Notification and Recording of Frequency Assignments in Space Services

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OVERVIEW

Notification & Recording in MIFR

- Which frequency assignments?
- When?
  - Space stations
  - Earth stations
- Program
- Technical Examinations
- Completion of coordination
- Findings & Publication

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WHICH FREQUENCY ASSIGNMENTS SHALL BE NOTIFIED?

- **Frequency assignments of transmitting and receiving earth and space stations (No. 11.3 -11.8)**
  - **Capable of causing harmful interference**
  - **Used for international radiocommunication**
  - **Subject to a world or regional frequency plan which does not have its own notification procedure**
  - **Subject to coordination procedure of Article 9**
  - **Seeking international recognition**
  - **Non conforming assignment under No. 8.4 seeking to be recorded into MIFR for information purposes only**
- **Except ES in Amateur-Satellite service (No. 11.14)**
- **Radio Astronomy is optional (No. 11.12)**

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PRIOR TO NOTIFICATION PROCEDURE

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NOTIFICATION PROVISIONS

Article 11 of the Radio Regulations

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WHEN TO INITIATE THE NOTIFICATION PROCEDURE

SPACE STATIONS

- **Assignments that do not require coordination under Sect II of Article 9**
  - **Generally upon the completion of the Advance Publication procedure**
- **Assignments that require coordination under Sect II of Article 9**
  - **Generally upon the completion of the Coordination procedure**

Time limit → 7 years

No.11.44.1

The first notice for recording the space station frequency assignments must be carried out before the end of 7 years from the date of receipt of (API) information under No. 9.1.

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NOTIFICATION OF EARTH STATIONS

EARTH STATIONS

- Associated space station must already be recorded into the MIFR
- Thereafter, notification of earth station should be initiated

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Submission of NOTIFICATION

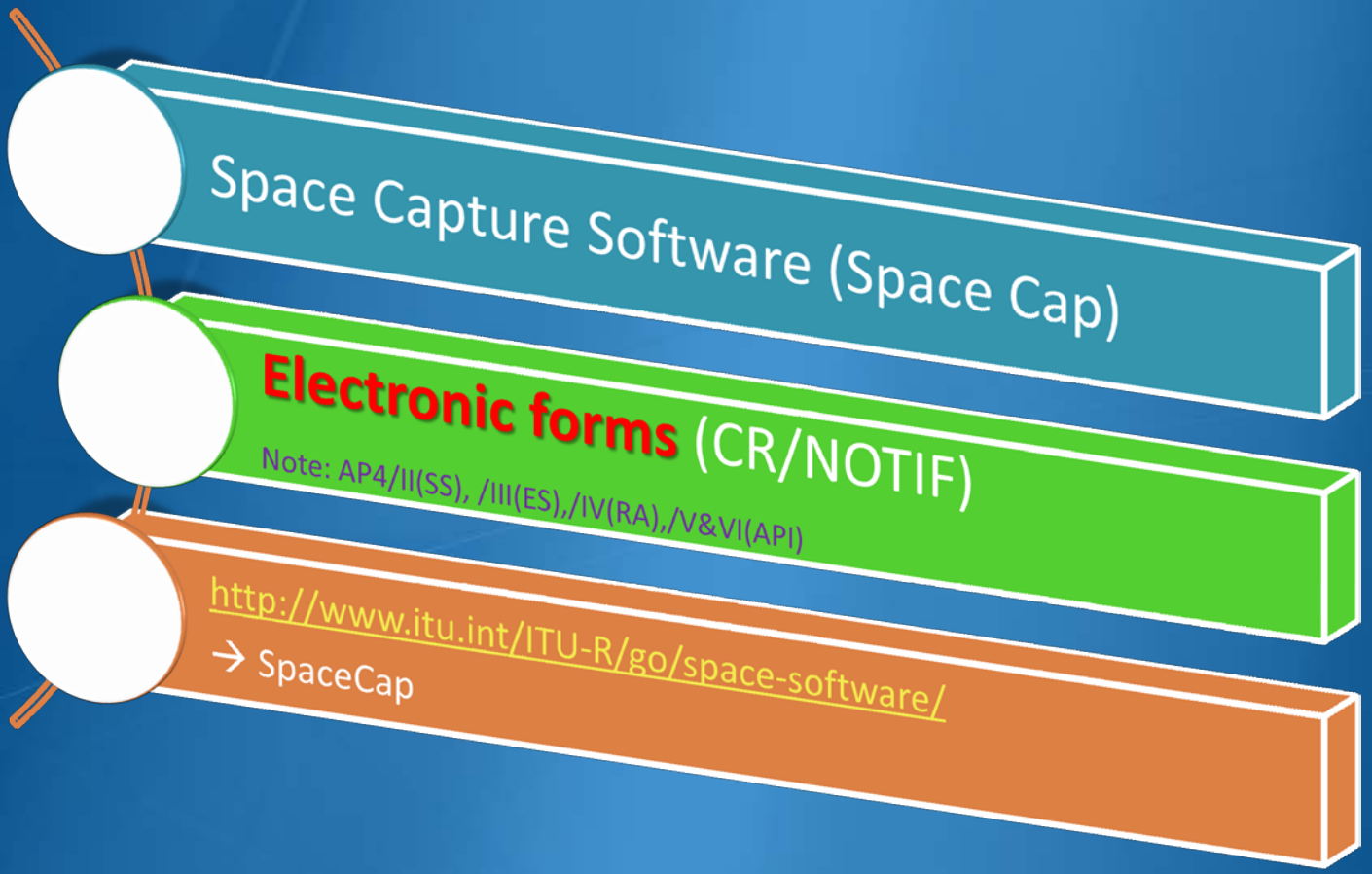
- Provide the relevant characteristics as specified in Appendix 4 (No. 11.15)

- Res 55 requires all notice forms to be submitted in electronic format after 3 June 2000

- Graphical data can be submitted either in electronic format (.mdb) or paper form

- Tools available from BR IFIC on DVD ROM and ITU Website

NOTIFICATION SOFTWARES (1)



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NOTIFICATION SOFTWARES (2)

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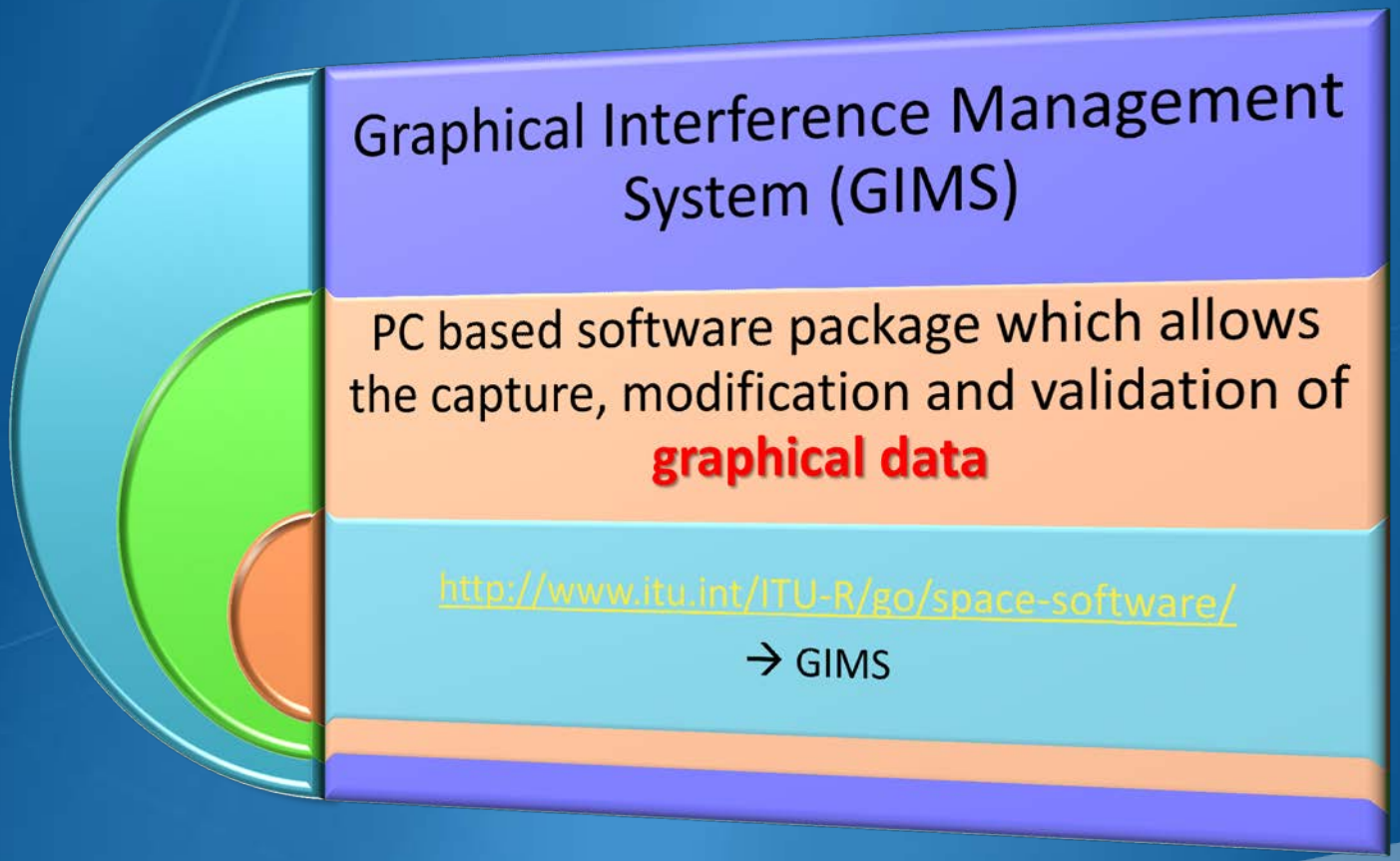
NOTIFICATION SOFTWARES (3)



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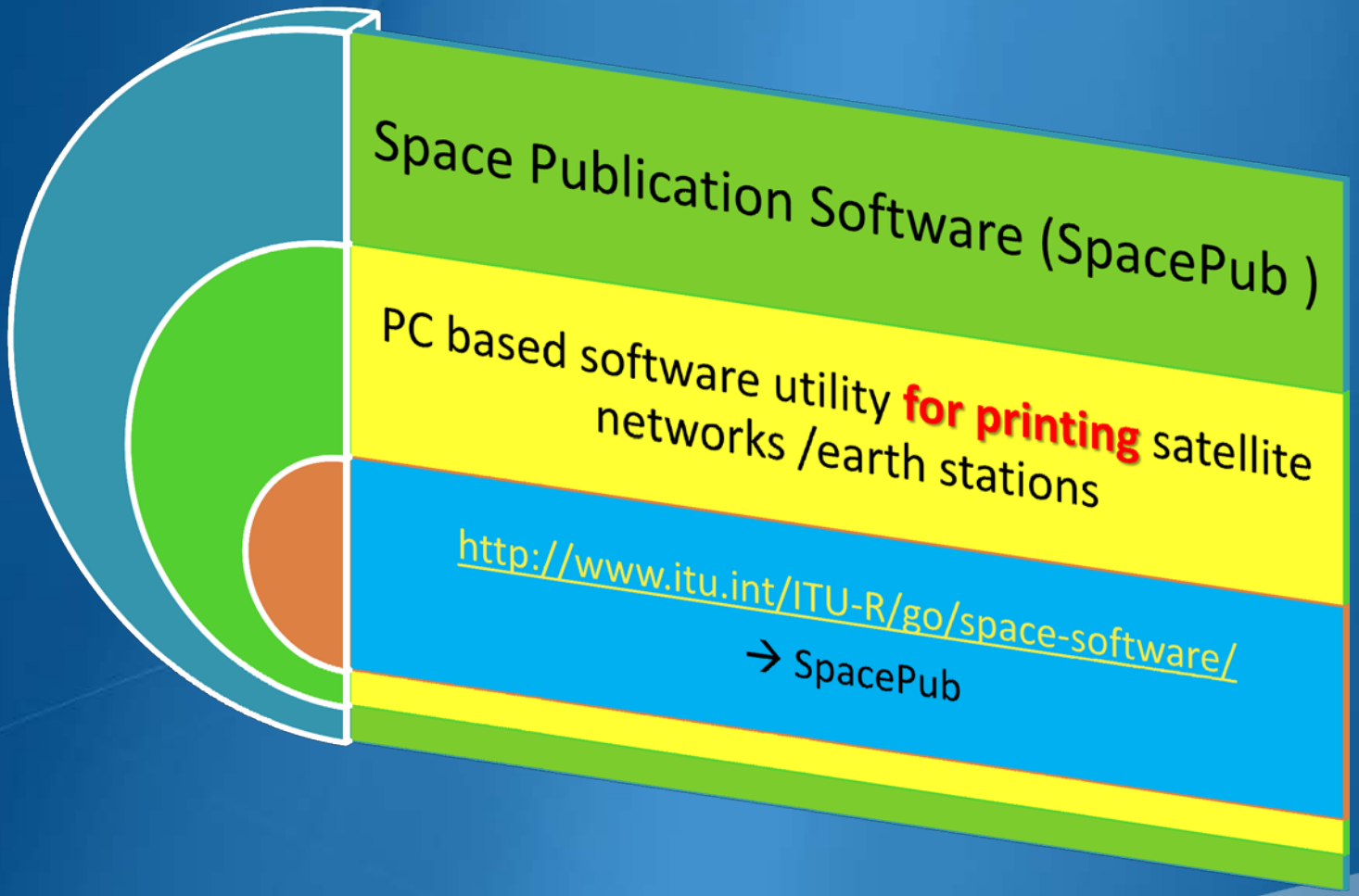
NOTIFICATION SOFTWARES (4)



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NOTIFICATIONS "AS RECEIVED"

Notifications "as received" are made available by the BR within 30 days (Res 55)

- **International Frequency Information Circular(IFIC) DVD-ROM**

- **This information can also be monitored through the ITU website**

  www.itu.int➔ Radiocommunication(ITU-R) ➔ Space Services ➔ BR IFIC➔ List of information "as received"

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USEFUL REMINDERS DURING NOTIFICATION SUBMISSIONS

- Ensure forms are filled up accurately and correctly – use SpaceCap, GIMS and SpaceVal software for preparation of submissions in electronic format
- Submit forms in electronic format – Access files with .mdb (extension .itu?), and NOT the Acrobat (.PDF) or Word (.doc) files, should be submitted to the BR
- Ensure most up-to-date coordination information (agreements & parameters) has been provided
- Ensure the relevant Advance Publication and Coordination Special Sections exist for the assignments being notified
- Take note of the regulatory time constraints (Nos. 11.44, 11.44.1, No.11.43A, Res49, Res552 and 11.25)

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COMPLETENESS CHECK

Upon receiving the notices, the Bureau as specified in No. 11.27, shall check for the completeness of the notice.

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INCOMPLETE NOTICES & NON-RECEIVABLES

- **Mandatory data has not been provided or incorrect**
- **A notification received by the BR earlier than the prescribed date limit in No. 11.25**
- **A notice for a particular procedure is receivable only if the previously applicable procedures have been effected. If not, the notice will be deemed not receivable.**
  - ***Examples***
    - *A notification relating to a Satellite network is not supported by an advance and/or coordination publication*
    - *A notification relating to a Earth Station is not supported by a Space Station recorded in MIFR*

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DATE OF RECEIPT OF NOTIFICATION(1)

- Formal date of receipt is established when the Bureau confirms that the information submitted is ***complete and correct***
- Accordingly, where a notice does not contain all of the mandatory information as defined in the AP4 of the Radio Regulations, further processing of the notice will remain in abeyance and a date of receipt will not be established until the missing information is received.

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DATE OF RECEIPT OF NOTIFICATION(2)

If upon establishment that all mandatory data have been submitted and there are further clarification required, the Bureau shall request the administration to provide the *clarification within 30 days*.

If the information is received within the 30 days period, the original date of receipt is retained, otherwise, a new date of receipt will be established.

After one year, any pending submission containing incomplete information or clarification shall be returned to the notifying administration.

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PUBLICATION OF COMPLETE INFORMATION

- **Complete notices are published in *part I-S* of the BR IFIC DVD-ROM *within 2 months* of the date of receipt (No. 11.28)**
- **Complete notices will be used for further examination and may differ from those published "as received"**

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EXAMINATION OF NOTICES

- Regulatory deadlines – Nos. 11.25, 11.44, 11.44.1, 11.43A, RES 49 & Res 552
- No. 11.31- conformity with the Table of Frequency Allocations and other provisions of the Radio Regulations
- No. 11.32- conformity with the coordination procedures
- Nos. 11.32A & 11.33 – probability of harmful interference

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Regulatory Deadline Check

- **No. 11.44.1**

  The first notice for recording of the assignments must be within 7 years

- **No. 11.44**

  Notified date of bringing into use should be within 7 years

- **No. 11.25**

  Date of bringing into use cannot be more than 3 years from date of notification

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DATE OF BRINGING INTO USE

No. 11.44B (WRC-12)

A frequency assignment to a space station in the geostationary-satellite orbit shall be considered as having been brought into use when a space station in the geostationary-satellite orbit with the capability of transmitting or receiving that frequency assignment has been deployed and maintained at the notified orbital position for a **continuous period of ninety days**.

The notifying administration shall so inform the Bureau **within thirty days from the end of the ninety-day period**.

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AFTER SEVEN YEARS PERIOD

- **No. 11.48**
  - ❑ **Frequency assignments are not brought into use or**
  - ❑ **first notice has not been submitted or**
  - ❑ **due diligence information has not been submitted**

- **Information published under Nos. 9.2B and 9.38, as appropriate, shall be cancelled**

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SUSPENSION OF ASSIGNMENTS

- **No. 11.49**
  - **Recorded frequency assignment is suspended more than six months**
  - **Bureau will be informed not later than six months**
  - **When the recorded assignments brought back into use not later than three years from the date of suspension**

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Examination under No. 11.31 (1)

- Conformity of Table of Frequency Allocations under Art. 5
- Other relevant provisions (Rules of Procedure)
  - Footnotes, RESs, RECs
  - Successful application of No. 9.21
  - Articles 21 to 57 (Space → 21,22,23)

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Examination under No. 11.31 (2)

Provisions	*General Description of the Examination*
Art 5	*Checks if frequency is in compliance with table of frequency allocation including footnotes*
Art 21 Sect III	*Checks that power limits of earth stations are complied*
Art 21 Sect IV	*Checks that minimum elevation angles of earth stations are complied*
Art 21 Sect V	*Checks that limits of power flux density (PFD) from space stations are complied*
Article 22 Sect II	*Checks the PFD limits on NGSO networks are complied*
Article 22 Sect III	*Checks that station keeping of space stations are complied*
Article 22 Sect IV	*Checks that pointing accuracies of antennae on geostationary satellites are complied*
Article 22 Sect VI	*Checks that earth station off-axis power limitations in the fixed satellite service are complied*
Article 23 Sect II	*Checks the condition "a space station in the BSS shall reduce to the maximum the radiation over the territory of other countries unless an agreement has been previously reached with such countries" is complied*
9.21	*Checks if agreement has been achieved when applicable*

Examination under No. 11.31 (3)

When No. 11.31 finding is favourable, the assignment shall be recorded in the Master Register,

or examined further to Nos. 11.32 to 11.33, as appropriate

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Examination under No. 11.32 (1)

- Basically, the requirement of all forms of coordination should be completed

- Findings will be based on information available on the A5/A6 boxes

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Examination under No. 11.32 (2)

Space Stations

- Check if notified characteristics are the same or within the envelope of coordination characteristics
  - ✓ If not → relevant interference calculations are carried out on the basis of AP5
  - ✓ If additional administrations identified → unfavourable finding will be given and notice returned. → Administration would be requested to publish a modification to the related coordination Special Section
- See RoP(Rules of Procedure) 11.32

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RESUBMISSIONS(1)

Unfavourable finding under No. 11.32

- No. 11.46 is applicable
  - The resubmission will retain the original date of submission, unless the resubmission is received more than 6 months after the date of which the original submission was returned
- In other words, important to resubmit within 6 months to retain the original date of submission

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RESUBMISSIONS(2)

Unfavourable finding under No. 11.31

- **No. 11.46 is not applicable**
- **Will have a new date of receipt upon resubmission**

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No. 11.32 Examination(ES)

Earth Stations

- Establishment that the corresponding assignments of associated space station has been recorded into the MIFR
- Establishment that the earth station has completed coordination
- Establishment that the earth station is located in the service area of the associated space station

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NOS. 11.32A & 11.33 EXAMINATION

The examination of the probability of harmful interference under Nos. 11.32A & 11.33 is carried out when the notifying administration states that the coordination procedure *could not be successfully completed* for the assignments being notified

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NOS. 11.32A & 11.33 EXAMINATION

Procedure of 11.32A → *C/I calculation*

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No. 11.35 – Cases where probability of harmful interference cannot be carried out

In cases where the Bureau is not in a position to conduct the examination under No.11.32A or No.11.33 (i.e. other than No. 9.7), the Bureau shall immediately inform the notifying administration, which may then *resubmit its notice under No.11.41*, under the assumption that the finding under No.11.32A or No.11.33 is unfavourable.

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RESUBMISSION
RECORDING UNDER NO: 11.41

Unfavourable finding under Nos. 11.32A & 11.33

- Possible to be resubmitted under No. 11.41
- All efforts have been made to effect coordination with the relevant ADMs with actual proof(?) however no success (No. 11.41.2)
- Bureau enters the assignment in Master Register with an indication (13A: ANN 13B1: 11.41, 11.41|X| abc)
- Upon *completion of coordination* relevant remark or indications (13A: ANN 13B1: 11.41 → 13A: AA-13B1: (null) , 11.41|X|→9.7|O| abc) will be removed *(No. 11.41B)*

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INTERFERENCE FROM ASSIGNMENTS RECORDED UNDER NO: 11.41 (1)

- Upon receipt of a report providing the particulars relating to the harmful interference, it shall immediately eliminate this harmful interference (No. 11.42)
- The format prescribed in Appendix 10, when providing the particulars relating to the harmful interference

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INTERFERENCE FROM ASSIGNMENTS RECORDED UNDER NO: 11.41 (2)

- **No. 11.42A**
  - **administrations shall cooperate in elimination of harmful interference**
  - **assistance from Bureau may be requested to resolve the issue**
  - **The Bureau will prepare a report for the next meeting of Board for its consideration and any required action (including the possible cancellation of the assignment recorded under No.11.41)**

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ASSIGNMENT LEVELS(1)

- Examination is done at assignment level
- Finding is established at group level
- Different frequency assignments may be notified at different times

ASSIGNMENT LEVELS(2)

Split findings (Group I.D. No. 99999991)

Example 1 (Class of Station : TC)

13730 MHz

Unfavourable (99999992) ← 13770 MHz

13810 MHz

→ Favourable (99999991)

Example 2 (Class of Station : TC & TM)

TC 5945 MHz	} Favourable	TM 5945 MHz	} Unfavourable
5985 MHz		5985 MHz	
6025 MHz		6025 MHz	

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ASSIGNMENT LEVELS(2)

Split findings (Group I.D. No. 111616457)

E_TSUM Requested by: NESA Date: 10.03.2011 15:02:55 DB: SNSP-ING Plan Id.: Notice type: GEO

A | A1a Sat. Network: UKSAT-19 | A1f1 Notifying adm.: G | A1f3 Inter. sat. org.: | BR1 Date of receipt: 26.01.2011 | BR20 BR IFIC no.:

BR6a/BR6b Id. no.: 111520036 | BR3a/BR3b Provision reference: 9.6 C | BR2 Adm. serial no.: | VDR E

BR7a/BR7b Group id.: 111616457 | BR1 Date of receipt: 26.01.2011 | C2c RR No. 4.4:

A2a Date of bringing into use: 13.01.2017 | A2b Period of valid.: 30 | A3a Op. agency: 186 | A3b Adm. resp.: A | BR16 Value of type C8b:

BR62 Expiry date for bringing into use: 29.04.2017 | BR63 Confirmed date of bringing into use: | BR64 Date of receipt of 1st Res49:

BR14 Special Section:

C4a Class of station: EC | C3a Assigned freq. band: 2500000

C4b Nature of service: CP | C6a Polarization type: M | C6b Polarization angle:

C8d1 Max. tot. peak pwr.: 42 | C8d2 Contiguous bandwidth: 2500000

C11a1 Service area no.: 1 | C11a2 Service area: | C11a3 Service area diagram: 1

A5/A6 Coordinations/Agreements:

C2a1 Assigned frequency

38.75	GHz	41.25	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 Attch.	C8c3 Min. pwr dens.	C8c4 Attch.	C8e1 C/N ratio	C8e2 Attch.
API/A	X/21.16									
	1	500MG7W--	31	-56	19.2		-67.8		9	
	2	100MG7W--	24	-56	12.2		-67.8		9	
	3	1M00G7W--	4	-56	-7.8		-67.8		9	
	4	100KG7W--	-6	-56	-17.8		-67.8		9	

C10b1 Assoc. earth station id.	C10b2 Type	C10c1 Geographical coord.	C10c2 Ctry	C10d1/C10d2 Cls. / Nat.		C10d3 Max. iso. gain	C10d4 Bmwdth	C10d6 Noise temp.	C10d7 Ant. diameter
TYPICAL 0.3M	T	FAVOURABLE		1 TC	CP	40.2	1.77	200	
TYPICAL 0.6M	T			1 TC	CP	46.2	0.79	200	
TYPICAL 1.2M	T			1 TC	CP	52.2	0.39	200	

C10d5a Co-polar antenna pattern

C10b1 Assoc. earth station id.	Co-polar ref. pattern	Coef. A	Coef. B	Coef. C	Coef. D	Phi1	Co-polar rad. diag.
TYPICAL 0.3M	REC-465-5						
TYPICAL 0.6M	REC-580-6						
TYPICAL 1.2M	REC-580-6						

Findings | 2D Date of protection: | 13A Conformity with RR: | 13B1 Provision: | 13B2 Remarks: | 13B3 Date of Review:

13C Remarks:

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PUBLICATION OF FINDINGS

Favourable Findings

- **Published in Part II-S of the BR-IFIC DVD-ROM**

Unfavourable findings

- **Published in Part III-S of the BR-IFIC DVD-ROM**

- **BRIFIC publications also available on the ITU website**

  www.itu.int ➔ Radiocommunication(ITU-R) ➔ Space Services ➔ BR IFIC ➔ BR IFIC data

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Definition in the BR IFIC

- **Part II-S - Findings adopted concerning new frequency assignments or modifications to existing frequency assignments resulting in the recording of the frequency assignment in the Master Register;**

- **Part III-S - Unfavourable Findings adopted concerning new frequency assignments or modifications to existing frequency assignments resulting in the return of the notice to the notifying administration.**

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PART II-S DETAILS

PARTIE II-S / PART II-S / PARTE II-S / 第II-S部分 / ЧАСТЬ II-S / II-Sجـزء

A	*A1a* Sat. Network	RADARSAT-3B	*A1f1* Notifying adm.	CAN	*A1f3* Inter. sat. org.		*BR1* Date of receipt	04.04.2012	*BR20/BR21* BR IFIC no./part	2731/2	
BR6a/BR6b Id. no.	112500061		*BR3a/BR3b* Provision reference	11.2	N	*BR2* Adm. serial no.			RADR1	R	

A13 Ref. to Special Sections: API/A /7039

C8b3a Mean peak pwr | *C8b3b* Mean pwr dens. | *C8a1/C8b1* Max. peak pwr | *C8a2/C8b2* Max. pwr dens.

Findings | *2D* Date of protection: 04.04.2012 | *13A* Conformity with RR: A- -- -- | *13B1* Provision: 5.448A 5.448B | *13B2* Remarks: R | *13B3* Date of Review: A/16.05.2018

13C Remarks

B1a/BR17 Beam designation: RADR10 | *B1b* Steerable: Y | *B2* Emi-Rcp: R | *B3a1* Max. co-polar gain: 46

B3c1 Co-polar antenna pattern

Co-polar ref. pattern	Coef. A	Coef. B				Co-polar rad. diag.
						5

B4a3a1 Angle alpha: 270 | *B4a3a2* Angle beta: 59

BR7a/BR7b Group id.: 112630936 | *BR1* Date of receipt: 04.04.2012 | *C2c* RR No. 4.4

A2a Date of bringing into use: 01.12.2014 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 6 | *A3b* Adm. resp.: A | *BR16* Value of type C8b

BR62 Expiry date for bringing into use: 15.06.2018 | *BR63* Confirmed date of bringing into use | *BR64* Date of receipt of 1st Res49

BR14 Special Section

C4a Class of station: E3 | *C5d1* Noise temperature (sensors): 680 | *C5d2* Noise bandwidth (sensors): 290000

C4b Nature of service: CV | *C6a* Polarization type: M | *C6b* Polarization angle

A5/A6 Coordinations/Agreements

C2a1 Assigned frequency: 5405 MHz

A13 Ref. to Special Sections: API/A /7039

C8b3a Mean peak pwr | *C8b3b* Mean pwr dens. | *C8a1/C8b1* Max. peak pwr | *C8a2/C8b2* Max. pwr dens.

Findings | *2D* Date of protection: 04.04.2012 | *13A* Conformity with RR: A- -- -- | *13B1* Provision: 5.448A 5.448B | *13B2* Remarks: R | *13B3* Date of Review: A/16.05.2018

13C Remarks

B1a/BR17 Beam designation: RADR2 | *B1b* Steerable: Y | *B2* Emi-Rcp: R | *B3a1* Max. co-polar gain: 46

B3c1 Co-polar antenna pattern

Co-polar ref. pattern	Coef. A	Coef. B				Co-polar rad. diag.
						5

B4a3a1 Angle alpha: 0 | *B4a3a2* Angle beta: 59

BR7a/BR7b Group id.: 112630921 | *BR1* Date of receipt: 04.04.2012 | *C2c* RR No. 4.4

A2a Date of bringing into use: 01.12.2014 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 6 | *A3b* Adm. resp.: A | *BR16* Value of type C8b

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PART III-S DETAILS

PARTIE III-S / PART III-S / PARTE III-S / 第III-S部分 / ЧАСТЬ III-S / III-Sالجزء

A	*A1a* Sat. Network	EXPRESS-5KA	*A1f1* Notifying adm.	RUS	*A1f3* Inter. sat. org.		*BR1* Date of receipt	02.04.2012	*BR20/BR21* BR IFIC no./part 2731/3
	BR6a/BR6b Id. no.	112500062	*BR3a/BR3b* Provision reference	11.2	N		*BR2* Adm. serial no.		KAUR R

C10b1 Assoc. earth station id.	C10d5a Co-polar antenna pattern: Co-polar ref. pattern	Coef. A	Coef. B	Coef. C	Coef. D	Phi1	Co-polar rad. diag.
TYPICAL KA1	A-25*LOG(FI)	29					

Findings *2D* Date of protection | *13A* Conformity with RR A- N- N- | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

BR7a/BR7b Group id. 112621635 | *BR1* Date of receipt 02.04.2012 | *C2c* RR No. 4.4

A2a Date of bringing into use 16.06.2014 | *A2b* Period of valid. 20 | *A3a* Op. agency 11 | *A3b* Adm. resp. A | *BR16* Value of type C8b

BR62 Expiry date for bringing into use 11.12.2015 | *BR63* Confirmed date of bringing into use | *BR64* Date of receipt of 1st Res49

BR14 Special Section

C4a Class of station EC | *C3a* Assigned freq. band 100000 | *C5a* Noise temperature 600

C4b Nature of service CP | *C6a* Polarization type V | *C6b* Polarization angle

C11a1 Service area no. 1 | *C11a2* Service area | *C11a3* Service area diagram 1

A5/A6 Coordinations/Agreements			
9.7	O		ARS CZE F/EUT IRN MLA PAK RUS/IK UAE
X/11.32A	X		CHN CYP D F HOL KAZ LUX MCO PNG THA TUR

C2a1 Assigned frequency

27.55	GHz	27.75	GHz	27.95	GHz	28.15	GHz	28.35	GHz	28.55	GHz
27.65	GHz	27.85	GHz	28.05	GHz	28.25	GHz	28.45	GHz		

A13 Ref. to Special Sections	
API/A	/5491
CR/C	/2427

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Attch.	*C8c3* Min. pwr dens.	*C8c4* Attch.	*C8e1* C/N ratio	*C8e2* Attch.
1	100MG7W--	30	-50	20		-60		10	
2	50M0G7W--	27	-50	17		-60		10	
3	2M40G7W--	13.7	-50	3.7		-60		10	
4	64K0G7W--	-1.9	-50	-11.9		-60		10	

C10b1 Assoc. earth station id.	*C10b2* Type	*C10c1* Geographical coord.	*C10c2* Ctry	*C10d1/C10d2* Cls. / Nat.	*C10d3* Max. iso. gain	*C10d4* Bmwdth		*C10d7* Ant. diameter	*C8g1* Max. aggr. pwr.	*C8g2* Aggr. bandwidth	*C8g3* Transp. bandwidth = Aggr. bandwidth
TYPICAL KA1	T			1 TC CP	39.7	1.7					

C10b1 Assoc. earth station id.	C10d5a Co-polar antenna pattern: Co-polar ref. pattern	Coef. A	Coef. B	Coef. C	Coef. D	Phi1	Co-polar rad. diag.
TYPICAL KA1	A-25*LOG(FI)	29					

Findings *2D* Date of protection | *13A* Conformity with RR A- N- N- | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

BR7a/BR7b Group id. 112621636 | *BR1* Date of receipt 02.04.2012 | *C2c* RR No. 4.4

A2a Date of bringing into use 16.06.2014 | *A2b* Period of valid. 20 | *A3a* Op. agency 11 | *A3b* Adm. resp. A | *BR16* Value of type C8b

BR62 Expiry date for bringing into use 11.12.2015 | *BR63* Confirmed date of bringing into use | *BR64* Date of receipt of 1st Res49

BR14 Special Section

C4a Class of station EC | *C3a* Assigned freq. band 100000 | *C5a* Noise temperature 600

C4b Nature of service CP | *C6a* Polarization type H | *C6b* Polarization angle

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THANK YOU