

Cellular Mast Emissions Survey: JSPCA (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 JSPCA site located in Jersey.

The JSPCA site was used by one operator at the time of the survey: Sure 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
JSPCA	800	1.131	Sure J	34	0.001722038	1/ 581
	900	2.2	Sure J	19	0.002943111	1/ 340
	1800	0.2699	Sure J	216	0.000656795	1/ 1523
	2100	0.005863	Airtel J	10404	5.00077E-07	1/ 1999693
	2600	0.00323	JT J	18885	1.63362E-07	1/ 6121381
Total Site EQ					0.005322607	1/ 188

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/188 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

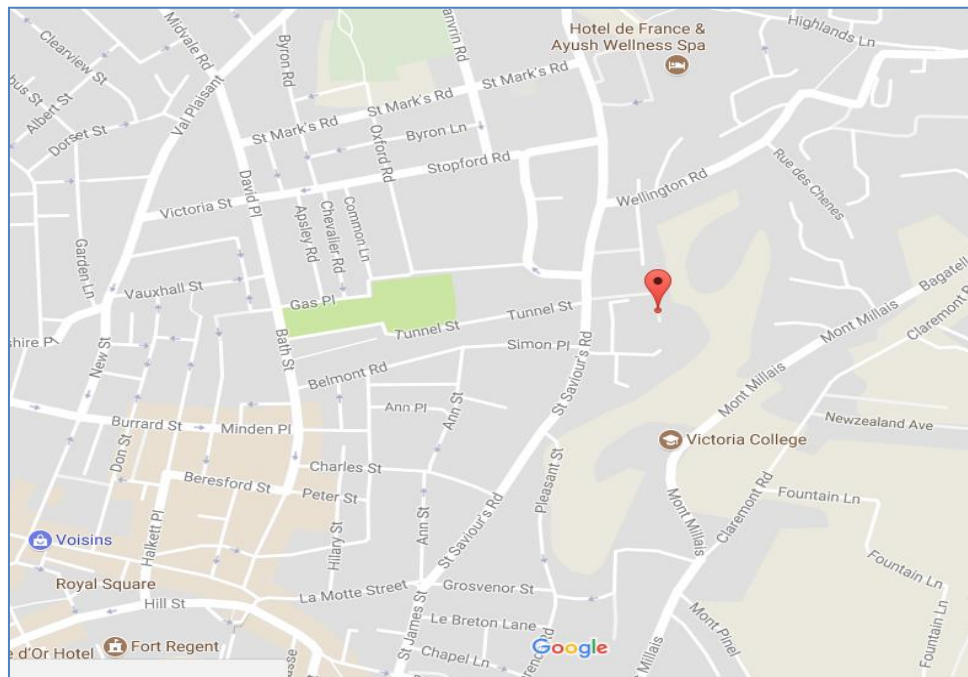


Figure 1 - Map of the Site Area

Site name	JSPCA
Site address	Animal Shelter, 89 St Saviour's Road, St Helier
Site Latitude	49.1876
Site Longitude	-2.09605

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	8m
Site type	Building Wall Mount
Description	The antennas at JSPCA are located on the side of the main building, out of reach of the public

1.3 Site Photo



Figure 2 – Peak Measurement Location (left) and view of the antenna from the outside (right)

1.4 Test Location

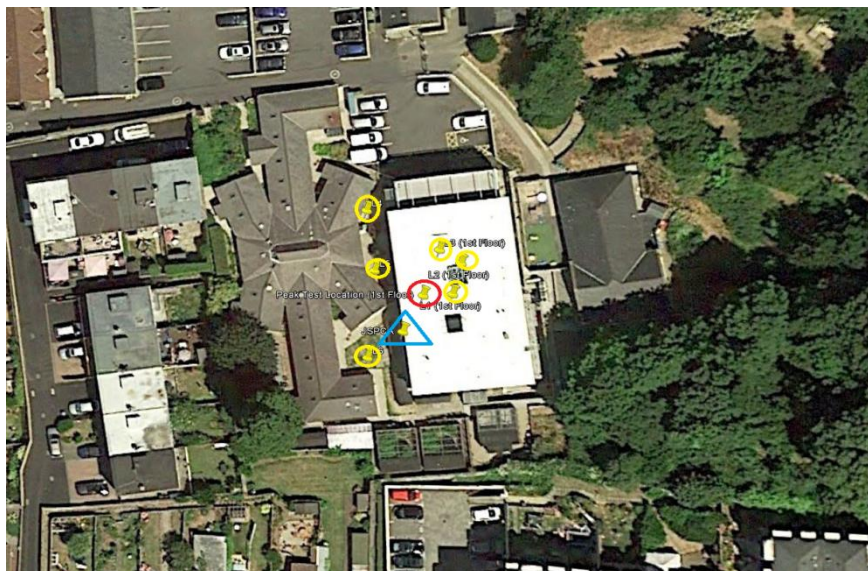


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations (indoor and outdoor) measured at during the peak search and the red circle (indoor) is the spot where the highest spot search reading was obtained and where the detailed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

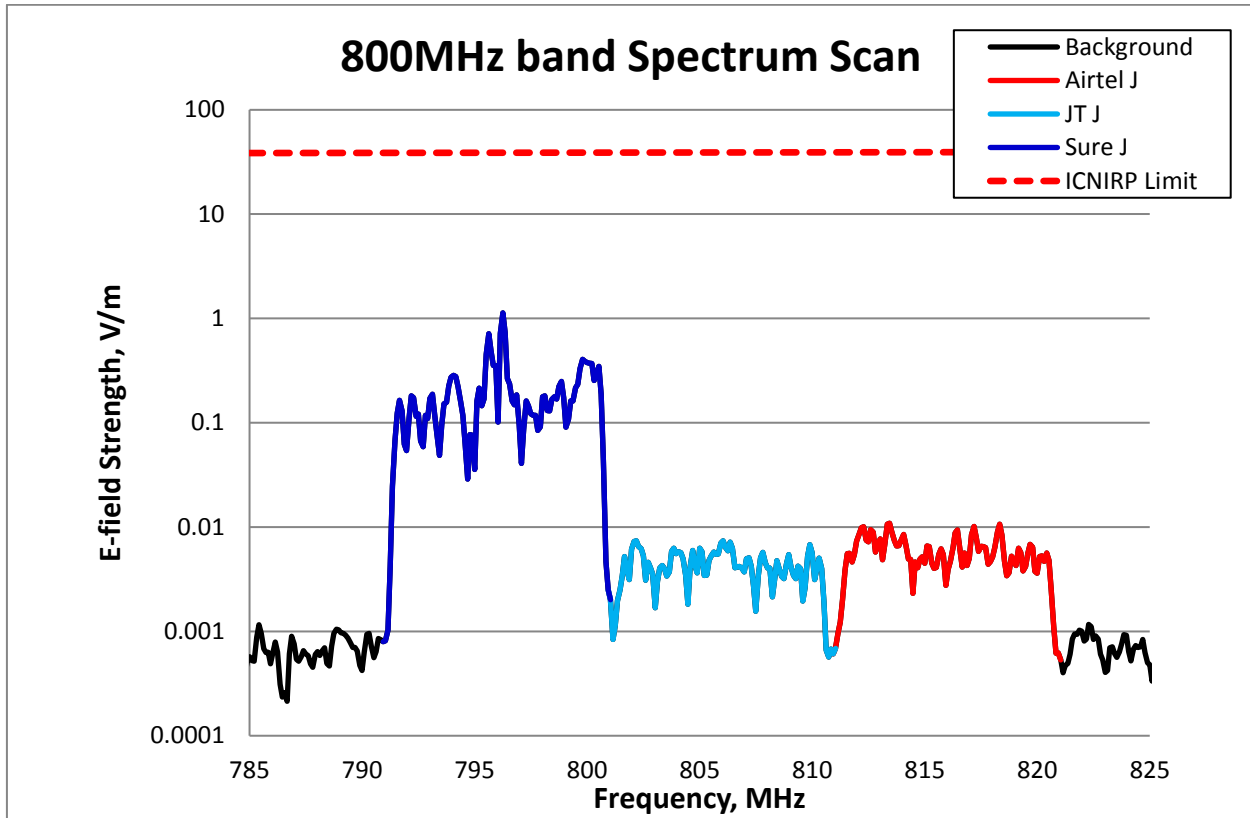


Figure 4 - 800MHz band Spectrum Scan

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 1.131 V/m (Sure J), which is 34 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
JSPCA	Airtel J	800	0.01088	3575	9.76541E-07	1/ 1024023
	JT J		0.00739	5263	5.27953E-07	1/ 1894109
	Sure J		1.131	34	0.001720533	1/ 581
total band EQ					0.001722038	1/ 581

Table 2– 800MHz band Exposure Quotient at JSPCA

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

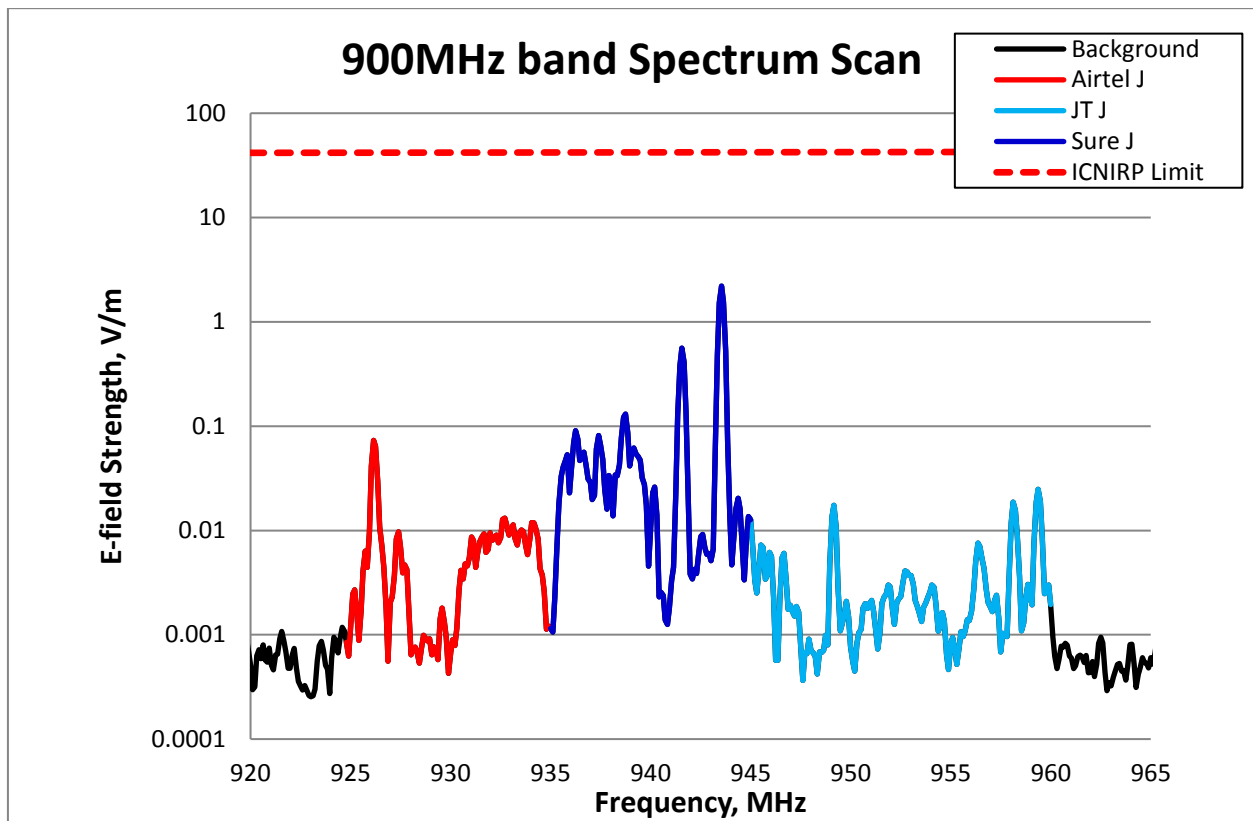


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.2 V/m (Sure J), which is 19 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
JSPCA	Airtel J	900	0.07289	566	4.17978E-06	1/ 239247
	JT J		0.0248	1663	1.07238E-06	1/ 932506
	Sure J		2.2	19	0.002937859	1/ 340
total band EQ					0.002943111	1/ 340

Table 3– 900MHz band Exposure Quotient at JSPCA

2.3 1800 MHz Band

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

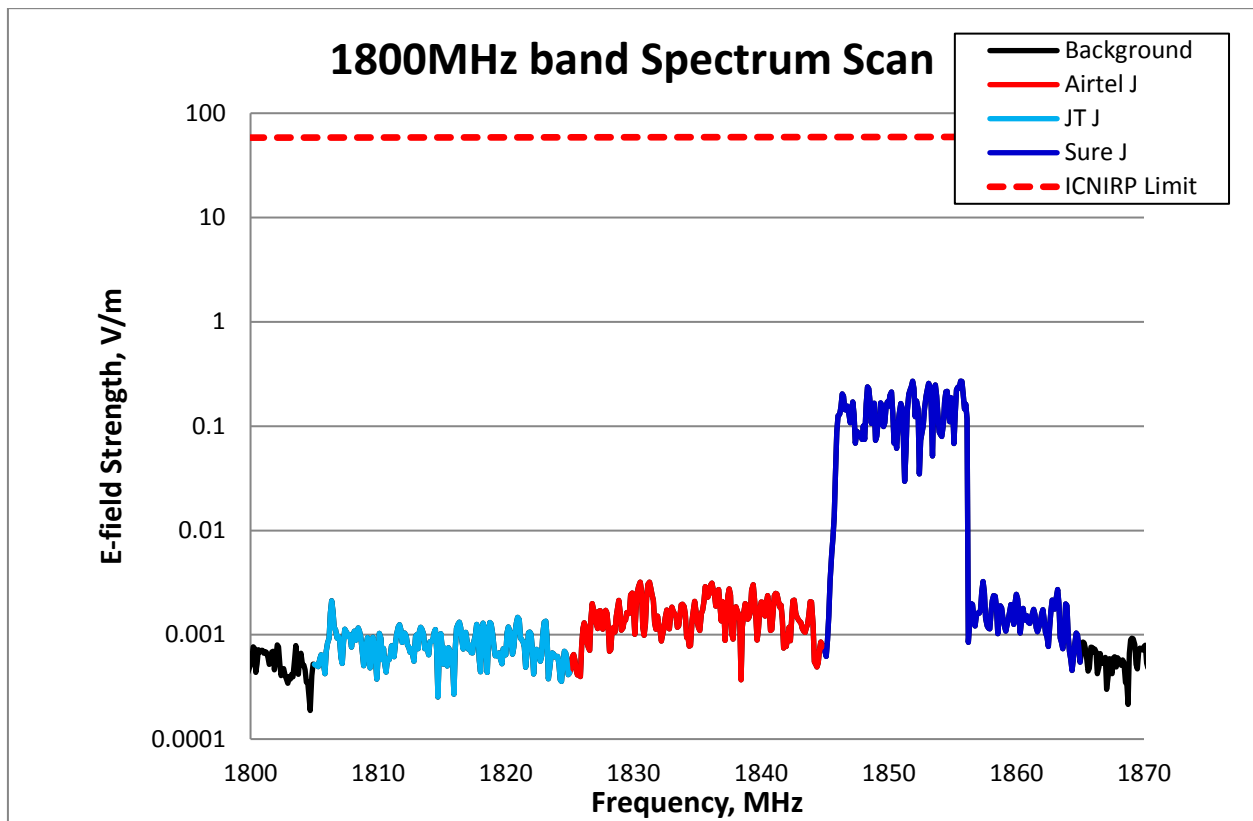


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.2699 V/m (Sure J), which is 216 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
JSPCA	Airtel J	1800	0.003198	18241	1.45067E-07	1/ 6893360
	JT J		0.002116	27569	3.87811E-08	1/ 25785747
	Sure J		0.2699	216	0.000656611	1/ 1523
total band EQ					0.000656795	1/ 1523

Table 4 – 1800MHz band Exposure Quotient at JSPCA

2.4 2100MHz Band

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

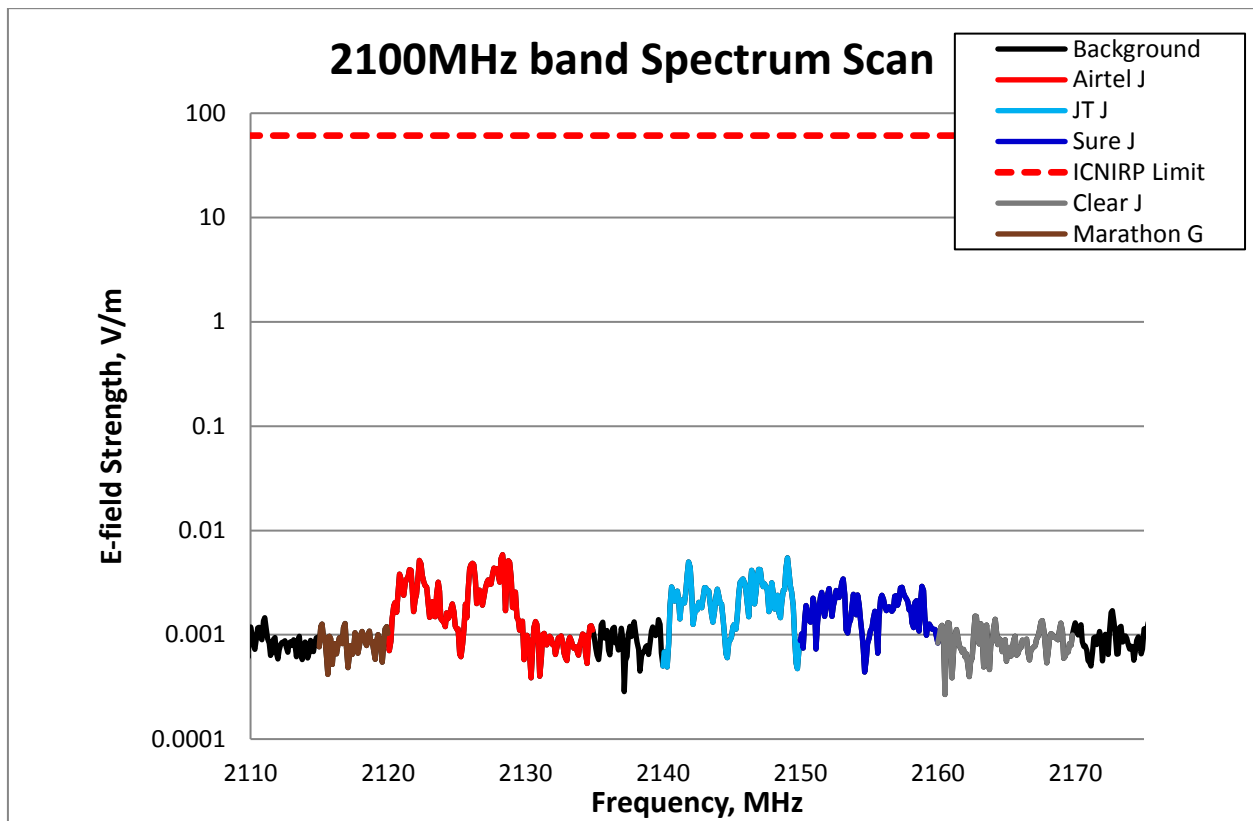


Figure 7 – 2100MHz band Spectrum Scan

The activity recorded in the 2100MHz was marginal as no operator appears to transmit in this band at this site.

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
JSPCA	Airtel J	2100	0.005863	10404	2.21998E-07	1/ 4504552
	Clear J		0.001506	40505	2.06469E-08	1/ 48433448
	JT J		0.00546	11172	1.58886E-07	1/ 6293810
	Marathon J		0.00128	47656	1.03253E-08	1/ 96849106
	Sure J		0.003434	17764	8.82205E-08	1/ 11335227
total band EQ					5.00077E-07	1/ 1999693

Table 5 – 2100MHz band Exposure Quotient at JSPCA

2.5 2600MHz band

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

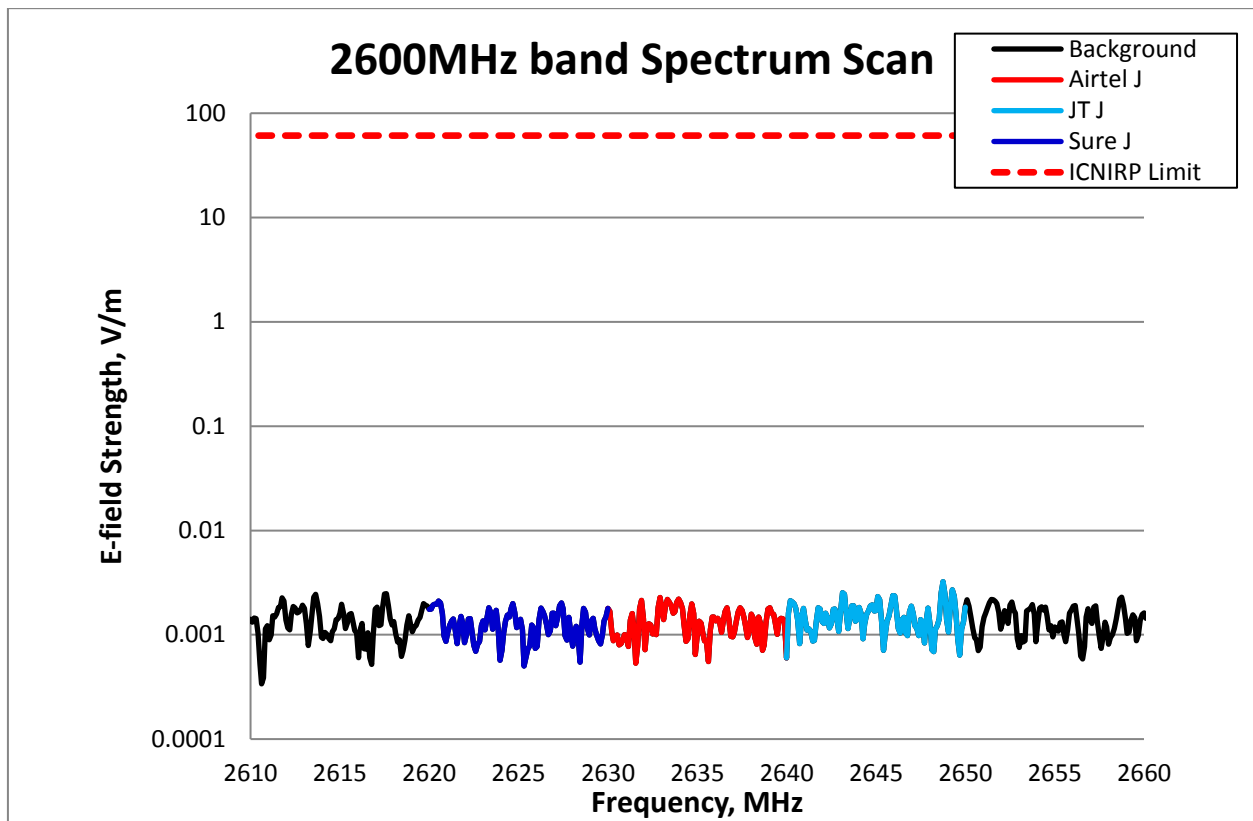


Figure 8 – 2600MHz band Spectrum Scan

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
JSPCA	Airtel J	2600	0.002279	26766	5.0339E-08	1/ 19865300
	JT J		0.00323	18885	6.66364E-08	1/ 15006806
	Sure J		0.002107	28951	4.63864E-08	1/ 21558054
total band EQ					1.63362E-07	1/ 6121381

Table 6 – 2600MHz band Exposure Quotient at JSPCA

End