



**DECISION ISSUED BY THE  
INFO-COMMUNICATIONS MEDIA DEVELOPMENT AUTHORITY**

**TECHNICAL SPECIFICATION FOR DEDICATED SHORT-RANGE  
COMMUNICATIONS IN INTELLIGENT TRANSPORT SYSTEMS  
(OPERATING IN THE 5.9 GHZ FREQUENCY BAND)**

**6 October 2016**

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FOR DEDICATED SHORT-RANGE COMMUNICATIONS IN INTELLIGENT  
TRANSPORT SYSTEMS  
(OPERATING IN THE 5.9 GHZ FREQUENCY BAND)**

**INTRODUCTION**

1. On 21 December 2015, the former IDA issued a public consultation on the proposed regulatory framework and standards for Intelligent Transport Systems (“ITS”) in the 5.9 GHz (5.875 – 5.925 GHz) frequency band.
2. By the close of the public consultation on 3 February 2016, the former IDA received comments from Cisco Systems (USA) Pte Ltd, Singapore Telecommunications Ltd and StarHub Mobile Pte Ltd (referred to as “Respondents”).
3. IMDA thanks the Respondents for their feedback. IMDA has reviewed the comments, and this document discusses the issues raised relating to the final draft IMDA TS DSRC, sets out IMDA’s decision and summarises any changes made to the final draft IMDA TS DSRC as a result.

**BACKGROUND**

4. Globally, the 5.9 GHz frequency band has been identified for ITS usage. Between 2009 and 2014, Dedicated Short-Range Communications (“DSRC”) for ITS have been developed in the United States based on the IEEE<sup>1</sup> Wireless Access Vehicular Environment (“WAVE”) model whilst in Europe, ITS has been centred on the concept of Communications Access for Land Mobiles (“CALM”), based on the OSI<sup>2</sup> reference model. In June/July 2014, the former IDA invited industry players and interested government agencies to form a Working Group Task Force (“WG TF”) for the Telecommunications Standards Advisory Committee (“TSAC”) to look into areas of ITS standardisation for Singapore.
5. With contributions from these stakeholders, the work for establishing an IMDA Technical Specification for Dedicated Short Range Communications in Intelligent Transport Systems (“final IMDA TS DSRC”) has been completed, as part of TSAC’s effort in envisioning future transportation systems for the smart nation. This work was accomplished in collaboration with the Land Transport Authority (“LTA”) to help address the compatibility of future DSRC devices and systems. IMDA will continue to monitor the global technology and standards development for ITS, and will update the technical specifications together with the LTA and industry when necessary to ensure the relevancy of the specifications.

**IMDA RESPONSES TO COMMENTS RECEIVED ON THE STANDARDS PROPOSED IN THE DRAFT IDA TS DSRC**

6. One Respondent indicated support for IMDA’s adoption of DSRC in ITS, based on the 5.9 GHz IEEE 802.11p/1609 WAVE standards, as recommended by the TSAC WG TF for ITS standardisation. Industry players largely perceive that the

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<sup>1</sup> IEEE – Institute of Electrical and Electronic Engineers

<sup>2</sup> OSI – Open System Interconnection

IEEE development of DSRC in the WAVE is more mature, and initiatives have been ongoing to further enhance the coexistence of DSRC systems with other devices operating in the 5.9 GHz band.

7. IMDA assures Respondents that the TSAC ITS standardisation programme, which is still ongoing, will continue to be aligned with the international harmonisation effort that has begun in 2012 with the formation of the EU-US ITS Task Force (comprising ETSI<sup>3</sup>, IEEE and ISO<sup>4</sup>). TSAC is tracking this global ITS standardisation effort closely, and will conduct regular reviews to ensure that the ITS standards adopted are up-to-date and relevant for Singapore's implementation of ITS.
8. Another Respondent raised concerns on the provision of higher power transmission intended for covering communication range of 1 km (defined for DSRC devices of power class D in the final draft IDA TS DSRC). The Respondent was concerned that such devices may pose risk of interference when operating in close proximity to existing fixed satellite services. IMDA clarifies that the scenario of DSRC interfering with satellite uplink services in the 5.9 GHz frequency band is unlikely, as these satellite services are provisioned with radio frequency transmission at very high power level and directed upwards to intended satellites in space. Nevertheless, for avoidance of doubt, a note restricting the use of class D DSRC devices to public safety services will be added to the final IMDA TS DSRC.

## **SUMMARY OF IMDA'S DECISION**

9. IMDA has included the necessary clarification to the IMDA TS DSRC, released on 6 October 2016. The IMDA TS DSRC will take effect on 1 October 2017 to allow sufficient time for device manufacturers to make the necessary adjustments to comply with the requirements setup in the Specification.
10. For consistency and clarity in the adoption of the suite of IEEE WAVE standards, ITS Service Providers will provide Protocol Implementation Conformance Statements ("PICS") for any implementation(s) of ITS using DSRC for vendors' conformity assessment in an Annex to the published IMDA TS DSRC. PICS will indicate features supported by the implementation of ITS-DSRC based on the IEEE WAVE standards, which vendors may use as checklists for conformity assessment of their DSRC devices. The IMDA TS DSRC has included some templates of the required PICS:
  - a. PICS for an implementation of the IEEE 802.11-2012 standard (WLAN Media Access Control and Physical layer)
  - b. PICS for an implementation of the IEEE 1609.4 standard (WAVE Media Access Control)
  - c. PICS for an implementation of the IEEE 1609.3 standard (Logical Link Control, IPv6/Transport Control Protocol and WAVE Short Message Protocol)

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<sup>3</sup> ETSI – European Telecommunications Standards Institute

<sup>4</sup> ISO – International Organization for Standardization

- d. PICS for an implementation of the IEEE 1609.2 standard (WAVE Security Services)