

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, approves the release of a draft Executive Branch proposal for WRC-12 agenda item 1.7 (aeronautical mobile-satellite and mobile-satellite services). NTIA proposes modification Resolution 222 (Rev. WRC-07).

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(Original Signed August 12, 2010)

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.7: *to consider the results of ITU-R studies in accordance with Resolution 222 (Rev.WRC-07) in order to ensure long-term spectrum availability and access to spectrum necessary to meet requirements for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz*

Background Information: Prior to the 1997 World Radiocommunication Conference (WRC-97), the Radio Regulations contained an exclusive allocation to the aeronautical mobile-satellite (R) service (AMS(R)S) for the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space). To allow flexibility in frequency coordination and to achieve spectrum efficiency, WRC-97 changed this into a generic mobile-satellite service (MSS) allocation subject to the provision RR No. 5.357A. With this footnote, WRC-97 intended to provide priority access to the spectrum by the AMS(R)S.¹

WRC-2000 adopted Resolution 222 (WRC-2000) resolving that, in frequency coordination of MSS systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for AMS(R)S communications within priority categories 1 to 6 of Article 44 is accommodated. WRC-07 revised Resolution 222 inviting ITU-R to carry out a number of additional studies towards ensuring long term spectrum availability for AMS(R)S.

In coordinating MSS systems under the procedure of Article 9, the notifying administrations for MSS systems in the above bands have adopted two multilateral Memoranda of Understanding (MoU) to facilitate the coordination process: one MoU involves the administrations providing MSS over North America and a second MoU involves administrations providing MSS over ITU Regions 1 and 3. Usually on an annual basis under these MoUs, Operator Review Meetings (ORM) coordinate and review assignments across the bands 1 525-1 559/1 626.5-1 660.5 MHz so as to ensure fair and efficient use of the radio spectrum.

In the CPM Report, one administration stated that in the framework of one multilateral meeting (MLM)/operator's review meeting (ORM) group (Regions 1 and 3) no more than 76 % of the spectrum requested by that operator was made available and, when then considering the additional constraints on spectrum reuse due to the other operators in Region 2, the overall resulting spectrum freely accessible for that AMS(R)S network was less than 50 % of the requested amount. Therefore, the CPM report indicates that some

¹ For AMS(R)S priority access to the sub-bands 1 555-1 559 MHz and 1 656.5-1 660.5 MHz, see also RR No. 5.362A.

administrations believe that the current provisions of Resolution **222 (Rev.WRC-07)** have not achieved the objectives of No. **5.357A**.

To ensure long-term availability of AMS(R)S, this proposal puts forth “no change” to Article **5**; however, it modifies Resolution **222 (WRC-07)**. The proposed modifications to the resolution include inviting ITU-R to study and develop a recommendation on a method to determine spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article **44** for use during coordination discussions. The modifications also include an annex to the resolution to describe the procedures that administrations can utilize during coordination discussions to accommodate priority access to AMS(R)S spectrum in the bands that are under the provisions of No. **5.357A**.

Proposal:

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

NOC USA/AI 1.7/1

1 525-1 610 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	1 525-1 530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	

1 535-1 559	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341 5.362B 5.362C

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

NOC USA/AI 1.7/2

1 610-1 660 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B	1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space)	1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite

5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	Mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	(Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

NOC USA/AI 1.7/3

1 660-1 710 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	
1 660.5-1 668	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
1 668-1 668.4	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
1 668.4-1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	
1 670-1 675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	
1 675-1 690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	

1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL- SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381
1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	1 700-1 710 FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

MOD USA/AI 1.7/4

5.357A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-2012), shall apply.) (WRC-2012)

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 This Resolution was revised by WRC-07.¶

Reasons: Additional provisions are necessary in Resolution 222 to ensure priority access by the AMS(R)S to spectrum under the provisions of No. 5.357A.

NOC USA/AI 1.7/5

5.362A

Reasons: For the bands covered by agenda item 1.7, the 1 555-1 559 MHz and 1 656.5-1 660.5 MHz bands with the 2 x 10 MHz in No. 5.357A are sufficient to accommodate AMS(R)S operations inside the United States. No additional spectrum is required to satisfy this agenda item.

MOD USA/AI 1.7/6

MOD

RESOLUTION 222 (Rev.WRC-12)

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Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service

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The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;
- b) that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;
- c) that WRC-97 adopted No. 5.353A giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. 5.357A giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article 44 in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz;
- d) that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

further considering

- a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;
- b) that, in these bands, geostationary mobile-satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;
- c) that spectrum requirements for MSS networks, including the GMDSS and AMS(R)S, are currently accommodated through the capacity-planning approach and that, in the bands to which Nos. 5.353A or 5.357A apply, this approach, and other methods

may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that Report ITU-R M.2073 has concluded that prioritization and inter-system pre-emption between different mobile-satellite systems is not practical and, without a significant advance in technology, is unlikely to be feasible for technical, operational and economical reasons;

e) that there is existing and increasing demand for spectrum for AMS(R)S and non-AMS(R)S by several mobile satellite systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz;

f) that future requirements for GMDSS spectrum may require additional allocations,

recognizing

a) that absolute priority to all telecommunications concerning safety of life at sea, on land, in air or in outer space is given by No. 191 of the ITU Constitution;

b) that the International Civil Aviation Organization (ICAO) has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article 44;

d) that Table 15-2 of Appendix 15 identifies the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes;

e) that any administration having difficulty in applying the procedures of Articles 9 and 11 with respect to No. 5.357A and this Resolution may at any time request assistance of the Radiocommunication Bureau and the Board under the relevant provisions of the Radio Regulations, including Article 7, the relevant provisions of Articles 9 and 11, as well as Articles 13 and 14.

noting

that there is a need to use spectrum in the most efficient manner within and among MSS systems,

resolves

1 that, in frequency coordination of MSS in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, the notifying administrations of mobile-satellite networks shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated in Articles 32 and 33, in the bands where No. 5.353A applies, and for AMS(R)S communications within priority categories 1 to 6 of Article 44 in the bands where No. 5.357A applies, is met;

2 that the notifying administrations of mobile-satellite networks shall ensure the use of the latest technical advances in mobile-satellite systems, in order to achieve the most flexible, efficient and practical use of the generic MSS allocations; 3 that the notifying administrations of mobile-satellite networks shall ensure that, if spectrum requirements of an MSS, including AMS(R)S, network decrease relative to the requirements presented at the previous coordination meeting, the corresponding unused spectrum resources shall be released to facilitate efficient use of spectrum;

4 that the notifying administrations of mobile-satellite networks shall ensure that MSS operators carrying non-safety-related traffic yield capacity, as and when necessary,

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to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles 32 and 33, and for AMS(R)S communications within priority categories 1 to 6 of Article 44; this could be achieved in advance through the coordination process in *resolves 1* and the procedures contained in the Annex to this Resolution shall apply.

invites ITU-R

1. to conduct studies on and develop in one or more ITU-R Recommendations a methodology to compute spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article 44 by 2016 to support discussions between notifying administrations;
2. to take into account *further considering c* in conducting the studies of *invites ITU-R 1*;

ANNEX TO RESOLUTION 222 (Rev.WRC-12)

Procedures to implement No. 5.357A and Resolution 222 (Rev. WRC-12) within the Coordination Process

- 1) The notifying administrations of planned MSS, including AMS(R)S networks, submit the required technical characteristics and other relevant information of their MSS networks in accordance with Appendix 4. Coordination of these MSS systems with other affected satellite systems operating in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz proceeds in accordance with Articles 9 and 11 and other relevant provisions of the Radio Regulations, as appropriate.
- 2) To further facilitate coordination under Articles 9 and 11, the notifying administrations of MSS, including AMS(R)S, networks may authorize their respective MSS satellite operators, including AMS(R)S satellite operators, to enter into bilateral and multilateral coordination processes to secure operator agreements on access to spectrum for their satellite systems.
- 3) At frequency coordination meetings, including operator meetings referred to in 2), the notifying administration or its respective MSS satellite operator presents the spectrum requirements of each AMS(R)S system according to an agreed method and accompanied with the information justifying such requirements. The other notifying administrations or their respective MSS satellite operators then validate the requirements under agreed criteria. In accordance with No. 5.357A the notifying administrations ensure that their coordination agreement accommodates all validated AMS(R)S spectrum requirements with priority categories 1 to 6 of Article 44.
- 4) The notifying administrations of MSS systems, including AMS(R)S, have responsibility to ensure that their respective assignments are compatible in the relevant bilateral or multilateral frequency coordination meetings (in particular when those systems span over various geographic area(s)). In the event an administration notifying an AMS(R)S system experiences difficulty in accommodating its validated AMS(R)S spectrum requirements at these meetings, it may invoke No. 5.357A (as per the procedures described in Items 5, 6 and 7 below).
- 5) In the event that a notifying AMS(R)S administration invokes No. 5.357A based on the results of a bilateral or multilateral coordination operators' meeting, that administration shall ensure that its designated operator does not accept the spectrum

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Deleted: to conduct, in time for consideration by WRC-11, the appropriate technical, operational and regulatory studies to ensure long-term spectrum availability for the aeronautical mobile-satellite (R) service (AMS(R)S) including:¶

i) . to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;¶

ii) . to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. 5.357A while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;¶

iii) . to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves 1* or the means considered in Report ITU-R M.2073, in order to ensure adequate access to spectrum to ... [1]

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sharing arrangement developed at the operators' meeting as acceptance indicates that the agreement satisfies requirements presented. That AMS(R)S administration informs the other administrations involved in the coordination process of its intention to invoke No. 5.357A, and informs the Radiocommunication Bureau that its AMS(R)S requirements have not been satisfied. The concerned AMS(R)S administration then calls for an administrations' frequency coordination meeting of all affected notifying administrations, to be convened within six months. That notifying AMS(R)S administration may seek the assistance of the Radiocommunication Bureau in accordance with Articles 7 and 13, if any of the affected notifying administrations do not agree to meet to resolve the raised issues.

6) At the administrations' frequency coordination meeting, all affected notifying administrations review and validate the AMS(R)S requirements of the notifying administration referred to in 5) above. All affected notifying administrations work toward accommodating any validated AMS(R)S requirements in accordance with No. 5.357A and Resolution 222 (Rev.WRC-12).

7) If the matter remains unresolved at the administrations' frequency coordination meeting referred to in 6) above, the notifying AMS(R)S administration may seek the assistance of the Radiocommunication Bureau pursuant to Articles 7 and 13 and notify the respective administrations. The Radiocommunication Bureau provides a report and assistance in accordance with No. 13.3.

8) To facilitate the users' long term planning, each MSS operator providing AMS(R)S service or its notifying administration may decide to disclose within the above coordination procedure information regarding its coordinated AMS(R)S spectrum resource (e.g. to AMS(R)S users of such service).

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Reasons: Additional provisions are necessary in Resolution 222 to ensure priority access by the AMS(R)S to spectrum under the provisions of No. 5.357A.

to conduct, in time for consideration by WRC-11, the appropriate technical, operational and regulatory studies to ensure long-term spectrum availability for the aeronautical mobile-satellite (R) service (AMS(R)S) including:

- i) to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;
- ii) to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. **5.357A** while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;
- iii) to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves* 1 or the means considered in Report ITU-R M.2073, in order to ensure adequate access to spectrum to accommodate the AMS(R)S requirements as referenced in *resolves* 3 above, while taking into account the latest technical advances in order to maximize spectral efficiency;
- iv) if the assessment identified in *invites ITU-R* i) and ii) indicates that these requirements cannot be met, to study existing MSS allocations or possible new allocations only for satisfying the requirements of the aeronautical mobile satellite (R) service for communications with priority categories 1 to 6 of Article **44**, for global and seamless operation of civil aviation taking into account the need to avoid undue constraints on existing systems and other services,

invites WRC-11

to consider the results of the above ITU-R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz,

invites

the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above.