Resolution SFCG 14-3R1

MICROWAVE POWERED HIGH ALTITUDE RELAY PLATFORMS

The SFCG,

CONSIDERING

a) that microwave powered high altitude radio platforms are proposed to operate at altitudes up to 20 km;

b) that these platforms, which will be powered by the transmission of electro-magnetic energy from the surface of the Earth, require very high levels of power from the ground (greater than 500 kW) to propel and operate the aircraft and associated electronic equipment;

c) that the system operators are contemplating such power transmission in bands allocated to the radiolocation service and industrial, scientific and medical (ISM), which may be an inappropriate use of that service as presently defined;

d) that the radiated beam of power (EIRP greater than135 dBW) required to operate the platform may produce power density levels at orbital altitudes sufficient to cause physical damage to space-based active and passive sensors and other radio equipment, even when operating in frequency bands removed from the fundamental power transmission frequency;

e) that the radiated beam of power has the potential to cause high levels of out-of-band and harmonic emissions from intermodulation products resulting from the non-linear characteristics of the platform rectifying antenna (rectenna) used to convert RF energy to direct current energy to operate the platform;

f) that the platforms are intended to support terrestrial radio services over a wide area (greater than 750,000 km^2);

g) that such radio services may provide benefits in certain areas of low-to-medium density population distribution, but not without significant potential for harmful interference to existing terrestrial and space radio systems.

RESOLVES

1. that member agencies urge their respective administrations to take into account the following considerations during the licensing process for microwave powered high altitude relay platform systems:

    1.1 interference to other radio services resulting from intermodulation products generated by the high power densities interacting with the non-linear characteristics of the RECTENNA;

    1.2 interference and potential damage to avionics equipment on board aircraft that fly through or near the high power beam;

    1.3 interference and potential damage to telecommunication equipment on satellites that traverse the high power beam;

    1.4 potential physical damage to active and passive sensors on low orbiting satellites which traverse the high power beam;

    1.5 the propriety of using allocations to the radiolocation service, as currently defined, for the purpose of transferring power to the aircraft.