

Application for FCC Certification  
On behalf of

Hisense Electric Co., Ltd.

Product Name: Remote Control

Model No.: ERF6C11

FCC ID: W9HBRCB0005

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

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Report No. : ACI-F14013  
Date of Test : Jan. 29 – Feb. 12, 2014  
Date of Report : Feb. 13, 2014

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# TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : Remote Control

(A) Model No. : ERF6C11

(B) Power Supply : DC 3V (AA Battery\*2)

(C) Test Voltage : DC 3V

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2013  
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: ERF6C11), which was tested on Jan. 29 – Feb. 12, 2014 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.

Date of Test : Jan. 29 – Feb. 12, 2014 Date of Report : Feb. 13, 2014

Producer :   
EMILY ZHU / Assistant

Review :   
DIO YANG / Deputy Manager

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

Signatory :   
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               |
|--|---|---------|---------------------------|
| <b>EMISSION</b>  |   |         |                           |
| Conducted Emission Measurement                             | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND ANSI C63.4:2003                  | N/A     | 15.207                    |
| Spurious Radiated Emissions Measurement                    | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND ANSI C63.4:2003<br>AND DA 00-705 | Pass    | 15.209(a)<br>15.205(a)(c) |
| 20 dB Bandwidth Measurement                                | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(a)(1)              |
| Peak Output Power Measurement                              | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(b)(1)              |
| Spurious RF Conducted Emissions Measurement                | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(d)                 |
| Band-edge Compliance of RF Conducted Emissions Measurement | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(d)                 |
| Number of Hopping Frequencies Measurement                  | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(a)(1)              |
| Carrier Frequency Separation Measurement                   | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(a)(1)              |
| Dwell Time Measurement                                     | FCC RULES AND REGULATIONS PART 15<br>SUBPART C October 2013<br>AND DA 00-705                        | Pass    | 15.247(a)(1)              |
| N/A is an abbreviation for Not Applicable.                 |   |         |                           |

## 2 GENERAL INFORMATION

### 2.1 Description of Equipment Under Test

Description : Remote Control

Model Number : ERF6C11

Type of EUT  Production  Pre-product  Pro-type

Radio Tech : Bluetooth

Freq. Band : 2402 MHz ~ 2480 MHz  
Total 79 Channels:

Tested Freq. : 2402 MHz (Channel 00)  
2441 MHz (Channel 39)  
2480 MHz (Channel 78)

Antenna Type : iron antenna

Antenna Gain : -2.0 dBi

RF Test Offset : cable loss 3dB

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

## 2.2 Description of Test Facility

|   |   |
|---|---|
| Site Description<br>(Semi-Anechoic Chamber) | : Sept. 17, 1998 file on<br>Mar 16, 2012 Renewed<br>Federal Communications Commission<br>FCC Engineering Laboratory<br>7435 Oakland Mills Road<br>Columbia, MD 21046, USA |
| Name of Firm                                | : Audix Technology (Shanghai) Co., Ltd.   |
| Site Location                               | : 3 F 34 Bldg 680 Guiping Rd.,<br>Caohejing Hi-Tech Park,<br>Shanghai 200233, China   |
| FCC registration Number                     | : 91789   |
| Accredited by NVLAP, Lab Code               | : 200371-0  |

## 2.3 Measurement Uncertainty

|  |  |
|--|--|
| Radiated Emission Expanded Uncertainty (30-200MHz):  | U = 4.17dB (Horizontal)<br>U = 4.02dB (Vertical) |
| Radiated Emission Expanded Uncertainty (200M-1GHz):  | U = 3.38dB (Horizontal)<br>U = 3.28dB (Vertical) |
| Radiated Emission Expanded Uncertainty (Above 1GHz): | U= 4.68 dB (Horizontal)<br>U= 4.87 dB (Vertical) |
| 20 dB Bandwidth Expanded Uncertainty                 | : U = $\pm 1 \times 10^{-8}$ MHz                 |
| Peak Output Power Expanded Uncertainty               | : U = $\pm 1.56$ dB                              |
| Spurious RF Conducted Emissions Expanded Uncertainty | : U = $\pm 1.20$ dB                              |

### 3 RADIATED EMISSION TEST

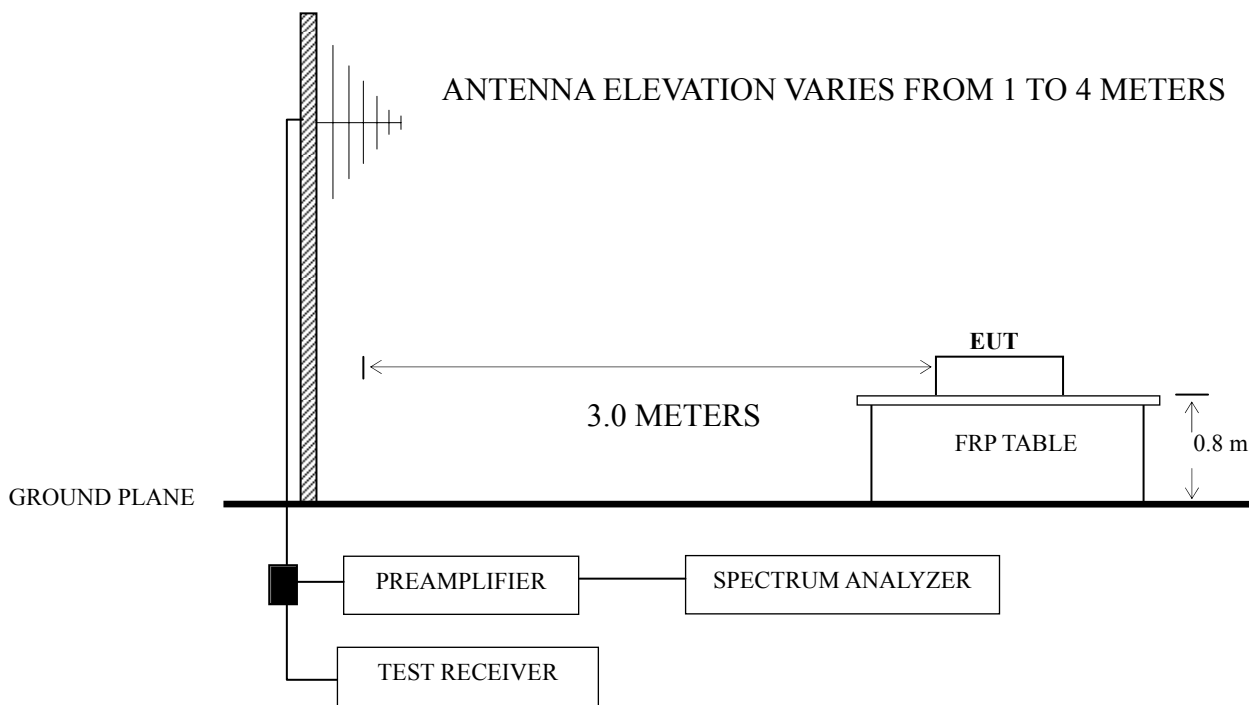
#### 3.1 Test Equipment

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  | Sep 18, 2013 | Mar 17, 2014 |
| 2.   | Preamplifier       | HP           | 8449B     | 3008A00864  | Mar 20, 2013 | Mar 19, 2014 |
| 3.   | Spectrum Analyzer  | Agilent      | E7405A    | MY45106600  | Nov 11, 2013 | Nov 10, 2014 |
| 4.   | Test Receiver      | R&S          | ESCI      | 101302      | Sep 03, 2013 | Sep 02, 2014 |
| 5.   | Bi-log Antenna     | TESEQ        | CBL6112D  | 23193       | May 03, 2013 | May 02, 2014 |
| 6.   | Horn Antenna       | EMCO         | 3115      | 9607-4878   | May 11, 2013 | May 10, 2014 |
| 7.   | Horn Antenna       | EMCO         | 3116      | 00062643    | Jul 03, 2013 | Jul 02, 2014 |
| 8.   | 50Ω Coaxial Switch | Anritsu      | MP59B     | 6200426390  | Sep 18, 2013 | Mar 17, 2014 |
| 9.   | Software           | Audix        | E3        | 6.2007-9-10 | -            | -            |

#### 3.2 Block Diagram of Test Setup

##### 3.2.1 Test Setup



■ : 50 ohm Coaxial Switch



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

| Frequency<br>(MHz) | Distance<br>(m) | Field strength limits ( $\mu\text{V/m}$ ) |                       |
|--------------------|-----------------|---|-----------------------|
|                    |                 | ( $\mu\text{V/m}$ )                       | dB( $\mu\text{V/m}$ ) |
| 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 ( $\mu\text{V/m}$ ) = 20 log Emission Level ( $\mu\text{V/m}$ )  
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

### 3.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.3.2 to meet FCC requirements 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 equipment.

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

### 3.6 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 ESCI 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<sup>th</sup> 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 | 00      | 2402 MHz  |
| 6.   | Band-Edge    | 78      | 2480 MHz  |

All the test results are listed in Sec.3.7.

### 3.7 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.  | Transmitting<br>(NON-EDR) | 00        | 2402 MHz  | P12       |
| 2.  |                           | 39        | 2441 MHz  | P13       |
| 3.  |                           | 78        | 2480 MHz  | P14       |
| 4.  | Transmitting<br>(EDR)     | 00        | 2402 MHz  | P15       |
| 5.  |                           | 39        | 2441 MHz  | P16       |
| 6.  |                           | 78        | 2480 MHz  | P17       |
| 7.  | Receiving                 | --        | --        | P18       |
| 8.  | Transmitting              | Band Edge |           | P19       |

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.

EUT : Remote Control Temperature : 22°C  
 Model No. : ERF6C11 Humidity : 40%RH  
 Test Mode : Transmitting Ch00 (NON-EDR) Date of Test : Jan. 29, 2014

| 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   | 30.97           | 1.35                  | 18.10                 | 0.64            | --                 | 20.09                    | 40.00            | 19.91        | QP     |
|              | 48.43           | 6.71                  | 8.08                  | 0.83            | --                 | 15.62                    | 40.00            | 24.38        |        |
|              | 320.03          | 3.30                  | 13.80                 | 2.54            | --                 | 19.64                    | 46.00            | 26.36        |        |
|              | 557.68          | 2.64                  | 19.52                 | 3.10            | --                 | 25.26                    | 46.00            | 20.74        |        |
|              | 710.94          | 2.77                  | 19.60                 | 3.50            | --                 | 25.87                    | 46.00            | 20.13        |        |
|              | <b>888.45</b>   | <b>3.96</b>           | <b>19.20</b>          | <b>4.42</b>     | --                 | <b>27.58</b>             | <b>46.00</b>     | <b>18.42</b> |        |
|              | 2089.00         | 46.96                 | 30.50                 | 4.50            | 35.91              | 46.05                    | 74.00            | 27.95        | PK     |
|              | 5572.00         | 45.36                 | 34.04                 | 7.77            | 35.82              | 51.35                    | 74.00            | 22.65        |        |
|              | 6859.00         | 43.58                 | 33.77                 | 9.26            | 35.99              | 50.62                    | 74.00            | 23.38        |        |
| Vertical     | 38.73           | 7.15                  | 13.01                 | 0.74            | --                 | 20.90                    | 40.00            | 19.10        | QP     |
|              | 96.93           | 11.73                 | 9.80                  | 1.21            | --                 | 22.74                    | 43.50            | 20.76        |        |
|              | 281.23          | 9.77                  | 12.50                 | 2.35            | --                 | 24.62                    | 46.00            | 21.38        |        |
|              | 528.58          | 5.13                  | 18.10                 | 3.00            | --                 | 26.23                    | 46.00            | 19.77        |        |
|              | 688.63          | 3.91                  | 19.75                 | 3.47            | --                 | 27.13                    | 46.00            | 18.87        |        |
|              | <b>958.29</b>   | <b>7.16</b>           | <b>19.60</b>          | <b>4.66</b>     | --                 | <b>31.42</b>             | <b>46.00</b>     | <b>14.58</b> |        |
|              | 1729.00         | 50.55                 | 28.59                 | 4.10            | 36.10              | 47.14                    | 74.00            | 26.86        | PK     |
|              | 3781.00         | 47.25                 | 32.54                 | 5.96            | 35.50              | 50.25                    | 74.00            | 23.75        |        |
|              | 6697.00         | 44.42                 | 33.74                 | 8.69            | 35.97              | 50.88                    | 74.00            | 23.12        |        |

TEST ENGINEER: NEAL WANG

EUT : Remote Control Temperature : 22°C

Model No. : ERF6C11 Humidity : 40%RH

Test Mode : Transmitting Ch39  
(NON-EDR) Date of Test : Jan. 29, 2014

| 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   | 33.88           | 2.17                  | 16.07                 | 0.68            | --                 | 18.92                    | 40.00            | 21.08        | QP     |
|              | 145.43          | 10.07                 | 10.34                 | 1.50            | --                 | 21.91                    | 43.50            | 21.59        |        |
|              | 320.03          | 3.88                  | 13.80                 | 2.54            | --                 | 20.22                    | 46.00            | 25.78        |        |
|              | 555.74          | 2.66                  | 19.65                 | 3.07            | --                 | 25.38                    | 46.00            | 20.62        |        |
|              | 623.64          | 3.43                  | 18.80                 | 3.29            | --                 | 25.52                    | 46.00            | 20.48        |        |
|              | <b>822.49</b>   | <b>3.15</b>           | <b>20.40</b>          | <b>3.79</b>     | --                 | <b>27.34</b>             | <b>46.00</b>     | <b>18.66</b> |        |
|              | 1810.00         | 52.04                 | 29.46                 | 4.17            | 36.04              | 49.63                    | 74.00            | 24.37        | PK     |
|              | 3862.00         | 46.32                 | 32.86                 | 5.88            | 35.47              | 49.59                    | 74.00            | 24.41        |        |
| Vertical     | 5680.00         | 44.57                 | 33.92                 | 8.03            | 35.84              | 50.68                    | 74.00            | 23.32        | QP     |
|              | 38.73           | 7.90                  | 13.01                 | 0.74            | --                 | 21.65                    | 40.00            | 18.35        |        |
|              | 80.44           | 10.37                 | 7.15                  | 1.04            | --                 | 18.56                    | 40.00            | 21.44        |        |
|              | 281.23          | 6.35                  | 12.50                 | 2.35            | --                 | 21.20                    | 46.00            | 24.80        |        |
|              | 528.58          | 5.08                  | 18.10                 | 3.00            | --                 | 26.18                    | 46.00            | 19.82        |        |
|              | 824.43          | 3.21                  | 20.50                 | 3.79            | --                 | 27.50                    | 46.00            | 18.50        |        |
|              | <b>958.29</b>   | <b>5.58</b>           | <b>19.60</b>          | <b>4.66</b>     | --                 | <b>29.84</b>             | <b>46.00</b>     | <b>16.16</b> |        |
|              | 2053.00         | 46.49                 | 30.71                 | 4.45            | 35.90              | 45.75                    | 74.00            | 28.25        |        |
|              | 3799.00         | 46.08                 | 32.63                 | 5.92            | 35.50              | 49.13                    | 74.00            | 24.87        |        |
| 6985.00      | 43.62           | 33.80                 | 9.54                  | 36.00           | 50.96              | 74.00                    | 23.04            |              |        |

TEST ENGINEER: NEAL WANG

EUT : Remote Control Temperature : 22°C

Model No. : ERF6C11 Humidity : 40%RH

Test Mode : Transmitting Ch78  
(NON-EDR) Date of Test : Jan. 29, 2014

| 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   | 30.97           | 1.44                  | 18.10                 | 0.64            | --                 | 20.18                    | 40.00            | 19.82        | QP     |
|              | 48.43           | 7.32                  | 8.08                  | 0.83            | --                 | 16.23                    | 40.00            | 23.77        |        |
|              | 145.43          | 10.48                 | 10.34                 | 1.50            | --                 | 22.32                    | 43.50            | 21.18        |        |
|              | 310.33          | 4.24                  | 13.20                 | 2.52            | --                 | 19.96                    | 46.00            | 26.04        |        |
|              | 562.53          | 2.87                  | 19.23                 | 3.10            | --                 | 25.20                    | 46.00            | 20.80        |        |
|              | <b>688.63</b>   | <b>3.70</b>           | <b>19.75</b>          | <b>3.47</b>     | --                 | <b>26.92</b>             | <b>46.00</b>     | <b>19.08</b> |        |
|              | 2269.00         | 46.71                 | 29.39                 | 4.64            | 35.93              | 44.81                    | 74.00            | 29.19        | PK     |
|              | 3817.00         | 46.70                 | 32.68                 | 5.92            | 35.48              | 49.82                    | 74.00            | 24.18        |        |
| Vertical     | 5887.00         | 44.50                 | 33.71                 | 8.30            | 35.88              | 50.63                    | 74.00            | 23.37        | PK     |
|              | 33.88           | 5.11                  | 16.07                 | 0.68            | --                 | 21.86                    | 40.00            | 18.14        |        |
|              | 80.44           | 10.51                 | 7.15                  | 1.04            | --                 | 18.70                    | 40.00            | 21.30        |        |
|              | 145.43          | 10.95                 | 10.34                 | 1.50            | --                 | 22.79                    | 43.50            | 20.71        |        |
|              | 368.53          | 2.89                  | 15.13                 | 2.63            | --                 | 20.65                    | 46.00            | 25.35        |        |
|              | 686.69          | 3.58                  | 19.60                 | 3.47            | --                 | 26.65                    | 46.00            | 19.35        |        |
|              | <b>933.07</b>   | <b>4.80</b>           | <b>20.00</b>          | <b>4.60</b>     | --                 | <b>29.40</b>             | <b>46.00</b>     | <b>16.60</b> |        |
|              | 2062.00         | 46.86                 | 30.67                 | 4.47            | 35.91              | 46.09                    | 74.00            | 27.91        |        |
| 3763.00      | 47.23           | 32.45                 | 5.96                  | 35.52           | 50.12              | 74.00                    | 23.88            |              |        |
| 6373.00      | 45.10           | 33.68                 | 8.04                  | 35.94           | 50.88              | 74.00                    | 23.12            |              |        |

TEST ENGINEER: NEAL WANG

EUT : Remote Control Temperature : 22°C  
 Model No. : ERF6C11 Humidity : 40%RH  
 Test Mode : Transmitting Ch00 (EDR) Date of Test : Jan. 29, 2014

| 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   | 48.43           | 7.32                  | 8.08                  | 0.83            | --                 | 16.23                    | 40.00            | 23.77        | QP     |
|              | 114.39          | 4.01                  | 11.92                 | 1.32            | --                 | 17.25                    | 43.50            | 26.25        |        |
|              | 159.98          | 10.98                 | 9.20                  | 1.58            | --                 | 21.76                    | 43.50            | 21.74        |        |
|              | 555.74          | 3.03                  | 19.65                 | 3.07            | --                 | 25.75                    | 46.00            | 20.25        |        |
|              | 837.04          | 4.32                  | 19.80                 | 3.98            | --                 | 28.10                    | 46.00            | 17.90        |        |
|              | <b>958.29</b>   | <b>4.67</b>           | <b>19.60</b>          | <b>4.66</b>     | --                 | <b>28.93</b>             | <b>46.00</b>     | <b>17.07</b> |        |
|              | 1945.00         | 46.80                 | 30.60                 | 4.35            | 35.94              | 45.81                    | 74.00            | 28.19        | PK     |
|              | 3808.00         | 47.12                 | 32.68                 | 5.92            | 35.49              | 50.23                    | 74.00            | 23.77        |        |
| Vertical     | 5878.00         | 45.11                 | 33.71                 | 8.30            | 35.88              | 51.24                    | 74.00            | 22.76        | QP     |
|              | 38.73           | 4.90                  | 13.01                 | 0.74            | --                 | 18.65                    | 40.00            | 21.35        |        |
|              | 61.04           | 14.26                 | 5.14                  | 0.89            | --                 | 20.29                    | 40.00            | 19.71        |        |
|              | 114.39          | 7.87                  | 11.92                 | 1.32            | --                 | 21.11                    | 43.50            | 22.39        |        |
|              | 334.58          | 3.18                  | 14.25                 | 2.57            | --                 | 20.00                    | 46.00            | 26.00        |        |
|              | 703.18          | 1.90                  | 19.97                 | 3.50            | --                 | 25.37                    | 46.00            | 20.63        |        |
|              | <b>827.34</b>   | <b>3.19</b>           | <b>20.60</b>          | <b>3.88</b>     | --                 | <b>27.67</b>             | <b>46.00</b>     | <b>18.33</b> |        |
|              | 1720.00         | 50.24                 | 28.54                 | 4.08            | 36.12              | 46.74                    | 74.00            | 27.26        | PK     |
| 3835.00      | 46.84           | 32.77                 | 5.92                  | 35.48           | 50.05              | 74.00                    | 23.95            |              |        |
| 5590.00      | 44.81           | 34.02                 | 7.77                  | 35.82           | 50.78              | 74.00                    | 23.22            |              |        |

TEST ENGINEER: NEAL WANG

EUT : Remote Control Temperature : 22°C  
 Model No. : ERF6C11 Humidity : 40%RH  
 Test Mode : Transmitting Ch39 (EDR) Date of Test : Jan. 29, 2014

| 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   | 32.91           | 1.18                  | 16.55                 | 0.67            | --                 | 18.40                    | 40.00            | 21.60        | QP     |
|              | 145.43          | 9.84                  | 10.34                 | 1.50            | --                 | 21.68                    | 43.50            | 21.82        |        |
|              | 281.23          | 6.02                  | 12.50                 | 2.35            | --                 | 20.87                    | 46.00            | 25.13        |        |
|              | 417.03          | 2.67                  | 17.15                 | 2.73            | --                 | 22.55                    | 46.00            | 23.45        |        |
|              | 555.74          | 2.41                  | 19.65                 | 3.07            | --                 | 25.13                    | 46.00            | 20.87        |        |
|              | <b>824.43</b>   | <b>4.23</b>           | <b>20.50</b>          | <b>3.79</b>     | --                 | <b>28.52</b>             | <b>46.00</b>     | <b>17.48</b> |        |
|              | 1864.00         | 47.52                 | 29.94                 | 4.24            | 35.99              | 45.71                    | 74.00            | 28.29        | PK     |
|              | 3835.00         | 46.21                 | 32.77                 | 5.92            | 35.48              | 49.42                    | 74.00            | 24.58        |        |
| Vertical     | 5770.00         | 44.18                 | 33.83                 | 8.17            | 35.86              | 50.32                    | 74.00            | 23.68        | QP     |
|              | 80.44           | 10.25                 | 7.15                  | 1.04            | --                 | 18.44                    | 40.00            | 21.56        |        |
|              | 145.43          | 11.49                 | 10.34                 | 1.50            | --                 | 23.33                    | 43.50            | 20.17        |        |
|              | 281.23          | 9.40                  | 12.50                 | 2.35            | --                 | 24.25                    | 46.00            | 21.75        |        |
|              | 426.73          | 2.62                  | 17.43                 | 2.74            | --                 | 22.79                    | 46.00            | 23.21        |        |
|              | 706.09          | 2.98                  | 19.83                 | 3.50            | --                 | 26.31                    | 46.00            | 19.69        |        |
|              | <b>934.04</b>   | <b>5.44</b>           | <b>19.90</b>          | <b>4.60</b>     | --                 | <b>29.94</b>             | <b>46.00</b>     | <b>16.06</b> |        |
|              | 1729.00         | 50.75                 | 28.59                 | 4.10            | 36.10              | 47.34                    | 74.00            | 26.66        | PK     |
| 3871.00      | 47.66           | 32.90                 | 5.88                  | 35.46           | 50.98              | 74.00                    | 23.02            |              |        |
| 7102.00      | 43.57           | 34.32                 | 9.53                  | 36.04           | 51.38              | 74.00                    | 22.62            |              |        |

TEST ENGINEER: NEAL WANG



EUT : Remote Control Temperature : 22°C

Model No. : ERF6C11 Humidity : 40%RH

Transmitting Ch78

Test Mode : (EDR) Date of Test : Jan. 29, 2014

| 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   | 31.94           | 1.71                  | 17.10                 | 0.65            | --                 | 19.46                    | 40.00            | 20.54        | QP     |
|              | 128.94          | 6.71                  | 12.16                 | 1.42            | --                 | 20.29                    | 43.50            | 23.21        |        |
|              | 145.43          | 10.48                 | 10.34                 | 1.50            | --                 | 22.32                    | 43.50            | 21.18        |        |
|              | 281.23          | 5.43                  | 12.50                 | 2.35            | --                 | 20.28                    | 46.00            | 25.72        |        |
|              | <b>560.59</b>   | <b>3.16</b>           | <b>19.40</b>          | <b>3.10</b>     | --                 | <b>25.66</b>             | <b>46.00</b>     | <b>20.34</b> |        |
|              | 982.54          | 4.12                  | 21.23                 | 4.76            | --                 | 30.11                    | 54.00            | 23.89        | PK     |
|              | 3889.00         | 46.36                 | 32.99                 | 5.88            | 35.45              | 49.78                    | 74.00            | 24.22        |        |
|              | 5671.00         | 44.42                 | 33.94                 | 7.90            | 35.84              | 50.42                    | 74.00            | 23.58        |        |
| 6958.00      | 45.23           | 33.79                 | 9.26                  | 36.00           | 52.28              | 74.00                    | 21.72            |              |        |
| Vertical     | 33.88           | 5.32                  | 16.07                 | 0.68            | --                 | 22.07                    | 40.00            | 17.93        | QP     |
|              | 80.44           | 10.16                 | 7.15                  | 1.04            | --                 | 18.35                    | 40.00            | 21.65        |        |
|              | 259.89          | 2.85                  | 12.60                 | 2.22            | --                 | 17.67                    | 46.00            | 28.33        |        |
|              | 499.48          | 3.76                  | 18.10                 | 2.90            | --                 | 24.76                    | 46.00            | 21.24        |        |
|              | 698.33          | 2.63                  | 20.03                 | 3.49            | --                 | 26.15                    | 46.00            | 19.85        |        |
|              | <b>958.29</b>   | <b>6.32</b>           | <b>19.60</b>          | <b>4.66</b>     | --                 | <b>30.58</b>             | <b>46.00</b>     | <b>15.42</b> | PK     |
|              | 3979.00         | 46.56                 | 33.32                 | 5.80            | 35.41              | 50.27                    | 74.00            | 23.73        |        |
|              | 5887.00         | 44.72                 | 33.71                 | 8.30            | 35.88              | 50.85                    | 74.00            | 23.15        |        |
| 8281.00      | 44.10           | 35.94                 | 9.27                  | 36.40           | 52.91              | 74.00                    | 21.09            |              |        |

TEST ENGINEER: NEAL WANG

EUT : Remote Control Temperature : 22°C

Model No. : ERF6C11 Humidity : 40%RH

Test Mode : Receiving Date of Test : Jan. 29, 2014

| 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   | 30.97           | 1.43                  | 18.10                 | 0.64            | --                 | 20.17                    | 40.00            | 19.83        | QP     |    |
|              | 114.39          | 3.87                  | 11.92                 | 1.32            | --                 | 17.11                    | 43.50            | 26.39        |        |    |
|              | 281.23          | 4.90                  | 12.50                 | 2.35            | --                 | 19.75                    | 46.00            | 26.25        |        |    |
|              | 329.73          | 3.59                  | 14.10                 | 2.56            | --                 | 20.25                    | 46.00            | 25.75        |        |    |
|              | 547.98          | 2.26                  | 19.83                 | 3.04            | --                 | 25.13                    | 46.00            | 20.87        |        |    |
|              | <b>958.29</b>   | <b>5.04</b>           | <b>19.60</b>          | <b>4.66</b>     | --                 | <b>29.30</b>             | <b>46.00</b>     | <b>16.70</b> |        |    |
|              | 3657.74         | 44.65                 | 32.01                 | 6.02            | 35.57              | 47.11                    | 74.00            | 26.89        | PK     |    |
|              | 5482.98         | 43.75                 | 33.97                 | 7.64            | 35.80              | 49.56                    | 74.00            | 24.44        |        |    |
| Vertical     | 6334.40         | 44.26                 | 33.67                 | 8.04            | 35.93              | 50.04                    | 74.00            | 23.96        | PK     |    |
|              | 33.88           | 4.74                  | 16.07                 | 0.68            | --                 | 21.49                    | 40.00            | 18.51        |        | QP |
|              | 80.44           | 10.42                 | 7.15                  | 1.04            | --                 | 18.61                    | 40.00            | 21.39        |        |    |
|              | 250.19          | 3.57                  | 11.80                 | 2.15            | --                 | 17.52                    | 46.00            | 28.48        |        |    |
|              | 421.88          | 2.16                  | 17.33                 | 2.73            | --                 | 22.22                    | 46.00            | 23.78        |        |    |
|              | 543.13          | 1.92                  | 19.70                 | 3.04            | --                 | 24.66                    | 46.00            | 21.34        |        |    |
|              | <b>853.53</b>   | <b>3.06</b>           | <b>20.37</b>          | <b>4.07</b>     | --                 | <b>27.50</b>             | <b>46.00</b>     | <b>18.50</b> |        |    |
|              | 3061.74         | 44.41                 | 29.72                 | 5.84            | 35.96              | 44.01                    | 74.00            | 29.99        |        | PK |
|              | 4455.95         | 43.18                 | 32.28                 | 6.89            | 35.54              | 46.81                    | 74.00            | 27.19        |        |    |
| 6041.73      | 44.57           | 33.61                 | 8.33                  | 35.90           | 50.61              | 74.00                    | 23.39            |              |        |    |

TEST ENGINEER: NEAL WANG

**Radiated Band Edge measurement:****For NON-EDR mode:**

| Polarization | Frequency (MHz) | Meter Reading dB ( $\mu$ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB ( $\mu$ V/m) | Limits dB ( $\mu$ V/m) | Margin (dB) | Remark |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------|--------------------------------|------------------------|-------------|--------|
| Horizontal   | 2388.48         | 48.27                       | 28.72                 | 4.74            | 35.94              | 45.79                          | 74.00                  | 28.21       | PK     |
|              | 2483.68         | 51.63                       | 28.26                 | 4.79            | 35.95              | 48.73                          | 74.00                  | 25.27       |        |
|              | 2390.00         | 32.00                       | 28.72                 | 4.74            | 35.94              | 29.52                          | 54.00                  | 24.48       | AV     |
|              | 2483.50         | 33.02                       | 28.26                 | 4.79            | 35.95              | 30.12                          | 54.00                  | 23.88       |        |
| Vertical     | 2389.76         | 53.09                       | 28.72                 | 4.74            | 35.94              | 50.61                          | 74.00                  | 23.39       | PK     |
|              | 2483.50         | 51.76                       | 28.26                 | 4.79            | 35.95              | 48.86                          | 74.00                  | 25.14       |        |
|              | 2390.00         | 32.26                       | 28.72                 | 4.74            | 35.94              | 29.78                          | 54.00                  | 24.22       | AV     |
|              | 2483.50         | 33.16                       | 28.26                 | 4.79            | 35.95              | 30.26                          | 54.00                  | 23.74       |        |

**For EDR mode:**

| Polarization | Frequency (MHz) | Meter Reading dB ( $\mu$ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB ( $\mu$ V/m) | Limits dB ( $\mu$ V/m) | Margin (dB) | Remark |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------|--------------------------------|------------------------|-------------|--------|
| Horizontal   | 2389.73         | 52.76                       | 28.72                 | 4.74            | 35.94              | 50.28                          | 74.00                  | 23.72       | PK     |
|              | 2483.50         | 52.17                       | 28.26                 | 4.79            | 35.95              | 49.27                          | 74.00                  | 24.73       |        |
|              | 2390.00         | 32.14                       | 28.72                 | 4.74            | 35.94              | 29.66                          | 54.00                  | 24.34       | AV     |
|              | 2483.50         | 33.11                       | 28.26                 | 4.79            | 35.95              | 30.21                          | 54.00                  | 23.79       |        |
| Vertical     | 2389.95         | 49.33                       | 28.72                 | 4.74            | 35.94              | 46.85                          | 74.00                  | 27.15       | PK     |
|              | 2483.75         | 54.46                       | 28.26                 | 4.79            | 35.95              | 51.56                          | 74.00                  | 22.44       |        |
|              | 2390.00         | 32.05                       | 28.72                 | 4.74            | 35.94              | 29.57                          | 54.00                  | 24.43       | AV     |
|              | 2483.50         | 33.58                       | 28.26                 | 4.79            | 35.95              | 30.68                          | 54.00                  | 23.32       |        |

TEST ENGINEER: NEAL WANG

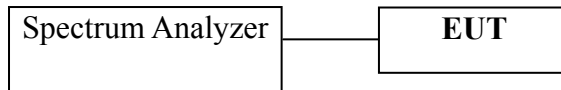
## 4 20 dB BANDWIDTH MEASUREMENT

### 4.1 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.   | Spectrum Analyzer | Agilent      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

### 4.2 Block Diagram of Test Setup



### 4.3 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.

### 4.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

### 4.5 Test Procedure

The transmitter output was connected to the 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.

## 4.6 Test Results

### **PASSED.**

All the test results are attached in next pages.

(Test Date: Feb. 12, 2014 Temperature: 21°C Humidity: 42 %)

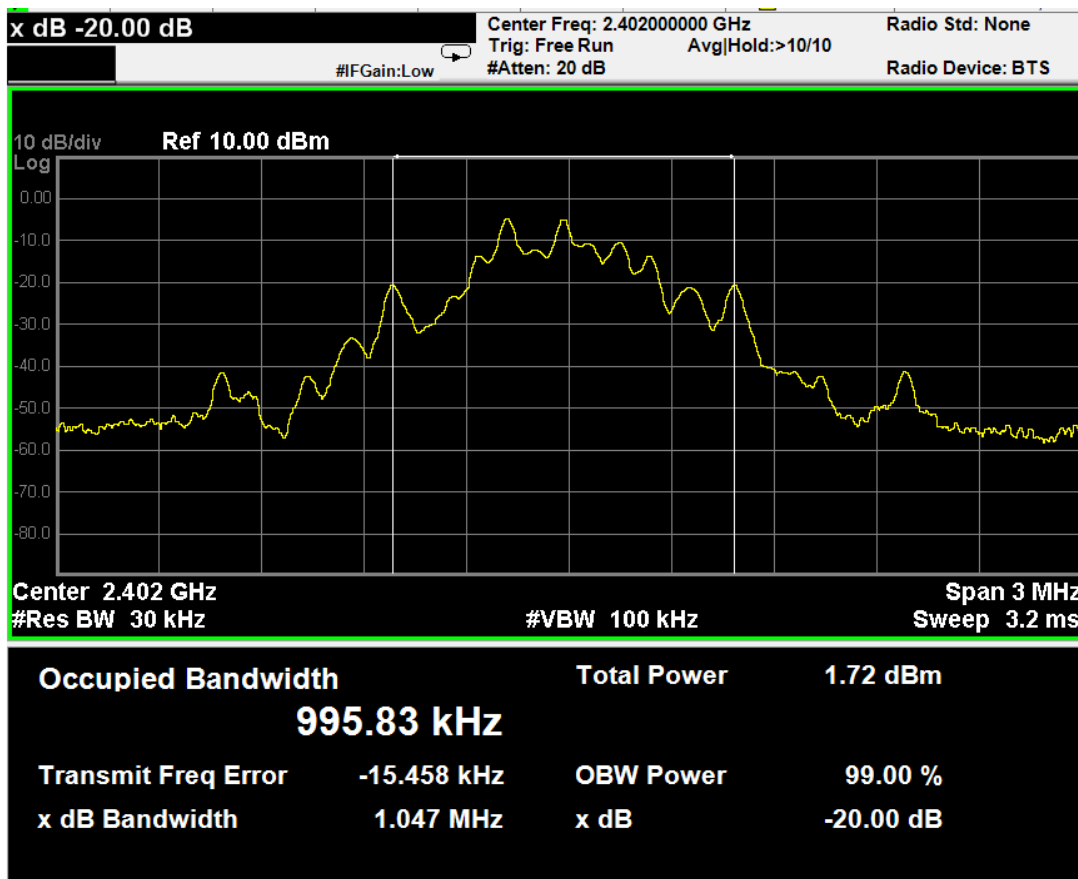
For Non-EDR

| Channel | Frequency | 20dB Bandwidth   |
|---------|-----------|------------------|
| 00      | 2402 MHz  | <b>1.047 MHz</b> |
| 39      | 2441 MHz  | <b>1.047 MHz</b> |
| 78      | 2480 MHz  | <b>1.046 MHz</b> |

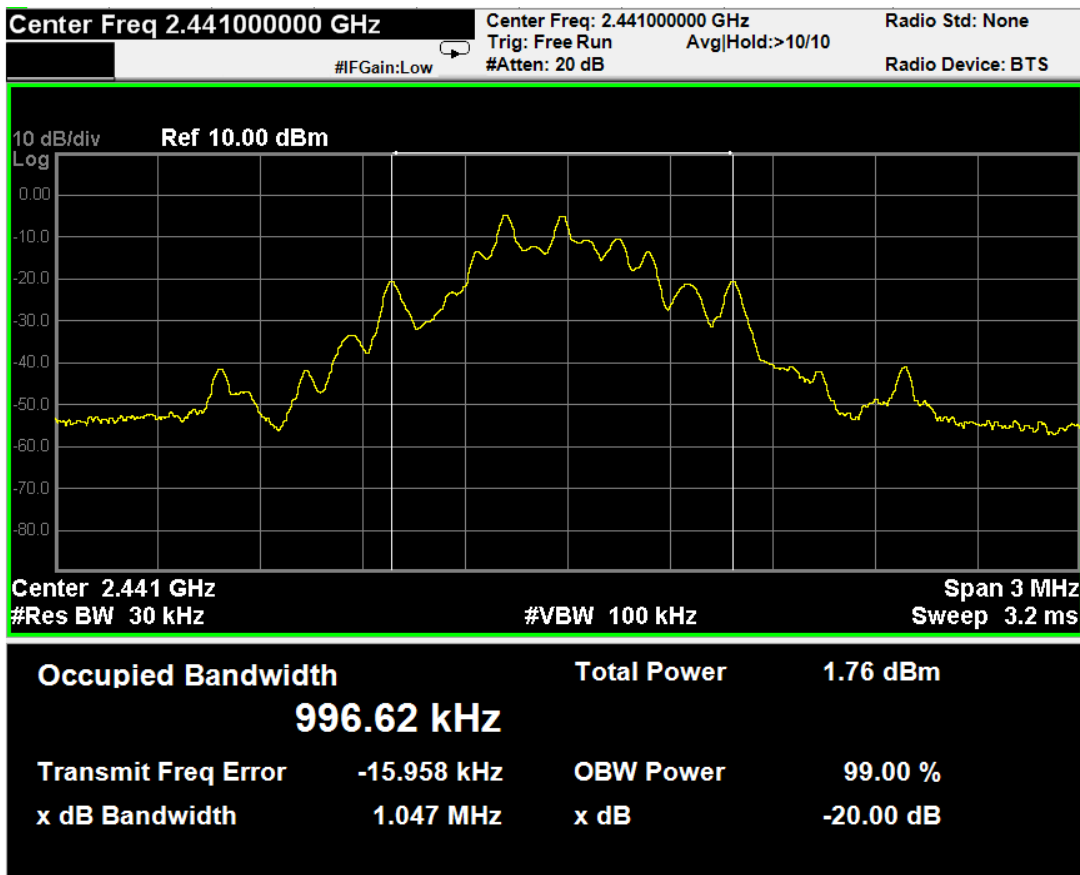
For EDR

| Channel | Frequency | 20dB Bandwidth   |
|---------|-----------|------------------|
| 00      | 2402 MHz  | <b>1.153 MHz</b> |
| 39      | 2441 MHz  | <b>1.153 MHz</b> |
| 78      | 2480 MHz  | <b>1.154 MHz</b> |

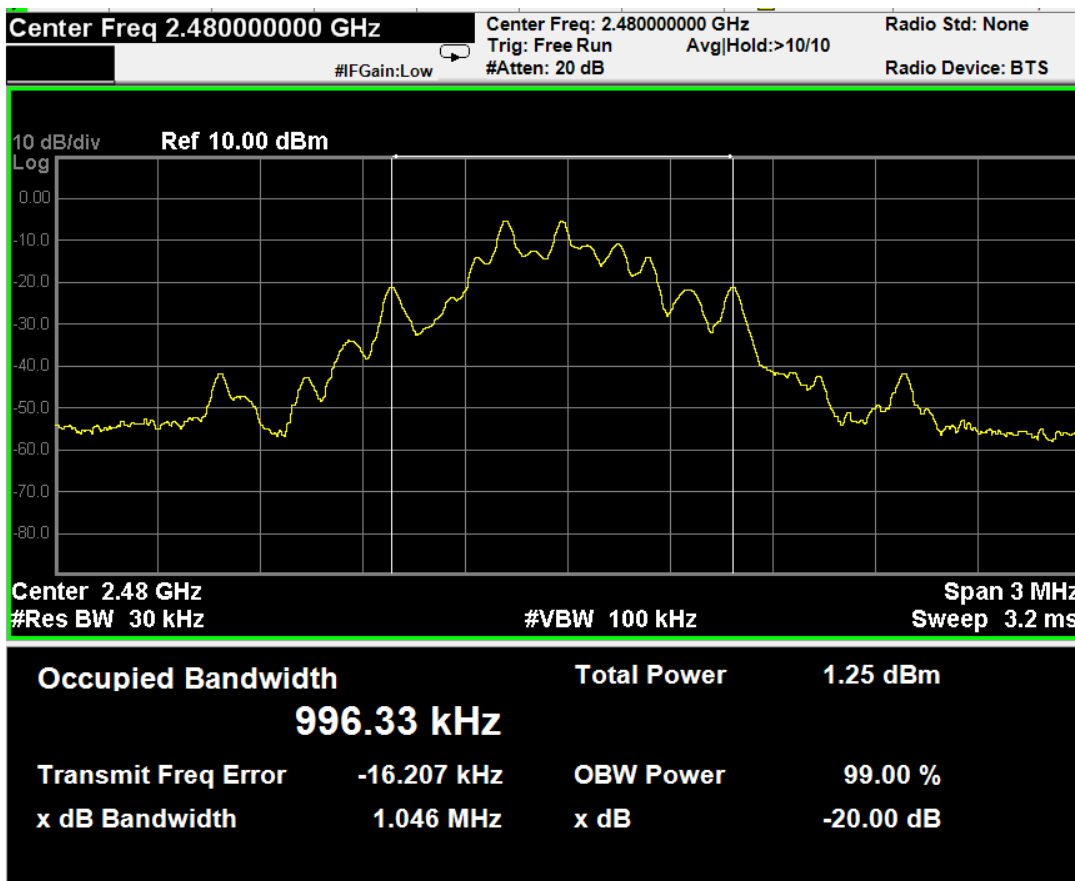
### Ch 00 (2402 MHz) NON-EDR



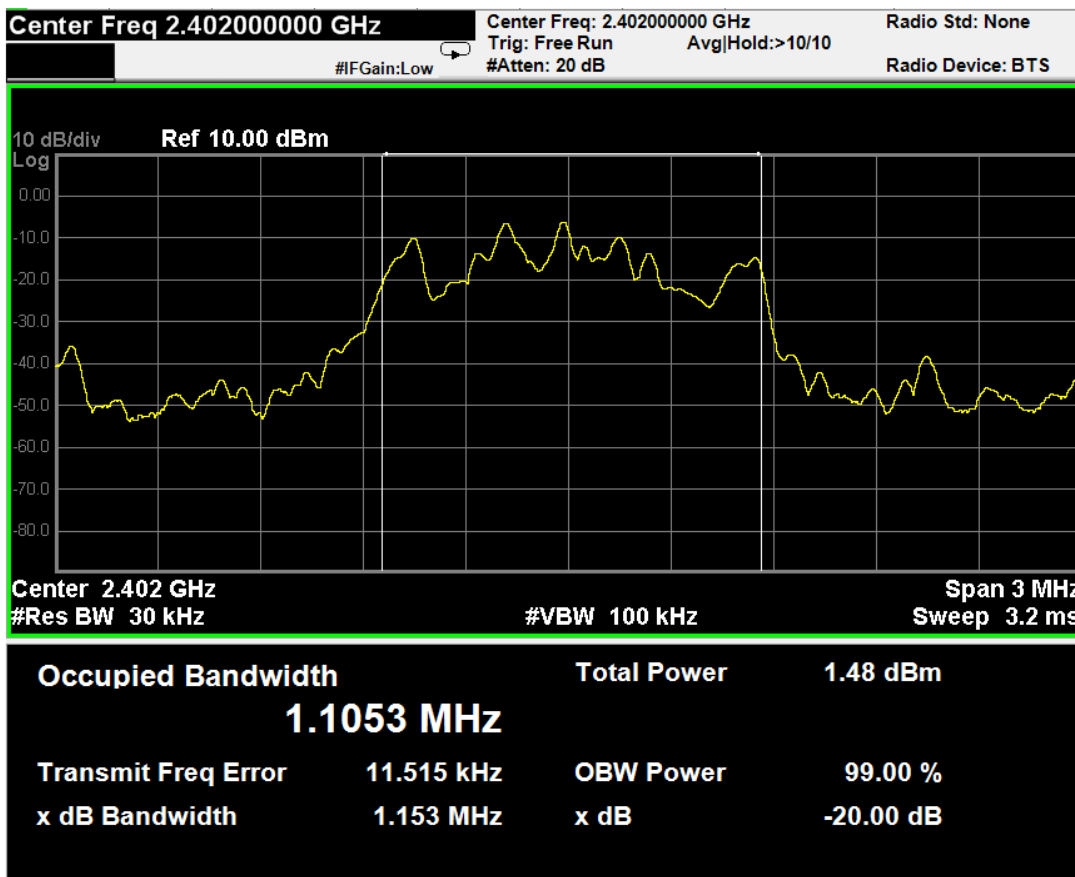
### Ch 39 (2441 MHz) NON-EDR



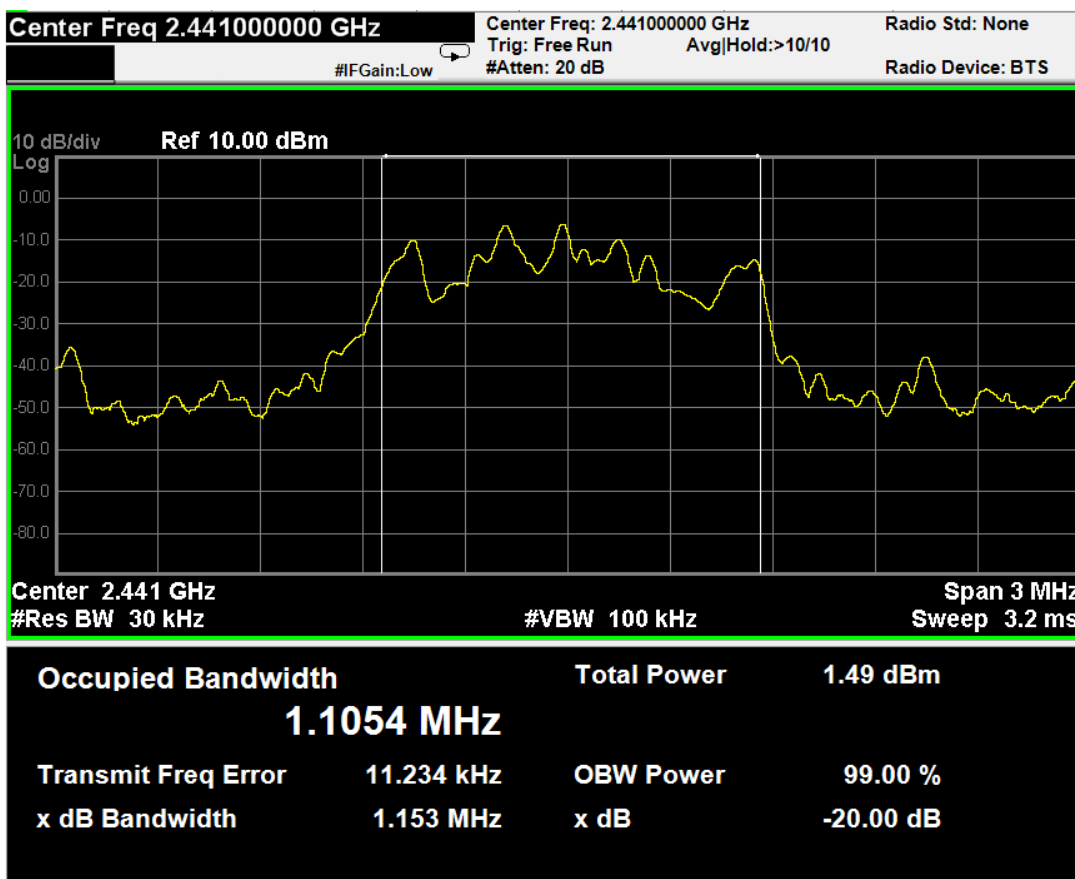
**Ch 78 (2480 MHz) NON-EDR**



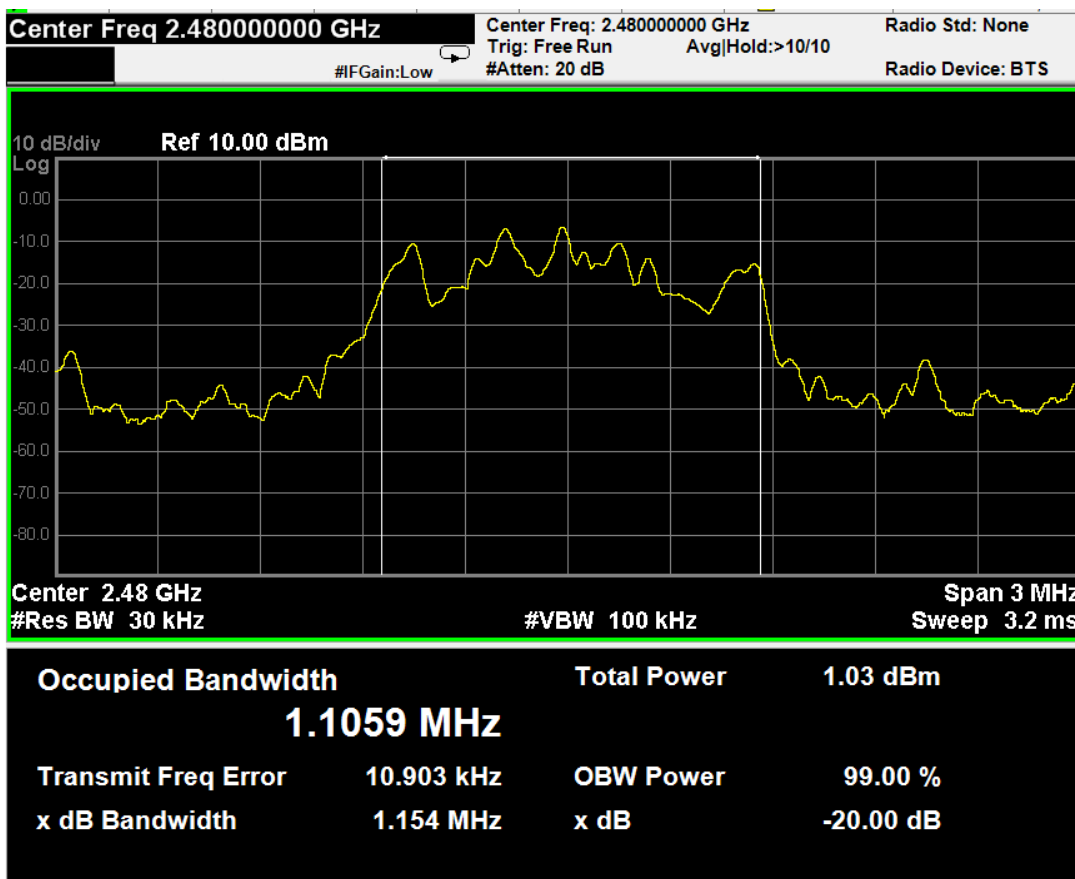
**Ch 00 (2402 MHz) EDR**



### Ch 39 (2441 MHz) EDR



### Ch 78 (2480 MHz) EDR





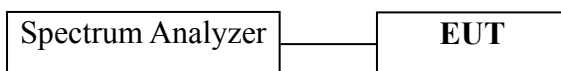
## 5 PEAK OUTPUT POWER MEASUREMENT

### 5.1 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.   | Spectrum Analyzer | Agilent      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

### 5.2 Block Diagram of Test Setup



### 5.3 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)

### 5.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

### 5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.  
The test procedure is defined in DA 00-705.

### 5.6 Test Results

**PASSED.**

(Test Date: Feb. 12, 2014 Temperature: 21°C Humidity: 42 %)

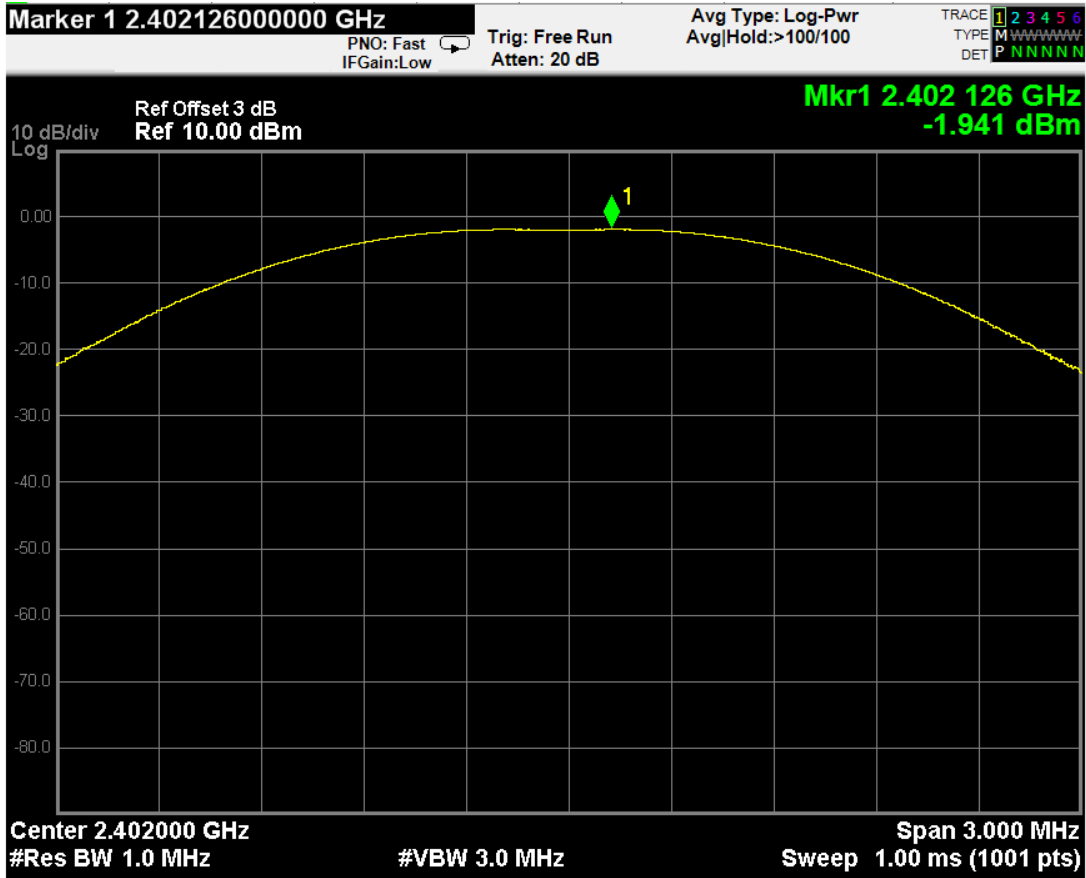
For Non-EDR

| Channel | Frequency | Peak Output Power | Limit  |
|---------|-----------|-------------------|--------|
| 00      | 2402 MHz  | <b>-1.941 dBm</b> | 30 dBm |
| 39      | 2441 MHz  | <b>-1.936 dBm</b> | 30 dBm |
| 78      | 2480 MHz  | <b>-2.418 dBm</b> | 30 dBm |

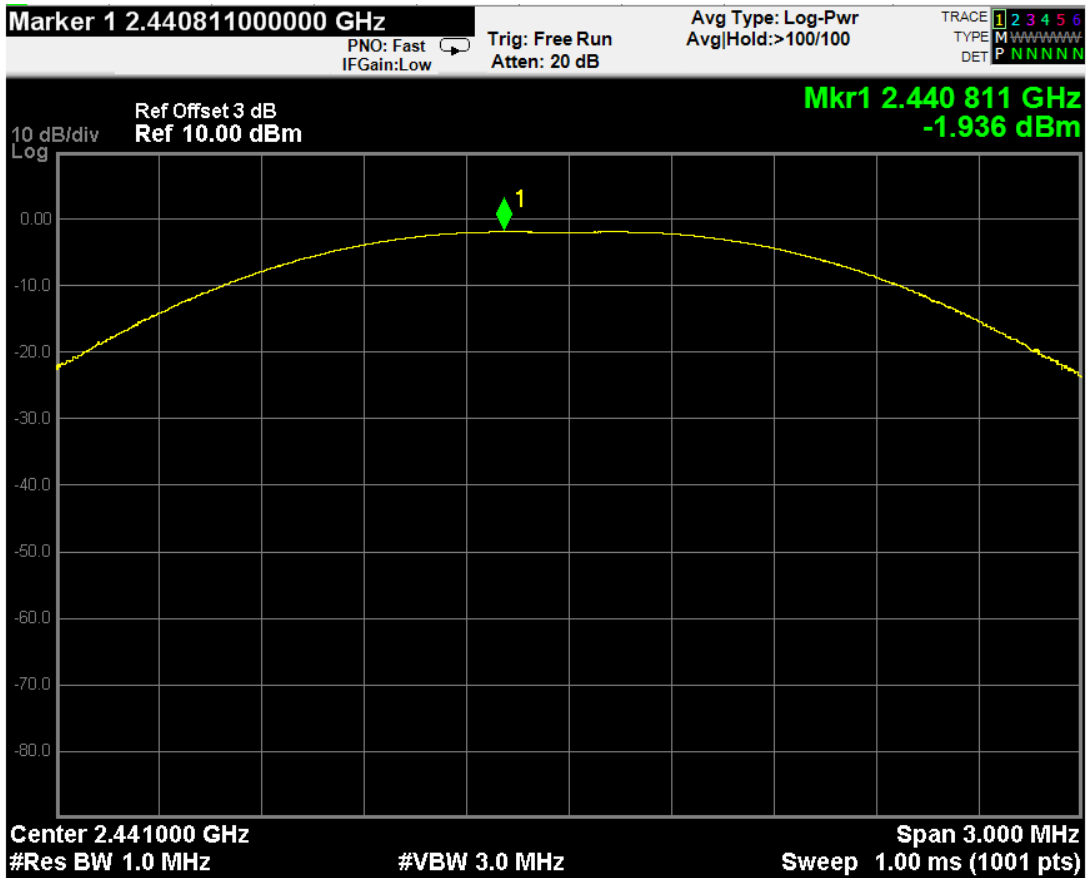
For EDR

| Channel | Frequency | Peak Output Power | Limit  |
|---------|-----------|-------------------|--------|
| 00      | 2402 MHz  | <b>-1.038 dBm</b> | 30 dBm |
| 39      | 2441 MHz  | <b>-1.013 dBm</b> | 30 dBm |
| 78      | 2480 MHz  | <b>-1.489 dBm</b> | 30 dBm |

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

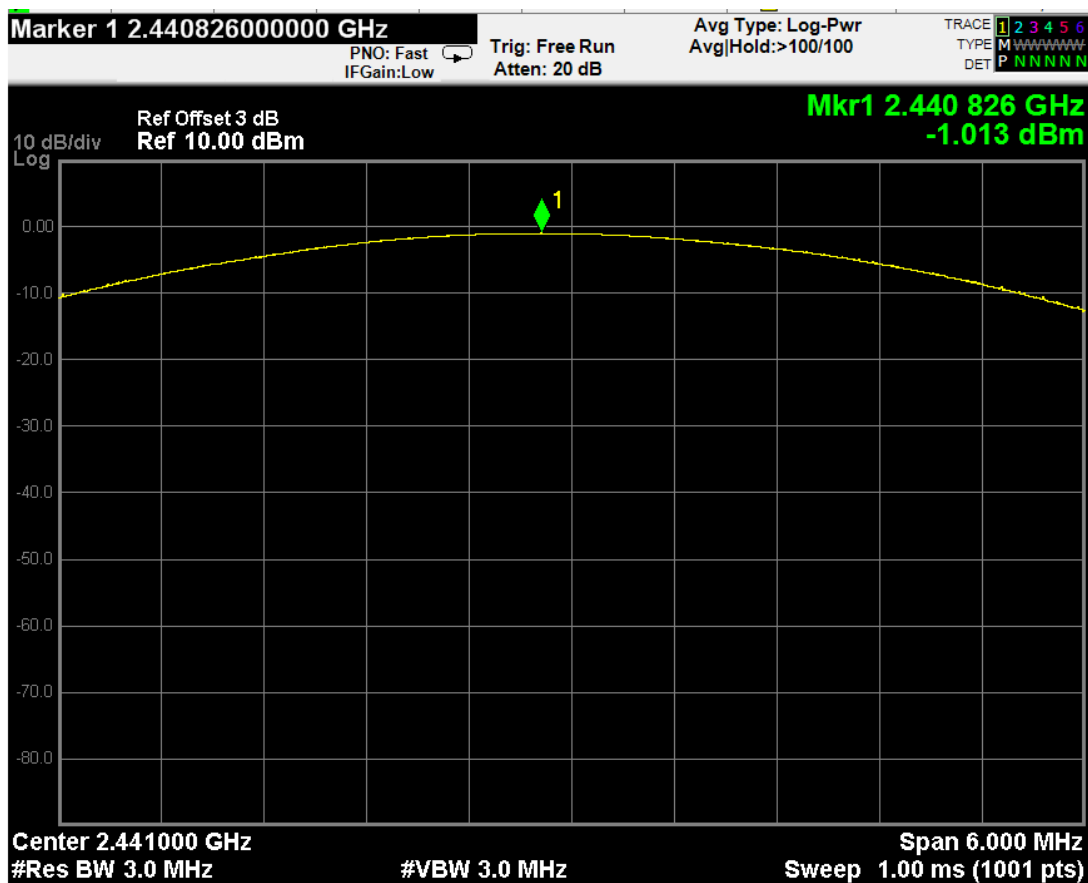


### Ch 39 (2441 MHz) NON-EDR

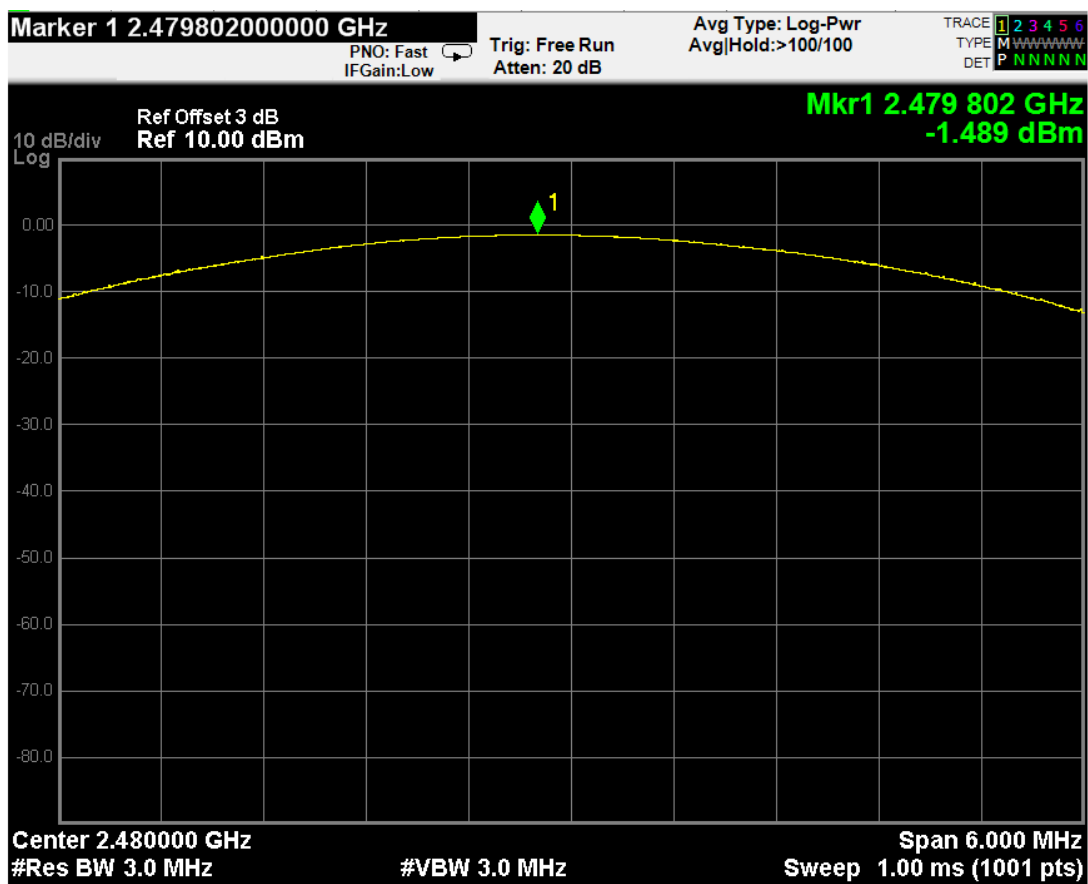




### Ch 39 (2441 MHz) EDR



### Ch 78 (2480 MHz) EDR



## 6 SPURIOUS RF CONDUCTED EMISSIONS

### MEASUREMENT

#### 6.1 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      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

#### 6.2 Block Diagram of Test Setup

The same as Section. 4.2.

#### 6.3 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)

#### 6.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

#### 6.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10<sup>th</sup> 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.

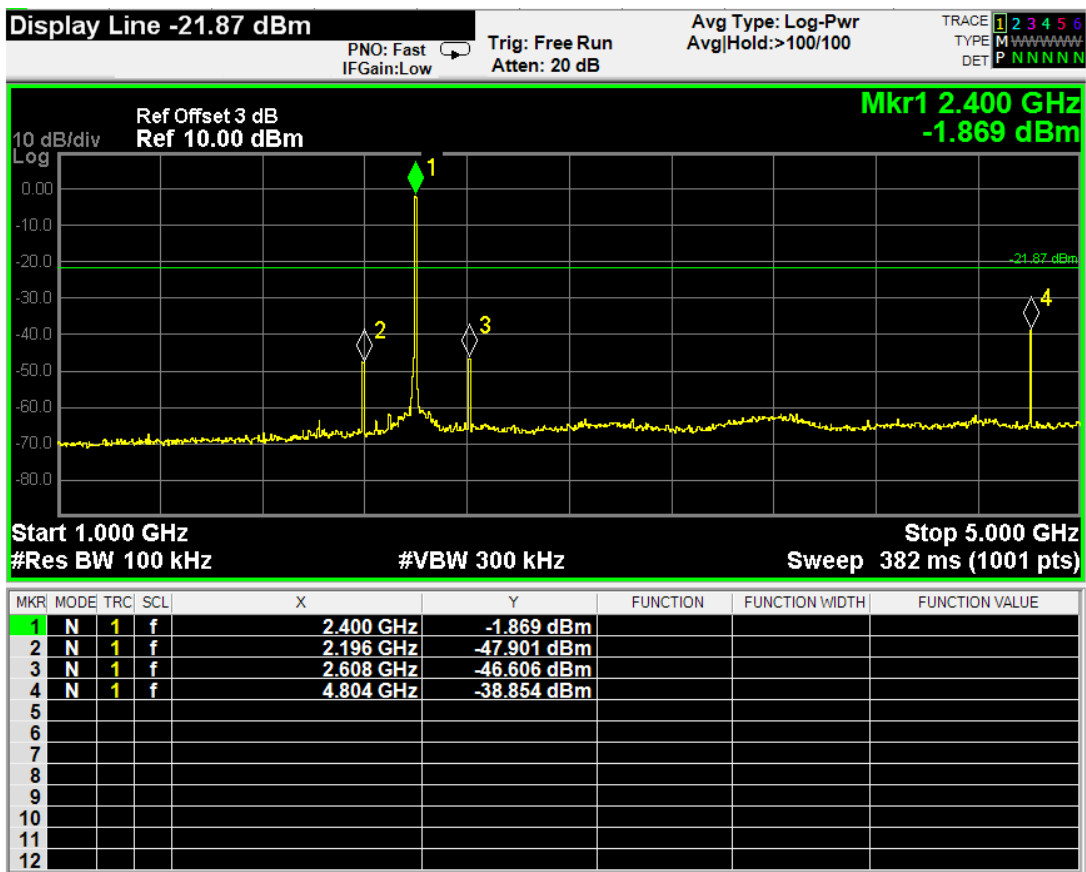
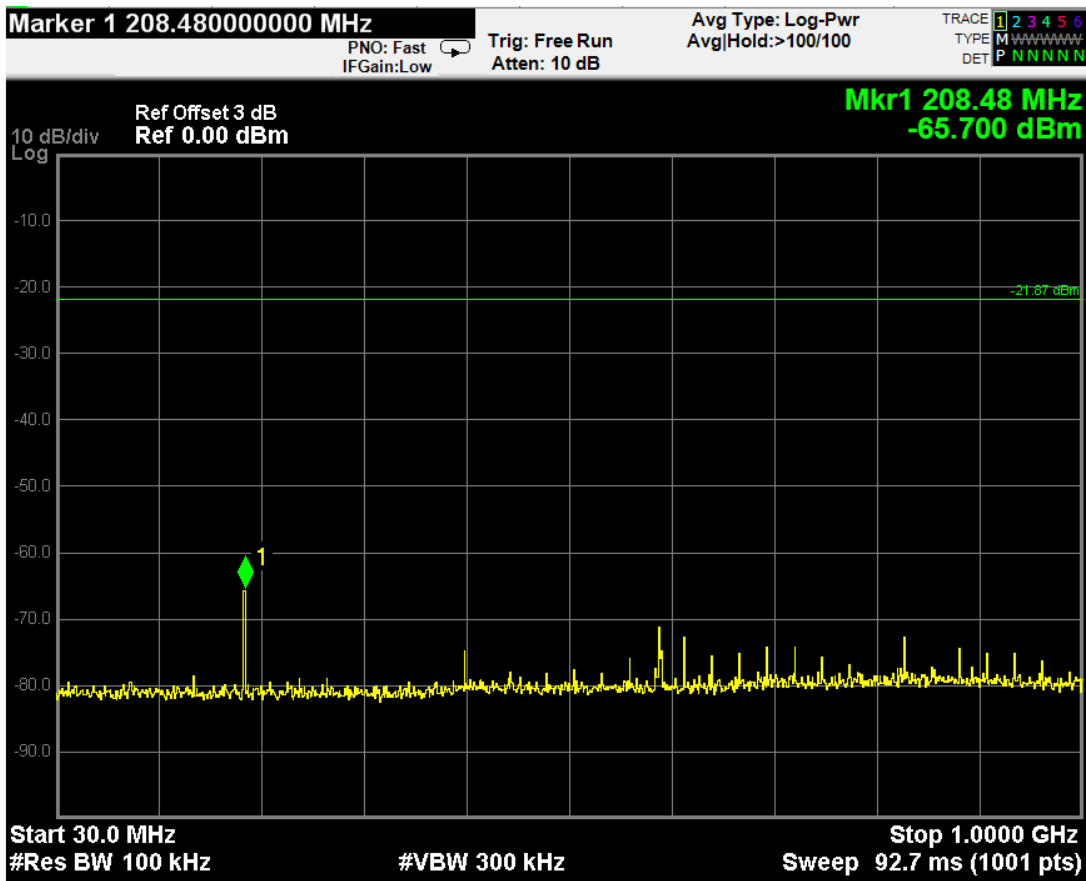
#### 6.6 Test Results

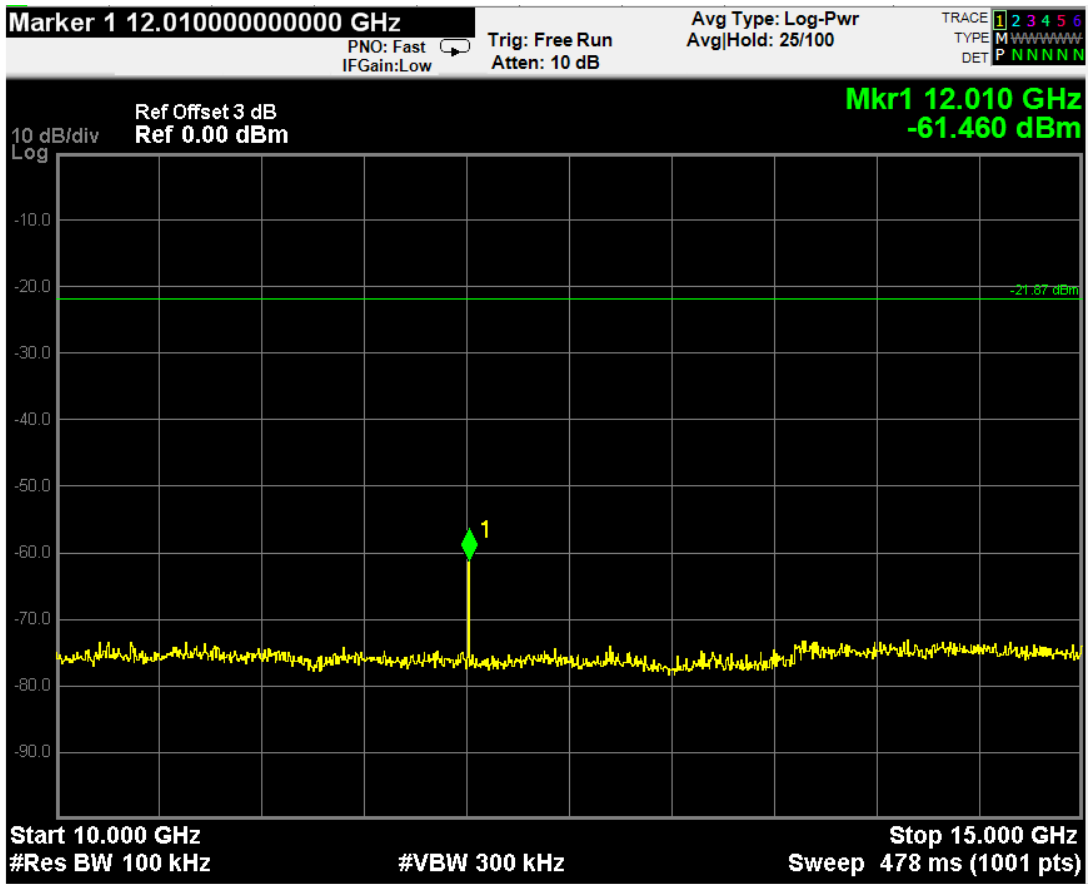
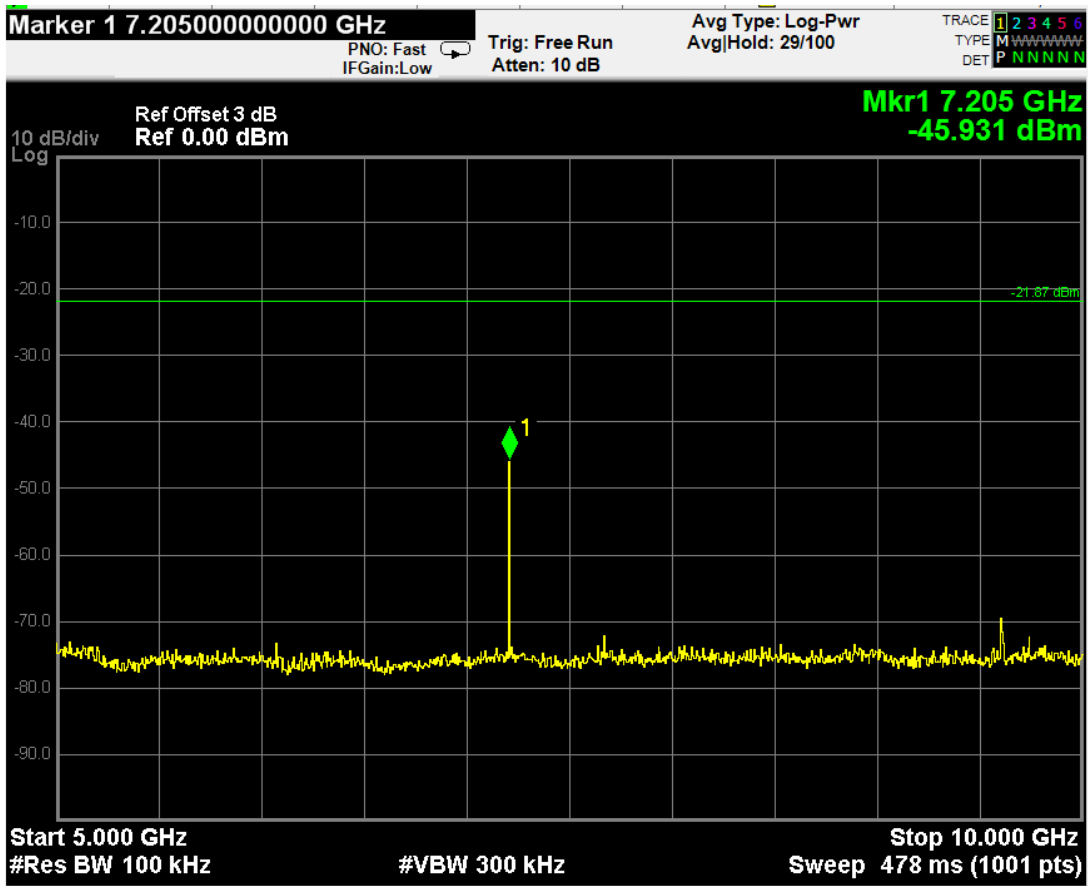
**PASSED.**

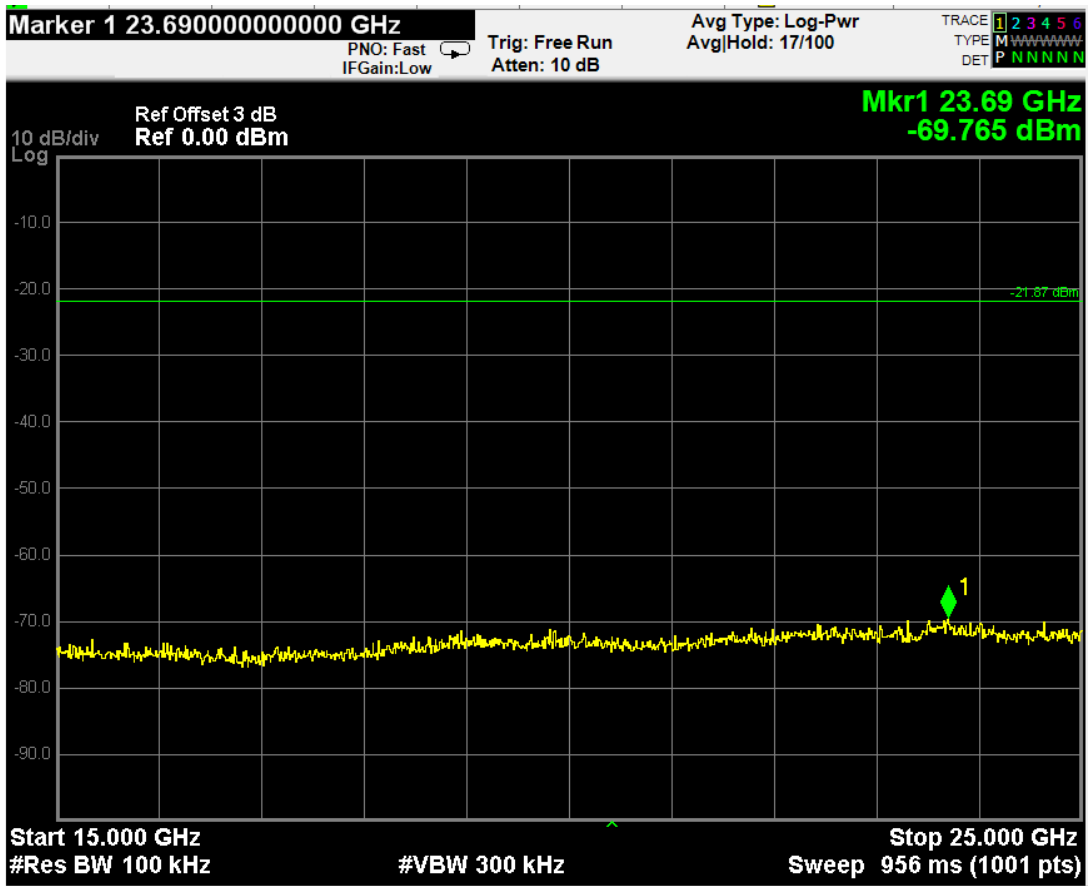
The test data was attached in the next pages.

(Test Date: Feb. 10, 2014 Temperature: 21°C Humidity: 42 %)

NON-EDR Ch 00 (2402 MHz)

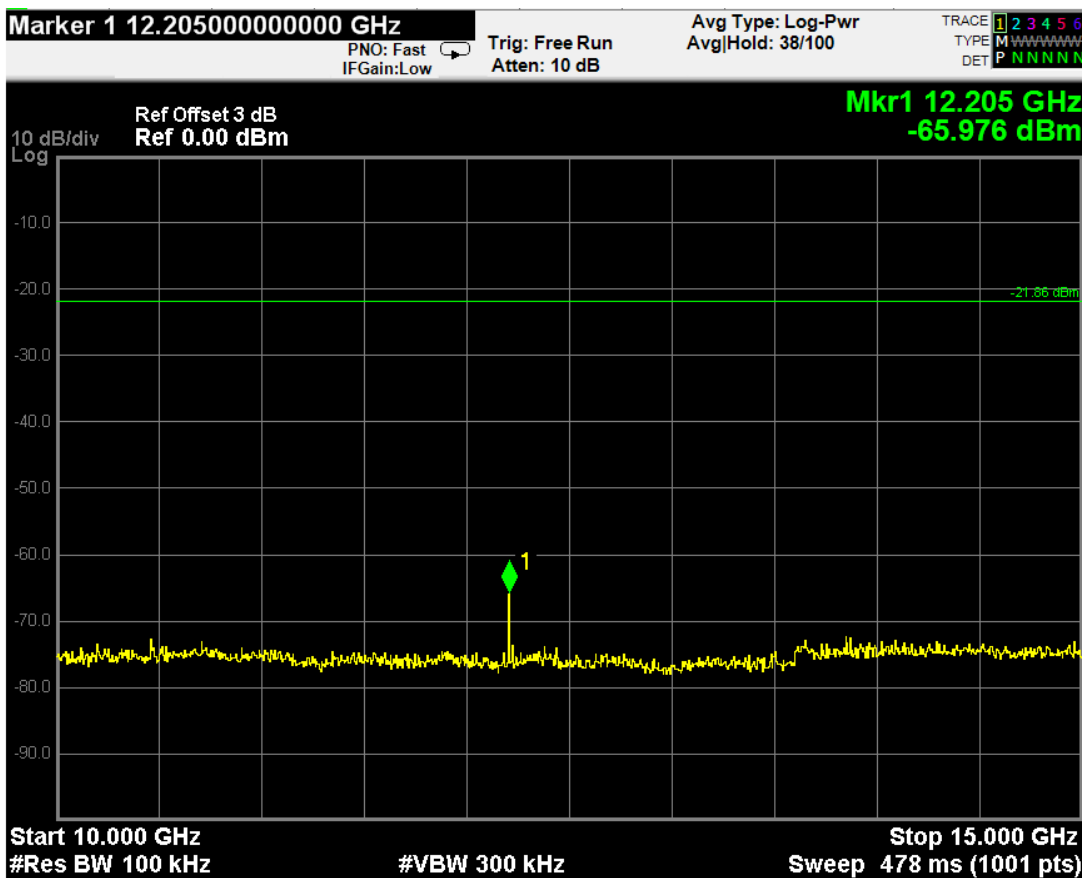
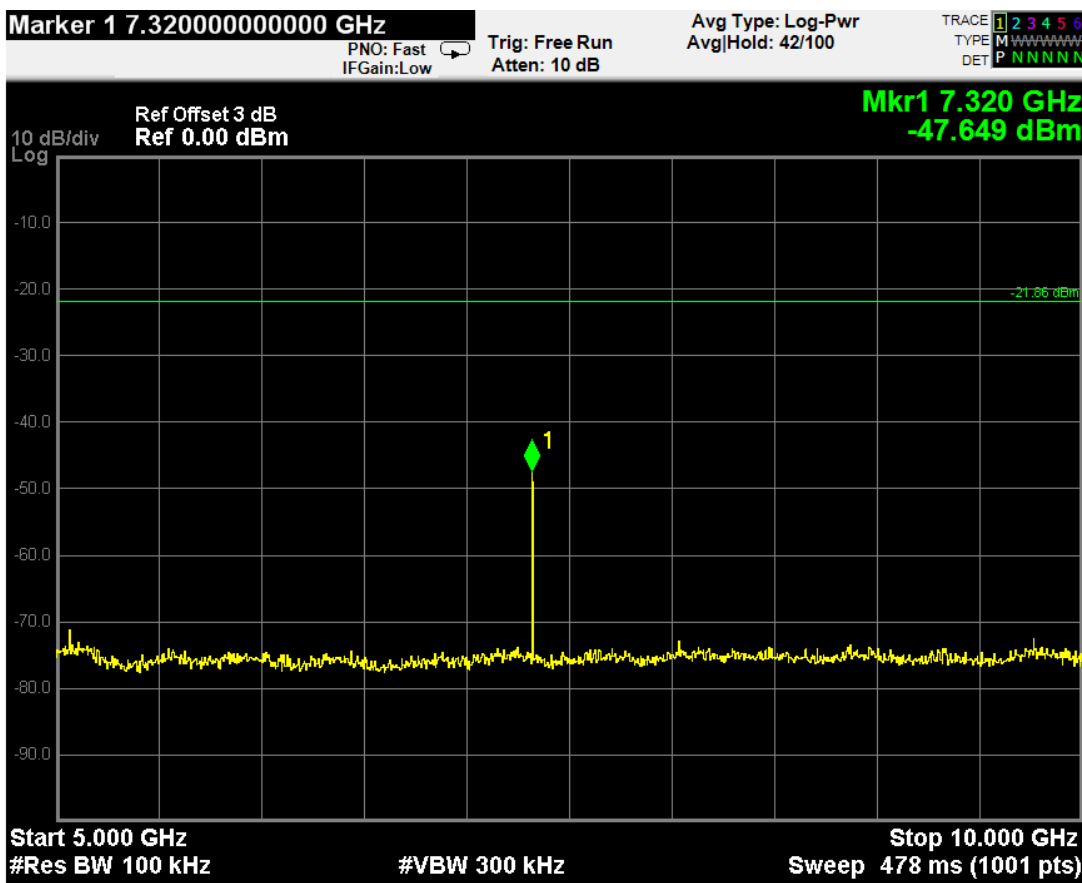






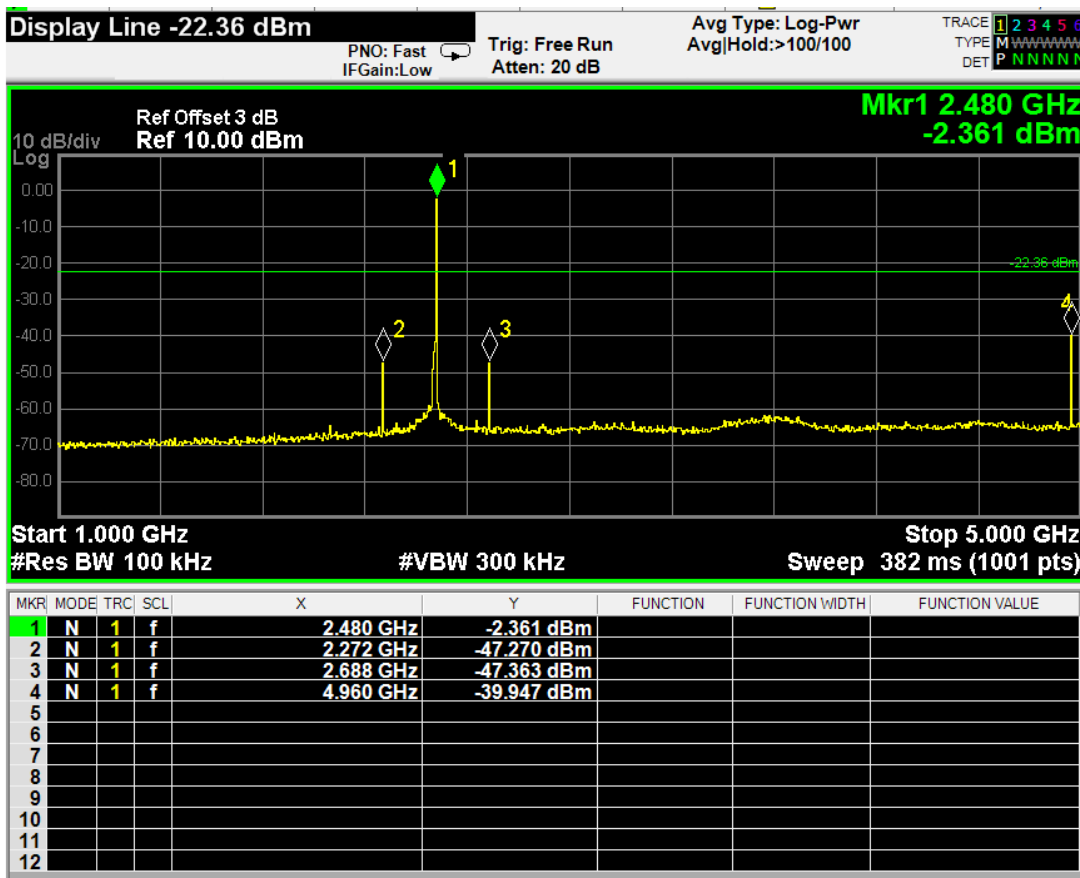
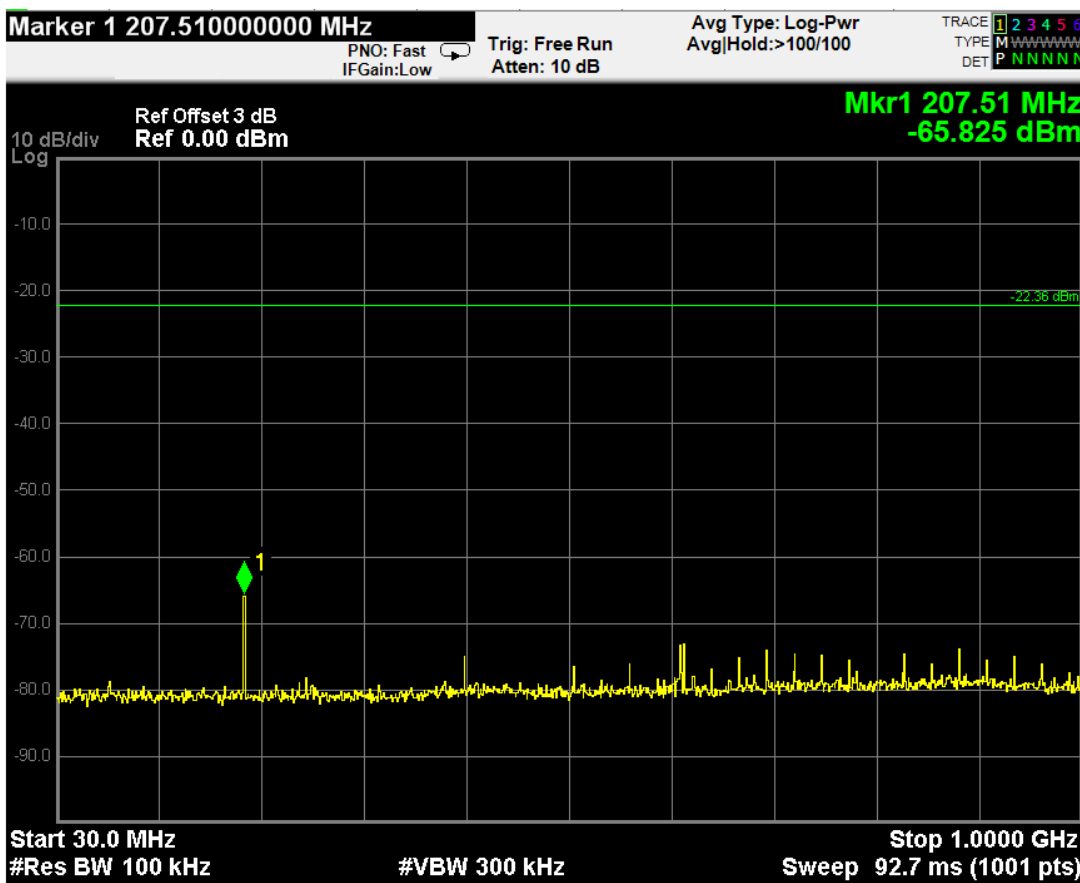


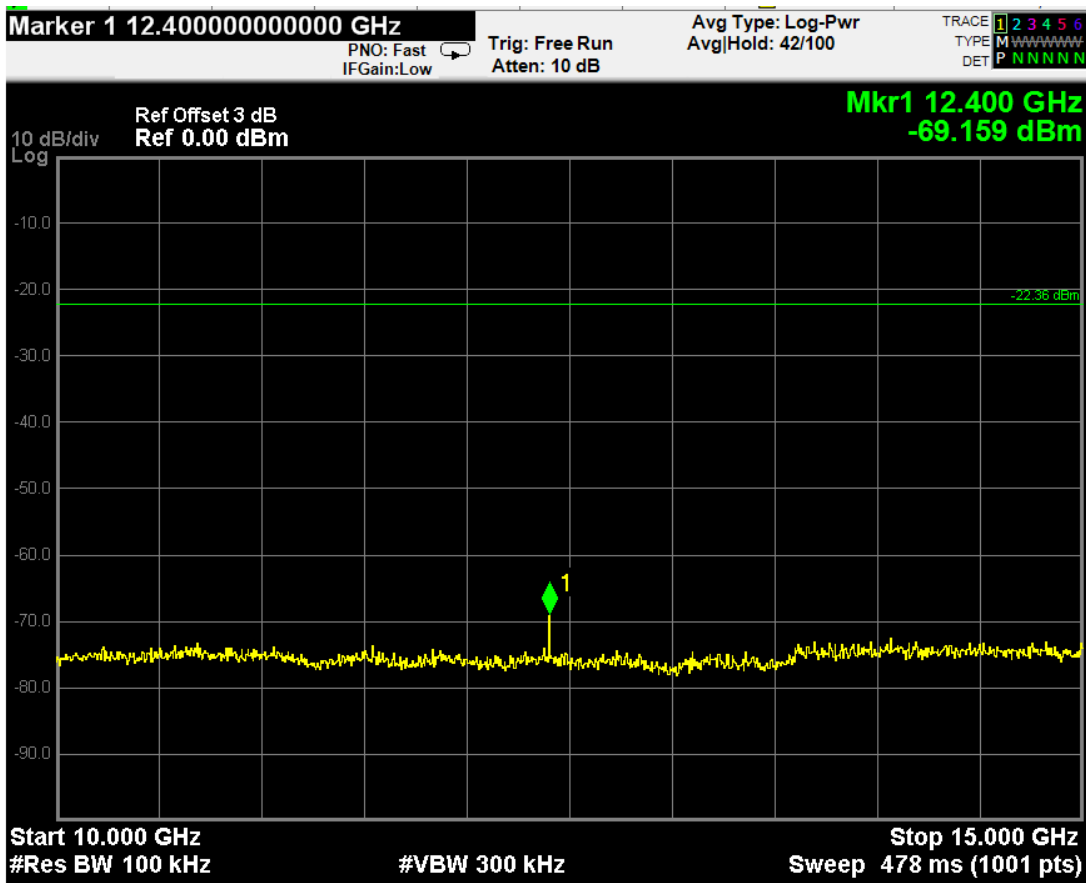
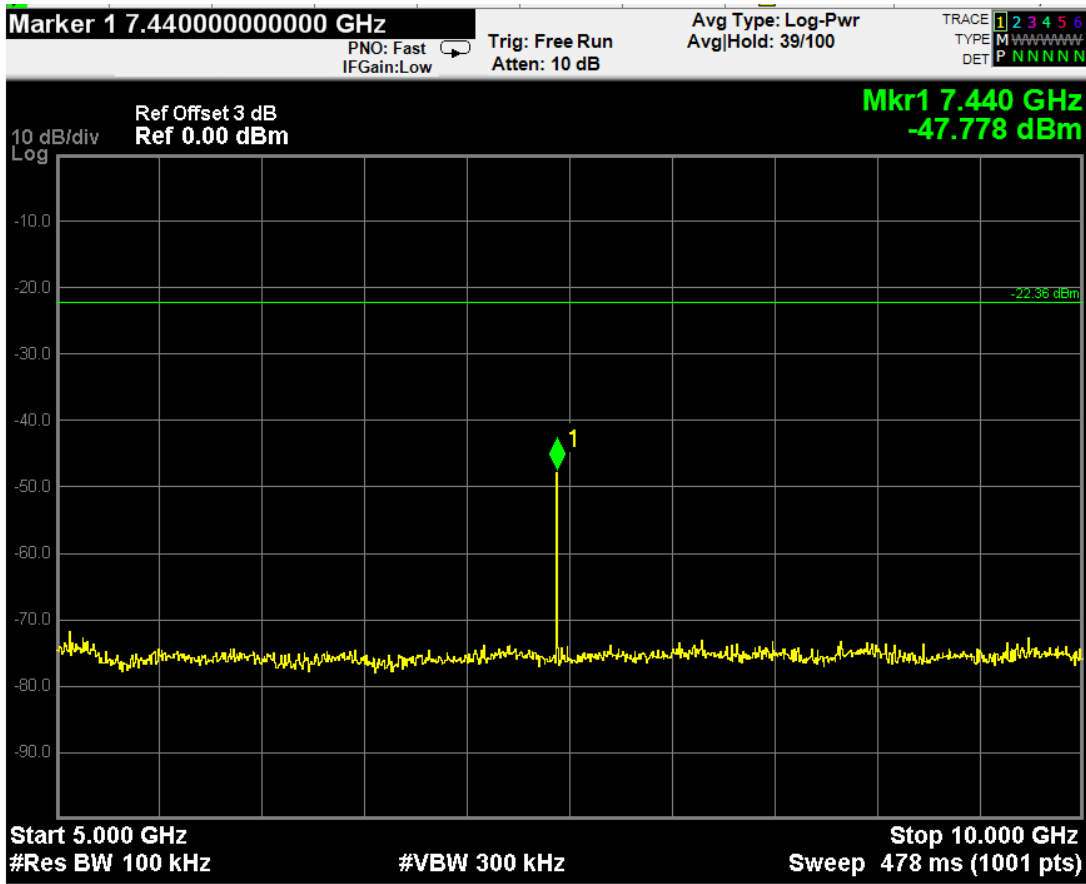






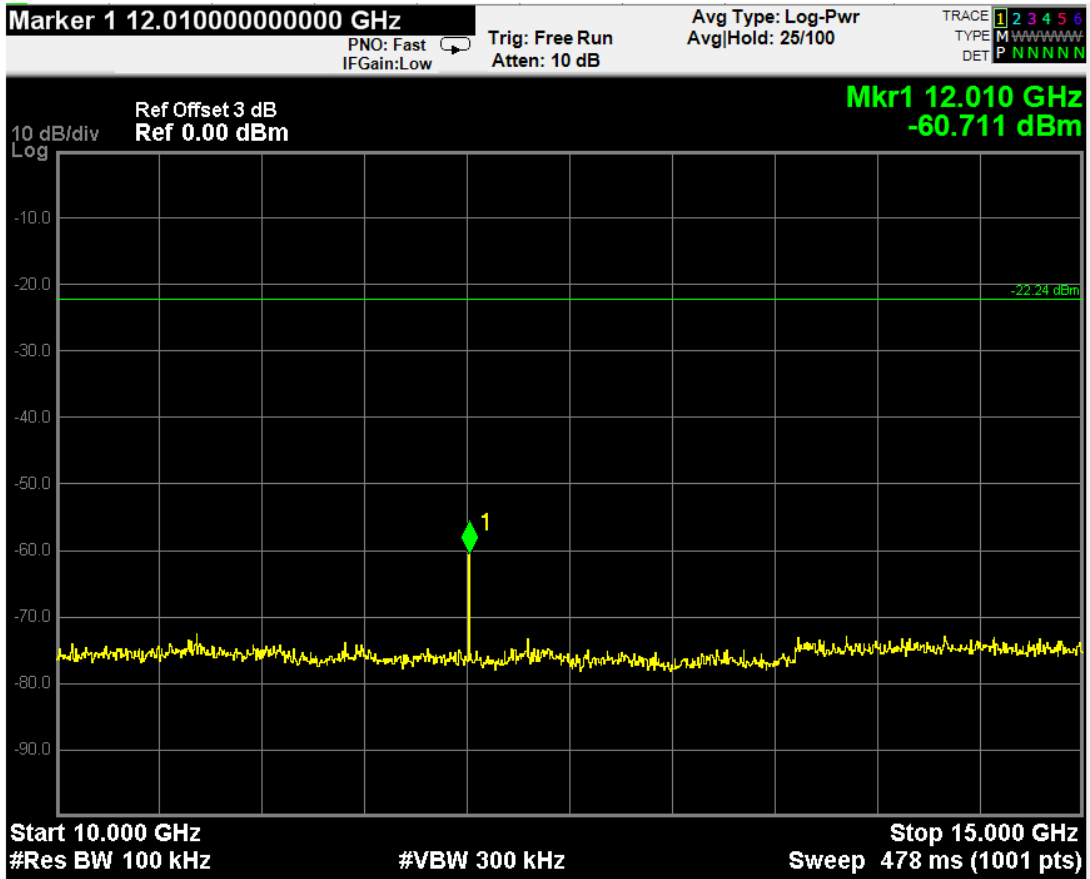
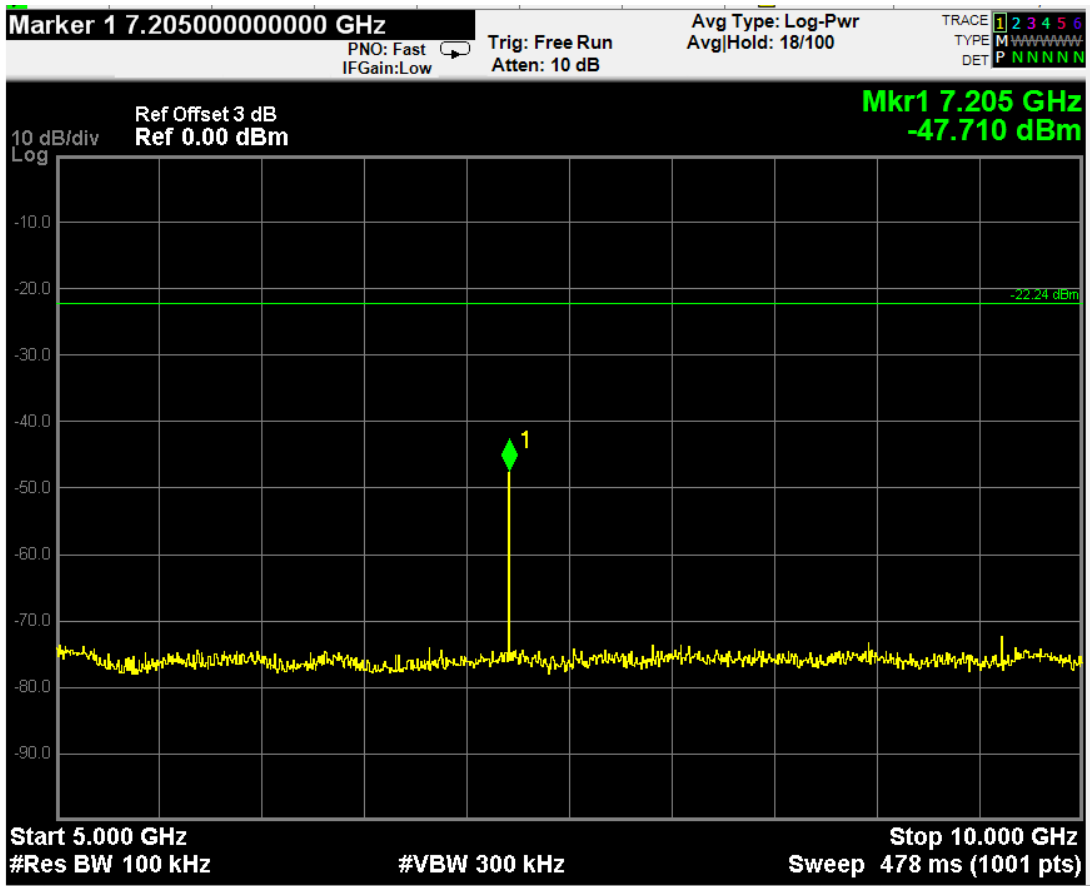
NON-EDR Ch 78 (2480 MHz)



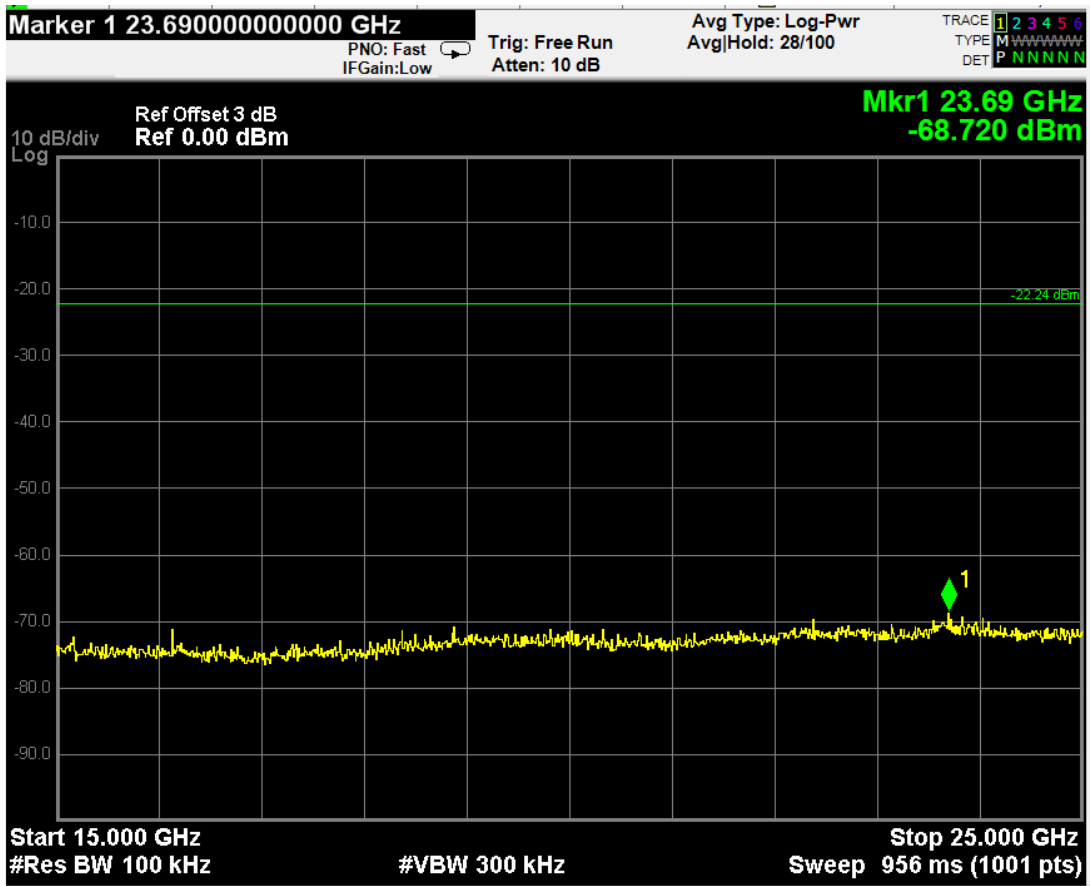




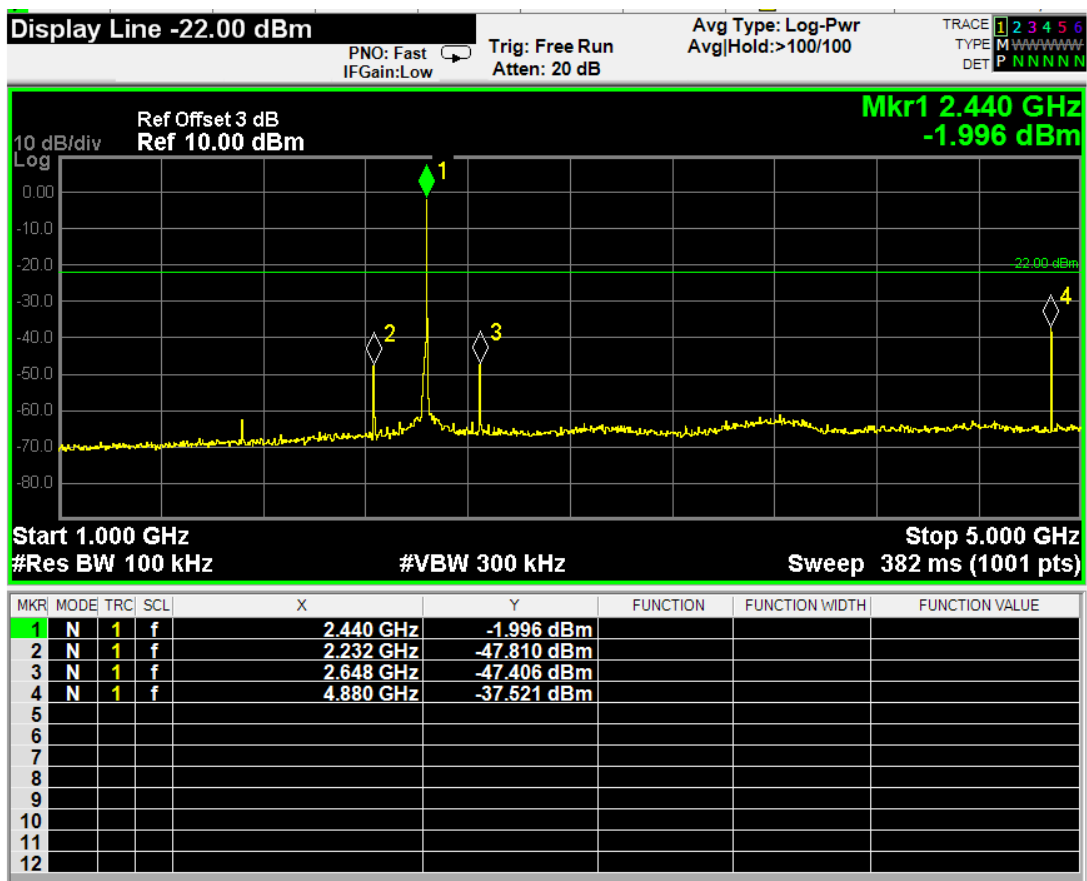
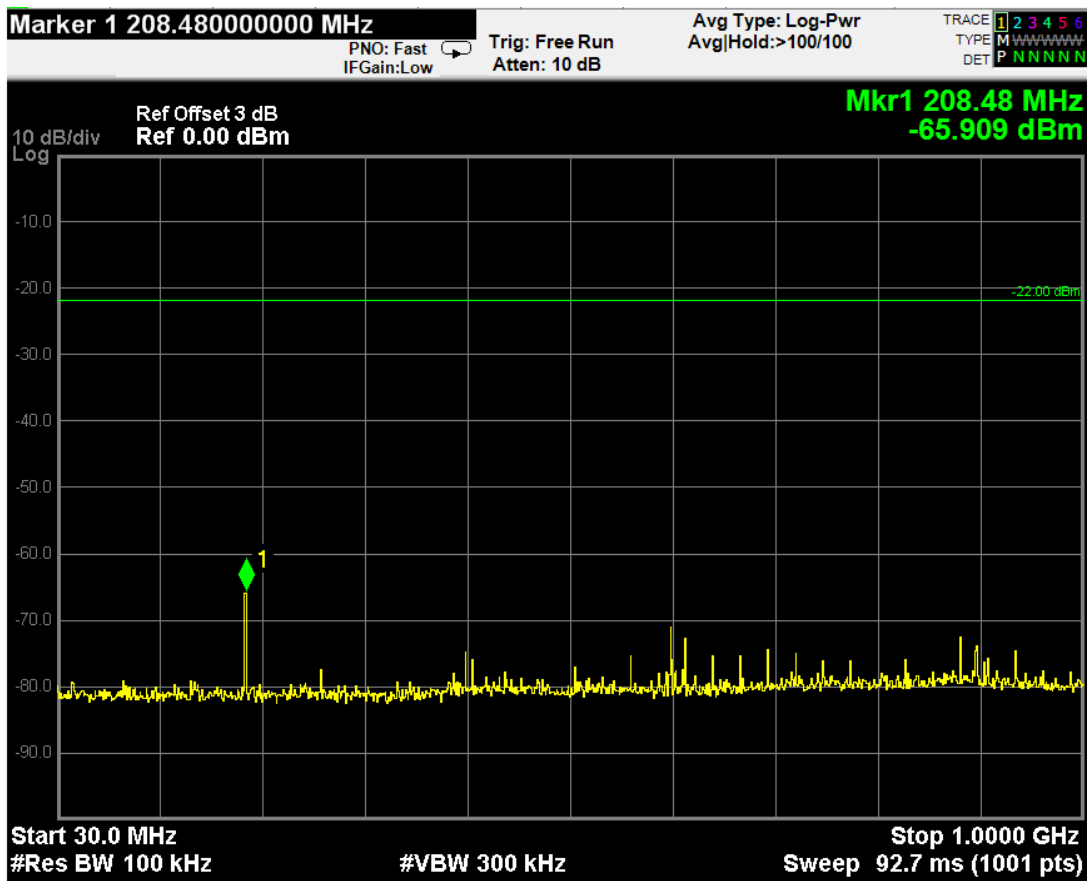


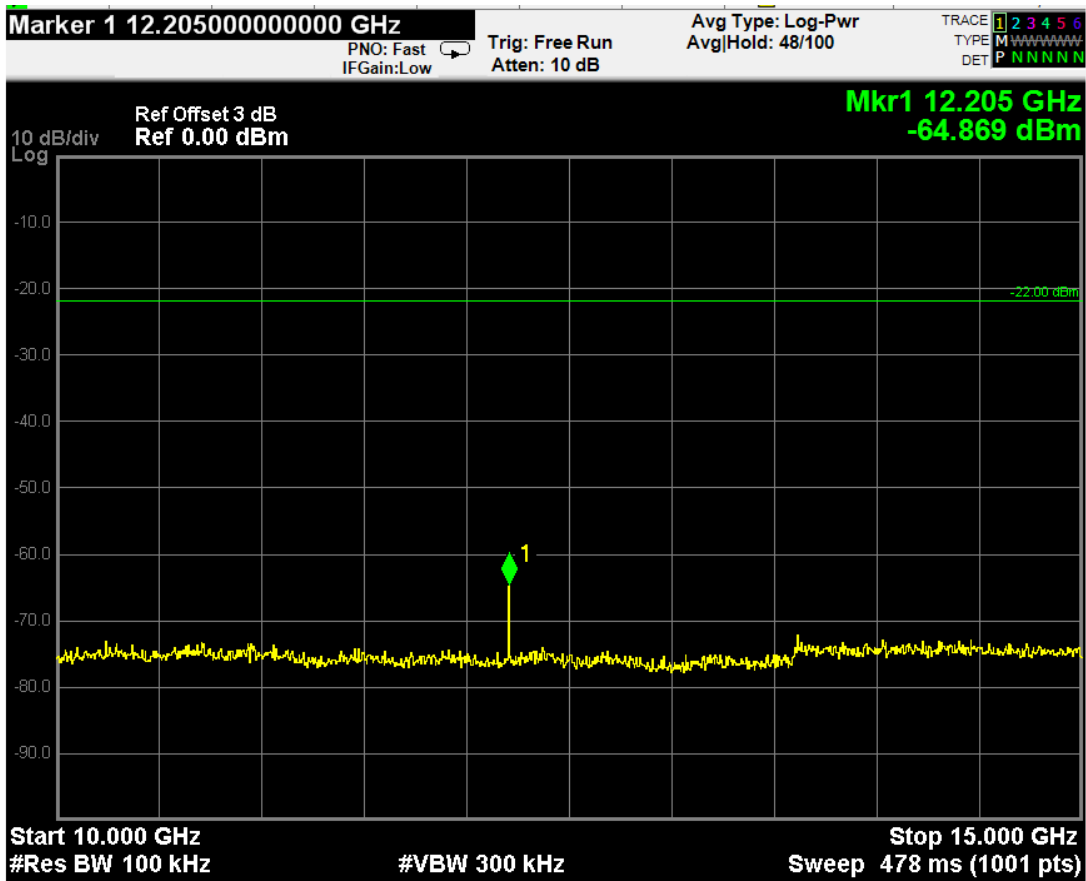
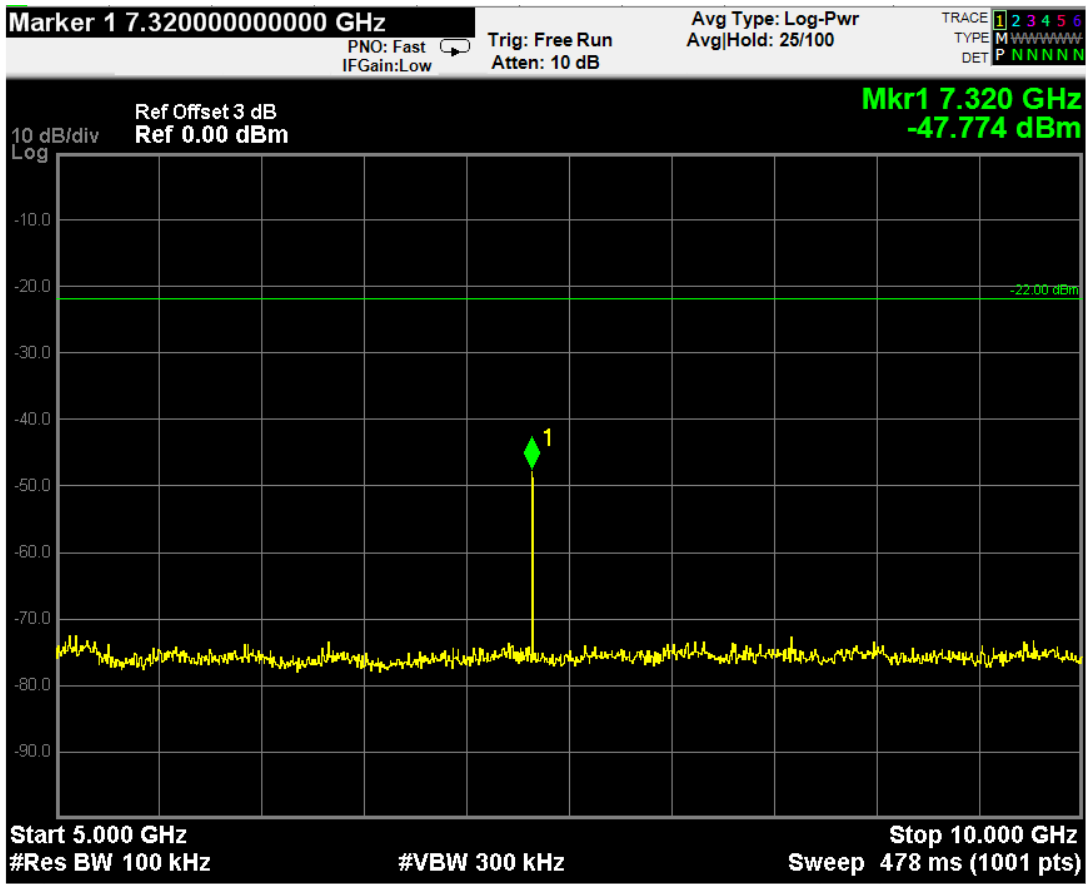


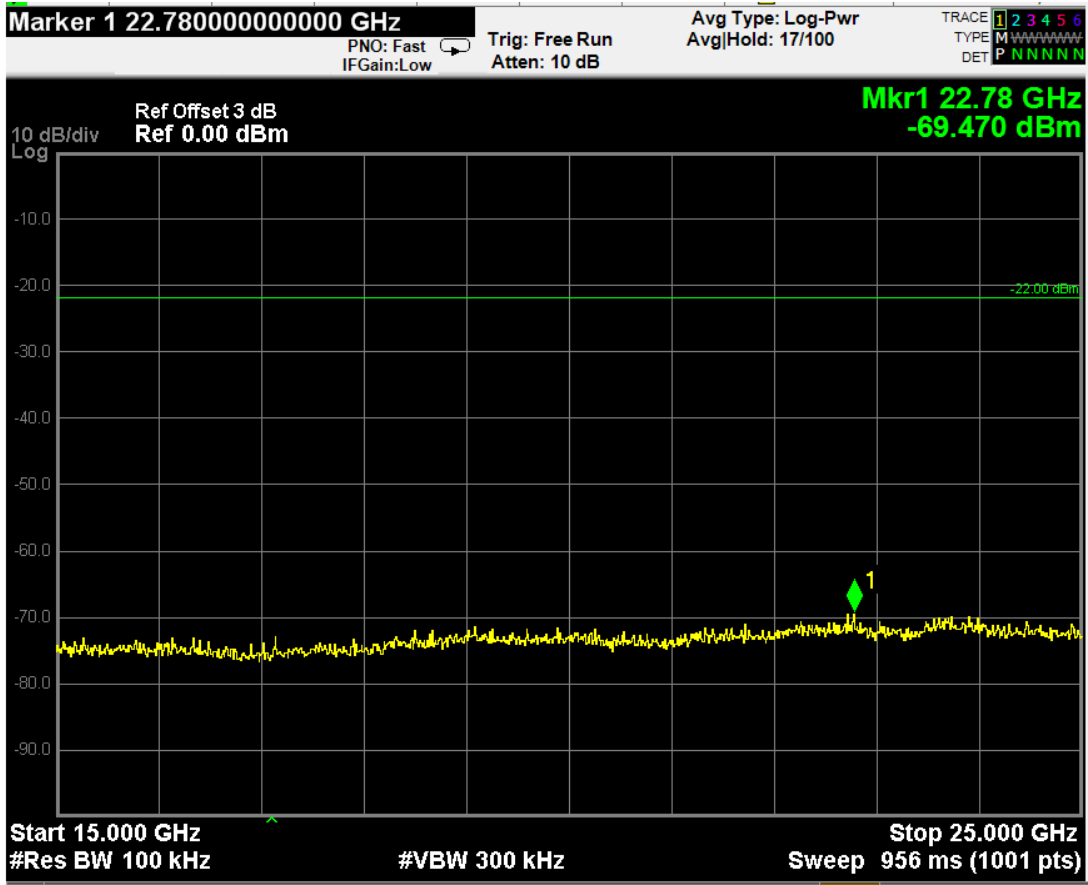




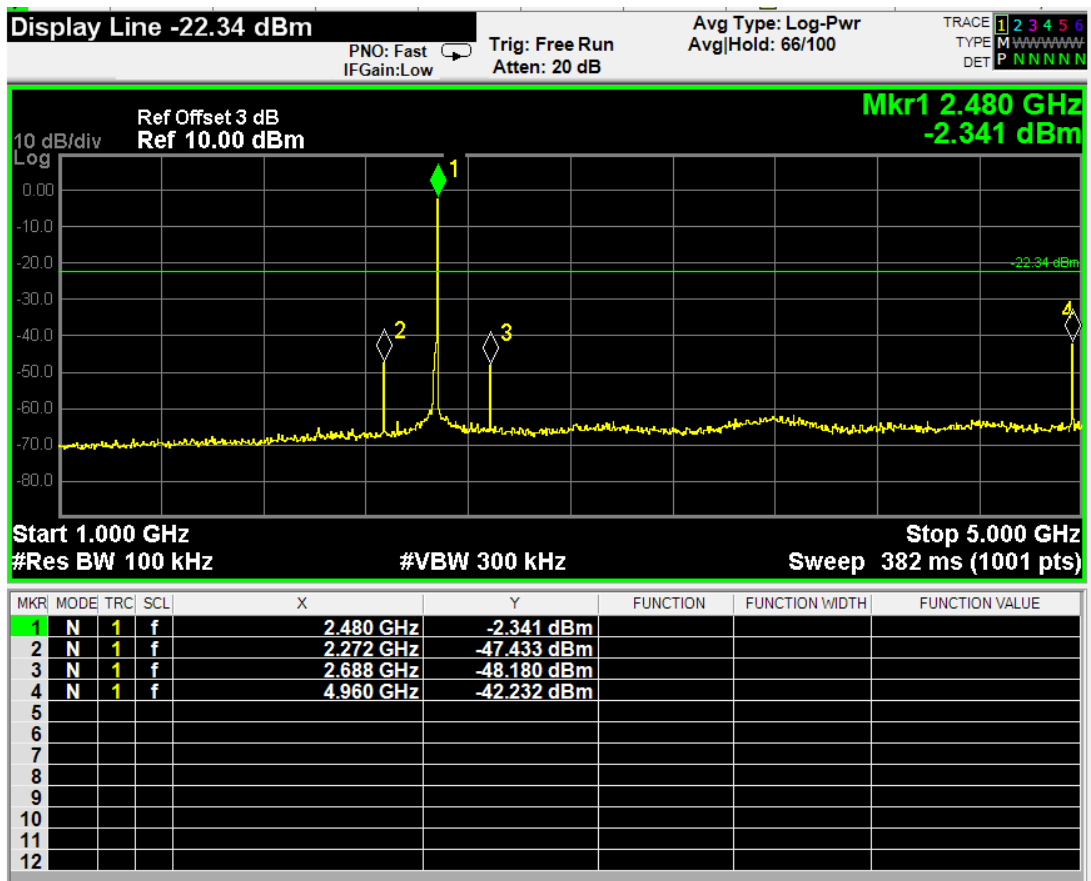
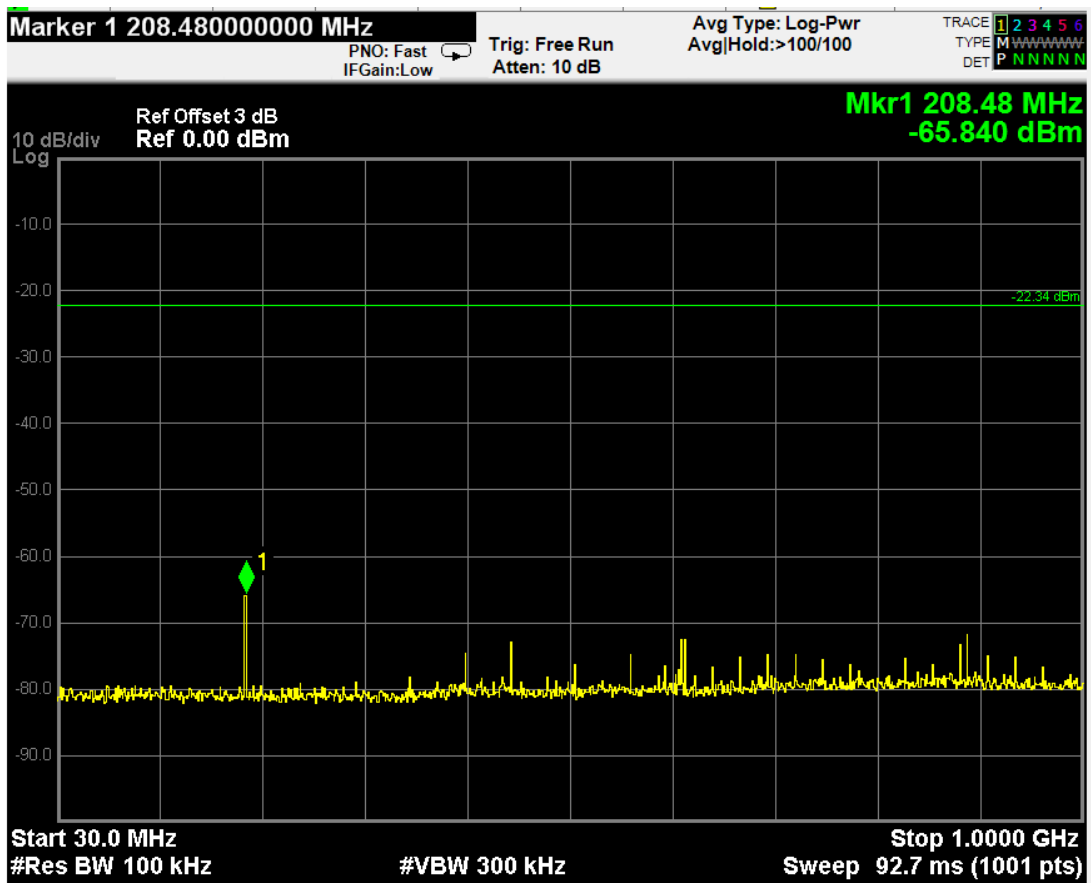
EDR Ch 39 (2441 MHz)

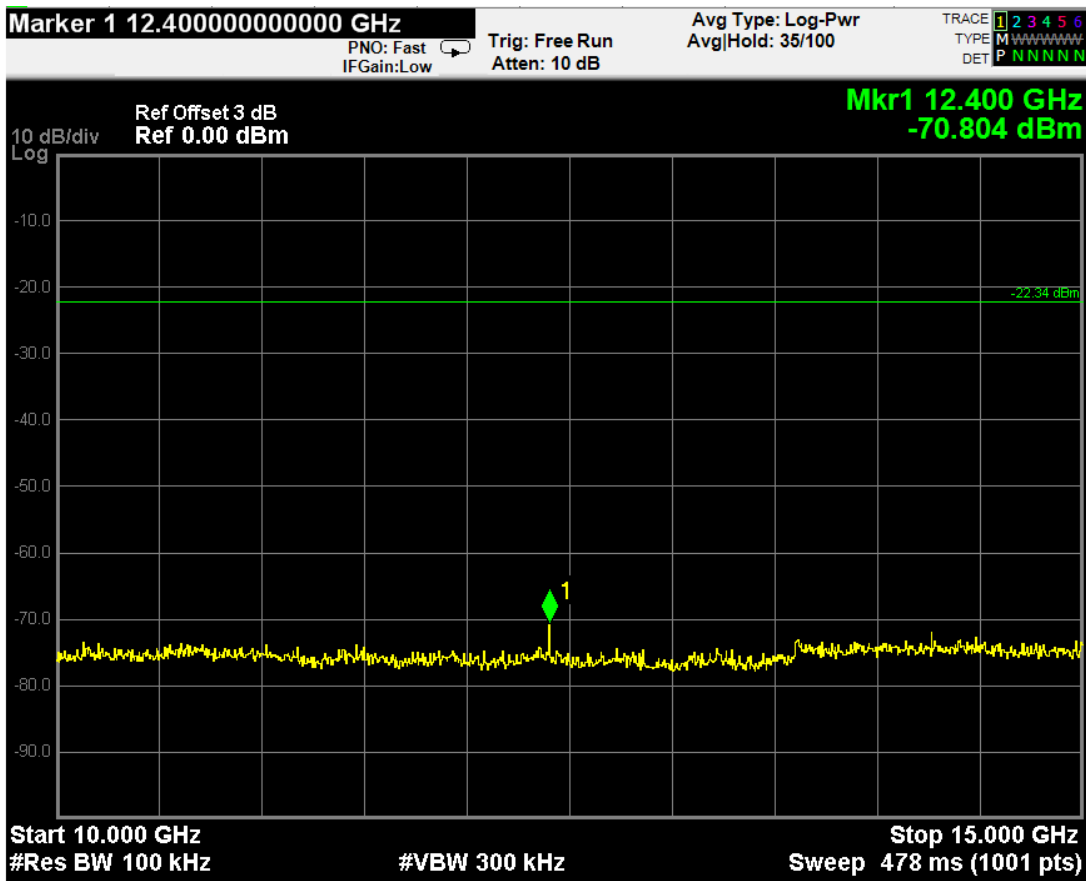
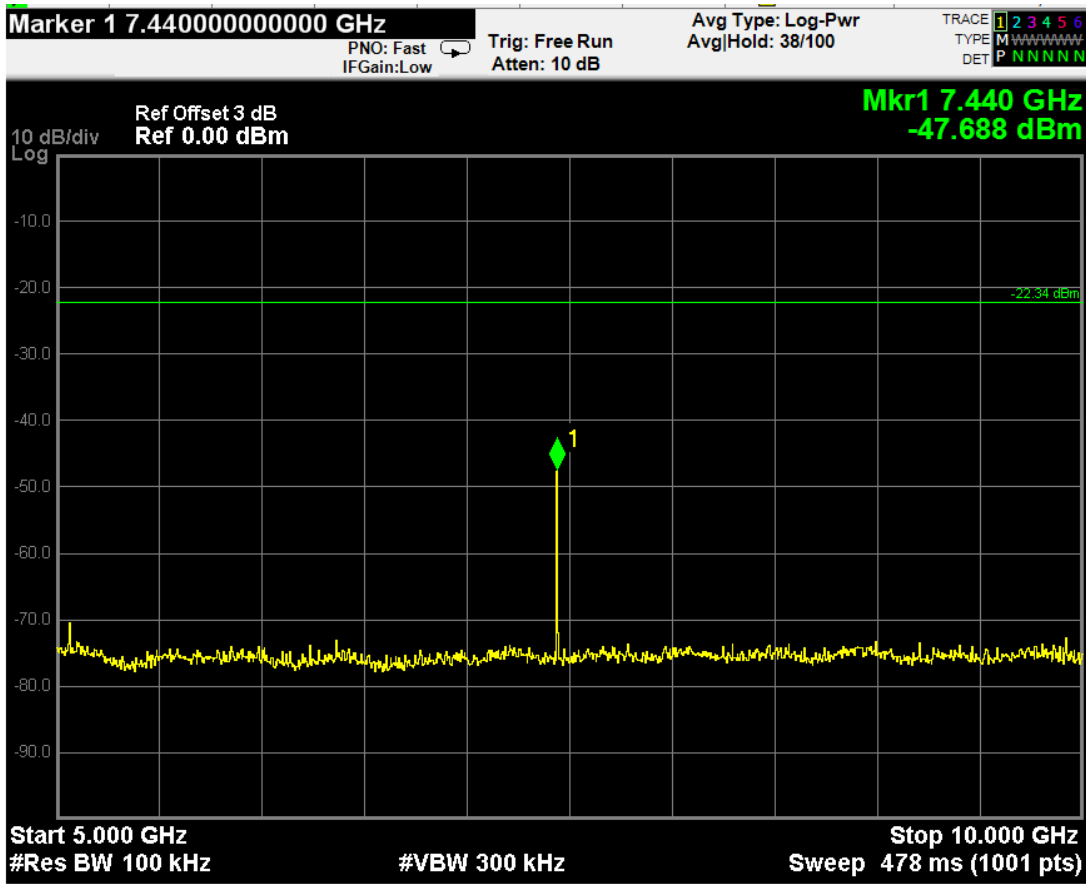






EDR Ch 78 (2480 MHz)







## 7 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS MEASUREMENT

### 7.1 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.   | Spectrum Analyzer | Agilent      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

### 7.2 Block Diagram of Test Setup

The same as section.4.2.

### 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

### 7.4 Operating Condition of EUT

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 of spectrum analyzer to 100kHz and VBW to 300kHz with span wide enough to fully capture the emission being measured.

The test procedure is defined in DA 00-705.



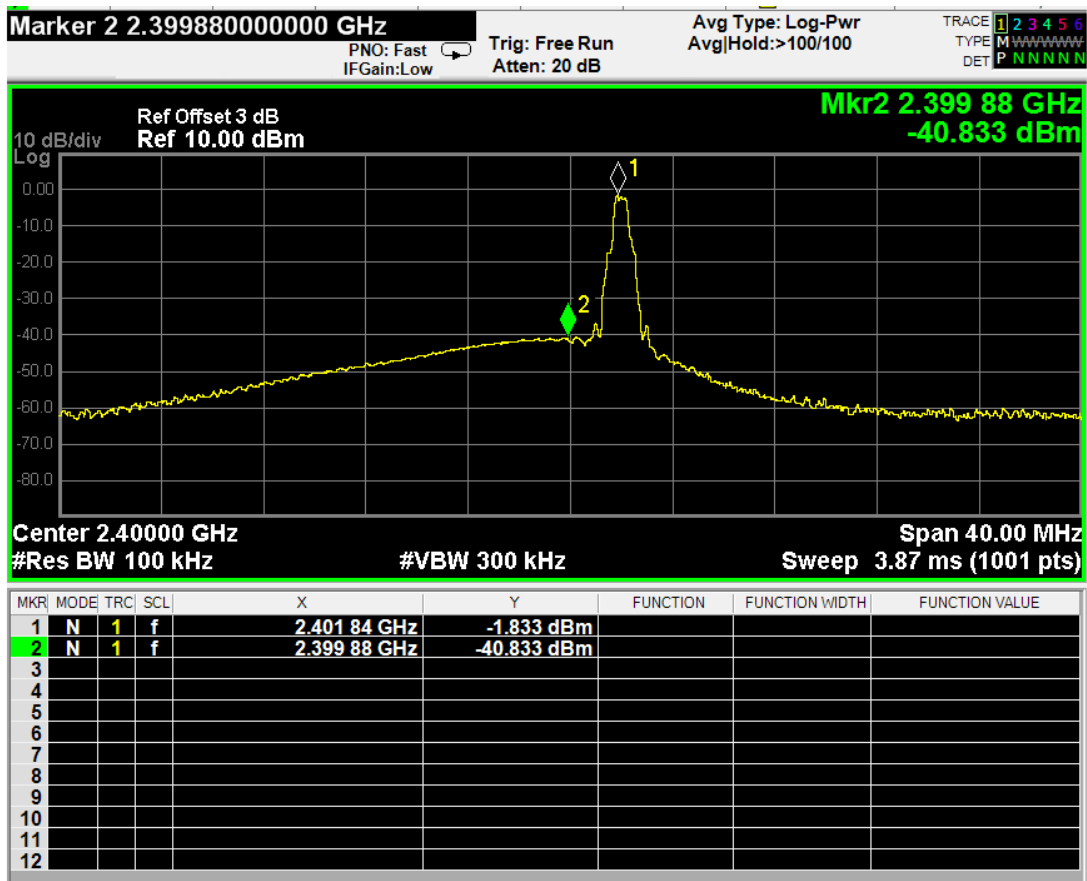
## 7.6 Test Results

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

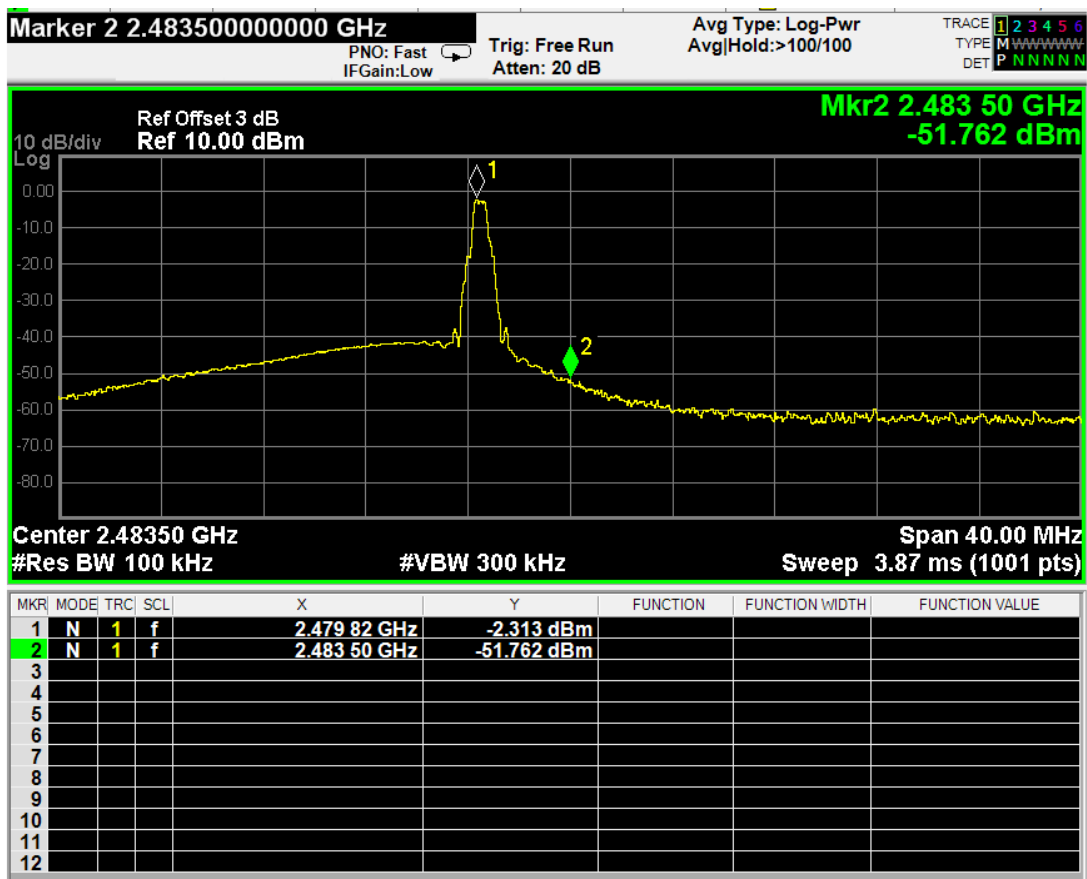
(Test Date: Feb. 10, 2014 Temperature: 21°C Humidity: 42 %)

| Location              | Channel | Frequency | Delta Marker<br>(worst) | Data Page | Result   |
|-----------------------|---------|-----------|-------------------------|-----------|--|
| Below<br>Band<br>Edge | 00      | 2402 MHz  | <b>38.831 dB</b>        | P50-51    | More than<br><b>20 dB</b><br>below the<br>highest<br>level of<br>the<br>desired<br>power |
| Upper<br>Band<br>Edge | 78      | 2480 MHz  | <b>46.123 dB</b>        | P52-53    |  |

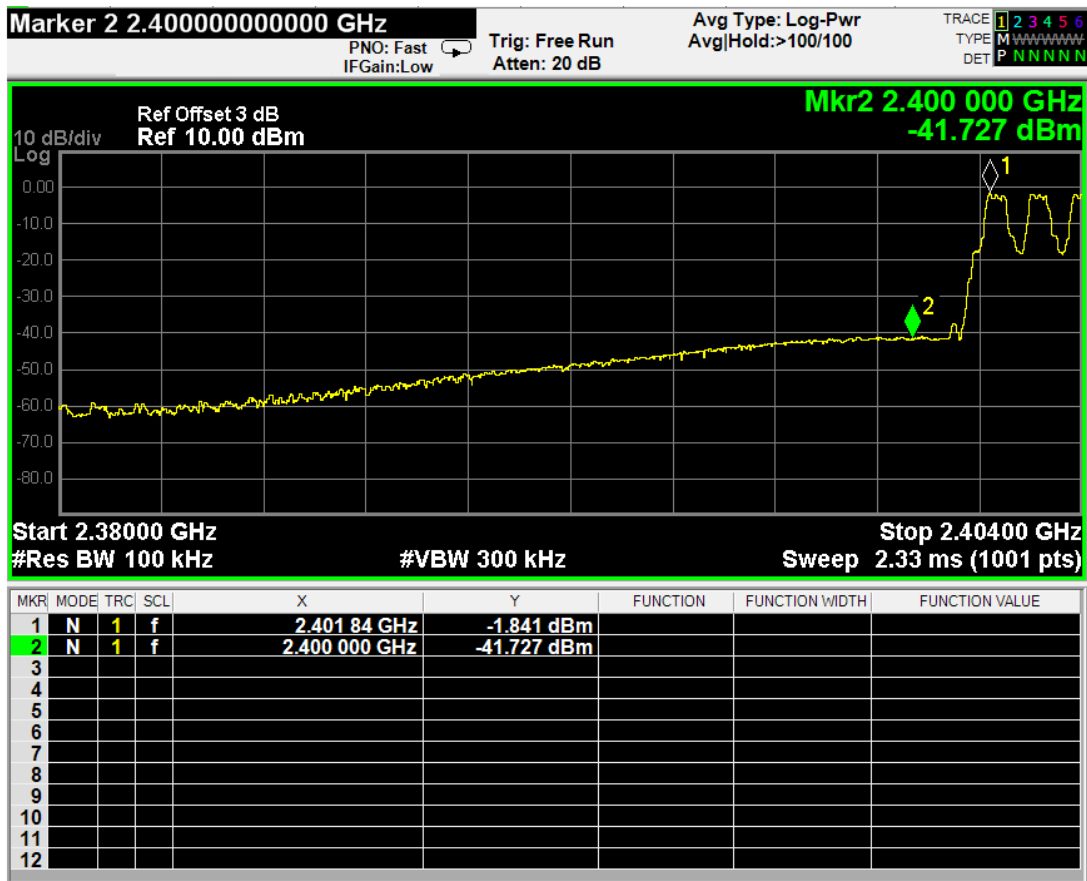
**Ch00 2402MHz (Below Edge 2400 MHz) NON-EDR**



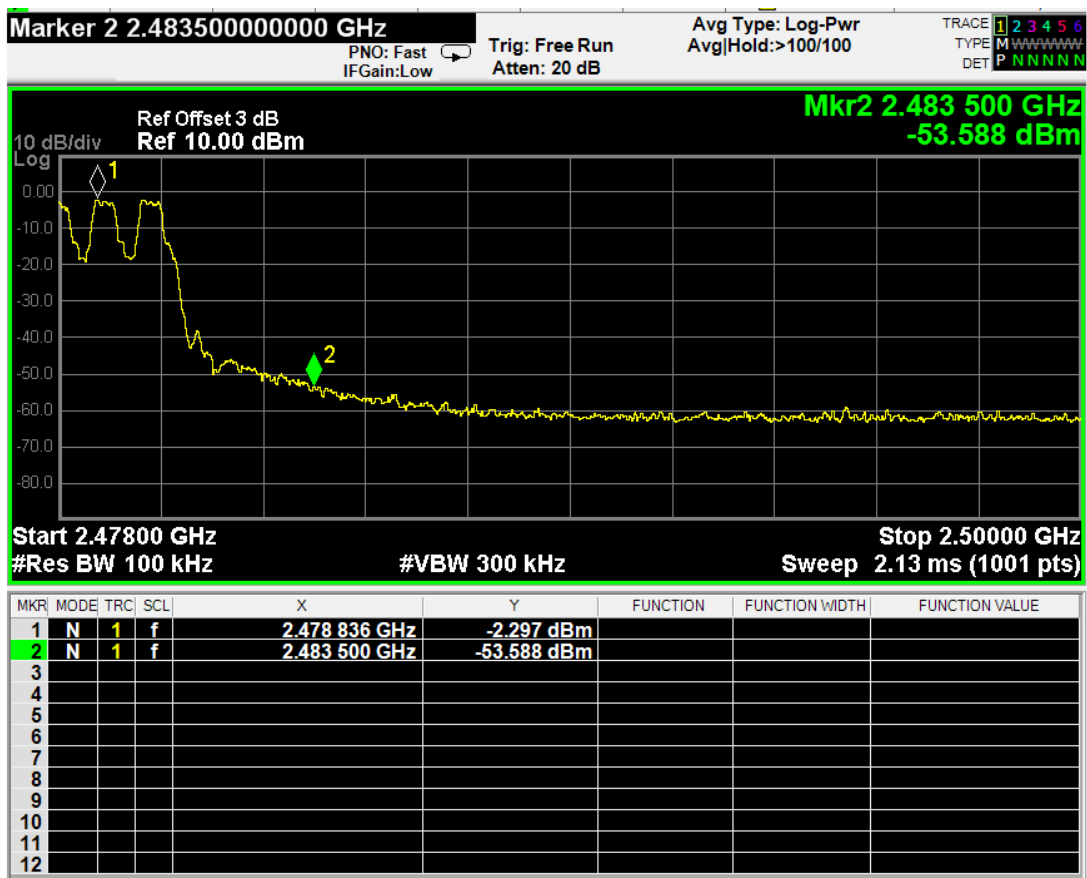
**Ch78 2480MHz (Upper Edge 2483.5 MHz) NON-EDR**



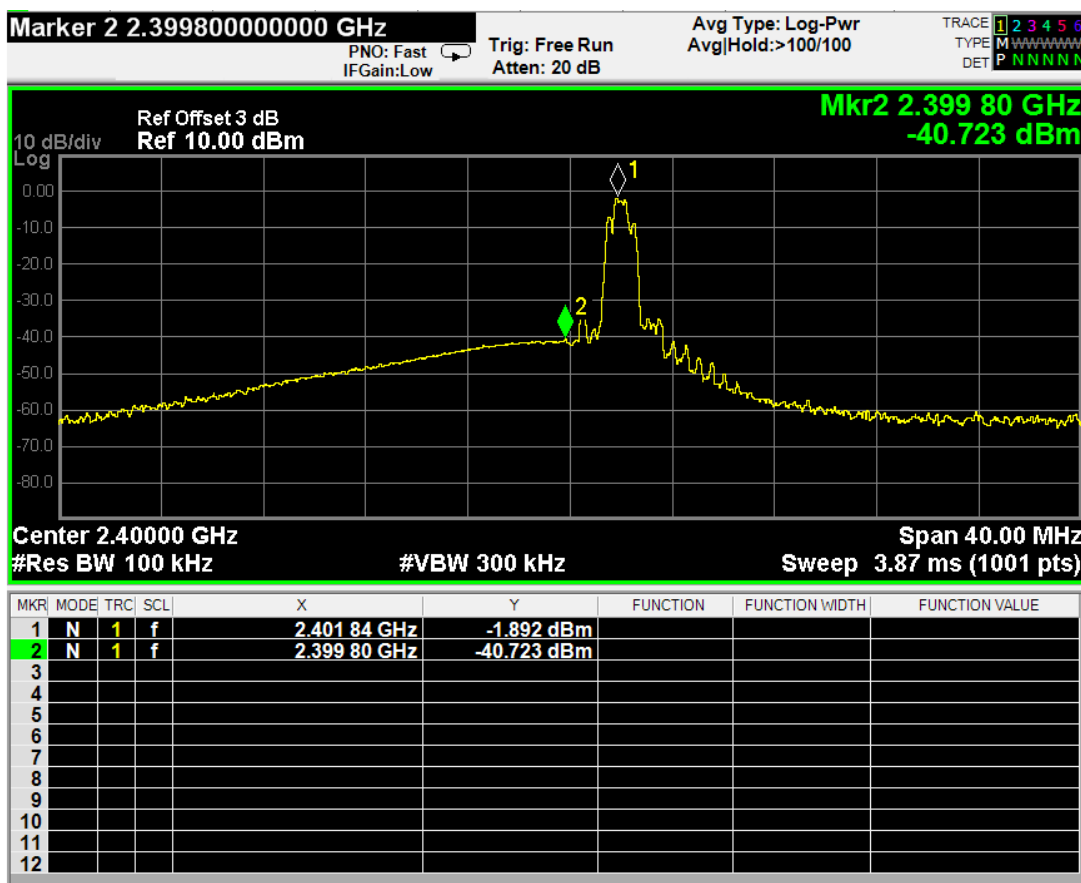
### Ch00 2402MHz (Below Edge 2400 MHz) NON-EDR HOPPING



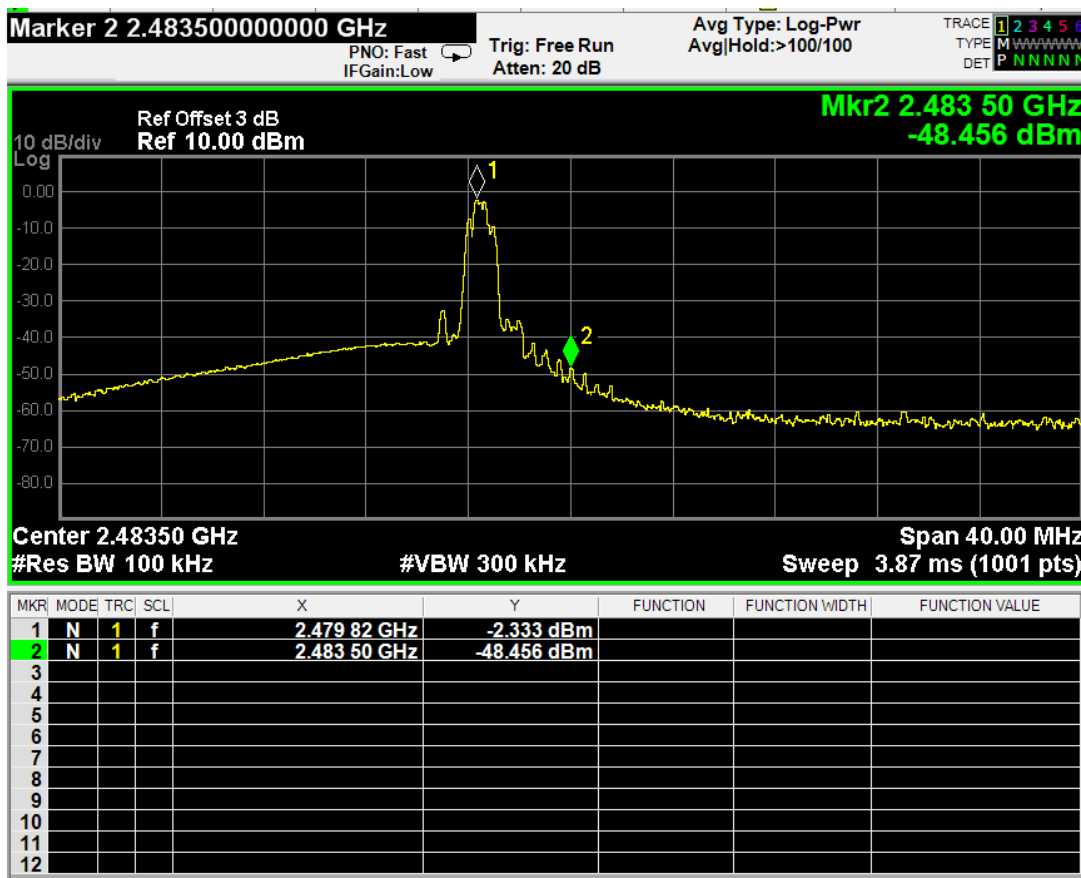
### Ch78 2480MHz (Upper Edge 2483.5 MHz) NON-EDR HOPPING



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



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





## 8 NUMBER OF HOPPING FREQUENCIES

### MEASUREMENT

#### 8.1 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.   | Spectrum Analyzer | Agilent      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

#### 8.2 Block Diagram of Test Setup

The same as section.4.2.

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

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

#### 8.4 Operating Condition of EUT

Enable the EUT hopping function.

#### 8.5 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.

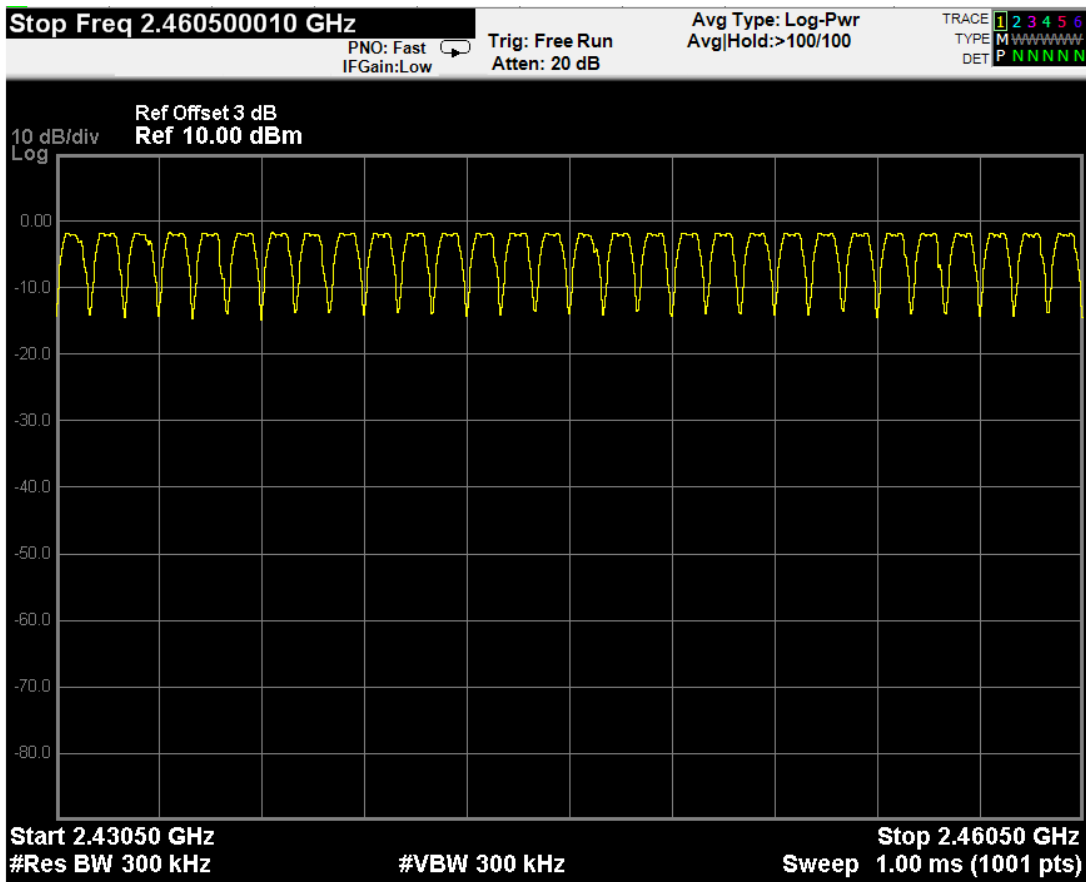
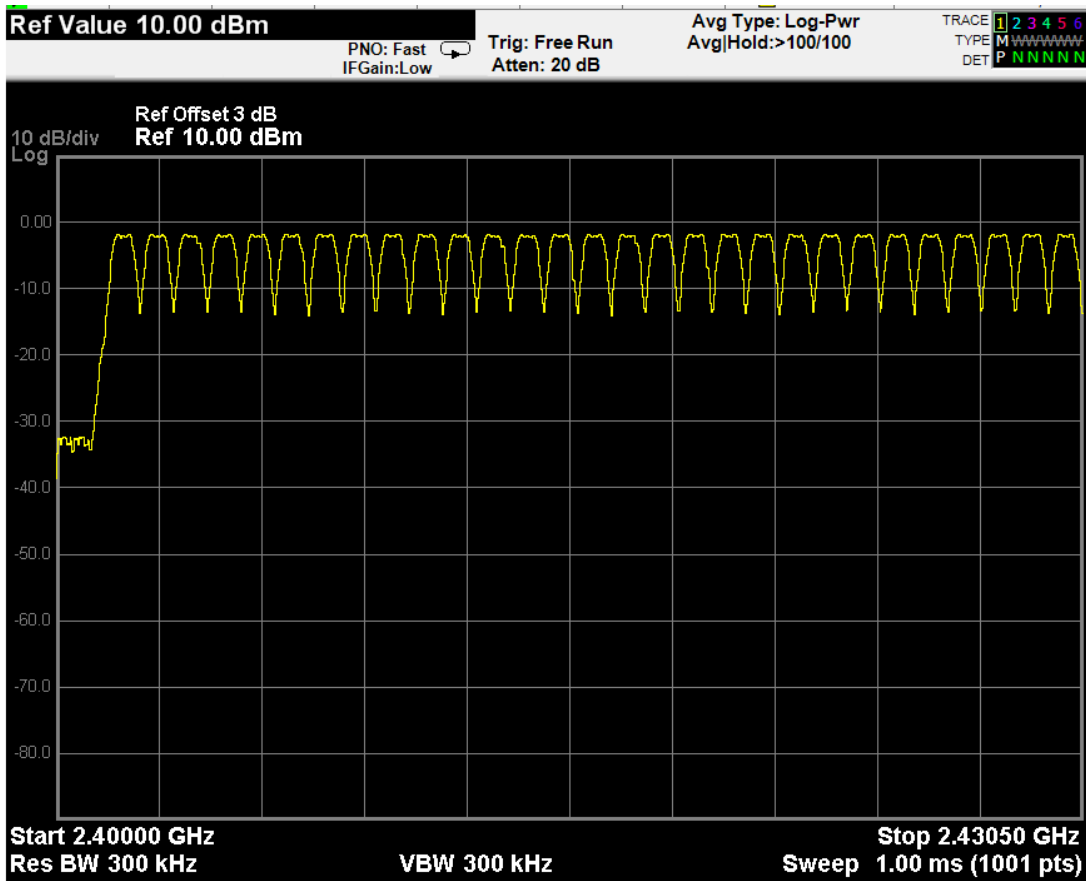
The test procedure is defined in DA 00-705.

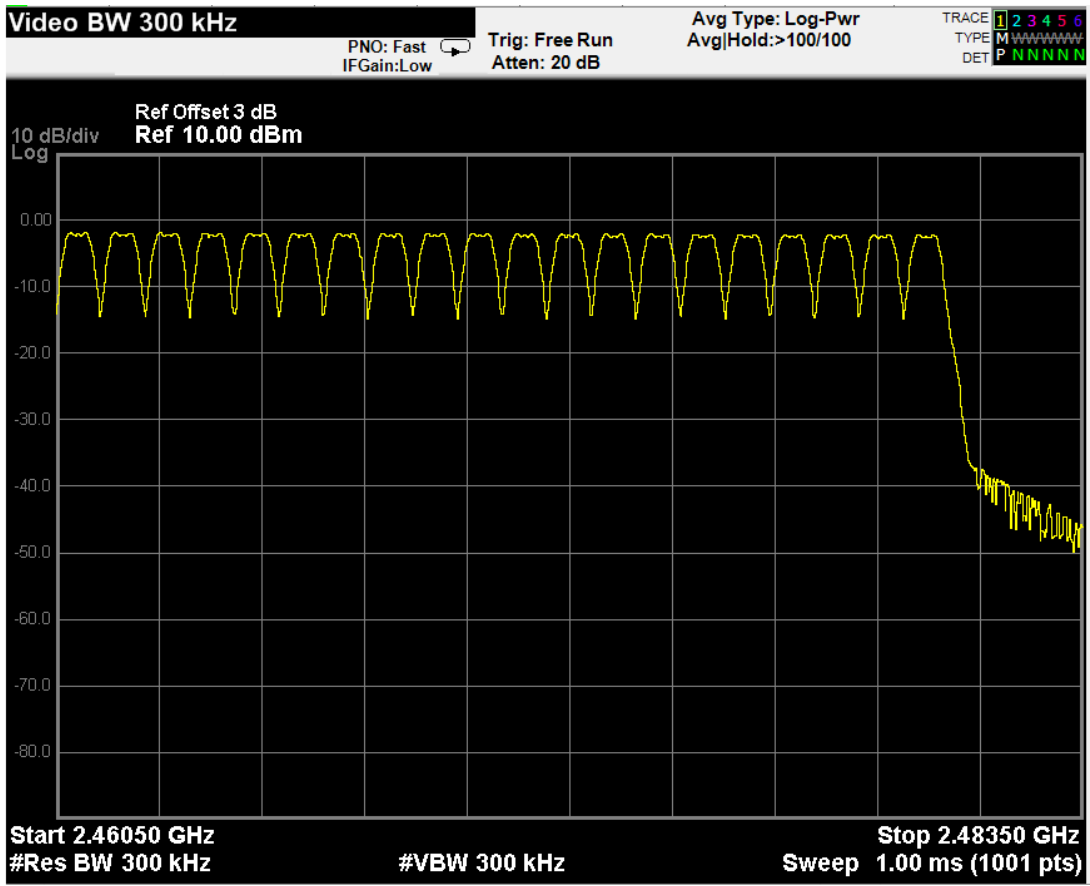
#### 8.6 Test Results

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

(Test Date: Feb. 12, 2014 Temperature: 21°C Humidity: 42 %)

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







## 9 CARRIER FREQUENCY SEPARATION

### 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.   | Spectrum Analyzer | Agilent      | N9010A    | MY52221182 | Jun 14, 2013 | Jun 14, 2014 |

#### 9.2 Block Diagram of Test Setup

The same as section.4.2.

#### 9.3 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.

#### 9.4 Operating Condition of EUT

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 = 100kHz, VBW = 300kHz, span = wide enough to capture the peaks of two adjacent channels. 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.

#### 9.6 Test Results

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

(Test Date: Feb. 12, 2014 Temperature: 21°C Humidity: 42 %)

| Mode    | Result    | Limit<br>(2/3 of the 20dB<br>bandwidth) | Conclusion |
|---------|-----------|---|------------|
| Non-EDR | 0.999 MHz | > 0.697 MHz                             | Pass       |
| EDR     | 0.999 MHz | > 0.789 MHz                             | Pass       |



## 10 DEWLL TIME 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, 2013 | Sep 11, 2014 |

### 10.2 Block Diagram of Test Setup

The same as section.4.2.

### 10.3 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.

### 10.4 Operating Condition of EUT

Enable the EUT hopping function.

### 10.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 1MHz, VBW = 1MHz, 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.

### 10.6 Test Results

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

(Test Date: Feb. 10, 2014 Temperature: 21°C Humidity: 42 %)

| No. | Channel | Frequency | Data Page |
|-----|---------|-----------|-----------|
| 1.  | 00      | 2402 MHz  | P60-66    |
| 2.  | 39      | 2441 MHz  | P67-73    |
| 3.  | 78      | 2480 MHz  | P74-80    |

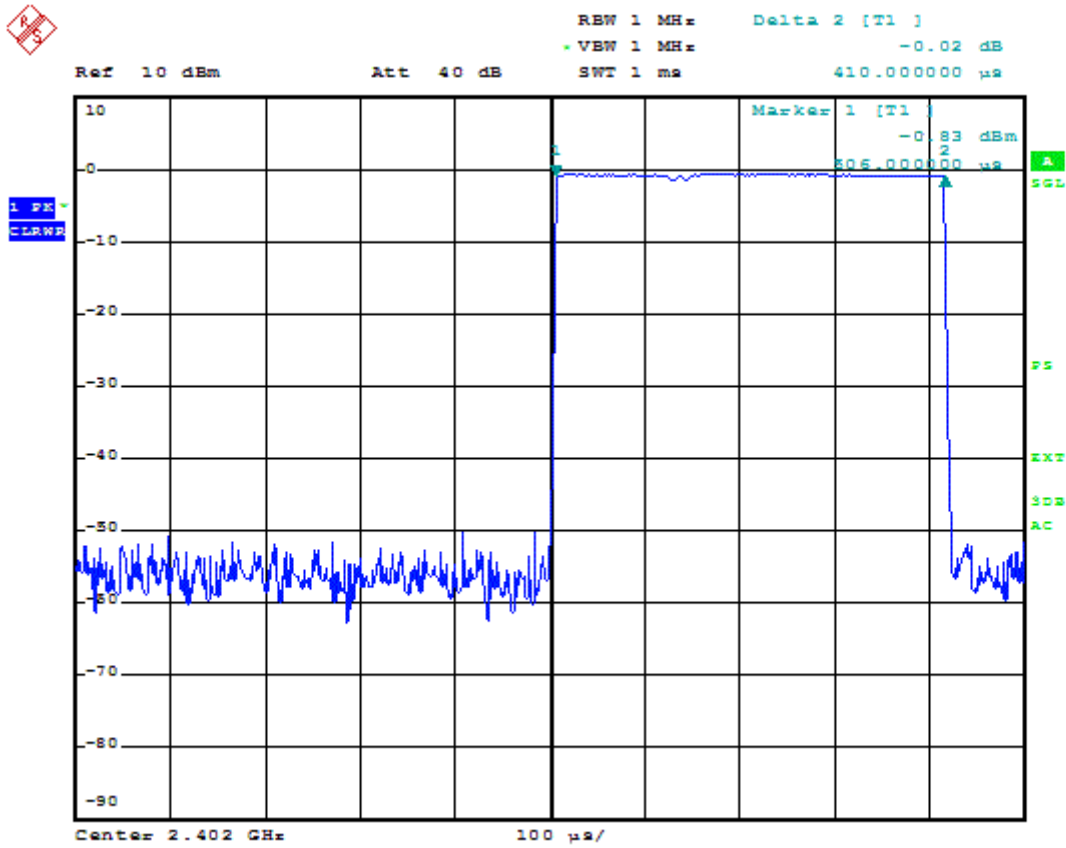
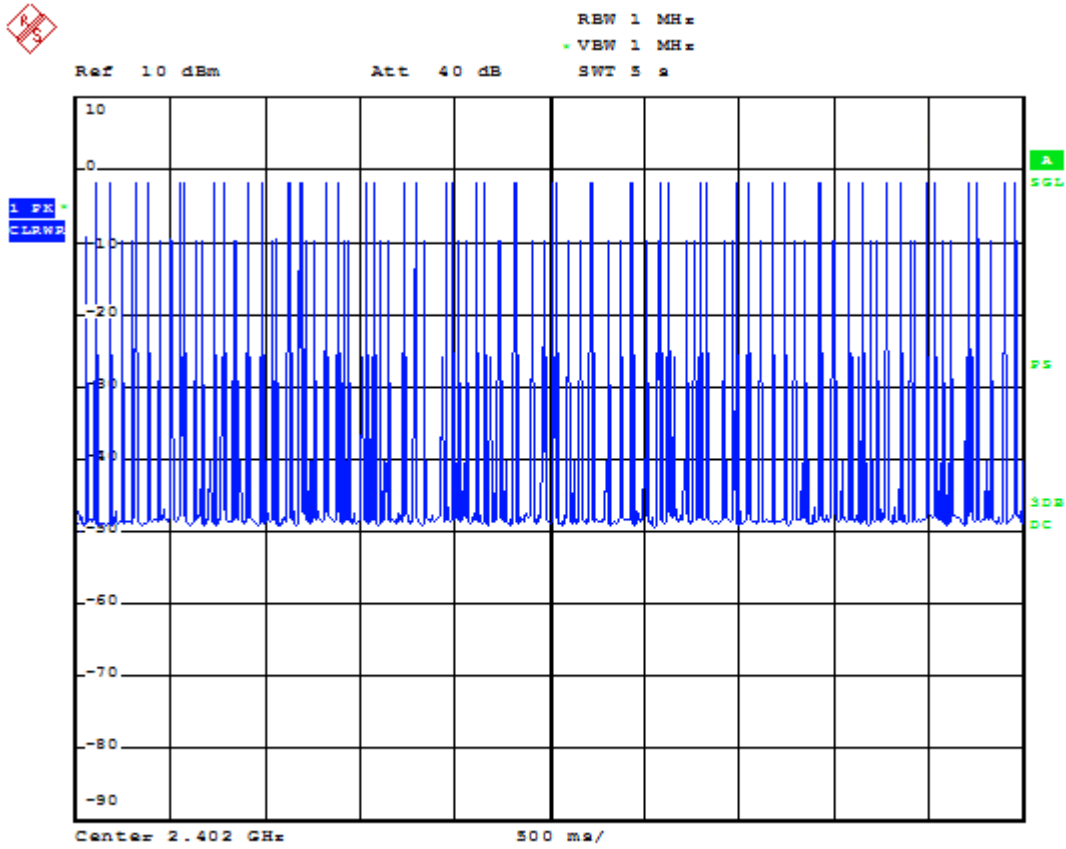
**Ch 00 2402MHz NON-EDR**

| 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  | 48 times/5 sec * 31.6=303 times                                 | 0.410                              | 303*0.410 = 124.2 | < 400        | Pass       |
| DH3  | 24 times/5 sec * 31.6=152 times                                 | 0.368                              | 152*0.368 = 55.9  | < 400        | Pass       |
| DH5  | 17 times/5 sec * 31.6=107 times                                 | 0.366                              | 107*0.366 = 39.2  | < 400        | Pass       |

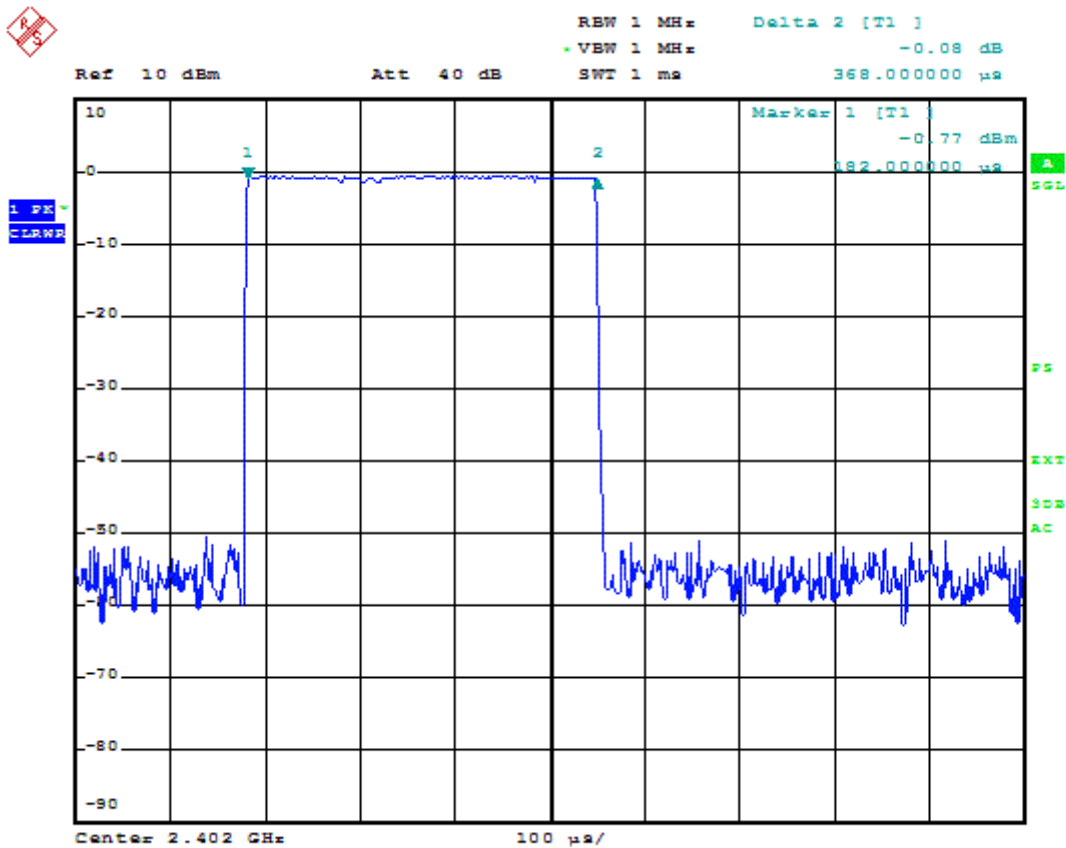
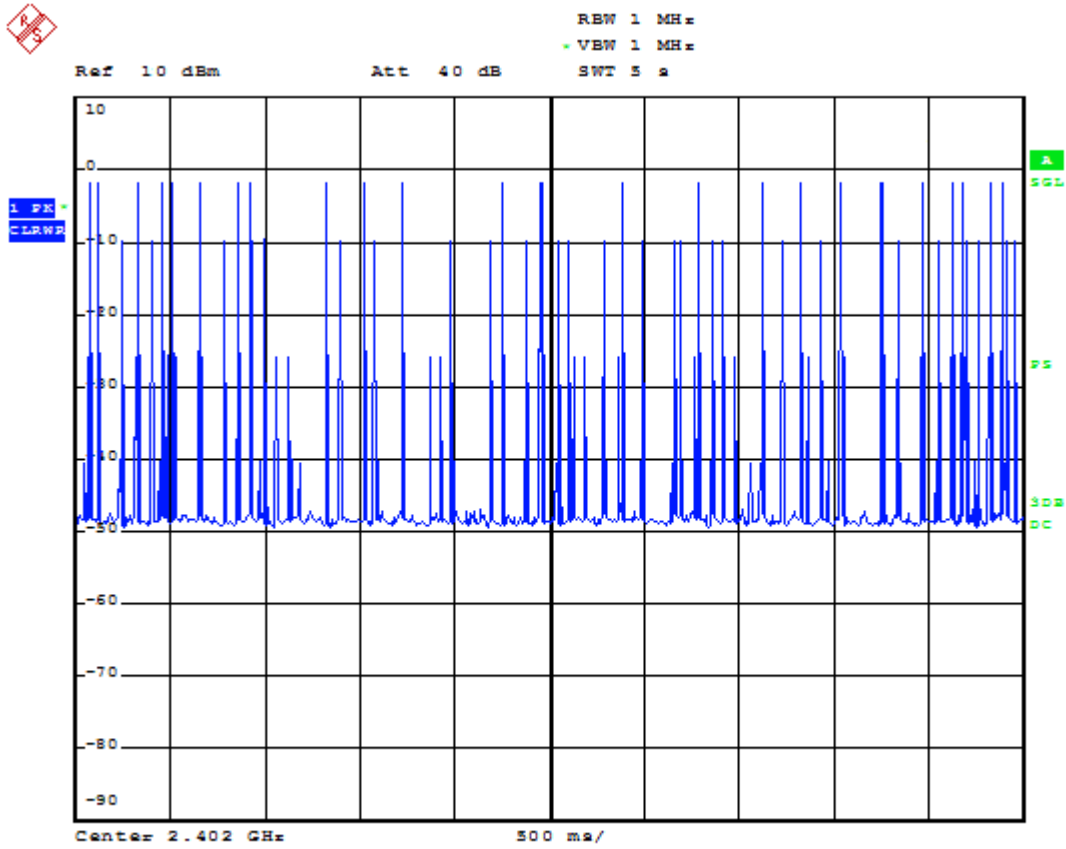
**Ch 00 2402MHz EDR**

| 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  | 48 times/5 sec * 31.6=303 times                                 | 0.408                              | 303*0.408 = 123.6 | < 400        | Pass       |
| DH3  | 30 times/5 sec * 31.6=190 times                                 | 0.165                              | 190*0.165 = 31.4  | < 400        | Pass       |
| DH5  | 16 times/5 sec * 31.6=101 times                                 | 0.167                              | 101*0.167 = 16.9  | < 400        | Pass       |

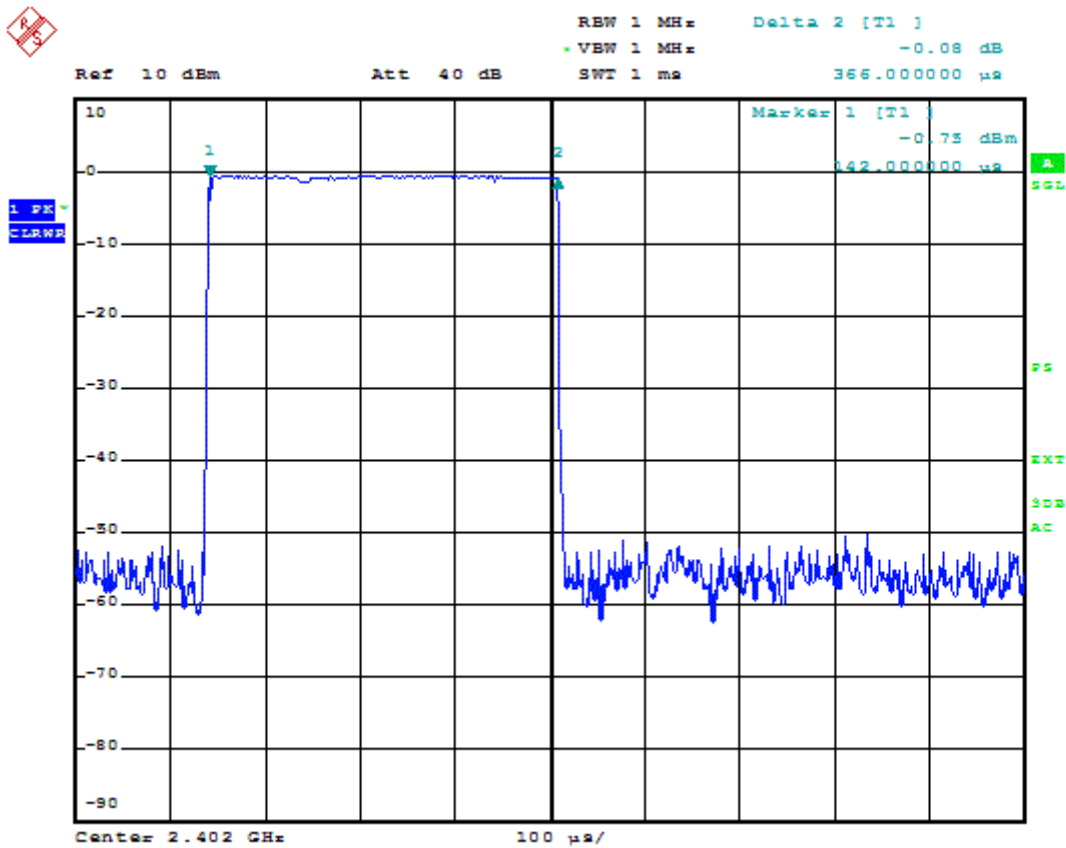
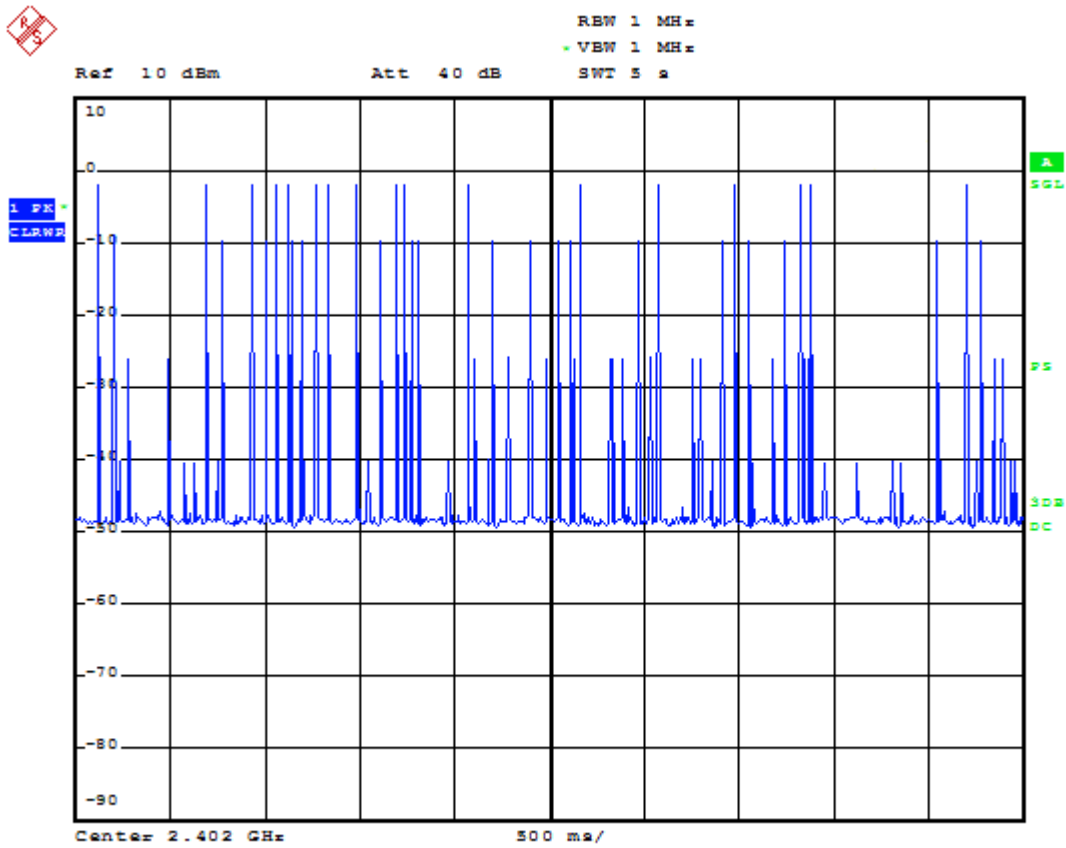
For Ch 00 2402MHz NON-EDR DH1



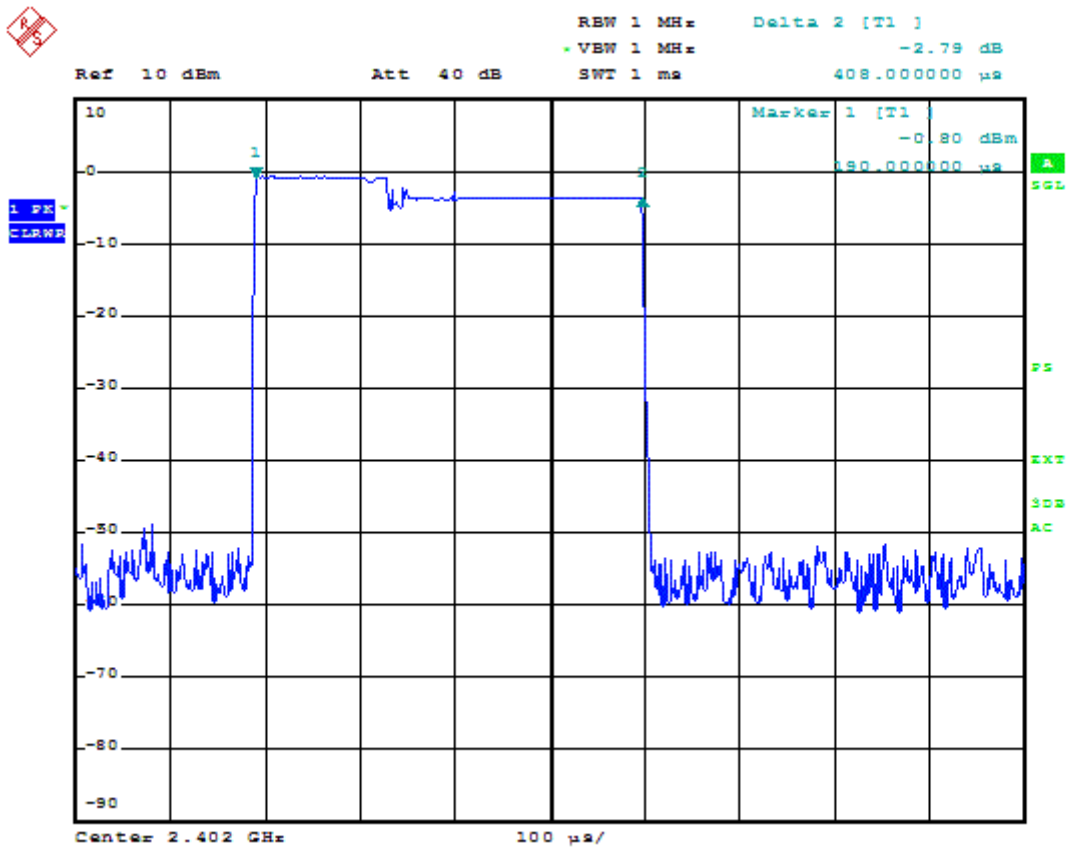
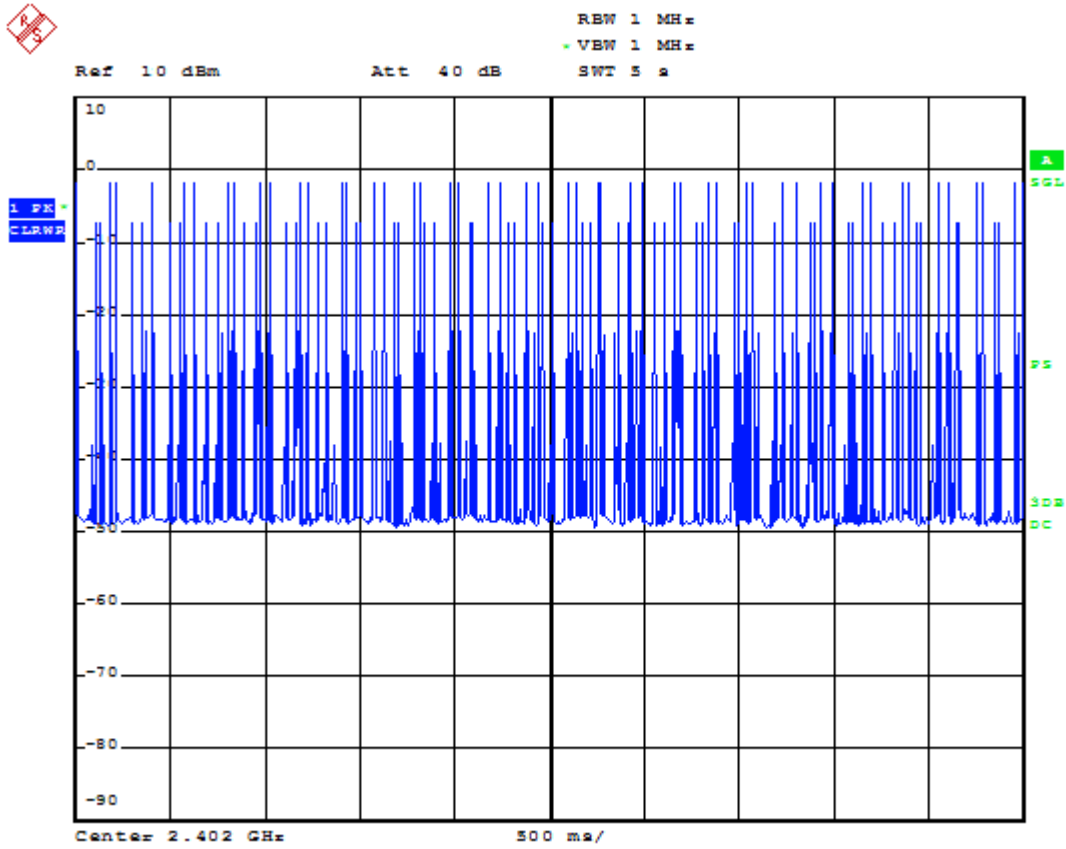
For Ch 00 2402MHz NON-EDR DH3



For Ch 00 2402MHz NON-EDR DH5

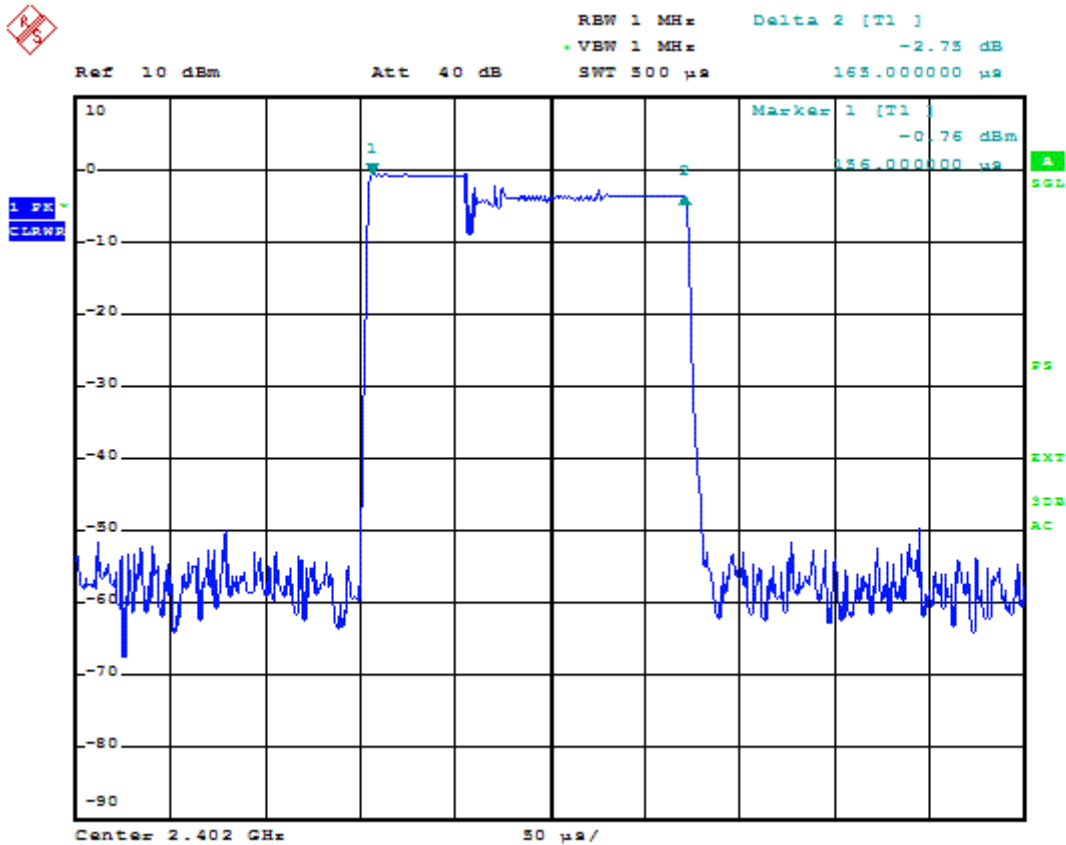
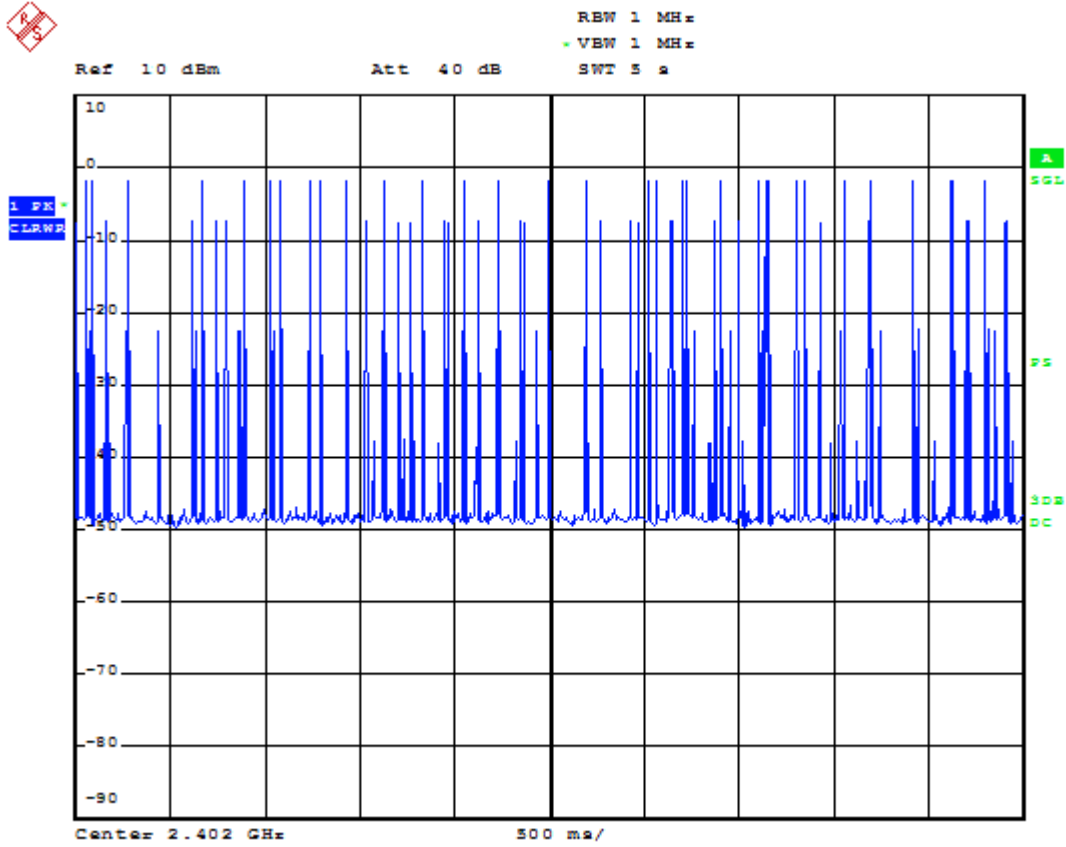


For Ch 00 2402MHz EDR DH1

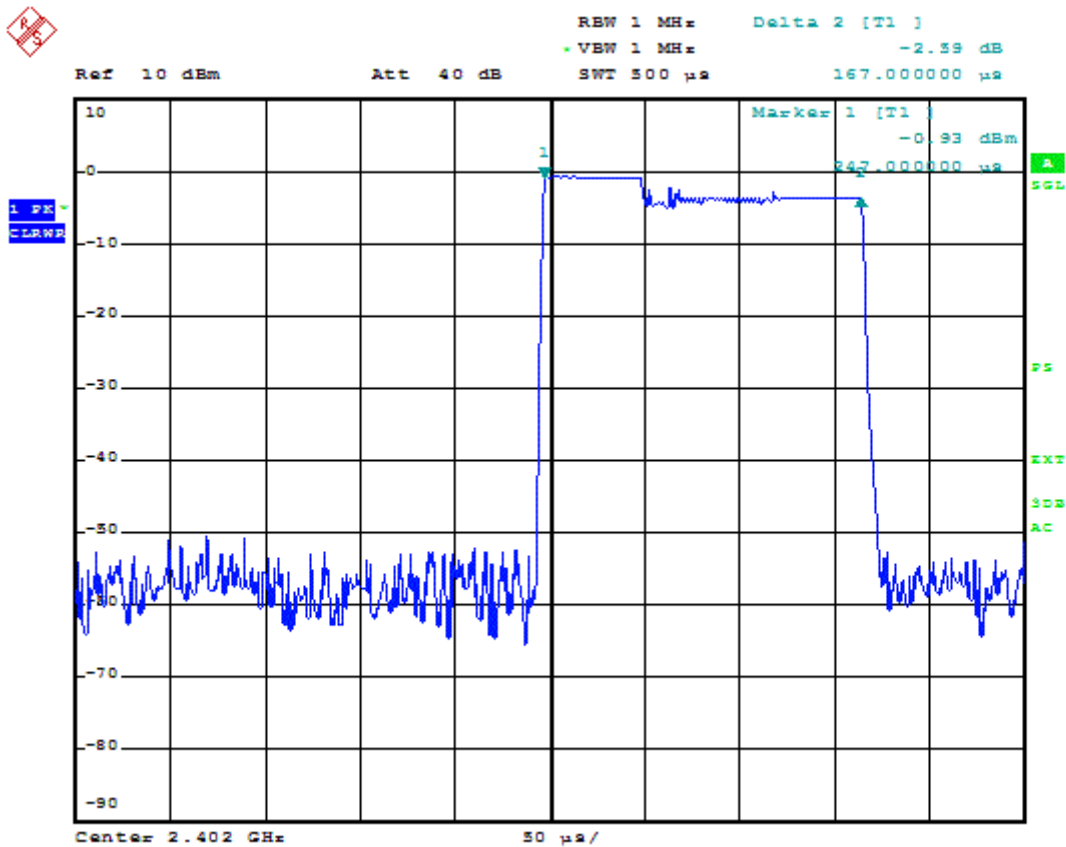
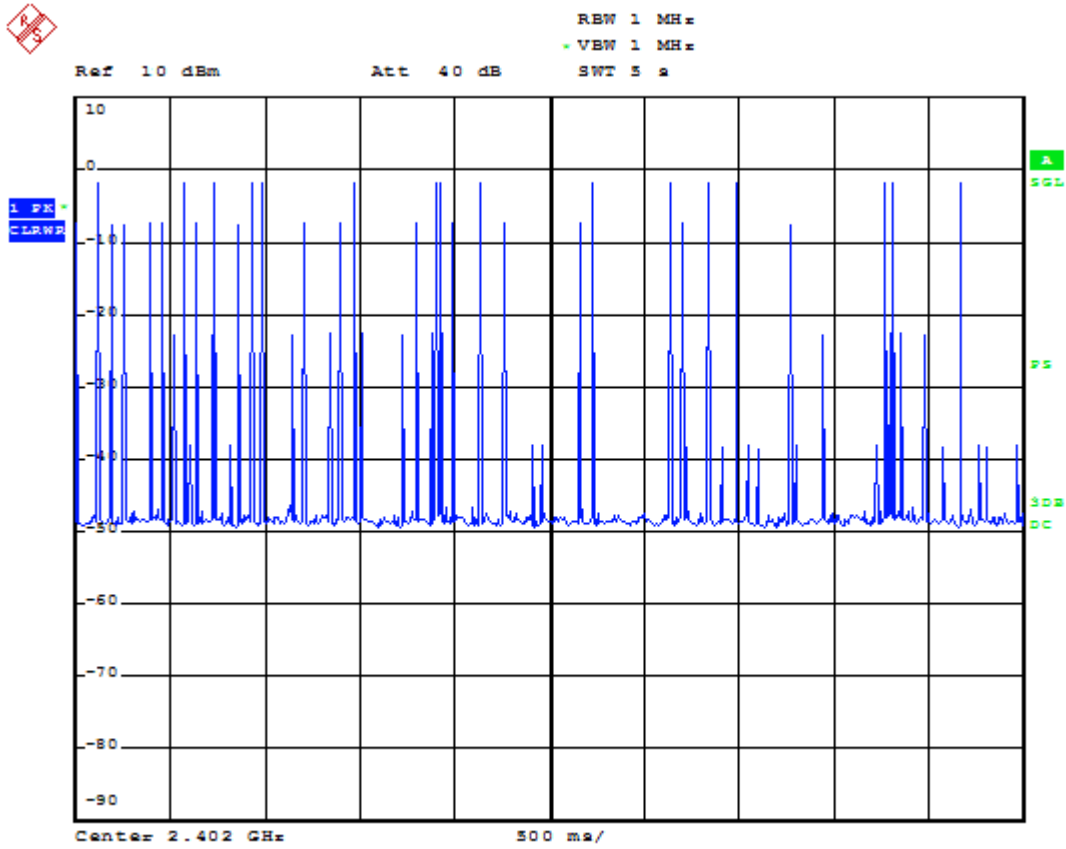




For Ch 00 2402MHz EDR DH3



For Ch 00 2402MHz EDR DH5



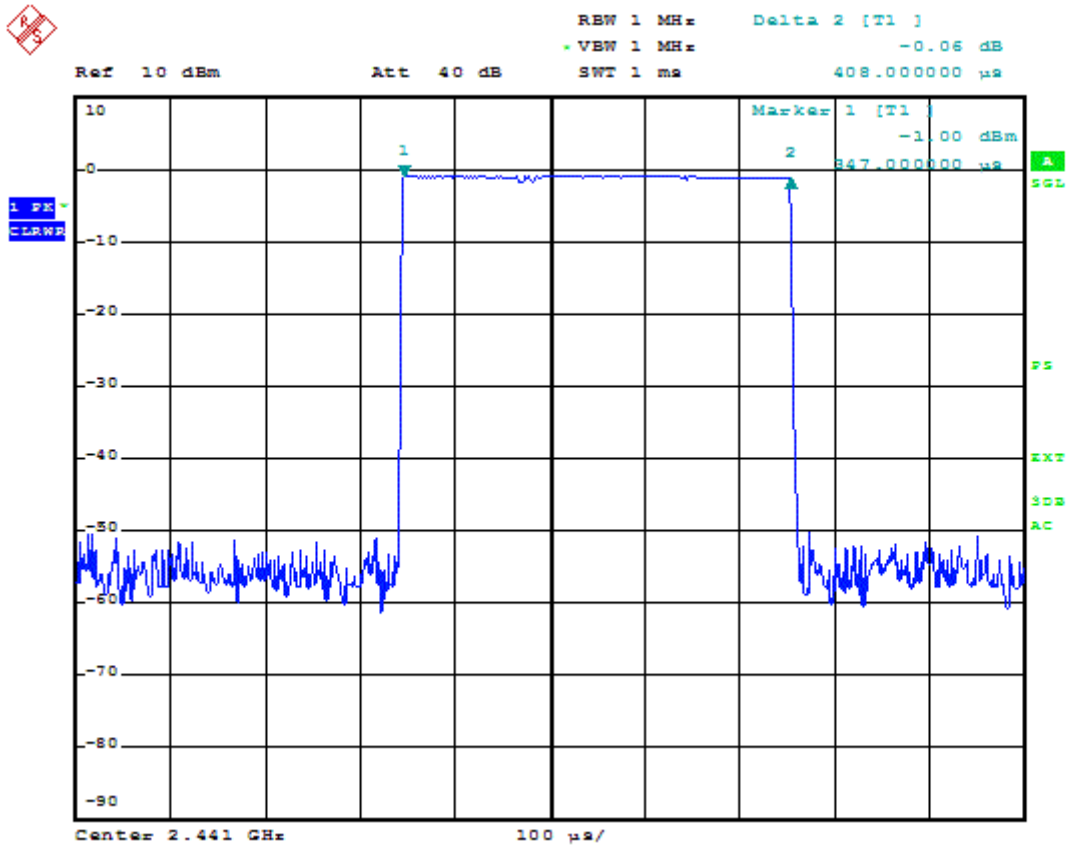
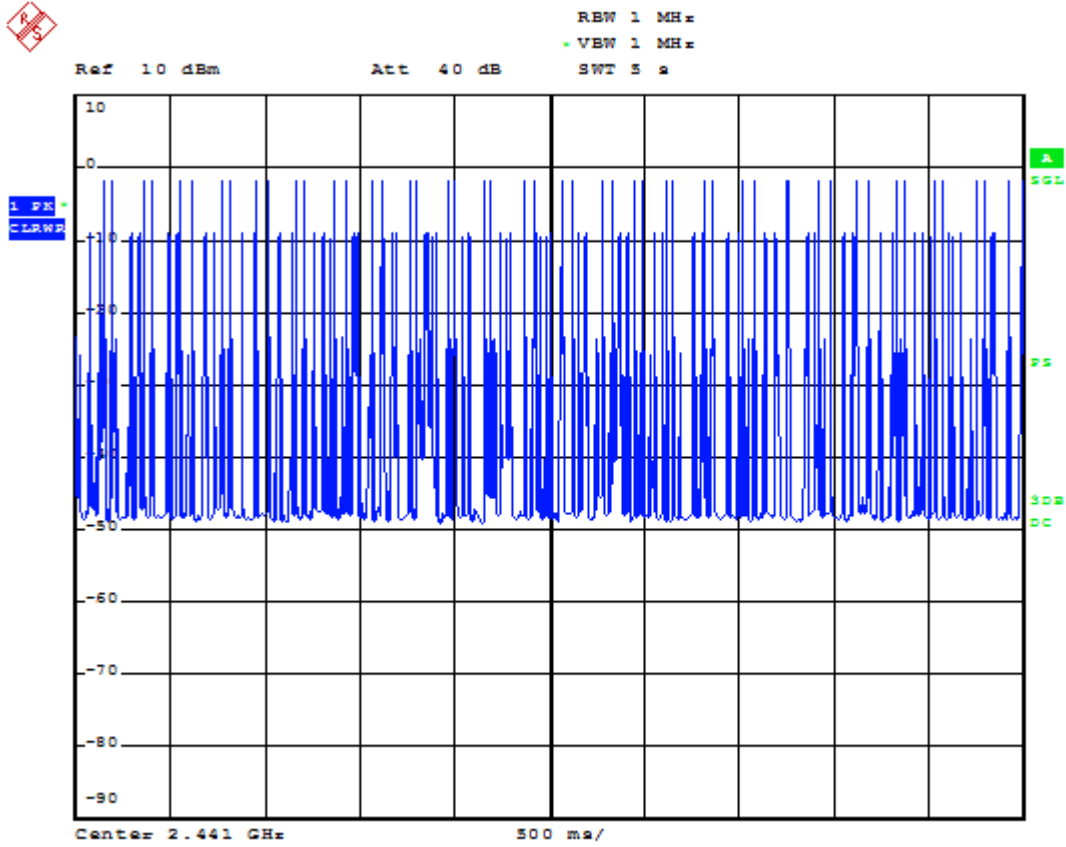
**Ch 39 2441MHz NON-EDR**

| 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  | 49 times/5 sec * 31.6=310 times                                 | 0.408                              | 310*0.408 = 126.5 | < 400        | Pass       |
| DH3  | 24 times/5 sec * 31.6=152 times                                 | 0.368                              | 152*0.368 = 55.9  | < 400        | Pass       |
| DH5  | 17 times/5 sec * 31.6=107 times                                 | 0.368                              | 107*0.368 = 39.4  | < 400        | Pass       |

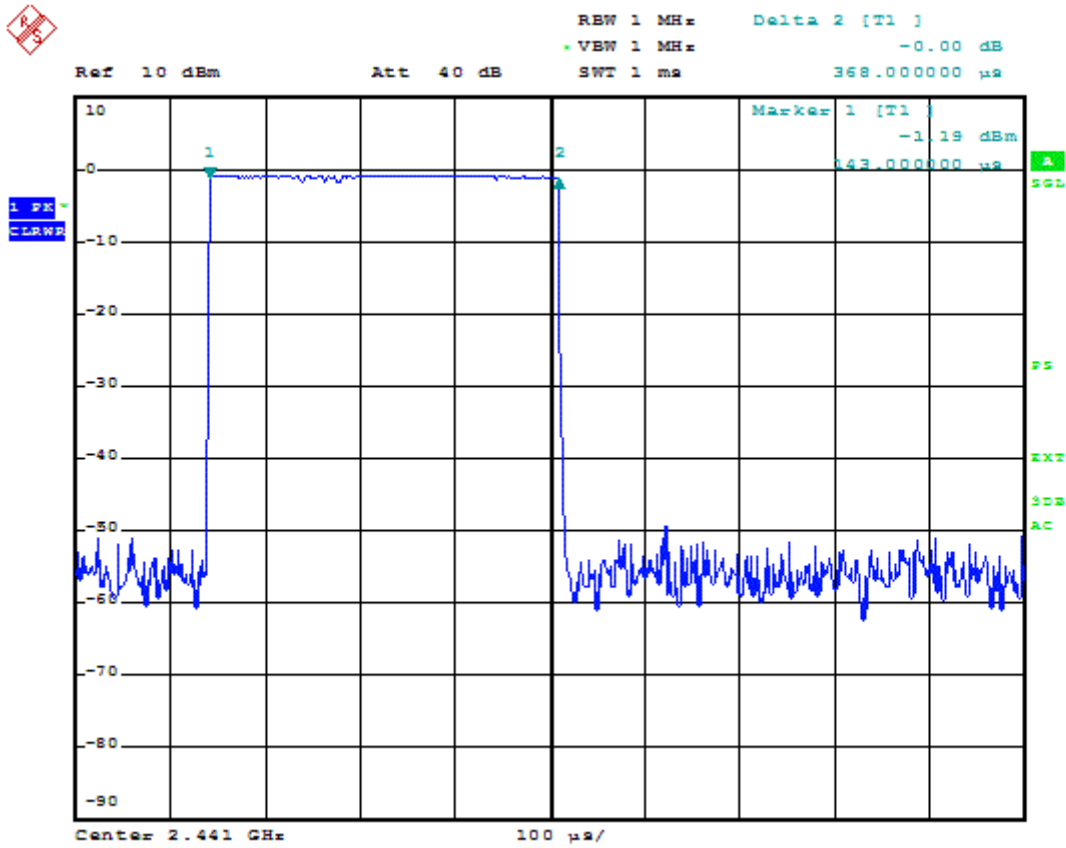
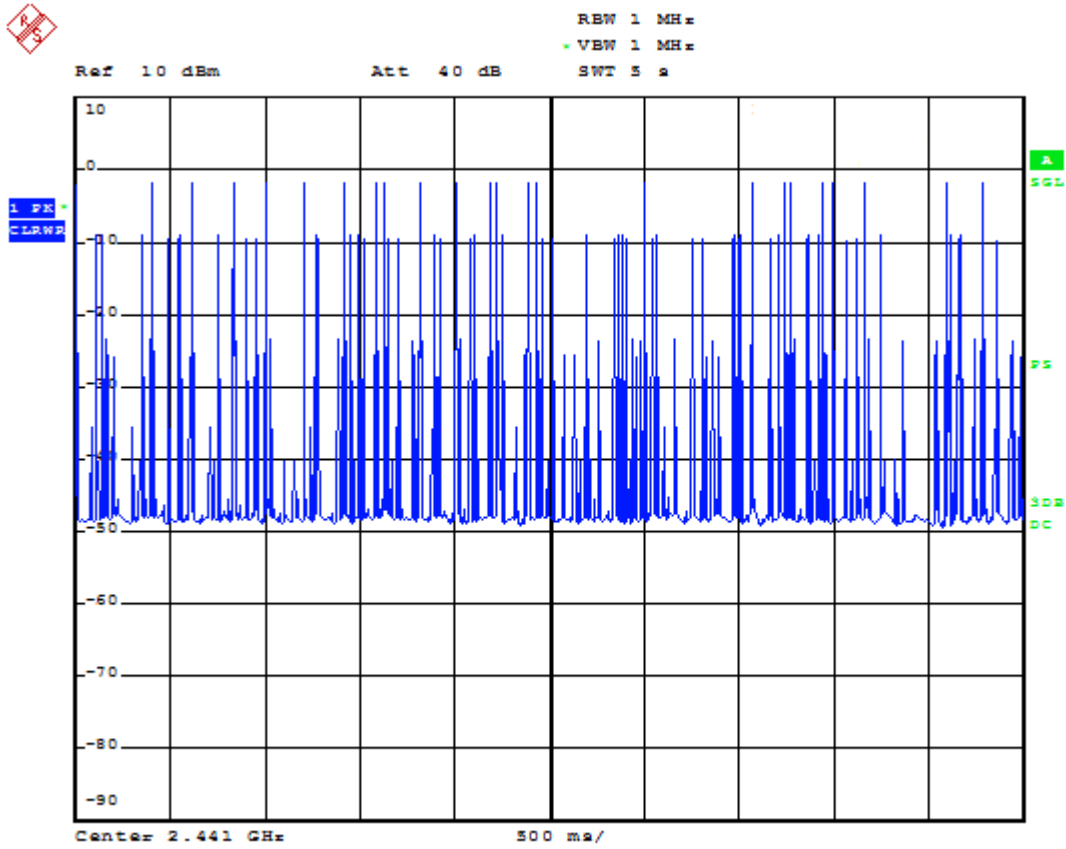
**Ch 39 2441MHz EDR**

| 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  | 47 times/5 sec * 31.6=297 times                                 | 0.406                              | 297*0.406 = 120.6 | < 400        | Pass       |
| DH3  | 24 times/5 sec * 31.6=152 times                                 | 0.168                              | 152*0.168 = 25.5  | < 400        | Pass       |
| DH5  | 17 times/5 sec * 31.6=107 times                                 | 0.167                              | 107*0.167 = 17.9  | < 400        | Pass       |

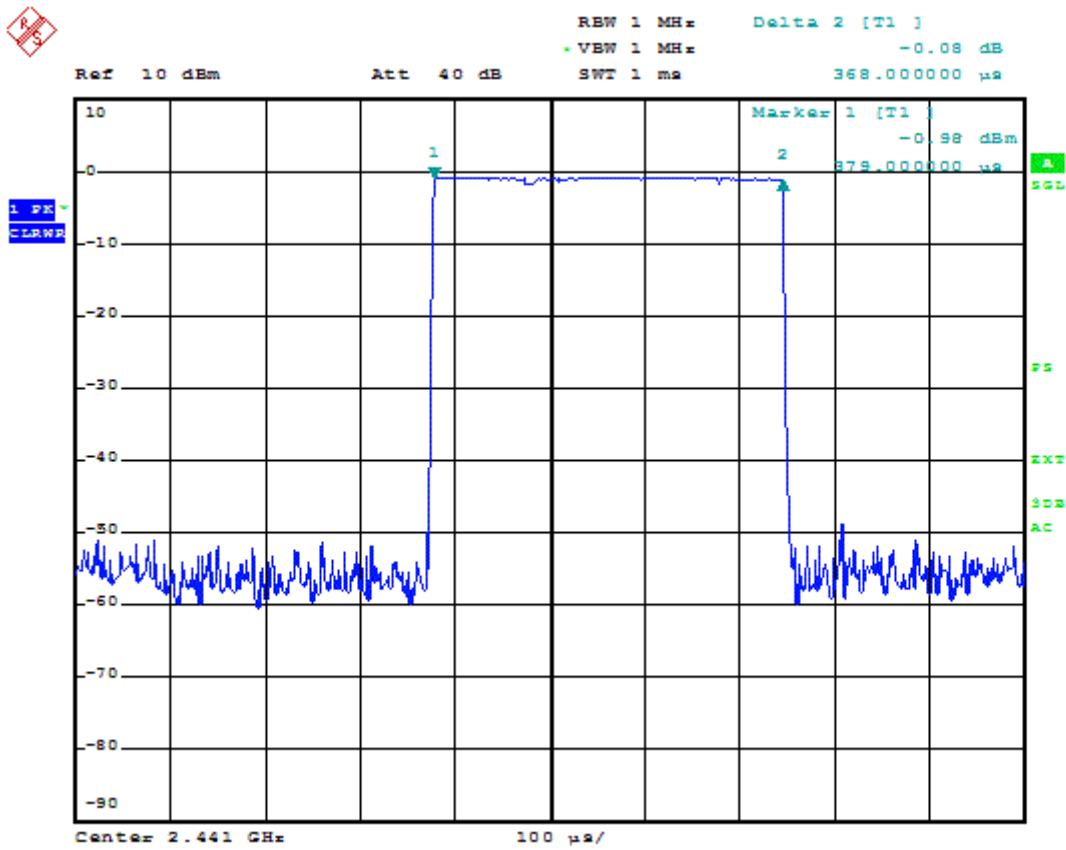
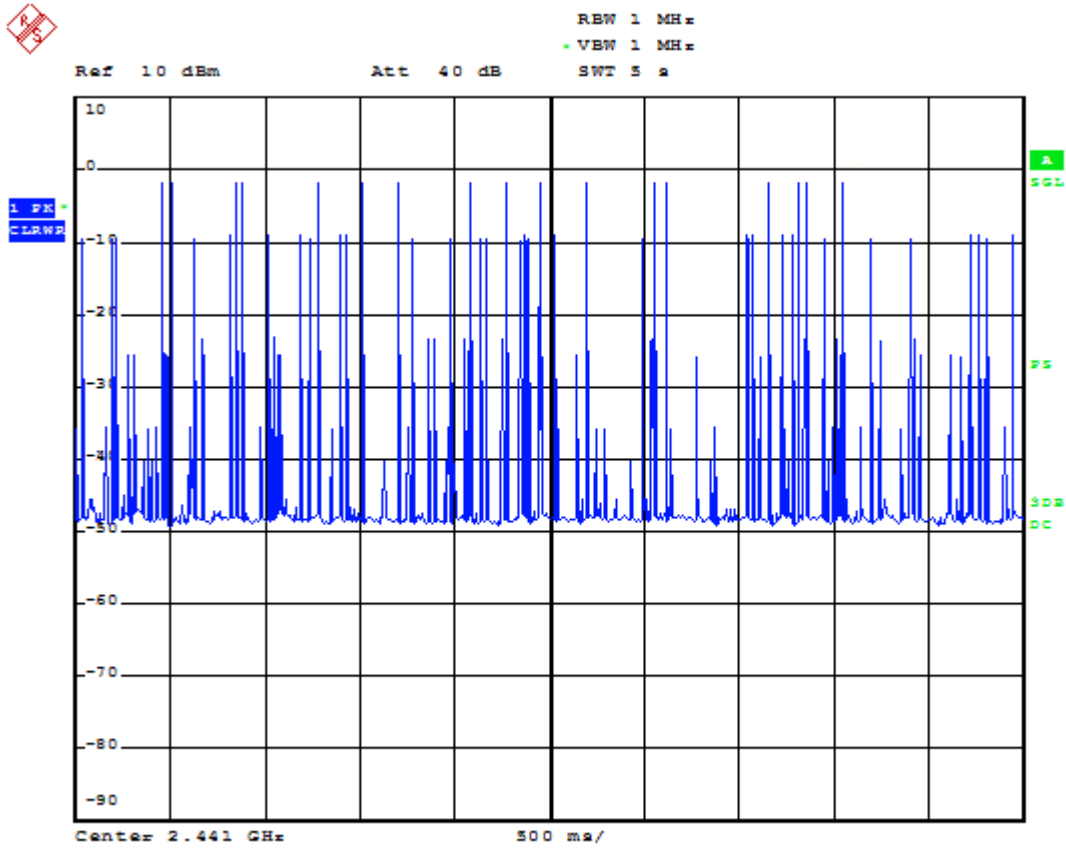
For Ch 39 2441MHz NON-EDR DH1



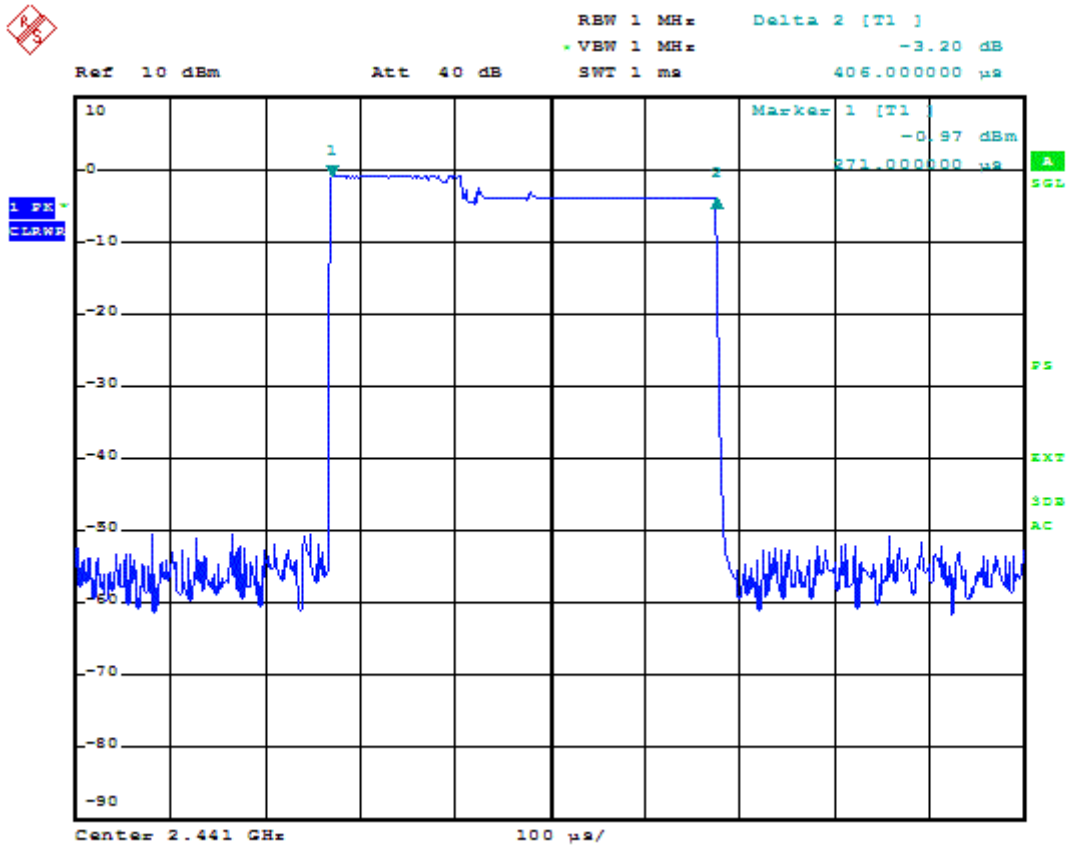
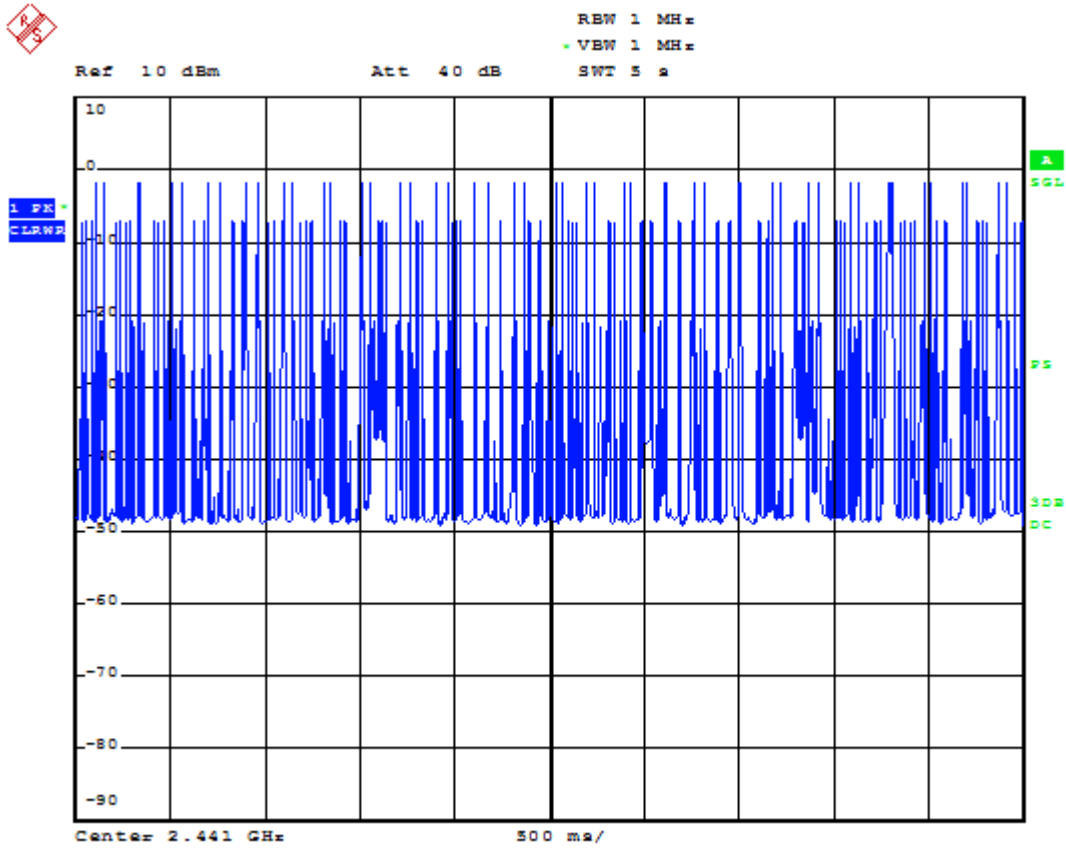
For Ch 39 2441MHz NON-EDR DH3



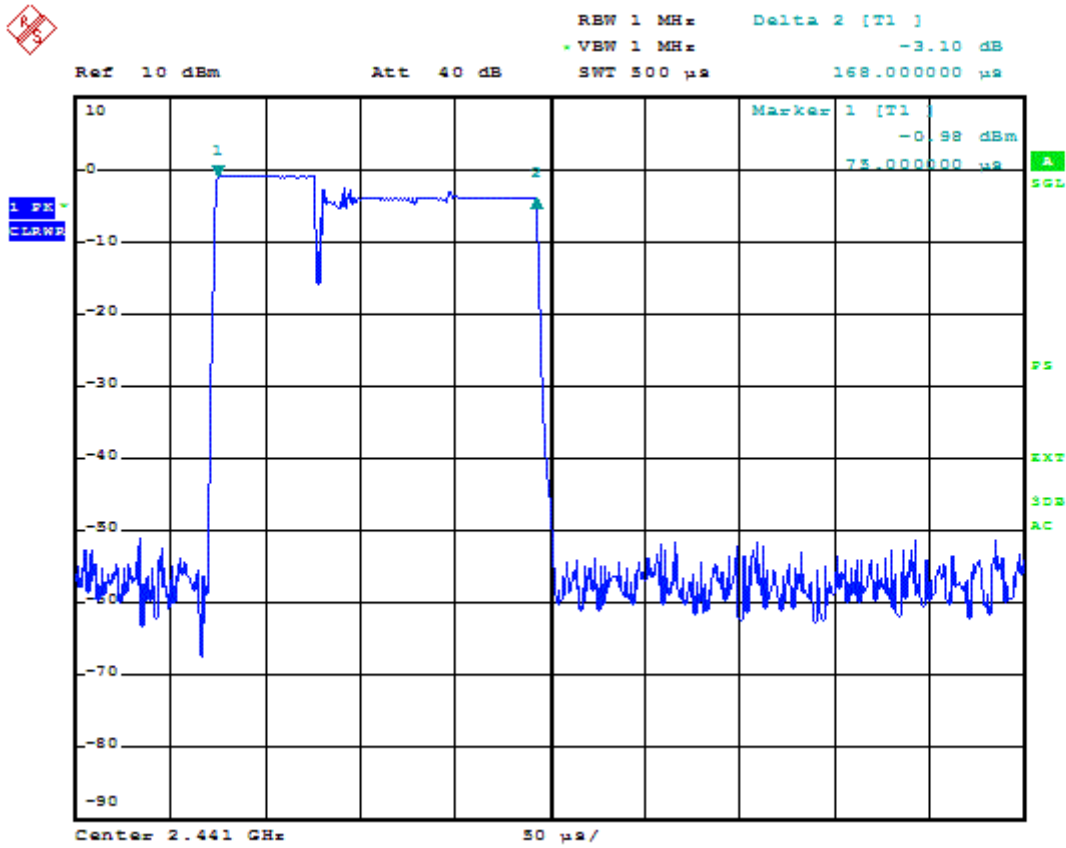
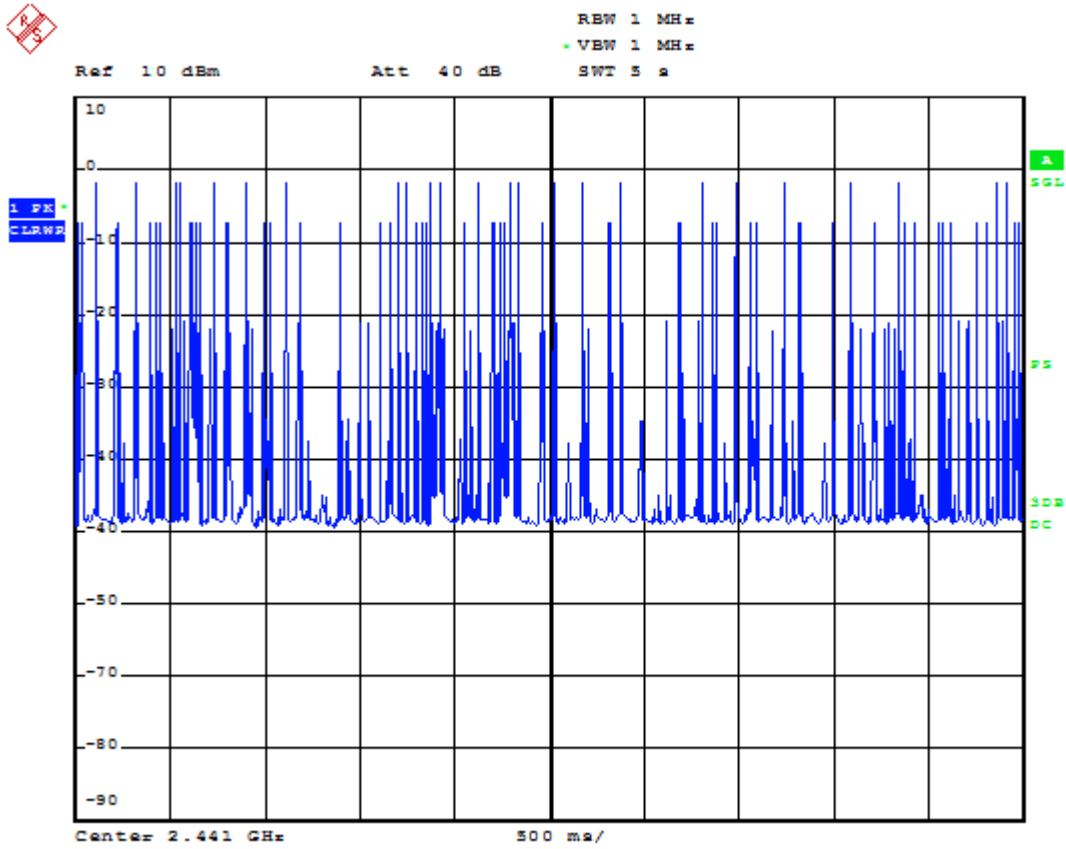
For Ch 39 2441MHz NON-EDR DH5



For Ch 39 2441MHz EDR DH1

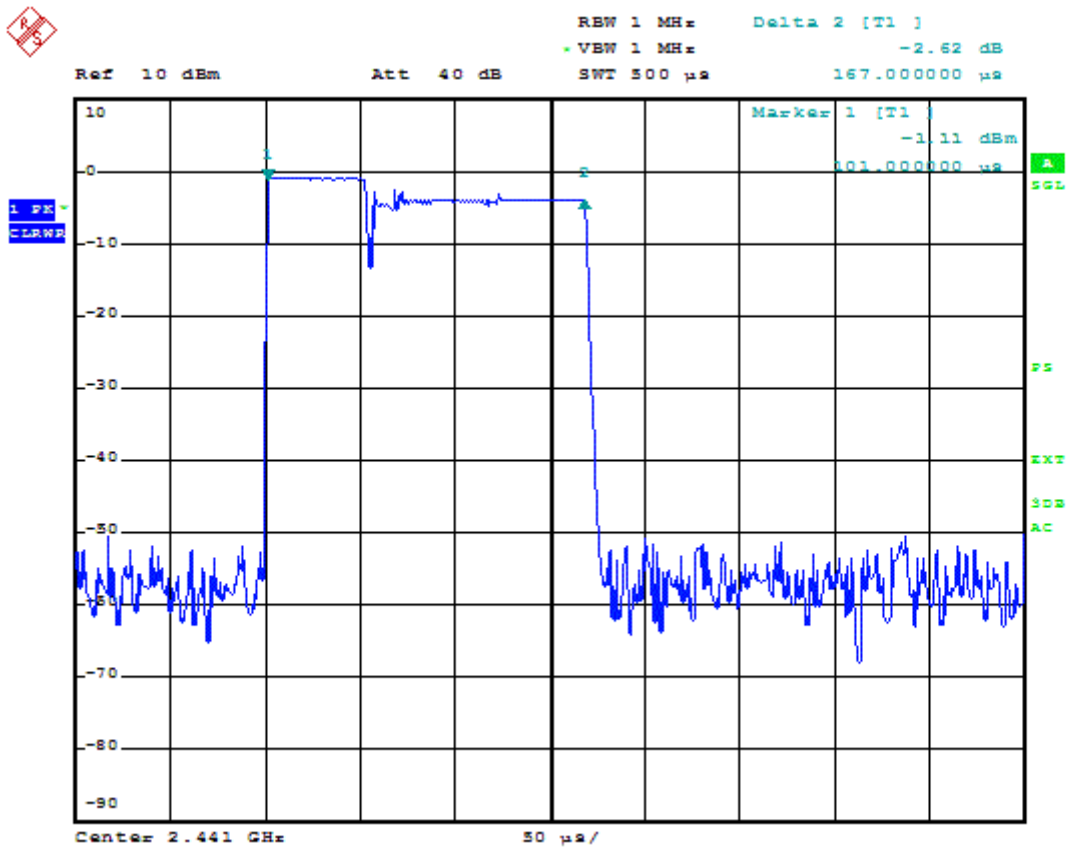
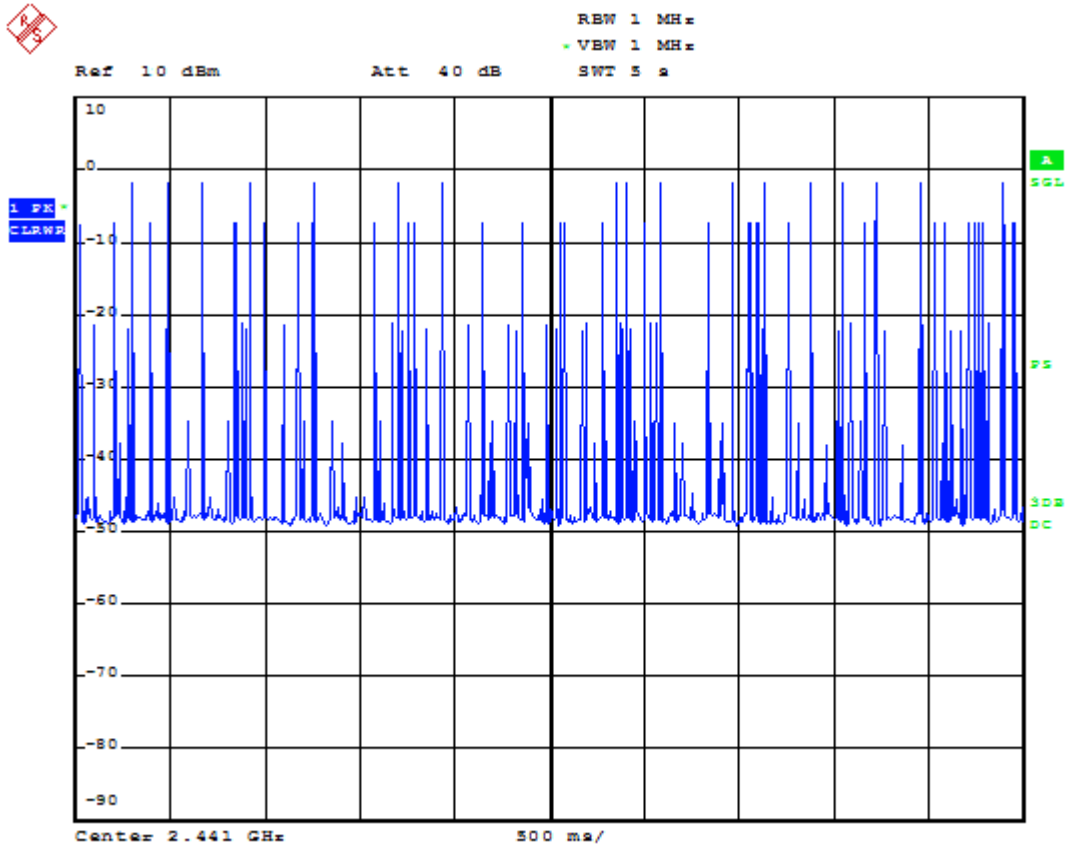


For Ch 39 2441MHz EDR DH3





For Ch 39 2441MHz EDR DH5



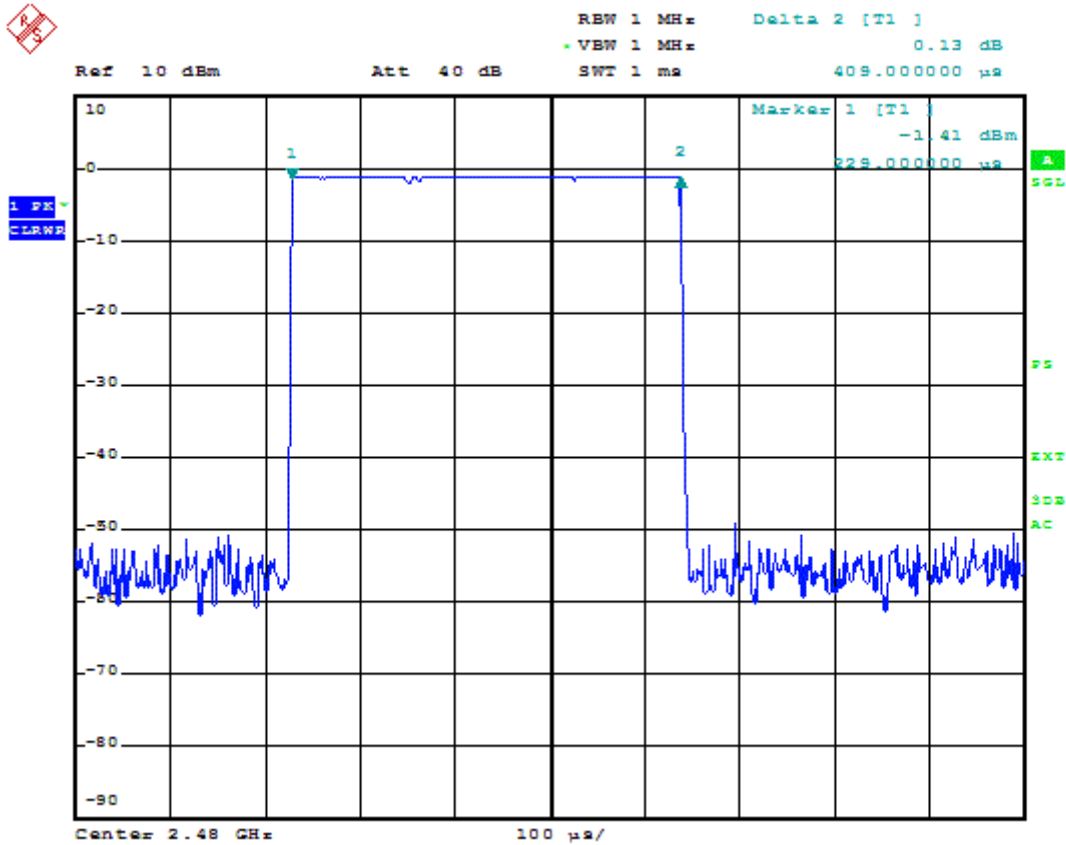
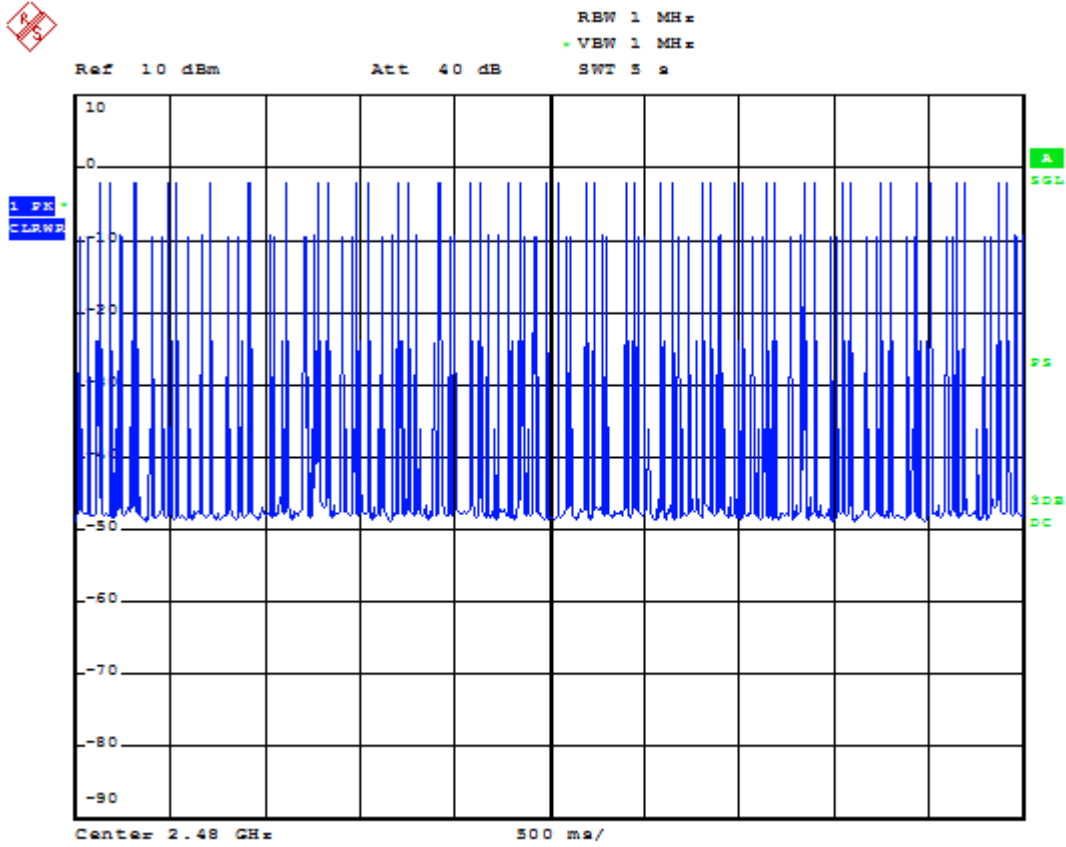
**Ch 78 2480MHz NON-EDR**

| 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  | 48 times/5 sec * 31.6=303 times                                 | 0.409                              | 303*0.409 = 123.9 | < 400        | Pass       |
| DH3  | 24 times/5 sec * 31.6=152 times                                 | 0.365                              | 152*0.365 = 55.5  | < 400        | Pass       |
| DH5  | 19 times/5 sec * 31.6=120 times                                 | 0.367                              | 120*0.367 = 44.0  | < 400        | Pass       |

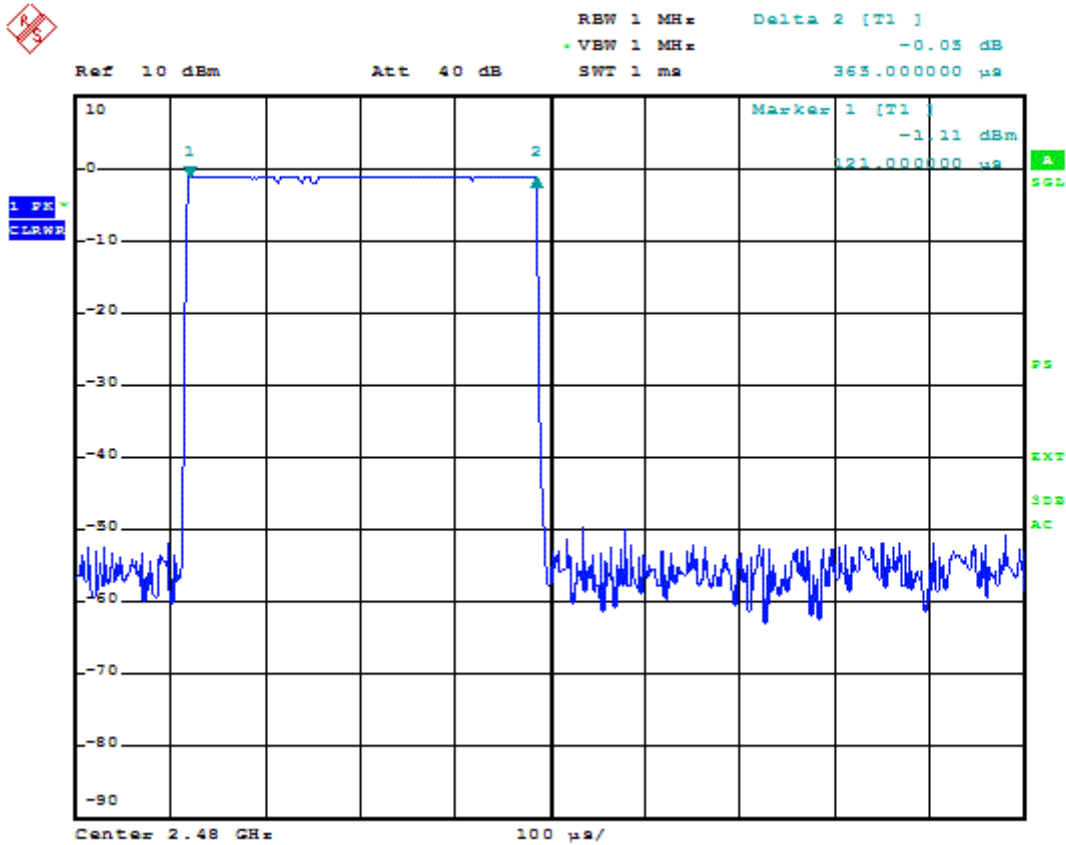
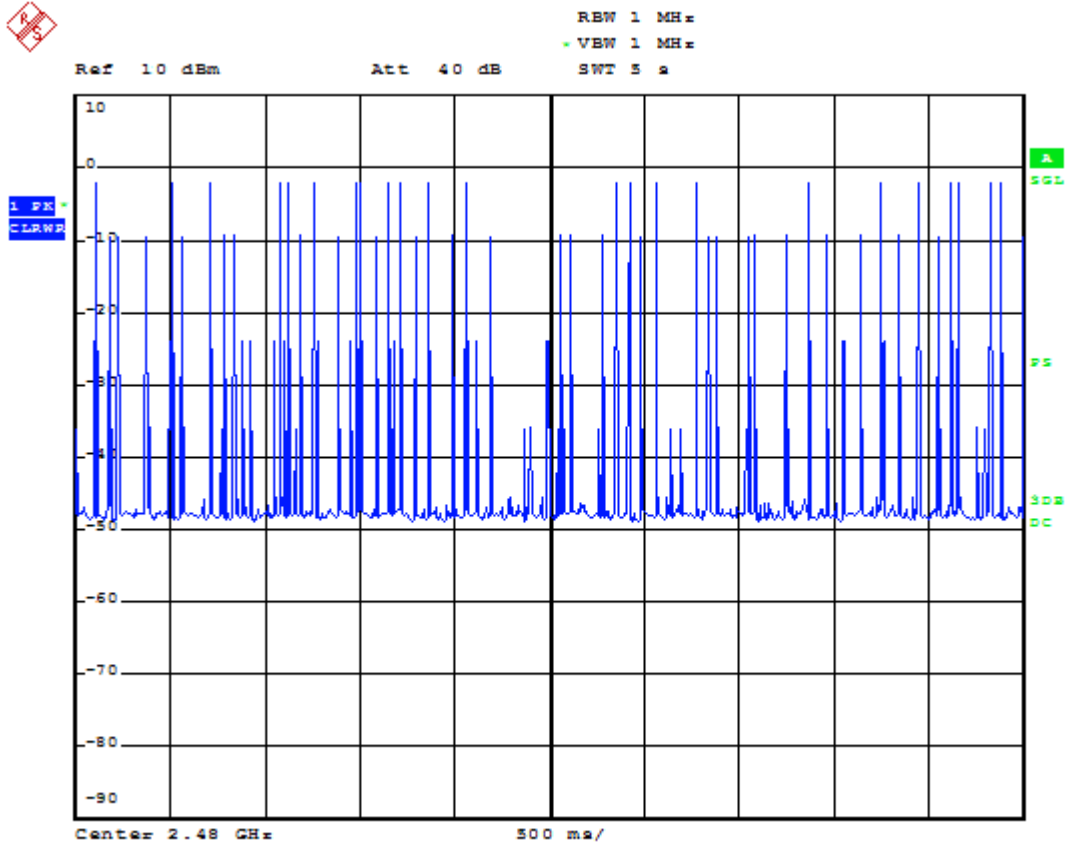
**Ch 78 2480MHz EDR**

| 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  | 48 times/5 sec * 31.6=303 times                                 | 0.405                              | 303*0.405 = 122.7 | < 400        | Pass       |
| DH3  | 25 times/5 sec * 31.6=158 times                                 | 0.167                              | 158*0.167 = 26.4  | < 400        | Pass       |
| DH5  | 17 times/5 sec * 31.6=107 times                                 | 0.167                              | 107*0.167 = 17.9  | < 400        | Pass       |

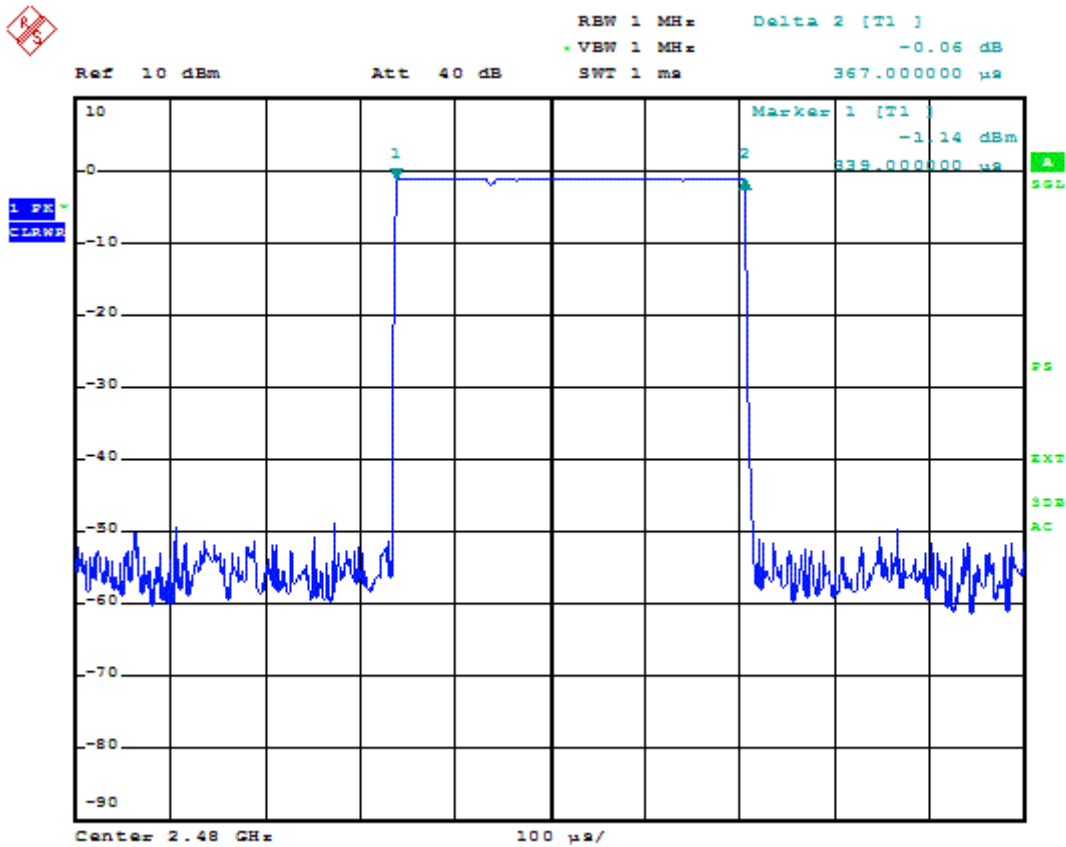
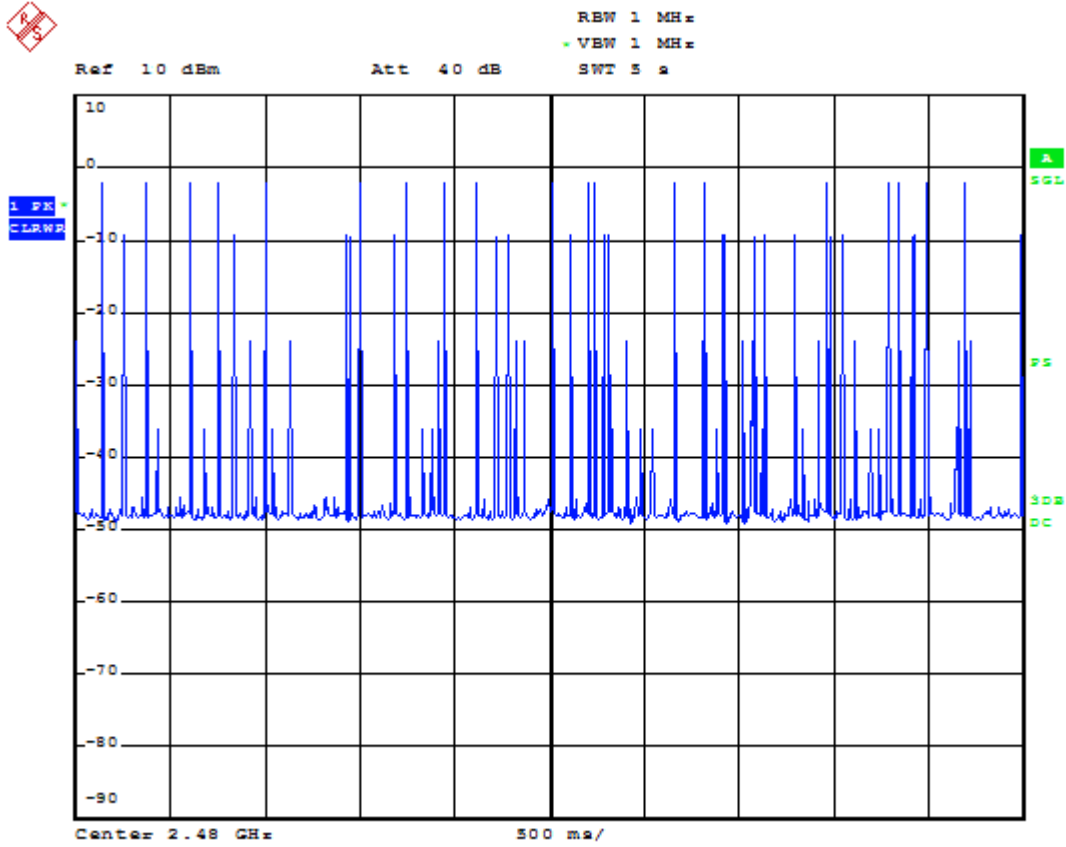
For Ch 78 2480MHz NON-EDR DH1



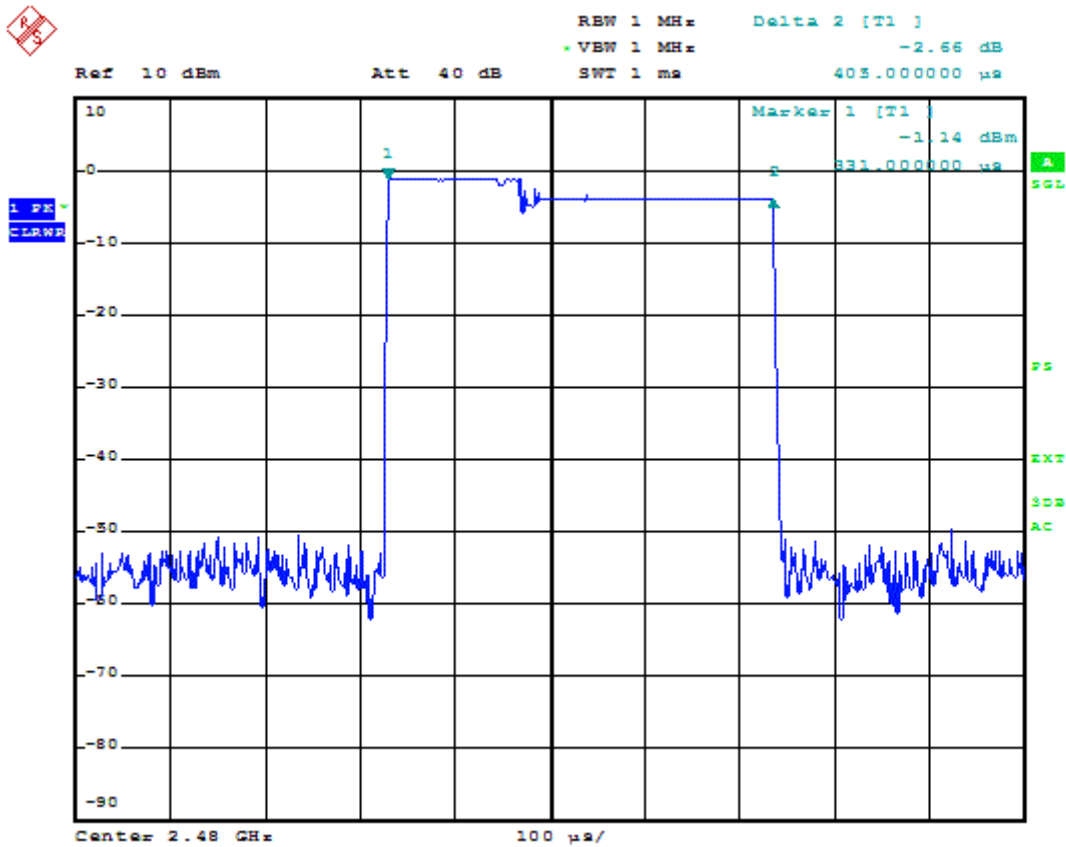
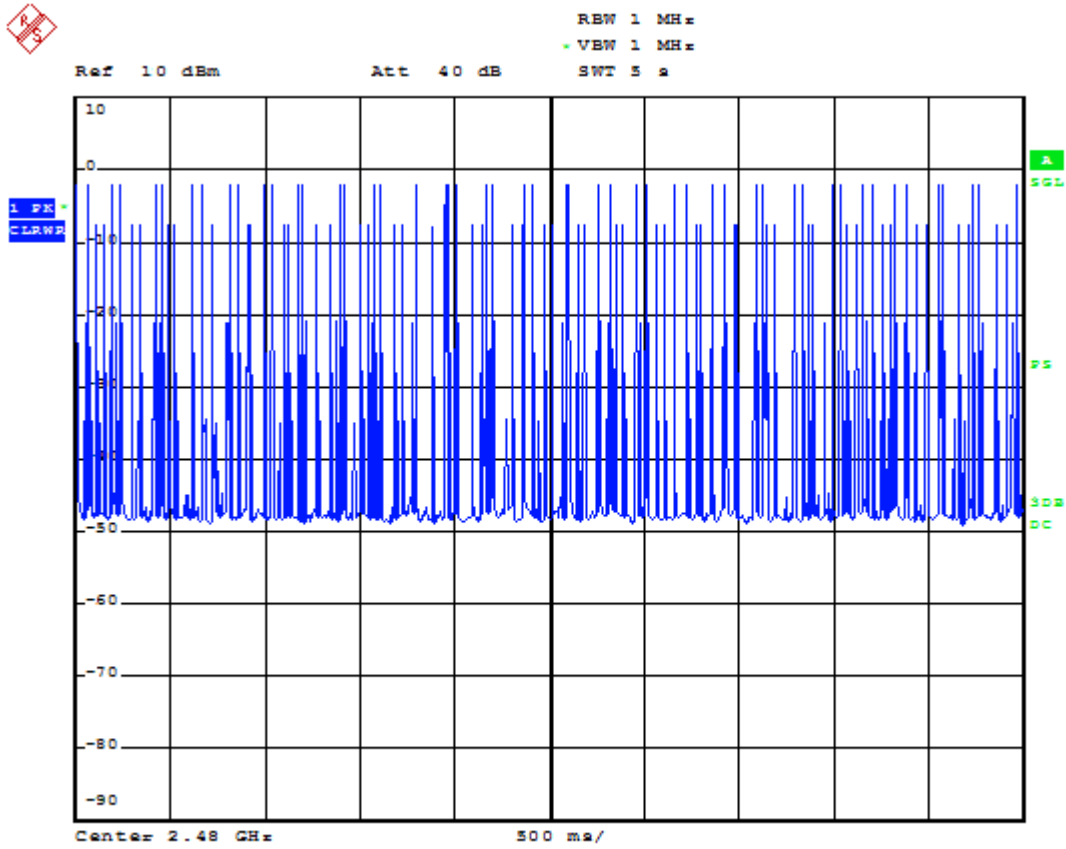
For Ch 78 2480MHz NON-EDR DH3



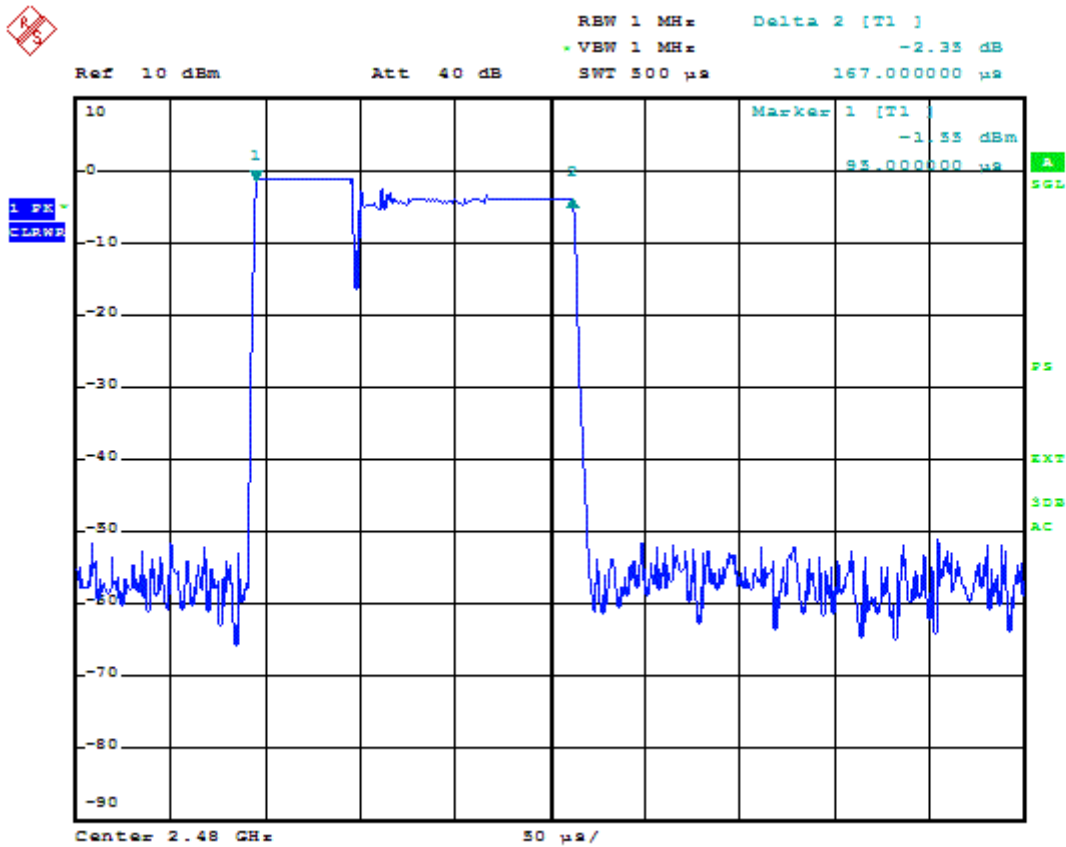
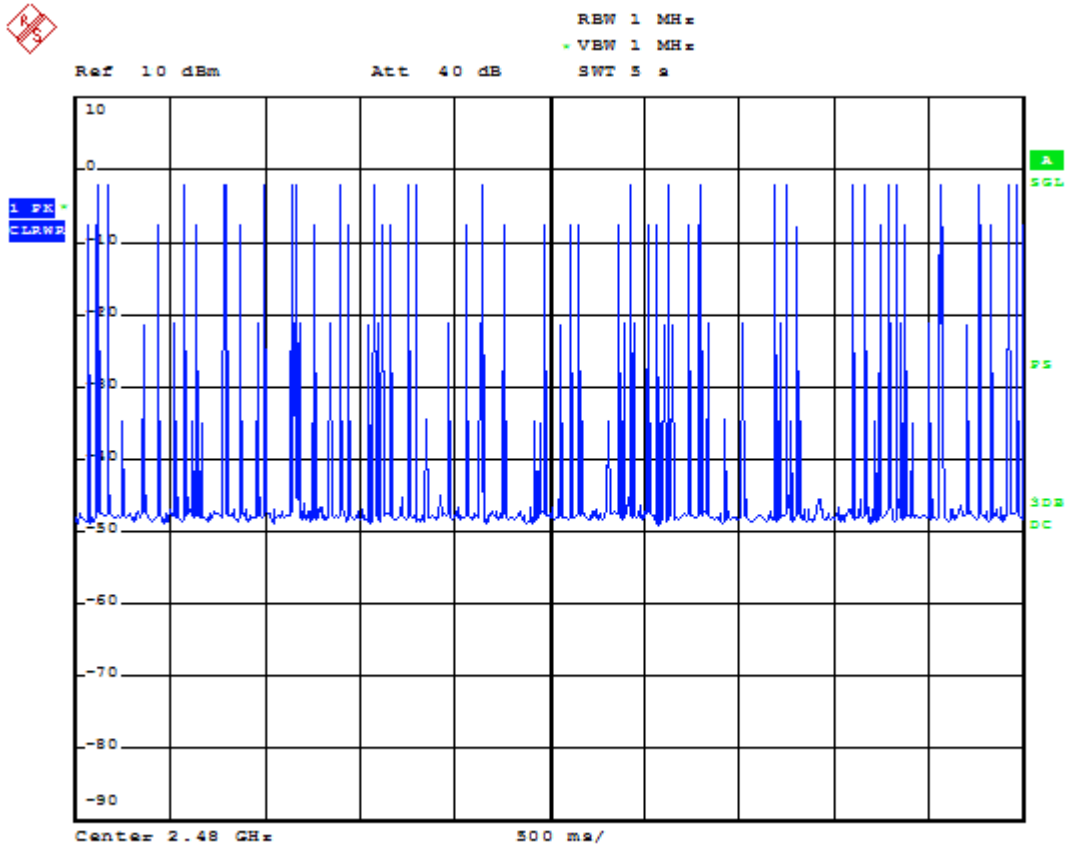
For Ch 78 2480MHz NON-EDR DH5



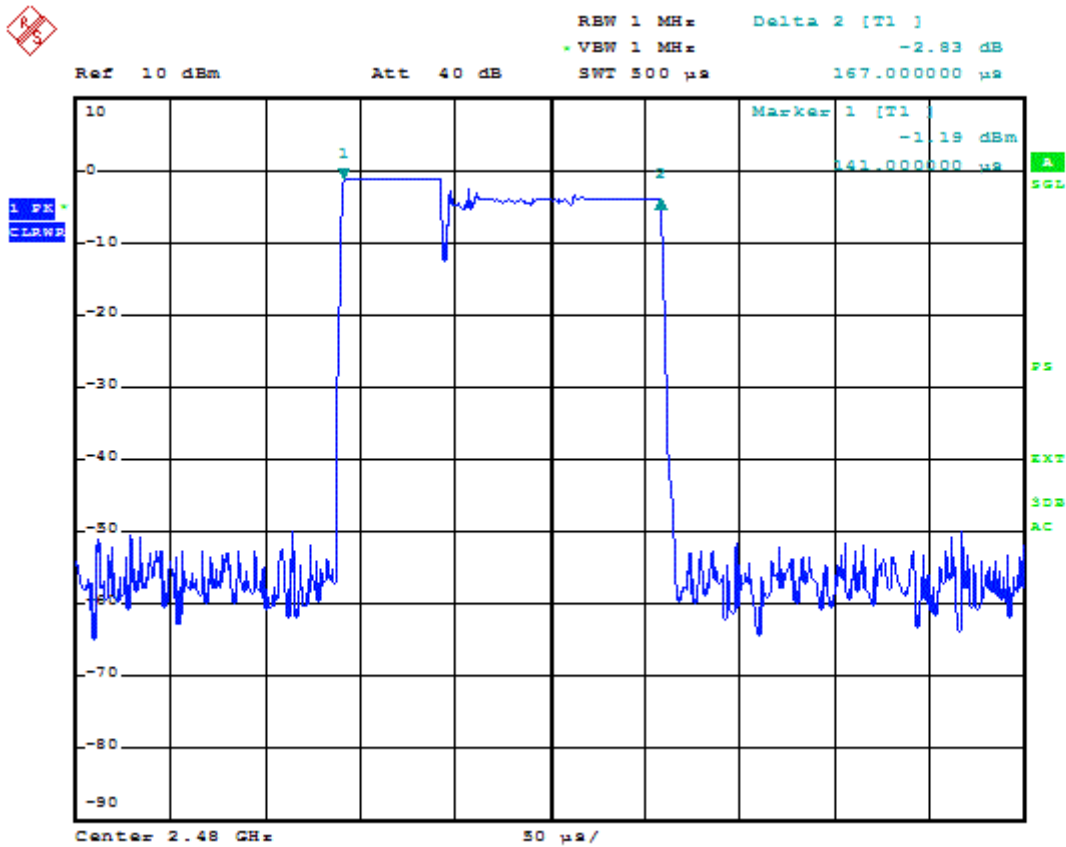
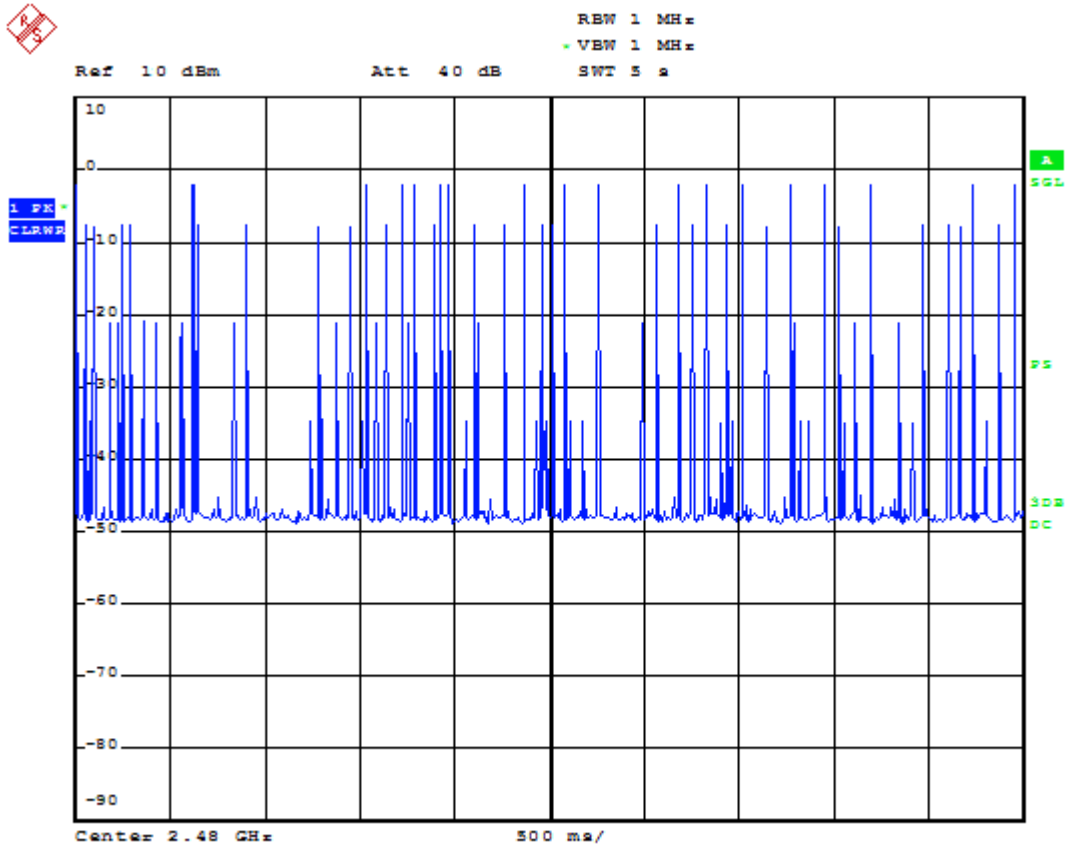
For Ch 78 2480MHz EDR DH1



For Ch 78 2480MHz EDR DH3



For Ch 78 2480MHz EDR DH5





## **11 DEVIATION TO TEST SPECIFICATIONS**

None.