External activity:

Long-distance links

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morning:

ICTP (GGH) to Muggia

GPS coordinates are on the website

we meet in the Lab @ 9:00 sharp

we take the bus at 9:15, no waiting!

work in Muggia: 10:00 - 11:30

estimated time back: 12:30

afternoon:

ICTP (AGH) to Grado

GPS coordinates are on the website

we meet in the Lab @ 14:00 sharp

we take the bus at 14:15, no waiting!

work in Grado: 15:30 - 17:30

estimated time back: 19:00

Tasks to do (1)

site survey in both locations:

visual check for line-of-sight

spectrum survey with the portable SA to identify the best channel to use

survey for best location for the non-penetrating antenna mount

survey for the solar panel installation

Tasks to do (2)

preparation of the radiolink:

mounting of the antenna mast

power supply (solar panel + inverter + batteries)

survey for the solar panel installation

cabling and testing of power supply

Tasks to do (3)

preparation of the radiolink:

installation of the antenna on the mast

preliminary antenna alignment with compass and GPS

fine antenna alignment with Signal Generator and Spectrum Analyzer

Tasks to do (4)

installation of the radiolink:

mounting of the radio station (and power amplifier if needed) on the mast

RF cabling, ethernet cabling

test of the link with portable computer

Tasks to do (5)

usage of the radiolink:

file transfer (ftp) with throughput measurement

audio and video conference (QoS testing)

signal strength measurement with software and comparison with SA

Tasks to do (6)

additional tests:

comparison of different antennas

test with and without power amplifier

sensitivity to antenna mis-alignment

all measurements and readings should be recorded for further analysis

experiments - 1

ICTP - Muggia:

2.4 GHz 802.11 b/g

5.8 GHz 802.11 a

5.4 GHz proprietary protocol

several types of antenna

experimental test with USB wireless adapter and parabolic dish

experiments - 2

ICTP - Grado (26.5 km over the sea !!!):

2.4 GHz 802.11 b/g

with/without power amplifier

QoS for audio-video conference ???

equipment checklist

preparation of the equipment the day before

checking before departure in the morning!

coordinators are required to care of the items

radios

Metrix box “Mark II” with 2 radios:

802.11 a/b/g

802.11b High Power)

Alvarion “BreezeAccess” 5.4 GHz link

RTX handheld radios for voice communications

RF cables

pigtails for all radios and antennas (check!)

short and long coax cables

adapters for the measuring equipment

lightning arrestors (check gender!)

(grounding)

computer and networking

one or more laptops with signal strength measuring software, network utilities and audio/video conference applications

(software for AP configuration and monitoring, if needed)

ethernet cables, power supplies, webcam

radio stations

ICTP:

Signal generator and Spectrum Analyzer

Remote Site:

Portable Spectrum Analyzers (Bantam + Rohde&Shwarz)

additional items

antenna mast

tools for mast installation (pliers, wrench, rope for fixing the mast in case of wind)

binoculars, compass, GPS, maps

paper and pen for taking notes! ;-)

Personal items

It may be cold, be properly dressed!

Hat and gloves are recommended.

Some walking is needed, use comfortable shoes (no high heels!)

No coffee break provided on field :-)