KUALA LUMPUR 2012 WORLD GAS CONFERENCE

IGU

25th world gas conference

"Gas: Sustaining Future Global Growth"

Smart Gas Meters in Iran

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Date: Tuesday, 5th June, 2012

Venue: Room 302/3

Patron

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INTERNATIONAL GAS UNION
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Host

MALAYSIAN Gas ASSOCIATION

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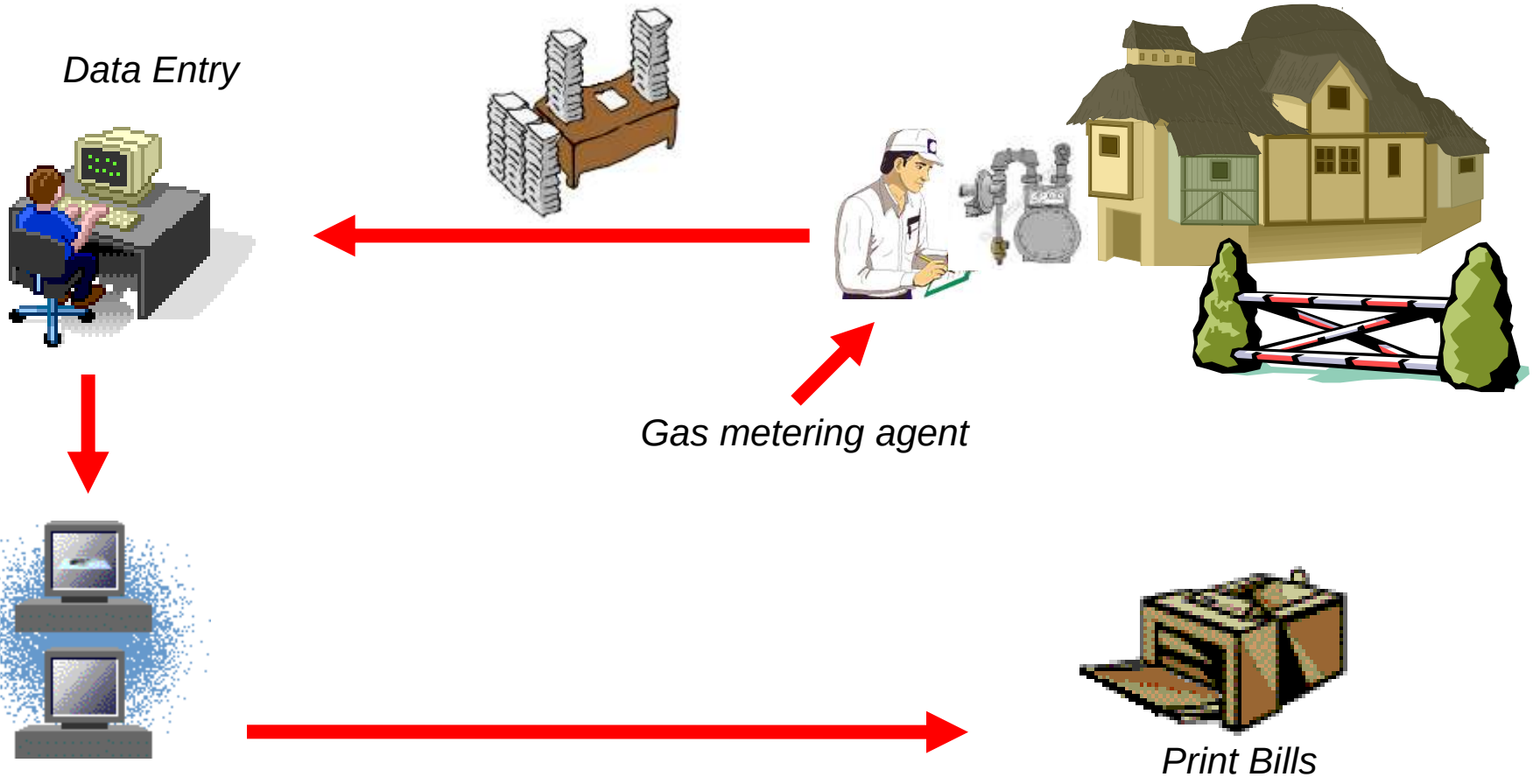
reimagining energy

NIGC (National Iranian Gas Company)

No. of consumers	15000000
No. of cities use Natural Gas	919
No. of villages use Natural Gas	12267
No. of industrial consumers	5000
No of power plants using natural gas	65
Natural gas volume consumed per day	500000000 m3

Gas metering: Traditional method



The disadvantages of current gas meters

- The vulnerability of the moving mechanical parts to shock, expansion and contraction due to temperature variation
- Difficulty in reading due to figures' fading, glass opacity, and aluminum palette removal
- Gas leakage from the body, under the counter, and inlet/outlet of the meters' throat
- Meter tampering
- Human error and related problems

Objectives

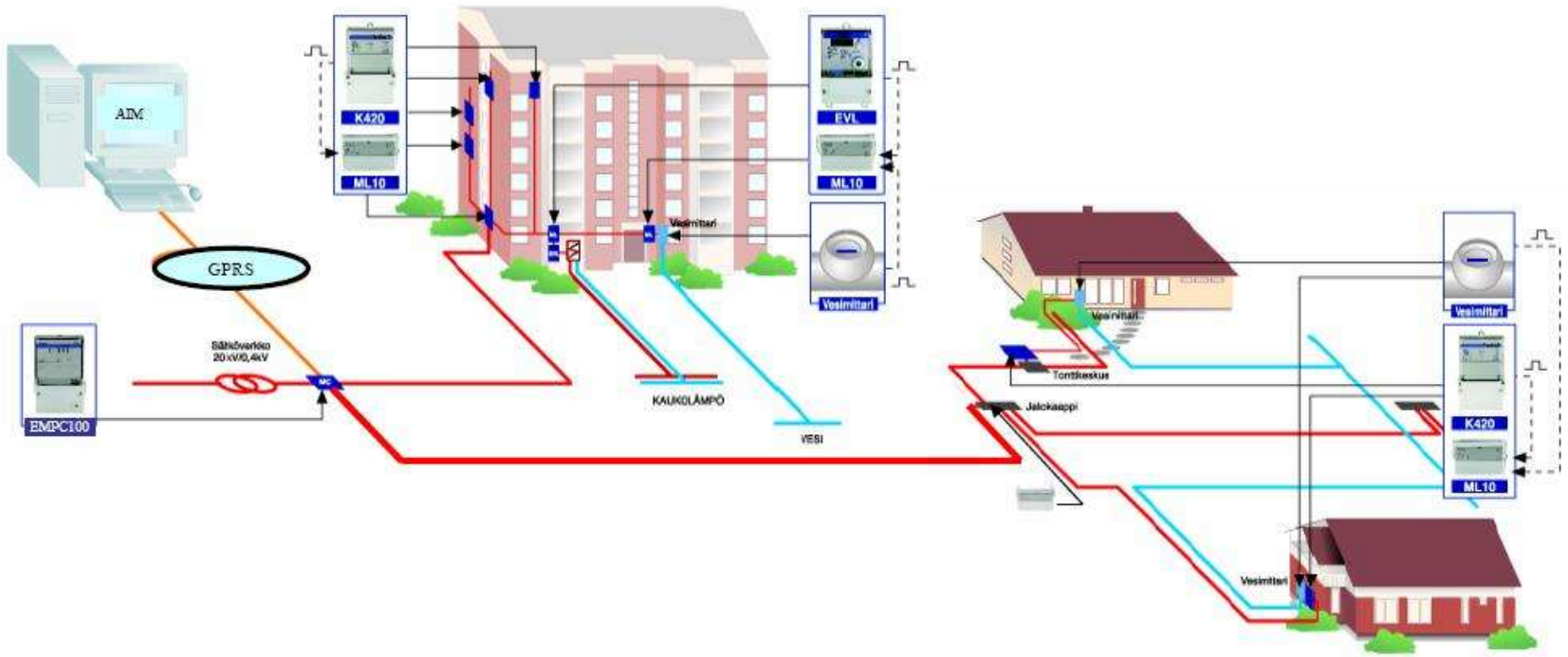
- Tempering Prevention
- Elimination of the gas meter reader to visit the customers' residence
- Human reading error elimination
- Gas distribution automation infrastructure
- Nationwide daily consumption database
- Consumption planning infrastructure
- On-line billing
- Gas meters diagnostics and maintenance

Smart metering for residential consumers (AMR/AMI)

- Bi-directional meter communication (Two-way)
- Possible network communication scheme between the meters and the data collector
- Radio Channels
- Electricity distribution network
- Telephone lines

Application of Remote Gas Meter Reading System

In this system, mechanical data of the gas meter is converted into digital data via an encoder installed on the meter. Next, through a communication route the digital data is converged and transmitted to the desired destination.



Technical and economical benefits of Remote Gas Meter Reading System

- Meter reading error exclusion
- Exclusion of reading inconveniences (barriers, customer absence, …)
- Fast & instant reading
- Accurate consumption computation via temperature conversion
- Encoder utilization and minimizing meter mechanical error
- To enable customer to analyze metering, consumption and billing (Energy management)
- Social security assurance
- On-line billing
- Illegal consumption detection

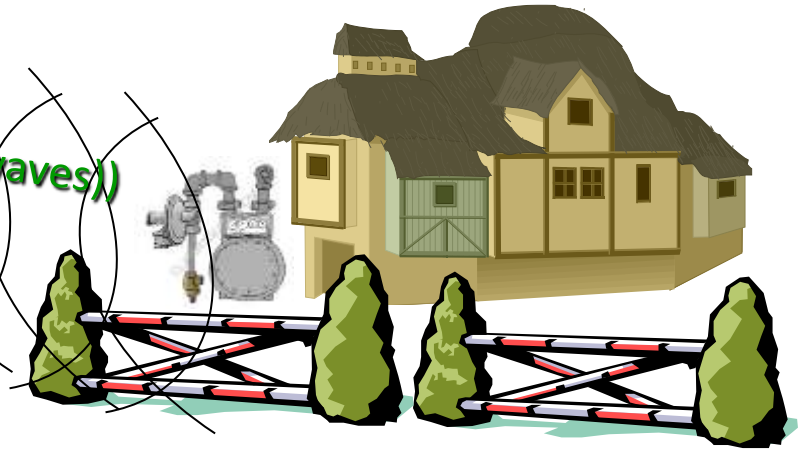
Smart Gas Meter

The gas meter is equipped with a radio frequency transmitter/receiver module, to send and receive data from a data collector through Radio Frequency (RF). This module is powered by battery with a lifetime of 10 years. However, communication between the gas meter and data collector is be means of radio frequency or optical port, and the communication between data collector and NCC is either through mobile communication network or local at NCC location.

Gas metering: Walk-by

Remote data receiving

((Frequency waves))



Tel line

Data processing

Print Bills

Gas metering: Fixed network

Data Collector

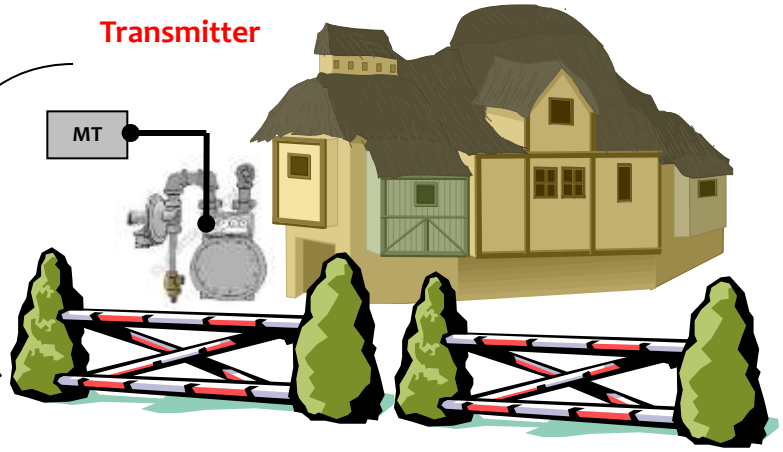
Tel line

Network Controller

Radio waves

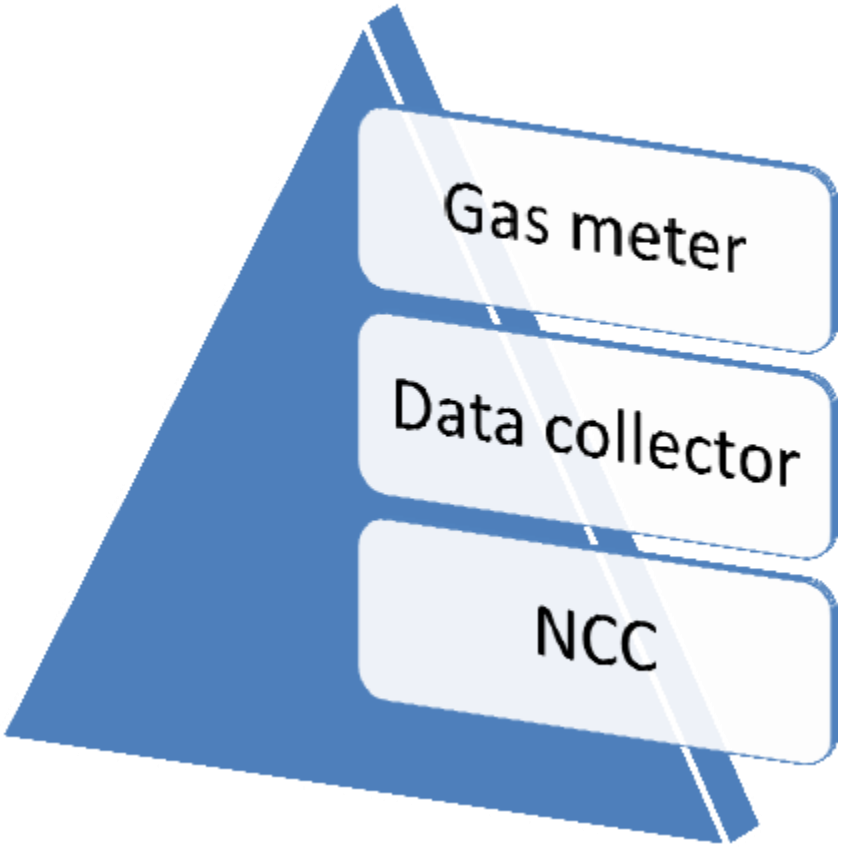
Transmitter

MT



Print Bills

The components



Ordinary & Smart Gas meter

Ordinary gas meter

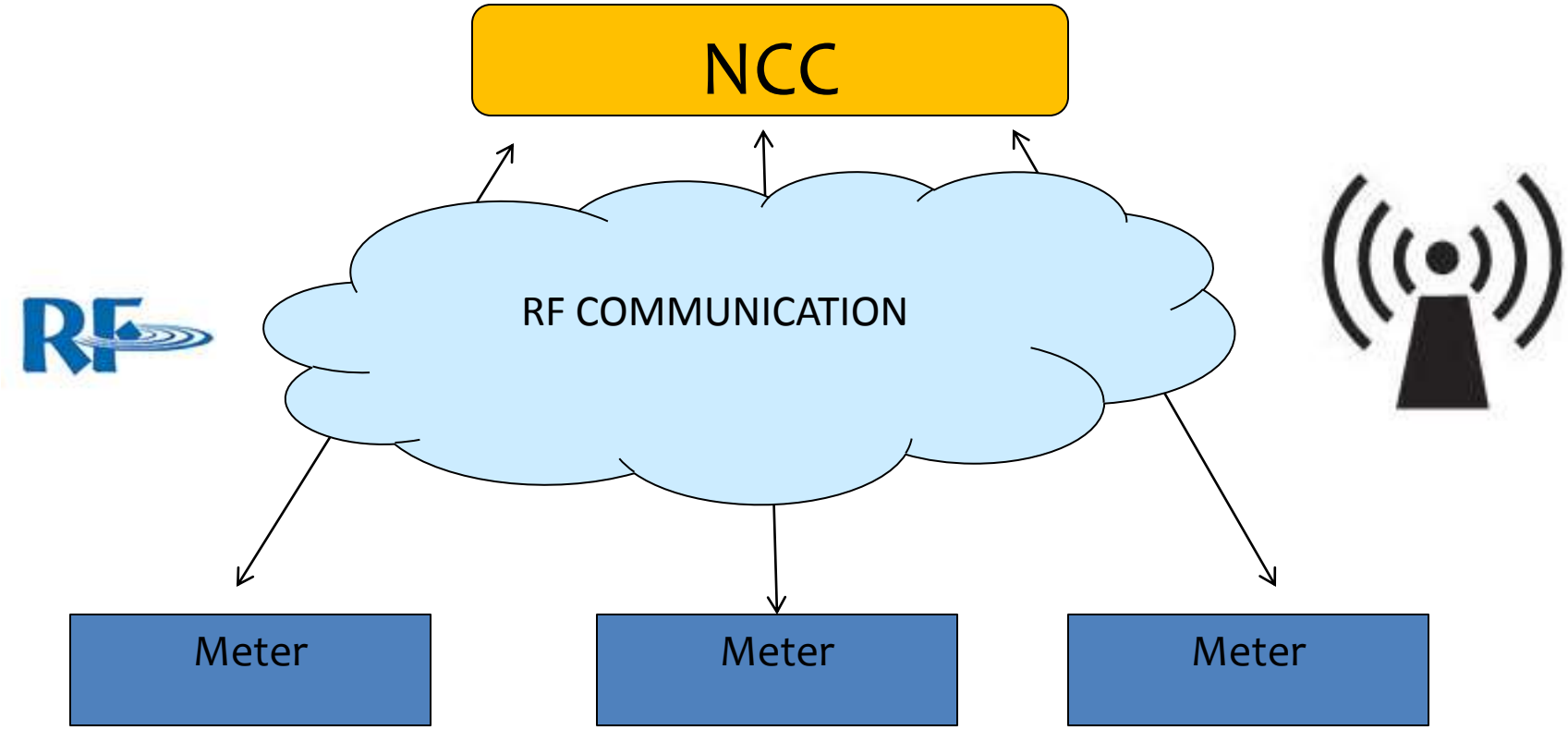
Smart gas meter

Data collectors (DC)

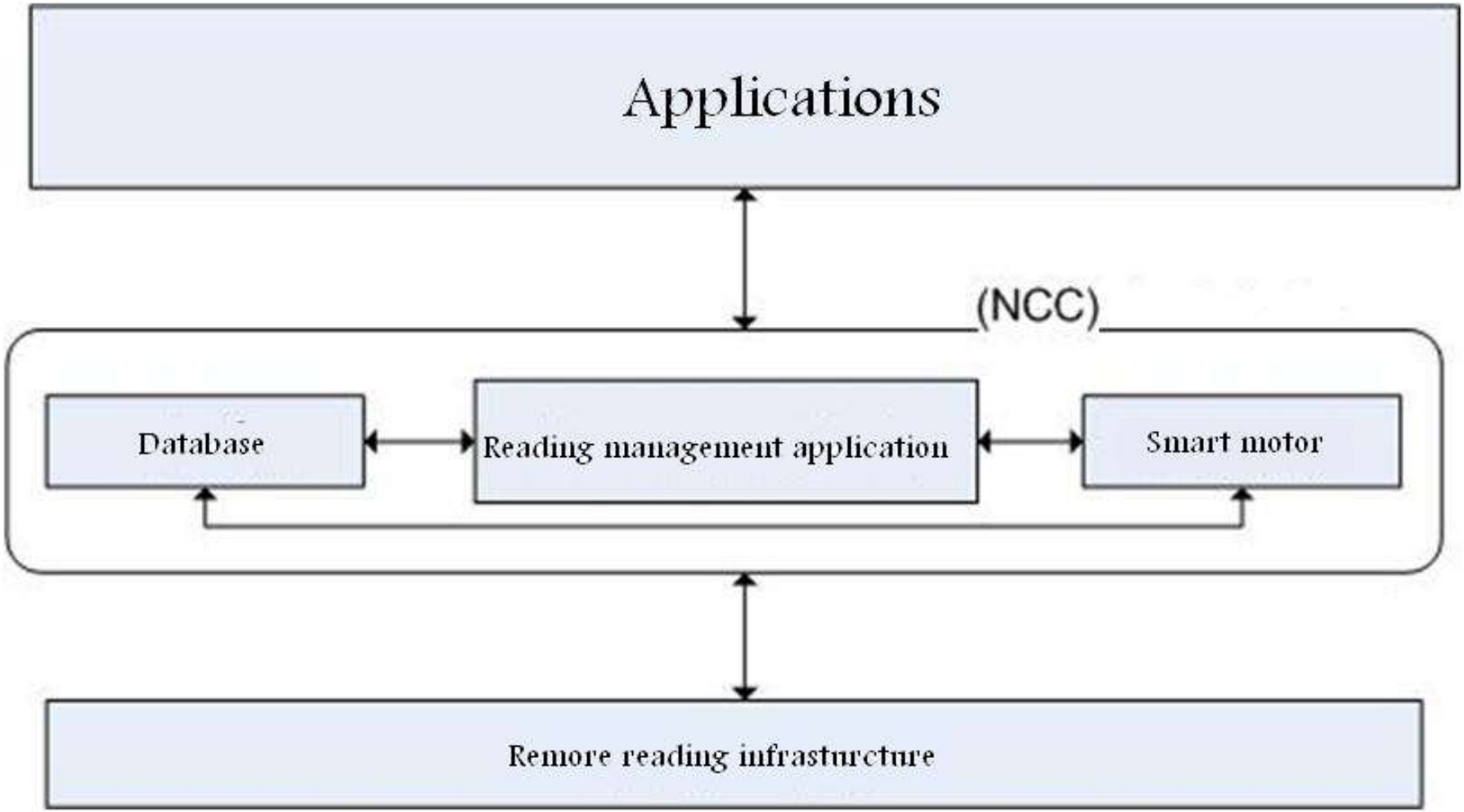
Stationary Data Collector

Mobile Data Collector

NCC

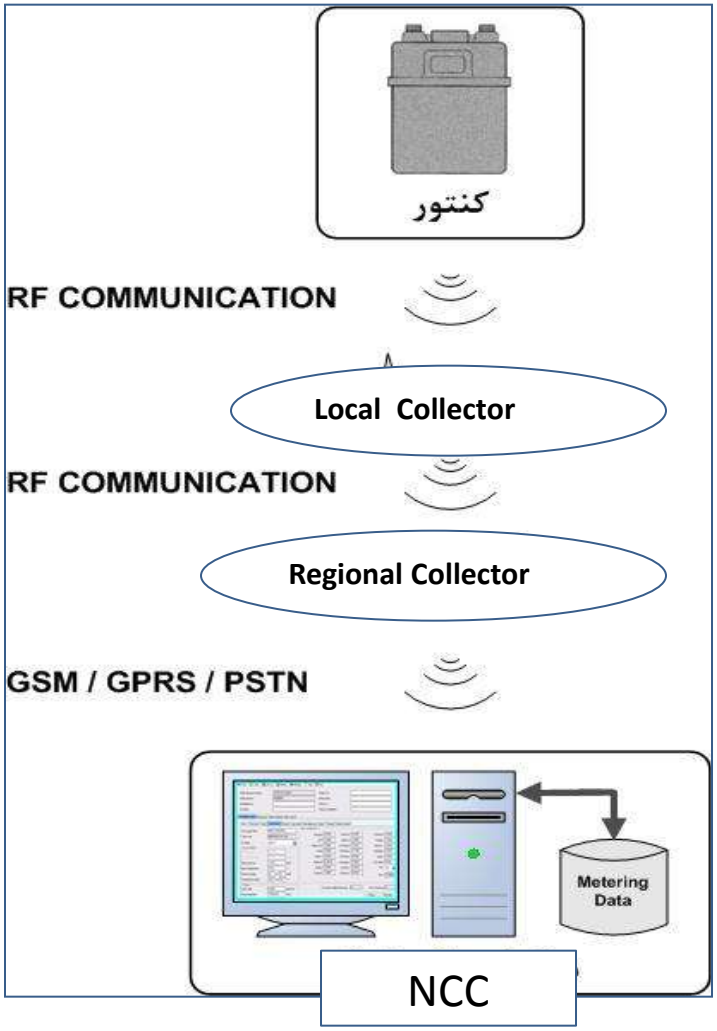


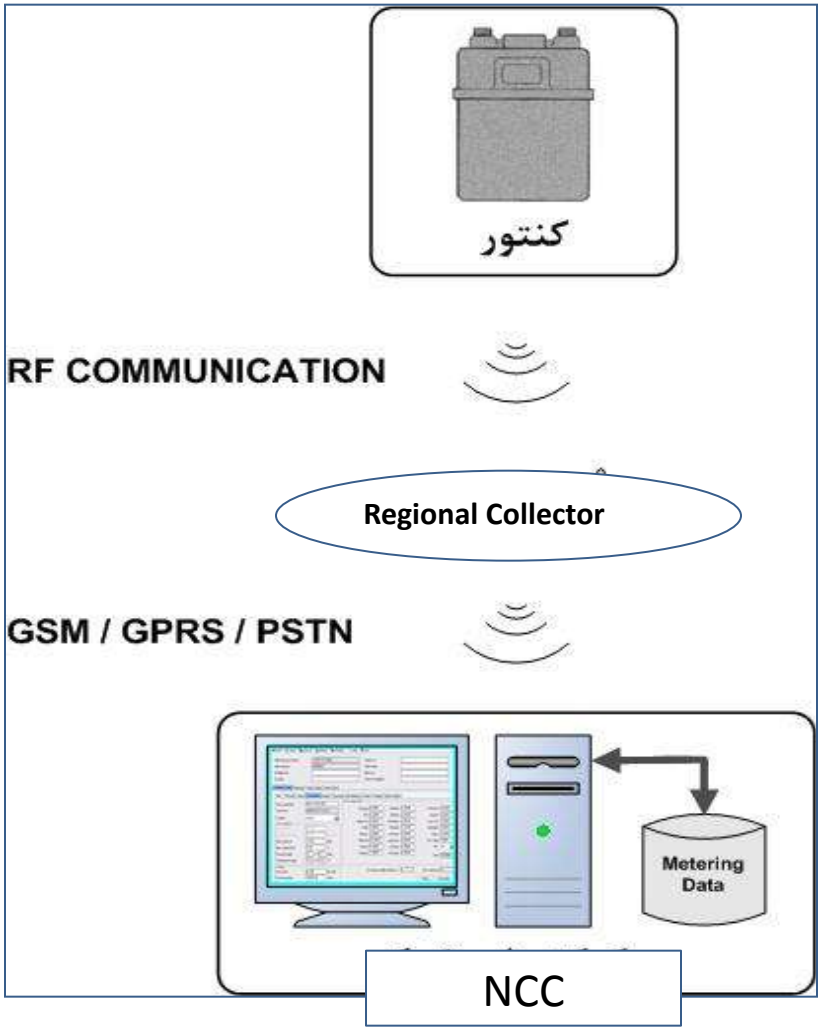
NCC


Applications
(NCC)
Database
Reading management application
Smart motor
Remore reading infrastructure

Features	Advantages
Remote reading of gas meters	Reduction in the number of reading
Automatic reading of gas meters	Elimination of human errors
Accuracy of measurement	Reduction of the volume of lost gas
Daily collection of gas meter data	Flexibility in bill preparation process
Sending messages to the meter	Sending notifications to the consumers
Registering the numbers every hour	Control of consumption
Cut/ re-allow of gas flow	Consumption management
Alarm in case of tampering	Prevention of illegal consumption
Announcing the error in meter functionality	Detection and troubleshooting the defects of the meters

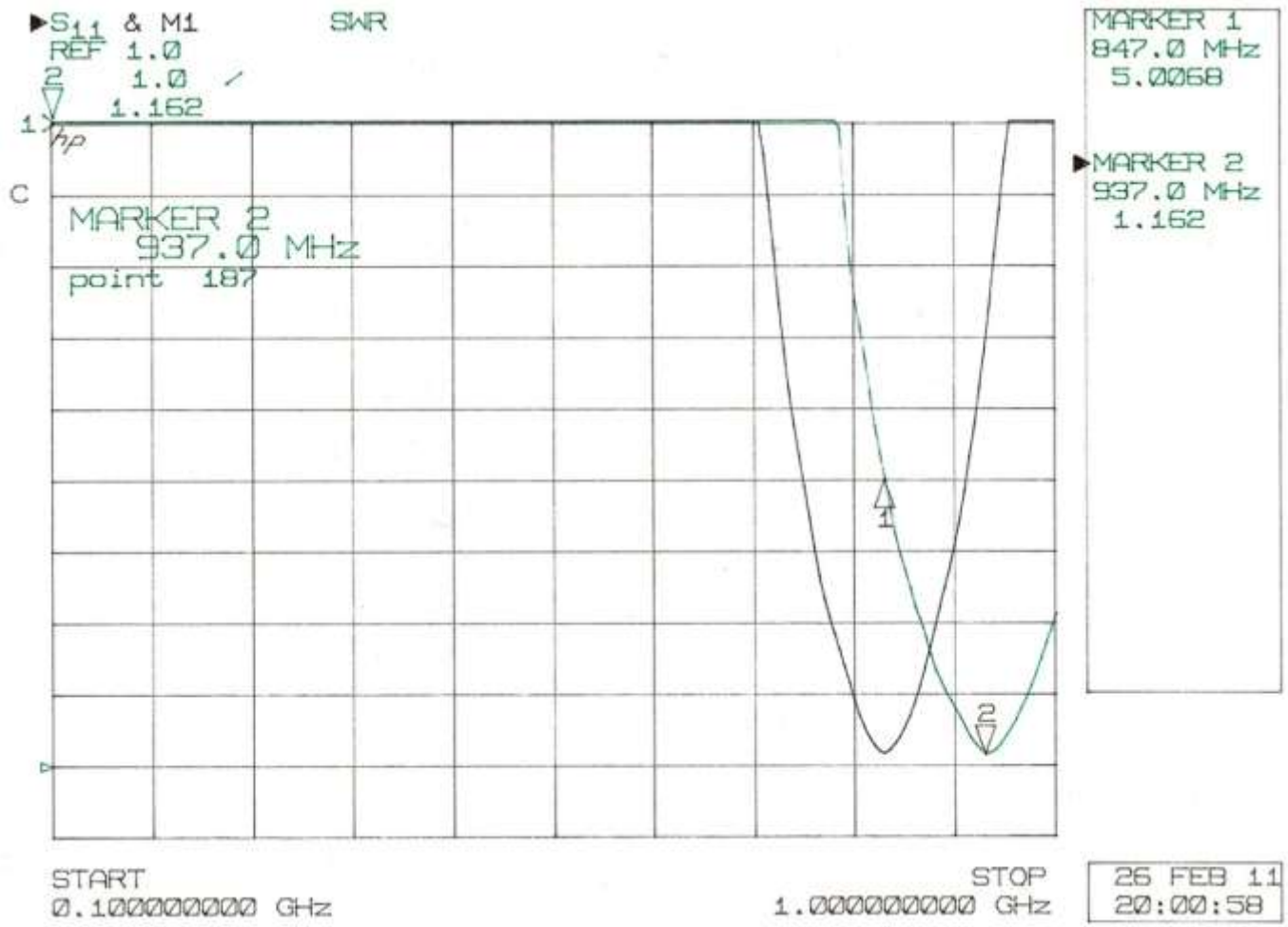
Proposed methods





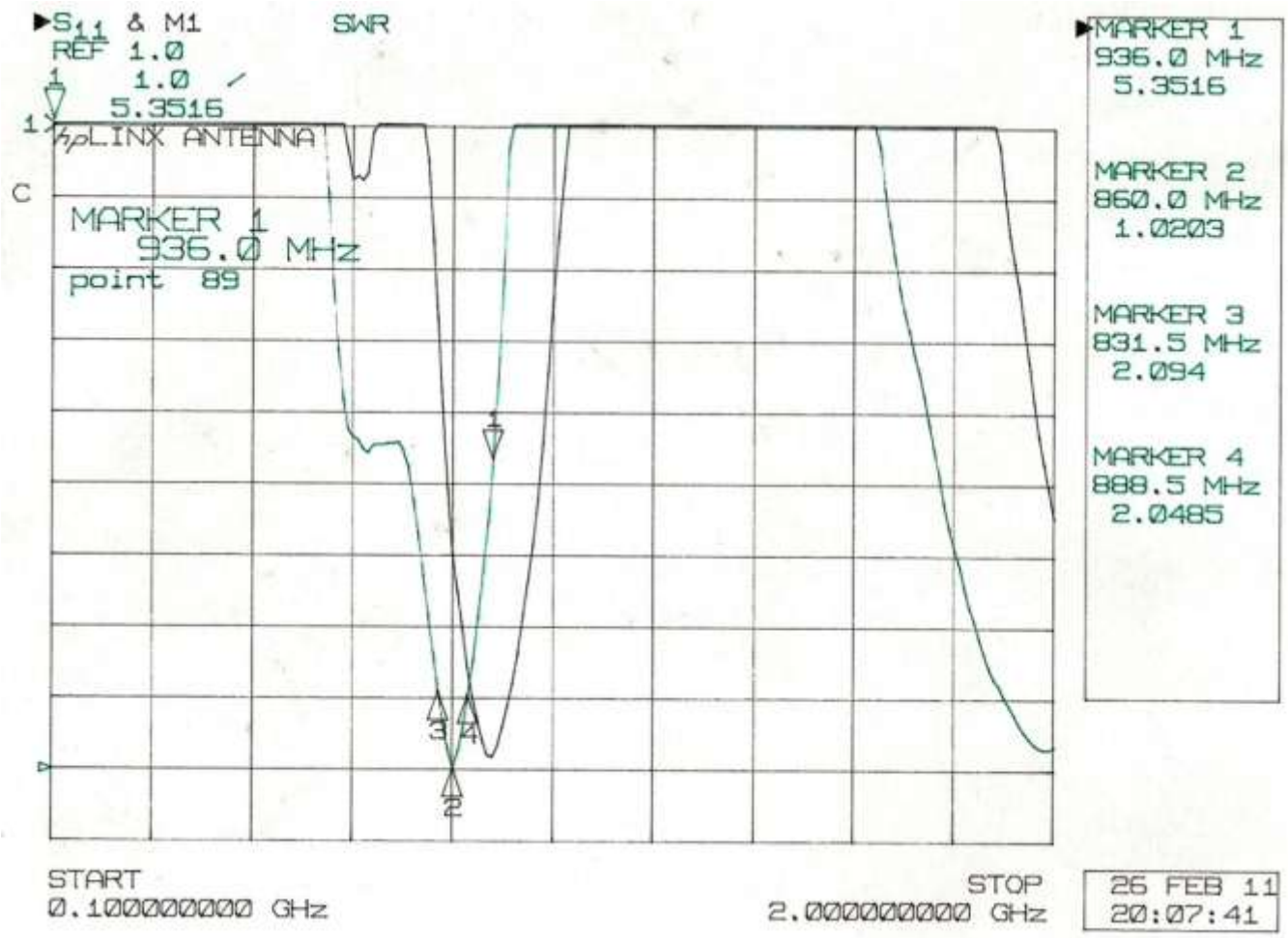
Antenna Standard Tests Results

- SWR (Standing Wave Ratio) Parameter for wide frequency range of 100 MHZ to 1GHZ with protective shield (Black) and without protective shield (Green)



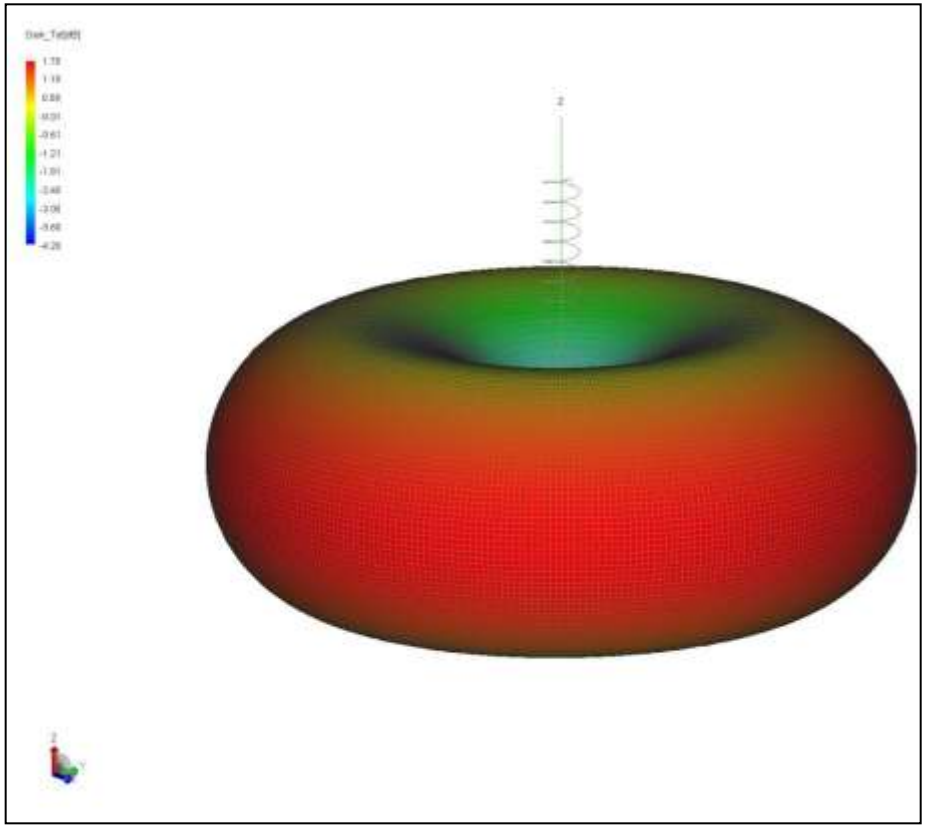
Antenna Standard Tests Results

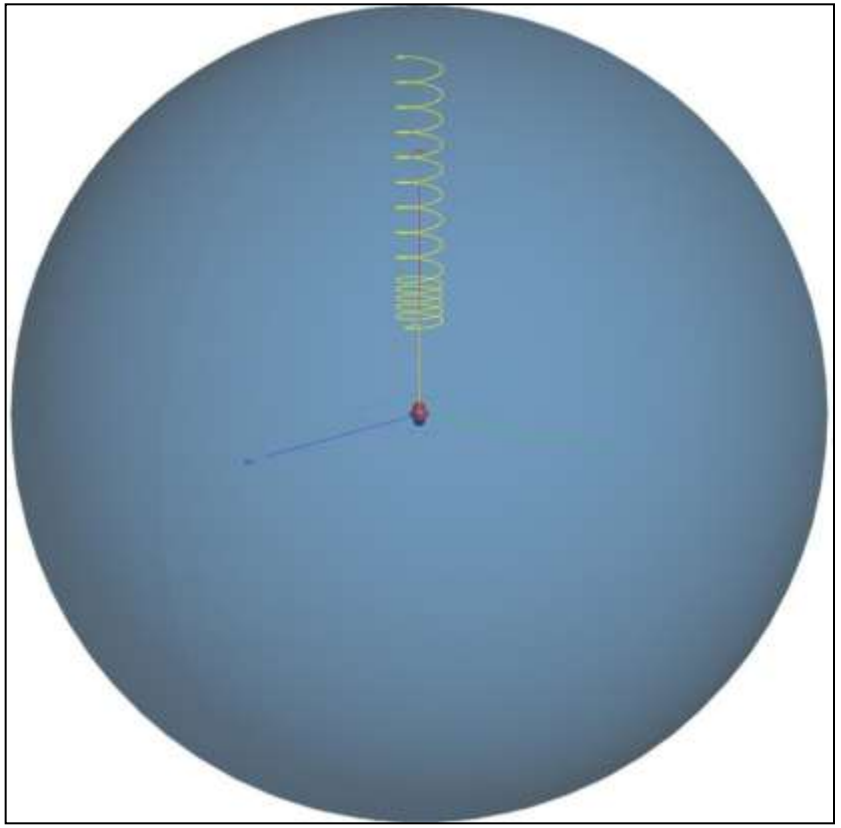
- SWR (Standing Wave Ratio) Parameter for wide frequency range of 100 MHZ to 2GHZ with protective shield (Black) and without protective shield (Green)



Antenna Pattern Computation

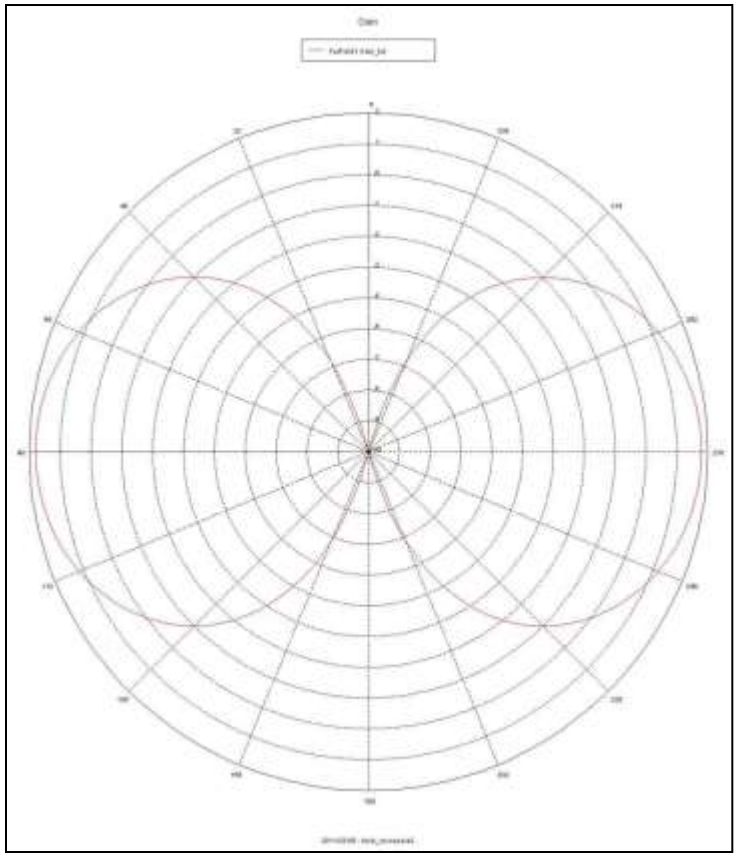
- General antenna coverage pattern

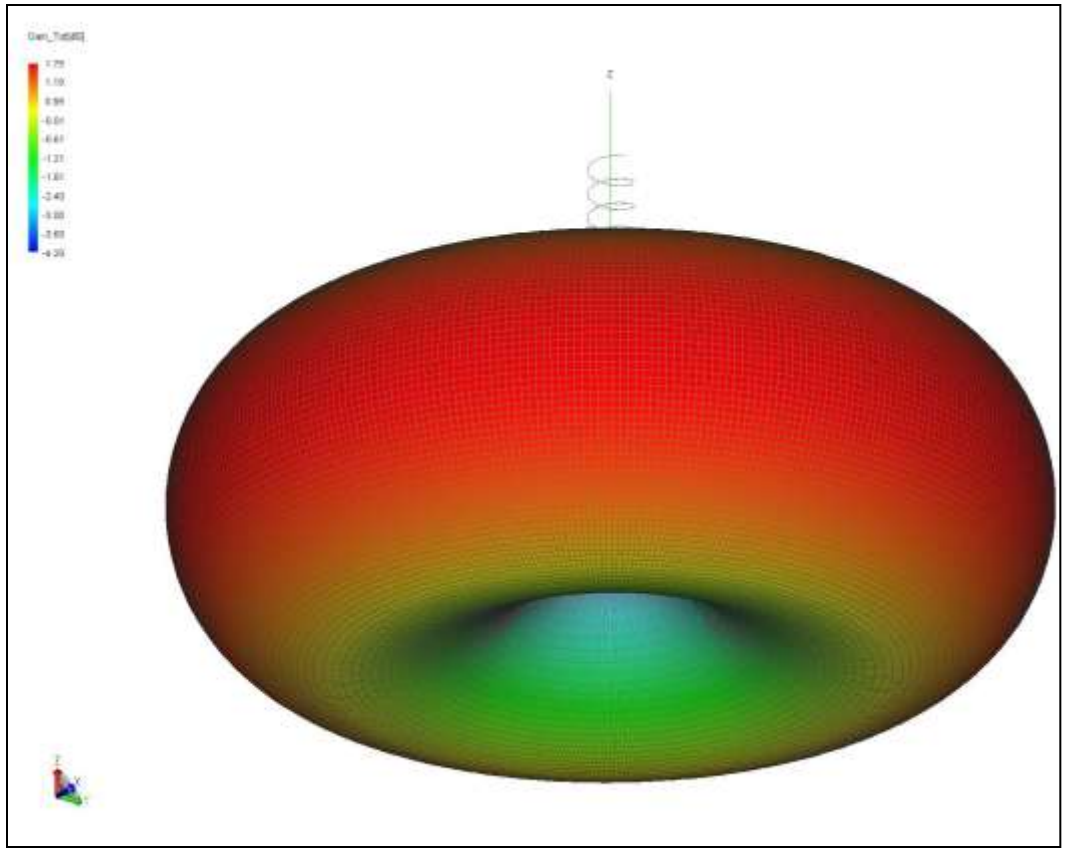




Antenna Pattern Computation

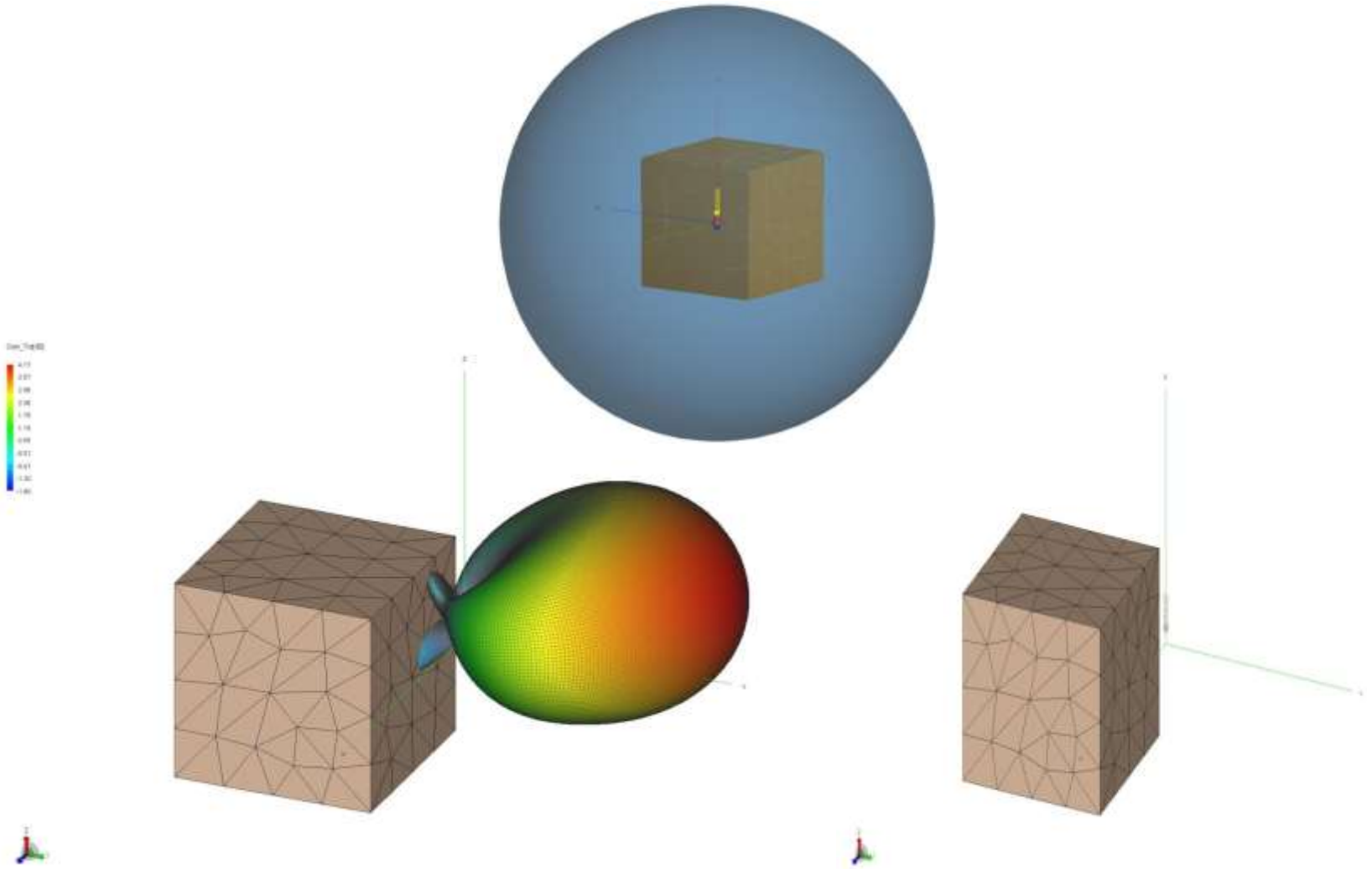
- General antenna coverage pattern from different angle





Antenna Pattern Computation

- Antenna coverage pattern located on metal case at the middle



Thank you