



ISO 9001:2008

Government of India
Department of Telecommunications
Telecommunication Engineering Centre
Khurshid Lal Bhawan, Janpath, New Delhi – 110 001.
(RADIO DIVISION)

Visit <https://www.tec.gov.in>

Dear all,

The Mandatory Testing Consultative Forum Meeting (MATCOF) meeting to consider the draft ER on 'Antennas' is planned to be held as per the following schedule:

Date and Time: 30-March-2021 from 11 am onwards

Venue: Online meeting (Link: <https://global.gotomeeting.com/join/729359477>)

You are requested to kindly make it convenient to attend the meeting. The draft ER document is enclosed herewith for your reference and comments. You are requested to please share your comments on the draft document at the earliest so that the same may be considered for discussion during the MATCOF meeting.

(Neha Upadhyay)
Assistant Director General(R-III),
Radio Division, TEC.
Ph # +91 11 23323107

No.: **No. 3-2/8/2021-R**

Date: 24/03/2021

To:

1. Stakeholders registered for MATCOF under the relevant category.
2. AD(IT), TEC to upload this letter on TEC website.

Essential Requirements
under the
MTCTE Framework
for
“Antennas”

This document defines the technical parameters for the telecommunication equipment mentioned in the scope of this document against which Testing & Certification has to be carried as prescribed by G.S.R No. 1131(E) dated 5th September, 2017 (Amendment (2017) to Indian Telegraph Rules, 1951).

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HISTORY SHEET

Sr. No.	Document name/No.	Issued on	Version
1.	Essential Requirements under the MTCTE Framework for Antennas	XXXX-2020	1

REFERENCES

Sr No.	Document No.	Document Title
1.	ETSI EN 301 215-3	Fixed Radio Systems; Point to Multipoint Antennas; Antennas for point-to-multipoint fixed radio systems in the 11 GHz to 60 GHz band; Part 3: Multipoint Multimedia Wireless System in 40,5 GHz to 43,5 GHz
2.	ETSI EN 302 326-3	Fixed Radio Systems; Multipoint Equipment and Antennas; Part 3: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Multipoint Radio Antennas
3.	ETSI EN 302 217-4	Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4: Antennas
4.	ETSI EN 301 126-3-1	Fixed Radio Systems; Conformance testing; Part 3-1: Point-to-Point antennas; Definitions, general requirements and test procedures"
5.	ETSI EN 301 126-3-2	Fixed Radio Systems; Conformance testing; Part 3-2: Point-to-Multipoint antennas - Definitions, general requirements and test procedures
6.	ETSI EN 303 354	Amplifier and active antennas for TV broadcast reception in domestic premises; Harmonised standard covering the essential requirements of article 3.2 of directive 2014/53/EU.
7.	ETSI EN 303 372-1	Satellite broadcast reception equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Outdoor unit receiving in the 10,7 GHz to 12,75 GHz frequency band.
8.	ETSI EN 303 345-3	Broadcast Sound Receivers; Part 3: FM broadcast sound service; Harmonised Standard for access to radio spectrum
9.	ETSI EN 303 372-1	Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers
10.	ETSI EN 302 977	Satellite Earth Stations and Systems (SES); Harmonized EN for Vehicle-Mounted Earth Stations (VMES) operating in the 14/12 GHz frequency bands.
11.	ETSI EN 303 979	Satellite Earth Stations and Systems (SES); Harmonised Standard for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in non-geostationary orbit, operating in the 27,5 GHz to 29,1 GHz and 29,5 GHz to 30,0 GHz frequency bands.

12.	ETSI EN 301 428	Satellite Earth Stations and Systems (SES); Harmonised Standard for Very Small Aperture Terminal (VSAT); Transmit-only, transmit/receive or receive-only satellite earth stations operating in the 11/12/14 GHz frequency bands.
13.	ETSI EN 301 443	Satellite Earth Stations and Systems (SES); Harmonised Standard for Very Small Aperture Terminal (VSAT); Transmit-only, transmit-and-receive, receive-only satellite earth stations operating in the 4 GHz and 6 GHz frequency bands
14.	ETSI EN 302 340	Satellite Earth Stations and Systems (SES); Harmonized EN for satellite Earth Stations on board Vessels (ESVs) operating in the 11/12/14 GHz frequency bands allocated to the Fixed Satellite Service (FSS)
15.	ETSI EN 301 447	Satellite Earth Stations and Systems (SES); Harmonised Standard for satellite Earth Stations on board Vessels (ESVs) operating in the 4/6 GHz frequency bands allocated to the Fixed Satellite Service (FSS)
16.	TEC42722002	Essential requirements: Base Station for Cellular Network
17.	CFR § 25.209	<u>Earth station antenna performance standards.</u>
18.	CFR § 25.210	Technical requirements for space stations.
19.	CFR § 101.115	Fixed Microwave Services; Directional antennas
20.	IEC 62037-6	Passive RF and microwave devices, inter modulation level measurement - Part 6: Measurement of passive inter modulation in antennas.

Scope

This document lays down the essential requirements for Antennas. The present document covers different categories of antennas such as those used in

- i. Point to point systems
- ii. Point to multi point systems
- iii. Cellular base station antennas
- iv. Antennas used with Wi-Fi Systems
- v. Satellite dish antennas in different frequency bands
- vi. TV broadcast systems
- vii. Antennas used in GNSS receiver systems
- viii. Antennas used in FM broadcast systems

The document also defines the necessary testing requirements for certification under the MTCTE framework.

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SECTION I:

EMC Requirements

<Inputs required for the applicable standards wrt surge etc .>

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SECTION II:

Safety Requirements

<Inputs are required for standards applicable on antennas which should cover but not limited to the following aspects of

- 1. Life endurance test (Salt test)*
- 2. Wind survival test (say 140 kmph operational and 180 kmph survival)*
- 3. Mechanical test as applicable for mounts etc.*
- 4. Restriction to use of hazardous substances in material used in manufacturing the antenna>*

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SECTION III :**Technical Requirements**

Sr. No	Technical Parameters	Testing requirements																					
i.	<p>Frequency of operation</p> <p>(i)The equipment shall operate in the permitted radio frequency bands as per latest regulations and guidelines issued by Government of India in case of different use cases covered under this document.</p>	<p>Test report from TEC Designated CAB as per testing requirements.</p> <p>(i) Test set up as per relevant clause of applicable standards</p> <p>(ii)As per Annexure I</p>																					
ii.	<p>Conformance to the following standards as applicable:</p> <p><i><Editor's Note: Please note that the list of specifications provided below may not be exhaustive and inputs are invited for inclusion of relevant specifications under the different categories of antennas></i></p> <table border="1" data-bbox="300 1182 1002 2022"> <thead> <tr> <th data-bbox="300 1182 523 1227">Sr. No.</th> <th data-bbox="523 1182 735 1227">Standard</th> <th data-bbox="735 1182 1002 1227">Applicability</th> </tr> </thead> <tbody> <tr> <td colspan="3" data-bbox="300 1227 1002 1261">I</td> </tr> <tr> <td colspan="3" data-bbox="300 1261 1002 1294">Point to Point Systems</td> </tr> <tr> <td data-bbox="300 1294 523 1731">1.</td> <td data-bbox="523 1294 735 1731">ETSI EN 302 217-4</td> <td data-bbox="735 1294 1002 1731">Applicable to antennas intended for application in point-to-point antenna systems (1 GHz to 86 GHz)</td> </tr> <tr> <td colspan="3" data-bbox="300 1731 1002 1765">II</td> </tr> <tr> <td colspan="3" data-bbox="300 1765 1002 1798">Point to Multipoint Systems</td> </tr> <tr> <td data-bbox="300 1798 523 2022">2.</td> <td data-bbox="523 1798 735 2022">ETSI EN 302 326-3</td> <td data-bbox="735 1798 1002 2022">Applicable to antennas intended for application in Multipoint</td> </tr> </tbody> </table>	Sr. No.	Standard	Applicability	I			Point to Point Systems			1.	ETSI EN 302 217-4	Applicable to antennas intended for application in point-to-point antenna systems (1 GHz to 86 GHz)	II			Point to Multipoint Systems			2.	ETSI EN 302 326-3	Applicable to antennas intended for application in Multipoint	<p>i. For Sr No. 1 testing as per ETSI EN 301 126-3-2 to be exhibited.</p> <p>ii. For Sr No. 2 testing as per ETSI EN 301 126-3-1 to be exhibited.</p> <p>iii. Test results and certificate from TEC Designated CAB as per shall be submitted for compliance.</p>
Sr. No.	Standard	Applicability																					
I																							
Point to Point Systems																							
1.	ETSI EN 302 217-4	Applicable to antennas intended for application in point-to-point antenna systems (1 GHz to 86 GHz)																					
II																							
Point to Multipoint Systems																							
2.	ETSI EN 302 326-3	Applicable to antennas intended for application in Multipoint																					

		Antenna systems (1 to 40.5 GHz)	
III	Cellular Base Station Antennas		
	<Inputs required wrt antennas in different frequency bands and parameters such as Antenna Gain and Antenna Transmit Pattern etc.>		
IV	Antennas used in Wi-Fi Systems		
	<<Inputs required wrt antennas in different frequency bands and parameters such as Antenna Gain and Antenna Transmit Pattern etc.>>		
V	TV Broadcast Systems		
3.	ETSI EN 303 354	Applicable to active antennas for TV broadcast reception in domestic premises	
VI	Antennas used in FM broadcast systems		
4.	ETSI EN 303 345-3 <i>(Antenna should be in conformation with Clauses 4.2 and 4.3 of the standard)</i>	Applicable to antennas Intended for FM broadcast signal reception in FM antenna system.	

VII	Antennas used in GNSS receiver systems		
5.	ETSI EN 303 413 <i>(Antenna should be in conformation with Clauses 4.2 of the standard)</i>	Applicable to antennas, intended for use in GNSS signal reception.	
VIII	Antennas used in satellite communication systems		
6.	ETSI EN 302 977 <i>(Antenna should be in conformation with Clauses 4.2 of the standard)</i>	Applicable to antennas intended for application under Satellite Earth Stations and Systems (SES) such as Vehicle-Mounted Earth Stations (VMES).	
7.	ETSI EN 303 979 <i>(Antenna should be in conformation with Clauses 4.2 of the standard)</i>	Applicable to antennas intended for application in Satellite Earth Stations and Systems (SES); such as Earth Stations on Mobile Platforms (ESOMP) transmitting	

			towards satellites in non-geostationary orbit .
8.	ETSI EN 301 428 <i>(Clauses related to Antenna transmit gain and Antenna Radiation pattern are to be complied)</i>	Applicable to antennas intended for application in Satellite Earth Stations and Systems (SES); such as Very Small Aperture Terminal (VSAT); Transmit-only, transmit/receive or receive-only satellite earth stations for Ku band	
9.	ETSI EN 301 443 <i>(Antenna should be in conformation with Clauses 4.2 of the standards)</i>	Applicable to antennas intended for application in Satellite Earth Stations and Systems (SES); such as Very Small Aperture Terminal (VSAT); Transmit-only, transmit/receive or receive-only satellite earth stations for C band	

	10.	ETSI EN 302 340 <i>(Clauses related to Antenna transmit gain and Antenna Radiation pattern, Antenna pointing & Stability requirements are to be complied)</i>	Applicable to antennas intended for application in Satellite Earth Stations and Systems (SES); such as satellite Earth Stations on board Vessels (ESVs) operating in the frequency bands allocated to the Fixed Satellite Service (FSS).	
	11.	ETSI EN 303 372-1	Applicable to antennas intended for use in ODUs in satellite broadcast reception in ku band	

SECTION IV:

Other Requirements

- 1. ROHS**
<Inputs required>

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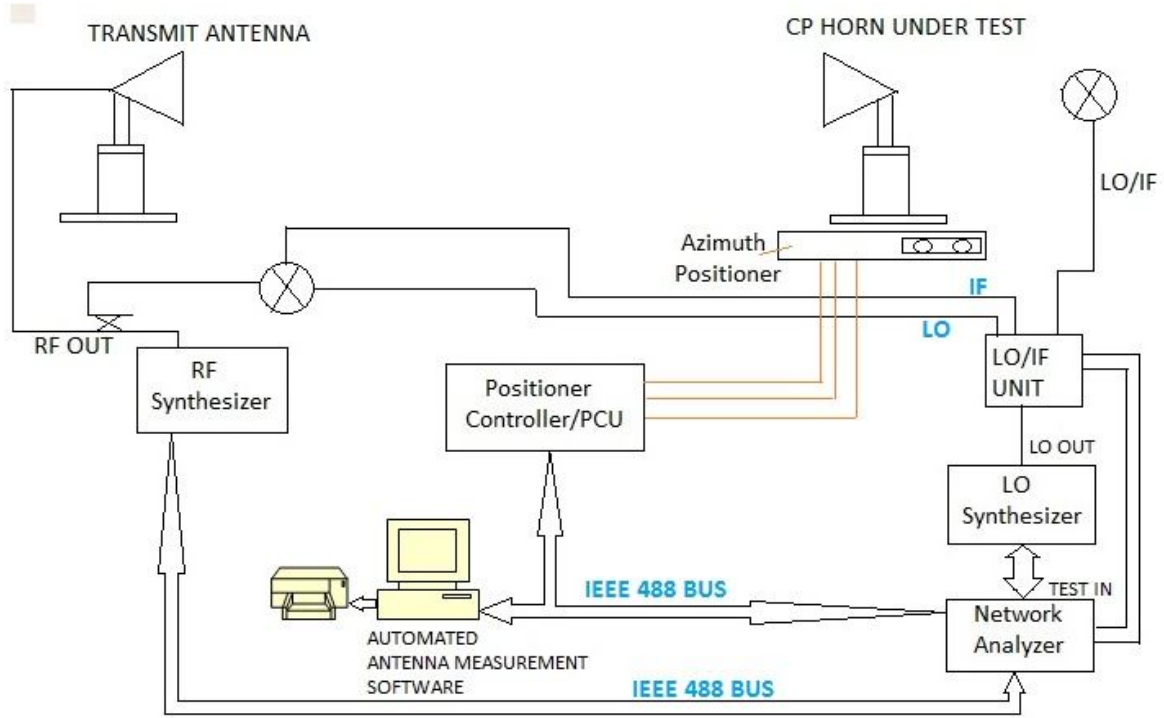
SECTION V:

Security Requirements

As and when prescribed by Department of Telecommunications, Ministry of Communications, Government of India.

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Annexure I



Antenna Measurement Test Setup

ABBREVIATIONS
<To be updated>

CAB	Conformance Assessment Body
CISPR	Comité International Spécial des Perturbations Radioélectriques
EMC	Electromagnetic Compatibility
ER	Essential Requirements
ETSI	<i>European Telecommunications Standards Institute</i>
EUT	Equipment Under Test
GHz	Giga Hertz
GSR	General Statutory Rules
IEC	International Electrotechnical Commission
MHz	Mega Hertz
MTCTE	Mandatory Testing & Certification of Telecom Equipment
NFAP	National Frequency Allocation Plan
TEC	Telecommunication Engineering Center
WPC	Wireless Planning & Coordination

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