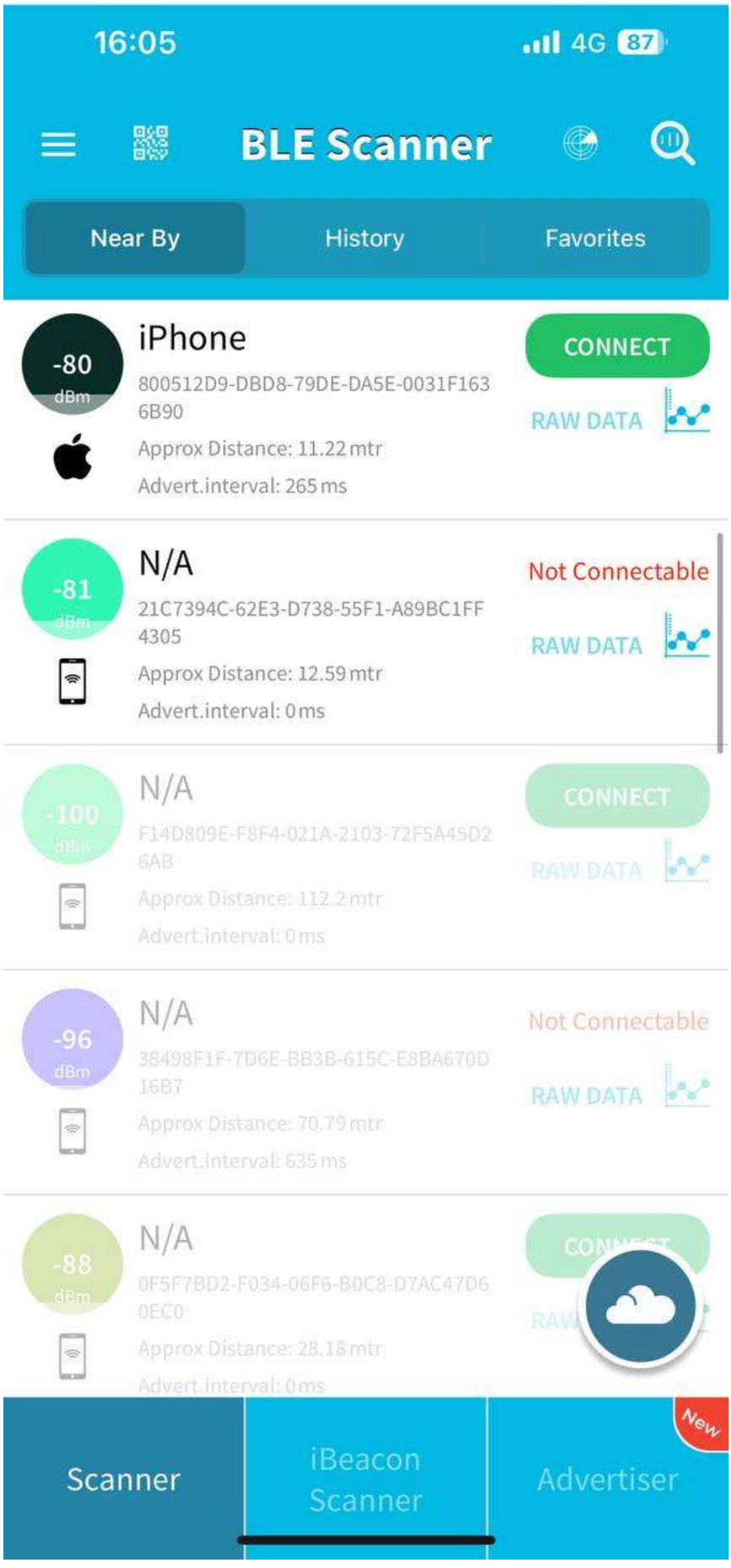
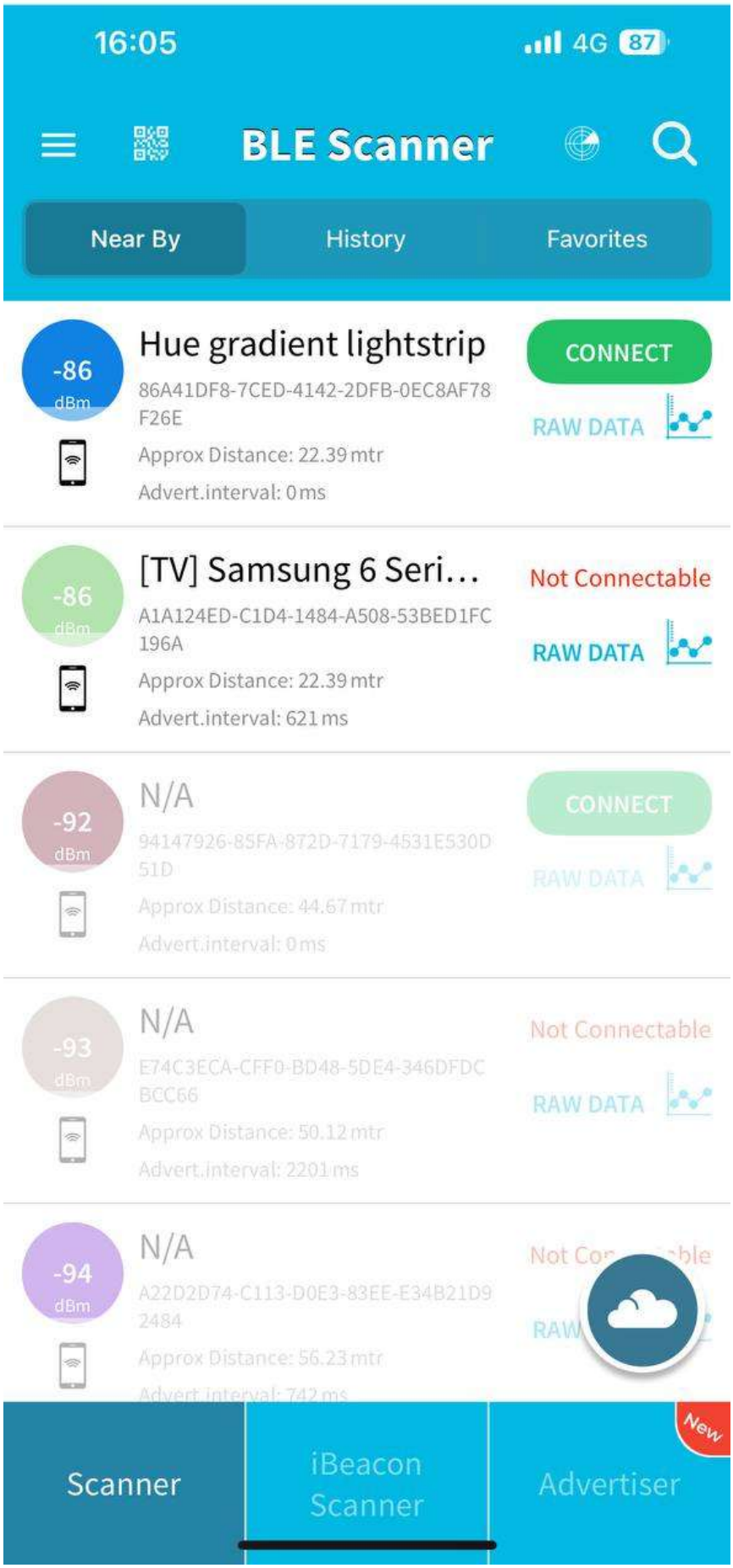

16:05
4G
87
BLE Scanner
Near By
History
Favorites
-80
dBm
iPhone
800512D9-DBD8-79DE-DA5E-0031F1636B90
Approx Distance: 11.22 mtr
Advert.interval: 265 ms
CONNECT
RAW DATA
-81
dBm
N/A
21C7394C-62E3-D738-55F1-A89BC1FF4305
Approx Distance: 12.59 mtr
Advert.interval: 0 ms
Not Connectable
RAW DATA
-100
dBm
N/A
F14D809E-F8F4-021A-2103-72F5A45D26AB
Approx Distance: 112.2 mtr
Advert.interval: 0 ms
CONNECT
RAW DATA
-96
dBm
N/A
38498F1F-7D6E-BB3B-615C-E8BA670D16B7
Approx Distance: 70.79 mtr
Advert.interval: 635 ms
Not Connectable
RAW DATA
-88
dBm
N/A
0F5F7BD2-F034-06F6-B0C8-D7AC47D60EC0
Approx Distance: 28.18 mtr
Advert.interval: 0 ms
Scanner
iBeacon Scanner
Advertiser
New


16:05
4G
87
BLE Scanner
Near By
History
Favorites
-86
dBm
Hue gradient lightstrip
86A41DF8-7CED-4142-2DFB-0EC8AF78F26E
Approx Distance: 22.39 mtr
Advert.interval: 0 ms
CONNECT
RAW DATA
-86
dBm
[TV] Samsung 6 Seri...
A1A124ED-C1D4-1484-A508-53BED1FC196A
Approx Distance: 22.39 mtr
Advert.interval: 621 ms
Not Connectable
RAW DATA
-92
dBm
N/A
94147926-85FA-872D-7179-4531E530D51D
Approx Distance: 44.67 mtr
Advert.interval: 0 ms
CONNECT
RAW DATA
-93
dBm
N/A
E74C3ECA-CFF0-BD48-5DE4-346DFDCBCC66
Approx Distance: 50.12 mtr
Advert.interval: 2201 ms
Not Connectable
RAW DATA
-94
dBm
N/A
A22D2D74-C113-D0E3-83EE-E34B21D92484
Approx Distance: 56.23 mtr
Advert.interval: 742 ms
Scanner
iBeacon Scanner
Advertiser
New

This screen i made at my home and second screen was made at outdoor area

BLE Device Analysis – Wireless and Radiotechnology Course 2026

Objective

The objective of this experiment was to investigate nearby Bluetooth Low Energy (BLE) devices and analyze their signal characteristics in different environments.

Tool Used

- **BLE Scanner mobile application**

Scan Environment

- **Indoor environment (classroom / public indoor area)**
- **Smartphone connected to mobile network (4G)**

Detected BLE Devices (Sample)

Device Name	RSSI (dBm)	Approx. Distance	Connectable
iPhone	−80 dBm	~11 m	Yes
Hue gradient lightstrip	−86 dBm	~22 m	Yes
Samsung TV	−86 dBm	~22 m	No
Unknown device	−92 dBm	~45 m	Yes
Unknown device	−96 dBm	~70 m	No
Unknown device	−100 dBm	>100 m	Yes

Each device was identified by a unique MAC address or identifier provided by the scanner.

Analysis

- **RSSI vs Distance:**
  Devices with stronger RSSI values (−80 to −86 dBm) were estimated to be closer, while weaker signals (−96 to −100 dBm) indicated greater distance.
- **Environment Impact:**
  Indoor obstacles such as walls and furniture reduced signal strength and increased RSSI fluctuations.

- **Device Types:**
  Detected devices included smartphones, smart lighting (IoT), TVs, and unidentified BLE devices, showing common everyday BLE usage.
- **Anomalies:**
  Estimated distances are approximate and sometimes inconsistent due to reflections, multipath propagation, and varying transmission power.

Security and Privacy Considerations

- **BLE is widely used in wearables, smart home devices, and beacons.**
- **Constant broadcasting allows passive device tracking.**
- **Device identifiers and names may expose user information.**
- **Open BLE advertising can be exploited for profiling and location tracking.**

Conclusion

This experiment demonstrated how BLE devices are easily detectable in everyday environments and how RSSI can be used to estimate distance, though with limited accuracy. Environmental factors and device transmission power significantly affect measurements. BLE provides convenience and low energy consumption but also raises important security and privacy concerns.