



# INSTRUCTION MANUAL

This instruction manual is provided for helping applicants in completing Earth Station Radio Application form (ES application form)

## Instruction to complete application form for Earth Station

	Item name	Item definition		Responsible person
<b>Section of General Information of the Applicant</b>				
Item No. U1	Full name of responsible person	If Applicant is a natural person, this is a name of this person. In this case the box U2 should not be filled in and this natural person has to sign in the field U4. If Applicant is a legal entity, this is a name of the person who is eligible to submit an application on behalf of the legal entity and responsible for the operation of radio equipment. In this case this person has to indicate his title and sign in the field U4.		Applicant
Item No. U2.1	Name	Enter the name of the legal entity that operates the radiocommunication network.		Applicant
Item No. U2.2	Country of registration	Enter the name of the country where the legal entity is registered.		Applicant
Item No. U2.3	C. R. No	The Commercial Registration Number of the Legal entity that has been issued by the Ministry of Commerce and Industry of the Country. Please attach a copy of this document.		Applicant
Item No. U3	Address and contact details	Enter the address and contact details in appropriate boxes (from U3.1 to U3.9) as required and applicable.		Applicant
Item No. P1	New Frequency assignment	Mark this box if the application is intended for obtaining a new frequency assignment or frequency assignments for the Earth station.		Applicant
Item No. P2	Suppress of existing Frequency assignment	Mark this box if the application is intended for suppressing of existing frequency assignment or frequency assignments of the Earth station.		Applicant
Item No. P3	Modification of existing Frequency assignment	Mark this box if the application is intended for modification of existing frequency assignment or frequency assignments of the Earth station.		Applicant
Item No. P4	Renewal of existing Frequency assignment	Mark this box if the application is intended for renewal of existing frequency assignment or frequency assignments of the Earth station.		Applicant
Item No. P5a	Date	The date of submission of the application. If the purpose of the application is other than Application for the New frequency assignment (box P1 is marked), please provide necessary information in fields P5b, P6b, P7b of "target" frequency assignment which is under consideration. The "target" frequency assignment is the assignment, which is requested to be suppressed, modified or renewed.		Applicant
Item No. P5b	Date	The date of previously submitted application (if applicable) under which the "targeted" frequency assignment was made.		Applicant
Item No. P6a	Serial No	A seven-digits code assigned by the ANC for the frequency assignment made under this application.		ANC
Item No. P6b	Serial No	A seven-digits code assigned by the ANC for the old frequency assignment		Applicant
Item No. P7a	User code	unique code which will be assigned for each applicant or for spectrum user by the ANC.		ANC
Item No. P7b	User code	A unique code assigned for each applicant or for spectrum user by the ANC for old assigned frequency		Applicant
<b>ITEM GROUP "CHARACTERISTICS OF THE EARTH STATION"</b>				
Item No. A1E1	Type (Specific/Typical)	Enter "S" or "T" for specific or typical station, as appropriate.		Applicant
Item No. A1e2	Name of the earth station	Enter the name of the locality by which the earth station is known or in which it is located, using not more than 20 characters. If an earth station uses more than one antenna, the station name should be supplemented by a number (e.g. 1, 2, 3, etc.) to distinguish one antenna from another.		Applicant
Item No. A1e3b	Geographical coordinates	Indicate the geographical coordinates of each transmitting and receiving antenna site comprising the earth station (longitude and latitude in degrees, minutes and seconds). This information is not required for the application for a typical earth station.		Applicant (no for typical)
Item No. A4c1	Associated space station	Indicate the name of the associated space station with which communication is to be established.		Applicant
Item No. A4c2	Nominal orbital longitude	If the associated space station with which communication is to be established is on board a geostationary satellite, enter the nominal longitude of the orbital position of that satellite expressed in decimal degrees E or W (the value should not exceed 180 degrees); otherwise leave blank.		Applicant

Item No. A7a	Horizon elevation diagram	Enter the number of the attachment containing the diagram indicating the horizon elevation angle for each azimuth around the earth station; the horizon elevation angle is the angle viewed from the center of the earth station antenna between the horizontal plane and a ray that grazes the visible physical horizon in the direction concerned.  Alternatively, fill in the table provided for the values of horizon elevation angle. In this case it is not necessary to fill in values for each 5 or 10 degrees of azimuth; only changes in the horizon elevation angle need be indicated. Thus, for example, if the horizon elevation angle has a constant value of 1.5 degrees between azimuths of 50 and 180 degrees only two entries are required in the table; one for an azimuth of 50 degrees and one for an azimuth of 180 degrees. In addition, if for two consecutive values of azimuth in the table, the horizon elevation angles are different, intermediate values will be calculated by linear interpolation. This information is not required for the application for a typical earth station.		Applicant (no for typical)
Item No. A7b	Elevation angle	Enter the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation towards the associated space station, expressed in decimal degrees from the horizontal plane. In the case of a geostationary-satellite network, these angles are to be calculated for the nominal orbital longitude, taking into account the tolerances. This information is not required for the application for a typical earth station.		Applicant (no for typical)
Item No. A7c	Operating azimuthal angles	Enter the planned range of operating azimuthal angles for the direction of maximum radiation, each value expressed in decimal degrees clockwise from True North. In the case of a geostationary-satellite network, these angles are to be calculated for the nominal orbital longitude, taking into account the tolerances. This information is not required for the application for a typical earth station.		Applicant (no for typical)
Item No. A7d	Altitude	Enter the height of the center of the antenna above mean sea level, expressed in metres. This information is not required for the application for a typical earth station.		Applicant (no for typical)
Item group "CHARACTERISTICS OF THE ANTENNA"				
Item No. B1	Associated satellite beam designation	Enter the receiving or transmitting beam designation by a symbol consisting of up to four characters. For practical reasons, there are different approaches for the designation of the beam. It may consist of: (a) numbers such as 1, 2, 3, etc., which refer to the number of the figure representing the corresponding antenna gain contours diagram published in the relevant Special Section; or (b) numbers such as 195, which identify a beam having a maximum gain of 19.5 dB; or (c) a symbol of up to four letters (or a letter and a figure), which is used to represent the abbreviated beam name, such as "GBL" for global, "NWQ" for North West Quadrant, "WH" for West Hemisphere, "Z1" for zone 1, "O" for omnidirectional. For steerable beams, the last character shall always be the letter "R".		Applicant
Item No. B5a	Maximum isotropic gain	Enter the appropriate sign (+ or -) followed by the isotropic gain of the antenna in the direction of maximum radiation, expressed in dBi.		Applicant
Item No. B5b	Beamwidth	Enter the total beamwidth at the mean half-power points of the main lobe, expressed in decimal degrees. Describe in detail in attachment B5c1, if not symmetrical.		Applicant
Item No. B5c1	Antenna radiation pattern diagram	If a reference radiation pattern cannot be indicated by reference to one of the symbols in B5c2, or the measured radiation diagram of the antenna is available, give the relevant information in the attachment. If the attachment is provided, enter the attachment number identifying its presence. Alternatively, if the radiation pattern can be described by two logarithmic expressions as follows:  $G = GMAX \quad \text{PHI} < 1^\circ$ $G = COEFA - COEFB * LOG(PHI) \quad 1^\circ \leq \text{PHI} \leq \text{PHI1}$ $G = MAX(MIN(G(PHI1), COEFC - COEFD * LOG(PHI)), -10) \quad \text{PHI} > \text{PHI1}$ Provide the values of Coefficient A, Coefficient B, Coefficient C and Coefficient D (all in dBi) and PHI1 (in degrees) in the relevant boxes.		Applicant
Item No. B5c2	Radiation pattern	Indicate the reference radiation pattern, preferably by means of the symbols in table A or similar symbols not exceeding 12 characters.		Applicant
Item group "INFORMATION COMMON TO GROUPS (LISTS) OF PLANNED FREQUENCIES"				
	Special Section AR11/A (RR1042)	Enter the number of the Special Section of the BR Circular in which the advance information was published under Section I of Article 11.		Applicant
	Special Section AR11/C (RR1060)	Enter the number of the Special Section of the BR Circular in which the coordination information was published under Section II of Article 11; leave blank if the associated space station does not belong to a geostationary-satellite network or if such publication has not been made.		Applicant
	Special Section Art. 14 (RR1610)	Enter the number of the Special Section of the BR Circular in which the request for agreement under Article 14 was published; leave blank if such publication has not been made.		Applicant
	Other Special Sections	Enter the reference and the number of the Special Section of the BR Circular in which any other request for coordination was published; leave blank if such publication has not been made.		Applicant
Item group "CHARACTERISTICS COMMON TO A GROUP (LIST) OF PLANNED FREQUENCIES". Several of the items described below apply only in the case of a transmitting earth station or in the case of a receiving earth station.				
Item No. C4a/C4b	Class of station / Nature of service	Indicate the appropriate class of station using the symbols given in Tables B and the nature of service from following options:  CO Station open to official correspondence exclusively		Applicant

		<p>CP Station open to public correspondence</p> <p>CR Station open to limited public correspondence</p> <p>CV Station open exclusively to correspondence of a private agency</p> <p>FS Land station established solely for the safety of life</p> <p>OT Station open exclusively to operational traffic of the service concerned</p> <p>Up to four pairs of values can be provided.</p>		
Item No. C6	Polarization	<p>Enter one of the following options (for second box refer to explanation of L):</p> <p>V <i>Vertical linear</i>: the electric field vector is in a plane normal to the equatorial plane</p> <p>H <i>Horizontal linear</i>: the electric field vector is in a plane parallel to the equatorial plane</p> <p>D <i>Dual</i>: When substantially equal-amplitude vertically – and horizontally - polarized components are radiated without particular control of the phase relation between them. Typically, the vertically - and horizontally – polarized sources may be displaced one from the other so that the resultant polarization varies between circular and slant, according to azimuth angle</p> <p>CR <i>Right-hand circular or Direct</i>: The electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction.</p> <p>CL <i>Left-hand circular or Indirect</i>: The electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left-hand or anti-clockwise direction.</p> <p>SL <i>Left-hand slant</i>: The electric field vector is in the plane rotated 45 degrees anti-clockwise from the vertical position, as seen from the transmitting point</p> <p>SR <i>Right-hand slant</i>: The electric field vector is in the plane rotated 45 degrees clockwise from the vertical position, as seen from the transmitting point.</p> <p>M <i>Mixed</i>: The collective term applied when both vertical and horizontal components are radiated, embracing slant, circular and dual polarization.</p> <p>L999<i>Linear</i>: The electric field vector, observed in any fixed plane, normal to the beam axis, whilst looking in the direction of propagation, remains in the direction specified by the angle measured anti-clockwise from a line parallel to the equatorial plane; the value of this angle follows the symbol L and is expressed in degrees from 0 to 359. Put this value in the second box (in degrees)</p>		Applicant
Item No. C3a	Requested band to be assigned	Enter the bandwidth of the frequency band to be assigned as defined in RR1.147, expressed in kHz. The frequency band to be assigned should in no case exceed the bandwidth of a single satellite transponder.		Applicant
Item No. C3b	Receiving system noise temperature	Enter the value of the lowest total receiving system noise temperature expressed in kelvins, referred to the output of the earth station antenna under clear sky conditions. When the associated space transmitting station is on board a geostationary satellite the value to be entered is that for the nominal antenna elevation.		Applicant
Item No. C8g	Maximum aggregate power	Enter the maximum aggregate power (dBW) of all carriers supplied to the input of the antenna.		Applicant
Item group "EMISSIONS COMMON TO OR RECEIVED BY THE ASSIGNED FREQUENCIES"				
Item No. C7a	Designation of emission	Indicate the necessary bandwidth (RR1.152) and class of emission (RR1.139) in accordance with Appendix 1 of RR (this Appendix is presented in this Instruction as an Appendix 1 as it is appeared in ITU RR). This Appendix reproduced in Annex 1 to the Handbook.		Applicant
Item No. C8a1	Maximum peak power	Enter the appropriate sign (+ or -) and the maximum value of the peak envelope power (RR1.157), expressed in dBW, supplied to the input of the antenna for each corresponding emission (carrier type).		Applicant
Item No. C8b1	Maximum peak power	Enter the appropriate sign (+ or -) and the maximum value of the total peak envelope power (RR1.157), expressed in dBW, supplied to the input of the antenna for the corresponding emission.  <i>NOTE</i> : If the maximum values of peak envelope power are being provided for individual carriers, they should be of type C8a1. If the application does not concern individual carriers (e.g. as in spread spectrum applications) provide a general designation of emission (item C7a) and total peak envelope power values of type C8b1.		Applicant
Item No. C8a2	Maximum power density	Enter the appropriate sign (+ or -) followed by the value of the maximum power density per Hertz (expressed in dBW/Hz) supplied to the input of the antenna for each corresponding emission (carrier type) averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz. For narrow band carriers with a necessary bandwidth (RR1.152) less than the reference bandwidth, the peak power should be averaged over the reference bandwidth (4 kHz or 1 MHz) to obtain this value of maximum power density.		Applicant
Item No. C8b2	Maximum power density	Enter the appropriate sign (+ or -) followed by the value of the maximum power density per Hertz (expressed in dBW/Hz) supplied to the input of the antenna averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz. For narrow band carriers with a necessary bandwidth (RR1.152) less than the reference bandwidth, the peak power should be averaged over the reference bandwidth (4 kHz or 1 MHz) to obtain this value of maximum power density.		Applicant

		<b>NOTE:</b> If the values of maximum power density are being provided for individual carriers, they should be of type C8a2. If the notification does not concern individual carriers (e.g. as in spread spectrum applications) provide a general designation of emission (item C7a) and maximum power density values of type C8b2.		
Item No. C8c1	Minimum peak power	Enter the appropriate sign (+ or -) and the minimum value of the peak envelope power (RR1.157), expressed in dBW, supplied to the input of the antenna for each corresponding emission (carrier type).		Applicant
Item No. C8c2	Minimum power density	Enter the appropriate sign (+ or -) followed by the value of the minimum power density per Hertz (expressed in dBW/Hz) supplied to the input of the antenna for each corresponding emission (carrier type) averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz. For narrow band carriers with a necessary bandwidth (RR1.152) less than the reference bandwidth, the peak power should be averaged over the reference bandwidth (4 kHz or 1 MHz) to obtain this value of minimum power density.		Applicant
Item No. C8e	C/N objective (total-clear sky)	Enter the required carrier to noise ratio, in decibels, for the overall link for each carrier when clear sky propagation conditions apply.		Applicant
(in page 4 of form)	Type of maximum peak power and power density values	If the values of maximum peak power and power density are of type C8b1 and C8b2, check the relevant box.		Applicant
(in page 4 of form)	Reason for absence of minimum peak power and power density values	If no values of minimum peak power and power density are provided, provide the reason therefore in an attachment and enter the number of this attachment in the box.		Applicant
Item group "GROUP (LIST) OF PLANNED FREQUENCIES"				
Item No. C2a	Frequency to be assigned	Enter the frequency which must be assigned as defined in RR1.148, expressed in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive, and in GHz above 10 500 MHz, and enter letter k, M or G, as appropriate.		Applicant