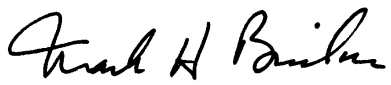
October 30, 2007

FEDERAL COMMUNICATIONS COMMISSION
Authorization and Evaluation Services
7435 Oakland Mills Road
Columbia, MD 21046

Dear Sirs:

Enclosed is a submission for type certification of an ACRODYNE NW8201E low-power DTV television transmitter.

Regards



Mark H. Bricker
Systems Engineer

Enclosures

Certification Submission For Acrodyne Model NW8201E Low-power DTV Television Transmitter

LIST OF EXHIBITS

21.	74.795(b)(1)	Signals Produced
22.	74.795(b)(2)	Emissions
23.	74.795(b)(3)	Output Power Display
24.	74.795(b)(4)	Frequency Stability
25.	74.795(b)(5)	Metering

Attachment A	Installation and Operation Manual, NW8200 Series Transmitter

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(1)**
PARAGRAPH TITLE:	**NAME OF APPLICANT**

The manufacturer of the device for which certification is sought is Rohde & Schwarz, Inc., 8661A Robert Fulton Drive, Columbia, MD 21046-2265.

This application is submitted by Acrodyne Industries, Inc., 200 Schell Lane, Phoenixville, PA 19460-1178.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(2)**
PARAGRAPH TITLE:	**FCC IDENTIFIER**

The FCC Identifier for the device for which certification is sought is BQMNW8201E, a low power DTV television transmitter.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(3)**
PARAGRAPH TITLE:	**INSTALLATION AND OPERATING INSTRUCTIONS**

The Installation and Operating Instructions are included as attachment A to this submission.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(4)**
PARAGRAPH TITLE:	**TYPE OF EMISSION**

The type of emission of the device for which certification is sought is eight level vestigial sideband (8-VSB) for DTV transmission.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(5)**
PARAGRAPH TITLE:	**FREQUENCY RANGE**

The frequency range for the device for which certification is sought is any one television channel within the range of channels 7 to 13, 174 MHz to 216 MHz.

APPLICATION FOR CERTIFICATION

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DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(6)**
PARAGRAPH TITLE:	**OPERATING POWER LEVELS**

The range of operating power for the device for which certification is sought is from 100 to 500 watts average 8-VSB. The operating power level is set by control of a variable attenuator within the preamplifier section of the final power stage. Further information is available in the Installation and Operating Instructions which are included as attachment A to this submission.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(7)**
PARAGRAPH TITLE:	**MAXIMUM POWER RATING**

The maximum power rating of the device for which certification is sought is 500 watts average 8-VSB. Operation is excess of 500 watts is limited by final power amplifier non-linearity.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(8)**
PARAGRAPH TITLE:	**DC VOLTAGES AND CURRENTS**

The DC voltage applied and the DC current into the device for which certification is sought is 32 volts and 60 amperes when operating at full rated power.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(9)**
PARAGRAPH TITLE:	**TUNE-UP PROCEDURE**

The transmitter tune up procedure for the device for which certification is sought is contained within the Installation and Operating Instructions included as attachment A to this submittal. No tuning is required for the RF stages as they are all broadband stages as indicated in the manual supplied.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(10)**
PARAGRAPH TITLE:	**CIRCUIT DESCRIPTIONS**

The circuit descriptions requested for the device for which certification is sought are contained within the Installation and Operating Instructions included as attachment A to this submittal.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(11)**
PARAGRAPH TITLE:	**IDENTIFICATION LABEL**

FCC ID: BQM-NW8201E
NW8201E
ACRODYNE INDUSTRIES, INC

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(12)**
PARAGRAPH TITLE:	**EQUIPMENT PHOTOGRAPHS**

Equipment Identification Label placed here

BQM-NW8201E
LP DTV Television Transmitter
front view

Additional equipment construction photographs and drawings are included with the Installation and Operating Instructions included as attachment A to this submission.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1033**
SUB-PARAGRAPH:	**(c)(13)**
PARAGRAPH TITLE:	**DIGITAL MODULATION DESCRIPTION**

The digital modulation technique employed for the device for which certification is sought is eight level vestigial sideband, or 8-VSB, as outlined for DTV service by the ATSC Standards Committee.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1046**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**RF POWER OUTPUT**

The maximum RF power output of the device for which certification is sought is 500 watts average power in 8-VSB mode.

The following is a list of equipment used to determine output power:

1. Calibrated precision directional coupler.

2. Agilent E4418B Power Meter.

3. Agilent 8482H Power Sensor.

The calibrated precision directional coupler is located at the output of the channel mask filter. The directional coupler output was terminated into a substantially resistive 50-ohm termination.

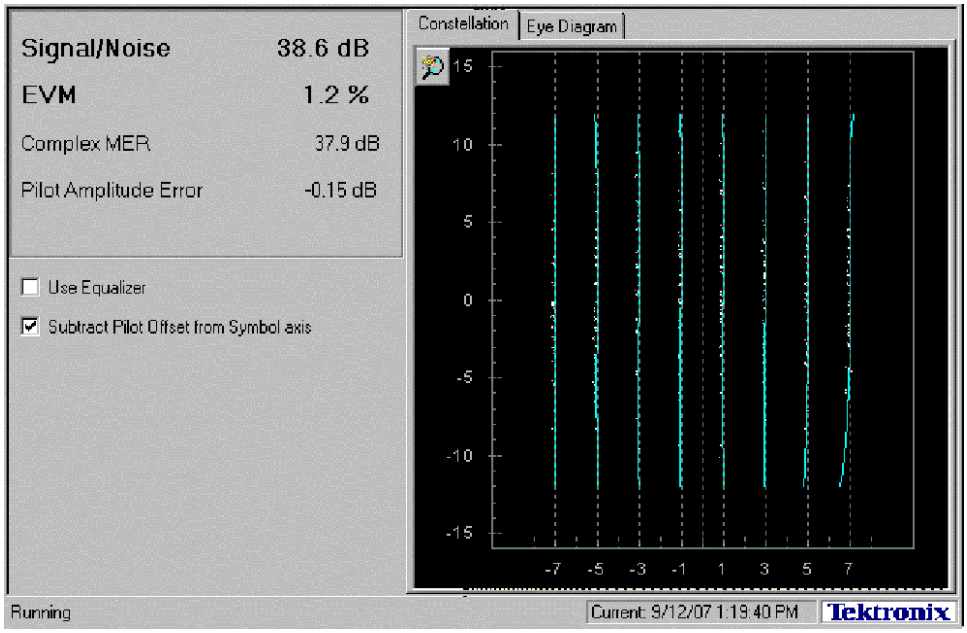
In the absence of an ASI or 310M data stream applied to the input terminals of the transmitter, the transmitter will internally generate and insert a pseudorandom bit stream to produce the required 8-VSB waveform.

The directional coupler coupling value was entered into the power meter as an offset for calibration. The power meter then provides a direct readout of power in watts. The power meter reading, in watts, is the average 8-VSB power output of the transmitter.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1047**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**MODULATION CHARACTERISTICS**

The modulation characteristics of the device for which certification is sought are described in the photographs shown below. The photographs were taken with the transmitter operating at 500 watts average power at the output of the channel mask filter.

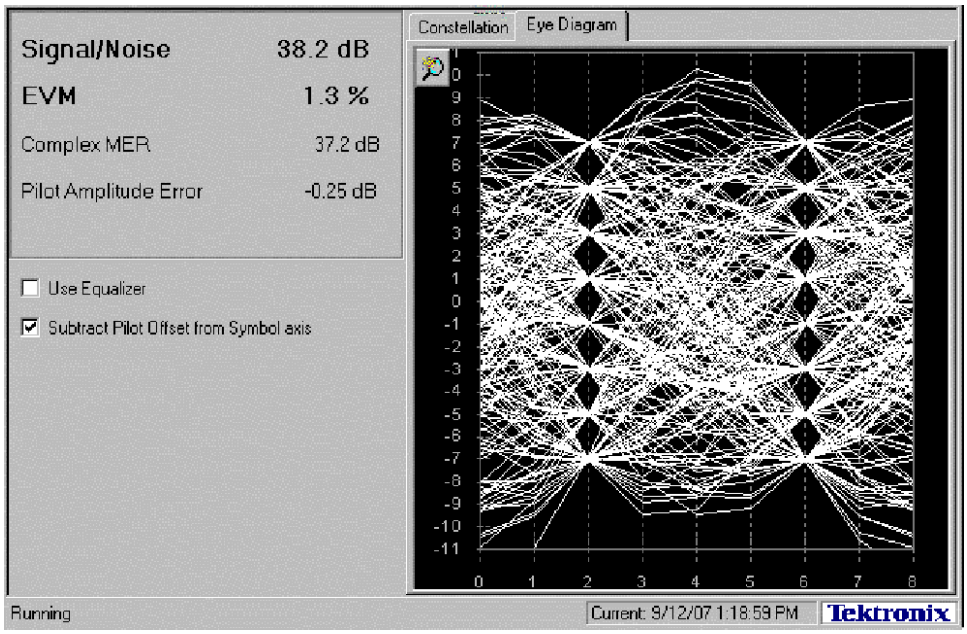


CONSTELLATION

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1047**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**MODULATION CHARACTERISTICS**

The modulation characteristics of the device for which certification is sought are described in the photographs shown below. The photographs were taken with the transmitter operating at 500 watts average power at the output of the channel mask filter.

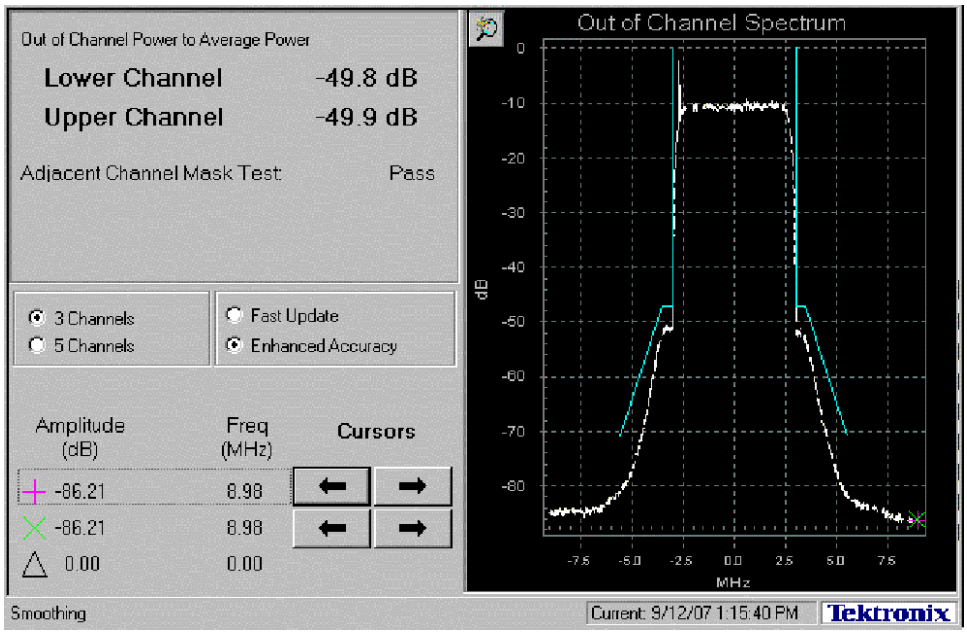


EYE DIAGRAM

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1049**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**OCCUPIED BANDWIDTH**

The occupied bandwidth of the device for which certification is sought are described in the photographs shown below.



APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1051**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**SPURIOUS EMISSIONS - ANTENNA TERMINALS**

The spurious emissions of the device for which certification is sought are shown in the table below.

The spurious signals are measured using a spectrum analyzer and sampling after the channel mask filter. Tunable band-pass filters are placed in the sample line and are tuned through the desired range of frequencies, from baseband through the 10th harmonic. Fundamental reference frequency is 213 MHz. The filters are utilized to remove the fundamental on-channel signal from the spectrum analyzer input thus preventing spectrum analyzer overload. Spurious signal rejection required is defined by ATSC Document A/64, revision A, §4.1.1.1 as 110 dB minimum referenced to average transmitted power. All other signals through the 10^{th} harmonic were attenuated greater than 20 dB below 110 dB.

SPURIOUS EMISSION FREQUENCY MHZ	AMPLITUDE, DB, REL. TO PEAK POWER
426 MHz	118 dB

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1053**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**FIELD STRENGTH OF SPURIOUS EMISSIONS**

The cabinet radiation of the device for which certification is sought was checked with the transmitter operating at full rated power into a terminating load resistor. A calibrated antenna and spectrum analyzer was used to measure the radiation. The receiving antenna was alternately located three meters in front, to the rear and to the side of the transmitter cabinet. The transmitter was located approximately 4 meters from walls in front and to the rear of the cabinet, and 10 and 20 meters from side walls.

All emissions were greater than 116 dB below 500 watts.

Power line radiation was checked by lightly coupling a spectrum analyzer to the AC line. No spurious signals attributable to the transmitter were observed. The frequency range from 0.01 to 3 GHz was investigated during the preceding test.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1055**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**FREQUENCY STABILITY**

The transmitter operating frequency is dependent on the stability of the synthesizer circuitry 10 MHz reference oscillator. The reference oscillator feeds the pilot frequency synthesizer and thus the pilot carrier frequency is dependent on the stability of the synthesizer circuitry 10 MHz reference oscillator.

Reference oscillator frequency stability data is presented on the following page. A regulated dc supply provides power to the oscillator and as a result changes in frequency over the 85% to 115% ac input voltage range are immeasurable.

Test report

Project:	Sx800
Subject:	FCC testing according to part 2.1055
Name:	Sx800 - test report FCC part 2.1055
Author:	Wolfgang Böhm
Date:	28.09.2007
Status:	passed

History:

28.09.07	Böhm	created

1 Test setup

1.1 Test setup

The objective of the test is to verify the frequency stabilty of the Nx8000 transmitter versus temperature. FCC part 2.1055 allows that the test is performed with the frequency determining element only which is the exciter Sx800. The temperature range is from -30 °C to 50 °C in steps of 10 °C. The test frequency is 750 MHz.
For the test the exciter has been operated in a temperature rack without input signal.
The monitoring output of the RF local signal of the synthesizer has been measured with a R&S FSQ spectrum analyzer.
A GPS 10 MHz reference was connected to the reference input of the FSU. A marker was set to the local signal, the signal counter was activated with a resolution of 0.1 Hz.

The synthesizer board was working in internal mode, so not locked to an external reference.

1.2 Test equipment

Device	ID	Serial No.
Spectrum Analyzer FSQ 8	1155.5001.88	200280
Digital Thermometer R&S PTM	336.8010.02	891981/009

1.3 Device under test

Gerät / Baugruppe	ID	Ser.-Nr.
Sx800 exciter	2095.1502.60	100035

1.4 Software version of exciter

software version of exciter: 01.83

2 Test results

2.1 Test results

No.	Date	Time	nominal Temperature	measured Temperature	Frequency / Hz	Difference / Hz
1	27.09.2007	16:00	20,0 °C	20,7°C	749999999,6	-0,4
2	28.09.2007	09:00	-30,0 °C	-30,5°C	750000002,3	2,3
3	28.09.2007	10:00	-20,0 °C	-20,2°C	750000001,7	1,7
4	28.09.2007	11:00	-10,0 °C	-10,8°C	750000001,2	1,2
5	28.09.2007	12:00	0,0 °C	0,5°C	750000000,8	0,8
6	28.09.2007	13:00	10,0 °C	9,8°C	750000000,4	0,4
7	28.09.2007	14:00	20,0 °C	20,8°C	750000000,0	0
8	28.09.2007	15:00	30,0 °C	29,9°C	749999999,5	-0,5
9	28.09.2007	16:00	40,0 °C	40,3°C	749999999,0	-1
10	28.09.2007	17:00	50,0 °C	49,8°C	749999998,4	-1,6

Remark:

The exciter was switched on at 20 °C from 27.09.2007 11:00 to 27.09.2007 16:00 and was cooled down to -30°C while switched on after 27.09.2007 16:00.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**2.1057**
SUB-PARAGRAPH:	
PARAGRAPH TITLE:	**FREQUENCY SPECTRUM**

The frequency spectrum investigated in §§2.1051 and 2.0153 for the device for which certification is sought was from 174 MHz to the 10^{th} harmonic of 216 MHz, or 2.160 GHz.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**74.795**
SUB-PARAGRAPH:	**(b)(1)**
PARAGRAPH TITLE:	**SIGNALS PRODUCED**

The signals produced by the device for which certification is sought are demonstrated in §2.1047 and §2.1049.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**74.795**
SUB-PARAGRAPH:	**(b)(2)**
PARAGRAPH TITLE:	**EMISSIONS**

Emissions outside the authorized channel for the device for which certification is sought are described under section 2.1051 of this submittal.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**74.795**
SUB-PARAGRAPH:	**(b)(3)**
PARAGRAPH TITLE:	**OUTPUT POWER DISPLAY**

The front panel of the device for which certification is sought is equipped with a meter display that indicates the final output power of the transmitter. Excessive output power is inhibited by circuitry in place as described in the Installation and Operating Instructions included as attachment A to this submittal.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**74.795**
SUB-PARAGRAPH:	**(b)(4)**
PARAGRAPH TITLE:	**FREQUENCY STABILITY**

The frequency stability of the device for which certification is sought is described under section 2.1055 of this submittal.

APPLICATION FOR CERTIFICATION

FCC IDENTIFICATION NUMBER:	**BQM-NW8201E**
DATE:	**SEPTEMBER 10, 2007**
APPLICABLE FCC PARAGRAPH:	**74.795**
SUB-PARAGRAPH:	**(b)(5)**
PARAGRAPH TITLE:	**METERING**

Front panel connectors are provided for monitoring of the final amplifier voltages and currents.