

Cellular Mast Emissions Survey: Chappel 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 Chappel Farm site located in Jersey.

The Chappel Farm site was used by a single operator 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
Chappel Farm	800	0.05996	Airtel J	649	1.66003E-05	1/ 60240
	900	0.2748	Airtel J	150	5.41991E-05	1/ 18450
	1800	0.001691	Sure J	34498	6.13119E-08	1/ 16310044
	2100	0.002127	Sure J	28679	1.22344E-07	1/ 8173677
	2600	0.002167	Sure J	28150	1.20579E-07	1/ 8293294
Total Site EQ					7.11036E-05	1/ 14064

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/14064 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

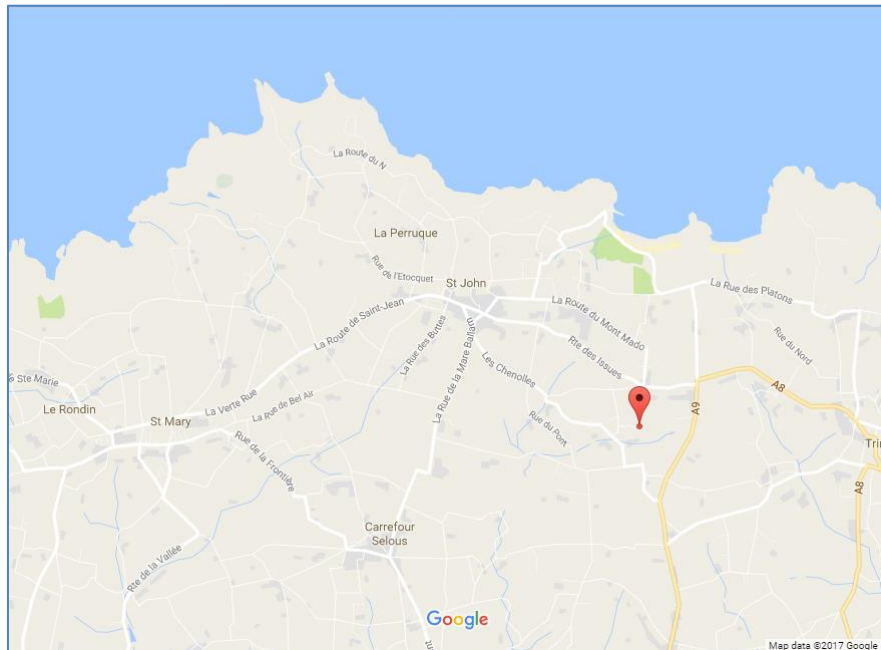


Figure 1 - Map of the Site Area

Site name	Chappel Farm
Site address	Field 971, Rue du Bouillon, St John, Jersey
Site Latitude	N 49.2364
Site Longitude	W 02.11773

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole mast
Description	The pole mast at Chappel Farm is located at the entrance of the site, 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.

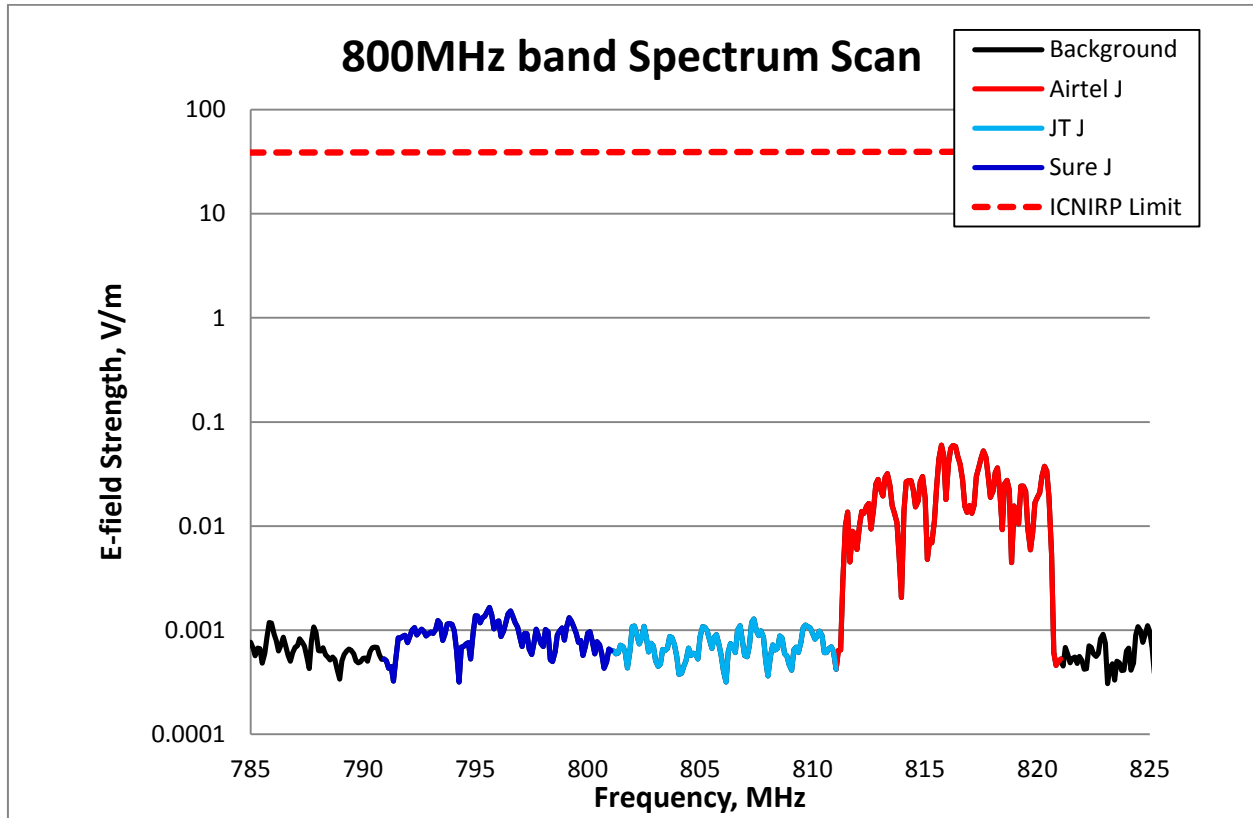


Figure 4 - 800MHz band Spectrum Scan

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 0.05996 (Airtel J), which is 649 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
Chappel Farm	Airtel J	800	0.05996	649	1.65616E-05	1/ 60381
	JT J		0.001282	30336	1.50605E-08	1/ 66398927
	Sure J		0.001657	23471	2.36434E-08	1/ 42295115
total band EQ					1.66003E-05	1/ 60240

Table 2– 800MHz band Exposure Quotient at Chappel Farm

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

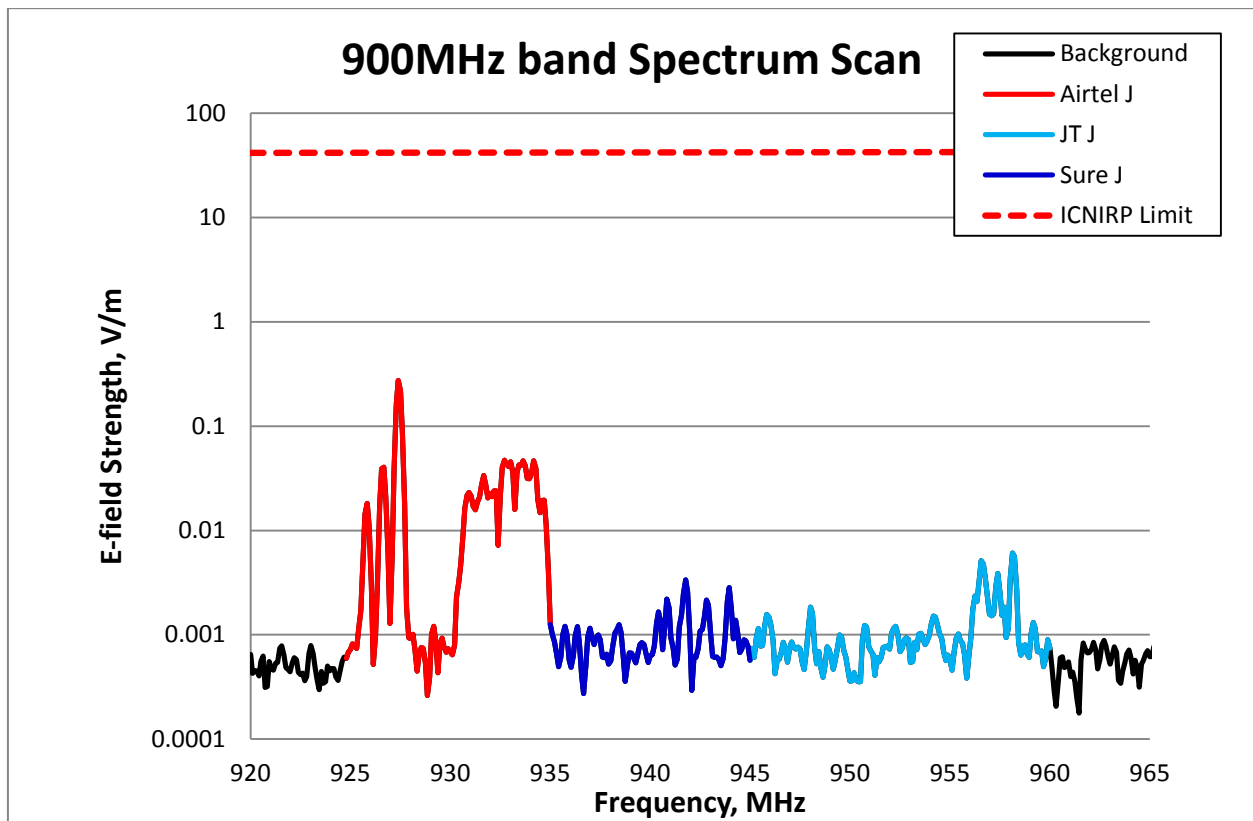


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2748 V/m (Airtel J), which is 150 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
Chappel Farm	Airtel J	900	0.2748	150	5.40829E-05	1/ 18490
	JT J		0.006072	6793	8.3759E-08	1/ 11939022
	Sure J		0.003348	12321	3.24821E-08	1/ 30786225
total band EQ					5.41991E-05	1/ 18450

Table 3– 900MHz band Exposure Quotient at Chappel Farm

2.3 1800 MHz Band

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

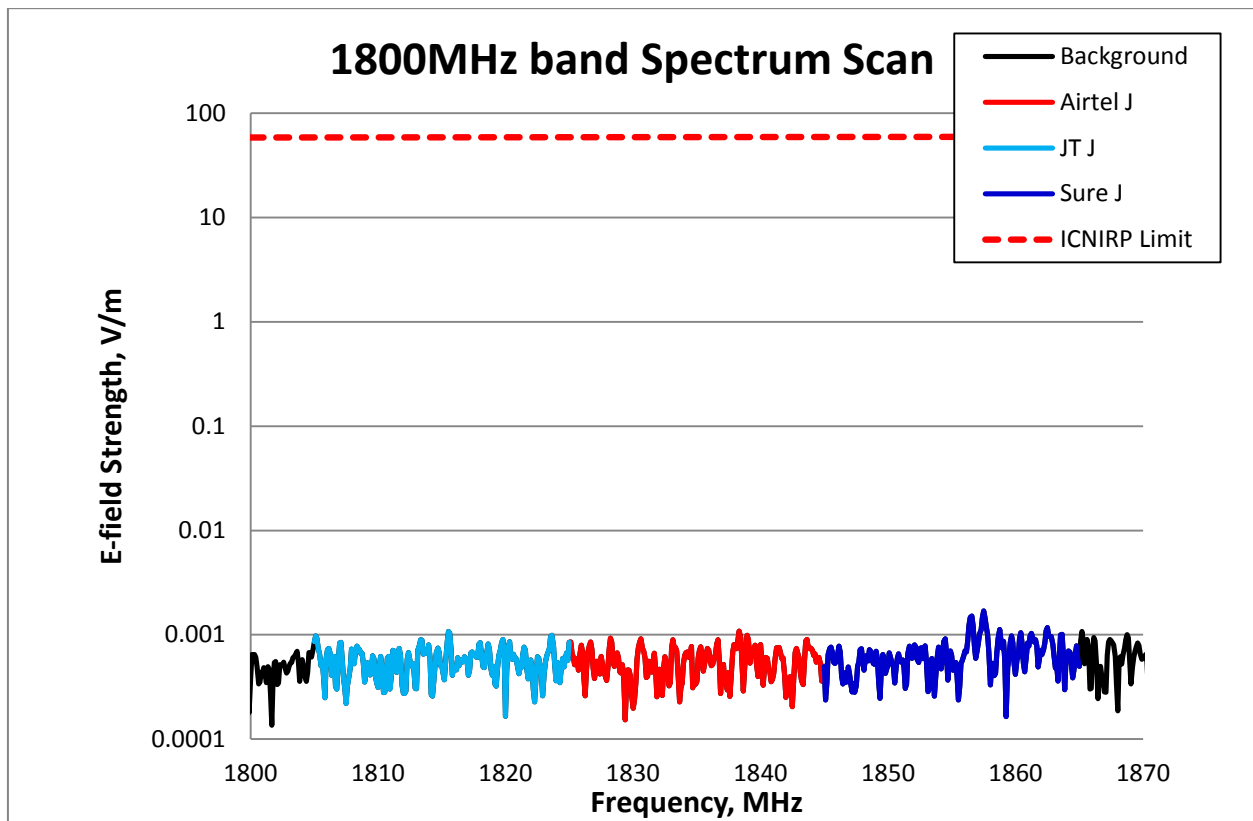


Figure 6 - 1800MHz Spectrum Scan

No activity was recorded in the 1800MHz 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
Chappel Farm	Airtel J	1800	0.001086	53717	1.79851E-08	1/ 55601708
	JT J		0.001078	54115	1.81537E-08	1/ 55085148
	Sure J		0.001691	34498	2.51731E-08	1/ 39724883
total band EQ					6.13119E-08	1/ 16310044

Table 4 – 1800MHz band Exposure Quotient at Chappel Farm

2.4 2100MHz Band

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

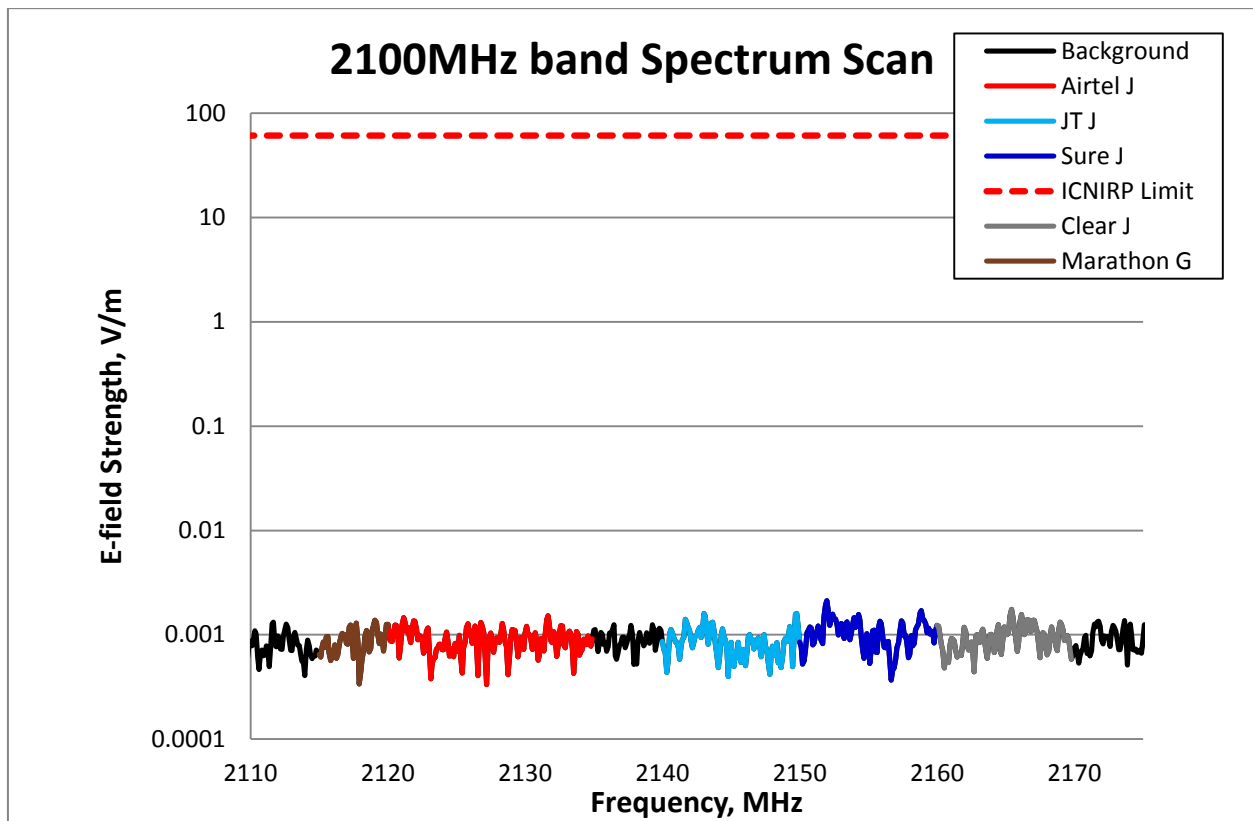


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz 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
Chappel Farm	Airtel J	2100	0.00152	40132	3.37586E-08	1/ 29622040
	Clear J		0.001749	34877	2.47879E-08	1/ 40342268
	JT J		0.001603	38054	2.12842E-08	1/ 46983117
	Marathon J		0.001376	44331	1.09493E-08	1/ 91330378
	Sure J		0.002127	28679	3.15639E-08	1/ 31681743
total band EQ					1.22344E-07	1/ 8173677

Table 5 – 2100MHz band Exposure Quotient at Chappel Farm

2.5 2600MHz band

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

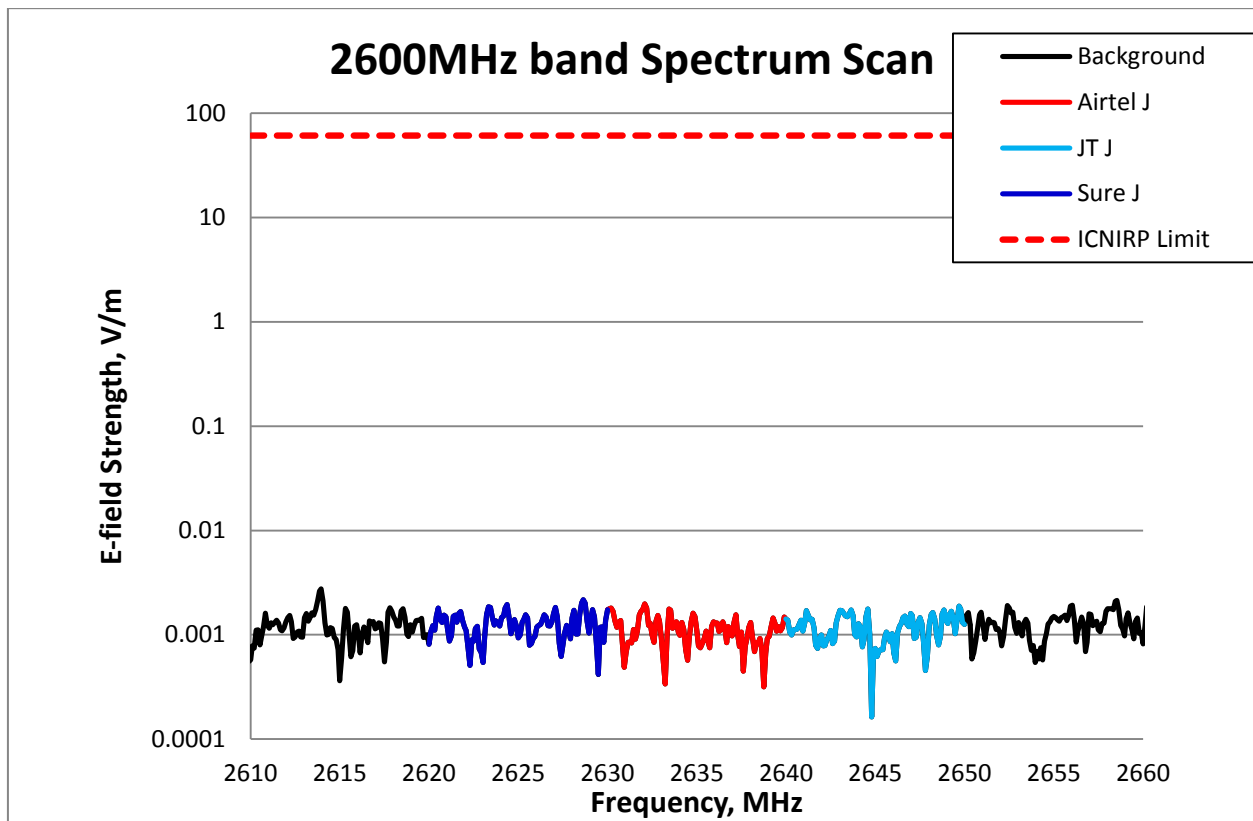


Figure 8 – 2600MHz band Spectrum Scan

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
Chappel Farm	Airtel J	2600	0.001982	30777	3.60379E-08	1/ 27748534
	JT J		0.001886	32344	3.9458E-08	1/ 25343416
	Sure J		0.002167	28150	4.50834E-08	1/ 22181097
total band EQ					1.20579E-07	1/ 8293294

Table 6 – 2600MHz band Exposure Quotient at Chappel Farm

End