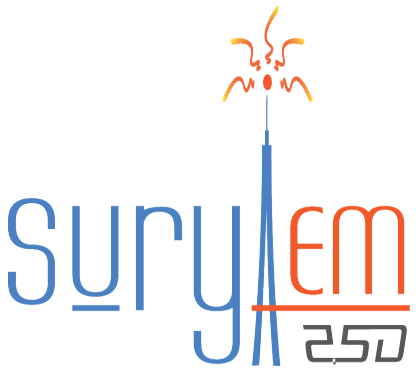
EMF SIMULATION REPORT

(Commission Version)



STRUCTURE ID	Sample_Rooftop_1
SITE NAME	Sample Rooftop Site
SITE ADDRESS	123, Sample Lane, Sample Building, Area Name, District Name
STRUCTURE TYPE/CATEGORY	Rooftop
SIMULATION DATE	31-Jul-2020
EMF COMPLIANCE STATUS	Pending
RF OWNER	SuryaEm
SHARING TYPE	Single
CONSULTANT	---
SOFTWARE	SuryaEm2.5D

TABLE OF CONTENTS

GENERAL INFORMATION

Introduction:

In this report maximum cumulative radio-frequency (RF) exposure calculations are presented for the above mentioned cellular base station site. Results are shown at 2m above ground level and/or roof top level, unless specified otherwise, and expressed in terms of the ICNIRP guidelines. The actual RF exposure levels will generally be significantly less than the simulated values, due to automatic power control used by cellular base stations as well as reduction in exposure levels due to environmental factors such as the presence of buildings, trees and other objects. The simulated values are aimed towards the analytic worst case scenario for the peak traffic conditions.

Exposure Standards:

Results are expressed in terms of the ICNIRP'98 general public guidelines. These guidelines are reviewed on a regular basis by ICNIRP and specify the limits for continuous exposure of the general public to RF transmissions at frequencies used by cellular phone base stations.

Report Format:

The report in this document is in line with most of national standards. Electromagnetic mapping of BTS site and nearby clutter is done, based on cylindrical spherical computation meth od as defined in International Electrotechnical Commission's IEC 62232 International Standard "Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure"

Software used:

This report is automatically generated from SuryaEM 2.5D suite which is a product of ni2designs. SuryaEM is validated as per IEC 62232 Annexure H IEC Benchmark example and the Validation report can be download from our website www.suryaem.com

Glossary of Terms Used:

Exclusion Zone: Area around an antenna or antennas where the RF field values emanating from the antennas exceed the ICNIRP public guidelines (public exclusion zone) or the ICNIRP occupational guidelines (occupational exclusion zone). Red zone indicates no access without following appropriate shut-down, power-down or pass through procedures. Yellow zone indicates access only allowed for RF trained personnel. No access for general staff, maintenance personnel or the public, whereas white zone is free access to everybody.

Orthoslice: Colour representation in form of power density values calculated in a plane of interest, expressed as a percentage of ICNIRP general public reference level with logarithmic legend. The standard dimension/area of Orthoslice of 60mX60m is used in the report as per Malaysian Standard document.

SITE DATA & TECHNICAL PARAMETERS

Structure ID : Sample_Rooftop_1

RF Owner Name : SuryaEm

Site ID : Sample_Rooftop_1

Site Name : Sample Rooftop Site

Site Address : 123, Sample Lane, Sample Building, Area Name, District Name

Site Category : Rooftop

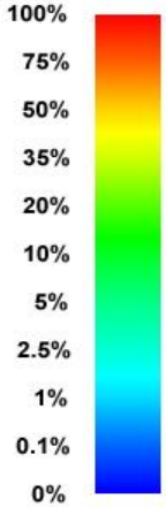
Latitude/Longitude : 18.50853271737789 73.79332669692421

Height of Building/Tower : 15

Antenna	Operator	Antenna Model	Height	Azimuth	Mech Tilt	Band	Frequency	Elect. Tilt	Power
Commscope	SuryaEm	HWXXX-6516DS-A3M	20	0	3	DCS	1800	2	20
						LTE	1800	3	30
						LTE	2600	3	30
						UMTS	2100	3	20
Commscope	SuryaEm	HWXXX-6516DS-A3M	20	110	3	DCS	1800	2	20
						LTE	1800	3	30
						LTE	2600	3	30
						UMTS	2100	3	20
Commscope	SuryaEm	HWXXX-6516DS-A3M	20	225	3	DCS	1800	2	20
						LTE	1800	3	30
						LTE	2600	3	30
						UMTS	2100	3	20

ORTHOSLICE AT GROUND LEVEL

POWER DENSITY AT 2 M ABOVE THE GROUND LEVEL

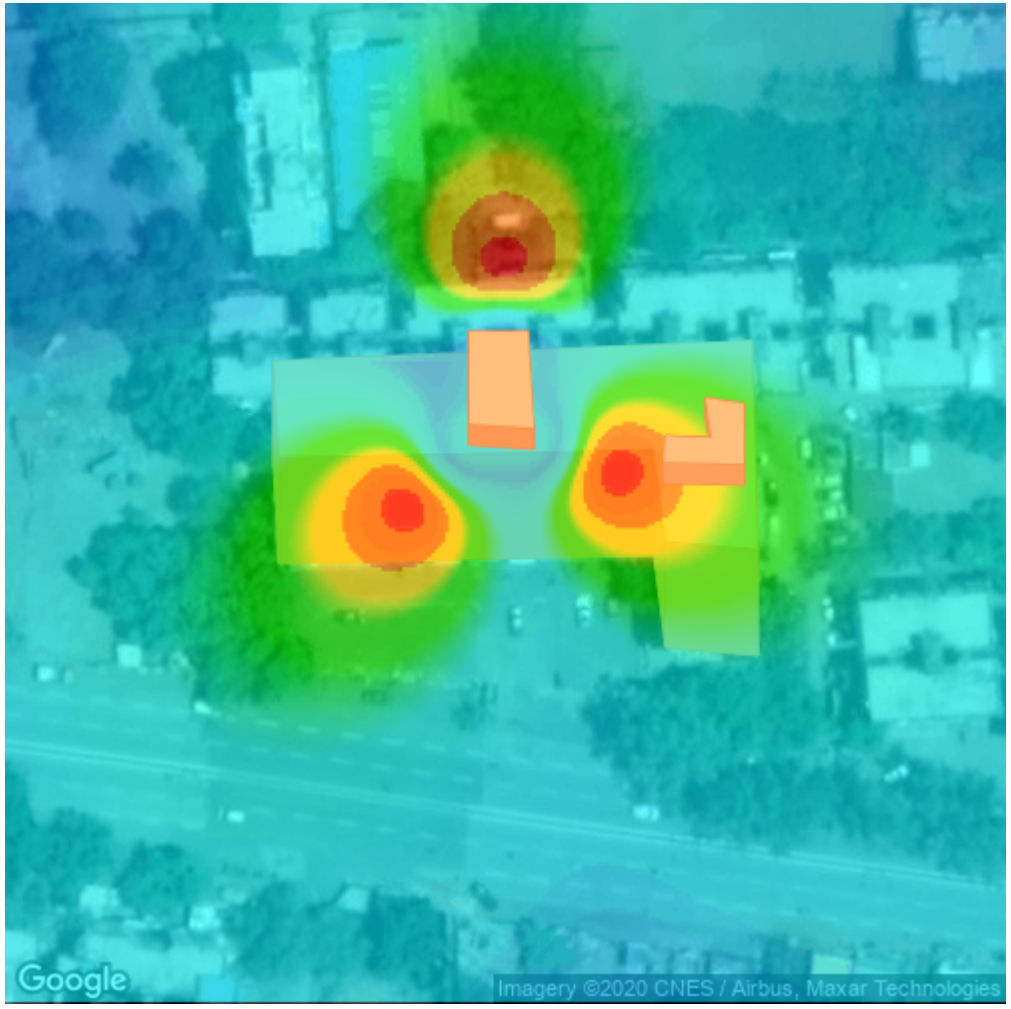


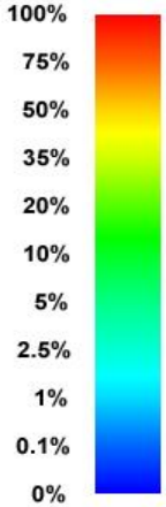
Struct. ID	Sample_Rooftop_1
Site Name	Sample Rooftop Site
Lat	18.50853271737789
Long	73.79332669692421
No. of Antenna	3
Max Value	**2.35%**

COMMENT: The figure on this page page show the calculated exposure levels in the vicinity of the base station site. The colour legend in logarithmic scale ranges from blue depicting values less than 5%, or twenty times below ICNIRP public guideline, to red depicting values more than 80% of the ICNIRP public guideline. 100% or more dark red would represent values above the guidelines. It is clear from the results that RF exposure at 2m above ground level and at all positions in the vicinity of the base station site, is well below the ICNIRP and MCMC guidelines.

ORTHOSLICE AT ROOF TOP LEVEL

POWER DENSITY AT 2 M ABOVE THE ROOF TOP LEVEL



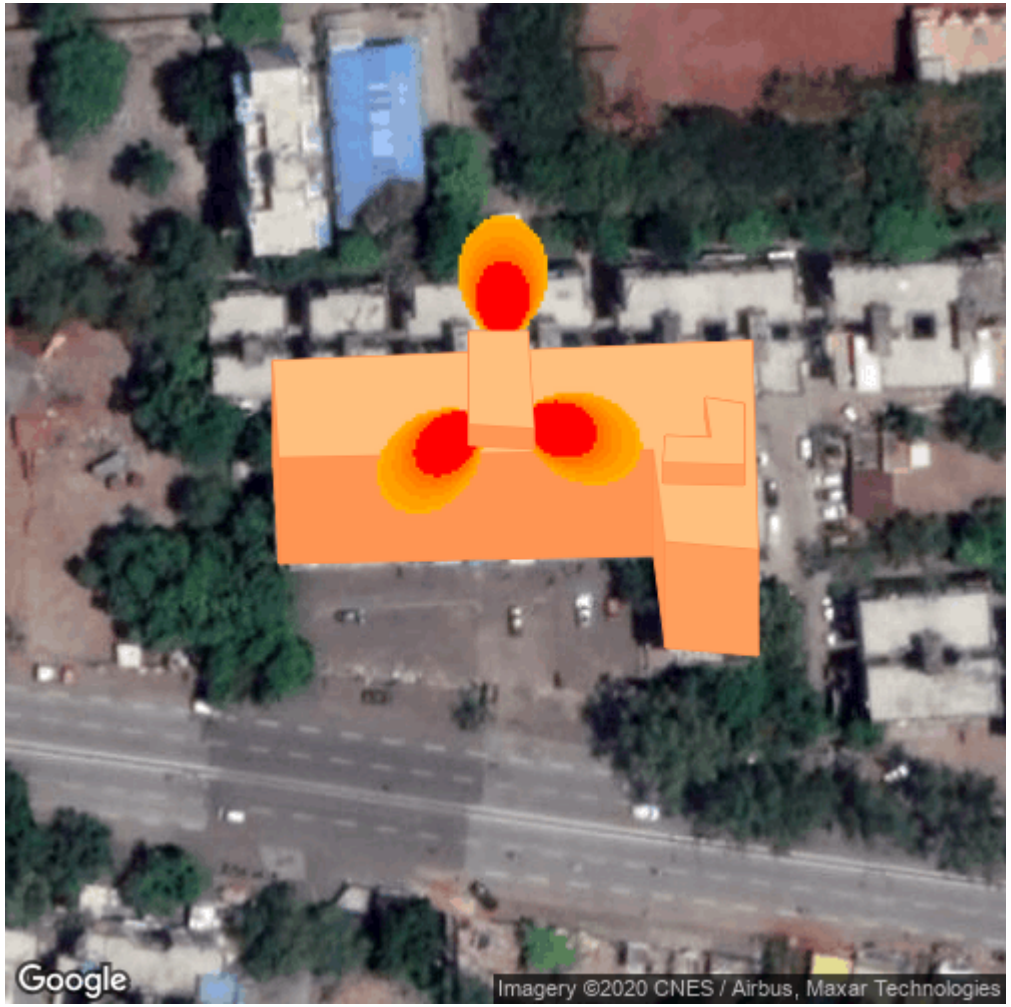


Struct. ID	Sample_Rooftop_1
Site Name	Sample Rooftop Site
Lat	18.50853271737789
Long	73.79332669692421
No. of Antenna	3
Max Value	**83.98100000000001%**

COMMENT: The figure on this page page show the calculated exposure levels in the vicinity of the base station site. The colour legend in logarithmic scale ranges from blue depicting values less than 5%, or twenty times below ICNIRP public guideline, to red depicting values more than 80% of the ICNIRP public guideline. 100% or more dark red would represent values above the guidelines. It is clear from the results that RF exposure at 2m above ground level and at all positions in the vicinity of the base station site, is well below the ICNIRP and MCMC guidelines.

EXCLUSION ZONE

TOP VIEW



Exclusion Zone Indicators

This report contains numerically computed exclusion zones. These zones are computed based on the ICNIRP guidelines.

Red Zone = No access without following appropriate shut-down, power-down or pass through procedures.

Yellow Zone = Access only allowed for RF trained personnel. No access for general staff, maintenance personnel or the public.

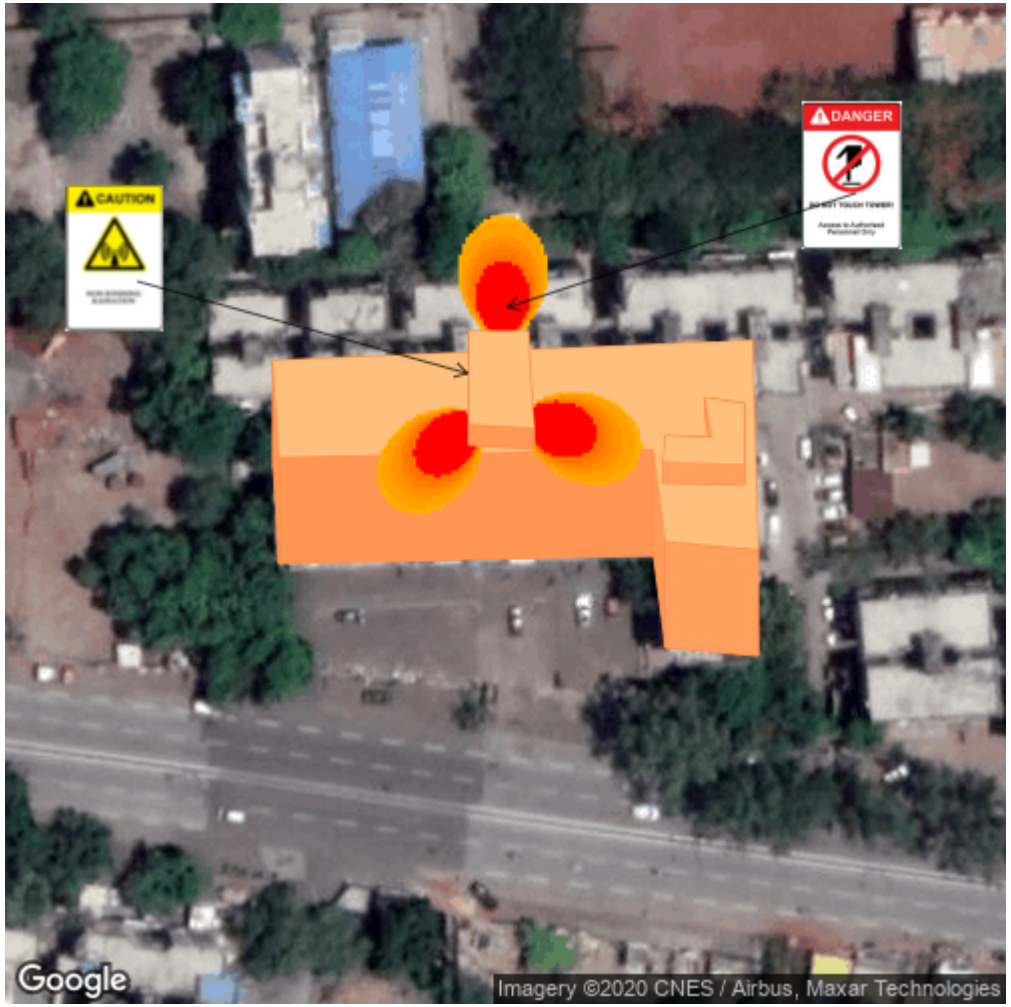
White Zone = Free access

Struct. ID	Sample_Rooftop_1
Site Name	Sample Rooftop Site
Lat	18.50853271737789
Long	73.79332669692421
No. of Antenna	3
Max Exclusion Zone Distance	**9.341 M**

COMMENT: It is clear from the results that the exclusion zones are very small in length and hence are very less likely to have a cross with adjacent buildings. The exclusion zone crossover with adjacent buildings is manually verified with panaromic pictures. There was no nearby building observed in the pananoramic pictures within the range of exclusion zone. An aerial/google picture is overlaid with 3D geometry of the BTS site (if available) and the computed results of exclusion zone to determine crossover with adjacent buildings.

SIGNAGE IMPLEMENTATION

EXCLUSION ZONE HEIGHT AND SIGNAGE IMPLEMENTATION



Safety Signages

The service provider will ensure provision of below proper signages on the site for safety requirements.

	Notice signage for public exposure limit
	Warning signage for public exposure limit
	Warning signage for occupational exposure limit

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Site Name	Sample Rooftop Site
Lat	18.50853271737789
Long	73.79332669692421
No. of Antenna	3
Max Exclusion Zone Distance	**9.341 M**

COMMENT: Apart from determining the RF exposure emanating from the site, at positions where the public normally resides and ensuring that this exposure is below the public ICNIRP guidelines, it is also important that adequate control measures be in place to ensure that no person enters into the exclusion zones. Such control measures could include RF hazard signage and/or physical access control at this site. None of the exclusion zones of antennas on this site is accessible by public. Hence signage of warning at exclusion zone is not required. General signage of ""Notice"" at the entry of BTS site and Danger on the tower structure are recommended.

AERIAL VIEW

EYE ALT VIEW FROM GROUND LEVEL

COMMENT: The figure on this page shows Eye Alt (bird eye) view on Google earth by overlaying satellite imagery onto a Digital Elevation model at an height of around 200m from ground level (if available). The above figure is to give general overrview of the surroundings of the site and to roughly estimate the population clutter of the cellular area.