

Cellular Mast Emissions Survey: Field 440 (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 440 site located in Jersey.

Field 440 site was used by one 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 440	800	0.07486	Airtel J	520	2.91565E-05	1/ 34298
	900	0.1828	Airtel J	226	4.26361E-05	1/ 23454
	1800	0.003236	Sure J	18027	1.0644E-07	1/ 9395007
	2100	0.00331	Sure J	18429	1.89862E-07	1/ 5266992
	2600	0.002145	Sure J	28438	1.09783E-07	1/ 9108838
Total Site EQ					7.21987E-05	1/ 13851

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/13851 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

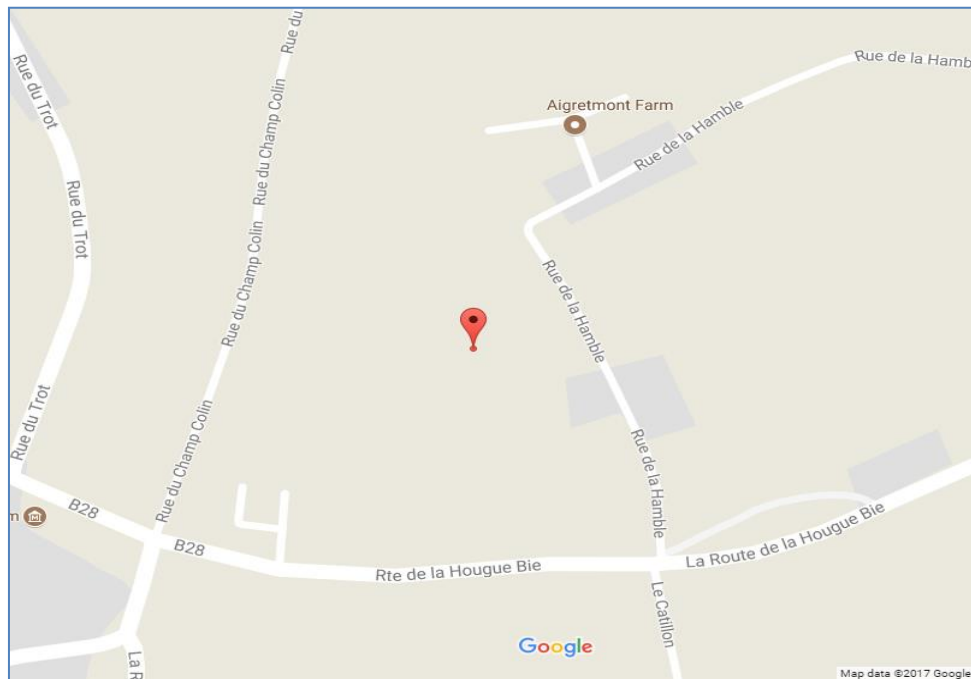


Figure 1 - Map of the Site Area

Site name	Field 440
Site address	La Rue de la Hamble, St Saviour, Jersey
Site Latitude	49.20206
Site Longitude	-2.06039

1.2 Site Description

Operators	Airtel J
Antenna types	Directionals
Approximate height	18.0m
Site type	Pole Mast
Description	The antennas at Field 440 are located at the back of the field, the public could have access.

1.3 Site Photo

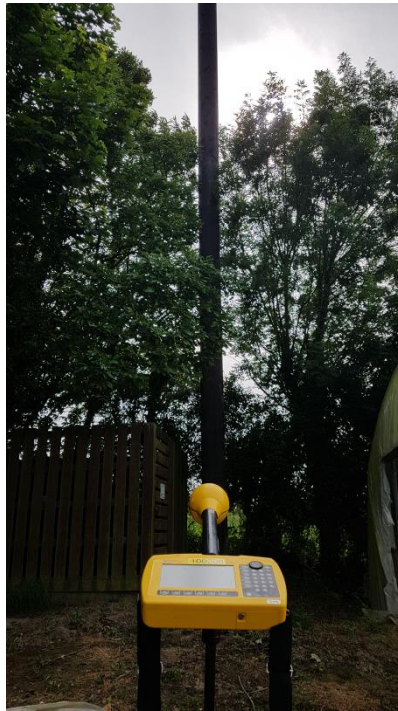


Figure 2 – Peak Measurement Location

1.4 Test Location

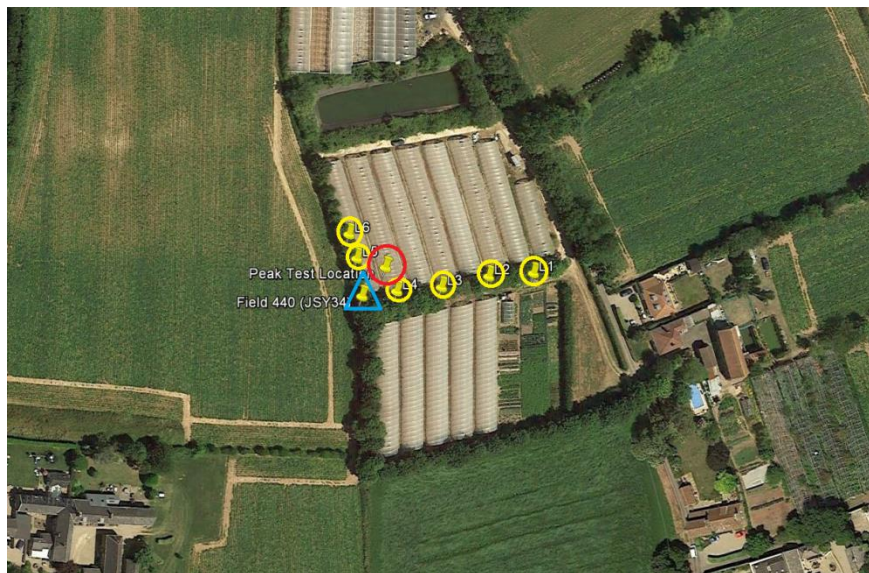


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

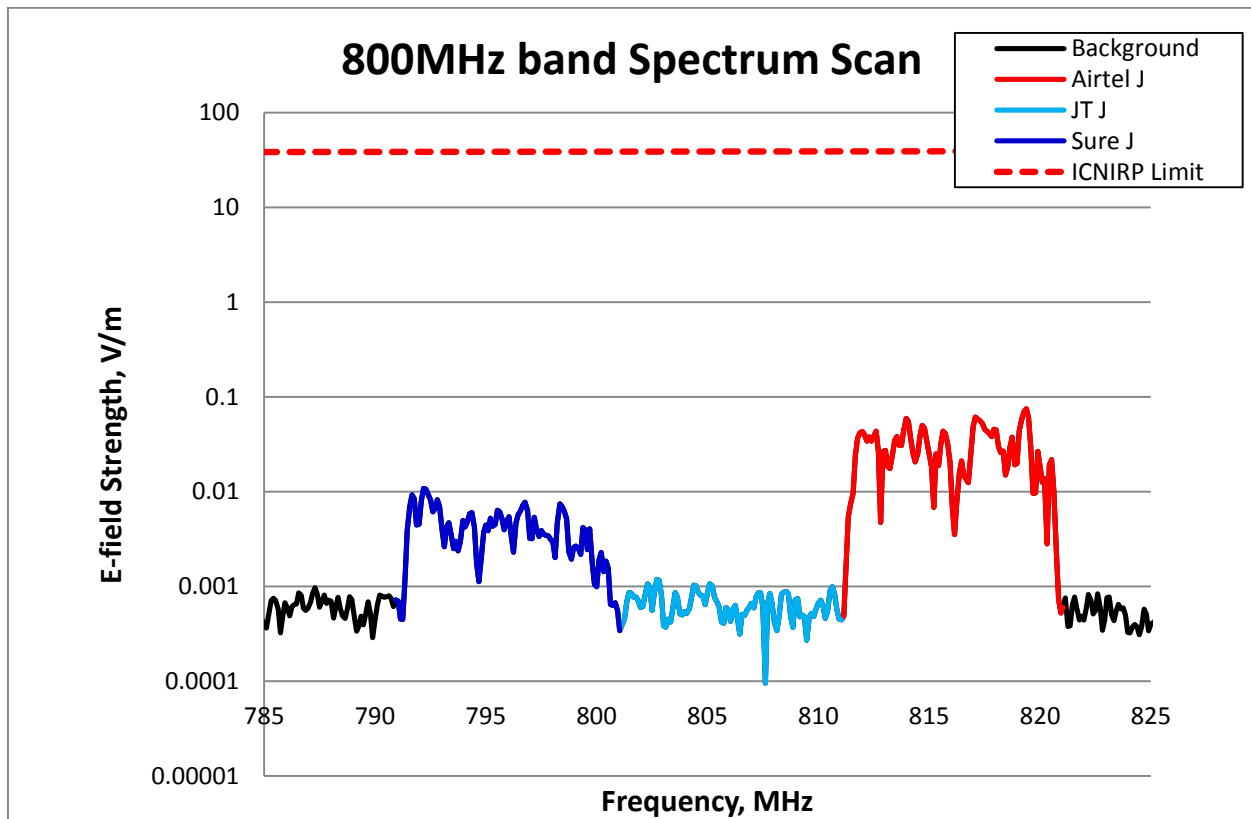


Figure 4 - 800MHz band Spectrum Scan

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 0.07486 V/m (Airtel J), which is 520 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 440	Airtel J	800	0.07486	520	2.85601E-05	1/ 35014
	JT J		0.001182	32903	1.22141E-08	1/ 81872701
	Sure J		0.01079	3604	5.84215E-07	1/ 1711699
total band EQ					2.91565E-05	1/ 34298

Table 2– 800MHz band Exposure Quotient at Field 440

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

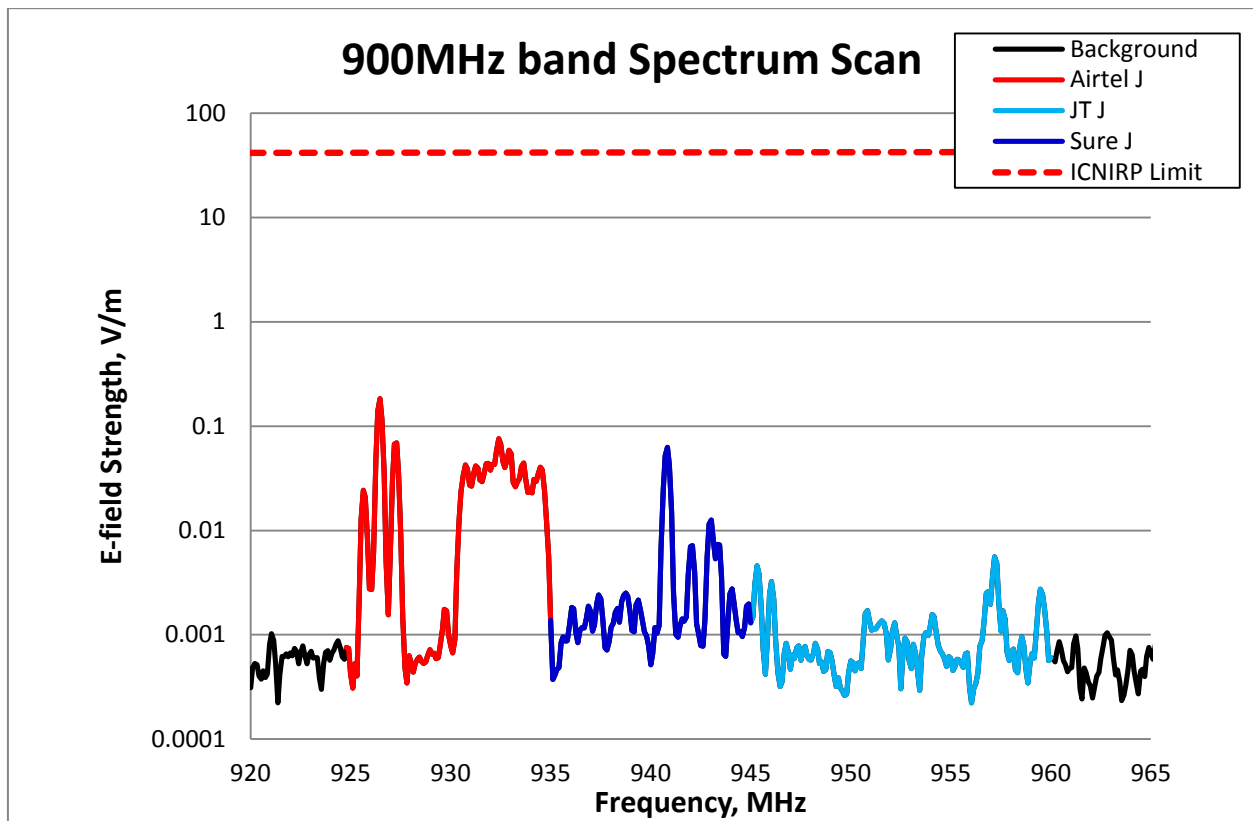


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1828 V/m (Airtel J), which is 226 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 440	Airtel J	900	0.1828	226	3.98386E-05	1/ 25101
	JT J		0.005577	7396	7.0424E-08	1/ 14199709
	Sure J		0.06248	660	2.72699E-06	1/ 366705
total band EQ					4.26361E-05	1/ 23454

Table 3– 900MHz band Exposure Quotient at Field 440

2.3 1800 MHz Band

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

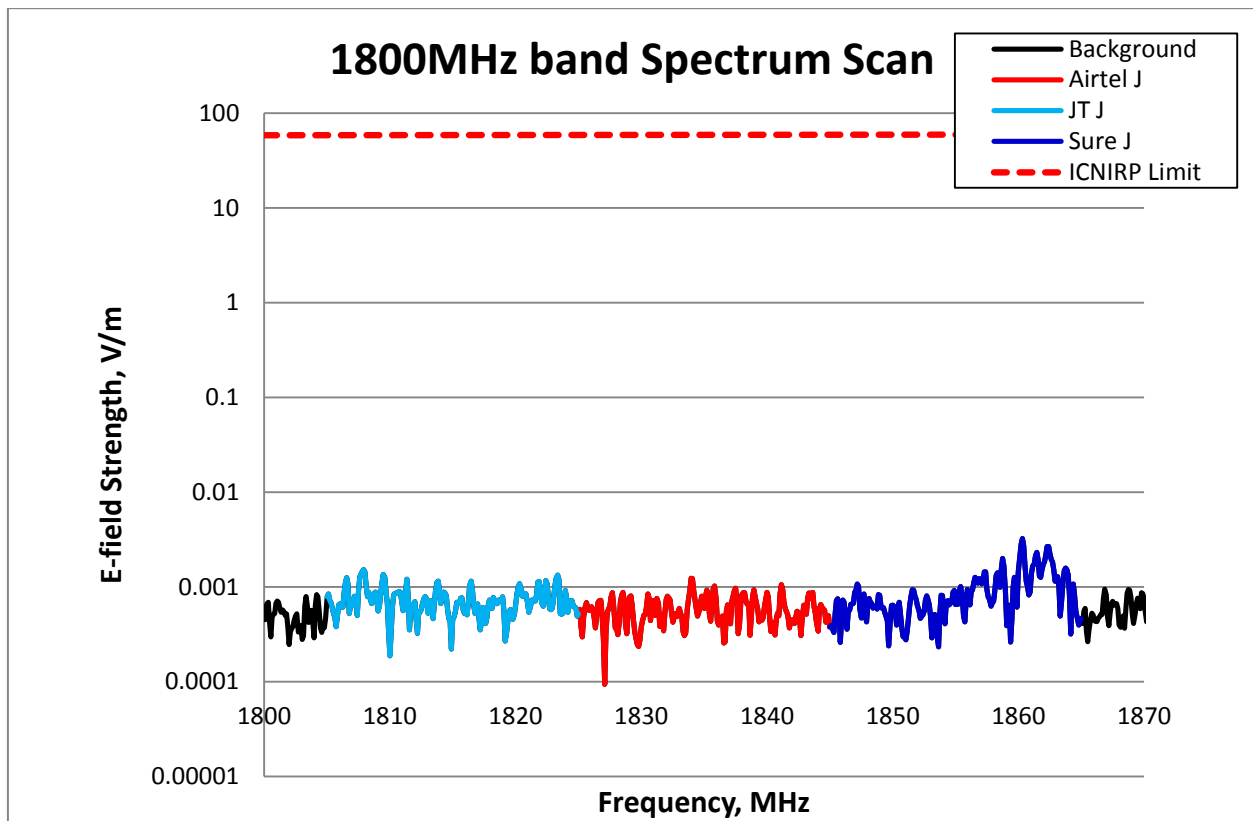


Figure 6 - 1800MHz Spectrum Scan

No activity was recorded in the 1800MHz as no operator appears to transmit in this band at this site.

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 440	Airtel J	1800	0.001229	47466	1.94168E-08	1/ 51501702
	JT J		0.001522	38329	3.03735E-08	1/ 32923413
	Sure J		0.003236	18027	5.66492E-08	1/ 17652513
total band EQ					1.0644E-07	1/ 9395007

Table 4 – 1800MHz band Exposure Quotient at Field 440

2.4 2100MHz Band

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

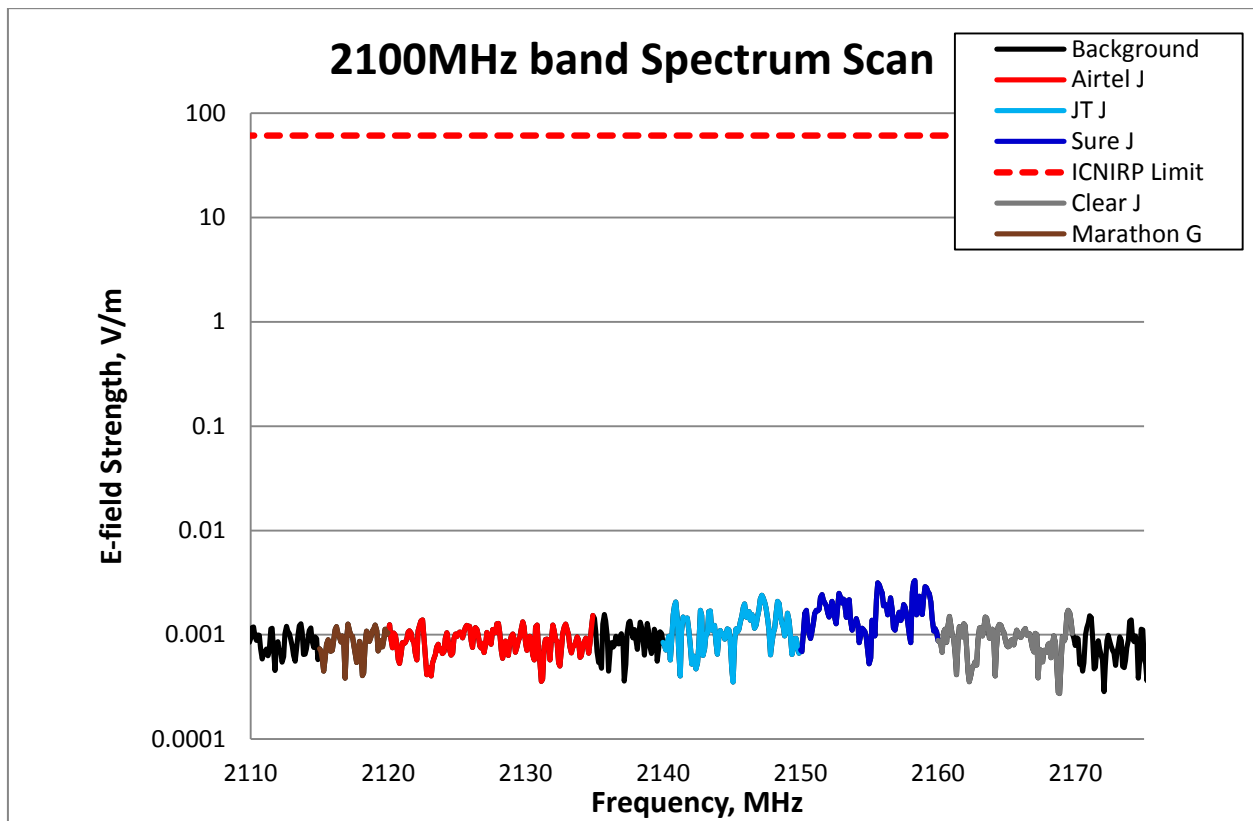


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100 MHz 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
Field 440	Airtel J	2100	0.001528	39921	3.19391E-08	1/ 31309635
	Clear J		0.001719	35486	2.35086E-08	1/ 42537696
	JT J		0.002386	25566	4.17786E-08	1/ 23935712
	Marathon J		0.001263	48298	1.02747E-08	1/ 97326726
	Sure J		0.00331	18429	8.23608E-08	1/ 12141695
total band EQ					1.89862E-07	1/ 5266992

Table 5 – 2100MHz band Exposure Quotient at the Field 440

2.5 2600MHz band

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

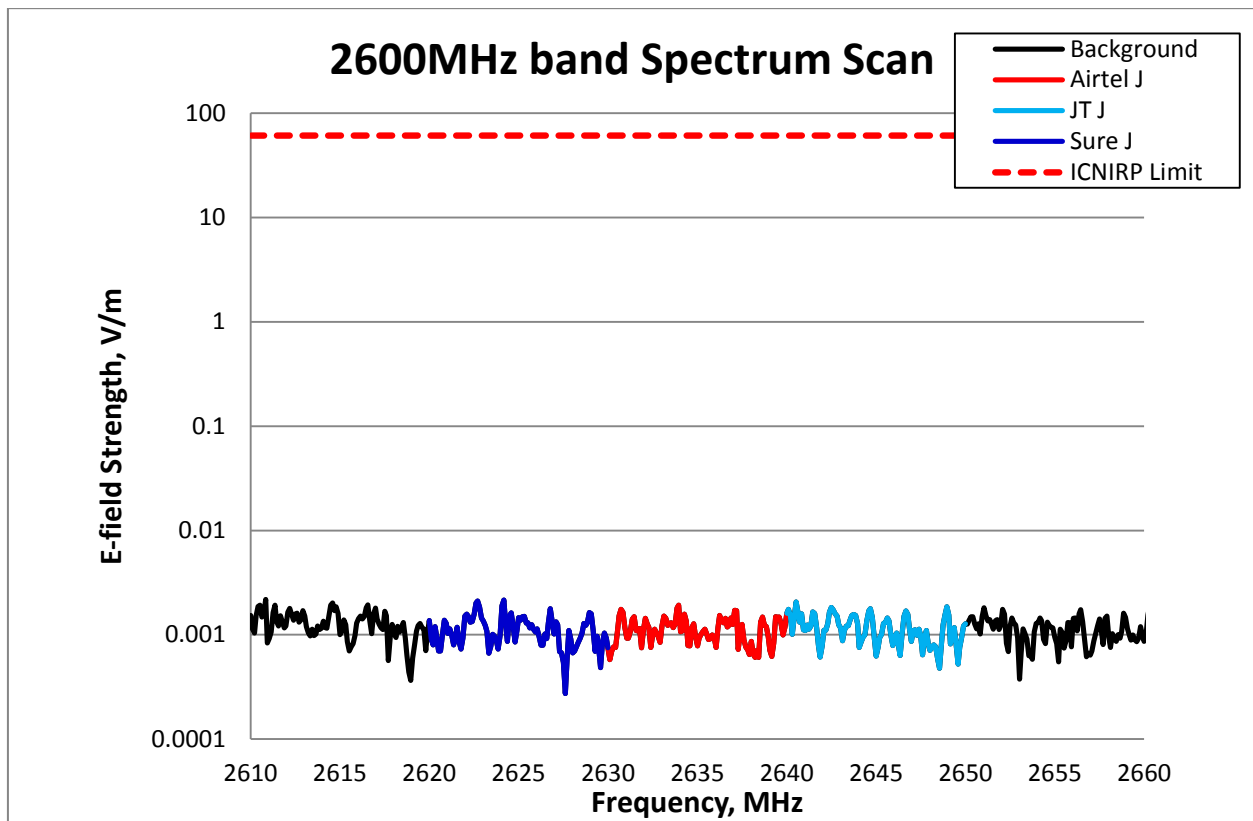


Figure 8 – 2600MHz band Spectrum Scan

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 440	Airtel J	2600	0.001925	31688	3.52209E-08	1/ 28392247
	JT J		0.002069	29483	3.87448E-08	1/ 25809886
	Sure J		0.002145	28438	3.58178E-08	1/ 27919114
total band EQ					1.09783E-07	1/ 9108838

Table 6 – 2600MHz band Exposure Quotient at Field 440

End