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Summary of the Working Paper.

Program is being planned for FY-4s, the next generation of Chinese geostationary meteorological satellites to take over FY-2s after 2015. Preliminarily, FY-4 frequency network is considered with respect to the fact of increased data amount in transmission, added functions to FY-4 such as Search and Rescue, DCP; which request for new frequencies in addition to the current FY-2 network. Other factors to be considered for the constitution of future FY-4 frequency network include the requirement of new orbital locations of satellites for backup/storage purpose beside the primary locations at 86.5E, 105E, 123.5E. This paper gives the information on frequencies to be used by FY-4s.

Preliminary Consideration for FY-4 Frequency Network

1 INTRODUCTION

FY-4s is the new generation of Chinese meteorological Satellites to take over the FY-2s. FY-4 Program is being planned, preliminary consideration on FY-4 frequency network is given with respect to the requirement for new frequency, increased amount of data transmission, and requirement for new function, for instance, Search and Rescue, as well as DCPS.

2 FY-4 FREQUENCY NETWORK

Network name: FY-4 Series Geostationary Meteorological Satellites

Launch of first satellite: ~ 2015

General objective: 1) Collect atmospheric and surface condition parameters such as vertical temperature and moisture profiles, sea surface temperature, clouds, occurrence of lightning, and aerosol using instruments sensing in visible, near-IR and thermal IR frequencies; The FY-4 program is proposed to develop FY-4(M) satellites to fulfil the mission of GEO microwave observation, separately from the FY-4(O) satellites that carry optics instruments; 2) Search and Rescue; 3) DCP.

Orbit: Geostationary;

Locations: 86.5E, 105E, and 123.5E for two FY-4s(O) and a FY-4(M). Additional locations are being considered for backup/storage purposes.

Number of satellites: 7

Main ground stations: Beijing (primary), Urumuqi(TARS), Grangzhou(TARS), and Melbourne(TARS, backup)

In consideration of increased data amount in transmission and new function assumed for FY-4, additional 300MHz between 18.0-18.4GHz (pending on the result of WRC-07 Res.) is required for raw data transmission; 406.025MHz (uplink) / 1544.5 MHz (downlink) are needed for Search and Rescue, and 8175-8215MHz data uplink for data broadcast system, based on current FY-2 frequency network for the 3 satellite locations.

For additional satellite locations, the frequencies to be considered are as follows.

Raw data transmission (downlink): K_a band between 18.0-18.3GHz / 18.1-18.4GHz, pending on the result of WRC-07 Res.

Data broadcast system: 8175-8215MHz (data uplink)
1670-1698MHz (data downlink)
1697.6MHz (LRIT uplink)
1674-1696MHz (LRIT broadcast)

Search and Rescue: 406.025MHz (uplink) / 1544.5 MHz (downlink)

DCPS: domestic channel: 401.1-401.4MHz (uplink)
International channel: 402.0-4.2.1MHz (uplink)
1670-1675MHz (downlink)

Telemetry and command: 2025-2110MHz (Uplink), 2200-2290MHz (downlink)