

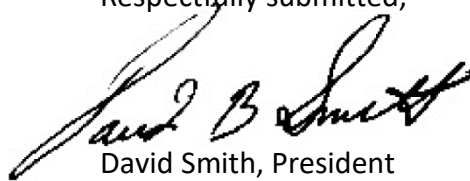
Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Creation of Interstitial 12.5 Kiloherz Channels in the 800 MHz Band Between 809-817/854-862 MHz)	WP Docket No. 15-32 RM-11572
)	
Amendment of Part 90 of the Commission's Rules to Improve Access to Private Land Mobile Radio Spectrum)	WP Docket No. 16-261
)	
Land Mobile Communications Council Petition for Rulemaking Regarding Interim Eligibility for 800 MHz Expansion Band and Guard Band Frequencies)	RM-11719
)	
Petition for Rulemaking Regarding Conditional Licensing Authority Above 470 MHz)	RM-11722
)	

To: The Commission

**PETITION FOR RECONSIDERATION
OF THE
LAND MOBILE COMMUNICATIONS COUNCIL**

Respectfully submitted,



David Smith, President
Land Mobile Communications Council
2121 Cooperative Way, Suite 225
Herndon, VA 20171
Phone: (202) 434-4178

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The Land Mobile Communications Council (“LMCC”), in accordance with Section 1.429 of the Federal Communications Commission (“FCC” or “Commission”) rules, respectfully requests reconsideration of certain provisions adopted by the FCC in the Report and Order in the above-identified proceedings.¹ The LMCC has been an active participant in these matters on behalf of the Private Land Mobile Radio (“PLMR”) user community, which has consistently embraced rule changes, like those adopted herein, that promote more efficient and intensive use of the limited spectrum allocated for their operations.² It is pleased that the Commission has taken a variety of actions that are intended to increase access to and utilization of PLMR spectrum.

The Commission has adopted many of the approaches endorsed by the LMCC in these proceedings. However, there is a critical area in which the FCC rejected the LMCC’s recommendations and adopted rules, in the LMCC’s opinion, that must be reconsidered if the full potential of the spectrum at issue is to be captured. Specifically, the LMCC urges the FCC to reconsider the definition of the interference contour to be used in coordinating an 800 MHz Mid-Band (809-817/854-862 MHz) application and the derating factors to be applied in that contour analysis.³ The derating factors, which were developed for use with an F(50,50) curve, are not appropriate when applied to a more conservative F(50,10) curve. The result will

¹ In the Matter of Creation of Interstitial 12.5 KiloHertz Channels in the 800 MHz Band Between 809-817/854-862 MHz, WP Docket No. 15-32, *Report and Order and Order*, 83 FR 61072 (Nov. 27, 2018) (“R&O”). The Order portion of the Commission’s action was its termination of the 1995 freeze on inter-category sharing in the 800 MHz band, an action taken on its own motion and not addressed in any of the above-identified rulemaking proceedings. R&O at ¶ 77.

² See, e.g., Implementation of Sections 309(j) and 337 of the Communications Act of 1934, as Amended, *Second Report and Order and Second Further Notice of Proposed Rule Making*, WT Docket No. 99-87, 18 FCC Rcd 3034 (2003).

³ As discussed, *infra*, no contour analysis should be required if the distance from adjacent stations meets the co-channel requirements of FCC Rule Section 90.621(b).

provide more adjacent channel protection than needed while simultaneously reducing the spectrum utilization that otherwise could be derived from introducing interstitial channels into the 800 MHz band.

I INTRODUCTION

As the Commission is aware, the LMCC is comprised of the following organizations that collectively represent the PLMR community:

- American Association of State Highway and Transportation Officials (“AASHTO”)
- American Automobile Association (“AAA”)
- American Petroleum Institute (“API”)
- Association of American Railroads (“AAR”)
- Association of Public-Safety Communications Officials-International, Inc. (“APCO”)
- Aviation Spectrum Resources, Inc. (“ASRI”)
- Enterprise Wireless Alliance (“EWA”)
- Forest Industries Telecommunications (“FIT”)
- Forestry-Conservation Communications Association (“FCCA”)
- International Association of Fire Chiefs (“IAFC”)
- International Municipal Signal Association (“IMSA”)
- MRFAC, Inc. (“MRFAC”)
- Telecommunications Industry Association (“TIA”)
- The Monitoring Association (“TMA”)
- Utilities Technology Council (“UTC”)
- Wireless Infrastructure Association (“WIA”)

Many of its members are FCC-certified Frequency Advisory Committees (“FACs”), agents of the Commission charged with coordinating frequency assignments on certain PLMR spectrum. Collectively, its membership includes all FACs. These organizations have demonstrated a collaborative ability to implement PLMR coordination procedures that have facilitated the assignment of channels responsive to the needs of the users they represent with only a minimal need for FCC involvement.

The LMCC and many of its members have been actively involved in each of the proceedings identified above. The UHF Industrial/Business Pool (“I/B”) frequencies that the

Commission has added to the Part 90 I/B frequency table were first identified by a constituent of an LMCC member. An LMCC member petitioned the FCC to create narrowband 12.5 kHz interstitial channels in the 800 MHz band, another recommendation adopted in the R&O. The LMCC responded to the Commission's proposal to expand eligibility for central station alarm channels with a Consensus Protocol developed by the LMCC and its member, The Monitoring Association ("TMA"), that represents that industry.

Each of the LMCC's recommendations in respect to these proposed rule changes was adopted in an effort to derive maximum utilization of PLMR spectrum resources without adversely affecting the operations, and investments, of existing licensees. The interests of prospective new PLMR entrants and incumbents were given careful consideration in an effort to reach balanced solutions.⁴ Achieving that balance requires reconsideration of the 800 MHz Mid-Band coordination process.

II THE FCC SHOULD ADOPT THE LMCC-PROPOSED F(50,50) CURVE FOR CALCULATING ADJACENT CHANNEL INTERFERENCE CONTOURS IN THE 800 MHz BAND.

It has been more than 30 years since the FCC allocated new spectrum for PLMR use other than for Public Safety entities. The 800 MHz interstitial channels, while not new spectrum, offer an opportunity to make more intensive use of this band by creating new exclusive channels at distances that will not cause interference to adjacent 25 kHz bandwidth systems. The issue is how that interference potential should be calculated.

As an initial matter, it is clear that applications for 800 MHz Mid-Band channels with sites that provide at least as much separation from any adjacent channel system(s) as is

⁴ The LMCC also believes it would have been preferable to modify the rules to allow conditional licensing in the 470-512 MHz and 900 MHz bands, effective upon the lifting of the freezes in those bands. R&O at ¶ 58. It assumes that the Commission will extend that flexibility to those bands when it terminates those freezes.

required for co-channel assignments under FCC Rule Section 90.621 do not present any interference potential.⁵ The FCC appears to agree:

Most parties, including LMCC, submit that contour protection is the optimum methodology for avoiding mutual interference between interstitial channels and standard 25 kilohertz-spaced facilities. However, to lessen the burden on applicants, we have specified that contour analysis need not be applied to applications that meet or exceed the distances specified in the Commission's co-channel spacing rules.⁶

Yet the rules do not appear to incorporate that option. FCC Rule Section 90.621(b) states, "In addition, contour overlap as detailed in paragraph (d) of this section will be the basis for geographic separation between fixed stations operating on adjacent-channel frequencies in the 809-817 MHz / 8540862 MHz sub-band." This omission could be addressed by modifying FCC Rule Section 90.621(d) as follows to recognize that such applications can be coordinated without a contour analysis:

(d) Geographic separation between fixed stations operating on adjacent channels in the 809-817/854-862 MHz band segment, *unless the separation meets the requirements of Sec. 90.621(b)*, will be based on contour overlap as detailed below.

That modification, while useful, would not address the more fundamental issue. Adjacent channel assignments at distances designed to protect co-channel operations will not take advantage of the spectrum opportunities that could be achieved with a more carefully calibrated interference analysis. Therefore, the LMCC undertook a technical review to identify how best to protect 25 kHz bandwidth operations while maximizing the availability of new 12.5

⁵ Prior to the 800 MHz "rebanding" proceeding, WT Docket No. 02-55, 25 kHz bandwidth 800 MHz channels in the Mexican border area were offset 12.5 kHz lower than channels assigned in the rest of the country. See prior version of FCC Rule Section 90.619(a). For years, those "offset" channels were treated as co-channel with adjacent 25 kHz bandwidth systems for purposes of channel assignments. Since 25 kHz bandwidth interstitial channels co-existed compatibly with adjacent channel systems when assigned pursuant to Rule Section 90.621(b), the 12.5 kHz interstitial channels at issue herein will pose no interference potential when assigned on that same basis.

⁶ R&O at ¶ 35.

kHz bandwidth channels. The conclusion was that reciprocal contour analyses, based on an F(50,50) curve with appropriate derating factors, should be conducted when the distance separation is less than prescribed in Rule Section 90.621(b). If that analysis shows no overlap of proposed and incumbent adjacent channel 800 MHz facilities, the application may be coordinated.

The LMCC considered retaining the traditional F(50,10) interference curve, but determined that it would be overly conservative in its protection of adjacent channel systems. This is particularly true for stations with fixed facilities separated by 80.5 kilometers/50 miles or more because the F(50,10) radius increases faster than the F(50,50) radius as the distance between stations increases. (See Attachment A) It would prevent the assignment of 800 MHz Mid-Band channels at distances where they could be used without risking interference to incumbent adjacent channel systems.

Therefore, based on carefully considered theoretical analyses and empirical data, the LMCC recommended the use of an F(50,50) curve and a derating factors matrix that included all equipment then known to be available for 800 MHz systems. That proposal was submitted to the FCC in 2015.⁷

The LMCC also recommended that the FCC follow precedent and specify the applicable interference contour, but not the matrix of derating factors, in the rules. The LMCC explained that the matrix would need to be updated as new technologies were introduced in 800 MHz equipment. Including the matrix in the rules would require a rulemaking proceeding each time equipment changes were made, thereby delaying the time at which such equipment could be

⁷ LMCC Reply Comments, WP Docket No. 15-32 (May 26, 2015).

used by applicants whose proposed systems require a contour analysis. Instead, the LMCC suggested that the matrix be posted on the LMCC website, along with other, similar coordination criteria,⁸ and that changes be reviewed by the Commission and public comment invited on them before the matrix would be updated.

The FCC rejected LMCC's recommendation to use the F(50,50) curves for both coverage and interference contours and directed that the F(50,10) curve be used for the latter.⁹ It nonetheless retained the matrix of derating factors the LMCC had developed based on an F(50,50) contour analysis.¹⁰ Those factors simply are not appropriate for an F(50,10) analysis. They will produce an unnecessarily conservative channel assignment approach that is not needed to protect adjacent channel operations and will result in under-utilization of this spectrum resource. Moreover, the matrix was developed and submitted to the FCC more than three years ago and may need updating in the near term future. It simply is not the right tool both because it does not conform to an F(50,10) interference curve and because equipment vendors need to be queried about possible changes to their devices in the years since it was created.

The FCC can be assured that the LMCC, including the FACs responsible for making frequency recommendations for the public safety, critical infrastructure, business enterprise, and commercial entities they represent, would not have recommended substituting an F(50,50) curve for the traditional F(50,10) curve if they were less than confident that it represented the optimal balancing of spectrum utilization and protection from interference if used with the

⁸ See <http://lmcc.org/policy-advocacy/consensus-filings>.

⁹ R&O at ¶ 28.

¹⁰ *Id.*; see also, Rule Section 90.621(d)(2).

proposed derating factors. In the LMCC’s view and the view of the PLMR users it represents, all geography is significant in an environment of relative spectrum scarcity. Having the ability to place adjacent channel sites in closer proximity by using an F(50,50) curve with the derating factors can mean the difference between being able to meet a critical communications need and not being able to secure the spectrum at the right location to do so. The LMCC urges the Commission to reconsider its decision on this vital issue. It also asks that the FCC confirm that FCC Rule Section 90.621(b)(4)(n.3) applies to adjacent as well as co-channel separation criteria, such that incumbent contours are calculated based on an assumed effective radiated power of 1000 watts.¹¹

In the event the Commission is unwilling to change its interference contour definition, the far better solution in the opinion of the LMCC, the LMCC will develop and file with the FCC a modified matrix with derating factors appropriate for an F(50,10) interference curve. It will do so as promptly as possible and will seek leave to supplement the instant Petition in accordance with FCC Rule Section 1.429(d). It will do so although it is not LMCC’s preferred resolution for all the reasons detailed above: it sacrifices the potential for superior spectrum utilization and provides an unnecessary degree of interference protection.

¹¹ The LMCC recommends that the following methodology be used when evaluating adjacent channel contours, with an F(50,50) curve used to calculate the interference contour:

Proposed	Incumbent
<u>Forward analysis</u> : Derated Ix Contour @ proposed/Licensed ERP	Service Contour @ 1000 watts
<u>Reverse analysis</u> : Service Contour @ 1000 watts	Derated Ix Contour @ licensed ERP

Whichever interference curve the FCC elects to adopt, the LMCC respectfully requests that the last sentence of Rule Section 90.621(d)(2) be modified to read: “The incumbent’s interference contour is determined using the dBu level listed in the appropriate table on the Land Mobile Communications Council (LMCC) website: <http://lmcc.org/policy-advocacy/consensus-filings>.” The LMCC has explained why it was preferable to follow precedent and not include these detailed aspects of frequency coordination analyses in the FCC rules. That approach has been used successfully in the LMCC coordination protocols used for VRS/Data Telemetry applications in the 174 MHz band;¹² adjacent channel applications in the 470-512 MHz band;¹³ applications for exclusive FB8 channels in the VHF and UHF bands;¹⁴ determining additional coordination requirements for certain Part 90 applications;¹⁵ and 800 MHz Sprint-vacated channels.¹⁶ In all cases, the FCC solicited public comment on the proposed LMCC protocols and subsequently endorsed them.

The FACs responsible for maintaining and implementing these protocols all perform coordination functions as agents of the FCC. A failure to adhere to their responsibilities would expose them to potential decertification by the Commission. To the best of the LMCC’s knowledge, no complaint has ever been lodged based on the fact that the granular aspects of

¹² See Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau Announce They Will Begin Accepting Applications for the Operation of Mobile Repeaters on Six Remote Control and Telemetry Channels in the VHF Band on March 15, 2016, PS Docket No. 13-229, *Public Notice*, DA 16-119 (Feb. 3, 2016).

¹³ See Letter to Melvin Spann, Mobility Division, Wireless Telecommunications Bureau, FCC from Kenton Sturdevant, President, LMCC, FCC File Nos. 0003959495 and 0004042455, dated June 9, 2010.

¹⁴ See Amendment of Part 90 of the Commission’s Rules, WP Docket No. 07-100, *Fifth Report and Order*, FCC 13.52 at ¶18 (2013).

¹⁵ See Wireless Telecommunications Bureau Accepts and Approves Consensus Analytical Method for Determining Additional Frequency Coordination Requirements for Certain Private Land Mobile 150-470 MHz Applications, WT Docket No. 98-182, *Public Notice*, DA 02-1319 (2002).

¹⁶ See Public Safety and Homeland Security Bureau Announces Application and Licensing Procedures for Channels Relinquished by Sprint Nextel Corporation in the 09-809.5/854.854.5 Band, WT Docket No. 02-55, *Public Notice*, DA 08-2810 pp. 2-3 (2008).

these coordination processes are posted on the LMCC website rather than specified in the FCC rules. The entities whose applications are coordinated based on the LMCC protocols recognize that incorporating this level of detail in the rules would make them difficult to update in a timely fashion in response to experience or changes in technology and equipment. At a time when technological advances are accelerating, the PLMR community would be unnecessarily handicapped by having to wait for adoption of a rule change in the coordination process. While the LMCC appreciates that the FCC has committed to modifying the matrix “to take newly developed technology into account...with dispatch in an expedited notice and comment proceeding,”¹⁷ even expedited rulemakings often take years rather than months; they can represent multiple technology lifetimes in today’s world.

In the LMCC’s opinion, the better approach is the one used successfully in the past. The FCC should invite public comment on the matrix and require further public comment should the LMCC propose to modify it. It should not include those protocols in the rules, but should leave them on the LMCC website.

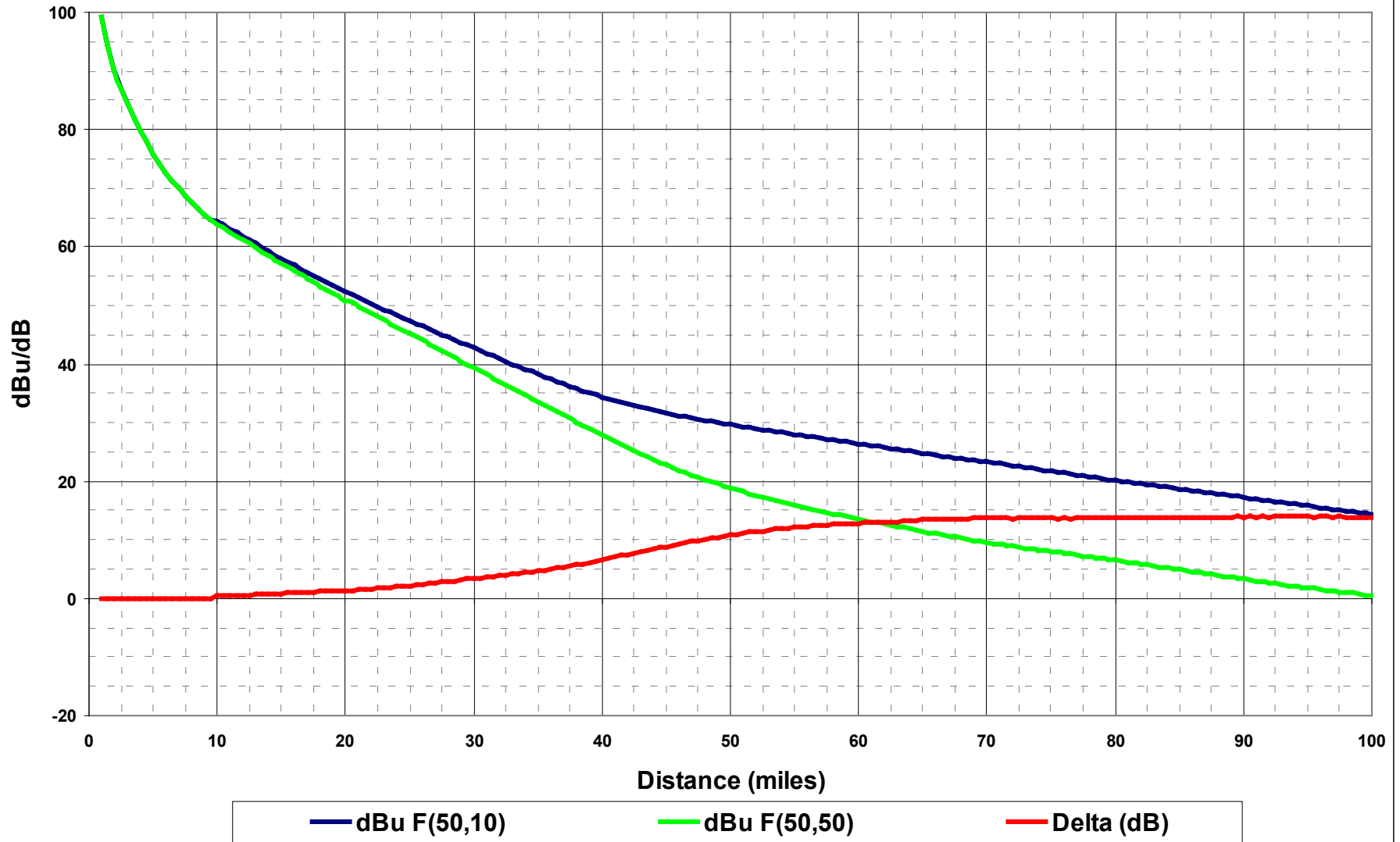
III CONCLUSION

The LMCC requests that the FCC reconsider the rules adopted in the R&O and modify them consistent with the positions detailed above.

¹⁷ R&O at ¶ 27.

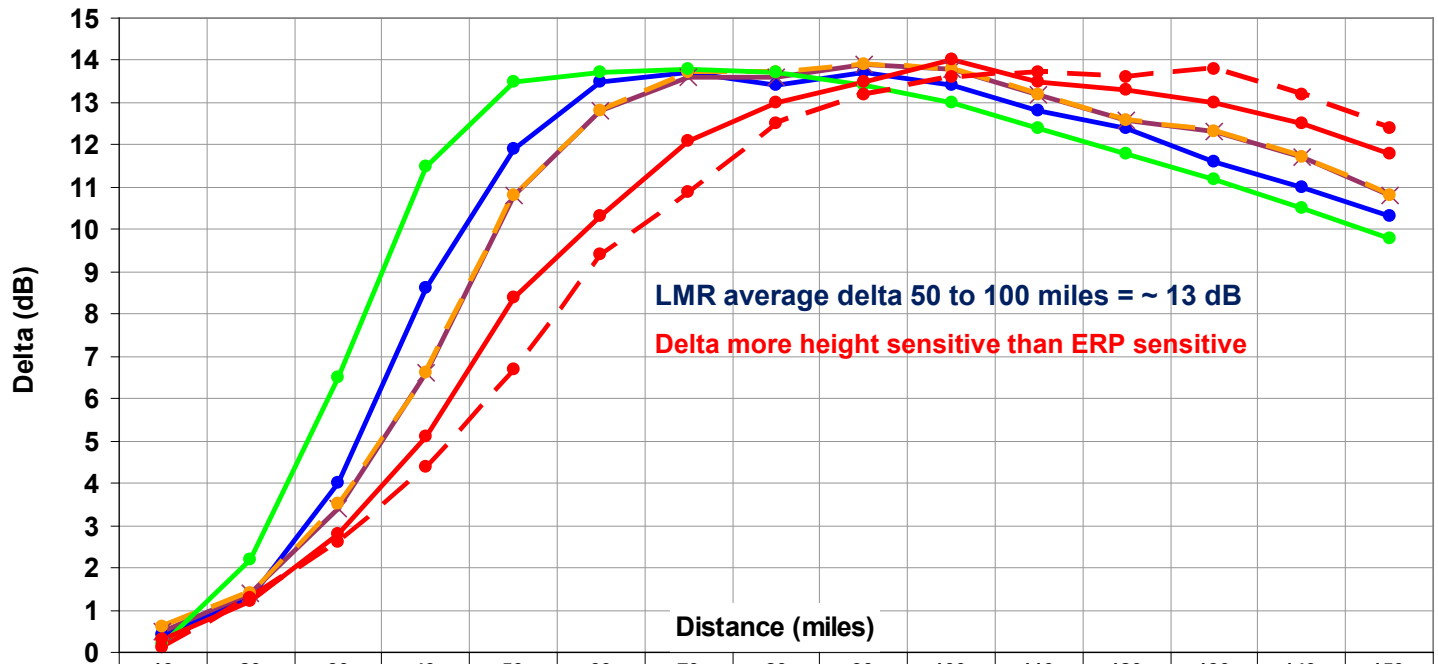
ATTACHMENT A

f(50,50) and f(50,10) vs Distance at 500 watts ERP and 500 ft AGL



470 MHz R6602 Contours

Delta between F(50,50) and F(50,10) Contours



	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
delta @ 500W, 250ft	0.4	1.3	4	8.6	11.9	13.5	13.7	13.4	13.7	13.4	12.8	12.4	11.6	11	10.3
delta @ 250W, 500ft	0.5	1.4	3.4	6.6	10.8	12.8	13.6	13.6	13.9	13.8	13.2	12.6	12.3	11.7	10.8
delta @ 500W, 500ft	0.6	1.4	3.5	6.6	10.8	12.8	13.7	13.7	13.9	13.8	13.2	12.6	12.3	11.7	10.8
delta @ 250W, 125ft	0.2	2.2	6.5	11.5	13.5	13.7	13.8	13.7	13.4	13	12.4	11.8	11.2	10.5	9.8
delta @ 1000W, 1000ft	0.3	1.2	2.8	5.1	8.4	10.3	12.1	13	13.5	14	13.5	13.3	13	12.5	11.8
delta @ 10,000W, 1500ft	0.1	1.3	2.6	4.4	6.7	9.4	10.9	12.5	13.2	13.6	13.7	13.6	13.8	13.2	12.4

F(50,10) radius decreases faster than F(50,50) radius as distance decreases

While contour D/U stays the same, C/I between median signals decreases.

Do not recommend using F(50,10) at < 50 miles.

Use median signal level F(50,50) de-rated by 13 to 14 dB for interference contour

→ then C/I remains constant as distance decreases.