Cellular Mast Emissions Survey: Field 550 (Jersey)

DOCUMENT DETAILS

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Survey Engineer:	Louise Sands	
Report Compiled by:	Hadas Goraly - Shay	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

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 the Field 550 site located in Jersey.

The Field 550 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 550	800	0.2407	Airtel J	162	0.000371135	1/ 2694
	900	0.3545	Airtel J	116	0.000169643	1/ 5895
	1800	0.02759	JT J	2114	1.38265E-06	1/ 723247
	2100	0.03227	JT J	1890	6.86242E-06	1/ 145721
	2600	0.002149	JT J	28385	1.26015E-07	1/ 7935575
				Total Site EQ	0.000549149	1/ 1821

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/1821 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

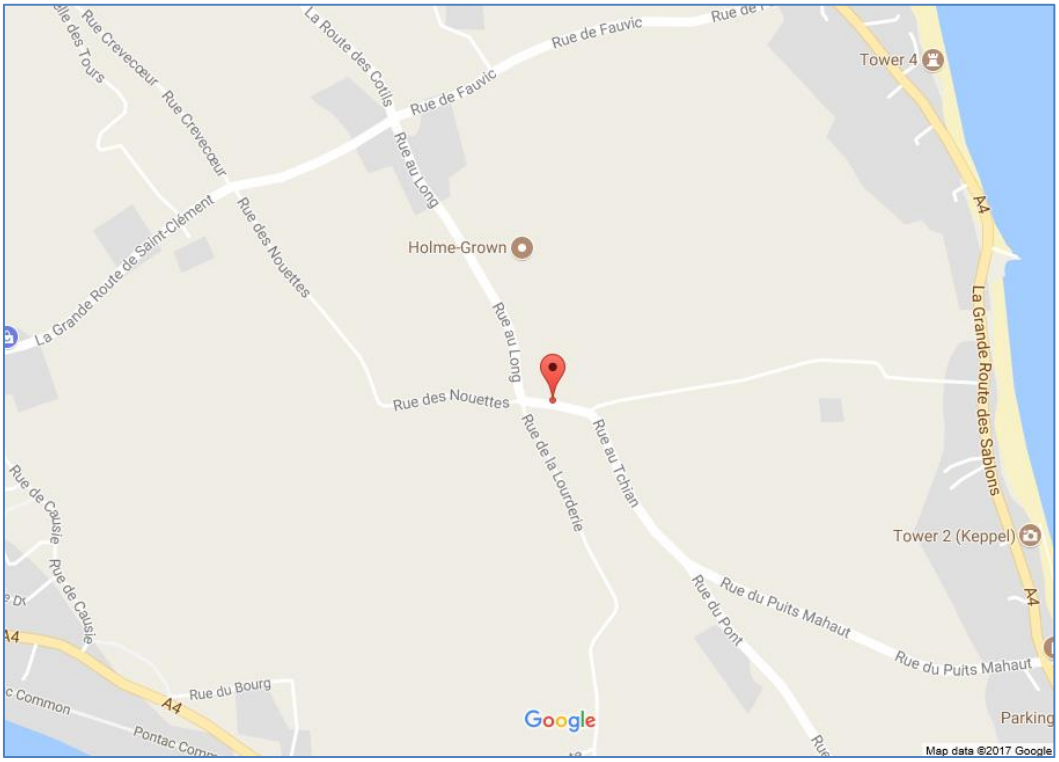

Figure 1 - Map of the Site Area

Site name	Field 550
Site address	La Rue au Tchian, Grouville, Jersey
Site Latitude	N 49.17271
Site Longitude	W 02.03912

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole mast
Description	The pole mast at Field 550 (La Rue au Tchian) is on the edge of a field and is accessible to the public

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

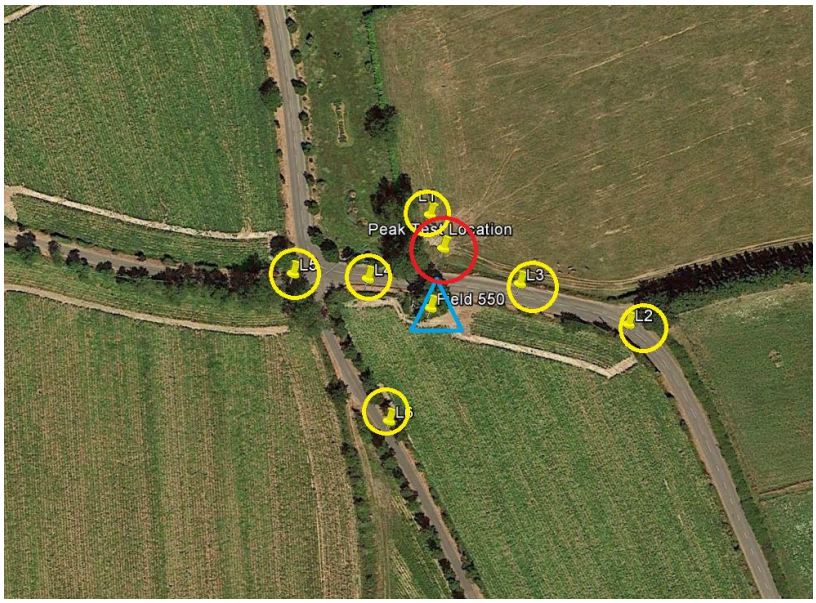

Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

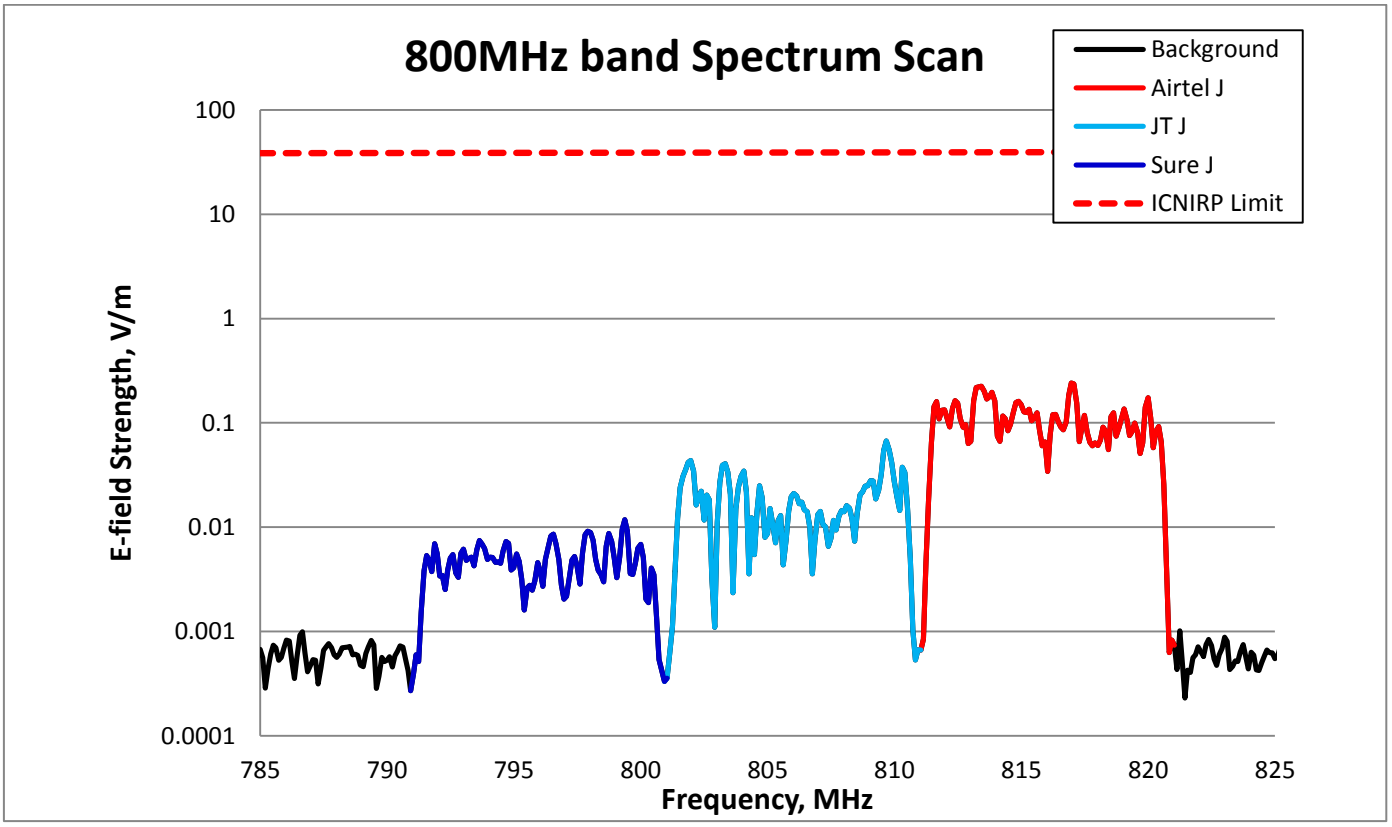

Figure 4 - 800MHz band Spectrum Scan

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 0.2407 V/m (Airtel J), which is 162 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 550	Airtel J	800	0.2407	162	0.000357583	1/ 2797
	JT J		0.0668	582	1.28559E-05	1/ 77785
	Sure J		0.01176	3307	6.95371E-07	1/ 1438081
				total band EQ	0.000371135	1/ 2694

Table 2– 800MHz band Exposure Quotient at Field 550

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

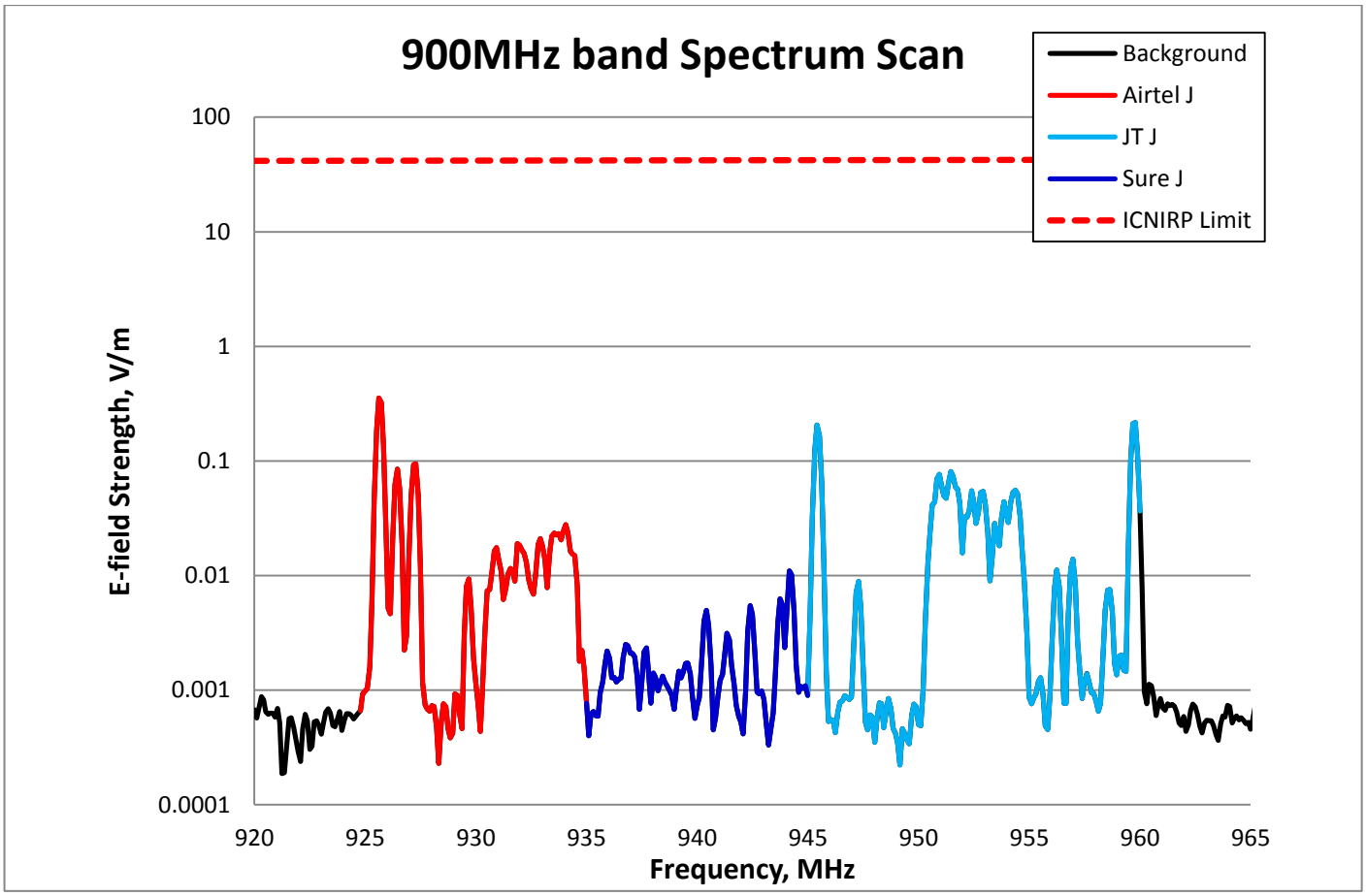

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3545 V/m (Airtel J), which is 116 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 550	Airtel J	900	0.3545	116	9.01946E-05	1/ 11087
	JT J		0.216	191	7.92763E-05	1/ 12614
	Sure J		0.01097	3760	1.72099E-07	1/ 5810602
				total band EQ	0.000169643	1/ 5895

Table 3– 900MHz band Exposure Quotient at Field 550

2.3 1800 MHz Band

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

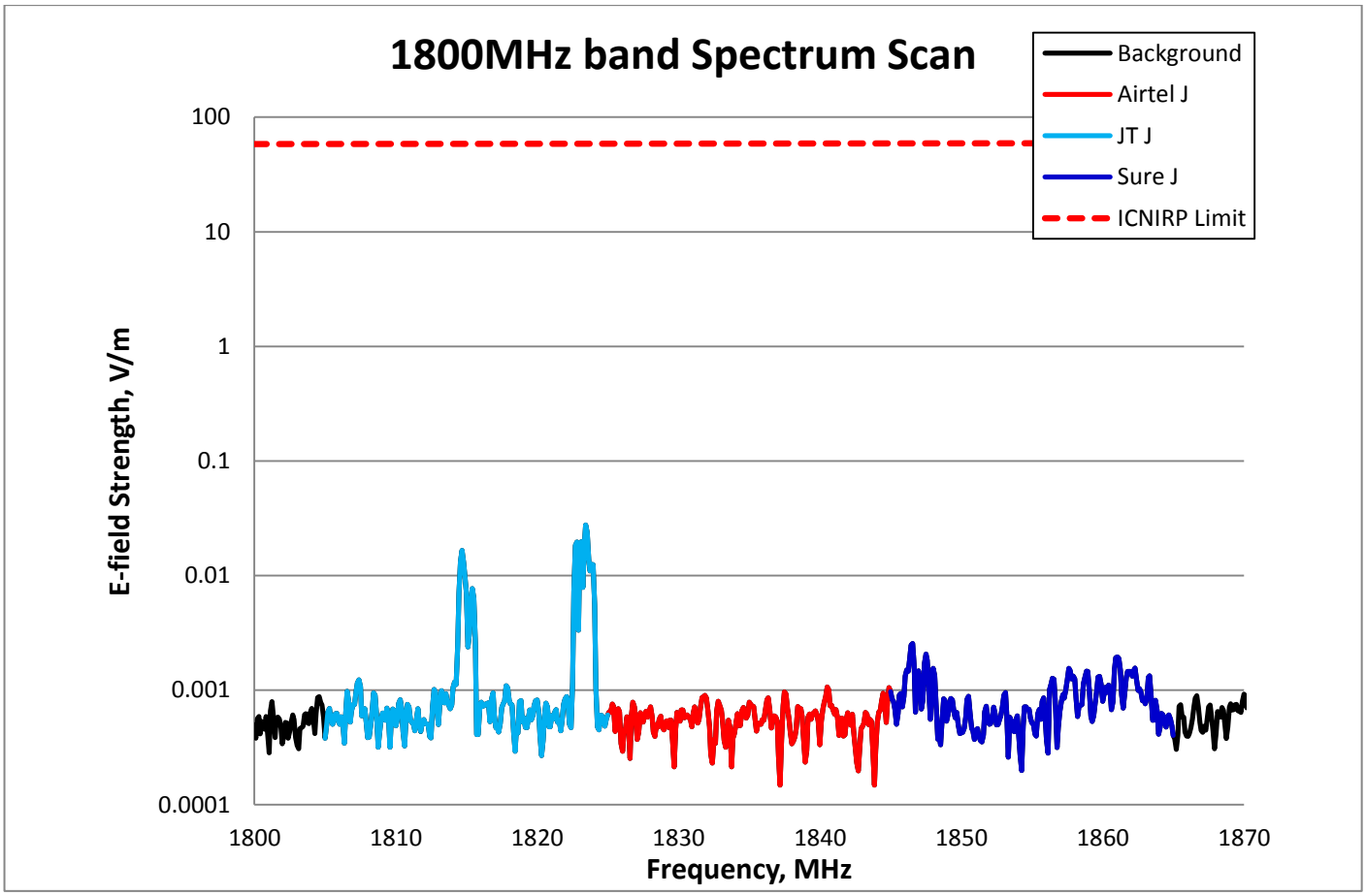

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.02759 V/m (JT J), which is 2114 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 550	Airtel J	1800	0.001063	54879	1.80984E-08	1/ 55253556
	JT J		0.02759	2114	1.31726E-06	1/ 759149
	Sure J		0.00255	22877	4.72897E-08	1/ 21146246
				total band EQ	1.38265E-06	1/ 723247

Table 4 – 1800MHz band Exposure Quotient at Field 550

2.4 2100MHz Band

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

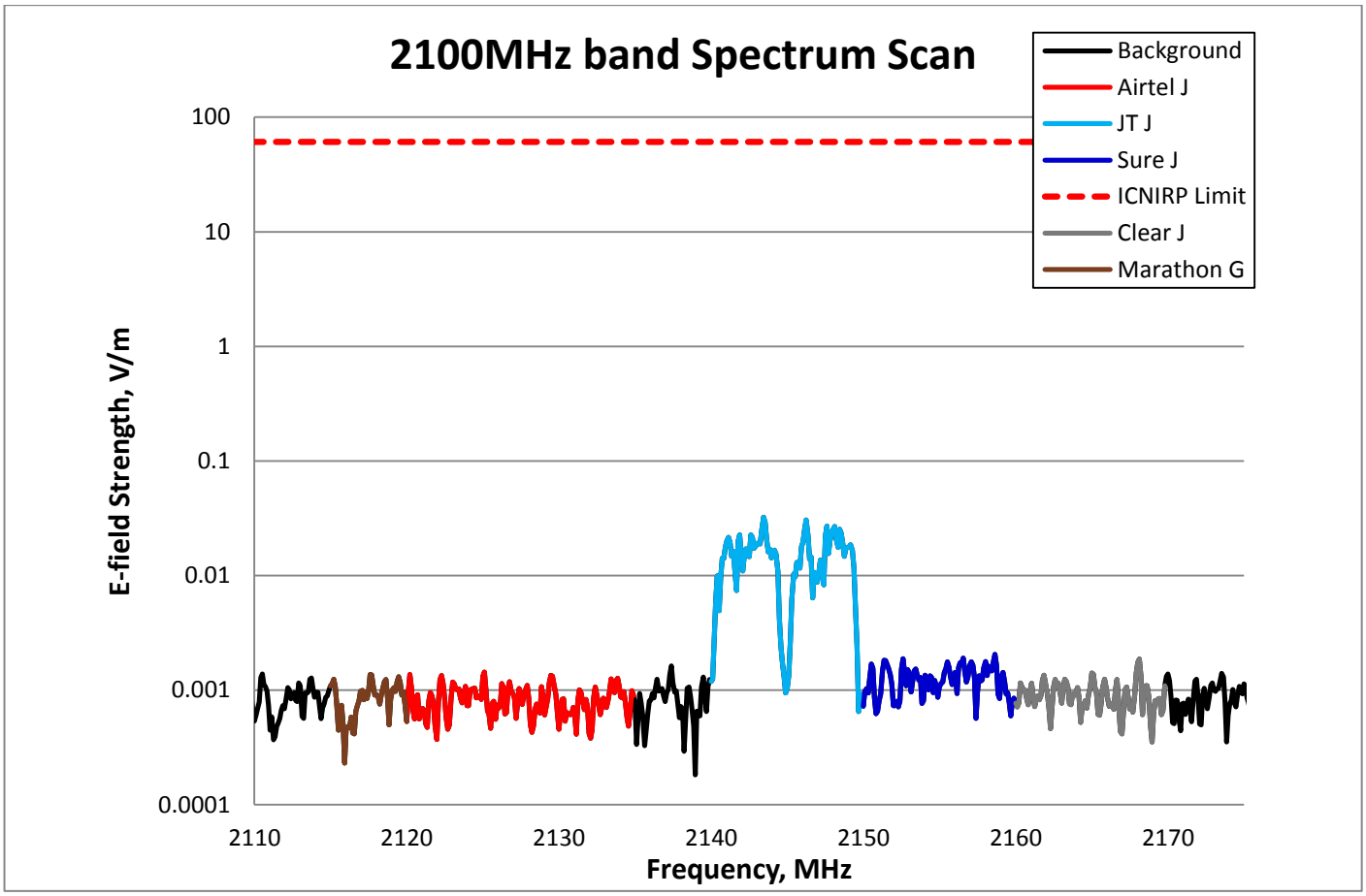

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.03227 V/m (JT J), which is 1890 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 550	Airtel J	2100	0.001435	42509	2.85855E-08	1/ 34982718
	Clear J		0.001865	32708	2.30191E-08	1/ 43442277
	JT J		0.03227	1890	6.75634E-06	1/ 148009
	Marathon J		0.001367	44623	1.07198E-08	1/ 93284987
	Sure J		0.002048	29785	4.37555E-08	1/ 22854252
				total band EQ	6.86242E-06	1/ 145721

Table 5 – 2100MHz band Exposure Quotient at Field 550

2.5 2600MHz band

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

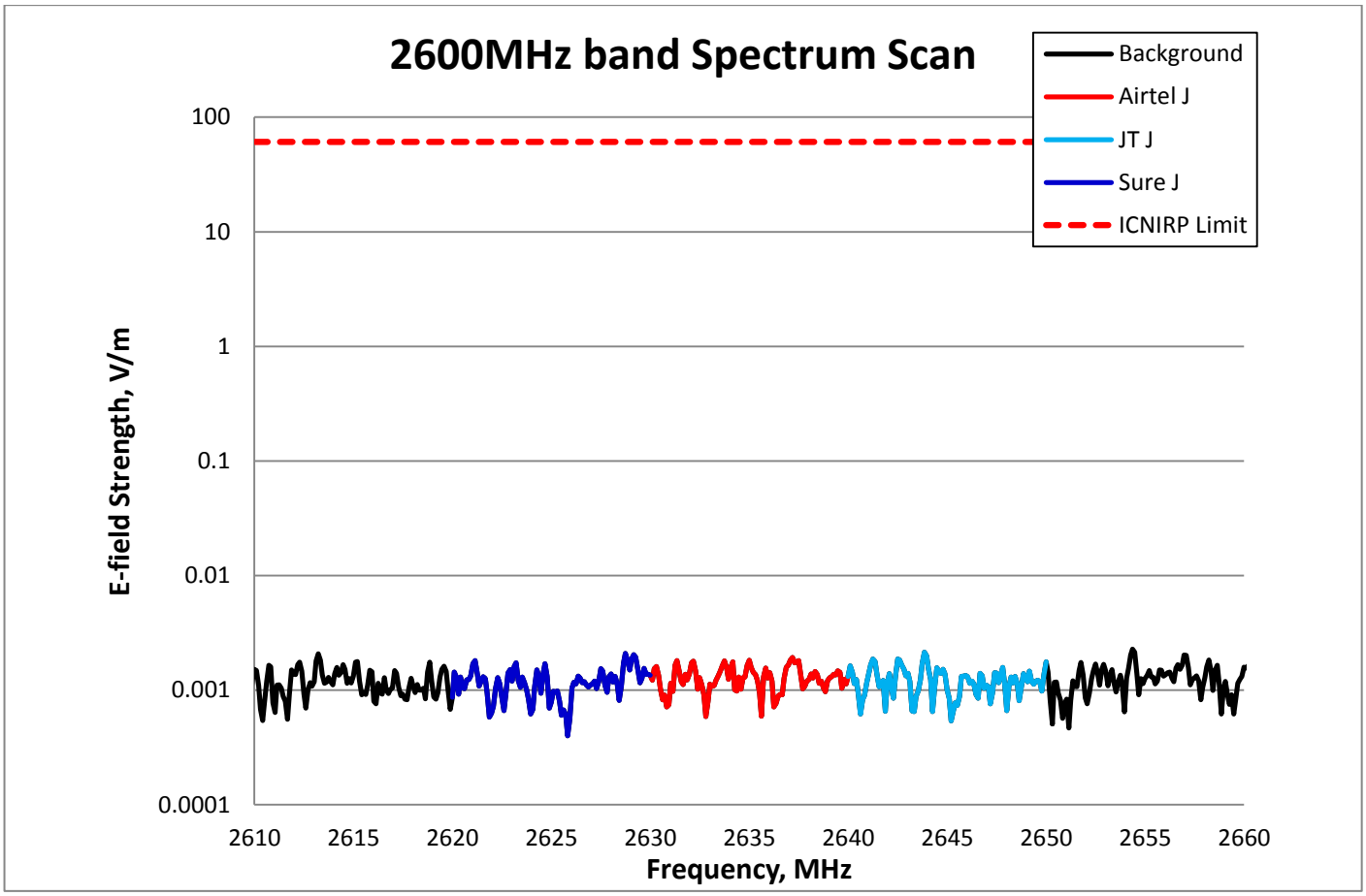

Figure 8 – 2600MHz band Spectrum Scan

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	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 550	Airtel J	2600	0.001924	31705	4.51547E-08	1/ 22146099
	JT J		0.002149	28385	4.11636E-08	1/ 24293303
	Sure J		0.002096	29103	3.96965E-08	1/ 25191126
				total band EQ	1.26015E-07	1/ 7935575

Table 6 – 2600MHz band Exposure Quotient at Field 550

End