



Capture, Validation and Submission of Earth Stations

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ITSO/ITU WORKSHOP on Satellite Communications

Afralti, Nairobi

8 - 12 June 2015



15  1865
2015



Two steps to be followed



Coordination

- Submission of Appendix 4 data to affected ADM's



Notification

- Submission of Appendix 4 data to BR

Coordination of earth stations

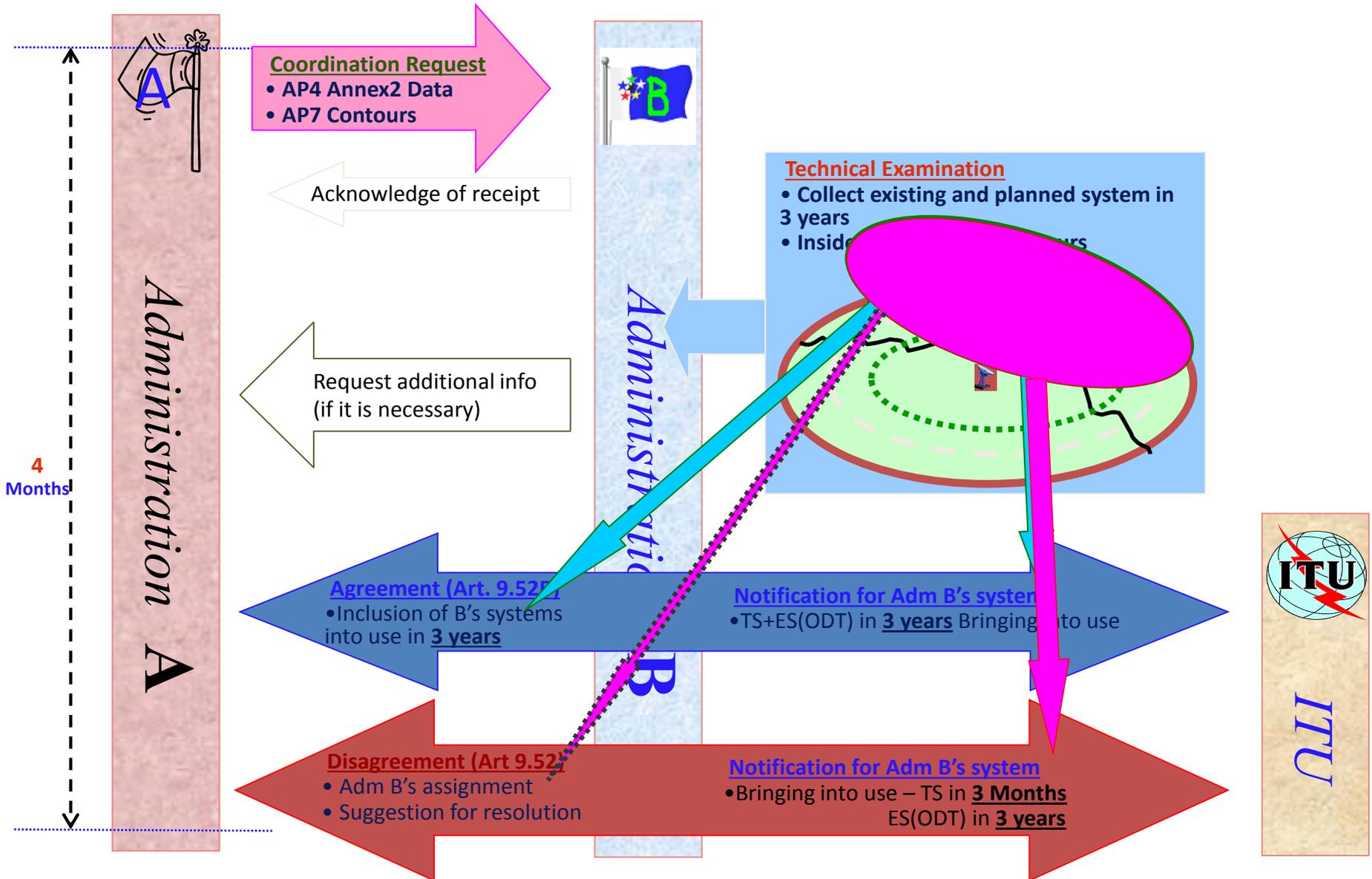
- 9.29 Requests for coordination under 9.15 to 9.19 shall be sent by the requesting administration to the identified administrations, together with the appropriate information listed in Appendix 4 to the Radio Regulations

Notification of an Earth station

- Any frequency assignment to a transmitting station and to its associated receiving stations shall be notified to the Bureau if (No.11.2)
 - Assignment is capable of causing harmful interference; or
 - Assignment is used for international radiocommunication; or
 - Assignment is subject to a world or regional frequency allotment or assignment plan which does not have its own notification procedure; or
 - if that assignment is subject to the coordination procedure of Article 9; or
 - It is desired to obtain international recognition; or
 - Non conforming assignment seeking to be recorded for information purposes only
- Similar requirements for receiving earth station (No.11.9)

Response by Administration B

(to Coordination Request from A)



Guidance for Notification of Earth stations



- Capture file by using SpaceCap
- Validate the file
- Launch SpaceVal/Click on Open/Browse and select the database
- select the correct notice ID/Click Validate/Click Report

SpaceCap

Notification of earth stations

Notice Id: AP4/II and AP4/III (Appendix 4 - Annex 2A) 22.11.2012 Status

Notice submitted under:

<input checked="" type="radio"/> No. 11.2 Notification <input type="radio"/> First Notification <input type="radio"/> Resubmission	<input type="radio"/> RR1488 Notification
<input type="radio"/> No. 9.6 Coordination <input type="checkbox"/> No. 9.11A Applies	<input type="radio"/> RR1060 Request for Coordination <input type="checkbox"/> RS46 Applies
<input type="radio"/> No. 9.7A Specific Receive GSO FSS Earth stn Coordination	<input type="radio"/> RR1107 Request for Coordination
<input checked="" type="radio"/> No. 9.17 Coordination amongst Administrations	<input type="radio"/> RR1610 Agreement Under Art. 14

Date: DD.MM.YYYY Administration Serial Nbr

A1f1. Notifying Administration A1f2. Notice submitted on behalf of these administrations. +
A1f3. Intergovernmental Satellite System x

Notice intended for
 Addition
 Modification
 Suppression
BR Identification No. of Station to be modified/suppressed

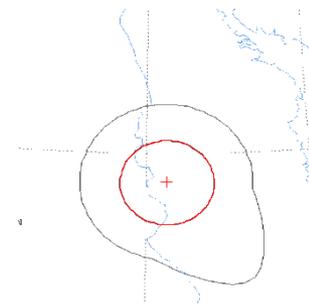
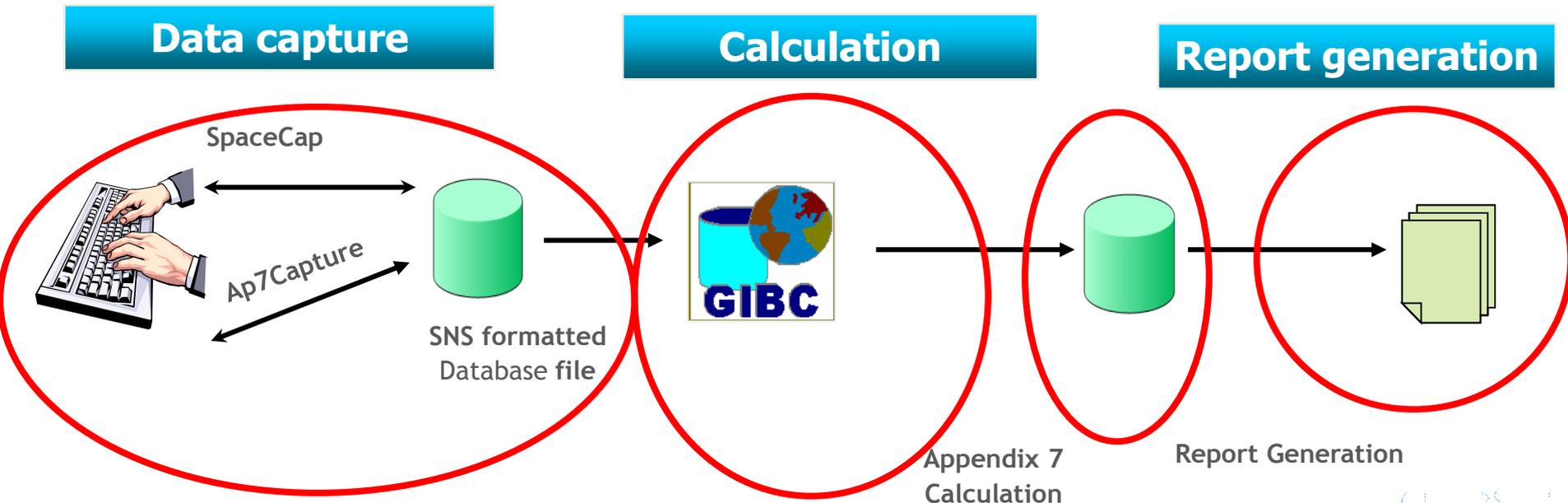
Type of Satellite Network or Earth Station

<input type="radio"/> GeoStationary Satellite Network	<input type="radio"/> Specific Earth Station
<input type="radio"/> NonGeoStationary Satellite Network	<input type="radio"/> Typical Earth Station

 More...

Coordination of earth stations

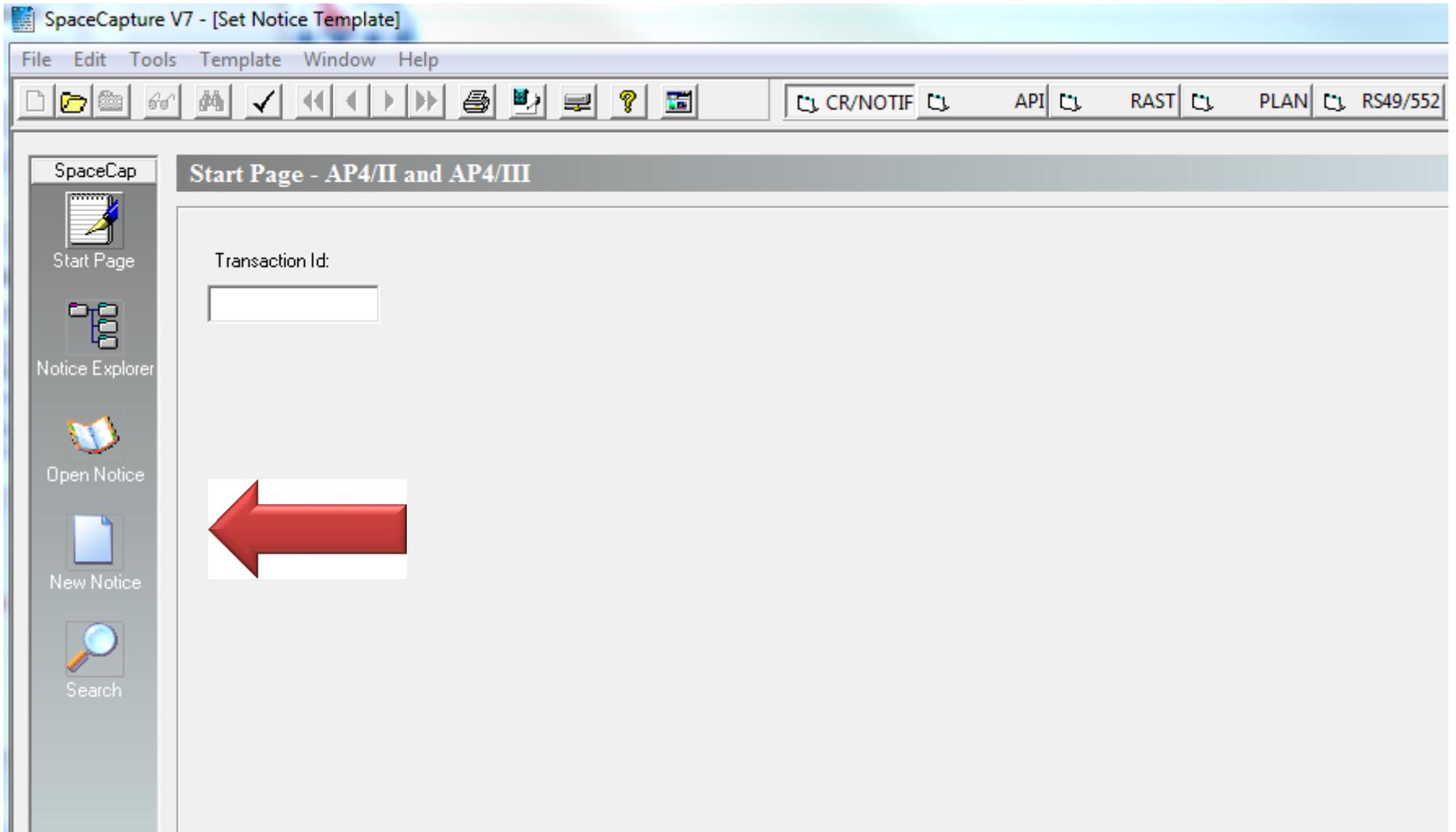
AP7 data capture/calculation



Data capture and storage in the SNS formatted database
Extract all required information from the database
Perform Appendix 7 calculation
Save the results in an ESCC formatted database file
Produce report document in RTF format

Capturing Exercise

Coordination



Specific Earth Station Notice:1

- Notice
- Station
- Beam
- Attachments

Notice Id: 1 AP4/II and AP4/III (Appendix 4 - Annex 2A) 21.11.2014 Status 01

Notice submitted under:

- No. 9.6 Coordination
- No. 11.2 Notification
- First Notification
- Resubmission

- No. 9.11A Applies
- Bands 21.4 to 22 GHz
- Bands 21.4 to 22 GHz Special Procedure

- No. 9.7A Specific Receive GSD FSS Earth stn Coordination
- No. 9.17 Earth Station Coordination amongst Administrations

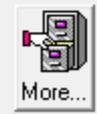
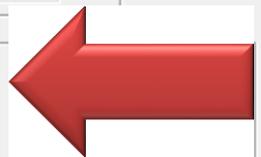
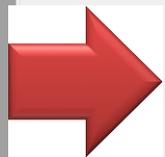
Date: DD.MM.YY 21.11.2014 Administration Serial Nbr

A1f1. Notifying Administration MLT A1f2. Notice submitted on behalf of these administrations. + x
A1f3. Intergovernmental Satellite System

Notice intended for
 Addition
 Modification
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BR Identification No. of Station to be modified/suppressed

Type of Satellite Network or Earth Station

- GeoStationary Satellite Network
- Specific Earth Station
- NonGeoStationary Satellite Network
- Typical Earth Station



Notice **Station** Beam Attachments

Notice Id: 1 Administration: MLT Status: 01 Date: 21.11.2014

A1e1. Type of Station
 Typical Specific

A1e2. Earth Station Name: MLT-11

A1e3a. Country: MLT

A1e3b. Geographical Coordinates

Longitude: Degrees 14 E/W E Min 25 Sec 0

Latitude: Degrees 35 N/S N Min 55 Sec 0

A4c1. Associated Space Station: INTELSAT8 359E

A4c2. Nominal Orbital Longitude (if geostationary): 1 W E/W

A7b1. Min Elevation Angle (GSO): 35 °

[A7e. Table of Minimum Antenna Elevation Angles \(NGSO\)](#)



A16b Commitment to meet PFD limits (applicable bands 13.75-14 GHz) Yes No N/A

A18a Commitment of aircraft earth station (applicable bands 14-14.5 GHz) Yes No N/A

A7d. Altitude: 30 Metres

A7c. Operating Azimuthal Angles (GSO)

1. From: 110 °

2. To: °



[A7a. Table of Horizon Elevation/Distance](#)

A7a. Horizon Elevation Diagram attached. See Attachment No.

List of Available Beams

- Beam 9H2

Specific Earth Station Notice:1

Notice

Station

Beam

Group

Attachments

Notice Id: 1 Administration: MLT Station Name: MLT-11

Characteristics of the Antenna

- Receiving Earth Station
- Transmitting Earth Station

B1 a. Beam Designation: 9H2 [Assoc. Satellite Receiving Beam Designation](#)
Old Beam Designation (if changed)

- Add of the Antenna
- Mod
- Sup



B5. Earth Station Antenna Characteristics

a. Maximum Isotropic Gain

+/- dBi
44

b. Beamwidth

Degrees
1

A7f. Antenna Diameter (meters) (only for 13.75-14GHz)

A10a. E Stn Coordination diagram. See Attachment

d. Dgso (meters)

Antenna Radiation Pattern

[REC-465-5 ==> APEREC013V01](#)

Diagram attached. See Attachment no.:

List of Available Groups
Group 1 Page No.

Specific Earth Station Notice:1

Coordination Notice | Special Section Station | Attachments Beam | **Group** | Emissions | Frequencies

Notice: 1 Station Name: MLT-11 EAnt Id: 9H2 E Group Id: 1 Split Grp Id:

3. Observed Frequencies and Related Characteristics
 Add Mod Sup of the group BR Identification of the Group to be modified/suppressed Page No. BR Data

Characteristics Common to a Group of Frequencies | General Characteristics

C3a. Assigned Frequency Bandwidth: 10000 (kHz)
 C2c. compliance with No. 4.4 of the Radio Regulations

C4a. Cls Stn	C4b. Nat Srv
TC	CP

C6. Polarization Type: M Mixed Polarization
If linear, provide angle: °

C8g1. Maximum Aggregate Power: dBW
C8g2. Aggregate Bandwidth: (kHz)
 C8g3. Bandwidth Corresponds to Aggr Bandwidth

Remarks

Special Section
NoticeAttachments
Station

Beam

Group

Emissions

Frequencies

Coordinates

 Notice Station Name: EAnt Id: Group Id: Split Grp Id:

3. Observed Frequencies and Related Characteristics

 Add Mod Sup of the group
BR Identification of the Group
to be modified/suppressedPage
No.BR
Data

Characteristics Common to a Group of Frequencies

General Characteristics

C3a. Assigned
Frequency Bandwidth (kHz) C2c. compliance with No. 4.4 of the Radio Regulations

	C4a. Cls Stn	C4b. Nat Srv
<input type="checkbox"/>	TC	CP
<input type="checkbox"/>		
<input type="checkbox"/>		

C6. Polarization

Type If linear, provide
angle

C8g1. Maximum Aggregate Power

 dBW

C8g2. Aggregate Bandwidth

 (kHz) C8g3. Bandwidth Corresponds to
Aggr Bandwidth

Remarks

Specific Earth Station Notice:1

Coordination Notice Special Section Station Attachments Beam Group **Emissions** Frequencies

Notice Id: 1 Adm: MLT Station Name: MLT-11 EAnt Id: 9H2 E Group Id: 1

Emissions Applicable to the Assigned Frequencies

C7a. Designation of Emission	C8a1/C8b1. Total Peak Power (dBW)	C8a2/C8b2. Maximum Power Density (dBW/Hz)	C8c1. Minimum Peak Power (dBW)	C8c3. Minimum Power Density (dBW/Hz)	C8c2. Atch No. Pep	C8c4. Atch No. Mpd	Emission of Type C8b
▶ 10M0G7W--	18.0	-52.5	-5.0	-53.0			<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Specific Earth Station Notice:1

Notice Coordination	Station Special Section	Beam Attachments	Group	Emissions	Frequencies
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Notice Id: 1 Adm: MLT Station Name: MLT-11 EAnt Id: 9H2 E Group Id: 1

Information Common to List of Groups in this Beam

A13.

Special Section AR11/A (RR1042)	1056
Special Section AR11/C (RR1060)	2462
Special Section ART. 14 (RR1610)	
Special Section API/A (9.1)	
Special Section CR/C (9.6)	
Special Section AP30-30A/F/C	

Reference	Number

To apply Special Section data to other groups, select the beam or notice option.

Apply to current group only Apply to all groups in this beam Apply to all groups in this notice

SpaceCap

- Start Page
- Notice Explorer
- Open Notice
- New Notice
- Search

Notice Explorer - AP4/II and AP4/III

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.	Status
List of notices Count=1						
000000001[A]	S	MLT/		MLT-11	21.11.2014	01

Control Box

- Show
- Clone
- Export
- Delete
- To SNS
- CFEX
- SpaceVal
- Esub
- RS49/552



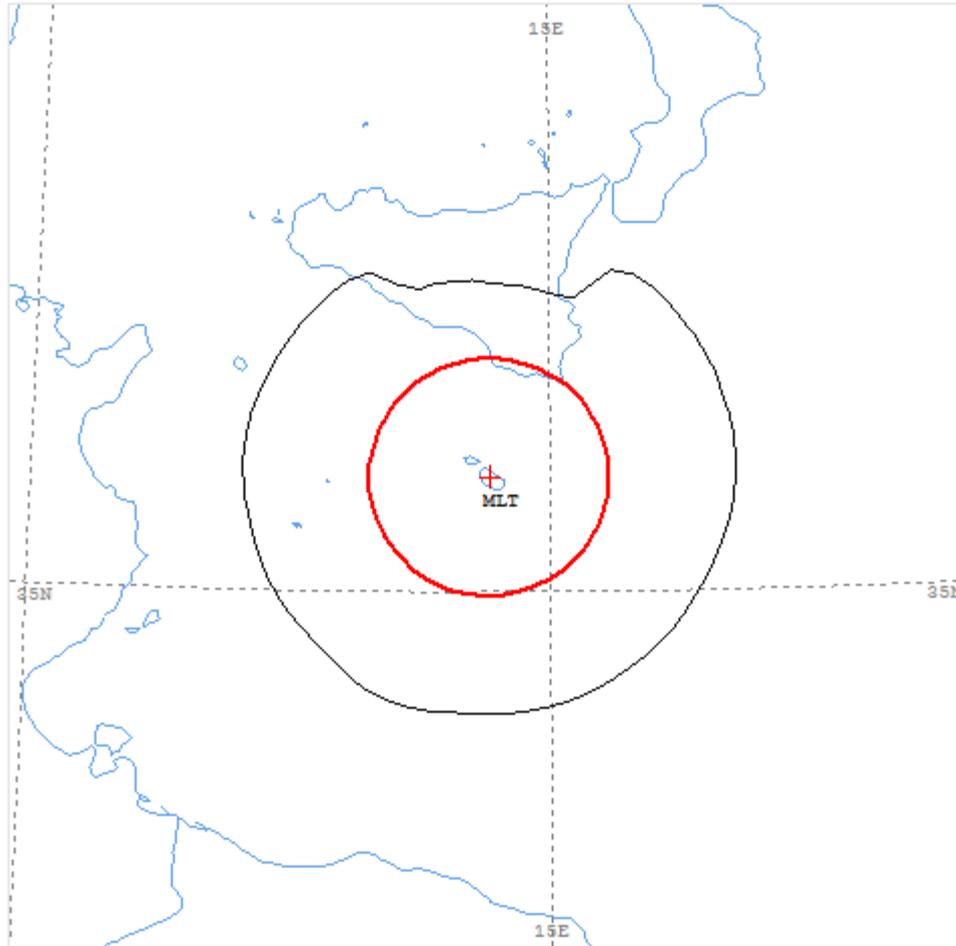
Generate coordination area diagrams with AP7 software

vsak2v:2.1.0.1appendix 7/slc-2.0.0.4/csm-2.0.0.1/Cic-2.0.0.0/exp1.2.0.0/Sm-2.0.0.0/aw/r-2.0.0.0/waf-2.0.0.1

Diagram 1: 2.1_TABLE7. TRANSMITTING GSO ES in FIXED-SATELLITE SERVICE W.R.T. RECEIVING TERRESTRIAL STATIONS. TS: fixed, mobile

Notice ID: 1
Administration/Geographical area: MLI/MLI
Satellite orbital position: -1.00
Frequency band: 5965.00-5975.00 MHz

Earth station name: MLI-11
Earth station position: 014N250035W5500
Satellite name: INTELSAT 35 SE



+ ES position
— Main Model
— Main Model 2

Scale: 419.00 Km (default)



Contacting Affected Administrations

- Cover Letter
- Email attachment containing:
 - ESName.mdb
 - Coordination contour diagrams generated using AP7 software
 - Any other attachments or notes in Word or PDF format

Capturing Exercise

Notification

Notice Station Beam Attachments

Notice Id: 1 AP4/ (Appendix 4 - Annex 2A) 21.11.2014 Status 01

Notice submitted under:

No. 9.6 Coordination No. 11.2 Notification First Notification Resubmission

No. 9.11A Applies Bands 21.4 to 22 GHz Bands 21.4 to 22 GHz Special Procedure

No. 9.7A Specific Receive GSO FSS Earth stn Coordination

No. 9.17 Earth Station Coordination amongst Administrations

Date: DD.MM.YY 21.11.2014 Administration Serial Nbr

A1f1. Notifying Administration MLT A1f2. Notice submitted on behalf of these administrations. + x

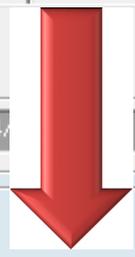
A1f3. Intergovernmental Satellite System

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Specific Earth Station Notice:1

- Coordination Notice
- Special Section Station
- Attachments Beam
- Group**
- Emissions
- Frequencies

Notice: 1 Station Name: MLT-11 EAnt Id: 9H2 E Group Id: 1 Split Grp Id:

3. Observed Frequencies and Related Characteristics

Add Mod Sup of the group BR Identification of the Group to be modified/suppressed Page No. BR Data

- Characteristics Common to a Group of Frequencies
- General Characteristics**

A2a. Date Bringing into use
10.12.2015

A3a. Operating Administration or Agency
003 ... DIRECTOR OF CIVIL AVIATION

A3b. Responsible Administration
A ... MALTA COMMUNICATIONS AUTHORITY

To apply this information to other groups, select the beam or notice option.

Apply to current group only Apply to all groups in this beam Apply to all groups in this notice

Before submitting the notification

Check the following:

- –Associated space station must already be notified
- –Provide the correct name used in BR databases
- –Check also the beam names/ if the frequency bands are covered by the bands used by the space station

Use Spacecap to convert the notice from No.9.17 to No.11.2

Use Spacecap to update the status of coordination of the earth station

Run Spaceval to ensure that there are no fatal errors

Common Errors

- Space station name/beam name/
frequency band not covered
- Missing horizon elevation angle
- Missing minimum angle of elevation
- Missing coordination area diagram
- Missing antenna diameters when
required
- Missing antenna radiation patterns
- Missing coordination agreements

Validation report

QuickQuery Result for Network(s): 112505900

Validation Report for Network: 112505900 On: 23.11.2012 @ 12:38:18 By Operator: FALLOUDIN (notif_seminar_es_with_errors.mdb)

Network ID: 112505900 Adm: HOL Station name: SEMINAR_ES Satellite name: ITUSAT Orbital Pos: 7.00°

Validation Message Counts: Total: 9, Fatais: 5, Warnings: 3; Message Option: All

Beam Name	E / R	Group ID	Row No	Item Number	Rule ID	Severity Code	Table Name	Field Name	Field Value	Validation Error Message
				0		A				VALIDATION COMPLETED; v7.0; ERRORS F/W:
				1000	2	W	e_stn	stn_name	EMINAR_E	Invalid earth station name (not in reference table)
				1011	2	W	e_stn	sat_name	ITUSAT	Invalid Value (not in reference table)
				1014	4	F	e_stn	elev_min		Value missing for station-type = S (geo) or R
KR1	E			1037	3	F	e_ant	atrch_e		Value missing and item 1045 not provided
KR1	E			1045	3	F	e_ant	pattern_id		Value missing and item 1037 not provided
KR1	E	1		1603	3.2	W	grp	d_inuse	05.12.1994	For <N> filing, date < date-of-receipt - 3 months
KR1	E	1	1	1621	2	F	provsn	coord_prov	9.7	Invalid value
KR1	E	1	1	1623	3	F	provsn	adm		Value missing; incompatible with item 1621

Rules concerning receivability

- Associated space station must already be notified
- Provide the correct name used in BR databases
- Check also the beam names/ if the frequency bands are covered by the bands used by the space station

Common Receivability Issues

- Frequencies of S/S should match

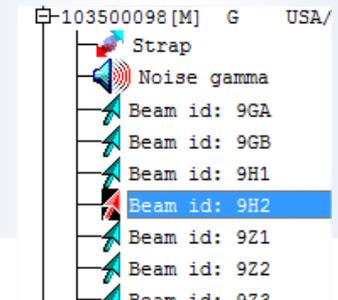
INTELSAT8 359E

...

5929.00000 .. 6425.00000

...

- Beam names of E/S should match those of the S/S in the opposite direction



Part I-S

- When notice is found to be complete, it will be published in Part I-S, which will constitute the acknowledgement to the notifying administration of receipt of its notice (No.11.28).

Part II-S

- Assignments, after detailed technical and regulatory examination, that are found to be favourable will be published in a Part II-S and recorded in the MIFR.

Part III-S

- Assignments, after detailed technical and regulatory examination, that are found to be unfavourable will be published in a Part III-S.

Reasons for unfavorable findings (Part III-S)

Examples of paragraphs

Notes for return of notices for earth station		
Provision	Examples of paragraphs	Resubmission Within 6 months
<p>A N - X/9.17[X]</p>	<p>With respect to the frequency assignment groups Nos. (...) of your earth station (...), it is noted that the <u>coordination procedure under No. 9.17 has not been shown as completed with the Administrations of (...) since the coordination area of your earth station includes the territories of those Administrations</u> (see coordination contours attached). Thus, an unfavorable finding with respect to No. 11.32 has been reached and the notice in question is being returned to you in conformity with No. 11.37.</p> <p>Should the notice <u>be resubmitted with the indication that coordination has been successfully completed with the Administration(s)</u> mentioned above, a favorable finding might result.</p> <p>However, these being frequency assignments for reception, your Administration may be prepared to accept the interference resulting from existing and future terrestrial stations of the countries concerned. In this event, should your Administration resubmit the notice concerned and insist upon its reconsideration, the assignment will be recorded in the Master Register; symbol "H" will be inserted in Column 13B2 as well as AP5 PARA 6E(III) in the column reserved for coordination information.</p>	<p>Yes</p>
<p>A N - X/9.7[X]</p> <p>No SS subject to coord.)</p>	<p>With regard to the frequency assignment groups Nos. (...) of your earth station (...), it is noted that the <u>corresponding frequency assignments of the associated space station (...) have not yet been communicated to the Radiocommunication Bureau</u> for recording. Thus, these frequency assignments have been given an <u>unfavourable finding with respect to No. 11.32</u> (see paragraph 2.1.2.1 of the Rules of Procedure relating to No. 11.32) and the notice in question is being returned to you in conformity with No. 11.37.</p> <p>Once the corresponding assignments of the associated space station have been notified and recorded in the Master Register, it will be possible to examine again your earth station notice.</p>	<p>Yes</p>
<p>A N - X/9.7[X]</p> <p>Outside SA</p>	<p>With respect to the frequency assignments groups Nos. (...) of your earth station (...), it is noted that the <u>station is outside the service area of the transmitting/receiving beam (...) of the associated space station (...)</u>. Consequently, your earth station frequency assignments have been given an unfavorable finding with respect to No. 11.32 (see paragraph 2.1.3 of the Rules of Procedure relating to No. 11.32) and the notice in question is being returned to you in conformity with No. 11.37.</p>	<p>Yes</p>
<p>N X/ROP RCV4.4</p>	<p>With regard to the frequency assignments groups Nos. (...) of your earth station (...), it is noted that the <u>associated space station (...) does not have any valid publication in the Radiocommunication Bureau</u>.</p> <p>As stated in paragraph 2.1.2.1 of Rules of Procedure relating to No. 11.32, starting from the principle that the leading element of a space network is the space station and that it would be misleading to record in the Master Register earth stations for which a space station (network) is not recorded, the Radio Regulation Board decided that an earth station cannot be recorded in the Master Register before its associated space station.</p> <p>In view of the above, according to Rules of Procedure, paragraph 4.4 of "Rules concerning the <u>Receivability</u> of forms of notice generally applicable to all notified assignments submitted to the <u>Radiocommunication Bureau</u> in application of the Radio Regulatory Procedures relating to space services" the subject notice is not receivable.</p>	<p>Yes</p>

Submission to the Bureau

- Create a zip file ADM_ESName.zip containing
 - ESName.mdb
 - Coordination contour diagrams generated using AP7 software
 - Any other attachments or notes in Word or PDF format
- Rename the zip file to ADM_ESName.itu
- Send email with attachment ADM_ESName.itu to BRMAIL@ITU.INT
- Send confirmation telefax to BR at +41 22 730 5785 **within seven days** from the email submission

Questions?