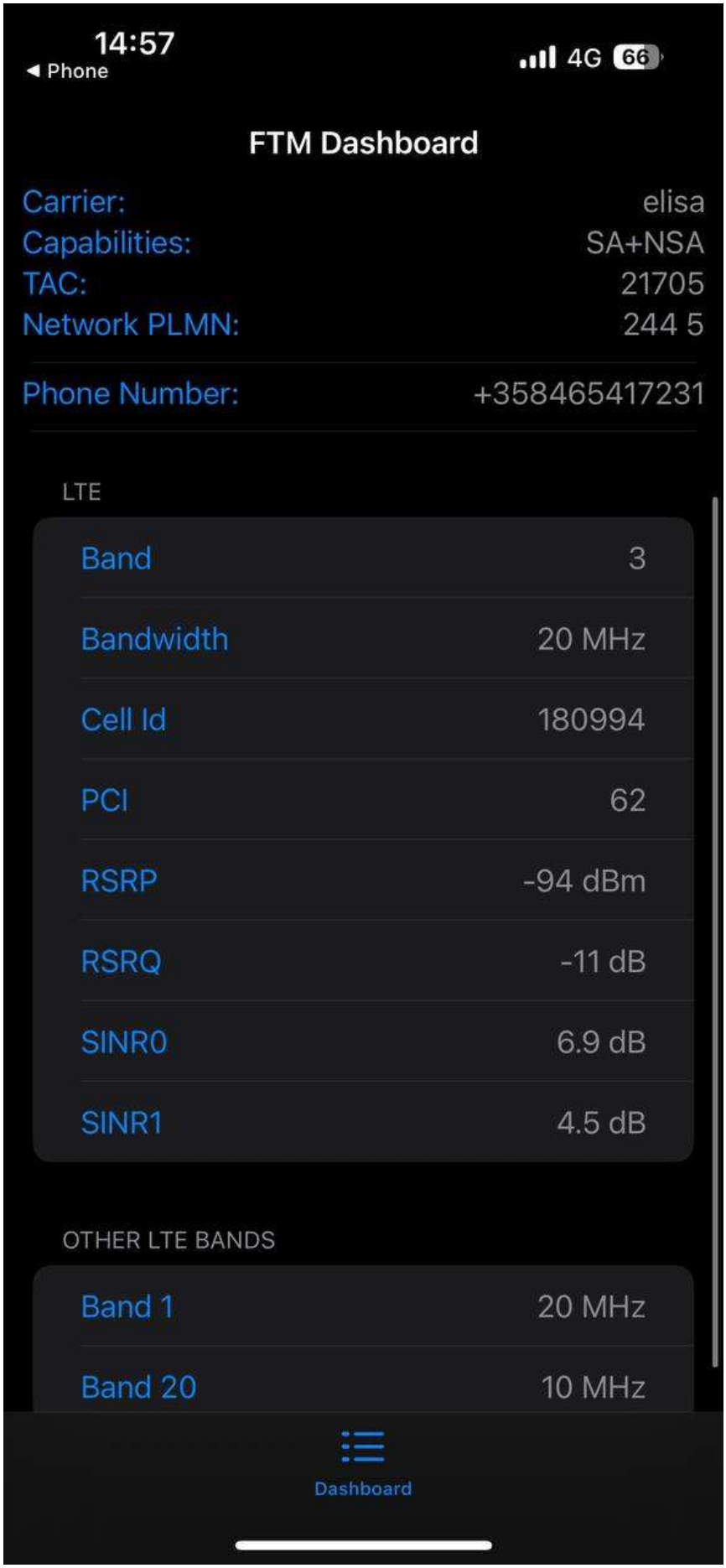
14:57
◀ Phone
4G
66
FTM Dashboard
Carrier:
elisa
Capabilities:
SA+NSA
TAC:
21705
Network PLMN:
244 5
Phone Number:
+358465417231
LTE
Band
3
Bandwidth
20 MHz
Cell Id
180994
PCI
62
RSRP
-94 dBm
RSRQ
-11 dB
SINR0
6.9 dB
SINR1
4.5 dB
OTHER LTE BANDS
Band 1
20 MHz
Band 20
10 MHz
Dashboard

Service Mode Exploration – Wireless and Radiotechnology Course 2026

Objective

The objective of this experiment was to explore the smartphone service mode and analyze cellular network parameters such as signal strength, signal quality, frequency band, and bandwidth, and to understand how they affect network performance and reliability.

Device and Network

- **Operator:** Elisa (Finland)
- **Network Technology:** LTE (4G)
- **Service Mode:** FTM Dashboard

Measured Parameters (from Service Mode)

Parameter	Value
LTE Band	Band 3 (1800 MHz)
Bandwidth	20 MHz
RSRP	−94 dBm
RSRQ	−11 dB
SINR	6.9 dB
Cell ID	180994
PCI	62

Additional available bands:

- Band 1 (20 MHz)
- Band 20 (10 MHz)

Measurement Conditions

- Measurement was taken **indoors**, away from the base station
- The device was not placed directly near a window
- Network technology used: **4G LTE**

Analysis

- **Signal Strength (RSRP −94 dBm):**
  Indicates a medium signal level. The connection is usable, but not optimal.
- **Signal Quality (RSRQ −11 dB, SINR 6.9 dB):**
  Shows moderate interference and noise, likely caused by indoor walls and distance from the cell tower.
- **Bandwidth (20 MHz):**
  Provides good potential data speed, especially when combined with carrier aggregation.
- **Impact on Performance:**
  - Data speed is acceptable but may fluctuate
  - Network stability is generally good
  - Reliability can decrease during high network load or deeper indoor usage

Influencing Factors

- Distance from the cell tower
- Indoor obstructions (walls, floors, building materials)
- Network load and surrounding environment

Conclusions

The experiment shows that signal strength and signal quality significantly affect data speed and network stability. Indoor environments reduce signal quality due to physical obstructions, even when sufficient bandwidth is available. Better performance can be achieved near windows, outdoors, or by switching to 5G when available.