

Cellular Mast Emissions Survey: Central (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	Central (Jersey)
Survey Date:	10/06/2017 at 10:24	
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 Central site located in Jersey.

The Central site was used by a single operator at the time of the survey: JT J; strong signal levels were also recorded for the other two operators who operate sites at a nearby location. Surveys were nonetheless 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
Central	800	0.1175	JT J	331	0.000125348	1/ 7978
	900	0.9986	JT J	41	0.001116416	1/ 896
	1800	0.04651	Sure J	1254	2.24297E-05	1/ 44584
	2100	0.08344	JT J	731	4.99274E-05	1/ 20029
	2600	0.07482	JT J	815	2.69135E-05	1/ 37156
Total Site EQ					0.001341034	1/ 746

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/746 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

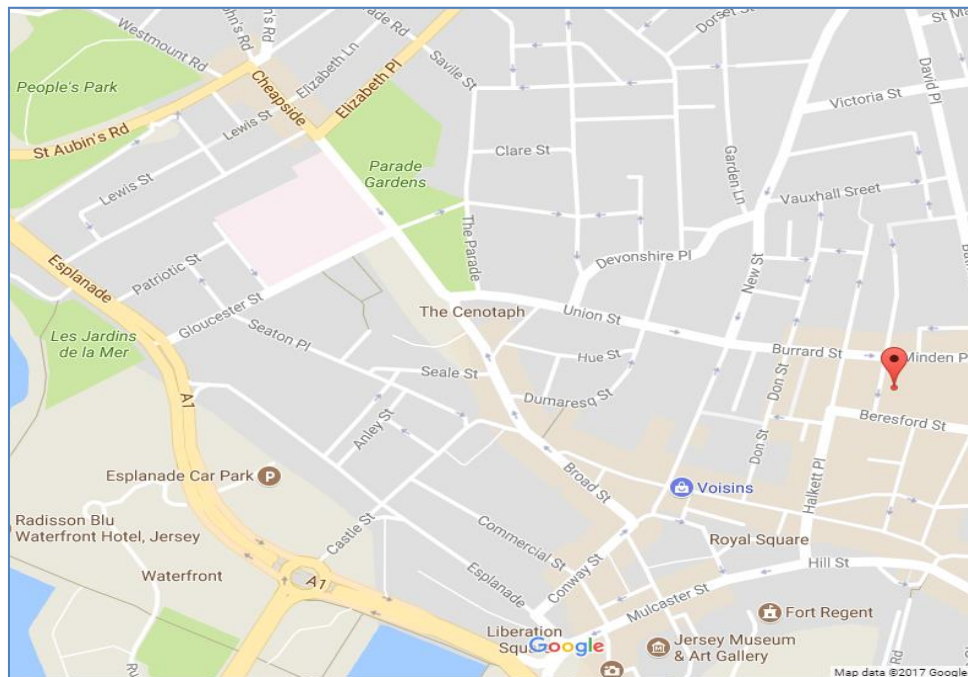


Figure 1 - Map of the Site Area

Site name	Central
Site address	Central Exchange, Minden Place, St Helier, Jersey
Site Latitude	49.18563
Site Longitude	-2.10368

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	15m
Site type	Building - Rooftop
Description	The antennas at Central are located on the rooftop of the main building, out of reach of the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

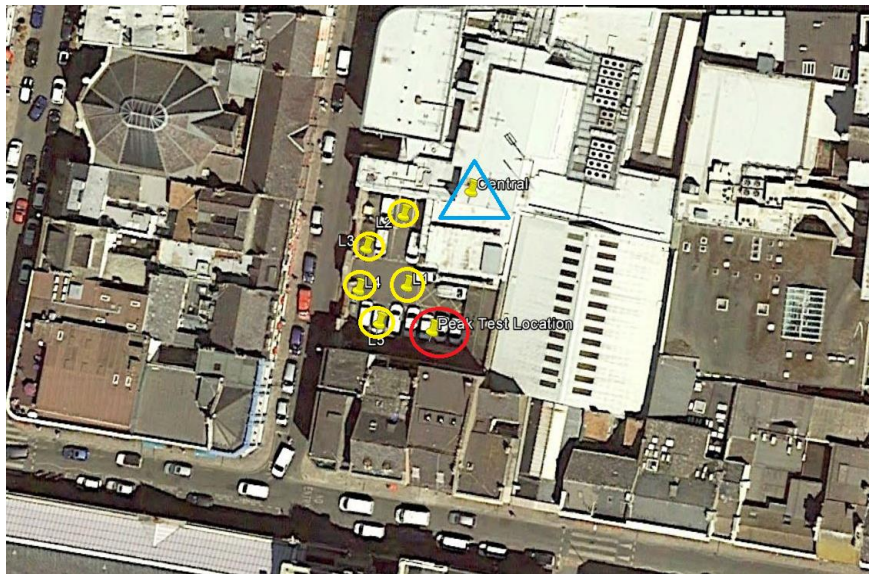


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

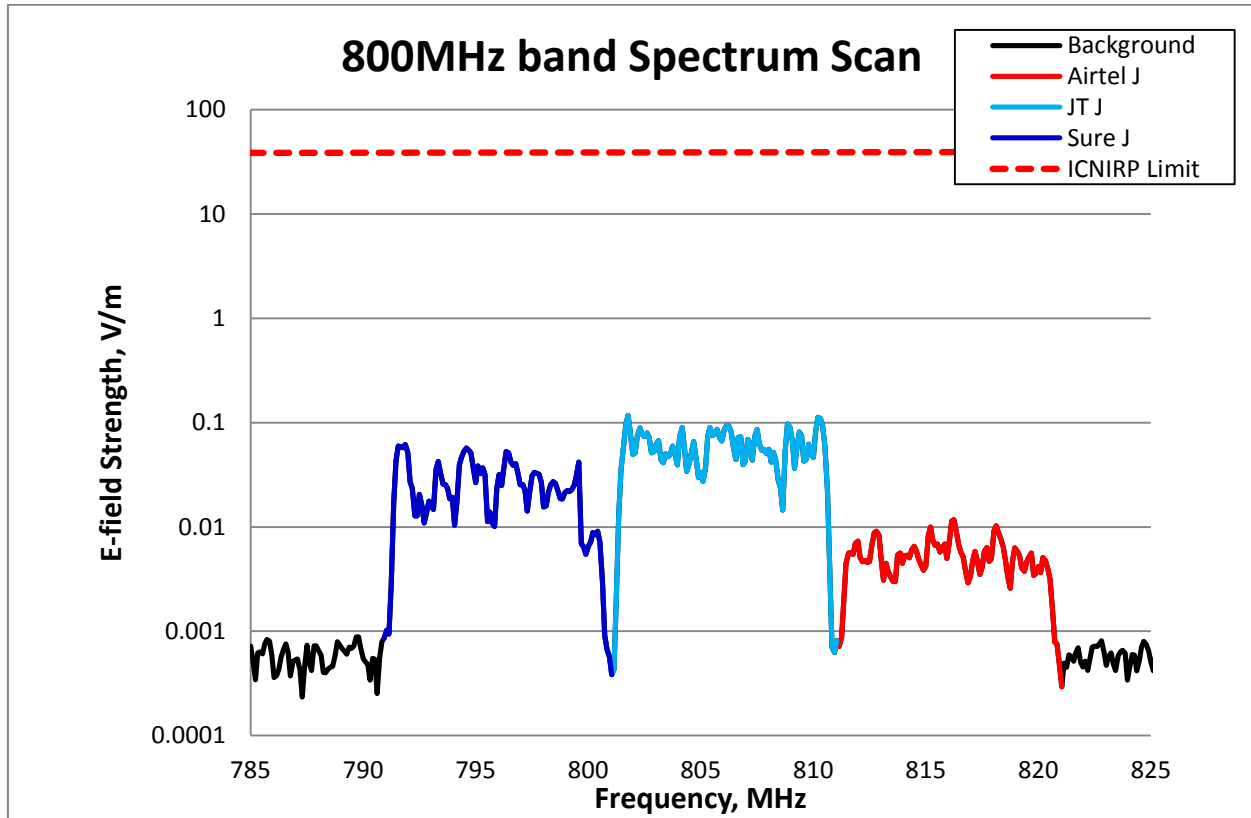


Figure 4 - 800MHz band Spectrum Scan

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 0.1175 V/m (JT J), which is 331 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
Central	Airtel J	800	0.01169	3327	8.21301E-07	1/ 1217580
	JT J		0.1175	331	0.0001018	1/ 9823
	Sure J		0.06183	629	2.27266E-05	1/ 44001
total band EQ					0.000125348	1/ 7978

Table 2– 800MHz band Exposure Quotient at Central

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

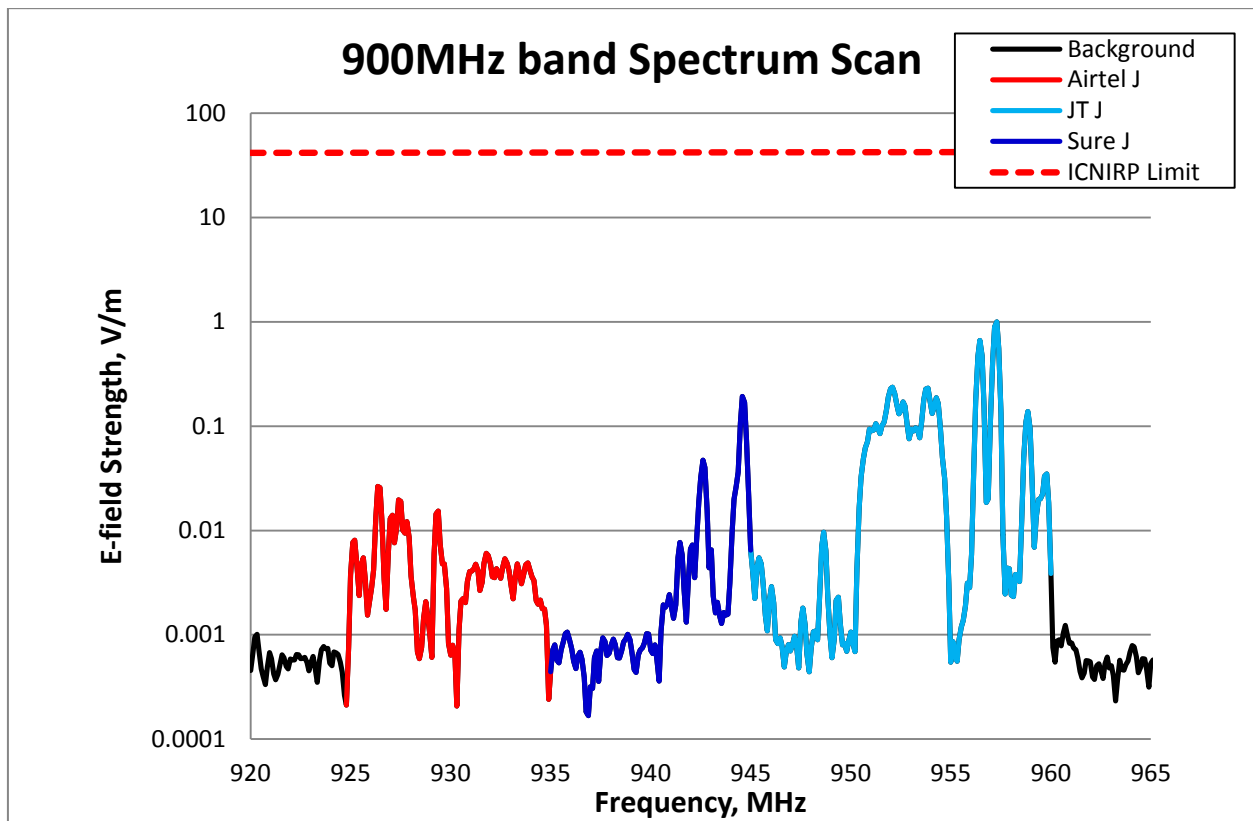


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.9986 V/m (JT J), which is 41 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
Central	Airtel J	900	0.02638	1564	1.32386E-06	1/ 755366
	JT J		0.9986	41	0.001090454	1/ 917
	Sure J		0.1929	214	2.4638E-05	1/ 40588
total band EQ					0.001116416	1/ 896

Table 3– 900MHz band Exposure Quotient at Central

2.3 1800 MHz Band

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

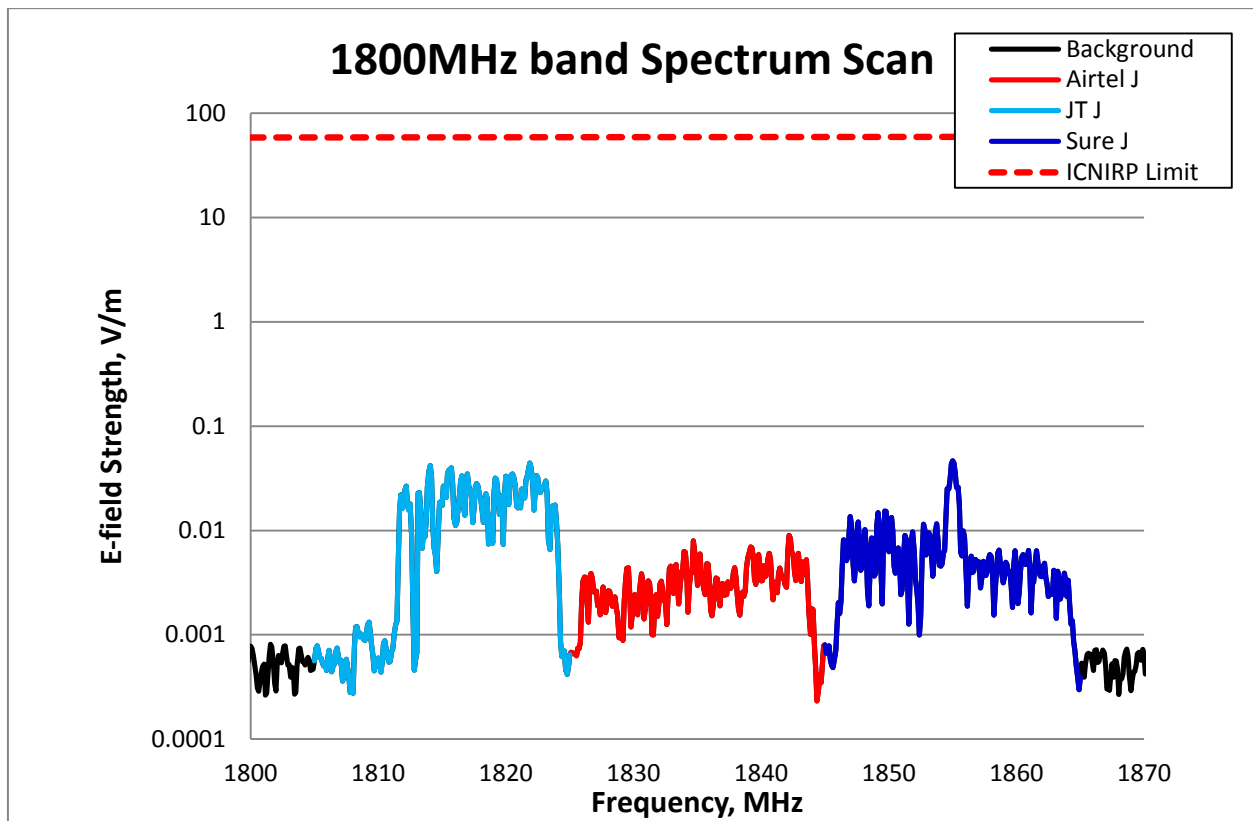


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.04651 V/m (Sure J), which is 1254 times smaller than the ICNIRP Reference level.

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
Central	Airtel J	1800	0.008968	6505	6.15933E-07	1/ 1623553
	JT J		0.04442	1313	1.71199E-05	1/ 58411
	Sure J		0.04651	1254	4.69384E-06	1/ 213045
total band EQ					2.24297E-05	1/ 44584

Table 4 – 1800MHz band Exposure Quotient at Central

2.4 2100MHz Band

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

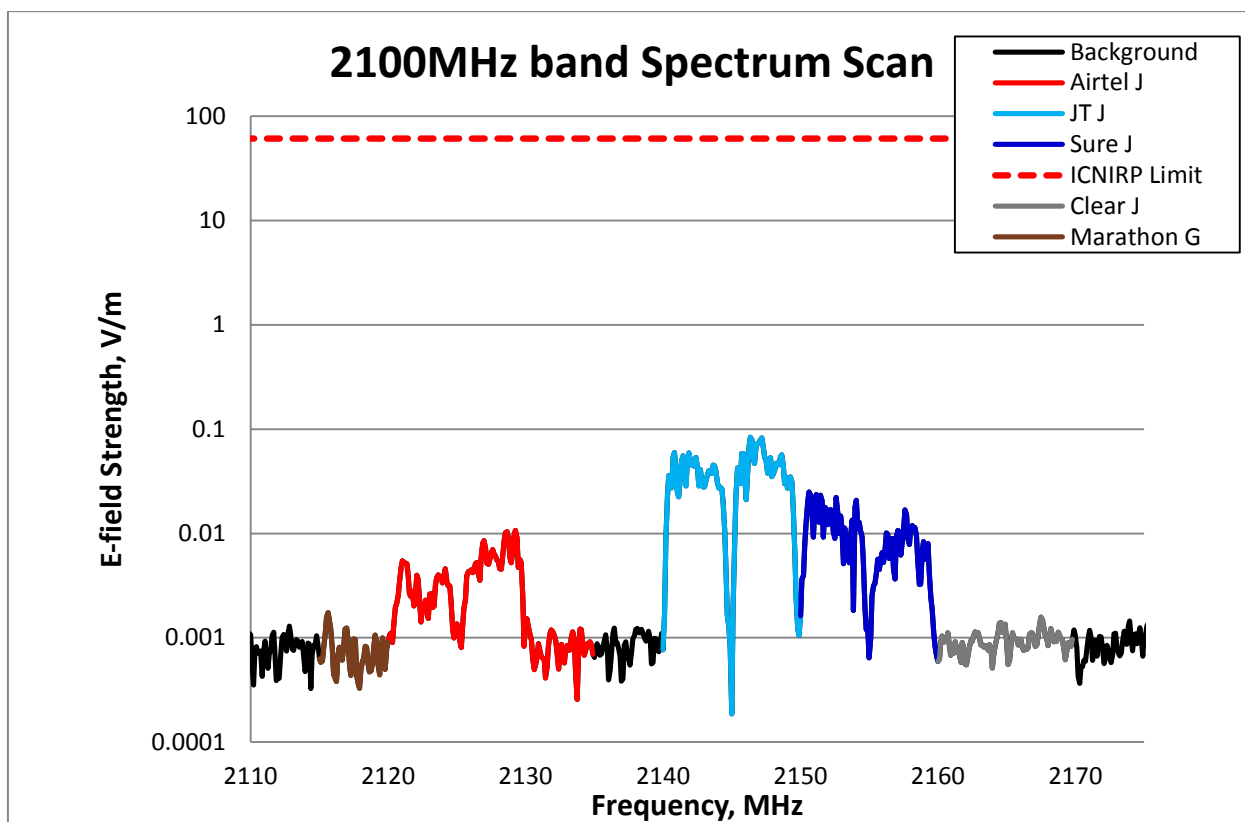


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.08344 V/m (JT J), which is 731 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
Central	Airtel J	2100	0.01072	5690	5.79263E-07	1/ 1726332
	Clear J		0.001573	38779	2.29429E-08	1/ 43586515
	JT J		0.08344	731	4.60799E-05	1/ 21701
	Marathon J		0.001738	35098	8.90135E-09	1/ 112342496
	Sure J		0.02507	2433	3.23636E-06	1/ 308989
total band EQ					4.99274E-05	1/ 20029

Table 5 – 2100MHz band Exposure Quotient at Central

2.5 2600MHz band

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

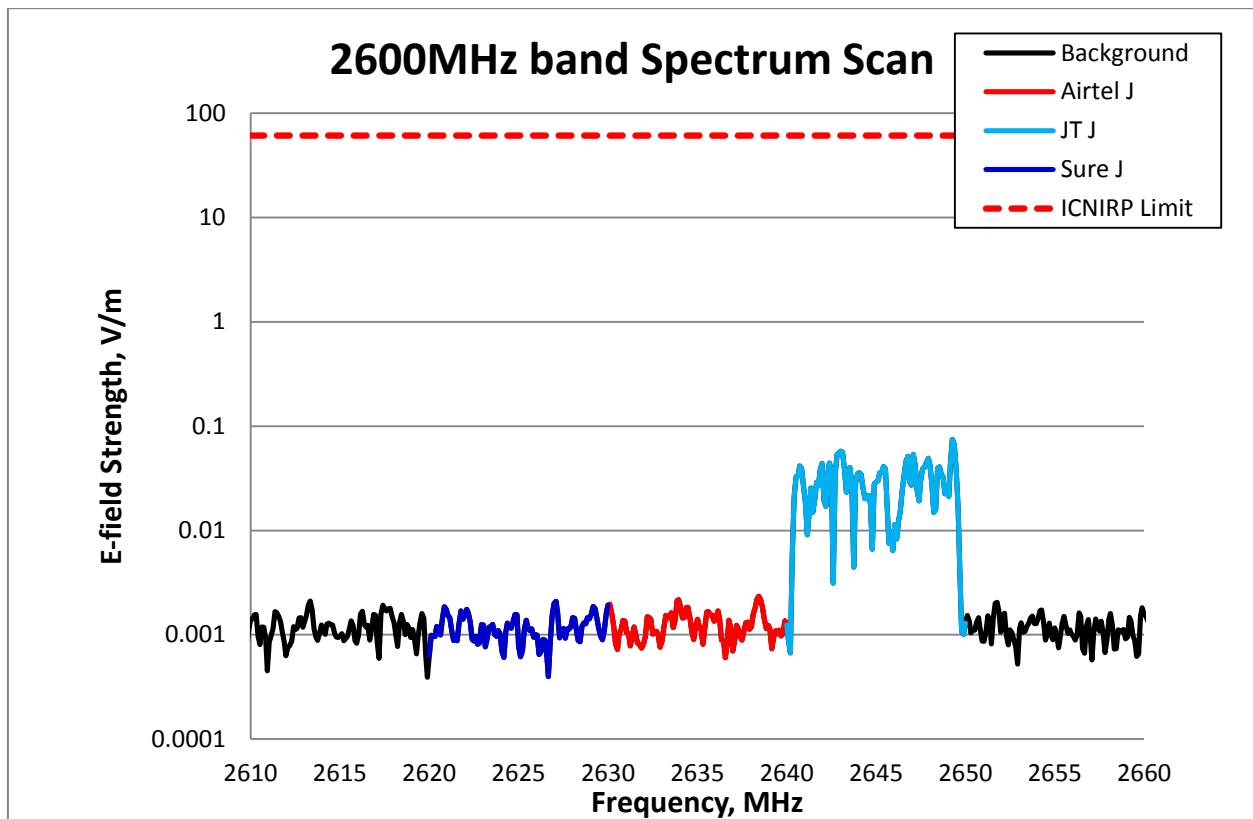


Figure 8 – 2600MHz band Spectrum Scan

No field level recorded across the band was higher than 0.07482 V/m (JT J), which is 815 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2600MH 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
Central	Airtel J	2600	0.002347	25991	4.53675E-08	1/ 22042213
	JT J		0.07482	815	2.68293E-05	1/ 37273
	Sure J		0.002087	29229	3.88663E-08	1/ 25729257
total band EQ					2.69135E-05	1/ 37156

Table 6 – 2600MHz band Exposure Quotient at Central

End