Cellular Mast Emissions Survey: Old Farm (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 Old Farm site located in Jersey.

The Old Farm site was used by one 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
Old Farm	800	0.1215	JT J	320	0.000142157	1/ 7034
	900	2.134	JT J	19	0.004112259	1/ 243
	1800	0.2025	JT J	288	0.000312676	1/ 3198
	2100	0.2827	JT J	216	0.000549056	1/ 1821
	2600	0.002502	JT J	24380	1.29621E-07	1/ 7714829
				Total Site EQ	0.005116278	1/ 195

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/195 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

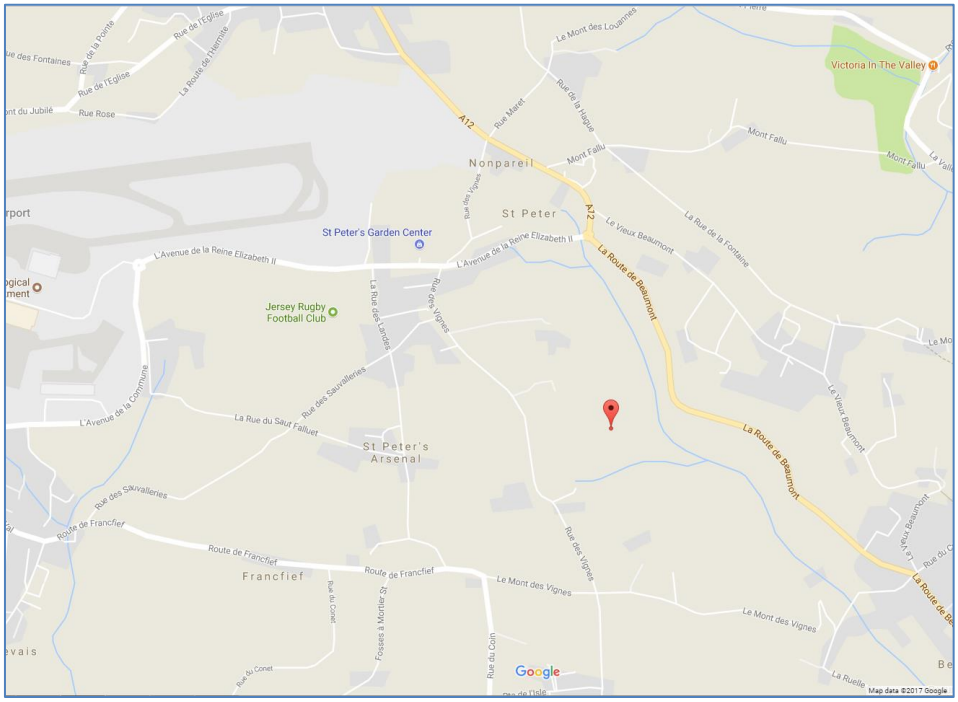

Figure 1 - Map of the Site Area

Site name	Old Farm
Site address	La Rue des Vignes, St Peter, Jersey
Site Latitude	N 49.20233
Site Longitude	W 02.17276

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	12-15m
Site type	Pole Mast
Description	The Pole Mast at the Old Farm is located on the edge of the field, it is accessible by the public.

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

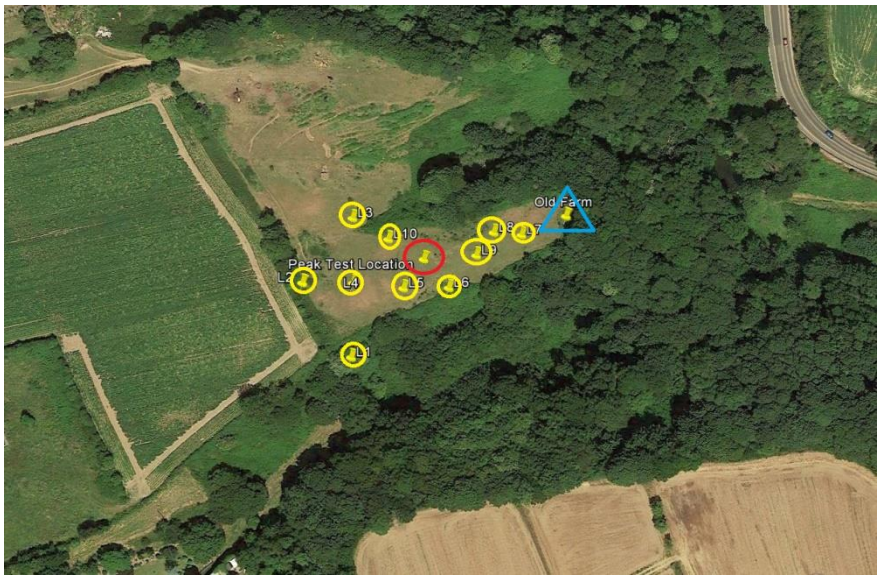

Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

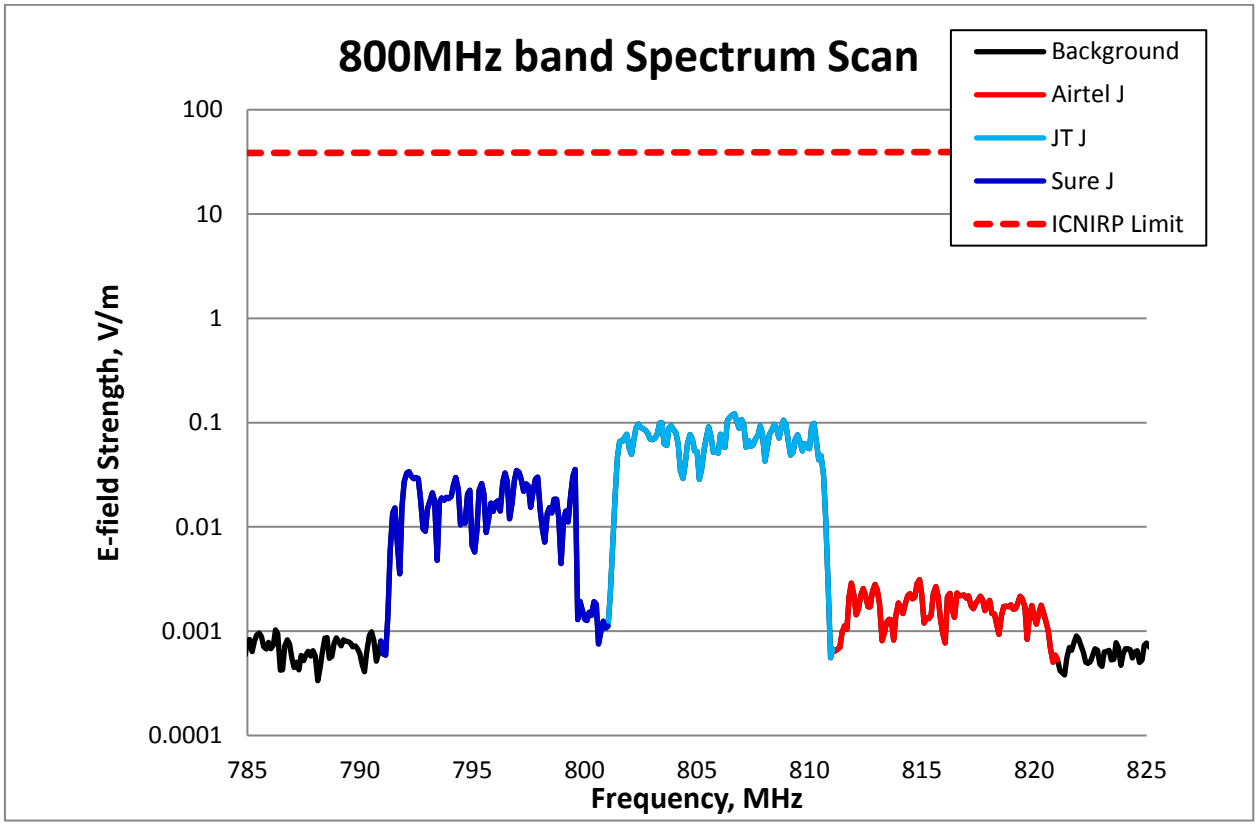

Figure 4 - 800MHz band Spectrum Scan

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 0.1215 V/m (JT J), which is 320 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
Old Farm	Airtel J	800	0.003127	12437	8.05316E-08	1/ 12417491
	JT J		0.1215	320	0.000132985	1/ 7520
	Sure J		0.03558	1093	9.09154E-06	1/ 109992
				total band EQ	0.000142157	1/ 7034

Table 2– 800MHz band Exposure Quotient at Old Farm

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

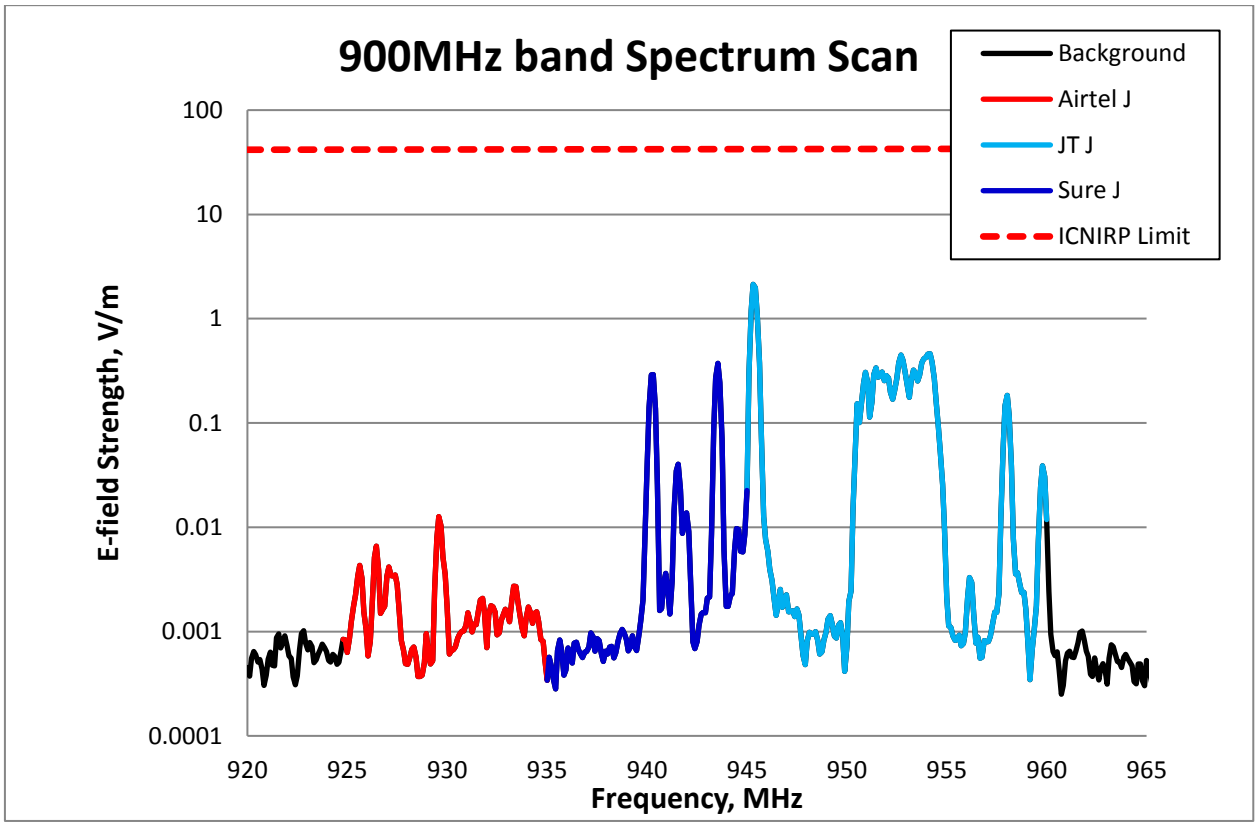

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.134 V/m (JT J), which is 19 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
Old Farm	Airtel J	900	0.01266	3258	1.88754E-07	1/ 5297889
	JT J		2.134	19	0.003977807	1/ 251
	Sure J		0.3733	111	0.000134263	1/ 7448
				total band EQ	0.004112259	1/ 243

Table 3– 900MHz band Exposure Quotient at Old Farm

2.3 1800 MHz Band

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

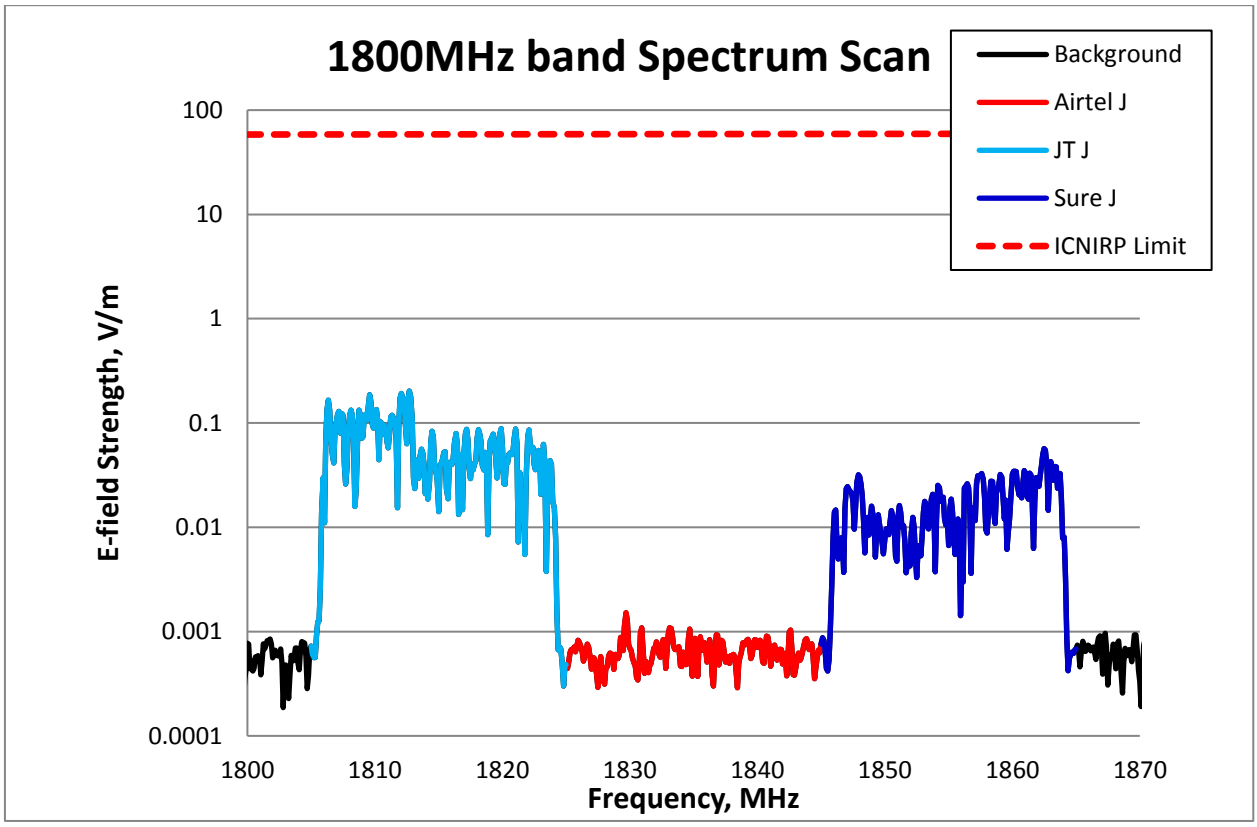

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.2025 V/m (JT J), which is 288 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
Old Farm	Airtel J	1800	0.001515	38506	2.32622E-08	1/ 42988199
	JT J		0.2025	288	0.000292662	1/ 3417
	Sure J		0.0567	1029	1.9991E-05	1/ 50022
				total band EQ	0.000312676	1/ 3198

Table 4 – 1800MHz band Exposure Quotient at Old Farm

2.4 2100MHz Band

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

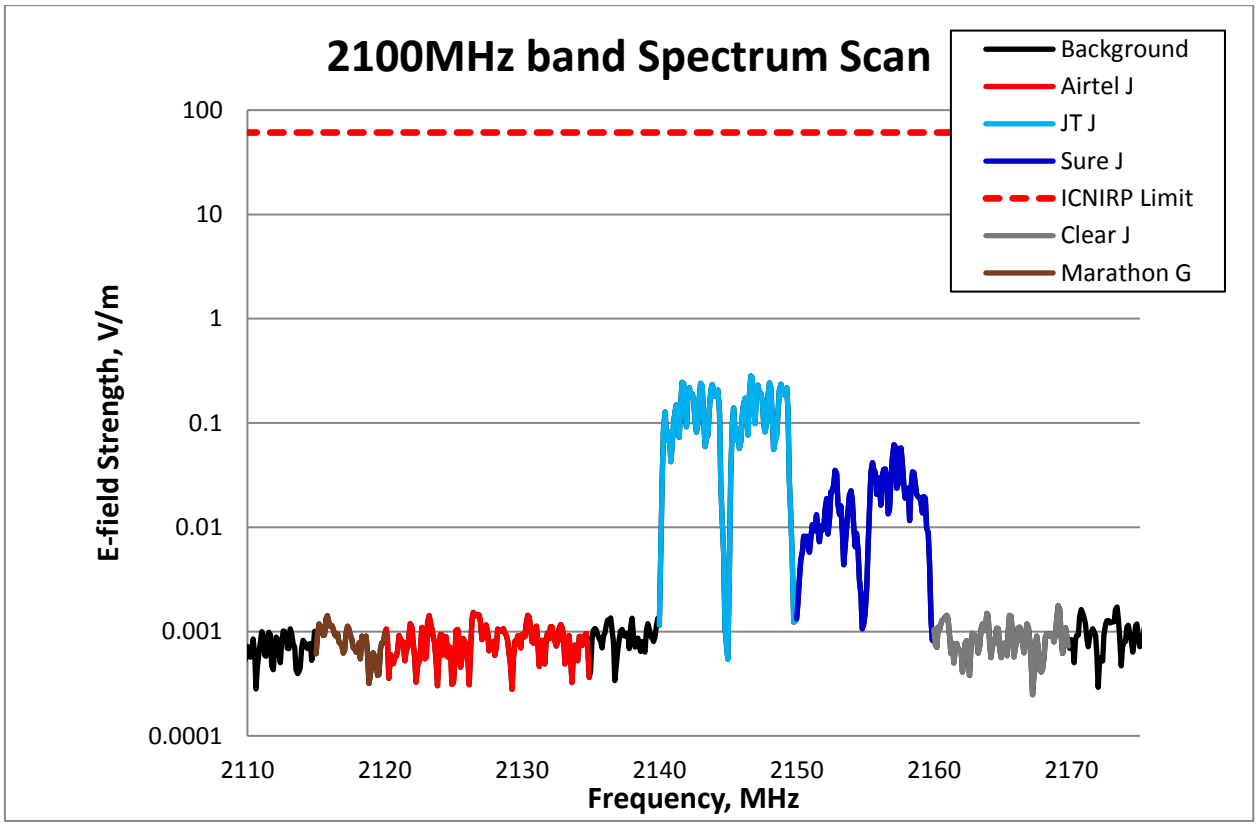

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2827 V/m (JT J), which is 216 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
Old Farm	Airtel J	2100	0.001531	39843	2.89519E-08	1/ 34540015
	Clear J		0.001766	34541	2.1793E-08	1/ 45886316
	JT J		0.2827	216	0.000535715	1/ 1867
	Marathon J		0.00142	42958	9.70947E-09	1/ 102992241
	Sure J		0.06204	983	1.32809E-05	1/ 75296
				total band EQ	0.000549056	1/ 1821

Table 5 – 2100MHz band Exposure Quotient at Old Farm

2.5 2600MHz band

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

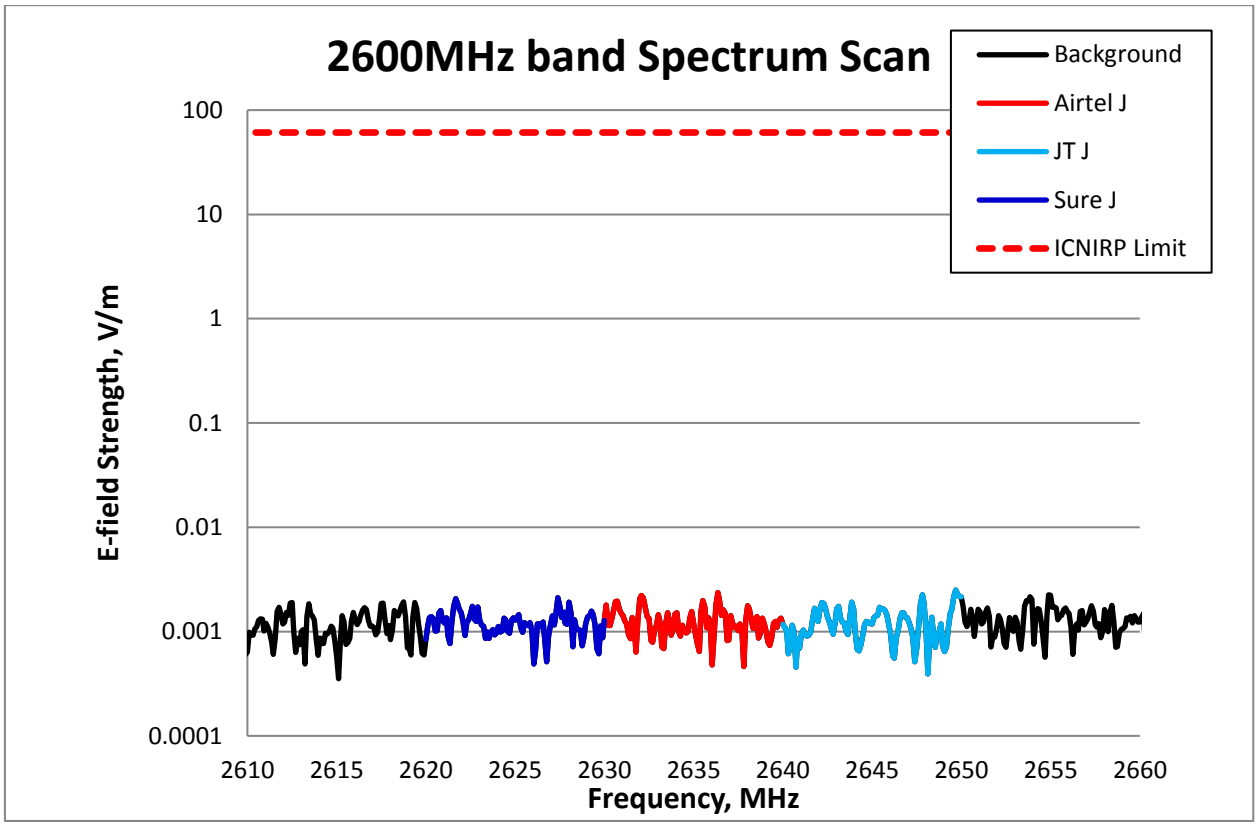

Figure 8 – 2600MHz band Spectrum Scan

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
Old Farm	Airtel J	2600	0.002364	25804	4.47543E-08	1/ 22344244
	JT J		0.002502	24380	4.44392E-08	1/ 22502660
	Sure J		0.002107	28951	4.04271E-08	1/ 24735905
				total band EQ	1.29621E-07	1/ 7714829

Table 6 – 2600MHz band Exposure Quotient at Old Farm

End