

## Chapter II of “PERDIRJEN SDPPI No. 3 Tahun 2020”

### “Technical Requirements of Automotive Short Range Radar System”

#### A. GENERAL REQUIREMENTS

##### 1. POWER SUPPLY

Automotive Short Range Radar Telecommunication device is supplied by DC Power.

##### 2. NON-IONIZING RADIATION REQUIREMENT

Non-Ionizing radiation of automotive short range radar system is based on International Commission on Non-Ionizing Radiation Protection (ICNIRP) guideline, as followed:

Table 1. EMF Exposure Limit

Radio Frequency Range	E-Field Strength ( $V M^{-1}$ )	H-Field Strength ( $A M^{-1}$ )	B-Field ( $\mu T$ )	Equivalent Plane Wave Density Seq ( $W M^{-2}$ )
2-300 GHz	61	0.16	0.20	10

##### 3. EMC REQUIREMENTS

Automotive Short Range Radar System equipment should fulfill SNI ISO/IEC CISPR 32: 2018 or other Equal electromagnetic compatibility standard.

Emission measurement has to be conducted to Automotive Short Range Radar System equipment if possible:

###### A. Equipment that is used in residential area:

- i. Conducted emission at DC power port should be complied with class A requirement specified on table A.9 based on clause 4 from SNI ISO/IEC CISPR 32 – 2018.
- ii. Conducted emission at network cable should comply with class B requirements specified in table A.12 based on clause 4 from SNI ISO/IEC CISPR 32-2018.

B. Equipment that is used in non-residential area:

- i. Conducted emission at DC power port should be complied with class A requirement specified on table A.9 based on clause 4 from SNI ISO/IEC CISPR 32 – 2018.
- ii. Conducted emission at network cable should comply with class A requirements specified in table A.11 based on clause 4 from SNI ISO/IEC CISPR 32-2018.

## B. CONFORMITY REQUIREMENTS

Every Automotive Short Range Radar System equipment is mandatory to fulfill main characteristics specified on table 2, as followed.

### 1. OUTDOOR WLAN DEVICE

Table 2. Transmitter Conformity Requirements of Automotive Short Range Radar System equipment (Reference: ETSI EN 301 091)

No	Parameter	Standard
1	Operating Frequency Range	76 – 77 GHz
2	Peak Power (EIRP)	$\leq 55$ dBm
3	Mean Power (EIRP)	$\leq 50$ dBm
4	Bandwidth	$\leq 1$ GHz
5	Unwanted Emission in the out of band domain	Based on table 3
6	Unwanted Emission in the Spurious domain	Based on Table 4

Table 3. Limits for out-of-band radiation (Reference: ETSI EN 301 091)

Frequency Range (GHz)	RMS mean power spectral density (dBm/MHz)
$F_1 \leq f < f_L$	0
$f_H < f \leq F_2$	0

Note:

1. The values  $F_L$  and  $F_H$  are the result of the operating frequency range conformance test, see ETSI EN 301 091 clause 4.3.1.4.
2. The values  $F_1$  and  $F_2$  are calculated as in ETSI EN 303 396, clause 6.2.11

Table 4. Limit of the radiated spurious emission

Frequency Range (MHz)	Limit Values for Spurious radiation	Detector Type
47 to 74	-54 dBm (ERP)	Quasi-Peak
87,5 to 118	-54 dBm (ERP)	Quasi-Peak
174 to 230	-54 dBm (ERP)	Quasi-Peak
470 to 790	-54 dBm (ERP)	Quasi-Peak
Otherwise in band 30 to 1000	-36 dBm (ERP)	Quasi-Peak
$F > 1000$ to 300000 (see note)	-30 dBm (EIRP)	RMS

Note:

Measurement is only required up to 2<sup>nd</sup> harmonic of the fundamental frequency. In this case, the upper frequency limits up to which measurement are performed is 154 GHz