

Cellular Mast Emissions Survey: Field 235 (Jersey)



DOCUMENT DETAILS

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Survey Engineer:	Louise Sands	
Report Compiled by:	Erin Dawson	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

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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 Field 235 site located in Jersey.

The Field 235 site was used by one operator at the time of the survey: Airtel J; but the survey recorded a strong signal from JT J who operate a site in a nearby location. Surveys were nonetheless 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 235	800	0.4621	JT J	84	0.000393615	1/ 2541
	900	3.166	JT J	13	0.008158628	1/ 123
	1800	0.2094	JT J	279	0.000342324	1/ 2921
	2100	0.204	JT J	299	0.00027432	1/ 3645
	2600	0.00522	Airtel J	11686	7.00901E-07	1/ 1426736
Total Site EQ					0.009169588	1/ 109

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/109 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

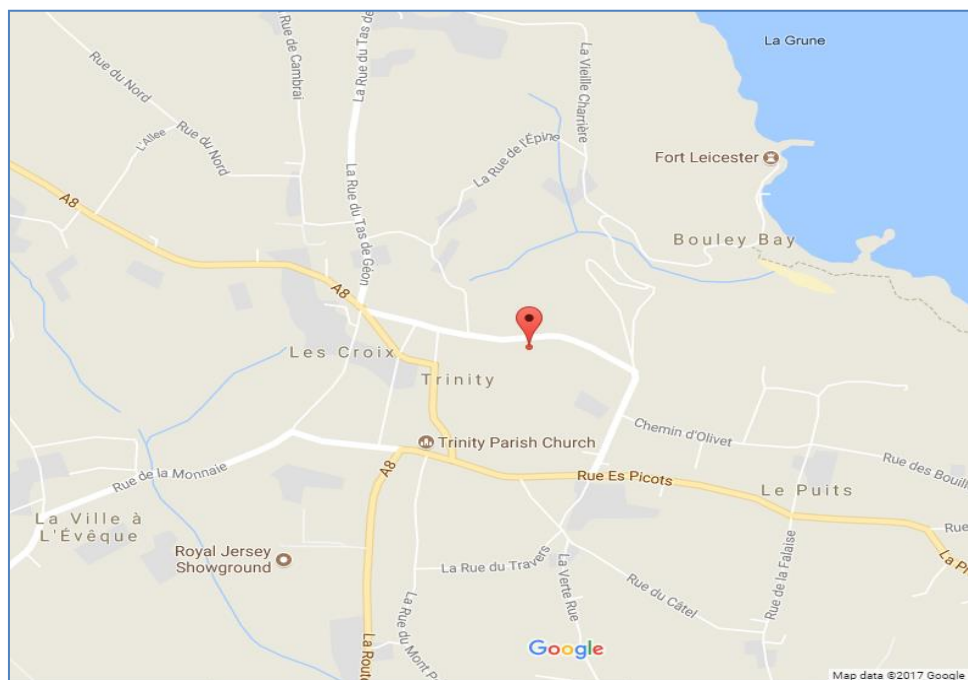


Figure 1 - Map of the Site Area

Site name	Field 235
Site address	La Rue de la Petite Falaise, Trinity, Jersey
Site Latitude	49.23595
Site Longitude	-2.08873

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole Mast
Description	The antennas at the Field 235 are located in the corner of the field, the public can access it.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

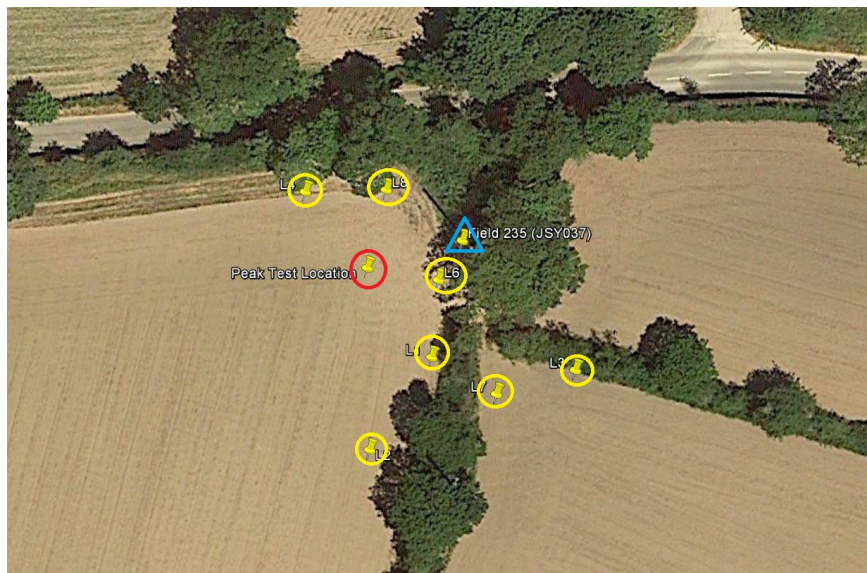


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

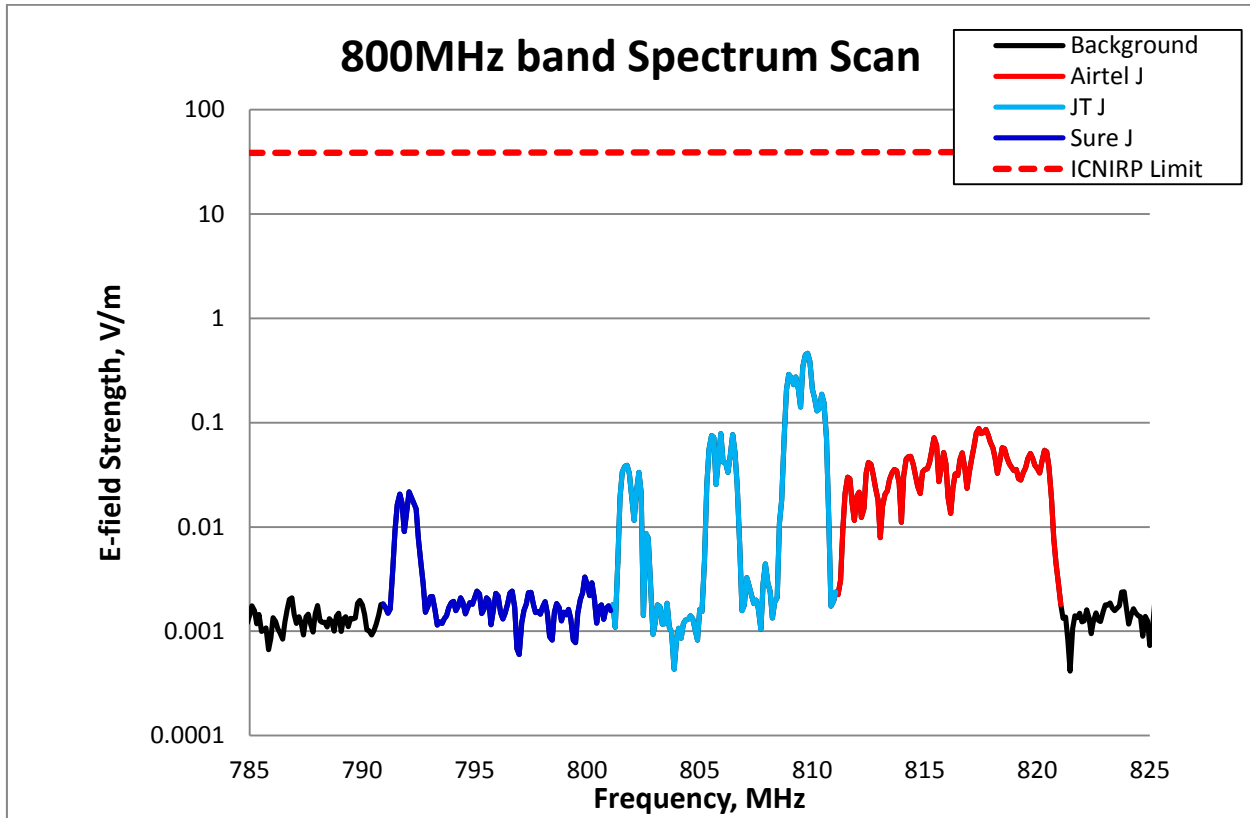


Figure 4 - 800MHz band Spectrum Scan

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 0.4621 V/m (JT J), which is 84 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 235	Airtel J	800	0.0876	444	4.24687E-05	1/ 23547
	JT J		0.4621	84	0.000350319	1/ 2855
	Sure J		0.02172	1791	8.2717E-07	1/ 1208942
total band EQ					0.000393615	1/ 2541

Table 2– 800MHz band Exposure Quotient at Field 235

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

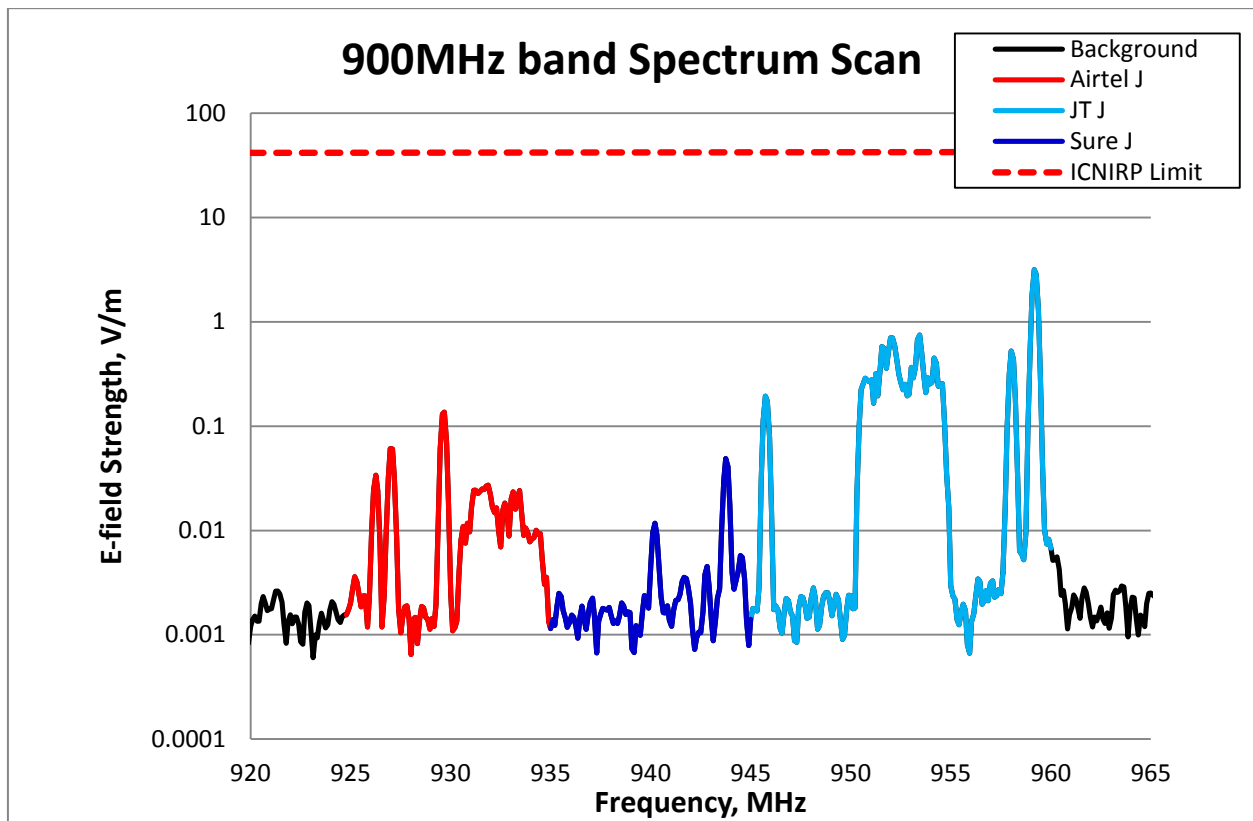


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 3.166 V/m (JT J), which is 13 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 235	Airtel J	900	0.1358	304	1.82738E-05	1/ 54723
	JT J		3.166	13	0.008138703	1/ 123
	Sure J		0.04905	841	1.65178E-06	1/ 605408
total band EQ					0.008158628	1/ 123

Table 3– 900MHz band Exposure Quotient at Field 235

2.3 1800 MHz Band

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

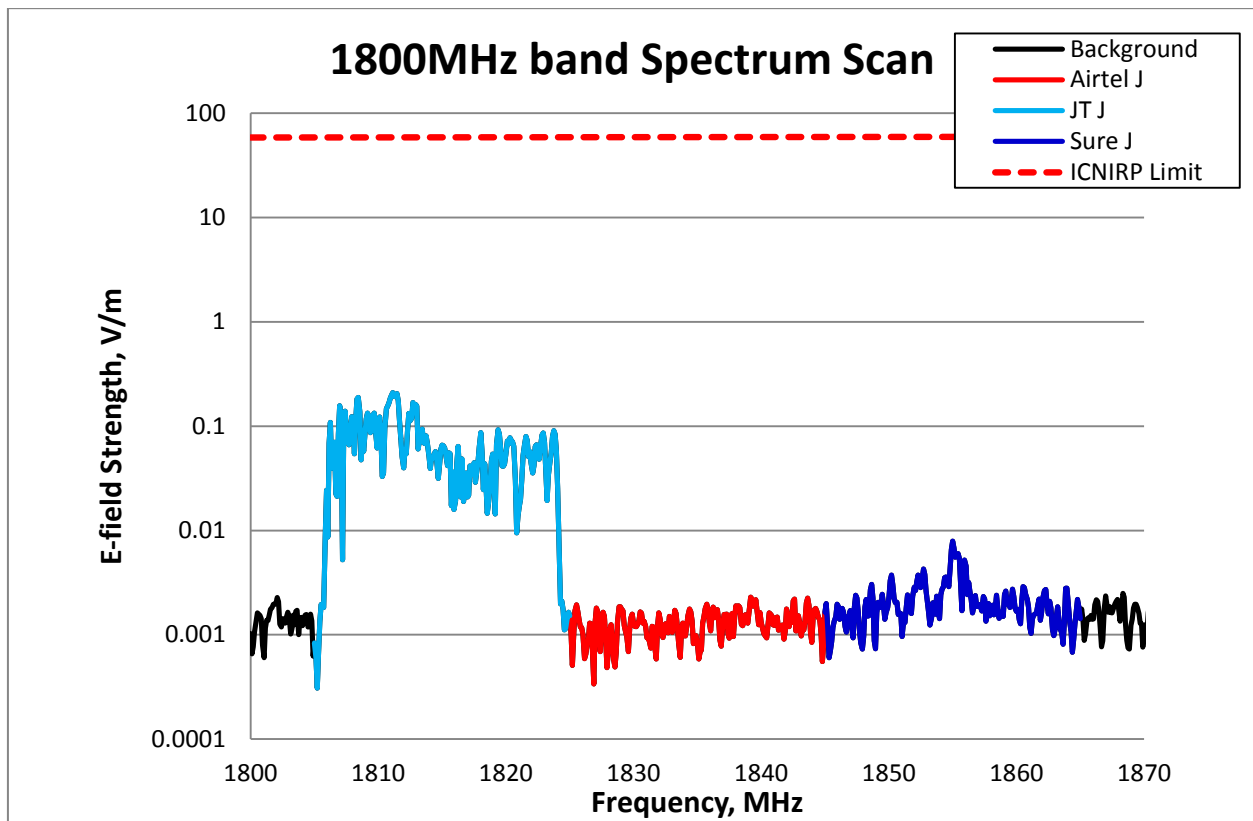


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.2094 V/m (JT J), which is 279 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 235	Airtel J	1800	0.002298	25386	9.46794E-08	1/ 10561962
	JT J		0.2094	279	0.000341931	1/ 2925
	Sure J		0.007887	7397	2.9872E-07	1/ 3347617
total band EQ					0.000342324	1/ 2921

Table 4 – 1800MHz band Exposure Quotient at Field 235

2.4 2100MHz Band

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

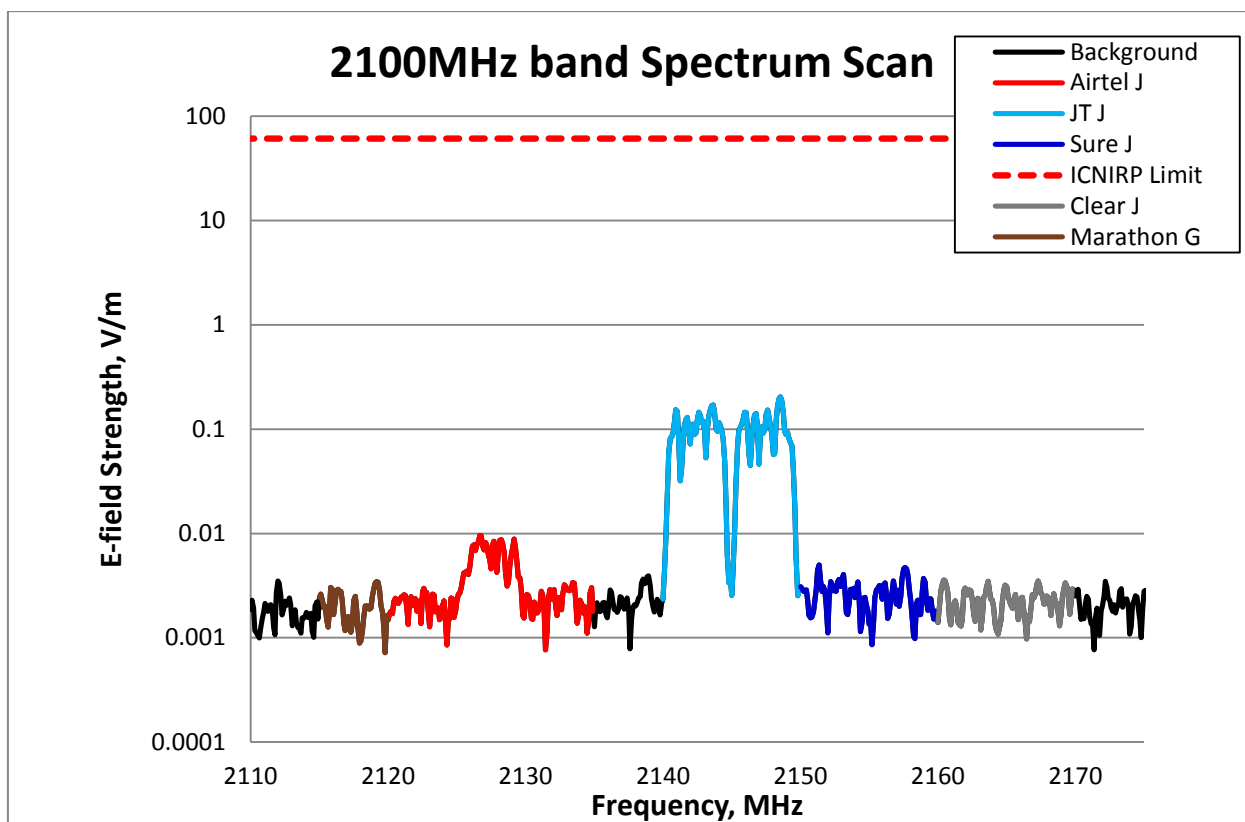


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.204 V/m (JT J), which is 299 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 235	Airtel J	2100	0.009545	6391	6.1221E-07	1/ 1633426
	Clear J		0.003576	17058	1.3869E-07	1/ 7210314
	JT J		0.204	299	0.000273318	1/ 3659
	Marathon J		0.003455	17656	5.95925E-08	1/ 16780642
	Sure J		0.004988	12229	1.91565E-07	1/ 5220169
		total band EQ			0.000274129	1/ 3648

Table 5 – 2100MHz band Exposure Quotient at Field 235

2.5 2600MHz band

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

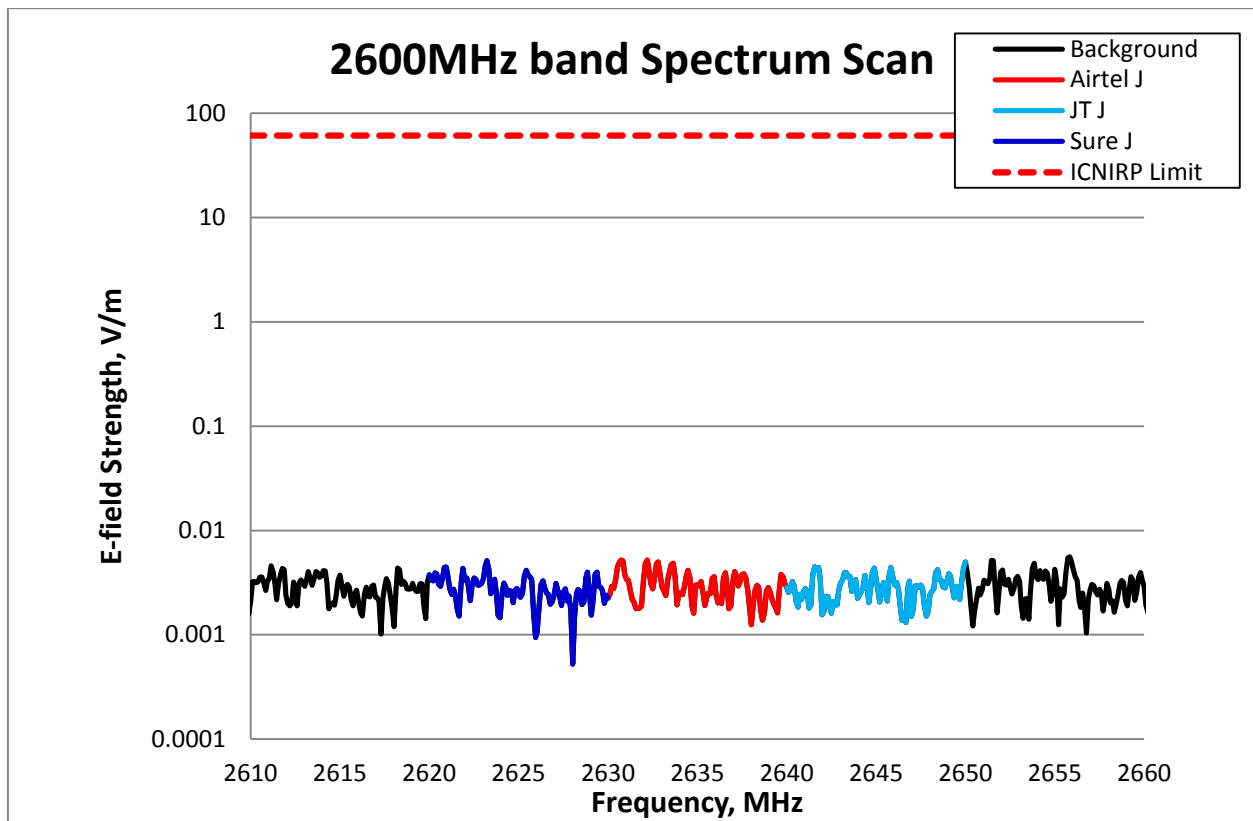


Figure 8 – 2600MHz band Spectrum Scan

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 235	Airtel J	2600	0.00522	11686	2.54274E-07	1/ 3932771
	JT J		0.004988	12229	2.24893E-07	1/ 4446553
	Sure J		0.005132	11886	2.21734E-07	1/ 4509915
total band EQ					7.00901E-07	1/ 1426736

Table 6 – 2600MHz band Exposure Quotient at Field 235

End