

Cellular Mast Emissions Survey:

Field 848 (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 Field 848 site located in Jersey.

The Field 848 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
Field 848	800	0.117	Airtel J	332	0.000105318	1/ 9495
	900	1.119	Airtel J	37	0.000908379	1/ 1101
	1800	0.003939	JT J	14810	2.27525E-07	1/ 4395117
	2100	0.009355	JT J	6521	5.40971E-07	1/ 1848528
	2600	0.002507	Sure J	24332	1.1802E-07	1/ 8473162
Total Site EQ					0.001014584	1/ 986

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/986 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

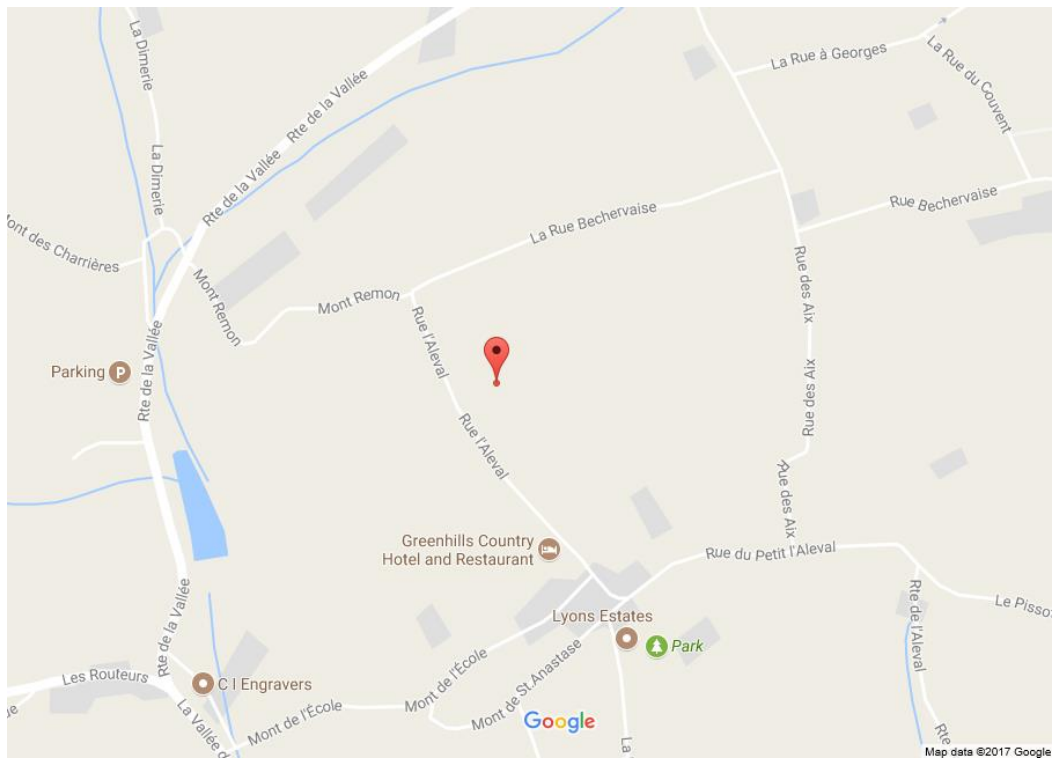


Figure 1 - Map of the Site Area

Site name	Field 848
Site address	Field 848, La route de L'Aleval, St John, Jersey
Site Latitude	N 49.22294
Site Longitude	W 02.1686

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	15m
Site type	Pole Mast
Description	The pole mast at field 848 is located on the edge of a field, it is accessible to the public

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

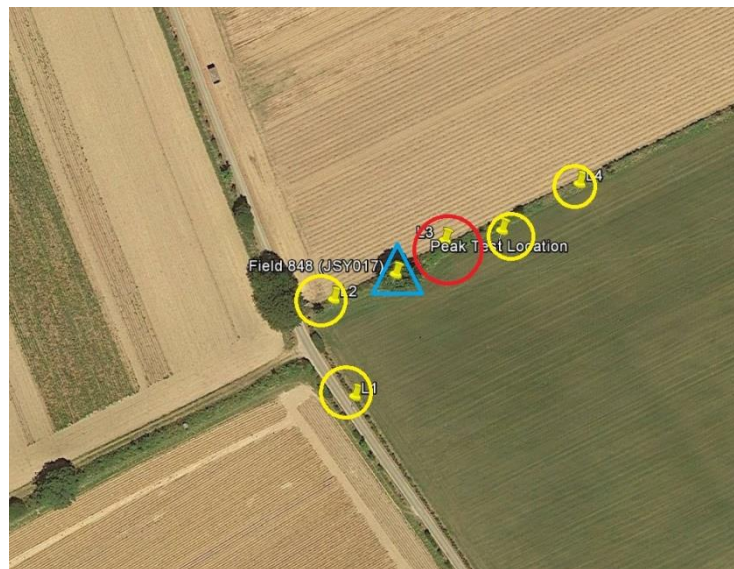


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

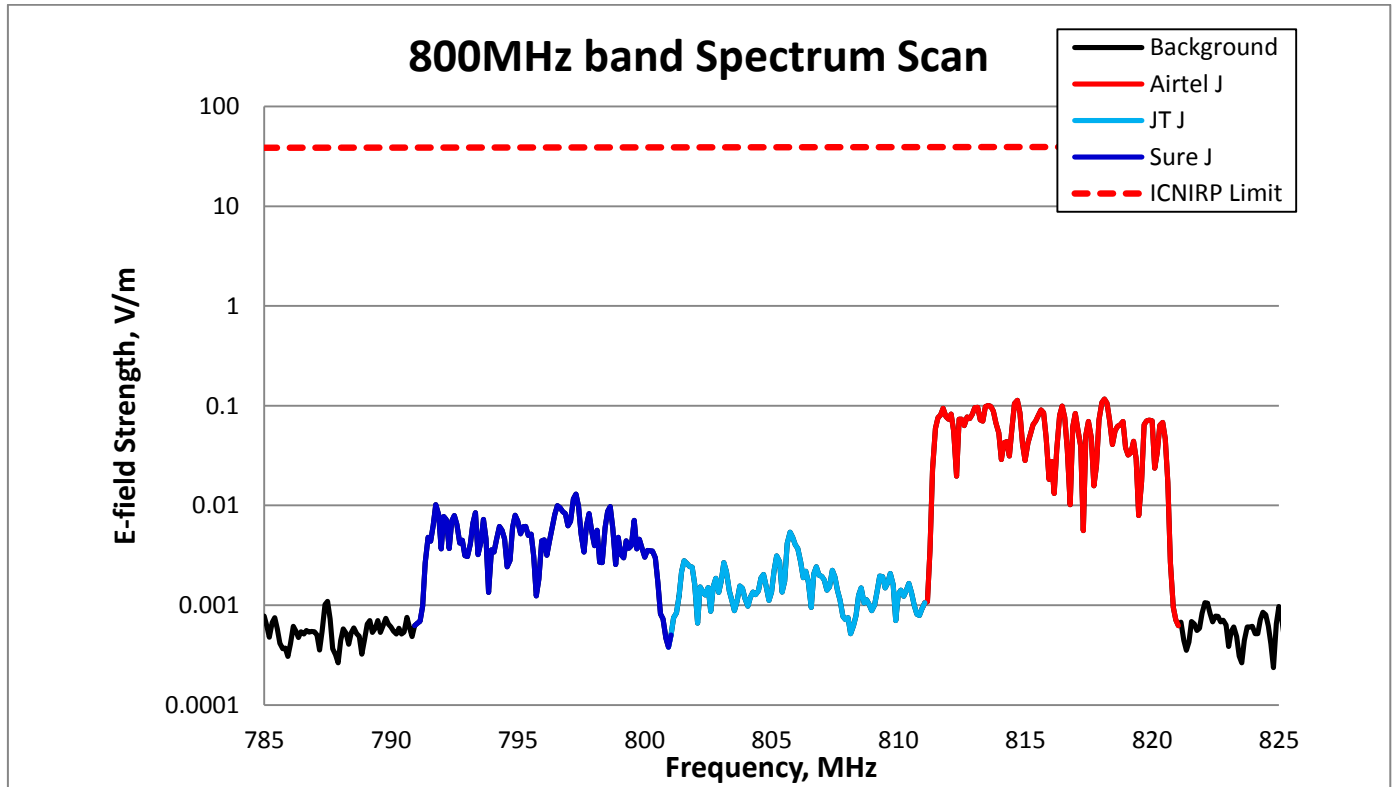


Figure 4 - 800MHz band Spectrum Scan

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 0.117 V/m (Airtel J), which is 332 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
Field 848	Airtel J	800	0.117	332	0.00010441	1/ 9578
	JT J		0.005388	7218	8.98774E-08	1/ 11126264
	Sure J		0.01302	2987	8.19089E-07	1/ 1220869
total band EQ					0.000105318	1/ 9495

Table 2– 800MHz band Exposure Quotient at Field 848

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

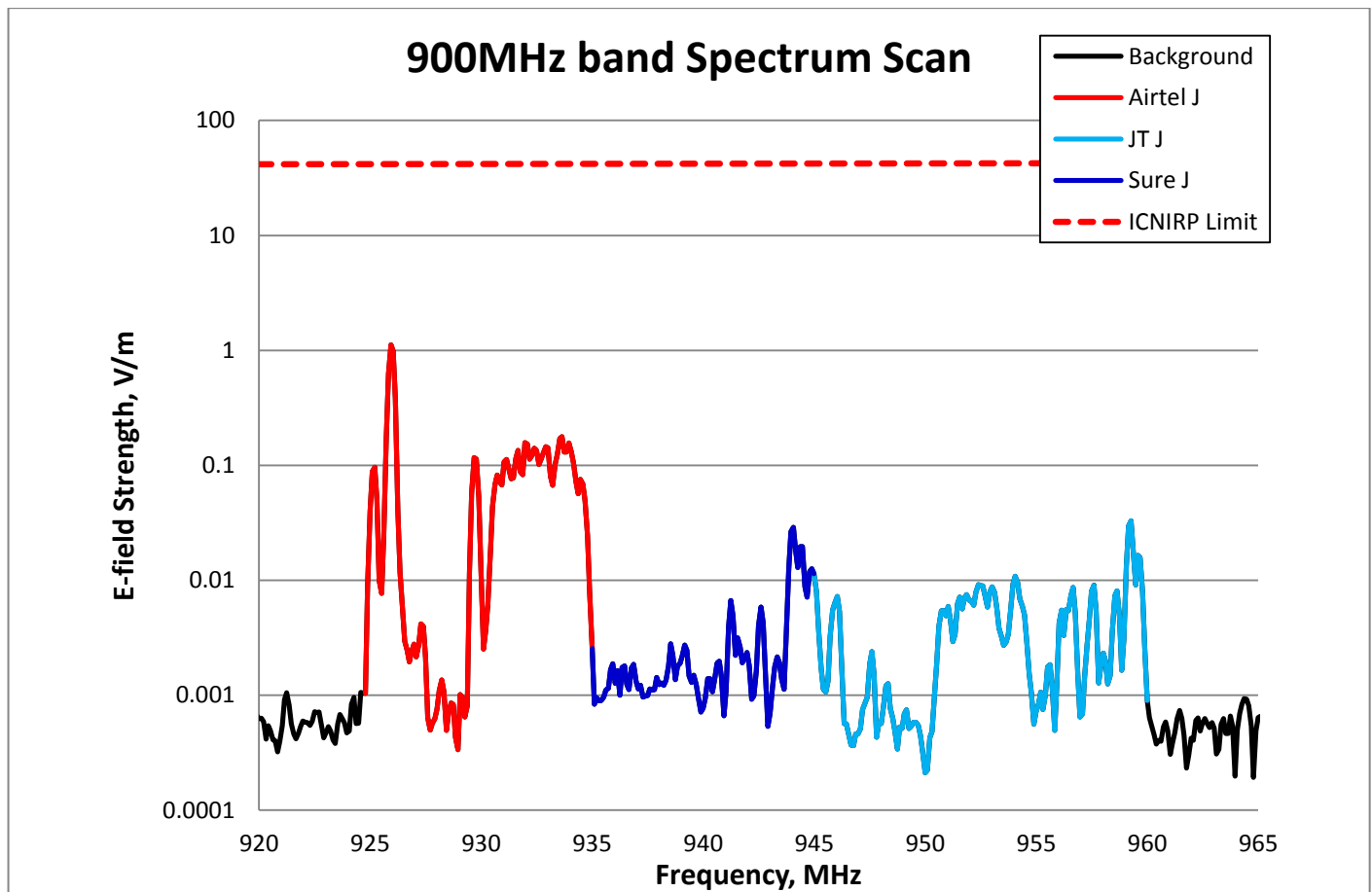


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.119 V/m (Airtel J), which is 37 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
Field 848	Airtel J	900	1.119	37	0.000905749	1/ 1104
	JT J		0.03298	1251	1.58663E-06	1/ 630267
	Sure J		0.02885	1430	1.04347E-06	1/ 958341
total band EQ					0.000908379	1/ 1101

Table 3– 900MHz band Exposure Quotient at Field 848

2.3 1800 MHz Band

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

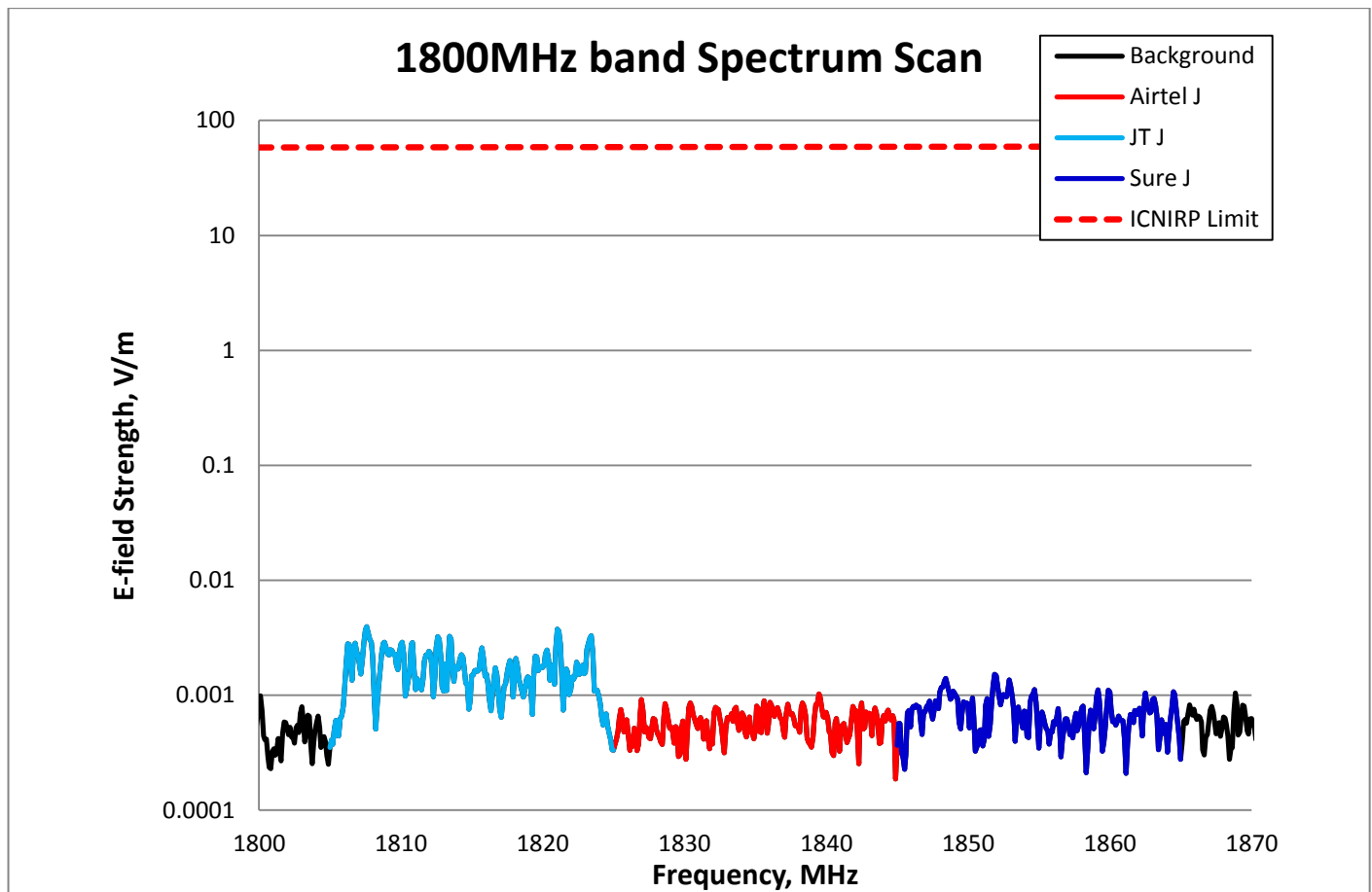


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.003939 V/m (JT J), which is 14810 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
Field 848	Airtel J	1800	0.001028	56747	1.85389E-08	1/ 53940605
	JT J		0.003939	14810	1.80045E-07	1/ 5554174
	Sure J		0.001524	38278	2.89415E-08	1/ 34552407
total band EQ					2.27525E-07	1/ 4395117

Table 4 – 1800MHz band Exposure Quotient at Field 848

2.4 2100MHz Band

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

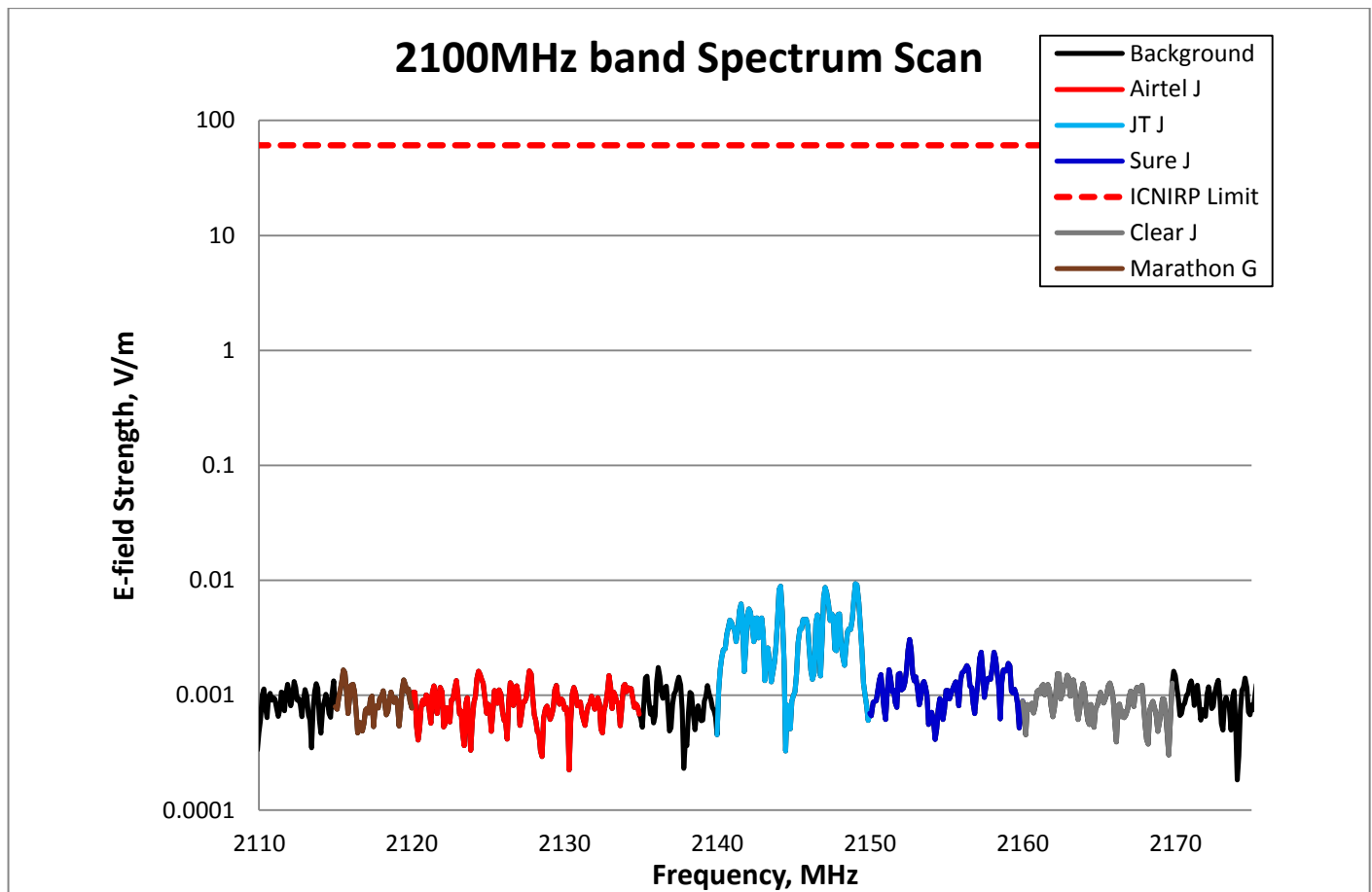


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.009355 V/m (JT J), which is 6521 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
Field 848	Airtel J	2100	0.001625	37538	3.17464E-08	1/ 31499684
	Clear J		0.001542	39559	2.22861E-08	1/ 44871104
	JT J		0.009355	6521	4.29833E-07	1/ 2326485
	Marathon J		0.001658	36791	1.17969E-08	1/ 84767981
	Sure J		0.003051	19993	4.53087E-08	1/ 22070816
total band EQ					5.40971E-07	1/ 1848528

Table 5 – 2100MHz band Exposure Quotient at Field 848

2.5 2600MHz band

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

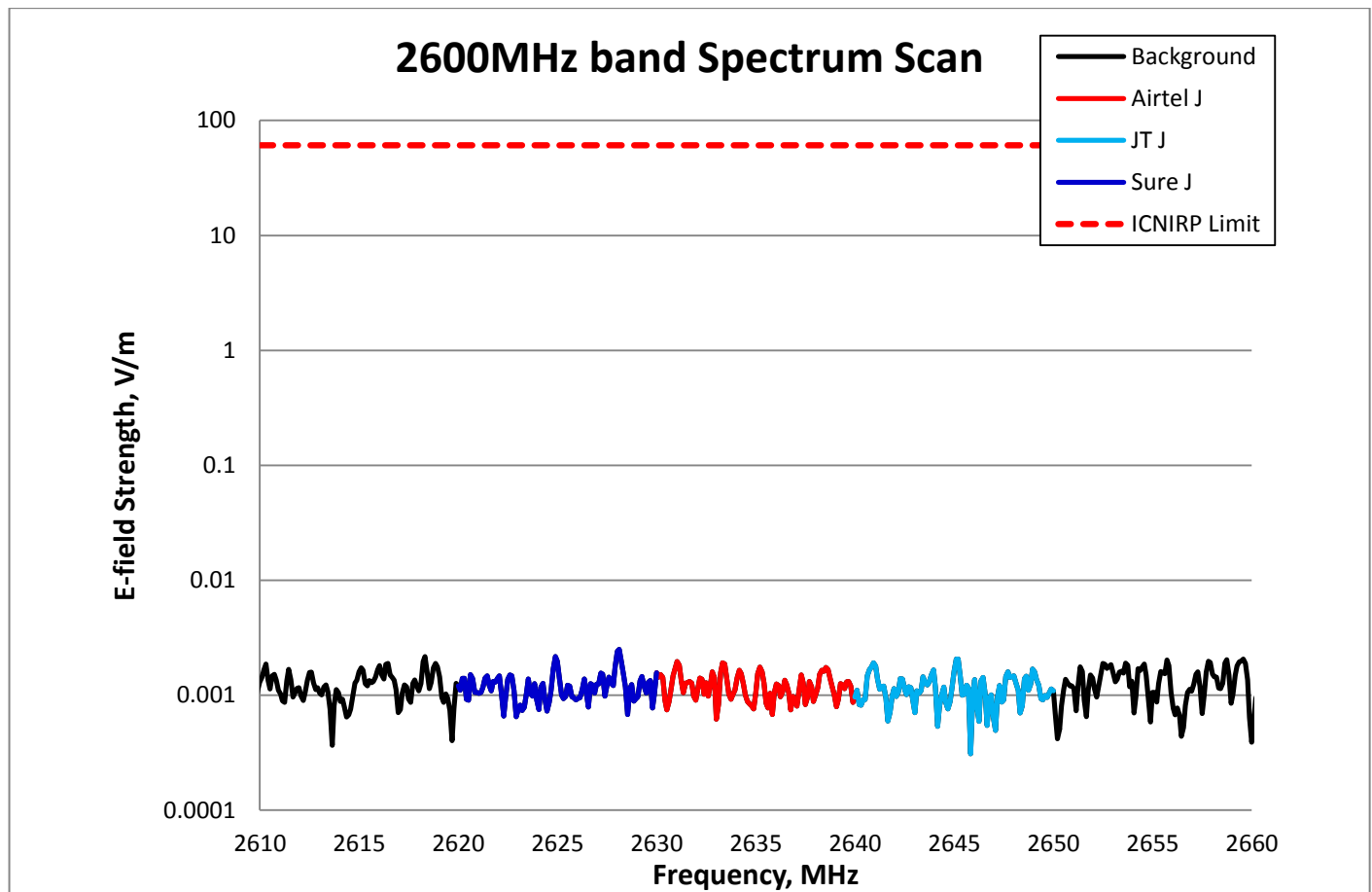


Figure 8 – 2600MHz band Spectrum Scan

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
Field 848	Airtel J	2600	0.00197	30964	4.05227E-08	1/ 24677530
	JT J		0.002066	29526	3.69731E-08	1/ 27046698
	Sure J		0.002507	24332	4.05239E-08	1/ 24676791
total band EQ					1.1802E-07	1/ 8473162

Table 6 – 2600MHz band Exposure Quotient at Field 848

End