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## 44<sup>TH</sup> ASECAP STUDY & INFORMATION DAYS 2016

# The Path Towards an Integrated And Sustainable Mobility in Europe

Intercontinental Hotel  
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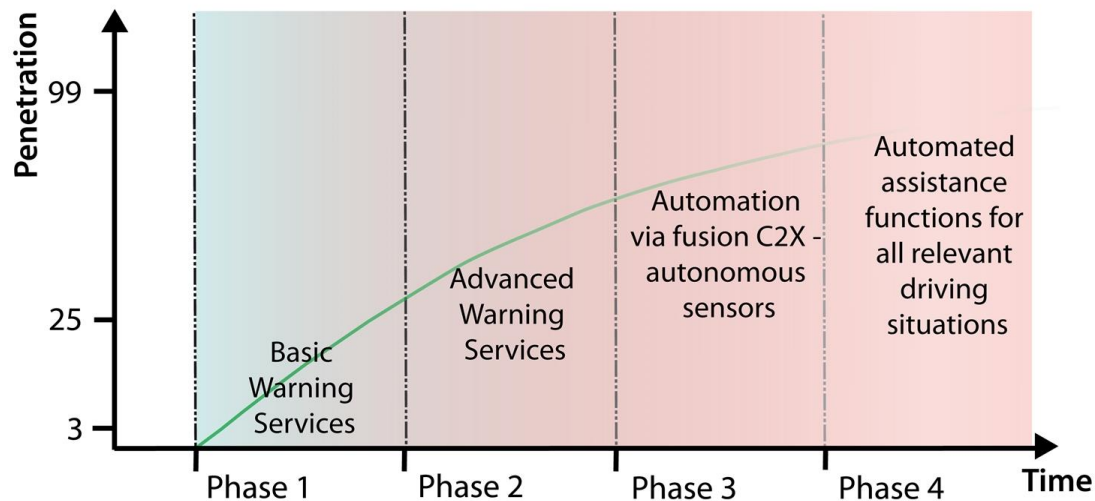


Organized by



# THE PROBLEM

Risk of ITS-G5 systems interfere with DSRC systems and degrade its performance



Phase concept of C-ITS deployment, by Amsterdam Group

# OBJECTIVES

1. Study the coexistence between the DSRC system and Cooperative ITS-G5 in a real environment
2. Evaluate potential mitigation techniques
3. Produce knowledge about coexistence interoperability of ITS-G5 & DSRC

# STUDY AREAS

## Single Lane



## Multi-lane free flow



# PILOTE AREA (1)

DSRC

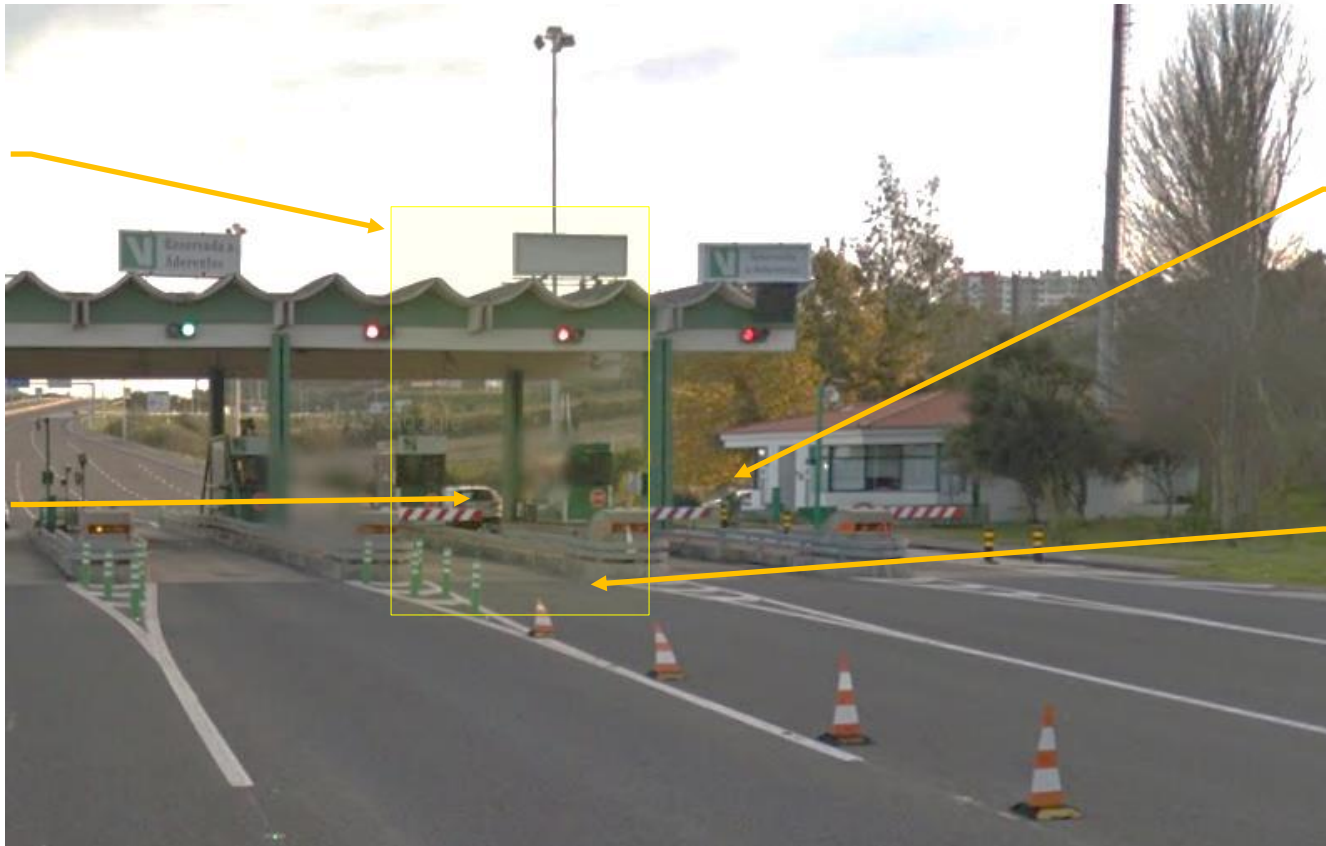
ITS-G5

DSRC  
LANE

ITS-G5  
ANTENNA

DSRC OBU

ITS-G5  
OBU



# PILOTE TEST (1)

# 200

## TRANSACTIONS

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100 DSRC ONLY

100 DSRC & ITS-G5

1ST MEASURE OF PERFORMANCE

# TRANSACTIONS LOST

0

# TRANSACTIONS LOST

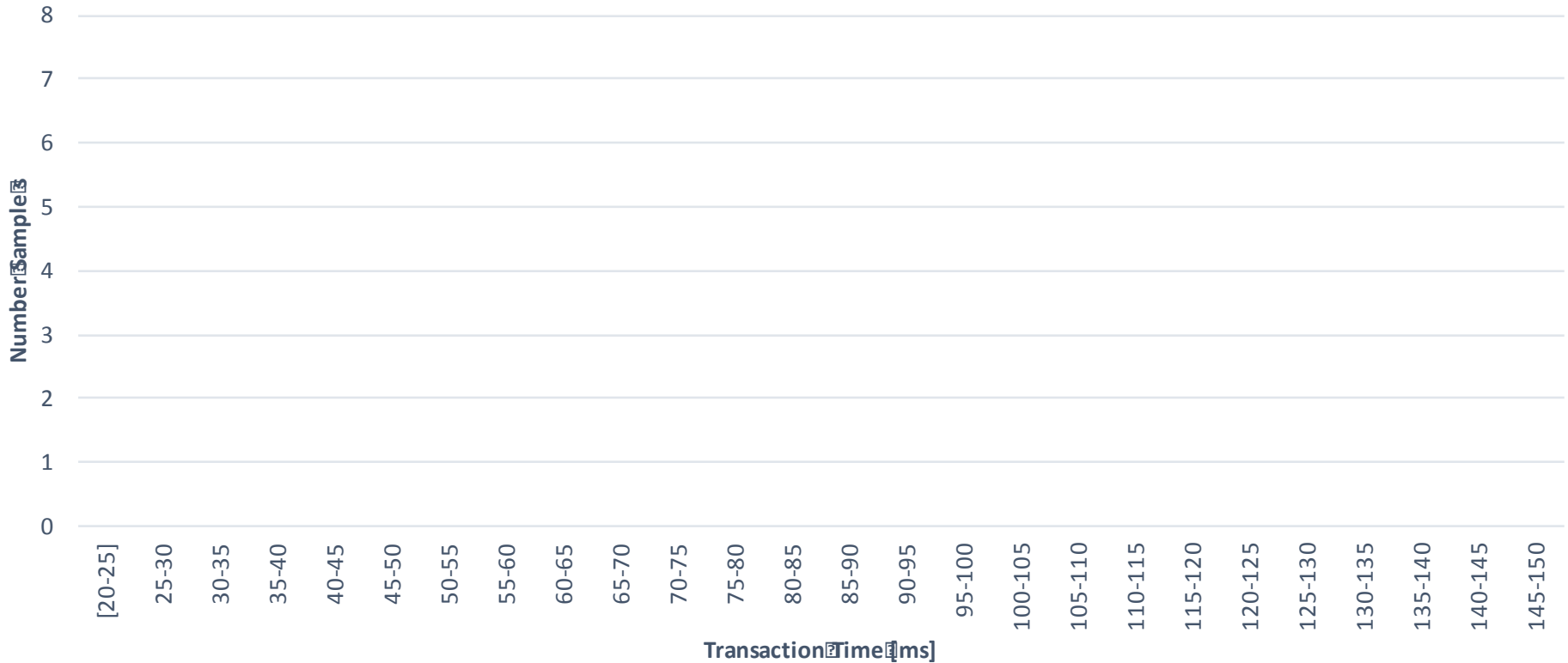
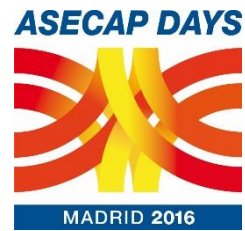
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0 DSRC ONLY

0 DSRC & ITS-G5

## 2ND MEASURE OF PERFORMANCE

# TRANSACTIONS DURATION



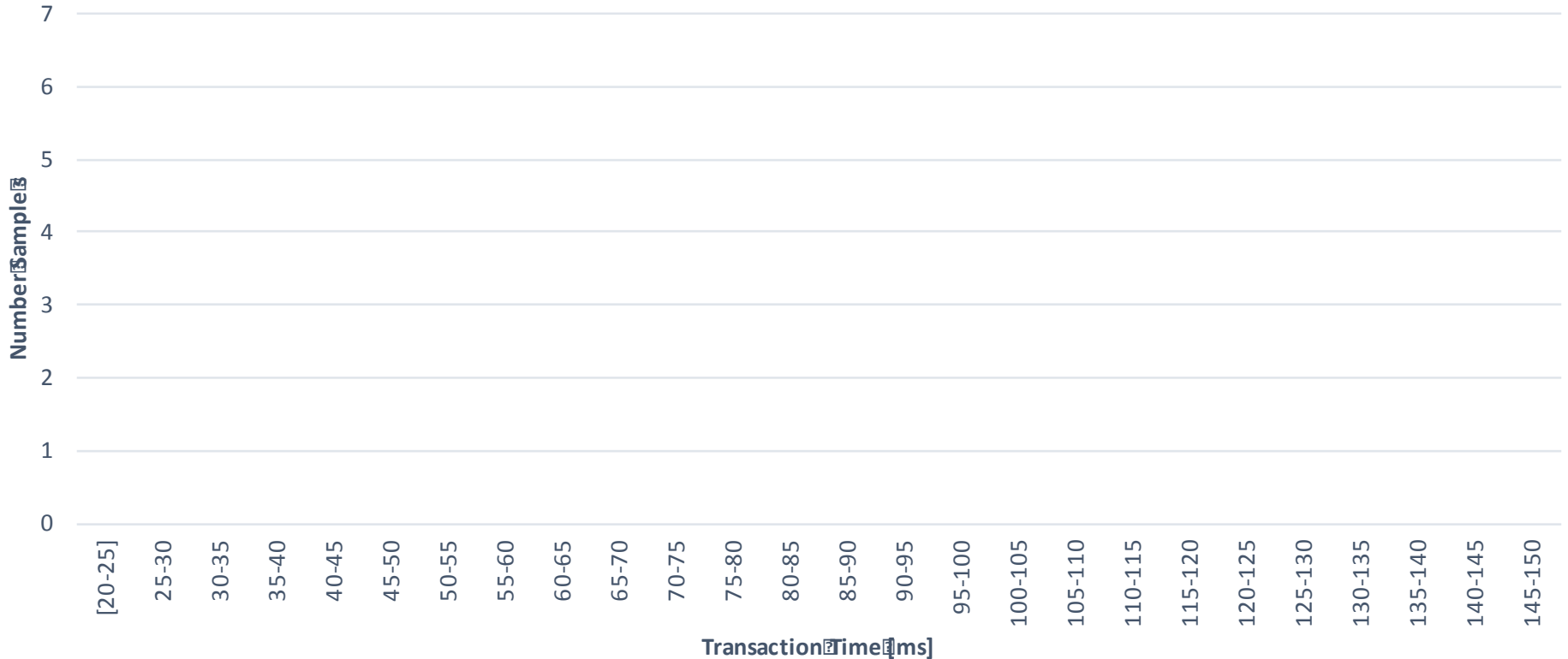
DSRC

DSRC only



## 2ND MEASURE OF PERFORMANCE

# TRANSACTIONS DURATION

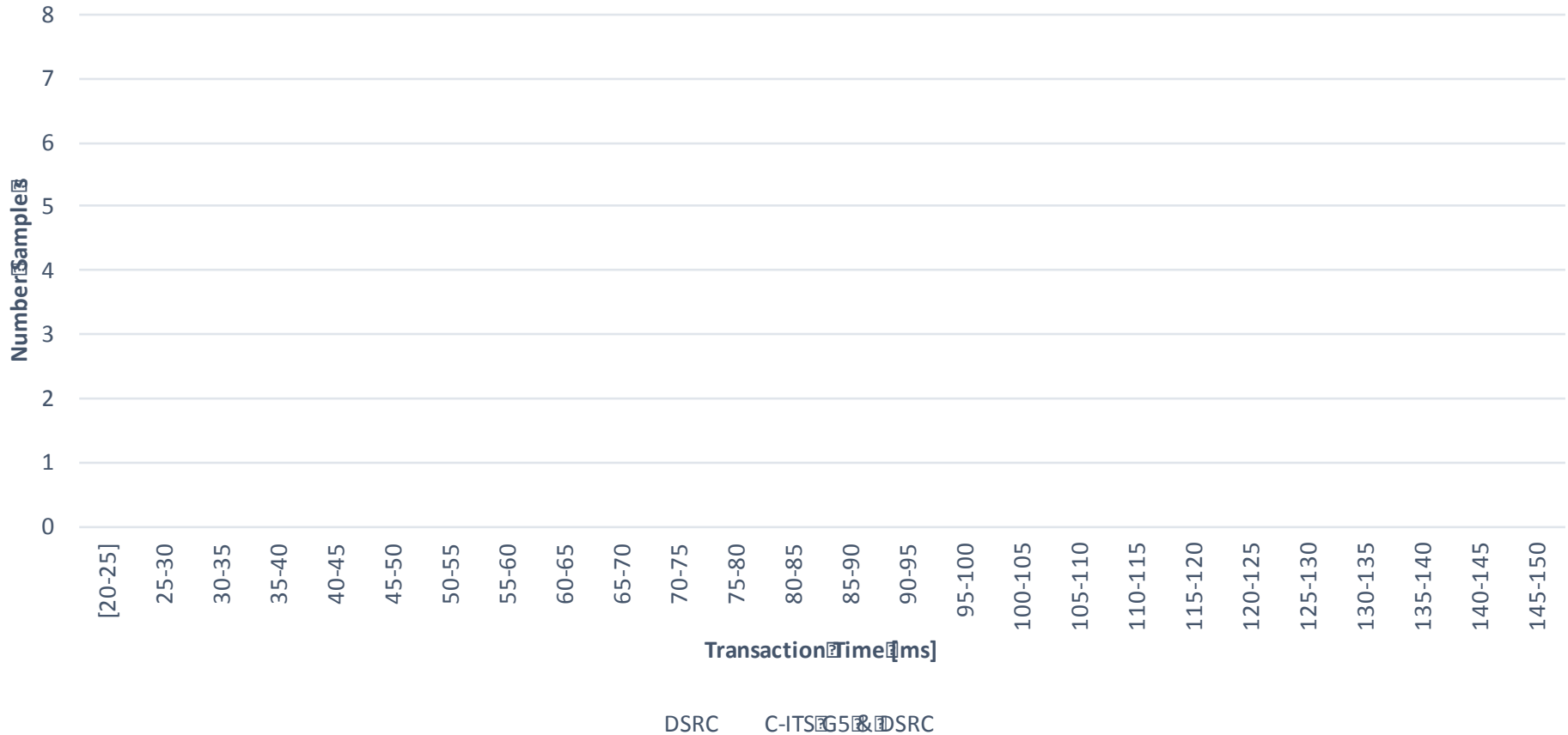


C-ITS-G5 & DSRC

## ITS-G5 & DSRC

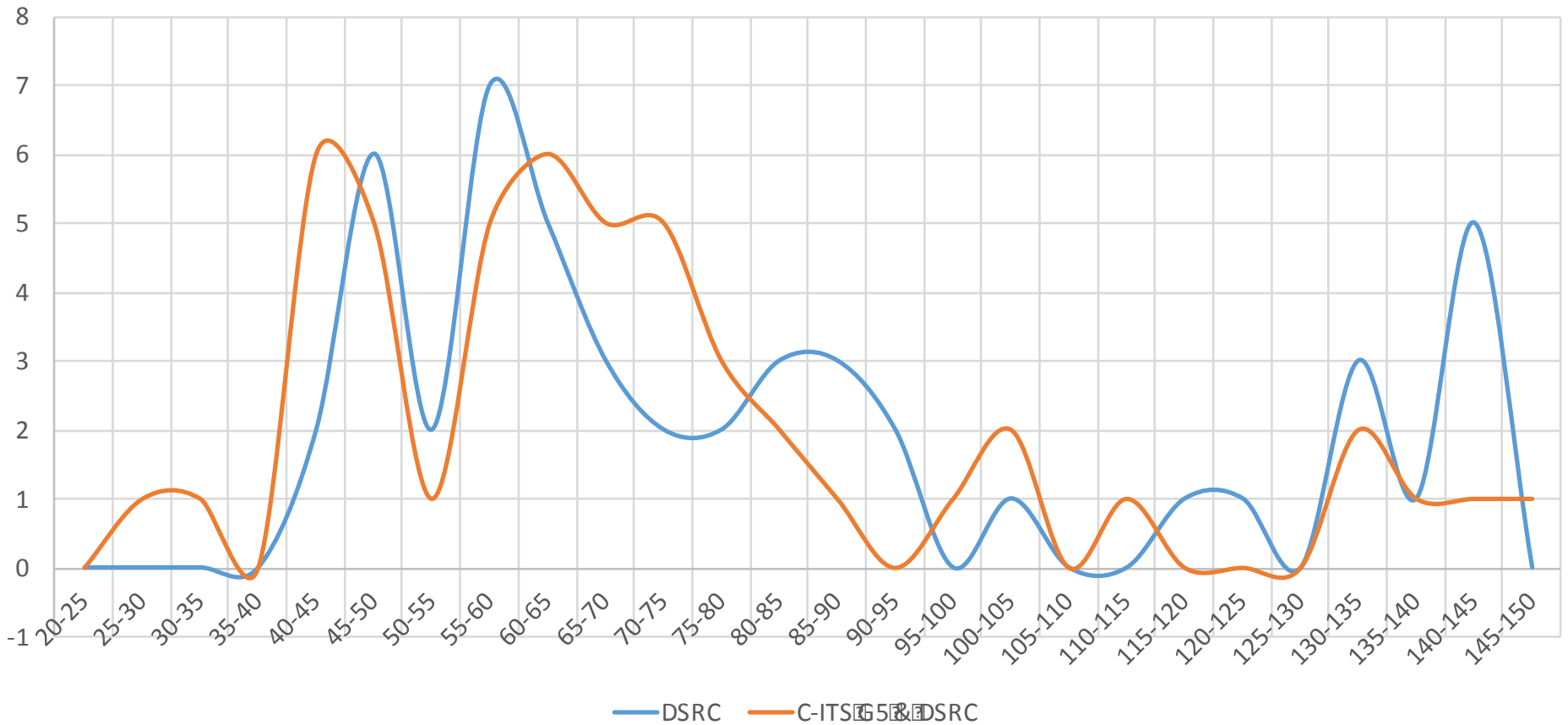
## 2ND MEASURE OF PERFORMANCE

# TRANSACTIONS TIME



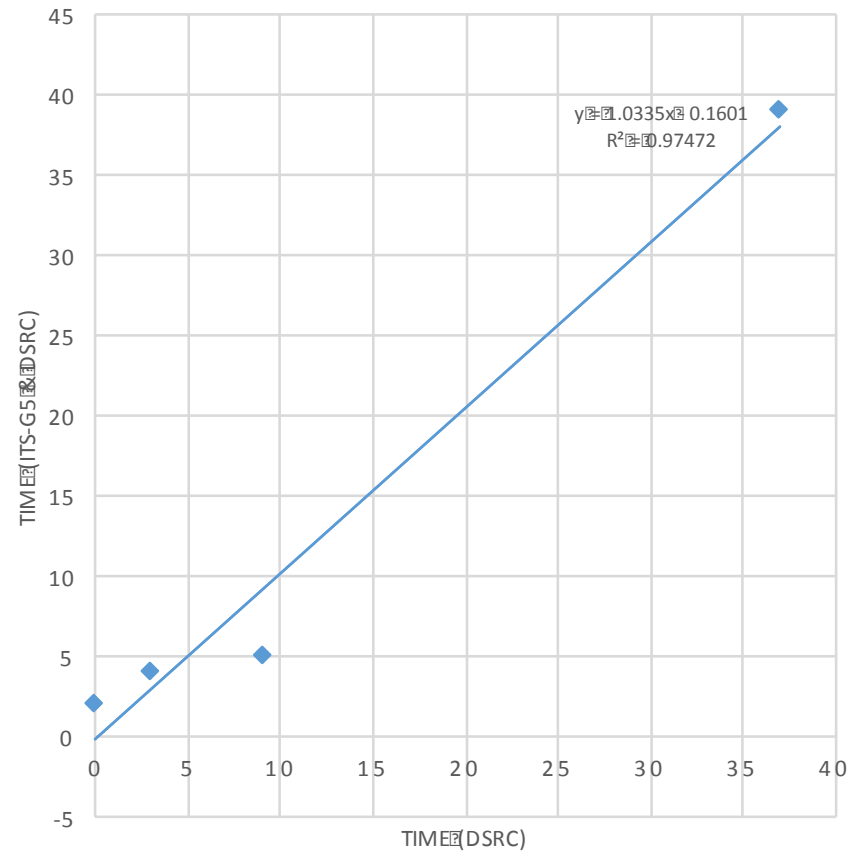
EN15509 DSRC transaction time similar

# DSRC TRANSACTION TIME VARIATION



Similar transaction time distribution

# CORRELATION COEFFICIENT



Transaction time intervals strongly related

# NEXT STEPS

- **Dynamic Tests**
  - Others channels, duty cycles
  - More C-ITS G5 on at the same time
- **Static Tests**
  - Different distances to the DSRC RSU
  - Different channels, duty cycles
- Test the interference of the ITS-G5 equipment in the DSRC OBUs, by validating the change to its operating status

# CONCLUSIONS

1. NO interference detected for DSRC transaction in preliminary tests
2. Complementary tests have to be performed to vary channels and duty cycles
3. Collaboration with other study groups (e.g. ASFA) is essential to validate methodologies and results