

Cellular Mast Emissions Survey: Airport Runway (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 Airport Runway site located in Jersey.

The Airport Runway site was used by two operators at the time of the survey: Airtel J and 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
Airport Runway	800	0.02697	Airtel J	1442	4.35196E-06	1/ 229781
	900	0.1299	Sure J	318	2.48627E-05	1/ 40221
	1800	0.03379	Sure J	1726	5.73147E-06	1/ 174475
	2100	0.02625	Sure J	2324	3.06886E-06	1/ 325854
	2600	0.00238	Sure J	25630	1.35279E-07	1/ 7392157
Total Site EQ					3.81502E-05	1/ 26212

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/26212 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

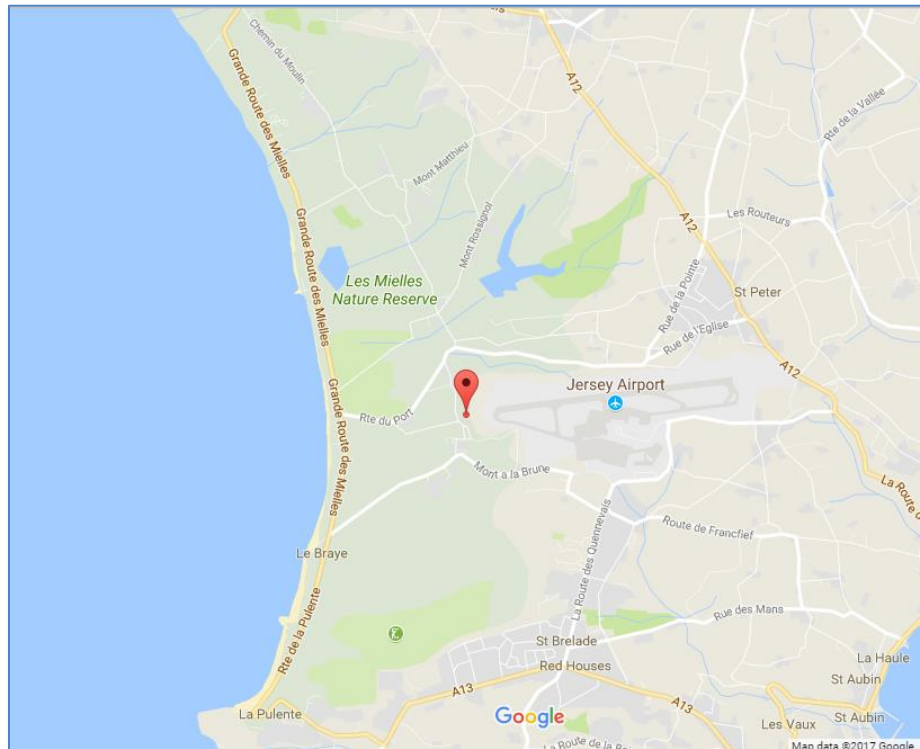


Figure 1 - Map of the Site Area

Site name	Airport Runway
Site address	Avenue De La Reine, Jersey
Site Latitude	N 49.20673
Site Longitude	W 02.21002

1.2 Site Description

Operators	Airtel J, Sure J
Antenna types	Directional
Approximate height	5m
Site type	Monopole
Description	The Monopole at the Airport Runway is located to 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.

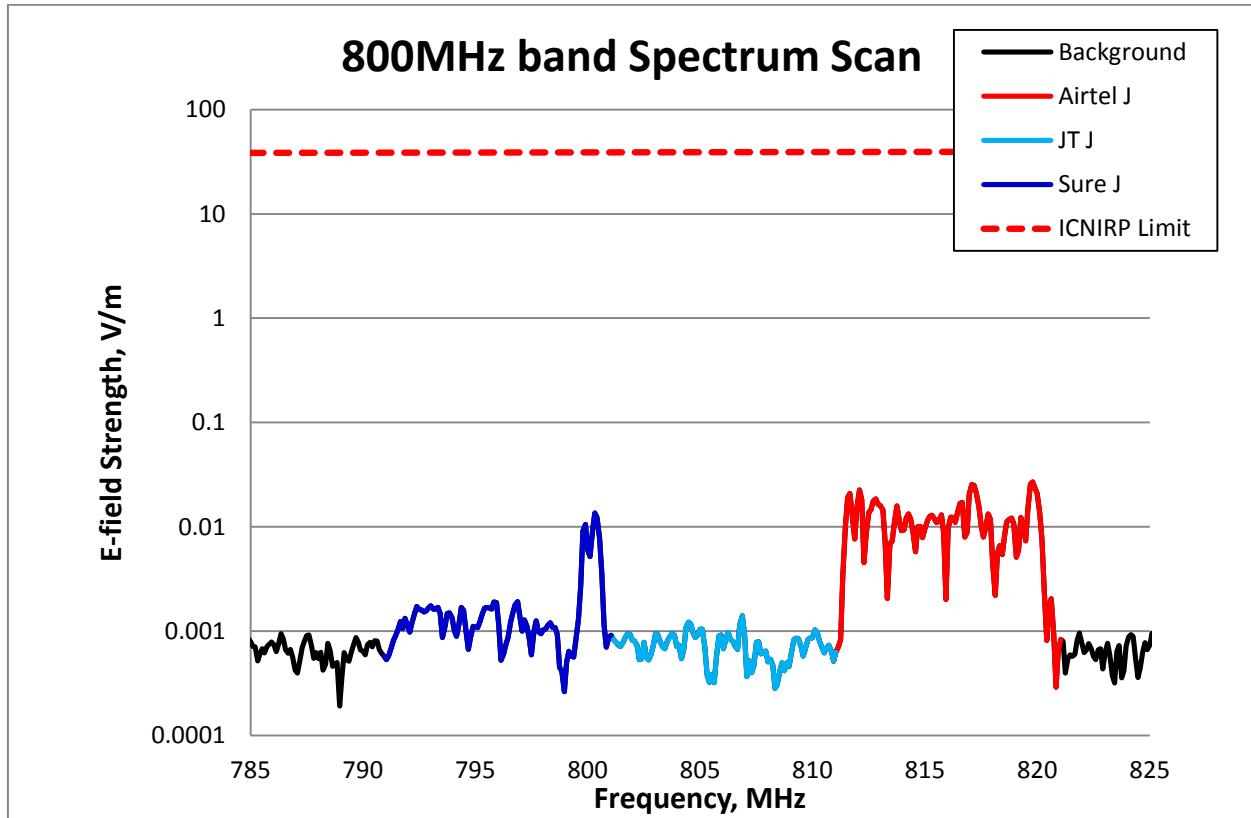


Figure 4 - 800MHz band Spectrum Scan

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 field level recorded across the band was higher than 0.02697 V/m (Airtel J), which is 1442 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
Airport Runway	Airtel J	800	0.02697	1442	4.10008E-06	1/ 243898
	JT J		0.0014	27779	1.52475E-08	1/ 65584539
	Sure J		0.0136	2860	2.36635E-07	1/ 4225921
	total band EQ			4.35196E-06	1/ 229781	

Table 2– 800MHz band Exposure Quotient at the Airport Runway

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

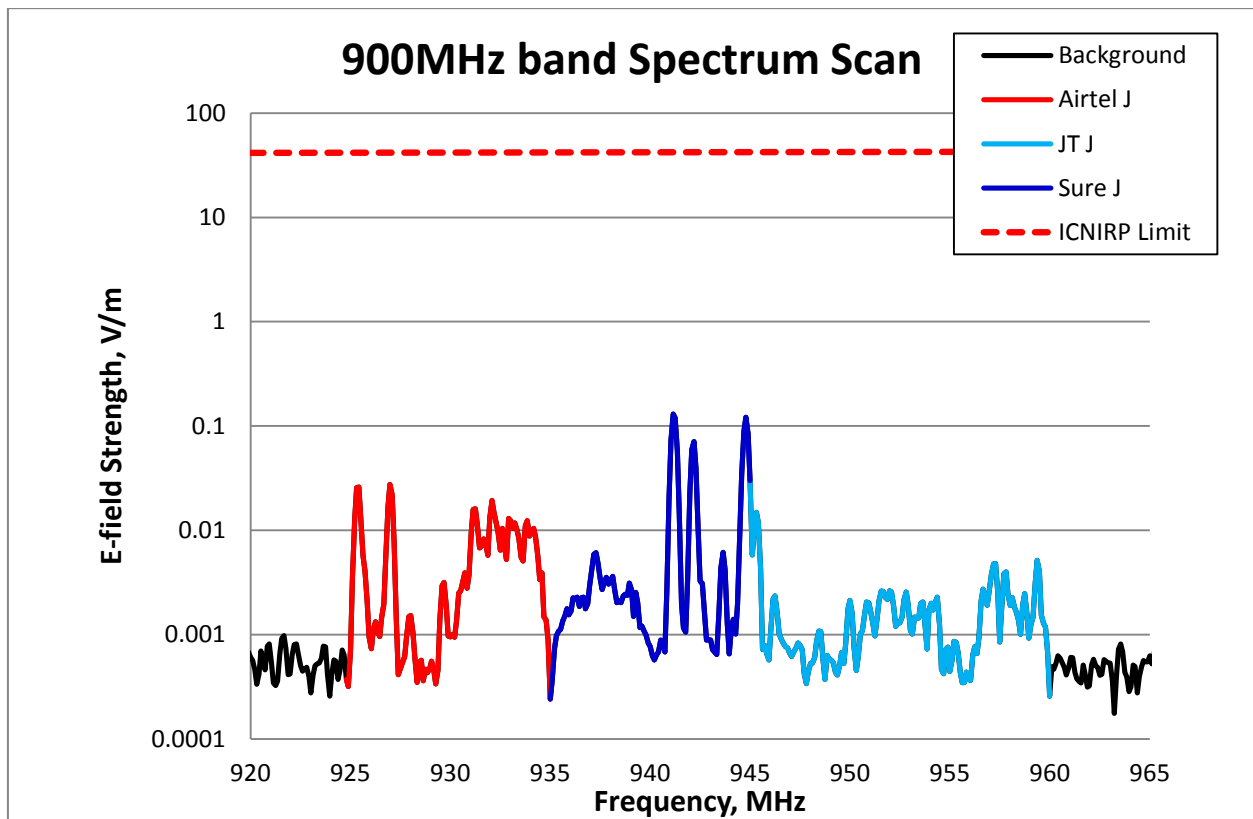


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1299 V/m (Sure J), which is 318 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
Airport Runway	Airtel J	900	0.02741	1505	1.91602E-06	1/ 521916
	JT J		0.02983	1383	4.84723E-07	1/ 2063033
	Sure J		0.1299	318	2.24619E-05	1/ 44520
total band EQ					2.48627E-05	1/ 40221

Table 3– 900MHz band Exposure Quotient at the Airport Runway

2.3 1800 MHz Band

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

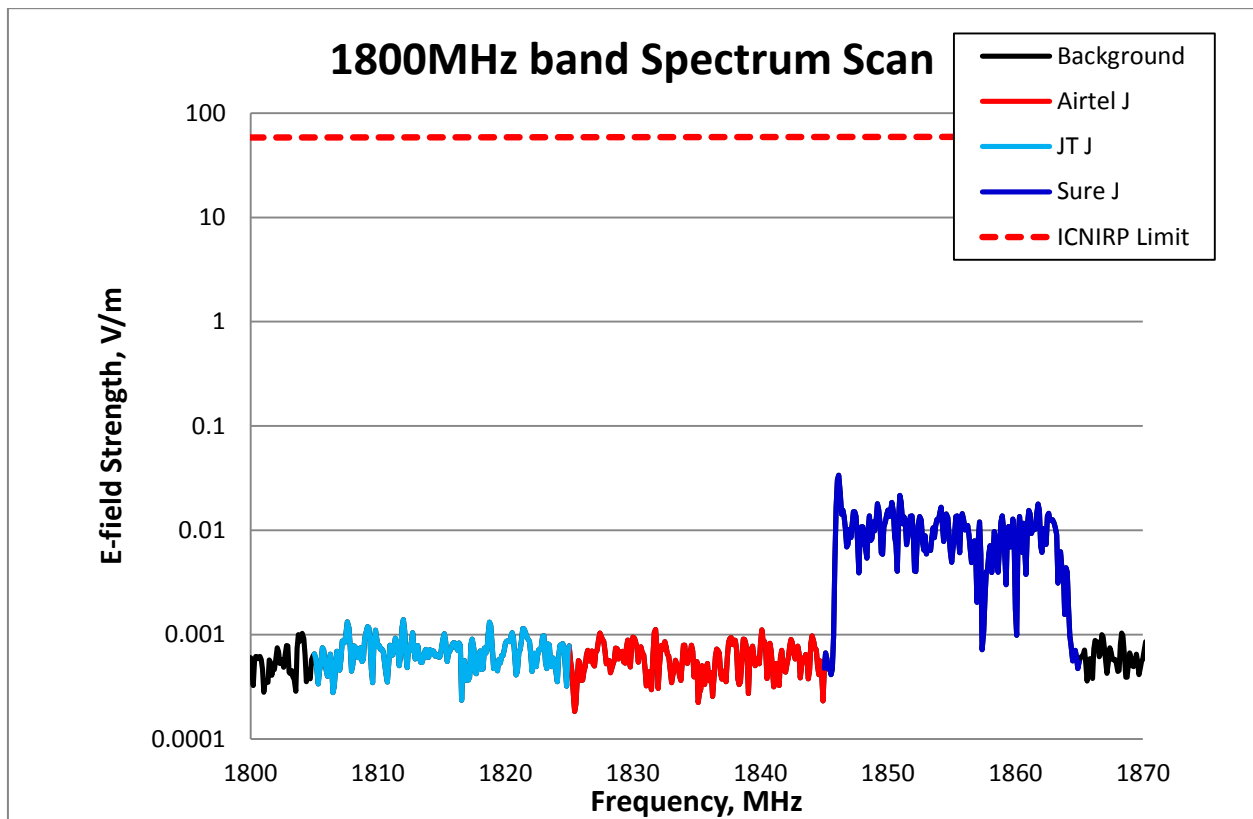


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.03379 V/m (Sure J), which is 1726 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
Airport Runway	Airtel J	1800	0.001118	52179	2.035E-08	1/ 49140002
	JT J		0.001389	41999	2.74646E-08	1/ 36410463
	Sure J		0.03379	1726	5.68365E-06	1/ 175943
total band EQ					5.73147E-06	1/ 174475

Table 4 – 1800MHz band Exposure Quotient at the Airport Runway

2.4 2100MHz Band

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

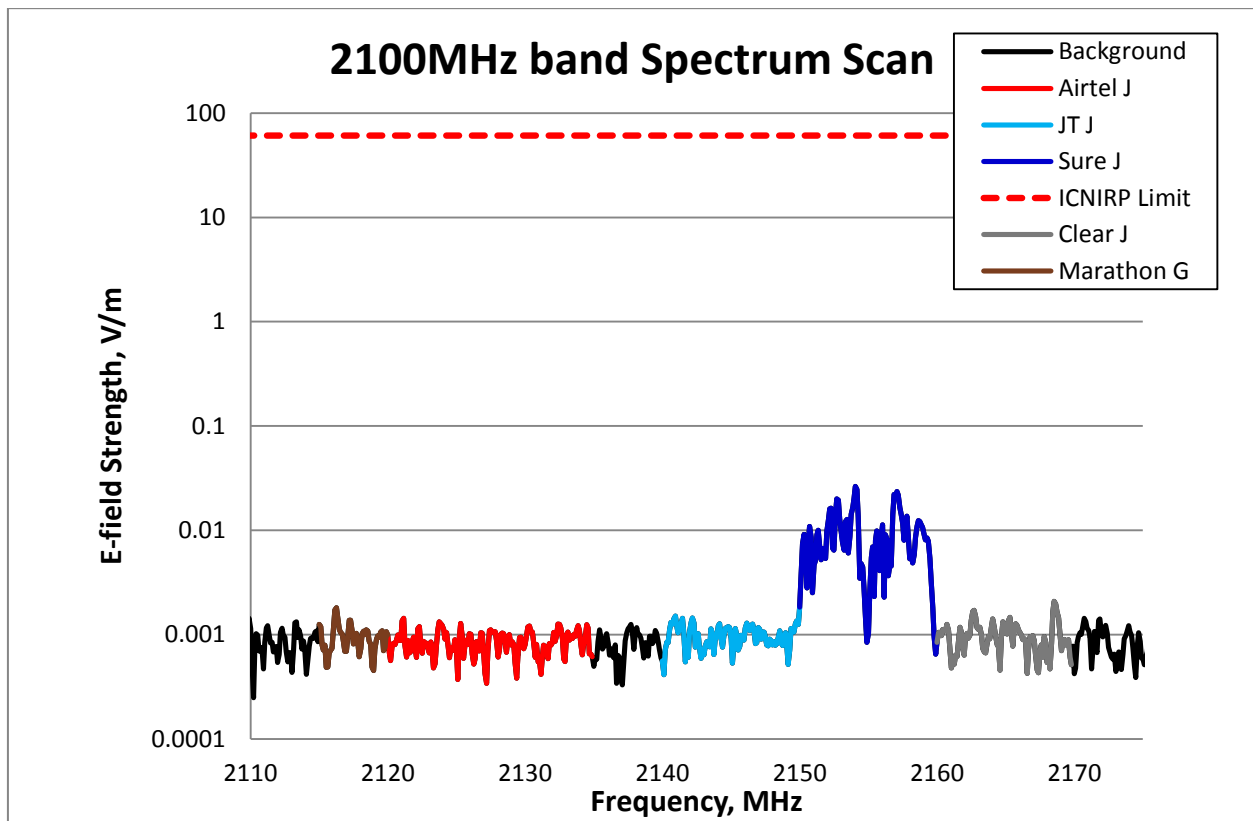


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.02625 V/m (Sure J), which is 2324 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
Airport Runway	Airtel J	2100	0.001433	42568	3.01302E-08	1/ 33189270
	Clear J		0.002089	29201	2.67161E-08	1/ 37430621
	JT J		0.001836	33224	2.68369E-08	1/ 37262168
	Marathon J		0.001802	33851	1.27672E-08	1/ 78325998
	Sure J		0.02625	2324	2.97241E-06	1/ 336428
total band EQ					3.06886E-06	1/ 325854

Table 5 – 2100MHz band Exposure Quotient at the Airport Runway

2.5 2600MHz band

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

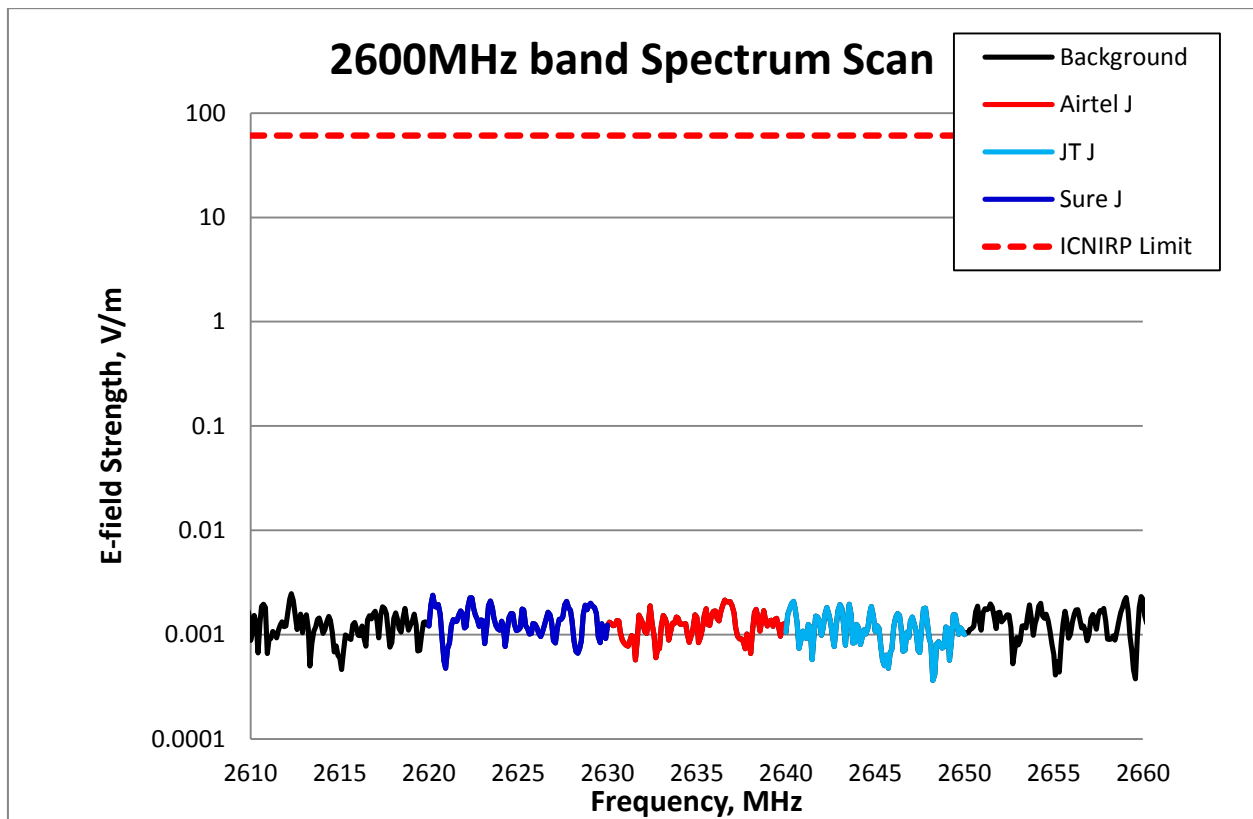


Figure 8 – 2600MHz band Spectrum Scan

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
Airport Runway	Airtel J	2600	0.002139	28518	4.39094E-08	1/ 22774180
	JT J		0.002087	29229	3.85508E-08	1/ 25939799
	Sure J		0.00238	25630	5.28183E-08	1/ 18932820
	total band EQ			1.35279E-07	1/ 7392157	

Table 6 – 2600MHz band Exposure Quotient at the Airport Runway

End