

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

The Rondel Farm Shop site was used by a single 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
Rondel Farm Shop	800	0.2293	JT J	170	0.000252156	1/ 3966
	900	1.682	JT J	25	0.002590598	1/ 386
	1800	0.002875	Airtel J	20291	3.44377E-07	1/ 2903793
	2100	0.09896	JT J	616	7.62651E-05	1/ 13112
	2600	0.005465	Sure J	11162	6.86014E-07	1/ 1457696
Total Site EQ					0.002920049	1/ 342

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/342 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

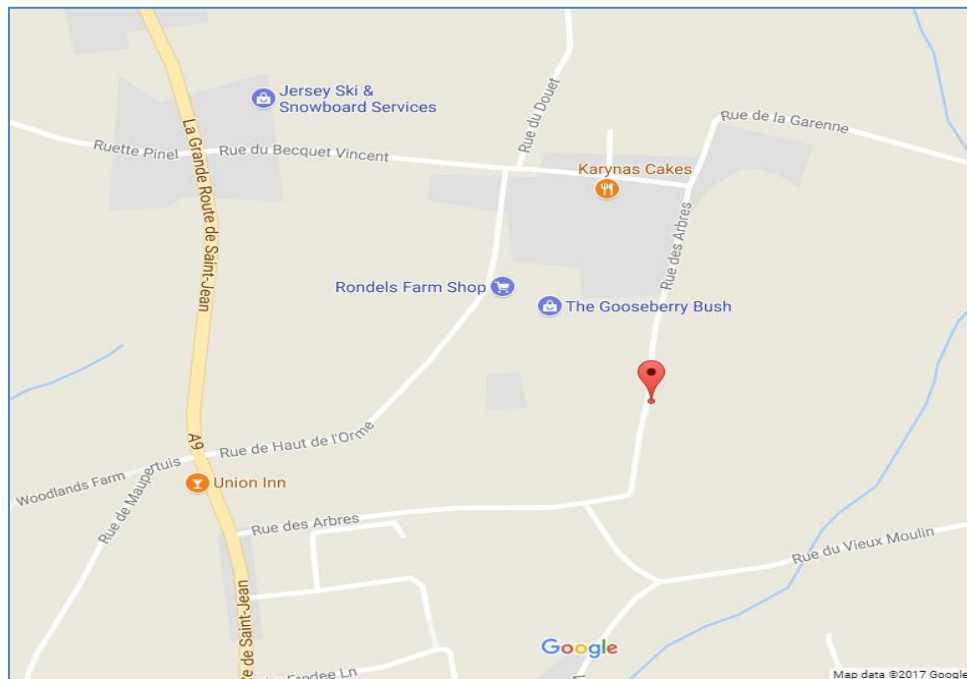


Figure 1 - Map of the Site Area

Site name	Rondel Farm Shop
Site address	Rue de Haut de L'Orme, Trinity, Jersey
Site Latitude	49.21261
Site Longitude	-2.10791

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	15m
Site type	Monopole
Description	The antennas at the Rondel Farm shop are located in the back of the field behind the building. The public have access to it.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

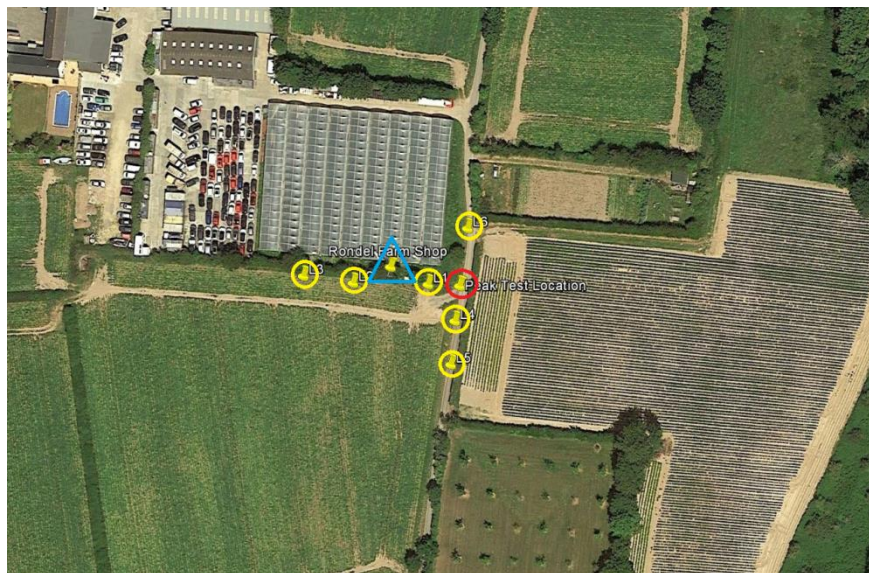


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

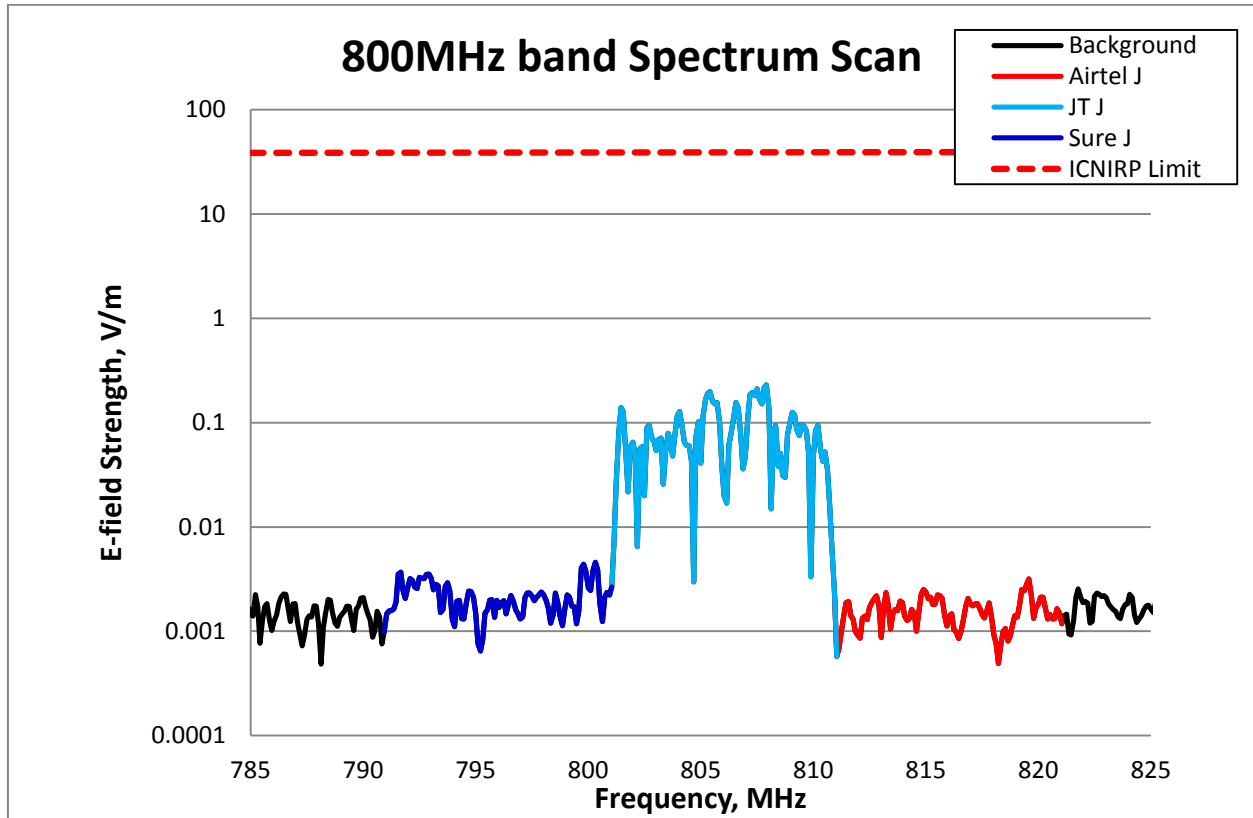


Figure 4 - 800MHz band Spectrum Scan

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 0.2293 V/m (JT J), which is 170 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
Rondel Farm Shop	Airtel J	800	0.003174	12253	7.10658E-08	1/ 14071465
	JT J		0.2293	170	0.000251944	1/ 3969
	Sure J		0.004588	8477	1.40659E-07	1/ 7109416
total band EQ					0.000252156	1/ 3966

Table 2– 800MHz band Exposure Quotient at Rondel Farm Shop

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

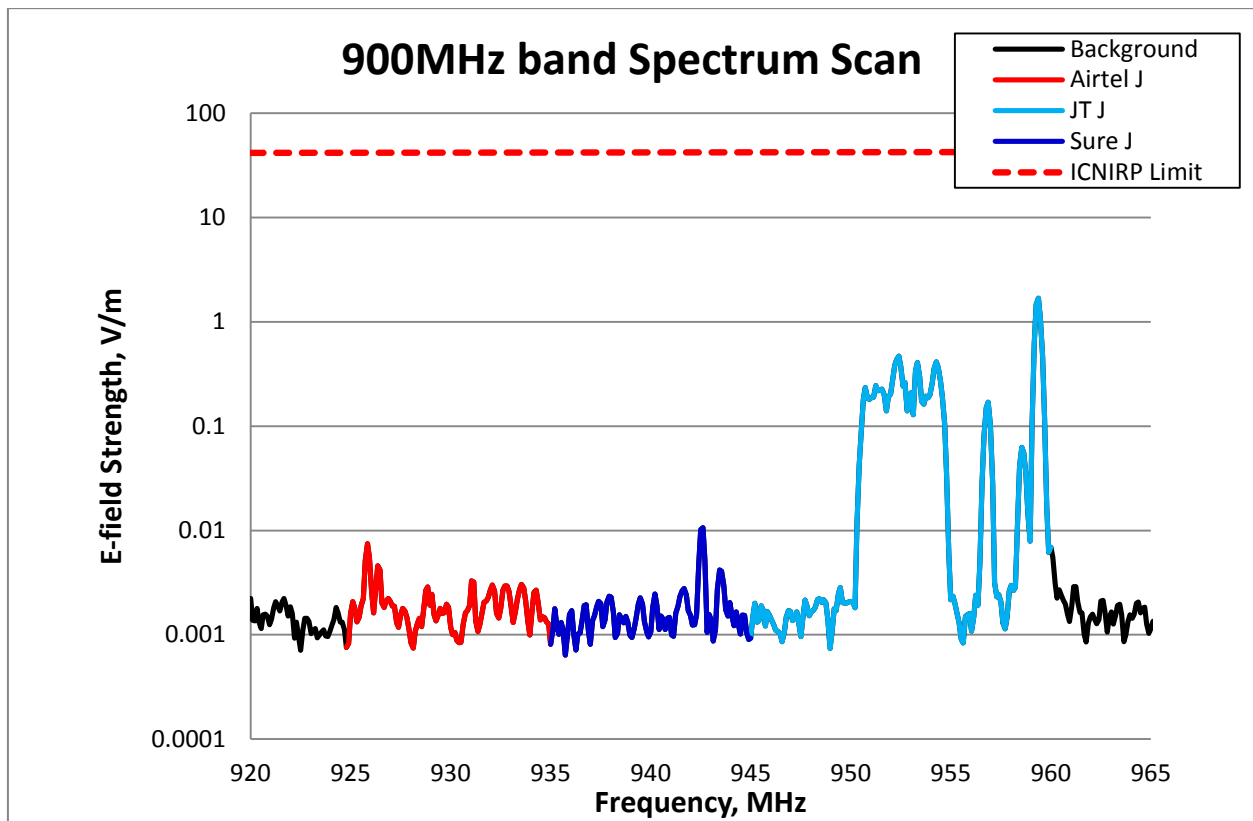


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.682 V/m (JT J), which is 25 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz band are shown below:

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
Rondel Farm Shop	Airtel J	900	0.007441	5544	1.31007E-07	1/ 7633197
	JT J		1.682	25	0.002590326	1/ 386
	Sure J		0.0106	3892	1.40872E-07	1/ 7098649
total band EQ					0.002590598	1/ 386

Table 3– 900MHz band Exposure Quotient at Rondel Farm Shop

2.3 1800 MHz Band

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

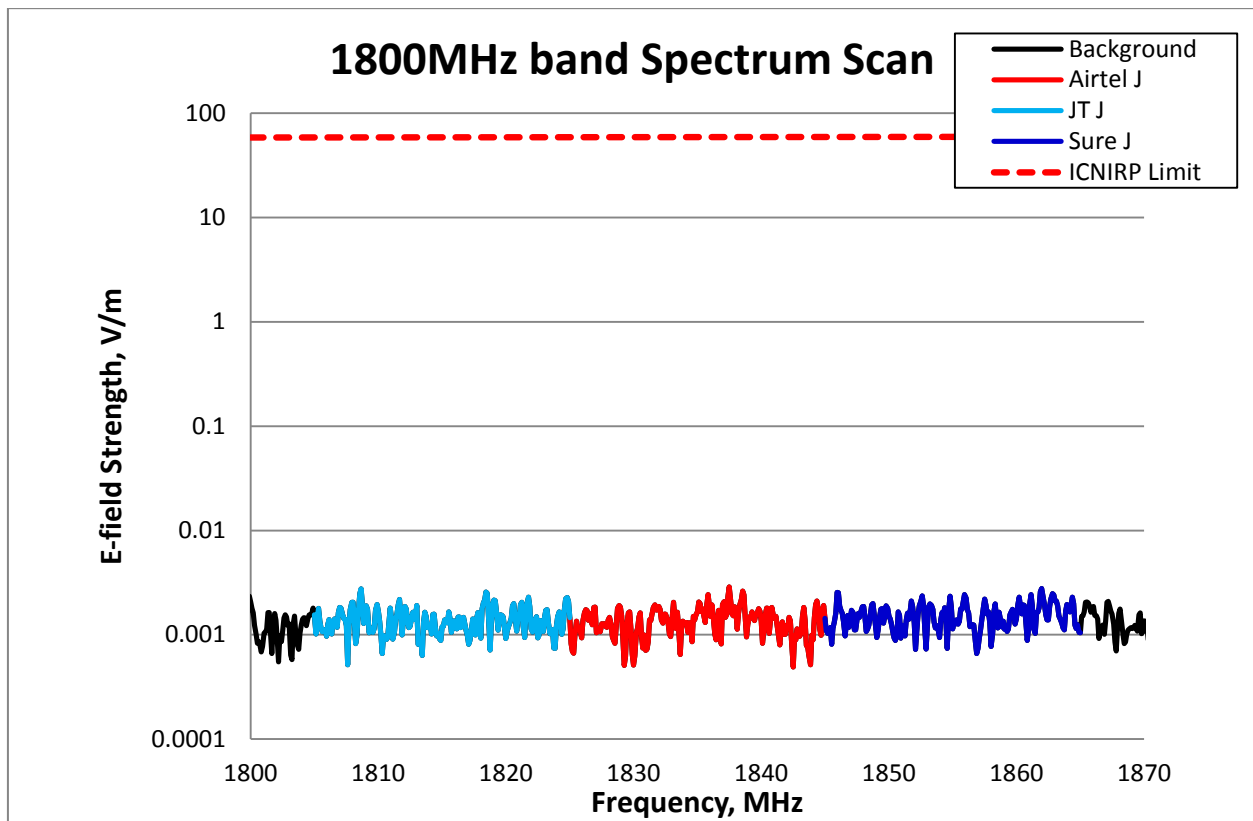


Figure 6 - 1800MHz Spectrum Scan

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	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
Rondel Farm Shop	Airtel J	1800	0.002875	20291	1.06664E-07	1/ 9375236
	JT J		0.002746	21244	1.08419E-07	1/ 9223487
	Sure J		0.002783	20962	1.29294E-07	1/ 7734289
total band EQ					3.44377E-07	1/ 2903793

Table 4 – 1800MHz band Exposure Quotient at Rondel Farm Shop

2.4 2100MHz Band

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

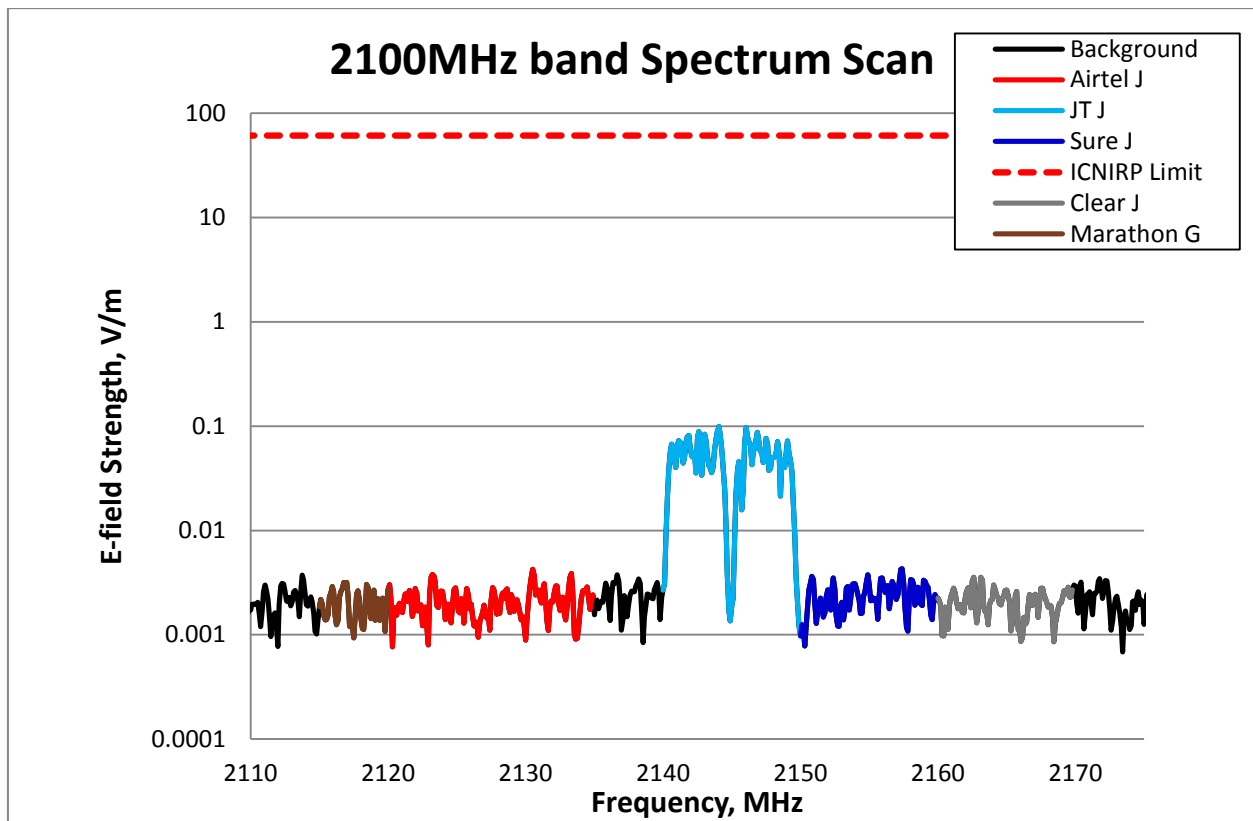


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.09896 V/m (JT J), which is 616 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2100MHz band are shown below:

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
Rondel Farm Shop	Airtel J	2100	0.004243	14377	1.84483E-07	1/ 5420555
	Clear J		0.003559	17140	1.16038E-07	1/ 8617855
	JT J		0.09896	616	7.57473E-05	1/ 13202
	Marathon J		0.00318	19182	5.70396E-08	1/ 17531678
	Sure J		0.004298	14193	1.60327E-07	1/ 6237235
total band EQ					7.62651E-05	1/ 13112

Table 5 – 2100MHz band Exposure Quotient at Rondel Farm Shop

2.5 2600MHz band

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

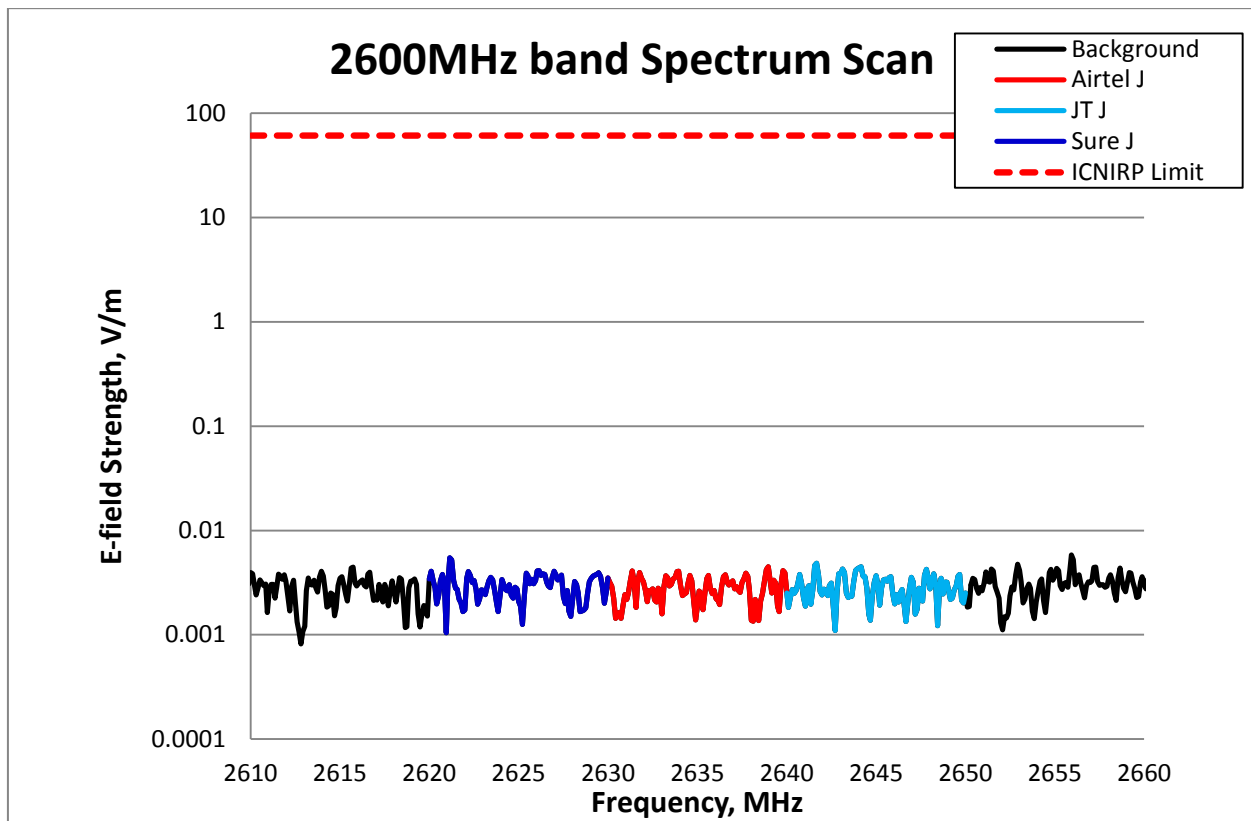


Figure 8 – 2600MHz band Spectrum Scan

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	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
Rondel Farm Shop	Airtel J	2600	0.004472	13640	2.16497E-07	1/ 4619010
	JT J		0.004847	12585	2.28804E-07	1/ 4370554
	Sure J		0.005465	11162	2.40713E-07	1/ 4154318
total band EQ					6.86014E-07	1/ 1457696

Table 6 – 2600MHz band Exposure Quotient at Rondel Farm Shop

End