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Improving 73K324L Carrier Acquisition Time in V.23

Description of the Issue:

V.23 can be used as either asymmetric full-duplex (1200 bits/s one way and 75 bits/s the other way) or half-duplex (1200 bits/s switching back and forth). The CCITT specification requires the first carrier acquisition to be detected between 300-700 ms and subsequent carrier detection to be between 10-20 ms. Since the device itself does not know whether it is the first carrier acquisition or subsequent detection, it must be able to detect carrier under 20 ms from the time the signal appears at RXA.

After the carrier is detected in V.23 Main Channel receive mode, there may be glitches on RXD up to 90 ms after carrier appears at RXA. This is not critical in most of the applications that do not start sending data well past 100ms of carrier but if the application requires sending data earlier than 90 ms after the beginning of carrier, the following technique is recommended.

TSC Recommendation:

The AGC in 73K324 settles much slower in FSK (V.23) mode than in DPSK (V.22) mode. The longer AGC settling time in V.23 is responsible for the long settling time even after the carrier is detected. The settling time can be significantly improved by detecting the carrier in V.22 first then switching to V.23 afterward the AGC has settled.

First of all, RXD (D7 of TR) should be clamped and the 73K324 should be in V.22 mode ready to detect the carrier. Make sure that the call init bit (D5 of CR2) is disabled and DSP (D2 of CR2) is enabled. When the carrier is detected in V.22, wait about 3-5 ms then switch the modulation type to V.23. If everything is executed properly, RXD can be enabled without any glitches about 26-30 ms after the RXA sees the signal. It takes about 10-12 ms for carrier to be detected after application to RXA and therefore RXD settles about 14-18 ms after the carrier is detected.

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