

Frequency Request Authorization Worksheet

Data Item	Data Entry
NOTE: 1 worksheet for each transmitter. For the following please explain in the 520. If this is a transceiver. Explain uplink/downlink configuration pairing. If the receive and transmit location is the same lat/long. If you are transmitting from one location to another. If you are transmitting to or from an aircraft in a radius of operation.	
005. What is the security classification? If classified, contact our office for additional information and handling.	U (Unclassified)
110. The single transmit frequency needed from a specific band or multiple frequencies needed within a specific band, or a specific band. Provide which transmit frequencies is uplink and which transmit frequencies is downlink. Identify each frequency as F1, F2 ect with it's associated lat/long identified in 303. F1 M270-430 F2 M9630-9790	
113. What is the station class i.e., fixed, mobile, portable, transportable?	Aircraft (Mobile) (XT)
114. What is the bandwidth and type of transmission, e.g., AM, FM, etc? (Emission Designator)	160MHz linear FM chirp (169M00Q3N)
115. What is the transmitter power?	P-band: K4 (4 KW) X-band: K8 (8 KW)
130. List the amount of daily use, e.g., 24 hours, night, day, and specified time/period (hours of operation).	Sporadic, Maximum ~3hrs twice/day; Typical 3hrs/day
140. When do you require the frequency e.g. start date?	20120401
141. How long due you require the frequency e.g. completion date?	20100430
207. What is your unit/organization/activity?	Fugro EarthData, Frederick, MD 21704 (GeoSAR Interferometric Mapping),
209. Who is the operating unit, if different than item 207?	Same

TRANSMITTER INFORMATION

300. What is the state or country will you be transmitting?	AK (Alaska, USA)
301. What is the actual transmit location, e.g., "Hanscom, City, Town, state, area, aircraft, ect?	Barrow, AK (Off the North Coast of Barrow, AK)
303. List the geographical coordinates for item 301 stated in LAT/LONG and expressed in degrees, minutes, seconds. Identify associated LAT/LONG with F1, F2 frequency in 110.	F1 & F2: 71°17'25.54"N, 156°46'42.03"W
306. What radius will the transmitter operate in? In Kilometers.	<350 km
315– 321 If your requirement involves space station/satellite operations, contact our office for additional information needed.	

Frequency Request Authorization Worksheet

340. What transmitter/transceiver will be used i.e., manufacturer, model number, part number. When sending request include/attach any technical data that you can find to aid in request.

GeoSAR is a dual-band, dual-frequency, single-pass, interferometric mapping radar designed by NASA JPL and implemented jointly with EarthData under contract to the USG. EarthData is the sole commercial operator of the system providing mapping services to the USG on a primary basis and to commercial concerns on a secondary basis.

341. How many transmitters will be used i.e., fixed, mobile, portables, etc.?	1 at F1 and 1 at F2
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If this request is for a pulse modulation system,	
346. What is the pulse width(s)?	40
347. What is the pulse repetition rate(s)	1.4K – 2.1K
349. Does this system contain side lobe suppression? (Yes or No)	Yes

354. What type of transmit antenna will be used, e.g., parabolic, whip?	F1: 4 dipoles linear array, cavity backed F2: 64 slot weighted array
355. What is the transmit antenna manufacturer/model number?	F1: JPL GeoSAR P-band F2: Rantec GeoSAR X-band
356. What is the transmit antenna structure height? (In meters above ground)	F1: On wing tips; F2: On wing root (aircraft mounted)
357. What is the transmit antenna gain?	F1: +10dBi F2: +27dBi
358. What is the transmit antenna terrain elevation, specify meters or feet AMSL?	F1 & F2: sea level
359. How high is the transmit antenna above the ground, specify meters or feet above terrain?	F1 & F2: 10km-12km
362. Is the transmit antenna directional, non-directional, or does it rotate? If directional, provide direction relative true North.	F1 & F2: Directional, broadside to direction of flight
363. How is the transmit antenna polarized, e.g., horizontal, vertical, etc.?	F1: H & V F2: V

RECEIVER INFORMATION

NOTE: Include all receiver equipment and locations that will be receiving from the transmitter in the 340. Identify each receiver and location by R1, R2, ect.	
400. What is the state or country will you be receiving?	AK
401. What is the actual receive location, e.g., "Hanscom, City, Town, state, area, aircraft, ect?"	Barrow, AK (Off the North Coast of Barrow, AK)
403. List the geographical coordinates for item 401 stated in LAT/LONG and expressed in degrees, minutes, seconds. Identify associated LAT/LONG with R1, R2 in 440.	F1 & F2: 71°17'25.54"N, 156°46'42.03"W
406. What radius will the receiver operate in? In Kilometers.	350km

Frequency Request Authorization Worksheet

415 – 419, 470-472. If your requirement involves space station/satellite operations, contact our office for additional information needed.	
440. What receiver/transceiver will be used i.e., manufacturer, model number, part number. When sending request include/attach any technical data that you can find to aid in request. Identify each receiver as R1, R2 ect and associate them with LAT/LONG in 403.	
GeoSAR is a dual-band, dual-frequency, single-pass, interferometric mapping radar designed by NASA JPL and implemented jointly with EarthData under contract to the USG. EarthData is the sole commercial operator of the system providing mapping services to the USG on a primary basis and to commercial concerns on a secondary basis.	
441. How many receivers will be used i.e., fixed, mobile, portables, etc.?	F1: 3 (collocated at transmitter at aircraft) F2: 2 (collocated at transmitter at aircraft)
454. What type of receive antenna will be used, e.g., parabolic, whip?	F1: 4 dipoles linear array, cavity backed F2: 64 slot weighted array
455. What is the receive antenna manufacturer/model number?	F1: JPL GeoSAR P-band F2: Rantec GeoSAR X-band
456. What is the receive antenna structure height? (In meters above ground)	F1: On wing tips; F2: On wing root (aircraft mounted)
457. What is the receive antenna gain?	F1: +10dBi F2: +27dBi
458. What is the receive antenna terrain elevation, specify meters or feet AMSL?	F1 & F2: sea level
459. How high is the receive antenna above the ground, specify meters or feet AMSL?	F1 & F2: 10km-12km (aircraft acquisition height)
462. Is the receive antenna directional, non-directional, or does it rotate? If directional, provide direction relative true North.	F1 & F2: Directional, broadside to direction of flight
463. How is the receive antenna polarized, e.g., horizontal, vertical, etc.?	F1: H & V F2: V
506. List paired frequency of frequencies in 110. if applicable. Example: F1 M225.425 TX 344500N1172500W R1M225.425 RX 343604N1162217W R2 M356.325 RX 344500N1172500W F2 M356.325 TX 343604N1162217W R1 R2 colocated with TX1 and TX2	

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SUPPLEMENTARY DETAILS

520. Give a full detailed and specific description of your requirement for usage of this requested frequency and how you intended to use it i.e, what, how when, where, mission, exercise, or test supporting, etc. Include FCC Type Acceptance Number, Contract Number and Contractor. Include who this directly supports, ie Navy, FAA, DOE, Army, Air Force Unit, ect.

Fugro EarthData (Fugro) and their partners—NASA’s Jet Propulsion Laboratory (JPL), and the University of Alaska Fairbanks (UAF) wish to conduct this exercise in support of a test regarding the use of an airborne synthetic aperture radar system in Arctic/sub-Arctic conditions with the purpose of measuring multi-year sea ice. Mounted on a Gulfstream G-II jet, Fugro’s airborne radar system, known as GeoSAR uses a unique dual-band configuration with (2) X-band antennas mounted at each wing root and (2) P-band antennas, mounted on each wingtip. *In situ* measurements of sea ice have provided empirical evidence that describes the microwave properties of ice for characterization of type, size, and snow cover, where long wavelength signals penetrate ice (dependent on individual properties). This study will test the ability of an airborne SAR sensor to penetrate and measure ice flow thickness remotely. The outputs of this experiment will provide information that will support applications such as navigational safety, ice management, and hydrography.

530. If applicable, use to identify geographical area for operations i.e., transmitting in warning area xxx bounded by coordinates XXxxXXNXXXxxXXW, etc.

531. If applicable use to include/exclude states for an area of operation. Must be justified.

711. If this request is for aircraft, how high will it fly and what is the radius of operation? Elevation in Ft and radius in Kilometers.

10km-12km,
~100km radius of Barrow,AK

803. Provide requestors point of contact information e.g. name, phone number, office symbol.

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Remarks: *(Amplifying information, etc. Detailed justification rationale for insufficient leadtime and impact if required date not met.)*