Excellence in Compliance Solutions

# Certification Test Report

**FCC ID: 2AELXM700**
**IC: 20120-M700**

**FCC Rule Part: 15.247**
**IC Radio Standards Specification: RSS-247**

**ACS Report Number: 15-3046.W06.1C**

Manufacturer: SmallHD, LLC
Models: M701, M701L, M702, M702L

Test Begin Date: September 15, 2015
Test End Date: October 2, 2015

Report Issue Date: December 22, 2015

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

FOR THE SCOPE OF ACCREDITATION UNDER LAB Code AT-1921

This report must not be used by the client to claim product certification, approval, or endorsement by ANAB, ANSI, or any agency of the Federal Government.

Reviewed by:

M. R de Aranzeta

Mario de Aranzeta
Lab Manager Durham (RTP)
ACS Inc.



**This report contains 22 pages**

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# 1 GENERAL

## 1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-247 Certification.

## 1.2 Product Description

The SmallHD M700 and its variants (M702 Bright, M701 Bright, M702 Lite, M701 Lite) are camera-top monitors with 7-inch LCD panels used for displaying captured images via HDMI (all variants) or SDI input (M702 Bright, M702 Lite variants). The device includes a Bluetooth Low Energy radio. The device includes confidence tools for checking and correcting exposure, framing, and focus. The 7-Inch panel is a 1920x1200 IPS LCD display in an anodized aluminum chassis with plastic front bezel and plastic back battery plate.

Technical Information:

| Detail | Description |
|---|---|
| Frequency Range | 2402 to 2480 MHz |
| Number of Channels | 40 |
| Modulation Format | GFSK (F1D) |
| Data Rates | 1 MBPS |
| Number of Inputs/Outputs | 1 RF output to an integral antenna |
| Operating Voltage | 6 to 8.4 Vdc |
| Antenna Type / Gain | Meandering PCB trace -7.8 dBi Peak |

Manufacturer Information:
SmallHD, LLC
118 MacKenan Drive
Cary, NC 27511

EUT Serial Numbers: 702-0000065 and 702-000063

Test Sample Condition: The test samples were provided in good working order with no visible defects.

### 1.3 Test Methodology and Considerations

All modes of operation, including all available data rates, were evaluated. The data presented in this report represents the worst case where applicable.

For radiated emissions, the EUT was evaluated in its normal orientation. This orientation is the landscape (wide screen) orientation.

The EUT is a battery operated handheld device, therefore, AC power line conducted emissions testing was not performed.

The power setting is fixed in the firmware and is not accessible by the end user.

A summary of the variants is in the table below:

| Physical Difference | Functionality difference | Model Variant | | | |
|---|---|---|---|---|---|
| | | 702 | 701 | 701L | 702L |
| PCBA components which support SDI video format input and output | SDI serial video input or output. Video signal conversion from HDMI-to-SDI, or SDI-to-HDMI | Yes | No | No | Yes |
| Two external BNC connectors for SDI input and output interfaces | SDI serial video input or output. Video signal conversion from HDMI-toSDI, or SDI-to-HDMI | Yes | No | No | Yes |
| LCD panel pixel count 1080p (1920x1200 pixels) or 720p (1280x800 pixels) | Display resolution | 1080p | 1080p | 720p | 720p |
| PCBA components to support 1 or 2 DDR3 memory banks | Memory size | 2 | 2 | 1 | 1 |
| PCBA components for accelerometer sensor | Auto image rotation | Yes | Yes | No | No |
| PCBA components for Temperature sensor | PCB temperature sensing | Yes | Yes | No | No |
| PCBA components for Audio CODEC and headphone jack | Audio headset | Yes | Yes | No | No |
| PCBA components for USB (not supported for end-users) | Manufacturing verification tests | Yes | Yes | No | No |

# 2 TEST FACILITIES

## 2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions
2320 Presidential Drive, Suite 101
Durham, NC 27703
Phone: (919) 381-4235

## 2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ANAB program and has been issued certificate number AT-1921 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

## 2.3 Radiated Emissions Test Site Description

### 2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of an 18' x 28' x 18' shielded enclosure. The chamber is lined with Samwha Electronics Co. LTD Ferrite Absorber, model number SFA300 (HSN-1). The ferrite tile is 10cm x 10 cm and weighs approximately 1.4lbs. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber. On top of the ferrite tiles is DMAS HT-45 (Dutch Microwave Absorber Solutions) hybrid absorber on all walls except the wall behind the antenna mast which has a shorter DMAS HT-25 absorber.

The turntable is 1.50m in diameter and is located 150cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using short #6 copper wire. The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the turntable. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane.

Behind the turntable is a 2' x 6' x 1.5' deep shielded pit used for support equipment if necessary. The pit is equipped with 2 - 4" PVC chase from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

To comply with the requirements of the test methods given on page 4, RF absorbing foam was placed inside the chamber in a configuration that provided the best results. First, a 12ft X 12ft. patch of 10" tall absorber was placed on the floor between the turntable and the receiving antenna. This absorber meets the absorption requirements specified in ANSI C63.4:2009.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

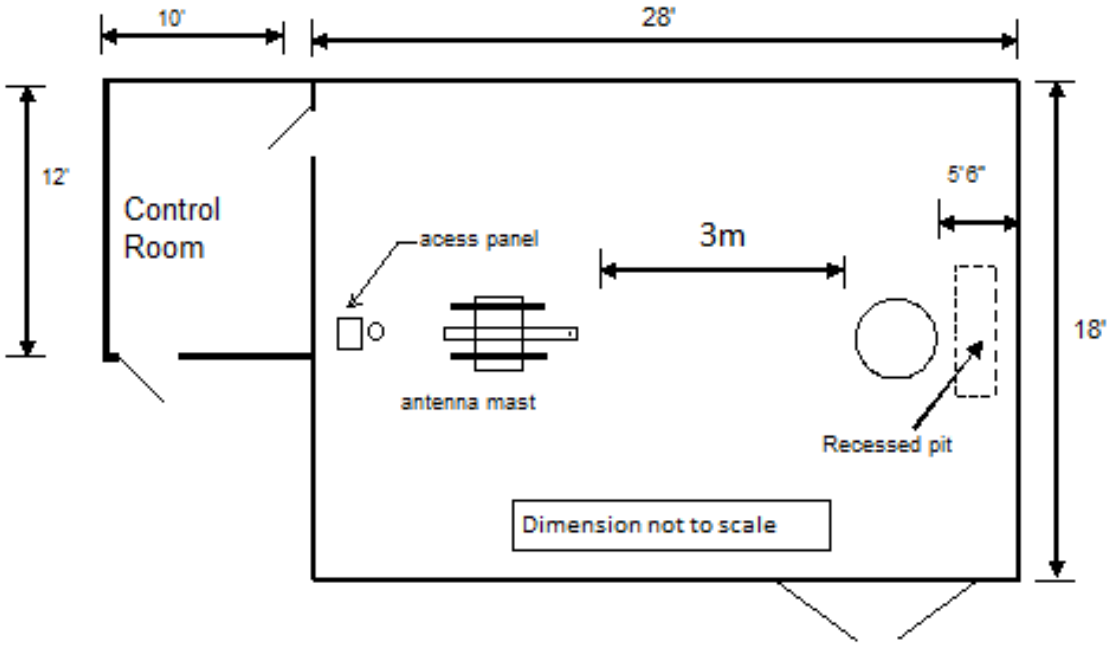


**Figure 2.3-1: Semi-Anechoic Chamber Test Site**

### 2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is located in the main EMC lab. It consists of an 8' x 10' sheet galvanized steel horizontal ground reference plane (GRP) bonded every 6" to an 8' X 8' aluminum vertical ground plane.

A diagram of the room is shown below in figure 2.4-1:

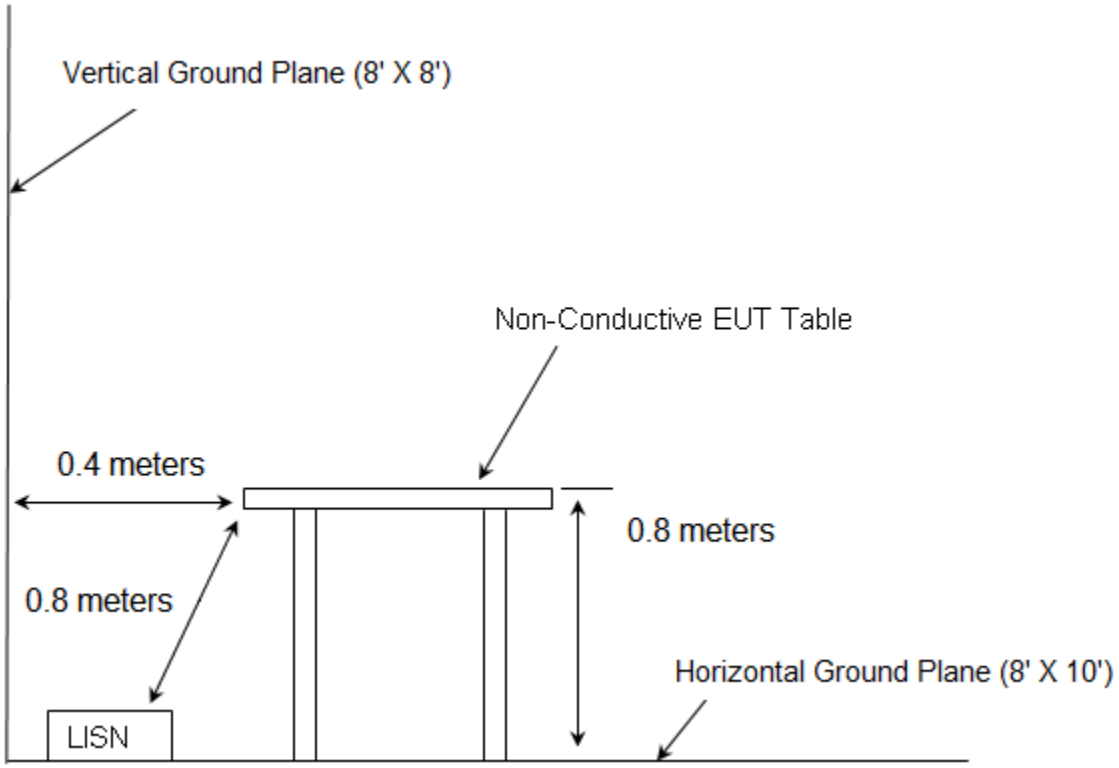


**Figure 2.4-1: AC Mains Conducted EMI Site**

## 3 APPLICABLE STANDARD REFERENCES

- ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2015
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2015
- FCC KDB 558074 D01 DTS Meas Guidance v03r03 - Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247, June 9, 2015
- Industry Canada Radio Standards Specification: RSS-247, Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices, Issue 1, May 2015
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 4, Nov 2014

## 4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

**Table 4-1: Test Equipment**

| AssetID | Manufacturer | Model # | Equipment Type | Serial # | Last Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|
| 3002 | Rohde & Schwarz | ESU40 | Receiver | 100346 | 7/6/2015 | 7/6/2016 |
| 3038 | Florida RF Labs | NMSE-290AW-60.0-NMSE | Cable Set | 1448 | 1/12/2015 | 1/12/2016 |
| 3039 | Florida RF Labs | NMSE-290AW-396.0-NMSE | Cable Set | 1447 | 1/12/2015 | 1/12/2016 |
| 3016 | Fei Teng Wireless Technology | HA-07M18G-NF | Antennas | 2013120203 | 1/14/2015 | 1/14/2016 |
| 3057 | Advanced Technical Materials | 42-441-6/BR | Antennas | R110602 | NCR | NCR |
| 626 | EMCO | 3110B | Antennas | 9411-1945 | 2/26/2014 | 2/26/2016 |
| 277 | Emco | 93146 | Antennas | 9904-5199 | 9/2/2014 | 9/2/2016 |
| 3006 | Rohde & Schwarz | TS-PR18 | Amplifiers | 122006 | 6/29/2015 | 6/29/2016 |
| 3007 | Rohde & Schwarz | TS-PR26 | Amplifiers | 100051 | 6/29/2015 | 6/29/2016 |
| 3054 | Mountain View Cable | BMS-RG400-36.0-BMS | Cables | 3054 | 1/12/2015 | 1/12/2016 |
| 3020 | Rohde & Schwarz | SMB100A | Signal Generators | 175943 | 7/14/2015 | 7/14/2016 |
| 3008 | Rohde & Schwarz | NRP2 | Meter | 103131 | 1/15/2015 | 1/15/2016 |
| 3009 | Rohde & Schwarz | NRP-Z81 | Meter | 102397 | 1/15/2015 | 1/15/2016 |
| 3046 | Aeroflex Inmet | 26AH-10 | Attenuator | 1443 | 1/15/2015 | 1/15/2016 |
| 3033 | Hasco, Inc. | HLL142-S1-S1-36 | Cables | 1435 | 1/15/2015 | 1/15/2016 |
| 3034 | Hasco, Inc. | HLL142-S1-S1-12 | Cables | 3076 | 1/18/2015 | 1/18/2016 |
| 3012 | Rohde & Schwarz | EMC32-EB | Software | 100731 | 1/19/2015 | 7/19/2016 |

DMAS MT-25 RF absorber material was used on the floor for all final measurements above 1 GHz.
NCR = No Calibration Required
Firmware Version: ESU40 is 4.73 SP1
Software Version: EMC32-B is 9.15

## 5 SUPPORT EQUIPMENT

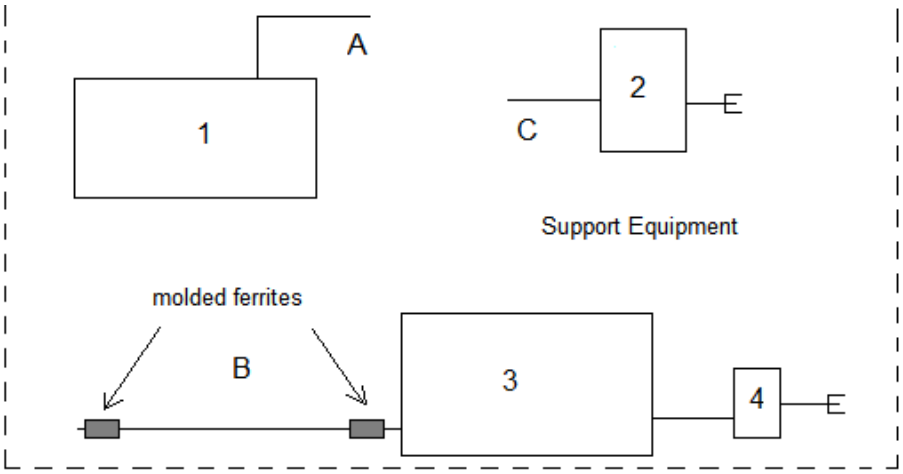


**Figure 5-1: Test Setup Support Equipment Block Diagram**

**Table 5-1: Support Equipment**

| Item | Equipment Type | Manufacturer | Model Number | Serial Number |
|---|---|---|---|---|
| 1 | Monitor | SmallHD, LLC | M502 | ACS # 32 |
| 2 | Power Supply DC | Sorenson | QRD 20-4 | ACS # 23 |
| 3 | Laptop Computer | Lenovo Idea Pad Z710 | 20250 | AB20732643 |
| 4 | Power Adapter | Lenovo | ADL135NDC3A | ACS # 35 |

**Table 5-2: Cable Description – Support Equipment**

| Cable # | Cable Type | Length | Shield | Termination |
|---|---|---|---|---|
| A | SDI Cable L5-CFB<br>Same cable as item 2 in table 5.1 | 3.6 m | Yes | EUT to M502 monitor |
| B | HDMI Cable 3662 | 3.04 m | Yes | EUT to Apple MacBook Pro |
| C | DC Adapter cable | 3.04m | No | Adapter to power supply |

## 6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

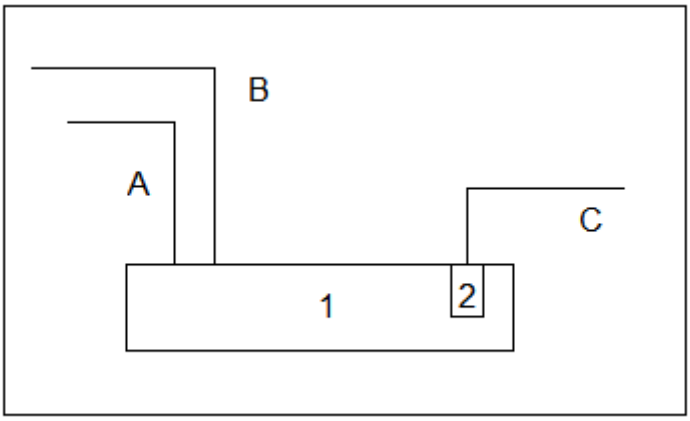


**Figure 6-1: EUT Test Setup Block Diagram**

**Table 6-1: EUT Description**

| Item # | Type Device | Manufacturer or Responsible Party | Model/Part # | Serial # |
|---|---|---|---|---|
| 1 | Monitor (EUT) | SmallHD, LLC | M702 | ACS # 30 |
| 2 | Power Adapter (EUT) | SmallHD, LLC | PWR-ADP-DCA5 | 44 |

**Table 6-2: Cable Description – Radiated Emissions**

| Cable # | Cable Type | Length | Shield | Termination |
|---|---|---|---|---|
| A | SDI Cable L5-CFB<br>Same cable as item 2 in table 5.1 | 3.6 m | Yes | EUT to M502 monitor |
| B | HDMI Cable 3662 | 3.04 m | Yes | EUT to Apple MacBook Pro |
| C | DC Adapter cable | 3.04m | No | Adapter to power supply |

# 7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

## 7.1 Antenna Requirement – FCC 15.203

The antenna is integral to the device and cannot be removed or replaced by the end user. The peak gain of the antenna is -7.8 dBi.

## 7.2 Power Line Conducted Emissions – FCC 15.207, IC: RSS-Gen 8.8

The EUT is a battery operated handheld device, therefore AC power line conducted emissions testing was not performed.

## 7.3 6dB / 99% Bandwidth – FCC 15.247(a)(2), IC: RSS-247 5.2(1)

### 7.3.1 Measurement Procedure

The 6dB bandwidth was measured in accordance with the ANSI C63.10: 2013 (11.8). The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 3 times the RBW. The trace was set to max hold with a peak detector active. The marker-delta function of the spectrum analyzer was utilized to determine the 6 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set to 1% to 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth.

### 7.3.2 Measurement Results

**Table 7.3.2-1: 6dB / 99% Bandwidth**

| Frequency [MHz] | 6dB Bandwidth [kHz] | 99% Bandwidth [MHz] |
|---|---|---|
| 2402 | 697.11 | 1.013 |
| 2440 | 689.10 | 1.026 |
| 2480 | 729.17 | 1.026 |

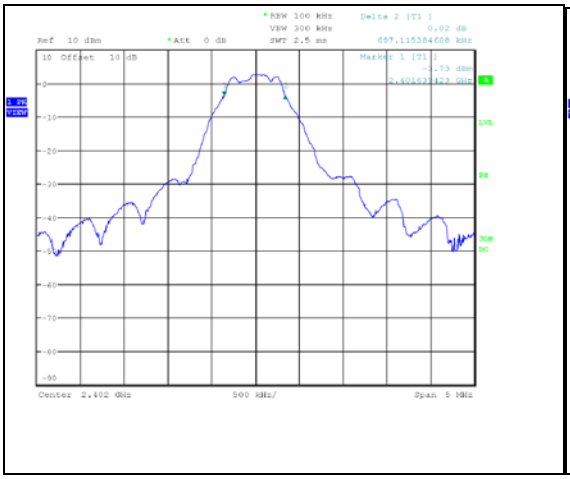

**Figure 7.3.2-1: 6dB Bandwidth Low Channel**

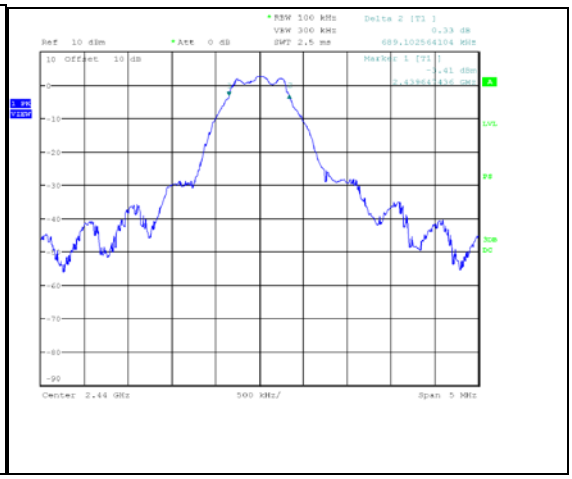

**Figure 7.3.2-2: 6dB Bandwidth Mid Channel**

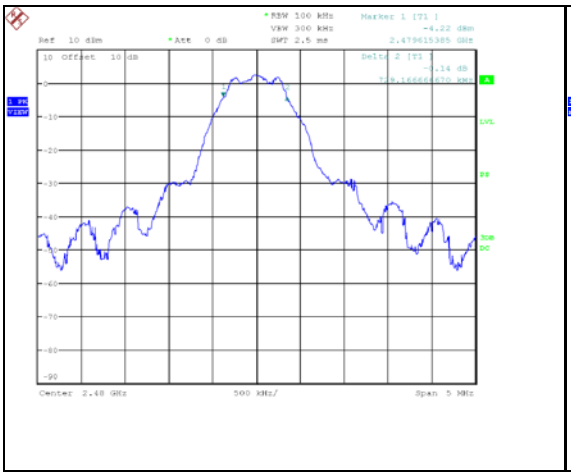

**Figure 7.3.2-3: 6dB Bandwidth High Channel**

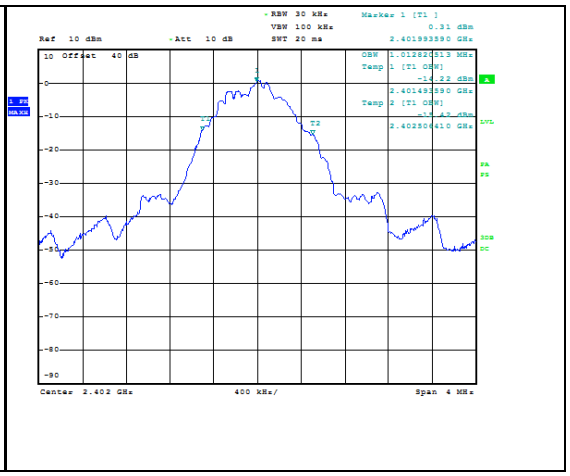

**Figure 7.3.2-4: 99% Bandwidth Low Channel**

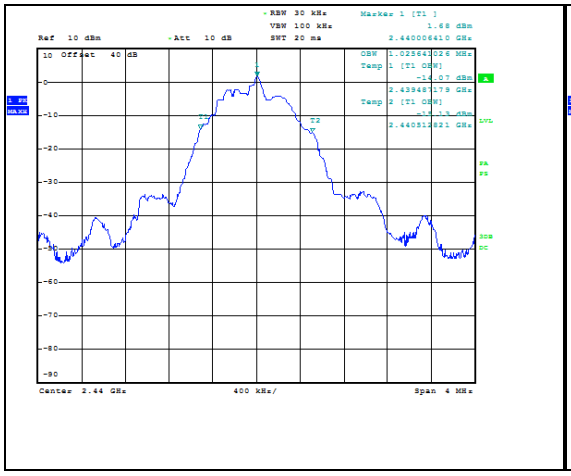

**Figure 7.3.2-5: 99% Bandwidth Mid Channel**

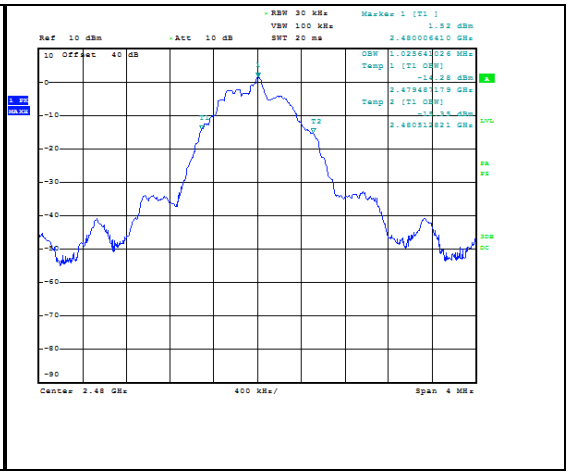

**Figure 7.3.2-6: 99% Bandwidth High Channel**

## 7.4 Fundamental Emission Output Power – FCC 15.247(b)(3), IC: RSS-247 5.4(4)

### 7.4.1 Measurement Procedure

The maximum peak conducted output power was measured in accordance with ANSI C63.10: 2013 (11.9) utilizing the PKPM1 Peak power meter method. The RF output of the equipment under test was directly connected to the input of the peak power meter applying suitable attenuation.

### 7.4.2 Measurement Results

**Table 7.4.2-1: Maximum Peak Conducted Output Power**

| Frequency (MHz) | Output Power (dBm) | Output Power Watts |
|---|---|---|
| 2402 | 3.3 | 0.0021 |
| 2440 | 3.16 | 0.0021 |
| 2480 | 3 | 0.002 |

## 7.5 Emission Levels – FCC 15.247(d), 15.205, 15.209; IC RSS-247 5.5, RSS-Gen 8.9/8.10

### 7.5.1 Emissions into Non-restricted Frequency Bands

#### *7.5.1.1* Measurement Procedure

The unwanted emissions into non-restricted bands were measured conducted in accordance with ANSI C63.10: 2013 (11.11). The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 300 kHz. The trace was set to max hold with a peak detector active. The resulting spectrum analyzer peak level was used to determine the reference level with respect to the 20 dBc limit. The spectrum span was then adjusted for the measurement of spurious emissions from 30 MHz to 25GHz, 10 times the highest fundamental frequency.

Band-edge compliance was determined using the conducted marker-delta method in which the radio frequency power that is produced by the EUT is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power.

#### *7.5.1.2* Measurement Results

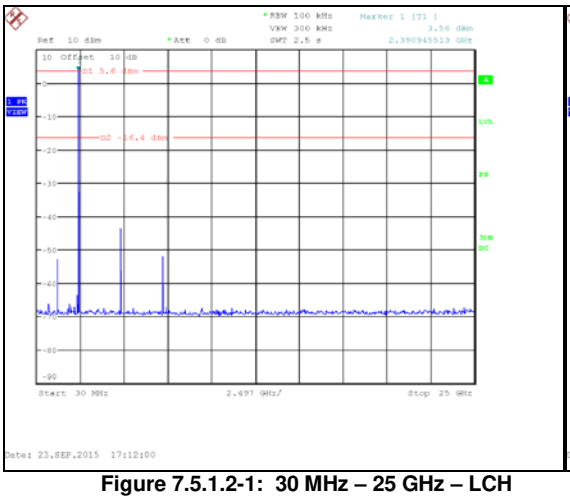

Figure 7.5.1.2-1: 30 MHz – 25 GHz – LCH

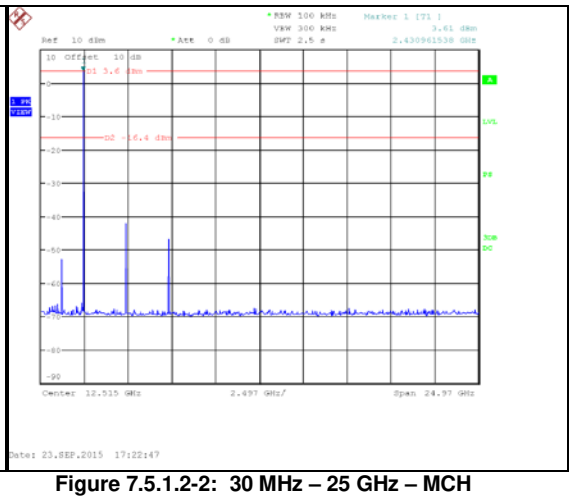

Figure 7.5.1.2-2: 30 MHz – 25 GHz – MCH

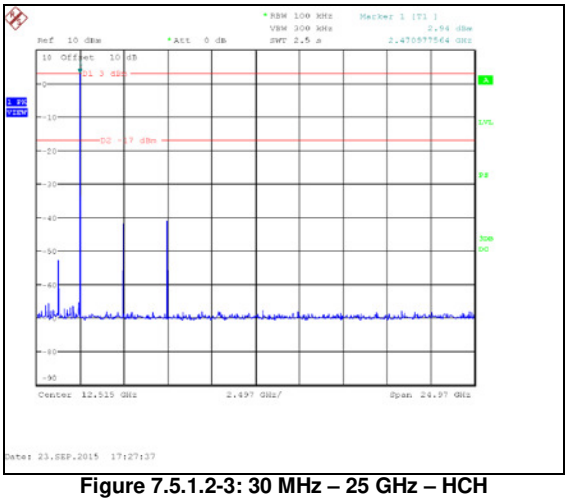

Figure 7.5.1.2-3: 30 MHz – 25 GHz – HCH

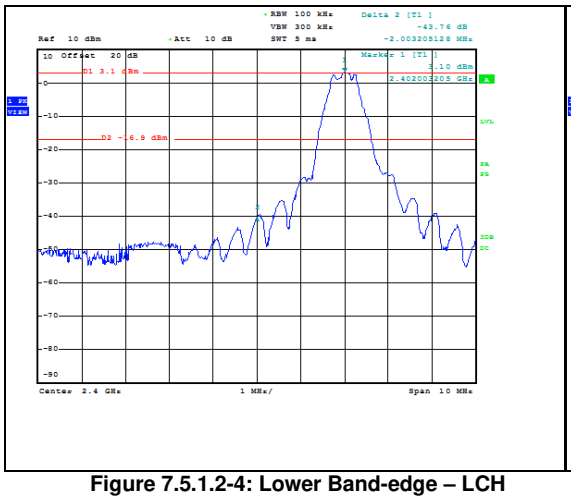


**Figure 7.5.1.2-4: Lower Band-edge – LCH**

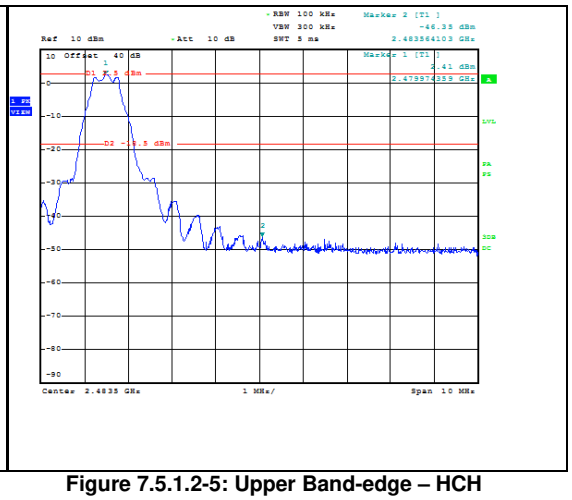


**Figure 7.5.1.2-5: Upper Band-edge – HCH**

### 7.5.2 Emissions into Restricted Frequency Bands

#### *7.5.2.1* Measurement Procedure

The unwanted emissions into restricted bands were measured radiated over the frequency range of 30MHz to 25GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a RBW of 120 kHz and a VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3 MHz respectively.

Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209.

#### *7.5.2.2* Duty Cycle Correction

The Duty Cycle Correction was not required.

#### *7.5.2.3* Measurement Results

**Table 7.5.2.3-1: Radiated Spurious Emissions Tabulated Data – LCH**

**Low Channel: 2402 MHz**

**Measurement Distance:**
☐ 1 Meter ☒ 3 Meter ☐ 10 Meter

| Frequency (MHz) | Measured Level (dBuV) | | Antenna Polarity (H/V) | Turntable Position (o) | Antenna Height (cm) | Correction Factors (dB) | Corrected Level (dBuV/m) | | Limit (dBuV/m) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pk | Qpk/Av | | | | | Pk | Qpk/Av | Pk | Qpk/Av | Pk | Qpk/Av |
| 4804 | 49.80 | 41.70 | H | 125 | 140 | 6.02 | 55.82 | 47.72 | 74.0 | 54.0 | 18.2 | 6.3 |
| 4804 | 48.00 | 35.10 | V | 127 | 125 | 6.02 | 54.02 | 41.12 | 74.0 | 54.0 | 20.0 | 12.9 |
| 1336 | 55.40 | 42.30 | H | 270 | 120 | -5.39 | 50.01 | 36.91 | 74.0 | 54.0 | 24.0 | 17.1 |
| 1336 | 52.30 | 42.20 | V | 50 | 210 | -5.39 | 46.91 | 36.81 | 74.0 | 54.0 | 27.1 | 17.2 |
| 2321.5 | 47.60 | 25.20 | H | 345 | 130 | -2.38 | 45.22 | 22.82 | 74.0 | 54.0 | 28.8 | 31.2 |
| 2321.5 | 39.90 | 24.80 | V | 345 | 130 | -2.38 | 37.52 | 22.42 | 74.0 | 54.0 | 36.5 | 31.6 |
| 2377.7 | 48.30 | 25.60 | H | 345 | 130 | -2.21 | 46.09 | 23.39 | 74.0 | 54.0 | 27.9 | 30.6 |
| 2377.7 | 47.60 | 25.40 | V | 345 | 130 | -2.21 | 45.39 | 23.19 | 74.0 | 54.0 | 28.6 | 30.8 |

**Table 7.5.2.3-2: Radiated Spurious Emissions Tabulated Data - MCH**

**Mid Channel: 2440 MHz**

**Measurement Distance:**
☐ 1 Meter ☒ 3 Meter ☐ 10 Meter

| Frequency (MHz) | Measured Level (dBuV) | | Antenna Polarity (H/V) | Turntable Position (o) | Antenna Height (cm) | Correction Factors (dB) | Corrected Level (dBuV/m) | | Limit (dBuV/m) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pk | Qpk/Av | | | | | Pk | Qpk/Av | Pk | Qpk/Av | Pk | Qpk/Av |
| 4880 | 48.60 | 40.50 | H | 125 | 140 | 5.97 | 54.57 | 46.47 | 74.0 | 54.0 | 19.4 | 7.5 |
| 4880 | 48.10 | 31.70 | V | 127 | 125 | 5.97 | 54.07 | 37.67 | 74.0 | 54.0 | 19.9 | 16.3 |
| 7320 | 42.90 | 30.70 | H | 125 | 140 | 9.26 | 52.16 | 39.96 | 74.0 | 54.0 | 21.8 | 14.0 |
| 7320 | 39.40 | 25.20 | V | 125 | 125 | 9.26 | 48.66 | 34.46 | 74.0 | 54.0 | 25.3 | 19.5 |
| 1336.5 | 58.40 | 48.00 | H | 270 | 120 | -5.39 | 53.01 | 42.61 | 74.0 | 54.0 | 21.0 | 11.4 |
| 1336.5 | 57.50 | 49.10 | V | 50 | 210 | -5.39 | 52.11 | 43.71 | 74.0 | 54.0 | 21.9 | 10.3 |

**Table 7.5.2.3-3: Radiated Spurious Emissions Tabulated Data - HCH**

**High Channel: 2480 MHz**

**Measurement Distance:**
☐ 1 Meter ☒ 3 Meter ☐ 10 Meter

| Frequency (MHz) | Measured Level (dBuV) | | Antenna Polarity (H/V) | Turntable Position (o) | Antenna Height (cm) | Correction Factors (dB) | Corrected Level (dBuV/m) | | Limit (dBuV/m) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pk | Qpk/Av | | | | | Pk | Qpk/Av | Pk | Qpk/Av | Pk | Qpk/Av |
| 4960 | 49.50 | 39.70 | H | 130 | 190 | 5.91 | 55.41 | 45.61 | 74.0 | 54.0 | 18.6 | 8.4 |
| 4960 | 49.10 | 34.00 | V | 195 | 155 | 5.91 | 55.01 | 39.91 | 74.0 | 54.0 | 19.0 | 14.1 |
| 7440 | 43.20 | 31.10 | H | 130 | 125 | 9.60 | 52.80 | 40.70 | 74.0 | 54.0 | 21.2 | 13.3 |
| 7440 | 38.80 | 24.70 | V | 190 | 195 | 9.60 | 48.40 | 34.30 | 74.0 | 54.0 | 25.6 | 19.7 |
| 1336.5 | 54.50 | 44.90 | H | 90 | 250 | -5.39 | 49.11 | 39.51 | 74.0 | 54.0 | 24.9 | 14.5 |
| 1336.5 | 53.50 | 44.40 | V | 135 | 150 | -5.39 | 48.11 | 39.01 | 74.0 | 54.0 | 25.9 | 15.0 |
| 2483.5 | 42.70 | 25.30 | H | 255 | 130 | -1.89 | 40.81 | 23.41 | 74.0 | 54.0 | 33.2 | 30.6 |
| 2483.5 | 43.10 | 25.50 | V | 330 | 100 | -1.89 | 41.21 | 23.61 | 74.0 | 54.0 | 32.8 | 30.4 |

### *7.5.2.4* Sample Calculation:

$R_C = R_U + CF_T$

Where:

| | | |
|---|---|---|
| $CF_T$ | = | Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only) |
| $R_U$ | = | Uncorrected Reading (dBuV) |
| $R_C$ | = | Corrected Level (dBuV/m) |
| AF | = | Antenna Factor (dB/m |
| CA | = | Cable Attenuation (dB) |
| AG | = | Amplifier Gain |
| DC | = | Duty Cycle Correction Factor |

**Example Calculation: Peak**

Corrected Level: 49.80 + 6.02 = 55.82dBuV/m
Margin: 74dBuV/m – 55.82dBuV/m = 18.2dB

**Example Calculation: Average**

Corrected Level: 41.70 + 6.02 - 0 = 47.72dBuV/m
Margin: 54dBuV – 47.72dBuV = 6.3dB

## 7.6 Power Spectral Density in the Fundamental Emission – FCC 15.247(e) IC: RSS-247 5.2(2)

### 7.6.1 Measurement Procedure

The power spectral density was measured in accordance with the ANSI C63.10: 2013 (11.10) utilizing the PKPSD (peak PSD) method. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 3 kHz. The Video Bandwidth (VBW) was set to 10 kHz. Span was set to 1.5 times the DTS bandwidth. The trace was set to max hold with a peak detector active.

### 7.6.2 Measurement Results

**Table 7.6.2-1: Peak Power Spectral Density**

| Frequency (MHz) | PSD Level (dBm) |
|---|---|
| 2402 | -10.07 |
| 2440 | -10.25 |
| 2480 | -10.27 |

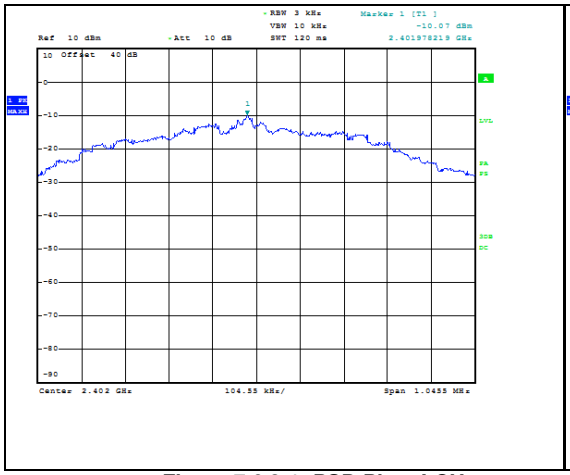

Figure 7.6.2-1: PSD Plot –LCH

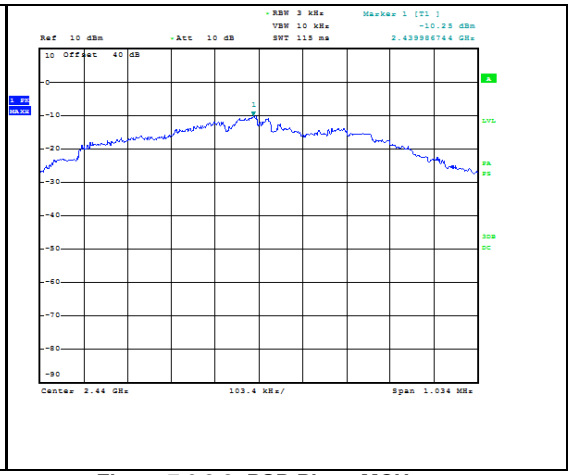

Figure 7.6.2-2: PSD Plot – MCH

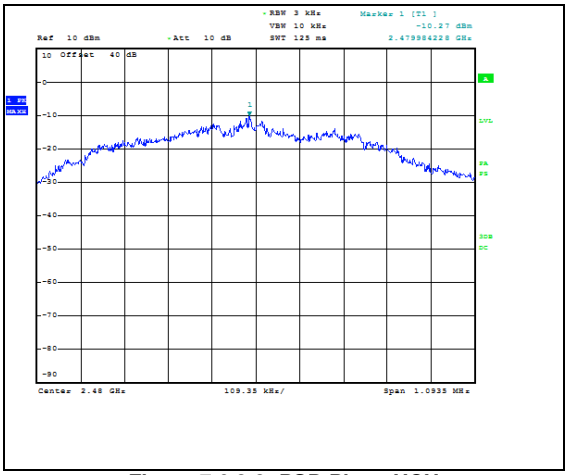

Figure 7.6.2-3: PSD Plot – HCH

## 8 CONCLUSION

In the opinion of ACS, Inc. the M701, M701L, M702, M702L, manufactured by SmallHD, LLC meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-247.

# END REPORT