Turkey

FOCAL POINT REGARDING CORRESPONDENCE ON THIS QUESTIONNAIRE (PARTS I, II AND III)

Please identify a focal point in your administration/organization who could provide a response to further correspondence regarding this questionnaire (see hereafter).

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   Family Name First Name

2. Country TURKEY _____

3. Name of the Administration/Organization TELECOMMUNICATIONS AUTHORITY ___

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Attachment 1

QUESTIONNAIRE - PART I

(To be completed by both Administrations and, where relevant, by Sector members)

Information on national radio frequency spectrum allocations: 960 – 3 000 MHz

1. Introduction

A national table of frequency allocations is a basic tool for an effective spectrum management process. It provides a general plan for spectrum use and the basic structure to ensure efficient use of the spectrum and the prevention of radio frequency interference between services. Through use of the table, manufacturers will have a guide to where in the spectrum to design and build equipment, and users will know where to operate. As described in the National Spectrum Management Handbook, the International Table of Frequency Allocations, Article 5 of the Radio Regulations forms the basis for national tables and, in some countries, this may be used as the national table. However, other countries have included additional information on national use, varying in detail from showing which service operates when the Radio Regulations offer a choice, to showing how spectrum available for government and non-government use, and, for specific sub-bands, channel arrangements and equipment specifications in use. An extract of a national allocation table is attached as an example.

The scope of the information requested from administrations by this circular letter in no way touches the security or the secrecy aspects of frequency usage in Member States. It is intended simply to provide additional information on the frequency usage on a national basis, together with its corresponding application. It is intended also to facilitate the co-ordination requirements of that usage, either nationally or with neighbouring countries, or with other countries at an international level.

2. Information on national radio frequency spectrum allocations: 960 – 3 000 MHz

a) If you have a publicly available national table of radio frequency spectrum allocations, please submit a copy (either in electronic, or printed form, or both) of that table, or an extract for the frequency range 960 – 3 000 MHz.

Our national table of radio frequency spectrum allocations are publicly available at http://www.tk.gov.tr/tm/marfl_ing.asp , and I am sending its electronic copy of 960-3000 Mhz frequency range as attachment of this mail.

b) If you do not have a national frequency allocations table available, the attached extract from Article 5 of the Radio Regulations may be used to indicate general information on how this range of frequencies is used by your administration within your national borders. Two "empty" columns have been added to this table for this purpose. If you are using an electronic version of the table, the information may be keyed into the spaces provided, otherwise, please type or write the information on a printed copy.

c) Administrations are invited to enter the following information:

In the column designated "National Allocations", please enter the name of the radiocommunications service that is allocated for the use of a given frequency band. Please use the ITU terminology given in Article 1 of the Radio Regulations to describe services, such as FIXED, MOBILE, space research, radio astronomy, etc., using "capitals" to denote a PRIMARY allocation and "normal characters" to denote a secondary allocation (see Nos. **5.23** to **5.31**)

In the column designated "Application and comment", please enter further technical requirements or characteristics, if any, that have been established nationally for a given band such as channel spacing, limitations on radiated signal power;

d) Sector Members that operate in or manufacture equipment for this frequency range are invited to enter information about applications available for operation in the different frequency sub-bands e.g. purpose, operating parameters such as channel spacing, radiated signal power capabilities, etc.

e) Example extract from a national frequency allocation table

This example extract from a national allocation table shows the typical information administrations are invited to provide in the two columns under "National Use" for each sub-band. The column "National Allocation" shows which service(s) have been allocated the sub-band by the administration on a national basis. This is usually a sub-set of the international allocations. The second column shows the typical applications within the service, further comments on the application or any other application in the sub-band.

Allocation to services 960 – 3 100 MHz			**National Use**	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
960-1 215	AERONAUTICAL RADIONAVIGATION 5328 5328A		AERONAUTICAL RADIONAVIGATION S5.328	Military and civil radionavigation; S5.328 refers. Used for DME/TACAN and military identification systems. Radioastronomy on 962-970 MHz - used for pulsars.
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5329 5329A SPACE RESEARCH (active) 5330 5331 5332		RADIOLOCATION RADIONAVIGATION-SATELLITE (s-->E) S5329, S5333	Military radiolocation including NAVSTAR GPS. Civil airport radars - 23cm band. Spaceborne radiolocation for Earth exploration - S5.333 refers

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
960-1 215	AERONAUTICAL RADIONAVIGATION 5.328 5.328A			
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332			
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.330 5.331 5.332 5.334 5.335			
1 260-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.334 5.335 5.335A			
1 300-1 350	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339			
1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341			
1 427-1 429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341			
1 429-1 452 FIXED MOBILE except aeronautical mobile 5.341 5.342	**1 429-1 452** FIXED MOBILE 5.343 5.341			
1 452-1 492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 5.347 BROADCASTING-SATELLITE 5.345 5.347 5.341 5.342	**1 452-1 492** FIXED MOBILE 5.343 BROADCASTING 5.345 5.347 BROADCASTING-SATELLITE 5.345 5.347 5.341 5.344			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 492-1 525 FIXED MOBILE except aeronautical mobile 5.341 5.342	**1 492-1 525** FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348A 5.341 5.344 5.348	**1 492-1 525** FIXED MOBILE 5.341 5.348A		
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354		
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354			
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.341 5.362B 5.362C 5.363			
1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372		
1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372		

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372		
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376			
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A			
1 660.5-1 668.4	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A			
1 668.4-1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.341			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 670-1 675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 5.341				
1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	**1 675-1 690** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.341 5.377	**1 675-1 690** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341		
1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (Earth-to-space) 5.289 5.341 5.377 5.381	**1 690-1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381		

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.289 5.341 5.377	**1 700-1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384		
1 710-1 930	FIXED MOBILE 5.380 5.384A 5.388A 5.149 5.341 5.385 5.386 5.387 5.388			
1 930-1 970 FIXED MOBILE 5.388A 5.388	**1 930-1 970** FIXED MOBILE 5.388A Mobile-satellite (Earth-to-space) 5.388	**1 930-1 970** FIXED MOBILE 5.388A 5.388		
1 970-1 980	FIXED MOBILE 5.388A 5.388			
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F			
2 010-2 025 FIXED MOBILE 5.388A	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)	**2 010-2 025** FIXED MOBILE 5.388A		

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
5.388	5.388 5.389C 5.389D 5.389E 5.390	5.388		
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392			
2 110-2 120	FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space) 5.388			
2 120-2 160 FIXED MOBILE 5.388A 5.388	**2 120-2 160** FIXED MOBILE 5.388A Mobile-satellite (space-to-Earth) 5.388	**2 120-2 160** FIXED MOBILE 5.388A 5.388		
2 160-2 170 FIXED MOBILE 5.388A 5.388 5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.388 5.389C 5.389D 5.389E 5.390	**2 160-2 170** FIXED MOBILE 5.388A 5.388		
2 170-2 200	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F 5.392A			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
2 200-2 290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392				
2 290-2 300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)				
2 300-2 450 FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396			
2 450-2 483.5 FIXED MOBILE Radiolocation 5.150 5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION 5.150 5.394			

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation 5.150 5..371 5..397 5..398 5..399 5.400 5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5..398 5.150 5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) 5..398 5.150 5.400 5.402		
2 500-2 520 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403 5.405 5.407 5.412 5.414	**2 500-2 520** FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403 5.404 5.407 5.414 5.415A			
2 520-2 655 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416	**2 520-2 655** FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416	**2 520-2 535** FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.415A		

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
5.339 5.403 5.405 5.412 5.418 5.418B 5.418C	5.339 5.403 5.418B 5.418C	**2 535-2 655** FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.418 5.418A 5.418B 5.418C		
2 655-2 670 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412 5.420	**2 655-2 670** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420	**2 655-2 670** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420		

Allocation to services 960 – 3 100 MHz			National Allocation	
Region 1	**Region 2**	**Region 3**	**National Allocation**	**Application & Comment**
2 670-2 690 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420 5.420A		
2 690-2 700	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) **5.340** 5.421 5.422			
2 700-2 900	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424			
2 900-3 100	RADIONAVIGATION 5.426 Radiolocation 5.425 5.427			

Attachment 2

QUESTIONNAIRE - PART II
(To be completed by Administrations only)

General Questions on National Spectrum Management

The following general questions on national spectrum management are based in part on the functional requirements of spectrum management described in the handbook on "National Spectrum Management". If you need additional space to answer the questions please continue on a separate sheet of paper.

1. What legal or regulatory texts govern your national spectrum management processes?
Wireless Law numbered 2813 and Implementing Regulations numbered 18183

Are any actions planned to change these legal texts or regulations? YES _X_ NO__

2. Have you publicly available regulations and procedures for national spectrum management (e.g. radio services, license requirements etc.)? YES_X_ NO__

3. Do you have a national radio frequency spectrum allocation table? YES_X_ NO__

4. Regulations for the technical characteristics of radiocommunications equipment

Do you specify that the technical characteristics of radiocommunications equipment must comply with certain requirements (often referred to as "equipment standards"), for example to avoid interference to other services and users? YES_X_NO__

a) Do you develop these technical requirements or equipment standards on a national basis or use those developed by other administrations or international/regional standards organisations: National _X_Other __

b) Do you have a procedure to ensure that radiocommunications equipment complies with the technical requirements, for example:

Type Approval: _X__; Manufacturers Declaration of Compliance: _X__; Other _RTTE__

5. Spectrum re-deployment*

(The term "redeployment" is used here to refer to a process of national scope in which an assessment is conducted 1) to determine if portions of spectrum can be identified that are in limited use; and 2) to determine if such spectrum segments can be reallocated for use in delivering radiocommunication services that have expanding spectrum requirements. Some countries co-operate on a regional basis to identify suitable spectrum segments that may be re-deployed to facilitate the introduction of new applications on a harmonised basis.)*

a) Has there been any spectrum redeployment* in your country or has a need for spectrum redeployment been identified? YES_X_NO__

b) If so, do you have a method for achieving this redeployment in respective frequency bands and for given radiocommunication services? YES_X_ NO__

c) Please define the established method and describe the nature of the consultation, if any, with users regarding the potential costs resulting from the planned redeployment.

when redeployment is needed, another frequency band is assigned to the user with sufficient time for redeployment. There is no payment due to redeployment.

6. Spectrum management costs

a) What is the cost of providing national spectrum management functions in your country (if there is more than one organisation or agency responsible for spectrum management please give the total costs if this information is available)? _____-_____(Swiss Francs)

b) What is the source of the funding required to accomplish these spectrum management functions?

Frequency usage fee, licensing fee, contribution fee from 0.3% of endorsement of companies (licensed services only)

7. Management of frequency assignment records.

a) Does your administration have a system (manual or computerized) to keep and maintain records of national frequency assignments and spectrum use (usually known as a Data Base Management System (DBMS))? YES_X_ NO__

b) Is there a single national DBMS or separate DBMS(s) for different users (for example a DBMS for assignments to government users and separate DBMS for assignments to non-government users)? Single_X_ Separate__

What is the approximate size (at 2002) of your DBMS:

c) number of frequency assignments _____140000_____

d) number of licences _____34000_____

e) Are these frequency assignment records made available to public? YES__ NO_X_

f) Is the DBMS computerized? YES_X_ NO__

g) What computerized DBMS do you use? _Oracle based_

8. Co-ordination of frequency assignments with other countries:

- do you co-ordinate assignments to terrestrial stations YES_X_ NO__

- do you co-ordinate assignments to space stations YES_X_ NO__

9. Notification of frequency assignments.

Do you notify to the ITU those frequency assignments that are required to be notified by the Radio Regulations ? YES_X_ NO__

If not, please explain why and list any difficulties: _____

10. Do you have a policy and planning function for national spectrum management (i.e. a national strategy for future use of the spectrum)? YES_X_ NO__

11. Do you perform technical analyses of frequency assignment requests? YES_X_ NO__

12 Do you perform radio monitoring of terrestrial radio services? YES _X_NO __

Fixed monitoring stations

a) How many fixed monitoring stations do you have? _ 8 (Our National Monitoring System Project is carrying out and when it is completed; the system will have 17 fixed monitoring stations)__

b) Please provide a brief list of the facilities available at your fixed monitoring stations (for example: receivers, spectrum analysers, direction finding equipment):

Spectrum analyser, receiver, DF system, Omni-directional antennas, log periodic antennas (vertical/horizontal), Yagi antennas

c) What is the upper frequency limit of your fixed monitoring stations ____2500__ MHz

d) What is the upper frequency limit of your fixed direction finding stations __2500____ MHz

Mobile monitoring stations

e) How many mobile monitoring stations do you have? 12 (+ 9 at the end of project)

f) Please provide a brief list of the facilities available in your mobile monitoring stations (for example: receivers, spectrum analysers, direction finding equipment)

Receiver, DF system, Omni-directional antennas, log periodic antennas (vertical/horizontal), Yagi antennas

g) What is the upper frequency limit of your mobile monitoring stations ___2500___ MHz

h) What is the upper frequency limit of your mobile direction finding stations __2500____ MHz

Transportable monitoring stations

i) How many transportable monitoring stations do you have? 8 (+5 at the end of project)

j) Please provide a brief list of the facilities available in your transportable monitoring stations (for example: receivers, spectrum analysers, direction finding equipment):

Spectrum analyser, receiver, DF system, Omni-directional antennas, log periodic antennas (vertical/horizontal), Yagi antennas

k) What is the upper frequency limit of your transportable monitoring stations __2500__ MHz

l) What is the upper frequency limit of your transportable direction finding stations _2500 MHz

m) Do you perform space monitoring YES ___ NO __X_

n) Please provide a brief list of the facilities available at your space monitoring stations

_____-

o) What tasks does your space monitoring station perform for GSO satellite monitoring?-

p) What tasks does your space monitoring station perform for non-GSO satellite monitoring?-

q) Does your Administration participate in the International Monitoring Programme of ITU? YES ___ NO _X__

r) Co-operation between Spectrum Management and Monitoring

Please indicate the amount of work (in percentages) performed by the monitoring service for:

s) Frequency Management Department ___-_____%

t) Enforcement Department _____-_____ %

u) License Department _____-_____ %

13. Do you perform Inspections on Radio Stations YES_X_ NO__

a) What inspection techniques are used by your administration to determine that users of the spectrum are complying with national or international requirements?

Measurement devices are connected to the devices and measurements are done by using these devices in order to supervise the frequency users whether they obey national and international rules or not.

b) What are the administrative procedures that determine your inspection policy (for example the number of inspections, type of notification provided prior to inspection, rules and regulations)?

An inspection is an obligation when radio stations are brought into use as a first time. Then, they are supervised randomly. Registrations are kept in TA (Telecommunications Authority) database and the registrations are the basis for inspections. Any notification is not required prior to inspections.

c) What measurement equipment does your administration use to perform technical measurements at an inspection?

Spectrum Analyzer, Wattmeter, Dummy Loads, Accumulators, Frequency Counter,

d) What technical parameters does your administration measure when inspecting a radio system?

Output power, Field Strength, frequency, bandwidth, frequency deviation/depth

e) What station records does your administration review when inspecting a radio station?

Licence , System Establishment Authorization

14. Do you perform technical analyses of radio frequency interference complaints? YES_X_ NO__

Do you have an established consultation process, involving Government and non-government organization, for resolving these complaints? YES_X_ NO__

15. Use of computers for national spectrum management

General

a) Do you use computers for national spectrum management? YES_X_ NO__

b) Type of computers _____

c) How many workstations: _____ or personal computers (PCs): _____

d) Operating system(s) ____Oracle Based ISYAM-BILSPECT Software _____

e) Does your spectrum management system operate within a Local Area Network (LAN)? YES_X_ NO__

f) Do you have access to the internet? YES__ NO_ X _

g) Does your administration provide a web site on the internet to disseminate spectrum management information? YES__ NO__

If yes, please provide the address (URL) of the web site: _____

Windows Basic Spectrum Management System (WinBASMS)

h) Are you aware that a Windows Basic Spectrum Management System is available from the ITU at no cost? YES__ NO_X_

i) Has your administration used WinBASMS? YES__ NO_X_

j) Has your administration had problems using WinBASMS? YES__ NO_X_

k) Please list all problems that were encountered using WinBASMS.

_____

l) Would you recommend using WinBASMS if the problems identified in (d) have been corrected? YES__ NO__

m) Do you need an enhanced spectrum management system if you answered no in (e)? YES__ NO__

Advanced Automated Spectrum Management Systems (AASMS)

n) Does your administration use an Automated Spectrum Management Systems (AASMS) YES__ NO_X_

o) Has your administration had problems using your AASMS YES__ NO__

p) Please list all problems that were encountered using your AASMS

_____

q) How would you propose to change the AASMS to correct or overcome these problems (please describe)?

_____

16. Organisation of spectrum management

a) Please describe your country's spectrum management structure and enclose a copy of the organization chart. The following aspects are of particular interest:

ORGANIZATION CHART

TELECOMMUNICATIONS AUTHORITY
TELECOMMUNICATION BOARD
CHAIRMAN OF THE BOARD
1- Vice President 1

- Tariffs
- Licences and Agreements
- Sectoral Competition and Consumer Rights
- Technical Regulations and Standards

2- Vice President 2

- ***Spectrum Management***
- Spectrum Monitoring
- International Relations and EU Coordination

3- Vice President 3

- Human Resources
- Accounting and Finance
- Logistics
- Regional Directorates

4- Vice President 4

- Quality Assurance
- Sectoral Research and Strategies
- Information Technologies

5- Legal Advisors

6- Advisor for Press and Consumer Relations

b) Is the spectrum management organisation a separate ministry, department or agency reporting directly to the government or is it part of a larger government department (for example, a department responsible for all telecommunications)? Spectrum Management department is responsible department of TELECOMMUNICATIONS REGULATORY AUTHORITY which is independent authority. Telecommunication Authority was founded as a public judicial entity with a private budget having administrative and financial autonomy on January 27, 2000 in accordance with Article 5 of Law No. 4502 amended by Wireless Law No. 2813 in order to execute the actions envisaged in Wireless Law No. 2813, Law No. 406 on Telegraph and Telephone and other laws, and became effective as from August 15, 2000. The Authority works under the auspices of Ministry of Transportation.

c) Is the responsibility for spectrum management contained within a single organisation or is it shared between separate organisations (for example, some administrations have separate organisations for regulatory matters and policy matters, other administrations have separate organisations for government users and non-government users)? The responsibility for spectrum management contained within only our authority.

d) Have there been recent changes in this organisational structure or are changes planned (for example to take account of any changes in your government's policy for telecommunications)? The organizational structure had been changed in 2001. Before 2001 there wasn't Telecommunication Regulation Authority.

e) Number of specialist staff in national spectrum management? ____20_____

f) Number of support staff in national spectrum management? _____5_____

17. Do you use the ITU-R Handbooks and Reports on:

a) National Spectrum Management[1], version 1995 ? yes

b) Spectrum Monitoring, version 2002? yes

[1] The National Spectrum Management Handbook is currently being updated. You are urged to contact Mr Robert Mayher, Chairman ITU-R Study Group 1 and the designated Rapporteur for revision of this Handbook if you have any comments that you wish included in this revision.

c) Computer-aided Techniques for Spectrum Management, version 1999? -

d) Report SM.2012-1, Economic Aspects of Spectrum Management, version 2000? yes

18. Identification of problems experienced in national spectrum management.

Please use the following table to describe problems experienced by your administration in national spectrum management. This information will be used by the ITU, in particular ITU-R Study Group 1, to identify future areas of work, within the normal study programme, so that effort may be focused on the development of recommendations and reports for subjects where assistance is most needed.

Question	**Please describe the spectrum management problem associated with the Question and the type of assistance that could be provided by the ITU.**
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Q7	
Q8	
Q9	
Q10	
Q11	
Q12	
Q13	
Q14	
Q15	
Q16	
Q17	

Attachment 3

QUESTIONNAIRE - PART III
(To be completed by administrations)
Information on the calculation of fees for frequency use

1 Introduction

ITU-D Question 21/2 (see Appendix 1), adopted by the World Telecommunication Development Conference (Istanbul, March 2002), aims to respond to one of the most pressing concerns of the majority of developing countries, particularly LDCs, which are experiencing difficulties in establishing a national frequency fee calculation model.

The Question was entrusted to the Joint Group on Resolution 9 (ITU-D Study Group 2 and ITU-R Study Group 1) in order to benefit from the experience it had acquired during the period 1998-2002 in mobilizing ITU-D and ITU-R expertise. It will lead *inter alia* to the establishment of a document structure bringing together the calculation formulas and frequency fee amounts applied by the countries for radiocommunication usages in the various frequency bands.

This questionnaire is thus being sent to administrations in order to collect the necessary data, which will be analysed in depth and reported on, with a view to the establishment by ITU of a database, to be accessible to all countries.

Generally speaking, Report ITU-R SM.2012-1, while it does not go into detail about the situation in each country, does describe several possible methods of administrative spectrum pricing and mentions the variables likely to be used to calculate frequency fees. It also considers the systems of assignment by public tender and of transferable rights to use the spectrum, in both of which frequency prices are set by the market.

Question 21/2 carries on from Report SM.2012-1, and the results of the work done under this Question will provide information on the real conditions in which frequency fees are implemented in all the countries that participated.

Administrations are therefore invited to answer this questionnaire as accurately as possible. However, the questionnaire has been designed to cover generally all possible cases. Your Administration is not necessarily required to reply to all questions but to mark applicable boxes. Should you find that there are other possible cases or other explanations, please do not hesitate to include them on a separate sheet with an appropriate cross-reference.

2 How to complete the questionnaire

The document contains questions that are to be found in both the body of the text and in the charts set out in APPENDIX 2, which concerns only frequency fees (the other charges are dealt with in question Q3).

In the charts, many of the questions require only a "yes" or "no" answer, and the questionnaire can serve as an aid to answering those questions. For the other questions, and when necessary, administrations are invited to write their replies on a separate document.

Additional explanations and a glossary intended to make it easier to answer the questions are given below.

The questionnaire was drawn up with a view to obtaining relatively specific replies that could be put to satisfactory use in the database. Numerous situations were envisaged and, as a rule,

targeted questions drafted but, in spite of the questionnaire's length, it is quite likely that not all possible scenarios have been covered.

Administrations are therefore invited not only to respond to the questions asked, but also, as necessary, to describe any peculiarities of their system that the questionnaire does not cover. They are also invited to make any suggestions they consider pertinent to improve the content and the quality of the future database.

3 Questions

3.1 General questions

Q1

- Are there any legal texts on the establishment of frequency fees?

  Reply: Wireless Law No. 2813,

- If yes, please indicate their references and the date on which they were last updated.
  Reply: Wireless Law No. 2813 was last updated with Law No. 4502 dated 27.01.2000

Q2

- What procedure (regulatory, legislative, etc.) is used to review and update your system for setting frequency fees?

  Reply: legislative

- Are reviews conducted at pre-established regular intervals? If yes, please specify:

  *Reply**:*** Every year

- Does recourse to market mechanisms (auctions, calls for tenders) to screen applicants for spectrum access require that parliament enact legislation, that the government make a decision, or any other measure? Please specify.

  Reply:

Q3

- Are the same approaches and principles used to set frequency fees for all users?

  Reply: *Yes*

- If yes, please complete the charts in APPENDIX 2.

- If no:

  – please indicate the methods used to calculate fees or the scales applied to agencies that use frequencies for non-commercial activities;

  – then, please complete the charts in APPENDIX 2 for the agencies that use frequencies for commercial activities.

  Reply:

Q4

- In addition to direct frequency fees, certain administrations require the payment of additional spectrum-related charges (for example, for spectrum access, spectrum replanning, management of equipment using the frequencies).

  Does your Administration require such payments?

  Reply: No

- If yes, please specify:

  – the users concerned;

  – the methods used to calculate the charges or the scales applied and the corresponding amounts.

  Reply:

Q5

- To which institution(s) are the frequency fees and any additional charges collected paid?
  Reply: Telecommunication Authority

3.2 Exemption from payment of frequency fees

Q6

- Are any applications partially or completely exempted from the payment of frequency fees?

  Reply: No

- If yes, please specify:

  – the applications concerned;

  – their respective rate of exemption;

  – the method used to calculate the fees or the scale applied, if they differ from those indicated in rows 20 and 21 of the charts in APPENDIX 2.

  Reply:

Q7

- Are any users partially or wholly exempted from the payment of frequency fees?

  Reply: Yes

- If yes, please specify:

  – the users concerned; *military, forest ministry, health ministry and police*

– their respective rate of exemption; No Payment

– the method used to calculate the fees or the scale applied, if they differ from those indicated in rows 20 and 21 of the charts in APPENDIX 2.

Reply:

3.3 The application of frequency fees

Administrations are invited to respond to the questions asked in charts A to E in APPENDIX 2, dealing respectively with the fixed, mobile, satellite and broadcasting services and other applications.

The charts comprise:

– horizontally, three sections corresponding respectively:

  – [rows 1 to 21]: to the variables which may be used to set the fees and to the methods applied. This section contains shaded cells corresponding to non-relevant situations;

  – [row 22]: to the explanations, grounds and objectives;

  – [rows 23 to 25]: to recourse to market mechanisms, as the case may be;

  – vertically, the various applications relating to the service considered.

3.3.1 Approaches and principles for setting frequency fees

To answer this part of ITU-D Question 21/2, please complete rows 1 to 21 of the five charts (A to E) in APPENDIX 2.

In each chart, for any given application:

• for the variables, administrations should reply:

  – yes (by crossing out or deleting the letter "n") in the cells relating to the variables they use to set fees;

  – no (by crossing out or deleting the letter "y") in the cells relating to the variables they do not use;

• under "methods used" (rows 20 and 21), administrations should indicate, separately and depending on the case, the formulas or scales used to calculate the amount of the fees, preceded by the references indicated in the corresponding cells. Administrations are invited to explain the formulas and scales they use and how they are implemented.

Note: An administration concerned by a cell in row 20 in respect of one application will not be concerned by the corresponding cell in row 21 in respect of the same application, and vice versa.

Example 1 Take Chart A ("fixed service") and the application "Radio relays".

- To establish the corresponding fees, if the administration uses the variables "bandwidth", "centre frequency", "number of transmitting stations" and "duration of authorization/licence", it should reply "yes" in the cells situated at the intersection of rows 1, 2, 10 and 13 with the column "Radio relay". In all other cells in that column, it should reply "no".

- To determine the amount of the fees:

  – if the administration uses the following formula:
  "*Annual charge for a link = 100 x Δf/f* ",
  where Δf = bandwidth and f = centre frequency,
  it could reply as follows:
  "*A1:*
  Annual charge for a link = 100 x Δf/f "

  – if the administration uses no formula, it should append the corresponding scale under reference *A7*.

3.3.2 Explanations, grounds and objectives (row 22 in the charts)

For each of the cells in row 22, administrations are invited to provide information on the grounds for their choice, for the variables used to set the fees and for the methods applied to determine the amount of those fees.

Example 2 Following on from example 1, the administration could reply as follows:

"A13:

– *the variable "bandwidth" was chosen to encourage economical use of the spectrum;*

– *the variable "centre frequency" was chosen to encourage the use of high frequencies;*

– *the variable "number of transmitting stations" was chosen to take account of spectrum and geographic occupancy;*

– *the variable "duration of authorization" was chosen in order to enable collection of a global amount corresponding to the total length of time the spectrum is occupied. It also reduces the risk of frequency hoarding and non-use."*

3.3.3 Heading "Recourse to market mechanisms"

If the administration has had recourse to market mechanisms for a given application (for example, IMT-2000), it should specify whether it used auctions (row 23), calls for tenders (row 24) or comparative selection (beauty contests) (row 25). It should also indicate the total amount obtained and the total bandwidths auctioned off and allocated, respectively.

Note: An administration concerned by a cell in row 23 in respect of one application will not be concerned by the corresponding cell in rows 24 and 25 in respect of the same application, and vice versa.

3.3.4 Advantages and disadvantages of each approach

Q8

- What are the advantages and disadvantages of the approaches currently used by your Administration to establish the amount of frequency fees and any additional charges?

  Reply:

4 Updating the ITU report and database on frequency fees and additional charges

Q9

- How often would you consider it most appropriate to update the report and the database: every 2 years, 3 years, 4 years, ...?

  Reply: every 3 years

- To that end, would your Administration be willing subsequently to complete a similar questionnaire at the regular interval it has indicated above?

  Reply: yes

5 Information concerning the questionnaire

France:

economic information
M. Jean-Pierre HUYNH
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PART III

APPENDICES

APPENDIX 1: Definition of ITU-D Question 21/2
APPENDIX 2: Charts to be completed (A to E)
APPENDIX 3: Glossary of terms used

Appendix 1

DEFINITION OF ITU-D QUESTION 21/2

Calculation of frequency fees

1 Statement of the situation or problem

The draft new Question dealt with here responds to one of the most pressing concerns of numerous developing countries, particularly LDCs, which are experiencing difficulties in elaborating a national frequency fee calculation model.

Furthermore, several regulatory frameworks place the frequency resource within the State domain. As a result, its use, which may well not be equitably distributed, must be properly remunerated as part of the rational management of public property. Techniques for sharing, segmentation, access to new frequencies and reorganization of the spectrum no longer suffice to guarantee effective management. The frequency spectrum therefore has to be optimized. This effort should, however, take into account the nature of the service to be provided, the band in question and the end user (consumer activities, etc.).

The optimization effort must be adapted to the new trends in the area of spectrum usage and sharing and must reflect the socioeconomic features of each country. It is particularly urgent when it comes to evaluating bands which are in high demand or may come to be so in the light of emerging technologies, as is the case with IMT-2000 systems in the 2 GHz band.

It should be borne in mind that the economic aspects of spectrum management are addressed in the ITU-D handbook on the economic, administrative and regulatory aspects of national spectrum management, as well as in Report ITU-R SM.2012, which describes, *inter alia*, the three main approaches to financing national spectrum management and the corresponding main advantages and disadvantages (financing from the national budget, through the collection of fees or charges for use of the spectrum, and by public tender). The report also presents the economic approaches used to promote national spectrum management (assignment through comparative assessment procedures; random assignment; assignment by public tender; transferable, flexible rights to use the spectrum; incentive pricing and concessionary charges, etc.).

Thus, the elaboration of a national frequency fee calculation model is a very complex matter and is the source of major difficulties for numerous developing countries and particularly LDCs for which the need is extremely urgent. The proposed Question will help to meet those concerns.

2 Question or issue proposed for study

The proposed study relates to the methods for calculating the various charges, fees, etc. that are levied on spectrum users. The points to be considered within the framework of this new Question are as follows:

a) Establishment in electronic format of a document structure bringing together the calculation formulas and frequency fee amounts applied by different countries for different radiocommunciation usages in the various frequency bands. This database will be made available to the ITU Member States and will require periodic updating.

b) Preparation of a report dealing with the following points:

• Analysis of the various methods, formulas and approaches currently applied by different countries for calculating frequency fees, accompanied by a comparative study clearly highlighting:

– approaches and principles relating to the calculation of frequency charges;

– the justifications and reasoning for each approach;

– how each approach contributes to fostering spectrum management and the effectiveness thereof;

– advantages and drawbacks of each approach (socioeconomic, technical and other considerations).

• Basic factors that may be taken into account when elaborating new formulas or reviewing existing ones.

• How to bring about consistency and complementarity between spectrum rearrangement processes and economic optimization of frequencies.

3 Expected outputs

An electronic document structure and links enabling users to have easy access to data on frequency fee calculation formulas for the users of the radio frequency spectrum in different countries. BDT is requested to coordinate participation with those countries who do not have access to the Web, providing them a hard copy upon request.

A report on the various frequency fee calculation formulas currently applied in different countries.

4 Required timing of the expected output

An initial version of the output is requested by mid-2003.

A regular update should subsequently be carried out.

5 Proposers/sponsors

This Question was submitted to WTDC-02 and has been recognized as being very important for the developing countries and LDCs, and as being urgent.

6 Source of required inputs

– Inputs are expected from spectrum managers (administrations, regulators), relating to:

– the structure of the information to be made available and the questionnaire(s) to be circulated to the Member States in order to gather the information to be entered into the database;

– analysis of the replies and of the report.

– Inputs are also expected from spectrum users (operators, etc.) that are subject to the fees in question, for analysis of the replies and of the report.

– Member States' replies to the questionnaire(s).

7 Target audience for the output

a) Indicate the target audience for the output in the following table:

	Developed countries	Developing countries	LDCs
Telecom policy makers	x	x	x
Telecom regulators	x	x	x
Service providers (operators)	x	x	-
Manufacturers	-	-	-

b) Target audience for the study - who specifically will use the output?

The output could be particularly useful to frequency spectrum managers when it comes to identifying the basic elements to be taken into account in elaborating a national frequency fee calculation model for the various users of the radio frequency spectrum in the different frequency bands.

c) Proposed methods for implementing the output

The output will be made available to all Member States free of charge (documents on paper, on the Web and on CD-ROM). An ITU circular letter should be sent out informing the Member States of the results of this study and inviting them to use that output when elaborating their national model for optimizing the frequency spectrum.

8 Proposed method of handling this Question

Given that this Question, which is very important and urgent for the developing countries and particularly LDCs, touches also on the field of radiocommunications, and that ITU-R Study Group 1 has already accumulated expert experience on the matter, it is proposed that it be dealt with by the **joint working group** already set up for the implementation of Resolution 9 (ITU-D Study Group 2/ITU-R Study Group 1).

Meetings dealing specifically with this Question should be programmed by the joint working group during the period 2002-2003.

9 Coordination requirements for the study

Coordination between ITU-D and ITU-R is required and should be carried out within the framework of the joint working group on Resolution 9.

In addition, coordination with ITU-D Study Group 1 is necessary (Question 12/1).

Appendix 2

Chart A: FIXED service

⬇	➡ **APPLICATIONS** **VARIABLES**	Row No.	Radio relay	Local radio loop (incl. LMDS, MMDS)	Links between fixed stations (incl. HF)	Local radio networks	Other application(s): please specify
Spectrum-related variables	bandwidth	1	yX / n	y / n	y X/ n	y X / n	y / n
	number of channels	1bis	y / n	y X/ n	y / n	y X / n	y / n
	centre frequency, or band position in the spectrum	2	yX / n	y / n	y X/ n	y / n	y / n
	exclusive / shared use	3	yX / n	y / n	y X/ n	y / n	y / n
Variables relating to geographic coverage	surface area allocated	4	y X/ n	y X/ n	y X / n		y / n
	distance between transmitter and receiver	5	y X/ n		y X / n		y / n
Variables relating to equipment and infrastructure	transmitter power	6	y X/ n	y X/ n	y X / n	y X / n	y / n
	antenna height	7	y X/ n	y X/ n	y X / n		y / n
	bit rate or capacity	8	y / n	y X/ n	y X / n	y X / n	y / n
	transmitting beam angle	9	y X/ n				y / n
	number of transmitting stations	10	y X/ n	y X/ n	y X / n	y X / n	y / n
	number of receiving stations	11	y / n	y / n	y / n	y / n	y / n
	degressivity	12	y / n	y / n	y / n	y / n	y / n
Socio-economic variables	duration of the authorization / licence	13	y / n	y / n	y / n	y / n	y / n
	population density	14		y / n	y / n	y / n	y / n
	total population covered	15		y / n			y / n
	geographic location	16	y / n	y / n	y / n	y / n	y / n
	operator's turnover	17		y / n	y / n		y / n
	Gross domestic product	18	y / n	y / n	y / n	y / n	y / n
Other variable(s): please specify		19	y / n	y / n	y / n	y / n	y / n

Appendix 2

Methods used	calculation formulas and corresponding amounts	20	A1	A2	A3	A4	A5
	scales	21	A6	A7	A8	A9	A10
Explanations and grounds, objectives		22	A11	A12	A13	A14	A15
Recourse to market mechanisms	auctions	23	A16	A17	A18		A20
	call for tenders	24	A21	A22	A23		A25
	comparative selection (beauty contests)	25	A26	A27	A28		A30

Appendix 2

CHART B: MOBILE service

⬇	➡ APPLICATIONS VARIABLES	Row No.	2G mobile systems	3G mobile systems	Radio-messaging	Private independent networks	Operated independent networks	Citizen band (CB)	RRI 446 (or family radio)	Other application(s): please specify
Spectrum-related variables	bandwidth	1	y X / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	centre frequency, or band position in the spectrum	2	y X / n	y / n	y X / n	y X / n	y X / n	y X / n	y X / n	y / n
	exclusive / shared use	3	y X / n	y / n	y / n	y / n	y / n			y / n
Variables relating to geographic coverage	surface area allocated	4	y X / n	y / n	y / n	y X / n	y X / n			y / n
	distance between transmitter and receiver	5				y X / n	y X / n			y / n
Variables relating to equipment and infrastructure	transmitter power	6				y X / n	y X / n	y X / n	y X / n	y / n
	antenna height	7				y X / n	y X / n	y X / n		y / n
	bit rate or capacity	8	y X / n	y / n		y / n	y / n			y / n
	transmitting beam angle	9								y / n
	number of transmitting stations	10	y X / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	number of receiving stations	11	y / n	y / n	y / n	y / n	y / n			y / n
	degressivity	12	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
Socio-economic variables	duration of the authorization / licence	13	y / n	y / n	y / n	y / n	y / n	y / n		y / n
	population density	14	y / n	y / n	y / n	y / n	y / n			y / n
	total population covered	15	y / n	y / n	y / n	y / n	y / n			y / n
	geographic location	16	y / n	y / n	y / n	y / n	y / n			y / n
	operator's turnover	17	y / n	y / n	y / n		y / n			y / n
	Gross domestic product	18	y / n	y / n	y / n	y / n	y / n			y / n
Other variable(s): please specify		19	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n

Appendix 2

Methods used	calculation formulas and corresponding amounts	20	B1	B2	B3	B4	B5	B6	B7	B8
	scales	21	B9	B10	B11	B12	B13	B14	B15	B16
Explanations and grounds, objectives		22	B17	B18	B19	B20	B21	B22	B23	B24
Recourse to market mechanisms	auctions	23	B25	B26	B27	B28	B29			B32
	call for tenders	24	B33	B34	B35	B36	B37			B40
	comparative selection (beauty contests)	25	B41	B42	B43	B44	B45			B48

Appendix 2

Chart C: SATELLITE service

⬇ / ➡ *VARIABLES* / **APPLICATIONS**		Row No.	VSAT	Earth stations	Satellite video reporting	Mobile satellite service	Satellite radiolocation	Other application(s): please specify
Spectrum-related variables	bandwidth	1	y / n	y / n	y / n	y / n	y / n	y / n
	number of channels	1bis	y / n	y / n	y / n	y / n	y / n	y / n
	centre frequency, or band position in the spectrum	2	y / n	y / n	y / n	y / n	y / n	y / n
	exclusive / shared use	3	y / n	y / n	y / n	y / n	y / n	y / n
Variables relating to geographic coverage	surface area allocated	4			y / n	y / n	y / n	y / n
	distance between transmitter and receiver	5						y / n
Variables relating to equipment and infrastructure	transmitter power	6	y / n	y / n	y / n			y / n
	antenna diameter	7	y / n	y / n	y / n			y / n
	bit rate or capacity	8	y / n	y / n	y / n	y / n	y / n	y / n
	transmitting beam angle	9	y / n	y / n	y / n			y / n
	number of transmitting stations	10	y / n	y / n	y / n	y / n		y / n
	number of receiving stations	11	y / n	y / n		y / n	y / n	y / n
	degressivity	12	y / n	y / n	y / n	y / n	y / n	y / n
Socio-economic variables	duration of authorization / licence	13	y / n	y / n	y / n	y / n	y / n	y / n
	population density	14	y / n	y / n	y / n	y / n	y / n	y / n
	total population covered	15				y / n	y / n	y / n
	geographic location	16	y / n	y / n	y / n	y / n	y / n	y / n
	operator's turnover	17	y / n	y / n	y / n	y / n	y / n	y / n
	Gross domestic product	18	y / n	y / n	y / n	y / n	y / n	y / n
Other variable(s): please specify		19	y / n	y / n	y / n	y / n	y / n	y / n

Appendix 2

Methods used	calculation formulas and corresponding amounts	20	C1	C2	C3	C4	C5	C6
	scales	21	C7	C8	C9	C10	C11	C12
Explanations and grounds, objectives		22	C13	C14	C15	C16	C17	C18
Recourse to market mechanisms	auctions	23	C19	C20	C21	C22	C23	C24
	call for tenders	24	C25	C26	C27	C28	C29	C30
	comparative selection (beauty contests)	25	C31	C32	C33	C34	C35	C36

Appendix 2

Chart D: BROADCASTING service

⬇ / ➡ APPLICATIONS / VARIABLES		Row No.	Sound broadcasting				Television broadcasting			
			Earth		Satellite		Earth		Satellite	
			Analogue	Digital	Analogue	Digital	Analogue	Digital	Analogue	Digital
Spectrum-related variables	bandwidth	1	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	centre frequency, or band position in the spectrum	2	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	exclusive / shared use	3	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
Variables relating to geographic coverage	surface area allocated	4	y / n	y / n			y / n	y / n		
	distance between transmitter and receiver	5								
Variables relating to equipment and infrastructure	transmitter power	6	y / n	y / n			y / n	y / n		
	antenna height	7	y / n	y / n			y / n	y / n		
	bit rate or capacity	8	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	transmitting beam angle	9								
	number of transmitting stations	10	y / n	y / n			y / n	y / n		
	number of receiving stations	11	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	degressivity	12	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
Socio-economic variables	duration of authorization / licence	13	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	population density	14	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	total population covered	15	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	geographic location	16	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	operator's turnover	17	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	Gross domestic product	18	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n
Other variable(s): please specify		19	y / n	y / n	y / n	y / n	y / n	y / n	y / n	y / n

Appendix 2

Methods used	calculation formulas and corresponding amounts	20	D1	D2	D3	D4	D5	D6	D7	D8
	scales	21	D9	D10	D11	D12	D13	D14	D15	D16
Explanations and grounds, objectives		22	D17	D18	D19	D20	D21	D22	D23	D24
Recourse to market mechanisms	auctions	23	D25	D26	D27	D28	D29	D30	D31	D32
	call for tenders	24	D33	D34	D35	D36	D37	D38	D39	D40
	comparative selection (beauty contests)	25	D41	D42	D43	D44	D45	D46	D47	D48

Appendix 2

Chart E: other applications

⬇	➡ **APPLICATIONS** ***VARIABLES***	Row No.	Radio amateur	Experimental networks	Low-range, low-power devices	Radio-navigation	Radio-location	Weather service	Other application(s): please specify
Spectrum-related variables	bandwidth	1	y / n	y / n	y X / n	y / n	y / n	y / n	y / n
	centre frequency, or band position in the spectrum	2	y / n	y / n	y X / n	y / n	y / n	y / n	y / n
	exclusive / shared use	3		y / n		y / n	y / n	y / n	y / n
Variables relating to geographic coverage	surface area allocated	4		y / n		y / n	y / n	y / n	y / n
	distance between transmitter and receiver	5		y / n					y / n
Variables relating to equipment and infrastructure	transmitter power	6	y / n	y / n	y X / n	y / n			y / n
	antenna height	7	y / n	y / n					y / n
	bit rate or capacity	8		y / n	y X / n	y / n	y / n	y / n	y / n
	transmitting beam angle	9		y / n		y / n		y / n	y / n
	number of transmitting stations	10	y / n	y / n	y X / n	y / n	y / n	y / n	y / n
	number of receiving stations	11	y / n	y / n	y / n		y / n		y / n
	degressivity	12	y / n		y / n	y / n	y / n	y / n	y / n
Socio-economic variables	duration of authorization / licence	13	y / n	y / n	y / n	y / n	y / n	y / n	y / n
	population density	14							y / n
	total population covered	15							y / n
	geographic location	16							y / n
	operator's turnover	17			y / n	y / n	y / n	y / n	y / n
	Gross domestic product	18							y / n
Other variable(s): please specify		19	y / n	y / n	y / n	y / n	y / n	y / n	y / n

Appendix 2

Methods used	calculation formulas and corresponding amounts	20	E1	E2	E3	E4	E5	E6	E7
	Scales	21	E8	E9	E10	E11	E12	E13	E14
Explanations and grounds, objectives		22	E15	E16	E17	E18	E19	E20	E21
Recourse to market mechanisms	auctions	23				E25	E26	E27	E28
	call for tenders	24				E31	E32	E33	E34
	comparative selection (beauty contests)	25				E38	E39	E40	E41

Appendix 3

GLOSSARY

Term	Meaning
Exclusive/shared use	The utilization of a frequency band is "exclusive" when the beneficiary of the authorization is the only one to use that band. If several users utilize the same band, utilization is "shared".
Surface area allocated	Area within which the beneficiary of the authorization is authorized to use the frequency/frequencies allocated to it. Example: the surface area allocated may be the entire national territory or only a part thereof.
Degressivity	An organization that uses *n* units of equipment (or *n* frequencies) benefits from "degressivity" in the fees due when the total fees it has to pay in respect of the *n* units of equipment (or *n* frequencies) is less than the product of: [*n*] x [amount of the fees relating to one unit of equipment (or to one frequency)].
Duration of authorization/licence	The period during which the beneficiary of the authorization is authorized to use the frequency/frequencies it has been allocated. Example: generally speaking, authorizations are valid for several years, although temporary authorizations, covering a period of months or less, may also be granted.
Population density	Density relative to surface area allocated.
Population covered	Number of inhabitants in the surface area allocated.
Operator's turnover	For a given application, generally the annual turnover obtained by the operator from the frequencies it has been allocated for that application. Example: annual turnover obtained by a 2G mobile service operator.
Gross domestic product (GDP)	GDP of the economic agents (State, firms and households) within the surface area allocated. The higher the GDP, the greater the potential turnover obtained from the commercial use of frequencies in the surface area allocated is likely to be.
Geographic location	Location of the surface area allocated within the national territory. To take an extreme example, in a given country, the turnover that can potentially be derived from the commercial use of frequencies in and around the economic capital is greater than that which could be obtained in a desert area.
Management costs	The costs borne by the body managing the authorization granted for use of the frequencies. In some countries, fees are broken down into frequency fees and management fees.
Additional charges	These are charges (for spectrum access, spectrum replanning, management, etc.) relating to spectrum occupancy only.
Auctions	In an auction, once the applicants have qualified, the price they bid (which corresponds to the fees for spectrum access and use of the frequencies) is the only criteria used in their selection.
Call for tenders	In bidding of this kind, the applicants' price bid (which corresponds to the fees for spectrum access and use of the frequencies) is just one of several selection criteria used (see below).
Comparative selection (beauty contest)	In bidding of this kind, the applicants are screened on the basis of various possible criteria (but not price), such as aptitudes and capacities, technical and business plans, proposed tariffs, commitment to covering the territory, availability and quality of service, etc. Where spectrum access and frequency use are subject to a fee, the amount of that fee is not open to bidding by the applicants but rather imposed by the authorities.

960 MHz 1215	MHz	AERONAUTICAL RADIONAVIGATION S5.328 S5.328A	AERONAUTICAL RADIONAVIGATION S5.328 S5.328A	AERONAUTICAL RADIONAVIGATION 	DME, TACAN, SSR				
1215 MHz 1240	MHz	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (S/E) (S/S) S5.329 S5.329A SPACE RESEARCH (active) S5.331 S5.332	RADIOLOCATION RADIONAVIGATION-SATELLITE (S/E (S/S) S5.329 S5.329A EARTH EXPLORATION SATELLITE (active) SPACE RESEARCH (active) RADIONAVIGATION S5.331 S5.332	RADIONAVIGATION	RADIONAVIGATION NAVSTAR-GPS (SECONDARY)				
1240 MHz 1260	MHz	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION -SATELLITE(S/E) (S/S) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.329 S5.331 S5.332	RADIOLOCATION RADIONAVIGATION-SATELLITE (S/E) (S/S) S5.329 S5.329A EARTH EXPLORATION SATELLITE (active) SPACE RESEARCH (active) RADIONAVIGATION Amateur S5.329 S5.331 S5.332	RADIOLOCATION Amateur	RADIOLOCATION AERONAUTICAL SEARCH Amateur	 TR2			 GLONASS
1260 MHz 1270	MHz	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION -SATELLITE(S/E) (S/S) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.331 S5.335A	RADIOLOCATION RADIONAVIGATION-SATELLITE (S/E) (S/S) S5.329 S5.329A EARTH EXPLORATION SATELLITE (active) SPACE RESEARCH (active) RADIONAVIGATION Amateur Amateur-satellite S5.282 S5.331 S5.335A	RADIOLOCATION SATELLITE UP-LINK Amateur	RADIOLOCATION SATELLITE UP-LINK AERONAUTICAL SEARCH Amateur	 TR2			
1270 MHz 1300	MHz	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION -SATELLITE(S/E) (S/S) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.331 S5.335A	RADIOLOCATION RADIONAVIGATION-SATELLITE (S/E) (S/S) S5.329 S5.329A EARTH EXPLORATION SATELLITE (active) RADIONAVIGATION Amateur S5.331 S5.335A	RADIOLOCATION SATELLITE UP-LINK Amateur	RADIOLOCATION SATELLITE UP-LINK AERONAUTICAL SEARCH Amateur	 TR2			

1300 MHz 1350	MHz	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (E/S) S5.149 S5.337A	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (E/S) S5.149 S5.337A	RADIONAVIGATION RADIOLOCATION	RADIONAVIGATION RADIOLOCATION	TR2 TR2			
1350 MHz 1400	MHz	FIXED MOBILE RADIOLOCATION S5.149 S5.338 S5.339	FIXED MOBILE RADIOLOCATION S5.149 S5.339 EU2 EU15 EU15A	FIXED RADIOLOCATION	FIXED RADIOLOCATION				
1400 MHz 1427	MHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341 EU15	RADIO ASTRONOMY SPACE RESEARCH (PASSIVE)	RADIO ASTRONOMY SPACE RESEARCH (PASSIVE)				
1427 MHz 1429	MHz	SPACE OPERATION (E/S) FIXED MOBILE except aeronautical mobile S5.341	SPACE OPERATION (E/S) FIXED MOBILE except aeronautical mobile S5.341 EU2 EU15A EU15	RADIOLOCATION	RADIOLOCATION	TR2			
1429 1452 MHz	MHz	FIXED MOBILE except aeronautical mobile S5.341 S5.342	FIXED MOBILE except aeronautical mobile S5.341 EU2 EU15A EU15	FIXED RADIOLOCATION	FIXED RADIOLOCATION	 TR2			Rural area wireless telephone (1450-1452 MHz) 1429-1450 MHz
1452 MHz 1492	MHz	BROADCASTING S5.345 S5.347 BROADCASTING- SATELLITE S5.345 S5.347 FIXED MOBILE except aeronautical mobile S5.341 S5.342	BROADCASTING S5.345 S5.347 BROADCASTING- SATELLITE S5.345 S5.347 Fixed Mobile except aeronautical mobile S5.341 EU15	DIGITAL BROADCASTING 	T-DAB S-DAB				1452-1467.5 MHz 1467.5-1492 MHz
1492 MHz 1517	MHz	FIXED MOBILE except aeronautical mobile S5.341 S5.342	FIXED MOBILE except aeronautical mobile S5.341 EU2 EU15 EU15A	FIXED 	FIXED 				Rural area wireless telephone
1517 MHz 1525	MHz	FIXED MOBILE except aeronautical mobile S5.341 S5.342	FIXED MOBILE except aeronautical mobile S5.341 EU2 EU15 EU15A	FIXED 	FIXED 				Rural area wireless telephone

1525 MHz 1530	MHz	SPACE OPERATION (S/E) FIXED MOBILE -SATELLITE (S/E) S5.351A Earth Exploration- Satellite Mobile except aeronautical mobile S5.349 S5.341 S5.342 S5.350 S5.351 S5.352A S5.354	FIXED MOBILE-SATELLITE (S/E) S5.351A SPACE OPERATION (S/E) S5.341 S5.351 S5.354 EU15	FIXED MOBILE SATELLITE	FIXED LINK MOBILE SATELLITE 				
1530 MHz 1533	MHz	MOBILE except aeronautical mobile SPACE OPERATION (S/E) MOBILE-SATELLITE (S/E) S5.353A S5.351A Earth Exploration-Satellite Fixed S5.341 S5.342 S5.351 S5.354	MOBILE except aeronautical mobile SPACE OPERATION (S/E) MOBILE-SATELLITE (S/E) S5.353A S5.351A Earth Exploration-Satellite Fixed S5.341 S5.351 S5.354	MOBILE SATELLITE	MOBILE SATELLITE				
1533 MHz 1535	MHz	SPACE OPERATION (S/E) MOBILE-SATELLITE (S/E) S5.353A S5.351A Earth Exploration Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	SPACE OPERATION (S/E) MOBILE-SATELLITE (S/E) S5.353A S5.351A Earth Exploration Satellite MOBILE except aeronautical mobile S5.341 S5.351 S5.354 EU15	MOBILE SATELLITE	MOBILE SATELLITE				
1535 MHz 1544	MHz	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.353A S5.354 S5.355	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.353A S5.354 EU15	MOBILE SATELLITE	MOBILE SATELLITE				INMARSAT
1544 MHz 1545	MHz	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.354 S5.355 S5.356	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.354 S5.356 EU15	MOBILE SATELLITE	MOBILE SATELLITE				INMARSAT
1545 MHz 1555	MHz	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.354 S5.355 S5.357 S5.357A S5.359	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.354 S5.357 S5.357A S5.359 EU15	MOBILE SATELLITE	MOBILE SATELLITE				INMARSAT
1555 MHz 1559	MHz	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.354 S5.355 S5.359	MOBILE-SATELLITE (S/E) S5.351A S5.341 S5.351 S5.354 S5.359 EU15	MOBILE SATELLITE	MOBILE SATELLITE				INMARSAT
1559 MHz 1610	MHz	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION SATELLITE (S/E) (S/S) S5.329A S5.341 S5.355 S5.359 S5.363	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION SATELLITE (S/E) (S/S) S5.329A S5.341 S5.359 EU15	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION SATELLITE 	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION SATELLITE 				1594.025-1610 MHz GPS
1610 MHz 1610.6	MHz	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (E/S) S5.351A S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.371 S5.372	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (E/S) S5.351A S5.341 S5.359 S5.364 S5.366 S5.367 S5.368 S5.371 S5.372 EU15	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (S-PCS)				

1610.6MHz 1613.8 MHz	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (E/S) S5.351A RADIO ASTRONOMY S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.371 S5.372	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (E/S) S5.351A RADIO ASTRONOMY S5.149 S5.341 S5.359 S5.364 S5.366 S5.367 S5.368 S5.371 S5.372 EU15	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (S-PCS)				 1610-1621.35 MHz GLOBALSTAR
1613.8MHz 1626.5 MHz	MOBILE-SATELLITE (E/S) S5.351A AERONAUTICAL RADIONAVIGATION Mobile-Satellite (S/E) S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.371	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE (E/S) S5.351A Mobile Satellite (S/E) S5.341 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.371 EU15	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE	AERONAUTICAL RADIONAVIGATION MOBILE SATELLITE				1625.525-1626.5 MHz GLONASS 1621.35-1626.5 MHz IRIDIUM, 1610-1621.35 MHz GOBALSTAR
1626.5MHz 1631.5 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.355 S5.359	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.359 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1631.5MHz 1636.5 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.355 S5.359 S5.374	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.359 S5.374 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1636.5MHz 1645.5 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.355 S5.359	MOBILE -SATELLITE (E/S) S5.351A S5.341 S5.351 S5.353A S5.354 S5.359 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1645.5MHz 1646.5 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.354 S5.375	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.354 S5.375 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1646.5MHz 1656.5 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.354 S5.355 S5.357A S5.359 S5.376	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.354 S5.357A S5.359 S5.376 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1656.5MHz 1660 MHz	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.354 S5.355 S5.359 S5.374	MOBILE-SATELLITE (E/S) S5.351A S5.341 S5.351 S5.354 S5.355 S5.359 S5.374 EU15	MOBILE SATELLITE (E/S) 	MOBILE SATELLITE (E/S) 				INMARSAT
1660MHz 1660.5 MHz	MOBILE-SATELLITE (E/S) S5.351A RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.376A	MOBILE -SATELLITE (E/S) S5.351A RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.376A EU15	MOBILE SATELLITE	MOBILE SATELLITE				

1660.5 MHz 1668.4	MHz	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed MOBILE except Aeronautical Mobile S5.149 S5.341 S5.379A	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed MOBILE except Aeronautical Mobile S5.149 S5.341 S5.379A EU2 EU15 EU15A	RADIO ASTRONOMY 	RADIO ASTRONOMY 				
1668.4 MHz 1670	MHz	METEOROLOGICAL AIDS FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY S5.149 S5.341	METEOROLOGICAL AIDS FIXED RADIO ASTRONOMY Mobile except Aeronautical S5.149 S5.341 EU2 EU15 EU15A	METEOROLOGICAL AIDS FIXED MOBILE 	METEOROLOGICAL AIDS FIXED MOBILE 				
1670 MHz 1675	MHz	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (S/E) MOBILE S5.380 S5.341	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (S/E) MOBILE S5.380 Fixed S5.341 EU15	METEOROLOGICAL AIDS FIXED 	METEOROLOGICAL AIDS FIXED TFTS				
1675 MHz 1690	MHz	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (S/E) MOBILE except Aeronautical Mobile S5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (S/E) MOBILE except Aeronautical Mobile S5.341 EU2 EU15A EU15	METEOROLOJİK SATELLITE FIXED MOBILE 	METEOROLOJİK SATELLITE FIXED MOBILE 				
1690 MHz 1700	MHz	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (S/E) Fixed Mobile except Aeronautical Mobile S5.289 S5.341 S5.382	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (S/E) Fixed Mobile except Aeronautical Mobile S5.341 S5.382 EU2 EU15A EU15	METEOROLOGICAL AIDS Fixed Mobile	METEOROLOGICAL AIDS Fixed Mobile				
1700 MHz 1710	MHz	FIXED METEOROLOGICAL-SATELLITE (S/E) MOBILE except Aeronautical Mobile S5.289 S5.341	FIXED METEOROLOGICAL-SATELLITE (S/E) Mobile except Aeronautical Mobile S5.341 EU2 EU15A EU15	METEOROLOGICAL SATELLITE FIXED Mobile	METEOROLOGICAL SATELLITE FIXED Mobile				
1710 MHz 1785	MHz	FIXED MOBILE S5.384A S5.149 S5.341 S5.385 S5.387	FIXED MOBILE S5.384A S5.149 S5.341 S5.385 EU15 EU29	FIXED MOBILE 	GSM 1800	TR8			

1785 MHz 1800	MHz	FIXED MOBILE S5.384A S5.149 S5.341 S5.385 S5.387	FIXED MOBILE S5.384A EU2 EU15	FIXED MOBILE 	FIXED MOBILE RADIO MICROPHONES	 TR1	 ERC REC 70-03		
1800 MHz 1805	MHz	FIXED MOBILE S5.380 S5.384A S5.149 S5.341 S5.385 S5.387	MOBILE S5.380 S5.384A Fixed EU15	FIXED MOBILE 	TFTS				
1805 MHz 1880	MHz	FIXED MOBILE S5.384A S5.149 S5.341	FIXED MOBILE S5.384A EU15 EU29	FIXED MOBILE 	GSM 1800	TR8			
1880 MHz 1885	MHz	FIXED MOBILE S5.384A S5.149 S5.341 S5.385 S5.387	MOBILE Fixed EU15	FIXED MOBILE 	DECT				
1885 MHz 1900	MHz	FIXED MOBILE S5.388A S5.149 S5.341 S5.385 S5.387 S5.388	 MOBILE S5.388A Fixed S5.388 EU15	FIXED MOBILE 	DECT				
1900 MHz 1930	MHz	FIXED MOBILE S5.388A S5.149 S5.341 S5.388	FIXED MOBILE S5.388A S5.388 EU16 EU15	FIXED MOBILE 	IMT-2000				
1930 MHz 1970	MHz	FIXED MOBILE S5.388 S5.388A	FIXED MOBILE S5.388 S5.388A EU16 EU15	FIXED MOBILE 	FIXED LINK IMT-2000				
1970 MHz 1980	MHz	FIXED MOBILE S5.388A S5.388	FIXED MOBILE S5.388A S5.388 EU16 EU15	FIXED MOBILE 	FIXED LINK IMT-2000				
1980 MHz 2010	MHz	FIXED MOBILE MOBILE-SATELLITE (E/S) S5.351A S5.388 S5.389A	FIXED MOBILE MOBILE-SATELLITE (E/S) S5.351A S5.388 S5.389A EU15 EU16	FIXED MOBILE MOBILE SATELLITE	MOBILE SATELLITE IMT-2000 SATELLITE				INMARSAT

2010 MHz 2025	MHz	FIXED MOBILE S5.388A S5.388	FIXED MOBILE S5.388A S5.388 EU16 EU15	FIXED MOBILE	IMT-2000				
2025 MHz 2110	MHz	EARTH EXPLORATION-SATELLITE (E/S) (S/S) FIXED MOBILE S5.391 SPACE OPERATION (E/S) (S/S) SPACE RESEARCH (E/S) (S/S) S5.392	EARTH EXPLORATION-SATELLITE (E/S) (S/S) FIXED MOBILE S5.391 SPACE OPERATION (E/S) (S/S) SPACE RESEARCH (E/S) (S/S) S5.392 EU2 EU15 EU16A EU27	SPACE RESEARCH FIXED	SPACE RESEARCH FIXED LINK				
2110 MHz 2120	MHz	FIXED MOBILE S5.388A SPACE RESEARCH (deep space) (E/S) S5.388	FIXED MOBILE S5.388A SPACE RESEARCH (deep space) (E/S) S5.388 EU15 EU16	SPACE RESEARCH FIXED MOBILE	SPACE RESEARCH IMT-2000				
2120 MHz 2170	MHz	FIXED MOBILE S5.388A S5.388 S5.392A	FIXED MOBILE S5.388A S5.388 EU15 EU16	SPACE RESEARCH FIXED MOBILE	SPACE RESEARCH IMT-2000				
2170 MHz 2200	MHz	FIXED MOBILE MOBILE-SATELLITE (S/E) S5.351A S5.388 S5.389A S5.392A	FIXED MOBILE MOBILE-SATELLITE (S/E) S5.351A S5.388 S5.389A EU15 EU16	SPACE RESEARCH MOBILE SATELLITE FIXED MOBILE	SPACE RESEARCH MOBILE SATELLITE IMT-2000				
2200 MHz 2290	MHz	EARTH EXPLORATION-SATELLITE (S/E) (S/S) FIXED MOBILE S5.391 SPACE OPERATION (S/E) (S/S) SPACE RESEARCH (S/E) (S/S) S5.392	EARTH EXPLORATION-SATELLITE (S/E) (S/S) FIXED MOBILE S5.391 SPACE OPERATION (S/E) (S/S) SPACE RESEARCH (S/E) (S/S) S5.392 EU15 EU16 EU16A F360 EU27	SPACE RESEARCH FIXED	SPACE RESEARCH FIXED LINK				
2290 MHz 2300	MHz	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (deep space) (S/E)	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (deep space) (S/E) EU2	FIXED MOBILE	FIXED LINK				
2300 MHz 2400	MHz	FIXED MOBILE Amateur Radiolocation	FIXED MOBILE Amateur Radiolocation S5.150 EU2 EU15	FIXED MOBILE	FIXED LINK				

		S5.150 S5.395							
2400 MHz 2450	MHz	FIXED MOBILE Amateur Radiolocation S5.150 S5.282	FIXED MOBILE Amateur Amateur satellite S5.150 S5.282 EU2 EU15	FIXED 	FIXED LINK ISM RFID RLAN NON-SPECIFIC SRD AVI EQUIPMENT FOR DETECTING MOVEMENT AND ALERT	 TR1 TR1 TR1 TR1 TR1	 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03		 2446-2454 MHz
2450 MHz 2483.5	MHz	FIXED MOBILE Radiolocation S5.150 S5.397	FIXED MOBILE S5.150 EU2	FIXED 	FIXED LINK ISM RFID RLAN NON-SPECIFIC SRD AVI EQUIPMENT FOR DETECTING MOVEMENT AND ALERT	 TR1 TR1 TR1 TR1 TR1	 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03 ERC REC 70-03		 2446-2454 MHz
2483.5 MHz 2500	MHz	FIXED MOBILE MOBILE-SATELLITE (S/E) S5.351A Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.402	FIXED MOBILE MOBILE-SATELLITE (S/E) S5.351A S5.150 S5.371 S5.397 S5.402 EU15	MOBILE SATELLITE (S/E) 	MOBILE SATELLITE (S/E) 				
2500 MHz 2520	MHz	FIXED S5.409 S5.410 S5.411 MOBILE except Aeronautical Mobile S5.384A MOBILE-SATELLITE (S/E) S5.403 S5.351A S5.405 S5.407 S5.412 S5.414	MOBILE-SATELLITE (S/E) S5.403 S5.351A Fixed Mobile except Aeronautical Mobile S5.384A S5.403 S5.414 EU15	MOBILE SATELLITE (S/E) FIXED 	MOBILE SATELLITE (S/E) FIXED 				

2520 MHz 2655	MHz	BROADCASTING SATELLITE S5.413 S5.416 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.384A S5.339 S5.403 S5.405 S5.412 S5.418 S5.418B S5.418C	FIXED MOBILE except aeronautical mobile S5.384A S5.339 S5.403 S5.418B S5.418C EU2 EU15	FIXED MOBILE 	FIXED LINK IMT-2000				
2655 MHz 2670	MHz	BROADCASTING SATELLITE S5.413 S5.416 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.384A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) S5.149 S5.412 S5.420	FIXED MOBILE except aeronautical mobile S5.384A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) S5.149 S5.420 EU2 EU15	FIXED MOBILE 	FIXED LINK IMT-2000				
2670 MHz 2690	MHz	FIXED S5.409 S5.410 S5.411 MOBILE except Aeronautical Mobile S5.384A MOBILE-SATELLITE (E/S) S5.351A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) S5.149 S5.412 S5.419 S5.420	MOBILE except aeronautical mobile S5.384A MOBILE-SATELLITE (E/S) S5.351A Fixed Radio Astronomy S5.149 S5.419 S5.420 EU15	MOBILE SATELLITE (E/S) Radio Astronomy	MOBILE SATELLITE (E/S) Radio Astronomy				
2690 MHz 2700	MHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.421 S5.422	RADIO ASTRONOMY SPACE RESEARCH (passive) Earth Exploration-Satellite (passive) S5.340	RADIO ASTRONOMY SPACE RESEARCH (PASSIVE)	RADIO ASTRONOMY SPACE RESEARCH (PASSIVE)				
2700 MHz 2900	MHz	AERONAUTICAL RADIONAVIGATION S5.337 Radiolocation S5.423	AERONAUTICAL RADIONAVIGATION S5.337 Radiolocation S5.423	AERONAUTICAL RADIONAVIGATION RADIOLOCATION	AERONAUTICAL RADIONAVIGATION RADIOLOCATION	TR2 TR2			
2900 MHz 3100	MHz	RADIONAVIGATION S5.426 Radiolocation S5.425 S5.427	RADIONAVIGATION S5.426 Radiolocation S5.425 S5.427	AERONAUTICAL RADIONAVIGATION RADIOLOCATION	AERONAUTICAL RADIONAVIGATION RADIOLOCATION	TR2 TR2			