



## Radiocommunication Bureau (BR)

Circular Letter  
CR/345

8 May 2013

### To Administrations of Member States of the ITU

Subject: **Implementation of Resolution 150 (WRC-12) - Data elements for notification and examination of frequency assignments to HAPS gateway links operating in the bands 6 440-6 520 MHz and 6 560-6 640 MHz**

The World Radiocommunication Conference, Geneva, 2012 (WRC-12) adopted provision No. **5.457** stipulating that the allocation to the fixed service in the bands 6 440-6 520 MHz and 6 560-6 640 MHz may be used by gateway links for high-altitude platform stations (HAPS) within the territory of Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria. In accordance with the Conference decisions contained in Resolution **98** (WRC-12), provision No. **5.457** entered into force on 1 January 2013.

WRC-12 also approved Resolution **150** (WRC-12), which imposes regulatory and technical restrictions on the usage of the HAPS gateway links and makes their notification to the Radiocommunication Bureau mandatory. The Resolution invites administrations to consult with the Director of the Radiocommunication Bureau to determine the data elements of HAPS gateway stations necessary for notification and examination of frequency assignments in accordance with the provisions of Article **11** and Appendix **4** and instructs the Director of the Radiocommunication Bureau to implement this Resolution.

Following these instructions, the Bureau analysed the conditions of operation of the HAPS contained in *resolves* 1 to 6 of that Resolution and took actions towards the development of a draft list of data elements required for notification and examination of the HAPS gateway links.

The Bureau conducted consultations with the administrations listed in No. **5.457** as well as with the administrations that are potentially affected by the use of HAPS gateway stations, i.e. having territories within 1 000 kilometers from the border of the countries appearing in No. **5.457**. The purpose of these consultations was to confirm the completeness and appropriateness of the data elements included in this draft list. Based on the results of the consultations a consolidated list of data elements has been established as presented in the Annex to this Circular Letter.

Administrations wishing to implement HAPS gateway links in the bands 6 440-6 520 MHz and 6 560-6 640 MHz should use the data elements listed in Tables 1 and 2 of the Annex on a provisional basis till a competent world radiocommunication conference includes the data items in Appendix **4** to the Radio Regulations.

Your attention is also drawn to the fact that the use of HAPS gateway links in the above-mentioned bands requires explicit agreement of the administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. In order to facilitate the determination of this coordination requirement, the Bureau prepared the list of those geographical areas and their responsible administrations, which are located within 1 000 kilometres from the borders of the administrations appearing in No. **5.457**, as summarized in Table 3 of the Annex.

The Bureau remains at the disposal of your Administration for any clarification you may require regarding the subjects covered in this Circular Letter.

François Rancy  
Director

### Annex

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- Administrations of Member States of ITU
- Members of the Radio Regulations Board

## Annex

### Data elements for the notification of frequency assignment for HAPS gateway links

#### 1 Explanation of the format of Tables 1 and 2

1.1 Information in columns 1, 2 and 3 of Table 1 and columns 1 and 2 of Table 2 is given in the format of Annex 1 of Appendix 4 to the Radio Regulations, with necessary modifications related to HAPS.

1.2 Columns 4 to 12 of Table 1 and Columns 3 to 11 of Table 2 contain explanations of the notification requirements for each data item derived from general requirements of the current Appendix 4 as well as from the examination and coordination requirements of Resolution 150 (WRC-12) and No. 5.457.

1.3 The notice type to be used for notification of HAPS gateway links under Resolution 150 (WRC-12) is T11, which corresponds in Appendix 4 to “Transmitting station (except broadcasting stations in the planned LF/MF bands, in the HF bands governed by Article 12, and in the VHF/UHF bands up to 960 MHz) for the application of Nos. 11.2 and 9.21”.

#### 2 Explanation of the symbols used in Tables 1 and 2

X	Mandatory information
+	Mandatory under the conditions specified in column 3 of Table 1 and column 2 of Table 2
O	Optional information
C	Mandatory if used as a basis to effect coordination with another administration
●	This data item is required for all fixed stations
#	This data item is required for performing examination

**TABLE 1<sup>1</sup> : Characteristics for high altitude platform stations (HAPS) gateway links  
in the band 6 560 – 6 640 MHz (ground-to-HAPS direction)**

Item identifier (as in column 1 of Table 1 of Appendix 4)	Item identifier (as in column 2 of Table 1 of Appendix 4)	Description of data items and requirements	Transmitting stations in the ground-to-HAPS direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
					Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
<b>1</b>		<b>GENERAL INFORMATION AND FREQUENCY CHARACTERISTICS</b>									
1.1	B	the symbol of the notifying administration (see the Preface)	X	•							
1.2	D	the provision code of the Radio Regulations under which the notice has been submitted	X	•							
1.4		<b>Assignment and allotment identification information</b>									
1.4.2	ID1	the unique identification code given by the administration to the assignment	O								
<i>NEW</i>	<i>ID4<sup>2</sup></i>	<i>the unique network identifier of the associated HAPS platform station</i>	X		#				#		
1.5		<b>Frequency information</b>									
1.5.1	1A	the assigned frequency, as defined in Article 1	X	•							
1.5.2	1B	the reference frequency, as defined in Article 1 Required if the modulation envelope is asymmetric	+	•							
<b>2</b>		<b>DATE OF OPERATION</b>									
2.1	2C	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use	X	•							
<b>3</b>		<b>CALL SIGN AND STATION IDENTIFICATION</b>									
3.1	3A1	the call sign used in accordance with Article 19	O								
3.2	3A2	the station identification used in accordance with Article 19	O								

<sup>1</sup> This table is derived from Table 1 of Annex 1 of Appendix 4 to the Radio Regulations with the appropriate modifications.

<sup>2</sup> This data item is newly introduced for HAPS gateway links.

Item identifier (as in column 1 of Table 1 of Appendix 4)	Item identifier (as in column 2 of Table 1 of Appendix 4)	Description of data items and requirements	Transmitting stations in the ground-to-HAPS direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
					Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
<b>4</b>		<b>LOCATION OF THE TRANSMITTING ANTENNA(S)</b>									
4.1	4A	the name of the locality by which the transmitting station is known or in which it is situated	X	•							
4.3	4B	the code of the geographical area in which the transmitting station is located (see the Preface)	X	•							
4.4	4C	the geographical coordinates of the transmitter site Latitude and longitude are provided in degrees, minutes and seconds	X	•		#	#	#	#	#	
<b>5</b>		<b>LOCATION OF THE RECEIVING ANTENNA(S)</b>									
5.1	5A <sup>3</sup>	the name of the locality by which the nadir of the receiving HAPS station is known or in which it is situated	X	•							
5.2	5B <sup>3</sup>	the code of the geographical area in which the nadir of receiving HAPS platform is located (see the Preface)	X	•							
5.3	5C <sup>3</sup>	the geographical coordinates of the nadir of the HAPS receiving station Latitude and longitude are provided in degrees, minutes and seconds	X	•						#	
<b>6</b>		<b>CLASS OF STATION AND NATURE OF SERVICE</b>									
6.1	6A	the class of station (FX)	X	•							
6.2	6B	the nature of service, using the symbols from the Preface	X	•							
<b>7</b>		<b>CLASS OF EMISSION AND NECESSARY BANDWIDTH</b> <i>(in accordance with Article 2 and Appendix 1)</i>									
7.1	7A	the class of emission	X	•							
7.2	7AB	the necessary bandwidth	X	•							

<sup>3</sup> The description of (and/or requirements for) this data item has been changed compared with its description in Appendix 4 to the Radio Regulations.

Item identifier (as in column 1 of Table 1 of Appendix 4)	Item identifier (as in column 2 of Table 1 of Appendix 4)	Description of data items and requirements	Transmitting stations in the ground-to-HAPS direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
					Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
7.3.10.1	7E	the peak to peak frequency deviation, in MHz	C	•							
7.3.10.2	7F	the sweep frequency, in kHz, of the energy dispersal waveform	C	•							
8		<b>POWER CHARACTERISTICS</b>									
8.1	8	the symbol (X, Y or Z, as appropriate) describing the type of power (see Article 1) corresponding to the class of emission	X	•							
8.3	8AA <sup>3</sup>	the power delivered to the antenna, in dBW	X	•			#	#			
8.4	8AB <sup>3</sup>	the maximum power density (dB(W/Hz)) for each carrier type averaged over the worst 4 kHz band for carriers supplied to the antenna transmission line	X	•			#	#			
8.6	8B	the radiated power, in dBW, in the form described in No. 1.161 Required if the power delivered to the antenna (8AA), or the maximum antenna gain (9G), is not provided	+	•			#				
9		<b>ANTENNA CHARACTERISTICS</b>									
9.1		<b>For a transmitting antenna:</b>									
9.1.1	9 <sup>3</sup>	the indicator showing whether the antenna is directional (D) or non-directional (ND)	X	•							
9.1.2	9D <sup>3</sup>	the code indicating the type of polarization (see the Preface)	X	•							
9.1.3	9E <sup>3</sup>	the height of the antenna above ground level, in metres	X	•			#				
9.2.1	9C <sup>3</sup>	for a directional transmitting antenna: the total angular width of the radiation main lobe (beamwidth) measured horizontally in a plane containing the direction of maximum radiation, in degrees, within which the power radiated in any direction does not fall more than 3 dB below the power radiated in the direction of maximum radiation	X	•							

Item identifier (as in column 1 of Table 1 of Appendix 4)	Item identifier (as in column 2 of Table 1 of Appendix 4)	Description of data items and requirements	Transmitting stations in the ground-to-HAPS direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
					Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
9.2.3	9K <sup>3</sup>	for a receiving antenna: the lowest total receiving system noise temperature, in kelvins	C	•							
9.3.1	9EA <sup>3</sup>	for any transmitting antenna: the altitude of the site above mean sea level, in metres	X	•		#	#	#	#		
9.3.4	9G	the maximum antenna gain (isotropic) of the transmitting antenna For a directional antenna, the gain is in the direction of maximum radiation Required if the antenna is either directional or non-directional, and the power to the antenna (8A) or the radiated power (8B) is not provided	+	•	#			#			
9.3.7	9J <sup>3</sup>	commitment that antenna pattern complies with the reference antenna pattern of defined in <i>resolves 1</i> of the Resolution 150 (WRC-12)	X		#						
9.5		<b>For a directional transmitting antenna where the antenna beam is not rotating or swept:</b>									
9.5.1	9A	the azimuth of maximum radiation of the transmitting antenna, measured in the horizontal plane from True North in a clockwise direction	X	•				#			
9.5.2	9B <sup>3</sup>	the elevation angle of maximum directivity, in degrees	X	•			#	#			
10		<b>HOURS OF OPERATION</b>									
10.1	10B	the regular hours of operation (in hours and minutes from ... to ...) of the frequency assignment, in UTC	X	•							
11		<b>COORDINATION AND AGREEMENT</b>									
11.1	11	the symbol of each administration with which coordination has been successfully effected	X	•							#
12		<b>OPERATING ADMINISTRATION OR AGENCY</b>									
12.1	12A	the symbol for the operating agency	O	•							

Item identifier (as in column 1 of Table 1 of Appendix 4)	Item identifier (as in column 2 of Table 1 of Appendix 4)	Description of data items and requirements	Transmitting stations in the ground-to-HAPS direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
					Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
12.2	12B <sup>3</sup>	the symbol for the address of the administration responsible for the station and to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the circuit (see Article 15, also the Preface)	X	•							
13		<b>REMARKS</b>									
13.1	13C	remarks for assisting the Bureau in processing the notice	O	•							



**TABLE 2<sup>4</sup> : Characteristics for high altitude platform stations (HAPS) gateway links  
in the band 6 440 – 6 520 MHz (HAPS-to-ground direction)**

Item identified (as in column 1 of Table 2 of Appendix 4)	Description of data items and requirements	Transmitting stations in the HAPS-to-ground direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
				Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
	<b>GENERAL INFORMATION</b>									
1.B	the symbol of the notifying administration (see the Preface)	X	•							
1.D	the provision code of the Radio Regulations under which the notice has been submitted	X	•							
1.ID1	the unique identifier given by the administration to the station	X	•							
1.ID2 <sup>5</sup>	<i>the unique network identifier given by the administration</i>	X			#				#	
	<b>LOCATION OF THE STATION</b>									
1.4.a	the name by which by which the nadir of the HAPS is known	X	•							
1.4.b	the code of the geographical area, above which the station is located (see the Preface)	X	•							
1.4.c	the nominal geographical coordinates of the nadir of the station Latitude and longitude are provided in degrees, minutes and seconds	X	•		#			#		
1.4.h	the nominal altitude of the station above mean sea level, in metres	X			#			#		
1.4.t	<b>Station location tolerances:</b>									
1.4.t.1.a	the planned latitudinal tolerance northerly limit, using d.m.s units	X			#	#	#	#		
1.4.t.1.b	the planned latitudinal tolerance southerly limit, using d.m.s units	X			#	#	#	#		

<sup>4</sup> This table is derived from Table 2 of Annex 1 of Appendix 4 to the Radio Regulations with the appropriate modifications.

<sup>5</sup> This item is newly introduced for HAPS gateway links.

Item identified (as in column 1 of Table 2 of Appendix 4)	Description of data items and requirements	Transmitting stations in the HAPS-to-ground direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
				Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
1.4.t.2.a	the planned longitudinal tolerance easterly limit, using d.m.s units	X			#	#	#	#		
1.4.t.2.b	the planned longitudinal tolerance westerly limit, using d.m.s units	X			#	#	#	#		
1.4.t.3	the planned altitudinal tolerance, in metres	X			#	#	#	#		
	<b>COORDINATION OR AGREEMENT</b>									
1.11.a <sup>6</sup>	the symbol of each administration with which coordination has been successfully effected, including where the agreement is to exceed the limits prescribed in the Radio Regulations	X								#
	<b>OPERATING ADMINISTRATION OR AGENCY</b>									
1.12.a	the symbol for the operating agency	O	•							
1.12.b	the symbol for the address of the administration responsible for the station and to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the circuit (see Article 15)	X	•							
	<b>REMARKS</b>									
1.13.c	remarks for assisting the Bureau in processing the notice	O	•							
	<b>CALL SIGN AND STATION IDENTIFICATION</b>									
	the call sign used in accordance with Article 19	O								
	the station identification used in accordance with Article 19	O								
	<b>ANTENNA CHARACTERISTICS</b>									
2.9.g	the maximum co-polar isotropic gain	X	•							
2.9.j	commitment that antenna pattern complies with the reference antenna pattern defined in <i>resolve 1</i> of the Resolution 150 (WRC-12)	X		#						

<sup>6</sup> The description of (and/or requirements for) this data item has been changed compared with its description in Appendix 4 to the Radio Regulations.

Item identified (as in column 1 of Table 2 of Appendix 4)	Description of data items and requirements	Transmitting stations in the HAPS-to-ground direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
				Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
	<b>ASSIGNED FREQUENCY</b>									
3.1.a	the assigned frequency, as defined in No. 1.148	X	•							
3.1.b	the reference frequency, as defined in Article 1 Required if the modulation envelope is asymmetric	+	•							
	<b>DATE OF OPERATION</b>									
3.2.c	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use	X	•							
	<b>LOCATION OF THE RECEIVING ANTENNA(S)</b>									
	the name of the locality by which the receiving gateway station(s) is known or in which it is situated	X	•							
	the code of the geographical area in which the receiving gateway station(s) is located (see the Preface)	X	•							
3.5.c.a <sup>7</sup>	the geographical coordinates of the receiving gateway station(s). Maximum of 5 stations belonging to the same network could be submitted	X	•		#			#		
	<b>CLASS OF STATION AND NATURE OF SERVICE</b>									
3.6.a	the class of station (FX)	X	•							
3.6.b	the nature of service, using the symbols from the Preface	X	•							
	<b>CLASS OF EMISSION AND NECESSARY BANDWIDTH</b> <i>(in accordance with Article 2 and Appendix 1)</i>									
3.7.a	the class of emission	X	•							

<sup>7</sup> The description of (and/or requirements for) this data item has been changed compared with its description in Appendix 4 to the Radio Regulations.

Item identified (as in column 1 of Table 2 of Appendix 4)	Description of data items and requirements	Transmitting stations in the HAPS-to-ground direction	Required for all fixed stations	Needed to perform examinations of Resolution 150 (WRC-12)						No. 5.457
				Resolves 1	Resolves 2	Resolves 3	Resolves 4	Resolves 5	Resolves 6	
3.7.b	the necessary bandwidth	X	•					#		
	<b>ANTENNA CHARACTERISTICS OF THE TRANSMISSION</b>									
3.8	the symbol (X, Y or Z, as appropriate) describing the type of power (see Article 1) corresponding to the class of emission	X	•					#		
3.8.aa	the power delivered to the antenna, in dBW	X	•					#		
3.8.ab	the maximum power density averaged over the worst 1 MHz band delivered to the antenna	X	•					#		
	<b>POLARIZATION</b>									
3.9.d	the code indicating the type of polarization (see the Preface)	X	•							
	<b>HOURS OF OPERATION</b>									
3.10.b	the regular hours of operation (in hours and minutes from ... to ...) of the frequency assignment, in UTC	X	•							

**TABLE 3: Administrations whose territories are located within 1 000 kilometers from the border of administrations listed in No. 5.457**

<b>Notifying administration</b>	<b>Administrations (its geographical area) within 1 000 kilometers from the notifying administration's territory</b>
Australia (AUS)	INS, F(KER, NCL), NZL, PNG, TLS
Burkina Faso (BFA)	ALG, BEN, CME, CTI, GHA, GMB, GNB, GUI, LBR, MLI, MTN, NGR, NIG, SEN, SRL, TGO
Cote D'ivoire (CTI)	BEN, BFA, GHA, GMB, GNB, GUI, LBR, MLI, MTN, NGR, NIG, SEN, SRL, TGO
Mali (MLI)	ALG, AOE, BEN, BFA, CNR, CTI, GHA, GMB, GNB, GUI, LBR, LBY, MRC, MTN, NGR, NIG, SEN, SRL, TGO
Nigeria (NIG)	ALG, BEN, BFA, CAF, CME, COD, COG, CTI, GAB, GHA, GNE, MLI, NGR, SDN SSD, STP, TCD, TGO

Note: in order to satisfy the coordination requirements of No. **5.457**, the notifying administration shall submit the symbol of each administration with which coordination has been successfully completed. This coordination information has to be provided both for assignments used in ground-to-HAPS-direction and for assignments used in HAPS-to-ground direction.