

Cellular Mast Emissions Survey: Beaumont Hill (Jersey)



DOCUMENT DETAILS

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Survey Engineer:	Louise Sands	
Report Compiled by:	Lauren Medhurst	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

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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 Beaumont Hill site located in Jersey.

The Beaumont Hill site was used by a single operator at the time of the survey: Sure 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
Beaumont Hill	800	0.3026	Sure J	129	0.000316452	1/ 3160
	900	2.793	Sure J	15	0.005380443	1/ 186
	1800	0.5734	Sure J	102	0.00362297	1/ 276
	2100	0.5932	Sure J	103	0.002646955	1/ 378
	2600	0.004712	JT J	12946	6.41386E-07	1/ 1559125
Total Site EQ					0.011967461	1/ 84

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/84 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

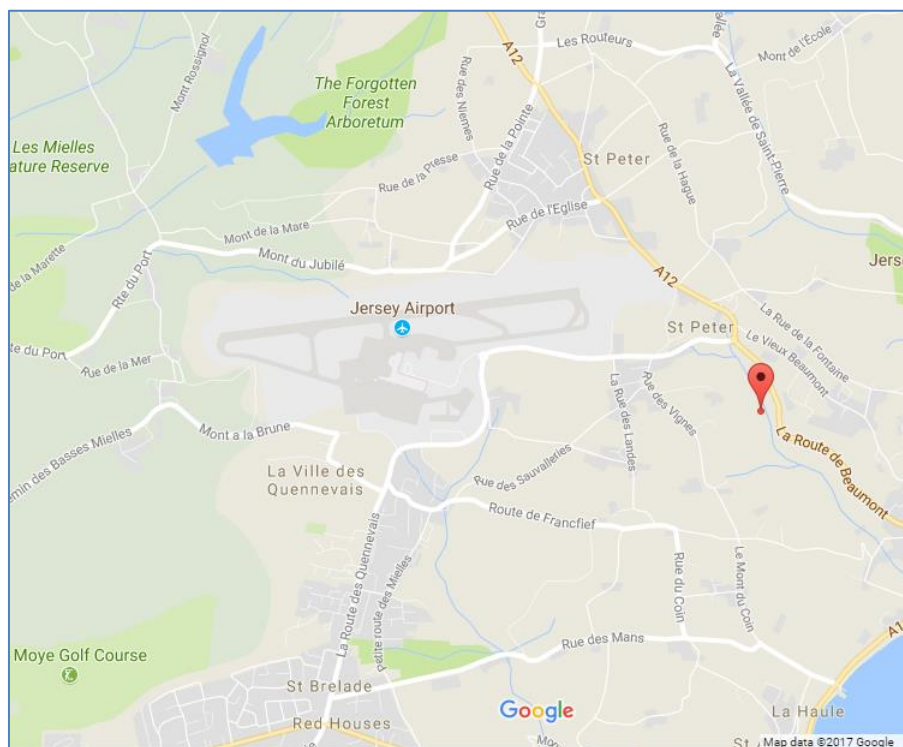


Figure 1 - Map of the Site Area

Site name	Beaumont Hill
Site address	Rue Des Vignes, St Peter, Jersey
Site Latitude	N 49.20384
Site Longitude	W 02.1718

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	12m
Site type	Pole Mast
Description	The Pole Mast at Beaumont Hill is located at the rear of the field, access is open to 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.

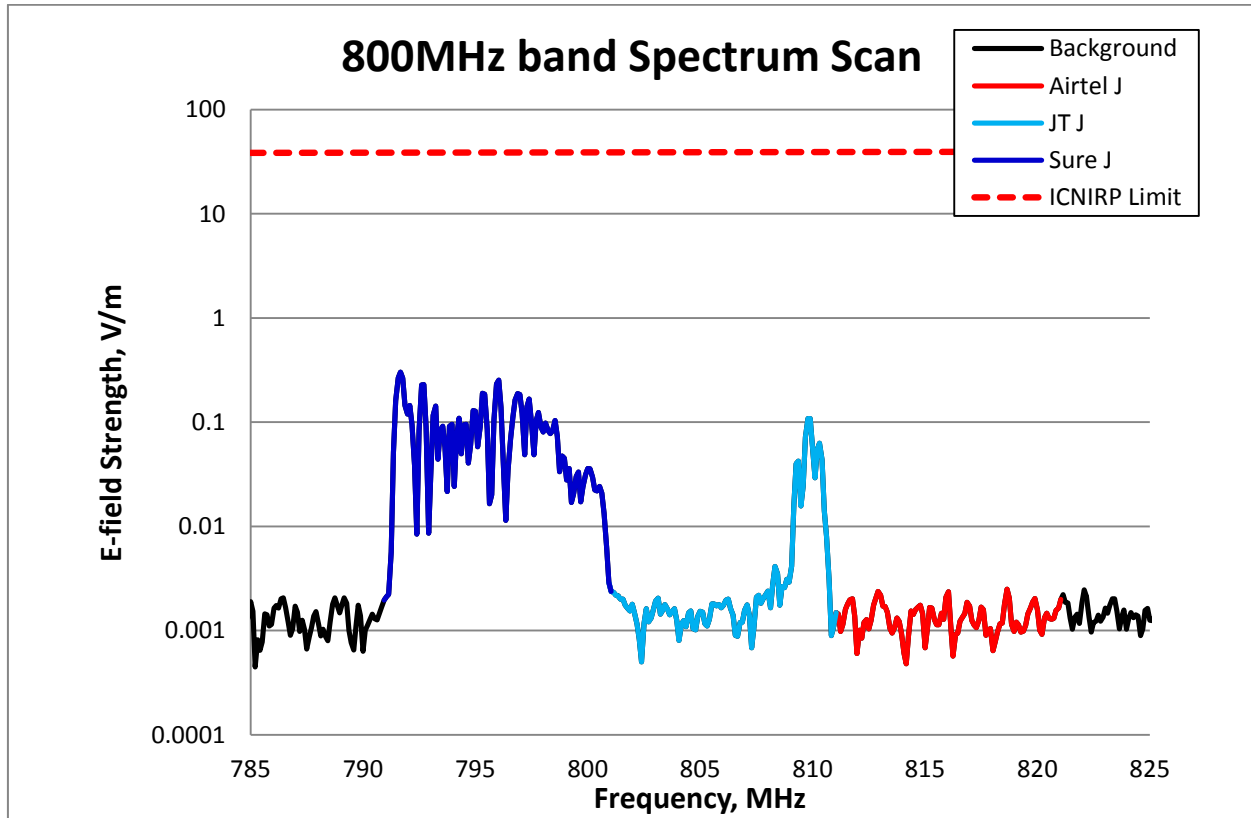


Figure 4 - 800MHz band Spectrum Scan

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 0.3026 V/m (Sure J), which is 129 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
Beaumont Hill	Airtel J	800	0.002499	15563	5.27946E-08	1/ 18941335
	JT J		0.1085	358	1.25716E-05	1/ 79545
	Sure J		0.3026	129	0.000303828	1/ 3291
total band EQ					0.000316452	1/ 3160

Table 2– 800MHz band Exposure Quotient at Beaumont Hill

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

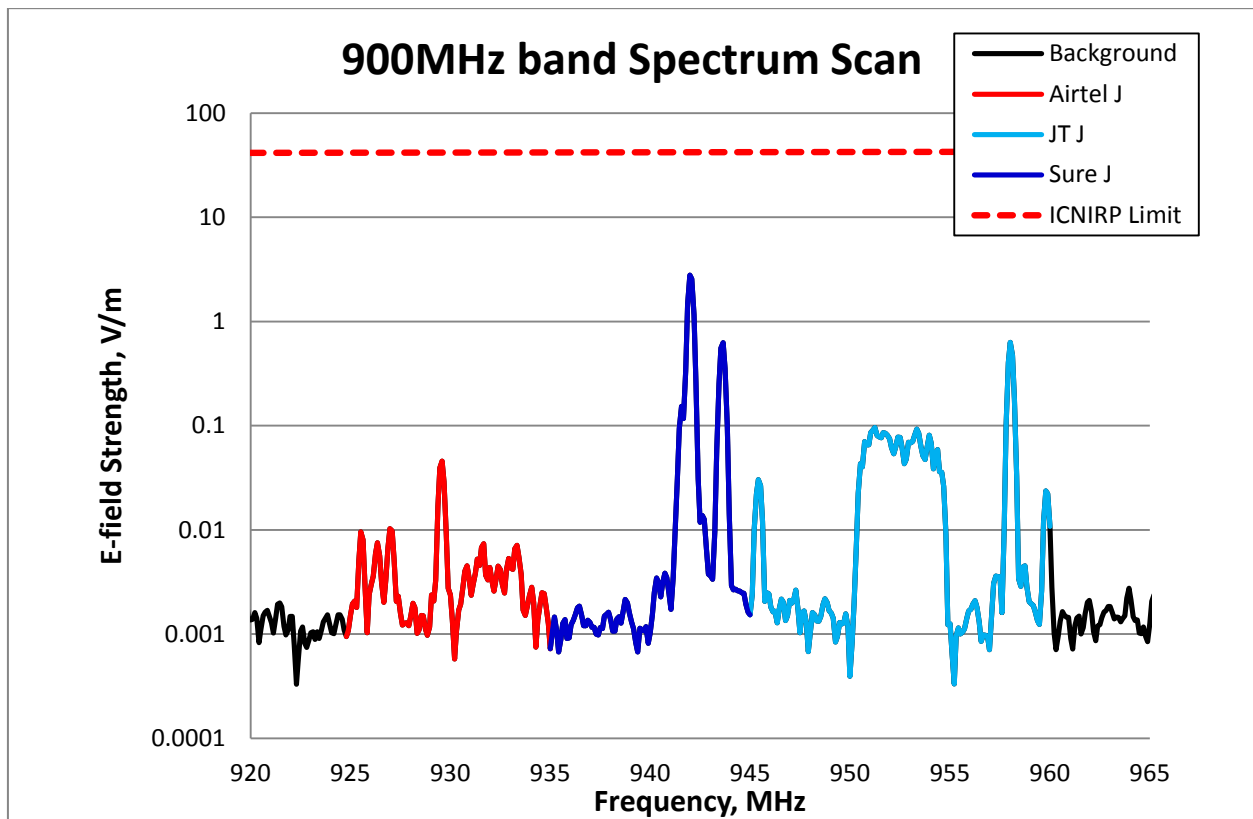


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.793 V/m (Sure J), which is 15 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
Beaumont Hill	Airtel J	900	0.04564	904	1.6687E-06	1/ 599268
	JT J		0.629	66	0.000273871	1/ 3651
	Sure J		2.793	15	0.005104903	1/ 196
total band EQ					0.005380443	1/ 186

Table 3– 900MHz band Exposure Quotient at Beaumont Hill

2.3 1800 MHz Band

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

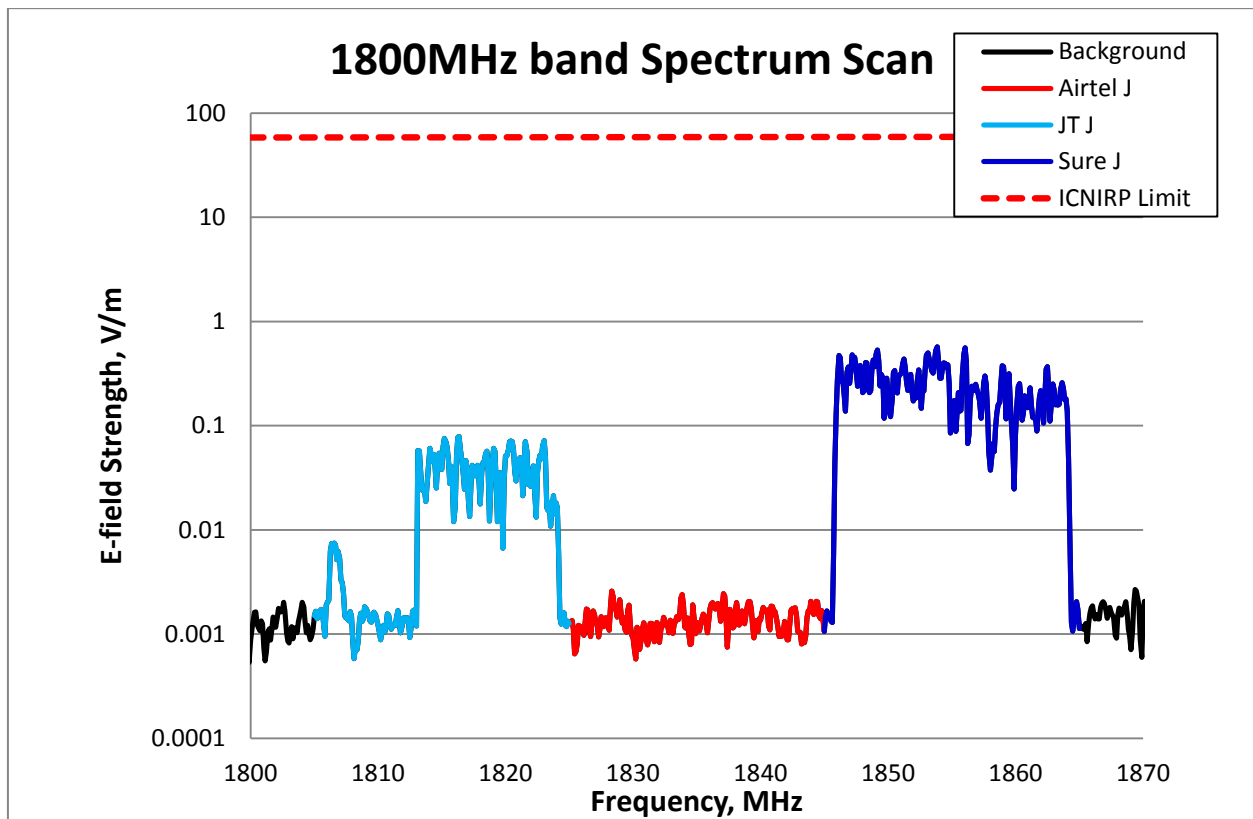


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.5734 V/m (Sure J), which is 102 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
Beaumont Hill	Airtel J	1800	0.002592	22506	1.06272E-07	1/ 9409813
	JT J		0.07904	738	5.38738E-05	1/ 18562
	Sure J		0.5734	102	0.00356899	1/ 280
	total band EQ				0.00362297	1/ 276

Table 4 – 1800MHz band Exposure Quotient at Beaumont Hill

2.4 2100MHz Band

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

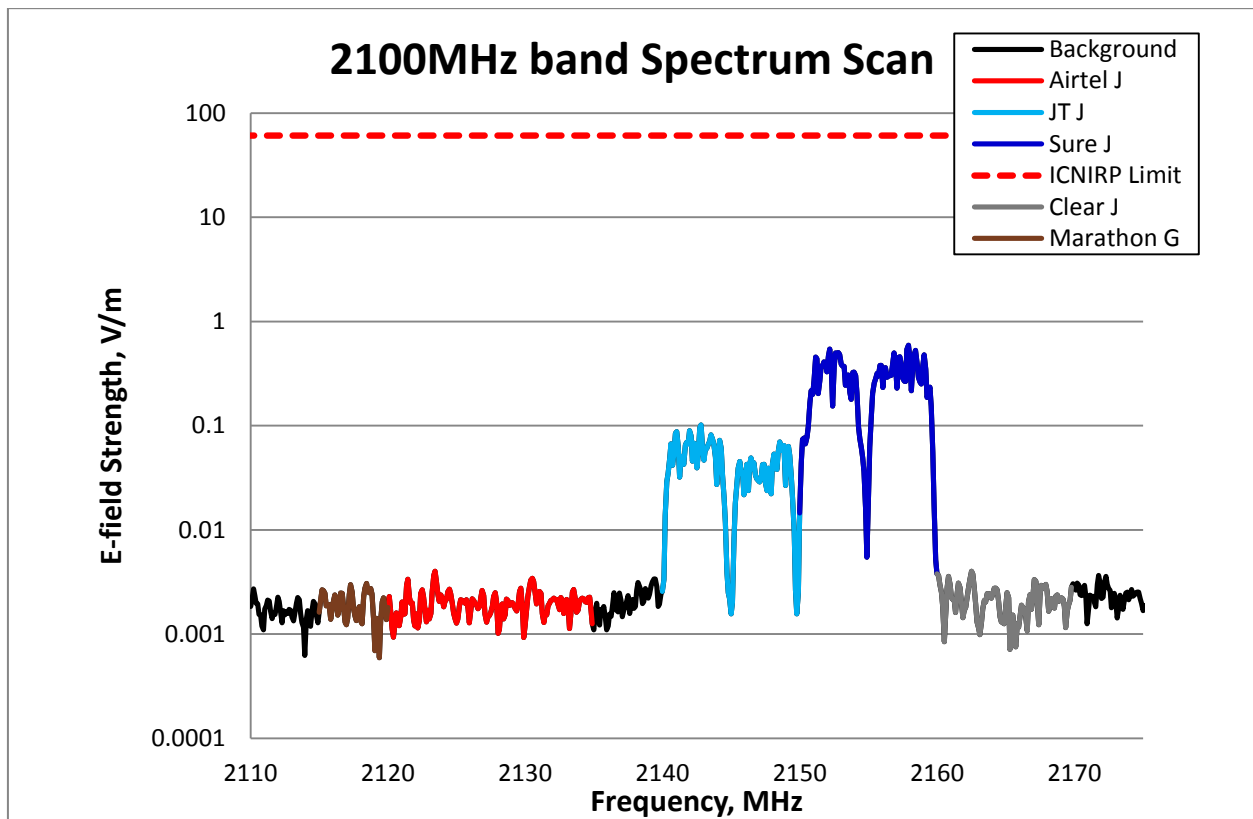


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.5932 V/m (Sure J), which is 103 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
Beaumont Hill	Airtel J	2100	0.004007	15223	1.61073E-07	1/ 6208382
	Clear J		0.004007	15223	1.29067E-07	1/ 7747895
	JT J		0.1016	600	6.11708E-05	1/ 16348
	Marathon J		0.003067	19889	5.24312E-08	1/ 19072605
	Sure J		0.5932	103	0.002585442	1/ 387
total band EQ					0.002646955	1/ 378

Table 5 – 2100MHz band Exposure Quotient at Beaumont Hill

2.5 2600MHz band

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

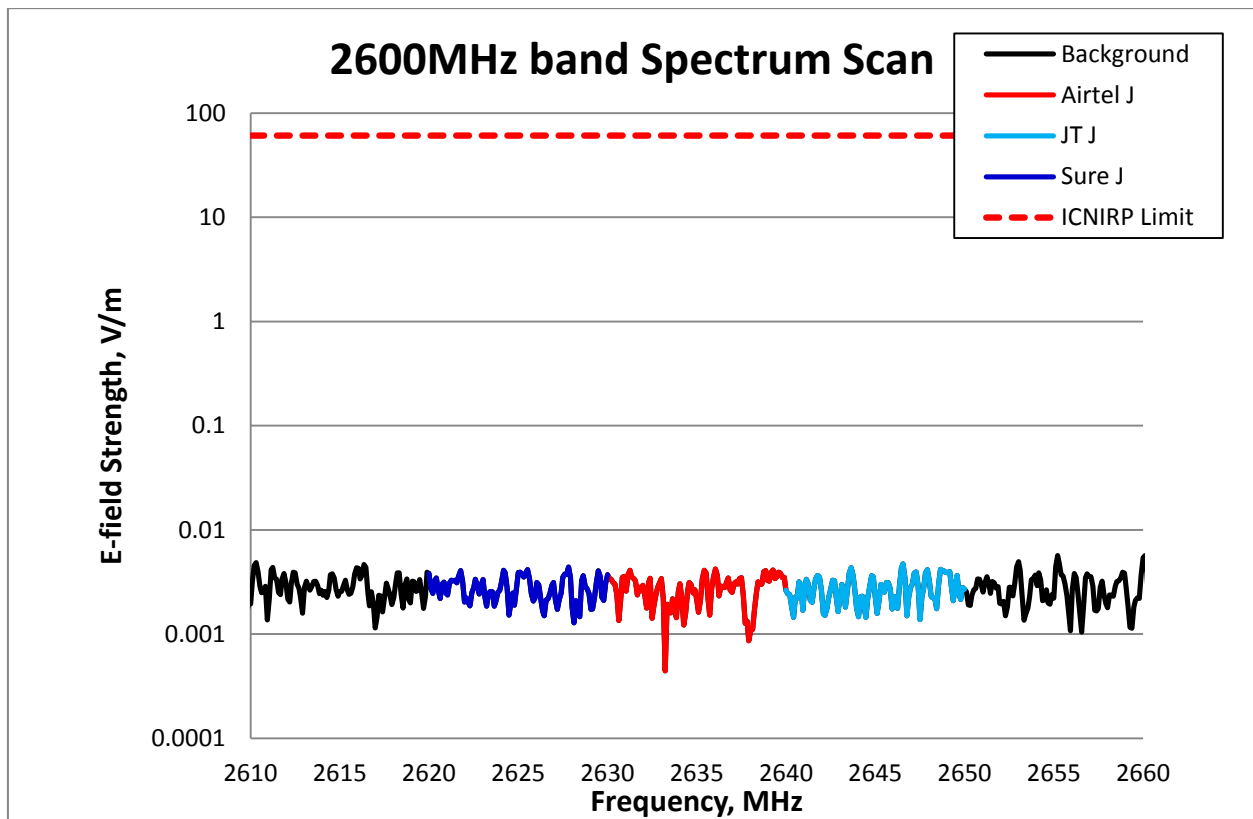


Figure 8 – 2600MHz band Spectrum Scan

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
Beaumont Hill	Airtel J	2600	0.004228	14428	2.15761E-07	1/ 4634748
	JT J		0.004712	12946	2.11723E-07	1/ 4723145
	Sure J		0.004387	13905	2.13901E-07	1/ 4675065
total band EQ					6.41386E-07	1/ 1559125

Table 6 – 2600MHz band Exposure Quotient at Beaumont Hill

End