Sagemcom G3-PLC Deployment in North Africa

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CTO Energy at Sagemcom

Sagemcom

Sagemcom, 3 business units

Broadband Solutions

#1 WW Broadband solutions.

Leader in the latest market technologies: Fiber, 5G, Wi-Fi 6/6E/7, Docsis 3.1/4.0, 10GPON...

Audio Video Solutions

#1 WW on the set-top-box market

Disruptive and **premium** products with the development of the **sound** and **voice** range

Energy & Telecom

Major player in EMEA

Develops and **installs** products and **solutions** for **network management** (electricity, gas and water), **distribution** and **energy production**

2022 : In Figures

$ 3.15b +
turnover

6,500 +
employees

40M +
products delivered each year in over **50 countries**

$ 127m +
R&D spending

150 +
customer assets

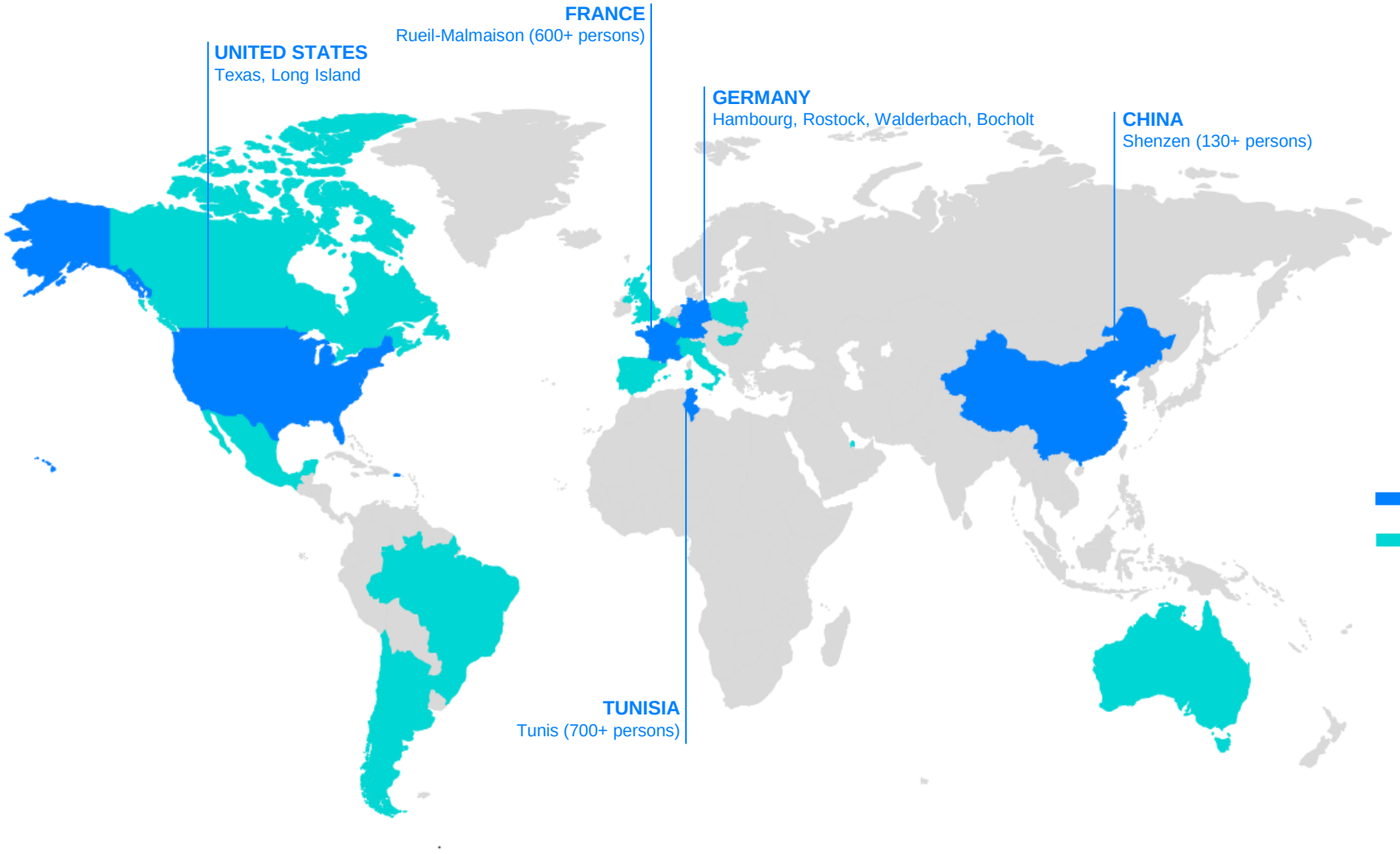
30%
Employee-owned capital

An R&D strategy tailored to meet our customers' needs

1,700
engineers
all around the world

CSIRT Sagemcom

ISO27001
Certification



Project Introduction

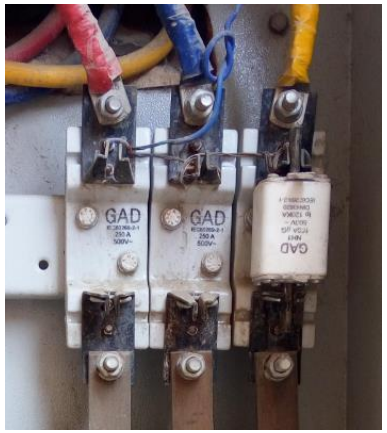
Project Intorduction

- An AMI project has been launched by Egyptian energy authorities with the aim of selecting the best communication technology.
  - The candidate technologies were G3-PLC, PRIME, Broadband PLC, and cellular communication.
- Sagemcom has been awarded the deployment of 50K meters using G3-PLC technology.
  - Sagemcom has partnered with local metering manufacturer Globaltronics.
- The location awarded for G3-PLC deployment was the residential and business section of Cairo's old town.

Some of the Obstacle using G3-PLC Technology(1). Smart meters Are Turned OFF by Consumers

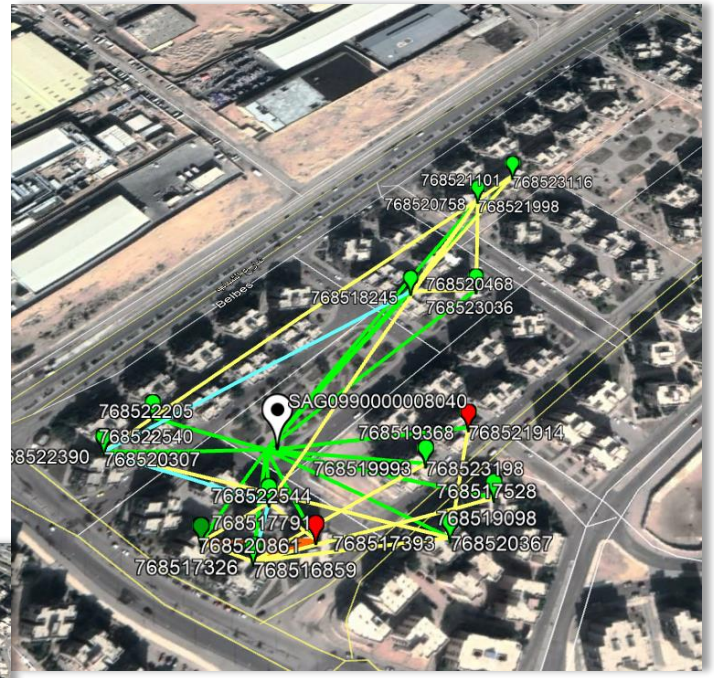
- End-customer switches off the meters using a MCB before the meters.
  - When going away on vacation
  - When the shops are closed

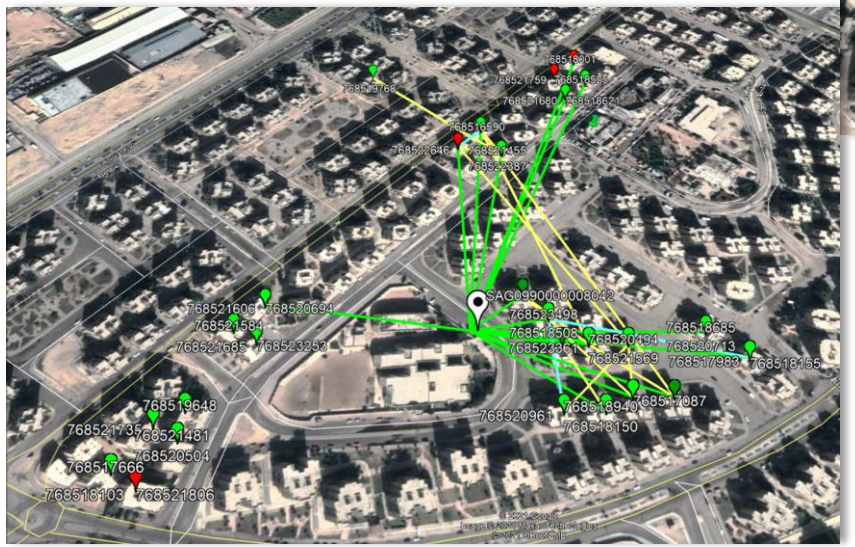
- Due to the distribution network connectivity issues, we needed to install repeaters. We also needed secondary DC for a few substations to reduce the number of meter reads per each DCU.



Some of the Obstacle using G3-PLC Technology(1). Star Topology

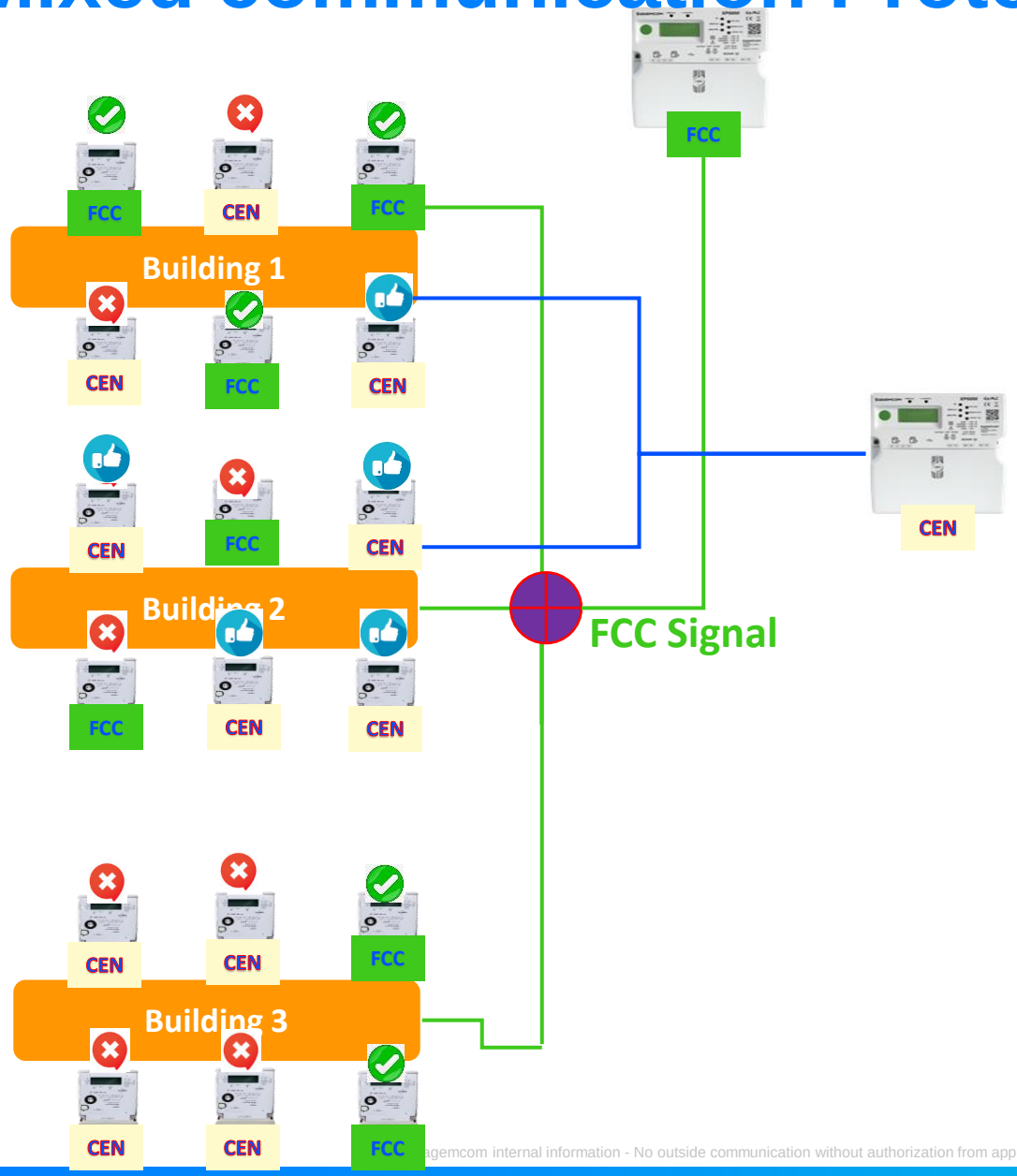
- Most of the electricity distribution network is constructed to form a star topology.
- Buildings connection to the substation are nonuniformed.





Lessons Learned and How to Improve G3-PLC Specification

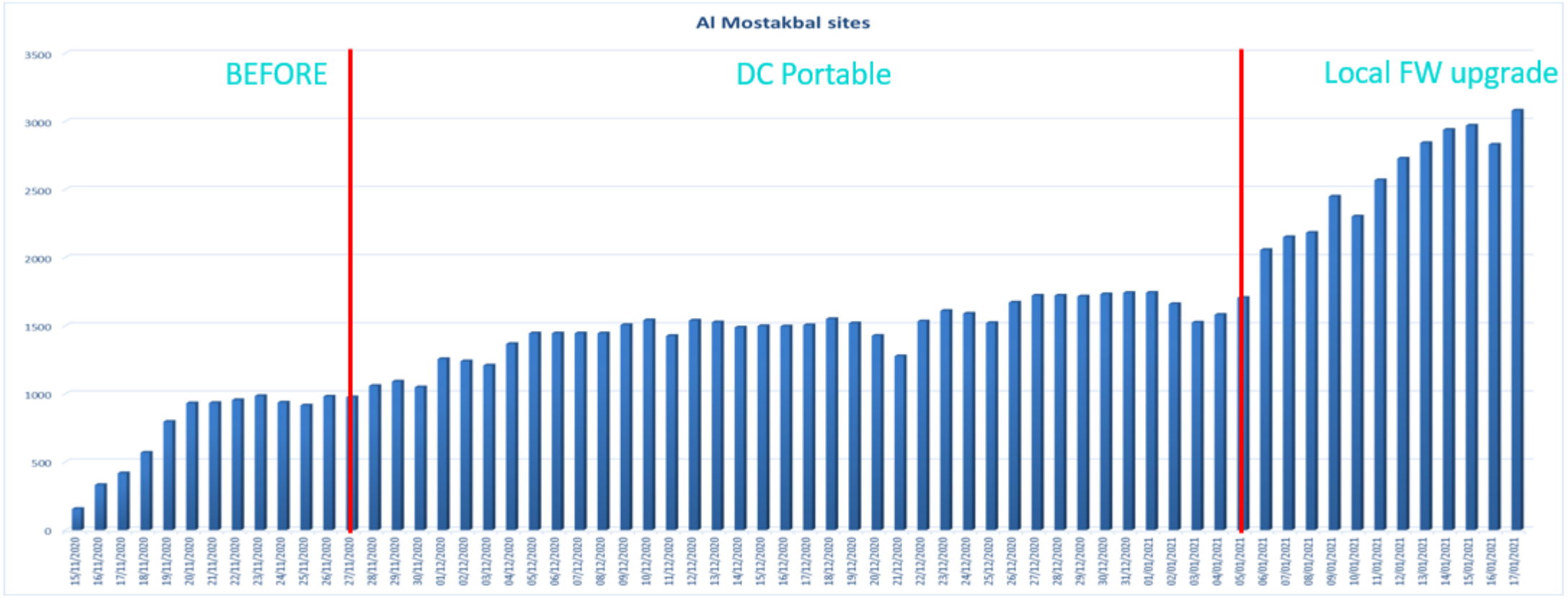
Mixed communication Protocol



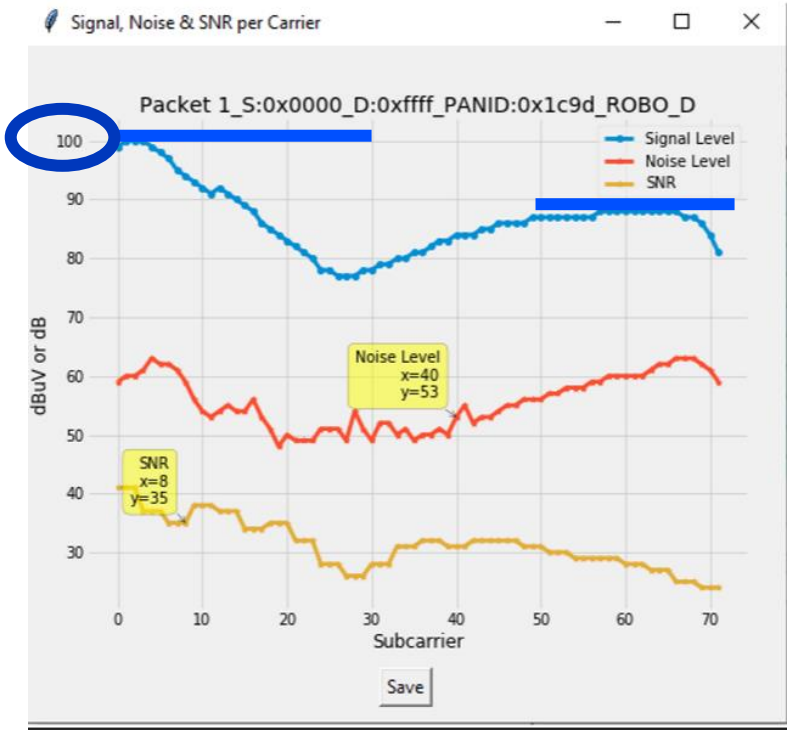
- Due to network reachability The communication protocol is not heterogenous.
- We installed portable DCs in Cenelec A at Al Mostakbal
  - Objective: discover the meters in Cenelec A and switch them to FCC.
- G3-PLC alliance should finalize the dynamic band switching to mitigate these kind of problem.

Local FW upgrade / Configuration at Al Mostakbal

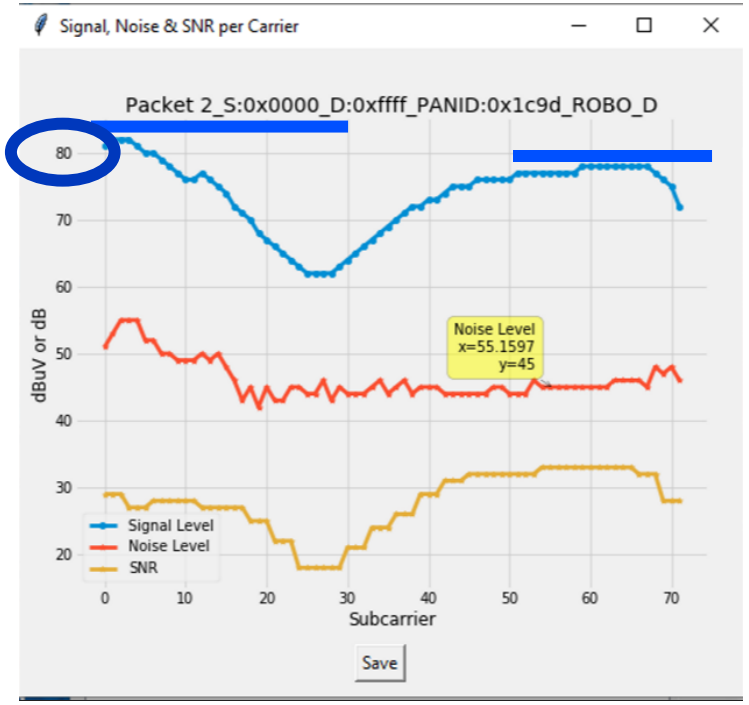
- Upgrading all meters to latest FW
  - It switch all the meters by default to FCC.
- FCC outperforms Cenelec A significantly.



Signal attenuation by a switch at substation

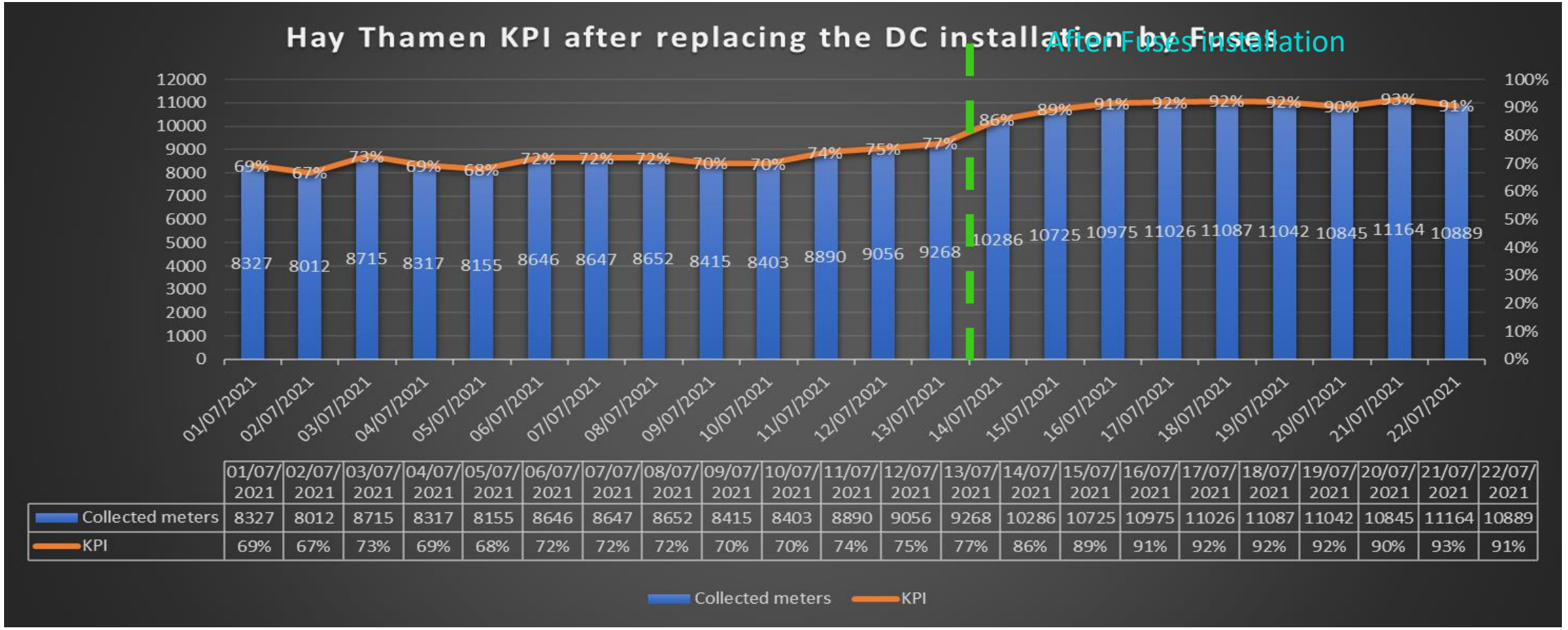


Signal Level before the filter



Signal Level after the filter

Hay Thamen KPI after installation correctness



	01/07/2021	02/07/2021	03/07/2021	04/07/2021	05/07/2021	06/07/2021	07/07/2021	08/07/2021	09/07/2021	10/07/2021	11/07/2021	12/07/2021	13/07/2021	14/07/2021	15/07/2021	16/07/2021	17/07/2021	18/07/2021	19/07/2021	20/07/2021	21/07/2021	22/07/2021
Collected meters	8327	8012	8715	8317	8155	8646	8647	8652	8415	8403	8890	9056	9268	10286	10725	10975	11026	11087	11042	10845	11164	10889
KPI	69%	67%	73%	69%	68%	72%	72%	72%	70%	70%	74%	75%	77%	86%	89%	91%	92%	92%	92%	90%	93%	91%

- 85% of DC enclosures have been replaced before Aid period.
  - Before Fuse replacement, KPI was at 70%
  - After fuse replacement, KPI is more than 90% and stable for several days
- 6 DCs not yet installed. We achieved entire meter read after installing the 6 DCU.

EEHC - SCEDC Collect KPI

Daily KPI

Consumption Period	Collected Meters	Commissioned Meters	KPI (%)
2021-08-28	46,113	47,043	98.023%
2021-08-27	46,137	47,039	98.082%
2021-08-26	46,185	47,031	98.201%
2021-08-25	46,192	47,021	98.237%
2021-08-24	46,234	46,914	98.551%
2021-08-23	46,121	46,899	98.341%
2021-08-22	46,187	46,896	98.488%
2021-08-21	46,202	46,894	98.524%
2021-08-20	46,184	46,893	98.488%
2021-08-19	46,161	46,891	98.443%
2021-08-18	46,200	46,885	98.539%
2021-08-17	46,267	46,881	98.69%
2021-08-16	46,242	46,879	98.641%
2021-08-15	46,247	46,871	98.669%
2021-08-14	46,260	46,869	98.701%

Monthly KPI

Consumption Period	Collected Meters	Commissioned Meters	KPI (%)
2021-08-01	46,530	46,694.663	99.647%

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Weekly KPI

Consumption Period	Collected Meters	Commissioned Meters	KPI (%)
2021-08-23	46,267	46,916.053	98.617%
2021-08-16	46,233	46,830.082	98.725%
2021-08-09	46,263	46,714.049	99.034%
2021-08-02	46,019	46,458.96	99.053%
2021-07-26	45,589	46,299.432	98.466%

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- KPI is at 98% in Daily, Weekly and 99.5% Monthly for collected meters.

Conclusion

- G3-PLC performed very well and met the customer's expectations.
- Due to a PLC reachability problem, the entire network cannot be switched from Cenelec to FCC band.
  - This will cause a breakdown in PLC communication across the entire network.
  - G3-PLC alliance should ratify the dynamic band switching soon.
- G3-PLC network performance can be dropped when customer turned off the meters.
  - Hybrid G3-PLC will be more suitable for Egyptian distribution network.