

Cellular Mast Emissions Survey: The Royal Yacht 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 the emission surveys at all sites within the two Bailiwicks. This report is for the The Royal Yacht Hotel site located in Jersey.

The Royal Yacht Hotel site was used by a single operator at the time of the survey: JT 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
Royal Yacht Hotel	800	0.001323	Sure J	29396	3.55929E-08	1/ 28095518
	900	0.3185	JT J	130	0.000147413	1/ 6784
	1800	0.01663	JT J	3508	3.81338E-06	1/ 262235
	2100	0.09198	Sure J	663	3.32302E-05	1/ 30093
	2600	0.002309	Airtel J	26418	1.28473E-07	1/ 7783737
Total Site EQ					0.000184621	1/ 5417

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/5417 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	The Royal Yacht Hotel
Site address	Weighbridge, St Helier, Jersey
Site Latitude	49.182513
Site Longitude	-2.1077360

1.2 Site Description

Operators	JT J
Antenna types	Omni directional
Approximate height	3m
Site type	Internal Wall Mount
Description	The antennas at the Royal Yacht Hotel are mounted on the internal walls of the main building, out of reach of the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

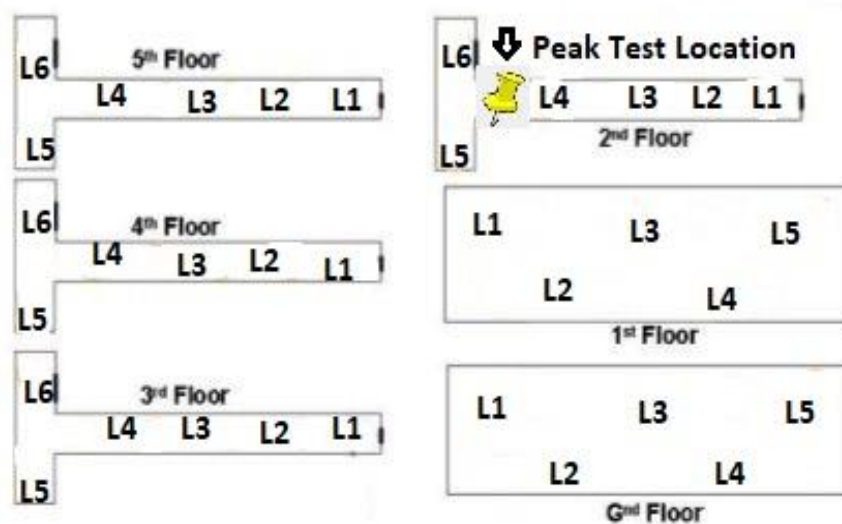


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

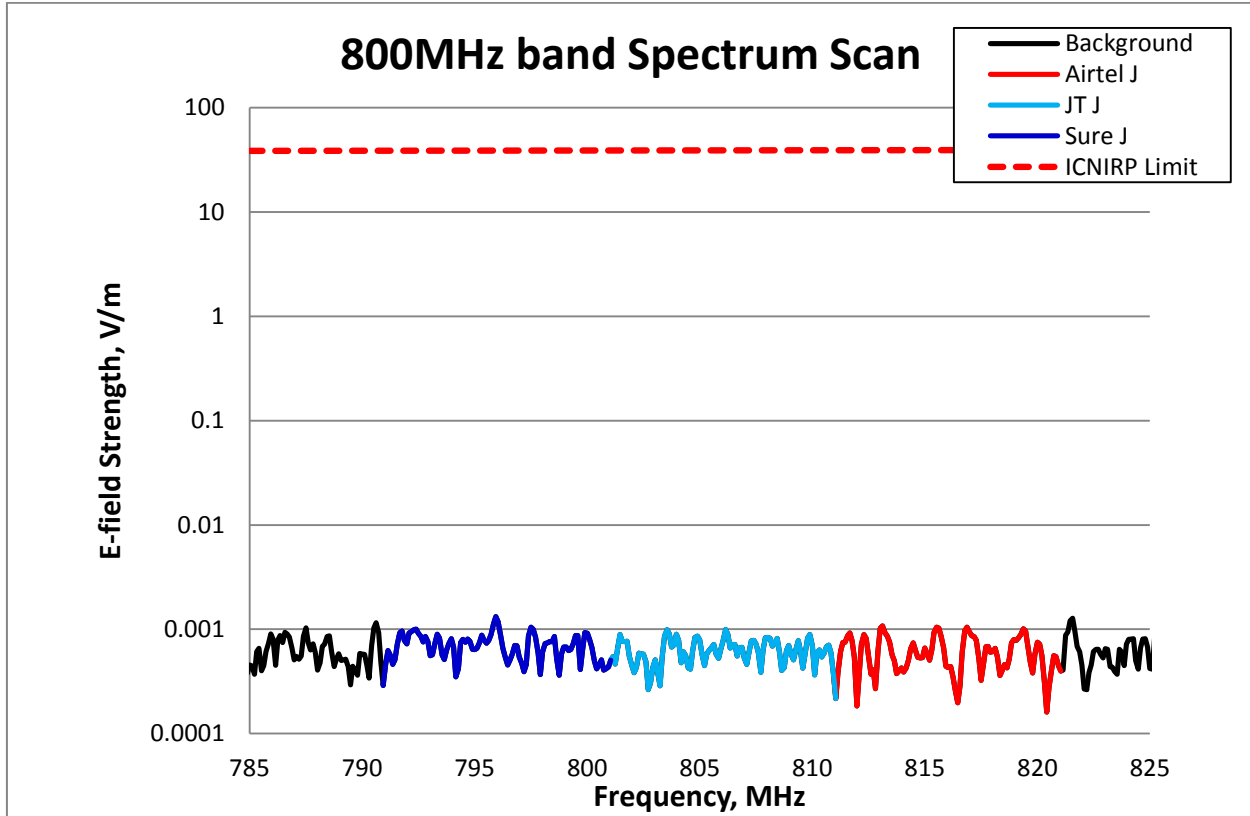


Figure 4 - 800MHz band Spectrum Scan

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 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
Royal Yacht Hotel	Airtel J	800	0.001074	36211	1.09488E-08	1/ 91334046
	JT J		0.000996	39047	1.08702E-08	1/ 91994828
	Sure J		0.001323	29396	1.37739E-08	1/ 72601236
total band EQ					3.55929E-08	1/ 28095518

Table 2– 800MHz band Exposure Quotient at The Royal Yacht Hotel

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

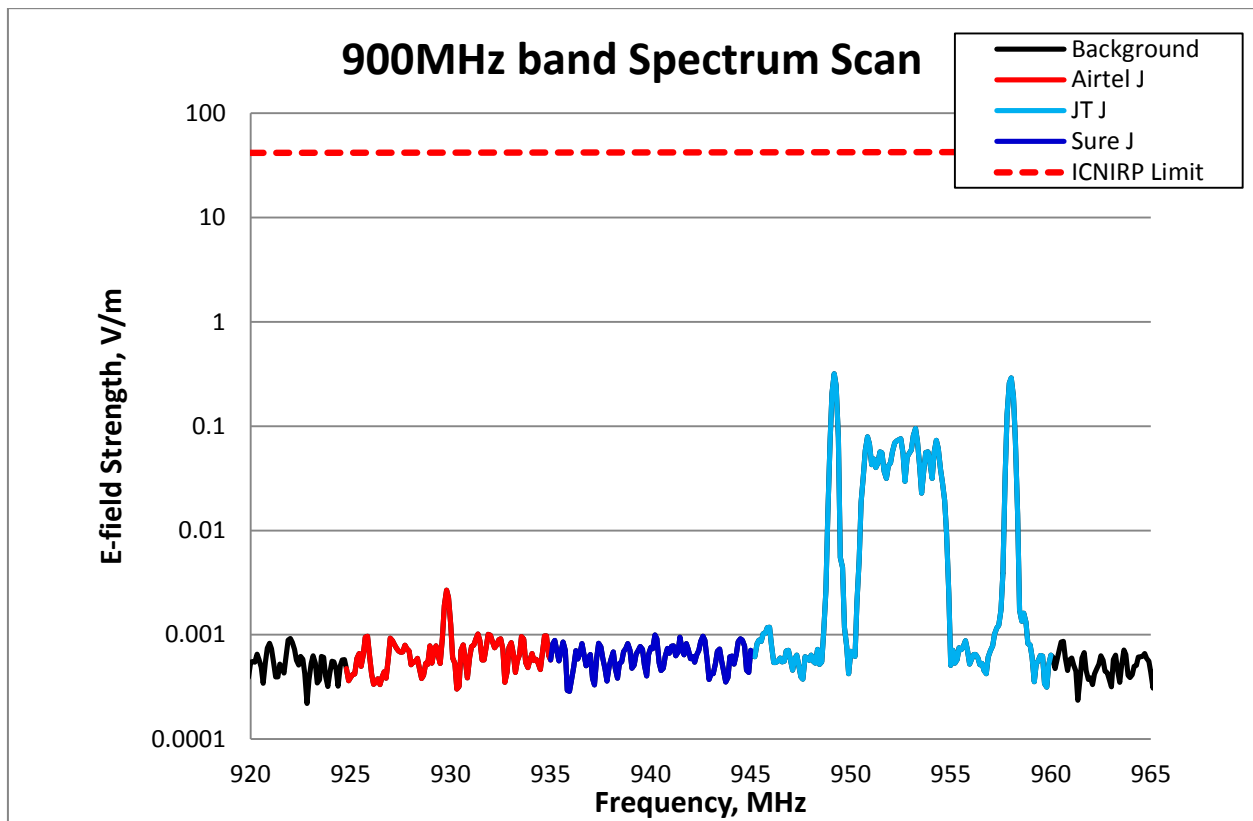


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3185 V/m (JT J), which is 130 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
Royal Yacht Hotel	Airtel J	900	0.002671	15444	1.59288E-08	1/ 62779317
	JT J		0.3185	130	0.000147386	1/ 6785
	Sure J		0.0009946	41474	1.1096E-08	1/ 90122280
total band EQ					0.000147413	1/ 6784

Table 3– 900MHz band Exposure Quotient at The Royal Yacht Hotel

2.3 1800 MHz Band

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

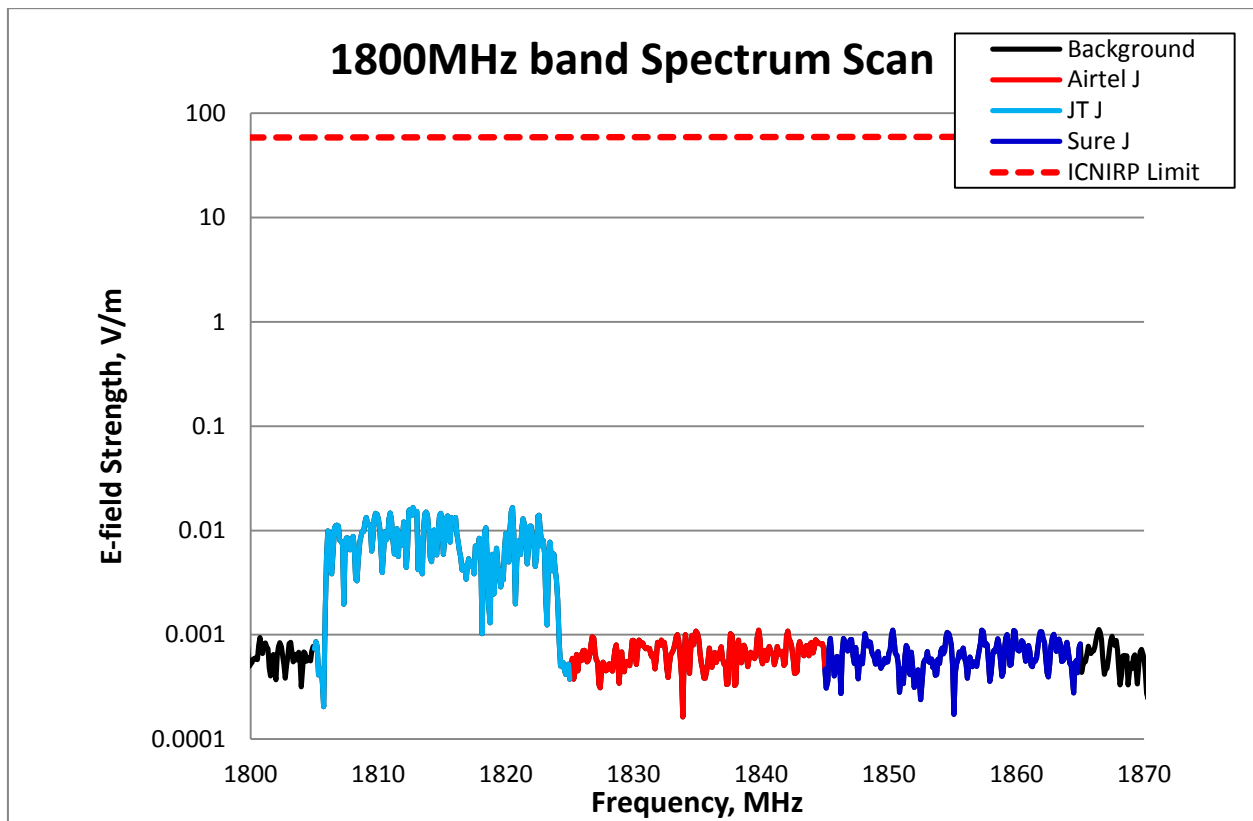


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.01663 V/m (JT J), which is 3508 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
Royal Yacht Hotel	Airtel J	1800	0.001108	52650	2.42825E-08	1/ 41181987
	JT J		0.01663	3508	3.76532E-06	1/ 265582
	Sure J		0.00111	52555	2.3772E-08	1/ 42066209
	total band EQ				3.81338E-06	1/ 262235

Table 4 – 1800MHz band Exposure Quotient at The Royal Yacht Hotel

2.4 2100MHz Band

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

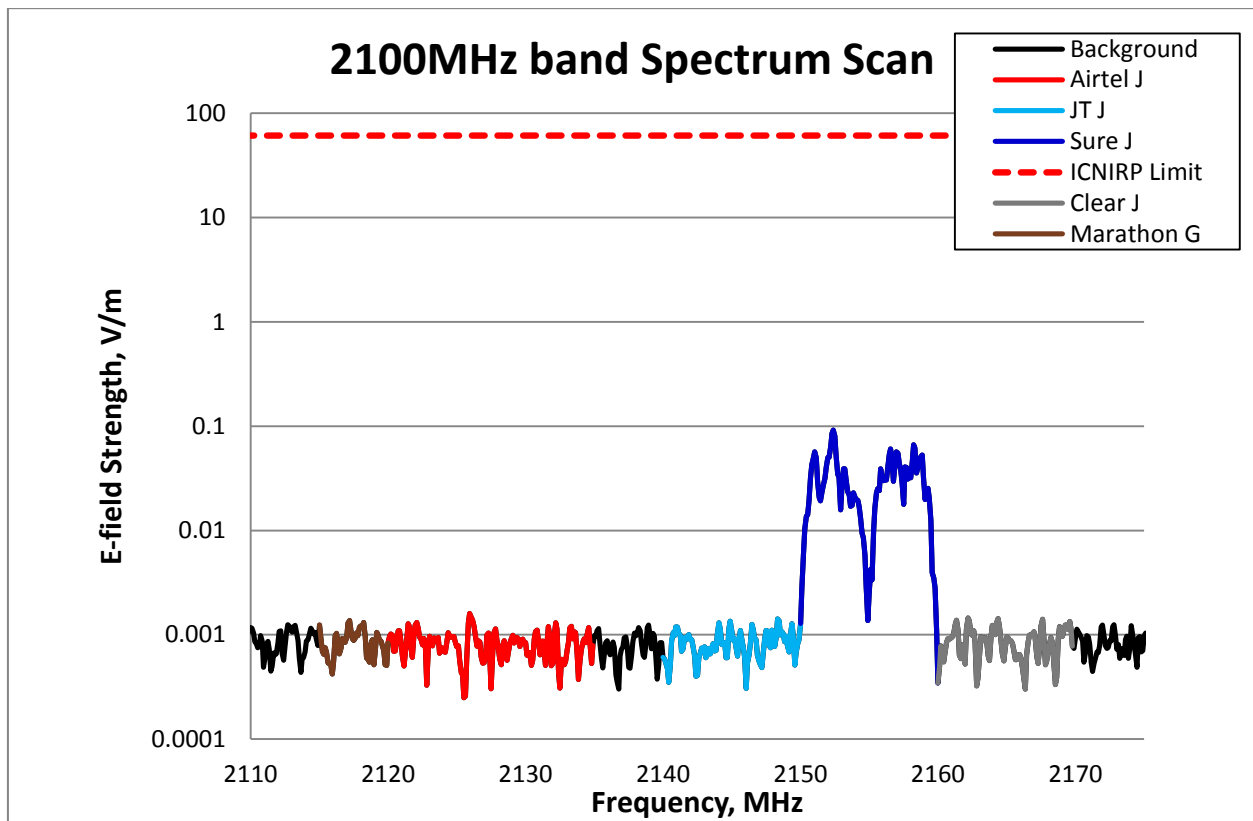


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.09198 V/m (Sure J), which is 663 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
Royal Yacht Hotel	Airtel J	2100	0.001601	38101	2.8762E-08	1/ 34768135
	Clear J		0.001447	42156	2.05773E-08	1/ 48597249
	JT J		0.001421	42928	1.98634E-08	1/ 50343742
	Marathon J		0.001368	44591	1.02112E-08	1/ 97931687
	Sure J		0.09198	663	3.31508E-05	1/ 30165
total band EQ					3.32302E-05	1/ 30093

Table 5 – 2100MHz band Exposure Quotient at The Royal Yacht Hotel

2.5 2600MHz band

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

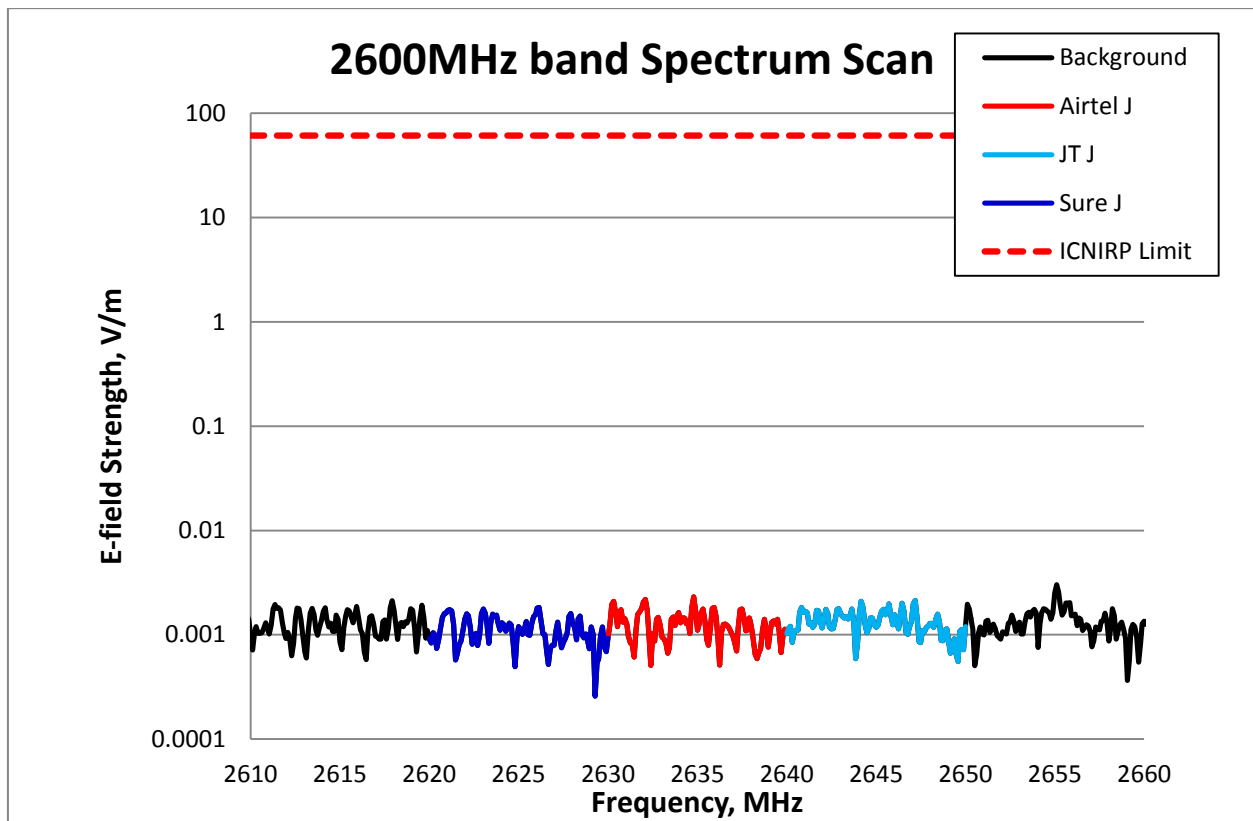


Figure 8 – 2600MHz band Spectrum Scan

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	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
Royal Yacht Hotel	Airtel J	2600	0.002309	26418	4.42704E-08	1/ 22588466
	JT J		0.00213	28638	4.84984E-08	1/ 20619250
	Sure J		0.001827	33388	3.57042E-08	1/ 28007875
	total band EQ			1.28473E-07	1/ 7783737	

Table 6 – 2600MHz band Exposure Quotient at The Royal Yacht Hotel

End