

is greater than +280 kHz for evenly numbered bits, and less than –280 kHz for oddly numbered bits. In the Trace D Error Summary, verify that the Deviation is a minimum of 280 kHz (rms).

2.4.2.4 Verification of Modulation Distortion (§2.2.2.4)

Purpose/Introduction:

~~These test procedures verify that the~~The minimum vertical opening of the eye diagram of the transmitted signal (measured at the optimum sampling points) **shall** be no less than 560 kHz when measured over an entire Long ADS-B Message containing pseudorandom payload data.

The minimum horizontal opening of the eye diagram of the transmitted signal (measured at 978 MHz) shall be no less than 0.624 microseconds (0.65 symbol periods) when measured over an entire Long ADS-B Message containing pseudorandom payload data.

This test procedure also verifies the Modulation Rate specified in §2.2.2.2, by measurement of the Eye Diagram.

Equipment Required:

The test performed in this subparagraph requires equipment described in §2.4.2.1.

Measurement Procedures:

Step 1: Equipment Setup (§2.2.2.4)

For the test in this subparagraph, configure the Vector Signal Analyzer according to the Digital Demodulation Mode setup listed in [Table 2-71](#). See Appendix N for the state file “UAT-DMD.STA” to automatically setup the HP89441A Vector Signal Analyzer. If the Trace C – RefLvl/Scale / Y per div[ision] setting does not equal 70 kHz, manually enter the value. On a display of 10 vertical divisions, deviations of ±280 kHz will occur at ±4 vertical divisions, respectively, from the display center.

Step 2: Modulation Distortion (§2.2.2.2 and §2.2.2.4)

Connect the ADS-B Transmitting Equipment to the Vector Signal Analyzer through enough attenuation to present a signal at the Vector Signal Analyzer input of -60 ± 5 dBm, and initiate a series of Long ADS-B test messages each having the following message elements: the 36 bit SYNCH, followed by a 272 bit Payload having a pseudo-random series of bits which changes for each successive payload, and a 112 bit FEC as generated by the Reed-Solomon algorithm. On the Trace C “Eye Diagram,” find the minimum upper crossing, and the maximum lower crossing, at the horizontal center of the display, and verify that the upper crossing minus the lower crossing is no less than 560 kHz (8 vertical divisions). Trace C should resemble [Figure 2-11](#).

UTDMD_C2bw3.HGL ==> Recording Date: 02-13-02 Time: 14:49

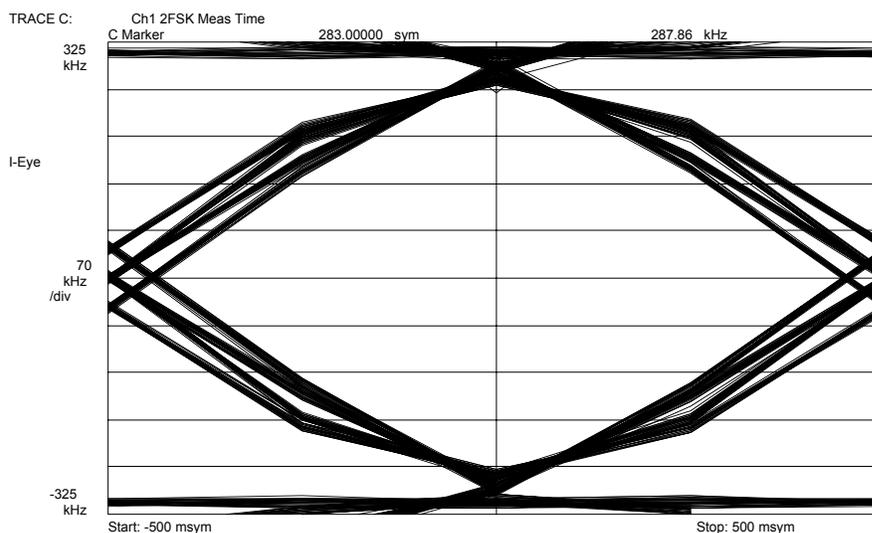


Figure 2-11: Digital Demodulation Mode – Trace C: “Eye Diagram”

Step 3 Verification of the Horizontal Eye Diagram Requirement

TBD

2.4.2.5 Verification of Transmitter Power Output (§2.2.2.5)

Purpose/Introduction:

The Time/Amplitude profile of an ADS-B Message Transmission **shall** fall within the following limits relative to a *reference time* defined as 0.48 microseconds prior to the center of the first bit of the synchronization sequence (§2.2.3.1.1) appearing at the output port of the equipment.

All power measurements for subparagraphs “a” through “f” below apply to the selected antenna port for installations that support transmitter diversity (§2.2.6.1.3). The RF power output on the non-selected antenna port **shall** be at least 20 dB below the level on the selected port.

All power measurements for subparagraphs “a” and “f” assume a 300 kHz bandwidth. All power measurements for subparagraphs “b,” “c,” “d” and “e” assume a 2 MHz bandwidth.

- a. Prior to 8 bit periods before the reference time, the average RF output power **shall** not exceed –80 dBm.

Note: *This unwanted power requirement is necessary to ensure that the ADS-B Transmitting Subsystem does not prevent closely located UAT receiving*