FCC ID: RY9SK8900
CT Project: TCB-p1220002

From: Chris Harvey

Date: March 2, 2012

1. The manual specifies the Omni antenna and the High Gain Yagi antenna. There are photos of Antenna 2 and Antenna 4, but no cross reference to the names. The RF report MFA p0430001 indicated Radiated measurements with Whip and Hemispherical antennas. Are there only 2 possible antennas?
Customer Response - We have apparently created some confusion between antennas used on the SkySite high altitude platform versus what's used on the ground-based control station. There are three antennas that are used on the SkySite platform: the two depicted in the referenced photos and a third high gain antenna. High gain is a relative term in that the third antenna, a 5-element vertically oriented collinear array, provides about 6 dBd gain and slightly down-tilted pattern with gain primarily to the horizon.

2. The Operations Manual indicates operation in a 'recovery frequency' but does not provide any details of what this means. Please provide more information on the recovery frequency operations.
Customer Response - Space Data owns licenses for several nationwide 900 MHz channels. A 'recovery frequency' is one that is used primarily at mission termination so as not to interfere with other channels set aside as operational frequencies. Operational frequencies are the ones programmed into user devices for communication through a SkySite platform. Recovery frequencies, which are not programmed into user devices, are used to track a SkySite platform to the ground once its high altitude mission is complete.

3. The recovery process indicates setting power to 33dBm, but this seems like it would be non-compliant is using the high gain 10dBi Yagi antenna.
Customer Response - This refers to setting a SkySite transmit frequency, which is in the 930-931 MHz or 940-941 MHz range. The 33 dBm power level would be set on the SkySite high altitude platform, which is the base station or "tower" (albeit a very tall tower) in our system. While we cannot transmit the full 3,500-watt maximum allowed for towers in NPCS, there is a waiver in place that allows us to transmit up to 190 watts.

The Yagi is only used with our ground station which operates in the 901-902 MHz portion of NPCS. We abide by the 7-watt ERP limit by limiting our transmit power to 28 dBm when using the Yagi, as specified on page 4 of the SkySite System Operators Instructions.

4. How does the user determine which antenna type is configured with a particular setup?
Customer Response - Our standard SkySite antenna is the half-wave vertical dipole ("rubber duck") depicted as Antenna 4 in the supplied photos. Antenna 2 is rarely if ever used, having been replaced by the 5-element collinear array. Attached is a photo ("Antenna 3") of the collinear array suspended below a SkySite platform. A small quantity of collinear array antennas are available to launch teams if directed to change the antenna for a particular flight, but nearly all flights use Antenna 4.

5. Please note that the RF Test report P1220002 indicated 971.3% humidity. Please correct.
CT - The typographical error – The FCC Part 24 Test Report has been revised.
The Rev 2.0 has been uploaded for your review.

6. The conducted RF power in the 901-902 MHz band is 7Watts (38.45dBm) (from the Form 731), and the Yagi antenna has 10dBi gain. It seems possible that the device could be setup to operate outside of compliance. Please note that ERP is theoretically Conducted Power (dBm) + Antenna Gain (dBi) – 2.15dB.
CT – Operation in the frequency band of 901-902 MHz is for the ground station only which is handled under a separate FCC ID from 2004. The 731 Form has been edited to remove this information. The revised 731 Form has been uploaded for your review.

The 901-902 is a receive only band for this EUT.

7. The MPE exhibit was for original FCC ID and used only 3dBi antenna, and had 100cm separation, but amended pages has 25cm separation, but still 3dBi antenna. What about the 10dBi Yagi? What about the 7W operation at 901-902MHz?
CT - Operation in the frequency band of 901-902 MHz is for the ground station only which is handled under a separate FCC ID from 2004. The 731 Form has been edited to remove this information.
The revised 731 Form has been uploaded for your review.

The 901-902 is a receive only band for this EUT.

8. There are 3 RF reports:
MFA p0430001, d0440002 dated April 5, 2004, PCB Operations for 940.3675MHz and 930.010 MHz
MFA p0430001, d0440002 dated April 13, 2004, 4 amended pages
p1220002, dated February 8, 2012, AMP operations 930.5 & 940.5MHz, likely repeater operation

There does not seem to be any test report submitted for the operations at 901-902MHz 7Watts AMP as shown on the Form 731. These are the parameters for the Accessory System Control Transmitter FCC ID: RY9GST900. Is this just a coincidence?
CT - Operation in the frequency band of 901-902 MHz is for the ground station only which is handled under a separate FCC ID from 2004. The 731 Form has been edited to remove this information.
The revised 731 Form has been uploaded for your review.

The 901-902 is a receive only band for this EUT.

9. From the test reports and previous approvals it appears that the 901-902 MHz operates as AMP and 930-931 MHz and 940-941MHz operates as PCB.
CT – The device operated under two equipment classifications in the 930-931 / 940-941 bands.
PCB and AMP

The 901-902 is a receive only band for this EUT.

10. The Block Diagram only shows the SKS-900 operations for 930-940 MHz. This block is also included in the Operational Description. If this device also operates in the 901-902MHz band, please update this to include all the operations of the SK8-900.
CT – The only bands of operation are 930-931 / 940-941.

The 901-902 is a receive only band for this EUT.

Response by: Customer and John Erhard

Submitted by: Karen Springer

Date: April 18, 2012