Below please find the answer to the question asked on 2/14/2001.


Re: FCC ID N6SMRIR3
Applicant: Marconi Commerce Systems Inc.
Correspondence Reference Number: 18100
731 Confirmation Number: EA98605

1) Please clarify what the input frequency RANGE is? What is the input
bandwidth / frequency range of the receiver? It should be wide enough
to capture the transmitted signal but may be wider to accomodate any
deviation or stability in the design.

An illumination frequency (13.56MHz) is used to power the tag and pass data, but the responses from the tag are returned in modulation sidebands centered around the illumination frequency. For a graphical representation of these sidebands and associated spectral content see the graph below.

ISO 15693

f_c = carrier frequency = 13.56 MHz
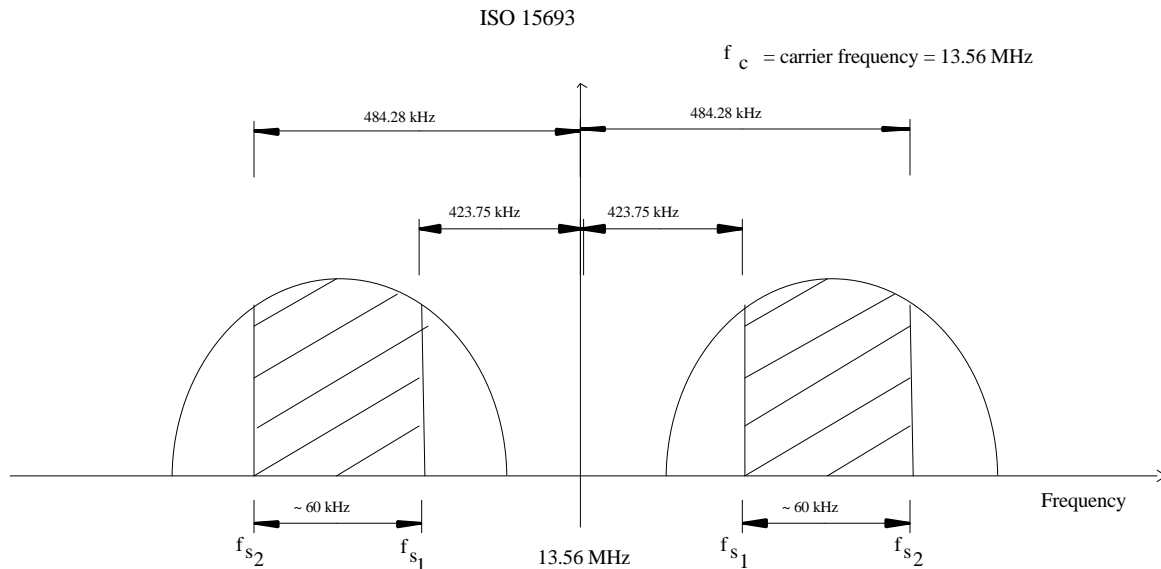
Subcarrier frequency: $f_{s1} = f_c/32$ (423.75 kHz) (if 1 subcarrier) or $f_{s1} = f_c/32$ (423.75 kHz) and $f_{s2} = f_c/28$ (484.28 kHz) (if two subcarriers are used).

The transponder typically (when using two subcarriers) switches rapidly between f_{s1} and f_{s2} as shown in the figure above. Theoretically this should be therefore a "bandwidth" of ~ 60 Hz. However, in reality, this is ~ 300 kHz (each side).

For the ISO 14443 functionality, the f_s value is 847 kHz (one subcarrier) with "bandwidth" of 600 kHz (each side).