

**DEPARTMENT OF TELECOMMUNICATIONS  
TELECOMMUNICATION ENGINEERING CENTRE**



**CONSULTATION ON SAR LIMITS FOR RF DEVICES USED IN  
CLOSE PROXIMITY TO HUMAN BODY**

# **Consultation on SAR limits for wireless communication devices used in close proximity to human body**

Specific absorption rate (SAR) is a measure of the rate at which energy is absorbed by the human body when exposed to a radio frequency (RF) electromagnetic field. It is defined as the power absorbed per mass of tissue and has units of watts per kilogram (W/kg).

The main factors that influence how SAR limits are defined and measured are the possible usage of the device near the human body (like near the head, on the body, holding the device etc.) and distance of this usage from the body, and the output power of the RF device among others. Based on these factors, the SAR limits and the measurement methodologies are defined.

Globally, the practice for definition of SAR values with respect to RF devices includes prescribing SAR limits for head, body etc. with respect to RF devices being used in close proximity to the human body. The current regulation of Department of Telecommunications (DoT) prescribes the SAR limits for mobile phones and exposure limited to head and trunk.

With the proliferation of other RF emitting devices like Wi-Fi dongles, MRTS (Mobile Radio Trunking System) handsets, satellite handheld devices, IoT devices etc. which are used close to the body or by holding them, the consideration of SAR applicable to them becomes important.

In view of this, this consultation paper is being floated to solicit the inputs of stakeholders on following items:

1. What wireless communication devices need to be considered for defining SAR limits depending on their usage in proximity to the body and output power?
2. What are the applicable SAR limits followed globally for these devices?
3. What are the applicable SAR measurement standards followed globally for these devices?
4. What are the applicable distances for SAR measurement for these devices?

In the following Annexure-1, a table is provided in which some wireless communication devices have been categorized with applicable SAR limits, measurement standards and measurement distances. The values in the table are indicative and further inputs may be provided by the stakeholders. The stakeholders may populate the table as per global best practices and regulations followed worldwide. The categorization of devices in the table is

not exhaustive and if the stakeholders feel that more categories need to be added in the table, the same may be proposed with justifications. Also, if more parameters other than the parameters in table like applicability of SAR, SAR limits, measurement standards and distance of measurement need to be added then the same are welcome for inclusion in the table. It would be appreciable if the inputs proposed are backed with globally accepted best practices and literature.

DRAFT

**ANNEXURE-1**

Category of RF Device	Applicable SAR (Place ✓ mark if applicable)			Applicable SAR limits			Applicable SAR standards			Applicable SAR measurement distances		
	Localized SAR (Head & Trunk)	Localized SAR (Body & Limbs)	Whole body Average SAR	Localized SAR (Head & Trunk)	Localized SAR (Body & Limbs)	Whole body Average SAR	Localized SAR (Head & Trunk)	Localized SAR (Body)	Whole body Average SAR	Localized SAR (Head & Trunk)	Localized SAR (Body & Limbs)	Whole body Average SAR
Hand-held devices like Cellular/ Mobile/Satellite phones etc. which will be used close to the ear.	✓	✓	✓	1.6 W/kg averaged over 1 gm of tissue.	TBD	TBD	IEC 62209-1	IEC 62209-2	TBD	0 mm	TBD	TBD
Hand-held devices like MRTS handsets/HF/VHF/UHF handsets which will be used in close proximity of 20 cm or less to the body.		✓	✓	NA	TBD	TBD	NA	IEC 62209-2	TBD	NA	TBD	TBD
RF devices like Wi-Fi dongles, Mobile data		✓	✓	NA	TBD	TBD	NA	IEC 62209-2	TBD	NA	TBD	TBD

cards which are expected to be used in close proximity of 20 cm or less to the body.												
IoT devices expected to be worn on the body.		✓	✓	NA	TBD	TBD	NA	IEC 62479 : 1.0	IEC 62479 : 1.0	NA	TBD	TBD
IoT devices expected to be worn on the body near the head or ear.	✓	✓	✓	TBD	TBD	TBD	IEC 62479 : 1.0	IEC 62479 : 1.0	IEC 62479 : 1.0	TBD	TBD	TBD
IoT devices expected to be used in close proximity of 20 cm or less to the body		✓	✓	NA	TBD	TBD	IEC 62479 : 1.0	IEC 62479 : 1.0	IEC 62479 : 1.0	NA	TBD	TBD

NA- Not Applicable

TBD- To be decided