



**STATEMENT OF JOHN E. HIDLE, P.E.  
IN SUPPORT OF AN APPLICATION FOR  
LICENSE TO COVER  
POST REPACK CONSTRUCTION PERMIT  
FILE # 0000034898  
WDSI-TV - CHATTANOOGA, TENNESSEE  
DTV - CH. 14 - 120 kW - 306 m HAAT**

Prepared for: NEW AGE MEDIA OF TENNESSEE LICENSE, LLC

I am a Consulting Engineer, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission. I am a Professional Engineer in the Commonwealth of Virginia, No. 7418, and in the State of New York, No. 63418.

**GENERAL**

This office has been authorized by NEW AGE MEDIA OF TENNESSEE LICENSE, LLC, licensee of WDSI-TV, channel 40, licensed to Chattanooga, Tennessee, to prepare this statement, FCC Form 2100, Schedule B, and its associated exhibits in support of an application for license to cover its constructed facility according to the terms of its post-reassignment construction permit, File # 0000034898.

The instant application, in addition to a facility “proof-of-performance”, also provides certain documentation that is necessary to demonstrate that no objectionable interference will be caused to existing land mobile radio facilities that are located in the 460 MHz to 470 MHz band, which is directly adjacent to UHF television channel 14 (470 - 476 MHz).

Notification was made to 642 land mobile facilities, as shown in the attach example notification. Should there subsequently arise any interference complaints the applicant will respond accordingly and immediately notify FCC staff.

**STATEMENT OF JOHN E. HIDLE, P.E.**  
**WDSI-TV - Chattanooga, Tennessee**  
**PAGE 2**

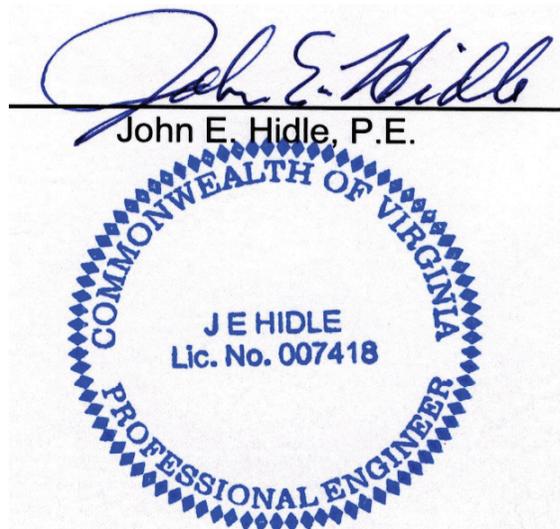
**DISCUSSION**

The applicant, in order to comply with the FCC's channel 14 special operating conditions set forth in its construction permit, file # 0000034898, in constructing the facility has installed an RF filter with highly suppressive characteristics in the adjacent frequency band below channel 14. The manufacturer's measured data, which is included herein, show the sufficiently suppressive "out-of-band" characteristics of the filter.

**SUMMARY**

It is submitted that the instant application for license to cover its post-reassignment channel 14 construction permit, file # 0000034898, which includes data to demonstrate compliance with the channel 14 special conditions, as described herein, does comply with the Rules, Regulations and relevant Policies of the Federal Communications Commission. This statement, FCC PTA request Form, and the attached exhibits were prepared by me or under my direct supervision and are believed to be true and correct to the best of my knowledge and belief.

DATED: August 31, 2018

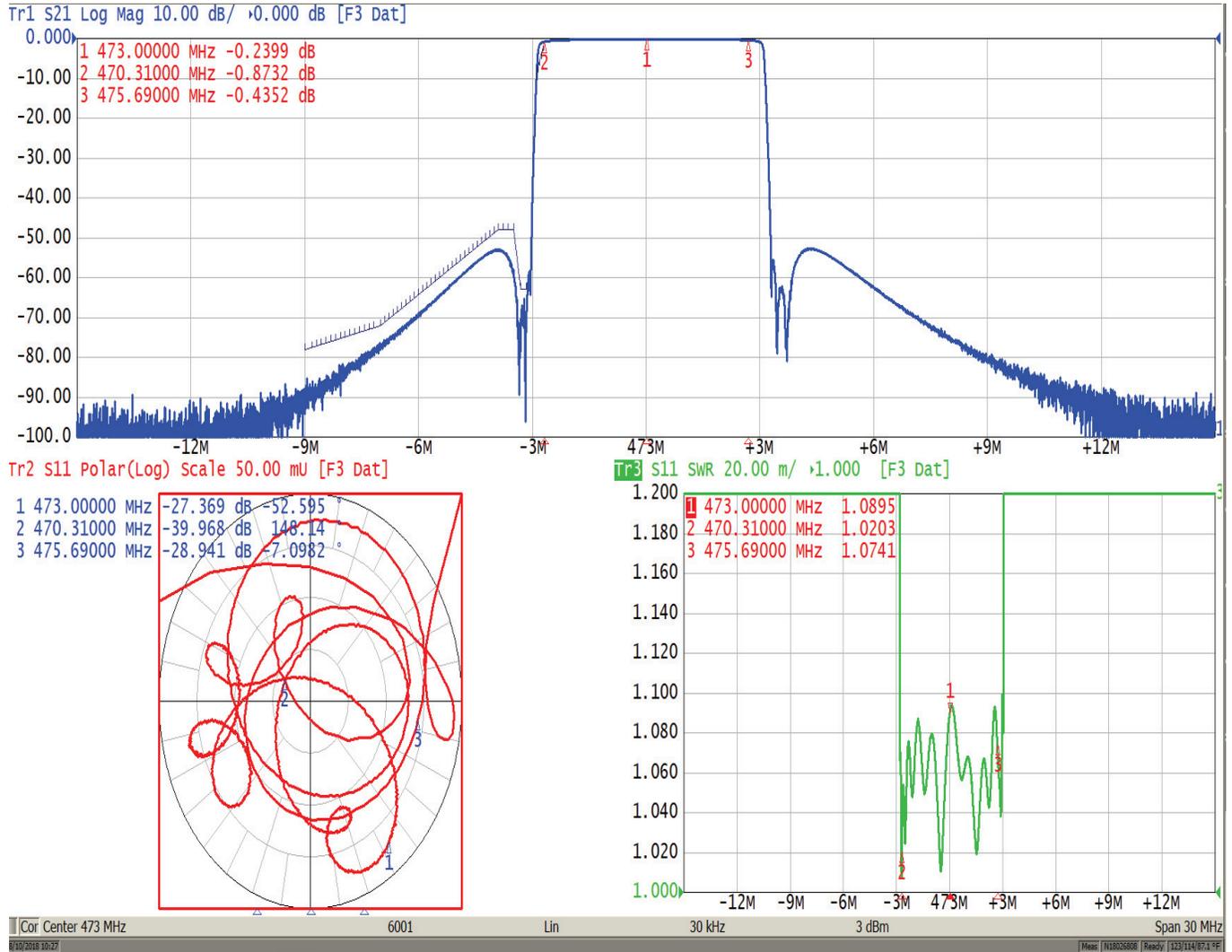




M50 1634002 LINE 1

RF SYSTEM CH 14 WDSI

FILTER RESPONSE POLAR VSWR INTO ANTENNA POSITION

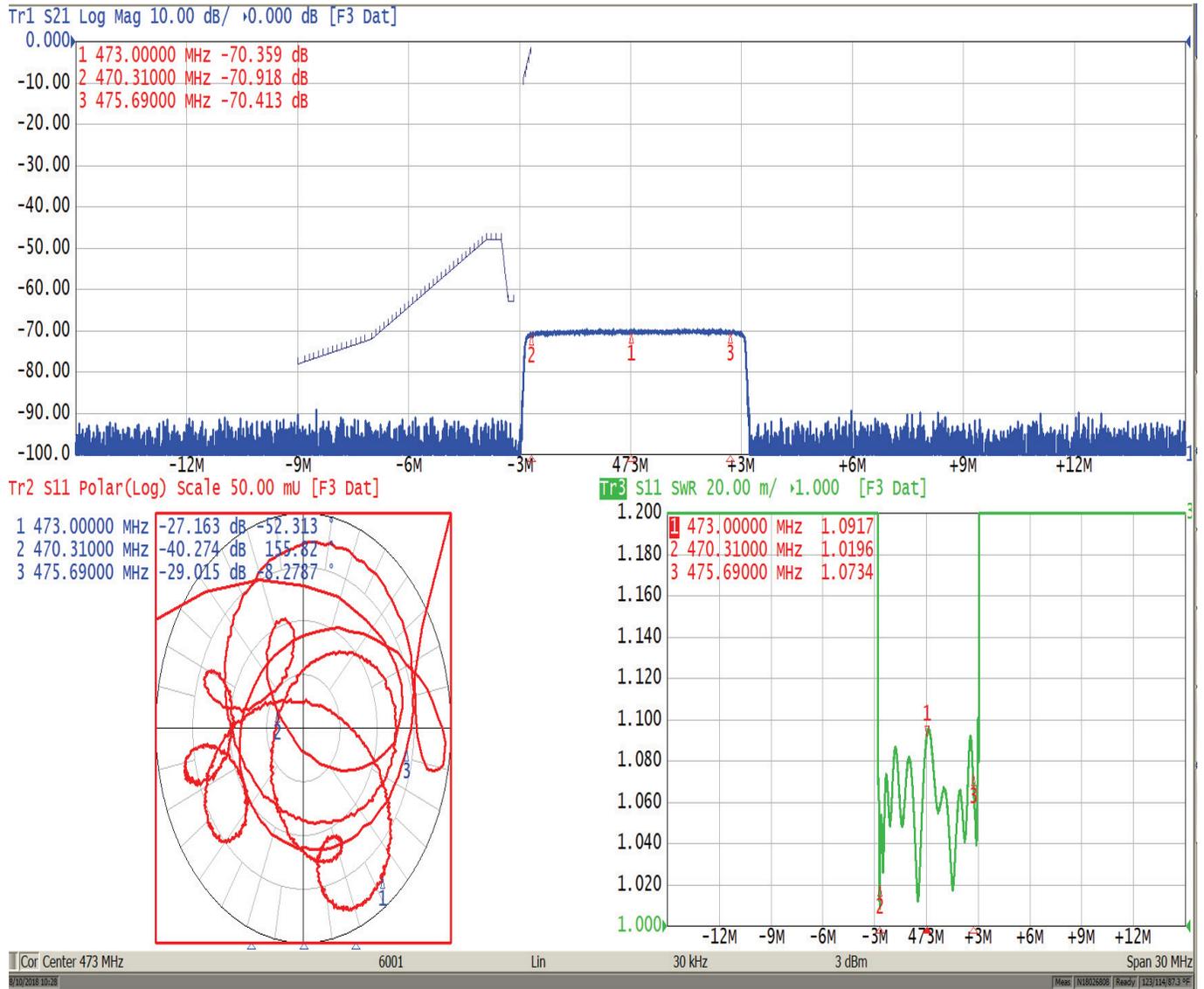




MSO 1634002 LINE 1

RF SYSTEM CH 14 WDSI

ISOLATION POLAR VSWR INTO LOAD POSITION



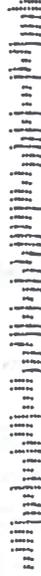
RF Notifications LLC  
2054 Kildaire Farm Rd # 405  
Cary, NC 27518

**WDSI-LM**

Lisa Sockett or 2-way Radio (LMRS) Administrator  
RF Notifications  
125 Bonniewood DR  
Cary, NC 27518

neopost<sup>SM</sup>  
06/11/2018  
**US POSTAGE \$000.47**  
  
0.4 ZIP 32809  
225238

2751838961 R016





RF Notifications

2054 Kildaire Farm Rd. #405 Cary, NC 27518 919.368.6580 RFNotifications.com

June 11, 2011

**RF Notifications**  
**125 Bonniewood DR**  
**Cary, NC 27518**  
**Lisa Sockett or 2-way Radio (LMRS) Administrator**

**Time Sensitive Material**

Dear Lisa Sockett or 2-way Radio (LMRS) Administrator,

**PLEASE DIRECT THIS LETTER TO THE PERSON RESPONSIBLE FOR OVERSEEING AND/OR MAINTAINING YOUR LAND MOBILE 2-WAY RADIOS AND REPEATERS.**

It is very important that this online form be **completed by July 15<sup>th</sup>, 2018** so that WDSI can plan its frequency change to avoid interference to your facilities and to facilitate uninterrupted use of your 2-way systems. Given the potential number of land mobile operators, WDSI needs to start the mitigation process within the next few months. Your response to this letter via input to the [www.WDSI-RFN.com](http://www.WDSI-RFN.com) website is critical to an effective program to remediate potential interference.

The FCC is requiring WDSI-TV in Chattanooga, TN to change its television broadcast channel to Channel 14 (470Mhz – 476MHz). This change in WDSI's frequency could potentially create additional interference to your existing land mobile radio facilities (2-way radio service).

On, or around **September 1st, 2018** WDSI will begin operations on TV channel 14 with 120kW Effective Radiated Power from 2417 Taft Highway, Signal Mountain, TN 37377 (35-09-38N Lat. 85-19-06W Long.).

WDSI has retained RF Notifications, a broadcast TV consultant, to operate a website so that WDSI and its consulting engineers can work with land mobile operators like you to assist in mitigating potential interference issues.

Please log into [www.WDSI-RFN.com](http://www.WDSI-RFN.com) your case sensitive password is: **WDSI\$2685** and complete the brief form.

Again, it is very important that this online form be **completed by July 15<sup>th</sup>, 2018**

Website Problems: Please contact Lisa Sockett at (919) 368-6580 or e-mail at [Lsockett@RFNotifications.com](mailto:Lsockett@RFNotifications.com)

Technical Questions regarding this process: Please contact Rusty Mooney at (501) 324-7531 or email [wrmoney@sbgvtv.com](mailto:wrmoney@sbgvtv.com)

Kind Regards,

*Lisa Sockett*

Lisa Sockett, COO  
 RF Notifications

**\*\*\*Please see reverse side for the Call Sign(s) this letter covers\*\*\***



RF Notifications



RF Notifications

2054 Kildaire Farm Rd. #405 Cary, NC 27518 919.368.6580 RFNotifications.com

The Call signs this letter is covering for Licensee P&L Enterprises

NCPETE



RF Notifications

# FCC Proof of Performance and Site Acceptance Test

Prepared By:

**ROHDE & SCHWARZ, INC.**

Prepared For:

**WDSI DT**

**UHF 14**

Submitted By: \_\_\_\_\_

Louis Moyer & Carlos Quevedo  
Rohde & Schwarz, Inc.

This undersigned confirms that the FCC Proof of Performance  
and the Site Acceptance Test were successfully completed on:

\_\_\_\_\_  
(Submitted Date)

\_\_\_\_\_  
(Accepted Date)

Accepted By: \_\_\_\_\_

Dennis Brown  
SBGTV



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## 1 System Information

### 1.1 Hardware Information

#### 1.1.1 Transmitter Information

Transmitter Manufacturer:	Rohde and Schwarz
Transmitter Model Number:	THU9 - 4 Evo
Transmitter Part Number:	2065.1240.30
Transmitter Serial Number:	1030013-qu
Modulation:	ATSC
Total Output Power of Transmitter (TPO):	4.764KW W
Total Output Power of Filter (TPOF):	5.39KW W
Pilot Frequency:	470.3094410 MHz

#### 1.1.2 Filter Information

Filter Manufacturer:	Dielectric
Filter Model:	MSO 1634002 Line 1
Filter Part Number:	RF System Channel 14 WDSI
Filter Serial Number:	0

#### 1.1.3 Antenna Information

Antenna Manufacturer:	Dielectric
Antenna Model:	TFU-24WB/VP-R C160
Antenna Part Number:	0
Antenna Serial Number:	C-71027

#### 1.1.4 Line Information

Line Manufacturer:	Dielectric
Line Size:	3 1/8"
Line Length:	250' ft



## 1.2 Software Information

### 1.2.1 Software Information

TCE Controller:	23.6.0
Exciter A:	23.6.0
Exciter B:	23.6.0
Amplifiers:	01.01

## 2 Customer Information

### 2.1 Customer Information

#### 2.1.1 Network Information

Call Sign:	WDSI DT
Customer:	Sinclair
Channel:	UHF 14

#### 2.1.2 Installation Location

Location:	LAT: 35-9-38.7 N LON: 85-19-5.8 W
Address:	2417 Taft highway
City:	Signal Mountain
State:	TN
Zip:	37377

## 3 Test Information

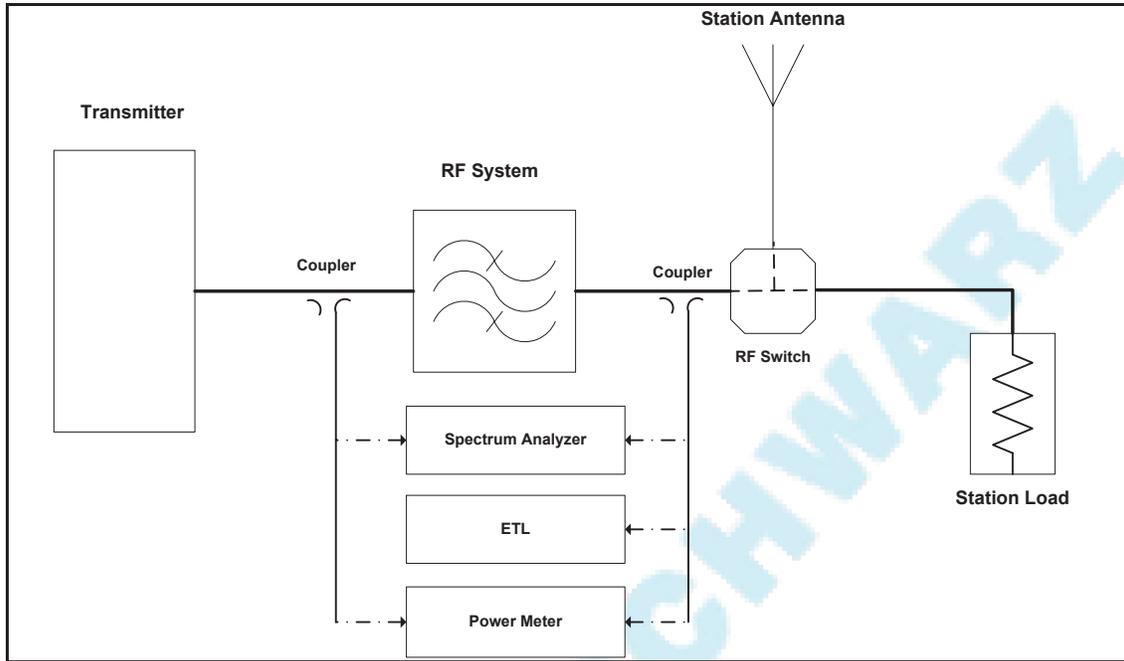
### 3.1 Test Equipment Used

#### 3.1.1 Test Equipment Used Table

Type	Material Number	Serial Number	Owner	Calibration Due
ETL-3	2112.0004.13	105234	Rohde & Schwarz, Inc.	12:00:00 AM
NRP18S	1419.0029K02	101125-NC	Rohde & Schwarz, Inc.	12:00:00 AM

## 3.2 Equipment Test Setup

### 3.2.1 Equipment Test Setup Diagram



## 3.3 FCC Proof of Performance Test Results

### 3.3.1 Output Power Measurements

Output Power Measurements	Rated	Actual	Result
Nominal Output Power from Transmitter	4.764KW W	4.764KW W – See Section 3.4.1	Pass
Nominal Output Power after Mask Filter	5.39KW W	4.76KW W – See Section 3.4.2	Pass
Nominal Output Power Displayed on GUI	±5.00% of 4.764KW W	– See Section 3.4.3	Pass
Total Coupling Attenuation at Transmitter		61.0 dB	
Total Coupling Attenuation after Mask Filter		53.0 dB	

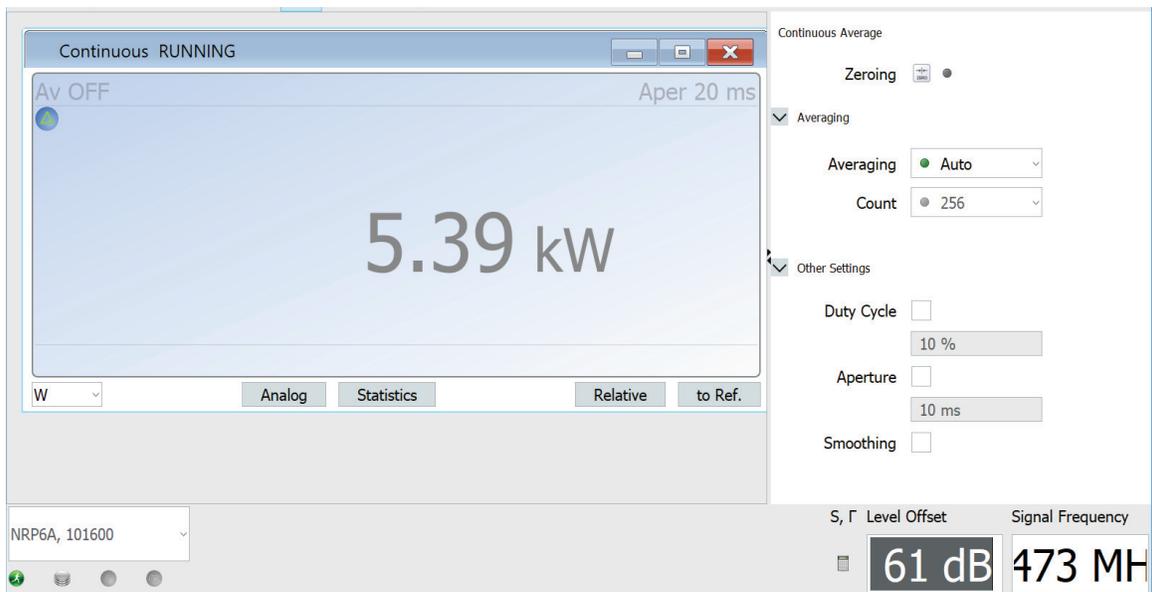


## 3.3.2 Spectrum Measurements

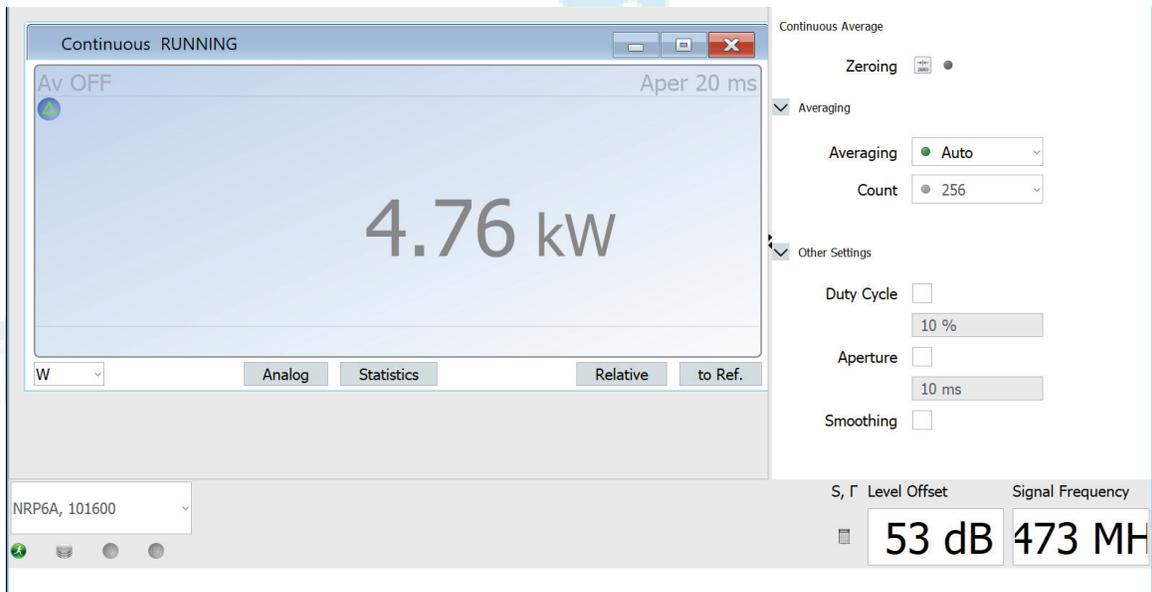
Output Power Measurements	Rated	Actual	Result
Exciter A Narrow Band FCC Mask Filter Plot	Compliant with Spec	Refer to Section 3.5.2	PASS
Exciter B Narrow Band FCC Mask Filter Plot	Compliant with Spec	Refer to Section 3.5.7	PASS
Exciter A Wide Band FCC Mask Filter Plot	Compliant with Spec	Refer to Section 3.5.3	PASS
Exciter B Wide Band FCC Mask Filter Plot	Compliant with Spec	Refer to Section 3.5.8	PASS
Exciter A Second Harmonics	$\geq -110 \text{ dB}_c$	Refer to Section 3.5.4	PASS
Exciter B Second Harmonics	$\geq -110 \text{ dB}_c$	Refer to Section 3.5.9	PASS
Exciter A Third Harmonics	$\geq -110 \text{ dB}_c$	Refer to Section 3.5.5	PASS
Exciter B Third Harmonics	$\geq -110 \text{ dB}_c$	Refer to Section 3.5.10	PASS
Exciter A Pilot Frequency Offset	$\pm 1000 \text{ Hz}$	- 9 Hz – Refer to Section 3.5.1	PASS
Exciter B Pilot Frequency Offset	$\pm 1000 \text{ Hz}$	+ 2 Hz – Refer to Section 3.5.6	PASS

### 3.4 Transmitter Power Output Results

#### 3.4.1 Total Output Power of Transmitter (TPO)

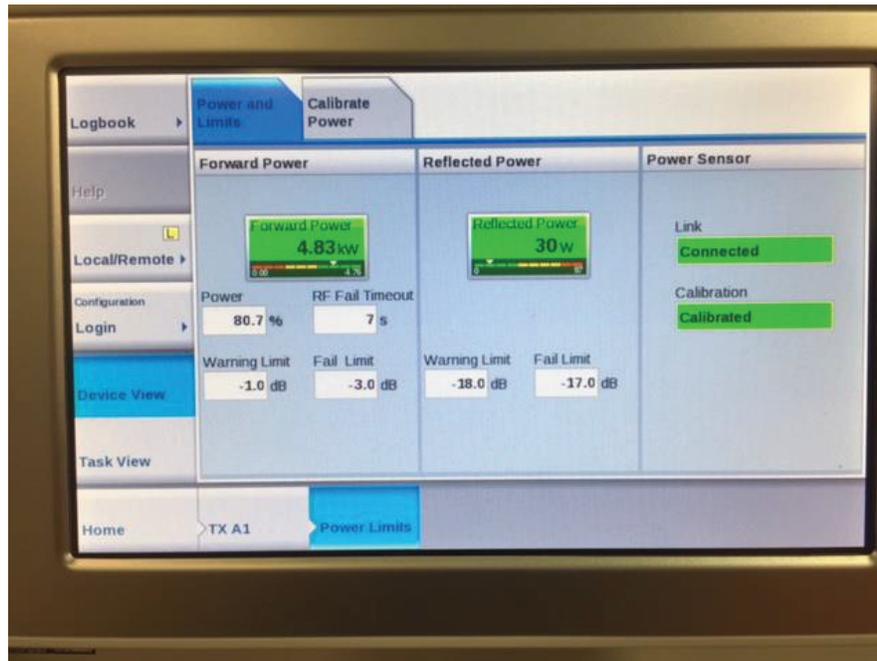


#### 3.4.2 Total Output Power of Filter (TPOF)





### 3.4.3 Transmitter Displayed Output Power



### 3.4.4 Estimated RF Power Budget

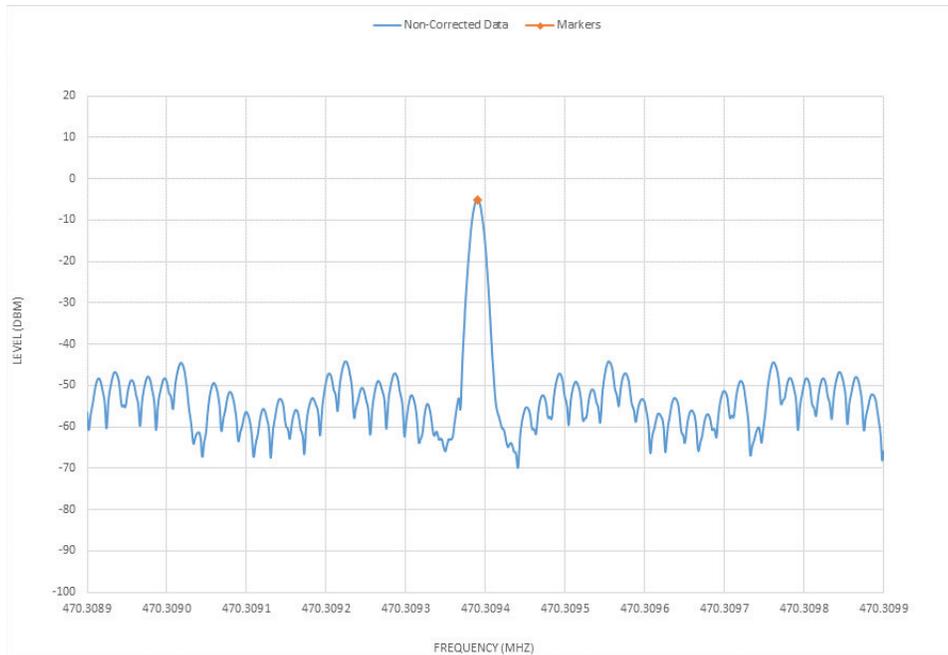
Measurement	Rated	Measured
Total Power Output (TPO) (W)	4.764KW	4.764KW
Total Power Output after Filter (TPOF) (W)	5.39KW	4.76KW

### 3.4.5 Transmitter Efficiency

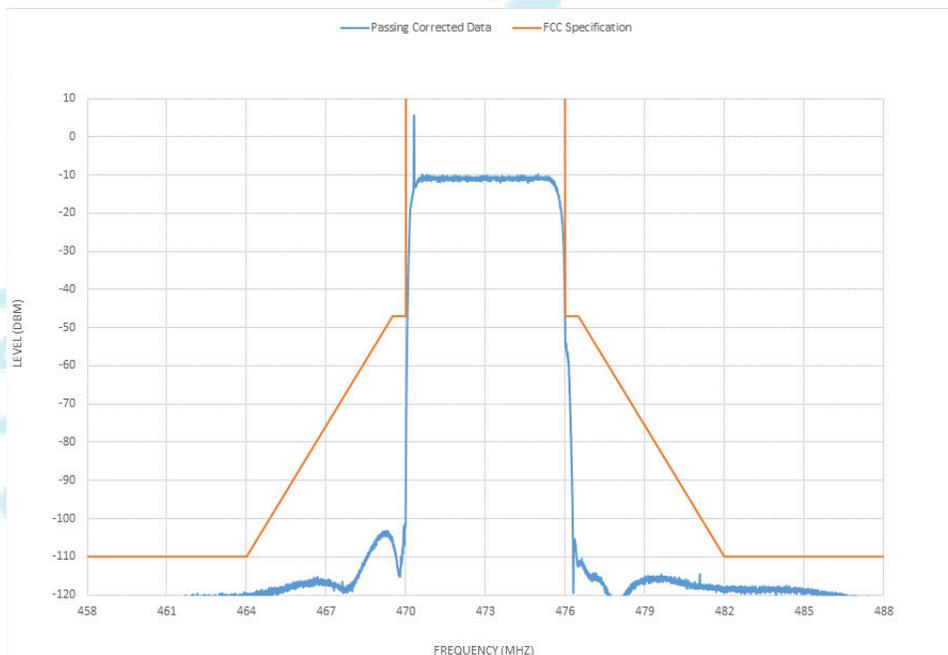
Measurement	Output Power	AC Drain	Typical Eff.	Actual Eff.
Transmitter Only	4.764KW	14470 W	~40.00%	#VALUE!
RF System (Transmitter and Filter)	4.76KW	14470 W	~35.00%	#VALUE!

### 3.5 Exciter Plots

#### 3.5.1 Exciter A - Pilot Frequency

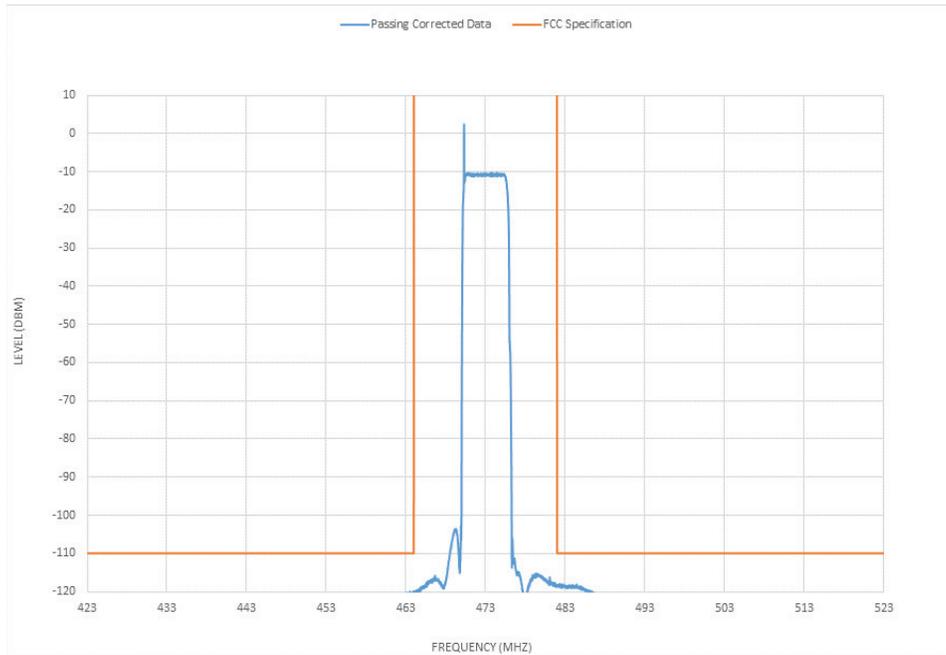


#### 3.5.2 Exciter A - Narrow Band Mask Filter Plot

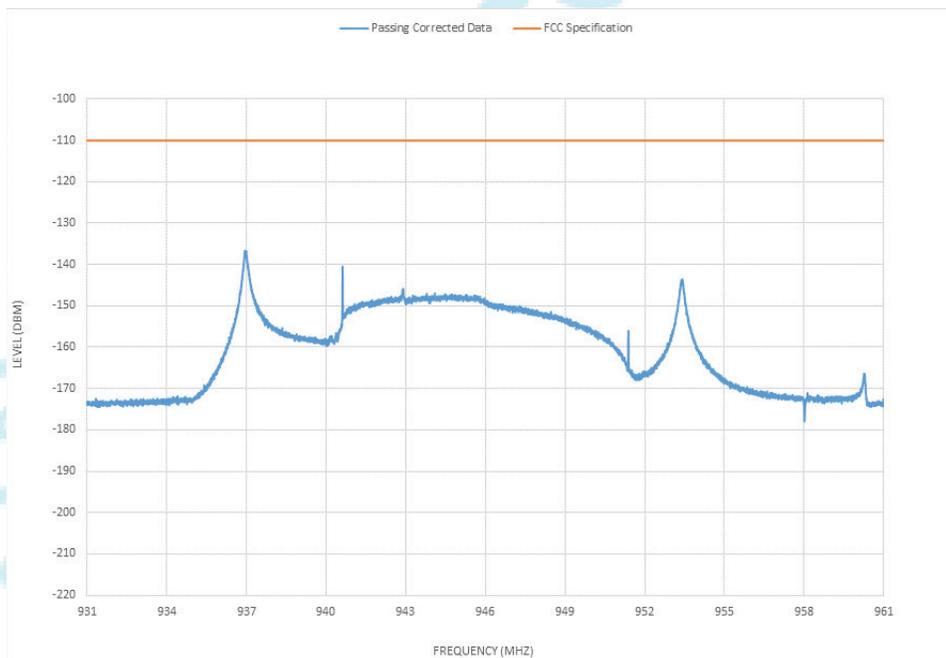




## 3.5.3 Exciter A - Wide Band Plot

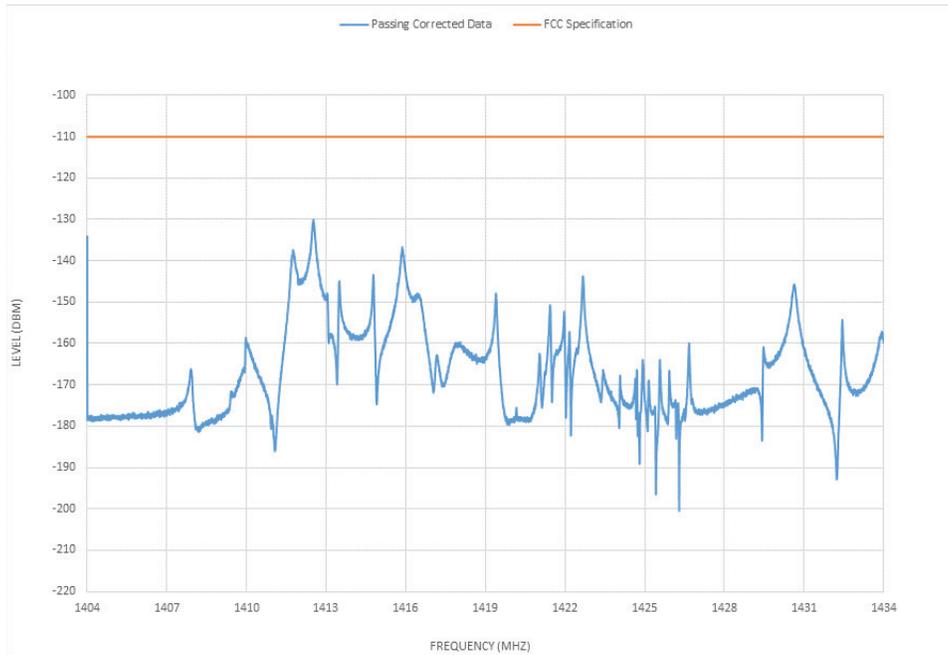


## 3.5.4 Exciter A - Second Harmonic Plot

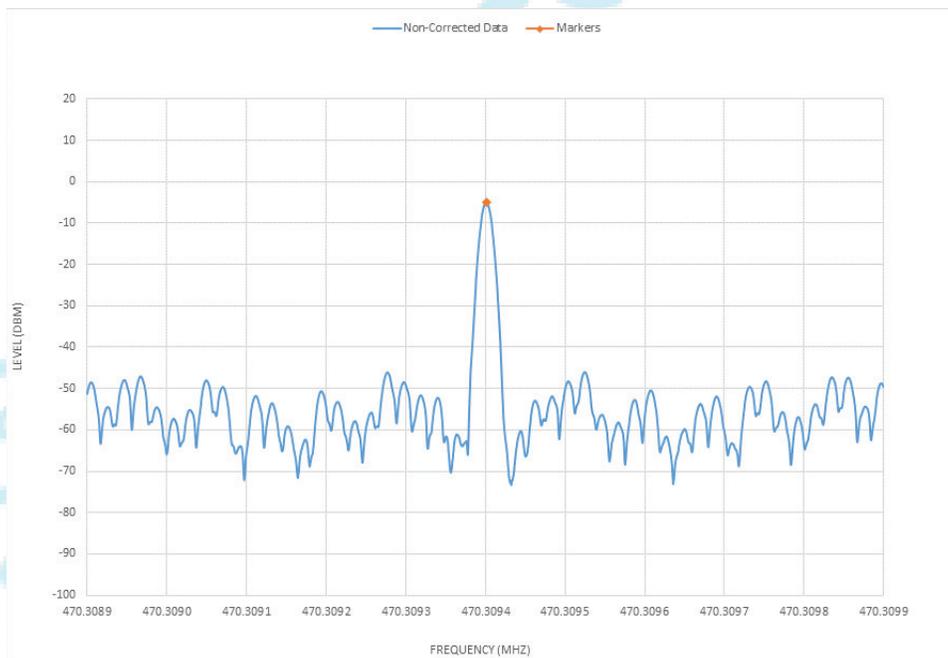




## 3.5.5 Exciter A - Third Harmonic Plot

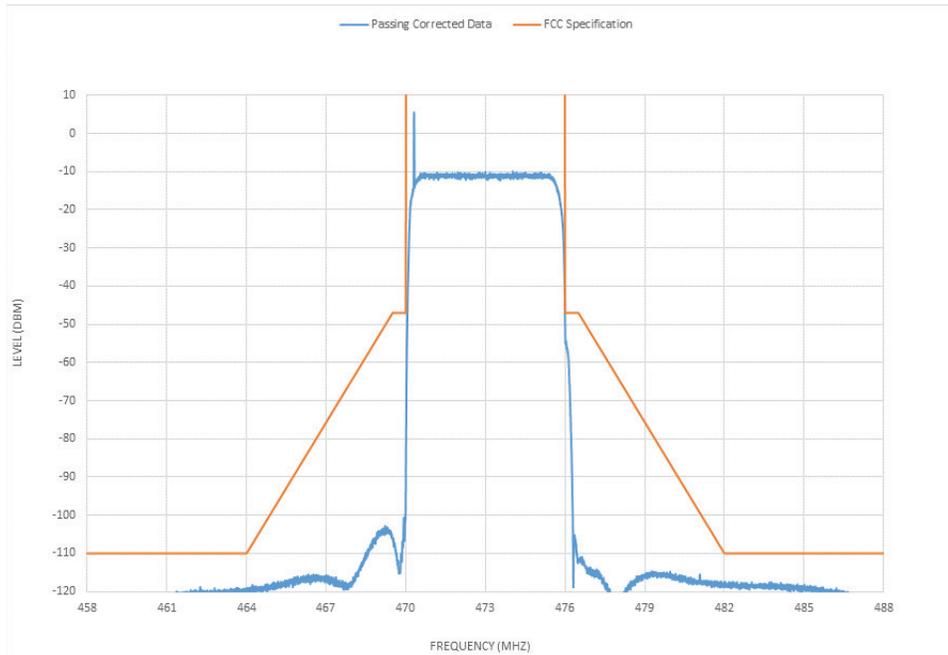


## 3.5.6 Exciter B - Pilot Frequency

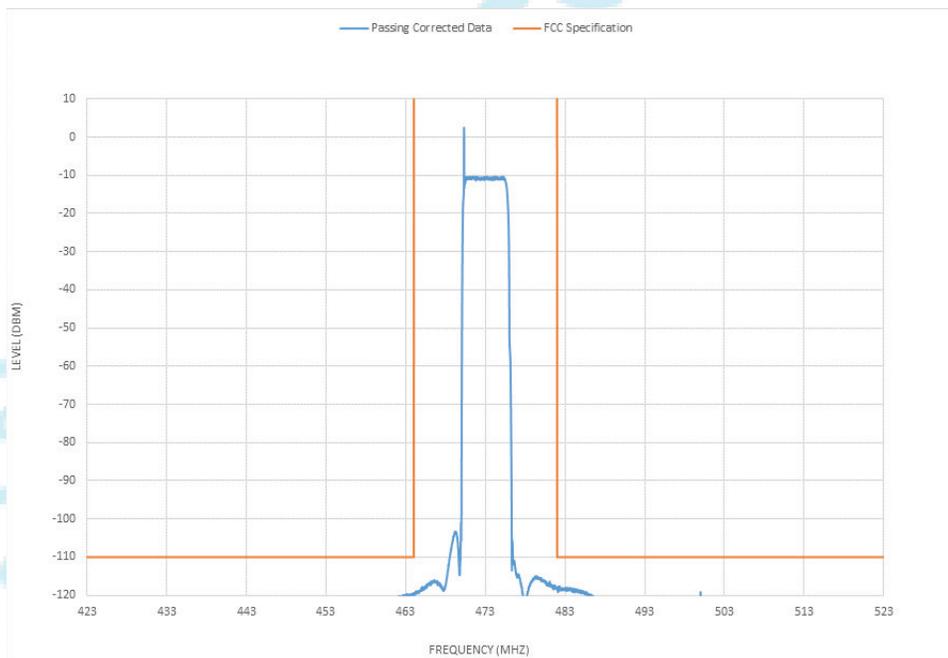




## 3.5.7 Exciter B - Narrow Band Mask Filter Plot

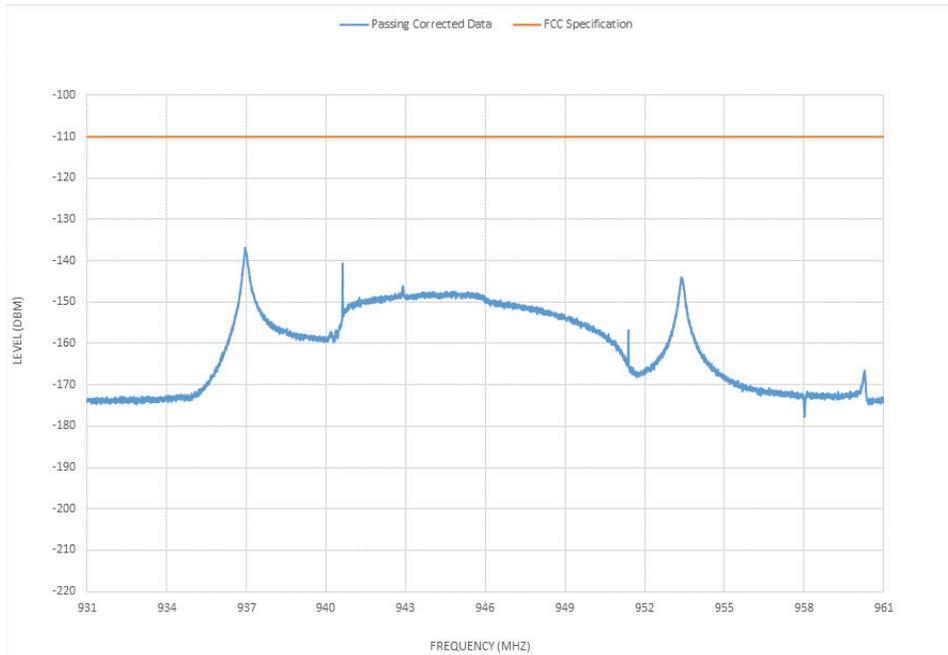


## 3.5.8 Exciter B - Wide Band Plot

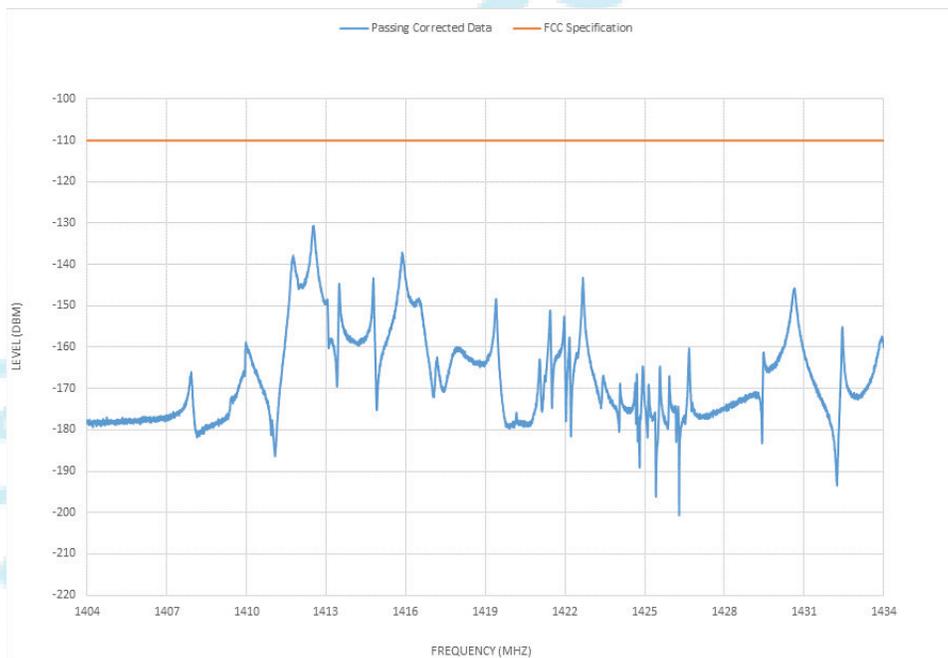




## 3.5.9 Exciter B - Second Harmonic Plot



## 3.5.10 Exciter B - Third Harmonic Plot





## 3.6 Site Acceptance Tests

### 3.6.1 Exciter A - Site Acceptance Test Data

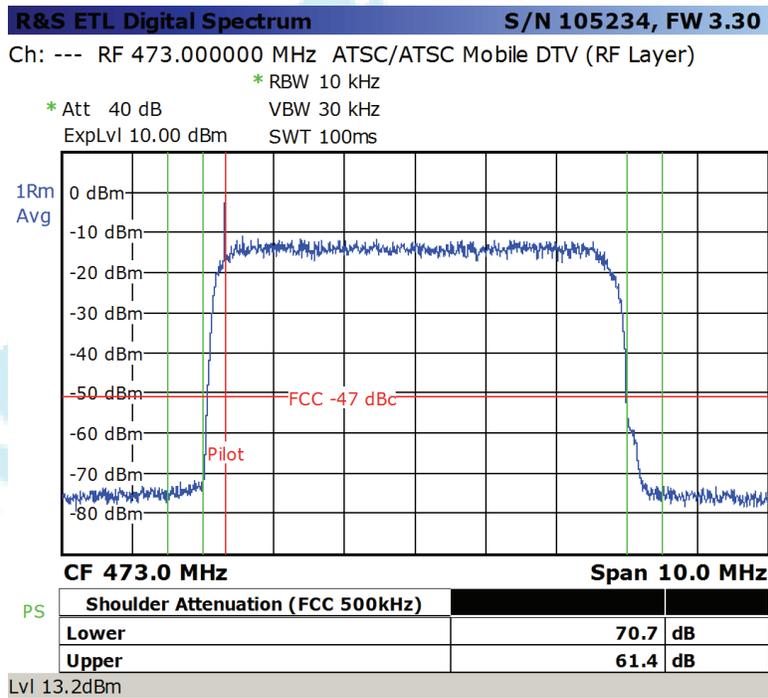
Measurement	Minimum	Actual	Ideal	Score	Result
Sync Lock	Yes	Yes	Yes	100.0%	Pass
Level	3.0 ±5.0 dBm	12.7 dBm	3.0 dBm	46.0%	Pass
Carrier Frequency Offset	0.0 ±1000 Hz	-9.2 Hz	0.0 Hz	99.1%	Pass
Symbol Rate Offset	0.0 ±1000 Hz	37.6 Hz	0.0 Hz	96.2%	Pass
MER Equalizer On	30.0 dB	40.8 dB	33.0 dB	100.0%	Pass
MER Equalizer Off	27.0 dB	35.0 dB	30.0 dB	100.0%	Pass
EVM Equalizer Off	3.0%	1.2%	1.0%	92.5%	Pass
Amplitude Flatness	1.0 dB	0.7 dB	0.5 dB	66.9%	Pass
Phase	3.0°	5.6°	1.0°	0.0%	FAIL
Group Delay	50.0 ns	195.7 ns	10.0 ns	0.0%	FAIL
Pilot Value	1.25 ±0.2	1.27	1.25	89.4%	Pass
Pilot Signal to Data Signal	3.0 dB	11.1 dB	11.7 dB	93.5%	Pass
BER Before Reed Solomon	2.E-06%	0.E+00%	1.E-11%	100.0%	Pass
BER After Reed Solomon	1.E-09%	0.E+00%	1.E-11%	100.0%	Pass
Packet Error Ratio	1.E-06%	0.E+00%	1.E-11%	100.0%	Pass
Packet Errors per Second	3	0	0	100.0%	Pass
Lower Shoulder	47.0 dB	70.7 dB	50.0 dB	100.0%	Pass
Upper Shoulder	47.0 dB	59.4 dB	50.0 dB	100.0%	Pass
Crest	3.0 dB	8.2 dB	7.5 dB	75.5%	Pass
<b>Transmitter Quality Value</b>	<b>0.0%</b>	<b>83.0%</b>	<b>100.0%</b>	<b>83.0%</b>	<b>Pass</b>

### 3.6.2 Exciter A - Overview

R&S ETL Digital Overview		S/N 105234, FW 3.30	
Ch: --- RF 473.000000 MHz ATSC/ATSC Mobile DTV (RF Layer)			
* Att 40 dB ExpLvl 10.00 dBm			
ATSC Parameters			
Fail	Limit	< Results	< Limit Unit
Level	-60.0 *	12.7	10.0 dBm
Constellation		8VSB / Normal	
MER (rms)	24.0	35.0	---- dB
MER (peak)	10.0	13.3	---- dB
EVM (rms)	----	1.16	4.40 %
EVM (peak)	----	14.17	22.00 %
OLim			
BER before RS		0.0e-7(40%/1e8)	2.0e-4
BER after RS		0.0e-6(10%/1e5)	1.0e-10
Packet Error Ratio		0.0e-4(10%/1e5)	1.0e-8
Packet Errors		0	1 /s
PS			
Carrier Freq Offset	-30000.0	-9.2	30000.0 Hz
Symbol Rate Offset	-10000.0	37.6	10000.0 Symb/s
MPEG Ts Bitrate		19.392658	MBit/s
Lvl 12.7dBm   BER 0.0e-7   MER 35.0dB		DEMOD	MPEG

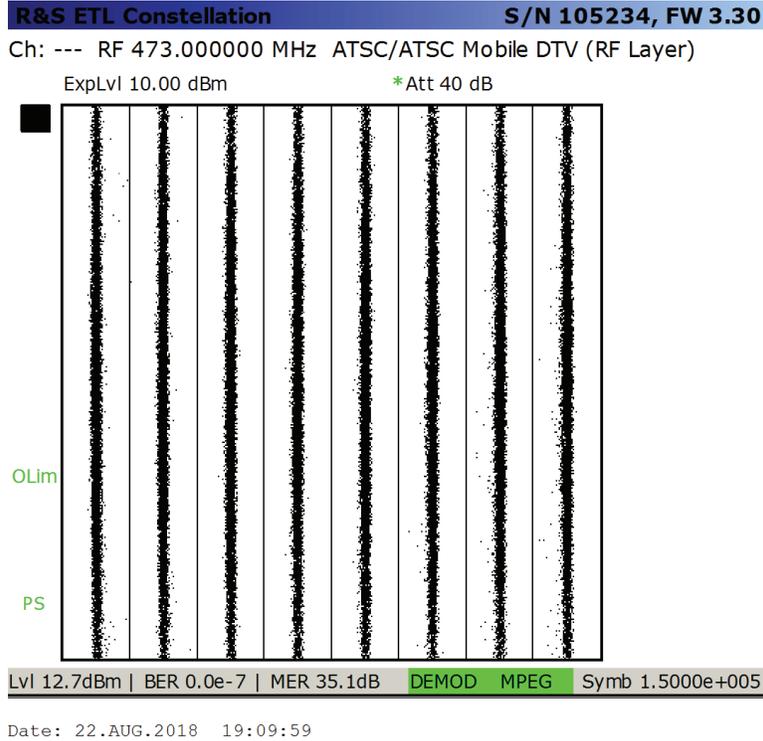
Date: 22.AUG.2018 19:09:47

### 3.6.3 Exciter A - Spectrum

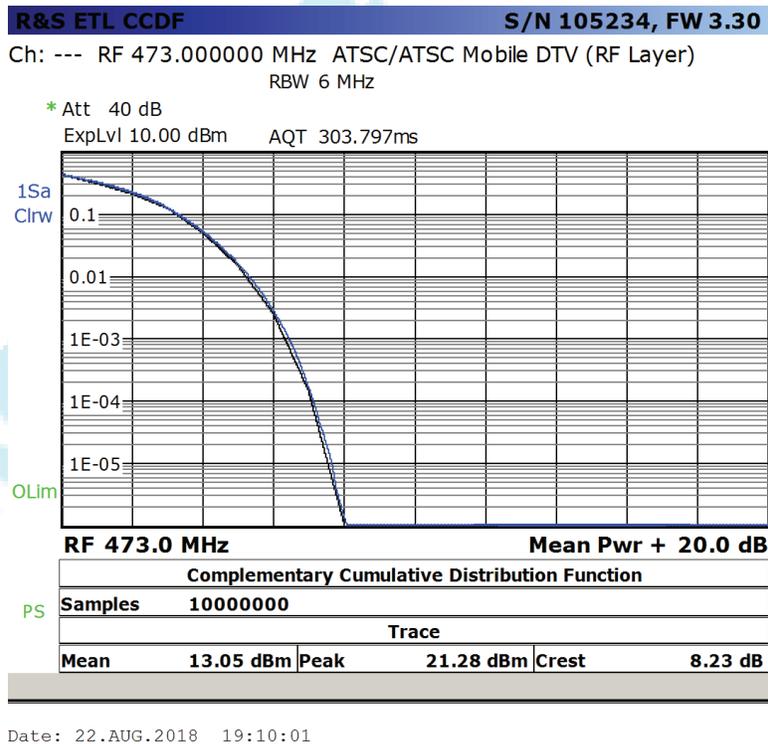


Date: 22.AUG.2018 19:09:54

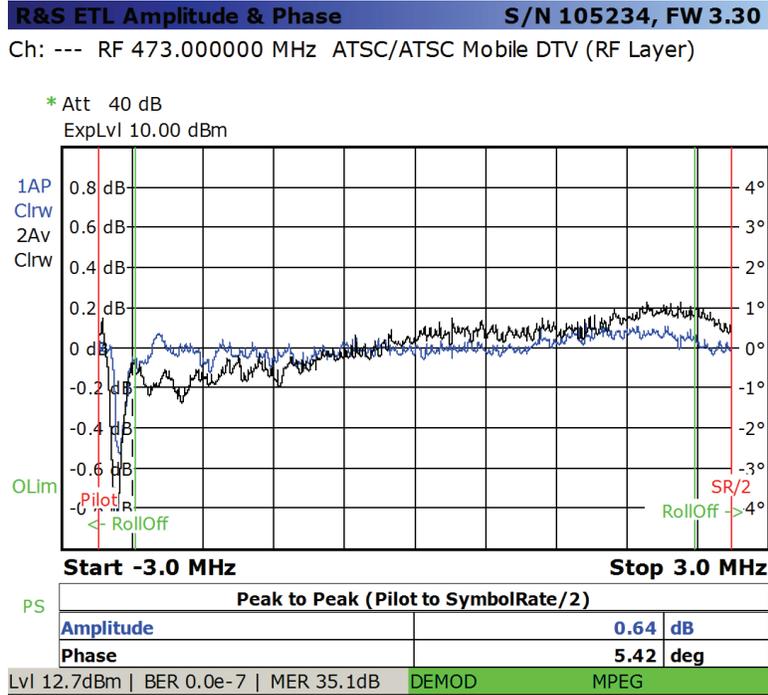
### 3.6.4 Exciter A - Constellation



### 3.6.5 Exciter A - CCDF

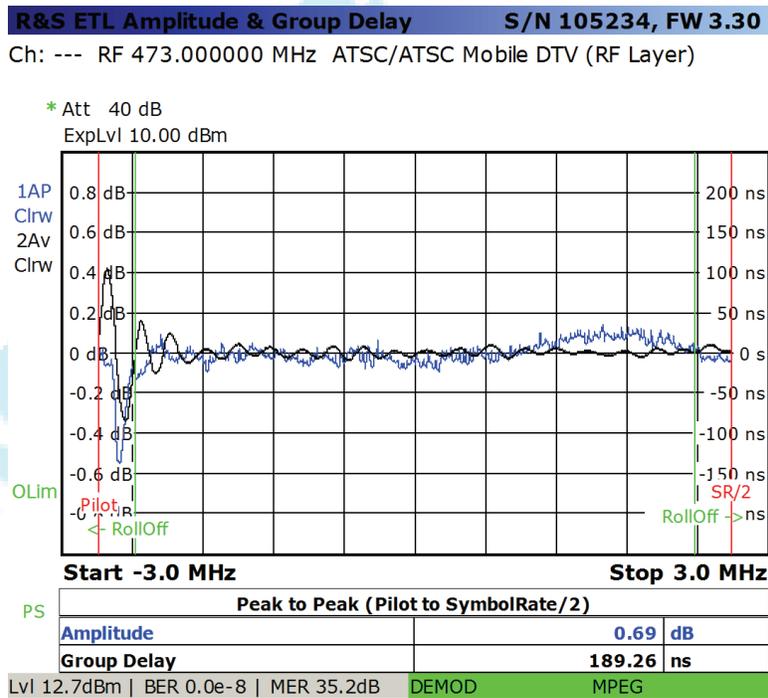


### 3.6.6 Exciter A - Amplitude and Phase



Date: 22.AUG.2018 19:10:07

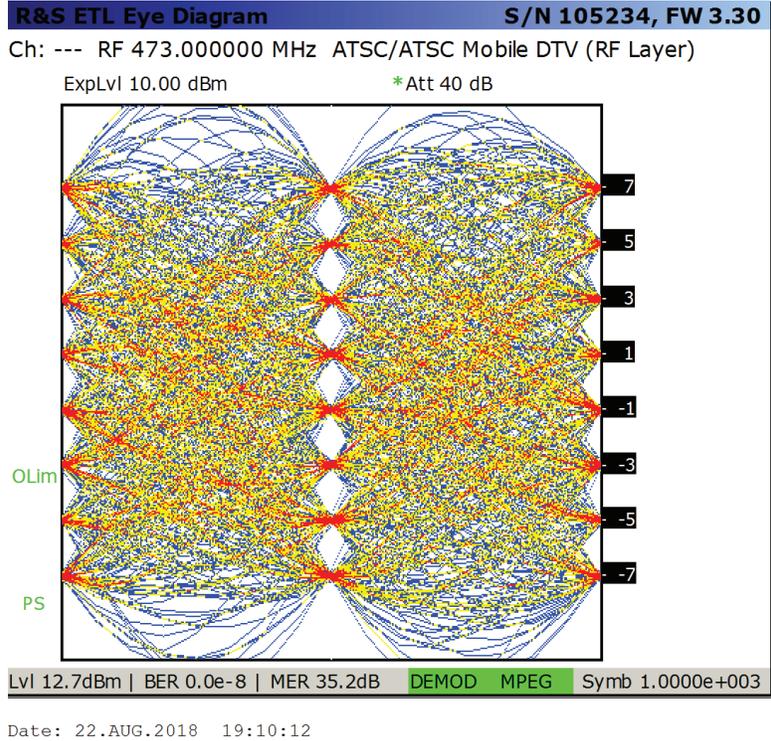
### 3.6.7 Exciter A - Amplitude and Group Delay



Date: 22.AUG.2018 19:10:10



## 3.6.8 Exciter A - Eye Diagram





## 3.6.9 Exciter B - Site Acceptance Test Data

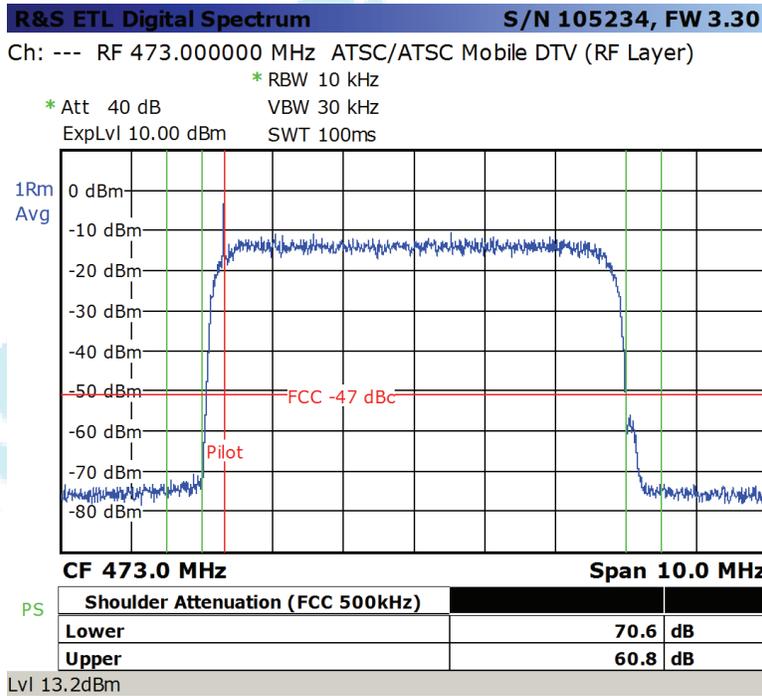
Measurement	Minimum	Actual	Ideal	Score	Result
Sync Lock	Yes	Yes	Yes	100.0%	Pass
Level	3.0 ±5.0 dBm	12.7 dBm	3.0 dBm	45.2%	Pass
Carrier Frequency Offset	0.0 ±1000 Hz	1.7 Hz	0.0 Hz	99.8%	Pass
Symbol Rate Offset	0.0 ±1000 Hz	37.8 Hz	0.0 Hz	96.2%	Pass
MER Equalizer On	30.0 dB	40.4 dB	33.0 dB	100.0%	Pass
MER Equalizer Off	27.0 dB	34.5 dB	30.0 dB	100.0%	Pass
EVM Equalizer Off	3.0%	1.2%	1.0%	88.0%	Pass
Amplitude Flatness	1.0 dB	0.6 dB	0.5 dB	80.4%	Pass
Phase	3.0°	5.9°	1.0°	0.0%	FAIL
Group Delay	50.0 ns	199.4 ns	10.0 ns	0.0%	FAIL
Pilot Value	1.25 ±0.2	1.28	1.25	85.2%	Pass
Pilot Signal to Data Signal	3.0 dB	11.1 dB	11.7 dB	92.9%	Pass
BER Before Reed Solomon	2.E-06%	0.E+00%	1.E-11%	100.0%	Pass
BER After Reed Solomon	1.E-09%	0.E+00%	1.E-11%	100.0%	Pass
Packet Error Ratio	1.E-06%	0.E+00%	1.E-11%	100.0%	Pass
Packet Errors per Second	3	0	0	100.0%	Pass
Lower Shoulder	47.0 dB	70.6 dB	50.0 dB	100.0%	Pass
Upper Shoulder	47.0 dB	60.1 dB	50.0 dB	100.0%	Pass
Crest	3.0 dB	8.4 dB	7.5 dB	68.8%	Pass
<b>Transmitter Quality Value</b>	<b>0.0%</b>	<b>82.8%</b>	<b>100.0%</b>	<b>82.8%</b>	<b>Pass</b>

### 3.6.10 Exciter B - Overview

R&S ETL Digital Overview		S/N 105234, FW 3.30	
Ch: --- RF 473.000000 MHz ATSC/ATSC Mobile DTV (RF Layer)			
* Att 40 dB ExpLvl 10.00 dBm			
ATSC Parameters			
Fail	Limit	< Results	< Limit Unit
Level	-60.0 *	12.7	10.0 dBm
Constellation		8VSB / Normal	
MER (rms)	24.0	34.5	---- dB
MER (peak)	10.0	13.3	---- dB
EVM (rms)	----	1.23	4.40 %
EVM (peak)	----	14.17	22.00 %
OLim			
BER before RS		0.0e-7(40%/1e8)	2.0e-4
BER after RS		0.0e-6(10%/1e5)	1.0e-10
Packet Error Ratio		0.0e-4(10%/1e5)	1.0e-8
Packet Errors		0	1 /s
PS			
Carrier Freq Offset	-30000.0	1.8	30000.0 Hz
Symbol Rate Offset	-10000.0	37.8	10000.0 Symb/s
MPEG Ts Bitrate		19.392658	MBit/s
Lvl 12.7dBm   BER 0.0e-7   MER 34.5dB		DEMOD	MPEG

Date: 22.AUG.2018 19:04:31

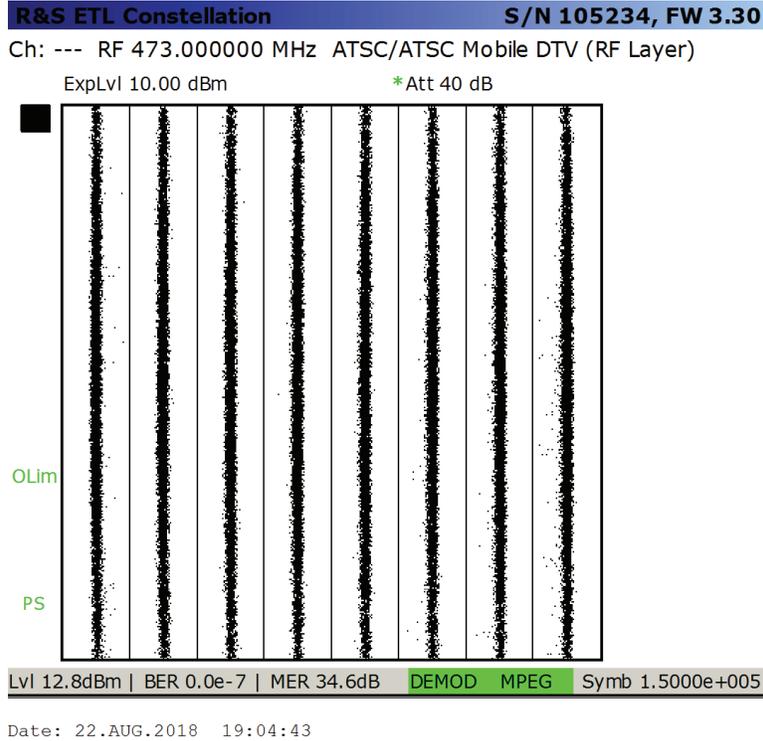
### 3.6.11 Exciter B - Spectrum



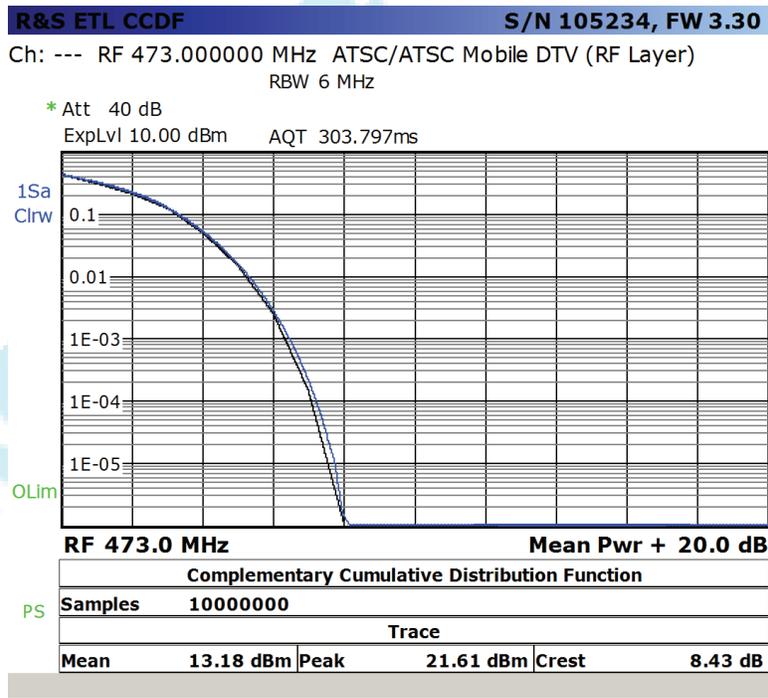
Date: 22.AUG.2018 19:04:38



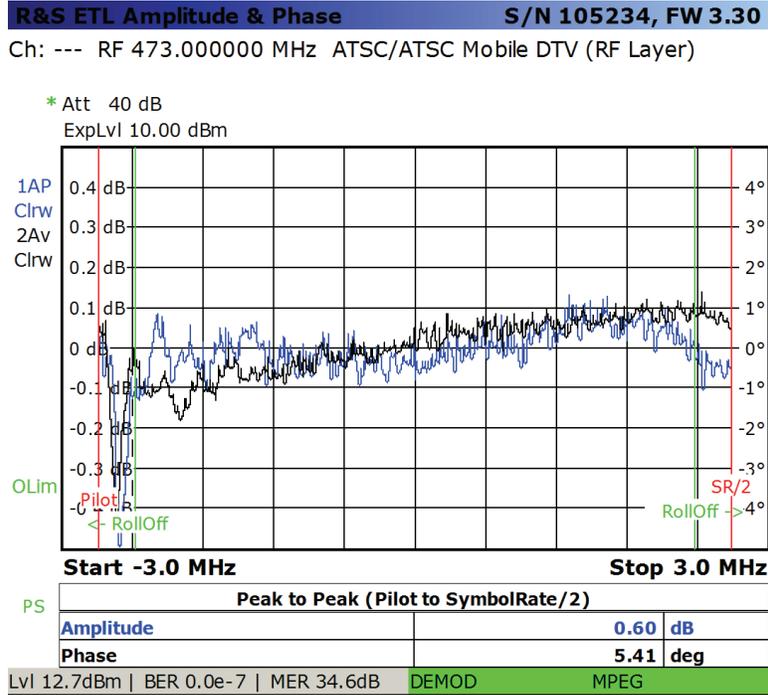
## 3.6.12 Exciter B - Constellation



## 3.6.13 Exciter B - CCDF

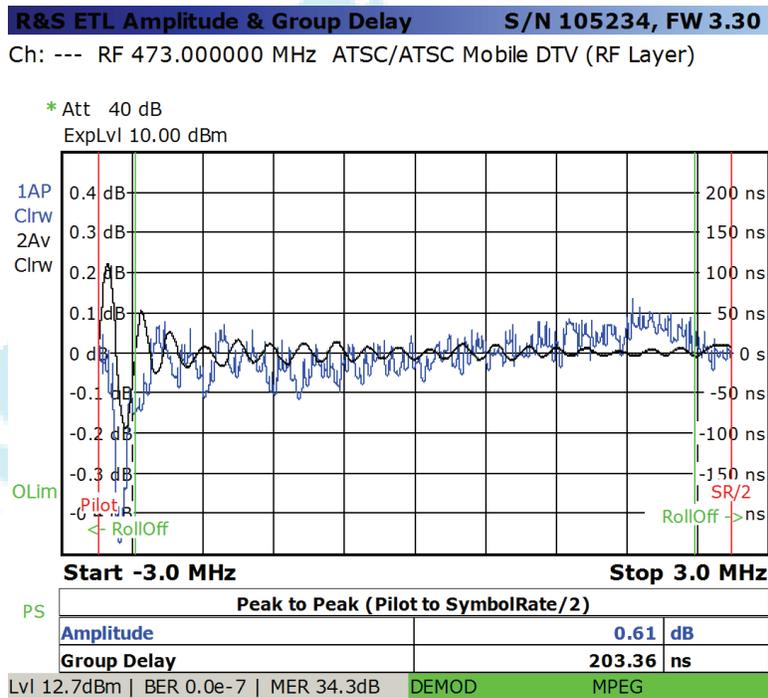


### 3.6.14 Exciter B - Amplitude and Phase



Date: 22.AUG.2018 19:04:51

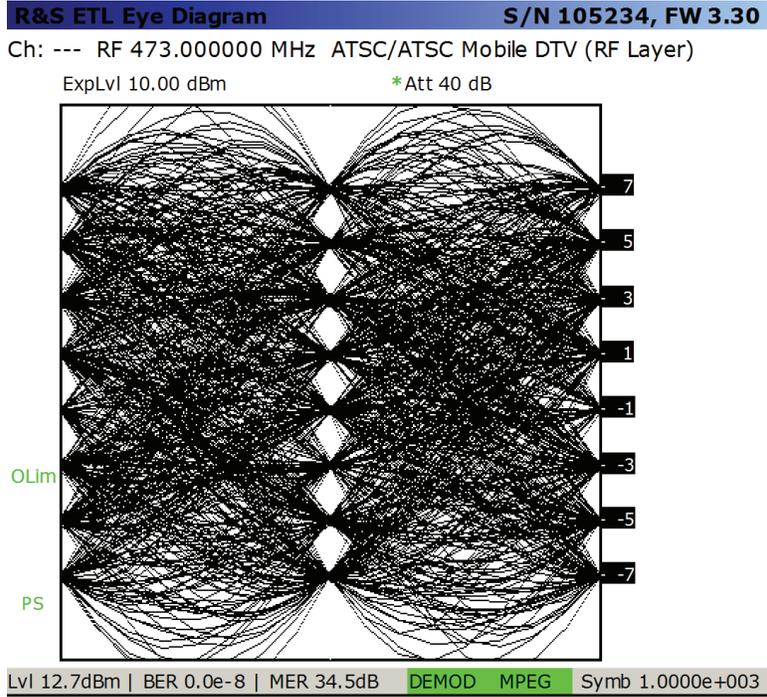
### 3.6.15 Exciter B - Amplitude and Group Delay



Date: 22.AUG.2018 19:04:54



## 3.6.16 Exciter B - Eye Diagram



Date: 22.AUG.2018 19:04:57

## 3.7 FCC Limits

### 3.7.1 Out of Channel Requirements

Full Service transmitters should meet the following Out-of-Channel Emissions requirements [FCC 47CFR§73.622(h)]:

- a) In the range between  $\frac{1}{2}$  the width of the Resolution Bandwidth filter used and 500 kHz from the Channel Edge:

$$\text{Emissions} \leq -47 \text{ dB}_{\text{DTV}} \text{ (4)}$$

- b) More than 6 MHz from the Channel Edge:

$$\text{Emissions} \leq -110 \text{ dB}_{\text{DTV}} \text{ (5)}$$

- c) At any frequency between 500 kHz and 6 MHz from the Channel Edge:

$$\text{Emissions} \leq -(11.5(|\Delta F|-0.5)+47) \text{ dB}_{\text{DTV}} \text{ (6)}$$

Where:

$\Delta F$  is the frequency difference, in MHz, from the Channel Edge

### 3.7.2 Notes for all Masks

Note 1: Measurements need not be made any closer to the Channel Edge than one half of the width of the Resolution Bandwidth filter used in the measurement instrument.

Note 2: While Figure 3, Figure 4, and Figure 5 depict only the band of frequencies near the transmitter's output signal, the FCC's ultimate attenuation requirement specifically applies to all Emissions greater than 6.0 MHz away from the transmitter's Channel Edges, including harmonics, sub-harmonics or other spurious signals.

Note 3: The FCC accepts measurements made using one of two methods [FCC Public Notice DA-05-1321A1, May 10, 2005, "OET Clarifies Emission Mask Measurement for DTV Transmitters"]:

Method 1: Measure the Emissions in a narrow Resolution Bandwidth (30 kHz, 10 kHz or narrower). Either scale the measured power to a 500 kHz bandwidth based on IEEE P1631™/D3, February, 2008  $10 \log(500 \text{ kHz}/\text{noise bandwidth of the resolution filter})$  or scale the measured attenuation (i.e.,  $10 \log(\text{measured power}/\text{total signal power})$ ) based on  $10 \log(\text{noise bandwidth of the resolution filter}/500 \text{ kHz})$ . These values are then compared point by point to the emission mask.

Method 2: Sum the power across a 500 kHz window in order to implement an effective measurement bandwidth of 500 kHz; this power is then compared to the emission mask value computed for the center frequency of the 500 kHz Sub-Band. This method may be performed either by manually summing the measurements or by using a measurement instrument's Band Power Measurement function. It is sufficient to measure a contiguous sequence of twelve 500 kHz windows across each adjacent Channel, plotting the measured value at the center of the 500 kHz Sub-Band window.

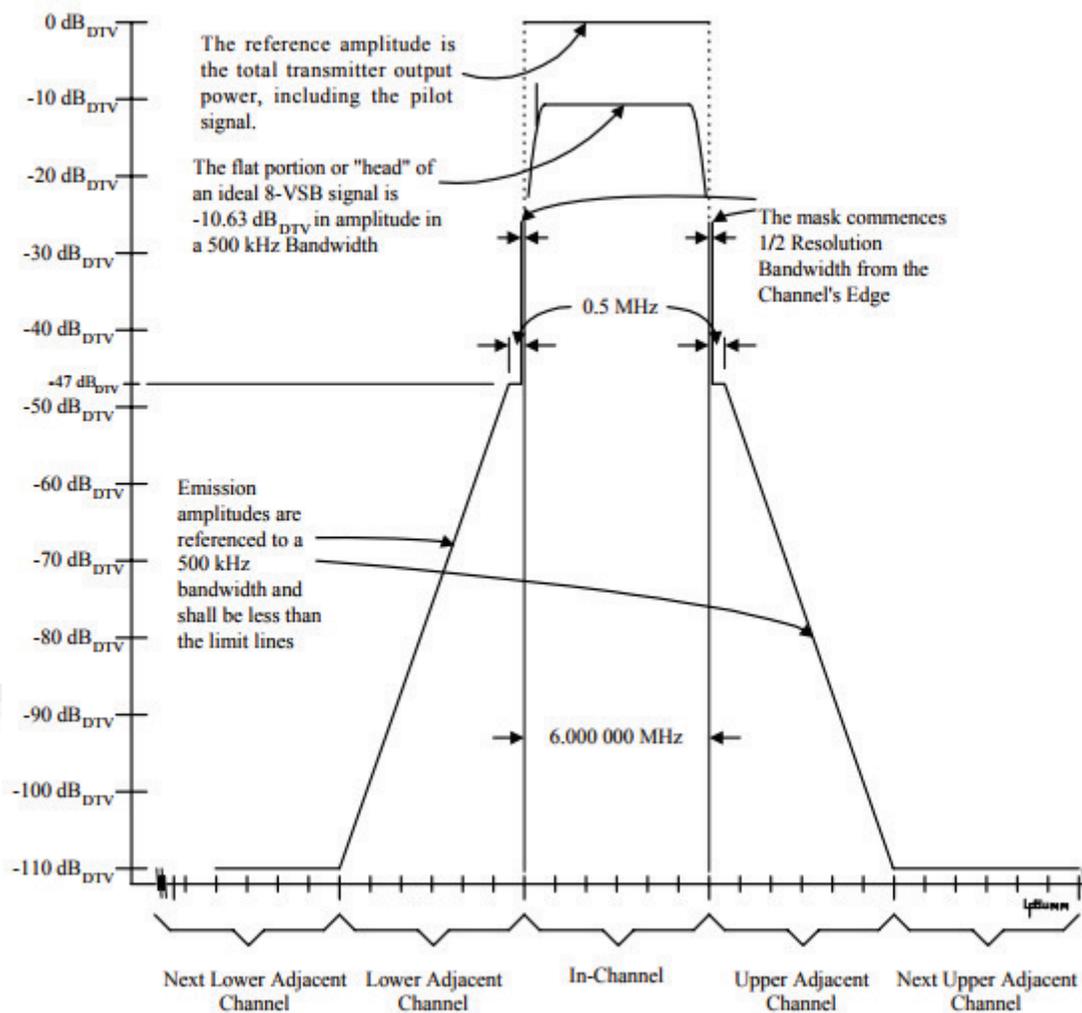
The FCC allows a single method to be used for all measurements, or, if desired, one of the above methods may be employed in the 500 kHz window adjacent to each Channel Edge and the other method for all other measurements further from the Channel Edge. The FCC requires that the frequency bin

spacing on the measurement test instrument is to be less than or equal to the Resolution Bandwidth as displayed.

Note 4: Mask measurements performed in accordance with IEEE-1631-2008 section 4.6.2 using method 4.6.5 (described above). To overcome the limitations of direct measurement with the test equipment, the spectral response was measured prior to the mask filter with a RBW of 10 kHz, span of 30 MHz and utilizing 6001 points. The mask filter was directly swept using a 30 MHz span and utilizing 6001 points. The data from both sweeps are imported into a spreadsheet, corrected for RBW and coupler frequency response on a point by point basis. The result is then plotted against the FCC mask requirements for verification of mask compliance.

### 3.7.3 Transmitter Emission Limit Diagram

## 8-VSB Full Service Transmitter Emission Limits





## 3.7.4 Notes for Harmonic Measurement

Note 1: A coupler was characterized at the fundamental, two times the fundamental and three times the fundamental. A reference value is then measured for the fundamental using a spectrum analyzer. A characterized high pass filter is then inserted between the spectrum analyzer and the coupler to avoid overloading the spectrum analyzer. Measurements are taken at two and three times the fundamental and a spreadsheet is used to derive the resultant level output at these bands.

## 3.7.5 Notes for Pilot Frequency Measurement

Note 1: Measurement values of less than 100 HZ RBW and VBW shall be used.

Note 2: When available, the test equipment shall be locked to a GPS provided 10MHz reference. The minimum acceptable method is to have the device under test and the transmitter locked to a shared 10MHz reference.

