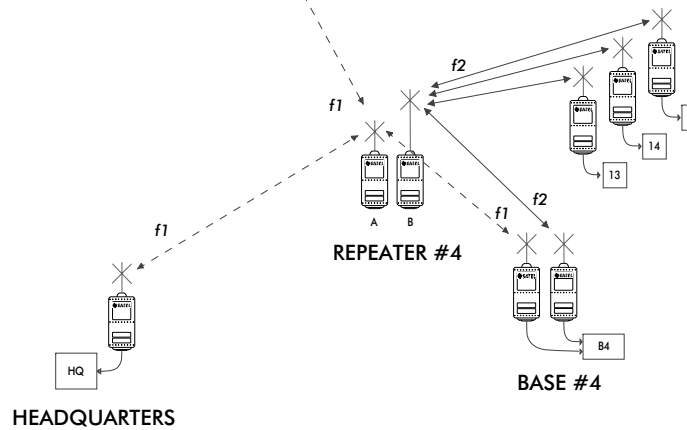


Modem addresses
& Tx delays

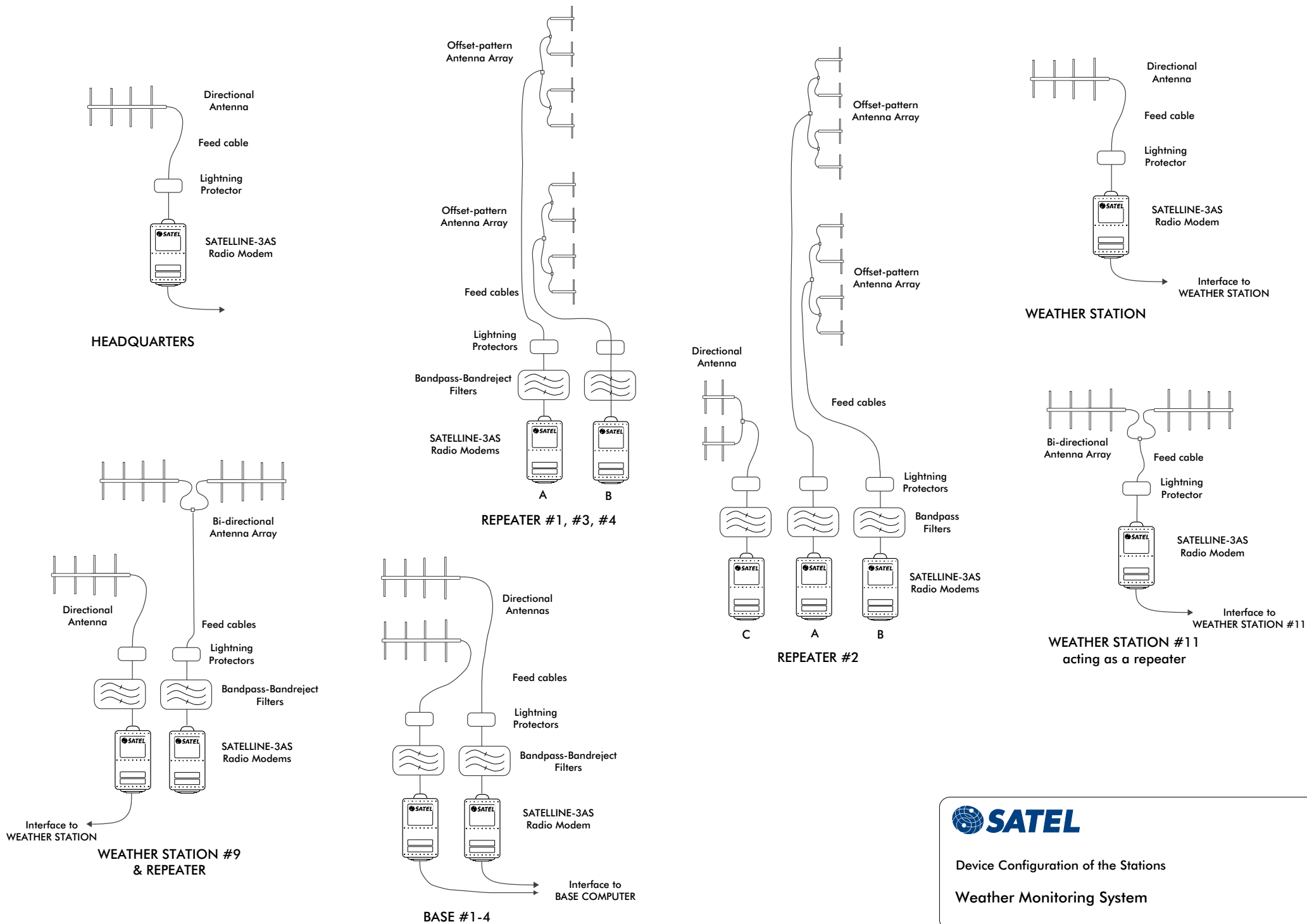
Notes:

- The design is based on the information in the document "Typical layout UHF Radio Network".
The final network design can be easily extended according to more detailed data about the station locations, area topography, data capacity needs etc.
- As per functionality, the radio data communications network is divided into two parts.
 - Data acquisition from local area weather stations, stored to Base station, and
 - Data acquisition from the entire network, i.e. from Base stations.
- A clear polling data communications protocol is recommended for both network levels.
A "report by event" function would require a multiple access protocol. However, passing time of the report would increase heavily with increased density of basic data transmission from weather stations.
Thanks to fast turnaround delays of SATELLINE radio modems, the polling sequence of each cell is kept short enough, and the time from the event to its arrival at the headquarters is limited to a low fixed value.
- We would recommend not to base the radio contact on the propagation through knife-edge diffraction. The signal level vary too much for reliable communications, even 30 to 40 dB. Where ever line-of-sight conditions can not be reached, it is preferred to route messages via a repeating modem.
- Example of the total polling time of a local weather station network including a Base, a Repeater and 10 weather stations. The other presumptions are:
 - serial settings = 9600, 8, N, 1 - radio channel = 12.5 kHz
 - messages: request = 10B, response = 100B
 - request = $10B \times 10\text{bit/B} \times 1/9600\text{bit/s} = 10.5\text{ ms}$, response = 105 ms
 - point-to-point transmission delay = 30 ms
 - Total polling time = 10 stations x (10.5 + 30 + 105 + 30) ms = 1755 ms
- "Message Routing" feature is utilized in the higher level Headquarter-Base radio network.
- In local weather station networks, the Tx/Rx addresses are implemented.




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Configuration of the Radio Data Communications Network
Weather Monitoring System



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Device Configuration of the Stations

Weather Monitoring System