

Notification of the National Telecommunications Commission

On Technical Standards for Telecommunication Equipment

Re: Vehicle Radar Equipment in the Frequency Range 76 - 77 GHz

Whereas the National Telecommunications Commission has granted permission for the general public to use vehicle radar equipment in the frequency range 76 - 77 GHz in response to the need to use radiocommunication equipment for the benefits and safety of life and property, it is thereby necessary to set out technical standards in keeping pace with current technological circumstances so that the telecommunication equipment would objectively meet technical requirements, and be able to operate without causing interference, as well as to ensure consumer protection, for the benefits of the overall telecommunication industry and in order that the national technical standards are harmonized with international standards.

Pursuant to Section 29 (4) of the Radiocommunications Act B.E. 2498 (1955), and its amendments, together with Section 78 paragraph one of the Act on the Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunication Services B.E. 2543 (2000), the National Telecommunications Commission at its Meeting No. 41/2549 on 29 November B.E. 2549 (2006), approved for the issuance of the Notification on Technical Standards for Telecommunication Equipment regarding Vehicle Radar Equipment in the Frequency Range 76 - 77 GHz, as detailed in the Standard No. NTC TS 1011-2549 appended hereto.

This Notification shall come into force from the date of its publication in the Government Gazette.

Issued on the 28th day of December B.E. 2549 (2006)

General Choochart Promphrasid

Chairman of the National Telecommunications Commission



Technical Standards for Telecommunication Equipment

NTC TS 1011 – 2549

Vehicle Radar Equipment in the Frequency Range 76 – 77 GHz

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**Technical Standards for Telecommunication Equipment:
Vehicle Radar Equipment in the Frequency Range 76 - 77 GHz**

1. Scope

This technical standard specifies the minimum technical characteristics for vehicle radar equipment in the frequency range 76 - 77 GHz, using fixed antenna or steerable antenna.

2. Technical Requirements

2.1 Radio frequency requirements

The radio frequency requirements for vehicle radar equipment in the frequency range 76 - 77 GHz shall be as follows:

2.1.1 Transmitting power

The transmit power of vehicle radar equipment in the frequency range 76 - 77 GHz shall not exceed 10 watts or 40 dBm (peak power e.i.r.p.).

2.1.2 Spurious emissions and out-of-band emissions

The power of spurious emissions and out-of-band emissions outside the frequency range 76 - 77 GHz from the transmitters of the vehicle radar equipment shall comply with one or more of the following standards:

- (1) Code of Federal Regulations (USA); Title 47 Telecommunication; Chapter 1
Federal Communications Commission; Part 15 Radio Frequency Devices;
Subpart C - Intentional Radiators; § 15.253 Operation within the bands 46.7 -
46.9 GHz and 76.0 - 77.0 GHz (§ 15.253 (c) - *Emissions outside the operating
band*)

Frequency range	Power density
< 40 GHz	As per FCC § 15.209 limits
40 - 200 GHz	600 pW/cm ² @ 3 m (forward-looking) 300 pW/cm ² @ 3 m (side-looking & rear-looking)
200 - 231 GHz	1000 pW/cm ² @ 3 m

- (2) EN 301 091-1 (Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Radar equipment operating in the 76 GHz to 77 GHz range; Part 1: Technical characteristics and test methods for radar equipment operating in the 76 GHz to 77 GHz range) - *Clauses 7.3.4 & 7.4.4*

Frequency range	Power density
30 - 1000 MHz	<p>- 36 dBm/kHz</p> <p>- 54 dBm/kHz</p> <p><i>(for the frequency ranges of 47 - 74 / 87.5 - 118 / 174 - 230 / 470 - 862 MHz only)</i></p>
1 - 100 GHz	<p>- 30 dBm/MHz</p> <p>0 dBm/MHz</p> <p><i>(for the frequency ranges of 73.5 - 76 GHz and 77 - 79.5 GHz only)</i></p>

2.2 Electrical safety requirements

The electrical safety requirements for vehicle radar equipment in the frequency range 76 - 77 GHz shall comply with one or more of the following standards:

2.2.1 IEC 60950 - 1 : Information technology equipment – Safety - Part 1: General requirements

2.2.2 TISI 1561 - 2548 : Information technology equipment – Safety: General requirements

2.3 Radiation exposure requirements

The vehicle radar equipment in the frequency range 76 - 77 GHz shall be demonstrated that it complies with the radiation exposure requirements specified by the National Telecommunications Commission, or one or more of the following standards:

2.3.1 ANSI/IEEE C95.1 : IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz

2.3.2 ICNIRP Guidelines : Guidelines for Limiting Exposure to Time-Varying Electro,
Magnetic, and Electromagnetic Fields (up to 300 GHz)

2.3.3 CENELEC EN 50371: Generic standard to demonstrate the compliance of low power
electronic and electrical apparatus with the basic restrictions
related to human exposure to electromagnetic fields (10 MHz -
300 GHz) - General public
