Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of: )

)

Amendment of Part 74 of the Commission’s ) MB Docket 18-119

Rules Regarding Translator Interference )

)

)

To: The Commission

**COMMENTS**

**OF**

**PUEBLO BROADCASTING GROUP**

**I. Introduction**

I, Steven R. Bartholomew, certify that I am Director of Engineering for Pueblo Broadcasting Group LLC, licensee of radio station KIQN (FM) in Colorado City, Colorado. I was awarded a BSEE degree from Northwestern University, and I hold an FCC General Class Radiotelephone Operators License. I have prepared and submitted many applications to the FCC for the Broadcast and Broadcast Auxiliary Services. My 25 years of practical, real-world experience in broadcast engineering and legal matters is a matter of record at the FCC.

**II: Executive Summary**

The FCC’s proposal to modify Section 74.1203(a)(3) to state that no complaint of actual interference will be considered actionable if the alleged interference occurs outside of a desired station’s 54-dBμ contour is NOT adequate to safeguard the technical integrity of the FM band. The same conclusion would apply to any new proposal to set the remediation threshold at 48 dBμ, as this constitutes an illusory “compromise” value that is NOT adequate to safeguard the technical integrity of the FM band. Implementation of either proposal would significantly harm existing full-service stations.

Reasonable and efficient licensing procedures are not served by granting a license to a secondary facility that will cause harmful interference to thousands of listeners currently served by a full-service station. Oftentimes, critically important coverage areas are not situated within the 54-dBu or 48-dBu F(50,50) contours of full-service stations. Rather, a number of such stations are dependent upon so-called “fringe” coverage of heavily-populated urban areas. But in many cases, this “fringe” coverage is much better than what one might expect. The full-service station is actually providing a strong, solid, clear signal in these “fringe” areas due to terrain considerations, notwithstanding the misleading nature of the F(50,50) curves in areas of rugged terrain. After all, the F(50,50) curves only consider terrain in the range of 2 to 10 miles from the transmitter site. Thus, there is a great potential for the F(50,50) curves to predict grossly inaccurate or anomalous results in areas of non-uniform terrain.

The Petitioner does NOT support the sole use of F(50,50) contours to demonstrate non-actionable interference as the F(50,50) contours do not properly reflect terrain. While contours may be effective for most cases of spacing and allocation, they are very ineffective for reasonably approximating actual field strength at a listener’s location. Other methods, such as Longley-Rice and Point-to-Point, have been proven to be more effective in accurately determining the coverage of FM broadcast facilities. The F(50,50) approach has two major shortcomings: first, it was intended to be applied to smooth terrain; and second, it only considers terrain from 2 to 10 miles from the transmitter site. The F(50,50) contour-based approach is woefully inadequate to properly model propagation in mountainous locations such as Colorado, Connecticut, and California. Thus, full-service stations in these and similar locations would be unfairly penalized and substantially harmed by a drop-dead F(50,50) interference remediation threshold.

In contrast to the F(50,50) contour-based approach, Longley-Rice and Point-to-Point consider ALL of the intervening terrain between the transmitter and the listener. Thus, the Longley-Rice propagation method is a much more appropriate method than F(50,50) in the context of translator interference that involves specific listener locations. Undesired-to-Desired (U-to-D) ratio methodology using terrain-based prediction tools such as Longley-Rice should be employed to determine field strengths for both the desired and the undesired signal at the listener’s approximate location. In order for a translator interference complaint to be congnizable, the desired signal level should be used to decide whether or not the full-service station can make a valid claim to serve the area in question. This decision would use a threshold value, but the threshold would be based on Longley-Rice, not on the troublingly inaccurate F(50,50) curves.

The implementation of a draconian F(50,50)-based 54-dBu or 48-dBu translator interference remediation threshold would expose thousands of full-service FM stations to substantial audience erosion. Likewise, stations in areas of irregular terrain would be heavily penalized. Such a threshold would pose a significant threat to the continued existence of stand-alone full-service FM stations, creating undue and unnecessary hardship on these license holders. The value of full-service FM stations would plunge.

As a practical matter, when a 54-dBu F(50,50) remediation threshold is applied to a representative sampling of 31 actual translator conflicts, the end result is the translator automatically winning the conflict 94% of the time. This is because every one of the gathered complaints in these conflicts falls below the required 54-dBu threshold. Accordingly, 94% of all translator conflicts would be automatically excluded right out of the gate, with only 6% of the conflicts submitted by full-service stations proceeding to the Audio Division for further consideration. With a 54-dBu threshold, full-service stations would be left without a remedy for translator interference 94% of the time.

If the 54-dBu threshold is replaced with a 48-dBu threshold, the full-service stations fare no better. Under a 48-dBu interference remediation threshold, 90% of all translator conflicts would be automatically excluded right out of the gate, with only 10% of the conflicts passing to the Audio Division for further consideration. With a 48-dBu threshold, full-service stations would be left without a remedy for translator interference 90% of the time.

If there is a concern about some full-service stations claiming coverage beyond what is reasonable, the best solution is NOT an arbitrary F(50,50) translator remediation threshold. Rather, the Commission should use Longley-Rice for the purpose of determining whether or not the full-service station should be allowed to claim a listenable signal within the proposed translator’s 60-dBu contour.

Nevertheless, if the FCC insists on setting a “drop dead” interference remediation contour beyond which interference remediation of a full-powered facility would no longer be possible, it is submitted that such a “drop dead” dBu contour should apply to either the standard F(50,50) contour, OR the contour calculated using the Longley-Rice propagation prediction method.

If the FCC is to adopt a “drop dead” F(50,50) remediation standard, an appropriate level must be selected in accordance with relevant engineering considerations. According to numerous sources, including the 2013 NAB Engineering Handbook, the USA Digital Radio Report, NRSC, Nielsen, the ITU, Ofcom, and the BBC, a 34-dBu signal provides good quieting in nearly all automobile and portable radios. Thus, based upon sound engineering practice, an appropriate drop-dead level for interference remediation is an F(50,50) level of 34 dBu.

Although not ideal, a 34-dBu F(50,50) threshold would adequately compensate for situations where the predicted Longley-Rice signal is much stronger than the F(50,50) predictions would indicate. As will be described in greater detail hereinafter, it is not unusual or unique for a station in irregular terrain to serve a given area with a 60-dBu or better signal as indicated by Longley-Rice, whereas F(50,50) predictions would indicate a substantially lower signal level on the order of 33 or 34 dBu. In these scenarios, the measured signal strength conforms closely to the Longley-Rice predictions, and not the F(50,50) curves, and the signal is loud, clear, and consistent. In many cases, a line-of-sight path is involved.

**III. The FCC’s Proposed 54-dBu Remediation Threshold**

Reasonable and efficient licensing procedures are not served by granting a license to a secondary facility that will cause harmful interference to thousands of listeners currently served by a full-service station. It is important to realize that critically important coverage areas may not lie entirely within the 54-dBu or 48-dBu F(50,50) contours of full-service stations. In fact, a number of such stations are dependent upon so-called “fringe” coverage of heavily-populated urban areas. However, it must be emphasized that, in many cases, this “fringe” coverage is actually better than “fringe”. In a substantial number of real-world cases, the predictions of the F(50,50) curves do not match practical reality. Instead, in situations where care is taken to select a terrain- optimized transmitter site, the actual signal level of the full-service station will be much stronger than what the standard F(50,50) curves are predicting. This viewpoint is further supported by performing field strength measurements. The full-service station is actually providing a strong, solid, clear signal in these “fringe” areas due to terrain considerations, notwithstanding the misleading nature of the F(50,50) curves in areas of rugged terrain.

The shortcomings of the F(50,50) method are readily apparent in the context of translator interference where it is of paramount importance to obtain signal strength predictions that are reasonably accurate. If the limitations of the F(50,50) method are not properly considered, full-service stations will pay the price for an overly granular propagation prediction method that produces a rough approximation of coverage, substantially understating actual coverage in many real-world situations, so as to unfairly advantage translator operators at the expense of full-service stations.

The F(50,50) curves only consider terrain in the range of 2 to 10 miles from the transmitter site. Thus, there is a great potential for inaccurate or anomalous results in areas of non-uniform terrain. Although the F(50,50) model is adequate for allotment proceedings, it is quite ill-suited for translator interference proceedings. To restrict the present reach of full-service stations based on the inaccurate and inappropriate F(50,50) propagation model would result in a substantial loss of existing listenership and a substantial loss of income. If a full-service station no longer has the reach, then the revenue is lost as well. The very survival of full-service stations is at stake.

As a practical matter, when a 54-dBu F(50,50) remediation threshold is applied to a large representative sampling of 31 actual translator conflicts that have been filed with the FCC over the past few years, the end result is the translator automatically winning the conflict 94% of the time. This is because every one of the gathered complaints in these conflicts falls below the required 54-dBu threshold. Accordingly, 94% of all translator conflicts would be automatically excluded right out of the gate, with only 6% of the conflicts submitted by full-service stations proceeding to the Audio Division for further consideration. With a 54-dBu threshold, full-service stations would be left without a remedy for translator interference 94% of the time.

If the 54-dBu threshold is replaced with a 48-dBu threshold, the full-service stations fare no better. Under a 48-dBu interference remediation threshold, 90% of all translator conflicts would be automatically excluded right out of the gate, with only 10% of the conflicts passing to the Audio Division for further consideration. Among the 90% of excluded conflicts, about half of them (48%) would be eliminated because none of the listener complaints meet the 48-dBu threshold. Most of the remaining conflicts (42%) would be eliminated because less than six complaints were gathered from listeners within the 48-dBu contour. With a 48-dBu threshold, full-service stations would be left without a remedy for translator interference 90% of the time.

The following four pages include a tabulation of 31 recent translator interference conflicts.

**TABLE 1:**

**Recent Translator Interference Conflicts (Part 1)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Translator Callsign or Application Number | Translator Freq. | Full-Service Callsign | Full-Service Freq. | Fighting for Coverage of: | Desired Station’s F(50,50) Signal Strength at Locations of Listener Complaints (dBu) | # of Com-plaints | Who Would Automatically Win Under the Proposed 54-dBu Remediation Threshold? | Who Would Automatically Win Under a 48-dBu Remediation Threshold? |
|  |  |  |  |  |  |  |  |  |
| K241CS | 96.1 | KSWG | 96.3 | Downtown Phoenix & Surrounding Suburbs | 29 dBu  To  35 dBu | 7 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| K256CX | 99.1 | KGGI | 99.1 | LA’s Inland Empire | 46 dBu  To  49 dBu | 5 | Translator – 54-dBu Threshold Not Met | Translator – Only 2 Complaints Above Threshold |
| BNPFT-20180420AAX | 107.9 | KWVE | 107.9 | Downtown Los Angeles, CA | 32 dBu  to  42 dBu | 29 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20180507AAH | 105.5 | KBUE | 105.5 | LA’s San Fernando Valley, CA | 46 dBu  to  52 dBu | 7 | Translator – 54-dBu Threshold Not Met | Translator – Insufficient No. of Complaints Above Threshold |
| W231DC | 94.1 | WLLD | 94.1 | Fort Myers, Cape Coral & Bonita Springs, FL | 37 dBu  to  47 dBu | 7 | Translator – 54-dBu Threshold Not Met | Translator – 48- dBu Threshold Not Met |
| W255CJ | 98.9 | WWGA | 98.9 | Atlanta, GA & Surrounding Suburbs | 39 dBu  to  49 dBu\*\* | 6 | Translator – 54-dBu Threshold Not Met | Translator – Insufficient No. of Complaints Above Threshold |
| W280EM | 103.9 | WXRD | 103.9 | Downtown Chicago & Surrounding Suburbs | 34 dBu  To  72 dBu | 380 | Audio Division Would Decide | Audio Division Would Decide |
| W275BD | 102.9 | WXCH | 102.9 | Downtown Indianapolis & Suburbs | 32 dBu  To  47 dBu | 11 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| W266AN (now W247CT) | 101.1 | WSGS | 101.1 | Lexington, KY | 31 dBu  to  47 dBu | 76 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |

**TABLE 1:**

**Recent Translator Interference Conflicts (Part 2)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Translator Callsign or Application Number | Translator Freq. | Full-Service Callsign | Full-Service Freq. | Fighting for Coverage of: | Desired Station’s F(50,50) Signal Strength at Locations of Listener Complaints (dBu) | # of Com-plaints | Who Would Automatically Win Under the Proposed 54-dBu Remediation Threshold? | Who Would Automatically Win Under a 48-dBu Remediation Threshold? |
|  |  |  |  |  |  |  |  |  |
| W249CV | 97.3 | WJFD | 97.3 | Downtown Boston, MA & Surrounding Suburbs | 45 dBu  To  47.7 dBu | 27 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPF20180508ACJ | 97.3 | WJFD | 97.3 | Downtown Boston, MA & Surrounding Suburbs | 41 dBu  to  45 dBu | 22 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20180430ABE | 95.1 | WPVQ | 95.3 | Downtown Springfield, MA | 43 dBu  to  49 dBu | 10 | Translator – 54-dBu Threshold Not Met | Translator – Only One Complaint Above Threshold |
| W225AP | 92.9 | KKJM | 92.9 | Downtown Minneapolis & Surrounding Suburbs | 36 dBu  To  52 dBu | 4 | Translator – 54-dBu Threshold Not Met | Translator – Only Two Complaints Above Threshold |
| K237GP | 95.3 | KCSI | 95.3 | Downtown Omaha, NE & Surrounding Suburbs | 43 dBu  To  50 dBu | 7 | Translator – 54-dBu Threshold Not Met | Translator – Only Two Complaints Above Threshold |
| K276FB | 96.5 | KSOM | 96.5 | Downtown Omaha, NE & Surrounding Suburbs | 39 dBu  To  47 dBu | 3 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20180502ABQ | 106.5 | WTHJ | 106.5 | Vineland, NJ | 39 dBu  to  45 dBu | 35 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu  Threshold Not Met |
| W295CK | 95.5 | WBEN | 95.7 | New Jersey Shore | 40 dBu | 1 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |

**TABLE 1:**

**Recent Translator Interference Conflicts (Part 3)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Translator Callsign or Application Number | Translator Freq. | Full-Service Callsign | Full-Service Freq. | Fighting for Coverage of: | Desired Station’s F(50,50) Signal Strength at Locations of Listener Complaints (dBu) | # of Com-plaints | Who Would Automatically Win Under the Proposed 54-dBu Remediation Threshold? | Who Would Automatically Win Under a 48-dBu Remediation Threshold? |
|  |  |  |  |  |  |  |  |  |
| BNPFT-20130830APM | 97.5 | WPEN | 97.5 | Midtown Manhattan, NY | 29.5 dBu | 1 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20130830ABH | 101.5 | WKXW | 101.5 | Midtown Manhattan, NY | 46.7 dBu  To  48.4 dBu | 5 | Translator-  54-dBu Threshold Not Met | Translator – Only Three Complaints Above Threshold |
| W276BV | 103.1 | W276AQ | 103.1 | Midtown Manhattan, NY & Surrounding Suburbs | 46 dBu | 3 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20130830AQK | 105.5 | WDHA | 105.5 | Midtown Manhattan & Surrounding Suburbs | 43 dBu  To  57 dBu | 59 | Audio Division Would Decide | Audio Division Would Decide |
| W292DV | 106.3 | WKMK | 106.3 | Midtown Manhattan, NY | 40 dBu  To  47 dBu | 25 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20180426AAS | 94.9 | WQMX | 94.9 | Cleveland, OH & Suburbs (Painesville, Mentor) | 50 dBu  to  53 dBu | 4 | Translator – 54-dBu Threshold Not Met | Translator – Insufficient No. of Complaints Above Threshold |
| BNPFT-20180418ADE | 100.3 | WNIR | 100.1 | Cleveland, OH & Suburbs (Medina, Brunswick, North Olmsted | 45 dBu  to  52 dBu | 12 | Translator – 54-dBu Threshold Not Met | Audio Division Would Decide |

**TABLE 1:**

**Recent Translator Interference Conflicts (Part 4)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Translator Callsign or Application Number | Translator Freq. | Full-Service Callsign | Full-Service Freq. | Fighting for Coverage of: | Desired Station’s F(50,50) Signal Strength at Locations of Listener Complaints (dBu) | # of Com-plaints | Who Would Automatically Win Under the Proposed 54-dBu Remediation Threshold? | Who Would Automatically Win Under a 48-dBu Remediation Threshold? |
|  |  |  |  |  |  |  |  |  |
| BNPFT-20180427ABZ | 105.5 | KXRU-LP++ | 105.5 | Downtown Portland, OR | 32 dBu  to  49 dBu | 2 | Translator – 54-dBu Threshold Not Met | Translator – Only One Complaint Above Threshold |
| W295CR | 106.9 | WKVP | 106.9 | Allentown, PA & Lehigh Valley | 43 dBu  To  51 dBu | 12 | Translator – 54-dBu Threshold Not Met | Translator – Less than 6 Complaints within 48-dBu |
| W221DS | 92.1 | WVLT | 92.1 | Downtown Philadelphia & Surrounding Suburbs | 38 dBu  To  48 dBu | 217 | Translator-  54-dBu Threshold Not Met | Translator – Only Two Complaints within 48-dBu |
| W221DG | 92.1 | WVLT | 92.1 | Downtown Philadelphia & Surrounding Suburbs | 38 dBu  To  51 dBu | 63 | Translator – 54-dBu Threshold Not Met | Translator – Only Two Complaints Within 48-dBu |
| BNPFT-20180502AAQ | 102.3 | KTRQ | 102.3 | Downtown Memphis, TN | 43 dBu  to  51 dBu | 11 | Translator – 54-dBu Threshold Not Met | Translator – Insufficient No. of Complaints Above Threshold |
| BNPFT-20180508ACN | 107.9 | WCVQ | 107.9 | Nashville, TN & Suburbs (Gallatin) | 39 dBu  to  47 dbu | 6 | Translator – 54-dBu Threshold Not Met | Translator – 48-dBu Threshold Not Met |
| BNPFT-20180501ABU | 92.1 | W221CF%% | 92.1 | I-81 Corridor- Strasburg, VA | 20.0 dBu  to  36.0 dBu | 4 | New Translator-  54-dBu Threshold Not Met | New Translator-  48-dBu Threshold Not Met |
|  |  |  |  |  |  |  |  |  |

\*\* = As Measured in the Field; all other tabulated values represent F(50,50) predictions.

++ = This is a conflict between an existing LPFM station and a newly proposed translator.

%% = This is a conflict between an existing translator and a newly proposed translator

Table 1 illustrates that, as a practical matter, it is very difficult to gather a sufficient number of complaints strictly within the 54-dBu or 48-dBu contour of a full-service station. This is because the signal from the desired station is relatively strong in this area, and the signal from the translator is relatively weak. Thus, the Undesired-to-Desired (U-to-D) signal ratio will only be exceeded in a very limited number of areas. In some geographic scenarios, the U-to-D signal ratio will never be exceeded within the 54-dBu or 48-dBu F(50,50) contour of the full-service station. Likewise, the desired signal is strong enough within the 48-dBu contour to fend off interference, and listeners are not as likely to notice a problem with the signal from the full-service station in this area.

The greatest potential for interference is in areas where the full-service station is relatively weak and the translator is relatively strong. As a practical matter, this condition is not easily achieved within the 48-dBu contour of the full-service station. Likewise, a critically important listening audience often resides in a large urban center somewhat outside of the F(50,50) 48-dBu contour of the full-service station. Adoption of a drop-dead 48-dBu F(50,50) threshold would severely curtail the extent to which full-service stations could protect their existing listeners who live in proximity to critically important large urban centers.

Refer to Exhibits One through Eleven which include maps depicting a number of actual, real-world translator conflicts. As a preliminary consideration, unlike translators, many full-service stations are not able to place their broadcast transmitters smack-dab at the center of their desired service areas, or in the heart of the largest market that they serve. This situation is due to the geographic spacing requirements of §73.207 and §73.215 which only apply to full-service stations and not translators. Many full-service stations must contend with less than optimum transmitter locations, whereas many translators receive the benefit of operating from downtown skyscrapers or mountaintop sites.

Exhibit One illustrates the 54-dBu F(50,50) contour of full-service station WQMX (Class B), licensed to Medina, Ohio and serving the Cleveland radio market from a transmitter site midway between Akron and Medina. A co-channel translator has been proposed for the suburban community of Painesville, to the east of Cleveland along Lake Erie. This map shows the boundary of predicted interference to WQMX based upon the Undesired-to-Desired (U-to-D) signal ratio being exceeded for co-channel stations. ***It is critically important to note that the U-to-D ratio (based on F(50,50) contours) is NEVER exceeded within the 54-dBu contour of WQMX.***  Yet if this translator were to go on the air, it would be extremely disruptive to WQMX and its existing listeners. Thus, if the FCC’s proposed 54-dBu remediation threshold were to be enacted, WQMX would be rendered powerless to fight off any interference experienced by existing listeners. This situation is by no means unique to WQMX.

Exhibit Two illustrates the 30-dBu to 54-dBu contours of WJFD in New Bedford, Massachusetts, and Exhibit Three illustrates a number of WJFD listener complaints that were reported within the contours of Exhibit Two. WJFD has a large number of established listeners in the Boston suburbs (denoted as H1, H2… for home-based listeners; W1, W2…as work-based listeners in Exhibit Three), but most of these suburbs are situated beyond WJFD’s 48-dBu F(50,50) contour as depicted in Exhibit Two. If WJFD was limited to defending its existing signal only within the 54-dBu (or even the 48-dBu) F(50,50) contour, it would stand to lose a vast majority of its existing Boston-area listeners without being able to protect them from a newly-proposed interfering translator.

Exhibit Four illustrates listener interference to full-service station WPVQ in Greenfield, Massachusetts that would be caused by a proposed first-adjacent-channel translator in the much larger community of Springfield, Massachusetts. In this example, WPVQ has an established listener base in Springfield, MA as demonstrated by listener complaints. These listeners are receiving an F(50,50) signal level of 43 dBu to 49 dBu from WPVQ, due to the larger city of Springfield being situated somewhat beyond the 48-dBu F(50,50) contour of WPVQ. Thus, a proposed F(50,50) remediation threshold of 54-dBu (or even 48-dBu) would render WPVQ powerless to protect its existing listener base in Springfield. The region between the WPVQ transmitter site and the Springfield urbanized area comprises thinly populated rural areas, and it would be relatively difficult to obtain complaints from areas within the 54-dBu or 48-dBu contour of WPVQ.

Exhibit Five illustrates listener interference to full-service station WPEN in suburban Philadelphia caused by a proposed co-channel translator in Midtown Manhattan, New York. In this example, WPEN has an established listener base in Manhattan, as demonstrated by Nielsen data and listener complaints. One complaining listener is receiving an F(50,50) signal level of 29.5 dBu from WPEN. Many people in Midtown Manhattan live and work in high-rise structures that provide signal gain in some directions based upon window orientation and height.

The map of Exhibit Five refutes the specious argument presented in the FCC proposal alleging that, by limiting interference to the 54-dBu contour of the desired station instead of the 60-dBu contour of the translator, the potential area of remediation for the full-powered station would become larger. Hogwash !! In fact, the map of Exhibit Five illustrates that the area of interference between a translator and a full-service station (shaded in red) becomes larger and larger as one moves further and further away from the desired full-service station. By contrast, as one moves closer and closer to the full-service station, the area of interference becomes smaller and smaller. There is only a tiny crescent of interference within the 47-dBu contour of WPEN, and NO interference at all within the 51-dBu contour. Thus, any interference remediation threshold set to 54 dBu or 48 dBu would almost completely prevent many full-service stations from protecting existing listeners. As one considers the 34-dBu contour of WPEN, there is a more substantial area of interference, with data indicating that many WPEN listeners are within this 34-dBu contour. The greatest area of interference occurs within the 29.5-dBu contour of WPEN.

Exhibit Six illustrates listener interference to full-service station W**B**EN in Philadelphia (not to be confused with the previous example of W**P**EN) caused by a proposed first-adjacent-channel translator in an important resort area along the New Jersey shore. In this example, WBEN has an established listener base in the shore community of Manahawkin. One complaining listener is receiving an F(50,50) signal level of 40 dBu from WBEN.

As with Exhibit Five, the map of Exhibit Six further refutes the specious argument presented in the FCC proposal alleging that, by limiting interference to the 54-dBu contour of the desired station instead of the 60-dBu contour of the translator, the potential area of remediation for the full-powered station would become larger. Baloney !! The map of Exhibit Six illustrates that the area of interference between a translator and a full-service station (shaded in red) becomes larger and larger as one moves further and further away from the desired full-service station. By contrast, as one moves closer and closer to the full-service station, the area of interference becomes smaller and smaller. There is only a tiny crescent of interference within the 52-dBu contour of WBEN, and NO interference at all within the 51-dBu contour. Thus, any interference remediation threshold set to 54 dBu or 48 dBu would almost completely prevent many full-service stations from protecting existing listeners. The greatest area of interference occurs within the 40-dBu contour of WBEN.

Exhibit Seven illustrates listener interference to full-service station WCVQ in the important Nashville suburb of Gallatin caused by a proposed co-channel translator. In this example, WCVQ has an established listener base in Gallatin, as supported by listener complaints at five different locations. These listeners are receiving signal levels from WCVQ in the range of 39 dBu to 47 dBu. It is important to point out, however, that the area between the WCVQ transmitter site and the suburb of Gallatin is very sparsely populated, decreasing the likelihood of receiving complaints that would be limited to the 54-dBu contour of WCVQ (or even the 48-dBu contour of WCVQ).

Exhibit Eight illustrates a typical geographical configuration between a full-service station in a semi-rural area and a proposed translator in the larger community of Vineland, New Jersey. The full-service station, WTHJ, has established listeners in Vineland, and WTHJ supplies Vineland with a signal in the range of 37 dBu to 45.8 dBu. Yet, if the FCC were to advance a 54-dBu (or even a 48-dBu) interference remediation threshold, WTHJ would be out of luck and unable to defend its Vineland listenership.

Exhibit Nine illustrates listener interference to LPFM station KXRU-LP caused by a proposed co-channel translator in downtown Portland, Oregon. In this example, KXRU-LP has an established listener base in Portland, as demonstrated by several listener complaints in the downtown area. These complaining listeners are receiving F(50,50) signal levels in the range of 32 dBu to 50 dBu from KXRU-LP. The purpose of this example is to emphasize that many LPFMs have listeners who rely upon relatively weak signals that are well below 54 dBu, and even well below 48 dBu. Oftentimes this existing listenership is in a larger city, such as Portland, where the LPFM may be dependent on receiving donations and sponsorships. However, the proposed translator threatens to adversely impact the established LPFM station.

Exhibit Ten illustrates listener interference to full-service station WNIR that would be caused by a proposed co-channel translator near the Cleveland suburb of Elyria. WNIR enjoys a substantial listener base throughout the Cleveland suburbs with its live-and-local talk shows, no-holds-barred commentary, and uniquely stylized programs. The area of interference depicted on the map indicates that WNIR could lose about half of its listeners if the Elyria translator were allowed to go on the air.

Exhibit Eleven illustrates interference to an existing translator caused by a newly proposed translator. This situation has a unique angle that apparently has not been contemplated by translator proponents. The existing translator, W221CF, has an established listener base in Strasburg, Middletown, and other communities along the busy I-81 corridor. The translator provides a signal level of 20.0 dBu to 36.0 dBu to the complaining listeners. The take-home message is as follows: If translator owners want to restrict full-service stations to the 54-dBu (or 48-dBu) contour, they should fully consider the implications of this proposal should they ever want to protect their own translator’s service area against a newly-proposed translator in the future.

In reviewing Exhibits One through Eleven, it may be observed that full-service stations around the country***, as well as existing translators and LPFMs,*** would be severely harmed by a drop-dead 54-dBu or 48-dBu remediation threshold. Adoption of a 48-dBu remediation threshold would severely curtail the extent to which a full-service station (or LPFM or translator station) would be able to protect its existing listeners from new translator proposals.

A drop-dead 54-dBu or 48-dBu interference remediation threshold constitutes a wholesale rule change that will destroy the existing service areas of countless full-service stations across the country. Such a rule strips away the ability of full-service stations to protect their existing listenership by depriving them of the right to oppose or even comment on a newly-proposed translator. In effect, this proposed rule change makes fill-in translator applicants primary and all other stations secondary. As a result, thousands of listeners to full-service stations would be harmed by translator interference that is now and forever rendered completely irremediable.

**IV. The Petitioner does NOT support the sole use of F(50,50) contours to demonstrate an elimination of interference as the F(50,50) contours do not properly reflect terrain.**

While contours may be effective for most cases of spacing and allocation, they are very ineffective for closely approximating actual field strength at a listener’s location. Other methods, such as Longley-Rice and Point-to-Point, have been proven to be more effective in accurately determining the coverage of FM broadcast facilities. The F(50,50) approach has two major shortcomings: first, it was intended to be applied to smooth terrain; and second, it only considers terrain from 2 to 10 miles from the transmitter site. The F(50,50) contour-based approach is woefully inadequate to properly model propagation in mountainous locations such as Colorado, Connecticut, and California. Full-service stations in such locations would be unfairly penalized and substantially harmed by a hard-line F(50,50) interference remediation threshold.

In contrast to the F(50,50) contour-based approach, Longley-Rice and Point-to-Point consider ALL of the intervening terrain between the transmitter and the listener. Thus, the Longley-Rice propagation method is a much more appropriate method than F(50,50) in the context of translator interference that involves specific listener locations. Undesired-to-Desired (U-to-D) ratio methodology using terrain-based prediction tools such as Longley-Rice should be employed to determine field strengths for both the desired and the undesired signal at the listener’s approximate location. In order for a translator interference complaint to be congnizable, the desired signal level should be used to decide whether or not the full-service station can make a valid claim to serve the area in question.

**V: A Better Solution: If a Full-Service Station Claims to Have a Listenable Signal in a Certain Area, Test This Claim Using Longley-Rice Methodology**

If there is a concern about some full-service stations claiming coverage beyond what is reasonable, the best solution is NOT an arbitrary F(50,50) translator remediation threshold. Rather, the Commission should use Longley-Rice for the purpose of determining whether or not the full-service station should be allowed to claim a listenable signal within the proposed translator’s 60-dBu contour. For example, in Richard J. Bodorff, Esq., 27 FCC Rcd 4870, FN19 (MB2012), the Commission acknowledged Longley-Rice methodology to support a showing that a primary station has listeners within the FM translator application’s proposed 60-dBu contour, and not for purposes of extending the primary protected service (60-dBu) contour, but rather to support its claim where the primary station has a listenable signal within the proposed translator’s 60-dBu contour.

**VI. In Areas of the Country Where Substantial Variations in Terrain Exist, the Establishment of a One-Size-Fits-All F(50,50) Signal Strength Remediation Threshold is Not in the Public Interest**

The establishment of an arbitrary “drop dead” F(50,50) signal strength contour beyond which a full-service station cannot claim protection from interference is inappropriate because substantial terrain variations exist in many parts of the United States. From a practical standpoint, a station’s truly listenable contour varies tremendously based on natural terrain features. Depending upon the intervening terrain, a predicted F(50,50) signal strength of 34 dBu not infrequently results in a very strong, solid received signal that is fully quieted. The ability of popular FM radios to receive listenable-quality 34-dBu signals will be described in greater detail hereinafter.

***The use of a supplemental method, such as Longley Rice, is a valuable tool that would allow the FCC and translator applicants to better determine where a full-service station experiences a listenable signal that should be protected.***

In cases where an optimal transmitter site has been selected in a mountainous or hilly area, the actual usable coverage may far exceed the predictions of the FCC F(50,50) curves in some directions. In other circumstances, the FCC F(50,50) curves will predict 54-dBu or 48-dBu coverage to a certain area, but such coverage does not exist in practice due to the existence of a large ridge between the transmitter site and the area to be covered.

A Class “A” Example: WVLT-92.1, Vineland, NJ – Facility ID No. 11974:

Consider a test point at a distance of 61 kilometers (37.9 miles) along a 331-degree bearing from the WVLT (92.1) transmitter site in Southern New Jersey. The predicted F(50,50) signal strength at this test point is 43 dBu using the procedures set forth in §73.313(a). However, applying the alternate prediction methodology of NBS Tech Note 101, Version 1.2.2 of the Longley-Rice model indicates that the signal strength at this test point is 60.0 dBu. By contrast, the 60-dBu, §73.313 distance along the 331-degree radial is 29.2 kilometers. Accordingly, the alternate prediction method 60-dBu contour reaches out 61 kilometers from WVLT, while the predicted 60-dBu F(50,50) contour distance is only 29.2 kilometers. This is a substantial difference of 208.9%. Examining the terrain profile reveals a gradual increase in elevation from the WVLT transmitter site to the test point. There is a line of sight path from the transmitter to the test point, resulting in strong signal levels. It should be emphasized that this test point is NOT anomalous, as similar terrain conditions exist along a Northwesterly arc proceeding clockwise from 295 degrees to 340 degrees, encompassing many Philadelphia suburbs. Why should WVLT be penalized for selecting an optimized transmitter site?

A Class “C” Example: KIQN-103.3, Colorado City, CO – Facility ID No. 164269: Consider a test point at a distance of 140 kilometers (87 miles) along a 0-degree bearing (true North) from the KIQN (103.3) transmitter site at Rattlesnake Butte. The predicted F(50,50) signal strength at this test point is 33.8 dBu using the procedures set forth in §73.313(a). However, applying the alternate prediction methodology of NBS Tech Note 101, Version 1.2.2 of the Longley-Rice model indicates that the signal strength at this test point is 60.0 dBu. By contrast, the 60-dBu, §73.313 distance along the 0-degree radial is 66.6 kilometers (41.4 miles). Accordingly, the alternate prediction method 60-dBu contour reaches out 140 kilometers from KIQN, while the predicted 60-dBu F(50,50) contour distance is only 66.6 kilometers. This is a substantial difference of 210.2%. Examining the terrain profile reveals a gradual increase in elevation from the KIQN transmitter site to the test point. There is a line of sight path from the transmitter to the test point, resulting in strong signal levels. It should be emphasized that this test point is NOT anomalous, as similar terrain conditions exist along a Northern arc proceeding clockwise from 348 degrees to 50 degrees, encompassing Colorado Springs and many smaller towns.

**VII. In areas of Irregular Terrain, the Arbitrary Setting of an F(50,50) Drop-Dead Threshold for Interference Remediation will Unfairly Penalize an Existing Facility’s Listenership which Can and Often Does Extend Beyond the F(50,50), 48-dBu contour. Such Stations Would Be Substantially Harmed.**

Any arbitrary F(50,50) threshold would be unfair to full-service stations in mountainous areas of the country, and it would constitute a hardship to such stations. The F(50,50) approach fails to reasonably account for actual signal levels in hilly and mountainous areas. Considering the foregoing examples, when the entirety of the terrain path from transmitter to receiver is considered, WVLT has a 60-dBu signal level in areas where the F(50,50) curves only predict a 43-dBu signal level. Likewise, when the entirety of the terrain path from transmitter to receiver is considered, KIQN has a 60-dBu signal level in areas where the F(50,50) curves only predict a 33.8 dBu signal level. In both cases, actual field measurements conform very closely to the Longley-Rice numbers, and NOT the F(50,50) numbers.

It must be emphasized that the foregoing examples are NOT anomalous, as many full-service stations are facing similar circumstances. Any fair and balanced proposal to adopt a drop-dead translator interference remediation threshold must consider scenarios where terrain causes the actual and practical coverage area of a station to exist well beyond what the F(50,50) curves would indicate. Since the F(50,50) curves only consider terrain within 2 to 10 miles from the transmitter site, these curves are best used as approximations for allocations purposes, and not for the purpose of denying interference relief to full-service stations.

The FCC F(50,50) curves were developed in the pre-computer era when manual computations and paper USGS maps were used to determine height above average terrain***. For purposes of simplifying computation, these curves only consider terrain between 2 and 10 miles from the transmitter site.*** Thus, a high ridge 11 miles from the transmitter site may totally cut off coverage as a practical matter, despite the F(50,50) curves indicating otherwise. By contrast, a station that selects a transmitter site atop a wide mountain ridge or broad mesa that extends for 10 miles or more will have practical, solid, real-world coverage well beyond what the F(50,50) curves would predict.

**VIII. In Many Real-World Scenarios Involving Irregular Terrain, the F(50,50) approach Dramatically Understates Actual, Real-World Coverage.**

As indicated previously, in many real-world scenarios involving irregular terrain where transmitter sites are carefully chosen, the F(50,50) approach dramatically under-states actual, real-world coverage. It is not fair to destroy the existing coverage of such stations just because they do not readily fit into a standard, one-size-fits-all F(50,50) box. ***This shortcoming can be easily overcome by allowing Longley-Rice showings in translator interference remediation proceedings as an alternative to the draconian, inaccurate, and overly harsh F(50,50) approach. In this case, Longley-Rice needs to be separated from any hard-line F(50,50) limitation, and a requisite showing should be permitted in any scenario when warranted by terrain considerations.***

Instead of using an overly simplistic and outdated coverage prediction method for interference remediation which uses approximations that are horribly inaccurate in mountainous terrain, the FCC should modernize its approach and use a better propagation prediction method for interference remediation. This is especially true when so much is at stake for the full-service, standalone FM broadcaster. It bears emphasizing that, ***whereas the F(50,50) only considers terrain within 2 to 10 miles from the transmitter site, the Longley-Rice propagation prediction method utilizes the entire terrain path from the transmitter site to the receiver***. Therefore, it is easy to see why Longley-Rice provides predictions that are much more accurate than the F(50,50) curves in mountainous terrain. It is for this reason that we support the use of real world Longley-Rice signal strength determination in the context of translator interference remediation.

**IX. If the FCC insists on setting a “drop dead” interference remediation contour beyond which interference remediation of a full-powered facility would no longer be possible, it is submitted that such a “drop dead” dBu contour should apply to either the standard F(50,50) contour, OR the contour calculated using the Longley-Rice propagation prediction method.**

Eligibility for using the Longley-Rice method could be established by means of demonstrating a minimum delta-H for the terrain path between the transmitter and the receiver location or locations. There is long-standing precedent for the use of the Longley-Rice prediction methodology for purposes of determining coverage over the city of license and main studio locations. There is also long-standing precedent for the use of Longley-Rice propagation methodology in connection with over-the-air digital television signals in the United States.

The FCC case reference for the use of Longley-Rice to predict 70-dBu coverage over a proposed community of license may be summarized as follows: The Commission’s F(50,50) propagation curves used as the standard method for coverage prediction assumes a delta h (∆h) value of 50 meters. See Section 73.313(i). In the unpublished decision, Cumulus Licensing Corp., Letter, Aug. 8, 2003, the Audio Division staff in coordination with the Office of Engineering and Technology (OET) established the following guidelines to define “terrain departs widely”: (1) Where the ∆h is used as the sole determinant that the terrain along a radial widely departs from the 50 meter standard, a ∆h of 20 meters or less, or 100 meters or more is required. (2) Where the antenna height above average terrain (HAAT) along the radial towards the studio location (using an extended radial) varies by more than 30% from the HAAT derived from the standard 3 to 16 km average.

Should the Commission allow the use of Longley-Rice to establish usable coverage in the context of translator interference remediation, it is believed reasonable for the Media Bureau, in coordination with OET, to issue guidelines for use of the Longley-Rice method. Such guidance could be as simple as mandating specific use of the FCC TVStudy software function for FM, and solely for the purpose of translator interference remediation.

Regardless of the Commission’s willingness to permit the employment of Longley-Rice in these determinations, the employment of either a harsh F(50,50) 54-dBu or 48-dBu contour beyond which no interference can be claimed by the protected full-service station would put the full-service station at an extreme disadvantage relative to the translator, and it would constitute a significant hardship to the full-service station. Essentially, translator owners would receive a windfall at the expense of existing full-service stations.

**X. Why Should Brand-New Translators Be Given Priority Over Existing FM Broadcasters Who Have Been On the Air for Many Years?**

Surely the FCC should not allow brand-new FM translators to wipe out long-standing local programming provided by full-service stations. Yet valuable spectrum in heavily-populated areas is being taken away from incumbent FM full-service stations that have invested heavily in their facilities, and summarily given away to AM operators for free. In order to defend itself, the incumbent full-service station is faced with an extremely heavy burden of proof. Meeting this burden typically involves tens of thousands of dollars in legal and engineering expenses, with the full-service station having to endure ongoing interference and loss of revenue for many months or years.

Whereas many full-service FM stations have been serving listeners for decades, cross-service translators are newcomers and should not have priority over senior users. Instead of advancing a remediation threshold (such as 54 dBu or 48 dBu) that results in a new translator almost always winning, while rendering an existing full-service station completely powerless, a more appropriate threshold needs to be selected that does a better job of protecting the interests of existing full-service FM broadcasters. Otherwise, thousands of radio stations across the nation will have thousands of regular listeners whose listening will be interrupted by interference. This situation have an adverse impact on the listening habits of millions of people, an unintended consequence that is certainly not in the public interest.

Since the very inception of radio broadcasting, it is axiomatic that existing spectrum users have priority over newcomers. If it is desired to reallocate a band of frequencies from one service to another, the existing spectrum rights holders are compensated accordingly. Examples include the recent reverse auctions of UHF television spectrum where television licensees were compensated in return for giving up their spectrum rights. However, the present AM translator craze seems to be a lone exception to the rule.

The petitioner understands the motivation behind this rulemaking in light of the AM revitalization efforts, but the FCC’s efforts to revitalize the AM radio service should not concomitantly and substantially degrade the FM radio service. Only in the case of AM translators does the Commission seek to place the rights of newcomers above the rights of incumbents who have been using the spectrum to serve listeners for many years. To add insult to injury, the location of the contested interference is typically in the heart of a heavily-populated urban area. If the Commission so desires to create and promote new AM translators while taking rights away from everyone else, why not offer existing full-service stations an auction process where they can receive compensation for giving up their spectrum rights to these new AM translators?

The addition of an oppressive remediation threshold to the existing translator rules (such as 54 dBu or 48 dBu) would expose each full-service FM station to further erosion of its audience. New technologies and changing listener habits are challenging enough to traditional terrestrial broadcasting. We do not need to be taking any action that contributes to the substantial degradation of the FM radio service. Terrestrial radio is already beleaguered by online music services, YouTube, and podcasts that have caused many people to migrate away from the FM band. Along with these new trends, considerable advertising dollars are moving away from terrestrial broadcasting to online broadcasting. After losing the ability to hear their favorite FM stations, many listeners will become disenchanted with the FM broadcast band. They will be motivated to actively seek out alternative content delivery methods such as Internet radio, Pandora, Satellite radio, and others. To further infringe on the broadcast reach of traditional full-service FM stations will create undue and unnecessary hardship on these license holders.

**XI. Ensuring The Continued Operation of Translators, Versus Ensuring The Continued Operation of Full-Service Stations.**

The FCC seems to be concerned about providing a measure of security to translator operators. However, in so doing, the FCC is taking away security from the owners and operators of full-service stations. If the proposals in the present rulemaking procedure are adopted, the full-service station will forever have to worry about losing its largest market to a translator and being powerless to do anything about it. What about providing some operational security to full-service stations as well? The FCC seems to only be concerned about promoting the welfare of translators at the expense of other spectrum users. This approach will backfire, resulting in the substantial devaluation of full-service stations as new owners are not going to want to risk losing critically important urban coverage that happens to lie outside of an arbitrarily-determined, drop-dead signal contour.

Instead of facing a constant deluge of pro-translator proposals that threaten the continued viability of full-service stations, many station owners would prefer to focus more time and energy on serving the public by providing compelling programming.

If translators are now regarded as the highest and best use of the FM radio spectrum, the FCC should offer full-service owners the option of converting their stations to translators. The conversion process would merely require the 60-dBu contour of the full-service station to at least partially overlap the 60-dBu contour of the proposed translator. This would allow many owners of full-service stations to relocate their transmitters from rural areas to the heart of their target markets, without having to worry about the provisions of 73.207.

**XII. In Its Zeal to Help AM Stations, the FCC is Throwing Existing Full-Service FM Licensees Under the Bus**

The FCC’s 54-dBu proposal, as well as a substantially similar 48-dBu proposal, fail to consider the big picture. Although it appears that the FCC would like to single-mindedly advance AM translators to a highly-exalted status above all other classes of service, it is wrong to do so at the expense of existing full-service FM licensees who have been serving communities for decades, and who have relied upon the existing interference remediation scheme to protect their significant investments.

The FM band is rapidly degrading in the wake of so-called AM revitalization, with existing stand-alone, full-service stations getting the short end of the stick and bearing the brunt of the pain. In the past, one could remain tuned to the same suburban station during a daily commute into the downtown area. Nowadays, the same frequency is rendered useless over long distances as one’s car radio rapidly switches back and forth between the legacy full-powered station in the suburbs and the brand-new downtown translator.

Setting a 54-dBu or 48-dBu standard for actionable translator interference will foster the continued existence of tiny islands of service in a vast sea of interference. An unintelligible mush-pot of competing signals will exist between the translator and the full-powered facility across long distances where the full-powered station was previously well heard. Neither the translator nor the full-powered station will be listenable across this distance, and the integrity of the FM band will suffer severely.

The creation of a large zone of interference spanning several counties, just to support a translator serving a relatively small area is not in the public interest. Yet in the wake of the recent translator filing windows, the AM-itization of the FM band appears to be in full swing. Many frequencies which formerly featured usable metro area coverage from a single station are now choked with interference. Had the FCC analyzed the translator proposals using Longley-Rice methodology (as currently employed in the context of over-the-air television broadcasting) instead of using the simplistic F(50,50) approach, most of the existing translator conflicts would have been avoided.

**XIII. Applying the Lifeline Argument to AM Translators is WRONG !!!**

The lifeline argument is often used in a misguided attempt to prioritize AM cross-service translators at the expense of other broadcasters. Translators are nothing more than rebroadcasting stations. If a translator used to rebroadcast an AM station experiences interference or is ordered off the air, the AM station owner has a fallback position. Listeners are still able to tune into the station on the AM broadcast band.

By contrast, if the AM translator interferes with an independently-owned, standalone, full-service FM station, the standalone station does not broadcast on a second frequency, and reception of the full-powered station can be totally destroyed and eliminated by the translator. Unlike the AM operator, the independently –owned, full-service FM station has NO lifeline whatsoever. The independently-owned, full-service FM station is totally dependent upon ONE SINGLE signal. By contrast, the AM translator operator is using TWO DIFFERENT signals, a first signal on the AM band, and a second signal on the FM band.

Although AM operators complain about possibly being shut down by a full-service station, there is another side to the story. Legacy full-service broadcasters are at risk of losing critically important urban coverage to brand-new translators. Taking away the ability of full-service stations to fight translator interference by using cleverly-chosen 54-dBu or 48-dBu interference thresholds will substantially harm existing full-service stations.

**XIV. The FCC’s 54-dBu Proposal Elevates Translators to Primary Status at the Expense of Full-Service Stations.**

Translators can be sited with relative ease, whereas full-power stations must abide by the geographic restriction requirements of 73.207. Thus, the translator operator is already operating at a significant advantage relative to a full-powered station. Whereas a translator can generally move to any of a variety of locations to mitigate interference, or to saturate a heavily-populated area with a strong signal, it is much more difficult and expensive to move a full-service station. If the FCC further exacerbates this imbalance by making translator interference non-actionable in a vast majority of real-world interference scenarios, as would be the case with a 54-dBu or 48-dBu F(50,50) standard, the FCC’s proposal would effectively elevate translator stations to a higher status than that of existing full-powered stations. Meanwhile, the value and continued viability of full-powered stations would be significantly denigrated.

**XV. There is No Technical Receiver-Based Evidence to Support a 54-dBu or 48-dBu Minimum Signal Threshold.**

Although there is a lot of talk about providing a signal strength threshold below which interference would no longer be recognized, thus far no solid technical rationale has been advanced to support any particular proposed threshold. Rather, 50-dBu and 48-dBu values are being thrown out on the basis of “group-think”, without any independent analysis or understanding of how the number being suggested would impact translators and full-service stations. The individuals and entities who are suggesting these numbers might be surprised at the practical impact of these values as applied to actual translator disputes. Moreover, no receiver tests are offered up, nor are any standards-setting bodies are cited. This is because no receiver tests or standards-setting bodies would support such a high signal strength threshold. In fact, the 50-dBu and 48-dBu values are being thrown out without any independent analysis as to the ability of popular radios to receive such signal levels. Modern radios do not need anywhere near a 50-dBu or 48-dBu signal to produce fully-quieted, enjoyable audio.

Many pro-translator individuals and entities are advocating a 48-dBu or 50-dBu signal strength threshold instead of the FCC’s proposed 54-dBu threshold, in an attempt to cleverly and misleadingly imply that a 48-dBu or 50-dBu level is somehow a good “compromise” value. In fact, a 48-dBu or 50-dBu threshold is NOT a compromise at all, as it works heavily to the advantage of translator owners. As indicated previously, the 48-dBu and 50-dBu proponents fail to provide any technical analysis or reasoning as to why such a signal strength would be appropriate. Sure, 48 dBu and 50 dBu are nice, round numbers that are somewhat less than 54 dBu, but this doesn’t mean that either number is appropriate or effective for protecting the integrity of the FM band.

**XVI. Moving the Proposed Remediation Threshold from 54 dBu to 48 dBu is a Meaningless, Illusory Change That Will Significantly Harm Full-Service Stations**

Moving the standard from 54 dBu to 48 dBu is a meaningless, illusory compromise. In fact, it is anything but a “compromise”, and works to the significant advantage of translator proponents. Even if a 48-dBu threshold is adopted instead of the proposed 54-dBu threshold, the adverse impact on independently-owned, full-service stations will be significant and devastating. Full-service stations would be harmed significantly. The practical result of a 48-dBu standard will be the translator winning over the full-powered station 99% of the time. In reality, 54-dBu versus 48-dBu doesn’t make much of a difference, as both numbers are very pro-translator. The devastating impact of even a 48-dBu threshold on full-powered stations is discussed in more detail hereinafter, in the context of a representative sampling of recent translator interference disputes.

**XVII. If the FCC Enacts a Threshold Signal Strength Level for Translator Interference Remediation, This Threshold Must Be Set to a Value that Represents a Lower Limit of the Useful Coverage Area of Existing Full-Service FM Broadcast Stations.**

In order to properly protect the integrity of the FM broadcast band, and to protect the existing coverage of full-service stations, a cutoff of 54 dBu or 48 dBu is woefully inadequate in view of actual FM receiver performance and actual, practical, useful FM coverage. The sensitivity of typical auto, portable, and home-based FM radios used by members of the general public has been the subject of past studies. Comprehensive receiver testing was performed by a number of groups in the US, including the NAB and the NRSC.

**XVIII. According to the 2013 NAB Engineering Handbook, a 34-dBu Signal Provides Good Quieting in Nearly All Automobile and Portable Radios.**

The 2013 NAB Engineering Handbook states, “The history of FCC proceedings provides the rationale for the following levels for minimum satisfactory signal strength…34 dBu = 0.05 mV/m in rural areas.” (see *National Association of Broadcasters Engineering Handbook*; Graham A. Jones, David H. Layer, Thomas G. Osenkowsky; April 26, 2013, page 844.) “This level was established by the FCC in the early 1950s when tube receivers and H-pol antennas were popular. Modern receivers have much better sensitivity. The FCC also stated that, in rural areas, levels as low as 50 uV/m [34 dBu] were useful. Indeed, current home stereo tuners and FM auto radios operate very well with only 25 uV/m. **In practice, 50 uV/m [34 dBu] provides good quieting in nearly all automobile and portable radios receiving a stereo signal from an CP (circularly-polarized) antenna.** Therefore, 50 uV/m should be considered the minimum useful signal level.”

**XIX. Since a 34-dBu signal provides good quieting in nearly all radios, it may be concluded that listeners of full-service stations are able to listen to reasonable-quality audio from signals of as little as 34 dBu.**

This is a far cry from the unsubstantiated claims of a 48-dBu or greater signal level being necessary in order to obtain good quieting and good station listenability. In fact, good listenability may be provided with a signal of 34 dBu or better. Accordingly, a much higher standard of 48 dBu or 54 dBu is inappropriate, as it would result in many thousands of listeners being deprived of their favorite stations. Moreover, the NAB Engineering Handbook is not an outlier. Several other sources strongly support a 34-dBu signal providing good listenability.

**XX. A 34-dBu Threshold Is Consistent with Claims of Service Made by Broadcasters and Further Supported by Nielsen Data**

In an Engineering Statement filed with the BNPFT-20130830AQK application for a new translator, the consulting engineer for WDHA-FM states that “WDHA-FM currently provides FM service to areas within its predicted 50 uV/m (34 dBu) contour.” WDHA-FM fully supports this claim by citing Nielsen data clearly indicating substantial listenership out to the 34-dBu contour.

In an Engineering Statement filed with the BNPFT-20130828AGD application for a new translator, the consulting engineer for WBEN(FM) states that “WBEN(FM) currently provides FM service to areas within its predicted 50 uV/m (34 dBu) contour.” WBEN(FM) fully supports this claim by citing Nielsen data clearly indicating substantial listenership out to the 34-dBu contour.

In an Engineering Statement filed with the BNPFT-20130830APM application for a new translator, the consulting engineer for WPEN(FM) states that “WPEN(FM) currently provides FM service to areas within its predicted 30 uV/m (29.5 dBu) contour.”

These examples serve to illustrate that many existing full-service stations have verifiable listenership out to the 34-dBu F(50,50) contour.

**XXI. According to the USA Digital Radio Report, the Useful Analog Coverage Area of Current Analog FM Radio Lies Between 25 dBu and 35 dBu.**

A typical FM radio performance study is, “USA Digital Radio Report on Laboratory and Field Testing Presented to the National Radio Systems Committee,” December 1999, available at the NRSC website, and hereinafter referred to as the “USA Digital Radio Report”. Page 15 of Appendix F states, “[T]he useful coverage area of current analog radio … lies between 25 dBu and 35 dBu.” Based upon the foregoing Report (and many other similar reports) which are all based on actual field testing, the predetermined threshold should be set to a value somewhere within the range of 25 dBu and 35 dBu, and NOT 48 dBu or 54 dBu. Accordingly, the USA Digital Radio Report provides further support for the 34-dBu standard set forth in the NAB Engineering Handbook.

Graphs of field strength values are plotted for several popular representative radio receivers in FIG. F-17 of Appendix F of the USA Digital Radio Report. These graphs confirm that useful coverage and good-quality audio may be provided with a 34-dBu signal. It may be noted that the laws of physics have not changed from 1999 to the present, nor has receiver technology undergone any substantial updates.

Another source corroborates the findings of the USA Digital Radio Report that the useful coverage area of current analog radio lies between 25 dBu and 35 dBu. The 1957 version of § 73.315 (then § 3.315) states that signals as low as 20 µV/m (the equivalent of a 26-dBu signal) will provide service in rural areas. FM receiver technology has improved immensely since 1957, with the effect that 26 dBu would represent a very conservative and usable signal strength level in the present day and age. Thus, 26 dBu could be established as the outer limit of usable, reliable analog FM coverage. In fact, some full-service stations have relied upon this extended coverage for many years.

**XXII. ITU-R Recommendation BS.412-9 –A 34-dBu Signal Level Provides a Just Acceptable Service for the FM Broadcast Band.**

BS.412-9 states that, in the absence of interference, a 34-dBu signal (measured at a 10-meter height) provides a just- acceptable level of service for most listeners. This is not a median value, but rather the field in which a specific antenna must be immersed. This source further reinforces the 34-dBu value cited in the NAB Engineering Handbook.

**XXIII. BBC Tests of FM Radios Indicate That A Satisfactory Service Can Be Obtained At a Field Strength As Low As 34 dBu.**

The BBC made one of the first formal tests of FM radio in 1945 and 1946, with low power transmissions in London, Oxford, and the Pennines. These trials were made at 90 MHz. It was noted that a “satisfactory service can be obtained at a field strength as low as 34 dBu.” See Kirke, H.L., “*Frequency Modulation: BBC Field Trials*”, BBC Quarterly, Volume 1, Number 2, 1946. This source provides still further confirmation as to the usefulness of a 34-dBu signal, and it also serves to reinforce the position set forth in the NAB Engineering Handbook.

**XXIV: Ofcom Tested a Group of Typical Consumer Radio Receivers and Determined that Useful Coverage is Reached at Field Strengths of Around 30 dBu.**

Ofcom performed actual radiated sensitivity measurements in an anechoic chamber for a group of popular radios that are also widely used in the United States. The radios included hi-fi tuners, car radios, and portable radios. Extensive measurements indicated that “the majority reach the FM threshold at a field strength around 20-30 dBu…It seems that the FM threshold, which is a reasonable definition of the limit of ‘useful’ coverage, is reached at field strengths of around 30 dBu in typical portable receivers. ” See “*Prediction of the ‘Useable’ Coverage of FM Radio Services*”, Ofcom, 14 June 2010, prepared by Aegis Spectrum Engineering.

**XXV: Based on Extensive FM Receiver Tests Performed by the NRSC, the NAB, and Ofcom, an Appropriate Bright-Line Cutoff Value for Translator Interference Remediation Is 34 dBu.**

The FCC may ultimately decide that a “go vs. no-go” bright-line cutoff value for translator interference remediation is necessary. ***In view of the findings of the NAB Engineering Handbook, the USA Digital Radio Report, the BBC study, the Ofcom Report, the older version of § 73.315, as well as a number of additional empirical listening tests that have been conducted in recent times***, ***a minimum signal strength level of 34 dBu represents an appropriate value. By contrast, NO sources support or mention 48 dBu as a minimum signal strength level that would be necessary for quality reception.***

A 34-dBu signal level would adequately protect listeners of full-powered primary stations, consider actual FM radio performance, and create a clear bright-line standard by which full-powered primary stations and FM translators would be able to accurately assess the viability of a proposed translator not to cause interference to listeners who have come to rely upon a licensed primary full-power station.

**XXVI. Is The FCC’s 54-dBu Proposal A Staff Workload Reduction Measure Designed to Cut Off 94% of Translator Conflicts at the Outset?**

The FCC-s 54-dBu proposal is misguided and ill-conceived. Instead of providing a more expeditious means for fairly resolving translator interference conflicts, the proposal will create a new scheme that is heavily biased in favor of translator operators. Full-service stations will be harmed significantly. As indicated previously, the translator will almost always win, automatically, and the full-powered station will almost always get the shaft. For purposes of interference remediation, this measure will give the translator priority over the full-powered station, with the translator receiving an automatic “WIN”, effectively making the translator primary and the full-powered station secondary. As was described in detail previously, applying the proposed 54-dBu rule to dozens of past and present translator conflicts will result in the translator automatically winning 94% of these cases, with the full-powered station being rendered powerless to do anything about the situation. A 48-dBu threshold is no better, as it would result in the translator automatically winning 90% of these cases.

In the wake of the AM Revitalization initiative, the FCC has been facing a heavy caseload of several new translator interference complaints every week. However, one might have anticipated that some full-service stations would stand up for their rights when threatened with economic ruin.

The FCC’s ill-conceived 54-dBu proposal appears to be yet another attempt at providing riches and rewards to the AM translator crowd, while hoping that no one would study the implications of such a proposal in detail. Another possibility is that this proposal was crafted as a staff workload-reduction measure so as to eliminate a vast majority of translator interference issues that occur in the real world. With respect to Table 1 discussed previously, the 54-dBu threshold would result in the Audio Division only considering 7% of incoming complaints. A 48-dBu threshold is not much better, as the Audio Division would then only consider 10% of incoming complaints.

It’s quite easy for the Commission to expedite the “resolution” of interference complaints by arbitrarily deciding that the translator should almost always win, but such a resolution is far from being fair and equitable. The FCC’s proposal introduces a new set of engineering standards whereby, from a practical standpoint, most translator interference would now be regarded as unactionable and automatically decided in favor of the translator.

With so much at stake on both sides, it is not fair or just to cut off all incoming complaints at the outset via a ridiculously high 54-dBu or 48-dBu threshold***. In fact, all of these interference disputes should be studied in excruciating detail to determine a fair outcome based on the individual circumstances of each specific case.***  If the FCC requires additional help in resolving the large numbers of new translator interference disputes, the undersigned petitioner would be willing to work in a new, officially-assigned role as a translator ombudsman, taking whatever time is necessary to fairly resolve all outstanding disputes.

**XXVII. Existing Owners of Full-Service Stations Would Not Have Entered the Broadcast Industry Under a Harsh 54-dBu or 48-dBu Translator Interference Remediation Scheme.**

Whether bidding on auction allotments or purchasing an existing radio station, a prospective radio station owner conducts due diligence to assess his or her level of risk. Since the very inception of the translator service, the owner of the full-service station could rely upon the primary status of their station in the event of a future translator conflict. However, proposals to limit actionable interference to the 54-dBu or 48-dBu contour of the primary station completely change what has been a standard procedure for many years. These proposals increase the element of risk to an unacceptable level for the owners of full-powered stations, many of which rely upon extended coverage beyond the 50-dBu F(50,50) contour to remain economically viable. This is especially true in areas of mountainous terrain, where there is little or no relationship between the F(50,50) paper contours and real-world coverage.

First-time and smaller broadcasters are not always able to afford a radio station that puts a solid 60-dBu signal (or even a 50-dBu signal) over the entirety of the desired target market as determined by the F(50,50) contour, and it is unrealistic to expect that this should always be the case. The Commission’s 54-dBu proposal (as well as essentially similar 48-dBu proposals) would decimate the value of many full-powered FM stations, especially those who provide solid coverage beyond the 50-dBu contour due to factors that are more adequately explained with reference to the Longley-Rice methodology and real-world signal measurements. The FCC’s proposal pulls the rug out from under those entities who previously bidded on auction allotments in good faith, on the assumption that they would be protected by the FCC’s longstanding translator remediation scheme. Meanwhile, owners of AM stations are currently receiving a windfall at the expense of existing full-service FM stations. Still not satisfied with their free translators, these AM operators now seek to steal away rights from legacy FM broadcasters. Next they will complain about inadequate coverage from their AM translators, and they will petition to increase the maximum allowable power to 3,000 watts.

**XXVIII. It Will Be Very Difficult for Full-Powered Stations to Show the Requisite Undesired-to- Desired Signal Ratio Within the 54-dBu Contour of the Full-Powered Station.**

As will be demonstrated in greater detail hereinafter, if the threshold for the desired signal is set somewhere within the range of 48 dBu to 54 dBu, the end result will be the translator owner prevailing over the full-powered station about 90% of the time. In layman’s terms, if interference is observed, it will be most troublesome in areas where the translator signal is stronger and the full-powered station is weaker. You will not observe interference in areas where the full-powered station already has a moderately strong signal in the range of 48 dBu or 54 dBu. This result ensues because the Desired component of the Undesired to Desired (U to D) signal ratio is very high within the 48-dBu contour of the desired station. Moreover, the Undesired component of the Undesired to Desired (U to D) signal ratio is very low within the 48-dBu contour of the desired station. The Undesired component is low in this region because the translator must be situated far enough away from the 54-dBu or 48-dBu contour of the full-powered station, so as to achieve the required amount of contour protection towards the full-powered station. For each of the foregoing reasons, the U to D ratio is much, much more likely to be exceeded within the 60-dBu contour of the *translator*.

As a practical matter, it is difficult or impossible to demonstrate that the Undesired to Desired signal ratio has been exceeded in areas where the signal from the full-powered station is relatively strong (such that it exceeds 48 dBu or 54 dBu). In these areas, the translator is going to be relatively weak due to the contour protection requirement. Thus, the full-powered station will be rendered powerless to defend itself against a newly-implemented translator in areas where the interference is the most damaging. A much lower threshold in the range of 34-35 dBu is required in order to preserve the integrity of the FM broadcast band, and in order to retain the existing primary status of full-powered stations.

**XXIX. The FCC’s 54-dBu proposal will enable the greatest wholesale transfer of spectrum rights in the history of the FM broadcast band.**

The FCC’s 54-dBu proposal will enable the greatest wholesale transfer of spectrum rights in the history of the FM broadcast band. Full-powered stations that have been reliably serving downtown urban centers from outlying areas will now be displaced by brand-new translators in the heart of downtown. The 54-dBu requirement will ensure that full-powered stations are powerless to do anything about the new translator interference. The most populous and economically vibrant areas will be stolen from legacy full-powered broadcasters and re-allocated to translator operators. This situation will have a very negative impact on the value of full-powered stations, and it will also have a disparate impact on small, minority-owned, full-power stations. Many such stations are “rimshooters” because the owners cannot afford to purchase a powerful flamethrower based at the city’s main antenna farm. The end result is an elimination or substantial reduction of broadcast diversity, in exchange for providing large cluster owners with a windfall of new translators.

**XXX. If a 54-dBu or 48-dBu F(50,50) Remediation Threshold Is Enacted, Extremely Valuable Spectrum Space in Downtown Urban Areas will Be Reallocated From Full-Service Stations to Translator Operators.**

Of course, the full-service station will still have the ability to serve its community of license and some smaller surrounding rural communities, but the vast majority of the full service station’s listeners in and around the large city will go to the translator. The continued viability of the full-service station will be threatened after the translator takes over.

Examples abound. Translators are threatening to steal away the 101.5, 104.7, and 106.3 frequencies in midtown Manhattan from existing full-service stations in the surrounding suburbs. Sure, the full-service stations can continue to serve the smaller suburbs, but the translators will win the jackpot by taking over the most valuable and densely populated urban areas. Likewise, the 103.9, 104.7, and 106.3 frequencies in downtown Chicago could be stripped away from full-service stations in suburban Crown Point, Morris, and Lansing, respectively, and given to skyscraper-based translators atop the 1500’ Willis Tower. A full-service station in suburban Los Angeles offering a unique Christian Contemporary format could be rendered unreceivable throughout most of the greater LA area to make way for a new translator in downtown LA. Whereas the translator proposes to replicate an AM service that is already well heard in the area, the Christian Contemporary station is only heard on the FM dial.

This is a small handful of examples where suburban stations are economically dependent upon serving a larger metro area. Likewise, many people live in the suburbs served by these stations and commute into the downtown district every day. Instead of being able to listen to the same station during their daily commutes, these individuals will now be confronted with a mashpot of interference for most of the trip. All of these full-service stations will be substantially harmed by losing the largest population concentrations within their present coverage areas.

Examples of translators threatening to destroy full-service stations are not limited to the top three radio markets. An independent , live-and-local FM voice in suburban Kent, OH could be effectively snuffed out so that a large AM-FM combo can obtain yet another presence on the Cleveland-area radio dial. Moreover, a unique station in New Bedford, MA that is currently providing Portuguese-language programming to Boston and its suburbs could have its coverage carved up to accommodate a brand-new translator operator in downtown Boston.

In each of the above examples, the frequency in question will feature an unusable mishmash of translator versus full-service station throughout many of the inner-ring and middle-ring suburbs. The translator will dominate the lucrative, highly desirable downtown area, whereas the full-service station will be stuck with coverage limited to the outer-ring suburbs where less advertising revenue can be generated. These factors will have far-reaching consequences. ***If a draconian 54-dBu or 48-dBu remediation threshold is used to prevent full-service stations from defending themselves against newly-proposed translators, the end result is going to be a substantial and dramatic devaluation of FM full-service broadcast properties.***

**XXXI. The Proposed 54-dBu Standard has the Largest Impact on Stand-Alone, Independently-Operated Full-Power FM Stations.**

It’s not difficult to see why some industry insiders are hopping on board the “Translator Train”. A translator offers a quick shortcut to obtaining the equivalent of a Class C3 station, without all of the worry and fuss about complying with the geographic spacing provisions of 73.207. You can simply place your translator on the tallest building in the heart of downtown, or on top of a 1500’ television tower. With a 48-dBu or 54-dBu signal threshold applying to full-powered stations, you never again need to worry about being shut down by interference complaints from full-powered stations. In effect, translators are now becoming primary stations (due to the significant flexibility in geographic placement for translators), and full-powered stations are now being relegated to secondary status. Full-service stations are secondary in the sense that many independently-owned FM stations are not able to move their transmitters to the heart of the city due to the requirements of 73.207 and 73.215, and in many cases must make the best of site restrictions. Full-service stations are also secondary in the sense that their owners must forever worry about new translator incursions into their largest and most important markets, while translator operators are able to rest easy knowing that, under the set of rules proposed herein, it will be impossible for them to ever be thrown off the air.

The FCC’s proposed 54-dBu standard will have a disastrous impact on small, independently-owned, standalone, full-powered FM stations as well as LPFMs. By contrast, some large and medium-sized broadcasters are not very concerned about the new “54-dBu” proposal. These are the broadcasters with many chess pieces on the game board, including a significant inventory of full-powered stations and translators. If the corporate owner loses a bit of coverage on the full-powered side, their losses will be offset by significant gains on the translator side. For them, it is a zero-sum game. They have nothing to lose if the 54-dBu proposal is enacted.

Although the translator operator’s perspective has been heavily promoted by one-sided articles appearing in the trade press, many stand-alone broadcasters strongly disagree with the conclusions expressed therein. In fact, the Commission’s new “54-dBu” proposal will have a disastrous impact on listeners of independently-owned, full-powered stations throughout the United States. Any 54-dBu or 48-dBu proposal based solely on F(50,50) curves is harmful, unfair, and unwarranted. The profitability and continued viability of independently-owned, full-powered FM broadcast stations is being threatened.  It’s frustrating to contemplate a brand-new translator moving into the heart of your largest market, stealing away all of your listeners and profits, with you being powerless to do anything about it.

**XXXII: Translators Do Not Always Play Fair.**

In the June 13, 2018 “Engineering Extra” section of Radio World magazine, respected broadcast engineer Cris Alexander writes: “Funny Business: Working at shared sites, I found that there is quite a bit of “funny business” going on in the translator world – antennas that do not match what is specified in the license, antennas pointed the wrong way, and even directional patterns that are reversed. How do those licensees get away with this kind of thing? It’s simple: Nobody complains, and the FCC’s local Enforcement Bureau folks don’t have the manpower or resources to go around checking this kind of thing in the absence of an interference complaint.”

The Petitioner is able to confirm Mr. Alexander’s observations. For example, some translator operators have specified use of a single-bay yagi antenna but instead are using stacked arrays of two or four yagi antennas. The potentially ambiguous model number of the Scala CA2-FM antenna has brought about some abuse, with existing installations that are licensed as single-bay designs actually using two bays. The model number of the antenna includes a “2”, which some operators creatively interpret as referring to the number of bays that are authorized, but then these same operators calculate the licensed TPO based on a single-bay design.

In some cities, translator operators have not been satisfied with the coverage of a translator that was built “by the book.” They increase their transmitter power output to a level well beyond what is authorized, until the operator is satisfied that the on-air signal is sufficiently solid and strong throughout his target market. The resulting transmitter power output is observed to be in the range of 500 to 1500 watts, sometimes limited only by the power-handling capability of the transmission line. The excessive power is fed into a high-gain, vertically-stacked array to achieve an impressive level of coverage, especially if the translator is operating from a skyscraper or mountaintop site. The potential for such facilities causing interference is great, especially since many of them are sited in the heart of densely-populated urban areas.

For some real-world examples of omnidirectional double-vee antennas being “mistakenly” installed in lieu of the directionalized Scala arrays specified in the Construction Permits, one may refer to the CDBS records for K223CT, K266BY, K260AS, and K256CX. These are just a few illustrative examples.

Regulations already exist that require applicants to provide full proofs of performance, but the Audio Division has chosen not to enforce these regulations. For example, §74.1235(i) of the Commission’s Rules states in part that in instances where a directional antenna is proposed for the purpose of providing protection to another facility, a condition may be included in the construction permit requiring that before program tests are authorized, a permittee: (1) must submit the results of a complete proof-of-performance to establish the horizontal plane radiation patterns for both the horizontally and vertically polarized radiation components; and (2) must certify that the relative field strength of neither measured horizontally nor vertically polarized radiation component shall exceed at any azimuth the value indicated on the composite radiation pattern authorized by the construction permit.

The FCC has not been including the foregoing condition in any granted FM translator construction permit. The Petitioner has observed a number of cases where the translator is not placing the same antenna that was originally proposed, thus resulting in field values exceeding those on the construction permit. Likewise, some unusual customized directional antenna patterns are being proposed that would require an elaborate, complicated arrangement of parasitics to achieve, and yet the antenna that is actually installed is an off-the-shelf model with no parasitics. In other cases, directional antennas are being mounted on a structure in a clever way so as to substantially modify the intended radiation pattern as furnished by the manufacturer.

With more and more translators coming on the air trying to squeeze into any remaining slice of spectrum, we must hold spectrum users accountable and assure through a method beyond “self-certification” that the antenna was constructed and installed in accordance with the terms of the construction permit. In the past, we had much more enforcement and many fewer translators. We are at a point where pirate enforcement has been given a high priority, but rogue translators also have the potential to cause interference to full-service broadcasters. For example, a 250-watt translator atop a mountain, television tower or skyscraper is the technical equivalent of a full-powered Class C3 station.

***Given the relative ease with which existing translator operators are able to skirt regulations governing authorized transmitter power output and directional antennas, it would be a mistake to enact regulations that substantially limit the ability of full-service stations to complain about interference***.

**XXXIII: Conclusion**

The FCC’s proposal to modify Section 74.1203(a)(3) to state that no complaint of actual interference will be considered actionable if the alleged interference occurs outside of a desired station’s 54-dBμ contour is NOT adequate to safeguard the technical integrity of the FM band. The same conclusion would apply to any new proposal to set the remediation threshold at 48 dBu as this constitutes an illusory “compromise” value that is NOT adequate to safeguard the technical integrity of the FM band. Implementation of either proposal would significantly harm existing full-service stations.

Oftentimes, critically important coverage areas are not within the 54-dBu or 48-dBu F(50,50) contours of full-service stations. Rather, a number of full-service stations are dependent upon so-called “fringe” coverage of heavily-populated urban areas. But in many cases, this “fringe” coverage is much better than what one might expect. The full-service station is actually providing a strong, solid, clear signal in these “fringe” areas due to terrain considerations, notwithstanding as the misleading nature of the F(50,50) curves in areas of rugged terrain. After all, the F(50,50) curves only consider terrain in the range of 2 to 10 miles from the transmitter site. Thus, there is a great potential for inaccurate or anomalous results in areas of non-uniform terrain.

The implementation of a draconian 54-dBu or 48-dBu translator interference remediation threshold would expose thousands of full-service FM stations to substantial audience erosion. Such a threshold would pose a significant threat to the continued existence of stand-alone full-service FM stations, creating undue and unnecessary hardship on these license holders. The value of full-service FM stations would plunge.

As a practical matter, when a 54-dBu F(50,50) remediation threshold is applied to a large representative sampling of 31 actual translator conflicts, the end result is the translator automatically winning the conflict 94% of the time. This is because every one of the gathered complaints in these conflicts falls below the required 54-dBu threshold. Accordingly, 94% of all translator conflicts would be automatically excluded right out of the gate, with only 6% of the conflicts submitted by full-service stations proceeding to the Audio Division for further consideration. With a 54-dBu threshold, full-service stations would be left without a remedy for translator interference 94% of the time.

If the 54-dBu threshold is replaced with a 48-dBu threshold, the full-service stations fare no better. Under a 48-dBu interference remediation threshold, 90% of all translator conflicts would be automatically excluded right out of the gate, with only 10% of the conflicts passing to the Audio Division for further consideration. With a 48-dBu threshold, full-service stations would be left without a remedy for translator interference 90% of the time.

If there is a concern about some full-service stations claiming coverage beyond what is reasonable, the best solution is NOT an arbitrary F(50,50) translator remediation threshold. Rather, the Commission should use Longley-Rice for the purpose of determining whether or not the full-service station should be allowed to claim a listenable signal within the proposed translator’s 60-dBu contour.

Nevertheless, if the FCC insists on setting a “drop dead” interference remediation contour beyond which interference remediation of a full-powered facility would no longer be possible, it is submitted that such a “drop dead” dBu contour should apply to either the standard F(50,50) contour, OR the contour calculated using the Longley-Rice propagation prediction method.

If the FCC is to adopt a “drop dead” F(50,50) remediation standard, an appropriate level must be selected in accordance with engineering considerations. According to numerous sources, including the 2013 NAB Engineering Handbook, the USA Digital Radio Report, Nielsen, the ITU, and the BBC, a 34-dBu F(50,50) signal level provides good quieting in nearly all automobile and portable radios. Thus, based upon sound engineering practice, an appropriate drop-dead level for interference remediation is an F(50,50) level of 34 dBu.

Respectfully submitted,

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