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

Jersey Zoo 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
Jersey Zoo	800	0.004628	Sure J	8403	2.89795E-07	1/ 3450717
	900	2.352	JT J	18	0.003815785	1/ 262
	1800	0.06267	JT J	931	1.85274E-05	1/ 53974
	2100	0.4915	JT J	124	0.001832729	1/ 546
	2600	0.004108	Sure J	14849	4.4085E-07	1/ 2268346
				Total Site EQ	0.005667771	1/ 176

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/176 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

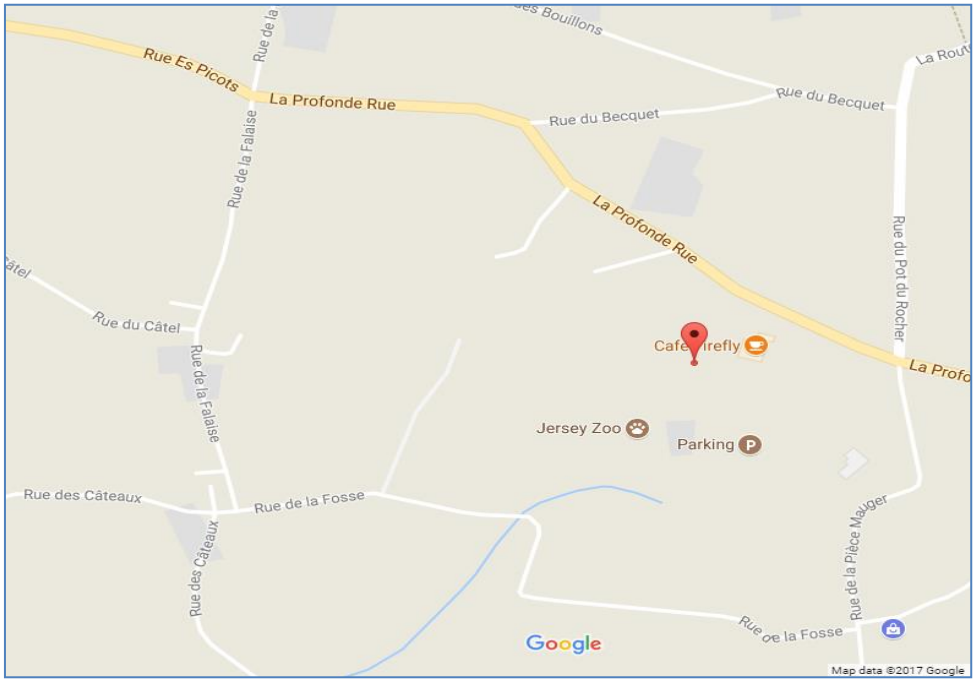

Figure 1 - Map of the Site Area

Site name	Jersey Zoo
Site address	Durrell Wildlife Park, La Profonde Rue, Trinity, Jersey
Site Latitude	49.22893
Site Longitude	-2.07444

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	9m
Site type	Building – Wall Mount
Description	The antennas at Jersey Zoo are located on the side of the chimney of the main building, out of reach of the public.

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

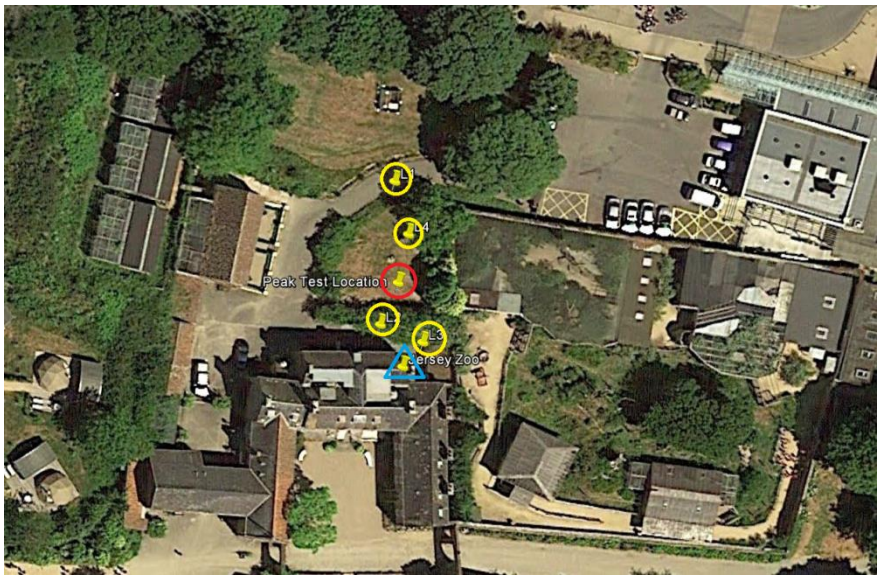

Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

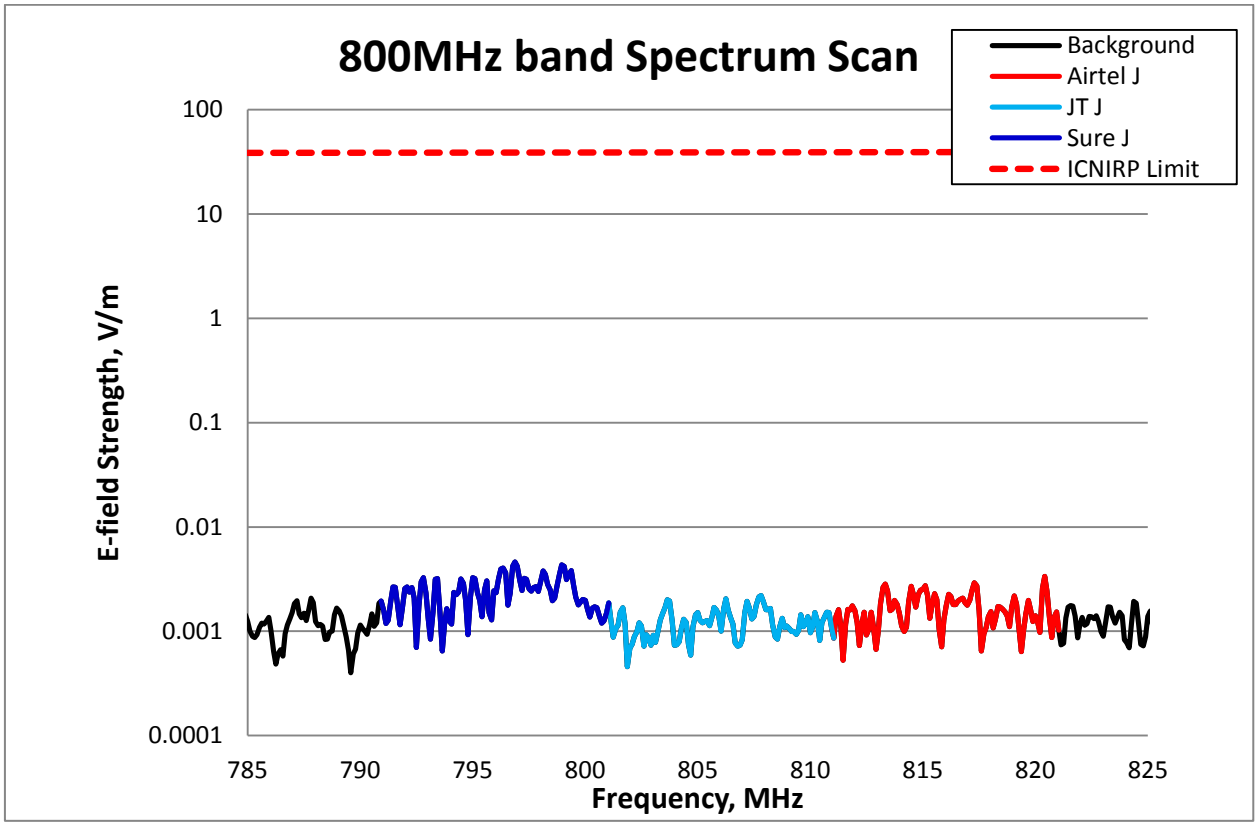

Figure 4 - 800MHz band Spectrum Scan

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 activity was recorded in the 800MHz as no operator appears to transmit in this band at this site.

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
Jersey Zoo	Airtel J	800	0.003358	11582	7.83497E-08	1/ 12763289
	JT J		0.002191	17750	4.35824E-08	1/ 22945021
	Sure J		0.004628	8403	1.67863E-07	1/ 5957249
				total band EQ	2.89795E-07	1/ 3450717

Table 2– 800MHz band Exposure Quotient at Jersey Zoo

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

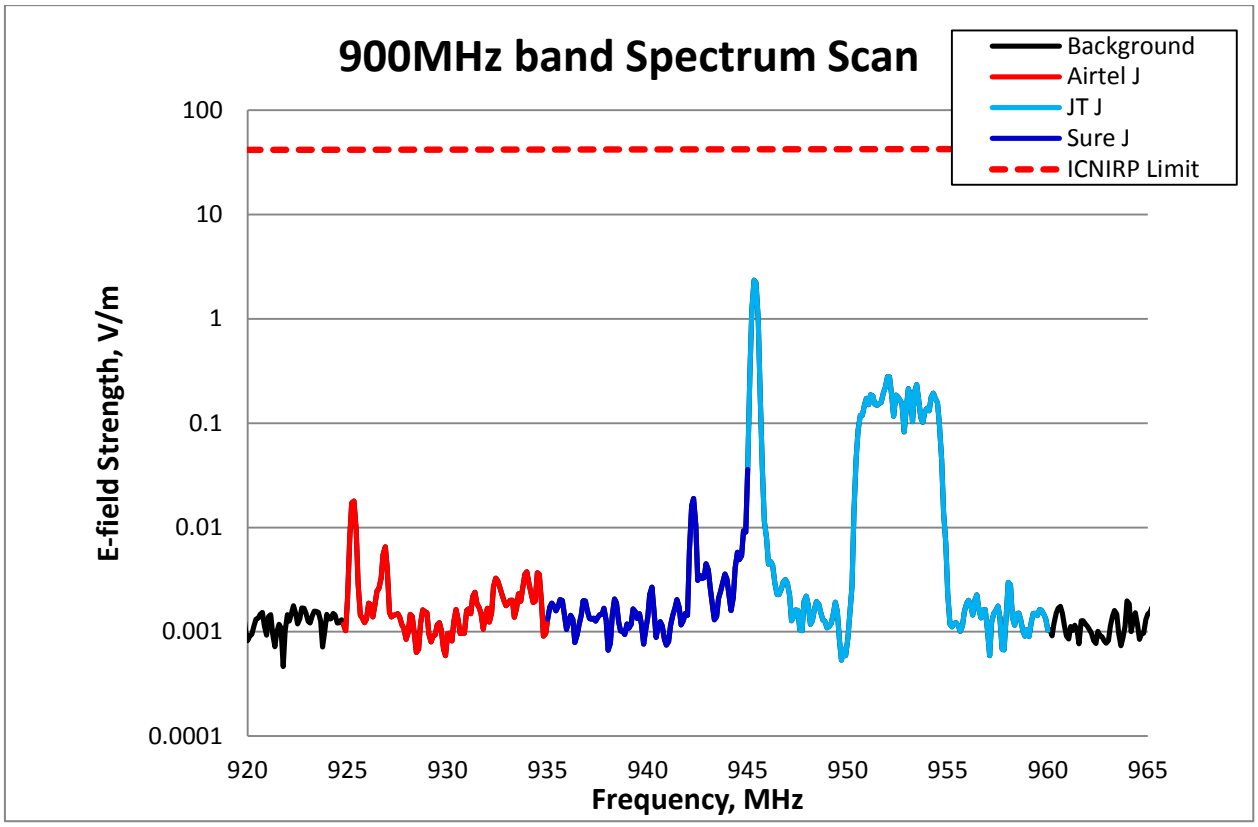

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.352 V/m (JT J), which is 18 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
Jersey Zoo	Airtel J	900	0.0179	2304	3.12177E-07	1/ 3203313
	JT J		2.352	18	0.003814768	1/ 262
	Sure J		0.03597	1147	7.04109E-07	1/ 1420235
				total band EQ	0.003815785	1/ 262

Table 3– 900MHz band Exposure Quotient at Jersey Zoo

2.3 1800 MHz Band

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

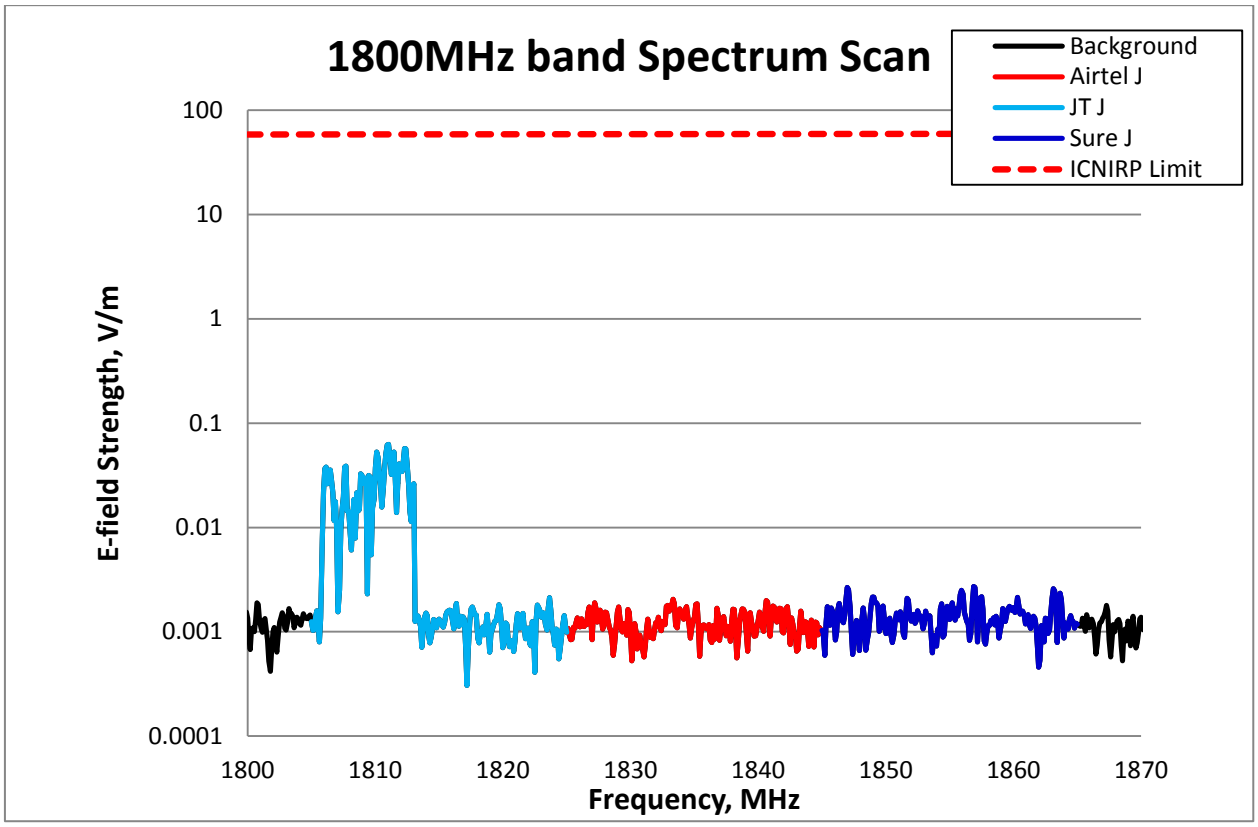

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.06267 V/m (JT J), which is 931 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
Jersey Zoo	Airtel J	1800	0.002052	28429	8.14646E-08	1/ 12275275
	JT J		0.06267	931	1.83364E-05	1/ 54536
	Sure J		0.002714	21495	1.09568E-07	1/ 9126716
				total band EQ	1.85274E-05	1/ 53974

Table 4 – 1800MHz band Exposure Quotient at Jersey Zoo

2.4 2100MHz Band

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

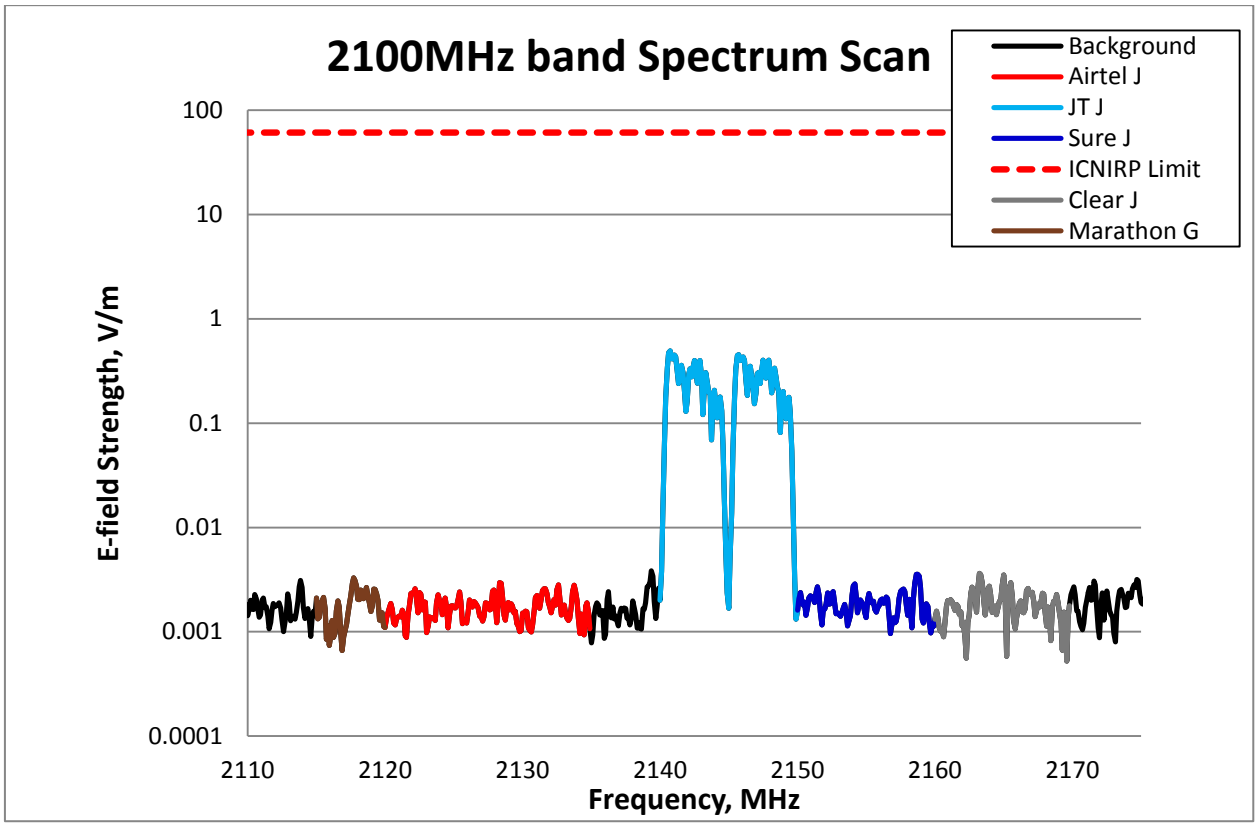

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.4915 V/m (JT J), which is 124 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
Jersey Zoo	Airtel J	2100	0.002955	20643	1.19954E-07	1/ 8336550
	Clear J		0.003624	16832	9.22231E-08	1/ 10843269
	JT J		0.4915	124	0.001832372	1/ 546
	Marathon J		0.003296	18507	4.62469E-08	1/ 21623076
	Sure J		0.003551	17178	9.79277E-08	1/ 10211611
				total band EQ	0.001832729	1/ 546

Table 5 – 2100MHz band Exposure Quotient at Jersey Zoo

2.5 2600MHz band

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

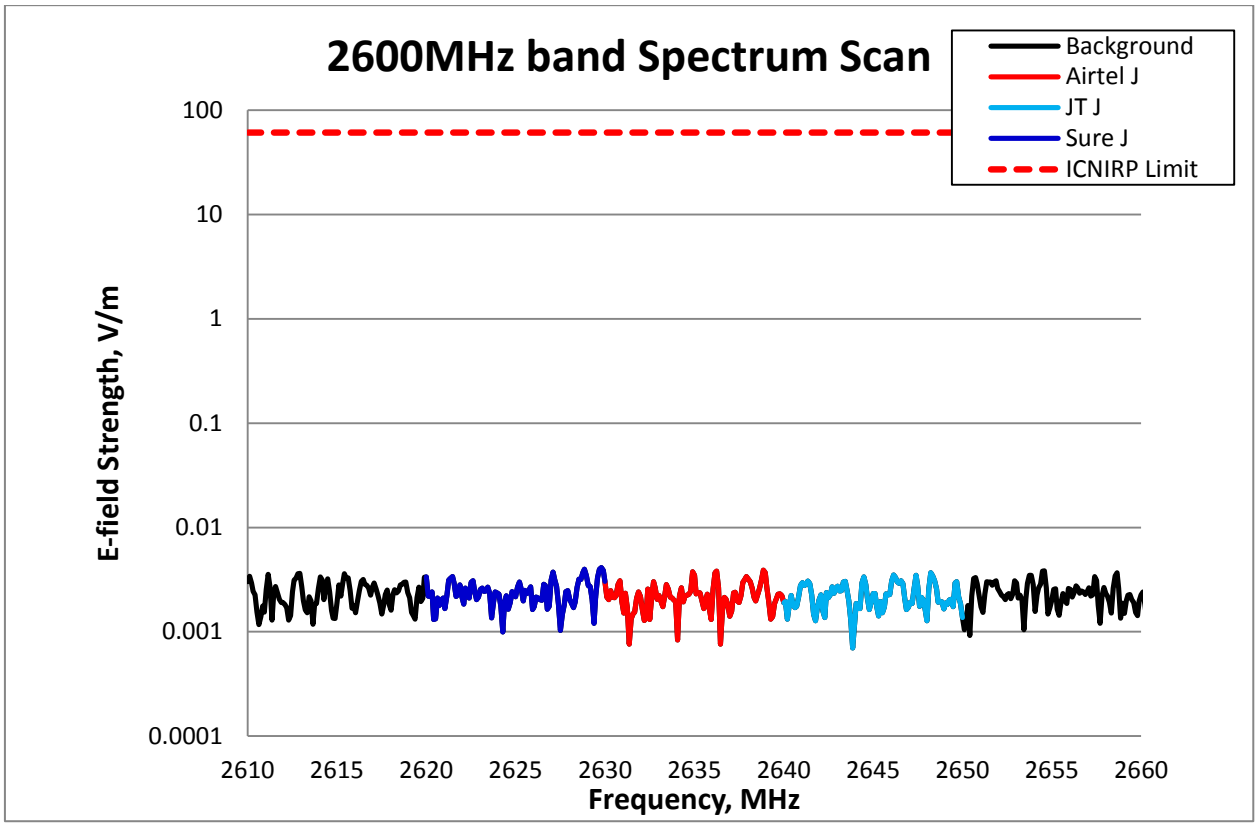

Figure 8 – 2600MHz band Spectrum Scan

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 2600MH 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
Jersey Zoo	Airtel J	2600	0.003893	15669	1.40295E-07	1/ 7127840
	JT J		0.003685	16554	1.39025E-07	1/ 7192942
	Sure J		0.004108	14849	1.6153E-07	1/ 6190813
				total band EQ	4.4085E-07	1/ 2268346

Table 6 – 2600MHz band Exposure Quotient at Jersey Zoo

End