

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
Amendment of Parts 73 and 74 of the)	MB Docket No. 03-185
Commission’s Rules to Establish Rules for)	
Digital Low Power Television and Television)	
Translator Stations)	
Expanding the Economic and Innovation)	GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)	
Auctions)	
Amendment of Part 15 of the Commission’s)	ET Docket No. 14-175
Rules to Eliminate the Analog Tuner)	
Requirement)	

To: The Commission

JOINT COMMENTS

The following comments are submitted jointly by Island Broadcasting LLC (“Island”), licensee of analog Low Power Television Station (“LPTV”) WNYZ-LP (Channel 6), New York, New York (“WNYZ”), and Richard D. Bogner, a former principal of both Island and its predecessor licensee (Island Broadcasting Co.), who currently serves as Island’s engineering consultant.¹ Specifically, the joint comments address the questions raised by the Commission in Section E (¶¶47-54) of the *Third Notice of Proposed Rulemaking*, released October 10, 2014, in the above-captioned proceeding (the “Third NPRM”).

WNYZ has been broadcasting an aural FM programming service, separate from its Channel 6 video service, for more than 10 years, during which time no interference to any other

¹ Richard D. Bogner holds Bachelor and Master Degrees in Electrical Engineering from the Polytechnic Institute of New York. After a career in designing antennae for military and space application, followed by a career in designing antennae for broadcast and microwave operations, Mr. Bogner has been involved in the ownership and/or operation of LPTV stations since the inception of the LPTV industry, and he remains an active consultant to many in the LPTV industry.

broadcast service has been noted. Approximately seven years ago, Island Broadcasting Co., under Mr. Bogner's management, began testing to determine if such ancillary aural programming could continue after WNYZ's conversion to digital operations, without derogation of the digital signal reception by the aural analog FM signal.

A test setup, shown schematically in attached **Figure 1**, and photographically in attached **Figure 2**, was created. The tests allowed combining FM and DTV signals at variable absolute and relative strengths and frequencies, before the combined signals entered a spectrum analyzer or TV receiver. The results of these tests provide answers to the Commission's questions raised in paragraphs 49 and 50 of the Third NPRM, and provide the basis for comments below in response to questions raised in paragraph 51 of the Third NPRM.

By way of background, the tests were originally conducted with digital power at -68dbm, which corresponds approximately to 43 dbu, the protected contour. (Higher powers showed the same or slightly better results). The analog FM was set at 87.76 MHz, modulated to peak deviation of 25 KHz with a 1 KHz tone. (75 KHz showed no measurable difference). It is noted that these test conditions were the same conditions tested by Linley Gumm and Charles Rhodes ("G&R"), as reported in their Comments, dated November 12, 2014, and filed in the above-captioned proceeding. Island tested twenty seven (27) different manufacturers' TV receivers, listed in **Figure 3** and shown photographically in **Figure 4**. According to the G&R Comments, G&R tested sixteen of the same manufacturers (listed first in **Figure 3**) out of a total of 18 receivers they tested. Island and G&R both found that there are two distinct groups of receivers. The majority (about 75%) performed very well, and the minority (25%) performed much less well.

Island found that the group of receivers that performed well allowed acquisition and decoding when the digital signal was at least four (4) db below the FM, while the second inferior group of receivers required that the digital signal be at least seven (7) db (5x power) above the FM.²

². G&R's Comments reflect that G&R found identical results. See at **Figure 5**, a copy of G&R's Comments, p. 5.

Island also performed tests to determine how the FM reception was affected by the digital signal, and it was found that even with poor FM receivers, the FM signal can be at least 10 db below the digital before evidence of noise was observed, at full FM volume. G&R's test results did not contradict this finding.

It is also worth noting that the testing conducted by Island disproved certain concerns expressed by the Media Bureau's Video Division in an August 2, 2012 letter decision (which letter is referenced at footnote 111 of the Third NPRM). In dismissing applications of Venture Technologies Group that sought to modify construction permits for digital Channel 6 facilities in Lubbock, TX and Pittsburgh, PA, to include authorization for ancillary analog FM services, the Video Division letter expressed concern that an ancillary FM signal could cause interference to nearby co-channel operations by altering the D/U for DTV to DTV interference. However, using two channel 6 sources combined in Island's testing, as shown in *Figure 1*, it is clear that the Video Division's concern was unwarranted.

Based on the assumption that Section 74.735(b) (1) of the Commission's rules limits the total average power of a digital TV station on Channel 6 to 3 KW, it is recommended that the licensed maximum ERP be divided between the DTV and the FM, despite the interference analysis being based on the total average power. Therefore, if, for example, the licensed power is the maximum 3 KW, and the DTV/FM ratio is the minimum 7 db (5xpower), the digital ERP should be 2500 watts, and the FM ERP should be the most allowable, 500 watts, since the inferior group of TV receivers must be the criterion, if all receivers must acquire and decode.

Regarding concerns about interference to noncommercial educational ("NCE") radio stations operating on Channels 201, 202, and 203, it is worth noting that for over 60 years, full-service television stations operating on Channel 6 have broadcast 5 KW or more aural power at 87.75 +/- .01 MHz with no requirement to protect NCE stations, and, to the knowledge of the joint Commenters, there has been no evidence presented to the Commission that full-service Channel 6 operations or current 3 KW LPTV operations on Channel 6 have caused significant interference. Island proposes a maximum power of only 0.5 KW for the ancillary FM service. Thus it should be considered sufficient that an LPTV broadcasting ancillary FM signal must eliminate actual interference it is shown to cause due to the FM.

In sum, two independent observers, G&R and Island, using adequate test equipment and 27 different manufacturers' TV receivers, have found that DTV stations will operate normally when combined with an ancillary FM signal before entering a shared transmitting antenna, if the FM ERP is at least 7 db below the DTV ERP. Under these conditions, it has been shown that the digital signal will be acquired and decoded with no derogation by all current TV receivers and FM radios. With no technical issues that should prevent Channel 6 digital LPTV stations from offering ancillary audio services, allowing the use of otherwise unused spectrum for such ancillary services is in the paramount public interest, as it will offer additional outlets of radio service at no cost or added interference, and be fully consistent with advanced TV services technology.

Respectfully submitted,

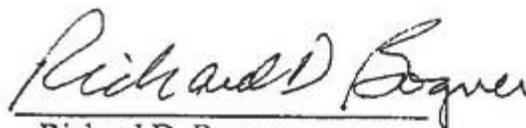
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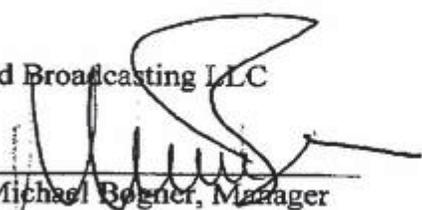
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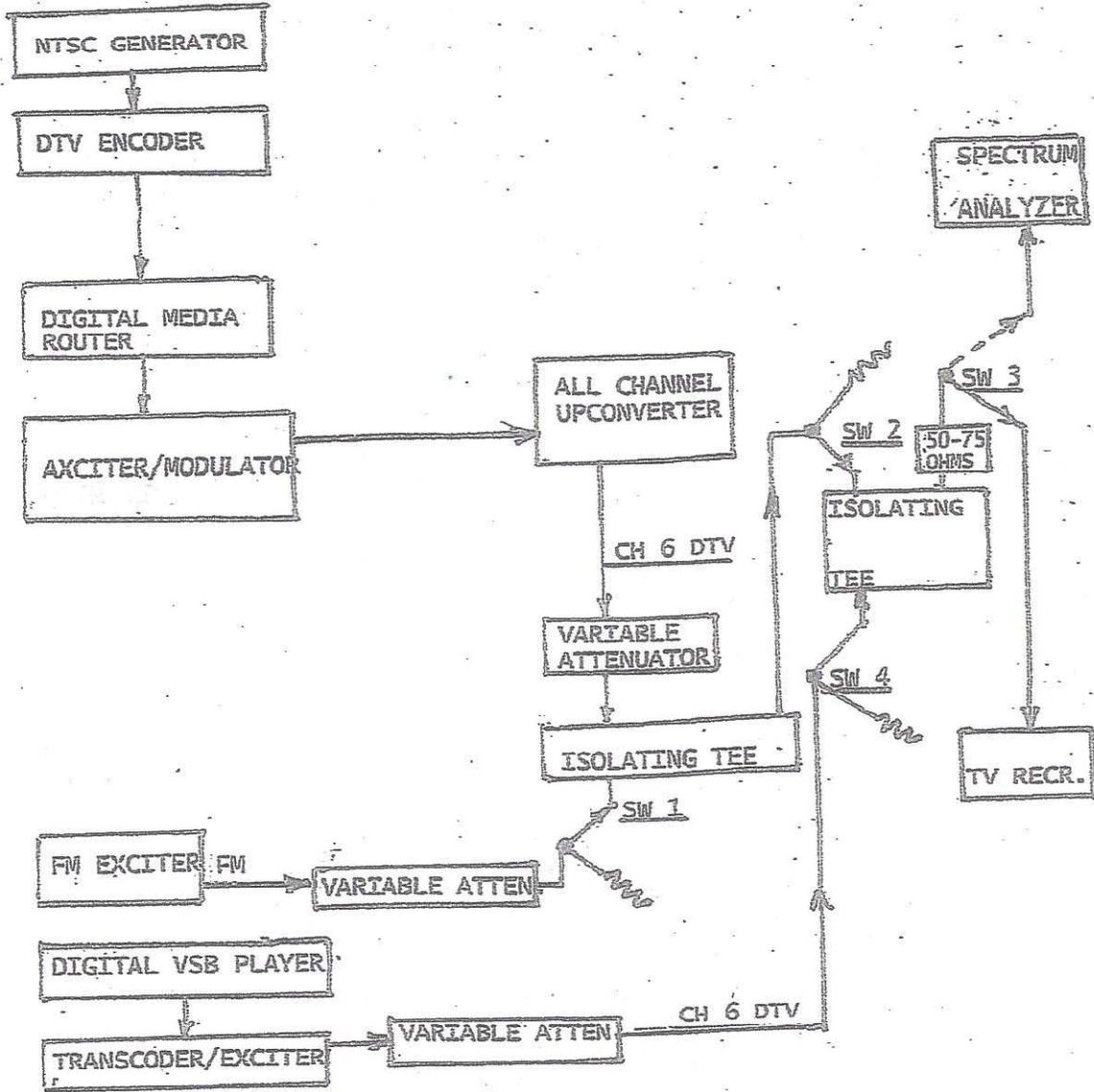
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FIGURE 1

TEST SCHEMATIC



- Tektronix TSG-100 NTSC TV Generator
- Adtec MPEG2 DTV Encoder
- Adtec DTA 3050 Digital Media Router
- Arcera Exciter Modulator
- Eiden All Channel Up Converter 4222A-001
- Anzac 20-300 MHz Iso-T
- Armstrong FMX-150B FM Exciter
- Anzac 20-300 MHz Iso-T
- Lercan Transcoder/Exciter
- Arma 2952-60B 60db variable attenuator
- Eiden 932A 50-75 ohm Impedance Converter
- Haier TV Receiver
- Sencore HDTV 996 VSB Player
- Rhode & Schwarz FSH3 Spectrum Analyzer

FIGURE 2



8

FIGURE 3

TV RECEIVER MANUFACTURERS TESTED

GUMM & RHODES

COBY
ELEMENT
INSIGNIA
LG ELEC. (2)
MAGNAVOX (2)
NAXA
PANASONIC
PHILLIPS
RCA
SAMSUNG
SEIKI
SHARP
TCL
TOSHIBA
UPSTAR
VIZIO

ISLAND BROADCASTING

COBY
ELEMENT
INSIGNIA
LG ELEC.
MAGNAVOX
NASA
PANASONIC
PHILLIPS
RCA
SAMSUNG
SEIKI
SHARP
TCL
YOSHIBA
UPSTAR
VIZIO
JVC
PROSCAN
SONY
HITACHI
SANSUI
QUANTUM
HISENSE
WESTINGHOUSE
SCEPTRE
DIGITREX
CRAIG

BASED ON DTV AT -68 DBM (APPROX. 43 DBU)
AND FM AT 87.76 MHz, 21 of the 27 Island
and 13 of the 18 G&R receivers perform
with DTV 4 db below FM, the rest require
DTV at least 7 db above FM.

FIGURE 4



FIGURE 5

FM carrier at 87.76 MHz, DTV signal amplitude at -68 dBm

This test was similar to the previous except that the amplitude of the DTV signal (D) was kept fixed at -68 dBm.

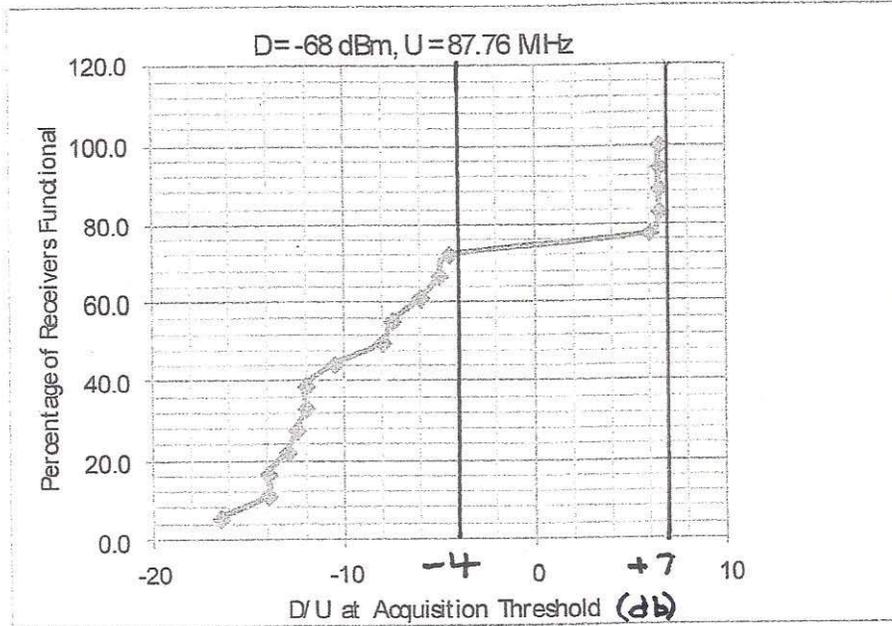


Figure 2: D/U data for FM carrier (U) at 87.76 MHz and DTV (D) amplitude equal -68 dBm

With the larger D signal amplitude, the larger group of receivers that are operational with negative D/U ratios are essentially unchanged; the performance of the five receivers that require positive D/U ratios have improved by 4 to 6 dB.

COMMENTS of Linley Gumm and Charles Rhodes To Section E, "Operation of Analog Radio Services by Digital LPTV Stations as Ancillary or Supplementary Services"

November 12, 2014