dBm
Atten 10 dB
-61.75 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-14.3
dBm
Marker
24.454845814 GHz
-61.75 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.455 GHz -61.75 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

**NON-EDR Ch 39 (2441 MHz)**

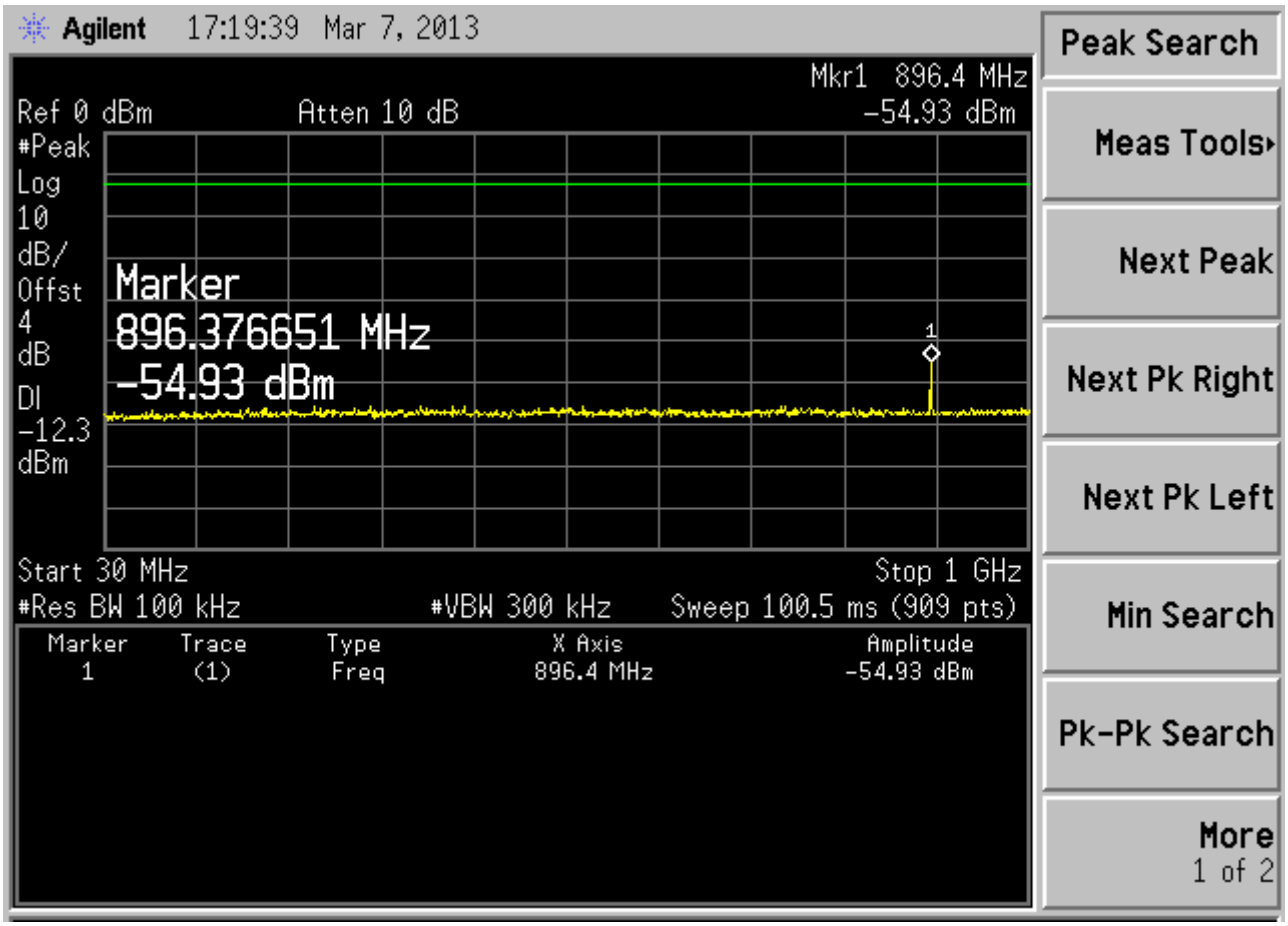


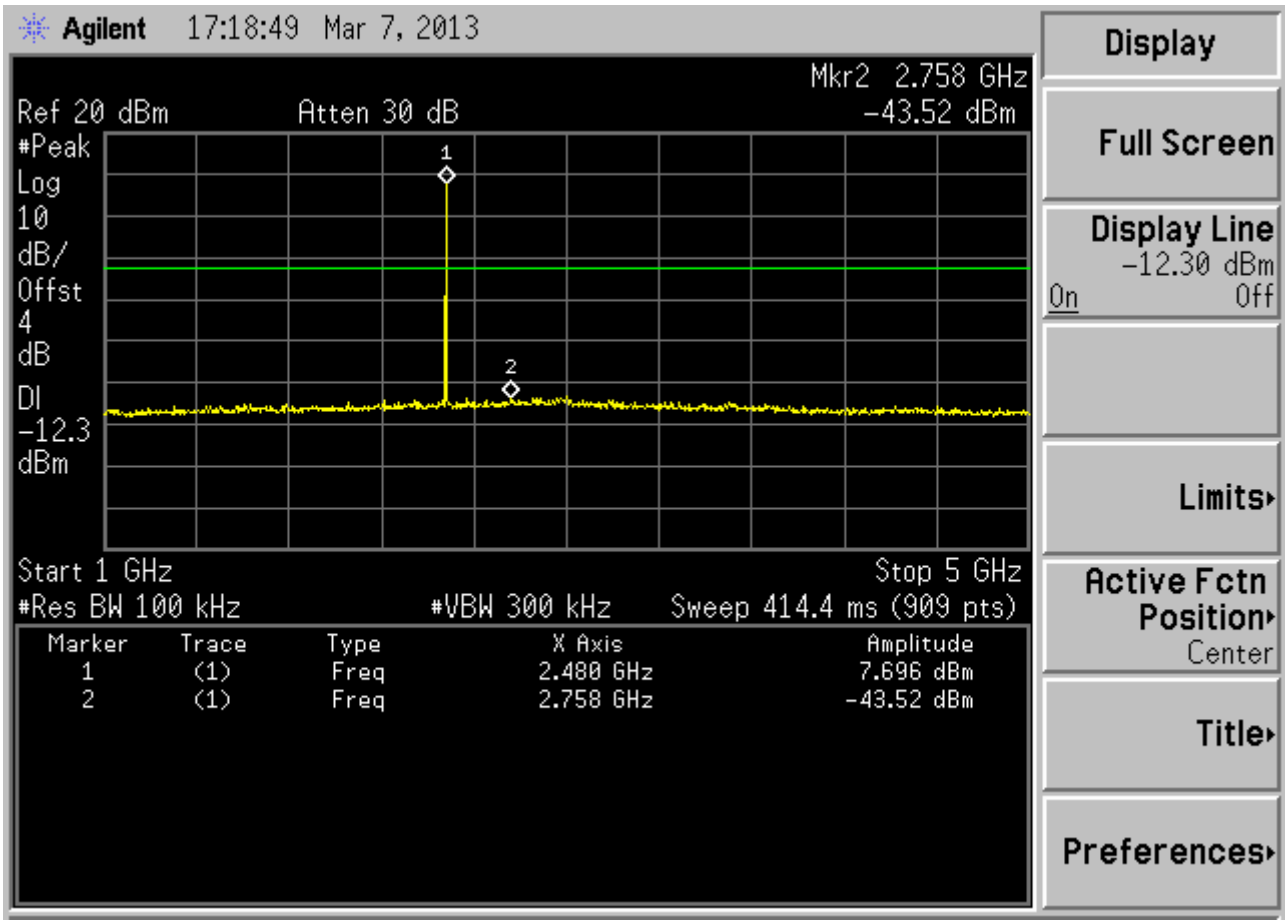



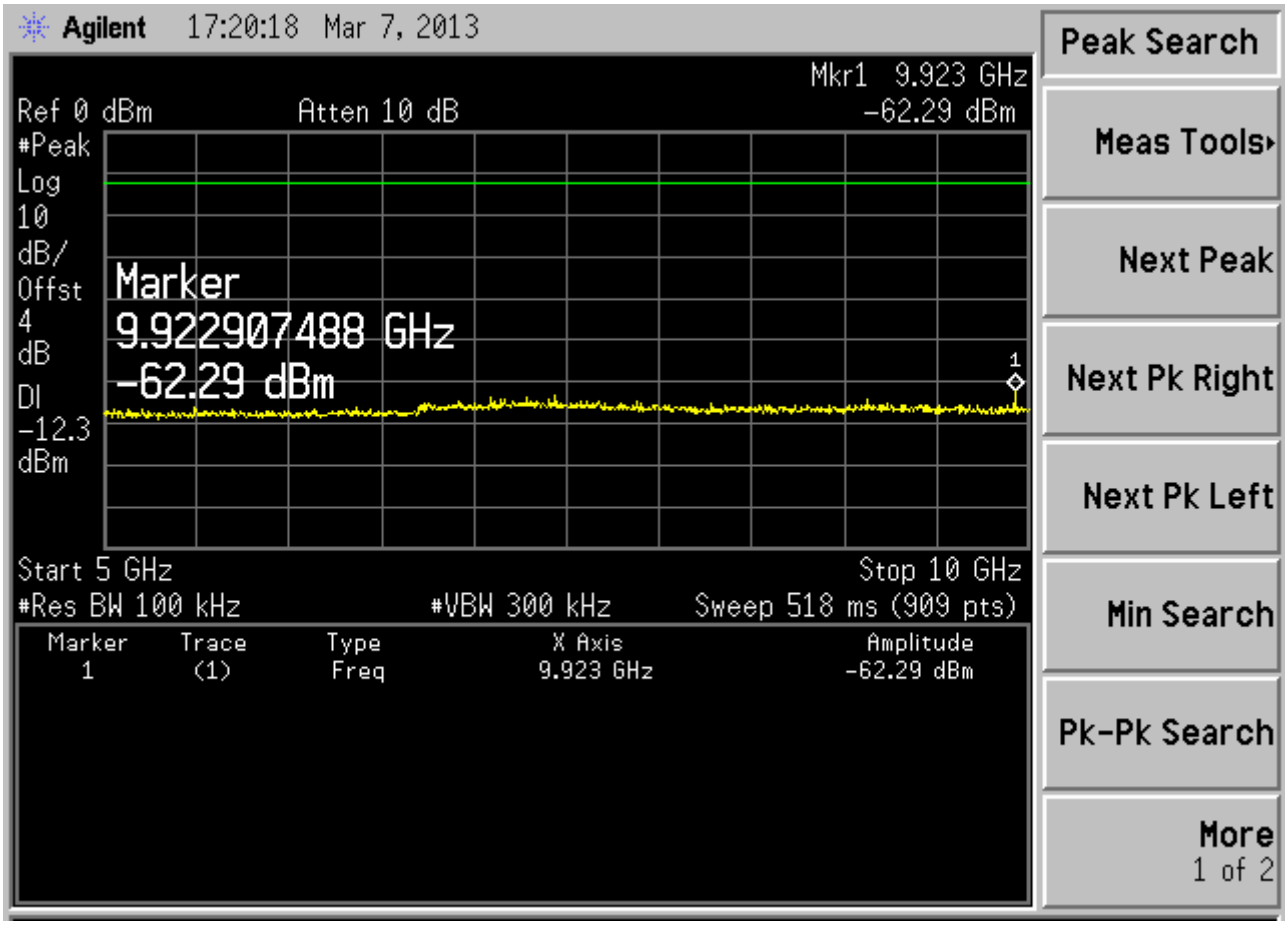

Agilent 17:15:49 Mar 7, 2013
Mkr1 9.763 GHz
Ref 0 dBm
Atten 10 dB
-61.49 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-12.6
dBm
Marker
9.763215859 GHz
-61.49 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 9.763 GHz -61.49 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

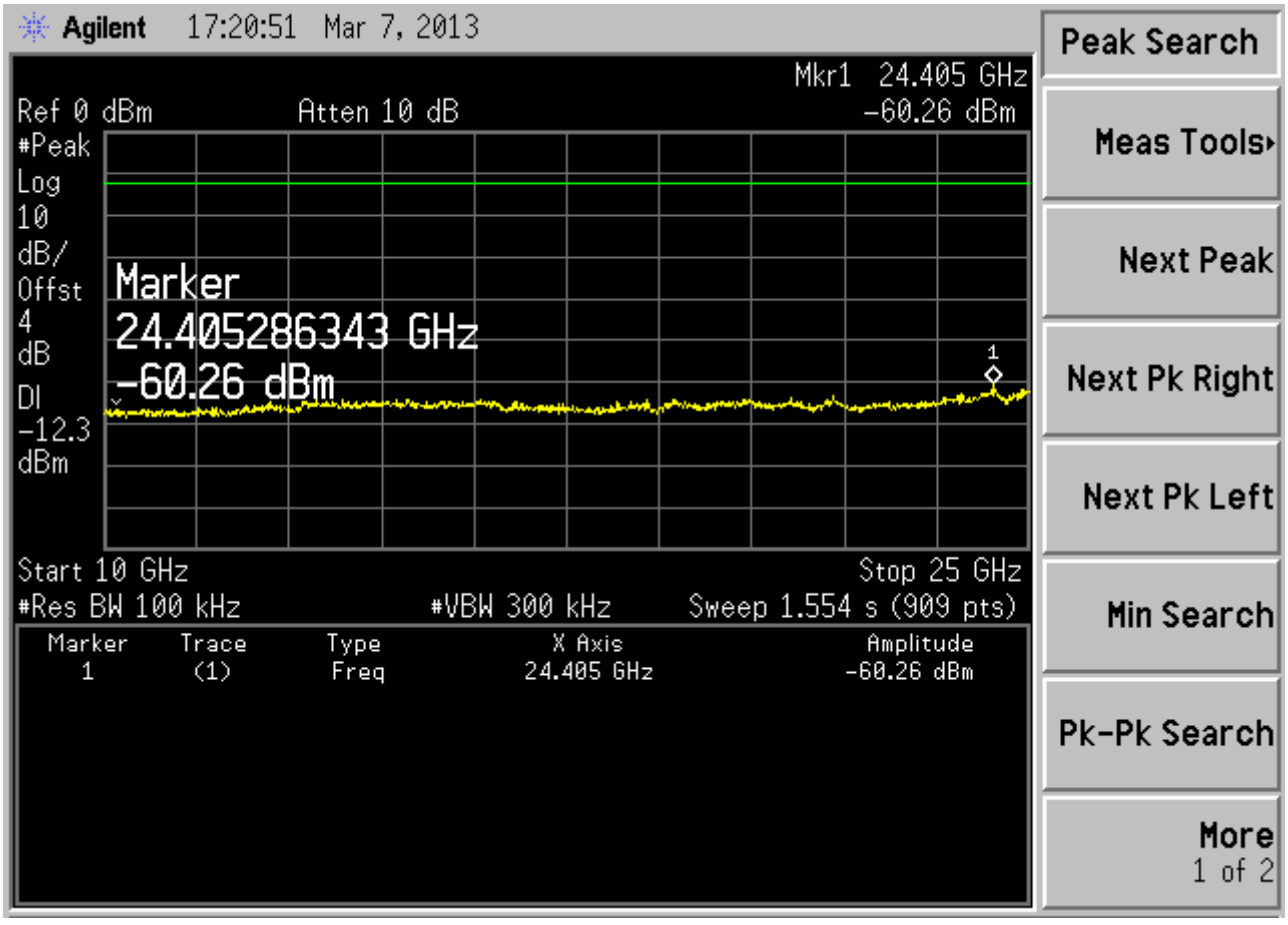

Agilent 17:16:28 Mar 7, 2013
Mkr1 24.455 GHz
Ref 0 dBm
Atten 10 dB
-61.81 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-12.6
dBm
Marker
24.454845814 GHz
-61.81 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.455 GHz -61.81 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

**NON-EDR Ch 78 (2480 MHz)**

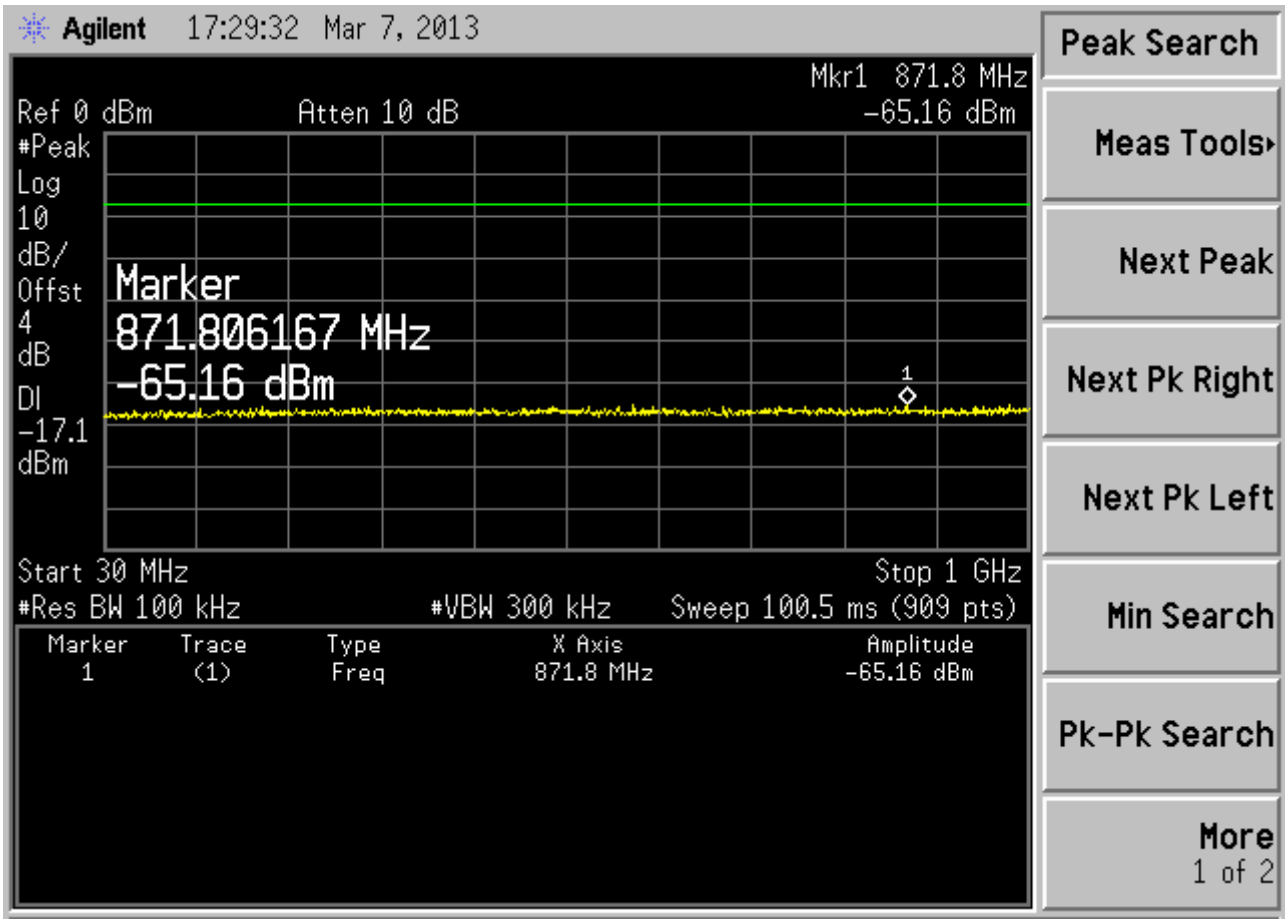


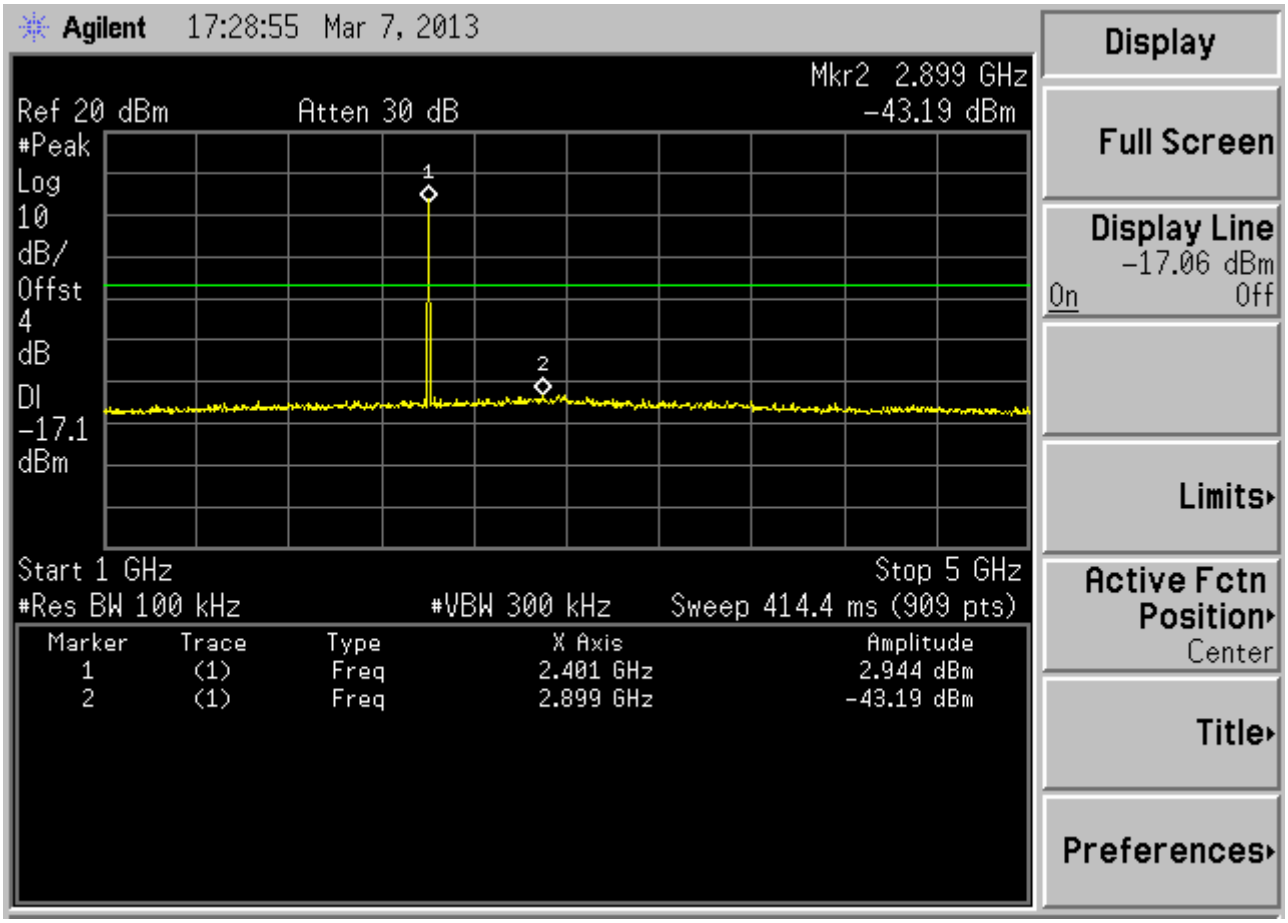



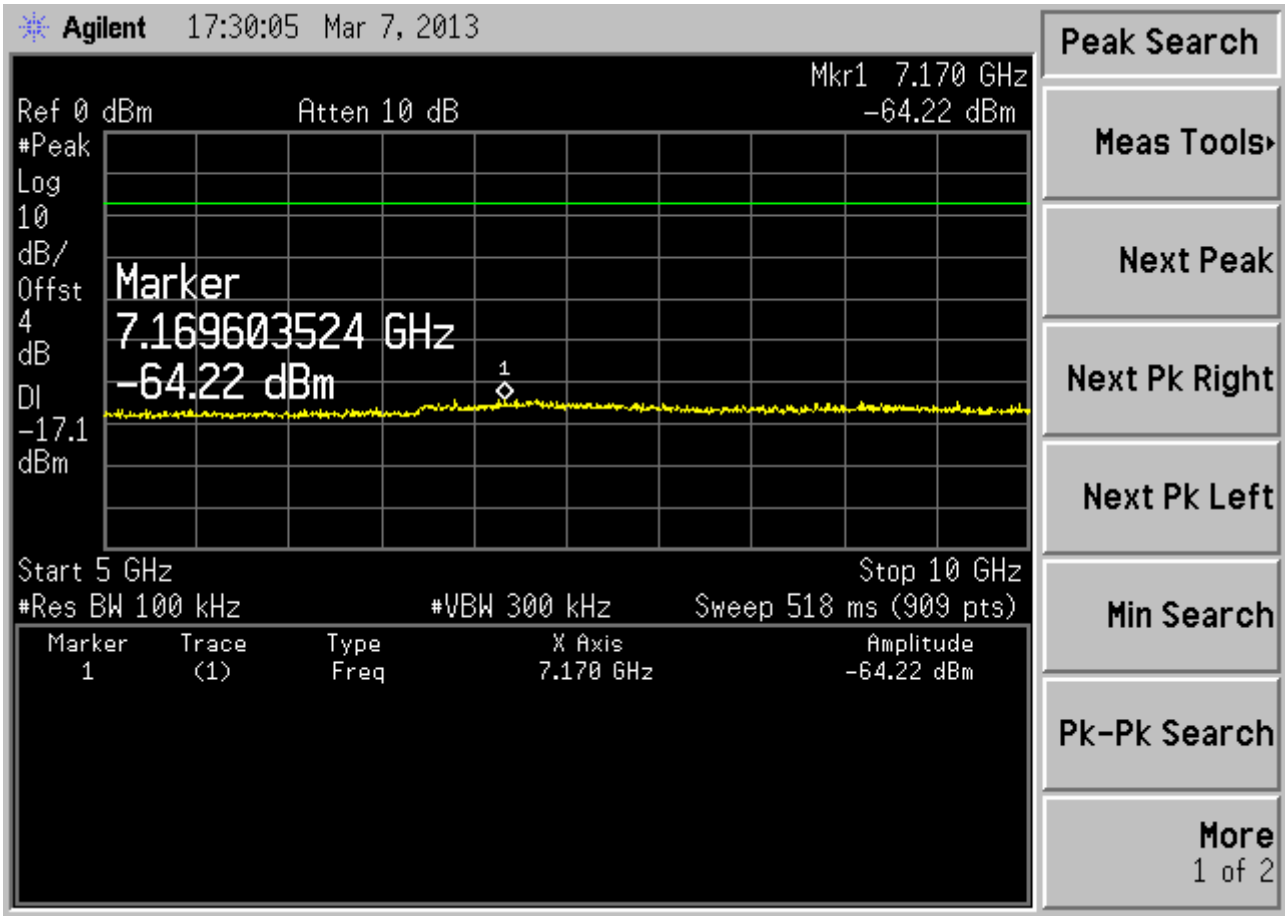

Agilent 17:20:18 Mar 7, 2013
Mkr1 9.923 GHz
Ref 0 dBm
Atten 10 dB
-62.29 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-12.3
dBm
Marker
9.922907488 GHz
-62.29 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 9.923 GHz -62.29 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

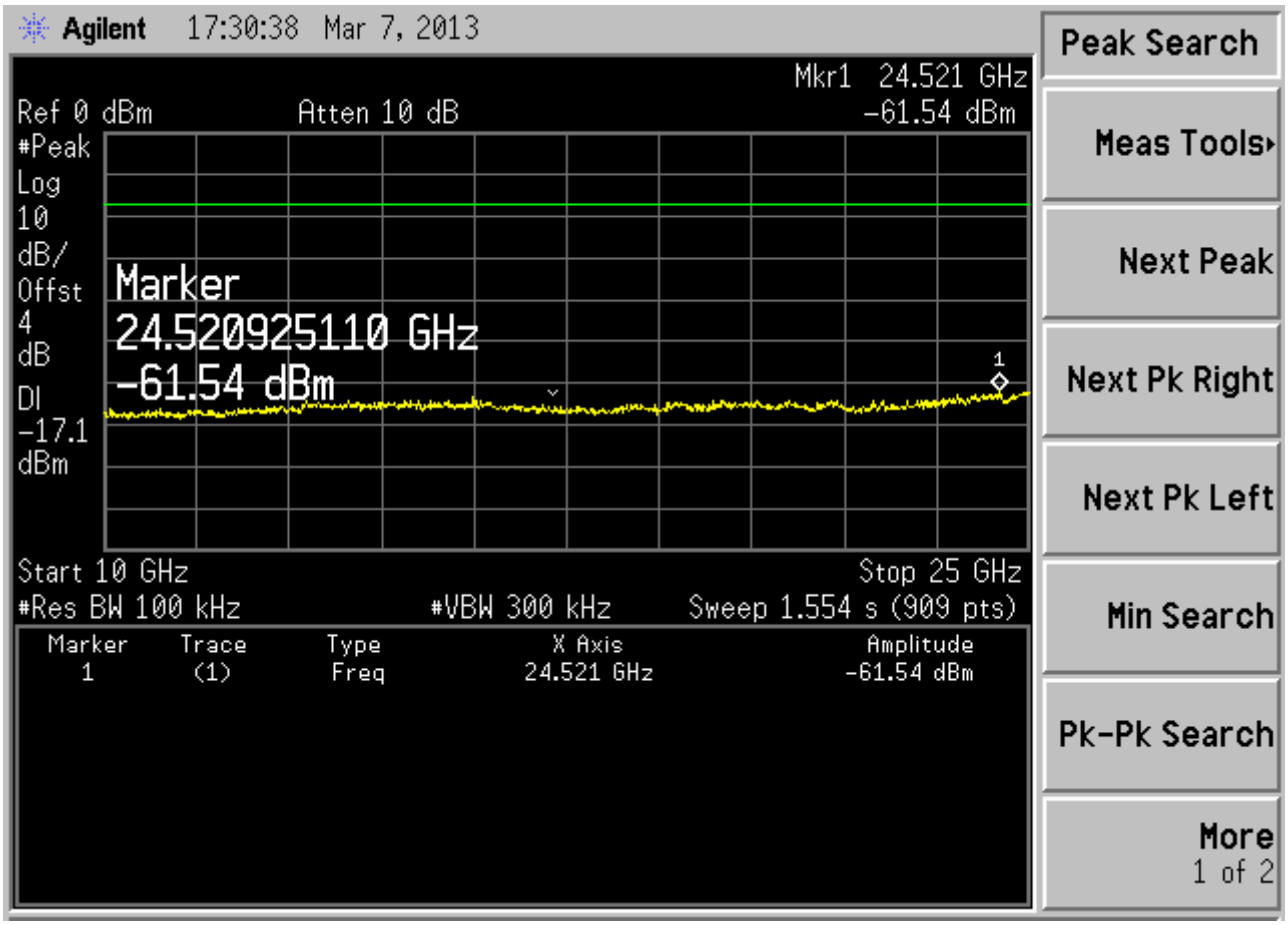

Agilent 17:20:51 Mar 7, 2013
Mkr1 24.405 GHz
Ref 0 dBm
Atten 10 dB
-60.26 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-12.3
dBm
Marker
24.405286343 GHz
-60.26 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.405 GHz -60.26 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

**EDR Ch 00 (2402 MHz)**

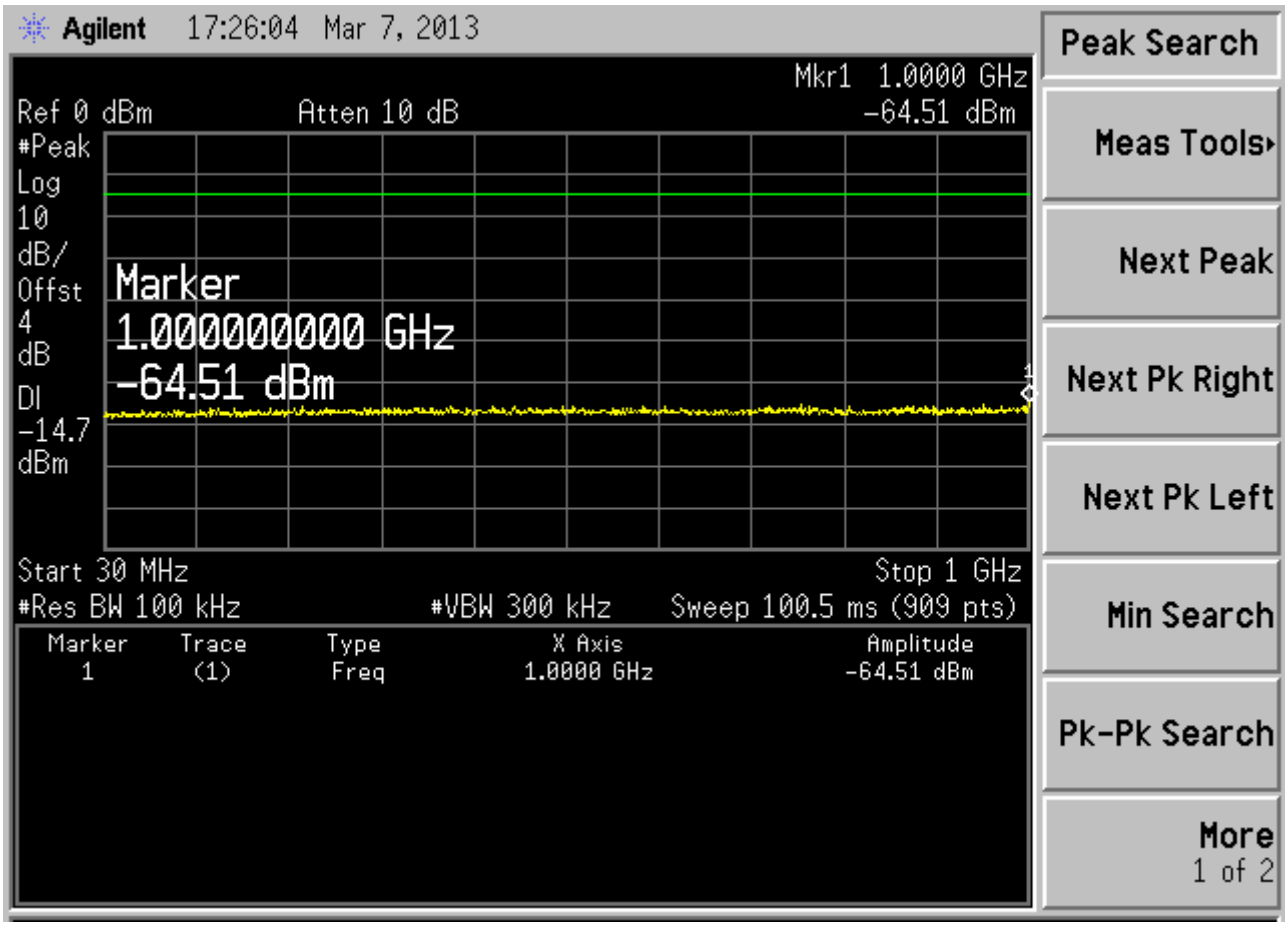


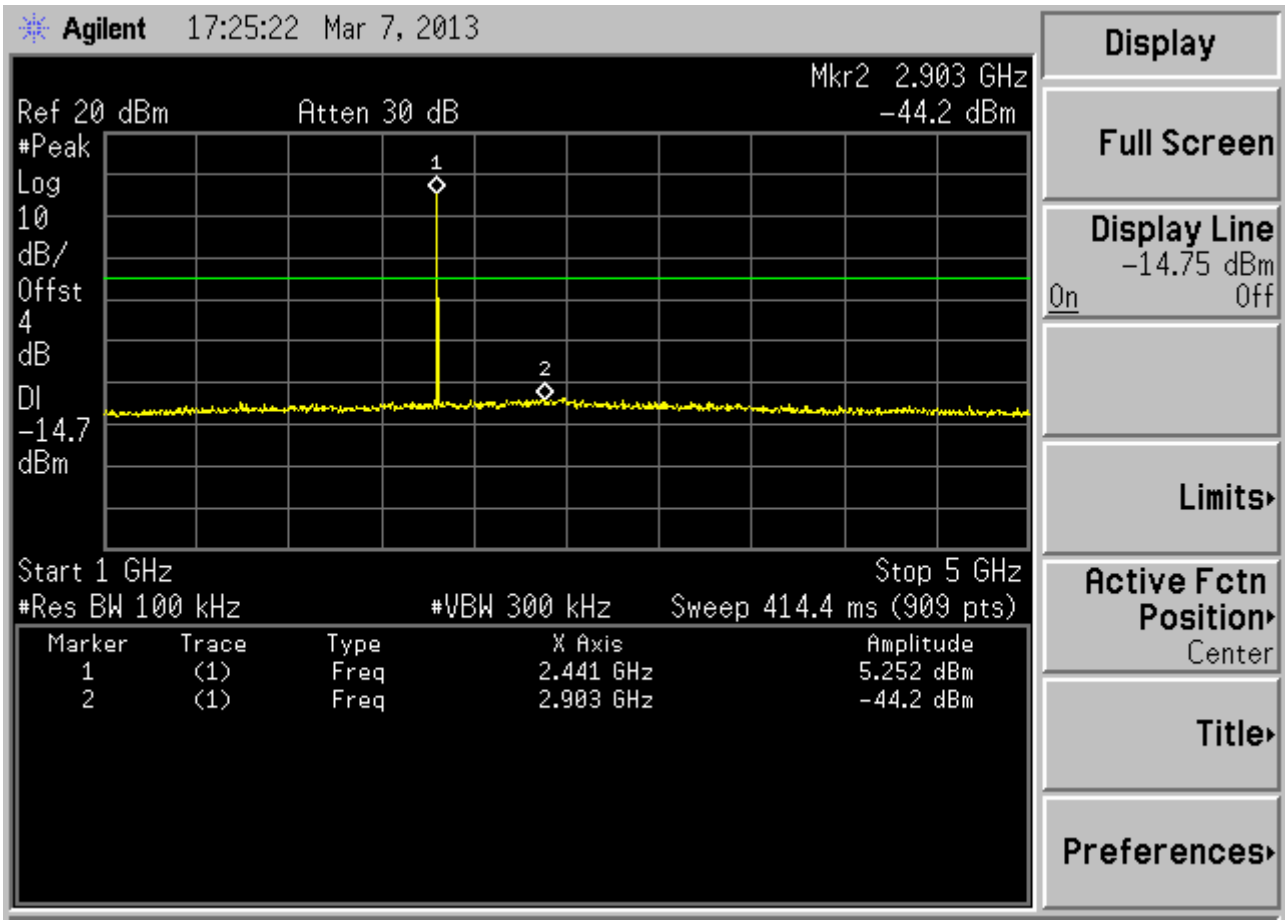



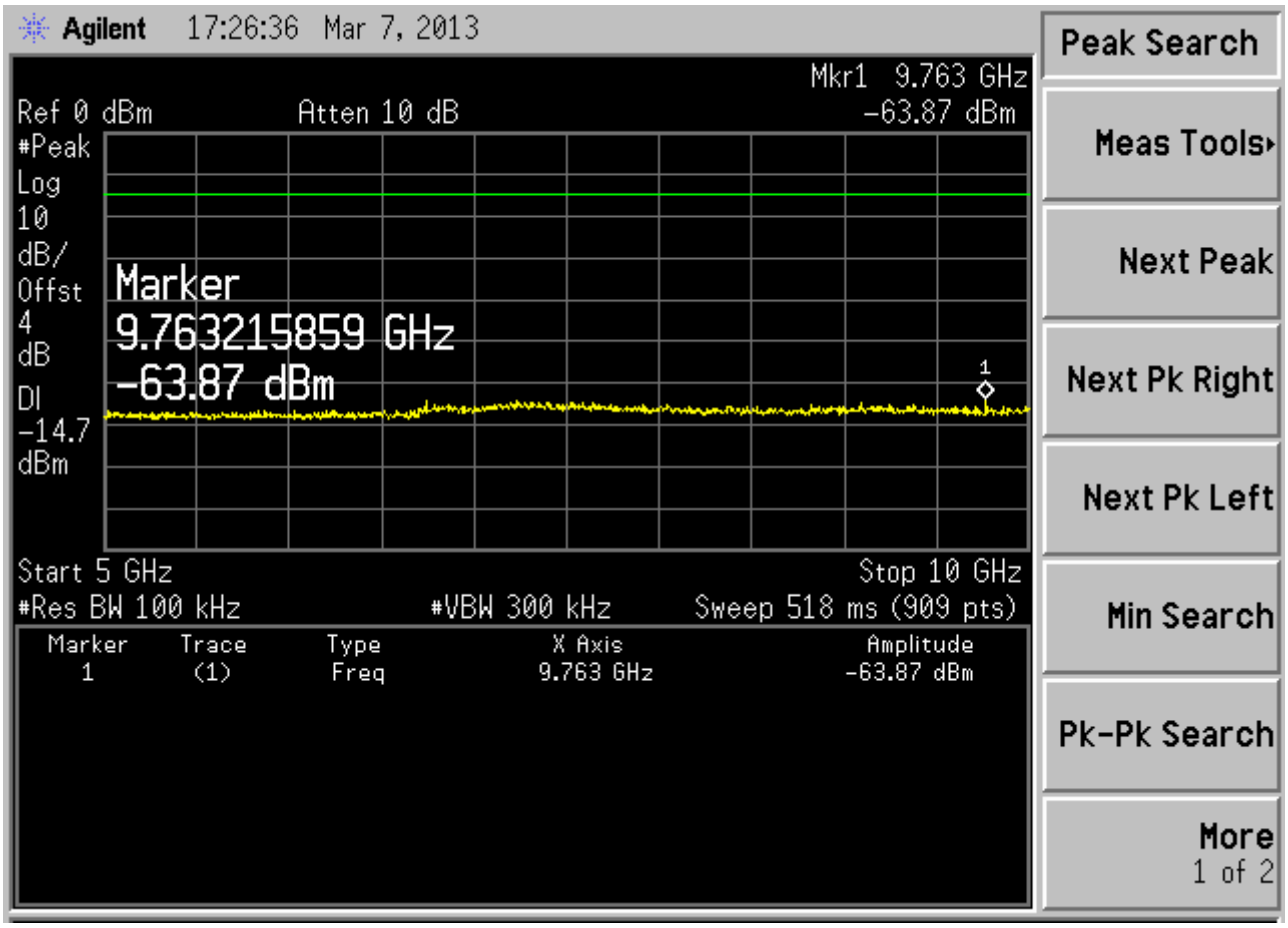

Agilent 17:30:05 Mar 7, 2013
Mkr1 7.170 GHz
Ref 0 dBm
Atten 10 dB
-64.22 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-17.1
dBm
Marker
7.169603524 GHz
-64.22 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 7.170 GHz -64.22 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

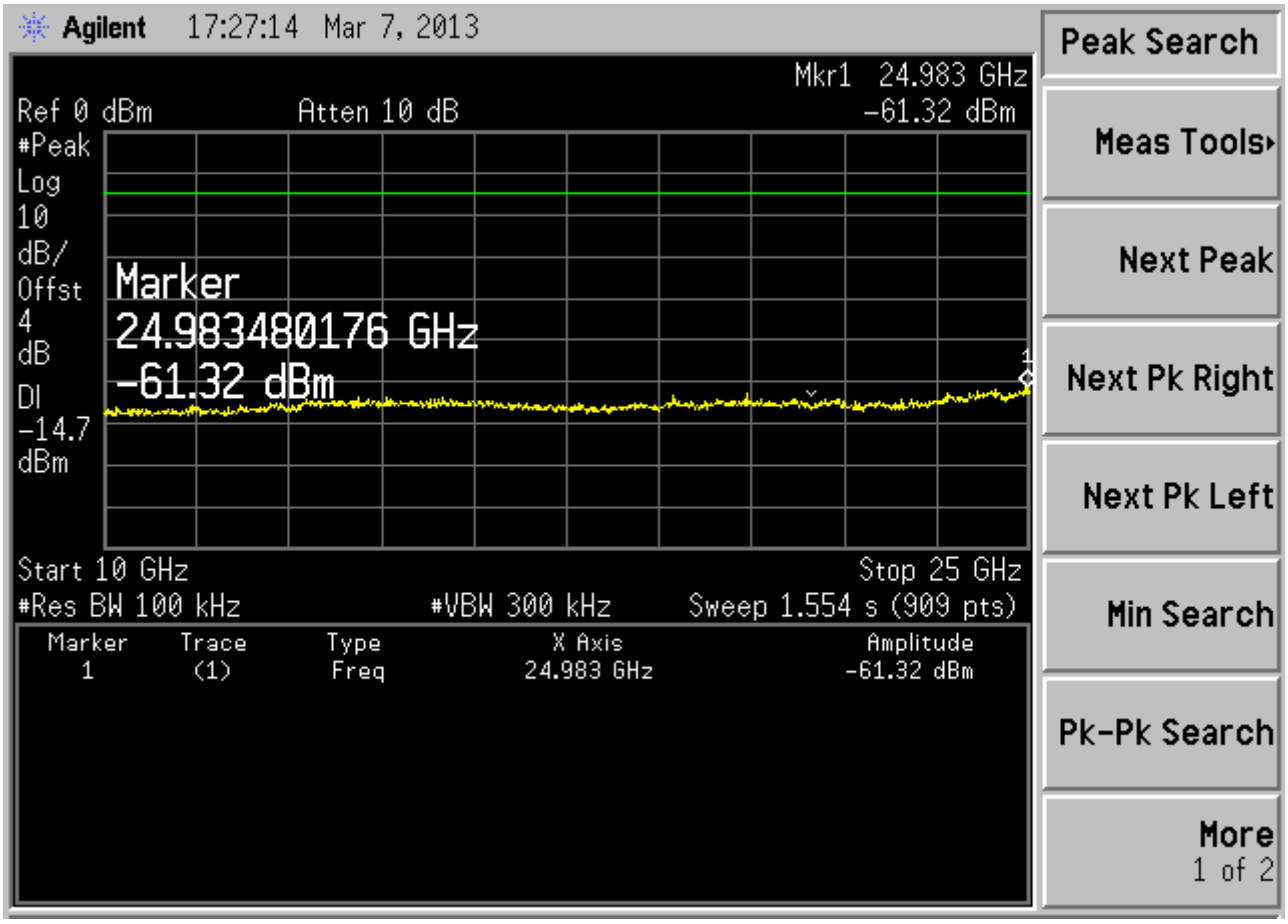

Agilent 17:30:38 Mar 7, 2013
Mkr1 24.521 GHz
Ref 0 dBm
Atten 10 dB
-61.54 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-17.1
dBm
Marker
24.520925110 GHz
-61.54 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.521 GHz -61.54 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

**EDR Ch 39 (2441 MHz)**

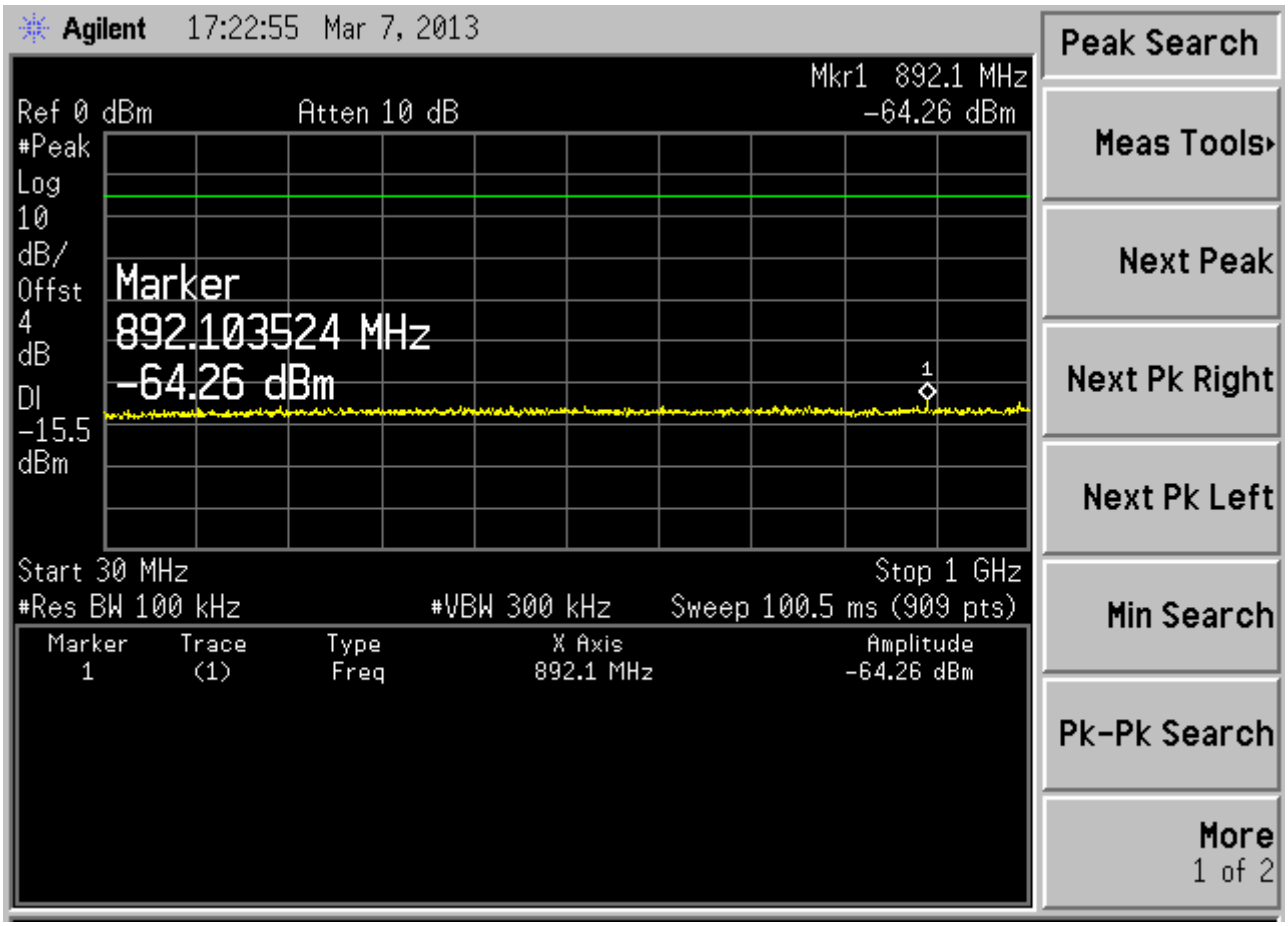


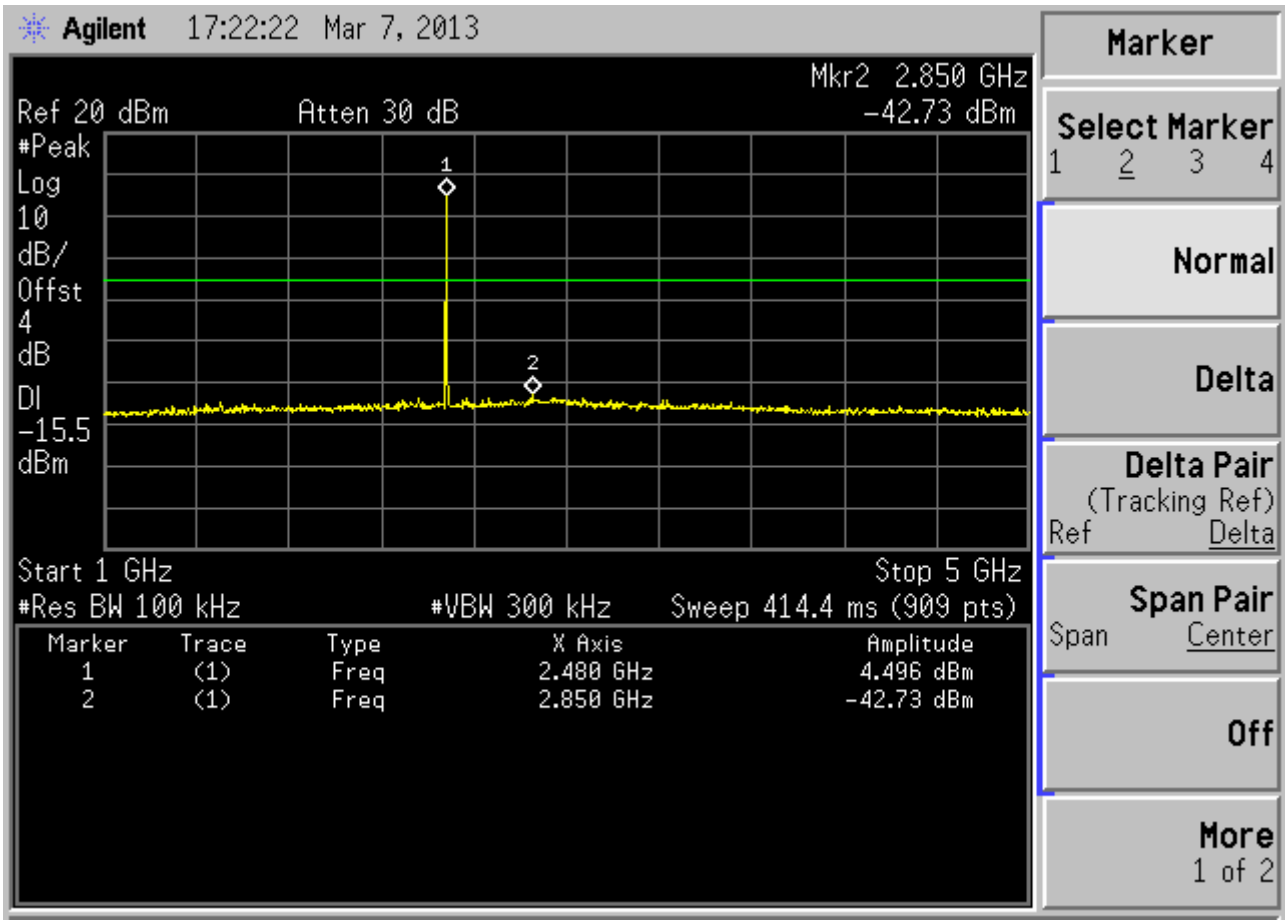



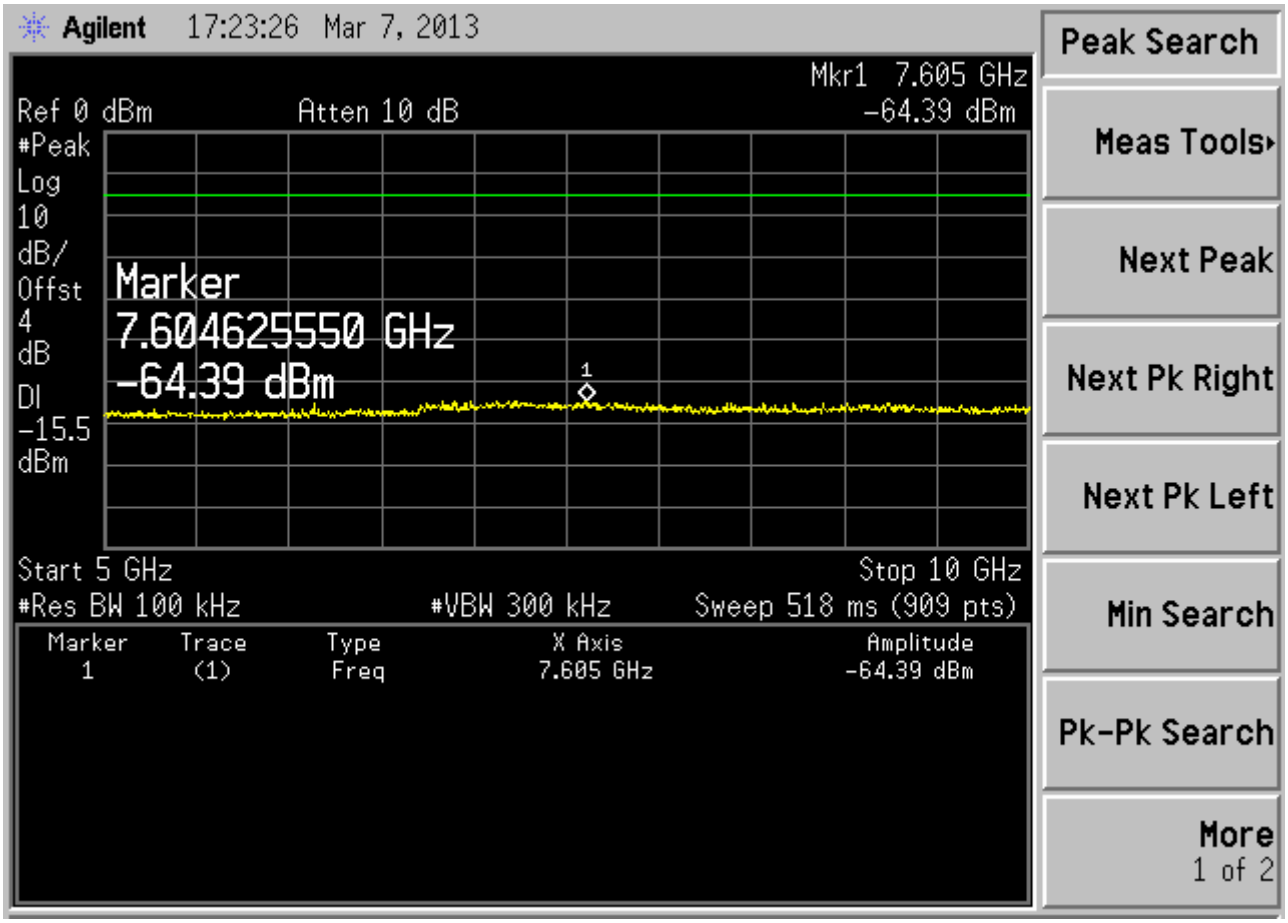

Agilent 17:26:36 Mar 7, 2013
Mkr1 9.763 GHz
Ref 0 dBm
Atten 10 dB
-63.87 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-14.7
dBm
Marker
9.763215859 GHz
-63.87 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 9.763 GHz -63.87 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

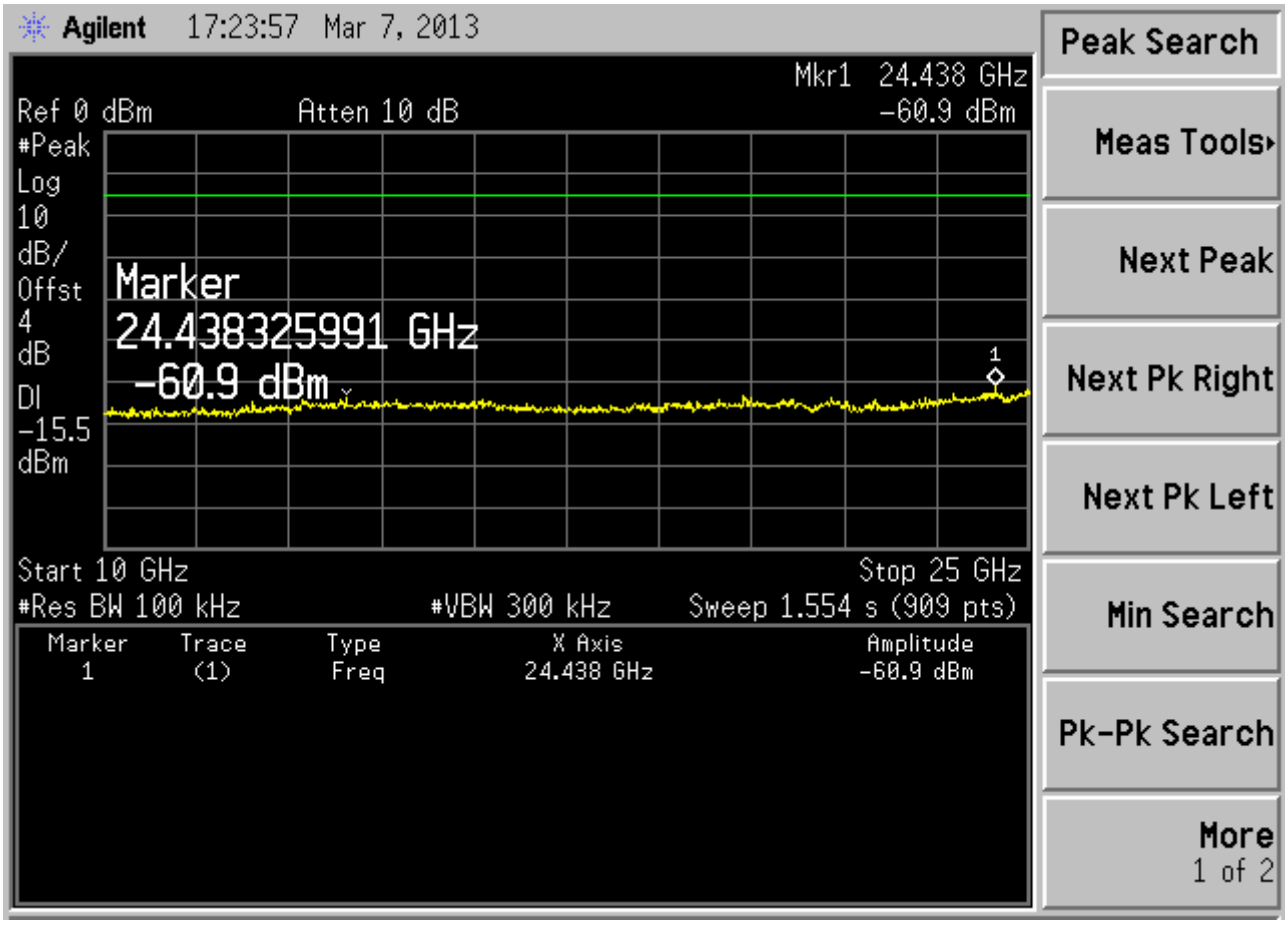

Agilent 17:27:14 Mar 7, 2013
Mkr1 24.983 GHz
Ref 0 dBm
Atten 10 dB
-61.32 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-14.7
dBm
Marker
24.983480176 GHz
-61.32 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.983 GHz -61.32 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

**EDR Ch 78 (2480 MHz)**




Agilent 17:23:26 Mar 7, 2013
Mkr1 7.605 GHz
Ref 0 dBm
Atten 10 dB
-64.39 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-15.5
dBm
Marker
7.604625550 GHz
-64.39 dBm
Start 5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 518 ms (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 7.605 GHz -64.39 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent 17:23:57 Mar 7, 2013
Mkr1 24.438 GHz
Ref 0 dBm
Atten 10 dB
-60.9 dBm
#Peak
Log
10
dB/
Offst
4
dB
Dl
-15.5
dBm
Marker
24.438325991 GHz
-60.9 dBm
Start 10 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.554 s (909 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 24.438 GHz -60.9 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

# 8 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS MEASUREMENT

## 8.1 Test Equipment

The following test equipment was used during the band edges measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 8.2 Block Diagram of Test Setup

The same as section.5.2.

## 8.3 Specification Limits (§15.247(d))

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

## 8.4 Operating Condition of EUT

The test program “adb shell” was used to enable the EUT to transmit data at different channel frequency individually.

## 8.5 Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. Set RBW ≥ 1% of the span and VBW ≥ RBW with span wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.
The test procedure is defined in DA 00-705.

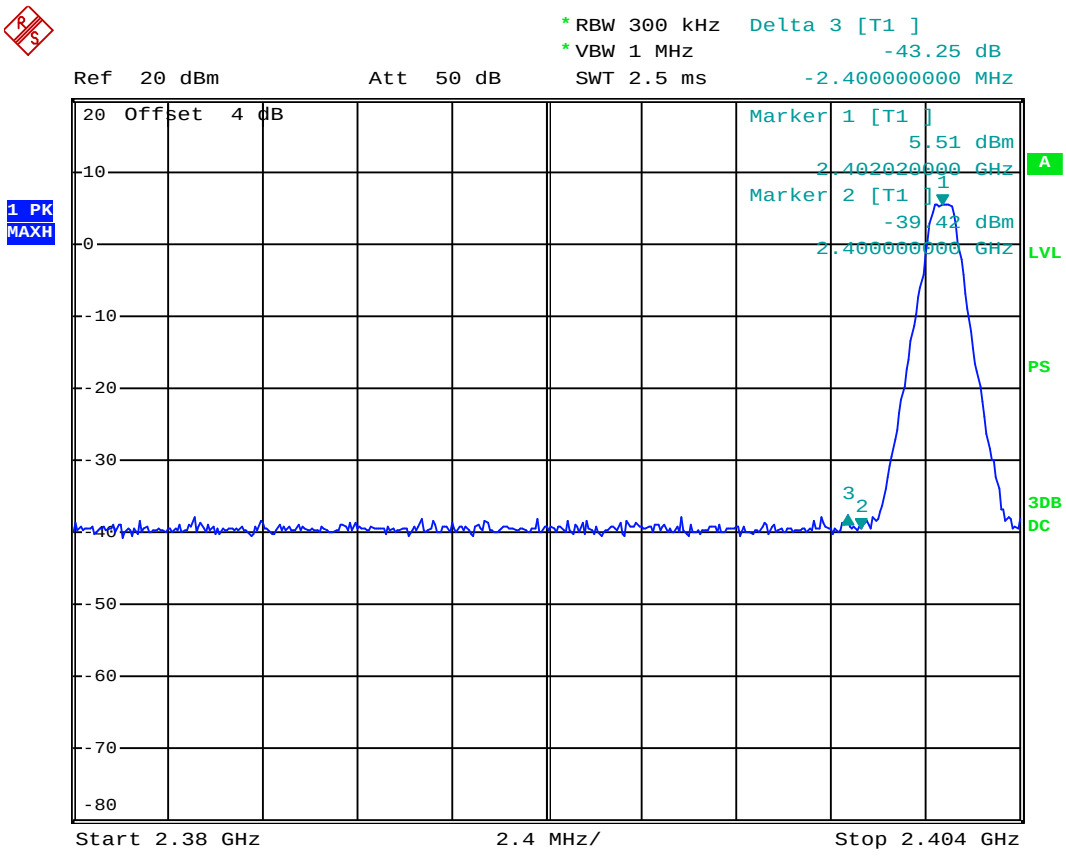
## 8.6 Test Results

**PASSED**. All the test results are attached in next pages.

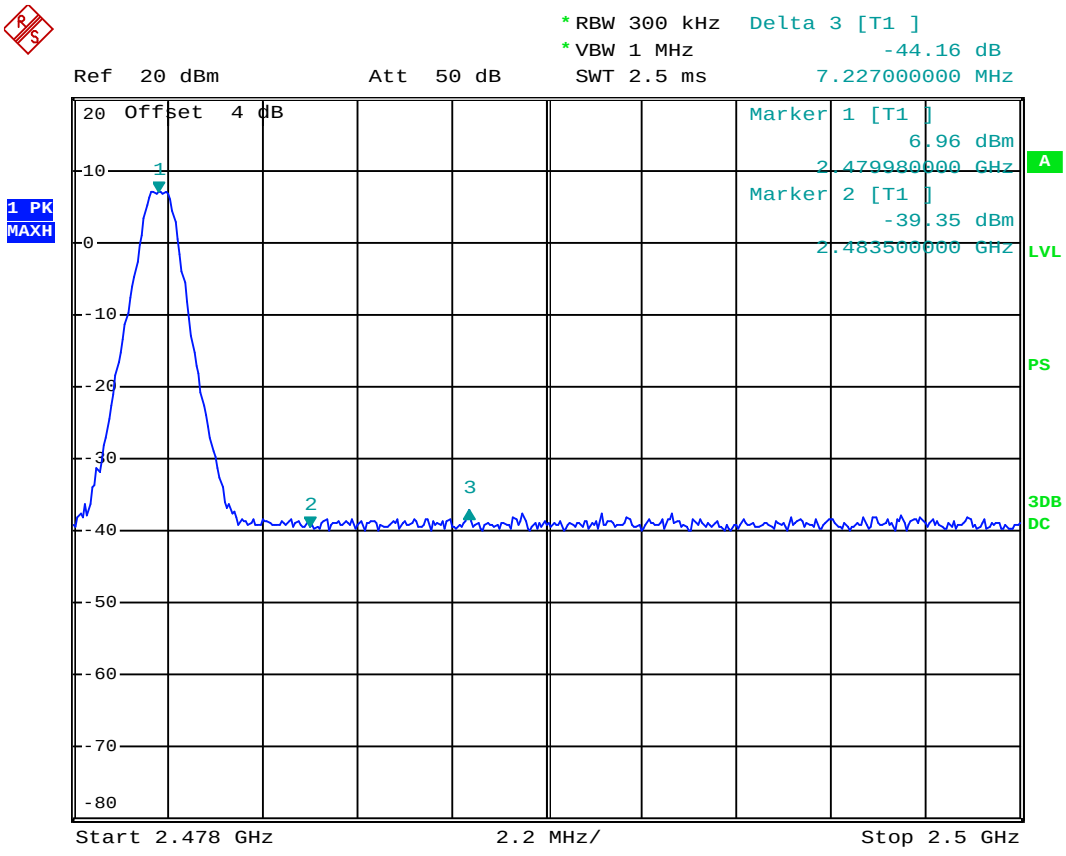
(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

| Location | Mode | **Delta Marker (worst)** | Data Page | Result |
|---|---|---|---|---|
| Below Band Edge | NON-EDR | **41.01 dB** | P61-62 | More than **20 dB** below the highest level of the desired power |
| Upper Band Edge | EDR | **41.73 dB** | P63-64 | |

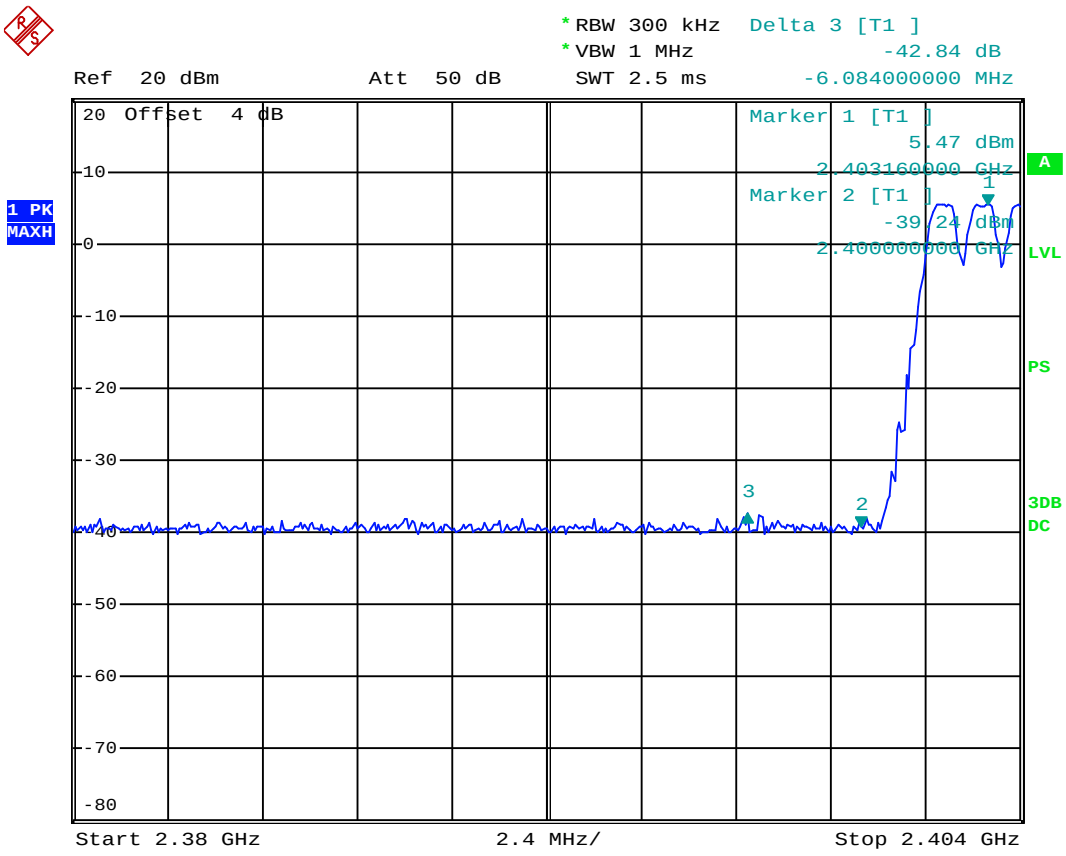
## Ch00 2402MHz (Below Edge 2400 MHz) NON-EDR



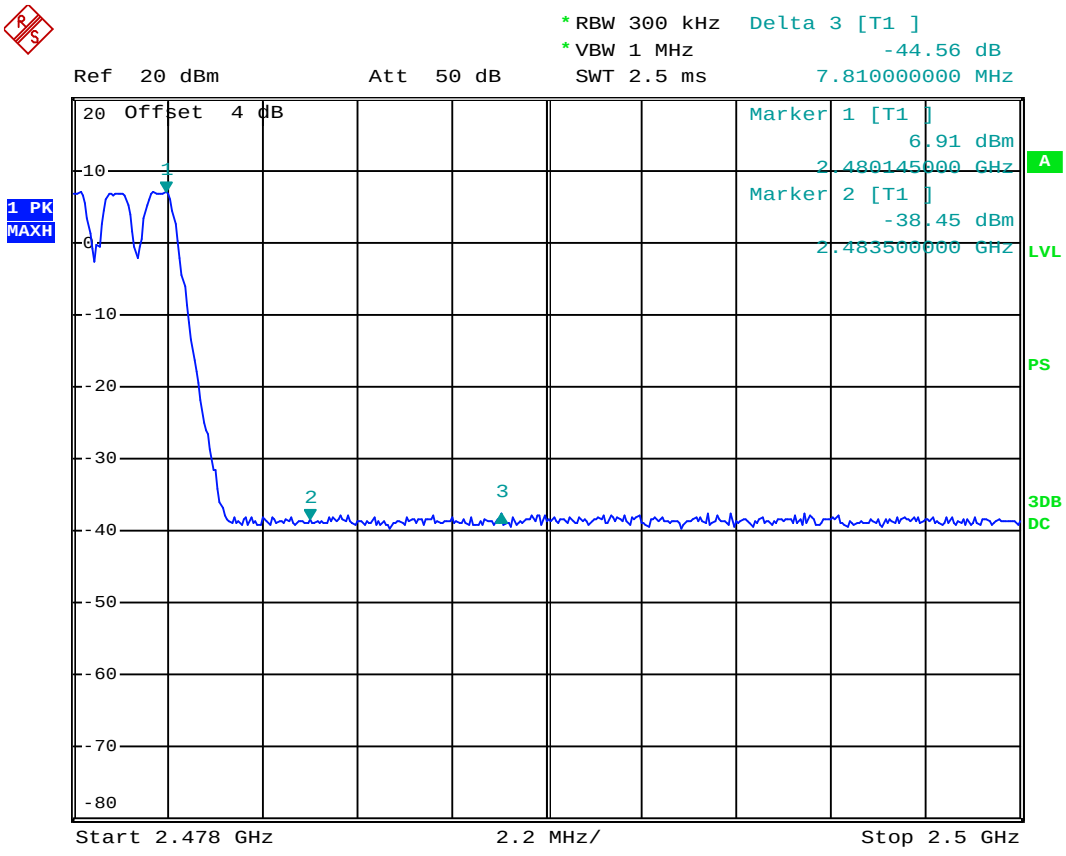

## Ch78 2480MHz (Upper Edge 2483.5 MHz) NON-EDR



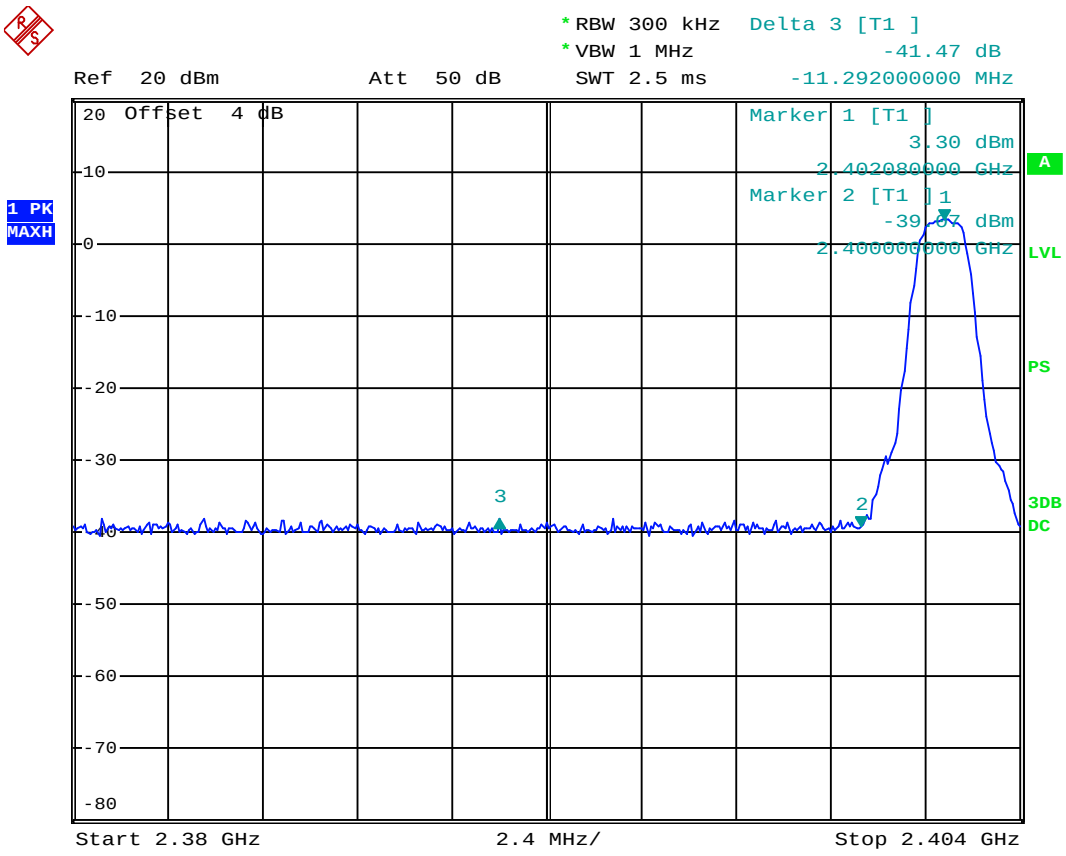
## Ch00 2402MHz (Below Edge 2400 MHz) NON-EDR HOPPING



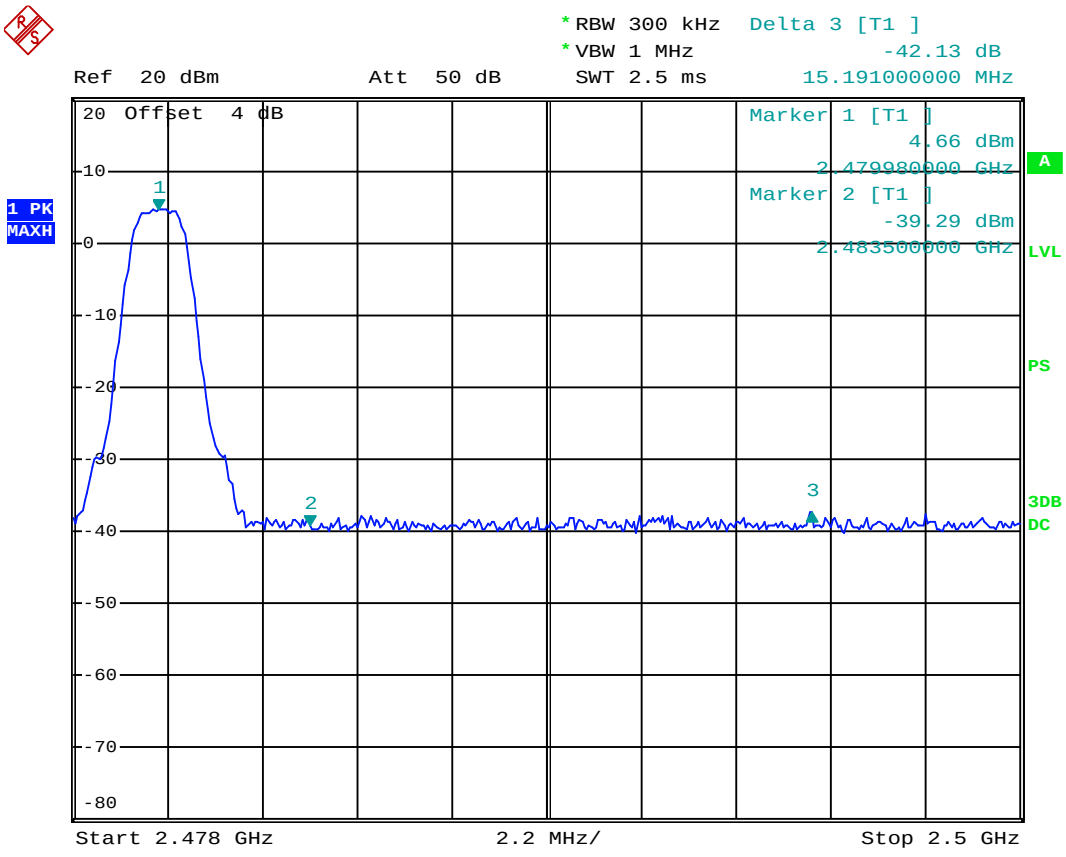

## Ch78 2480MHz (Upper Edge 2483.5 MHz) NON-EDR HOPPING



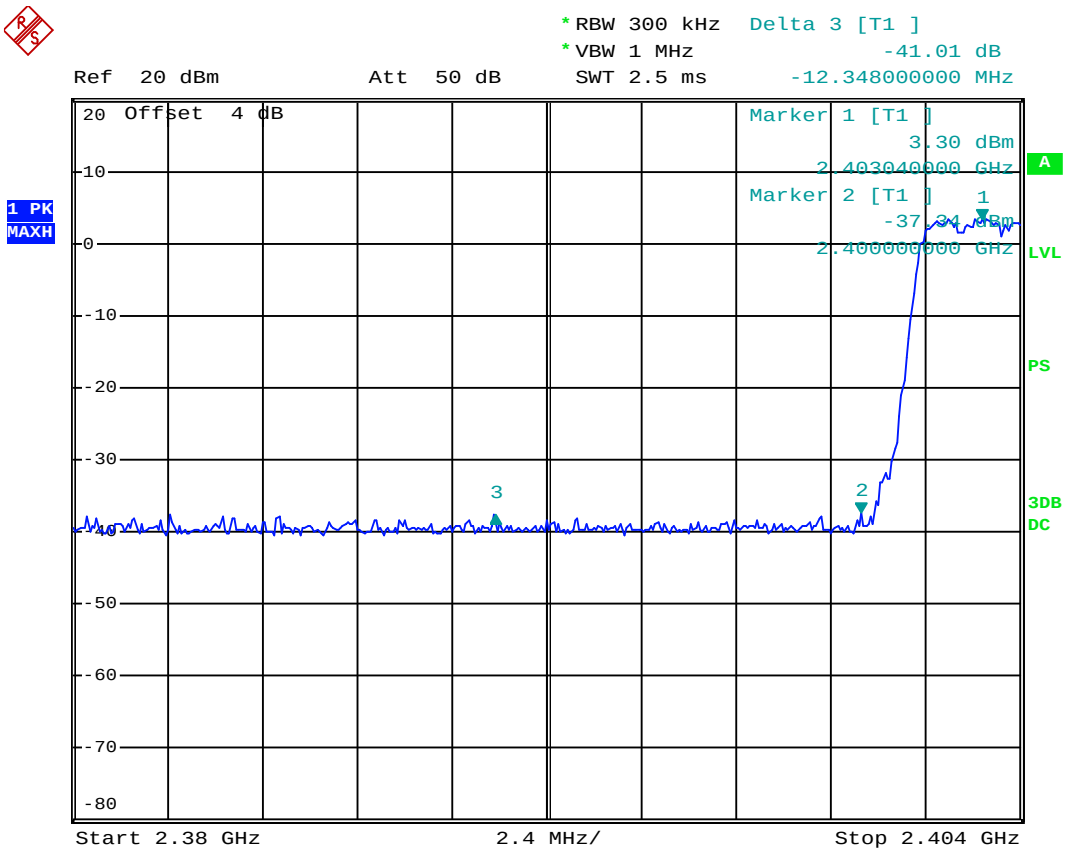
## Ch00 2402MHz (Below Edge 2400 MHz) EDR



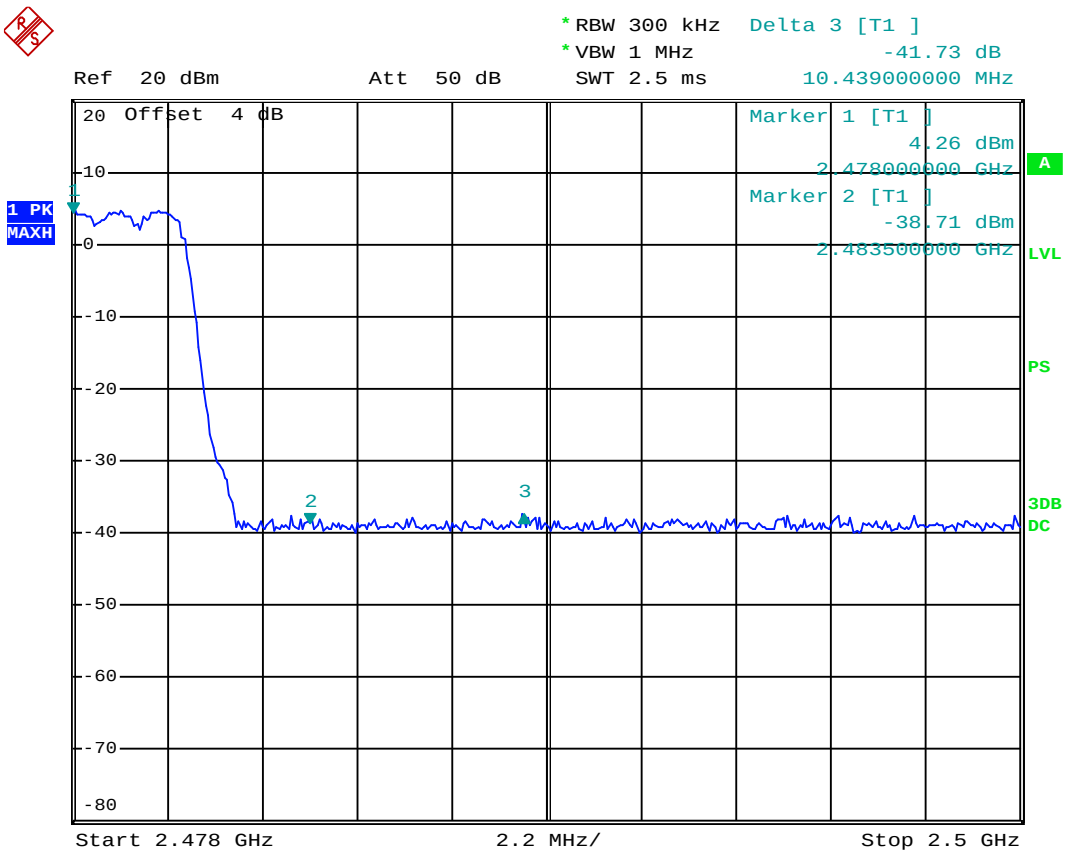

## Ch78 2480MHz (Upper Edge 2483.5 MHz) EDR



## Ch00 2402MHz (Below Edge 2400 MHz) EDR HOPPING




## Ch78 2480MHz (Upper Edge 2483.5 MHz) EDR HOPPING



# 9 NUMBER OF HOPPING FREQUENCIES MEASUREMENT

## 9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 9.2 Block Diagram of Test Setup

The same as section.5.2.

## 9.3 Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

## 9.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT hopping function.

## 9.5 Test Procedure

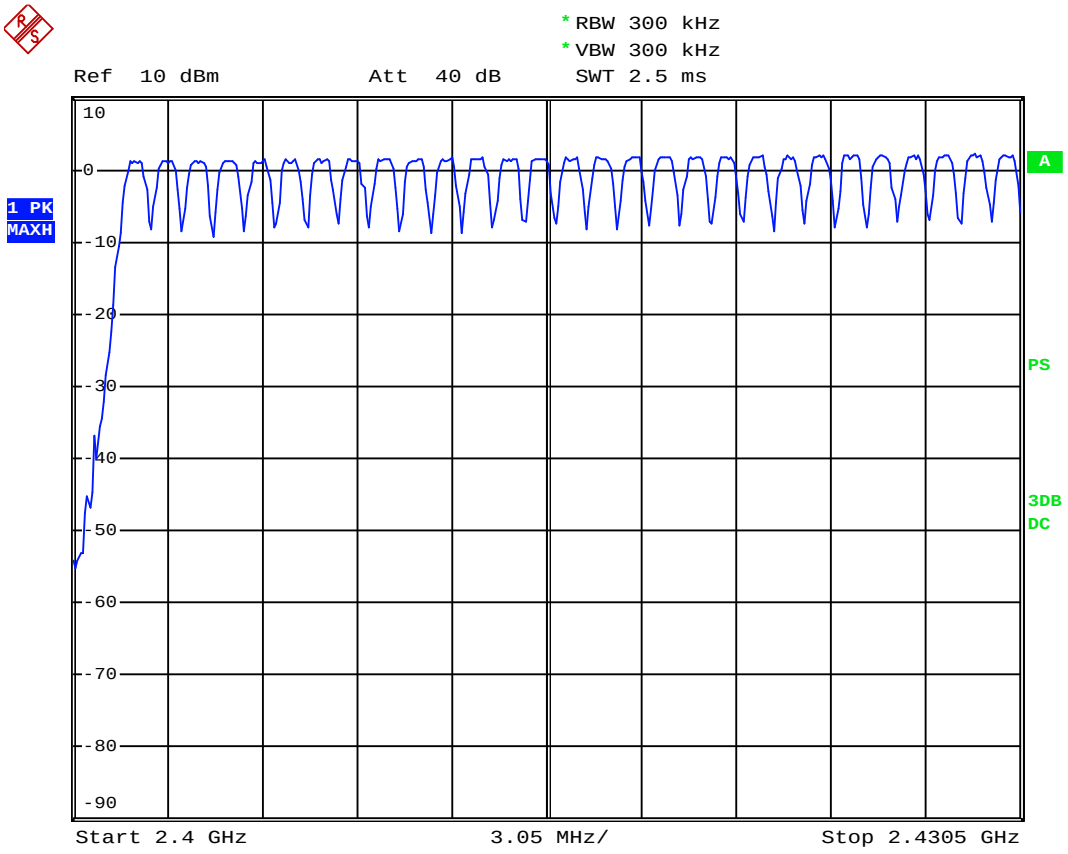
The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 300kHz, VBW = 300kHz, count the number of hopping frequencies used and recorded.
The test procedure is defined in DA 00-705.

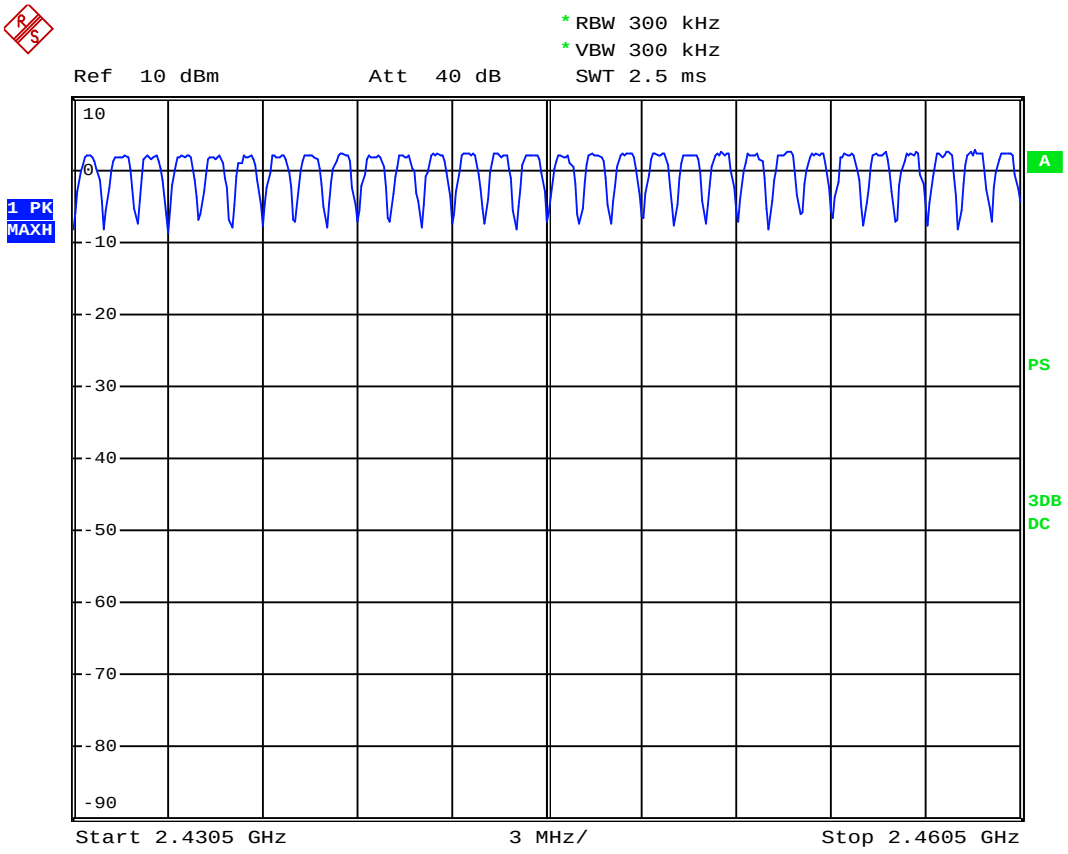
## 9.6 Test Results

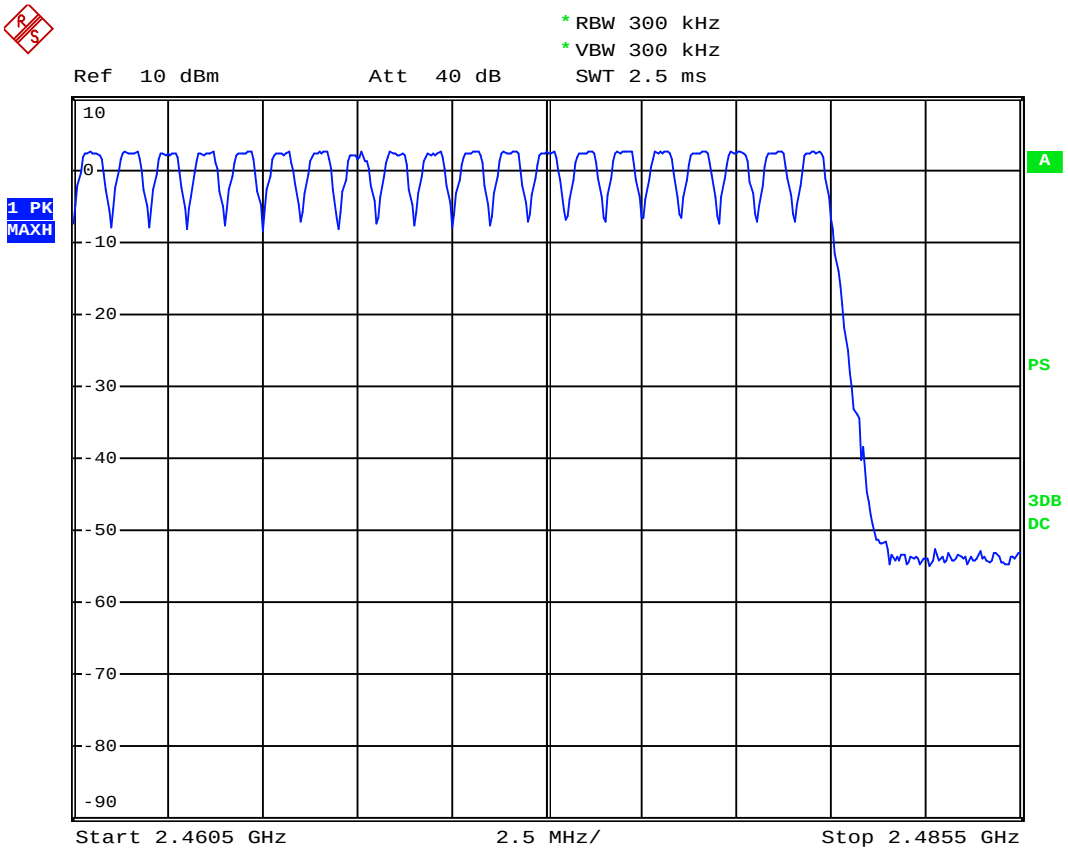
**PASSED**. All the test results are attached in next pages.

(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

| Result | Limit | Conclusion |
|---|---|---|
| 79 | > 15 | Pass |


*RBW 300 kHz
*VBW 300 kHz
Ref 10 dBm
Att 40 dB
SWT 2.5 ms
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK
MAXH
A
PS
3DB
DC
Start 2.4 GHz
3.05 MHz/
Stop 2.4305 GHz


*RBW 300 kHz
*VBW 300 kHz
Ref 10 dBm
Att 40 dB
SWT 2.5 ms
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK
MAXH
A
PS
3DB
DC
Start 2.4305 GHz
3 MHz/
Stop 2.4605 GHz


*RBW 300 kHz
*VBW 300 kHz
Ref 10 dBm
Att 40 dB
SWT 2.5 ms
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK
MAXH
A
PS
3DB
DC
Start 2.4605 GHz
2.5 MHz/
Stop 2.4855 GHz

# 10 CARRIER FREQUENCY SEPARATION MEASUREMENT

## 10.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 10.2 Block Diagram of Test Setup

The same as section.5.2.

## 10.3 Specification Limits (§15.247(a)(1))

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Alternatively, 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, provided the systems operate with an output power no greater than 125 mW.

## 10.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT hopping function.

## 10.5 Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. Set span = wide enough to capture the peaks of two adjacent channels, RBW ≥ 1% of the span, VBW ≥ RBW. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.
The test procedure is defined in DA 00-705.

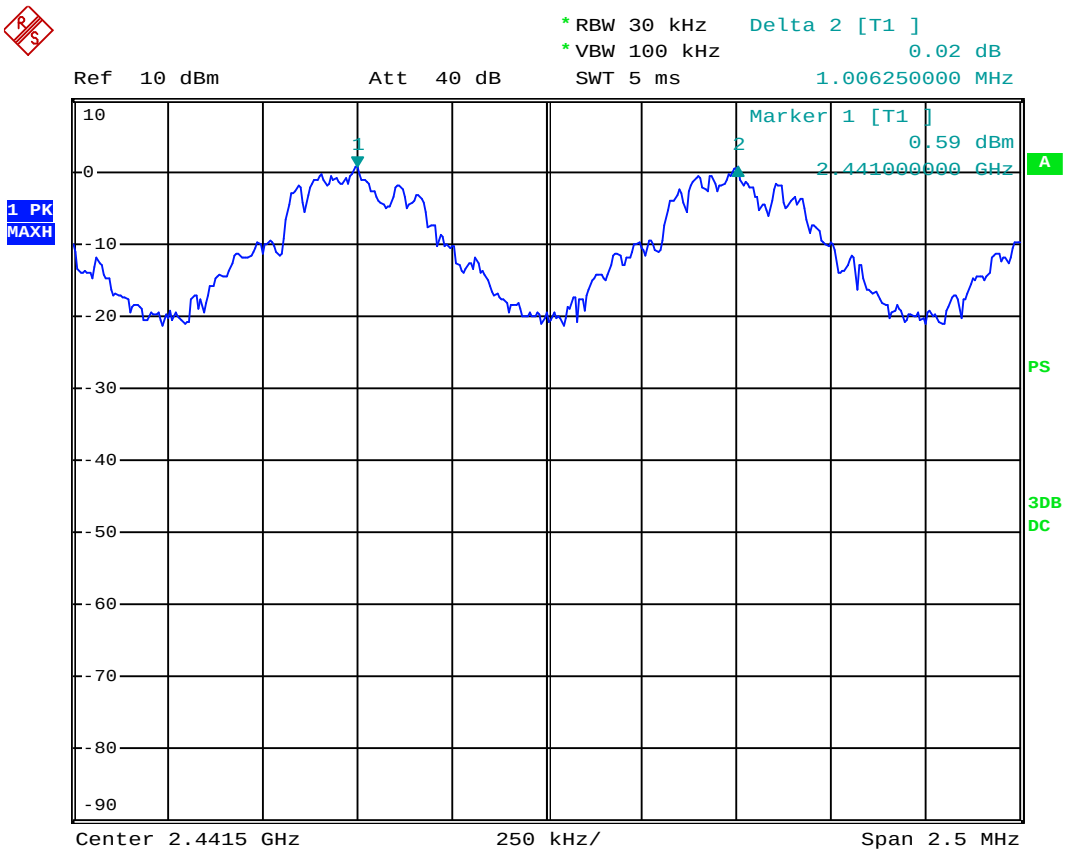
## 10.6 Test Results

**PASSED**. All the test results are attached in next pages.

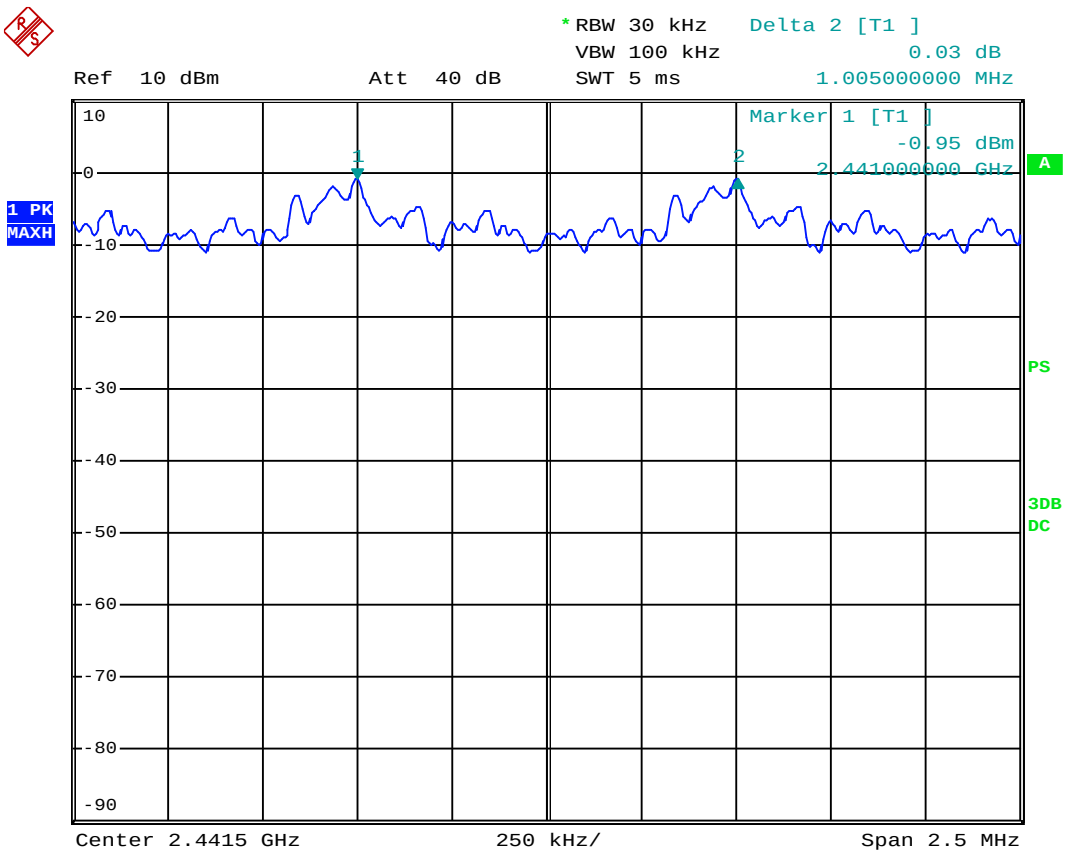
(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

| Mode | Result | Limit (2/3 of the 20dB Bandwidth) | Conclusion |
|---|---|---|---|
| NON-EDR | 1.00625 MHz | > 0.59 MHz | Pass |
| EDR | 1.005 MHz | > 0.897 MHz | Pass |

## NON-EDR


*RBW 30 kHz
*VBW 100 kHz
Ref 10 dBm
Att 40 dB
SWT 5 ms
Delta 2 [T1 ]
0.02 dB
1.006250000 MHz
Marker 1 [T1 ]
0.59 dBm
2.441000000 GHz
1 PK
MAXH
A
PS
3DB
DC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4415 GHz
250 kHz/
Span 2.5 MHz

## EDR


*RBW 30 kHz
VBW 100 kHz
Ref 10 dBm
Att 40 dB
SWT 5 ms
Delta 2 [T1 ]
0.03 dB
1.005000000 MHz
Marker 1 [T1 ]
-0.95 dBm
2.441000000 GHz
1 PK
MAXH
A
PS
3DB
DC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4415 GHz
250 kHz/
Span 2.5 MHz

# 11 DEWLL TIME MEASUREMENT

## 11.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 101303 | Sep 11, 2012 | Sep 11, 2013 |

## 11.2 Block Diagram of Test Setup

The same as section.5.2.

## 11.3 Specification Limits (§15.247(a)(1)(iii))

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

## 11.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT hopping function.

## 11.5 Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. Set as RBW = 1MHz, VBW ≥ RBW, span = zero span, centered on a hopping channel. Use the marker-delta function to calculate the dwell time.
The test procedure is defined in DA 00-705.

## 11.6 Test Results

**PASSED**. All the test results are attached in next pages.

(Test Date: Mar. 07, 2013 Temperature: 25℃ Humidity: 48 %)

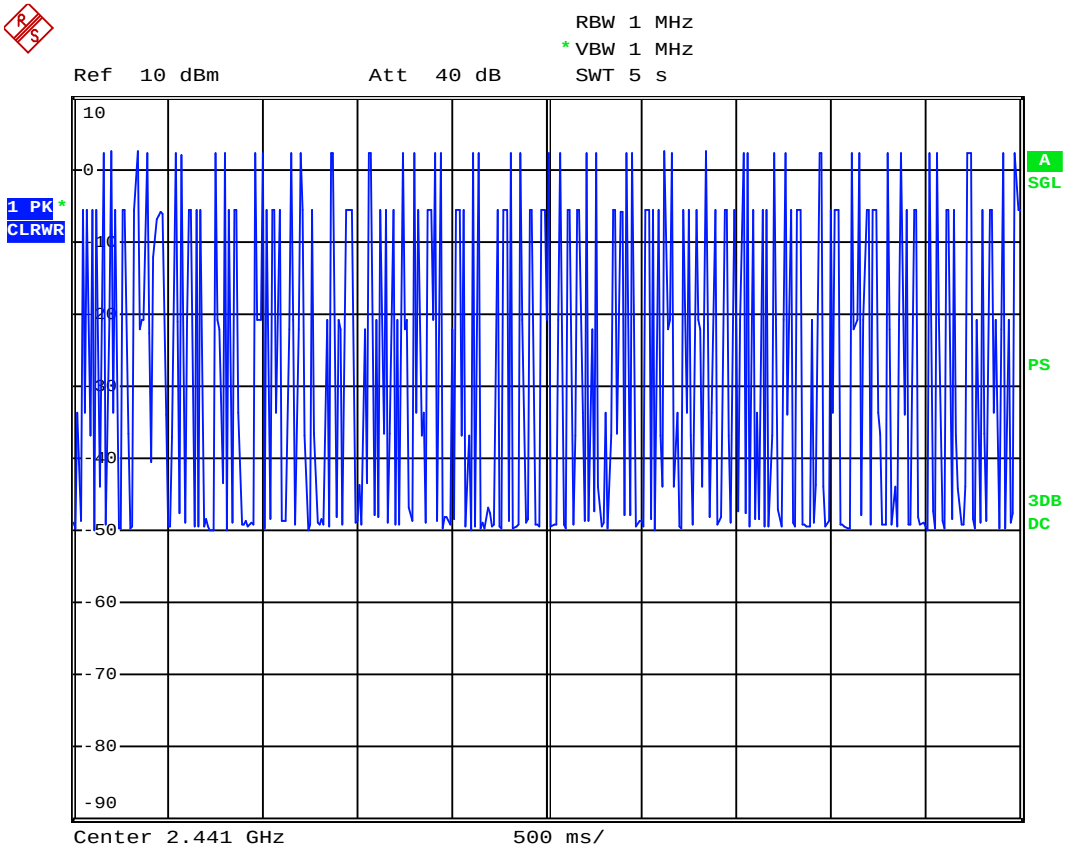
**NON-EDR**

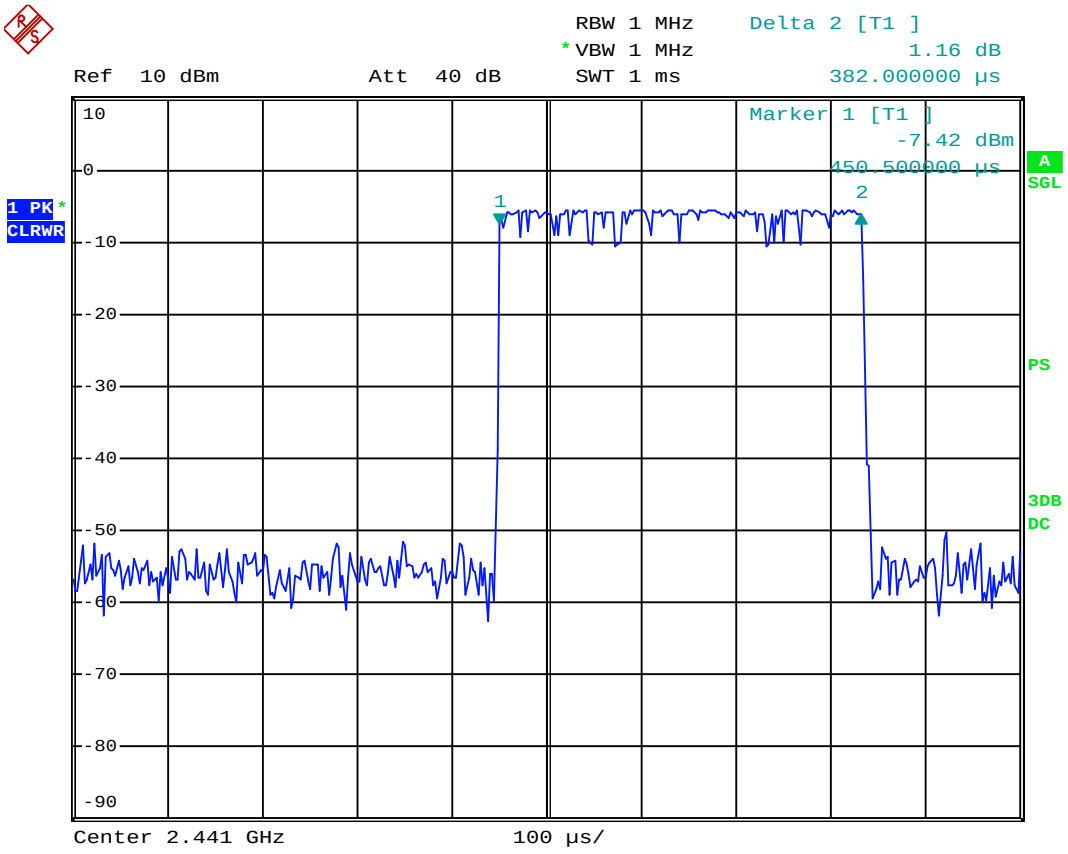
| Mode | Number of transmission in a 31.6 (79 hopping*0.4) second period | Length of transmission time (msec) | Result (msec) | Limit (msec) | Conclusion |
|---|---|---|---|---|---|
| DH1 | 45 times/5 sec * 31.6=285 times | 0.382 | 285*0.382 = 108.9 | < 400 | Pass |
| DH3 | 30 times/5 sec * 31.6=190 times | 1.640 | 190*1.640 = 311.6 | < 400 | Pass |
| DH5 | 20 times/5 sec * 31.6=127 times | 2.900 | 127*2.900 = 368.3 | < 400 | Pass |

**EDR**

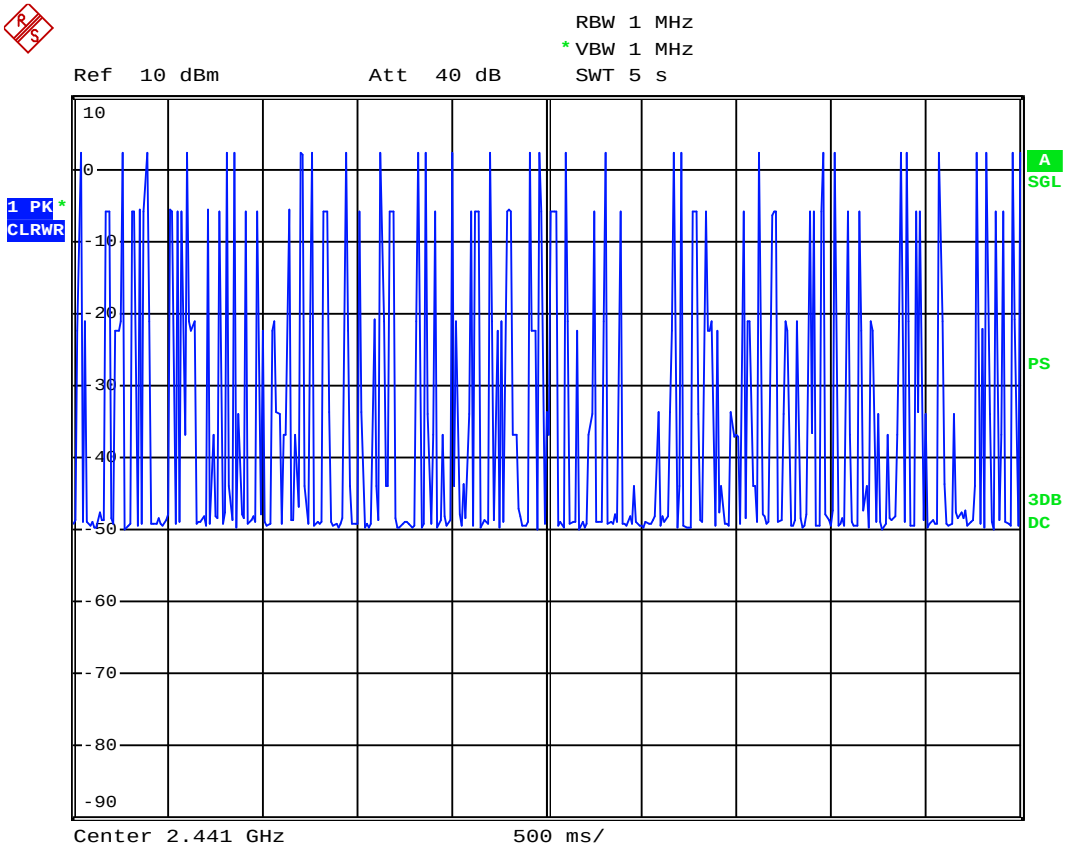
| Mode | Number of transmission in a 31.6 (79 hopping*0.4) second period | Length of transmission time (msec) | Result (msec) | Limit (msec) | Conclusion |
|---|---|---|---|---|---|
| DH1 | 45 times/5 sec * 31.6=285 times | 0.392 | 285*0.392 = 111.7 | < 400 | Pass |
| DH3 | 28 times/5 sec * 31.6=177 times | 1.640 | 177*1.640 = 290.3 | < 400 | Pass |
| DH5 | 14 times/5 sec * 31.6=89 times | 1.650 | 89*1.650 = 146.85 | < 400 | Pass |

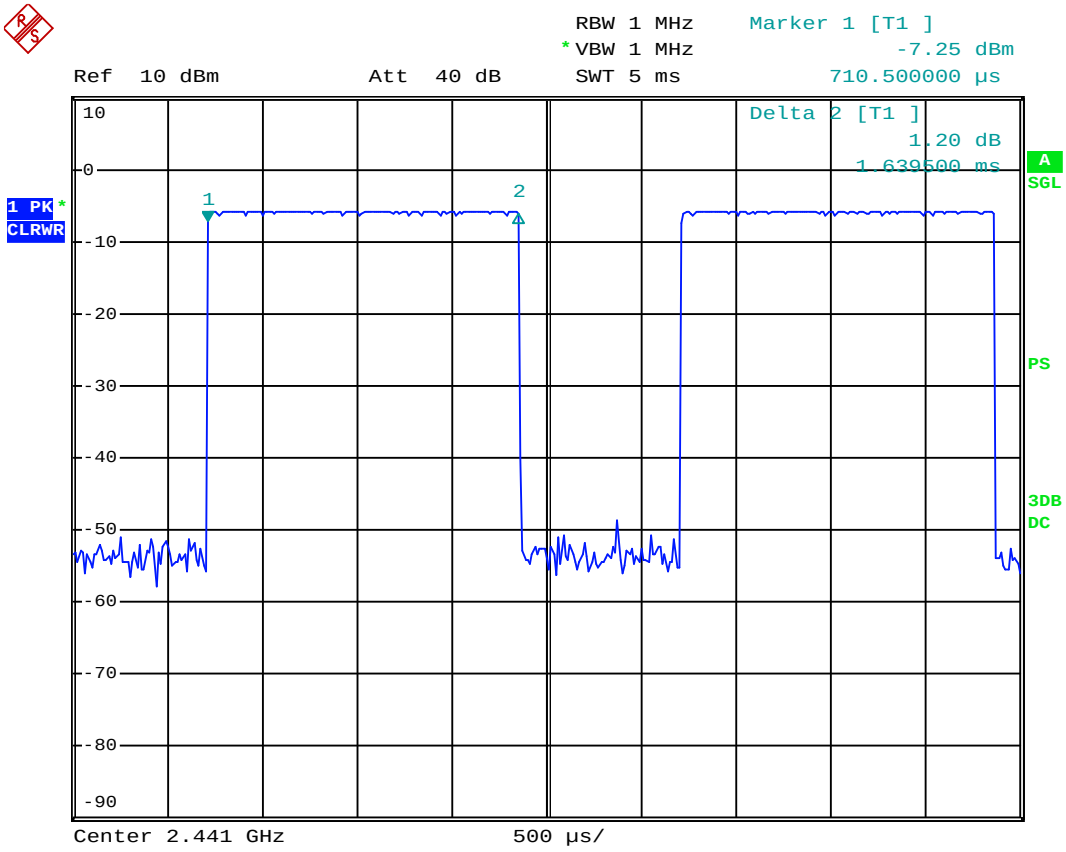
For NON-EDR DH1



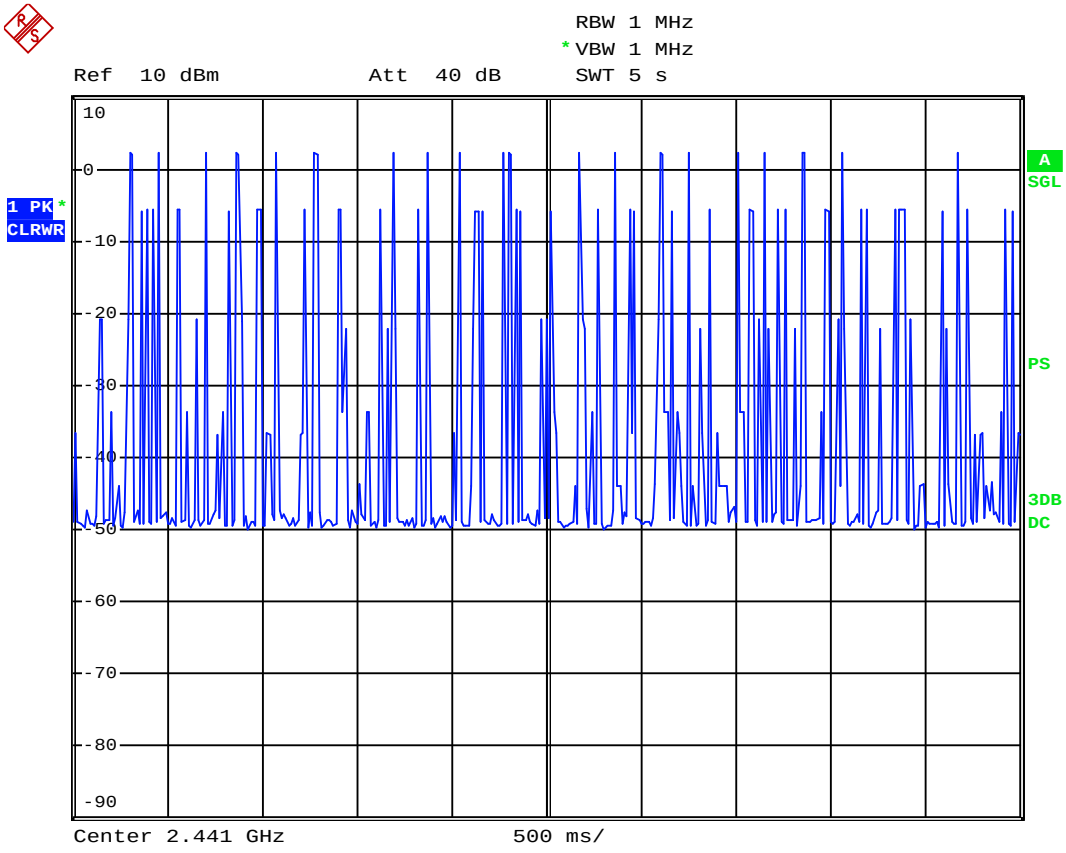



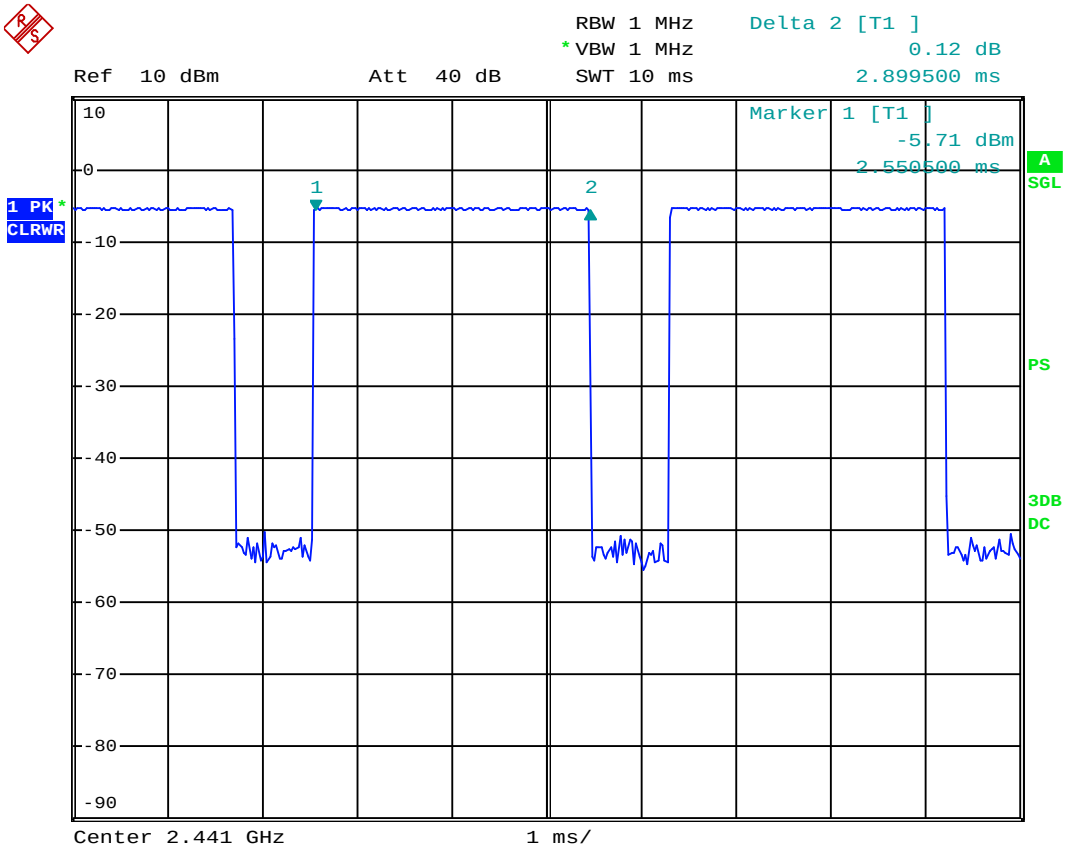
For NON-EDR DH3



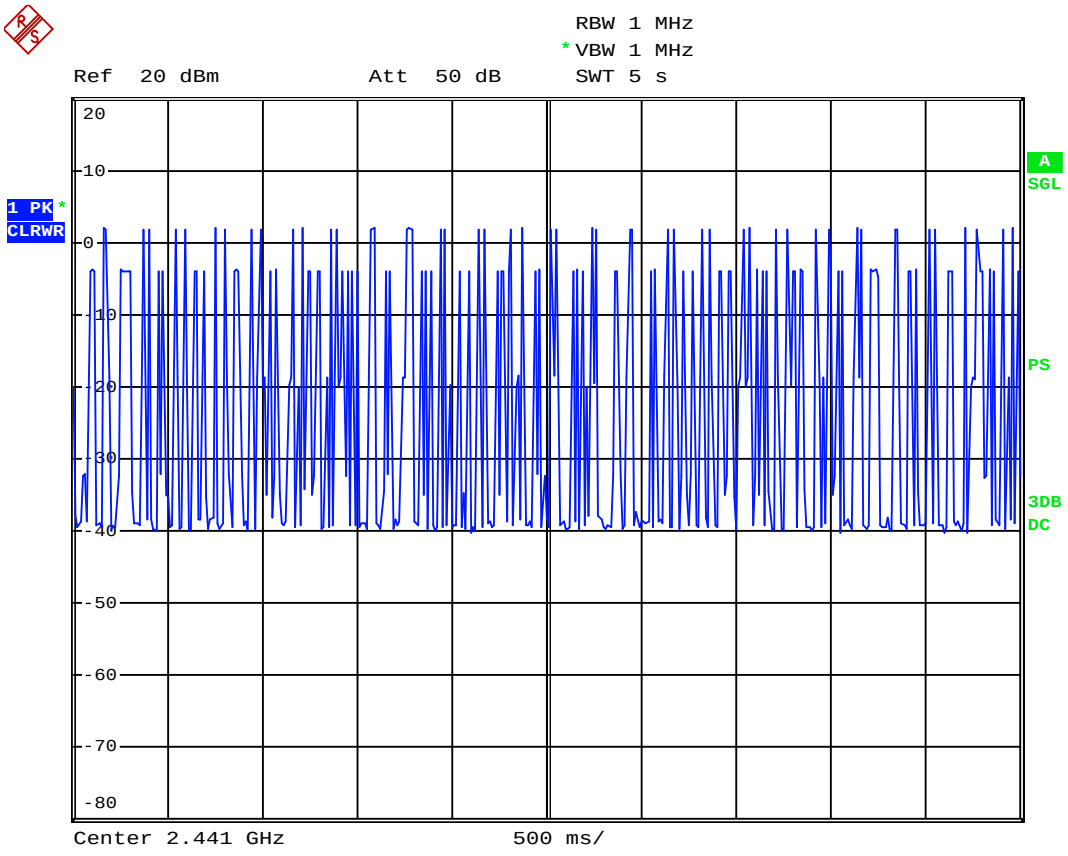



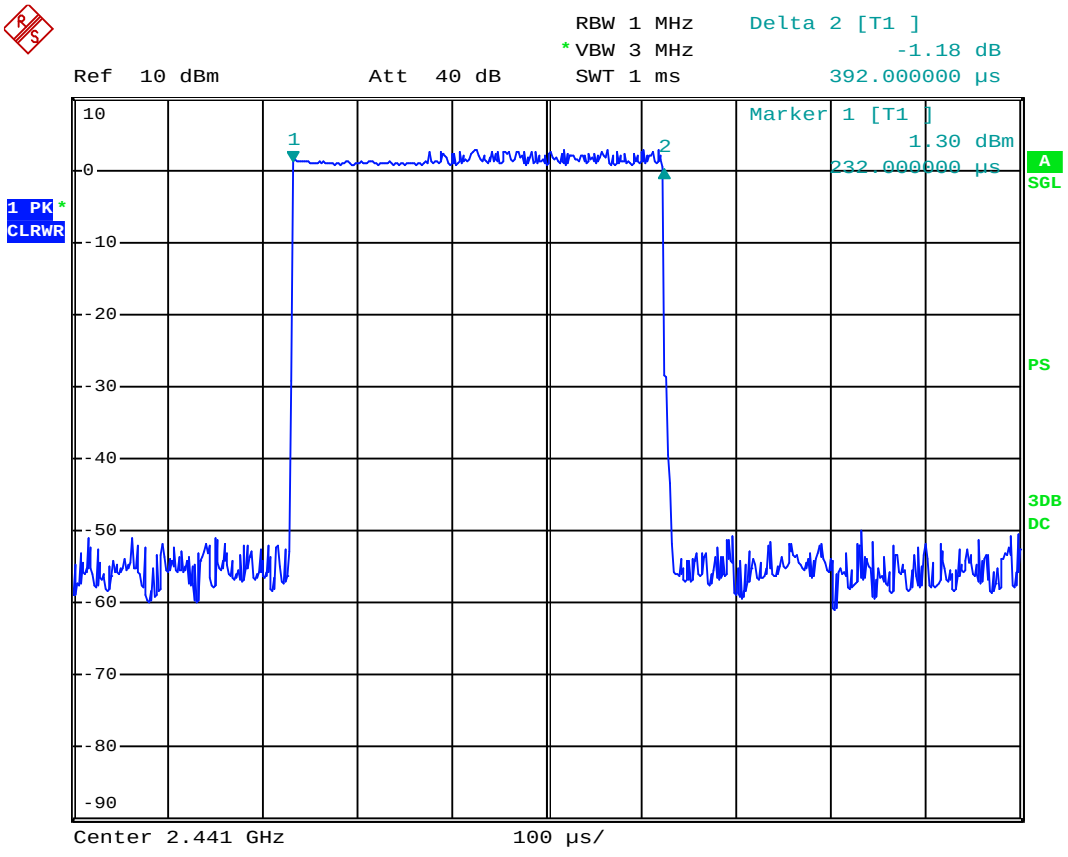
For NON-EDR DH5



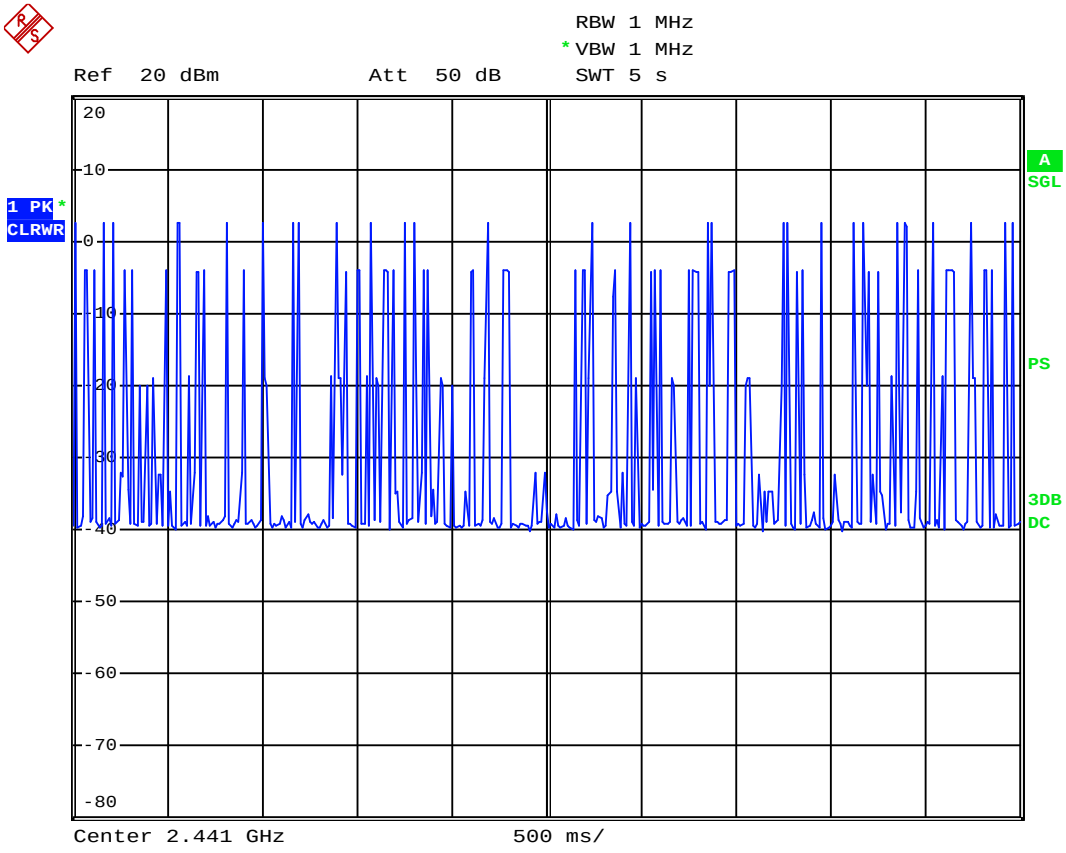



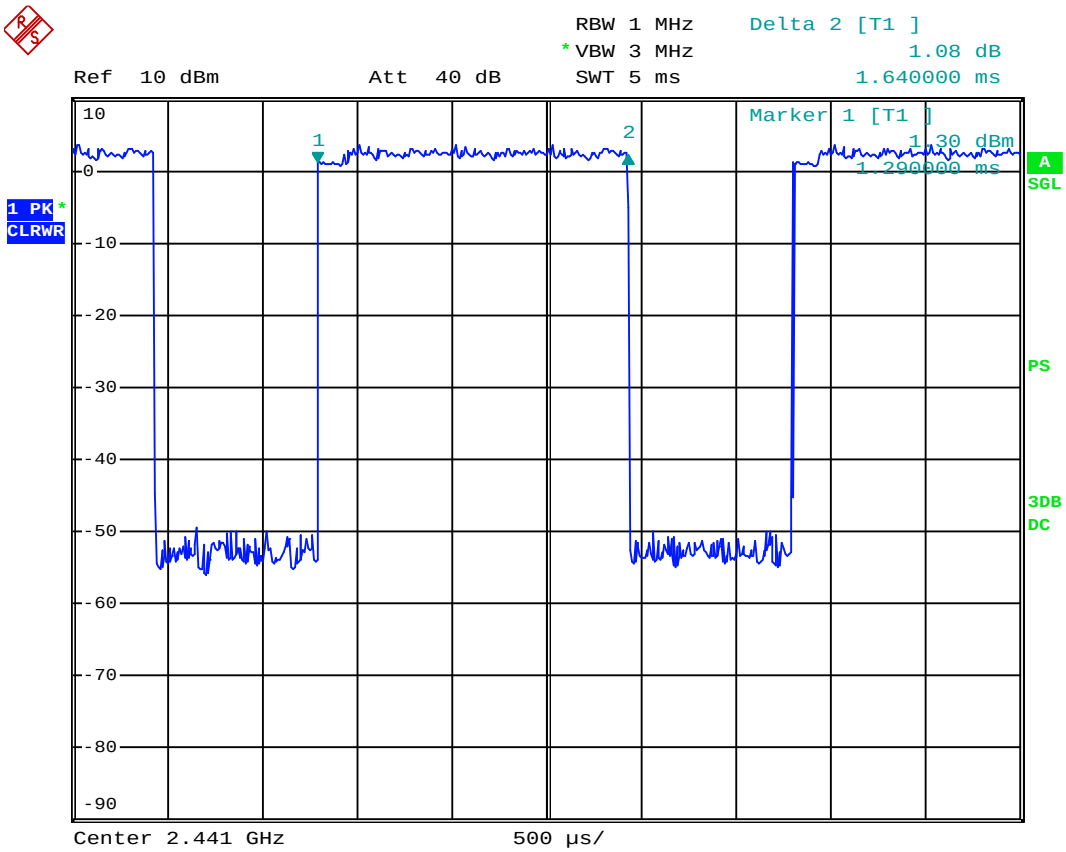
For EDR DH1


RBW 1 MHz
*VBW 1 MHz
Ref 20 dBm
Att 50 dB
SWT 5 s
1 PK*
CLRWR
A
SGL
PS
3DB
DC
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.441 GHz
500 ms/

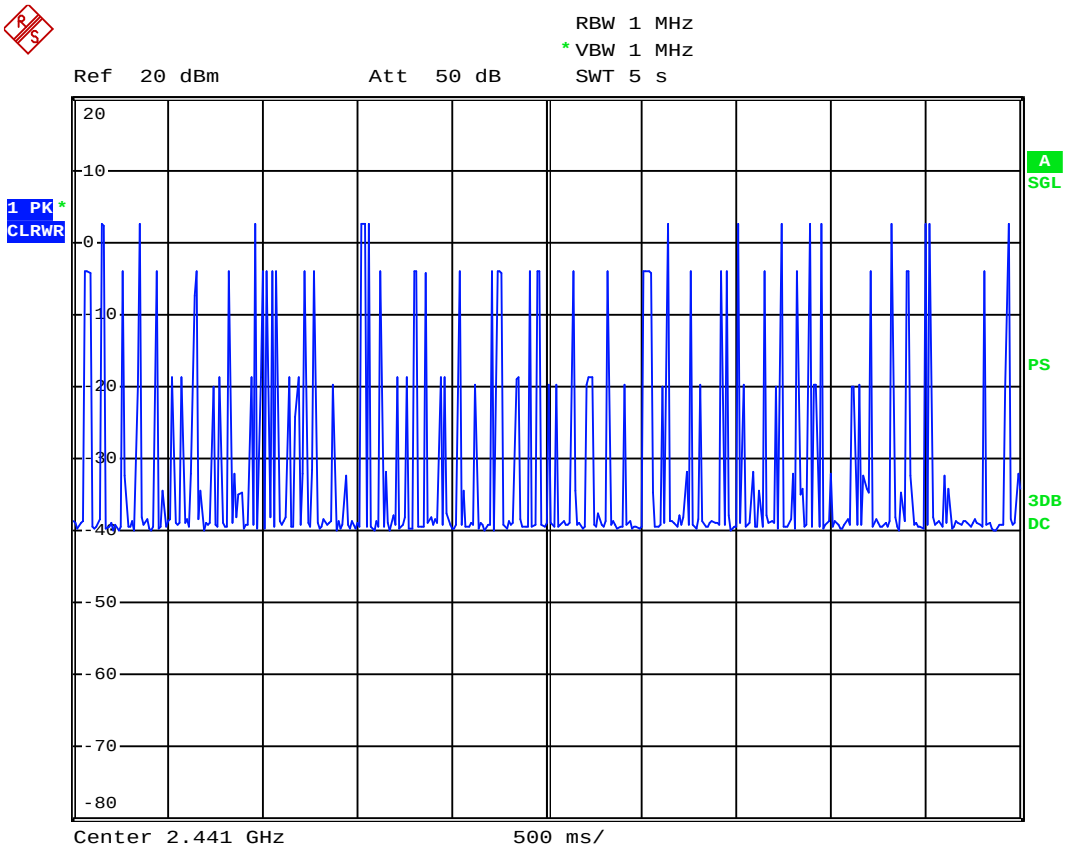

RBW 1 MHz
*VBW 3 MHz
SWT 1 ms
Delta 2 [T1 ]
-1.18 dB
392.000000 µs
Marker 1 [T1 ]
1.30 dBm
232.000000 µs
Ref 10 dBm
Att 40 dB
1 PK*
CLRWR
A
SGL
PS
3DB
DC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.441 GHz
100 µs/

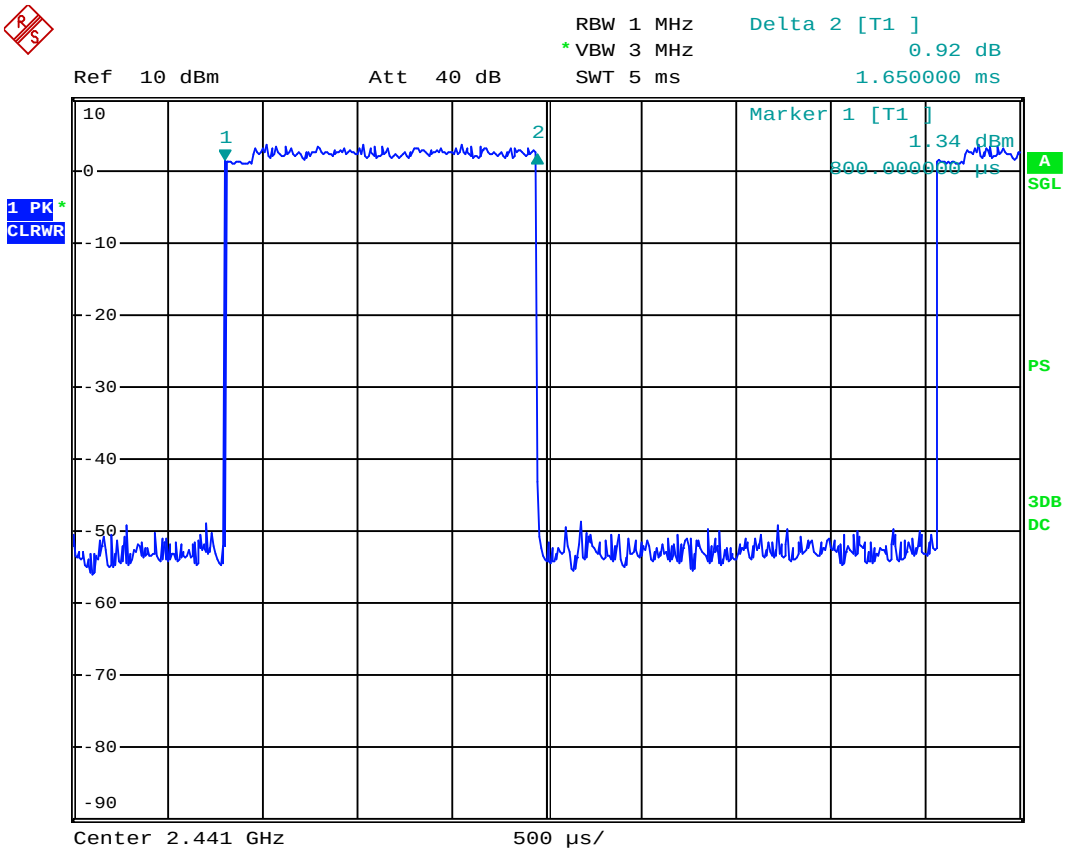
For EDR DH3


RBW 1 MHz
*VBW 1 MHz
Ref 20 dBm
Att 50 dB
SWT 5 s
1 PK*
CLRWR
A
SGL
PS
3DB
DC
Center 2.441 GHz
500 ms/


RBW 1 MHz
*VBW 3 MHz
Ref 10 dBm
Att 40 dB
SWT 5 ms
Delta 2 [T1 ]
1.08 dB
1.640000 ms
Marker 1 [T1 ]
1.30 dBm
1.290000 ms
1 PK*
CLRWR
A
SGL
PS
3DB
DC
Center 2.441 GHz
500 µs/

For EDR DH5


RBW 1 MHz
*VBW 1 MHz
Ref 20 dBm
Att 50 dB
SWT 5 s
1 PK*
CLRWR
A
SGL
PS
3DB
DC
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.441 GHz
500 ms/


RBW 1 MHz
*VBW 3 MHz
Ref 10 dBm
Att 40 dB
SWT 5 ms
Delta 2 [T1 ]
0.92 dB
1.650000 ms
Marker 1 [T1 ]
1.34 dBm
800.000000 µs
1 PK*
CLRWR
A
SGL
PS
3DB
DC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1
2
Center 2.441 GHz
500 µs/

# 12 DEVIATION TO TEST SPECIFICATIONS

None.