Cellular Mast Emissions Survey: Pembroke Kiosk (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 Pembroke Kiosk site located in Jersey.

The Pembroke Kiosk 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
Pembroke Kiosk	800	0.01773	Airtel J	2194	1.8834E-06	1/ 530955
	900	1.747	JT J	24	0.002339213	1/ 427
	1800	0.002984	Sure J	19550	3.6475E-07	1/ 2741606
	2100	0.9392	JT J	65	0.005482947	1/ 182
	2600	0.005423	JT J	11248	6.37643E-07	1/ 1568275
				Total Site EQ	0.007825046	1/ 128

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/128 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 (JT) 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

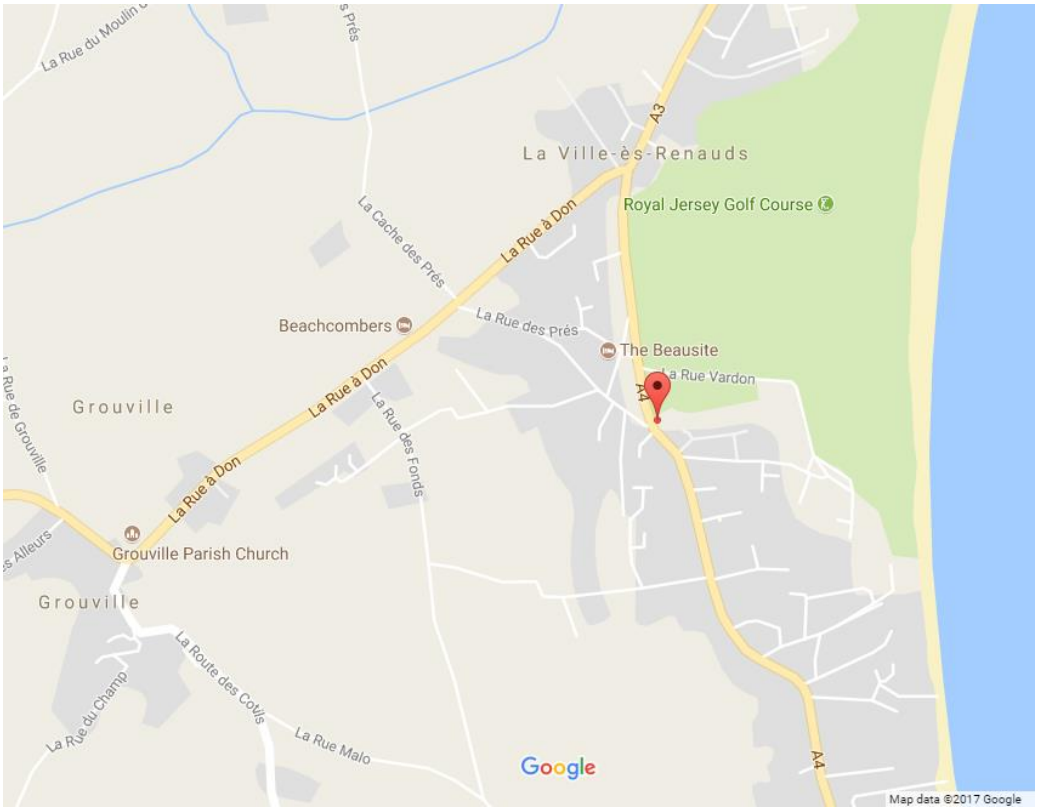

Figure 1 - Map of the Site Area

Site name	Pembroke Kiosk
Site address	La Grande Route des Sablons, Grouville, Jersey
Site Latitude	N 49.185404
Site Longitude	W 02.03927

1.2 Site Description

Operators	JT J
Antenna types	Omni directional (microcell)
Approximate height	2m
Site type	Kiosk
Description	The antenna at the Pembroke Kiosk is hidden inside the roof-space of the kiosk. It is not visible to the public but its outer

	protective case can be reached by the public

1.3 Site Photo

Figure 2 – Peak Measurement Location

1.4 Test Location

Figure 3- The probe was positioned inside the kiosk where the strongest signal was 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.

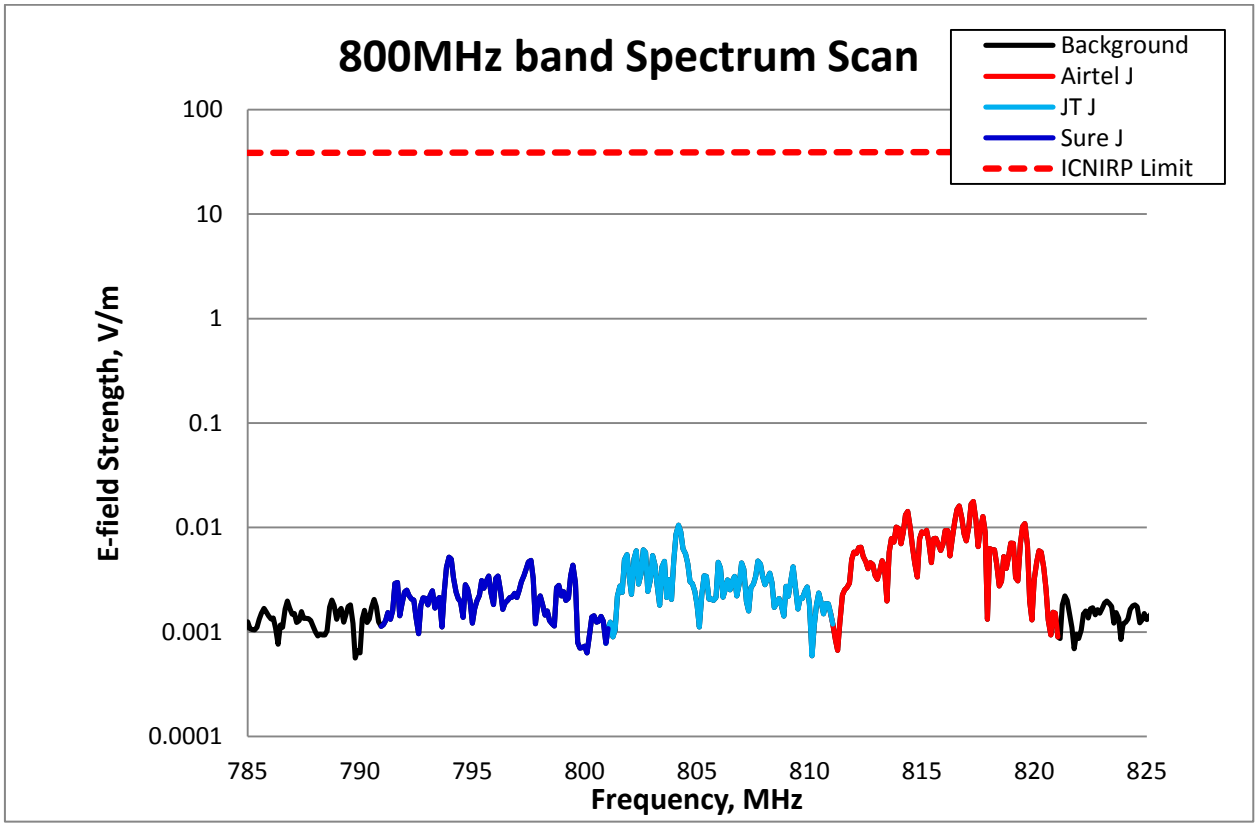

Figure 4 - 800MHz band Spectrum Scan

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 0.01773 V/m (Airtel J), which is 2194 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
Pembroke Kiosk	Airtel J	800	0.01773	2194	1.40815E-06	1/ 710150
	JT J		0.01056	3683	3.27407E-07	1/ 3054299
	Sure J		0.005181	7506	1.47837E-07	1/ 6764211
				total band EQ	1.8834E-06	1/ 530955

Table 2– 800MHz band Exposure Quotient at Pembroke Kiosk

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

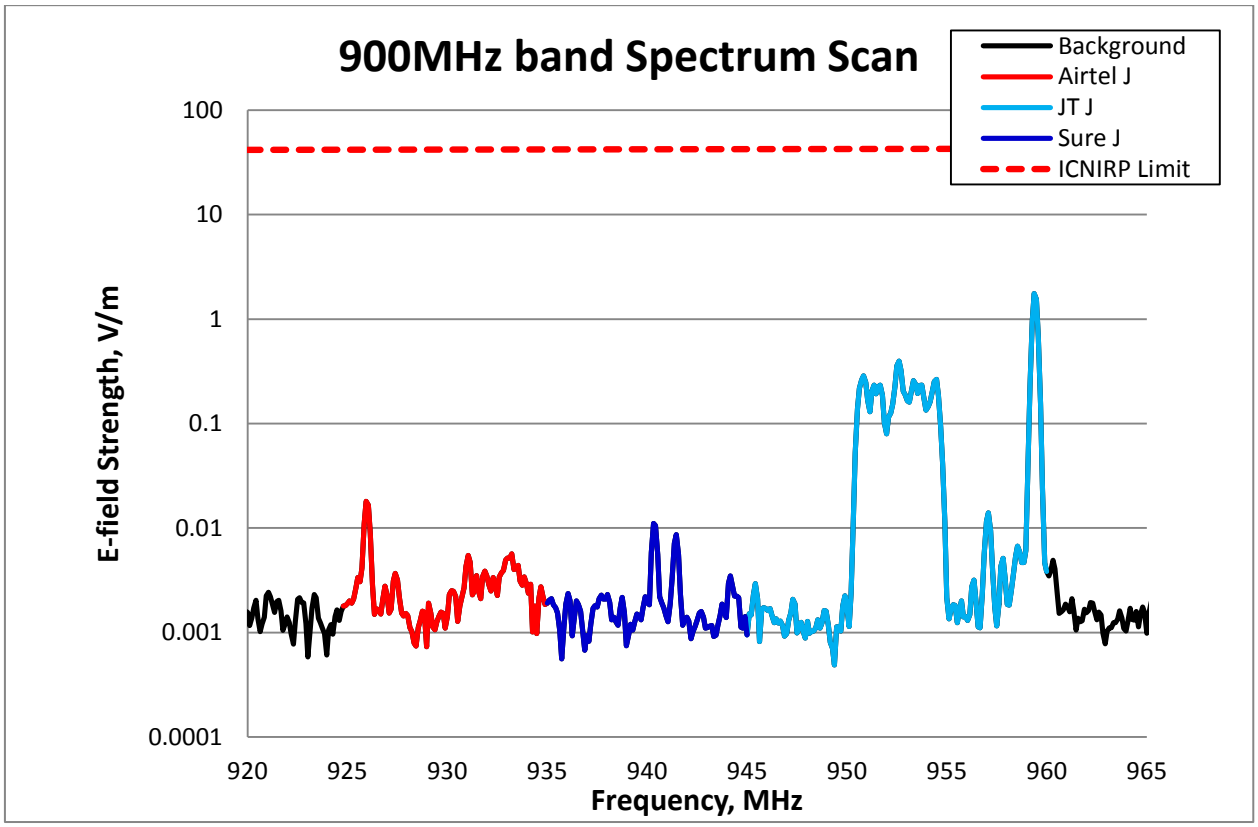

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.747 V/m (JT J), which is 24 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
Pembroke Kiosk	Airtel J	900	0.01801	2290	3.9914E-07	1/ 2505385
	JT J		1.747	24	0.002338624	1/ 428
	Sure J		0.01102	3743	1.90105E-07	1/ 5260243
				total band EQ	0.002339213	1/ 427

Table 3– 900MHz band Exposure Quotient at Pembroke Kiosk

2.3 1800 MHz Band

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

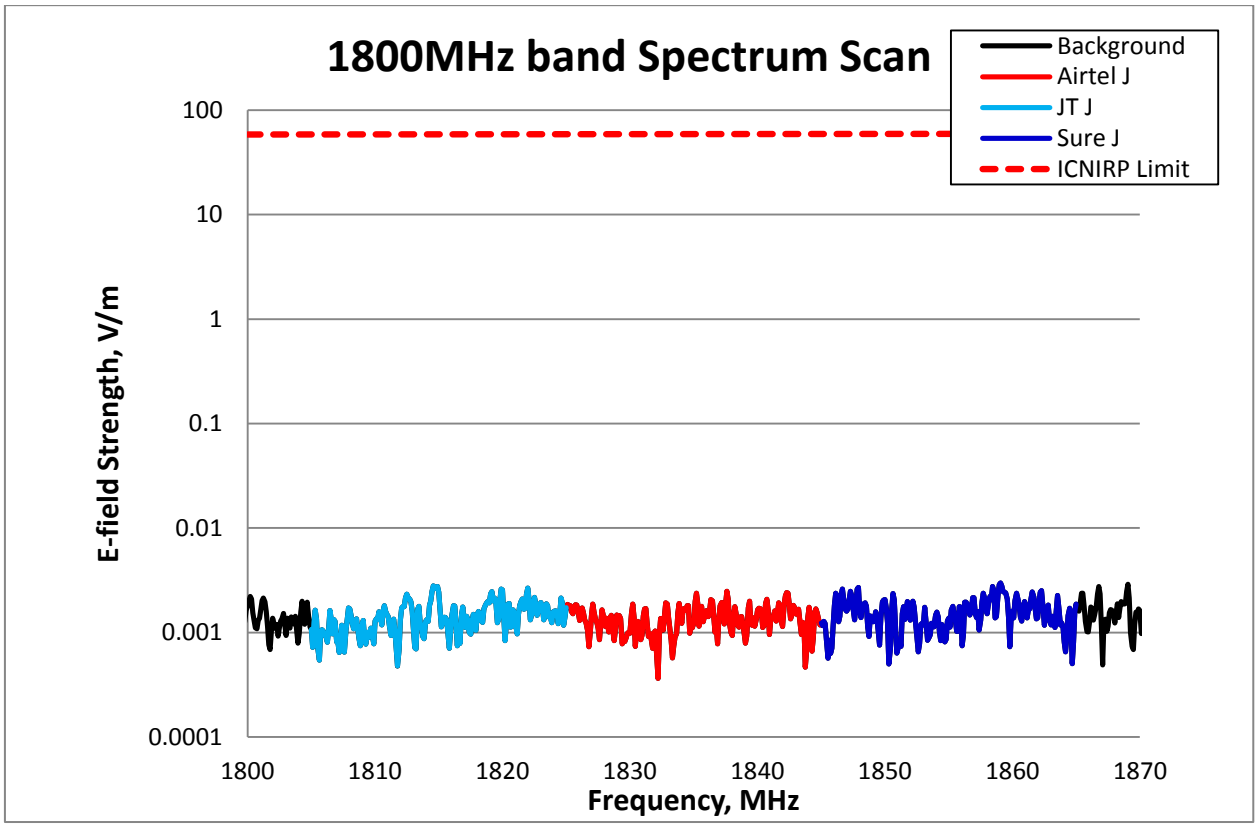

Figure 6 - 1800MHz Spectrum Scan

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
Pembroke Kiosk	Airtel J	1800	0.002484	23485	1.06458E-07	1/ 9393362
	JT J		0.002792	20894	1.19083E-07	1/ 8397478
	Sure J		0.002984	19550	1.39208E-07	1/ 7183489
				total band EQ	3.6475E-07	1/ 2741606

Table 4 – 1800MHz band Exposure Quotient at Pembroke Kiosk

2.4 2100MHz Band

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

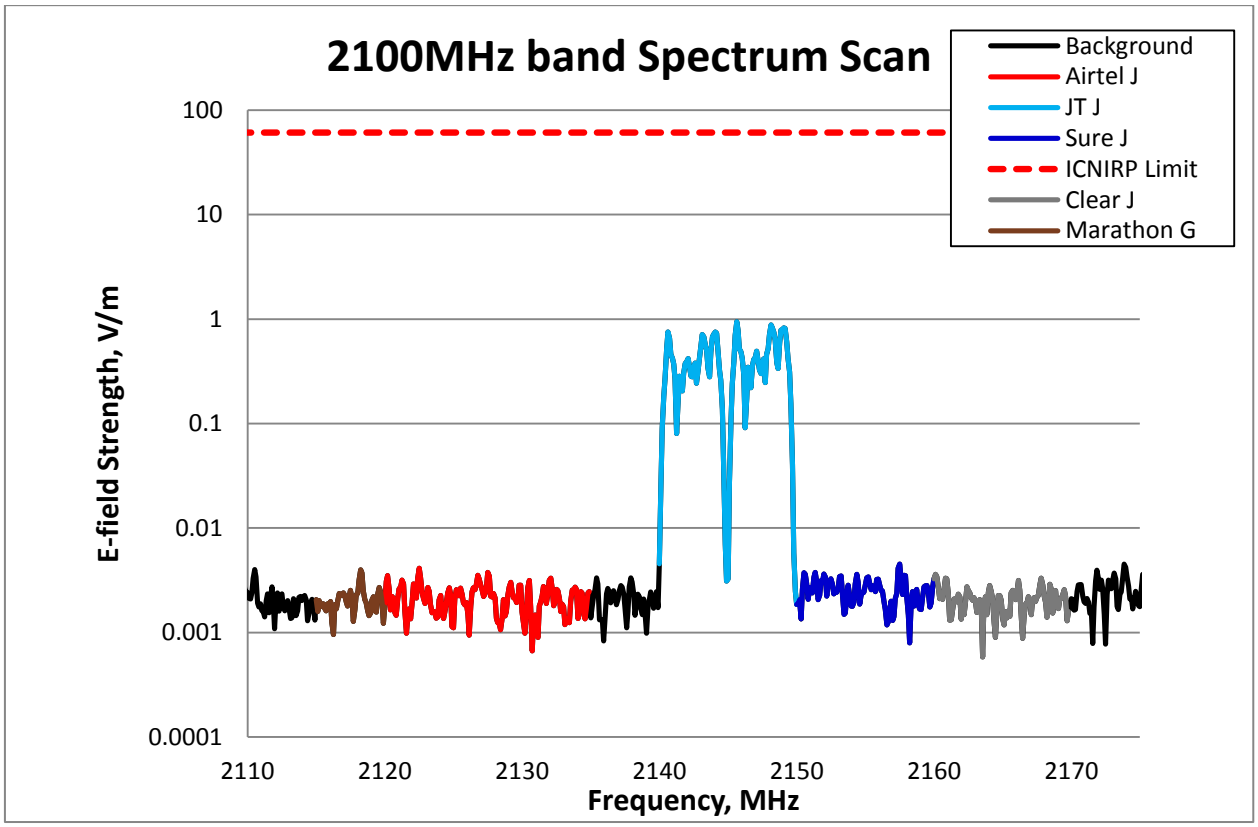

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.9392 V/m (JT J), which is 65 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
Pembroke Kiosk	Airtel J	2100	0.004113	14831	1.90103E-07	1/ 5260303
	Clear J		0.003601	16940	1.18435E-07	1/ 8443427
	JT J		0.9392	65	0.005482402	1/ 182
	Marathon J		0.003983	15315	5.8268E-08	1/ 17162090
	Sure J		0.004527	13475	1.78609E-07	1/ 5598818
				total band EQ	0.005482947	1/ 182

Table 5 – 2100MHz band Exposure Quotient at Pembroke Kiosk

2.5 2600MHz band

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

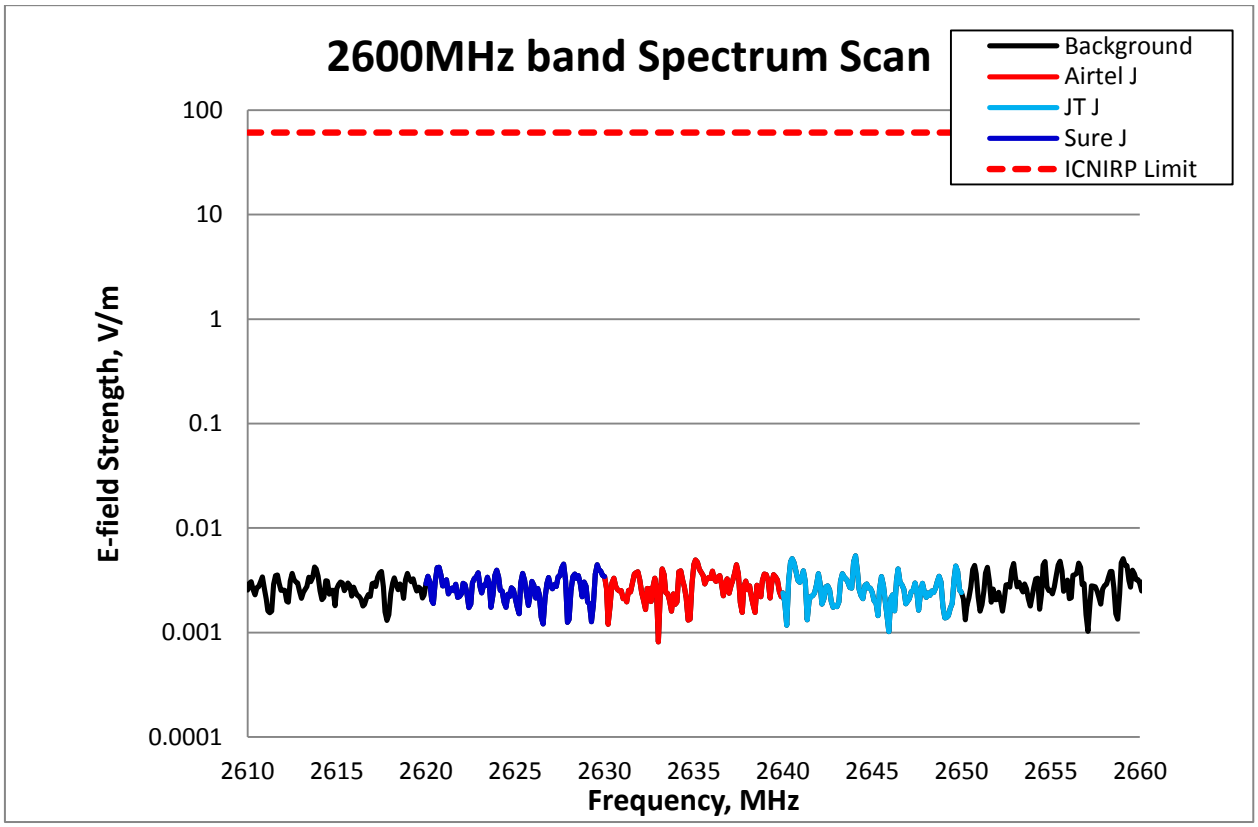

Figure 8 – 2600MHz band Spectrum Scan

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 2600MH 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
Pembroke Kiosk	Airtel J	2600	0.004954	12313	2.22844E-07	1/ 4487453
	JT J		0.005423	11248	2.01967E-07	1/ 4951299
	Sure J		0.004527	13475	2.12832E-07	1/ 4698534
				total band EQ	6.37643E-07	1/ 1568275

Table 6 – 2600MHz band Exposure Quotient at Pembroke Kiosk

End