

Cellular Mast Emissions Survey:

Merton Hotel (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 EM emission surveys at all sites within the two Bailiwicks. The surveys were repeated in 2018 for a small selection of sites where changes were made by the operators. This report is for the Merton Hotel site located in Jersey.

The Merton Hotel site was used by all three mobile operators at the time of the 2018 survey: Sure J, JT J and Airtel J. Surveys were 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 Hotel	800	0.1283	Airtel J	303	0.000130553	1/ 7660
	900	1.092	Sure J	38	0.000804836	1/ 1242
	1800	0.1288	Sure J	453	0.000210682	1/ 4746
	2100	0.09664	Airtel J	631	4.98521E-05	1/ 20059
	2600	0.005507	JT J	11077	6.57802E-07	1/ 1520213
Total Site EQ					0.001196581	1/ 836

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/836 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

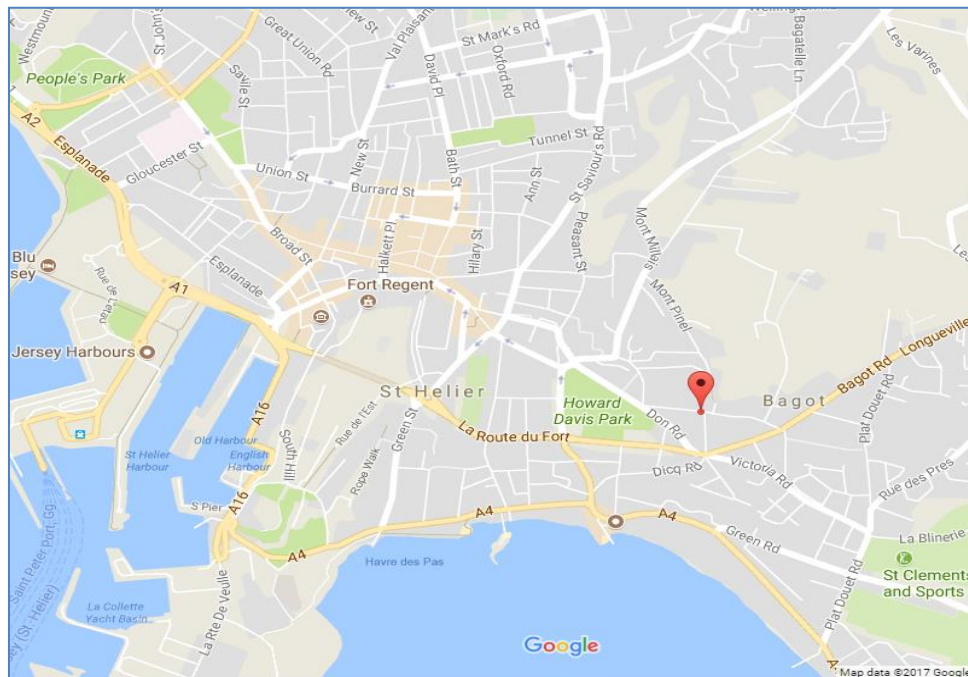


Figure 1 - Map of the Site Area

Site name	Merton Hotel
Site address	Belvedere Hill, St Helier, Jersey
Site Latitude	49.179977
Site Longitude	-2.09368294

1.2 Site Description

Operators	Sure J, JT J and Airtel J
Antenna types	Directional
Approximate height	25m
Site type	Building – Wall Mount
Description	The antennas at the Merton Hotel are located on the side of the main 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.

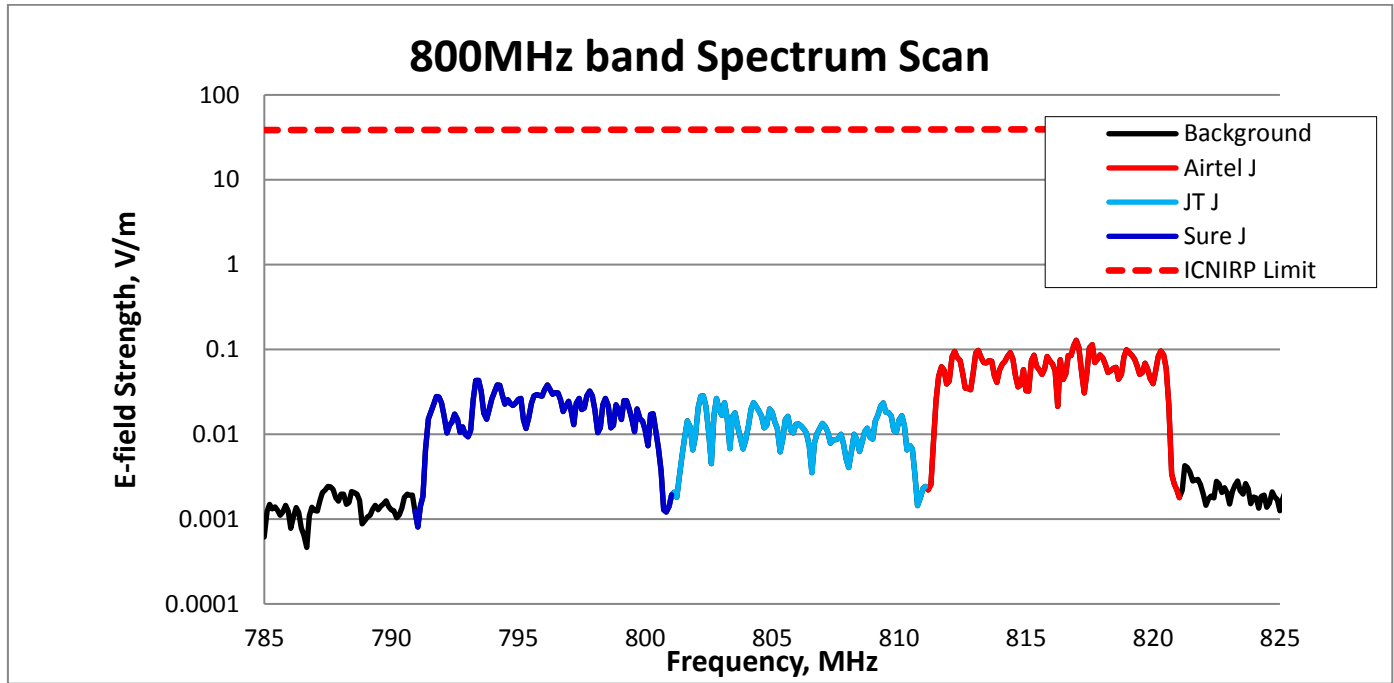


Figure 4 - 800MHz band Spectrum Scan

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 0.1283 V/m (Airtel J), which is 303 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 Hotel	Airtel J	800	0.1283	303	0.000113438	1/ 8815
	JT J		0.02834	1372	4.6478E-06	1/ 215155
	Sure J		0.04322	900	1.24675E-05	1/ 80209
total band EQ					0.000130553	1/ 7660

Table 2– 800MHz band Exposure Quotient at the Merton Hotel

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

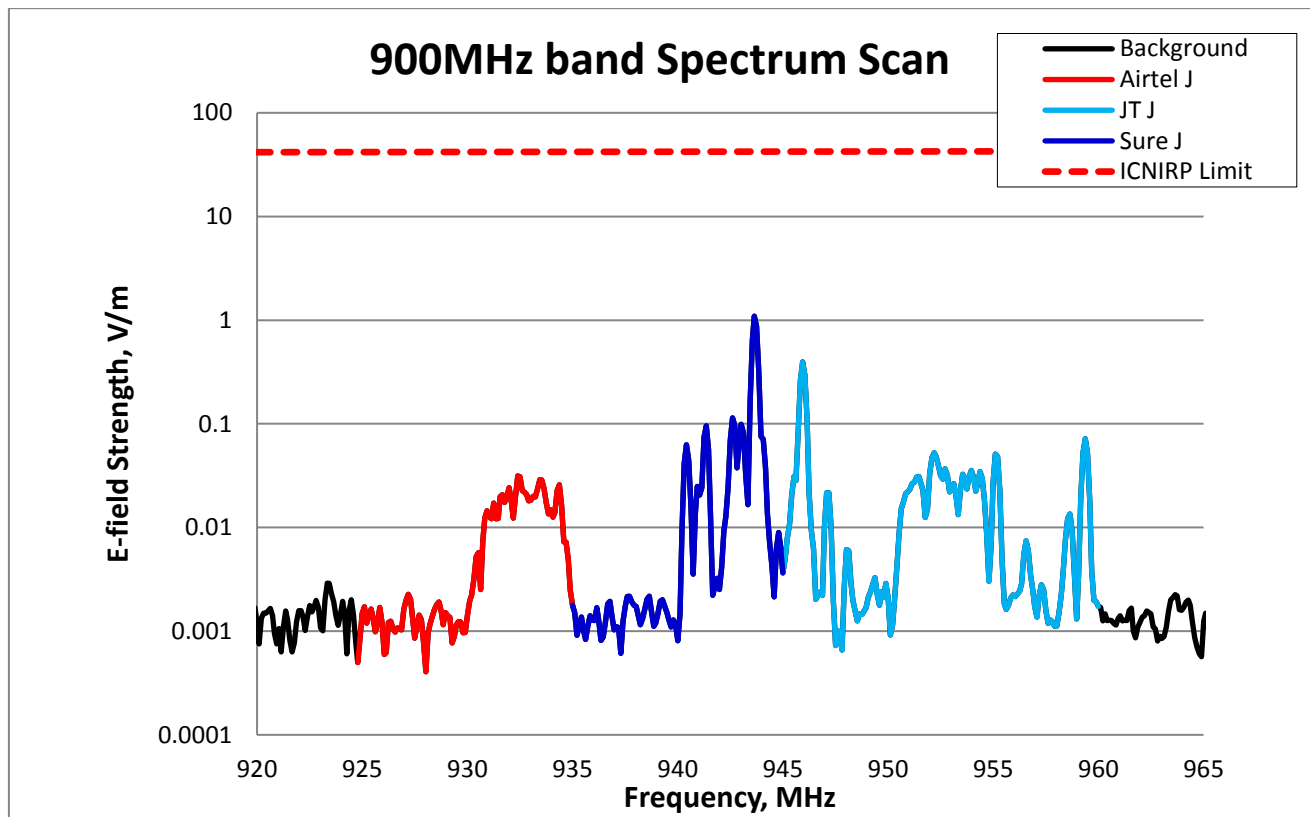


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.092 V/m (Sure J), which is 38 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
Merton Hotel	Airtel J	900	0.03139	1314	3.94435E-06	1/ 253527
	JT J		0.3952	104	0.000104062	1/ 9610
	Sure J		1.092	38	0.00069683	1/ 1435
total band EQ					0.000804836	1/ 1242

Table 3– 900MHz band Exposure Quotient at the Merton Hotel

2.3 1800 MHz Band

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

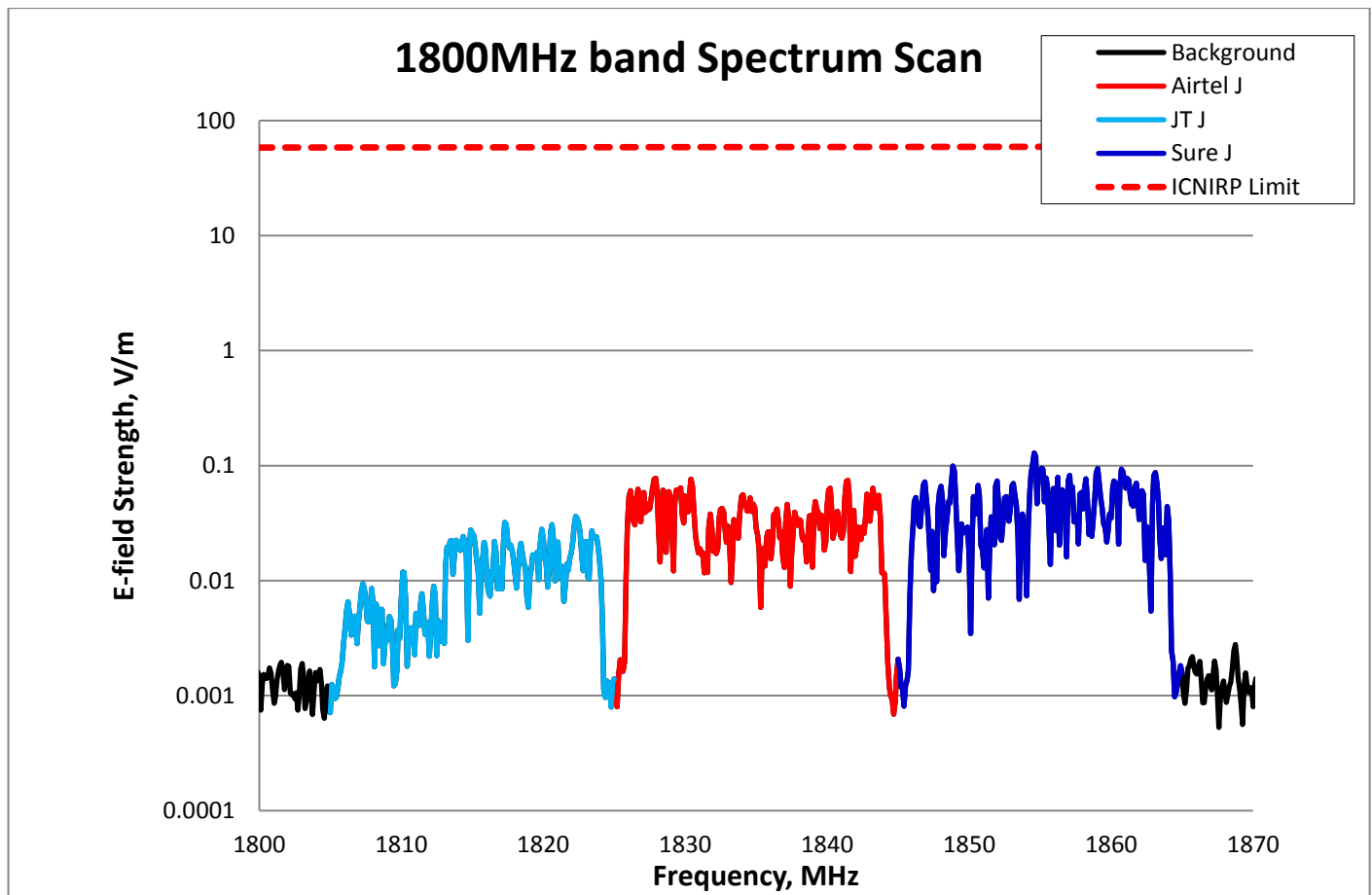


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1288 V/m (Sure J), which is 453 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
Merton Hotel	Airtel J	1800	0.07776	750	7.33051E-05	1/ 13642
	JT J		0.03617	1613	1.05753E-05	1/ 94560
	Sure J		0.1288	453	0.000126802	1/ 7886
total band EQ					0.000210682	1/ 4746

Table 4 – 1800MHz band Exposure Quotient at the Merton Hotel

2.4 2100MHz Band

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

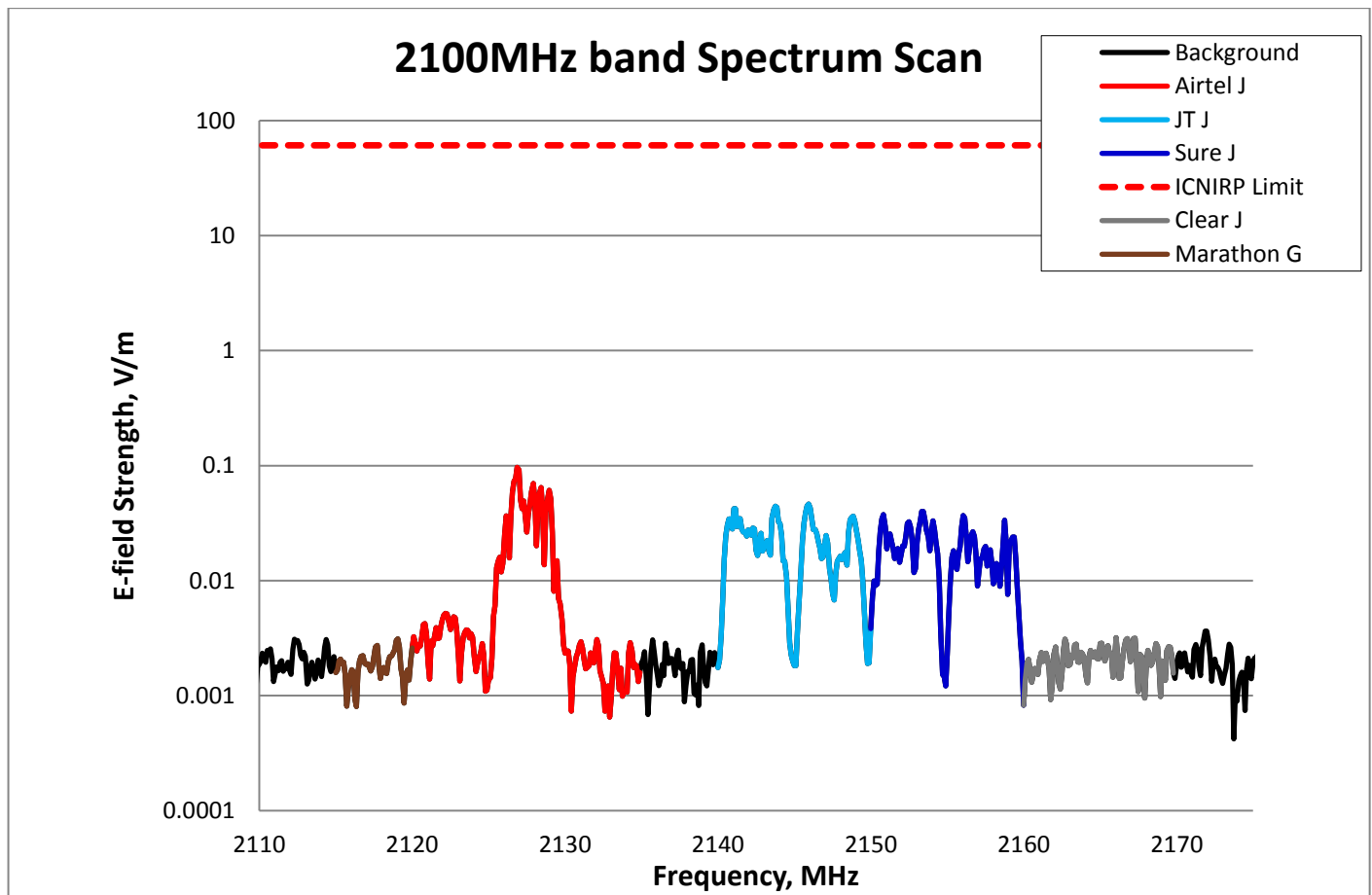


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.09664 V/m (Airtel J), which is 631 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
Merton Hotel	Airtel J	2100	0.09664	631	2.29754E-05	1/ 43525
	Clear J		0.003186	19146	1.17831E-07	1/ 8486727
	JT J		0.04629	1318	1.54471E-05	1/ 64737
	Marathon J		0.003115	19583	4.85409E-08	1/ 20601202
	Sure J		0.03995	1527	1.12633E-05	1/ 88784
total band EQ					4.98521E-05	1/ 20059

Table 5 – 2100MHz band Exposure Quotient at the Merton Hotel

2.5 2600MHz band

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

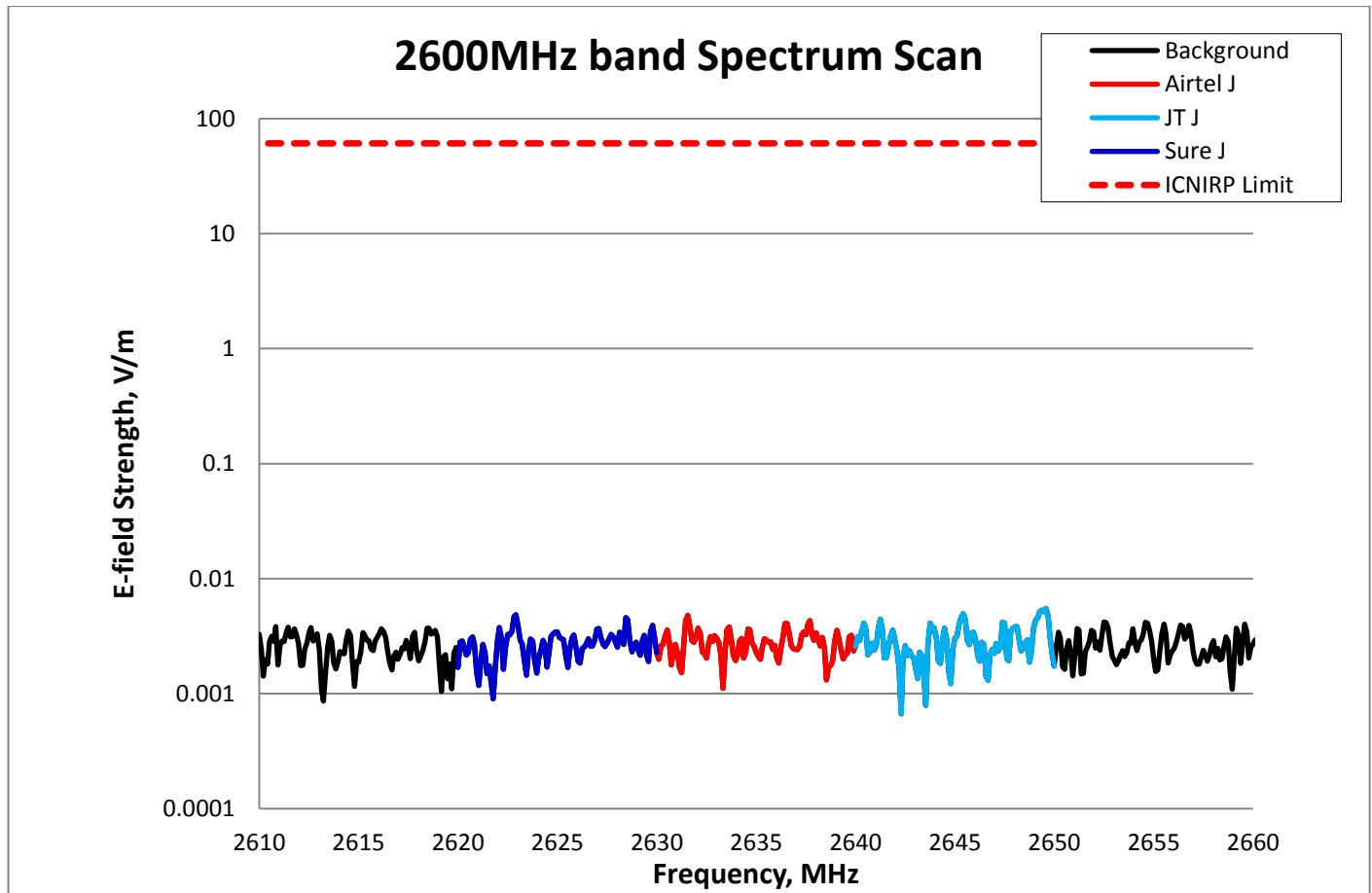


Figure 8 – 2600MHz band Spectrum Scan

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
Merton Hotel	Airtel J	2600	0.004794	12724	2.08857E-07	1/ 4787960
	JT J		0.005507	11077	2.45375E-07	1/ 4075393
	Sure J		0.004864	12541	2.0357E-07	1/ 4912314
total band EQ					6.57802E-07	1/ 1520213

Table 6 – 2600MHz band Exposure Quotient at the Merton Hotel

End