# Test Report of FCC CFR 47 Part 15 Subpart C

## On Behalf of

## SHENZHEN GONBES TECHNOLOGY CO., LTD

| | |
|---|---|
| **FCC ID:** | **2ABMEG15-BT** |
| **Product Description:** | **3D Glasses** |
| **Model No.:** | **G15-BT** |
| **Supplementary Model:** | **N/A** |

| | |
|---|---|
| **Prepared for:** | **SHENZHEN GONBES TECHNOLOGY CO., LTD**<br>Room 1102-1103, Unit B4, Kexing Science Park, No.15 Keyuan Rd, Nanshan, Shenzhen, China |
| **Prepared by:** | **Shenzhen Bontek Compliance Testing Laboratory Co., Ltd.**<br>1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China<br>Tel: 86-755-86337020<br>Fax: 86-755-86337028 |
| **Report No.:** | BCT13KR410E |
| **Issue Date:** | December 11, 2013 |
| **Test Date:** | November 27- December 11, 2013 |

**Tested by:** Lion Cai **Reviewed by:** Owen Yang

**Approved by:** Kendy Wang

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# 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

Client Information

| | |
|---|---|
| Applicant: | **SHENZHEN GONBES TECHNOLOGY CO., LTD** |
| Address of applicant: | Room 1102-1103, Unit B4, Kexing Science Park, No.15 Keyuan Rd, Nanshan, Shenzhen, China |
| Manufacturer : | **SHENZHEN GONBES TECHNOLOGY CO., LTD** |
| Address of manufacturer: | Room 1102-1103, Unit B4, Kexing Science Park, No.15 Keyuan Rd, Nanshan, Shenzhen, China |

General Description of E.U.T

| **Items** | **Description** |
|---|---|
| EUT Description: | 3D Glasses |
| Model No.: | G15-BT |
| Trade Name: | Gonbes |
| Supplementary Model: | N/A |
| BT Module | V3.0-Compliant |
| Frequency Band: | 2402~2480MHz |
| Number of Channels: | 79 |
| Type of Modulation: | GFSK, Pi/4 DQPSK, 8-DPSK |
| Antenna Gain | 0 dBi |
| Antenna Type: | Integral Antenna |
| Rated Voltage: | Input: DC 3V from Battery |

Remark: * *The test data gathered are from the production sample provided by the manufacturer.*

## 1.2 Related Submittal(s) / Grant (s) and Test Methodology

The tests were performed based on the Electromagnetic Interference (EMI) tests performed on the EUT. Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003 Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.207, 15.209 and 15.247 rules. Test was carried out according to the above mentioned FCC rules and the FCC publication notice DA 00-705: Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

## 1.3 Test Facility

All measurement required was performed at laboratory of Shenzhen Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China and Centre Testing International (ShenZhen) Corporation ,Location at Hongwei Industrial Zone, Baoan 70 District, Shenzhen, Guangdong.

The test facility is recognized, certified, or accredited by the following organizations:

**FCC – Registration No.: 338263**

Shenzhen Bontek Compliance Testing Laboratory Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 03, 2011.

**IC Registration No.: 7631A**

The 3m alternate test site of Shenzhen Bontek Compliance Testing Laboratory Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on January 25, 2011.

**CNAS - Registration No.: L3923**

Shenzhen Bontek Compliance Testing Laboratory Ltd. to ISO/IEC 17025:25 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. The acceptance letter from the CNAS is maintained in our files: Registration: L3923,March 22,2012.

**TUV - Registration No.: UA 50242657-0001**

Shenzhen Bontek Compliance Testing Laboratory Ltd. An assessment of the laboratory was conducted according to the"Procedures and Conditions for EMC Test Laboratories"with reference to EN ISO/IEC 17025 by a TUV Rheinland auditor. Audit Report NO. 17010783-003.

# 2. SYSTEM TEST CONFIGURATION

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

## 2.3 General Test Procedures

Conducted Emissions: The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions: The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

## 2.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Parameter | Uncertainty |
|---|---|
| Power Line Conducted Emission | +/- 2.3 dB |
| Radiated Emission | +/- 3.4 dB |

Uncertainty figures are valid to a confidence level of 95%.

## 2.5Test Equipment List and Details

Test equipments list of Shenzhen Bontek Compliance Testing Laboratory Co., Ltd.

| No. | Instrument no. | Equipment | Manufacturer | Model No. | S/N | Last Calculator | Due Calculator |
|---|---|---|---|---|---|---|---|
| 1 | BCT-EMC001 | EMI Test Receiver | R&S | ESCI | 100687 | 2013-4-25 | 2014-4-24 |
| 2 | BCT-EMC002 | EMI Test Receiver | R&S | ESPI | 100097 | 2013-11-1 | 2014-10-31 |
| 3 | BCT-EMC003 | Amplifier | HP | 8447D | 1937A02492 | 2013-4-25 | 2014-4-24 |
| 4 | BCT-EMC018 | TRILOG Broadband Test-Antenna | SCHWARZBECK | VULB9163 | 9163-324 | 2013-4-25 | 2014-4-24 |
| 5 | BCT-EMC021 | Triple-Loop Antenna | EVERFINE | LLA-2 | 711002 | 2013-11-1 | 2014-10-31 |
| 6 | BCT-EMC026 | RF POWER AMPLIFIER | FRANKONIA | FLL-75 | 1020A1109 | 2013-4-25 | 2014-4-24 |
| 7 | BCT-EMC029 | 6DB Attenuator | FRANKONIA | N/A | 1001698 | 2013-4-25 | 2014-4-24 |
| 8 | BCT-EMC032 | 10dB attenuator | ELECTRO-METRICS | EM-7600 | 836 | 2013-4-25 | 2014-4-24 |
| 9 | BCT-EMC036 | Spectrum Analyzer | R&S | FSP | 100397 | 2013-11-1 | 2014-10-31 |
| 10 | BCT-EMC037 | Broadband preamplifier | SCH WARZBECK | BBV9718 | 9718-182 | 2013-4-25 | 2014-4-24 |
| 11 | BCT-EMC039 | Horn Antenna | SCHWARZBECK | BBHA 9120D | 0437 | 2013-4-25 | 2014-4-24 |
| 12 | BCT-EMC038 | Horn Antenna | SCHWARZBECK | BBHA9170 | 0483 | 2013-4-5 | 2014-4-4 |

# 3. SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|---|---|
| FCC §15.207 | AC Power Line Conducted Emission | Not applicable |
| FCC §15.247(a)(1) | Hopping Channel Bandwidth | Pass |
| FCC §15.247(a)(1) | Hopping Channel Separation | Pass |
| FCC §15.247(a)(1) | Number of Hopping Frequency Used | Pass |
| FCC §15.247(a)(1)(iii) | Dwell Time of Each Frequency | Pass |
| FCC §15.247(b)(1) | Maximum Peak Output Power | Pass |
| FCC §15.247(d) | Band Edges Emission | Pass |
| FCC §15.247(d) | Spurious Radiated Emission | Pass |
| FCC §15.203/15.247(b)/(c) | Antenna Requirement | Pass |

# 4. TEST OF AC POWER LINE CONDUCTED EMISSION

## 4.1 Applicable Standard

Refer to FCC §15.207.
For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

| Frequency Range (MHz) | Limits ( dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.150～0.500 | 66～56 | 56～46 |
| 0.500～5.000 | 56 | 46 |
| 5.000～30.00 | 60 | 50 |

## 4.2 Test Setup Diagram

No required

## 4.3 Test Result

Notes: The EUT is powered by battery without AC mains(with battery),this test is not applicable.

# 5. Test of Hopping Channel Bandwidth

## 5.1 Applicable Standard

Section 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.

## 5.2 EUT Setup


**Spectrum Analyzer**

## 5.3 Test Equipment List and Details

See section 2.5.

## 5.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
   RBW ⩾ 1% of the 20 dB bandwidth, VBW ⩾ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

3. The spectrum width with level higher than 20dB below the peak level.

4. Repeat above 1~3 points for the middle and highest channel of the EUT.

## 5.5 Test Result

| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

**BDR 1M**

| Modulation Type | Channel No. | Frequency (MHz) | 20dB Bandwidth (kHz) |
|---|---|---|---|
| GFSK | Low | 2402.00 | 570 |
| GFSK | Middle | 2441.00 | 570 |
| GFSK | High | 2480.00 | 570 |

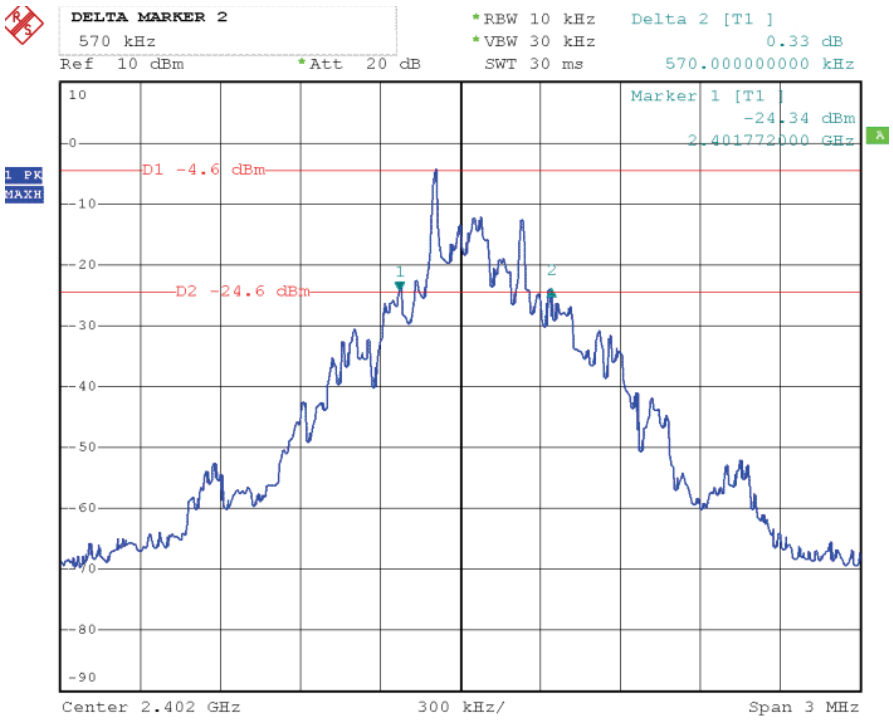
**EDR 2M**

| Modulation Type | Channel No. | Frequency (MHz) | 20dB Bandwidth (kHz) |
|---|---|---|---|
| Pi/4 DQPSK | Low | 2402.00 | 1158 |
| Pi/4 DQPSK | Middle | 2441.00 | 1158 |
| Pi/4 DQPSK | High | 2480.00 | 1158 |

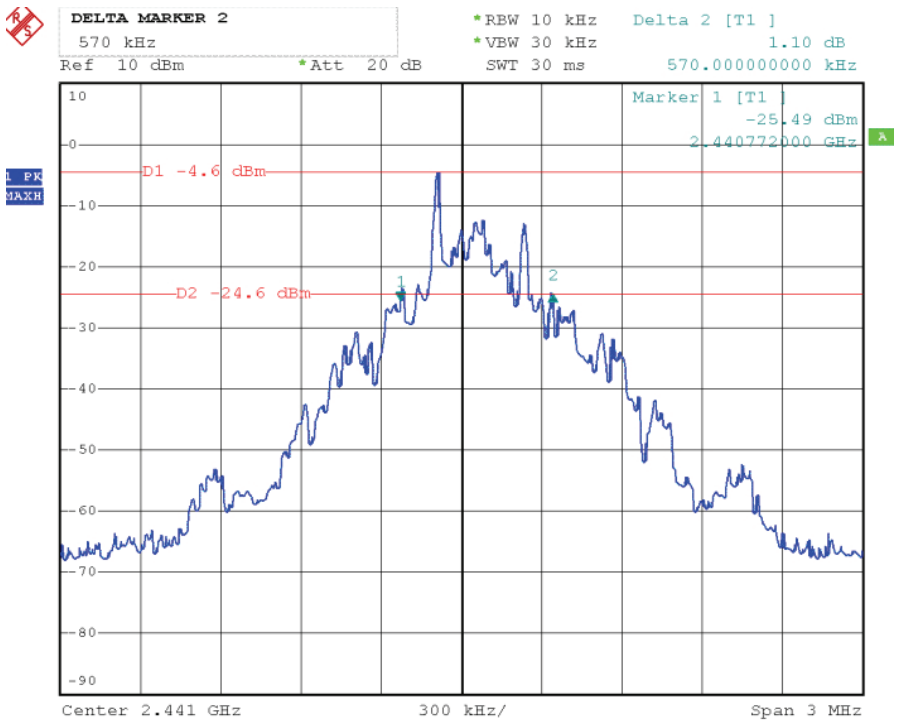
**EDR 3M**

| Modulation Type | Channel No. | Frequency (MHz) | 20dB Bandwidth (kHz) |
|---|---|---|---|
| 8-DPSK | Low | 2402.00 | 1176 |
| 8-DPSK | Middle | 2441.00 | 1170 |
| 8-DPSK | High | 2480.00 | 1164 |

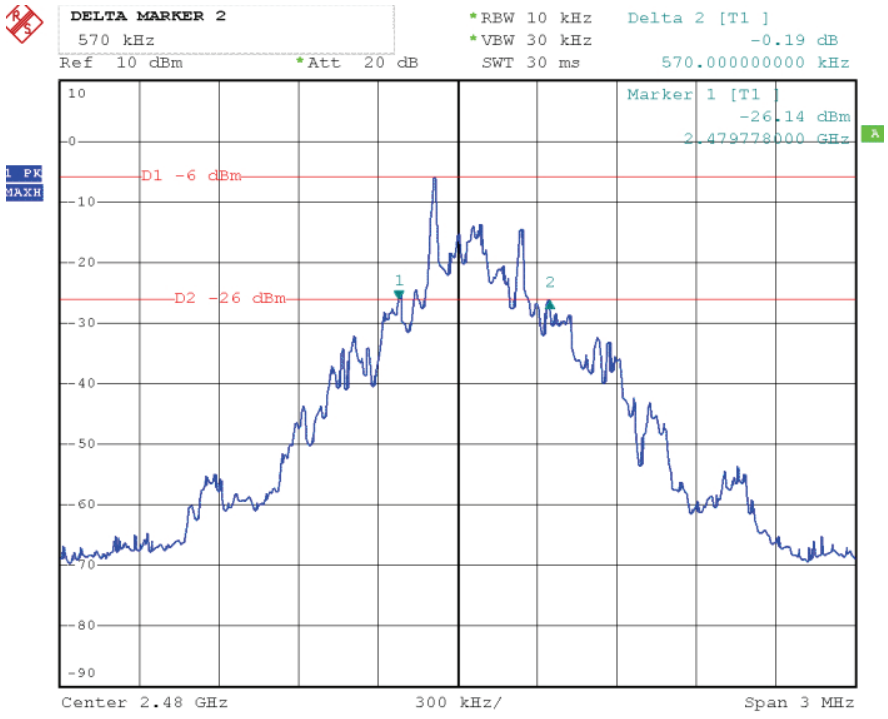
**BDR 1M**
**Channel Low**



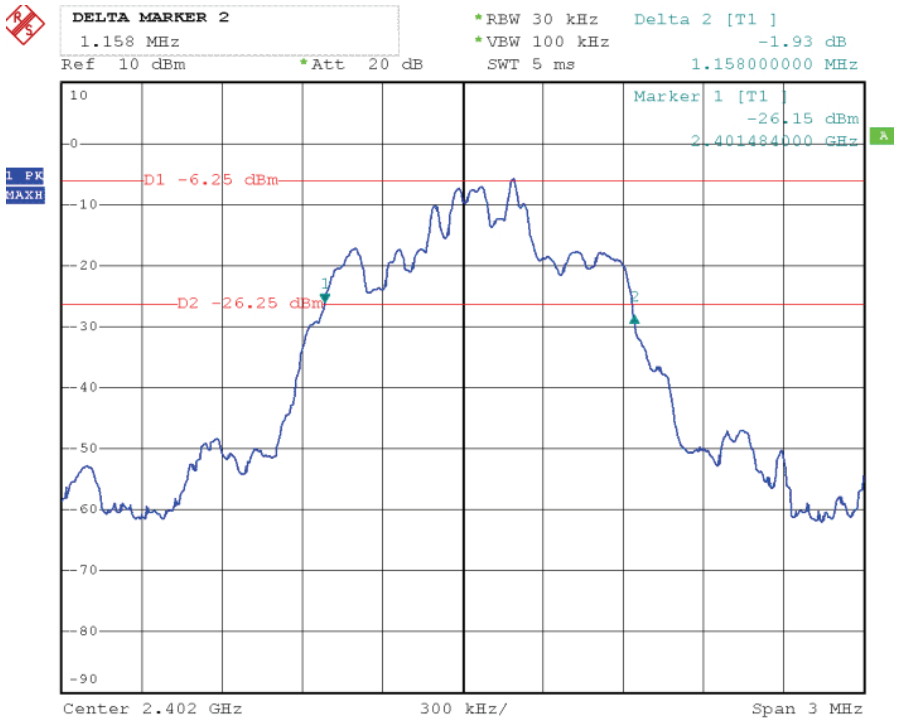
## Channel Middle



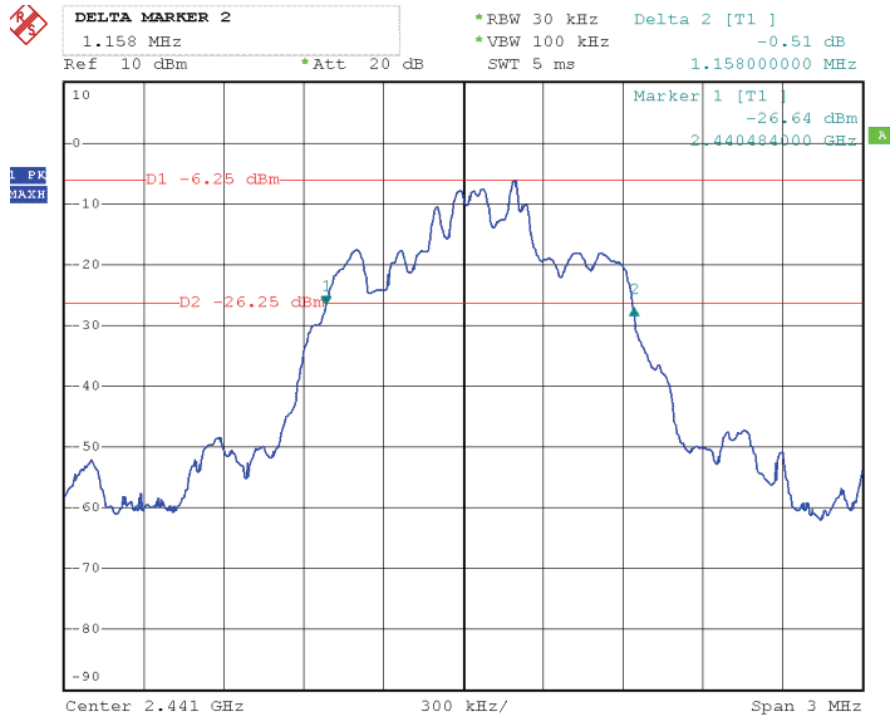

## Channel High



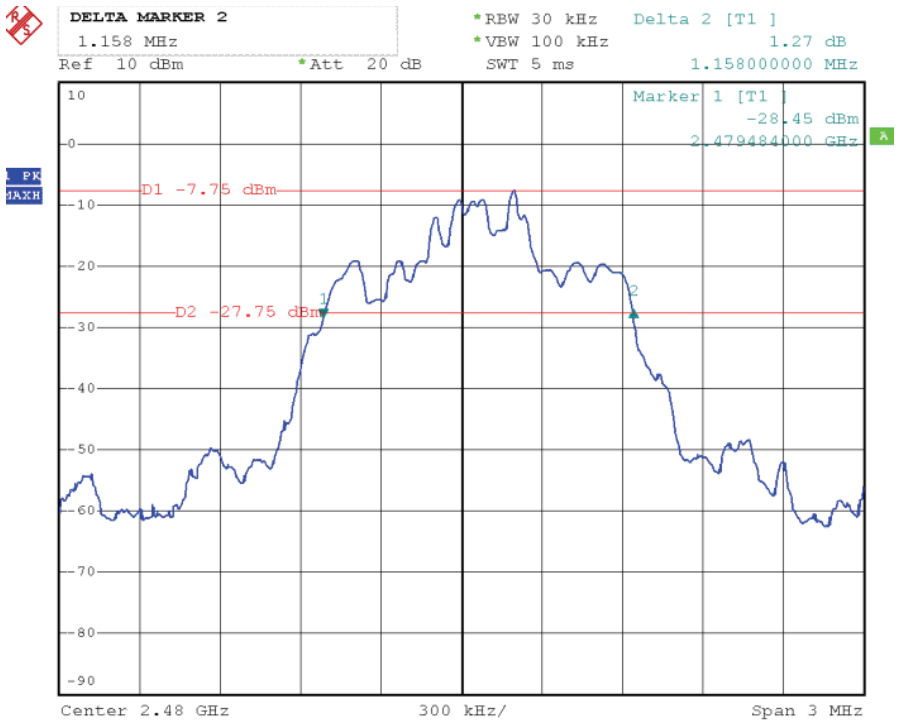
**EDR 2M**
**Channel Low**



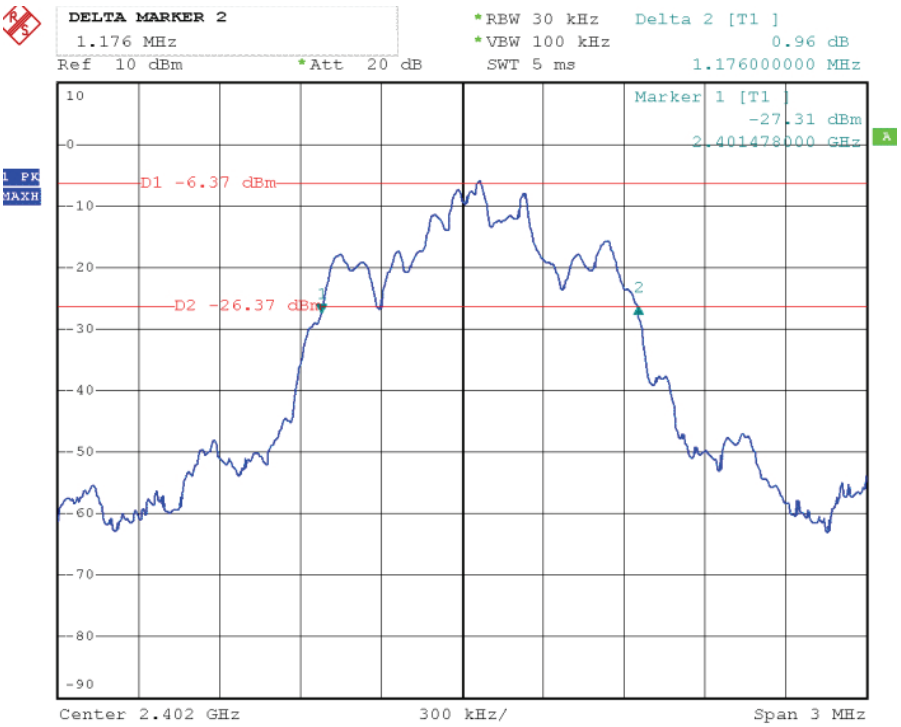

**Channel Middle**



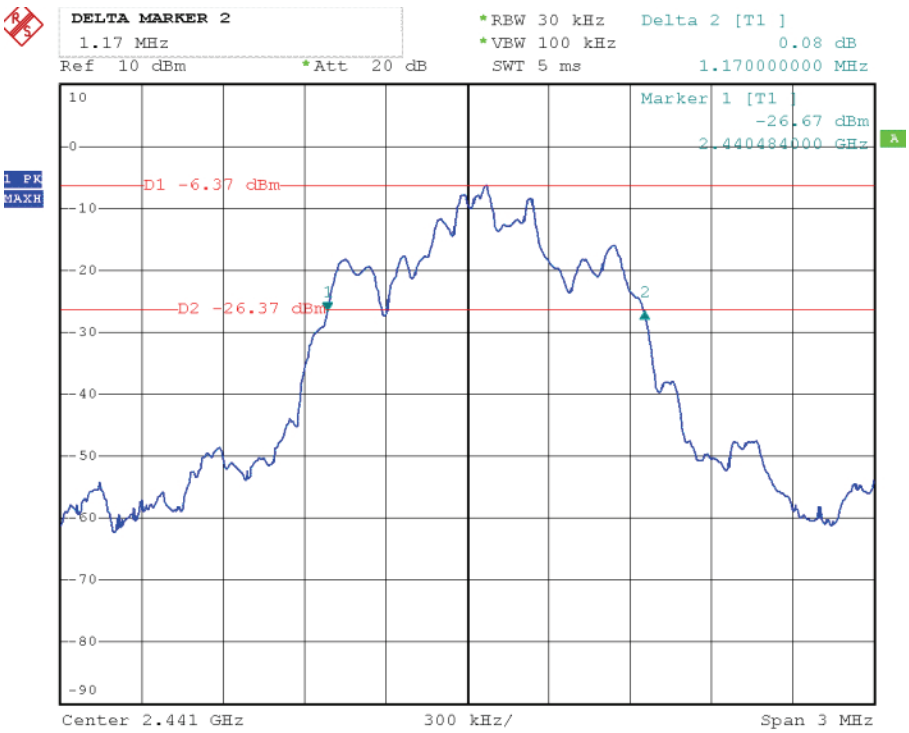
**Channel High**



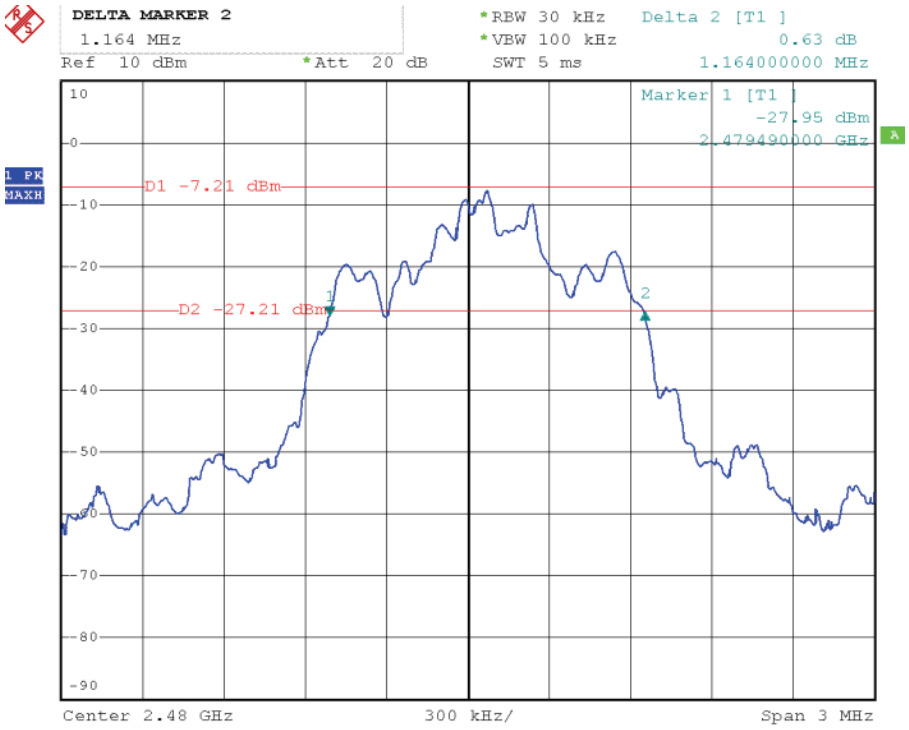

**EDR 3M**
**Channel Low**



## Channel Middle




## Channel High



# 6. Test of Hopping Channel Separation

## 6.1 Applicable Standard

Section 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.

## 6.2 EUT Setup


**Spectrum Analyzer**

## 6.3 Test Equipment List and Details

See section 2.5.

## 6.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 30KHz and VBW to 100KHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

4. The Hopping Channel Separation is defined as the separation between 2 neighboring hopping frequencies.

5. Repeat above 1~3 points for the middle and highest channel of the EUT.

## 6.5 Test Result

| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

**BDR 1M**

| Modulation Type | Frequency (MHz) | Channel Separation (MHz) | Min. Limit (kHz) |
|---|---|---|---|
| GFSK | 2402~2403 | 1.004 | >25 |
| GFSK | 2441~2442 | 1.004 | >25 |
| GFSK | 2479~2480 | 1.004 | >25 |

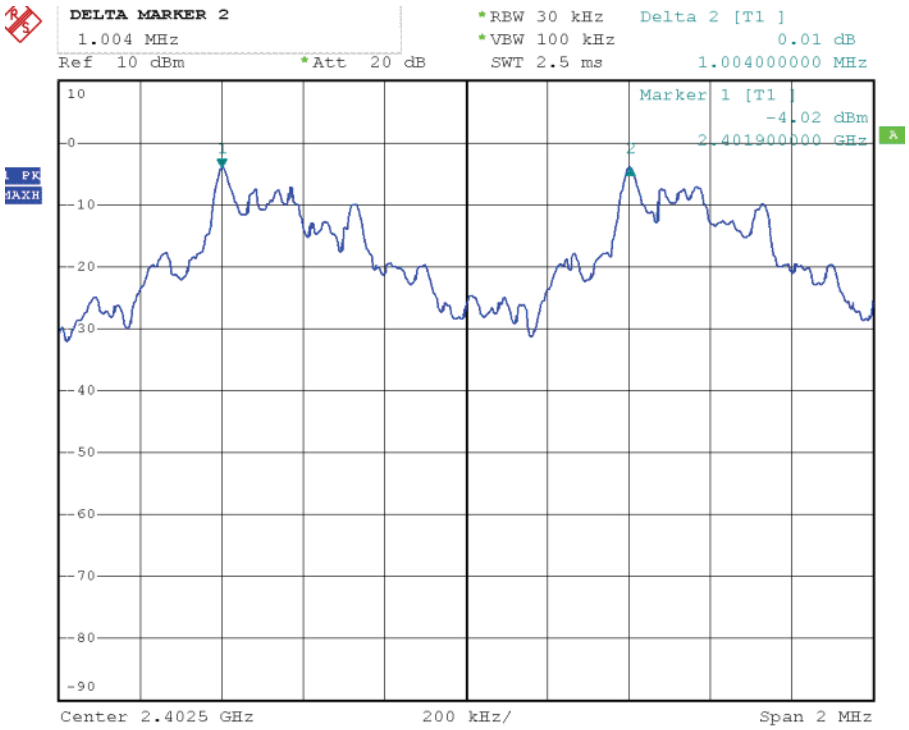
**EDR 2M**

| Modulation Type | Frequency (MHz) | Channel Separation (MHz) | Min. Limit (kHz) |
|---|---|---|---|
| Pi/4 DQPSK | 2402~2403 | 1.000 | >25 |
| Pi/4 DQPSK | 2441~2442 | 1.004 | >25 |
| Pi/4 DQPSK | 2479~2480 | 1.004 | >25 |

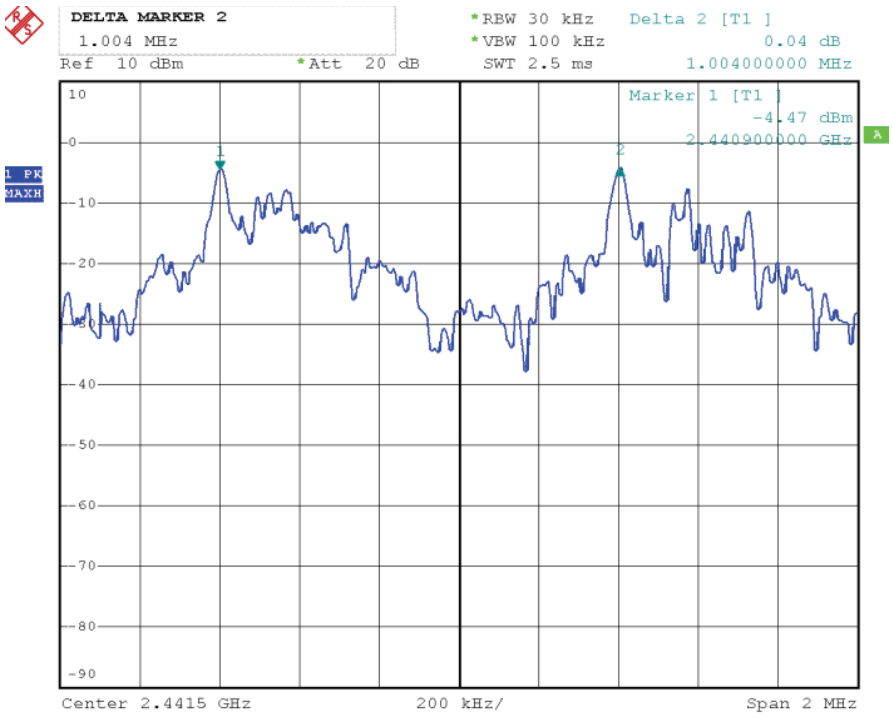
**EDR 3M**

| Modulation Type | Frequency (MHz) | Channel Separation (MHz) | Min. Limit (kHz) |
|---|---|---|---|
| 8-DPSK | 2402~2403 | 1.005 | >25 |
| 8-DPSK | 2441~2442 | 1.008 | >25 |
| 8-DPSK | 2479~2480 | 1.004 | >25 |

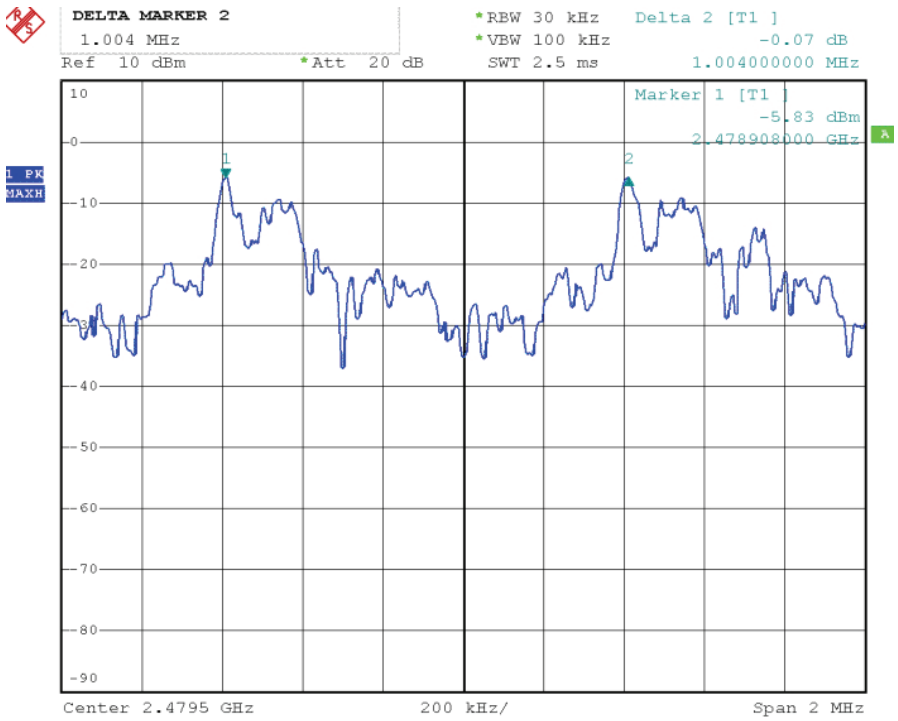
**BDR 1M**
**Channel Low**



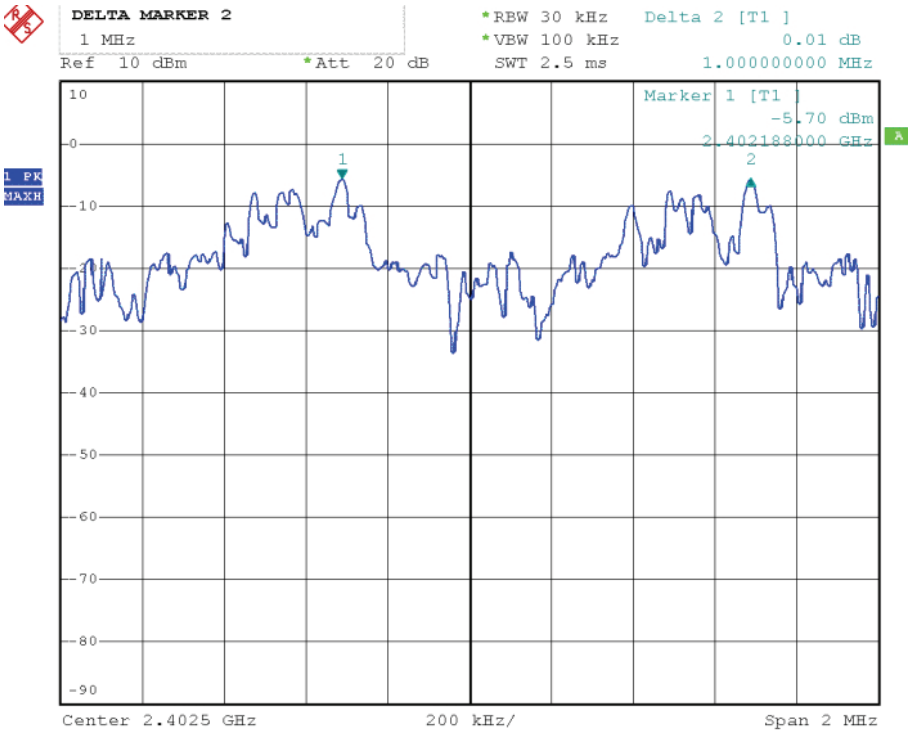

**Channel Middle**



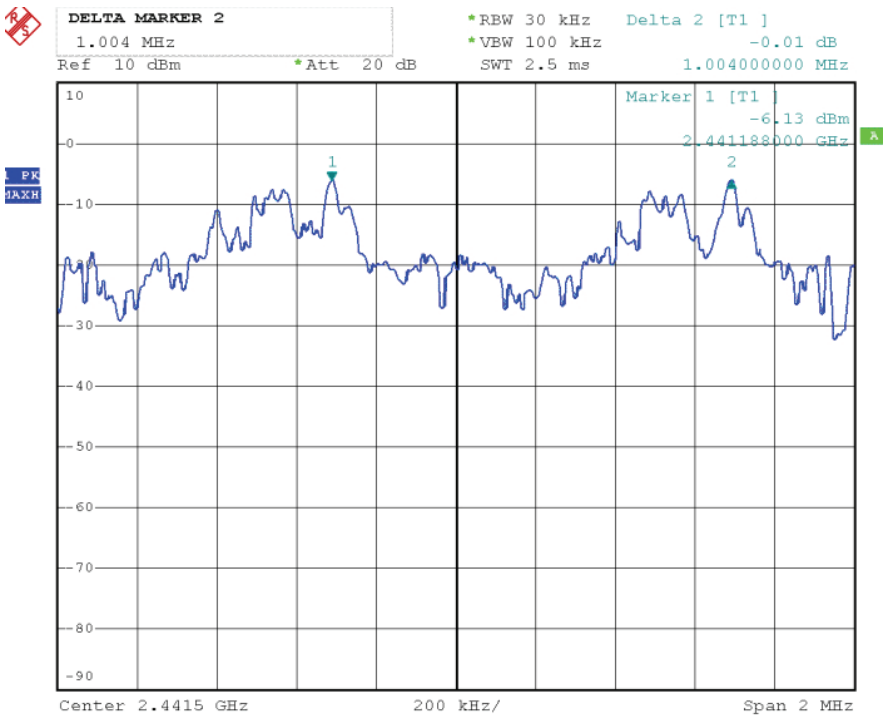
**Channel High**



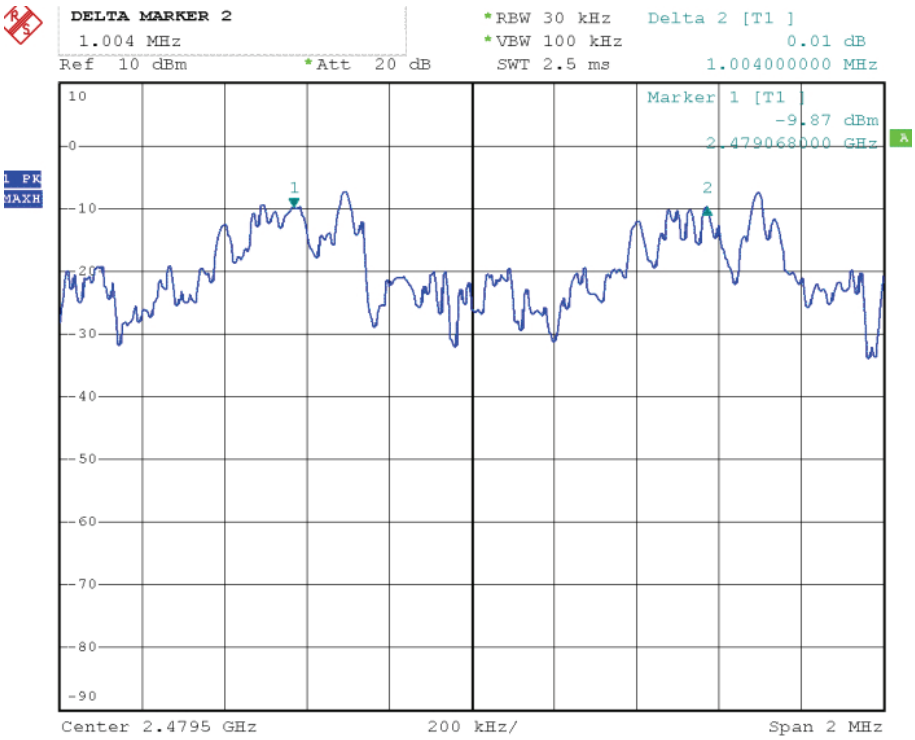

**EDR 2M**
**Channel Low**



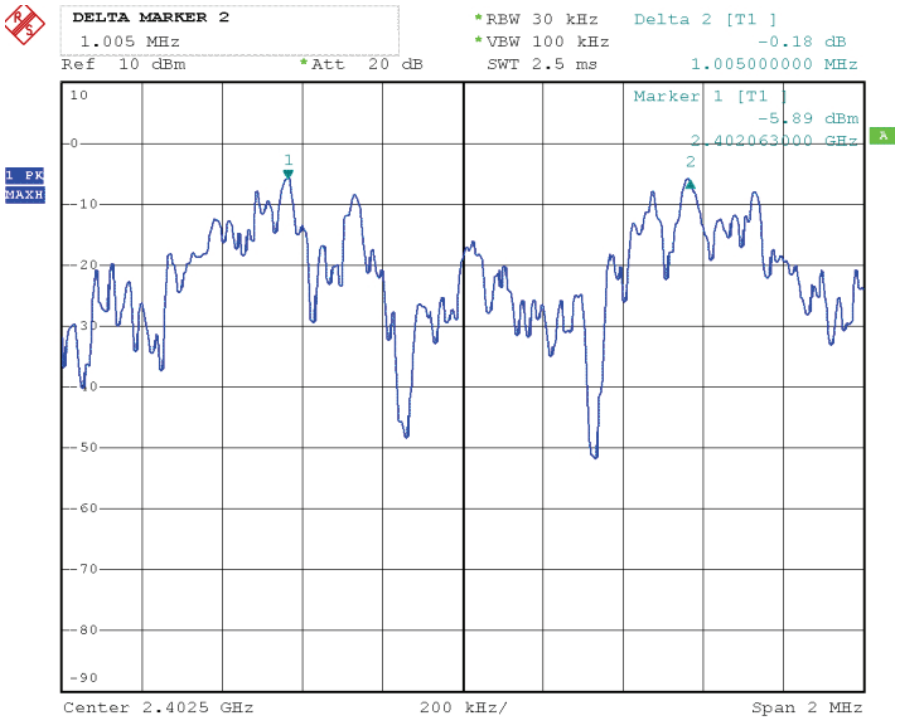
## Channel Middle



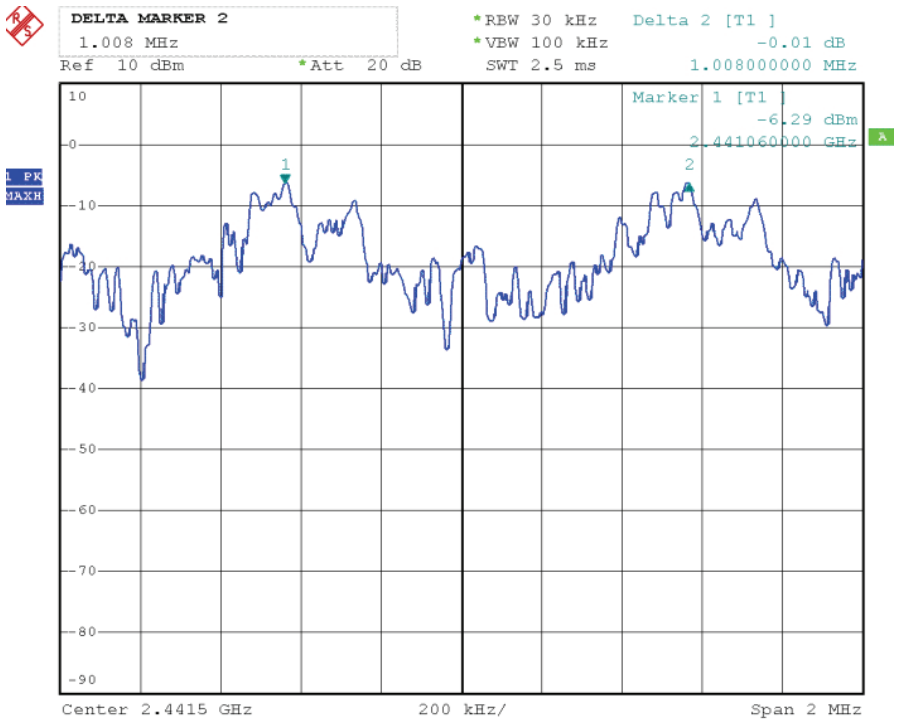

## Channel High



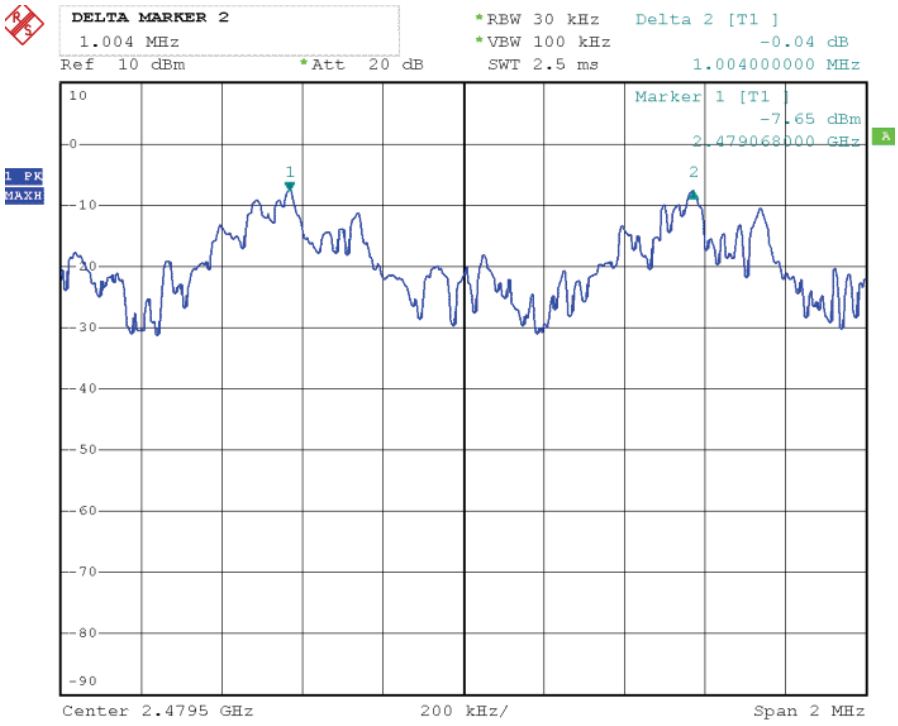
**EDR 3M**
**Channel Low**




**Channel Middle**



**Channel High**



# 7. Test of Number of Hopping Frequency

## 7.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 15 non-overlapping hopping channels. Frequency hopping system which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping system may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

## 7.2 EUT Setup


**Spectrum Analyzer**

## 7.3 Test Equipment List and Details

See section 2.5.

## 7.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

4. Observe frequency hopping in 2400MHz~2483.5MHz, there are at least 32 non-overlapping channels.

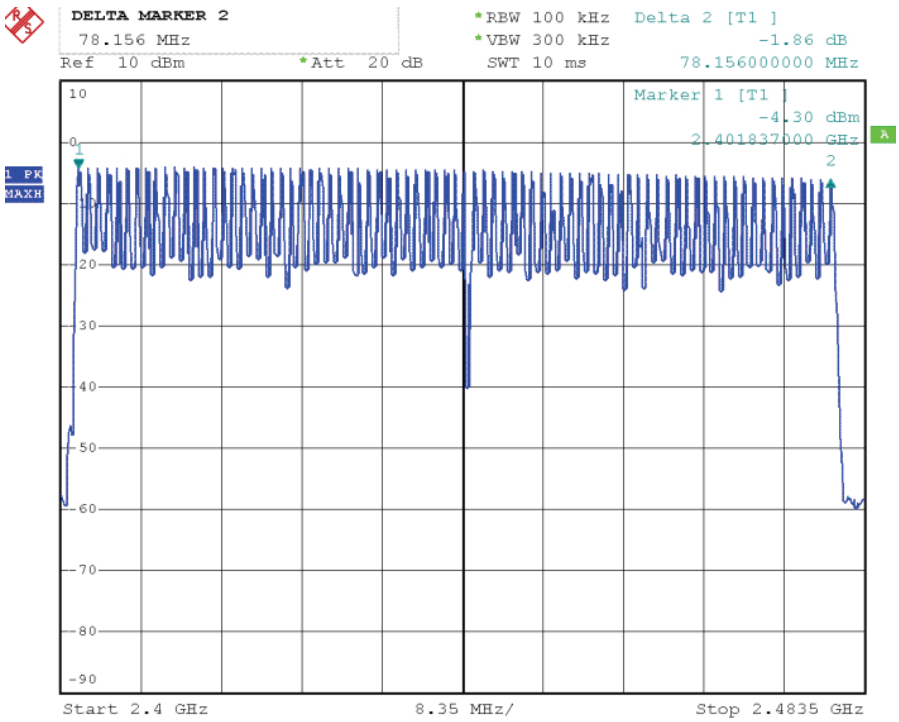
5. Repeat above 1~3 points for the middle and highest channel of the EUT.

## 7.5 Test Result

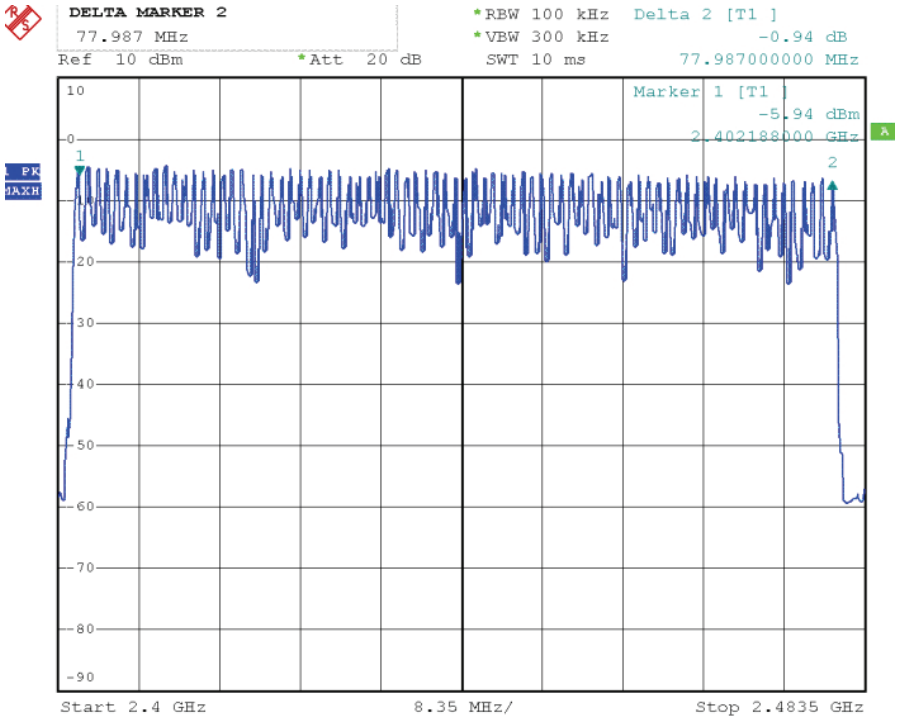
| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

| Modulation Type | Frequency (MHz) | Number of Hopping Channels | Min. Limit |
|---|---|---|---|
| GFSK | 2402~2480 | 79 | ≥15 |
| Pi/4 DQPSK | 2402~2480 | 79 | ≥15 |
| 8-DPSK | 2402~2480 | 79 | ≥15 |

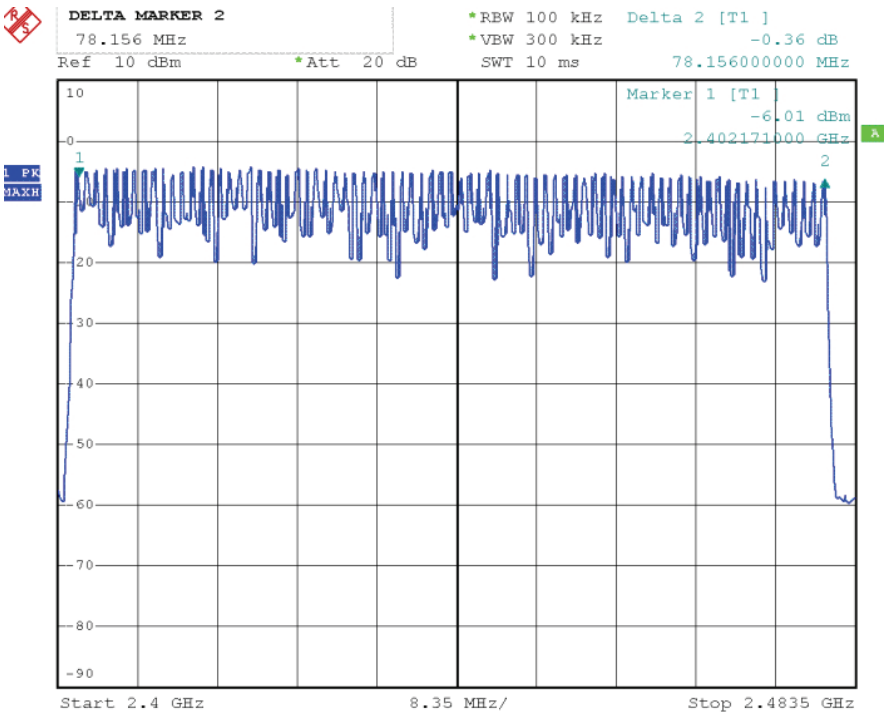
**BDR 1M**


DELTA MARKER 2
78.156 MHz
Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 300 kHz
SWT 10 ms
Delta 2 [T1 ]
-1.86 dB
78.156000000 MHz
Marker 1 [T1 ]
-4.30 dBm
2.401837000 GHz
Start 2.4 GHz
8.35 MHz/
Stop 2.4835 GHz

**EDR 2M**


DELTA MARKER 2
77.987 MHz
Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 300 kHz
SWT 10 ms
Delta 2 [T1 ]
-0.94 dB
77.987000000 MHz
Marker 1 [T1 ]
-5.94 dBm
2.402188000 GHz
Start 2.4 GHz
8.35 MHz/
Stop 2.4835 GHz

**EDR 3M**


DELTA MARKER 2
78.156 MHz
*RBW 100 kHz
*VBW 300 kHz
SWT 10 ms
Delta 2 [T1 ]
-0.36 dB
78.156000000 MHz
Ref 10 dBm
*Att 20 dB
Marker 1 [T1 ]
-6.01 dBm
2.402171000 GHz
10
0
20
30
40
50
60
70
80
-90
Start 2.4 GHz
8.35 MHz/
Stop 2.4835 GHz

# 8. Test of Dwell Time of Each Frequency

## 8.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4seconds multiplied by the number of hopping channels employed.

## 8.2 EUT Setup


**Spectrum Analyzer**

## 8.3 Test Equipment List and Details

See section 2.5.

## 8.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.

2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.

3. Set Detector to Peak, Trace to Max Hold and Sweep Time is more than once pulse time.

4. Set the center frequency on any frequency would be measure and set the frequency span to zero span.

5. Measure the maximum time duration of one single pulse.

## 8.5 Test Result

| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

DH1

Dwell time= t*(1.6/2/79)*31.6

DH3

Dwell time= t*(1.6/4/79)*31.6

DH5

Dwell time= t*(1.6/6/79)*31.6

**BDR 1M**
**Low Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| GFSK | DH1 | 0.388 | 124.16 | 400 |
| GFSK | DH3 | 1.648 | 263.68 | 400 |
| GFSK | DH5 | 2.912 | 310.61 | 400 |

**Middle Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| GFSK | DH1 | 0.388 | 124.16 | 400 |
| GFSK | DH3 | 1.648 | 263.68 | 400 |
| GFSK | DH5 | 2.912 | 310.61 | 400 |

**High Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| GFSK | DH1 | 0.388 | 124.16 | 400 |
| GFSK | DH3 | 1.648 | 263.68 | 400 |
| GFSK | DH5 | 2.912 | 310.61 | 400 |

**EDR 2M**
**Low Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| Pi/4 DQPSK | 2DH1 | 0.394 | 126.08 | 400 |
| Pi/4 DQPSK | 2DH3 | 1.660 | 265.60 | 400 |
| Pi/4 DQPSK | 2DH5 | 2.912 | 310.61 | 400 |

**Middle Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| Pi/4 DQPSK | 2DH1 | 0.394 | 126.08 | 400 |
| Pi/4 DQPSK | 2DH3 | 1.660 | 265.60 | 400 |
| Pi/4 DQPSK | 2DH5 | 2.912 | 310.61 | 400 |

**High Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| Pi/4 DQPSK | 2DH1 | 0.394 | 126.08 | 400 |
| Pi/4 DQPSK | 2DH3 | 1.660 | 265.60 | 400 |
| Pi/4 DQPSK | 2DH5 | 2.912 | 310.61 | 400 |

**EDR 3M**
**Low Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| 8-DPSK | 3DH1 | 0.394 | 126.08 | 400 |
| 8-DPSK | 3DH3 | 1.652 | 264.32 | 400 |
| 8-DPSK | 3DH5 | 2.912 | 310.61 | 400 |

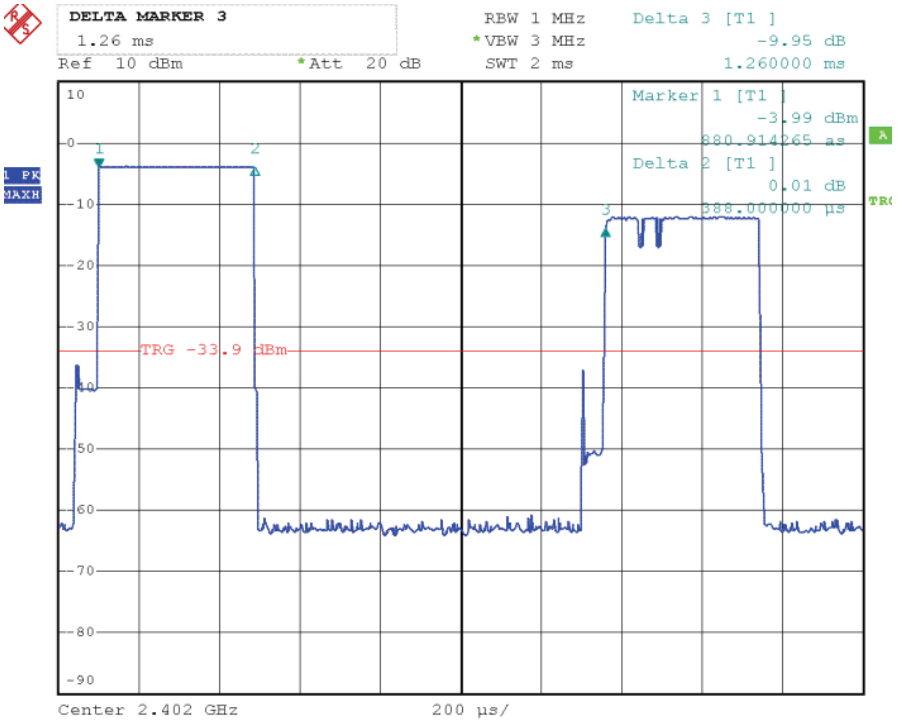
**Middle Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| 8-DPSK | 3DH1 | 0.394 | 126.08 | 400 |
| 8-DPSK | 3DH3 | 1.652 | 264.32 | 400 |
| 8-DPSK | 3DH5 | 2.912 | 310.61 | 400 |

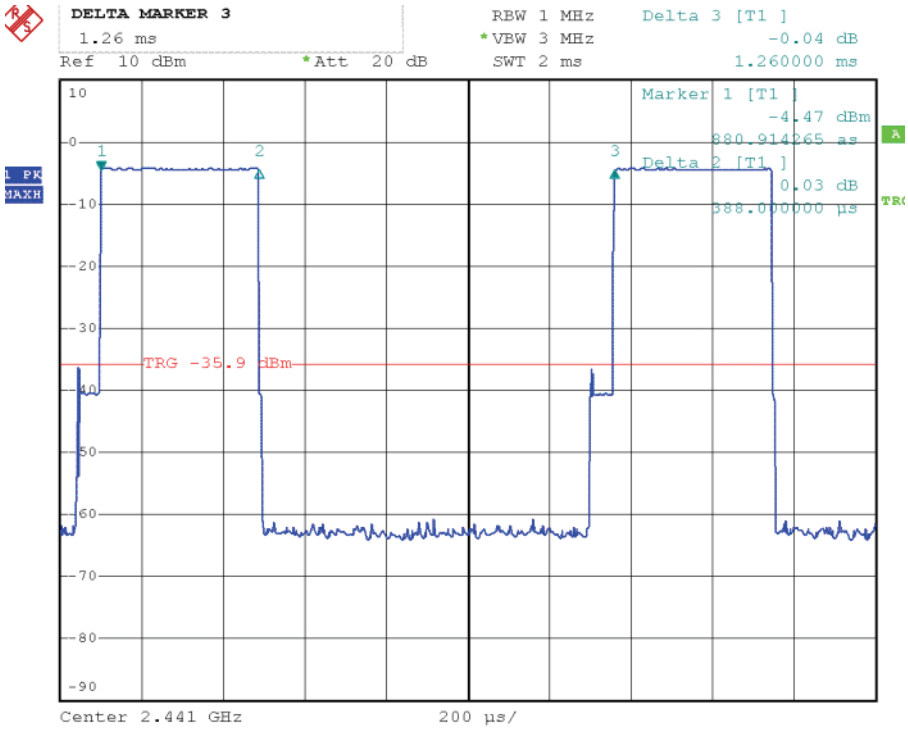
**High Channel**

| Modulation Type | | Reading （ms） | Dwell Time (ms) | Limit (ms) |
|---|---|---|---|---|
| 8-DPSK | 3DH1 | 0.394 | 126.08 | 400 |
| 8-DPSK | 3DH3 | 1.652 | 264.32 | 400 |
| 8-DPSK | 3DH5 | 2.912 | 310.61 | 400 |

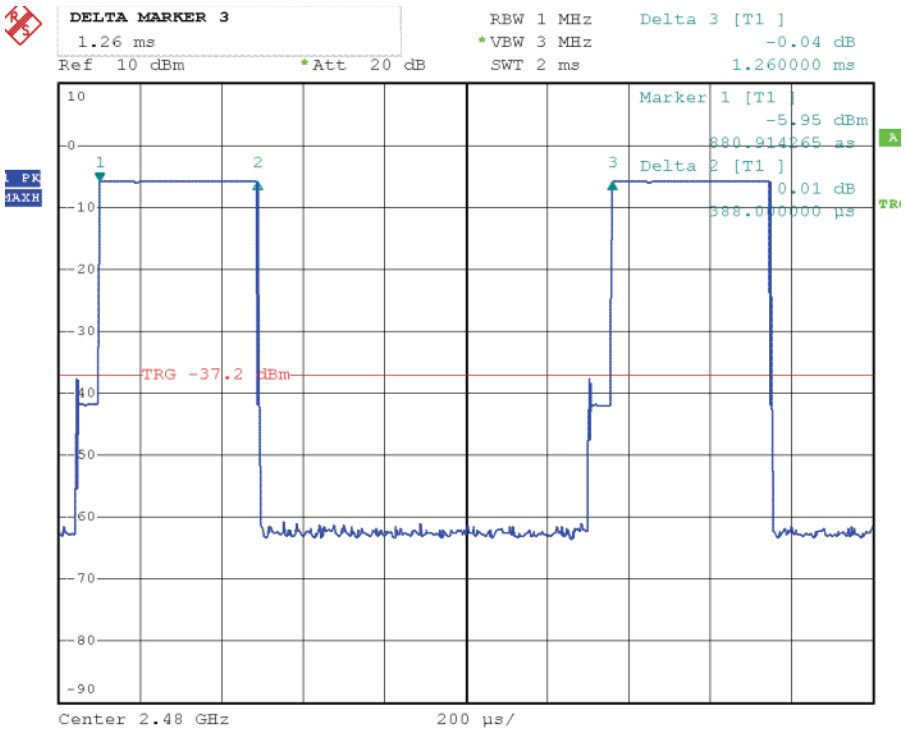
**BDR 1M DH1**
**Channel Low**



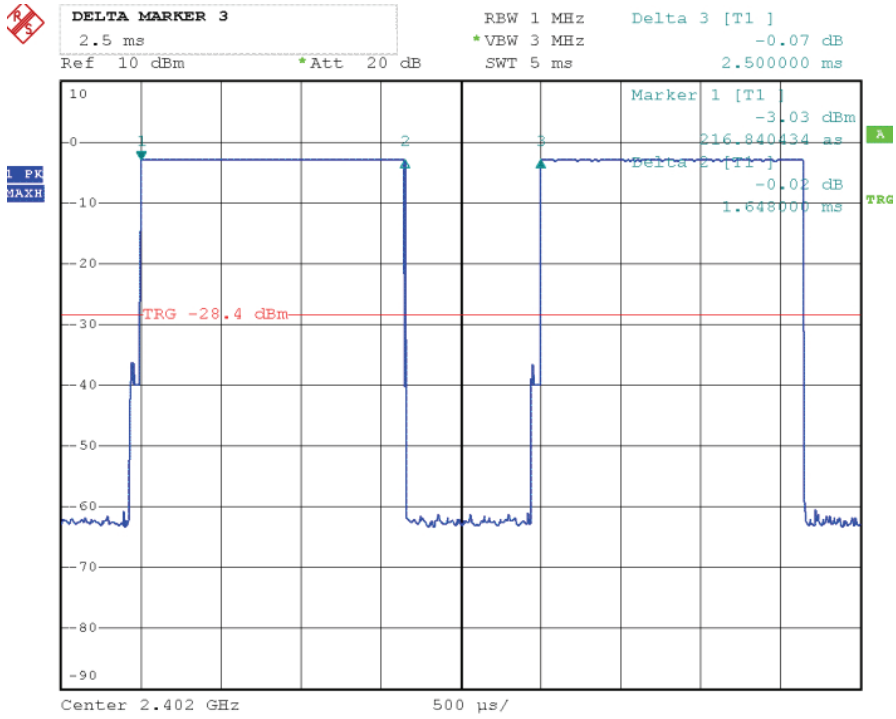

**Channel Middle**



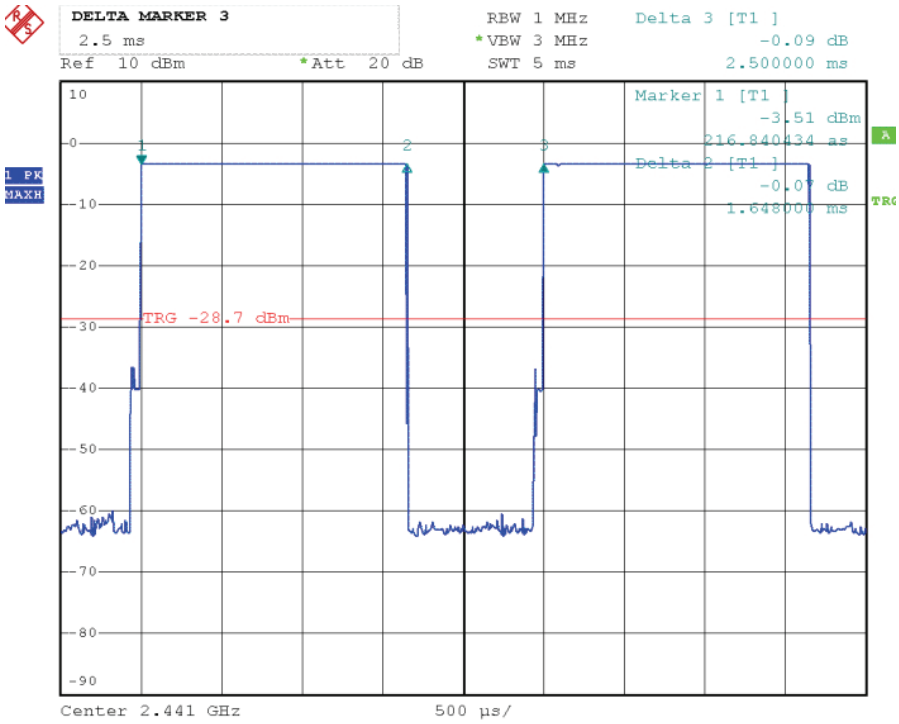
**Channel High**



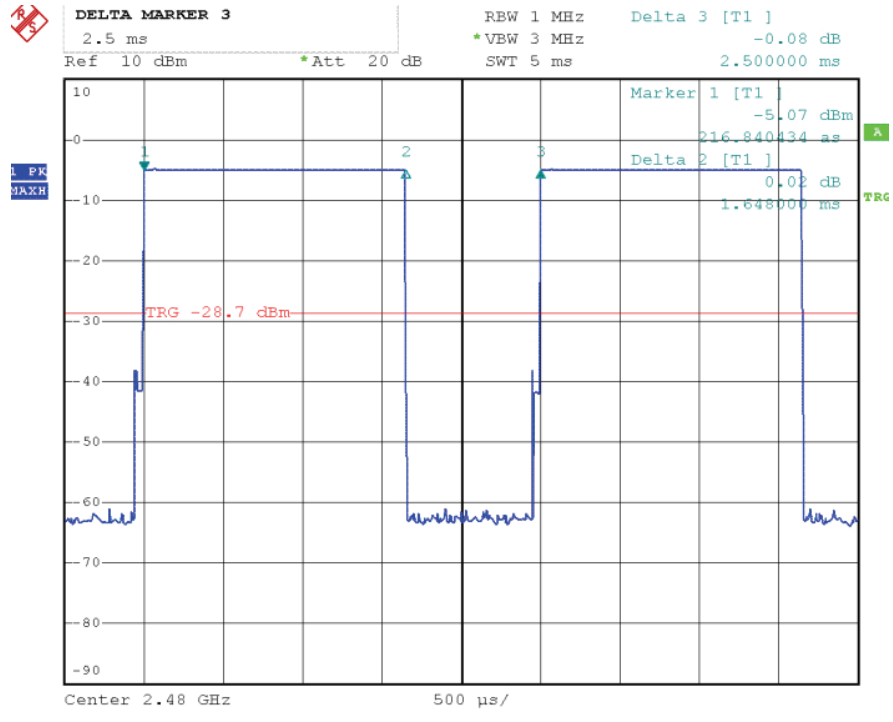

**BDR 1M DH3**
**Channel Low**



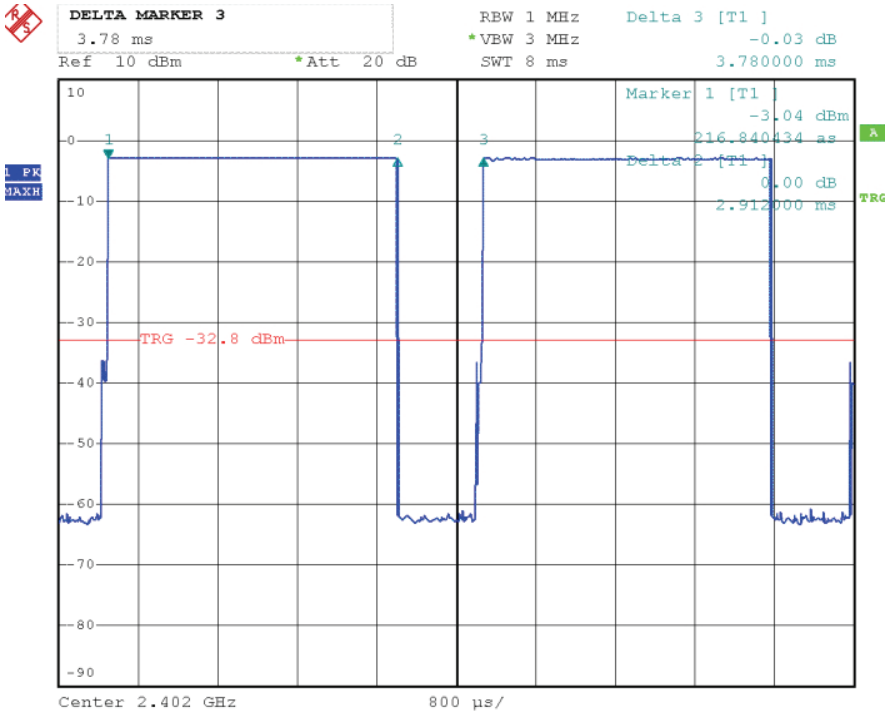
## Channel Middle



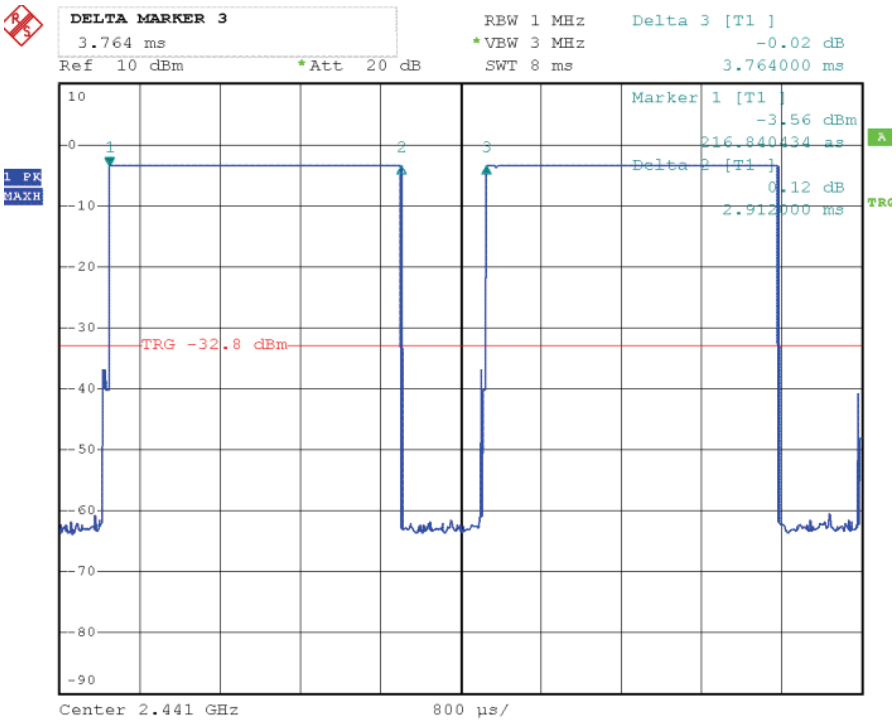

## Channel High



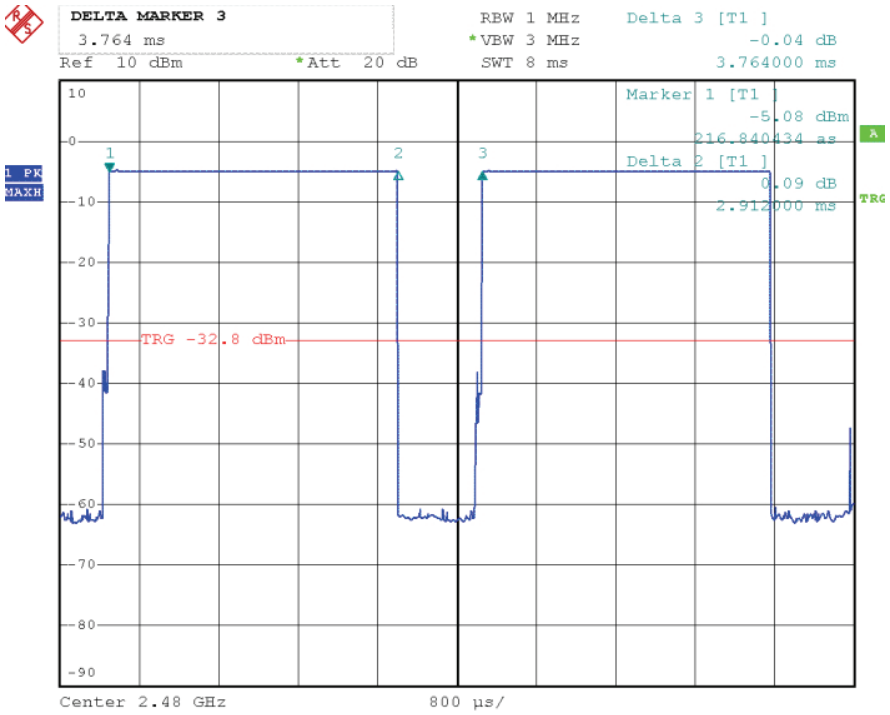
**BDR 1M DH5**
**Channel Low**



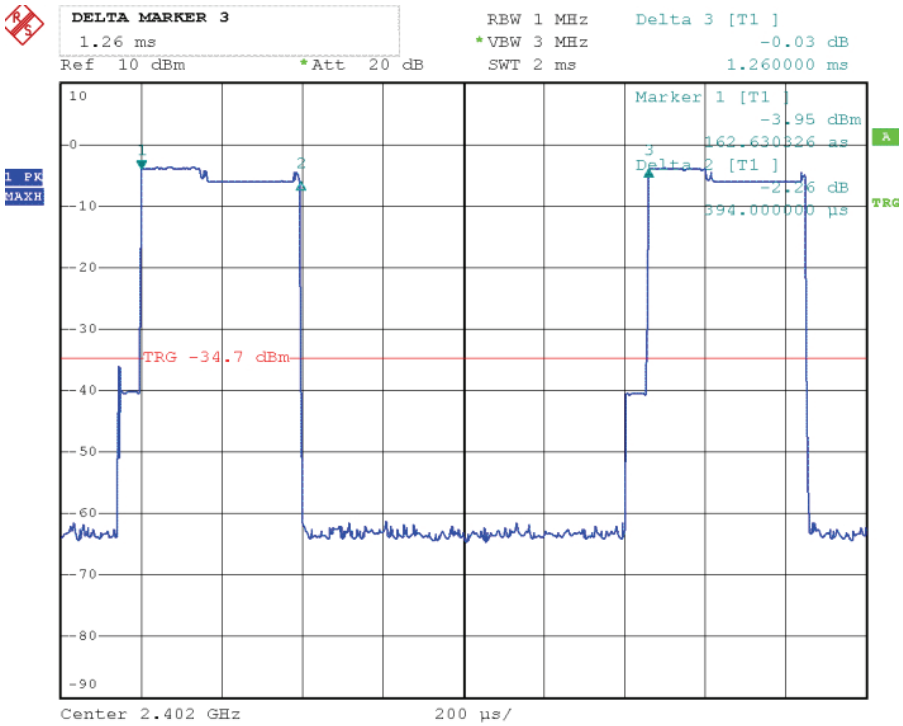

**Channel Middle**



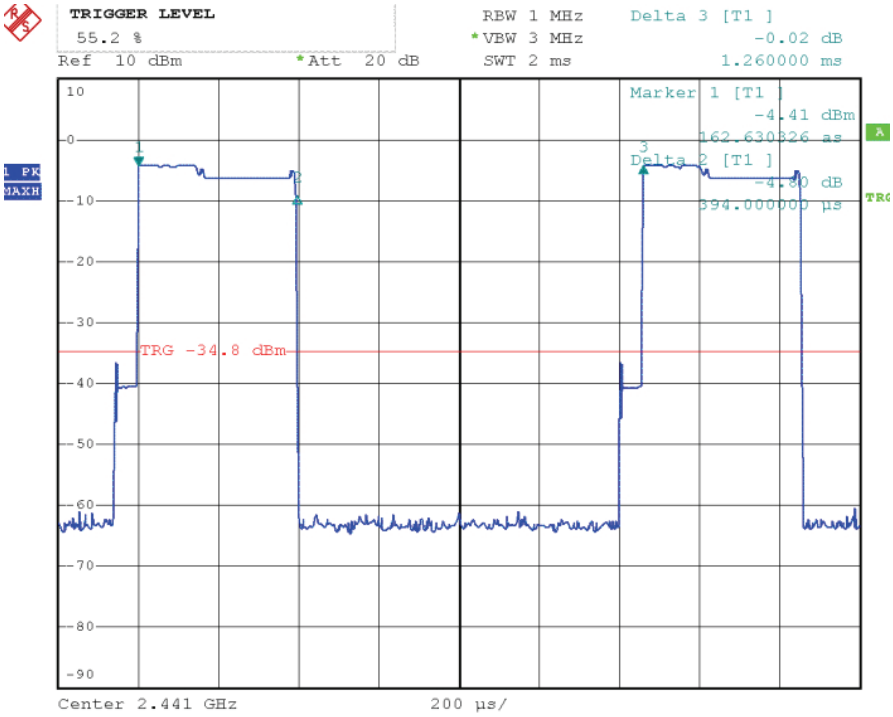
**Channel High**



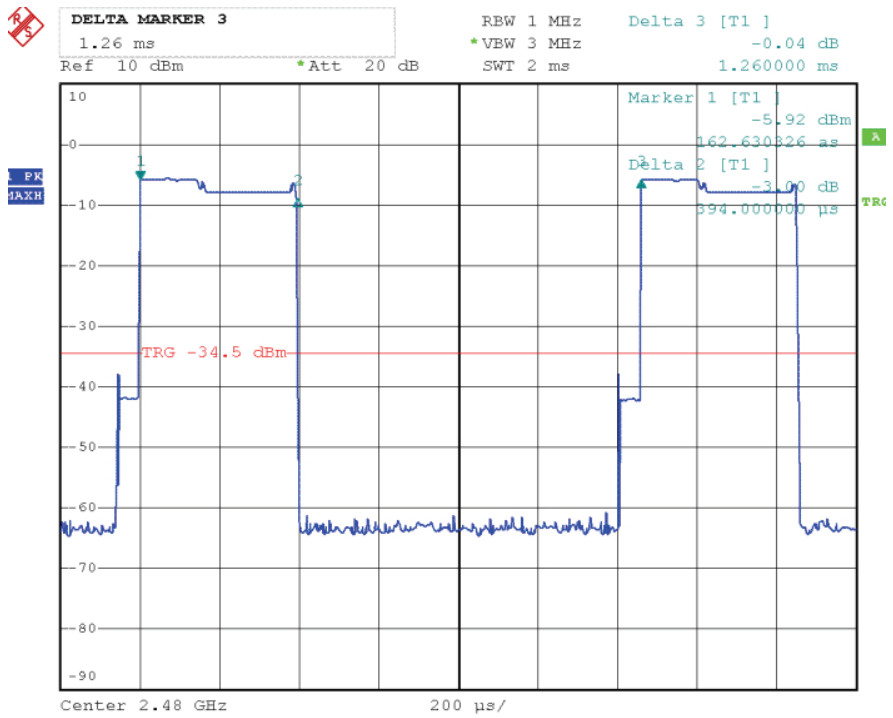

**EDR 2M 2DH1**
**Channel Low**



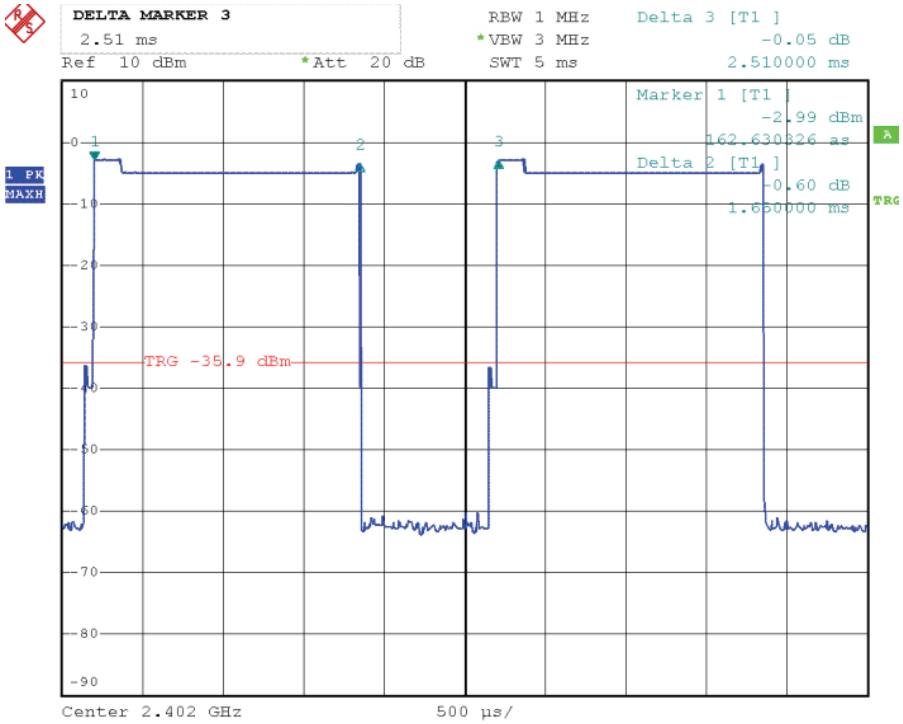
## Channel Middle



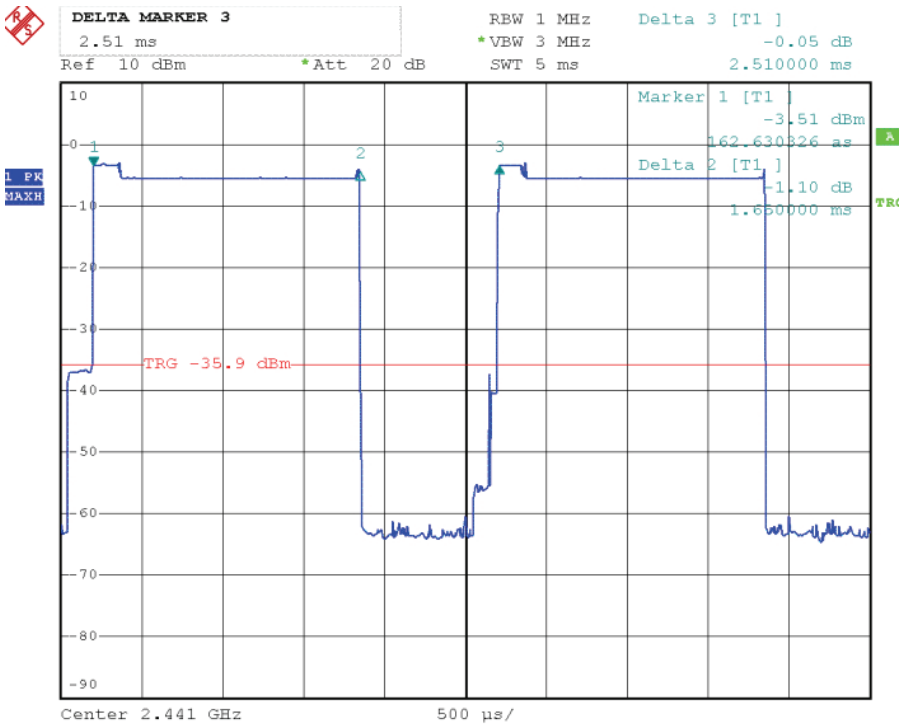

## Channel High



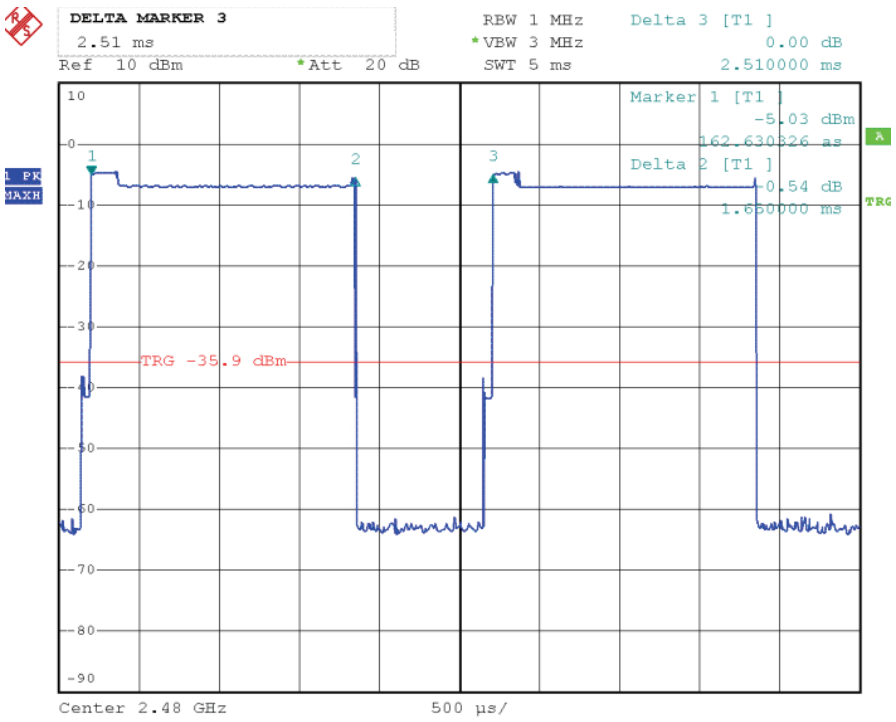
**EDR 2M 2DH3**
**Channel Low**



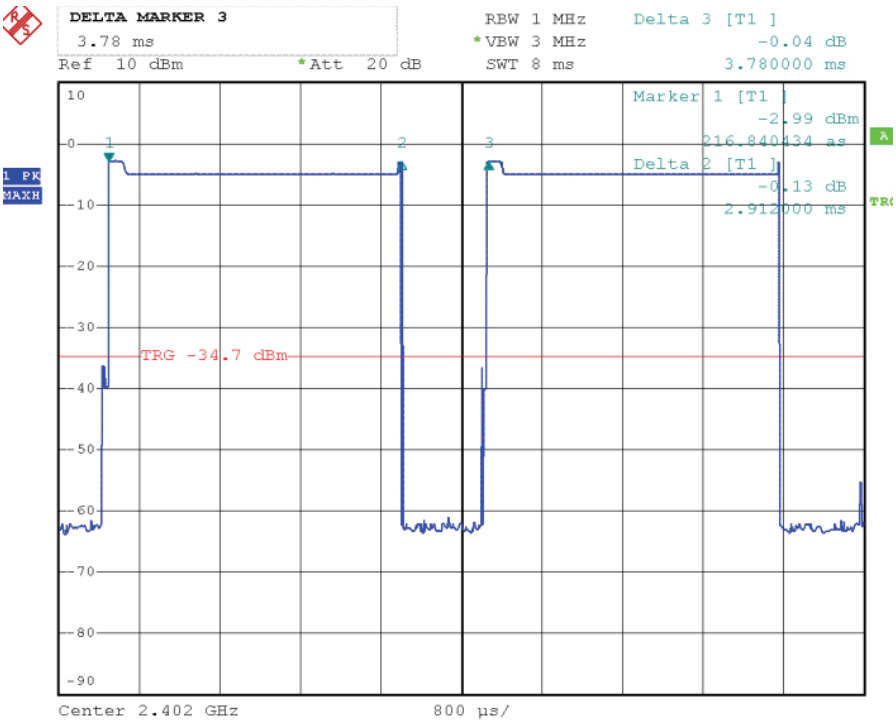

**Channel Middle**



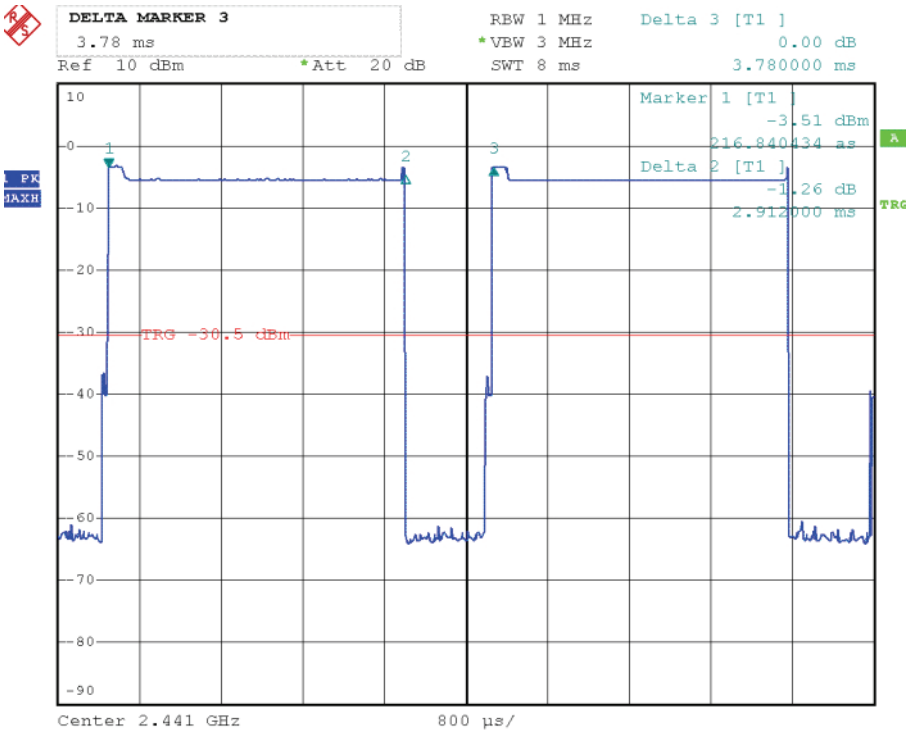
**Channel High**



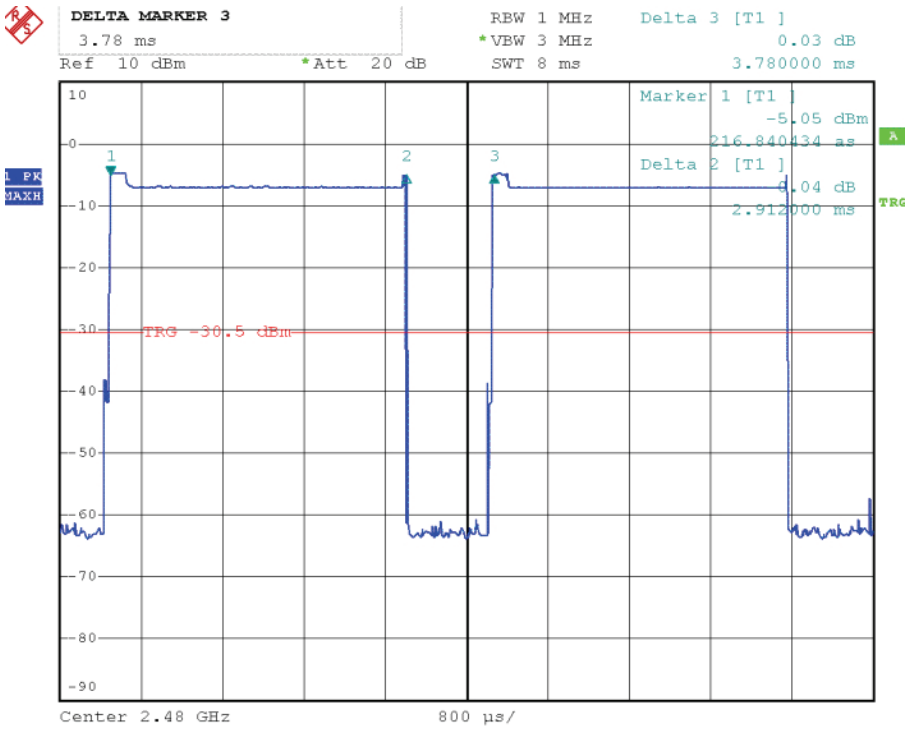

**EDR 2M 2DH5**
**Channel Low**



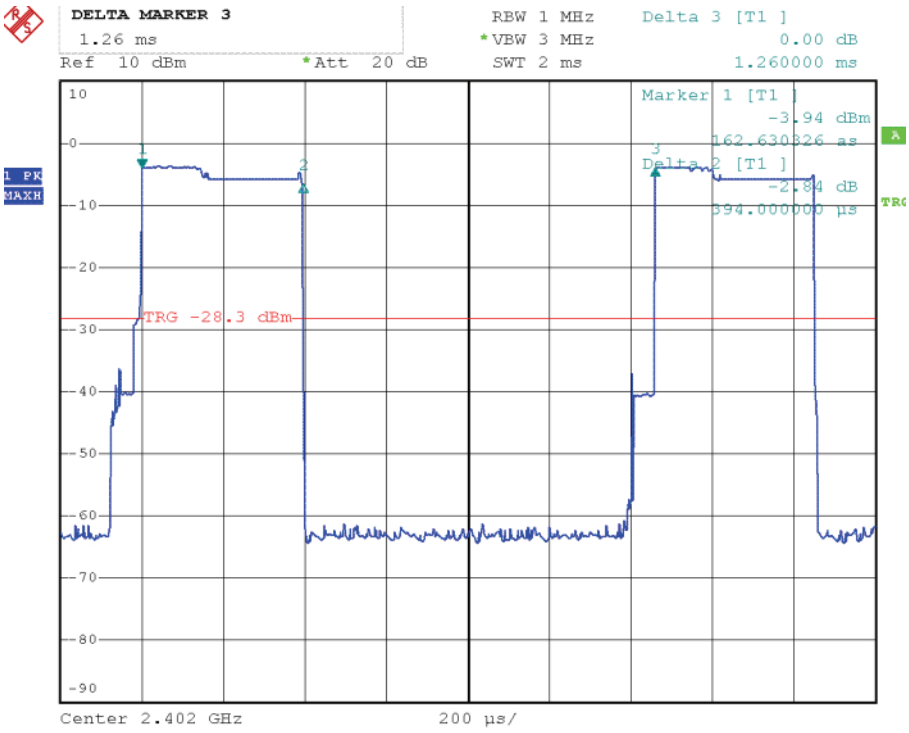
## Channel Middle



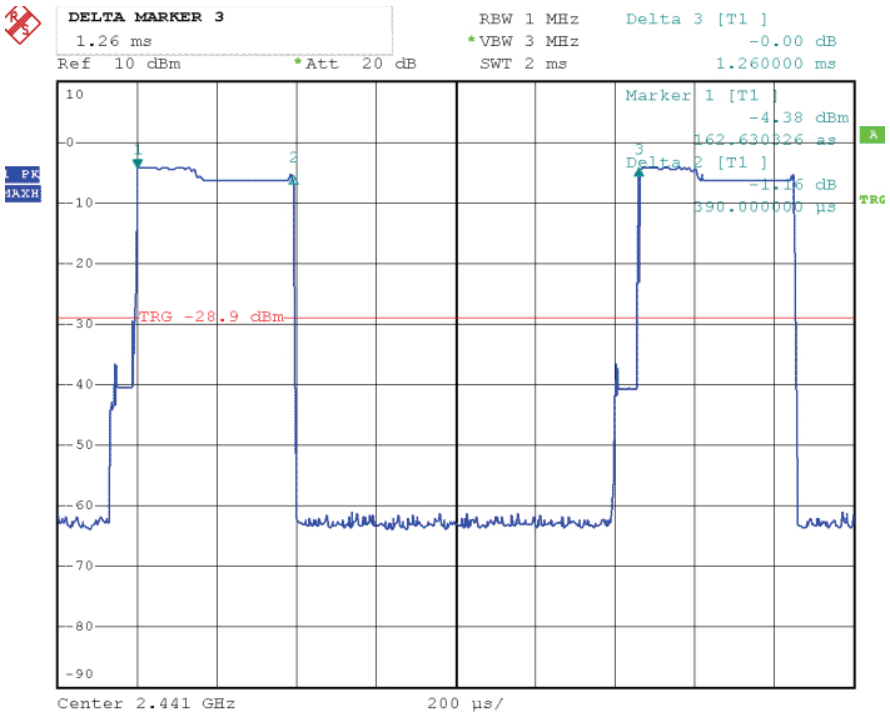

## Channel High



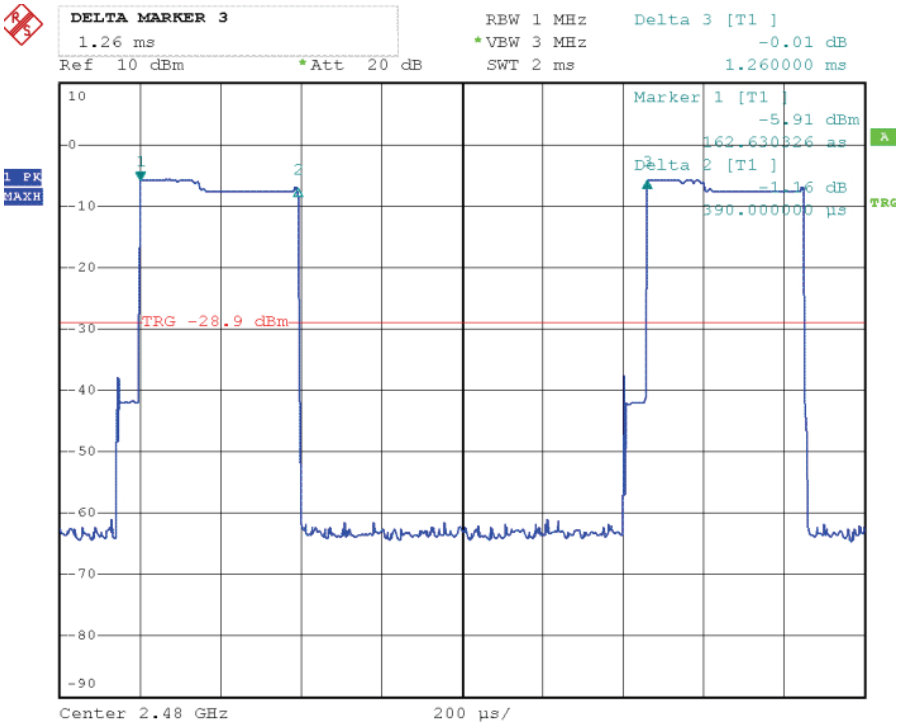
**EDR 3M 3DH1**
**Channel Low**



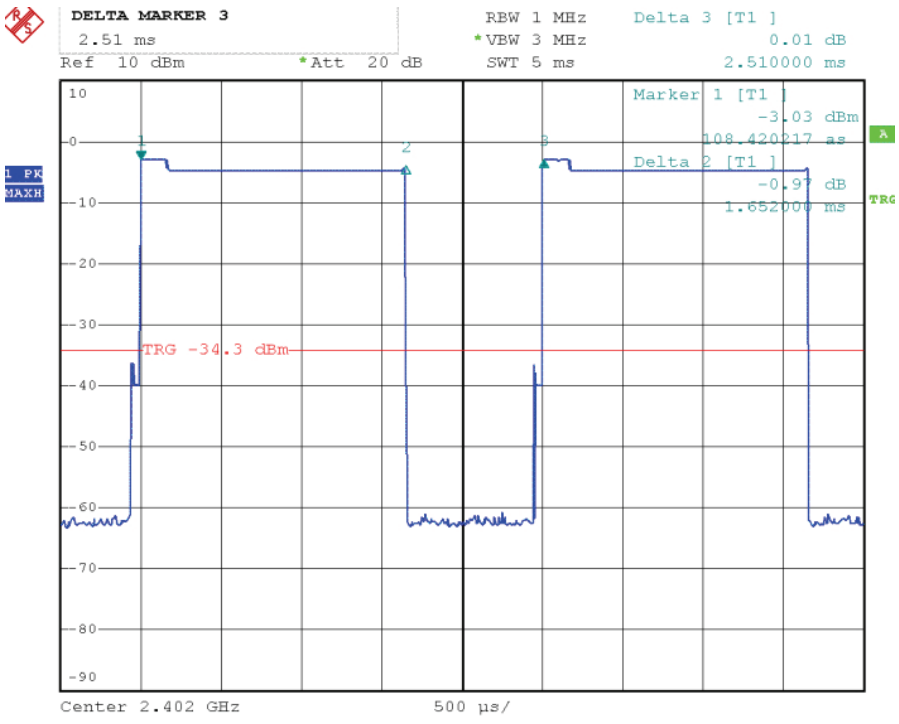

**Channel Middle**



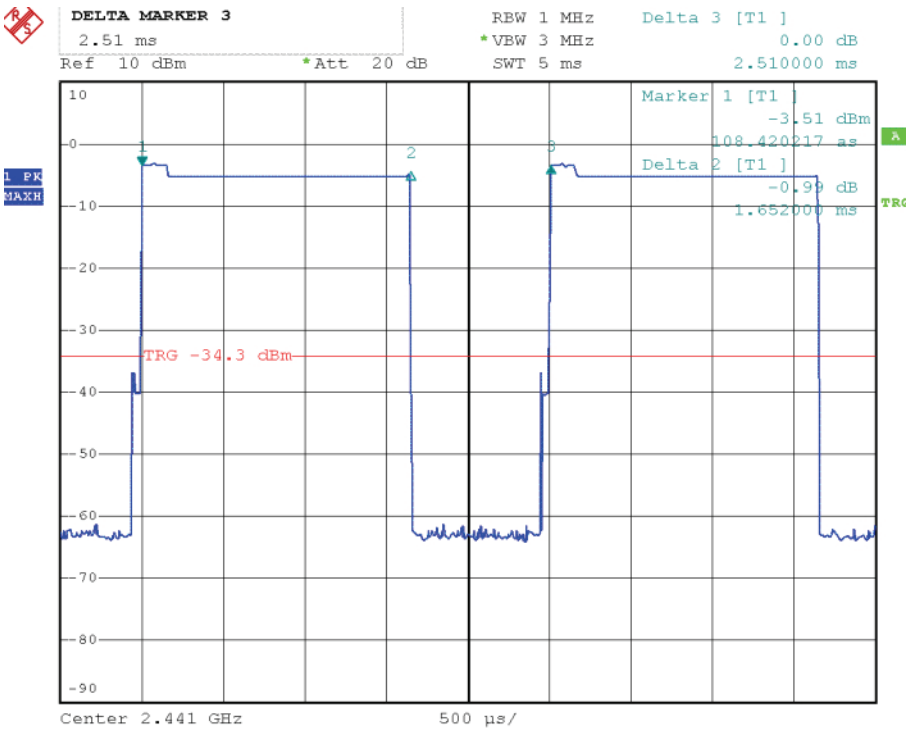
**Channel High**



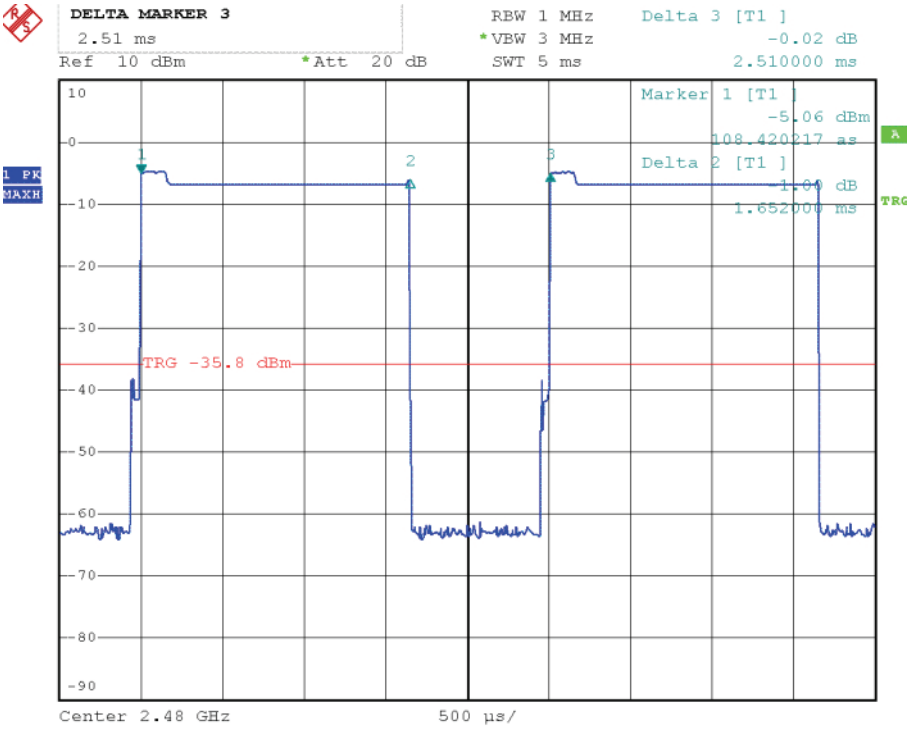

**EDR 3M 3DH3**
**Channel Low**



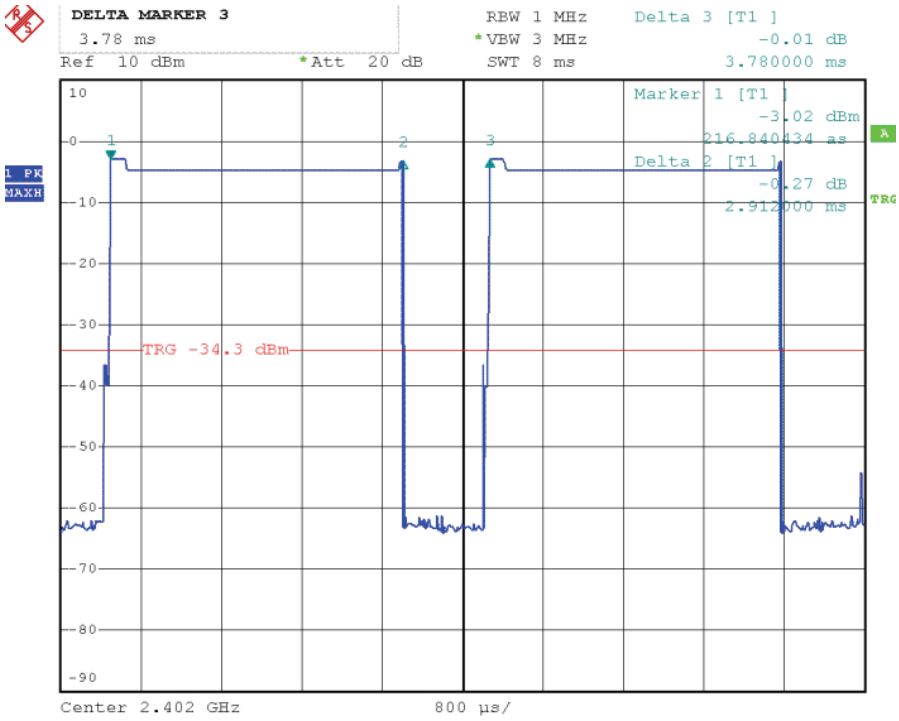
## Channel Middle



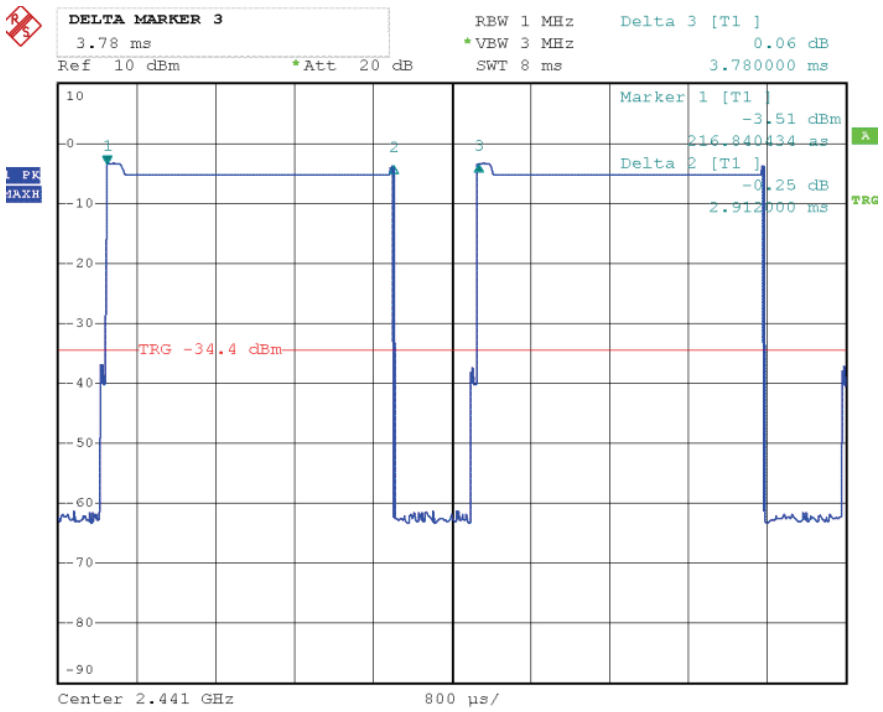

## Channel High



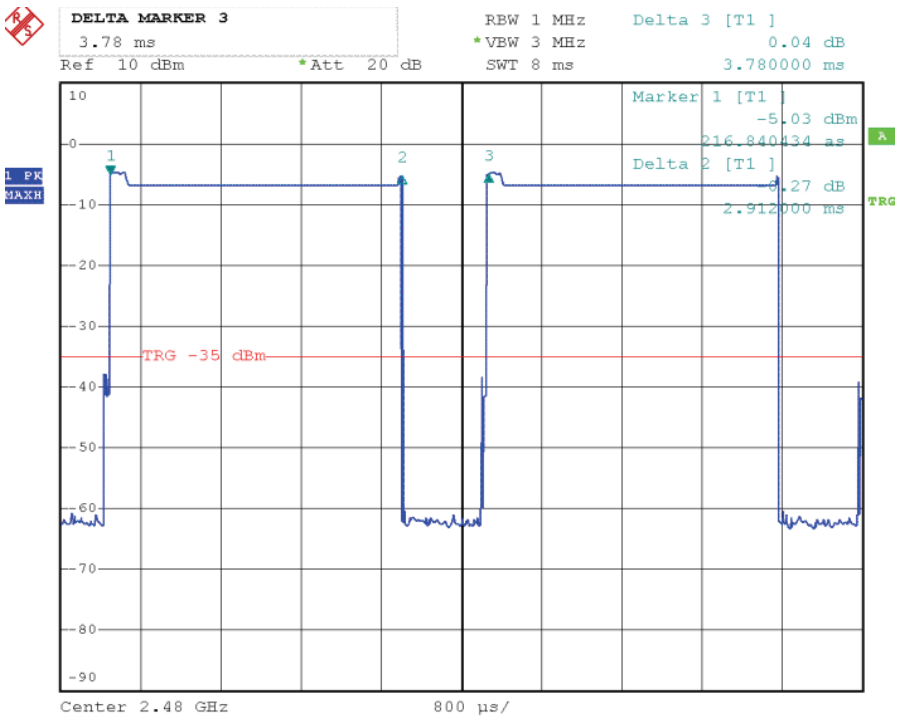
**EDR 3M 3DH5**
**Channel Low**




**Channel Middle**



## Channel High

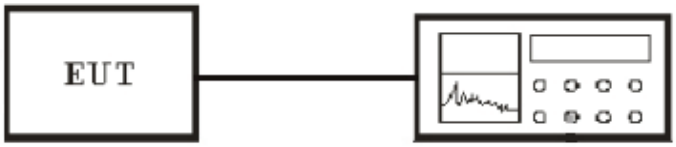


# 9. Test of Maximum Peak Output Power

## 9.1 Applicable Standard

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels and The maximum peak output power shall not exceed 1 watt. For all other frequency hopping systems in this frequency band, The maximum peak output power shall not exceed 0.125 watt.

## 9.2 EUT Setup




**Spectrum Analyzer**

## 9.3 Test Equipment List and Details

See section 2.5.

## 9.4 Test Procedure

1. The transmitter output was connected to the peak power meter and recorded the peak value.

2. Peak power meter parameter set to auto attenuator and filter is the same as.

3. Repeated the 1 for the middle and highest channel of the EUT.

## 9.5 Test Result

| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

**BDR 1M**

| Modulation Type | Channel No. | Frequency (MHz) | Output Power (dBm) | Limits (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| GFSK | Low | 2402.00 | -3.65 | 21 | -24.65 |
| GFSK | Middle | 2441.00 | -4.43 | 21 | -25.43 |
| GFSK | High | 2480.00 | -5.72 | 21 | -26.72 |

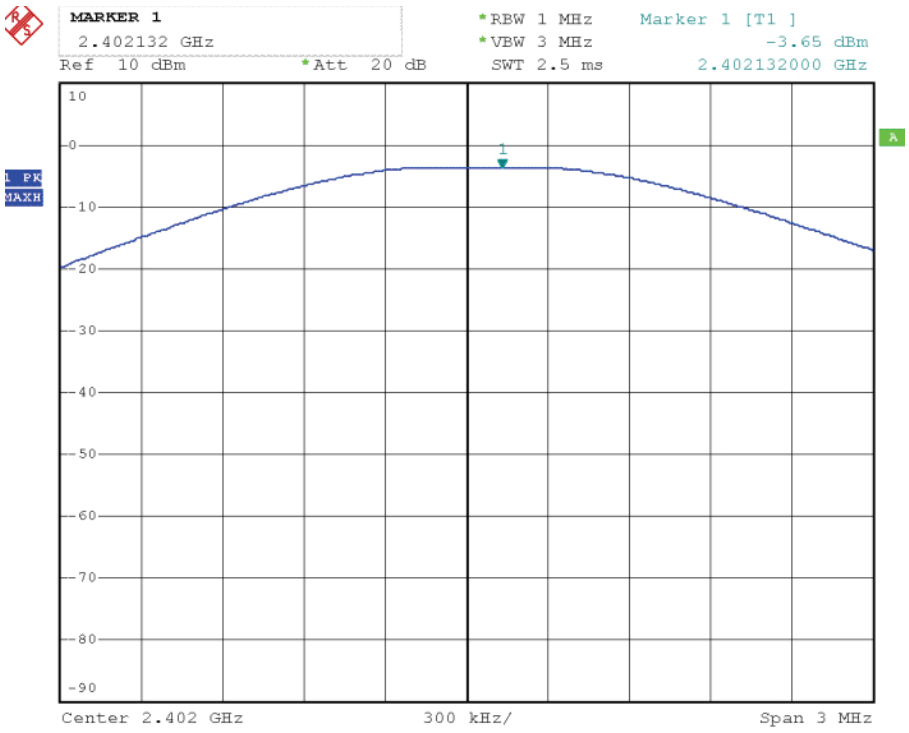
**EDR 2M**

| Modulation Type | Channel No. | Frequency (MHz) | Output Power (dBm) | Limits (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| Pi/4 DQPSK | Low | 2402.00 | -3.87 | 21 | -24.87 |
| Pi/4 DQPSK | Middle | 2441.00 | -4.32 | 21 | -25.32 |
| Pi/4 DQPSK | High | 2480.00 | -5.75 | 21 | -26.75 |

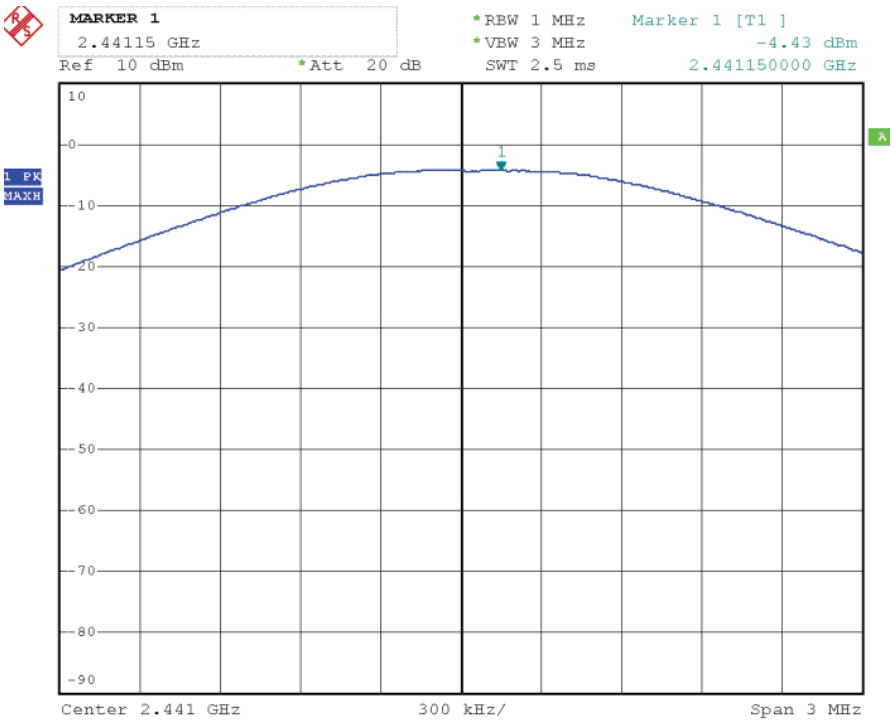
**EDR 3M**

| Modulation Type | Channel No. | Frequency (MHz) | Output Power (dBm) | Limits (dBm) | Margin (dB) |
|---|---|---|---|---|---|
| 8-DPSK | Low | 2402.00 | -3.82 | 21 | -24.82 |
| 8-DPSK | Middle | 2441.00 | -4.25 | 21 | -25.25 |
| 8-DPSK | High | 2480.00 | -5.74 | 21 | -26.74 |

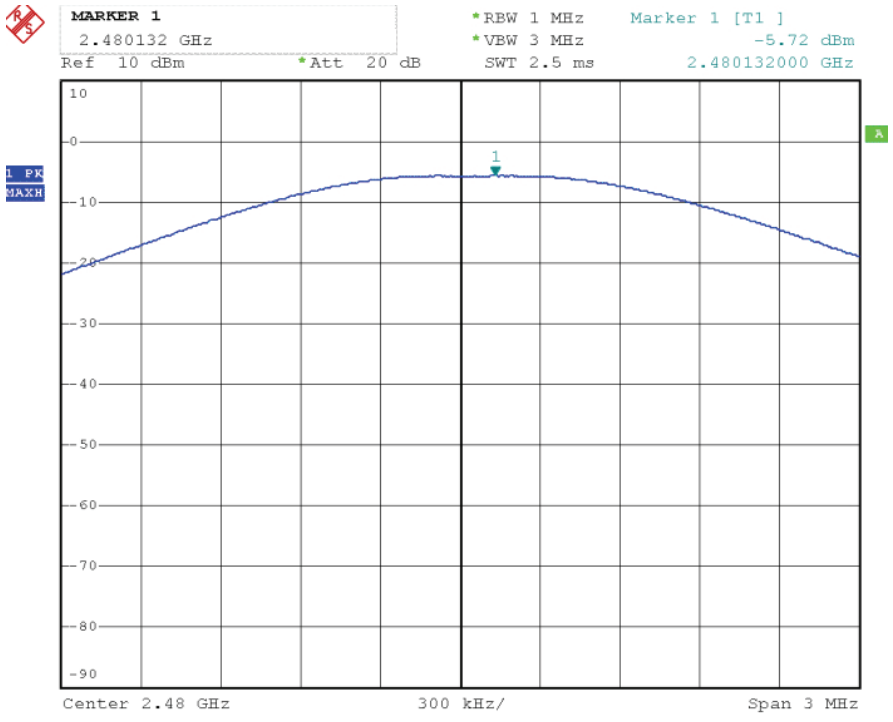
**BDR 1M**
**Channel Low**



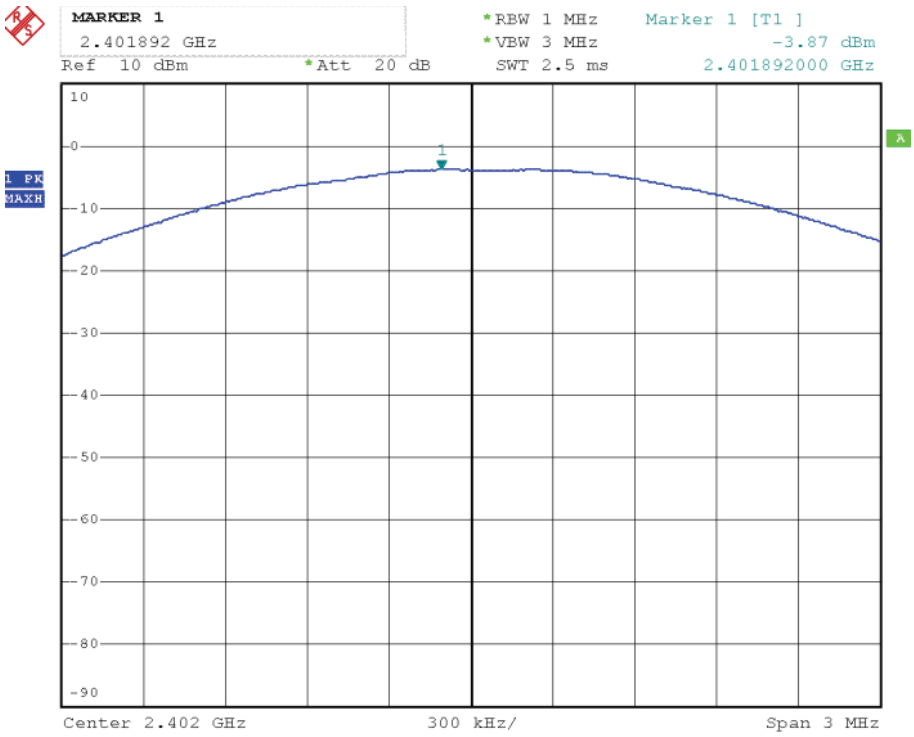
## Channel Middle



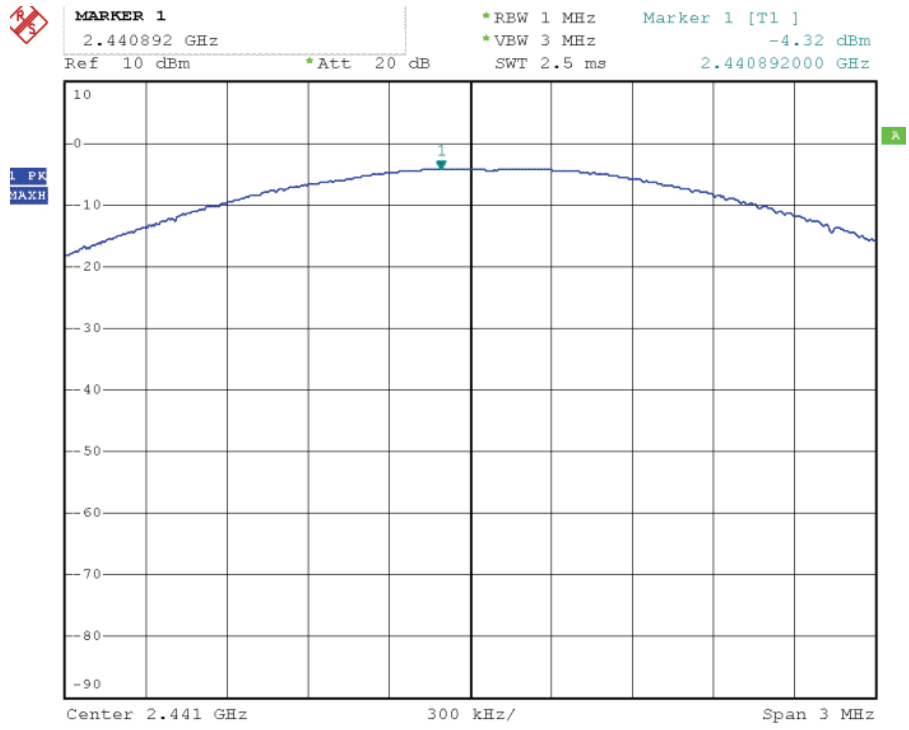

## Channel High



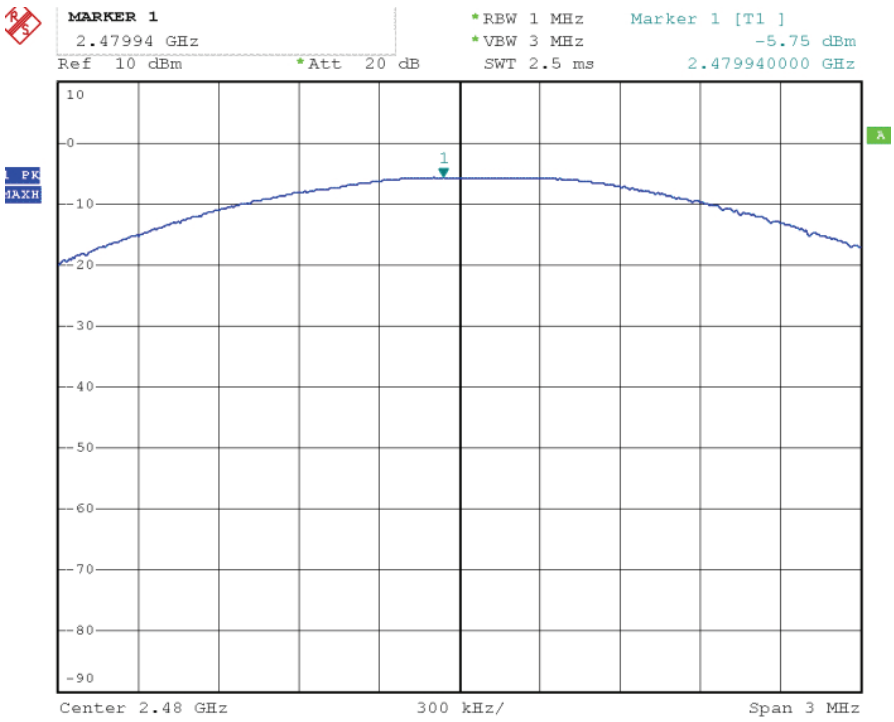
**EDR 2M**
**Channel Low**



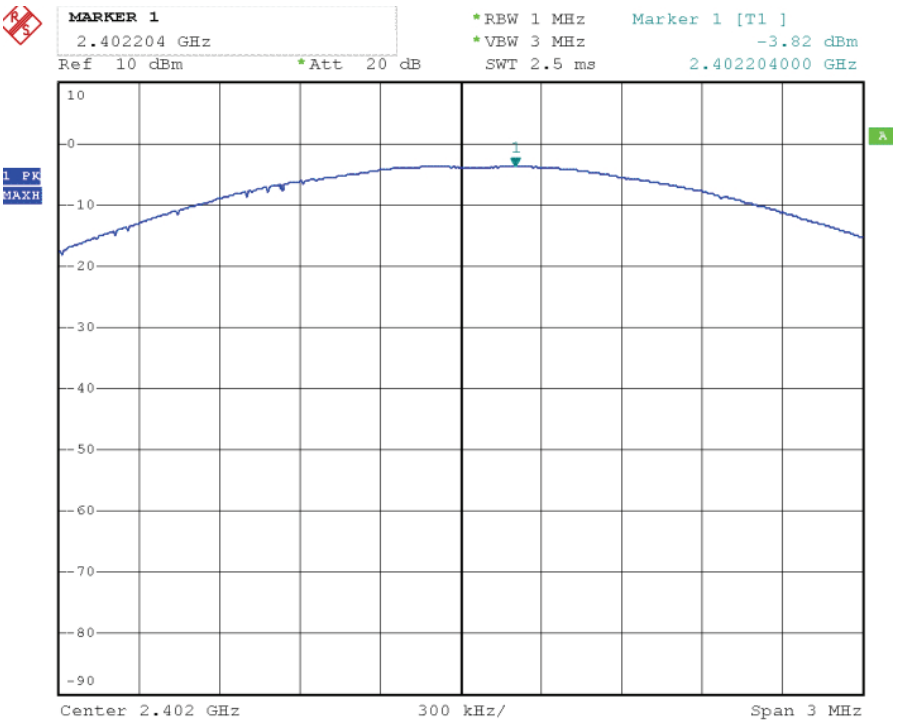

**Channel Middle**



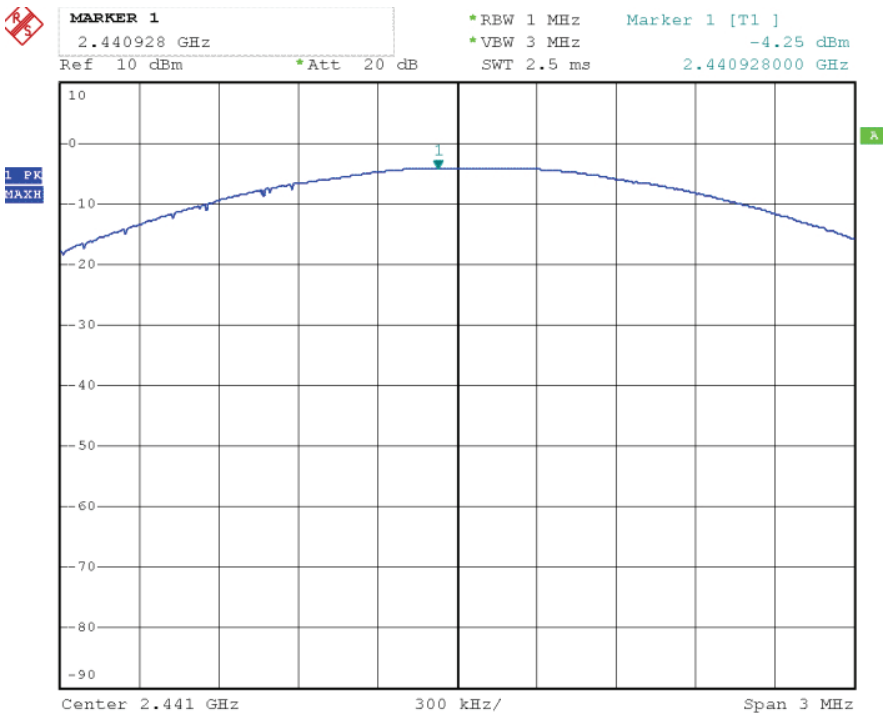
**Channel High**



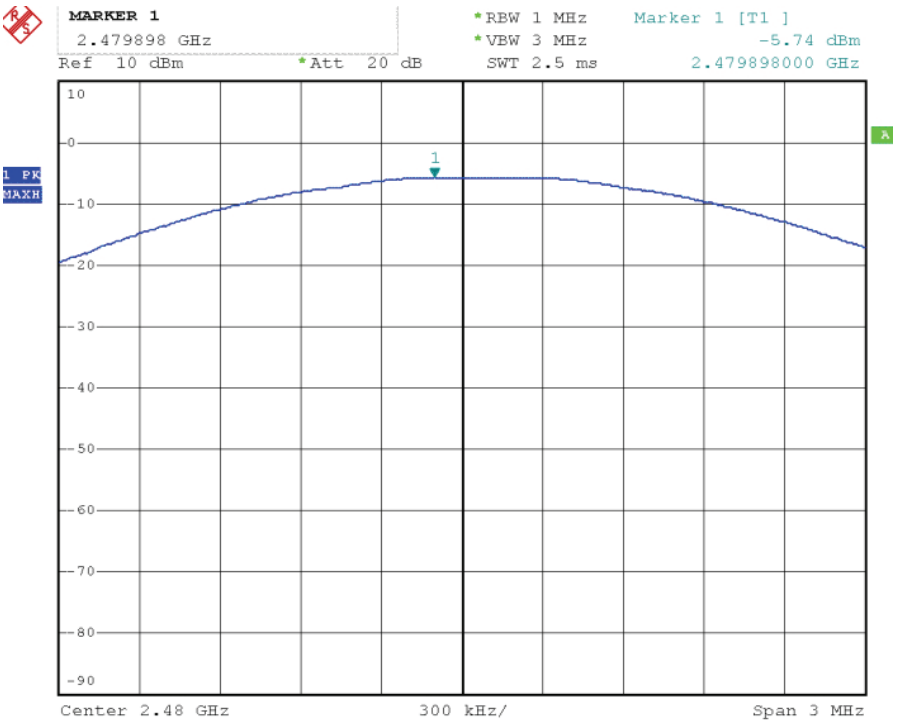

**EDR 3M**
**Channel Low**



## Channel Middle




## Channel High



# 10. Test of Band Edges Emission

## 10.1 Applicable Standard

Section 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. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

## 10.2 EUT Setup

Radiated Measurement Setup

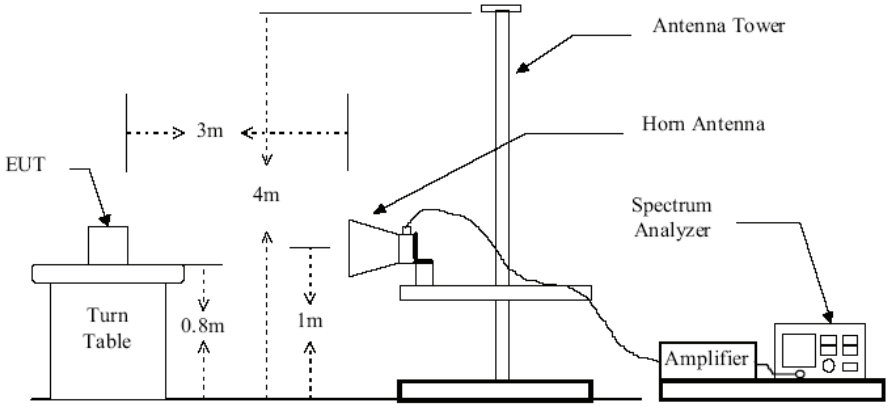



Figure 2 : Frequencies measured above 1 GHz configuration

Conducted Measurement Setup


**Spectrum Analyzer**

## 10.3 Test Equipment List and Details

See section 2.5.

## 10.4 Test Procedure

Conducted Measurement

1. The transmitter is set to the lowest channel.

2. The transmitter output was connected to the spectrum analyzer via a cable .

3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100MHz bandwidth from lower band edge. Then detector set to peak and max hold this trace.

4. The lowest band edges emission was measured and recorded.

5. The transmitter set to the highest channel and repeated 2~4.

Radiated Measurement

1. Configure the EUT according to ANSI C63.4-2003

2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.

4. For band edge emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.

5. For band edge emission, use 1MHz VBW and 1MHz RBW for reading under AV and use 1MHz VBW and 1MHz RBW for reading under PK.

## 10.5 Test Result

| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: Tx Mode |

**Radiated Test Result**

**Worst Case BDR 1M**

| Frequency (MHz) | Antenna Polarization | Emission Read Value (dBμV/m) | Limits (dBμV/m) |
|---|---|---|---|
| 2389.5 | H | 34.12 | 54 |
| 2389.5 | V | 33.45 | 54 |
| 2483.6 | H | 35.22 | 54 |
| 2483.6 | V | 33.64 | 54 |

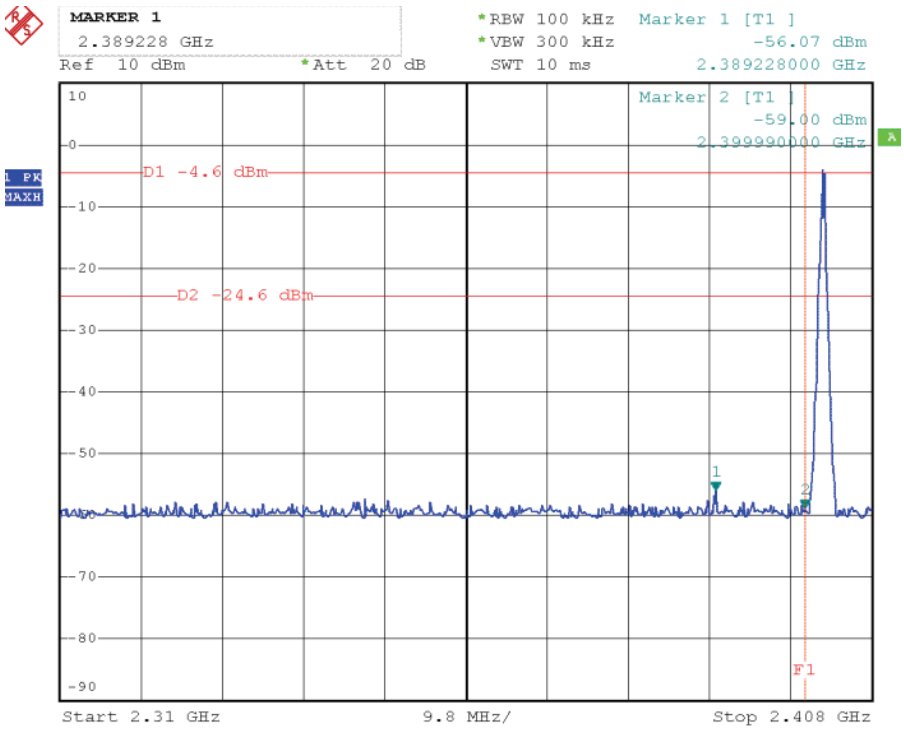
**Worst Case EDR 2M**

| Frequency (MHz) | Antenna Polarization | Emission Read Value (dBμV/m) | Limits (dBμV/m) |
|---|---|---|---|
| 2389.4 | H | 33.43 | 54 |
| 2389.4 | V | 32.55 | 54 |
| 2483.7 | H | 35.89 | 54 |
| 2483.7 | V | 33.65 | 54 |

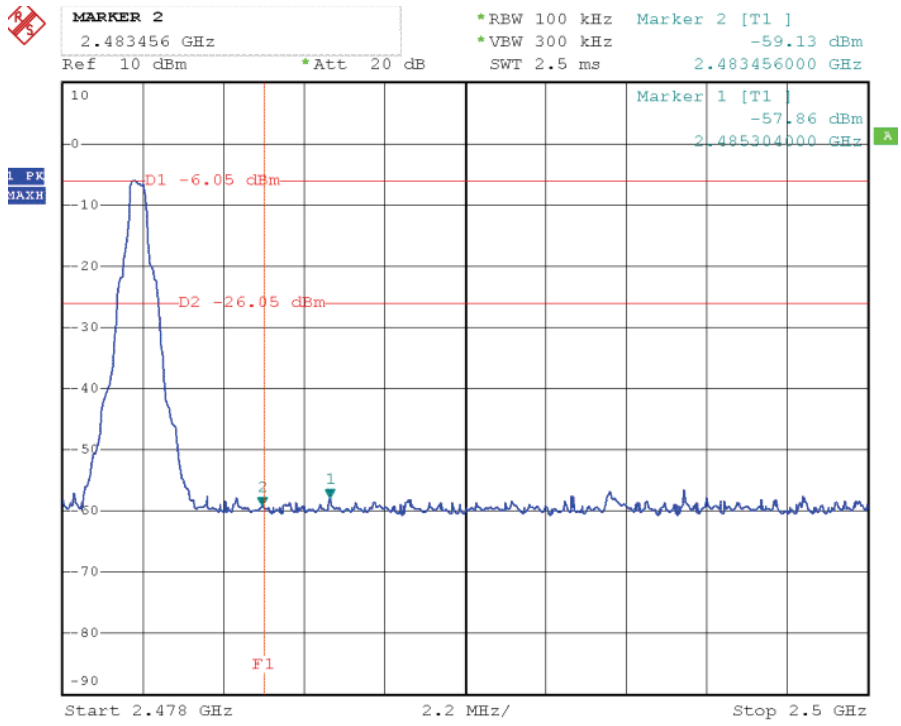
**Worst Case EDR 3M**

| Frequency (MHz) | Antenna Polarization | Emission Read Value (dBµV/m) | Limits (dBµV/m) |
|---|---|---|---|
| 2389.5 | H | 34.66 | 54 |
| 2389.5 | V | 32.33 | 54 |
| 2483.6 | H | 35.54 | 54 |
| 2483.6 | V | 33.56 | 54 |

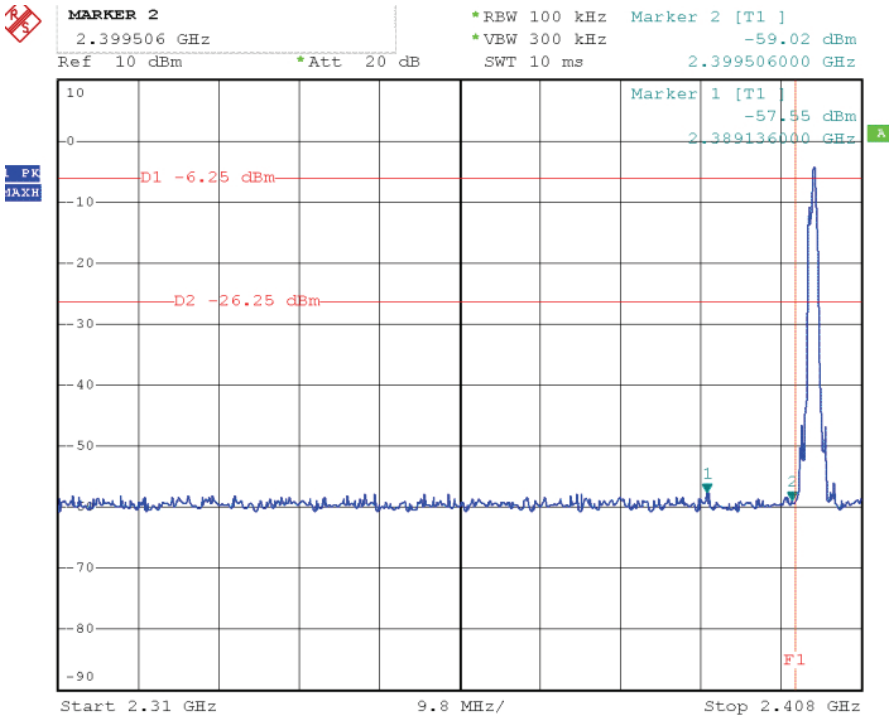
**Conducted Test Result**
**BDR 1M**
**Low Channel**



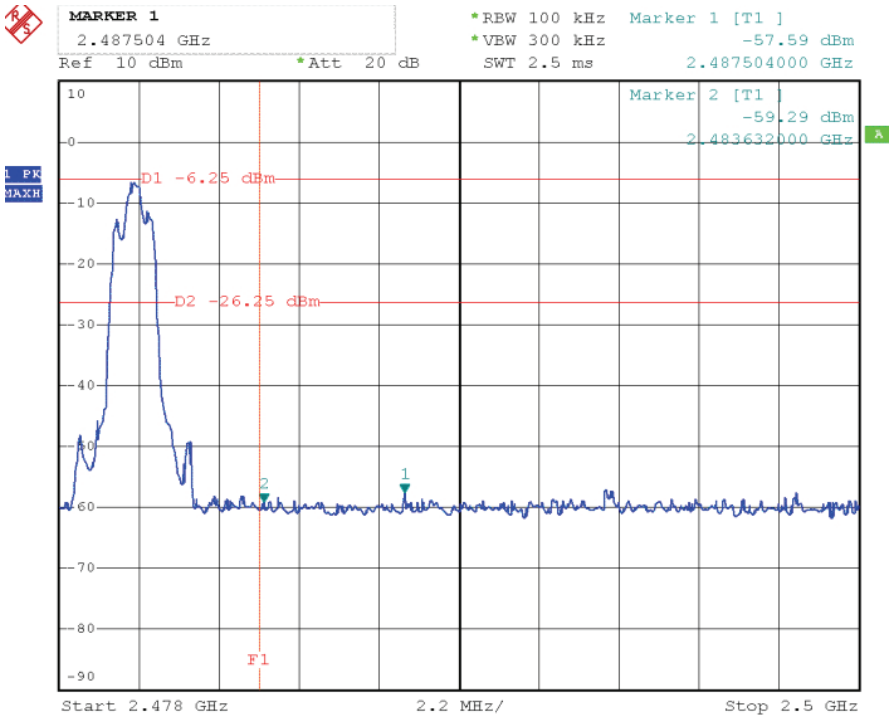

**High Channel**



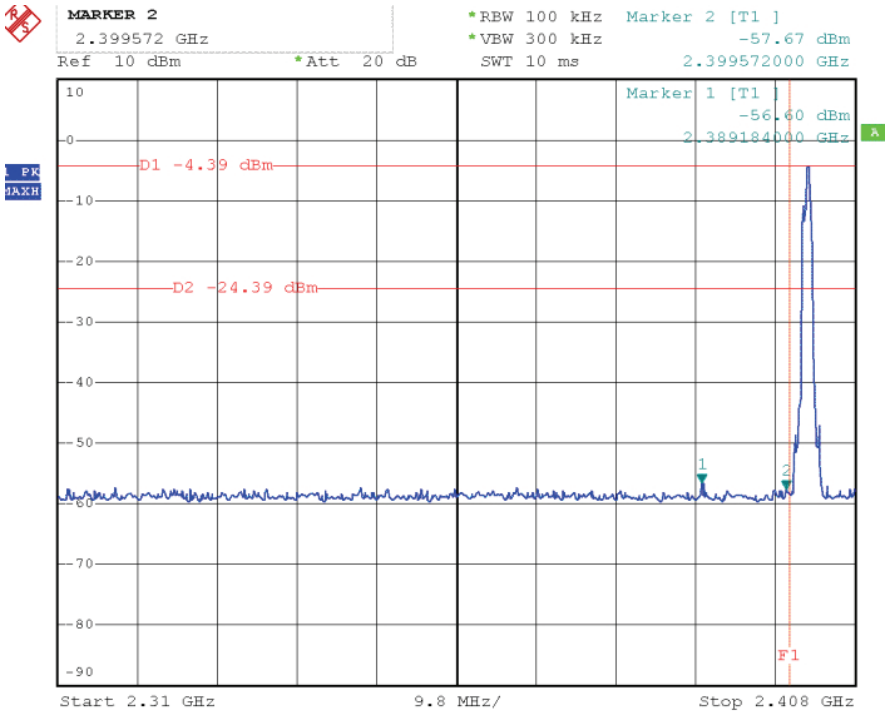
**EDR 2M**
**Low Channel**



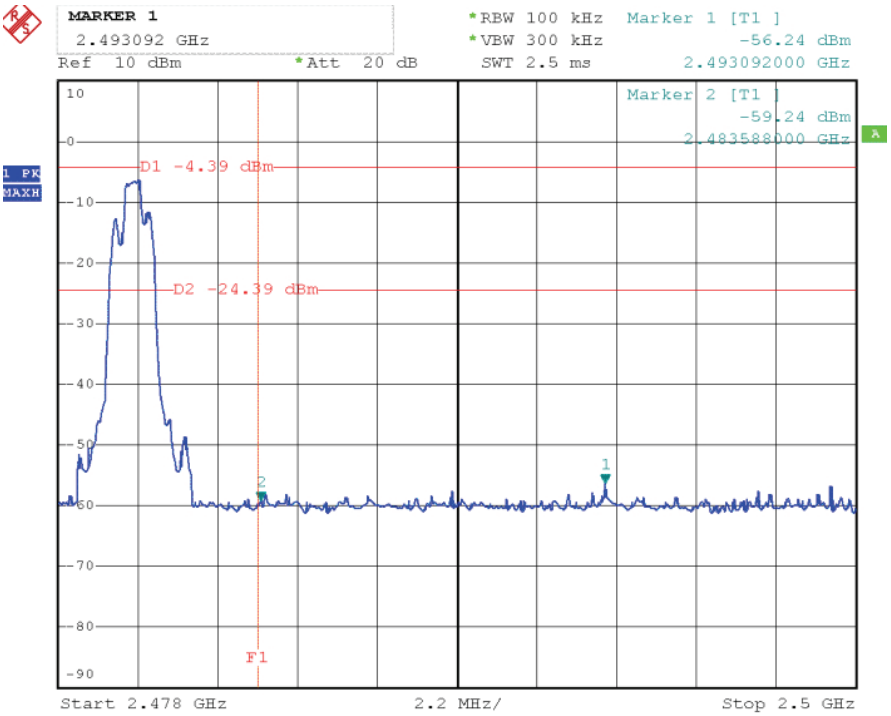

**High Channel**



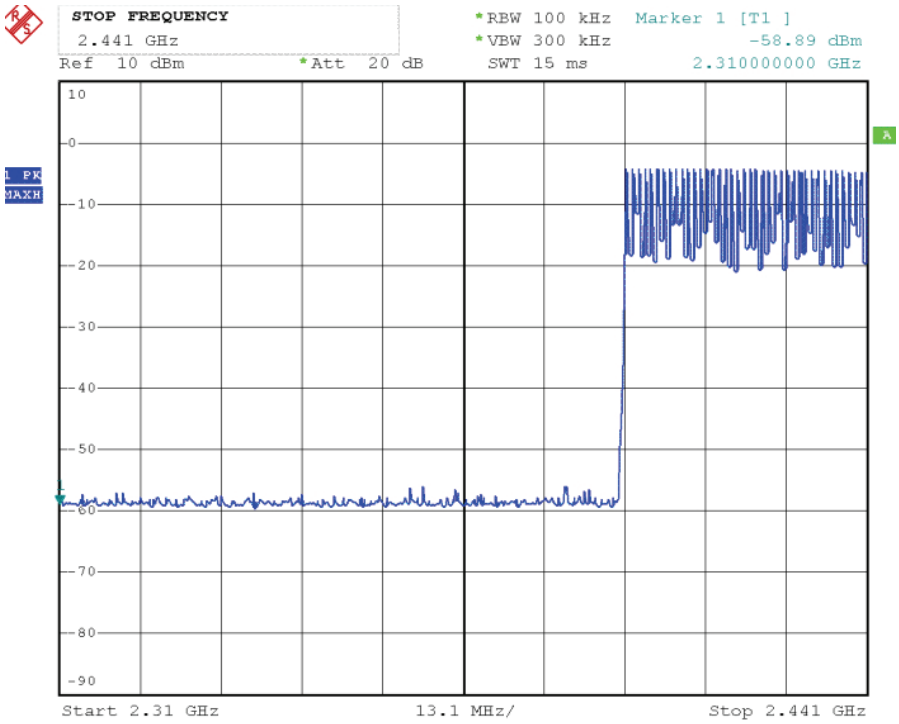
**EDR 3M**
**Low Channel**



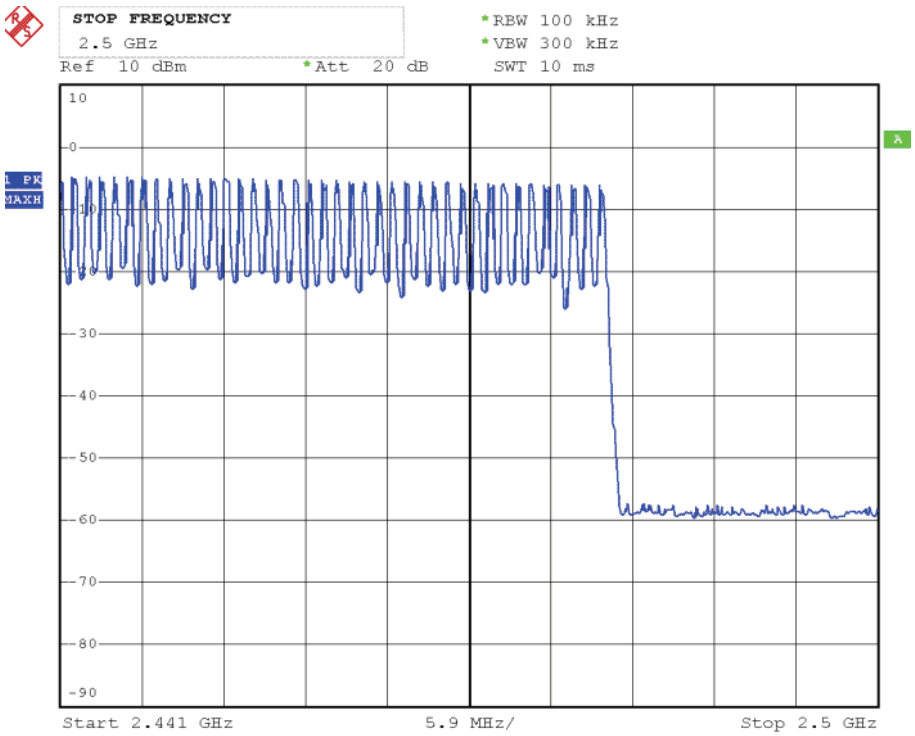

**High Channel**



**Hopping Mode Worst case BDR 1M**
**Low**




**High**



# 11. Test of Spurious Radiated Emission

## 11.1 Applicable Standard

Section 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. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

## 11.2 EUT Setup

### Conducted Measurement Setup


**Spectrum Analyzer**

### Radiated Measurement Setup

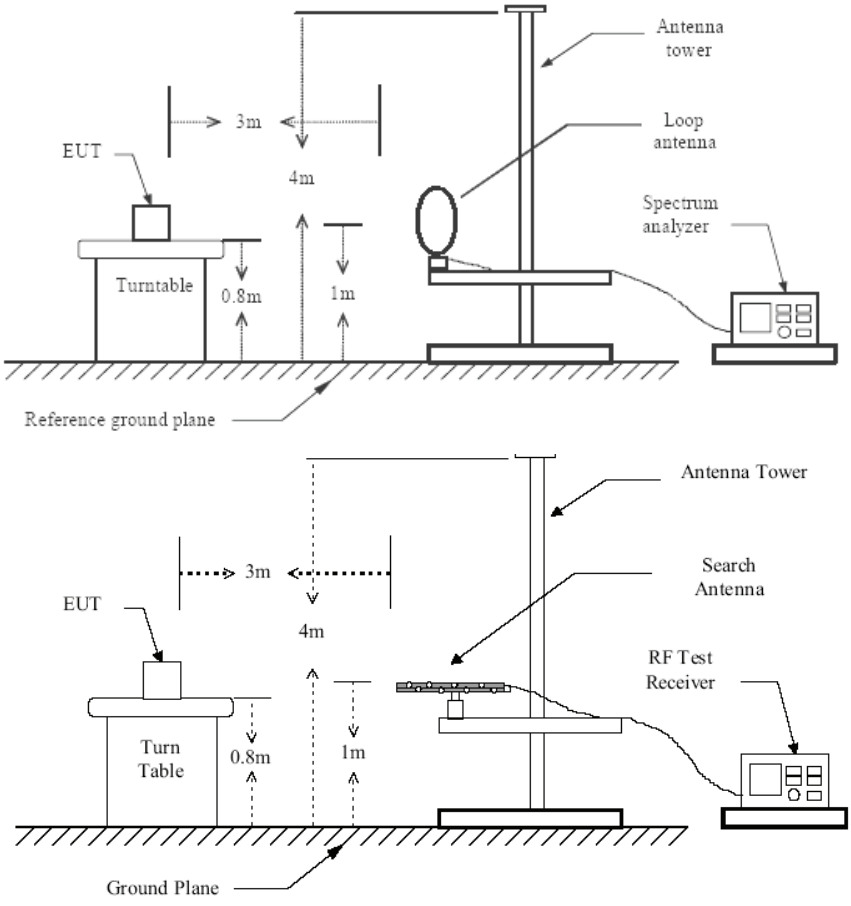



Figure 1 : Frequencies measured below 1 GHz configuration

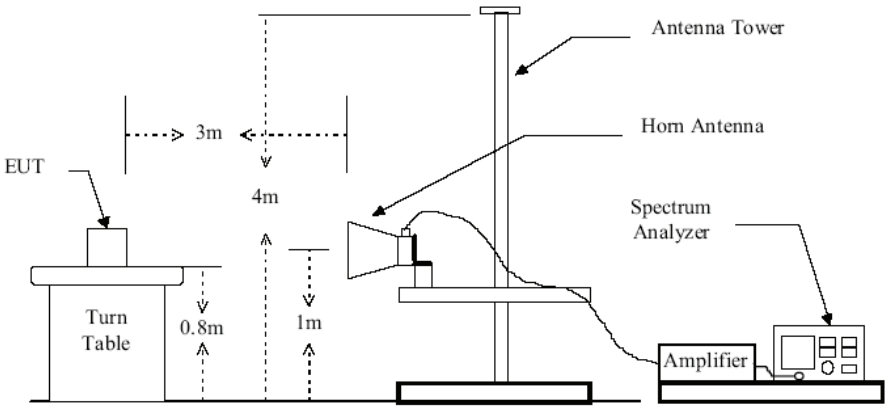


Figure 2 : Frequencies measured above 1 GHz configuration

## 11.3 Test Equipment List and Details

See section 2.5.

## 11.4 Test Procedure

**Conducted Measurement**

1. For emission above 1GHz to 26G,conducted measurement method is used.

2. The transmitter is set to the lowest channel.

3. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.

4. Set RBW to 1 MHz and VBW to 3 MHz, Then detector set to peak and max hold this trace.

5. The lowest band edges emission was measured and recorded.

6. The transmitter set to the highest channel and repeated 2~4.

**Radiated Measurement**

1. Configure the EUT according to ANSI C63.4-2003

2. The EUT was placed on the top of the turntable 0.8 meter above ground.

3. Receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable. When the frequency spectrum measured started from 9 kHz to 30 MHz, a loop antenna is used. When the frequency spectrum measured started from 30 MHz to 1000 MHz and above 1000 MHz, a broadband receiving antenna and the horn antenna are used.

4. Power on the EUT and all the supporting units.

5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.

7. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

8. According to the characteristic of the EUT crystals, the range of frequencies was investigated from 9KHz to 30MHz, 30MHz to 1GHz and 1GHz to 26GHz.

9. For emission below 1GHz, Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

10. For emission above 1GHz, Set the RBW=1MHz,VBW=3MHz for Peak Detector while the RBW=1MHz, VBW=10Hz for Average Detector, Readings are both peak and average values.

11. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos. The worst case data is recorded in the report. All emission not reported are much lower than the prescribed limits.

### 11.5 Test Result

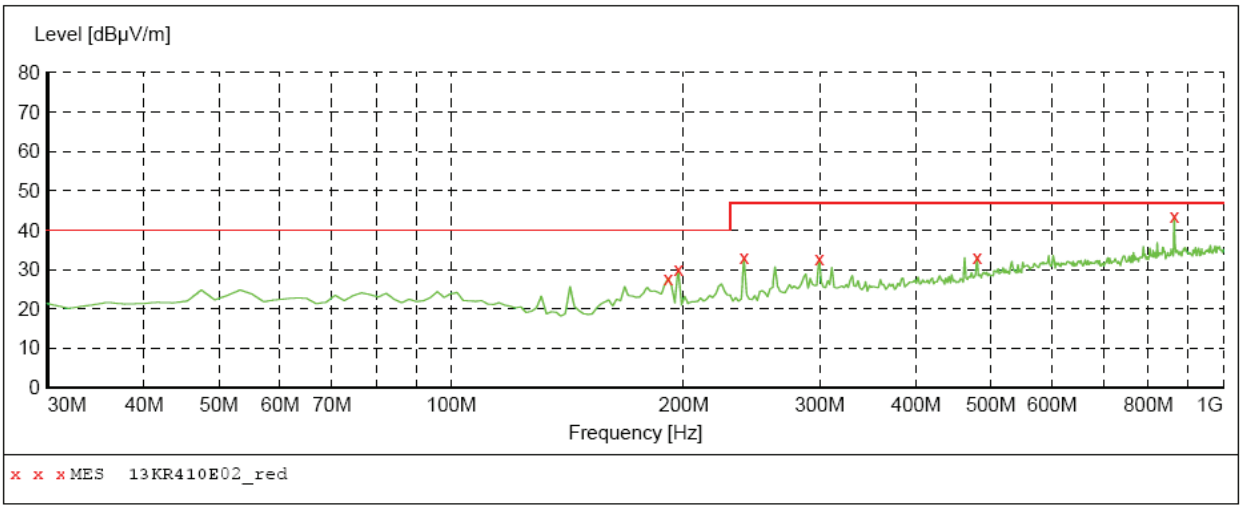
| | |
|---|---|
| Temperature ( ℃ ) : 22~23 | EUT: 3D Glasses |
| Humidity (%RH ): 50~54 | M/N: G15-BT |
| Barometric Pressure ( mbar ): 950~1000 | Operation Condition: TX Mode |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel Low:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Horizontal |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E02_red"***

12/5/2013 13:35

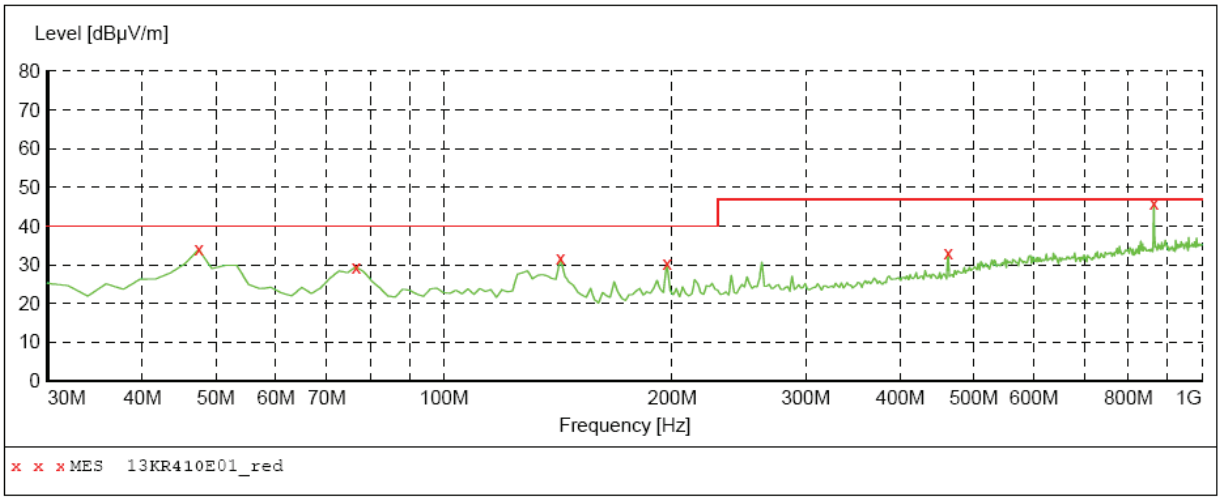
| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 191.020000 | 27.80 | 14.8 | 40.0 | 12.2 | QP | 100.0 | 0.00 | HORIZONTAL |
| 196.840000 | 30.20 | 14.8 | 40.0 | 9.8 | QP | 100.0 | 0.00 | HORIZONTAL |
| 239.520000 | 33.00 | 16.9 | 47.0 | 14.0 | QP | 100.0 | 0.00 | HORIZONTAL |
| 299.660000 | 32.90 | 18.7 | 47.0 | 14.1 | QP | 100.0 | 0.00 | HORIZONTAL |
| 480.080000 | 33.30 | 23.1 | 47.0 | 13.7 | QP | 100.0 | 0.00 | HORIZONTAL |
| 864.200000 | 43.60 | 28.8 | 47.0 | 3.4 | QP | 100.0 | 0.00 | HORIZONTAL |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel Low:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Vertical |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E01_red"***

12/5/2013 13:34

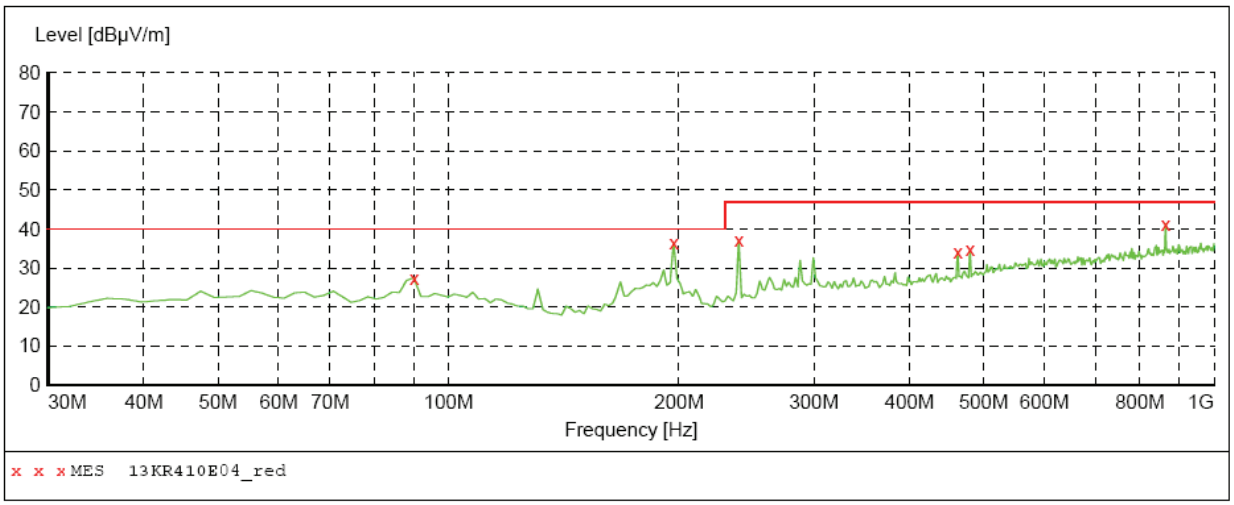
| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 47.460000 | 34.00 | 15.8 | 40.0 | 6.0 | QP | 100.0 | 0.00 | VERTICAL |
| 76.560000 | 29.50 | 12.0 | 40.0 | 10.5 | QP | 100.0 | 0.00 | VERTICAL |
| 142.520000 | 31.70 | 12.3 | 40.0 | 8.3 | QP | 100.0 | 0.00 | VERTICAL |
| 196.840000 | 30.50 | 14.8 | 40.0 | 9.5 | QP | 100.0 | 0.00 | VERTICAL |
| 462.620000 | 33.20 | 22.4 | 47.0 | 13.8 | QP | 100.0 | 0.00 | VERTICAL |
| 864.200000 | 45.00 | 28.8 | 47.0 | 2.0 | QP | 100.0 | 0.00 | VERTICAL |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel Middle:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Horizontal |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E04_red"***

12/5/2013 13:43

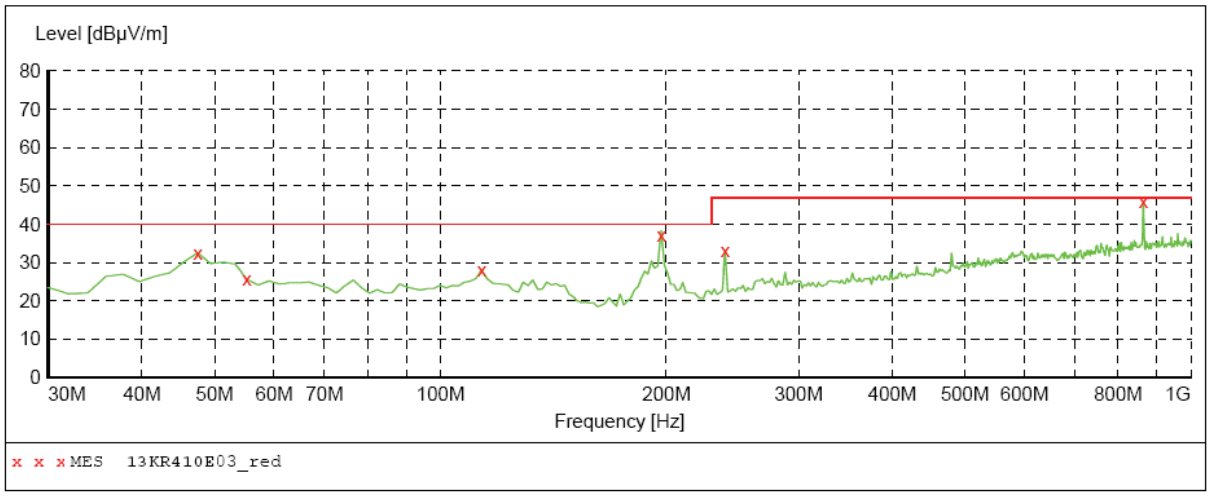
| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 90.140000 | 27.50 | 16.1 | 40.0 | 12.5 | QP | 100.0 | 0.00 | HORIZONTAL |
| 196.840000 | 36.60 | 14.8 | 40.0 | 3.4 | QP | 100.0 | 0.00 | HORIZONTAL |
| 239.520000 | 37.10 | 16.9 | 47.0 | 9.9 | QP | 100.0 | 0.00 | HORIZONTAL |
| 462.620000 | 34.30 | 22.4 | 47.0 | 12.7 | QP | 100.0 | 0.00 | HORIZONTAL |
| 480.080000 | 34.70 | 23.1 | 47.0 | 12.3 | QP | 100.0 | 0.00 | HORIZONTAL |
| 864.200000 | 41.40 | 28.8 | 47.0 | 5.6 | QP | 100.0 | 0.00 | HORIZONTAL |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel Middle:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Vertical |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E03_red"***

12/5/2013 13:41

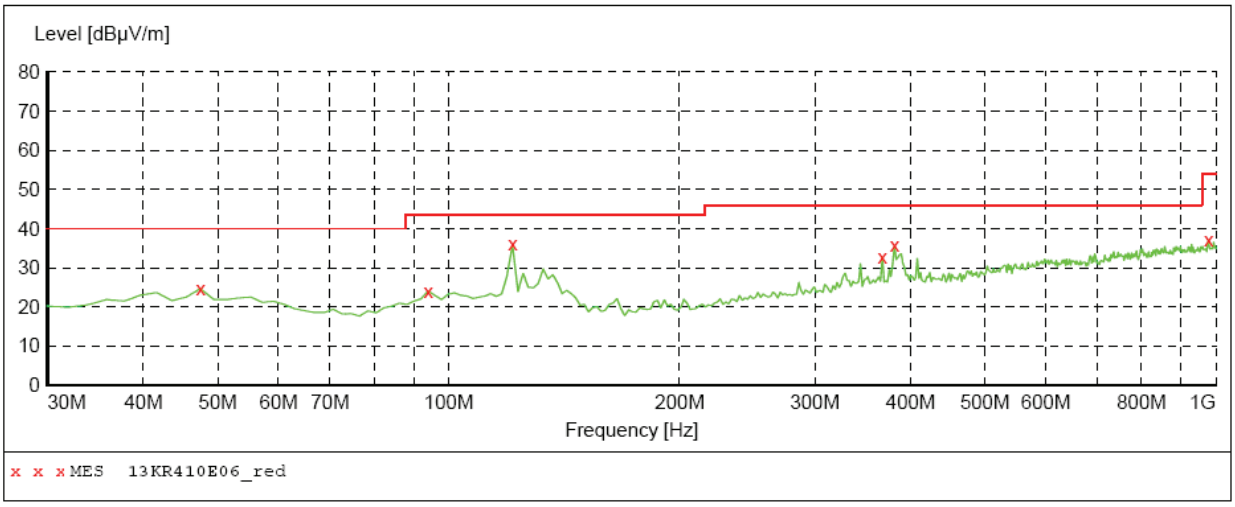
| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 47.460000 | 32.50 | 15.8 | 40.0 | 7.5 | QP | 100.0 | 0.00 | VERTICAL |
| 55.220000 | 25.60 | 15.6 | 40.0 | 14.4 | QP | 100.0 | 0.00 | VERTICAL |
| 113.420000 | 28.10 | 15.9 | 40.0 | 11.9 | QP | 100.0 | 0.00 | VERTICAL |
| 196.840000 | 37.30 | 14.8 | 40.0 | 2.7 | QP | 100.0 | 0.00 | VERTICAL |
| 239.520000 | 33.30 | 16.9 | 47.0 | 13.7 | QP | 100.0 | 0.00 | VERTICAL |
| 864.200000 | 45.00 | 28.8 | 47.0 | 2.0 | QP | 100.0 | 0.00 | VERTICAL |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel High:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Horizontal |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E06_red"***

12/5/2013 14:16

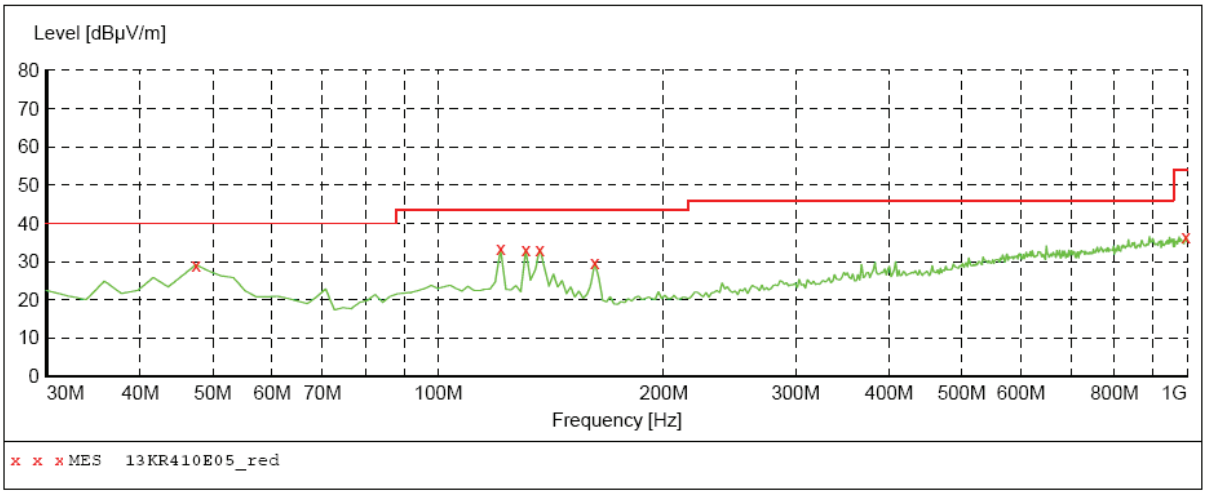
| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 47.460000 | 24.70 | 15.8 | 40.0 | 15.3 | QP | 100.0 | 0.00 | HORIZONTAL |
| 94.020000 | 24.10 | 16.9 | 43.5 | 19.4 | QP | 100.0 | 0.00 | HORIZONTAL |
| 121.180000 | 36.00 | 14.5 | 43.5 | 7.5 | QP | 100.0 | 0.00 | HORIZONTAL |
| 367.560000 | 32.70 | 20.7 | 46.0 | 13.3 | QP | 100.0 | 0.00 | HORIZONTAL |
| 381.140000 | 35.70 | 20.9 | 46.0 | 10.3 | QP | 100.0 | 0.00 | HORIZONTAL |
| 978.660000 | 37.10 | 29.8 | 54.0 | 16.9 | QP | 100.0 | 0.00 | HORIZONTAL |

The worst Spurious Emission Data BDR Mode Below 1GHz Channel High:

| | |
|---|---|
| EUT: | 3D Glasses |
| M/N: | G15-BT |
| Operating Condition: | TX Mode |
| Test Site: | 3m CHAMBER |
| Operator: | Chen |
| Test Specification: | DC 3V from battery |
| Comment: | Polarization: Vertical |

***SWEEP TABLE: "test (30M-1G)"***

| Short Description: | | | Field Strength | | |
|---|---|---|---|---|---|
| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | VULB9163 NEW |




***MEASUREMENT RESULT: "13KR410E05_red"***

12/5/2013 14:12

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 47.460000 | 29.20 | 15.8 | 40.0 | 10.8 | QP | 100.0 | 0.00 | VERTICAL |
| 121.180000 | 33.50 | 14.5 | 43.5 | 10.0 | QP | 100.0 | 0.00 | VERTICAL |
| 130.880000 | 33.20 | 13.0 | 43.5 | 10.3 | QP | 100.0 | 0.00 | VERTICAL |
| 136.700000 | 33.30 | 12.5 | 43.5 | 10.2 | QP | 100.0 | 0.00 | VERTICAL |
| 161.920000 | 29.90 | 12.8 | 43.5 | 13.6 | QP | 100.0 | 0.00 | VERTICAL |
| 996.120000 | 36.60 | 29.9 | 54.0 | 17.4 | QP | 100.0 | 0.00 | VERTICAL |

The worst Spurious Emission Data BDR Mode Above 1GHz

Channel Low

| Channel Low（2402MHz） | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Maximum Frequency (MHz) | Polarity and Level | | | | | Limit (dBμV/m) | Margin (dBμV/m) | Mark (P/Q/A) |
| | Polarity | Height (m) | Reading dBμV | Transd | Result dBμV/m | | | |
| 2402 | H | 1 | 84.76 | -7.15 | 77.61 | N/A | N/A | P |
| | | | 78.68 | -7.15 | 71.53 | N/A | N/A | A |
| 2402 | V | 1 | 86.23 | -7.15 | 79.08 | N/A | N/A | P |
| | | | 80.02 | -7.15 | 72.87 | N/A | N/A | A |
| 4804 | H | 1 | 42.02 | 1.07 | 43.09 | 74 | -30.91 | P |
| | | | 32.7 | 1.07 | 33.77 | 54 | -20.23 | A |
| 4804 | V | 1 | 44.31 | 1.07 | 45.38 | 74 | -28.62 | P |
| | | | 33.42 | 1.07 | 34.49 | 54 | -19.51 | A |
| 7206 | H | 1 | 41.69 | 7.38 | 49.07 | 74 | -24.93 | P |
| | | | 31.82 | 7.38 | 39.2 | 54 | -14.8 | A |
| 7206 | V | 1 | 44.82 | 7.38 | 52.2 | 74 | -21.8 | P |
| | | | 33.2 | 7.38 | 40.58 | 54 | -13.42 | A |
| 9613.33 | H | 1 | 42.98 | 10.29 | 53.27 | 74 | -20.73 | P |
| | | | 32.29 | 10.29 | 42.58 | 54 | -11.42 | A |
| 9613.33 | V | 1 | 44.01 | 7.38 | 51.39 | 74 | -22.61 | P |
| | | | 32.62 | 7.38 | 40 | 54 | -14 | A |
| 12021.67 | H | 1 | 43.42 | 14.01 | 57.43 | 74 | -16.57 | P |
| | | | 33.01 | 14.01 | 47.02 | 54 | -6.98 | A |
| 12021.67 | V | 1 | 44.29 | 14.01 | 58.3 | 74 | -15.7 | P |
| | | | 32.86 | 14.01 | 46.87 | 54 | -7.13 | A |
| 25380.37 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

Channel Mid

| Channel Low（2441MHz） | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Maximum Frequency (MHz) | Polarity and Level | | | | | Limit (dBμV/m) | Margin (dBμV/m) | Mark (P/Q/A) |
| | Polarity | Height (m) | Reading dBμV | Transd | Result dBμV/m | | | |
| 2441 | H | 1 | 84.02 | -6.37 | 77.65 | N/A | N/A | P |
| | | | 78.82 | -6.37 | 72.45 | N/A | N/A | A |
| 2441 | V | 1 | 86.23 | -6.37 | 79.86 | N/A | N/A | P |
| | | | 79.87 | -6.37 | 73.5 | N/A | N/A | A |
| 4882 | H | 1 | 39.83 | 1.07 | 40.9 | 74 | -33.1 | P |
| | | | 31.82 | 1.07 | 32.89 | 54 | -21.11 | A |
| 4882 | V | 1 | 39.69 | 1.07 | 40.76 | 74 | -33.24 | P |
| | | | 31.76 | 1.07 | 32.83 | 54 | -21.17 | A |
| 7323 | H | 1 | 41.23 | 7.49 | 48.72 | 74 | -25.28 | P |
| | | | 32.32 | 7.49 | 39.81 | 54 | -14.19 | A |
| 7323 | V | 1 | 42.21 | 7.49 | 49.7 | 74 | -24.3 | P |
| | | | 32.31 | 7.49 | 39.8 | 54 | -14.2 | A |
| 9764 | H | 1 | 42.83 | 10.47 | 53.3 | 74 | -20.7 | P |
| | | | 32.12 | 10.47 | 42.59 | 54 | -11.41 | A |
| 9764 | V | 1 | 44.17 | 10.47 | 54.64 | 74 | -19.36 | P |
| | | | 32.56 | 10.47 | 43.03 | 54 | -10.97 | A |
| 12191.67 | H | 1 | 44.829 | 14.1 | 58.929 | 74 | -15.071 | P |
| | | | 31.65 | 14.1 | 45.75 | 54 | -8.25 | A |
| 12191.67 | V | 1 | 44.79 | 14.1 | 58.89 | 74 | -15.11 | P |
| | | | 32.07 | 14.1 | 46.17 | 54 | -7.83 | A |
| 25380.37 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

Channel High

| Channel Low（2480MHz） | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Maximum Frequency (MHz) | Polarity and Level | | | | | Limit (dBμV/m) | Margin (dBμV/m) | Mark (P/Q/A) |
| | Polarity | Height (m) | Reading dBμV | Transd | Result dBμV/m | | | |
| 2480 | H | 1 | 83.22 | -6.05 | 77.17 | N/A | N/A | P |
| | | | 78.79 | -6.05 | 72.74 | N/A | N/A | A |
| 2480 | V | 1 | 84.78 | -6.05 | 78.73 | N/A | N/A | P |
| | | | 78.69 | -6.05 | 72.64 | N/A | N/A | A |
| 4960 | H | 1 | 50.75 | 1.07 | 51.82 | 74 | -22.18 | P |
| | | | 32.39 | 1.07 | 33.46 | 54 | -20.54 | A |
| 4960 | V | 1 | 41.81 | 1.07 | 42.88 | 74 | -31.12 | P |
| | | | 32.03 | 1.07 | 33.1 | 54 | -20.9 | A |
| 7440 | H | 1 | 42.65 | 7.61 | 50.26 | 74 | -23.74 | P |
| | | | 31.69 | 7.61 | 39.3 | 54 | -14.7 | A |
| 7440 | V | 1 | 43.82 | 7.61 | 51.43 | 74 | -22.57 | P |
| | | | 32.45 | 7.61 | 40.06 | 54 | -13.94 | A |
| 9920 | H | 1 | 41.79 | 10.65 | 52.44 | 74 | -21.56 | P |
| | | | 33.06 | 10.65 | 43.71 | 54 | -10.29 | A |
| 9920 | V | 1 | 44.68 | 10.65 | 55.33 | 74 | -18.67 | P |
| | | | 32.79 | 10.65 | 43.44 | 54 | -10.56 | A |
| 12361.67 | H | 1 | 42.81 | 14.19 | 57 | 74 | -17 | P |
| | | | 31.98 | 14.19 | 46.17 | 54 | -7.83 | A |
| 12361.67 | V | 1 | 43.96 | 14.19 | 58.15 | 74 | -15.85 | P |
| | | | 31.72 | 14.19 | 45.91 | 54 | -8.09 | A |
| 25380.37 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier
Margin = Level-Limit
Mark: P means Peak Value, Q means Quasi Peak Value, A means Average Value
2. Data of measurement within this frequency range shown " -" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz.
4. The test limit distance is 3m limit

The worst Spurious Emission Data BDR Mode Below 30 MHz

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Levels (dBuV/m) | Limit (dBμV/m) | Margin (dB) | Detector Mode |
|---|---|---|---|---|---|---|---|
| 0.534 | 26.52 | 8.22 | -1.01 | 33.73 | 67 | -33.27 | QP |
| 18.32 | 25.52 | 8.17 | -1.2 | 32.49 | 49.5 | -17.01 | QP |
| 23.15 | 26.33 | 8.03 | -1.05 | 33.31 | 49.5 | -16.19 | QP |
| 24.24 | 27.52 | 7.48 | -1.69 | 33.31 | 49.5 | -16.19 | QP |

Note:

1. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos. The worst case data is recorded in the report.

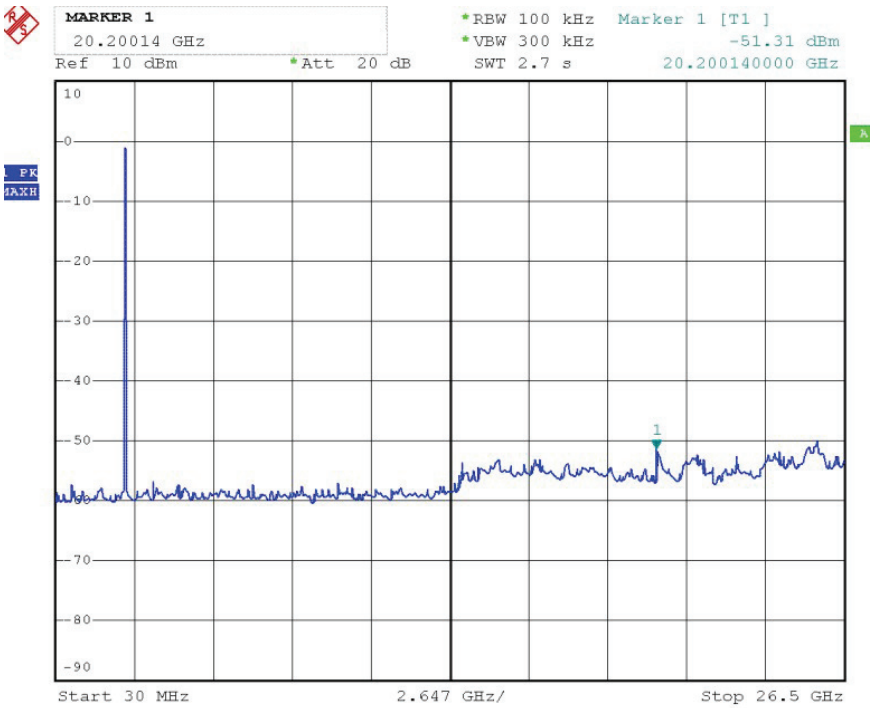
2. Emission level (dBuV/m) =Raw Value (dBuV) + Correction Factor (dB/m)

3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)

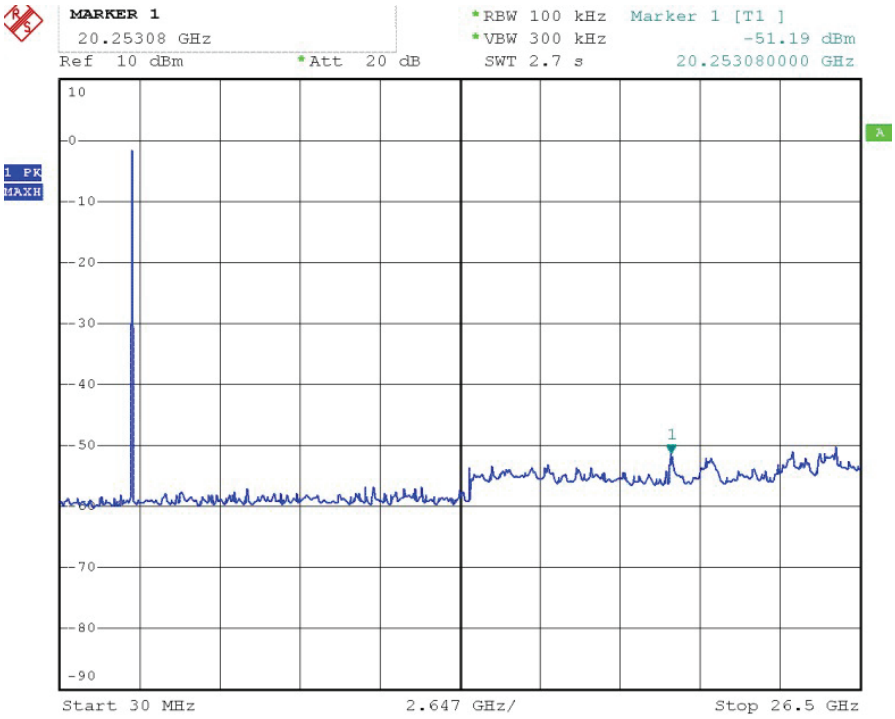
4. The other emission levels were very low against the limit.

5. Margin value = Emission level.- Limit value

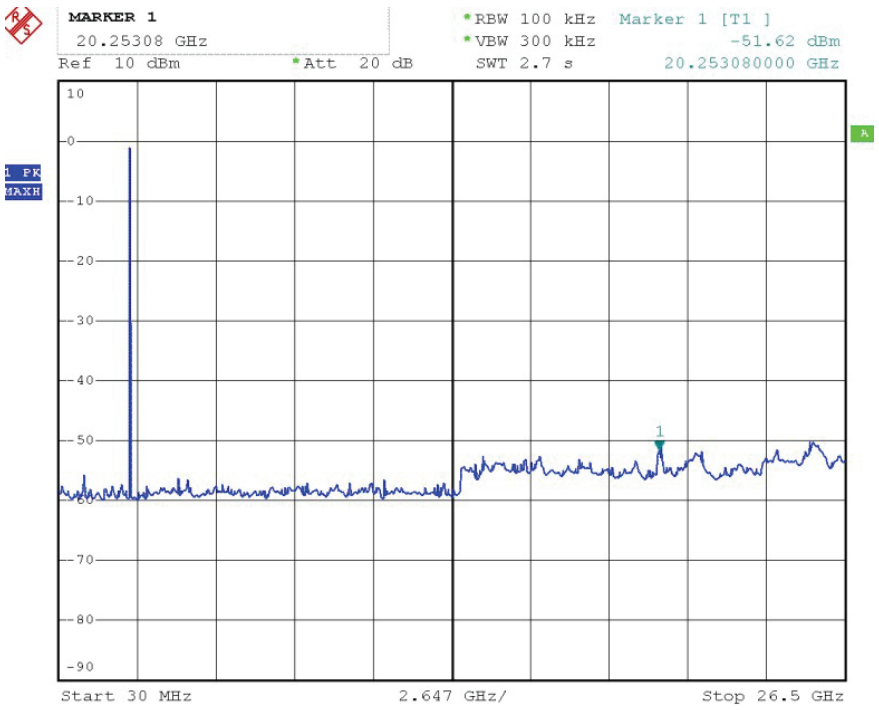
**Conducted Spurious Emission**
**BDR 1M**
**Channel Low**



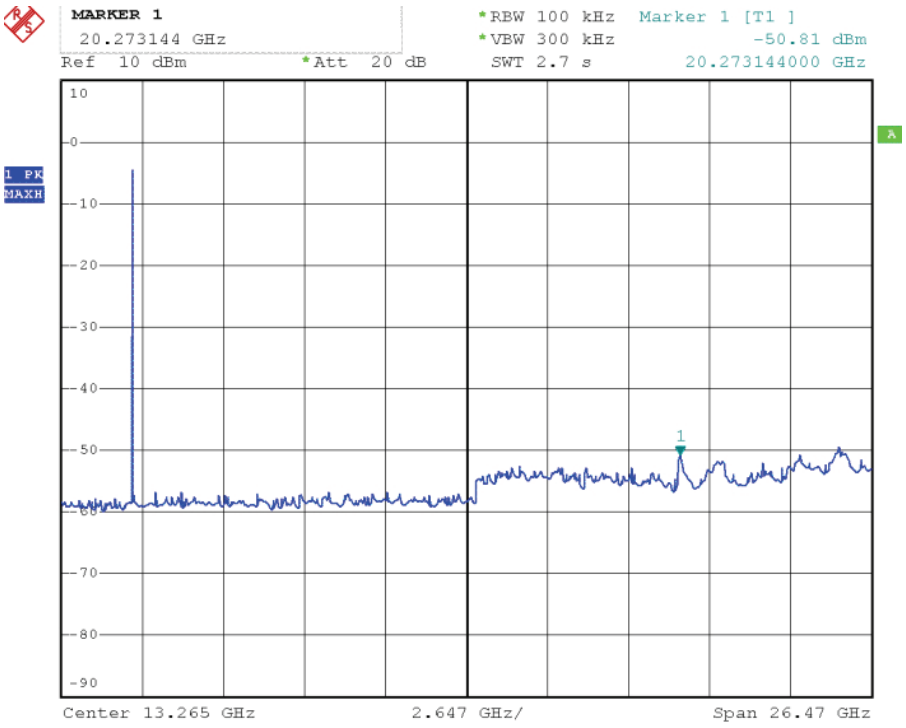
**Channel Mid**



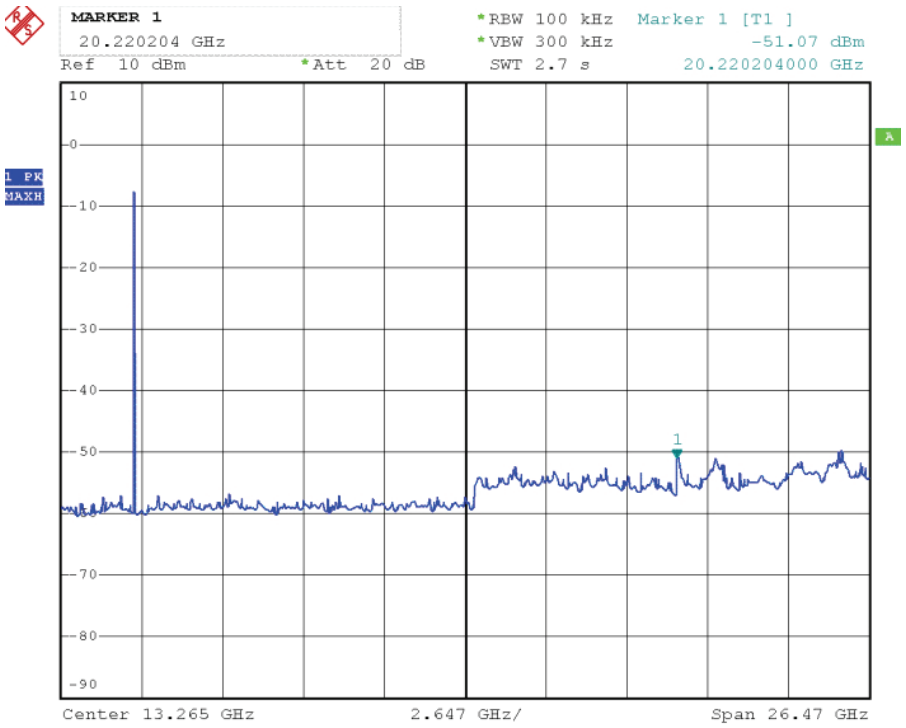

**Channel High**



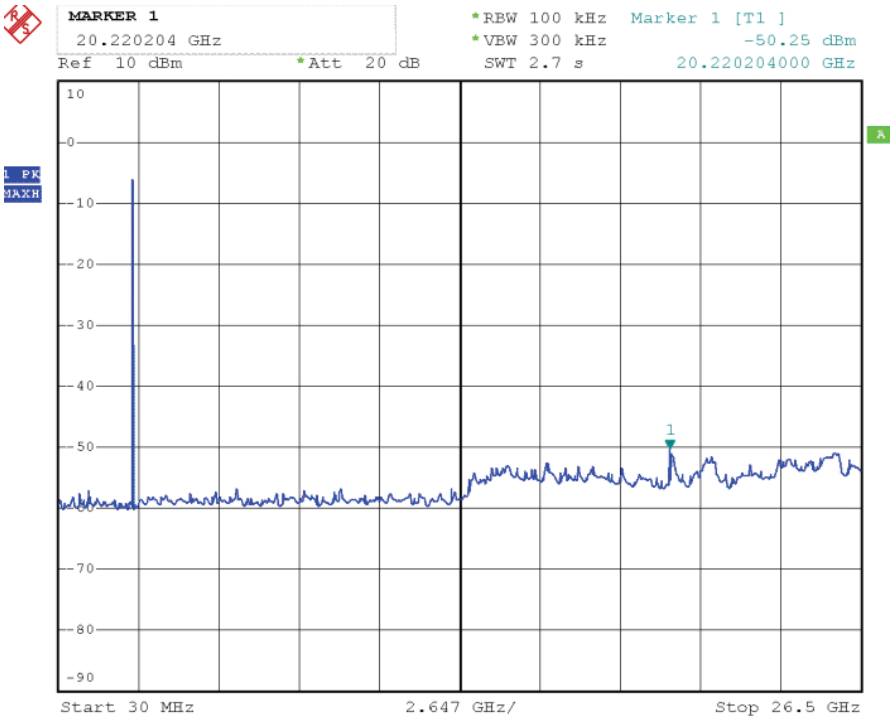
**BDR 2M**
**Channel Low**



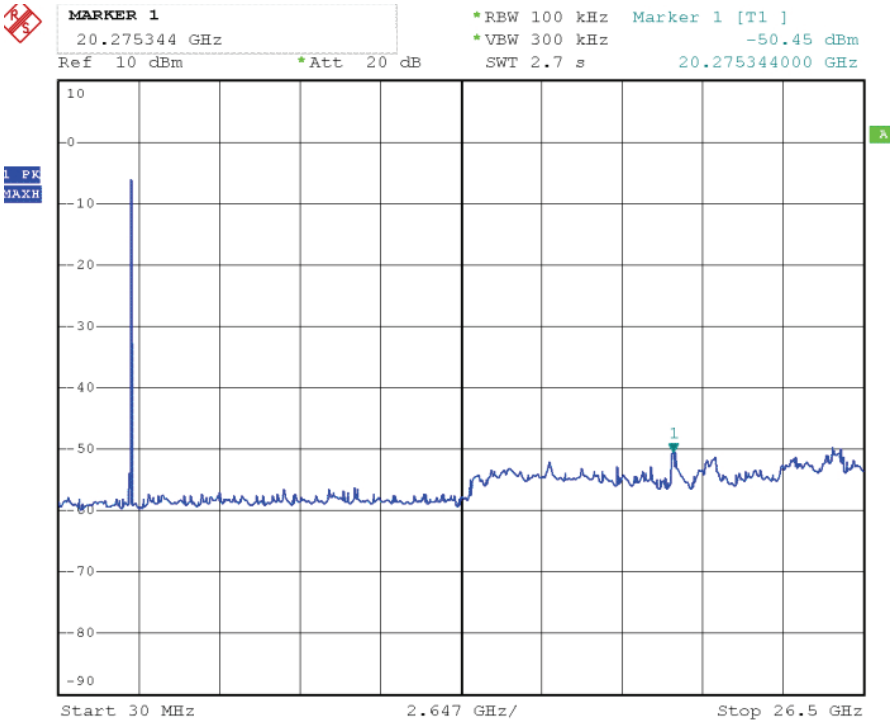

**Channel Middle**



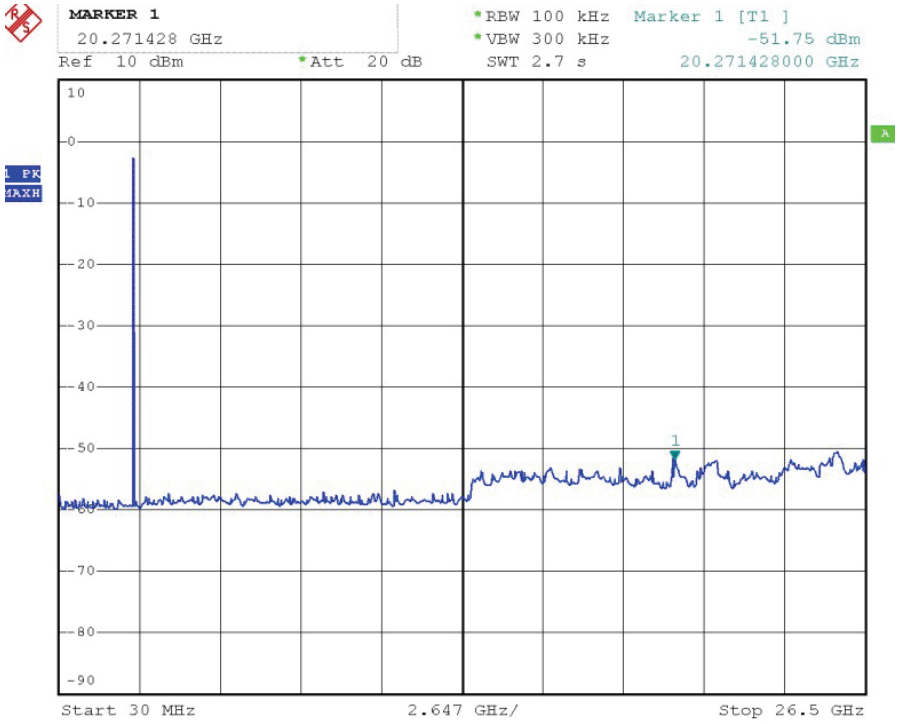
**Channel High**



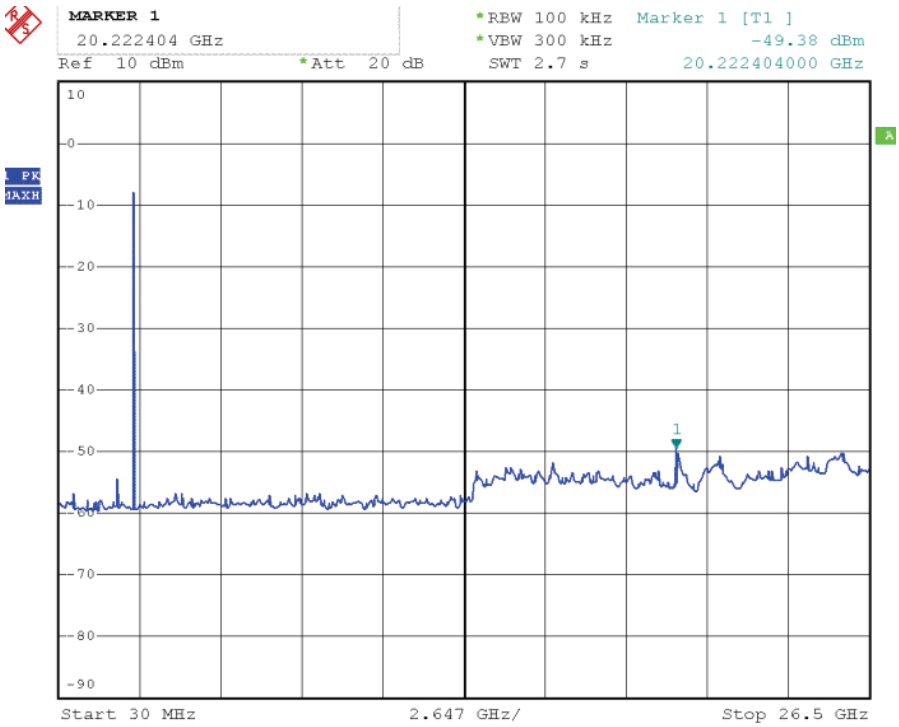

**BDR 3M**
**Channel Low**



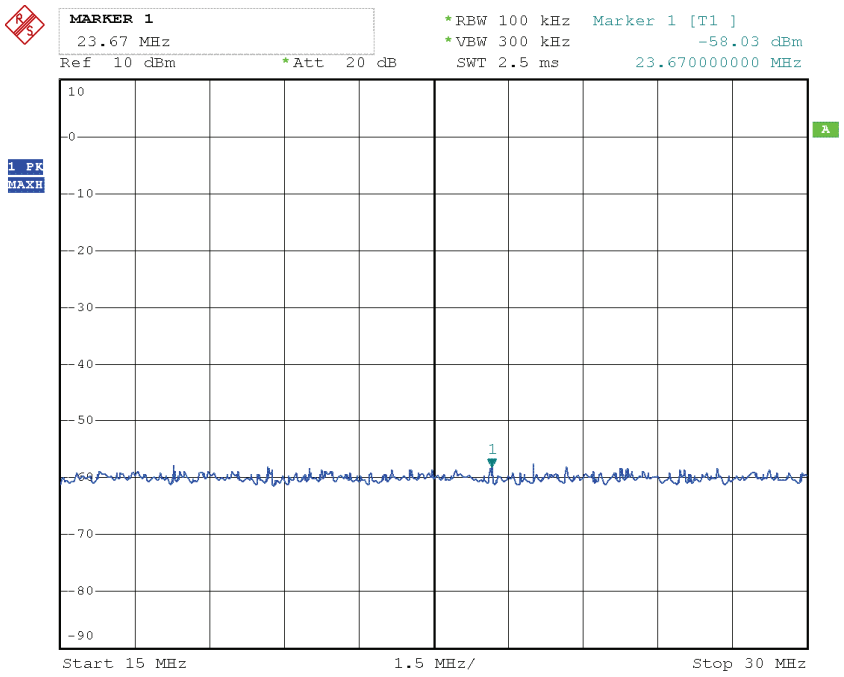
## Channel Middle



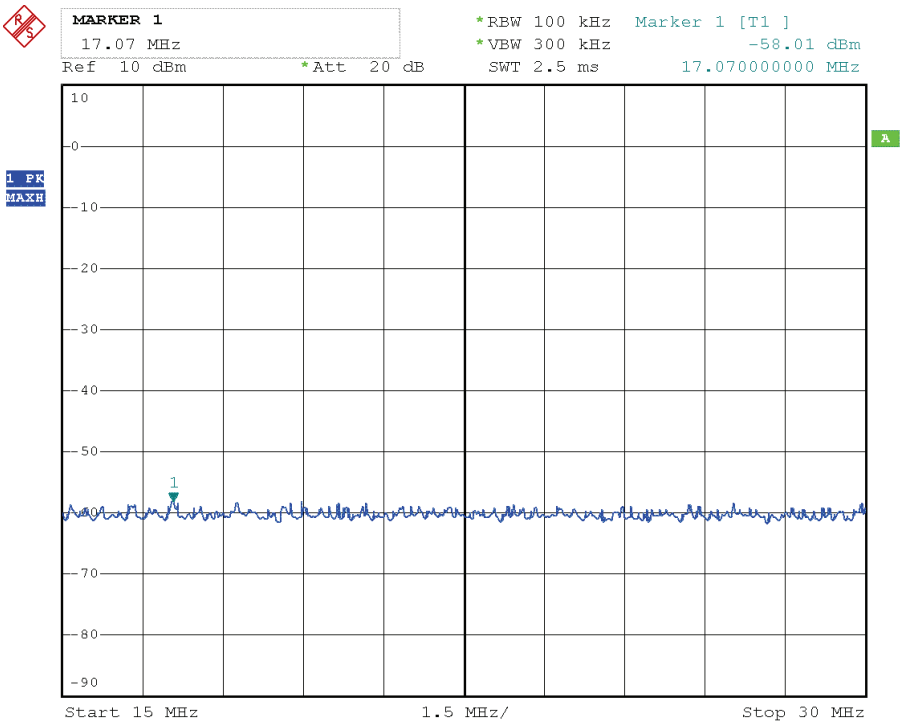

## Channel High



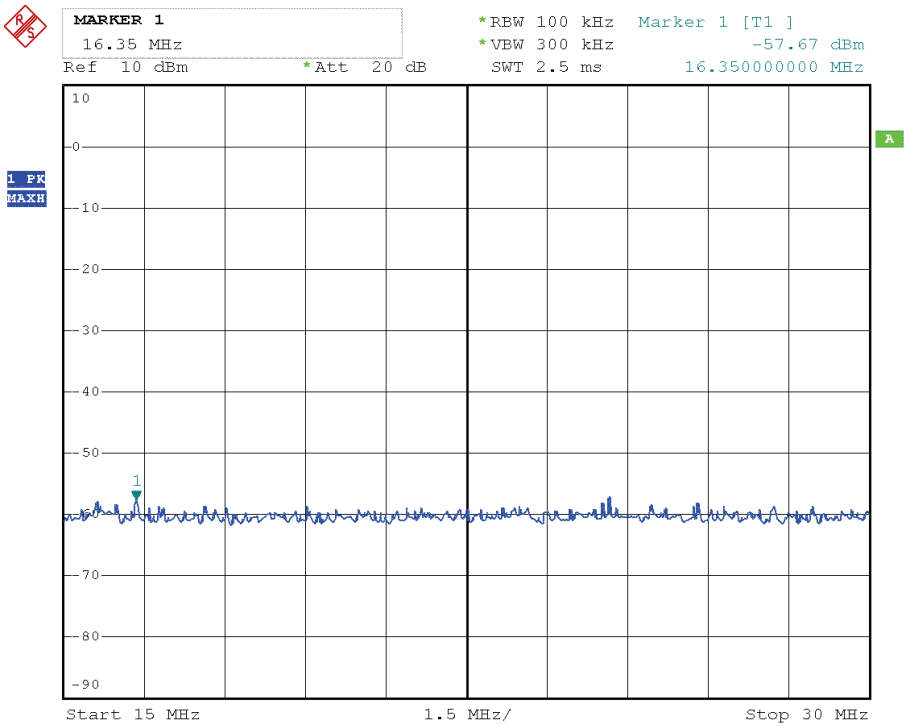
**Conducted Spurious Emission**
**Below 30MHz Worst case BDR**
**Channel Low**




**Channel Middle** Date: 25.DEC.2013 16:19:24



## Channel High



# 12. ANTENNA REQUIREMENT

## 12.1 Standard Applicable

Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Section 15.247(b)/(c):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

## 12.2 Antenna Connected Construction

The antenna is designed with permanent attachment and no consideration of replacement. The antenna used in this product is complied with Standard. The maximum Gain of the antenna lower than 6.0dBi and have the definite antenna Specification.