

Cellular Mast Emissions Survey: Fremont Point (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 Fremont Point site located in Jersey.

The Fremont Point (Arqiva Tower) site was shared 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
Fremont Point	800	0.01481	JT J	2626	1.82552E-06	1/ 547789
	900	0.291	Sure J	142	9.44488E-05	1/ 10588
	1800	0.01603	Sure J	3639	2.39454E-06	1/ 417616
	2100	0.04904	Sure J	1244	7.72623E-06	1/ 129429
	2600	0.00219	Sure J	27854	1.29066E-07	1/ 7747956
Total Site EQ					0.000106524	1/ 9388

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/9388 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

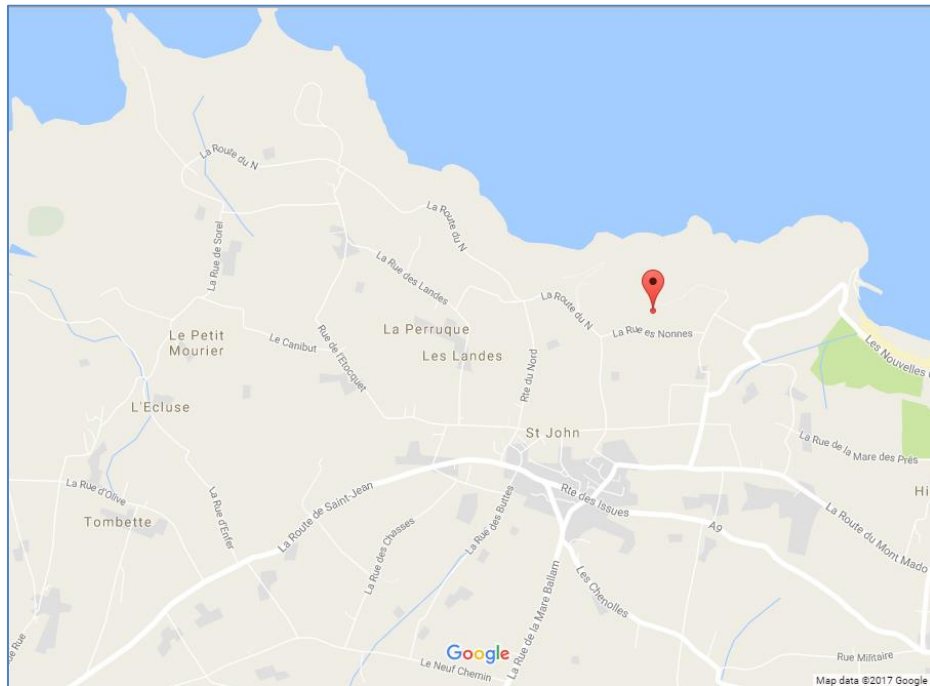


Figure 1 - Map of the Site Area

Site name	Fremont Point
Site address	La Rue De Fremont, St John, Jersey
Site Latitude	N 49.25107
Site Longitude	W 02.13164

1.2 Site Description

Operators	JT J, Sure J, Airtel J
Antenna types	Directional
Approximate height	18-61m
Site type	Lattice mast
Description	The lattice mast at Fremont Point is located at the rear of the building within a fenced enclosure; access to the public is restricted.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

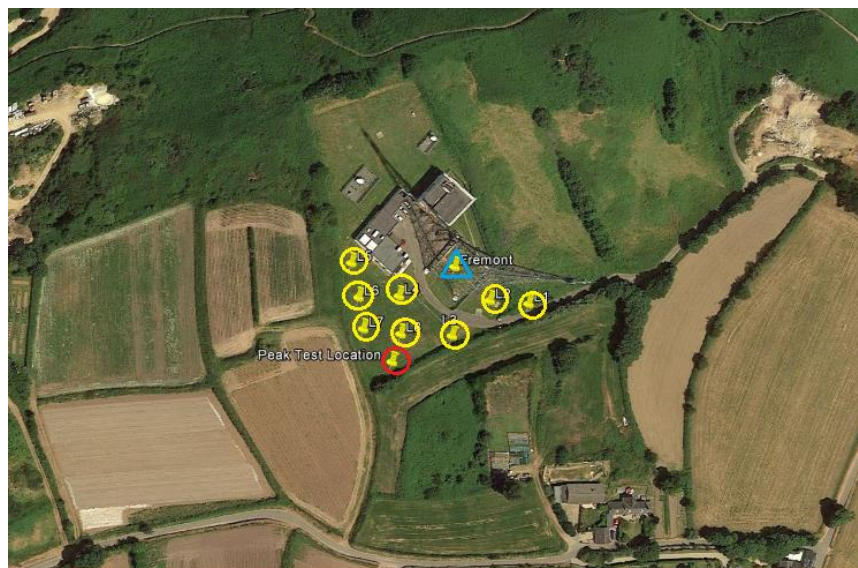


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

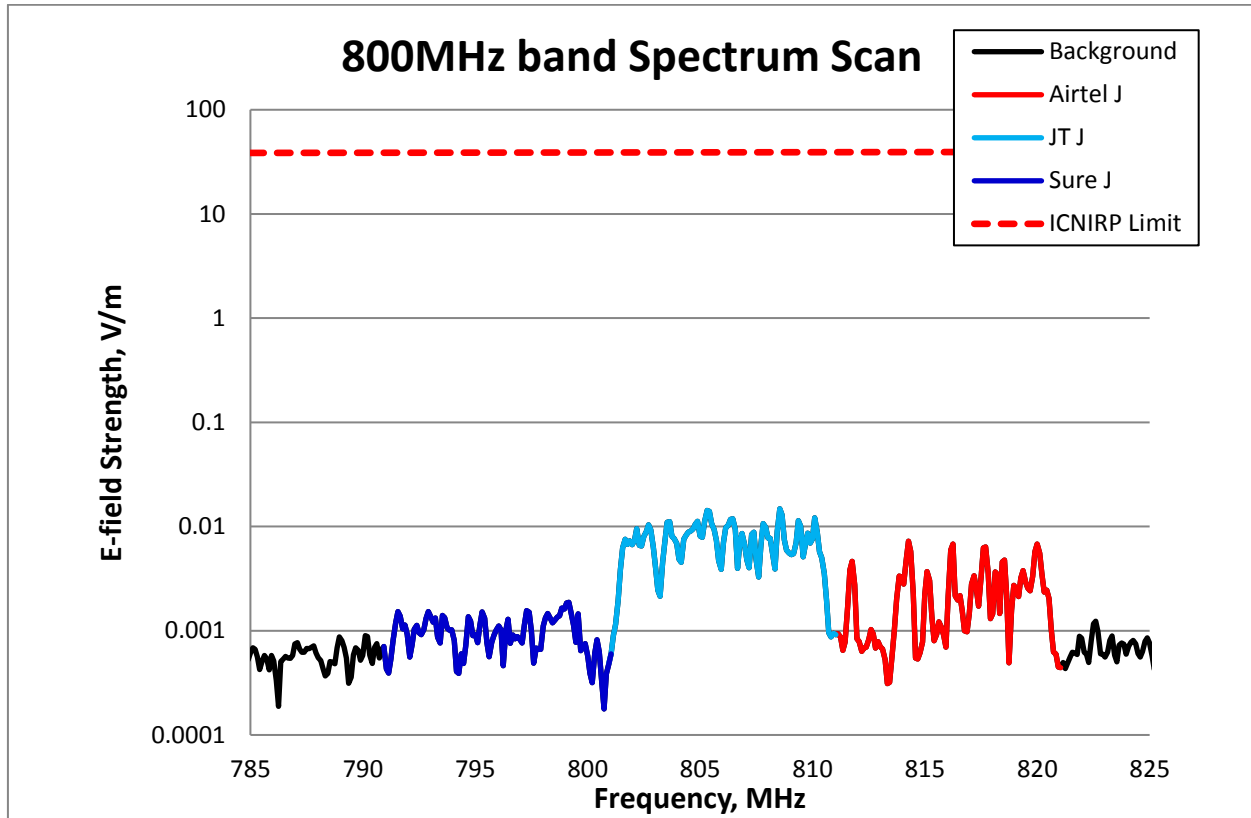


Figure 4 - 800MHz band Spectrum Scan

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 0.01481 V/m (JT J), which is 2626 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
Fremont Point	Airtel J	800	0.007226	5382	2.09393E-07	1/ 4775708
	JT J		0.01481	2626	1.58798E-06	1/ 629732
	Sure J		0.001872	20775	2.81492E-08	1/ 35524927
total band EQ					1.82552E-06	1/ 547789

Table 2– 800MHz band Exposure Quotient at Fremont Point

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

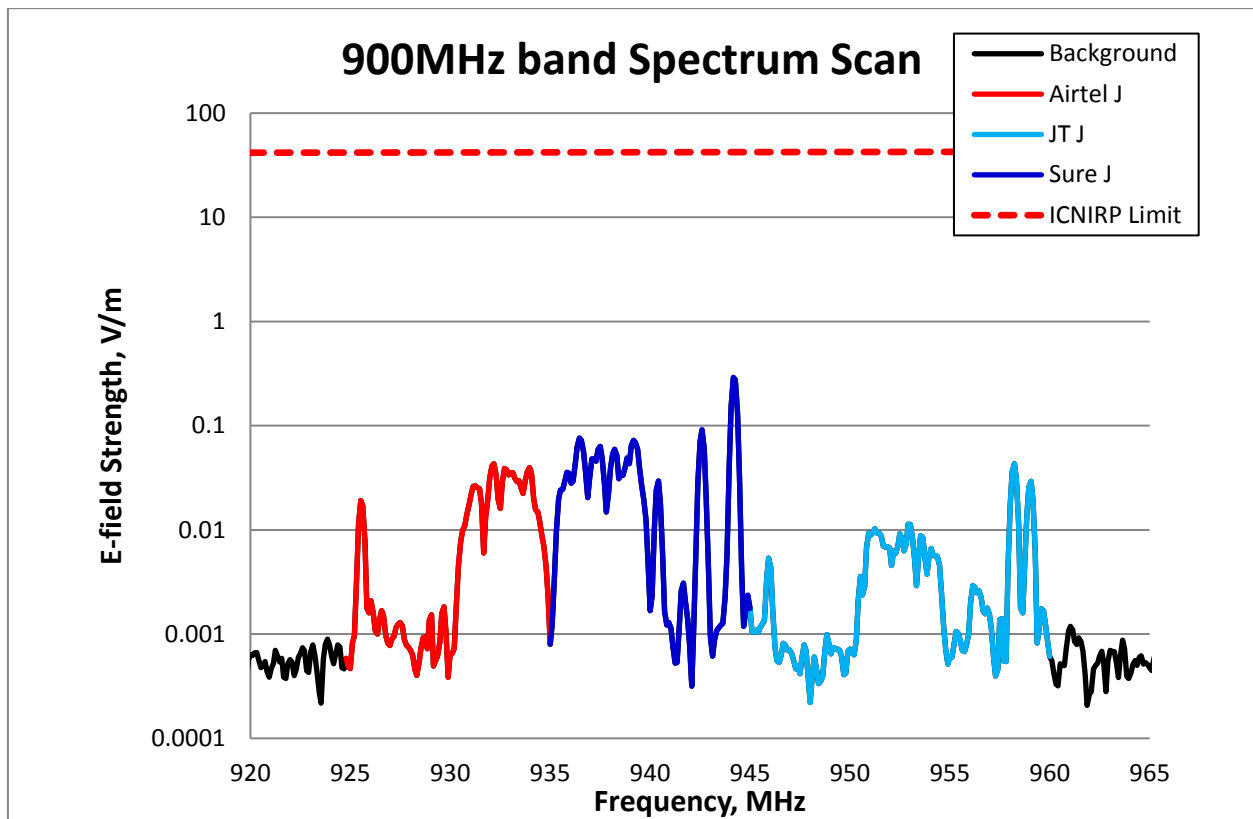


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.291 V/m (Sure J), which is 142 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
Fremont Point	Airtel J	900	0.04313	956	7.94333E-06	1/ 125892
	JT J		0.04309	957	2.41537E-06	1/ 414016
	Sure J		0.291	142	8.40901E-05	1/ 11892
total band EQ					9.44488E-05	1/ 10588

Table 3– 900MHz band Exposure Quotient at Fremont Point

2.3 1800 MHz Band

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

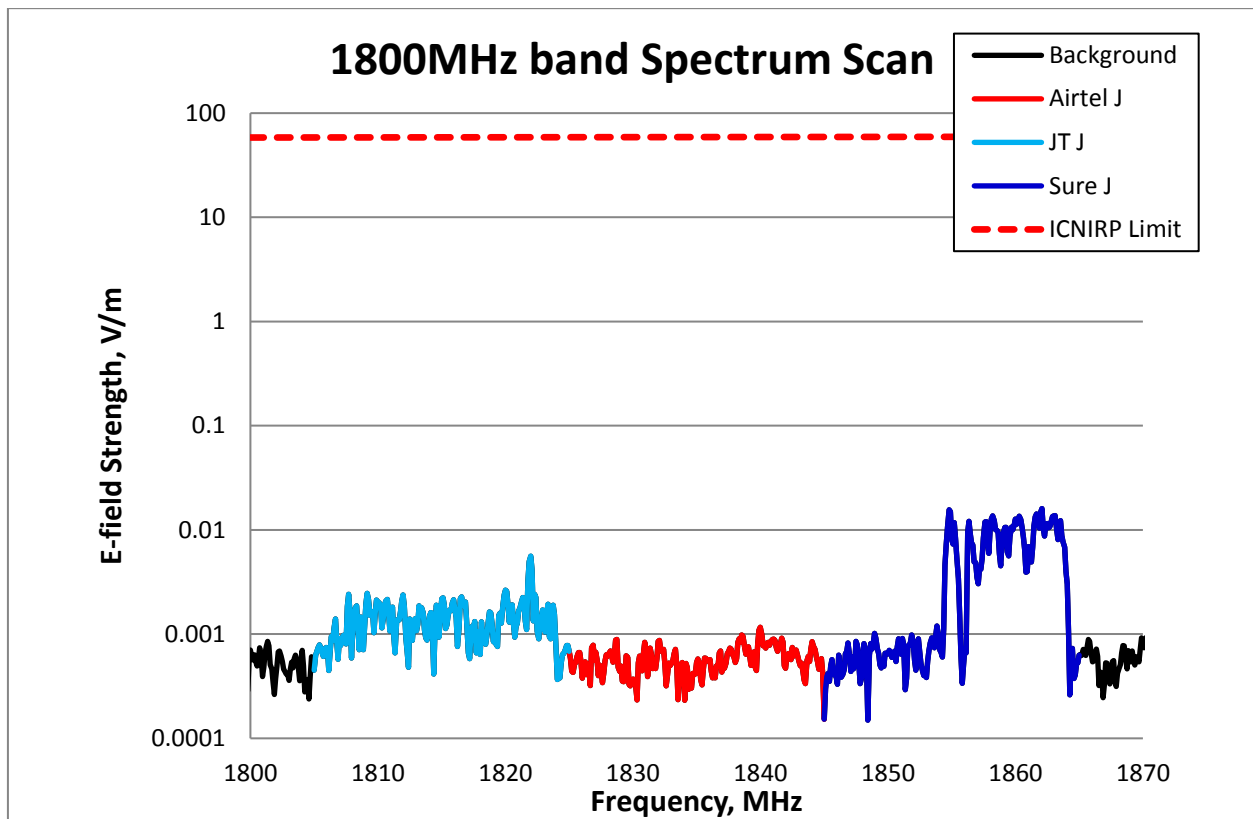


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.01603 V/m (Sure J), which is 3639 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
Fremont Point	Airtel J	1800	0.001165	50074	1.9055E-08	1/ 52479796
	JT J		0.005608	10402	1.25305E-07	1/ 7980505
	Sure J		0.01603	3639	2.25018E-06	1/ 444408
total band EQ					2.39454E-06	1/ 417616

Table 4 – 1800MHz band Exposure Quotient at Fremont Point

2.4 2100MHz Band

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

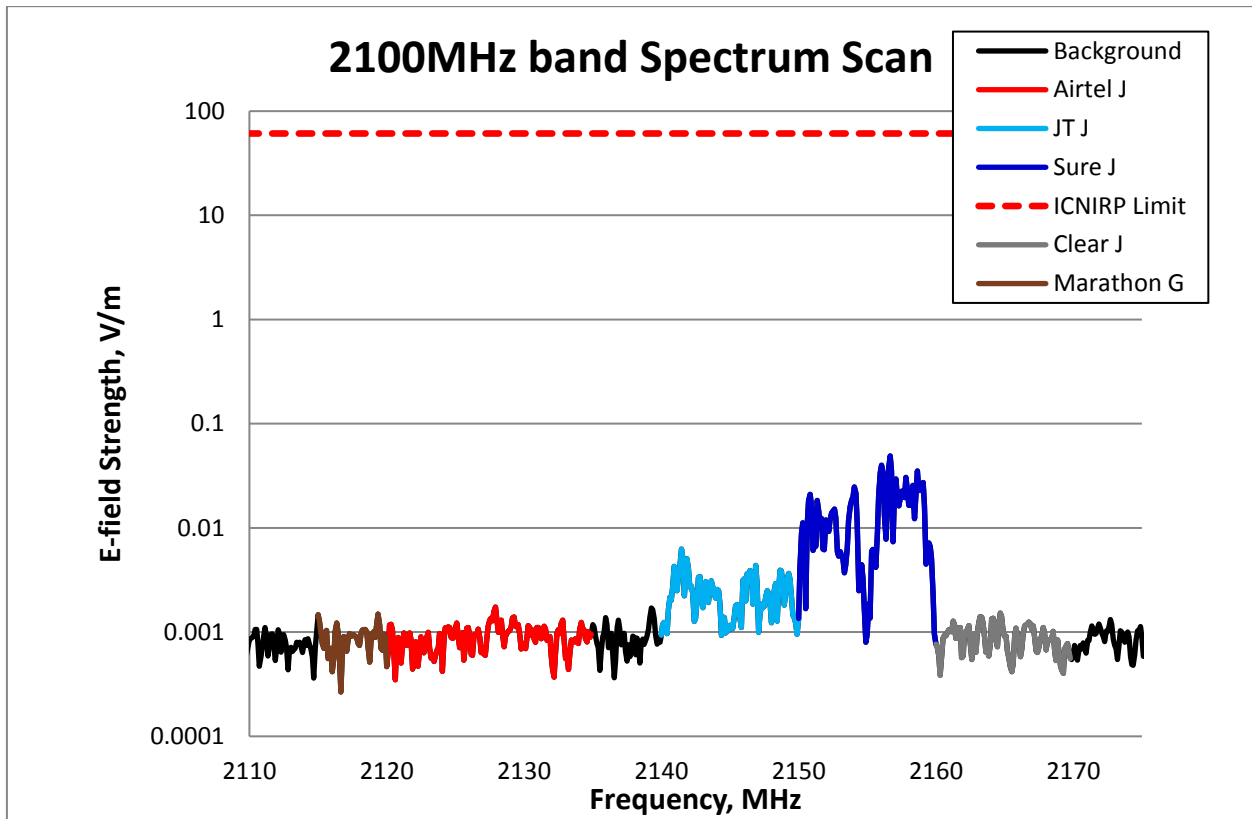


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.04904 V/m (Sure J), which is 1244 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
Fremont Point	Airtel J	2100	0.001735	35159	3.2988E-08	1/ 30314030
	Clear J		0.001524	40026	2.15111E-08	1/ 46487612
	JT J		0.006255	9752	1.75725E-07	1/ 5690705
	Marathon J		0.001488	40995	1.07957E-08	1/ 92629068
	Sure J		0.04904	1244	7.48521E-06	1/ 133597
total band EQ					7.72623E-06	1/ 129429

Table 5 – 2100MHz band Exposure Quotient at Fremont Point

2.5 2600MHz band

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

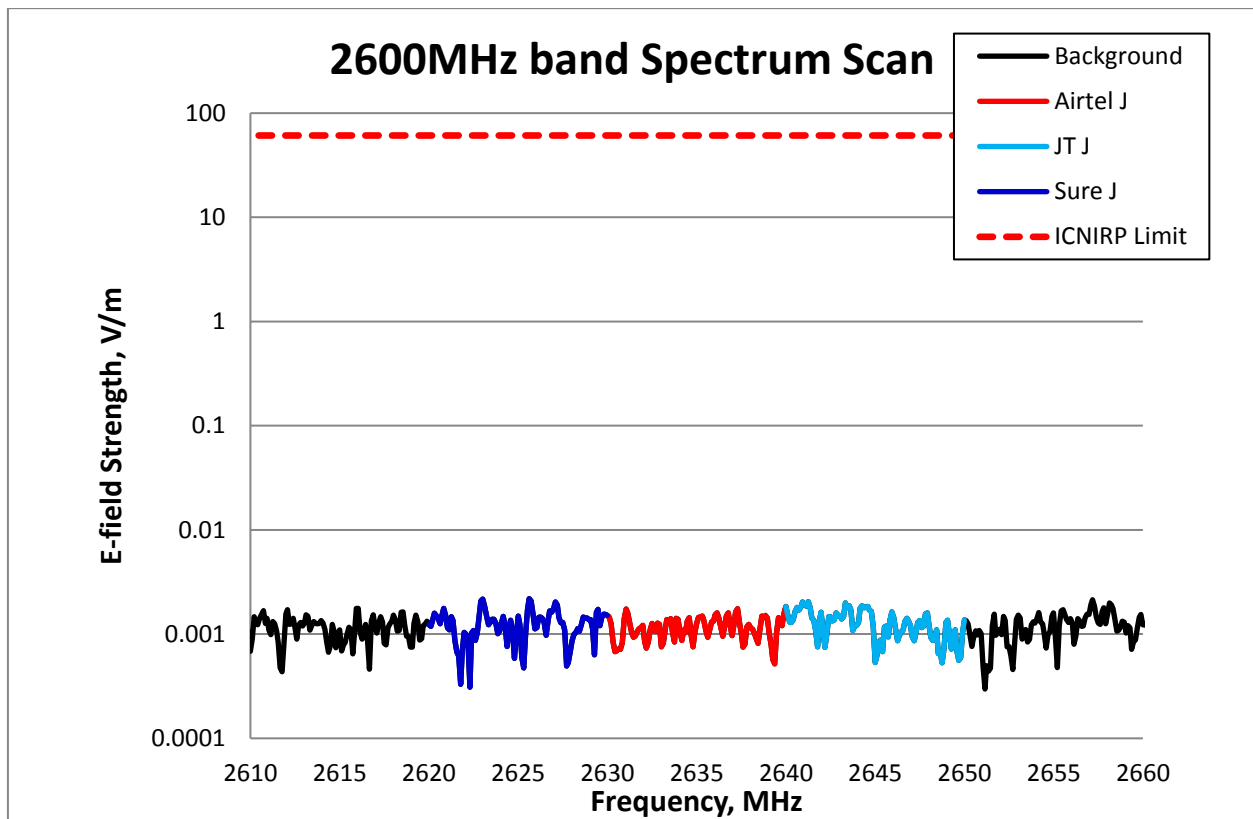


Figure 8 – 2600MHz band Spectrum Scan

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
Fremont Point	Airtel J	2600	0.001844	33080	3.73592E-08	1/ 26767196
	JT J		0.002047	29800	4.68133E-08	1/ 21361445
	Sure J		0.00219	27854	4.48938E-08	1/ 22274781
	total band EQ			1.29066E-07	1/ 7747956	

Table 6 – 2600MHz band Exposure Quotient at Fremont Point

End