



Guidance Circular

GC No: 960, App. A -1
Subject: Guidance on Ground Component Terminology and Testing
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Guidance circulars (or circulars) are intended to provide guidance to entities subject to or potentially subject to the Land Remote Sensing Policy Act of 1992 (51 U.S.C. § 60101 *et seq.*) and the National Oceanic and Atmospheric Administration's (NOAA's) implementing regulations at 15 CFR Part 960. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. The document is only intended to provide clarity to the public regarding existing requirements under the law or agency policies.

Applicable Statute: 51 U.S.C. § 60121, 60122

Applicable Regulations: 15 C.F.R. 960, App. A.

If you have suggestions for improving this guidance circular, we invite you to provide feedback to NOAA's Commercial Remote Sensing Regulatory Affairs office (CRSRA) at crsra@noaa.gov, noting the number of the circular you are discussing in your email. Please note that responses by email are not anonymous and the entirety of the response, including the email address, attachments, and other supporting materials, may be disclosed pursuant to federal freedom of information law. Sensitive personal information, trade secrets, or financial information should not be included with the response.

Overview of Issue

The Land Remote Sensing Policy Act of 1992 authorizes the Department of Commerce, delegated to NOAA, to license private entities to operate remote sensing space systems (systems) and prohibits the operation of these systems without such a license. The implementing regulations define a system as an instrument that is capable of conducting remote sensing and which is not owned by an agency or instrumentality of the U.S. Government. 15 C.F.R. § 960.4. The system includes the remote sensing instrument and

all additional components that support operating the remote sensing instrument, receipt of unenhanced data, and data preprocessing, regardless of whether the component is owned or managed by the applicant or licensee, or by a third party through a legal arrangement with the applicant or licensee.

Accordingly, NOAA's jurisdiction extends to ground components that aid in the operation of the remote sensing instrument, receive unenhanced data from the remote sensing instrument, or conduct data preprocessing.¹ The definition of system provides that ground components in the system include facilities that are co-located with and act as relays to or from a remote ground terminal (support operation of the remote sensing instrument) and receive and process unenhanced data, as well as facilities that receive and store unenhanced data. However, as explained in the preamble to the regulations, facilities dedicated *exclusively* to higher-level processing and data storage, such as data centers, are generally not included in the definition of the system.² It is important to note that each licensee will have a unique makeup of ground facilities constituting the system's ground components, and therefore broad generalizations regarding the inclusion of ground components in the system are difficult to make and often must be identified on a case-by-case basis.³

NOAA regulates ground components by requiring applicants to report the locations of ground components and whether any entity or individual other than the applicant will own, control, or manage any mission control center (discussed further below). 15 C.F.R. § 960, App. A (Application Information Required). Information provided by the applicant concerning ground components is then incorporated into the license as material facts. See 15 C.F.R. § 960, App. C, Part D (License Template). Because information regarding ground components constitutes material facts, licensees must request and receive approval for a license modification before

¹ Unenhanced data means the output from a remote sensing instrument, including imagery products, which is either unprocessed or preprocessed. Preprocessing includes rectification of system and sensor distortions in data as it is received directly from the instrument in preparation for delivery to a user, registration of such data with respect to features of the Earth, and calibration of spectral response with respect to such data, but does not include conclusions, manipulations, or calculations derived from such data, or a combination of such data with other data. 15 C.F.R. § 960.4.

² See Licensing of Private Remote Sensing Systems, 85 Fed. Reg. 30790, 30796 (May 20, 2020).

³ CRSRA has authority to "make investigations and inquiries ... concerning any matter relating to the enforcement of this chapter." 51 U.S.C. § 60123(a). Under this authority, CRSRA may evaluate the details of a specific system and its license, determine which facilities are ground components in the system, and conduct inquiries and inspections appropriately.

taking any action that would change the information in their license regarding their ground components. 15 C.F.R. § 960.16(d).⁴

This guidance circular provides further explanation of the categories of ground components that support remote sensing instrument operation, outlines scenarios that CRSRA has observed to create confusion regarding how to report ground components, and explains how licensees can ensure that tests for new ground components are lawful.

Mission Control Center

A mission control center (MCC) is the primary facility through which ultimate decision-making authority is regularly exercised by the licensee, and where operational commands, such as altitude control, propulsion, and imagery targeting commands, are generated and transmitted to the system. Subtypes of MCC include:

Mission Control Center Subtype	Description
Backup Mission Control Center	Any secondary facility through which ultimate decision-making authority may be exercised by the licensee when unable to do so through the MCC, where operational commands can be generated and transmitted to the system. ⁵
Subordinate Mission Control Center	Any facility through which partial control of the system may be exercised, where operational commands that are subject to final approval by the licensee can be generated and transmitted to the system.

Ground Station

A ground station is any ground component with one or more of the following abilities: to uplink commands to any remote sensing instrument in the system; to downlink relevant telemetry or unenhanced data from any remote sensing instrument in the system; to relay commands, telemetry, or unenhanced data; or to conduct preprocessing on unenhanced data. Subtypes include:

⁴ 15 C.F.R. § 960.16(d) prohibits licensees from “[failing] to obtain approval for a license modification before taking any action that would change a material fact in the license.”

⁵ CRSRA considers the use of a backup mission control center to be an anomaly that must be reported. An anomaly is defined as “an unexpected event or abnormal characteristic affecting the operations of a system that could indicate a significant technical malfunction or security threat” and includes “any significant deviation from the orbit and data collection characteristics of the system.” 15 C.F.R. § 960.4. Please note that a standard license condition requires licensees to “[n]otify the Secretary in writing [...] no later than seven days after the event” of “[t]he detection of an anomaly.” 15 C.F.R. § 960.8(e)(3).

Ground Station Subtype	Description
Relay Ground Terminal (RGT)	Any facility with the ability to: <ul style="list-style-type: none"> • Downlink and/or relay unenhanced data from a remote sensing instrument, but with no ability to access the downlinked data; and/or • Uplink and/or relay commands to a remote sensing instrument, but with no ability to alter those commands or to generate new commands.
Data Access Terminal (DAT)	Any facility with the ability to downlink and access unenhanced data from a remote sensing instrument.
Data Preprocessing Terminal (DPT)	Any facility that conducts preprocessing on unenhanced data from a remote sensing instrument, but with no ability to directly downlink unenhanced data from a remote sensing instrument.

Common Ground Station Scenarios

CRSRA has observed several scenarios regarding ground components that commonly have required additional guidance to licensees.

Mobile Ground Stations

CRSRA understands that a ground component may be mobile. Because the location of a ground component is a material fact, applicants and licensees are required to provide and maintain a location for any ground component and to request a license modification prior to moving the ground component. See 15 C.F.R. § 960.8(f). Licensees may alternatively request a license modification, pursuant to 15 C.F.R. § 960.13, seeking CRSRA’s approval to report and receive approval for a ground component’s relocation using a different method.

Ground Components Owned and Operated by the United States (U.S.) Government

For use of a fixed ground component both owned and operated by the U.S. Government, the licensee should include in the ground station table that the ground component is owned and operated by the U.S. Government and should provide the city and state in which the ground component is located. For mobile ground components both owned and operated by the U.S. Government, the licensee should include in the ground station table that the ground component is owned and operated by the U.S. Government, the unit’s inventoried location or home of record (city and state) as used by the U.S. Government when inventorying the equipment, and a range for the total number of mobile units at each inventoried location or home of record (city and state).

Ground Components Privately-Owned and -Operated for Exclusive U.S. Government Use

For use of a fixed ground component that is privately-owned and privately-operated for exclusive U.S. Government use, or is privately-owned and U.S. Government-operated, the licensee should include in the ground station table the name of the private entity owning and/or operating the ground component and the location of the ground component as a street address. For each mobile ground component, the licensee should include in the ground station table the name of the private entity either owning and/or operating the ground component, the units' inventoried location or home of record (city, state), and a range for the total number of mobile units at each inventoried location or home of record.

In-Space Communications and Data Relay

CRSRA evaluates licensee use of in-space relays on a case-by-case basis. Critical to CRSRA's evaluation is if the use of the in-space relay can be characterized as a part of the system, meaning the relay is used to support the operations of the remote sensing instrument, is used to receive unenhanced data, or is used to perform data pre-processing. 15 C.F.R. § 960.4. Should CRSRA assess that the in-space relay is part of the system, the ground station operator and locations related to the use of the relay must be included in the ground station table.

Ground Component Testing

CRSRA understands that licensees may wish to add or change ground components during the term of their license. CRSRA also understands that when licensees evaluate a new location for additional ground components, the licensee may wish to conduct tests to evaluate the location and/or facilities. As stated above, the location of a ground component is a "material fact," as that term is defined in 15 C.F.R. § 960.4, and a licensee must obtain approval for a license modification pursuant to 15 C.F.R. § 960.13 prior to taking any action that would change a material fact in the license. Therefore, where testing activities amount in substance to operating an unlicensed ground component, such actions could constitute a license violation. However, CRSRA wants to clarify the circumstances under which licensees may lawfully test a ground component that is not listed in the license.

To evaluate whether the testing of an unlicensed ground component is lawful, CRSRA considers several factors. These include but are not limited to:

- the location of the test;
- the length of the test and, if multiple tests are conducted, the frequency of testing activities;
- the content and volume of transmissions, particularly unenhanced data, from the spacecraft to the unlicensed ground component; and
- the extent to which the unlicensed ground component can communicate commands to the on-orbit remote sensing instruments, and the nature of the commands communicated.

To assist licensees in conducting lawful tests of potential ground components, CRSRA strongly encourages licensees to contact CRSRA at least **fifteen days** in advance of any such test at

crsra@noaa.gov. When contacting CRSRA, identify the location of the test, the length of the test, what will be transmitted to the unlicensed ground components (e.g., telemetry, data, or both), the extent to which the on-orbit remote sensing instrument will be subject to control by the unlicensed ground component, and the nature of commands to be communicated through the unlicensed ground component. CRSRA will promptly provide a written response to advise whether, based upon the information provided by the licensee, the proposed testing activities would amount to operation of the remote sensing system and, if so, whether CRSRA considers the test a compliance concern.

Opportunity for Feedback: We welcome any feedback you may have about this guidance circular. Please contact CRSRA at crsra@noaa.gov.

Change Log

Change Number	Date	Description
1	10/20/2022	Baseline version
2	07/06/2023	<p>Minor editorial revisions for increased clarity and consistency throughout.</p> <p>p. 2 – General guidance regarding data centers, alternative types of ground facilities, and considerations CRSRA makes when evaluating inclusion of a ground component as part of the system added. Addition of citations to CRSRA’s authority to perform inquiries and to the prohibition on changing a material fact of the license without requesting and receiving approval in advance of the change.</p> <p>p. 3 – Clarification added that ground components include facilities that relay communication and data to or from the spacecraft.</p> <p>p. 4 – Clarification added that relay ground terminals may also relay data or communications without mandatorily performing the uplink or downlink function. Addition of guidance regarding the reporting of mobile ground stations and ground components owned and operated by the U.S. Government.</p> <p>p. 5 – Addition of guidance regarding the reporting of ground components that are privately-owned and operated for exclusive U.S. Government use. Addition of guidance regarding reporting the use of in-space communications relays.</p>