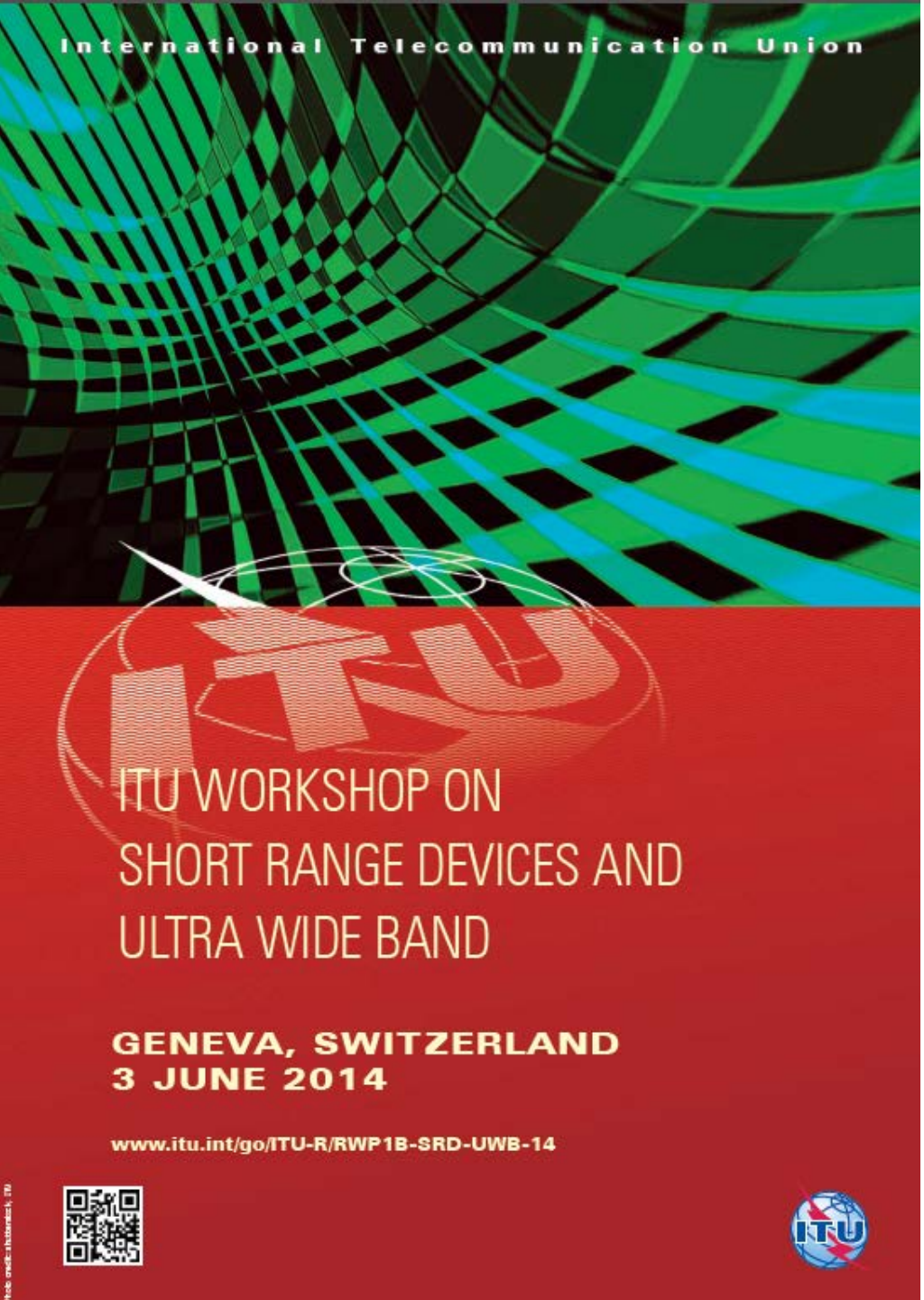

ITU WORKSHOP on
SHORT RANGE DEVICES (SRDs)
AND ULTRA WIDE BAND (UWB)
(Geneva, 3 June 2014*)

Roles of SRD Spectrum Harmonization in the development of WPT and ITS

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Korea (Republic of)

** in conjunction with the June 2014 block of meetings of ITU-R Study Group 1*

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- Wireless Power Transfer
  - Concept & Applications of WPT
  - Frequency Trend for WPT
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  - WAVE System
  - Road Radar System
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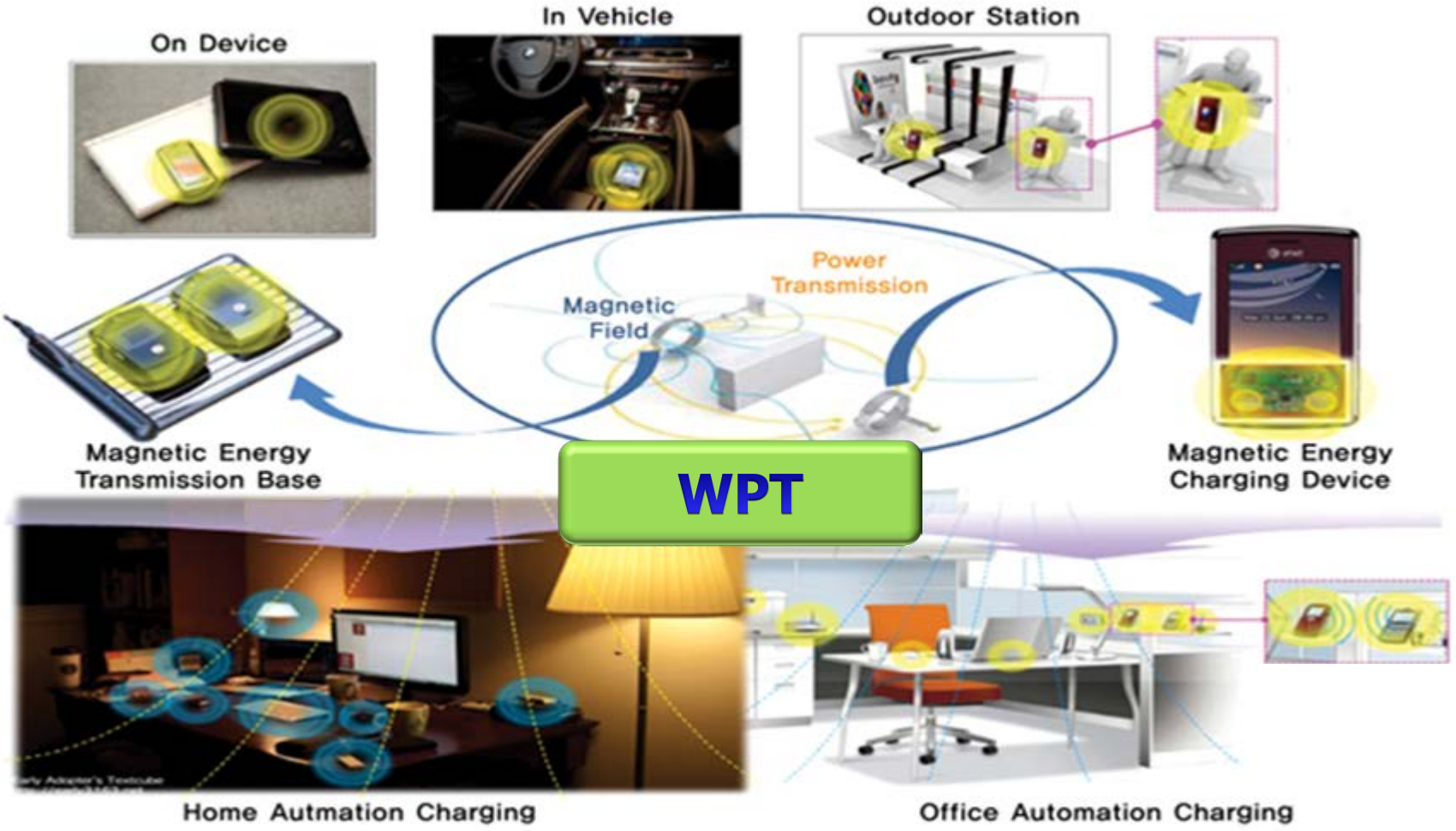
Wireless Power Transfer (WPT)

Concept & Applications of WPT

Concept and Application of WPT



Frequency Trend for WPT

Frequency Trend for WPT

Frequency (kHz)	19 – 21	59 – 61	79 – 90	100 – 205	277 – 357	6765 – 6795
ITU						
Europe				EV Mobile/Portable		
USA			EV	Mobile/Portable	Mobile/ Portable	
Japan			EV	Mobile/Portable		
Korea	EV	EV		Mobile/Portable		
						ISM

Regulations of WPT

EMC

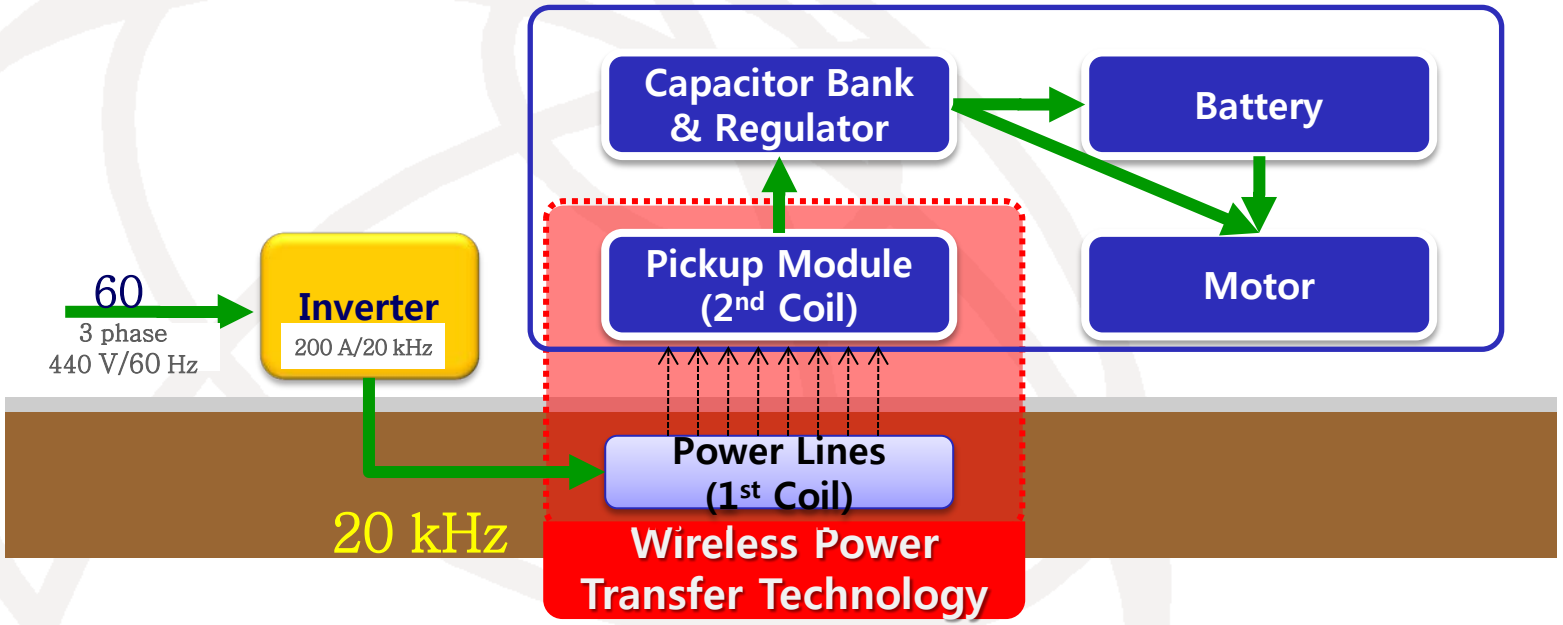
- **Preparation of EMI criteria of WPT Device(lower than 10W), June 2013**
- **6.78 MHz was assigned , Dec. 2013**
- **Technical Standard was established for WPT Devices (20㎑/60㎑, 100~210㎑, 6.765~6.795㎒) , Dec. 2013**
- **Preparation of EMI criteria of WPT Device (On Line Electric Vehicle; OLEV, higher than 50 kW) , Jan. 2014**

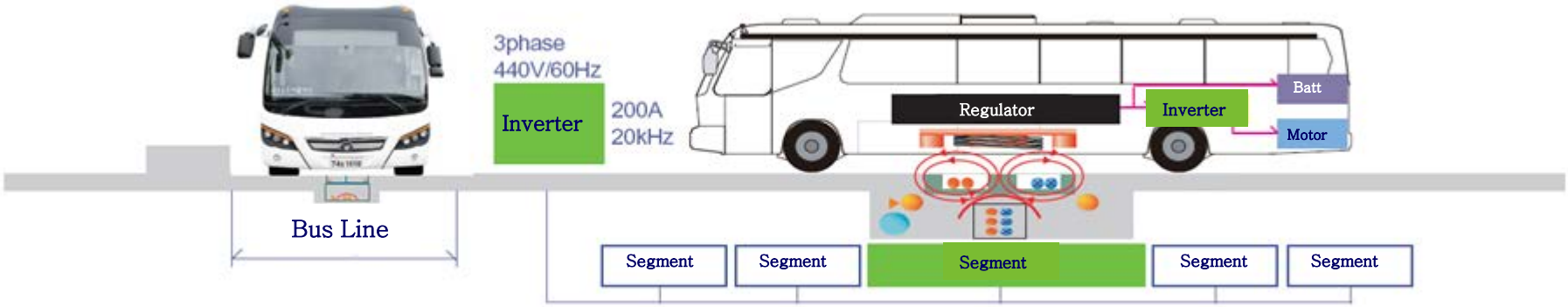
EMF

- Measurement method and Technical Standard are under study

Technology of OLEVE

Technology of On Line Electrical Vehicle





Demonstration Project of WPT

❖ Wireless Charging Electrical BUS (20 kHz)

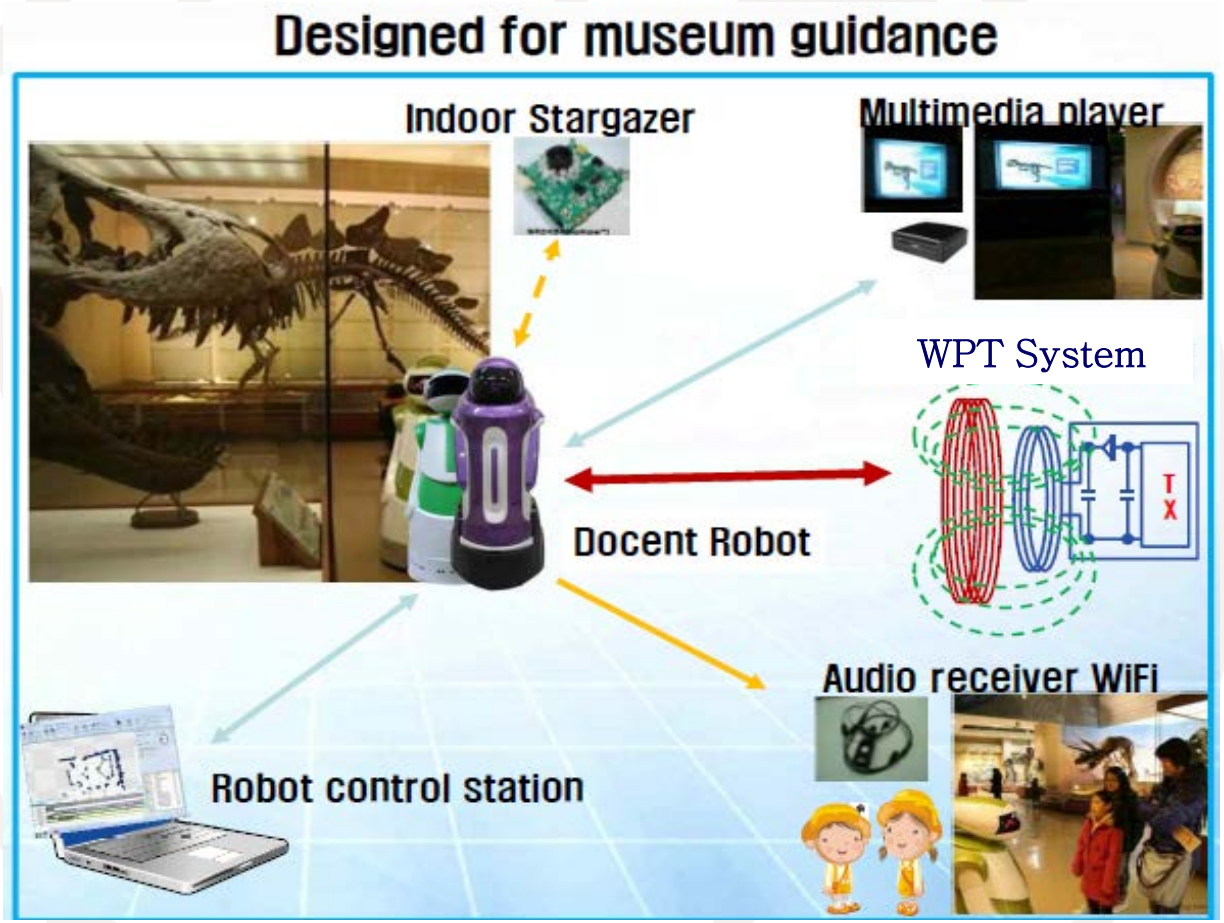
Seoul (2011 ~)

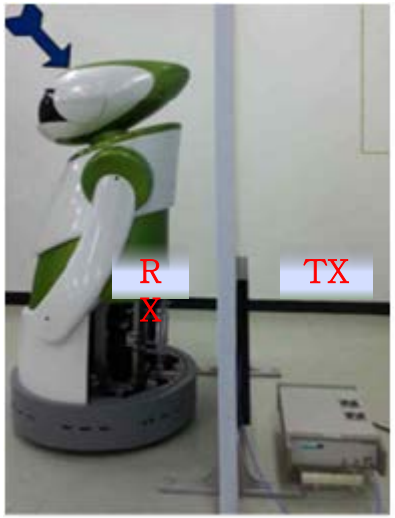
KAIST (2012 ~)

Koomi City [2013 ~)

Demonstration Project of WPT

❖ Wireless Charging Guidance Robot (1.7 MHz)



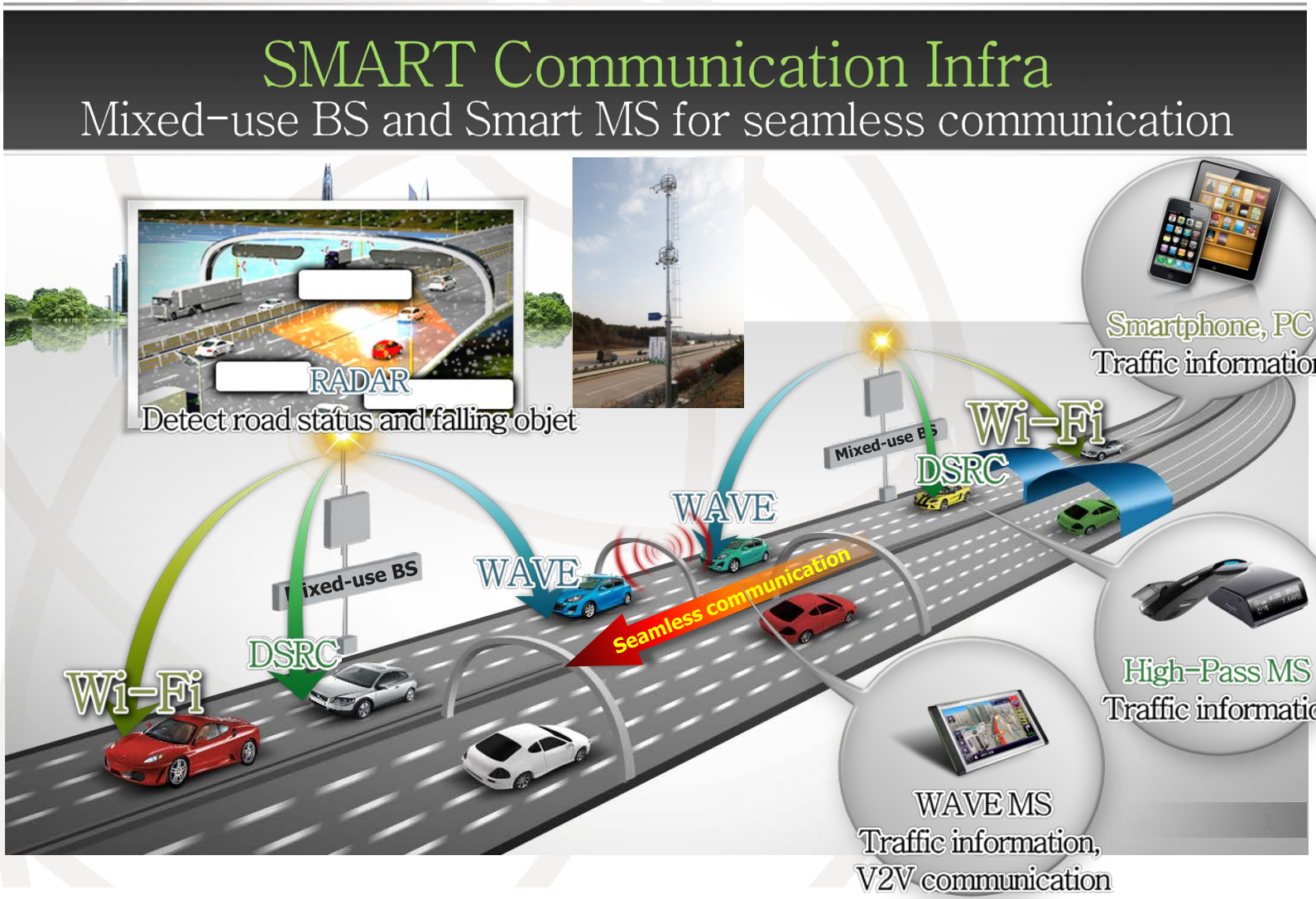


100W, 50cm, 80%

Cooperative Intelligent Transport System (C-ITS)

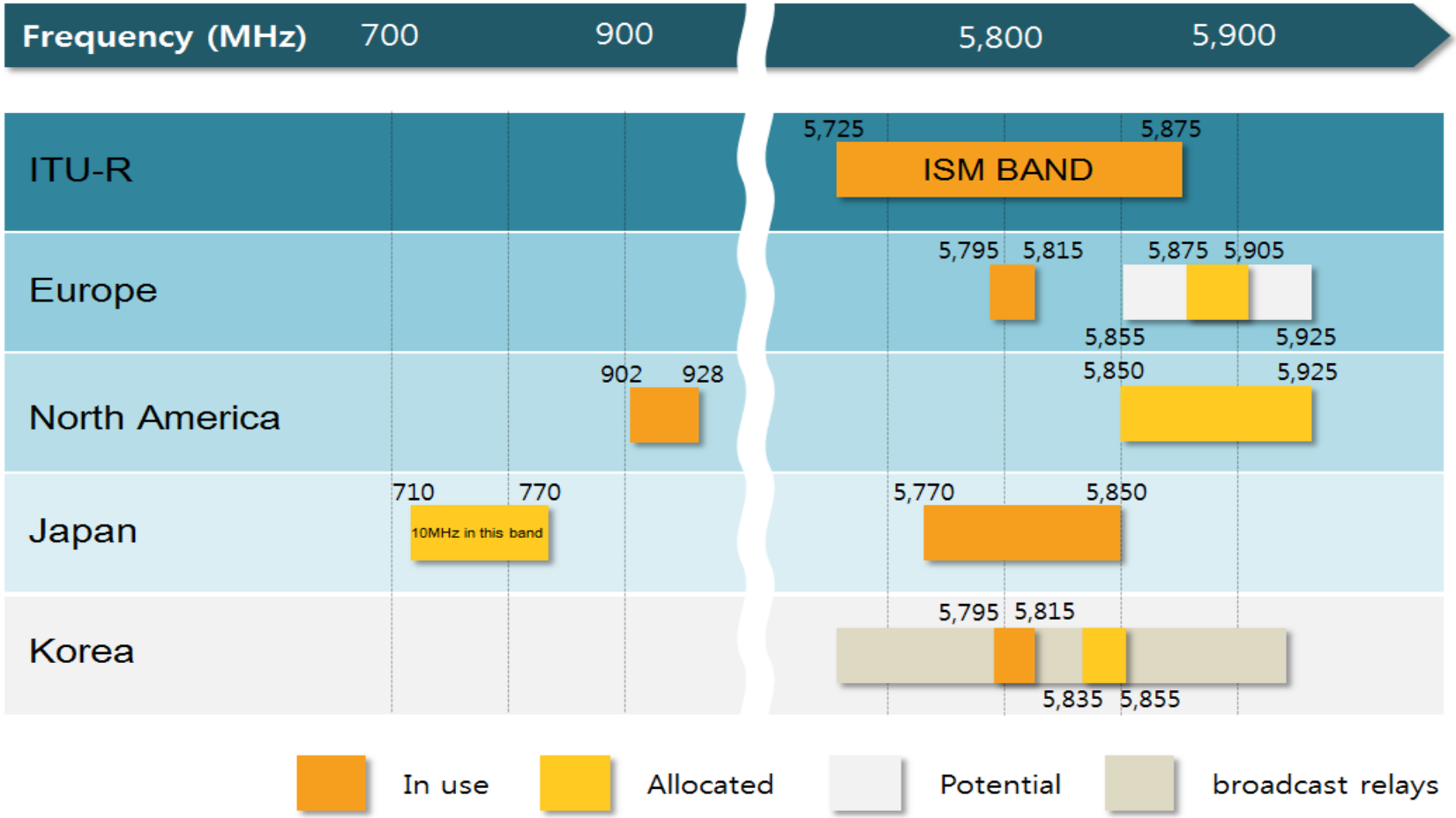
Concept of Next Generation ITS

Basic configuration



Frequency Trend for C-ITS

❖ Worldwide Frequency Trend for C-ITS



WAVE Standard : 5.855~5.925GHz

Radar Frequency for ITS

❖ Worldwide Radar Frequency for ITS

Frequency	Korea	USA	Europe	Japan
24 ㎓ band	24.05~24.25	24.05~24.25	24.05~24.25	24.05~24.25
26 ㎓ band	24.25~26.65	-	21.65~26.65	21.65~26.65
77 ㎓ band	76~77	76~77	76~77	76.5~77.0
79 ㎓ band	-	-	77~81	-

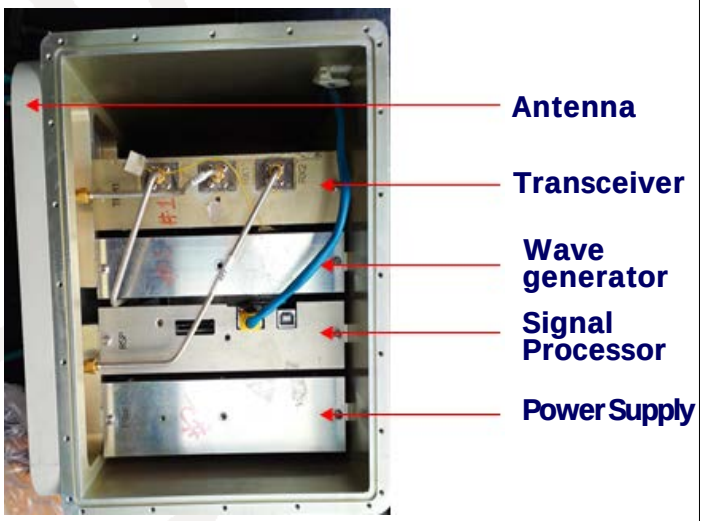
WAVE System

❖ Development of WAVE System

Parameters	Requirement	Product
Frequency	5855~5925㎒	  
Power	200mW below	
Bandwidth	70㎒(7Ch)	
Moving Velocity	Max. 200km/h	
Propagation distance	Max.1km	
Data rate	Normal12Mbps, Max. 27Mbps	
Packet Latency	Less than 100 msec	
Communication function	(V2V), (V2I)	

Road Radar System

❖ Development of Road Radar System

Parameters	Requirement	Developed Equipment
Frequency	34.275~34.875㎓	
Power	200mW	
Occupied Bandwidth	300㎒	
Radar Type	Pulsed Doppler	
Effective detection range	1km	
Beamwidth	Horizontal 3° / Vertical 10°	
Antenna	Patch	
Detection Object	30cm above	

Conclusions

❖ Worldwide Harmonization of Spectrum and Technical Standardization for WPT

- ➢ **As applications of WPT are expected to increase like license-exempt equipment, global technical standardization is required**
- ➢ **Hot issues of WPT such as EMC, EMF and frequency harmonization need to be managed by International Standardization Organization**

❖ Worldwide Harmonization of Next Generation ITS

- ➢ Worldwide frequency harmonization and technical standardization should be reviewed for Next generation ITS services