

Cellular Mast Emissions Survey: Sure Shop (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 Sure Shop site located in Jersey.

The Sure Shop site was used by a single operator at the time of the survey: Sure 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
Sure Shop	800	0.004672	Sure J	8324	5.00409E-07	1/ 1998365
	900	0.2873	Sure J	144	5.54892E-05	1/ 18022
	1800	0.1801	Sure J	324	0.000155411	1/ 6435
	2100	1.305	Sure J	47	0.009492477	1/ 105
	2600	0.009744	Airtel J	6260	2.13019E-06	1/ 469441
Total Site EQ					0.009706007	1/ 103

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/103 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

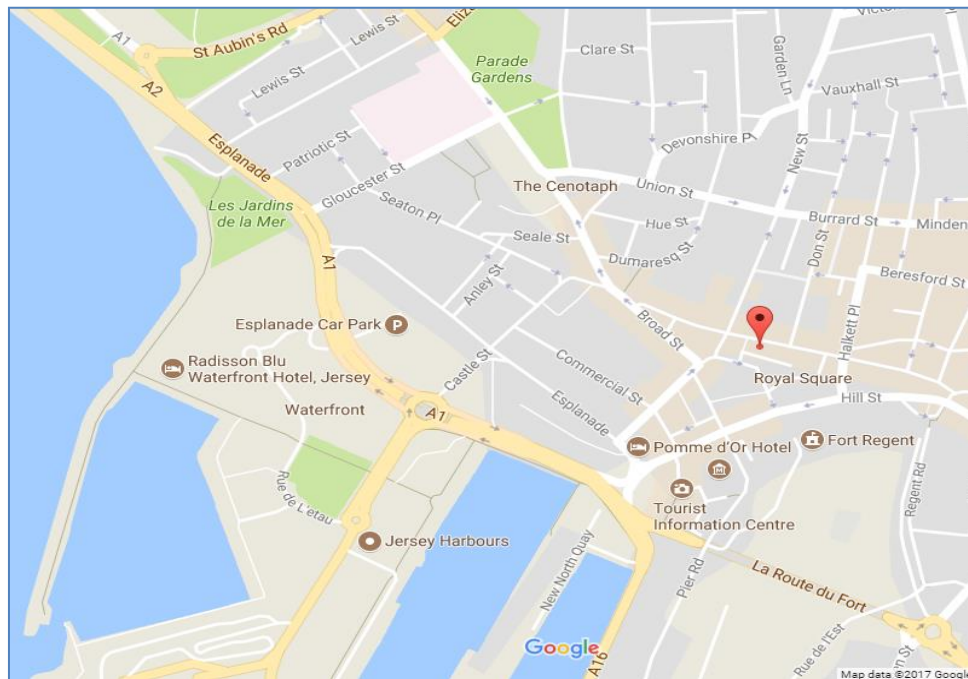


Figure 1 - Map of the Site Area

Site name	Sure Shop
Site address	36 King Street, St Helier, Jersey
Site Latitude	49.1843
Site Longitude	-2.10644

1.2 Site Description

Operators	Sure J
Antenna types	Omni directional
Approximate height	3m
Site type	Indoor
Description	The antennas at Sure Shop are located in the basement of the shop, the staff have access.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

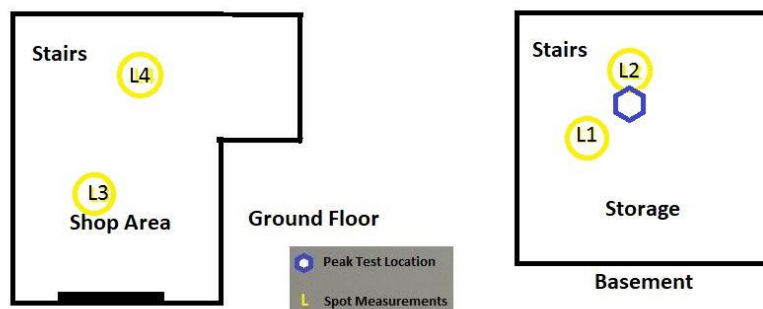


Figure 3- Survey Area with Spot Measurement Markers: the yellow circles are intermediate locations measured at during the peak search and the blue hexagon is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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 blue 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.

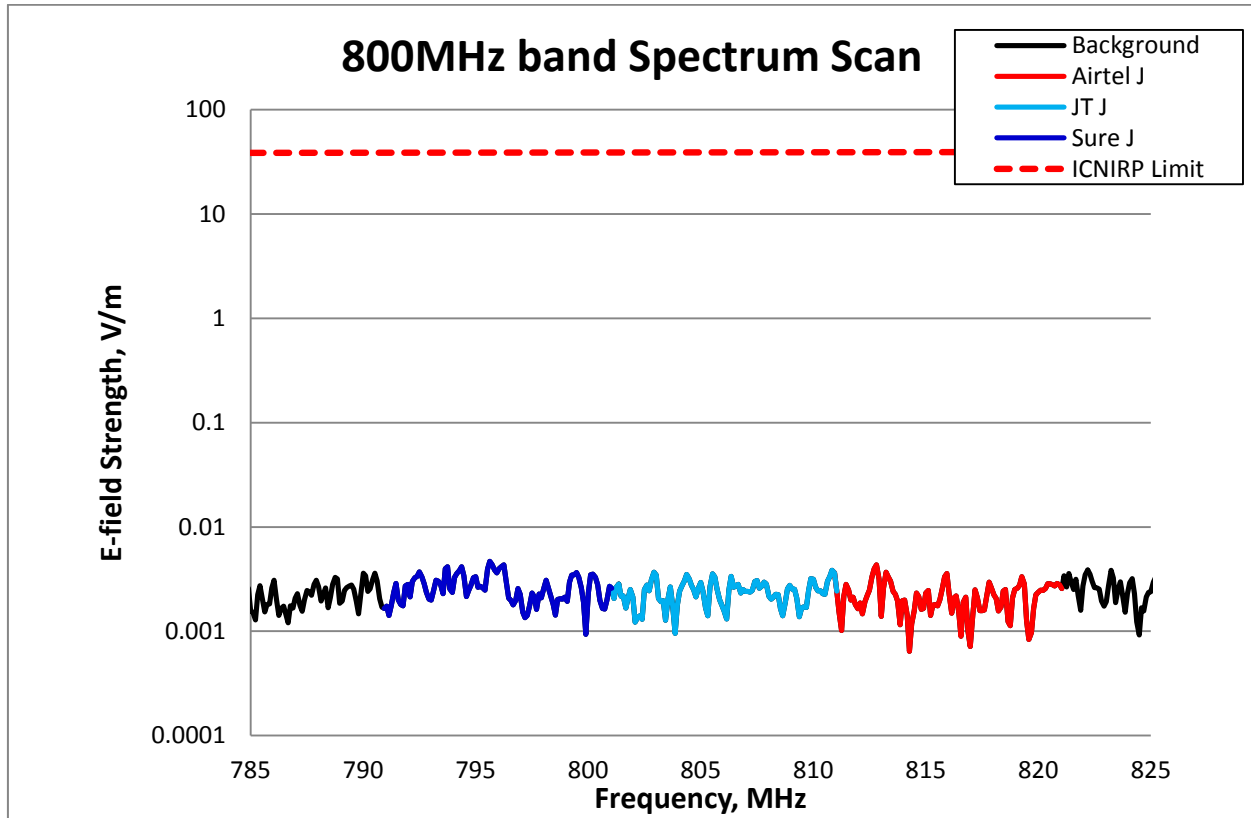


Figure 4 - 800MHz band Spectrum Scan

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
Sure Shop	Airtel J	800	0.004337	8967	1.37157E-07	1/ 7290934
	JT J		0.003832	10149	1.61254E-07	1/ 6201400
	Sure J		0.004672	8324	2.01999E-07	1/ 4950531
total band EQ					5.00409E-07	1/ 1998365

Table 2– 800MHz band Exposure Quotient at Sure Shop

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

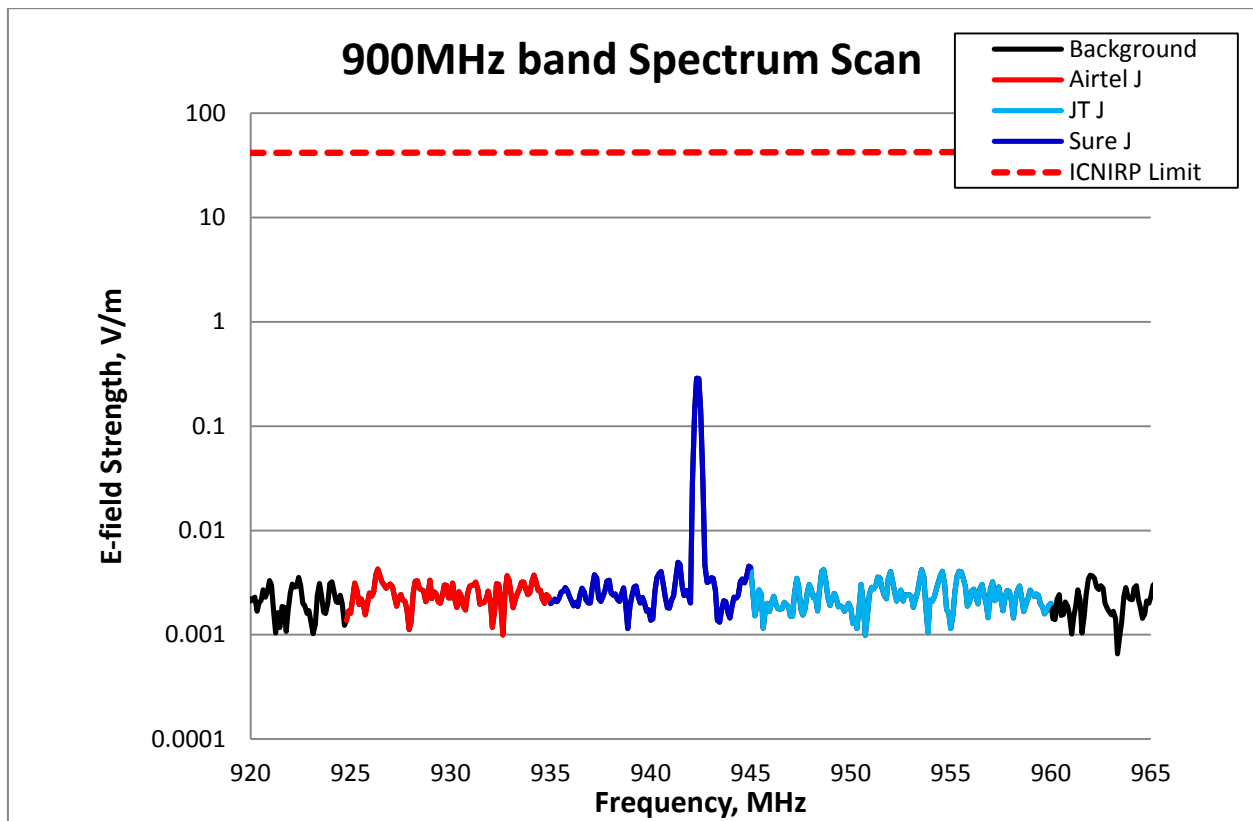


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2873 V/m (Sure J), which is 144 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
Sure Shop	Airtel J	900	0.004285	9627	1.72493E-07	1/ 5797340
	JT J		0.004437	9297	2.39694E-07	1/ 4171980
	Sure J		0.2873	144	5.5077E-05	1/ 18156
total band EQ					5.54892E-05	1/ 18022

Table 3– 900MHz band Exposure Quotient at Sure Shop

2.3 1800 MHz Band

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

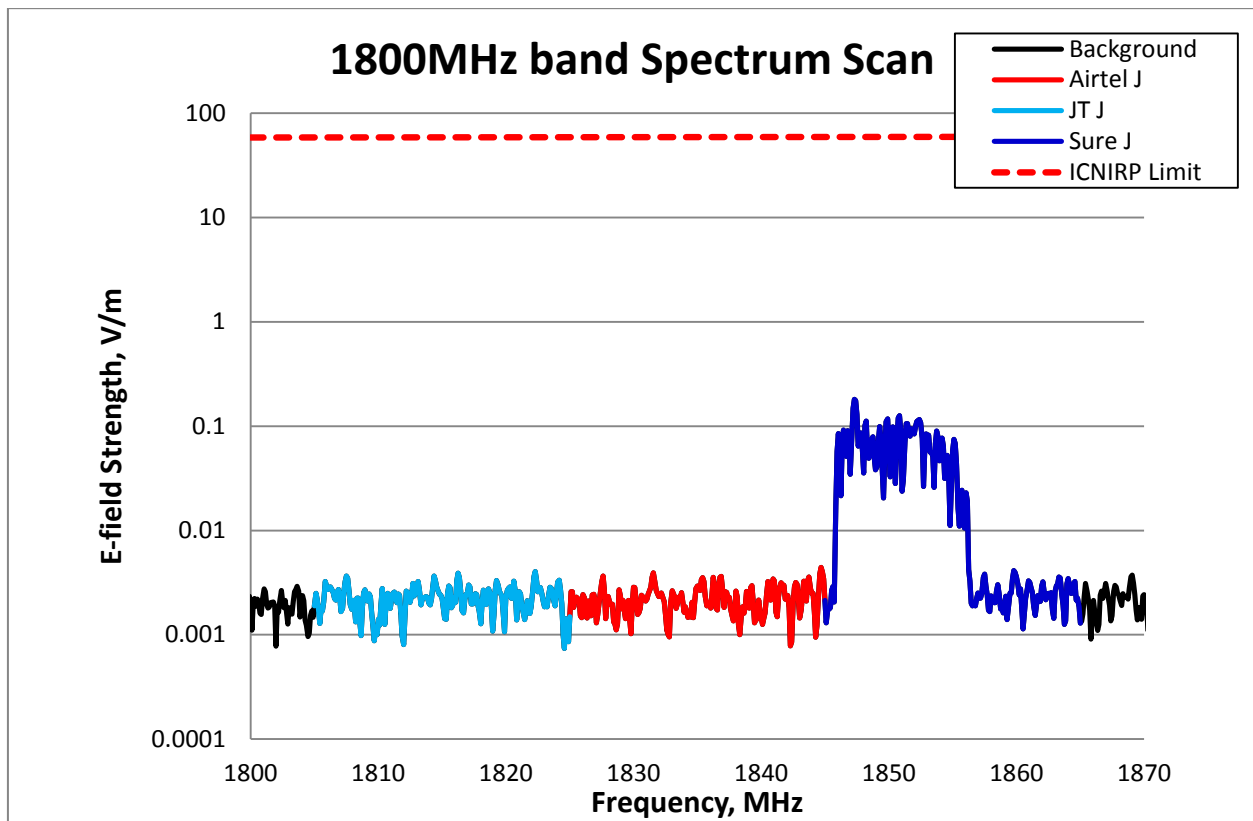


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1801 V/m (Sure J), which is 324 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
Sure Shop	Airtel J	1800	0.00442	13198	2.79085E-07	1/ 3583141
	JT J		0.004044	14425	2.8134E-07	1/ 3554416
	Sure J		0.1801	324	0.00015485	1/ 6458
total band EQ					0.000155411	1/ 6435

Table 4 – 1800MHz band Exposure Quotient at Sure Shop

2.4 2100MHz Band

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

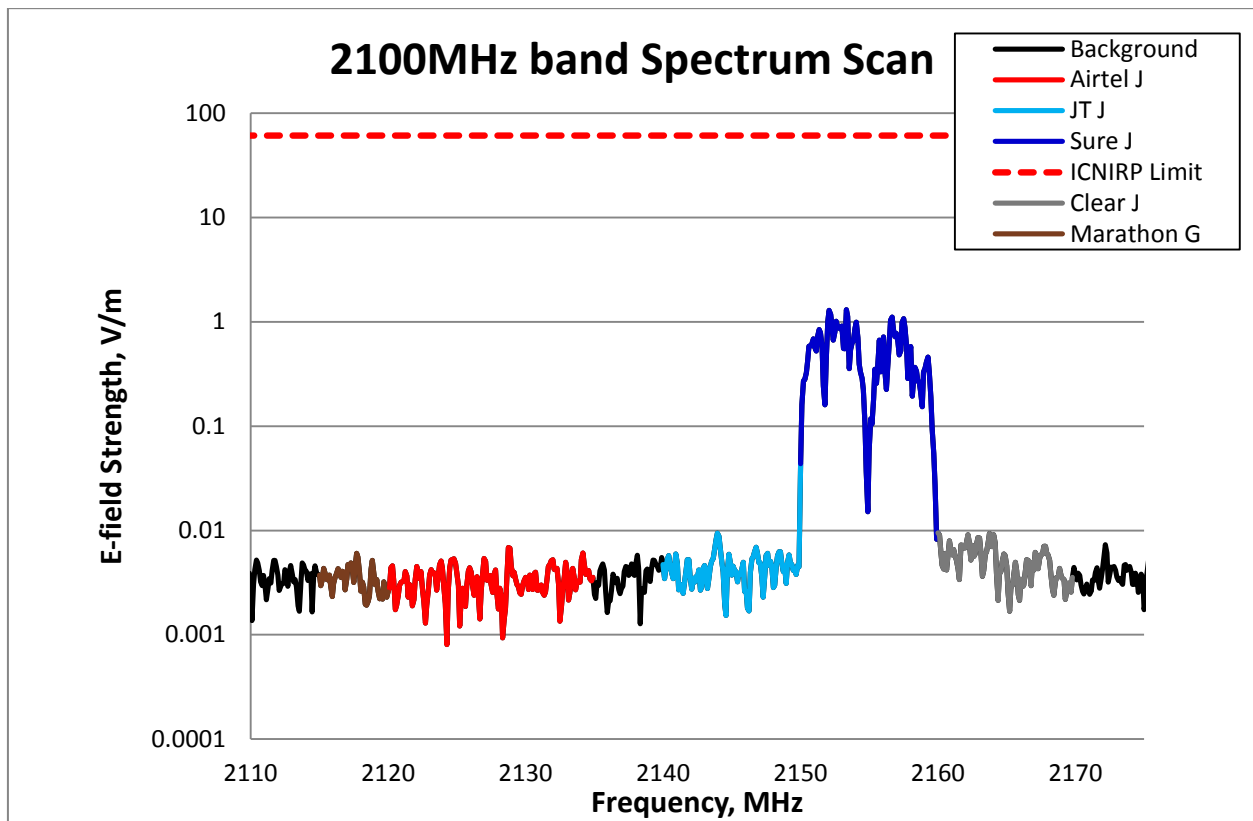


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 1.305 V/m (Sure J), which is 47 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
Sure Shop	Airtel J	2100	0.006842	8916	4.81769E-07	1/ 2075683
	Clear J		0.009492	6426	7.68557E-07	1/ 1301140
	JT J		0.04378	1393	1.06549E-06	1/ 938537
	Marathon J		0.006041	10098	1.68086E-07	1/ 5949333
	Sure J		1.305	47	0.009489993	1/ 105
total band EQ					0.009492477	1/ 105

Table 5 – 2100MHz band Exposure Quotient at Sure Shop

2.5 2600MHz band

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

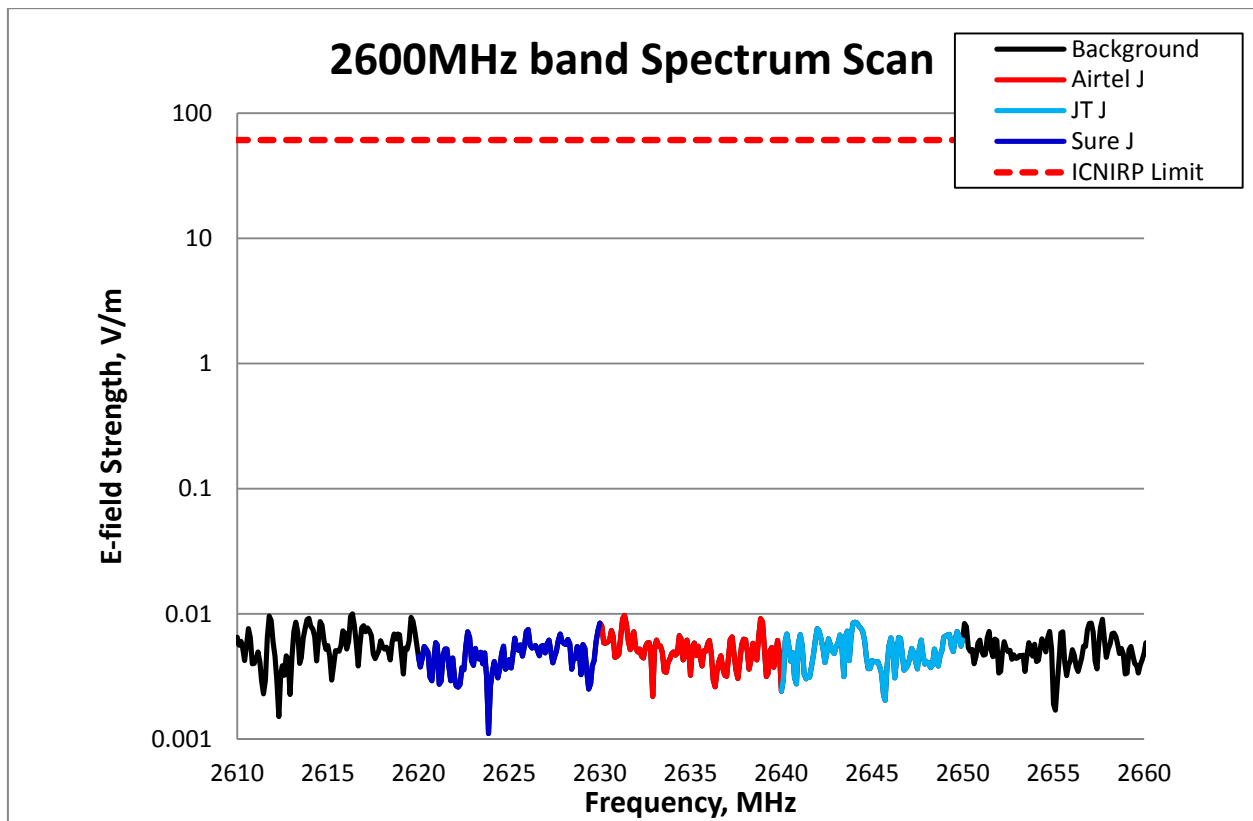


Figure 8 – 2600MHz band Spectrum Scan

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
Sure Shop	Airtel J	2600	0.009744	6260	7.68292E-07	1/ 1301588
	JT J		0.008617	7079	7.42003E-07	1/ 1347703
	Sure J		0.00846	7210	6.19897E-07	1/ 1613171
total band EQ					2.13019E-06	1/ 469441

Table 6 – 2600MHz band Exposure Quotient at Sure Shop

End