

What are the differences between the 16-channel and the 32-channel systems?

SACOM's 16-channel version allows up to 16 concurrent users in the same room. It has audio specifications good enough for a recording studio mic (http://www.sacomusa.com/BrochureWebPages/Brochure110823_pg-011.html). The main advantage of the SACOM digital circuit is that it does not employ a compander circuit. Companders are an integral part of analog wireless microphones. They are notorious for adding noise and distortion and a loss in the lower frequencies of the voice. Companders are also the reason that guitars and basses sound distorted through analog microphone systems.

SACOM's main advantage over other digital systems is that it has very low latency. Latency is a delay in the audio signal through the system and is akin to reverb and echo. It is common for digital wireless systems to add between 14 to 20 msec of annoying latency. SACOM's latency is only 2.8 msec¹ typical of the industry's most advanced digital equipment.

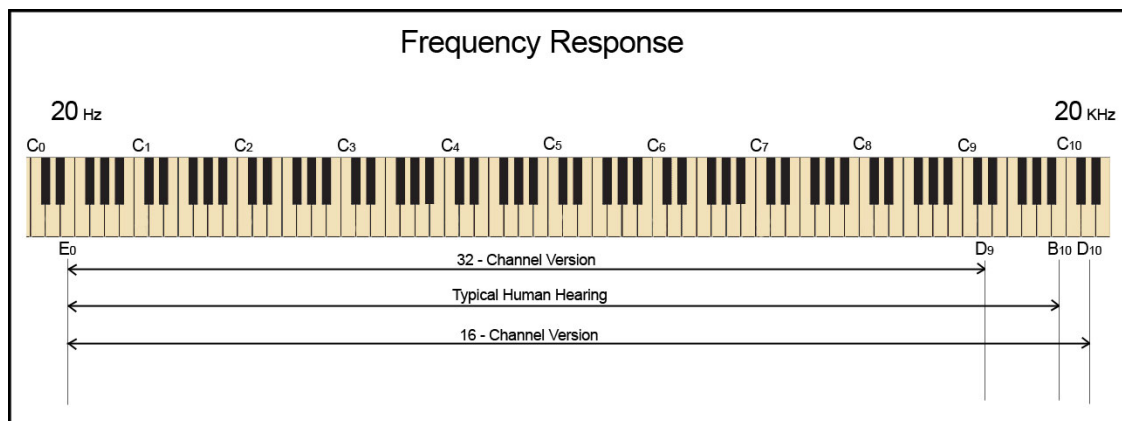
SACOM's 32-channel systems double the number of concurrent users by giving up a few of the highest frequencies in the audio spectrum. The SACOM 32-channel systems are designed mainly for large venues like conference rooms, but it is often used in large churches and playhouses because the lost frequencies are almost never perceived by an audience or performers because: 1) The 32-channel version only removes a very small part of the audio spectrum²; 2) high-frequency tones are absorbed by air before they reach the listener's ears, so the audience does not hear them even if they are in the program³; 3) Music's lower frequencies mask the high-frequency sounds⁴; 3) Typical sound systems are not efficient at reproducing and dispersing frequencies above 10 KHz.

None the less, audio purists can increase the number of full-frequency concurrent channels above 16 by installing more than one RF frequency band in the same room. For example, 16 channels can operate in the 902-928 MHz band while another 16 channels can operate in 603-630 MHz band.

The 16 and 32-channel versions require different receiver modules, but otherwise the two systems are identical. Receiver modules can be exchanged in the field.

Notes:

1. Latency: 2.8 ms w/ digital output or 3.8 ms with analog out.



- 2.
3. High Frequency Loss: 400 Hz loss is 0.1 dB per 100 feet while 16 KHz loss is 11 dB per 100 feet. (<http://www.sengpielaudio.com/calculator-air.htm>)
4. Masking: See Fletcher-Muncken Curves- http://en.wikipedia.org/wiki/Fletcher%E2%80%93Munson_curves)