

Cellular Mast Emissions Survey: Horizon (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 Horizon site located in Jersey.

The Horizon 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
Horizon	800	0.1121	Sure J	347	3.19075E-05	1/ 31341
	900	1.996	Sure J	21	0.003482204	1/ 287
	1800	0.1204	Sure J	485	0.000110016	1/ 9090
	2100	0.1147	Sure J	532	4.15469E-05	1/ 24069
	2600	0.00369	Airtel J	16531	2.98832E-07	1/ 3346357
Total Site EQ					0.003665973	1/ 273

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/273 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

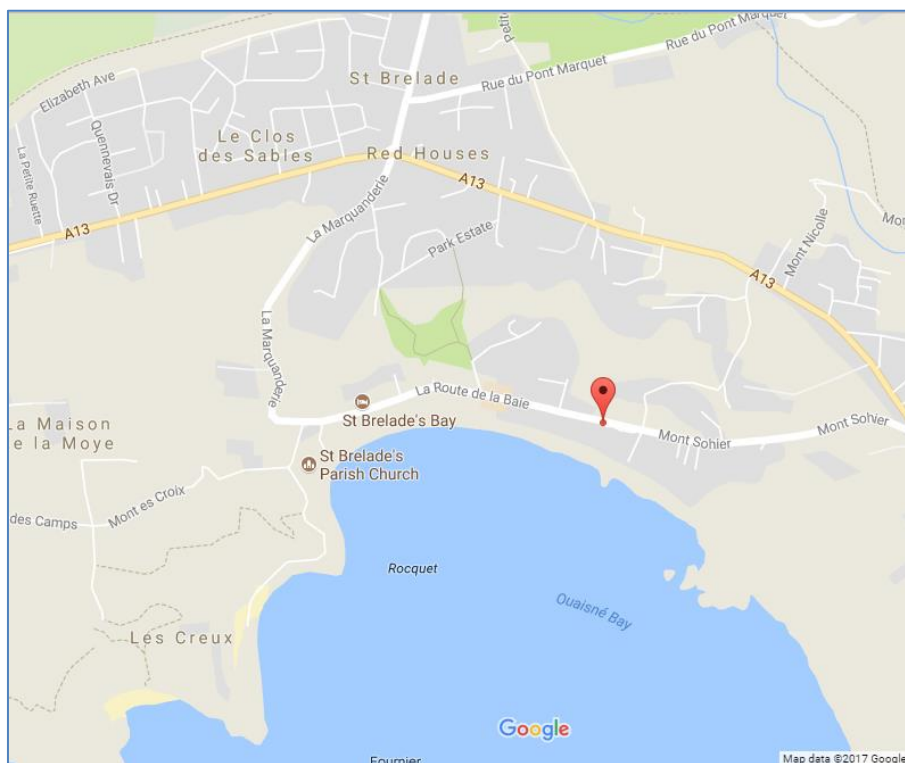


Figure 1 - Map of the Site Area

Site name	Horizon
Site address	La Route De La Baie, St Brelade, Jersey
Site Latitude	N 49.18495
Site Longitude	W 02.1937

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	12m
Site type	Rooftop
Description	The antennas at Horizon are located on the roof 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.

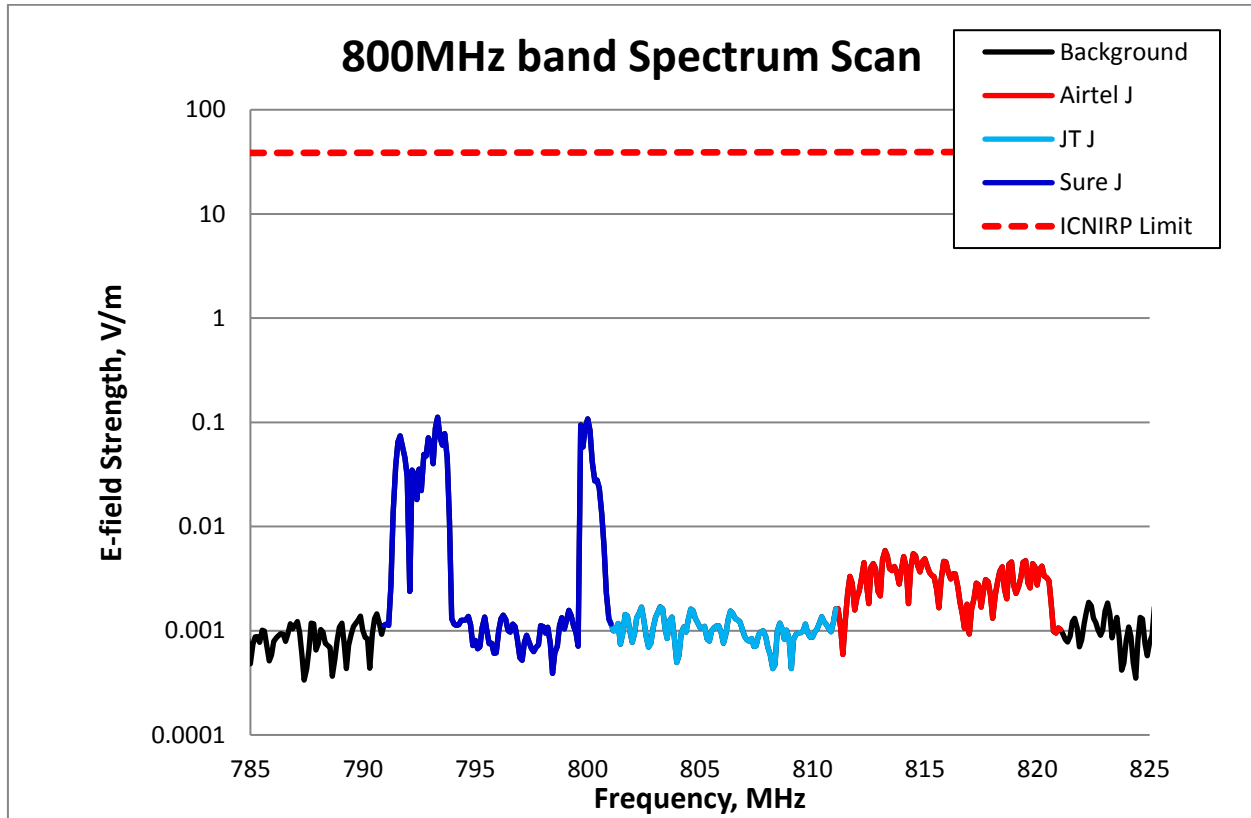


Figure 4 - 800MHz band Spectrum Scan

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 0.1121 V/m (Sure J), which is 347 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
Horizon	Airtel J	800	0.005878	6616	2.81707E-07	1/ 3549787
	JT J		0.001694	22958	3.11711E-08	1/ 32080973
	Sure J		0.1121	347	3.15946E-05	1/ 31651
total band EQ					3.19075E-05	1/ 31341

Table 2– 800MHz band Exposure Quotient at the Horizon

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

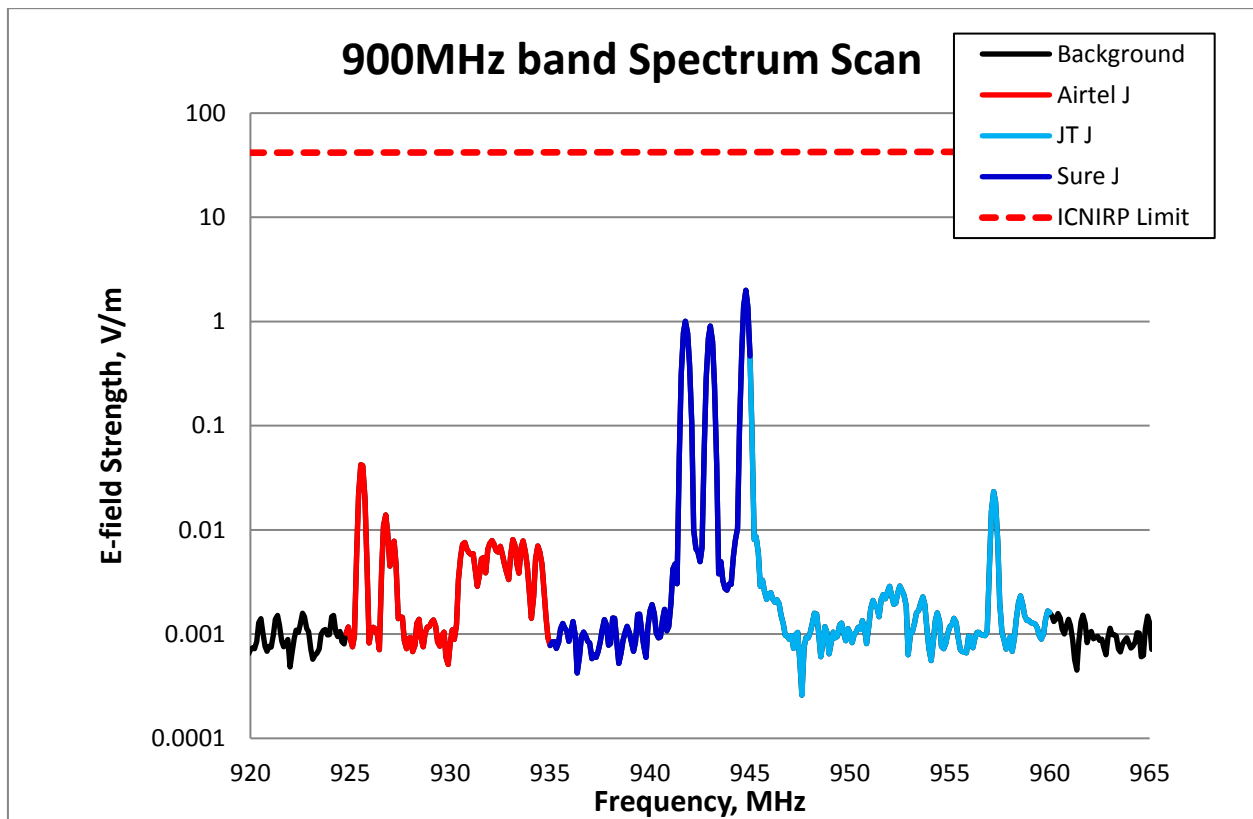


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.996 V/m (Sure J), which is 21 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
Horizon	Airtel J	900	0.0422	977	1.71756E-06	1/ 582221
	JT J		0.4639	89	6.03259E-05	1/ 16577
	Sure J		1.996	21	0.00342016	1/ 292
total band EQ					0.003482204	1/ 287

Table 3– 900MHz band Exposure Quotient at Horizon

2.3 1800 MHz Band

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

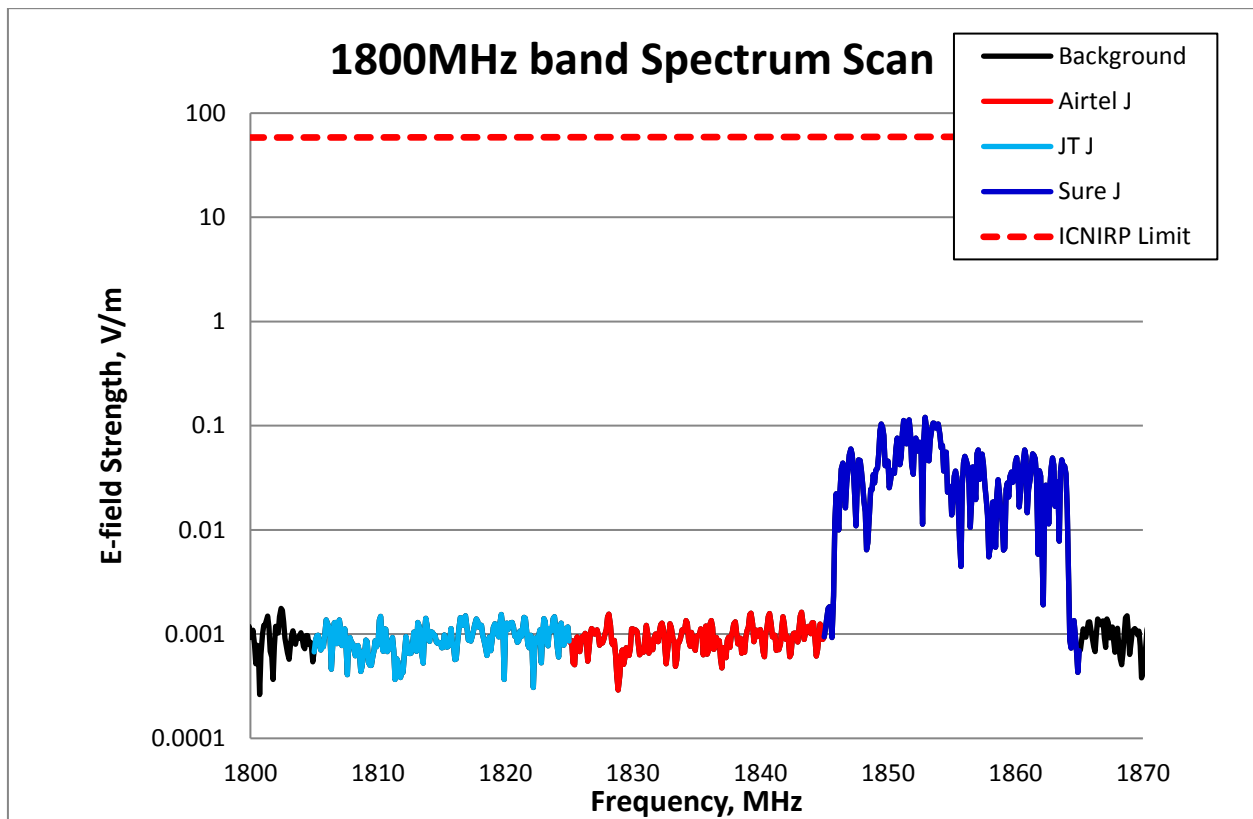


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1204 V/m (Sure J), which is 485 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
Horizon	Airtel J	1800	0.001623	35944	4.80714E-08	1/ 20802408
	JT J		0.001544	37783	4.83455E-08	1/ 20684427
	Sure J		0.1204	485	0.000109919	1/ 9098
total band EQ					0.000110016	1/ 9090

Table 4 – 1800MHz band Exposure Quotient at Horizon

2.4 2100MHz Band

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

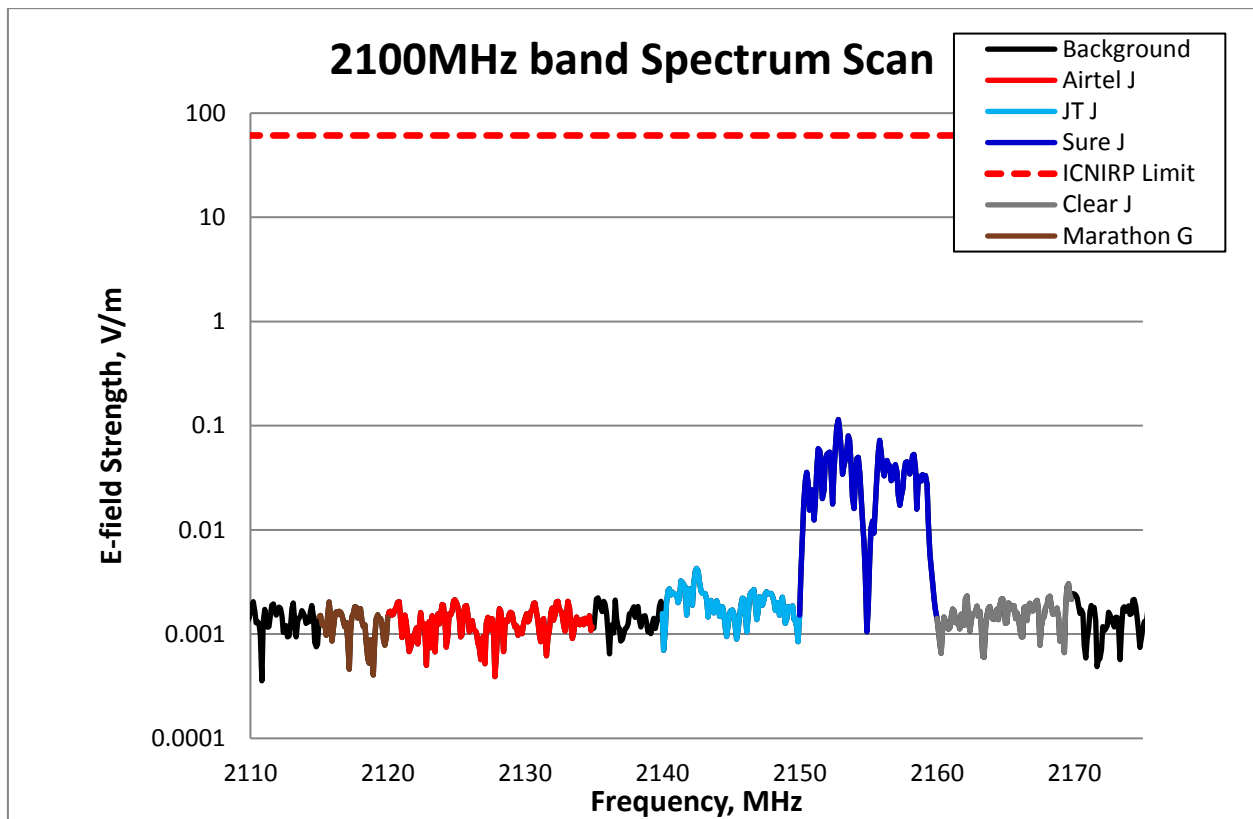


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1147 V/m (Sure J), which is 532 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
Horizon	Airtel J	2100	0.002135	28571	7.26117E-08	1/ 13771890
	Clear J		0.003044	20039	6.67838E-08	1/ 14973697
	JT J		0.004275	14269	1.18203E-07	1/ 8460053
	Marathon J		0.00204	29902	2.24057E-08	1/ 44631464
	Sure J		0.1147	532	4.12669E-05	1/ 24232
total band EQ					4.15469E-05	1/ 24069

Table 5 – 2100MHz band Exposure Quotient at Horizon

2.5 2600MHz band

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

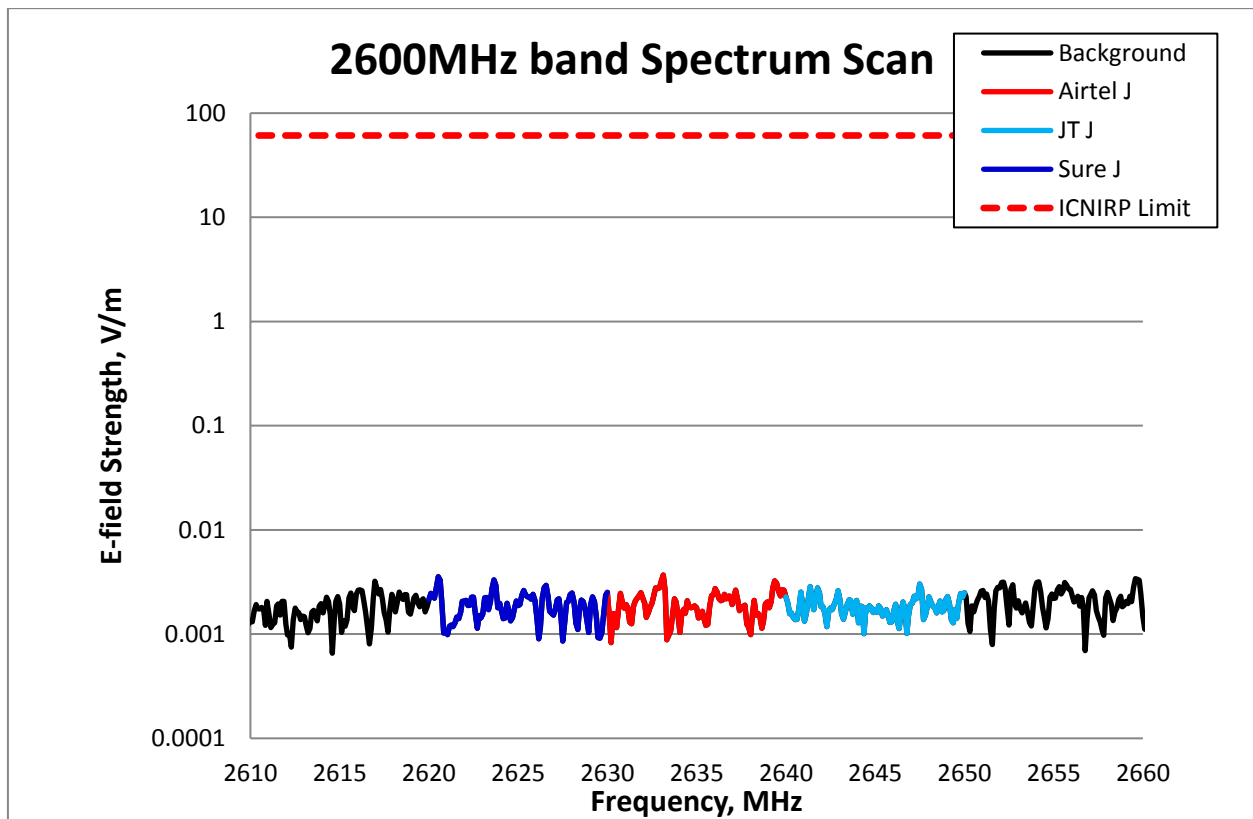


Figure 8 – 2600MHz band Spectrum Scan

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
Horizon	Airtel J	2600	0.00369	16531	1.06765E-07	1/ 9366404
	JT J		0.003025	20165	9.18972E-08	1/ 10881729
	Sure J		0.003552	17173	1.00171E-07	1/ 9982960
total band EQ					2.98832E-07	1/ 3346357

Table 6 – 2600MHz band Exposure Quotient at Horizon

End