Analysis of FSS-4180-IP Compliance to FCC 25.226

Summary:

The new L3Harris FSS-4180-IP antenna is largely based on the existing FSS-4180-LC antenna. The 4180LC antenna is FCC certified. The 'IP' antenna uses the same reflector and feed as the 'LC' and has the exact same radiation patterns. The frequency coverage in both TX and RX bands is also the same. The power levels radiated are the same in both dBW and dBW/kHz units.

The differences between the two are:

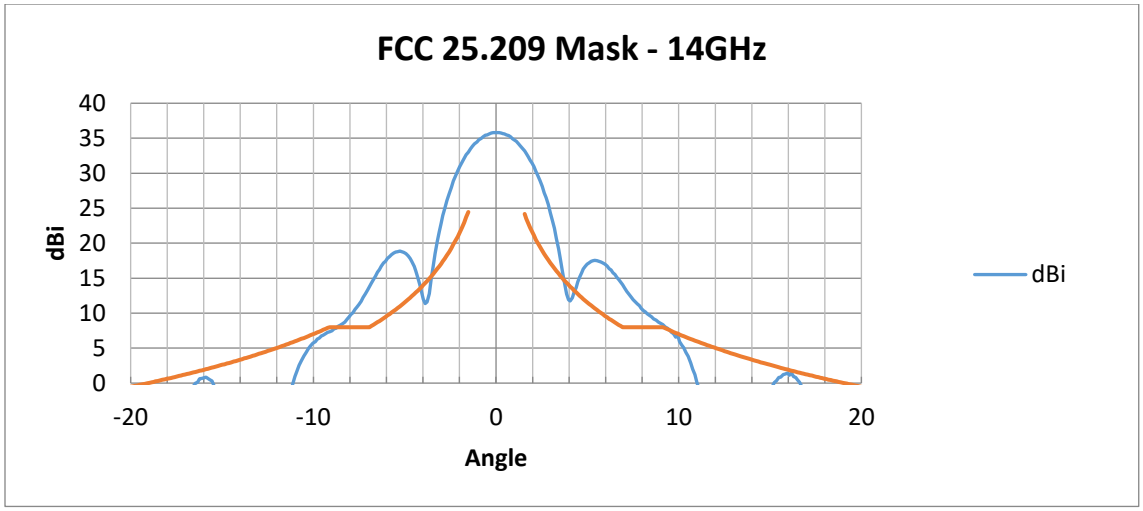
1.) The IP antenna is EMI/EMC compliant with MIL-STD-188-164 while the LC antenna is not.
2.) The IP antenna is sealed to IP67 levels while the LC antenna is not.
3.) The IP Ku SSPA is GaN based, while the LC SSPA is GaAs based.

We wish to modify the following license to add the FSS-4180-IP as an additional Antenna Facility.

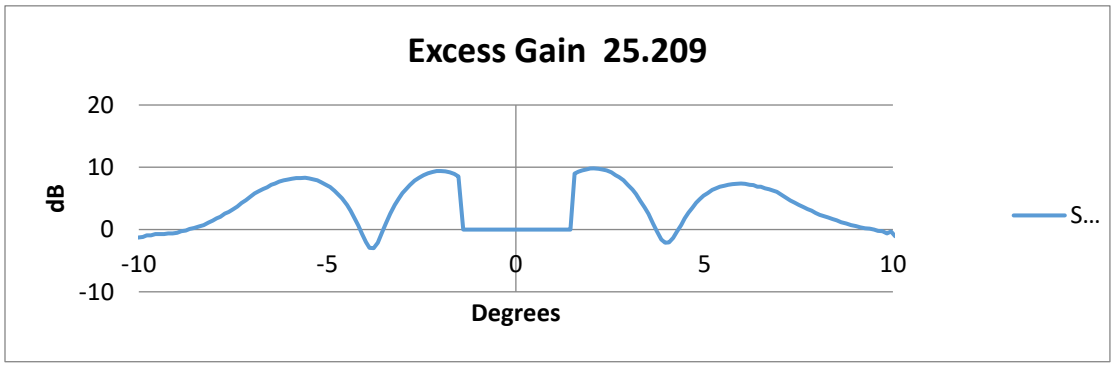
Call Sign: E100099
File Number: SES-MOD-20130128-00105

Note: The FSS-4180-LC antenna is found in the above file in section E as 'Mobile-2'.

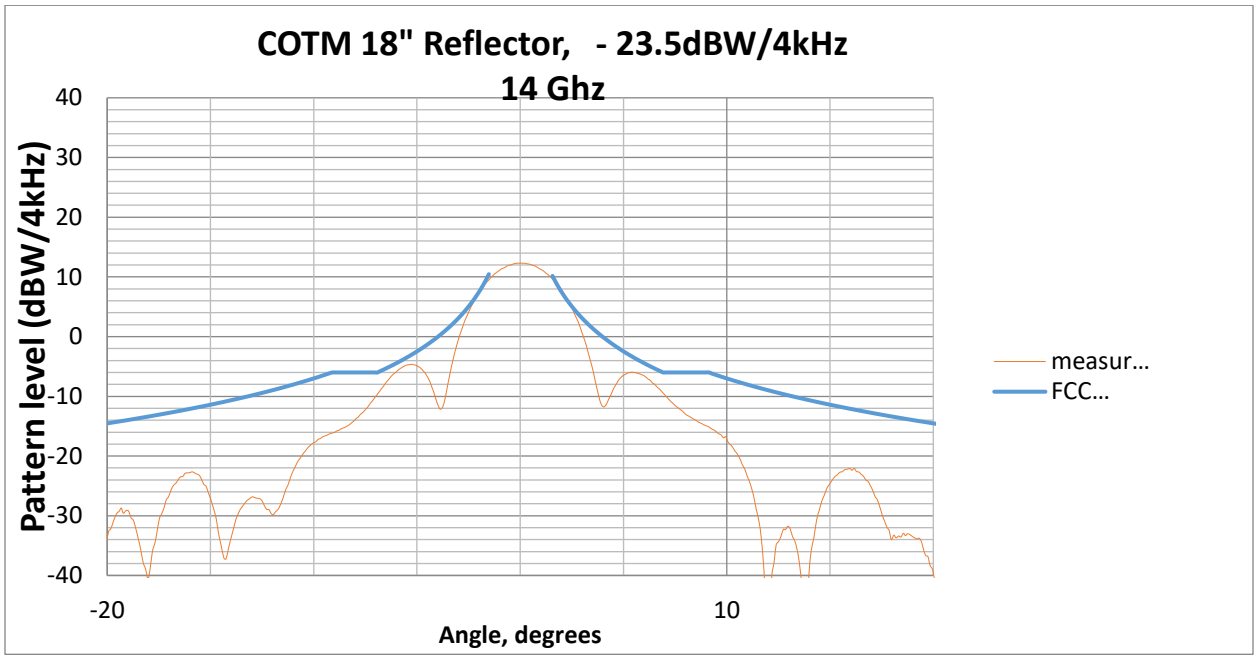
Radiation Patterns:

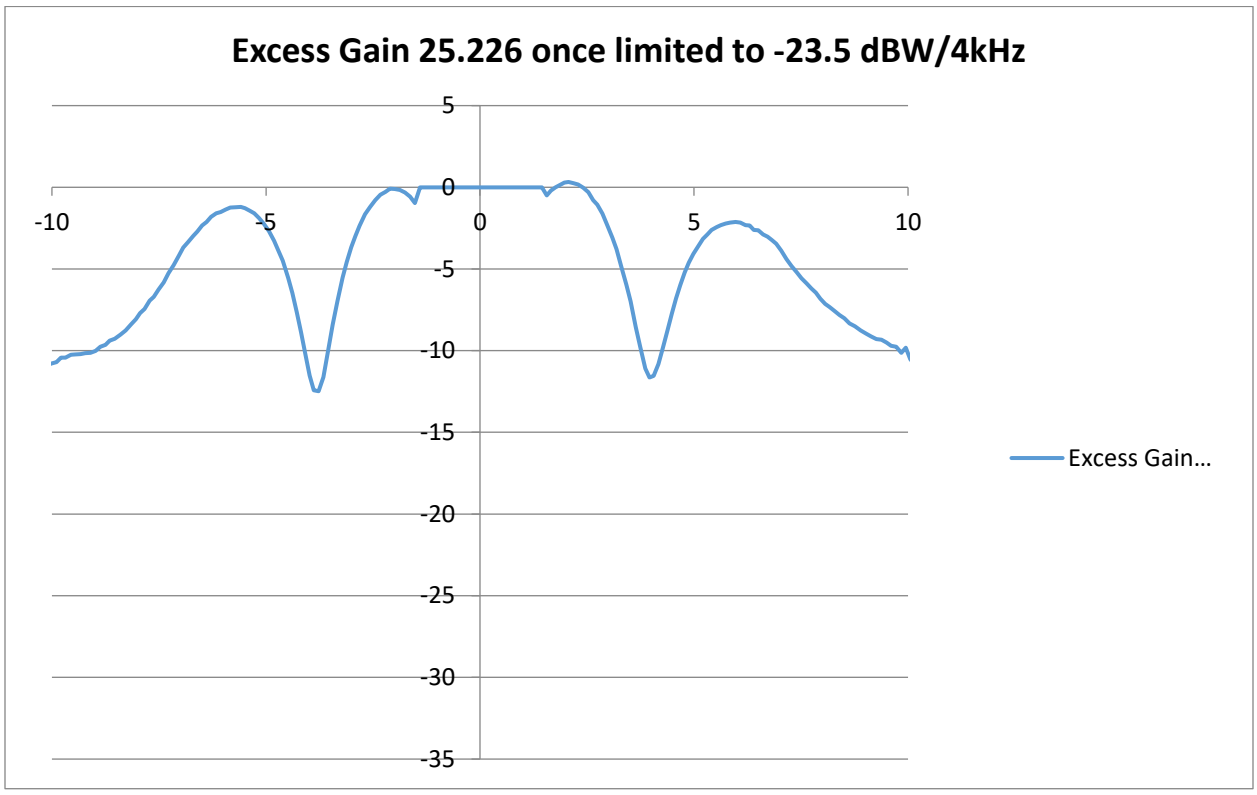


The symmetrical reflector's transmit pattern at 14 GHz is shown above overlaid with the 25.209 mask. Subtracting the mask from the pattern shows the excess gain:



The small reflector cannot meet 25.209. It instead must gain compliance via lower power spectral density. These next plots show that if the antenna is limited to an ESD level of -23.5 dBW/4kHz at the feed input, it will be compliant with 25.226.





This new antenna will operate in the same networks as the IP antenna. It will be limited in exactly the same way as the LC antenna currently is.