

Space Export Controls Update



U.S. DEPARTMENT OF COMMERCE
BUREAU OF INDUSTRY AND SECURITY

- **Since Delivering the 1248 Report to Congress - April 2012**
 - Congress added language into the FY13 National Defense Authorization Act that gave the President the authority to transfer certain satellites and related items to the Commerce Control List (CCL)
 - Prohibits export of CCL satellites and related items to China, North Korea, or any state sponsor of terrorism
 - Friday, May 24, 2013: Published proposed rules for satellite sections in USML (CAT XV) and CCL (ECCN 9x515) for public comment
- **Future Tasks**
 - Fall 2013: Final rules for satellites and related items notified to Congress
 - End of calendar year 2013: Final rules published

500 Series Framework



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- Order of review: for spacecraft items, first review USML Category XV, then 9x515, then other ECCNs
- Subject to same scope of controls as 600 series items
 - NS1, RS1, and AT1 generally
 - MT for some items
- Generally eligible for many license exceptions (e.g., LVS, TMP, RPL, GOV, TSU, STA)
 - Restrictions apply in § 740.2
 - Certain software (9D515.b-.g) and technology (9E515.b) only eligible for GOV (§ 740.11(b)(2))
 - Subject to fewer STA conditions than 600 series items

500 Series Framework



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- License applications for Country Group D:5 reviewed consistent with ITAR § 126.1
 - Policy of denial for Country Group E:1 and China
- Subject to same *de minimis* and direct product rule scope as 600 series

Summary of Proposed Controls



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Cat XV Today

USML

CCL

Cat XV

Other

New ECCN 9x515

Existing ECCNs

Military Satellites

Military Ground equip

Parts critical for military functions

Services for USML and CCL satellites

GPS Rcvrs

Worldwide license, except Canada.
25% *de minimis*, except 0% for China and other ITAR 126.1 countries.

STA-36 eligible, except for certain software and technology

Controls for satellite items transferred from USML to be the same as for 9x515

Sats and Ground equip not in USML

Rad Hard ICs

Parts not on USML or other CCL

New sat related item or tech

Spec electronics

Spec optical sensors

Spec radar systems

Items Proposed for Transfer to CCL



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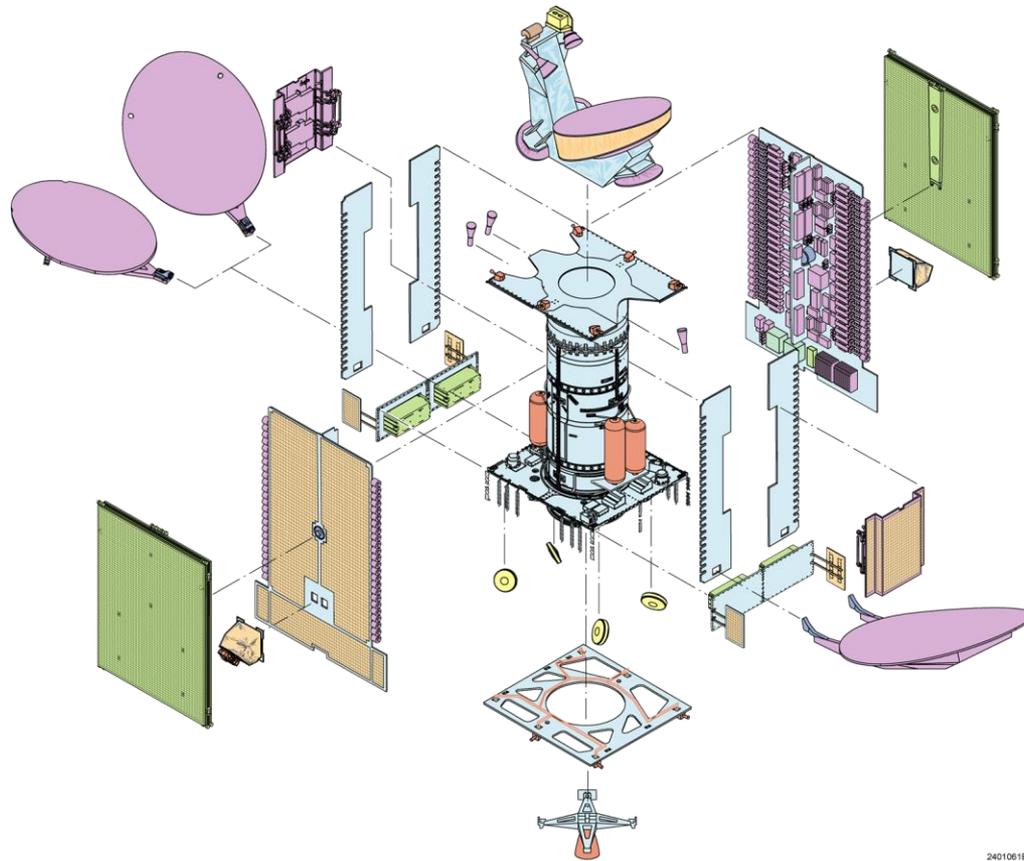
- **Satellites**
 - Commercial Communication Satellites
 - Lower-Performance Remote Sensing Satellites
 - Planetary Rovers
 - Planetary and Interplanetary Probes
- **Related systems for the above:**
 - Ground control systems
 - Training simulators
 - Test, inspection, and production equipment
 - Non-critical software for production, operation or maintenance
 - Non-critical technology for development, production, installation, operation or maintenance
 - Radiation hardened microelectronics
- **Parts and components of satellite bus and payloads not listed on USML**
 - Thousands of *types* of parts and subsystems
 - Hundreds of thousands of specific parts

(Note: Technology related to spaceflight passenger experience previously determined to be EAR99)

CCL Satellite-Related Parts and Components



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SATELLITE BUS SYSTEMS INCLUDES:

- Solar Array
- Propulsion Tank
- Optical Solar Reflector
- Tower Structure
- Stationary Plasma Thruster
- Antenna Reflector
- Antenna Subreflector
- Comm Panel Electronics
- Spacecraft Control Electronics
- Thruster
- Antenna Feed
- Earth Sensor
- Thermal Blanket
- TWTA
- Batteries
- TT&C Antenna

Items Remaining on USML



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- Satellites and spacecraft
 - Unique military and intelligence functions, including nuclear detection, intelligence collection, missile tracking, anti-satellite or space-based weapons, classified operation or equipment, and navigation
 - Certain remote sensing with military applications
 - Man-rated habitats
- Ground control equipment
 - Performs a uniquely military function for one of satellites above
- Parts & components
 - Sixteen specific technologies critical to military functions
 - Any payload that performs one of military functions listed above
 - DoD funded payloads

16 Critical Technologies Remaining on USML



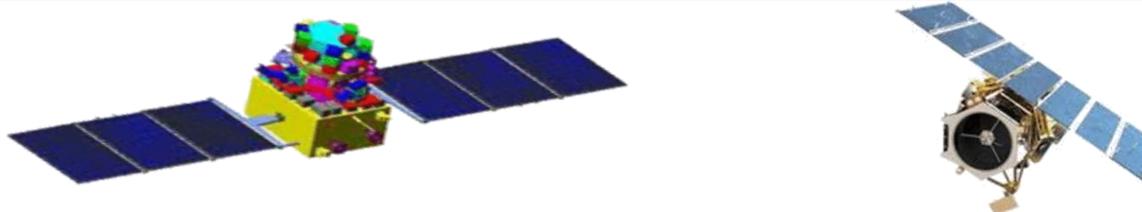
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- 1) Certain specified antennas having particular capabilities
- 2) Certain space qualified optics with particular properties
- 3) Space qualified FPAs having particular peak response wavelength
- 4) Space qualified mechanical cryocooler
- 5) Space qualified active vibration suppression
- 6) Certain optical bench assemblies
- 7) Certain non-communication space qualified directed energy systems
- 8) Space-based kinetic or charged particle energy systems
- 9) Certain space qualified atomic clocks
- 10) High performance attitude determination and control systems
- 11) Certain Space based thermoionic converters or generators
- 12) Certain thrusters for orbit adjustment
- 13) Control moment gyroscopes
- 14) Certain space qualified MIMICs
- 15) Certain space qualified oscillators
- 16) Certain high performing star trackers

USML - Spacecraft



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Proposed Category XV - Satellites

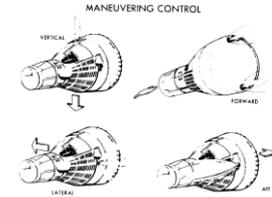
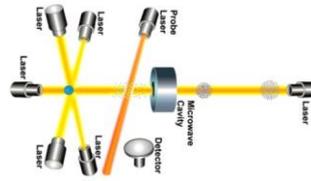
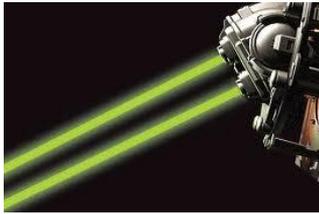
- Nuclear Detection
- Tracking – ground, airborne, missile using imaging, infrared, radar, or laser
- SIGINT
- MSINT
- Space-based logistics
- Anti-satellite or anti-spacecraft
- High Performance Remote Sensing
 - Electro-optical VNIR or IR with < 40 spectral bands and an aperture >0.35 m
 - Electro-optical Hyperspectral VNIR and SWIR with > 40 bands, with narrow spectral bandwidth of $\Delta\lambda < 20\text{nmFWHM}$ AND ground sample distance <200m
 - Same as above but for MWIR
 - Same as above but for LWIR
- Radar remote sensing, including AESA, SAR, ISAR, ultra-wideband SAR EXCEPT for those with center frequency of $1\text{GHz} < x < 10\text{GHz}$ and $\text{BW} < 300\text{MHz}$
- Position, Navigating, and Timing
- Constellation of satellites that form a virtual satellite performing any function listed here
- Man-rated sub-orbital, orbital, lunar, or inter-planetary
- Man-rated habitat
- Contained a classified system, subsystem or component
- Ground control systems for TM, tracking, and control of any satellite listed here

• Illustrative list only

USML – Spacecraft-Related Articles



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Proposed Category XV – Parts and Components

- Antennas with dia >25m
- Actively scanned antennas
- Adaptive beam forming antennas
- Interferometric radar antennas
- Space qualified optics including coating with active properties
- Space qualified optics including coating with largest lateral dimension >0.35 m
- Space qualified FPAs having peak response wavelength >900nm and associated ROICs
- Space qualified mechanical cryocooler, active coldfinger, and associated control electronics
- Space qualified active vibration suppression, including isolation and dampening, and associated electronics
- Optical bench assemblies and control electronics for satellites on previous page
- Control moment gyroscopes
- Certain space qualified MIMICs, oscillators for radar, star trackers
- Secondary or hosted payloads that perform any function listed on previous page
- DoD funded payloads
- Classified components
- Non-communication space-qualified directed energy designed for spacecraft on previous page
- Space-based kinetic energy systems
- Charged particle energy systems
- Attitude Determination and Control Systems with ground location points better than or equal to 5m (LEO), 30m (MEO), 150m (GEO), or 225m (HEO)
- Thrusters for orbit adjustment with .150lbf vacuum thrust
- Space qualified cesium, rubidium, hydrogen Master, or Quantum atomic clocks
- Space based thermoionic or non-nuclear thermoionic converters or generators

• Illustrative list only

Services Remaining on USML



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- Satellite integration and launch services
 - Provided by a U.S. person
 - To a foreign launch integrator or launch vehicle provider
- Launch support considered a defense service, includes furnishing assistance or information for:
 - Integration of satellite to vehicle
 - Launch failure analysis