

Cellular Mast Emissions Survey: JEC Chimney (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 JEC Chimney site located in Jersey.

The JEC Chimney site was used by all three operators at the time of the survey: Airtel J, JT J and Sure J. Surveys were 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
JEC Chimney	800	0.05711	Airtel J	681	8.25327E-06	1/ 121164
	900	0.4411	JT J	94	0.000186578	1/ 5360
	1800	0.02174	Sure J	2683	4.52527E-06	1/ 220981
	2100	0.03481	Sure J	1752	7.78382E-06	1/ 128472
	2600	0.002438	Airtel J	25021	1.33969E-07	1/ 7464437
Total Site EQ					0.000207275	1/ 4825

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/4825 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

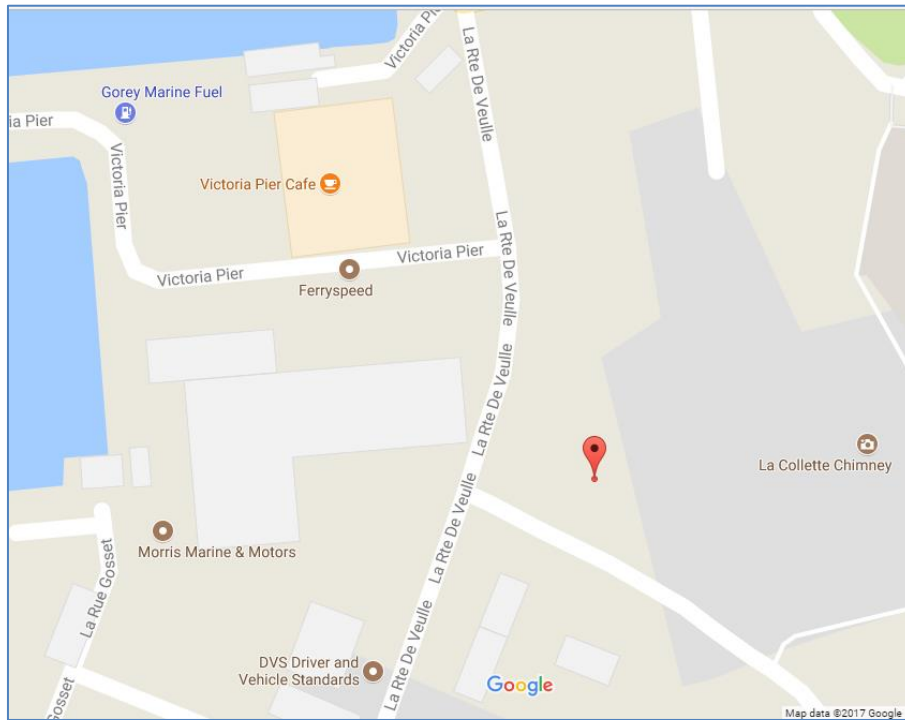


Figure 1 - Map of the Site Area

Site name	JEC Chimney
Site address	South Harbour, St Helier, Jersey
Site Latitude	N 49.17437
Site Longitude	W 02.11017

1.2 Site Description

Operators	Airtel J, JT J and Sure J
Antenna types	Directional
Approximate height	50-60m
Site type	Building - Chimney
Description	The antennas at JEC Chimney are located on the roof of the main building, out of reach of the public

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

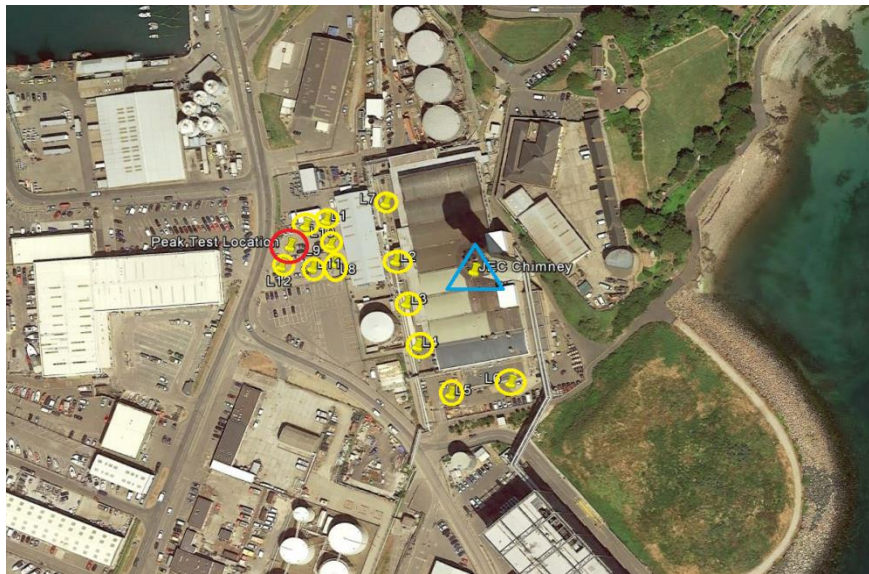


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

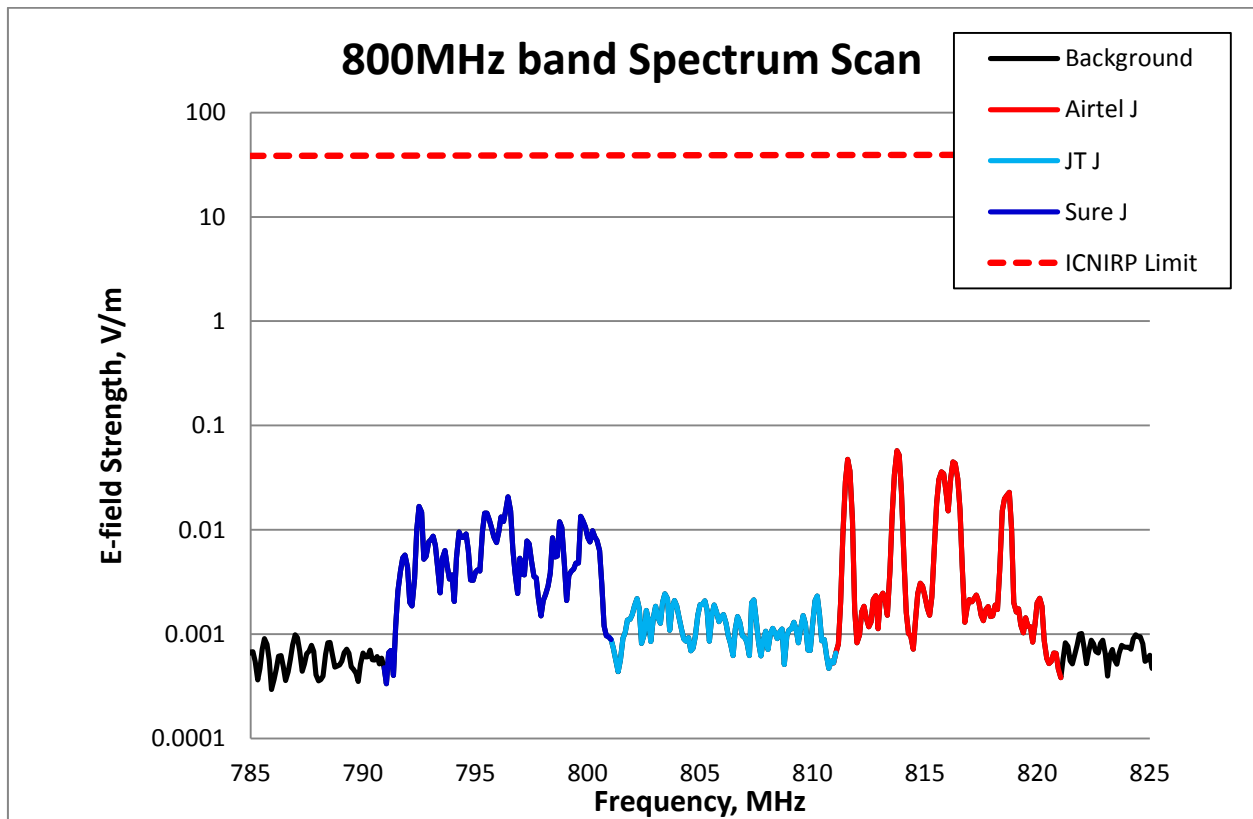


Figure 4 - 800MHz band Spectrum Scan

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 0.05711 V/m (Airtel J), which is 681 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
JEC Chimney	Airtel J	800	0.05711	681	6.72546E-06	1/ 148689
	JT J		0.002436	15965	4.50282E-08	1/ 22208282
	Sure J		0.02071	1878	1.48278E-06	1/ 674407
total band EQ					8.25327E-06	1/ 121164

Table 2– 800MHz band Exposure Quotient at JEC Chimney

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

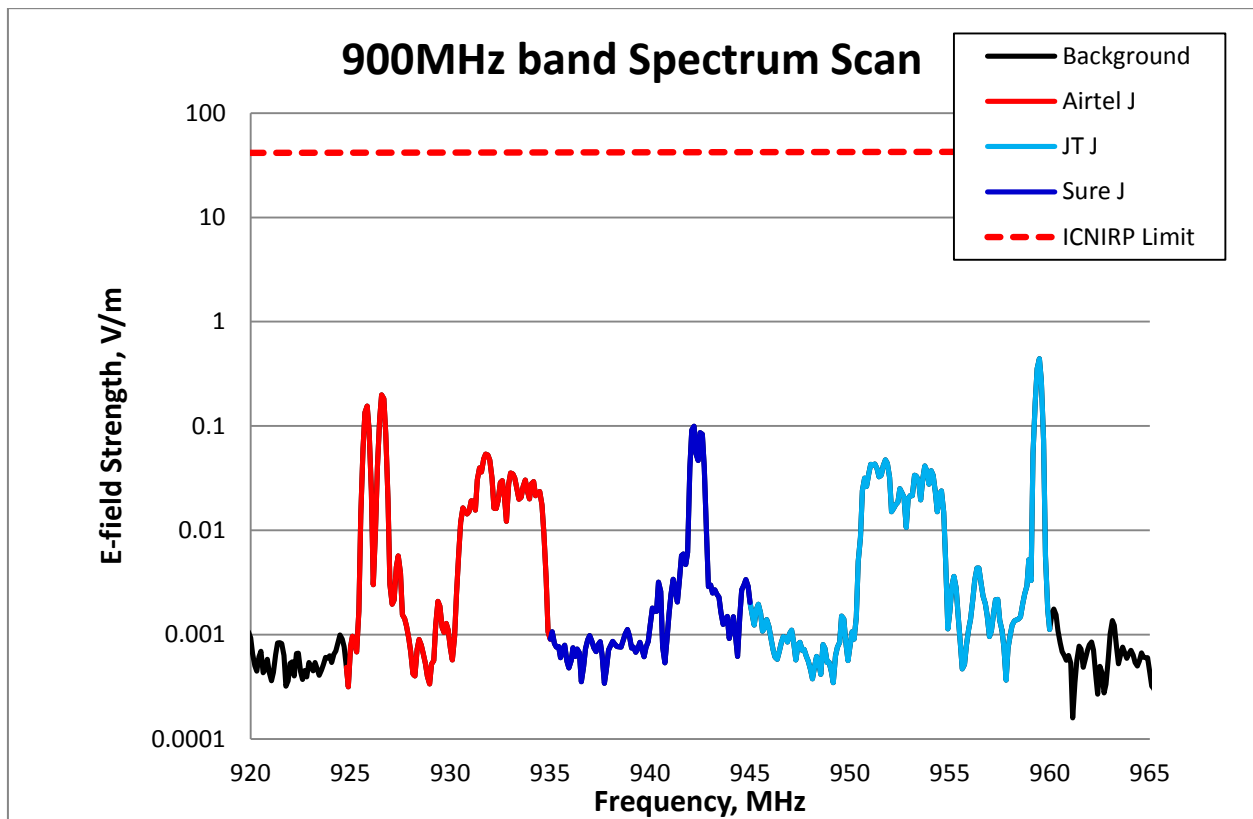


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.4411 V/m (JT J), which is 94 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
JEC Chimney	Airtel J	900	0.1994	207	4.91434E-05	1/ 20349
	JT J		0.4411	94	0.0001263	1/ 7918
	Sure J		0.0996	414	1.11351E-05	1/ 89806
total band EQ					0.000186578	1/ 5360

Table 3– 900MHz band Exposure Quotient at JEC Chimney

2.3 1800 MHz Band

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

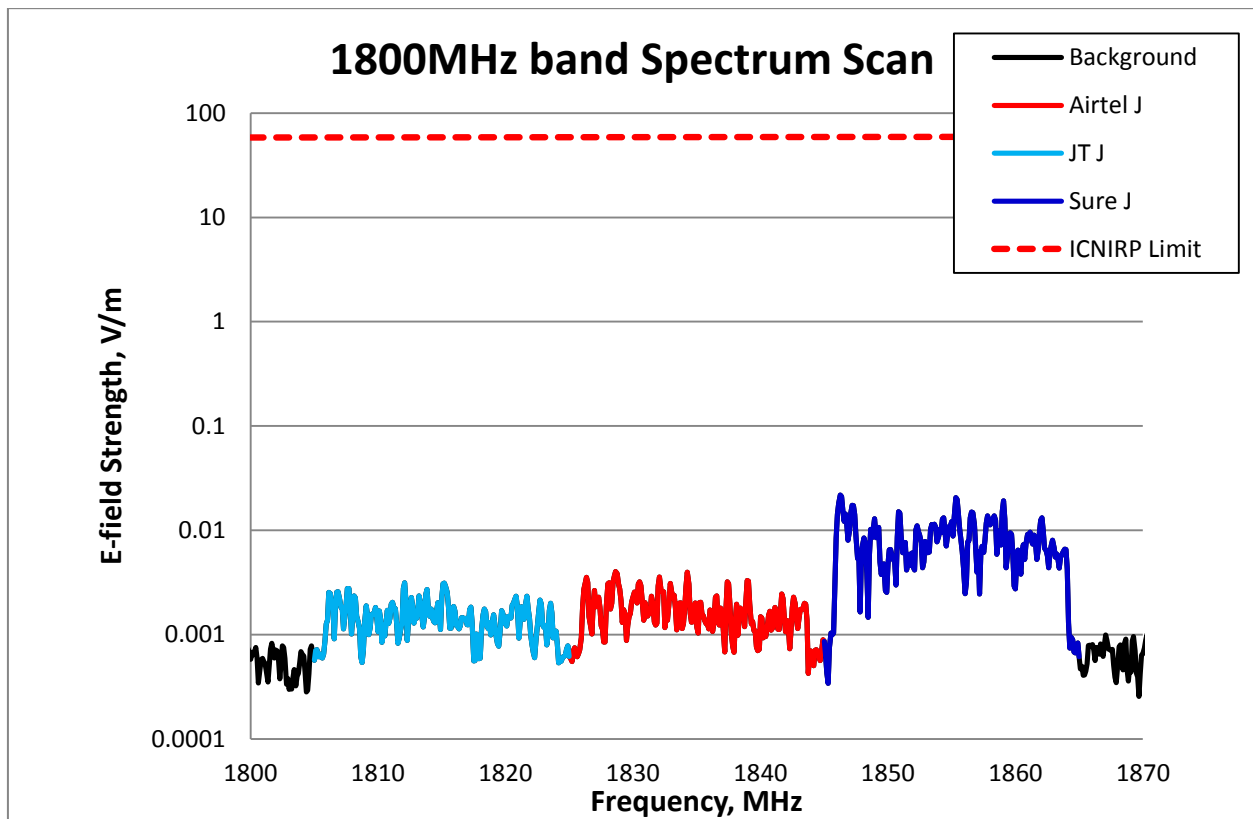


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.02174 V/m (Sure J), which is 2683 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
JEC Chimney	Airtel J	1800	0.004016	14526	1.78221E-07	1/ 5610998
	JT J		0.003131	18632	1.25376E-07	1/ 7975999
	Sure J		0.02174	2683	4.22167E-06	1/ 236873
total band EQ					4.52527E-06	1/ 220981

Table 4 – 1800MHz band Exposure Quotient at JEC Chimney

2.4 2100MHz Band

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

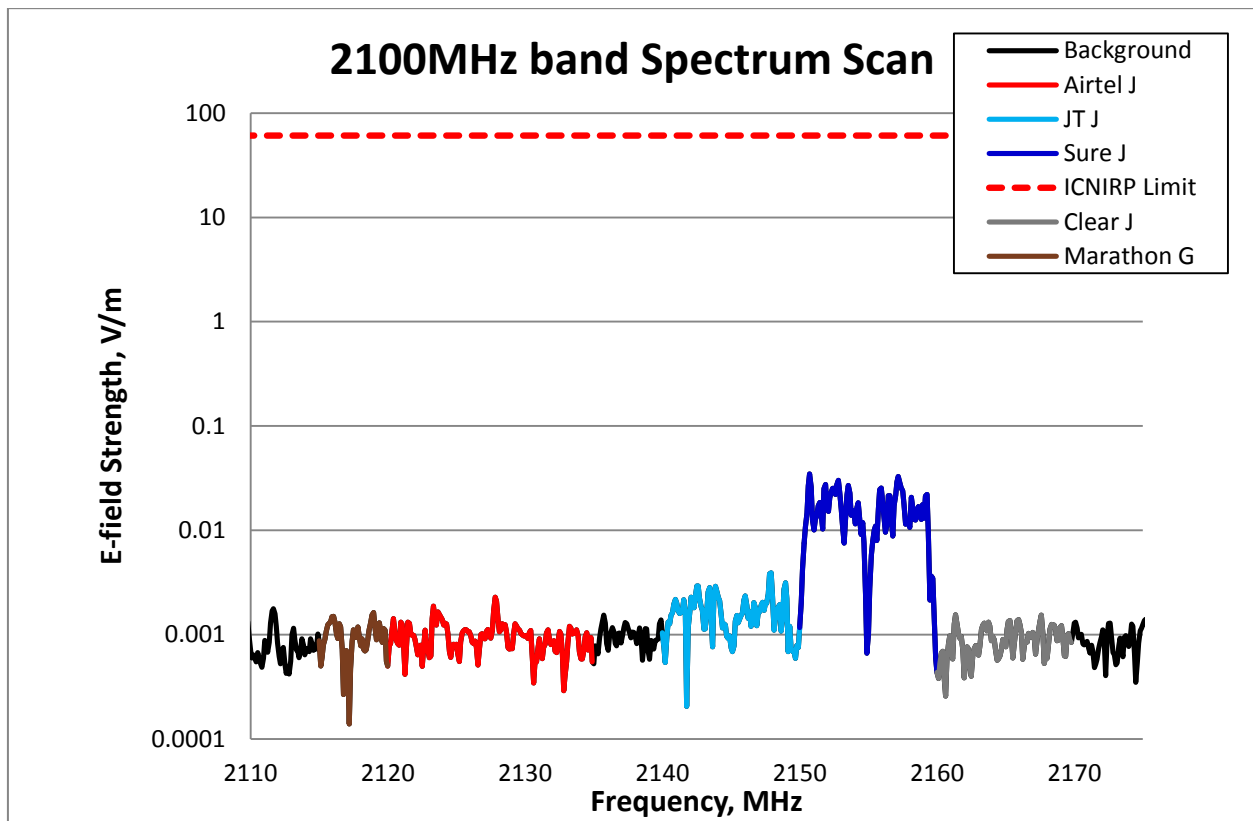


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.03481 V/m (Sure J), which is 1752 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
JEC Chimney	Airtel J	2100	0.002282	26731	3.86403E-08	1/ 25879695
	Clear J		0.001548	39406	2.22861E-08	1/ 44870974
	JT J		0.003905	15621	8.31938E-08	1/ 12020133
	Marathon J		0.001621	37631	1.34143E-08	1/ 74547086
	Sure J		0.03481	1752	7.62629E-06	1/ 131125
total band EQ					7.78382E-06	1/ 128472

Table 5 – 2100MHz band Exposure Quotient at JEC Chimney

2.5 2600MHz band

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

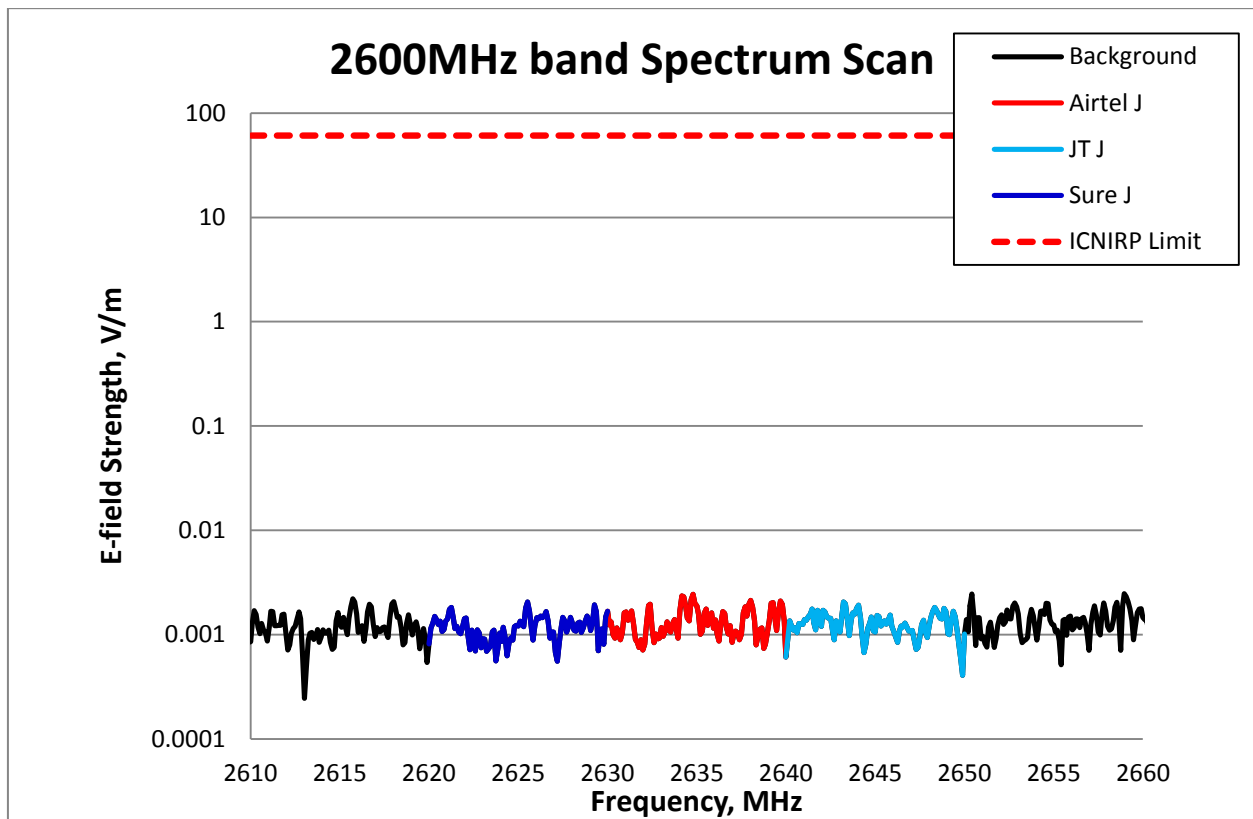


Figure 8 – 2600MHz band Spectrum Scan

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
JEC Chimney	Airtel J	2600	0.002438	25021	5.08185E-08	1/ 19677862
	JT J		0.002052	29727	4.47413E-08	1/ 22350704
	Sure J		0.002052	29727	3.84087E-08	1/ 26035746
total band EQ					1.33969E-07	1/ 7464437

Table 6 – 2600MHz band Exposure Quotient at JEC Chimney

End