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SENA

Dates of Tests: Oct 25 ~ Nov 3, 2011
 Test Report S/N: LR50011111C
 Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID
 IC
 APPLICANT

S7A-SP03
8154A-SP03
Sena Technologies, Inc.

| | |
|----------------------------------|--|
| Equipment Class | : Part 15 Spread Spectrum Transmitter (DSS) |
| Manufacturing Description | : Bluetooth Stream Audio Adapter |
| Manufacturer | : Sena Technologies, Inc. |
| Model name | : PD10 |
| Test Device Serial No.: | : Identical prototype |
| Rule Part(s) | : FCC Part 15.247 Subpart C; ANSI C-63.4-2003 RSS-210 and ISSUE No. :8 Date :2010 |
| Frequency Range | : 2402 ~ 2480MHz |
| RF power | : Max 11.85dBm - Conducted |
| Data of issue | : November 4 , 2011 |

This test report is issued under the authority of:

Hyun-Chae You, Manager

The test was supervised by:

Ki-Hun Cho, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The 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.



NVLAP LAB Code.: 200723-0

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1. General information's

1-1 Test Performed

Company name : LTA Co., Ltd.
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822
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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

| Agency | Country | Accreditation No. | Validity | Reference |
|--------|---------|-------------------|------------|---------------------|
| NVLAP | U.S.A | 200723-0 | 2012-09-30 | ECT accredited Lab. |
| KCC | KOREA | KR0049 | 2013-04-24 | EMC accredited Lab. |
| FCC | U.S.A | 610755 | 2014-04-27 | FCC filing |
| FCC | U.S.A | 649054 | 2013-04-13 | FCC CAB |
| VCCI | JAPAN | R2133(10m), C2307 | 2014-06-21 | VCCI registration |
| VCCI | JAPAN | T-2009 | 2013-12-23 | VCCI registration |
| IC | CANADA | IC5799 | 2012-05-14 | IC filing |

2. Information's about test item

2-1 Client & Manufacturer

Company name : Sena Technologies, Inc.
 Address : 210 Yangjae-dong Seocho-gu Seoul 137-130 Korea
 Telephone / Facsimile : +82-2-571-8283/ +82-2-573-7710

2-2 Equipment Under Test (EUT)

Trade name : Bluetooth Stream Audio adapter
 Model name : PD10
 Serial number : Identical prototype
 Date of receipt : October 19, 2011
 EUT condition : Pre-production, not damaged
 Antenna type : Chip antenna (M/N: SENA_009) Max Gain 0.5 dBi
 Frequency Range : 2402 ~ 2480MHz
 RF output power : Max. 11.85dBm - Conducted
 Number of channels : 79
 Duty cycle : 80.90 %
 Channel spacing : 1MHz
 Channel Access Protocol : Frequency Hopping Spread Spectrum (FHSS)
 Type of Modulation : Basic Mode(GFSK), EDR Mode(Pi/4 DQPSK, 8DPSK)
 Power Source : DC 12.0 V
 Firmware Version : V1.0.

2-4 Tested frequency

| | LOW | MID | HIGH |
|-----------------|------|------|------|
| Frequency (MHz) | 2402 | 2441 | 2480 |

2-5 Ancillary Equipment

| Equipment | Model No. | Serial No. | Manufacturer |
|-----------|-----------|------------|--------------|
| - | - | - | - |

3. Test Report

3.1 Summary of tests

| FCC Part Section(s) | Parameter | Limit | Test Condition | Status (note 1) |
|---------------------|----------------------------------|-------------------|----------------|---------------------|
| 15.247(a) | Carrier Frequency Separation | > 25 kHz | Conducted | C |
| 15.247(a) | Number of Hopping Frequencies | > 15 hops | | C |
| 15.247(a) | 20 dB Bandwidth 99% Bandwidth | > 1.5 MHz | | C |
| 15.247 | Dwell Time | < 0.4 seconds | | C |
| 15.247(b) | Transmitter Output Power | < 250 mWatt | | C |
| 15.247(d) | Conducted Spurious emission | > 20 dBc | | C |
| 15.247(d) | Band Edge | > 20 dBc | | C |
| 15.249 / 15.209 | Field Strength of Harmonics | < 54 dBuV (at 3m) | | Radiated |
| 15.109 | Field Strength | - | C | |
| 15.207 / 15.107 | AC Conducted Emissions | EN 55022 | Line Conducted | NA ^{Note3} |
| 15.203 | Antenna requirement | - | - | C |

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note3: This device is only operated by DC

Note 1: Antenna Requirement

→ The Sena Technologies, Inc. PD10 unit complies with the requirement of §15.203.

The antenna type is the Chip antenna

Note 2: The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

RSS-210 and ISSUE No.: 8 Date: 2010

3.2 Transmitter requirements

3.2.1 Carrier Frequency Separation

Procedure:

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = 2~ 3 MHz (wide enough to capture the peaks of two adjacent channels)

RBW = 10 kHz (1% of the span or more) Sweep = auto

VBW = 10 kHz Detector function = peak

Trace = max hold

Measurement Data:

| Test Results | |
|------------------------------------|----------|
| Carrier Frequency Separation (MHz) | Result |
| 1.0029 | Complies |

- See next pages for actual measured spectrum plots.

Minimum Standard:

The EUT shall have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of 20dB bandwidth of the hopping channel, whichever is greater.

Measurement Setup

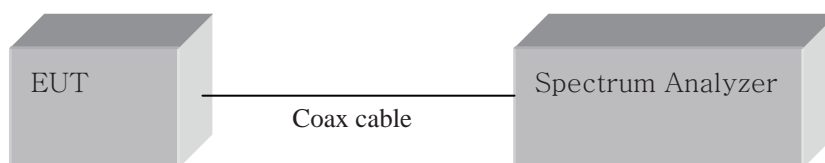
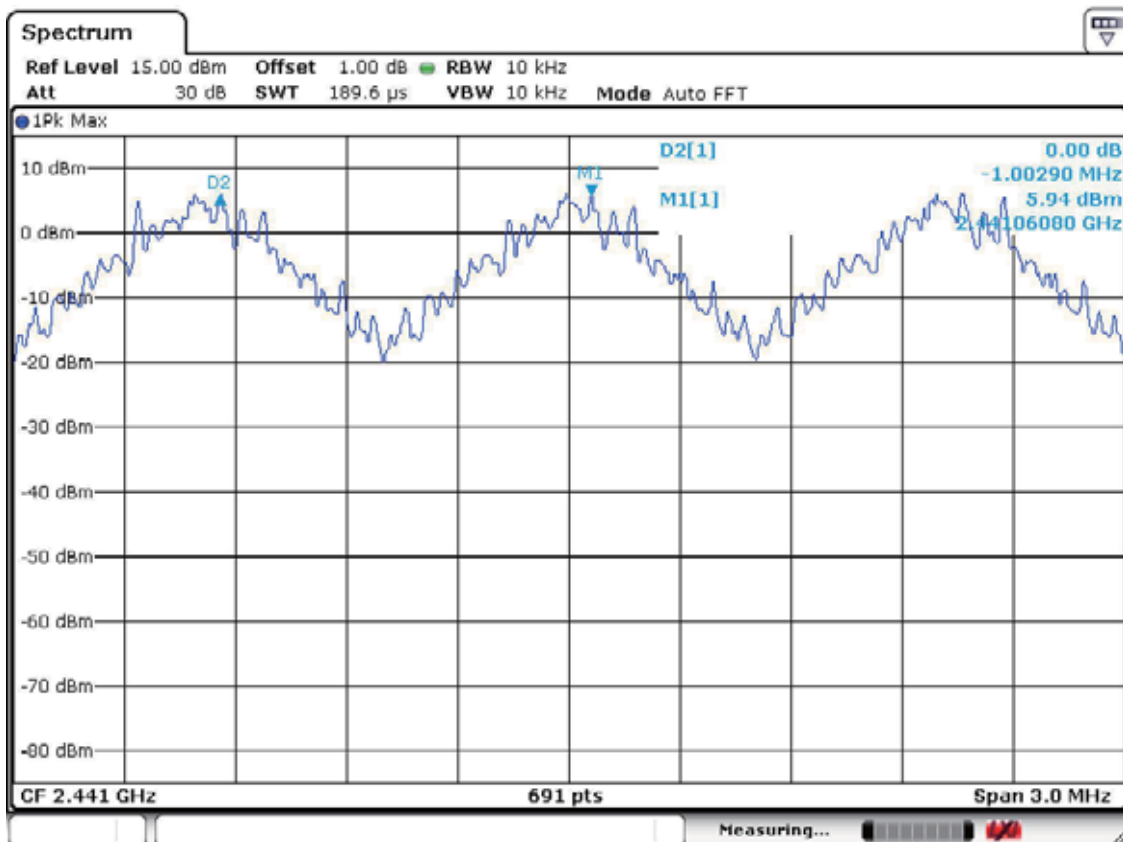


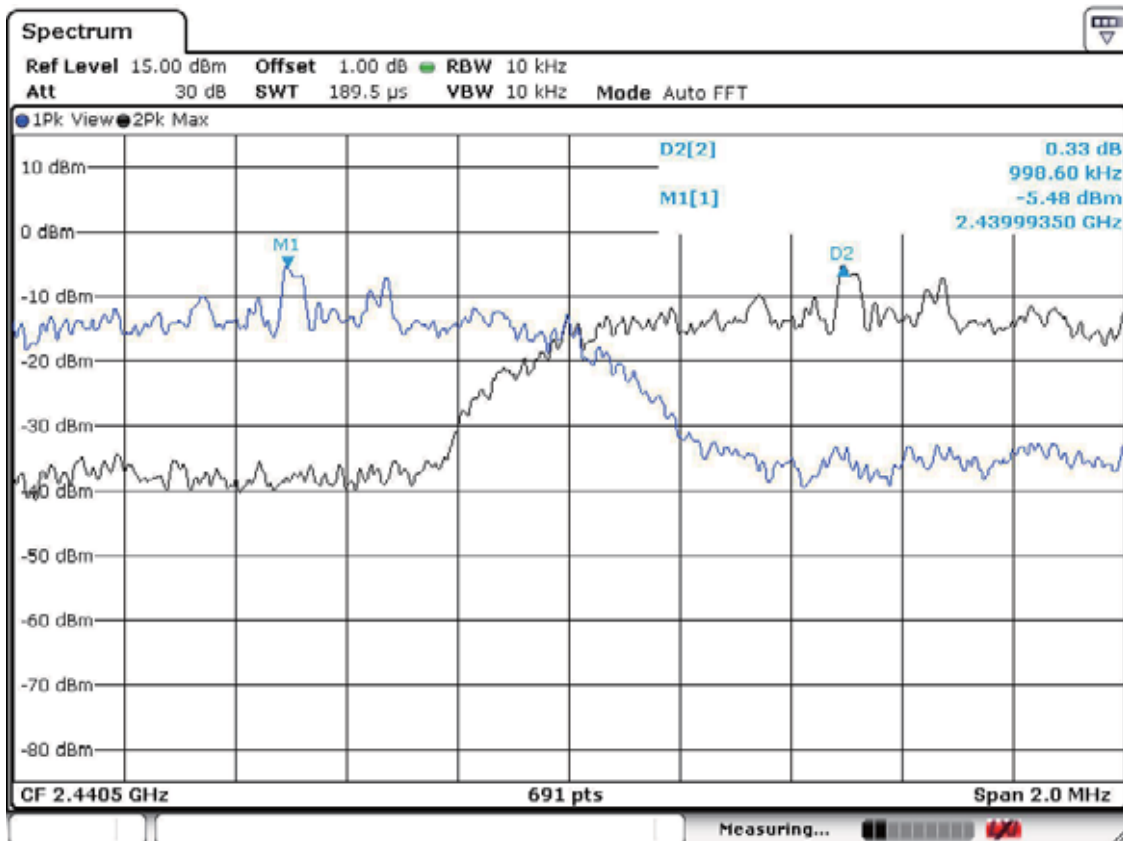
Figure 1: Measurement setup for the carrier frequency separation

Carrier Frequency Separation

Basic Mode



EDR Mode



3.2.2 Number of Hopping Frequencies

Procedure:

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz FH band were examined.

The spectrum analyzer is set to:

Frequency range Start = 2400.0MHz, Stop = 2483.5 MHz

RBW = 100 kHz (1% of the span or more) Sweep = auto

VBW = 100 kHz (VBW \geq RBW) Detector function = peak

Trace = max hold Span > 40MHz

Measurement Data: Complies

| | |
|---|----|
| Total number of Hopping Channels | 79 |
|---|----|

- See next pages for actual measured spectrum plots.

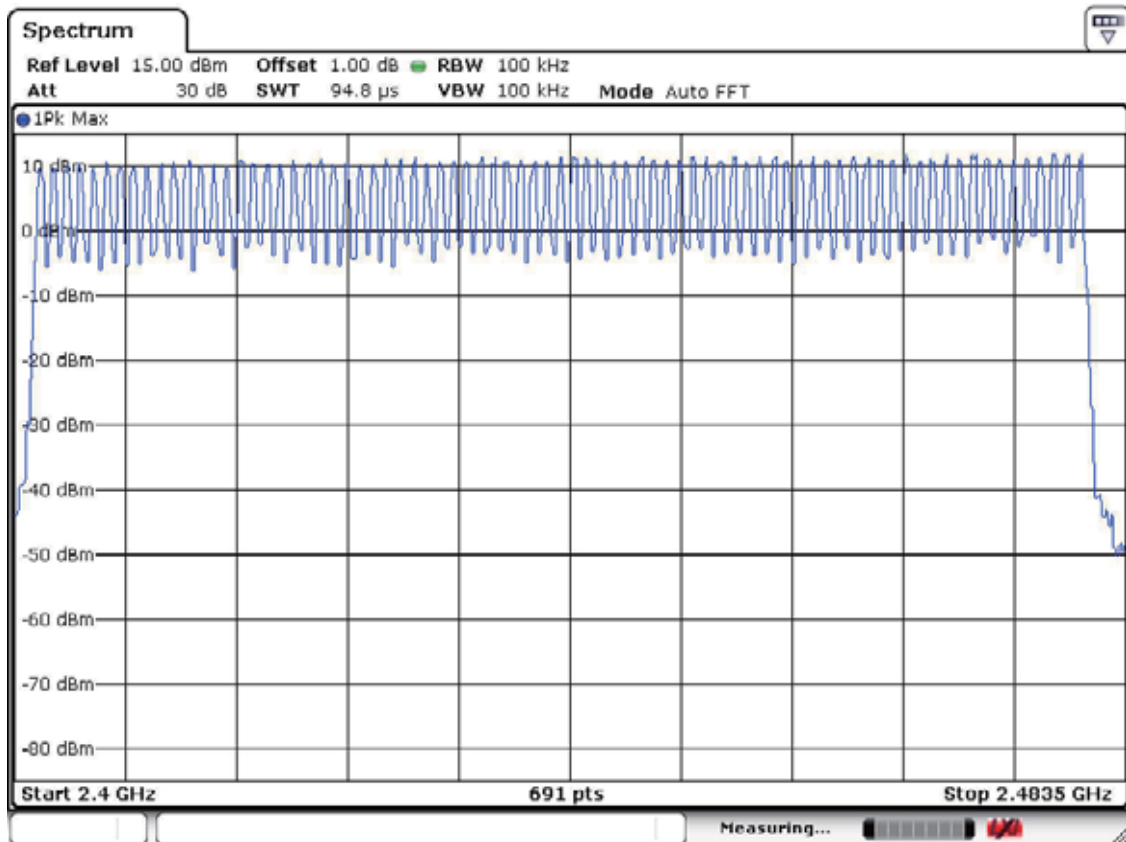
Minimum Standard:

At least 15 hopes

Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

Number of Hopping Frequencies



3.2.3 20 dB Bandwidth

Procedure:

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 3 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

RBW = 30 kHz

Sweep = auto

VBW = 30 kHz (VBW \geq RBW)

Detector function = peak

Trace = max hold

Measurement Data: Basic Mode

| Frequency (MHz) | Channel No. | Test Results(MHz) | |
|-----------------|-------------|-------------------|---------------|
| | | 20dB Bandwidth | 99% Bandwidth |
| 2402 | 0 | 0.825 | 0.873 |
| 2441 | 39 | 0.829 | 0.868 |
| 2480 | 78 | 0.829 | 0.873 |

Measurement Data: EDR Mode

| Frequency (MHz) | Channel No. | Test Results(MHz) | |
|-----------------|-------------|-------------------|---------------|
| | | 20dB Bandwidth | 99% Bandwidth |
| 2402 | 0 | 1.311 | 1.289 |
| 2441 | 39 | 1.320 | 1.315 |
| 2480 | 78 | 1.320 | 1.329 |

- See next pages for actual measured spectrum plots.

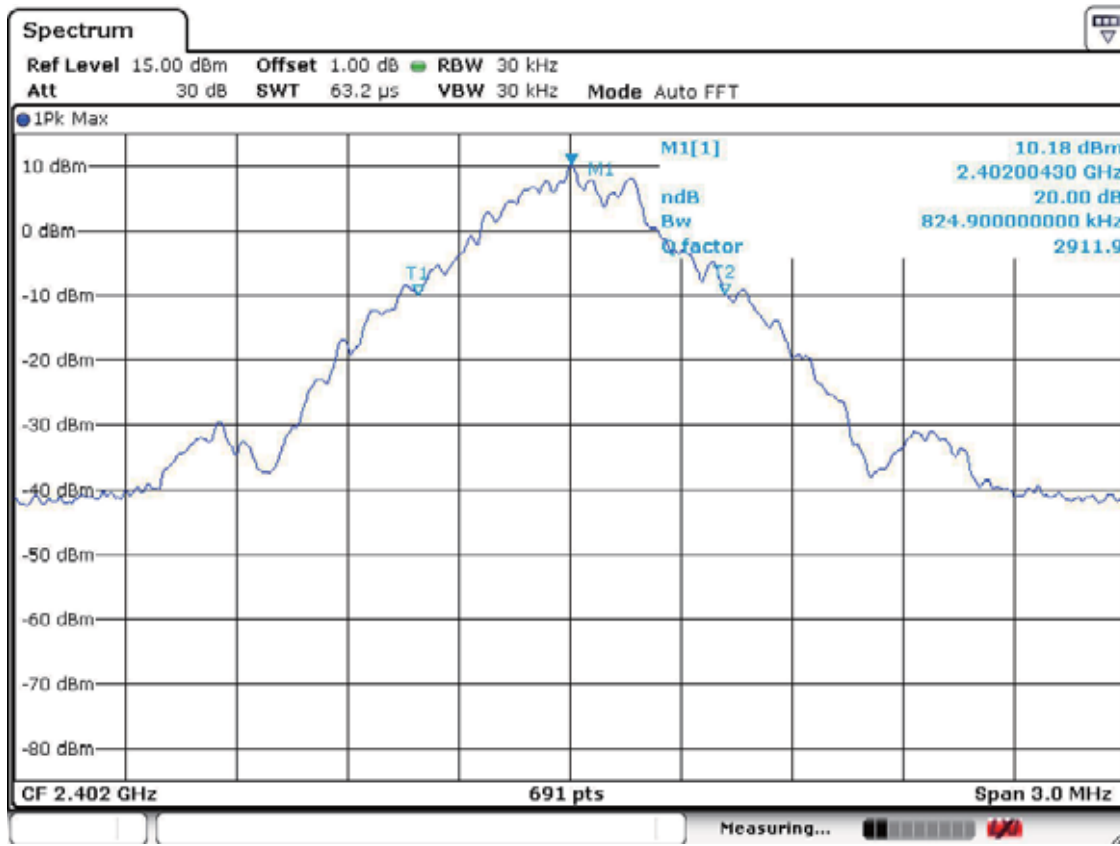
Minimum Standard:

N/A

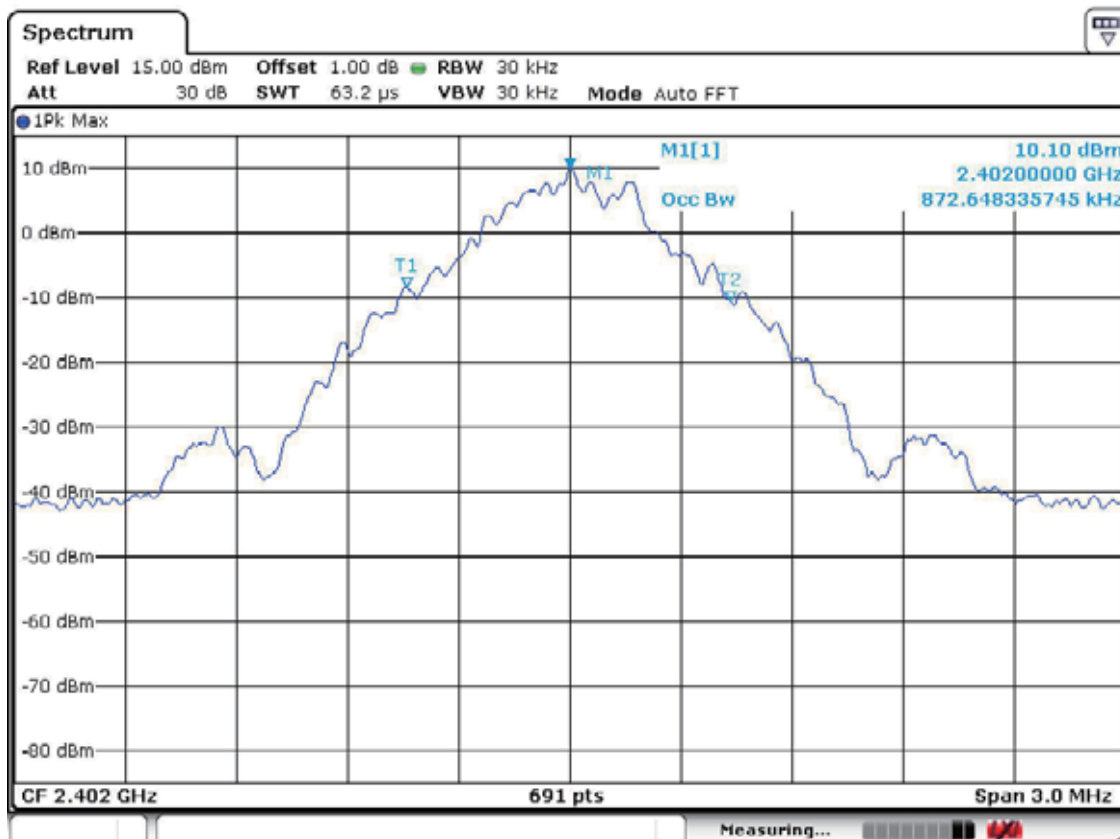
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

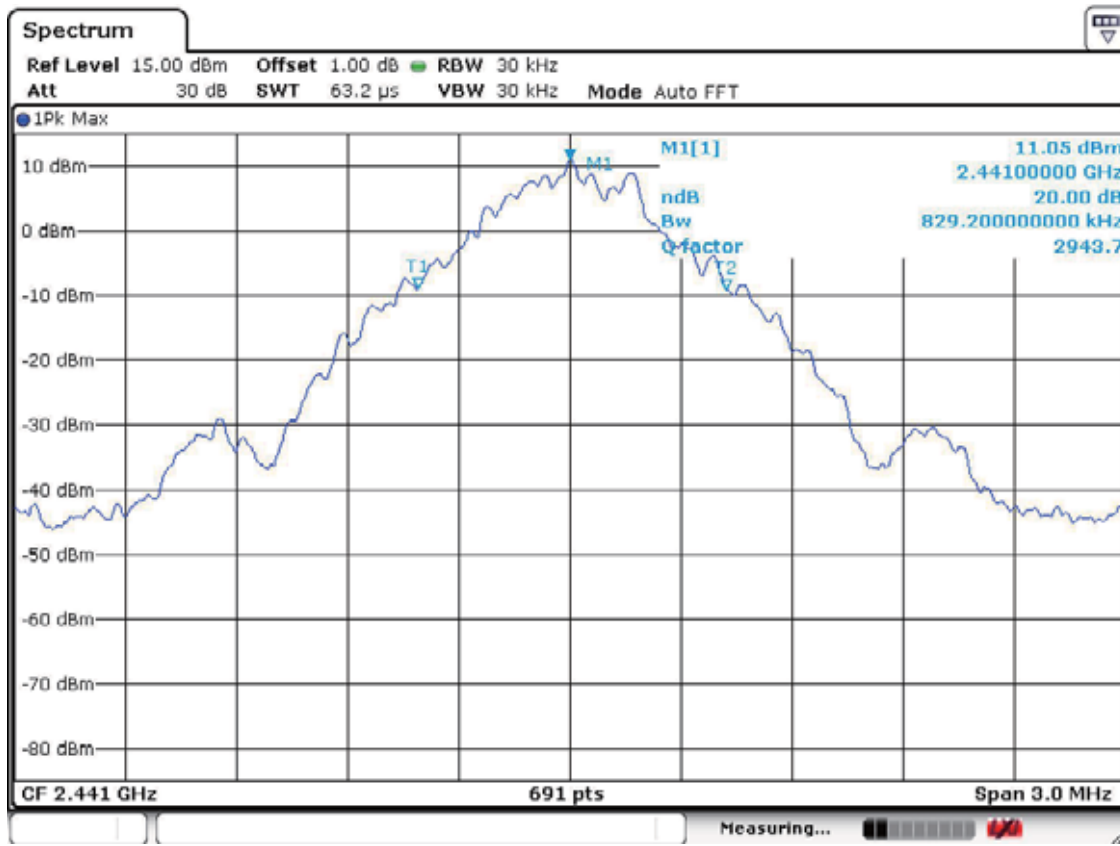
Channel 1 of basic mode
20 dB Bandwidth



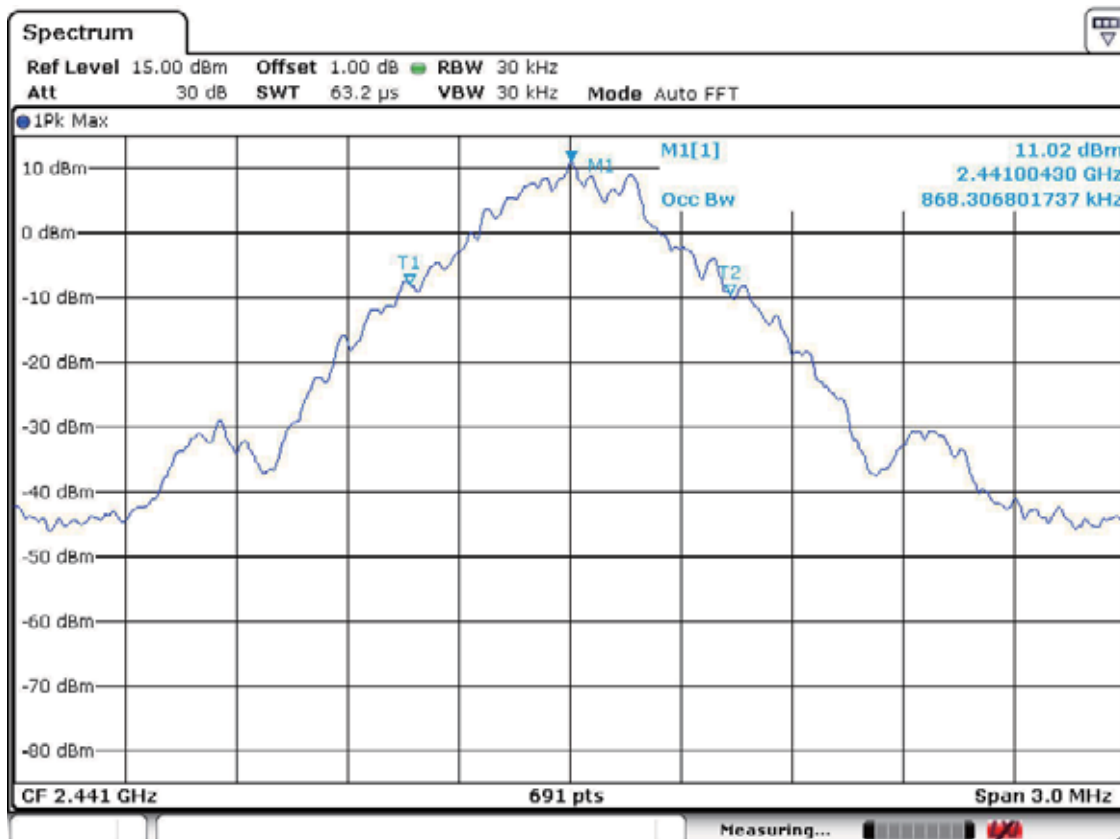
99% Bandwidth



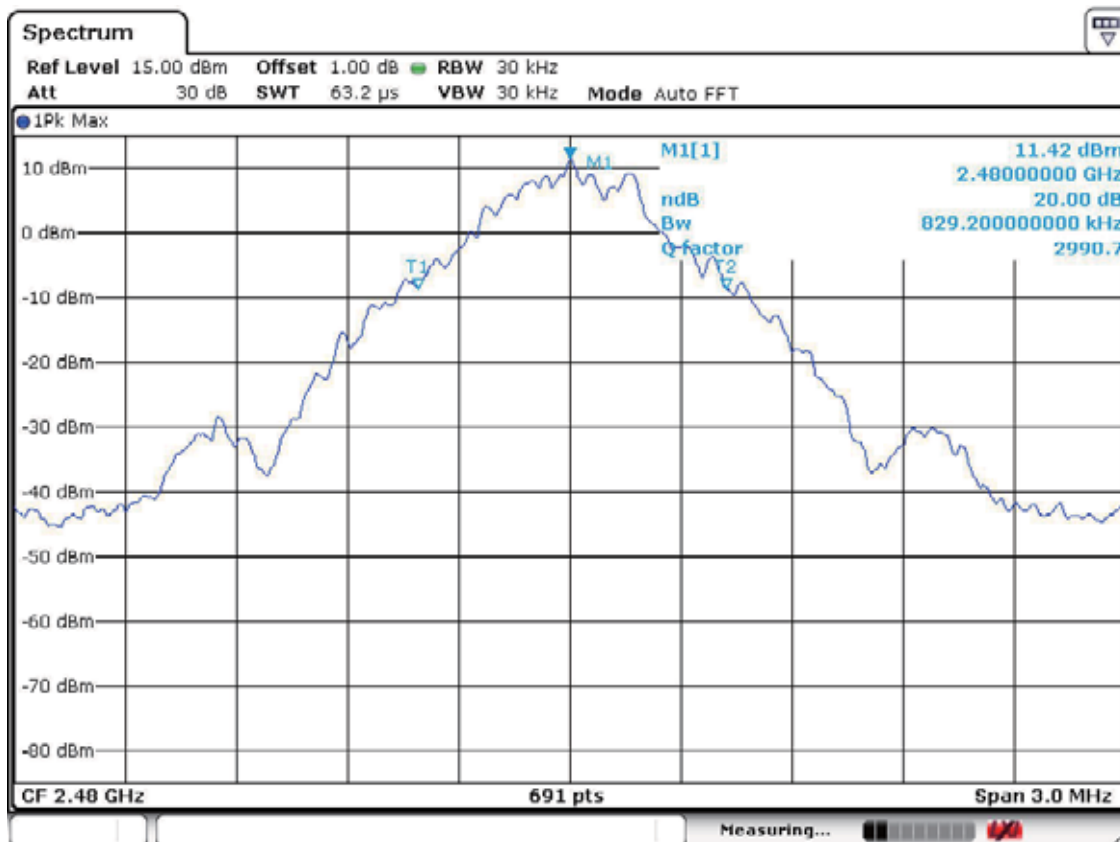
Channel 2 of basic mode
20 dB Bandwidth



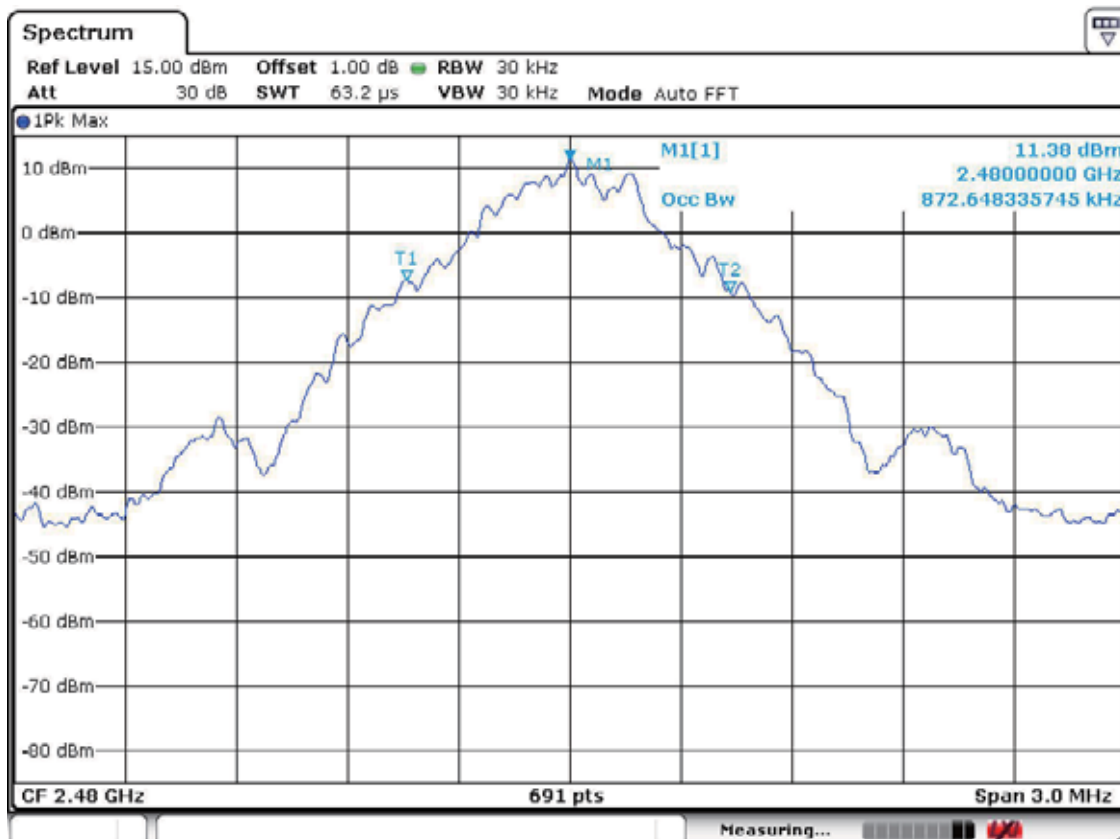
99% Bandwidth



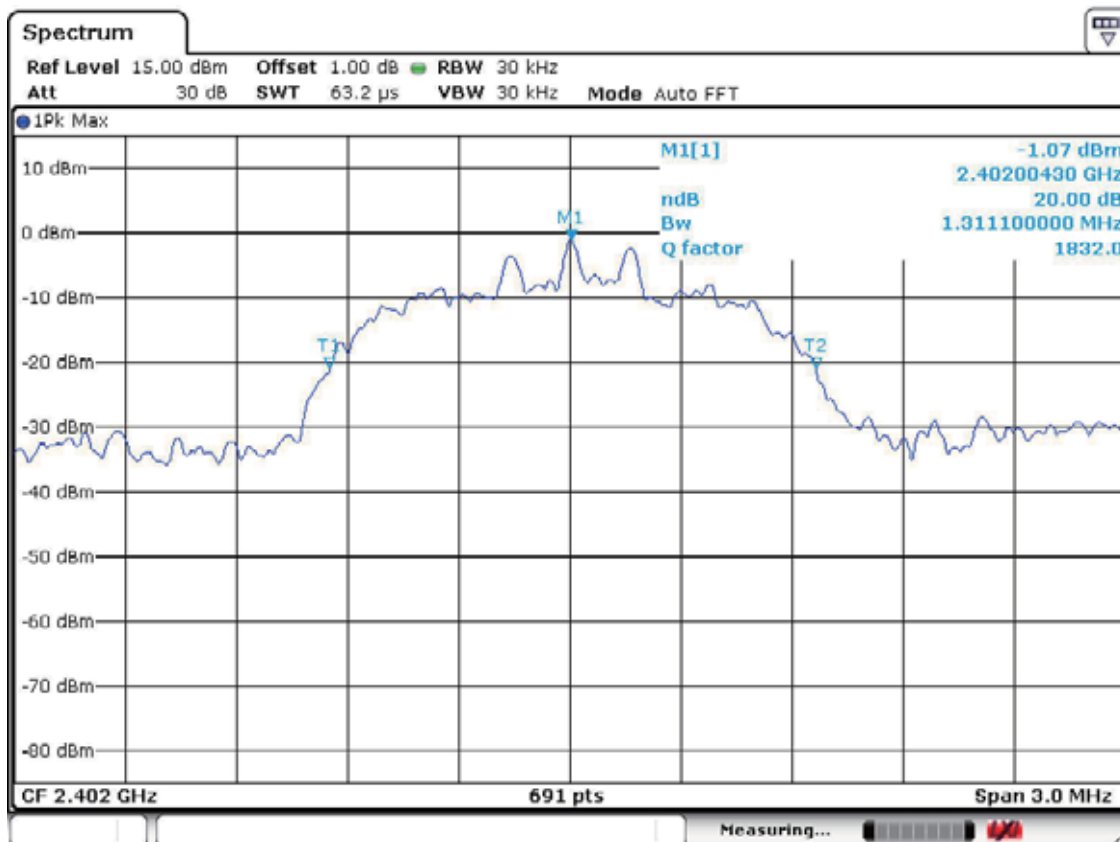
Channel 3 of basic mode
20 dB Bandwidth



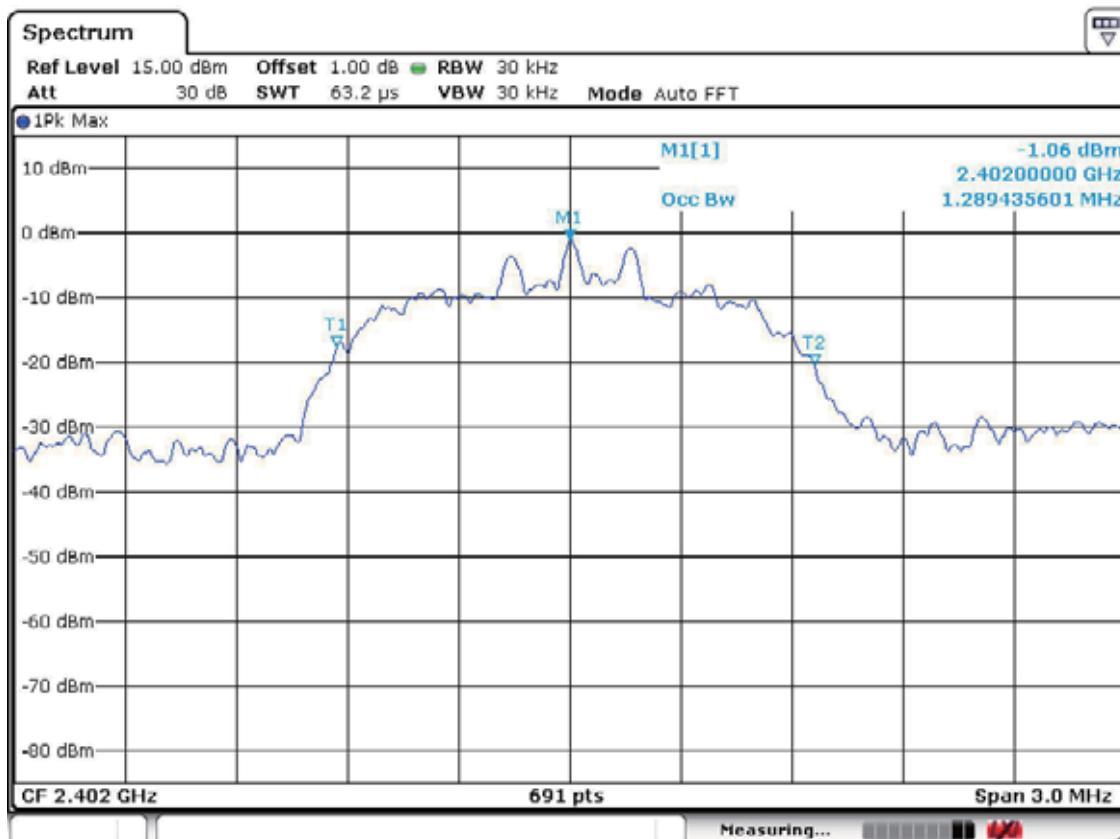
99% Bandwidth



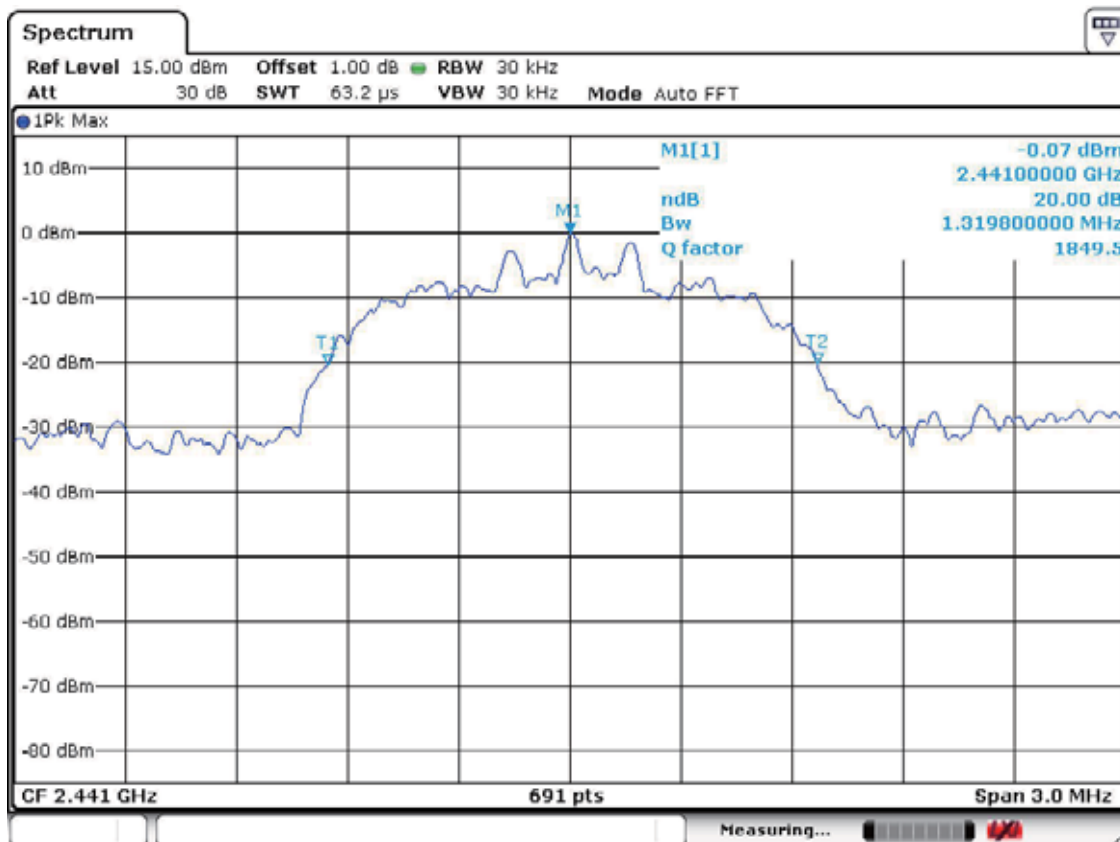
Channel 1 at EDR mode
20 dB Bandwidth



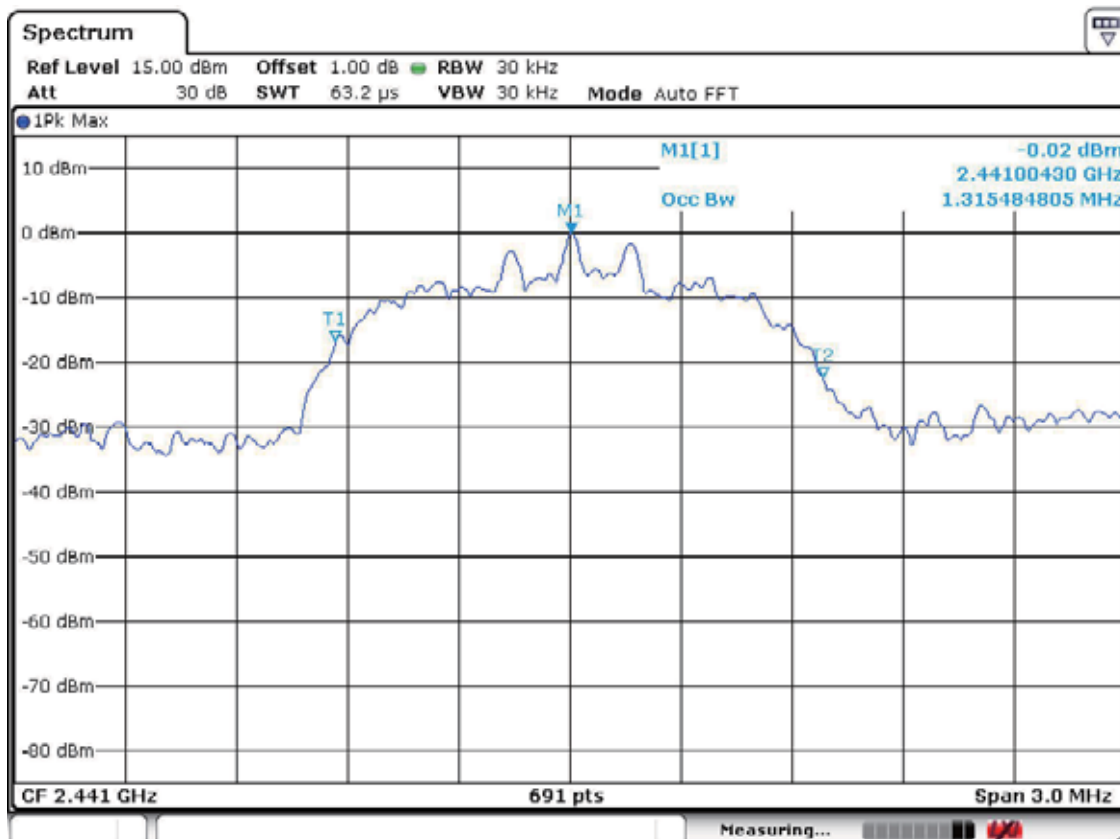
99% Bandwidth



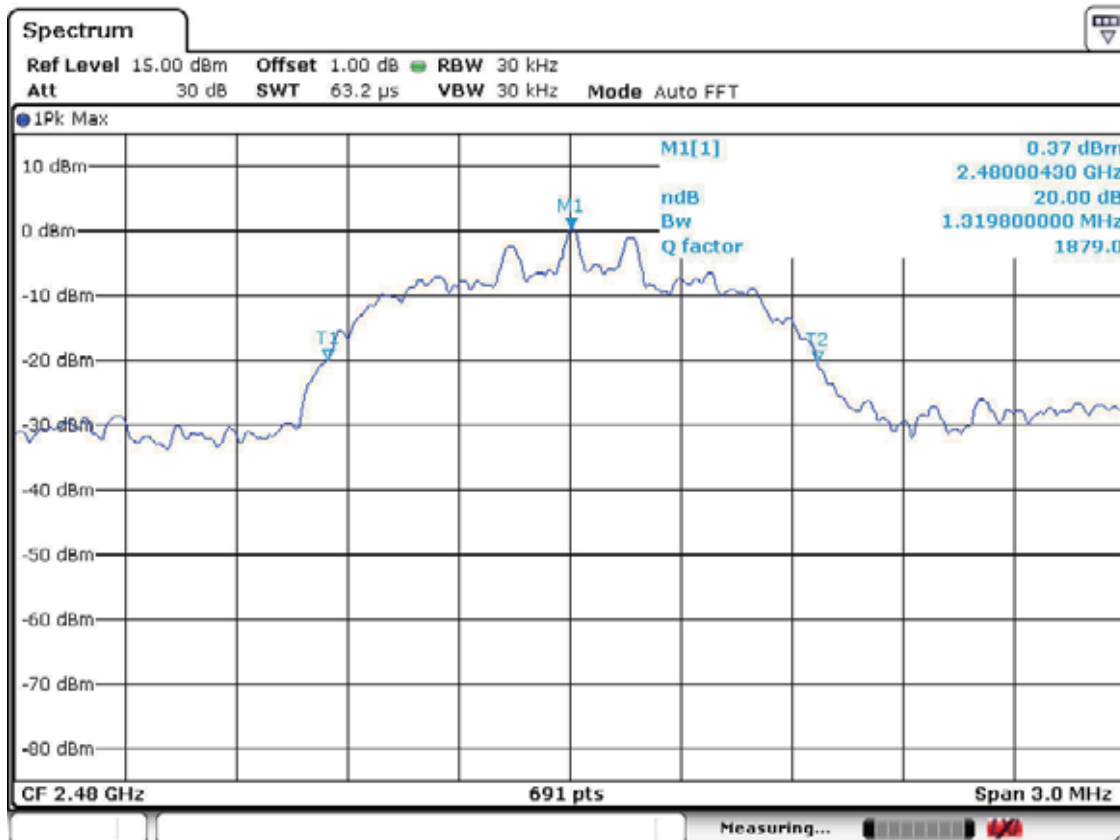
Channel 2 at EDR mode
20 dB Bandwidth



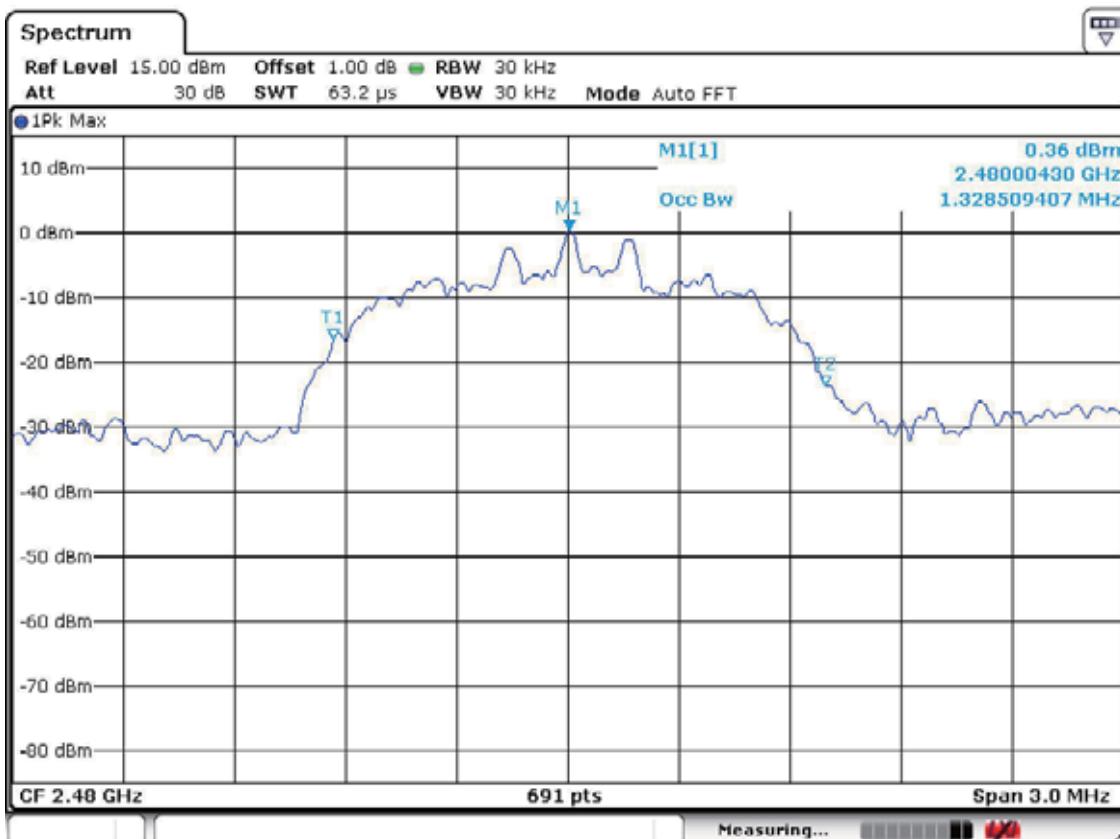
99% Bandwidth



Channel 3 at EDR mode
20 dB Bandwidth



99% Bandwidth



3.2.4 Time of Occupancy (Dwell Time)

Procedure:

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Center frequency = 2441 MHz

Span = zero

RBW = 1 MHz

VBW = 1 MHz (VBW \geq RBW)

Trace = max hold

Detector function = peak

Measurement Data:

| Mode | Number of transmission in a 31.6s (79Hopping*0.4) | Length of Transmission Time (msec) | Result (msec) | Limit (msec) |
|---------------|--|------------------------------------|---------------|--------------|
| DH1 | 30(Times / 3sec) *10.533 = 315.99 | 0.529 | 167.16 | 400 |
| DH3 | 15(Times / 3sec) *10.533 = 158.00 | 1.761 | 278.23 | 400 |
| DH5 | 10(Times / 3sec) *10.533 = 105.33 | 3.036 | 319.78 | 400 |
| EDR 3Mbps DH5 | 10(Times / 3sec) *10.533 = 105.33 | 3.036 | 319.78 | 400 |

- See next pages for actual measured spectrum plots.
- dwell time = {(number of hopping per second / number of slot) x duration time per channel} x 0.4 ms

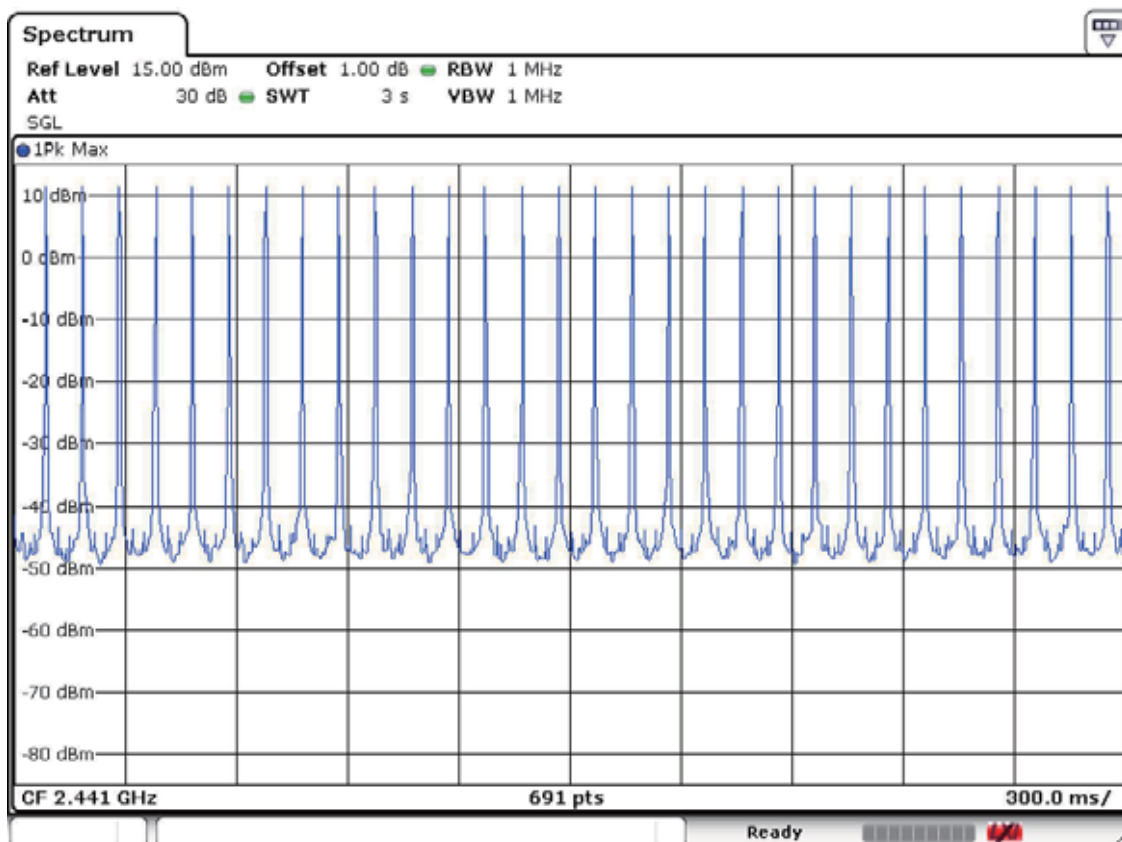
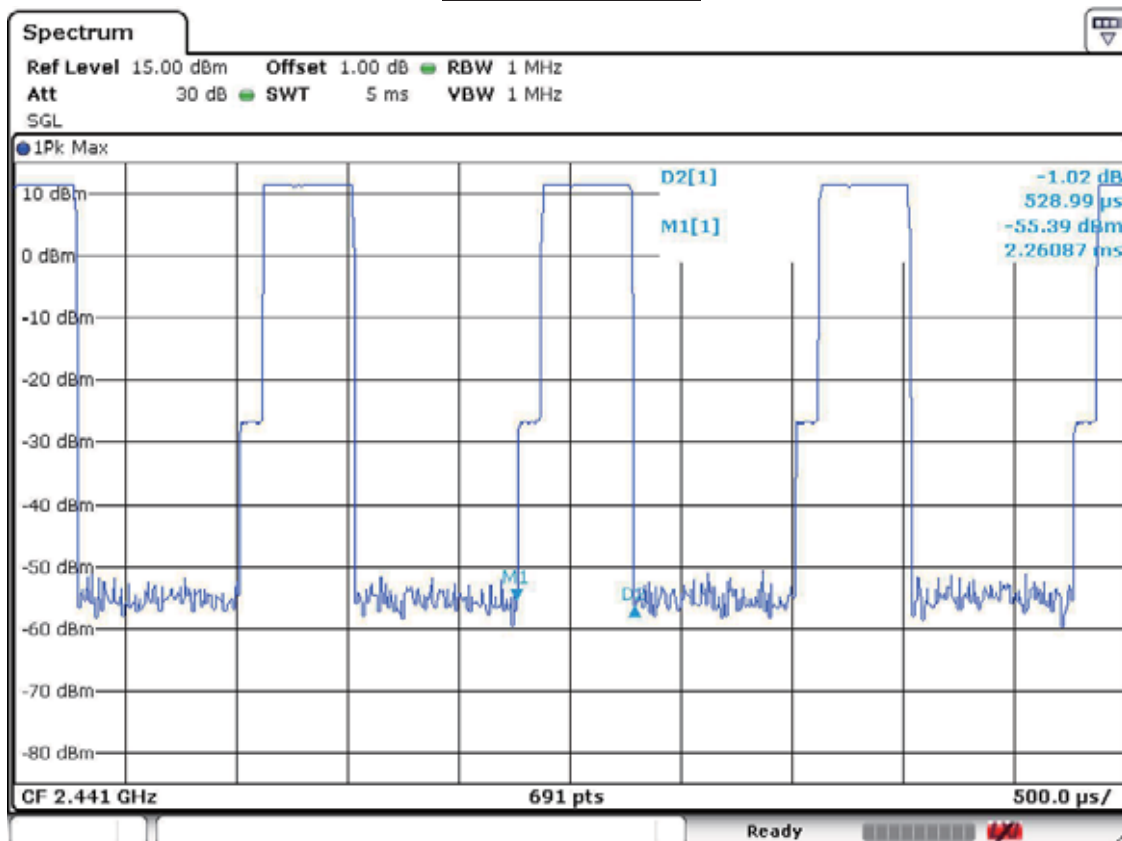
Minimum Standard:

0.4 seconds within a 30 second period per any frequency

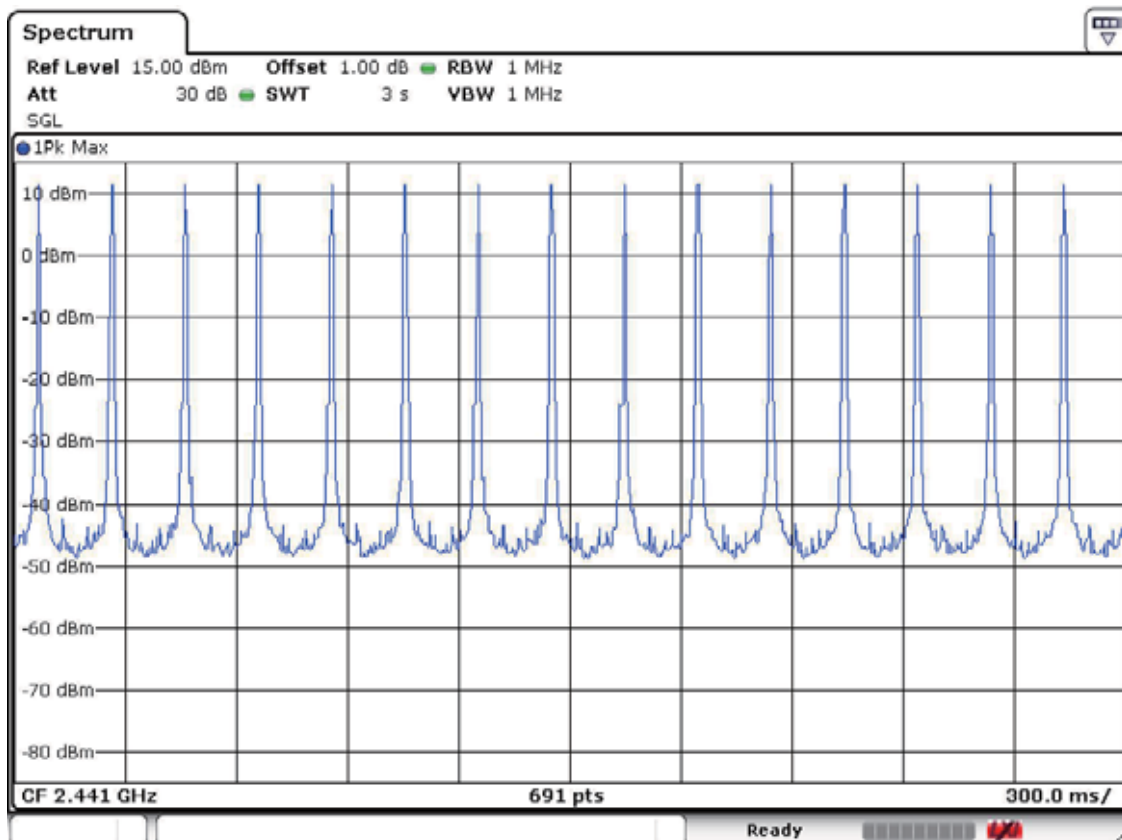
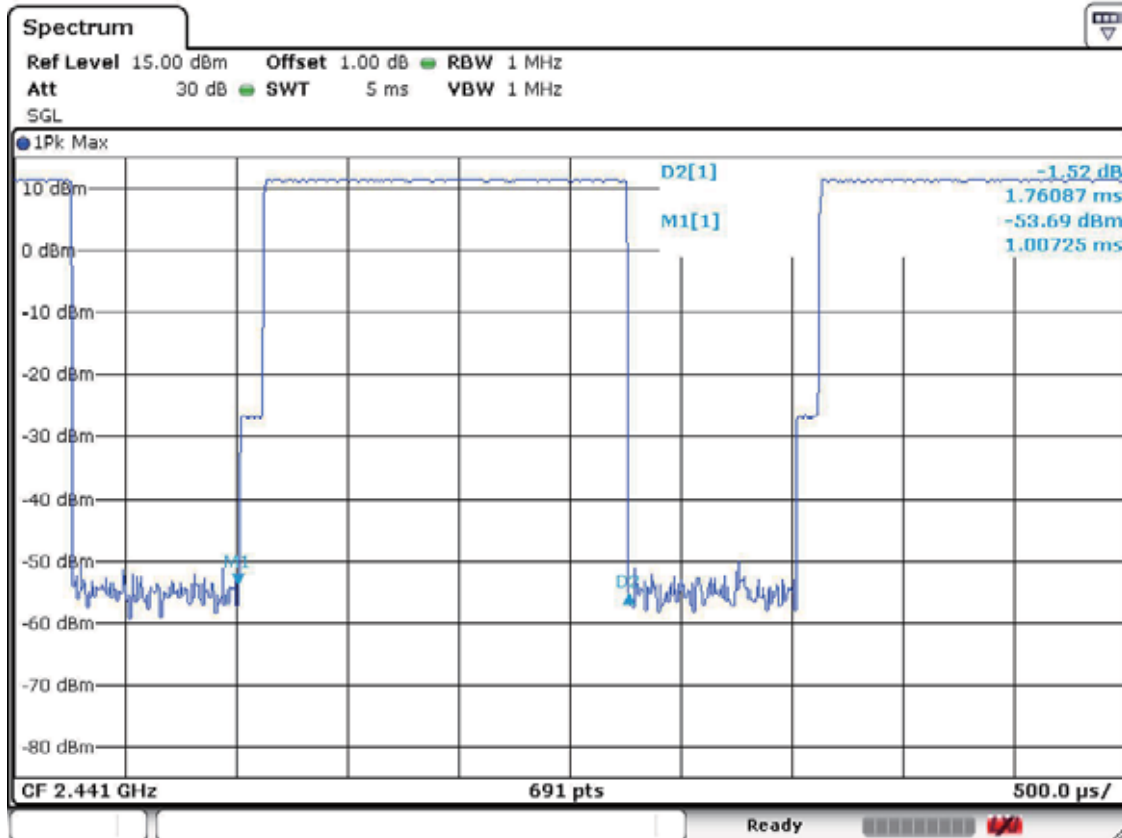
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

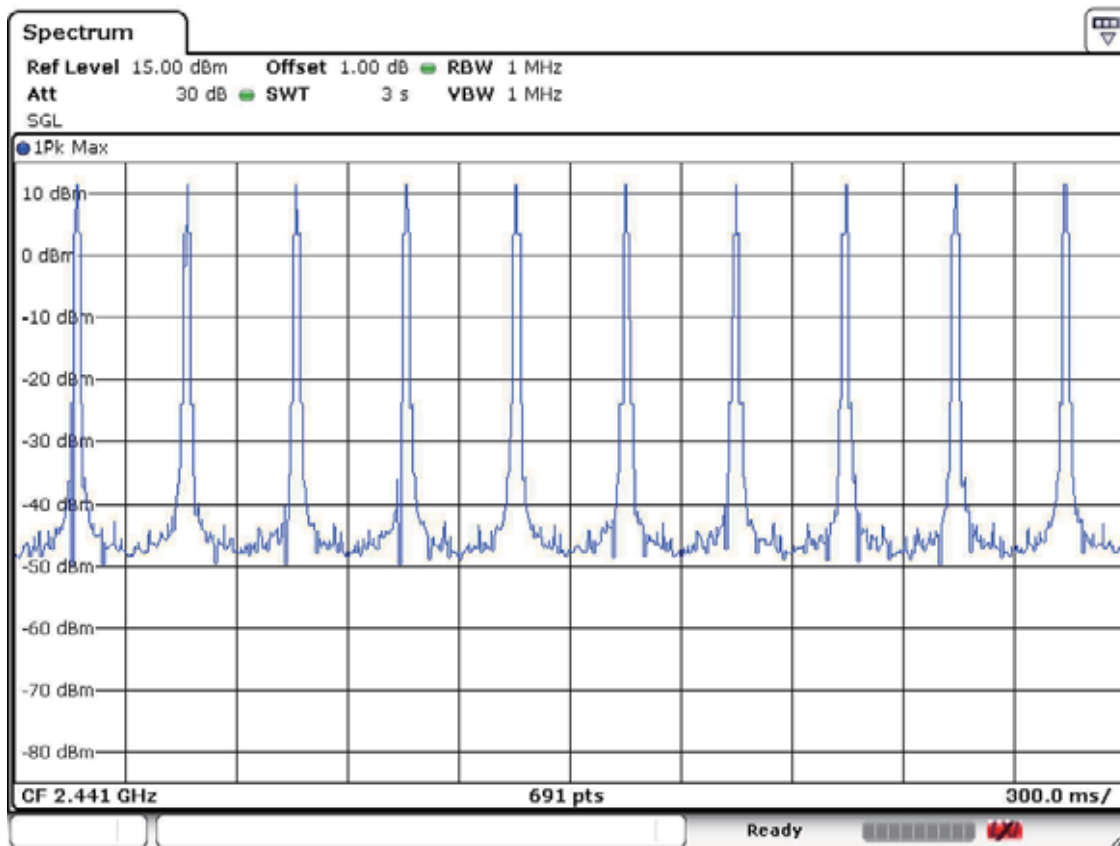
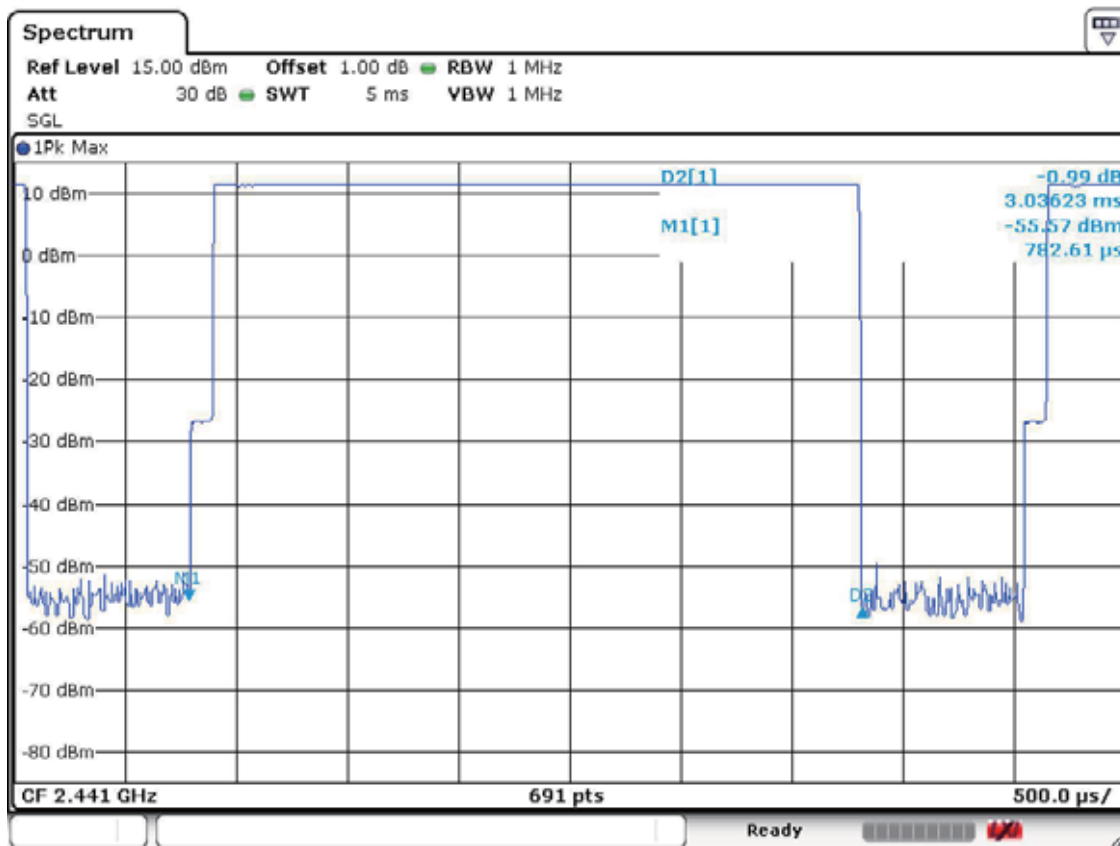
DH1 at basic mode



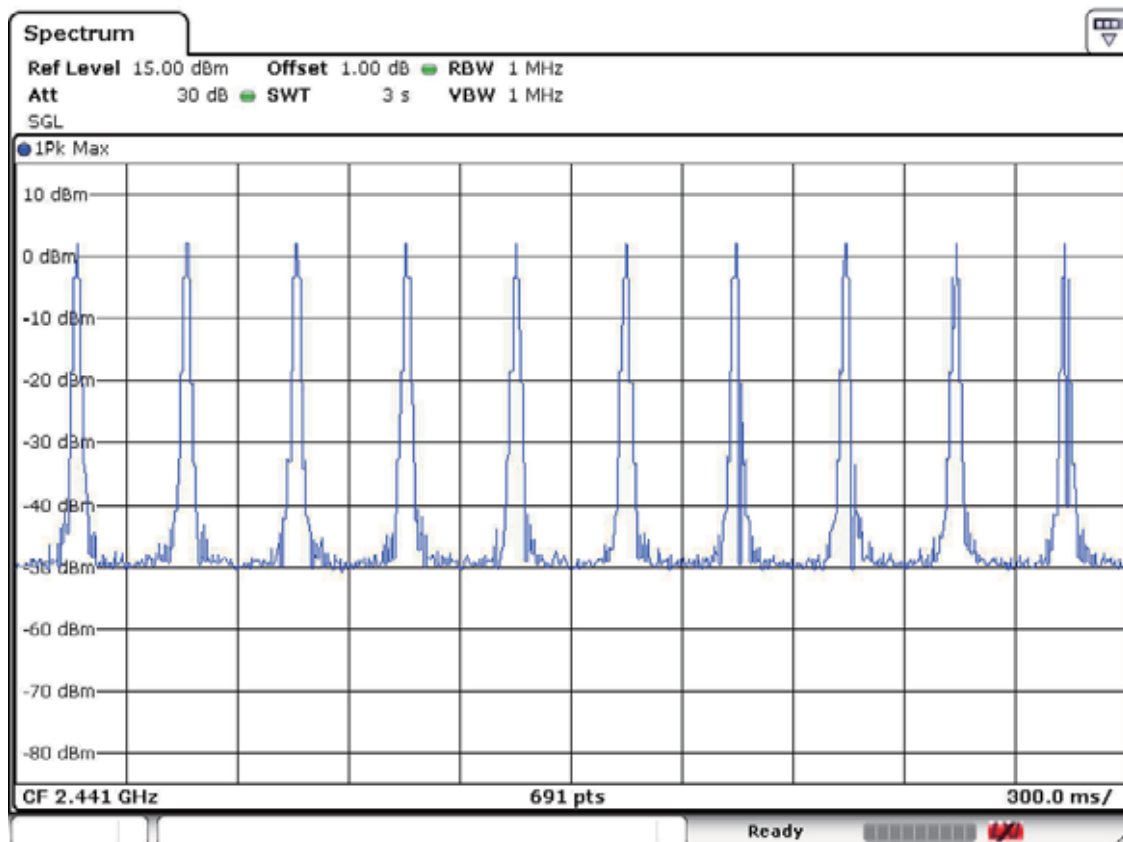
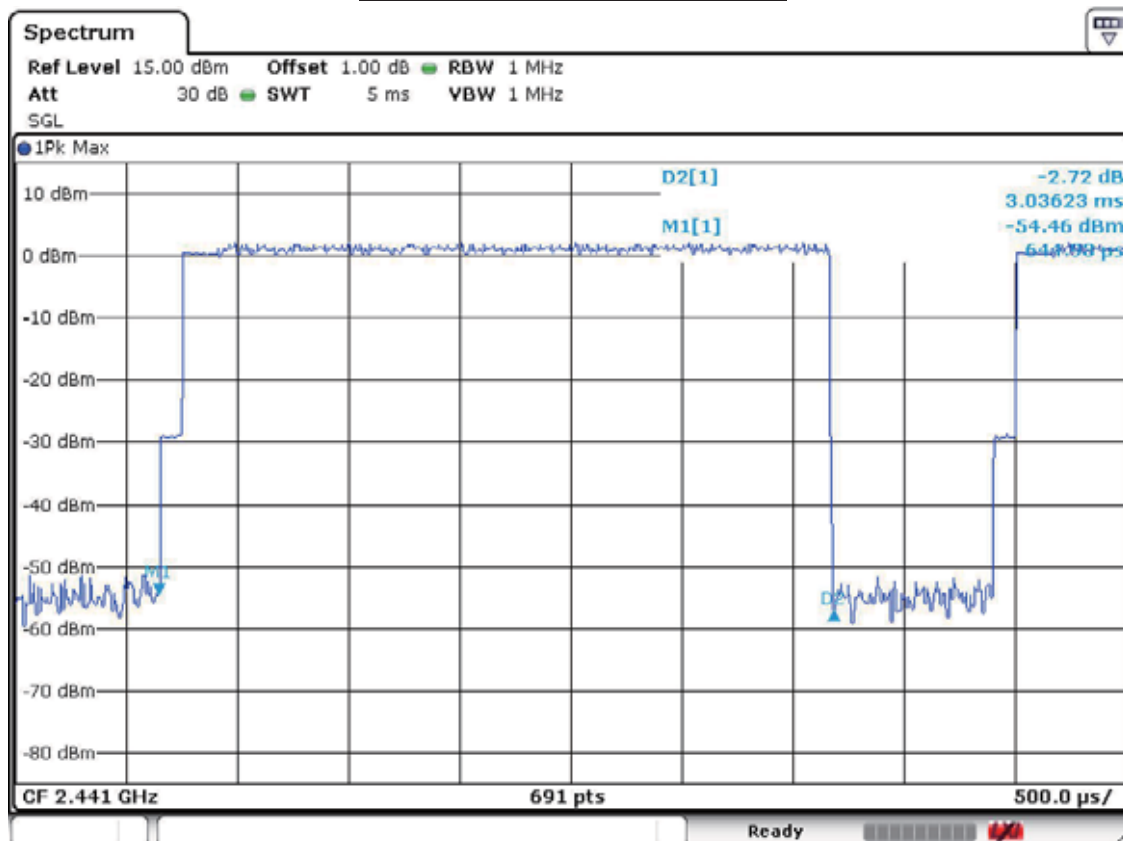
DH3 at basic mode



DH5 at basic mode



DH5 at EDR mode with 3Mbps



3.2.5 Transmitter Output Power

Procedure:

The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, 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 spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 10 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 3 MHz (greater than the 20dB bandwidth of the emission being measured)

VBW = 3 MHz (VBW \geq RBW)

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data: Basic Mode

| Frequency (MHz) | Ch. | Test Results | | |
|-----------------|-----|--------------|-------|----------|
| | | dBm | mW | Result |
| 2402 | 0 | 10.53 | 11.30 | Complies |
| 2441 | 39 | 11.52 | 14.19 | Complies |
| 2480 | 78 | 11.85 | 15.31 | Complies |

Measurement Data: EDR Mode

| Frequency (MHz) | Ch. | Test Results | | |
|-----------------|-----|--------------|------|----------|
| | | dBm | mW | Result |
| 2402 | 0 | 2.44 | 1.75 | Complies |
| 2441 | 39 | 3.73 | 2.36 | Complies |
| 2480 | 78 | 4.25 | 2.66 | Complies |

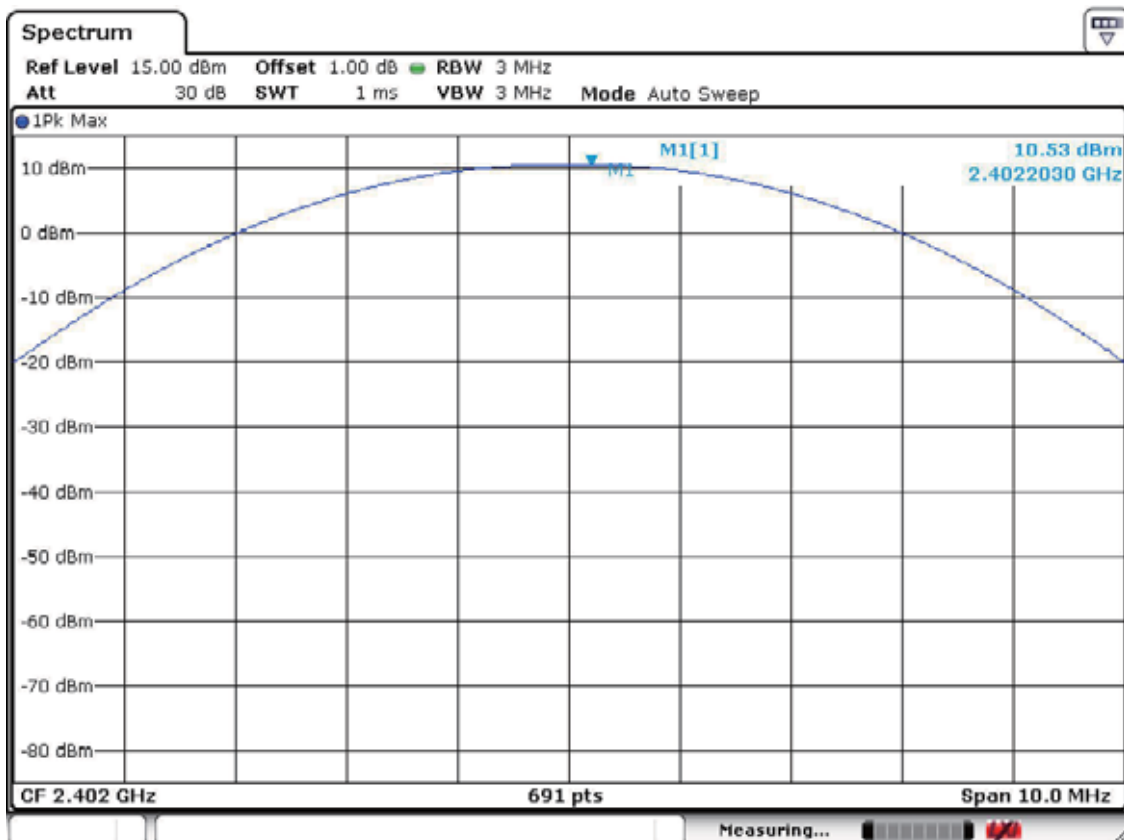
- See next pages for actual measured spectrum plots.

| | |
|--------------------------|----------|
| Minimum Standard: | < 250 mW |
|--------------------------|----------|

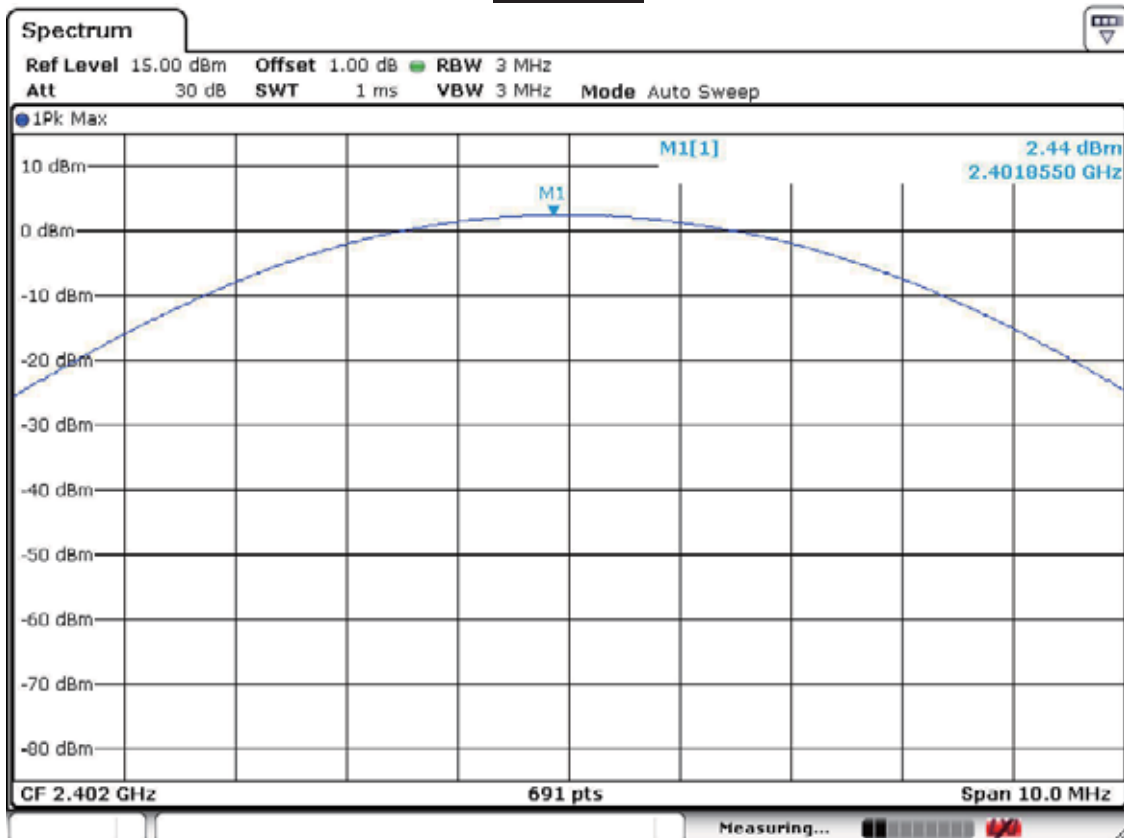
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

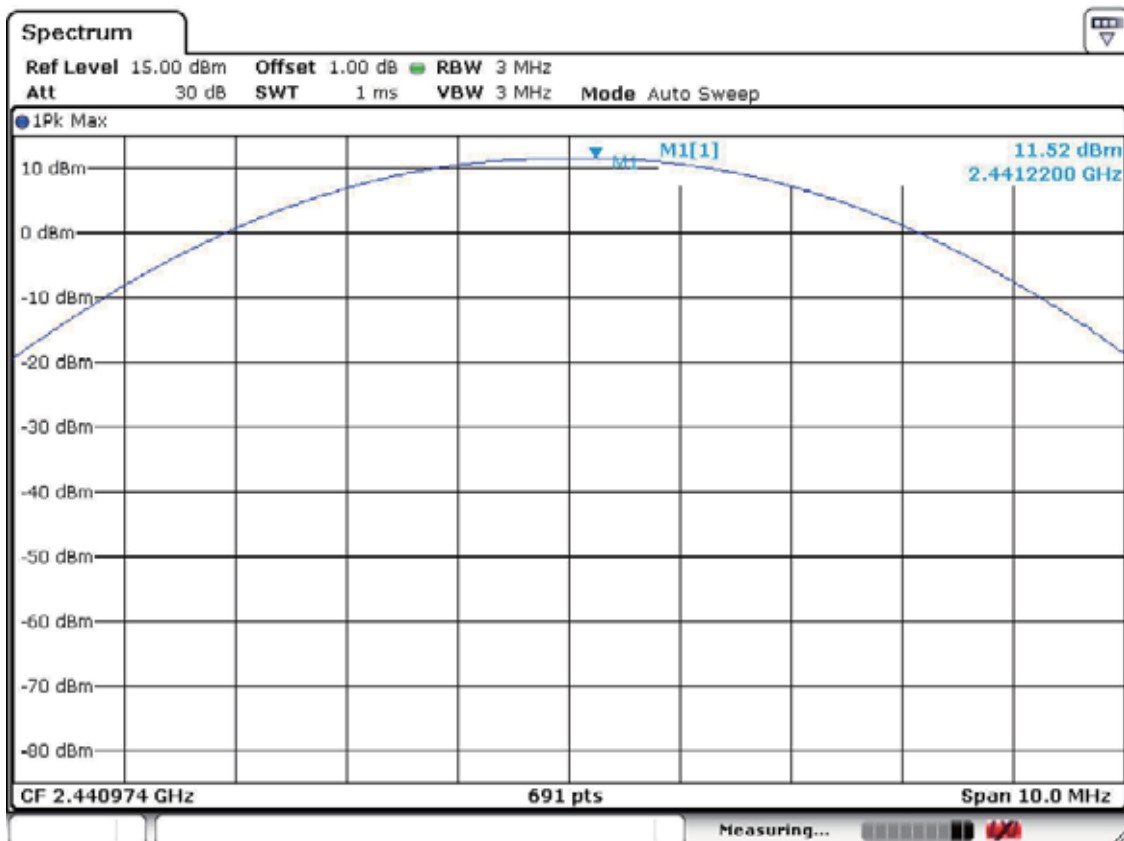
Channel 1 Basic mode



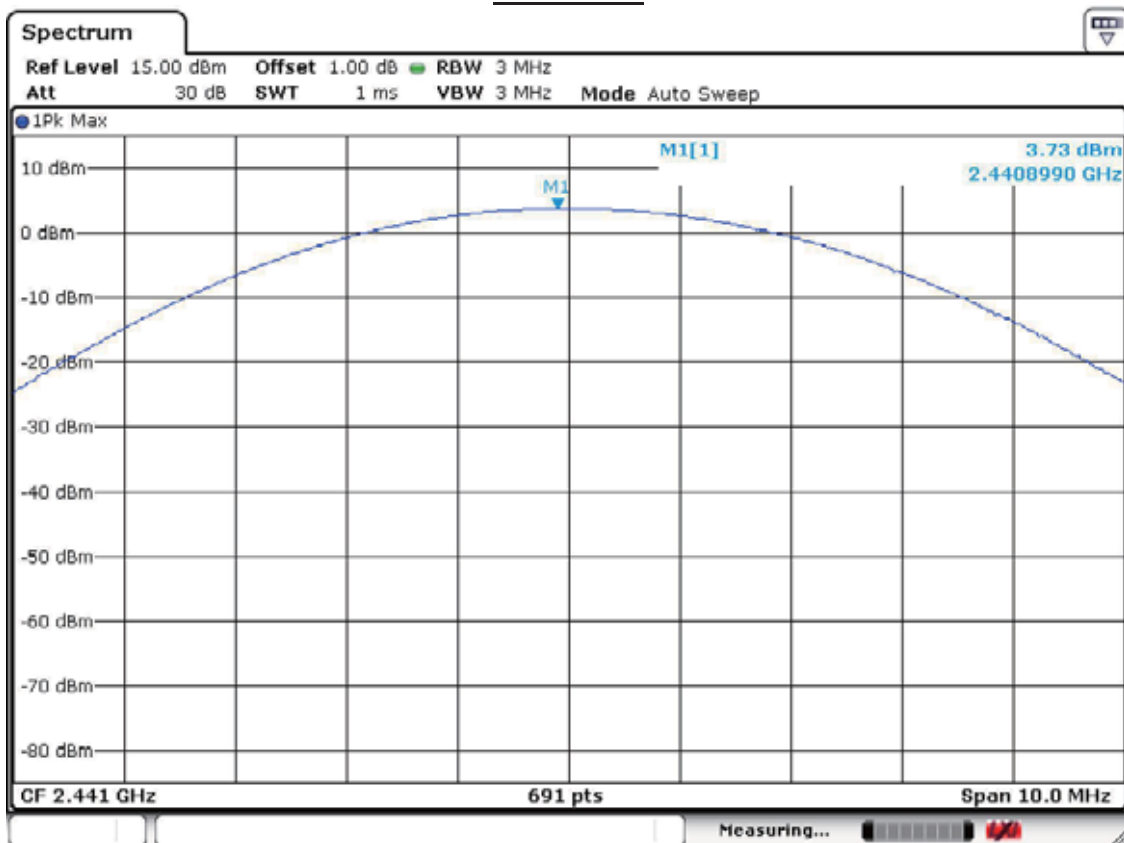
EDR mode



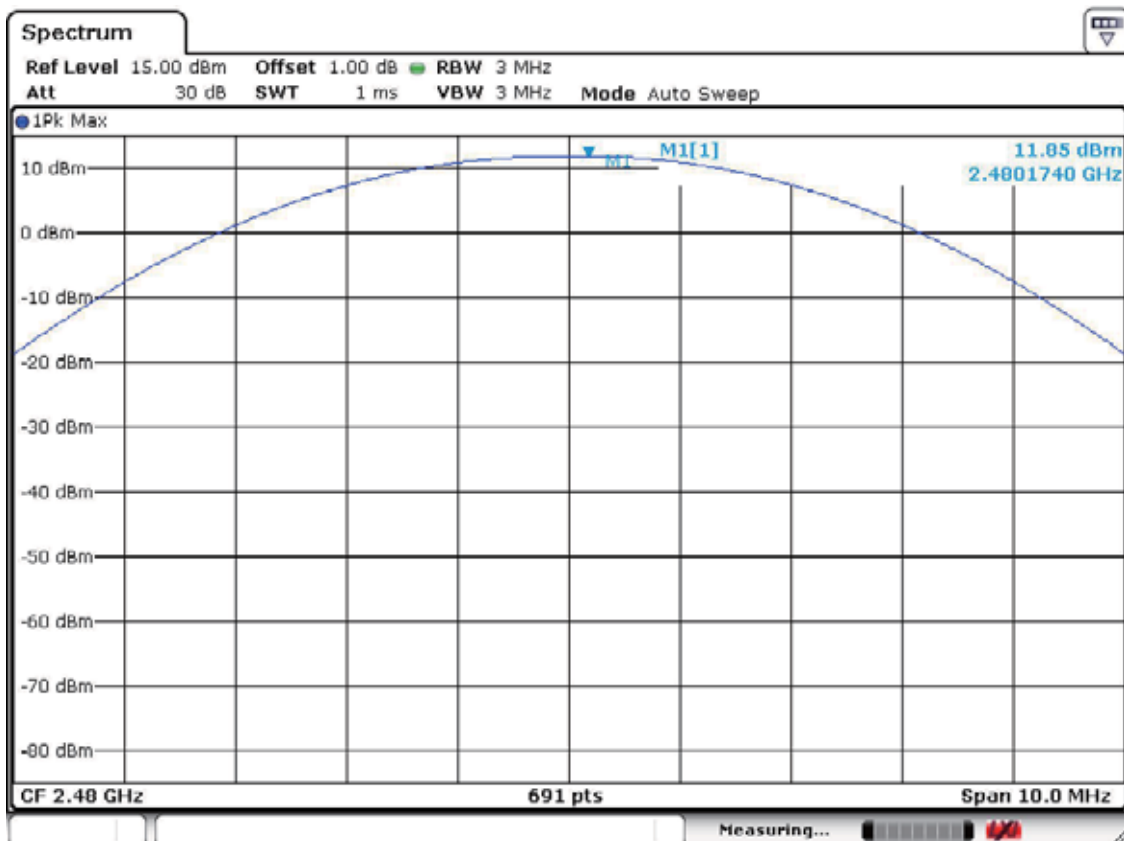
Channel 2 Basic mode



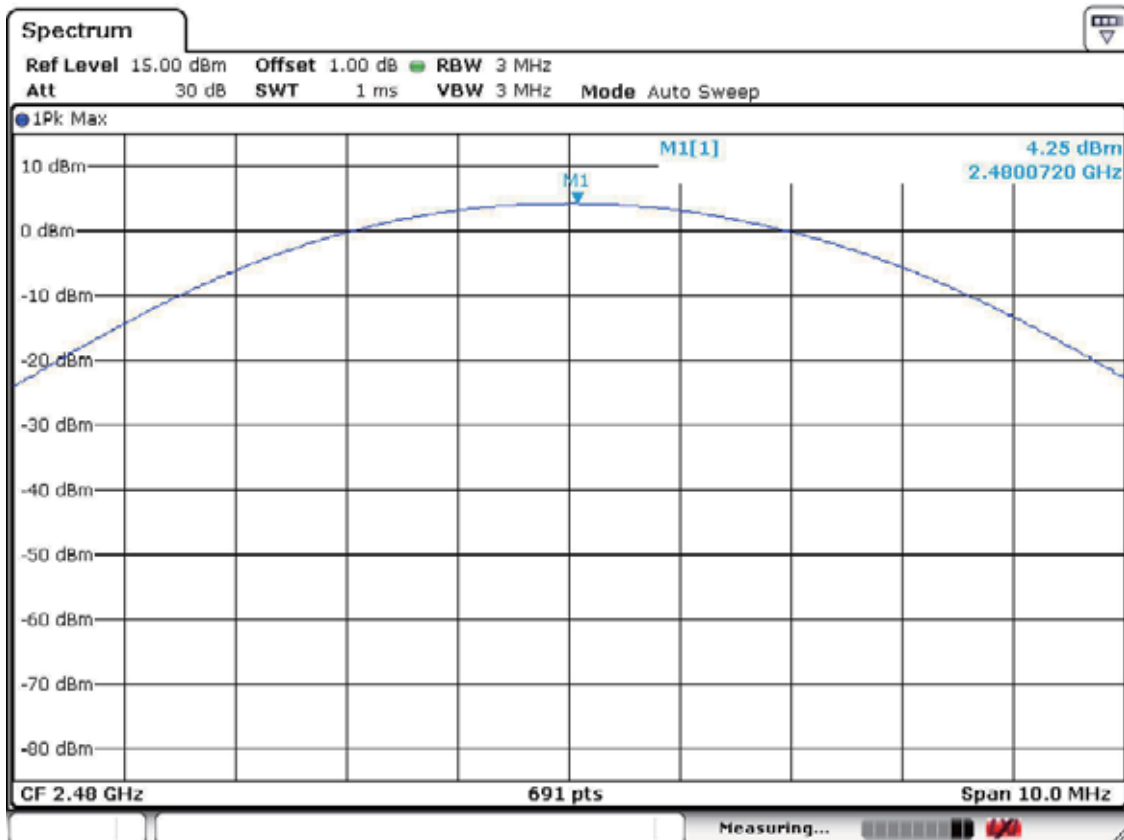
EDR mode



Channel 3 Basic mode



EDR mode



3.2.6 Band Edge

Procedure:

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

VBW = 100 kHz

Span = 10~30 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data: Complies

- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

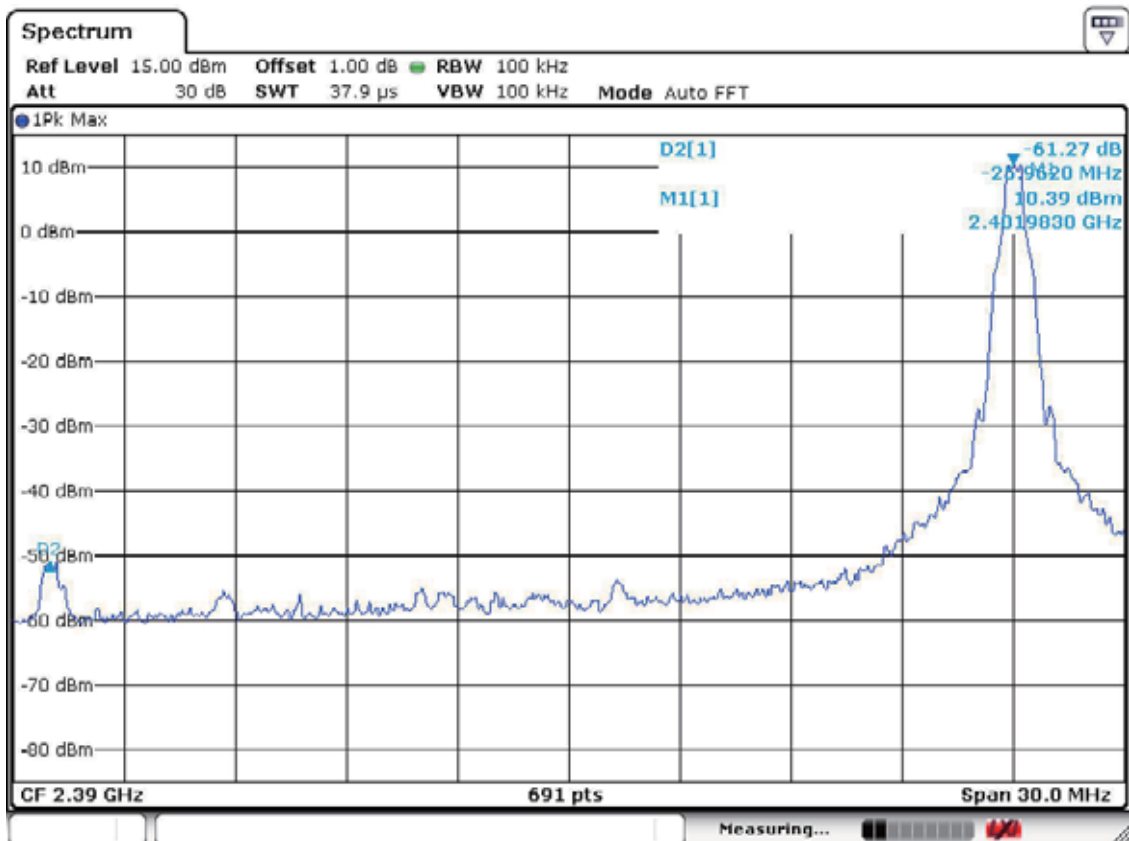
| | |
|--------------------------|----------|
| Minimum Standard: | > 20 dBc |
|--------------------------|----------|

Measurement Setup

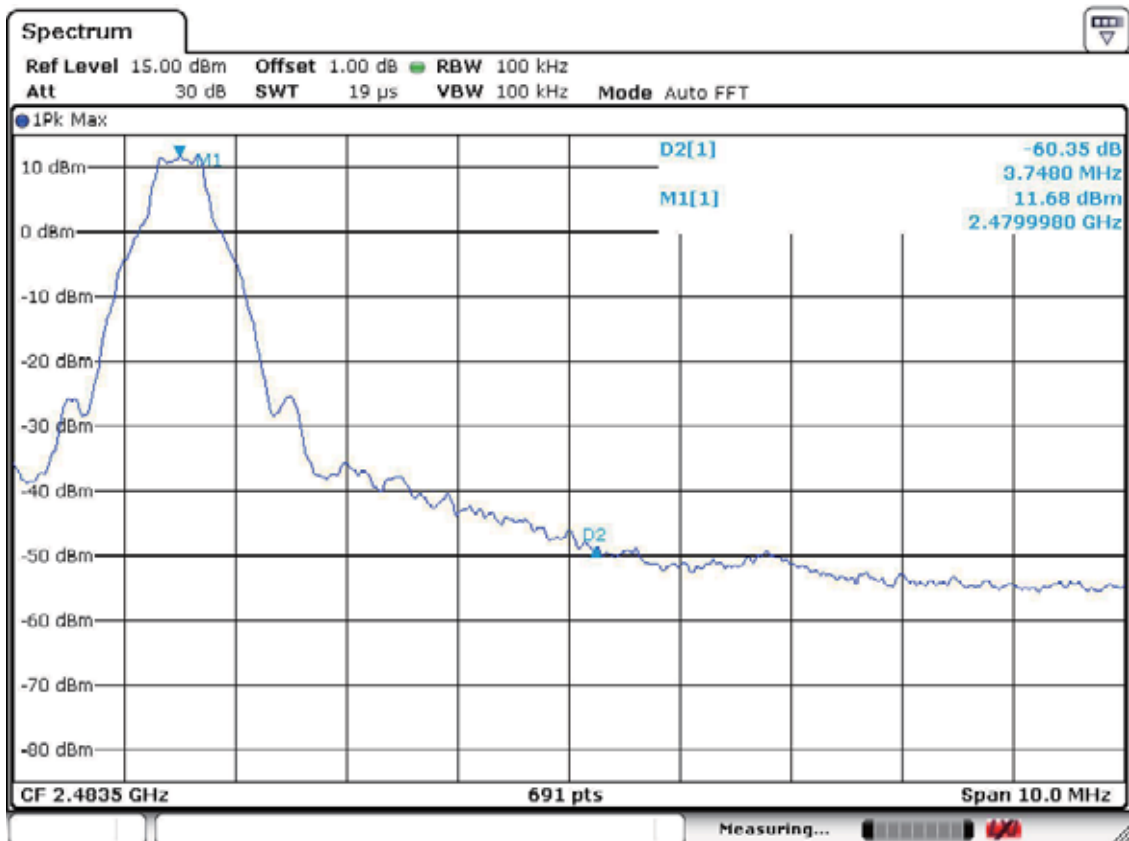
Same as the Chapter 3.2.1 (Figure 1)

Band – edge

Lower edge



Upper edge



Band-edges in the restricted band 2310-2390 MHz measurement

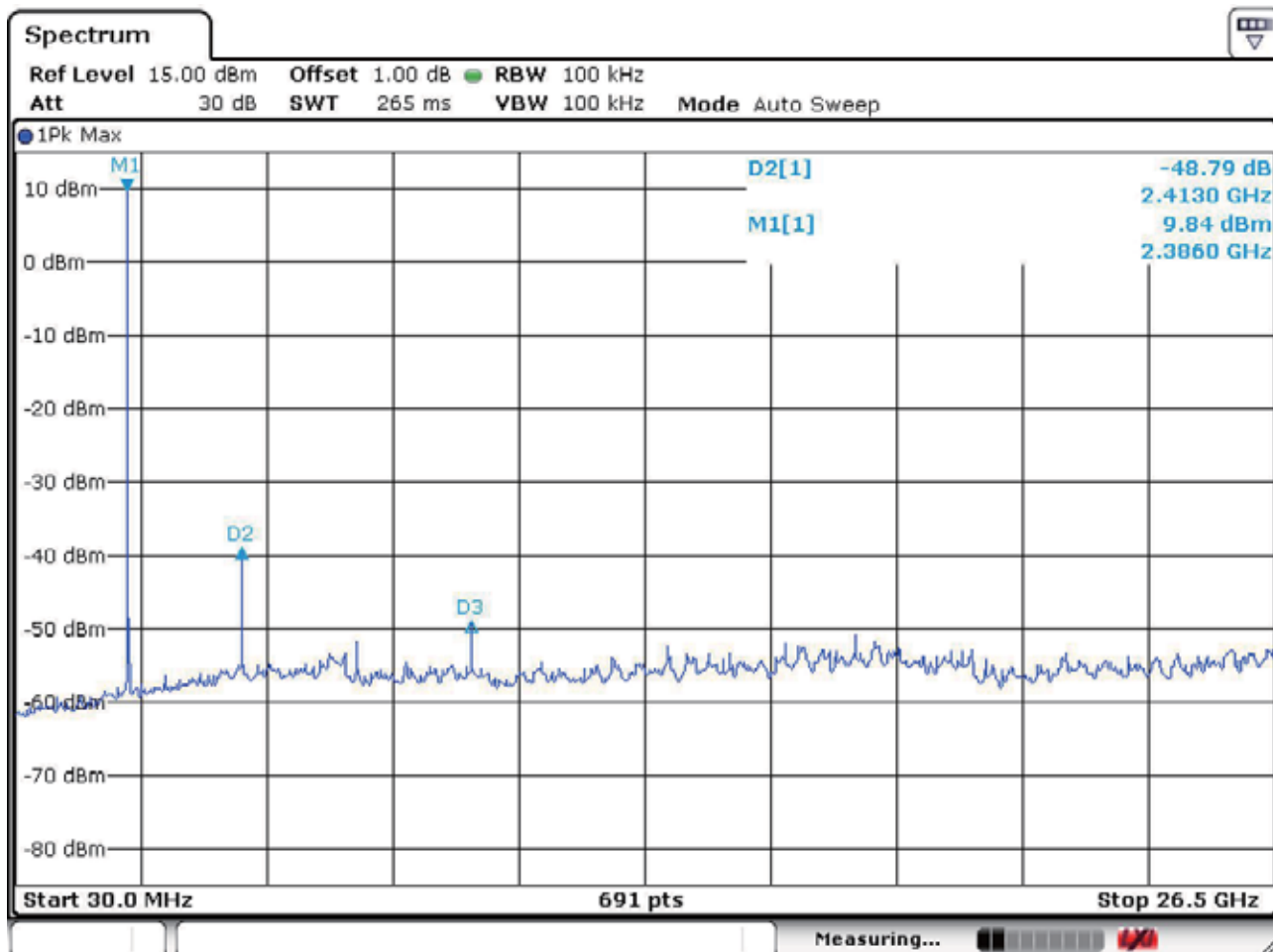
| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
|--------------------|---------------------|------|------|----------------------|--------------|-------|--------------------|------|--------------------|------|----------------|------|
| | AV / Peak | | | Antenna | Amp. Gain | Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| | | | | | | | | | | | | |
| 2342.8 | 45.8 | 60.3 | H | 25.4 | 37.1 | 4.0 | 54.0 | 74.0 | 38.0 | 52.5 | 16.0 | 21.5 |

Band-edges in the restricted band 2483.5-2500 MHz measurement

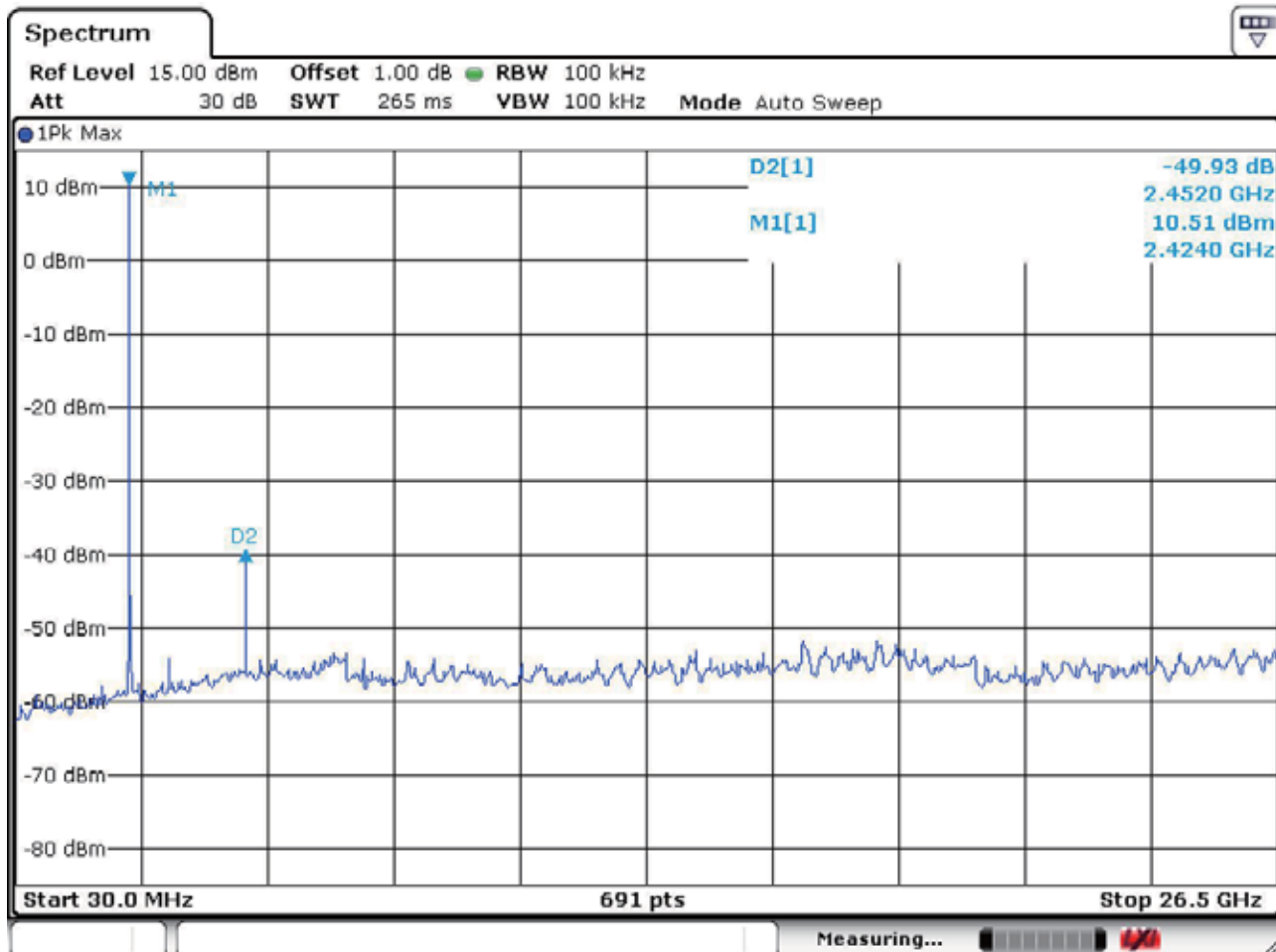
| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
|--------------------|---------------------|------|------|----------------------|--------------|-------|--------------------|------|--------------------|------|----------------|------|
| | AV / Peak | | | Antenna | Amp. Gain | Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| | | | | | | | | | | | | |
| 2483.5 | 49.3 | 61.8 | H | 25.4 | 37.1 | 4.0 | 54.0 | 74.0 | 41.6 | 54.1 | 12.5 | 20.0 |

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented.

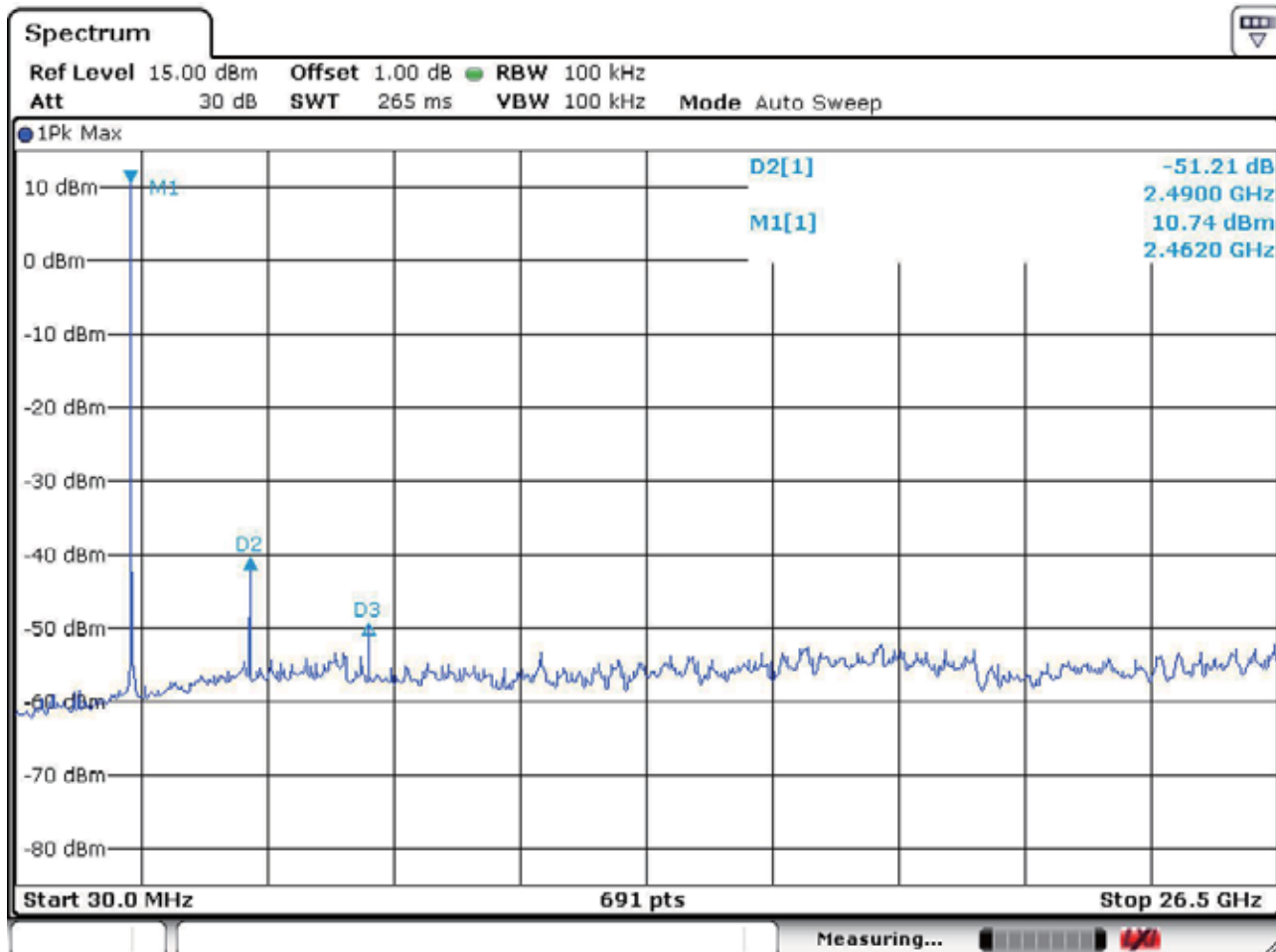
Unwanted Emission – Low channel
Frequency Range = 30 MHz ~ 26.5 GHz



Unwanted Emission – Middle channel
Frequency Range = 30 MHz ~ 26.5 GHz



Unwanted Emission – High channel
Frequency Range = 30 MHz ~ 26.5 GHz



3.2.7 Field Strength of Harmonics - Transmitter

Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions. In case of the air temperature of the test site is out of the range is 10 to 40°C before the testing proceeds the warm-up time of EUT maintain adequately

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 25 MHz ~ 10th harmonic.

RBW = 100 kHz (25MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

Trace = max hold

Peak:VBW \geq RBW

Average:VBW=10Hz

Detector function = Peak and Average

Sweep = auto

Measurement Data: Complies

- Refer to the next page.
- No other emissions were detected at a level greater than 20dB below limit.

Minimum Standard: FCC Part 15.209(a)

| Frequency (MHz) | Limit (uV/m) @ 3m |
|-----------------|----------------------|
| 0.009 ~ 0.490 | 2400/F(kHz) (@ 300m) |
| 0.490 ~ 1.705 | 24000/F(kHz) (@ 30m) |
| 1.705 ~ 30 | 30(@ 30m) |
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Measurement Data:

| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | D.C.F | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
|--------------------|---------------------|------|------|----------------------|----------|-------|--------|--------------------|------|--------------------|------|----------------|------|
| | AV / Peak | | | Antenna | Amp.Gain | Cable | | AV/Peak | | AV/Peak | | AV / Peak | |
| | | | | | | | | | | | | | |
| 4804.0 | 57.8 | 65.1 | H | 31.4 | 36.5 | 5.7 | -30.25 | 54.0 | 74.0 | 28.2 | 35.5 | 25.8 | 38.5 |
| 4882.0 | 33.7 | 44.0 | H | 31.4 | 36.5 | 5.7 | -30.25 | 54.0 | 74.0 | 4.1 | 14.4 | 49.9 | 59.6 |
| 4960.0 | 44.6 | 51.0 | H | 31.4 | 36.5 | 5.7 | -30.25 | 54.0 | 74.0 | 15.0 | 21.4 | 39.0 | 52.6 |

- No other emissions were detected at a level greater than 20dB below limit.

- D.C.F (Duty Cycle Correction Factor) = $20\log(\text{The worst Case DWELL Time}/100\text{ms})$

$$= 20\log(3.043\text{ms}/100\text{ms}) = -30.33$$

Radiated Emissions – BT Pairing



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Tel +82-31-3236008,9
Fax:+82-31-3236010

EUT/Model No.: SENA(PD10)

TEST MODE: BT

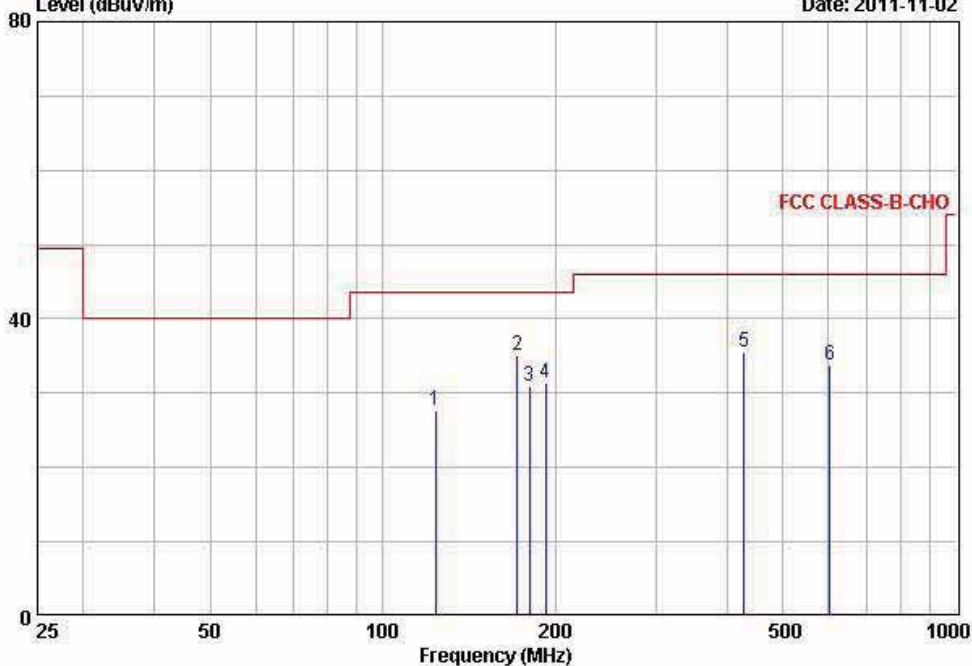
Temp Humi : 22°C / 53%

Tested by: CHO.K.H

Data: 61

Level (dBuV/m)

Date: 2011-11-02



| Freq | Reading | C.F | Result | Limit | Margin | Height | Angle | Polarity |
|----------|---------|--------|--------|--------|--------|--------|-------|------------|
| MHz | dBuV/m | dB/m | dBuV/m | dBuV/m | dB | cm | deg | |
| 1 123.80 | 43.80 | -16.04 | 27.76 | 43.50 | 15.74 | 108 | 186 | VERTICAL |
| 2 171.60 | 48.50 | -13.43 | 35.07 | 43.50 | 8.43 | 134 | 292 | HORIZONTAL |
| 3 180.30 | 44.80 | -13.92 | 30.88 | 43.50 | 12.62 | 100 | 172 | VERTICAL |
| 4 192.30 | 46.30 | -14.90 | 31.40 | 43.50 | 12.10 | 124 | 263 | HORIZONTAL |
| 5 427.40 | 43.60 | -8.02 | 35.58 | 46.00 | 10.42 | 118 | 203 | VERTICAL |
| 6 603.70 | 36.90 | -3.22 | 33.68 | 46.00 | 12.32 | 104 | 197 | VERTICAL |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

3.2.8 Field Strength of Harmonics - Receivers

Definition:

The field strength of emissions from intentional radiators was measured. In case of the air temperature of the test site is out of the range is 10 to 40°C before the testing proceeds the warm-up time of EUT maintain adequately

| | |
|---------------------|--|
| Test method | : FCC Part 15.209 |
| Frequency Range | : 25 MHz ~ 10 th harmonic. |
| Bandwidth | : 120 kHz (F < 1GHz) 1 MHz (F > 1GHz) |
| Distance of antenna | : 3 meters |
| Test mode | : Rx mode |
| Result | : Complies |

Measurement Data:

- Refer to the next page.
- No other emissions were detected at a level greater than 20dB below limit
- It gave the worse case emissions.

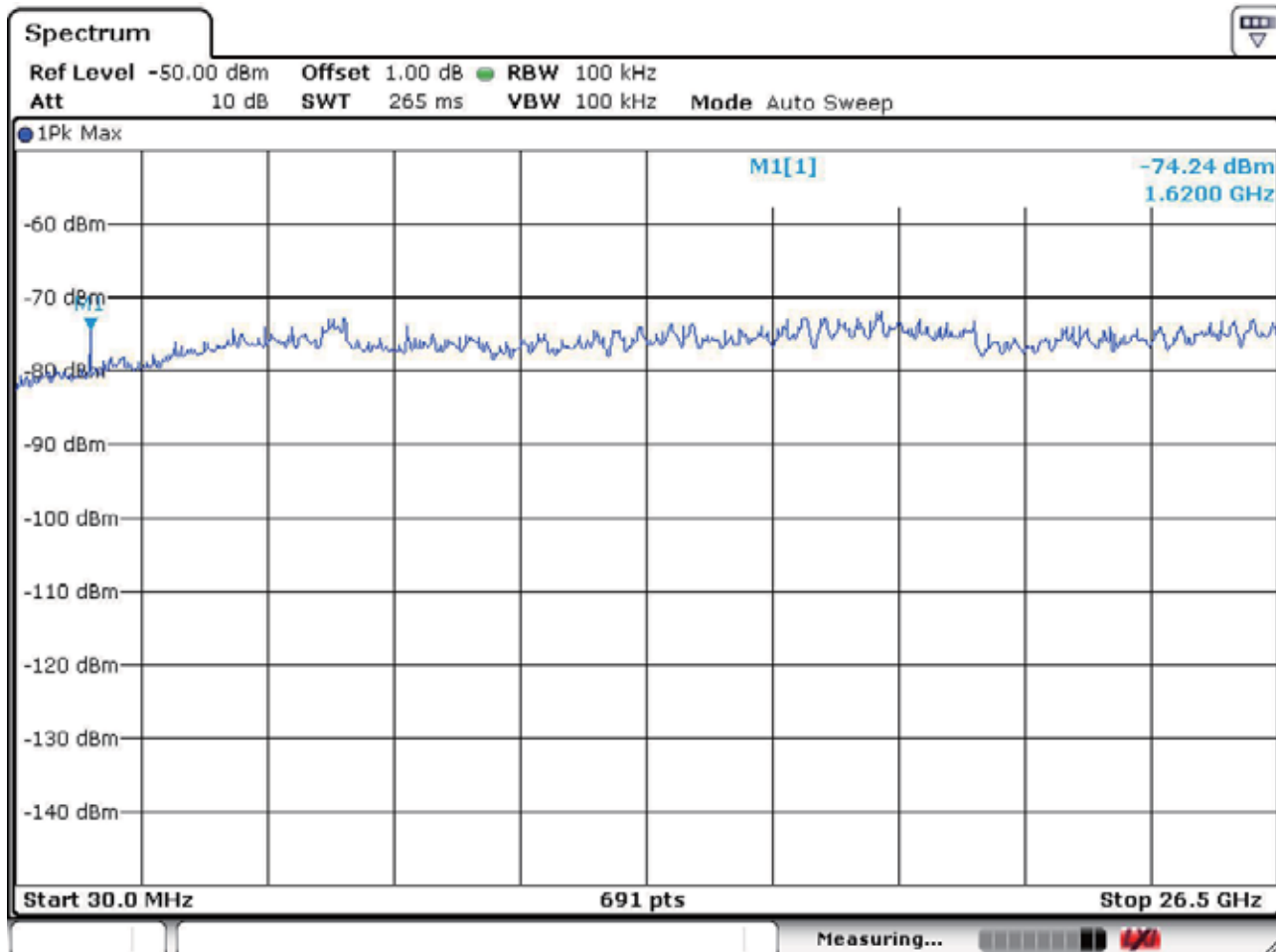
Field Strength Limit

Part 15.209 LIMIT:

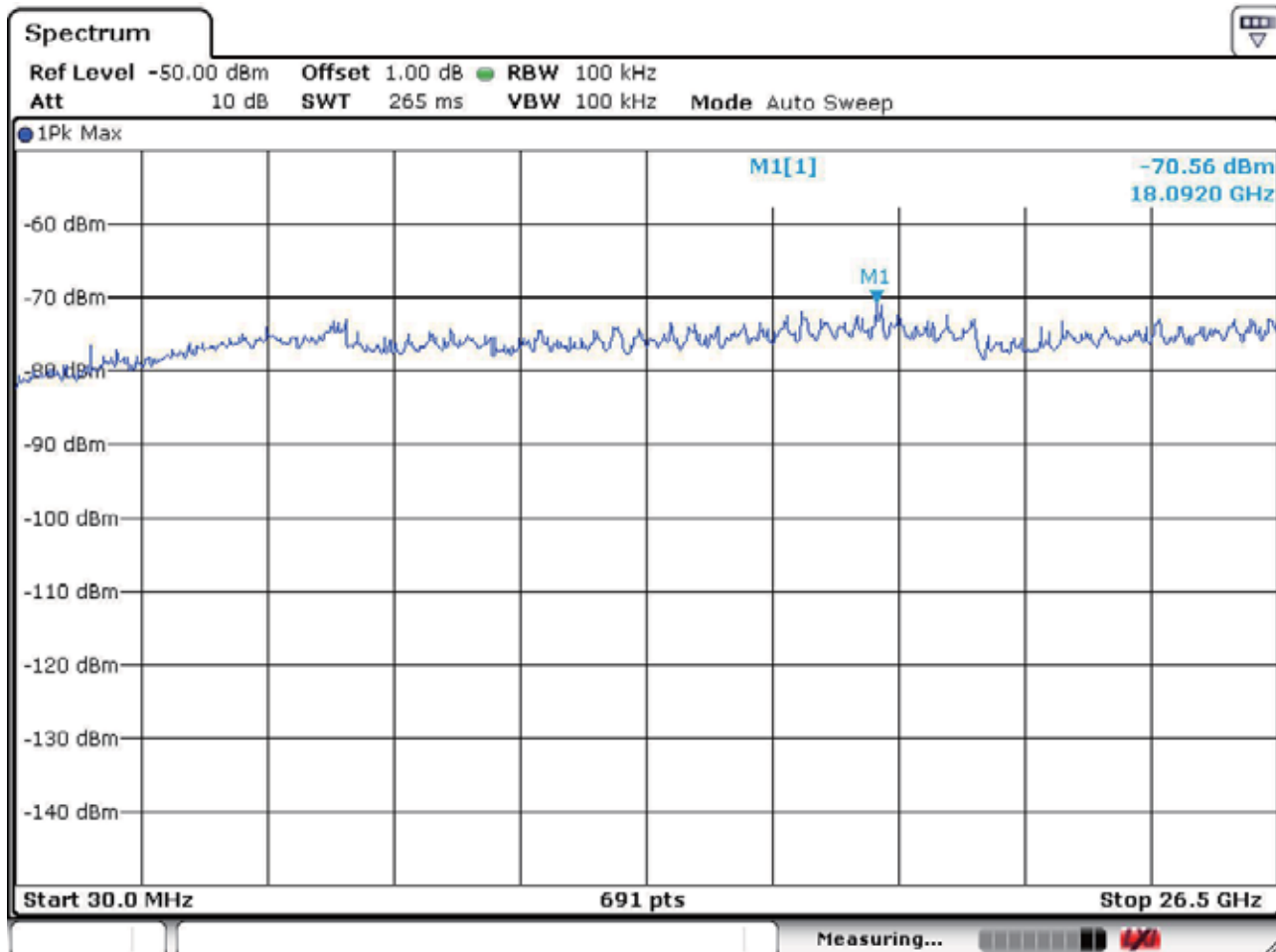
| Frequency (MHz) | Limit (uV/m) @ 3m |
|-----------------|-------------------|
| 0.009 ~ 0.490 | 2400/F(kHz) |
| 0.490 ~ 1.705 | 24000/F(kHz) |
| 1.705 ~ 30 | 30 |
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

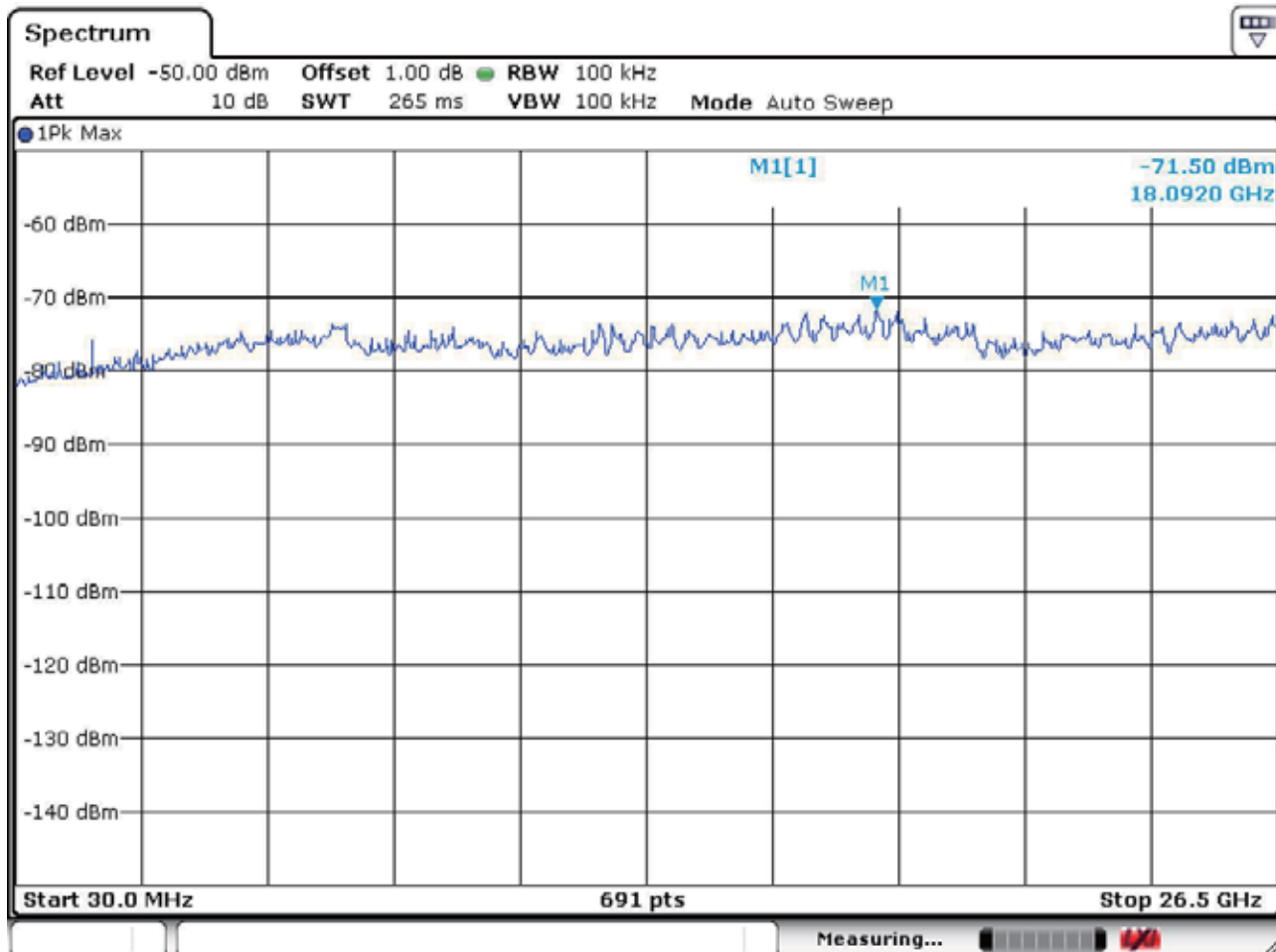
Conducted Emission – Low channel
Frequency Range = 30 MHz ~ 26.5 GHz



Conducted Emission – Middle channel
Frequency Range = 30 MHz ~ 26.5 GHz



Conduceted Emission – High channel
Frequency Range = 30 MHz ~ 26.5 GHz



Measurement Data:

| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
|--------------------|---------------------|------|------|----------------------|----------|-------|--------------------|-----|--------------------|------|----------------|------|
| | AV / Peak | | | Antenna | Amp.Gain | Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| | 1602.0 | 53.0 | | 55.8 | H | 25.4 | 38.4 | 3.0 | 54.0 | 74.0 | 43.0 | 45.8 |
| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
| | AV / Peak | | | Antenna | Amp.Gain | Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| | 1634.0 | 48.6 | | 53.2 | H | 25.4 | 38.4 | 3.0 | 54.0 | 74.0 | 38.6 | 43.2 |
| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
| | AV / Peak | | | Antenna | Amp.Gain | Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| | 1652.00 | 40.5 | | 47.8 | H | 25.4 | 38.4 | 3.0 | 54.0 | 74.0 | 30.5 | 37.8 |

No other emissions were detected at a level greater than 20dB below limit.

3.2.9 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Not Complies

- This device is only operated by DC

Minimum Standard: FCC Part 15.207(a)/EN 55022

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|--------------------------|------------------------|------------|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz

APPENDIX

TEST EQUIPMENT USED FOR TESTS

| | Description | Model No. | Serial No. | Manufacturer | Interval | Last Cal. Date |
|----|--------------------------------------|------------------|-------------|------------------------|----------|----------------|
| 1 | Spectrum Analyzer (~30GHz) | FSV-30 | 100757 | R&S | 1 year | 2011-01-24 |
| 2 | Signal Generator (~3.2GHz) | 8648C | 3623A02597 | HP | 1 year | 2011-03-30 |
| 3 | Signal Generator (1~20GHz) | 83711B | US34490456 | HP | 1 year | 2011-03-30 |
| 4 | Attenuator (3dB) | 8491A | 37822 | HP | 2 year | 2010-10-08 |
| 5 | Attenuator (10dB) | 8491A | 63196 | HP | 2 year | 2010-10-08 |
| 6 | Attenuator (30dB) | 8498A | 3318A10929 | HP | 2 year | 2011-01-05 |
| 7 | Test Receiver (~30MHz) | ESHS10 | 828404/009 | R&S | 1 year | 2011-03-30 |
| 8 | EMI Test Receiver (~1GHz) | ESCI7 | 100722 | R&S | 1 year | 2011-10-07 |
| 9 | RF Amplifier (~1.3GHz) | 8447D | 2439A09058 | HP | 2 year | 2010-10-08 |
| 10 | RF Amplifier (1~18GHz) | 8449B | 3008A02126 | HP | 2 year | 2010-03-29 |
| 11 | Horn Antenna (1~18GHz) | BBHA 9120D | 9120D122 | SCHWARZBECK | 2 year | 2010-12-24 |
| 12 | Horn Antenna (18 ~ 40GHz) | SAS-574 | 154 | Schwarzbeck | 2 year | 2010-11-25 |
| 13 | Horn Antenna (18 ~ 40GHz) | SAS-574 | 155 | Schwarzbeck | 2 year | 2010-11-25 |
| 14 | TRILOG Antenna | VULB 9160 | 9160-3172 | SCHWARZBECK | 2 year | 2010-10-07 |
| 15 | Dipole Antenna | VHA9103 | 2116 | SCHWARZBECK | 2 year | 2010-11-25 |
| 16 | Dipole Antenna | VHA9103 | 2117 | SCHWARZBECK | 2 year | 2010-11-25 |
| 17 | Dipole Antenna | VHA9105 | 2261 | SCHWARZBECK | 2 year | 2010-11-25 |
| 18 | Dipole Antenna | VHA9105 | 2262 | SCHWARZBECK | 2 year | 2010-11-25 |
| 19 | Hygro-Thermograph | THB-36 | 0041557-01 | ISUZU | 2 year | 2010-04-12 |
| 20 | Splitter (SMA) | ZFSC-2-2500 | SF617800326 | Mini-Circuits | - | - |
| 21 | Power Divider | 11636A | 6243 | HP | 2 year | 2010-10-08 |
| 22 | DC Power Supply | 6622A | 3448A03079 | HP | - | - |
| 23 | Frequency Counter | 5342A | 2826A12411 | HP | 1 year | 2011-03-30 |
| 24 | Power Meter | EPM-441A | GB32481702 | HP | 1 year | 2011-03-30 |
| 25 | Power Sensor | 8481A | US41030291 | HP | 1 year | 2011-10-07 |
| 26 | Audio Analyzer | 8903B | 3729A18901 | HP | 1 year | 2011-10-07 |
| 27 | Modulation Analyzer | 8901B | 3749A05878 | HP | 1 year | 2011-10-07 |
| 28 | TEMP & HUMIDITY Chamber | YJ-500 | LTAS06041 | JinYoung Tech | 1 year | 2011-10-07 |
| 29 | Stop Watch | HS-3 | 601Q09R | CASIO | 2 year | 2010-03-31 |
| 30 | LISN | ENV216 | 100408 | R&S | 1 year | 2011-10-07 |
| 31 | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 106243 | R&S | 2 year | 2010-05-13 |
| 32 | Highpass Filter | WHKX1.5/15G-10SS | 74 | Wainwright Instruments | - | - |
| 33 | Highpass Filter | WHKX3.0/18G-10SS | 118 | Wainwright Instruments | - | - |