TETRA ASSOCIATION

Nielson's experience withTETRA in the US ?

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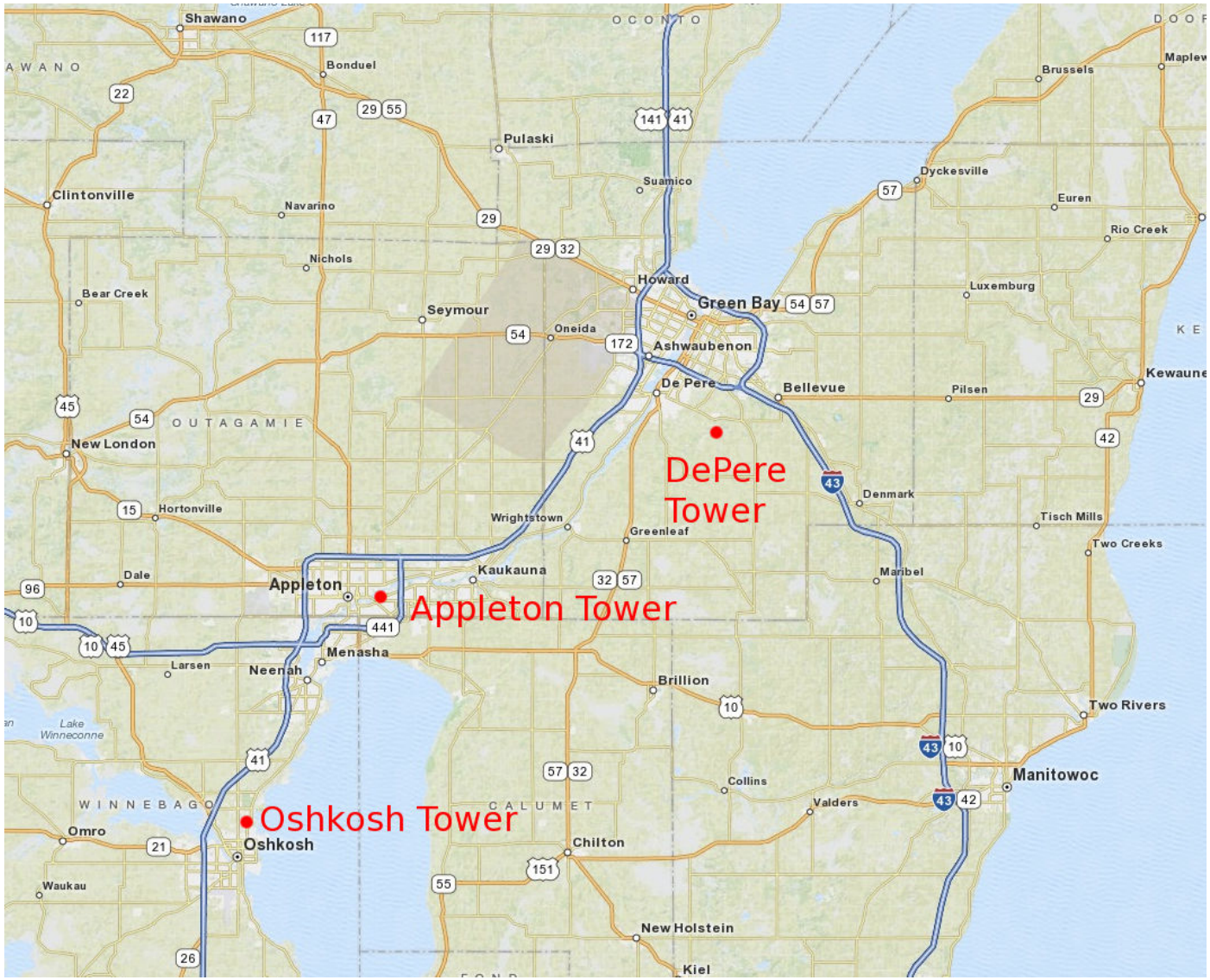
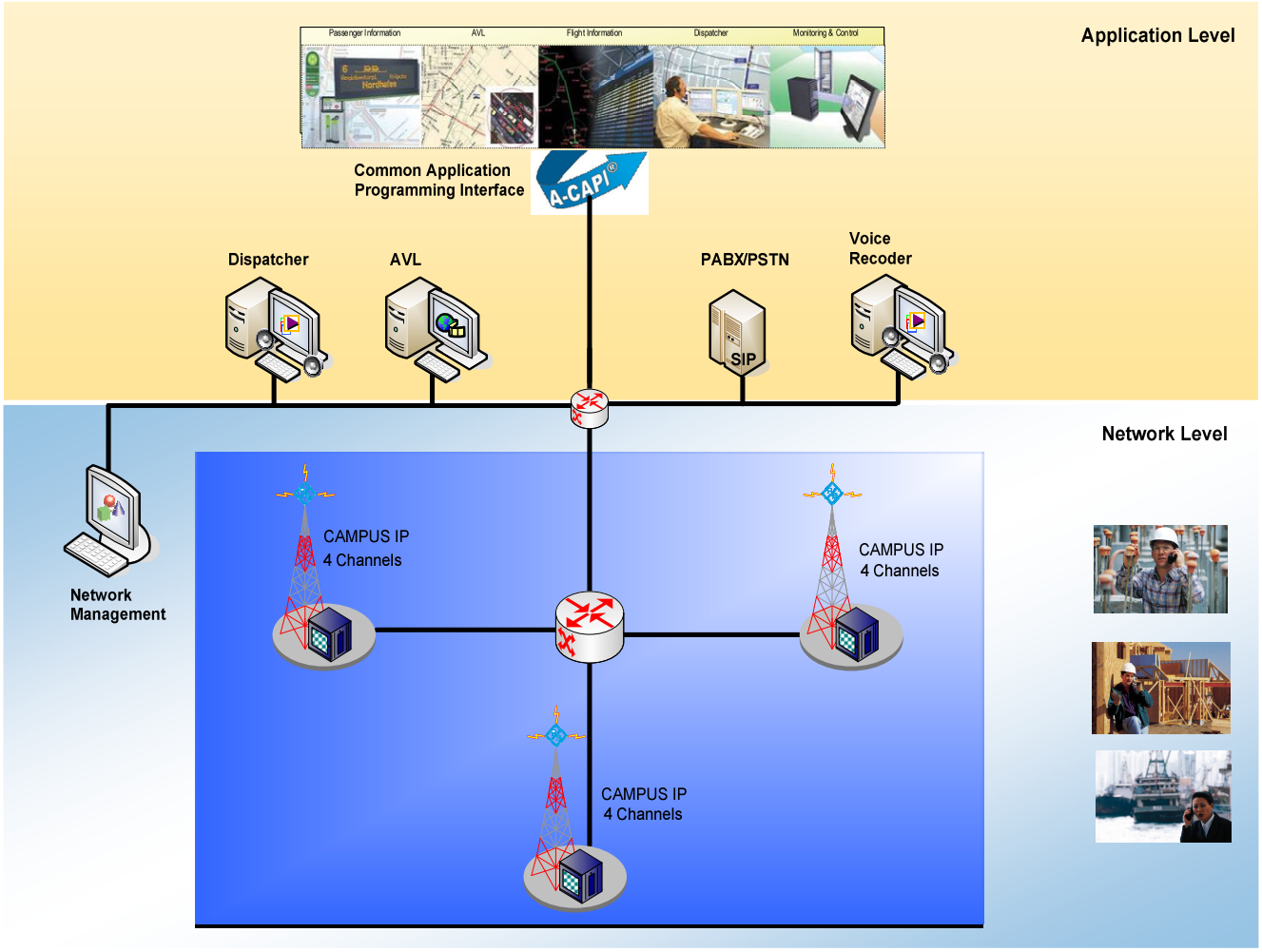
Pilot System



The Pilot system



- 3rd Party Application interface
- SIP based telephony interface

- *3 Sites*
- *4 Channels per site*
- *30+ Terminals*
- *Fully IP based*
- *Distributed IP call processing*
- *No separate or proprietary switching HW*

Nielson's experience with TETRA in the US vs the rumors !

Increased functionality

Open API and Data Applications

Better than expected features

Automatic seamless Call Handover

Superior voice quality

Lack of any Interference

Interference Test

Preliminary Tetra Adjacent Channel Interference Test

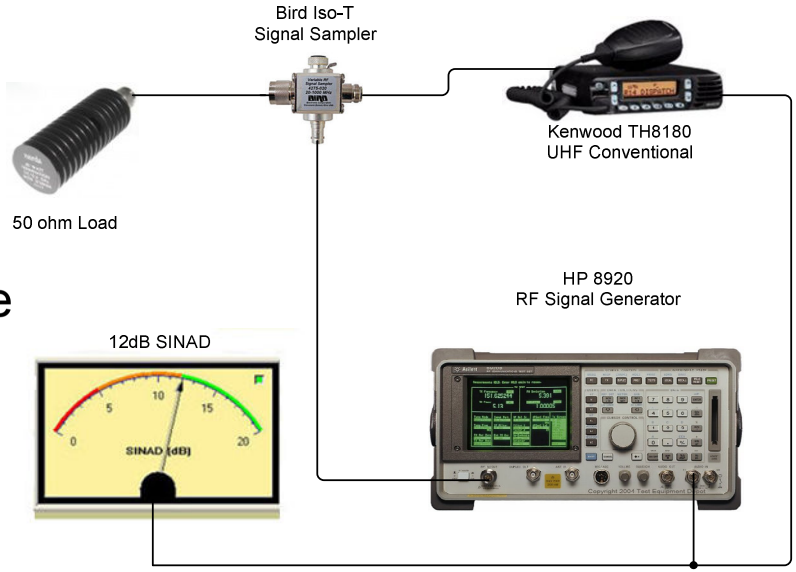
Measurement of Baseline Radio Sensitivity
(Determining radio sensitivity without external influences)

Ideal receiver sensitivity measurement

- The sensitivity of the Kenwood analog receiver is measured without external antenna or interference noise sources.

- This measurement gives us the ideal sensitivity of the analog receiver.

- The ideal sensitivity of the analog receiver is -118dBm.



Sensitivity is -118dBm

Frequency	Description	12dB SINAD Sensitivity
454.200	Adjacent Channel Below	" -118dBm"
454.225	Tetra Control Channel	" -118dBm"
454.250	Adjacent Channel Above	" -118dBm"

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V.1
FILENAME: TETRA Interference for UTC.vsd
SHEET 1 OF 3

Interference Test

Receiver sensitivity measurement with noise floor present. (TETRA transmitter is not present).

•The 50 ohm dummy load is replaced by the external receive antenna.

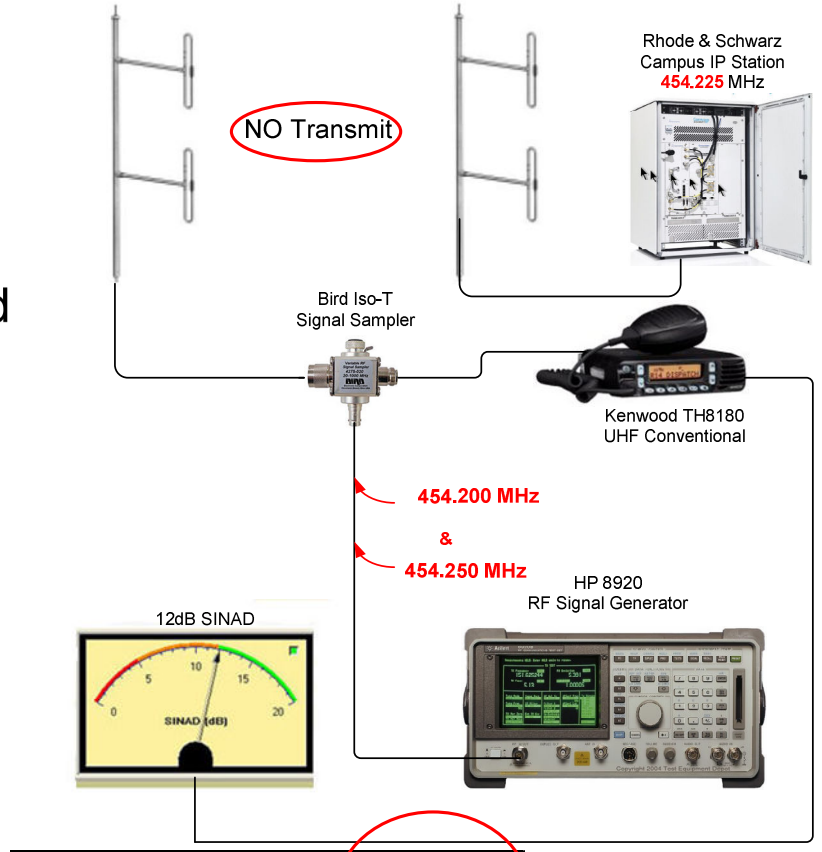
•The analog receiver sensitivity is again measured with the receive antenna connected to the receiver.

•The results show a sensitivity of -115dBm @ 454.200MHz, - 117dBm @ 454.225MHz, and -117dBm @ 454.250MHz.

Preliminary Tetra Adjacent Channel Interference Test

Measurement of Noise Floor Radio Sensitivity

(Sensitivity with external antenna noise present)



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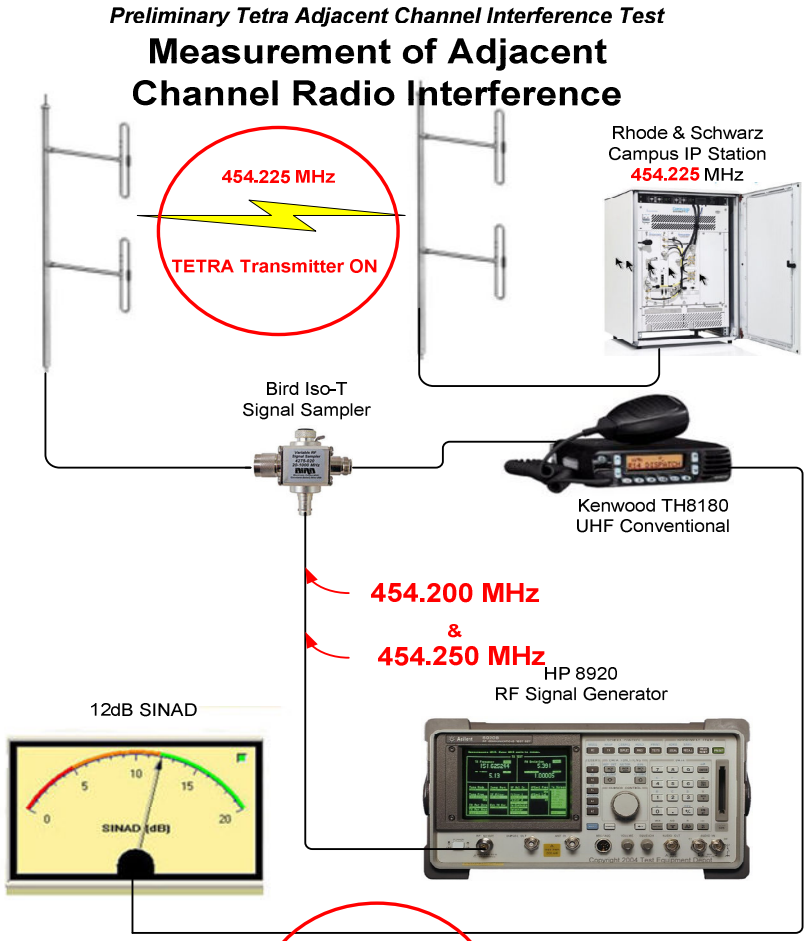
Interference Test

Receiver sensitivity measured with TETRA transmitter present @ 454.225MHz

•Lower adjacent channel sensitivity is unchanged from non-transmit sensitivity of -115dBm indicating NO TETRA adjacent channel interference

•Upper adjacent channels sensitivity is unchanged from non-transmit sensitivity of -117dBm indicating NO TETRA adjacent channel interference

•Note! The center channel sensitivity was only reduced by 6dB (-111dBm) with the TETRA station present.



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Interference Test

Local Paging Transmitter Desensitization

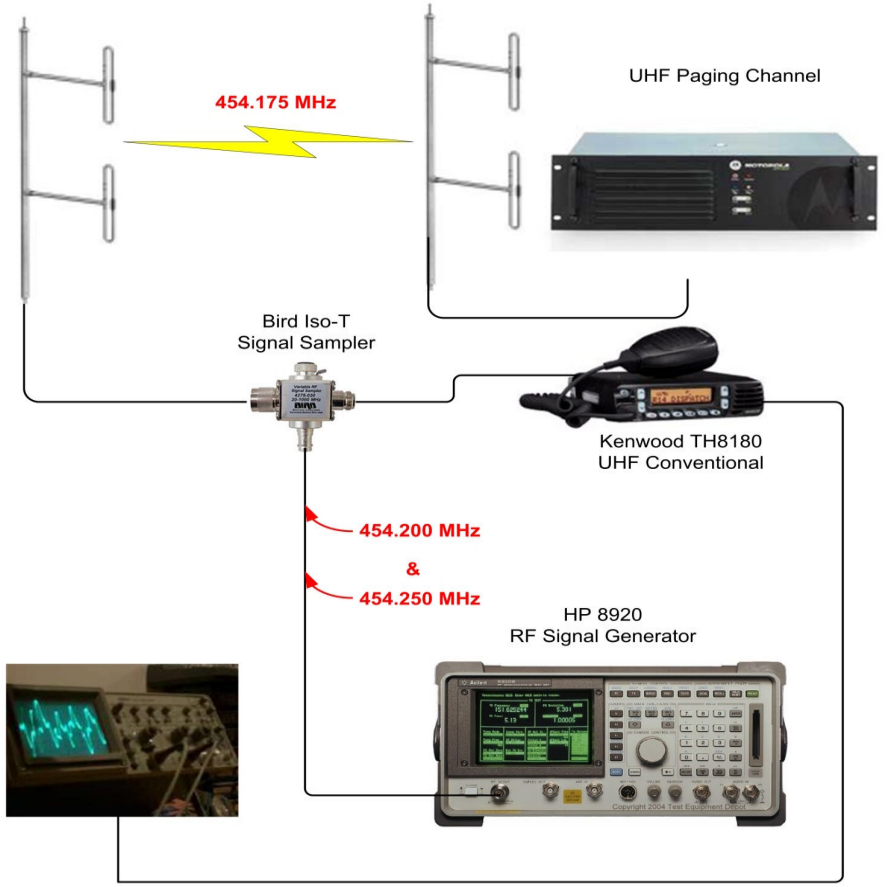
•During Testing, it was determined a local UHF Paging transmitter on the same tower as the Tetra transmitter was de-sensitizing the analog receiver.

•The Paging transmitter was operating on 454.175MHz and was causing interference on the adjacent 454.200MHz channel.

•The Tetra transmitter was operating on 454.225MHz and was **NOT** causing interference on the adjacent 454.200MHz channel.

Preliminary Tetra Adjacent Channel Interference Test

Measurement of Adjacent Channel Radio Interference



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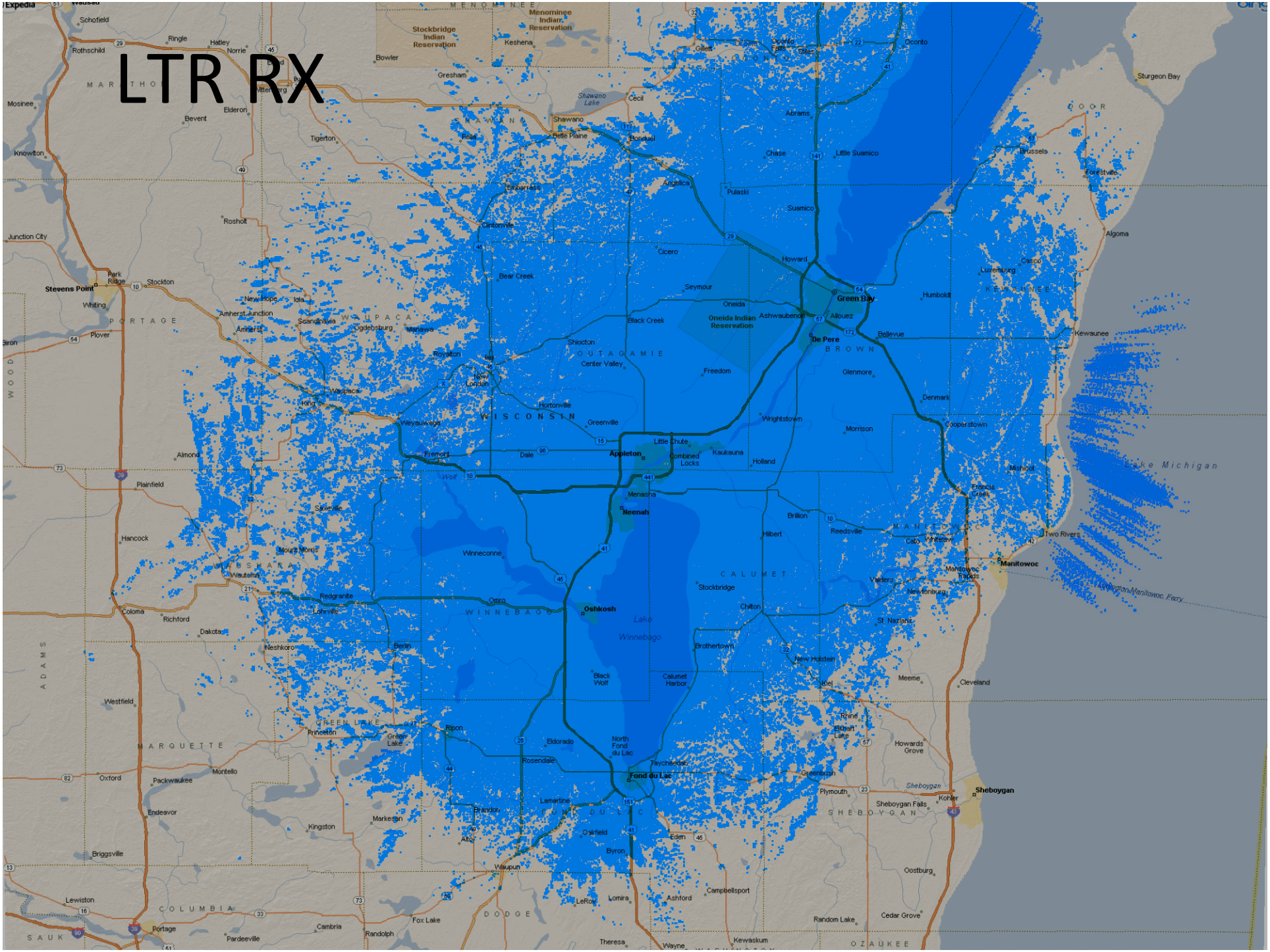
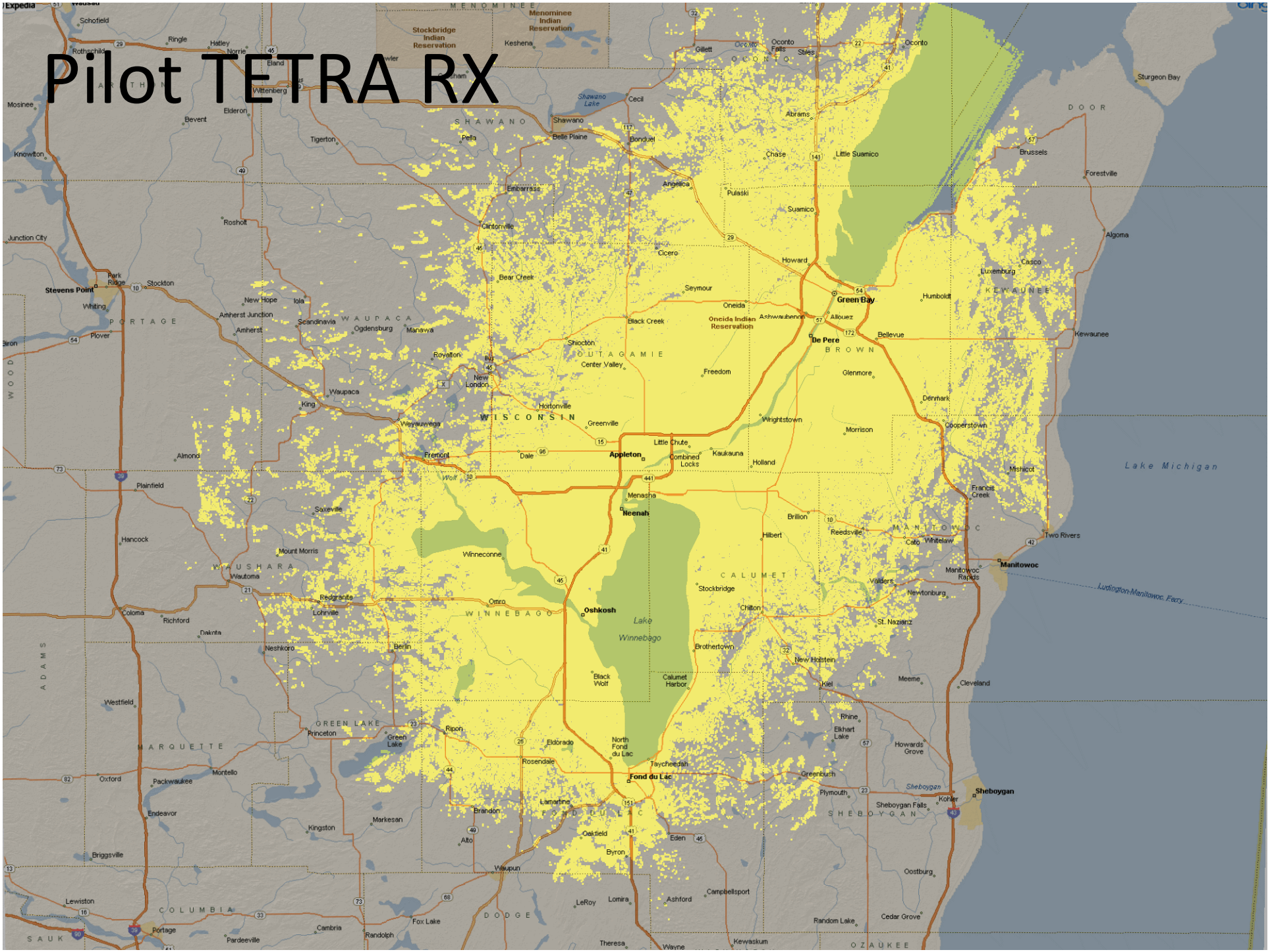
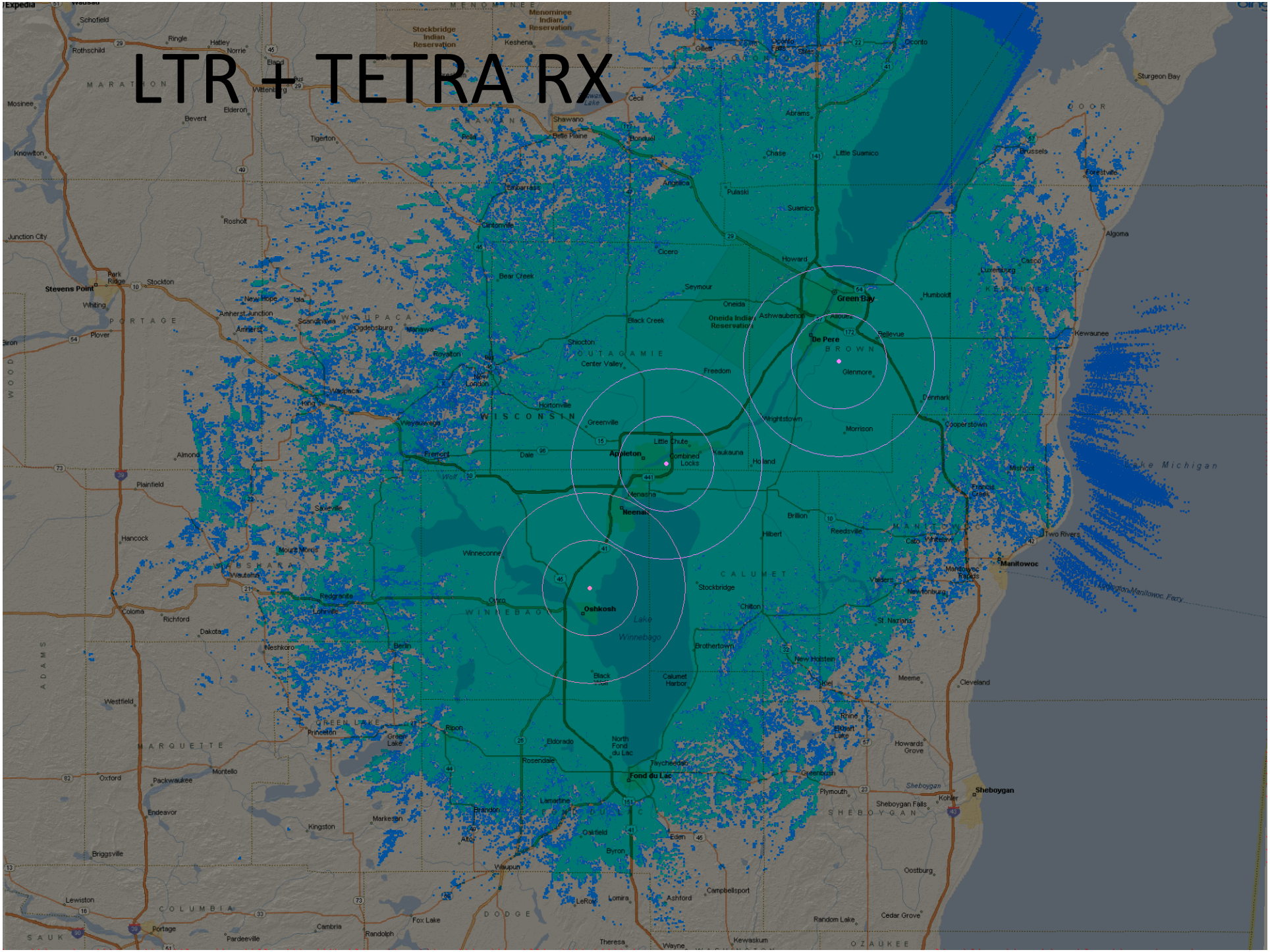
Better than expected coverage


LTR RX
Green Bay
Appleton
Oshkosh
Fond du Lac
Sheboygan
Manitowoc
Neenah
Menasha
De Pere
Oneida Indian Reservation
Stockbridge Indian Reservation
Menominee Indian Reservation
Lake Michigan
Lake Winnebago
WISCONSIN

Pilot TETRA RX



LTR + TETRA RX



Green Bay
De Pere
Appleton
Neenah
Oshkosh
Fond du Lac
Manitowoc
Sheboygan
Lake Winnebago
Lake Michigan
Oneida Indian Reservation
Stockbridge Indian Reservation
Menominee Indian Reservation
Stevens Point
Oconto
Sturgeon Bay
Kewaunee
Two Rivers
Ashwaubenon
Bellevue
Glenmore
Denmark
Cooperstown
Morrison
Wrightstown
Freedom
Hortonville
Greenville
Little Chute
Combined Locks
Kaukauna
Holland
Menasha
Winneconne
Stockbridge
Chilton
Brothertown
New Holstein
Kiel
Meeme
Cleveland
Howards Grove
Plymouth
Sheboygan Falls
Kohler
Oostburg
Cedar Grove
Random Lake
Campbellsport
Ashford
Lomira
Eden
Byron
Oakfield
Lamartine
Brandon
Rosendale
Eldorado
North Fond du Lac
Taycheedah
Greenbush
Rhine
Elkhart Lake
Ripon
Princeton
Green Lake
Berlin
Neshkoro
Redgranite
Lohrville
Oxford
Packwaukee
Montello
Endeavor
Kingston
Markesan
Briggsville
Lewiston
Portage
Pardeeville
Cambria
Randolph
Fox Lake
Waupun
LeRoy
Theresa
Wayne
Kewaskum
Brillion
Hilbert
Reedsville
Valders
Newtonburg
St. Nazianz
Mishicot
Cato
Whitelaw
Mantowoc Rapids
Lodington-Manitowoc Ferry
Cecil
Shawano
Bonduel
Belle Plaine
Pulaski
Suamico
Angelica
Cicero
Seymour
Oneida
Black Creek
Shiocton
Center Valley
Bear Creek
Cintonville
Embarrass
Pella
Keshena
Oconto Falls
Gillett
Abrams
Chase
Little Suamico
Brussels
Forestville
Algoma
Casco
Luxemburg
Humboldt
Howard
Rosholt
Tigerton
Elderon
Bevent
Mosinee
Knowlton
Junction City
Stockton
Whiting
Plover
Park Ridge
Amherst Junction
Amherst
New Hope
Scandinavia
Ogdensburg
Manawa
Royalton
New London
Weyauwega
Fremont
Dale
Almond
Plainfield
Hancock
Saxeville
Mount Morris
Wautoma
Coloma
Richford
Dakota
Westfield
Oxford
Briggsville
Lewiston
Schofield
Rothschild
Ringle
Hatley
Norrie
Eland
Wittenberg
Bus
Expedia
MENOMINEE
MARATHON
SHAWANO
WAUPACA
PORTAGE
WOOD
OUTAGAMIE
WISCONSIN
BROWN
KEWAUNEE
DOOR
MANITOWOC
CALUMET
WINNEBAGO
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ADAMS
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Proven networking technology

Real multi vendor standard