

Cellular Mast Emissions Survey: Merton Suites (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 Merton Suites site located in Jersey.

The Merton Suites site was used by one operator at the time of the survey: JT J; but strong signal levels from Sure J who operate from a nearby site were also recorded at this site. 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
Merton Suites	800	0.04807	Sure J	809	8.72732E-06	1/ 114583
	900	0.07178	JT J	575	9.99963E-06	1/ 100004
	1800	0.01581	JT J	3690	2.115E-06	1/ 472814
	2100	0.01902	JT J	3207	2.57354E-06	1/ 388570
	2600	0.002404	Airtel J	25374	1.31271E-07	1/ 7617844
Total Site EQ					2.35467E-05	1/ 42469

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/42469 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

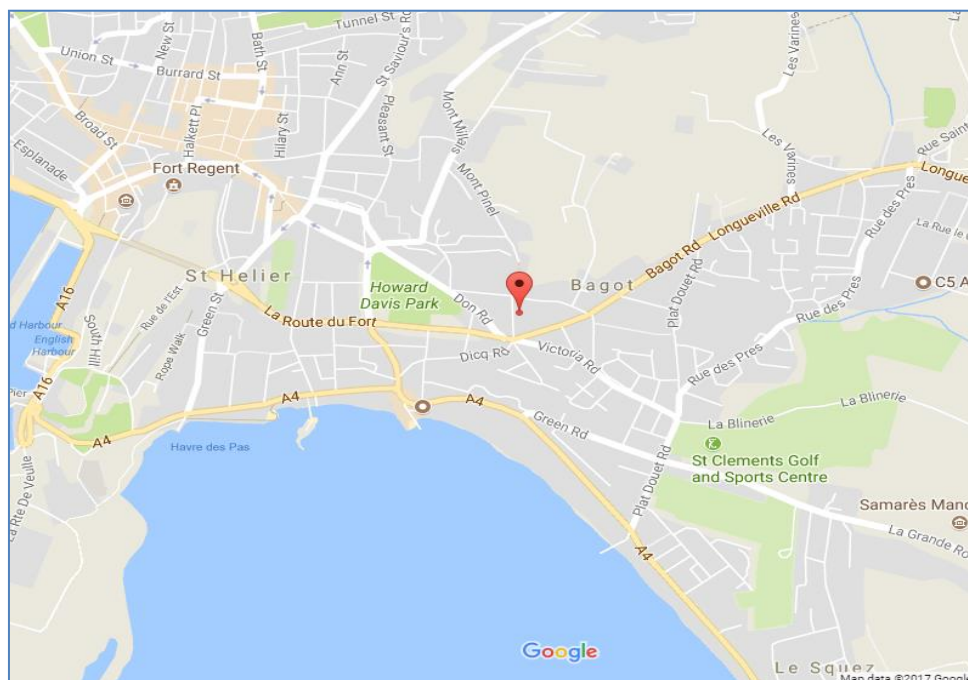


Figure 1 - Map of the Site Area

Site name	Merton Suites
Site address	Belvedere Hill, Jersey
Site Latitude	49.17951
Site Longitude	-2.09328

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	3.5m
Site type	Building Wall Mount
Description	The antennas at the Merton Suites are located on the side of a building, out of reach of the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

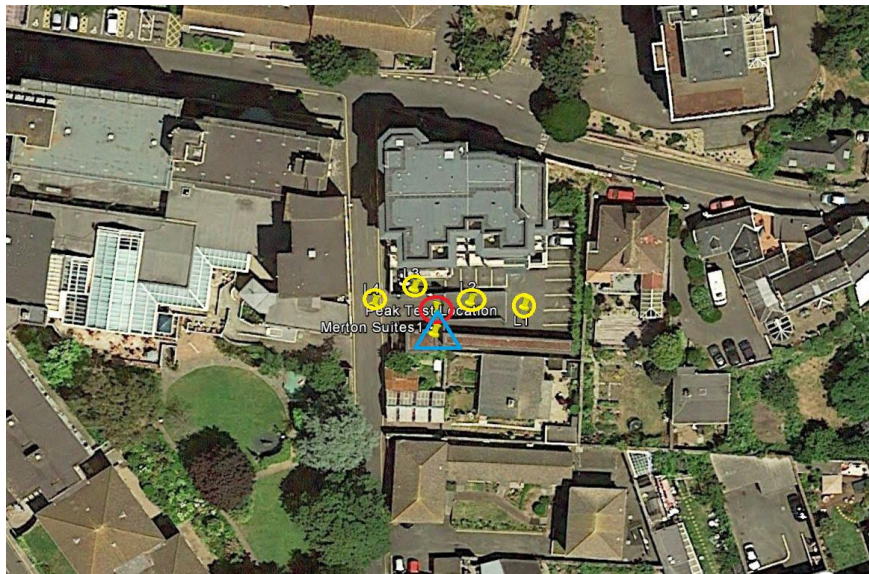


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

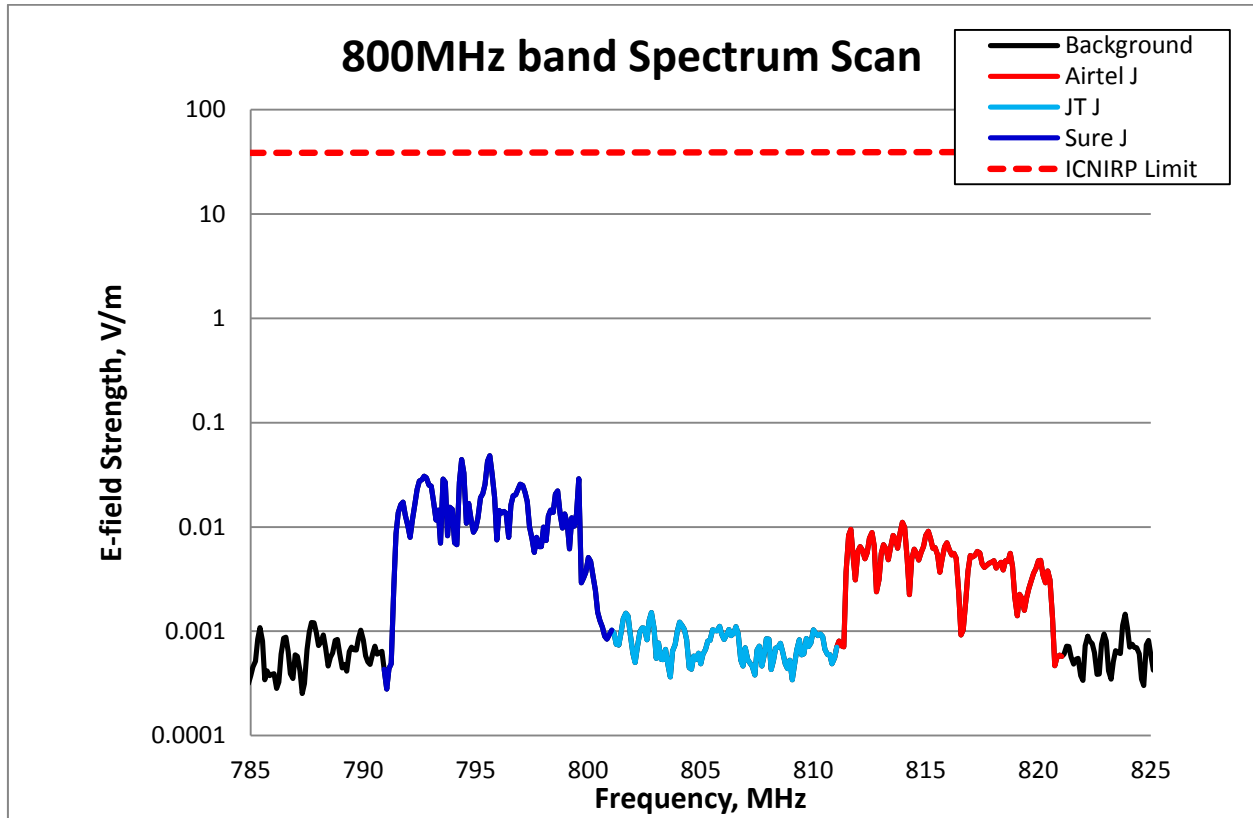


Figure 4 - 800MHz band Spectrum Scan

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 0.04807 V/m (Sure J), which is 809 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
Merton Suites	Airtel J	800	0.01109	3507	7.07922E-07	1/ 1412585
	JT J		0.001516	25654	1.74207E-08	1/ 57403057
	Sure J		0.04807	809	8.00197E-06	1/ 124969
total band EQ					8.72732E-06	1/ 114583

Table 2– 800MHz band Exposure Quotient at Merton Suites

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

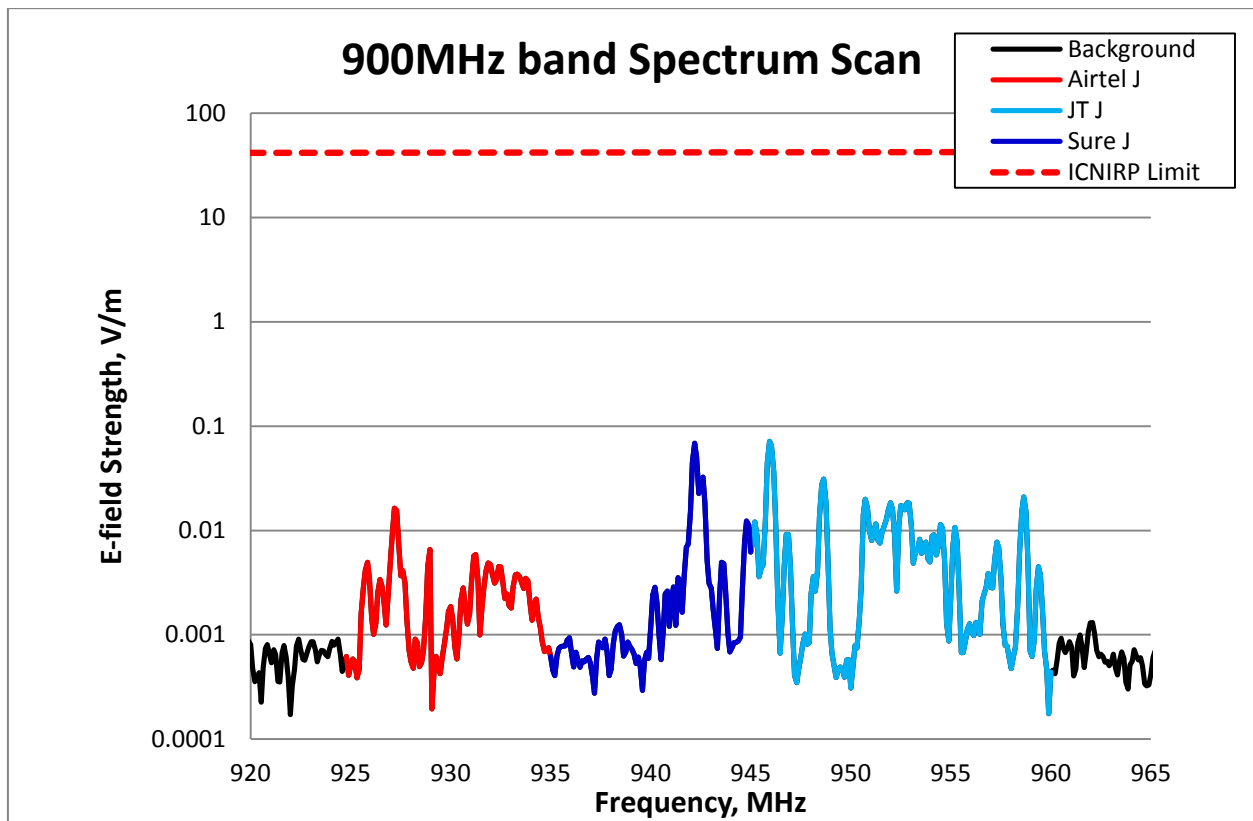


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.07178 V/m (JT J), which is 575 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz band are shown below:

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
Merton Suites	Airtel J	900	0.01638	2518	3.5629E-07	1/ 2806699
	JT J		0.07178	575	6.13183E-06	1/ 163083
	Sure J		0.06867	601	3.5115E-06	1/ 284778
total band EQ					9.99963E-06	1/ 100004

Table 3– 900MHz band Exposure Quotient at Merton Suites

2.3 1800 MHz Band

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

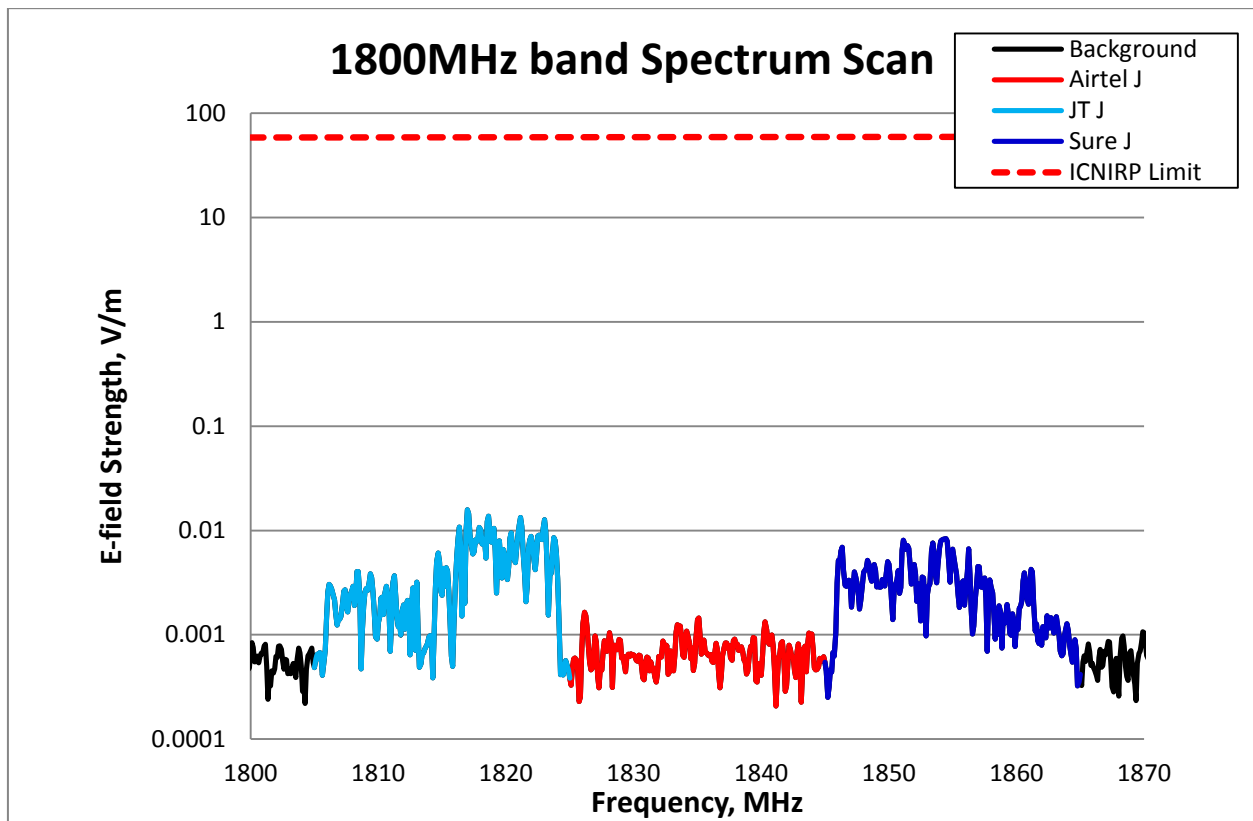


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.01581 V/m (JT) which is 3690 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 1800MHz band are shown below:

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
Merton Suites	Airtel J	1800	0.00164	35571	2.7077E-08	1/ 36931769
	JT J		0.01581	3690	1.4501E-06	1/ 689608
	Sure J		0.008371	6969	6.37819E-07	1/ 1567843
total band EQ					2.115E-06	1/ 472814

Table 4 – 1800MHz band Exposure Quotient at Merton Suites

2.4 2100MHz Band

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

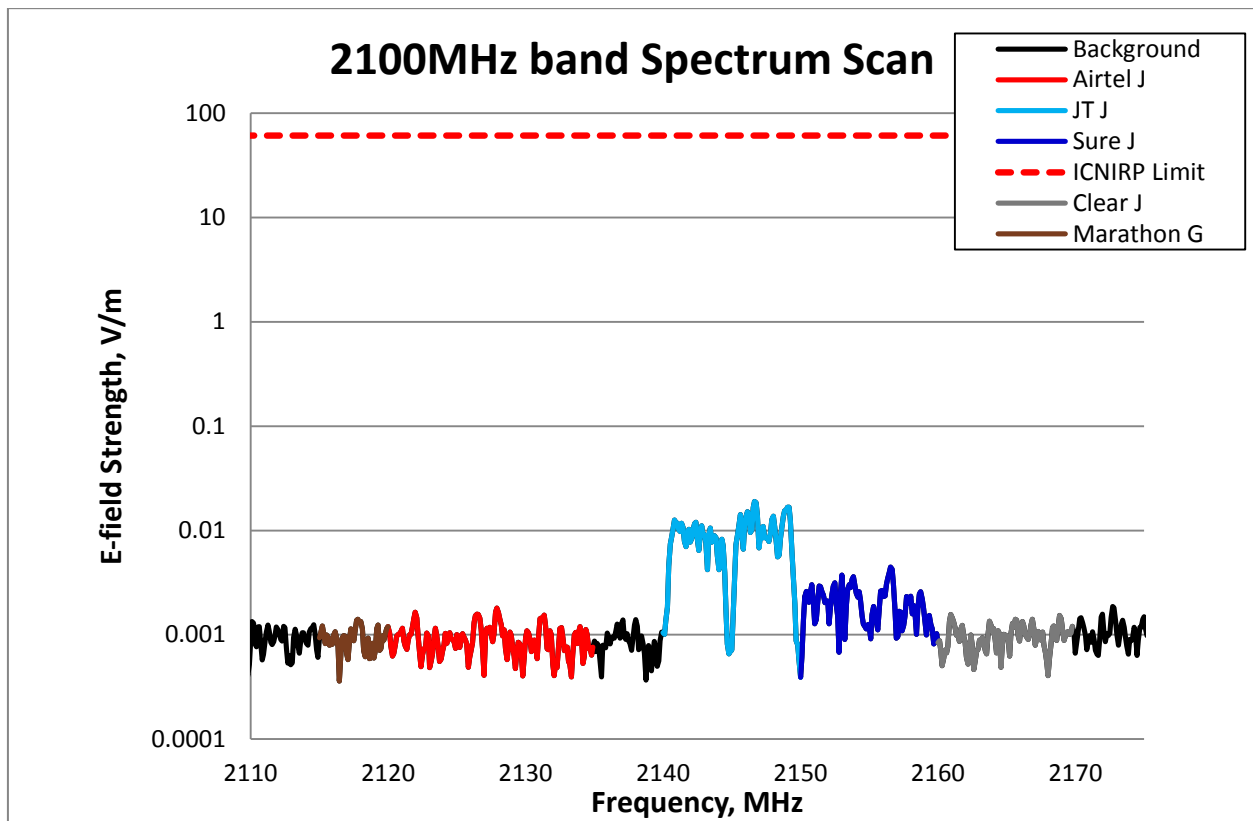


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.01902 V/m (JT J), which is 3207 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2100MHz band are shown below:

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
Merton Suites	Airtel J	2100	0.001802	33851	3.5822E-08	1/ 27915787
	Clear J		0.001568	38903	2.5377E-08	1/ 39405708
	JT J		0.01902	3207	2.37769E-06	1/ 420576
	Marathon J		0.001405	43416	1.20209E-08	1/ 83188200
	Sure J		0.004464	13665	1.22631E-07	1/ 8154560
total band EQ					2.57354E-06	1/ 388570

Table 5 – 2100MHz band Exposure Quotient at Merton Suites

2.5 2600MHz band

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

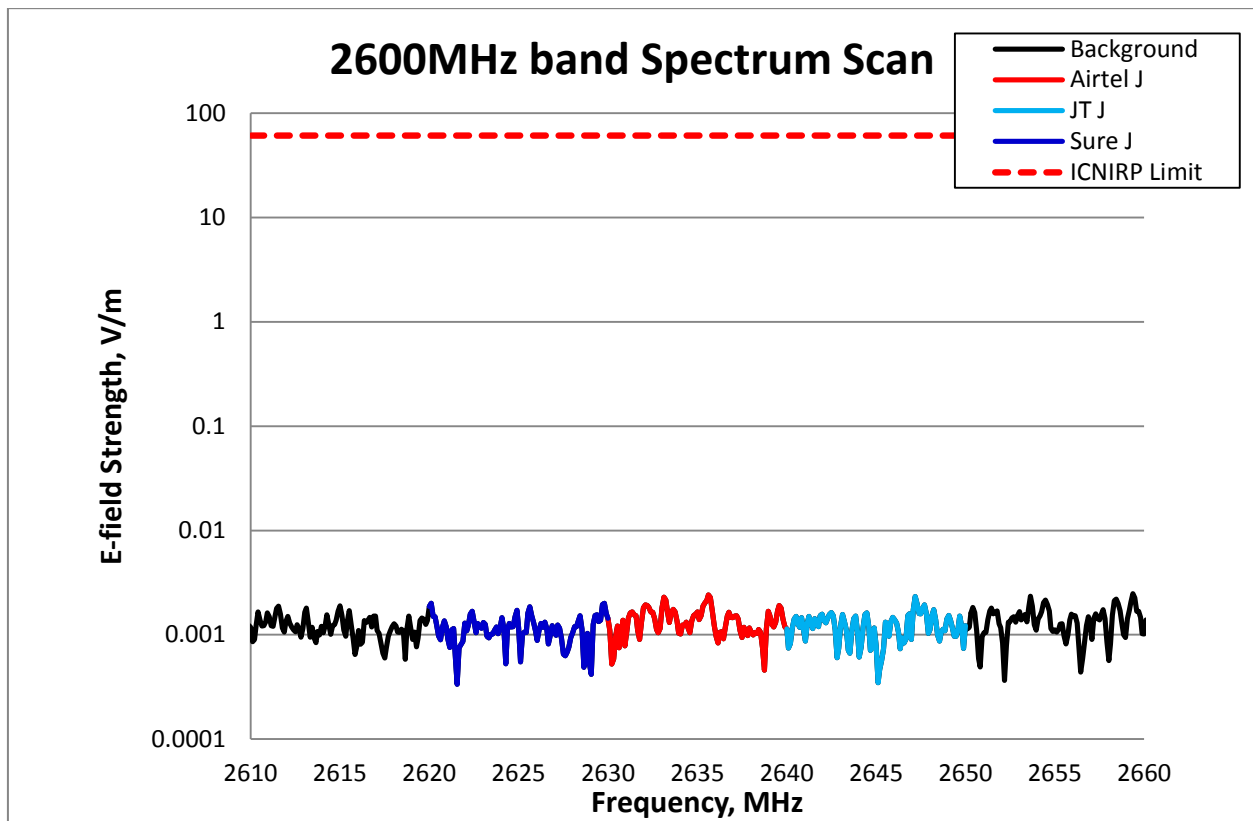


Figure 8 – 2600MHz band Spectrum Scan

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	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
Merton Suites	Airtel J	2600	0.002404	25374	5.1859E-08	1/ 19283065
	JT J		0.002325	26237	4.1652E-08	1/ 24008463
	Sure J		0.002003	30454	3.77598E-08	1/ 26483200
total band EQ					1.31271E-07	1/ 7617844

Table 6 – 2600MHz band Exposure Quotient at Merton Suites

End