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Agenda Item: I/1

FREQUENCY PLAN OF RUSSIAN METEOROLOGICAL SATELLITES

Summary and purpose of the WP

This document reports on frequency plans of future Russian satellites in sunsynchronous orbit (series METEOR-M) and in geostationary orbit (series ELEKTRO-L)

Action proposed: none.

FREQUENCY PLAN OF RUSSIAN METEOROLOGICAL SATELLITES

Frequency plan of Meteor-M programme

In according with Russian Federal Space Programme the first satellite of new series Meteor-M is planned for launch on sunsynchronous orbit in December 2007 and the satellite Meteor-M N2 is planned for launch in 2008.

Global data will be stored on board and transmitted in X-band:

- 2 frequencies: 8128 & 8320 MHz, bandwidth 32-250 MHz, data rate: 15.36, 30.72, 61.44 or 122.88 Mbps.

Meteor-M direct-transmission in standards similar to NOAA:

- *HRPT (Advanced High Resolution Picture Transmission)*, for the whole information at full resolution in digital form (and additionally data from DCP's) at S-band frequencies. Main features:
  - frequency: 1700 MHz; bandwidth: 2.0 MHz; polarisation: right-hand circular
  - antenna diameter ~ 2 m, G/T ~ 6.0 dB/K, data rate 665 kbps.
- *LRPT (Low Resolution Picture Transmission)*, for selected information. Main features:
  - frequencies: 137.91 or 137.1 MHz; bandwidth: 150 kHz; polarisation: right-hand circular
  - Yagi antenna, G/T ~ -22.4 dB/K, data rate 72 kbps.

Data collection service:

- *DCP* uplink: frequency 401,9 – 402,0 MHz; data rate 400 bps

In addition, Meteor-M N2 will re-transmit data from DCP's to geostationary satellite Elektro-L in the frequency band 464.9-465.1 MHz with data rate 400 -1200 bps.

Frequency plan of Elektro-L programme

The first geostationary satellite of new series Elektro-L is planned for launch in 2007 and the satellite Elektro-L N2 is planned for launch in 2009.

Elektro-L data will be transmitted in real time to the:

- *Raw Data Acquisition Station* (allocated at SRC Planeta, Moscow) for MSU-GS (10-channels VIS/IR imaging radiometer) and HMS (Heliogeophysical Measurements System). Main features:
  - frequency: 7500 MHz; bandwidth: 60 MHz; polarisation: right-hand circular; data rate 30.72, 15.36, 2.56 Mbps.

After processing data will be transmitted to Elektro-L:

- *HRIT, LRIT uplink.* Main features:

  - frequency: 8195.0 MHz; data rate 64-128, 0.665-1 Mbps;

. The broadcast will comply with the HRIT and LRIT standards:

- *HRIT*. Main features:
  - frequency: 1691.0 MHz; bandwidth: 2 MHz; polarisation: right-hand circular
  - antenna diameter ~ 3.7 m, G/T ~ 12 dB/K, data rate 0.665-1 Mbps;

- *LRIT*, similar to MSG, GOES and MTSAT. Main features:
  - frequency: 1691.0 MHz; bandwidth: 200 kHz; polarisation: right-hand circular
  - antenna diameter ~ 1.5 m, G/T ~ 4 dB/K, data rate 64-128 kbps.

Data Collection Service (DCS), to relay *in situ* observations from Data Collection Platforms (DCP) at fixed times - Main features:
  - uplink: three bands, frequencies 402.0-402.1 MHz for international DCP's (33 channels of bandwidth 3 kHz), 401.5-402.0 MHz and 402.1-402.5 MHz for regional DCP's (300 channels of bandwidth 3 kHz); data rate 100 bps, polarisation right-hand circular;
  - downlink for DCS ground acquisition station: 1697 MHz, bandwidths 2 MHz, data rate 100-1200 bps, linear polarisation.

GEOSAR (Geostationary Search And Rescue), to relay distress signals from beacons at 406 MHz to stations of the international COSPAS/SARSAT Search & Rescue system (downlink: frequency: 1544.5 MHz; bandwidth: 80 KHz).