



ATSC 1.0/2.0 SFN

(8VSB) SFN REQUIREMENTS

Connecting for the Future

SINGLE FREQUENCY NETWORKS

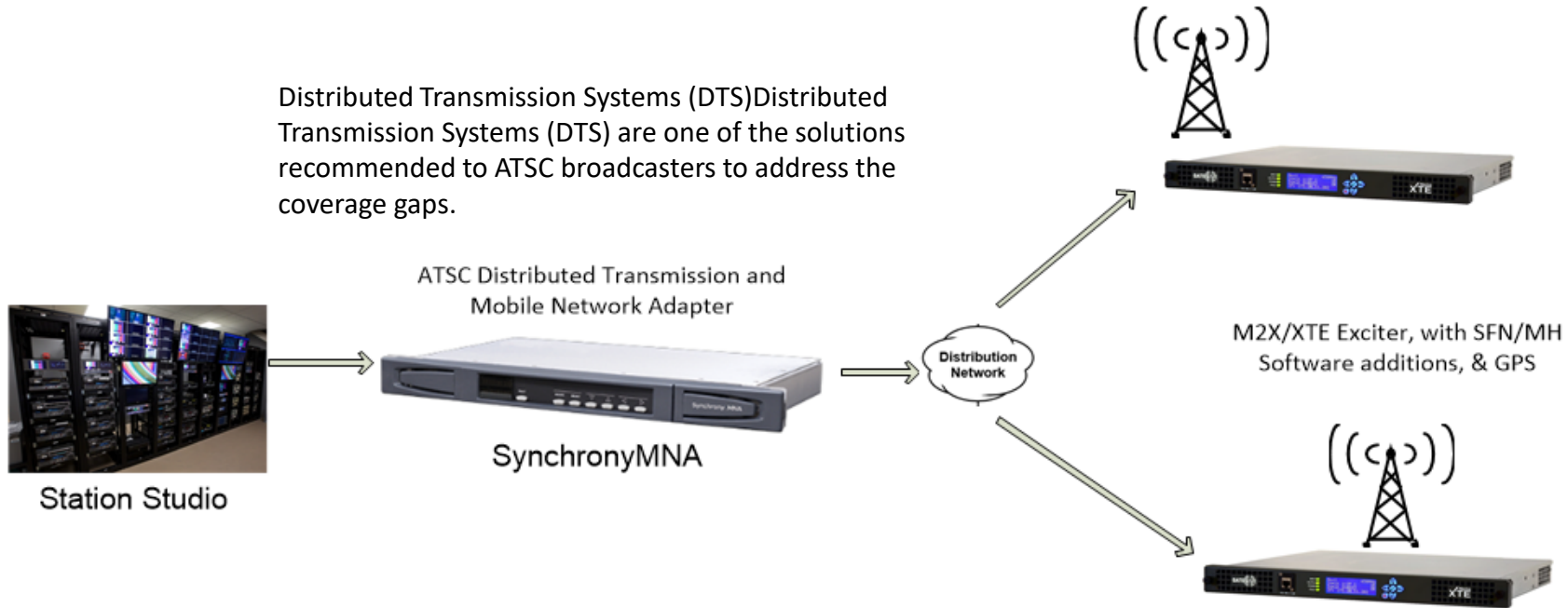
Key Factors of an SFN:

- All the transmitters are broadcasting the same information, same signal / bits.
- All the transmitters are broadcasting at approximately the same time (with some exceptions)
- All the transmitters are broadcasting on the same frequency or channel



REQUIREMENTS:

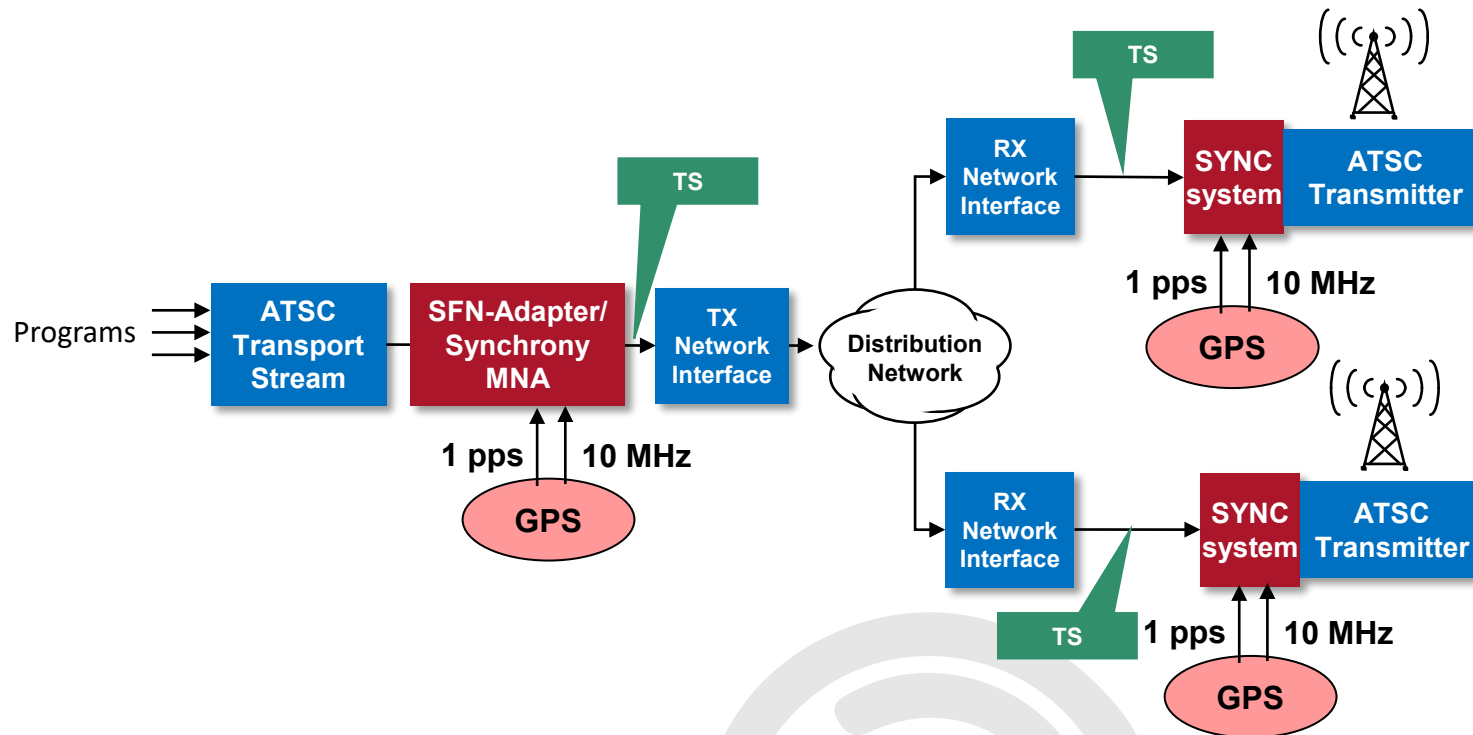
Distributed Transmission Systems (DTS) Distributed Transmission Systems (DTS) are one of the solutions recommended to ATSC broadcasters to address the coverage gaps.



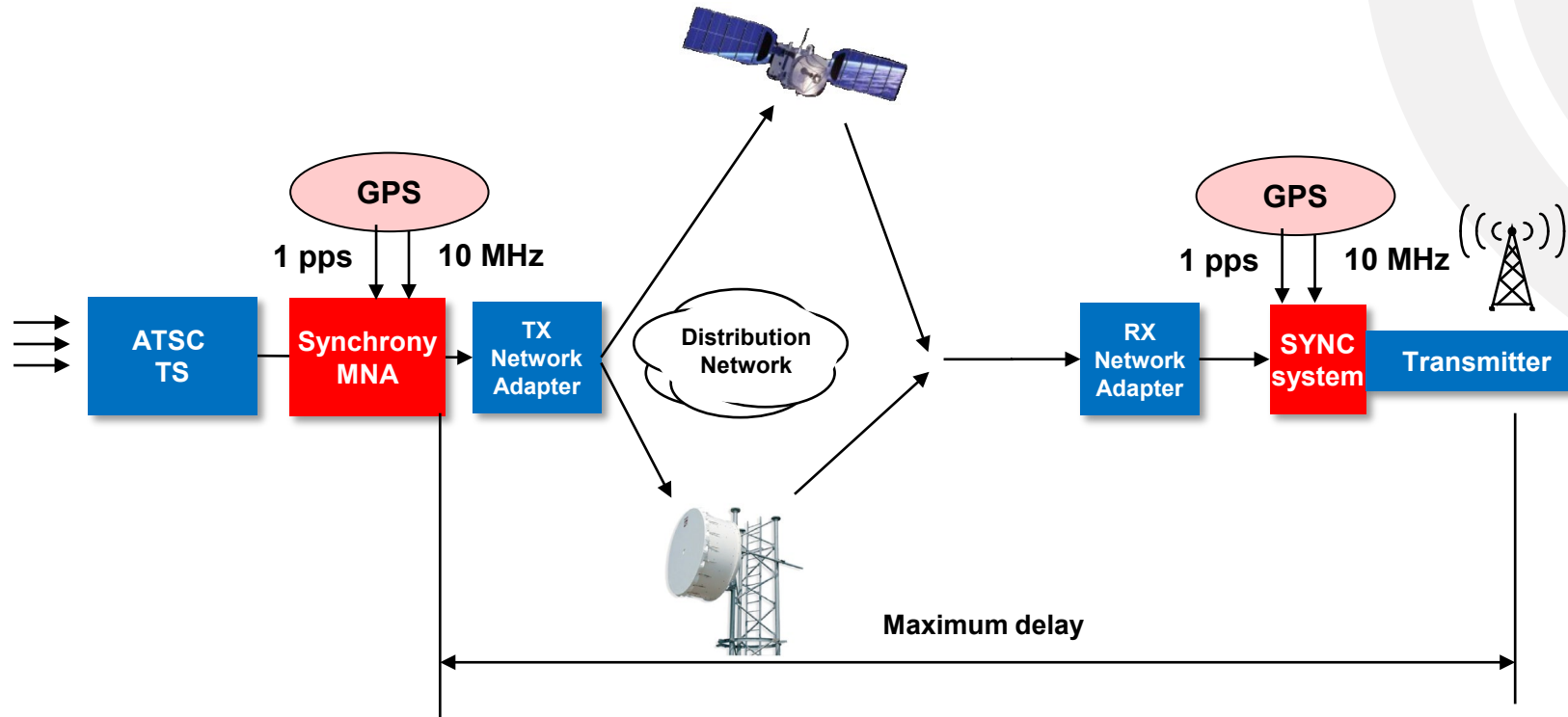
Maxiva Synchrony MNA precisely manages the timing and synchronization of the modulated signal in each transmitter to minimize interference zones where coverage overlaps. It inserts GPS timing information into the data stream delivered to the transmitters from the studio and centralizes control of the transmitters DTS functions.



Reference Synchronisation



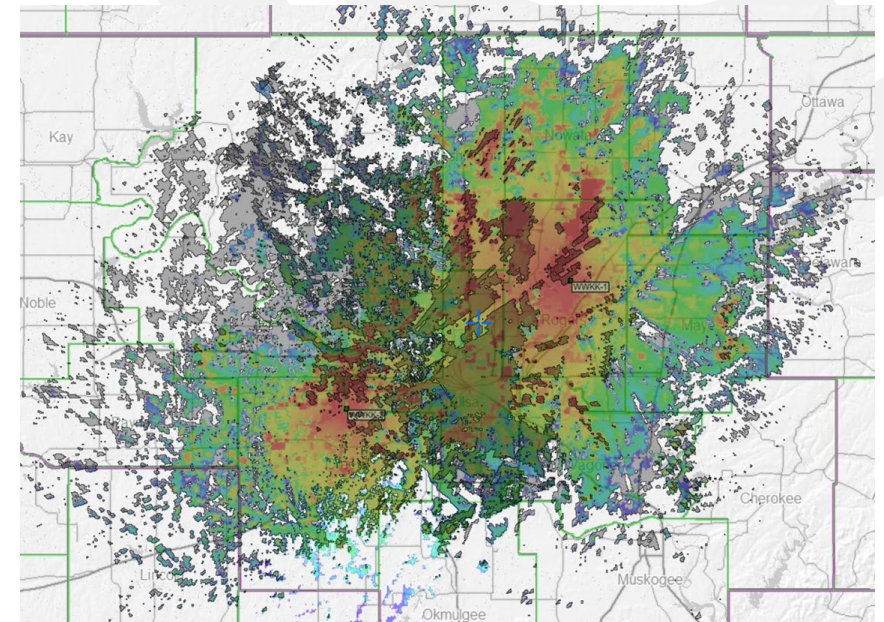
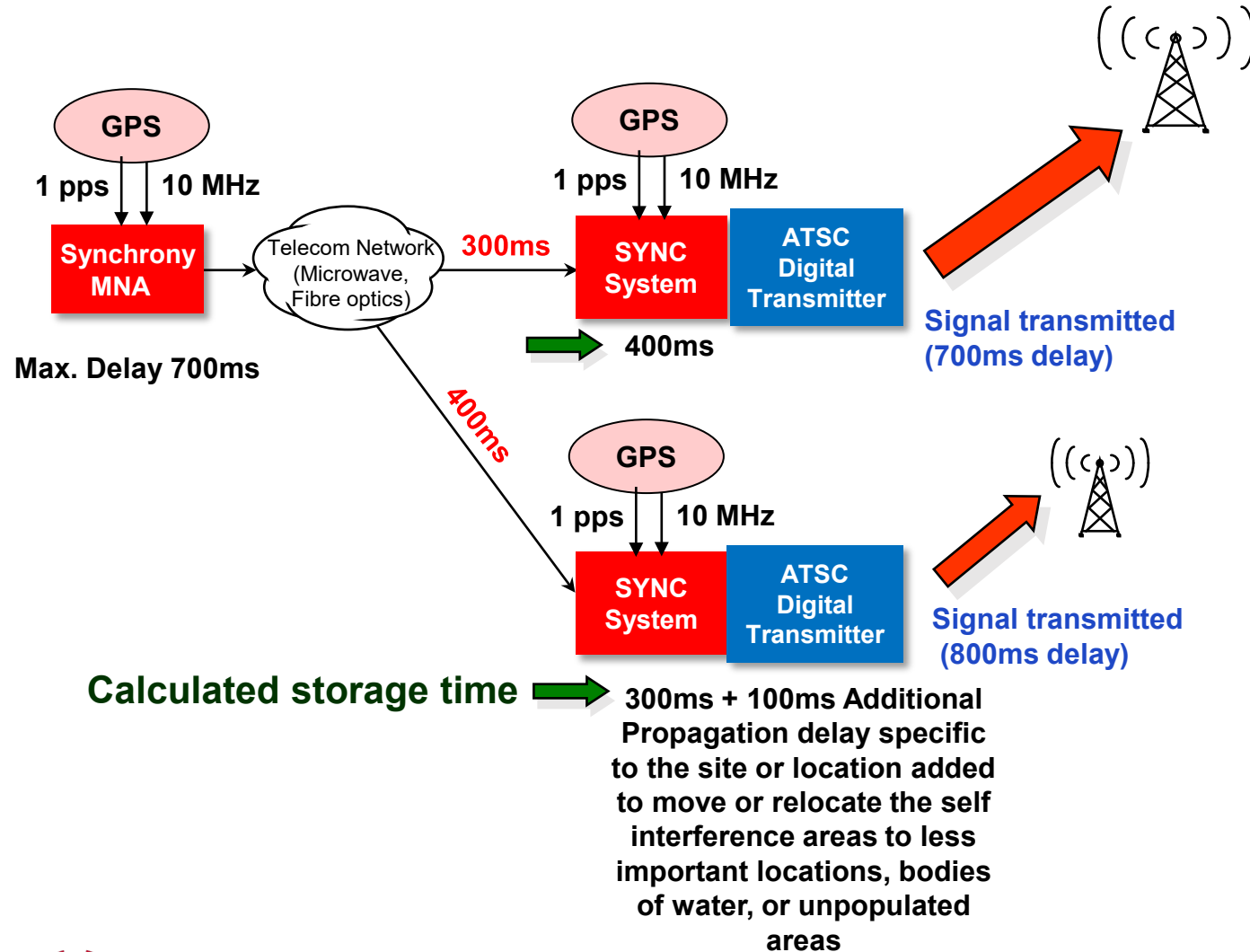
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Maximum delay: (reference synchronization)

The maximum delay is set in the SFN adaptor/Synchrony MNA and provides the reference for the total amount of delay required in the Distribution network.

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Coverage overlap or interference zones

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Maxiva Synchrony MNA

Transmitter / Exciter

Synchrony™ MNA

Section 2 Installation

Utilities—Feature Key, Commands, ISP, Load/Save Config, Downloads

Feature Key

Feature Key: BFBCFDC400070080

MH Enabled: ☒ Yes

SFN Enabled: ☒ Yes

In-System Programming

File to Upload (*.s19): Browse...

Load/Save Configuration Status Text File

File to Upload: Browse...

Commands

RESET

SET FACTORY DEFAULTS

Load/Save Configurations

Current Configuration: Config File 4

LOAD

SAVE

Default Config

Config File 1

Downloads

Right click the link to the file to download and then select Save Link As...

[All Status](#) [Fault Page](#)

[Configuration Status](#) [Event Log](#)

[Configuration s19](#) [Fault Log](#)

[EEPROM s19](#) [Server Log](#)



GATESAIR eng, Engineer XTE-EXCITER-MS Maxiva™ XTE

On Logout Home Event Log

Forward 100 mW

Foldback 0 %

183.000000 MHz ATSC 04.10.0002 02/15/2021 15:57

Performance: LSB: -50.7 dB, USB: -51.3 dB, EVM: 0.2 %, SNR: 48.5 dB

RTAC: Linear: Adapt, Nonlinear: Adapt, Exciter: Main, Remote Enabled: ☒

DTx/SFN Status

Input Status

Primary: OK

Secondary: None

Active Input: Primary

Primary Input: TS1 ASI

Secondary Input: None

Modulator Mute Status:

Modulator Mute: ☒

Negative Delay: ☒

Mute Count: 0

Delay Exceeds 1 Sec: ☒

Mute to Increase Delay: ☒

Delay Count (Inc/Dec): 0 / 0

Reset Count

Reset Count

Cooling

PS Monitoring

Battery

Maximum Delay (us): 0.0

Transport Delay (us): 0.0

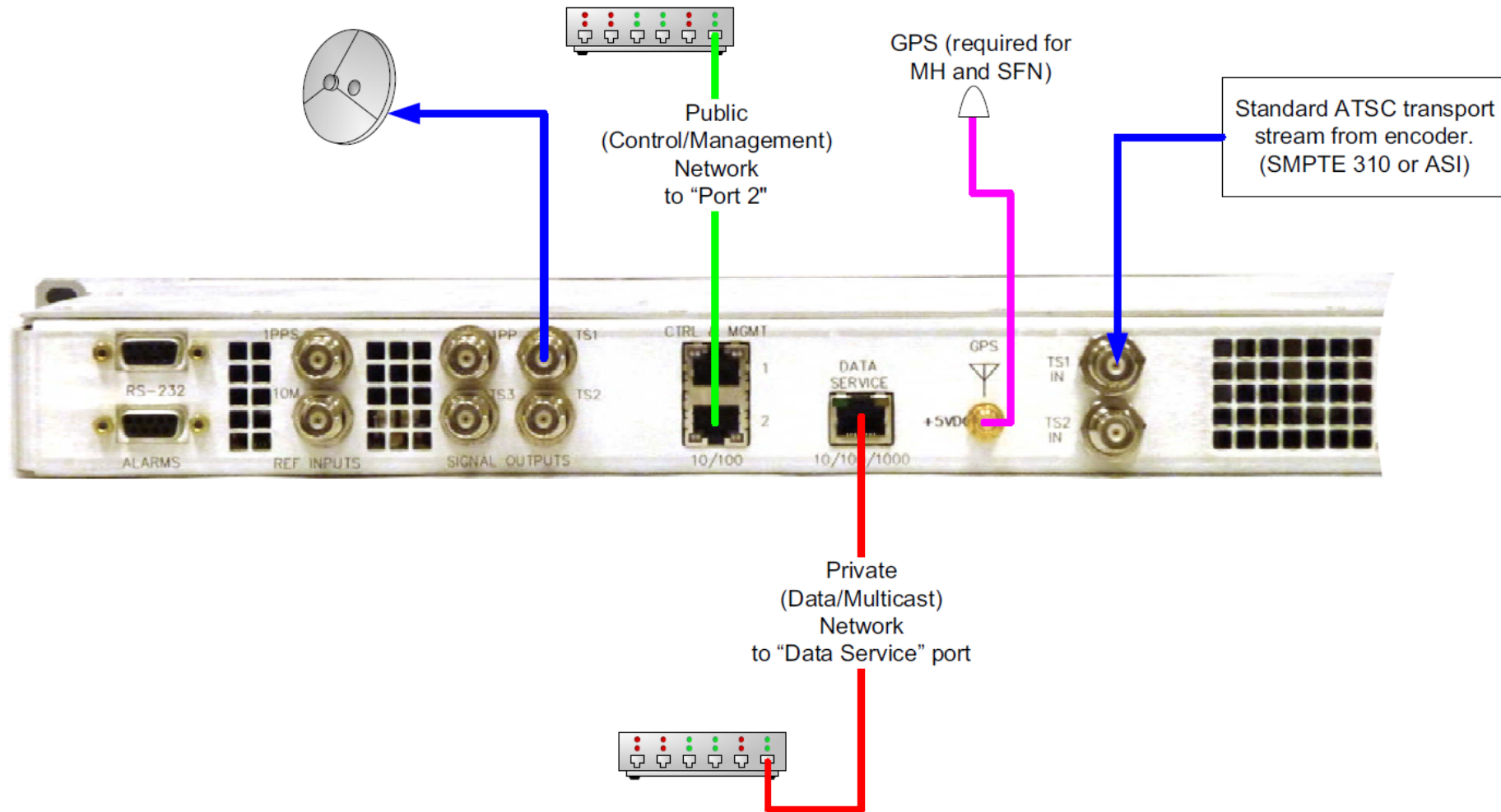
Offset Delay (us): 0.0

Delay Adjust (us): 0.0

Antenna Delay (us): 0.0

Total Delay (us): 0.0

MAXIVA SYNCHRONY MNA



SINGLE FREQUENCY NETWORKS

ATSC 1.0/2.0

Things to Consider when doing a SFN with ATSC 1.0 or ATSC 2.0 (8VSB Modulation)

- ATSC (8VSB) interference is created when used in a single frequency network, because the 8VSB modulation does not handle multipaths well.
- Interference can be moved into different locations by adjusting the delay / timing, but not eliminated.
- Coverage studies should be completed looking at the predicted interference locations, consultants can provide coverage and interference studies, providing possible locations to move the interference zones, like bodies of water or unpopulated areas.
- The use of Terrain and other RF blockage or separation in transmission sites is helpful in reducing interference.
- My Recommendation: Wait for ATSC 3.0 if possible.



THANK YOU

www.gatesair.com

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