

Kristopher Kroc

Subject: STA for Grasshopper in Las Cruces New Mexico

From: Dan Zillich [<mailto:dzillich@newmexicopbs.org>]

Sent: Wednesday, July 03, 2013 8:44 AM

To: Steve Pollmann

Subject: RE: Frequency coordination For SpaceX Falcon-9 "reusable" launch

Steve,

I have looked at the proposed frequencies and have coordinated with the other users in the area and there should not be any interference caused by your operation.

Good luck with your testing.

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From: Steve Pollmann [<mailto:Stephen.Pollmann@spacex.com>]

Sent: Tuesday, July 02, 2013 2:48 PM

To: dzillich@knme.org

Subject: Frequency coordination For SpaceX Falcon-9 "reusable" launch

Hi Dan, I'm trying to perform some pre coordination for some launch vehicle testing we will be doing in Las Cruces New Mexico at SpacePort America

We are applying for a license in the 2 GHz band for the following frequencies

2090.0 MHz (telecommand)

2093.0 MHz (telecommand)

2273.5 MHz (telemetry)

2221.5 MHz (telemetry)

The frequencies will be used for telecommand and telemetry for the launch vehicle. We will be launching to an altitude of up to 100 km

And the 22xx frequencies will be radiating from the launch vehicle in an omni directional patter with an approximate power of 20W ERP

The data rates of the telemetry channels will be about 2.8 Mbps, and use PCM/FM modulation (basically BFSK with deviation of 0.35R) with necessary BW of about 3 MHz

The telecommand frequencies (209x MHz) will be uplinked from the ground to the Launch vehicle with a 1 meter parabolic reflector with about 100 W ERP

The modulation format for the telecommand frequencies is 300 kbps BPSK Necessary bandwidth is about 400 KHz.

The operation on these frequencies is relatively short, about 1 hour from turn on time to turn off time, where only about 15 mins of the 1 hour is when the vehicle is in actual flight

Do you see any issues or conflicts within say 40 miles of Las Cruces ? Do you need any more information about the link or RF characteristics ?

Regards

Steve

Steve Pollmann

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