

Summit Data Communications, Inc. User's Guide for Summit Manufacturing Utility

Version 0.3

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1.0 Introduction

Thank you for choosing compact flash (SDC-CF10G), PCMCIA (SDC-PC10G), or miniature compact flash (SDC-MCF10G) wireless LAN radio modules from Summit Data Communications, Inc. Each radio module, or WLAN client adapter, enables a computing device to communicate to a computing network using the IEEE 802.11g and IEEE 802.11b protocols.

The hardware components and software for all three radio modules are the same. The PC10G is a CF10G in a specially designed PCMCIA carrier, and the MCF10G is essentially a CF10G with a different layout and a different (Molex) connector.

1.1 Product Overview

For an overview of Summit WLAN radio modules, go to <http://www.summitdatacom.com/products.htm>.

1.2 This Manual

This manual is a user's guide for the Summit Manufacturing Utility (SMU), which Summit offers to device manufacturers that embed Summit radios in their devices or offer Summit radios as device options. The utility enables you, the device manufacturer, to configure certain radio settings that cannot be configured through the Summit Client Utility (SCU), which is the utility that you probably will offer to your customers, who are end users of devices with Summit radio modules.

The radio module that is installed or will be installed on a computing device that is running one of the following operating systems:

- Windows CE 4.2
- Windows Mobile 2003
- Windows CE 5.0
- Windows Mobile 5.0

The software for all three radio modules is the same. This manual may refer to any of the modules as the CF10G.

1.3 Security Capabilities

For details on the security capabilities of Summit radio modules, see the Summit User's Guide, which is the documentation for your customers, who are end users of devices with Summit radio modules.

1.4 How Your Customers Configure the Radio Module

The software that Summit provides for its radio modules includes:

- A device driver for the operating system running on the computing device that houses the radio module
- An integrated IEEE 802.1X supplicant
- SCU

Your customers can configure radio and security settings, monitor performance and activity, and troubleshoot issues with the radio module using any of the following:

- SCU
- Another application, such as Wavelink Avalanche, that uses the application programming interface (API) for SCU
- Native facilities in the operating system, such as Windows Zero Config (WZC)

2.0 Using the Summit Manufacturing Utility

To enable your customer to use a Summit CF10G, PC10G, or MCF10G in a computing device, you must perform the following steps:

1. Install Summit software, including the Summit Manufacturing Utility, on a mobile computing device that runs Microsoft Windows CE Version 4.2 or 5.0, Microsoft Windows Pocket PC 2003, or Windows Mobile Version 5.0
2. Install the Summit radio module on that device
3. Use SMU to configure specific global settings for the radio module
4. Remove SMU from the device

It is recommended that you complete the steps in order. If you insert the card in your device before you install the software, then the "Found New Hardware Wizard" screen will appear, and you must select "Cancel" to cancel the Hardware Wizard.

2.1 Step 1: Install the Summit Software

- a) Download the appropriate **SDC-CF10G "cab"** file for the type of device you are using. The "cab" file is the software equivalent of a "file cabinet" which contains the driver for the radio as well as the SCU (Summit Client Utility).
- b) Copy the file to your device using a supported file transfer mechanism. Common methods of moving the file include:
 - Place the file on a supported Compact Flash or SD memory card and use that card for copying the file to the device
 - Use a program such as FTP or Microsoft ActiveSync
- c) On the device, use the resident File Explorer program to locate the "cab" file
- d) Run the "cab" file by single-clicking the file or by right-clicking and selecting "run"
- e) If asked to replace any existing files on the device, answer "yes to all"

2.2 Step 2: Install the Radio Module in the Host Device

- a) Insert the card into a CF or PCMCIA slot or, in the case of the MCF10G, attach the card's Molex connector to the corresponding Molex connector on the device's board
- b) Connect the device's internal antenna or antennas to the card via the U.FL connector or connectors – If there is one antenna, connect it to the radio module's main connector, which is nearer to the right edge of the card

2.3 Step 3: Run the Summit Manufacturing Utility

SMU presents a graphical user interface on which the user can specify various settings. Once the user presses the Commit button, then SMU uses the Summit application programming interface (in the Summit software developer's kit, or SDK) and programmatically does the following:

- Gathers the specified settings
- Calls SetGlobalSettings
- Calls updateSRAM

It takes about 30 seconds from when the user clicks Commit to when the settings are stored.

Ensure that your driver version is at least V1.0.16 before using SMU.

Note that the SMU GUI may not reflect what is programmed on the card or on the device. Be sure to set every parameter to the desired value before clicking Commit.

2.4 Step 4: Remove SMU from the Device

SMU is designed exclusively for device manufacturers and not for device end-users or administrators. Once you have used SMU to configure radio module settings, you should remove SMU from the device. Note this warning from the FCC, which is shown in the appendix:

OEM shall not supply to its customers (end users) the Summit Manufacturing Utility or any tool or info that will enable an end user to change the regulatory domain or the operating channels for the radio.

3.0 End User Settings

The Summit Client Utility (SCU) is an application designed for end users and administrators of mobile devices that use a Summit radio module. SCU provides a graphical user interface (GUI) for access to all end user. Access to these functions also is available through an application programming interface (API) that is provided to every Summit customer. A Summit customer can use the API to manage the radio from another utility, such as one that the customer provides with its mobile devices. Wavelink Avalanche also uses this API.

Using SCU, an administrator can configure radio and security settings in a configuration profile, or config. For a list of config settings, see the Summit User's Guide. An administrator also can use SCU to define a set of global settings, which apply to all configs and to SCU. For a list of global settings that can be configured using SCU, see the Summit User's Guide.

4.0 Manufacturing Settings

Some global settings can be configured only through the Summit Manufacturing Utility (SMU). There are two types of these SMU-configured settings:

- **Card Settings:** Stored in the SROM on the radio module, or card. If you move the card from one device to another, the card will retain these settings, provided that the device is running a version of the driver as current as the version with which SMU was used.
- **Unit Settings:** Stored in the registry of the unit on which SMU is run.

Card Settings are described in the table below:

Description	Options	Default
Regulatory Domain	FCC: Channels 1-11, max 802.11b Tx power of 19dBm (85 mW) ETSI: Channels 1-13, max 802.11b Tx power of 17dBm (50 mW) TELEC: Channels 1-14, max 802.11b Tx power of 17dBm (50 mW) Worldwide: Channels 1-11, max 802.11b Tx power of 17dBm (50 mW)	Worldwide
BT Coexistence (Bluetooth Coexistence)	On: Pins 39 and 45 are used for two-wire BT coexistence handshaking Off: Handshaking lines are not used	Off
Max antenna adjust	Percentage of maximum transmit power for the specified regulatory domain	100%

4.1 Regulatory Domain

The SMU enables OEMs (device manufacturers) to configure Summit radio modules to meet regulatory domain-specific requirements, i.e. the appropriate channel set to allow for operation only within the frequency band specified by the applicable regulations and the maximum transmit power allowed for by those regulations. The manufacturer must select the regulatory domain that corresponds to the territory in which their device will be operating. When the regulatory domain is set, the applicable channel set, maximum 802.11b transmit power and maximum 802.11g transmit power will be automatically stored in the non-volatile memory on the radio module. Once set by the manufacturer, these settings cannot be changed by the end user. These settings can, however, be edited by the OEM by using SMU. Summit restricts access to SMU strictly to OEMs who may not distribute this utility to any other party. The Commit Changes button must be tapped to save any settings changes.

4.2 Bluetooth Coexistence

Summit software includes a feature designed specifically for devices which support both 802.11b/g and Bluetooth wireless interfaces. As these technologies operate in different manners in the same 2.4GHz frequency band, they are “mutual interferers”, i.e. operation of one device will interfere with the operation of the other device when they’re transmitting simultaneously. Summit’s Bluetooth coexistence feature addresses this issue. When BT Coexistence is enabled, the Summit radio will not transmit when it’s been made aware through the driver that the Bluetooth radio is operating. By the same token, when BT Coexistence is enabled, the Summit radio will make the device aware through the driver that it’s transmitting. OEMs will need to enable corresponding “802.11 Coexistence on their Bluetooth interface for this time sharing system to be operational. BT Coexistence should not be enabled on those devices which do not have a Bluetooth interface as this will result in unnecessary overhead which will have a marginal impact on performance. The Commit Changes button must be tapped to save any settings changes.

4.3 Maximum Antenna Adjust

Summit recognizes that Summit radio modules are installed in devices which have higher gain antennas, i.e. antennas with gain greater than 0dBi. The regulatory domain maximum power settings all assume no antenna gain. As such, when installing a Summit radio module in devices equipped with higher gain antennas the OEM must compensate for this additional gain in order to maintain regulatory compliance. The Maximum Antenna Adjust field allows the OEM to scale back transmit power over and above the reduction in transmit power that is set when selecting the regulatory domain. This setting may also be used irrespective of antenna gain to decrease the maximum transmit power to comply with applicable regulatory agency grants and certifications.

The default setting for this field is 100%, i.e. no reduction in the maximum transmit power set as a result of the regulatory domain selection. Selection of a value less than 100% will reduce the transmit power by the inputted value multiplied by the transmit power expressed in dBm (a logarithmic scale, not the transmit power expressed in milliwatts which is a linear scale) rounded down to the nearest quarter decibel value. The below table provides examples of different input values, the resulting transmit power and the resulting EIRP (Effective Isotropic Radiated Power, a measurement of the total gain that results from both the transmit and antenna gain) with antennas of differing gains. Like all other settings in the Card Settings section, these values are stored in the non-volatile memory on the radio module and may not be edited by the end user. For those end users who wish to operate their device at lower transmit power levels to address operational issues, SCU provides this capability in the Global Settings section. The Commit Changes button must be tapped to save any settings changes.

Power Setting	Transmit Power (802.11b)	Antenna Gain	EIRP
100%	19 dBm	0 dBi	19 dBm
94%	18 dBm	1 dBi	19 dBm
90%	17 dBm	2 dBi	19 dBm
84%	16 dBm	3 dBi	19 dBm
79%	15 dBm	4 dBi	19 dBm
73%	14 dBm	5 dBi	19 dBm

4.4 Unit Settings

The only Unit Setting is Administrative override. When this is set, the SCU Admin Login button is removed, and SCU considers all SCU users to be administrators with the ability to change all settings in SCU. Setting Admin Override to "ON" will not impact any settings made via SMU. The Commit Changes button must be tapped to save any settings changes.

Appendix: FCC Information

Note: All declarations and instructions for the SDC-CF10G apply to the SDC-PC10G and to the SDC-MCF10G.

Summit declares that SDC-CF10G (FCC ID: TWG-SDCCF10G) is limited in CH1~CH11 for 2.4 GHz by specified firmware controlled in U.S.A.

This device is intended for host device manufacturers and integrators only under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the two conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing its end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that the two conditions above cannot be met (for example certain device configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

- **End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users, for example, mobile data terminals (MDTs) and vehicle-mounted devices (VMDs). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: TWG-SDCCF10G".

- **Manual Information That Must be Included**

The OEM integrator must not provide information to the end user regarding how to install or remove this RF module in the users manual of the end product which integrate this module.

The users manual for OEM integrators must include the following information in a prominent location "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

The user's manual for the device that embeds or otherwise uses a Summit radio module must not provide information on how to install or remove the radio module.

IC (Canada)

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.