



CGMS-39 NOAA-WP-15  
Prepared by NOAA  
Agenda Item: I/2  
Discussed in WGI

**NOAA PLANS FOR THE FREQUENCY BAND 7750 - 7850/7900 MHZ**  
In response to CGMS action 37.23

In response to CGMS action 37.23, information on NOAA current and future missions planning to use the frequency band 7750 - 7850/7900 MHz is provided.

The band 7750 – 7850 MHz is currently planned for use by the by the NOAA/NASA NPOESS Preparatory Project (NPP) and the NOAA Joint Polar-orbiting Satellite System (JPSS) for the downlink of raw instrument data to satellite direct readout users at 7830MHz with a data rate of 20 Mbps and a bandwidth of 30.8 MHz.

Recommendation proposed: None.



## **NOAA plans for the frequency band 7750 - 7850/7900 MHz**

### **1 INTRODUCTION**

The NPOESS preparatory Project (NPP) is planned for launch in October 2011. The High Rate Data (HRD) service will become operational in late 2011 or early 2012 using the band 7812 MHz downlink to support the global direct readout community.

### **2 NOAA MISSIONS USING (OR PLANNING TO USE) THE BAND 7750 - 7850/7900 MHz**

#### **2.1 NOAA/NASA NPOESS Preparatory project (NPP)**

The NPP satellite is follow-on of the current NOAA POES operations. The spacecraft will collect a full orbit of remotely-sensed land, ocean, and atmospheric data that will be downlinked at Svalbard then delivered to the NOAA Environmental Satellite Processing Center (ESPC) in Suitland, Maryland. Additionally, the data are distributed in real-time using the 7812 MHz frequency band to the meteorological and global climate change communities. It will provide atmospheric and sea surface temperatures, humidity sounding, land and ocean biological productivity, and cloud and aerosol properties.

#### **2.2 NOAA Joint Polar-orbiting Satellite System (JPSS-1)**

The JPSS satellite is the first of the polar satellites and is a follow on to the NPP satellite. The spacecraft will collect a full orbit of remotely-sensed land, ocean, and atmospheric data that will be downlinked at Svalbard then delivered to the NOAA Environmental Satellite Processing Center (ESPC) in Suitland, Maryland. Additionally, the data are distributed in real-time using the 7812 MHz frequency band to the meteorological and global climate change communities. It will provide atmospheric and sea surface temperatures, humidity sounding, land and ocean biological productivity, and cloud and aerosol properties.

The High Rate Data (HRD) broadcast will be a complete, full-resolution data set containing sensor data and a subset of auxiliary/ancillary data necessary to generate EDRs and is intended to support users at fixed, regional hubs. A complete set of auxiliary/ancillary data will also be available at an on-line server for field terminal real-time processing. The HRD broadcast will be transmitted at X-band frequencies in the 7750-7850 MHz band (carrier frequencies of 7812 MHz), at a data rate of 20 Mbps, and will require a bandwidth of 30.8 MHz, with a tracking receive antenna aperture not to exceed 2.0 meters in diameter. The HRD continuity is expected from NPP through JPSS.

#### **2.3 NOAA Joint Polar-orbiting Satellite System (JPSS2-4)**

In addition to the space-to-ground transmission of stored mission data (SMD), JPSS-2 will simultaneously broadcast two continuous real-time data streams, at high and low rates, to suitably equipped field terminals worldwide. These direct broadcast/real-time



field terminals will be capable of processing Raw Data Records (RDRs) into Environmental Data Records (EDRs) by using a JPSS/Field Terminal Segment (FTS) open source processing software package using commercial-off-the-shelf systems. NOAA, through the JPSS/FTS program, will distribute the non-proprietary field terminal software, software changes, and program updates.

The High Rate Data (HRD) broadcast will be a complete, full-resolution data set containing sensor data and a subset of auxiliary/ancillary data necessary to generate EDRs and is intended to support users at fixed, regional hubs. A complete set of auxiliary/ancillary data will also be available at an on-line server for field terminal real-time processing. The HRD broadcast will be transmitted at X-band frequencies in the 7750-7850 MHz band (carrier frequencies of 7834MHz), at a data rate of 20 Mbps, and will require a bandwidth of 30.8 MHz, with a tracking receive antenna aperture not to exceed 2.0 meters in diameter. The HRD continuity is expected from NPP through JPSS.

Currently, NOAA plans to support the direct readout community with an L-band service on JPSS-2, JPSS-3 and JPSS-4. These options may change due to budget and frequency considerations.

### **3 CONCLUSIONS**

The current frequency use of the band 7750 – 7850 MHz is coordinated between CMA, NOAA and EUMETSAT for the systems FY-3, JPSS/NPP and EPS, respectively, with all Metop satellites (A, B, C) using the same frequency at 7800 MHz. CGMS should continue to monitor this band to ensure continuity of services and the coordination of satellite operations.