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Office of the Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

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FCC Mail Room

RE: Public Notice and ET Docket No. 10-123

June 9, 2010

Dear Madame Secretary:

I am writing you on behalf of the Exploring Technology with Satellite Imagery program at the NASA-Goddard Space Flight Center (GSFC), to strongly urge you against the reallocation of the 1675-1710 MHz frequency band from meteorological to broadband use.

NASA-GSFC uses the 1675-1710 MHz band to receive the GVar Data from the GOES satellites, The LRIT data from GOES-13, and the HRPT data from all the active NOAA satellites. We use the collection and processing of this data to train students from Middle School through Graduate-level, in a multitude of technical areas. Students learn all about Remote Sensing of the Earth by actually collecting and then processing the raw weather data that these satellites are broadcasting for free to the general public. This resource is probably the most easily relatable to by the general public, because they are all concerned about their weather. My group here at GSFC was the first to develop a PC-based ingest and image processing system for the GOES-GVar data (back in the early 1990s using OS/2 WARP). The news media spent a year working with us routinely to train our students in meteorology and to learn themselves about this new PC-based system. Now they are displaying the same data on the nightly news, as we had been doing years earlier. NASA was able to put GVar receive antennas and computers on 28 schools all around the USA. We also installed a number of HRPT systems for schools that could handle the tracking. Needless to say, many young minds have been positively influenced by these opportunities and many more young students have moved in the direction of Science, Technology, Engineering, and Math as a result. Now you can get the processed imagery that someone else has manipulated on the Internet, but that does not compare to being able to get this real-time data raw, and process it yourself, with all that is entailed. We've seen the learning and excitement this generates, up close and personal for about 15 years.

In the 1675-1710 MHz band range, the following frequencies are used by L-Band direct reception ground stations:

1685.7 ± 3 MHz
1691.0 ± 256 KHz
1698.0 ± 1.5 MHz
1702.5 ± 1.5 MHz
1707.0 ± 1.5 MHz

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Although the frequency range that L-Band direct reception uses can be quantified exactly above, a band sharing agreement in the 1675-1710 MHz range not be effective because broadband wireless equipment has poor filtering, and will therefore increase noise harmonics that will spill over into the satellite data range that is needed, rendering the data noisy and useless to us and our peers.

Due to the public's daily use of software such as Google Earth, and websites provided by agencies such as NASA and NOAA, there is a perception that all Earth Science satellite data can be received online. This is unfortunately not true, and a dangerous misconception. Data received via the internet has the following drawbacks:

1. It is not "real-time." Real-time data is defined as data that is received as close to simultaneously as is possible to when the satellite images an area. A Direct Broadcast satellite transmits the "picture" it sees immediately after it sees it. Data received from NOAA and NASA via the internet may not be available for hours, sometimes days, after it is received. This makes it useless for operational applications.
2. All data products may not be available. Each satellite takes multiple bands of data. It is then processed into different resolutions and end products using scientific algorithms. Data available via the Internet is usually already processed to certain end-points, which may or may not fit the user's needs, and currently NOAA does not disseminate all possible products. By receiving the raw data directly from the satellites, users can customize products, even create their own products. This kind of decentralized approach is essential to the scientific process, and is continuously driving innovation in the field.
3. Internet data transmission required huge amounts of bandwidth, not only by the user, but by the organization serving the data. We cannot speak with authority on NOAA's ability to provide thousands of large data sets daily to hundreds of users, but we do not think it currently exists, and would require a huge infusion of capital investment for upgraded IT infrastructure.
4. Internet data is not dependable during times of crisis, when operational agencies (research, government, and military) need it the most. A direct reception ground station can provide continuous data coverage in the absence of internet connectivity and grid power. In an emergency such as fire, flood, earthquake, or war, a direct reception ground station is essential, which is why agencies with operational missions across the globe continue to purchase such stations.

The 1675-1710 MHz frequency band is critical to our mission. If the frequency is transferred to the broadband community, irreparable damage will be done to the U.S. Direct Reception community.
Respectfully,

Michael A. Comberiate, NASA – Senior System Manager
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