

Schedule for Registration
(Parts 90 & 101)

Form FCC 601, Schedule M, is a supplementary schedule for use with the FCC Application for Radio Service Authorization: Wireless Telecommunications Bureau and/or Public Safety and Homeland Security Bureau, FCC 601 Main Form. Schedule M is not used with initial license applications. Complete this schedule to register a link in radio service MM - Millimeter Wave 70/80/90 GHz Service (70/80/90 GHz), transmitter location for radio service IQ or QQ – Dedicated Short Range Communications Service/Intelligent Transportation Service (ITS), or register a location in the radio service NN – 3650 – 3700 MHz Service. You must have a license (call sign) prior to filing a registration for a location/link.

Each Schedule M or groups of Schedule M must be filed with the FCC 601 Main Form. The main form must designate the purpose as 'RL' when this schedule is included. For 70/80/90 GHz and 3650 – 3700 MHz, Schedule M (link registrations) must be filed electronically.

Item 1 It indicates the action the Licensee wants the FCC to take on the specified registered location/link. Enter 'A' to Add, 'M' to Modify, or 'D' to delete.

Item 2 If response to Item 1 is 'M' (modify), or 'D' (delete), enter the previously registered location/link number. If response to Item 1 is 'A' (add), the FCC will assign an official number to the new location/link, which will appear on the registration.

For 70/80/90 GHz, enter the link registration number provided by the third party database manager, or leave blank and the FCC will assign.

Item 3 This item is required for fixed locations if the action requested in Item 1 is 'A' or 'M' and if antenna structure registration is required (see notes below), enter the seven digit FCC Antenna Structure Registration Number (shown on the structure's registration, FCC 854R). Otherwise, enter N/A to indicate that FAA notification is not required.

Note: Effective 7/1/96 the Commission requires owners to register certain structures. When required, antenna structures must be registered using FCC 854. The use of this FCC 601 to supply antenna structure information does not replace the requirement to register antenna structures on the FCC 854. For more information, see our web site at <http://wireless.fcc.gov/antenna>, call (877) 480-3201 (TTY 717-338-2824), or visit <http://esupport.fcc.gov>.

Note: If, in accordance with 47 CFR § 17.14, Antenna Structure Registration is not required because the structure is shielded by existing structures or because it is fixed by its functional purpose, submit supporting documentation as an attachment to your application.

Item 4 This item is optional. Enter a site name that describes the location (up to 20 characters maximum).

Items 5 and 6 Enter the geographic coordinates of the transmit location referenced to NAD83.

Enter the latitude using the format *DD-MM-SS.S*, where the degrees (*DD*) term can have a value in the range of 0 to 72, minutes (*MM*) can range from 0 to 59, and seconds (*SS.S*) can range from 0 to 59.9. In the right corner, specify the direction as either N for North or S for South.

Enter the longitude using the format *DDD-MM-SS.S*, where the degrees (*DDD*) term can have a value in the range of 64 to 180, minutes (*MM*) can range from 0 to 59, and seconds (*SS.S*) can range from 0 to 59.9. In the right corner, specify the direction as either E for East or W for West.

All coordinates must be referenced to the North American Datum of 1983 (NAD83). This information can be determined in many ways, including a GPS receiver, a 7.5-minute topographical quadrangle map of the area, or you may consult the city or county/borough/parish or equivalent entity surveyor in your area. Topographical maps may be purchased from the U.S. Geological Survey, Washington, DC 20242 or from its office in Denver, Colorado 80225.

Note: Location coordinates (latitude and longitude) for sites in the Continental United States, Puerto Rico, the U.S. Virgin Islands, Alaska, Hawaii, American Samoa, and Guam must be referenced to the North American Datum of 1983 (NAD83). Coordinates for sites in the Northern Mariana Islands, Wake Island, and Midway Island should be referenced to the applicable local datum. If the source from which you obtain the coordinates still utilizes an older datum (*i.e.*, NAD27, PRD40) you must convert to NAD83. Conversion routines are available through the internet at <http://wireless.fcc.gov/uls/utilities/nadcon.html>.

Item 7 This item must be completed with the City in which the Transmitter is located.

Item 8 (Not required for ITS) This item must be completed with the County/Borough/Parish or equivalent entity in which the Transmitter is located unless any of the following pertain to the Transmit Station location:

- a) the city entered in Item 7 is an Independent City that is not affiliated with a County/Borough/Parish (i.e., Baltimore, MD)
- b) the State code entered in Item 9 is GM, Gulf of Mexico

Item 9 This item must be completed with the State code in which the Transmitter is located. Refer to FCC 601 Main Form Instructions, Appendix II, for a list of valid state, jurisdiction and area codes.

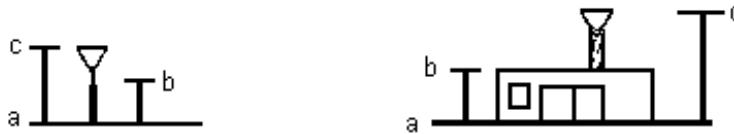
Item 10 Enter the elevation above mean sea level (AMSL) of the ground at the antenna location. Enter this item in meters, rounded to the nearest tenth. Refer to letter 'a' in the antenna structure figure examples on page 2 of these instructions. This information can be determined in many ways, including a GPS receiver, 7.5 minute topographical quadrangle map of the area, or you may consult the city or county/borough/parish or equivalent entity surveyor in your area.

Topographical maps may be purchased from the U.S. Geological Survey, Washington, DC 20242 or from its office in Denver, Colorado 80225.

Item 11 Enter the height above ground level to the highest point of the **supporting structure only**. Enter this item in meters, rounded to the nearest tenth. For example, if the antenna structure consists of a building/tower combination, include any elevator shaft, flag pole, or penthouse in the **overall** support structure height, but not the antenna, tower, pole, or mast. If the antenna structure is a tower only, include the height of the tower but not the antenna. Refer to letter 'b' in the antenna structure figure examples below.

Item 12 Enter the overall height above ground level of the entire antenna structure to the highest point, including any appurtenances. Enter this item in meters, rounded to the nearest tenth. You must include antennas, dishes, obstruction lighting, etc. Refer to letter 'c' in the antenna structure figure examples below.

Antenna Structure Figure Examples:



Item 13 Enter the code for the type of structure on which the antenna is or will be mounted from the following valid structure types:

<u>Code</u>	<u>Definition</u>
B	Building with a side mounted antenna
BANT	Building with Antenna on Top
BMAST	Building with Mast/Antenna on Top
BPIPE	Building with Pipe/Antenna on Top
BPOLE	Building with Pole/Antenna on Top
BRIDG	Bridge
BTWR	Building with Tower/Antenna on Top
MAST	Self-Support Structure
NNTANN*	Antenna Tower Array
NTOWER**	Multiple Structures
PIPE	Any Type of Pipe
POLE	Any Type of Pole, used only to mount an antenna
RIG	Oil or Other Type of Rig
SIGN	Any Type of Sign or Billboard
SILO	Any Type of Silo
STACK	Smoke Stack
TANK	Any Type of Tank (Water, Gas, etc.)
TOWER	A Free Standing or Guyed Structure Used for Communications Purposes
TREE	When Used as a Support for an Antenna
UPOLE	Utility Pole/Tower Used to Provide Service (Electric, Telephone, etc.)

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* Valid Tower Arrays. Code definition: The first NN indicates the number of towers in an array. The second NN is optional and indicates the position of that tower in the array (e.g., 3TA2 would identify the second tower in a three-tower array).

** Valid Multiple Structures. Code Definition: The N indicates the number of structures where multiple antenna structures are present in a multiple structure (Ex.: 2TOWER, 3TANK, 6BANT, 7BMAST).

Item 14 and 15 Not required for ITS and 3650 – 3700 MHz. Enter the geographic coordinates of the receiver location referenced to NAD83.

Enter the latitude using the format *DD-MM-SS.S*, where the degrees (*DD*) term can have a value in the range of 0 to 72, minutes (*MM*) can range from 0 to 59, and seconds (*SS*) can range from 0 to 59.9. In the right corner, specify the direction as either N for North or S for South.

Enter the longitude using the format *DDD-MM-SS.S*, where the degrees (*DDD*) term can have a value in the range of 64 to 180, minutes (*MM*) can range from 0 to 59, and seconds (*SS*) can range from 0 to 59.9. In the right corner, specify the direction as either E for East or W for West.

All coordinates must be referenced to the North American Datum of 1983 (NAD83). This information can be determined in many ways, including a GPS receiver, a 7.5-minute topographical quadrangle map of the area, or you may consult the city or county/borough/parish or equivalent entity surveyor in your area. Topographical maps may be purchased from the U.S. Geological Survey, Washington, DC 20242 or from its office in Denver, Colorado 80225.

Note: Location coordinates (latitude and longitude) for sites in the Continental United States, Puerto Rico, the U.S. Virgin Islands, Alaska, Hawaii, American Samoa, and Guam must be referenced to the North American Datum

of 1983 (NAD83). Coordinates for sites in the Northern Mariana Islands, Wake Island, and Midway Island should be referenced to the applicable local datum. If the source from which you obtain the coordinates still utilizes an older datum (i.e., NAD27, PRD40) you must convert to NAD83. Conversion routines are available through the internet at <http://wireless.fcc.gov/uls/utilities/nadcon.html>.

Item 16 Enter the name of the manufacturer of the transmitting antenna.

Item 17 Enter the model number of the transmitting antenna.

Item 18 Enter the gain of the transmitting antenna in decibels referenced to an isotropic radiator (dBi).

Item 19 Enter the beamwidth (degrees, rounded to one decimal place) of the transmitting antenna. That is, enter the angular distance between the half power points of the antenna's major lobe in the horizontal plane. For omnidirectional antennas, enter '360'.

Item 20 Enter the height above ground level to the center of the transmitting antenna. Enter this item in meters, rounded to the nearest tenth. For a parabolic dish antenna, this is the height to the center of the dish.

Item 21 Enter the azimuth of the transmit antenna in degrees (rounded to one decimal place) clockwise from True North. For omnidirectional antennas, enter '360'.

Item 22 Enter the elevation angle of the transmitting antenna (rounded to the nearest degree), measured from the horizontal up to the center line of the main beam of the antenna. If the antenna tilts down (depression angle), indicate with a minus sign.

Item 23 Not required for ITS. Indicate polarization with the following codes:

Acceptable polarizations for 70/80/90 GHz:

V – Vertical
H – Horizontal
R – Right-hand circular
L – Left-hand circular
S – Variable

Acceptable polarizations for 3650-3700 MHz:

E-Elliptical
F-45 degrees
H-Horizontal
J-Linear
L-Left-hand circular
R-Right-hand circular
S-Horizontal and vertical
T-Right and left-hand circular
V-Vertical
X-Other (provide a description in an attachment)

For linear polarization other than horizontal or vertical, the polarization should be stated in degrees measured from the vertical, with angles between 1 and +89 degrees denoting the outgoing electric field vector displacement in the clockwise direction, and angles between -1 and -89 degrees denoting the outgoing electric field vector displacement in the counterclockwise direction.

Item 24 Not required for ITS and 3650 – 3700 MHz. Enter the name of the manufacturer of the receiving antenna.

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Item 25 Not required for ITS and 3650 – 3700 MHz. Enter the model number of the receiving antenna.

Item 26 Not required for ITS and 3650 – 3700 MHz. Enter the gain of the receiving antenna in decibels referenced to an isotropic radiator (dBi).

Item 27 Not required for ITS and 3650 – 3700 MHz. Enter the beamwidth (degrees, rounded to one decimal place) of the receiving antenna. That is, enter the angular distance between the half power points of the antenna's major lobe in the horizontal plane. For omnidirectional antennas, enter '360'.

Item 28 Not required for ITS and 3650 – 3700 MHz. Enter the height above ground level to the center of the receiving antenna. Enter this item in meters, rounded to the nearest tenth. For a parabolic dish antenna, this is the height to the center of the dish.

Item 29 Not required for ITS and 3650 – 3700 MHz. Enter the azimuth of the receive antenna in degrees (rounded to one decimal place), clockwise from True North.

Item 30 Not required for ITS and 3650 – 3700 MHz. Enter the elevation angle of the receiving antenna (rounded to the nearest degree), measured from the horizontal up to the center line of the main beam of the antenna. If the antenna tilts down (depression angle), indicate with a minus sign.

Item 31 Not required for ITS and 3650 – 3700 MHz. Enter the name of the manufacturer of the transmitter.

Item 32 Not required for ITS. Enter the model number/FCC ID number of the transmitter.

Item 33 ITS operations only. Enter the class (A, B, C or D) of the equipment used. The equipment class is based on the communication zone (A-15m, B-100m, C-400m, D-1000m) of the roadside unit.

Item 34 Not required for ITS and 3650 – 3700 MHz. Enter the transmitter stability (percentage).

Item 35 Not required for 3650 – 3700 MHz. Enter the appropriate station class code. For 70/80/90 GHz, the only valid station class is FXO. For ITS, the only valid station class is FB.

Item 36 Not required for ITS. For 70/80/90 GHz enter the center frequency in MHz. For 3650 – 3700 MHz enter the center frequency or lower and upper frequency band edge in MHz.

Item 37 For ITS operations only. Check all service channel numbers that the Roadside Unit will be using. The service channel numbers are 170 (reserved), 172, 174, 175, 176, 180, 181, 182, and 184. Checking 'All' will select channels 174, 175, 176, 180, 181 and 182. If more than one channel is selected, the EIRP, Item 40, must be identical for all channels. (Note: Control Channel 178 will be given to all users; Channel 172 is designated for public safety applications; and Channel 184 is restricted to government entities.)

Item 38 Not required for ITS and 3650 – 3700 MHz. Enter the minimum transmitter output power in dBm if automatic transmitter power control is employed.

Item 39 Not required for 3650 – 3700 MHz. Enter the maximum transmitter output power in dBm.

Item 40 Enter the Effective Isotropic Radiated Power (EIRP), in dBm rounded to one decimal place, radiated off the transmitting antenna. For 70/80/90 GHz, if Automatic Transmitter Power Control is employed, specify the maximum EIRP.

Item 41 Not required for ITS. Enter the transmitter emission designator, composed of its necessary bandwidth and emission type. (See Sections 2.201 and 2.202 for further information on emission and bandwidth designation.

Item 42 Not required for ITS. Enter the appropriate Modulation Scheme (e.g. AM, FM, OFDM, QAM, etc.).

Item 43 Not required for ITS and 3650 – 3700 MHz. Enter the name of the manufacturer of the receiver.

Item 44 Not required for ITS and 3650 – 3700 MHz. Enter the model number of the receiver.

Item 45 Not required for ITS and 3650 – 3700 MHz. Enter the receiver stability (percentage).

Item 46 Not required for ITS and 3650 – 3700 MHz. Enter the receiver noise figure (dB).

Item 47 For 70/80/90 GHz, refer to Rule 1.928(f). For ITS operations that require coordination with Canada, answer 'Y' only if operation is north of Line A (or east of Line C) and the station is operating with a power (ERP) greater than 5 watts. Refer to Rule 1.928(e) for a definition of Line A (or Line C).

Item 48 This item is required for compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. 4321-4335. See also Part 1, Subpart I of the FCC rules (47 CFR 1.1301 - 1.1319). This item must be answered, either 'Y' or 'N'.

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Enter 'Y' if an FCC grant of this application will have a significant environmental effect. Section 1.1307 of the FCC rules lists categories of environmental effects for which Applicants must file an environment assessment. Other wise enter 'N'. Examples of facilities that may have a significant effect on the environment include:

An antenna structure located in a residential area (as defined by applicable zoning laws) that will utilize high intensity aviation obstruction lighting

A facility located in an officially designated wilderness area, wildlife preserve, or floodplain

A facility that affects a site significant in American history

A facility whose construction involves extensive changes in surface features

Facilities, operations, or transmitters (not otherwise excluded) that would cause non-compliance with the limits specified in § 1.1310

Item 49a Applicants filing for a new or modified fixed station located in one of the Quiet Zone areas listed below must notify the proper authority and indicate the date such notification was sent in Item 49a. Those applications who are proposing to modify other technical parameters (including, but not limited to frequency, power, antenna height, etc.) of their system operations where the station is currently authorized to operate within the quiet zone area, must also notify the proper authority and indicate the date such notification was sent in Item 49a. See Part 1, Subpart F of the FCC Rules (47 CFR 1.924)

Item 49b If the Applicant has obtained prior written consent from the Quiet Zone entity for the technical parameters specified in the application, enter "Y" and include a copy of the consent as a Quiet Zone Consent attachment. If prior written consent has not been obtained, enter "N".

Quiet Zone areas:

1. National Radio Astronomy Observatory, Green Bank, Pocohontas County, West Virginia. The quiet zone is located within Virginia, West Virginia, and Garrett County, Maryland and bounded by N 39 degrees 15' 0.4" on the north, W 78 degrees 29' 59.0" on the east, N 37 degrees 30' 0.4" on the south, and W 80 degrees 29' 59.2" on the west. Contact the Director, National Radio Astronomy Observatory, P. O. Box 2, Green Bank, WV 24944.
2. Arecibo Observatory, Puerto Rico. The quiet zone consists of the Puerto Rico, Desecheo, Mona, Vieques, and Culebra islands. Contact the Interference Office, Arecibo Observatory, Post Office Box 53995, Arecibo, Puerto Rico 00612, or electronically at prcz@naic.edu.

Item 50 For ITS operations. Enter 'Y' if the registration location requires coordination with NTIA otherwise enter 'N'. See rule 90.371(b) to determine if NTIA coordination is required.

For 70/80/90 GHz. Enter 'Y' if the link requires coordination with NTIA due to a "yellow light" response from NTIA's automated system, otherwise, enter 'N'.

Item 51 For 3650 – 3700 MHz Service Operations. Enter 'Y' if you certify that you have negotiated an agreement with the grandfathered satellite earth station Licensee to operate within 150 km of the grandfathered satellite earth station. Otherwise, enter 'N'.

Item 52a For 3650 – 3700 MHz Service Operations. In accordance with 47 CFR 90.7 and 90.1305 stations in the 3650 - 3700 MHz service must employ a transmission method or protocol that allows multiple users to share the spectrum. Transmission methods or protocols may fall into two categories, unrestricted or restricted. Unrestricted protocols are broadly compatible and function to prevent interference even with other, dissimilar contention technologies on the market (e.g. listen before talk). Restricted contention protocols can prevent interference only with other devices incorporating the same protocol (e.g. scheduling protocols). Enter "R" if you employ a restricted transmission method or protocol, or "U" if you employ an unrestricted transmission method or protocol.

Item 52b For 3650 – 3700 MHz Service Operations. Enter or specify what transmission methods or protocols you will employ.

**FCC 601
Schedule M**

**Schedule for Registration
(Parts 90 & 101)**

Approved by OMB
3060 - 0798
See 601 Main Form
for public burden estimate

1) Action: () <u>A</u> dd, <u>M</u> odify or <u>D</u> elete	2) Location/Link Registration Number: _____
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Site Data

3) FCC Antenna Structure Registration # or N/A (FAA Notification not Required):		4) Site Name:	
5) Transmitter Latitude (DD-MM-SS.S):	NAD83 () <u>N</u> or <u>S</u>	6) Transmitter Longitude (DDD-MM-SS.S):	NAD83 () <u>E</u> or <u>W</u>
7) City:	8) County/Borough/Parish:	9) State:	
10) Elevation of Site AMSL (meters) ('a' in antenna structure example):	11) Overall Ht AGL Without Appurtenances (meters) ('b' in antenna structure example):	12) Overall Ht AGL With Appurtenances (meters) ('c' in antenna structure example):	
13) Support Structure Type:			

14) Receiver Latitude (DD-MM-SS.S):	NAD83 () N or S	15) Receiver Longitude (DDD-MM-SS.S):	NAD83 () E or W
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Antenna Data

16) Transmitter Antenna Manufacturer:		17) Transmitter Antenna Model Number:	
18) Transmitter Antenna Gain (dBi):	19) Transmitter Antenna Beamwidth (Degrees):	20) Transmitter Antenna Center Line (meters-AGL):	
21) Transmitter Antenna Azimuth (Degrees):		22) Transmitter Antenna Elevation Angle (Degrees):	
23) Polarization:			
24) Receiver Antenna Manufacturer:		25) Receiver Antenna Model Number:	
26) Receiver Antenna Gain (dBi):		27) Receiver Antenna Beamwidth (Degrees):	
28) Receiver Antenna Center Line (meters-AGL):	29) Receiver Antenna Azimuth (Degrees):	30) Receiver Antenna Elevation Angle (Degrees):	

Equipment Data

31) Transmitter Manufacturer:		32) Transmitter Model Number/FCC ID Number:	
33) Equipment Class: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		34) Transmitter Stability (%):	
35) Transmitter Station Class:	36) Transmitter Center Frequency or Lower Frequency Band Edge (MHz):	Upper Frequency Band Edge (MHz):	37) Channel Number (Channel 170 is reserved for future use): (Reserved) 170 () 172 () 174 () 175 () 176 () 180 () 181 () 182 () 184 () All
38) Minimum Transmitter Output Power (if Automatic Transmitter Power Control is employed) (dBm):	39) Maximum Transmitter Output Power (dBm):		40) EIRP (dBm):
41) Transmitter Emission Designator:			
42) Modulation Scheme:			

43) Receiver Manufacturer:	44) Receiver Model Number:
45) Receiver Stability (%):	46) Receiver Noise Figure (dB):
47) Do you propose to operate in an area that requires frequency coordination with Canada or Mexico? () <u>Yes</u> No	
48) Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? See Section 1.1307 of 47 CFR. If 'Yes', submit an environmental assessment as required by 47 CFR, Sections 1.1308 and 1.1311. () <u>Yes</u> No	
49a) If the site is located in one of the Quiet Zones listed in Item 49b of the Instructions, provide the date (mm/dd/yyyy) that the proper Quiet Zone entity was notified: ____/____/____	
49b) Has the Applicant obtained prior written consent from the proper Quiet Zone entity for the same technical parameters that are specified in this application? () <u>Yes</u> No	
50) Does the registration location/link require coordination with NTIA? () <u>Yes</u> No For 70/80/90 GHz. Enter 'Y' if the link requires coordination with NTIA due to a yellow light from NTIA's automated system, otherwise, enter 'N'.	
51) If your base or fixed station is located within 150 km of a grandfathered satellite earth station, do you certify that you have negotiated an agreement with the grandfathered satellite earth station Licensee to operate the station that you are registering within that protected zone? () <u>Yes</u> No	
52a) Do you employ a transmission method or protocol that is categorized as restricted or unrestricted? () <u>Restricted</u> or <u>Unrestricted</u> 52b) Enter the name or description of the transmission methods or protocols you will employ. _____	