

Subtel – CHILE

CORF 2008 Meeting

21 May 08

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Role of Subtel on astronomy and astrophysics activities

1. SUBTEL, their authority
2. Coordination activities for interference protection for ALMA

SUBSECRETARIA DE TELECOMUNICACIONES

- Undersecretary of the Ministry of Transport and Telecommunication
- Their functions are focused on the proposal of national telecommmunications policies, command and control their settlement, supervise the sector's private enterprises and control compliance of laws, rules and regulations.
- Since year 1977. Decreto N°1762.
- Ley General de Telecomunicaciones N° 18.168, year 1982.

SUBSECRETARIA DE TELECOMUNICACIONES

Ley General de Telecomunicaciones

The **Chilean Administration of Telecomunicaciones** is the Subsecretaría de Telecomunicaciones, and as that, is the government's service responsible for the compliance of the obligations settled by the ITU Constitution and Convention and their regulations.

SUBSECRETARIA DE TELECOMUNICACIONES

La Ley General de Telecomunicaciones

Artículo 1°: “... se entenderá por telecomunicación toda transmisión, emisión o recepción de signos, señales, escritos, imágenes, sonidos e informaciones de cualquier naturaleza, por línea física, radioelectricidad, medios ópticos u otros sistemas electromagnéticos.”

Artículo 7°: “El Ministerio de Transportes y Telecomunicaciones velará porque todos los servicios de telecomunicaciones y sistemas e instalaciones que generen ondas electromagnéticas, cualquiera sea su naturaleza, sean instalados, operados y explotados de modo de que no causen lesiones a personas o daños a cosas ni interferencias perjudiciales a los servicios de telecomunicaciones nacionales o extranjeros o interrupciones en su funcionamiento

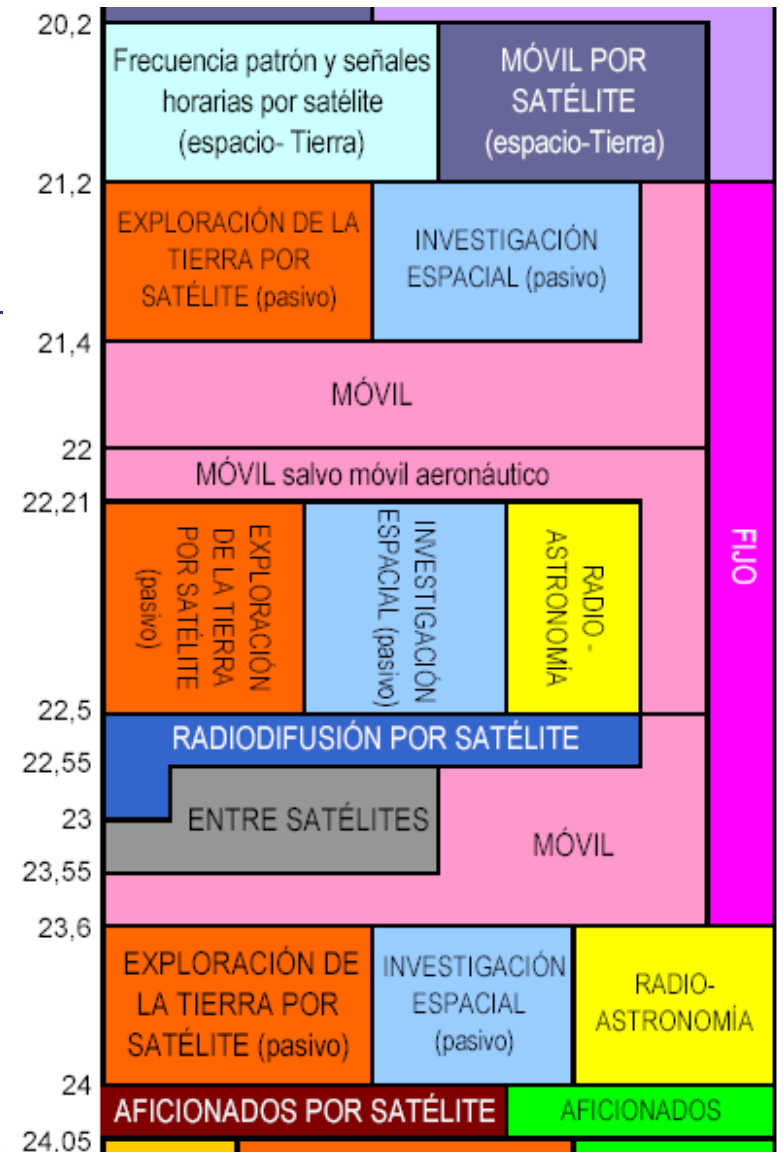
Categories of services and allocations

Plan General de Uso del Espectro Radioeléctrico, Decreto N° 127 year 2006: settle the Table of frequency allocation. (based on Article 5 of the ITU Radio Regulations, Region 2).

Categories of services:

Services on a Primary basis: can claim protection form harmful interferences from stations of a primary service or from stations of a secondary service.

Services on a Secondary basis: can not claim protection form harmful interferences from stations of a primary service, but they have the right to claim protection form harmful interferences from stations of a secondary service.



Coordination

Subtel granted AUI and ESO(august 2004), licence Permiso de Servicio Limitado, to install and operate the radiotelescope at Llano de Chajnantor, Atacama, asociated to characteristics of:

- Frequency asignment
- Location
- Type and number of antennas
- Definition of protection zone and coordination zone

Coordination

- Reception frequency bands- EHF- of ALMA antennas

Authorized Frequency Bands [GHz]	Band allocated to radioastronomy service on primary basis[GHz]	Band allocated to radioastronomy service on secondary[GHz]
31,3 - 45	31,3-31,8 / 42,4 - 43,5	
67 - 90	76-77,5 / 79 - 90	77,5 - 78
84 - 116	84 - 116	
125 - 163	130-134 / 136-158,5	125-130 / 134-136
163 - 211	164 - 167 / 182-185 / 200-211	
211 - 275	211-231,5 / 241-275	
275 - 370	Not allocated	
285 - 500	Not allocated	
602 - 720	Not allocated	
787 - 950	Not allocated	

- The radiotelescope can operate on all the frequency bands authorized, nevertheless it is no possible to guarantee protection on the bands, or parte of them, not allocated to radioastronomy on primary basis.

Coordination- ALMA Radiotelescope

- Protection Zone:

- ✓Centered at lat. $23^{\circ}01'$ S and long. $67^{\circ}45'$ W, 30 km radius.
- ✓Subtel guarantees that will not authorize the instalation of radiocomunicaciones systems which operate in the reception bands of the radiotelescope.

Coordination- ALMA Radiotelescope

•Coordination Zone

Inside the coordination zone, the emissions from equipments authorized to licensees will be limited according to **Rec. ITU-T 769** in the cases:

- For frequencies $<31,3$ GHz, maximum EIRP is defined for distances from 10Km to 100 Km.
- For frequencies $>31,3$ GHz, protection criteria established by **Rec. ITU-T 769** (or any ITU Recommendation that will replace it) will be settled.

Coordination- ALMA Radiotelescope

•Coordination Zone

- ✓Centered at latitude 23°01' S and longitude 67°45' W, with 120 km radius, inside national territory.
 - ✓ Any authorization will be submitted to a coordination process:
 - Subtel will inform ESO and AUI about applications that could affect the operation of the radiotelescope, asking for their technical opinion.
 - In any case ESO and AUI will detect emissions affecting the radiotelescope operation, they will inform Subtel for their coordination.
- “Good Practices” regarding adjusting antenna beams, power, filtering harmonic emissions.

Coordination- ALMA Radiotelescope

Inclusion of the frequencies of ALMA Radio Observatory in the ITU Master International Frequency Register

Radio astronomy station antenna characteristics ALMA Observatory

<u>Code</u>	<u>Antenna type and dimensions</u>	<u>Effective area and angular coverage in azimuth and elevation</u>
CHL1	Array of 64 parabolic reflectors, 12 -m diameter each with <u>Cassegrain subreflector</u> , arranged in a variable pseudo-random spiral pattern of maximum diameter 10 km	5100 square <u>metres</u> ; all directions; the angle of elevation is between 5° and 90°
CHL2	Array of 64 parabolic reflectors, 12 -m diameter each with <u>Cassegrain subreflector</u> , arranged in a variable pseudo-random spiral pattern of maximum diameter 10 km	5100 square <u>metres</u> ; all directions; the angle of elevation is between 5° and 90°

REMARKS

- Subsecretaría de Telecomunicaciones furnish available mechanism for protecting the RADIOASTRONOMY service.
- Subtel submit ITU recommendations related to radioastronomy protection, (ej. Rec.ITU – R 769).
- It is Subtel's will to consider the scientific community worries related to planning for future allocations on the upper bands 275- 3000 GHz, either for radioastronomy services as for earth exploration satellite passive and space research.

Willing to contribute, muchas gracias