

+ Microwave Engineering Project



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Methods of Station Discovery

- 1. Use APRS Query and Response Functions**
- 2. Defocus the Beam for Wide Angle Scanning**
- 3. In-band Beacon**

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Methods of Station Discovery

2

Station Discovery

Station discovery is the process of learning about other stations in range of the searching station. Discovery is accomplished in order to establish communications.

It is likely that the Microwave Engineering Project (MEP) stations will use highly directional antennas. Therefore, accurate pointing is required in order to achieve communications between stations. If the positions of the stations within range of the searching station are known, then the beam headings to these other stations can be determined. If the beam headings are known, and the searching station's beam heading is correctly calibrated, then accurate pointing can be achieved without prior arrangement or lengthy voice-channel negotiations.

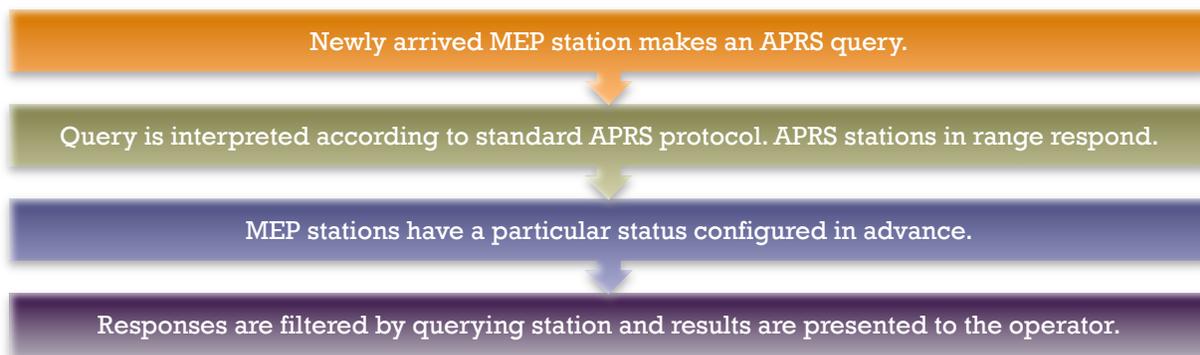
The following sections contain the methods considered for accomplishing station discovery.

APRS

Automatic Packet Reporting System (APRS) provides the functions required for station discovery and pointing. An advantage to this method is that the information learned about the stations is more detailed than the information that can be learned from scanning for transmitting stations in the microwave band with either a focused or a defocused (wider-angle) beam.

Using APRS discovery, the searching station can determine the locations of other stations, which directions the other stations are currently pointing, and what services, modes, or missions the other stations have. The information is updated in real time and can be obtained by passively monitoring for station beacons or by actively searching using a query and response method. Stations need not be actively transmitting on the microwave bands in order to be found by the searching station.

APRS discovery works for any highly directional station, not just MEP stations. A disadvantage of this method is that it may produce a list of stations that are within VHF range but not within microwave range. This means that the list of stations may include some that are out of microwave range but within VHF range or stations that are within VHF range but are not within line of sight. Finally, station status must be properly configured and additional VHF equipment reliably working if automatic discovery via APRS is to work.



Defocus the Beam

The second method of station discovery is to scan for stations with a defocused beam. This may require mechanical movement of the feed or additional mechanical complexity. Reduced sensitivity means that this list of stations produced from defocused beam scan may not include some stations in range. There may also be phase distortions.

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Methods of Station Discovery

3

In-band Beacon

An in-band beacon or a type of in-band signaling can accomplish station discovery. This method does not require a transceiver on another band.