

Road Drive Patterns of EV

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Study content

◎ What is the adequate sound levels of the AVAS?

1. Human detection
2. Compare to ICEV

GRB Proposal for guidelines

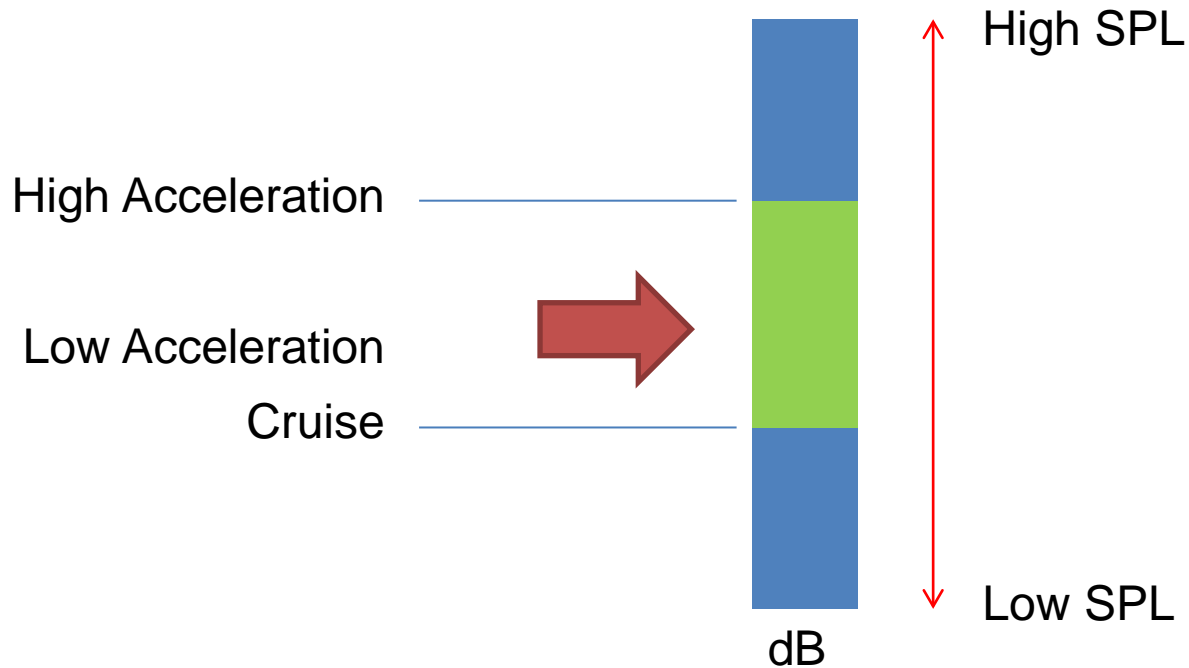
3. Sound type and volume

(c) The sound volume of the AVAS should not exceed the volumes generated by passenger cars, trucks and other vehicles powered exclusively by an internal combustion engine and running at a speed of 20 km/h in their **practical uses**.

3. Others

Applicability of findings

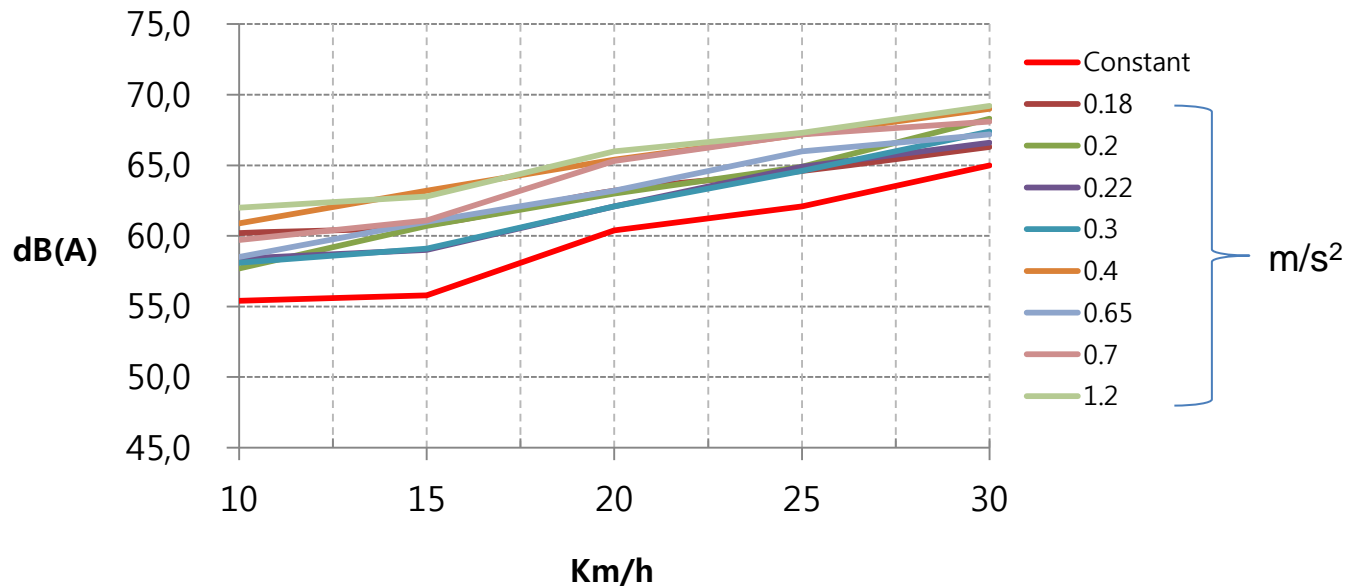
◎ Sound level of ICEV in practical uses



It is important to determine which driving status we use.
But, the test have be done only in cruise mode with ICEV.
Will the SPL in cruise be sufficient?

Last study(2nd meeting)

◎ Graph according to acceleration



“Not only cruise should be considered but also acceleration”.

Why should acceleration be considered?



Research on the EV

◎ Research contents



Contents	List
Road operation monitoring	Operating conditions, Road, Weak point, conditions and so on
Safety assessment	Electricity safety during charging
	Safety of high voltage electricity system
	Safety of Storage battery
	Rate of fuel consumption
	Safety of online EV
	System power
	QRTV
	Assessment of running ability
	Running distance at one charging
	General characteristic of EV
	Grade ability, Headlamp and so on

Period : 2010~2012

Expense : 2.7 million dollars

Research of road operation monitoring on the EV

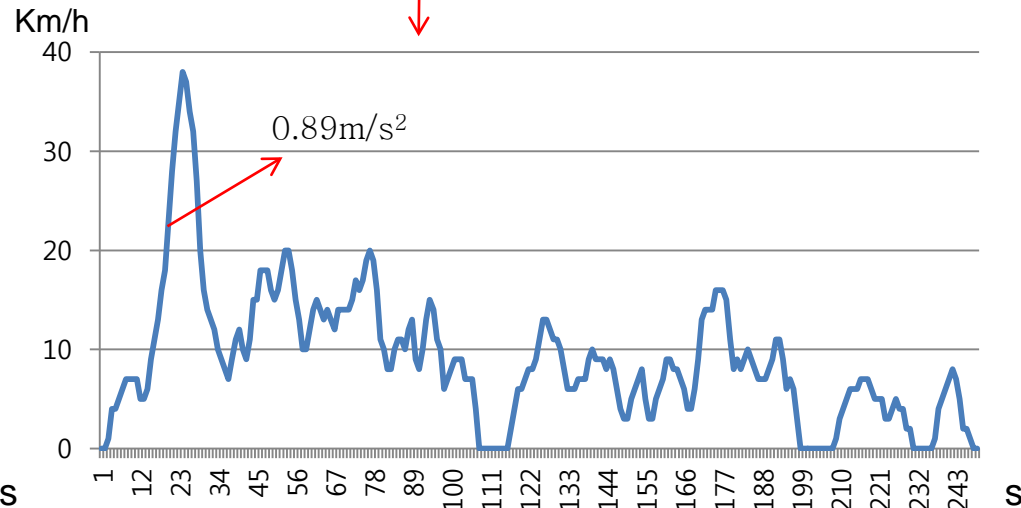
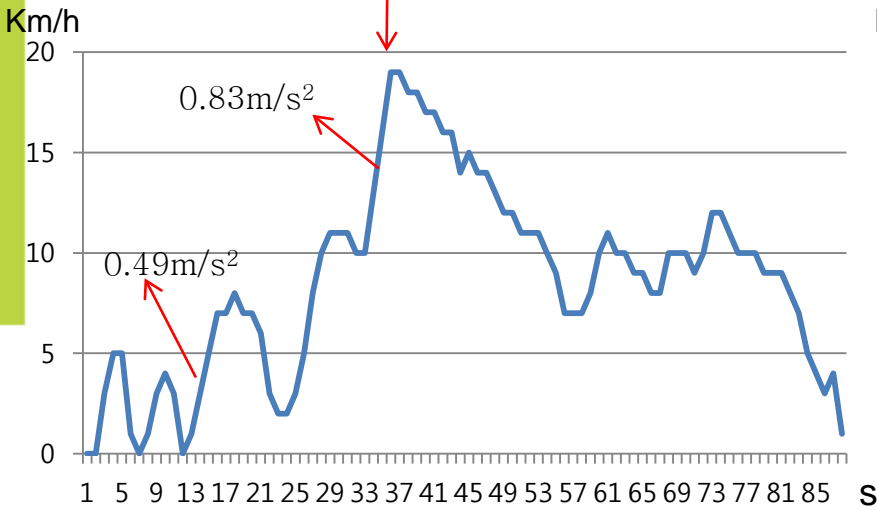
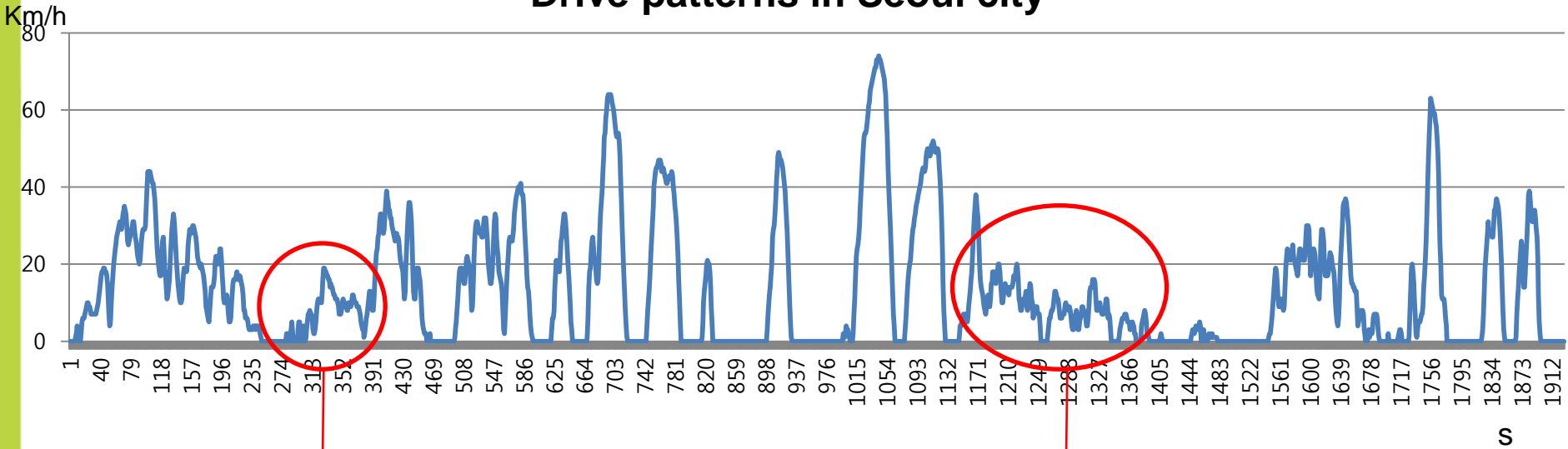
◎ City and driving days

Vehicle	city	Driving days
Blueon	Seoul	259
	Ansan	304
	Sangju	134
	Whaseong	20
	Jeju	226
Ray	Suwon	165
	Whaseong	19
SM3	Daegu	67

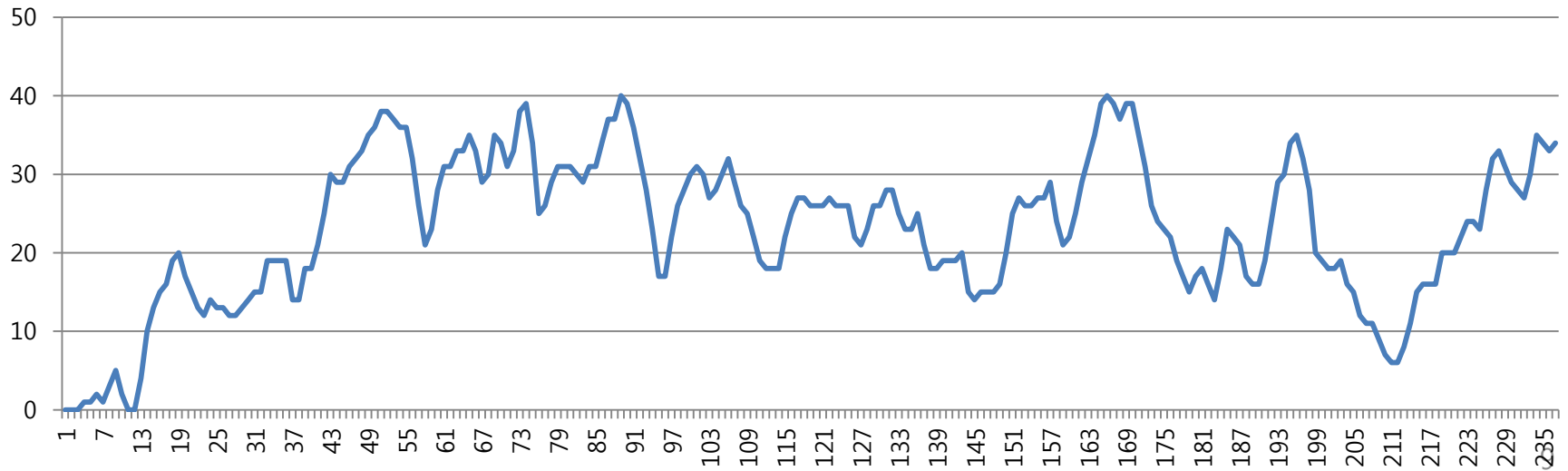
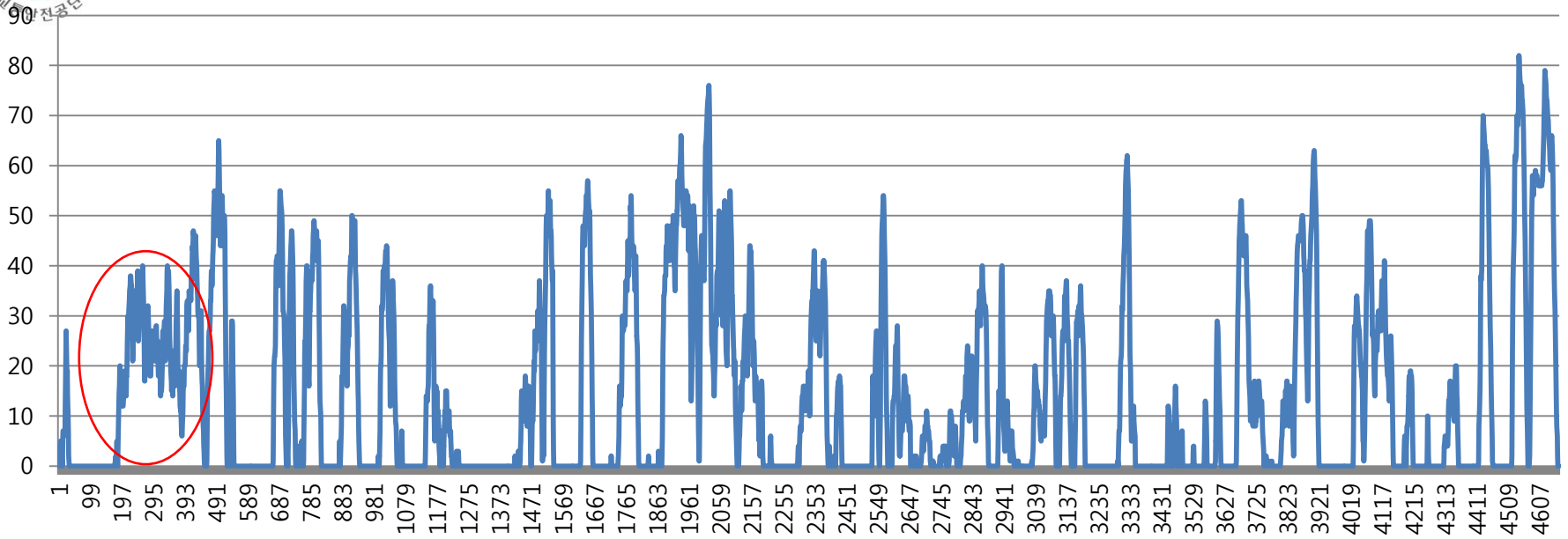
Total : 1,194 days

Drive patterns(sample)

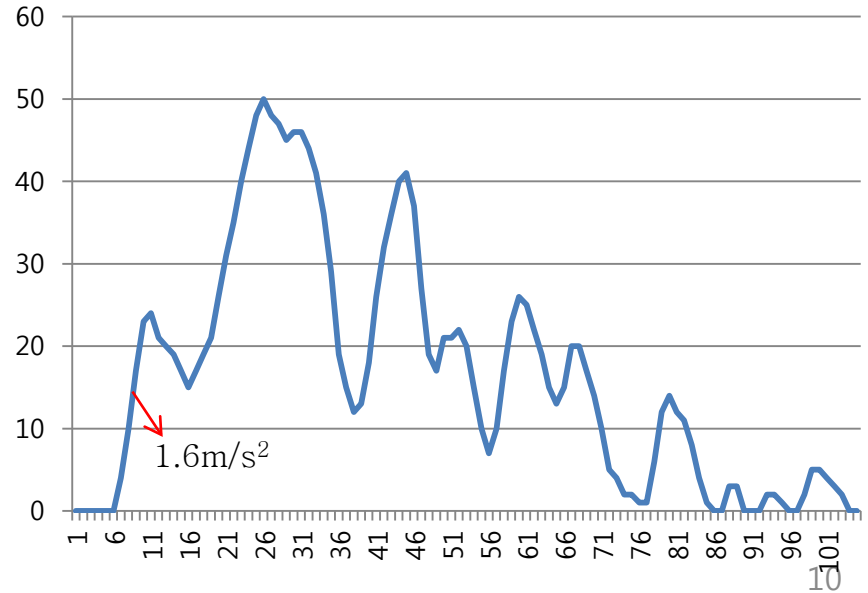
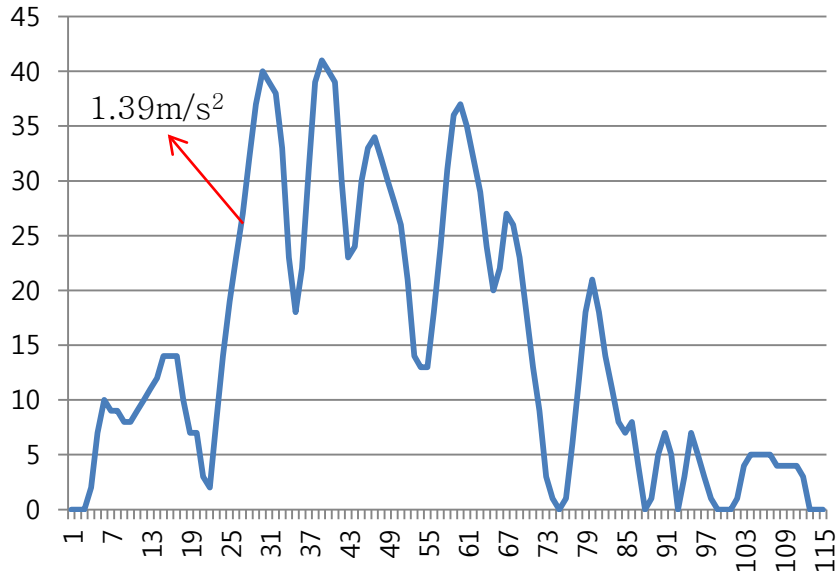
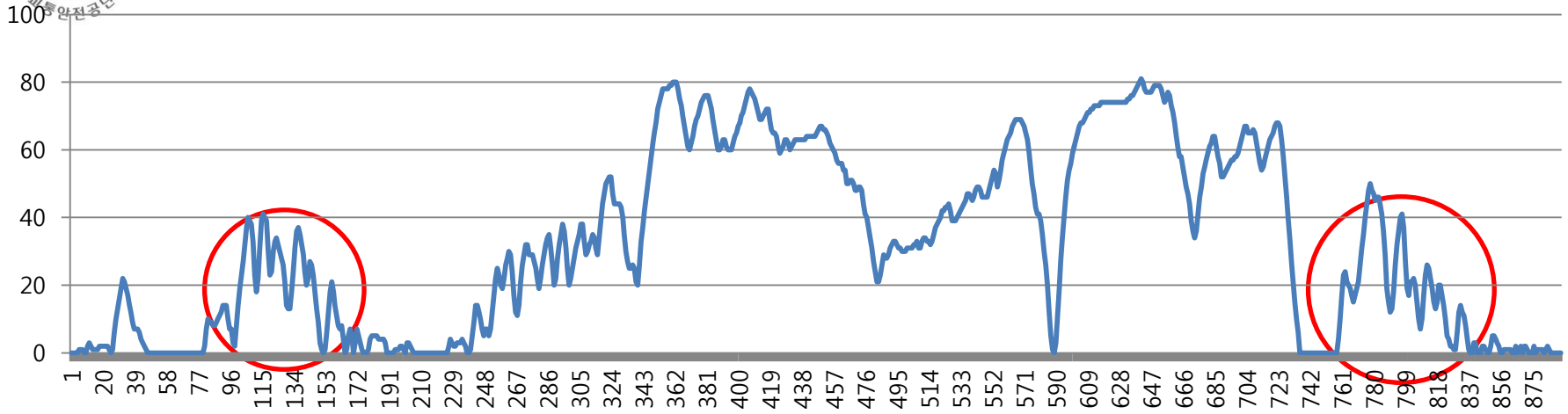
Drive patterns in Seoul city



Drive patterns in Seoul city

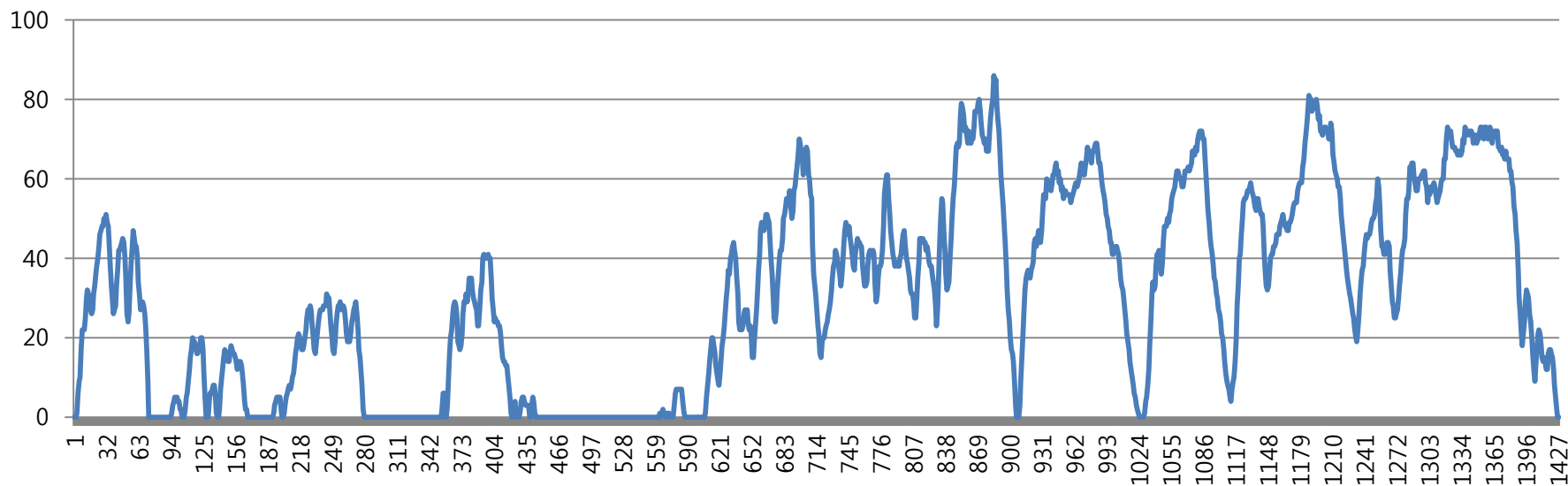
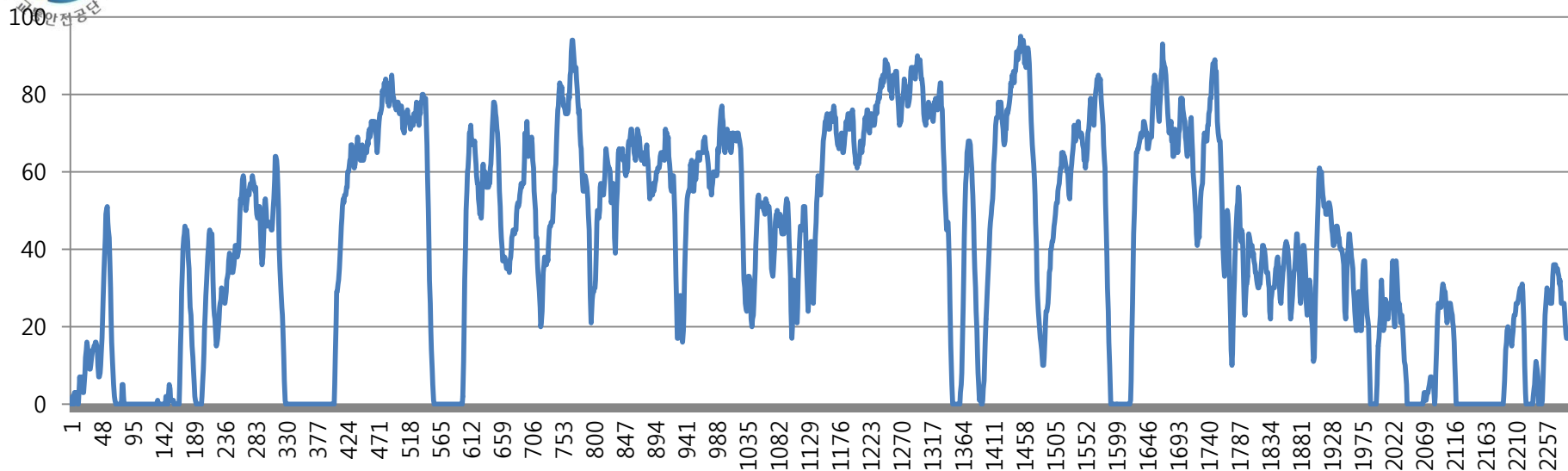


Drive patterns in Daegu city





Drive patterns in Whaseong city





Analysis

◎ Patterns

1. Instantaneous acceleration or deceleration occur continuously in actual road driving.
2. It is hard to see cruise drive patterns especially in low speed.
3. Also, it is not easy to maintain constant speed in low speed.

Conclusion

1. Many transient drive patterns are typical for real traffic situation.
2. Actually, it is hard to maintain constant speed within a low velocity.
3. We have to determine the reference driving condition either minimum level compared to ICEV or the real traffic sound level of ICEV.
4. The generated sound during cruise is close to minimum.
5. Therefore, the SPL should increase if we consider acceleration.

Thank you
for your attention!

