

# **Bluetooth 4.0 Daughter Board Conducted Measurements Test Report**

**FCC ID: 2AA9WV360**

**IC: 11665A-V360**

**FCC Rule Part: FCC Part 15 Subpart C**

**Manufacturer: VSN Technologies Inc.**

**Model: V360**

**Test Facility: 12 Ang Mo Kio St 64 #03-01  
UE BizHub Central (Blk A), 569088 Singapore.**

**Test Begin Date: Oct 1, 2014**

**Test End Date: Oct 31, 2014**

**Report Issue Date: Nov 3, 2014**

**Test By:**

**Name: Christy Lim**

**Signature: *Christy***

**Reviewed By:**

**Name: Yu Xue Dong**

**Signature: *Xue Dong***

# 1 List of Test Equipment

Manufacturer	Model	Equipment Type	Serial No.	Last Calibration Date	Calibration Due Date
Agilent	E4404B	Spectrum Analyzer	MY44220422	06 Jan 14	06 Jan 16
Advantest	R3273	Spectrum Analyzer	95090358	06 Oct 14	06 Oct 15
Agilent	N1911A	Power Meter	MY50150005	24 Apr 13	24 Apr 15
Agilent	N1921A	Power Sensor	MY50150006	16 Jun 13	16 Jun 15

# 2 Applicable Standard References

The following standards were used:

FCC Rules	Description of Test	Result
§ 15.247 (a) (2)	6dB Bandwidth	Pass
§ 15.247 (b) (3)	Peak Output Power	Pass
§ 15.247 (d)	100kHz Bandwidth of Frequency Band Edges	Pass
§ 15.247 (e)	Power Spectral Density	Pass
§ 15.209	Spurious Emission	Pass

# 3 Summary of Tests

## 3.1 6 dB Bandwidth – FCC Section 15.247 (a) (2)

### 3.1.1 Measurement Procedure

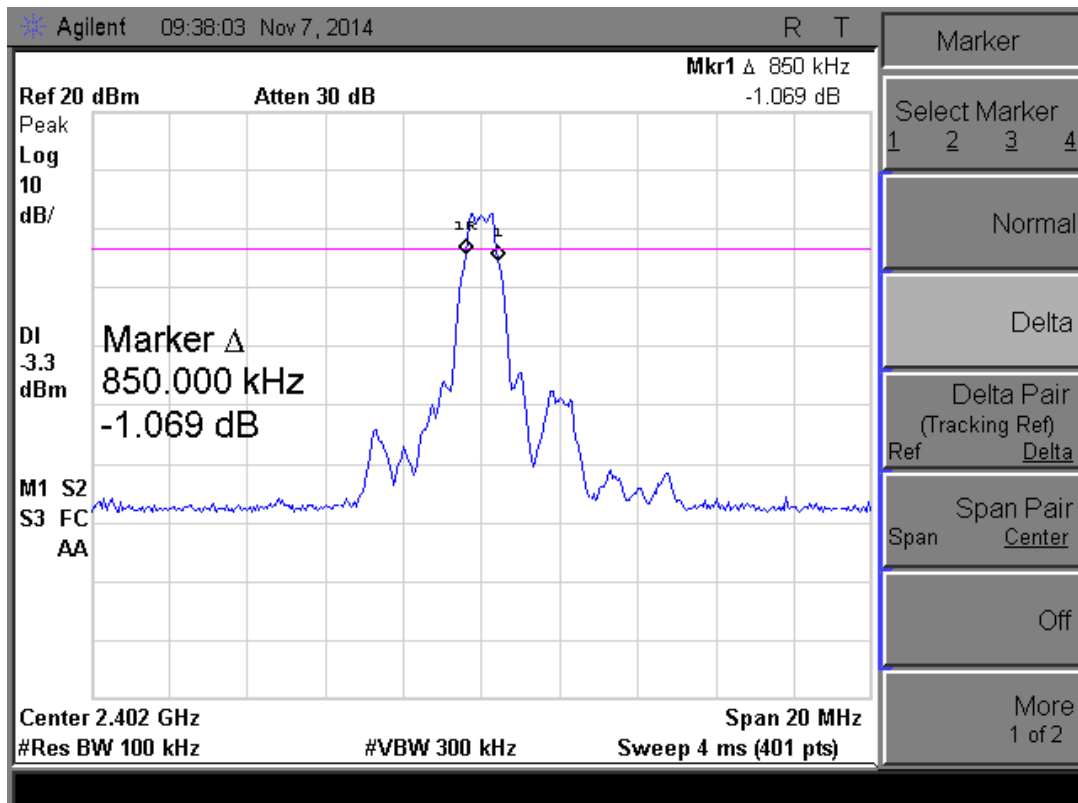
The 6dB bandwidth was measured in accordance with the FCC KDB Publication No.558074 v03r02“Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)” DTS 6-dB Signal Bandwidth Option 1. The RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. Span was set large enough to capture the entire emissions and >> RBW.

The 99% occupied bandwidth was measured using the spectrum analyzer span set to fully display the emission, including the emissions skirts. The RBW was set to 1% to 3% of the 99% bandwidth. The VBW was set to 3 times the RBW. The spectrum analyzer internal 99% bandwidth function is utilized.

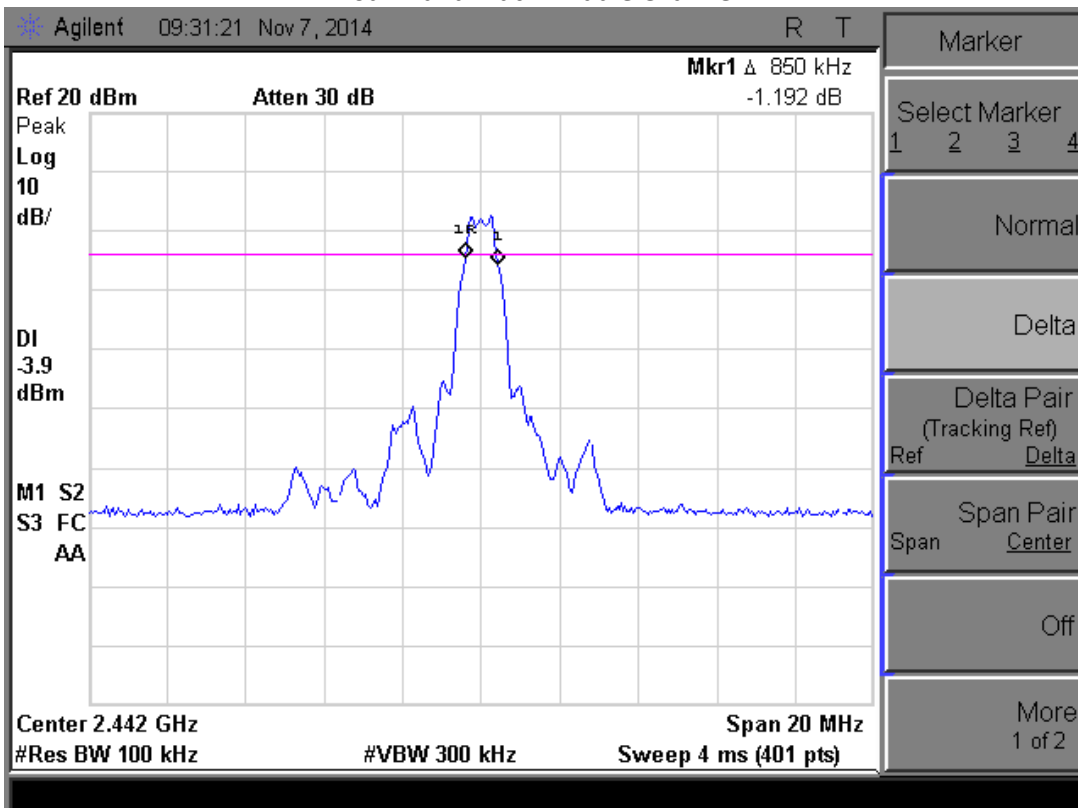
### 3.1.2 Measurement Result

Frequency (MHz)	6dB Bandwidth (kHz)	99% Bandwidth (MHz)
2402	850	1.0689
2442	850	1.0630
2480	850	1.0556

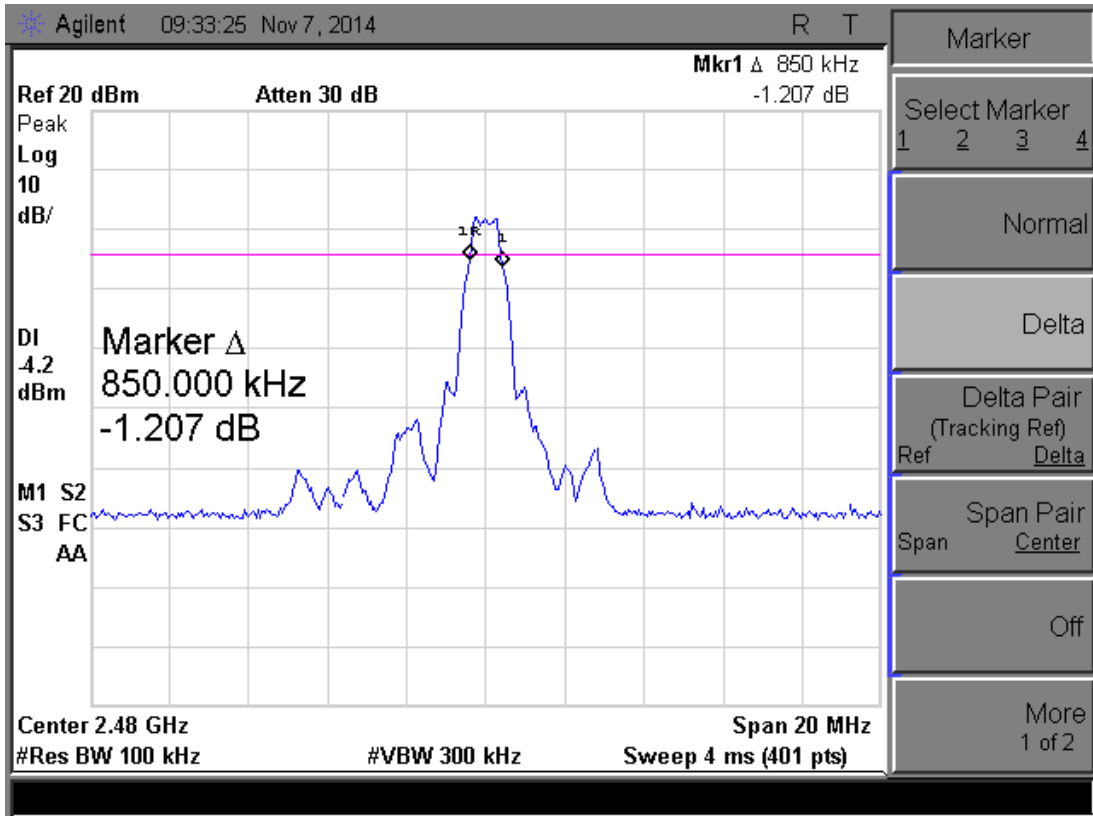
6dB Bandwidth-Low Channel



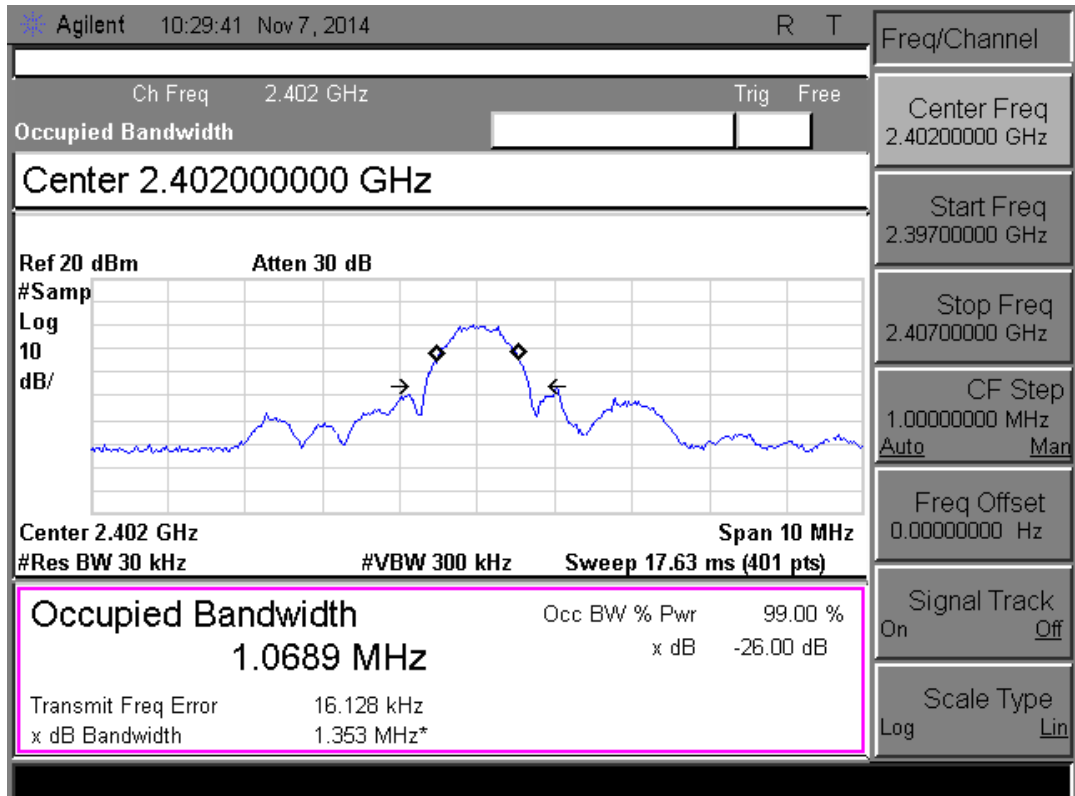
### 6dB Bandwidth-Middle Channel



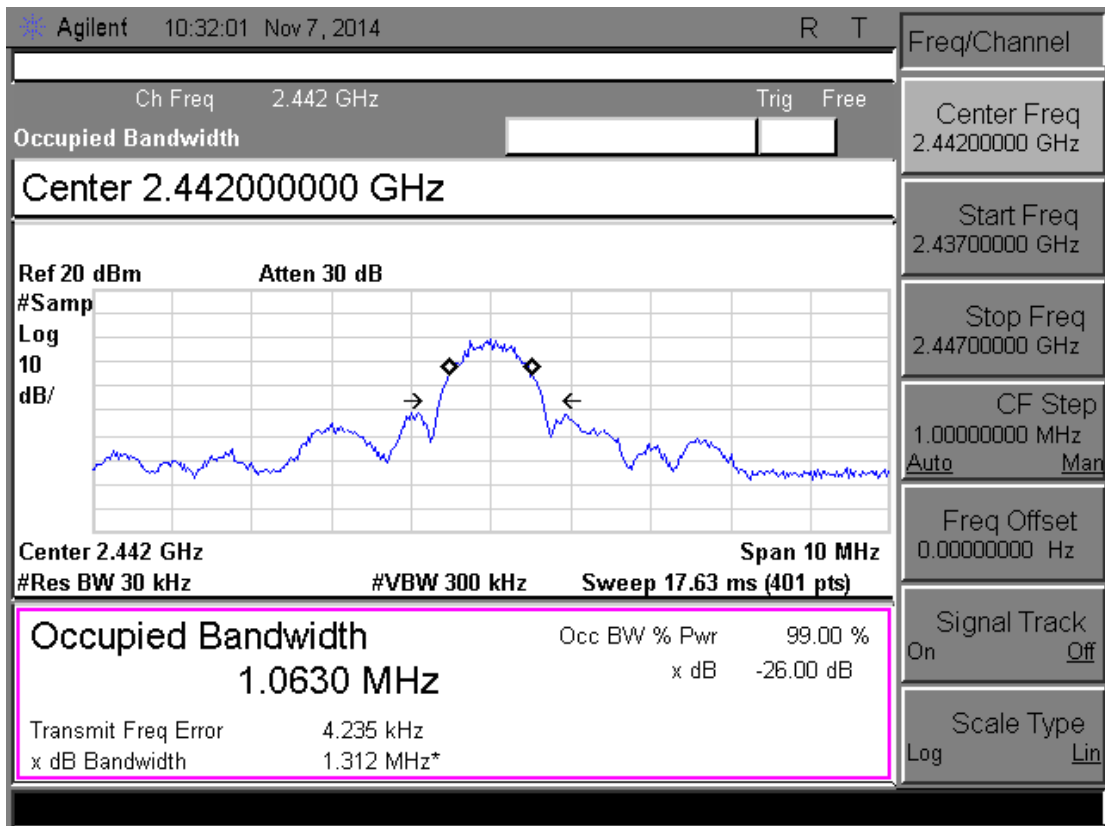
### 6dB Bandwidth-High Channel



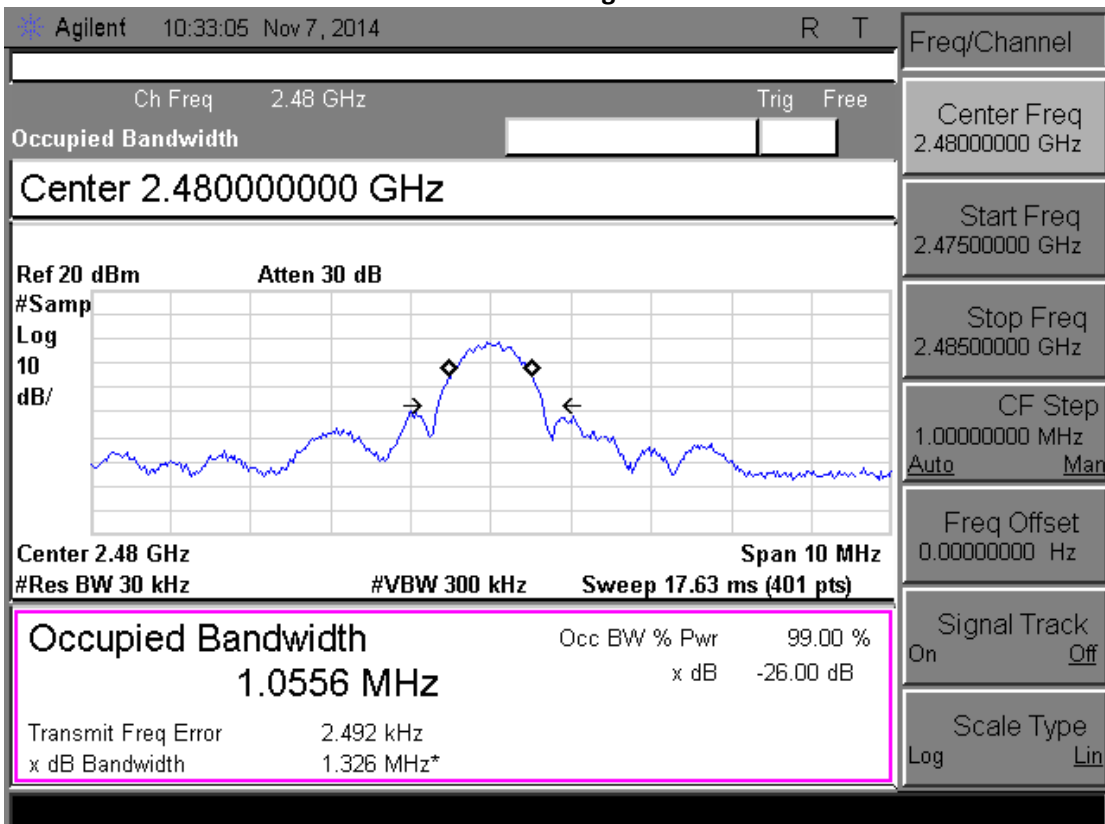
99% Bandwidth-Low Channel



99% Bandwidth-Middle Channel



99% Bandwidth-High Channel



## **3.2 Peak Output Power – FCC Section 15.247 (b)(1)**

### **3.2.1 Measurement Procedure**

The peak output power was measured in accordance with the FCC KDB Publication No.558074 v03r02 “Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)” Section 9.1.2 Integrated Band Power Method. The RBW of the spectrum analyzer was set to 1 MHz and VBW  $\geq 3 \times$  RBW. The spectrum analyzer internal channel power measurement function is utilized. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer through suitable attenuation.

### **3.2.2 Measurement Result**

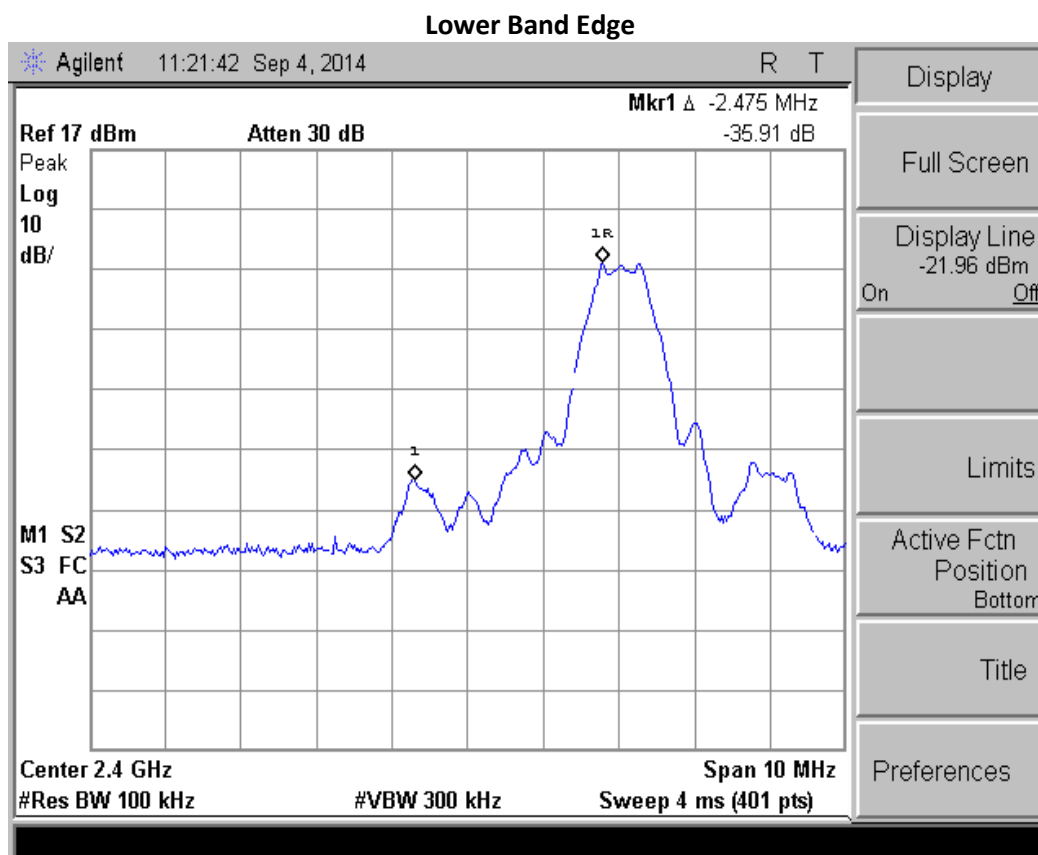
<b>Frequency (MHz)</b>	<b>RF Output Power (dBm)</b>
2402	3.34
2442	2.99
2480	2.73

## **3.3 Band-Edge Compliance of RF Conducted Emissions – FCC Section 15.247(d)**

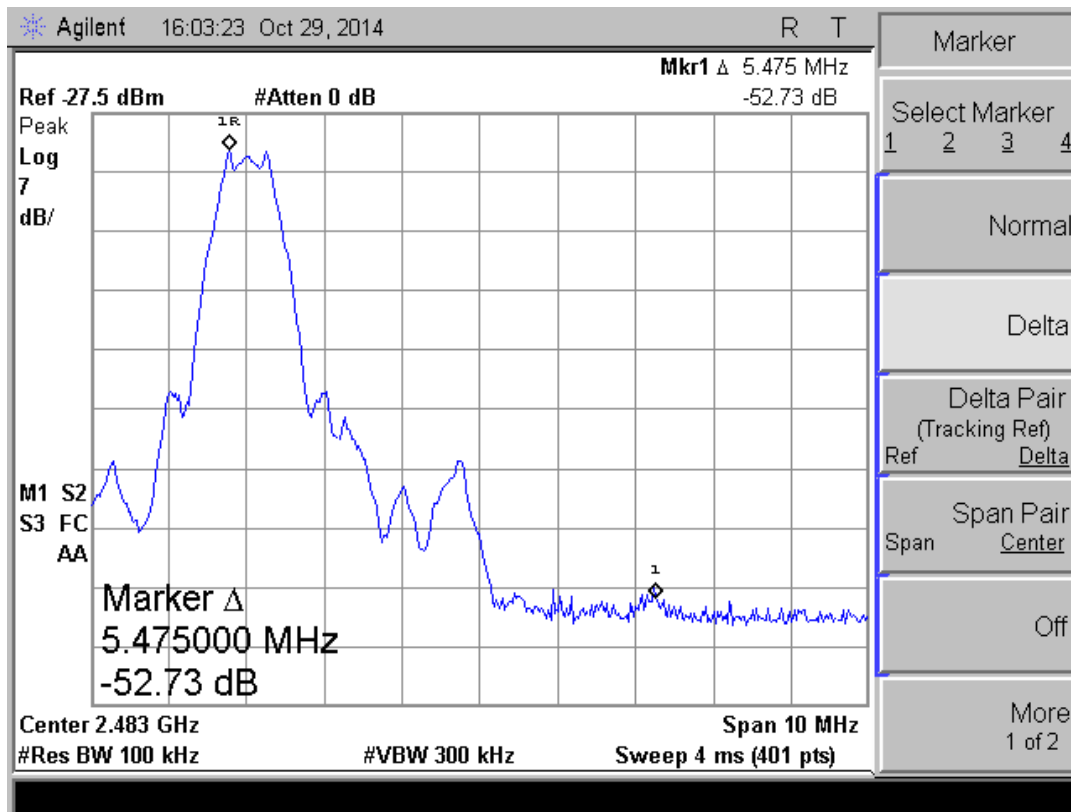
### 3.3.1 Measurement Procedure

The band-edge measurement was measured in accordance with the FCC KDB Publication No.558074 v03r02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)" Section 13.2 Marker-delta Method. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer through suitable attenuation. The EUT was investigated at the lowest and highest channel available to determine band-edge compliance. The RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. The reference level was determined by measuring the Peak PSD level in any 100 kHz bandwidth within the DTS channel bandwidth.

### 3.3.2 Measurement Result



**Upper Band Edge**



### 3.4 Power Spectral Density – FCC Section 15.247(e)

#### 3.4.1 Measurement Procedure

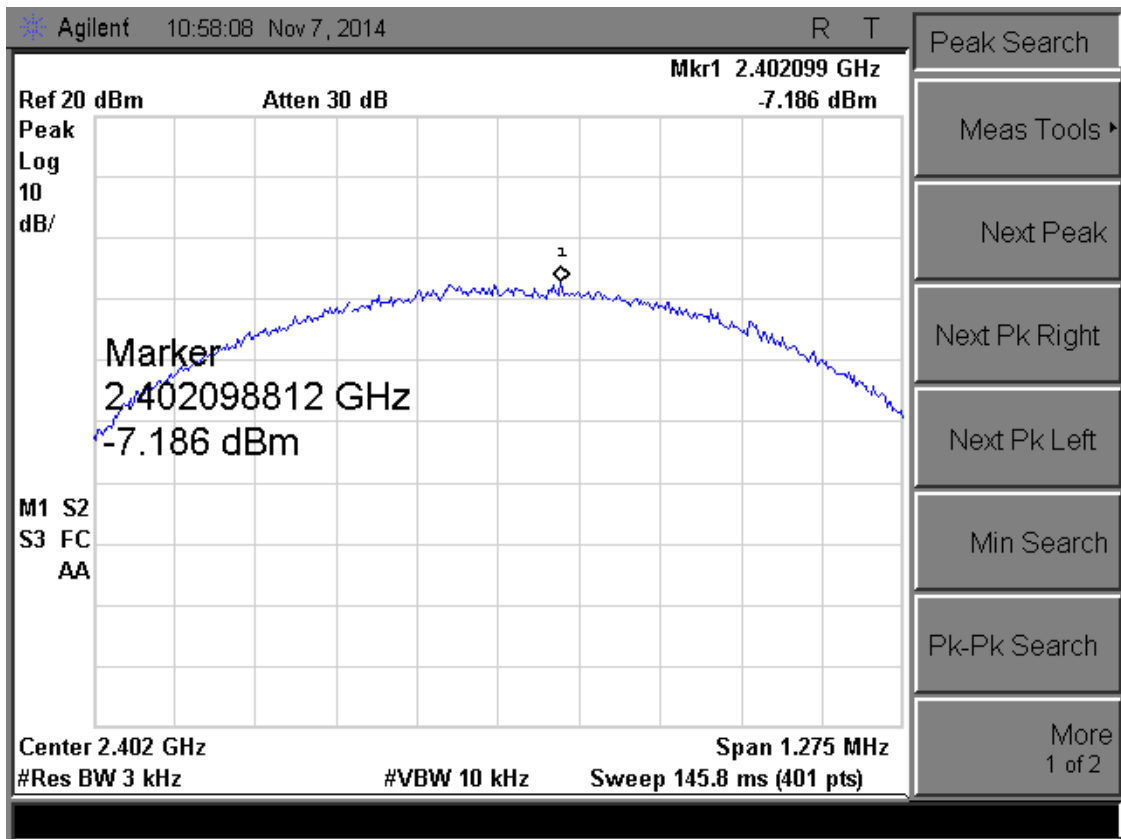
The power spectral density was measured in accordance with the FCC KDB Publication No.558074 v03r02 “Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)” Section 10.2 Peak PSD Method. The RBW of the spectrum analyzer was set to 3 kHz and VBW 10 kHz. The peak marker function was used to determine the maximum amplitude level within the RBW.

#### 3.4.2 Measurement Result

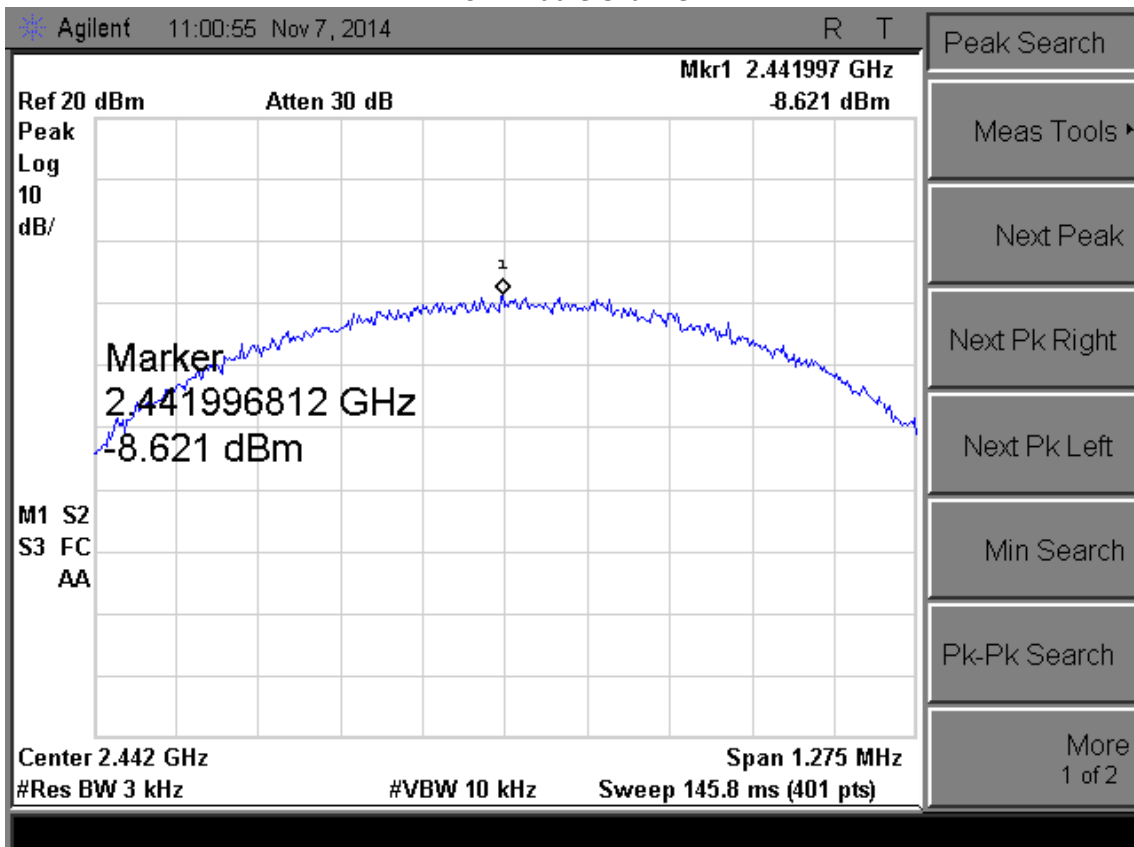
Frequency (MHz)	PSD/3kHz (dBm)	Limit (dBm)
2402	-7.186	8
2442	-8.621	8
2480	-8.858	8

PSD-Low Channel

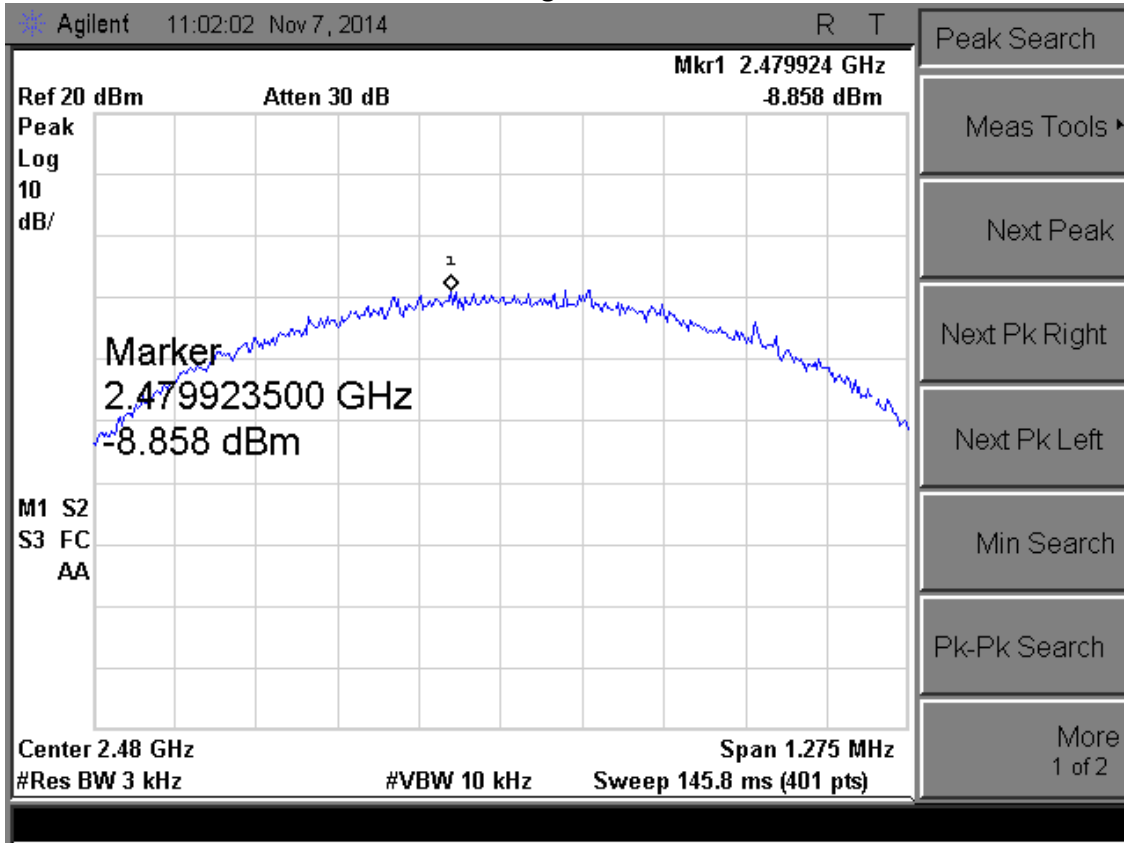




PSD-Middle Channel



# PSD-High Channel



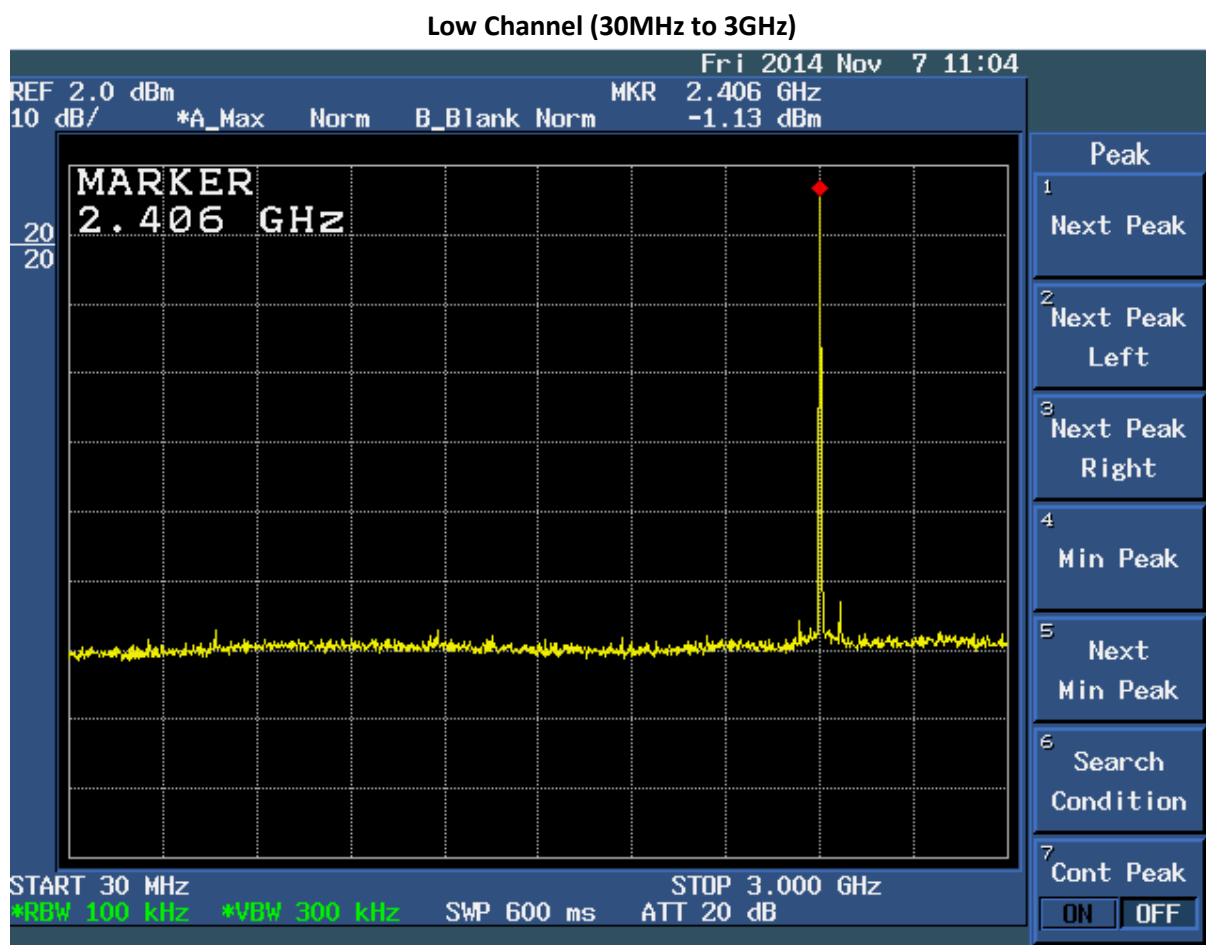
## Conducted Spurious Emissions – FCC Section 15.247(d)

### 3.4.3 Measurement Procedure

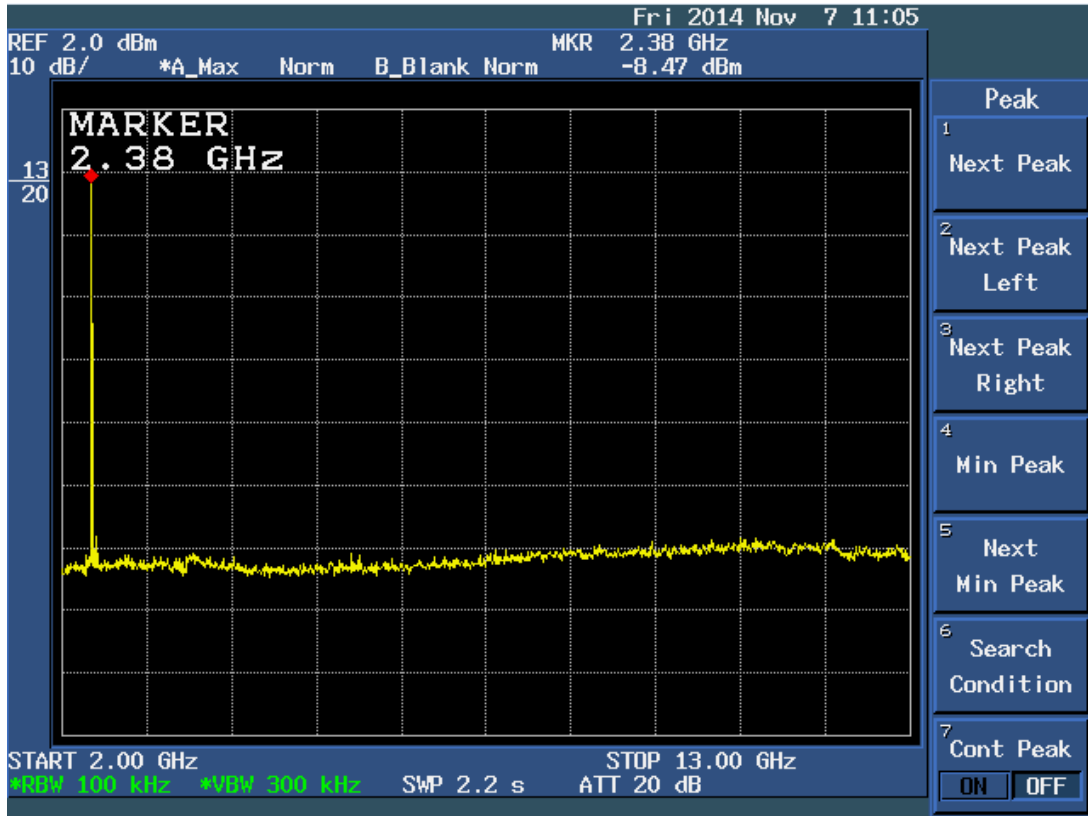
The RF conducted spurious emissions were measured in accordance with the FCC KDB Publication No.558074 v03r02 “Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)”. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer. The EUT was investigated for conducted spurious emissions from 30MHz to 26GHz, 10 times the highest fundamental frequency.

Measurements were made at the low, middle and high channels of the EUT. For each measurement, the RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. The reference level was determined by measuring the peak PSD level in any of the 100 kHz bandwidth within the DTS channel bandwidth.

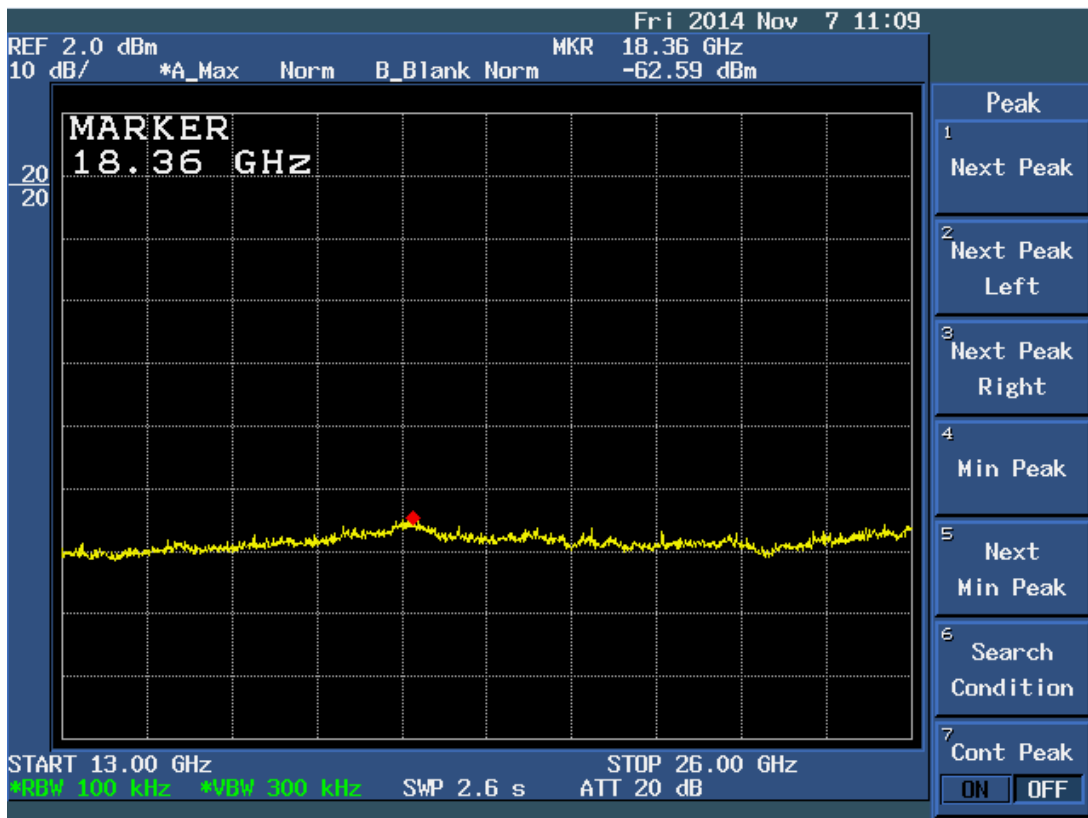
### 3.4.4 Measurement Result



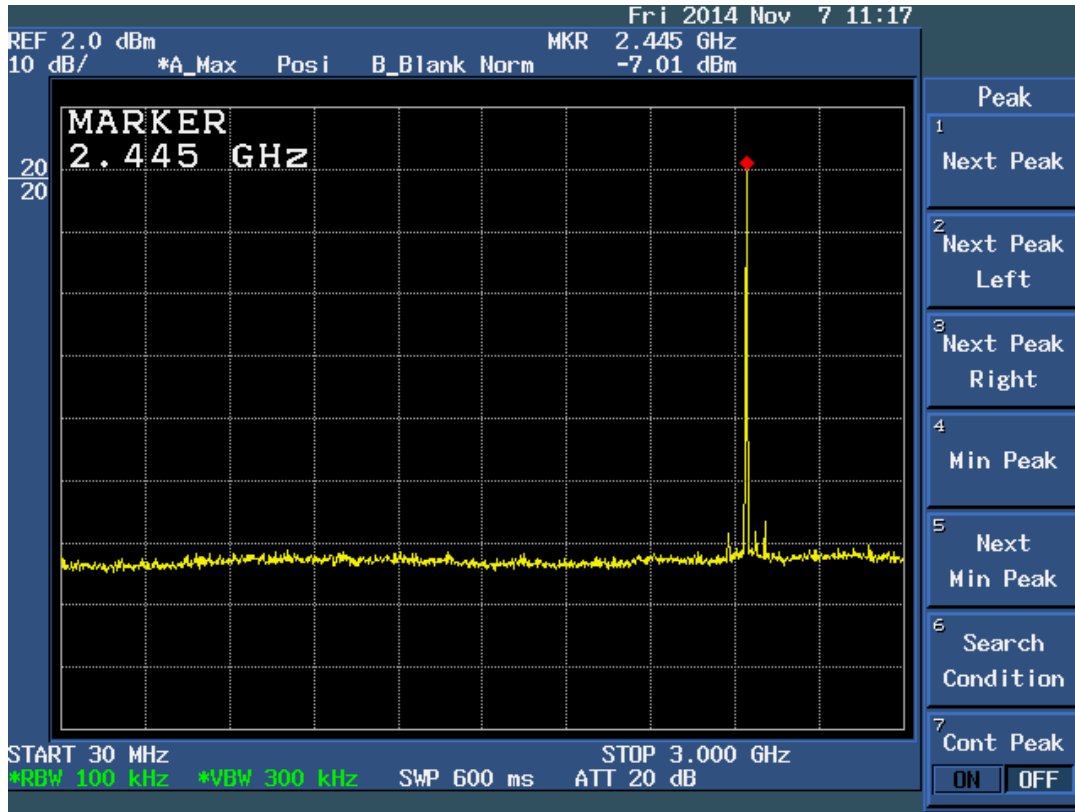
### Low Channel (2GHz to 13GHz)



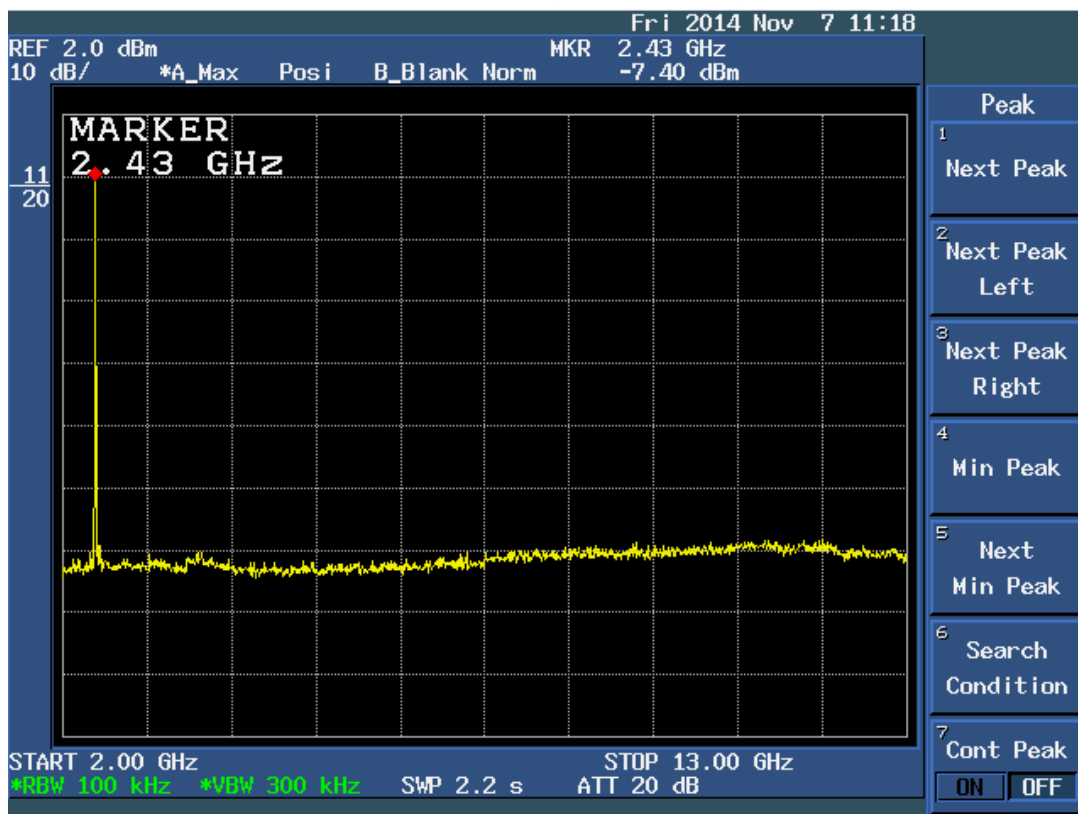
### Low Channel (13GHz to 26GHz)



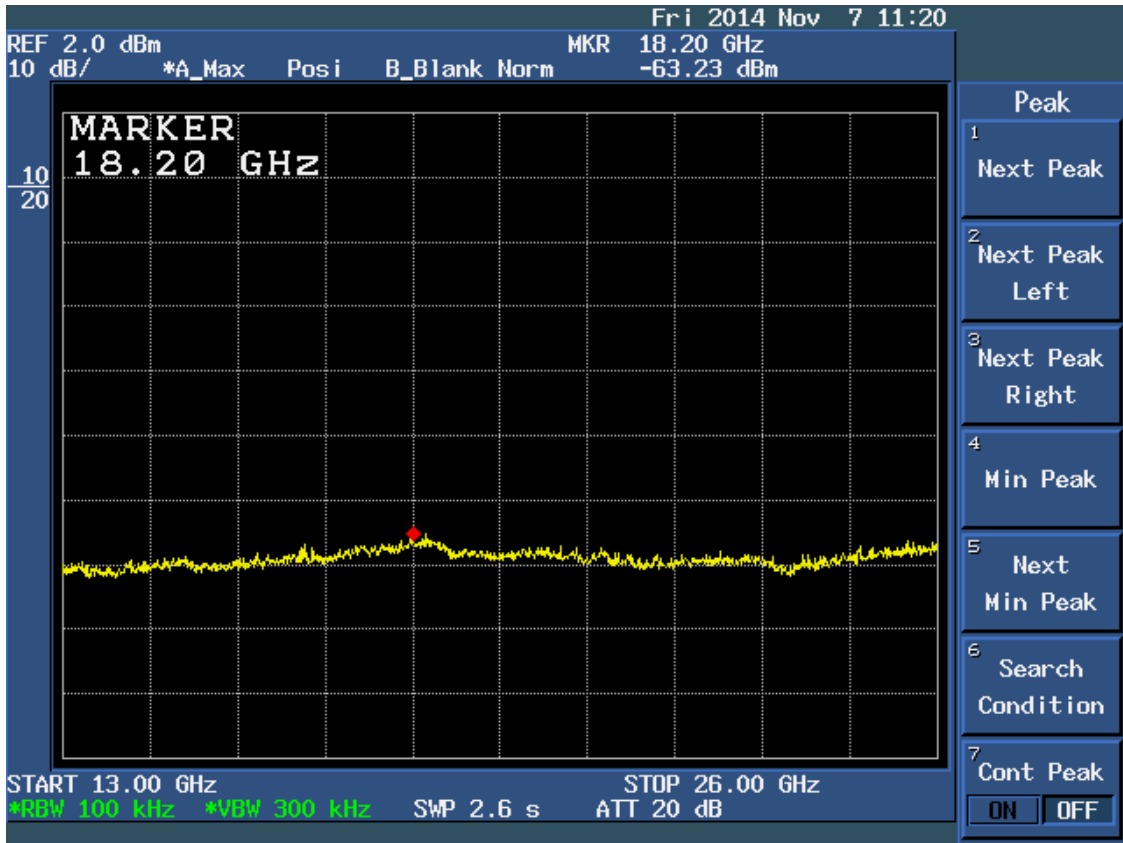
### Middle Channel (30MHz to 3GHz)



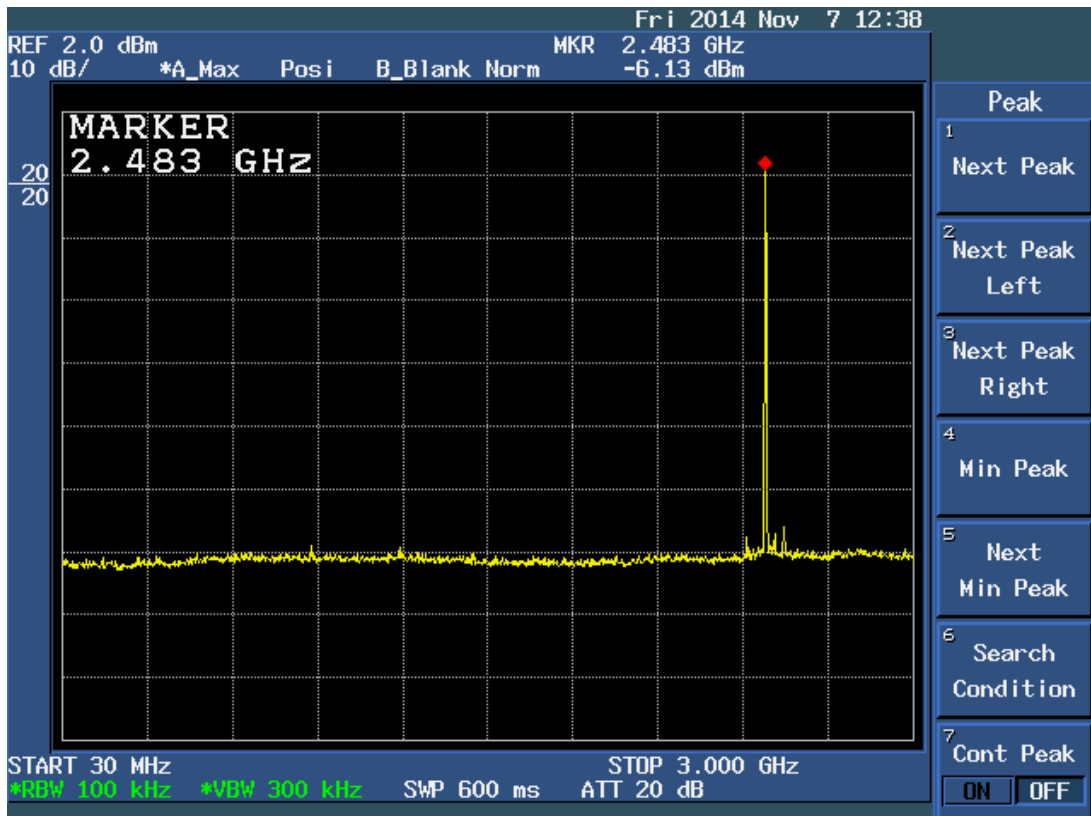
### Middle Channel (2GHz to 13GHz)



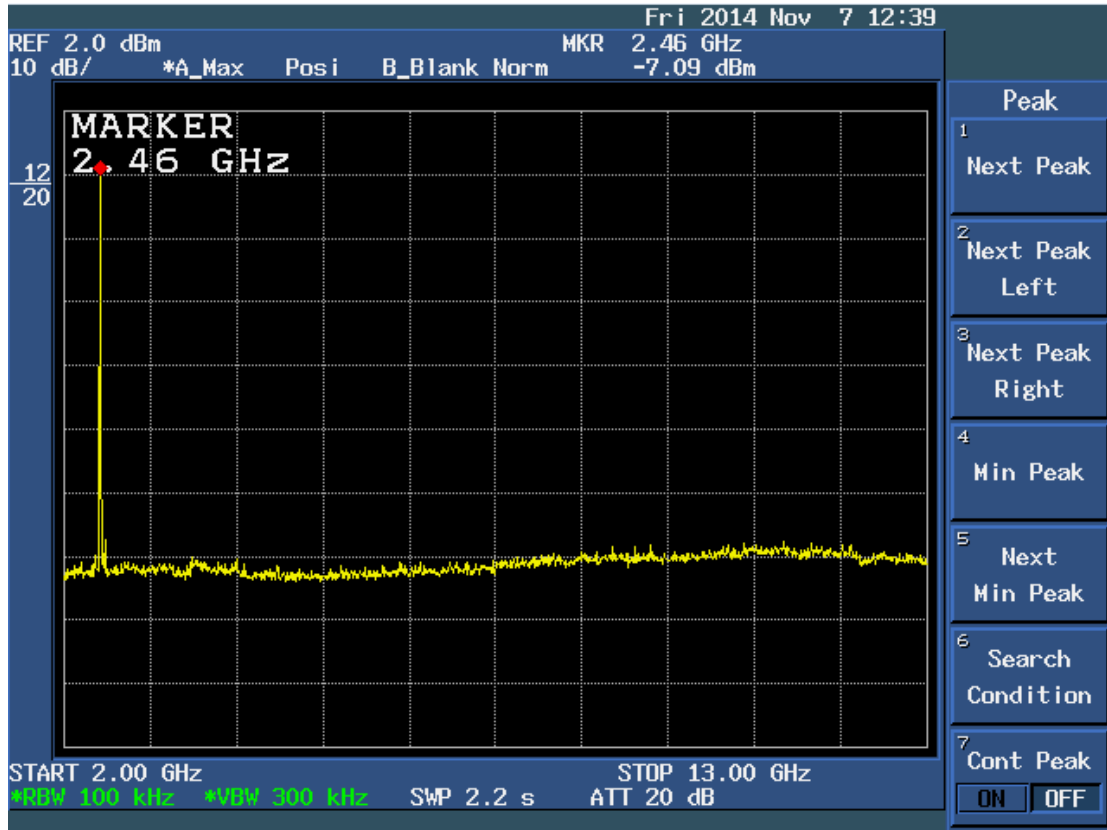
### Middle Channel (13GHz to 26GHz)



### High Channel (30MHz to 3GHz)



### High Channel (2GHz to 13GHz)



### High Channel (13GHz to 26GHz)

