

1 Scope

This paper has five purposes:

- 1) Operational description of Delphi SDARS in-home repeater
- 2) Review F.C.C. regulations for device
- 3) Design considerations based on F.C.C. requirements
- 4) Provide recommendation for certification test stimulus
- 5) Present requests for F.C.C. rules interpretation

The intended audience is specifically the F.C.C. Office of Engineering and Technology.

2 Product Overview and Operational Description

Currently, Delphi is the leading maker and distributor of satellite radios in the United States, with a growing aftermarket customer base in excess of 1 million customers. One current limitation of satellite radio installations is that, generally, the SDARS antenna that is connected to the satellite radio needs to be placed at a point where the service signal is present (typically outside the house or in a window exposed to the service signal). The Delphi SDARS In-Home Repeater product is intended to overcome the limitation mentioned above such that current Delphi satellite radio customers would be able to receive the satellite radio signal (as broadcast by the service providers) at any place in their home without having to connect to the SDARS antenna.

Note that the primary intention of this product is to rebroadcast the XM signal in an effort to increase sales of current Delphi aftermarket satellite radios (all of which utilize XM as service provider).

Though termed as an in-home product here for identification purposes, the product is intended to also be applicable to other environments, including offices, health clubs, and malls.

In this system, the S-band antenna module which feeds the transmitter has an in-band passive gain of +7 dBiC and an effective active gain of + 20 dB (low noise amplifier gain minus cable loss).

The product concept involves receiving the XM SDARS signal at S-Band (centered at 2338.75 MHz), frequency-converting it to the 915 MHz ISM band, broadcasting it into the desired coverage space by radiating the SDARS signal in the 915 MHz ISM band, receiving the SDARS signal in the 915 MHz ISM band near the SDARS receiver, reconvertng the signal back to S-Band, and conducting the signal into the target satellite radio via its existing antenna input.

The product inherently is comprised of two units:

- 1) Downconverter/Transmitter