Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of	)	
	)	WP Docket No. 15-32
Creation of Interstitial 12.5 kHz Channels in the	)	RM-11572
800 MHz Band between 809-817/854-862 MHz	)	

To: The Commission

REPLY COMMENTS
OF THE
LAND MOBILE COMMUNICATIONS COUNCIL

The Land Mobile Communications Council ("LMCC"), in accordance with Section 1.45 of the Federal Communications Commission ("FCC" or "Commission") rules, respectfully submits its reply comments in response to the Notice of Proposed Rulemaking regarding the creation of new, full power, interstitial 12.5 kHz channels in the 809-817/854-862 MHz band ("800 MHz Mid-Band").[1] The Comments filed in response to the NPRM further emphasize the critical role frequency coordination will play in the licensing of interstitial channels. The coordination process described below is designed to protect the operations of existing 25 kHz licensees while providing some opportunity for the more intensive use of this portion of the 800 MHz band under carefully prescribed conditions.

I INTRODUCTION

The LMCC is a non-profit association of organizations representing virtually all users of land mobile radio systems, providers of land mobile services, and manufacturers of land mobile radio equipment. The LMCC acts with the consensus and on behalf of the vast majority of public safety,

[1] In the Matter of Creation of Interstitial 12.5 kHz Channels in the 800 MHz Band Between 809-817/854-862 MHz, WP Docket No. 15-32, *Notice of Proposed Rulemaking*, 30 FCC Rcd 1663 (2015) ("NPRM").

business, industrial, transportation and private commercial radio users, as well as a diverse group of land mobile service providers and equipment manufacturers. Membership includes the following organizations:

- 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")
- Central Station Alarm Association ("CSAA")
- Energy Telecommunications and Electrical Association ("ENTELEC")
- Enterprise Wireless Alliance ("EWA")
- Forest Industries Telecommunications ("FIT")
- Forestry-Conservation Communications Association ("FCCA")
- Intelligent Transportation Society of America, Inc. ("ITSA")
- International Association of Fire Chiefs ("IAFC")
- International Municipal Signal Association ("IMSA")
- MRFAC, Inc. ("MRFAC")
- National Association of State Foresters ("NASF")
- PCIA – The Wireless Infrastructure Association ("PCIA")
- Telecommunications Industry Association ("TIA")
- Utilities Telecom Council ("UTC")

These organizations, individually and collectively, work with their members and with the FCC in an effort to maximize the use of scarce spectrum resources. Allowing the deployment of systems on interstitial 12.5 kHz channels in the 800 MHz Mid-Band will further that objective.

II COORDINATION OF 800 MHz INTERSTITIAL CHANNELS

As described in many of the Comments filed in this proceeding, the technology options available at 800 MHz have expanded considerably since the EWA Petition for Rulemaking was filed.[2] The LMCC is pleased that the users represented by its members have many more equipment choices

[2] *See* Petition for Rulemaking of the Enterprise Wireless Alliance, RM-11572, filed April 29, 2009 ("Petition"). The FCC then issued a Public Notice seeking comment on the Petition. *See* Public Safety and Homeland Security Bureau and Wireless Telecommunications Bureau Seek Comment on the Petition by Enterprise Wireless Alliance Requesting the Creation of New, Full Power, Interstitial 12.5 kHz Channels in the 800 MHz Band, RM-11572, *Public Notice*, 24 FCC Rcd 12461 (2009) ("Public Notice").

when implementing an 800 MHz system. This expansion in options adds some complexity to the frequency assignment process, but it is a welcome tradeoff for a wireless community that had seen too few advances in equipment efficiency and capability since trunked and P25 technologies were introduced.

In considering how to coordinate 800 MHz Mid-Band interstitial channels, the LMCC was guided by several principals:

- Proceed conservatively and err, if at all, on the side of protecting the operations of incumbent 25 kHz systems.
- Establish protection criteria for all FCC-certified 800 MHz equipment options and be prepared to accommodate additional technologies that are expected to be certified in the near-term future.
- Propose as few modifications of 800 MHz technical rules as possible to simplify the coordination process to the extent feasible.
- Use FCC Rule Sections 90.621 and 90.635 as the starting point for rules governing the assignment of interstitial channels.

Based on those principals, the LMCC recommends the following:

A) Co-channel Separation. All provisions of Rule Section 90.621(b) apply to interstitial co-channel coordinations.

B) Adjacent Channel Separation. When coordinating interstitial-to-full channel or full channel-to-interstitial applications

(i) Potentially affected stations are those closer than the mileage separations in Rule Section 90.621(b), including the greater separation afforded mountaintops identified in subsections (1), (2) and (3). Adjacent channel stations beyond those distances do not need to be considered.

(ii) If potentially affected stations are closer than the permitted distances in Rule Section 90.621(b), the application may be coordinated if the applicant's interference contour does not overlap the incumbent's 40 dBu service contour and, with the exception noted below, the incumbent's interference contour does

not overlap the applicant's 40 dBu service contour. Both the service and interference contours will be calculated using F(50,50) curves.[3]

(iii) No reciprocal analysis need to be conducted to an adjacent channel licensee when the applicant and adjacent channel licensees are both public safety entities; only the applicant interference to incumbent service contour overlap needs to be considered.

(iv) Exhibit A is a matrix that specifies the derated interference contour to be used for all known combinations of adjacent channel system types.[4] The matrix is subject to FCC oversight, but should not be incorporated in the rules to facilitate modifications to accommodate future technologies.

(v) The contour analyses will be performed by participating frequency coordinators using generally accepted engineering practices and standards.

C) Power/Antenna Height. All provisions of Rule Section 90.635 apply to interstitial applications.

III CONCLUSION

Allowing the licensing of 800 MHz Mid-Band interstitial channels will expand spectrum opportunities for all PLMR users. The LMCC urges the Commission to adopt rules consistent with the recommendations above as promptly as possible.

Respectfully submitted,

/s/

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[3] A number of commenting parties expressed concern that use of F(50,50) rather than F(50,10) curves to define adjacent channel interference contours would result in lesser interference protection than is afforded in co-channel situations. In fact, the derated interference contours in Exhibit A provide superior interference protection for 25 kHz systems.

[4] One party suggested that the use of contours necessarily leads to speculation about the adequacy of the protection provided and, therefore, disputes that will require Commission resolution. The LMCC must respectfully disagree. The industry has been using contours when coordinating applications under FCC Rule Section 90.187 for a number of years and disputes have been negligible. The same is true for contour analyses used in short-spacing 800 MHz systems that do not meet the Rule Section 90.621 separation criteria. As long as all coordinators are diligent in following the agreed-upon protection criteria, the LMCC is confident that there will be very few, if any, instances in which the FCC will need to become involved in resolving a dispute.

EXHIBIT A

Interstitial to 25 kHz Interference Contour			Interstitial Channel				
			Modulation				
			12.5 Analog	Any P25 (FDMA, LSM, TDMA)	DMR or NXDN 9.6	NXDN 4.8	2 x NXDN 4.8
			Transmitter Emission				
25 kHz Channel			< 11K3F3E	8K10F1E/D 8K70D1W 9K80D7W	7K60FXE/D or 7K60F7E/D/W 8K30F1E/D	4K00F1E/D	11K0F7E/D/W
			Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Modulation	Transmitter Emission		Interstitial Derated Interference Contour [dBu f(50,50)]				
25 kHz Analog	16K0F3E or 20K0F3E	Rcvr	25	20	25	35	15
ASTRO Widepulse	10K0F1E/D	Rcvr	40	35	40	55	25
OpenSky	12K5F9W	Rcvr	40	35	40	55	30
EDACS	16K0F1E/D	Rcvr	70	65	65	NR	NR
iDEN & HPD	18K3D7W 17K7D7D	Rcvr	25	20	25	45	10
Possible 12.5 kHz Technologies on 25 kHz centers							
12.5 kHz Analog	< 11K3F3E	Rcvr	65	65	65	NR	70
P25 FDMA, LSM, TDMA, Simulcast	8K10F1E/D 8K7D1W 9K80D7W 9K80D1E/D	Rcvr	NR	75	75	NR	NR
DMR or NXDN 9.6	7K60FXE/D or 7K60F7E/D/W 8K30F1E/D	Rcvr	75	70	75	NR	NR
NXDN 4.8	4K00F1E/D	Rcvr	NR	NR	NR	NR	NR
2 x NXDN 4.8 (+/- 3.125 kHz)	11K0F7E/D/W	Rcvr	60	55	60	NR	NR
Possible 90.221 Technologies on 25 kHz centers							
TETRA	22K0D7E/D/W 22K0DXW 22K0G1W 21K0D1E/D/W	Rcvr	25	20	25	45	10
2 x P25 FDMA, LSM, TDMA (+/- 6.25 kHz)	21K7D7E/D/W	Rcvr	25	20	25	60	10
2 x DMR (+/- 6.25 kHz)	To Be Determined	Rcvr	20	15	20	45	10
2 x NXDN 9.6 (+/- 6.25 kHz)	To Be Determined	Rcvr					
3 x NXDN 4.8 (0, +/- 6.25 kHz)	To Be Determined	Rcvr					

NR = derating value > 75 dB, no analysis required

25 kHz to Interstitial Interference Contour			Interstitial Channel				
			Modulation				
			12.5 Analog	Any P25 (FDMA, LSM, TDMA)	DMR or NXDN 9.6	NXDN 4.8	2 x NXDN 4.8
			Transmitter Emission				
25 kHz Channel			< 11K3F3E	8K10F1E/D 8K70D1W 9K80D7W	7K60FXE/D or 7K60F7E/D/W 8K30F1E/D	4K00F1E/D	11K0F7E/D/W
			Receiver	Receiver	Receiver	Receiver	Receiver
Modulation	Transmitter Emission		25 kHz Derated Interference Contour [dBu f(50,50)]				
25 kHz Analog	16K0F3E or 20K0F3E	Xmtr	40	50	45	60	35
ASTRO Widepulse	10K0F1E/D	Xmtr	50	50	50	55	50
OpenSky	12K5F9W	Xmtr	40	50	45	50	35
EDACS	16K0F1E/D	Xmtr	35	40	40	45	35
iDEN or HPD	18K3D7W 17K7D7D	Xmtr	20	45	30	50	15
Possible 12.5 kHz Technologies on 25 kHz centers							
12.5 kHz Analog	< 11K3F3E	Xmtr	65	NR	75	NR	60
P25 FDMA, LSM, TDMA, Simulcast	8K10F1E/D 8K7D1W 9K80D7W 9K80D1E/D	Xmtr	65	75	70	NR	55
DMR or NXDN 9.6	7K60FXE/D or 7K60F7E/D/W 8K30F1E/D	Xmtr	65	75	75	NR	60
NXDN 4.8	4K00F1E/D	Xmtr	NR	NR	NR	NR	NR
2 x NXDN 4.8 (+/- 3.125 kHz)	11K0F7E/D/W	Xmtr	70	NR	NR	NR	NR
Possible 90.221 Technologies on 25 kHz centers							
TETRA	22K0D7E/D/W 22K0DXW 22K0G1W 21K0D1E/D/W	Xmtr	20	25	20	30	15
2 x P25 FDMA, LSM, TDMA (+/- 6.25 kHz)	21K7D7E/D/W	Xmtr	15	20	15	25	10
2 x DMR (+/- 6.25 kHz)	To Be Determined	Xmtr	20	25	20	35	15
2 x NXDN 9.6 (+/- 6.25 kHz)	To Be Determined	Xmtr					
3 x NXDN 4.8 (0, +/- 6.25 kHz)	To Be Determined	Xmtr					

NR = derating value > 75 dB, no analysis required