

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

The Airport Comms Mast North 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
Airport Comms Mast North	800	0.1199	Sure J	324	7.64737E-05	1/ 13076
	900	1.021	Sure J	40	0.000965865	1/ 1035
	1800	0.0907	Sure J	643	5.59601E-05	1/ 17870
	2100	0.07564	Sure J	806	3.34226E-05	1/ 29920
	2600	0.002179	Airtel J	27994	1.2483E-07	1/ 8010904
Total Site EQ					0.001131847	1/ 884

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/884 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

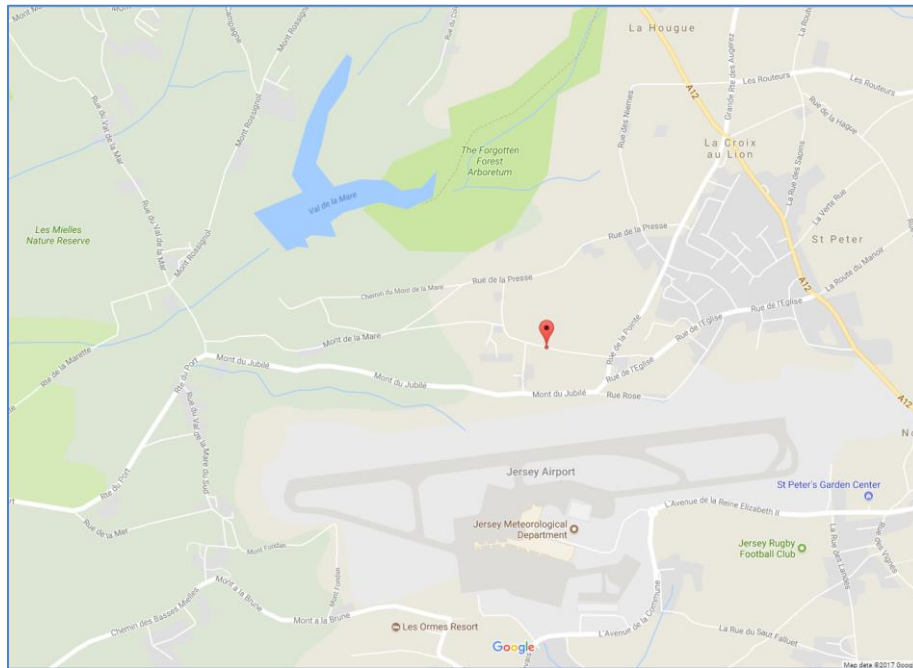


Figure 1 - Map of the Site Area

Site name	Airport Comms Mast North
Site address	Airport Transmitter, Field 198, Jersey Airport
Site Latitude	N 49.21131
Site Longitude	W 02.19496

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	15-20m
Site type	Lattice Mast
Description	The Lattice Mast at the Airport Comms Mast North is located within a fenced enclosure, 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.

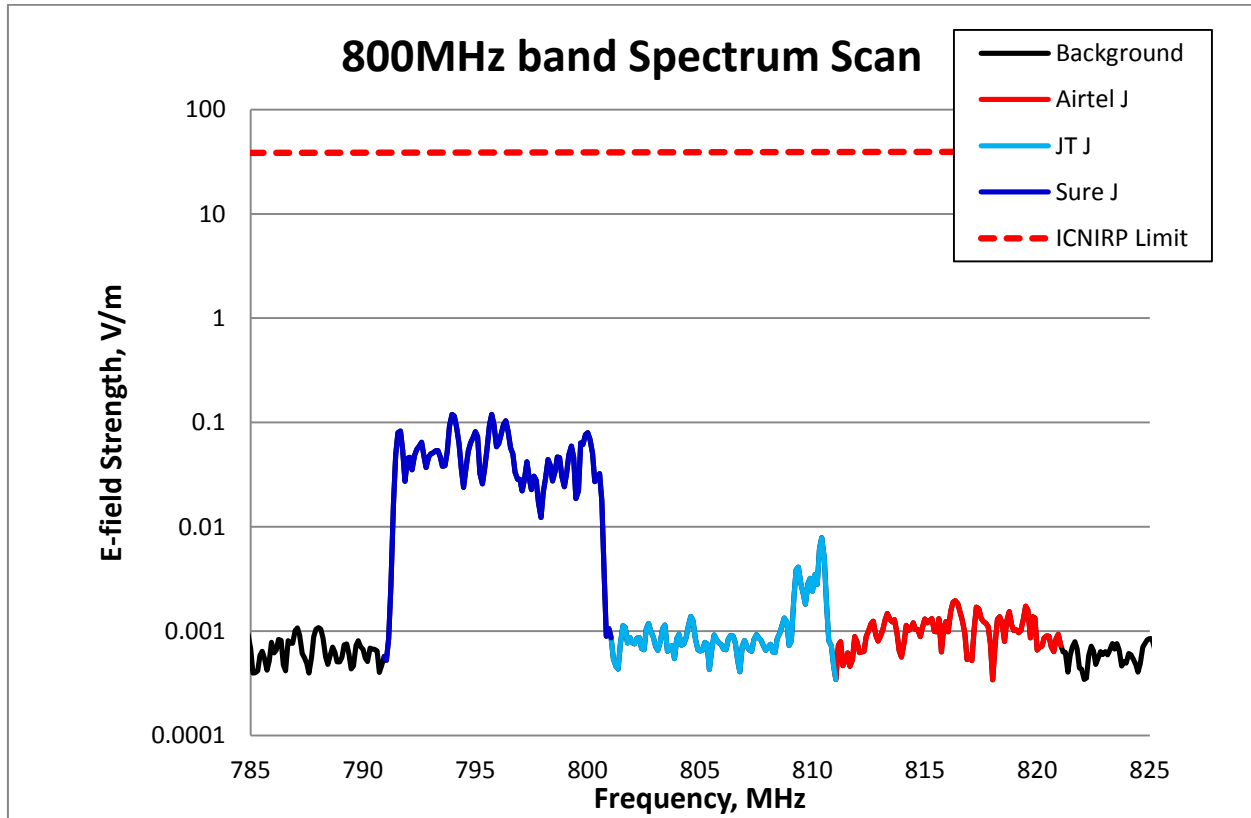


Figure 4 - 800MHz band Spectrum Scan

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 0.1199 V/m (Sure J), which is 324 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 Comms Mast North	Airtel J	800	0.001958	19863	3.05353E-08	1/ 32748983
	JT J		0.007851	4954	7.57194E-08	1/ 13206647
	Sure J		0.1199	324	7.63674E-05	1/ 13095
total band EQ					7.64737E-05	1/ 13076

Table 2– 800MHz band Exposure Quotient at the Airport Comms North Mast

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

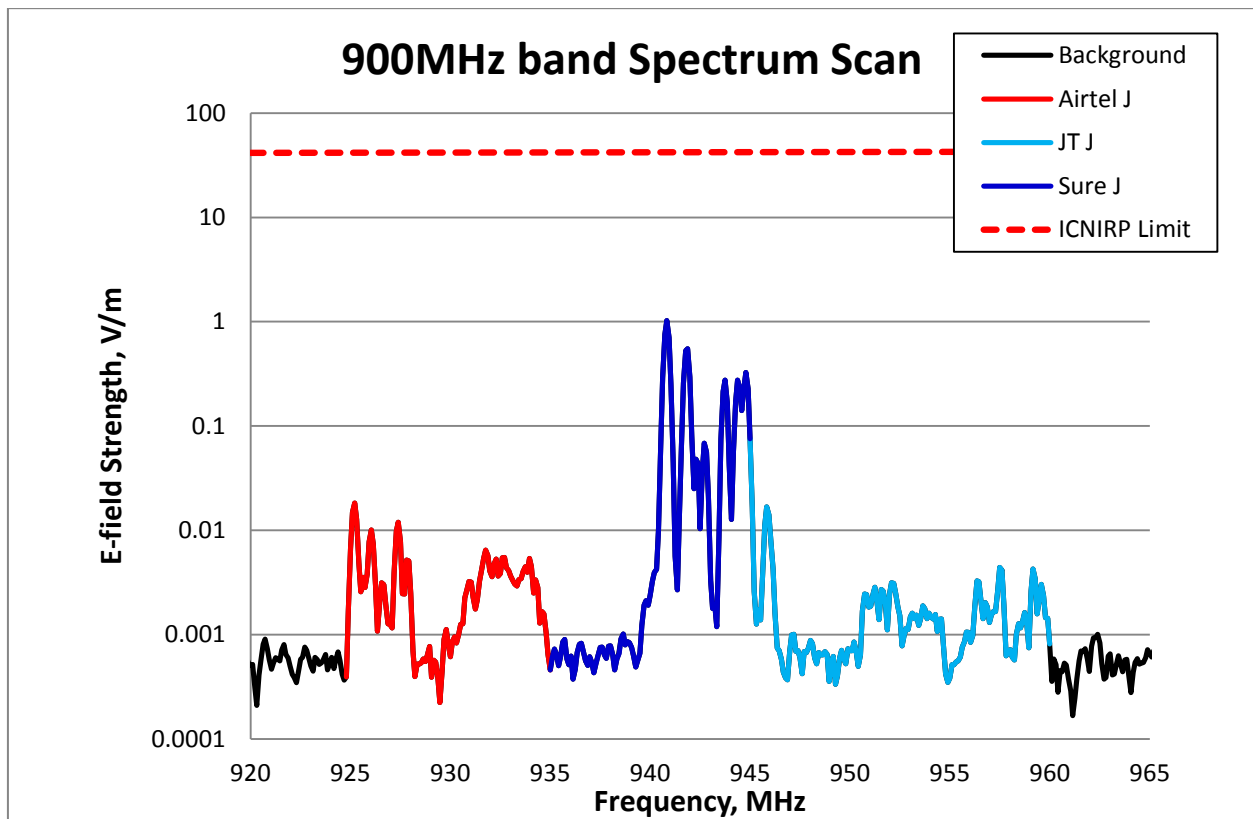


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.021 V/m (Sure J), which is 40 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 Comms Mast North	Airtel J	900	0.01824	2262	5.53589E-07	1/ 1806394
	JT J		0.07555	546	1.88852E-06	1/ 529514
	Sure J		1.021	40	0.000963423	1/ 1038
total band EQ					0.000965865	1/ 1035

Table 3– 900MHz band Exposure Quotient at the Airport Comms North Mast

2.3 1800 MHz Band

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

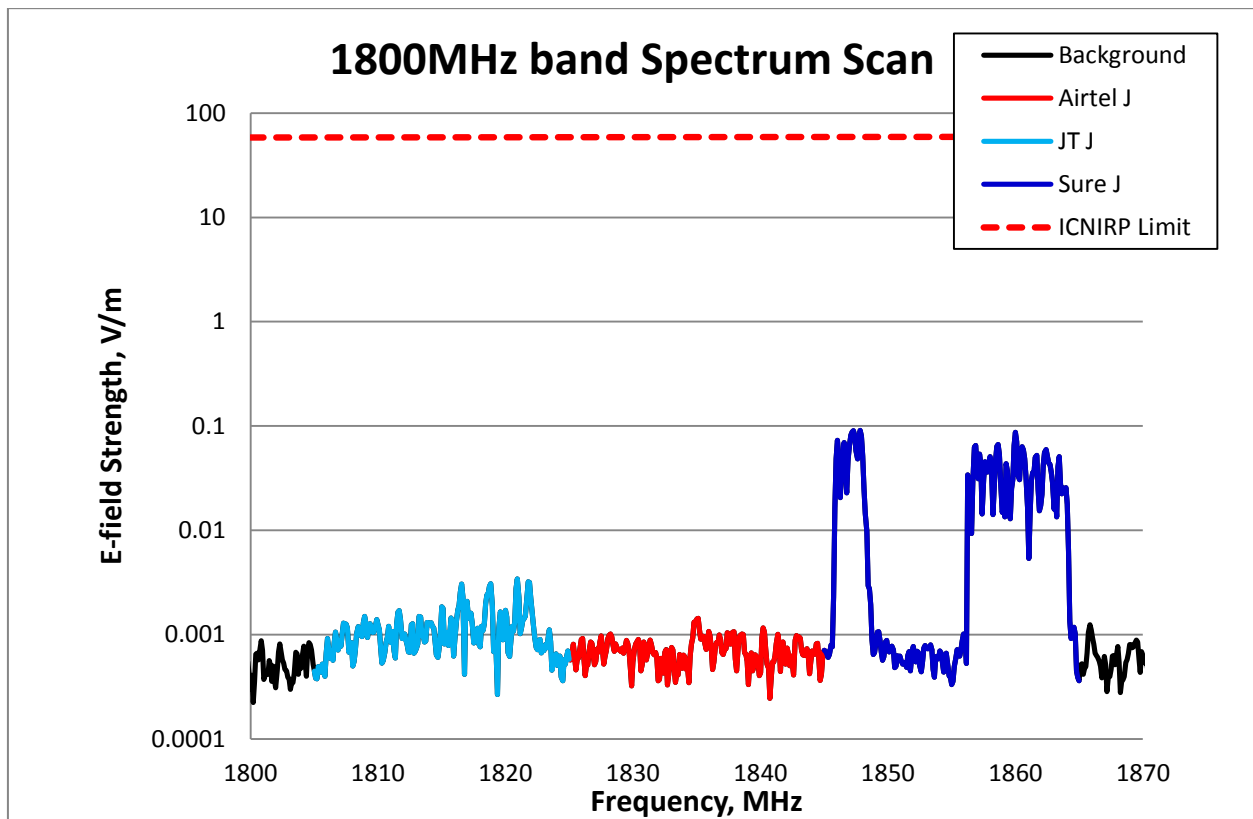


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.0907 V/m (Sure J), which is 643 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 Comms Mast North	Airtel J	1800	0.001431	40766	2.79461E-08	1/ 35783207
	JT J		0.003409	17112	8.10718E-08	1/ 12334739
	Sure J		0.0907	643	5.58511E-05	1/ 17905
total band EQ					5.59601E-05	1/ 17870

Table 4 – 1800MHz band Exposure Quotient at the Airport Comms North Mast

2.4 2100MHz Band

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

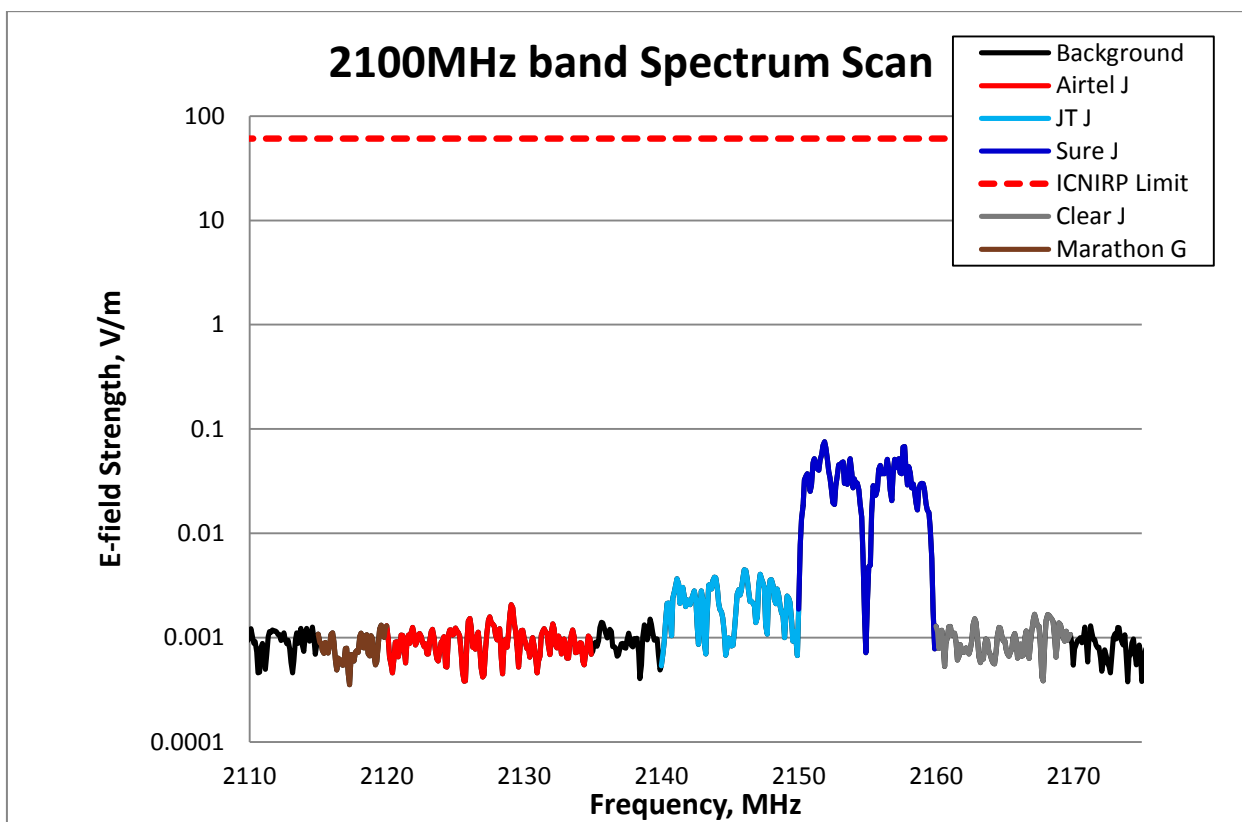


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.07564 V/m (Sure J), which is 806 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 Comms Mast North	Airtel J	2100	0.002075	29398	3.67427E-08	1/ 27216325
	Clear J		0.001672	36483	2.61247E-08	1/ 38277983
	JT J		0.004474	13634	1.49451E-07	1/ 6691165
	Marathon J		0.001313	46458	9.59946E-09	1/ 104172481
	Sure J		0.07564	806	3.32007E-05	1/ 30120
total band EQ					3.34226E-05	1/ 29920

Table 5 – 2100MHz band Exposure Quotient at the Airport Comms North Mast

2.5 2600MHz band

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

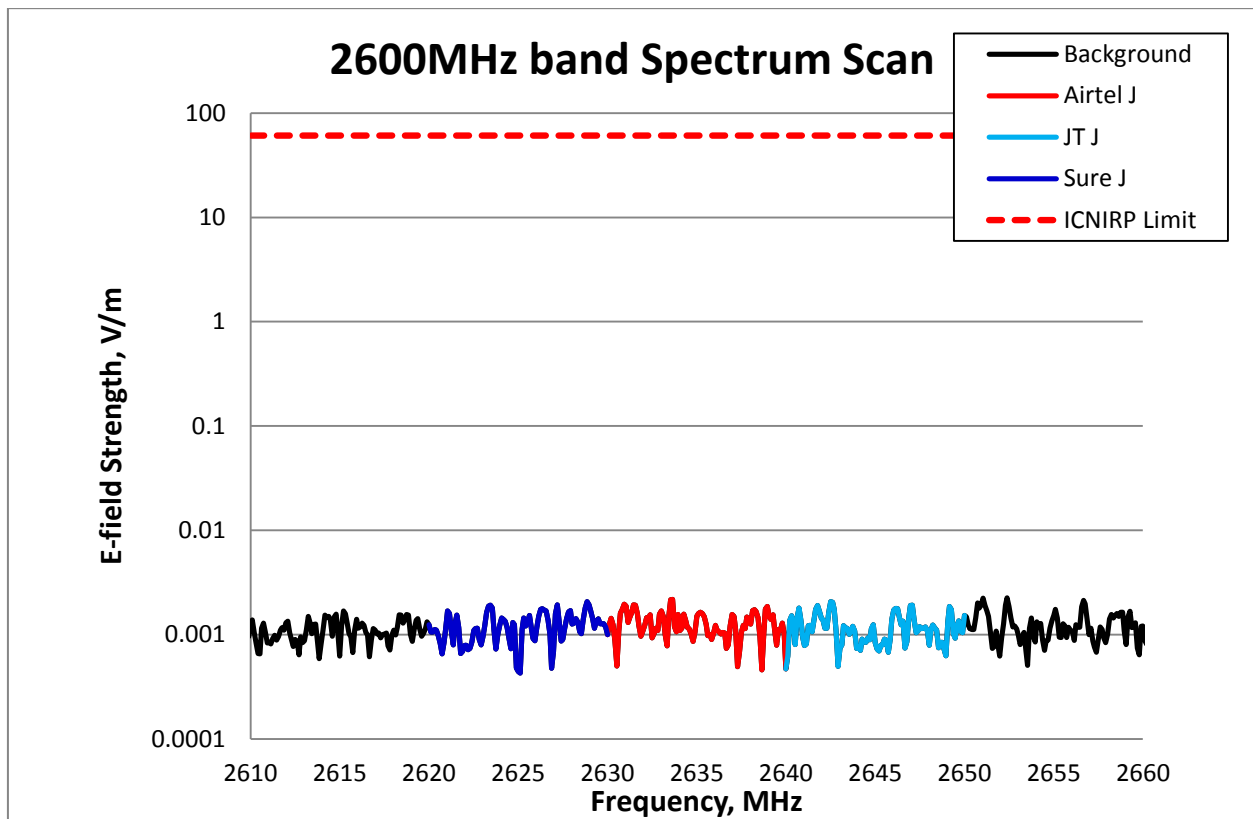


Figure 8 – 2600MHz band Spectrum Scan

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 Comms Mast North	Airtel J	2600	0.002179	27994	4.5326E-08	1/ 22062411
	JT J		0.00207	29469	3.83432E-08	1/ 26080260
	Sure J		0.002063	29569	4.11607E-08	1/ 24295005
	total band EQ			1.2483E-07	1/ 8010904	

Table 6 – 2600MHz band Exposure Quotient at the Airport Comms North Mast

End