APRS


KENWOOD
FM DUAL BANDER TM-D710G
DATA GPS
AX.25 PROTOCOL
B01 APRS12
12:00
2:DF0TK-9
14:55
TM-D710
BCON iGPS
11/30
N 50° 12.16'
E 008° 44.54'
JO40IE
+045°
PATH CLR
BACK
F
MSG
KB9BYP
WX
FW8572
WA9TT-12
Grand Chute
KD9MIL-10
96
47
125
41
NZ9KB-B
441
KD9QHQ
76
10

What is APRS?

- Automatic Packet Reporting System (*not* “Position Reporting System”)
- Originally developed as a ship tracking system for the US Navy. It is now much more than a mere location tracking system.
- APRS is a tactical information-sharing system providing real-time, situational and spatial awareness of your immediate area over RF.
- Also allows local and global communications via short text messages among many other uses and services.

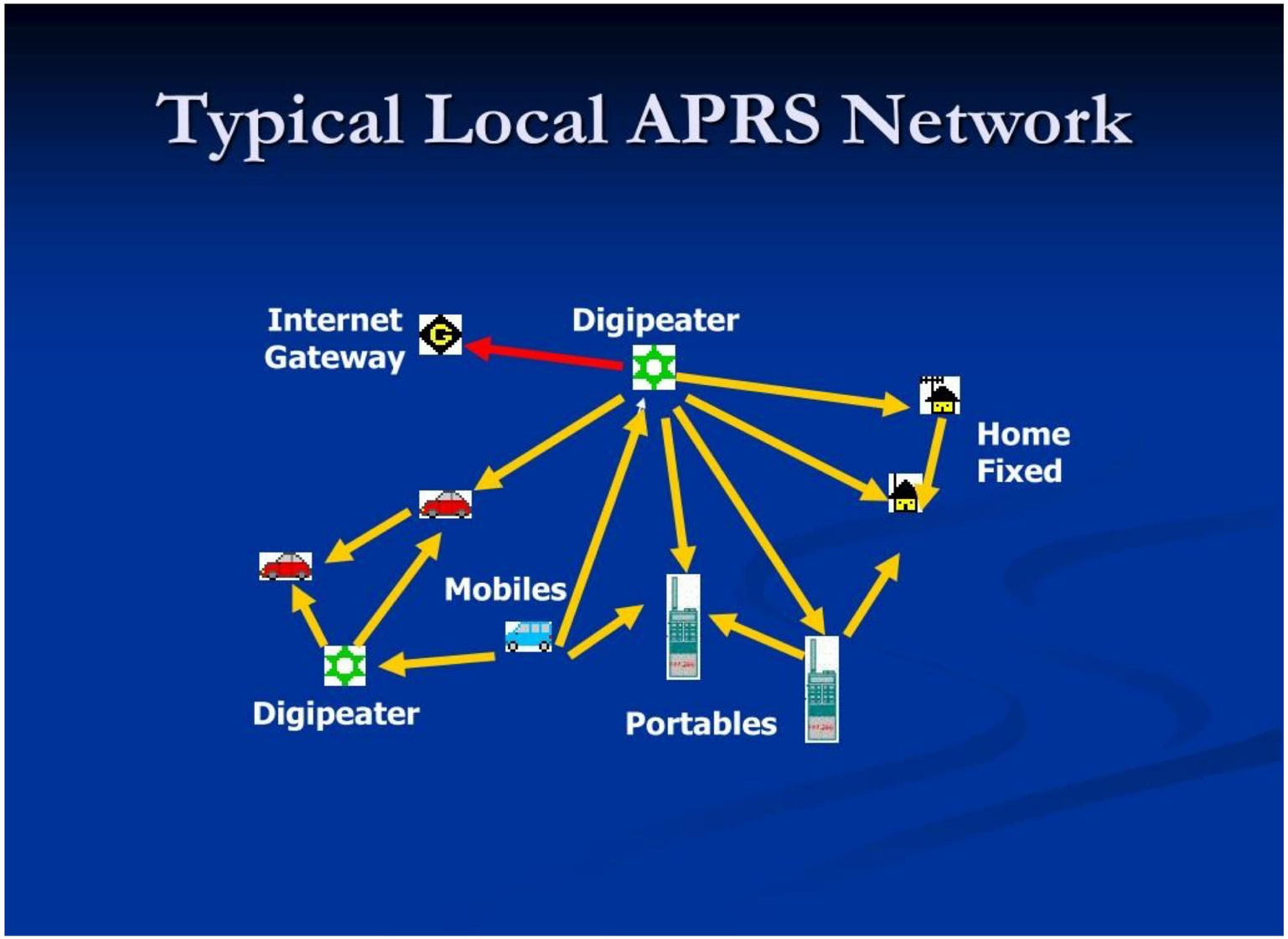
APRS Data Examples

- Positions
- Station capabilities
- Objects
- Weather reports
- Telemetry (example: monitoring remote radios)
- Text messages
- Bulletins
- Queries and responses
- Internet gateways to other services, information servers
- APRS of Things
- User-defined data types

How APRS works

- 1200 baud AFSK AX.25 packets
- Digipeaters and IGates form the local infrastructure
- Single shared simplex frequency on 2 meters
- One-to-many information-sharing
- No error-checking, “fire and forget”
- GPS used for obtaining position, altitude, direction and speed
- FM Radios, GPS receivers, TNCs (terminal node controllers: essentially modems)
- Internet connectivity for global messaging and maps (not essential)

How APRS works



Digipeaters: Two types

- **Wide coverage**
- Usually located at repeater sites
- Often no Internet access available at those sites
- **Local/fill-in**
- Less range than wide coverage digipeaters
- Multiple local digipeaters can extend coverage if desired
- Can fill in weak RF signal areas
- May reduce load on wide coverage digipeaters
- Often located at hams' QTHs and double as Igates
- Can be temporary (i.e. HT-based) for improved coverage at special events

APRS Use Cases

- Position reporting and tracking (lost or missing hams, S&R, special events)
- Short text messages (special events, off grid communications, APRS nets)
- Broadcast/group messages (just-in-time announcements)
- Locations of objects and places (floods, MVAs, blocked roads, emergency supply procurement sites: water, fuel, food, medicine, recharging stations, ATMs)
- Repeater frequency information (for visiting hams from elsewhere, new hams)
- Weather stations (storm tracking, emergency net readiness)
- Voice monitoring frequency (contacting mobile hams)
- Queries (examples: callsign lookups, local weather, ISS and satellite pass info, discussion groups, local resources)
- Gateways (examples: SMS, Internet email, ChatGPT, Twitter, Whatsapp, SOTA/POTA activation self-spotting)

Getting started: software and hardware

- Cell phone apps (APRSDroid for Android, Aprs.fi for Iphones/Ipads) Requires Internet access.
- FM HT or mobile/base, cable, old smartphone with headset jack, APRSDroid. Cheapest RF portable solution.
- FM HT with MobilinkD Bluetooth TNC, cable, smartphone/Iphone.
- Old packet radio TNCs
- TAPR NinoTNC kit
- Direwolf (software TNC) plus radio with digital interface box and USB sound card. Another cheap RF solution, for the shack.
- APRS trackers plus GPS receivers and radios (vehicle and amateur balloon tracking)
- APRS-capable radio (best all-in-one solution especially for field use)

APRS Radios

- **Yaesu VX-8DR 5W FM and APRS HT (out of production)**
- **LANCHONLH HG-UV98 5W HT (Made by QZLCDZ, sold by Venus Information Technology and Anysecu, all in China) $118 to $162, average price $150**
- **BTECH UV-PRO 7W HT (Baofeng) $165**
- **VCG VR-N76 7W HT (Vero Global Communications, Fujian, China) $189**
- **Radioddity GA-5WB 7W HT $180**
- **VCG VR-N7500 headless 50W dual band mobile $199**
- **VCG VR-6600PRO dual band dual VFO 50W mobile $349**
- **Anytone AT-D878UVII Plus 7.5W DMR HT $335**
- **Many Yaesu C4FM radios (FT-1D-5D HTs, FTM-100D-500D mobiles)**
- **Kenwood TM-D700A, 710A, 710GA 50W mobiles (out of production though the 710GA is still listed on Kenwood’s website)**
- **Kenwood TH-D7A, TH-D72A and TH-D74A HTs (out of production) and TH-D75A**
- **Yaesu FTM-350 50W FM and APRS mobile (out of production)**
- **FM analog radios with DTMF capability (can send only, not receive and decode)**
- **Many DMR radios with GPS (most can send position beacons only)**

APRS Frequencies (in MHz)

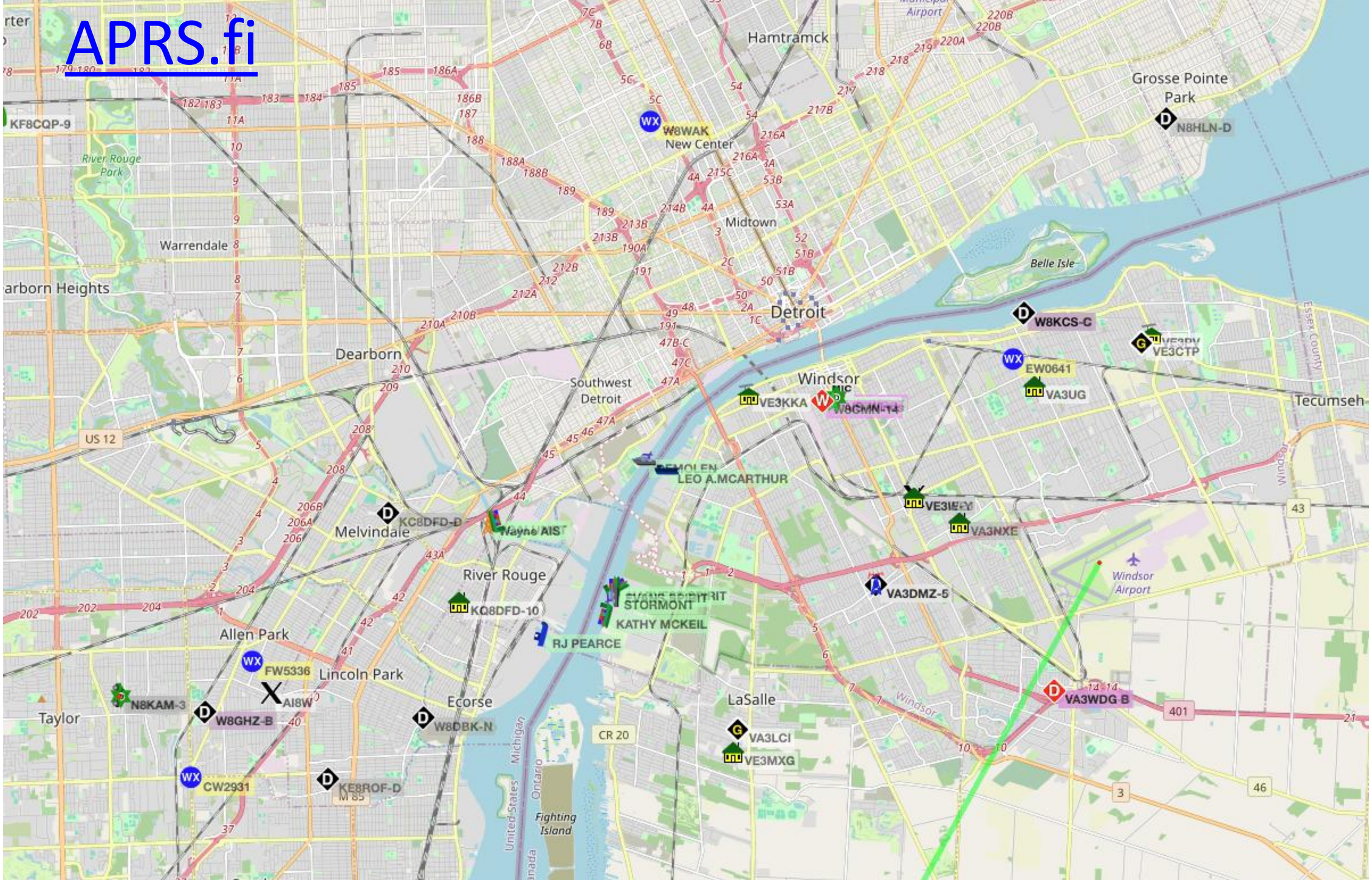
- 144.390 North America (USA inc. Puerto Rico, Canada, Mexico), also Thailand, Malaysia, Singapore, Indonesia
- 145.010 Caribbean Region
- 144.800 Europe, also South Africa, Israel, Lebanon, Costa Rica, Senegal
- 145.175 Australia, Tasmania
- 144.575 New Zealand
- 144.640 China, Taiwan, Hong Kong, Japan
- 145.825 Worldwide (satellites, ISS)
- 144.440 Philippines Districts 1, 3 and 7 (Originally 144.390)
- ???.??? Other Districts must find their own clear frequencies if 144.440 is unavailable due to existing repeaters
- **Badly need a national Philippines APRS frequency allocation** (like every other country has)

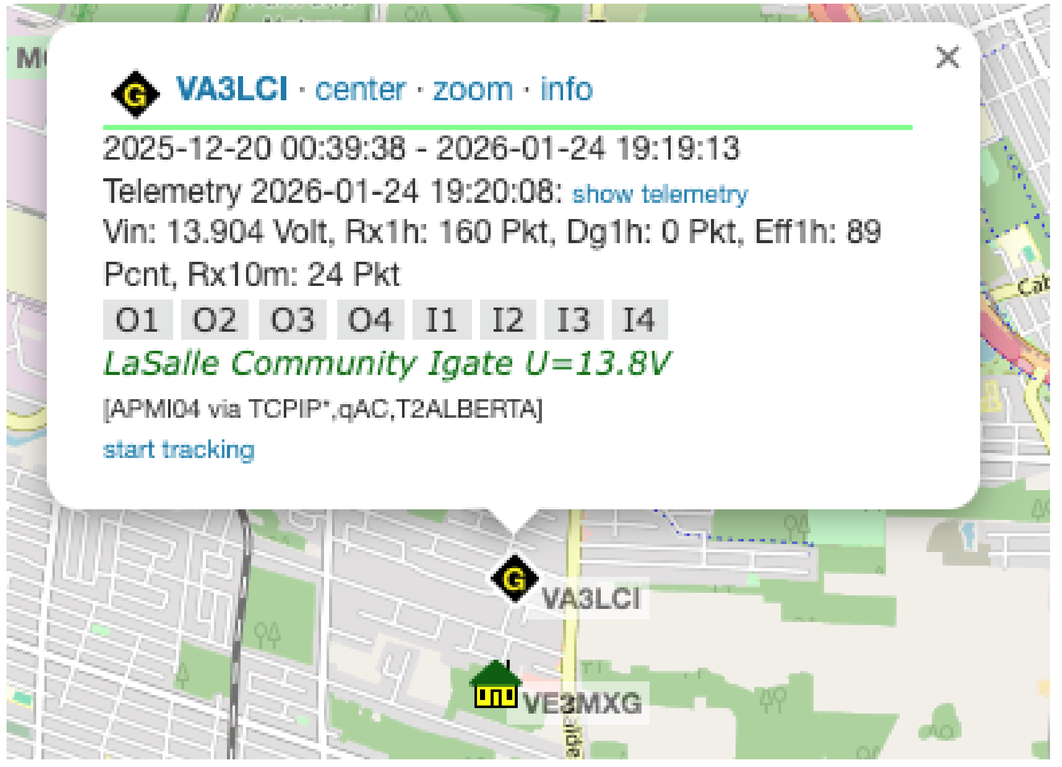
-0 Your primary station usually fixed and message capable
-1 generic additional station, digi, mobile, wx, etc
-2 generic additional station, digi, mobile, wx, etc
-3 generic additional station, digi, mobile, wx, etc
-4 generic additional station, digi, mobile, wx, etc
-5 Other networks (Dstar, Iphones, Androids, Blackberry's etc)
-6 Special activity, Satellite ops, camping or 6 meters, etc
-7 walkie talkies, HT's or other human portable
-8 boats, sailboats, RV's or second main mobile
-9 Primary Mobile (usually message capable)
-10 internet, Igates, echolink, winlink, AVRS, APRN, etc
-11 balloons, aircraft, spacecraft, etc
-12 APRStt, DTMF, RFID, devices, one-way trackers*, etc
-13 Weather stations
-14 Truckers or generally full time drivers
-15 generic additional station, digi, mobile, wx, etc

Conclusion

- What APRS is
- How APRS is useful
- How APRS works and its infrastructure
- APRS-IS and mapping websites (“Google maps for amateur radio”)
- APRS data types and examples
- APRS frequencies
- APRS software and hardware
- APRS-capable radios past and present

The usefulness of APRS depends on what you do with it. *Everyone* gets out of it what *YOU* put into it. Track your car or HT, practice sending and receiving text messages, practice changing symbols to represent things on the maps along with beacon comments giving more information. Then you will be prepared to use APRS in emergencies to share valuable information and help the community.


APRS.fi
Hamtramck
Grosse Pointe Park
N8HLN-D
KF8CQP-9
W8WAK
New Center
River Rouge Park
Warrendale
Midtown
Belle Isle
Detroit
W8KCS-C
VE3CTP
EW0641
VA3UG
Windsor
VE3KKA
Tecumseh
Dearborn
Southwest Detroit
US 12
LEO A.MCARTHUR
VA3NXE
VA3DMZ-5
Windsor Airport
KC8DFD-D
Melvindale
Wayne AIS
River Rouge
KQ8DFD-10
STORMONT
KATHY MCKEIL
RJ PEARCE
Allen Park
FW5336
AI8W
Lincoln Park
Taylor
N8KAM-3
W8GHZ-B
W8DBK-N
Ecorse
LaSalle
VA3LCI
VE3MXG
VA3WDG B
401
CR 20
CW2931
KE8ROF-D
Fighting Island
United States
Ontario
Michigan
Windsor
Essex County



APRS station **VA3LCI** - show graphs

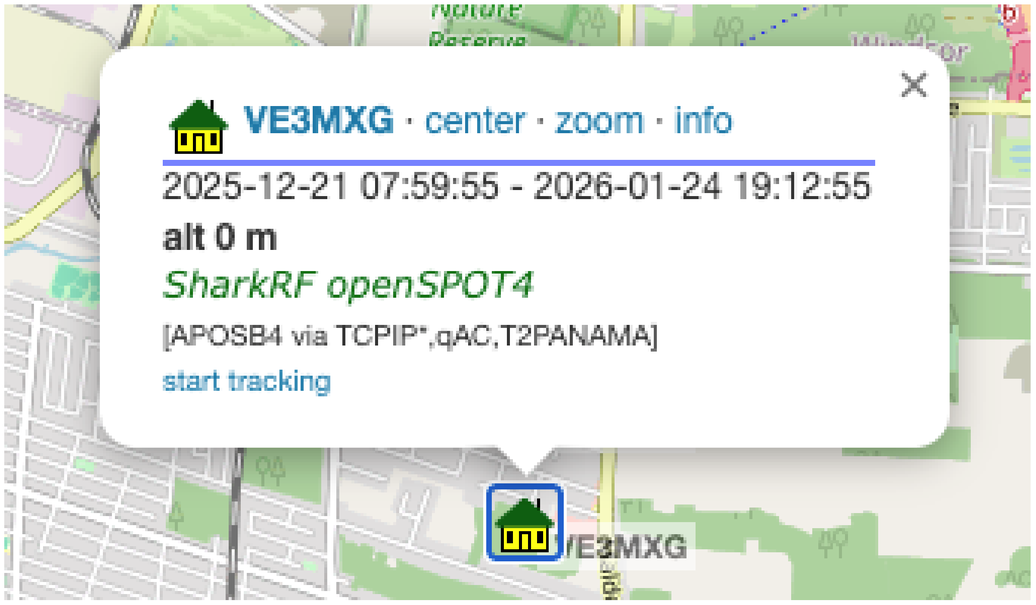
Comment:	*LaSalle Community Igate U=13.8V*
Location:	42°14.30' N 83°03.90' W - locator EN82LF27EE - **show map** 7.9 km Southwest bearing 210° from Windsor, Ontario, Canada [?] 10.5 km South bearing 189° from Detroit, Wayne County, Michigan, United States 139.9 km Northwest bearing 306° from Cleveland, Cuyahoga County, Ohio, United States
Last position:	2026-01-24 19:04:13 EST (8m17s ago) 2026-01-24 19:04:13 EST local time at Windsor, Canada [?]
Last telemetry:	2026-01-24 19:10:08 EST (2m22s ago) – show telemetry Vin: 13.904 Volt, Rx1h: 160 Pkt, Dg1h: 0 Pkt, Eff1h: 89 Pcnt, Rx10m: 18 Pkt O1 O2 O3 O4 I1 I2 I3 I4
Device:	Microsat: WX3in1 Mini
Last path:	VA3LCI>APMI04 via TCPIP*,qAC,T2ALBERTA
Positions stored:	2
Packet rate:	86 seconds between packets on average during 4210 seconds.
Other SSIDs:	VA3LCI-7 VA3LCI-Y

APRS igate – Statistics for 2026-01:

Stations heard directly:	33 on radio path – **show map**
Last heard a station directly:	2026-01-24 18:56:43 EST (15m47s ago)
Normal receiver range estimate:	20 km (Updated: 2026-01-24 18:26:34 EST)
Position packets heard directly:	4280 on radio path
Position packets sent to APRS-IS:	8303 – **show map**

Stations near current position of **VA3LCI** - show more

callsign	distance	last heard - EST	callsign	distance	last heard - EST
VE3BW-7	118.5 m 340°	2026-01-24 14:52:38	VE3MXG-7	168.9 m 9°	2026-01-21 11:08:26
VE3PCG-7	187.5 m 8°	2026-01-13 23:47:10	**VE3MXG**	566.3 m 191°	2026-01-24 19:02:55
va3rdq-i	2.4 km 232°	2025-12-29 19:13:26	KF8DCI	4.0 km 110°	2026-01-14 20:06:26
KATHY MCKEIL	4.4 km 311°	2026-01-24 19:09:39	SURPRISE	4.4 km 221°	2026-01-08 17:35:45
STORMONT	4.5 km 317°	2026-01-24 19:10:39	**EVANS SPIRIT**	4.6 km 319°	2026-01-24 19:11:39
HARVEST SPIRIT	4.7 km 320°	2026-01-24 19:10:39	**VA3DMZ-D**	5.0 km 44°	2026-01-24 19:06:58
VA3DMZ-5	5.0 km 44°	2026-01-24 19:11:59	HERBERT C JACKSON	5.0 km 295°	2026-01-18 14:46:30
MARK W. BARKER	5.4 km 296°	2026-01-12 13:24:19	**RJ PEARCE**	5.4 km 296°	2026-01-24 19:09:39
SAMUEL DE CHAMPLAIN	6.5 km 333°	2026-01-22 15:37:52	**LEO A.MCARTHUR**	6.7 km 345°	2026-01-24 19:10:39
ONTARIO	6.9 km 313°	2026-01-20 16:17:07	OHIO	7.0 km 313°	2026-01-18 13:13:27



APRS station **VE3MXG** - show graphs

Comment: *SharkRF openSPOT4*
Location: 42°14.00' N 83°03.98' W - locator EN82LF25AX - **show map**
8.5 km Southwest bearing 209° from Windsor, Ontario, Canada [?]
11.0 km South bearing 189° from Detroit, Wayne County, Michigan, United States
139.7 km Northwest bearing 306° from Cleveland, Cuyahoga County, Ohio, United States
Last position: 2026-01-24 19:12:55 EST (5m58s ago)
2026-01-24 19:12:55 EST local time at Windsor, Canada [?]
Device: SharkRF: openSPOT4 (gadget)
Last path: VE3MXG>APOSB4 via TCPIP*,qAC,T2PANAMA
Positions stored: 16
Packet rate: 600 seconds between packets on average during 29421 seconds.
Other SSIDs: VE3MXG-7

Stations near current position of **VE3MXG** - show more

callsign	distance	last heard - EST	callsign	distance	last heard - EST
VA3LCI	566.3 m 11°	2026-01-24 19:04:13	VE3BW-7	670.2 m 6°	2026-01-24 14:52:38
VE3MXG-7	735.1 m 11°	2026-01-21 11:08:26	VE3PCG-7	753.6 m 10°	2026-01-13 23:47:10
va3rdq-i	2.0 km 243°	2025-12-29 19:13:26	SURPRISE	3.9 km 226°	2026-01-08 17:35:45
KF8DCI	4.0 km 102°	2026-01-14 20:06:26	**KATHY MCKEIL**	4.7 km 317°	2026-01-24 19:18:40
STORMONT	4.9 km 322°	2026-01-24 19:18:40	**EVANS SPIRIT**	5.0 km 324°	2026-01-24 19:17:39
HARVEST SPIRIT	5.0 km 325°	2026-01-24 19:16:39	HERBERT C JACKSON	5.2 km 301°	2026-01-18 14:46:30
VA3DMZ-D	5.5 km 41°	2026-01-24 19:06:58	**VA3DMZ-5**	5.5 km 40°	2026-01-24 19:11:59
MARK W. BARKER	5.5 km 301°	2026-01-12 13:24:19	**RJ PEARCE**	5.6 km 301°	2026-01-24 19:18:40
SAMUEL DE CHAMPLAIN	6.9 km 336°	2026-01-22 15:37:52	WY8DOT	7.2 km 249°	2026-01-17 16:04:51
LEO A.MCARTHUR	7.2 km 347°	2026-01-24 19:16:39	ONTARIO	7.3 km 317°	2026-01-20 16:17:07

APRS station **VA3DMZ-D** - show graphs

Comment: *70cm MMDVM Voice (DMR) 430.50000MHz +0.0000MHz, APRS for DMRGateway*

Location: 42°16.24' N 83°01.39' W - locator EN82LG74FX - **show map**
3.3 km South bearing 189° from Windsor, Ontario, Canada [?]
7.0 km South bearing 165° from Detroit, Wayne County, Michigan, United States
139.3 km Northwest bearing 308° from Cleveland, Cuyahoga County, Ohio, United States

Last position: 2026-01-24 19:06:58 EST (16m30s ago)
2026-01-24 19:06:58 EST local time at Windsor, Canada [?]

Device: Jonathan, G4KLX: ircDDB Gateway (D-Star)

Last path: VA3DMZ-D>APDG03 via TCPIP*,qAC,VA3DMZ-DS

Positions stored: 1

Packet rate: 1200 seconds between packets on average during 58777 seconds.

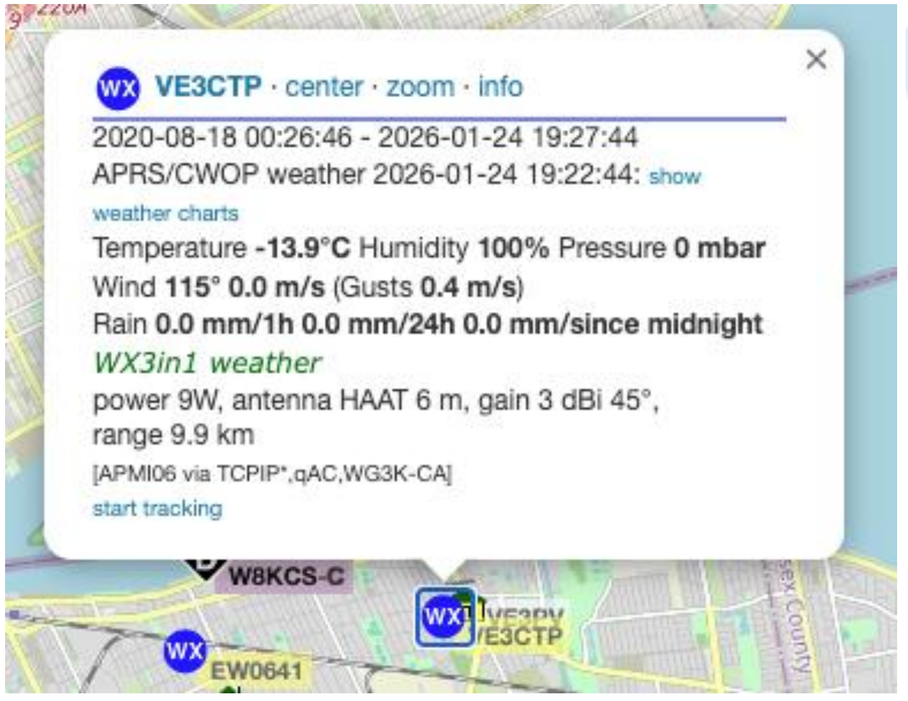
Other SSIDs: **VA3DMZ-5** VA3DMZ VA3DMZ-9 VA3DMZ-N

Stations near current position of **VA3DMZ-D** - show more

callsign	distance	last heard - EST	callsign	distance	last heard - EST
VA3DMZ-5	17.8 m 0°	2026-01-24 19:21:59	**VE3WEJ**	2.4 km 24°	2026-01-24 18:56:35
VE3IE-Y	2.4 km 23°	2026-01-24 19:04:27	**VA3NXE**	2.6 km 53°	2026-01-24 19:15:11
VA3NXE-Y	2.6 km 53°	2026-01-15 19:49:27	VA3QRM-9	3.5 km 44°	2026-01-24 14:07:59
VA3UG-9	3.8 km 81°	2026-01-24 11:00:43	VA3FTC-9	4.4 km 323°	2026-01-23 18:08:41
W8CMN-14	4.5 km 340°	2026-01-24 18:57:00	**VE3WRC**	4.8 km 348°	2026-01-24 19:12:05
AIS-Winds	4.8 km 347°	2026-01-24 19:22:39	**WIRES-X**	4.8 km 350°	2026-01-24 18:54:17
VE3IE	4.8 km 3°	2026-01-06 19:21:40	VE3PCG-7	4.8 km 225°	2026-01-13 23:47:10
VE3MXG-7	4.8 km 225°	2026-01-21 11:08:26	VE3BW-7	4.9 km 225°	2026-01-24 14:52:38
VA3LCI	5.0 km 224°	2026-01-24 19:19:13	KF8DCI	5.0 km 176°	2026-01-14 20:06:26
VA3WDG-B	5.1 km 121°	2026-01-24 18:47:06	**VA3WDG B**	5.1 km 121°	2026-01-24 18:47:06

APRS object **W8CMN-14** - show graphs

Source callsign:	WINLINK
Comment:	*441.050MHz Winlink Packet Gateway*
Location:	42°18.50' N 83°02.50' W - locator EN82LH43XX - **show map** 2.3 km Northwest bearing 294° from Windsor, Ontario, Canada [?] 2.6 km South bearing 173° from Detroit, Wayne County, Michigan, United States 143.1 km Northwest bearing 309° from Cleveland, Cuyahoga County, Ohio, United States
Last position:	2026-01-24 18:57:00 EST (30m30s ago) 2026-01-24 18:57:00 EST local time at Windsor, Canada [?]
Position ambiguous:	Precision reduced at transmitter by 2 digits, position resolution approximately 1.9 km.
Last path:	WINLINK>APWL2K via TCPIP*,qAS,WLNK-1
Positions stored:	15
Others sourced by WINLINK:	3D2JR 4F1GNW 4F1PUZ 4F1PUZ-10 4F3BZ 4G1CCH 4G1CLT-10 4G1FSL 9Y4C-10 9Y4C-11 9Y4DZ-10 9Y4V 9Y4V-10 9Z4DZ-11 AA0RC AA0RC-10 AA5DE-10 AA5GW AA5KV-10 AA5QJ-10 AA6AT AA6BD AA6BD-10 AA6JP AB4CD-10 AB4NX AB4NX-10 AB4QQ AB4WV AB5MC-10 AB6MV-10 AB8D AC5PW-10 AC6CZ AC6DF-10 AC6LS-10 AC7BR-10 AC7DS AC7II-10 AC7I AD6DM-10 AD6DM-13 AD6MH AD7DD AD7DD-10 AD7DQ-10 AD7FC AD7 AE5ME-10 AE5ME-13 AE5ME-15 AE5MI AE5MM-13 AE6EQ-7 AE6XT

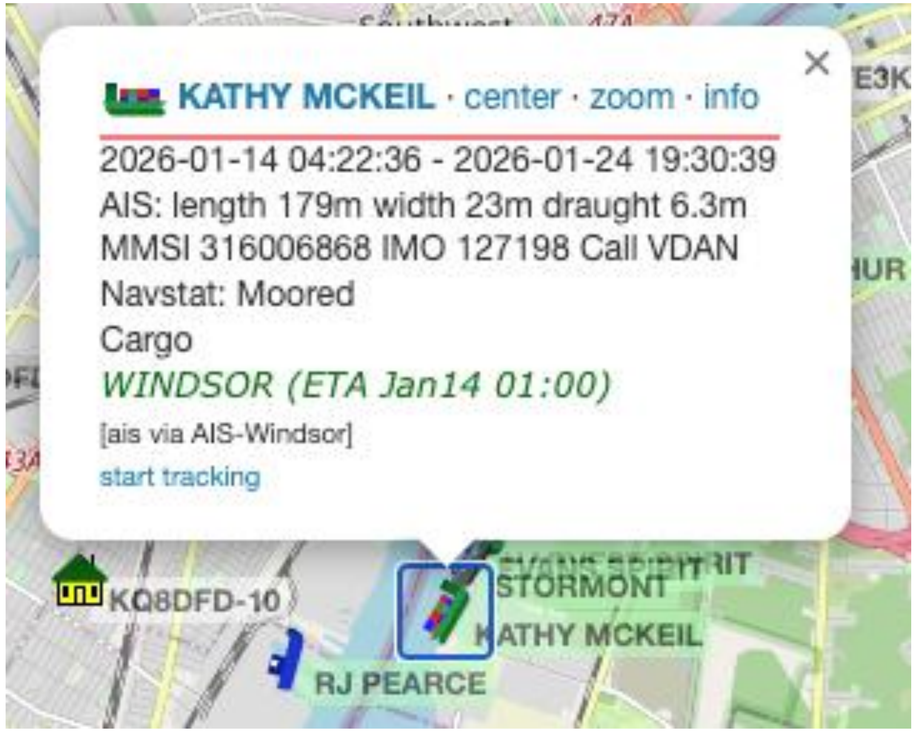


APRS weather station **VE3CTP** - show graphs

Comment:	*WX3in1 weather*
Location:	42°19.48' N 82°56.59' W - locator EN82MH67TW - **show map** 6.6 km Northeast bearing 66° from Windsor, Ontario, Canada [?] 8.5 km East bearing 95° from Detroit, Wayne County, Michigan, United States 138.0 km Northwest bearing 312° from Cleveland, Cuyahoga County, Ohio, United States
Last position:	2026-01-24 19:27:44 EST (2m10s ago) 2026-01-24 19:27:44 EST local time at Windsor, Canada [?]
Last WX report:	2026-01-24 19:22:44 EST (7m10s ago) – show weather charts -13.9 °C 100% 0.0 mbar 0.0 m/s Southeast
Device:	Microsat: WX3in1 Plus 2.0
Last path:	VE3CTP>APMI06 via TCPIP*,qAC,WG3K-CA
Positions stored:	263
Packet rate:	202 seconds between packets on average during 9899 seconds.
APRS igate – Statistics for 2026-01:	
Stations heard directly:	41 on radio path – **show map**
Last heard a station directly:	2026-01-24 19:26:36 EST (3m18s ago)
Normal receiver range estimate:	40 km (Updated: 2025-12-31 18:04:27 EST)
Position packets heard directly:	2301 on radio path
Position packets sent to APRS-IS:	3475 – **show map**

Stations near current position of **VE3CTP** - show more

callsign	distance	last heard - EST	callsign	distance	last heard - EST
VE3PV	344.0 m 46°	2026-01-24 19:22:30	VA3ROC	2.7 km 251°	2026-01-21 10:58:16
VA3ROC-10	2.7 km 251°	2026-01-23 07:21:45	**VA3UG**	2.8 km 248°	2026-01-24 19:24:15
W8KCS-N	3.0 km 285°	2026-01-24 19:23:17	**W8KCS C**	3.0 km 285°	2026-01-24 19:24:00
W8KCS-C	3.0 km 285°	2026-01-24 19:24:10	W8KCS-DP	3.0 km 285°	2026-01-09 09:01:18
EW0641	3.2 km 263°	2026-01-24 19:15:01	VA3QRM-9	5.4 km 230°	2026-01-24 14:07:59



AIS vessel **KATHY MCKEIL** - show graphs

Callsign:	VDAN
MMSI number:	316006868
IMO number:	127198
Navigational status:	Moored (5)
Vessel class:	Cargo (70)
Destination:	*WINDSOR (ETA Jan14 01:00)*
Location:	42°15.83' N 83°06.31' W - locator EN82KG73JI - **show map** 6.1 km East bearing 110° from Melvindale, Wayne County, Michigan, United States [?] 6.2 km East bearing 76° from Lincoln Park, Wayne County, Michigan, United States 9.0 km Southwest bearing 213° from Detroit, Wayne County, Michigan, United States 76.3 km Northeast bearing 29° from Toledo, Lucas County, Ohio, United States
Last position:	2026-01-24 19:30:39 EST (1m42s ago) 2026-01-24 19:30:39 EST local time at Melvindale, United States [?]
Course:	206.7° – heading 19°
Speed:	0 km/h
Dimensions:	length 179 m width 23 m draught 6.3 m
Last path:	VDAN>ais via AIS-Windsor
Positions stored:	7534

Stations near current position of **KATHY MCKEIL** - show more

callsign	distance	last heard - EST	callsign	distance	last heard - EST
STORMONT	510.9 m 25°	2026-01-24 19:30:39	**EVANS SPIRIT**	677.6 m 21°	2026-01-24 19:29:39
HARVEST SPIRIT	759.4 m 22°	2026-01-24 19:31:39	HERBERT C JACKSON	1.4 km 239°	2026-01-18 14:46:30
MARK W. BARKER	1.6 km 251°	2026-01-12 13:24:19	**RJ PEARCE**	1.6 km 253°	2026-01-24 19:30:39
ONTARIO	2.6 km 317°	2026-01-20 16:17:07	OHIO	2.6 km 316°	2026-01-18 13:13:27
MINNESOTA	2.6 km 316°	2026-01-23 20:00:53	SAMUEL DE CHAMPLAIN	3.0 km 7°	2026-01-22 15:37:52