

Space Plans Workshop (AP30/30A)

Exercise on validation of a submission with a correction of common incorrectly submitted parameters in SpaceCap

Presented by:

ITU-R/Space Services Department
Space Notification and Plans Division



Outline

Observation on some submitted Appendix 4 data for Appendices 30/30A Article 4 submissions

Exercise on Correction to AP30/30A Article 4 submissions

Exercise 1: Correction to a R1&3 BSS submission
(file: **R13_BSS.mdb**)

Exercise 2: Correction to a R1&3 BSS Feeder-link submission
(file: **R13_BSS_FL.mdb**)

Exercise 3: Correction to a Region 2 submission
(file: **R2.mdb**)

Annex1- Gains at two most Western and Eastern points visible from the GSO satellite

Annex 2 - SpaceVal

Observation on some submitted AP4 data for AP30/30A Article 4 submissions



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice | Beam | Attachments | Coordination

Notice Id: 199999999 Plan: WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30) Status: 24

Date of Receipt: DD.MM.YYYY: 04.12.2007 Administration Serial Number: []

A1f1. Notifying Administration: SUI A1f2. Notice submitted on behalf of these administrations: []

A1f3. Intergovernmental Satellite: []

Notice intended for:

- 4.1.3
 - Part A submission
 - A13c
 - Part A suppression
 - 4.1.26 (new ADM)
 - 4.1.27 Replacement in Plan
- 4.1.12 (Part B submission)
- Resolution 548 (Part B)
- 4.1.23 (List Suppression)

A4a1. Nominal Orbital Longitude: 9.00° E

A1a. Identity of the Satellite Network: TU_SAT

A4a2. Longitudinal tolerance:

- b. West: 0.1°
- a. East: 0.1°

List of Available Beams:

- Beam INT

A11. Regular Hours of Operation:

- a. start: 0 b. end: 24

✓ Shall be in conformity with the orbital position limitations of Annex 7 to Appendix 30.

✓ Part of Annex 7 compliance validated by SpaceVal.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice | Beam | Group | Attachments | Coordination

Notice Id: 199999999 Satellite Network: ITU_SAT Nominal Orbital Longitude: 10.00 Administration: SUI

Characteristics of the Beam

B2. Receiving Beam Transmitting Beam

Shape of the Beam Elliptical Other Shape

B3d. Pointing Accuracy: 0.1°

B3a1. Co-polar gain: 31.44 dBi

B1a. Beam Designation: INT B1b. Steerable/Reconfigurable Beam:

Space Station Antenna B3c. Radiation Pattern: R123FR ==> APSRR_402V01

B3f2a. Rotation Accuracy: 1° Beamlet: 0.6

B3f2b. Major Axis Orientation: 60°

B3f2. Axis at half-power beamwidth: c. Major: 5° d. Minor: 4°

B3f1. Boresight Longitude: 13.75° E Latitude: 48.64° N

List of Available Groups: Group 16983, Group 16984

spacecap: Co-polar antenna gain not equal to $10 \cdot \text{LOG}(27843 / (\text{minor axis} * \text{major axis})) = 31.44$

A pattern is required. If it is a fast roll-off pattern, beamlet shall be provided. Minimum beamlet for R1&3 is 0.6° and 0.8° for Region 2.

For elliptical beam, Co-polar gain should be equal to the value suggested by SpaceCap (antenna efficiency of 55% is assumed).

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice | Beam | Group | Attachments | Coordination

Notice Id: 199999999 Satellite Network: ITU_SAT Nominal Orbital Longitude: 10.00 Administration: SUI

Characteristics of the Beam

B2. Receiving Beam Transmitting Beam

Shape of the Beam Elliptical Other Shape

B1a. Beam Designation: INT Rename Beam

B1b. Steerable Reconfigurable Beam

B3a1. Co-polar gain: 35 dBi

B3a2. Cross-polar Gain: 5 dBi

B3b1. Co-polar antenna gain contours. See Attachment No. []

B3b2. Cross-polar antenna gain contours. See Attachment No. []

Longitude: 13.75 °E Latitude: 48.64 °N

List of Available Groups

- Group 16983
- Group 16984

For a steerable beam, the 0 dB dB relative gain isoline contour(s) shall also be submitted.

The derived minimum co-polar and cross-polar absolute antenna gain should not be normally less than -10 dBi.

- For a shaped beam, co-polar and cross-polar antenna gain contours shall be provided.
- Mandatory gain contours are -2, -4, -6, -10 and -20 dB.
- Related information in SPS and Attachment shall be consistent to avoid confusion.
- Gain contours in GXT or GIMS shall be validated with the latest GIMS.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Notice Beam Group Attachments Coordination

Notice Id: 109554033 Satellite Network: ITU_SAT Nominal Orbital Longitude: 9.00 Administration: SUI

Characteristics of the Beam

B2.
 Receiving Beam Transmitting Beam

Shape of the Beam
 Elliptical Other Shape

B1a. Beam Designation: E001 B1b. Steerable/Reconfigurable Beam

B3a1. Co-polar gain: 35 dBi

B3a2. Cross-polar Gain: 2 dBi

B3b1. Co-polar antenna gain contours. See Attachment No.

B3b2. Cross-polar antenna gain contours. See Attachment No.

B3e. Antenna Gain toward GSO. See Attachment No.

Longitude: 13.75 ° E Latitude: 48.64 ° N

List of Available Groups
Group 17037
Group 17038

- Required for feeder-link non-elliptical beams in 17 GHz and downlink non-elliptical beams in 12.5 -12.7 GHz.
- Not required for elliptical beams.
- Not required for feeder-link non-elliptical beams in 14 GHz.
- Related information in SPS and Attachment shall be consistent to avoid confusion.
- See Annex 1 for the gains at two most Western and Eastern points visible from the GSO satellite.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Coordination | Beam | Group | Emissions/Frequencies | Srv Area/Assoc Earth Strn

SAT Beam Id: INT E Group Id: 16983 Split Grp Id:

to a Group of Frequencies | General Characteristics

C3a. Assigned frequency bandwidth: 33000 (kHz)

C15a. MSPACE Group code: 80

C4a. Class of Station: EB, EV

C.6 Polarization: a. Type: CL Circular Left (Indirect) b. Electric Vector Angle: °

BR Data

Remarks:

Shall be equal to the highest necessary bandwidth captured in the "Emissions/Frequencies" data entry form of the same "Group".

- Used to avoid a high level of mutual interference of the same network and/or with other Plan, List assignments of the same Administration.
- Multiple MSPACE grouping for a specific assignment is not possible.
- Grouping of networks separated by more than 0.4° is not allowed (See relevant ROP).

- Only EB and EV are valid for the downlink. However, EB should not stand alone as it is for sound broadcasting.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Assoc Specific Earth Stn	Attachments	Coordination		
Notice	Beam	Group	Emissions/Frequencies	Srv Area

Notice: 109554033 Satellite Network: ITU_SAT Beam Id: E001 R Group Id: 17037

Characteristics Common to a Group of Frequencies | General Characteristics

C3a. Assigned frequency bandwidth: 33000 (kHz)

C15a. MSPACE Group code: 80

Indicates whether the group can contain 14GHZ or 17GHz frequencies.
 WRC-00 14 GHz WRC-00 17 GHz

C4a. Class of Station: EC

C.6 Polarization:
 a. Type: L Linear Polarization
 b. Electric Vector Angle: 90 °

C5a. Receiving System:
 Noise Temperature: 600 Kelvins

BR Data

Only EC is valid for the feeder-link.

If linear polarization, the polarization angle shall be provided.

- For R1&3:
 • For 17 GHz, a value of 600K or better should be provided.
 • For 14 GHz, a value of 750K or better should be provided.
 - For Region 2: a value of 600K or better should be provided.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments	Coordination			
Notice	Beam	Group	Emissions/Frequencies	Srv Area/Assoc Earth Stn

Notice: 1999999999 Satellite Network: ITU_SAT Beam Id: INT E Group Id: 16983 Split Grp Id:

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

A2a. Date of bringing into use: 26.03.2017

A3a. Operating Administration or Agency: 9999 ... Other

A3b. Responsible Administration: XX ... Other

To apply information to other groups in this beam or

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

Shall be within 8 years from the date of receipt of the Article 4 submission.

In the case of submission of a new entry (9999), the name, telefax number and the address of the operating administration or agency shall be submitted in the fax or email corresponding to the submission.

In the case of a submission for a new entry (XX), the name, telefax number and the address of the responsible administration shall be submitted in the fax or e-mail corresponding to the submission.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments | Coordination | Notice | Beam | Group | Emissions/Frequencies | Srv Area/Assoc Earth Strn

Notice Id: 199999999 | Satellite Network: ITU_SAT | Beam Id: INT E | Group Id: 16983 | Mspace Grp Code: 80

C8 Power Characteristics of the transmission				
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth
33M0G7W+	modchar	15.7	-59.5	-59.5

Annotations:

- As defined in Appendix 1. Only digital modulation may be submitted under Article 4 in Regions 1 and 3.
- Shall be captured for each emission.
- For digital emissions, the maximum power density default value (assuming uniform distribution of the power over the necessary bandwidth) is calculated once the total power is entered using the following formula: $pwr - 10 * \log(B)$. Default values should be used in submissions for digital emissions.
- For Regions 1 and 3 downlink:
 - `total_pow + co_pol_ant_gain` shall be in conformity with e.i.r.p. limitations of Annex 7 to Appendix 30, and;
 - the PFD level produced by the total e.i.r.p./ 27MHz shall not exceed the limit of -103.6 dB(W/m². 27 MHz) of § 1 of Annex 1 to Appendix 30.
- For Regions 1 and 3 feeder-link: the PFD level produced by the total e.i.r.p. of `pow_dens_27MHz + co_pol_ant_gain` shall not exceed the limit of -76 dB(W/m². 27 MHz) of § 4 of Annex 1 to Appendix 30A.
- See also relevant Rules of Procedure.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Modulation Characteristics

Current Designation of Emission 33M0G7W--

C9a. Modulation Characteristics

1) Type of modulation

3c) Multiplexing type

7) Energy dispersal type

9) TV standard

Apply these characteristics to all emissions in this notice with the same designation of emission

Apply these characteristics to the current emission

OK CANCEL

A12. Range of automatic gain control dB

List of proposed values

• Required for feeder-link only.
• The value shall be in the range 0 to 15 dB.

A12. Range of automatic gain control
 dB

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Assoc Specific Earth Stn | Attachments | Coordination

Notice | Beam | Group | Emissions/Frequencies | Srv Area/Assoc Earth Stn

Notice Id: 199999999 | Satellite Network: ITU_SAT | Beam Id: E001 R | Group Id: 17037 | Mspace Grp Code: 80

C8 Power Characteristics of the transmission

C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth	i. Power Control (dB)
33M0G7W--	modchar	28.0	-47.2	-47.2	10.0

C2a. Assigned Frequencies

Channel	Frequency in MHz
1	17327.48000
3	17365.84000
5	17404.20000
7	17442.56000
9	17480.92000
11	17519.28000
13	17557.64000
15	17596.00000
17	17634.36000
19	17672.72000
21	17711.08000
23	17749.44000

- Required for feeder-link only.
- For Regions 1 and 3 power control value shall be in the range 0 to 10 dB.
- For Region 2, see §4.5 and § 4.10 of Annex 3 to AP30A for power limits.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Notice Id: 199999999 Satellite Network: ITU_SAT Beam Id: INT E Group Id: 16983 Mspace Grp Code: 80

C8 Power Characteristics of the transmission				
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth
33M0G7W+	modchar	15.7	-59.5	-59.5

C2a. Assigned Frequencies	
Channel	Frequency in MHz
1	11727.48000
3	11765.84000
5	11804.20000
7	11842.56000
9	11880.92000
11	11919.28000
13	11957.64000
15	11996.00000
17	12034.36000
19	12072.72000
21	12111.08000
23	12149.44000

- Assigned Frequencies together with corresponding assigned frequency bandwidths shall be in conformity with Article 2 and/or Annex 7 of Appendix 30.
- Automatic calculation of channel number from frequency or frequency from channel number.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of No...

Attach...

Not...

Not...

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-8.59	57.81	0	F	F
-8.47	51.90	0	F	F
-8.40	43.37	0	H	H
-4.50	48.38	0	F	F
-3.00	35.17	0	K	K

Appendix 30)

Emissions/Frequencies Srv Area/Assoc Earth Stn

Group Id: 16983 Mspace Grp Code: 80

C11a1. Service Area No. 1 C11a3. Service Area Diagram. See Attachment No.

C11a4. Service Area Name INT_SA_D C11a5e. Minimal Elevation Angle

Associated Ty... Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d8. Equivalent Diameter in meters
35.50	2.86	BR_007V01	0.60

Apply these to all group

Apply these the Current

Overwrite Clin

Bands 12.2 - 12.5 GHz and 14.5 - 14.8 GHz:

- ✓ Test points and service area corresponding to the band 12.2-12.5 GHz shall not be inside Region 3.
- ✓ In the case of 14.5-14.8 GHz band, test points and service area shall not include the territories of European countries.

• Test points:

- ✓ should not be located at sea;
- ✓ location shall be visible from the satellite;
- ✓ should be located within its service area.

• Up to 20 test points within a service area.

Service area:

- ✓ The service area of a Region 2 Article 4 network shall not overlap with the Regions 1 or 3 and vice versa;
- ✓ The service area "Number" and "Name" shall be identical to the data submitted in the corresponding GXT file. If only one service area is submitted for a specific beam, the number 1 should be assigned to it;
- ✓ The type (Paper, GXT, File), file name and description of the attached diagram should be indicated.

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments Coordination

Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Beam Id: INT E Group Id: 16983 Mspace Grp Code: 80

Service area contour

C11a1. Service Area No. 1 C11a3. Service Area Diagram. See Attachment No.

C11a4. Service Area Name INT_SA_D C11a5e. Minimal Elevation Angle

Associated Typical Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d8. Equivalent Diameter in meters
35.50	2.86	MODRES ==> APERR_007V01	0.60

✓ Maximum Gain and 3dB beamwidth should be consistent with submitted antenna diameters.

✓ The minimum feeder-link antenna diameter for the Region 2 is 2.5 m.

✓ Radiation pattern shall contain both co-polar and cross-polar patterns.

✓ Gain and 3dB beamwidth are stored with 2 digits after decimal.

C.10.d.5 reference pattern	maximum gain Default Value	C.10.d.5 reference pattern	3dB beamwidth Default Value
DBLTVROI0001	$\leq 42.228 + 25 * \log(D)$	DBLTVROI0001	$1.58/D$
DBLTVROC0001	47	DBLTVROC0001	0.66
MODRES	$35.5 + 20 * \log(D/0.6)$	MODRES	$2.86 * 0.6/D$
R13RES	$38.43 + 20 * \log(D/0.9)$	R13RES	$2.0 * 0.9/D$
R2RES	$40.24 + 20 * \log(D)$	R2RES	$1.7 * 1/D$
R13TES MODTES	14GHz: $57 + 20 * \log(D/6)$ 17GHz: $57 + 20 * \log(D/5)$	R13TES MODTES	14GHz feeder-link: ≤ 0.25 17GHz feeder-link: ≤ 0.25
R2TES	$57.4 + 20 * \log(D/5)$	R2TES	if $G_{max} > 59$ dBi: ≤ 0.2 if $G_{max} \leq 59$ dBi: $2 * 10^{((39 - G_{max})/20)}$

Observation on some submitted AP4 data for AP30/30A Article 4 submissions (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Notice | Beam | **Strapping** | Attachments | Coordination

Notice Id.: 199999999 Satellite: ITU_SAT Nominal Orbital Longitude: 47.5 Administration: SUI

Overall Link Characteristics

	Group Combination		Frequency Combination		Channel Combination	
	Uplink Group	Downlink Group	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Uplink Channel	Downlink Channel
▶	14269	14271	17338.58000	12238.58000	2	2
	14269	14271	17367.74000	12267.74000	4	4
	14269	14271	17396.90000	12296.90000	6	6
	14269	14271	17426.06000	12326.06000	8	8
	14269	14271	17455.22000	12355.22000	10	10
	14269	14271	17484.38000	12384.38000	12	12
	14269	14271	17513.54000	12413.54000	14	14
	14269	14271	17542.70000	12442.70000	16	16
	14269	14271	17571.86000	12471.86000	18	18
	14270	14268	17324.00000	12224.00000		1
	14270	14268	17353.16000	12253.16000	3	3
	14270	14268	17382.32000	12282.32000	5	5
	14270	14268	17411.48000	12311.48000	7	7
	14270	14268	17440.64000	12340.64000	9	9
	14270	14268	17469.80000	12369.80000	11	11
	14270	14268	17498.96000	12398.96000	13	13

Strap Wizard

Validate

Required for Region 2 only

Use Strap Wizard to connect downlink and feeder-link assignments.

After finishing, the "Validation" button should be pressed to verify that all assignments have been strapped.

You are now requested to do one of the following exercises:

Exercise 1: Correction to a R1&3 BSS submission
(file: **R13_BSS.mdb**)

Exercise 2: Correction to a R1&3 BSS Feeder-link submission
(file: **R13_BSS_FL.mdb**)

Exercise 3: Correction to a Region 2 submission
(file: **R2.mdb**)

Annex 1: Gains at two most Western and Eastern points visible from the GSO satellite

Annex 2: SpaceVal

Step by step to do exercise

1. Copy folder “Space Plans” under “\Workshop\Space” from the USB key to your C drive.

2. Find submissions with error under:

“Space Plans\2_A30_30A submission exercise\Exercise”

Name	Size	Type
Solution		File Folder
R2.mdb	2,176 KB	Microsoft Office Access Database
R13_BSS.mdb	2,132 KB	Microsoft Office Access Database
R13_BSS_FL.mdb	2,180 KB	Microsoft Office Access Database

3. Run SpaceVal on selected submission to identify problems (*see Annex 2*)

4. Open SpaceCap Software with the selected submission to correct the problems (*see slides 22-32 for Exercise 1, 33-42 for Exercise 2 and 42-58 for Exercise 3 for step by step correction*)

5. Items to be corrected:

- *Orbital position to comply with Annex 7*
- *Co-polar gain for an elliptical beam*
- *Assigned frequency bandwidth; Class of station; Linear polarization Angle*
- *Emission and associated power densities; power control for Feeder-link*
- *Modulation characteristics; automatic gain control for Feeder-link*
- *Earth station antenna gain and beamwidth*
- *Strapping for Region 2.*

6. Run SpaceVal again to see if there are any remaining problems.

Example of SpaceVal report before correction



BR Space Query and Extract System - [QuickQuery Result for Network(s): 199999999]

Validation Report for Network: 199999999 On: 27.11.2010 @ 19:38:09 By Operator: NGUYENTH (r13_bss.mdb)

Network ID: 199999999 Adm: SUI Satellite name: ITU_SAT Orbital Pos: 10.00°

Applicability code(s): axiss, geo

Validation Message Counts: Total: 74, FataIs: 8, Warnings: 65; 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; v6.1.6; ERRORS F/W: 8/65
				100	2	W	geo	sat_name	ITU_SAT	sat_name not found in ref table
				101	3	W	geo	long_nom	10	sat_name not found in ref table
				101	4.2	F	geo	long_nom	10	Orbital position not in accordance with Annex 7 of Appendix 30
INT	E			504	3	W	s_beam	gain	35	difference between co-polar and default value > 0.1 dB
INT	E	16983		605	3	W	grp	op_agcy	999	value = 999 ; please provide details in attachment
INT	E	16983		606	3	W	grp	adm_resp	XX	Value = XX ; please provide details in attachment
INT	E	16983		641	3	F	grp	polar_ang		No value provided and PolarType (item 640) = L
INT	E	16983	2	669	3.3	F	emiss	design_emi	33M0F7W--	Bandwidth is greater than FreqBand at group level
INT	E	16983	2	669	4.1	F	emiss	design_emi	33M0F7W--	Invalid the fifth character
INT	E	16983	1	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	2	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	3	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	4	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	5	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	6	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	7	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	8	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	9	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	10	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)
INT	E	16983	11	694	4	W	e_as_stn	gain	36.5	Value should be equal to the calculated value (39.02)

Notice is not ready to be submitted to the Bureau.

SpaceVal report after correction



BR Space Query and Extract System - [QuickQuery Result for Network(s): 199999999]

File View Window Help

Validation Report for Network: 199999999 On: 27.11.2010 @ 20:51:33 By Operator: NGUYENTH (r13_bss_valid.mdb)

Network ID: 199999999 Adm: SUI Satellite name: ITU_SAT Orbital Pos: 9.00°

Applicability code(s): axis, geo

Validation Message Counts: Total: 26, Fatals: 0, Warnings: 25; 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; v6.1.6; ERRORS F/W: 0/25
				100	2	W	geo	sat_name	ITU_SAT	sat_name not found in ref table
				101	3	W	geo	long_nom	9	sat_name not found in ref table
				101	4.2	W	geo	long_nom	9	PFD hard limit of -138dB(W/(m2 . 27 MHz)) of note 1 to Tb. 1 and 2 of Annex 7 to AP30 is applicable
INT	E	16983		605	3	W	grp	op_agcy	999	value = 999 ; please provide details in attachment
INT	E	16983		606	3	W	grp	adm_resp	XX	Value = XX ; please provide details in attachment
INT	E	16983	1	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	2	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	3	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	4	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	5	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	6	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	7	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	8	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	9	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	10	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	11	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	12	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	13	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	14	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres
INT	E	16983	15	710	3	W	e_as_stn	ant_diam	0.9	The default reference antenna diameter is 0.6 metres

Notice is now ready to be submitted to the Bureau.

Any Questions?

Presenter: Thong.PHAMVIET@itu.int

Main contact person for Space Plan Services:

Mitsuhiro.Sakamoto@itu.int

Software: brsas@itu.int

Exercise 1: Correction to a R1&3 BSS submission



The screenshot shows the SpaceCapture V6 application window titled "[Set Notice Template]". The interface includes a menu bar (File, Edit, Tools, Template, Window, Help), a toolbar with various icons, and a main workspace. The workspace title is "Start Page - PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)".

Four purple callout boxes provide instructions:

- 1. Set Template to PLAN**: Points to the "PLAN" button in the top toolbar.
- 2. Set Notice type**: Points to the "Transaction Id:" input field.
- 3. Uncheck read-only mode**: Points to the checkbox labeled "Plan/List/Pending notices (Status above 01) read-only mode".
- 4. Open Database**: Points to the "Open Notice" button in the left sidebar.

The main workspace displays a table with the following data:

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	0
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	1
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	0
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

At the bottom of the window, the status bar shows: "Current DB : C:\ABR_SOFT\DATA\SPACECAP_V6.MDB Click on Notice Explorer to see a list of Notices, or New Notice to create one."

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

SpaceCap

Start Page

Notice Explorer

Open Notice

New Notice

Search

Start Page - Please select the type of plan from the list

Transaction Id:

Database to open

Exercise

Organize Views New Folder

Name	Date modified	Type	Size
R2			
R13_BSS_FL			
R13_BSS			

Select file R13_BSS.mdb and click Open

File name: R13_BSS

Access 7.0 files (*.mdb)

Open Cancel

A30B W

Plan/List/Per...

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

Start Page - PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Transaction Id:

Plan / List / Pending Plan / List Notification Space Operation Functions

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	1
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	0
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	0
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

Select a Plan

Plan/List/Pending notices (Status above 01) read-only mode

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



The screenshot shows the SpaceCapture V6 software interface. The main window is titled "Notice Explorer PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)". It features a table with the following columns: Notice id., Type, Adm./Org., Orb. Pos., Station name, and Date rcv. A single row is selected, containing the notice ID 199999999 [A], Type G, Adm./Org. SUI/, Orb. Pos. 10E, Station name ITU_SAT, and Date rcv. 19.11.2010. To the right of the table is a "Control Box" with buttons for Show, Clone, Export, and Delete. A purple callout box with the text "Select the notice and click Show" has arrows pointing to the selected row and the Show button.

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.
199999999 [A]	G	SUI/	10E	ITU_SAT	19.11.2010

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice | Beam | Attachments | Coordination

Notice Id: 199999999 Plan WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30) Status 01

Date of Receipt: DD.MM.YYYY Administration Serial Number
19.11.2010

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

Notice intended for
 4.1.3
 Part A submission
 A13c
 Part A suppression
 4.1.26 (new ADM)
 4.1.27 Replacement in Plan
 4.1.12 (Part B submission)
 Resolution 548 (Part B)
 4.1.23 (List Suppression)

A4a1. Nominal Orbital Longitude 10.00 ° E A1a. Identity of the Satellite Network ITU_SAT A4a2. Longitudinal tolerance
b. West 0.1 °
a. East 0.1 °

List of Available Beams
Beam INT

A11. Regular Hours of Operation
a. start 0 b. end 24

Find another position as 10°E is violating Annex 7. (e.g 9° E)

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice: Notice Id: 199999999 Satellite Network: ITU_SAT Nominal Orbital Longitude: 10.00 Administration: SUI

Characteristics of the Beam

B2. Receiving Beam Transmitting Beam

Shape of the Beam: Elliptical Other Shape

B3d. Pointing Accuracy: 0.1 °

B3a1. Co-polar gain: 35 dBi

B1a. Beam Designation: INT Rename Beam B1b. Steerable/Reconfigurable Beam

Space Station Antenna

B3c. Radiation Pattern: R123FR ==> APSRR_402V01

B3f2a. Rotation Accuracy: 1 ° Beamlet: 0.6

B3f2b. Major Axis Orientation: 60 °

B3f2. Axis at half-power beamwidth: c. Major: 5 ° d. Minor: 4 °

B3f1. Boresight: Longitude: 13.75 ° E Latitude: 48.64 ° N

List of Available Groups: Group 16983, Group 16984

spacecap: Co-polar antenna gain not equal to $10 \cdot \text{LOG}(27843 / (\text{minor axis} * \text{major axis})) = 31.44$

OK

Enter a value of 31.44 instead of 35

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Beam Id: INT E Group Id: 16983 Split Grp Id:

Characteristics Common to a Group of Frequencies General Characteristics

C3a. Assigned frequency bandwidth: 27000 (kHz)

C15a. MSPACE Group code:

C4a. Class of Station: EB

C.6 Polarization: a. Type: L Linear Polarization b. Electric Vector Angle:

BR Data

Remarks:

Enter 33000 instead of 27000 as highest necessary bandwidth for this group is 33000 kHz.

C3a. Assigned frequency bandwidth: 27000 (kHz)

Capture a code if required.

Capture also EV code as EB is for sound broadcasting.

Capture polarization angle for Linear polarization. (e.g 90 degrees)

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments	Coordination			
Notice	Beam	Group	Emissions/Frequencies	Srv Area/Assoc Earth Stn

Notice: 1999999999 Satellite Network: ITU_SAT Beam Id: INT E Group Id: 16983 Split Grp Id:

Characteristics Common to a Group of Frequencies | General Characteristics

A2a. Date of bringing into use: 01.09.2015

A3a. Operating Administration or Agency: 9999 ... Other

A3b. Responsible Administration: XX ... Other

To apply this information to other groups, select the beam or group. Apply to current group only Apply to all groups in this beam Apply to all groups in this notice

Please remember to attach to the submission, the name, telefax number and the address of operating administration or agency and the responsible administration.

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Notice Id: 199999999 Satellite Network: ITU_SAT Beam Id: INT E Group Id: 16983 Mspace Grp Code:

C8 Power Characteristics of the transmission				
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth
33M0F7W--	modchar	15.7	-58.6	-58.6
23M0G7W--	modchar	15.7	-58.6	-58.6

C2a. Assigned Frequencies	
Channel	Frequency in MHz
1	11727.48000
3	11765.84000
5	11804.20000
7	11842.56000
9	11880.92000
11	11919.28000
13	11957.64000
15	11996.00000
17	12034.36000
19	12072.72000
21	12111.08000
23	12149.44000

Use 33M0G7W- instead of 33M0F7W for digital modulation for R1&3 submissions.

Capture modulation for every emission.

Use default value of -59.5 instead of -58.6.

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Notice Id: 199999999 Satellite Network: ITU_SAT Beam Id: INT E Group Id: 16983 Mspace Grp Code:

C8 Power Characteristics of the transmission					
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth	
▶ 33M0F7W--	modchar	15.7	-58.6	-58.6	
27M0G7W--	modchar	15.7	-58.6	-58.6	

C2a. Assigned Frequencies	
Channel	Frequency in MHz
21	12111.08000
23	12149.44000
25	12187.80000
27	12226.16000
29	12264.52000
31	12302.88000
33	12341.24000
35	12379.60000
37	12417.96000
39	12456.32000

Shall be removed if the corresponding service area includes ITU Region 3.

Exercise 1: Correction to a R1&3 BSS submission (Cont.)



Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Attachments: Notice | Coordination: Beam | Group | Emissions/Frequencies | Srv Area/Assoc Earth Stn

Notice Id: 199999999 | Satellite Network: ITU_SAT | Beam Id: INT E | Group Id: 16983 | Mspace Grp Code:

C11a. Test Points (maximum 20)

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-8.59	57.81	0	F	F
-8.47	51.90	0	F	F
-8.40	43.37	0	H	H
-4.50	48.38	0	F	F
-3.00	35.17	0	K	K
4.90	52.35	0	E	E
6.15	46.22	0	K	K
9.55	39.88	0	K	K
10.22	36.85	0	K	K
11.33	44.50	0	K	K
11.58	48.13	0	H	H
12.40	55.70	0	E	E
14.24	40.83	0	K	K
14.50	35.90	0	K	K
15.23	44.12	0	K	K
15.30	47.60	0	K	K

Service area contour: C11a1. Service Area No. 1 | C11a3. Service Area Diagram. See Attachment No. | C11a4. Service Area Name: INT_SA_D | C11a5e. Minimal Elevation Angle: °

Associated Typical Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d8. Equivalent Diameter in meters
36.50	2.96	MODRES ==> APERR_007V01	0.90

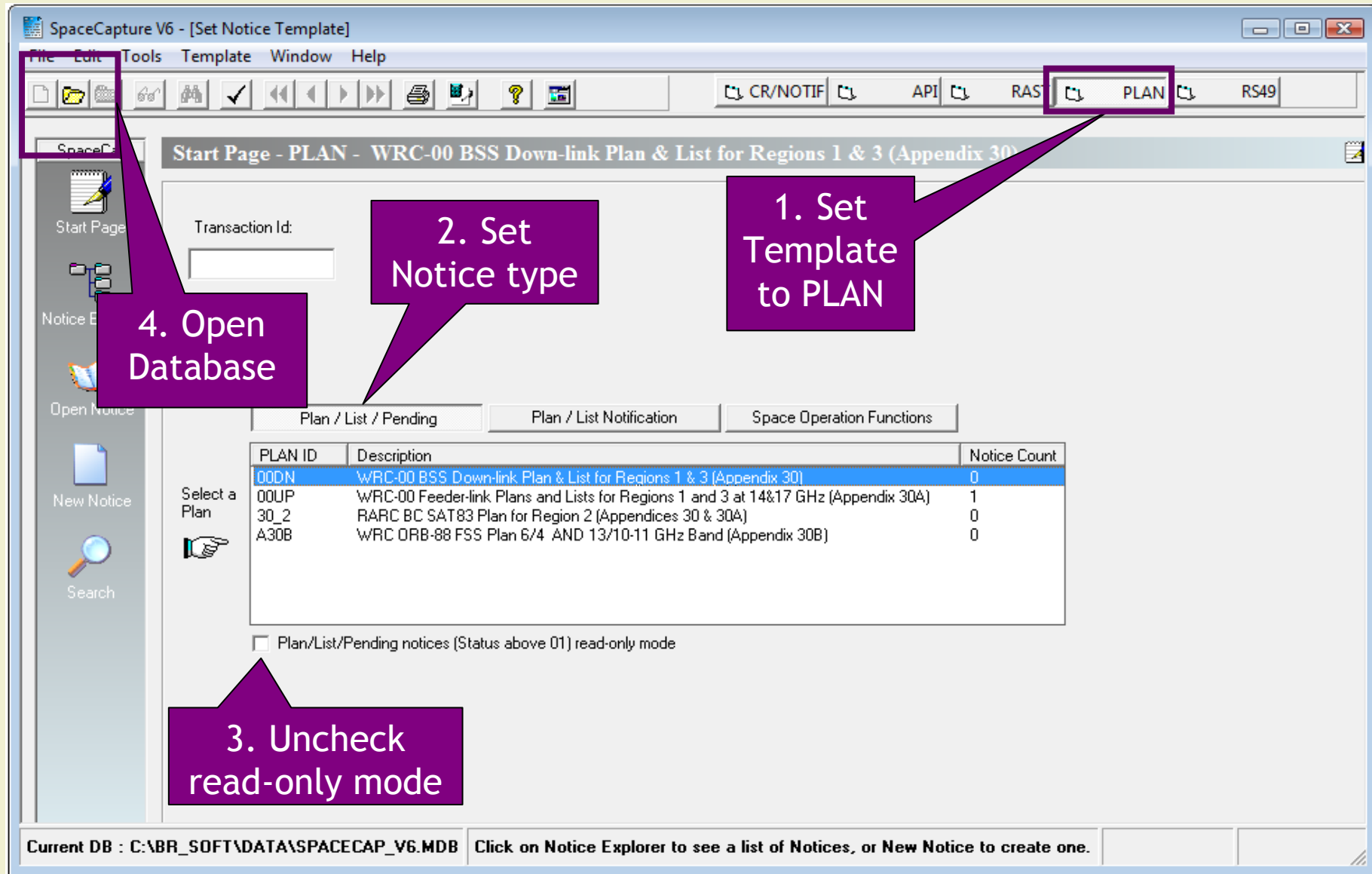
Apply these characteristics to all groups in this beam:
 Apply these characteristics to the Current Group:
 Overwrite Climatic Zone: W/M Climatic Zones

Note: Each set of associated typical earth station antenna characteristics is valid for each test point.

For MODRES with 0.9 meters, use a value of 39.02 instead of 36.50 for maximum antenna gain.

For MODRES with 0.9 meters, use a value of 1.91 instead of 2.96 for 3dB beamwidth.

Exercise 2: Correction to a R1&3 BSS Feeder-link submission



The screenshot shows the SpaceCapture V6 interface with the following annotations:

- 1. Set Template to PLAN**: Points to the 'PLAN' button in the top toolbar.
- 2. Set Notice type**: Points to the 'PLAN / List / Pending' tab.
- 3. Uncheck read-only mode**: Points to the checkbox labeled 'Plan/List/Pending notices (Status above 01) read-only mode'.
- 4. Open Database**: Points to the 'Open Notice' button in the left sidebar.

The main window displays a table of notices:

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	0
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	1
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	0
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

At the bottom of the window, the status bar reads: **Current DB : C:\ABR_SOFT\DATA\SPACECAP_V6.MDB** Click on Notice Explorer to see a list of Notices, or New Notice to create one.

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

Start Page - Please select the type of plan from the list

Transaction Id:

Start Page

Notice Explorer

Open Notice

New Notice

PLAN ID	Des
00DN	WF
00UP	
30	

Select a Plan

Database to open

Exercise

Organize Views New Folder

Name	Date modified	Type	Size
R2		R13_BSS	
R13_BSS_FL			

File name: R13_BSS_FL

Access 7.0 files (*.mdb)

Open Cancel

Select file R13_BSS_FL.mdb and click Open

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

Start Page - PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Transaction Id:

Plan / List / Pending Plan / List Notification Space Operation Functions

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	0
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	1
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	0
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

Select a Plan

Plan/List/Pending notices (Status above 01) read-only mode

Double click on "00UP"

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

SpaceCap

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

Notice Explorer PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.
List of notices					
Count=1					
199999998 [A]	G	SUI/	9E	ITU_SAT	19.11.2010

Control Box

- Show
- Clone
- Export
- Delete
- SpaceVal

Select the notice and click Show

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Notice | Beam | Attachments | Coordination

Notice Id: 199999998 Plan: WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A) Status: 01

Date of Receipt: DD.MM.YYYY: 19.11.2010 Administration Serial Number: []

A1f1. Notifying Administration: SUI A1f2. Notice submitted on behalf of these administrations: [] + [] x

A1f3. Intergovernmental Satellite: []

Notice intended for:

- 4.1.3
 - Part A submission
 - A13d
 - Part A suppression
 - 4.1.26 (new ADM)
 - 4.1.27 Replacement in Plan
- 4.1.12 (Part B submission)
- Resolution 548 (Part B)
- 4.1.23 (List Suppression)

A4a1. Nominal Orbital Longitude: 9.00° E A1a. Identity of the Satellite Network: ITU_SAT

A4a2. Longitudinal tolerance:
b. West: 0.1°
a. East: 0.1°

A11. Regular Hours of Operation:
a. start: 0 b. end: 24

List of Available Beams:
Beam E001

For the same network, use the same position as that for BSS.

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Notice Beam Group Attachments Coordination

Notice Id: 199999998 Satellite Network: ITU_SAT Nominal Orbital Longitude: 9.00 Administration: SUI

Characteristics of the Beam

B2. Receiving Beam Transmitting Beam

Shape of the Beam
 Elliptical Other Shape

B3d. Pointing Accuracy: 0.1 °

B3a1. Co-polar gain: 35 dBi

B1a. Beam Designation: E001 B1b. Steerable/Reconfigurable Beam:

Space Station Antenna

B3c. Radiation Pattern: MODRSS ==> APSRR_404V01

B3f2a. Rotation Accuracy: 0 °

B3f2b. Major Axis Orientation: 0 °

B3f2. Axis at half-power beamwidth: c. Major: 5 ° d. Minor: 4 °

B3f1. Boresight
Longitude: 13.75 ° E Latitude: 48.64 ° N

List of Available Groups
Group 17037
Group 17038

spacecap
Co-polar antenna gain not equal to $10 \cdot \text{LOG}(27843 / (\text{minor axis} * \text{major axis})) = 31.44$

Enter a value of 31.44 instead of 35

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Coordination
Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Beam Id: E001 R Group Id: 17037

Characteristics Common to a Group of Frequencies | General Characteristics

C3a. Assigned frequency bandwidth: 27000 (kHz)

C15a. MSPACE Group code: []

Indicate whether the group can contain 14GHz or 17GHz frequencies.
 WRC-00 14 GHz WRC-00 17 GHz

C4a. Class of Station
EC
ED

C.6 Polarization
a. Type: L Linear Polarization
b. Electric Vector Angle: []

C5a. Receiving System Noise Temperature: 1000 Kelvins

Remarks: []

Enter 33000 instead of 27000 as highest necessary bandwidth for this group is 33000 kHz.

Capture polarization angle for Linear polarization. (e.g 90 degrees)

C3a. Assigned frequency bandwidth

C4a. Class of Station

C.6 Polarization

C5a. Receiving System

Capture a code if required.

ED shall be removed as only EC is valid.

For 17GHz, a value of 600K or lower should be used.

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Assoc Specific Earth Stn Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Assoc Earth Stn

Notice Id: 199999998 Satellite Network: ITU_SAT Beam Id: E001 R Group Id: 17037 Mspace Grp Code:

C8 Power Characteristics of the transmission						C2a. Assigned Frequencies	
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth	i. Power Control (dB)	Channel	Frequency in MHz
33M0G7W--	modchar	28.0	-47.2	-47.2		1	17327.48000
27M0F7W--	missing	27.0	-47.0	-47.0		3	17365.84000
						15	17596.00000
						17	17634.36000
						19	17672.72000
						21	17711.08000
						23	17749.44000

Use 27M0G7W- instead of 27M0F7W for digital modulation for R1&3 submissions.

Capture modulation for every emission.

Use default value of -47.3 instead of -47.0.

If used, a value between 0 and 10 should be captured.

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Modulation Characteristics

Current Designation of Emission 33M0G7W--

C9a. Modulation Characteristics

1) Type of modulation QPSK

3c) Multiplexing type TDM

7) Energy dispersal type Carrier always spread by digital stream

9) TV standard DVB-S

A value between 0 and 15 dB shall be used. (e.g 15)

Apply these characteristics to all emissions in this notice with the same designation of emission

Apply these characteristics to the current emission

OK CANCEL

A12. Range of automatic gain control 20 dB

Exercise 2: Correction to a R1&3 BSS Feeder-link submission (Cont.)



Forms of Notice PLAN - WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)

Assoc Specific Earth Stn	Attachments	Coordination	Emissions/Frequencies	Srv Area/Assoc Earth Stn
Notice	Beam	Group		

Notice Id: 199999998 Satellite Network: ITU_SAT Beam Id: E001 R Group Id: 17037 Mspace Grp Code:

C11a. Test Points (maximum 20)

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-8.59	57.81	0 F	F	F
-8.47	51.90	0 F	F	F
-8.40	43.37	0 H	H	H
-4.50	48.38	0 F	F	F
-3.00	35.17	0 K	K	K
4.90	52.35	0 E	E	E
6.15	46.22	0 K	K	K
9.55	39.88	0 K	K	K
10.22	36.85	0 K	K	K
11.33	44.50	0 K	K	K
11.58	48.13	0 H	H	H
12.40	55.70	0 E	E	E
14.25	40.84	0 K	K	K
14.50	35.90	0 K	K	K
15.23	44.12	0 K	K	K
15.98	47.88	0 K	K	K

Service area contour
 C11a1. Service Area No. 1 C11a3. Service Area Diagram. See Attachment No.
 C11a4. Service Area Name E001_SA C11a5e. Minimal Elevation Angle

Associated Typical Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d7. Antenna Diameter in meters
54.00	0.30	MODTES ==> APERR_010V01	4.50

Apply these characteristics to all groups in this beam
 Apply these characteristics to the Current Group

Overwrite Climatic Zones W/M Climatic Zones

Note: Each set of associated typical earth station antenna characteristics is valid for each test point.

For MODTES with 4.5 meters, use a value of 56.08 instead of 54.00 for maximum antenna gain.

For MODTES with 4.5 meters, use a value of 0.25 instead of 0.30 for 3dB beamwidth.

Exercise 3: Correction to a Region 2 submission



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAS PLAN RS49

Start Page - PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Transaction Id:

4. Open Database

2. Set Notice type

1. Set Template to PLAN

Plan / List / Pending Plan / List Notification Space Operation Functions

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	0
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	1
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	0
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

Select a Plan

Plan/List/Pending notices (Status above 01) read-only mode

3. Uncheck read-only mode

Current DB : C:\ABR_SOFT\DATA\SPACECAP_V6.MDB Click on Notice Explorer to see a list of Notices, or New Notice to create one.

Exercise 3: Correction to a Region 2 submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

Start Page - Please select the type of plan from the list

Transaction Id

Database to open

Exercise

Name	Date modified	Type	Size
R2			R13_BSS
R13_BSS_FL			

File name: R2 Access 7.0 files (*.mdb)

Open Cancel

Select file R2.mdb and click Open

Exercise 3: Correction to a Region 2 submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

Start Page - PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Transaction Id:

Plan / List / Pending Plan / List Notification Special Operation Functions

PLAN ID	Description	Notice Count
00DN	WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)	0
00UP	WRC-00 Feeder-link Plans and Lists for Regions 1 and 3 at 14&17 GHz (Appendix 30A)	0
30_2	RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)	1
A30B	WRC ORB-88 FSS Plan 6/4 AND 13/10-11 GHz Band (Appendix 30B)	0

Select a Plan

Plan/List/Pending notices (Status above 01) read-only mode

Double click on "30_2"

Exercise 3: Correction to a Region 2 submission (Cont.)



SpaceCapture V6 - [Set Notice Template]

File Edit Tools Template Window Help

CR/NOTIF API RAST PLAN RS49

SpaceCap

Start Page

Notice Explorer

Open Notice

New Notice

Search

Notice Explorer PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.
List of notices					
199999999[A]	G	USA/	40W	ITU_SAT_R2	19.11.2010

Control Box

- Show
- Clone
- Export
- Delete
- SpaceVal

Count=1

Select the notice and click Show

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Notice | Beam | Strapping | Attachments | Coordination

Notice Id: 199999999 Plan: RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A) Status: 01

Date of Receipt: DD.MM.YYYY: 19.11.2010 Administration Serial Number: []

A1f1. Notifying Administration: USA A1f2. Notice submitted on behalf of these administrations: []

A1f3. Intergovernmental Satellite: []

Notice intended for:

- 4.2.6
 - Part A submission
 - A1b
 - Part A suppression
- 4.2.16 Part B submission
- 4.2.24 (Sup Plan)
- Resolution 42

A4a1. Nominal Orbital Longitude: 40° W

A1a. Identity of the Satellite Network: TU_SAT_R2

A4a2. Longitudinal tolerance:
b. West: 0.1°
a. East: 0.1°

List of Available Beams:
Beam R2R
Beam R2T

A11. Regular Hours of Operation:
a. start: 0 b. end: 24

Find another position as 40°W is violating Annex 7. (e.g 47.5° W)

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Coordination

Notice Beam Group Strapping Attachments

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Nominal Orbital Longitude: 40 Administration: USA

Characteristics of the Beam

B2. Receiving Beam Transmitting Beam

Shape of the Beam: Elliptical Other Shape

B3d. Pointing Accuracy: 0.1 °

B3a1. Co-polar gain: 37 dBi

B1a. Beam Designation: R2R Rename Beam B1b. Steerable/Reconfigurable Beam

Space Station Antenna

B3c. Radiation Pattern: R123FR ==> APSRR_402V01

B3f2a. Rotation Accuracy: 1 ° Beamlet: 0.8

B3f2b. Major Axis Orientation: 60 °

B3f2. Axis at half-power beamwidth: c. Major: 5 ° d. Minor: 4 °

B3f1. Boresight: Longitude: -60 ° E Latitude: 0 ° N

List of Available Groups: Group 14269, Group 14270

Enter a value of 31.44 instead of 37

spacecap: Co-polar antenna gain not equal to $10 \cdot \text{LOG}(27843 / (\text{minor axis} * \text{major axis})) = 31.44$

OK

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Coordination
Notice Beam Group Strapping Attachments

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Nominal Orbital Longitude: 40 Administration: USA

Characteristics of the Beam

B2.
 Receiving Beam Transmitting Beam

Shape of the Beam
 Elliptical Other Shape

B3d. Pointing Accuracy 0.1 °

B3a1. Co-polar gain 37 dB

B1a. Beam Designation R2T B1b. Steerable/ Reconfigurable Beam

Space Station Antenna
B3c. Radiation Pattern R123SS ==> AP5RR_401V01

B3f2a. Rotation Accuracy 1 °
B3f2b. Major Axis Orientation 60 °
B3f2. Axis at half-power beamwidth c. Major 7 ° d. Minor 6 °

B3f1. Boresight
Longitude -60 ° E Latitude 0 ° N

List of Available Groups
Group 14268

spacecap
Co-polar antenna gain not equal to $10 \cdot \text{LOG}(27843 / (\text{minor axis} \cdot \text{major axis})) = 28.21$
OK

Enter a value of 28.21 instead of 37

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Coordination
Group Emissions/Frequencies Srv Area/Typical Antenna

Beam Id: R2R R Group Id: 14269

Characteristics Common to a Group of Frequencies | General Characteristics

C3a. Assigned frequency bandwidth
23000 (kHz)

C15a. MSPACE Group code

C4a. Class of Station
EC
ED

C.6 Polarization
a. Type: CL Circular Left (Indirect)
b. Electric Vector Angle

C5a. Receiving System
Noise Temperature: 1000 Kelvins

Remarks

Enter 24000 instead of 23000 as the necessary bandwidth for this group is 24000 kHz.

Capture a code if required.

ED shall be removed as only EC is valid.

For 17GHz, a value of 600K or lower should be used.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Coordination
Group Emissions/Frequencies Srv Area/Typical Antenna

Beam Id: R2T E Group Id: 14268

Characteristics Common to a Group of Frequencies

General Characteristics

C3a. Assigned frequency bandwidth
23000 (kHz)

C15a. MSPACE Group code

C4a. Class of Station
EB

C.6 Polarization
a. Type CR Circular Right (Direct)
b. Electric Vector Angle

Remarks

Enter 24000 instead of 23000 as the necessary bandwidth for this group is 24000 kHz.

Capture a code if required.

Capture also EV code as EB is for sound broadcasting.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping	Attachments	Coordination		
Notice	Beam	Group	Emissions/Frequencies	Srv Area/Typical Antenna

Notice: 199999999 Satellite Network: ITU_SAT_R2 Beam Id: R2T E Group Id: 14268 Split Grp Id:

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

A2a. Date of bringing into use
30.03.2016

A3a. Operating Administration or Agency
9999 ... Other

A3b. Responsible Administration
XX ... Other

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

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

Please remember to attach to the submission, the name, telefax number and the address of operating administration or agency and the responsible administration.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping	Attachments	Coordination	Emissions/Frequencies	Srv Area/Typical Antenna
Notice	Beam	Group		

Notice: 199999999 Satellite Network: ITU_SAT_R2 Beam Id: R2R R Group Id: 14269 Split Grp Id:

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

A2a. Date of bringing into use
30.03.2016

A3a. Operating Administration or Agency
9999 ... Other

A3b. Responsible Administration
XX ... Other

To apply information to other beams, select the beam(s) and click the button.

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

Please remember to attach to the submission, the name, telefax number and the address of operating administration or agency and the responsible administration.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Typical Antenna

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Beam Id: R2R R Group Id: 14269 Mspace Grp Code:

C8 Power Characteristics of the transmission					
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth	i. Power Control (dB)
24M0G7W--	modchar	25.0	-47.8	-47.8	

C2a. Assigned Frequencies	
Channel	Frequency in MHz
2	17338.58000
4	17367.74000
16	17542.70000
18	17571.86000

Capture modulation for every emission.

If used, in accordance with section §4.5 and 4.10 of Annex 3 to Appendix 30A

Use default value of -48.8 instead of -47.8.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping	Attachments	Coordination		
Notice	Beam	Group	Emissions/Frequencies	Srv Area/Typical Antenna

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Beam Id: R2T E Group Id: 14268 Mspace Grp Code:

C8 Power Characteristics of the transmission				
C7a. Designation of Emission	C9. Modulation Char	b1. Total Power (dBW)	b2. Maximum Power Density	h. Maximum Power Density over Bandwidth
24MOG7W-	modchar	19.0	-54.0	-54.0

C2a. Assigned Frequencies	
Channel	Frequency in MHz
1	12224.00000
3	12253.16000
5	12282.32000
7	12311.48000
9	12340.64000
11	12369.80000
13	12398.96000
15	12428.12000
17	12457.28000
19	12486.44000

Capture modulation for every emission.

Use default value of -54.8 instead of -54.0.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Typical Antenna

Notice Id: 1999999999 Satellite Network: ITU_SAT_R2 Beam Id: R2R R Group Id: 14269 Mspace Grp Code:

C11a. Test Points (maximum 20)

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-113.00	33.00	0 E	E	E
-100.00	20.00	0 M	M	M
-100.00	40.00	0 K	K	K
-90.00	55.00	0 C	C	C
-82.00	28.00	0 N	N	N
-80.00	40.00	0 K	K	K
-75.00	-5.00	0 N	N	N
-75.00	65.00	0 A	A	A
-70.00	-54.00	0 D	D	D
-70.00	-10.00	0 N	N	N
-70.00	55.00	0 C	C	C
-65.00	-40.00	0 E	E	E
-65.00	-25.00	0 K	K	K
-55.00	0.00	0 P	P	P
-50.00	-25.00	0 N	N	N
-50.00	10.00	0 N	N	N

Service area contour
 C11a1. Service Area No. 1 C11a3. Service Area Diagram. See Attachment No.
 C11a4. Service Area Name REG 2 C11a5e. Minimal Elevation Angle

Associated Typical Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d7. Antenna Diameter in meters
57.40	0.24	R2TES ==> APERR_011V01	7.00

Apply these characteristics to all groups in this beam
 Apply these characteristics to the Current Group

Note: Each set of associated typical earth station antenna characteristics is valid for each test point.

Overwrite Climatic Zones with ICAO Climatic Zones

For R2TES with 7 meters, use a value of 60.32 instead of 57.40 for maximum antenna gain.

For R2TES with 7 meters, a value less than or equal to 0.2 shall be used for 3dB beamwidth.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Strapping Attachments Coordination
 Notice Beam Group Emissions/Frequencies Srv Area/Typical Antenna

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Beam Id: R2T E Group Id: 14268 Mspace Grp Code:

C11a. Test Points (maximum 20)

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-113.00	33.00	0 E	E	E
-100.00	20.00	0 M	M	M
-100.00	40.00	0 K	K	K
-90.00	55.00	0 C	C	C
-82.00	28.00	0 N	N	N
-80.00	40.00	0 K	K	K
-75.00	-5.00	0 N	N	N
-75.00	65.00	0 A	A	A
-70.00	-54.00	0 D	D	D
-70.00	-10.00	0 N	N	N
-70.00	55.00	0 C	C	C
-65.00	-40.00	0 E	E	E
-65.00	-25.00	0 K	K	K
-55.00	0.00	0 P	P	P
-50.00	-25.00	0 N	N	N

Service area contour
 C11a1. Service Area No. 1
 C11a3. Service Area Diagram. See Attachment No.
 C11a4. Service Area Name REG 2
 C11a5e. Minimal Elevation Angle

Associated Typical Earth Station Antenna Characteristics

C10d3. Maximum Isotropic Gain in dBi	C10d4. Half-power beamwidth in degrees	C10d5a. Radiation pattern	C10d8. Equivalent Diameter in meters
33.30	4.00	R2RES ==> APERR_008V01	0.60

Apply these characteristics to all groups in this beam
 Apply these characteristics to the Current Group

Overwrite Climatic Zones

Note: Each set of associated typical earth station antenna characteristics is valid for each test point.

For R2RES with 0.60 meters, use a value of 35.8 instead of 33.30 for maximum antenna gain.

For R2RES with 0.6 meters, use a value of 2.83 instead of 4 for 3dB beamwidth.

Exercise 3: Correction to a Region 2 submission (Cont.)



Forms of Notice PLAN - RARC BC SAT83 Plan for Region 2 (Appendices 30 & 30A)

Notice	Beam	Group	Emissions/Frequencies	Srv Area/Typical Antenna
Strapping	Attachments	Coordination		

Notice Id: 199999999 Satellite Network: ITU_SAT_R2 Nominal Orbital Longitude: 40 Administration: USA

Overall Link Characteristics

Group Combination		Frequency Combination		Channel Combination	
Uplink Group	Downlink Group	Uplink Frequency (MHz)	Downlink Frequency (MHz)	Uplink Channel	Downlink Channel
14269	14271	17338.58000	12238.58000	2	2
14269	14271	17367.74000	12267.74000	4	4
14269	14271	17396.90000	12296.90000	6	6
14269	14271	17426.06000	12326.06000	8	8
14269	14271	17455.22000	12355.22000	10	10
14269	14271	17484.38000	12384.38000	12	12
14269	14271	17513.54000	12413.54000	14	14
14269	14271	17542.70000	12442.70000	16	16
14269	14271	17571.86000	12471.86000	18	18

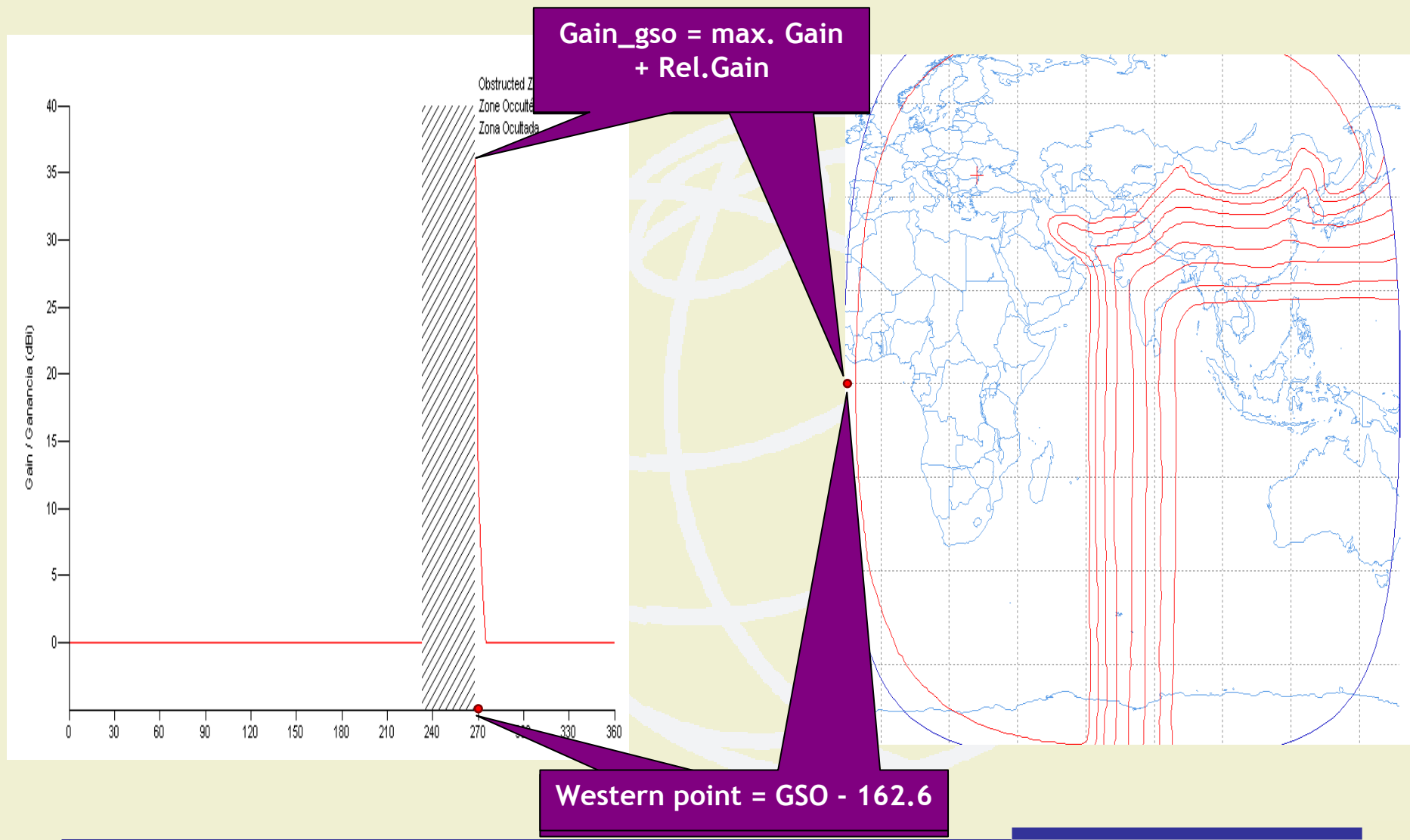
Strap Wizard

Validate

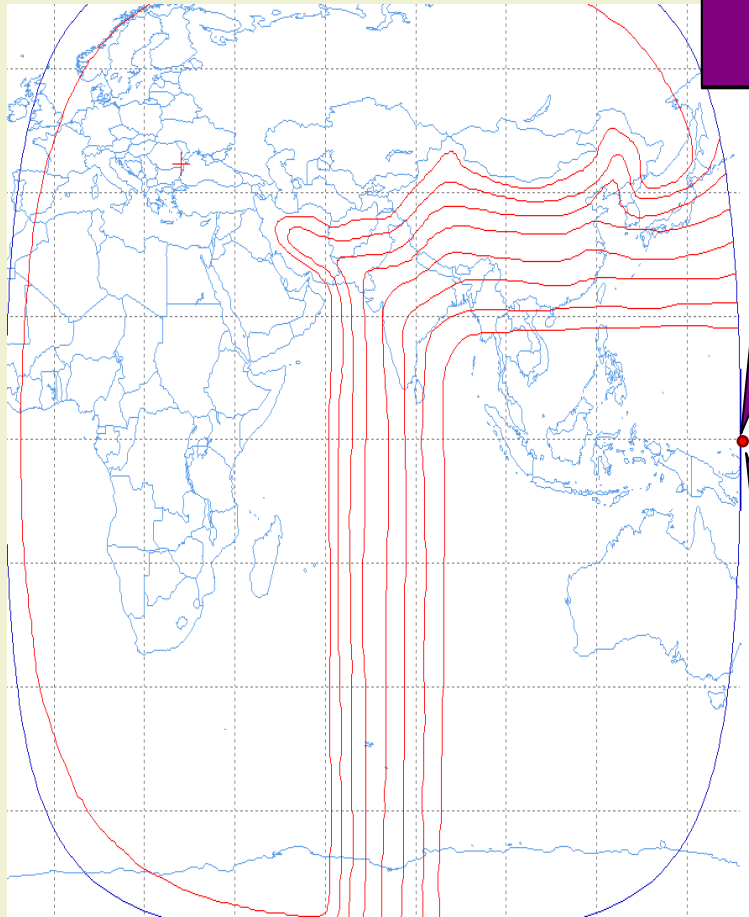
Use Strap Wizard to connect downlink and feeder-link assignments.

After finishing, the "Validation" button should be pressed to verify that all assignments have been strapped.

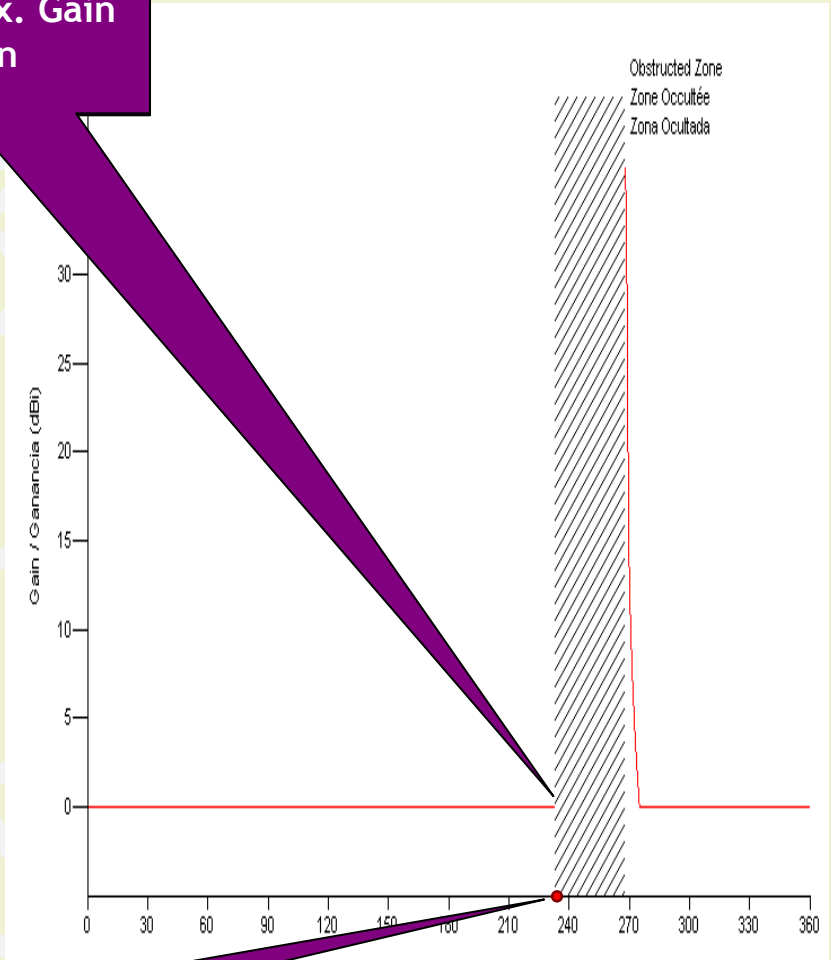
Annex1-Gains at two most Western and Eastern points visible from the GSO satellite



Annex1-Gains at two most Western and Eastern points visible from the GSO satellite



Gain_gso = max. Gain + Rel. Gain



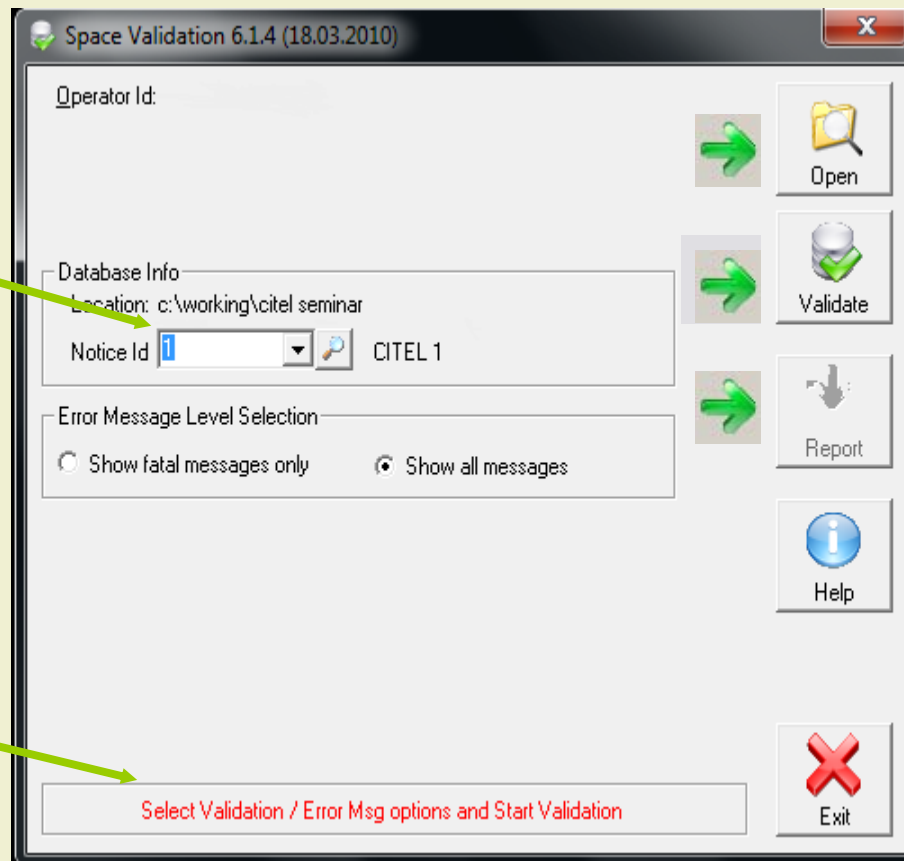
Eastern point = GSO + 162.6

Annex2: SpaceVal



2. Select the notice Id. to be validated

4. Check validation message



1. Browse to Select/open the database to be validated

3. Start the validation process

5. Show validation results with SpaceQry

Help / show validation rules

Exit SpaceVal