

**PLENARY MEETING**

**Addendum 2 to  
Document 6236(Add.9)-E  
3 September 2019  
Original: English**

**Member States of the Inter-American Telecommunication Commission (CITEL)**

**PROPOSALS FOR THE WORK OF THE CONFERENCE**

**Agenda item 1.9.2**

1.9 to consider, based on the results of ITU-R studies:

1.9.2 modifications of the Radio Regulations, including new spectrum allocations to the maritime mobile-satellite service (Earth-to-space and space-to-Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125-162.0375 MHz of Appendix 18, to enable a new VHF data exchange system (VDES) satellite component, while ensuring that this component will not degrade the current terrestrial VDES components, applications specific messages (ASM) and AIS operations and not impose any additional constraints on existing services in these and adjacent frequency bands as stated in *recognizing d) and e)* of Resolution 360 (Rev.WRC-15);

**BACKGROUND**

RESOLUTION 360 (REV. WRC-15) “*Consideration of regulatory provisions and spectrum allocations to the maritime mobile-satellite service to enable the satellite component of the VHF Data Exchange System (VDES) and enhanced maritime radiocommunications*”, invites ITU-R to conduct, as a matter of urgency, and in time for WRC-19, sharing and compatibility studies between VDES satellite components and incumbent services in the same and adjacent frequency bands specified in *recognizing d) and e)* to determine potential regulatory actions, including spectrum allocations to the MMSS (Earth-to-space and space-to-Earth) for VDES applications. To this end, the ITU-R has initiated sharing studies between the proposed VDES satellite (VDE-SAT) frequencies and the incumbent services in the same and adjacent bands so that this component does not impose any additional constraints on existing services in these and adjacent frequency bands as stated in *recognizing d) and e)* of Resolution 360 (Rev. WRC-15). The satellite component of the VDES could be beneficial towards enhancing maritime navigation and safety related applications on a global basis.

Traditional maritime communication methods (i.e. voice) have been used for the transfer of the information required to improve the safety of navigation particularly in adverse conditions. More information (such as weather, ice charts, status of aids to navigation, water levels and rapid changes of port status) is required in real-time to improve operational decisions on land and on ship that will lead to safer and more efficient voyages. Shore authorities have also demonstrated interest in

increasing the quantity of information retrieved from ships in real-time (such as voyage information, passenger manifest and pre-arrival reports) in a more efficient way to transmit and process this information as digital information.

As a result of these additional requirements on maritime communications, WRC-15 made regulatory changes to Appendix 18 to facilitate the use of the terrestrial component of VHF Data Exchange system (VDES). These channels may be used by maritime authorities across the world to respond to increased data transfer and improve maritime safety and efficiency in the growing maritime environment.

VDES is an extension of the very successful Automatic Identification System (AIS) used by the maritime community, while protecting the original function of AIS identification, position reporting and tracking.

AIS, designed primarily as a collision avoidance system, and application specific messages (ASM) will continue to operate along with the new VDES channels. VDES is based on robust and efficient digital transmission rates through the aggregation of several 25 kHz channels for increased throughput capacity.

Once vessels have travelled outside the area of terrestrial coverage from shore stations, satellite networks could provide VDES capability to support and enhance safety and navigation. The satellite component of VDES is being further studied for WRC-19 to take into account existing services within and adjacent to the frequency band under consideration.

Under 5.225A, the adjacent frequency band 154-156 MHz includes a primary allocation to the radiolocation service in some countries.

In accordance with Resolution 360 (Rev.WRC-15), the ITU-R has undertaken studies for possible new allocations to the maritime mobile-satellite service (MMSS) (Earth-to-space) and (space-to-Earth), preferably within the frequency bands 156.0125-157.4375 MHz and 160.6125-162.0375 MHz of RR Appendix 18, to support the digital evolution of maritime radio communications.

The results of the sharing and compatibility studies are contained in Recommendation ITU-R M.2092-0 which was developed in the WRC-15 study cycle, and Report ITU-R M.2435-0, which has been developed in this study cycle.

Based on the results of these studies, six methods have been developed to satisfy WRC-19 agenda item 1.9.2. The main differences between the methods are the frequency plan and pfd-mask to be imposed on the MMSS (space-to-Earth) emissions, which are described in Report ITU-R M.2435-0.

Furthermore, the following three frequency plans have been studied in Report ITU-R M.2435-0. Note that only frequency plan alternatives 2 and 3 are used in the CPM methods.

### **Frequency plan alternative 1**

Frequency plan alternative 1 allow for utilization of the channels 24, 84, 25, 85, 26 and 86 of RR Appendix 18 in a shared manner between VDE-TER and VDE-SAT.

- Four channels, 1024, 1084, 1025 and 1085, are shared between ship-to-shore and ship-to-satellite (VDE-SAT uplink) communications.
- Two channels, 1026 and 1086, are exclusively reserved for ship-to-satellite (VDE-SAT uplink) services.
- Four channels, 2024, 2084, 2025 and 2085, are shared among shore-to-ship, ship-to-ship and satellite-to-ship (VDE-SAT downlink) communications.

- Two channels, 2026 and 2086, are exclusively reserved for satellite-to-ship (VDE-SAT downlink) communications and are not used for VDE-TER.

### **Frequency plan alternative 2**

Frequency plan alternative 2 allows for utilization of channels 24, 84, 25 and 85 for VDE-TER, while channels 26 and 86 are identified for VDE-SAT uplink, and are not used for VDE-TER. VDE-SAT uplink is also possible in channels 24, 84, 25 and 85, but the VDE-SAT uplink on these channels should not impose constraints on VDE-TER. Frequencies are identified for VDE-SAT downlink within the frequency range 160.9625 MHz to 161.4875 MHz, which is not channelized in RR Appendix 18.

- Four channels, 1024, 1084, 1025 and 1085, are identified for ship-to-shore communications, but ship-to-satellite (VDE-SAT uplink) may be possible without imposing constraints on ship-to-shore communications.
- Four channels, 2024, 2084, 2025 and 2085, are identified for shore-to-ship and ship-to-ship communications, but ship-to-satellite (VDE-SAT uplink) may be possible without imposing constraints on shore-to-ship and ship-to-ship communications.
- Two channels, 1026 and 2086, are exclusively reserved for ship-to-satellite (VDE-SAT uplink) services.
- Frequencies are identified for satellite-to-ship (VDE-SAT downlink) services within the frequency range 160.9625 MHz to 161.4875 MHz, which is not channelized in RR Appendix 18.

### **Frequency plan alternative 3**

Frequency plan alternative 3 allows for utilization of channels 24, 25 and 84, 85 in a shared manner between VDE-TER and VDE-SAT, while channels 26 and 86 are identified for VDE-SAT.

- Four channels, 1024, 1084, 1025 and 1085, are shared between ship-to-shore, ship-to-ship, shore-to-ship and ship-to-satellite (VDE-SAT uplink) communications.
- Two channels, 1026 and 2086, are identified for ship-to-satellite (VDE-SAT uplink) communications and are not used for VDE-TER.
- Four channels, 2024, 2084, 2025 and 2085, are identified for satellite-to-ship (VDE-SAT downlink) communications, while the shore-to-ship communications may be possible without imposing constraints on satellite-to-ship communications.

The two channels 2026 and 2086, are identified for satellite-to-ship (VDE-SAT downlink) communications, and are not used for VDE-TER communications.

## ARTICLE 5

### **Frequency allocations**

#### **Section IV – Table of Frequency Allocations (See No. 2.1)**

**MOD IAP/6236A9A2/1**

148-161.9375 MHz

Allocation to services		
Region 1	Region 2	Region 3
<del>156.8375-157.1875</del> <del>161.9375</del> FIXED MOBILE except aeronautical mobile 5.226	<del>156.8375-157.1875</del> <del>161.9375</del> FIXED MOBILE 5.226	
<del>156.8375</del> <del>157.1875-</del> <del>161.9375</del> <del>157.3375</del> FIXED MOBILE except aeronautical mobile <a href="#">MARITIME MOBILE-SATELLITE (Earth-to-space)</a> <a href="#">MOD 5.228AA</a> 5.226	<del>156.8375</del> <del>157.1875-</del> <del>161.9375</del> <del>157.3375</del> FIXED MOBILE <a href="#">MARITIME MOBILE-SATELLITE (Earth-to-space)</a> <a href="#">MOD 5.228AA</a> 5.226	
<del>156.8375</del> <del>157.3375-</del> <del>161.9375</del> <del>160.9625</del> FIXED MOBILE except aeronautical mobile 5.226	<del>156.8375</del> <del>157.3375-</del> <del>161.9375</del> <del>160.9625</del> FIXED MOBILE 5.226	
<del>156.8375</del> <del>160.9625-</del> <del>161.9375</del> <del>161.4875</del> FIXED MOBILE except aeronautical mobile <a href="#">MARITIME MOBILE-SATELLITE (space-to-Earth)</a> <a href="#">MOD 5.208A MOD 5.208B</a> <a href="#">ADD 5.A192</a> 5.226	<del>156.8375</del> <del>160.9625-</del> <del>161.9375</del> <del>161.4875</del> FIXED MOBILE <a href="#">MARITIME MOBILE-SATELLITE (space-to-Earth)</a> <a href="#">MOD 5.208A MOD 5.208B</a> <a href="#">ADD 5.A192</a> 5.226	
<del>156.8375</del> <del>161.4875-</del> <del>161.9375</del> <del>161.7875</del> FIXED MOBILE except aeronautical mobile 5.226	<del>156.8375</del> <del>161.4875-</del> <del>161.9375</del> <del>161.7875</del> FIXED MOBILE 5.226	
<del>156.8375</del> <del>161.7875-</del> <del>161.9375</del> FIXED MOBILE except aeronautical mobile <a href="#">MARITIME MOBILE-SATELLITE (Earth-to-space)</a> <a href="#">MOD 5.228AA</a> 5.226	<del>156.8375</del> <del>161.7875-</del> <del>161.9375</del> FIXED MOBILE <a href="#">MARITIME MOBILE-SATELLITE (Earth-to-space)</a> <a href="#">MOD 5.228AA</a> 5.226	

**Reasons:**

**MOD IAP/6236A9A2/2**

**5.228AA** The use of the frequency bands [157.1875-157.3375 MHz](#), [161.7875-161.9375 MHz](#), [161.9375-161.9625 MHz](#) and [161.9875-162.0125 MHz](#) by the maritime mobile-satellite (Earth-to-space) service is limited to the systems which operate in accordance with Appendix 18. (WRC-1519)

**Reasons:**

APPENDIX 5 (REV.WRC-15)

**Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9**

**ADD IAP/6236A9A2/3**

**5.A192** The use of the frequency band 160.9625-161.4875 MHz by the maritime mobile-satellite (space-to-Earth) service is limited to non-GSO satellite systems operating in accordance with the most recent version of Recommendation ITU-R M.2092. Such use is subject to the application of the provisions of No. 9.14. (WRC-19)

**Reasons:**

ARTICLE 5

**Frequency allocations**

**Section IV – Table of Frequency Allocations**  
(See No. 2.1)

**MOD IAP/6236A9A2/4**

**5.208A** In making assignments to space stations in the mobile-satellite service in the bands 137-138 MHz, 387-390 MHz, ~~and~~ 400.15-401 MHz [and in the maritime-mobile satellite service \(space-to-Earth\) in the band 160.9625-161.4875 MHz](#), administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are indicated in the relevant ITU-R Recommendation. (WRC-0719)

**Reasons:**

**MOD IAP/6236A9A2/5**

**5.208B\*** In the frequency bands:  
137-138 MHz,  
[160.9625-161.4875 MHz](#),  
387-390 MHz,  
400.15-401 MHz,  
1 452-1 492 MHz,  
1 525-1 610 MHz,

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\* This provision was previously numbered as No. 5.347A. It was renumbered to preserve the sequential order.

1 613.8-1 626.5 MHz,  
2 655-2 690 MHz,  
21.4-22 GHz,

Resolution 739 (Rev.WRC-195) applies. (WRC-195)

**Reasons:**

**MOD IAP/6236A9A2/6**

**APPENDIX 18 (REV.WRC-15)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
24	w), <del>www</del> , x), xx)	157.200	161.800		x	x	x
1024	w), <del>www</del> , x), xx) <u>aaa</u>	157.200	<u>157.200</u>				
2024	w), <del>www</del> , x), xx) <u>aaa</u>	161.800	161.800	x (digital only)			
84	w), <del>www</del> , x), xx)	157.225	161.825		x	x	x
1084	w), <del>www</del> , x), xx) <u>aaa</u>	157.225	<u>157.225</u>				
2084	w), <del>www</del> , x), xx) <u>aaa</u>	161.825	161.825	x (digital only)			
25	w), <del>www</del> , x), xx)	157.250	161.850		x	x	x
1025	w), <del>www</del> , x), xx) <u>aaa</u>	157.250	<u>157.250</u>				
2025	w), <del>www</del> , x), xx) <u>aaa</u>	161.850	161.850	x (digital only)			
85	w), <del>www</del> , x), xx)	157.275	161.875		x	x	x
1085	w), <del>www</del> , x), xx) <u>aaa</u>	157.275	<u>157.275</u>				
2085	w), <del>www</del> , x), xx) <u>aaa</u>	161.875	161.875	x (digital only)			

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
26	w), <del>ww)</del> , x)	157.300	161.900		x	x	x
1026	w), <del>ww)</del> , x), <u>aaa)</u>	157.300					
2026	w), <del>ww)</del> , x), <u>aaa)</u>		161.900				
86	w), <del>ww)</del> , x)	157.325	161.925		x	x	x
1086	w), <del>ww)</del> , x), <u>aaa)</u>	157.325					
2086	w), <del>ww)</del> , x), <u>aaa)</u>		161.925				
27	z), <del>zz)</del>	157.350	161.950			x	x
1027	<del>z)</del> , zz)	157.350	157.350		x		
2027*	z)	161.950	161.950				
87	<del>z)</del> , zz)	157.375	157.375		x		
28	z), <del>zz)</del>	157.400	162.000			x	x
1028	<del>z)</del> , zz)	157.400	157.400		x		
2028*	z)	162.000	162.000				
88	<del>z)</del> , zz)	157.425	157.425		x		
AIS 1	f), l), p)	161.975	161.975				
AIS 2	f), l), p)	162.025	162.025				

\* From 1 January 2019, channel 2027 will be designated ASM 1 and channel 2028 will be designated ASM 2.

**MOD IAP/6236A9A2/7**

**APPENDIX 18 (REV.WRC-15)**

**Table of transmitting frequencies in the VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

w) **In Regions 1 and 3:**

Until 1 January 2017, the frequency bands 157.200-157.325 MHz and 161.800-161.925 MHz (corresponding to channels: 24, 84, 25, 85, 26 and 86) may be used for digitally modulated emissions, subject to coordination with affected administrations. Stations using these channels or frequency bands for digitally modulated emissions shall not cause harmful interference to, or claim protection from, other stations operating in accordance with Article 5.

From 1 January 2017, the frequency bands ~~157.1875-157.3375~~ ~~157.200-157.325~~ MHz and ~~161.7875-161.9375~~ ~~161.800-161.925~~ MHz (corresponding to channels: 24, 84, 25, 85, 26 and 86) are identified for the utilization of the VHF Data Exchange System (VDES) described in the most recent version of Recommendation ITU-R M.2092. These frequency bands may also be used for analogue modulation described in the most recent version of Recommendation ITU-R M.1084 by an administration that wishes to do so, subject to not causing harmful



interference to, or claiming protection from other stations in the maritime mobile service using digitally modulated emissions and subject to coordination with affected administrations. (WRC-1519)

**MOD IAP/6236A9A2/8**

**APPENDIX 18 (REV.WRC-15)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

~~ww) In Region 2, the frequency bands 157.200-157.325 and 161.800-161.925 MHz (corresponding to channels: 24, 84, 25, 85, 26 and 86) are designated for digitally modulated emissions in accordance with the most recent version of Recommendation ITU-R M.1842.~~

~~— In Canada and Barbados, from 1 January 2019 the frequency bands 157.200-157.275 and 161.800-161.875 MHz (corresponding to channels: 24, 84, 25 and 85) may be used for digitally modulated emissions, such as those described in the most recent version of Recommendation ITU-R M.2092, subject to coordination with affected administrations. — (WRC-15)~~

**MOD IAP/6236A9A2/9**

**APPENDIX 18 (REV.WRC-19)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

x) ~~From 1 January 2017, in~~ In Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Democratic Republic of the Congo, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, the frequency bands ~~157.1125-157.3375~~ ~~157.125-157.325~~ and ~~161.7125-161.9375~~ ~~161.725-161.925~~ MHz (corresponding to channels: 82, 23, 83, 24, 84, 25, 85, 26 and 86) are designated for digitally modulated emissions.

~~From 1 January 2017, in~~ In China, the frequency bands ~~157.1375-157.3375~~ ~~157.150-157.325~~ and ~~161.7375-161.9375~~ ~~161.750-161.925~~ MHz (corresponding to channels: 23, 83, 24, 84, 25, 85, 26 and 86) are designated for digitally modulated emissions. (WRC-1219)

**MOD IAP/6236A9A2/10**

**APPENDIX 18 (REV.WRC-19~~5~~)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

- xx) ~~From 1 January 2019, the~~The channels 24, 84, 25 and 85 may be merged in order to form a unique duplex channels with a bandwidth of 50 kHz or 100 kHz in order to operate, in either duplex or simplex mode, the VDES terrestrial component as described in the most recent version of Recommendation ITU-R M.2092. (WRC-1519)

**MOD IAP/6236A9A2/11**

**APPENDIX 18 (REV.WRC-195)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

- z) ~~Until 1 January 2019, these channels may be used for possible testing of future AIS applications without causing harmful interference to, or claiming protection from, existing applications and stations operating in the fixed and mobile services.~~

~~From 1 January 2019, these~~These channels 27 and 28 are each split into two simplex channels. The channels 2027 and 2028 designated as ASM 1 and ASM 2 are used for application specific messages (ASM) as described in the most recent version of Recommendation ITU-R M.2092. (WRC-1519)

**MOD IAP/6236A9A2/12**

**APPENDIX 18 (REV.WRC-195)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

- ~~zz) In the United States, these channels are used for communication between ship stations and coast stations for the purpose of public correspondence. (WRC-15)~~

**MOD IAP/6236A9A2/13**

**APPENDIX 18 (REV.WRC-195)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

- zz) ~~From 1 January 2019, The~~ channels 1027, 1028, 87 and 88 are used as single-frequency analogue channels for port operation and ship movement. (WRC-1519)

**ADD IAP/6236A9A2/14**

**APPENDIX 18 (REV.WRC-19~~5~~)**

**Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

**Notes referring to the Table**

*Specific notes*

*aaa*) These channels are designated for use by the VDES satellite component (VDE-SAT) in the maritime mobile-satellite service (Earth-to-space) as described in the most recent version of Recommendation ITU-R M.2092 and using one or more of the following channelling arrangements:

- The channels 1024, 1084, 1025 and 1085 are identified for ship-to-shore, shore-to-ship and ship-to-ship communications, but ship-to-satellite (VDE-SAT uplink) communications may be possible without imposing constraints on ship-to-shore communications.
- The channels 2024, 2084, 2025 and 2085 are identified for shore-to-ship and ship-to-ship communications, but ship-to-satellite (VDE-SAT uplink) communications may be possible without imposing constraints on shore-to-ship and ship-to-ship communications.
- The channels 1026, 1086, 2026 and 2086 are identified for ship-to-satellite (VDE-SAT uplink) communications and are not used by the terrestrial component of VDES.

The use of any of the above channelling arrangements are subject to coordination with affected administrations

**Reasons:** Note *aaa*): Introduces the satellite component of VDES (VDE-SAT) into Appendix 18 on both lower leg and upper leg of channels 24, 84, 25, 85, 26 and 86 for ship-to-satellite (VDE-SAT uplink) according to the most recent version of the Recommendation ITU-R M.2092

**MOD IAP/6236A9A2/15**

**RESOLUTION 739 (REV.WRC-19~~5~~)**

**Compatibility between the radio astronomy service and the active  
space services in certain adjacent and nearby frequency bands**

The World Radiocommunication Conference (Geneva, 201~~9~~~~5~~),

**ANNEX 1 TO RESOLUTION 739 (REV.WRC-19~~5~~)**

**Unwanted emission threshold levels**

TABLE 1-2  
 epfd thresholds<sup>(1)</sup> for unwanted emissions from all space stations of a non-GSO satellite system  
 at a radio astronomy station

Space service	Space service frequency band	Radio astronomy frequency band	Single dish, continuum observations		Single dish, spectral line observations		VLBI		Condition of application: the API is received by the Bureau following the entry into force of the Final Acts of:
			epfd <sup>(2)</sup>	Reference bandwidth	epfd <sup>(2)</sup>	Reference bandwidth	epfd <sup>(2)</sup>	Reference bandwidth	
			(dB(W/m <sup>2</sup> ))	(MHz)	(dB(W/m <sup>2</sup> ))	(kHz)	(dB(W/m <sup>2</sup> ))	(kHz)	
MSS (space-to-Earth)	137-138	150.05-153	-238	2.95	NA	NA	NA	NA	WRC-07
<a href="#">MMSS (space-to-Earth)</a>	<a href="#">160.9625-161.4875</a>	<a href="#">150.05-153</a>	<a href="#">-238</a>	<a href="#">2.95</a>	<a href="#">NA</a>	<a href="#">NA</a>	<a href="#">NA</a>	<a href="#">NA</a>	<a href="#">WRC-19</a>
<a href="#">MMSS (space-to-Earth)</a>	<a href="#">160.9625-161.4875</a>	<a href="#">322-328.6</a>	<a href="#">-240</a>	<a href="#">6.6</a>	<a href="#">-255</a>	<a href="#">10</a>	<a href="#">-228</a>	<a href="#">10</a>	<a href="#">WRC-19</a>
MSS (space-to-Earth)	387-390	322-328.6	-240	6.6	-255	10	-228	10	WRC-07
MSS (space-to-Earth)	400.15-401	406.1-410	-242	3.9	NA	NA	NA	NA	WRC-07
MSS (space-to-Earth)	1 525-1 559	1 400-1 427	-243	27	-259	20	-229	20	WRC-07
RNSS (space-to-Earth) <sup>(3)</sup>	1 559-1 610	1 610.6-1 613.8	NA	NA	-258	20	-230	20	WRC-07
MSS (space-to-Earth)	1 525-1 559	1 610.6-1 613.8	NA	NA	-258	20	-230	20	WRC-07
MSS (space-to-Earth)	1 613.8-1 626.5	1 610.6-1 613.8	NA	NA	-258	20	-230	20	WRC-03

**Reasons:**

SUP IAP/6236A9A2/16

RESOLUTION 360 (REV.WRC-15)

**Consideration of regulatory provisions and spectrum allocations to the maritime mobile-satellite service to enable the satellite component of the VHF Data Exchange System and enhanced maritime radiocommunication**

**Reasons:** Resolution 360 (WRC-15) is proposed to be suppressed as it will not be needed when the regulatory provisions and spectrum allocations to the maritime mobile-satellite service required to enable the VDES satellite component (VDE-SAT) have been approved by WRC-19.

MOD IAP/6236A9A2/17

APPENDIX 5 (REV.WRC-195)

**Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9**

~~ANNEX 1~~

~~MOD~~

~~1 ——— Coordination thresholds for sharing between MSS (space to Earth) and terrestrial services in the same frequency bands and between non-GSO MSS feeder links (space to Earth) and terrestrial services in the same frequency bands and between RDSS (space to Earth) and terrestrial services in the same frequency bands — (WRC 1219)~~

~~MOD~~

~~1.1 ——— Below 1 GHz\*~~

~~...~~

~~1.1.4 ——— In the band 160.9625-161.4875 MHz, coordination of a space station of the maritime mobile-satellite service (space to Earth) with respect to terrestrial services is required only if the power spectral and flux density produced by this space station exceeds the following mask in dB(W/(m<sup>2</sup> · 4 kHz)) at the Earth's surface:~~

~~where  $\theta$  is the angle of arrival of the incident wave above the horizontal plane (degrees);~~

~~\* — These provisions apply only to the MSS.~~

TABLE 5-1 (continued) (Rev.WRC-15)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.14 Non-GSO/terrestrial, GSO/terrestrial	A space station in a satellite network in the frequency bands for which a footnote refers to No. 9.11A or to No. 9.14, in respect of stations of terrestrial services where threshold(s) is (are) exceeded	1) Frequency bands for which a footnote refers to No. 9.11A; or 2) 11.7-12.2 GHz (Region 2 GSO FSS) 3) 5 030-5 091 MHz 4) <u>160.9625-161.4875 MHz (non-GSO maritime mobile-satellite service)</u>	1) See § 1 of Annex 1 to this Appendix; In the bands specified in No. 5.414A, the detailed conditions for the application of No. 9.14 are provided in No. 5.414A for MSS networks or 2) In the band 11.7-12.2 GHz (Region 2 GSO FSS): $-124 \text{ dB(W/(m}^2 \cdot \text{MHz)) for } 0^\circ \leq \theta \leq 5^\circ$ $-124 + 0.5 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz)) for } 5^\circ < \theta \leq 25^\circ$ $-114 \text{ dB(W/(m}^2 \cdot \text{MHz)) for } \theta > 25^\circ$ where $\theta$ is the angle of arrival of the incident wave above the horizontal plane (degrees) 3) Bandwidth overlap 4) <u>In the band 160.9625-161.4875 MHz (non-GSO maritime mobile-satellite service):</u> $-142.72 - 8.15 + 12 \cdot (\theta / 16.47)^2 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz)) for } 0^\circ \leq \theta < 8.5^\circ$ $-149 + 0.16 \cdot \theta \text{ dB(W/(m}^2 \cdot 4 \text{ kHz)) for } 8.5^\circ \leq \theta < 45^\circ$ $-142 + 0.53 \cdot (\theta - 45^\circ) \text{ dB(W/(m}^2 \cdot 4 \text{ kHz)) for } 45^\circ \leq \theta < 58^\circ$ $-142.72 + 6.85 - 10 \log_{10}((\theta / 16.47)^{-1.5} + 0.7) \text{ dB(W/(m}^2 \cdot 4 \text{ kHz)) for } 58^\circ \leq \theta < 90^\circ$ where $\theta$ is the angle of arrival of the	1) See § 1 of Annex 1 to this Appendix	

			<u>incident wave above the horizontal plane (degrees).</u>		
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**Reasons:** The above modification defines a coordination threshold in Table 5-1 for references of RR No. **9.14** for the VDE-SAT downlink to ensure compatibility with terrestrial services. The coordination threshold mask is defined in Annex 2 of Report ITU-R M.2435-0.

