

Cellular Mast Emissions Survey: Castle Quay B (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 Castle Quay B site located in Jersey.

Castle Quay B 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
Castle Quay B	800	0.004868	Airtel J	7989	2.349E-07	1/ 4257136
	900	1.288	JT J	32	0.001215583	1/ 823
	1800	0.1297	JT J	450	4.06608E-05	1/ 24594
	2100	0.0016	Sure J	38125	1.17526E-07	1/ 8508722
	2600	0.002426	JT J	25144	1.25785E-07	1/ 7950102
Total Site EQ					0.001256722	1/ 796

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/796 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

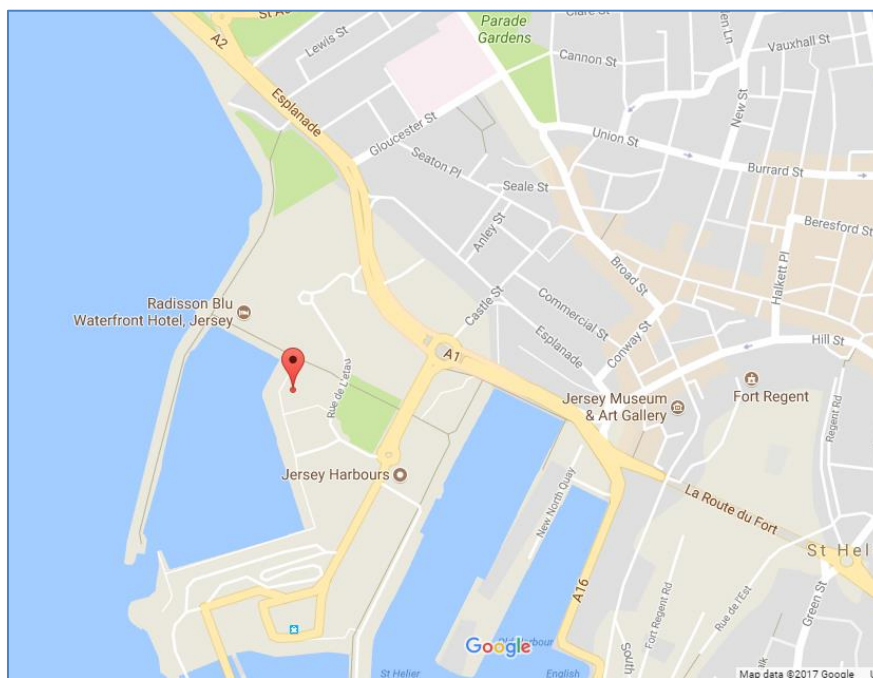


Figure 1 - Map of the Site Area

Site name	Castle Quay B
Site address	Castle Quay, Block B, Waterfront, Jersey
Site Latitude	N 49.18285
Site Longitude	W 02.11574

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	4m
Site type	Building Wall Mount
Description	The antennas at Castle Quay B 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

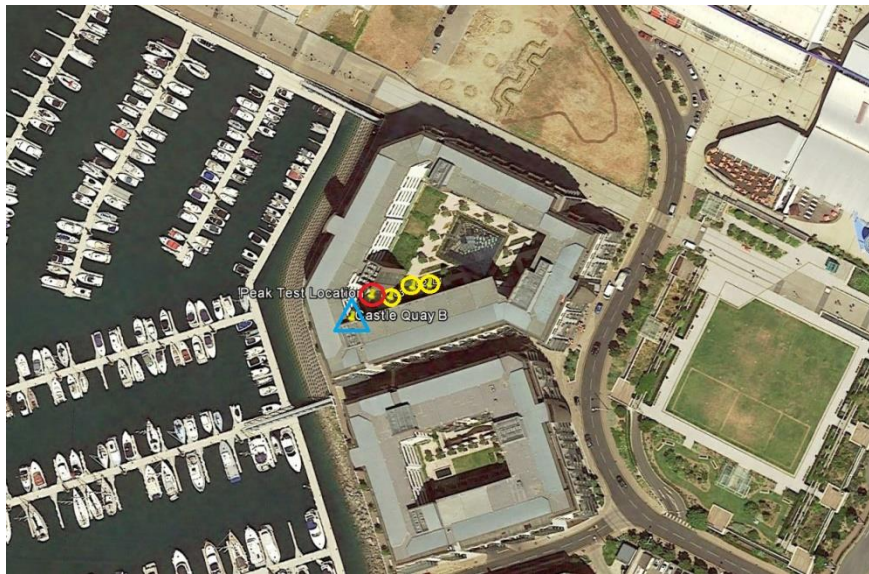


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

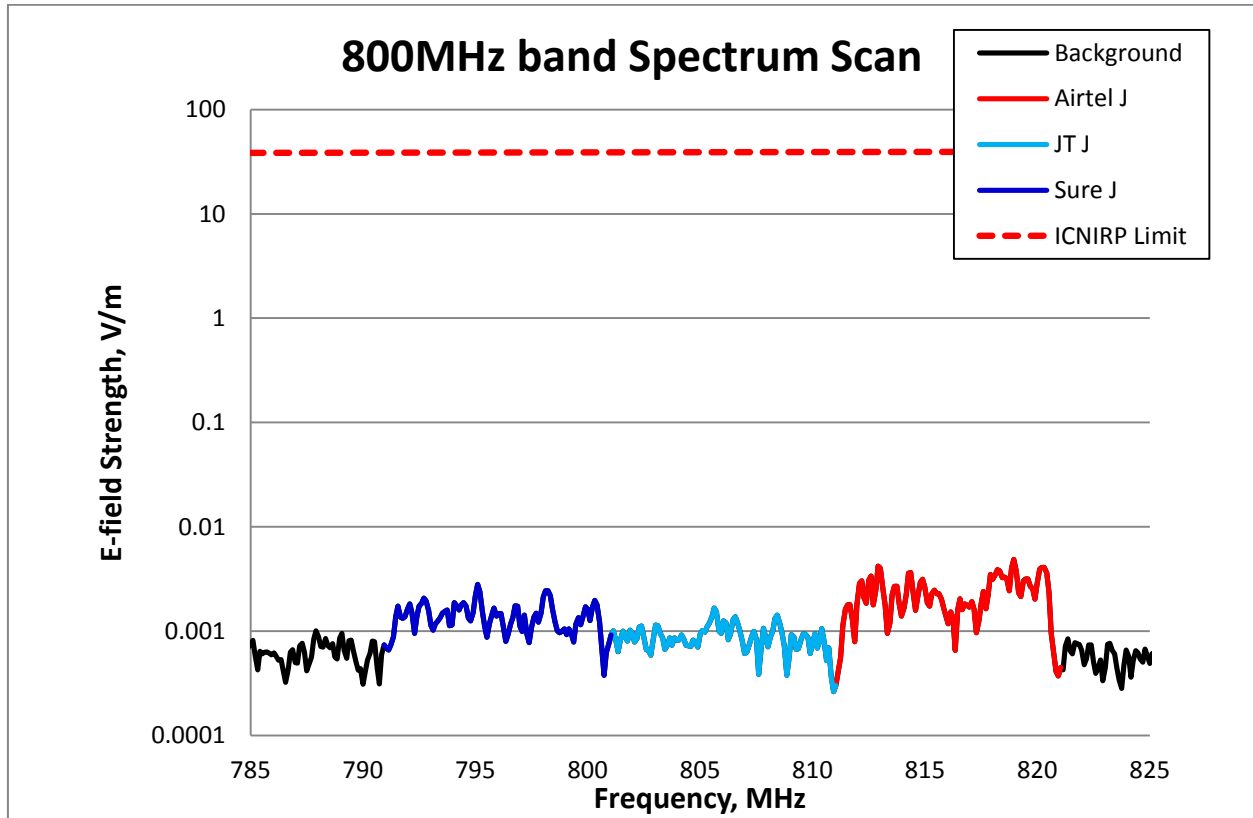


Figure 4 - 800MHz band Spectrum Scan

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 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
Castle Quay B	Airtel J	800	0.004868	7989	1.58363E-07	1/ 6314603
	JT J		0.00166	23428	2.17367E-08	1/ 46005040
	Sure J		0.002798	13900	5.47999E-08	1/ 18248209
total band EQ					2.349E-07	1/ 4257136

Table 2– 800MHz band Exposure Quotient at Castle Quay B

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

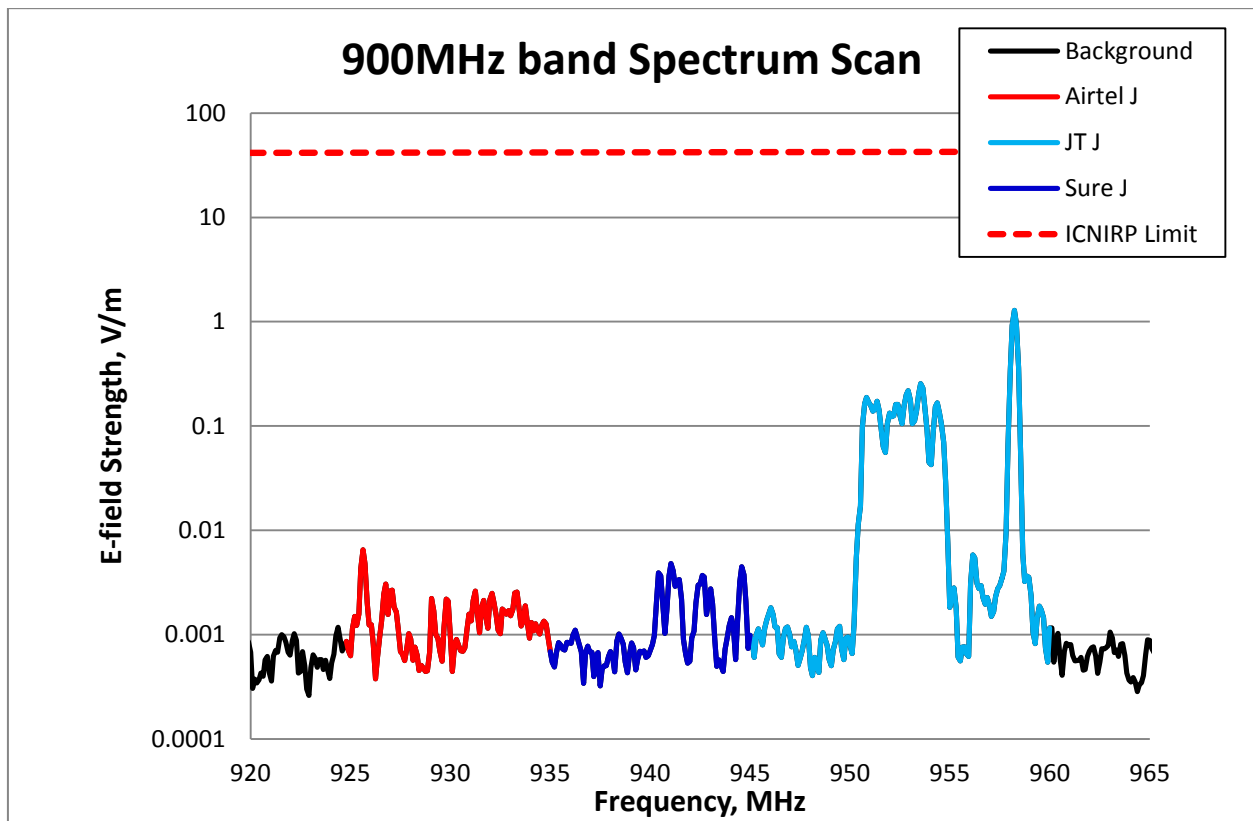


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.288 V/m (JT J), which is 32 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
Castle Quay B	Airtel J	900	0.006506	6340	7.54244E-08	1/ 13258300
	JT J		1.288	32	0.001215431	1/ 823
	Sure J		0.004782	8626	7.68885E-08	1/ 13005840
total band EQ					0.001215583	1/ 823

Table 3– 900MHz band Exposure Quotient at Castle Quay B

2.3 1800 MHz Band

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

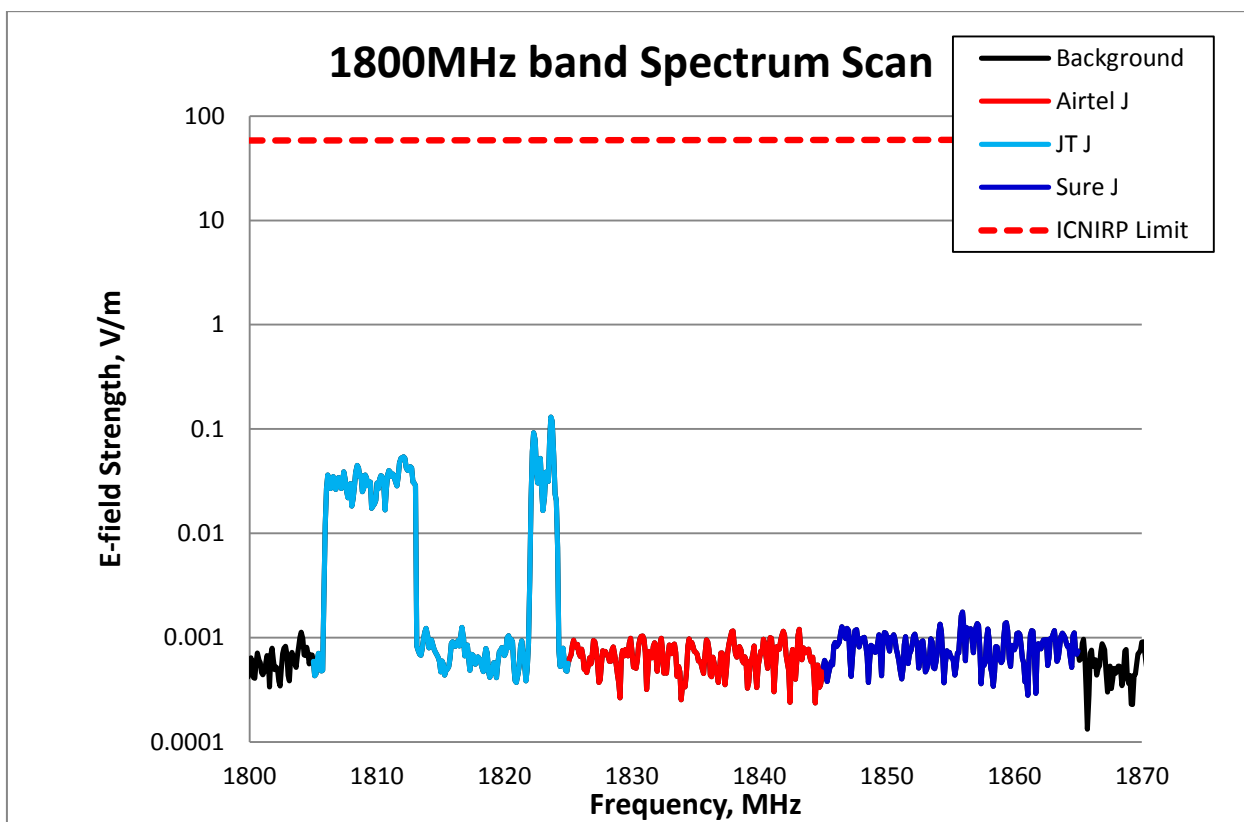


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1297 V/m (JT J), which is 450 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
Castle Quay B	Airtel J	1800	0.001198	48695	2.51489E-08	1/ 39763105
	JT J		0.1297	450	4.0597E-05	1/ 24632
	Sure J		0.001762	33108	3.86559E-08	1/ 25869299
total band EQ					4.06608E-05	1/ 24594

Table 4 – 1800MHz band Exposure Quotient at Castle Quay B

2.4 2100MHz Band

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

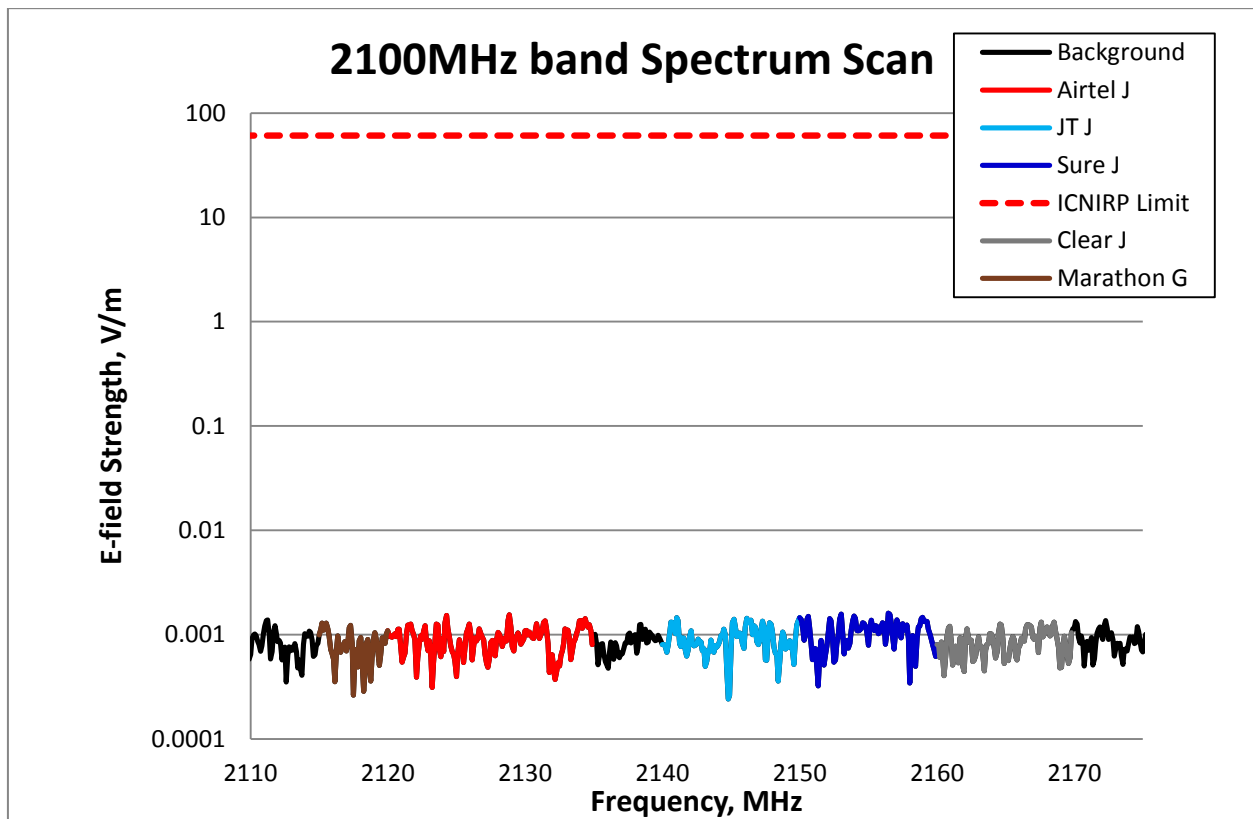


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz as no operator appears to transmit in this band at this site.

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
Castle Quay B	Airtel J	2100	0.001552	39304	3.44884E-08	1/ 28995289
	Clear J		0.001319	46247	1.96104E-08	1/ 50993306
	JT J		0.001457	41867	2.35369E-08	1/ 42486420
	Marathon J		0.001292	47214	9.4104E-09	1/ 106265414
	Sure J		0.0016	38125	3.04803E-08	1/ 32808025
total band EQ					1.17526E-07	1/ 8508722

Table 5 – 2100MHz band Exposure Quotient at Castle Quay B

2.5 2600MHz band

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

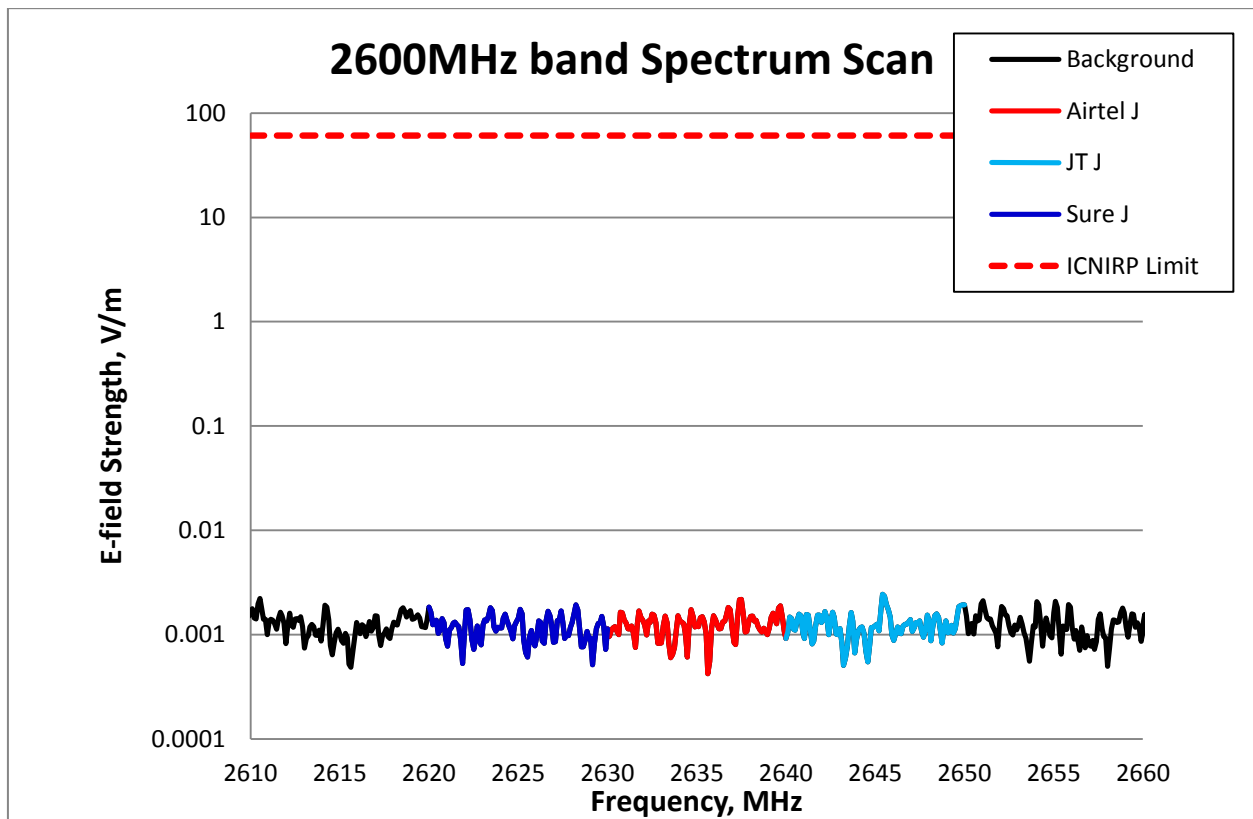


Figure 8 – 2600MHz band Spectrum Scan

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
Castle Quay B	Airtel J	2600	0.00218	27982	4.31784E-08	1/ 23159738
	JT J		0.002426	25144	4.37604E-08	1/ 22851700
	Sure J		0.001925	31688	3.88457E-08	1/ 25742849
total band EQ					1.25785E-07	1/ 7950102

Table 6 – 2600MHz band Exposure Quotient at Castle Quay B

End