

Government of India
Department of Telecommunications
Telecommunication Engineering Centre
Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi-110001.
(IoT Division)

File No: 2-20/2023-IoT/TEC

Date: 17 October 2025

Subject: Revision of Standard for Essential Requirements (ER) of "Smart Electricity Meter" – Inviting comments.

In exercise of the powers conferred by rule 5(2) of the Telecommunications (Framework to Notify Standards, Conformity Assessment and Certification) Rules 2025, a draft revision of Standard of Essential Requirements (ER) on "Smart Electricity Meter" is enclosed herewith (Annexure-I) for stakeholder consultation. It is requested to go through the enclosed draft Standard for revision and offer your inputs/comments. The comments may please be furnished in the template sheet enclosed herewith as Annexure-II.

The comments/inputs may be furnished through email to adet.iottec-dot@gov.in with copy to adg.iot-tec-dot@gov.in and ddgsd.tec@gov.in at the earliest and latest within **sixty days of the date of this reference** please.

Enclosures:

- (i) Draft Revision of Standard for Essential Requirements of "Smart Electricity Meter" (Annexure-I)
- (ii) Template sheet for providing comments/inputs (Annexure-II)

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To,

All Stakeholders (through portal)

Copy to:

1. Sr. DDG & Head, TEC
2. AD (IT), TEC – for uploading on TEC Portal

अनिवार्य आवश्यकताएं

संख्या : TEC28362401

संख्या :

Essential Requirements

ER No. : TEC28362401

Smart Electricity Meter

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MTCTE के तहत जारी:

Issued under MTCTE by:

दूरसंचार अभियांत्रिकी केंद्र

भारत सरकार

खुर्शीद लाल भवन, जनपथ, नई दिल्ली - 110001, भारत

**Telecommunication Engineering Centre
Government of India
Khurshid Lal Bhawan, Janpath, New Delhi-110001, INDIA**

DRAFT

Essential Requirements for:

Smart Electricity Meter

Certification Scheme: **SCS**

Product Fee Group: **B**

This ER covers Smart Electricity Meter working on wired or wireless (cellular/non cellular) communication technologies.

Note: Annexures referred to in this ER are Annexures as mentioned in "Annexures to ERs" No. TEC/SD/DD/TCP-222/02/June19 as updated from time to time and available on MTCTE portal.

This product has the following variants:

1. Smart Electricity Meter

1. Variant 1 : Smart Electricity Meter

1.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
1.1.1	EMI EMC compliance	As per related IS 16444 standard
1.1.2	Dual IP Parameters	<u>RFC 4213, RFC 791 Annex-P6, RFC 8200.</u> <u>Annex- P7RFC 4213, Annex P6</u>

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1.1.39	IoT Dev-Non-0 IMEI or MEID or Unique MAC	Annex-M
1.1.10	IPv4 Parameters	RFC 791. Annex-
1.1.41	IPv6 Parameters	RFC 2460/ 8200. Annex-P7
1.1.51	Safety compliance	As per related IS 16444 standard

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1.2 Interface 1 : GSM or GPRS or EDGE

S.No.	Parameter Name	Standard Name
1.2.1	Int Parameters for GSM or GPRS or EDGE	3GPP TS 51 010-1 or EN 301 511. Annex-F10
1.2.2	Operating Frequency for GSM or GPRS or EDGE Int	NFAP. Annex-F

1.3 Interface 2 : LPWAN – LoRa

S.No.	Parameter Name	Standard Name
1.3.1	Basic RF Requirements for LPWAN-LoRA	Annex- G5(5.4 to 5.2019). ETSI EN 300 220-2V3.2.1
1.3.2	EIRP LoRa	<u>WPC GSR 853(E).</u> Annex- G5(5.2).
1.3.3	Frequency of Operation for LoRa Int	Latest NFAP. Annex- G5(5.1)
1.3.4	Maximum Transmit Power LoRa	WPC GSR 853(E). <u>WPC GSR 853(E).</u> Annex- G5(5.3).

1.4 Interface 3 : LTE or LTE-A

S.No.	Parameter Name	Standard Name
1.4.1	Int Parameters for LTE or LTE-A	3GPP TS 36.521-1 or EN 301 908-13. Annex-F12
1.4.2	Operating Frequency for LTE or LTE-A Int	NFAP. Annex-F

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1.4.5 Interface 4 : WCDMA or HSPA

S.No.	Parameter Name	Standard Name
1.5.1	Operating Frequency for WCDMA or HSPA Int	NFAP. Annex-F
1.5.2	WCDMA or HSPA Int Parameters	3GPP TS 34.121-1 or EN 301 908-2. Annex-F11

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1.2 Interface 5 : 6LoWPAN (2.4 GHz)

S.No.	Parameter Name	Standard Name
1.6.1	Basic RF Requirements for 6LoWPAN Interface	Annex G4 (4.4 to 4.15). ETSI EN 300 328 V2.2.2.
1.6.2	EIRP for 6LoWPAN Interface	WPC GSR 45(E). Annex-G4(4.2)
1.6.3	Frequency of operation for 6LoWPAN Interface	Latest NFAP Annex-G4(4.1)
1.6.4	Maximum Transmitted Power for 6LoWPAN Int	WPC GSR 45(E). Annex-G4 (4.3)

1.6 Interface 6 : 6LoWPAN (865 to 868.7 MHz)

S.No.	Parameter Name	Standard Name
1.6.1	Basic RF Requirements for 6LoWPAN Interface	Annex- G5(5.4 to 5.2018). ETSI EN 300 220-2 V3.2.1
1.6.2	EIRP for 6LoWPAN Interface	WPC GSR 564853(E). Annex- G5(5.2)
1.6.3	Frequency of operation for 6LoWPAN Interface	Latest NFAP. Annex- G5(5.1)
1.6.4	Maximum Transmitted Power for 6LoWPAN Int	WPC GSR 564853(E). Annex- G5(5.3).

1.31.7 Interface 76: RF Mesh

S.No.	Parameter Name	Standard Name
1.7.1	Basic RF Requirements for RF Mesh	Annex- G5(5.4 to 5.2018). ETSI EN 300 220-2 V3.2.1
1.7.2	EIRP RF Mesh	WPC GSR 564853(E). Annex- G5(5.2).
1.7.3	Frequency of Operation for RF Mesh Int	Latest NFAP. Annex- G5(5.1)
1.7.4	Maximum Transmit Power RF Mesh	WPC GSR 564853(E). Annex- G5(5.3).

1.41.8 Interface 78 : 5G NR- FR1 and FR2 interworking with other Radios

S.No.	Parameter Name	Standard Name
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1.8.1	Additional Spectrum emissions mask for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.2
1.8.2	Additional Spurious emissions for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.4.3
1.8.3	Adjacent channel leakage ratio for Inter- band EN-DC including FR2 2CCs	3GPP TS 38.521-3 Clause 6.5B.2.4.3
1.8.4	Adjacent channel leakage ratio for inter- band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.3
1.8.5	Adjacent channel selectivity for inter-band EN-DC within FR1 2CCs	3GPP TS 38.521-3 3GPP TS 38.521-3 Clause 7.5B.3
1.8.6	Adjacent channel selectivity for intra-band contiguous EN-DC 2CCs	3GPP TS 38.521-3 Clause 7.5B.1
1.8.7	General spurious emissions for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.3.3.1
1.8.8	General spurious emissions for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.5B.3.1.1
1.8.9	Inband blocking for inter-band EN-DC within FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.2.3
1.8.10	Inband blocking for intra-band contiguous EN-DC in FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.2.1
1.8.11	Minimum output power for EN-DC Inter- band including FR2	3GPP TS 38.521-3 Clause 6.3B.1.4
1.8.12	Minimum Output Power for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.3B.1.1
1.8.13	Minimum output power for intra-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.3B.1.3
1.8.14	Narrow band blocking for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.6B.4.3
1.8.15	Narrow band blocking for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.6B.4.1
1.8.16	Out-of-band blocking for inter-band EN-DC within FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.3.3
1.8.17	Out-of-band blocking for intra-band contiguous EN-DC in FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.3.1
1.8.18	Reference sensitivity for EN-DC within FR1 3CCs	3GPP TS 38.521-3 Clause 7.3B.2.3_1.1

1.8.19	Reference sensitivity for inter-band EN-DC including FR2	3GPP TS 38.521-3 Clause 7.3B.2.4
1.8.20	Reference sensitivity for inter-band EN-DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.3B.2.3
1.8.21	Reference sensitivity for intra-band contiguous EN-DC 2CCs	3GPP TS 38.521-3 Clause 7.3B.2.1
1.8.22	Spectrum emissions mask for inter- band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.1
1.8.23	Spectrum emissions mask for inter-band EN-DC including FR2 (2 CCs)	3GPP TS 38.521-3 Clause 6.5B.2.4.1
1.8.24	Spurious emission band UE co-existence for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.5B.3.1.2
1.8.25	Spurious emissions band UE co-existence for inter-band within FR1	3GPP TS 38.521-3 Clause 6.5B.3.3.2
1.8.26	Spurious Emissions for EN DC within FR1 3CCs	3GPP TS 38.521-3 Clause 7.9B.3 1.1
1.8.27	Spurious Emissions for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.9B.3
1.8.28	Spurious emissions for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.9B.1
1.8.29	Spurious Response for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.7B.3
1.8.30	Spurious Response for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.7B.1
1.8.31	UE Maximum Output Power for Inter-Band EN-DC including FR2 - EIRP and TR	3GPP TS 38.521-3 Clause 6.2B.1.4.1
1.8.32	UE Maximum Output Power for Inter-Band EN-DC including FR2 - Spherical Coverage	3GPP TS 38.521-3 Clause 6.2B.1.4.2
1.8.33	UE Maximum Output Power for Inter-Band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.2B.1.3
1.8.34	UE Maximum Output Power for Intra-Band Contiguous EN-DC	3GPP TS 38.521-3 Clause 6.2B.1.1
1.8.35	Wideband Intermodulation for inter band EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.8B.2.3
1.8.36	Wideband Intermodulation for intra band contiguous EN DC in FR1	3GPP TS 38.521-3 Clause 7.8B.2.1

1.51.9 Interface 89 : 5G NR (FR1)

S.No.	Parameter Name	Standard Name
1.9.1	Additional spectrum emission mask- Transmitter	3GPP TS 38.521-1 Clause 6.5.2.3
1.9.2	Additional spectrum emission mask for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.3
1.9.3	Additional spurious emissions	3GPP TS 38.521-1 Clause 6.5.3.3
1.9.4	Additional spurious emissions for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.3
1.9.5	Adjacent channel selectivity	3GPP TS 38.521-1 Clause 7.5
1.9.6	Adjacent channel selectivity for 2DL CA	3GPP TS 38.521-1 Clause 7.5A.1
1.9.7	Adjacent channel selectivity for UL-MIMO	3GPP TS 38.521-1 Clause 7.5D
1.9.8	General spurious emissions-Transmitter	3GPP TS 38.521-1 Clause 6.5.3.1
1.9.9	General spurious emissions for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.1
1.9.10	In-band Blocking for CA-2DL CA	3GPP TS 38.521-1 Clause 7.6A.2.1
1.9.11	Inband Blocking	3GPP TS 38.521-1 Clause 7.6.2
1.9.12	Inband blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.2
1.9.13	Minimum output power	3GPP TS 38.521-2 Clause 6.3.1
1.9.14	Narrow band blocking	3GPP TS 38.521-1 Clause 7.6.4
1.9.15	Narrow band blocking for CA-2DL CA	3GPP TS 38.521-1 Clause 7.6A.4.1
1.9.16	Narrow band blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.4
1.9.17	NR ACLR	3GPP TS 38.521-1 Clause 6.5.2.4.1
1.9.18	NR ACLR for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.4.1
1.9.19	Out-of-band blocking	3GPP TS 38.521-1 Clause 7.6.3
1.9.20	Out-of-band blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.3
1.9.21	Reference sensitivity power level	3GPP TS 38.521-1 Clause 7.3.2
1.9.22	Reference sensitivity power level for 2DL CA without exception	3GPP TS 38.521-1 Clause 7.3A.1
1.9.23	Reference sensitivity power level for UL- MIMO	3GPP TS 38.521-1 Clause 7.3D.2
1.9.24	Spectrum Emission Mask-5G NR FR1	3GPP TS 38.521-1 Clause 6.5.2.2
1.9.25	Spectrum emission Mask for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.2
1.9.26	Spurious emission for 2DL CA	3GPP TS 38.521-1 Clause 7.9A.1
1.9.27	Spurious emission for UE co-existence	3GPP TS 38.521-1 Clause 6.5.3.2

1.9.28	Spurious emission for UE co-existence for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.2
1.9.29	Spurious emissions-5G NR FR1	3GPP TS 38.521-1 Clause 7.9
1.9.30	Spurious response	3GPP TS 38.521-1 Clause 7.7
1.9.31	Spurious response for 2DL CA	3GPP TS 38.521-1 Clause 7.7A.1
1.9.32	Spurious response for UL-MIMO	3GPP TS 38.521-1 Clause 7.7D
1.9.33	UE Maximum Output Power	3GPP TS 38.521-1 Clause 6.2.1
1.9.34	UE maximum output power for UL-MIMO	3GPP TS 38.521-1 Clause 6.2D.1
1.9.35	UE maximum output power reduction for UL-MIMO	3GPP TS 38.521-1 Clause 6.2D.2
1.9.36	UTRA ACLR	3GPP TS 38.521-1 Clause 6.5.2.4.2
1.9.37	UTRA ACLR for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.4.2
1.9.38	Wide band Intermodulation	3GPP TS 38.521-1 Clause 7.8.2
1.9.39	Wide band Intermodulation for CA-2DL CA	3GPP TS 38.521-1 Clause 7.8A.2.1
1.9.40	Wide band Intermodulation for UL-MIMO	3GPP TS 38.521-1 Clause 7.8D.2

1.61.10 Interface 9 10 : 5G NR (FR2)

S.No.	Parameter Name	Standard Name
1.10.1	Adjacent channel leakage ratio	3GPP TS 38.521-2 Clause 6.5.2.3
1.10.2	Minimum Output power-Transmitter	3GPP TS 38.521-1 Clause 6.3.1
1.10.3	Reference sensitivity power level	3GPP TS 38.521-1 Clause 7.3.2
1.10.4	Spectrum Emission Mask-5G NR FR2	3GPP TS 38.521-2 Clause 6.5.2.1
1.10.5	UE maximum output power-EIRP and TRP	3GPP TS 38.521-2 Clause 6.2.1.1
1.10.6	UE maximum output power-Spherical coverage	3GPP TS 38.521-2 Clause 6.2.1.2
1.10.7	UE maximum output power reduction	3GPP TS 38.521-2 Clause 6.2.2
1.10.8	UE maximum output power with additional requirements	3GPP TS 38.521-2 Clause 6.2.3

1.71.11 Interface 110 : NB-IoT

S.No.	Parameter Name	Standard Name
1.11.1	Frequency Stability-NB-IOT	3GPP TS 36.521-1 Clause 6.5.1F
1.11.2	Maximum output power-NB-IOT	3GPP TS 36.521-1 Clause 6.2.2F
1.11.3	Operating Frequency-NB-IOT-Device Equip. shall be capable of operating in at least one of the	National Frequency Allocation Plan- 2018 Frequency Allocation Table (IND 16)

	frequency bands as per the National Freq. Allocation plan	
1.11.4	Power Control Absolute Power Tolerance-NB-IOT	3GPP TS 36.521-1 Clause 6.3.5F.1
1.11.5	Receiver Adjacent Channel Selectivity (ACS) - NB-IOT	3GPP TS 36.521-1 Clause 7.5F
1.11.6	Receiver In-band blocking-NB-IOT	3GPP TS 36.521-1 Clause 7.6.1F
1.11.7	Receiver Reference Sensitivity level-NB-IOT	3GPP TS 36.521-1 Clause 7.3F
1.11.8	Receiver spurious emission-NB-IOT	3GPP TS 36.521-1 Clause 7.9F
1.11.9	Spectrum emissions mask-NB-IOT	3GPP TS 36.521-1 Clause 6.6.2.1F
1.11.10	Spurious emissions-NB-IOT	3GPP TS 36.521-1 Clause 6.6.3F.1-6.6.3F.2

1.12 Interface : Wi-SUN (865 to 868 MHz)

<u>S.No.</u>	<u>Parameter Name</u>	<u>Standard Name</u>
<u>1</u>	<u>Basic RF Requirements for Wi-SUN Interface</u>	<u>Annex- G5(5.4 to 5.20). ETSI EN 300 220-2 V3.2.1</u>
<u>2</u>	<u>EIRP for Wi-SUN Interface</u>	<u>WPC GSR 853 (E)Annex- G5(5.2)</u>
<u>3</u>	<u>Frequency of operation for Wi-SUN Interface</u>	<u>Latest NFAP. Annex- G5(5.1)</u>
<u>4</u>	<u>Maximum Transmitted Power for Wi-SUN Int</u>	<u>WPC GSR 853 (E)Annex- G5(5.3).</u>

1.13 Interface : Fast Ethernet Optical

<u>S.No.</u>	<u>Parameter Name</u>	<u>Standard Name</u>
<u>1.14.1</u>	<u>Average Launch power for FE Opt</u>	<u>IEEE 802.3u. Annex-H</u>
<u>1.14.2</u>	<u>Receiver Sensitivity for FE Opt</u>	<u>IEEE 802.3u. Annex-H</u>
<u>1.14.3</u>	<u>Wavelength for FE Opt</u>	<u>IEEE 802.3u. Annex-H</u>

1.14 Interface : 1G Optical Ethernet

<u>S. No</u>	<u>Parameter Name</u>	<u>Standard Name</u>
<u>1</u>	<u>Average Launch power for 1 GE Opt</u>	<u>IEEE 802.3z Cl. 38. Annex-H</u>
<u>2</u>	<u>Receiver Sensitivity 1 GE Opt</u>	<u>IEEE 802.3z Cl. 38. Annex-H</u>

3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
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1.15 Interface: oneM2M

Note: Testing applicable as per available profile(s) in the device

S.No.	Profile Details	Standard Name
1	Constrained sensor as ADN with security	oneM2M TS-0025, v3.3.0, clause 5.10
2	Constrained actuator as ADN with security	oneM2M TS-0025, v3.3.0, clause 5.11

Annexure – II

Name (of Member/Manufacturer)

Inputs/Comments/Suggestions on Draft Revision of Essential Requirements of Smart Electricity Meter:

Clause Number	Clause Description	Modified/New Clause	Justification