

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

In the Matter of )  
 )  
Emission Mask Requirements for Digital ) PS Docket No. 13-209  
Technologies on 800 MHz NPSPAC )  
Channels; Analog FM Capability on Mutual ) RM-11663  
Aid and Interoperability Channels )  
 )

**REPLY COMMENTS OF HARRIS CORPORATION**

Harris Corporation (Harris) respectfully submits these reply comments in response to the Federal Communications Commission’s (Commission) Notice of Proposed Rulemaking (NPRM), proposing to require that: 1) digital technologies comply with Emission Mask H when operated in the 800 MHz National Public Safety Planning Advisory Committee (NPSPAC) band (806-809/851-854 MHz); and 2) subscriber equipment have analog FM capability when operating on the 800 MHz mutual aid channels designated in §90.617(a)(1) of the rules and on the nationwide public safety interoperability calling channels in the 150–174 MHz VHF and 450-470 MHz UHF bands.<sup>1</sup> Harris appreciates the comments of all stakeholders providing insight, and based upon them, urges the Commission to rapidly advance rules as described above.

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<sup>1</sup> See Emission Mask Requirements for Digital Technologies on 800 MHz NPSPAC Channels; Analog FM Capability on Mutual Aid and Interoperability Channels, PS Docket No. 13-209, RM-11663, Notice of Proposed Rulemaking, FCC 13-117 (rel. Aug. 27, 2013) (H Mask NPRM).

**I. APPLICATION OF THE H MASK FOR DIGITAL TECHNOLOGIES IN THE 800 MHZ NPSPAC BAND WILL SERVE THE PUBLIC INTEREST.**

- a. The Record Reflects Wide Support For Use of the H Mask Among Public Safety and the Manufacturers Serving Them.

The vast majority of commenters, who are focused on providing effective public safety communications from a policy, engineering, local planning, and technical perspective, all concur that, to protect public safety communications from adjacent channel interference, the Commission must apply the H Mask to digital communications in the 800 MHz NPSPAC channels.<sup>2</sup> NPSTC details that the nature of the 800 MHz NPSPAC channels is elemental to the need for the H Mask: “Unlike other channels in the 800 MHz band, when the NPSPAC channels were allocated for public safety, the band was structured to provide for 25 kHz channels spaced 12.5 kHz apart. As a result, the NPSPAC channels are more susceptible to adjacent channel interference.”<sup>3</sup> It is important to note that this spectrum attribute is inherent regardless of the use of the spectrum; whether the spectrum is used for traditional first responder activity, or for that of transit entities or other related operations, the channel spacing makes the spectrum more susceptible to interference.

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<sup>2</sup> See Comments of the Association of Public-Safety Communications Officials-International, Inc. (APCO); see also Comments of the National Public Safety Telecommunications Council (NPSTC); see also Comments of William Carter, Region 13 Chairperson (RPC 13 Chair); see also Comments of the Telecommunications Industry Association (TIA); see also Comments of Motorola.

<sup>3</sup> NPSTC comments at 3; see also Comments of Motorola at 4 (detailing the increased susceptibility of 800 MHz NPSPAC channels to interference); see also Comments of TIA at 5 (noting that, “technical and operational standards applicable to the NPSPAC channels raise unique issues when considering whether to allow non Mask H compliant digital technologies on Part 90 frequencies.”).

As commenters make clear, not only is compliance with the H Mask technically feasible in digital technologies,<sup>4</sup> it can and should be applied on a technology-neutral basis.<sup>5</sup> Moreover, commenters state that the proposed codification of the H Mask requirement comports with industry practice: “digital technology meeting the more stringent Mask H emissions requirements is almost universally utilized in public safety frequencies used by first responders and others protecting life, health, and property.”<sup>6</sup> APCO also notes that consequences of the Commission not acting swiftly to this end could be severe: “...implementation of any digital system utilizing Mask B standards potentially jeopardizes incumbent co-channel and adjacent channel public safety operations...”<sup>7</sup>

b. Opposition Focused on Imposing Additional Burdens on RPCs and Claims of Economic Impact Upon One New Entrant Are Unreasonable.

Two commenters among eight take a view different than those espoused above. Their focus is on a claim that regional planning commissions (RPCs) can and should undertake extra measures to mitigate the additional interference that non-H Mask compliant digital technologies can cause.<sup>8</sup> However, the sole RPC commenting in this proceeding disagrees

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<sup>4</sup> See Comments of TIA at 5.

<sup>5</sup> See Comments of Motorola at 5; *see also* Comments of TIA at 4.

<sup>6</sup> See Comments of TIA at 6; *see also* NPSTC Comments at 4 (“industry practice has been to apply the H mask to equipment designed for use in the NPSPAC channels.”); *see also* Comments of Motorola at 3-4 (“under Section 90.210, it became the standard practice that the B-Mask applied to analog voice devices and the more stringent Mask H applied to data devices that did not employ a low-pass filter... making it the *de facto* standard for the band.”).

<sup>7</sup> Comments of APCO at 2.

<sup>8</sup> See Comments of PowerTrunk at 2; *see also* Comments of New Jersey Transit (NJT) at 4.

with this position.<sup>9</sup> These comments make clear that, if a “technology requires special consideration by the regional planning committees, increased attention and/or impacts co channel or adjacent channel usage due to the deployment of the... technology presently, or limits the adjacent channel usage in the future [, then] it is not evident how [a] technology can be generally approved for use and/or show the necessary protection required by the present rules.”<sup>10</sup> APCO adds that introduction of non-H Mask compliant digital technologies imposes “additional burdens on RPCs... and could require significant revisions to regional plans and re-coordination of current incumbent operations. This would be extremely difficult, if not impossible, in densely packed urban areas.”<sup>11</sup> NPSTC concurs, noting that, “if protection against adjacent channel interference were lessened for the NPSPAC channels by deliberately providing a free pass for equipment certification in that band without the use of the H mask, significant changes may be needed to regional plans, including re-coordination of incumbent operations.”<sup>12</sup>

To be clear, no commenter actually claims that non-H Mask compliant digital technologies do not increase interference threats in the 800 MHz NPSPAC channels. Rather, one commenter indicates that no emissions mask completely prevents all interference; therefore, no one mask should be mandated.<sup>13</sup> Such a proposition simply does not make sense.

Extending this logic, instead of applying an emissions mask that functionally protects from

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<sup>9</sup> See Comments of RPC 13 Chair at 1.

<sup>10</sup> *Id.*

<sup>11</sup> Comments of APCO at 2.

<sup>12</sup> Comments of NPSTC at 4.

<sup>13</sup> See Comments of PowerTrunk at 2.

most interference, and one on which RPCs have relied for 20 years to mitigate minimal threats,<sup>14</sup> the Commission should abandon emissions regulation through masks altogether. This would be contrary to the public interest. Abandonment of masks altogether could lead to a situation in which manufacturers do not know what limits must be factored into equipment. Moreover, FCC and Technical Compliance Bodies (TCBs) will have no means to rationally determine whether equipment should or shouldn't be certified for operation. Equally unreasonable are one commenter's claims of economic hardship and inequitable treatment.<sup>15</sup> The Commission proposes a technology-neutral and technically feasible solution. While it may not be desired by this party for the Commission to take steps to mitigate interference resulting from that party applying rules in a manner totally adverse to the spectrum interference efforts of all other stakeholders, it is not inequitable. The economic hardship in fact will lie upon public safety if the rule is not codified. APCO notes that allowing non-H Mask digital technologies to operate in the 800 MHz NPSPAC channels "could... impose substantial fiscal burdens on the operators of incumbent systems required to comply with revised coordination parameters, and potentially create a significant loss of flexibility in the spectrum management of the band."<sup>16</sup> NPSTC identifies similar financial costs to RPCs, stating that such a scenario "could encroach on public safety resources which are already stretched thin and result in less flexibility to locate public safety transmitter sites

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<sup>14</sup> See Comments of APCO at 3-4

<sup>15</sup> See Comments of PowerTrunk at 2-3.

<sup>16</sup> Comments of APCO at 2.

in the band. NPSTC applauds the Commission for proposing modifications to the rules for the NPSPAC band which should help avoid that result.”<sup>17</sup>

For these reasons and those detailed by other commenters in this proceeding, the Commission should rapidly require the H Mask for digital technologies operating in the 800 MHz NPSPAC channels.

## **II. THE MUTUAL AID REQUIREMENTS SHOULD BE RESERVED FOR MOBILE AND PORTABLE DEVICES.**

Harris concurs with comments that make clear that the Commission’s rules should codify common practice in which “subscriber equipment manufacturers and public safety licensees have historically used”<sup>18</sup> the common modulation of analog FM for operations in 800 MHz, VHF, and UHF interoperability channels. Leaving any discrepancy in the rules on this matter could thwart efforts driving interoperability. As APCO notes, “[p]ublic safety users learned long ago that allowing mixed modes negates efforts to achieve interoperability.”<sup>19</sup> While New Jersey Transit contends that “800 MHz (or 700 MHz) national mutual aid channels are not the only means of interoperable communications,”<sup>20</sup> Harris agrees with the majority of commenters that a mutual aid requirement is a foundational element of interoperability at the local level.<sup>21</sup> Moreover, Harris concurs with the one commenting RPC that “technology lacking an analog service mode

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<sup>17</sup> Comments of NPSTC at 4.

<sup>18</sup> Comments of TIA at 7.

<sup>19</sup> Comments of APCO at 4.

<sup>20</sup> Comments of NJT at 6.

<sup>21</sup> See Comments of RPC 13 Chair; see also Comments of Motorola at 6-7; see also Comments of APCO at 3-4; see also Comments of TIA at 6-7; see also Comments of NPSTC at 5.

to promote inter-op[erability] is unacceptable and contradictory to the present and past strategies throughout the nation concerning interoperability.”<sup>22</sup>

While ensuring that subscriber equipment includes the common modulation of analog FM for operations in 800 MHz, VHF, and UHF interoperability channels is vital, it is equally important that this requirement apply only to devices. Since 1987, the set-aside of the mutual aid and interoperability channels has been utilized to provide a minimum means of communications between disparate agencies - particularly when outside of coverage. With the proliferation of digital technologies, NPSPAC realized and the Commission accepted the fact that unless some common denominator for unit-to-unit communications was mandated, it was likely that manufacturers would not voluntarily do anything except include whatever digital technologies they desired in subscriber units. Had this been allowed to happen, unit-to-unit interoperability would quickly become impossible or non-existent. As the Commission recalls, the original mutual aid rules established in 1987 were the byproduct of the thoughtful proposals issued by NPSPAC.<sup>23</sup> In fact, the Commission noted that NPSPAC’s Final Report stated that the channeling plan for the new spectrum should satisfy a variety of current and future public safety needs, including interoperability on common mutual aid channels.<sup>24</sup> To meet this requirement, the Commission stated, NPSPAC recommended that all mobile and portable radios be equipped to operate on the five channels via mutual aid.<sup>25</sup> In accepting this proposal, the Commission

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<sup>22</sup> Comments of RPC Chair 13 at 1.

<sup>23</sup> *See generally* Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821–824/866–869 MHz Bands by the Public Safety Services, Gen. Docket 87-112, Report and Order, 3 FCC Rcd 905 (1987) (“NPSPAC Report and Order”).

<sup>24</sup> *See* NPSPAC Report and Order at ¶ 16.

<sup>25</sup> *See id.* at ¶ 28.

focused its regulations on operation of mobile and portable equipment.<sup>26</sup> It is clear from the NPSPAC documents and the Commission’s resulting rules that mandating a common technology for base stations was not deemed essential. With a plethora of techniques available to extend coverage among disparate technologies, it was not deemed essential to include fixed stations in the common technology mandates. The Commission and public safety endorsed the common technology mandates as only applicable to subscriber units when the initial interoperability mandates for VHF, UHF and 700 MHz narrowband were adopted in the early 2000’s. Since the time the initial mandates were adopted in 1987, there has not been significant justification for extending the common technology mandates to fixed station equipment as being in the public interest.

While appreciating APCO’s suggestion that the mutual aid requirements extend to all equipment, rather than only mobile and portable devices identified by NPSPAC as central to facilitating interoperability, this new extension would likely result in unexpected cost increases for public safety. While the Commission was correct in its assertion that there appear to be “no digital systems operating in the 800 MHz NPSPAC band that exceed Emission Mask H or lack analog FM capability,”<sup>27</sup> such is not the case for non-mobile or -portable elements of those systems, such as base stations. The reason for this fact is simple: providing this capability in base stations will escalate costs yet will not improve unit-to-unit interoperability.<sup>28</sup> Consistently, Motorola notes that it applies Section 90.203(i) to “require devices designed to operate on the NPSPAC

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<sup>26</sup> See *id.* at ¶ 34.

<sup>27</sup> H Mask NPRM at ¶ 20.

<sup>28</sup> This is presumably the reason the Commission has mandated mutual aid capability only for mobile and portable devices in other code section for various bands used by public safety. See, e.g., 47 CFR §90.720 (imposing mutual aid requirements for mobile and portable equipment in the 220 MHz band.).

channels to be capable of operating in analog FM mode when transmitting on the mutual aid channels.”<sup>29</sup>

Additionally, while a common technology is not mandated for inclusion as part of the certification process, nothing has precluded manufacturers from making such common technology in fixed stations available for those who want such a capability. Each manufacturer can and should be allowed to determine individually how to respond to any market demands that go beyond the desire for direct unit-to-unit interoperability, and public safety should be able to choose whether or not to incur the additional costs associated with such technology only if deemed appropriate.

### **III. CONCLUSION**

For the foregoing reasons, Harris urges the Commission to swiftly adopt policies as proposed above.

Respectfully submitted,

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<sup>29</sup> See Comments of Motorola at 6.