

Action Technology (Shenzhen) Co., Ltd.

10" DROPDOWN LCD MONITOR AND DVD Player

Model Number: MMD100; LMD-7106B

Prepared for : Action Technology (Shenzhen) Co., Ltd.  
Baosheng Industrial Building., Laodong Cun,  
Xixiang, Bao`an District, Shen Zhen

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Report Number : ACS-F07447  
Date of Test : Jul.23, 2007  
Date of Report : Oct.17, 2007

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## TEST REPORT DECLARATION

Applicant : Action Technology (Shenzhen) Co., Ltd.  
 Manufacturer : Action Technology (Shenzhen) Co., Ltd.  
 EUT Description : 10" DROPDOWN LCD MONITOR AND DVD Player

(A) MODEL NO. : MMD100; LMD-7106B

(B) SERIAL NO. : N/A

(C) POWER SUPPLY : DC 12V

## Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2007  
 ICES-003 Issue 4 February, 2004

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Jul.23, 2007

Prepared by :

Selina Liu  
 Selina Liu / Assistant

Reviewer :

Iceman Hu  
 Iceman Hu / Supervisor



信華科技(深圳)有限公司

Audix Technology (Shenzhen) Co., Ltd.

EMC 部門報告專用章

Stamp only for EMC Dept. Report

Signature:

Ken Lu 12/24/07

Approved & Authorized Signer :

Ken Lu / Deputy Manager

## 1. SUMMARY OF STANDARDS AND RESULTS

### 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

| EMISSION                                   |                                         |              |         |
|--------------------------------------------|-----------------------------------------|--------------|---------|
| Description of Test Item                   | Standard                                | Limits       | Results |
| Conducted Emission Test                    | FCC Part 15: 15.207<br>ANSI C63.4: 2003 | Part C Limit | N/A     |
| Radiated Emission Test                     | FCC Part 15: 15.239<br>ANSI C63.4: 2003 | Part C Limit | PASS    |
| Bandwidth Test                             | FCC Part 15: 15.239                     | Part C Limit | PASS    |
| N/A is an abbreviation for Not Applicable. |                                         |              |         |

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Description : 10" DROPDOWN LCD MONITOR AND DVD Player

Model Number : MMD100; LMD-7106B

Operating Frequency : 88.1MHz to 88.9MHz  
range

Operating Frequency : 88.1/88.3/88.5/88.7/88.9MHz

Applicant : Action Technology (Shenzhen) Co., Ltd.  
Baosheng Industrial Building., Laodong Cun,  
Xixiang, Bao`an District, Shen Zhen

Manufacturer : Action Technology (Shenzhen) Co., Ltd.  
Baosheng Industrial Building., Laodong Cun,  
Xixiang, Bao`an District, Shen Zhen

Date of Test : Jul.23, 2007

Note: We selected 88.1MHz, 88.5MHz and 88.9MHz for all test.

## 2.2. Test Facility

### Site Description

- 3m Anechoic Chamber : Jun. 13, 2006 File on Federal  
Communication Commission  
Registration Number: 90454
- 3m & 10m Anechoic Chamber : Jan.31, 2007 File on Federal  
Communication Commission  
Registration Number: 794232
- EMC Lab. : Accredited by DATech, German  
Registration Number: DAT-P-091/99-01  
Feb. 02, 2004
- Accredited by NVLAP, USA  
NVLAP Code: 200372-0  
Apr. 01, 2006

## 2.3. Test Uncertainty

| No. | Item                                    | Uncertainty | Remark      |
|-----|-----------------------------------------|-------------|-------------|
| 1.  | Uncertainty for Conducted Emission Test | 1.22dB      |             |
| 2.  | Uncertainty for Radiated Emission Test  | 3.14dB      | 3m Chamber  |
| 3.  | Uncertainty for Radiated Emission Test  | 3.18dB      | 10m Chamber |
| 4.  | Uncertainty for Power Clamp Test        | 1.38dB      |             |

### **3. POWER LINE CONDUCTED EMISSION TEST**

According to Paragraph (f) of FCC Part 15C , Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

## 4. RADIATED EMISSION TEST

### 4.1. Test Equipment

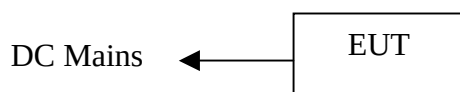
The following test equipments are used during the radiated emission Test :

#### 4.1.1. For Anechoic Chamber

| Item | Equipment      | Manufacturer    | Model No. | Serial No.      | Last Cal.    | Cal. Interval |
|------|----------------|-----------------|-----------|-----------------|--------------|---------------|
| 1    | 3#Chamber      | AUDIX           | N/A       | N/A             | June.25.07   | 1/2 Year      |
| 2    | EMI Spectrum   | Agilent         | E7403A    | MY42000106      | May 11, 07   | 1 Year        |
| 3    | Test Receiver  | Rohde & Schwarz | ESVS20    | 830350/005      | May 11, 07   | 1 Year        |
| 4    | Amplifier      | HP              | 8447D     | 2944A07794      | Mar.12, 07   | 1/2 Year      |
| 5    | Bilog Antenna  | Schaffner       | CBL6111C  | 2598            | Feb.22, 07   | 1 Year        |
| 6    | RF Cable       | MIYAZAKI        | 5D-2W     | 3# Chamber No.1 | July. 16, 07 | 1/2 Year      |
| 7    | RF Cable       | MIYAZAKI        | 5D-2W     | 3# Chamber No.2 | July. 16, 07 | 1/2 Year      |
| 8    | RF Cable       | FUJIKURAw       | RG-55/U   | 3# Chamber No.3 | July. 16, 07 | 1/2 Year      |
| 9    | RF Cable       | FUJIKURA        | RG-55/U   | 3# Chamber No.4 | July. 16, 07 | 1/2 Year      |
| 10   | Coaxial Switch | Anritsu         | MP59B     | M73989          | July. 16, 07 | 1/2 Year      |

### 4.2. Block Diagram of Test Setup

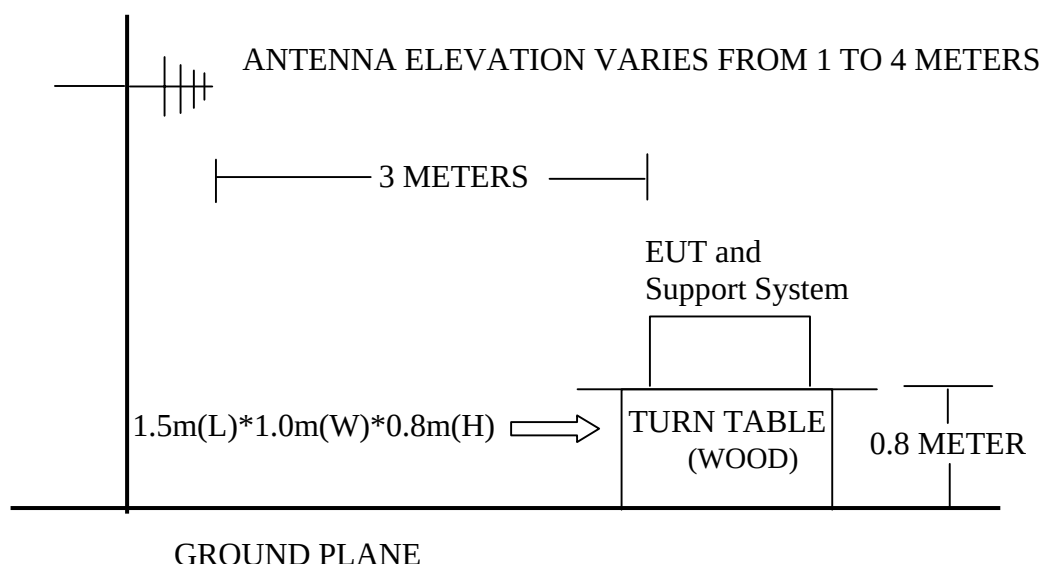
#### 4.2.1. Block Diagram of connection between EUT and simulators



**(EUT: 10" DROPDOWN LCD MONITOR AND DVD Player)**

#### 4.2.2. In Anechoic Chamber Test Setup Diagram

ANTENNA TOWER





### 4.3. Radiated Emission Limit 30~1000MHz

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT |                                   |
|------------------|--------------------|-----------------------|-----------------------------------|
|                  |                    | $\mu\text{V/m}$       | $\text{dB}(\mu\text{V})/\text{m}$ |
| 30 ~ 88          | 3                  | 100                   | 40.0                              |
| 88 ~ 108         | 3                  | 250                   | 48.0                              |
| 108 ~ 216        | 3                  | 150                   | 43.5                              |
| 216 ~ 960        | 3                  | 200                   | 46.0                              |
| 960 ~ 1000       | 3                  | 500                   | 54.0                              |

- Remark :
- (1) Emission level = Antenna Factor + Cable Loss + Reading
  - (2) The smaller limit shall apply at the cross point between two frequency bands.
  - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 4.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 4.4.1. 10" DROPDOWN LCD MONITOR AND DVD Player (EUT)

Model Number : MMD100  
 Serial Number : N/A  
 Manufacturer : Action Technology (Shenzhen) Co., Ltd.

### 4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2..

4.5.2. Let the EUT work in test modes (FM Tx Mode) and test it.

#### 4.6. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2003 on radiated emission Test.

This test was performed with EUT in X, Y, Z position (see test photo), and the worse case was found when EUT in X position and this position was also the normal use position.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The frequency range from 30MHz to 1000MHz are checked.

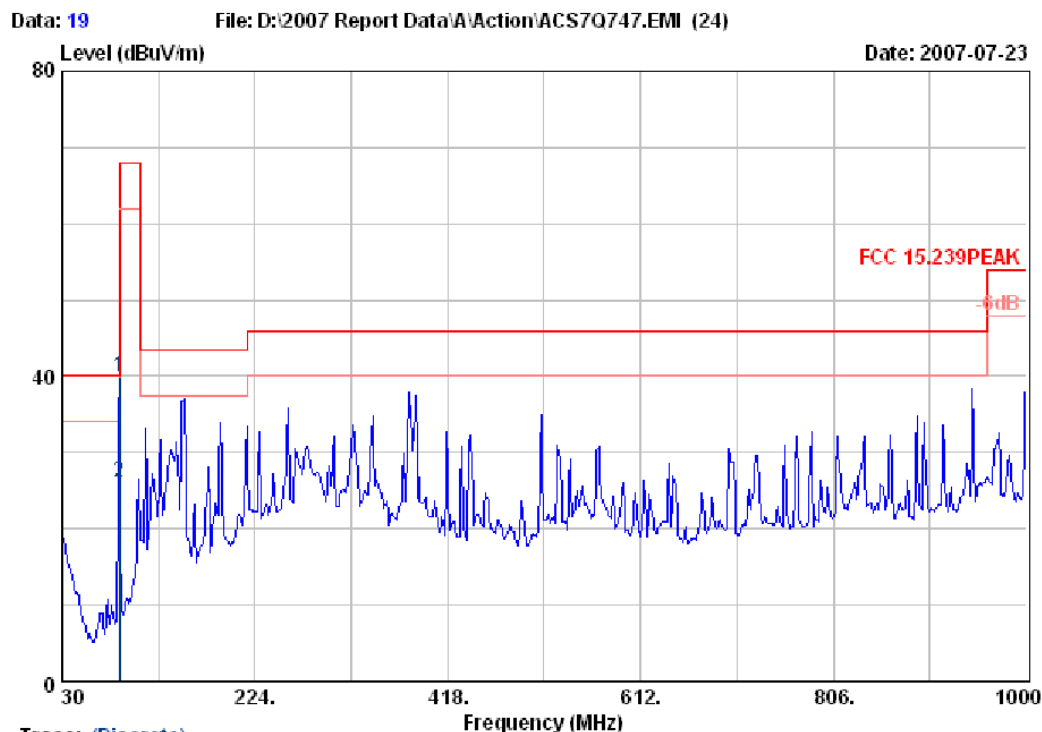
The test modes (FM Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on Section 4.7.

#### 4.7. Radiated Emission Test Results

**PASS.**



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Trace: (Discrete)

|                |                                          |             |            |
|----------------|------------------------------------------|-------------|------------|
| Site no. :     | 3# Chamber Radiation                     | Data no. :  | 19         |
| Dis. / Ant. :  | 3m 2598                                  | Ant. pol. : | HORIZONTAL |
| Limit :        | FCC 15.239PEAK                           |             |            |
| Env. / Ins. :  | 24*C/56% ESVS20                          | Engineer :  | Skyle      |
| EUT :          | 10'' DROFDOWN LCD Monitor AND DVD PLAYER |             |            |
| Power Rating : | DC 12V                                   |             |            |
| Test Mode :    | FM 88.1MHz                               |             |            |
| M/N :          | LMD-7106B/MMD100                         |             |            |

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.11          | 8.76                     | 1.02                  | 30.02             | 39.80                         | 68.00              | 28.20          | Peak    |
| 2 | 88.11          | 8.76                     | 1.02                  | 16.39             | 26.17                         | 48.00              | 21.83          | Average |

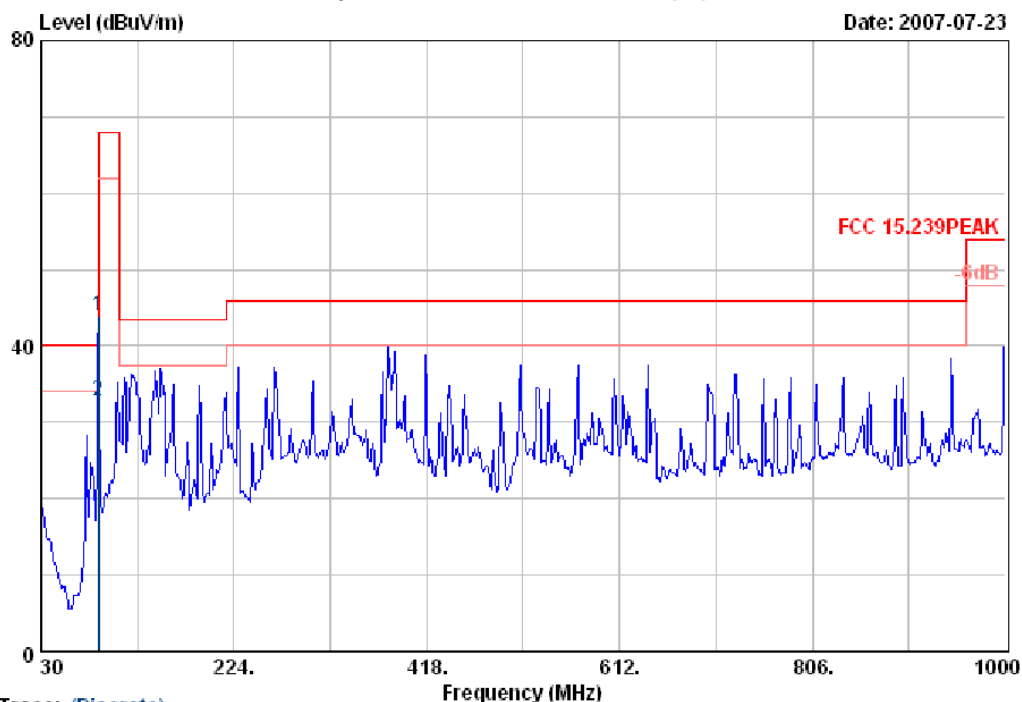
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official limit are not reported.



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Data: 20 File: D:\2007 Report Data\A\Action\ACS70747.EMI (24)

Date: 2007-07-23



Trace: (Discrete)  
Site no. : 3# Chamber Radiation Data no. : 20  
Dis. / Ant. : 3m 2598 Ant. pol. : VERTICAL  
Limit : FCC 15.239PEAK  
Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle  
EUT : 10'' DROPDOWN LCD Monitor AND DVD PLAYER  
Power Rating : DC 12V  
Test Mode : FM 88.1MHz  
M/N : LMD-7106B/MMD100

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.11          | 8.76                     | 1.02                  | 34.07             | 43.85                         | 68.00              | 24.15          | Peak    |
| 2 | 88.11          | 8.76                     | 1.02                  | 22.90             | 32.68                         | 48.00              | 15.32          | Average |

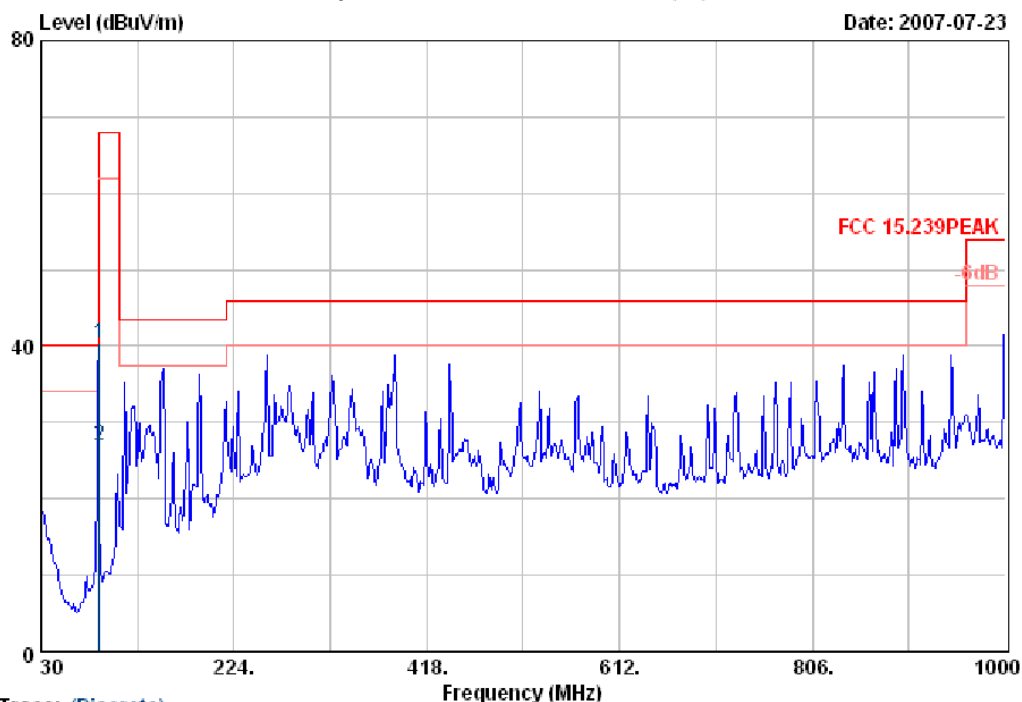
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official  
limit are not reported.



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Data: 22 File: D:\2007 Report Data\A\Action\ACS70747.EMI (24)

Date: 2007-07-23



Trace: (Discrete)  
Site no. : 3# Chamber Radiation Data no. : 22  
Dis. / Ant. : 3m 2598 Ant. pol. : HORIZONTAL  
Limit : FCC 15.239PEAK  
Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle  
EUT : 10'' DROPDOWN LCD Monitor AND DVD PLAYER  
Power Rating : DC 12V  
Test Mode : FM 88.5MHz  
M/N : LMD-7106B/MMD100

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.50          | 8.76                     | 1.02                  | 30.49             | 40.27                         | 68.00              | 27.73          | Peak    |
| 2 | 88.50          | 8.76                     | 1.02                  | 17.11             | 26.89                         | 48.00              | 21.11          | Average |

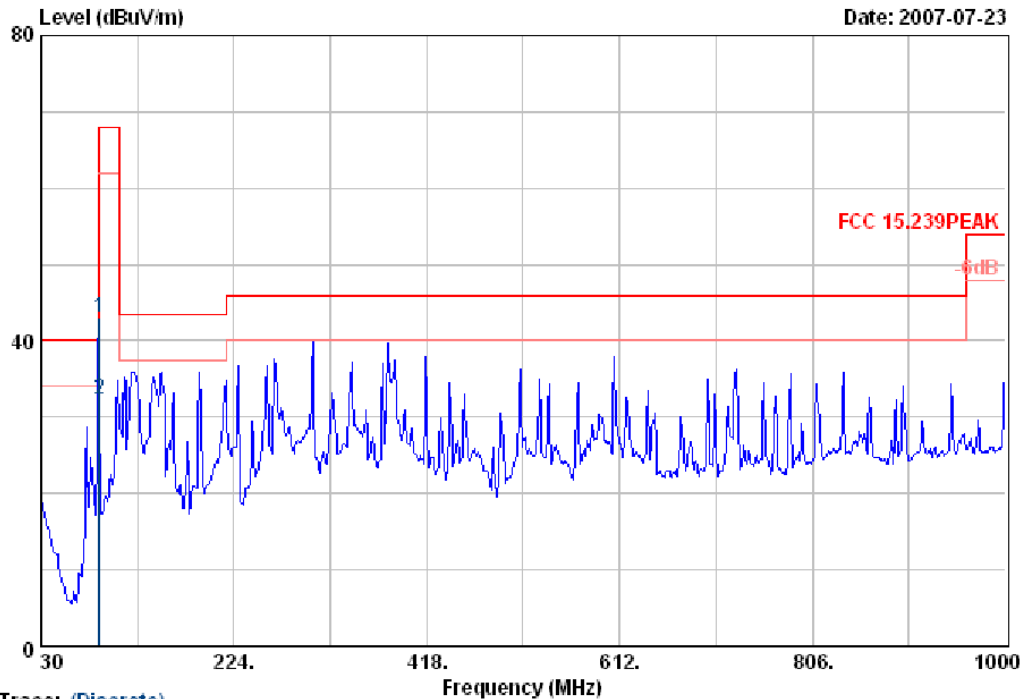
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official  
limit are not reported.



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Data: 21 File: D:\2007 Report Data\A\Action\ACS70747.EMI (24)

Date: 2007-07-23



Trace: (Discrete)  
Site no. : 3# Chamber Radiation Data no. : 21  
Dis. / Ant. : 3m 2598 Ant. pol. : VERTICAL  
Limit : FCC 15.239PEAK  
Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle  
EUT : 10" DROPDOWN LCD Monitor AND DVD PLAYER  
Power Rating : DC 12V  
Test Mode : FM 88.5MHz  
M/N : LMD-7106B/MMD100

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.50          | 8.76                     | 1.02                  | 33.20             | 42.98                         | 68.00              | 25.02          | Peak    |
| 2 | 88.50          | 8.76                     | 1.02                  | 22.48             | 32.26                         | 48.00              | 15.74          | Average |

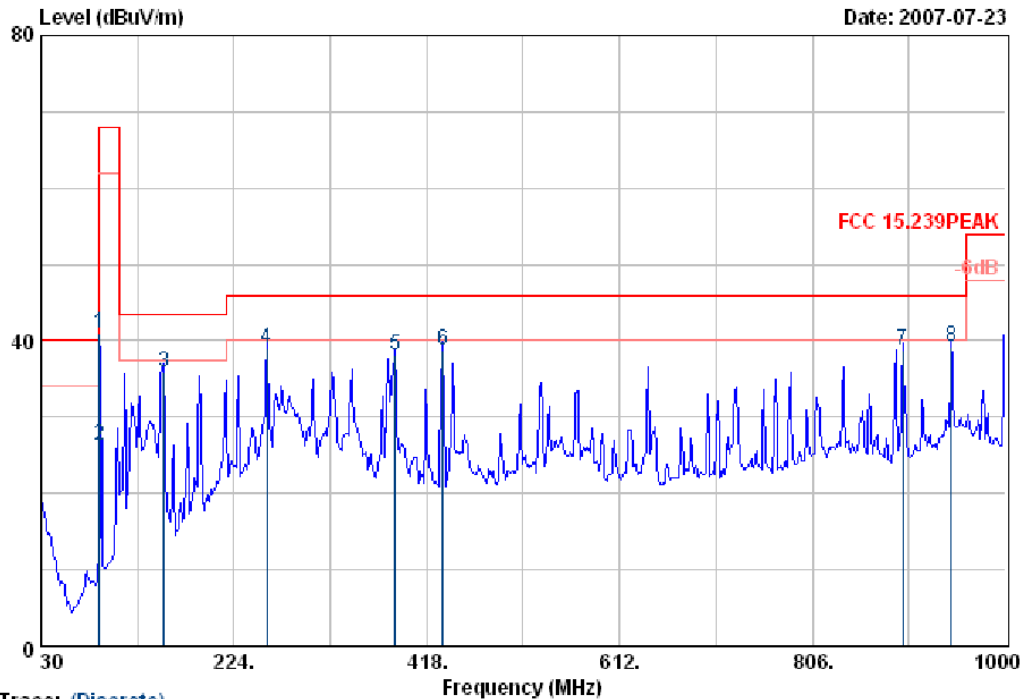
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official  
limit are not reported.



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Data: 23 File: D:\2007 Report Data\A\Action\ACS70747.EMI (24)

Date: 2007-07-23



Trace: (Discrete)  
Site no. : 3# Chamber Radiation Data no. : 23  
Dis. / Ant. : 3m 2598 Ant. pol. : HORIZONTAL  
Limit : FCC 15.239PEAK  
Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle  
EUT : 10" DROPDOWN LCD Monitor AND DVD PLAYER  
Power Rating : DC 12V  
Test Mode : FM 88.9MHz  
M/N : LMD-7106B/MMD100

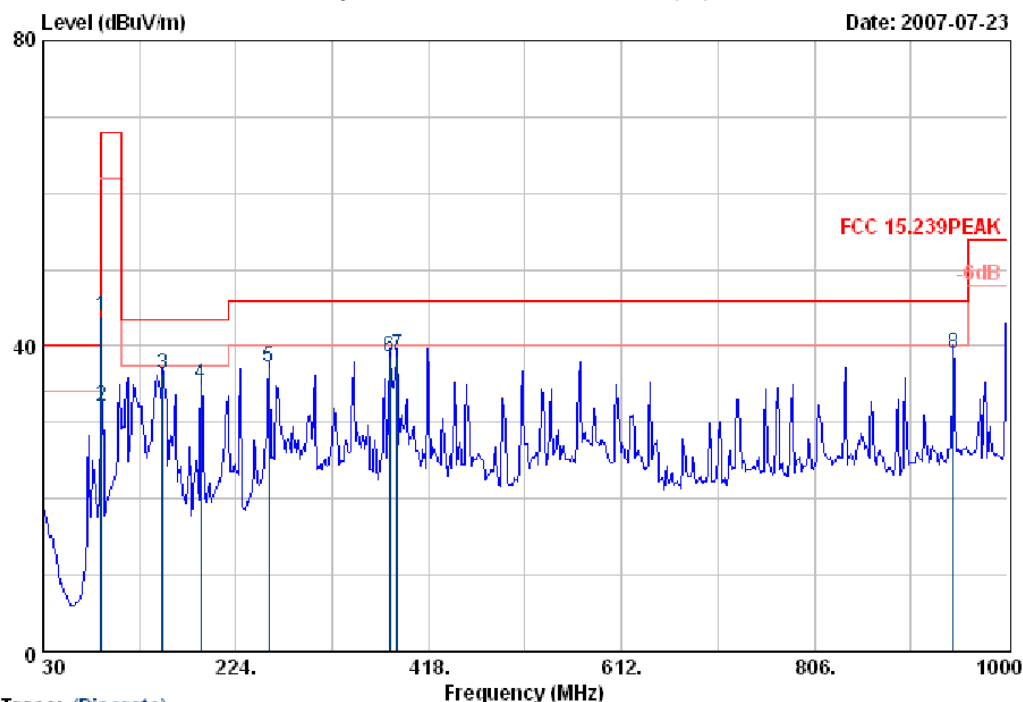
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.90          | 8.88                     | 1.02                  | 31.01             | 40.91                         | 68.00              | 27.09          | Peak    |
| 2 | 88.90          | 8.88                     | 1.02                  | 16.39             | 26.29                         | 48.00              | 21.71          | Average |
| 3 | 153.19         | 11.34                    | 1.21                  | 23.38             | 35.93                         | 43.50              | 7.57           | QP      |
| 4 | 256.98         | 13.48                    | 1.57                  | 23.91             | 38.96                         | 46.00              | 7.04           | QP      |
| 5 | 385.99         | 16.04                    | 1.81                  | 20.25             | 38.10                         | 46.00              | 7.90           | QP      |
| 6 | 434.49         | 17.00                    | 1.95                  | 19.85             | 38.80                         | 46.00              | 7.20           | QP      |
| 7 | 897.18         | 22.84                    | 2.49                  | 13.35             | 38.68                         | 46.00              | 7.32           | QP      |
| 8 | 945.68         | 24.02                    | 2.56                  | 12.62             | 39.20                         | 46.00              | 6.80           | QP      |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official limit are not reported.



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Data: 24 File: D:\2007 Report Data\A\Action\ACS7Q747.EMI (24)



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 24  
Dis. / Ant. : 3m 2598 Ant. pol. : VERTICAL  
Limit : FCC 15.239PEAK  
Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle  
EUT : 10'' DROPDOWN LCD Monitor AND DVD PLAYER  
Power Rating : DC 12V  
Test Mode : FM 88.9MHz  
M/N : LMD-7106B/MMD100

|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 88.90          | 8.88                     | 1.02                  | 33.99             | 43.89                         | 68.00              | 24.11          | Peak    |
| 2 | 88.90          | 8.88                     | 1.02                  | 22.16             | 32.06                         | 48.00              | 15.94          | Average |
| 3 | 150.28         | 11.40                    | 1.21                  | 23.61             | 36.22                         | 43.50              | 7.28           | QP      |
| 4 | 189.08         | 9.36                     | 1.30                  | 24.41             | 35.07                         | 43.50              | 8.43           | QP      |
| 5 | 256.98         | 13.48                    | 1.57                  | 22.16             | 37.21                         | 46.00              | 8.79           | QP      |
| 6 | 378.23         | 15.82                    | 1.78                  | 21.01             | 38.61                         | 46.00              | 7.39           | QP      |
| 7 | 385.99         | 16.04                    | 1.81                  | 20.91             | 38.76                         | 46.00              | 7.24           | QP      |
| 8 | 945.68         | 24.02                    | 2.56                  | 12.52             | 39.10                         | 46.00              | 6.90           | QP      |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official limit are not reported.



## 5. BANDWIDTH TEST

### 5.1. Test Equipment

The following test equipments are used during the bandwidth test:

| Item | Equipment | Manufgfacturer | Model No.   | Serial No. | Last Cal.   | Cal. Interval |
|------|-----------|----------------|-------------|------------|-------------|---------------|
| 1.   | Spectrum  | Agilent        | E4407B      | MY41440292 | May 11, 07  | 1 Year        |
| 2.   | Amp       | HP             | 8449B       | 3008A00863 | May 11, 07  | 1 Year        |
| 3.   | Antenna   | EMCO           | 3115        | 9607-4877  | Jan. 23, 07 | 1.5 Year      |
| 4.   | HF Cable  | Hubersuhne     | Sucoflex104 | -          | May 11, 07  | 1 Year        |

### 5.2. Test Standard

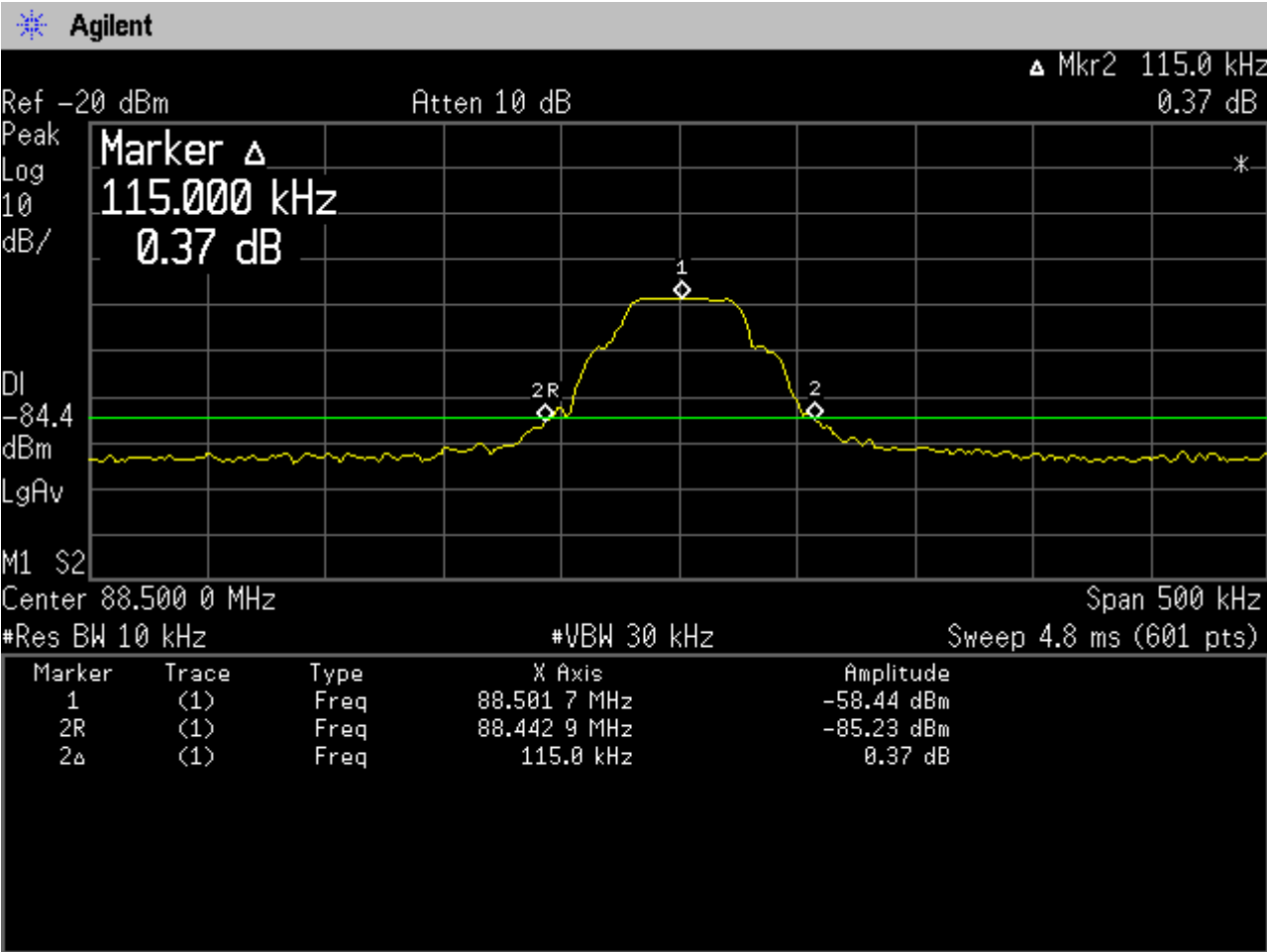
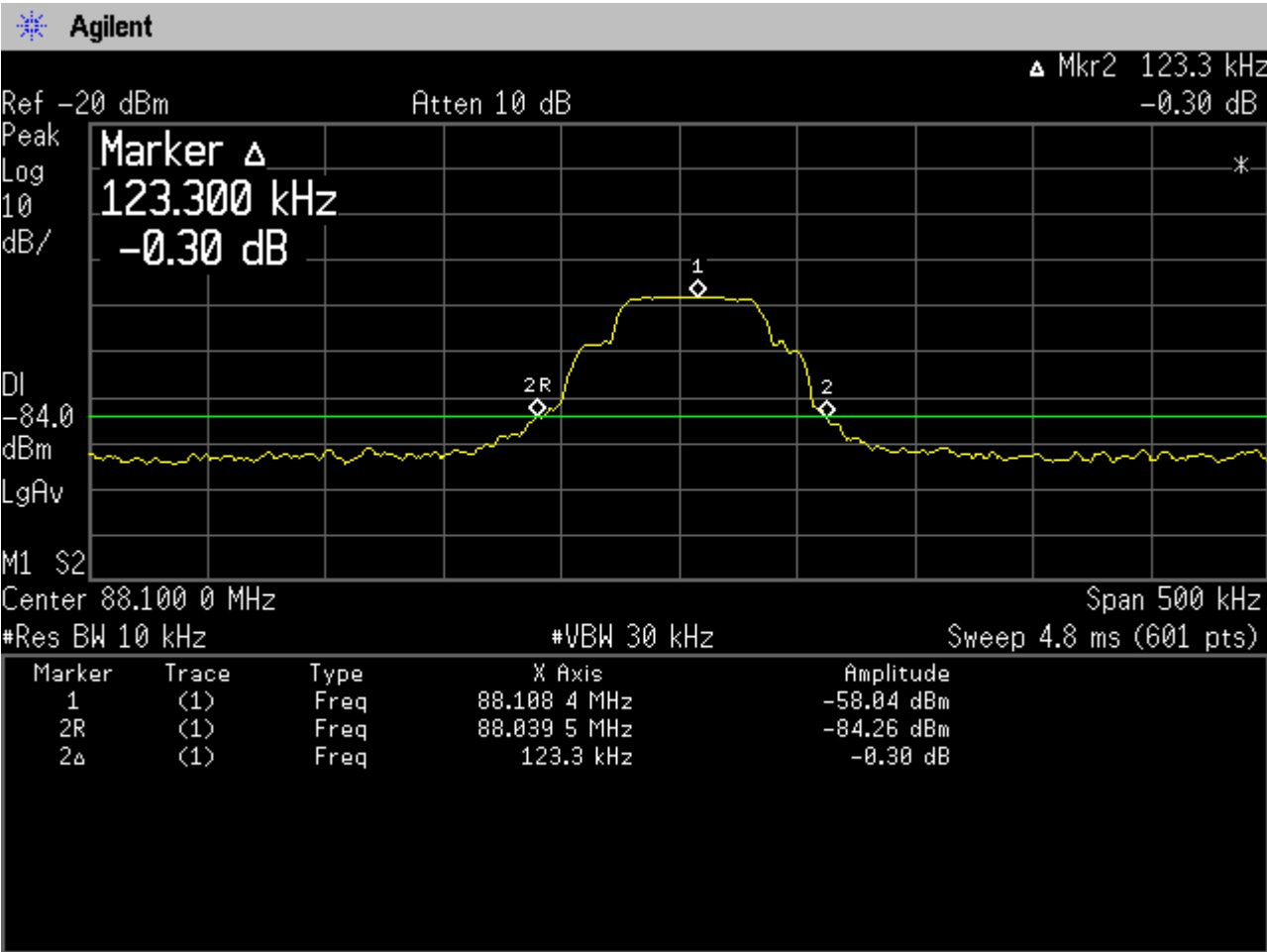
The test completeness FCC 15C (239).

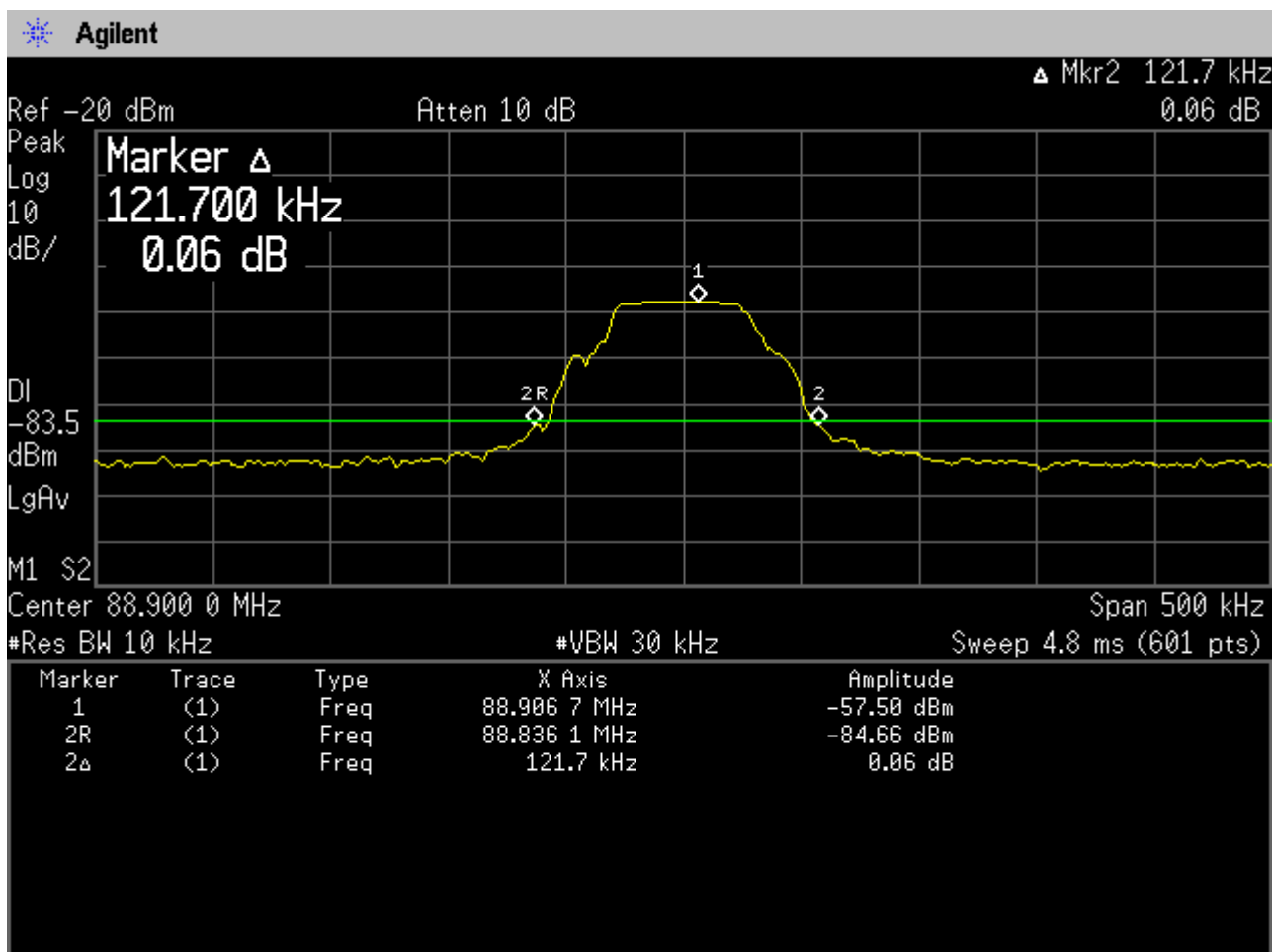
### 5.3. Bandwidth Limit

200kHz wide centered on the operation frequency.

### 5.4. Test Procedure

**PASS.**





## **6. DEVIATION TO TEST SPECIFICATIONS**

[ NONE]