

**PROPOSED EDITS TO NTIA DRAFT PROPOSAL ON WRC-15 AI 1.1
(REF. WAC/109(20.05.15))**

With Respect to 1 375- 1 400 and 1 427-1 452 MHz

IWG-2 members were not able to reach consensus on a proposal for WRC-15 agenda item 1.1 regarding IMT stations operating in the adjacent band(s) to Earth exploration-satellite service (1400-1427 MHz) and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by Aerospace and Flight Test Radio Coordinating Council, Aviation Spectrum Resources, Inc., New Wave Spectrum Partners LLC, The Boeing Company, and Lockheed Martin Corporation.

View B is supported by Alcatel-Lucent, AT&T, Ericsson, Intel Corporation, Motorola Mobility, Nokia Solutions and Networks, Samsung, Sprint Corporation, Telecommunications Management Group Inc. and Verizon.

VIEW A

VIEW A: View A supporting the Federal Agency proposal (WAC 109) for mandatory limits on IMT unwanted emissions to protect passive earth exploration satellite service (“EESS”) systems operating in 1400-1427 MHz immediately adjacent to bands occupied by IMT systems

WAC members setting forth this view (View A) carefully considered the necessary protection for EESS in the 1400-1427 MHz band. As a result the members noted below support NTIA’s proposal (WAC Doc. 109)¹ as the advice the WAC should provide to the FCC in its reconciliation process with NTIA. WAC members Aerospace and Flight Test Radio Coordinating Council, Aviation Spectrum Resources, Inc., New Wave Spectrum Partners LLC, Lockheed Martin Corp., and The Boeing Company support this view. The reasons are as follows.

First. The NTIA proposal is based on Report ITU-R RS.2336 which provides the maximum unwanted emissions from IMT operations in the adjacent band into the 1400-1427 MHz band. After completion of sharing studies by the Joint Task Group, this Report was approved jointly by Study Group 7 and Study Group 5 without qualification. The NTIA proposal, if adopted as the U.S. proposal, would align the U.S. with the CITEI IAP and a similar proposal within Europe to protect EESS as against identification of IMT above 1427 MHz. Within the Americas Region, and as of the Medellin meeting of PCC.II, nine CITEI administrations had signed on to the IAP that proposes mandatory limits as given in Report ITU-R RS.2336 for protecting the EESS band; two other administrations had signaled their intention to support such limits (*see* PCC. II Doc. 3818). U.S. failure to support this emerging international consensus would create a discordant and distracting issue for the U.S. as it seeks to forge as much comity as possible in aid of its principal objectives for the Conference. While the U.S. has indicated that the band 1427-1518 MHz will not be used for IMT within the U.S., there are existing U.S. EESS (passive) assets that could suffer harmful interference from IMT systems deployed in other countries if such limits are not adopted on a mandatory basis.

Second. At present, only six administrations have signed on to the IAP proposing No Change to RR **5.343** (PCC. II Doc. 3817). Preserving RR **5.343** unchanged is a priority for the Aeronautical Mobile Telemetry (AMT) community. Aerospace companies and their association, AFTRCC, are concerned that, if the U.S. is perceived as not supporting the limits in Report ITU-R RS. 2336, either outright or by relegating them to mere recommended limits only, it could inadvertently provide a reason for other administrations not to support, or continue to support, No Change to RR **5.343** at the final CITEI PCC.II meeting in Ottawa. In other words, we are concerned that, if the U.S. were to propose to CITEI that the IAP be changed from mandatory limits to recommended limits as suggested by View B, support for the NOC on RR **5.343** could be put at significant risk.

¹ WAC members supporting View A offer some editorial revisions to the NTIA proposal contained in WAC Doc. 109 as shown in the Attachment to View A, while fully retaining and supporting the mandatory limits included therein.

Third. The U.S. aerospace industry has an important stake in protecting the interests of its satellite customers around the world. U.S. companies have built major components of the earth sensing satellites operating in the 1400-1427 MHz band, which satellites were launched either by the U.S. or by other administrations. Failure to support the NTIA proposed limits, affirmed by the international community in the form of ITU-R Report RS. 2336, would be inconsistent with U.S. aerospace interests in the intense global competition with foreign suppliers.

Proponents of View B do not argue that EESS satellites are not particularly sensitive to harmful interference. Nor do they argue that IMT systems will not be characterized by dense deployments.

Rather, View B argues that the values in Report ITU-R RS. 2336 should be open to question because they would become mandatory in application of the Radio Regulations; that is, approval of an ITU-R Report is not an *a priori* indication of the technical credibility of the material contained therein nor its value to serve as a basis for international coordination of radio services (page 2). This argument proves far too much: By this standard, all Reports would be open to endless second-guessing -- including the very Reports that the IMT community relied upon to secure Agenda Item 1.1 in the first place.

Moreover, it is common practice for ITU-R Reports to be used as the basis for provisions in the Radio Regulations. Many decisions to be taken at WRC-15 will be reflected in the Radio Regulations, and those decisions will be based upon the studies and Reports that the JTG developed and that were then approved jointly by SG-5 and either SG-4, 6 or 7. Report ITU-R RS. 2336 is no exception to this.

View B also questions the wisdom of the U.S. making a proposal at odds with current FCC Rules for mobile system unwanted emissions. But here again, the argument is groundless: It is commonplace for the U.S. to make proposals which are not aligned with its current domestic rules. One need look no further than Agenda Item 1.1 to see that the U.S. has made proposals for re-allocation of bands and/or identification in ways which are not consistent with the current U.S. allocation table, e.g. 470-698 MHz and 3400-3700 MHz. Such inconsistencies are routinely dealt with post-Conference by means of rulemakings aligning the Commission's Rules with the results of the Conference. *See, e.g., Report and Order, Order, and Notice of Proposed Rulemaking* in ET Docket No. 12-338, FCC 15-50, released April 27, 2015 (effecting changes in numerous FCC Rules to align with decisions taken at WRC-07).

View B proponents also maintain that the deployment scenario assumed in Report ITU-R RS. 2336 conflicts with IMT deployments envisioned in the U.S.; i.e. that U.S. deployments assume on the order of 693 base stations in a 50 km radius, or half the 18 eNodeB stations assumed for deployments in and around Paris by the Report.

Whether IMT systems operating or deployed in the United States are consistent with the values set forth in the Report, is beside the point. EESS satellites are not subject to interference from just one administration, like the United States. Due to their wide field of view, the satellites

will be subject to interference from numerous administrations, and a multitude of operating IMT systems, at any given time. It is not surprising, then, that the IMT community's challenge to the basis for the density assumption at Study Group 5 (along with other points concerning the draft Report, Doc. SG5/157), did not receive the support of a single administration; rather, the Report was approved without a dissenting administration.

Beyond this, there also appear to be issues with the above technical assertions offered in support of View B. No basis has been discerned for the statement regarding 693 base stations in a 50 km radius; given the large size of the Paris metropolitan area and its corresponding population, the base station deployment assumed in Report ITU-R RS.2336 is eminently reasonable.

Finally, to treat the limits as merely recommendations, or utilize the generic mobile values in the table, would be pointless. As noted above, EESS satellites are by their nature international. In an environment characterized by tens of thousands, if not millions, of potentially interfering devices, with no one administration able to enforce compliance, it is hard to see how recommended limits, much less generic mobile limits, could provide the requisite protection.

**ATTACHMENT TO VIEW A:
Suggested Revisions to Proposal in Document WAC 109**

Draft

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.1

1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**;

Background Information: NASA operates Earth exploration-satellite service (passive) sensors in the 1 400-1 427 MHz band. ~~The NASA's~~ Aquarius passive sensor is currently flying on ~~the an~~ Argentinian satellite, SAC-D. NASA recently launched the Soil Moisture Active Passive (SMAP) satellite, which will begin operations in the near future. SMAP carries a passive sensor that operates across the 1 400-1 427 MHz band. Joint Task Group 4-5-6-7 completed compatibility studies regarding IMT in the 1375-1400 MHz and 1427-1452 MHz frequency bands and EESS (passive) in the adjacent 1 400-1 427 MHz frequency band that are contained in Report ITU-R RS.2336 jointly approved by ITU-R Study Group 7 and Study Group 5. Among other things, the JTG considered that the density of IMT deployment was a factor distinguishing IMT from traditional mobile systems covered by Res. 750 (Rev. WRC-12) and studied before WRC-07. The ~~draft~~-CPM Report provides the following text regarding the summary of studies on unwanted emissions in the 1 400-1 427 MHz band:

~~“Draft new Report ITU-R RS.[EESS-IMT-1.4 GHz] (now Report ITU-R RS.2336)~~ shows that, in order to protect EESS (passive) systems, the unwanted emission level of –60 dBW/27 MHz as

currently recommended in Resolution **750 (Rev. WRC-12)** is not sufficient and that the following levels of unwanted emissions in the 1 400-1 427 MHz frequency band are required:

For base stations:

- –80 dBW/27 MHz in the case both 1 375-1 400 MHz and 1 427-1 452 MHz frequency bands are considered to be used simultaneously by IMT systems;
- –75 dBW/27 MHz in the case only one of the 1 375-1 400 MHz or 1 427-1 452 MHz frequency bands is to be considered for IMT systems.

For user equipment:

- –65 dBW/27 MHz (This value is derived under the assumption that one UE is transmitting at an average output power of 15 dBm (over all resource blocks (RB)) per sector. It would therefore have to be verified consistently according to these conditions.)”

To protect U.S. spaceborne assets operating in the 1 400-1 427 MHz band from potential harmful interference by IMT operations in the adjacent 1 427-1 518 MHz band, these OOB limits are required for IMT and need to be made mandatory in the Radio Regulations. The US proposes updating Tables 1-1 and 1-2 in Resolution 750 (Rev. WRC-12), with the appropriate IMT OOB limits along with the existing mobile service OOB limits.

Proposal:

MOD USA/1.1/1

RESOLUTION 750 (REV.WRC-15)

Compatibility between the Earth exploration-satellite service (passive) and relevant active services

...

TABLE 1-1

EESS (passive) band	Active service band	Active service	Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band ¹
<u>1 400 – 1427 MHz</u>	<u>1 427 – 1452 MHz</u>	<u>Mobile</u>	<u>For IMT base stations:</u> <u>-75 dBW/27 MHz</u> <u>{Editor’s note: This may have to be revised if both bands around 1400 – 1427 MHz are used for IMT.}</u> <u>For IMT user equipment:</u> <u>-65dBW/27 MHz</u>

23.6-24.0 GHz	22.55-23.55 GHz	Inter-satellite	-36 dBW in any 200 MHz of the EESS (passive) band for non-geostationary (non-GSO) inter-satellite service (ISS) systems for which complete advance publication information is received by the Bureau before 1 January 2020, and -46 dBW in any 200 MHz of the EESS (passive) band for non-GSO ISS systems for which complete advance publication information is received by the Bureau on or after 1 January 2020
31.3-31.5 GHz	31-31.3 GHz	Fixed (excluding HAPS)	For stations brought into use after 1 January 2012: -38 dBW in any 100 MHz of the EESS (passive) band. This limit does not apply to stations that have been authorized prior to 1 January 2012
50.2-50.4 GHz	49.7-50.2 GHz	Fixed-satellite (E-to-s) ²	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
50.2-50.4 GHz	50.4-50.9 GHz	Fixed-satellite (E-to-s) ²	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
52.6-54.25 GHz	51.4-52.6 GHz	Fixed	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -33 dBW in any 100 MHz of the EESS (passive) band

¹ The unwanted emission power level is the level measured at the antenna port.

² The limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

TABLE 1-2

EESS (passive) band	Active service band	Active service	Recommended maximum level of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band¹
1 400-1 427 MHz	1 350-1 400 MHz	Radiolocation ²	-29 dBW in the 27 MHz of the EESS (passive) band
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
		Mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except transportable radio-relay stations -45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations

	1 427-1 429 MHz	Space operation (E-to-s)	-36 dBW in the 27 MHz of the EESS (passive) band
	1 427-1 429 MHz	Mobile except aeronautical mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except IMT stations and transportable radio-relay stations ³ -45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
	1 429-1 452 MHz	Mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except IMT stations and transportable radio-relay stations ³ -45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations -28 dBW in the 27 MHz of the EESS (passive) band for aeronautical telemetry stations ⁴
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
31.3-31.5 GHz	30.0-31.0 GHz	Fixed-satellite (E-to-s) ⁵	-9 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 56 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 56 dBi
86-92 GHz ⁶	81-86 GHz	Fixed	-41 - 14(f - 86) dBW/100 MHz for 86.05 ≤ f ≤ 87 GHz -55 dBW/100 MHz for 87 ≤ f ≤ 91.95 GHz where f is the centre frequency of the 100 MHz reference bandwidth expressed in GHz
	92-94 GHz	Fixed	-41 - 14(92 - f) dBW/100 MHz for 91 ≤ f ≤ 91.95 GHz -55 dBW/100 MHz for 86.05 ≤ f ≤ 91 GHz where f is the centre frequency of the 100 MHz reference bandwidth expressed in GHz

¹ The unwanted emission power level is the level measured at the antenna port.

² The mean power is to be understood here as the total power measured at the antenna port (or an equivalent thereof) in the band 1 400-1 427 MHz, averaged over a period of the order of 5 s.

³ Stations of the mobile service for cellular systems, including those complying with Recommendation ITU-R M.1457 or IMT standards, are likely to meet this unwanted emission power level.

⁴ The band 1 429-1 435 MHz is also allocated to the aeronautical mobile service in eight Region 1 administrations on a primary basis exclusively for the purposes of aeronautical telemetry within their national territory (No. **5.342**).

⁵ The recommended maximum levels apply under clear-sky conditions. During fading conditions, these levels

may be exceeded by earth stations when using uplink power control.

⁶ Other maximum unwanted emission levels may be developed based on different scenarios provided in Report ITU-R F.2239 for the band 86-92 GHz.

Reasons: Appropriate unwanted emission limits are required to protect EESS passive systems operating in the band 1 400-1 427 MHz from IMT stations operating in the adjacent band.

~~Canada is currently assessing the impact of the new limits. As such, in the proposal above, the unwanted emission limits contained in Report ITU-R RS-2336 are shown in square brackets.~~

MOD USA/1.1/2

5.338A In the bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC-15)** applies. (WRC-~~1215~~)

[NOTE: consequential changes to the Table of Allocations will also be required.]

Reasons: The changes to the references in No. 5.338A are consequential to the revision of Resolution **750**.

VIEW B

VIEW B: [Brief Description]

The proponents of View B are of the view that the Commission should not support changes to Resolution **750 (rev. WRC-12)** as proposed by the NTIA position given in WAC/109, unless it has addressed the issues put forward below and is satisfied that the basis for the WAC/109 proposal is consistent with the Commissions' rules and consistent with the deployment characteristics of LTE systems operating in the United States. However, if the FCC decides to pursue changes to WRC Resolution 750, the proponents of View B have provided revisions in Attachment B with the recommendation that any values more stringent than the existing values should remain in Table 1-2. Alternately, the existing values of -60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations could be implemented in Table 1-1.

View B is supported by Alcatel-Lucent, AT&T, Ericsson, Intel Corporation, Motorola Mobility, Nokia Solutions and Networks, Samsung, Sprint Corporation, Telecommunications Management Group Inc. and Verizon.

Background Information:

Resolution **750 (Rev. WRC-12)** addresses "Compatibility between the Earth exploration-satellite service (passive) and relevant active services": it includes Table 1-1 with mandatory out of band emission (OOBE) limits and Table 1-2 with recommended OOBE limits. Document WAC/109 proposes revisions to Tables 1-1 and 1-2 in Resolution **750 (Rev. WRC-12)**. In particular, it proposes new values for out of band emission (OOBE) limits for IMT systems only and would make them mandatory in the Radio Regulations. The existing values for OOBE limits for other mobile services would remain recommended values. Resolution **750 (Rev. WRC-12)** is listed in the ITU Radio Regulations, Volume 3.

The proposal in WAC/109 is based upon a study undertaken by the ITU-R Joint Task Group 4-5-6-7 (JTG 4-5-6-7) and approved as Report RS.2336 by ITU-R Study Groups 5 and 7. The report addresses the compatibility between IMT systems in the frequency bands 1 375-1 400 MHz and 1 427-1 452 MHz and EESS (passive) systems in the 1 400-1 427 MHz frequency band.

This study should not be used as the basis for mandatory limits being placed on IMT equipment, which is what the proposal in WAC/109 does. It is a huge step to incorporate the results of an ITU-R report into the Radio Regulations. An ITU-R report is (as described in ITU-R Resolution 1-6) "A technical, operational or procedural statement, prepared by a Study Group on a given subject related to a current Question or the results of studies referred to in § 3.3." This is in contrast to a recommendation that is defined (again as in ITU-R Resolution 1-6) as "An answer to a Question, part(s) of a Question or topics referred to in § 3.3, which, within the scope of existing knowledge, research and available information, normally provides recommended specifications, requirements, data or guidance for recommended ways of undertaking a specified task; or recommended procedures for a specified application, and which is considered to be sufficient to serve as a basis for international cooperation in a given context in the field of radiocommunications."

Approval of a report is not an *a priori* indication of the technical credibility of the material contained within the report nor its value to serve as a basis for international coordination of radio services. There are no criteria for the approval of a ITU-R report other than it is done so by the responsible SG or SGs in the case of a study involving two or more SGs such as a sharing or compatibility study that involves services whose responsibilities fall under different SGs (as is the case here).

The View B proponents note the values of the proposed OOB limits given in WAC/109 do not appear to be consistent with the Commissions’ rules relating to equipment OOB limits. The View B proponents request the Commission address this issue and if found to be the case, consider the appropriateness of the United States putting forward a proposal to WRC-15 at this time that is counter to the FCC’s own rules.

- Proposed new values given in WAC/109 for inclusion in Table 1-1 of Resolution 750 (WRC-12) and are intended to be mandatory are:

TABLE 1-1

EESS (passive) band	Active service band	Active service	Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band¹
1 400 – 1427 MHz	1 427 – 1452 MHz	Mobile	<p>For IMT base stations: -75 dBW/27 MHz {Editor’s note: This may have to be revised if both bands around 1400 – 1427 MHz are used for IMT.}</p> <p>For IMT user equipment: -65dBW/27 MHz</p>

The View B proponents are also of the view that the network deployment and the power levels for the IMT equipment used in the Report RS.2336 study are not representative of how IMT/LTE networks operate or are deployed in the United States and should not be the basis for a United States proposal to modify the Radio Regulations at WRC-15. The View B proponents request the Commission verify whether the values used in the Report RS.2336 study are consistent or not with how LTE systems operate in the United States.

- The resultant values determined for the proposed OOB values given in the table above are taken directly from Report RS.2336. These results are critically dependent upon the assumptions made regarding the deployment and power levels for LTE UE and base stations transmissions of the IMT/LTE network used in Report RS.2336.
- The Report RS.2336 study assumed 18 LTE sites per 100 square kilometers. Typical maximum values for LTE site density in North America are in the range 7-9 sites per 100 square kilometers in a 50 km area surrounding major markets and 1-2 sites per 100 square kilometers in a 50 km area surrounding minor markets in the United States.
- It is noted that AT&T Inc, Nokia Corporation, Nokia Solutions and Networks Oy, Sprint Corporation, Telefon AB – LM Ericsson, Telefónica SA, TeliaSonera AB, and Telstra Corporation submitted an input document to the ITU-R Study Group 5 meeting in

November 2014 taking issue with the IMT deployment values used in the Report RS.2336 study.

Finally, we note that the Canadian proposal to CITELE PCC II retained the proposed values in square brackets as they further study the issue. The proposed values in WAC/109 could have a substantial impact on IMT deployments in 1427-1518 MHz. In countries which already utilize the band in paired operation, the result would likely be power reduction which would result in poor network performance, as well as requiring the replacement of all existing user devices. This proposal expresses the “limits of unwanted emission power” in resolution bandwidths of 27 MHz. Considering the proposed limit is for out of band emissions and not spurious levels beyond 250% of the channel bandwidth, this means that the device transmitting at the channel closest to 1427 MHz must fulfill the $-65\text{dBW}/27\text{MHz}$ ($-35\text{dBm}/27\text{MHz}$) immediately outside the channel which means the ACLR requirement would be increased to $23\text{dBm} - (-35\text{dBm}) = -58\text{dBc}$ which is a significant increase to the -30dBc which is currently specified.

Based upon the above, the companies listed above urge FCC to not make any changes to Resolution **750 (rev. WRC-12)**. However, if the FCC decides to pursue changes to WRC Resolution 750, any proposed more stringent values should remain in Table 1-2 as shown in the attachment. Alternately, the existing values (-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations) could be implemented in Table 1-1.

**ATTACHMENT TO VIEW B:
Proposed Revisions to WAC/109**

Draft

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.1

1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**;

Background Information: NASA operates Earth exploration-satellite service (passive) sensors in the 1 400-1 427 MHz band. ~~NASA's~~The Aquarius passive sensor is currently flying on ~~the~~an Argentinian satellite, SAC-D. NASA recently launched the Soil Moisture Active Passive (SMAP) satellite, which will begin operations in the near future. SMAP carries a passive sensor that operates across the 1 400-1 427 MHz band. Joint Task Group 4-5-6-7 completed compatibility studies regarding IMT in the 1374-1400 MHz and 1427-1452 MHz frequency bands and EESS (passive) in the adjacent 1 400-1 427 MHz frequency band that are contained in Report ITU-R RS.2336 jointly approved by ITU-R Study Group 7 and Study Group 5.

~~The draft CPM Report provides the following text regarding the summary of studies on unwanted emissions in the 1 400-1 427 MHz band:~~

~~“Draft new Report ITU-R RS.[EESS-IMT 1.4 GHz] (now Report ITU-R RS.2336) shows that, in order to protect EESS (passive) systems, the unwanted emission level of -60 dBW/27 MHz as currently recommended in Resolution 750 (Rev. WRC-12) is not sufficient and that proposes the following levels of unwanted emissions in the 1 400-1 427 MHz frequency band are required:~~

For base stations:

~~_____~~ –80 dBW/27 MHz in the case both 1 375-1 400 MHz and 1 427-1 452 MHz frequency bands are considered to be used simultaneously by IMT systems;

~~_____~~ –75 dBW/27 MHz in the case only one of the 1 375-1 400 MHz or 1 427-1 452 MHz frequency bands is to be considered for IMT systems.

For user equipment:

~~_____~~ –65 dBW/27 MHz ~~(This value is derived under the assumption that one UE is transmitting at an average output power of 15 dBm (over all resource blocks (RB)) per sector. It would therefore have to be verified consistently according to these conditions.)~~

To protect U.S. spaceborne assets operating in the 1 400-1 427 MHz band from potential harmful interference by IMT operations in the adjacent 1 427-1 518 MHz band, ~~these OOB limits are required for IMT and need to be made mandatory in the Radio Regulations the US proposes to update Table 1-2 in Resolution 750 (Rev. WRC-12), with the appropriate IMT OOB limits along with the existing mobile service OOB limits.~~

Proposal:
MOD USA/1.1/1

RESOLUTION 750 (REV.WRC-15)

Compatibility between the Earth exploration-satellite service (passive) and relevant active services

...

TABLE 1-1

EESS (passive) band	Active service band	Active service	Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band ¹
1 400—1427 MHz	1 427—1452 MHz	Mobile	For IMT base stations: -75 dBW/27 MHz {Editor’s note: This may have to be revised if both bands around 1400—1427 MHz are used for IMT.} For IMT user equipment: -65dBW/27 MHz
23.6-24.0 GHz	22.55-23.55 GHz	Inter-satellite	–36 dBW in any 200 MHz of the EESS (passive) band for non-geostationary (non-GSO) inter-satellite service (ISS) systems for which complete advance publication information is received by the Bureau before 1 January 2020, and –46 dBW in any 200 MHz of the EESS (passive) band for non-GSO ISS systems for which complete advance

			publication information is received by the Bureau on or after 1 January 2020
31.3-31.5 GHz	31-31.3 GHz	Fixed (excluding HAPS)	For stations brought into use after 1 January 2012: -38 dBW in any 100 MHz of the EESS (passive) band. This limit does not apply to stations that have been authorized prior to 1 January 2012
50.2-50.4 GHz	49.7-50.2 GHz	Fixed-satellite (E-to-s) ²	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
50.2-50.4 GHz	50.4-50.9 GHz	Fixed-satellite (E-to-s) ²	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
52.6-54.25 GHz	51.4-52.6 GHz	Fixed	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: -33 dBW in any 100 MHz of the EESS (passive) band

¹ The unwanted emission power level is the level measured at the antenna port.

² The limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

TABLE 1-2

EESS (passive) band	Active service band	Active service	Recommended maximum level of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band ¹
1 400-1 427 MHz	1 350-1 400 MHz	Radiolocation ²	-29 dBW in the 27 MHz of the EESS (passive) band
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
		Mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except transportable radio-relay stations
	-45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations		
	1 427-1 429 MHz	Space operation (E-to-s)	-36 dBW in the 27 MHz of the EESS (passive) band
	<u>1 427 – 1452</u>	<u>Mobile</u>	<u>For IMT base stations:</u>

	<u>MHz</u>		<u>-75 dBW/27 MHz</u> <u>{Editor's note: This may have to be revised if both bands around 1400 – 1427 MHz are used for IMT.}</u> <u>For IMT user equipment:</u> <u>-65dBW/27 MHz</u>
	1 427- 1 429 MHz	Mobile except aeronautical mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except IMT stations and transportable radio-relay stations ³ -45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
	1 429- 1 452 MHz	Mobile	-60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except IMT stations and transportable radio-relay stations ³ -45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations -28 dBW in the 27 MHz of the EESS (passive) band for aeronautical telemetry stations ⁴
		Fixed	-45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
31.3-31.5 GHz	30.0-31.0 GHz	Fixed-satellite (E-to-s) ⁵	-9 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 56 dBi -20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 56 dBi
86-92 GHz ⁶	81-86 GHz	Fixed	-41 – 14($f - 86$) dBW/100 MHz for $86.05 \leq f \leq 87$ GHz -55 dBW/100 MHz for $87 \leq f \leq 91.95$ GHz where f is the centre frequency of the 100 MHz reference bandwidth expressed in GHz
	92-94 GHz	Fixed	-41 – 14($92 - f$) dBW/100 MHz for $91 \leq f \leq 91.95$ GHz -55 dBW/100 MHz for $86.05 \leq f \leq 91$ GHz where f is the centre frequency of the 100 MHz reference bandwidth expressed in GHz

¹ The unwanted emission power level is the level measured at the antenna port.

² The mean power is to be understood here as the total power measured at the antenna port (or an equivalent thereof) in the band 1 400-1 427 MHz, averaged over a period of the order of 5 s.

³ Stations of the mobile service for cellular systems, including those complying with Recommendation ITU-R M.1457 or IMT standards, are likely to meet this unwanted emission power level.

⁴ The band 1 429-1 435 MHz is also allocated to the aeronautical mobile service in eight Region 1 administrations on a primary basis exclusively for the purposes of aeronautical telemetry within their national territory (No. **5.342**).

⁵ The recommended maximum levels apply under clear-sky conditions. During fading conditions, these levels may be exceeded by earth stations when using uplink power control.

⁶ Other maximum unwanted emission levels may be developed based on different scenarios provided in Report ITU-R F.2239 for the band 86-92 GHz.

Reasons: ~~Appropriate To provide~~ unwanted emission limits ~~are required~~ to protect EESS passive systems operating in the band 1 400-1 427 MHz from IMT stations operating in the adjacent band. ~~Canada is currently assessing the impact of the new limits. As such, in the proposal above, the unwanted emission limits contained in Report ITU-R RS-2336 are shown in square brackets.~~

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5.338A In the bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750** (Rev.WRC-15) applies. (WRC-~~12~~15)

[NOTE: consequential changes to the Table of Allocations will also be required.]

Reasons: The changes to the references in No. 5.338A are consequential to the revision of Resolution **750**.
