



Alice-SC™

L-band remote sensing data receiving station

Alice-SC™ – is the universal hardware/software complex for reception and processing of data, transmitted from the polar-orbiting meteorological satellites in frequency range of 1.17 GHz in real-time

Alice-SC™ station provides the reception and processing of data from the following satellites:

- NOAA (POES)
- MetOp
- FengYun
- NPOESS (to be launched in 2013)

Alice-SC™ station enables to do daily monitoring of the territory of 2500 km in radius, receiving raw data from 7 currently operating meteo-satellites, providing for the revisit period of one satellite up to 4 times per day.

Main application of data

- Hydrology, meteorology and weather forecast
- Agriculture
- Monitoring of forest fires
- Flood control
- Dynamics of snow cover
- Sea ice monitoring
- Education and ecology



The receiving unit for the Alice-SC™ ground station

Complex components

- Antenna system
- Receiving unit with universal demodulator
- Computer interface board
- Connecting cable
- Software
- Documentation

Alice-SC™ receiving station operates based on standard personal computer, running on the MS Windows XP operating system. Station control, including tuning to have data received by any radio-channel within the limits indicated below, is done using software tools only.

Software

The complex is complete with the following software:

- AliceReceiver® for control of data reception and recording to hard disk
- ScanMagic® LL for images visualization, analysis and processing, including geo-location, geometric correction and creation of mosaics
- ScanEx METOP Tools®, ScanEx NOAA Tools®, ScanEx FengYun Tools® for AVHRR data

processing from MetOp-A satellites, NOAA series and FengYun-1D satellite, including unpacking, radiometric calibration and creation of L1B level products

The complex can be also complete with additional software:

- ScanEx ATOVS Tools® for ATOVS sounder data processing of NOAA and MetOp satellites
- MagicCatalog® for support of an electronic catalog of images (supplied together with ScanMagic® software application).
- MeteoGamma® for study of cloud cover in operational forecasting practice

Integration with workstation of the Map Maker "GIS-Meteo" forecaster is also possible



Daily coverage for one satellite of the NOAA series. The picture illustrates the Alice-SC™ station footprint (2400 km).

Main specifications of the Alice-SC™ station

Parameter	Alice-SC™
Antenna type	axially symmetric solid reflector
Type of positioner	2-axis (X-Y)
Antenna tracking control	step-type
Antenna reflector diameter, m	1.2
Working frequency band, MHz	1670 ... 1710
Digital data rate, Mbps	0.25...2.5(BPSK) 0.5...5(QRSK)
Modulation type	BPSK, QRSK, SQPSK
Noise temperature of the low-noise amplifier-converter, K	65
Rotation range for tilt (Y), deg.	-80...+90
Rotation range for elevation (X), deg.	0 ... 170
Max rotating velocity for elevation (not less than), deg./sec	2
Max rotating velocity for tilt (not less than), deg./sec	2
Dynamic tracking error (not more than), deg.	< 2
Antenna system weight (not more than), kg	40
Antenna system working temperature range, C	- 40 ... +50
Wind speed (working/ survival), m/s	20/ 30
Primary power supply requirements	220 V, 50/60 Hz, single phase
Maximum consumed power, V*A	300



The station ensures the BER of not more than 10^{-6} at all satellite elevations, higher than indicated below:

Satellite	Elevation, deg
NOAA-15	10
NOAA-17	10
NOAA-18	5
NOAA-19	5
METOP-A	10
FengYun-1D	10