

Regional Development Forum
for the Arab Region



ORBIT/SPECTRUM MANAGEMENT BASICS FOR SATELLITE SYSTEMS

Vadim Nozdrin
Radiocommunication
Bureau

ITU Constitution

**•INTERNATIONAL USE OF
SPECTRUM/ORBIT (LIMITED SCARCE
RESOURCES) – ITU**

**•BASIC INSTRUMENT- RADIO
REGULATION**

•ITU-R SHALL EFFECT:

*... registration of radio-frequency assignments
and of any associated orbital position in the
geostationary satellite orbit in order to avoid
harmful interference between radio stations of
different countries*



Radio Regulation

Right to use spectrum and orbit (ARTICLE 8):

- *The international rights and obligation of administrations in respect of their own and other administrations frequency assignments shall be derived from recording of those assignments in the Master International Frequency Register...*
- *Any frequency assignment recorded in the Master Register with a favourable findings... shall have the right to international recognition*

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Radio Regulation

Two major mechanisms for the sharing the orbit/spectrum resource :

- *PLANNING Approach-equitable access for all nations and future use*
- *COORDINATION Approach- Efficiency use ⇔ First come, first served for actual requirements*

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PLANNING

- **MAIN PRINCIPLE**- homogeneous systems, to provide service on national territory on non- interference basis with required quality.
- **Two satellite service plans:**
BSS and feeder links plan (Appendixes 30 and 30A)
FSS plan (Appendix 30B)



Plan BSS

Frequency bands

Region 1	Region 2	Region 3
11.7 - 12.5 GHz (space-to-Earth)	12.2 - 12.7 GHz (space-to-Earth)	11.7 - 12.2 GHz (space-to-Earth)
14.5 - 14.8 GHz (out of Europe) (Earth-to-space)	17.3 - 17.8 GHz (Earth-to-space)	14.5 - 14.8 GHz (Earth-to-space)
17.3 - 18.1 GHz (Earth-to-space)		17.3 - 18.1 GHz (Earth-to-space)



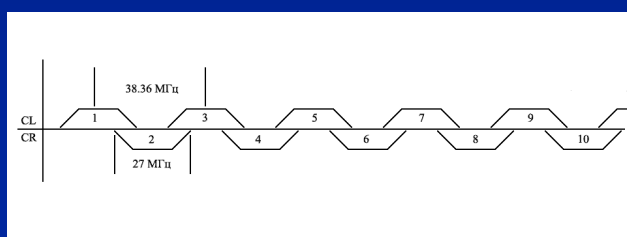
Plan BSS (Region 1 and 3)

Frequency plan:

40 channels, 27 MHz bandwidth

14.5-14.8 GHz- 14 channels

Channel spacing- 19.18 MHz, circular polarization



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Plan BSS (Region 1 and 3)

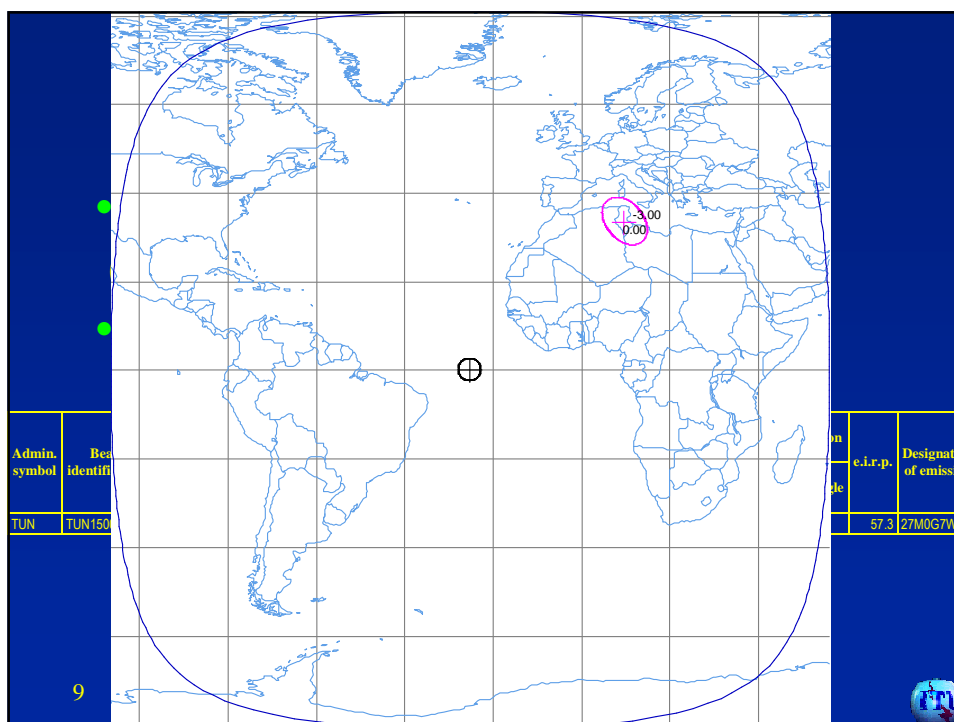
Standardized parameters of Plan systems:

- 10 channels,**
- one beam with national coverage,**
- digital modulation,**
- $C/N \geq 14$ dB for 99% of time ($FL \geq 13.5$) dB ,**
- earth station antenna size-60 cm (FL -5 m),**
- satellite antenna- elliptical, beamwidth 0.6° ,**
- required PFD- -108 dB/W/m²**

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Plan BSS (Region 1 and 3)

Main Procedures (1):

- *Administration sends electronic request to BR (Appendix 4)*
- *BR checks accordance with Plan*
- *Reference situation*
- *EMC criteria: Equivalent Protection Margin*



Plan BSS (Region 1 and 3)

Main Procedures (2):

Equivalent Protection Margin (EPM) :

$$EPM = -10 \log \left(\sum_{i=1}^3 10^{(-M_i/10)} \right)$$

$$M_i = \text{protection margin} = \frac{C}{I_{i_{agg}}} - PR_i \quad (\text{dB})$$

i = interference type (1=co-channel, 2 & 3 = upper & lower first adjacent channels);

PR_i = protection ratio for a given interference type i. (PR₁=-21 dB, PR_{2&3}=-16 dB, PR_{up}=-27 dB)

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Plan BSS (Region 1 and 3)

Main Procedures (3):

- If all characteristics of the filing are in accordance with national assignments-no change in reference situation- application can be sent for notification- **MIFR**
- If not- BR defines list of affected networks
 Coordination arc- $\pm 90^\circ$, EPM in all test points
 Down-link- PFD and EPM in any test-point
 Up-link- PFD at GSO and of-axis e.i.r.p

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Plan BSS (Region 1 and 3)

Main Procedures (4):

List of affected requirement: published in
Special Section App 30 and 30A Part A

IMPORTANT TIP

ALL ADMINISTRATIONS

HAVE TO CHECK BR IFIC (Space Service) in order to protect national assignments

No comment to publication in 4 months- not involved in coordination- no protection

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Administrations et/ou reseaux a satellite affectes / Affected administrations and/or satellite networks / Administraciones y/o redes de satelite afecte
إدارات و/أو الشبكات الساتلية المتأثرة / Затронутые администрации и/или спутниковые сети

A1f1 Notifying adm.	A1f3 Inter. sat. org.	A1a Sat. Network / A1b Plan beam identification	BR6a Id. no.	A4a1 Orbital long.	BR45 Max. EPM/OEPM degradation	BR46 Max. PFD excess
App.30 Art.4, §§4.1.1 a) & 4.1.1 b) - Annexe 1, §1 App.30 Art.4, §§4.1.1 a) & 4.1.1 b) - Anexo 1, §1 附录30第4条, 第4.1.1 a)段和 4.1.1 b)段 - 附件1, 第1段 Пр. 30 Ст. 4, пп. 4.1.1 a) и 4.1.1 b) - Дополнение 1, п. 1 الفقرتان 1.1.4 و 1.1.4 ب) من المادة 4 من التذييل 30 - الفقرة 1 من الملحق 1						
ARS		ARS_100	100550008	17 E	0.657	2.58
BDI		BDI27000	100550026	11 E	5.952	37.59
F	BUT	SMO-GEO-1B	100552037	4 E	1.164	0.79
		EUTELSAT B-10E	97552010	10.2 E	18.328	32.34
		EUTELSAT B-13E	95552004	13 E	22.665	23.87
		EUTELSAT B-16E	100551006	13 E	22.315	22.99
		EUTELSAT B-9E	101552009	9 E	4.817	4.58
I		I_08200	100550100	9 E	16.076	22.50
		INTERACT	103552007	9 E	14.848	22.54
		INTERACT	104552002	9 E	14.894	22.54
JOR		JOR22400	100550118	11 E	22.405	39.46
KWT		KWT13000	100550127	11 E	18.552	38.84
LBN		LBN27900	100550129	11 E	22.361	39.46
RRW		RRW10000	100550170	11 E	6.121	37.80
S		SIRIUS-2-BSS	100551031	5 E	2.584	0.54
		SIRIUS-A	100552010	5 E	1.423	0.64
		SIRIUS-B	100552011	5 E	1.751	0.64
		SIRIUS-C	100552012	5 E	1.031	0.64
		SIRIUS-D	100552013	5 E	1.209	0.64
SYR		SYR22900	100550195	11 E	22.332	39.46
		SYR33900	100550196	11 E	19.609	39.45
TZA		TZA22500	100550208	11 E	6.057	37.90
YEM		YEM_100	100550220	11 E	18.897	38.56

AP30/E/393


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Plan BSS (Region 1 and 3)

Main Procedures (5):

- after 4 months BR prepares a list of agreements required based on comments from administrations
- and publishes it in a Part D Special Section





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 BUREAU DES RADIOCOMMUNICATIONS RADIOCOMMUNICATION BUREAU OFICINA DE RADIOCOMUNICACIONES

RÉSEAU A SATELLITE SATELLITE NETWORK RED DE SATELITE		ARABSAT BSS 6D		SECTION SPÉCIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º		AP30/E/393	
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE		LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL		BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA		2566 / 04.04.2006	
NOTIFIÉ AU NOM DE NOTIFIED ON BEHALF OF NOTIFICADA EN NOMBRE DE		AFS, AGL, ALG, ARS, BOL, BFA, BHR, BOT, CAF, CME, COD, COG, COM, CPV, CTR, DJI, EGY, ERI, ETH, GAB, GHA, GMB, GNB, GNE, GUI, IRQ, JOR, KEN, KWT, LBN, LBR, LBY, LSO, MLI, MOZ, MRC, MTN, MWI, NGR, NIC, NMS, OMA, QAT, RRV, SDN, SEN, SOM, SRL, SYR, TCD, TGO, TUN, TZA, UAE, UGA, YEM, ZMB		NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN		105552008	

Disposition Provision 条款 Положение	Liste des administrations dont l'accord est nécessaire pour mener à bien la procédure de l'Article 4	List of administrations whose agreements are required for completion of the Article 4 procedure	Lista de administraciones cuyo acuerdo se necesita para terminar el procedimiento del Artículo 4
	为完成第 4 条程序所需征得其同意的主管部门清单	Список администраций, согласие которых необходимо для завершения процедуры Статьи 4	قائمة الإدارات التي يجب موافقتها ضرورية لإكمال إجراء المادة 4
X A30M.1.1A / A30M.1.1B	ARS, F, F/BVT, I, S, STR		
X A30M.1.1C			
X A30M.1.1D			
X A30M.1.1E	G, LUX, S		

Les dispositions de la présente section sont applicables en vertu de la Résolution 54B.

Provisions of this section are applicable in accordance with Resolution 54B.

Las disposiciones de esta sección son aplicables en virtud de la Resolución 54B.

[] Parte C - Annulation d'une Section spéciale Partie A publiée et/ou assignations de fréquence annulées de la Liste pour les Régions 1 et 3 conformément au § 4.1.3, à la note de bas de page 7 du § 4.1.5, à la note de bas de page 8 du § 4.1.15 et/ou § 4.1.23 de l'Article 4 de l'Appendice 30 ou Résolution 49.	[] Part C - Cancellation of a previously published Part A Special Section and/or frequency assignments cancelled from the Regions 1 and 3 List in accordance with § 4.1.3, footnote 7 to § 4.1.5, footnote 8 to § 4.1.15 and/or § 4.1.23 of Article 4 of Appendix 30 or Resolution 49.	[] Parte C - Cancelación de una Parte A de la Sección Especial previamente publicada y/o de las asignaciones de frecuencia canceladas de la Lista de las Regiones 1 y 3, de conformidad con el § 4.1.3, la nota 7 del § 4.1.5, la nota 8 del § 4.1.15 y/o § 4.1.23 del Artículo 4 del Apéndice 30 o Resolución 49.
[X] Parte D - Liste des administrations dont l'accord est nécessaire pour mener à bien la procédure de l'Article 4 conformément au § 4.1.10ter de l'Article 4 de l'Appendice 30.	[X] Part D - List of administrations whose agreements are required for completion of the Article 4 procedure in accordance with § 4.1.10ter of Article 4 of Appendix 30.	[X] Parte D - Lista de administraciones cuyo acuerdo se necesita para terminar el procedimiento de Artículo 4, de conformidad con el § 4.1.10ter del Artículo 4 del Apéndice 30.

RÉFÉRENCE DE LA SECTION SPÉCIALE (BR IFIC / DATE)
 SPECIAL SECTION REFERENCE (BR IFIC / DATE)
 REFERENCIA DE LA SECCIÓN ESPECIAL (BR IFIC / FECHA)

AP30/E/393 (Part A)(BR IFIC 2554 / 04.10.2005)



Plan BSS (Region 1 and 3)

- *After coordination- submission to BR of validated Appendix 4 data with coordination agreements*
- *Publication in Part B*
- *BR Favourable findings*
- *NOTIFICATION REQUEST- MIFR*

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FSS Plan

Frequency bands

6 / 4 GHz
(300 MHz)

6725 - 7025 MHz (up)

4500 - 4800 MHz (down)

13 / 10-11 GHz
(500 MHz)

12.75 - 13.25 GHz (up)

10.70 - 10.95 GHz (down)

11.20 - 11.45 GHz (down)

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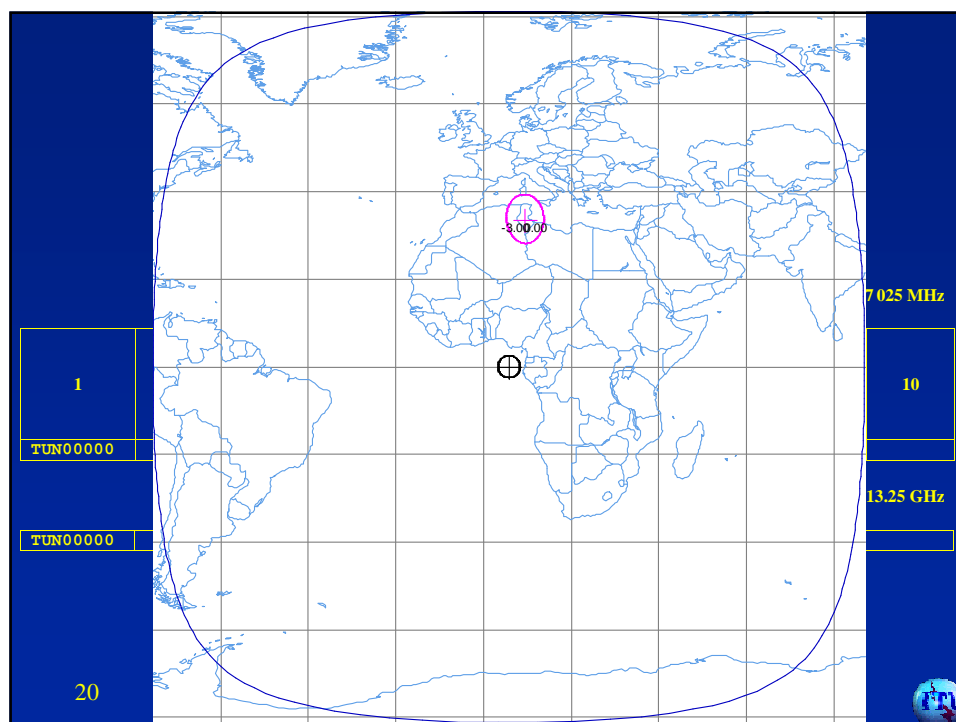
FSS Plan

Standardized parameters of PLAN systems

- 800 MHz for each administration (up and down),
- National coverage
- $C/N_{up} \geq 21$ dB, $C/N_{down} \geq 15$ dB, $C/N_{\Sigma}(\text{rain}) \geq 14$ dB
- satellite antenna- elliptical, beam width depends upon service area size ($\geq 1.6^\circ$, 4/6 GHz, $\geq 0.8^\circ$, 13/10–11 GHz)
- ES Antenna diameter 4/6 GHz- 5.5 m, 13/10 GHz-11 GHz-2.7 m

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FSS Plan

Main Procedures (1):

- *Administration: electronic request to BR (Appendix 4)*
- *BR checks accordance with Plan*
- *Reference situation*
- *EMC criteria: coordination arc, pfd limits, single entry and aggregate C/I*

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FSS Plan

- | | |
|---|--|
| <ul style="list-style-type: none"> • <i>Coordination arc:</i> 6/4 GHz- $\pm 10^0$ 13/10-11 GHz- $\pm 9^0$ | <ul style="list-style-type: none"> • <i>PFD value(down link):</i> -127.5 dBW/m²xMHz, 6/4GHz -114. dBW/m²xMHz, 13/10-11 GHz • <i>PFD value (uplink)</i> -140 dBW/m²xMHz, 6/4GHz -133 dBW/m²xMHz, 13/10-11 GHz |
| <ul style="list-style-type: none"> • <i>Single entry- from each filings:</i> $C/I_{\text{single(down)}} = 21 \text{ dB}$ $C/I_{\text{single(up)}} = 30 \text{ dB}$ $C/I_{\text{single}(\Sigma)} = 25 \text{ dB}$ | <ul style="list-style-type: none"> • <i>Aggregate C/I-from all filings:</i> $C/I_{\text{agg}} = 26 \text{ dB}$ |

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FSS Plan

Main Procedures (2):

- If all characteristics of the filing are in accordance with national assignments-no change in reference situation- electronic application can be sent for notification- **MIFR**
- If not- BR defines list of affected networks- **Publication APP30B**

IMPORTANT TIP

ALL ADMINISTRATIONS

HAVE TO CHECK BR IFIC (Space Service) and send comment to notifying Administration



RESEAU A SATELLITE SATELLITE NETWORK RED DE SATELITE		VINASAT-FSS-131E-III		SECTION SPECIALE N° SPECIAL SECTION No. SECCION ESPECIAL N.º		AP30B/93	
ADM. RESPONSABLE ADM. ADM. RESPONSABLE		VTN		LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL		131.8 E	
NOTIFIE AU NOM DE NOTIFIED ON BEHALF OF				BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA		2606 / 30.10.2007	
				NUMERO D'IDENTIFICATION IDENTIFICATION NUMBER		104559003	

Administrations et/ou réseaux à satellite affectés / Affected administrations and/or satellite networks / Administraciones y/o redes de satélite afectadas / 受影响的主管部门和/或卫星网络 / Затронутые администрации и/или спутниковые сети / الإدارات و/أو الشبكات الساتلية المتأثرة / 受影响的管理部门和/或卫星网络

AT1f Notifying adm.	A1f3 Inter. sat. org.	A1a Sat. Network / A1b Plan beam identification	BR6a Id. no.	A4a1 Orbital long.	BR73 Max. Single Entry C/I degradation	BR74 Max. Aggregate C/I degradation
		App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [6/4 GHz] App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [6/4 GHz] App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [6/4 GHz] 附录30B第6条6.12、6.24、6.43、6.56或第7条7.3款 [6/4 GHz] Приложение 30B: Ст. 6, пп. 6.12, 6.24, 6.43, 6.56 или Ст. 7, п. 7.3 [6/4 ГГц] القطرات [6/4 GHz] 30B من العدد 7 بالبنين 3.7، القطر 6 من العدد 56.6، 43.6، 24.6، 12.6	101559017	107.0	--	0.12
RUS		STATIONAR-D3	101559037	35.0	--	0.40
RUS		STATIONAR-D4	101559038	45.0	--	0.48
RUS		STATIONAR-D6	101559040	120.0	--	0.11
		App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [13/10-11 GHz] App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [13/10-11 GHz] App.30B Art. 6, § 6.12, 6.24, 6.43, 6.56 ou Art. 7, § 7.3 [13/10-11 GHz] 附录30B第6条6.12、6.24、6.43、6.56或第7条7.3款 [13/10-11 GHz] Приложение 30B: Ст. 6, пп. 6.12, 6.24, 6.43, 6.56 или Ст. 7, п. 7.3 [13/10-11 ГГц] القطرات [13/10-11 GHz] 30B من العدد 7 بالبنين 3.7، القطر 6 من العدد 56.6، 43.6، 24.6، 12.6	100559017	107.0	--	0.09
VTN		VINASAT-FSS-1	100559017	107.0	--	0.09

SOU/MIS AU TITRE DE SUBMITTED UNDER SOMETIDO CON ARREGLO A	§ 6.57	DATE LIMITE POUR LA RECEPTION DES COMMENTAIRES EXPIRY DATE FOR THE RECEIPT OF COMMENTS FECHA LIMITE PARA LA RECEPCION DE LOS COMENTARIOS	---
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FSS Plan

Main Procedures (3):

- *After coordination- electronic submission to BR of Appendix 4 data with ACHEIVED agreements*
- *Publication in Special Section 30B*
- ***NOTIFICATION REQUEST- MIFR***

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NON-Planned Bands

Main principle: First come, first served

Most used bands: 4/6 (C), 11-13/14 GHz (Ku), 18/28(Ka)

Main Procedures

- **ADVANCE PUBLICATION information (API) (Article 9)**
- **COORDINATION (Article 9)**
- **NOTIFICATION AND RECORDING IN MIFR (Article 11)**
- **DUE DILIGENCE (Res. 49)**

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API


- Aim is to inform all administrations of any planned satellite network (GSO or Non-GSO) and its general description
- Formal mechanism for making initial assessment of the interference effects of that planned satellite network



API

- Electronic Request is to be sent to the BR (Appendix 4)
- To be initiated: 2- 7 years before the planned date of bringing into use of the network (or system)- very important
- BR publishes Special Section API/A



 UNION INTERNATIONALE DES TELECOMMUNICATIONS BUREAU DES RADIOCOMMUNICATIONS		INTERNATIONAL TELECOMMUNICATION UNION RADIOCOMMUNICATION BUREAU		UNIÓN INTERNACIONAL DE TELECOMUNICACIONES OFICINA DE RADIOCOMUNICACIONES	
IFIC / DATE IFIC / DATE IFIC / FECHA		2478 / 17.09.2002		SECTION SPECIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	
RESEAU(X) A SATELLITE SATELLITE NETWORK(S) RED(ES) DE SATELITE		AM-SAT 85W		API/A/2413	
		ADMINISTRATION RESPONSABLE RESPONSIBLE ADMINISTRATION ADMINISTRACIÓN RESPONSABLE		G	
RENSEIGNEMENTS RECUS PAR LE BUREAU LE INFORMATION RECEIVED BY THE BUREAU ON INFORMACIÓN RECIBIDA POR LA OFICINA EL			11.07.2002		
<p>Ces renseignements concernant les réseaux à satellite régis par l'article 9, sous-section 1B, sont publiés par le Bureau des radiocommunications en application du No. 9.2B. Ils font l'objet de la(s) procédure(s) suivante(s), indiquée(s) ci-dessous par un X dans la case pertinente. (Voir les commentaires du Bureau des radiocommunications)</p>					
<p>This information on satellite networks covered under Article 9, Sub-Section 1B, is published by the Radiocommunication Bureau in accordance with No. 9.2B. It is subject to the procedure(s) indicated below by an X in the relevant box. (see comments of the Radiocommunication Bureau)</p>					
<p>Esta información relativa a las redes de satélite regidas por el Artículo 9, sub-sección 1B, se publica por la Oficina de Radiocomunicaciones en virtud del No. 9.2B. Está sujeta al (los) procedimiento(s) siguiente(s), señalado(s) con una X en la casilla apropiada. (véase las observaciones de la Oficina de Radiocomunicaciones)</p>					
<input checked="" type="checkbox"/> Les renseignements ont été reçus conformément au No. 9.1		The information has been received pursuant to No. 9.1		La información ha sido recibida de conformidad con No. 9.1	
<input type="checkbox"/> Les renseignements ont été reçus conformément au No. 9.2		The information has been received pursuant to No. 9.2		La información ha sido recibida de conformidad con No. 9.2	
Toute administration estimant que ses réseaux à satellite, ses systèmes à satellites ou ses stations de terre, selon le cas, existants ou en projet, sont affectés, peut envoyer ses observations à l'administration qui a demandé la publication des renseignements, avec copie au Bureau des radiocommunications.		Any administration which considers that its existing or planned satellite systems or networks or terrestrial stations, as appropriate, are affected, may send its comments to the administration which has requested publication of the information, with a copy of such comments to the Radiocommunication Bureau.		Cualquier administración que considere que sus sistemas o redes de satélites o estaciones terrenales, según el caso, existentes o planificados se verán afectados, podrá comunicar sus comentarios a la administración que haya solicitado la publicación de la información, enviando una copia de dichos comentarios a la Oficina de Radiocomunicaciones.	
Information aussi disponible sur le / Information also available on the / Información también disponible en: Space Network Systems Online Service : http://www-br/sns/advpub.html					
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SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL		API/A/2413	
A A1a Sat. Network AM-SAT 85W	A1f1 Notifying adm	A1f2 Inter. sat. org	BR1 Date of receipt 11.07.2002
BR2a/BR2b Id. no. 102602067	BR3a Provision reference 9.17/1B	BR20 IFIC no. 2478	
A4a1 Orbital long. 85 W			
BR7a/BR7b Group id. 102602066		BR14 Special Section API/A/2413	
BR15 Provision reference 9.17/1B			
A2a Date of bringing into use 01.05.2002	A2b Period of valid. 20		
C1 Frequency Range: From 17.5 GHz To 17.8 GHz			
C4a Class of station BB BD BC			
C4b Nature of service CB CB CB			
C11a4 Service area AAA			
BR7a/BR7b Group id. 102602067		BR14 Special Section API/A/2413	
BR15 Provision reference 9.17/1B			
A2a Date of bringing into use 01.05.2002	A2b Period of valid. 20		
C1 Frequency Range: From 24.75 GHz To 25.25 GHz			
C4a Class of station BB BD BC			
C4b Nature of service CB CB CB			
C11a4 Service area AAA			
BR22 Administration remarks		La zone de service est limitée à la Région 2 The service area is limited to Region 2. El área de servicio está limitada a la Región 2	
BR23 Radiocommunication Bureau comments			
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Coordination

- **Electronic coordination request to BR**
- **date of receipt of the coordination request must be => six months after the date of receipt of API (9.1)**
- **request for coordination must come within 24 months after the date of receipt of the advance information, otherwise restart API (9.5D)**



Coordination

Article 9 shall be applied for coordination of GSO and NGSO networks in the following cases:

- **Between GSO networks - 9.7**
- **Between GSO and NGSO and between NGSO networks (in accordance with a footnote in the Table) - 9.12, 9.12A, 9.13**



Coordination

- **Space station of a satellite network w.r. to stations of terrestrial services where threshold value is exceeded - 9.14**
- **space station in the BSS (non-planned) with respect to terrestrial services - 9.11**
- **any station of a space service for which the requirement to seek the agreement of other administrations is included in a footnote to the Table - 9.21**

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Coordination

- > **The Bureau examines coordination requests (if complete) for conformity with:**
 - **the Table of Frequency Allocations**
 - **other provisions of the RR (e.g. compliance with PFD limits)**
- > **The BR identifies any administration with which coordination may need to be effected**
- > **Sharing criteria – Appendix 5**



Coordination

Example: 9.7. (GSO with GSO satellites)

- Coordination Arc: GSO FSS and BSS in certain frequency bands
- Criterion $\Delta T/T > 6\%$

Results of examinations are published in BR IFIC (Space Service) Section CR/C:

- List of ADMINISTRATIONS
- List of NETWORKS, for information



Disposition Provision Disposición		Tableau/Tabla/Cuadro I Résumé des conditions régissant la coordination Summary of coordination requirements Resumen de los requisitos de coordinación
X	9.7	ARS, AUS, B, BLR/IK, CAN, CHN, CYP, EGY, F/ESA, F/IEUT, G, HOL, I, IND, IRN, J, KOR, MLA, RUS, SEY, SNG, THA, UAE, UKR, USA
	9.7A	
	9.7B	
	9.42	
	AP30#7.1 / RS533	
	AP30A#7.1 / RS533	
	RS77	
	RS84	
	RS33#3	

Disposition Provision Disposición		Tableau/Tabla/Cuadro II Administrations susceptibles d'être défavorablement influencées (à titre d'information uniquement, voir numéro 9.36.1) Potentially affected administrations (for information only, see No. 9.36.1) Administraciones posiblemente afectadas (sólo para información, véase el N° 9.36.1)
	9.11	
X	9.11A	
	9.12	
	9.12A	
X	9.13	AUS, B, D, F, G, MLA, RUS, USA
X	9.14	AFG, AFS/MRN, AFS, AGL, ALB, ALG, AND, ARM, ARS*, AUS/CHR, AUS/HMD, AUS/ICO, AUS*, AUT*, AZE, BDI, BEL*, BEN, BFA, BGD, BHR*, BIH*, BLR*, BOT, BRM, BRU, BTN, BUL, CAF, CAG, CHN/HK/OT, CHN/MAC, CHN*, CLN*, CME, COD, COS, DOM, CPV, CTI, CVA, CYP, CZE*, D*, DJI, DNK/FRO, DNK*, ECU/RY, E*, EGY*, ERN, EST, ETH, F/AMS, F/ICRO, F/KER, F/MYT*, F/FREU*, F*, FIN*, G/ASC, G/DGA, G/GCA, G/GIB, G/SHN, G/TRC, G*, GAB, GEO, GHA, GMB, GNB*, GNE, GRG*, GUI, HNG, HOL*, HRV*, I*, IND*, IRL*, IRN*, IRQ, ISL, ISR, J*, JOR*, KAZ, KEN, KGZ, KOR*, KRE, KWT*, LAO, LBN, LBR, LBY, LIE, LSO, LTU, LUX, LVA*, MAU/RGD, MAU, MCO, MDA*, MDG, MKD*, MLA, MLD, ML, MLT*, MNS, MOZ, MRG/AE*, MRC*, MTN, MWI, NSR, NIG*, NMB, NOR/BVT, NOR*, NPL, OMA*, PAK*, PHL*, PLW, POL, POR/AZR, POR/MDR, POR*, QAT*, ROU, RRW, RUS*, S*, SDN, SEN*, SEY, SMR, SNG, SOM, SRL, STP, SUW, SUI*, SVK*, SVN*, SWZ, SYR*, TCD, TGO, THA, TJK, TKM*, TMP, TUN, TUR*, TZA, UAE*, UGA, UKR*, USA/D, UZB, VTN, YEM*, YUG*, ZMB, ZWE
	9.21/A ¹	
	9.21/B ¹	
	9.21/C ¹	
	RS33#2.1	



Coordination

IMPORTANT TIP
ALL ADMINISTRATIONS
HAVE TO CHECK BR IFIC (Space Service)
Special Section CR/C in order to protect terrestrial services

- For coordination requests under **9.11, 9.12 to 9.14 and 9.21**, the absence of response within the 4-month period means agreement
- Electronic comment (SpaceCom) to be sent to BR
- BR checks of received comments and published CR/D **(9.53A)**

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TUNIS 2009

UNION INTERNATIONALE DES TELECOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS
INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU
UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
OFICINA DE RADIOCOMUNICACIONES

RESEAU(X) A SATELLITE SATELLITE NETWORK(S) REDES DE SATELITE	GARUDA-52E	SECTION SPECIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	CR/D/100
STATUT (TERRITORY)		DATE	

Tableau/Table/Cuadro I

Disposition Provision Disposición	Récapitulatif des coordinations à effectuer Summary of coordination requirements Resumen de los requisitos de coordinación
9.11	
X 9.11A	
9.12	
9.12A	
X 9.13	AUS, F, G, MLA, USA
X 9.14	ARM, ARS, AUS/CHR, AUS/HMD, AUS/ICO, AUS, CYP, EGY, FI/MS, F/CRO, F/KER, F/MYT, F/REU, F, G/ASC, G/DGA, G/GCA, G/GIB, G/SHN, G/TRC, G, HNG, HOL, I, J, KEN, MLA, PHL, POR/AZR, POR/MDR, POR, SNG, SVN, SYR, THA, TUR, UAE, USA/D, VTN
9.21A	
9.21B	
9.21C	
RS33#2.1	

RÉFÉRENCE DE LA SECTION SPECIALE (IFIC / DATE)
SPECIAL SECTION REFERENCE (IFIC / DATE)
REFERENCIA DE LA SECCIÓN ESPECIAL (IFIC / FECHA)
CR/C/327 (IFIC 2477 / 03.09.2002)

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TUNIS 2009

Coordination

- **Bilateral negotiations**
- **Consideration of technical parameters**
- **Correspondence, meetings**
- **Assistance of Bureau (9.59, 9.60-9.65)**
- **Fulfilment of Coordination requirement**

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TUNIS 2009



Notification

- **Notifying administration sends notification request to BR (Appendix 4)**
- **Indication of all administrations with whom coordination has been successfully finished**
- **Publication of Part I-S**

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TUNIS 2009



PARTIE I-S / PART I-S / PARTE I-S / 第I-S部分 / 第I-S部分 / 第I-S部分

A) A1a Sat. Network: GEOSAT KU 1E A1f1 Notifying adm: F A1f3 Inter. sat. org: BR1 Date of receipt: 13.11.2007 BR20/BR21 BR-IFIC no./part: 2613/1
 BR6a/BR6b Id. no.: 107500493 BR3a/BR3b Provision reference: 11.2 N BR2 Adm. serial no.: 010 BAR R

A1f2 Submitted on behalf: A4a1 Orbital long: 1.E BR61 Original orb. long: 1.E A4a2a East Long. tolerance limit: 0.1 A4a2b West Long. tolerance limit: 0.1 A4a2c Inclination excursion: 0.1
 A17a Compliance with PFD limit dB(W/(m²·1MHz)) in the band 1164 - 1215 MHz: A17b1 Calculated aggregate PFD value in the band 4990.0 - 5000.0 MHz: dB(W/(m²·10 MHz))
 A17b2 Calculated aggregate PFD value in the band 5030.0 - 5150.0 MHz: dB(W/(m²·150 kHz))
 A17d Mean PFD in the band 35.5 - 36.0 GHz: dB(W/(m²·1 MHz))
 A17e2a Calculated PFD value in the band 42.5 - 43.5 GHz at RA SDT: dB(W/(m²·1 GHz))
 A17e2b Calculated PFD value in the band 42.5 - 43.5 GHz at RA SDT: dB(W/(m²·500 kHz))
 A17e2c Calculated PFD value in the band 42.5 - 43.5 GHz at RA VLBI: dB(W/(m²·500 kHz))
 A18a Compliance with off-axis power limitation: Y A18a Aircraft earth station commitment:

B1a/BR17 Beam designation: BAR B1b Steerable: Y B2 Emi-Rcp: R B3a1 Max. co-polar gain: 35 B3d Pointing accuracy: 0.15
 B3b1 Co-polar ant. gain contours diag: 4 B3e Ant. gain vs orbit long. diag: 7
 B3c1 Co-polar antenna pattern: Co-polar ref. pattern: Coef. A: Coef. B: Co-polar rad. diag:

BR7a/BR7b Group id.: 107656628 BR1 Date of receipt: 13.11.2007 C2c RR No. 4.4: A2a Date of bringing into use: 15.08.2006 A2b Period of valid.: 40 A3a Cp. agency: 10 A3b Adm. resp.: A BR16 Value of type C8b: BR62 Expiry date for bringing into use: 21.11.2007 BR63 Confirmed date of bringing into use: BR64 Date of receipt of 1st Res49: BR14 Special Section: C4a Class of station: BC C3a Assigned freq. band: 36000 C5a Noise temperature: 450
 C4b Nature of service: CP C6a Polarization type: H C6b Polarization angle: C11a1 Service area no.: 1 C11a2 Service area: C11a3 Service area diagram: 4
 A5/A6 Coordinations/Agreements: 9.7 C: F/BU/MLA

C2a1 Assigned frequency			
14.022 GHz	14.106 GHz	14.19 GHz	14.272 GHz
14.064 GHz	14.148 GHz	14.232 GHz	14.314 GHz
			14.398 GHz
			14.44 GHz
			14.482 GHz

A13 Ref. to Special Sections		C7a Design of emission		C8a1/C8b1 Max. peak pwr		C8a2/C8b2 Max. pwr dens.		C8c1 Min. peak pwr		C8c2 Atch.		C8c3 Min. pwr dens.		C8c4 Atch.		C8e1 C/N ratio		C8e2 Atch.	
RP1/A	/1498	1	36K0MXX--	24.2	-49.9	14.6													
CV/C	/917	2	36K0FXX--	24	-42	10													
		3	8M10MXX--	15.1	-52.5	8.1													
		4	98K0MXX--	-5.8	-54.1	-14.9													

C10b1 Assoc. earth station id.		C10b2 Type		C10c1 Geographical coord.		C10c2 Ctry		C10d1/C10d2 Cts. / Net.		C10d3 Max. iso. gain		C10d4 Brwidth		C10d7 Ant. diameter		C8g1 Max. aggr. pwr.		C8g2 Aggr. bandwidth		C8g3 Transp. bandwidth = Aggr. bandwidth	
A350								1	TC	CP	52.5	0.43									

C10d5a Co-polar antenna pattern							
C10b1 Assoc. earth station id.		Co-polar ref. pattern		Coef. A		Coef. B	
A350		RBC-580					

Notification

•BR checks- conformity with RR and coordination requirements

•Favourable Findings (RECORDING IN MIFR)

Published in Part II-S of the BR-IFIC

•Unfavourable findings

Published in Part III-S of the BR-IFIC



Due diligence

- **Resolution 49:** to address the problem of reservation of orbit and spectrum capacity without actual use (Res. 18 of Kyoto Plenipotentiary)
- **Application:** for any non-planned satellite network in the FSS, MSS, BSS subject to coordination for majority plan networks



UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS BUREAU DES RADIOCOMMUNICATIONS		INTERNATIONAL TELECOMMUNICATION UNION RADIOCOMMUNICATION BUREAU		UNIÓN INTERNACIONAL DE TELECOMUNICACIONES OFICINA DE RADIOCOMUNICACIONES																																																	
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A Atm. Sat. Network GEOSAT KU 1E A111 Notifying adm. F A112 Inter. sat. org. BR1 Date of receipt 13.11.2007																																																					
BR6a/BR6b Id. no. 107590026 BR6c Linked id. no. 101520279 BR3a Provision reference RES49 BR2 Adm. serial no. 																																																					
A4e1 Orbital long. 1 E																																																					
BR41 Commercial name GEOSAT KU 1E																																																					
BR30 Spacecraft manufacturer ASTRIUM SAS																																																					
BR31 Date of execution of the contract 10.09.2003 BR32 Contractual delivery window From 10.01.2006 To 10.01.2006 BR33 Number of satellites procured 1																																																					
BR34 Launch vehicle provider ILR INTERNATIONAL BR35 Launch vehicle PROTON M BRBZ2 M																																																					
BR36 Date of execution of the contract 23.11.2004 BR37 Anticipated launch or delivery window From 04.08.2006 To 04.08.2006																																																					
BR38 Launch facility BAIKONUR BR39 Country / location KAZ BR40 Geographical coordinates 063E15 36 45N37 48																																																					
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BR22 Administration remarks 																																																					
BR23 Radiocommunication Bureau comments 																																																					



Due diligence

- Six months before expiry of the notified period of bringing into use, the BR sends a reminder.
- RS49 Special Section of IFIC
- If the complete due diligence information is not received within the specified time limit, the network shall no longer be taken into account .

