## FCC 47 CFR PART 15 SUBPART C: 2012 AND ANSI C63.4: 2009

# TEST REPORT

**For**

**MEDIA PLAYER WITH BLUETOOTH & TUNER**

**Model: DN-300Z**

**Brand Name: DENON PROFESSIONAL**

Issued for

**inMusic Brands, Inc.**
**200 Scenic View Drive, Suite 201 Cumberland, RI 02864, U.S.A.**

Issued By

**Compliance Certification Services Inc.**
**Tainan Laboratory**
**No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)**
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**Issued Date: September 16, 2014**

# REVISION HISTORY

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|---|---|---|---|---|
| 00 | September 16, 2014 | Initial Issue | ALL | Sunny Chang |
| | | | | |
| | | | | |
| | | | | |

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# 1. TEST REPORT CERTIFICATION

| | | |
|---|---|---|
| **Applicant** | : | **inMusic Brands, Inc.** |
| **Address** | : | 200 Scenic View Drive, Suite 201 Cumberland, RI 02864, U.S.A. |
| **Factory** | : | **YA HORNG ELECTRONIC CO., LTD.** |
| **Address** | : | No. 35, Shalun, Jon Sha Village, Anding Dist., Tainan City 745, Taiwan (R.O.C.) |
| **Equipment Under Test** | : | MEDIA PLAYER WITH BLUETOOTH & TUNER |
| **Model Number** | : | DN-300Z |
| **Brand Name** | : | DENON PROFESSIONAL |
| **Date of Test** | : | July 21, 2014 ~ September 02, 2014 |

| APPLICABLE STANDARD | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC Part 15 Subpart C : 2012 AND ANSI C63.4 : 2009 | PASS |

## We hereby certify that:

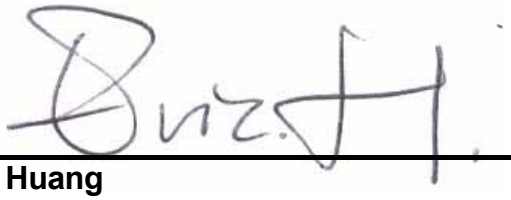
The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2009** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

**Approved by:**

**Jeter Wu**
Assistant Manager

**Reviewed by:**



**Eric Huang**
Assistant Section Manager

# 2. EUT DESCRIPTION

## 2.1 DESCRIPTION OF EUT & POWER

| | |
|---|---|
| **Product** | MEDIA PLAYER WITH BLUETOOTH & TUNER |
| **Model Number** | DN-300Z |
| **Brand Name** | DENON PROFESSIONAL |
| **Identify Number** | T140709N01 |
| **Received Date** | September 09, 2014 |
| **Frequency Range** | 2402 ~ 2480 MHz |
| **Transmit Peak Power** | GFSK : 7.2dBm / 5.2480746mW<br>8DPSK: 6.33dBm / 4.29536427mW |
| **Channel Spacing** | 1MHz |
| **Transmit Data Rate** | GFSK (1Mbps), π/4-DQPSK (2Mbps), 8-DPSK (3Mbps) |
| **Modulation Technique** | Frequency Hopping Spread Spectrum |
| **Number of Channels** | 79 Channels |
| **Power Supply** | 100-230Vac, 30W, 50/60Hz |
| **Antenna Type** | Type: Dipole<br>Model: WF2-273-866<br>Brand: Brito<br>Gain: 2.0dBi |

**Remark:**
1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for **FCC ID: Y4O-DN300Z** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
3. For more details, please refer to the User's manual of the EUT.

# 3. DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

There are three channels have been tested as following :

| Channel | Frequency (MHz) |
|---|---|
| Low | 2402 |
| Middle | 2441 |
| High | 2480 |

**Radiated Emission Test (Below 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Normal Operation

**Radiated Emission Test (Above 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| Tested Channel | Modulation Technology | Modulation Type | Packet Type |
|---|---|---|---|
| Low, Mid, High | FHSS | GFSK | DH5 |
| Low, Mid, High | FHSS | 8-DPSK | 3-DH5 |

**Bandedge Measurement :**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| Tested Channel | Modulation Technology | Modulation Type | Packet Type |
|---|---|---|---|
| Low, High | FHSS | GFSK | DH5 |
| Low, High | FHSS | 8-DPSK | 3-DH5 |

**Antenna Port Conducted Measurement :**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| Tested Channel | Modulation Technology | Modulation Type | Packet Type |
|---|---|---|---|
| Low, Mid, High | FHSS | GFSK | DH5 |
| Low, Mid, High | FHSS | 8-DPSK | 3-DH5 |

# 4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 : 2003 and FCC CFR 47 15.207, 15.209 and 15.247.

# 5. FACILITIES AND ACCREDITATIONS

## 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☒ No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

## 5.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: TW-1037).

## 5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

| | |
|---|---|
| **Taiwan** | TAF |

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

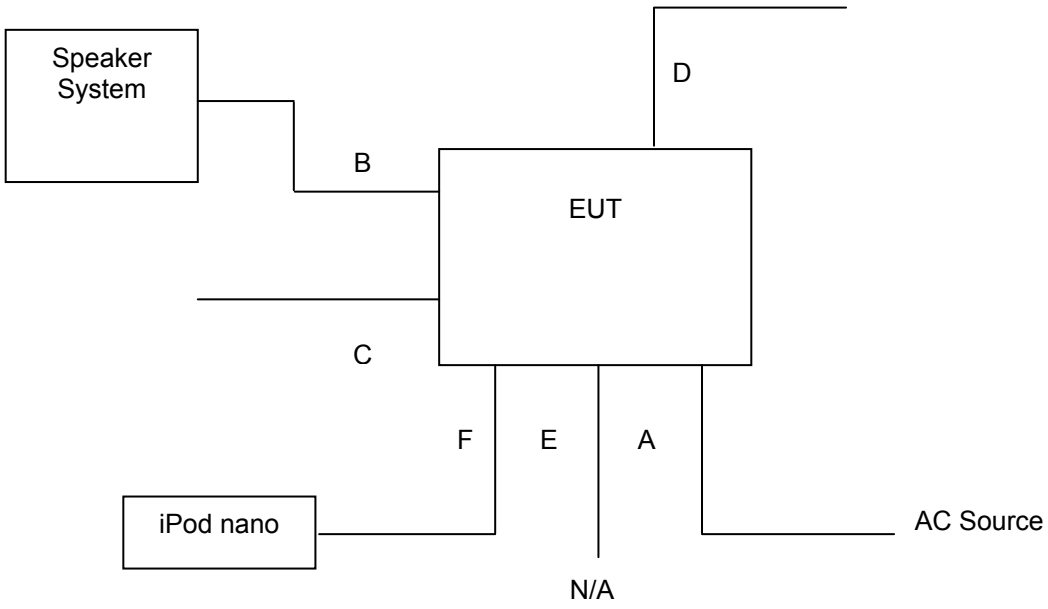
| | |
|---|---|
| **Canada** | INDUSTRY CANADA |
| **Germany** | TUV NORD |
| **Taiwan** | BSMI |
| **USA** | FCC |

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

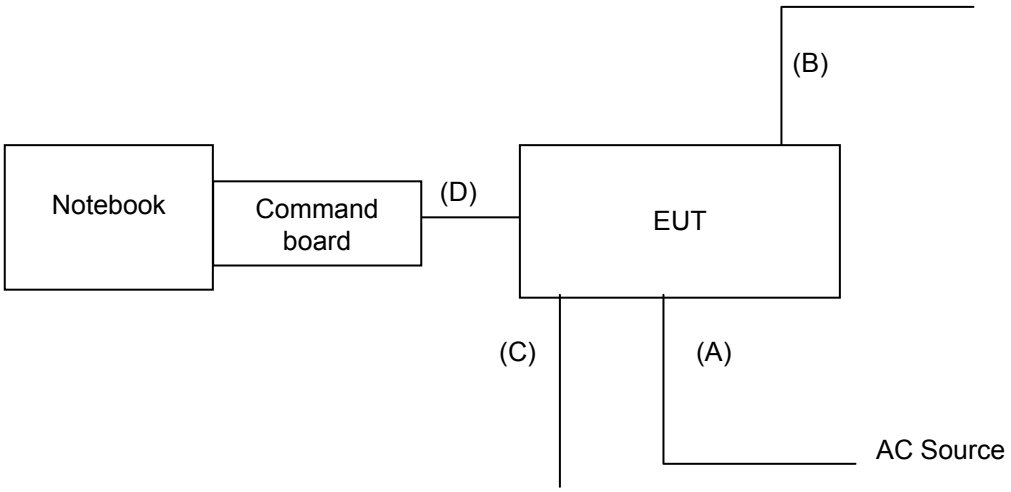
# 6. SETUP OF EQUIPMENT UNDER TEST

## 6.1 SETUP CONFIGURATION OF EUT

**EMI**




**RF**



## 6.2 SUPPORT EQUIPMENT

**For EMI test**

| No. | Product | Manufacturer | Model No. | Certify No. | Signal cable |
|---|---|---|---|---|---|
| 1 | Speaker System | Genius | SP-S110 | DOC | Audio cable, unshd, 1.6m |
| 2 | iPod nano | Apple | MA477TA/A | DOC | USB cable, shd, 1.8m |

| No. | Signal cable description | |
|---|---|---|
| A | AC Power | Unshielded, 1.8m, 1 pcs |
| B | Audio cable | Shielded, 1.0m, 1 pcs |
| C | Audio cable | Shielded, 1.0m, 1 pcs |
| D | AM cable | Unshielded, 1.2m, 1 pcs |
| E | FM cable | Unshielded, 1.2m, 1 pcs |
| F | Audio cable | Shielded, 1.4m, 1 pcs |

**For RF test**

| No. | Product | Manufacturer | Model No. | Certify No. | Signal cable |
|---|---|---|---|---|---|
| 1 | Notebook | Acer | AS 3830TG | DOC | Power cable, unshd, 1.6m |

| No. | Signal cable description | |
|---|---|---|
| A | Power | Unshielded, 1.9m, 1pcs |
| B | ANT | Unshielded, 0.3m, 1pcs. |
| C | ABT | Unshielded, 1.5m, 1pcs. |
| D | Command | Unshielded, 0.4m, 1pcs. |

## EUT OPERATING CONDITION

**RF Setup**

1. Set up all computers like the setup diagram.
2. The “Blue Test 3” software was used for testing
3. Choose Transport “SPI” and Port “USB SPI (10003)”

**TX Mode:**

**GFSK(DH1):**
**CFG PKT > Packet 4 Length 27**
**TXDATA1 > Power 63**
**GFSK(DH3):**
**CFG PKT > Packet 11 Length 183**
**TXDATA1 > Power 63**
**GFSK(DH5):**
**CFG PKT > Packet 15 Length 339**
**TXDATA1 > Power 63(LOW CHANNEL POWER 60)**
**8-DPSK(3DH1):**
**CFG PKT > Packet 24 Length 83**
**TXDATA1 > Power 105**
**8-DPSK(3DH3):**
**CFG PKT > Packet 27 Length 552**
**TXDATA1 > Power 105**
**8-DPSK(3DH5):**
**CFG PKT > Packet 31 Length 1021**
**TXDATA1 > Power 105**

**RX Mode:**

**RXDATA1**

4. All of the function are under run.
5. Start test.

# 7. APPLICABLE LIMITS AND TEST RESULTS

## 7.1 20dB BANDWIDTH FOR HOPPING

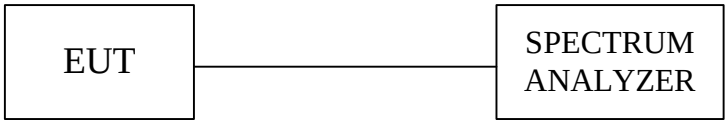
**LIMIT**

None; for reporting purposes only.

**TEST EQUIPMENT**

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

**TEST SETUP**




**TEST PROCEDURE**

The 20dB band width was measured with a spectrum analyzer connected to RF antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer. Display Line and Marker Delta functions, the 20dB band width of the emission was determined.

## TEST RESULTS

**Modulation Type: GFSK / DH5**

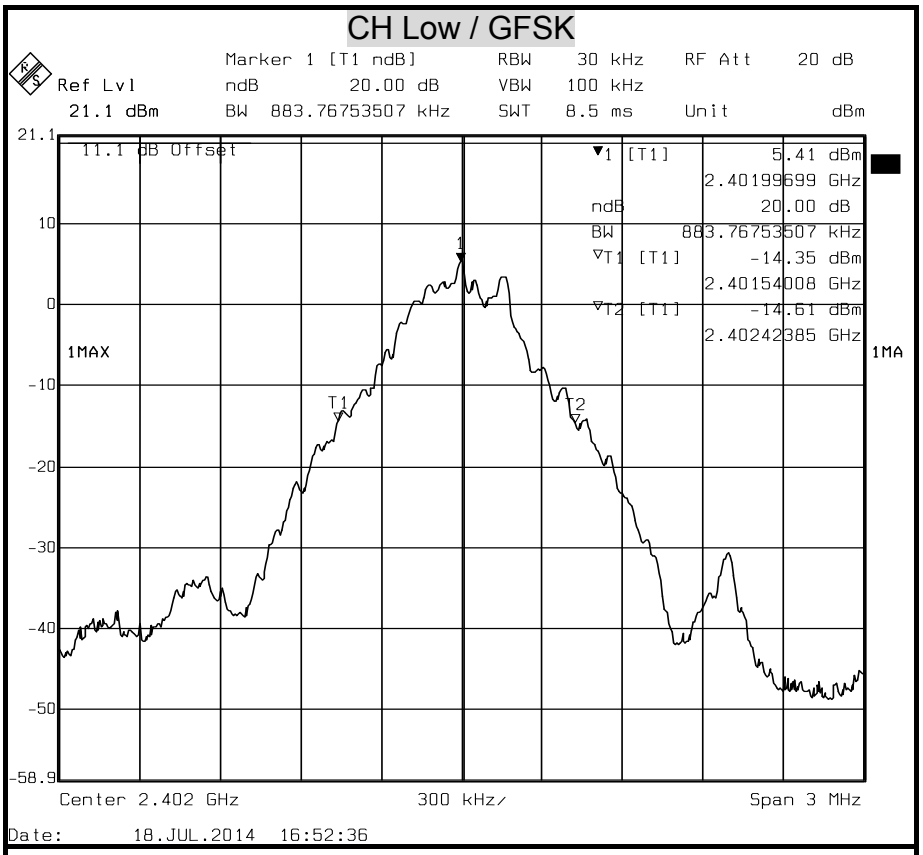
| Channel | Channel Frequency (MHz) | 20dB Bandwidth (kHz) | Pass / Fail |
|---|---|---|---|
| Low | 2402 | 883.77 | N/A |
| Middle | 2441 | 883.77 | N/A |
| High | 2480 | 901.80 | N/A |

**Modulation Type: 8-DPSK / 3-DH5**

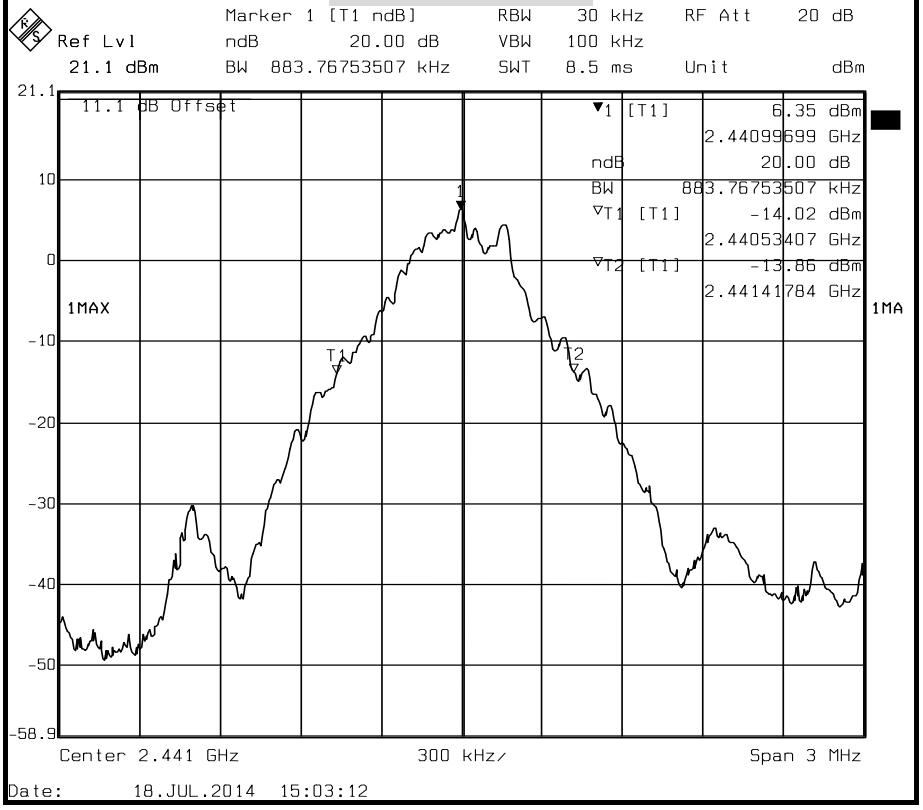
| Channel | Channel Frequency (MHz) | 20dB Bandwidth (kHz) | Pass / Fail |
|---|---|---|---|
| Low | 2402 | 1244.49 | N/A |
| Middle | 2441 | 1274.55 | N/A |
| High | 2480 | 1286.57 | N/A |

## 20dB BANDWIDTH

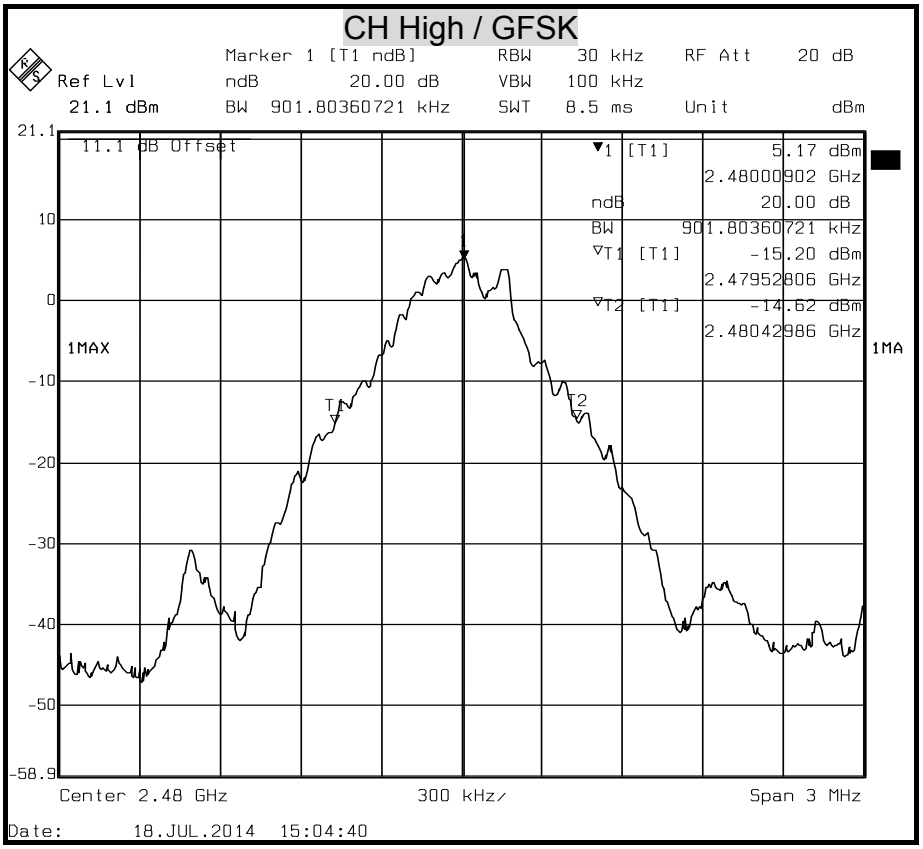
CH Low / GFSK



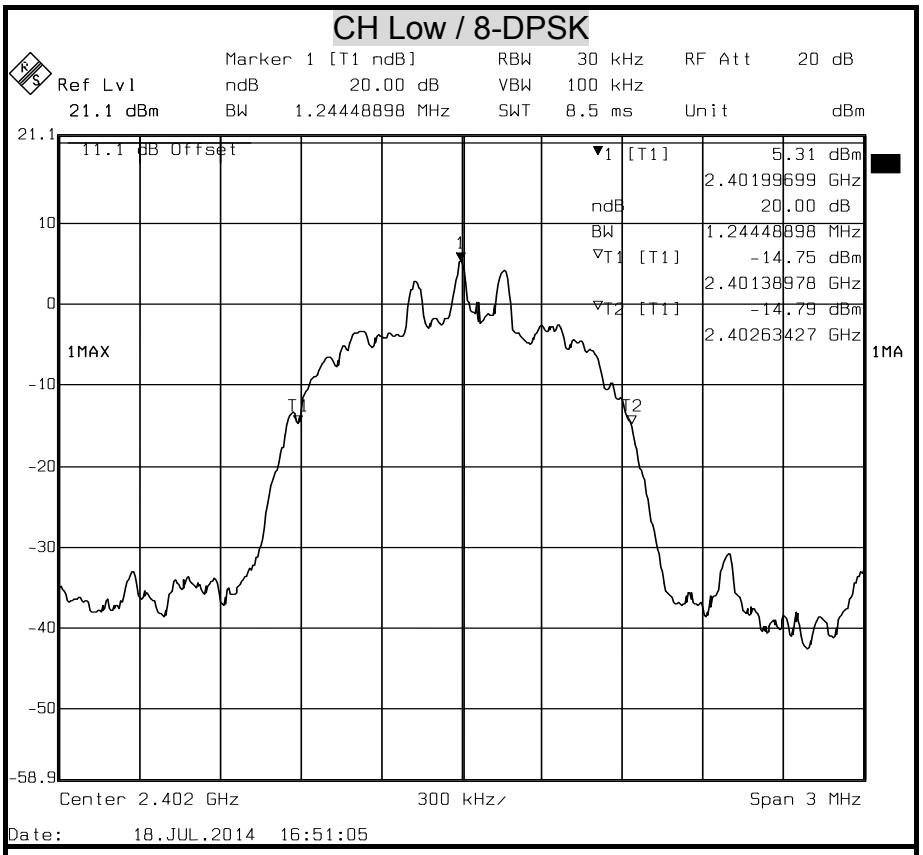

CH Middle / GFSK



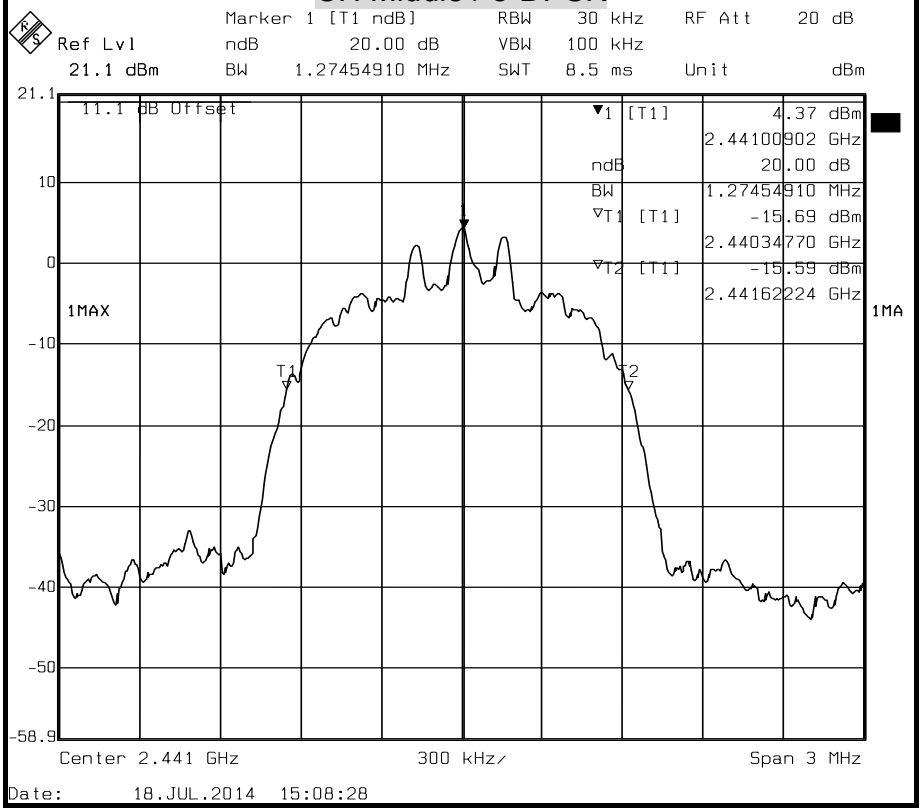
CH High / GFSK


Marker 1 [T1 ndB]
RBW 30 kHz
RF Att 20 dB
Ref Lvl
ndB 20.00 dB
VBW 100 kHz
21.1 dBm
BW 901.80360721 kHz
SWT 8.5 ms
Unit dBm
11.1 dB Offset
▼1 [T1] 5.17 dBm
2.48000902 GHz
ndB 20.00 dB
BW 901.80360721 kHz
▽T1 [T1] -15.20 dBm
2.47952806 GHz
▽T2 [T1] -14.62 dBm
2.48042986 GHz
1MAX
1MA
T1
T2
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
300 kHz/
Span 3 MHz
Date: 18.JUL.2014 15:04:40

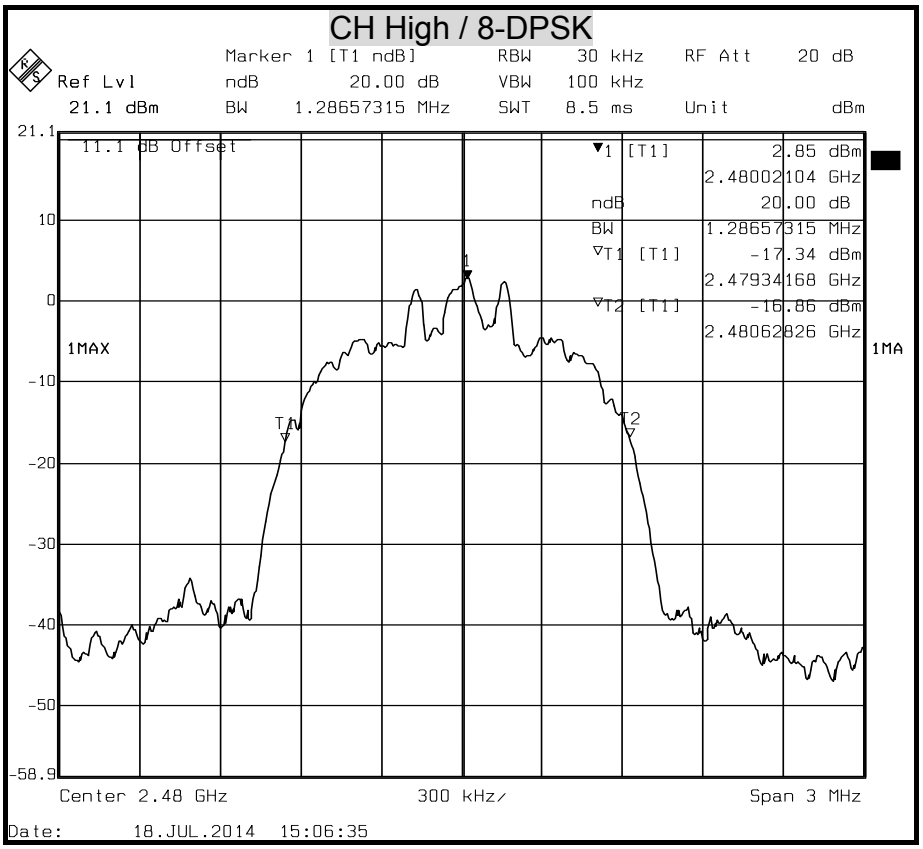
CH Low / 8-DPSK




CH Middle / 8-DPSK



CH High / 8-DPSK



## 7.2 MAXIMUM PEAK OUTPUT POWER

**LIMIT**

§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 all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

**TEST EQUIPMENT**

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

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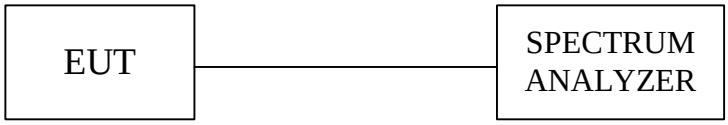
**Test Configuration**




**TEST PROCEDURE**

The RF power output was measured with a Spectrum Analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, A power meter was used to record the shape of the transmit signal.

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
RBW > the 20 dB bandwidth of the emission being measured
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

## TEST RESULTS

**Modulation Type: GFSK / DH5**

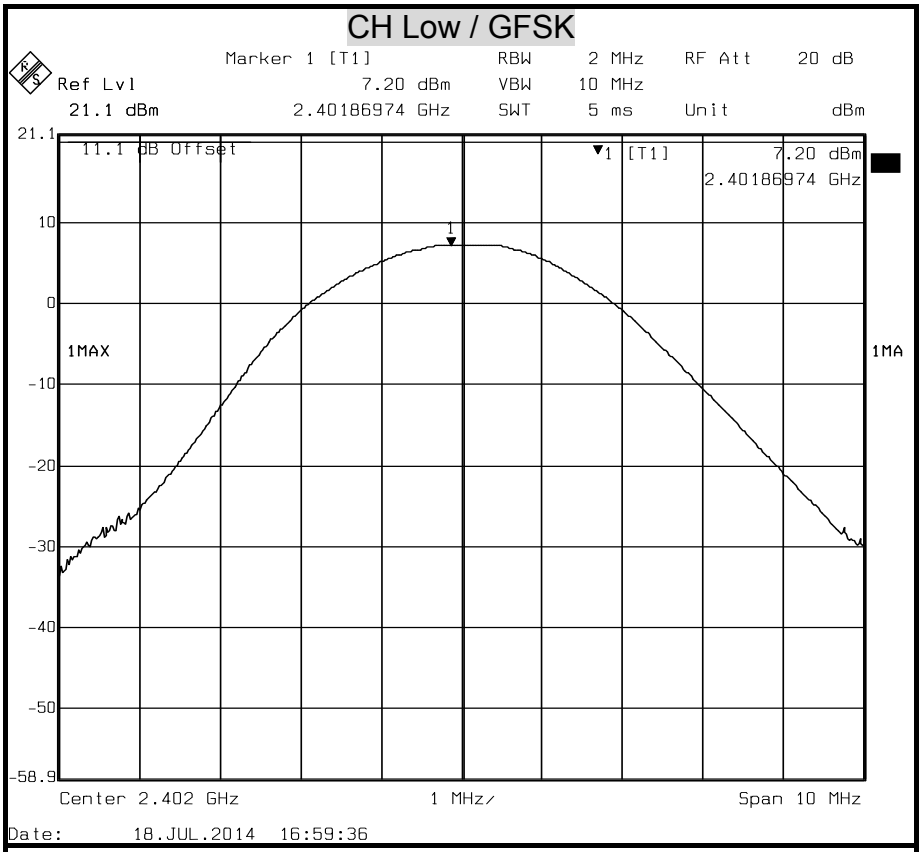
| Channel | Channel Frequency (MHz) | Peak Power Output (dBm) | Peak Power Output (mW) | Limit (mW) | Result |
|---|---|---|---|---|---|
| Low | 2402 | 7.20 | 5.24807 | 125 | PASS |
| Mid | 2441 | 6.99 | 5.00035 | | PASS |
| High | 2480 | 6.41 | 4.37522 | | PASS |

**Modulation Type: 8-DPSK / 3-DH5**

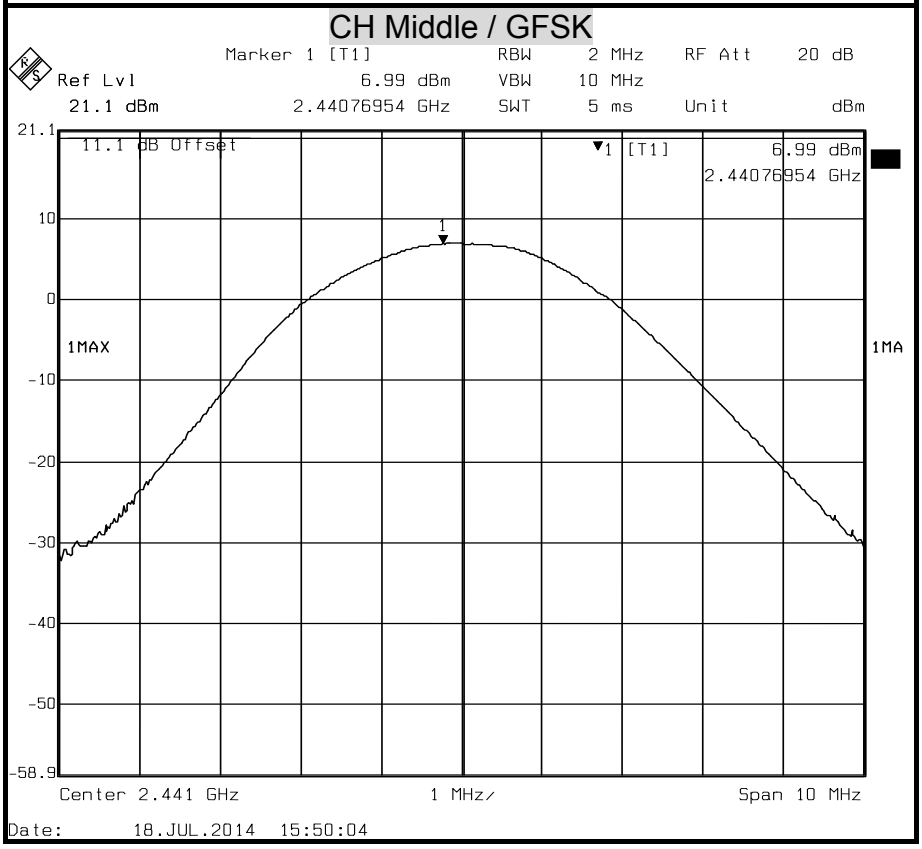
| Channel | Channel Frequency (MHz) | Peak Power Output (dBm) | Peak Power Output (mW) | Limit (mW) | Result |
|---|---|---|---|---|---|
| Low | 2402 | 6.33 | 4.29536 | 125 | PASS |
| Mid | 2441 | 5.80 | 3.80189 | | PASS |
| High | 2480 | 5.16 | 3.28095 | | PASS |

## MAXIMUM PEAK OUTPUT POWER

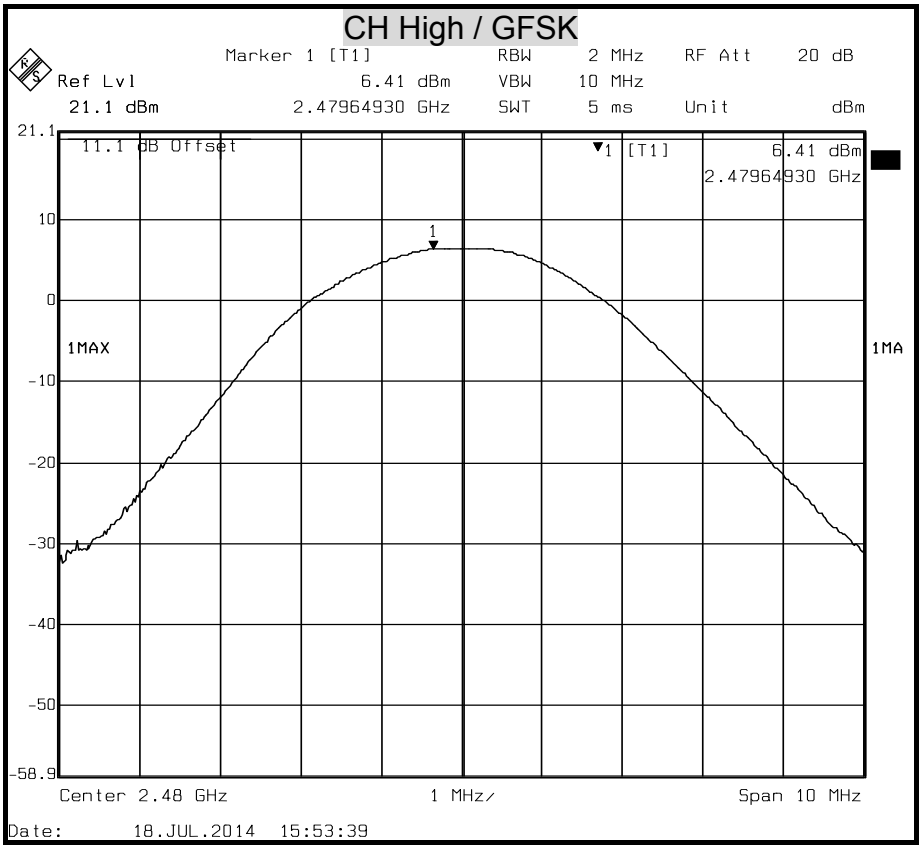
CH Low / GFSK



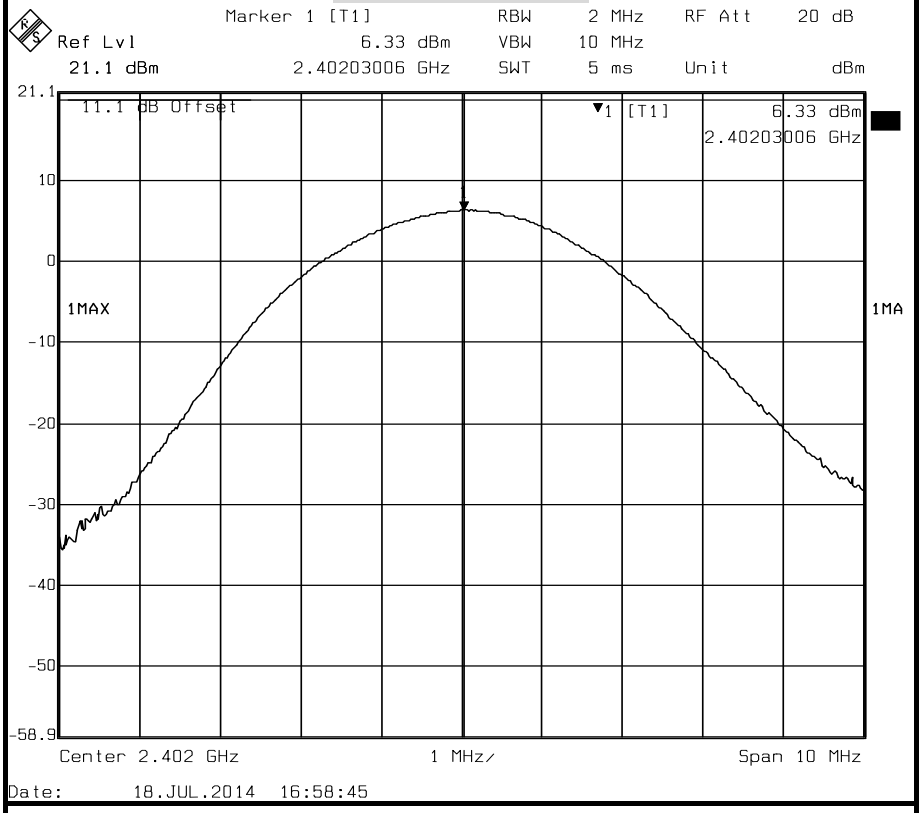

CH Middle / GFSK



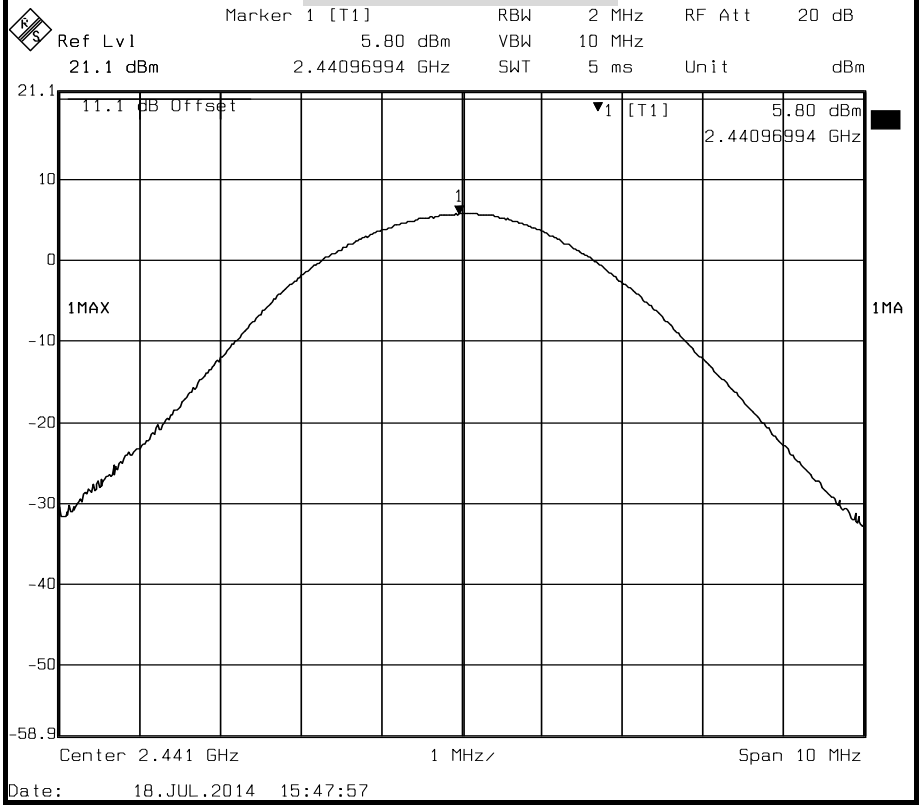
CH High / GFSK

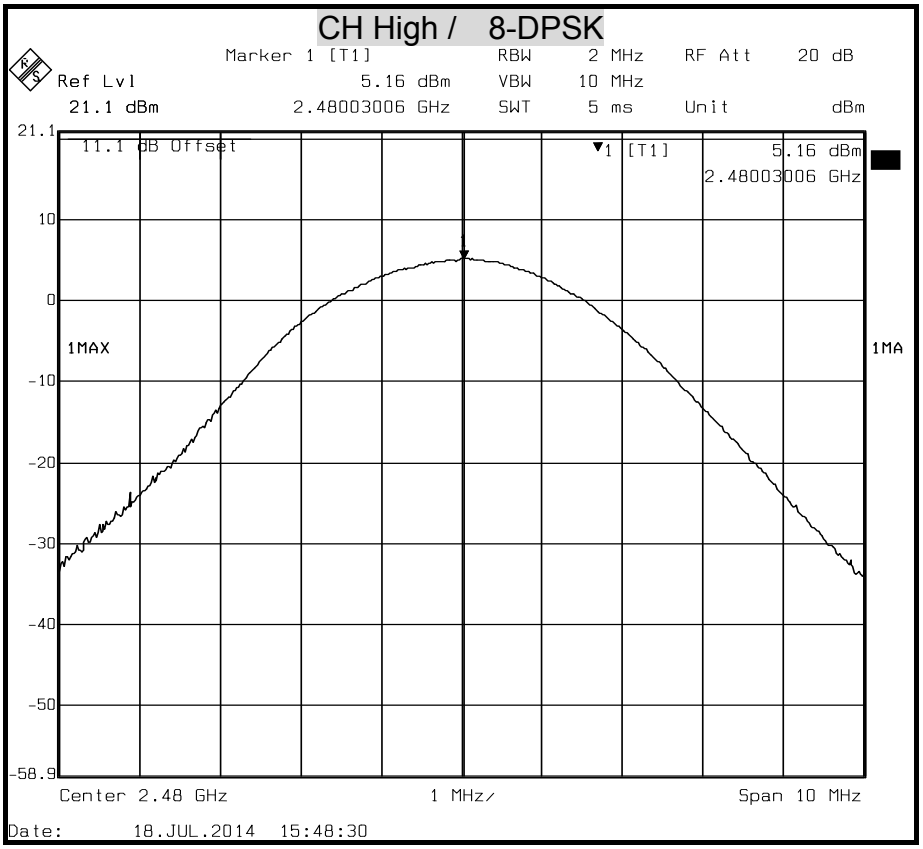

Marker 1 [T1]
RBW 2 MHz
RF Att 20 dB
Ref Lvl
6.41 dBm
VBW 10 MHz
21.1 dBm
2.47964930 GHz
SWT 5 ms
Unit dBm
11.1 dB Offset
1 [T1]
6.41 dBm
2.47964930 GHz
21.1
10
0
-10
-20
-30
-40
-50
-58.9
1MAX
1MA
Center 2.48 GHz
1 MHz/
Span 10 MHz
Date: 18.JUL.2014 15:53:39

CH Low / 8-DPSK




CH Middle / 8-DPSK




CH High / 8-DPSK
Marker 1 [T1]
RBW 2 MHz
RF Att 20 dB
Ref Lvl
5.16 dBm
VBW 10 MHz
21.1 dBm
2.48003006 GHz
SWT 5 ms
Unit dBm
11.1 dB Offset
1 [T1]
5.16 dBm
2.48003006 GHz
21.1
10
0
1MAX
-10
-20
-30
-40
-50
-58.9
1MA
Center 2.48 GHz
1 MHz/
Span 10 MHz
Date: 18.JUL.2014 15:48:30

## 7.3 HOPPING CHANNEL SEPARATION

**LIMIT**

§15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo andomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

**TEST EQUIPMENT**

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

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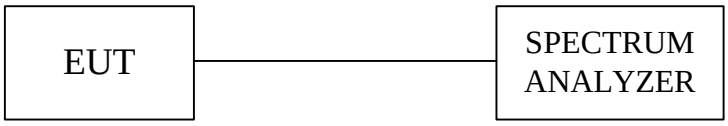
**TEST SETUP**




**TEST PROCEDURE**

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of adjacent channels.
4. Measure the frequency difference of these two adjacent channels by spectrum analyzer MARK function. And then plot the result on spectrum analyzer screen.
5. Repeat above procedures until all frequencies measured were complete.

## TEST RESULTS

Refer to section 8.1, 20dB bandwidth measurement, the measured channel separation should be greater than two-third of 20dB bandwidth or Minimum bandwidth.

**Modulation Type: GFSK / DH5**

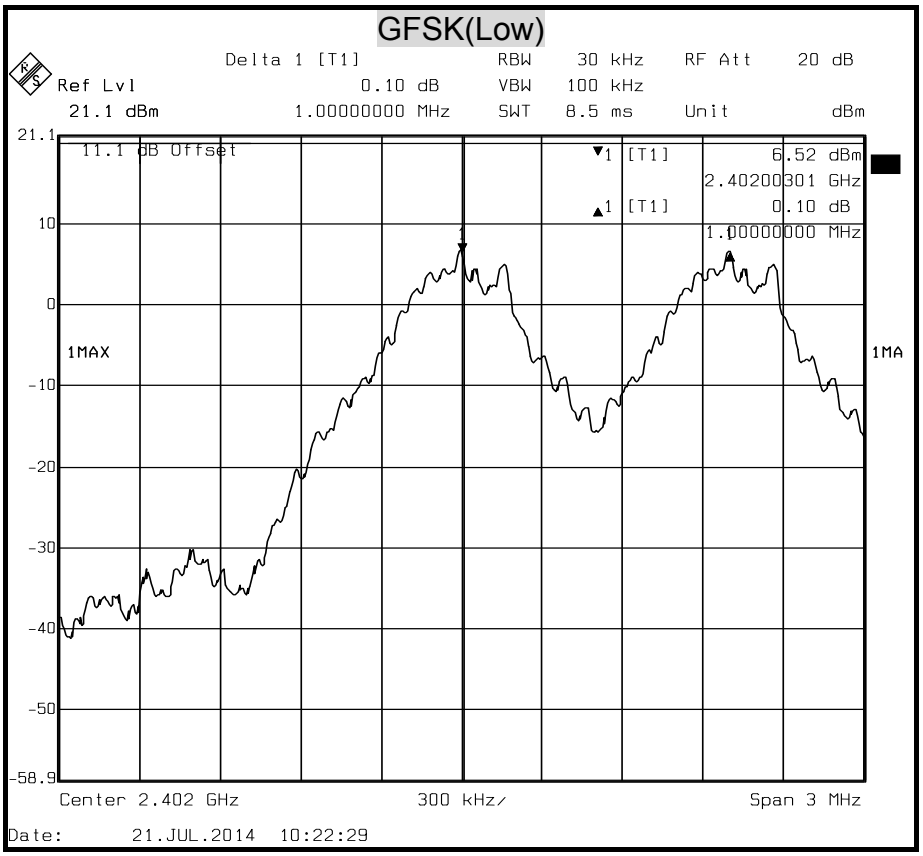
| Channel | Adjacent Hopping Channel Separation (MHz) | Two –third of 20dB bandwidth (MHz) | Minimum Bandwidth (kHz) | Result |
|---|---|---|---|---|
| 2402MHz | 1.00 | 0.59 | 25 KHz | PASS |
| 2441MHz | 1.00 | 0.59 | 25 KHz | PASS |
| 2480MHz | 1.00 | 0.60 | 25 KHz | PASS |

**Modulation Type: 8-DPSK / 3-DH5**

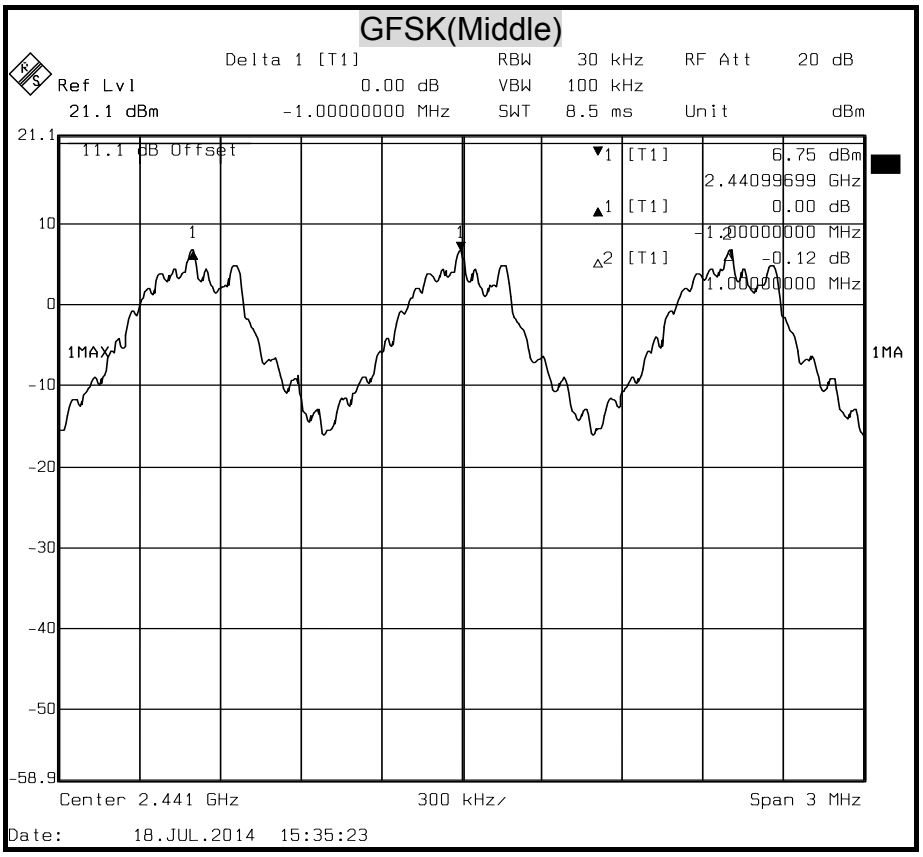
| Channel | Adjacent Hopping Channel Separation (kHz) | Two –third of 20dB bandwidth (kHz) | Minimum Bandwidth (kHz) | Result |
|---|---|---|---|---|
| 2402MHz | 1.00 | 0.83 | 25 KHz | PASS |
| 2441MHz | 1.01 | 0.85 | 25 KHz | PASS |
| 2480MHz | 1.00 | 0.86 | 25 KHz | PASS |

## HOPPING CHANNEL SEPARATION

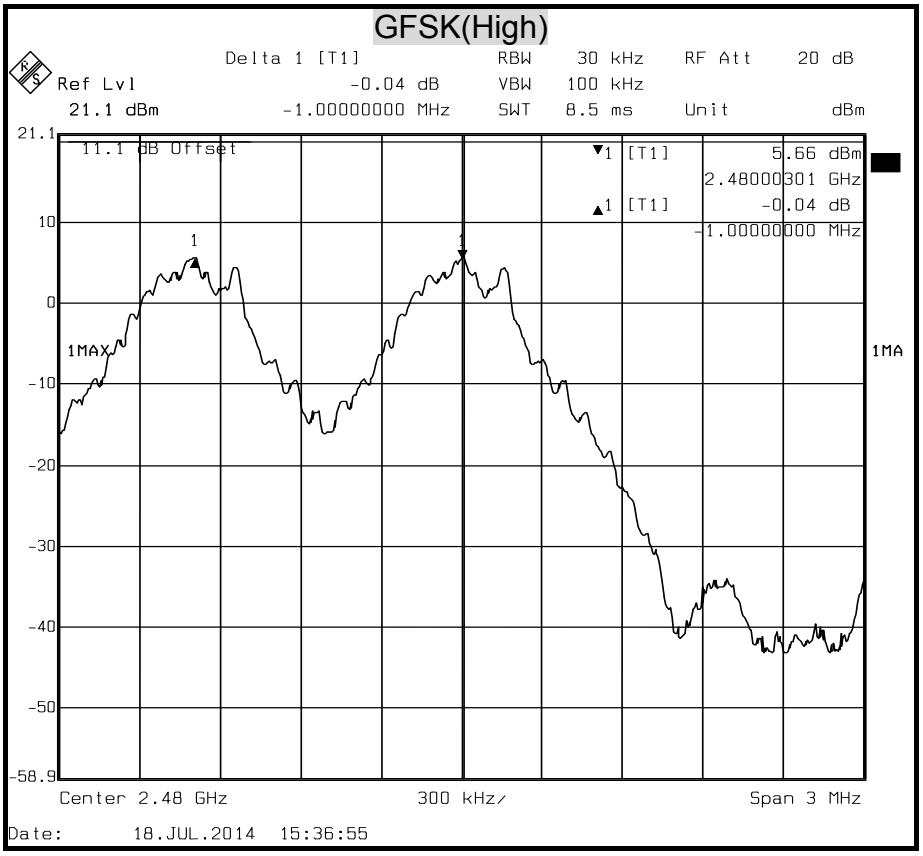
GFSK(Low)



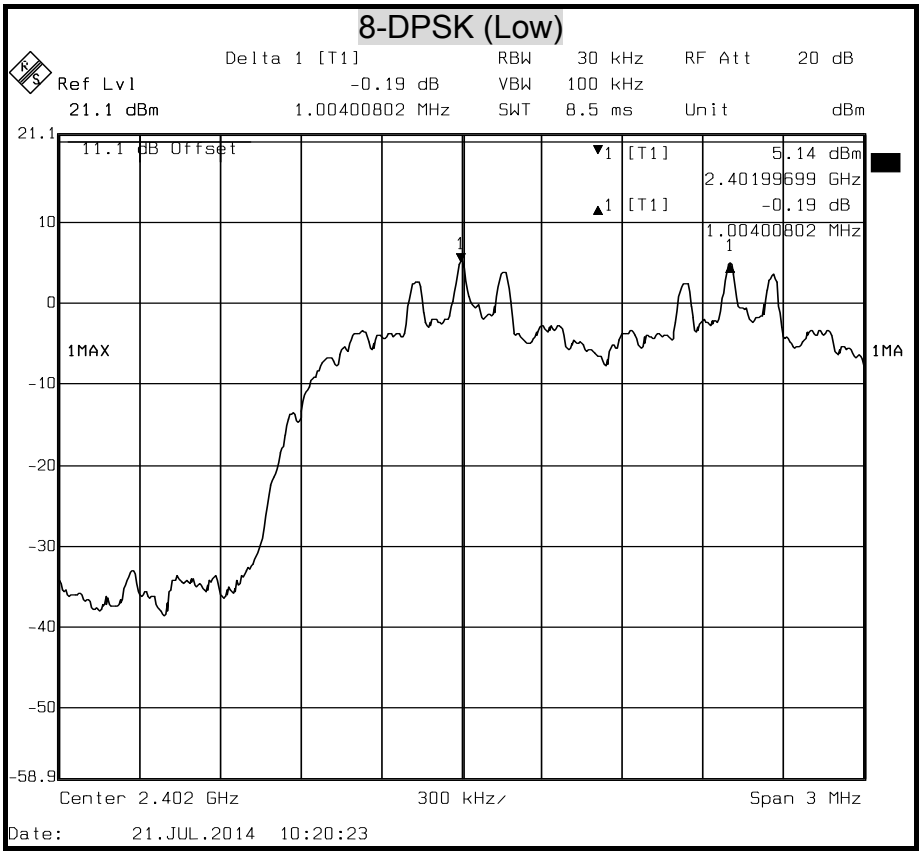

GFSK(Middle)



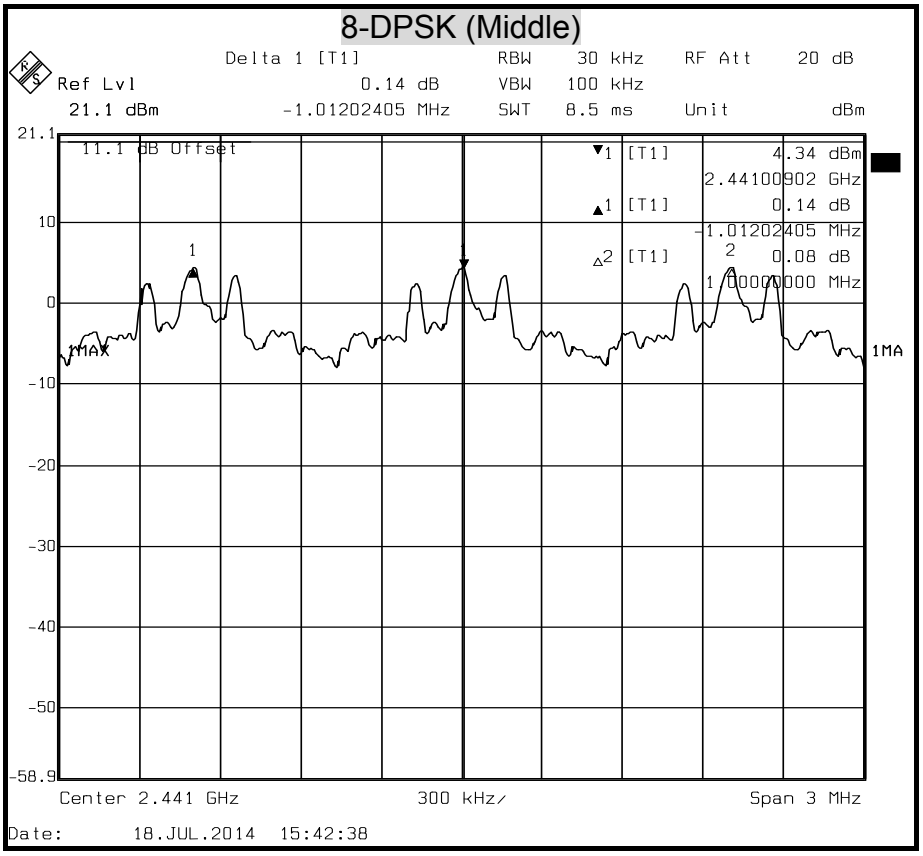
GFSK(High)



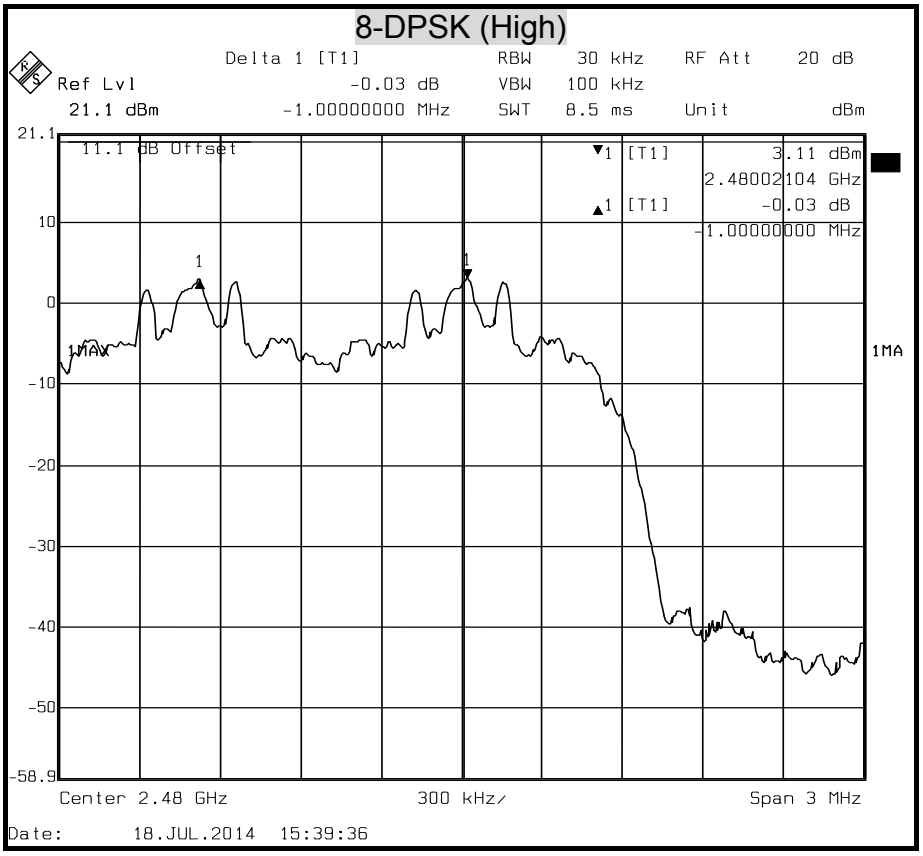

8-DPSK (Low)



8-DPSK (Middle)




8-DPSK (High)



## 7.4 NUMBER OF HOPPING FREQUENCY USED

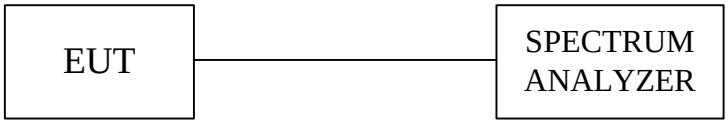
**LIMIT**

§15.247(a)(1)(iii) For frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

**TEST EQUIPMENT**

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

**TEST SETUP**




**TEST PROCEDURE**

1 Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2 Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3 Set the spectrum analyzer on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4 Set the spectrum analyzer on View mode and then plot the result on spectrum analyzer screen.
5 Repeat above procedures until all frequencies measured were complete.

## TEST RESULTS

**Modulation Type: GFSK / DH5**

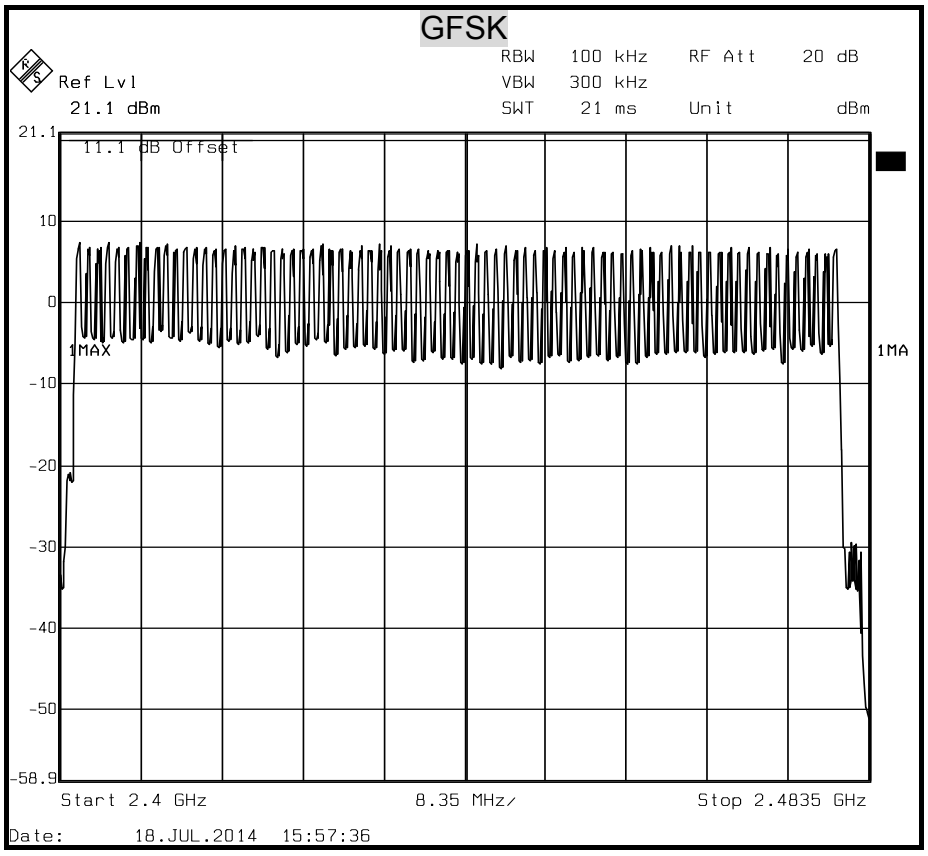
| Result(No.of CH) | Limit(No.of CH) | Result |
|---|---|---|
| 79 | >75 | PASS |

**Modulation Type: 8-DPSK / 3-DH5**

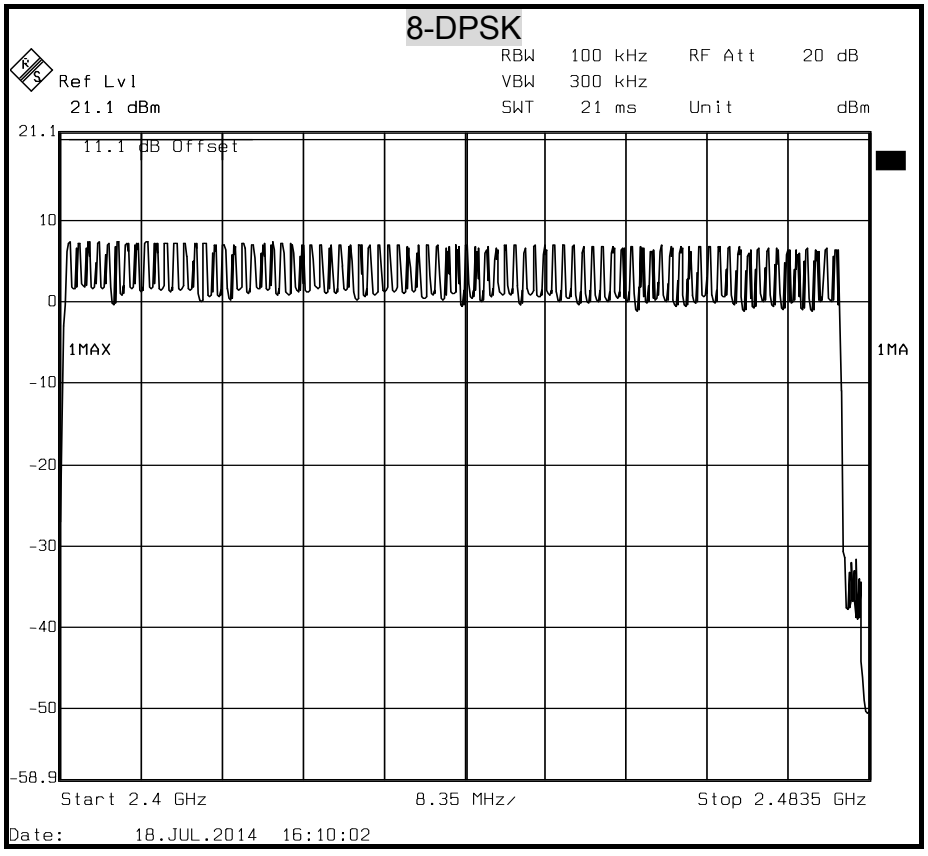
| Result(No.of CH) | Limit(No.of CH) | Result |
|---|---|---|
| 79 | >75 | PASS |

## NUMBER OF HOPPING FREQUENCY USED

GFSK




8-DPSK



## 7.5 DWELL TIME ON EACH CHANNEL

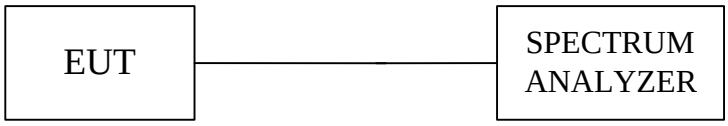
### LIMIT

§15.247(a)(1)(iii) For frequency hopping system operating in the 2400-2483.5MHz band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a 31.6 second period.

### TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

### TEST SETUP




### TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on any frequency be measured and set spectrum analyzer to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.
6. The Bluetooth Headset has 3 type of payload, DH1, DH3, DH5. The hopping rate is 1600 per second. The longer the payload is, the slower the hopping rate is.

## TEST RESULTS

Time of occupancy on the TX channel in 31.6sec = time domain slot length × hop rate ÷ number of hop per channel × 31.6
Refer to the attached graph.
The hopping rates of Bluetooth devices change with different types of payload. The longer the payload is, the slower the hopping rate. The hopping rate scenario is defined in Bluetooth core specification.

**Modulation Type: GFSK / DH5**

| Transmitting Frequency | Packet type | Dwell time (ms) | Time of occupancy on the TX channel in 31.6sec (ms) | Limit for Time of occupancy on the TX channel in 31.6sec (ms) | Results |
|---|---|---|---|---|---|
| 2441MHz | DH1 | 0.421 | 134.67 | 400.00 | PASS |
| 2441MHz | DH3 | 1.683 | 269.34 | 400.00 | PASS |
| 2441MHz | DH5 | 2.926 | 312.09 | 400.00 | PASS |
| 2441MHz | AFH | 2.926 | 156.05 | 400.00 | PASS |

DH1 Dwell tine= 0.421 ms×(1600÷2)÷79×31.6= 134.67 (ms)
DH3 Dwell tine= 1.683 ms×(1600÷4)÷79×31.6= 269.34 (ms)
DH5 Dwell tine= 2.926 ms×(1600÷6)÷79×31.6= 312.09 (ms)
AFH Dwell tine= 2.926 ms×(800÷6)÷20×8= 156.05 (ms)

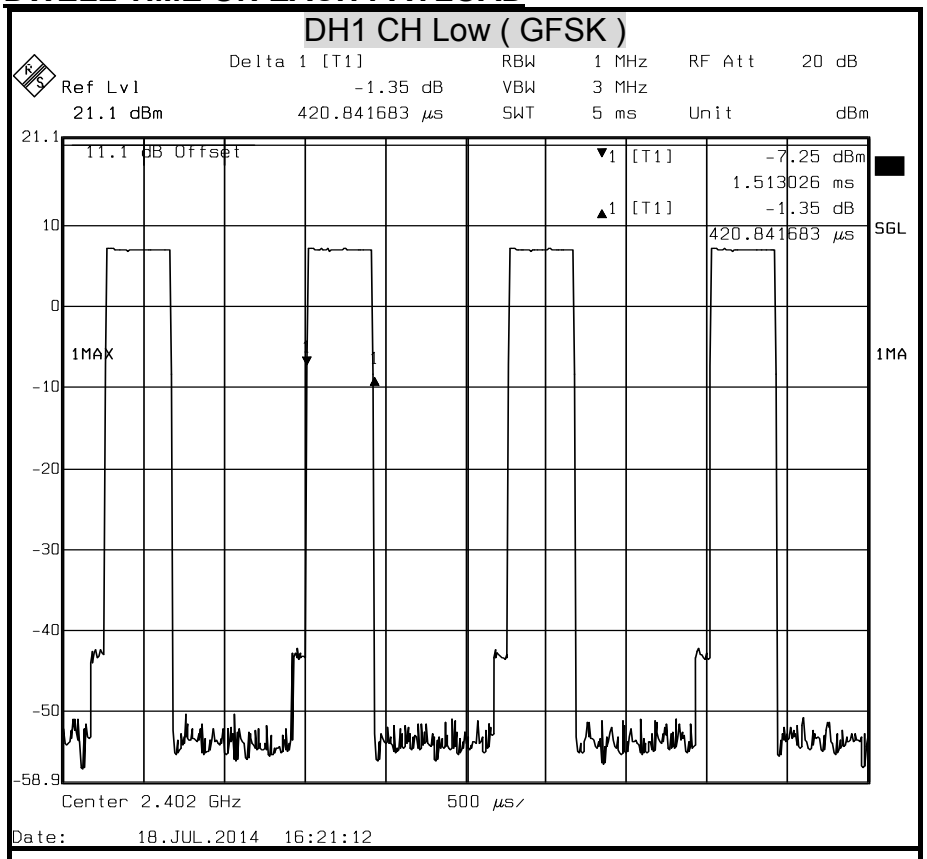
**Modulation Type: 8-DPSK / 3-DH5**

| Transmitting Frequency | Packet type | Dwell time (ms) | Time of occupancy on the TX channel in 31.6sec (ms) | Limit for Time of occupancy on the TX channel in 31.6sec (ms) | Results |
|---|---|---|---|---|---|
| 2441MHz | 3DH1 | 0.431 | 137.88 | 400.00 | PASS |
| 2441MHz | 3DH3 | 1.683 | 269.33 | 400.00 | PASS |
| 2441MHz | 3DH5 | 2.926 | 312.09 | 400.00 | PASS |
| 2441MHz | AFH | 2.926 | 156.05 | 400.00 | PASS |

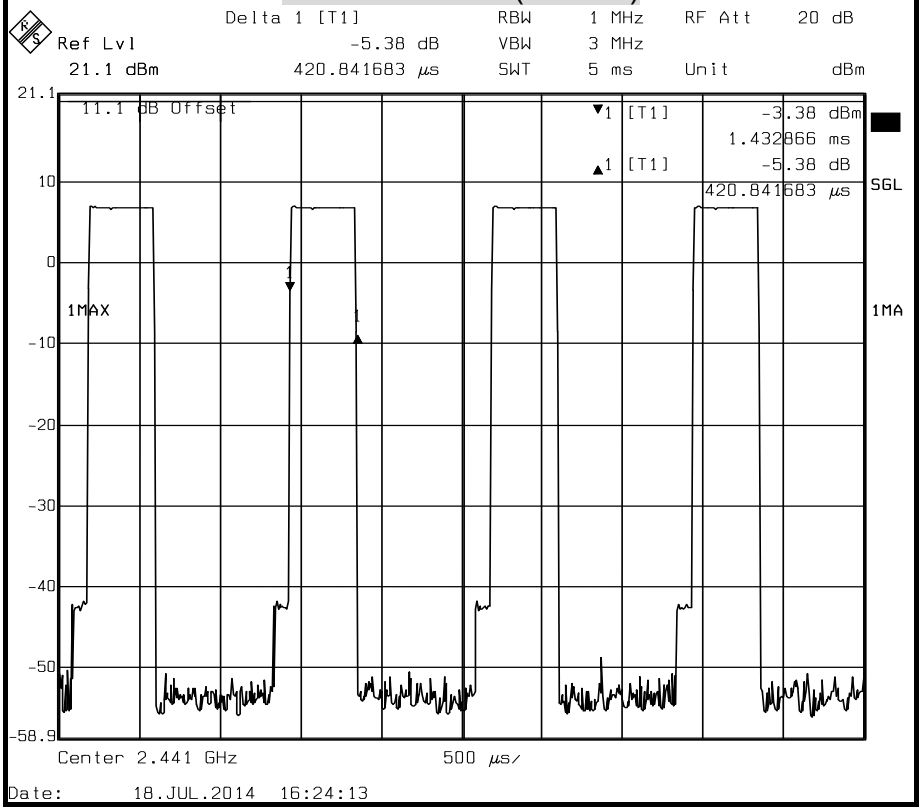
3DH1 Dwell tine= 0.431 ms×(1600÷2)÷79×31.6= 137.88 (ms)
3DH3 Dwell tine= 1.683 ms×(1600÷4)÷79×31.6= 269.33 (ms)
3DH5 Dwell tine= 2.926 ms×(1600÷6)÷79×31.6= 312.09 (ms)
AFH Dwell tine= 2.926 ms×(800÷6)÷20×8= 156.05 (ms)

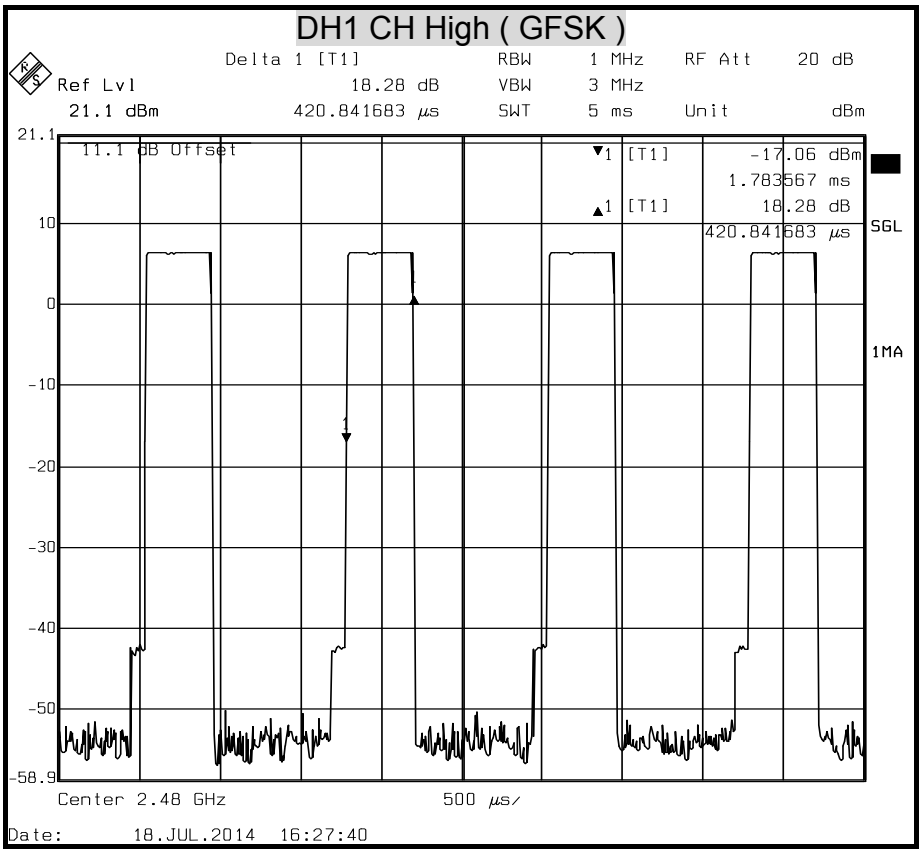
## DWELL TIME ON EACH PAYLOAD

DH1 CH Low ( GFSK )

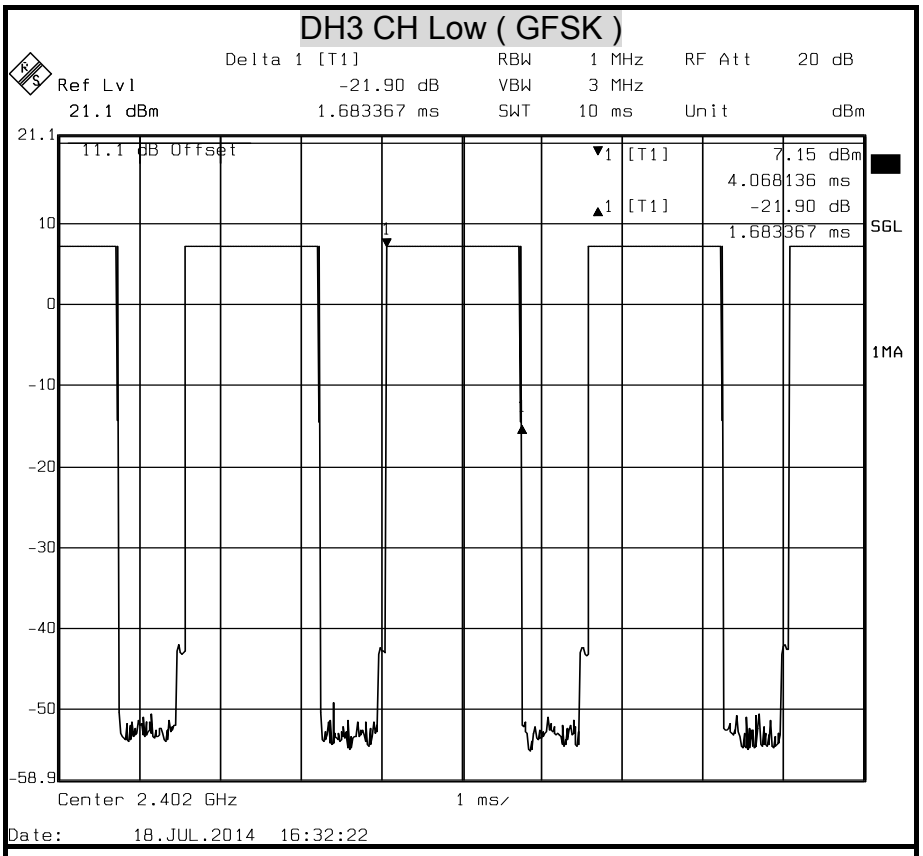



DH1 CH Middle ( GFSK )

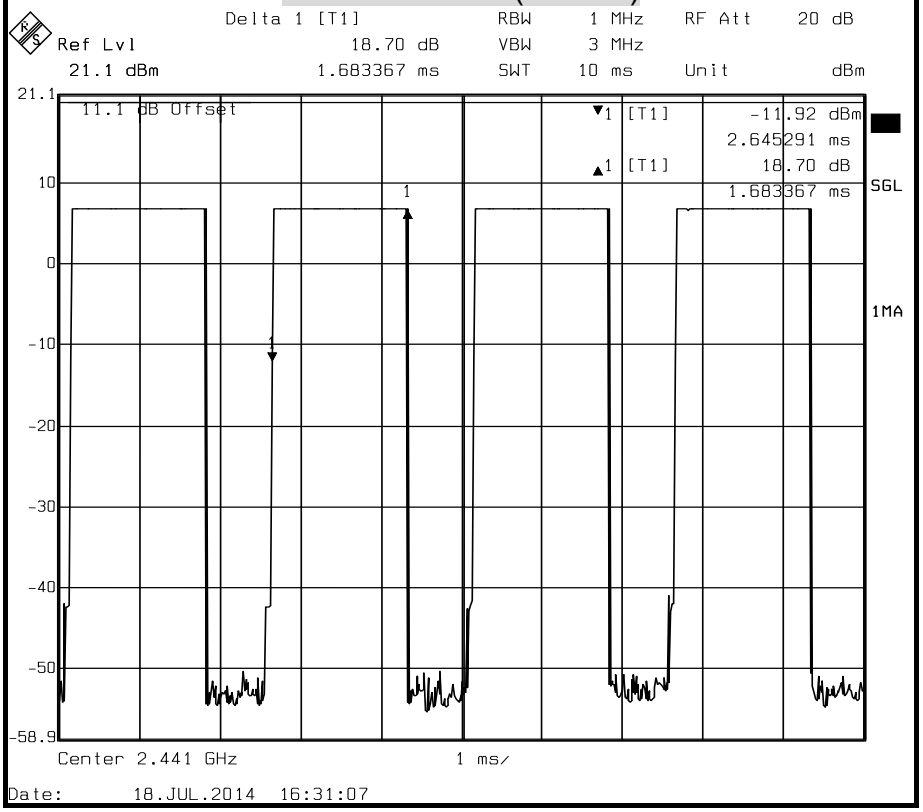



DH1 CH High ( GFSK )
Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
18.28 dB
VBW 3 MHz
21.1 dBm
420.841683 µs
SWT 5 ms
Unit dBm
11.1 dB Offset
▼1 [T1] -17.06 dBm
1.783567 ms
▲1 [T1] 18.28 dB
420.841683 µs
SGL
1MA
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
500 µs/
Date: 18.JUL.2014 16:27:40

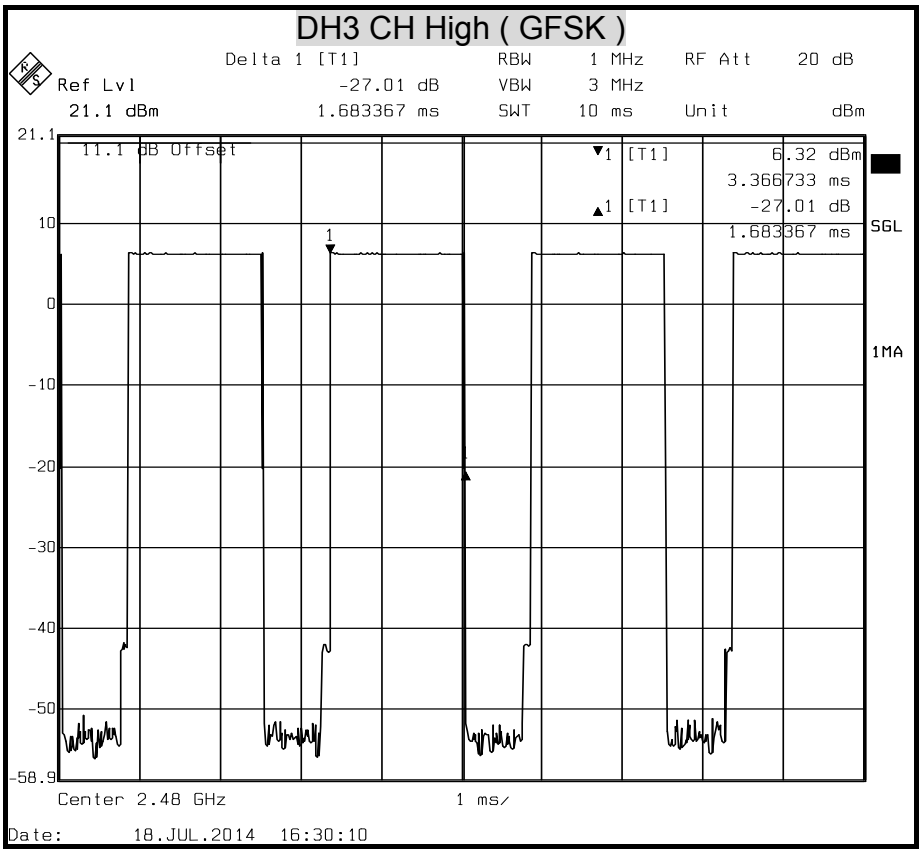
DH3 CH Low ( GFSK )



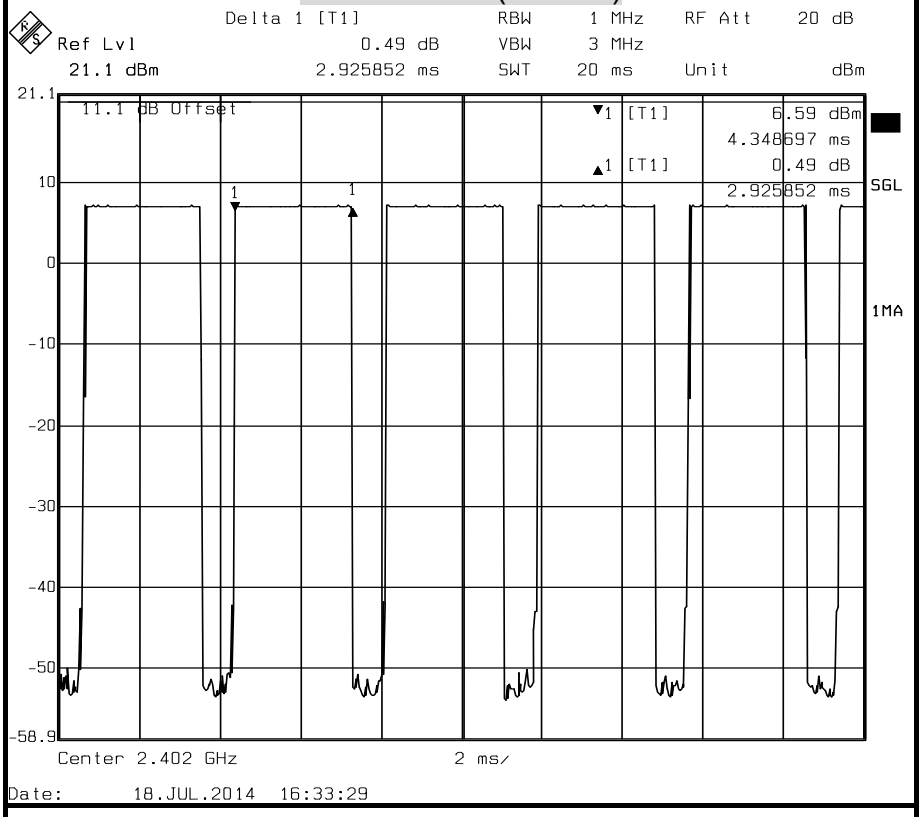

DH3 CH Middle ( GFSK )



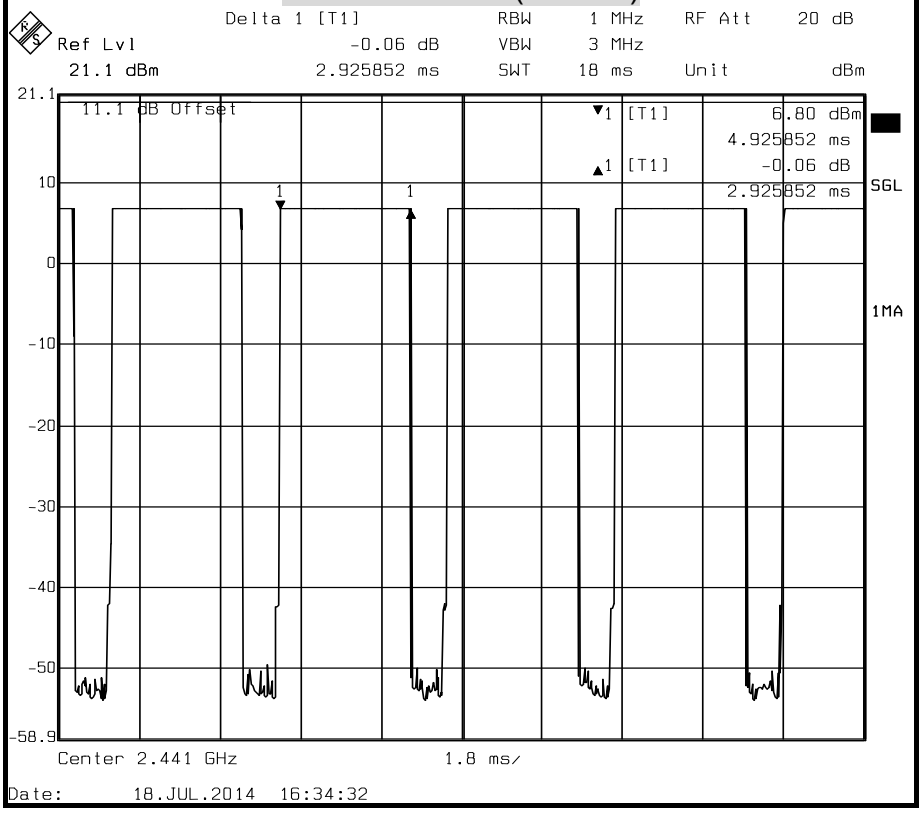
DH3 CH High ( GFSK )

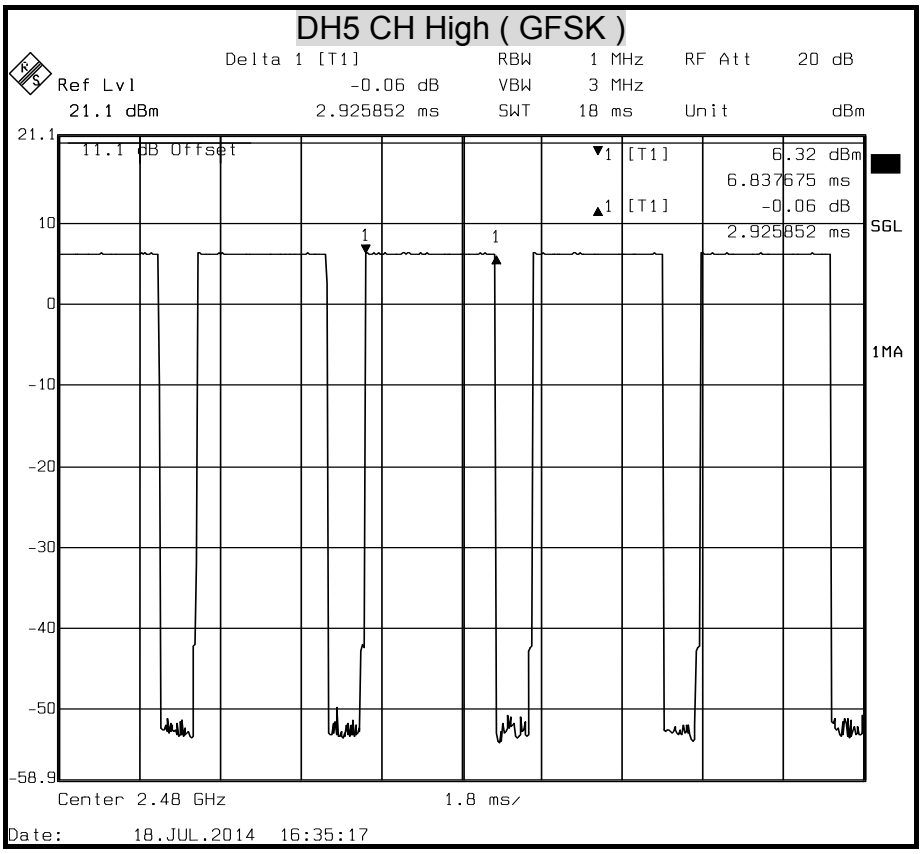


DH5 CH Low ( GFSK )

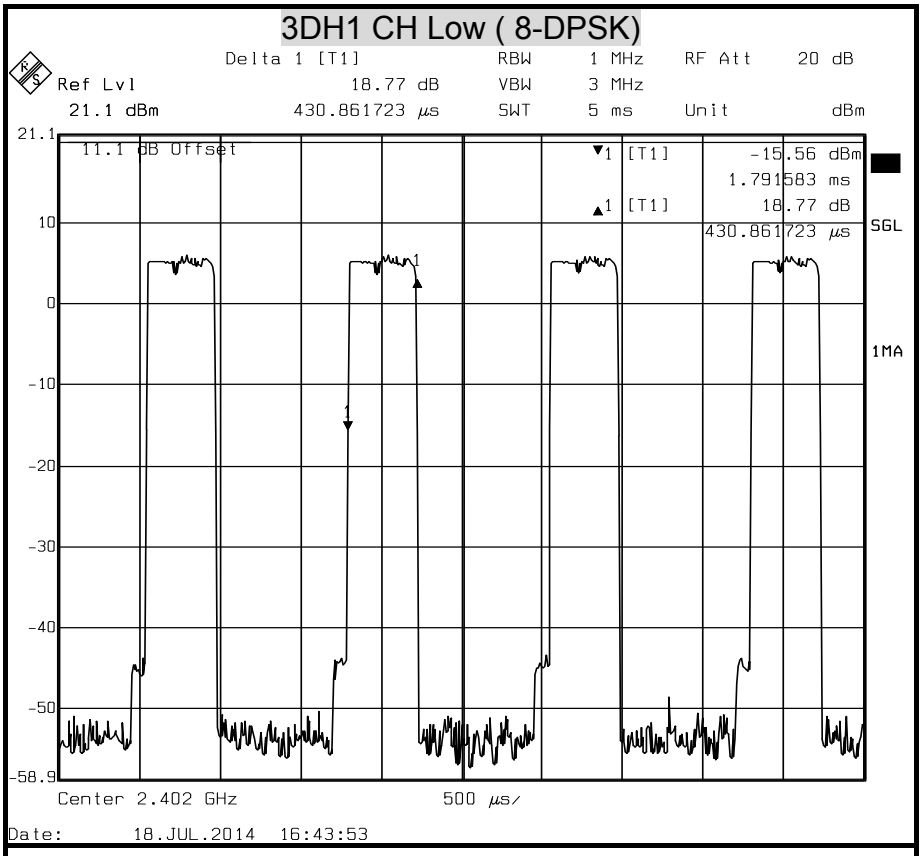



DH5 CH Middle ( GFSK )

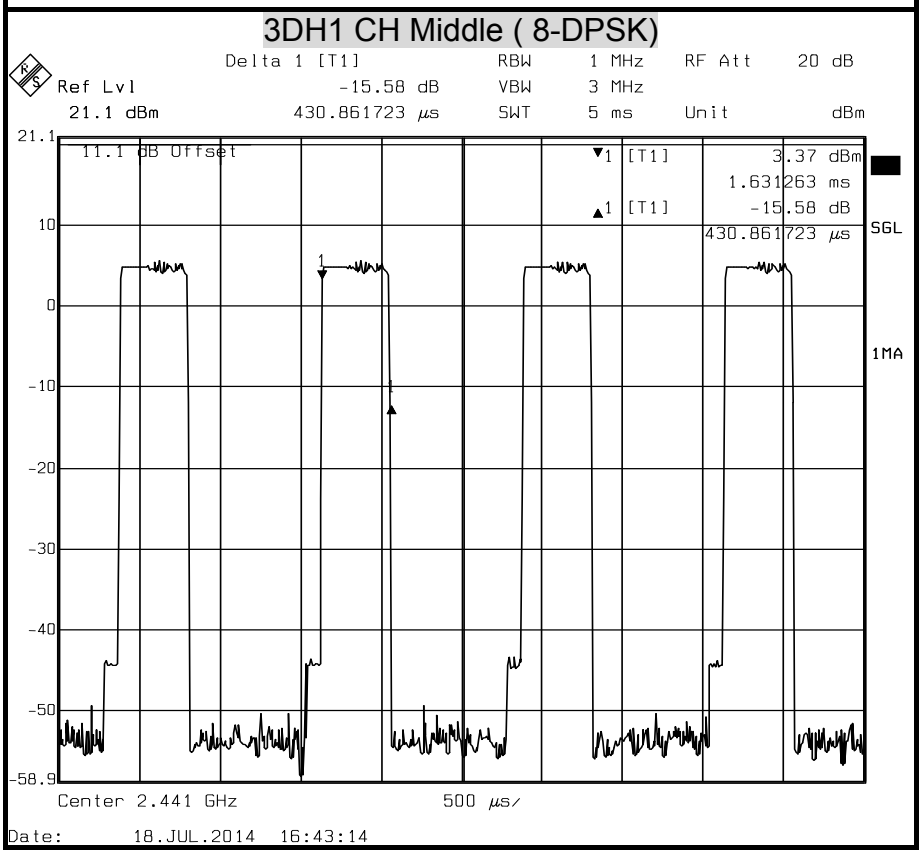


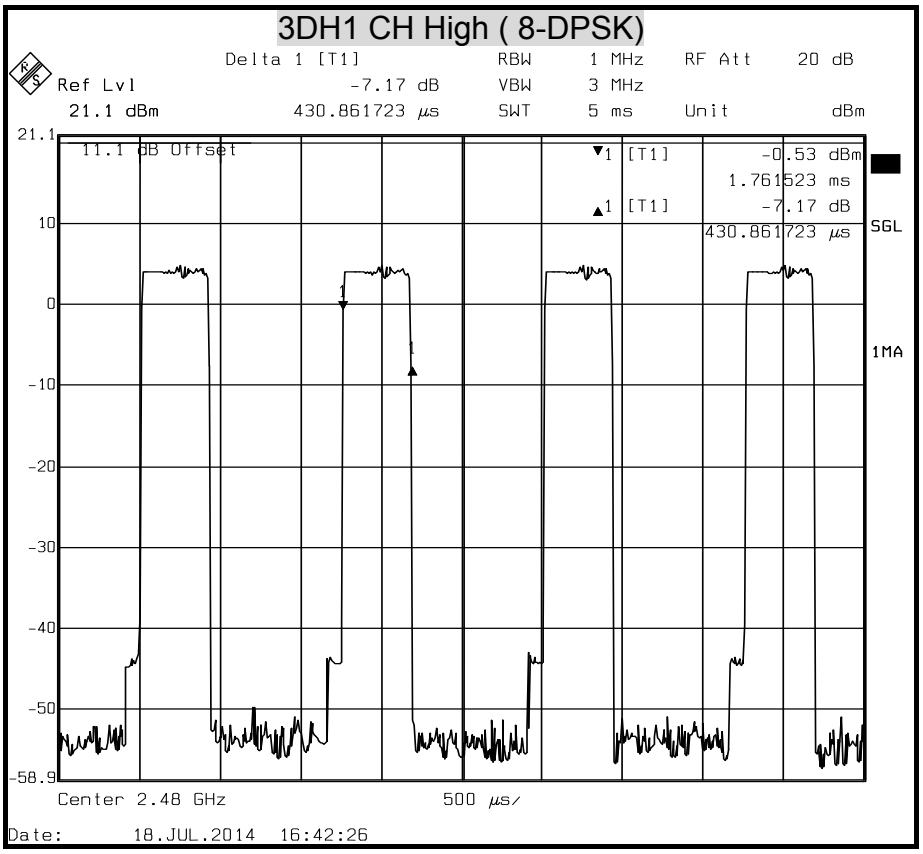

DH5 CH High ( GFSK )
Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-0.06 dB
VBW 3 MHz
21.1 dBm
2.925852 ms
SWT 18 ms
Unit dBm
11.1 dB Offset
1 [T1] 6.32 dBm
6.837675 ms
1 [T1] -0.06 dB
2.925852 ms
SGL
1MA
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
1.8 ms/
Date: 18.JUL.2014 16:35:17

3DH1 CH Low ( 8-DPSK)

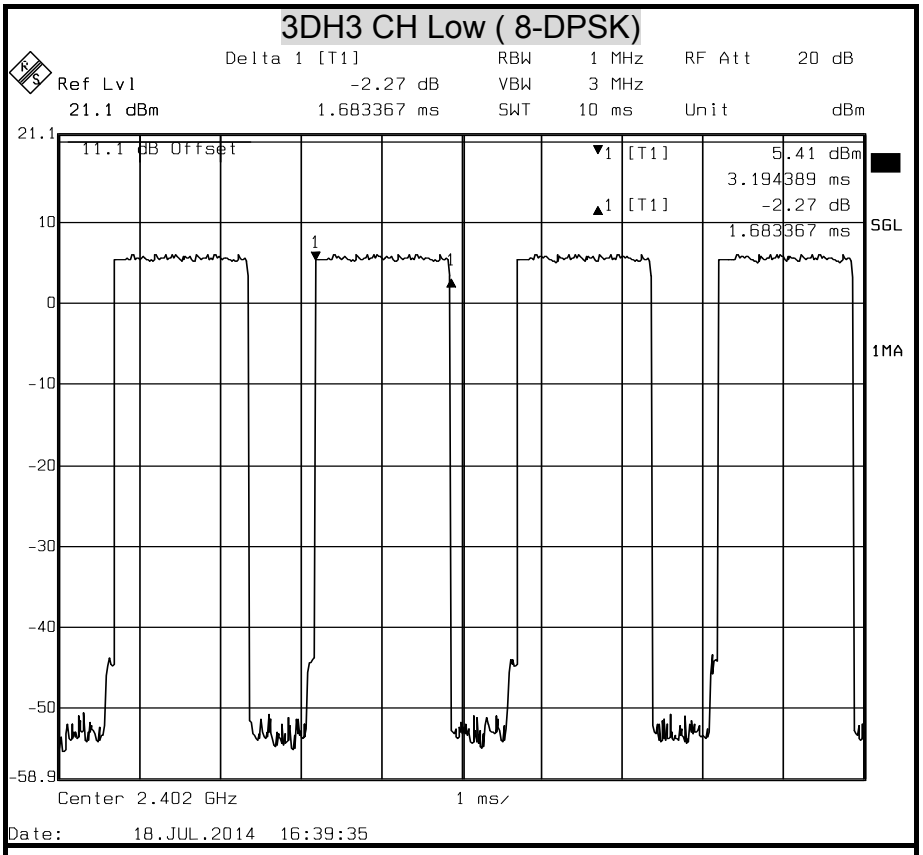



3DH1 CH Middle ( 8-DPSK)

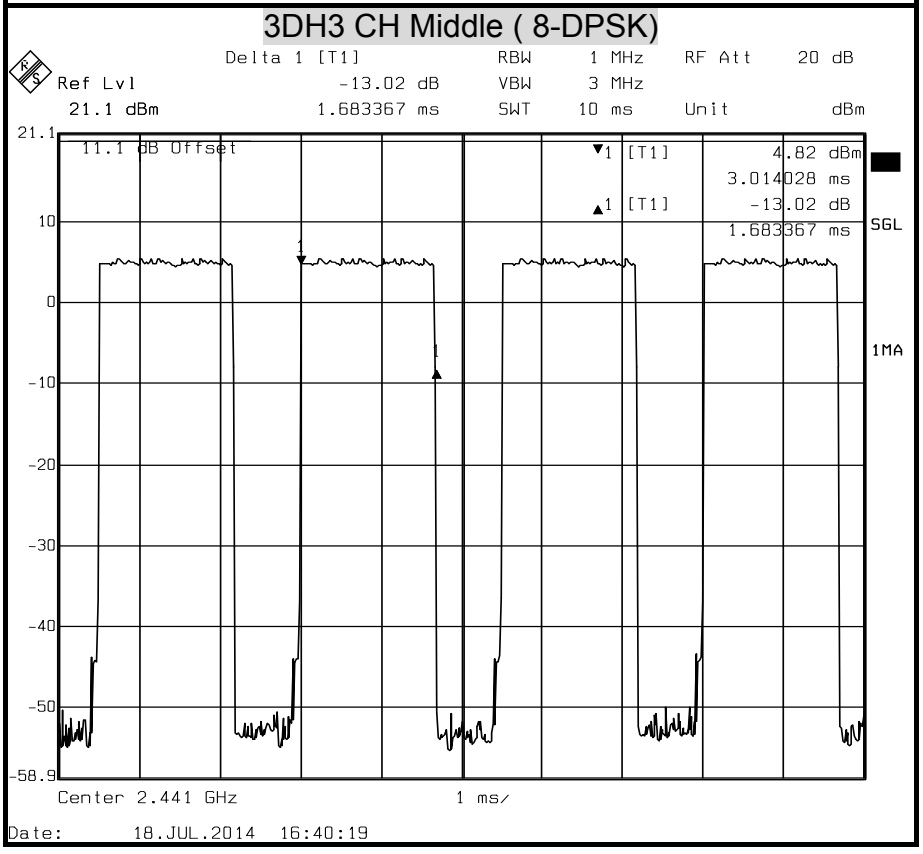


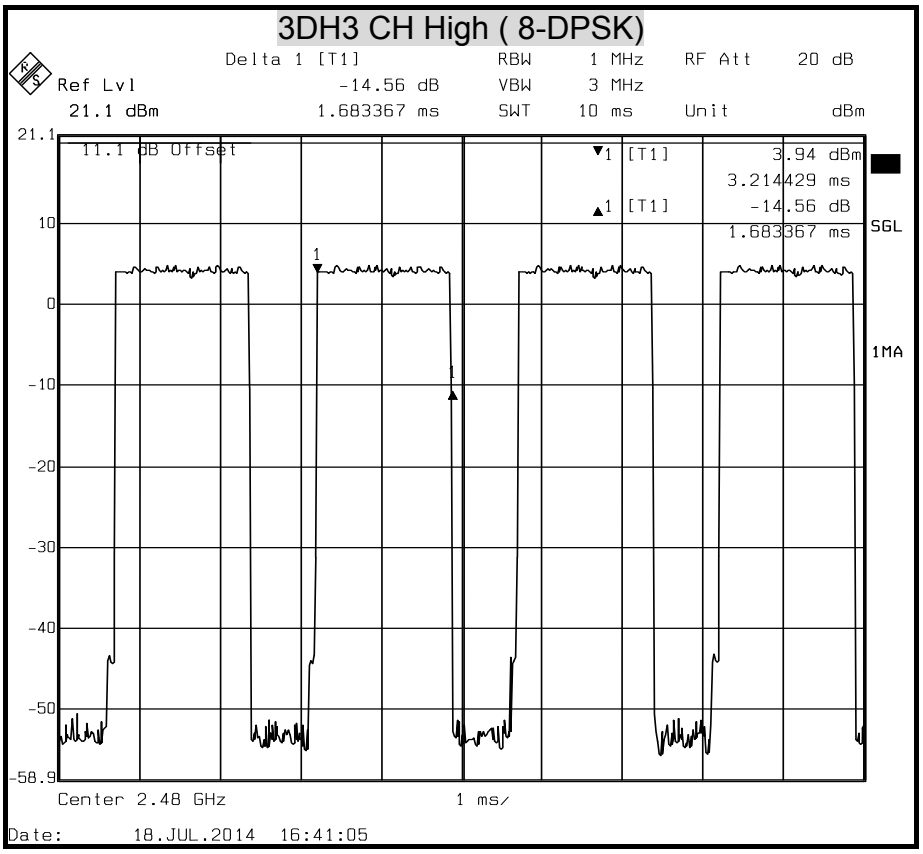

3DH1 CH High ( 8-DPSK)
Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-7.17 dB
VBW 3 MHz
21.1 dBm
430.861723 µs
SWT 5 ms
Unit dBm
11.1 dB Offset
▼1 [T1] -0.53 dBm
1.761523 ms
▲1 [T1] -7.17 dB
430.861723 µs
SGL
1MA
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
500 µs/
Date: 18.JUL.2014 16:42:26

3DH3 CH Low ( 8-DPSK)

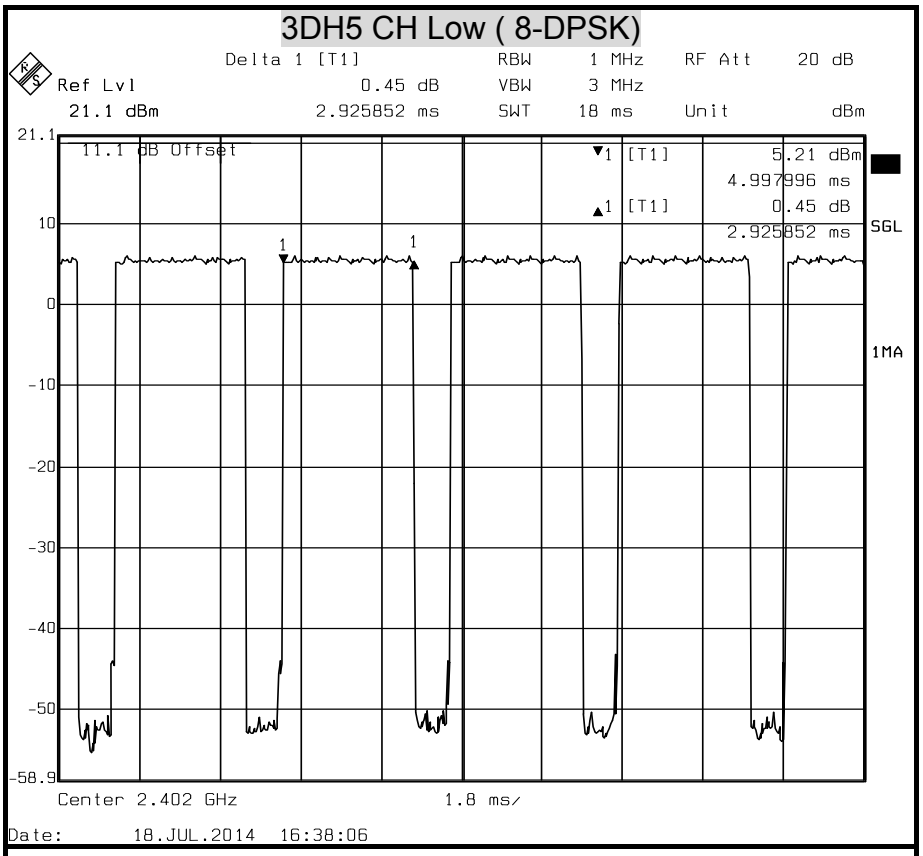



3DH3 CH Middle ( 8-DPSK)

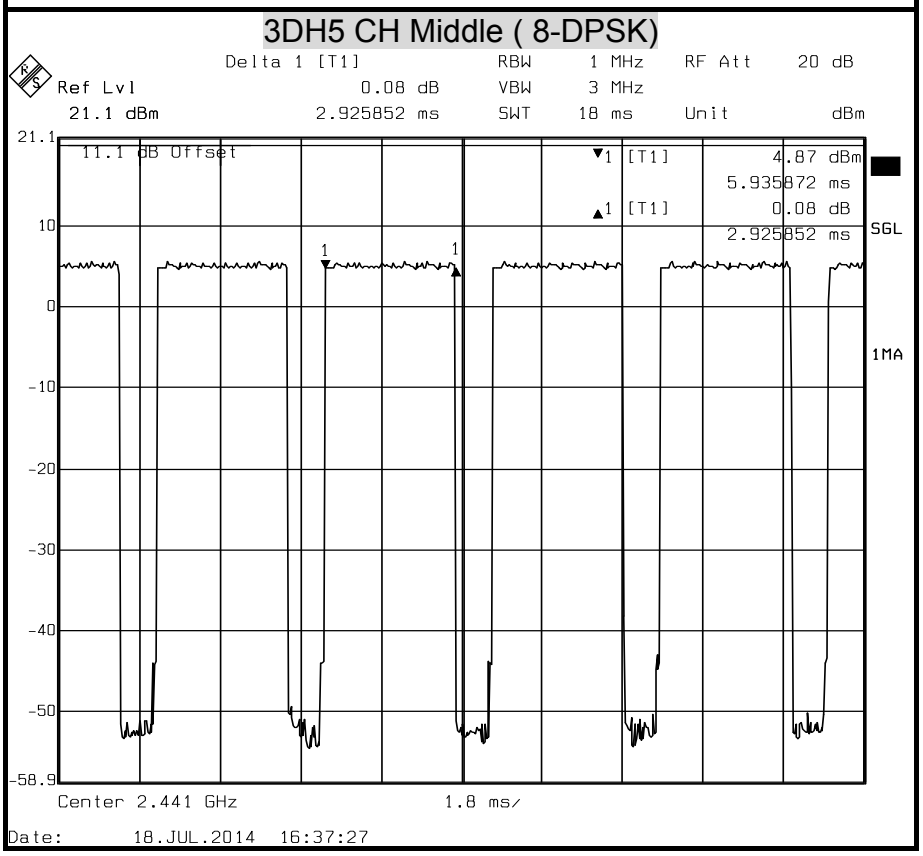


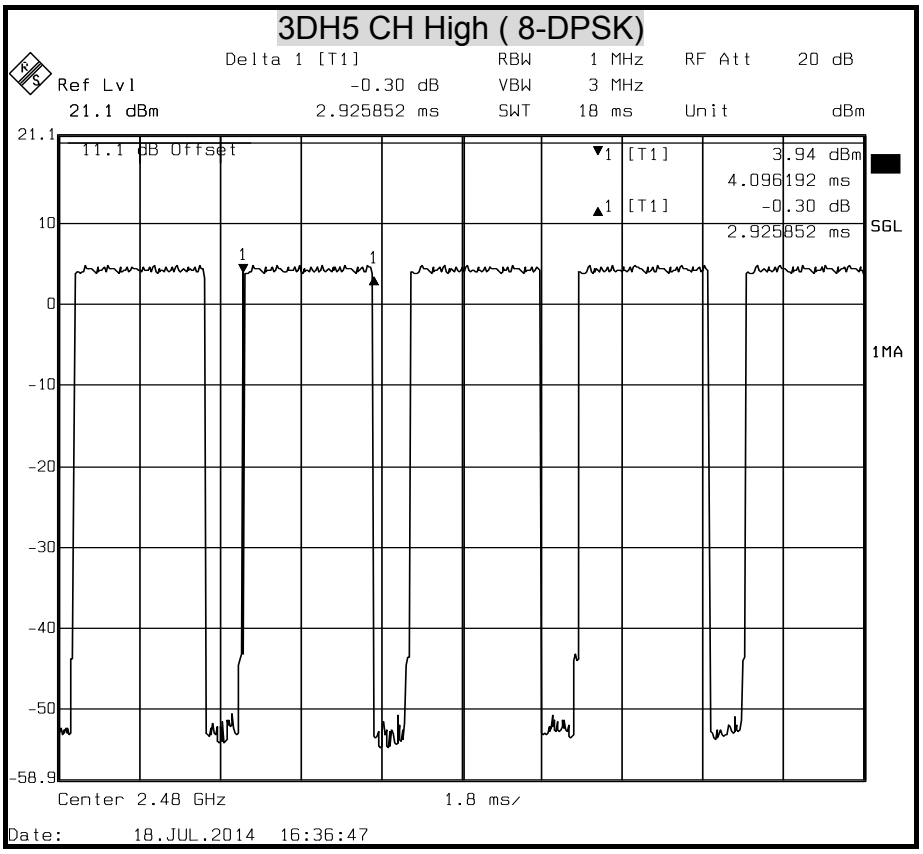

3DH3 CH High ( 8-DPSK)
Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-14.56 dB
VBW 3 MHz
21.1 dBm
1.683367 ms
SWT 10 ms
Unit dBm
11.1 dB Offset
1 [T1] 3.94 dBm
3.214429 ms
1 [T1] -14.56 dB
1.683367 ms
SGL
1MA
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
1 ms/
Date: 18.JUL.2014 16:41:05

3DH5 CH Low ( 8-DPSK)




3DH5 CH Middle ( 8-DPSK)




3DH5 CH High ( 8-DPSK)
Delta 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-0.30 dB
VBW 3 MHz
21.1 dBm
2.925852 ms
SWT 18 ms
Unit dBm
11.1 dB Offset
1 [T1] 3.94 dBm
4.096192 ms
1 [T1] -0.30 dB
2.925852 ms
SGL
1MA
21.1
10
0
-10
-20
-30
-40
-50
-58.9
Center 2.48 GHz
1.8 ms/
Date: 18.JUL.2014 16:36:47

## 7.6 CONDUCTED SPURIOUS EMISSION

**LIMITS**

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

**TEST EQUIPMENT**

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSEK 30 | 835253/002 | SEP. 28. 2014 |

**TEST SETUP**


**TEST PROCEDURE**

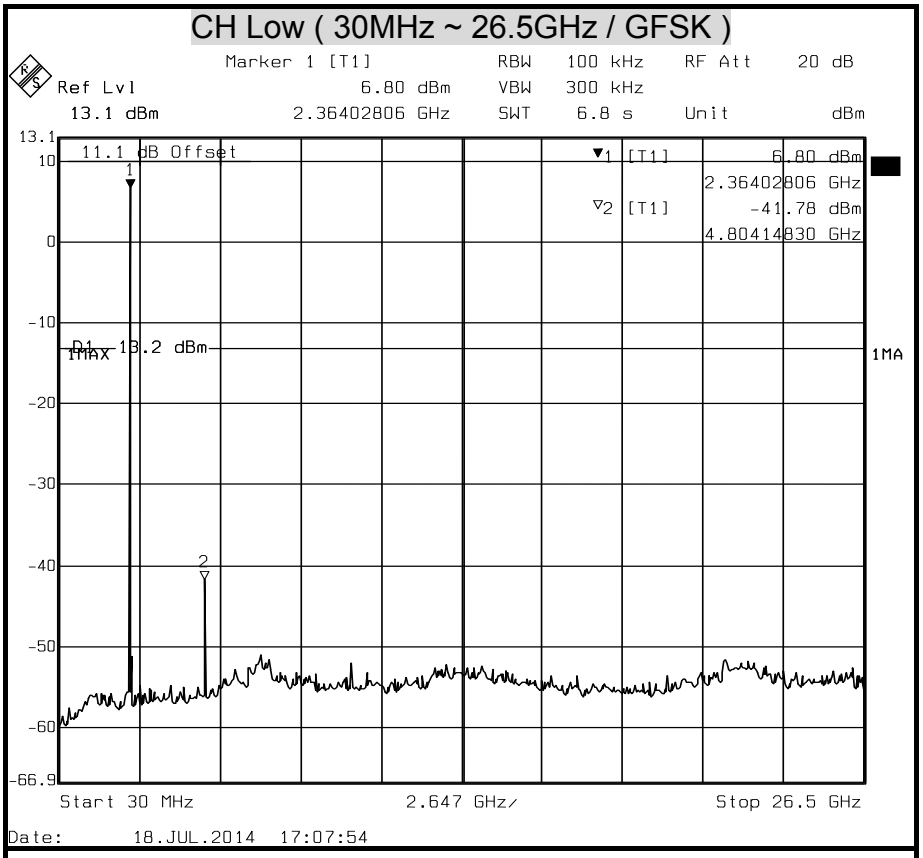
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

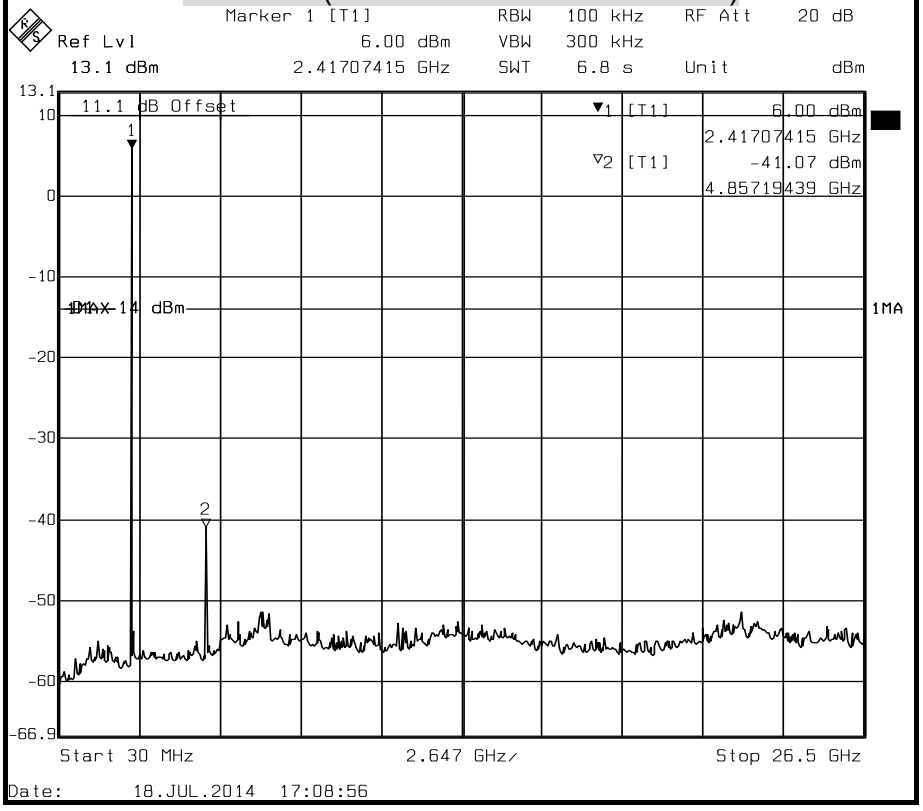
## TEST RESULTS

### OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

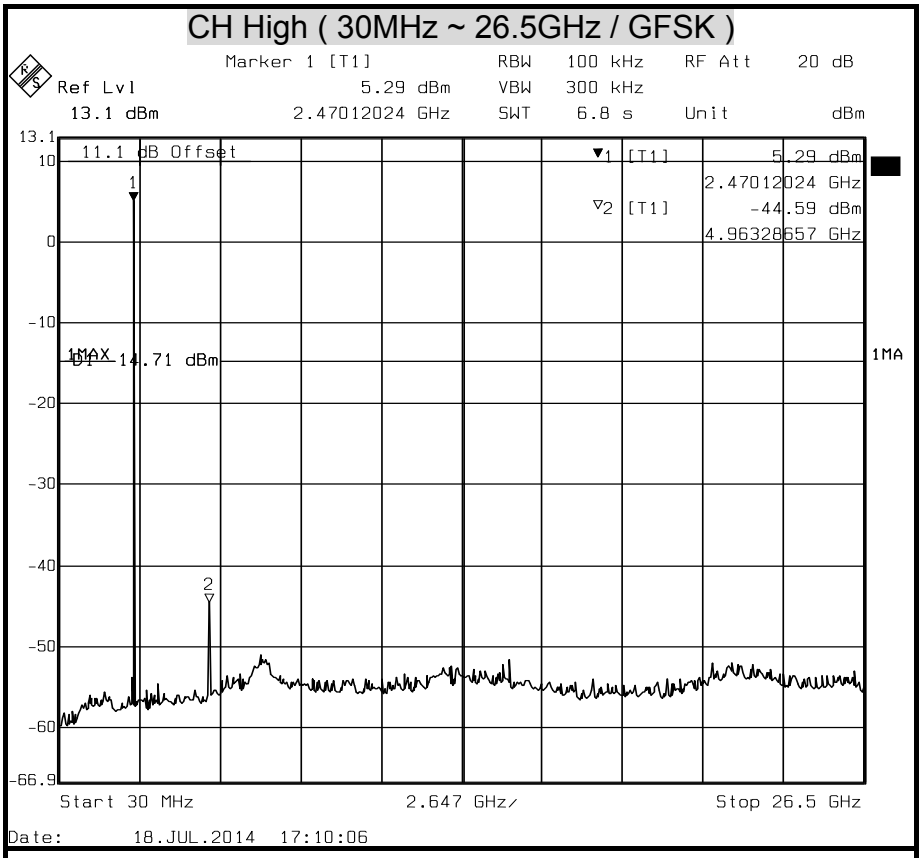
CH Low ( 30MHz ~ 26.5GHz / GFSK )



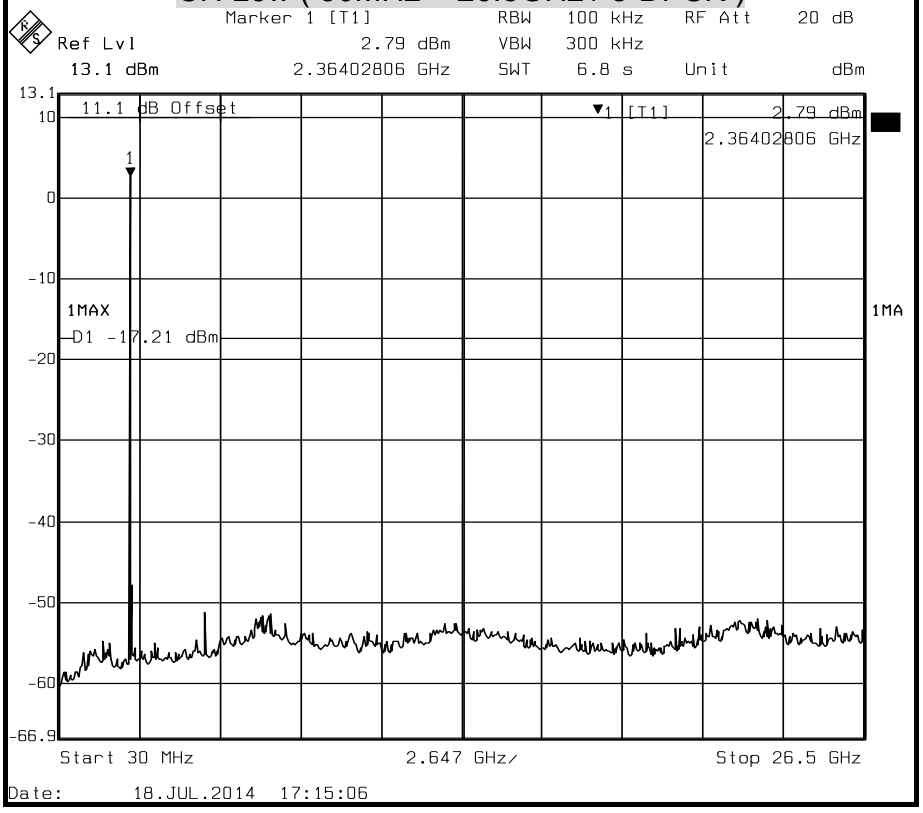

CH Midw ( 30MHz ~ 26.5GHz / GFSK )



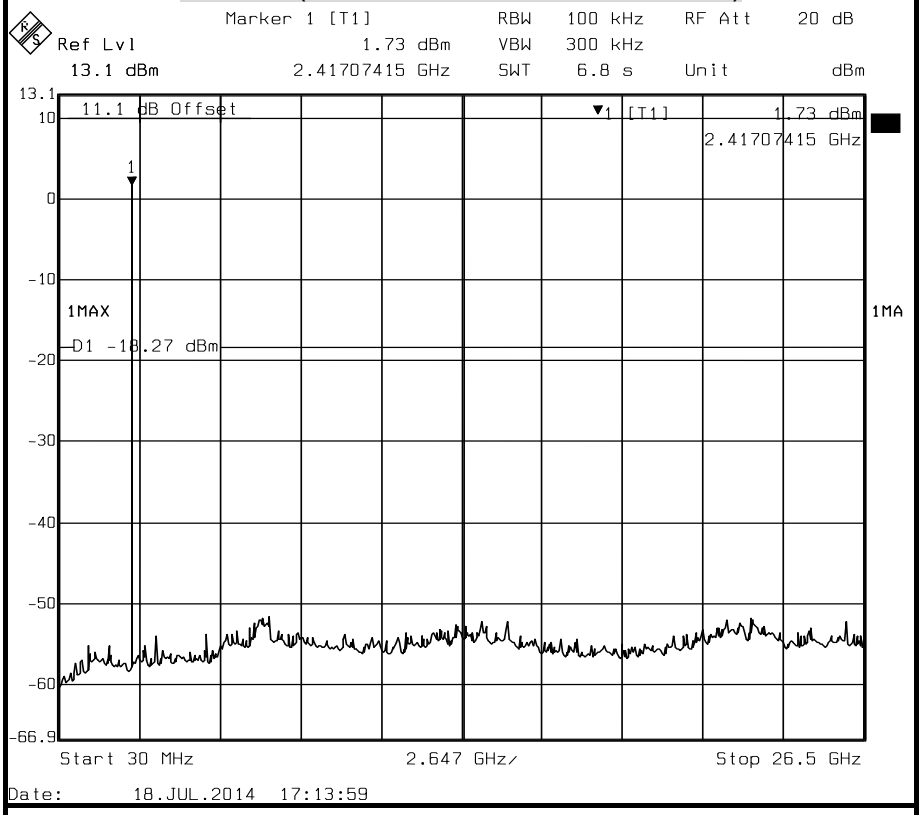
CH High ( 30MHz ~ 26.5GHz / GFSK )



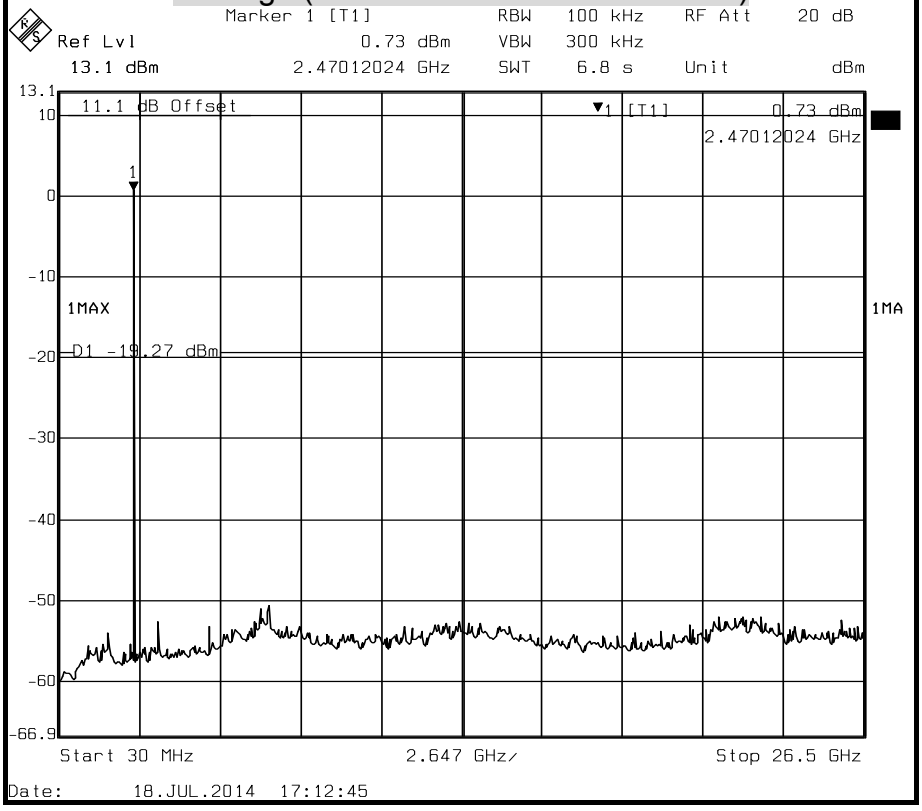

CH Low ( 30MHz ~ 26.5GHz / 8-DPSK )



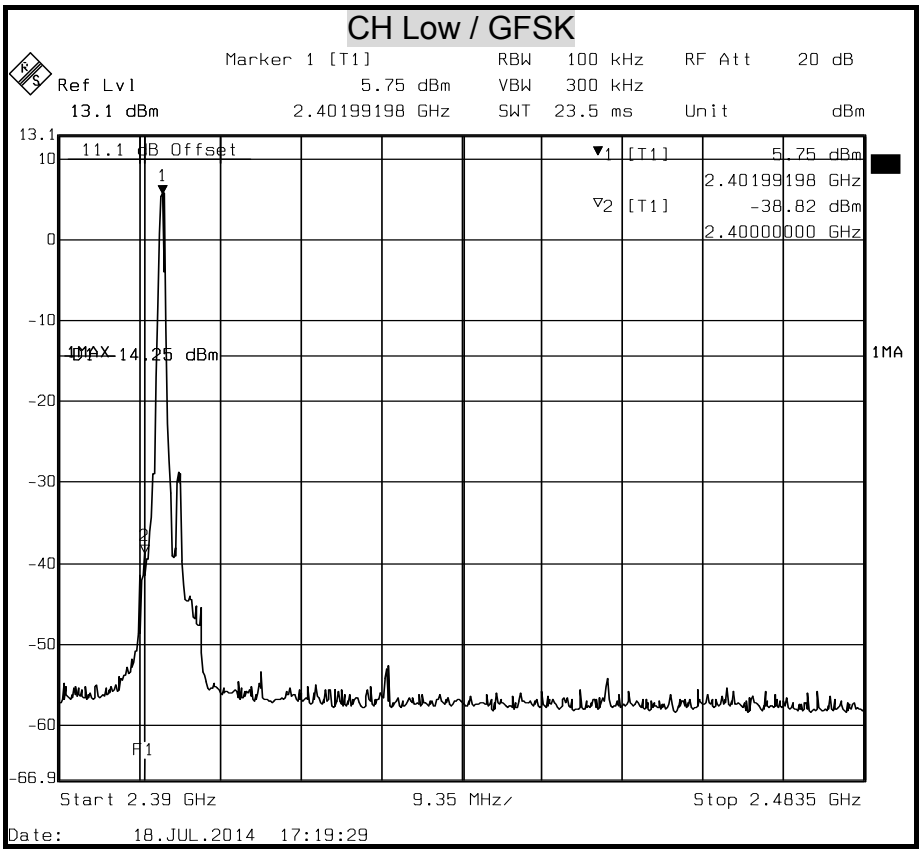
CH Mid ( 30MHz ~ 26.5GHz / 8-DPSK )

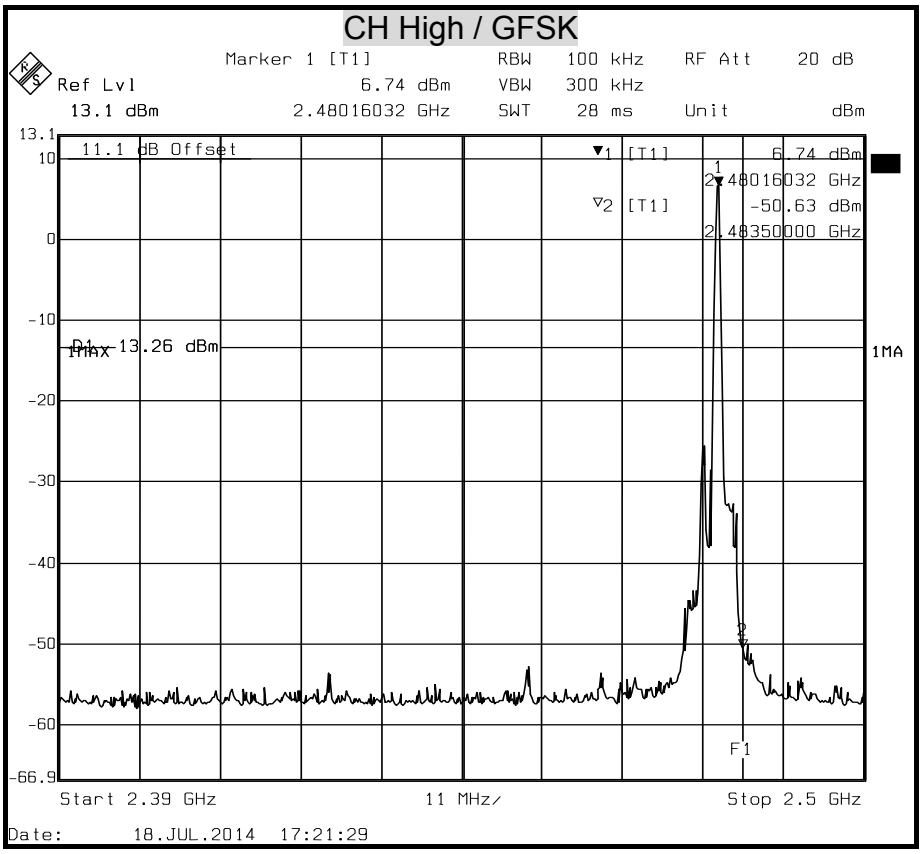



CH High ( 30MHz ~ 26.5GHz / 8-DPSK )

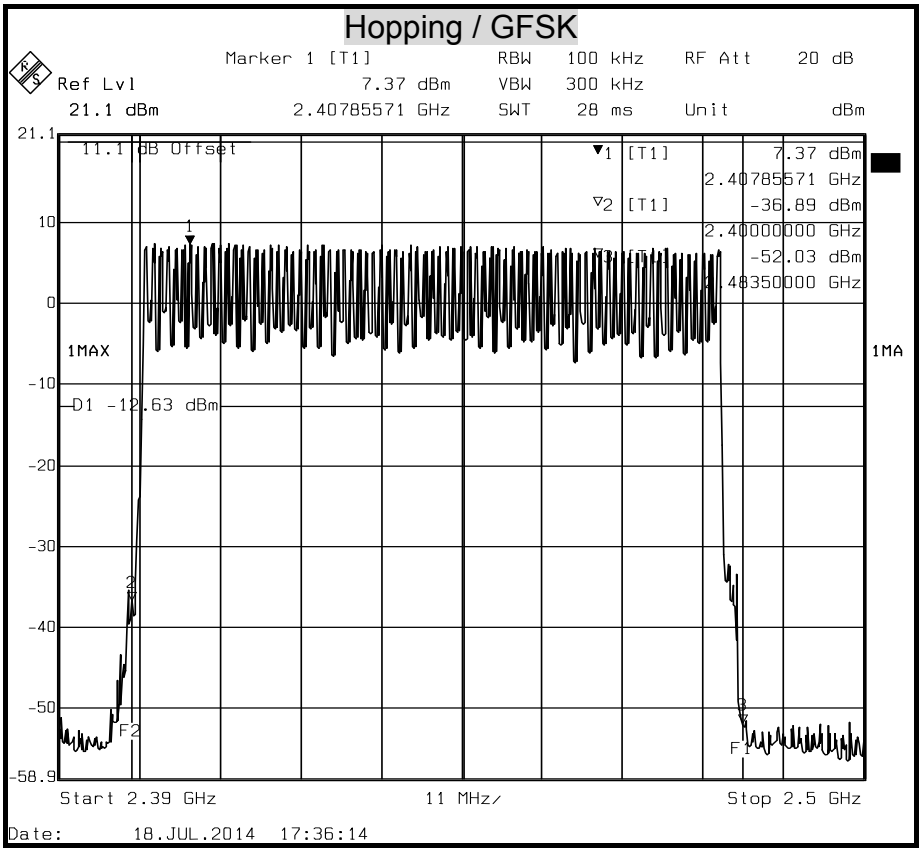


## Band-edge Compliance of RF Conducted Emissions

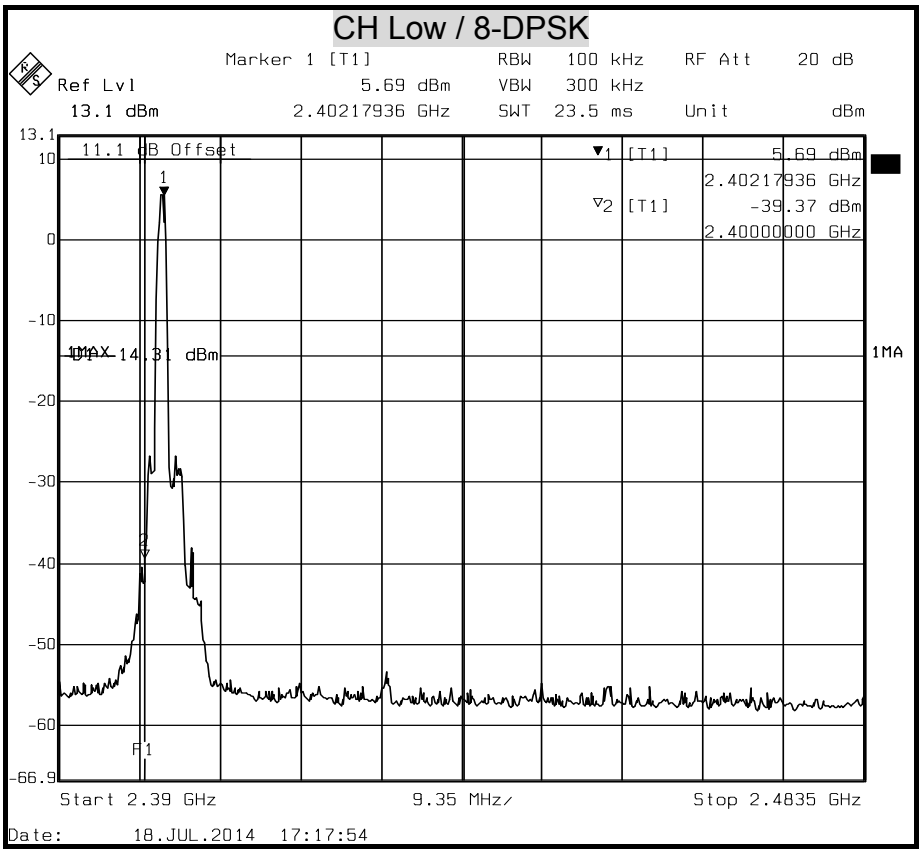


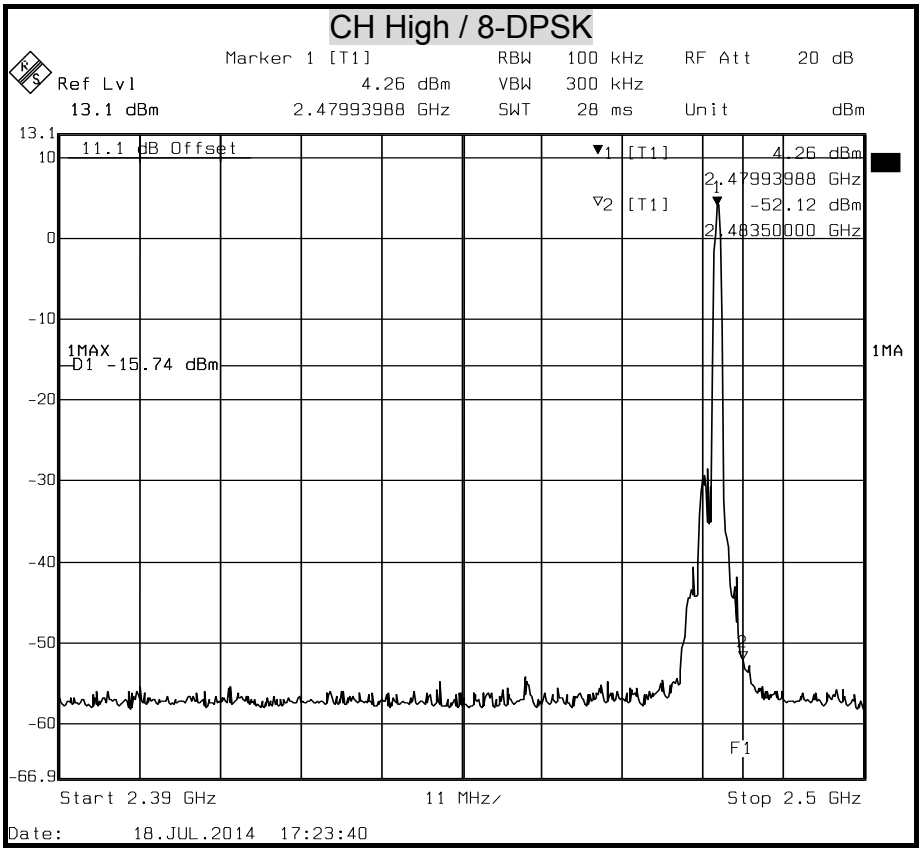
Hopping / GFSK



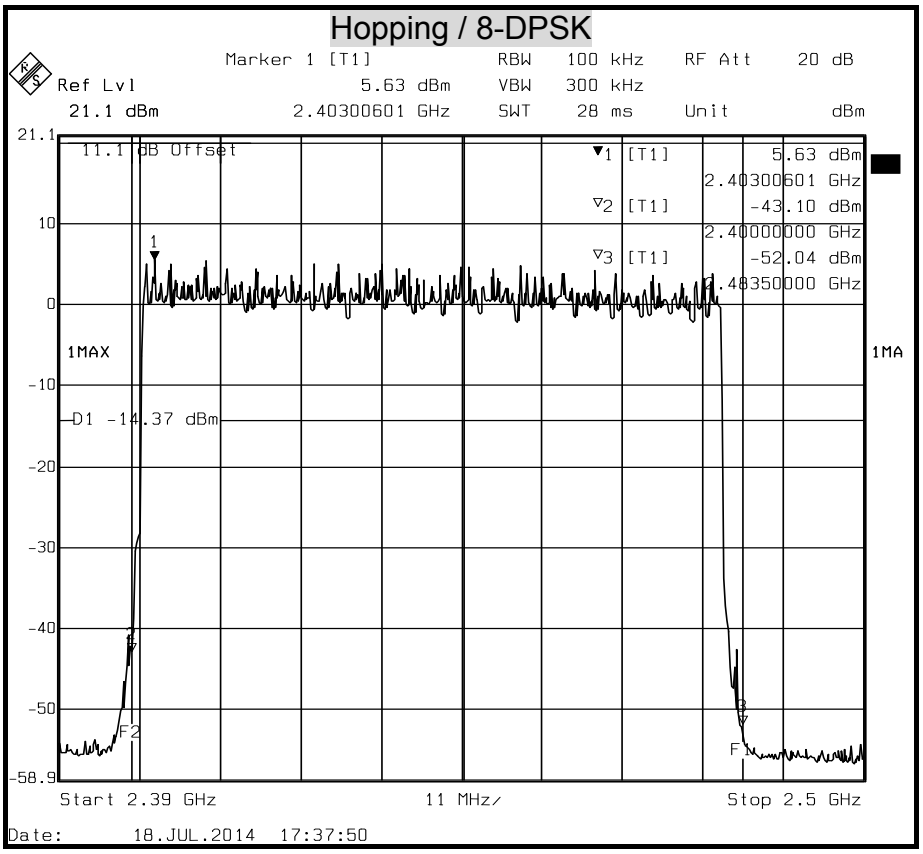
CH Low / 8-DPSK




CH High / 8-DPSK



Hopping / 8-DPSK



# 7.7 RADIATED EMISSIONS

## 7.7.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

**LIMITS**

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1]0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 -1710 | 10.6 -12.7 |
| 6.26775 - 6.26825 | 108 -121.94 | 1718.8 - 1722.2 | 13.25 -13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 – 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 -16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3338 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 -335.4 | 3600 - 4400 | ([2]) |
| 13.36 - 13.41 | | | |

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown is Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§ 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 30 - 88 | 100 ** | 3 |
| 88 - 216 | 150 ** | 3 |
| 216 - 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

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

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

**TEST EQUIPMENT**

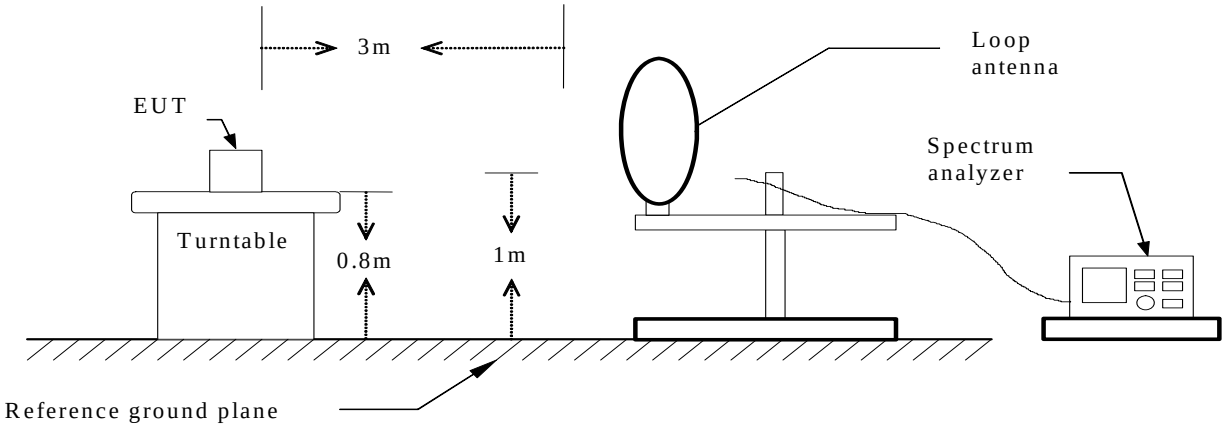
| Open Area Test Site # 6 | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| TYPE N COAXIAL CABLE | SUHNER | CHA9513 | 6 | DEC. 18, 2014 |
| BI-LOG Antenna | Sunol | JB1 | A070506-2 | SEP. 09, 2015 |
| LOOP ANTENNA | EMCO | 6502 | 8905-2356 | JUN. 10, 2015 |
| Pre-Amplifier | HP | 8447F | 2944A03817 | FEB. 13, 2015 |
| Pre-Amplifier | EMCI | EMC 012645 | 980097 | FEB .16,2015 |
| EMI Test Receiver | R&S | ESCS 30 | 100348 | AYG. 09, 2015 |
| Horn Antenna | Com-Power | AH-118 | 071032 | DEC. 05, 2014 |
| 3116 Double Ridge Antenna (40G) | ETS-LINDGREN | 3116 | 00078900 | FEB. 23, 2015 |
| Turn Table | Yo Chen | 001 | ---------- | N.C.R. |
| Antenna Tower | AR | TP1000A | 309874 | N.C.R. |
| Controller | CT | SC101 | ---------- | N.C.R. |
| RF Swicth | E-INSTRUMENT TELH LTD | ERS-180A | EC1204141 | N.C.R |
| Power Meter | Anritsu | ML2487A | 6K00003888 | JUN. 24, 2015 |
| Power Sensor | Anritsu | MA2491A | 33265 | JUN. 24, 2015 |
| Temp./Humidity Chamber | K.SON | THS-M1 | 242 | AUG. 08, 2015 |
| DC Power Source | LOKO | DSP-5050 | L1507009282 | N.C.R |
| Spectrum Analyzer | R&S | FSU | 200789 | JUL. 01, 2015 |
| Spectrum Analyzer | R&S | FSEM | 830270/015 | NCR |
| Spectrum Analyzer | R&S | FSEK 30 | 100264 | JAN. 26, 2015 |
| Test S/W | e-3 (5.04303e) | | | |

**Remark:** 1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R = No Calibration Request.

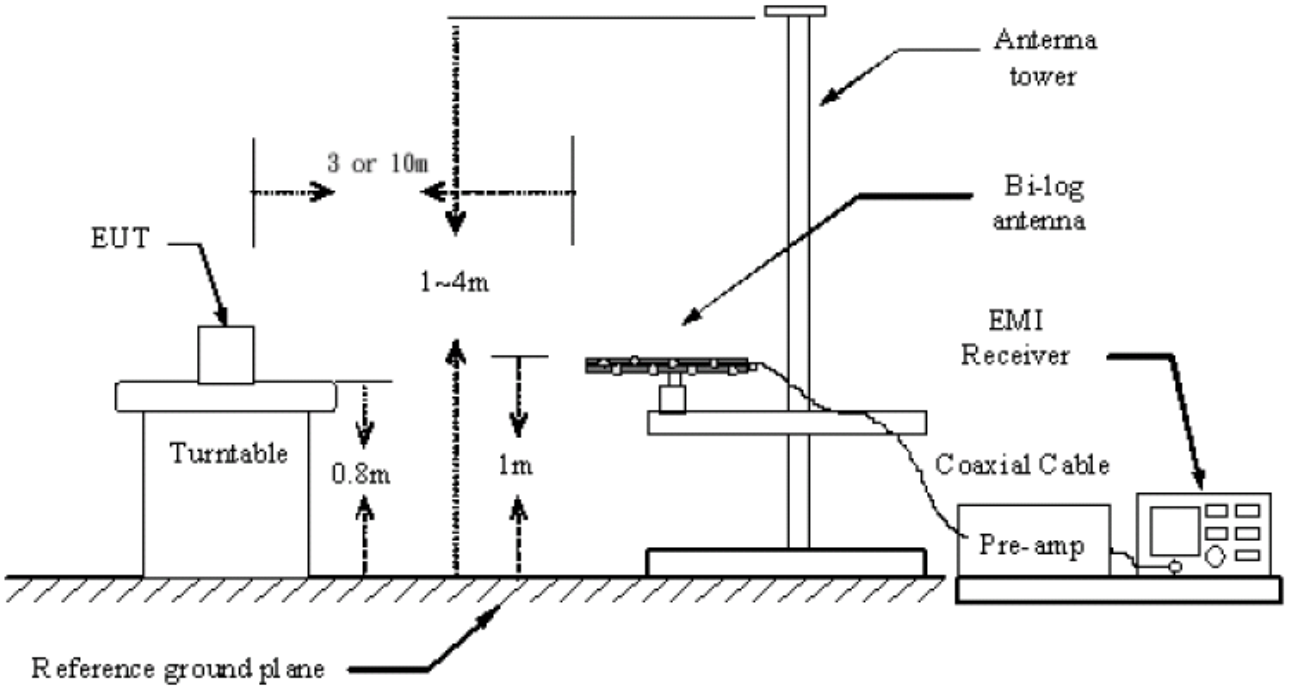
## TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from below 1GHz.

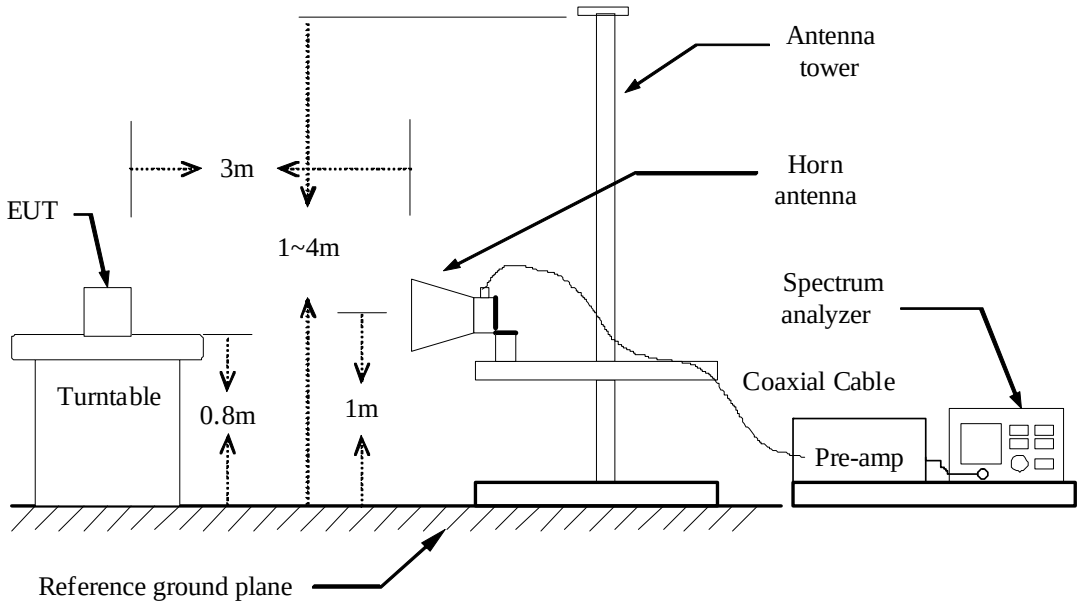
**9kHz ~ 30MHz**




**30MHz ~ 1GHz**



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.




## TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
b. White measuring the radiated emission below 1GHz, the EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 3 or 10 meters away from the interference-receiving antenna
c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note：
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

## 7.7.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

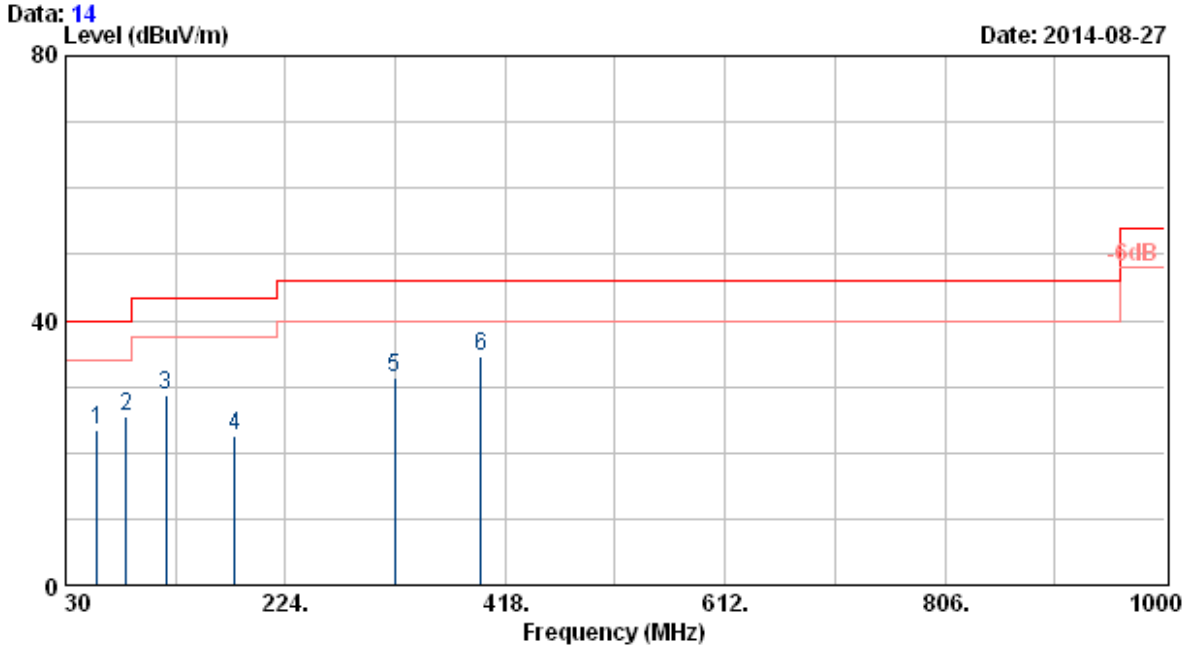
**BELOW 1 GHz (9kHz ~ 30MHz)**

No emission found between lowest internal used/generated frequency to 30MHz.

**BELOW 1 GHz (30MHz ~ 1GHz)**

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/08/07 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Weici Lo |
| Test Mode | CD Mode (worst case) | Temp & Humidity | 25.9°C, 57% |

Vertical




| Freq. MHz | Reading Level dBuV | Antenna Factor dB/m | Cable Loss dB | Measure Level dBuV/m | Limit dBuV/m | Over Limit dBuV/m | Detector |
|---|---|---|---|---|---|---|---|
| 57.55 | 13.21 | 7.91 | 2.22 | 23.34 | 40.00 | -16.66 | QP |
| 83.79 | 14.73 | 7.98 | 2.69 | 25.40 | 40.00 | -14.60 | QP |
| 118.55 | 11.90 | 13.70 | 3.24 | 28.84 | 43.50 | -14.66 | QP |
| 179.50 | 7.12 | 11.46 | 4.02 | 22.60 | 43.50 | -20.90 | QP |
| 320.04 | 10.99 | 14.42 | 5.82 | 31.22 | 46.00 | -14.78 | QP |
| 396.52 | 11.62 | 16.19 | 6.63 | 34.44 | 46.00 | -11.56 | QP |

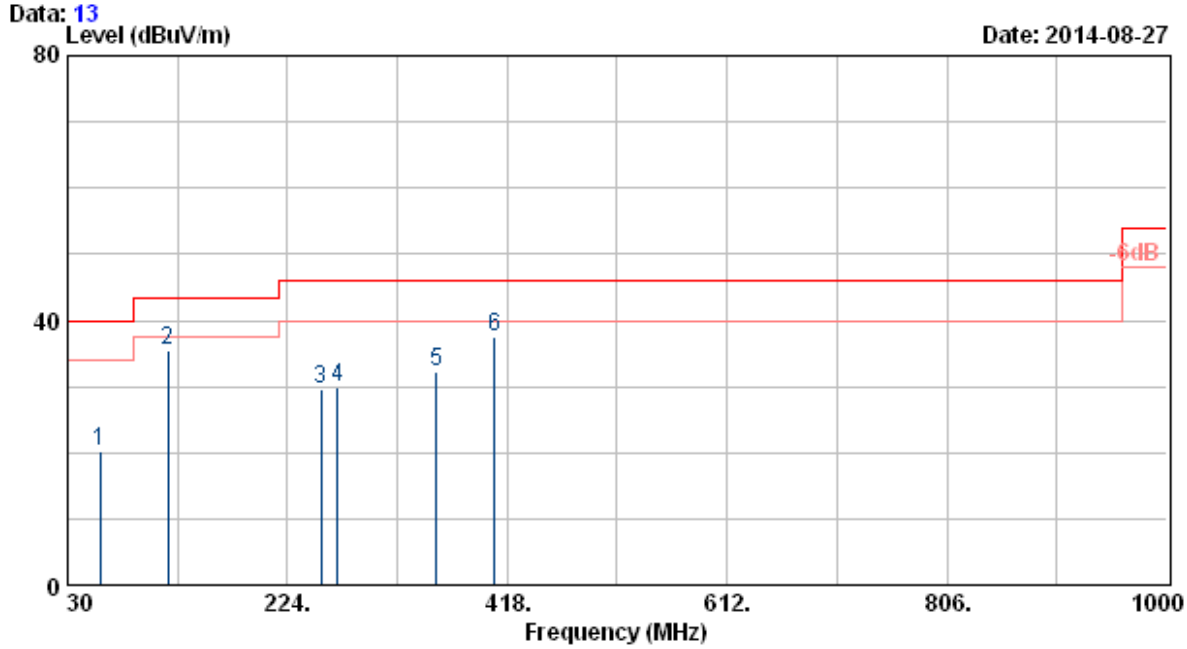
**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A "remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable imit) and considered that's already beyond the background noise floor.

5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/08/07 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Weici Lo |
| Test Mode | CD Mode (worst case) | Temp & Humidity | 25.9°C, 57% |

Horizontal



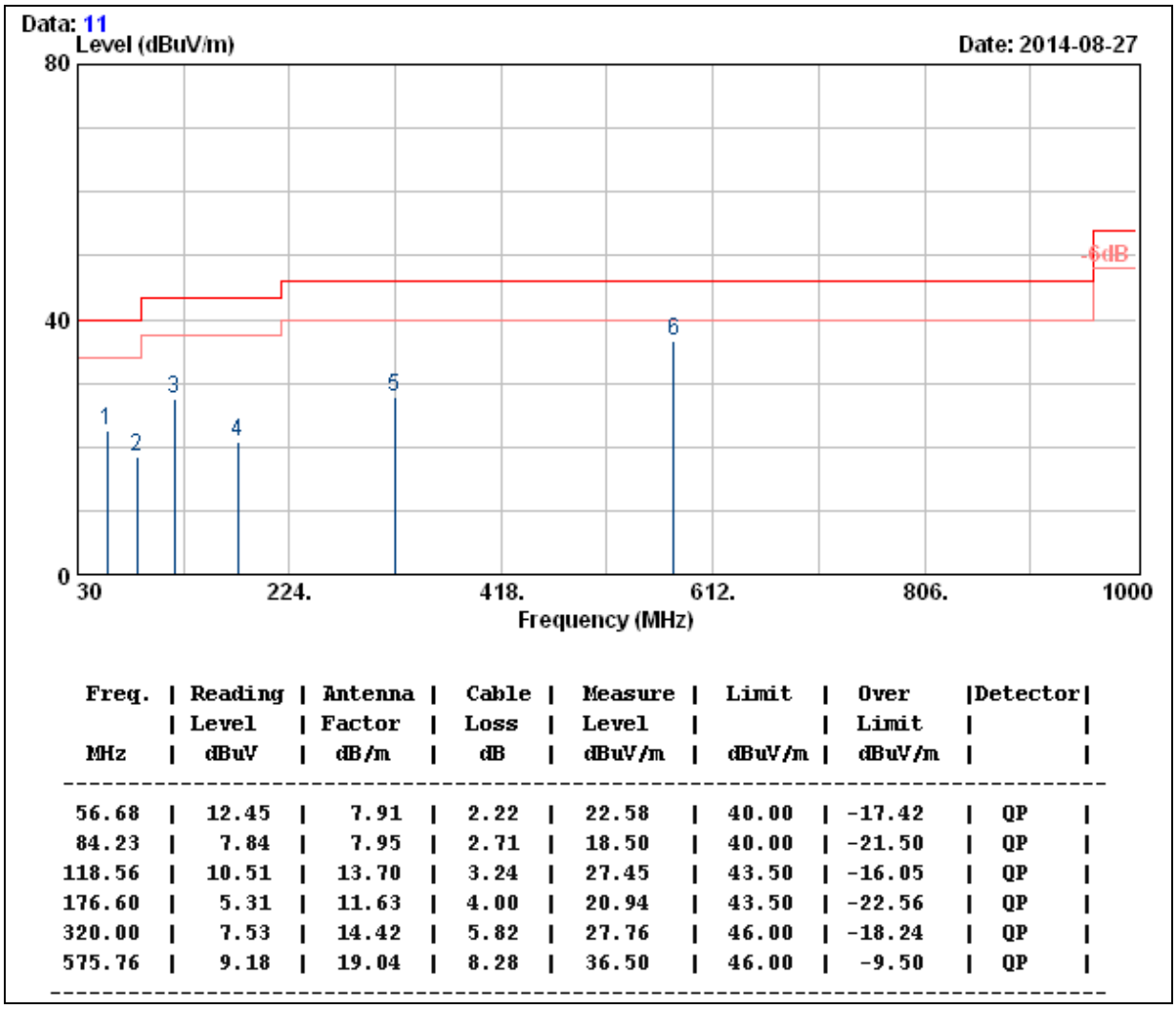

| Freq. MHz | Reading Level dBuV | Antenna Factor dB/m | Cable Loss dB | Measure Level dBuV/m | Limit dBuV/m | Over Limit dBuV/m | Detector |
|---|---|---|---|---|---|---|---|
| 59.00 | 10.31 | 7.77 | 2.27 | 20.34 | 40.00 | -19.66 | QP |
| 118.57 | 18.43 | 13.70 | 3.24 | 35.37 | 43.50 | -8.13 | QP |
| 254.02 | 12.05 | 12.68 | 4.99 | 29.72 | 46.00 | -16.28 | QP |
| 268.45 | 11.56 | 13.10 | 5.19 | 29.85 | 46.00 | -16.15 | QP |
| 355.66 | 10.85 | 15.23 | 6.20 | 32.27 | 46.00 | -13.73 | QP |
| 406.44 | 14.33 | 16.38 | 6.72 | 37.44 | 46.00 | -8.56 | QP |

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A "remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable imit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/08/07 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Weici Lo |
| Test Mode | Bluetooth Mode (worst case) | Temp & Humidity | 25.9°C, 57% |

Vertical



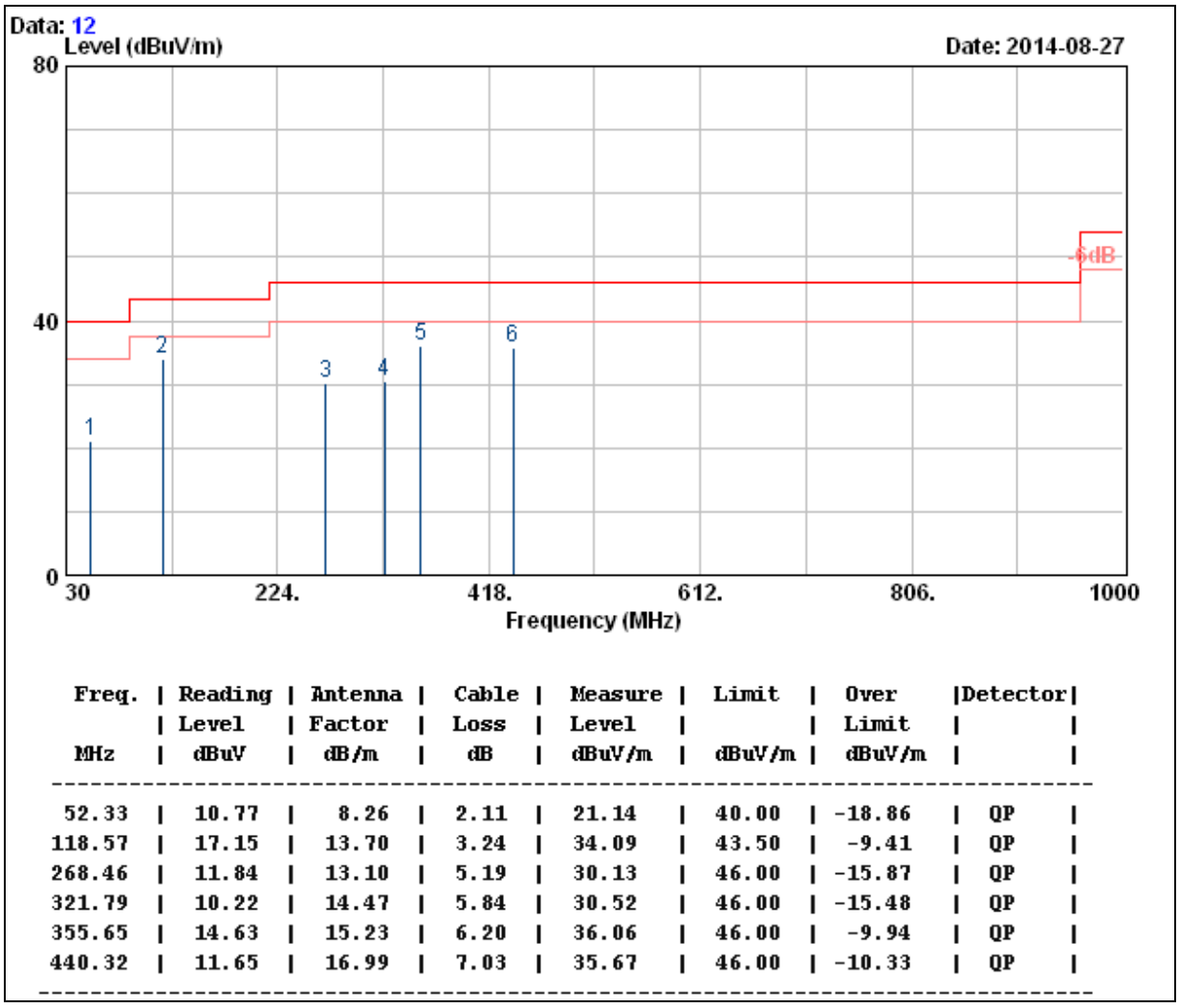

| Freq. MHz | Reading Level dBuV | Antenna Factor dB/m | Cable Loss dB | Measure Level dBuV/m | Limit dBuV/m | Over Limit dBuV/m | Detector |
|---|---|---|---|---|---|---|---|
| 56.68 | 12.45 | 7.91 | 2.22 | 22.58 | 40.00 | -17.42 | QP |
| 84.23 | 7.84 | 7.95 | 2.71 | 18.50 | 40.00 | -21.50 | QP |
| 118.56 | 10.51 | 13.70 | 3.24 | 27.45 | 43.50 | -16.05 | QP |
| 176.60 | 5.31 | 11.63 | 4.00 | 20.94 | 43.50 | -22.56 | QP |
| 320.00 | 7.53 | 14.42 | 5.82 | 27.76 | 46.00 | -18.24 | QP |
| 575.76 | 9.18 | 19.04 | 8.28 | 36.50 | 46.00 | -9.50 | QP |

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A "remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable imit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/08/07 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Weici Lo |
| Test Mode | Bluetooth Mode (worst case) | Temp & Humidity | 25.9°C, 57% |

Horizontal




| Freq. MHz | Reading Level dBuV | Antenna Factor dB/m | Cable Loss dB | Measure Level dBuV/m | Limit dBuV/m | Over Limit dBuV/m | Detector |
|---|---|---|---|---|---|---|---|
| 52.33 | 10.77 | 8.26 | 2.11 | 21.14 | 40.00 | -18.86 | QP |
| 118.57 | 17.15 | 13.70 | 3.24 | 34.09 | 43.50 | -9.41 | QP |
| 268.46 | 11.84 | 13.10 | 5.19 | 30.13 | 46.00 | -15.87 | QP |
| 321.79 | 10.22 | 14.47 | 5.84 | 30.52 | 46.00 | -15.48 | QP |
| 355.65 | 14.63 | 15.23 | 6.20 | 36.06 | 46.00 | -9.94 | QP |
| 440.32 | 11.65 | 16.99 | 7.03 | 35.67 | 46.00 | -10.33 | QP |

**Remark:**

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A "remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable imit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

## 7.7.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH Low TX / GFSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH Low | | | | Measurement Distance at 3m | | | Horizontal polarity | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| * | 1600.64 | 64.47 | 27.54 | 2.07 | 48.63 | 0.30 | 45.76 | 74.00 | -28.24 | P |
| * | 1600.64 | 61.10 | 27.54 | 2.07 | 48.63 | 0.30 | 42.39 | 54.00 | -11.61 | A |
| | 3218.19 | 66.31 | 30.69 | 3.03 | 47.27 | 0.30 | 53.05 | 74.00 | -20.95 | P |
| | 3218.19 | 64.43 | 30.69 | 3.03 | 47.27 | 0.30 | 51.17 | 54.00 | -2.83 | A |
| * | 4803.93 | 62.14 | 33.81 | 3.77 | 48.29 | 0.40 | 51.83 | 74.00 | -22.17 | P |
| * | 4803.93 | 56.84 | 33.81 | 3.77 | 48.29 | 0.40 | 46.53 | 54.00 | -7.47 | A |

Vertical

| | TX mode / CH Low | | | | Measurement Distance at 3m | | | Vertical polarity | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| * | 1600.67 | 64.01 | 27.54 | 2.07 | 48.63 | 0.30 | 45.30 | 74.00 | -28.70 | P |
| * | 1600.67 | 61.03 | 27.54 | 2.07 | 48.63 | 0.30 | 42.32 | 54.00 | -11.68 | A |
| | 3218.29 | 66.70 | 30.69 | 3.03 | 47.27 | 0.30 | 53.44 | 74.00 | -20.56 | P |
| | 3218.29 | 64.73 | 30.69 | 3.03 | 47.27 | 0.30 | 51.47 | 54.00 | -2.53 | A |
| * | 4804.05 | 68.65 | 33.81 | 3.77 | 48.29 | 0.40 | 58.34 | 74.00 | -15.66 | P |
| * | 4804.05 | 61.32 | 33.81 | 3.77 | 48.29 | 0.40 | 51.01 | 54.00 | -2.99 | A |

**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH Mid TX / GFSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH Mid | | | | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1626.74 | 65.12 | 27.74 | 2.09 | 48.60 | 0.30 | 46.65 | 74.00 | -27.35 | P |
| | 1626.74 | 61.96 | 27.74 | 2.09 | 48.60 | 0.30 | 43.49 | 54.00 | -10.51 | A |
| | 3218.20 | 67.13 | 30.69 | 3.03 | 47.27 | 0.30 | 53.87 | 74.00 | -20.13 | P |
| | 3218.20 | 65.09 | 30.69 | 3.03 | 47.27 | 0.30 | 51.83 | 54.00 | -2.17 | A |
| * | 4882.09 | 59.66 | 34.05 | 3.80 | 48.30 | 0.40 | 49.61 | 74.00 | -24.39 | P |
| * | 4882.09 | 52.17 | 34.05 | 3.80 | 48.30 | 0.40 | 42.12 | 54.00 | -11.88 | A |

Vertical

| | TX mode / CH Mid | | | | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1626.64 | 66.28 | 27.74 | 2.09 | 48.60 | 0.30 | 47.81 | 74.00 | -26.19 | P |
| | 1626.64 | 64.23 | 27.74 | 2.09 | 48.60 | 0.30 | 45.76 | 54.00 | -8.24 | A |
| | 3218.17 | 66.93 | 30.69 | 3.03 | 47.27 | 0.30 | 53.67 | 74.00 | -20.33 | P |
| | 3218.17 | 64.79 | 30.69 | 3.03 | 47.27 | 0.30 | 51.53 | 54.00 | -2.47 | A |
| * | 4881.97 | 65.01 | 34.05 | 3.80 | 48.30 | 0.40 | 54.96 | 74.00 | -19.04 | P |
| * | 4881.97 | 61.56 | 34.05 | 3.80 | 48.30 | 0.40 | 51.51 | 54.00 | -2.49 | A |

**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH High TX / GFSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH High | | | | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1652.64 | 66.34 | 27.93 | 2.11 | 48.56 | 0.30 | 48.12 | 74.00 | -25.88 | P |
| | 1652.64 | 64.00 | 27.93 | 2.11 | 48.56 | 0.30 | 45.78 | 54.00 | -8.22 | A |
| | 3218.15 | 67.12 | 30.69 | 3.03 | 47.27 | 0.30 | 53.86 | 74.00 | -20.14 | P |
| | 3218.15 | 64.78 | 30.69 | 3.03 | 47.27 | 0.30 | 51.52 | 54.00 | -2.48 | A |
| * | 4959.94 | 57.81 | 34.28 | 3.83 | 48.30 | 0.40 | 48.02 | 74.00 | -25.98 | P |
| * | 4959.94 | 49.93 | 34.28 | 3.83 | 48.30 | 0.40 | 40.14 | 54.00 | -13.86 | A |

Vertical

| | TX mode / CH High | | | | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1652.71 | 70.56 | 27.93 | 2.11 | 48.56 | 0.30 | 52.34 | 74.00 | -21.66 | P |
| | 1652.71 | 68.94 | 27.93 | 2.11 | 48.56 | 0.30 | 50.72 | 54.00 | -3.28 | A |
| | 3218.12 | 66.75 | 30.69 | 3.03 | 47.27 | 0.30 | 53.49 | 74.00 | -20.51 | P |
| | 3218.12 | 64.72 | 30.69 | 3.03 | 47.27 | 0.30 | 51.46 | 54.00 | -2.54 | A |
| * | 4960.05 | 62.23 | 34.28 | 3.83 | 48.30 | 0.40 | 52.44 | 74.00 | -21.56 | P |
| * | 4960.05 | 57.34 | 34.28 | 3.83 | 48.30 | 0.40 | 47.55 | 54.00 | -6.45 | A |

**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH Low TX / 8-DPSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH Low | | | | Measurement Distance at 3m | | Horizontal polarity | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| * | 1600.74 | 63.47 | 27.55 | 2.07 | 48.63 | 0.30 | 44.76 | 74.00 | -29.24 | P |
| * | 1600.74 | 60.59 | 27.55 | 2.07 | 48.63 | 0.30 | 41.88 | 54.00 | -12.12 | A |
| | 3218.28 | 66.89 | 30.69 | 3.03 | 47.27 | 0.30 | 53.63 | 74.00 | -20.37 | P |
| | 3218.28 | 64.57 | 30.69 | 3.03 | 47.27 | 0.30 | 51.31 | 54.00 | -2.69 | A |
| * | 4804.06 | 59.45 | 33.81 | 3.77 | 48.29 | 0.40 | 49.14 | 74.00 | -24.86 | P |
| * | 4804.06 | 51.29 | 33.81 | 3.77 | 48.29 | 0.40 | 40.98 | 54.00 | -13.02 | A |

Vertical

| | TX mode / CH Low | | | | Measurement Distance at 3m | | Vertical polarity | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| * | 1600.57 | 65.72 | 27.54 | 2.07 | 48.63 | 0.30 | 47.01 | 74.00 | -26.99 | P |
| * | 1600.57 | 63.08 | 27.54 | 2.07 | 48.63 | 0.30 | 44.37 | 54.00 | -9.63 | A |
| | 3218.33 | 66.70 | 30.69 | 3.03 | 47.27 | 0.30 | 53.44 | 74.00 | -20.56 | P |
| | 3218.33 | 64.52 | 30.69 | 3.03 | 47.27 | 0.30 | 51.26 | 54.00 | -2.74 | A |
| * | 4803.99 | 64.28 | 33.81 | 3.77 | 48.29 | 0.40 | 53.97 | 74.00 | -20.03 | P |
| * | 4803.99 | 57.21 | 33.81 | 3.77 | 48.29 | 0.40 | 46.90 | 54.00 | -7.10 | A |

**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH Mid TX / 8-DPSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH Mid | | | | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1626.64 | 67.13 | 27.74 | 2.09 | 48.60 | 0.30 | 48.66 | 74.00 | -25.34 | P |
| | 1626.64 | 64.50 | 27.74 | 2.09 | 48.60 | 0.30 | 46.03 | 54.00 | -7.97 | A |
| | 3218.27 | 67.18 | 30.69 | 3.03 | 47.27 | 0.30 | 53.92 | 74.00 | -20.08 | P |
| | 3218.27 | 64.86 | 30.69 | 3.03 | 47.27 | 0.30 | 51.60 | 54.00 | -2.40 | A |
| * | 4881.97 | 57.89 | 34.05 | 3.80 | 48.30 | 0.40 | 47.84 | 74.00 | -26.16 | P |
| * | 4881.97 | 48.04 | 34.05 | 3.80 | 48.30 | 0.40 | 37.99 | 54.00 | -16.01 | A |

Vertical

| | TX mode / CH Mid | | | | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1626.69 | 66.87 | 27.74 | 2.09 | 48.60 | 0.30 | 48.40 | 74.00 | -25.60 | P |
| | 1626.69 | 64.29 | 27.74 | 2.09 | 48.60 | 0.30 | 45.82 | 54.00 | -8.18 | A |
| | 3218.29 | 67.06 | 30.69 | 3.03 | 47.27 | 0.30 | 53.80 | 74.00 | -20.20 | P |
| | 3218.29 | 64.67 | 30.69 | 3.03 | 47.27 | 0.30 | 51.41 | 54.00 | -2.59 | A |
| * | 4881.95 | 61.28 | 34.05 | 3.80 | 48.30 | 0.40 | 51.23 | 74.00 | -22.77 | P |
| * | 4881.95 | 53.39 | 34.05 | 3.80 | 48.30 | 0.40 | 43.34 | 54.00 | -10.66 | A |

**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/07/21 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Ted Huang |
| Test Mode | CH High TX / 8-DPSK | Temp & Humidity | 26.5°C, 54% |

Horizontal

| | TX mode / CH High | | | | Measurement Distance at 3m Horizontal polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1652.65 | 65.66 | 27.93 | 2.11 | 48.56 | 0.30 | 47.44 | 74.00 | -26.56 | P |
| | 1652.65 | 63.10 | 27.93 | 2.11 | 48.56 | 0.30 | 44.88 | 54.00 | -9.12 | A |
| | 3218.22 | 67.06 | 30.69 | 3.03 | 47.27 | 0.30 | 53.80 | 74.00 | -20.20 | P |
| | 3218.22 | 65.01 | 30.69 | 3.03 | 47.27 | 0.30 | 51.75 | 54.00 | -2.25 | A |
| * | 4959.79 | 58.06 | 34.28 | 3.83 | 48.30 | 0.40 | 48.27 | 74.00 | -25.73 | P |
| * | 4959.79 | 46.41 | 34.28 | 3.83 | 48.30 | 0.40 | 36.62 | 54.00 | -17.38 | A |

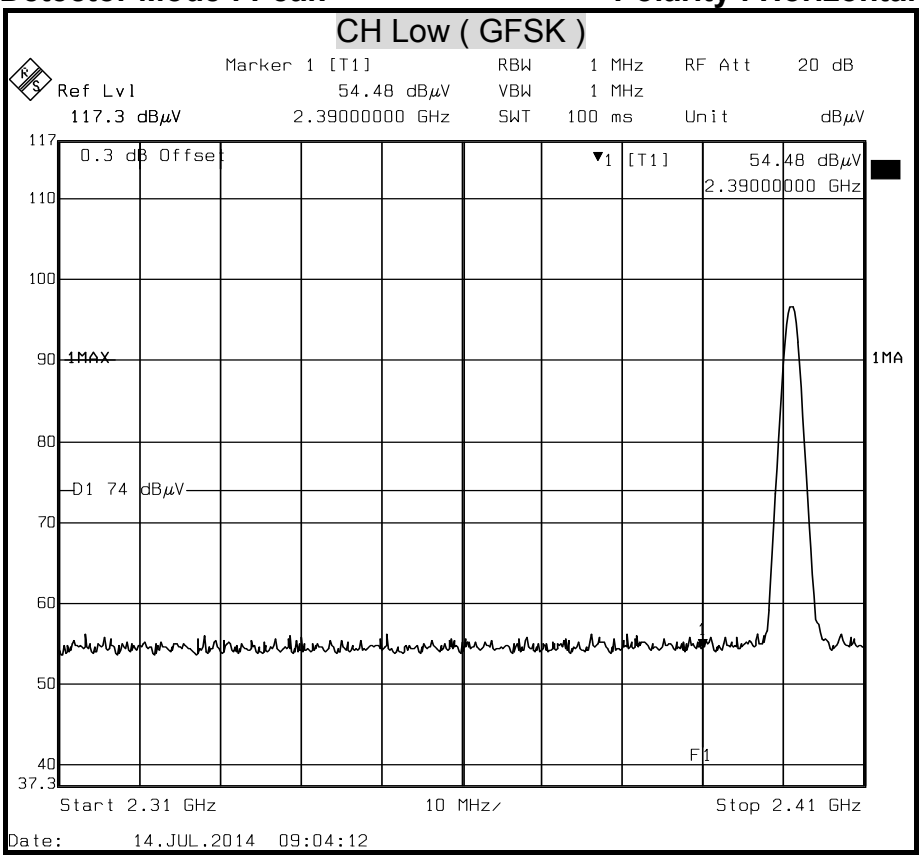
Vertical

| | TX mode / CH High | | | | Measurement Distance at 3m Vertical polarity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | Reading | AF | Cable Loss | Pre-amp | Filter | Level | Limit | Margin | Mark |
| | (MHz) | (dBμV) | (dB/m) | (dB) | (dB) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | (P/Q/A) |
| | 1652.71 | 65.93 | 27.93 | 2.11 | 48.56 | 0.30 | 47.71 | 74.00 | -26.29 | P |
| | 1652.71 | 62.85 | 27.93 | 2.11 | 48.56 | 0.30 | 44.63 | 54.00 | -9.37 | A |
| | 3218.22 | 66.70 | 30.69 | 3.03 | 47.27 | 0.30 | 53.44 | 74.00 | -20.56 | P |
| | 3218.22 | 64.57 | 30.69 | 3.03 | 47.27 | 0.30 | 51.31 | 54.00 | -2.69 | A |
| * | 4959.80 | 58.90 | 34.28 | 3.83 | 48.30 | 0.40 | 49.11 | 74.00 | -24.89 | P |
| * | 4959.80 | 48.93 | 34.28 | 3.83 | 48.30 | 0.40 | 39.14 | 54.00 | -14.86 | A |

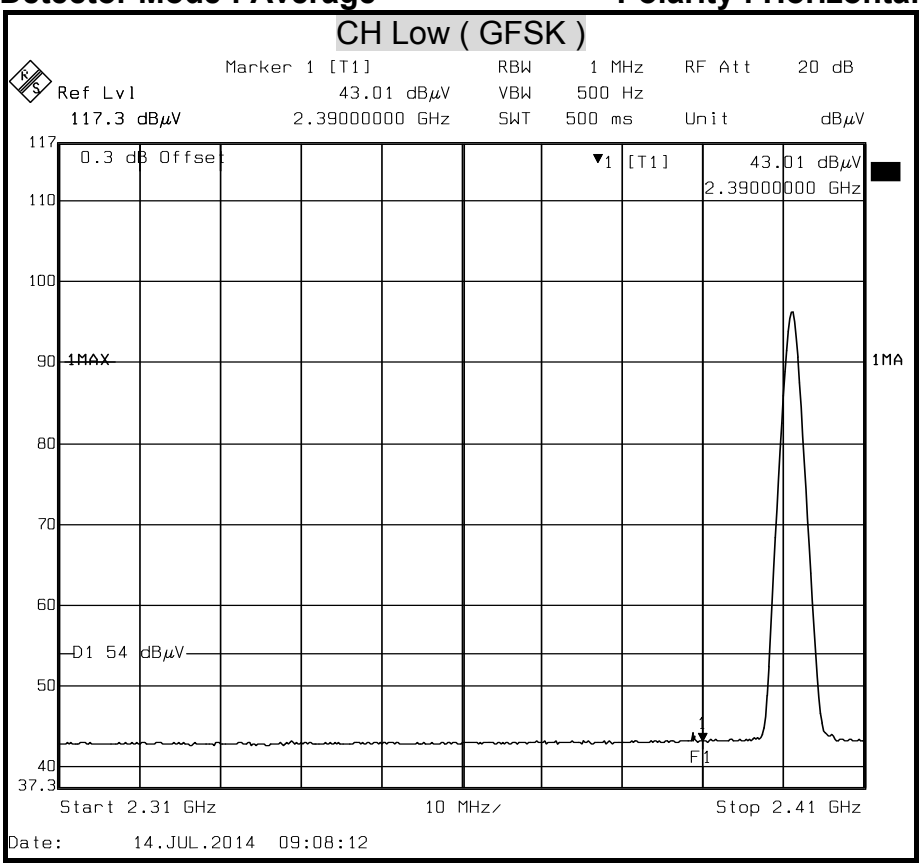
**Remark:**
1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
   Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 20dB below the limit
5. The test limit distance is 3M limit.

## 7.7.4 RESTRICTED BAND EDGES

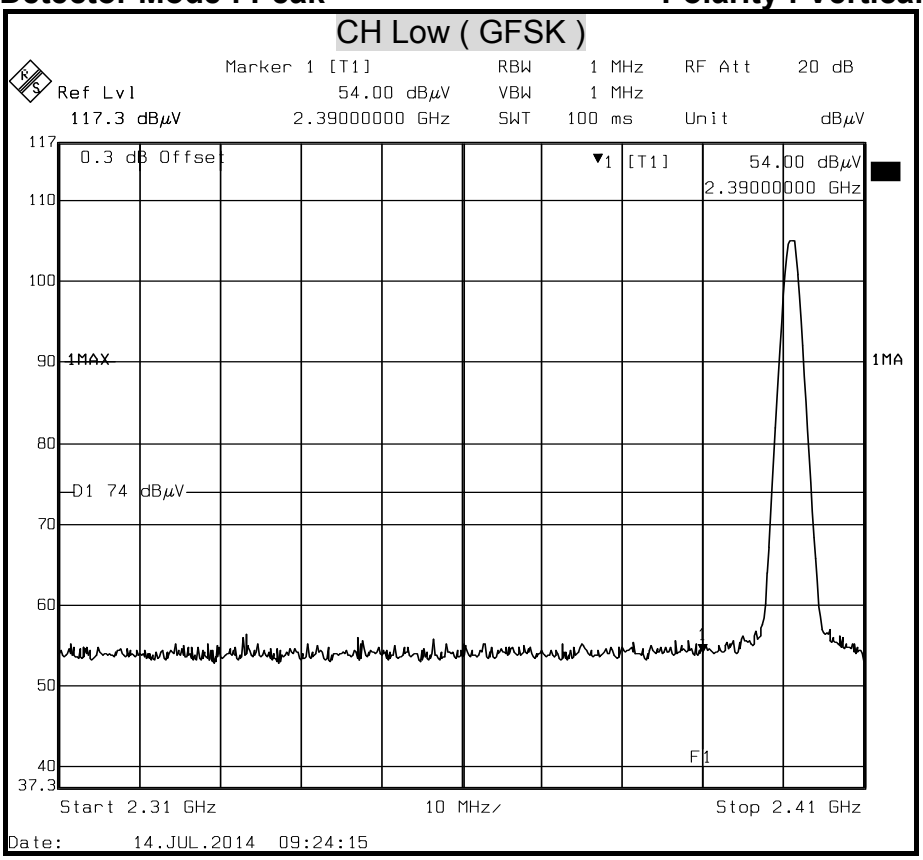
**Detector Mode : Peak** **Polarity : Horizontal**



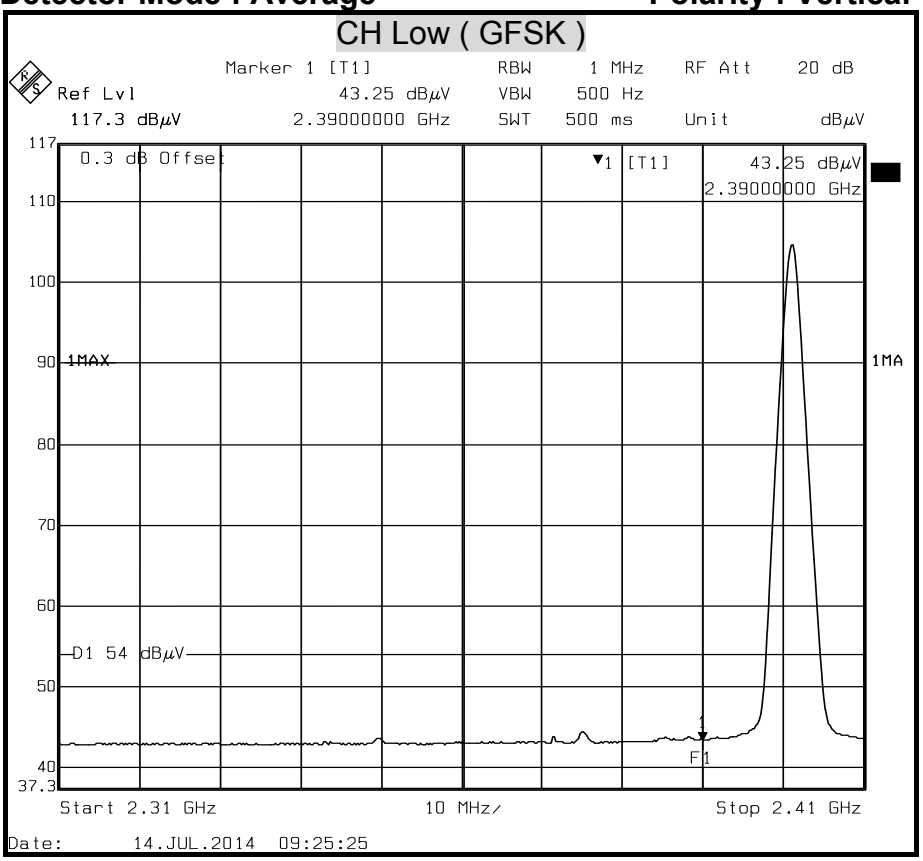

**Detector Mode : Average** **Polarity : Horizontal**



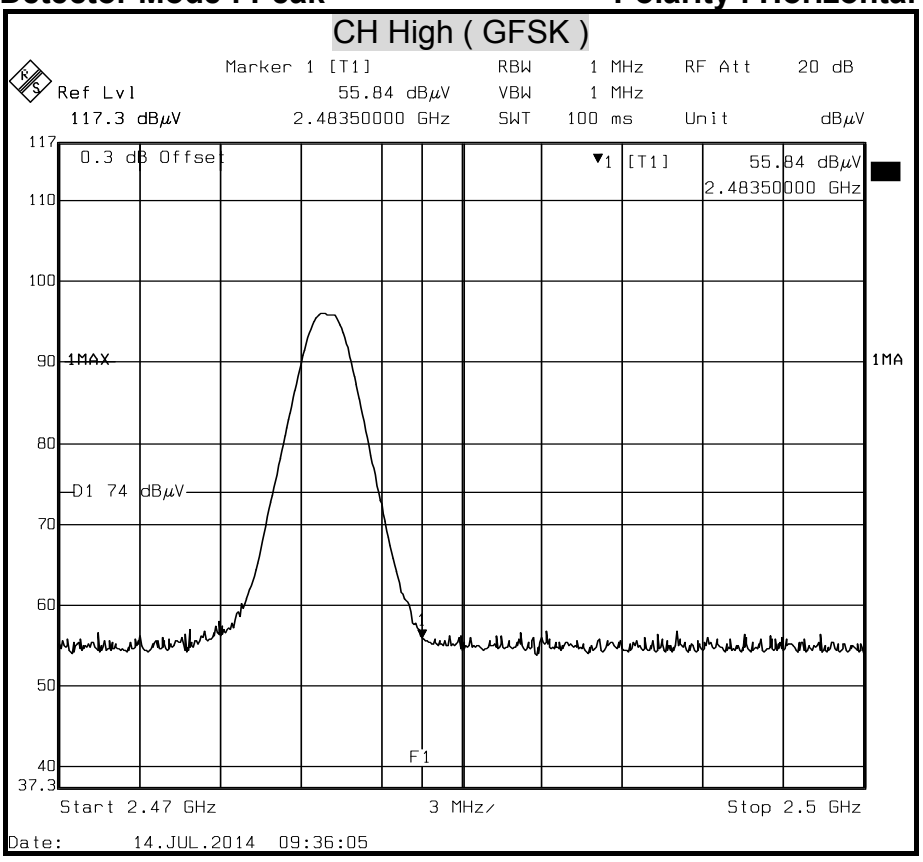
**Detector Mode : Peak** **Polarity : Vertical**



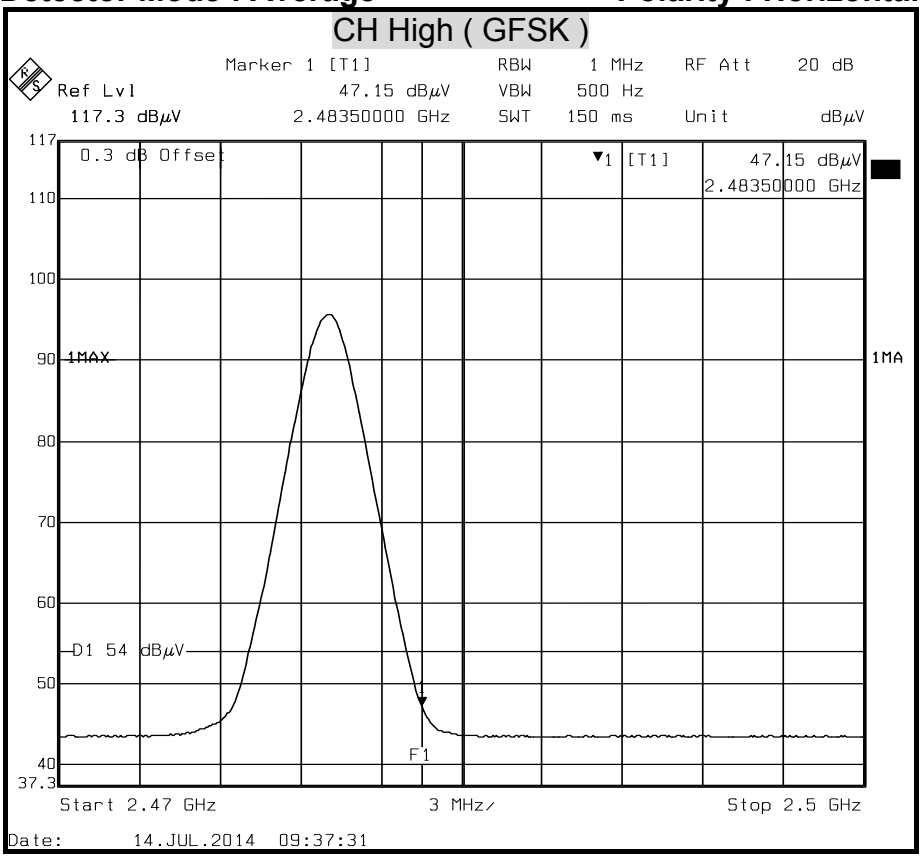

**Detector Mode : Average** **Polarity : Vertical**



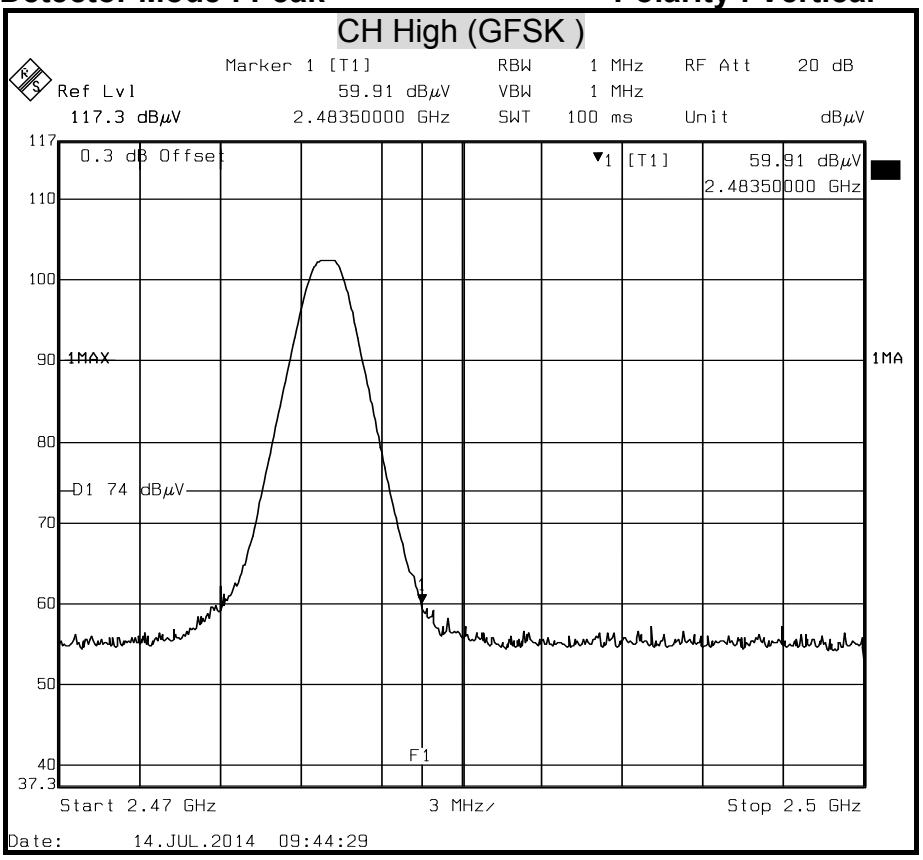
**Detector Mode : Peak** **Polarity : Horizontal**



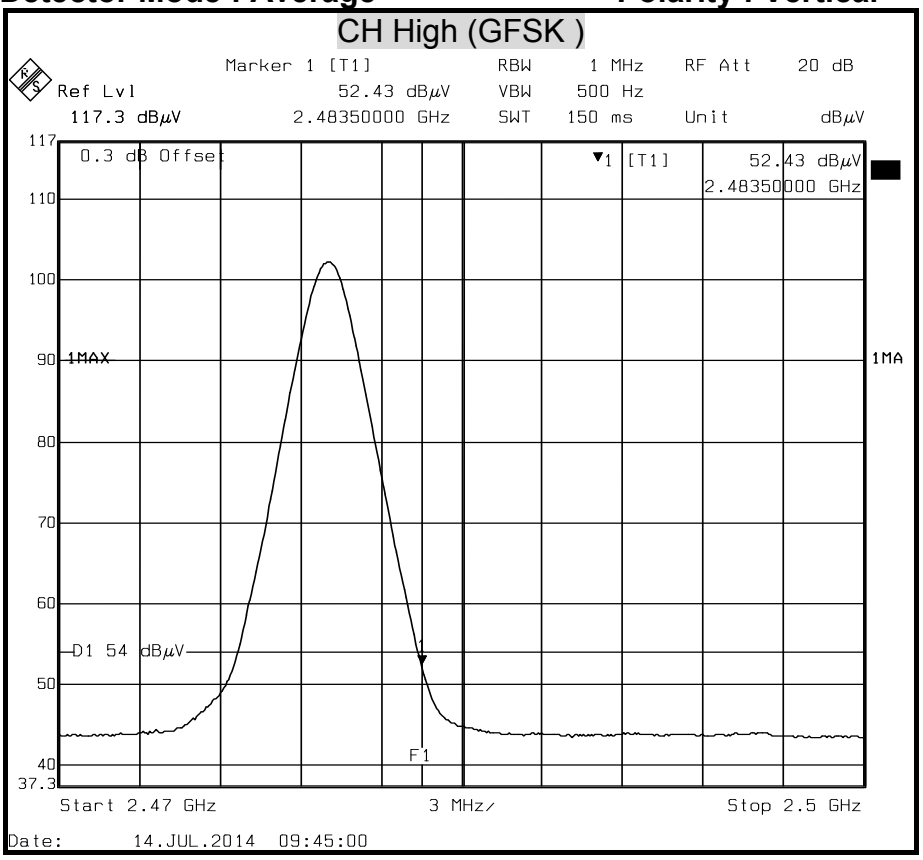

**Detector Mode : Average** **Polarity : Horizontal**



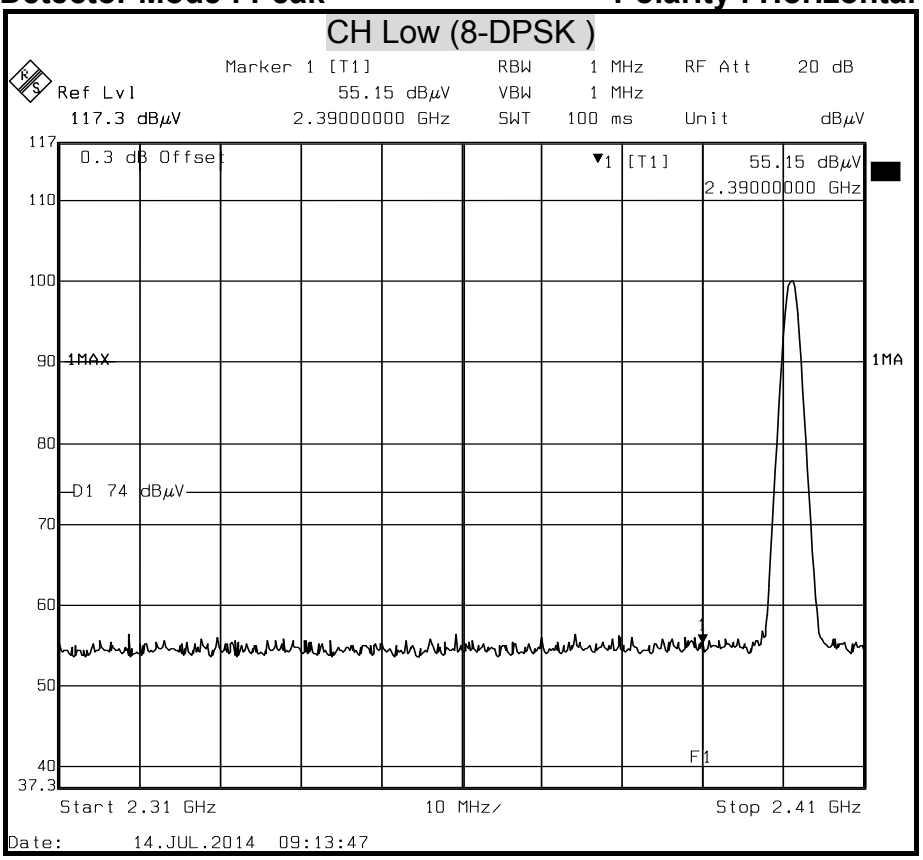
**Detector Mode : Peak** **Polarity : Vertical**



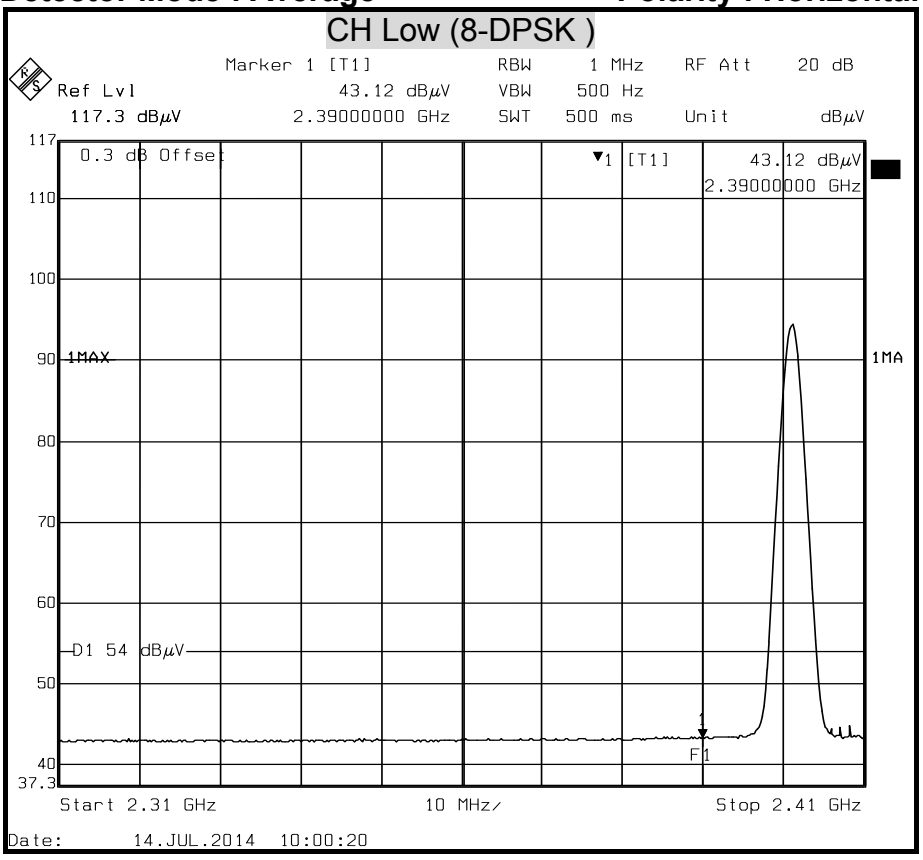

**Detector Mode : Average** **Polarity : Vertical**



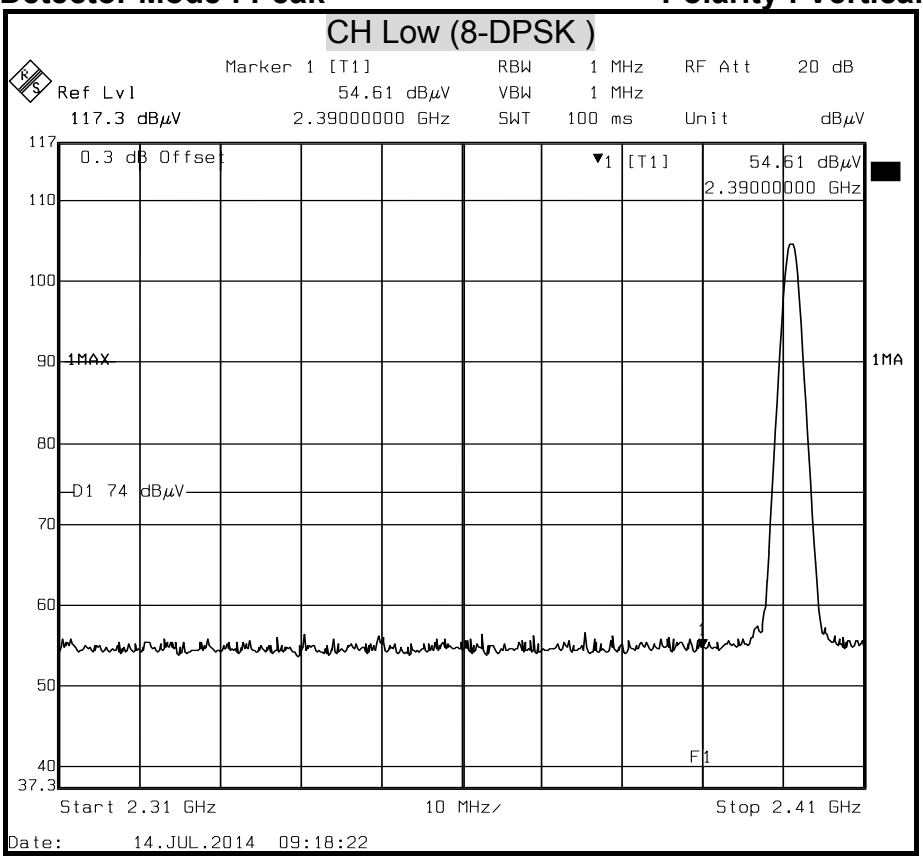
**Detector Mode : Peak** **Polarity : Horizontal**



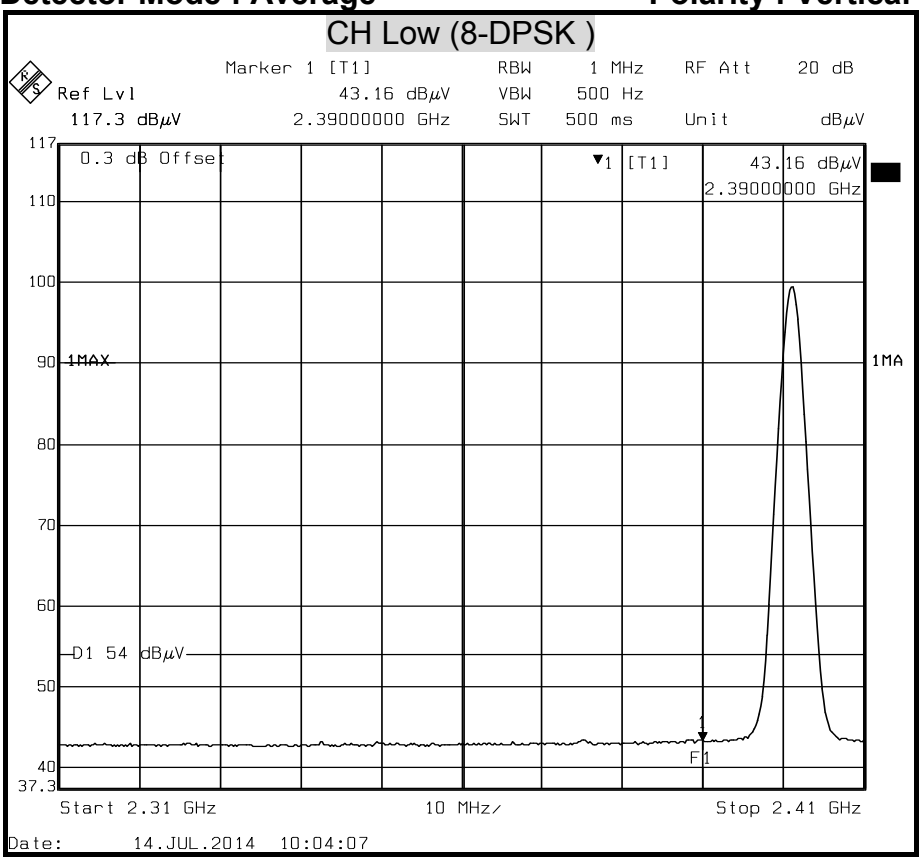

**Detector Mode : Average** **Polarity : Horizontal**



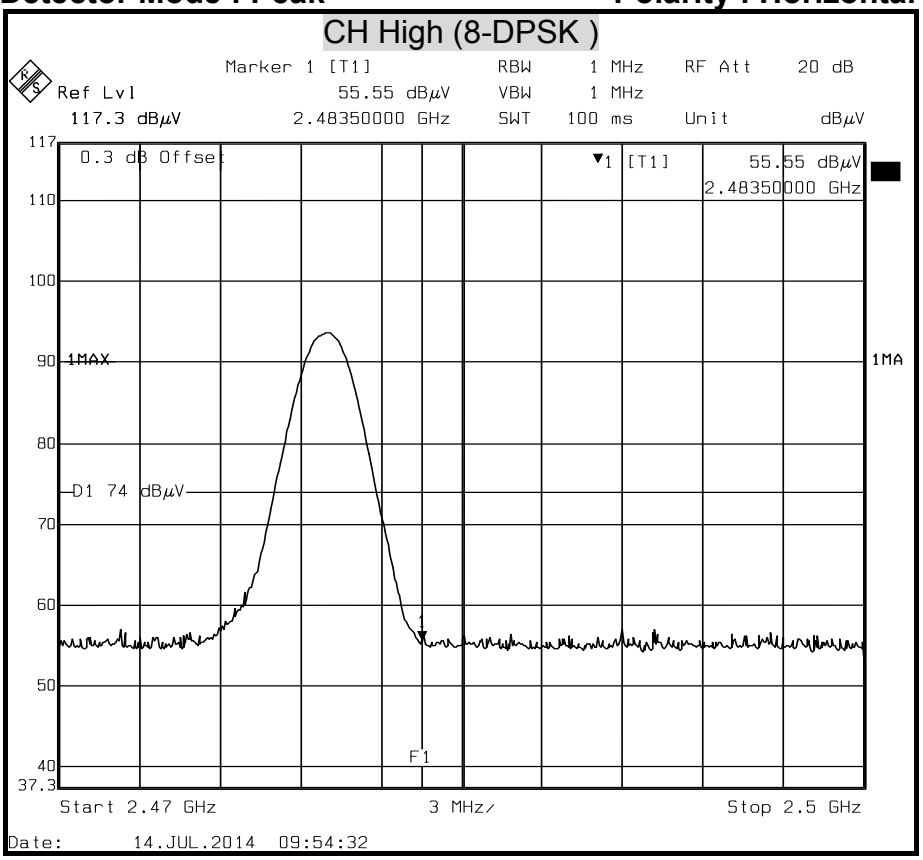
**Detector Mode : Peak** **Polarity : Vertical**



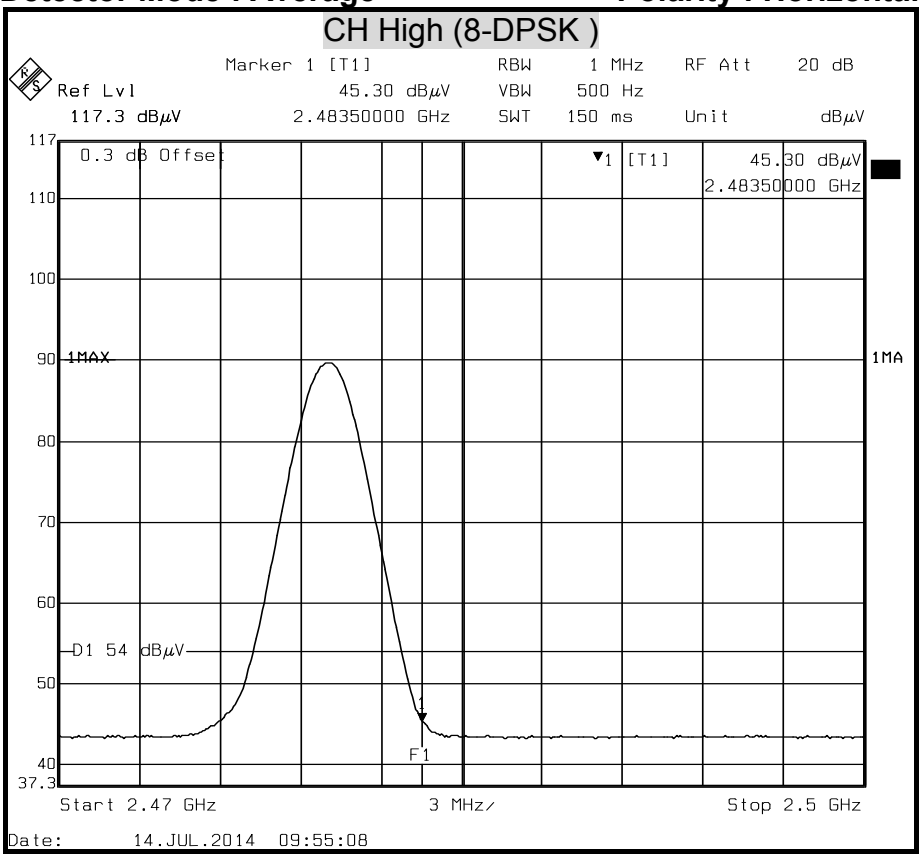

**Detector Mode : Average** **Polarity : Vertical**



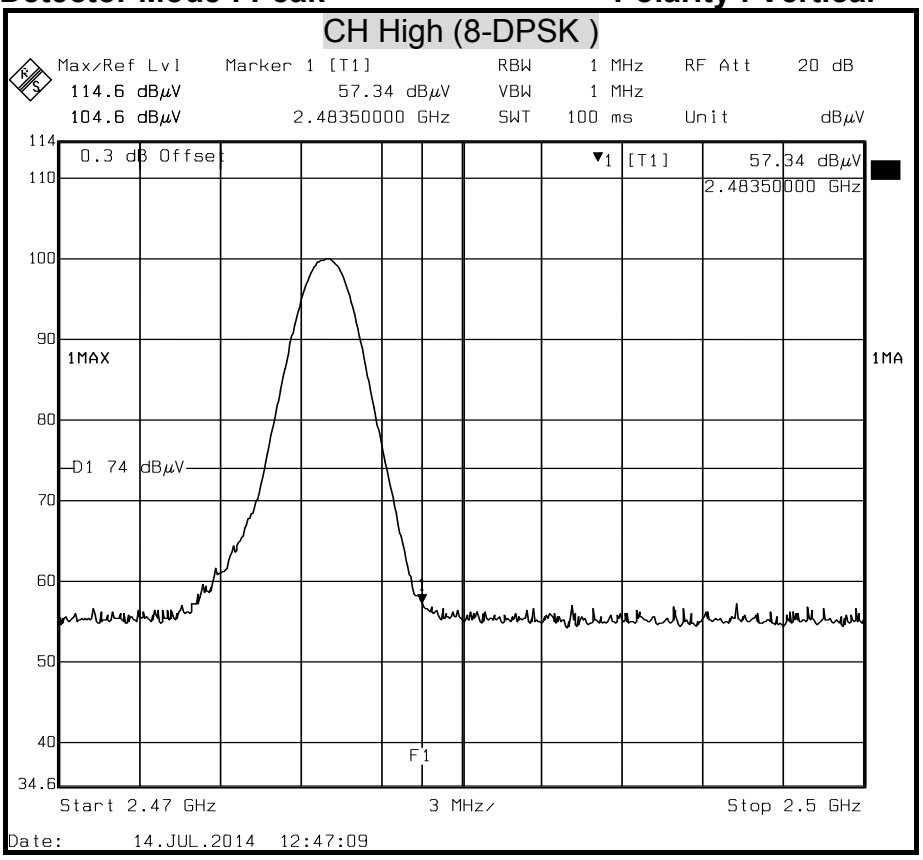
**Detector Mode : Peak** **Polarity : Horizontal**



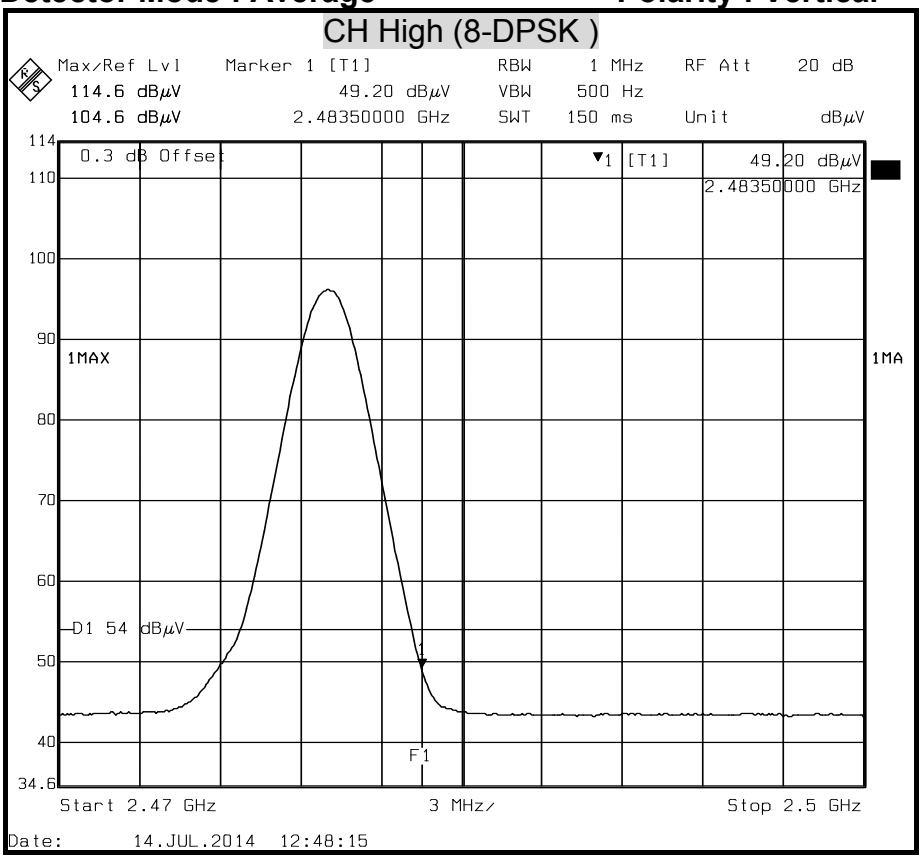

**Detector Mode : Average** **Polarity : Horizontal**



**Detector Mode : Peak** **Polarity : Vertical**




**Detector Mode : Average** **Polarity : Vertical**



## 7.8 POWERLINE CONDUCTED EMISSIONS

**LIMITS**

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (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 the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

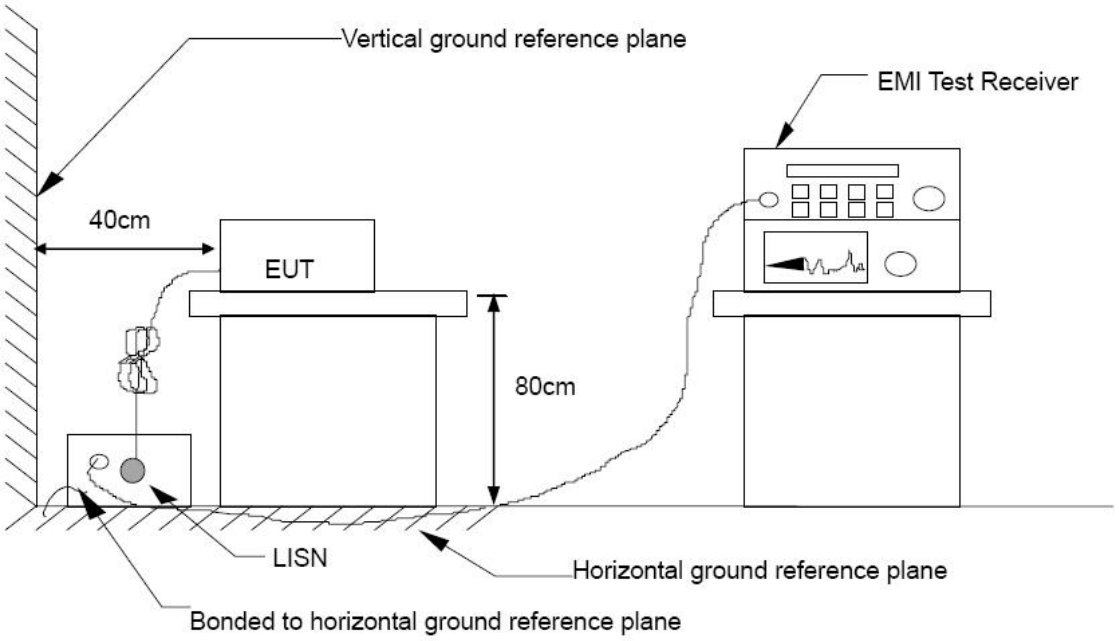
| Frequency of Emission (MHz) | Conducted limit (dBμv) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 to 56 | 56 to 46 |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

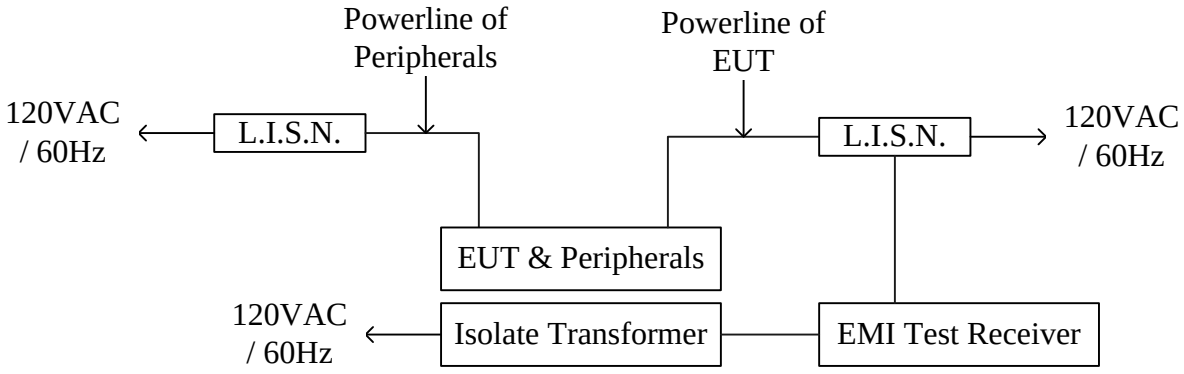
**TEST EQUIPMENT**

| Conducted Emission room #1 | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| L.I.S.N. | SCHWARZBECK | NNLK 8130 | 8130124 | AUG. 12, 2015 |
| | Rohde & Schwarz | ESH 3-Z5 | 840062/021 | SEP. 09, 2015 |
| | Rohde & Schwarz | ESH 3-Z5 | 893540/015 | APR. 13, 2015 |
| TEST RECEIVER | Rohde & Schwarz | ESCS 30 | 100348 | AUG. 09, 2015 |
| BNC COAXIAL CABLE | CCS | BNC50 | 11 | NOV. 19, 2014 |
| Test S/W | e-3 (5.04211c)<br>R&S (2.27) | | | |

**Remark:** Each piece of equipment is scheduled for calibration once a year.

## TEST SETUP




## TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4 : 2003.

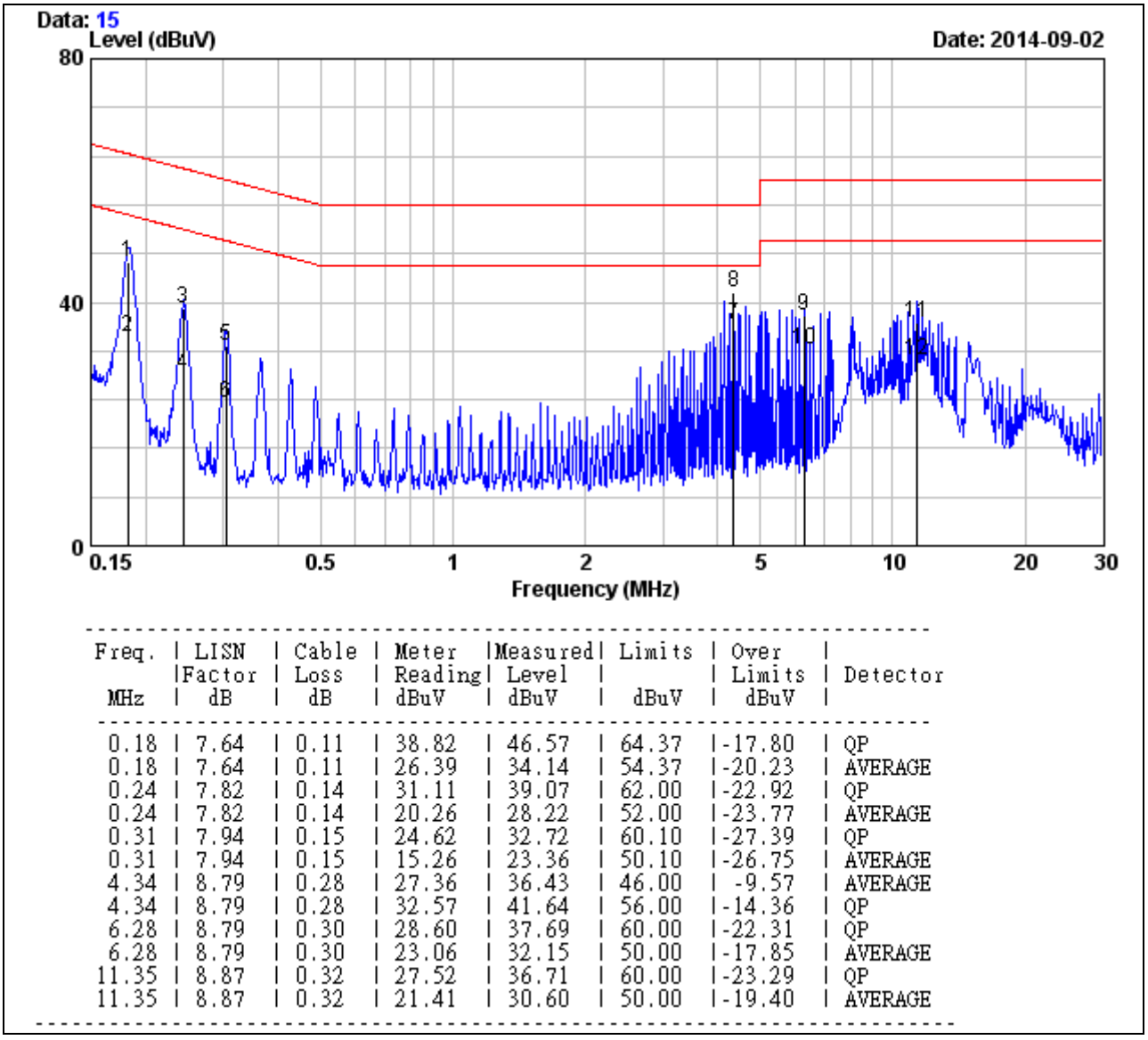
The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.

## TEST RESULTS

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/09/02 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Vis Liang |
| Test Mode | CD mode | Temp & Humidity | 24.5°C, 55% |

LINE




| Freq. MHz | LISN Factor dB | Cable Loss dB | Meter Reading dBuV | Measured Level dBuV | Limits dBuV | Over Limits dBuV | Detector |
|---|---|---|---|---|---|---|---|
| 0.18 | 7.64 | 0.11 | 38.82 | 46.57 | 64.37 | -17.80 | QP |
| 0.18 | 7.64 | 0.11 | 26.39 | 34.14 | 54.37 | -20.23 | AVERAGE |
| 0.24 | 7.82 | 0.14 | 31.11 | 39.07 | 62.00 | -22.92 | QP |
| 0.24 | 7.82 | 0.14 | 20.26 | 28.22 | 52.00 | -23.77 | AVERAGE |
| 0.31 | 7.94 | 0.15 | 24.62 | 32.72 | 60.10 | -27.39 | QP |
| 0.31 | 7.94 | 0.15 | 15.26 | 23.36 | 50.10 | -26.75 | AVERAGE |
| 4.34 | 8.79 | 0.28 | 27.36 | 36.43 | 46.00 | -9.57 | AVERAGE |
| 4.34 | 8.79 | 0.28 | 32.57 | 41.64 | 56.00 | -14.36 | QP |
| 6.28 | 8.79 | 0.30 | 28.60 | 37.69 | 60.00 | -22.31 | QP |
| 6.28 | 8.79 | 0.30 | 23.06 | 32.15 | 50.00 | -17.85 | AVERAGE |
| 11.35 | 8.87 | 0.32 | 27.52 | 36.71 | 60.00 | -23.29 | QP |
| 11.35 | 8.87 | 0.32 | 21.41 | 30.60 | 50.00 | -19.40 | AVERAGE |

***Remark:***

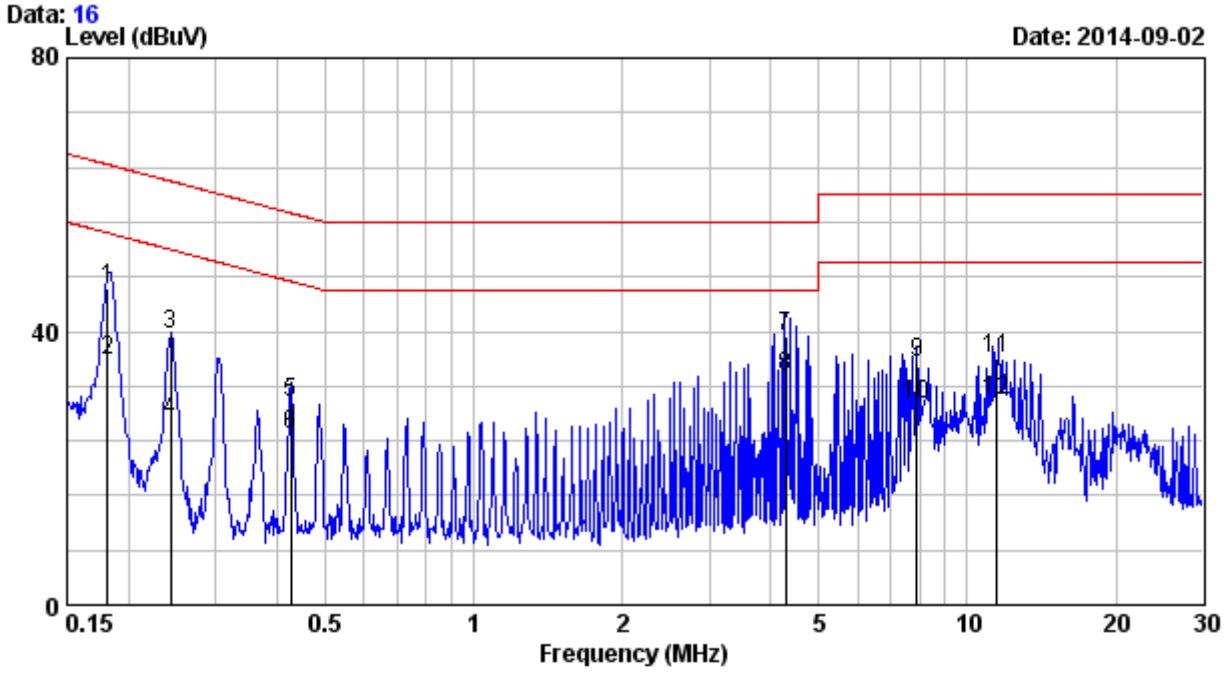
*1. Correction Factor = Insertion loss + Cable loss*

*2. Emission level = Reading Value + Correction factor*

*3. Margin value = Emission level – Limit value*

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/09/02 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Vis Liang |
| Test Mode | CD mode | Temp & Humidity | 24.5°C, 55% |

NEUTRAL




| Freq. MHz | LISN Factor dB | Cable Loss dB | Meter Reading dBuV | Measured Level dBuV | Limits dBuV | Over Limits dBuV | Detector |
|---|---|---|---|---|---|---|---|
| 0.18 | 7.67 | 0.11 | 38.61 | 46.39 | 64.42 | -18.02 | QP |
| 0.18 | 7.67 | 0.11 | 27.83 | 35.61 | 54.42 | -18.80 | AVERAGE |
| 0.24 | 7.86 | 0.14 | 31.51 | 39.51 | 62.00 | -22.48 | QP |
| 0.24 | 7.86 | 0.14 | 19.02 | 27.02 | 52.00 | -24.97 | AVERAGE |
| 0.43 | 8.12 | 0.22 | 21.38 | 29.72 | 57.33 | -27.62 | QP |
| 0.43 | 8.12 | 0.22 | 16.67 | 25.01 | 47.33 | -22.33 | AVERAGE |
| 4.29 | 8.83 | 0.28 | 30.07 | 39.18 | 56.00 | -16.82 | QP |
| 4.29 | 8.83 | 0.28 | 24.30 | 33.41 | 46.00 | -12.59 | AVERAGE |
| 7.91 | 8.84 | 0.30 | 26.41 | 35.55 | 60.00 | -24.45 | QP |
| 7.91 | 8.84 | 0.30 | 20.12 | 29.26 | 50.00 | -20.74 | AVERAGE |
| 11.47 | 8.91 | 0.32 | 26.85 | 36.09 | 60.00 | -23.91 | QP |
| 11.47 | 8.91 | 0.32 | 20.71 | 29.95 | 50.00 | -20.05 | AVERAGE |

***Remark:***

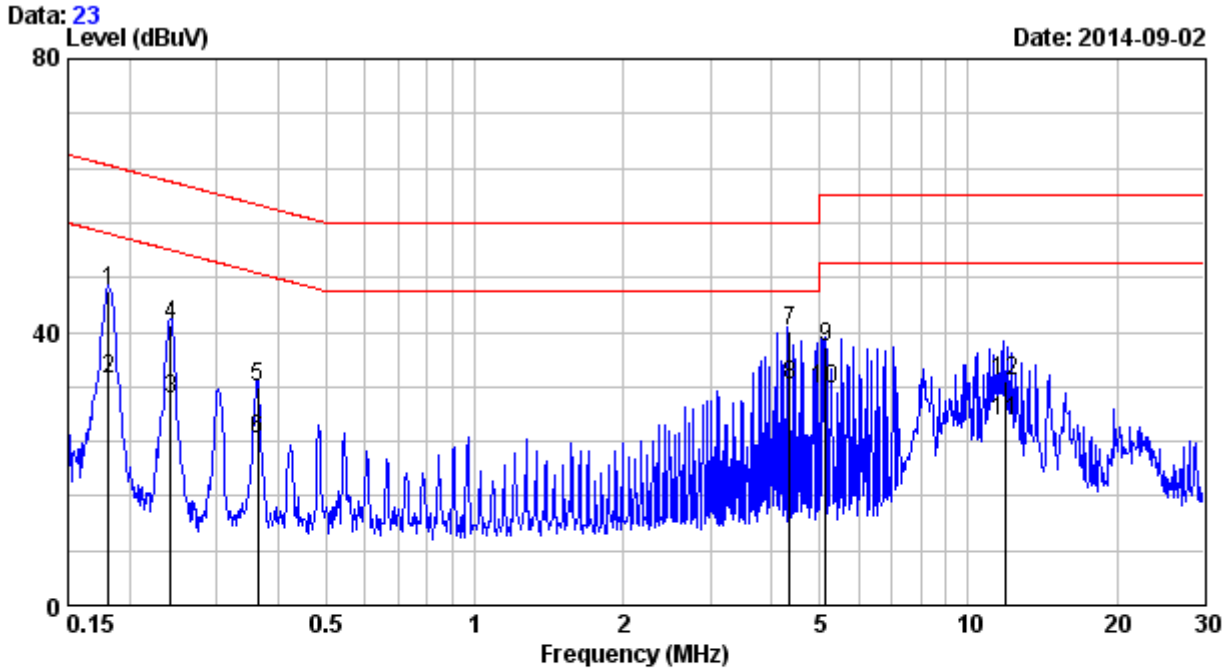
*1. Correction Factor = Insertion loss + Cable loss*

*2. Emission level = Reading Value + Correction factor*

*3. Margin value = Emission level – Limit value*

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/09/02 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Vis Liang |
| Test Mode | Bluetooth mode | Temp & Humidity | 24.5°C, 55% |

LINE




| Freq. MHz | LISN Factor dB | Cable Loss dB | Meter Reading dBuV | Measured Level dBuV | Limits dBuV | Over Limits dBuV | Detector |
|---|---|---|---|---|---|---|---|
| 0.18 | 7.63 | 0.11 | 38.22 | 45.96 | 64.42 | -18.45 | QP |
| 0.18 | 7.63 | 0.11 | 25.44 | 33.18 | 54.42 | -21.23 | AVERAGE |
| 0.24 | 7.82 | 0.14 | 22.32 | 30.28 | 52.04 | -21.76 | AVERAGE |
| 0.24 | 7.82 | 0.14 | 33.10 | 41.06 | 62.04 | -20.98 | QP |
| 0.36 | 8.04 | 0.20 | 23.79 | 32.03 | 58.65 | -26.63 | QP |
| 0.36 | 8.04 | 0.20 | 15.95 | 24.19 | 48.65 | -24.47 | AVERAGE |
| 4.35 | 8.79 | 0.28 | 31.00 | 40.07 | 56.00 | -15.93 | QP |
| 4.35 | 8.79 | 0.28 | 23.11 | 32.18 | 46.00 | -13.82 | AVERAGE |
| 5.13 | 8.79 | 0.29 | 28.61 | 37.69 | 60.00 | -22.31 | QP |
| 5.13 | 8.79 | 0.29 | 22.49 | 31.57 | 50.00 | -18.43 | AVERAGE |
| 11.89 | 8.89 | 0.32 | 17.63 | 26.85 | 50.00 | -23.15 | AVERAGE |
| 11.89 | 8.89 | 0.32 | 23.63 | 32.85 | 60.00 | -27.15 | QP |

***Remark:***

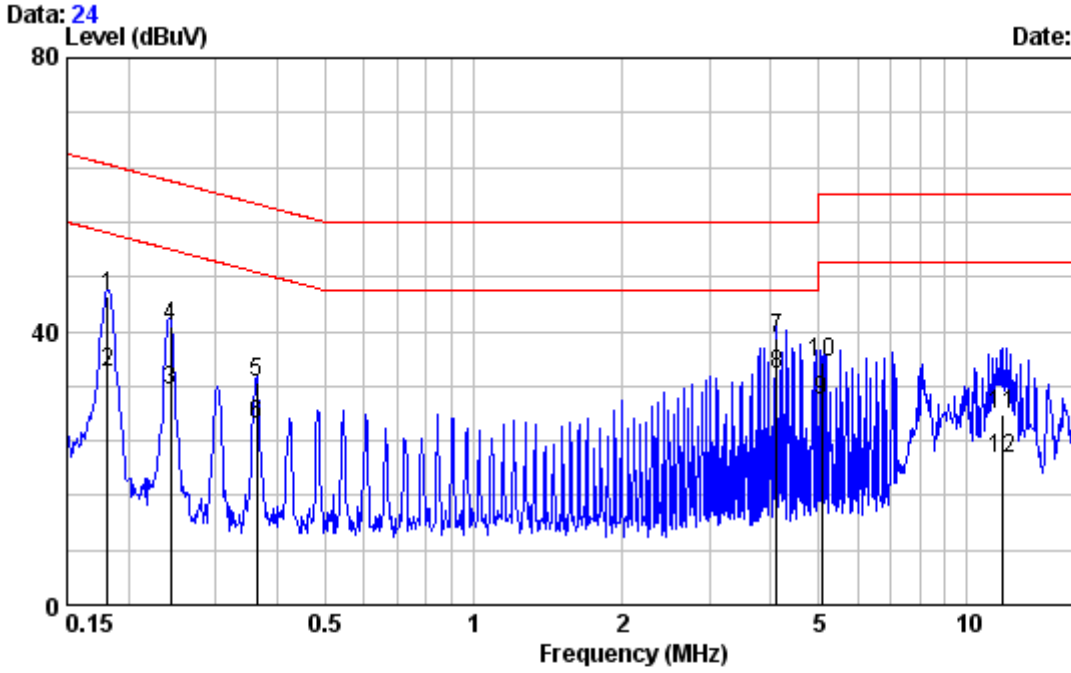
*1. Correction Factor = Insertion loss + Cable loss*

*2. Emission level = Reading Value + Correction factor*

*3. Margin value = Emission level – Limit value*

| Product Name | MEDIA PLAYER WITH BLUETOOTH & TUNER | Test Date | 2014/09/02 |
|---|---|---|---|
| Model Name | DN-300Z | Test By | Vis Liang |
| Test Mode | Bluetooth mode | Temp & Humidity | 24.5°C, 55% |

NEUTRAL




| Freq. MHz | LISN Factor dB | Cable Loss dB | Meter Reading dBuV | Measured Level dBuV | Limits dBuV | Over Limits dBuV | Detector |
|---|---|---|---|---|---|---|---|
| 0.18 | 7.67 | 0.11 | 37.22 | 45.00 | 64.42 | -19.41 | QP |
| 0.18 | 7.67 | 0.11 | 26.18 | 33.96 | 54.42 | -20.45 | AVERAGE |
| 0.24 | 7.86 | 0.14 | 23.22 | 31.22 | 52.00 | -20.77 | AVERAGE |
| 0.24 | 7.86 | 0.14 | 32.67 | 40.67 | 62.00 | -21.32 | QP |
| 0.36 | 8.08 | 0.20 | 24.26 | 32.54 | 58.65 | -26.12 | QP |
| 0.36 | 8.08 | 0.20 | 18.01 | 26.29 | 48.65 | -22.37 | AVERAGE |
| 4.11 | 8.83 | 0.28 | 29.81 | 38.92 | 56.00 | -17.08 | QP |
| 4.11 | 8.83 | 0.28 | 24.61 | 33.72 | 46.00 | -12.28 | AVERAGE |
| 5.07 | 8.84 | 0.29 | 20.90 | 30.03 | 50.00 | -19.97 | AVERAGE |
| 5.07 | 8.84 | 0.29 | 26.23 | 35.36 | 60.00 | -24.64 | QP |
| 11.81 | 8.93 | 0.32 | 18.64 | 27.89 | 60.00 | -32.11 | QP |
| 11.81 | 8.93 | 0.32 | 12.20 | 21.45 | 50.00 | -28.55 | AVERAGE |

***Remark:***

*1. Correction Factor = Insertion loss + Cable loss*

*2. Emission level = Reading Value + Correction factor*

*3. Margin value = Emission level – Limit value*