Simple Satellite Monitoring System

Application Note

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Introduction

This document describes how the Wavecom W-PCIe or W-PCI card can be used to install a simple Satellite L-Band or C-Band monitoring system.

The W-CODE satellite software allows the monitoring of the L-Band downlink (in the 1550 MHz range, also called forward path) of the INMARSAT System. This link contains the information from the Land Earth Station (LES) to the Mobile Earth Stations (MES).
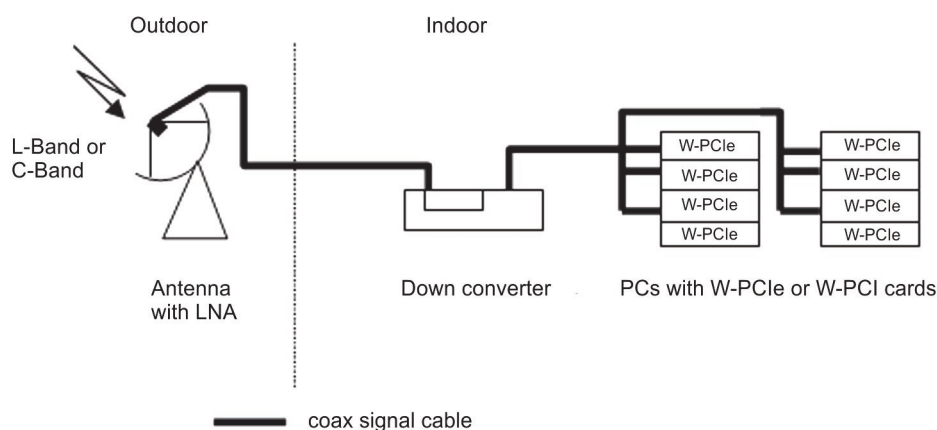
The monitoring system consists of three main components
♦ An antenna, including a low noise amplifier (LNA)
♦ A down converter
♦ One or more W74PC, W-PCIe or W-PCI card(s)
♦ One or more card hosts

These components are connected via coax cable. If more than one W-PCIe is to be fed from the same source, a splitter must be used to correctly match the input impedance of the 70 MHz input. The recommended PC requirements are
♦ Windows 7 32-bit/64-bit or Server 2008 with the same number of PCIe or PCI slots as the number of cards to be installed
♦ Intel® Core i5 or i7 2.8 GHz, 4-8 GB RAM and a hard disk with 500 GB to 1 TB of free space.
♦ Wavecom recommends up to four cards in a computer, if the cooling and power supply are appropriate.

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General Description of the Components

Antenna/LNA

The antenna system must have a figure of merit G/T > 0 dB/K, this is easily possible with a parabolic dish of at least 2 m diameter and a low noise amplifier with a noise figure of <= 0.8 dB. The polarization of the L-Band signal is RHCP, so if a parabolic reflector is used, the feed must pick up the LHCP component (mirror effect).
No tracking of the satellite is necessary. The antenna can be of a fixed type, which is installed and aligned to the satellite only once.

Downconverter

MP-9201 (L-Band) or MP-9240 (C-Band) are commercial products, converting L-Band or C-Band to 70 MHz IF with a bandwidth of +/- 20 MHz.

Wavecom Recommends the Following Products

L-Band
Dish antenna
3.7 m epoxy-glass resin dish
Feed and LNA
L-Band, Dual-Polarization-Feed with integrated LNA (1.5-1.7 GHz) from http://www.globotech.ch
Down converter
MP-9201 Satellite Down converters from http://www.microphaseinc.com

C-Band
Dish antenna
5 - 7 m epoxy-glass resin dish
Feeds and LNA
C-Band-Feed, Seavey ESA-44C C-Band Dual Circular Polarity Feed horn (INTELSAT Feed 3.7 GHz – 4.2 GHz) from www.vincor.com
C-Band LNA LNA8000N from www.norsat.com
Down converter
MP-9240 Satellite Down converters from http://www.microphaseinc.com

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Since more than thirty years Wavecom Elektronik AG has developed, manufactured and distributed high quality devices and software for the decoding and retrieval of information from wireless data communication in all frequency bands. The nature of the data communication may be arbitrary, but commonly contains text, images and voice. The company is internationally established within this industry and maintains a longstanding, world-wide network of distributors and business partners.

Product Information

Products	http://www.wavecom.ch/product-summary.php
Datasheets	http://www.wavecom.ch/brochures.php
Specifications	http://www.wavecom.ch/product-specifications.php
Documentation	http://www.wavecom.ch/manuals.php
Online help	http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm
Software warranty	One year free releases and bug fixes, update by DVD
Hardware warranty	Two years hardware warranty
Prices	http://www.wavecom.ch/contact-us.php

System Requirements

	Minimum	Recommended
CPU	Core i5 or Core i7 2.8 GHz	Core i7-6700 3.4 GHz
Memory	4 - 8 GB RAM	16 - 32 GB RAM
OS	Windows 7	Windows 10 32-bit or 64-bit

Distributors and Regional Contacts

You will find a list of distributors and regional contacts at http://www.wavecom.ch/distributors.php

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