

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

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

To: The Chief, Wireless Telecommunications Bureau  
The Chief, Public Safety and Homeland Security Bureau  
Via: Electronic Comment Filing System

**EX PARTE STATEMENT OF JVCKENWOOD USA CORPORATION**

Now comes JVCKenwood USA Corporation (“JVCKenwood”), a major manufacturer and developer of communications equipment for, among other purposes, public safety and industrial/business land mobile communications systems, through its regulatory counsel, and respectfully submits the following with respect to the comments filed in the above-captioned proceeding in response to the *Public Notice* (the “Public Notice”), DA 15-844, released July 24, 2015.<sup>1</sup> That *Public Notice* was issued pursuant to a proposal filed by the Land Mobile Communications Council (LMCC) in reply comments in response to an earlier *Notice of Proposed Rule Making* in this proceeding.<sup>2</sup> In those reply comments, LMCC recommended the adoption by the Commission of certain specific interstitial channel interference contours in the 800 MHz Mid-Band (809-817/854-862 MHz) and protocols for frequency coordination on those interstitial channels. On July 24, 2015, the Public Safety and Homeland Security Bureau and the

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<sup>1</sup> *Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau Seek Comment on Land Mobile Communications Council’s Proposed 800 MHz Interstitial Channel Interference Contours*, DA 15-844, released in the above-captioned proceeding July 24, 2015.

<sup>2</sup> See, *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 Rule Making*, 30 FCC Rcd 1663 (released February 9, 2015) amended by *Erratum* March 10, 2015. See 80 Fed. Reg. 15723 (Mar. 25, 2015). The *Notice of Proposed Rule Making* sought comment on proposals to amend the Commission’s rules in order to promote spectrum efficiency and flexibility. Specifically, the *Notice of Proposed Rulemaking* proposed to create interstitial channels in the 800 MHz “mid-band” (809-817/854-862 MHz). Under the proposal, interstitial channel centers would be placed halfway between the centers of current 25 kHz main channels in this sub-band. Frequency coordination with geographic spacing between new interstitial channels and adjacent main channels would be used to ensure protection to operations on the main channels.

Wireless Telecommunications Bureau issued the *Public Notice*, seeking comment on the LMCC interference contours. Comments were due thereon on or before September 8, 2015.<sup>3</sup> There was no reply comment date specified in the subsequent *Public Notice* which established comment dates in this proceeding.

1. JVCKenwood has reviewed the comments filed in this proceeding with respect to the LMCC's proposed interstitial channel interference contours. While LMCC offers a reasonable basic proposal that is well-conceived and widely supported, JVCKenwood commends to the Commission's attention the important comments filed by Mobile Relay Associates (MRA) on September 8, 2015 which suggest a major significant improvement in the LMCC band plan. Most importantly, MRA's proposed refinement of the LMCC plan contains a workable means of maximizing spectrum efficiency in channel assignments in instances where there is no overlap in occupied bandwidth between an incumbent licensee and a proposed new 800 MHz interstitial licensee. Indeed, as noted by MRA, absent the MRA modification, there will be wasted in very crowded land mobile markets a large amount of 800 MHz spectrum that could otherwise be well-utilized by licensees utilizing ultra-narrowband facilities: those which make use of equipment featuring 4 kilohertz occupied bandwidths.<sup>4</sup> The MRA modifications could be implemented

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<sup>3</sup> See, the Public Notice, *Public Safety and Homeland Security Bureau and Wireless Telecommunications Bureau Announce Comment Date for Land Mobile Communications Council's Proposed 800 MHz Interstitial Channel Interference Contours*, DA 15-892, released August 7, 2015.

<sup>4</sup> One such land mobile radio digital technology launched in 2007 is "NXDN", which operates in both narrowband ("NB") (i.e. 12.5 kHz channel bandwidth and 8 kHz occupied bandwidth) and very narrowband ("VNB") (i.e. 6.25 kHz channel bandwidth; 4 kHz occupied bandwidth) operating modes with equipment available in the Part 90 VHF, UHF, 800 and 900 MHz bands. NXDN is an open technology devoid of license fees or royalties and managed under the stewardship of the NXDN Forum. The Forum currently comprises 34 member companies. JVCKenwood's NEXEDGE® brand NXR- 800 UHF NXDN repeater station and the NX-800 mobile radio both comply with FCC Emission Mask E for 6.25 kHz VNB channels and are FCC-OET certified for VNB emissions of 4K00F1E, 4K00F1D & 4K00F7W & 4K00F2D. It is noteworthy that all Kenwood NXDN repeater stations in all bands operating in 6.25 kHz VNB mode are equipped with an Oven Controlled Crystal Oscillator (OCXO) with a frequency stability of 0.50 ppm. If the OCXO is not running properly the NXR repeater will not transmit. It is apparent therefore that VNB equipment is capable of operation closely adjacent in frequency to incumbent facilities without causing or suffering interference. As an example of the growth in deployed NXDN equipment, a January 25,

without the slightest risk of interference to incumbents. It is neither necessary, in other words, nor efficient to protect, as the LMCC band plan does, non-overlapping signals.

2. LMCC's frequency coordination recommendations and band plan for implementation of new interstitial channels in the 800 MHz Mid-band includes both standard coordination procedures and an interference contour chart that can be used for current channel adjacency emission combinations. LMCC proposes not to include this chart in the Rules. Rather, it would be used as a standard for coordination which would be modified over time to incorporate future technology changes. It is a good effort and the Commission should accept the idea of adopting the band plan developed by LMCC as a standard for use by all FACs without incorporating it verbatim in the rules, so as to allow it to be updated flexibly, and as necessary without the need for further rulemaking.

3. However, the chart should not be adopted precisely as LMCC proposes. As MRA notes, there are instances in which there is no overlap in occupied bandwidth between an incumbent station and a proposed station. There has never been required an interference analysis when there is no such overlap. As noted by MRA and hereinabove, there is now available equipment with ultra-narrowband emissions of 4 kilohertz occupied bandwidths. The band plan for the interstitial channels should make optimum use of this ultra-narrowband technology, thus to facilitate the opportunities to maximize the spectrum efficiency that is offered by it. As MRA explains it, the bandwidth of any particular channel is defined by its *occupied* bandwidth, reflected in the emission designator(s) specified for each channel on the license. Thus, though an incumbent 800 MHz licensee is assigned a channel with a 25 kHz *channel* bandwidth, the *occupied* bandwidth shown in the emission designator for that license may be for 20 kHz

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2013 audit of the Part 90 licensee database showed that there were 100,097 occupied channels of NXDN (4 kHz and 8 kHz occupied bandwidths), of which 80,205 were operated in the 4 kHz VNB mode only.

emissions. In that case, the occupied bandwidth of each transmitted signal extends 10 kHz on each side of the channel's center frequency. Similarly, if the emission designator on that 25 kilohertz channel shows an occupied bandwidth of 11 kHz, then the occupied bandwidth of that channel extends only 5.5 kHz on each side of the channel's center frequency. Two emissions are considered "co-channel" if there is overlap of the occupied bandwidths of the two signals, even if they have different center frequencies.

4. MRA offers as an example the case in which licensee X is assigned 855.0375 MHz with a 20 kHz occupied bandwidth emission. In that case, the occupied bandwidth extends from 855.0275 MHz to 855.0475 MHz. Licensee Y is assigned an interstitial channel centered on 855.0500 MHz (which is 12.5 kHz removed from the center channel of Licensee X), but Licensee Y has an 11 kHz occupied bandwidth emission. Therefore, licensee Y's occupied bandwidth extends from 855.0445 MHz to 855.0555 MHz. There is overlap with Licensee X between 855.0445 MHz and 855.0475 MHz. Therefore, those two stations would have to be considered co-channel. There are, however, "adjacent channel" stations where, and only where, they do not have any overlap of the occupied bandwidths of the two emissions. There can be a great many of those adjacencies where ultra-narrowband technology is used by interstitial licensees. That situation is not accommodated under the LMCC plan as filed, and therefore there would be spectrum lying fallow unnecessarily.

5. The goal of interference analyses in the land mobile radio service is to address co-channel interference; out-of-band emission limits address interference where there is no predicted overlap of the occupied bandwidths of two adjacent station transmissions. The Commission has firmly established its policy favoring the most efficient utilization of spectrum, and in the largest markets there are very few available 800 MHz channels. In implementing the

interstitial channels in the 800 MHz Mid-band, the most efficient use of the full bandwidth of each channel should be encouraged. Long ago, the Commission chose narrowband conversion as a means of improving spectrum efficiency in Part 90 land mobile allocations.<sup>5</sup> The full use of each channel necessitates promoting the use of ultra-narrowband technologies where no overlap of occupied bandwidth of incumbents is created. Because the LMCC proposal as filed would require frequency coordination even where there is no overlap of occupied bandwidth signals, there is no incentive to make use of the full channel bandwidth by permitting ultra-narrowband emissions which do not overlap the occupied bandwidth of incumbent licensees. With regard to the licensing of new, ultra-narrowband 4 kHz operations on offset channel centerpoints in the 800 MHz band, the LMCC proposal overregulates adjacent channel operation, which offers no marginal improvement in protection of incumbent operations, but disables efficient use of spectrum by disallowing any use of segments where VNB channels could be placed. Specifically, the LMCC proposes to protect adjacent channel (i.e., non-spectrally-overlapping) licensees from “harmful interference”.

6. MRA notes that even older, analog wideband 800 MHz equipment which is still in use in some areas is capable of adequate rejection of out-of-band emissions on from adjacent channel stations, and most 800 MHz equipment in service today is digital equipment with even better capability to reject spurious emissions. 800 MHz equipment is better equipped to reject spurious emissions than is the older equipment used in the 450-512 MHz band. Even so, 450-512 MHz equipment has consistently operated without a problem in proximity to constant narrow-band

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<sup>5</sup> The Commission’s specific goal in the narrowbanding proceedings (Docket 99-87) was to implement new, spectrum-efficient technologies, thus to allow a more efficient use of very limited spectrum available for Part 90 land mobile radio in the 150-174 MHz (VHF) and the 421-512 MHz (UHF) bands (the “Reframing” bands). See, e.g., *Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies, Second Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd 3034 (2003).

transmissions, so long as there was no overlap of occupied bandwidth signal with that of an adjacent channel station.<sup>6</sup> MRA has the experience in the 450 MHz band to affirm these claims reliably. On June 17, 2014, in WT Docket 13-212, the Commission granted MRA's requests for waiver of Section 90.35 of the Commission's Rules in order to permit licensed operation with station class FB8 and specifying *a 4 kHz emission designator* on three frequency pairs (451/456.003125 MHz and 451/456.09375 MHz and 451/456.015625 MHz) in the Los Angeles, Las Vegas and Miami metropolitan areas. These channels were adjacent to, *but did not overlap* the shared spectrum available for Part 74 Remote Pickup use at UHF pursuant to Section 74.402 of the Commission's rules. The channels were theretofore essentially fallow spectrum, constituting buffers between Part 90 Industrial/Business channels and Part 74 Broadcast Auxiliary services. Due to the specification of an ultra-narrow emission on the specified channels, Part 90 narrowband use of them *created no overlap of the occupied bandwidth of the specified channels with that of any licensed facilities in the Part 74 BAS Service*. In that case the Wireless Telecommunications Bureau concluded that (1) the underlying purpose of the rules would not be served by strict application of them, because Part 90 narrowband operations would not spectrally overlap the occupied bandwidth of any currently assignable frequency; and (2) the public interest would be served by permitting the assignment of the requested frequency pairs to

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<sup>6</sup> There is recent precedent for acceptance of MRA's proposed change to the LMCC band plan and coordination protocol. The Commission on January 5, 2012 issued a letter to LMCC granting LMCC's request to permit licensing in the 450-512 MHz band of two, 6.25 kHz digital channels offset by 3.125 kHz from an exclusively licensed (FB8 and many public safety) 12.5 kHz UHF analog channel. This permitted an applicant for two channels, each specifying 4 kHz occupied bandwidth to be licensed with the center frequencies offset by 3.125 kHz above and below the center frequency of a designated 12.5 kHz channel, so that the entire occupied bandwidth of the two, 4 kHz channels is within the passband of the designated 12.5 kHz channel. This permitted ultra-narrowband equipment users to make more efficient use of spectrum and allow licensing of channel pairs in crowded markets where other technologies would be precluded in the UHF band. See, DA 12-10, co-authored by the Chief, Mobility Division, Wireless Telecommunications Bureau, and the Chief, Policy Division, Public Safety and Homeland Security Bureau. Also,

alleviate Part 90 land mobile radio congestion at the requested locations. The current situation at 800 MHz is no different.

7. To do other than as MRA suggests will cause numerous potential ultra-narrowband channels at 800 MHz to lie fallow, in areas where the demand for 800 MHz channels far exceeds the availability of those channels, and without any concomitant preclusion of harmful interference. Therefore, as MRA suggests, the LMCC proposed tables should be modified to show as “NR” (“no analysis required”) for those table-cells where there is no overlap of the relative occupied bandwidths of the emissions of the incumbent licensee and the proposed interstitial licensee.<sup>7</sup> MRA’s proposed modification will enable the licensing of a large number of new interstitial licensees without increasing interference to any incumbent licensee, and maximizing the efficient use of spectrum.

Therefore, the foregoing considered, JVCKenwood USA Corporation respectfully requests that the Commission take further action with respect to the LMCC frequency

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<sup>7</sup> MRA notes that this is principally an issue in the column referring to 4 kHz emission designator proposals on the interstitial channels. Any new interstitial proposal is by definition centered 12.5 kHz away from incumbent licensee channel centers. Any interstitial 4 kHz emission will not overlap the occupied bandwidth of any incumbent 800 MHz channel, except in the one case of TETRA equipment utilizing a 22 kHz emission (and even then, the spectral overlap is only ½ kHz).

coordination proposal for the 800 MHz Mid-band only to the extent consistent with these ex parte reply comments.

Respectfully submitted,

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