

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 "Feedback Device" - 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 "Feedback Device" 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 "Feedback Device" (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 : TEC23232401

संख्या :

Essential Requirements

ER No. : TEC23232401

Feedback Device

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MTCTE के तहत जारी:

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

DRAFT

Essential Requirements for:

Feedback Device

Certification Scheme: **SCS**

Product Fee Group: **B**

This ER covers all types of IoT Feedback Devices 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. Feedback Device

1. Variant 1: Feedback Device

1.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
1.1.1	Conducted And Radiated Emission - Class B	TEC EMI EMC Standard CISPR 32 EN55032. Annex-B
1.1.2	Dual IP Parameters	RFC 4213, RFC 791 Annex-P6, RFC 8200, Annex- P7RFC 4213, Annex-P6
1.1.3	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
1.1.4	Immunity to DC Voltage Dips and Short Interruptions	EN/IEC:61000-4-29. Annex-B
1.1.5	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2. Annex-B
1.1.6	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B

1.1.7	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
1.1.8	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
1.1.9	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B
1.1.10	IoT Dev - Non-0 IMEI or MEID or Unique MAC	Annex-M
1.1.11	IPv4 Parameters	RFC 791. Annex-P6
1.1.11 2	IPv6 Parameters	RFC 2460 / 8200. Annex-P7
1.1.12 3	IT Equipment Safety	IEC 62368-1. Annex-A1

1.2 Interface 1 : CDMA

S.No.	Parameter Name	Standard Name
1.2.1	CDMA Int Parameters	1xS0011 or EN 301 908-04 CDMA. Annex-F9
1.2.2	Operating Frequency for CDMA Int	NFAP. Annex-F

1.3 Interface 2 : GSM or GPRS or EDGE

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

1.4 Interface 3 : LPWAN - LoRa

S.No.	Parameter Name	Standard Name
1.4.1	Basic RF Requirements for LPWAN-LoRa	Annex- G5(5.4 to 5.2018). ETSI EN 300 220-2V3.2.1
1.4.2	EIRP LoRa	WPC GSR 853 (E)WPC GSR 564(E). Annex-G5(5.2).
1.4.3	Frequency of Operation for LoRa Int	Latest NFAP. Annex- G5(5.1)
1.4.4	Maximum Transmit Power LoRa	WPC GSR 853 (E)WPC GSR 564(E). Annex-G5(5.3).

1.5 Interface 4 : LTE or LTE-A

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

1.6 Interface 5 : WCDMA or HSPA

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

1.7 Interface 6 : 5G NR- FR1 and FR2 interworking with other Radios

S.No.	Parameter Name	Standard Name
1.7.1	Additional Spectrum emissions mask for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.2
1.7.2	Additional Spurious emissions for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.4.3
1.7.3	Adjacent channel leakage ratio for Inter- band EN-DC including FR2 2CCs	3GPP TS 38.521-3 Clause 6.5B.2.4.3
1.7.4	Adjacent channel leakage ratio for inter- band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.3
1.7.5	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
1.7.6	Adjacent channel selectivity for intra-band contiguous EN-DC 2CCs	3GPP TS 38.521-3 Clause 7.5B.1
1.7.7	General spurious emissions for inter-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.3.3.1
1.7.8	General spurious emissions for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.5B.3.1.1
1.7.9	Inband blocking for inter-band EN-DC within FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.2.3
1.7.10	Inband blocking for intra-band contiguous EN-DC in FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.2.1

1.7.11	Minimum output power for EN-DC Inter- band including FR2	3GPP TS 38.521-3 Clause 6.3B.1.4
1.7.12	Minimum Output Power for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.3B.1.1
1.7.13	Minimum output power for intra-band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.3B.1.3
1.7.14	Narrow band blocking for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.6B.4.3
1.7.15	Narrow band blocking for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.6B.4.1
1.7.16	Out-of-band blocking for inter-band EN-DC within FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.3.3
1.7.17	Out-of-band blocking for intra-band contiguous EN-DC in FR1-2CCs	3GPP TS 38.521-3 Clause 7.6B.3.1
1.7.18	Reference sensitivity for EN-DC within FR1 3CCs	3GPP TS 38.521-3 Clause 7.3B.2.3_1.1
1.7.19	Reference sensitivity for inter-band EN-DC including FR2	3GPP TS 38.521-3 Clause 7.3B.2.4
1.7.20	Reference sensitivity for inter-band EN-DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.3B.2.3
1.7.21	Reference sensitivity for intra-band contiguous EN-DC 2CCs	3GPP TS 38.521-3 Clause 7.3B.2.1
1.7.22	Spectrum emissions mask for inter- band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.5B.2.3.1
1.7.23	Spectrum emissions mask for inter-band EN-DC including FR2 (2 CCs)	3GPP TS 38.521-3 Clause 6.5B.2.4.1
1.7.24	Spurious emission band UE co-existence for intra-band contiguous EN-DC	3GPP TS 38.521-3 Clause 6.5B.3.1.2
1.7.25	Spurious emissions band UE co-existence for inter-band within FR1	3GPP TS 38.521-3 Clause 6.5B.3.3.2
1.7.26	Spurious Emissions for EN DC within FR1 3CCs	3GPP TS 38.521-3 Clause 7.9B.3 1.1
1.7.27	Spurious Emissions for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.9B.3

1.7.28	Spurious emissions for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.9B.1
1.7.29	Spurious Response for inter band EN DC within FR1 2CCs	3GPP TS 38.521-3 Clause 7.7B.3
1.7.30	Spurious Response for intra band contiguous EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.7B.1
1.7.31	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
1.7.32	UE Maximum Output Power for Inter-Band EN-DC including FR2 - Spherical Coverage	3GPP TS 38.521-3 Clause 6.2B.1.4.2
1.7.33	UE Maximum Output Power for Inter-Band EN-DC within FR1	3GPP TS 38.521-3 Clause 6.2B.1.3
1.7.34	UE Maximum Output Power for Intra-Band Contiguous EN-DC	3GPP TS 38.521-3 Clause 6.2B.1.1
1.7.35	Wideband Intermodulation for inter band EN DC in FR1 2CCs	3GPP TS 38.521-3 Clause 7.8B.2.3
1.7.36	Wideband Intermodulation for intra band contiguous EN DC in FR1	3GPP TS 38.521-3 Clause 7.8B.2.1

1.8 Interface 7 : 5G NR (FR1)

S.No.	Parameter Name	Standard Name
1.8.1	Additional spectrum emission mask- Transmitter	3GPP TS 38.521-1 Clause 6.5.2.3
1.8.2	Additional spectrum emission mask for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.3
1.8.3	Additional spurious emissions	3GPP TS 38.521-1 Clause 6.5.3.3
1.8.4	Additional spurious emissions for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.3
1.8.5	Adjacent channel selectivity	3GPP TS 38.521-1 Clause 7.5
1.8.6	Adjacent channel selectivity for 2DL CA	3GPP TS 38.521-1 Clause 7.5A.1
1.8.7	Adjacent channel selectivity for UL-MIMO	3GPP TS 38.521-1 Clause 7.5D
1.8.8	General spurious emissions-Transmitter	3GPP TS 38.521-1 Clause 6.5.3.1
1.8.9	General spurious emissions for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.1
1.8.10	In-band Blocking for CA-2DL CA	3GPP TS 38.521-1 Clause 7.6A.2.1
1.8.11	Inband Blocking	3GPP TS 38.521-1 Clause 7.6.2
1.8.12	Inband blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.2

1.8.13	Minimum output power	3GPP TS 38.521-2 Clause 6.3.1
1.8.14	Narrow band blocking	3GPP TS 38.521-1 Clause 7.6.4
1.8.15	Narrow band blocking for CA-2DL CA	3GPP TS 38.521-1 Clause 7.6A.4.1
1.8.16	Narrow band blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.4
1.8.17	NR ACLR	3GPP TS 38.521-1 Clause 6.5.2.4.1
1.8.18	NR ACLR for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.4.1
1.8.19	Out-of-band blocking	3GPP TS 38.521-1 Clause 7.6.3
1.8.20	Out-of-band blocking for UL-MIMO	3GPP TS 38.521-1 Clause 7.6D.3
1.8.21	Reference sensitivity power level	3GPP TS 38.521-1 Clause 7.3.2
1.8.22	Reference sensitivity power level for 2DL CA without exception	3GPP TS 38.521-1 Clause 7.3A.1
1.8.23	Reference sensitivity power level for UL - MIMO	3GPP TS 38.521-1 Clause 7.3D.2
1.8.24	Spectrum Emission Mask-5G NR FR1	3GPP TS 38.521-1 Clause 6.5.2.2
1.8.25	Spectrum emission Mask for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.2
1.8.26	Spurious emission for 2DL CA	3GPP TS 38.521-1 Clause 7.9A.1
1.8.27	Spurious emission for UE co-existence	3GPP TS 38.521-1 Clause 6.5.3.2
1.8.28	Spurious emission for UE co-existence for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.3.2
1.8.29	Spurious emissions-5G NR FR1	3GPP TS 38.521-1 Clause 7.9
1.8.30	Spurious response	3GPP TS 38.521-1 Clause 7.7
1.8.31	Spurious response for 2DL CA	3GPP TS 38.521-1 Clause 7.7A.1
1.8.32	Spurious response for UL-MIMO	3GPP TS 38.521-1 Clause 7.7D
1.8.33	UE Maximum Output Power	3GPP TS 38.521-1 Clause 6.2.1
1.8.34	UE maximum output power for UL-MIMO	3GPP TS 38.521-1 Clause 6.2D.1
1.8.35	UE maximum output power reduction for UL-MIMO	3GPP TS 38.521-1 Clause 6.2D.2
1.8.36	UTRA ACLR	3GPP TS 38.521-1 Clause 6.5.2.4.2
1.8.37	UTRA ACLR for UL MIMO	3GPP TS 38.521-1 Clause 6.5D.2.4.2
1.8.38	Wide band Intermodulation	3GPP TS 38.521-1 Clause 7.8.2
1.8.39	Wide band Intermodulation for CA-2DL CA	3GPP TS 38.521-1 Clause 7.8A.2.1
1.8.40	Wide band Intermodulation for UL-MIMO	3GPP TS 38.521-1 Clause 7.8D.2

1.9 Interface 8 : 5G NR (FR2)

S.No.	Parameter Name	Standard Name
1.9.1	Adjacent channel leakage ratio	3GPP TS 38.521-2 Clause 6.5.2.3
1.9.2	Minimum Output power-Transmitter	3GPP TS 38.521-1 Clause 6.3.1
1.9.3	Reference sensitivity power level	3GPP TS 38.521-1 Clause 7.3.2
1.9.4	Spectrum Emission Mask-5G NR FR2	3GPP TS 38.521-2 Clause 6.5.2.1
1.9.5	UE maximum output power-EIRP and TRP	3GPP TS 38.521-2 Clause 6.2.1.1
1.9.6	UE maximum output power-Spherical coverage	3GPP TS 38.521-2 Clause 6.2.1.2
1.9.7	UE maximum output power reduction	3GPP TS 38.521-2 Clause 6.2.2
1.9.8	UE maximum output power with additional requirements	3GPP TS 38.521-2 Clause 6.2.3

1.10. Interface 9 : NB-IoT

S.No.	Parameter Name	Standard Name
1.10.1	Frequency Stability-NB-IOT	3GPP TS 36.521-1 Clause 6.5.1F
1.10.2	Maximum output power-NB-IOT	3GPP TS 36.521-1 Clause 6.2.2F
1.10.3	Operating Frequency-NB-IOT-Device Equip. shall be capable of operating in at least one of the frequency bands as per the National Freq. Allocation plan	National Frequency Allocation Plan- 2018 Frequency Allocation Table (IND 16)
1.10.4	Power Control Absolute Power Tolerance-NB-IOT	3GPP TS 36.521-1 Clause 6.3.5F.1
1.10.5	Receiver Adjacent Channel Selectivity (ACS) - NB-IOT	3GPP TS 36.521-1 Clause 7.5F
1.10.6	Receiver In-band blocking-NB-IOT	3GPP TS 36.521-1 Clause 7.6.1F
1.10.7	Receiver Reference Sensitivity level-NB-IOT	3GPP TS 36.521-1 Clause 7.3F
1.10.8	Receiver spurious emission-NB-IOT	3GPP TS 36.521-1 Clause 7.9F
1.10.9	Spectrum emissions mask-NB-IOT	3GPP TS 36.521-1 Clause 6.6.2.1F
1.10.10	Spurious emissions-NB-IOT	3GPP TS 36.521-1 Clause 6.6.3F.1-6.6.3F.2

1.11. Interface 10 : Geolocation Navigation Interface

S.No.	Parameter Name	Standard Name
1.11.1	GPS	Annexure to ER for Tracking Device
1.11.2	NavIC	Annexure to ER for Tracking Device

Interface: oneM2M

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

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

Annexure – II

Name (of Member/Manufacturer)

Inputs/Comments/Suggestions on Draft Revision of Essential Requirements of Feedback Device:

Clause Number	Clause Description	Modified/New Clause	Justification