

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

In the Matter of

Amendment of Parts 2 and 25 to Implement  
the Global Mobile Personal Communications  
by Satellite (GMPCS) Memorandum  
of Understanding and Arrangements

Petition of the National Telecommunications  
and Information Administration to Amend  
Part 25 of the Commission's Rules to  
Establish Emissions Limits for Mobile and  
Portable Earth Stations Operating in the  
1610-1660.5 MHz Band

**IB Docket No. 99-67**

**RM No. 9165**

**To: The Commission**

**REPLY OF MOTOROLA, INC.**

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## I. INTRODUCTION AND SUMMARY

Pursuant to Section 1.415 of the Commission's Rules, 47 C.F.R. §1.415, Motorola, Inc. ("Motorola") hereby replies to comments submitted in response to the Commission's Notice of Proposed Rulemaking in IB Docket No. 99-67.<sup>1</sup>

With respect to domestic implementation of the GMPCS-MoU Arrangements, there is general agreement that the proposed equipment certification requirements should apply broadly to any earth terminal that may be considered a "GMPCS Terminal" within the meaning of the GMPCS-MoU Arrangements. This should include any end user terminal regardless of whether it is intended primarily for mobile service.

Motorola agrees with those commenters who maintain that the proposed customs procedures should be simplified by making the ITU mark the sole basis upon which a GMPCS terminal is allowed entry into the U.S. Requiring that a customs official confirm that a visiting terminal is on a list of terminals "approved for domestic use" or "approved for transit" makes the process unnecessarily complicated and should not be a condition of entry. Service providers will be already charged with the responsibility of preventing unauthorized use under the terms of

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<sup>1</sup> In the Matter of the Application of Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements Petition of the National Telecommunications and Information Administration to Amend Part 25 of the Commission's Rules to Establish Emissions Limits for Mobile and Portable Earth Stations Operating in the 1610-1660.5 MHz Band, Notice of Proposed Rulemaking ("NPRM"), 64 Fed. Reg. 16687 (Apr. 6, 1999). Motorola is a manufacturer of GMPCS terminals and is licensee of the Iridium system through its wholly-owned subsidiary, Space System License, Inc. See Motorola Satellite Communications, Inc., 10 FCC Rcd. 2268 (Int'l Bureau 1995); Erratum, 10 FCC 3925 (1995); Modification granted, 11 FCC Rcd 13952 (1996); reconsideration denied, 11 FCC Rcd 18502 (1996).

their blanket licenses. Furthermore, there is ample time for manufacturers to comply with the requirement of an ITU mark by notifying the ITU and arranging for marking of their terminals before the Commission's Rules become effective.

The Commission should also require immediate compliance with the -70 dBW/MHz wideband and -80 dBW/700 Hz narrowband standards for out-of-band emissions by GMPCS terminals in the 1559-1605 MHz band, without any less strict, interim standards. These standards should be applied to all GMPCS terminals (including Inmarsat Standard-A terminals) in order to fully protect the radionavigation satellite service ("RNSS"). The Commission should also adopt its proposal for an interference standard for the 1605-1610 MHz band. However, the Commission should not to expand this proceeding to address interference standards for RNSS applications other than aeronautical applications. The comments further support Motorola's positions in its initial comments regarding measurement of out-of-band emissions.

Finally, no commenter has demonstrated that it is currently possible or foreseeable for MSS providers to include accurate geolocation or E911 capability in their systems absent enormous cost and disruption of service to the public. Instead, the substantial majority of commenters agree that the Commission must reaffirm its earlier decision not to impose an E911 requirement on MSS operations.

## II. GMPCS-MOU IMPLEMENTATION

### A. The Proposed Equipment Certification Requirements Should Apply Broadly to Any Earth Terminal That May Be Considered a GMPCS Terminal

For the most part, there is agreement among the commenters that the Commission's GMPCS-MoU implementation proposals should have broad applicability and cover not only MSS terminals but also certain types of FSS terminals.<sup>2</sup> For example, as noted by Teledesic, broadband NGSO FSS systems will provide service to many end users using small, transportable fixed terminals and, "as with mobile services, rules that facilitate expeditious type approval and allow users to transport their terminals across national borders will enhance the marketability of the service and speed its deployment."<sup>3</sup>

Some commenters support the proposed exemption for mobile terminals permanently installed on ships, boats or planes.<sup>4</sup> As Motorola noted in its initial comments, such terminals fall under the definition of a "GMPCS Terminal" to the extent that the operator of the ship, boat or plane can be considered an end user.<sup>5</sup> Motorola disagrees with the commenters supporting the proposed exemption if, in fact, it would result in barring all manufacturers from seeking FCC certification for those types of terminals.

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<sup>2</sup> See Motorola Comments at 3; Teledesic LLC ("Teledesic") Comments at 2; SkyBridge LLC Comments at 2; Comsat Corporation ("Comsat") Comments at 2.

<sup>3</sup> Teledesic LLC ("Teledesic") Comments at 3.

<sup>4</sup> See Inmarsat Comments at 2; ICO Global Communications ("ICO") Comments at 3; Comsat Comments at 3.

<sup>5</sup> Motorola Comments at 3 n.3.

To avoid such a result, Motorola suggests that such terminals be included within the scope of the certification requirement and that the exemption be made available, if at all, on a voluntary basis. In other words, if the Commission concludes that such an exemption is warranted, then these terminals should automatically be covered by the rule unless the manufacturer opts out. In that case, all required technical information would have to be made available in the earth station blanket license application. This approach is preferable to an opt-in approach (*i.e.*, exempting all such terminals and allowing manufacturers to apply for certification on a voluntary basis) because doing it this way would avoid the concern raised in Motorola's initial comments with respect to whether voluntarily-submitted applications would be placed at a disadvantage from a processing standpoint.<sup>6</sup> Moreover as noted by Globalstar, having multiple categories of GMPCS terminals adds an unnecessary element of complexity to the process.<sup>7</sup> Consistent with this view, making the inclusion of these types of terminals the rule rather than the exception is a more straightforward approach.

Striving for administrative simplicity also cuts against the comments of Constellation Communications, Inc., which contend that the proposed FCC equipment certification requirement should be limited to earth terminals that are intended for free circulation and should not apply to earth terminals used for feeder link operations or to provide basic telephone service to remote areas.<sup>8</sup> As Motorola stressed in its initial comments, FCC

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<sup>6</sup> Id. at 5.

<sup>7</sup> See Joint Comments of L/Q Licensee, Inc., Globalstar, L.P. and Airtouch Satellite Services U.S., Inc. ("Globalstar") at 7.

<sup>8</sup> Constellation Communications, Inc. ("Constellation") Comments at 3.

certification plays a critical role not only in connection with the free circulation objectives of the GMPCS-MoU Arrangements, but also in facilitating equipment certification outside the U.S.<sup>9</sup> Moreover, from a definitional standpoint, some of the types of terminals about which Constellation is concerned, namely feeder link earth stations, will presumably not be subject to the certification requirement because, as Motorola noted in its initial comments, that type of earth terminal clearly is not a “user terminal” within the meaning of “GMPCS Terminal.”<sup>10</sup>

**B. The Proposed Customs Procedures Should Be Simplified By Making the ITU Mark the Sole Basis Upon Which a GMPCS Terminal Is Allowed Entry into the U.S.**

A number of commenters observe that the proposed customs procedure involving multiple equipment lists is unduly cumbersome and could have the unintended consequence of actually hindering the free circulation of GMPCS terminals across borders.<sup>11</sup> Instead, most of these commenters maintain that the presence of the ITU mark alone should be a sufficient basis upon which a customs official should allow a terminal to enter the country. Motorola agrees with these commenters. The role of the customs official should be limited to determining whether or not the terminal should be allowed entry. The issue of whether or not the terminal may be used while temporarily located within the U.S. should be considered a matter solely within the jurisdiction of the FCC. The determining factor with respect to use is made clear in the NPRM – there must be a U.S.-licensed service provider responsible for its operation.<sup>12</sup>

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<sup>9</sup> Motorola Comments at 4.

<sup>10</sup> Motorola Comments at 3 n.3.

<sup>11</sup> See Iridium LLC (“Iridium”) Comments at 6; Globalstar Comments at 8; Inmarsat Comments at 4; Comsat Comments at 7.

<sup>12</sup> NPRM at ¶ 25.

Having a customs official confirm that a visiting terminal is on a list of terminals “approved for domestic use” as opposed to a list of terminals “approved for transit” will have no bearing on whether the terminal can, in fact, be used. The system operator and/or service provider is the only entity in a position to prevent unauthorized use.

Some commenters object to the Commission’s proposal to prohibit a terminal from entering the U.S. unless it bears the ITU mark.<sup>13</sup> They contend that this requirement would make it difficult to grandfather existing terminals and that existing terminals may already be in the market before the ITU notification process can be completed for such terminals.<sup>14</sup> These concerns are overstated and can be addressed without complicating the customs process. As Inmarsat itself notes, “many types of Inmarsat terminals have received type approval from the FCC and/or other administrations” and it “expects to notify the ITU in the very near future.”<sup>15</sup> If that is the case, Inmarsat has ample time before any proposed rules would become effective in this proceeding to secure authorization to use the ITU mark and to send labels bearing the ITU mark to existing customers.<sup>16</sup>

Indeed, the entire notification process does not even have to be completed before a manufacturer may be authorized to affix the ITU mark to its terminals. The mark may be affixed as soon as the manufacturer receives a letter of acknowledgement from the ITU that it

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<sup>13</sup> Inmarsat Comments at 3; Comsat Comments at 6.

<sup>14</sup> To be clear, “grandfathering” in the context of the NPRM refers to the requirement that FCC certification be obtained prior to selling terminals in the U.S. for domestic use. NPRM at ¶ 24. There is no suggestion in the NPRM that grandfathering should apply to terminals roaming into the U.S.

<sup>15</sup> Inmarsat Comments at 3.

<sup>16</sup> Inmarsat’s own representative suggested the possibility of using such labels for existing terminals during negotiation of the GMPCS-MoU Arrangements.

has received the required letters from the manufacturer, system operator and type approving Administration.<sup>17</sup> The subsequent steps in the notification process involving system-specific implementation are not a pre-condition to affixing the ITU mark. The most time consuming step in the process is getting the type approval itself and, according to Inmarsat, it already has that for many of its terminals.

While objecting to requiring the ITU mark for grandfathered terminals, Comsat recognizes that this would require that yet another category of terminals be included in a separate list for customs officials and concedes that “it is not readily apparent how a customs official would be able to determine the status of a particular terminal.”<sup>18</sup> The purpose of the ITU mark was to avoid precisely the kinds of border delays about which Comsat is concerned. Such delays are inevitable if customs officials are required to do any more than check for the presence of what will hopefully become a widely recognized mark. In fact, if cross-checking against one or more lists is required, the ITU mark will quickly become less and less significant.

This is not to say that a database has no place in the customs process. If the Commission and/or the U.S. Customs Service believe it would be helpful to have such equipment lists or related information available to customs officials, then Motorola certainly has no objection. Indeed, the strength of the ITU mark lies in the type approval-related information that stands behind it in the database being maintained by the ITU in its role as Depository of the Arrangements. The point here is that such information should be a tool available to customs

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<sup>17</sup> GMPCS-MoU Arrangements, Implementation Annex at § 6.

<sup>18</sup> Comsat Comments at 8.

officials if they need it for some reason, but, as noted by Iridium, it should not become a *de facto* requirement.<sup>19</sup>

### III. TECHNICAL REQUIREMENTS FOR GMPCS TERMINALS

#### A. The Commission Should Require Immediate Compliance With Its Proposed RNSS Protection Standard for Out-of-Band Emissions by All GMPCS Terminals

The protection standard proposed by the Commission for out-of-band emissions affecting the radionavigation satellite service (“RNSS”) – *i.e.*, limits of -70 dBW/MHz for wideband emissions and -80 dBW/700 Hz for narrowband emissions by GMPCS terminals – is the product of a lengthy international and domestic process.<sup>20</sup> In this proceeding, several commenters support the Commission’s proposal,<sup>21</sup> some argue for a stricter standard,<sup>22</sup> and others argue that the standard should be relaxed<sup>23</sup> – illustrating the difficulty of consensus or compromise on this issue. Motorola continues to believe that the compelling need to protect RNSS requires no less than adoption of the proposed limits with no interim exceptions.

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<sup>19</sup> Iridium Comments at 10.

<sup>20</sup> See NPRM at ¶¶ 44-60.

<sup>21</sup> See Motorola Comments at 11; National Telecommunications and Infrastructure Administration (“NTIA”) Comments at 8-13; Aeronautical Radio, Inc. Comments at 3; Globalstar Comments at 13-14, 17-23; see also Inmarsat Comments at 6-10 (supporting standard but seeking exemption for Inmarsat-A terminals).

<sup>22</sup> See Comments of the U.S. GPS Industry Council (“U.S. GPS”) at 13-17, 27-29; Comments of Rockwell Collins, Inc. (“Rockwell Collins”) at 4-6.

<sup>23</sup> See Constellation Comments at 12 (seeking “flexibility” in standard); Comments of Hughes Network Systems at 1-3 (requesting the Commission to defer adopting a narrowband limit); Comments of Norcom Networks Corporation at 8-9 (seeking relaxed standard in 1600-1605 MHz band).

The Commission should require that all GMPCS terminals adhere to the -70/-80 protection standard, including Inmarsat Standard-A terminals. The Commission has correctly concluded that there is no basis for an exception for Standard-A terminals,<sup>24</sup> and Comsat's proposal for "exclusion zones" around airports is unjustifiable and impractical.<sup>25</sup> Furthermore, Motorola agrees with those commenters who support application of the -70/-80 protection standard to Little LEO GMPCS terminals.<sup>26</sup>

Importantly, technology already exists for meeting the proposed -70/-80 protection standard (and Motorola is currently manufacturing and delivering Iridium system terminals that meet the standard). Therefore, the proposed interim -64/-74 standard is unwarranted if RNSS is to be protected now and in the future.<sup>27</sup> The Commission should require that all GMPCS terminals meet the final protection standard upon commencement of service. However, were the Commission to adopt the interim standard, that standard must be applied to all terminals operating in the 1610-1660.5 MHz band. In particular, the proposals of Inmarsat and AMSC that their terminals in the 1626.5-1660.5 MHz band be excluded from even the interim standard must be rejected, because the proposals would exempt a substantial proportion

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<sup>24</sup> See NPRM at ¶¶ 84-89.

<sup>25</sup> Comsat offers no explanation regarding enforcement of such zones. See Comsat Comments at 17-18; see also Inmarsat Comments at 9-10 (seeking exemption for Standard-A terminals).

<sup>26</sup> See NTIA Comments at 19-22; Rockwell Collins Comments at 5-6.

<sup>27</sup> See Motorola Comments at 12.

of the GMPCS terminals now in service or proposed for service, unnecessarily risking the integrity of RNSS on a global basis.<sup>28</sup>

Finally, the Commission should adhere to its proposal that wideband interference in the 1605-1610 MHz band be limited to -10 dBW/MHz at 1610 MHz, linearly interpolated to -70 dBW/MHz at 1605 MHz.<sup>29</sup> The majority of commenters addressing this issue support the Commission's proposal.<sup>30</sup>

**B. There Is No Basis in This Proceeding for Separate Emissions Limits to Protect Marine and Land-Mobile Radionavigation or for Non-GMPCS Emitters**

As the Commission has stated, the scope of this proceeding is limited to “protection of aeronautical uses of the radionavigation satellite service” from emissions of GMPCS terminals.<sup>31</sup> The Commission should continue to resist the efforts of the GPS community to expand this proceeding to other RNSS applications (i.e., marine and land-mobile uses)<sup>32</sup> and to non-GMPCS emitters.<sup>33</sup>

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<sup>28</sup> See Inmarsat Comments at 10; AMSC Subsidiary Corporation (“AMSC”) Comments at 14-15 (seeking delay of compliance deadline).

<sup>29</sup> See NPRM at ¶ 83.

<sup>30</sup> See Motorola Comments at 17; NTIA Comments at 14-15; Globalstar Comments at 26.

<sup>31</sup> NPRM at ¶ 77; see also Motorola Comments at 13.

<sup>32</sup> See U.S. GPS Comments at 17-20.

<sup>33</sup> See U.S. GPS Comments at 23-26; Rockwell Collins Comments at 4-5. See also Motorola Comments at 13 n.20.

### C. Motorola Continues to Support the Commission's Measurement Parameters

With regard to narrowband spurious measurements, Motorola stated in its initial comments that it agrees with the Commission's approach to adopt straightforward power limits rather than spectral power density limits.<sup>34</sup> However, Motorola requested that the Commission clarify that narrowband spurs may be measured using bandwidths less than as well as greater than 700 Hz.<sup>35</sup> Motorola also agreed with the Commission's proposal to specify that all measurements be averaged over a 20 millisecond (ms) interval.<sup>36</sup>

In its Comments, Rockwell Collins also agrees with the Commission that a total power limit should be used for narrowband emissions. It further states that "It is appropriate for narrowband measurements to be made with a 300 Hz bandwidth available on existing spectrum analyzers."<sup>37</sup> NTIA concurs, noting that "the method of using smaller bandwidths to measure the wideband limits is consistent with ITU-R M.1343."<sup>38</sup> The consensus of the commenters, therefore, is that narrowband measurement bandwidths of less than and greater than 700 Hz should be permitted.

Two commenters suggest that the 20 millisecond (ms) averaging time for broadband emission measurements should be changed to 2 ms.<sup>39</sup> Both the ETSI and ITU

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<sup>34</sup> Motorola Comments at 14.

<sup>35</sup> Id. at 15.

<sup>36</sup> Id.

<sup>37</sup> See Rockwell Collins Comments at 6. Rockwell Collins notes that the 700 Hz value was intended as a definition in RTCA/DO-235 to distinguish narrowband interference from broadband interference, not as a measurement bandwidth. Id.

<sup>38</sup> NTIA Comments at 19.

<sup>39</sup> Rockwell Collins Comments at 6; NTIA Comments at 17-19.

standards specify 20 ms in the GPS band, and allow 100 ms peak detection as well. Motorola continues to support the 20 ms specification, as contained in Section 25.213(b) of the Rules.

#### **IV. NO COMMENTER HAS SHOWN IT IS YET FEASIBLE FOR MSS SYSTEMS TO IMPLEMENT FULL E911 CAPABILITY**

In the NPRM, the Commission asked for comment on whether to require that GMPCS terminals authorized for use in the United States have position location capabilities.<sup>40</sup> The Commission also requested comment on whether FSS systems should be required to incorporate enhanced 9-1-1 (“E911”) capabilities and, if so, how they should be implemented; and whether automatic number identification (“ANI”) can be provided by MSS systems.<sup>41</sup>

Several commenters support imposition of E911 requirements on MSS systems to provide emergency calling compatibility.<sup>42</sup> They argue principally that GPS technology developments provide sufficient radiolocation accuracy to support E911-capable terminals.<sup>43</sup> One commenter, while recognizing that it is difficult to route GMPCS terminal-initiated E911

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<sup>40</sup> NPRM at ¶98.

<sup>41</sup> Id.

<sup>42</sup> See, e.g., Comments of the National Search and Rescue Committee (“NSRC”); Comments of The Association of Public-Safety Communications Officials-International, Inc (“APO”); Comments of the United States Coast Guard (“USCG”); and Comments of the National Emergency Number Association (“NEMA”).

<sup>43</sup> USCG Comments at 5-6. USCG further suggests that any wireless system should be capable of providing location, name, call-back number, priority information, and routing information to the PSAP or Local Exchange Carrier in the delivery of emergency calls. It also suggests that terminals not capable of providing this capability be clearly marked. Id.; see also APCO Comments at 2-3.

calls to an appropriate Public Safety Answering Point (“PSAP”), states that “despite this issue, the Commission must move forward and adopt E9-1-1 rules for GMPCS.”<sup>44</sup>

The capabilities suggested by these commenters, even if desirable, are simply not feasible at this time on MSS systems. As Motorola has stated in its initial comments,<sup>45</sup> it remains premature to impose specific geolocation requirements on MSS systems until suitably capable technologies are developed. Apart from the lack of these capabilities, there are no PSAPs that would serve the entire country, as would be required by an E911-capable MSS system.<sup>46</sup>

In its E911 Report and Order, the Commission decided to forego imposing specific emergency service requirements, including E911, on the MSS, noting that MSS carriers would eventually be required to provide such services as the technology emerged.<sup>47</sup> The Commission specifically stated that it would not impose specific regulatory requirements on

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<sup>44</sup> APCO Comments at 3. See also NSRC Comments at 5. NSRC would also impose a list of operational requirements on all GMPCS systems, including Caller-ID, ANI and Automatic Location Information (“ALI”) capabilities, two-action call initiation (to avoid accidental false alarms), etc. Id.

<sup>45</sup> Motorola Comments at 18-19.

<sup>46</sup> See Constellation Comments at 13-15.

<sup>47</sup> See In the Matter of Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Report and Order, 11 FCC Rcd. 18676 (July 26, 1996) (E911 Report and Order) at ¶ 83.

classes of CMRS providers “that have not yet fully developed their commercial services.”<sup>48</sup> The Commission also stated:

[E]mergency service requirements for global MSS systems should be developed in an international forum to take into account compatibility and consistency with international standards, and to avoid burdening the United States MSS licensees with a patchwork of different requirements.<sup>49</sup>

The Commission concluded that it would revisit this issue “if the MSS industry develops into a commercial mobile telephone service similar to cellular and broadband PCS, and still does not provide reliable public safety access to MSS customers.”<sup>50</sup> Several other parties agree that there is no basis in this proceeding for the Commission to revisit the decision of the Commission in the E911 Report and Order.<sup>51</sup>

Iridium, operator of the only Big LEO MSS system deployed, does not provide, by itself, a commercial mobile public telephone service like cellular or PCS. Moreover, while other MSS systems will be launched in the coming years, it will be many years beyond that before the MSS industry will develop into a cellular-like service as envisioned by the Commission. In this regard, AMSC states that it cannot implement ALI or ANI over its system, and to modify its earth station and switches, as well as its mobile terminals, would cost hundreds of millions of dollars.<sup>52</sup> For its part, Comsat correctly notes that it has taken decades to

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<sup>48</sup> Id. at ¶ 87. See also Teledesic Comments at 11-12.

<sup>49</sup> Id. at ¶ 87.

<sup>50</sup> Id. at ¶ 89.

<sup>51</sup> See Globalstar Comments at 27; Satellite Industry Association Comments at 3-5.

<sup>52</sup> See AMSC Comments at 16-17. Comsat notes the cost impact any requirement for E911 would have on spacecraft, terminal manufacturers and users, stating that “The Commission should make certain that the costs of any [E911 deployment] requirements are

(Continued ...)

implement the U.S. terrestrial system and there is still no unified national system for E911.

Motorola urges the Commission to resolve any questions concerning MSS E911 only when MSS has reached the level of development of cellular and PCS. In any event, Motorola agrees with Comsat's conclusion that it is inappropriate to impose an E911 requirement on GMPCS (or MSS or FSS) systems "without a great deal more study and analysis."<sup>53</sup>

Accordingly, the Commission should not impose any E911 requirement at this time on MSS systems.

## **V. CONCLUSION**

For the reasons set out above, in Motorola's initial comments, the Commission should adhere to its proposals for implementation of the GMPCS MoU and related technical requirements, with the modifications proposed by Motorola.

Further, the majority of commenters support Motorola's position that the Commission must not adopt an E911 requirement on MSS systems at this time because current

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warranted by the expected benefit." Comsat Comments at 15. See also ICO Comments at 6-7 ("Specific FCC [E911] requirements will only burden GMPCS providers unnecessarily and may ultimately not be technically achievable by, or legally appropriate for, all GMPCS providers.")

<sup>53</sup> See Comsat Comments at 14. Comsat would leave the matter of providing E911 and position locating services "on a voluntary basis." Id. at 12.

and foreseeable satellite technologies do not support a consistent standard of geolocation capability.

Respectfully submitted,

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