

Guidelines on Antenna Structures
based on the
National Policy on Antenna Structures

Telecommunications Regulatory Commission of Sri Lanka
Colombo
July 2008

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Guidelines on Antenna Structure

Preamble

The Telecommunications Regulatory Commission of Sri Lanka, was established under the Sri Lanka Telecommunications (Amendment) Act No. 27 of 1996 to be the National Regulatory Agency for Telecommunications in Sri Lanka. TRCSL, while promoting the sustained development in the telecommunication industry by shaping the regulatory process, will protect the public interests and be responsive to challenges in an increasingly competitive market. TRCSL will ensure that competition in the market is open, fair and effective.

The TRCSL appointed an Technical Advisory Committee (TAC) to look into the issues involved with the construction and maintenance of antenna structures. The TAC has formulated the **National Policy on Antenna Structures**, with the intention of not unduly restricting the conduct of telecommunication services while safeguarding the environment and public interests.

These Guidelines have been developed by the TAC to facilitate the implementation of the National Policy. Appeals for any deviation from these guidelines will be referred to the TAC.

List of Abbreviations

CAASL	-	Civil Aviation Authority of Sri Lanka
CEA	-	Central Environmental Authority
CEB	-	Ceylon Electricity Board
EMC	-	Electromagnetic Compatibility
EMF	-	Electromagnetic Frequency
ICNIRP	-	International Commission on Non Ionizing Radiation Protection
LA	-	Local Authorities established under the Local Government Ordinance in Sri Lanka
MC	-	Municipal Council/s established under the Municipal Council Ordinance in Sri Lanka
MOD	-	Ministry of Defence, Public Security, Law and Order
PEA	-	Provincial Environmental Authorities
PS	-	Pradheshiya Sabha established under the Pradheshiya Sabha Act
RF	-	Radio Frequency
TAC	-	Technical Advisory Committee
TRCSL	-	Telecommunications Regulatory Commission of Sri Lanka
TISP	-	Telecommunication Infrastructure Service Provider
TSP	-	Telecommunications Service Provider
UC	-	Urban Council/s established under the Urban Council Ordinance in Sri Lanka
UDA	-	Urban Development Authority
WHO	-	World Health Organization

Definitions

Antenna: One or more radiating elements used for communication purposes

Antenna Structure: A tower, platform and other parts of the structure on which antennae may be installed.

Antenna Structure Farm: A geographical location with a collection of Antenna Structures.

Canopy: A more or less continuous cover of foliage formed by adjacent treetops. The canopy layer contains the majority of the largest trees.

Technical Advisory Committee (TAC): A panel of advisors appointed by the TRCSL to advise on issues related to antenna structures.

Telecommunications Service Provider (TSP)*: One who provides Telecommunication Services to the Public.

Telecommunication Infrastructure Service Provider (TISP)*: One who provides telecommunication Infrastructure facilities.

*At the time of developing the National Policy, Operators function as both TSPs and TISPs.

1. Sharing of Antenna Structures

- 1.1 Antenna structures should be used on sharing basis for which the tariff schedule will be determined by TRCSL in consultation with the TISPs. The minimum number of antenna structures that conform to the technical requirements will be approved for an identified Antenna Structure Farm.
- 1.2 The TRCSL will initiate the formation of a new Antenna Structure Farm when the necessity arises. TISPs may propose such locations to TRCSL.
- 1.3 The antenna structure shall be designed and constructed to accommodate a minimum of 20 square meters of additional design antenna area (from the top portion) for at least two other TSPs. Physical space required for fixing of the additional antenna shall be reserved at top portion. This allocation of additional design antenna area will be encouraged through incentive schemes.
- 1.4 Initially up to three requests will be considered to construct separate antenna structures within the Antenna Structure Farm. Subsequent applicants should share one of the available antenna structures. Applications for additional antenna structures will be considered only under special circumstances and such applications will be referred to the TAC with justification for such request.
- 1.5 The Antenna Structure Farm will be confined to a minimum feasible area by the TRCSL, subject to a maximum radius of 250 m.
- 1.6 The distance between Antenna Structure Farms will be kept at a minimum separation of 4 km.
- 1.7 Both TSPs and TISPs may obtain approval to erect roof top masts of height not exceeding 20 meters from the roof top within or in between Antenna Structure Farms.
- 1.8 Broadcasting antenna structures are exempted from the clauses 1.3 and 1.4 provided that application is initially forwarded for an Antenna Structure to be used only for broadcasting purposes.
- 1.9 Cumulative radio frequency power density due to Antenna Structure Farm should be within the limits defined by ICNIRP and adopted by TRCSL provided that the maximum RF power levels allowed are as per Annexure I.

2. Height Clearance

- 2.1 Maximum height of the antenna structure shall be based on the recommendations of the CAASL, MOD and UDA.

3. Lightning Protection

- 3.1 The Antenna Structure premises should be provided with a comprehensive lightning protection scheme to minimize the lightning related damage and injury as per the Annexure II (a).
- 3.2 The antenna structure should conform to the guidelines specified in Annexure II (b) with regard to the lightning protection concerns.
- 3.3 Installation of the lightning protection system should be carried out by the TISP as per Annexure II (b).
- 3.4 An insurance cover shall be in place against any lightning related damage to the neighbourhood due to the existence of the antenna structure.
- 3.5 A report on the lightning protection system, and other specified information as per Annexure III, shall be submitted to TRCSL by TISP twice a year.

4. Electromagnetic Interference and Health Concerns

- 4.1 Base Station equipment shall comply with the EMC standards acceptable to TRCSL.
- 4.2 TRCSL will enforce and monitor maximum RF power density criteria defined by ICNIRP and adopted by TRCSL as per Annexure I.
- 4.3 Verification of compliance with stipulated standards will be carried out by TRCSL or a recognized institution to ensure public safety.

5. Environmental Concerns

- 5.1 Natural environment of the area shall be protected from any potential adverse impacts in accordance with CEA or PEA approval.

6. Construction of Antenna Structures

- 6.1 The Antenna structure and other related infrastructure should be designed and constructed in conformity with BS 8100, TIA/EIA 222F (or latest) or other equivalent international standard accepted by TRCSL.
- 6.2 All antenna structures with height exceeding 30m should be designed and detailed as post- disaster type structures.
- 6.3 All the structural designs, construction drawings and proposals are required to be certified by a chartered civil engineer who is specialized in structural design.
- 6.4 Institutes and individuals who do the certification should be registered with TRC.
- 6.5 Minimum of third-party insurance coverage of the risk of physical damage and injury should be taken during the construction of antenna structure. A copy of

the same should be submitted to TRCSL before commencement of the development.

- 6.6 During the construction, the antenna structure should be installed with an aircraft warning light, as per CAASL recommendations.
- 6.7 TISPs should obtain development permits from respective Local Authorities. All the approving agencies are encouraged to establish electronic document transfer in order to expedite the approval process.
- 6.8 TISP who has received approval is required to complete the construction of the new antenna structure within six months from the date of granting the approval. Failure to meet this requirement without a valid reason acceptable to TRCSL will result in cancellation of the approval. The new antenna structure should be available for sharing within 03 months from the date of completion.
- 6.9 No Telecommunication Antenna Structure should be constructed without written approval of TRCSL.

7. Installation of Antenna Structures on Buildings

- 7.1 The structural stability of the buildings, which are primarily designed for purposes other than facilitating antenna structures, should be certified by a chartered civil engineer who is specialized in structural design, prior to the approval for the construction of the Antenna Structure.
- 7.2 The TISP should obtain the planning clearance from UDA within the areas declared under UDA Law.
- 7.3 Antenna structure outside the areas declared under UDA Law will be considered for approval with the consent of relevant Local Authorities.
- 7.4 Antenna structures less than 5m in height above roof top level are required to obtain clearance only from the MOD and CAASL.
- 7.5 A lightning protection system should be installed as per the Annexure II(b), to ensure the safety of occupants.
- 7.6 All antenna structures on buildings with total height exceeding 30m above ground level should be designed and detailed as post-disaster type structures. All proposals shall be certified by a chartered civil engineer who is specialized in structural design.
- 7.7 Installations of Antenna Structures on buildings should conform to all other Guidelines in this document.

8. Maintenance of Antenna Structures

- 8.1 Lighting and painting of Antenna Structures must be in accordance with the specifications of CAASL.
- 8.2 Antenna structure operator should submit a monthly report in electronic form to TRCSL indicating the information as per format No: TRC/NW/MR – 01.
- 8.3 Maintenance of antenna structure shall be carried out in accordance with Annexure IV
- 8.4 Maintenance of Lightning protection system should be done by the TISP in compliance with specifications given in Annexure II (c).

9. Alteration to Antenna Structures

- 9.1 Upon justifiable request(s) made by concerned parties, the TRCSL, in consultation with relevant authorities, may consider removal or alteration to the structure or suspension of operation. In such case all costs should be borne by the TISP.
- 9.2 To ensure the safety of the public and property, an Antenna Structure should not be abandoned even for short periods of time, unless otherwise it is completely removed. The TISP should inform the TRCSL and make arrangements to either remove a non-operational installation or transfer it to another antennae structure operator. Until the antenna structure is removed or transferred and the TRCSL is informed the same, the TISP is responsible for the maintenance of the antenna structure in conformity with provisions specified.
- 9.3 Any structural alterations to the Antenna Structure or its supporting structure, beyond what has been envisaged in the approved design, require the certification of a chartered civil engineer who is specialized in structural design to get the approval of the TRCSL.
- 9.4 Removal of an Antenna Structure also requires insurance to be taken for the coverage of the risk of physical damage and injury during the removal of antenna structure.

10. Approval Procedure

- 10.1 TISP should submit an application as per Annexure V in the form of soft and hard copies.
- 10.2 Approval Procedure is as specified in Annexure VI

11. General

- 11.1 All relevant authorities such as CEA, PEA, UDA, CAASL, LA, CEB and TRCSL are required to facilitate, the TISPs in establishing antenna structures to

provide telecommunication services on a priority basis, as telecommunication networks are a vital component of infrastructure development while addressing the public health & safety, economic, environmental and other impacts.

- 11.2 Appeals for any deviation from these guidelines caused by technical or commercial issues will be referred to the TAC who will meet once in a month.

Annexure I - Guidelines for limiting exposure to time-varying electric, magnetic, and electro magnetic fields

ICNIRP Recommendations

Table 1 – Reference levels for occupational exposure to time-varying electric and magnetic fields (unplumbed rms values)

Frequency range	E-field strength (Vm ⁻¹)	H-field strength (Am ⁻¹)	B-field (μT)	Equivalent plane wave power density S _{eq} (W m ⁻²)
Up to 1 Hz	–	1.63 x 10 ⁵	2 x 10 ⁵	
1-8 Hz	20,000	1.63 x 10 ⁵ /f ²	2x 210 ⁵ /f ²	
8-25 Hz	20,000	2 X 10 ⁴ /f	2.5 X 10 ⁴ /f	
0.025-0.82 kHz	500/f	20/f	25/f	
0.82-65 KHz	610	24.4	30.7	
0.065-1MHz	610	1.6/f	2.0/f	
1-10 MHz	610/f	1.6/f	2.0/f	
10-400MHz	61	0.16	0.2	10
400-2,000MHz	3f ^{1/2}	0.008f ^{1/2}	0.01f ^{1/2}	f/40
2-300GHz	137	0.36	0.45	50

Notes:

1. f, as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded. Field strength values can be exceeded.
3. For frequencies between 100kHz and 10 GHz, S_{eq}, E², H², and B² are to be averaged over any 6- min period.
4. For peak values at frequencies up to 100KHz see table 4, note 3
5. For peak values at frequencies exceeding 100 KHz see figs.1 and 2. Between 100KHz and 10 MHz, Peak values for the field strength are obtained by interpolation from the 1.5 fold peak at 100KHz to the 32-fold peak at 10MHz, for frequencies exceeding 10MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width, does not exceed 1, 000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq}, E², H², and B² are to be any 68/f^{1.05}-min period (f in GHz).
7. No E-field value is provided for frequencies <1HZ, which are effectively static electric field. Electric shock from low impedance source is prevented by established electrical safety procedures for such equipment.

Table 2. Reference levels for general exposure to time-varying electric and magnetic fields (unplumbed rms values)

Frequency range	E-field strength (Vm ⁻¹)	H-field strength (Am ⁻¹)	B-field (μT)	Equivalent plane wave power density S _{eq} (W m ⁻²)
Up to 1 Hz	-	3.2 x 10 ⁴	4 x 10 ⁴	
1-8 Hz	10,000	3.2 x 10 ⁴ /f ²	4 x 10 ⁴ /f ²	
8-25 Hz	10,000	4,000/f	5,000/f	
0.025-0.8KHz	250/f	4/f	5/f	
0.8-3KHz	250/f	5	6.25	
3-150 KHz	87	5	6.25	
0.15-1 MHz	87	0.73/f	0.92/f	
1-10 MHz	87/f ^{1/2}	0.73/f	0.92/f	
10-400MHz	28	0.073	0.092	2
400-2,000MHz	1.375f ^{1/2}	0.0037f ^{1/2}	0.0046/f ^{1/2}	f/200
2-300GHz	61	0.16	0.20	10

Notes:

1. f, as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded. Field strength values can be exceeded.
3. For frequencies between 100kHz and 10 GHz, S_{eq}, E², H², and B² are to be averaged over any 6- min period.
4. For peak values at frequencies up to 100KHz see table 4, note 3
5. for peak values at frequencies exceeding 100KHz see figs.1 and 2. Between 100KHz and 10MHz, Peak values for the field strength are obtained by interpolation from the 1.5 fold peak at 100KHz to the 32-fold peak at 10MHz, for frequencies exceeding 10MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width, does not exceed 1, 000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq}, E², H², and B² are to be any 68/f^{1.05} -min period (f in GHz).
7. No E-field value is provided for frequencies <1HZ, which are effectively static electric field. Perception of surface Electric changes will not occur at field strength less than 25kVm⁻¹ Sparks dischargers causing stress or annoyance should be avoided..

Verification will be carried out as per Safety Guidelines of TRCSL on FR Exposure

Annexure II (a) - Lightning Protection of the Antenna Structure Premises

1. The metallic base of the antenna structure should be connected to the earth grid specified in Annexure II(b) by copper tapes of minimum cross sectional area 50 mm².
2. The cable sheaths of all signal lines from the antenna structure should be terminated at a bulkhead at the entrance to the equipment cabin. The bulkhead shall be electrically connected to the cable rack by copper tapes of minimum cross sectional area 50 mm². No conducting part inside the cabin should be directly connected to the outside bulkhead.
3. An earth inspection pit should be installed underneath the bulkhead. The bulkhead should be connected to the earth termination rod in the pit by a copper tape of minimum cross section 50 mm². The earth pit should be integrated with the earth grid specified in Annexure II(b) by copper tapes of minimum cross sectional area 50 mm².
4. The power line to the equipment cabin should be installed with Surge Protective Devices (SPDs) at the main panel, with following specifications.

#	Characteristic	Value
1	System Voltage	230V or relevant
2	MCOV	300V or above
3	I _{max} 8/20 μs per phase	60kA or above *
4	I _{imp} 10/350 μs per phase	30kA or above *
5	V _{clamp} at I _{max} per phase	1.8 kV or below

* Higher values may be used for better safety of the equipment in the cabin.

The earth terminal of the SPD should be connected to the to the earth bar via copper wire of minimum cross section 16 mm² and maximum length of 50 cm.

The earth bar should be connected to an external earth pit with copper conductors of minimum cross section 50 mm². The earth pit should be integrated with the earth grid specified in Annexure II (b) by copper tapes of minimum cross sectional area 50 mm².

Annexure II (b) - Lightning Protection Concerns

- As far as lightning is concerned, it should be noted that communication antenna structures differ from tall buildings of same height by the fact that currents pertinent to lightning that strike to antenna structures flow to ground within a small area (concentrated current flow).
- The areas of the high lightning occurrence density (HLOD) and low lightning occurrence density (LLOD) should be identified and mapped. Until such maps are produced all areas are considered under the category of HLOD.

Item No	Situation	Regulation for areas with HLOD	Regulation for areas with LLOD
01	Antenna structures of height less than 100 m and on concrete bases of perimeter less than 40 m (on small concrete bases)	<p>a. The minimum distance from the metal base of the antenna structure to the boundary of the other land plot should be 5 m from all directions (Refer section e for further restrictions)</p> <p>b. The antenna structure earthing should be done as per the diagram -1 with Minimum x should be 3 m. All the copper strips should have a minimum cross section of 50 mm^2 (Rectangular). Additional components (buried plates, deep driven rods etc. should be installed to achieve a maximum earth resistance measured under dry conditions to be 5Ω.</p> <ul style="list-style-type: none"> • It is the responsibility of the licensee to maintain earth resistance on or below the above limit. <p>c. An adequate Surge Protective Device (SPD) should be installed at the power entrance to the antenna structure related equipment with following specifications:</p>	<p>a. The minimum distance from the metal base of the antenna structure to the boundary of the other land plot should be 4 m from all directions</p> <p>b. The antenna structure earthing should be done as per the diagram-1 with Minimum x should be 2 m. All the copper strips should have a minimum cross section of 50 mm^2. Additional components (buried plates, deep driven rods etc). should be installed to achieve a maximum earth resistance measured under dry conditions to be 10Ω.</p> <ul style="list-style-type: none"> • It is the responsibility of the licensee to maintain earth resistance on or below the above limit. <p>c. If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), the minimum</p>

		<p>Configuration: 3L-N; 1 N-E for 3 phase supply 1L-N; 1 N-E for 1 phase supply Minimum I_{max} (8/20 μs): 50 kA per phase Minimum I_{imp} (10/350 μs): 30 kA per phase The earthing of the SPD should be properly connected to the antenna structure earthing by copper tape of minimum cross section 50 mm².</p> <ul style="list-style-type: none"> • It is the responsibility of the licensee to check and maintain the SPDs on regular basis. <p>d. The antenna structure related site should be provided only with wireless telephone systems</p> <p>e. If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), the minimum distance from the metallic antenna structure base to the boundary of the land plot having the place of mass gathering should be 15 m</p> <p>f. If a hospital is situated or constructed within 150 m from the metallic antenna structure base, the licensee should provide SPDs at the main power entrance of the hospital with proper earthing (according to IEC Standards 62305-4). The SPD should be in accordance with the specifications given in section c.</p>	<p>distance from the metallic antenna structure base to the boundary of the land plot having the place of mass gathering should be 10 m</p>
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02	Antenna structures of height greater than 100 m and on concrete bases of perimeter less than 40 m (on small concrete bases)	<p>a. The minimum distance from the metal base of the antenna structure to the boundary of the other land plot should be 10 m from all directions (Reefer section e for further restrictions)</p> <p>b. The antenna structure earthing should be done as per the diagram -1 with Minimum x should be 6 m. All the copper strips should have a minimum cross section of 50 mm^2. Additional components (buried plates, deep driven rods etc. should be installed to achieve a maximum earth resistance measured under dry conditions to be 3Ω.</p> <ul style="list-style-type: none"> • It is the responsibility of the licensee to maintain earth resistance on or below the above limit. <p>c. A Surge Protective Device (SPD) should be installed at the power entrance to the antenna structure related equipment with following specifications Configuration: 3L-N; 1 N-E for 3 phase supply 1L-N; 1 N-E for 1 phase supply Minimum I_{\max} (8/20 μs): 80 kA per phase Minimum I_{imp} (10/350 μs): 30 kA per phase The ear thing of the SPD should be properly connected to the antenna structure earthing by copper tape of minimum cross section 50 mm^2.</p>	<p>a. The minimum distance from the metal base of the antenna structure to the boundary of the other land plot should be 5 m from all directions</p> <p>b. The antenna structure earthing should be done as per the diagram-1 with Minimum x should be 3 m. All the copper strips should have a minimum cross section of 50 mm^2. Additional components (buried plates, deep driven rods etc). should be installed to achieve a maximum earth resistance measured under dry conditions to be 5Ω.</p> <ul style="list-style-type: none"> • It is the responsibility of the licensee to maintain earth resistance on or below the above limit. <p>c. If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), the minimum distance from the metallic antenna structure base to the boundary of the land plot having the place of mass gathering should be 20 m</p>
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		<ul style="list-style-type: none">• It is the responsibility of the licensee to check and maintain the SPDs on regular basis. <p>d. The antenna structure related site should be provided only with wireless telephone systems</p> <p>e. If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), the minimum distance from the metallic antenna structure base to the boundary of the land plot having the place of mass gathering should be 30 m</p> <p>f. If a hospital is situated or constructed within 150m from the metallic antenna structure base, the operator should provide SPDs at the main power entrance of the hospital with proper earthing (according to IEC Standards 62305-4). The SPD should be in accordance with the specifications given in section c.</p>	
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03	All antenna structures erected on bases having perimeter more than 40 m (on roof top of buildings)	<p>The building should be installed with a structural protection system as per the IEC Standards 62305-3 and Level of protection II.</p> <p>It is the responsibility of the licensee to maintain the protection system as per the standards</p> <p>If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), there should be at least 4 down conductors. The earth pits should be which should be joined by a ring conductor. The minimum distance from the ring conductor to the boundary of the land plot having the place of mass gathering should be 5 m</p> <p>A Surge Protective Device (SPD) should be installed at the power entrance to the antenna structure related equipment with following specifications</p> <p>Configuration: 3L-N; 1 N-E for Three phase supply 1L-N; 1 N-E for single phase supply</p> <p>Minimum I_{max} (8 / 20 μs): 50 kA per phase Minimum I_{imp} (10/ 350 μs): 30 kA per phase</p> <p>The earthing of the SPD should be properly connected to the antenna structure earthing by copper tape of minimum cross section 50 mm².</p> <p>It is the responsibility of the operator to check and maintain the SPDs on regular basis.</p>	<p>The building should be installed with a structural protection system as per the IEC Standards 62305-3 and Level of protection IV.</p> <p>It is the responsibility of the licensee to maintain the protection system as per the standards</p> <p>If the antenna structure is close to a place of mass gathering (school, religious places, hospitals cinema halls etc.), there should be at least 2 down conductors. The earth pits should be which should be joined by a ring conductor the minimum distance from the ring conductor to the boundary of the land plot having the place of mass gathering should be 3 m</p>
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Where the specified earth resistance and buffer zones cannot be achieved due to very specific practical reasons, the case shall be referred to TAC.

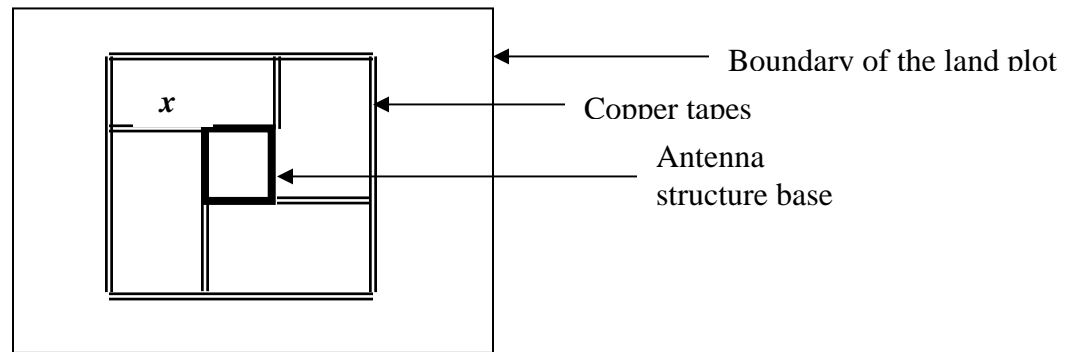


Diagram-1: Earthing arrangement of an antenna structure of 4 feet

Annexure II(c) - Maintenance

A comprehensive inspection should be done once in every 6 months preferably in mid-February and mid-August. The following items should be checked in the inspection and any defects should be rectified with immediate effect. A full report of the inspection together with any consequent rectification done should be forwarded to the TRCSL within two weeks after the inspection.

- a. Appearance of the exposed copper conductors (alignments, condition of brackets and joints, mechanical stability, corrosion etc.)
- b. Condition of the Earth pits
- c. Earth Resistance (should be in compliance with specifications given in Annexure II (b).
- d. Condition of surge protectors (status of faulty indicators, arc signs, distortions, colour changes of material, melted wire sheaths, burnt smells, any unusual noise etc)

Annexure IV - Antenna Structure Maintenance Report

SITE MAINTENANCE REPORT

Site Reference Number :- TRCSL/IOP/...../...../

1.0 General Details

1.1 Name of the Operator :-.....

1.2 Site Name :-.....

1.3 Date of Visit :-.....

1.4 Names of Officers Visited:-

1.....

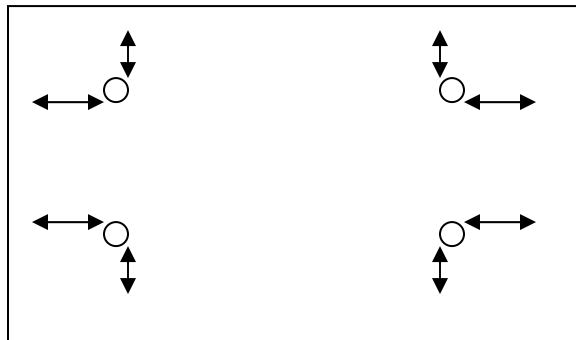
2.....

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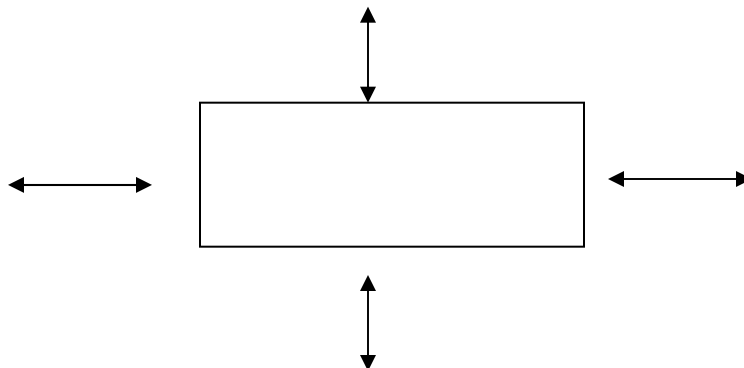
2.0 Site Location Details

2.1 Condition of fence and gate. In order/ Not in order

2.2 Distance from the legs of the antenna structure to the fences of the antenna structure



2.3 Distance from the fences to the nearby structures/ Houses/Building



2.4 The Antenna structure has been painted as per the standards

Yes	No

2.5 Condition of the Antenna structure Detection Bulb in order

Yes	No

3.0 Site Technical Details

3.1 Location N:

E:

3.2 Altitude

3.3 Remarks if any

3.4 Earth Resistance measurements

.....
.....
.....

3.5 Power source Details. (3 phase/ single phase/ Generate Power)

- Existing Height of the Antenna structure.....

3.8 Name Board of the operator placed correctly

Yes	No

3.9 Type of the Antenna structure.

[a].Ground Antenna structure

[i].Self supporting Ground Antenna structure. []

[ii].Guided Mast Ground Antenna structure. . []

[iii].Ground Pole. . []

[iv].Any other. []

[b].Roof Top Antenna structure

[i]. Self supporting Roof Top Antenna structure []

[ii]. Guided Mast Roof Top Antenna structure []

[iii]. Roof Top pole []

[iv]. Any other. []

3.10 Year of erection

3.11 Availability of Telecommunication Services.

- [a].Broadcasting
- [b].TV
- [c] Microwave
- [d].GSM Mobile.
- [e].CDMA fixed wireless.
- [f].3G
- [g].Wimax.
- [h].Any other.

3.12 Other Operators in Share.

3.13 Availability of Community based Structures.

- [a].Schools
- [b].Hospitals.
- [c].Libraries.
- [d].Any other.

3.14 Availability of Industries in the Targeted Coverage.

4.0 Necessary approvals obtained for the Antenna structure erection

Yes	No

5.0 Security for the Antenna structure

3.15 Security Officers deployed in the site premises

Yes	No

3.16 The Gate Kept under lock and key

Yes	No

6.0 Remarks if any.....

Certified by:

Annexure V - Application for Antenna Structure erection

Annexure I of Application for Antenna Structure erection

1. General Information

1.1 Legal Name of the operator:

1.2 Address/Telephone Number of Applicant:

1.3 Name/Position/Tel No. of the contact person:

1.4 Name /Position/ Tel. No. number of the person responsible for maintenance.

1.5 Address of the antenna structure location, elevation and its associated Radio Base Station :

1.6 District / Local Authority Area:

1.7 Gramasewaka Division:

1.8 Latitude: Longitude:

1.9 Land extend

2. Technical Details

2.1 Licensed Radio Service or Services:

2.2 Structure type:

2.3 Antenna type:

2.4 Height above ground of the lowest point of the antenna:

2.5 Total number of channels:

2.6 Effective Radiated Power or Effective Isotropic Radiated Power per channel in Watts:

2.7 What are the frequencies of the RF signals being transmitted?

Channel

Up Link Frequency:

Down Link Frequency:

3. Health Concerns

3.1 Distance and nature of the neighbourhood up to 100 m radius by plan view.

3.2 What will be the power density in mW /cm² at the above neighbourhood?

3.3 List any other antenna structures located in the area (may be from some other operator at the vicinity of the antenna structure) within 500 m range.

3.4 Further information on the surrounding and the location.

The closest school/Nursery – Name and Distance (km) :

The closest city - Distance to the city (km) :

The closest populated area - Distance to the populated area (km)

The closest hospital – Name and Distance

3.5 What is the expected RF power densities at the above locations (Q - 3.4) in mW/cm² averaged in any thirty minutes period (worst case).

3.6 Number of people who would reside and/or work in the premises once the service is commissioned?

4. Sharing of Infrastructure.

4.1 If these are similar structures/facilities available within 500 m range (Q - 3.3) applicant shall submit necessary information and evidence as to why this structure/facility cannot be accommodated with such existing facilities.

5. Zoning Classification

5.1 What is the current use of the site & adjacent properties?

5.2 Describe any existing structures on the site if such structures will be demolished.

5.3 If any other ancillary buildings are proposed to be constructed along with the antenna structure, please give details with building plans.

6. Environmental Aspects

6.1 Land

Could any disturbance to the natural terrain occur as a result of the construction of the proposed structure and if so provide details on the proposed mitigatory measures. (Land Slides, Soil erosion, etc.)

6.2 Vegetation

Types of Vegetation whether they will be removed or altered. (Tea, Rubber, Coconut, Mixed Forest, Forest Plantation Shrubs, Grass, Pasture, Crop or other)

6.3 Historical & Archaeological Importance

Describe any landmarks or evidence of historical, religious, archaeological, scientific or cultural sites known to be on or in close proximity to the antenna site (especially within 50 m Radius)

6.4 Aesthetic & Visual Environment

- a) Describe the impacts to the immediate vicinity (Whether it would be altered, impaired or obstructed as a result of the proposed structure.
- b) Proposed landscaping, use of native plants or other measures to preserve or enhance vegetation on the site.
- c) Any other impacts, which have not being anticipated at this, stage but may come up in the future

6.4 Whether proposed site is located within any of the areas listed below?

1. Within 100m from the boundaries of or within any area declared under -The National Heritage Wilderness Act No.03 of 1998;
-The Forest Ordinance (Chapter 451);
-The Fauna & Flora Protection Ordinance (Chapter 469).
2. Within any readable area declared under the Soil Conservation Act. (Chapter 450)
3. Within any Flood Areas declared under the Flood Protection Ordinance (Chapter 449) and any Flood Protection area declared under the Sri Lanka Land Reclamation & Development Co-corporation Act, 15 of 1968 as amended by Act, No. 52 of 1982
4. Within 60m from the Bank of a public stream as define in the Crowns Land Ordinance; (Chapter 454) and having width of more than 25 meters at any point of its course
5. Within any reservation beyond the full supply level of the reservoir.
6. Within any archaeological reserve, ancient or protected monuments as define or declared under Antic Ordinance (Chapter 488).
7. Within any area declared under The Botanic Garden Ordinance (Chapter 446).
8. Within 100m from the high flood level contour of, or within a public lake as defined in the Crown Land Ordinance (Chapter 454) including those declared under the section 71 of the said Ordinance.
9. Within any Environmental Protection Area / Scenic places declared under the National Environmental Act

- 6.5. If the area is within the Coastal Zone as defined in the Coastal Conservation Act No.57 of 1981. applicant should obtain approval from Coast Conservation Department and attach a copy of such approval letter.

7 Infrastructure facilities.

Power:

Power requirements
Alternative arrangements for power supply.

Road Access :

Will the proposed site require any new road construction, or improvements to existing roads.

8 Aesthetic & Visual Environment

- 8.1 Describe the impacts to the immediate vicinity (Whether it would be altered, impaired or obstructed as a result of the proposed structure.
- 8.2 Proposed landscaping, use of native plants or other measures to preserve or enhance Vegetation on the site.
- 8.3 Any other impacts, which have not being anticipated at this, stage but may come up in the future

9. Security implications

- 9.1 Indicate whether the proposed Antenna Masts and Radio Base Station is near proximity to any of the following establishments and if so indicate the distance and exact location

- 1. Military and Police Establishments
- 2. Military and Commercial Airports
- 3. Naval & Commercial Harbors.
- 4. Explosive & Ammunition Storage Depots
- 5. Petroleum storage tanks
- 6. Vulnerable Places (VP)/ Very Important Personnel (VIP) locations
- 7. Areas declared as a High Security Zone by the MPSL&O
- 8. Any other location declared by the Ministry of Defence Public Security Law and Order

- 10. Negative impacts of existing certain attractive areas by making them inaccessible to General public (E.g.: Pidurutalagala case)

Annexure II of Application for Antenna Structure erection

1 Site Owners Details

1.1 Site Owner's Name

1.2 Owner's Address

1.3 Telephone / Fax No

2 Route Map

Clearly indicate the location of the Antenna Structure and Radio Base Station.

2.1. On a Route Map for inspection purposes

2.2. On an Island wide map (Scale 1 :50,000) printed by the survey department

Annexure VI - Approval Procedure

1. TRCSL to coordinate and regulate erection of antenna structures as the single point of contact for telecommunication service providers and broadcasting agencies.
2. Adopt the guidelines developed by ICNIRP as the guidelines of Sri Lanka. Routine verification to be conducted by TRCSL according to the evaluation criteria.
3. Relevant Clearances of the Central Environmental Authority or Provincial Environmental Authority (NWP), Urban Development Authority, Civil Aviation Authority and Ministry of Defence, Public Security Law & Order shall be obtained prior to grant approval of the TRCSL. Final approval will be granted by TRCSL at a special coordinating committee comprising representatives from above institutions.
 - 6.1 If the facilities are proposed to be located in the area declared under UDA Act, the application will be forwarded to UDA for their observations and comments which will be considered in the approval by TRCSL.
 - 6.2 If the proposed site is located out side UDA declared areas, TRCSL, in consultation with government authorities concerned and the relevant local authority, will consider approval for the erection of antenna structure.
 - 6.3 If the UDA request the building owner to demolish / alter the building on which antenna structure / mast is erected, due to violation of UDA Regulations, the TRCSL will take action to instruct the owner of the antenna structure to remove the antenna structure / mast immediately to avoid UDA being institute its procedure to demolish unauthorized construction.
4. Civil Aviation Authority to enforce their regulations in full in processing the applications.
5. Evaluate all applications by Ministry of Defence, Public Security Law & order.
6. Building, wall and pole mounted antennae with height less than 5m from the top of a building will only be forwarded to MPSL & O. This will encourage operators to develop this type of environmental friendly arrangements.
7. Upon receipt of authorization from Telecommunications Regulatory Commission developer should submit an application to relevant Local Authority to obtain development permit.
8. TRCSL to insist sharing of existing facilities and develop projects for common antenna structures with the help of investors and operators.
9. Construction activities related to proposed base station should be commenced within 30 days from the date of the approval of TRCSL.
If the project is delayed due to any reason beyond the control of operator should be communicated to T RC.

The TRCSL welcomes views of the Public on this “ Policy on this “ Policy on Antenna Structures” and issues that are not addressed in this Policy.

All views and comments should be submitted in writing and /or in electronic form in preferably, Microsoft Word. Please submit your responses on or before 31October 2008.

Submission should be addressed to

The Director General of Telecommunications
Telecommunications Regulatory Commission of Sri Lanka
276, Elvitigala Mawatha,
Colombo 08

Email: networkdata@trc.gov.lk