

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Revitalization of the AM Radio Service)	MB Docket No. 13-249
)	
Second Further Notice of Proposed)	
Rulemaking)	

COMMENTS OF BRIAN J. HENRY

I hold a Lifetime FCC General Class Radiotelephone license as well as an Amateur Advanced Class license and have been a broadcast engineer since the late 1970's.

I have constructed, repaired, and maintained countless AM broadcast stations over the course of my career and I am a former AM broadcast station licensee (KLLK-Willits, California). I am the owner of Henry Communications, a company that I founded in 1978, to provide consulting and technical services to radio and television broadcast stations.

I am also the Chairman of the National Radio Systems Committee's (NRSC) AM Improvement Working Group (AIWG). These comments are my own opinions and do not represent those of the NRSC or the AIWG.

I hereby submit these comments in response to the Commission's Second Further Notice of Proposed Rulemaking (SFNPRM) that was issued in the above captioned proceeding on October 5, 2018.

I. Introduction

The AM broadcast transmission system in the United States is a national treasure that must be protected. Its most valuable asset is the existing receiver base of many millions that has been established over the course of the last one hundred years and the frequency allocations scheme that supports it. It is vital that any systemic changes take this fact into account, as there are many interdependent elements involved.

There are now new technologies available that have the potential to enhance and significantly improve the AM listening experience that is fully compatible with the existing receiver base that can create a viable path forward. These include:

- a. Carrier frequency synchronization (all stations GPS locked, inexpensive technology)
- b. Synchronous AM boosters (there is currently a proposed FCC Rulemaking)
- c. Software defined radios with adaptive bandwidth and dynamic pulse noise reduction
- d. AM Radio Broadcast Data Service (AM-RBDS)
- e. AM Stereo (FCC approved and non-proprietary with all patents expired)

I am concerned that some of the proposals that The Commission is considering in this proceeding may cause further degradation to demodulated AM audio quality and will not result in an enhancement to the service. AM broadcasters need regulations that create less interference not more. In the *Background* section of its Notice of Proposed Rulemaking, The Commission went into great detail explaining many of the factors that have caused the erosion of AM listenership. However, I feel that some of the remedies that have been proposed have the potential to significantly degrade the quality of service received by the public rather than enhancing it and could therefore ultimately result in the unintended consequence of permanently destroying the AM broadcast band.

To me, the current proponents must assume the burden of proof to demonstrate conclusively via real world testing under strong and careful Office of Engineering and Technology oversight and constructs that their ideas will not cause harm. The Commission should not casually implement an irreversible experiment on the whole AM service. There is too much to lose.

II. Proposed Changes to Nighttime and Critical Hours Protection to Class A Stations

I recognize and appreciate The Commission's desire to try to remedy the situation that exists between other station classes and Class A stations. Particularly with respect to Class D stations, I feel that The Commission has bent over backwards to accommodate them over the years. In the 1980s, the Commission authorized Post Sunset Service Authorization (PSSA) for a substantial number of stations and then most recently gave Class D stations preferential treatment in the proceeding to obtain a cross band FM translator. Class D licensees knew what they were getting when they acquired their daytime only facilities. I do not feel that it is fair for Class A licensees to bear the burden of losing some of their interference protection without some form of compensation for what could amount to a substantial reduction in their license values.

By proposing to change radio stations' interference protection contours, The Commission is essentially proposing to change what amounts to the equivalent of a property boundary line. What then is the Commission's strategy for compensating licensees for the interference protection that will be taken away by what essentially amounts to eminent domain?

III. Change Daytime Protection to Class B, C, and D Stations – Section 73.37

I am gravely concerned about the Commission's proposed changes to Section 73.37 of the FCC Rules and I am perplexed as to who the intended beneficiary of the proposed changes is. Allowing any additional daytime groundwave interference between stations could have very destructive results.

The work that the National Association of Broadcasters (NAB), the National Radio Systems Committee (NRSC), and the Federal Communications Commission did in the late 1980s and early 1990s that was conceived over the course of several years of discussion and which ultimately resulted in the current AM allocations scheme was extremely well thought out¹. This comprehensive work should not be discounted and Section 73.37 should not be altered in any way at this time.

All of the NRSC's AM Standards that were just recently reaffirmed are based on the existing allocations scheme. Will all of that work have to now be redone?

Virtually every AM receiver ever manufactured is based upon the current allocations or a slight variation thereof. What studies have been undertaken to insure that the public's service won't be severely degraded if the proposed changes to every station's protected signal contours go forward?

The FCC authorized hybrid AM digital transmission system requires 30 kHz of transmission bandwidth. If third adjacent channel protections are eliminated, the hybrid AM digital transmission sidebands will be sandwiched together. Changing the first and second adjacent channel protections would significantly affect both digital and analog reception. Has the potential impact of these proposed changes been adequately considered and studied?

Once again, how does The Commission intend to fully compensate licensees for their loss in interference protection and how will the public benefit by the substantial potential increase in received interference that is being proposed?

The current state of the AM broadcast industry is such that licensees are generally not seeking power increases, but are instead looking for ways to reduce expenditures for incoming primary power as evidenced by the implementation of power reduction technologies such as Modulation Dependent Carrier Level (MDCL).

An across the board 6 to 10 dB increase in RF output power is unrealistic due to maximum power limitations and finances. Many AM broadcast licensees can barely afford the power bill at their existing RF power level. How then are they going to justify the cost of a high power transmitter and a new antenna system?

This suggests that a different strategy such as authorizing the use of low power synchronous boosters that are located within close proximity of the intended audience might be more prudent than trying to come up with a way for stations to increase power by relatively insignificant amounts compared to the apparent increase in localized man made interference.

¹ See, Federal Register, Vol.56, No.239, Thursday, December 12, 1991, pp 64841-64874.

I have tabulated the proposed changes to the Section 73.37 contour protections and the potential increases in interference to all stations that may occur should they be adopted.

Current Section 73.37 Daytime Groundwave Protections:

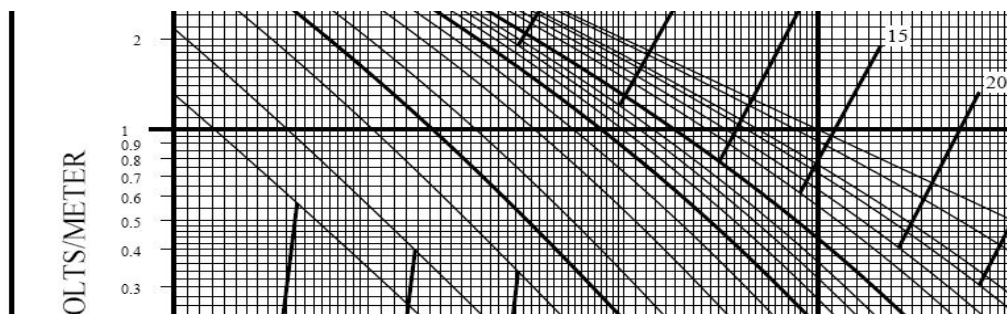
Frequency Separation kHz	Contour of Proposed Station (Classes B, C, and D) (mV/m)	Contour of any other station (mV/m)	D/U Ratio	<i>Defacto</i> D/U Ratio at 2 mV/m
0	0.005	0.100 (Class A)	26 dB	50 dB
	0.025	0.500 (Other classes)	26 dB	50 dB
	0.500	0.025 (Other classes)	26 dB	50 dB
10	0.250	0.500 (All classes)	6 dB	30 dB
	0.500	0.250 (All classes)	6 dB	30 dB
20	5.0	5.0 (All classes)		
	5.0	5.0 (All classes)		
30	25.0	25.0 (All classes)		

Proposed Section 73.37 Daytime Groundwave Protections:

Frequency Separation kHz	Contour of Proposed Station (Classes B, C, and D) (mV/m)	Contour of any other station (mV/m)	D/U Ratio	<i>Defacto</i> D/U Ratio at 2 mV/m	Potential increase in interference compared to current §73.37
0	0.025	0.500 (Class A)	26 dB	26 dB	+28 dB
	0.5	0.025 (Class A)	26 dB	26 dB	+28 dB
	0.100	2.0 (Other classes)	26 dB	26 dB	+24 dB
	2.0	0.100 (Other classes)	26 dB	26 dB	+24 dB
10	0.5	0.5 (Class A)	0 dB	24 dB	+6 dB
	2.0	2.0 (Other classes)	0 dB	0 dB	+30 dB
20	25.0	25.0 (All classes)			+28 dB
30	Unlimited Interference	Unlimited Interference			+Infinite!

This is a simple analysis that assumes uniform ground conductivity between the desired station and the undesired station. It is not intended to be an exact representation of the potential increase in allowed interference that the Commission's proposed changes might have but a reasonable approximation. A more detailed case-by-case analysis would be needed for individual circumstances.

Assuming uniform conductivity and linearizing the portion of the groundwave Field Strength curve (which is extremely close to reality), the following occurs: the Desired increases in level by 12 dB and the Undesired drops in level by 12 dB; therefore, the *defacto* co-channel D/U for Class B, C, and D stations at the 2mV/m groundwave contour under the current rules is 50 dB. It is fair to assume linear Field Strength drop-off / increase based on published FCC data. Here is a snip of the region for 550kHz indicating 2mV/m and 0.5mV/m. It is close to linear for most conductivity examples.



Under the current allocation scheme, the co-channel D/U ratio at the 0.5 mV/m groundwave contour is 26 dB. At the 2.0 mV/m groundwave contour it calculates out to be 50 dB. Under the proposed allocation scheme, the co-channel D/U ratio at the 0.5 mV/m groundwave contour calculates out to be just 2 dB. At the 2.0 mV/m groundwave contour it is 26 dB. The Commission's proposal therefore represents a 24 dB degradation in the daytime co-channel signal to noise ratio, potentially. This is a huge reduction in audio quality at a given signal strength contour. At the 5.0 mV/m groundwave contour, the proposed D/U ratio would only be about 42 dB. I doubt anyone would consider a 42 dB signal to noise ratio to be a "city grade" quality signal.

If the co-channel protection groundwave contour is changed from 0.5 mV/m to 2.0 mV/m and the D/U ratio of 26 dB doesn't change, a given station could be subjected to as much as 24 dB more interference assuming uniform ground conductivity between the desired and undesired stations.

If the protection contour is changed, then the D/U ratio has to be changed as well to maintain equilibrium.

Take for example the proposed changes to Class B, C, and D daytime co-channel protections.²

$20 \log (2.0/0.5) = 12 \text{ dB}$. From the 0.5 mV/m groundwave contour to the 2.0 mV/m groundwave contour, the desired station's signal increases by 12 dB and the undesired station's signal decreases by 12 dB = 24 dB.

A 26 dB D/U ratio at the 0.5 mV/m groundwave contour therefore becomes a 50 dB D/U ratio (26 dB + 12 dB + 12 dB) at the 2.0 mV/m groundwave contour.

Since the proposed D/U ratio of 26 dB remains the same, the degradation is therefore (50 dB – 26 dB) = 24 dB.

This same methodology is applicable to all of the other proposed changes to Section 73.37 as well.

Furthermore, the Commission's current proposal looks radical even when compared with the former Section 73.37 of the FCC rules that were in place prior to 1991. They are depicted below:

Former Section 73.37 Daytime Groundwave Protections prior to 1991

Frequency Separation kHz	Contour of Proposed Station (Classes B, C, and D) (mV/m)	Contour of any other station (mV/m)	D/U Ratio	Defacto D/U Ratio at 2 mV/m	Potential increase in interference compared to current §73.37
0	0.005	0.100 (Class A)	26 dB	50 dB	0 dB
	0.025	0.500 (Other classes)	26 dB	50 dB	0 dB
	0.500	0.025 (Other classes)	26 dB	50 dB	0 dB
10	0.500	0.500 (All classes)	0 dB	24 dB	+6 dB
20	2.0	25.0 (All classes)			+22 dB
	25.0	2.0 (All classes)			+22 dB
30	25.0	25.0 (All classes)			0 dB

Class C stations are particularly vulnerable to these proposed changes as their operation is limited to 1 kilowatt with few possibilities of increased power output and antenna pattern changes. KEST, 1450 kHz, San Francisco, California, 1 kW, ND exemplifies this. It could be inundated with increased interference from any or all of the following stations should they redirect their signals and/or increase their power output toward San Francisco without any recourse. The resulting loss of protected service to KEST could be in the millions of people.

Potential Interferer to KEST	Frequency	City of License	Current Daytime Power	Class
KSTN	1420 kHz	Stockton, California	5.0 kW	B
KVVN	1430 kHz	Santa Clara, California	1.0 kW	B

² See Appendix I, Exparte Communication with Thomas Nessinger, Senior Counsel FCC, October 11, 2018, for additional discussion on adjacent channel impacts.

KJAY	1430 kHz	Sacramento, California	0.5 kW	D
KVON	1440 kHz	Napa, California	5.0 kW	B
KRRS	1460 kHz	Santa Rosa, California	1.0 kW	D
KIID	1470 kHz	Sacramento, California	5.0 kW	B
KYOS	1480 kHz	Merced, California	5.0 kW	B

Another potent example could be KVTO, 1400 kHz, Berkeley, California:

<i>Potential Interferer to KVTO</i>	<i>Frequency</i>	<i>City of License</i>	<i>Current Daytime Power</i>	<i>Class</i>
KZSF	1370 kHz	San Jose, California	5.0 kW	B
KTKZ	1380 kHz	Sacramento, California	5.0 kW	B
KLOC	1390 kHz	Turlock, California	5.0 kW	B
KMYC	1410 kHz	Marysville, California	5.0 kW	B
KRML	1410 kHz	Carmel, California	0.5 kW	D
KSTN	1420 kHz	Stockton, California	5.0 kW	B
KVVN	1430 kHz	Santa Clara, California	1.0 kW	B
KJAY	1430 kHz	Sacramento, California	0.5 kW	D

To sum the FCC's proposed changes to Section 73.37 up:

Co-channel interference at a given signal contour may increase by as much as +28 dB.

First adjacent channel interference at a given signal contour may increase by as much as +30 dB.

Second adjacent channel interference at a given signal contour may increase by as much as +28 dB.

Third adjacent channel interference at a given signal contour may increase by an infinite amount.

While I do not recommend it, should The Commission still consider moving forward with any of these proposed changes to Section 73.37, I feel that it is important to keep in mind that while a signal may not be particularly listenable at the protected 0.1 mV/m groundwave contour, it will be quite listenable at the 0.5 mV/m groundwave contour. Changing the Class A protected groundwave contour to the 0.5 mV/m groundwave contour will defeat this! To maintain continuity with the rest of Section 73.37 and to be of maximum service to the public in the event of a national emergency, I believe strongly that maintaining the Class A protected groundwave contour at 0.1 mV/m serves the public interest best.

The changes to the daytime groundwave interference protections that are being proposed are unprecedented in magnitude and could potentially wreak absolute havoc on the AM broadcast band, as we now know it. FM translators have helped many AM stations improve their competitive position, but the added FM translators are not a panacea, just an augmentation. This proposal threatens to cancel out the benefits that the FM translators have brought. I believe that this is a proposal that ultimately stands to benefit a few at the expense of many and that it is not in the public interest to alter Section 73.37 in any way at this time.

IV. Potential Impacts to Class A and B Primary Entry Point (PEP) Stations

Class A and B Primary Entry Point (PEP) Stations are particularly vulnerable to the potential increase in interference that may result from the Commission's proposed changes to Section 73.37 of the FCC Rules. Because many of them are already operating with a daytime power level of 50 kW, they will be limited to only make modifications to their antenna systems. Therefore much like every Class C station, they will have no recourse other than to accept the additional interference that may come their way when other stations modify their operations. This could therefore have a significant impact on their ability to disseminate information to a large segment of the public in the event of a National emergency and is one more reason to leave Section 73.37 alone.

Class A and B Primary Entry Point (PEP) stations currently operating at 50 kW during daytime hours:

#	<i>Call Letters</i>	<i>City of License</i>	<i>Frequency</i>	<i>Class</i>
1	KIRO	Seattle, Washington	710 kHz	A
2	KPNW	Eugene, Oregon	1120 kHz	B
3	KCBS	San Francisco, California	740 kHz	B
4	KMJ	Fresno, California	580 kHz	B
5	KFI	Los Angeles, California	640 kHz	A
6	KKOH	Reno, Nevada	780 kHz	B
7	KDWN	Las Vegas, Nevada	720 kHz	B

8	KBOI	Boise, Idaho	670 kHz	B
9	KSL	Salt Lake City, Utah	1160 kHz	A
10	KFLT	Tucson, Arizona	830 kHz	B
11	KERR	Polson, Montana	750 kHz	B
12	KTWO	Casper, Wyoming	1030 kHz	B
13	KOA	Denver, Colorado	850 kHz	A
14	KKOB	Albuquerque, New Mexico	770 kHz	B
15	KRVN	Lexington, Nebraska	880 kHz	B
16	KRMG	Tulsa, Oklahoma	740 kHz	B
17	WBAP	Fort Worth, Texas	1130 kHz	A
18	KTRH	Houston, Texas	740 kHz	B
19	KWKH	Shreveport, Louisiana	1130 kHz	A
20	KAAY	Little Rock, Arkansas	1090 kHz	A
21	WHB	Kansas City, Missouri	810 kHz	B
22	WHO	Des Moines, Iowa	1040 kHz	A
23	WCCO	Minneapolis, Minnesota	830 kHz	A
24	WTMJ	Milwaukee, Wisconsin	620 kHz	B
25	WLS	Chicago, Illinois	890 kHz	A
26	WJR	Detroit, Michigan	760 kHz	A
27	KMOX	St. Louis, Missouri	1120 kHz	A
28	WSM	Nashville, Tennessee	650 kHz	A
29	WWL	New Orleans, Louisiana	870 kHz	A
30	WLW	Cincinnati, Ohio	700 kHz	A
31	WTAM	Cleveland, Ohio	1100 kHz	A
32	KDKA	Pittsburgh, Pennsylvania	1020 kHz	A
33	WJOX	Birmingham, Alabama	690 kHz	B
34	WMAC	Macon, Georgia	940 kHz	B
35	WOKV	Jacksonville, Florida	690 kHz	B
36	WFLF	Pine Hills, Florida	540 kHz	B
37	WAQI	Miami, Florida	700 kHz	B
38	WHAM	Rochester, New York	1180 kHz	A
39	WBAL	Baltimore, Maryland	1090 kHz	A
40	WFED	Washington, D.C.	1500 kHz	A
41	WTAR	Norfolk, Virginia	850 kHz	B
42	WTIC	Hartford, Connecticut	1080 kHz	A
43	WBZ	Boston, Massachusetts	1030 kHz	A
44	WABC	New York, New York	770 kHz	A
45	WBT	Charlotte, North Carolina	1110 kHz	A

V. NRSC AM Improvement Working Group

The NRSC has an AM Improvement Working Group. This group is studying the various aspects of the AM ecosystem and is looking for ways to improve the service.

VI. Reference Material

For the Commission staff, please review the following documents:

NRSC Reference Library Document No. NRSC-R13, “AM Technical Assignment Criteria: An Examination of Issues Raised in MM Docket No. 87-267”³

³ See AM Technical Assignment Criteria: An Examination of Issues Raised in MM Docket No. 87-267. An AM Improvement Report from the National Association of Broadcasters, June 17, 1988. Harrison J. Klein, Hammett and Edison, Inc., Consulting Engineers, San Francisco, California on behalf of the AM Improvement Committee, Michael C. Rau, Staff Liaison, National Association of Broadcasters, 1771 N Street, NW, Washington, D.C. 20036. <https://www.nrscstandards.org/reports/nrsc-r13.pdf>

The conclusions that were reached in these documents are just as valid today as they were thirty years ago. Unfortunately, there hasn't been much new research since. Please consider them before making any decision to permanently change Section 73.37 of the FCC rules as inexpensive new technologies such as software defined receivers (SDR) with adaptive bandwidth and dynamic pulse noise blanking capability that are now possible (and soon to be available) can fully exploit the work that was initiated by the NAB, the NRSC, and the FCC thirty years ago.

VII. Further Suggestions

A. Update and revise M-3 Ground Conductivity Map

It has been many years since the FCC's M-3 ground conductivity map has been updated and revised. With updated ground conductivity data, the potential exists for many AM broadcast licensees to modify their transmission facilities to better serve their communities of license without any changes to the allocations scheme. This might be a good first step rather than getting carried away with changing Section 73.37 of the FCC rules. I know for a fact that the ground conductivity in Northern coastal California is grossly understated by M-3. That is no doubt the case in other parts of the United States as well.

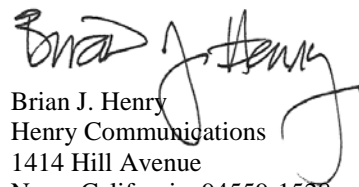
B. Enforce Electrical Interference Regulations

Please note that electrical interference to the AM broadcast band is nothing new. This has been an ongoing problem for the better part of seventy-five years. Increasing transmitted RF emissions will not improve the situation and it could make matters worse. There is probably nothing that could make a greater long-term impact to reducing interference in the AM broadcast band than for The Commission to vigorously enforce Part 15 and Part 18 of the FCC rules.

VIII. Conclusion

I feel that it is extremely important that The Commission proceed very cautiously before making any changes to the AM allocations scheme. Most of the work that was done in the past was well thought out and implemented for good reason. Adhering to the concept of "First do no harm" is essential to this process. Making the wrong choices at this moment could have such a devastating and destructive effect on the medium wave AM broadcast band that it may never be able to recover. Please be careful. The livelihood of every AM broadcast licensee depends on you making informed and wise decisions.

Respectfully Submitted,



Brian J. Henry
Henry Communications
1414 Hill Avenue
Napa, California 94559-1528
(707) 226-5544
bhenry@saber.net

January 22, 2019

⁴ See AM Radio Interference Study, Final Report, MM Docket No. 87-267, June 1988. B. Angell & Associates, Chicago, Illinois. Prepared for the National Association of Broadcasters, Washington, D.C.
<https://www.nrsstandards.org/reports/nrsc-r14.pdf>

APPENDIX I

Exparte Communication with Thomas Nessinger, Senior Counsel FCC, October 11, 2018, for additional discussion on adjacent channel impacts.

To: Thomas Nessinger
Subject: RE: FCC 18-139A1 / MB Docket No. 13-249 - Need Clarification

-----Original Message-----

From: Thomas Nessinger [mailto:Thomas.Nessinger@fcc.gov]
Sent: Thursday, October 11, 2018 8:01 AM
To: bhenry@saber.net
Subject: RE: FCC 18-139A1 / MB Docket No. 13-249 - Need Clarification

Mr. Henry,

This information is better raised in comments to the Second FNPRM. We have not yet published the summary in the Federal Register but hope that will be done within the next couple of weeks. The comment deadline will be 60 days after Federal Register publication, so there will be time to submit them.

Moreover, discussing this with me individually constitutes an ex parte communication. This is not a problem as the rulemaking is "permit but disclose," but you will need to file this submission for the record and disclose the fact that you've sent it to me. You can file this in ECFS under Docket 13-249. See Section 1.1206(b)(2) (47 CFR Section 1.1206(b)(2)). We will then consider it in the course of reviewing all the comments.

Thomas S. Nessinger
Senior Counsel
Audio Division, Media Bureau
Federal Communications Commission

-----Original Message-----

From: Brian J. Henry [mailto:bhenry@saber.net]
Sent: Thursday, October 11, 2018 10:22 AM
To: Thomas Nessinger <Thomas.Nessinger@fcc.gov>
Cc: bhenry@saber.net
Subject: RE: FCC 18-139A1 / MB Docket No. 13-249 - Need Clarification

Good morning again Mr. Nessinger,

Thank you for your considerate prompt reply.

The reason that I inquired about the Class B, C, and D of Section 73.37 of the FCC's rules is that The Commission's proposal is such a radical departure from the work that was done by the FCC and the NRSC during the early 1990's AM Improvement Proceeding that I feel that there must have been an oversight.

Let me try to explain my perspective without bringing the Class A situation into the equation.

Under the current Section 73.37 for daytime operation:

Co-channel separation is 0.025 mV/m to 0.5 mV/m. This is a D/U ratio of 26 dB at the 0.5 mV/m contour.
First adjacent channel separation is 0.25 mV/m to 0.5 mV/m. This is a D/U ratio of 6 dB at the 0.5 mV/m contour.
Second adjacent channel separation is 5 mV/m to 5 mV/m. This is a D/U ratio of 0 dB at the 5 mV/m contour.
Third adjacent channel separation is 25 mV/m to 25 mV/m. This is a D/U ratio of 0 dB at the 25 mV/m contour.

Under the proposed Section 73.37 for daytime operation:

Co-channel separation is 0.1 mV/m to 2 mV/m. This is a D/U ratio of 26 dB at the 2 mV/m contour.

First adjacent channel separation is 2 mV/m to 2 mV/m. This is a D/U ratio of 0 dB at the 2 mV/m contour.

Second adjacent channel separation is 25 mV/m to 25 mV/m. This is a D/U ratio of 0 dB at the 25 mV/m contour.

Now, let's look at the signal to noise ratios to a co-channel and first adjacent channel interferer using both the 0-5 kHz and the 5-10 kHz ranges for the two allocation schemes (current and proposed) that also correlates with audio signal to noise ratio.

The current Section of 73.37 signal to noise ratio for the desired station during daytime operation works out as follows:

At the 0.5 mV/m contour, the 0-5 kHz signal to noise ratio is 26 dB. (reference level) (barely useable)

At the 0.5 mV/m contour, the 5-10 kHz signal to noise ratio is 6 dB. (reference level) (unusable)

At the 2 mV/m contour, the 0-5 kHz signal to noise ratio is 50 dB.

(The interferer drops by 12 dB and the desired increases by 12 dB = +24 dB) (pretty good)

At the 2 mV/m contour, the 5-10 kHz signal to noise ratio is 30 dB.

(The interferer drops by 12 dB and the desired increases by 12 dB = +24 dB) (poor)

At the 5 mV/m contour, the 0-5 kHz signal to noise ratio is 66 dB.

(The interferer drops by an additional 8 dB and the desired increases by an additional 8 dB = +16 dB) (good)

At the 5 mV/m contour, the 5-10 kHz signal to noise ratio is 46 dB.

(The interferer drops by an additional 8 dB and the desired increases by an additional 8 dB = +16 dB) (acceptable)

At the 25 mV/m contour, the 0-5 kHz signal to noise ratio is 94 dB.

(The interferer drops by an additional 14 dB and the desired increases by an additional 14 dB = +28 dB) (excellent)

At the 25 mV/m contour, the 5-10 kHz signal to noise ratio is 74 dB.

(The interferer drops by an additional 14 dB and the desired increase by an additional 14 dB = +28 dB) (excellent)

This tabulation suggests why the 25 mV/m contour had previously been considered the "City Grade" contour. A 25 mV/m signal provides an excellent signal to noise ratio under ideal listening conditions with the current allocation scheme.

The proposed Section 73.37 signal to noise ratio for the desired station during daytime operation works out as follows:

At the 0.5 mV/m contour, the 0-5 kHz signal to noise ratio is only 2 dB. (unusable)

At the 0.5 mV/m contour, the 5-10 kHz signal to noise ratio is less than 0 dB. (unusable)

At the 2 mV/m contour, the 0-5 kHz signal to noise ratio is 26 dB. (reference level) (barely useable)

At the 2 mV/m contour, the 5-10 kHz signal to noise ratio is 0 dB. (reference level) (unusable)

At the 5 mV/m contour, the 0-5 kHz signal to noise ratio is 42 dB.

(The interferer drops by 8 dB and the desired increases by 8 dB = +16 dB) (poor)

At the 5 mV/m contour, the 5-10 kHz signal to noise ratio is 16 dB.

(The interferer drops by 8 dB and the desired increases by 8 dB = +16 dB) (terrible)

At the 25 mV/m contour, the 0-5 kHz signal to noise ratio is 70 dB.

(The interferer drops by 14 dB and the desired increases by 14 dB = +28 dB) (good)

At the 25 mV/m contour, the 5-10 kHz signal to noise ratio is 44 dB.

(The interferer drops by 14 dB and the desired increases by 14 dB = +28 dB) (acceptable)

At the 100 mV/m contour, the 0-5 kHz signal to noise ratio is 94 dB.

(The interferer drops by 12 dB and the desired increases by 12 dB = +24 dB) (excellent)

At the 100 mV/m contour, the 5-10 kHz signal to noise ratio is 68 dB.
(The interferer drops by 12 dB and the desired increases by 12 dB = +24 dB) (very good)

The proposed changes to Section 73.37 provide a relatively poor signal to noise ratio at the 5 mV/m "city grade" contour. It isn't until you reach the 25 mV/m contour that the signal to noise ratio becomes roughly equivalent to what the Section 73.37 currently provides at the 5 mV/m "city grade" contour.

Assuming uniform ground conductivity in a given area, I believe that my simple methodology provides a reasonably accurate analysis of the impact that the proposed changes to Section 73.37 could have.

To sum the proposed changes up:

Co-channel interference at a given signal contour may increase by as much as 24 dB.
First adjacent channel interference at a given signal contour may increase by as much as 30 dB.
Second adjacent channel interference at a given signal contour may increase by as much as 28 dB.
Third adjacent channel interference at a given signal contour may increase by an infinite amount.

To further exemplify the magnitude that the proposed changes may represent, let's say one station increases its output power and/or changes its pattern shaping such that its 0.5 mV/m first adjacent signal contour becomes the 2 mV/m contour and then places that 2 mV/m contour up against another station's 2 mV/m contour. For the second station to restore the status quo, it would have to increase its output power by 30 dB. For a 1 kW AM station, this would require an output power increase to 1 MW.

I feel doubtful that the Commission staff had this sort of increase in station to station interference in mind when these changes were conceived. It seems to me that the increased interference potential along with the corresponding reduction in a given station's service area that may result from it could have a detrimental impact on the AM broadcast service as we know it should the changes to Class B, C and D stations' daytime protected signal contours specified in Section 73.37 be implemented as proposed. It is because it is such a significant departure from all of the work that the FCC has done previously with respect to AM broadcast allocations that I feel that there must have been an oversight. I can't otherwise understand why the Commission would propose to degrade Class B, C and D daytime protections by such a large, consequential and unprecedented extent. The current protections are there for a reason. Changing or deleting them haphazardly wouldn't be sensible.

If the Commission simply wants to change the protected contour from 0.5 mV/m to 2 mV/m, then the D/U ratio at the new contour would need to be adjusted as well so that everything correlates to the current protections. It is worth noting that the design of every AM broadcast receiver ever made is based on the codified allocation scheme or a slight variation of it. The existing installed receiver base is the most valuable asset that the AM broadcast industry has and needs to be given due consideration because of it.

A co-channel D/U ratio of 50 dB and a first adjacent D/U ratio of 30 dB at the 2 mV/m contour correlates to D/U ratios of 26 dB and 6 dB respectively at the 0.5 mV/m contour that is being used currently in Section 73.37.

I am not sure if it would be appropriate, but I would welcome the opportunity to discuss my analysis in greater detail with the Commission staff.

Thank you for your consideration. I hope that I have been helpful. I have given a lot of careful thought to this.

Sincerely,

Brian Henry
Henry Communications
1414 Hill Avenue
Napa, California 94559-1528
707-226-5544 (office)
707-738-5787 (mobile)
bhenry@saber.net

-----Original Message-----

From: Thomas Nessinger [mailto:Thomas.Nessinger@fcc.gov]
Sent: Wednesday, October 10, 2018 12:14 PM
To: bhenry@saber.net
Subject: RE: FCC 18-139A1 / MB Docket No. 13-249 - Need Clarification

We did propose to revise the rules for Class B, C, and D protection in the Further Notice of Proposed Rule Making in this proceeding, FCC 15-142, and those original proposals are preserved in the Second FNPRM. They are, however, different from the current Section 73.37.

To the extent that the table in the proposed Section 73.37 in the Second FNPRM differs from the one in the FNPRM, this is because we revised our original proposal for protecting Class A stations. So the table will be different when it comes to Class B, C, and D stations vis-à-vis Class A stations. You will see that the figures are the same for Class B, C, and D stations vis-à-vis all other classes (i.e., non-Class A) of station.

Thomas S. Nessinger
Senior Counsel
Audio Division, Media Bureau
Federal Communications Commission

-----Original Message-----

From: Brian J. Henry [mailto:bhenry@saber.net]
Sent: Wednesday, October 10, 2018 9:45 AM
To: Thomas Nessinger <Thomas.Nessinger@fcc.gov>
Cc: bhenry@saber.net
Subject: FCC 18-139A1 / MB Docket No. 13-249 - Need Clarification

Good morning Mr. Nessinger,

I am hoping that you can provide me with some clarification to the Commission's recently released Second Further Notice Of Proposed Rulemaking in the AM Revitalization Proceeding.

In Section B, paragraph 16, of the Second Notice of Proposed Rulemaking, with respect to revising daytime protection ratios for Class B, C, and D AM stations, the Commission states, "We are not revising these proposals at this time." However, in Appendix A, Proposed Rule Changes, Section 73.37, the daytime protection ratios for Class B, C, and D stations are shown having been revised which is confusing.

Would it be possible for you to elaborate on this for me?

Sincerely,

Brian Henry
Henry Communications
1414 Hill Avenue
Napa, California 94559-1528
707-226-5544 (office)
707-738-5787 (mobile)
bhenry@saber.net