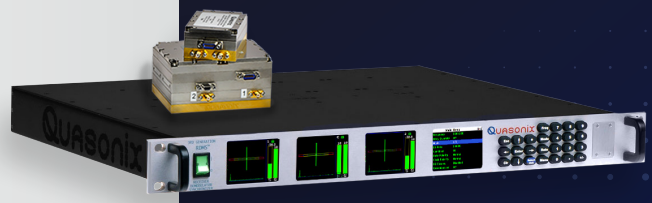
Quasonix

MADE IN USA

Space-Time Coding (STC) System

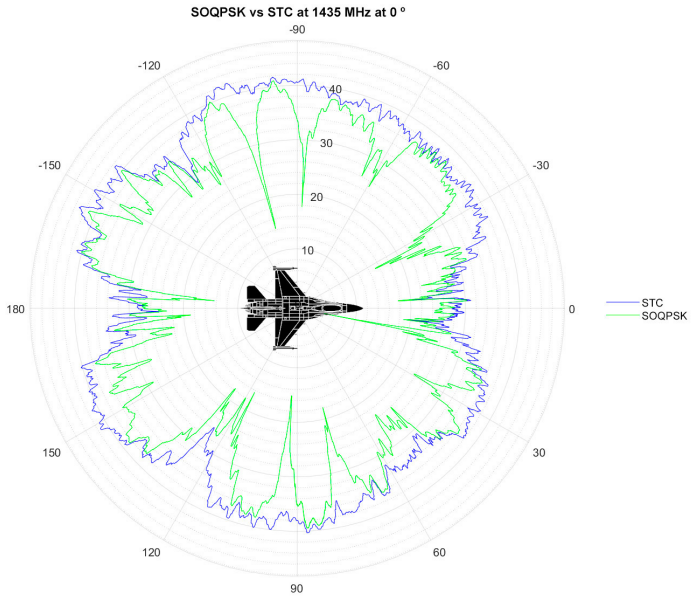
Adopted by the Range Commander's Council, IRIG 106-17, Appendix 2-E



A better two-antenna solution

Experiencing unexpected signal fades and data dropouts during testing? Your problem may be antenna self-interference. If so, STC can save the day. Quasonix is... Reinventing Telemetry™.

Solves the "Two-Antenna" Problem — While a single transmitter output split between top and bottom antennas provides full RF spatial coverage, the signals can combine destructively. STC signals, orthogonal over the length of the code block, interact non-destructively.



As measured by the engineers at Eglin AFB, a traditional two-antenna split signal (green) results in deep signal fades at some angles, whereas STC (blue) preserves the original antenna pattern.

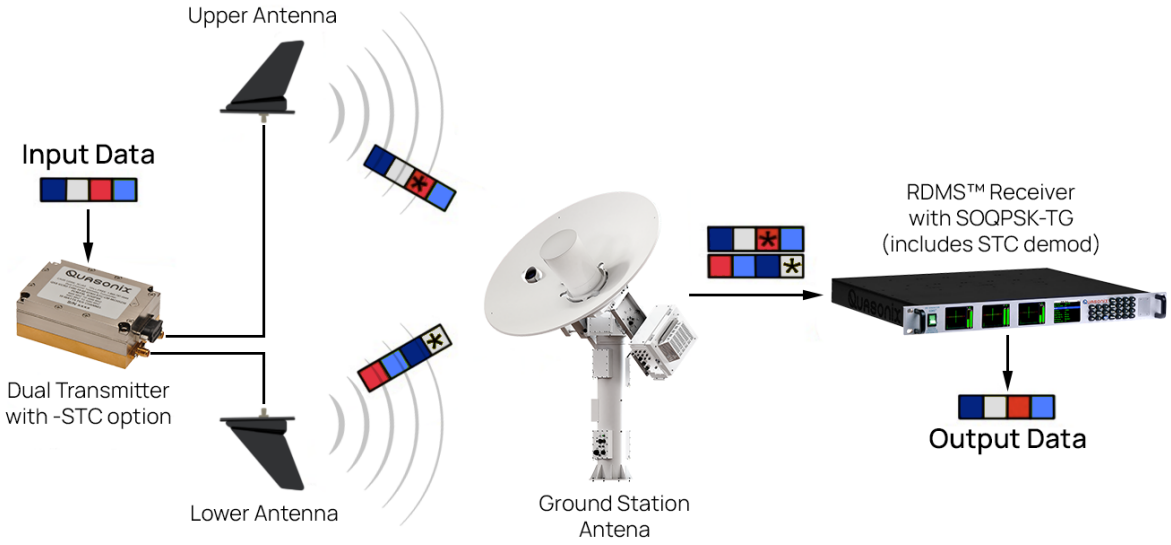
An F-16, used to test two-antenna interference and STC (chart at left), is mounted in the JPRIMES anechoic chamber at Eglin Air Force Base.

Based on SOQPSK-TG — Two STC data streams are applied to two phase-locked SOQPSK-TG modulators. As a result, STC has detection and spectral properties similar to SOQPSK-TG, including compatibility with Low-Density Parity Check (LDPC) coding to further improve performance.

Streamlines Hardware — No power splitter, high/low power, or top/ bottom selector circuitry is required. Source data is encoded by the transmitter, and each transmitter output is directly applied to its own antenna. This can save several dB of transmit losses and makes RF troubleshooting easier because individual channel performance is continually estimated and monitored during demodulation.

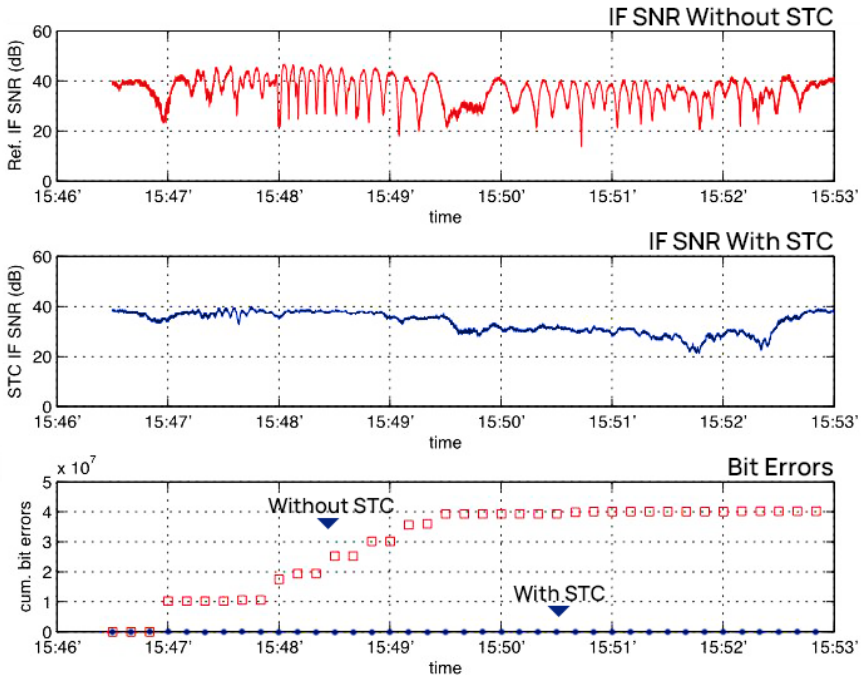
Easy Set-Up

A complete STC telemetry system simply consists of a Quasonix dual transmitter and a Quasonix STC-capable receiver (requires SOQPSK-TG) and results in a mere 4% bandwidth expansion. Existing receivers without SOQPSK-TG can have it added via a software ugprade.



Improved BER

STC stabilizes the received two-antenna signal, reducing deep signal fades and corresponding bit errors.



Flight test data on this page used with permission of the authors – originally published in "Space-Time Coding for Aeronautical Telemetry: Part II - Experimental Results" by Michael Rice, Brigham Young University, and Kip Temple, Air Force Flight Test Center, Edwards AFB, California, USA, in Proceedings of the International Telemetering Conference, Las Vegas, NV, October, 2011.

Photo and test data on the previous page used with permission of the authors - originally published in "Spectrum Relocation Fund Transition Agility Challenge", by Josef Von Niederhausern, Terry Wade, Michael Hagg, Matthew Morgan, Greg Uhland, Alfredo Berard, and Lorin Klein, 96th Test Wing, Eglin AFB, FL 32542, in Proceedings of the International Telemetering Conference, Las Vegas, NV, October, 2017.

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