Guidelines for

Aeronautical Radio Spectrum Licenses

Contents

Definitions & Abbreviations

ADF:	Automatic direction finder (ADF) is a marine or aircraft radio-navigation instrument that automatically and continuously displays the relative bearing from the ship or aircraft to a suitable radio station.
ACAS:	Airborne Collision Avoidance System (ACAS) is an aircraft system that operates independently of ground-based equipment and air traffic control in warning pilots of the presence of other aircraft that may present a threat of collision.
ADS-B:	Automatic dependent surveillance-broadcast (ADS-B) is a cooperative surveillance technology for tracking aircraft.
ASDE:	Airport Surface Detection System (ASDE) is a surveillance system using radar and satellite technology that allows air traffic controllers to track surface movement of aircraft and vehicles.
EASA:	European Aviation Safety Agency (EASA) is a European Union agency with regulatory and executive tasks in the field of civilian aviation safety.
GBAS:	Ground-Based Augmentation System (GBAS) is a safety-critical system that augments the GPS Standard Positioning Service (SPS) and provides enhanced levels of service regarding approach, landing, departure, and surface operations of the aircrafts.
GNSS:	Global Navigation Satellite System (GNSS) is a satellite navigation system is a system of satellites that provide autonomous geo-spatial positioning with global coverage.
ICAO:	International Civil Aviation Organization (ICAO) is a specialized agency of the United Nations that codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.
ICAO:	International Civil Aviation Organisation which serves as the global forum for its 191 Member States and promotes understanding and security through cooperative aviation regulation.
ITU:	International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.
LORAN:	LORAN (LOng RAnge Navigation) is a terrestrial radio navigation system which enables ships and aircraft to determine their position and speed from low frequency radio signals transmitted by fixed land based radio beacons, using a receiver unit.
PAR:	Precision approach radar (PAR), is a type of Radar guidance system designed to provide lateral and vertical guidance to an aircraft Pilot for landing, until the landing threshold is reached.

QCAA:	Qatar Civil Aviation Authority (QCAA) is the body responsible in Qatar for: air navigation; air safety; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.
SSR:	Secondary surveillance radar (SSR)[1] is a radar system used in air traffic control (ATC), that not only detects and measures the position of aircraft i.e. range and bearing, but also requests additional information from the aircraft itself such as its identity and altitude
UAT:	Universal Access Transceiver (UAT), is the aircraft / ground installed radio receiver/ transmitter designed to utilize ADS-B services.
VDL:	VHF Digital Link (VDL) is a means of sending information between aircraft and ground stations (and in the case of VDL Mode 4, other aircraft)

Aeronautical radio communication involves the communication between aeronautical stations and aircraft stations, or between aircraft stations relating to safety and regularity of flight, primarily along national or international civil air routes. Due to the safety critical nature of this type of communication the frequency bands are internationally agreed and set out in the Radio Regulations, which are agreed at the World Radio Conferences of the International Telecommunication Union (ITU) – a specialised agency of the United Nations. The Radio Regulations have international treaty status and are binding on ITU member states, including the State of Qatar.

The ITU "Handbook on Radio Frequency Spectrum Requirements for Civil Aviation" and ICAO Annex 10 details the following aviation use of spectrum bands.

Table 1. ITU defined spectrum bands and usage

Band	Aviation Use
90–110 kHz	LORAN-C
130–535 kHz	NDB/locator
2,850–22,000 kHz	Air-ground communications (HF voice and data)
3,023 and 5,680 kHz	Search and rescue
74.8–75.2 MHz	Marker beacon
108–117.975 MHz	VOR/ILS localizer/GBAS/VDL Mode 4
117.975–137 MHz	Air-ground and air-air communications (VHF voice and data) See Table below
121.5, 123.1 and 243 MHz	Emergency frequencies
328.6–335.4 MHz	ILS glide path
406–406.1 MHz	Search and rescue
960–1 215 MHz	DME/UAT GNSS
1,030 and 1,090 MHz	SSR/ACAS/1090ES
1,215–1,400 MHz	GNSS Primary surveillance radar
1,525–1,559 MHz	Satellite communications
1,610–1,626.5 MHz	Satellite communications
1,626.5–1,660.5 MHz	Satellite communications
1,559–1,626.5 MHz	GNSS
2,700–3,300 MHz	Primary surveillance radar
4,200–4,400 MHz	Radio altimeter
5,000–5,250 MHz	MLS
5,350–5,470 MHz	Airborne weather radar
8,750–8,850 MHz	Airborne Doppler radar
9,000–9,500 MHz	Precision approach radar ASDE
13.25–13.4 GHz	Airborne Doppler radar
15.4–15.7 GHz	ASDE/other systems
24.25–24.65 GHz	ASDE
31.8–33.4 GHz	ASDE

Note: The ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation notes that Off-Route (OR) communications are not used for safety-of-life operations and are not further considered in the ICAO handbook. The frequencies for Aeronautical Mobile (OR) Services in Qatar are assigned on case by case basis as per the applicants' requirements.

There are following categories and sub-categories of Aeronautical licenses issued by ictQATAR which are explained in detail in the following sections:

a) Aircraft Radio Station Licenses
   i) Aircraft Mobile Radio station
   ii) Aircraft Transportable Radio station
b) Ground Based Aeronautical Station Licenses
   i) Aeronautical Ground Station (AGS)
   ii) Aeronautical Navigational Aids
   iii) Aeronautical Ground Based Radar

Annex A to these guidelines provides the templates of the licenses along-with the specific terms and conditions and technical schedule(s).

Annex B to these guidelines provides the application processing procedure.

Annex C to these guidelines provides application forms to be used for license applications, modifications, renewals or cancellations. The application form describes the information and any documents that need to be provided for the application to be processed.

1. AIRCRAFT RADIO STATION LICENSE

This section provides information on the licensing considerations for the issuing of Aircraft Radio Station Licenses. The license covers the installation and operation of aeronautical radio equipment on-board the aircrafts, hang-gliders or balloons registered in Qatar. Radio communication is an important component of aeronautic safety, for both private and commercial activities. Without radio, aircraft operations would be unsafe and unable to meet the global demand for rapid and cost-effective transport. It is important therefore that the use of spectrum allocated to the sector is controlled. Operators need to be trained and qualified and the equipment has to meet the type approval requirements. The terms & conditions of the radio license reduce the likelihood of causing interference from the licensee to other radio users.

Aircraft radio station licenses are available with two options, which are explained in detail in the following sections:

a) an Aircraft Mobile Radio Station license to cover the use of aeronautical radio equipment on-board an individual aircraft including the use of satellite, WiFi and mobile communication access equipment.

b) an Aircraft Transportable radio station license to cover the use of one handheld VHF radio with an integral antenna and power supply on multiple aircrafts. The License does not cover the radio's use as a land mobile station.

1.1 Eligibility criteria

The Aircraft Radio Station Licenses may be applied for by an individual or a representative of the organisation owning/operating the aircraft or a fleet of aircrafts.

It should be noted that the licensees also require separate radio proficiency certification from the QCAA for the operators of the aeronautical radio equipment which can be a part of the aviation personnel license regarding flight proficiency.

1.2 Summary of the Licensee's Responsibilities

The licensee is generally required to ensure that:

a) the radio equipment and its installation is approved by the Qatar Civil Aviation Authority.

b) the user of the equipment holds appropriate operator's certification from the Qatar Civil Aviation Authority.

c) the identification of the station is done through the call sign allocated to the station or another form of identification approved by QCAA.

d) keep on-board the aircraft the license together with any other document which ictQATAR may prescribe

Please see Annex A for detailed terms and conditions.

1.3 Technical details

The Licensee is required to ensure that the apparatus is used only on such radio frequency bands listed in Table 1 above, complying with all obligations under relevant international agreements relating to the use of the apparatus and the associated frequency bands.

All transmissions from the cellular mobile, WiFi, & satellite equipment will be carried out when above 3000 meters altitude and on non-interference and non-protected basis. In addition to this, the following parameters are required to be followed:

a) Cellular Mobile Equipment on-board Aircraft[1]

For GSM: The aircraft base station transmitter must limit the power of all GSM mobile terminals transmitting in the 1800 MHz band to a nominal value of 0 dBm at all stages of communications including initial access.

For UMTS: The aircraft Node B, while in operation, must limit the transmit power of all UMTS mobile terminals transmitting in the 2100 MHz band to a nominal value of – 6 dBm/3,84 MHz at all stages of communication and the maximum number of users should not exceed 20.

For LTE: The aircraft Node B, while in operation, must limit the transmit power of all LTE mobile terminals transmitting in the 1800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication.

b) WiFi on-board Aircraft:

Since WiFi stations on board aircraft operate within the premises of the Aircraft, the similar conditions as applied to the indoor use of ISM bands are applicable. It must be ensured that all transmissions must be strictly restricted within the aircraft.

c) Satellite earth stations on-board aircraft

Satellite earth stations on aircraft are intended to provide non-safety related data communication services. The aircraft mobile radio station license covers the use of satellite equipment operating on frequency band: 14.0-14.5 GHz on-board the aircraft. The following conditions apply[2]:

[1] COMMISSION IMPLEMENTING DECISION of 12 November 2013, "Amending Decision 2008/294/EC to include additional access technologies and frequency bands for mobile communications services on aircraft (MCA services)" [2013/654/EU]

[2] ECC decision on the free circulation and use of Aircraft Earth Stations (AES) in the frequency bands 14.0-14.5 GHz (Earth-to-space), 10.7-11.7 GHz (space-to-Earth) and 12.5-12.75 GHz (space-to-Earth) [ECC/DEC/(05)11]

i. e.i.r.p. must not be greater than 50dBw;
ii. the equipment must comply with the relevant European Telecommunication Standards (e.g. EN 302 186)
iii. the equipment must comply with the Recommendation ITU-R M.1643
iv. the equipment must be operated under the control of a network control facility.

The Aircraft mobile radio station license also covers the use of satellite equipment operating on frequency band: 17.3-19.7 GHz and 27.5-29.5 GHz bands on-board the aircraft. The following conditions apply:

i. e.i.r.p. must not limited to a value within the range 55-60 dBw;
ii. the equipment must comply with the European Telecommunication Standard EN 303 978.
iii. the equipment must be operated under the control of a network control facility.
iv. the equipment must be self-monitoring and should a fault which can cause harmful interference to FSS or terrestrial networks be detected, the transmissions must be ceased automatically;

2. AERONAUTICAL GROUND STATION (AGS) LICENSE

This section provides information on the licensing considerations for the issuing of Aeronautical Ground Station (AGS) license. The AGS license covers the use of aeronautical radio frequencies for ground based aeronautical services such as general aviation; air traffic control; operations control, search and rescue and emergency communication, HF communication and public correspondence. These services are defined below:

A. **General Aviation:** Aviation service which covers common air to ground frequencies which are assigned to general aviation operations (e.g. common glider frequency)

B. **Air Traffic control:** Air traffic control service involves information, advisory control and emergency alerting services to prevent collisions between aircrafts in the air, between aircrafts and between aircrafts and other objects in apron / manoeuvring areas on the ground. The sub categories of the Air traffic control service are detailed below:

   a) Flight Information Service (FIS): A two-way communication between an aircraft and a ground station, in which the ground operator may only pass advisory information as requested by the pilot. This information may include situation awareness and weather information.

   b) Approach control service: Air traffic control service for arriving, departing or transiting controlled flights

   c) Area control Service: A two way communication between an aircraft and a ground station in which the ground operator provides control instructions to the aircraft within a defined region or sector.

   d) Automatic Terminal Information Service (ATIS): A broadcast transmission from a ground station to one or more aircraft, conveying information relating to the aerodrome from which the transmission made is conveyed.

   e) Precision Approach Radar (PAR): A two-way communication between an aircraft and a ground station, in which the ground operator uses both vertical and horizontal information about an aircraft's position to talk the aircraft down along the glide scope.

   f) Tower: A two-way communication between an aircraft and a groundstation, in which the ground operator controls the aircraft in the vicinity of an aerodrome traffic zone when the aircraft is flying with visual reference to the aerodrome.

   g) Surface Movement Control: This involves the service to ensure safe and efficient surface movement of aircraft and vehicles on the ground.

C. **Operations Control:** Operational Control (OPC) – A two-way communication between an aircraft and a ground station for the purposes stated in ICAO Annex 6, Parts 1 & 3, chapter 1: *"Operational Control. The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight."*

D. **Search and Rescue and Emergency Communications Service:** the service includes operation of fire stations, Alerting stations etc.

E. **HF Communication Service:** the service provided through ground stations with HF frequency assignments.

F. **Public Correspondence:** the service involving communication messages relating to air carrier / company business communications and passenger service / convenience.

2.1 Eligibility criteria

An Aeronautical Ground Station License may be applied for by QCAA or an authorised representative of an Aerodrome, approved by the QCAA.

An applicant wishing to establish a new aeronautical ground radio station must obtain an equipment proficiency certification from the QCAA.

2.2 Summary of Licensee's Responsibilities

The Licensee is generally responsible for ensuring that:

a) all individuals using the radio are in possession of an appropriate certificate of competence, where required, and are competent in both the operation of the equipment and local procedures.

b) aeronautical radio messages must be limited to those concerning flight safety or flight regularity.

c) The individual station call sign is used during communications in accordance with standard accepted procedures.

Please see Annex A for detailed terms and conditions.

2.3 Technical details

The tables below provide information on the applicable frequency band(s) and associated technical details for fixed HF stations and air-ground and ground-air communications over VHF aeronautical band.

Table 2. Aeronautical Ground Station frequency bands

	Fixed HF Stations	Air-ground / Ground-air communications
National usage	Ground based HF SSB for voice and data link communications for AGS civil and SAR (Search and Rescue) applications	AGS civil communications for Mode 2 and / or Mode 4 data links
Frequency bands	2850 – 3025 kHz 3400 – 3500 kHz 4650 – 4700 kHz 5480 – 5680 kHz 6525 – 6685 kHz 8815 – 8965 kHz 8965 – 10100 kHz 11175 – 11400 kHz 13200 – 13360 kHz 17900 – 17970 kHz 21924 – 22000 kHz	118 – 137 MHz (see Table 3 which provides further details on ICAO Annex 10 allotments in this band)
Standards	ICAO Annex 10	ICAO Annex 10
Channelling/ modulation	ICAO Annex 10	ICAO Annex 10. Equipment, designed for 25 kHz channel spacing, must be able to operate in the frequency band 118.00 – 136.975 MHz

		in 25 kHz steps and equipment designed for 8.33 kHz channel spacing must be able to operate on any channel between 118.00 and 136.475 MHz in 8.33 kHz steps.
Transmit power limit	Maximum peak envelope power shall be 6 kW Maximum peak envelope power for F1B shall be 1.5 kW.	For each individual license/frequency assignment either the maximum and minimum field strength at the limit of the designated operational coverage may be specified or the maximum effective radiated power (e.r.p.).

Table 3 VHF Frequency utilisation plan

Function (see table below)	Bands (MHz)	Function	Bands (MHz)
TWR	118.000 - 118.875	FIS-U(GP)	120.100 - 120.175
	124.300 - 124.375		123.900 - 123.975
Emergency	121.5		-
SMC	121.600 - 121.975		124.100 - 124.175
APP-PAR	119.500 - 119.975		124.900 - 124.975
APP-I, APP/DF-I,APP/SR-I, FIS-I	119.000 - 121.400		126.700 - 126.775
	123.800 - 124.775		126.900 - 126.975
	125.100 - 125.575		127.100 - 127.775
	126.500 - 126.575		127.300 - 127.375
	127.700 - 127.975		128.500 - 128.575
APP-U	120.300 - 120.375		134.600 - 135.800
	121.300 - 121.375	VOLMET /ATIS	126.000 - 126.075
	124.400 - 124.475		126.200 - 126.275
	124.600 - 124.675		126.400 - 126.475
	124.800 - 126.375		126.800 - 126.875
ACC-I	126.100 - 126.175		127.000 - 127.075
	127.500 - 127.575		127.200 - 127.275
ACC/SR-I	128.300 - 128.375		127.400 - 127.475
	128.700 - 128.775		127.600 - 127.675
ACC-U	118.900 - 118.975		127.800 - 127.875
	119.300 - 119.375		128.000 - 128.075
	120.500 - 120.575		128.200 - 128.275
	120.700 - 120.775		128.400 - 128.475
	120.900 - 120.975		128.600 - 128.800
	123.700 - 123.775	OPERATIONAL CONTROL	128.825 - 128.925
ACC-LU	124.500 - 124.575		128.975 - 132.025
	125.300 - 125.775	AIR-TO AIR	123.450 & 128.950
	125.900 - 125.975	DATA LINK[3]	136.900 - 137.000
	128.100 - 128.175	SPARE (Note)	136.000 - 136.900
	132.100 - 134.500		

[3] Data-link system) is used to send information between aircraft and air traffic controllers when an aircraft is too far from the Air Traffic Control to make conventional voice radio communication and radar observations possible. Such systems are used for aircraft crossing the Atlantic and Pacific oceans and hence are not expected to be deployed in Qatar.

Note: Spare - might be reserved for future data link applications

Table 4 below explains the abbreviations used in Table 3 above.

Table 4. Table of symbols and service type

Symbol	Type of Service
ACCL-L	Area control service for flights up to FL 250
ACC-SR-I	Area radar control service up to FL 250
ACC-SR-U	Area radar control service up to FL 450
ACC-U	Area control service for flights up to FL 450
AD	Within Limits of aerodrome
AFIS	Aerodrome flight information services
APP-L	Approach control service for flights below FL 120
APP-I	Approach control service for flights below FL 250
APP-PAR	Precision approach radar service up to FL 40
APP-SR-I	Surveillance radar approach control service up to FL 250
APP-SR-L	Surveillance radar approach control service up to FL 120
APP-SR-LU	Surveillance radar approach control service up to FL 450
APP-U	Approach control service for flights up FL 450
ATIS	Automatic terminal information services
CD	Clearance delivery
CTA	Control area
DF	Direction finder
ER	Requirement to utilize extended range technique, RCAG or repeater stations
FIR	Flight information region
FIS-L	Flight information service for flights up to FL 250
FIS-U	Flight information service for flights between FL 250 and FL 450
GP	VHF en-route general purpose system
RCAG	Remote controlled air-ground communication
SMC	Surface movement control up to limits of aerodrome

TWR	Aerodrome control service
VOLMET	VOLMET (meteorological information for aircraft in flight) broadcasts
FL	Means flight level, it is a standard nominal altitude of an aircraft, in hundreds of feet.

3. AERONAUTICAL NAVIGATIONAL AIDS STATION LICENSE

This section provides information on the licensing considerations for the issuing of Aeronautical Navigational Aids Station Licenses. This license covers, but is not limited to, the operation of following main types of navigation aid systems:

a) **Non-directional radio beacon (NDB):** The non-directional radio beacon (NDB) system is used for short/medium range navigation. When used with automatic direction finder (ADF) equipment in aircraft, NDB provides a bearing with moderate accuracy. NDB is used by larger aircraft over sea or overland routes and is extensively deployed at general aviation aerodromes, where it provides a cost-effective and easily installed facility. Offshore NDB operations require procedures to prevent co-channel interference where frequencies are assigned on a shared basis in accordance with ICAO Annex 10.

b) **VHF marker beacons:** VHF marker beacons serve to determine individual sites within the air traffic network and in the approach area. The directional pattern and modulation frequency differ according to the intended purpose. Beacons shall work in conjunction with each other using the same frequency.

c) **Instrument landing system (ILS):** The instrument landing system (ILS) is a standard approach and landing system. The ILS localizer is coupled with glide path system and with the Microwave landing system (MLS) and/or DME. MLS is a newer system, which operates in a similar manner to ILS. The ILS localiser radio equipment, when used as part of the ILS system provides guidance on azimuth while approaching the runway. The equipment transmissions are within the band 108 – 111.975 MHz in accordance with ICAO Annex 10. Station identifiers are required as per the instructions of QCAA. Equipment standards and channel plans are given in ICAO Annex 10.

d) **VHF omni-directional range (VOR):** The VHF omni-directional range (VOR) is a short/medium-range navigation aid system. VOR is normally associated with distance measuring equipment (DME).

e) **Distance measuring system (DME):** The distance measuring system (DME) is the ICAO standard system for determining ranges within radio line of sight, using pulse techniques and time measurement. It is the standard system used for en route and terminal navigation.

3.1 Eligibility criteria

The aeronautical navigational aids station License may be applied for by QCAA or an authorised representative of an Aerodrome approved by the QCAA.

Table 5 in the technical details below identifies where an individual operator's certificate is required (see Note to the Table).

3.2 Summary of Licensee's Responsibilities

The licensee is generally responsible for ensuring that the navigational aid(s) are planned, installed, operated and maintained in accordance with QCAA and international requirements. This includes the required training, certification and licensing of staff in accordance with QCAA requirements.

Records relating to the navigation aids will need to be maintained for inspection, on demand by ictQATAR.

Please see Annex A for detailed terms and conditions.

3.3 Technical details

The table given on next page provides information on the applicable frequency band(s) and associated technical details:

Table 5. Aeronautical Navigational Aids – frequency bands and technical details

	Beacons for radionavigation		Instrument landing systems for radionavigation				
National usage	Non-directional beacons	VHF marker beacons	ILS glide path transmitter	ILS localiser radio equipment (Note 1)	Microwave landing system (MLS)(Note 1)	VHF Omni directional radio range equipment and Doppler VHF omni directional radio range equipment (VOR/DVOR)	Ground based distance measuring equipment (DME) (Note 1)
Frequency bands	255 – 283.5, 283.5 – 315, 315 – 325, 325 – 405, 415 – 435, 435 – 495, 505 – 526.5, 53.5, 579.5, 850, 897, 949 kHz.	75 MHz (with a frequency tolerance of plus or minus 0.005%)	328.6 – 335.4 MHz (transmissions must be contained within the band)	108 – 111.975 MHz (transmissions must be contained within the band)	5000 – 5150 MHz	108 – 117.975 MHz	960 – 1215 MHz
Standards	ICAO Annex 10	ICAO Annex 10	ICAO Annex 10	ICAO Annex 10	ICAO Annex 10	ICAO Annex 10	ICAO Annex 10
Channelling/ modulation	ICAO Annex 10	ICAO Annex 10.	ICAO Annex 10.	ICAO Annex 10.	ICAO Annex 10. There are 200 channels within the frequencies 5031.0 – 5090.7 MHz	AM and FM modulation in accordance with ICAO Annex 10.	ICAO Annex 10
Transmit power limit	For each individual license the radiated power is that necessary to give a field strength of 70 microvolts at the limit of the designated coverage area and be maintained within a tolerance of +2 and -3dB.	(Note 2)	(Note 2)	(Note 2)	(Note 2)	(Note 2)	(Note 2)

Note 1: Individual operator's certification required.

Note 2: For each individual license / frequency assignment either the maximum and minimum field strength at the limit of the designated operational coverage may be specified or the maximum effective radiated power (e.r.p.).

4. AERONAUTICAL GROUND BASED RADAR STATION LICENSE

This section provides information on the licensing considerations for the issuing of Aeronautical Ground Based Radar Station licenses. The license is available to cover Aeronautical Primary Radar and Secondary Surveillance Radar (SSR) which are deployed at the aerodromes to aid the air traffic control.

4.1 Eligibility criteria

An Aeronautical Ground Based Radar license may be applied for by QCAA or an authorised representative of an Aerodrome, licensed by the QCAA.

4.2 Summary of Licensee's Responsibilities

The licensee is generally responsible for ensuring that the radar systems are planned, installed, operated and maintained in accordance with the QCAA requirements. This includes the required training, certification and licensing of staff in accordance with the QCAA requirements.

Records relating to radar systems will need to be maintained for inspection, on demand, by ictQATAR.

Please see Annex A for detailed terms and conditions.

4.3 Technical details

The license covers aeronautical primary radar and mono-pulse secondary surveillance radar (SSR). SSR is an ICAO standard system employing secondary radar principles, used either by itself or co-located and synchronised with primary radar. All SSR installations have a frequency for ground-air interrogation and a frequency for the air-ground reply.

Table 6 below provides information on the applicable frequency band(s) and associated technical details:

Table 6. Aeronautical Ground Based Radar – frequency bands and technical details

	Primary Radars	Secondary Surveillance Radar
National usage	Air traffic control primary radar	Air traffic control secondary surveillance radar monitoring
Frequency bands	1215 – 1350 MHz 2700 – 3100 MHz (Note)	960 – 1215 MHz Transmissions on 1030 MHz shall be to aircraft and shall be received on 1090 MHz from aircraft in accordance with ICAO Annex 10.
Standards	ICAO Annex 10	ICAO Annex 10
Channelling/ modulation	ICAO Annex 10	Pulse and phased modulation, L9D and M9D, may be used in accordance with ICAO Annex 10.

Transmit power limit	For each radar the maximum transmitter power e.i.r.p. is defined according to operational requirements.	For each individual license the maximum transmitter power limits will be specified according to operational requirements.

Note: ITU-R SM.329-10 and ITU-R SM.1541-1 apply in respect of unwanted emissions.

5. CALL SIGNS

Call signs are a unique way of identifying a user's station and allowing more than one user to share a radio channel. The call sign consists of the prefix which defines the geographic area (A7 for Qatar) and a suffix which is unique for the service and the individual.

In Qatar the aeronautical call sign is the same as the aircraft registration mark which is issued by the Qatar Civil Aviation Authority (QCAA). In Qatar the registration mark can be A7-AAA to A7-ZZZ. The table below shows the registration numbers / call signs that are currently being allocated as per the category and the model of the aircraft.

Table 7. Aircraft call sign format

Aircraft call sign	Category	Aircraft model
A7-AAx	Royal Craft / VIP	
A7-ABx	Air lines	A300-600R
A7-ACx	Airlines	A320-232 and A330-203
A7-ADx	Airlines	A320-232, A330-203 and A321-231
A7-AEx	Airlines	A320-232 and A330-302
A7-AFx	Airlines and Royal Craft	A3000B4-622R, A310-308 and A330-202
A7-AGx	Airlines	A340-600 and A340-202
A7-AHx	Airlines + single call sign for training craft used by civil aviation college	A320-231 and A320-232
A7-Aix	Airlines	A321-231 (airbus)
A7-AJx	Private	
A7-ASx	Private	
A7-BAx	Airlines	B777
A7-BBx	Airlines	B777
A7-BFx	Airlines	B777
A7-CEx	Airlines	
A7-CGx	Commercial (Private jet)	
A7-CJx	Airlines and Private	A300-600R and A319-133
A7-DSx	Training craft and private	
A7-FCx	Training craft	PA-28
A7-FSx	Training craft	PA34-220T and PA 28-181
A7-GHx	Helicopters	AW 139
A7-HAx	Helicopters	BELL 412
A7-HBx	Helicopters	BELL 412 and 1 off AW139
A7-HHx	Royal Craft (VIP) & a Helicopter	
A7-HJx	Royal Craft (VIP)	
A7-HMx	Helicopter	
A7-HYx	Private	

A7-JHx	Private	
A7-JBx	Private	
A7-KAx	Private	
A7-KHx	Private	
A7-MBx	Royal Craft (VIP) and helicopter	
A7-MEx	Air lines (VIP)	
A7-MGx	Private	
A7-MHx	Royal Craft (VIP)	
A7-NHx	Helicopter	MD902
A7-RZx	Qatar Commercial (RIZON QATAR)	
A7-Uxx	Private	

Note: X represents a letter of the alphabet.

These ranges will be used for the same applications/ services in future, and additional categories will be identified as follows.

Table 8. Aircraft call sign format - additional

Aircraft call sign	Service	Aircraft and type of model
A7-Sax – A7SCx	Gyrocopter	Gyrocopter
A7-SDx – A7SFx	Hang gliders	Hang gliders
A7-SGx – A7SKx	Balloons	Balloons

The call sign for Aircraft transportable radio stations will be formed by adding suffix "P" to the registration mark of the aircraft.

In the case of aeronautical ground stations the call signs are generally formed from a base, such as the name of the airfield / aerodrome or a nearby location, and typically a suffix which depends on the service being provided.

The call signs used by aeronautical ground stations providing Air Traffic Services (ATS) are illustrated in the following table, which provides information on the appropriate suffix that would be added to the aerodrome or location prefix:

Unit or Service	Abbreviation	Suffix
Area Control Centre	ACC	CONTROL
Approach Control	APP	APPROACH
Approach Control Radar Arrivals		ARRIVAL
Approach Control Radar Departures		DEPARTURE
Aerodrome Control	TWR	TOWER
Surface Movement Control (Note)		GROUND
Radar (in general)	RAD	RADAR
Precision Approach Radar	PAR	PRECISION
Direction Finding Station		HOMER
Flight Information Service	FIS	INFORMATION
Clearance Delivery		DELIVERY
Apron Control		APRON
Company Dispatch		DISPATCH
Aeronautical Station		RADIO

Note: Includes Ground Movement Control and Ground Movement Planning.

The information in this table is based on ICAO Annex 10 Volume II Chapter 5.

In the case of aeronautical radio stations providing Operational Control the call sign will consist of either the name of the company or its telephony designator[4], or the airfield / aerodrome or location plus the suffix OPS or OPERATIONS.

6. NOTE ON APPLICABLE STANDARDS

The aeronautical radio equipment to be deployed on-board the aircraft as well as on the ground has to be approved by the recognized national (e.g. QCAA) or regional agencies (e.g. European Aviation Safety Agency (EASA)). For aircrafts, the equipment may have approval acquired during the manufacturing phase as part of the aircraft's Type Certification.

[4] Operating agencies may apply to register an ICAO telephony designator. Telephony designators are published in ICAO Doc. 8585 and ICAO location indicators are published in Doc 7910.

7. COORDINATION REQUIREMENTS

The use of aeronautical radio frequencies is covered by ITU allotment plans. Co-ordination of frequencies is required to ensure that the proposed use will not suffer harmful interference between neighbouring countries. The use of aeronautical frequencies in Qatar from Ground stations which are not already covered by Appendix 27, of ITU Radio Regulations, will be co-ordinated with the Regional ICAO through the GCC Telecoms Bureau

8. SPECTRUM FEES

Please see the "Schedule of Radio Spectrum Fees" available on ictQATAR's website for details.

9. CONTACT DETAILS

For further queries, please contact:

Manager Spectrum Affairs,
Regulatory Authority,
The Supreme Council of Information & Communication Technology (ictQATAR)
P.O. Box 23264, Al Nassr Tower, Post Office Roundabout, Al Corniche,
Doha, Qatar
Fax: 44830630
Email: spectrumaffairs@ict.gov.qa

ANNEX A: LICENSE TEMPLATES AND TERMS & CONDITIONS

دولـة قطـر

State of Qatar

المجلس الأعلى للاتصالات وتكنولوجيا المعلومات

ictQATAR

Regulatory Authority

Aircraft Radio Station License

The Supreme Council of Information and Communication Technology ("ictQATAR"), in exercising the powers conferred on it by Articles (3) and (4) of Decree Law No. (34) of 2006, grants to the Licensee specified, authorisation to keep, have possession of, install, maintain, work and use radio transmitting and receiving equipment on board the aircraft as per the general terms and conditions for radio spectrum licensing, specific terms and conditions, special conditions (if any) and technical schedule (s) of this License.

License Number.....

Licensee: .....

Address: .....

License Type: .....

Commencement and Termination Dates:

The License comes into effect on DD/MM/YY and subject to revocation or suspension, expires on DD/MM/YY unless renewed in accordance with the Regulations.

Call Sign:

Signed:.....

On behalf of the Supreme Council of Information and Communication Technology ("ictQATAR")

Date: .....

Official Stamp

Specific Terms And Conditions

1. **Radio equipment operation**

1.1 a copy of the license shall be kept with the radio equipment at all times.

1.2 The Licensee shall:

(a) ensure that all persons using the station are made aware of and comply with the terms of this license

(b) permit representatives of ictQATAR to have access to the radio equipment on-board the aircraft for the purpose of verifying compliance with the terms of this license

1.3 The Licensee shall not permit any person to use the station unless that person:

(a) possesses a valid radio operator's certification from QCAA

(b) is under the supervision of a person possessing the above.

1.4 The Licensee and all persons using the station shall comply with the relevant provisions of the ITU Constitution and Convention and the Radio Regulations, in particular article 33 of the Constitution, and articles 36, 37, 39, 42 and clause 44.1 of the Radio Regulations.

2. **Identification of Transmission:**

2.1 The Licensee shall use one of the following methods of identification for all transmissions:

(a) Aircraft call sign indicated in the license.

(b) The type of aircraft followed by the registration number of the aircraft issued by QCAA.

(c) Any other aircraft identification approved by the QCAA for use by aircraft radio stations participating in an organized flying activity of short duration.

(d) For survival craft station with a reference to its parent aircraft. No identification is required for automatically transmitted distress signals. Transmissions other than distress or emergency signals must be identified by the call sign or by the registration number of the parent aircraft followed by a single digit other than 0 or 1.

3. **Technical conditions**

3.1 The radio equipment except the equipment for Off-Route communication[5] shall be operated within the aeronautical frequency bands and with the technical limits as defined in "Annex 10 to the Convention on International Civil Aviation: Volume 5" and the latest edition of "Handbook on Radio Frequency Spectrum Requirements for Civil Aviation: Including Statement of Approved ICAO Policies, Doc 9718--AN/957".

3.2 The use of mobile communication access equipment is allowed on-board the aircraft with the following conditions:

(a) the operation will be on a non-interference and non-protected basis.

[5] The bands for Aeronautical Mobile (OR) Services in Qatar are assigned on case by case basis as per the applicants requirements.

(b) the minimum height above ground for any transmission will be 3000 metres.

(c) The aircraft base station transmitter must limit the power of all GSM mobile terminals transmitting in the 1800 MHz band to a nominal value of 0 dBm at all stages of communications including initial access.

(d) The aircraft Node B, while in operation, must limit the transmit power of all UMTS mobile terminals transmitting in the 2 100 MHz band to a nominal value of – 6 dBm/3,84 MHz at all stages of communication and the maximum number of users should not exceed 20.

(e) The aircraft Node B, while in operation, must limit the transmit power of all LTE mobile terminals transmitting in the 1 800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication.

3.3 The use of satellite equipment on 14-14.5 GHz band is allowed with the following conditions:

(a) the operation will be on a non-interference and non-protected basis.

(b) the minimum height above ground for any transmission will be 3000 metres.

(c) e.i.r.p. must not be greater than 50dBW;

(d) the equipment must comply with the ITU-R Recommendation M.1643

(e) the equipment must be operated under the control of a network control facility.

3.4 The use of satellite equipment on 17.3-19.7 GHz and 27.5-29.5 GHz bands is allowed with the following conditions:

(a) the operation will be on a non interference and non protected basis.

(b) the minimum height above ground for any transmission will be 3000 metres.

(c) e.i.r.p. must not limited to a value within the range 55-60 dBw;
(d) the equipment must be operated under the control of a network control facility.
(e) the equipment must be self-monitoring and should a fault which can cause harmful interference to FSS or terrestrial networks be detected, the transmissions must be ceased automatically;

3.5 The use of WiFi access equipment is allowed, provided that all transmissions must be strictly restricted within the aircraft.

4. **Definitions**

4.1 **EIRP:** EPIRB (Emergency Position-Indicating Radio Beacon) is a tracking transmitter which aid in the detection and location of boats, aircraft, and people in distress.

4.2 **Frequency Band:** a contiguous block of the radio spectrum which starts at a frequency and ends at another.

4.3 **FSS:** means a radiocommunication service between earth stations at given fixed positions via one or more satellites.

4.4 **ictQATAR**: The regulator in Qatar established under Amiri decree Law No. 36 for 2004 and as further defined in Amiri decree Law No. 34 of 2006.

4.5 **ITU:** The International Telecommunication Union is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.

4.6 **ICAO:** International Civil Aviation Organization (ICAO) is a specialized agency of the United Nations that codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

4.7 **License**: The permission issued by the Board or the General Secretariat to an individual or class of individuals to own or operate a telecommunications network, provide telecommunications services, or use radio frequency spectrum and it does not constitute a contract or bilateral agreement.

4.8 **Licensee:** A person who holds a License pursuant to the provisions of the Telecom Law and the executive by-law.

4.9 **Off-route Communication:** Off-route communications is a type of aernautcal mbile communication service that relates to flight coordination, primarily outside national or international civil air routes.

4.10 **PFD:** Power Flux Density (PFD) means a measure of the energy that flows through a unit area each second.

4.11 **Qatar Civil Aviation Authority (QCAA)**: The body responsible in Qatar for: air navigation; air safety ; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.

Special Conditions

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Technical Schedule (1)

This schedule forms part of the Aircraft Mobile Radio Station License No. XXXX issued to XXXX, the Licensee on [Date].

Aircraft Details			
Aircraft registration number			
Aircraft call sign			
Fuselage number			
Type of aircraft and model			
Aircraft owner/operator			
Equipment Details			
Communications:			
Equipment	Model / Type	Quantity	Frequency Band
Navigation:			
Equipment	Model / Type	Quantity	Frequency Band
Radar:			
Equipment	Model / Type	Quantity	Frequency Band

Emergency distress:

Equipment	Model / Type	Quantity	Frequency Band

Aircraft earth station:

Satellite Network / satellite	Satellite orbital position	Equipment / Model / Type	Quantity	Power erp	Frequency Band

Other Equipment:

Equipment	Model / Type	Quantity	Power erp	Emissions	Frequency Band

دولـة قطـر

State of Qatar

المجلس الأعلى للاتصالات وتكنولوجيا المعلومات

ictQATAR

Regulatory Authority

Aircraft Transportable Radio Station License

The Supreme Council of Information and Communication Technology ("ictQATAR"), in exercising the powers conferred on it by Articles (3) and (4) of Decree Law No. (34) of 2006, grants to the Licensee specified, authorisation to keep, have possession of, install, maintain, work and use radio transmitting and receiving transportable equipment on board multiple aircrafts as per the general terms and conditions for radio spectrum licensing, specific terms and conditions, special conditions (if any) and technical schedule (s) of this License.

License Number.....

Licensee: .....

Address: .....

License Type: .....

Commencement and Termination Dates:

The License comes into effect on DD/MM/YY and subject to revocation or suspension, expires on DD/MM/YY unless renewed in accordance with the Regulations.

Call Sign:

Signed:.....

On behalf of the Supreme Council of Information and Communication Technology ("ictQATAR")

Date: ..... **Official Stamp**

Specific Terms And Conditions

1. **Radio equipment operation**

1.1 a copy of the license shall be kept with the radio equipment at all times.

1.2 The licensee shall:

(a) ensure that all persons using the station are made aware of and comply with the terms of this license

(b) permit representatives of ictQATAR to have access to the radio equipment for the purpose of verifying compliance with the terms of this license

1.3 The licensee shall not permit any person to use the station unless that person:

(a) possesses a valid radio operator's certification from QCAA

(b) is under the supervision of a person possessing the above.

1.4 The licensee and all persons using the station shall comply with the relevant provisions of the ITU Constitution and Convention and the Radio Regulations, in particular article 33 of the Constitution, and articles 36, 37, 39, 42 and clause 44.1 of the Radio Regulations.

1.5 The radio equipment cannot be used on land.

2. **Identification of Transmission**

2.1 The Licensee shall use one of the following methods of identification for all transmissions:

(a) Aircraft call sign.

(b) The type of aircraft followed by the registration number of the aircraft issued by CAA.

(c) Any other aircraft identification approved by the CAA for use by aircraft stations participating in an organized flying activity of short duration.

3. **Technical conditions**

3.1 The radio equipment except the equipment for Off-Route communication[6] shall be operated within the aeronautical frequency bands and with the technical limits as defined in "Annex 10 to the Convention on International Civil Aviation: Volume 5" and the latest edition of "Handbook on Radio Frequency Spectrum Requirements for Civil Aviation: Including Statement of Approved ICAO Policies, Doc 9718--AN/957".

4. **Definitions**

4.1 **EIRP:** EPIRB (Emergency Position-Indicating Radio Beacon) is a tracking transmitter which aid in the detection and location of boats, aircraft, and people in distress.

[6] The bands for Aeronautical Mobile (OR) Services in Qatar are assigned on case by case basis as per the applicants requirements.

4.2 **Frequency Band:** a contiguous block of the radio spectrum which starts at a frequency and ends at another.

4.3 **ictQATAR**: The regulator in Qatar established under Amiri decree Law No. 36 for 2004 and as further defined in Amiri decree Law No. 34 of 2006.

4.4 **ICAO:** International Civil Aviation Organization (ICAO) is a specialized agency of the United Nations that codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.

4.5 **ITU:** The International Telecommunication Union is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.

4.6 **License**: The permission issued by the Board or the General Secretariat to an individual or class of individuals to own or operate a telecommunications network, provide telecommunications services, or use radio frequency spectrum and it does not constitute a contract or bilateral agreement.

4.7 **Licensee:** A person who holds a License pursuant to the provisions of the Telecom Law and the executive by-law.

4.8 **Off-route Communication:** Off-route communications is a type of aernautcal mbile communication service that relates to flight coordination, primarily outside national or international civil air routes.

4.9 **Qatar Civil Aviation Authority (QCAA)**: The body responsible in Qatar for: air navigation; air safety ; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.

Special Conditions

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Technical Schedule (1)

This schedule forms part of the aircraft transportable radio station license No. XXXX issued to XXXX, the Licensee on [Date].

Equipment	Manufacturer / Model	Quantity	Power erp	Frequency Band

دولـة قطـر

State of Qatar

المجلس الأعلى للاتصالات وتكنولوجيا المعلومات

ictQATAR

Regulatory Authority

Aeronautical Ground Station License

The Supreme Council of Information and Communication Technology ("ictQATAR"), in exercising the powers conferred on it by Articles (3) and (4) of Decree Law No. (34) of 2006, grants to the Licensee specified, authorisation to keep, have possession of, install, maintain, work and use aeronautical radio equipment on ground as per the general terms and conditions for radio spectrum licensing, specific terms and conditions, special conditions (if any) and technical schedule (s) of this License.

License Number……

Licensee: ……

Address: ……..

License Type: ……

Commencement and Termination Dates:

The License comes into effect on DD/MM/YY and subject to revocation or suspension, expires on DD/MM/YY unless renewed in accordance with the Regulations.

Call Sign:

Signed:……..

On behalf of the Supreme Council of Information and Communication Technology ("ictQATAR")

Date: ……..

Official Stamp

Specific Terms & Conditions

1. **Radio equipment operation**

1.1 The installation of stations at aerodromes shall require approval from QCAA.

1.2 The Licensee shall not permit any person to use the station unless that person:

(a) possesses a valid radio operator's certification from QCAA

(b) is under the supervision of a person possessing the above.

1.3 Aeronautical radio messages shall be limited to those concerning flight safety or flight regularity.

2. **Technical conditions**

2.1 All new installations and any proposal to amend any details specified in this license and the associated technical schedule(s) require prior coordination with the Regional ICAO through the GCC Telecoms Bureau.

3. **Identification of Transmission:**

3.1 The Radio user shall use one of the following methods of identification for all transmissions:

(a) the aeronautical ground station call sign

(b) the location name of the station

(c) Any other identification method approved by the QCAA

4. **Definitions**

4.1 **ICAO:** International Civil Aviation Organisation which serves as the global forum for its 191 Member States and promotes understanding and security through cooperative aviation regulation.

4.2 **ictQATAR**: The regulator in Qatar established under Amiri decree Law No. 36 for 2004 and as further defined in Amiri decree Law No. 34 of 2006.

4.3 **ITU:** The International Telecommunication Union is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.

4.4 **License**: The permission issued by the Board or the General Secretariat to an individual or class of individuals to own or operate a telecommunications network, provide telecommunications services, or use radio frequency spectrum and it does not constitute a contract or bilateral agreement.

4.5 **Licensee:** A person who holds a License pursuant to the provisions of the Telecom Law and the executive by-law.

4.6 **QCAA:** The body responsible in Qatar for: air navigation; air safety ; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.

4.7 **Telecoms Bureau:** The GCC Telecommunications Bureau, which conducts the coordination of spectrum assignments between neighbouring GCC countries and engages in the process of resolving cross-border interference cases

Special Conditions

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Technical Schedule (1)

This schedule forms part of the Aeronautical Ground Station (AGS) License No. XXXX issued to XXXX, the Licensee on [Date].

INSTALLATION / AERODROME LOCATION	
1.1 Location:	
1.2 Latitude:	
1.3 Longitude:	
1.4 Service area (radius from base station) (km)	
1.5 Call sign /system ID:	
1.6 Antenna Type:	
1.7 Antenna Power (e.r.p) (W)	
1.8 Antenna Height:	

COMMUNICATIONS SYSTEM

2.1 Type of Station: *General aviation/ Operations control / Air Traffic Control / Search and Rescue and Emergency Communications / HF communications / Other*

Equipment	Model / Type	Power ERP	Frequency(ies)/ Band assigned

دولـة قطـر

State of Qatar

المجلس الأعلى للاتصالات وتكنولوجيا المعلومات

ictQATAR

Regulatory Authority

Aeronautical Navigational Aids Station License

The Supreme Council of Information and Communication Technology ("ictQATAR"), in exercising the powers conferred on it by Articles (3) and (4) of Decree Law No. (34) of 2006, grants to the licensee specified, authorisation to keep, have possession of, install, maintain, work and use aeronautical navigational aids equipment on ground as per the general terms and conditions for radio spectrum licensing, specific terms and conditions, special conditions (if any) and technical schedule (s) of this License.

License Number……

Licensee: ……..

Address: ……....

License Type: ……..…….

Commencement and Termination Dates:

The License comes into effect on DD/MM/YY and subject to revocation or suspension, expires on DD/MM/YY unless renewed in accordance with the Regulations.

Signed:……

On behalf of the Supreme Council of Information and Communication Technology ("ictQATAR")

Date: ……..

Official Stamp

Specific Terms & Conditions

1. Radio equipment operation

1.1 The radio equipment shall be operated to ensure that the appropriate identification methods as required by the International Standards and Recommended Practices and Procedures, as issued and amended from time to time by ICAO, are employed for all transmissions.

2. Technical conditions

2.1 All new installations and any proposal to amend any details specified in this license and the associated technical schedule require prior coordination with the Regional ICAO through the GCC Telecoms Bureau.

3. Definitions

3.1 **ICAO:** International Civil Aviation Organisation which serves as the global forum for its 191 Member States and promotes understanding and security through cooperative aviation regulation.

3.2 **ictQATAR**: The regulator in Qatar established under Amiri decree Law No. 36 for 2004 and as further defined in Amiri decree Law No. 34 of 2006.

3.3 **ITU:** The International Telecommunication Union is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.

3.4 **License**: The permission issued by the Board or the General Secretariat to an individual or class of individuals to own or operate a telecommunications network, provide telecommunications services, or use radio frequency spectrum and it does not constitute a contract or bilateral agreement.

3.5 **Licensee:** A person who holds a License pursuant to the provisions of the Telecom Law and the executive by-law.

3.6 **QCAA**: Qatar Civil Aviation Authority (QCAA) is the body responsible in Qatar for: air navigation; air safety ; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.

3.7 **Telecoms Bureau:** The GCC Telecommunications Bureau, which conducts the coordination of spectrum assignments between neighbouring GCC countries and engages in the process of resolving cross-border interference cases

Special Conditions

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Technical Schedule (1)

This schedule forms part of the Aeronautical Ground Based Navigational Aids Station License No. XXXX issued to XXXX, the Licensee on [Date].

INSTALLATION / AERODROME LOCATION	
1.1 Location:	
1.2 Latitude:	
1.3 Longitude:	
1.4 Service area (radius from base station) (km)	
1.5 Call sign /system ID:	
1.6 Antenna Type:	
1.7 Antenna Power (e.r.p) (W)	
1.8 Antenna Height:	

NAVIGATIONAL AIDS EQUIPMENT

Type of Station: Non-directional radio beacon / VHF Omni-directional radio (VOR) / VHF Marker beacon / Instrument landing system / DME pair / Other

Location (Lat & Long)	Manufacturer /Model / Type	Frequency	Max. range

دولـة قطـر

State of Qatar

المجلس الأعلى للاتصالات وتكنولوجيا المعلومات

ictQATAR

Regulatory Authority

Aeronautical Radar Station License

The Supreme Council of Information and Communication Technology ("ictQATAR"), in exercising the powers conferred on it by Articles (3) and (4) of Decree Law No. (34) of 2006, grants to the Licensee specified, authorisation to keep, have possession of, install, maintain, work and use aeronautical ground based radar equipment as per the general terms and conditions for radio spectrum licensing, specific terms and conditions, special conditions (if any) and technical schedule (s) of this License.

License Number……

Licensee: ……..

Address: ……...

License Type: ……

Commencement and Termination Dates:

The License comes into effect on DD/MM/YY and subject to revocation or suspension, expires on DD/MM/YY unless renewed in accordance with the Regulations.

Signed:……..

On behalf of the Supreme Council of Information and Communication Technology ("ictQATAR")

Date: …….. **Official Stamp**

Specific Terms & Conditions

1. **Radio equipment operation**

1.1 The radio equipment shall be operated to ensure that the appropriate identification methods as required by the International Standards and Recommended Practices and Procedures, as issued and amended from time to time by ICAO, are employed for all transmissions.

1.2 The licensee shall ensure that:

(a) the radar systems are planned, installed, operated and maintained in accordance with the ITU and ICAO requirements

(b) that persons authorized to use the equipment are trained, certified and licensed in accordance with the QCAA requirements

(c) the apparatus is used only for the purposes of aiding the navigation of any aircraft.

2. **Technical conditions**

2.1 All new installations and any proposal to amend any details specified in this license and the associated technical schedule require prior coordination with the Regional ICAO through the GCC Telecoms Bureau.

3. **Definitions**

3.1 **ICAO:** International Civil Aviation Organisation (ICAO) serves as the global forum for its 191 Member States and promotes understanding and security through cooperative aviation regulation.

3.2 **ictQATAR**: The regulator in Qatar established under Amiri decree Law No. 36 for 2004 and as further defined in Amiri decree Law No. 34 of 2006.

3.3 **ITU:** International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies – ICTs. It allocates global radio spectrum and satellite orbits and develops the technical standards that ensure networks and technologies seamlessly interconnect.

3.4 **License**: The permission issued by the Board or the General Secretariat to an individual or class of individuals to own or operate a telecommunications network, provide telecommunications services, or use radio frequency spectrum and it does not constitute a contract or bilateral agreement.

3.5 **Licensee:** A person who holds a License pursuant to the provisions of the Telecom Law and the executive by-law.

3.6 **Qatar Civil Aviation Authority (QCAA)**: The body responsible in Qatar for: air navigation; air safety ; air transport & airport affairs; meteorology and aviation security. QCAA administers the civil aviation regulations and aviation law in Qatar.

3.7 **Telecoms Bureau:** The GCC Telecommunications Bureau, which conducts the coordination of spectrum assignments between neighbouring GCC countries and engages in the process of resolving cross-border interference cases

Special Conditions

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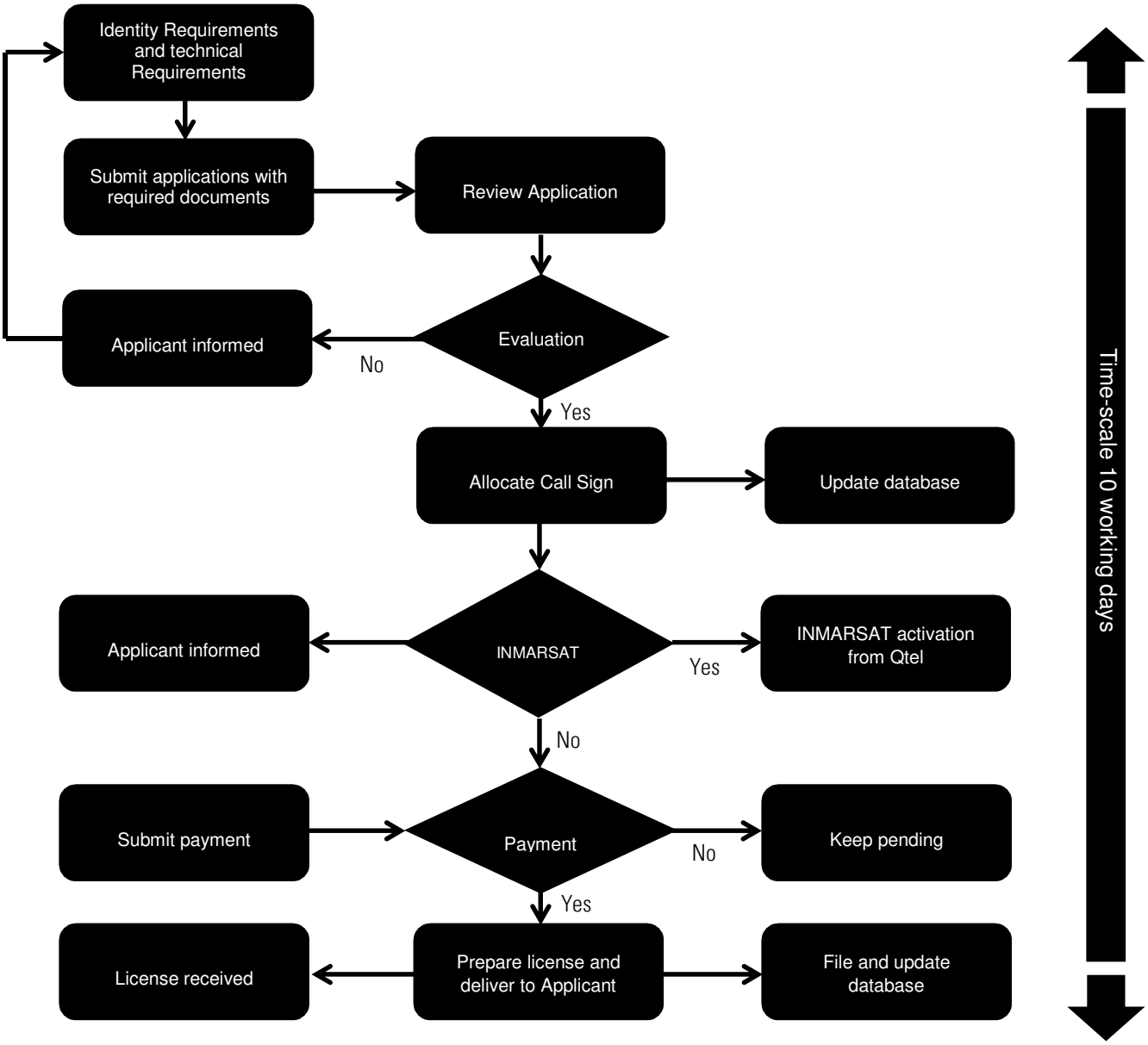
Technical Schedule (1)

This schedule forms part of the Aeronautical Ground Based Radar Station License No. XXXX issued to XXXX, the Licensee on [Date].

Location (Airport / Aerodrome name)			
Type of Station: Primary Radar / Secondary Radar			
Location (Lat & Long)	Manufacturer /Model / Type	Frequency	Peak power
Scan rate (rpm)	Pulse repetition rate	Antenna height	Antenna gain

ANNEX B: APPLICATION PROCESSING PROCEDURE


Identity Requirements and technical Requirements
Submit applications with required documents
Review Application
Evaluation
Applicant informed
No
Yes
Allocate Call Sign
Update database
INMARSAT
Applicant informed
Yes
INMARSAT activation from Qtel
No
Payment
Submit payment
No
Keep pending
Yes
Prepare license and deliver to Applicant
License received
File and update database
Time-scale 10 working days

ANNEX C: APPLICATION FORMS

ictQATAR	**ICTQATAR REGULATORY AUTHORITY** **APPLICATION FOR AIRCRAFT RADIO (MOBILE / TRANSPORTABLE) STATION LICENSE**	**FORM:** SA/ 01

APPLICANT'S DECLARATION

1.1 I declare that:

- the information provided in this application is complete and correct;
- any equipment and / or radio spectrum licensed as a result of this application will be used in compliance with ictQATAR Laws and Regulations;
- I / we will notify ictQATAR of any changes to the information provided;
- I am authorized to sign this application on behalf of the applicant.

1.2 Name:		1.6 Company stamp (if applicable):
1.3 Position:		
1.4 Signature:	1.5 Date:	

APPLICANT INFORMATION

2.1 ictQATAR Customer Number:
Please note. If you have an existing customer number and have previously provided the following information you need only complete the Applicant Information sections if your details need to be amended in our records.
2.2 Name / Company / Organisation:
2.3 Nationality / Place of registration:
2.4 Profession:
2.5 PO Box:
2.6 Address:

2.7 Main contact:	2.10 Position:
2.8 Contact email:	2.11 Mobile Tel:
2.9 Office Tel:	2.12 Fax:

INVOICING INFORMATION (IF DIFFERENT FROM ABOVE)

3.1 Name / Company / Organisation:
3.2 PO Box:
3..3 Address:

3.4 Invoicing contact:	3.7 Position:
3.5 Contact email:	3.8 Mobile Tel:
3.6 Office Tel:	3.9 Fax:

APPLICATION TYPE (TICK AS APPROPRIATE)

New application:		Renewal:		Modification:		Cancellation:	

APPLICATION SUBMISSION

Please send* completed applications to: * by fax, post, courier or hand deliver.	Regulatory Authority – Spectrum Affairs The Supreme Council of Information & Communication Technology (ictQATAR) P.O. Box 23264, Al Nassr Tower, Post Office Roundabout, Al Corniche, Doha, Qatar

FOR ictQATAR INTERNAL USE			
Date Received:			
Approved:		Not Approved:	
License Number:		Staff No.	
Date Completed:			

AIRCRAFT RADIO LICENSE				
1.1 Type of license applied for:				
Mobile		Transportable		

AIRCRAFT MOBILE RADIO LICENSE
AIRCRAFT DETAILS
2.1 Aircraft registration number:
2.2 Aircraft Call sign:
2.3 Fuselage number:
2.4 Type of aircraft and model:
2.5 Aircraft Owner/Operator:

COMMUNICATIONS			
Equipment	Model / Type	Quantity	Band / Assigned frequencies
3.1 HF			
3.2 VHF			

NAVIGATION			
Equipment	Model / Type	Quantity	Band / Assigned frequencies
4.1 ADF			
4.2 LORAN C			
4.3 DME			
4.4 ILS/MLS			
4.5 RDSS			
4.6 GPS			

RADAR			
Equipment	Model / Type	Quantity	Band / Assigned frequencies
5.1 Altimeter			
5.2 Weather			

EMERGENCY / DISTRESS			
Equipment	Model / Type	Quantity	Band / Assigned frequencies
6.1 EPIRB			
6.2 SAR			

MOBILE COMMUNICATION ACCESS EQUIPMENT ON BOARD					
Equipment	Model / Type	Quantity	Power erp	Emissions	Band / Assigned frequencies
WIFI ACCESS EQUIPMENT					
EARTH STATION EQUIPMENT ON BOARD					
Satellite Network / satellite	Satellite orbital position	Equipment / Model / Type	Quantity	Power erp	Band / Assigned frequencies
8.1 INMARSAT					
8.2 Ku Band					
8.3 Ka Band					
OTHER					
Equipment	Model / Type	Quantity	Power erp	Emissions	Band / Assigned frequencies
ADDITIONAL INFORMATION					

AIRCRAFT TRANSPORTABLE RADIO LICENSE					
Communications/ Radio Equipment					
Equipment	Model / Type	Quantity	Power erp	Emissions	Band / Assigned frequencies
1.1 VHF					
1.2 Other					
ADDITIONAL INFORMATION					

DOCUMENTS TO BE ENCLOSED
Copy of the CR (For organizations) / Copy of ID (for Private Aircraft Owners)
Copy of the corporate card (For organizations)
Registration Certificate issued by QCAA
Approval for use of the equipment granted by QCAA
DOCUMENTS TO BE ENCLOSED (FOR CANCELLATION)
Copy of receipt of final payment
Original license
Copy of the registry deletion certificate from QCAA

	ICTQATAR REGULATORY AUTHORITY **APPLICATION FOR AERONAUTICAL GROUND STATION LICENSE**	**FORM:** SV/01

APPLICANT'S DECLARATION

1.1 I declare that:

- the information provided in this application is complete and correct;
- any equipment and / or radio spectrum licensed as a result of this application will be used in compliance with ictQATAR Laws and Regulations;
- I / we will notify ictQATAR of any changes to the information provided;
- I am authorized to sign this application on behalf of the applicant.

1.2 Name:		1.6 Company stamp (if applicable):
1.3 Position:		
1.4 Signature:	1.5 Date:	

APPLICANT INFORMATION

2.1 ictQATAR Customer Number:	
Please note. If you have an existing customer number and have previously provided the following information you need only complete the Applicant Information sections if your details need to be amended in our records.	
2.2 Name / Company / Organisation:	
2.3 Nationality / Place of registration:	
2.4 Profession:	
2.5 PO Box:	
2.6 Address:	
2.7 Main contact:	2.10 Position:
2.8 Contact email:	2.11 Mobile Tel:
2.9 Office Tel:	2.12 Fax: . .

INVOICING INFORMATION (IF DIFFERENT FROM ABOVE)

3.1 Name / Company / Organisation:	
3.2 PO Box:	
3..3 Address:	
3.4 Invoicing contact:	3.7 Position:
3.5 Contact email:	3.8 Mobile Tel:
3.6 Office Tel:	3.9 Fax:

APPLICATION TYPE (TICK AS APPROPRIATE)

New application:		Renewal:		Modification:		Cancellation:	

APPLICATION SUBMISSION

Please send* completed applications to: * by fax, post, courier or hand deliver.	Regulatory Authority – Spectrum Affairs The Supreme Council of Information & Communication Technology (ictQATAR) P.O. Box 23264, Al Nassr Tower, Post Office Roundabout, Al Corniche, Doha, Qatar

FOR ictQATAR INTERNAL USE	
For Spectrum Planning Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	
For Spectrum Management Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	

INSTALLATION / AERODROME LOCATION	
1.1 Location:	
1.2 Latitude:	
1.3 Longitude:	
1.4 Service area (radius from base station) (km)	
1.5 Call sign /system ID:	
1.6 Antenna Type:	
1.7 Antenna Power (e.r.p) (W)	
1.8 Antenna Height:	

COMMUNICATIONS SYSTEMS

2.1 General aviation

Equipment	Model / Type	Quantity	Power erp	Band assigned

2.2 Operations control

Equipment	Model / Type	Quantity	Power erp	Band assigned

2.3 Air traffic control

Equipment	Model / Type	Quantity	Power erp	Band assigned

2.4 Search and Rescue and Emergency Communications

Equipment	Model / Type	Quantity	Power erp	Band assigned

2.5 HF communications				
Equipment	Model / Type	Quantity	Power erp	Band assigned
2.6 Other uses not covered by above:				
Type of use:				
Equipment	Model / Type	Quantity	Power erp	Band assigned
ADDITIONAL INFORMATION				

DOCUMENTS TO BE ENCLOSED
Copy of CR
Copy of Corporate card
Detailed Technical Specifications
Network Diagram[1]
QCAA approval/authorization
DOCUMENTS TO BE ENCLOSED (FOR CANCELLATION)
Copy of receipt of final payment
Original license
Copy of the shipment document (Airway bill & packing list) or Declaration that equipment will be written-off under the supervision of ictQATAR staff

[1] Wherever possible an initial / planned network diagram should be provided for information in support of the application.

ictQATAR	**ICTQATAR REGULATORY AUTHORITY** **APPLICATION FOR AERONAUTICAL GROUND BASED NAVIGATIONAL AIDS STATION LICENSE**	**FORM:** SV/02

APPLICANT'S DECLARATION

1.1 I declare that:

- the information provided in this application is complete and correct;
- any equipment and / or radio spectrum licensed as a result of this application will be used in compliance with ictQATAR Laws and Regulations;
- I / we will notify ictQATAR of any changes to the information provided;
- I am authorized to sign this application on behalf of the applicant.

1.2 Name:		1.6 Company stamp (if applicable):
1.3 Position:		
1.4 Signature:	1.5 Date:	

APPLICANT INFORMATION

2.1 ictQATAR Customer Number:

Please note. If you have an existing customer number and have previously provided the following information you need only complete the Applicant Information sections if your details need to be amended in our records.

2.2 Name / Company / Organisation:	
2.3 Nationality / Place of registration:	
2.4 Profession:	
2.5 PO Box:	
2.6 Address:	
2.7 Main contact:	2.10 Position:
2.8 Contact email:	2.11 Mobile Tel:
2.9 Office Tel:	2.12 Fax:

INVOICING INFORMATION (IF DIFFERENT FROM ABOVE)

3.1 Name / Company / Organisation:	
3.2 PO Box:	
3..3 Address:	
3.4 Invoicing contact:	3.7 Position:
3.5 Contact email:	3.8 Mobile Tel:
3.6 Office Tel:	3.9 Fax:

APPLICATION TYPE (TICK AS APPROPRIATE)

New application:		Renewal:		Modification:		Cancellation:	

APPLICATION SUBMISSION

Please send* completed applications to: * by fax, post, courier or hand deliver.	Regulatory Authority – Spectrum Affairs The Supreme Council of Information & Communication Technology (ictQATAR) P.O. Box 23264, Al Nassr Tower, Post Office Roundabout, Al Corniche, Doha, Qatar

FOR ictQATAR INTERNAL USE	
For Spectrum Planning Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	
For Spectrum Management Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	

INSTALLATION / AERODROME LOCATION	
1.1 Location:	
1.2 Latitude:	
1.3 Longitude:	

NAVIGATION AIDS EQUIPMENT			
Non-directional radio beacon			
2.1 Name/Model		2.2 Antenna height	
2.3 Identifier		2.4 Max. range	
VHF Omni-directional radio (VOR)			
2.5 Name/Model		2.6 Antenna height	
2.7 RF Power		2.8 Max. range	
VHF Marker beacon			
2.9 Name/Model		2.10 Antenna height	
2.11 RF Power		2.12 Max. range	
Instrument landing system			
2.13 Name/Model		2.14 Antenna height	
2.15 Runway designator(s)		2.16 Runway heading	
2.17 Frequency		2.18 Bandwidth	
2.19 RF Power		2.20 Antenna gain	
DME Pair			
2.21 Name/Model		2.22 Antenna height	
2.23 Runway designator(s)		2.24 Runway heading	
2.25 Frequency		2.26 Bandwidth	
2.27 RF Power		2.28 Antenna gain	

Other (please specify)			
2.29 Name/Model		2.30 Antenna height	
2.31 Frequency		2.32 Bandwidth	
2.33 RF Power		2.34 Antenna gain	
ADDITIONAL INFORMATION			

DOCUMENTS TO BE ENCLOSED
Copy of CR
Copy of Corporate card
Network Diagram
Detailed Technical Specifications
QCAA Approval/ Authorization
DOCUMENTS TO BE ENCLOSED (FOR CANCELLATION)
Copy of receipt of final payment
Original license
Copy of the shipment document (Airway bill & packing list) or Declaration that equipment will be written-off under the supervision of ictQATAR staff

ictQATAR	ICTQATAR REGULATORY AUTHORITY APPLICATION FOR AERONAUTICAL GROUND BASED RADAR STATION LICENSE	**FORM:** SV/03

APPLICANT'S DECLARATION

1.1 I declare that:

- the information provided in this application is complete and correct;
- any equipment and / or radio spectrum licensed as a result of this application will be used in compliance with ictQATAR Laws and Regulations;
- I / we will notify ictQATAR of any changes to the information provided;
- I am authorized to sign this application on behalf of the applicant.

1.2 Name:		1.6 Company stamp (if applicable):
1.3 Position:		
1.4 Signature:	1.5 Date:	

APPLICANT INFORMATION

2.1 ictQATAR Customer Number:

Please note. If you have an existing customer number and have previously provided the following information you need only complete the Applicant Information sections if your details need to be amended in our records.

2.2 Name / Company / Organisation:	
2.3 Nationality / Place of registration:	
2.4 Profession:	
2.5 PO Box:	
2.6 Address:	
2.7 Main contact:	2.10 Position:
2.8 Contact email:	2.11 Mobile Tel:
2.9 Office Tel:	2.12 Fax:

INVOICING INFORMATION (IF DIFFERENT FROM ABOVE)

3.1 Name / Company / Organisation:	
3.2 PO Box:	
3..3 Address:	
3.4 Invoicing contact:	3.7 Position:
3.5 Contact email:	3.8 Mobile Tel:
3.6 Office Tel:	3.9 Fax:

APPLICATION TYPE (TICK AS APPROPRIATE)

New application:		Renewal:		Modification:		Cancellation:	

APPLICATION SUBMISSION

Please send* completed applications to: * by fax, post, courier or hand deliver.	Regulatory Authority – Spectrum Affairs The Supreme Council of Information & Communication Technology (ictQATAR) P.O. Box 23264, Al Nassr Tower, Post Office Roundabout, Al Corniche, Doha, Qatar

FOR ictQATAR INTERNAL USE	
For Spectrum Planning Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	
For Spectrum Management Section:	
Date Received:	
Approved:	Not Approved:
License Number:	Staff No.
Remarks:	
Date Completed:	

INSTALLATION / AERODROME LOCATION	
1.1 Location:	
1.2 Latitude:	
1.3 Longitude:	

RADAR EQUIPMENT			
Primary radar			
2.1 Name/Model		2.2 Antenna height	
2.3 Operational range		2.4 Peak power	
2.5 Frequency		2.6 Pulse repetition rate	
2.7 Scan rate (rpm)		2.8 Antenna gain	
Secondary radar			
2.9 Name/Model		2.10 Antenna height	
2.11 Operational range		2.12 Peak power	
2.13 Frequency		2.14 Pulse repetition rate	
2.15 Scan rate (rpm)		2.16 Antenna gain	

ADDITIONAL INFORMATION

DOCUMENTS TO BE ENCLOSED (FOR NEW APPLICATION)
Copy of CR
Copy of Corporate card
Network Diagram
Detailed Technical Specifications
QCAA approval/ authorization

DOCUMENTS TO BE ENCLOSED (FOR CANCELLATION)
Copy of receipt of final payment
Original license
Copy of the shipment document (Airway bill & packing list) or Declaration that equipment will be written-off under the supervision of ictQATAR staff