Cellular Mast Emissions Survey: Le Bretton Farm (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 Le Bretton Farm site located in Jersey.

Le Bretton Farm 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
Le Bretton Farm	800	0.133	Sure J	292	9.65798E-05	1/ 10354
	900	0.6492	Sure J	64	0.000378486	1/ 2642
	1800	0.1554	Sure J	375	0.000203596	1/ 4912
	2100	0.2395	Sure J	255	0.000384905	1/ 2598
	2600	0.00222	Airtel J	27477	1.25269E-07	1/ 7982795
				Total Site EQ	0.001063693	1/ 940

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/940 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

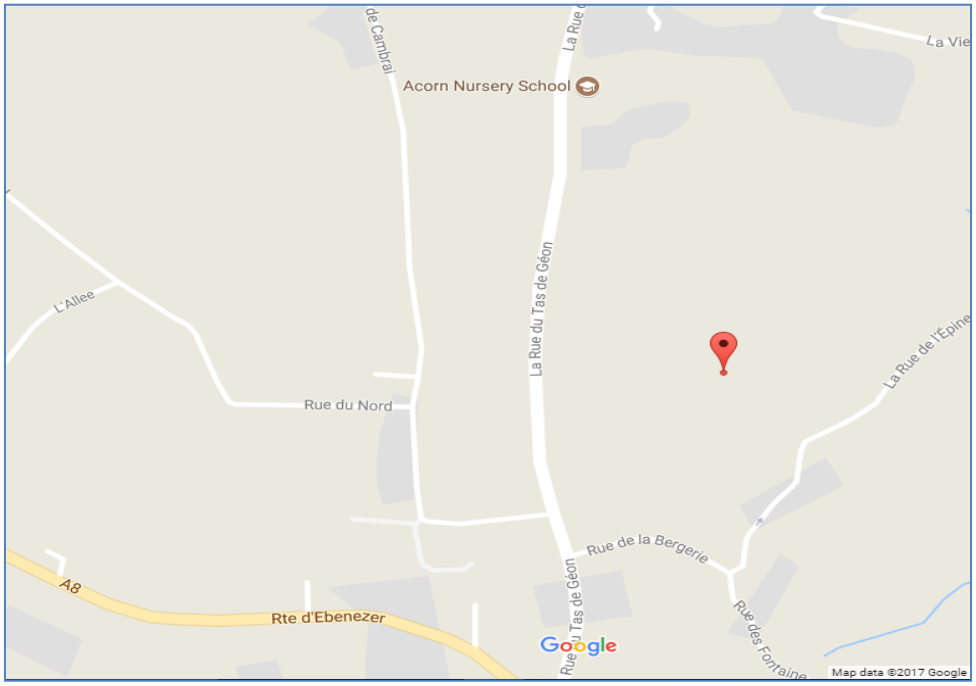

Figure 1 - Map of the Site Area

Site name	Le Bretton Farm
Site address	Rock Vale, La Rue de la Bergerie, Trinity, Jersey
Site Latitude	49.24023
Site Longitude	-2.09168

1.2 Site Description

Operators	Sure J
Antenna types	Directionals
Approximate height	12m
Site type	Pole Mast
Description	The antennas at Le Bretton Farm are located in the corner of the field, the public have access.

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

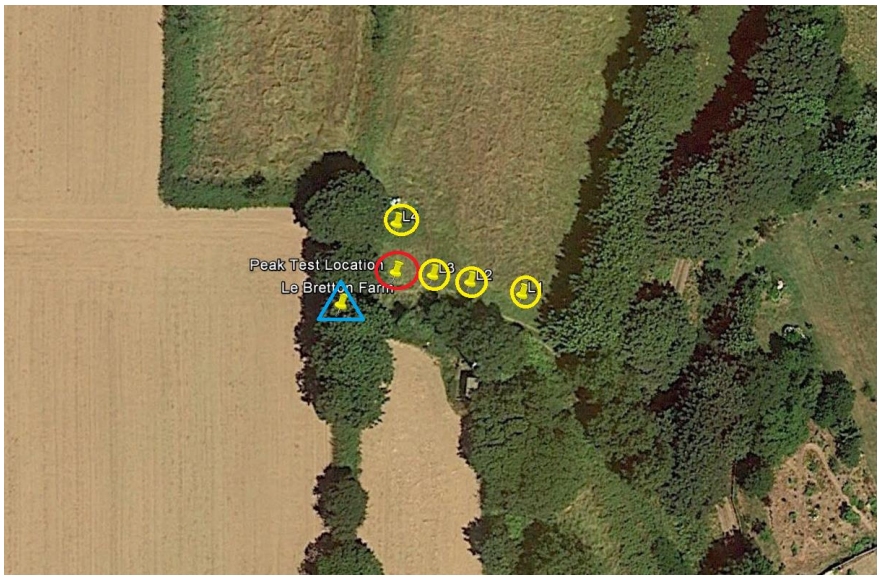

Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

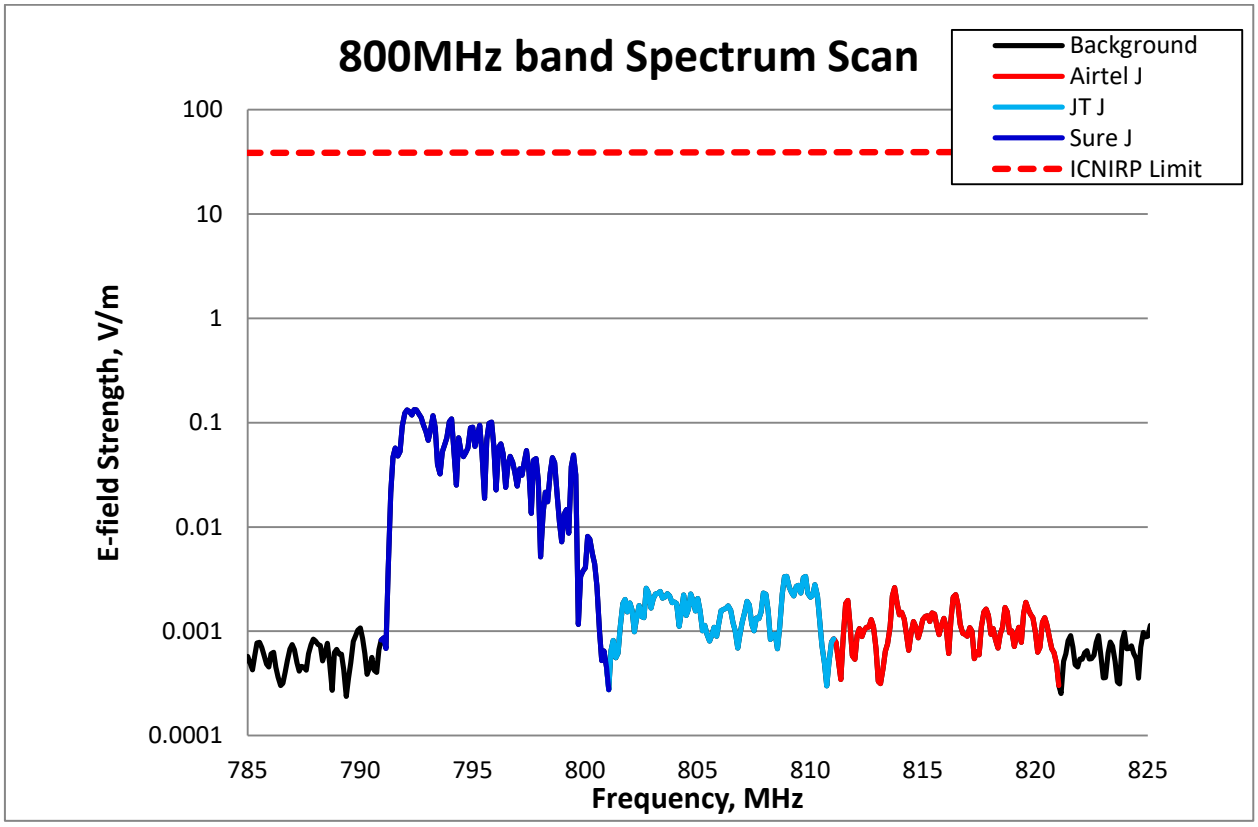

Figure 4 - 800MHz band Spectrum Scan

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 0.133 V/m (Sure J), which is 292 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
Le Bretton Farm	Airtel J	800	0.002623	14827	3.674E-08	1/ 27218314
	JT J		0.003366	11554	8.21069E-08	1/ 12179246
	Sure J		0.133	292	9.64609E-05	1/ 10367
				total band EQ	9.65798E-05	1/ 10354

Table 2– 800MHz band Exposure Quotient at Le Bretton Farm

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

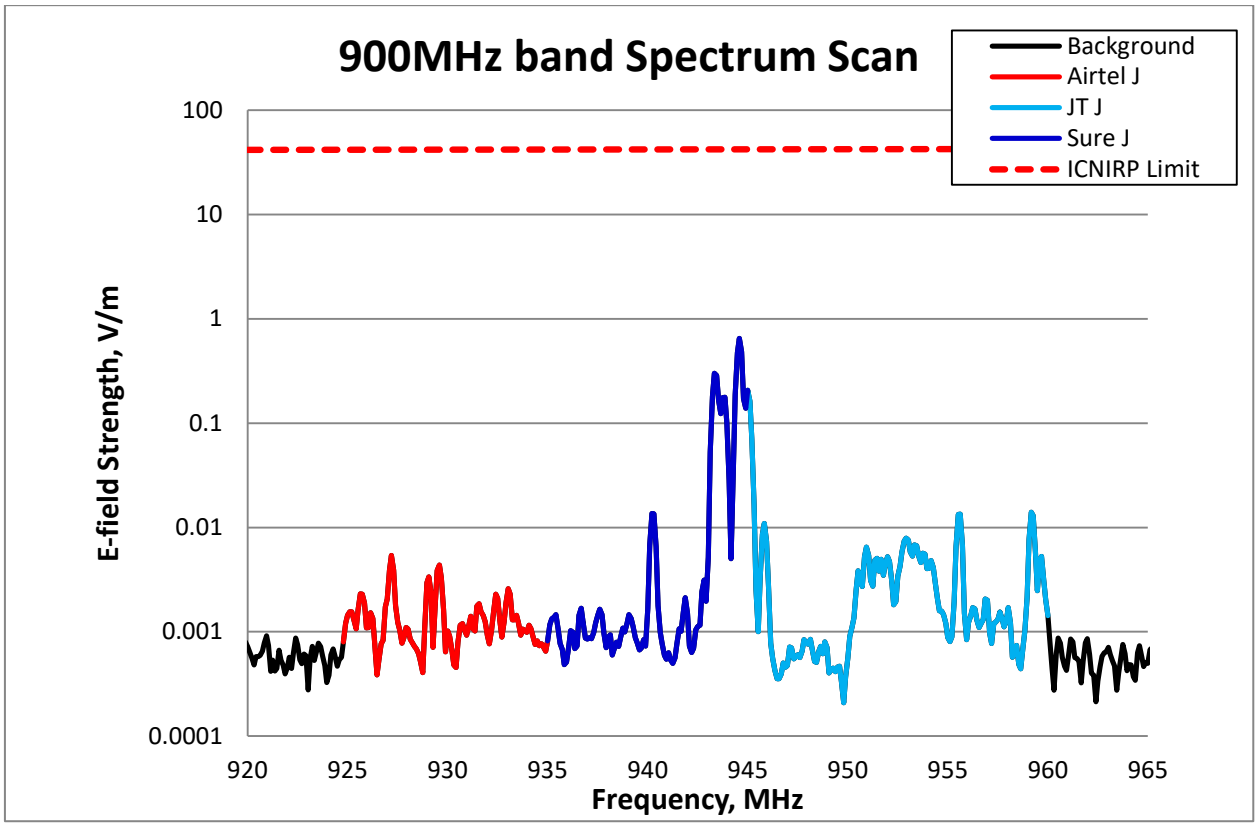

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.6492 V/m (Sure J), which is 64 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
Le Bretton Farm	Airtel J	900	0.005381	7666	7.28591E-08	1/ 13725121
	JT J		0.2063	200	2.04957E-05	1/ 48791
	Sure J		0.6492	64	0.000357918	1/ 2794
				total band EQ	0.000378486	1/ 2642

Table 3– 900MHz band Exposure Quotient at Le Bretton Farm

2.3 1800 MHz Band

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

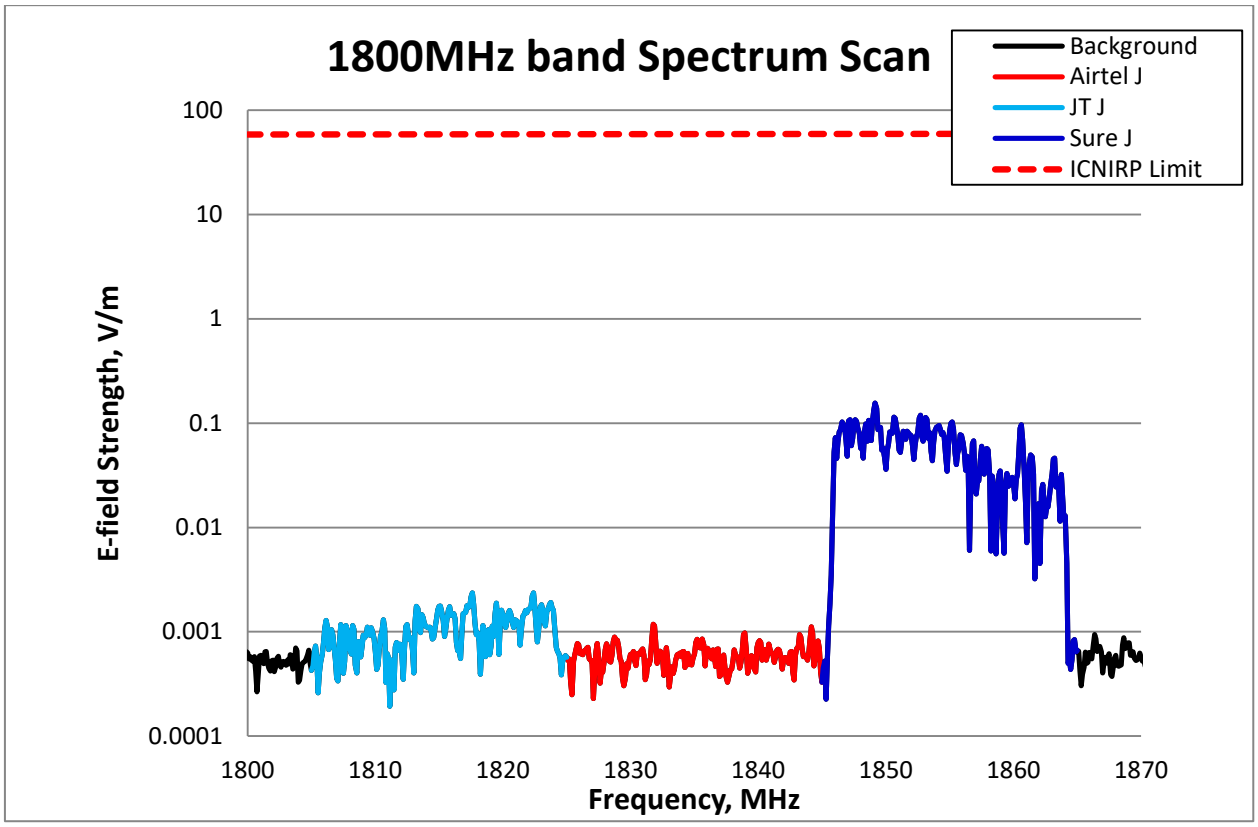

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1554 V/m (Sure J), which is 375 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
Le Bretton Farm	Airtel J	1800	0.001184	49271	1.96506E-08	1/ 50888945
	JT J		0.002363	24687	6.79962E-08	1/ 14706701
	Sure J		0.1554	375	0.000203509	1/ 4914
				total band EQ	0.000203596	1/ 4912

Table 4 – 1800MHz band Exposure Quotient at Le Bretton Farm

2.4 2100MHz Band

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

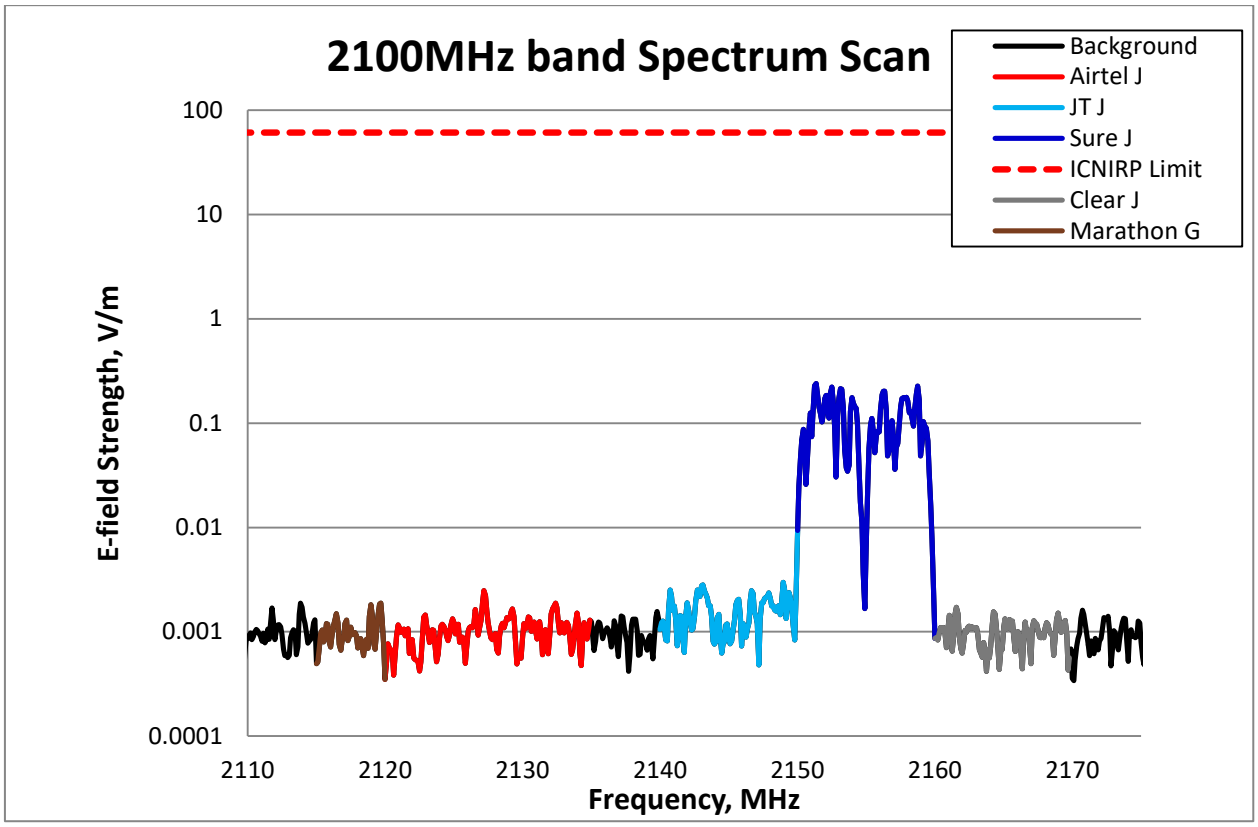

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2395 V/m (Sure J), which is 255 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
Le Bretton Farm	Airtel J	2100	0.002478	24617	4.51888E-08	1/ 22129393
	Clear J		0.001714	35589	2.61364E-08	1/ 38260862
	JT J		0.009365	6514	9.38723E-08	1/ 10652771
	Marathon J		0.001885	32361	1.431E-08	1/ 69881301
	Sure J		0.2395	255	0.000384726	1/ 2599
				total band EQ	0.000384905	1/ 2598

Table 5 – 2100MHz band Exposure Quotient at Le Bretton Farm

2.5 2600MHz band

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

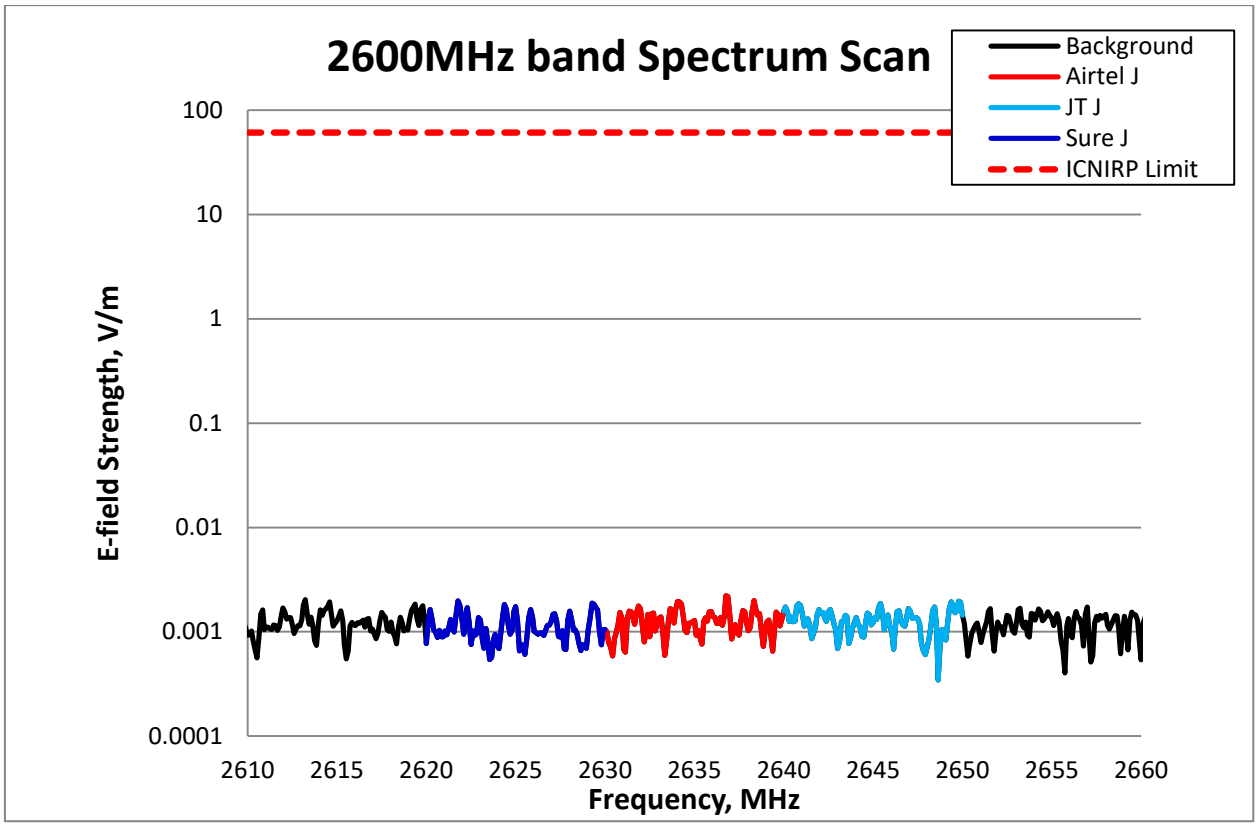

Figure 8 – 2600MHz band Spectrum Scan

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
Le Bretton Farm	Airtel J	2600	0.00222	27477	4.41869E-08	1/ 22631119
	JT J		0.001963	31075	4.60196E-08	1/ 21729873
	Sure J		0.001977	30855	3.50629E-08	1/ 28520197
				total band EQ	1.25269E-07	1/ 7982795

Table 6 – 2600MHz band Exposure Quotient at Le Bretton Farm

End