

Cellular Mast Emissions Survey: Gorey Pier (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 Gorey Pier site located in Jersey.

The Gorey Pier site was used by multiple operators at the time of the survey: Airtel J and Sure 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
Gorey Pier	800	0.2056	Sure J	189	0.000565759	1/ 1768
	900	2.889	Sure J	14	0.006396255	1/ 156
	1800	0.1111	Sure J	525	0.000117432	1/ 8516
	2100	0.1766	Sure J	345	0.000109167	1/ 9160
	2600	0.005517	Airtel J	11057	7.21505E-07	1/ 1385992
Total Site EQ					0.007189334	1/ 139

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/139 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

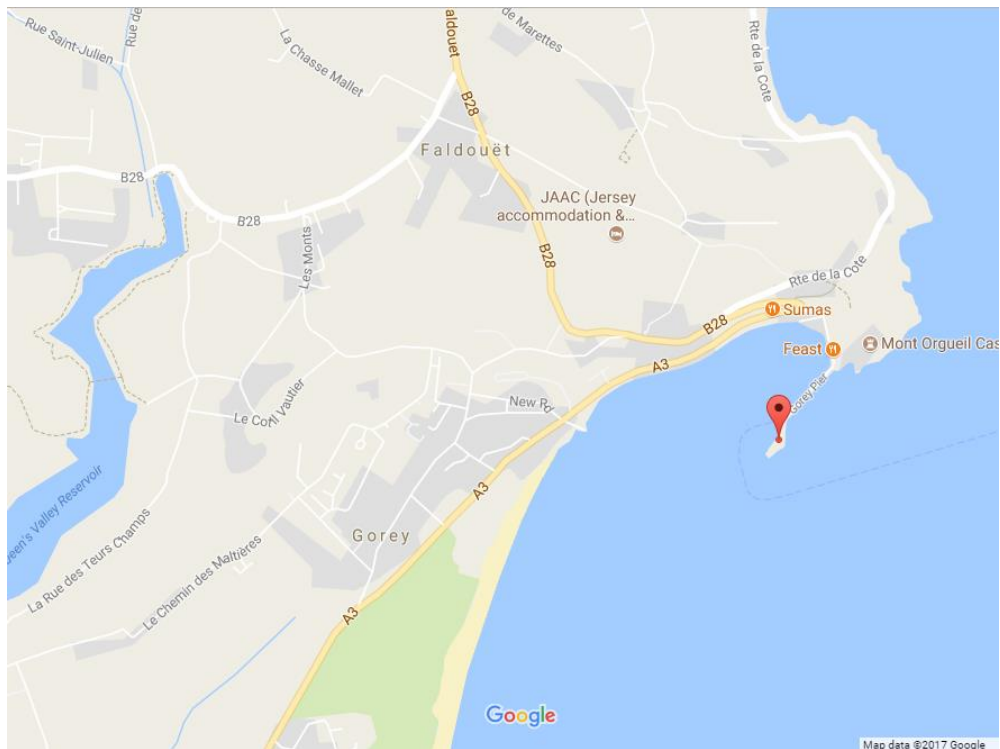


Figure 1 - Map of the Site Area

Site name	Gorey Pier
Site address	Gorey Harbour, Grouville, Jersey
Site Latitude	N 49.19712
Site Longitude	W 02.02205

1.2 Site Description

Operators	Airtel J and Sure J
Antenna types	Omni directional and Directional
Approximate height	8m
Site type	Building Rooftop
Description	The antenna at Gorey Pier is located at the front of the building, access to the public is restricted.

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.

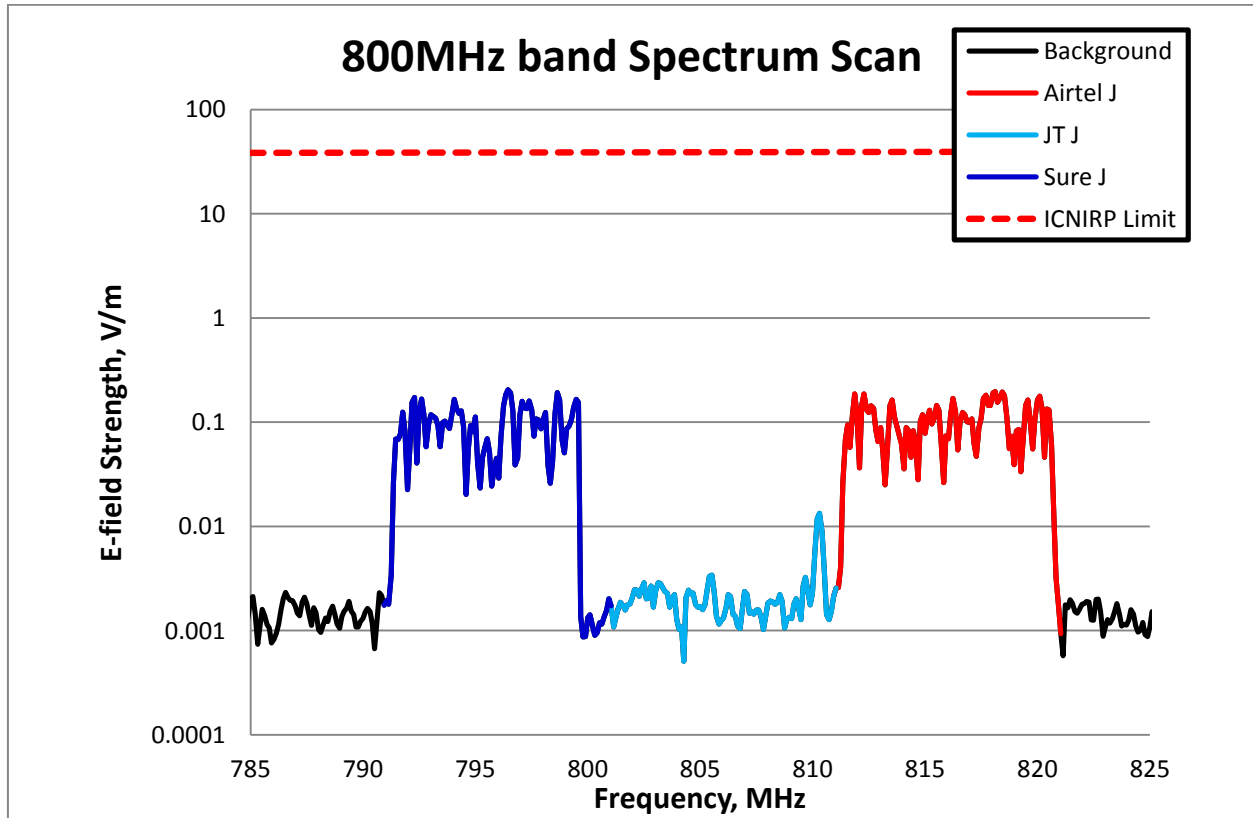


Figure 4 - 800MHz band Spectrum Scan

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 0.2056 V/m (Sure J), which is 189 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
Gorey Pier	Airtel J	800	0.1967	198	0.000314521	1/ 3179
	JT J		0.01337	2909	2.15435E-07	1/ 4641763
	Sure J		0.2056	189	0.000251022	1/ 3984
total band EQ					0.000565759	1/ 1768

Table 2– 800MHz band Exposure Quotient at Gorey Pier

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

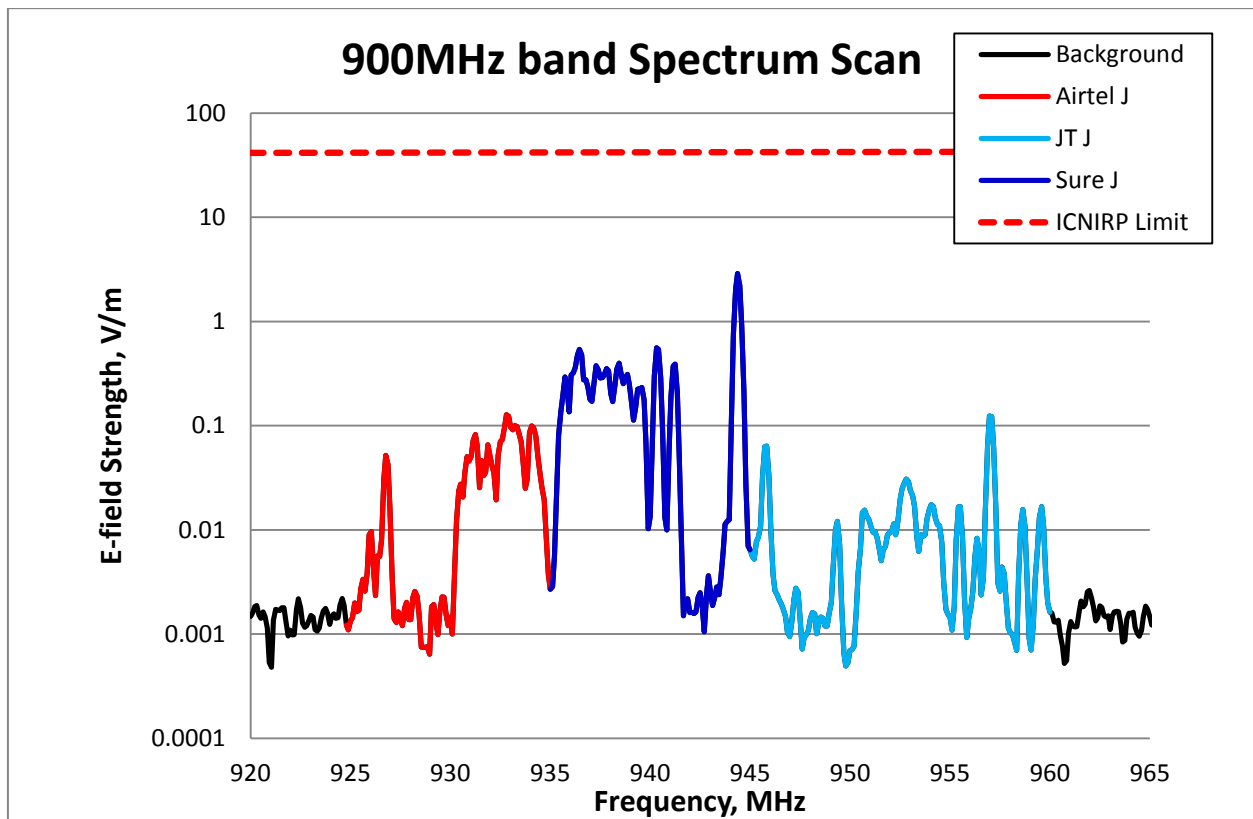


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.889 V/m (Sure J), which is 14 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
Gorey Pier	Airtel J	900	0.1273	324	5.17608E-05	1/ 19320
	JT J		0.1239	333	1.62576E-05	1/ 61510
	Sure J		2.889	14	0.006328236	1/ 158
total band EQ					0.006396255	1/ 156

Table 3– 900MHz band Exposure Quotient at Gorey Pier

2.3 1800 MHz Band

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

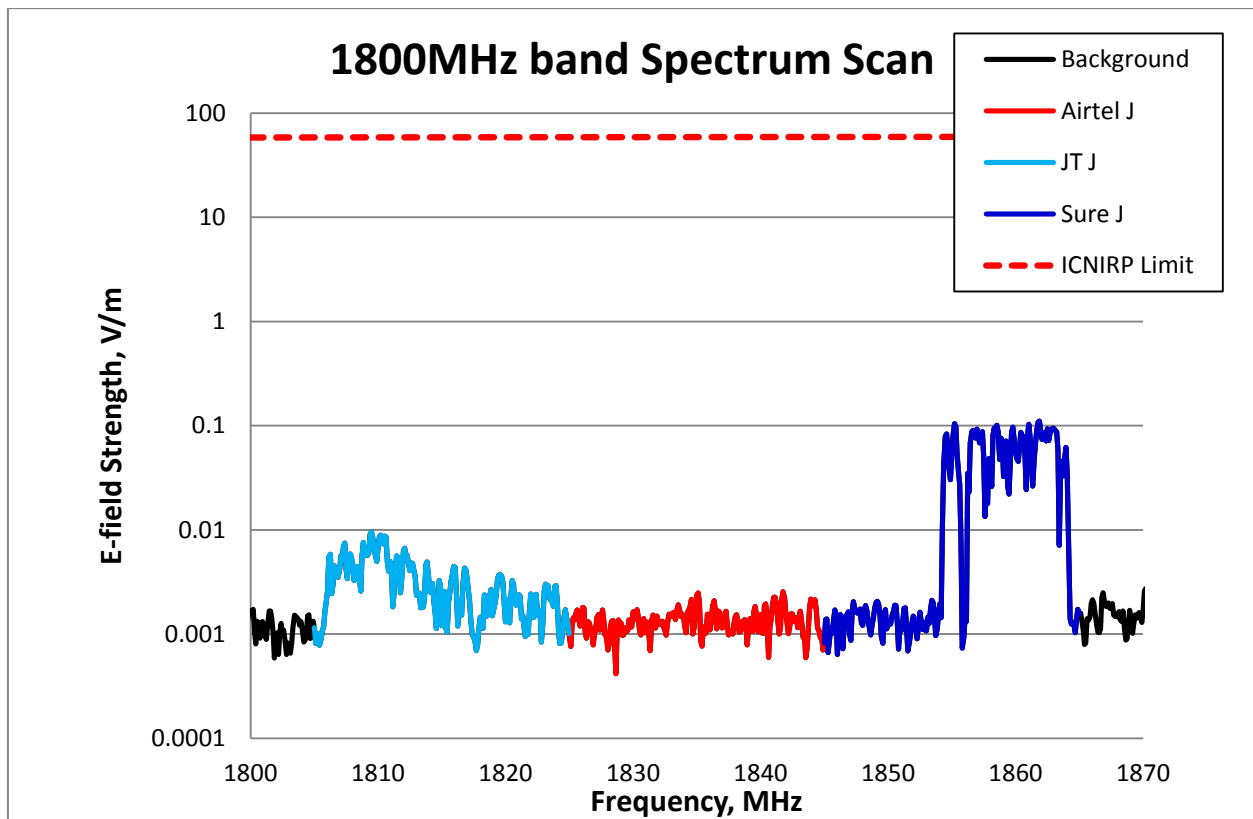


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1111 V/m (Sure J), which is 525 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
Gorey Pier	Airtel J	1800	0.002549	22886	1.00469E-07	1/ 9953311
	JT J		0.009584	6087	7.29981E-07	1/ 1369899
	Sure J		0.1111	525	0.000116602	1/ 8576
total band EQ					0.000117432	1/ 8516

Table 4 – 1800MHz band Exposure Quotient at Gorey Pier

2.4 2100MHz Band

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

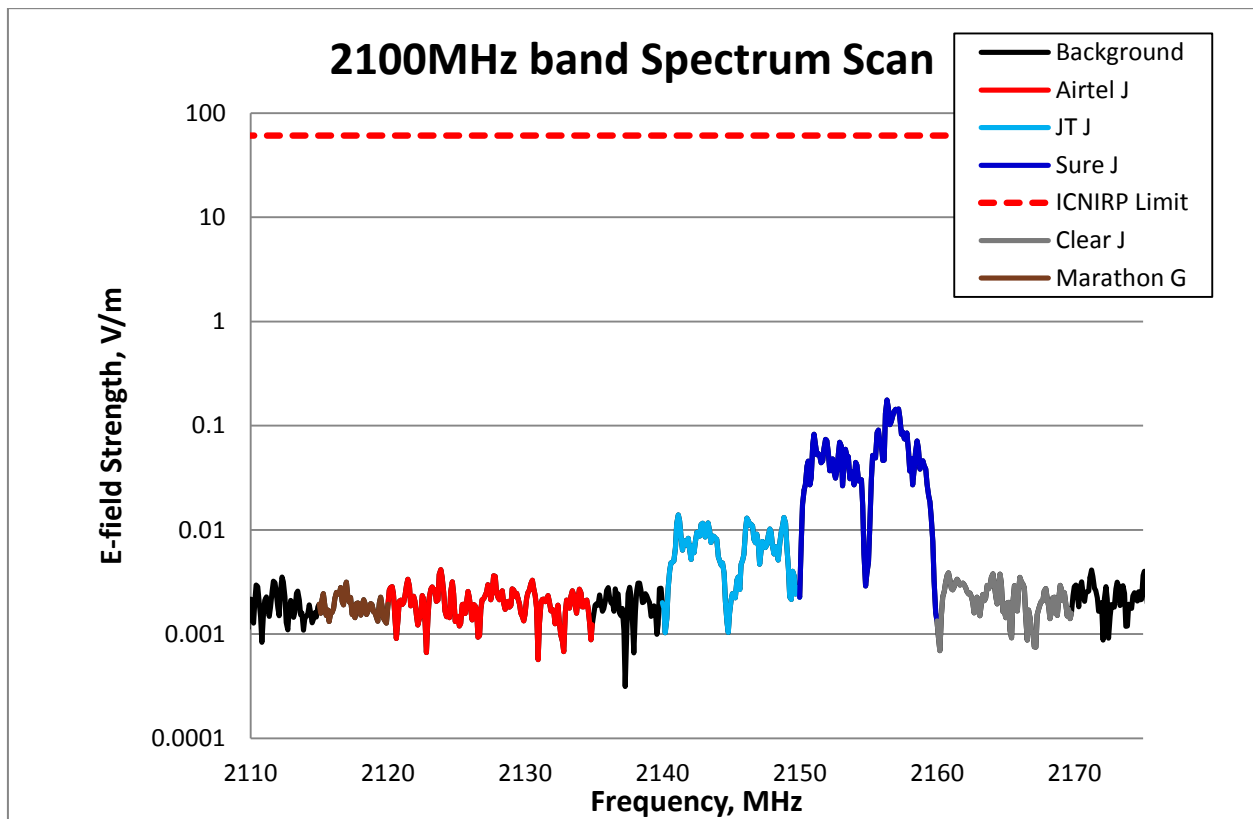


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1766 V/m (Sure J), which is 345 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
Gorey Pier	Airtel J	2100	0.004149	14702	1.78389E-07	1/ 5605735
	Clear J		0.003877	15734	1.43149E-07	1/ 6985749
	JT J		0.01395	4373	1.42464E-06	1/ 701932
	Marathon J		0.003146	19390	4.99646E-08	1/ 20014165
	Sure J		0.1766	345	0.00010737	1/ 9314
total band EQ					0.000109167	1/ 9160

Table 5 – 2100MHz band Exposure Quotient at Gorey Pier

2.5 2600MHz band

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

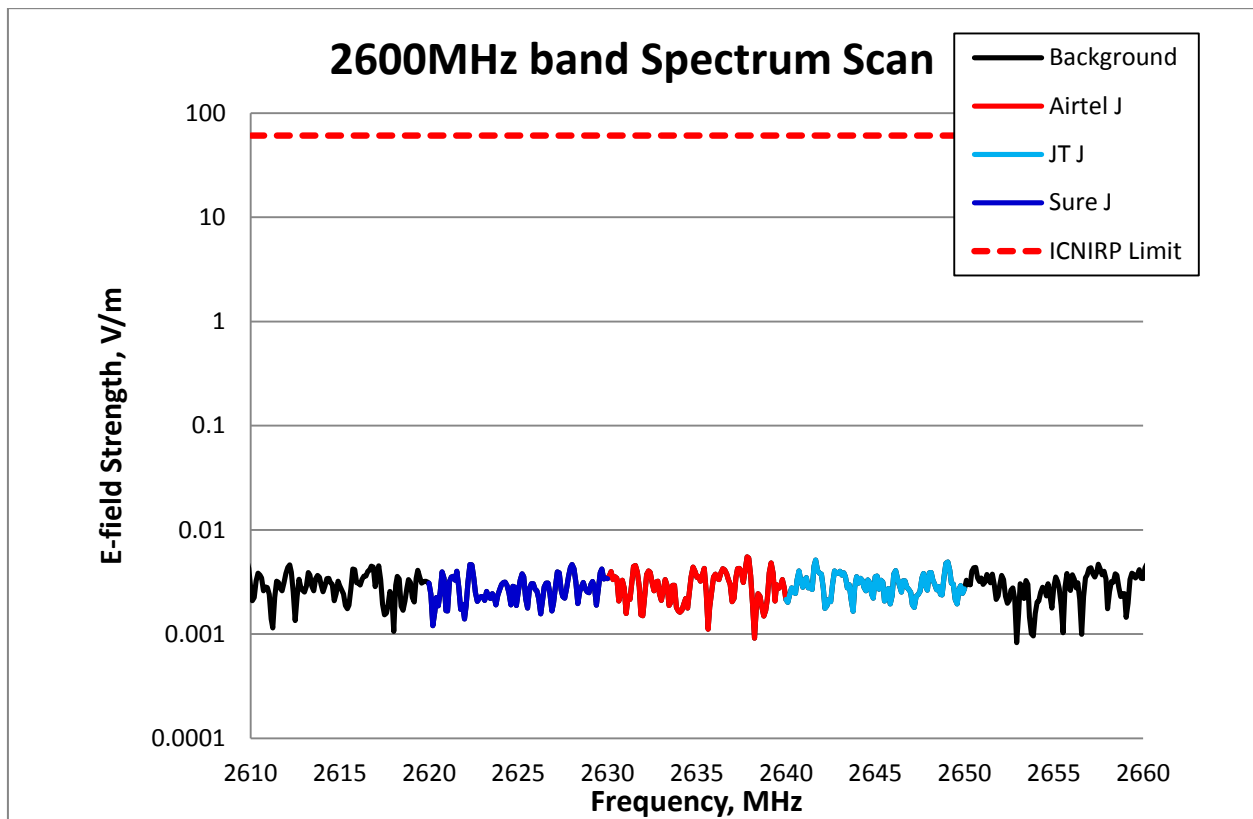


Figure 8 – 2600MHz band Spectrum Scan

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
Gorey Pier	Airtel J	2600	0.005517	11057	2.55912E-07	1/ 3907596
	JT J		0.005135	11879	2.50469E-07	1/ 3992516
	Sure J		0.004655	13104	2.15124E-07	1/ 4648477
total band EQ					7.21505E-07	1/ 1385992

Table 6 – 2600MHz band Exposure Quotient at Gorey Pier

End