

Chapter 1: Overview

Ripwave Description

A Ripwave system has three main components: the Base Station, the Modems, and the Element Management System (EMS). The Base Station performs the Modem registration and call processing, and provides the interface between the backhaul network and the EMS. It is made up of the Base Transceiver Station (BTS) and the Radio Frequency Subsystem (RFS) (Figures 1, 2 & 3). This manual provides the guidelines and instructions for installing and commissioning (I&C) the Base Station.

Figure 1 shows the system with both Secondary (built-in) and Primary (optional) Lightning Protection. Lightning Protection helps to protect the RFS, the BTS, and the RF lines against “tower lightning” events occurring at the Base Station. The customer must exercise judgment when balancing risk against cost to decide whether to install the primary protection kit at an extra cost or to rely on the secondary protection only. NOTE: Navini does not warranty equipment against lightning strikes.

In addition to tower lightning events occurring at the base station, lightning events that occur miles away from the BTS could generate intense electrical currents traveling over the power and/or backhaul lines and into the BTS equipment, damaging it. For this reason, Navini recommends adding surge protection devices at the power and backhaul demarcation points.

Figure 1: TTA Configuration with Primary and Secondary Surge Protection

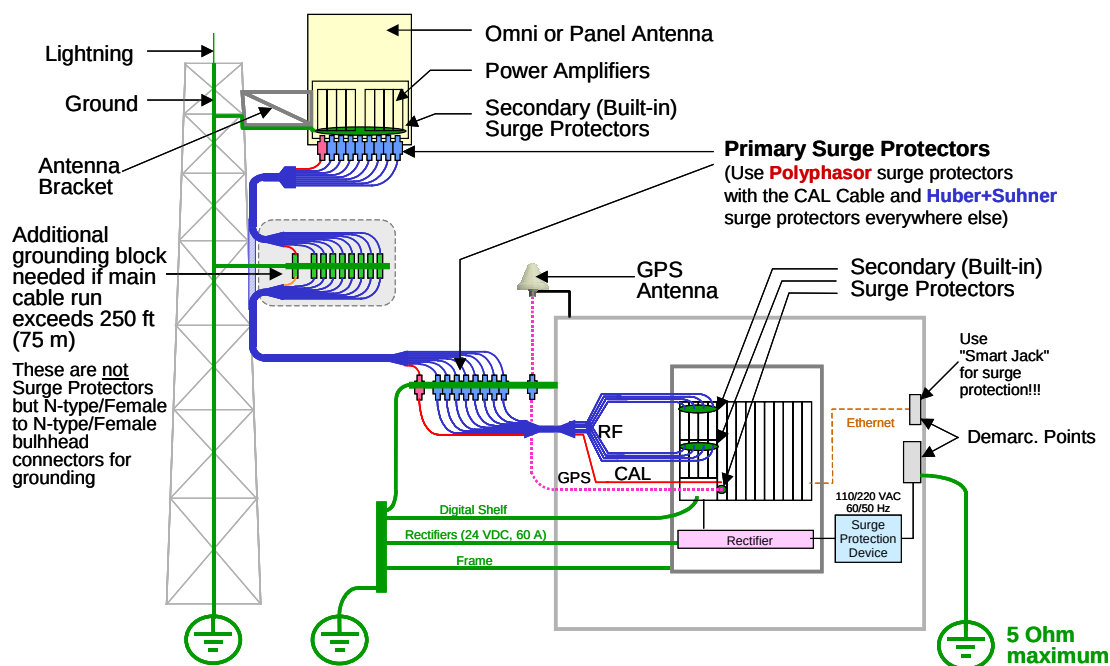
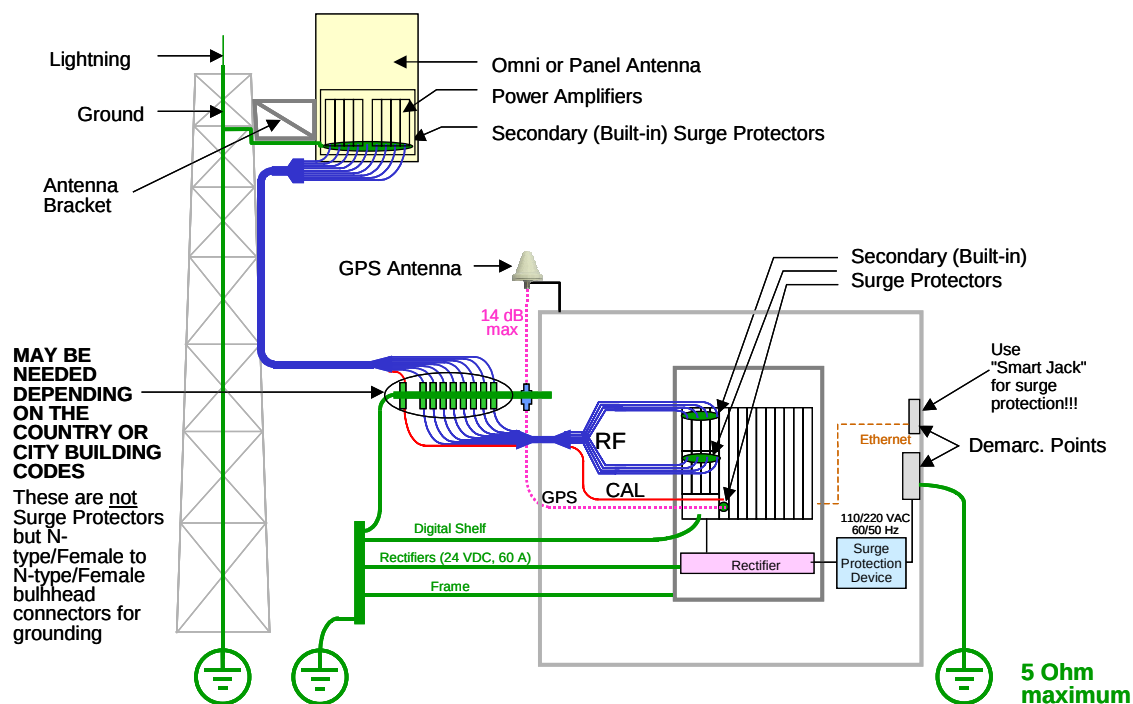


Figure 2: TTA Configuration with Secondary Surge Protection Only

CAUTION! Although Secondary surge protection is built into the TTA that ships from the factory, Navini recommends that the Primary surge protection kit be purchased and installed, in particular if the equipment is installed in an area where electrical storms are common. Surge protection devices should be added in front of the rectifier. Lightning striking miles away from the BTS may cause an intense electric current traveling on the power and/or backhaul lines and into the BTS, damaging the equipment.

Procedural Documents & Forms

You will refer to other Ripwave documents, procedures, and forms in the process of installing and commissioning the Base Station. The product documentation is provided on the Ripwave Standard Documentation CD (Table 1). As well, the EMS manuals can be viewed on-line through the EMS Server and Client applications.

Table 1: Ripwave Standard Documentation CD

Order Number 95-00116-00	Part Number
EMS Overview Manual	40-00016-03
EMS Software Installation Guide	40-00017-00
EMS-OSS Integration Guide	40-00147-00
EMS Administration Guide	40-00031-00
Ripwave Configuration Guide	40-00016-01
Excel Configuration Form	44-00032-01
EMS CLI Reference Manual	40-00016-02
Ripwave Alarm Resolution Reference Manual	40-00033-00
System Operations, Maintenance & Troubleshooting Guide*	00-00046-00
EMS Diagnostic Tools Guide	40-00032-00
Ripwave Modem Quick Installation Guide	40-00112-00
English	40-00098-00
Spanish	40-00096-00
Ripwave Modem User Guide	40-00111-00
English	40-00097-00
Spanish	40-00099-00
Ripwave Modem Software Update Tool Quick Guide	40-00066-00
Customer Release Notes	Varies w/each release

*Available 2Q04

A number of other forms are used in the installation and commissioning process. This I&C Guide references those throughout, and provides copies in the appendices.

High-level I&C Process

To put the I&C activities in the context of overall system deployment, Figure 4 provides a ‘flow’ of the key activities that are performed prior to and during the installation and commissioning of the Ripwave Base Station. Post-I&C, the system that has been installed and commissioned goes through Acceptance Testing against the customer’s objectives for that site. Once customer sign-off on the site is achieved, the customer becomes fully responsible for operating the system. You may find this flowchart can be used as a helpful checklist during the process.

Different job holders may perform various portions of these activities and not necessarily all of the activities. In fact, Marketing and Engineering personnel typically handle the earlier tasks, while installation may be a stand-alone function. Commissioning may or may not be handled by the same people who designed or installed the site. Regardless of who does them, these key activities have to be accomplished for successful deployment:

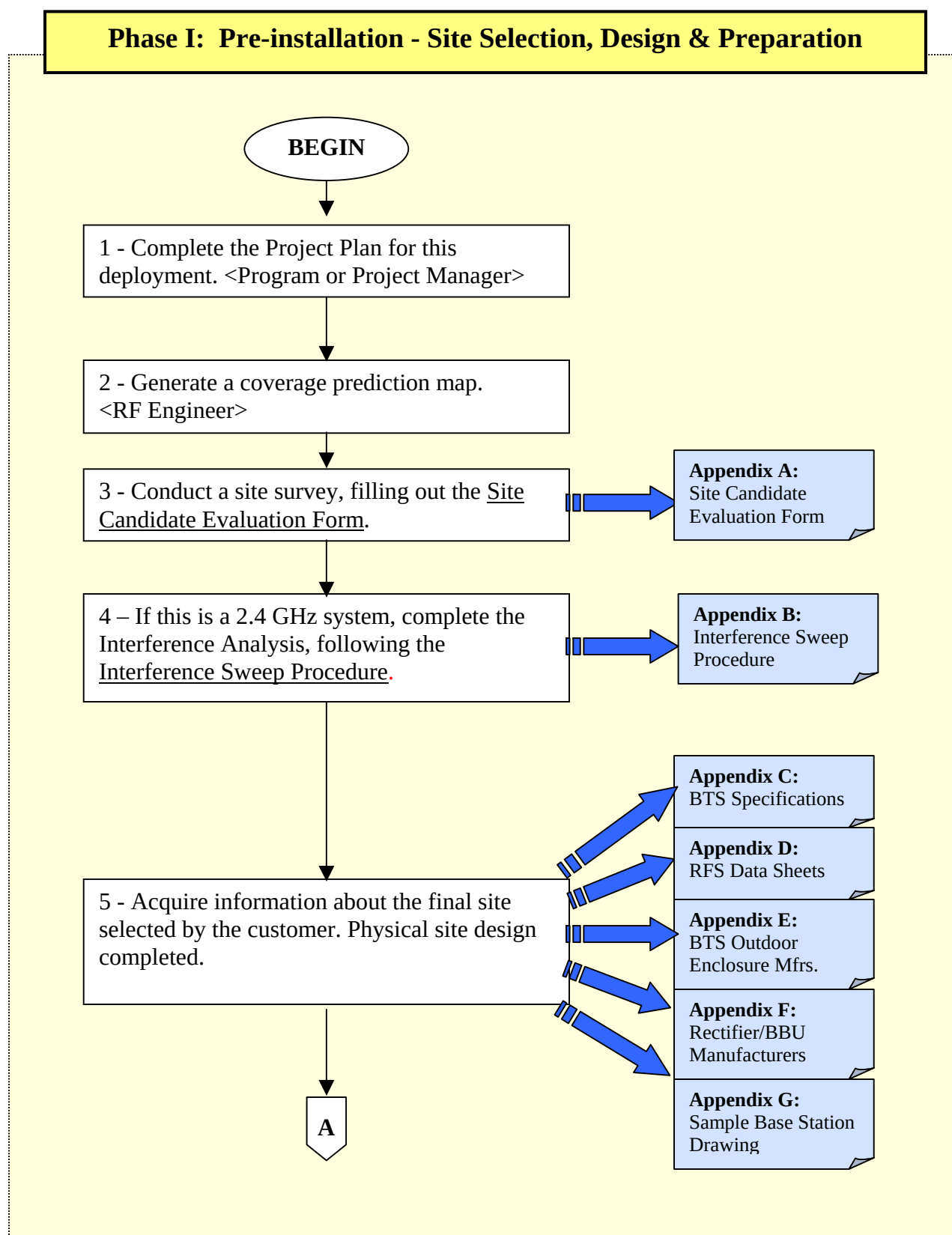
- Site Selection, Design, and Preparation
- Physical Installation
- Commissioning, with Acceptance Testing and Sign-off

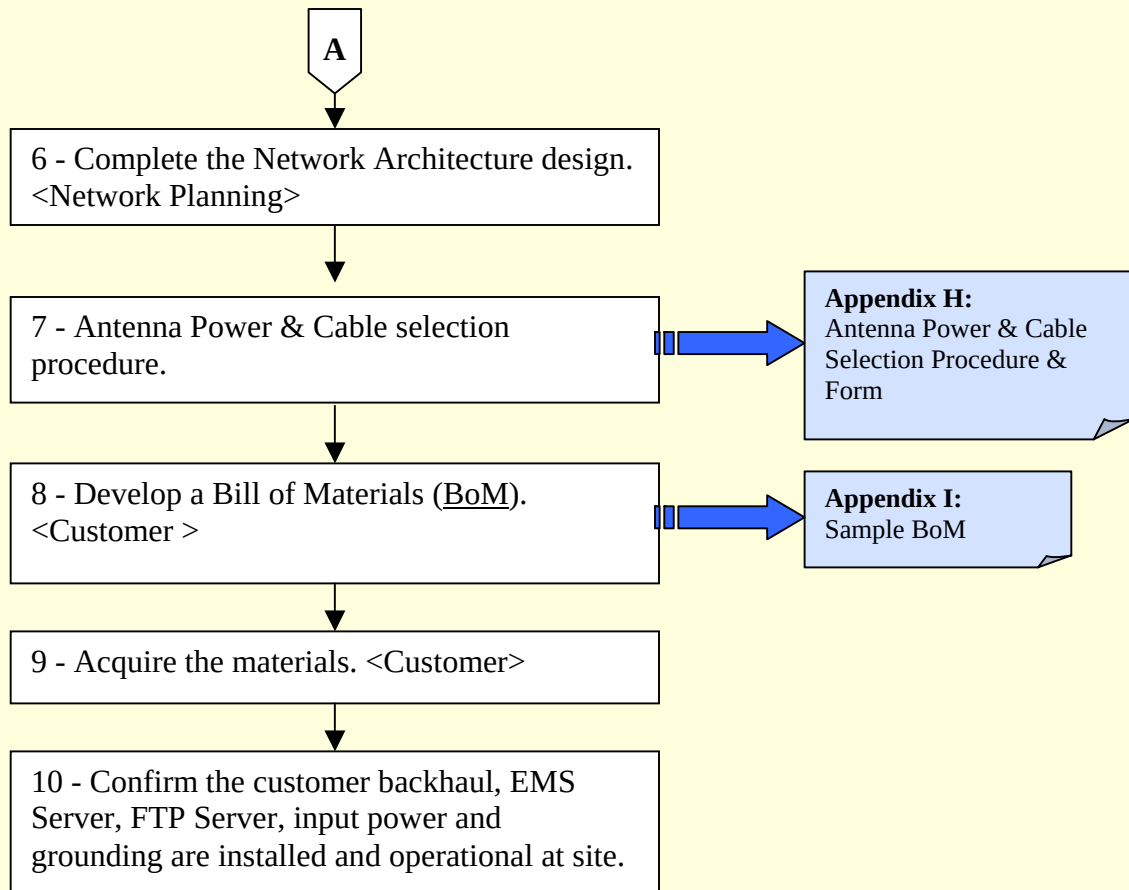
Prior to installation, Navini and the customer formulate a Project Plan and Responsibility Assignment Matrix (RAM) to clarify who will do what to complete the I&C activities. If requested by the customer, Navini may provide personnel, procedures, forms, and/or tools required to install and commission the Base Station equipment. They may also provide special commissioning software programs, computers, and any other special test equipment required.

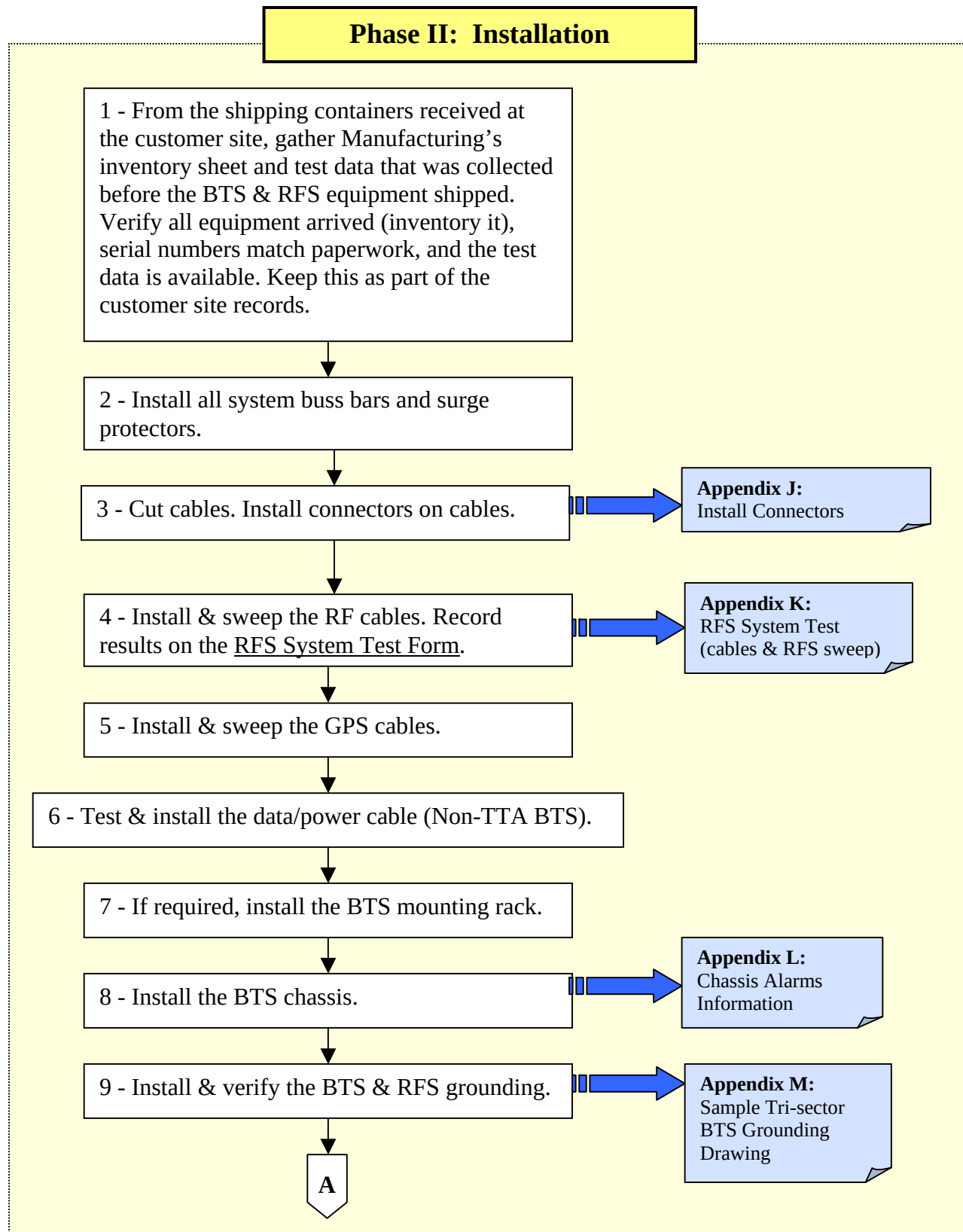
As part of the I&C duties, all testing results are recorded and kept for the customer to review and approve. These test results include the cable sweeps, the BTS Calibration Verification, RF System Tests, Drive Study, Line-of-Sight (LOS) FTP tests, and Non-Line-of-Sight (NLOS) FTP test results. The I&C Supervisor provides site tracking and weekly status reports. All of these tasks can be negotiated with the customer.

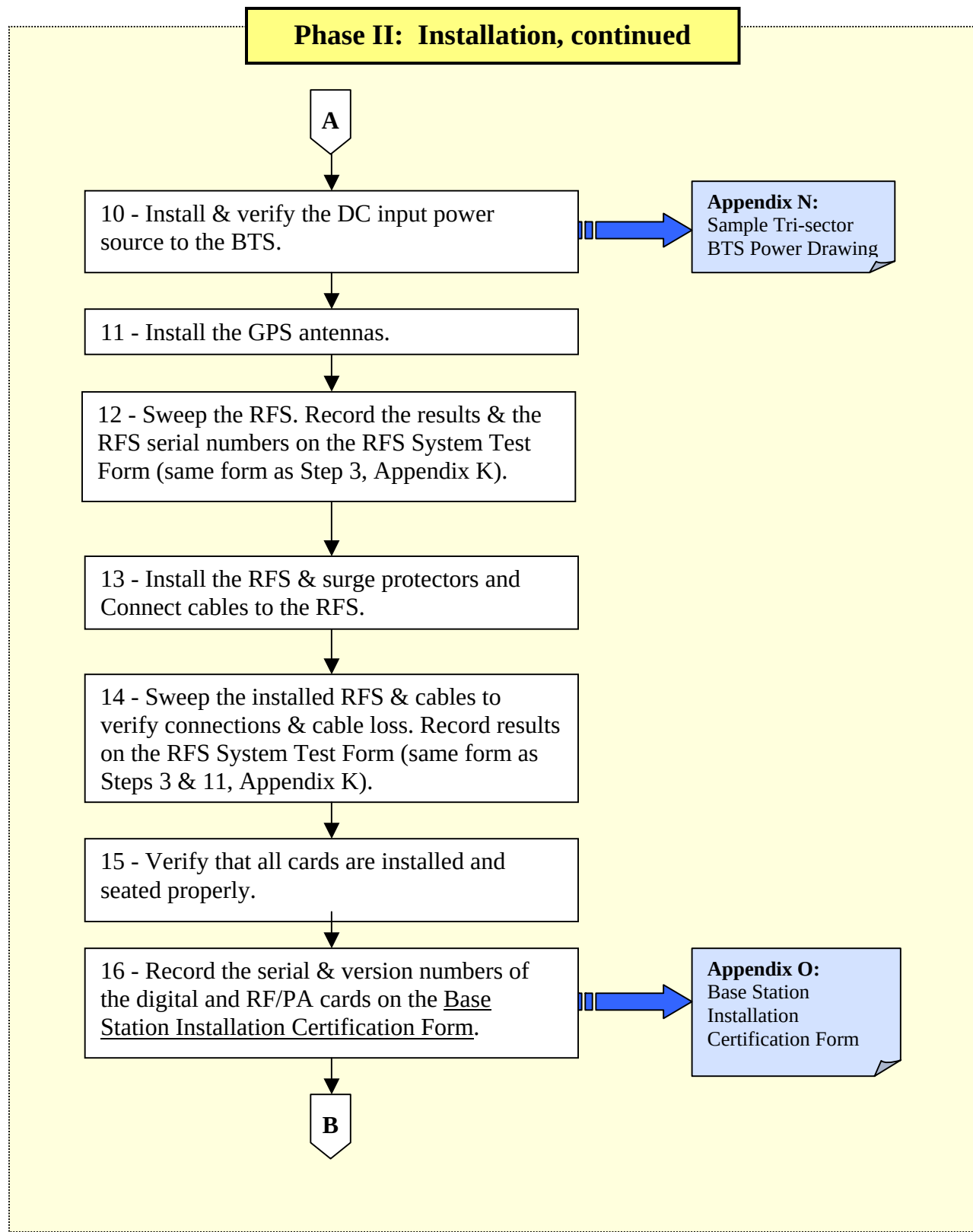
If Navini Networks is hired by a customer to provide Installation & Commissioning Services, involvement and some actual deliverables are still required by the customer. For example, the customer will need to review or perhaps even explain their Site Design Specifications, approve Logistics Plans, provide shipping information, approve the Network Architecture Plan, etc.

As part of a successful hand-off from Navini to the customer, it is usually necessary for Navini to provide some product training to customer personnel who will support the Base Station operation on-going. Customers may opt to take on a Train-the-Trainer program, in which case Navini certifies the customer's instructors who then provide staff training thereafter.

Figure 4: High Level I&C Process Flowchart

Phase I: Pre-installation - Site Selection, Design & Preparation, continued



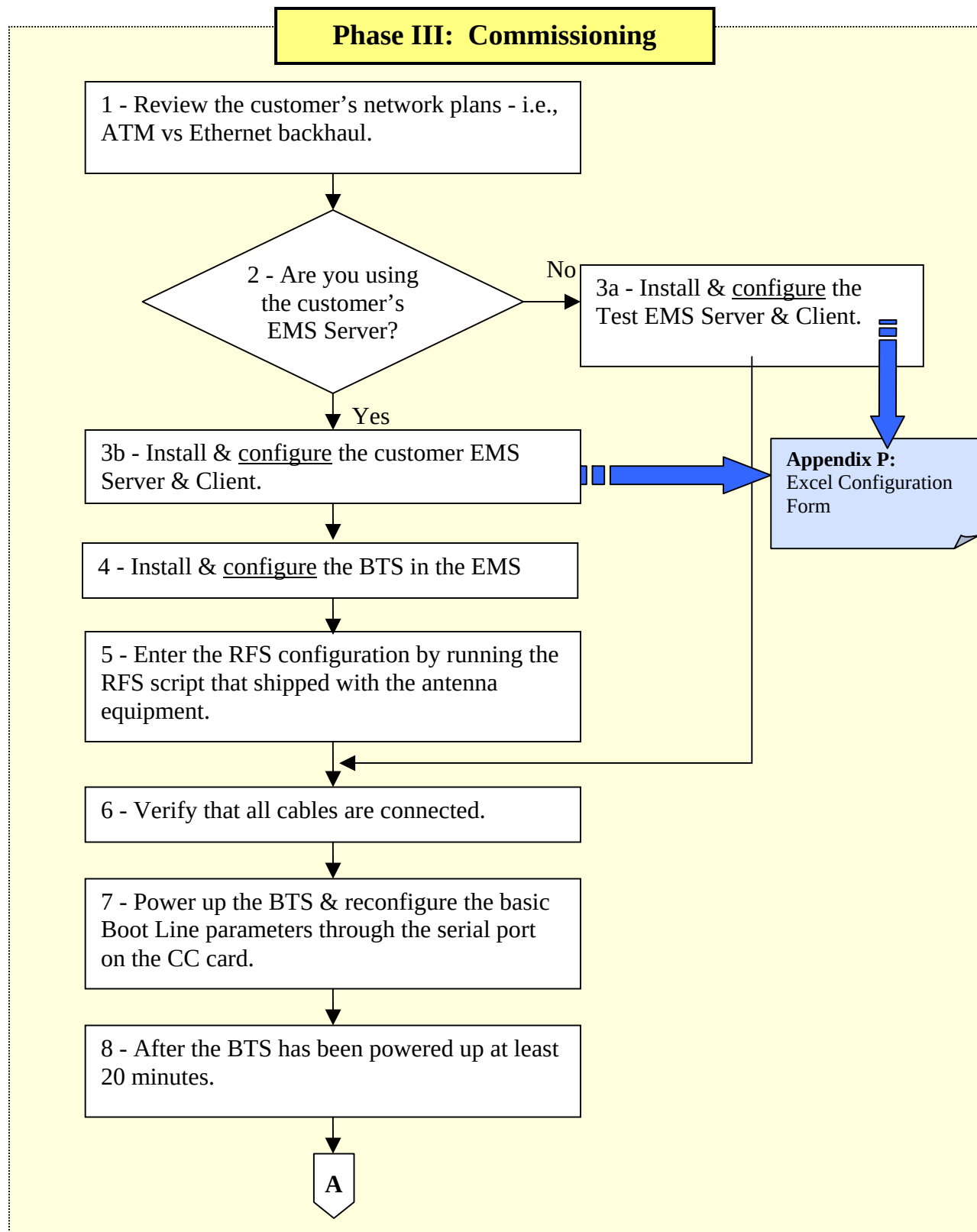


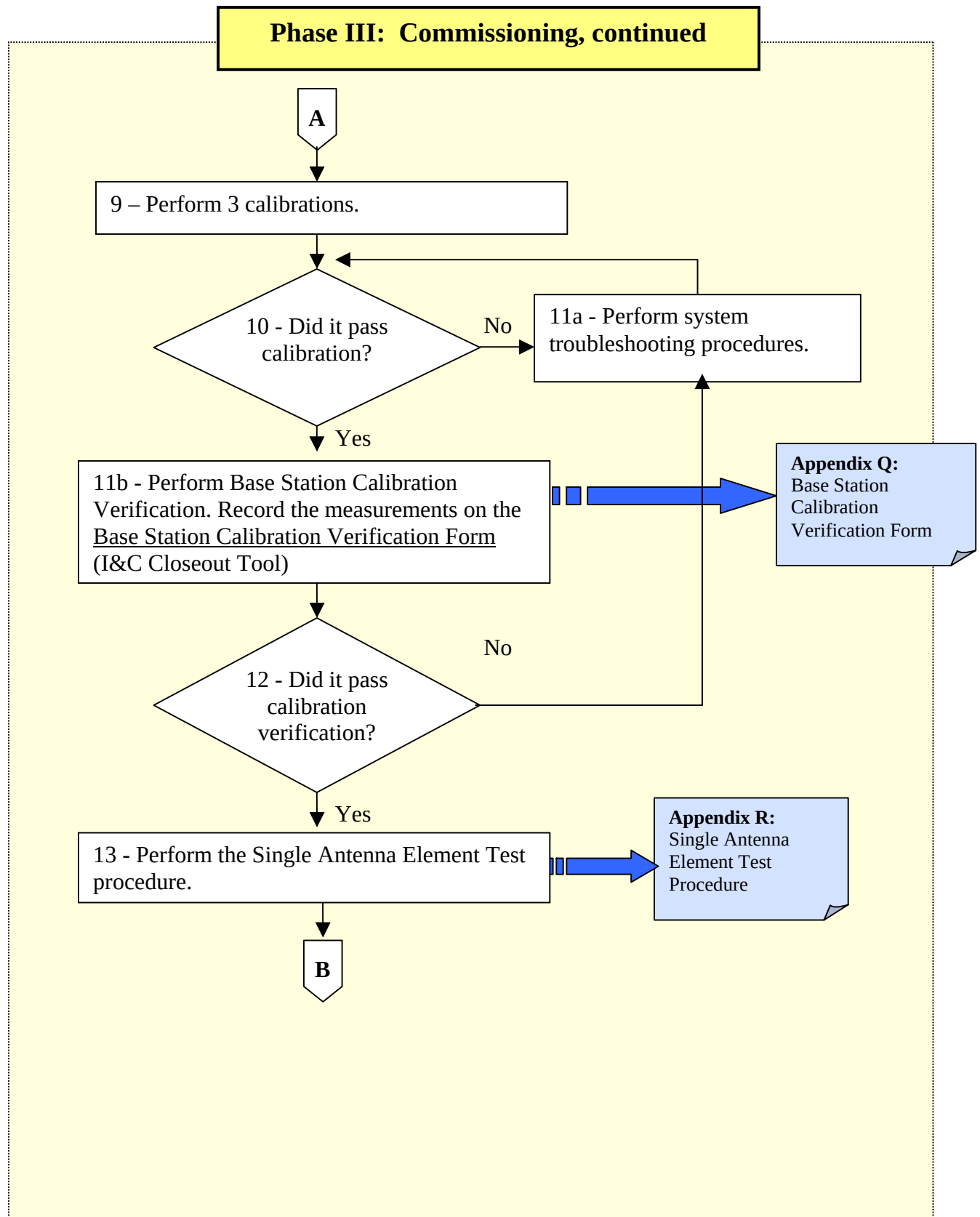
Phase II: Installation, continued**B**

17 - If required in the Responsibility Assignment Matrix (RAM) portion of the Project Plan, test the backhaul to the customer demarcation point.

18 - Provide a printed package of the measured results and equipment inventory to the customer on-site.

19 - Go over the results using the printed package and obtain customer sign-off on the completion of the Installation portion of the work. Use the Base Station Installation Certification Form for sign-off (same form as Step 16, Appendix P).





Phase III: Commissioning, continued