The Haunted Band

The 219-220 MHz secondary amateur allocation

Table of contents

Introduction

The FCC allocated 219-220 MHz for amateur use on a secondary basis.

This allocation is only for fixed digital message forwarding.

Amateur stations cannot cause interference to, and must accept interference from, primary services in this (and adjacent) bands. And they must ask permission if within 80 km of an AMTS Coast Station, 30 days in advance.

”Sometimes you can use this band. Sometimes you can’t”
-AD5T

“Mostly you can’t”
-ARRL Band Managers

“You almost certainly can’t”
-ARRL Counselors

“So… you’re saying there’s a chance?”
-W5NYV

1

The Ghost of 219 Past

Where the bodies are buried.

What are the rules?

(l) *In the 219–220 MHz segment:*

(1) Use is restricted to amateur stations participating as forwarding stations in fixed point-to-point digital message forwarding systems, including intercity packet backbone networks. It is not available for other purposes.

(2) Amateur stations must not cause harmful interference to, and must accept interference from, stations authorized by:

(i) The FCC in the Automated Maritime Telecommunications System (AMTS), the 218–219 MHz Service, and the 220 MHz Service, and television stations broadcasting on channels 11 and 13; and

(ii) Other nations in the fixed and maritime mobile services.

(3) No amateur station may transmit unless the licensee has given written notification of the station's specific geographic location for such transmissions in order to be incorporated into a database that has been made available to the public. The notification must be given at least 30 days prior to making such transmissions. The notification must be given to: The American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111–1494.

(4) No amateur station may transmit from a location that is within 640 km of an AMTS coast station that operates in the 217–218 MHz and 219–220 MHz bands unless the amateur station licensee has given written notification of the station's specific geographic location for such transmissions to the AMTS licensee. The notification must be given at least 30 days prior to making such transmissions. The location of AMTS coast stations using the 217–218/219–220 MHz channels may be obtained as noted in paragraph (l)(3) of this section.

(5) No amateur station may transmit from a location that is within 80 km of an AMTS coast station that uses frequencies in the 217–218 MHz and 219–220 MHz bands unless that amateur station licensee holds written approval from that AMTS licensee. The location of AMTS coast stations using the 217–218/219–220 MHz channels may be obtained as noted in paragraph (l)(3) of this section.

(l) *In the 219–220 MHz segment:*

(1) Use is restricted to amateur stations participating as forwarding stations in fixed point-to-point digital message forwarding systems, including intercity packet backbone networks. It is not available for other purposes.

(2) Amateur stations must not cause harmful interference to, and must accept interference from, stations authorized by:

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Simple enough…

Geography?

You

Your GPS location

Between 80 and 670 km

Have to inform the AMTS Coastal Station at least 30 days in advance of operation.

80 km or less

Have to ask permission at least 30 days in advance of operation.

Automated Maritime Telecommunications System (AMTS) stations are a special type of public coast station. The AMTS service was established in 1981 as an alternative to traditional VHF public coast service, primarily to meet the specialized needs of tugs, barges, and other commercial vessels on inland waterways. AMTS stations, which use 217/219 MHz frequencies, were intended primarily to provide public correspondence service to such vessels, but in an integrated manner not readily available from individual VHF public coast stations. AMTS public coast stations also may provide private radio service under certain circumstances, and have limited authority to provide service to units on land. An AMTS licensee may lease all or part of the spectrum usage rights associated with the license.

https://www.fcc.gov/wireless/bureau-divisions/mobility-division/maritime-mobile/coast-radio-stations/coast-radio-0

(b) Coast stations for which the above specified need not be submitted because the proposed station's predicted interference contour is fully encompassed by the composite interference contour of the applicant's existing system or the proposed station's predicted interference contour extends the system's composite interference contour over water only (disregarding uninhabited islands) must, at least 15 days before the station is put into operation, give written notice to the television stations which may be affected of the proposed station's technical characteristics, the date it will be put into operation, and the licensee's representative (name and phone number) to contact in the event a television station experiences interference. No prior FCC authorization is required to construct and operate such a station, but, at the time the station is added, the AMTS licensee must make a record of the technical and administrative information concerning the station and, upon request, supply such information to the FCC. In addition, when the station is added, the AMTS licensee must send notification of the station's location to the American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111–1494, and Interactive Systems, Inc., Suite 1103, 1601 North Kent Street, Arlington, VA 22209.

47 C.F.R. § 80.475(b) taken from https://www.ecfr.gov/current/title-47/chapter-I/subchapter-D/part-80

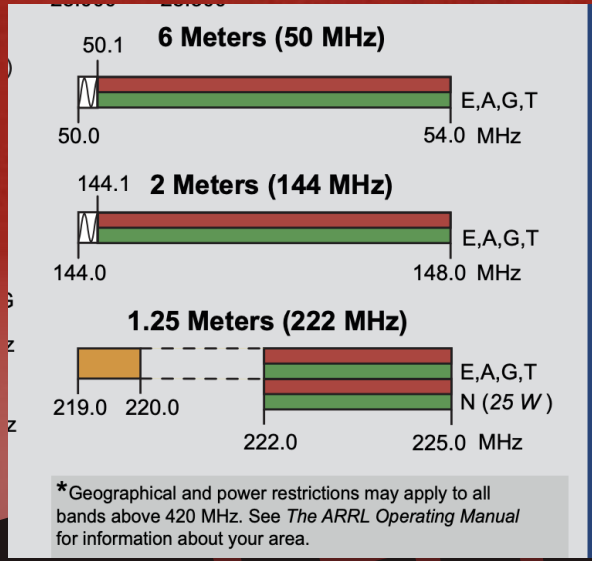
Band Plans

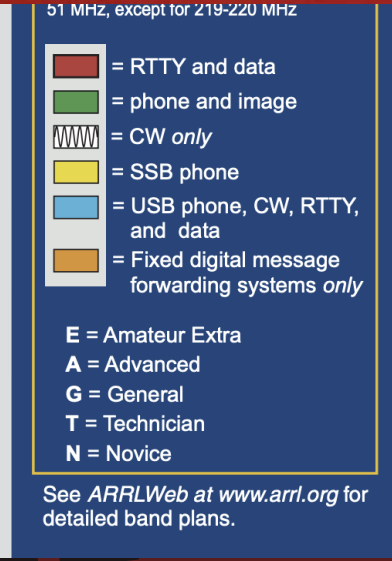
While it's not in the text-based ARRL band plan, it is in the graphical version.

1.25 Meters (222-225 MHz)

222.0-222.150	Weak-signal modes
222.0-222.025	EME
222.05-222.06	Propagation beacons
222.1	SSB & CW calling frequency
222.10-222.15	Weak-signal CW & SSB
222.15-222.25	Local coordinator's option; weak signal, ACSB, repeater inputs, control
222.25-223.38	FM repeater inputs only
223.40-223.52	FM simplex
223.52-223.64	Digital, packet
223.64-223.70	Links, control
223.71-223.85	Local coordinator's option; FM simplex, packet, repeater outputs
223.85-224.98	Repeater outputs only

Note: The 222 MHz band plan was adopted by the ARRL Board of Directors in July 1991.





Color Code*

y — Unnecessary

Extra restrictions added by ARRL.

r — Not great

Shouldn't have to commit to this data being in the database, because it could easily change.

t — Debatable

Call sign is of no interest to AMTS stations, height may be part of GPS coordinates.

b — Should be optional

At least mark these as opt-in.

NOTIFICATION FORM
Amateur Radio Service 219-220 MHz
Point-to-Point Fixed Digital Message Forwarding Station

Note: A separate form must be completed for each transmitter. Return to:
American Radio Relay League, 225 Main St., Newington, CT 06111-1494

Licensee information:
Name (last, first, middle initial) (example: Doe, John H.)

Primary amateur station call sign (example: WB4ABC)

Postal address (example: 12345 Main Street)

City, State, ZIP (example: Anytown, NC 24095)

Telephone (day) (example: 407-234-5678)

Telephone (night)

Facsimile (day)

Facsimile (night)

E-mail address (example: jdoe@aol.com)

Transmitter site characteristics:
XSC—Transmitter state (two-letter designator)

XLA—Transmitter antenna latitude (7 characters—deg/min/sec N) (example: 414538N)

XLG—Transmitter antenna longitude (8 characters—deg/min/sec W) (example: 0722625W)

XAD—Height above mean sea level (MSL) (meters)

XCL—Transmitter call sign (to be used at site) (up to 13 characters)

☐ Transmit and receive? ☐ Transmit only? (in 219-220 MHz band)

Transmitter characteristics:
FRQ—Center frequency (in MHz) (example: 219.050)

EMS—Emission designator (typically: 70KF1D, where 70K = 70 kHz bandwidth, F1D=frequency modulation, single channel digitized without use of a modulating subcarrier, data transmission)

PWR—Transmitter PEP output power (maximum 50 W)

Antenna characteristics:
XAP—Transmitter antenna polarization (H or V)

XAZ—Transmitter antenna orientation (degrees in 3 characters: eg 000=North, 090=east)

XAG—Transmitter antenna gain (dBi) (examples: 08G=8 dBi gain; 12G=12 dBi gain)

XAN—Name of antenna type (Yagi, etc, up to 10 characters)

XAH—Mean height above ground (meters)

Signed declaration. I understand and agree that:

1. Use of the 219-220 MHz segment is limited to amateur stations participating, as forwarding stations, in point-to-point fixed digital message forwarding systems, including intercity packet backbone networks. It is not available for other purposes.

2. No amateur station transmitting in the 219-220 MHz segment shall cause harmful interference to, nor is protected from interference due to operation of Automated Maritime Telecommunications Systems (AMTS), television broadcasting on channels 11 and 13, Interactive Video and Data Service systems, Land Mobile Services systems, or any other service having a primary allocation in or adjacent to the band. I will make any station modification, including cessation of operation if necessary, that may be required to resolve a complaint of harmful interference to a radiocommunication service listed herein.

3. No amateur station may transmit in the 219-220 MHz segment unless the licensee has given written notification to the American Radio Relay League, Inc. (ARRL) at least 30 days prior to making such transmissions, in accordance with Section 97.303(e)(3) of the FCC Rules.

4. No amateur station may transmit in the 219-220 MHz segment from a location that is within 640 km of an AMTS Coast Station unless the amateur station licensee has given written notification to the AMTS licensee at least 30 days prior to making such transmissions, in accordance with Section 97.303(e)(4) of the FCC Rules.

5. No amateur station may transmit in the 219-220 MHz segment from a location that is within 80 km of an AMTS Coast Station unless the amateur station licensee holds written approval from the AMTS licensee, in accordance with Section 97.303(e)(5) of the FCC Rules.

6. The ARRL is designated by the Federal Communications Commission as the national contact point for all amateur operations in the 219-220 MHz band, and is responsible for maintaining a database of all amateur operations in the 219-220 MHz band.

7. The information provided on this form will be included in this database, which will be available to the public.

8. The ARRL is not a licensing authority, and no authorization to operate a radio transmitter is expressed or implied by any document issued to me by the ARRL.

9. The ARRL is not a frequency coordinator. The ARRL will cooperate with recognized local amateur coordinators or packet network groups who assist amateurs in selecting operating frequencies on a voluntary basis.

10. Any transmitter that I may operate in the 219-220 MHz band will be operated strictly in accordance with Part 97 of the FCC Rules, with particular regard to Sections 97.303, 97.305, 97.307, and 97.313, or their successors.

Signed _____ Date _____

Remarks/notes:

219-220 MHz Band Plan

Amateur operation in this band is on a secondary, non-interference basis to other users. For details, see FCC Rules, Section 97.303(e).

The ARRL Board of Directors has adopted a band plan calling for ten 100-kHz channels which are centered on the following frequencies:

CHANNEL	A	219.050
CHANNEL	B	219.150
CHANNEL	C	219.250
CHANNEL	D	219.350
CHANNEL	E	219.450
CHANNEL	F	219.550
CHANNEL	G	219.650
CHANNEL	H	219.750
CHANNEL	I	219.850
CHANNEL	J	219.950

Amateur use of the band is limited to forwarding stations in point-to-point fixed digital message forwarding systems, including intercity packet backbone networks, with a maximum transmitter output power of 50 watts PEP. Highly directional antennas and horizontal polarization are strongly recommended.

Use of channels for speeds of less than 56 kilobit/s should be discouraged.

Transmissions should be centered in the channel, even if the bandwidth of the transmission does not occupy the full 100 kHz of the channel. The long term objective for digital transmission on these channels is the highest possible data rate using any permitted modulation or encoding scheme which does not exceed the 100 kHz bandwidth channel.

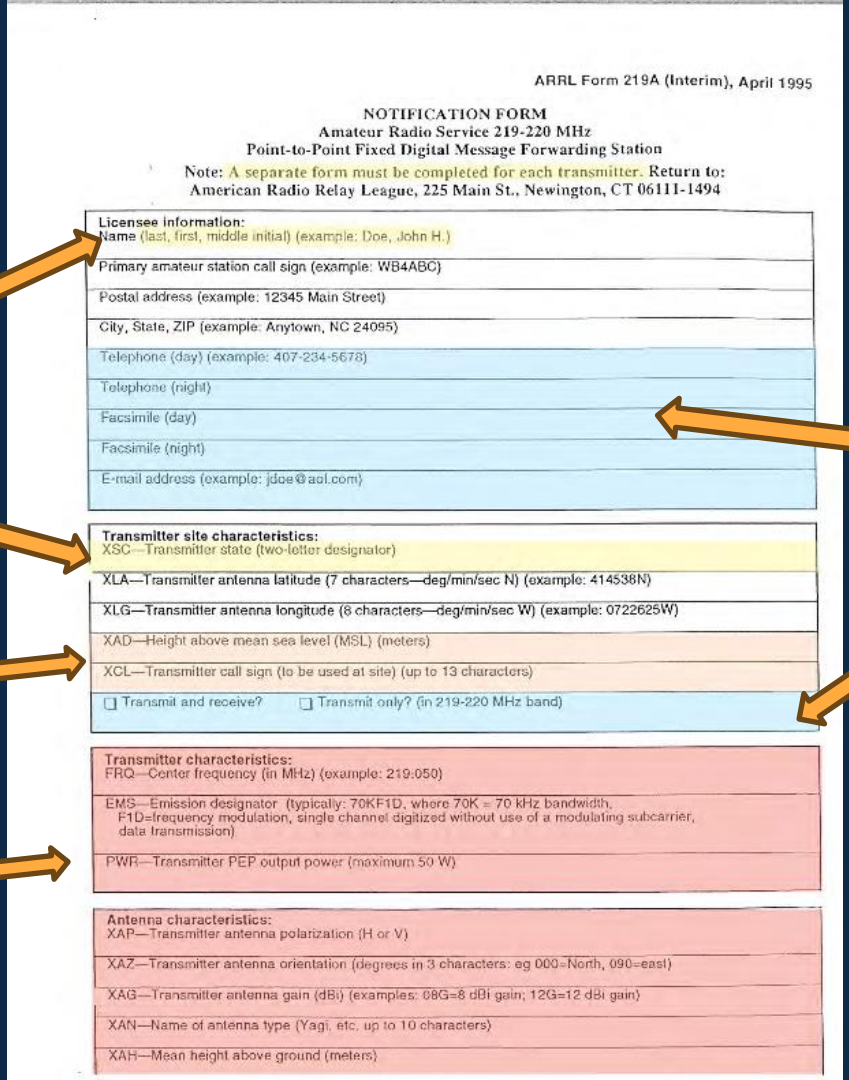
ARRL Notification Form 219A shall be used to meet the notification requirement of Section 97.303(e)(3). The ARRL has been designated by the FCC as the national contact point for all amateur operations in the 219-220 MHz band and is responsible for maintaining a database of all amateur operations in the band.

April 1995

Unnecessary extra restrictions

Debatable

Why? This stuff will change over time. Not required to be reported.



ARRL Form 219A (Interim), April 1995

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Name (last, first, middle initial) (example: Doe, John H.)
Primary amateur station call sign (example: WB4ABC)
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XAH—Mean height above ground (meters)

Needs to be opt-in for a public database.

Why?

If you have your license, you've already agreed to part 97.

ARRL says it won't coordinate, yet all this extra data, makes it feel like ARRL is trying to coordinate something.

Signed declaration. I understand and agree that:

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Signed _____ Date _____

Remarks/notes:

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97.303(l)

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April 1995

Form could be reduced to the white fields.

mustbeart 10:24 AM

I see a job posting in the ARRL Letter 2002-05-24 for a Field Organization Assistant with duties including "the AMTS program for 219-220 MHz"

There is no activity on this band.

History

“A Group”

There was an amateur group active on this band circa 1990s

“The Two Operators”

Two operators sent in the form in the early 2000s. One would not give a station location. Form not accepted by ARRL. The other was denied permission to operate from the primary. “Because future expansion”

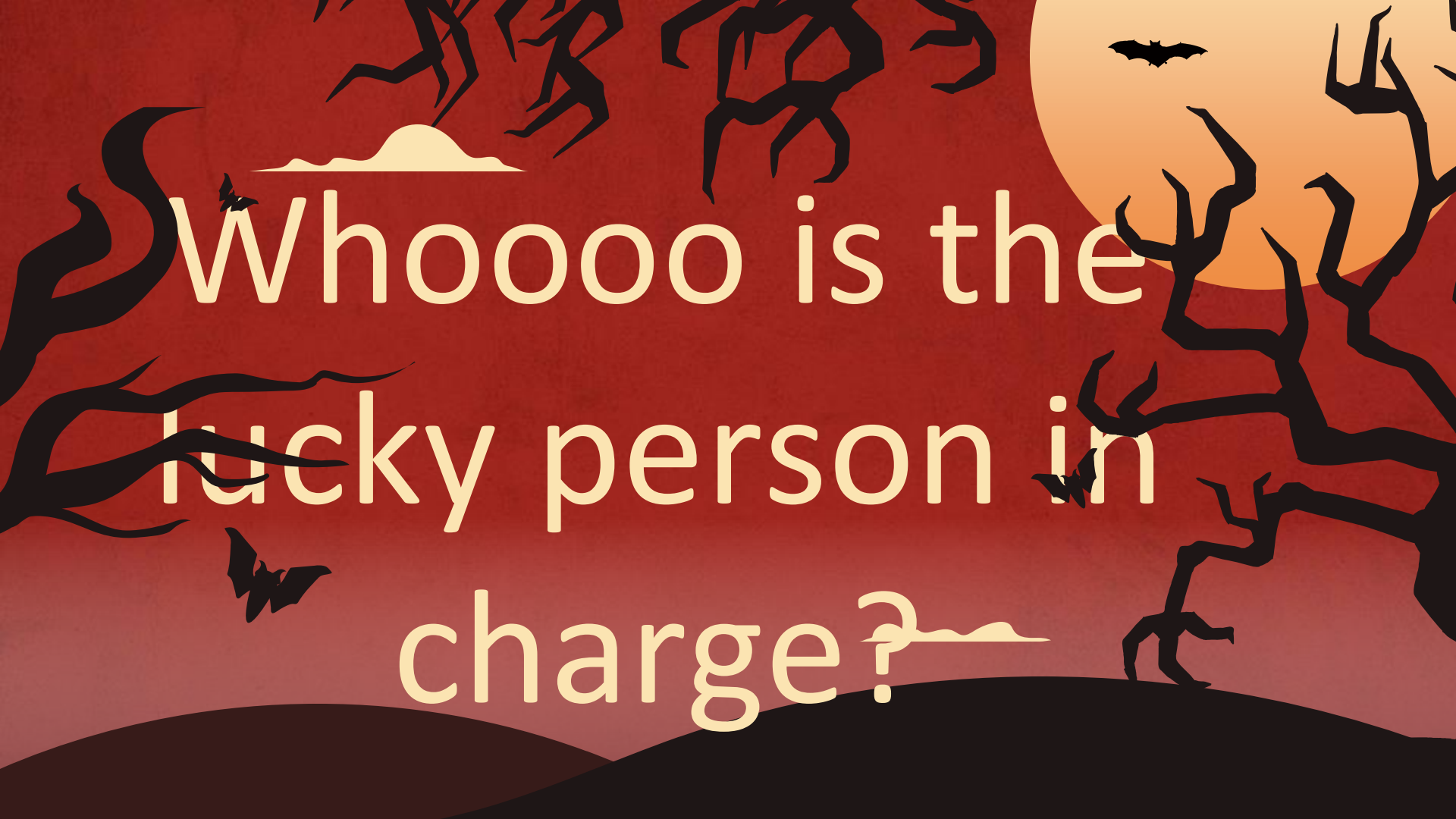
California

The bifurcation of the band. “It was a tale of two primaries..."

2

The Ghost of 219 Present

Where we dig up the bodies and look at them.


Whoooo is the lucky person in charge?


Bart Jahnke W9JJ
Radiosport and Regulatory Information Manager
ARRL
Be kind and gracious to Bart.
He has been good to work with.
It is not his fault this band is haunted.

That Database of AMTS Stations was Requested

AMTS licensees have to notify ARRL of station locations

1

Amateurs have to notify ARRL of station locations

2

Database must be available to the public.

3

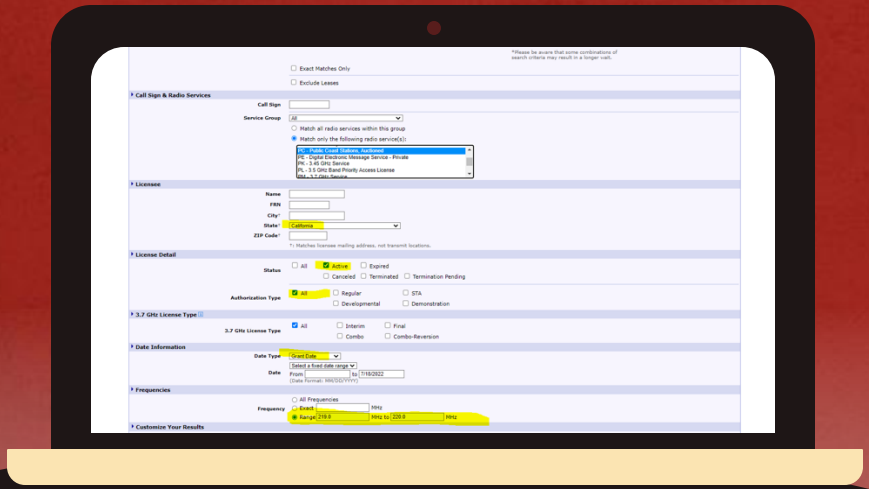
Bart said use ULS

4

No databases at ARRL: Does this mean there's no one to notify or ask permission of?

How to find AMTS Stations

AMTS Coast Station Locations – advice from Bart



"the location of AMTS coast stations using 217-218/219-220 MHz channels may be obtained [from ARRL]"
97.303(l)(4) and (l)(5)

wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp

AIS - Account - NEW | LOTW Admin Queue | Congress Plus | ARRL's Online DXCC | Arrl-vm Administrat... | Download and Inst... | Arrl-VC Admin | Arrl-leg-def-assista... | Logbook of the Wo... | LoTW Q Status

RESET GEOSEARCH SEARCH

*Please be aware that some combinations of search criteria may result in a longer wait.

☐ Exact Matches Only

☐ Exclude Leases

Call Sign & Radio Services

Call Sign

Service Group: All

○ Match all radio services within this group

◉ Match only the following radio service(s):

PC - Public Coast Stations, Auctioned
PE - Digital Electronic Message Service - Private
PK - 3.45 GHz Service
PL - 3.5 GHz Band Priority Access License
PM - 3.7 GHz Service

Licensee

Name

FRN

City†

State†: California

ZIP Code†

†: Matches licensee mailing address, not transmit locations.

License Detail

Status: ☐ All ☑ Active ☐ Expired ☐ Canceled ☐ Terminated ☐ Termination Pending

Authorization Type: ☑ All ☐ Regular ☐ STA ☐ Developmental ☐ Demonstration

3.7 GHz License Type

3.7 GHz License Type: ☑ All ☐ Interim ☐ Final ☐ Combo ☐ Combo-Reversion

Date Information

Date Type: Grant Date

Date: Select a fixed date range — From [ ] to 7/18/2022

(Date Format: MM/DD/YYYY)

Frequencies

Frequency: ○ All Frequencies ○ Exact [ ] MHz ◉ Range 219.0 MHz to 220.0 MHz

Customize Your Results

Results Display: 100 matches per page sorted by Name in ascending order

☐ Exact Matches Only

☐ Exclude Leases

License Search

Search Results

HELP

New Search | Refine Search | Printable Page | Query Download | Map Licenses

Specified Search

Radio Service = **PC**
State = **California**
Status = **Active**
Grant Date from **07/01/2000** to **7/18/2022**
Frequency Upper Band >= **219.0**
Frequency Assigned <= **220.0**

Matches **1- 22 (of 22)**

PA = Pending Application(s)
TP = Termination Pending
L = Lease

Page 1

	Call Sign/Lease ID	Name	FRN	Radio Service	Status	Expiration Date
1	WQCP810 L	Environmentel LLC	0011257086	PC	Active	04/26/2025
2	WQCP811 L	Environmentel LLC	0011257086	PC	Active	04/26/2025
3	WQCP812	Environmentel LLC	0011257086	PC	Active	04/26/2025
4	WQCP813	Environmentel LLC	0011257086	PC	Active	04/26/2025
5	WQCP814	Environmentel LLC	0011257086	PC	Active	04/26/2025
6	WQGF313	Environmentel LLC	0011257086	PC	Active	12/29/2026
7	WQGF314	Environmentel LLC	0011257086	PC	Active	12/29/2026
8	WQJV762	Environmentel LLC	0011257086	PC	Active	04/26/2025
9	WQNZ336	Environmentel-2 LLC	0020993044	PC	Active	04/26/2025
10	WQGF310	Intelligent Transportation & Monitoring Wireless LLC	0012930582	PC	Active	12/29/2026
11	WQGF311	Intelligent Transportation & Monitoring Wireless LLC	0012930582	PC	Active	12/29/2026
12	WQGF312	Intelligent Transportation & Monitoring Wireless LLC	0012930582	PC	Active	12/29/2026
13	WQTK261	Paging Systems, Inc.	0001546423	PC	Active	04/26/2025
14	WQTK262	Paging Systems, Inc.	0001546423	PC	Active	04/26/2025
15	L000043731	San Joaquin Regional Rail Commission	0030255186	PC	Active	12/29/2026
16	WQJW654	Skybridge Spectrum Foundation	0016374563	PC	Active	12/29/2026
17	WQYR421 L	Southern California Regional Rail Authority	0001531623	PC	Active	12/29/2026
18 PA	WQCP808	Verde Systems LLC	0009561002	PC	Active	04/26/2025
19 PA	WQCP815	Verde Systems LLC	0009561002	PC	Active	04/26/2025
20	WQCP816	Verde Systems LLC	0009561002	PC	Active	04/26/2025
21	WQCP817	Verde Systems LLC	0009561002	PC	Active	04/26/2025
22	WQGF308	Verde Systems LLC	0009561002	PC	Active	12/29/2026

Call Sign/Lease ID | Name | FRN | Radio Service | Status | Expiration Date

Page 1


Problems…

California

Putting California into the State entry in ULS does not return stations in California. It returns any record with an address in California.

Stations in California with out-of-state business addresses will not appear.

ULS

Universal Licensing System can be difficult to use. Understanding the format of the downloaded text results takes some time and effort.

No Loco?

There are very few, possibly only one, AMTS call signs with tower locations in ULS.


Solutions?

California

Putting California into the State entry in ULS does not return stations in California. It returns any record with an address in California.

Stations in California with out-of-state business addresses will not appear.

Just do your best with these results?

ULS

Universal Licensing System can be difficult to use. Understanding the format of the downloaded text results takes some time and effort.

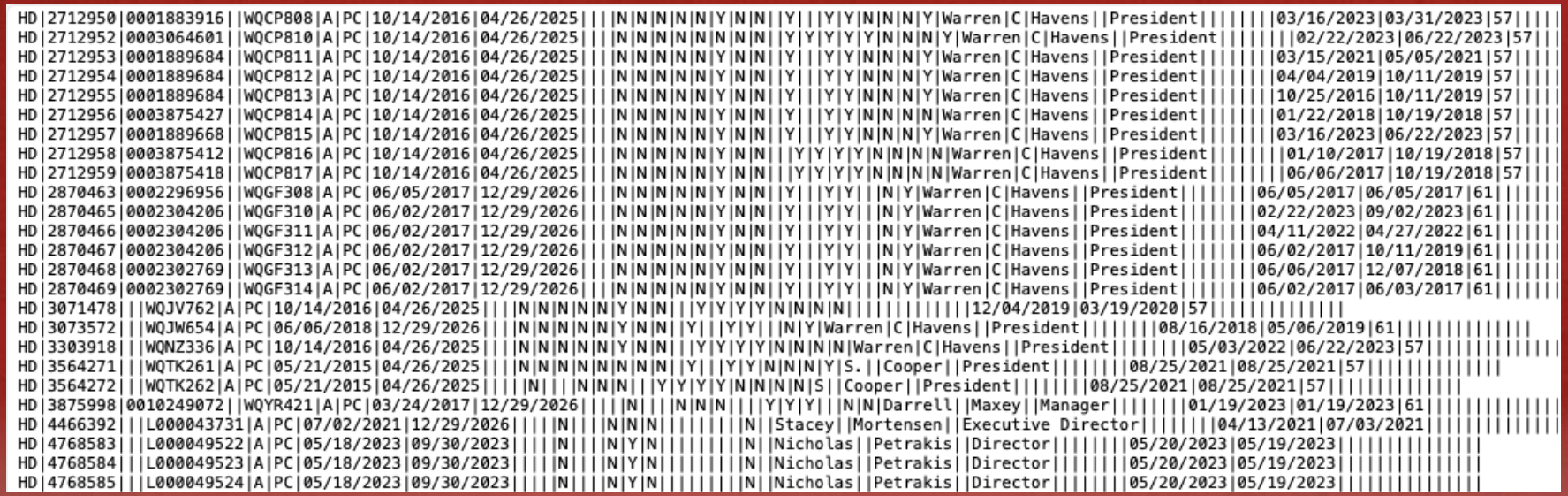
Learn how to use ULS?
Calculate distances from ULS results?
(Geospatial ULS search did not work!)

No Loco?

There are very few, possibly only one, AMTS call signs with tower locations in ULS.

Ask experts or consultants for help?

Bart’s ULS Search



```
HD|2712950|0001883916||WQCP808|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||03/16/2023|03/31/2023|57|||||
HD|2712952|0003064601||WQCP810|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|N|N|N||Y|Y|Y|Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||02/22/2023|06/22/2023|57|||
HD|2712953|0001889684||WQCP811|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||03/15/2021|05/05/2021|57|||||
HD|2712954|0001889684||WQCP812|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||04/04/2019|10/11/2019|57|||||
HD|2712955|0001889684||WQCP813|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||10/25/2016|10/11/2019|57|||||
HD|2712956|0003875427||WQCP814|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|N|Warren|C|Havens||President|||||||01/22/2018|10/19/2018|57|||||
HD|2712957|0001889668||WQCP815|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N||Y|||Y|Y|N|N|N|Y|Warren|C|Havens||President|||||||03/16/2023|06/22/2023|57|||||
HD|2712958|0003875412||WQCP816|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N|||Y|Y|Y|Y|N|N|N|N|Warren|C|Havens||President|||||||01/10/2017|10/19/2018|57||||
HD|2712959|0003875418||WQCP817|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N|||Y|Y|Y|Y|N|N|N|N|Warren|C|Havens||President|||||||06/06/2017|10/19/2018|57||||
HD|2870463|0002296956||WQGF308|A|PC|06/05/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||06/05/2017|06/05/2017|61|||||||
HD|2870465|0002304206||WQGF310|A|PC|06/02/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||02/22/2023|09/02/2023|61|||||||
HD|2870466|0002304206||WQGF311|A|PC|06/02/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||04/11/2022|04/27/2022|61|||||||
HD|2870467|0002304206||WQGF312|A|PC|06/02/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||06/02/2017|10/11/2019|61|||||||
HD|2870468|0002302769||WQGF313|A|PC|06/02/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||06/06/2017|12/07/2018|61|||||||
HD|2870469|0002302769||WQGF314|A|PC|06/02/2017|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||06/02/2017|06/03/2017|61|||||||
HD|3071478|||WQJV762|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N|||Y|Y|Y|Y|N|N|N|N|||||||||||||12/04/2019|03/19/2020|57|||||||||||||
HD|3073572|||WQJW654|A|PC|06/06/2018|12/29/2026|||N|N|N|N|N|Y|N|N||Y|||Y|Y|||N|Y|Warren|C|Havens||President|||||||08/16/2018|05/06/2019|61||||||||||||||
HD|3303918|||WQNZ336|A|PC|10/14/2016|04/26/2025|||N|N|N|N|N|Y|N|N|||Y|Y|Y|Y|N|N|N|N|Warren|C|Havens||President|||||||05/03/2022|06/22/2023|57|||||||||||||||
HD|3564271|||WQTK261|A|PC|05/21/2015|04/26/2025|||N|N|N|N|N|N|N|N||Y|||Y|Y|N|N|N|Y|S.||Cooper||President|||||||08/25/2021|08/25/2021|57|||||||||||||
HD|3564272|||WQTK262|A|PC|05/21/2015|04/26/2025||||N|||N|N|N|||Y|Y|Y|Y|N|N|N|N|S||Cooper||President|||||||08/25/2021|08/25/2021|57|||||||||||||
HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026||||N|||N|N|N||||Y|Y|Y||N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||||
HD|4466392|||L000043731|A|PC|07/02/2021|12/29/2026|||||N|||N|N|N|||||||||N||Stacey||Mortensen||Executive Director|||||||04/13/2021|07/03/2021|||||||||||||||
HD|4768583|||L000049522|A|PC|05/18/2023|09/30/2023|||||N|||N|Y|N|||||||||N||Nicholas||Petrakis||Director|||||||05/20/2023|05/19/2023|||||||||||||||
HD|4768584|||L000049523|A|PC|05/18/2023|09/30/2023|||||N|||N|Y|N|||||||||N||Nicholas||Petrakis||Director|||||||05/20/2023|05/19/2023|||||||||||||||
HD|4768585|||L000049524|A|PC|05/18/2023|09/30/2023|||||N|||N|Y|N|||||||||N||Nicholas||Petrakis||Director|||||||05/20/2023|05/19/2023|||||||||||||||
```

This is the HD (header) file from the downloaded ULS search
There are 25 results. Each row is a result.

APPLICATION/LICENSE HEADER		
Position	Data Element	Definition
1	Record Type [HD]	char(2)
2	Unique System Identifier	numeric(9,0)
3	ULS File Number	char(14)
4	EBF Number	varchar(30)
5	Call Sign	char(10)
6	License Status	char(1)
7	Radio Service Code	char(2)
8	Grant Date	mm/dd/yyyy
9	Expired Date	mm/dd/yyyy
10	Cancellation Date	mm/dd/yyyy
11	Eligibility Rule Num	char(10)
12	Reserved	char(1)
13	Alien	char(1)
14	Alien Government	char(1)
15	Alien Corporation	char(1)
16	Alien Officer	char(1)
17	Alien Control	char(1)
18	Revoked	char(1)
19	Convicted	char(1)
20	Adjudged	char(1)
21	Reserved	char(1)
22	Common Carrier	char(1)
23	Non Common Carrier	char(1)
24	Private Comm	char(1)
25	Fixed	char(1)
26	Mobile	char(1)
27	Radiolocation	char(1)
28	Satellite	char(1)
29	Developmental or STA or Demonstration	char(1)
30	Interconnected Service	char(1)
31	Certifier First Name	varchar(20)
32	Certifier MI	char(1)
33	Certifier Last Name	varchar(20)
34	Certifier Suffix	char(3)
35	Certifier Title	char(40)
36	Female	char(1)
37	Black or African-American	char(1)
38	Native American	char(1)
39	Hawaiian	char(1)
40	Asian	char(1)
41	White	char(1)
42	Hispanic	char(1)
43	Effective Date	mm/dd/yyyy
44	Last Action Date	mm/dd/yyyy
45	Auction ID	integer
46	Broadcast Services - Regulatory Status	char(1)
47	Band Manager - Regulatory Status	char(1)
48	Broadcast Services - Type of Radio Service	char(1)
49	Alien Ruling	char(1)
50	Licensee Name Change	char(1)

Header File Field Format

There are 50 fields per row. Not all are populated.

Amateur Radio Service header files follow this format too.

For each HD entry, a body of data exists.

This body of data is distributed across a number of other files.

I walked through the Amateur Radio ULS records structure in a RATPAC talk called “Who We Are”, where I extracted demographic data about the Amateur Radio Service.

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026|||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Record Type

Record type is HD, which is Application License/Header

Unique System Identifier

Gotta be some way to keep track of you!

ULS File Number

Another way to keep track of you?

EBF Number

(blank) ULS Electronic Batch Filing – an automated process so that stuff matches

Call Sign

We know what this is!

License Status

HD	License Status	
	A	Active
	C	Canceled
	E	Expired
	L	Pending Legal Status
	P	Parent Station Canceled
	T	Terminated
	X	Term Pending

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026|||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Radio Service Code

PC = Public Coast Stations, Auctioned

Grant Date

License grant date

Expired Date

When does it expire

Cancellation Date

(blank) if canceled, when?

Eligibility Rule Number

(blank) Not sure what this is

Reserved

(blank)

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Alien

(blank) I'm not saying it was aliens, but it was aliens.

Alien Government

Just Say No to Alien Governments

Alien Corporation

(blank)

Alien Officer

(blank)

Alien Control

(blank)

Revoked

No

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026||||N|||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Convicted	Adjudged	Reserved
No	No	(blank)

Common Carrier	Non-Common Carrier	Private Comm
(blank)	(blank)	Yes

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026|||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Fixed

Yes

Mobile

Yes

Radiolocation

(blank)

Satellite

(blank)

STA? Demo?

No

Interconnected Service

No

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026|||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Certifier First Name	Certifier MI	Certifier Last Name
Darrell	(blank)	Maxey

Certifier Suffix	Certifier Title	Female
(blank)	Manager	(blank)

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026||||N|||N|N|N|||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Black or African American

(blank)

Native American

(blank)

Hawaiian

(blank)

Asian

(blank)

White

(blank)

Hispanic

(blank)

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026|||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

Effective Date

19 Jan 2023

Last Action Date

19 Jan 2023

Auction ID

61

Broadcast Services Status

(blank)

Band Manager Status

(blank)

Broadcast Type of Service

(blank)

HD|3875998|0010249072||WQYR421|A|PC|03/24/2017|12/29/2026||||N||||N|N|N||||Y|Y|Y||
|N|N|Darrell||Maxey||Manager|||||||01/19/2023|01/19/2023|61|||||||||||||

49	Alien Ruling	char(1)
50	Licensee Name Change	char(1)
51	Whitespace Indicator	char(1)
52	Operation/Performance Requirement Choice	char(1)
53	Operation/Performance Requirement Answer	char(1)
54	Discontinuation of Service	char(1)
55	Regulatory Compliance	char(1)
56	900 MHz Eligibility Certification	char(1)
57	900 MHz Transition Plan Certification	char(1)
58	900 MHz Return Spectrum Certification	char(1)
59	900 MHz Payment Certification	char(1)

That’s the Header File…

EN

Entity

HS

History

MP

Market Partition

MF

Market Frequency

MC

Market Coordinate
(polygonal areas on a map)

LO

Location
(specific GPS coordinates of towers)

That’s the Header File…

L2

Additional Location Data

SC

Special Condition

SF

License Free Form Special Condition (long text blurbs)

CO

Comments

LA

License Attachment (hoo boy!)

Still with me?

7.3 MB plain text file for 25 results from ULS

```
LO|3875998|||WQYR421||F|T|1||||Fullerton|ORANGE|CA|||N||33|51|35.0|N|117|54|40.0|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|2||||Mission Viejo|ORANGE|CA|||N||33|36|45.5|N|117|40|50.3|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|3||||San Clemente|ORANGE|CA|||N||33|25|57.8|N|117|38|1.5|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|4||||Dana Point|ORANGE|CA|||N||33|27|56.2|N|117|40|49.2|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|5||||Los Angeles|LOS ANGELES|CA|||N||34|3|50.2|N|118|13|30.9|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|6||||Fontana|SAN BERNARDINO|CA|||N||34|5|42.6|N|117|26|21.4|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|7||||Pomona|LOS ANGELES|CA|||N||34|5|37.8|N|117|45|8.1|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|8||||Burbank|LOS ANGELES|CA|||N||34|10|41.1|N|118|18|40.8|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|9||||Palmdale|LOS ANGELES|CA|||N||34|32|50.5|N|118|12|46.8|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|10||||Los Angeles|LOS ANGELES|CA|||N||34|26|16.4|N|118|20|7.2|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|11||||Santa Clarita|LOS ANGELES|CA|||N||34|22|49.0|N|118|31|39.5|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|12||||Santa Clarita|LOS ANGELES|CA|||N||34|21|11.7|N|118|31|0.7|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|13||||Ventura|VENTURA|CA|||N||34|15|3.2|N|119|12|7.2|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|14||||Moorpark|VENTURA|CA|||N||34|17|5.1|N|118|52|37.5|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|15||||Simi Valley|VENTURA|CA|||N||34|16|19.0|N|118|41|56.0|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|16||||Chatsworth|LOS ANGELES|CA|||N||34|15|49.1|N|118|37|19.0|W|||||||N|||||||||||||||
LO|3875998|||WQYR421||F|T|17||||Chatsworth|VENTURA|CA|||N||34|16|19.0|N|118|36|24.7|W|||||||N|||||||||||||||
```

The only call sign with location data from the California Search is WQYR421.
The only location near my intended station is San Clemente.

And guess what?

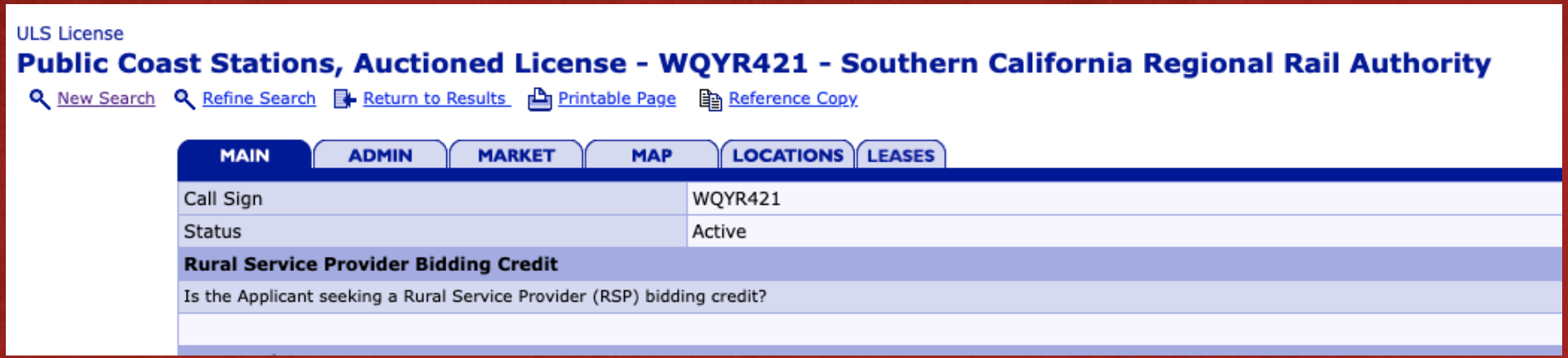

74 km

How did we figure this out?

We know where the amateur station is because it’s ours.

LO file has tower GPS coordinates

- Use mapping software.
- Or just look at the “locations” tab in the ULS GUI result for WQYR421



Searching up this license in ULS

Public Coast Stations, Auctioned License - WQYR421 - Southern California Regional Rail Authority

Locations Summary

New Search | Refine Search | Return to Results | Printable Page | Reference Copy

MAIN | ADMIN | MARKET | MAP | LOCATIONS | LEASES

Call Sign	WQYR421	Radio Service	PC - Public Coas

17 Total Locations
10 Locations per Summary Page

1 2 [Next >>]

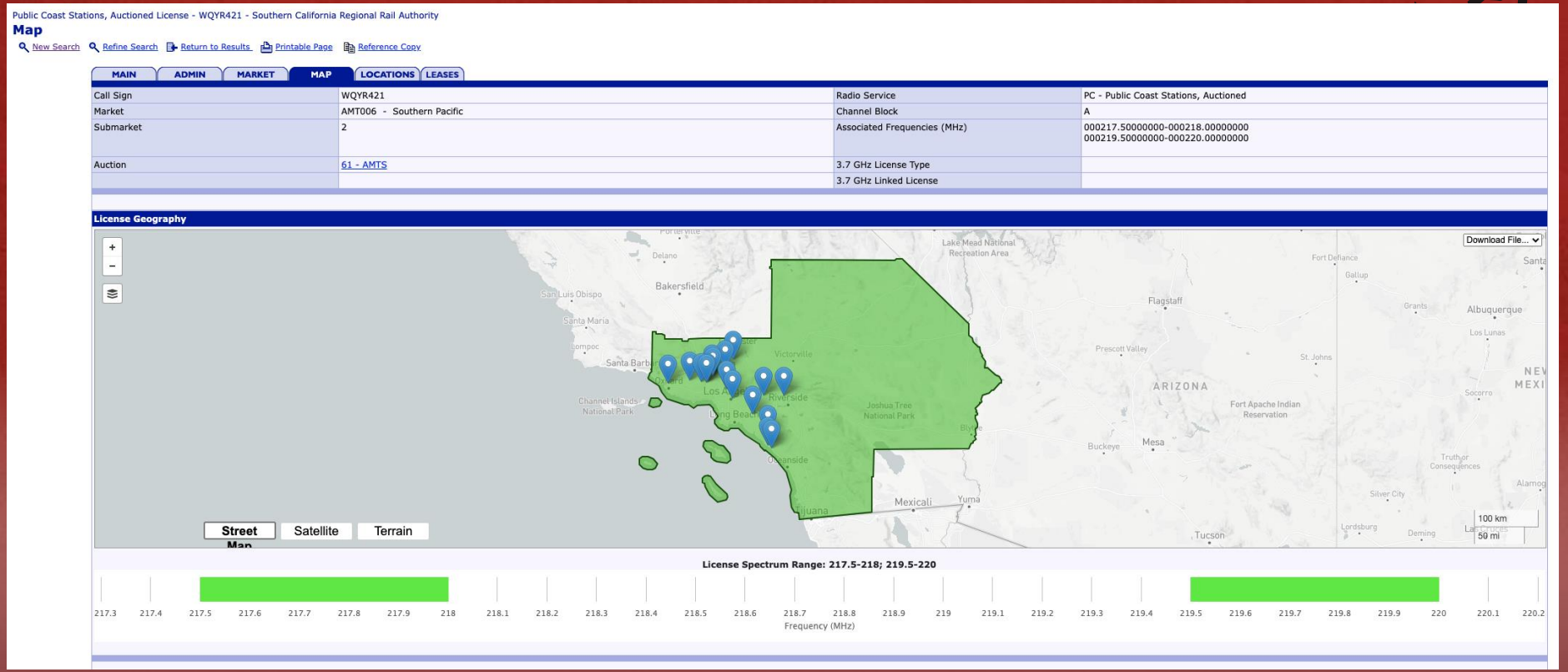
SC = Special Condition TP = Termination Pending

Location	Transmitter Address /Area of Operation	Latitude, Longitude
1 - Fixed	Fullerton, CA ORANGE County	33-51-35.0 N, 117-54-40.0 W
2 - Fixed	Mission Viejo, CA ORANGE County	33-36-45.5 N, 117-40-50.3 W
3 - Fixed	San Clemente, CA ORANGE County	33-25-57.8 N, 117-38-01.5 W
4 - Fixed	Dana Point, CA ORANGE County	33-27-56.2 N, 117-40-49.2 W
5 - Fixed	Los Angeles, CA LOS ANGELES County	34-03-50.2 N, 118-13-30.9 W
6 - Fixed	Fontana, CA SAN BERNARDINO County	34-05-42.6 N, 117-26-21.4 W
7 - Fixed	Pomona, CA LOS ANGELES County	34-05-37.8 N, 117-45-08.1 W
8 - Fixed	Burbank, CA LOS ANGELES County	34-10-41.1 N, 118-18-40.8 W
9 - Fixed	Palmdale, CA LOS ANGELES County	34-32-50.5 N, 118-12-46.8 W
10 - Fixed	Los Angeles, CA LOS ANGELES County	34-26-16.4 N, 118-20-07.2 W

17 Total Locations
10 Locations per Summary Page

1 2 [Next >>]

The results and even the tab names come from those ULS records we were looking at.
This is the only call sign in this batch of results with a Locations tab.



Public Coast Stations, Auctioned License - WQCP816 - Verde Systems LLC

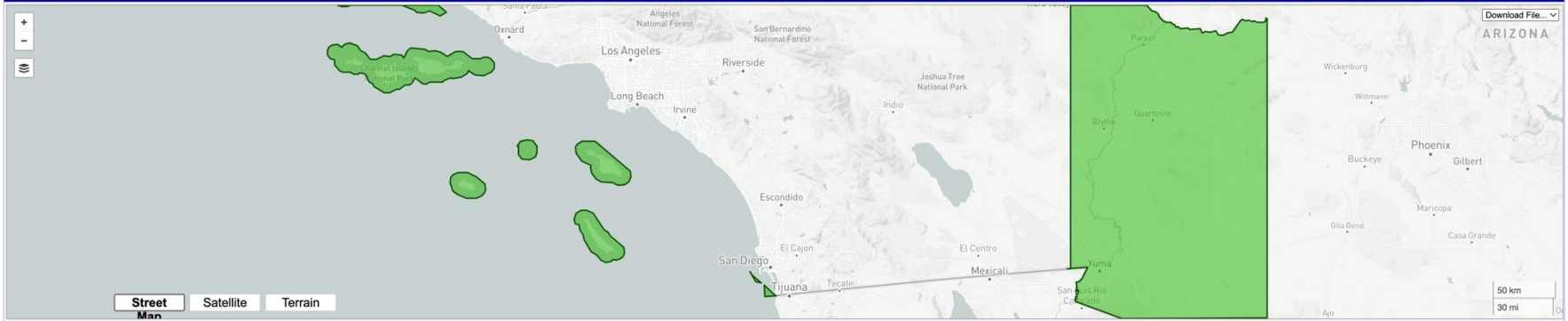
Map

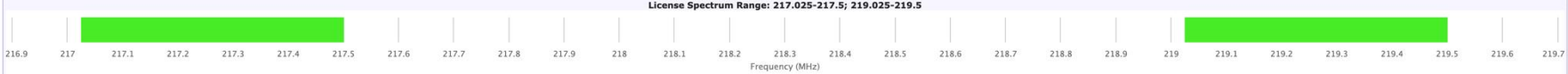
New Search | Printable Page | Reference Copy

MAIN | ADMIN | MARKET | MAP | LEASES

Call Sign	WQCP816	Radio Service	PC - Public Coast Stations, Auctioned
Market	AMT006 - Southern Pacific	Channel Block	B
Submarket	15	Associated Frequencies (MHz)	000217.00000000-000217.50000000 000219.00000000-000219.50000000
Auction	57 - AMTS	3.7 GHz License Type	
		3.7 GHz Linked License	

License Geography

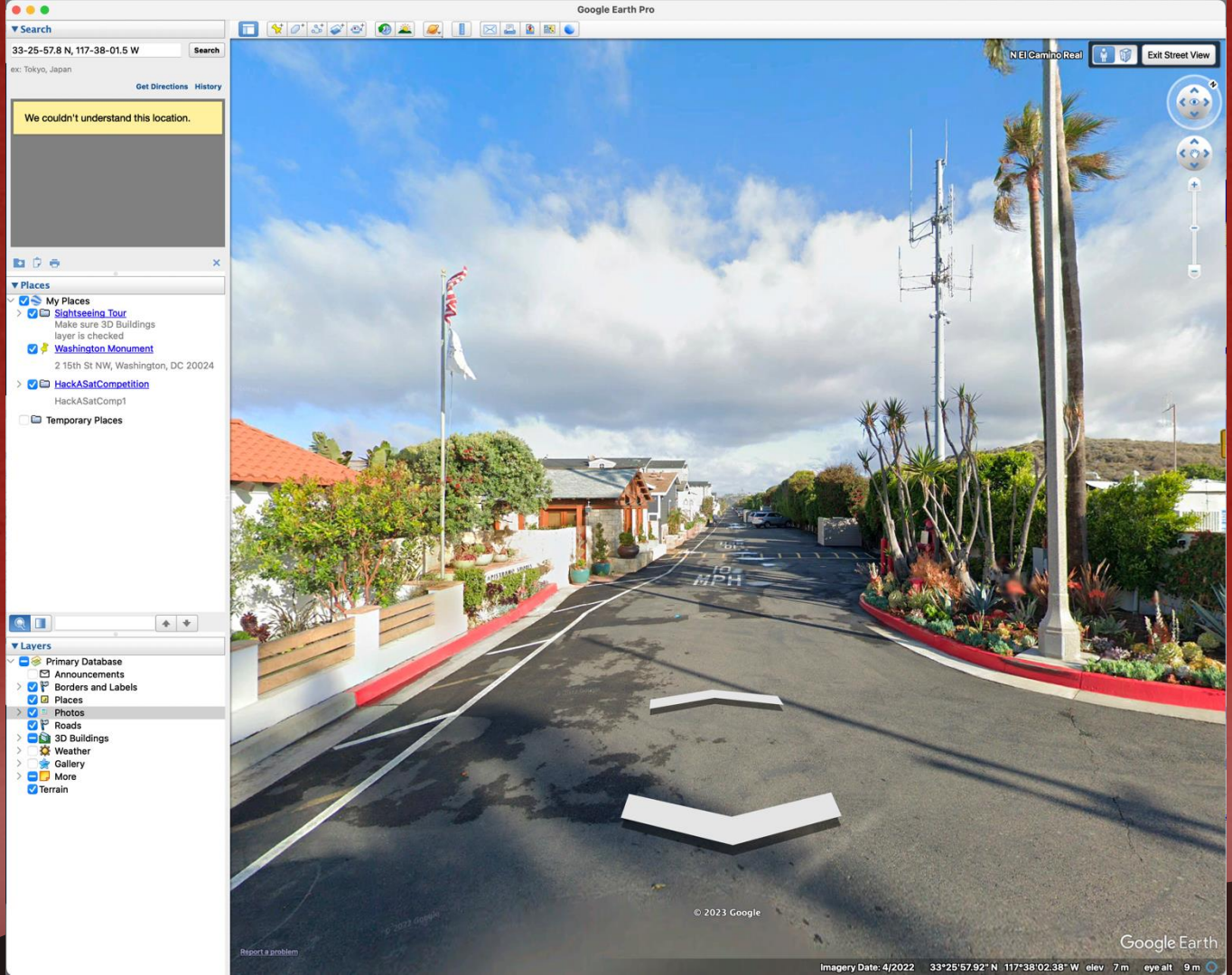


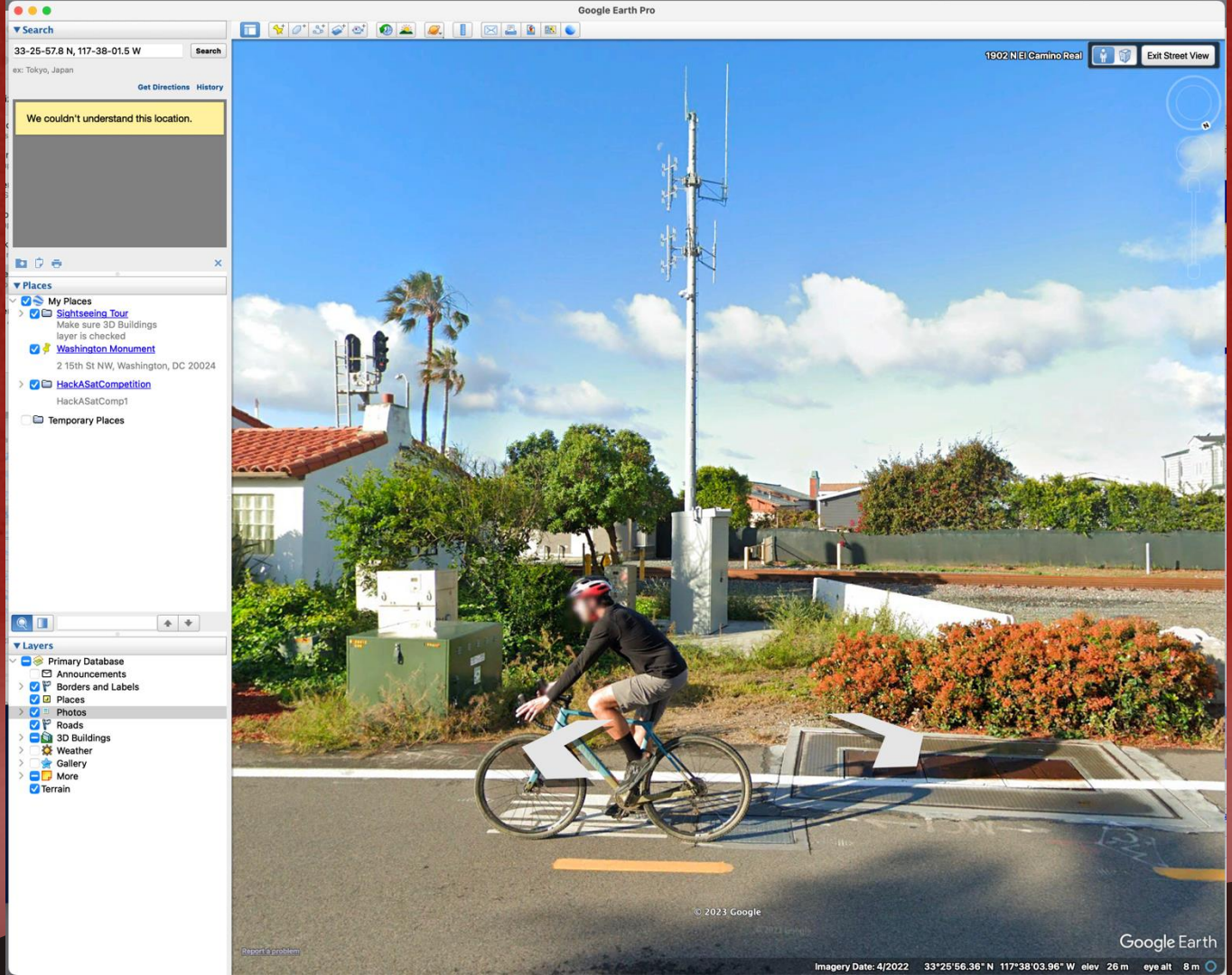


If all you have is the map tab, then this is what that MC file is turned into – just the polygons. There is no Locations tab here because this call sign has no LO file.

Detail of ULS Map page WQYR421

- What does this site look like?

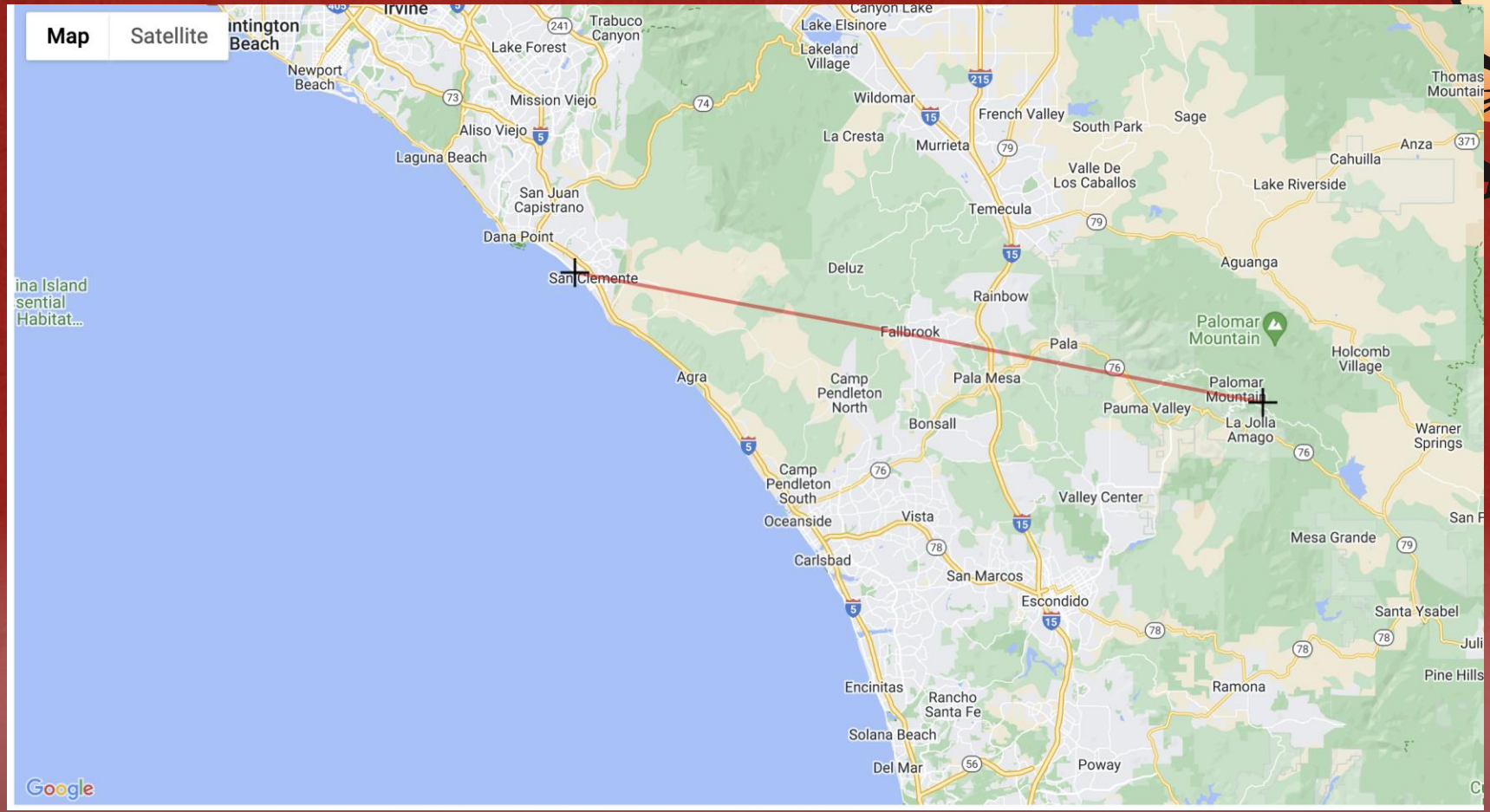

Google Earth Pro
Search
33-25-57.8 N, 117-38-01.5 W
Search
ex: Tokyo, Japan
Get Directions History
We couldn't understand this location.
Places
My Places
Sightseeing Tour
Make sure 3D Buildings layer is checked
Washington Monument
2 15th St NW, Washington, DC 20024
HackASatCompetition
HackASatComp1
Temporary Places
Layers
Primary Database
Announcements
Borders and Labels
Places
Photos
Roads
3D Buildings
Weather
Gallery
More
Terrain
N El Camino Real
Exit Street View
© 2023 Google
Google Earth
Report a problem
Imagery Date: 4/2022 33°25'57.92" N 117°38'02.38" W elev 7 m eye alt 9 m



Southern California Regional Rail Authority

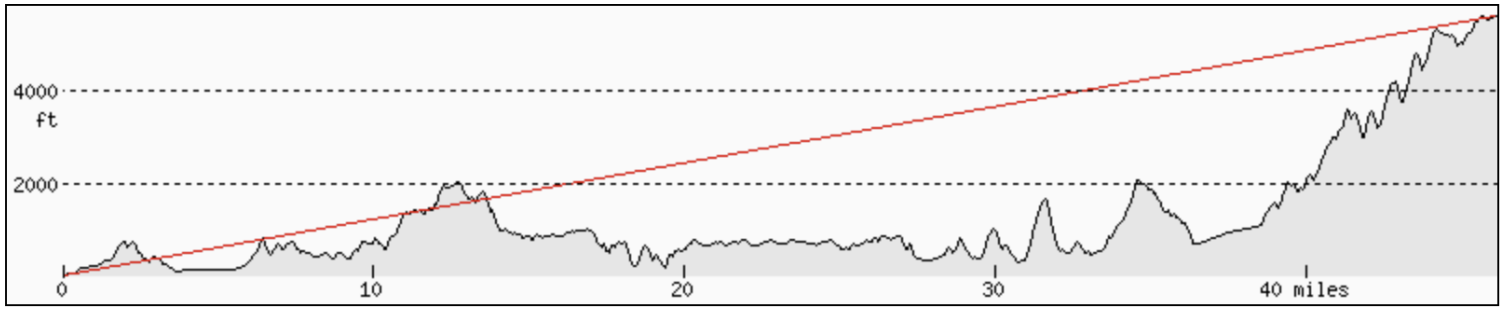
Railroad!


33 25 57.8 N, 117 38 01.5 W
1850 N El Camino Real
San Clemente, California
Google Street View
Apr 2022
See more dates
Bicycles
Sales Service
San Clemente Metrolink
North Beach
Google
Image capture: Apr 2022
© 2023 Google
United States
Terms
Privacy
Report a problem


Map
Satellite
Irvine
Trabuco Canyon
Lake Forest
Newport Beach
Mission Viejo
Aliso Viejo
Laguna Beach
San Juan Capistrano
Dana Point
San Clemente
Lake Elsinore
Canyon Lake
Lakeland Village
Wildomar
La Cresta
Murrieta
French Valley
South Park
Sage
Thomas Mountain
Anza
Cahuilla
Valle De Los Caballos
Lake Riverside
Temecula
Deluz
Aguanga
Rainbow
Fallbrook
Pala
Palomar Mountain
Holcomb Village
Agra
Camp Pendleton North
Pala Mesa
Pauma Valley
Bonsall
La Jolla Amago
Warner Springs
Camp Pendleton South
Oceanside
Vista
Valley Center
Mesa Grande
Carlsbad
San Marcos
Escondido
Santa Ysabel
Pine Hills
Encinitas
Rancho Santa Fe
Ramona
Solana Beach
Del Mar
Poway
Google

Line of Sight Profiler

- Palomar Mountain to San Clemente



Parameters

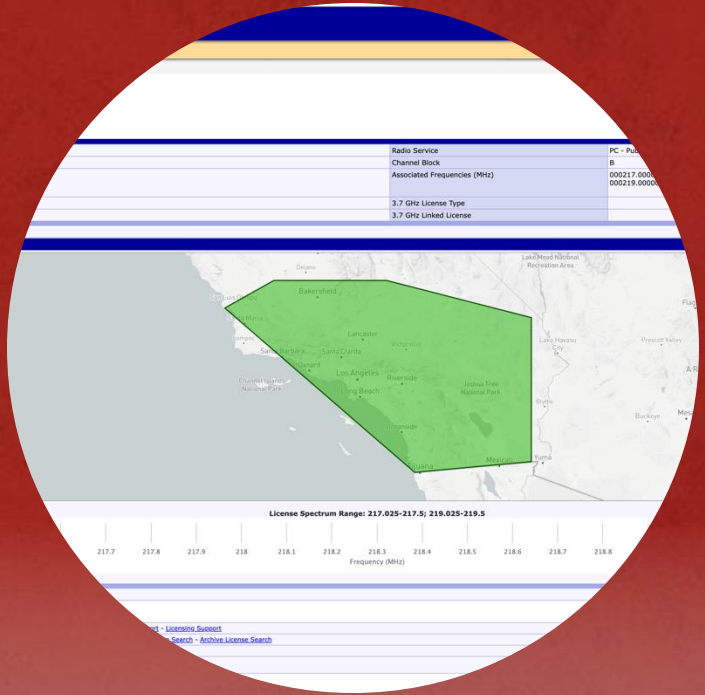
English Metric Decimal places (0-6) 0 DD.DDDDDD° DD° MM.MMMM' DD° MM' SS.SS"


3
Come Haunt with Us!
What do we do next?

How To Notify AMTS?

- ARRL doesn't do this for you.
- Who do you write?
- How do you ask permission?
- How do you do a notify?

Has this ever worked? (not yet!)



Reasons We Should Not Do This

Zero Activity

1

There are no live operators on this band. Scary!

New Band Who Dis

2

Primaries aren't compelled to answer and/or deny secondary station requests.

It's Dank in There

3

Digital messaging forwarding? Packet backbones? Their time has come and gone. No demand for the one thing authorized by FCC.

Findability

4

Not easy at all to figure out who is who at the zoo.

Reasons We Absolutely Should Do This

Activity

1

Because it is there.
We are supposed to activate our bands to the best of our abilities.

Quality

2

200 MHz is great!
Reliable, rain resistant, directional antennas available, decent range.

It’s Dank with Digital

3

Digital message forwarding! Packet backbones!
Think hard about an innovative reboot of digital links. 56 kbps++

Cheers!

4

Pretty much everyone is going to know our names at ARRL if we fill out that form and then get on the air.

What might a station look like?

Antenna

Heavy duty Yagi for 220 MHz, Digi-Key 7dBi, 215 – 225 MHz, 150 W max power.

Station Components

- 219 MHz capable SDR or Retro Radio
- Possibly a transverter
- Amplifier for up to 50 watts of output power
- Embedded processor or computer to control the SDR
- Cables
- A place to put things

Potential SDR Gear

Name	Range	Notes
RTL-SDR, FunCube	0.5 – 1800 MHz (or higher)	Receive only
SDRPlay	1 kHz – 2 GHz	Receive only
LimeSDR	Mini 10 MHz – 3.5 GHz Standard 100 kHz – 3.8 GHz	Transmit capable
USRP	B200/210 70 MHz – 6 GHz	Transmit capable
HackRF (clone)	1 MHz – 6 GHz	Transmit capable
PLUTO	325 MHz – 3.8 GHz	Transmit Capable

Potential Legacy Gear

Name	Range	Notes
Legacy Radios	Any legacy radio that tunes to 219 MHz	Build your own modem or go retro with...
WA4DSY 56kbps modem	28 – 30 MHz	required transverter, serial interface, for amateur packet radio networking (NLA)

Potential Gear (KB5MU)

- 432 MHz Linear Transverter MMT 432/28-S came in a 220 MHz version
- Q5 Signal (which took over from Down East) has a 222 MHz transverter with 50W output and the right 28 MHz IF, customizable for other IF. I imagine they could probably supply it for 219 MHz if you asked.
- On the baseband side you'd need something that could keep up at the data rate.

Potential Retro Gear (KB5MU)

Name	Notes
PacComm Spirit-2 PAD	Hookup diagram found
PS-186	Infamous!
Ottawa PI-2 Card	DMA-driven packet interface card for ISA bus computers

Don’t Forget

Name	Range	Notes
Amps	220 MHz	Plenty available?

4

The Ghost of 219 Future

Ok really, what do we do next.

Speaking of Data Rates…

Think Bigger!

100 kHz Channels

From ARRL 219 MHz band plan

Take advantage of modern equipment and methods to update and upgrade amateur digital message forwarding. Not your grandfather's packet radio.

No Less Than

56 kbps

An Opportunity for an Innovative Future

We could deploy 56 kbps digital messaging forwarding stations and packet backbones like we always have.

Or we can design an entirely new type of digital messaging forwarding station, experimenting with new types of forward error correction, more advanced modulation techniques, adaptive signaling, machine learning, dynamic channel allocation, and more.

Both types can co-exist on 219 MHz.

For That to Happen

We must activate this band.

If you would like to help, notify ARRL of your intention to operate 219 MHz

Tell your ARRL Technical Coordinator (most Sections have one) what you are doing

Without potential operators, we can't start documenting results of attempts to activate the band. All results are good – even if it is a denial, or no response

People get on the band = great!
100% denial rate = think about proposing a rules change

Thanks!

Do you have any questions?

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