Cellular Mast Emissions Survey: East Exchange (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 the East Exchange site located in Jersey.

The East Exchange site was used by a single operator at the time of the survey: JTJ. 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
East Exchange	800	0.004617	Airtel J	8423	2.82656E-07	1/ 3537868
	900	0.3434	JT J	120	0.000234298	1/ 4268
	1800	0.1006	JT J	580	0.000126609	1/ 7898
	2100	0.5561	JT J	110	0.002409491	1/ 415
	2600	0.005126	JT J	11900	6.81278E-07	1/ 1467830
				Total Site EQ	0.002771362	1/ 361

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/361 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

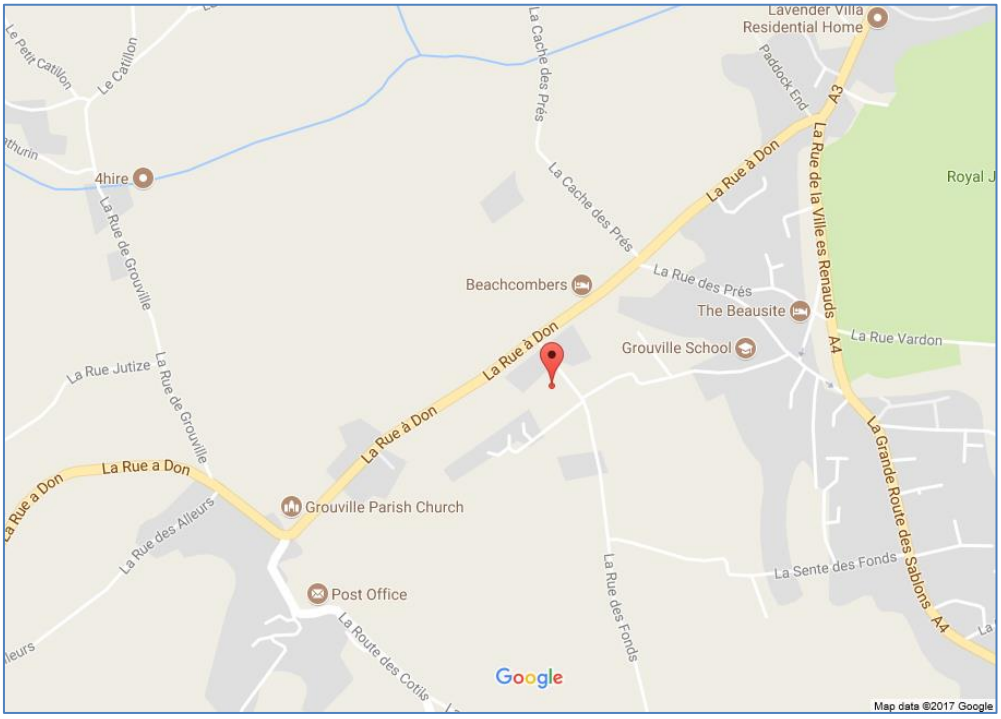

Figure 1 - Map of the Site Area

Site name	East Exchange
Site address	La Rue des Fonds, Grouville, Jersey
Site Latitude	N 49.18539
Site Longitude	W 02.0451

1.2 Site Description

Operators	JT J
Antenna types	Omni directional
Approximate height	10m
Site type	Building - rooftop
Description	The antenna at East Exchange is on a short pole on the rooftop of the building; the site is not accessible by the public

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

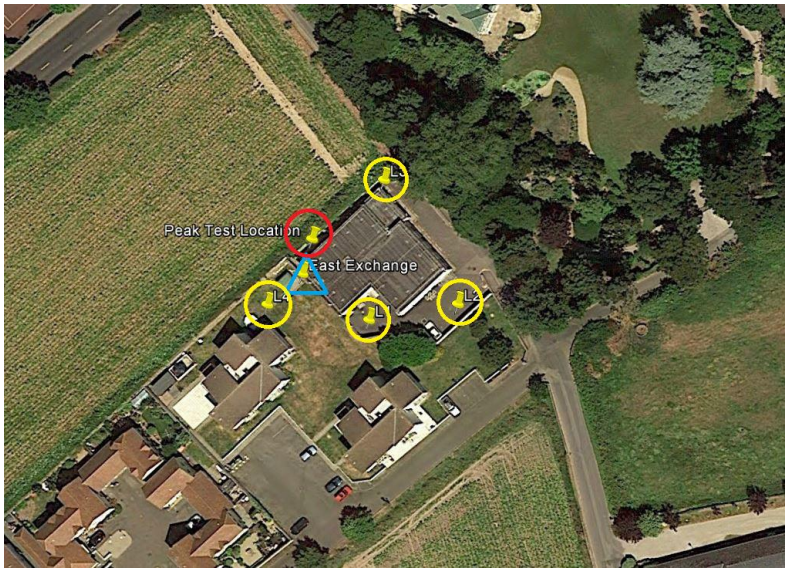

Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

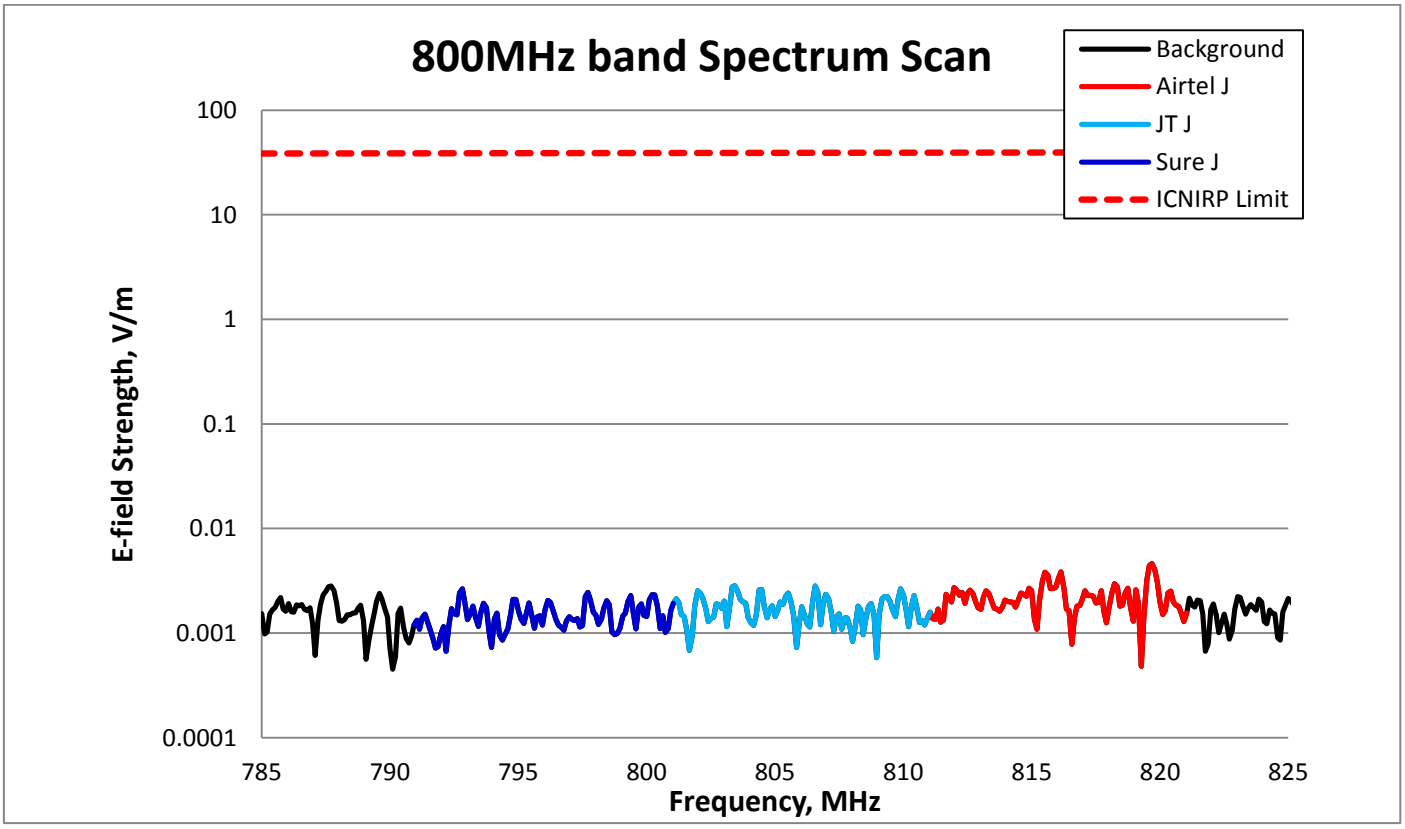

Figure 4 - 800MHz band Spectrum Scan

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 activity was recorded in the 800MHz as no operator appears to transmit in this band at this site.

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
East Exchange	Airtel J	800	0.004617	8423	1.36999E-07	1/ 7299343
	JT J		0.002838	13704	8.34068E-08	1/ 11989429
	Sure J		0.002656	14643	6.22507E-08	1/ 16064078
				total band EQ	2.82656E-07	1/ 3537868

Table 2– 800MHz band Exposure Quotient at East Exchange

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

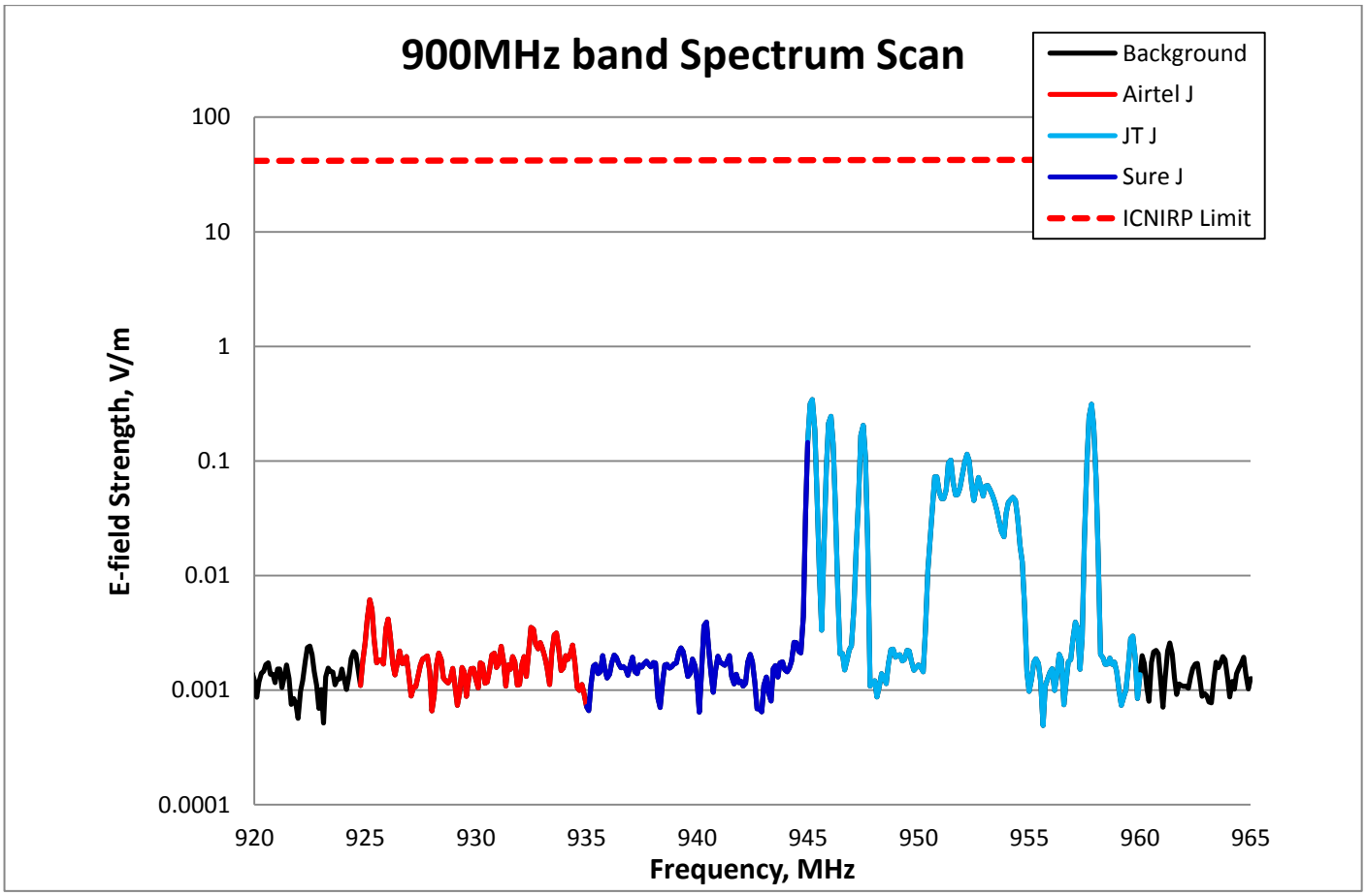

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3434 V/m (JT J), which is 120 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
East Exchange	Airtel J	900	0.006159	6698	1.0947E-07	1/ 9134943
	JT J		0.3434	120	0.000228155	1/ 4383
	Sure J		0.1451	284	6.03358E-06	1/ 165739
				total band EQ	0.000234298	1/ 4268

Table 3– 900MHz band Exposure Quotient at East Exchange

2.3 1800 MHz Band

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

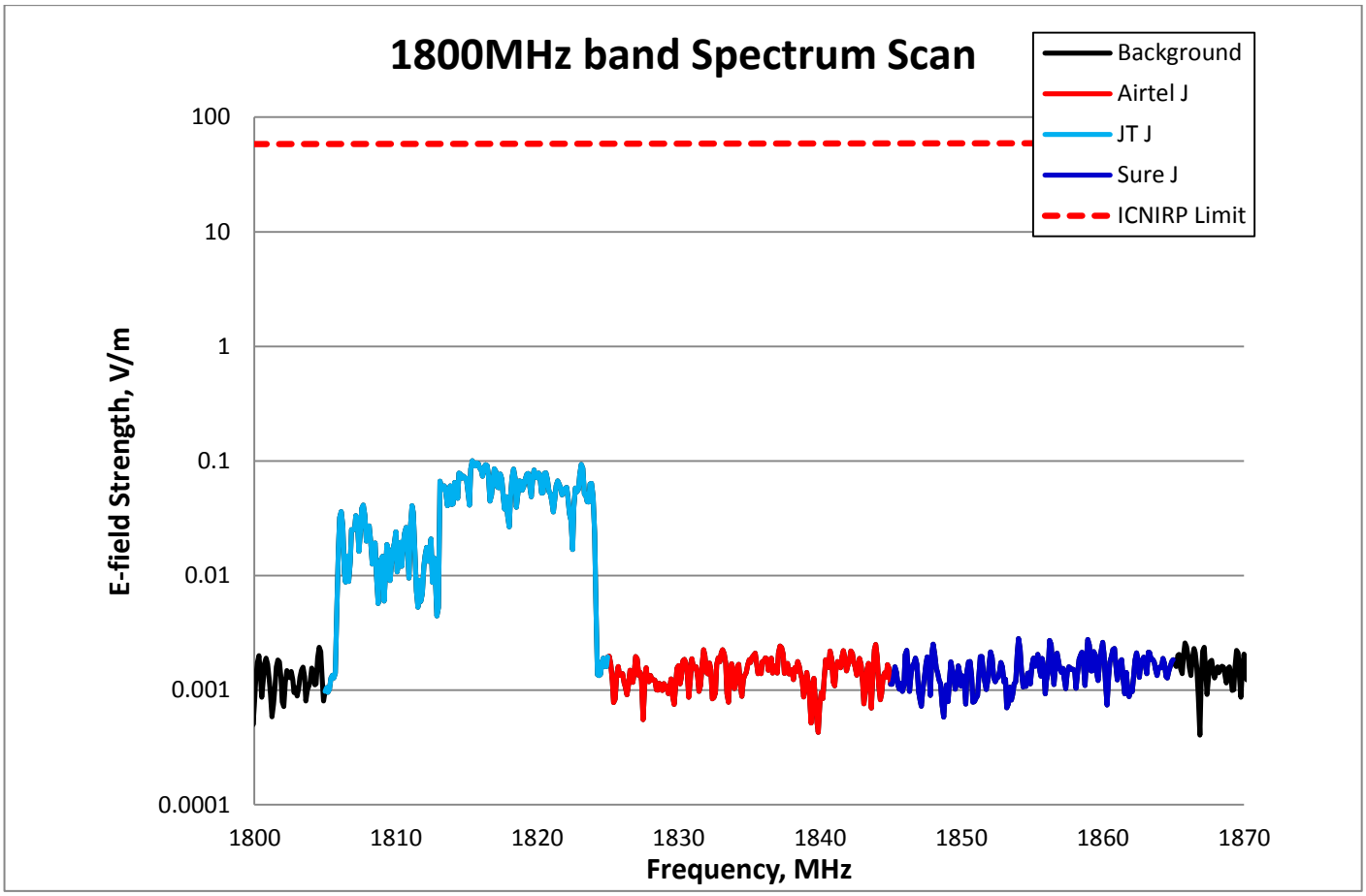

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1006 V/m (JT J), which is 580 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
East Exchange	Airtel J	1800	0.002512	23223	1.15986E-07	1/ 8621763
	JT J		0.1006	580	0.000126366	1/ 7914
	Sure J		0.002826	20643	1.26942E-07	1/ 7877620
				total band EQ	0.000126609	1/ 7898

Table 4 – 1800MHz band Exposure Quotient at East Exchange

2.4 2100MHz Band

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

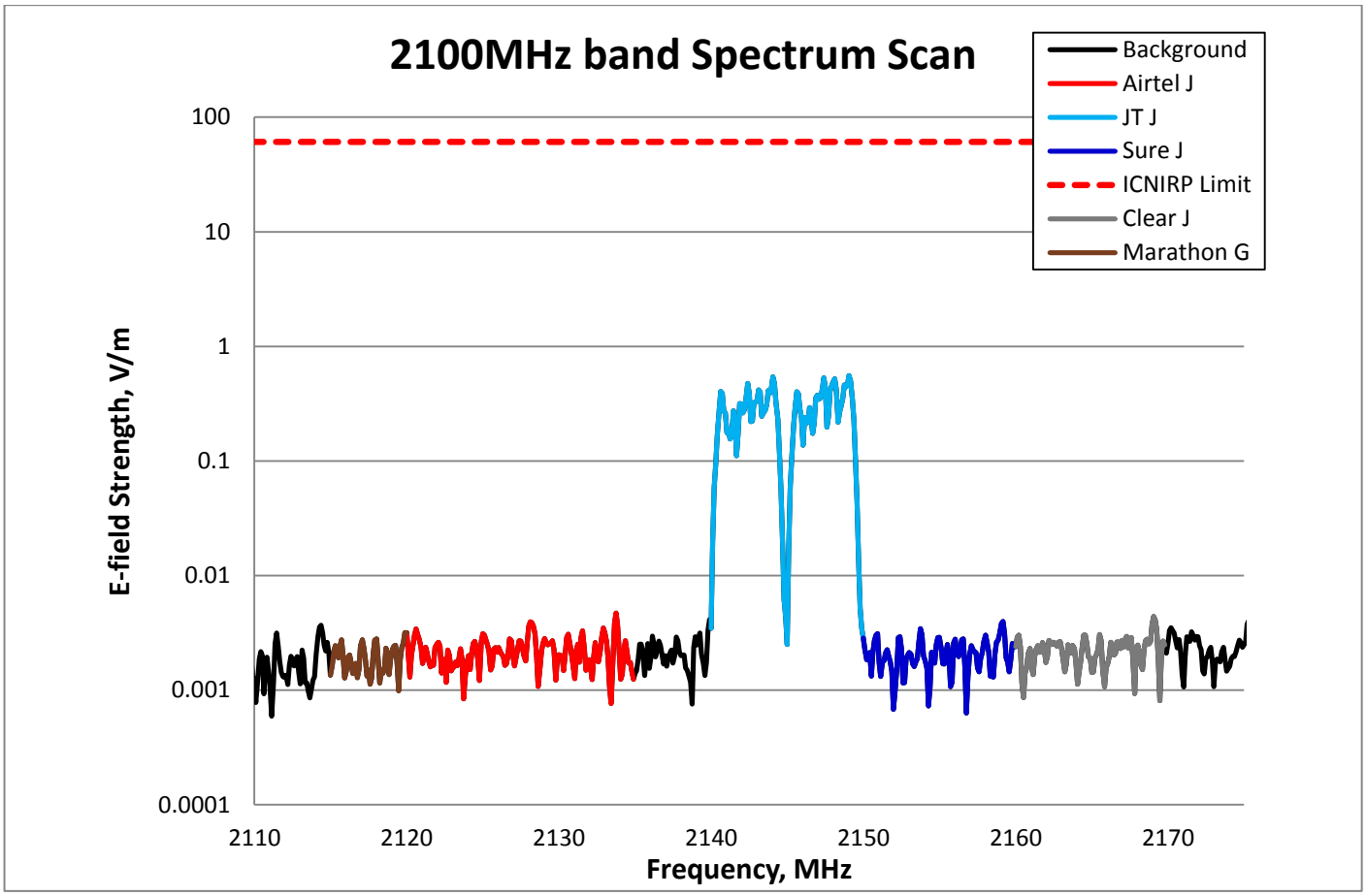

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.5561 V/m (JT J), which is 110 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
East Exchange	Airtel J	2100	0.004701	12976	2.03491E-07	1/ 4914212
	Clear J		0.004389	13898	1.37875E-07	1/ 7252922
	JT J		0.5561	110	0.002408972	1/ 415
	Marathon J		0.00318	19182	5.33276E-08	1/ 18752010
	Sure J		0.003986	15304	1.24211E-07	1/ 8050799
				total band EQ	0.002409491	1/ 415

Table 5 – 2100MHz band Exposure Quotient at East Exchange

2.5 2600MHz band

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

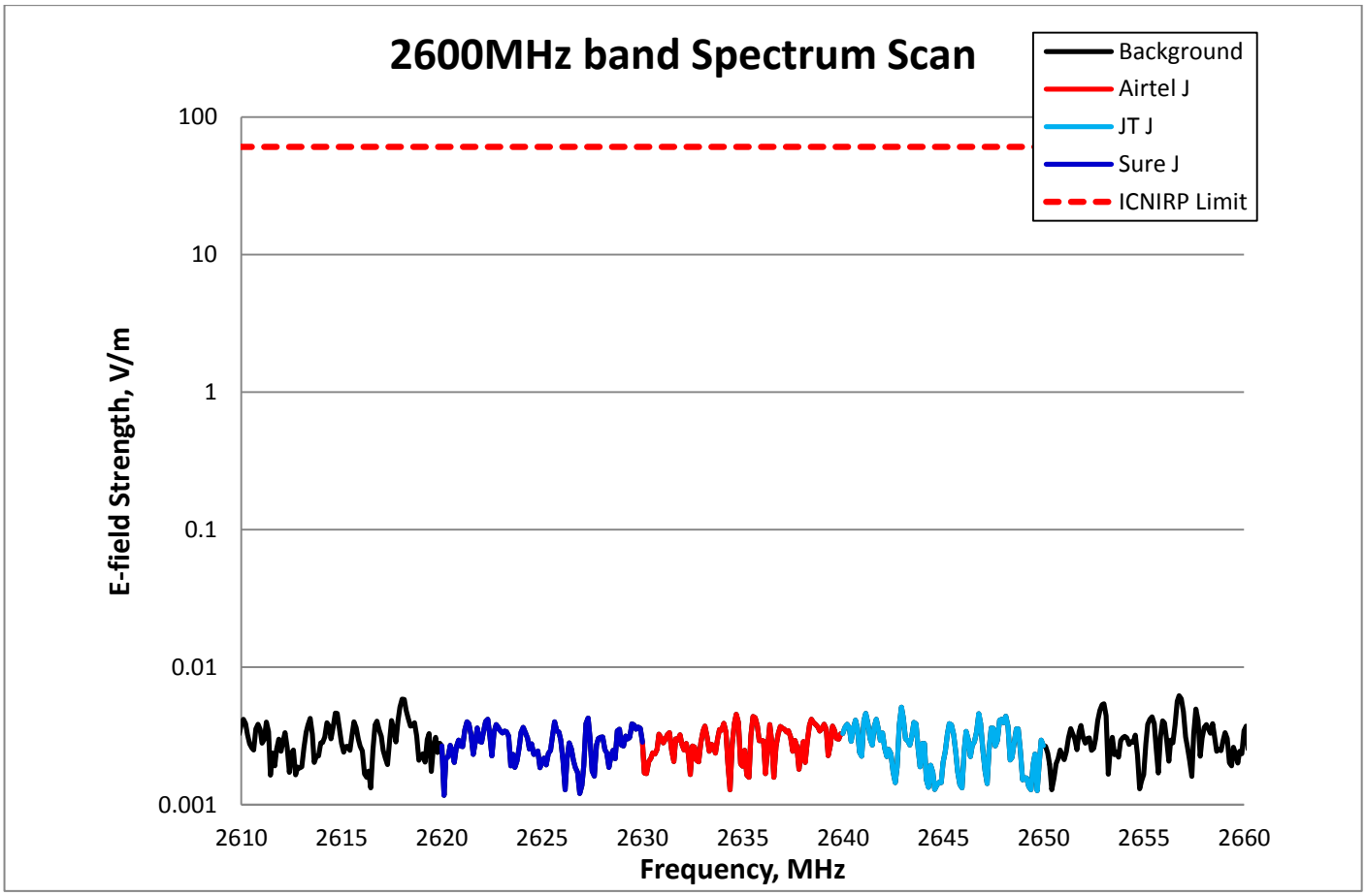

Figure 8 – 2600MHz band Spectrum Scan

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
East Exchange	Airtel J	2600	0.004547	13415	2.35232E-07	1/ 4251123
	JT J		0.005126	11900	2.28812E-07	1/ 4370394
	Sure J		0.004264	14306	2.17234E-07	1/ 4603337
				total band EQ	6.81278E-07	1/ 1467830

Table 6 – 2600MHz band Exposure Quotient at East Exchange

End