



## More TVWS Database and Device Problems

National Association of Broadcasters  
Presentation to OET  
June 9, 2015

# Review of TVWS Devices and Database

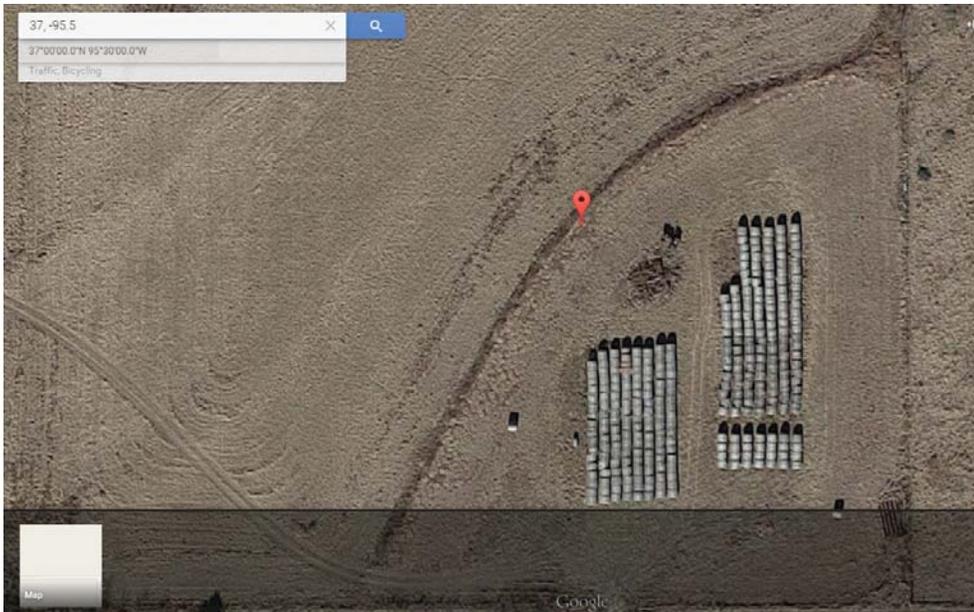
- Found obviously false registration that had been previously deleted by FCC had reappeared and remained in TVWS database until error again pointed out by NAB
- Continue to find many TVWS devices “professionally installed” with incorrect location information
  - Devices used manufacturers’ pre-populated “example” locations
  - Mistakes or typos in entering location information
  - Installer failed to change location after bench testing
- Found “professionally installed” and registered devices with incorrect FCC IDs
- Found TVWS database provider sending wrong channel information to devices
- Found modification and sale of TVWS devices without required FCC equipment authorization or approval

# Questionable Entries

- In August, 2014, NAB pointed out problems with TVWS database
- In April, 2015, FCC took action to have 62 obviously false TVWS registrations deleted
  - Locations outside US eliminated
  - False names such as John Doe, Sue Q. Public deleted
  - False contact addresses, such as 123 Jump Street and Anytown, USA, deleted
  - False emails addresses such as name@google.com and john@doe.com deleted
  - False phone numbers such as 555-1212 and 123-4567 deleted
- In May, 2015, an obvious false “John Doe” registration is back

# “John Doe” is Back!

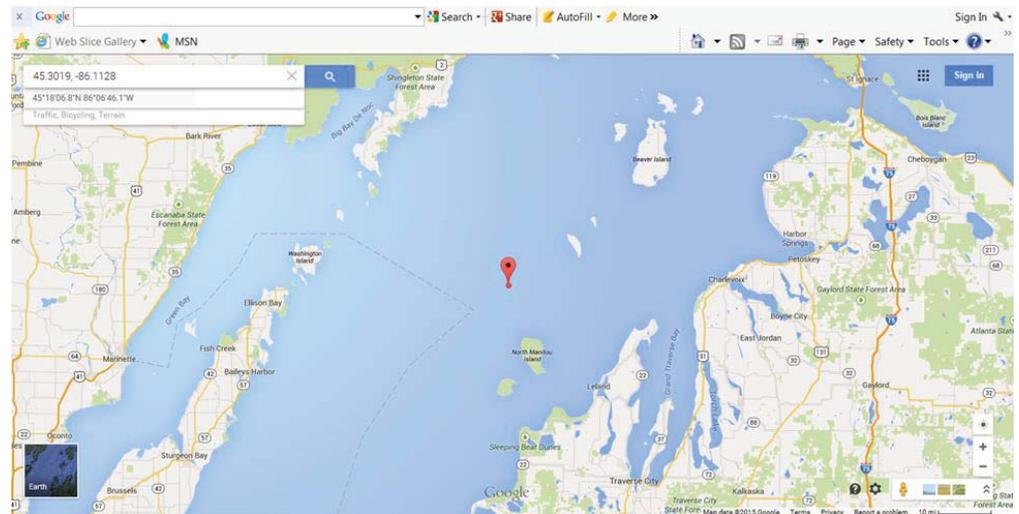
FccId	SerialNum	Latitude	Longitude	AntennaH	Name	HeightAbo	DeviceOwner	StreetAddress	City	State	PostalCode	Country	Email	Phone
A2UACRS10	AN029548	37	-95.5	10	John Doe	7.649638	Acme	1600 Amphitheatre Pkwy	Mountain View	CA	94043	US	jd@example.com	232-555-1212



- Above false registration appears in the 5/11, 5/14, 5/15, 5/20, and 5/21 databases and is the same as previously identified by NAB and deleted by FCC
- Only after NAB confirmed with FCC staff on 5/19 that [jd@example.com](mailto:jd@example.com) was a false email did FCC request entry be deleted AGAIN
- Entry deleted on 5/22

# TVWS Device in Lake Michigan

- TVWS device (FCC ID ZBGAWRZ2UHF) was registered to a location in Lake Michigan
- NAB brought erroneous location to FCC's attention April 3, 2015
- Device remained registered at this location in database until June 1, 2015
- On June 1, registration location changed to 45.3022, -83.885696 as shown below:



ZBGAWR2UHF	2626	30	-0.2 POINT	45.3019	-86.1128	I-2000 Inc.  Andy Pastars 2439 Byron Center Ave.\nWyoming, MI
------------	------	----	------------	---------	----------	---

Earlier entry

ZBGAWR2UHF	2626	45.3022	-83.885696	25	Andy pastars	24.89052402
------------	------	---------	------------	----	--------------	-------------

June 1 Entry

# Axiom Technologies

- Axiom is headquartered in Machias, Maine

The screenshot shows the Axiom Technologies website homepage. At the top left is the Axiom Technologies logo. To the right, there are social media icons for Facebook, Twitter, LinkedIn, and YouTube, with the text "Connect with Axiom". Below these are icons for "LIKE US", "FOLLOW US", "JOIN US", and "WATCH US". A toll-free number "866-708-7998" and a "Subscribe to our eNewsletter" button are also present. The main navigation bar includes links for HOME, SERVICES, BROADBAND, AXIOM EDUCATION & TRAINING, TECH SUPPORT, ABOUT, NEWS, and CONTACT. Below the navigation bar are four main service areas: TECHNOLOGY SERVICES (Moving Our Community Forward), BROADBAND (Bringing Internet to the Last Mile), EDUCATION/TRAINING (Unleashing the Possibilities), and TECHNICAL SUPPORT (Exceptional Customer Service). Each area is represented by a photo and a brief description.

## Broadband

**Axiom Technologies** researches and develops the **best solution** for your business broadband needs, covering the entire spectrum from **Dial-Up** to **Blazing Fast Fiberoptics**.

Additionally, our **partnerships with other providers** across the state gives us the **unbiased ability** to secure for you the most effective option for your unique situation, reducing your costs and increasing your bottom line.



And if your business uses the Internet for critical applications, it's important to have a **back-up Internet connection** in case your primary connection suffers an outage. Having this redundant Internet access gives your business the flexibility to switch traffic, safely and securely, across multiple Internet connections.

The screenshot shows a news article titled "Axiom Technologies Announces Bangor Saving Bank Sponsored Machias HotSpot a Huge Success". The article is dated April 28, 2015. The text states that the Bangor Saving Bank sponsored Machias WiFi HotSpot has been a huge success, enabling local merchants and Machias visitors to use free high speed Internet. A "Continue reading" link is provided at the end of the article.

*We now offer Phone and Tablet Repair*



**Product Mission**  
To bring broadband Internet services to rural communities throughout Maine and to provide quality consulting services and technology solutions to businesses and the community.

# Axiom Technologies

- Axiom entries in the 5/20 database

Maine  
Locations

A2UACRS20F	A2F0J403	44.93688	-67.4316	8	Kim Emerson	18.92233	Axiom Technologies
A2UACRS20F	A2F0J060	44.93975	-67.433	8	Kim Emerson	14.56157	Axiom Technologies
A2UACRS20F	A2F0J067	44.95083	-67.4352	8	Kim Emerson	12.66587	Axiom Technologies
A2UACRS20F	a2f0j078	44.96319	-67.4332	8	Kim Emerson	9.002809	Axiom Technologies
A2UACRS20F	A2F0J061	44.96334	-67.4335	8	Kim Emerson	10.6594	Axiom Technologies
A2UACRS20F	A2F0J075	44.96357	-67.4334	8	Kim Emerson	8.447415	Axiom Technologies

Pennsylvania  
Location

A2UACRS20F	A2F0J063	41.50809	-75.6433	5	Kim Emerson	48.66574	Axiom Technologies
------------	----------	----------	----------	---	-------------	----------	--------------------

# Axiom Technologies

- Axiom was helpful and responsive to our inquiries
- Axiom has expertise in radio operation
- However, Axiom also had a TVWS device mistakenly registered at the wrong location!
  - Axiom acknowledged the mistake
  - Took 10 days to correct
- Database system needs to be fixed if *responsible* professional installers can easily make mistakes

# Conxx.net

- Conxx is headquartered Cumberland, MD
- May 20, 2015 database entries for Brandon Wigfield of Conxx.net

A2UACRS20F	A2F0J173	39.65717	-78.7688	10	Brandon Wigfield	-161.062
A2UACRS20F	A2F0J158	39.6917	-78.7832	10	Brandon Wigfield	-224.515
A2UACRS20F	A2F0J199	41.26707	-75.5491	30	Brandon Wigfield	105.8959
A2UACRS20F	A2F0J209	41.3155	-75.5356	6	Brandon Wigfield	24.97508
A2UACRS20F	A2F0J166	41.3181	-75.5397	10	Brandon Wigfield	51.57903
A2UACRS20F	A2F0J202	41.3181	-75.5356	6	Brandon Wigfield	20.69971
A2UACRS20F	A2F0JA29	41.50809	-75.6433	5	Brandon Wigfield	48.66574

Same  
Location  
As Axiom

- In telephone conversations with NAB staff, Conxx indicated that they have no devices registered at this location

# MyAirFiber

- Myairfiber is an internet provider located in Superior, Wisconsin area and operates TVWS devices in Saginaw and Wrenshall, MN

The screenshot displays the MyAirFiber website interface. At the top, the logo "AIR FIBER" is shown in green and white, with the URL "www.myairfiber.com" below it. A navigation menu includes links for Home, Business, FAQs, FTTP, Residential, Rural, WhiteSpace, Acceptable Use, and TOS. The main content area features a large headline: "Had enough BS?" where "BS" is in orange, followed by "Switch to AirFiber high-speed internet today!". Below this, two pricing plans for "6/3 Mbps White Space Internet" are presented. The first plan includes a \$299.95 installation fee, a \$49.95 activation fee, no data limits, 6 Mbps download, and 3 Mbps upload, priced at \$99.95/month. The second plan includes free installation, a \$49.95 activation fee, no data limits, 6 Mbps download, and 3 Mbps upload, priced at \$124.95/month. A descriptive paragraph about WhiteSpace technology is located above the pricing plans.

WhiteSpace is a new Internet Technology that is now become available to deliver broadband internet service into even the most rural of locations. WhiteSpace delivers internet with low latency and broadband speeds up to 12 Mbps into the most difficult to cover areas. WhiteSpace delivers coverage that surpasses even current cell phone technology, it has the ability to bend around corners, and penetrate obstacles that most current technologies can't. Currently serving Saginaw MN, and Wrenshall MN.

6/3 Mbps White Space Internet	6/3 Mbps White Space Internet
\$299.95 Installation	Free Installation
\$49.95 Activation	\$49.95 Activation
No Data Limits	No Data Limits
6 Mbps Download	6 Mbps Download
3 Mbps Upload	3 Mbps Upload
<b>\$99.95/MONTH</b>	<b>\$124.95/MONTH</b>

# MyAirFiber

- MyAirFiber has five TV White Space devices in the 5/20/2015 database at locations near the Minnesota/Wisconsin border
- One device is located in Pennsylvania
  - Mr. Hanson indicated that they have no devices deployed in PA

Location  
in  
Pennsylvania

A2UACRS20F	A2F0J323	41.40809	-75.6433	10	Shawn Hanson
------------	----------	----------	----------	----	--------------

A2UACRS20F	A2F0J325	46.82785	-92.1939	30	Shawn Hanson
A2UACRS20F	A2F0J320	46.84693	-92.5269	5	Shawn Hanson
A2UACRS20F	A2F0J163	46.86376	-92.6589	5	Shawn Hanson
A2UACRS20F	A2F0J172	46.86376	-92.6589	10	Shawn Hanson
A2UACRS20F	A2F0J204	46.86379	-92.6591	5	Shawn Hanson

MN locations

## 19 Devices at Same Two Questionable Locations

A2UACRS20F	a200a021	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	a200a023	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	a200a028	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ001	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ154	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ165	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ170	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ175	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ206	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJ323	41.40809	-75.6433	10	Shawn Hanson	-85.0654	Adaptrum Inc
A2UACRS20F	A2FOJA01	41.40809	-75.6433	10	Kevin Hendrix	-85.0654	Kevin Hendrix
A2UACRS20F	A2FOJA08	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJA09	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJA16	41.40809	-75.6433	10	lin sun	-85.0654	lin sun
A2UACRS20F	A2FOJA17	41.40809	-75.6433	10	lin sun	-85.0654	lin sun

- Non “lin sun” contacts (Axiom Technologies, Conxx.net, MyAirFiber) indicated these are incorrect locations
- No way to determine correct location of rest of these devices since all contact information may be incorrect

A2UACRS20F	A2FOJ156	41.50809	-75.64332	5	lin sun	48.66573715	lin sun
A2UACRS20F	A2FOJ161	41.50809	-75.64332	5	lin sun	48.66573715	lin sun
A2UACRS20F	A2FOJ176	41.50809	-75.64332	5	lin sun	48.66573715	lin sun
A2UACRS20F	A2FOJA29	41.50809	-75.64332	5	Brandon Wigfield	48.66573715	Brandon Wigfield

# Deep South Communications



- Deep South Communications has two devices registered at same exact location near Bear Creek, Montana in the TVWS database
- In early May, NAB contacted Deep South Communications in Laurel, Mississippi
- Deep South indicated that one location was obviously wrong and they would investigate and fix
- Devices are still in June 1 database

QC8-RDL3000RMF	164PC13150085	48.56036	-109.901	3	Wayne Kairdolf
QC8-RDL3000RMF	164PC13150101	48.56036	-109.901	1	Wayne Kairdolf

# Ridgeland Mississippi Device



- Meld registered device near Ridgeland, Mississippi
- NAB contacted designated contact person, who stated that the device could be a demonstration device but that he did not know why a demonstration device would be registered to a location near a highway
- Contact indicated that he would check into the situation and get back to us

OKVMT300	474	32.46432	-90.112978	1 Jordan Du Val	8.490659052	Jordan Du Val
----------	-----	----------	------------	-----------------	-------------	---------------

# Summary of Database Review

- Review provides clear examples of failure of professional installation requirement
  - Mistakes or typos in entering location information
  - Devices used manufacturers pre-populated “example” locations
  - Installer failed to change location after bench testing
- Review provides clear evidence that “responsible party” cannot be contacted to correct false locations in many instances
- Many similar examples of incorrect and questionable locations in current TVWS database

## WVU – Air.U Showcase

“The heart of WVU’s white spaces network is the Adaptrum base station radio, on the rooftop of the Engineering Sciences Building near the center of Morgantown. With it, are the accompanying directional antennas, cabling, power supply, performance and availability monitoring equipment, switching facility, and interconnections for back-haul through WVU’s backbone to the Internet. There are five Adaptrum client radios, one for each PRT station, along with their own antennas, an Ethernet connection with one or more off-the-shelf Cisco Wi-Fi access points.”

From Article by John Cox, Network World, January 22, 2014.

<http://www.networkworld.com/article/2173545/wireless/better-than-tv--white-spaces- bring-wireless-bonanza-to-west-virginia.html>

# WVU-Air.U Showcase

- June 1, 2015 TVWS Database Entries for WVU

FCC ID	Serial No.	Latitude	Longitude	Ant. Height	Name	Device Owner
A2UACRS10	U0009	39.62991	-79.9574	0	lin sun	lin sun
A2UACRS10	U0011	39.63487	-79.9563	0	lin sun	lin sun
A2UACRS10	U0007	39.64551	-79.9732	0	lin sun	lin sun
A2UACRS10	3031	39.64577	-79.9735	10	lin sun	lin sun
A2UACRS10	3055	39.64692	-79.973	5	lin sun	lin sun
A2UACRS10	3057	39.65476	-79.9603	5	lin sun	lin sun

# WVU-Air.U Showcase

- Adaptrum A2UACRS10

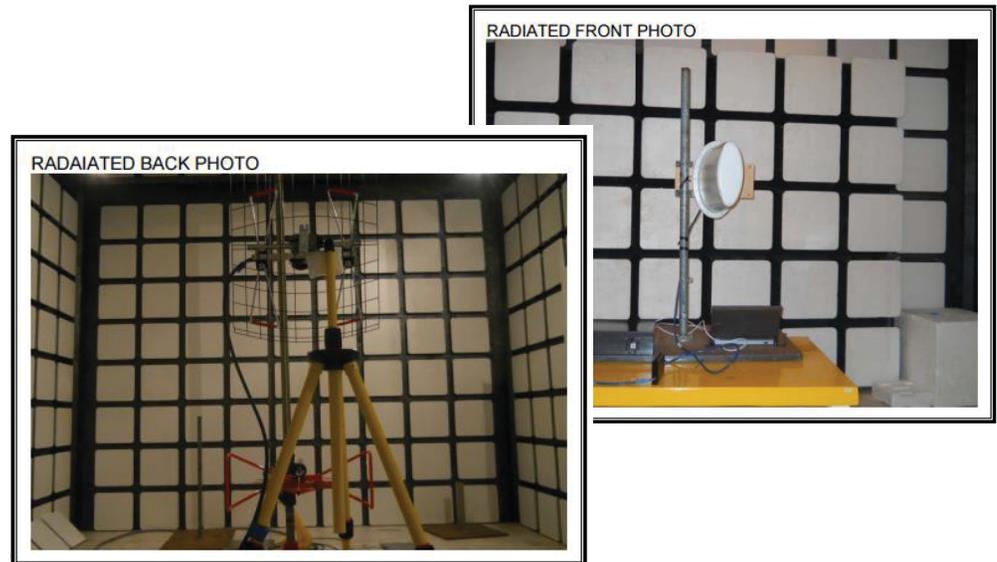
ACRS 1.0 radio unit is enclosed in a 2U size box whose front panel and back panel are shown in the following pictures. Both the base station and the client station use the same radio unit.



REPORT NO: 11U13701-3B  
EUT: TV BAND DEVICE

DATE: APRIL 13, 2012  
FCC ID: A2UACRS10

## RADIATED EMISSIONS SETUP



FCC Approved Antennas

# WVU-Air.U Showcase



[See larger image](#)

*Image courtesy Michael Gregory Ellis, WVU*



[See larger image](#)

*Image courtesy Michael Gregory Ellis, WVU*



# WVU Project (Adaptrum Website)



Client Site at Tower Lane  
Fully installed client site seen from the ground.

ACRS 2.0 Radio Closeup In a Snow Storm.

AP Site 1 In a Snow Storm

# Adaptrum A2UACRS20



Introducing ACRS 2.0 Adaptrum's market leading second generation TVWS product



## NLOS and Range

Our NLOS OFDMA technology combined with superior propagation characteristics in the UHF TV spectrum allows reliable connectivity in challenging radio propagation environments through uneven terrains, trees and buildings, whether rural, urban or suburban.

# WVU-Air.U Showcase

- June 1, 2015 TVWS Database Entries for WVU

FCC ID	Serial No.	Latitude	Longitude	Ant. Height	Name	Device Owner
A2UACRS10	U0009	39.62991	-79.9574	0	lin sun	lin sun
A2UACRS10	U0011	39.63487	-79.9563	0	lin sun	lin sun
A2UACRS10	U0007	39.64551	-79.9732	0	lin sun	lin sun
A2UACRS10	3031	39.64577	-79.9735	10	lin sun	lin sun
A2UACRS10	3055	39.64692	-79.973	5	lin sun	lin sun
A2UACRS10	3057	39.65476	-79.9603	5	lin sun	lin sun

- Adaptrum website shows different (A2UACRS20) devices installed at WVU
- However, there are no (and to our knowledge never have been) A2UACRS20 devices listed in the TVWS database at WVU
  - For example, the July, 2014<sup>th</sup> database listed the same six A2UACRS10 registrations along with one additional device (serial number 3056) at WVU

# Professional Installation Failed

- WVU-Air.U was showcase project for TVWS deployment
- Professional installation failed to update devices and provide correct FCC IDs for devices
- Professional installation appears to have failed to provide correct serial numbers
  - A2UACRS20 have different serial number formats
- Professional installation appears to have failed to provide correct antenna heights
  - Zero antenna heights suspect
- Professional installation failed to provide any local contact information so that problems could be corrected should they occur
  - Only contact information provided is “lin sun” and Adaptrum’s San Jose address, email and telephone number

# Meld Technologies Waiver

- Spectrum Bridge filed temporary waiver request for fixed Meld device on Feb. 13, 2013
  - Spectrum Bridge asked that Meld device be treated as “professionally installed” personal/portable device and be permitted to operate on channels available for 40 mW personal/portable devices
  - Spectrum Bridge states device would contact database once every 30 minutes to confirm channels assigned
  - Waiver was requested for one year period while more reliable (than GPS) indoor geo-locations are developed
- OET granted waiver on Sept. 16, 2013

# Meld Technologies Waiver

- OET waiver grant subject to following conditions:
  - Waiver applies to FCC ID OKVMT300 devices
  - Device must be professionally installed on a fixed mounted rack and **geographic coordinates must not be changeable by the user**
  - Device **may only be used indoors within retail stores** and **not offered for sale to the general public**
  - Device **must contact database once every 30 minutes** to obtain updated list of available channels
  - Operation under **waiver is valid for one year** to provide an opportunity to allow Meld to develop new geo-location technologies for indoor personal/portable devices
- Meld was also **required to file a permissive change application** to demonstrate compliance with the above conditions and include a reference to the waiver

# FCC Equipment Authorization Search

16 results were found that match the search criteria:  
 Equipment Class: **WGF-White Space Device with Geo-location- Fixed**

Displaying records 1 through 16 of 16.

View Form	Display Exhibits	Display Grant	Display Correspondence	Applicant Name	Address	City	State	Country	Zip Code	FCC ID	Application Purpose	Final Action Date	Lower Frequency In MHz	Upper Frequency In MHz
	<a href="#">Detail Summary</a>			Redline Communications Inc.	302 Town Centre Blvd, Suite 100	Markham, Ontario	N/A	Canada	L3R 0E8	QC8-RDL3000RMF	Original Equipment	09/05/2013	473.0	695.0
	<a href="#">Detail Summary</a>			Koos Technical Services, Inc	1025 Greenwood Blvd Suite 391	Lake Mary	FL	United States	32746	ZBGAWR-1	Original Equipment	12/22/2011	177.0	213.0
	<a href="#">Detail Summary</a>			Carlson Wireless Technologies Inc	2700 Foster Ave.	Arcata	CA	United States	95521	OPA-RC2-BS	Original Equipment	12/13/2013	473.0	599.0
	<a href="#">Detail Summary</a>			Carlson Wireless Technologies Inc	2700 Foster Ave.	Arcata	CA	United States	95521	OPA-RC2-BS	Original Equipment	12/13/2013	623.0	695.0
	<a href="#">Detail Summary</a>			Carlson Wireless Technologies Inc	2700 Foster Ave.	Arcata	CA	United States	95521	OPA-RC2-CPE	Original Equipment	01/08/2014	473.0	599.0
	<a href="#">Detail Summary</a>			Carlson Wireless Technologies Inc	2700 Foster Ave.	Arcata	CA	United States	95521	OPA-RC2-CPE	Original Equipment	01/08/2014	4623.0	695.0
	<a href="#">Detail Summary</a>			Meld Technology, Inc.	1642 Canary Drive	Sunnyvale	CA	United States	94087	OKVMT300	Original Equipment	11/28/2012	515.0	593.0
	<a href="#">Detail Summary</a>			Meld Technology, Inc.	1642 Canary Drive	Sunnyvale	CA	United States	94087	OKVMT300	Original Equipment	11/28/2012	623.0	695.0
	<a href="#">Detail Summary</a>			Adaptrum, Inc	25 E. Trimble Road	San Jose	CA	United States	95131	A2UACRS10	Original Equipment	04/19/2012	473.0	695.0
	<a href="#">Detail Summary</a>			Adaptrum, Inc	25 E. Trimble Road	San Jose	CA	United States	95131	A2UACRS20F	Class II Permissive Change	07/22/2014	473.0	695.0
	<a href="#">Detail Summary</a>			Adaptrum, Inc	25 E. Trimble Road	San Jose	CA	United States	95131	A2UACRS10	Class II Permissive Change	10/22/2013	473.0	695.0
	<a href="#">Detail Summary</a>			Koos Technical Services, Inc	1025 Greenwood Blvd Suite 391	Lake Mary	FL	United States	32746	ZBGAWR2UHF	Original Equipment	06/07/2012	473.0	695.0
	<a href="#">Detail Summary</a>			Adaptrum, Inc	25 E. Trimble Road	San Jose	CA	United States	95131	A2UACRS20F	Original Equipment	05/02/2014	473.0	695.0
	<a href="#">Detail Summary</a>			Adaptrum, Inc	25 E. Trimble Road	San Jose	CA	United States	95131	A2UACRS10	Class II Permissive Change	09/20/2012	473.0	695.0
	<a href="#">Detail Summary</a>			6Harmonics Inc	21 Concourse Gate Suites 9 & 10	Ottawa	N/A	Canada	K2E 7S4	2AASTGWS-3000	Original Equipment	03/11/2014	473.0	695.0
	<a href="#">Detail Summary</a>			FCC Laboratory Test Grantee Co	7435 Oakland Mills Rd	Columbia	MD	United States	21044	OPS1	Original Equipment	02/06/2015	67.0	68.0

[Perform Search Again](#)

# Meld Technologies Waiver

Database Administrator (Spectrum Bridge) provides Meld devices with channels in accordance with waiver request despite the fact:

- No permissive change application appears to have been ever filed
- Waiver expired on September 16, 2014
- Meld and its devices fail to meet any of the waiver conditions

# Meld Technologies Waiver

- Devices fail to meet any of the waiver conditions:
  - Coordinates of device can be easily be changed by user
    - NAB showed how coordinates can be easily changed and new channels acquired in minutes
  - Devices are available and offered for sale to general public on Meld website
    - For example, recent Meld devices sold to Arizona Capitol Television (and are used to display PowerPoint presentations on TV sets)
    - Arizona Capitol Television is not a retail store
  - Devices do not contact database every 30 minutes but rather 24 hours
- Unclear whether Meld ever has made any effort to develop geo-location capability or ever complied with any of waiver conditions

# Review of TVWS Devices and Database

- Found obviously false registration that had been previously deleted by FCC had reappeared and remained in TVWS database until error again pointed out by NAB
- Continue to find many TVWS devices “professionally installed” with incorrect location information
  - Devices used manufacturers’ pre-populated “example” locations
  - Mistakes or typos in entering location information
  - Installer failed to change location after bench testing
- Found “professionally installed” and registered devices with incorrect FCC IDs
- Found TVWS database provider sending wrong channel information to devices
- Found modification and sale of TVWS devices without required FCC equipment authorization or approval

# “Professional Installation” Not Reliable



- Would you take an airline that arrives where you want to go 8 or 9 times out of 10?
- There are less than 600 devices in the database
  - Well over 100 are test devices or devices owned by the manufacturer
- FCC deleted 62 clearly “bad” entries
- Database contains dozens of additional mistakes
- Time to admit “professional installation” does not work and adopt a viable solution

Additional Meld Issue

# Meld Equipment Authorization Issues



MT-300 Pico Broadcaster  
Operator Manual

## 4. Installation

### 4.1 Front/Rear Panel Interface



**Note:** It is recommended the MT300 be installed and located in a secure area such as a network closet or operations center. The device must be installed in a location that provides a minimum separation from all persons and the antenna of 40 cm (15.7 inches). Please refer to the RF Exposure warning on page 3.

- Meld granted equipment approval 11/28/2012
- In approved equipment, HDMI, Component connectors are “non-functional”
- No permissive changes authorized by FCC
- Meld selling six versions of the device on its website

# Meld Technologies

## MT300 PICO BROADCASTER™

DESCRIPTION: MELD's patented Pico Broadcaster™ sends 11 feet, about the size of a football field. No cabling or infrastru

### Key Benefits

- Full HD
- Easy & Affordable
- Proven technology used by professional broadcaster
- No cabling needed
- Supports unlimited number of TVs.
- Works with any off-the-shelf HDTV without additional decoder boxes

### Pricing

Description	SKU #	Price
MT300(IP input)	MT300-ATSC	\$1,599
MT300(IP input)	MT300-DVBT	\$1,699
MT300(IP input, lab version)	MT300-LAB	\$2,499

[MT300 Product Brief](#)

[MT300 Operator Manual](#)

Only Device  
FCC Approved



Home Up PARTNERS APPLICATIONS SUPPORT ABOUT

## MT300-AV MULTICAST PICO BROADCASTER™ "ANYTHING IN" TO BROADCAST OUT

### Key Benefits

- Wireless Multicast DTV compatible signal up to 1080
- Easy & Affordable
- Proven technology used by professional broadcasters
- No cabling needed
- Supports unlimited number of TVs.
- Connects to off-the-shelf HDTVs without additional

decoder boxes at each TV.

### Pricing

Description	SKU #	Price
MT300-AV ATSC output	MT300-AV/ATSC	\$2,499
MT300-AV/DVBT output	MT300-AV/DVBT	\$2,599
MT300-AV/lab version	MT300-AV/lab	\$3,999

[MT300-AV Product Brief](#)



Devices being sold