

Cellular Mast Emissions Survey: TRS (Jersey)



DOCUMENT DETAILS

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Survey Engineer:	Louise Sands	
Report Compiled by:	Lauren Medhurst	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

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Executive Summary

CICRA regularly monitors radiowave emissions from the cellular masts in the Bailiwicks of Guernsey and Jersey to ensure the mobile network operators who operate their services from those masts comply with their license obligations in terms of power levels and that the emissions from the sites comply with internationally recognised standards and guidelines regarding Health & Safety limits for the public.

In 2017, CICRA commissioned iWireless Solutions to conduct the emission surveys at all sites within the two Bailiwicks. This report is for the TRS site located in Jersey.

The TRS site was used by a single operator at the time of the survey: JT J. Surveys were however conducted at all cellular frequency bands (800, 900, 1800, 2100 and 2600MHz) for all mobile cellular technologies (GSM, 3G and 4G) and for all three cellular operators as a routine procedure.

The survey established that the emissions around this site were very low and well below the safety limits for the public advised by internationally recognised standards.

The values shown hereafter are the maximum levels that were recorded around the site following a peak search. In most other locations, the levels were lower. The recorded values are only true at the time of testing and can go up or down depending on the level of user activity on the cell.

The Total Exposure Quotient for the site recorded across all detected cellular frequency bands is given at the bottom of the summary table below. A total Site EQ close to 1 (one) would mean that emissions at the site approach the limit advised by ICNIRP in their guidelines.

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	800	0.1296	JT J	300	9.48212E-05	1/ 10546
	900	1.826	JT J	23	0.002637086	1/ 379
	1800	0.1647	JT J	354	0.000274162	1/ 3647
	2100	0.2419	JT J	252	0.000356593	1/ 2804
	2600	0.003457	Airtel J	17645	3.01616E-07	1/ 3315475
Total Site EQ					0.003362965	1/ 297

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/297 and therefore remains well below the ICNIRP guidelines.

The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the three main operators: Airtel J in red, Sure J in dark blue, and Jersey Telecom J in light blue.

The graphs are also supported by the equivalent statistical figures derived from the measured levels at the site for added clarity.

1. Site Details

1.1 Site Location

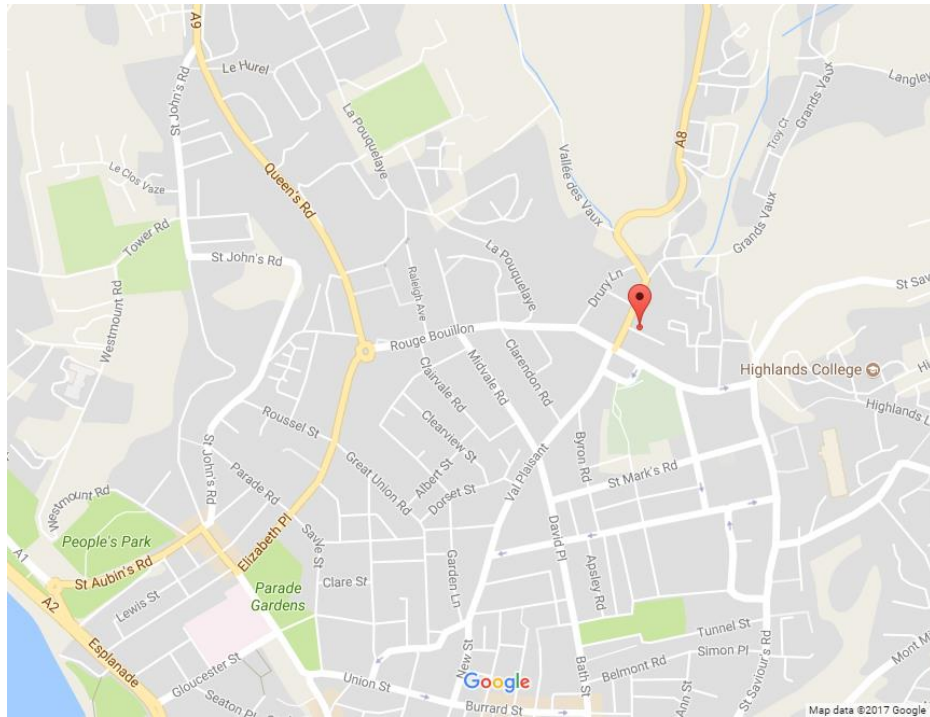


Figure 1 - Map of the Site Area

Site name	TRS
Site address	Trinity Road, St Helier, Jersey
Site Latitude	N 49.19308
Site Longitude	W 02.10085

1.2 Site Description

Operators	JT J
Antenna types	Omni directional
Approximate height	5m
Site type	Building - Rooftop
Description	The antenna at TRS is located on the building rooftop, out of reach of the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

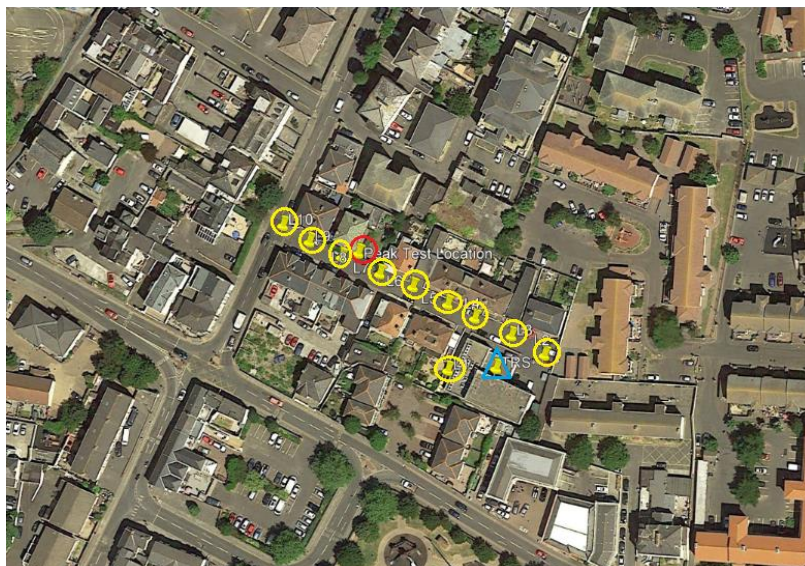


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

As part of the peak search procedure, spot measurements were taken at locations around the site, as shown on the above sketch. The reported spectrum scans were taken at the peak location (shown in red above) where the highest readings were recorded. The spectrum readings reported further down this report were recorded over a period of 6 minutes as advised by ICNIRP.

2. Survey Results

2.1 800 MHz Band

The graph for the 800 MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

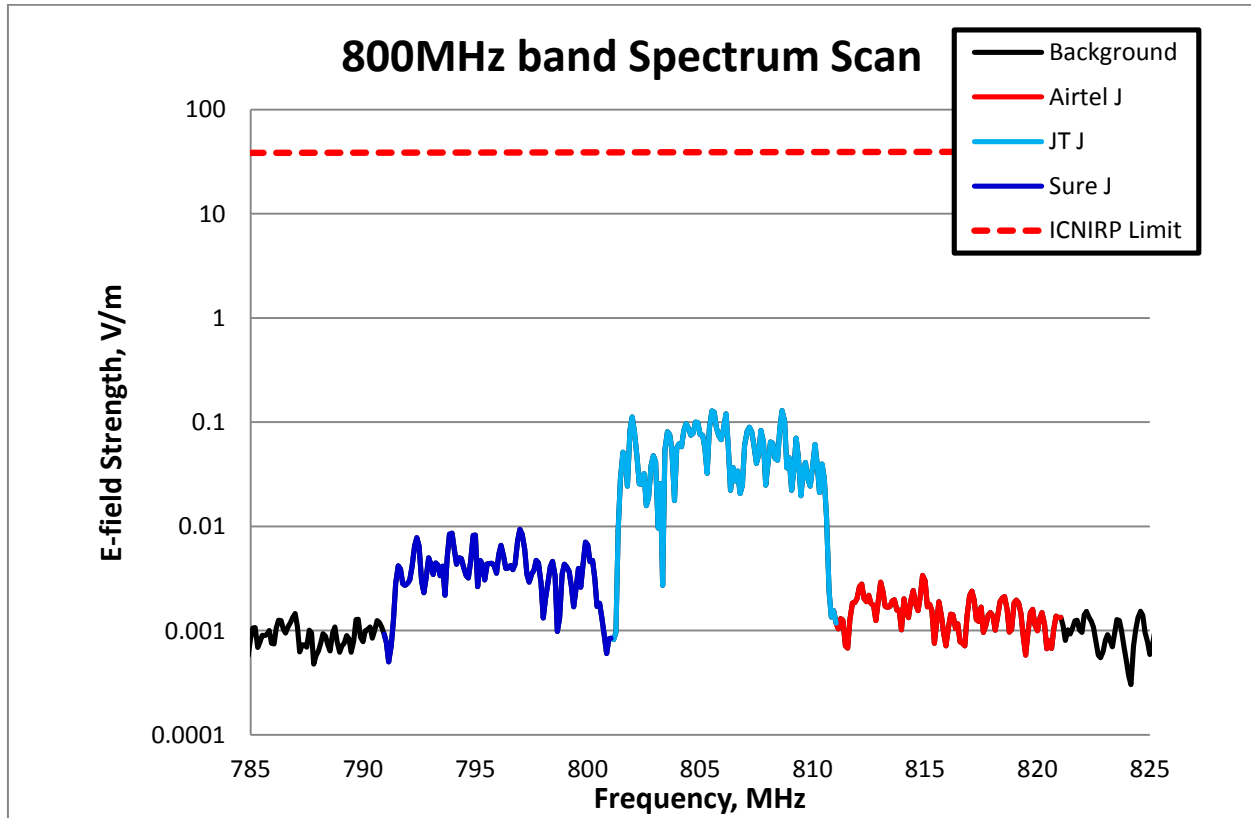


Figure 4 - 800MHz band Spectrum Scan

The red line on the scan represents the Airtel activity, the light blue is JT and the dark blue is Sure. ICNIRP's Reference Level for the General Public is also shown as the straight dashed line at the top of the graph. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used throughout this report.

No field level recorded across the band was higher than 0.1296 V/m (JT J), which is 300 times smaller than the ICNIRP Reference level. The Exposure Quotient results for the 800MHz band are shown below:

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	Airtel J	800	0.003377	11516	6.92416E-08	1/ 14442191
	JT J		0.1296	300	9.42468E-05	1/ 10610
	Sure J		0.009407	4134	5.05154E-07	1/ 1979593
total band EQ					9.48212E-05	1/ 10546

Table 2– 800MHz band Exposure Quotient at TRS

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

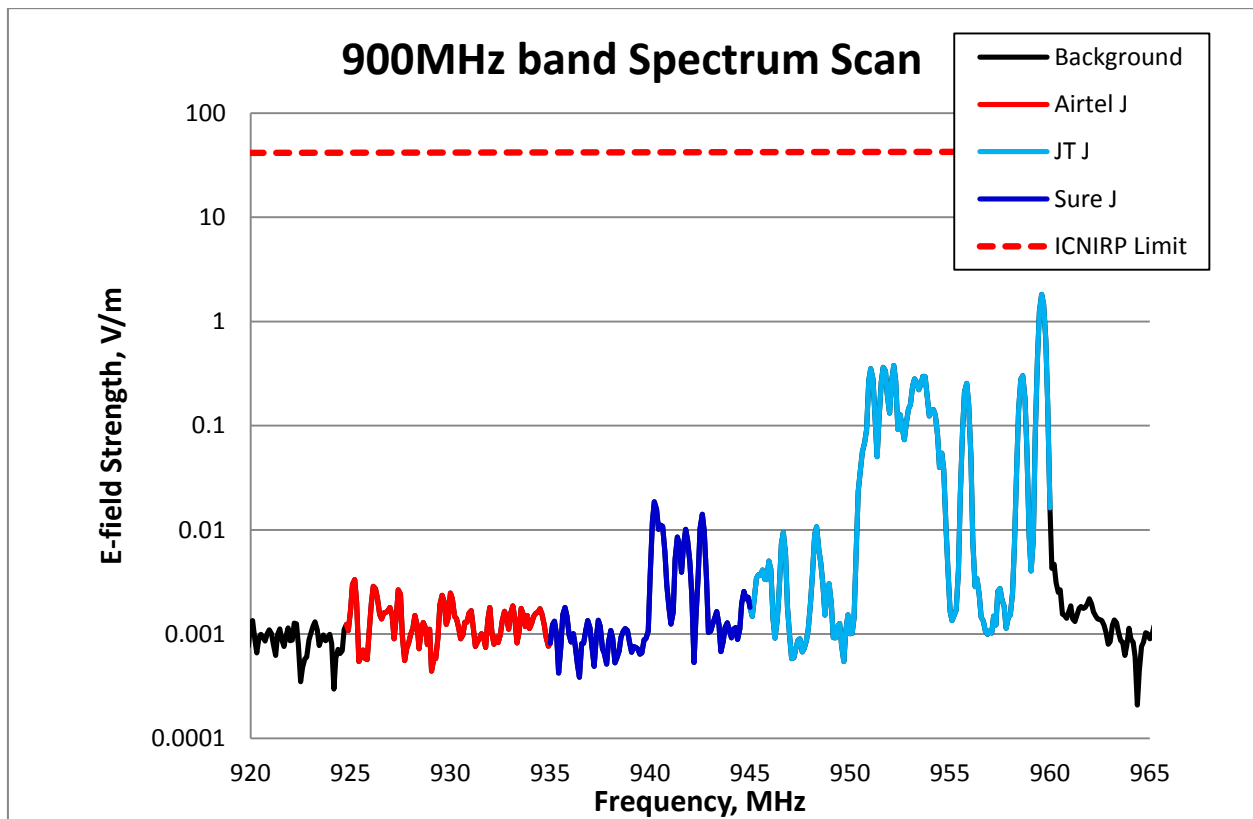


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.826 V/m (JT J), which is 23 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz band are shown below:

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	Airtel J	900	0.003343	12339	5.66048E-08	1/ 17666361
	JT J		1.826	23	0.002636473	1/ 379
	Sure J		0.01856	2223	5.5663E-07	1/ 1796527
total band EQ					0.002637086	1/ 379

Table 3– 900MHz band Exposure Quotient at TRS

2.3 1800 MHz Band

The graph for the 1800 MHz activity around the site is shown below:

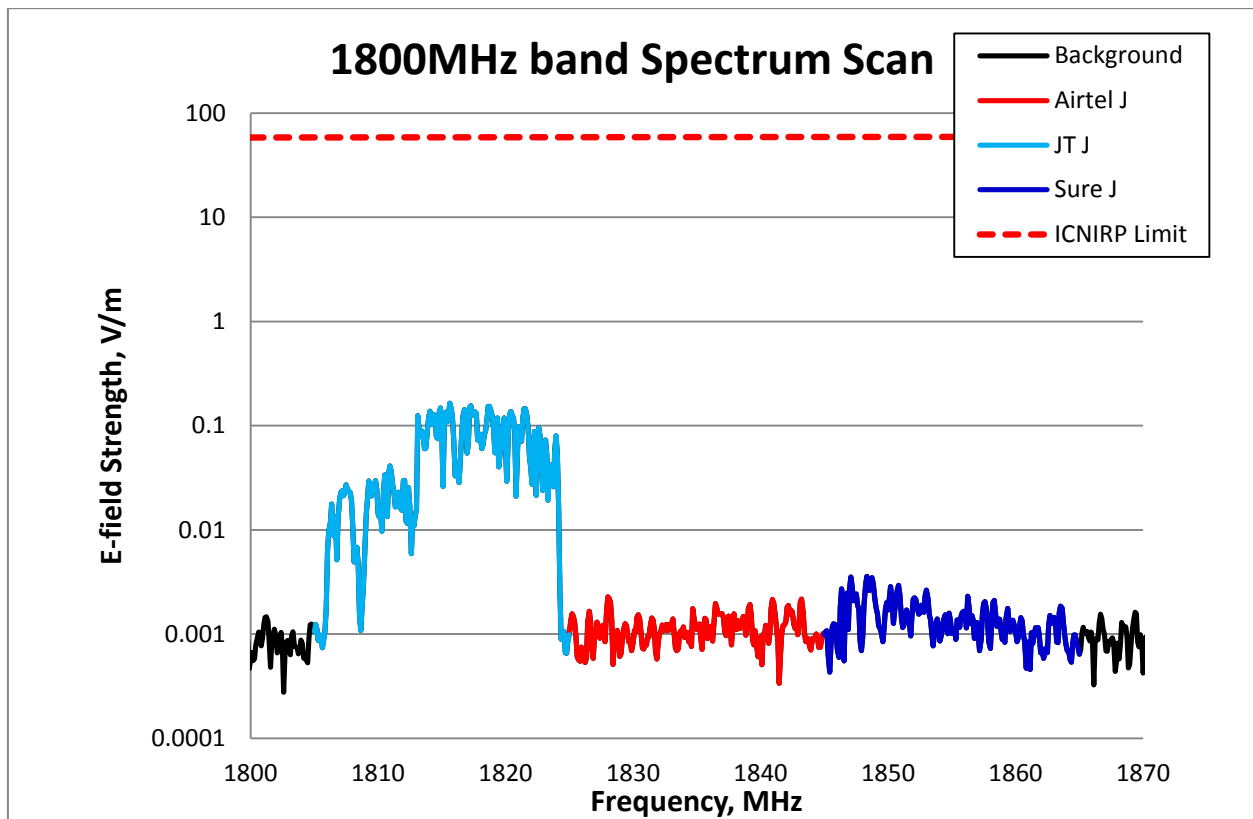


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1647 V/m (JT J), which is 354 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 1800MHz band are shown below:

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	Airtel J	1800	0.002272	25676	7.25929E-08	1/ 13775460
	JT J		0.1647	354	0.000273962	1/ 3650
	Sure J		0.003577	16309	1.27001E-07	1/ 7873969
total band EQ					0.000274162	1/ 3647

Table 4 – 1800MHz band Exposure Quotient at TRS

2.4 2100MHz Band

The graph for the UMTS activity around the site is shown below:

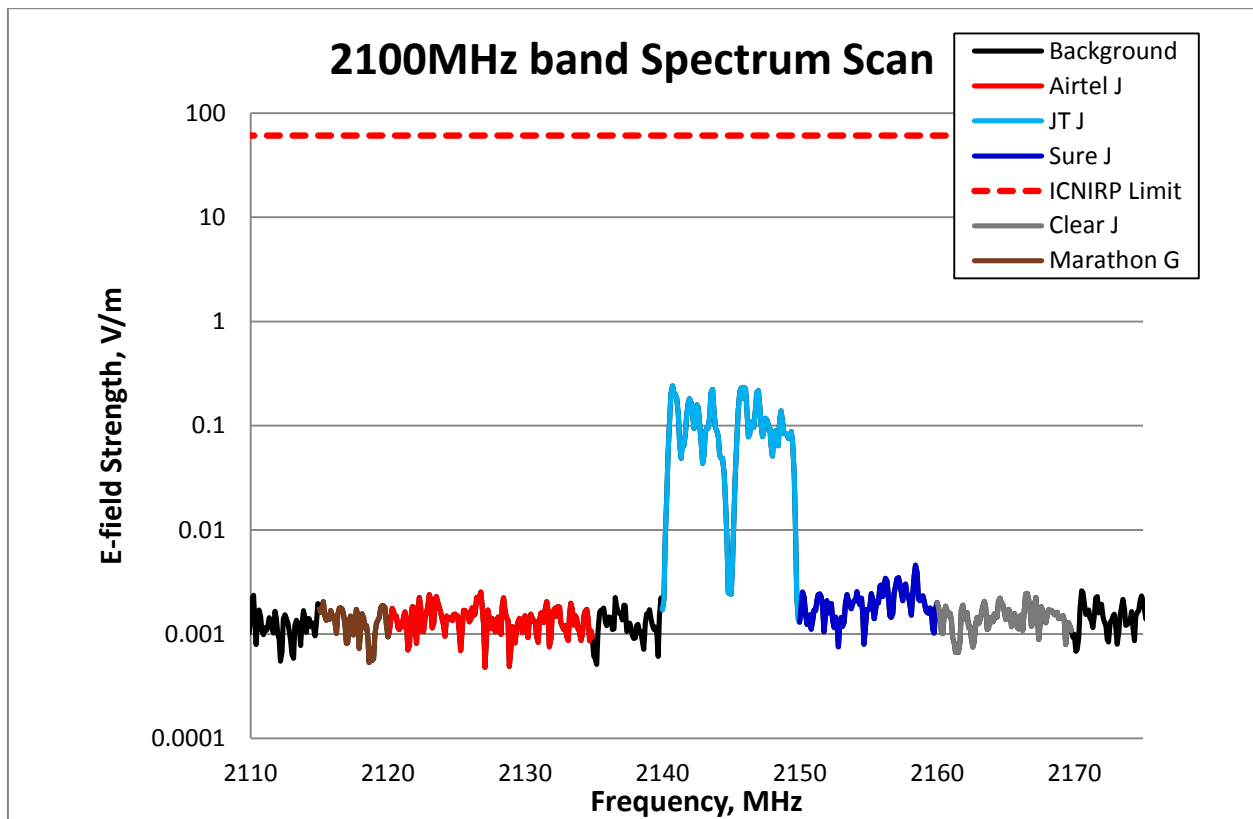


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2419 V/m (JT J), which is 252 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2100MHz band are shown below:

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	Airtel J	2100	0.002535	24063	8.22736E-08	1/ 12154565
	Clear J		0.002471	24686	5.78465E-08	1/ 17287118
	JT J		0.2419	252	0.00035631	1/ 2807
	Marathon J		0.002055	29684	2.54077E-08	1/ 39358085
	Sure J		0.004582	13313	1.18402E-07	1/ 8445817
total band EQ					0.000356593	1/ 2804

Table 5 – 2100MHz band Exposure Quotient at TRS

2.5 2600MHz band

The graph for the 2600MHz band activity around the site is shown below:

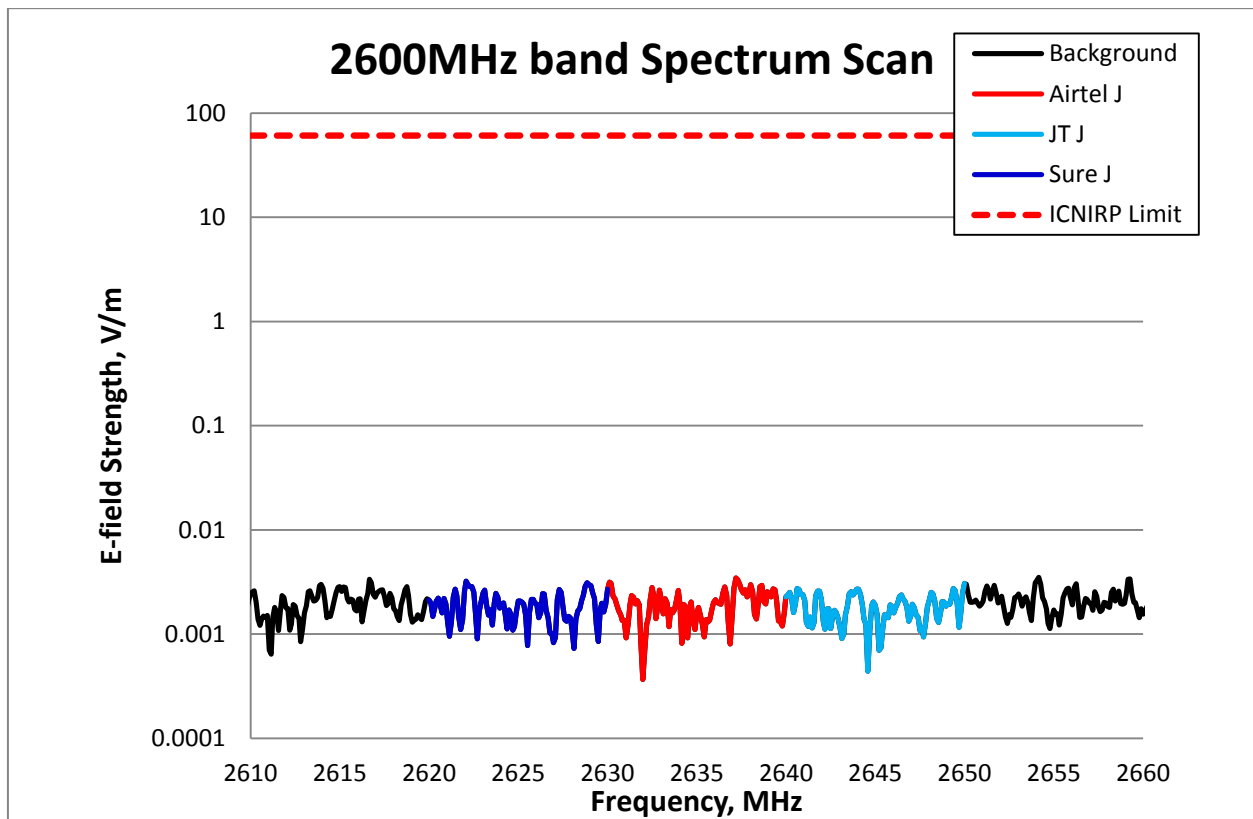


Figure 8 – 2600MHz band Spectrum Scan

No activity was recorded in the 2600MHz as no operator appears to transmit in this band at this site.

The Exposure Quotient results for the 2600MHz band are shown below:

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
TRS	Airtel J	2600	0.003457	17645	1.08452E-07	1/ 9220677
	JT J		0.003071	19863	9.35826E-08	1/ 10685742
	Sure J		0.003233	18868	9.95814E-08	1/ 10042036
total band EQ					3.01616E-07	1/ 3315475

Table 6 – 2600MHz band Exposure Quotient at TRS

End