Installation and Service Call Standards

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About this Document

Section 1 of this document is this section.

Section 2 of this document, **Interactive Tools for Technicians**, provides a description of the Field Service Management (FSM) and Viasat Tech Tools (VTT) platforms used for customer order activities. These activities apply to all Viasat provided internet services.

Section 3 of this document, **Residential Standard Installation Requirements**, provides a detailed list of required standards and activities involved in a standard residential installation. These standards apply to new Viasat services.

Section 4 of this document, **Commercial/Business (SMB) Standard Installation Requirements**, provides a detailed list of required standards and activities involved in a standard commercial installation. These standards apply to new Viasat services.

Section 5 of this document, **Standard Service Call Requirements,** lists the standard professional service call on-site activities for both residential and business services.

This document does not determine what is charged to the customer for non-standard installations. Dealers/Technicians should refer to the **Non-Standard Installation Best Practices Pricing Job Aid** or a similar Partner Job Aid/Bulletin to determine when additional costs apply.

Tools for Technicians

Interactive Tools for Viasat Retail and Fulfillment Technicians:

Field Service Management (FSM) is an application used by retail and fulfillment technicians (and their employers) to manage all work orders. There are a variety of platforms for the technician to choose from when working in the field. The employer and/or the technician must request an account at https://www.viasat.com/satellite-internet/fsm/.

Self-Install (SI) User Access Request Form (US only):

https://www.viasat.com/satellite-internet/fsm/

FSM:

The standard desktop website: https://fulfillment.wildblue.net/

FSM Mobile Browser Friendly (LITE):

A mobile-friendly browser website: https://m.fulfillment.wildblue.net/fsm-lite

FSM Mobile App Download: https://m.fulfillment.wildblue.net/fsm-fe/fsm-download

FSM Mobile is an app that is required to be downloaded to your mobile device.

Contact FSM Administrator for iPhone/Android download instructions.

FSMAdministrator@viasat.com

Interactive Tools for All Technicians

Viasat Tech Tools (VTT) App:

Viasat Tech Tools App: Available from the Apple Store or Google Play, the Viasat Tech Tools app provides modem status, activation, pointing and peaking, work order details, satellite finder, software management and system status information. Search using the keyword 'Viasat Tech Tools.'

Job Aid Resources

Field Support eGuide

All Job Aid references noted in this document are available from the Field Support eGuide eguide.field.viasat.com

Residential Standard Installation Requirements

Required Certification

Viasat Retail/Fulfillment/Partner-specific Certification

All technicians must be certified to complete residential installations through coursework completed in Viasat Discover.

Installation Planning with Customer

The technician meets the following requirements on every work order:

Obtain Work Order

Before leaving for the customer's location, access Field Service Management (FSM), Viasat Tech Tools (VTT) or any other Viasat authorized work order management tool to obtain customer-specific account information.

Status the Work Order

For technicians using FSM:
Every order will change status several times during its "life cycle". It is important that users know, and use, the various statuses correctly.

Please refer to Mobile [FSM Order Statuses](#) Job Aid or [FSM Order Statuses](#) Job Aid.

Read Comments and Notes in Work Order

For technicians using FSM:

Read all comments within the "Notes" section of the work order for any possible special instructions.

Additional notes may be available in the "Additional Information" tab in the FSM work order.

For technicians using Viasat Tech Tools: Notes can be found within the work order details.

Confirm Arrival Time

Call the customer a minimum of 30 minutes prior to arriving at the customer's location.

Arrive at the customer's location within the designated time window of the work order or notify local management of any delays.

Notify Customer of Delays

If the technician cannot arrive within the designated time, they are required to inform the customer of specific delays and note the order.

Confirm Identities

Upon arrival, present the customer with your identification (name, company association, badge, etc.) and verify customer information on the work order.

Perform Site Survey with Customer

Prior to the installation, preferably with the customer present, perform a site survey to determine the appropriate location for the ODU (also known as the antenna), which meets these requirements.

An installation location for the ground block that is 20 feet or less from the location of the approved NEC ground source. In cases where the Outdoor Unit (ODU) is located within the zone of protection, no ground block is required.

An appropriate location for the ground wire routing, COAX cable routing, and wall penetrations. A ground wire is not needed when the ODU is within the zone of protection.

A clear Line-of-Sight (LOS); LOS verification requires the use of a compass to verify the

Azimuth and an Inclinometer to verify the elevation. The LOS must have 10 degrees of clearance on all sides. Use the Viasat Tech Tools (VTT) app to help find LOS.

An approved mounting surface; refer to the [Quality Installation Standards](#) guidelines.

A mounting location at least 20 feet from overhead power lines, three feet from any electrical panel.

A mounting location at least 10 feet from any gas meter and/or gas conduit.

Total cable run should not exceed 150ft.

If pole mount is required, call your local Utility office before digging.

An appropriate location for the IDU. (Refer to section 3.11)

Determine which devices the customer wishes to connect to the service, such as laptop/PC, cell phone, tablet, or VOIP (requires Viasat Voice on the work order).

Obtain Landlord and/or Homeowner permission before starting the installation.

Review Results of the Site Survey with Customer

Prior to starting work, discuss the selected antenna location with the customer. Describe all work to be performed including any non-standard work. Obtain agreement on the following from the customer:

Confirm the mounting location for the antenna (ODU).

Confirm the location of the approved building ground.

Describe the cable routes for both ground and COAX cable(s).

Confirm the location of the power outlet for the IDU.

Review completed site survey form with customer.

Standard Installation

Materials provided by Viasat/Partner:

One Outdoor Unit (ODU), also known as the antenna, which is comprised of one reflector, one AZ/EL with back bracket and skew plate, one mount (stub or universal tri-mast only), two monopoles (for universal tri-mast only), TRIA, assembly nuts and bolts, and mounting lag screws.

One Indoor Unit (IDU), which is comprised of one modem and/or router, one power block, one

AC power cord, and one 7-foot Ethernet cable. Any additional devices provided by Viasat that connect to the IDU will be considered part of the IDU.

All other installation materials are provided by the installer and/or employer. Refer to the [Viasat Approved Materials List](#).

Electrical Compliance

Distances

All antennas must be located at least 20 feet from overhead power lines and three feet from any standard power circuit panel or electric light.

Codes and Specifications

All aspects of the installation must be in full compliance with the National Electric Code (NEC), state, local and/or Viasat specifications.

Antenna Grounding/Bonding Requirements

All grounding/bonding must meet all applicable NEC, state, local, and Viasat specifications.

For the latest details on approved Viasat grounding specifications, see the [Installation Grounding](#) Job Aid.

Antenna Grounding Materials (not required when using Zone of Protection grounding)

The technician must provide and install:

One fine-thread green ground screw, attached to the designated location on the mount or other UL listed attachment.

One 3.0 GHz or higher single ground block.

A length of COAX cable with an attached #17 messenger ground wire or, if messenger ground wire is not used, #10 solid copper ground wire.
One continuous length of #10 solid copper ground wire, not longer than 20 ft.

Zone of Protection:
The technician must provide and install:

One NEC approved bonding jumper

Power adapter to reduce from 3 prongs to 2 prongs, when needed

Ground Block Installation if required:

The #17 messenger wire (or alternate #10 ground wire) is attached to the footplate, and at the other end, the messenger/ground wire is attached to an approved 3.0 GHz or higher rated ground block.

The ground wire between the ground block and the building ground must be a minimum #10 solid copper ground wire. The distance between the ground block and the approved building ground must be 20 feet or less.

The connection to the building ground must be unique and cannot be shared with another ground run. The ground is always as short as possible and as straight as possible. The top five recommended approved building ground connections are and should be used in this order if present:

Intersystem Bonding Terminal (IBT) that has been installed by a licensed

electrician.

 #6 bare copper wire connected to the main house ground.

5/8" Copper ground rod that is 8ft in the ground and is back bonded to the building's electrical panel.

A grounding strap attached to a metal electrical raceway or conduit that has a continuous connection to the main circuit panel.

An Electrical Panel Clamp attached to the side of top of the metal electrical service panel, as long as the clamp does not impede opening of the panel door or risk the ground wire being cut when an electrician attempts to open the panel.

Please refer to the [Installation Grounding](#) Job Aid

Antenna Mounting Requirements

Standard Antenna Mounting Height Requirement

All antennas must not impede any high-traffic areas, such as a sidewalk or walking surface.

Wall Mounting Requirements:

Wall mounts require structurally sound surfaces that can support the weight of the mount and the antenna. Approved mount surfaces are:

Wood or wood-composite panel/lap siding

Brick, block, or poured concrete.

Universal Tri-Mast Mount on a Wall:

Requires the use of the mount bracket and both monopoles, which are provided with the antenna.

All mounting lag screws (two 3" in the center of the footplate bracket, four 2" in the outer corners of the footplate bracket and two 3" in each monopole) must penetrate through the building siding into a stud, joist, or truss.

Mounting screws inserted into masonry surfaces must be installed in the brick and not in the mortar, using the approved anchors.

Monopoles are directed at an upward angle.

S-Mount:

Approved Surfaces: Masonry, wood and deck posts which are anchored at top and bottom and at least 4x4 inches.

Requires structurally sound surfaces that can support the weight of the mount and the antenna.

Allow 4 feet between the center hole of the S-tube and any overhead impediments (roofs, overhangs, etc.)

Requires two 6" lag bolts to be installed for the S-Tube and crush tube, and four 3" lag bolts to be installed in the L- bracket.

Monopoles are not required.

Sloped Roof Mounting Requirements:

Sloped roof mounts require structurally sound surfaces covered with asphalt shingles that can support the weight of the mount and the antenna.

Do not install on non-approved surfaces:

Metal

Slate

Wooden Shake shingles

Avoid installing a roof mount over a living area of the building; use the overhang section of the roof whenever possible.

Use Bishops tape under the mount bracket and/or add tar-based sealant to screw holes.

Universal Tri-mast Mount on a Sloped Roof:

Requires the use of the mount bracket and both monopoles, which are provided with the antenna.

Install all mounting lag screws (two 3" in the center of the footplate bracket, four 2" in the outer corners of the footplate bracket, and two 3" in each monopole) through the roofing and roof decking to penetrate the roof truss or joist.

Monopoles are directed at a downward angle.

Low Profile "Stub" Mount on a Sloped Roof:

Requires two 3" lag screws in the center of the footplate bracket, and four 2" lag screws in the outer corners of the footplate bracket.

The center lag screws must penetrate through the roofing and roof decking into the roof truss or joist.

Monopoles are not required.

Pole Mount Requirements:

Must be one of the pole types listed in the [Viasat Approved Materials List](#).

A trench dug 6-inches deep, up to 20 feet long as measured between the building and the pole location, with sweeps on both ends.

When using concrete, a hole must be dug at least 36" (3-ft) deep (deeper if the local frost level requires it) and 12" wide. The pole must be a minimum of 3 ft in the ground and out of any traffic areas.

When using foam, a hole must be dug at least 36" (3-ft) deep (deeper if the local frost level requires it) and 3" to 4" wide, at the pole location. The pole must be a minimum of 3 ft in the ground and out of any traffic areas.

A longer pole may be required to accommodate local frost levels greater than 36 inches. The portion of the pole above surface level should never exceed 60".

The pole must be anchored with a non-rotating device installed at the base using at least 150 lbs. of quick setting concrete or 16 oz of approved expanding foam.

A pole with an outside diameter greater than 2 inches requires the use of a Viasat-approved pole adapter.

Non-penetrating (Non-pen) Mount Requirements:

The mount must be one of the types listed in the [Viasat Approved Materials List](#).

Non-penetrating mounts require structurally sound, non-sloped roof surfaces. When mounting to the structure is not an option, the mount may not impede any traffic area. Decks, balconies, and patio are approved surfaces when structurally sound.

Do not install on non-approved surfaces:

Metal

Requires the use of at least 8 28-lbs. cinder blocks to provide appropriate ballast to sustain the installation in a wind up to 65 MPH. Depending on geographic location, more cinder blocks may be required.

A rubber mat must be placed underneath all non-penetrating mounts.

Add monopoles when using the Tri-mast mount.

Under-eave Mount Requirements:

The mount must be one of the types listed in the [Viasat Approved Materials List](#)

Attached to a structurally sound enclosed or open rafter, depending on mount type used.

Monopoles are required.

Rail Mount Requirements:

This mount attaches to a structurally sound railing, preferably near a wall or post.

Tile Mount Requirements:

This mount attaches to clay or concrete tiles on a sloped roof.

Must be used with universal tri-mast.

Cabling Requirements

COAX Cabling Requirements:

Use only solid copper RG-6, rated 3.0 GHz or greater, 75 Ohm, 60% braid cable that meets/exceeds the standards set out in the COAX Cable Specification, or is listed in the Viasat Approved Materials List.

Provide an end-to-end COAX connection from the IDU to the ODU, not to exceed 150' total length, including any indoor COAX extension Cables.

Any bend in the COAX has a radius (1/2 the diameter of a circle) of at least 3"

All drip or service loops are at least 6" in diameter.

Drip loops are required at the point of entry (POE) and service loops are required at the ground block and below the AZ/EL canister attached to the mast and/or pole.

Use a wall plate that is rated up to 3.0 GHz.

A standard COAX cable route includes drilling through one exterior wall and one interior wall or floor.

Secure visible cable along appropriate horizontal or vertical structural lines using screw-type single flexible cable clips or vinyl siding cable clips. Place cable clips 18" to 24" apart.

Pole Mounts:

Buried **non-flooded** COAX cable must be enclosed in ½-inch, PVC conduit placed a minimum of 6" below ground level, using sealed, and sweep-type conduit as it leaves the ground to protect it from grass trimmer damage.

Buried **flooded** COAX cable is not required to be enclosed in PVC conduit; however, the entire cable run but must be placed a minimum of 6" below ground level and enclosed in sweep-type conduit as it leaves the ground to protect it from grass trimmer damage. Flooded cable may only be used outdoors. A Viasat approved non-flooded coax should be used from the ground block into the home and to the modem.

Ethernet Cabling Requirements:

Use the 7' RJ45-to-RJ45 Ethernet cable provided with the IDU to connect the IDU to the customer's device.

F-Connector Requirements

Approved Materials

Refer to Viasat Approved Materials List in the eGuide for approved connectors.

COAX Connector Assembly and Installation

Use only approved parts. All F Connectors must meet/exceed the Viasat specifications above, or as found in the COAX Connector Specification job aid, and be assembled onto the COAX cable using an appropriate compression tool.

The indoor COAX cable terminations must be properly dressed and be finger tight.

All wall connections must have single wall faceplates with 3.0 GHz connectors. If requested by the customer, pass-through wall plates are also approved.

Structural Penetrations

Point of Entry (POE) penetrations must have a drip loop on the outside of the building, feed-through bushings, and be weather sealed with silicone.

When using the mount bracket, seal all wall structural penetrations with silicone, and seal all roof penetrations with tar-based silicone or Bishop's tape.

Antenna Alignment

To properly align the antenna, the following activities must occur:

Assemble the antenna correctly, following the appropriate Viasat instructions found on the ODU Assembly page on the Field Support eGuide.

Use the appropriate point and peak process for the antenna. Refer to the Pointing and Peaking Videos page on the Field Support eGuide for additional information.

Complete the appropriate modem lock procedure for the modem in use. Refer to the Viasat Products Manual – IDU page on the Field Support eGuide for additional information.

IDU Installation Requirements

Refer to the IDU Installation Guides page.

Complete Service Activation

The technician must successfully complete the appropriate modem activation process.

For service activation, please refer to the Account Activation – Customer Present Job Aid on the Field Support eGuide.

For Viasat retail customers:

Collect the signature for the Electronic Customer Agreement (ECA) when presented. Follow the appropriate procedures for collecting an Authorized Signer signature.

If the customer ordered Viasat Voice, then the internal or external Viasat Voice Adapter

(ATA) should be activated with the Viasat Voice service. The technician is required to test the Viasat Voice service.

Customer Education for Viasat Retail and Fulfillment Technicians

The retail/fulfillment technician educates the customer on the following topics about their new Viasat or repaired service.

Location of antenna and IDU after installation.

Where to find the wireless router setup on a Viasat WiFi IDU.

How to connect the various devices to the service, including PCs, laptops, cell phones, tablets, or other internet-enabled devices.

Together, the technician and the customer will test the new/repaired Viasat service, using a browser to connect to random websites.

The technician and the customer will test the Viasat Voice service when present.

The technician shall direct each new retail Viasat customer to my.viasat.com to register their new account.

Customer Education for Partner Technicians

The Partner technician educates the customer on the following topics about their new Viasat or repaired service.

Location of antenna and IDU after installation.

Where to find the wireless router setup on a Viasat WiFi IDU.

How to connect the various devices to the service, including PCs, laptops, cell phones, tablets, or other internet-enabled devices.

Together, the technician and the customer will test the new/repaired Viasat service, using a browser to connect to random websites.

The technician and the customer will test the Viasat Voice service when present.

Post Installation Responsibilities

Required Photo Documentation

Technicians are required to take photos after completing any installation or service calls.

Please refer to the [Quality Installation Standards](#) for required photos.

Each work order must have all required photos uploaded within 72 hours upon completion.

Other Required Activities

Clean up all debris (cable scraps, wire ends, packaging, etc.) from around the customer's location and dispose of it appropriately, preferably at the technician's warehouse.

Confirm with the customer that the installation has been completed per customer's approval obtained during the site survey.

Inform the customer that they may receive a Customer Satisfaction Survey (CSAT) and encourage completion of survey.

Return all Dead-on Arrival (DOA) equipment to the technician's warehouse for RMA processing.

Commercial/Business (SMB) Standard Installation Requirements

Required Certification

Viasat Commercial Certification

All technicians must be certified to complete commercial/business (SMB) installations through coursework completed in Viasat Discover.

Installation Planning with Customer

Obtain Work Order

Before leaving for the customer's location, access Viasat Tech Tools, Field Service Management (FSM) or any other work order management tool to obtain customer-specific account information.

Status the Work Order

Please refer to Section 3, subsection 3.2.2.

Read Comments and Notes

Read all comments within the Notes section of the work order for any possible special amendments.

Additional notes may be available in the Additional Information tab in the FSM work order.

Confirm Arrival Time

Call the customer a minimum of 30 minutes prior to arriving at the customer's location. Arrive at the customer's location within the designated time window of the work order.

Notify Customer of Delays

If the technician cannot arrive within the designated time, they are required to inform the customer of specific delays and note the order.

Confirm Identities

Upon arrival, present the customer with your identification (name, company association, badge, etc.) and verify customer information on the work order.

Perform Site Survey with Customer

See Section 3, subsection 3.2.7.

All commercial installations require the Viasat Commercial/Business Site Survey form to be completed, signed by the customer, and attached to the FSM work order (along with the list of photos given below) when the work order is complete.

For all approved mounting surfaces for commercial installations, refer to the Business Quality Installation Standards.

For the commercial installations site survey form, refer to the Viasat Business Site Survey page.

Review Results of the Site Survey with Customer

See Section 3, subsection 3.2.8.

Standard Installation

See Section 3, subsection 3.2 for details.

Electrical Compliance

See Section 3, subsection 3.3 for details.

Antenna Grounding/Bonding Requirements

See Section 3, subsection 3.4 for details.

Cabling Requirements

Commercial installations may require a non-standard coaxial cable run.

Cable Type, based on Length of Cable Run

Use RG6 if the cable run is up to 150 feet.

Use RG11 if the cable run is longer than 150 feet but less than 250 feet.

Use LMR if the cable run is longer than 250 feet but less than 500 feet.

Cable Type, based on Building Air Supply

Business/commercial installations must follow building codes/requirements for the interior cable run, often using the existing air supply ducting/routing. Towards that end, these standards apply:

Forced Air Return/Forced Air Supply

If the building air supply is sealed and can be identified as forced air return and air supply, then the technician can use standard Viasat-approved COAX cabling.

Do not use the drop-down ceiling wires or grid to support the cable run, as this does not meet NEC specification.

See image on the next page.
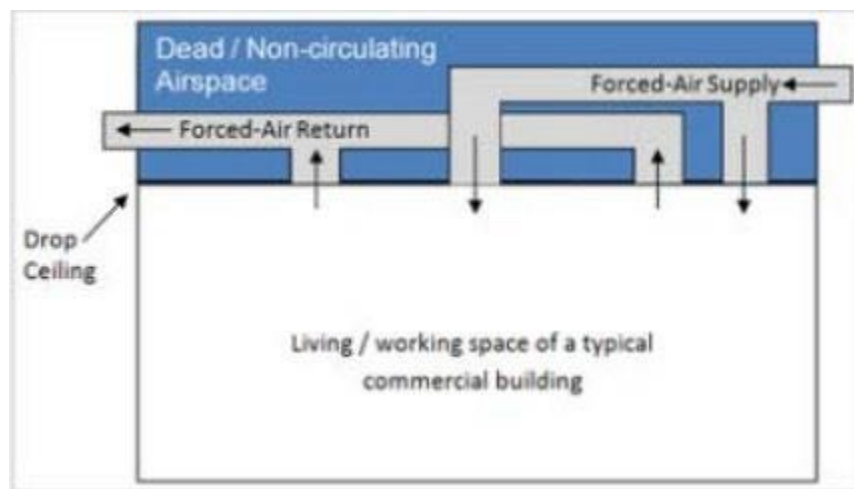
Forced Air Return, Circulating or Open

Important! Plenum cable is not part of the standard installation, but it is a NEC requirement if there is active plenum airspace.

If the building forced air return is circulating or open, then the technician must use approved Plenum R6/RG11/LMR COAX cabling throughout.

Do not use the drop-down ceiling wires or grid to support the cable run, as this does not meet NEC specification.
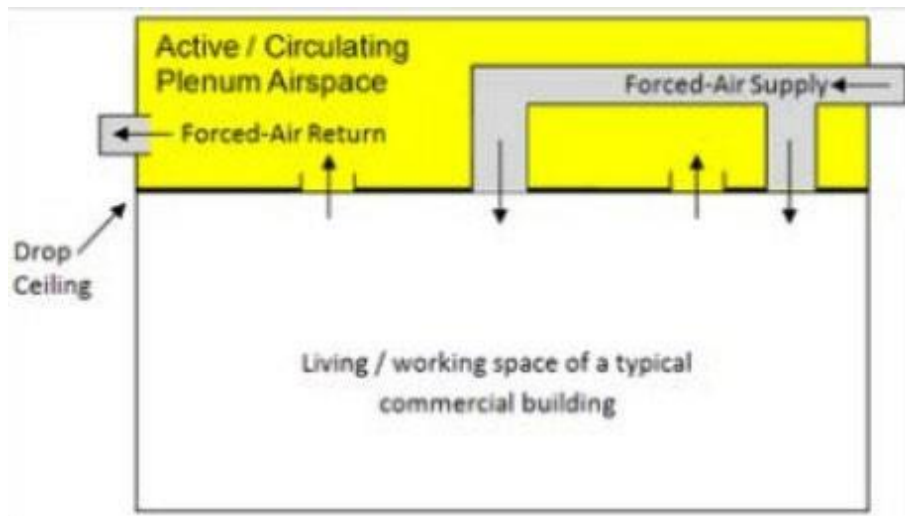
F-Connector Requirements

See Section 3, subsection 3.7 for details.

Structural Penetrations

See Section 3, subsection 3.8 for details.

Antenna Alignment

See Section 3, subsection 3.9 for details.

IDU Installation Requirements

See Section 3, subsection 3.10 for details.

Commercial installation may need to coordinate with the business's IT group in the placement of the IDU.

Connection to any wireless routers (other than Viasat WiFi modem/routers) is the responsibility of the business's IT group.

Persistent IP Addresses

Quantity

Each commercial account will receive up to 3 Persistent IP addresses.

IP Delivery

Installation technicians are required to deliver at least 1 IP to the customer before leaving the site.

IP Delivery – any unit that has a MAC address and is connected to the modem and/or router.

Viasat modem will be assigned a Persistent IP automatically after account activation.

Remaining IP addresses are automatically assigned to any device that has a MAC address and is connected to the Viasat modem or external devices connect to the Viasat modem.

Follow the [Locating the Persistent IP in eSVT](#) Job Aid for details.

Completed Service Activities

See Section 3, subsection 3.12.

Post Installation Responsibilities

Required Photo Documentation

Technicians are required to take pictures of completed work, before photos are permitted as applicable.

Please refer to the [Business Quality Installation Standards](#) for required commercial photos.

Other Required Activities

Clean up all debris (cable scraps, wire ends, packaging, etc.) from around the customer's location and dispose of it appropriately, preferably at the technician's warehouse.

Confirm with the customer that the installation has been completed per customer's approval obtained during the site survey.

Inform the customer that they may receive a Customer Satisfaction Survey (CSAT) and encourage completion of survey.

Return all Dead on Arrival (DOA) equipment to the technician's warehouse for RMA processing.

Standard Service Call Requirements

Every Viasat service call must restore the customer's service to a working condition that parallels a successfully completed Viasat standard service installation. The technician is required to repair, change, or update any part of the installation that does not conform to the standards listed in Section 3 or Section 4 of this document**, regardless of the original reason for the service call.**

All service call testing and trouble resolution processes (aka maintenance tests/checklists) are completed using a device provided by the technician. All customer equipment (routers, computers, etc.) is disconnected from the modem during all service call processes until the service is restored to working condition.

Required Service Call Activities

Determine whether the original installation meets all Viasat standards; if not, the technician must bring the installation up to all standards outlined in Section 3 or Section 4 of this document.

Inspect the original installation to isolate the original problem (reason for the service call).

Ensure all connections from the antenna to the IDU are intact, secure, and meet Viasat installation requirements, along with NEC, state, and Local Codes.

Re-point the antenna and peak the signal for optimal performance.

Replace any damaged or failed Viasat equipment.

Ensure all COAX cables meet Viasat standards.

Additional Service Call Activities

Refer to the eGuide for troubleshooting steps.

Service Call Completion Activities

Clean up all debris (cable scraps, wire ends, packaging, etc.) from around the customer's location and dispose of it appropriately, preferably at the technician's warehouse.

Verify and/or update work order systems (e.g., VTT or FSM) with replacement IDU and/or ODU identification numbers (serial numbers, MAC address).

Confirm either through Viasat Tech Tools, FSM or eSVT that the performance values are green.

Close the service call in FSM (if appropriate); note the work order that the work was completed. If using eSVT to confirm performance values, note this.

Inform the customer that they may receive a Customer Satisfaction Survey (CSAT) and encourage completion of survey.

Return all Dead on Arrival (DOA) equipment to the technician's warehouse for RMA processing.