

Cellular Mast Emissions Survey: Field 642 (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 Field 642 site located in Jersey.

Field 642 site was used by two operators at the time of the survey: Airtel 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
Field 642	800	0.04826	Airtel J	806	9.27714E-06	1/ 107792
	900	0.2955	Airtel J	140	0.000125965	1/ 7939
	1800	0.003566	Sure J	16359	9.06538E-08	1/ 11030983
	2100	0.003393	Sure J	17978	1.35937E-07	1/ 7356361
	2600	0.001946	Airtel J	31346	1.0324E-07	1/ 9686148
Total Site EQ					0.000135572	1/ 7376

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/7376 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

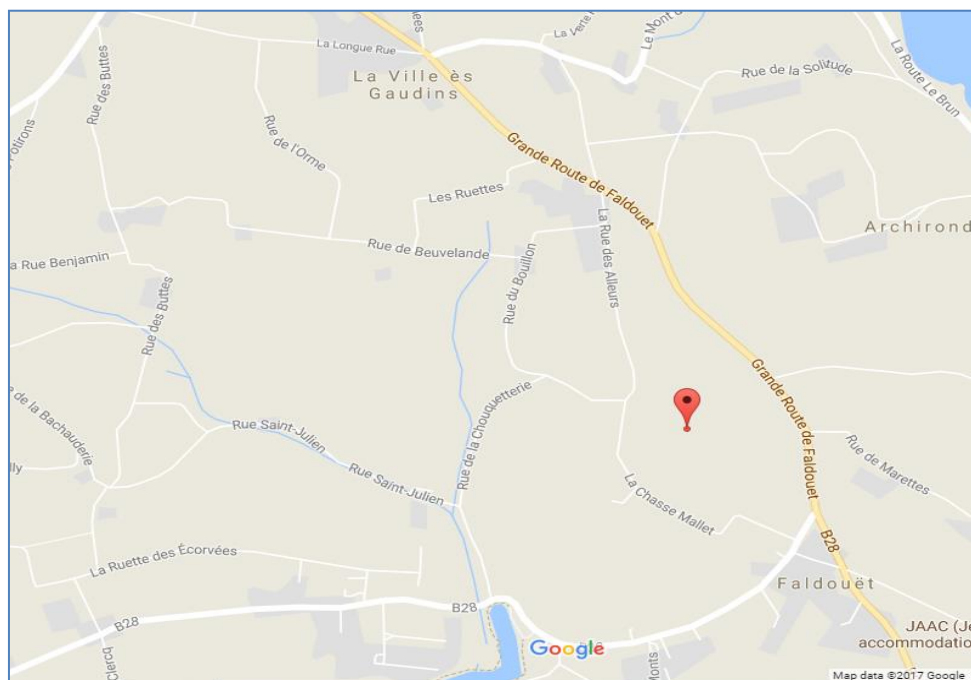


Figure 1 - Map of the Site Area

Site name	Field 642
Site address	La Chasse Mallet, Faldouet, St Martin, Jersey
Site Latitude	49.20679
Site Longitude	-2.0362

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18M
Site type	Pole Mast
Description	The antennas at the Field 642 are located in the corner of a field, the public have access

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.

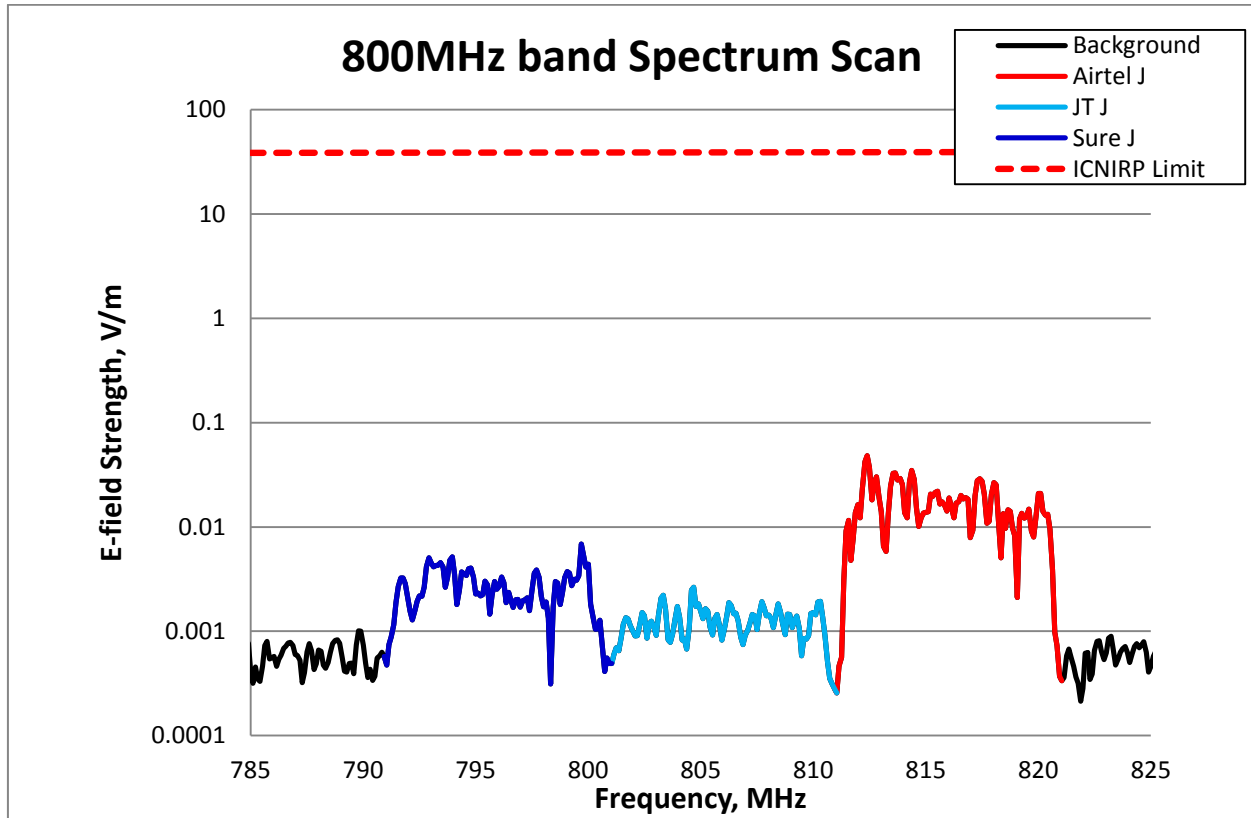


Figure 4 - 800MHz band Spectrum Scan

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 0.04826 V/m (Airtel J), which is 806 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
Field 642	Airtel J	800	0.04826	806	9.01414E-06	1/ 110937
	JT J		0.002633	14771	4.45265E-08	1/ 22458558
	Sure J		0.006873	5659	2.1847E-07	1/ 4577288
total band EQ					9.27714E-06	1/ 107792

Table 2– 800MHz band Exposure Quotient at Field 642

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

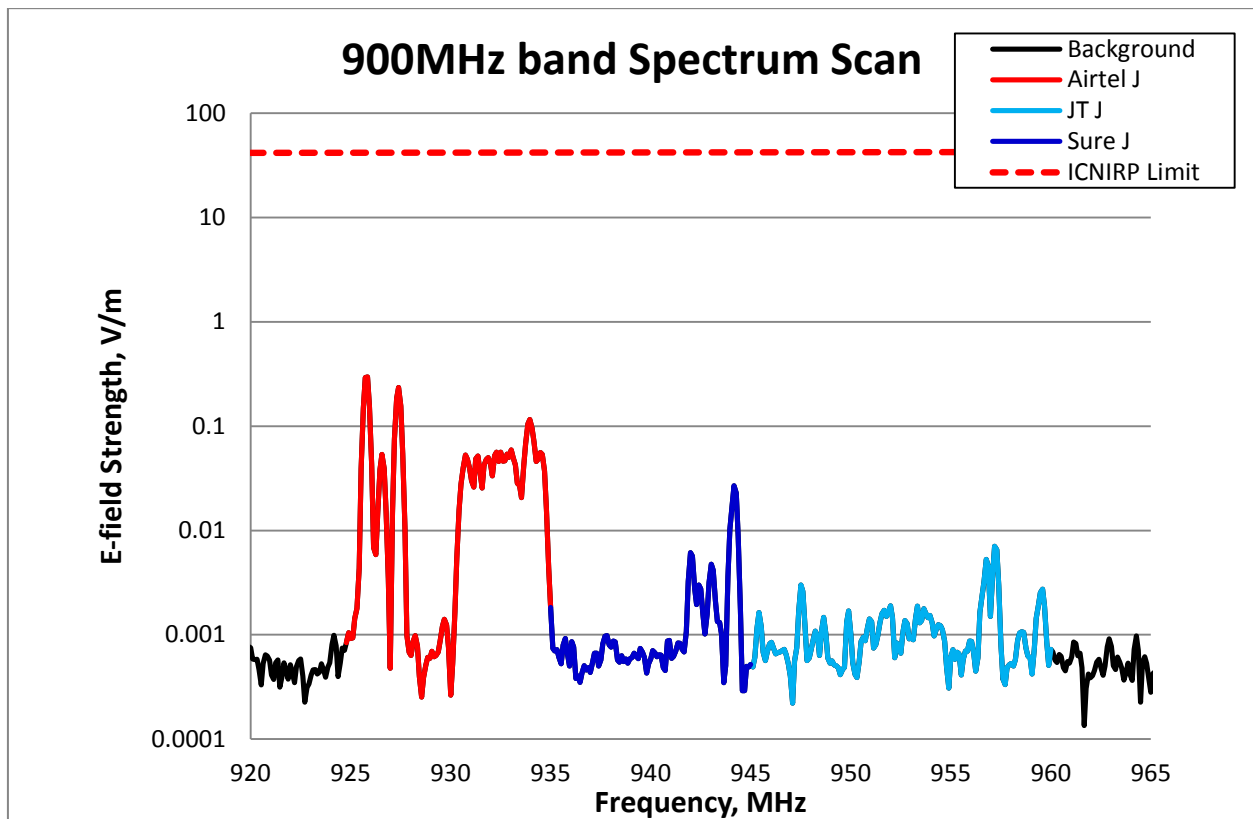


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2955 V/m (Airtel J), which is 140 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
Field 642	Airtel J	900	0.2955	140	0.000125351	1/ 7978
	JT J		0.00703	5868	9.18236E-08	1/ 10890444
	Sure J		0.02676	1541	5.22683E-07	1/ 1913206
total band EQ					0.000125965	1/ 7939

Table 3– 900MHz band Exposure Quotient at Field 642

2.3 1800 MHz Band

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

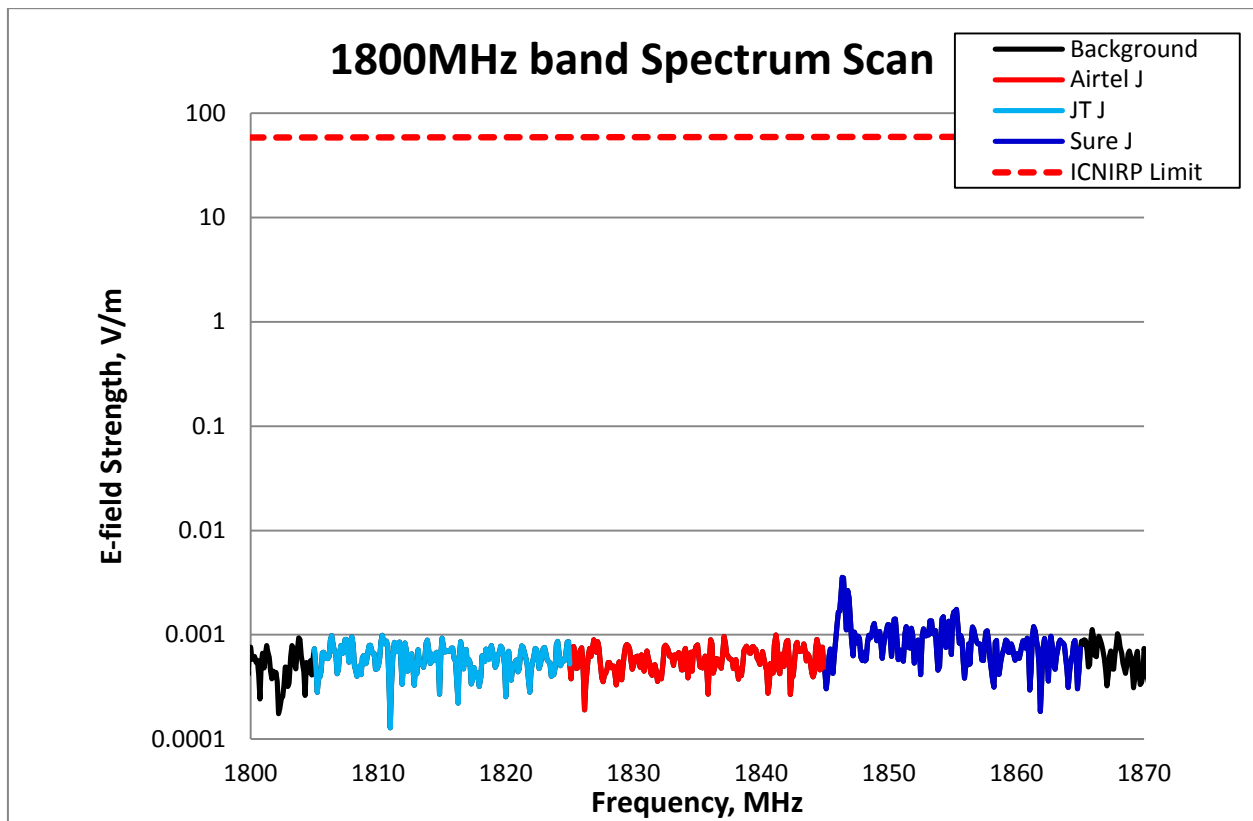


Figure 6 - 1800MHz Spectrum Scan

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 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
Field 642	Airtel J	1800	0.0009966	58535	1.90556E-08	1/ 52477938
	JT J		0.000991	58866	2.03157E-08	1/ 49223109
	Sure J		0.003566	16359	5.12825E-08	1/ 19499842
total band EQ					9.06538E-08	1/ 11030983

Table 4 – 1800MHz band Exposure Quotient at Field 642

2.4 2100MHz Band

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

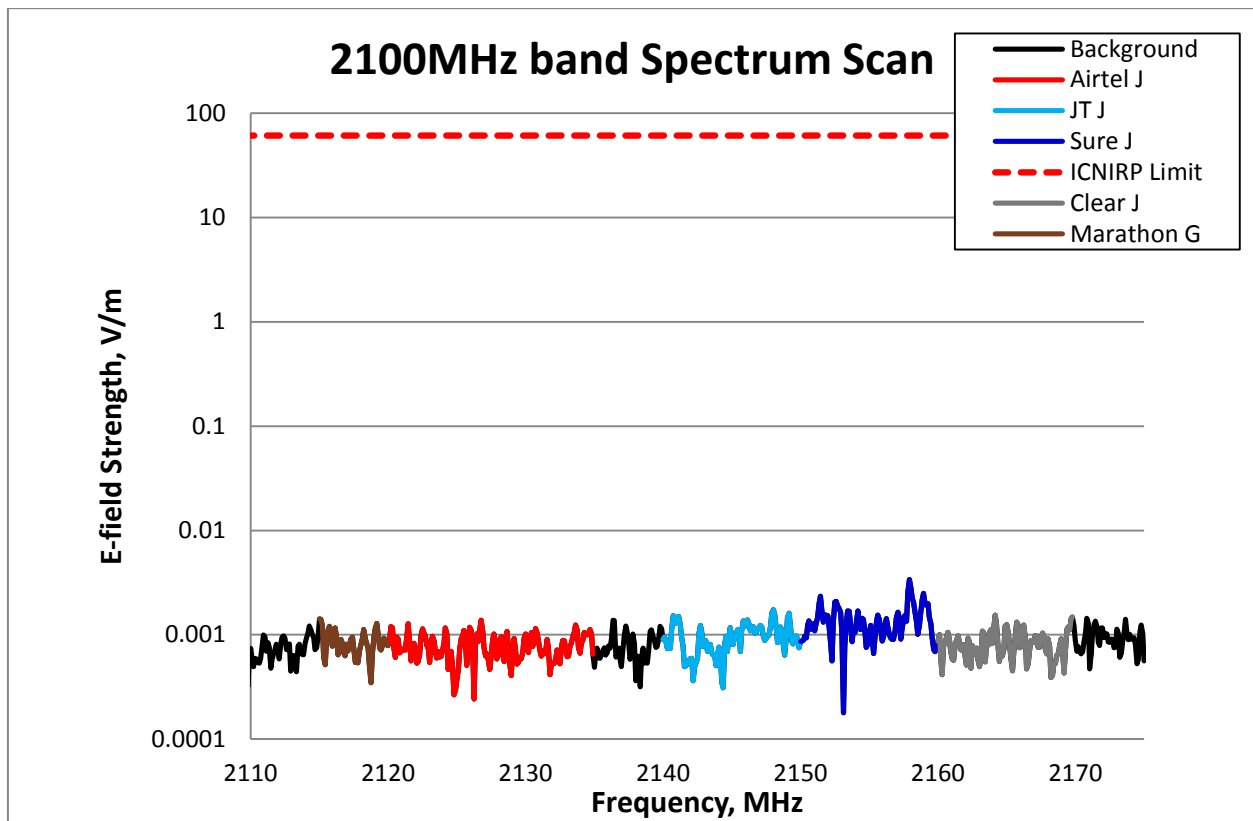


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 800MHz 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
Field 642	Airtel J	2100	0.001378	44267	2.58757E-08	1/ 38646281
	Clear J		0.001539	39636	1.9149E-08	1/ 52222053
	JT J		0.001741	35037	2.62727E-08	1/ 38062377
	Marathon J		0.001417	43049	1.04168E-08	1/ 95998388
	Sure J		0.003393	17978	5.42226E-08	1/ 18442509
total band EQ					1.35937E-07	1/ 7356361

Table 5 – 2100MHz band Exposure Quotient at Field 642

2.5 2600MHz band

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

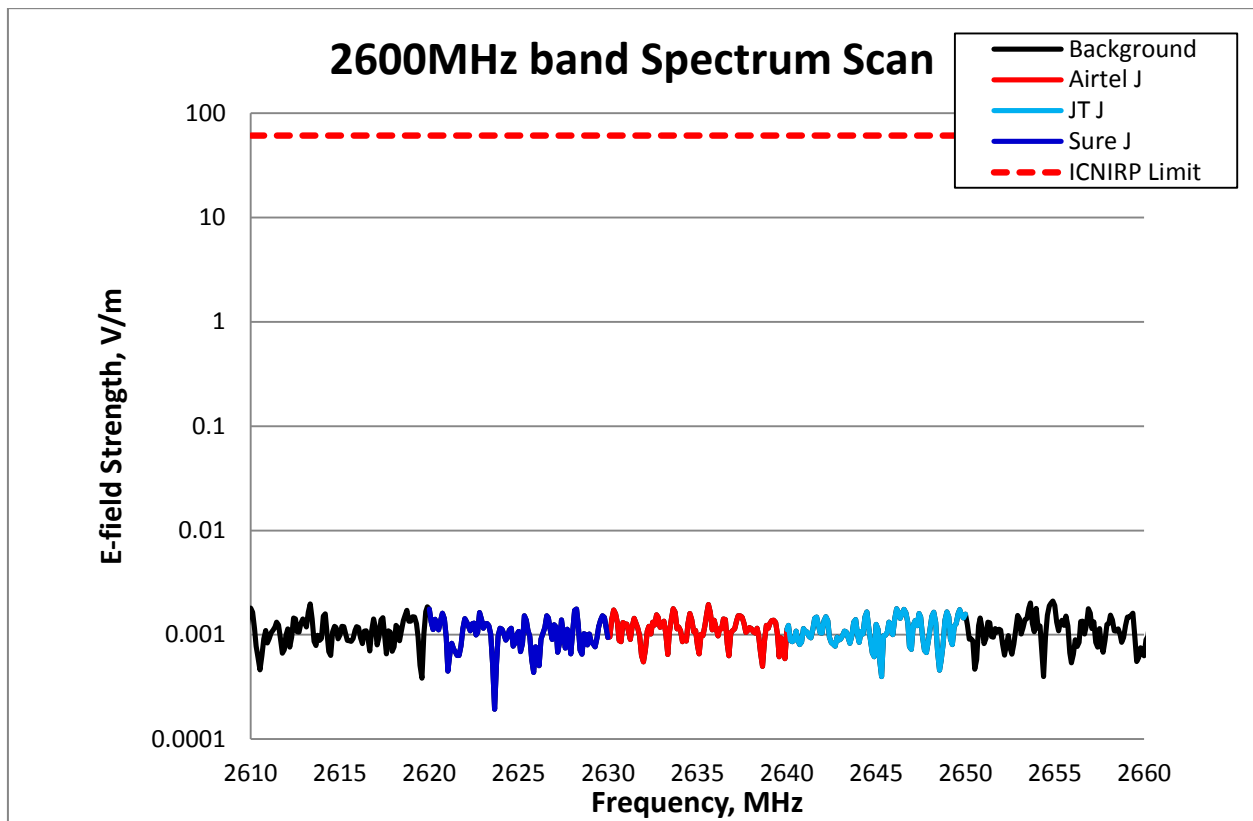


Figure 8 – 2600MHz band Spectrum Scan

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
Field 642	Airtel J	2600	0.001946	31346	3.64368E-08	1/ 27444813
	JT J		0.001775	34366	3.57468E-08	1/ 27974555
	Sure J		0.001762	34620	3.10567E-08	1/ 32199188
total band EQ					1.0324E-07	1/ 9686148

Table 6 – 2600MHz band Exposure Quotient at Field 642

End