

Cellular Mast Emissions Survey: Old East (Jersey)



DOCUMENT DETAILS

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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 Old East site located in Jersey.

The Old East site was used by one 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
Old East	800	0.03888	JT J	1000	1.15597E-05	1/ 86507
	900	0.6738	JT J	61	0.000325813	1/ 3069
	1800	0.01913	Sure J	3049	3.12687E-06	1/ 319809
	2100	0.01206	Sure J	5058	8.53278E-07	1/ 1171951
	2600	0.002311	Sure J	26395	1.13911E-07	1/ 8778778
Total Site EQ					0.000341467	1/ 2929

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/2929 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

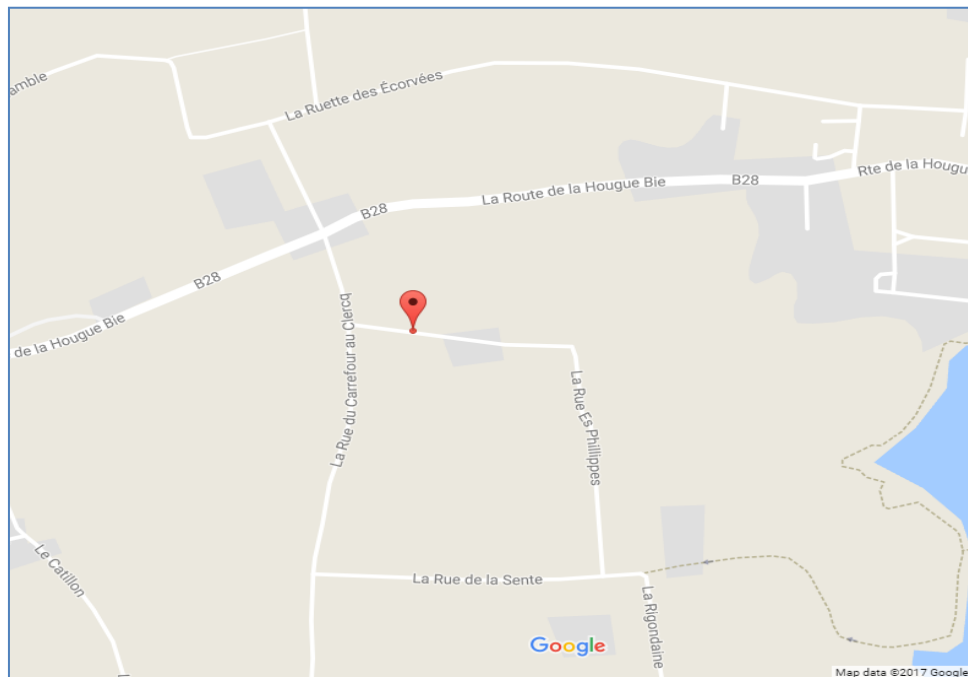


Figure 1 - Map of the Site Area

Site name	Old East
Site address	La Rue Es Phillippes, St Saviour, Jersey
Site Latitude	49.20088
Site Longitude	-2.05228

1.2 Site Description

Operators	JT J
Antenna types	Omni-directional
Approximate height	10m
Site type	Pole Mast
Description	The antennas at Old East are located at the edge of a field next to the road; the public has access to the immediate vicinity of the pole.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

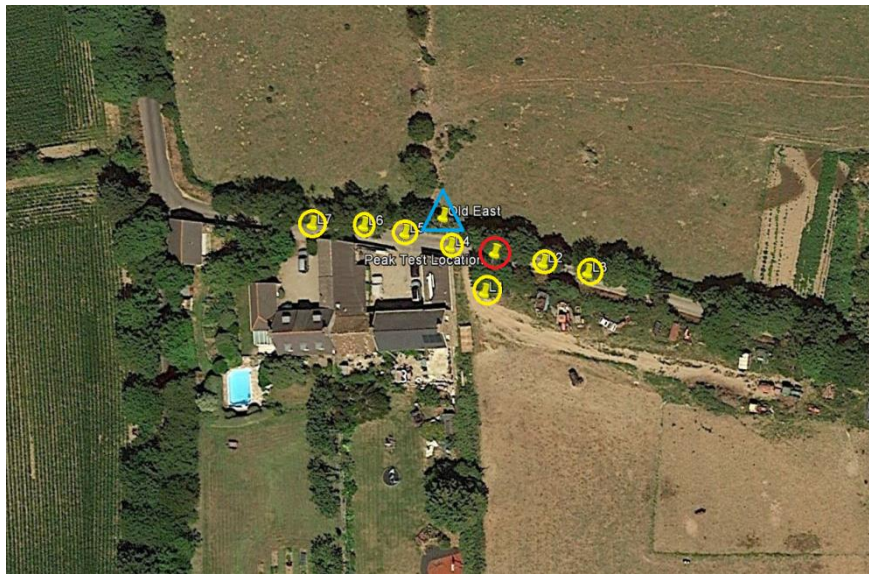


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

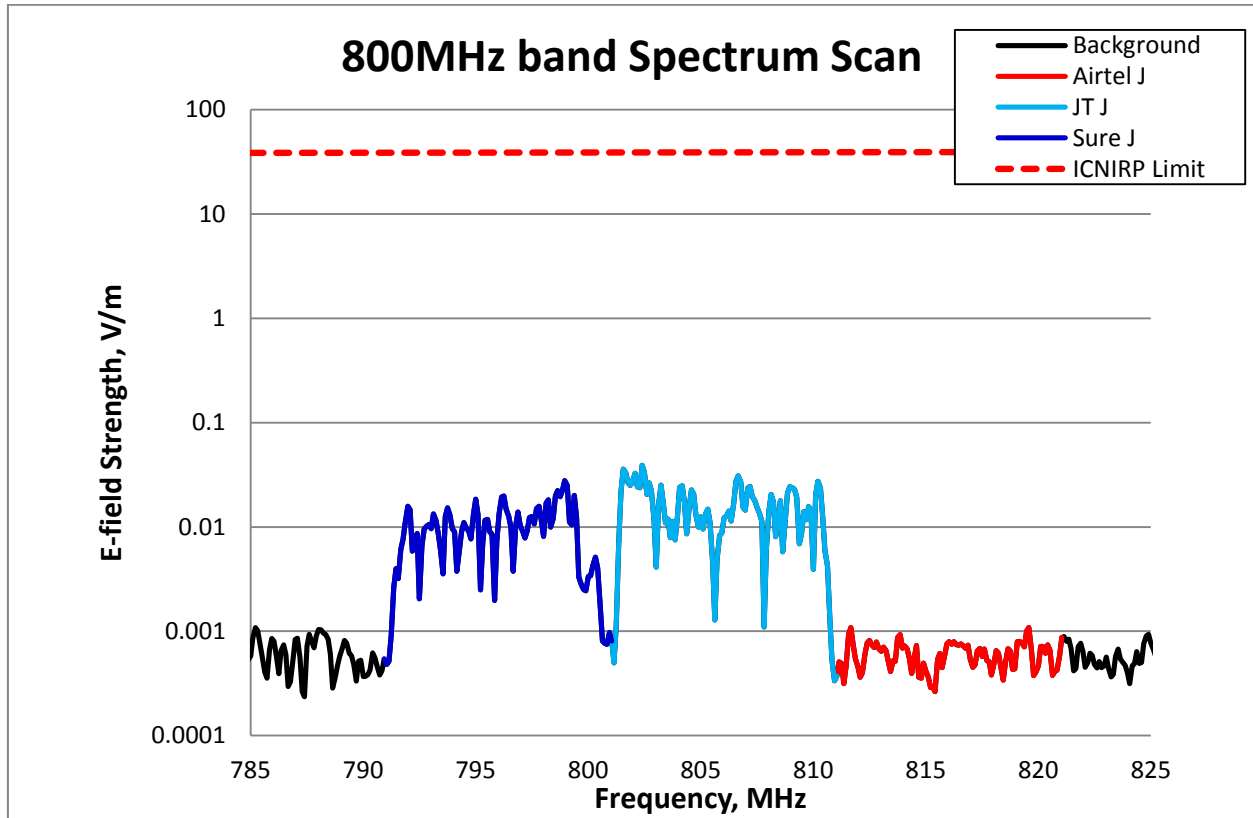


Figure 4 - 800MHz band Spectrum Scan

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 0.03888 V/m (JT J), which is 1000 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
Old East	Airtel J	800	0.001086	35811	1.0256E-08	1/ 97503482
	JT J		0.03888	1000	8.24019E-06	1/ 121356
	Sure J		0.0278	1399	3.30929E-06	1/ 302180
total band EQ					1.15597E-05	1/ 86507

Table 2– 800MHz band Exposure Quotient at Old East

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

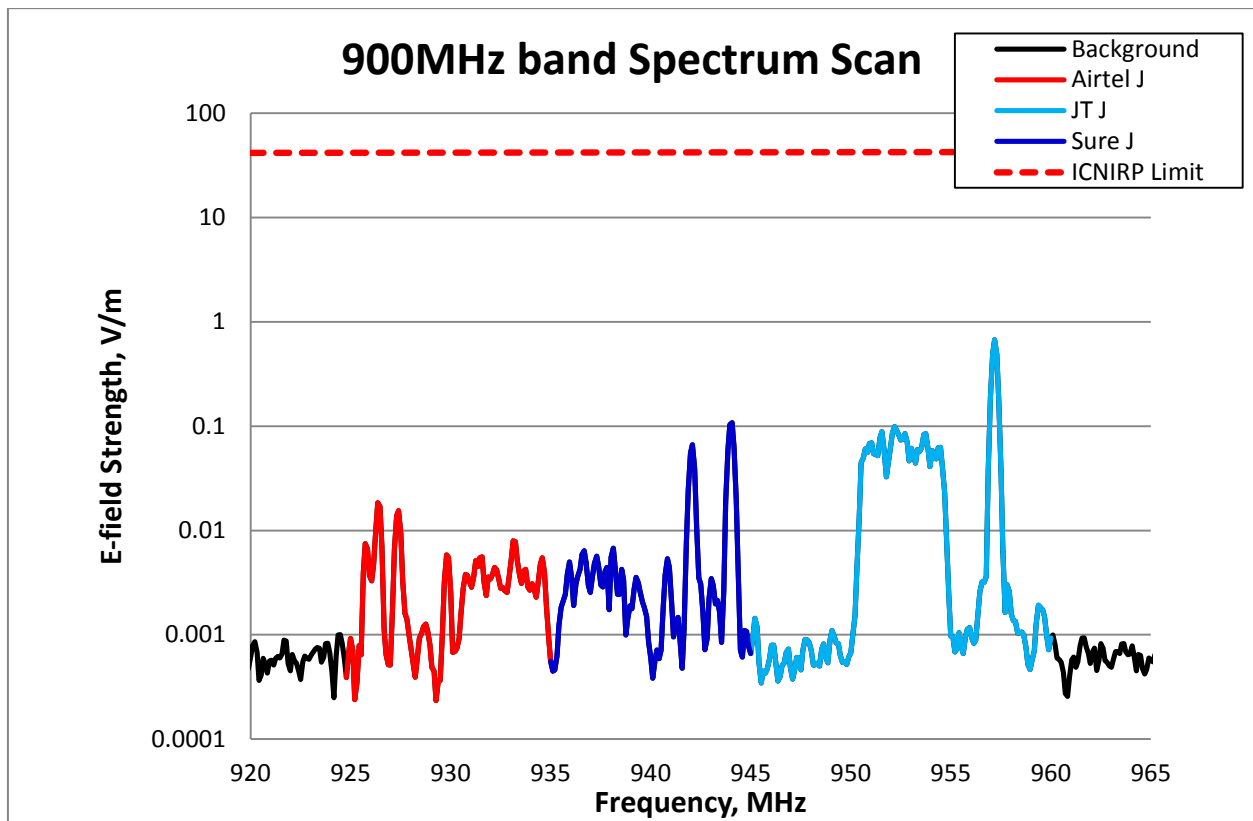


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.6738 V/m (JT J), which is 61 times smaller than the ICNIRP Reference level.

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

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
Old East	Airtel J	900	0.0185	2230	6.18516E-07	1/ 1616773
	JT J		0.6738	61	0.000314181	1/ 3183
	Sure J		0.1076	383	1.10133E-05	1/ 90799
total band EQ					0.000325813	1/ 3069

Table 3– 900MHz band Exposure Quotient at Old East

2.3 1800 MHz Band

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

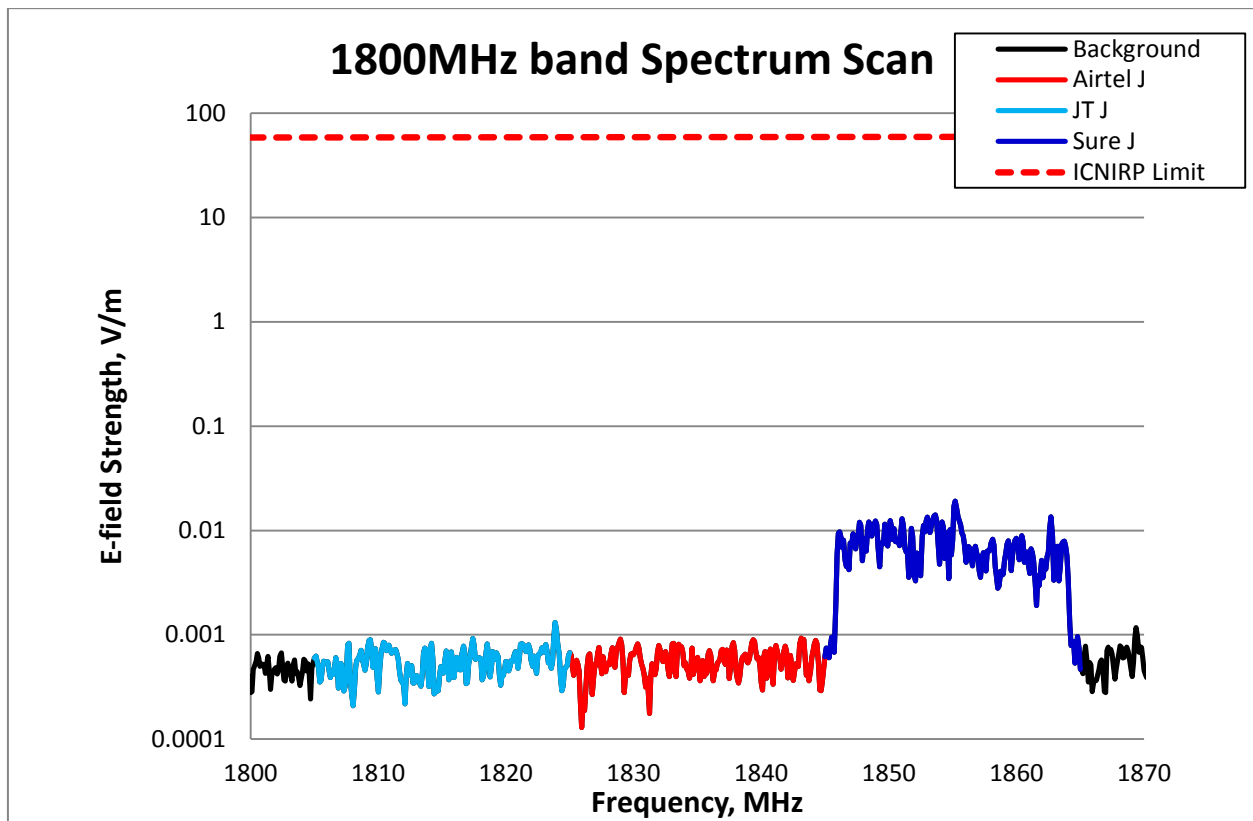


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.01913 V/m (Sure J), which is 3049 times smaller than the ICNIRP Reference level.

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

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
Old East	Airtel J	1800	0.000928	62862	1.76935E-08	1/ 56517839
	JT J		0.001308	44600	1.78052E-08	1/ 56163474
	Sure J		0.01913	3049	3.09137E-06	1/ 323481
total band EQ					3.12687E-06	1/ 319809

Table 4 – 1800MHz band Exposure Quotient at Old East

2.4 2100MHz Band

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

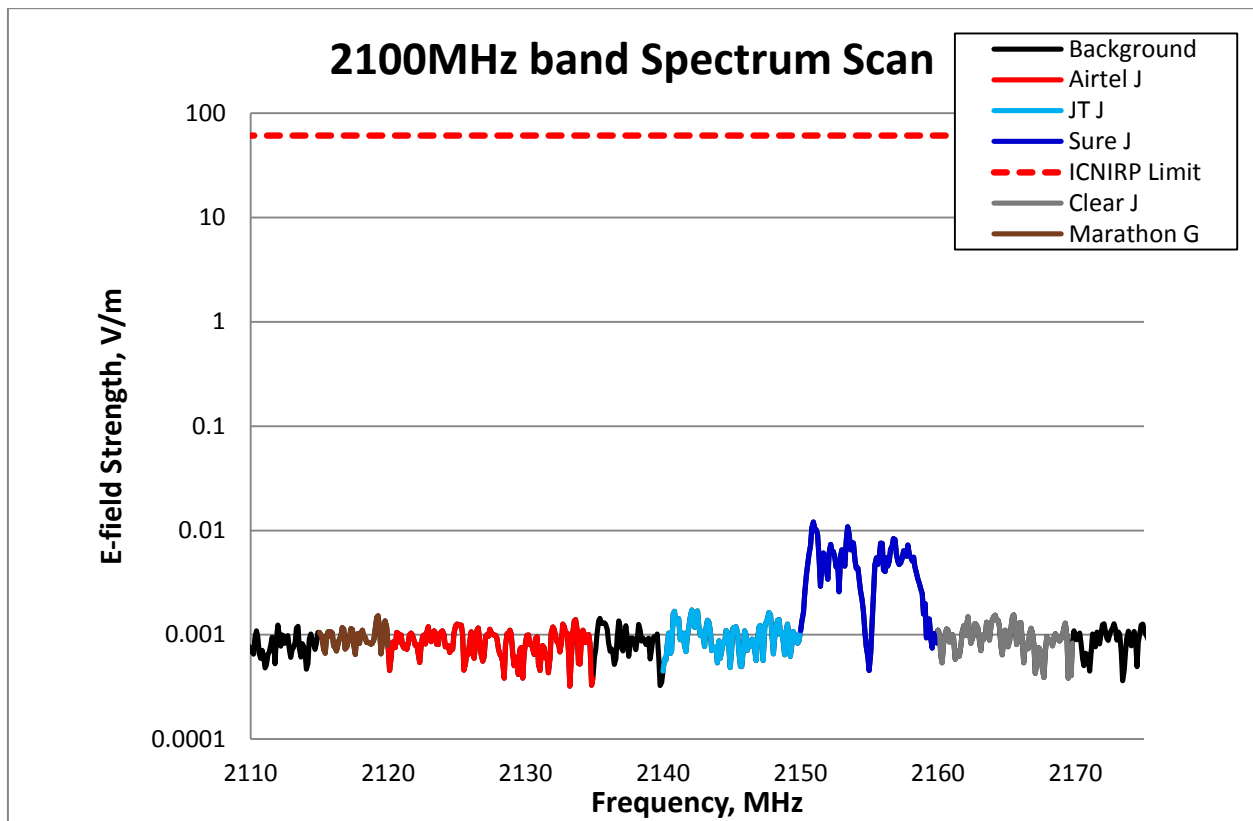


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.01206 V/m (Sure J), which is 5058 times smaller than the ICNIRP Reference level.

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

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
Old East	Airtel J	2100	0.001398	43634	2.9679E-08	1/ 33693814
	Clear J		0.00156	39103	2.48205E-08	1/ 40289342
	JT J		0.001734	35179	2.83369E-08	1/ 35289643
	Marathon J		0.001517	40211	1.26035E-08	1/ 79343060
	Sure J		0.01206	5058	7.57838E-07	1/ 1319543
total band EQ					8.53278E-07	1/ 1171951

Table 5 – 2100MHz band Exposure Quotient at Old East

2.5 2600MHz band

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

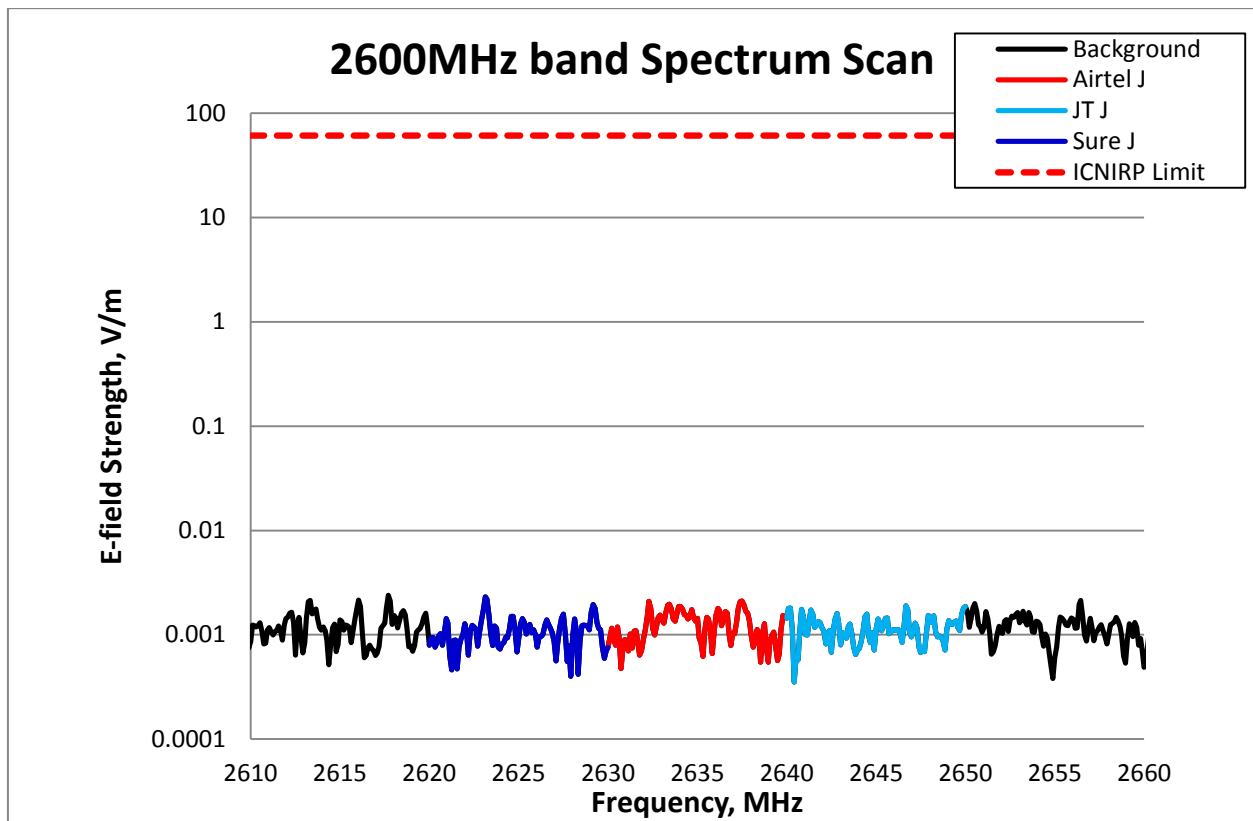


Figure 8 – 2600MHz band Spectrum Scan

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	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
Old East	Airtel J	2600	0.002102	29020	4.38411E-08	1/ 22809652
	JT J		0.001897	32156	3.72257E-08	1/ 26863185
	Sure J		0.002311	26395	3.28443E-08	1/ 30446671
total band EQ					1.13911E-07	1/ 8778778

Table 6 – 2600MHz band Exposure Quotient at Old East

End