

RF-7800H Product Overview and Adaptive WBHF Over-The-Air Testing Summary

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Agenda



- Introduction
- RF-7800H Product Capabilities
- Adaptive WBHF Data System Overview
- Harris WBHF Testing Review
- Over-The-Air (OTA) Testing Observations

**TRANSFORMING HF
COMMUNICATIONS FOR
TODAY'S DEMANDING
DIGITAL BATTLEFIELD**

**SMALLER
FASTER
LIGHTER**



HARRIS®
assuredcommunications®

RF-7800H-MP Capabilities



**Wideband Data
Smaller, Faster, Lighter**

- New Wideband Data up to 120 kbps
- New Small Single Battery Form Factor
- 1.5 MHz – 60 MHz HF/VHF
- 20W HF, 10W VHF
- Secured with Citadel and AES
- Built in GPS Receiver
 - SA/Position Reporting
- USB & Ethernet Cable Interfaces
- Rugged, Tested to MIL-STD-810G
- Interoperable with Falcon II HF Radios & Accessories

Rear Panel Accessory
Control

New High Performance
antenna coupler

F3 Battery Box

Internal
GPS

6 position
switch with
CLR

Side mounted
ground post

Simultaneous
USB and RKDU

Replaceable
handles

Data connector, FII compatible

Keypad with Snap dome
Tactile feel

Removable Front Panel
for Maintenance

NVG Display with improved
back lighting



Product Comparison



Engineered by the HF market leader with more than 50 years of proven reliability

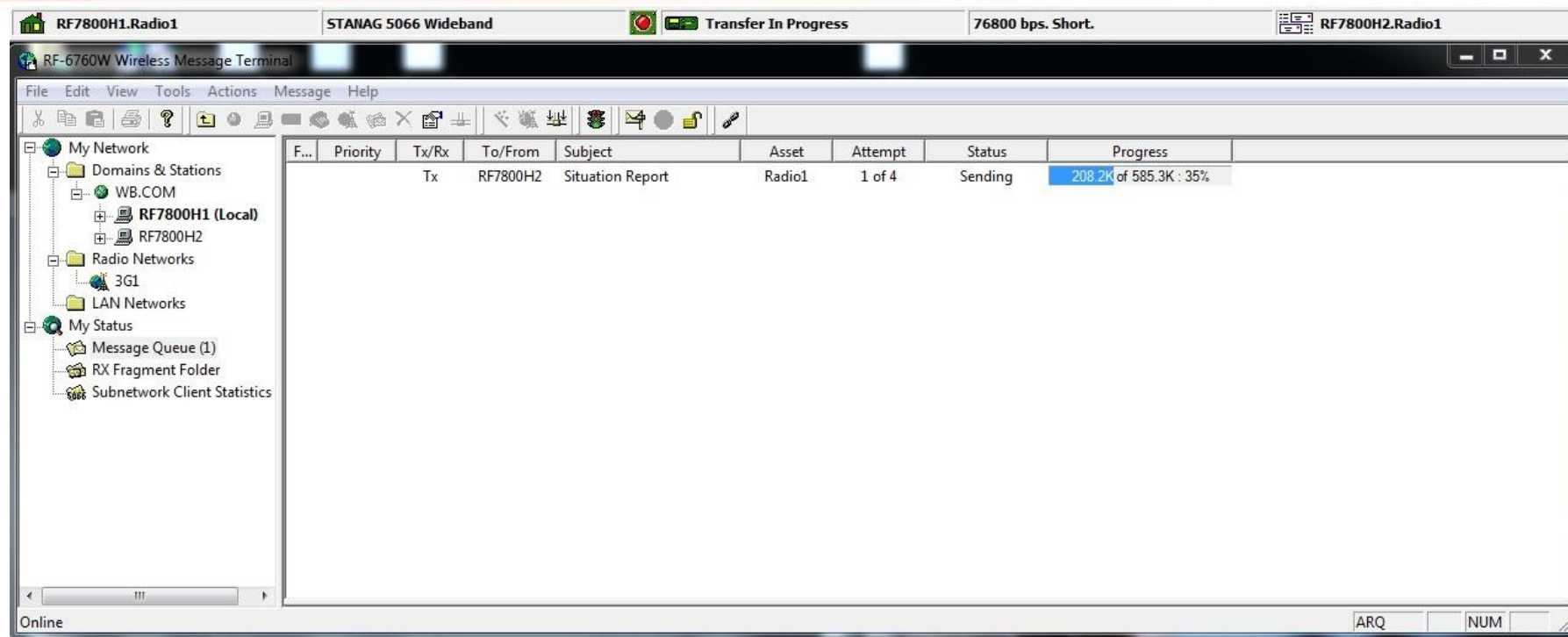
Features	RF-7800H	RF-5800H
Frequency Range	1.5-60 MHz	1.6-60 MHz
Wideband HF	Yes	No
USB Port	Yes	No
Enhanced Antenna coupler	Yes	No
Enhanced GPS	Yes	No
Size - without batteries	20W x 8.3H x 23.4D cm	26.7W x 8.1H x 21.3D cm
Digital Voice - MELP	600/1200/2400	600/2400
Weight - without batteries	3.9 Kg	4.7 Kg
SDR Platform	Yes	Yes
HF Power Out	20 Watts	20 Watts
VHF Power Out	10 watts	10 watts
Embedded GPS	Yes	Yes
Built in SA	Yes	Yes
Encryption	Citadel /AES	Citadel /AES
S 4538 (3G)	Yes	Yes
HF ECCM	Yes	Yes
IP Data	Yes	Yes
Remote KDU	Yes	Yes
WBFSK – VHF	16kbps	16kbps
MIL-STD-810G	Yes	Yes

data subject to change

- US MIL-STD-188-110C Appendix D defines a wideband HF data modem which supports eight bandwidths from 3 kHz to 24 kHz, in increments of 3 kHz allowing modem data rates from 75bps to 120 kbps.
- Harris Corporation has developed the modem technology that extends the high performance serial tone modem of the original MIL-STD-110B standard to these wider bandwidths.
- Harris has embedded the wideband HF modem technology in the RF-7800H and paired it with WMT to offer a wideband data system.

Send data up to 10X faster than previous generations of HF radios

Adaptive WBHF Data System (1)



RF-6760 Wireless Message Terminal (WMT)

- Fully integrated with HMTP/POP3 email clients, e.g. MS Outlook
- Runs an enhanced version of STANAG 5066 for use with WBHF
- USB Radio Control & Data interface with RF-7800H
- Support for LAN connection to other Networks, e.g. SATCOM, wired network

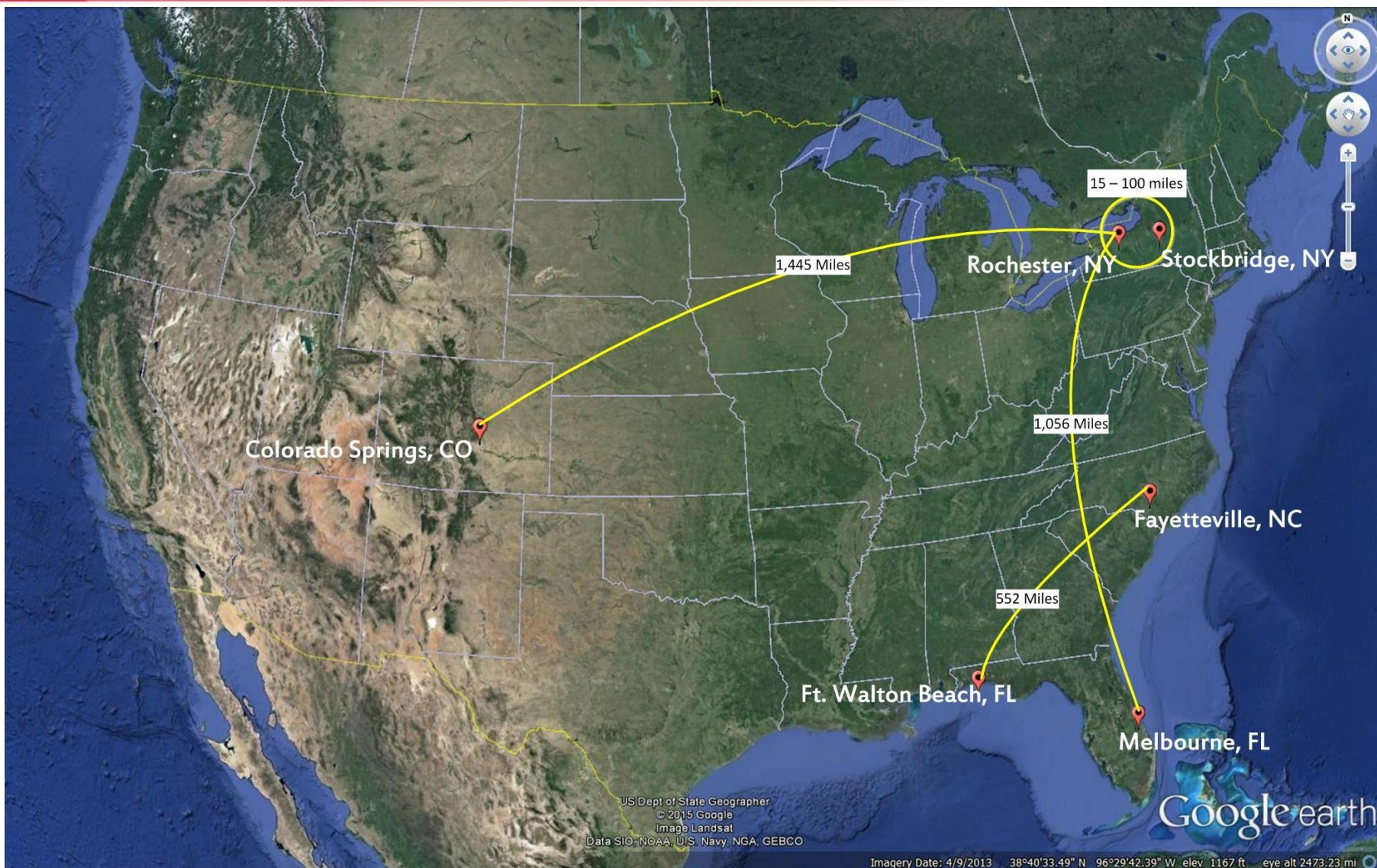
Adaptive WBHF Data System (2)



RF-7800H Radio

- Adaptive WBHF Capabilities
 - Enhanced 3G 4538 WB Linking
 - Interference Detection / Spectrum Sensing
 - Bandwidth & Offset Negotiation
 - MIL-STD-188-110C WBHF Modem
- System Configurations
 - Dismount
 - Base Station
 - Vehicular
- Fully compatible with all Harris external PAs, Couplers, and Pre/Post Selectors.

WBHF OTA Testing Sites



WBHF OTA Testing Setups (1)



- Power Amplifiers
 - MP only (20W internal)
 - RF-5833 150W
 - RF-5834 400W
 - RF-7835 1 kW
- Antenna Couplers
 - MP only (internal)
 - RF-5382 (150W max)
 - RF-382 (400W max)
 - RF-2601 (1 kW max)



WBHF OTA Testing Setups (2)



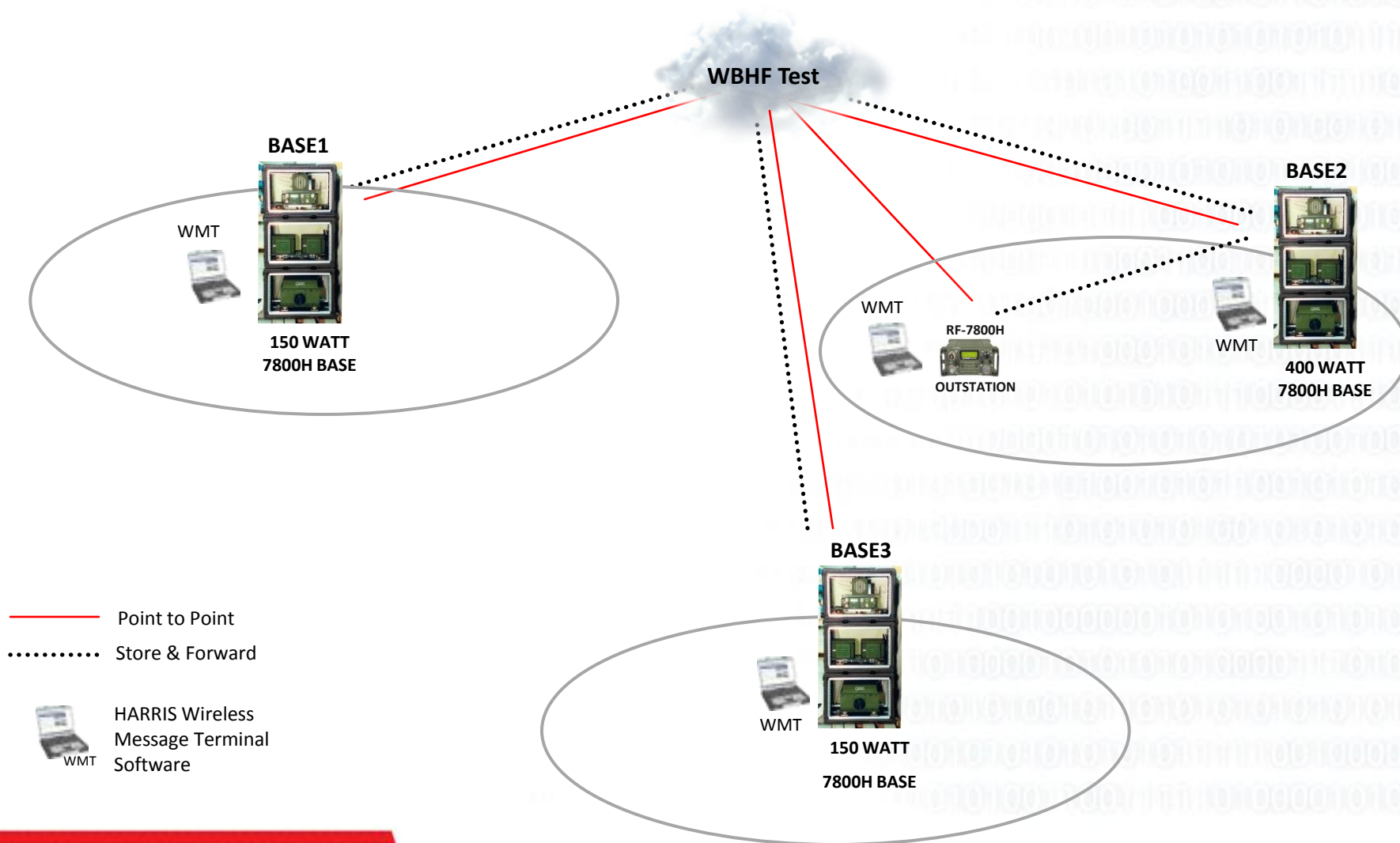
- Pre/Post Selectors
 - RF-5245 (Optional, Built-In to RF-5382 PA)
 - RF-5845 Standalone
- Antenna Configurations (some examples)
 - RF-1912 Dipole
 - Rotatable Log Periodic
 - Wire Doublet Antenna
 - Terminated Folded Dipole
 - OE-505 NVIS Adapter for Field Expedient MP use
 - Tilted Whip
 - Full loop

Summary of Harris OTA Testing Effort



- Active for the last 2+ years
- Sites of varying characteristics
 - Antenna Configuration
 - Power
 - Link Distance
 - Manned vs. Unmanned
 - Interference environment
- 24/7 unmanned operation at several sites
 - Remote Access
 - Data sent at varying time intervals and of varying sizes to simulate real user operation.

Sample Network Diagram



Other Testing Observations

- Both short-haul NVIS & longer-haul links should be tested in multiple equipment configurations to ensure all potential user situations are covered.
- Periodic LQAs necessary as part of the system for channel conditions refresh.
- Day & Night testing critical for system testing across changing channel conditions.
- Bandwidth & Offset selection since it is static for the link, should leave room for data rate adjustments.

This suite of OTA test systems has played a large role in the creation of a capability that meets the performance and reliability needs of a diverse set of customers.

QUESTIONS?