

Cellular Mast Emissions Survey: Field 814A (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	Field 814A (Jersey)
Survey Date:	10/06/2017 at 14:18	
Report issue Date	21/07/2017	
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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 Field 814A site located in Jersey.

The Field 814A site (at the back of Hotel Cristina) was used by one 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
Back of Cristina Hotel	800	0.289	Airtel J	135	0.000446533	1/ 2239
	900	0.398	Airtel J	104	0.000142587	1/ 7013
	1800	0.01099	Airtel J	5308	8.82553E-07	1/ 1133077
	2100	0.02788	Airtel J	2188	3.07342E-06	1/ 325371
	2600	0.00223	JT J	27354	1.11045E-07	1/ 9005395
Total Site EQ					0.000593187	1/ 1686

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/1686 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

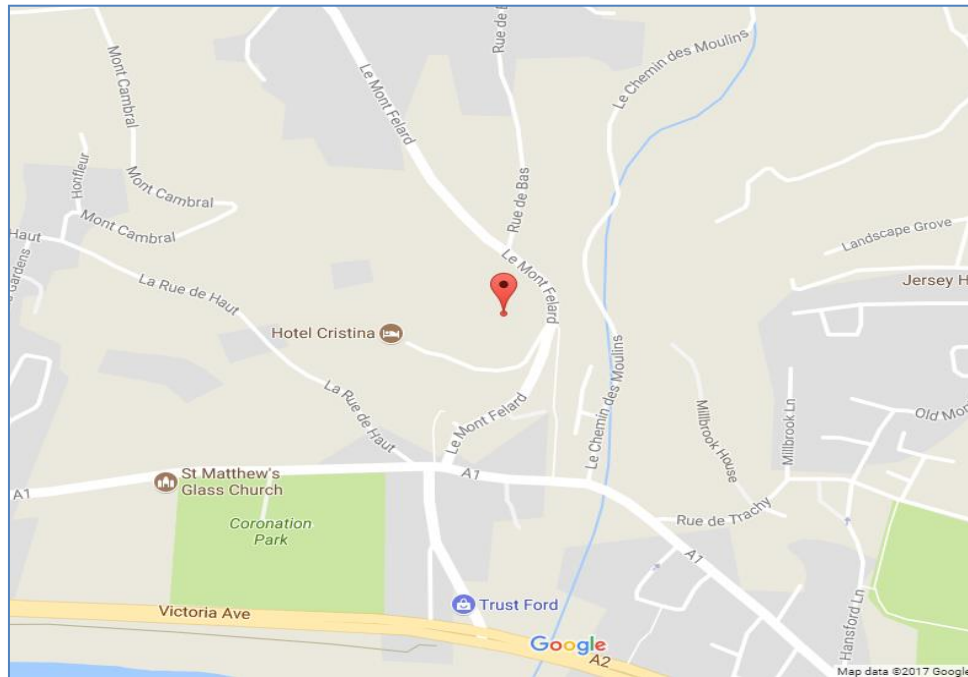


Figure 1 - Map of the Site Area

Site name	Field 814A
Site address	(back of Hotel Cristina), Le Mont Felard, St Lawrence, Jersey
Site Latitude	49.20038
Site Longitude	-2.13752

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole Mast
Description	The antennas at the Field 814A are located on the roof of the main building, 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.

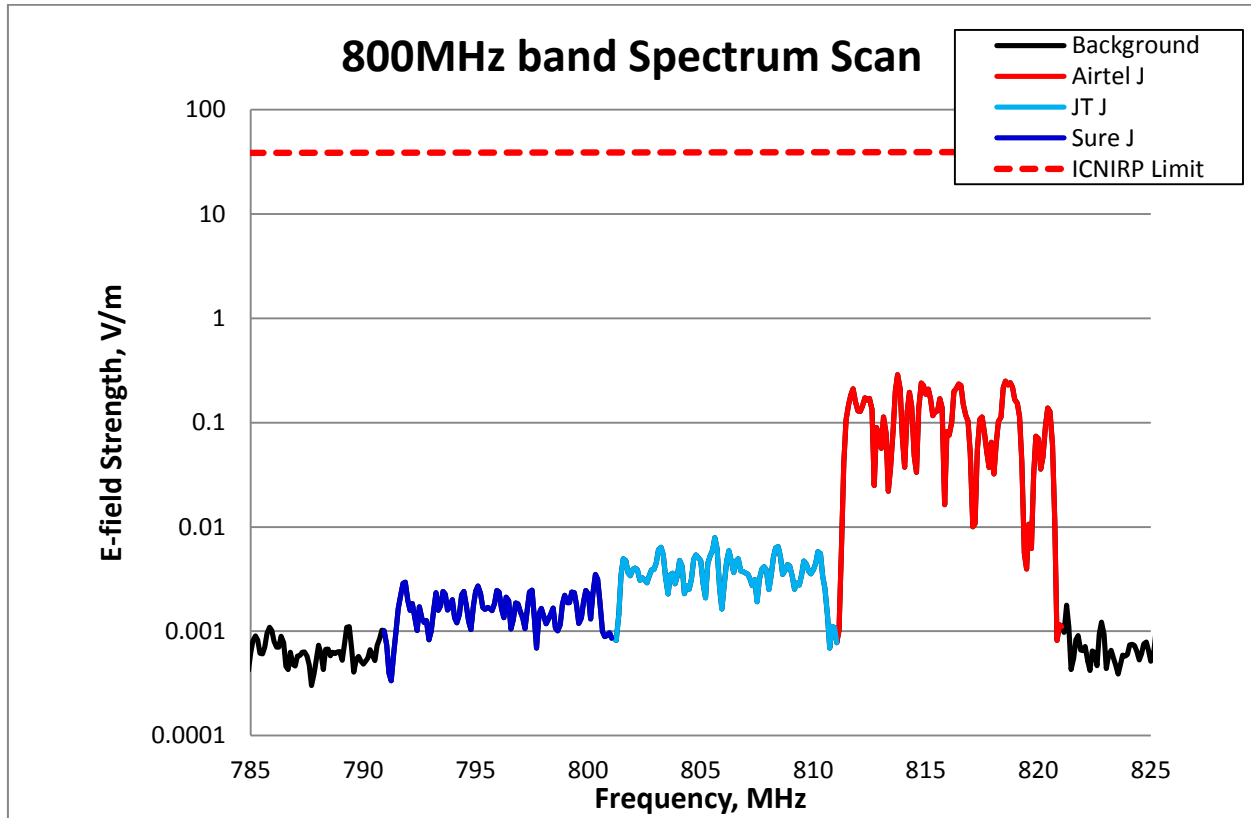


Figure 4 - 800MHz band Spectrum Scan

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 0.289 V/m (Airtel J), which is 135 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
Back of Cristina Hotel	Airtel J	800	0.289	135	0.000446042	1/ 2242
	JT J		0.007912	4915	4.09158E-07	1/ 2444045
	Sure J		0.003493	11134	8.16298E-08	1/ 12250426
total band EQ					0.000446533	1/ 2239

Table 2– 800MHz band Exposure Quotient at Field 814A

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

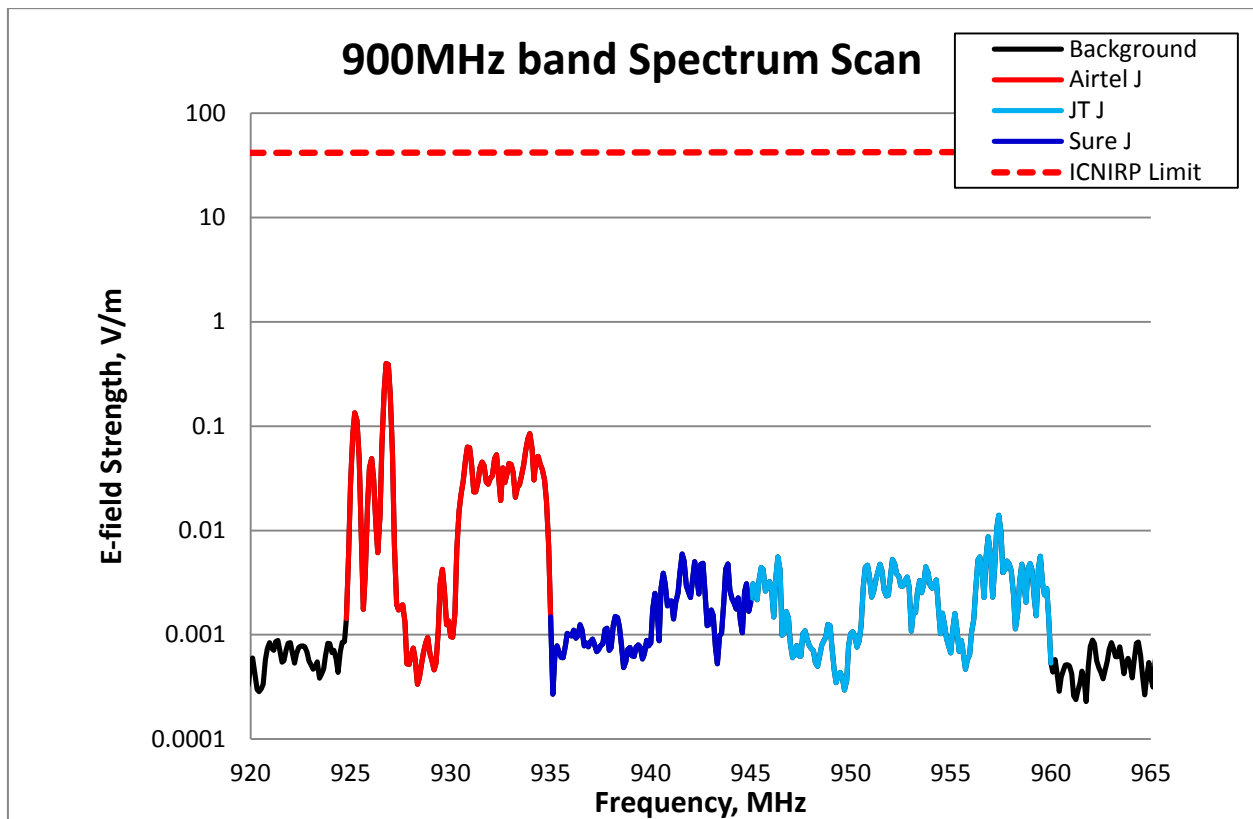


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.398 V/m (Airtel J), which is 104 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
Back of Cristina Hotel	Airtel J	900	0.398	104	0.000142044	1/ 7040
	JT J		0.01404	2938	4.28851E-07	1/ 2331811
	Sure J		0.005951	6932	1.14067E-07	1/ 8766770
total band EQ					0.000142587	1/ 7013

Table 3– 900MHz band Exposure Quotient at Field 814A

2.3 1800 MHz Band

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

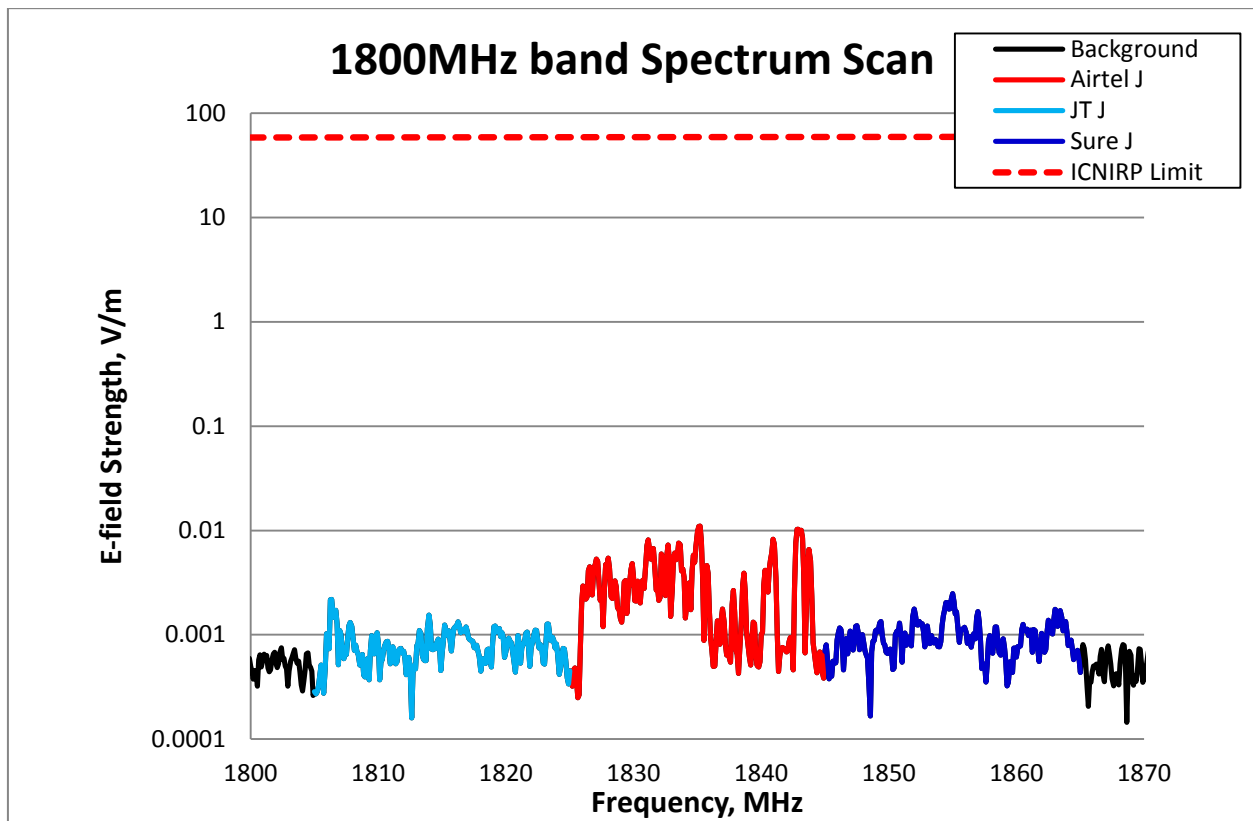


Figure 6 - 1800MHz Spectrum Scan

Marginal 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
Back of Cristina Hotel	Airtel J	1800	0.01099	5308	7.88905E-07	1/ 1267579
	JT J		0.002186	26686	3.80926E-08	1/ 26251791
	Sure J		0.00247	23618	5.55544E-08	1/ 18000360
total band EQ					8.82553E-07	1/ 1133077

Table 4 – 1800MHz band Exposure Quotient at Field 814A

2.4 2100MHz Band

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

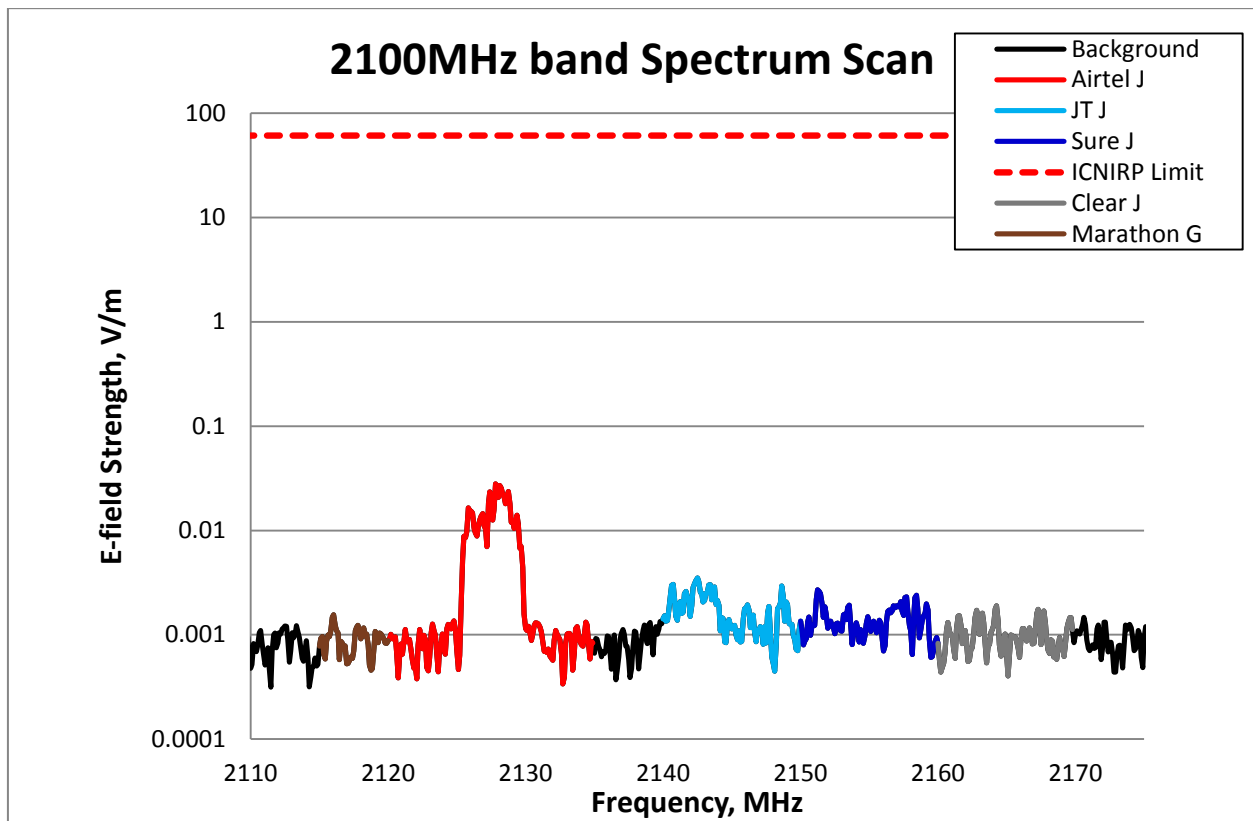


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.02788 V/m (Airtel J), which is 2188 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
Back of Cristina Hotel	Airtel J	2100	0.02788	2188	2.89187E-06	1/ 345797
	Clear J		0.00189	32275	2.78731E-08	1/ 35876883
	JT J		0.003516	17349	8.72669E-08	1/ 11459099
	Marathon J		0.001558	39153	1.11996E-08	1/ 89288517
	Sure J		0.0027	22593	5.52016E-08	1/ 18115429
total band EQ					3.07342E-06	1/ 325371

Table 5 – 2100MHz band Exposure Quotient at Field 814A

2.5 2600MHz band

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

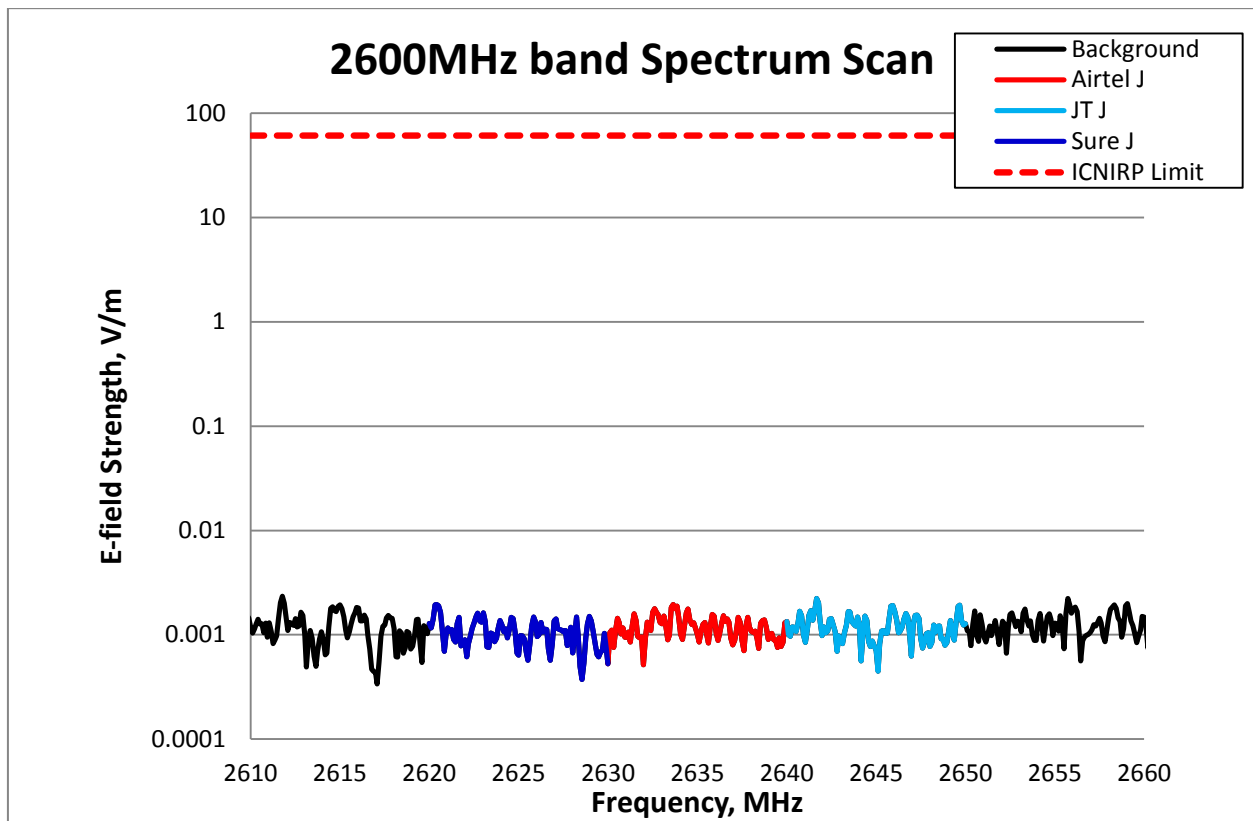


Figure 8 – 2600MHz band Spectrum Scan

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
Back of Cristina Hotel	Airtel J	2600	0.001947	31330	3.83018E-08	1/ 26108448
	JT J		0.00223	27354	4.05855E-08	1/ 24639360
	Sure J		0.001945	31362	3.21573E-08	1/ 31097141
total band EQ					1.11045E-07	1/ 9005395

Table 6 – 2600MHz band Exposure Quotient at Field 814A

End