

Cellular Mast Emissions Survey: Trois Bois (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 Trois Bois site located in Jersey.

The Trois Bois site was used by a single operator at the time of the survey: Airtel 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
Trois Bois	800	0.2204	Airtel J	176	0.000145261	1/ 6884
	900	0.7916	Airtel J	52	0.000435266	1/ 2297
	1800	0.008329	Sure J	7004	7.01975E-07	1/ 1424552
	2100	0.009038	Sure J	6749	7.37022E-07	1/ 1356811
	2600	0.00226	JT J	26991	1.1195E-07	1/ 8932538
Total Site EQ					0.000582078	1/ 1718

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/1718 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

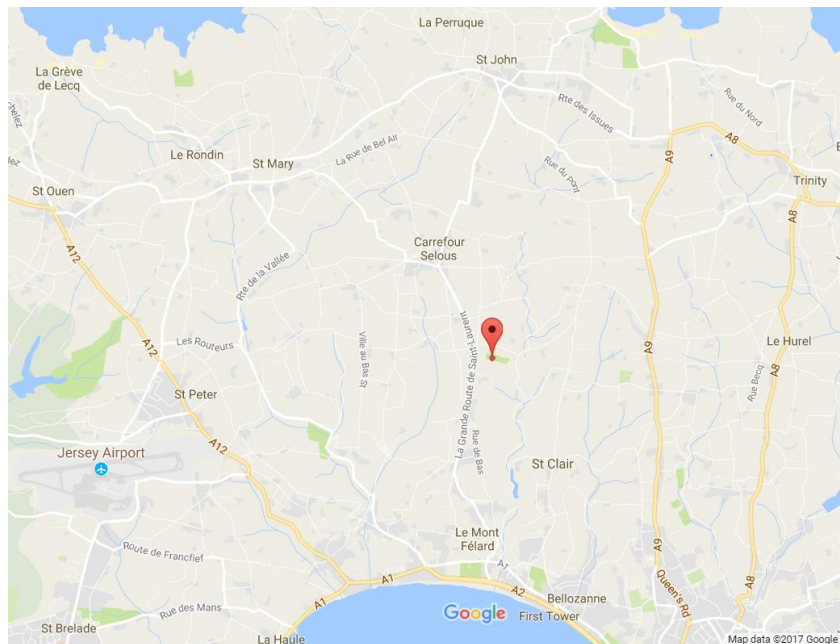


Figure 1 - Map of the Site Area

Site name	Trois Bois
Site address	Field 467, Trois Bois, Three Oaks, St Lawrence, Jersey
Site Latitude	N 49.21818
Site Longitude	W 02.13763

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole mast
Description	The pole mast at Trois Bois is located at the entrance of the Les Trois Chêne Court field, out of reach of the public

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

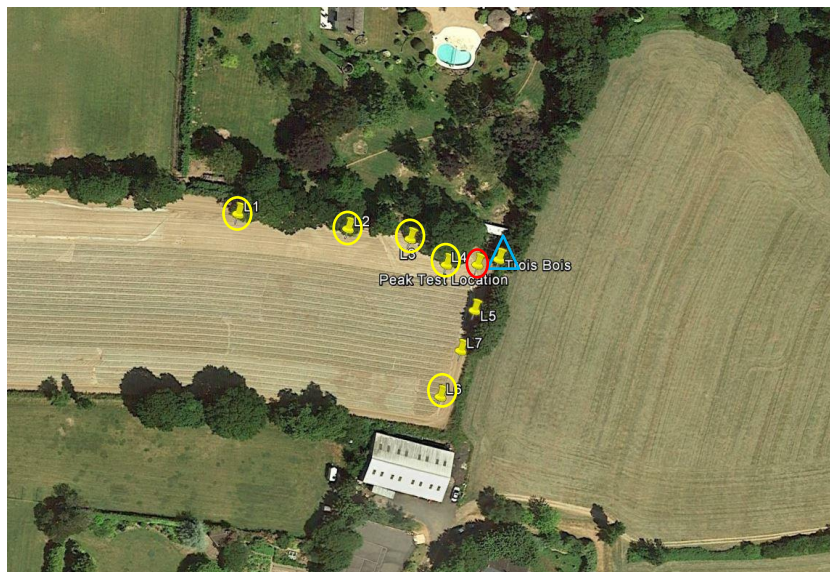


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

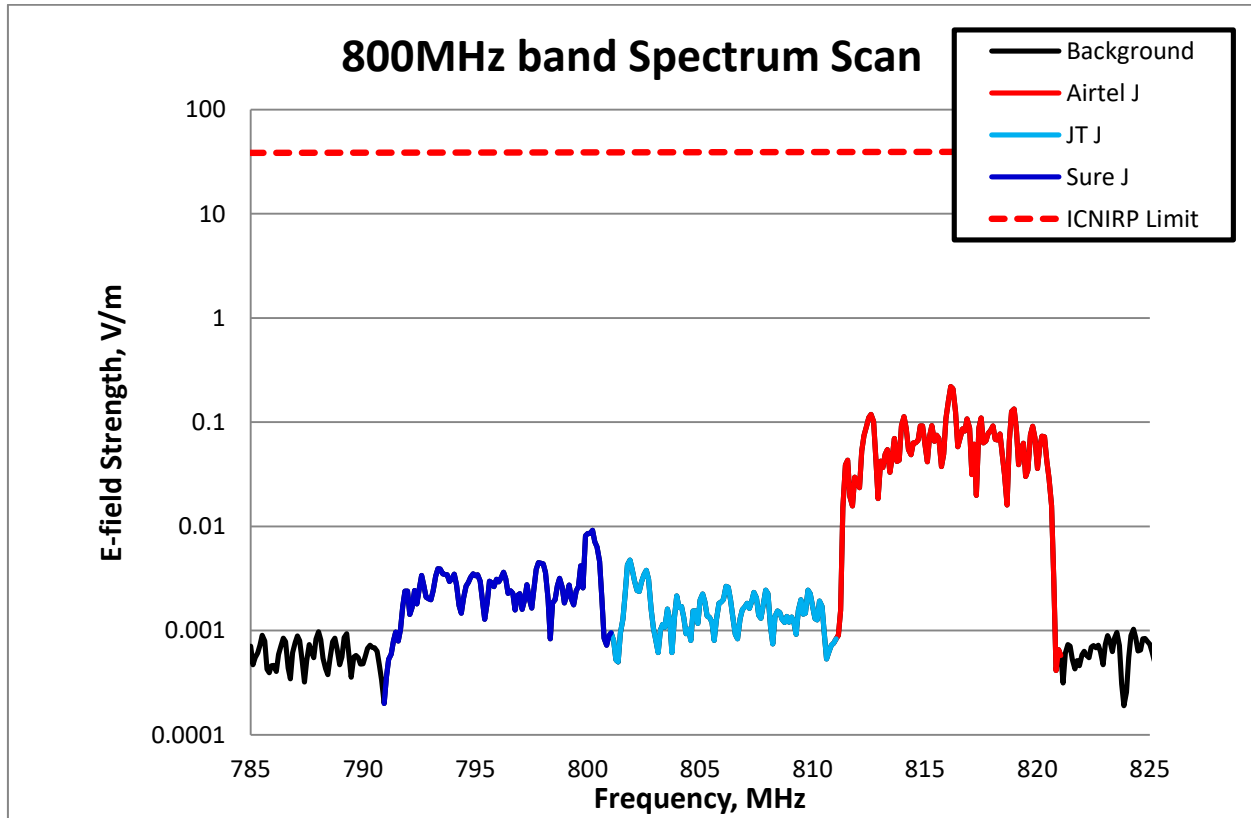


Figure 4 - 800MHz band Spectrum Scan

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 field level recorded across the band was higher than 0.2204 V/m (Airtel J), which is 176 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
Trois Bois	Airtel J	800	0.2204	176	0.000144903	1/ 6901
	JT J		0.004753	8182	8.59858E-08	1/ 11629826
	Sure J		0.00915	4250	2.71751E-07	1/ 3679839
total band EQ					0.000145261	1/ 6884

Table 2– 800MHz band Exposure Quotient at Trois Bois

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

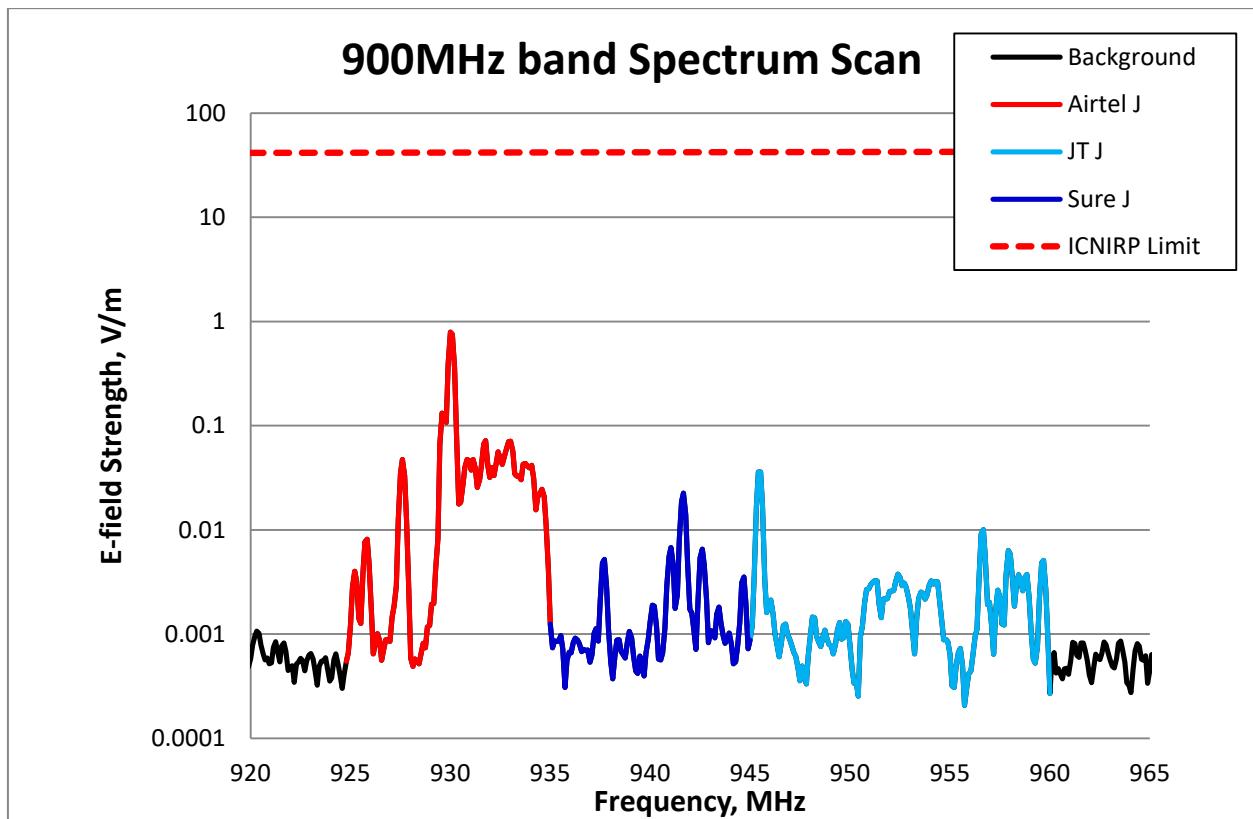


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.7916 V/m (Airtel J), which is 52 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
Trois Bois	Airtel J	900	0.7916	52	0.000433788	1/ 2305
	JT J		0.03598	1146	1.07151E-06	1/ 933260
	Sure J		0.02259	1826	4.06352E-07	1/ 2460922
total band EQ					0.000435266	1/ 2297

Table 3– 900MHz band Exposure Quotient at Trois Bois

2.3 1800 MHz Band

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

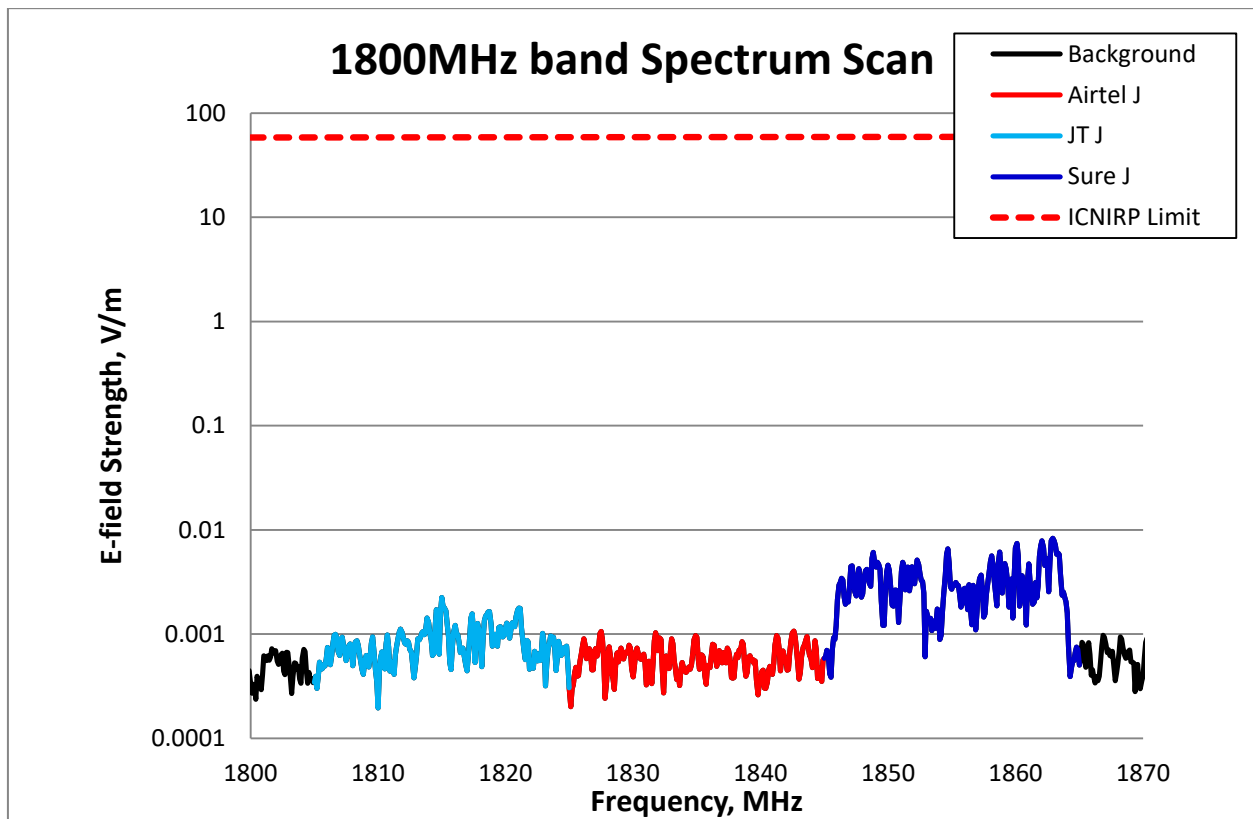


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.008329 V/m (Sure J), which is 7004 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
Trois Bois	Airtel J	1800	0.001069	54571	1.95571E-08	1/ 51132322
	JT J		0.002239	26055	4.29942E-08	1/ 23258932
	Sure J		0.008329	7004	6.39424E-07	1/ 1563908
total band EQ					7.01975E-07	1/ 1424552

Table 4 – 1800MHz band Exposure Quotient at Trois Bois

2.4 2100MHz Band

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

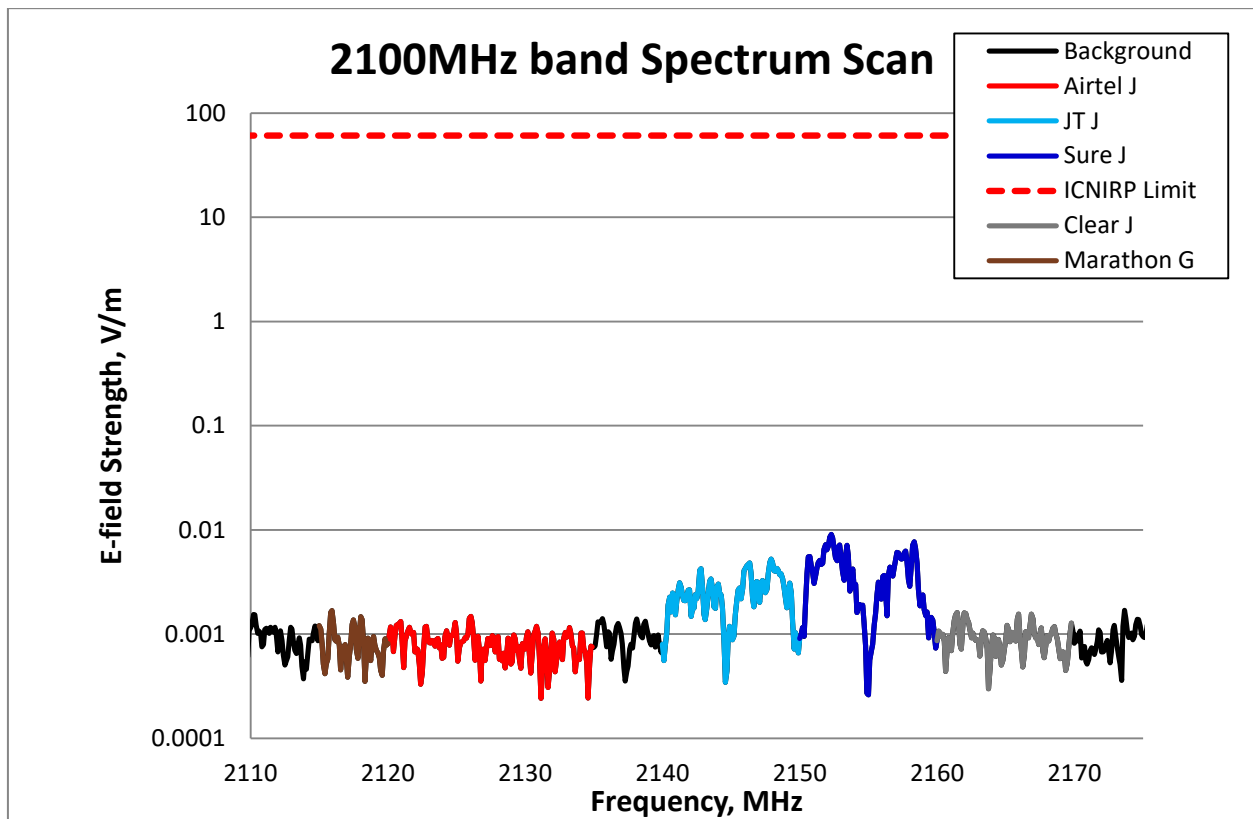


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz 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	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Trois Bois	Airtel J	2100	0.001475	41356	2.76726E-08	1/ 36136812
	Clear J		0.001606	37983	2.42684E-08	1/ 41205781
	JT J		0.005263	11590	1.92527E-07	1/ 5194066
	Marathon J		0.001678	36353	1.03506E-08	1/ 96612828
	Sure J		0.009038	6749	4.82203E-07	1/ 2073814
total band EQ					7.37022E-07	1/ 1356811

Table 5 – 2100MHz band Exposure Quotient at Trois Bois

2.5 2600MHz band

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

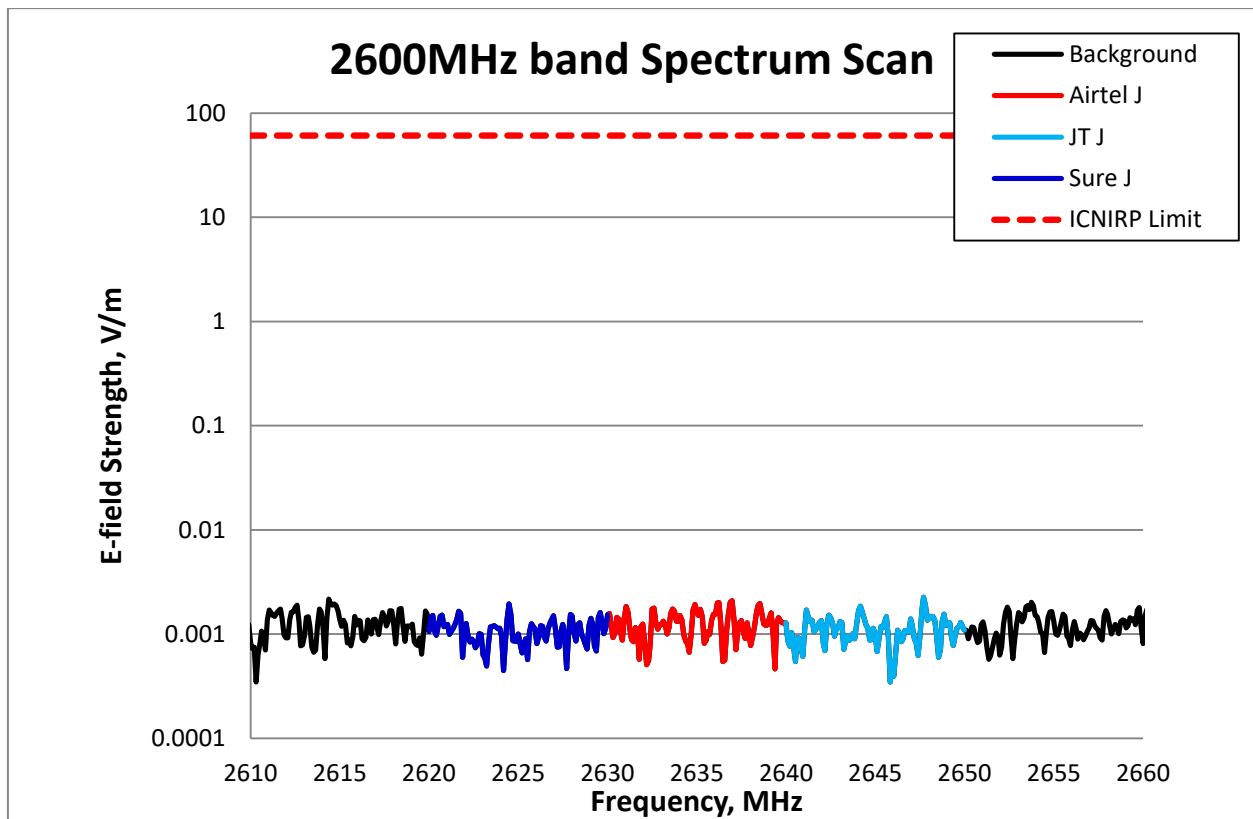


Figure 8 – 2600MHz band Spectrum Scan

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
Trois Bois	Airtel J	2600	0.002092	29159	4.47495E-08	1/ 22346600
	JT J		0.00226	26991	3.48382E-08	1/ 28704163
	Sure J		0.001947	31330	3.23626E-08	1/ 30899884
total band EQ					1.1195E-07	1/ 8932538

Table 6 – 2600MHz band Exposure Quotient at Trois Bois

End