

The Microwave Syndrome  
Further Aspects of a Spanish Study

3rd International Workshop  
on Biological Effects of Electromagnetic Fields  
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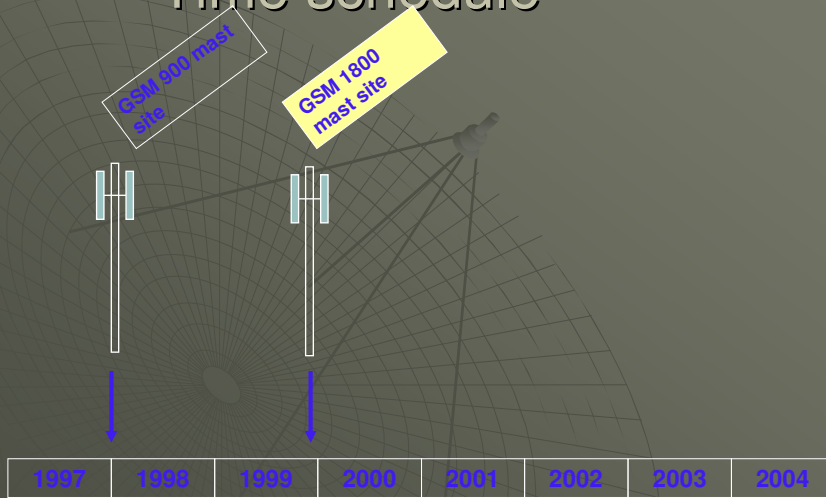


Area under study

- ◆ La Ñora
  - little village close to Murcia – south east of Spain
  - ~ 1900 inhabitants
  - situated on the slope of a hill



# Time schedule



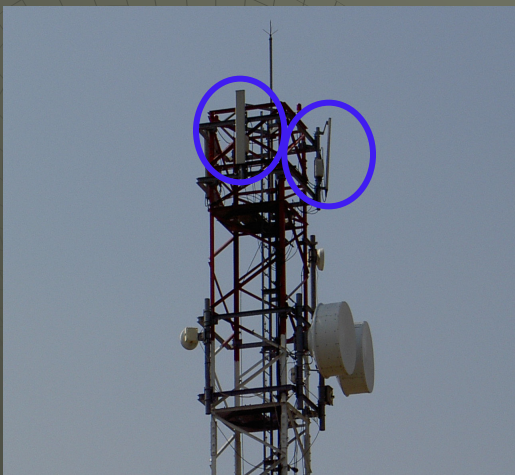
# GSM 900 MHz Base Station



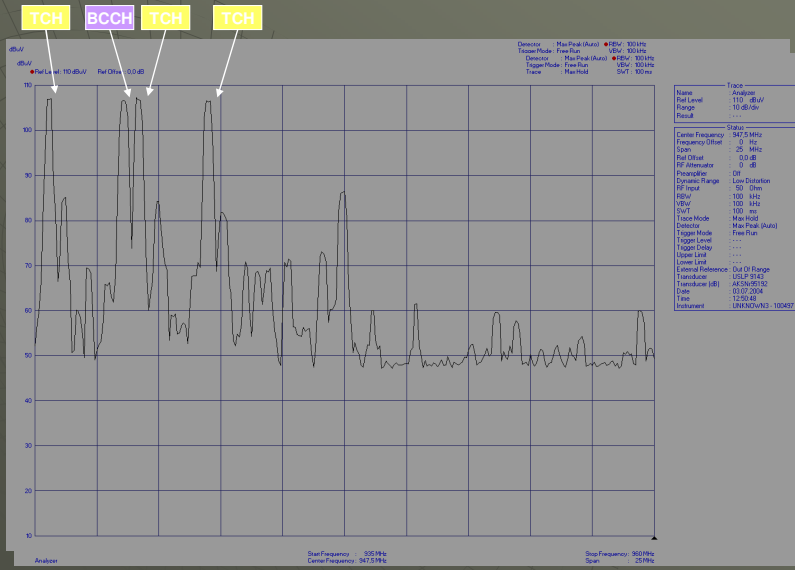
# GSM 1800 MHz Base Station



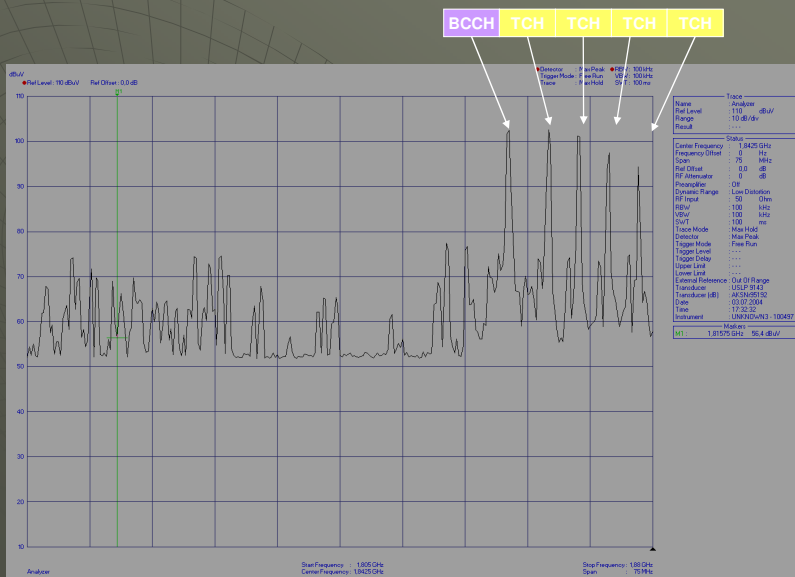
# GSM 1800 MHz Base Station



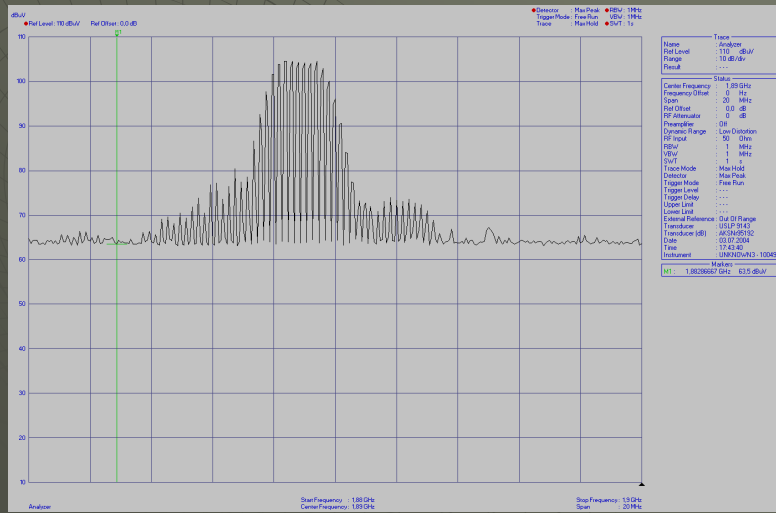
# GSM 900 MHz



# GSM 1800 MHz



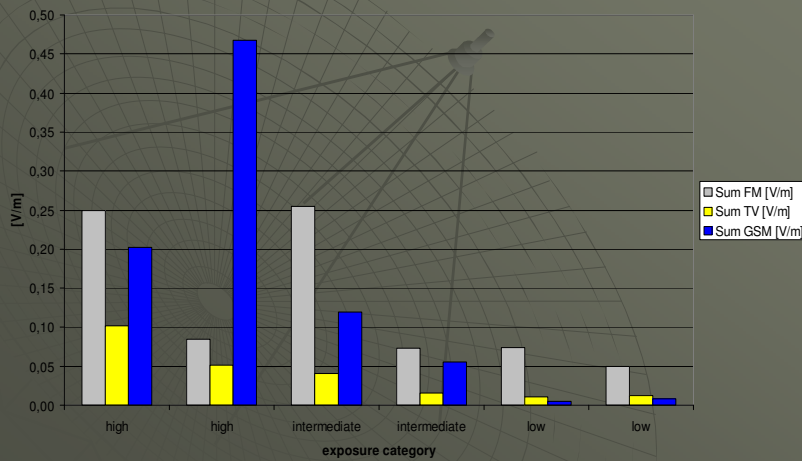
# DECT 1880 - 1900 MHz



# Results

## Exposure distribution 2004

Exposure distribution La Nora 3rd July 2004

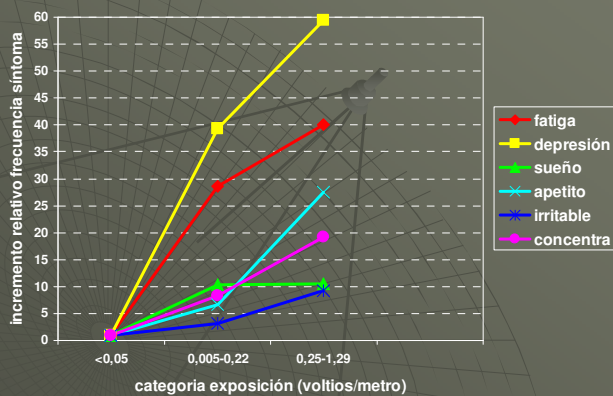


# Results

## Logistic regression model sex, age & distance adjusted

Health Outcome	0.05 – 0.22 V/m 0.0006 – 0.0128 $\mu\text{W}/\text{cm}^2$ 6 – 124 $\mu\text{W}/\text{m}^2$			0.25 – 1.29 V/m 0.0165 – 0.440 $\mu\text{W}/\text{cm}^2$ 165 – 4400 $\mu\text{W}/\text{m}^2$			p for the trend
	OR	95%-CI	p	OR	95%-CI	p	
Fatigue	28.53	3.03 – 268.78	0.0034	40.11	4.56 – 352.44	0.0009	0.0039
Irritability	3.12	0.91 – 10.68	0.0704	9.22	2.86 – 29.67	0.0002	0.0009
Headaches	5.99	1.50 – 23.93	0.0113	6.10	1.80 – 20.65	0.0037	0.0050
Nausea	5.92	0.60 – 58.68	0.1288	12.80	1.48 – 110.64	0.0205	0.0499
Loss of Appetite	6.66	0.62 – 71.52	0.1175	27.53	3.07 – 247.03	0.0031	0.0030
Sleeping Disorder	10.39	2.43 – 44.42	0.0016	10.61	2.88 – 39.19	0.0004	0.0008
Depressive Tendency	39.41	4.02 – 386.40	0.0016	59.39	6.41 – 550.11	0.0003	0.0016
Feeling of Discomfort	4.29	1.14 – 16.15	0.0314	10.90	3.16 – 37.56	0.0002	0.0007
Difficulty in Concentration	8.27	2.01 – 34.01	0.0034	19.17	4.91 – 74.77	0.0000	0.0001
Loss of Memory	2.35	0.62 – 8.89	0.2090	7.81	2.27 – 26.82	0.0011	0.0031
Skin Disorder	7.04	1.06 – 46.62	0.0429	8.22	1.39 – 48.51	0.0201	0.0628
Visual Disorder	2.48	0.65 – 9.44	0.1830	5.75	1.68 – 19.75	0.0054	0.0186
Hearing Disorder	3.89	0.99 – 15.21	0.0510	1.63	0.45 – 5.95	0.4572	0.1285
Dizziness	2.98	0.62 – 14.20	0.1712	8.36	1.95 – 35.82	0.0042	0.0117
Gait Difficulties	1.32	0.30 – 5.84	0.7114	2.07	0.57 – 7.50	0.2690	0.5211
Cardiovascular Problems	9.42	0.93 – 95.07	0.0572	17.87	1.96 – 162.76	0.0105	0.0333

Relación entre la frecuencia del síntoma con la exposición de campo eléctrico



## Conclusion

- The results are in agreement with similar studies [Santini 2002, Hutter 2002]
- Based on this study and in line with the empirical evidence over the last years of the Public Health Department Salzburg the recommendation is to strive for an exposure level indoors of  
< 0.02 V/m / < 0.0001  $\mu\text{W}/\text{cm}^2$  / < 1  $\mu\text{W}/\text{m}^2$   
for GSM base stations
- This value is recommended by the Public Health Department of Salzburg since February 2002