

Cellular mast emissions survey: Minden Place Car Park



Document details

Document name	Cellular mast emissions survey: Minden Place Car Park
Survey date	01-10-2021 at 14:01
Report issue date	20-10-2021
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1 Executive summary

The Jersey Competition and Regulatory Authority or JCRA regularly monitors emission levels from the cellular masts in Jersey¹ 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 levels from the sites meet the internationally recognised standards and guidelines regarding health and safety limits for the public.

In 2017, JCRA commissioned EM emission level surveys at all the sites within the island. The surveys were repeated in each subsequent year for all new sites and sites where major changes were made by the operators in the previous year. This report presents the results of the survey conducted at the Minden Place car park site in 2021.

The Minden Place car park site was used by three operators at the time of the survey: Airtel, JT and Sure. Surveys were 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. Even though the reported levels are expected to be predominantly emitted from this site, the test equipment does not discriminate between nearby sites which means that the levels are cumulated over all site emissions detected by the test instrument.

The survey established that the emission levels around the 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 recorded around the site following a peak search. The levels were found to be lower at all the other locations round this site. The recorded values are true at the time of testing and can go up or down depending on the level of user activity on the site.

The total Exposure Quotient (EQ) for the site recorded across all detected cellular frequency bands is given at the bottom of the summary table below. A total EQ close to 1 (one) for the site would mean that emission levels approach the safety limit advised by ICNIRP in their guidelines.

Table 1 – Cumulative exposure quotient

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Minden Place Car Park	800	2.814	Sure	14	0.036141454	1/ 28
	900	1.622	JT	25	0.013152436	1/ 76
	1800	1.086	Airtel	54	0.008553183	1/ 117
	2100	0.5994	Airtel	102	0.002397657	1/ 417
	2600	0.7405	JT	82	0.002360124	1/ 424
Total Site EQ					0.062604853	1/ 16

The results show that the total EQ was measured at 1/16 and therefore remains well below the ICNIRP guidelines.

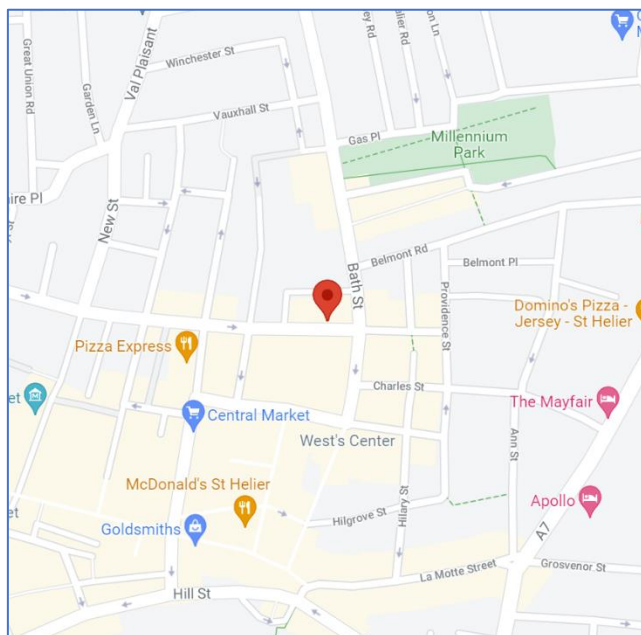
The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the three main operators: Airtel in red, Sure in dark blue, and Jersey Telecom in light blue. The graphs are also supported by the equivalent statistical figures derived from the measured levels at the site for added clarity.

¹ Prior to 1 July 2020, the JCRA and the Guernsey Competition Regulatory Authority coordinated their activities in the Channel Islands as the Channel Islands Competition Regulatory Authorities (CICRA). Earlier reports may refer to CICRA rather than JCRA.

2 Site details

2.1 Site location

Figure 1 – Map of the site area



Site name:	Minden Place Car Park
Site address:	Minden Place Car Park, Minden Place, St Helier, Jersey
Site latitude:	49.18607044
Site longitude:	-2.10272232

2.2 Site description

Operators:	JT, Airtel, Sure
Antenna types:	Directional
Approximate height:	21m (from street level) – 5-6m from roof level
Site type:	Rooftop
Description:	The antennas are located on top of the roof within a secure compound. Public access to the antenna is not possible without access permission or the use of a climbing aid.

2.3 Site photo

Figure 2 – Location of the peak and where emission levels were measured



2.4 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.

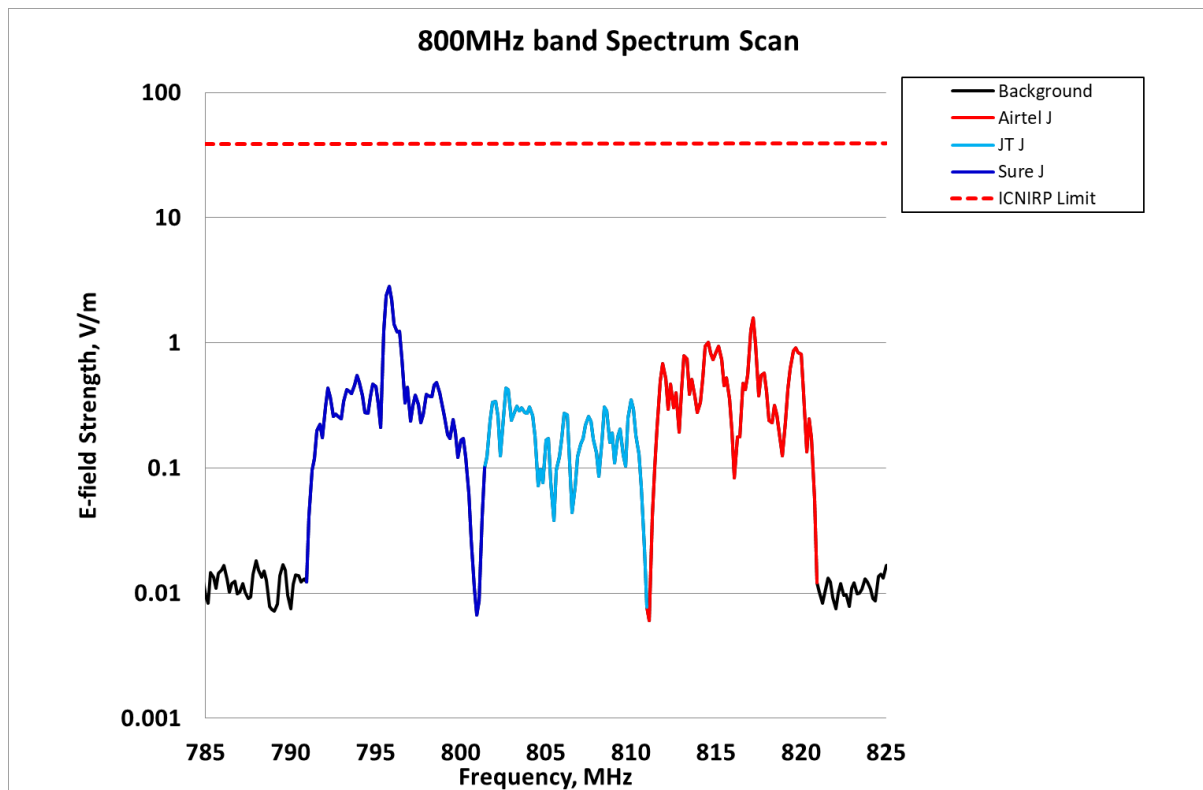
As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch. The reported spectrum scans were taken at the peak location (shown in red above) where the highest readings were recorded. The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

3 Survey results

3.1 800MHz band

The graph for the 800MHz 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 2.814 V/m (Sure), which is 14 times smaller than the ICNIRP guideline level.

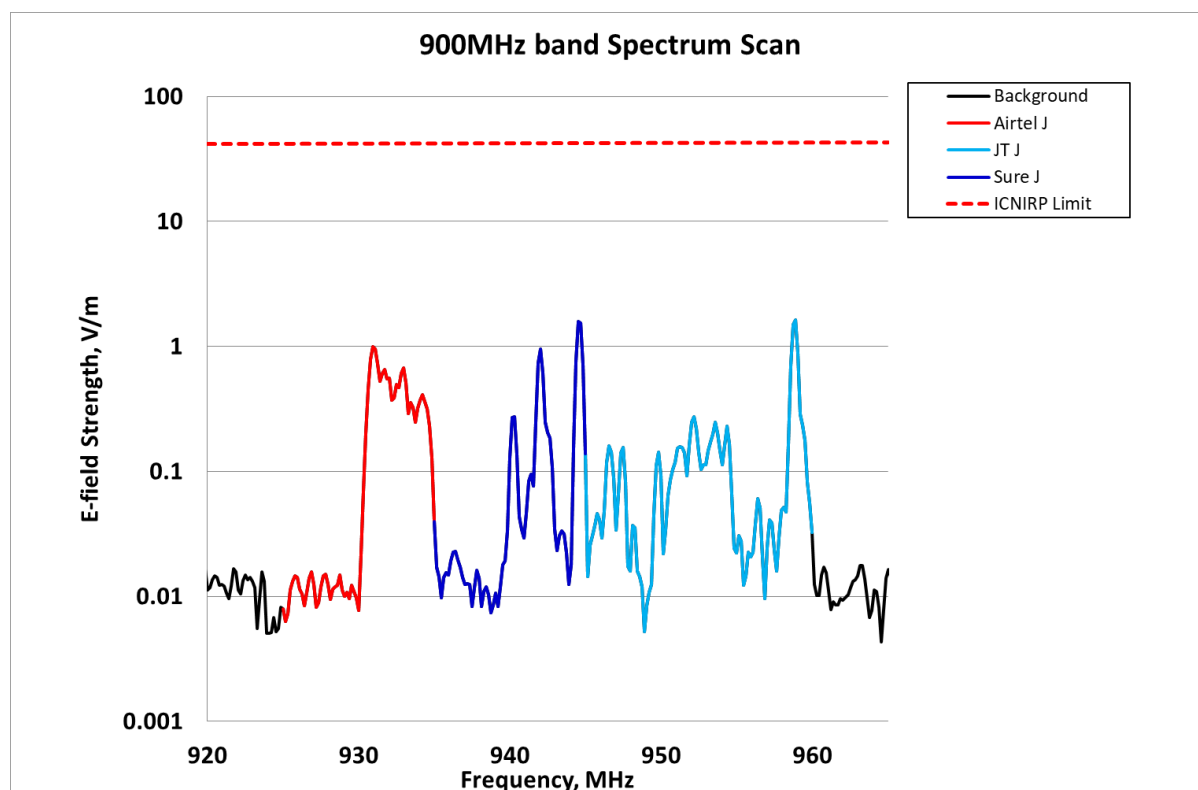
Table 2 – 800MHz band exposure quotient at Minden Place Car Park

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
Minden Place Car Park	Airtel	800	1.587	25	0.013534158	1/ 74
	JT		0.4348	89	0.001887336	1/ 530
	Sure		2.814	14	0.02071996	1/ 48
	total band EQ				0.036141454	1/ 28

3.2 900MHz band

The graph for the 900MHz activity is shown below.

Figure 5 – 900MHz band spectrum scan



No field level recorded across the band was higher than 1.622 V/m (JT), which is 25 times smaller than the ICNIRP guideline level.

The EQ results for the 900MHz band are shown below.

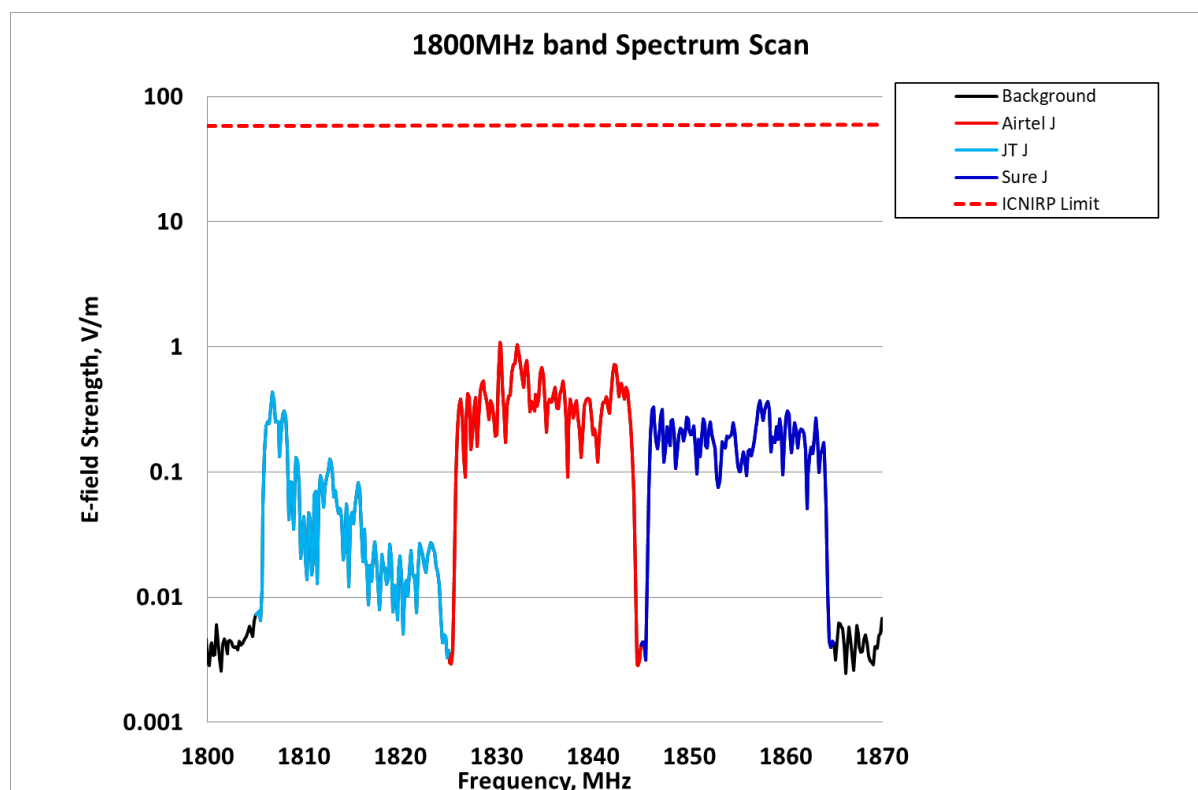
Table 3 – 900MHz band exposure quotient at Minden Place Car Park

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
Minden Place Car Park	Airtel	900	1.002	41	0.004504435	1/ 222
	JT		1.622	25	0.004049941	1/ 247
	Sure		1.574	26	0.00459806	1/ 217
	total band EQ			0.013152436	1/ 76	

3.3 1800MHz band

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

Figure 6 – 1800MHz spectrum scan



No field level recorded across the band was higher than 1.086 V/m (Airtel), which is 54 times smaller than the ICNIRP guideline level.

The EQ results for the 1800MHz band are shown below.

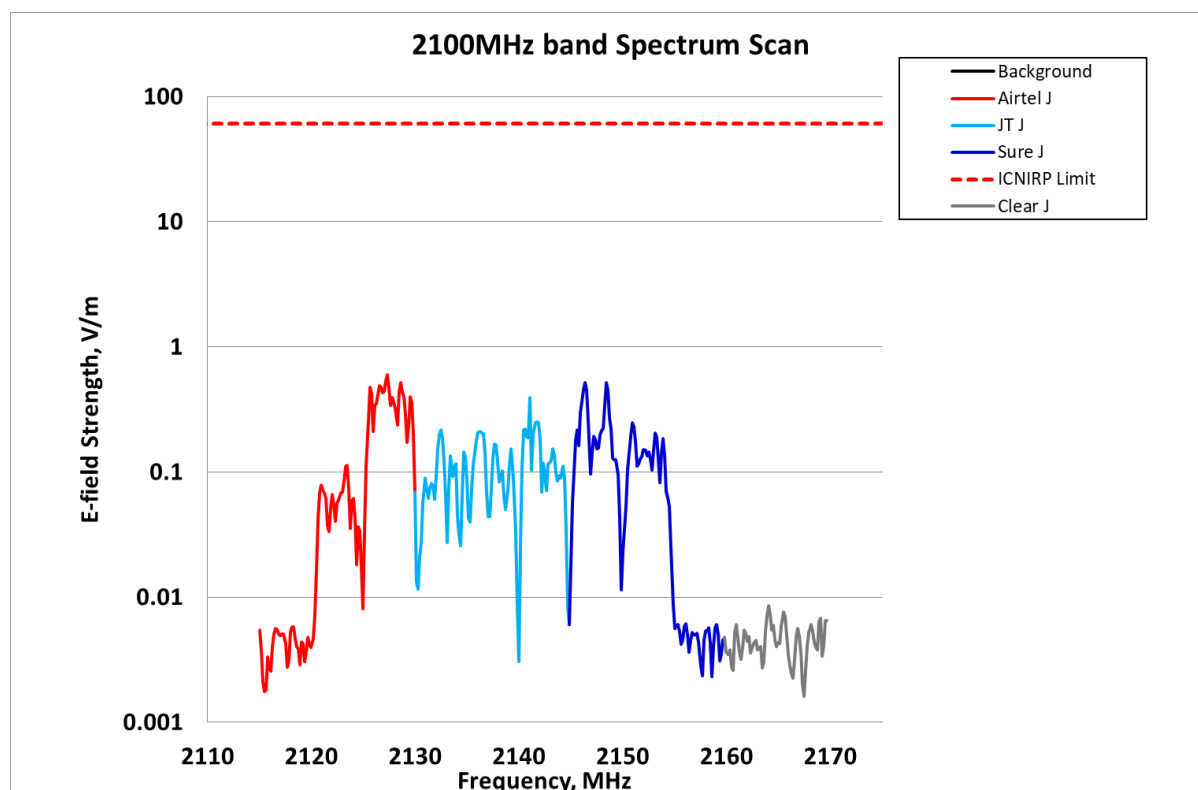
Table 4 – 1800MHz band exposure quotient at Minden Place Car Park

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
Minden Place Car Park	Airtel	1800	1.086	54	0.006737854	1/ 148
	JT		0.433	135	0.000408505	1/ 2448
	Sure		0.3702	158	0.001406824	1/ 711
	total band EQ				0.008553183	1/ 117

3.4 2100MHz band

The graph for the 2100MHz band activity around the site is shown below.

Figure 7 – 2100MHz band spectrum scan



No field level recorded across the band was higher than 0.5994 V/m (Airtel), which is 102 times smaller than the ICNIRP guideline level.

The EQ results for the 2100MHz band are shown below.

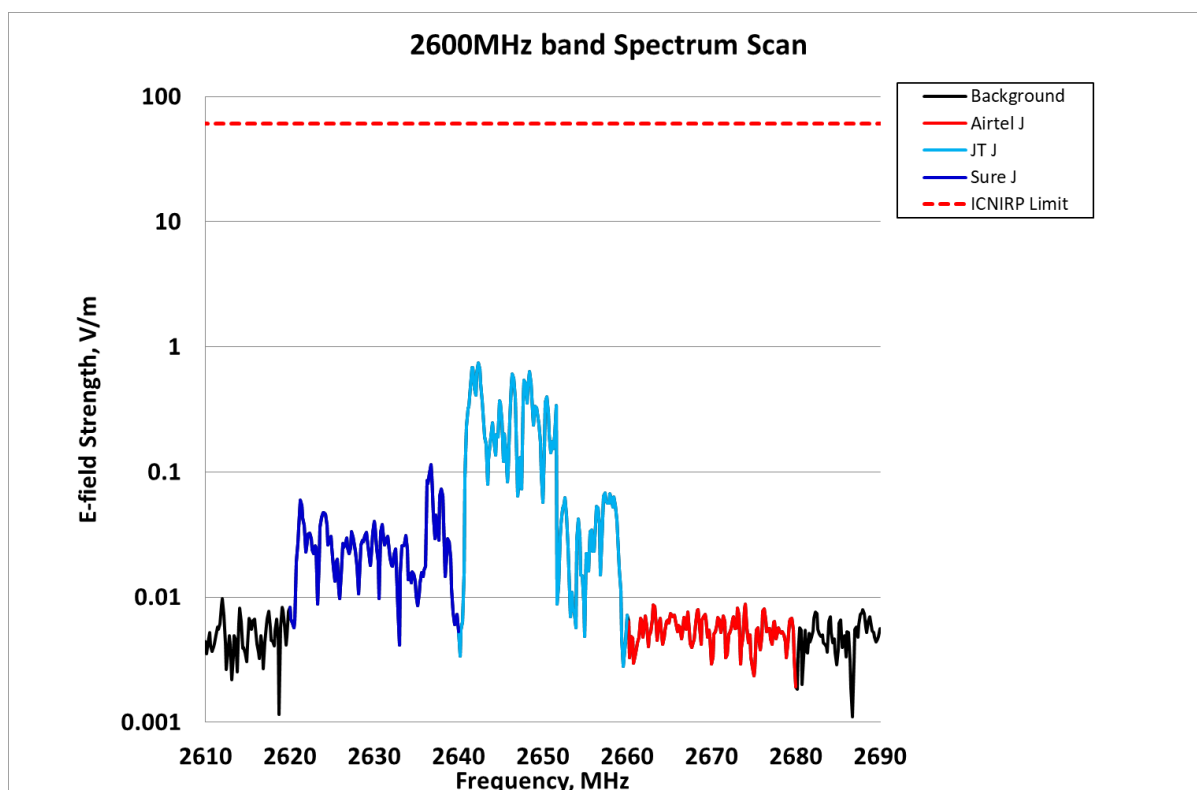
Table 5 – 2100MHz band exposure quotient at Minden Place Car Park

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
Minden Place Car Park	Airtel	2100	0.5994	102	0.001242945	1/ 805
	Clear		0.008559	7127	3.88432E-07	1/ 2574456
	JT		0.3934	155	0.000419541	1/ 2384
	Sure		0.52	117	0.000734782	1/ 1361
total band EQ					0.002397657	1/ 417

3.5 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 0.7405 V/m (JT), which is 82 times smaller than the ICNIRP guideline level.

The EQ results for the 2600MHz band are shown below.

Table 6 – 2600MHz band exposure quotient at Minden Place Car Park

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
Minden Place Car Park	Airtel	2600	0.008826	6911	2.06276E-06	1/ 484788
	JT		0.7405	82	0.002320141	1/ 431
	Sure		0.1146	532	3.79199E-05	1/ 26371
	total band EQ				0.002360124	1/ 424

END