

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

Le Rondin site was used by a single operator at the time of the survey: JT J; but the survey recorded strong signals from Airtel J who operate a site in a nearby location. Surveys were nonetheless 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 Rondin	800	0.2466	JT J	158	0.000331419	1/ 3017
	900	3.48	JT J	12	0.008961137	1/ 112
	1800	0.1604	JT J	364	0.000174867	1/ 5719
	2100	0.3866	JT J	158	0.000814343	1/ 1228
	2600	0.005371	Airtel J	11357	7.1943E-07	1/ 1389988
Total Site EQ					0.010282485	1/ 97

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/97 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

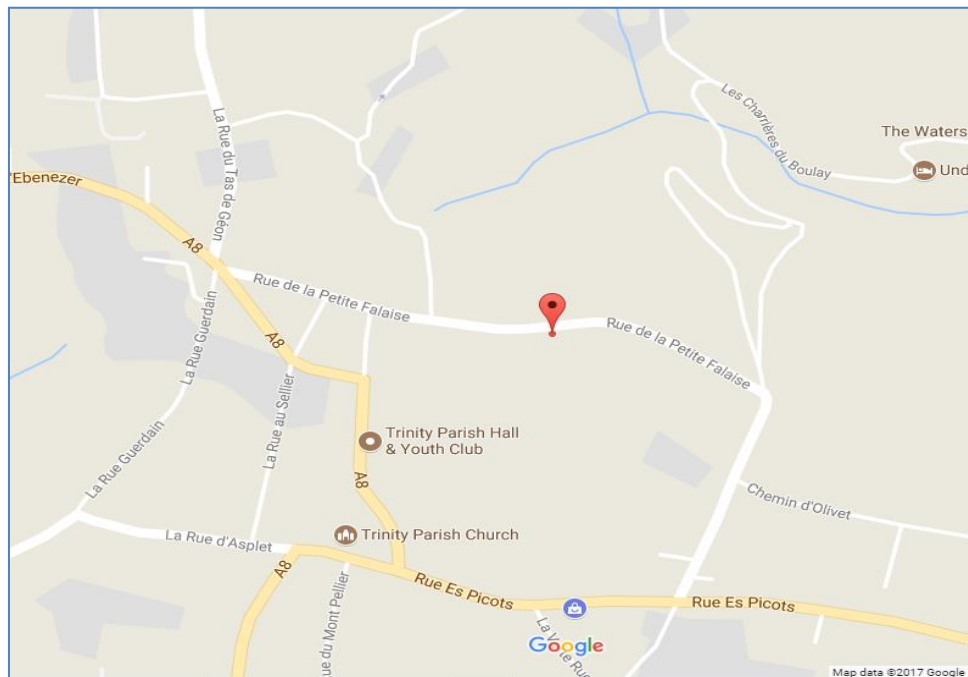


Figure 1 - Map of the Site Area

Site name	Le Rondin
Site address	Rue De La Petite Falaise, Trinity, Jersey
Site Latitude	49.23606
Site Longitude	-2.08872

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	15m
Site type	Monopole
Description	The antennas at Le Rondin 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.

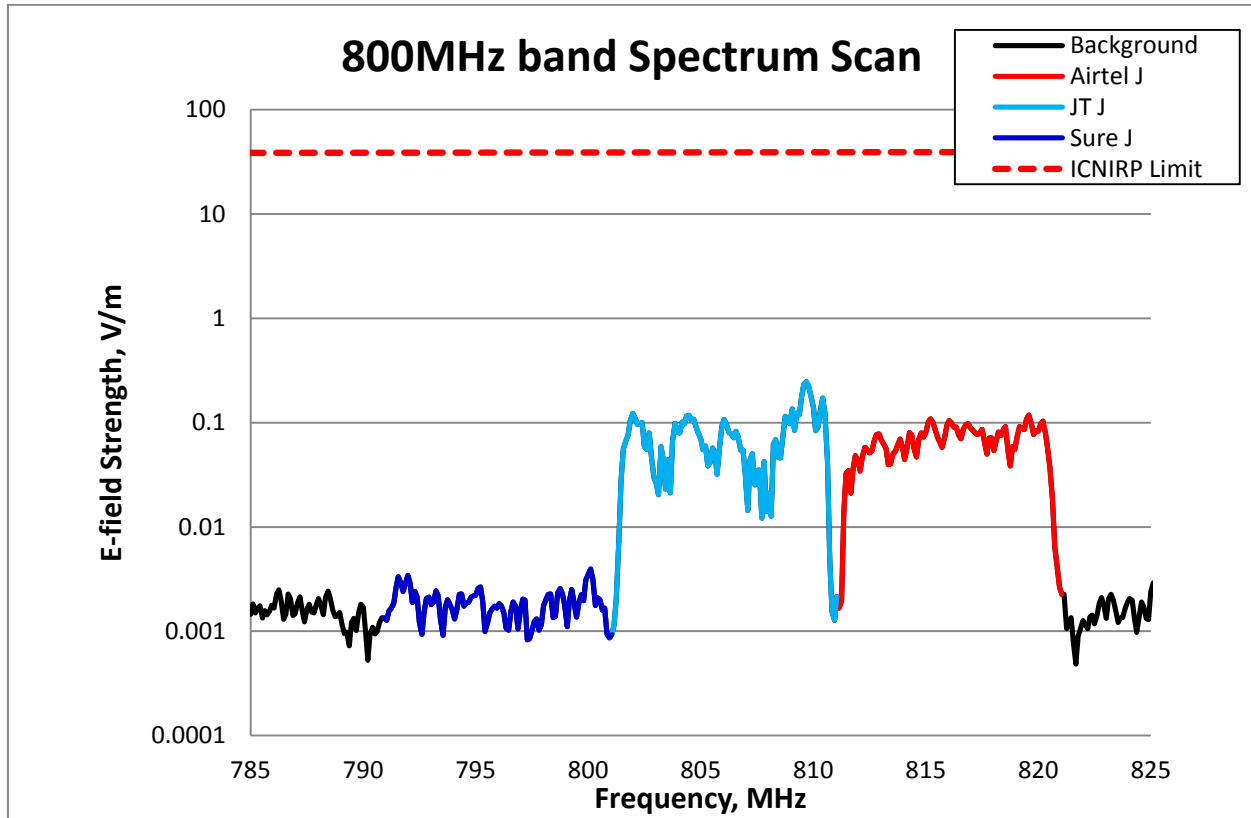


Figure 4 - 800MHz band Spectrum Scan

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 0.2466 V/m (JT J), which is 158 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 Rondin	Airtel J	800	0.1185	328	0.000128539	1/ 7780
	JT J		0.2466	158	0.000202778	1/ 4932
	Sure J		0.003964	9811	1.01914E-07	1/ 9812155
total band EQ					0.000331419	1/ 3017

Table 2– 800MHz band Exposure Quotient at Le Rondin

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

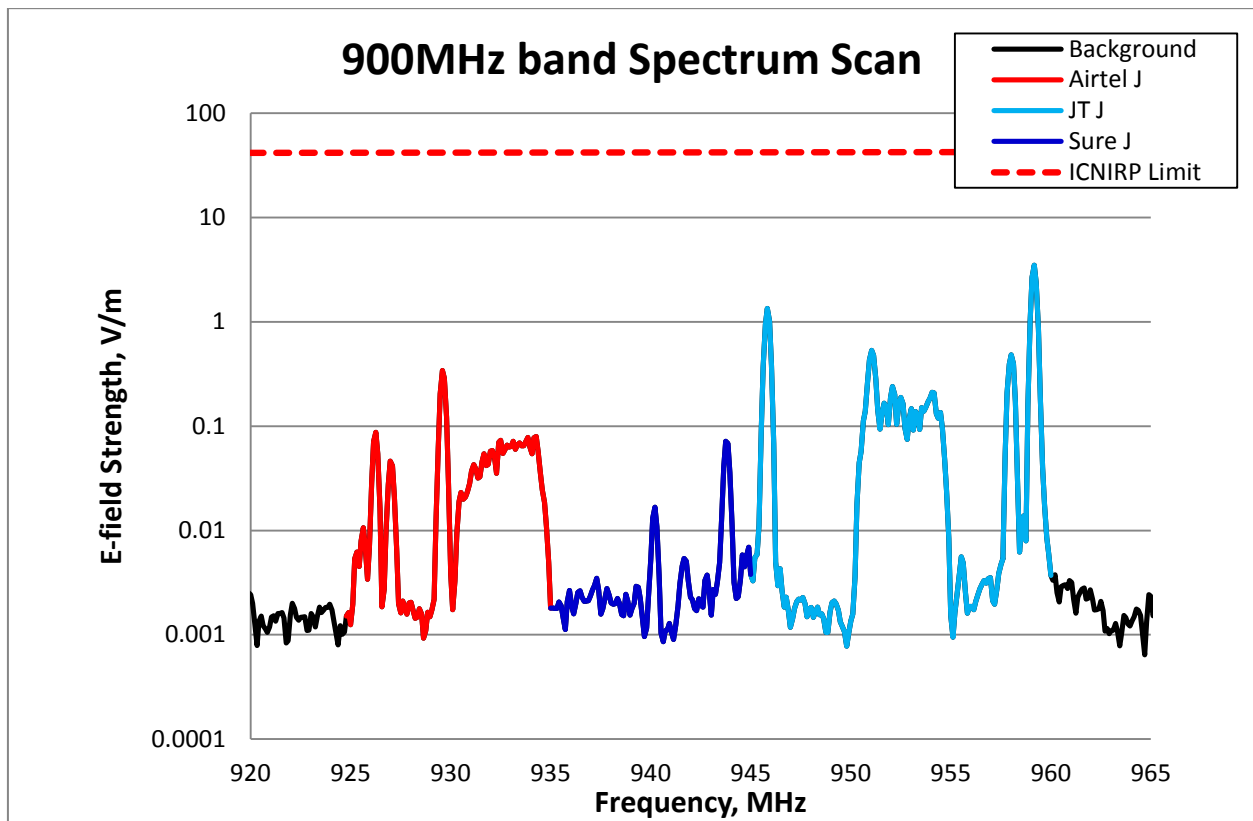


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 3.48 V/m (JT J), which is 12 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
Le Rondin	Airtel J	900	0.3411	121	0.000108311	1/ 9233
	JT J		3.48	12	0.008849004	1/ 113
	Sure J		0.07163	576	3.82131E-06	1/ 261690
total band EQ					0.008961137	1/ 112

Table 3– 900MHz band Exposure Quotient at Le Rondin

2.3 1800 MHz Band

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

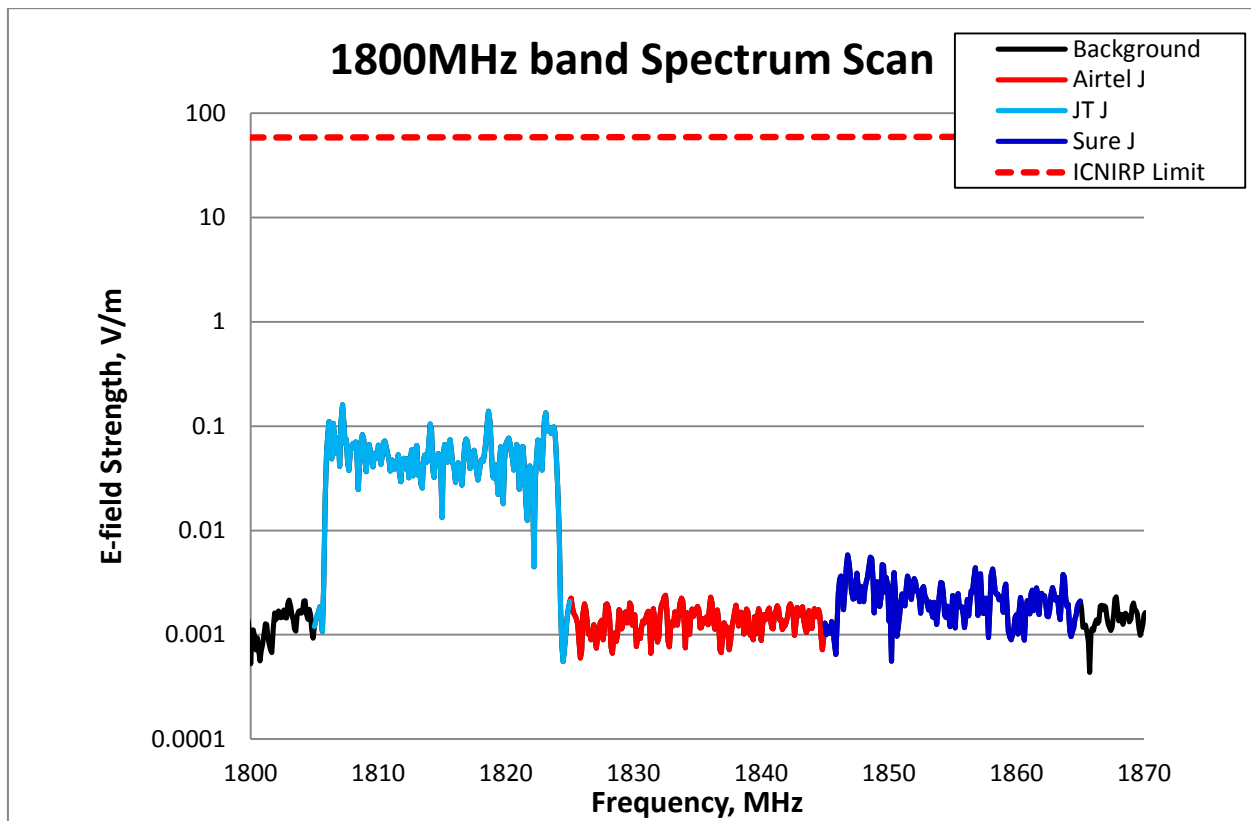


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1604 V/m (JT J), which is 364 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
Le Rondin	Airtel J	1800	0.002384	24470	1.07971E-07	1/ 9261722
	JT J		0.1604	364	0.00017444	1/ 5733
	Sure J		0.005817	10029	3.18619E-07	1/ 3138546
	total band EQ			0.000174867	1/ 5719	

Table 4 – 1800MHz band Exposure Quotient at Le Rondin

2.4 2100MHz Band

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

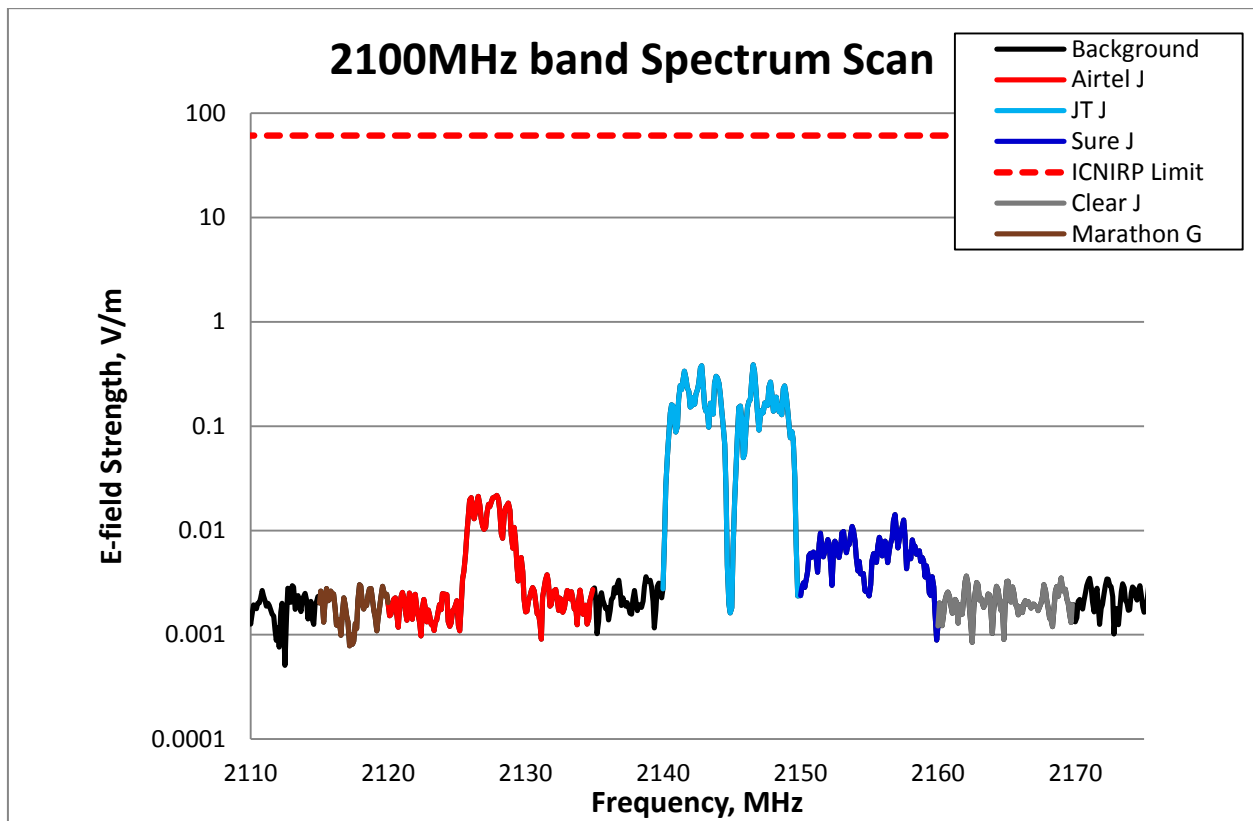


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3866 V/m (JT J), which is 158 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
Le Rondin	Airtel J	2100	0.02175	2805	2.49498E-06	1/ 400804
	Clear J		0.003644	16740	1.21085E-07	1/ 8258693
	JT J		0.3866	158	0.000810555	1/ 1234
	Marathon J		0.003013	20246	5.36307E-08	1/ 18646026
	Sure J		0.01421	4293	1.11911E-06	1/ 893566
total band EQ					0.000814343	1/ 1228

Table 5 – 2100MHz band Exposure Quotient at Le Rondin

2.5 2600MHz band

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

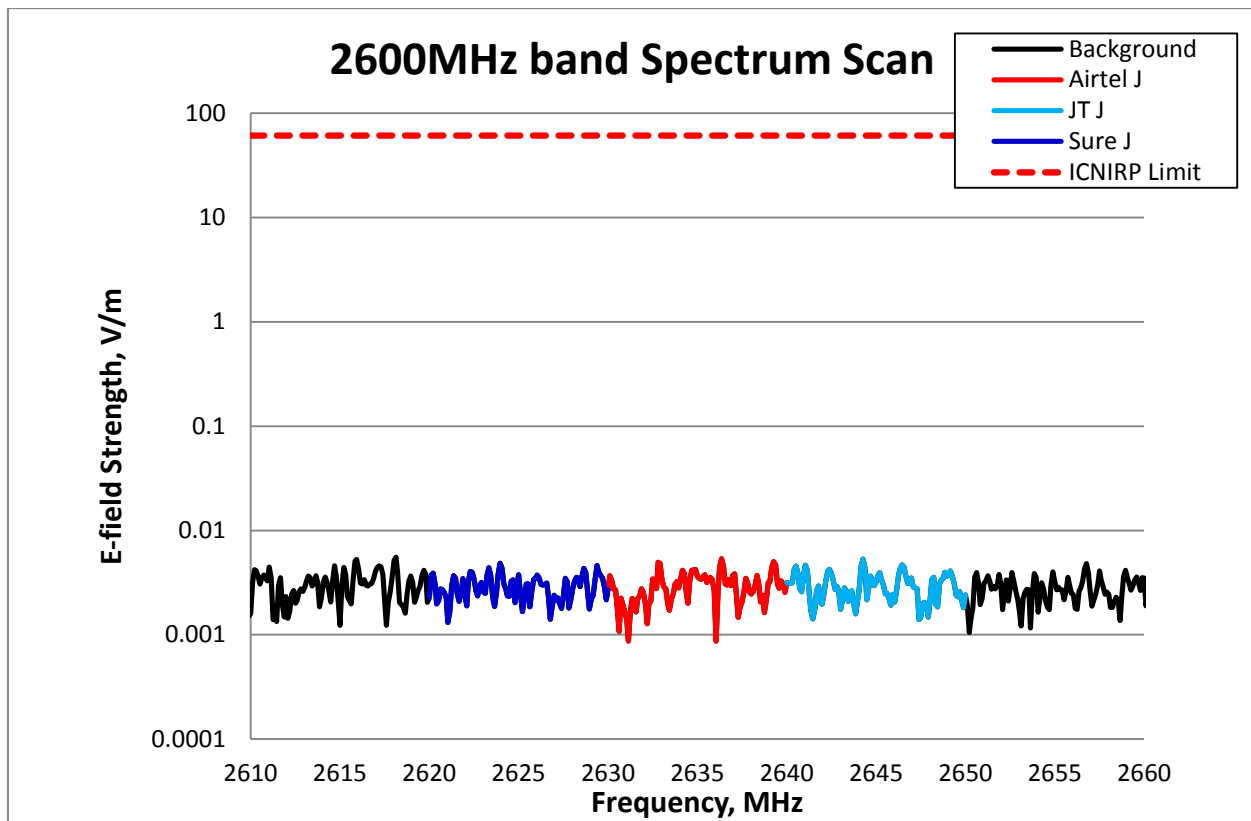


Figure 8 – 2600MHz band Spectrum Scan

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
Le Rondin	Airtel J	2600	0.005371	11357	2.41566E-07	1/ 4139658
	JT J		0.005327	11451	2.4559E-07	1/ 4071822
	Sure J		0.004837	12611	2.32274E-07	1/ 4305255
total band EQ					7.1943E-07	1/ 1389988

Table 6 – 2600MHz band Exposure Quotient at Le Rondin

End