

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)  
Fixed and Broadcast Communications (4)

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## PERFORMANCE OF NEW RADIO BROADCAST SATELLITE

**Abstract**

A new radio broadcasting satellite has been constructed over the past three years. The satellite is called Sirius FM-6 (USASAT-28N is its International Telecommunications Union designation). The satellite will be implemented by Sirius XM for operation in its orbital constellations, which provide satellite radio service to over 24 million subscribers in North America, as described in the paper, and was designed, constructed and tested by Space Systems Loral (SS/L). The satellite will be launched next year by a Proton BreezeM rocket provided by International Launch Services from Baikonur, Kazakhstan.

Sirius FM-6 is one of the most powerful radio broadcasting satellite constructed to date providing an EIRP (Effective Isotropic Radiated Power) of over 10 megawatts in portions of the United States. This is accomplished by a high powered transmitter which parallels thirty two 245 watt traveling wave tube amplifiers. The transmitter then radiates its output power through a 9 meter diameter antenna with a shaped beam to optimize coverage over its North American service area. It is designed to be a geostationary satellite for location at 116.15 degrees West Longitude.

The satellite transponder performance was carefully measured after integration and physical testing (i.e., thermal vacuum, vibration, shock and acoustic). The paper presents the key performance parameters measured on the ground and compares them with the original performance specifications. The measured performances in all cases meet and generally exceed the specifications, demonstrating that the satellite will have operating margin over requirements.