



Appendix A

Transmitter Output Power According to FCC Part 2.1046 & Part 24.232



Conducted Power of Transmitter

Table 1 Measurement Results

TEST CONDITIONS	RF Output Power (Conducted)					
	Channel512(B)		Channel661(M)		Channel810(T)	
	1850.2MHz		1880.0MHz		1909.8MHz	
	dBm		dBm		dBm	
T_{nom} / V_{nom}	Measured	Limit	Measured	Limit	Measured	Limit
TM1	29.87	33	29.94	33	29.98	33
TM2	26.98	33	26.95	33	26.88	33

Note: RBW > emission bandwidth, VBW > 3 x RBW.



Peak-to-Average Ratio

Table 1 Measurement Results

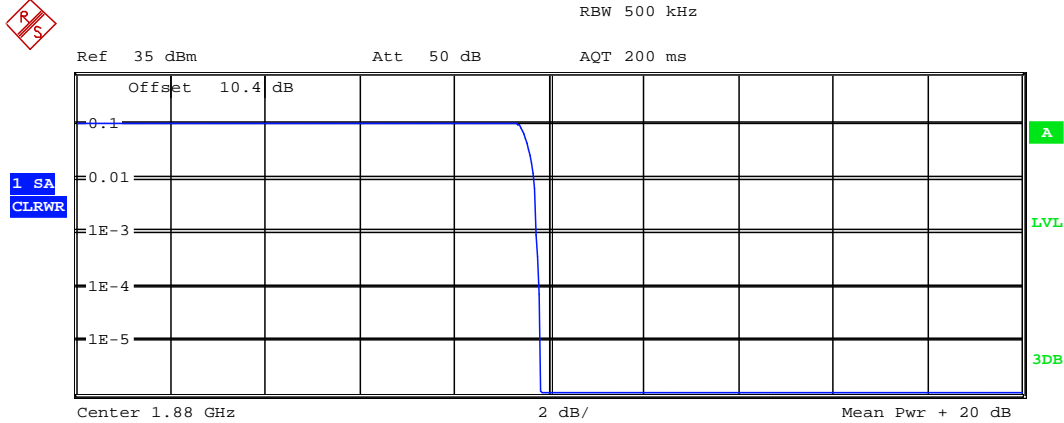
TEST CONDITIONS	Channel512(B)		Channel661(M)		Channel810(T)	
	1850.2MHz		1880.0MHz		1909.8MHz	
	dBm		dBm		dBm	
T_{nom} / V_{nom}	Measured	Limit	Measured	Limit	Measured	Limit
TM1	9.66	13.0	9.74	13.0	9.57	13.0
TM2	12.42	13.0	12.82	13.0	12.53	13.0



Test Plot of Peak-to-Average Ratio

Note: All relevant operation modes have been tested, and the worst case Plot is included in this report.

TM1

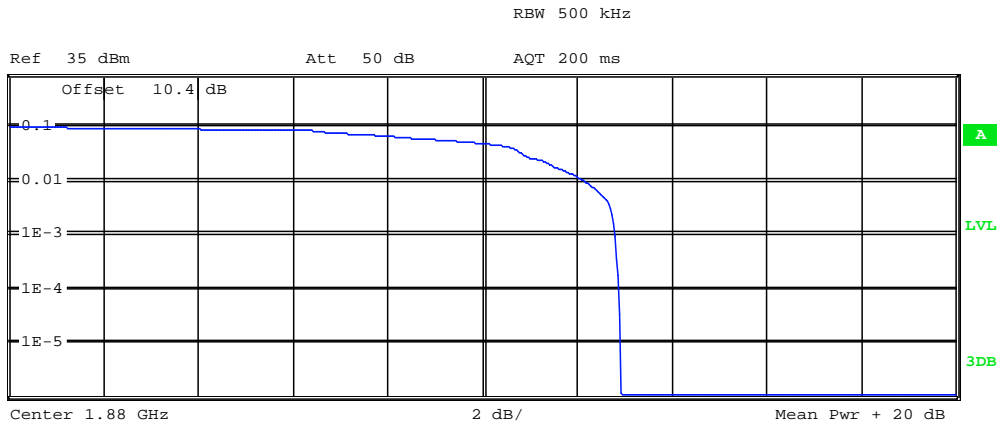


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 424kHz

Trace 1	
Mean	18.51 dBm
Peak	28.31 dBm
Crest	9.80 dB
10 %	9.39 dB
1 %	9.68 dB
.1 %	9.74 dB
.01 %	9.81 dB



TM2



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 424kHz

Trace 1

Mean	14.99	dBm
Peak	27.89	dBm
Crest	12.90	dB
10 %	2.44	dB
1 %	12.18	dB
.1 %	12.82	dB
.01 %	12.92	dB



Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 2 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
TM1	1850.2	32.87	Horn Ant.	29.17	4.5	1	32.67	33	Pass
TM1	1880.0	32.94	Horn Ant.	29.24	4.5	1	32.74	33	Pass
TM1	1909.8	32.98	Horn Ant.	28.98	4.8	1	32.78	33	Pass
TM2	1850.2	29.98	Horn Ant.	26.28	4.5	1	29.78	33	Pass
TM2	1880.0	29.95	Horn Ant.	26.25	4.5	1	29.75	33	Pass
TM2	1909.8	29.88	Horn Ant.	25.88	4.8	1	29.68	33	Pass

Note1: $RBW \geq$ emission bandwidth,, $VBW > 3 \times RBW$.

Note2: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should take to calculate it,

$$EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]$$

b, SGP=Signal Generator Level

-----The END-----



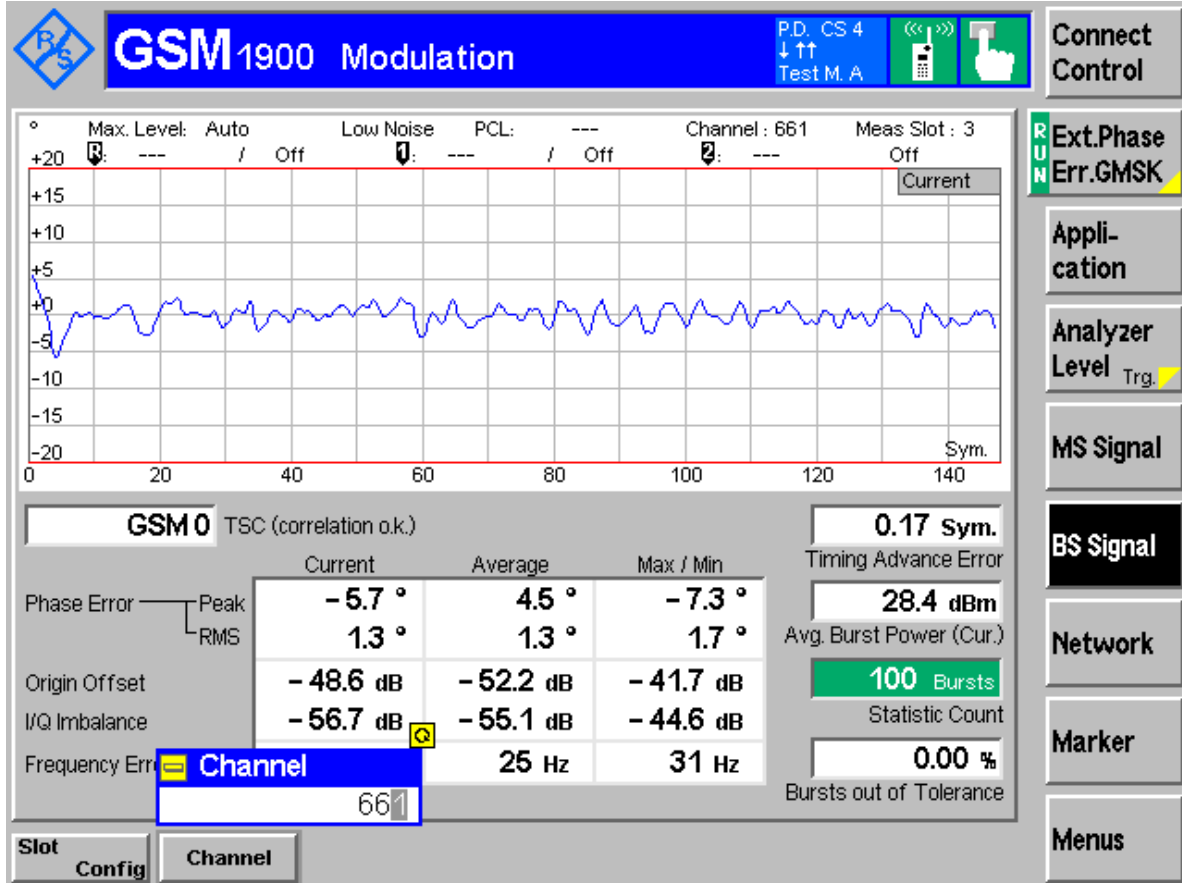
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part 24 Subpart E

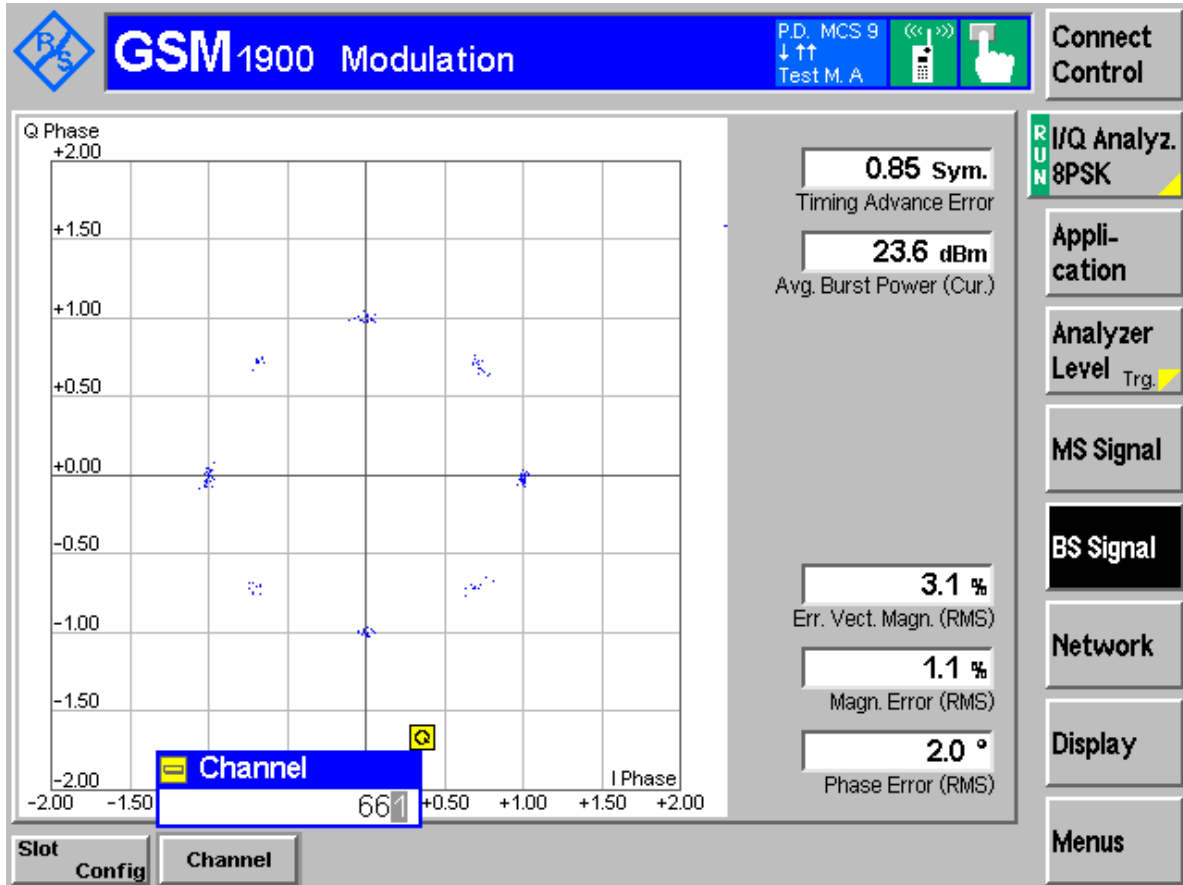


TM1:GPRS/GSM Channel 661





TM2:EDGE Channel 661



-----The END-----



Appendix C

Occupied Bandwidth

According to FCC Part 2.1049 & Part 24 Subpart E



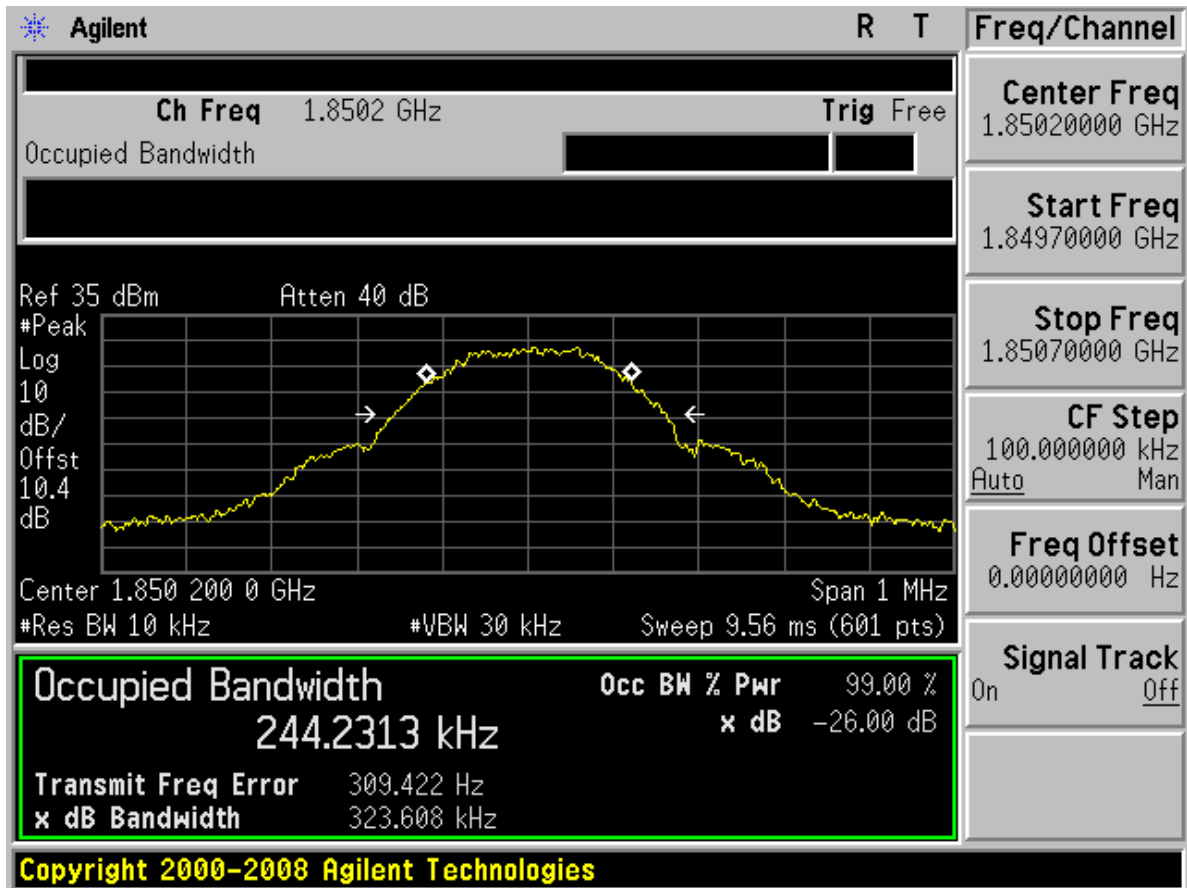
Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [kHz]	-26dB BW [kHz]	Verdict
TM1	512	244.2	323.6	Pass
	661	243.9	310.9	Pass
	810	249.6	319.9	Pass
TM2	512	242.1	309.0	Pass
	661	251.2	322.6	Pass
	810	244.4	310.4	Pass

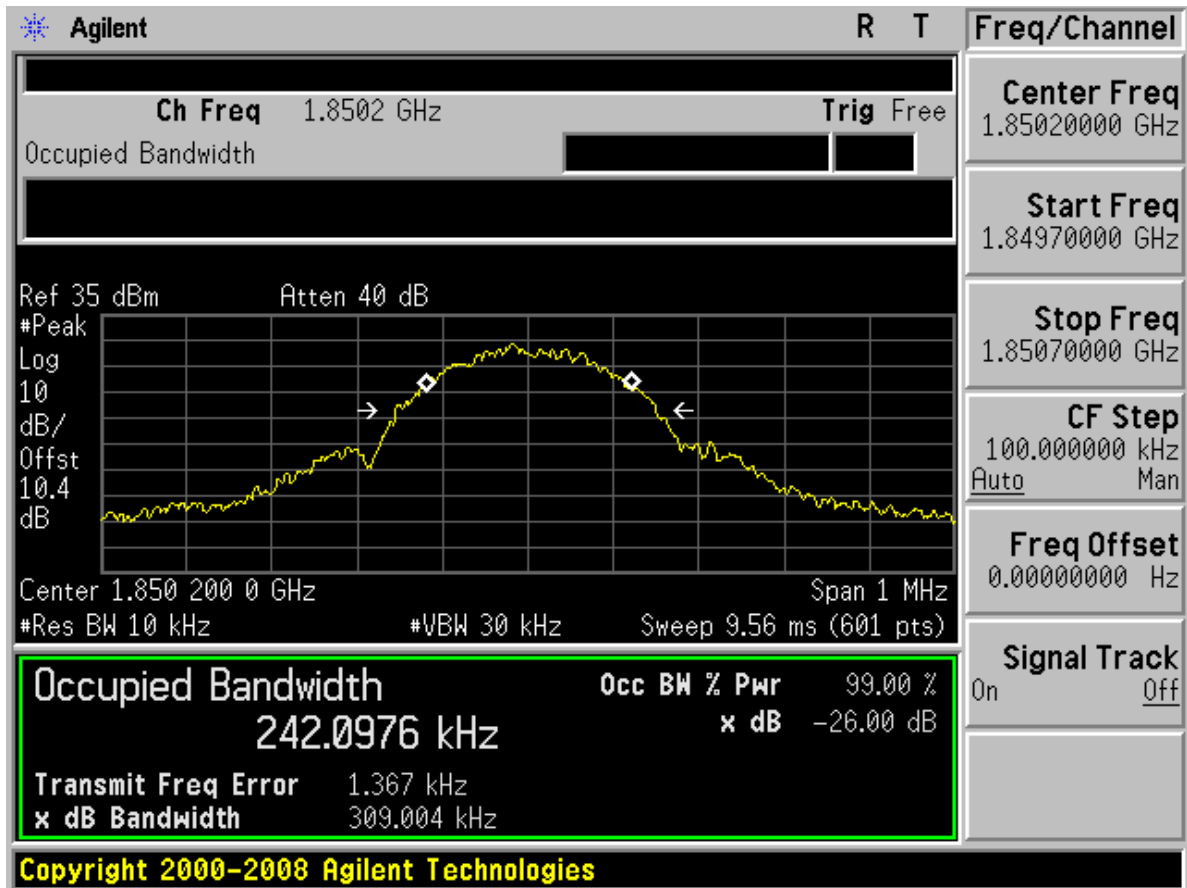


TM1:GPRS/GSM Channel 512



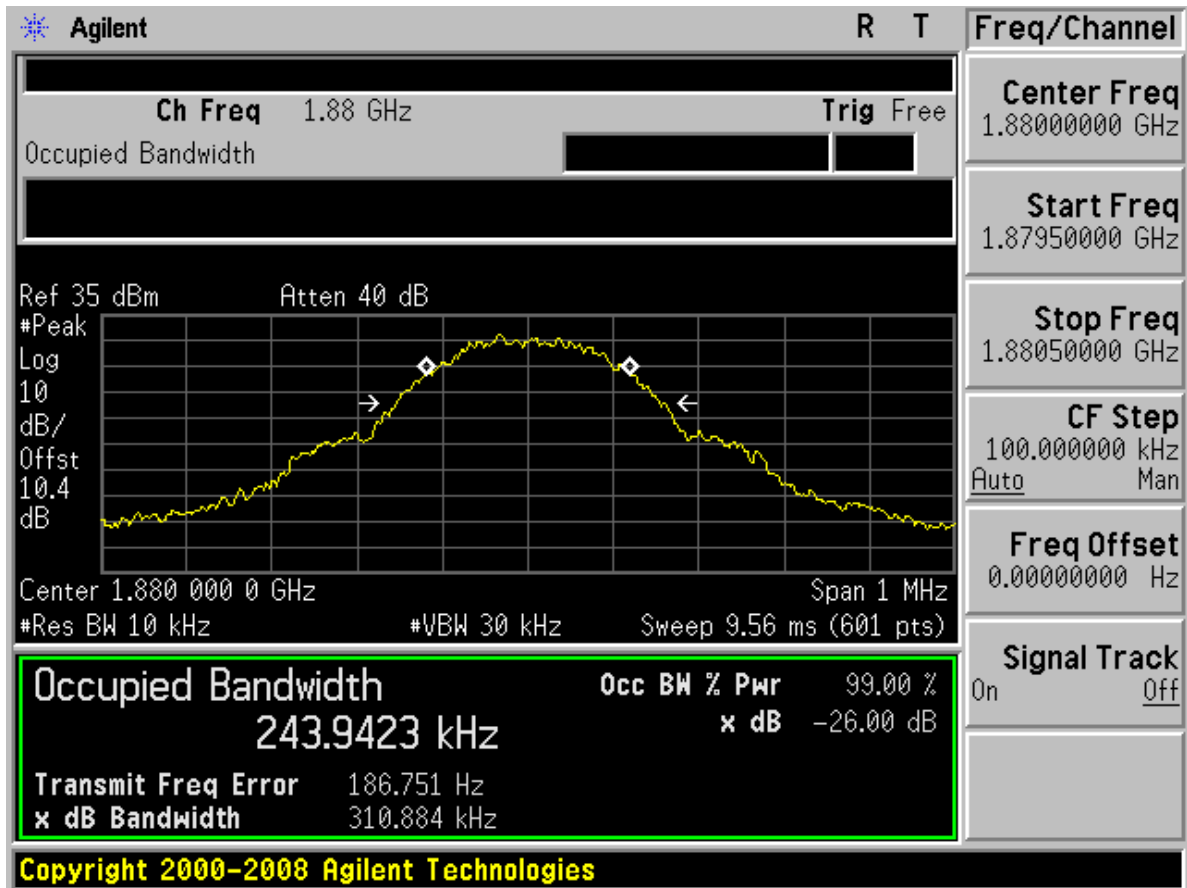


TM2:EDGE Channel 512



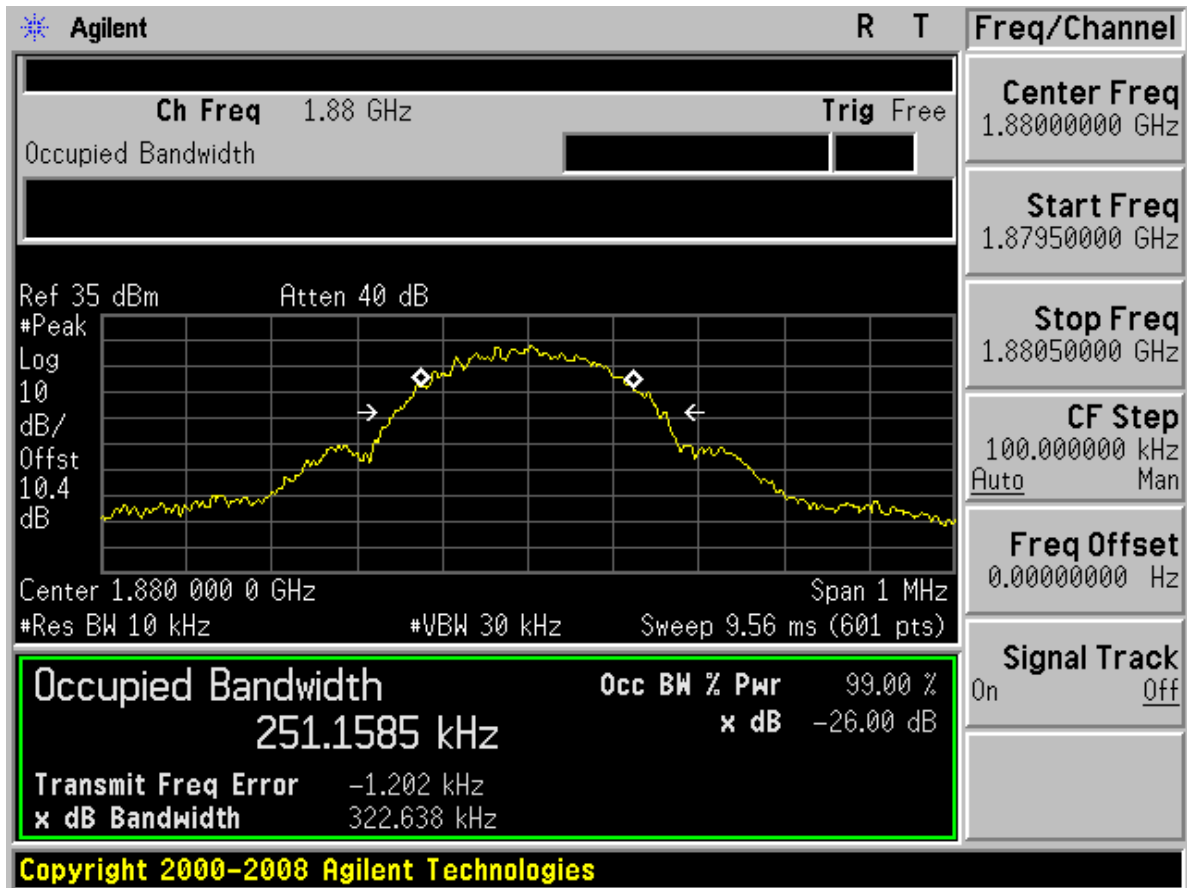


TM1:GPRS/GSM Channel 661



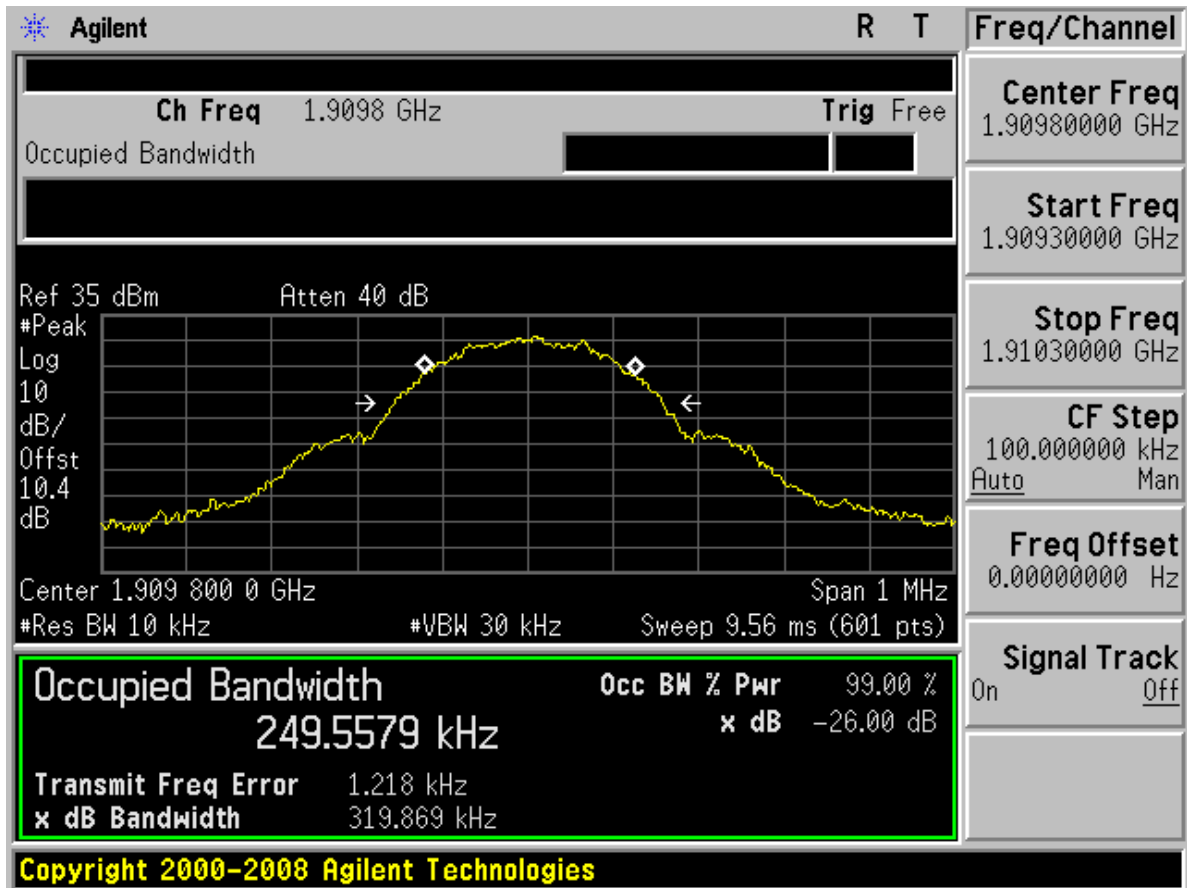


TM2:EDGE Channel 661



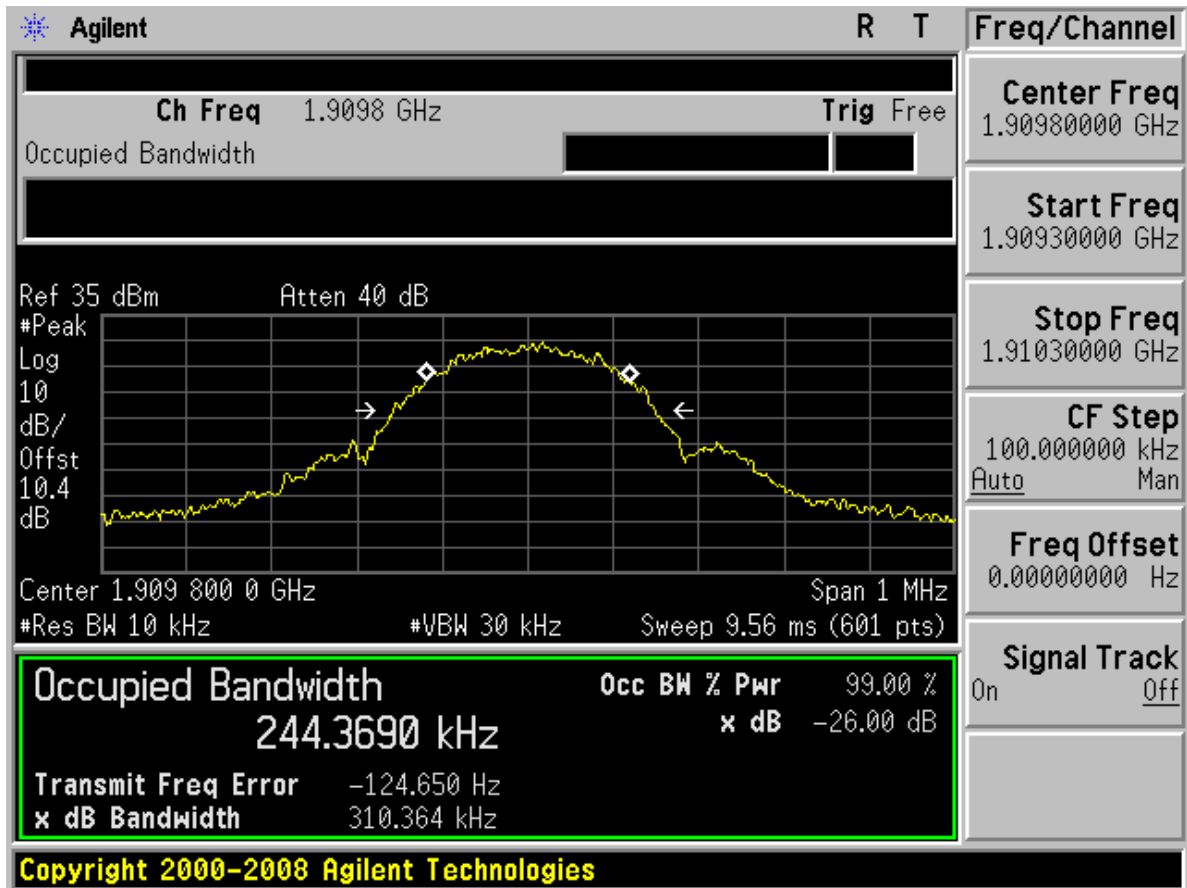


TM1:GPRS/GSM Channel 810





TM2:EDGE Channel 810



-----The END-----



Appendix D

Band Edges Compliance According to FCC Part 2.1051 & 24.238



26dB Occupied Bandwidth

Note: All relevant operation modes have been tested, and the widest case data is included in this table.

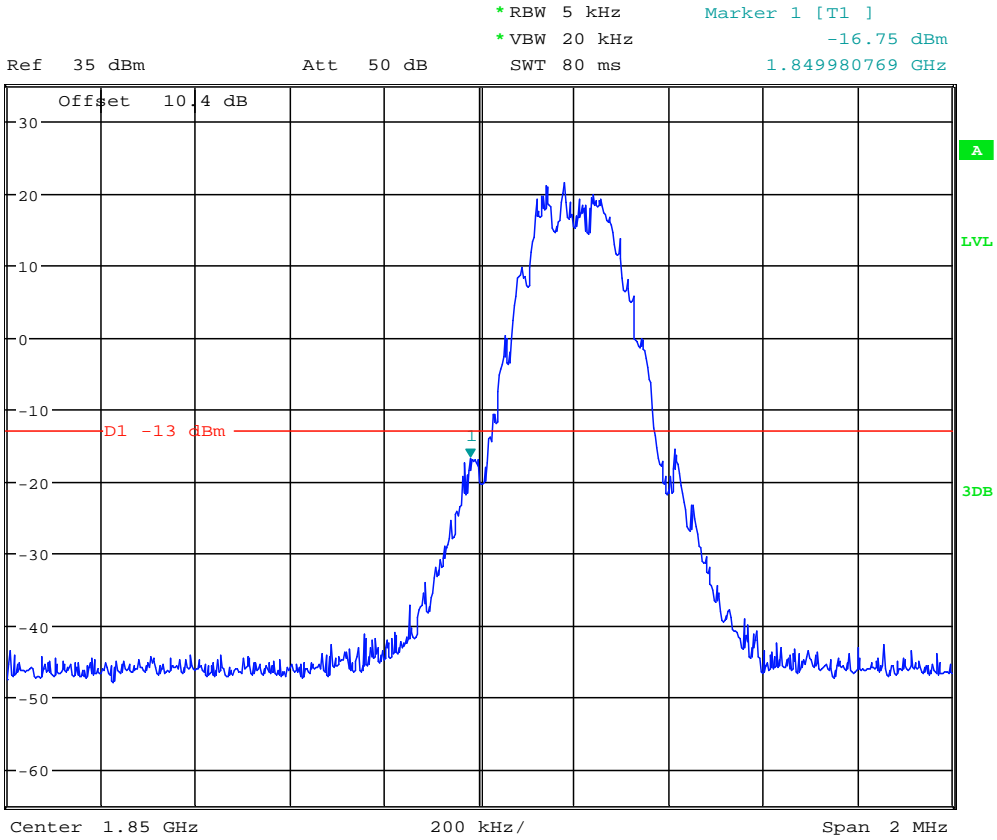
Mode	-26dB BW [MHz]	RBW to Measure Band Edge [kHz]
TM1/TM2	0.32	≥ 3.2 used 5



TM1:GPRS/GSM

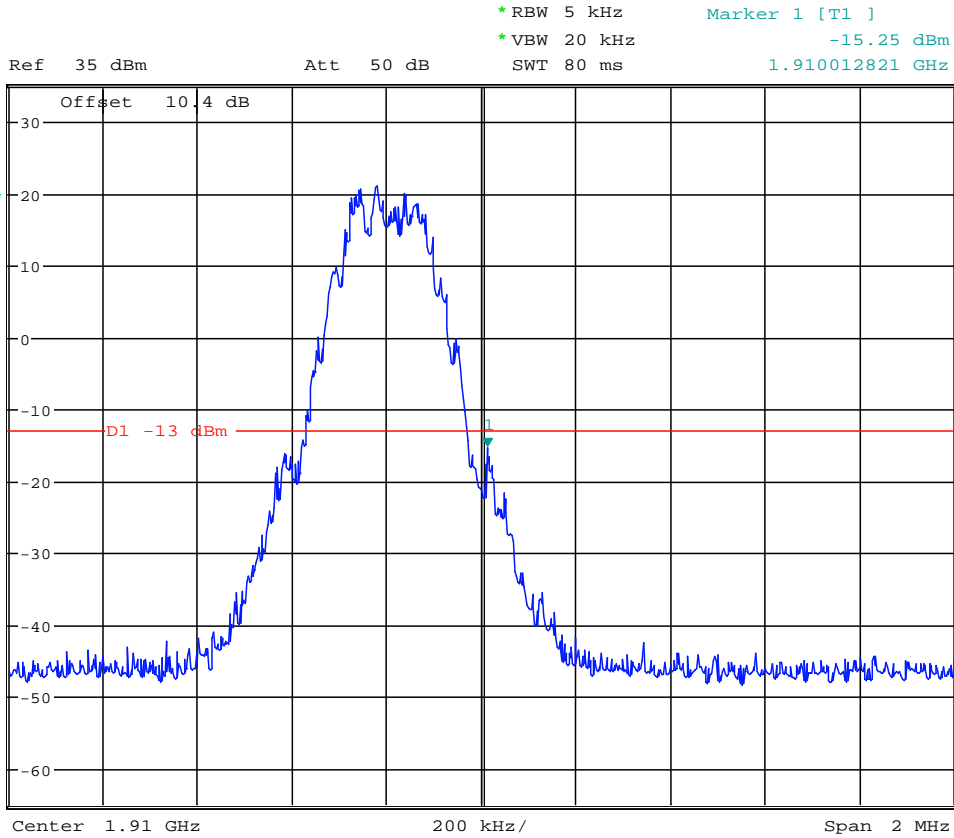
Left Edge

Channel 512





Right Edge Channel 810

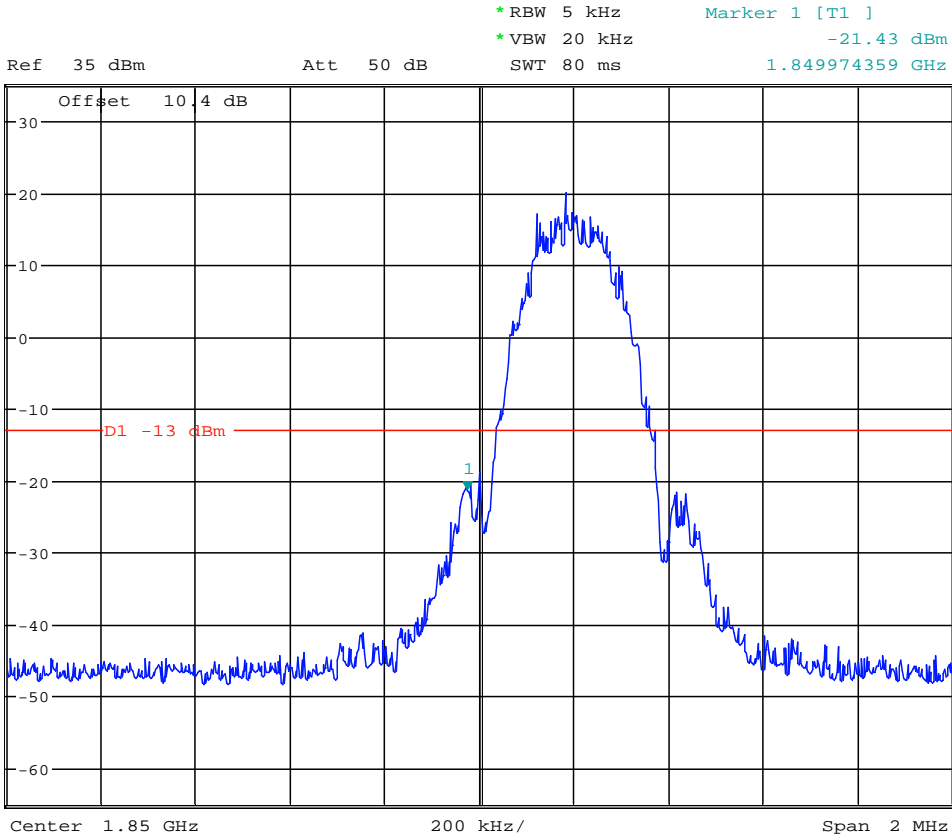




TM2:EDGE

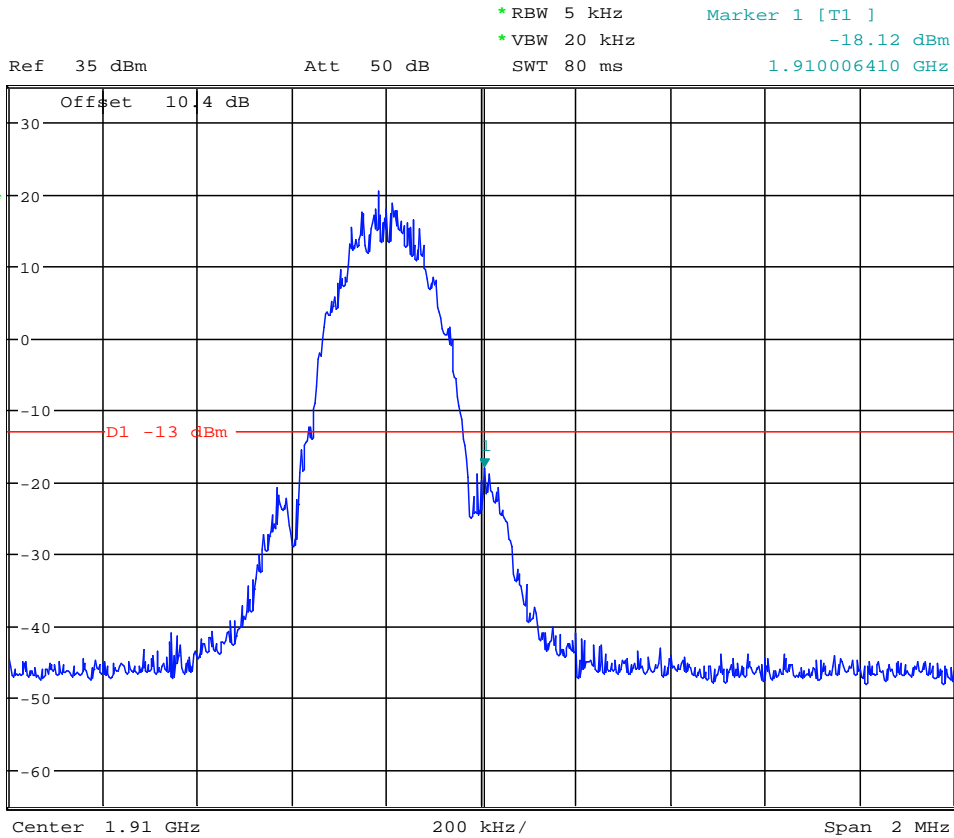
Left Edge

Channel 512





Right Edge Channel 810



-----The END-----



Appendix F

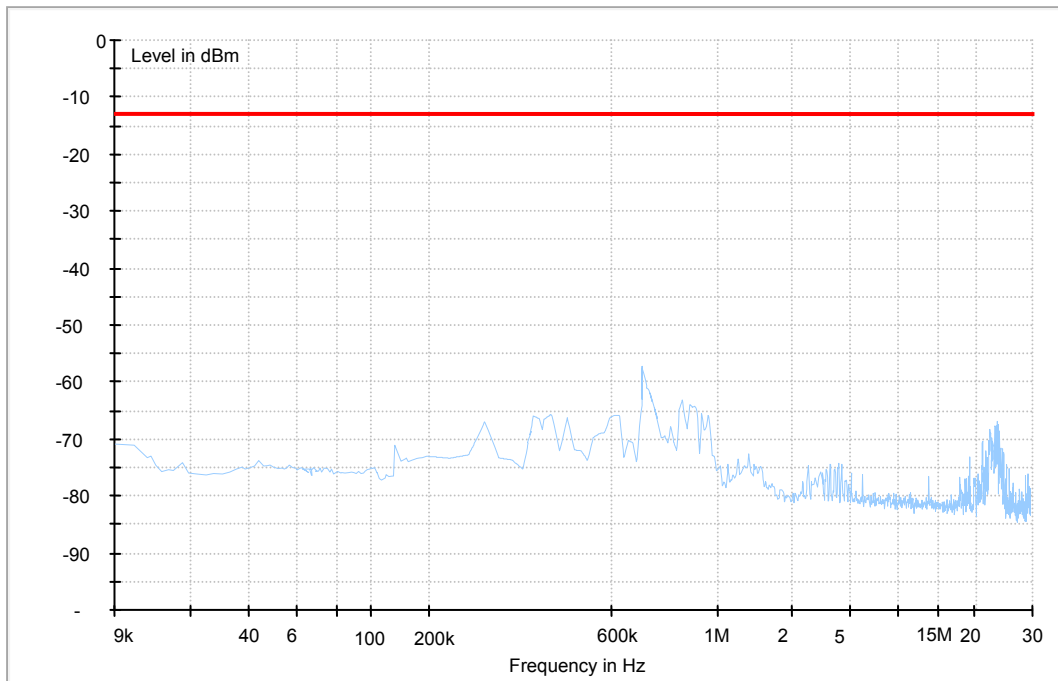
Radiated spurious emission



Note: 1. Simultaneous transmission was investigated and no new emissions were found.
2. RBW \geq 1MHz, VBW $>$ 3 x RBW.

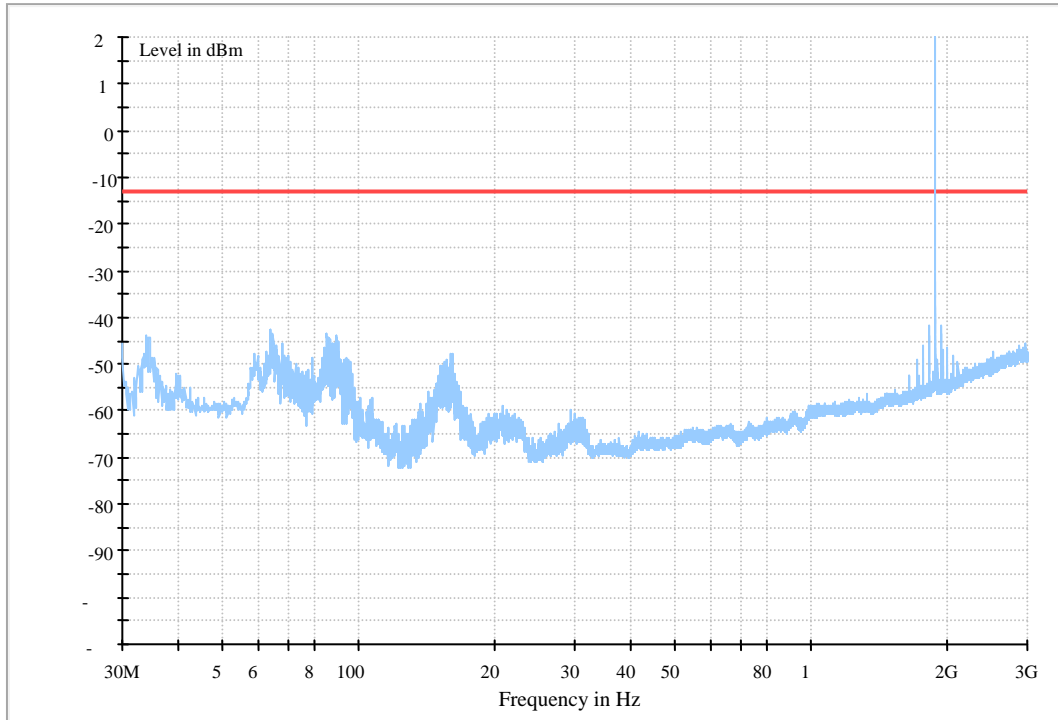
GSM 1900

Traffic Mode (9kHz-30MHz)

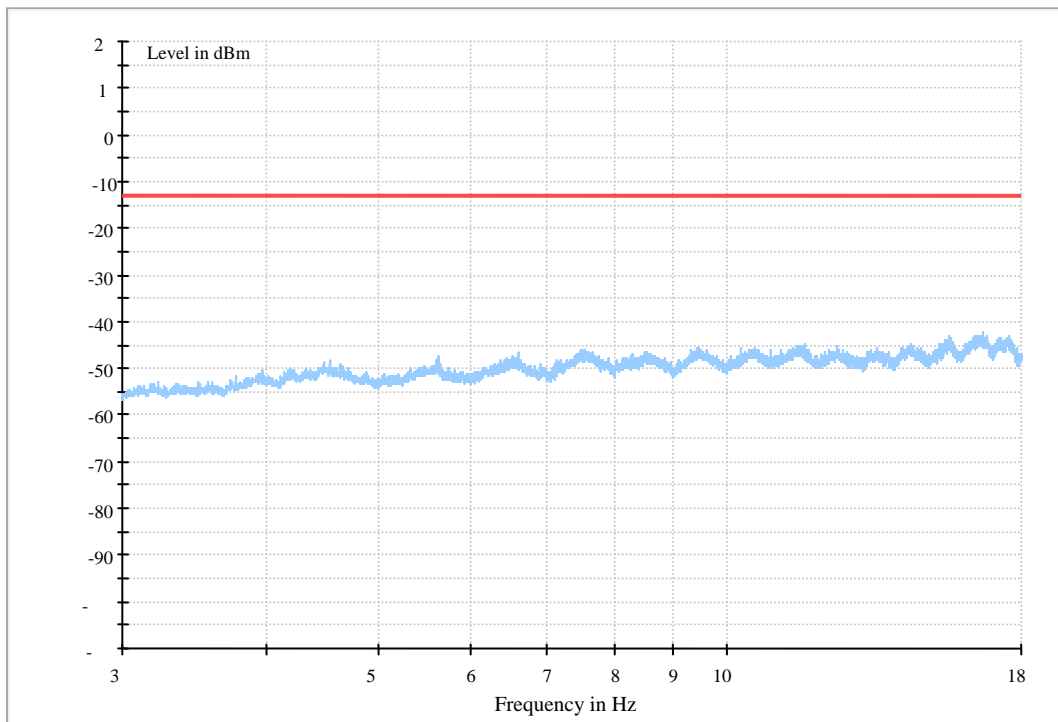




Traffic Mode (30MHz-3GHz)

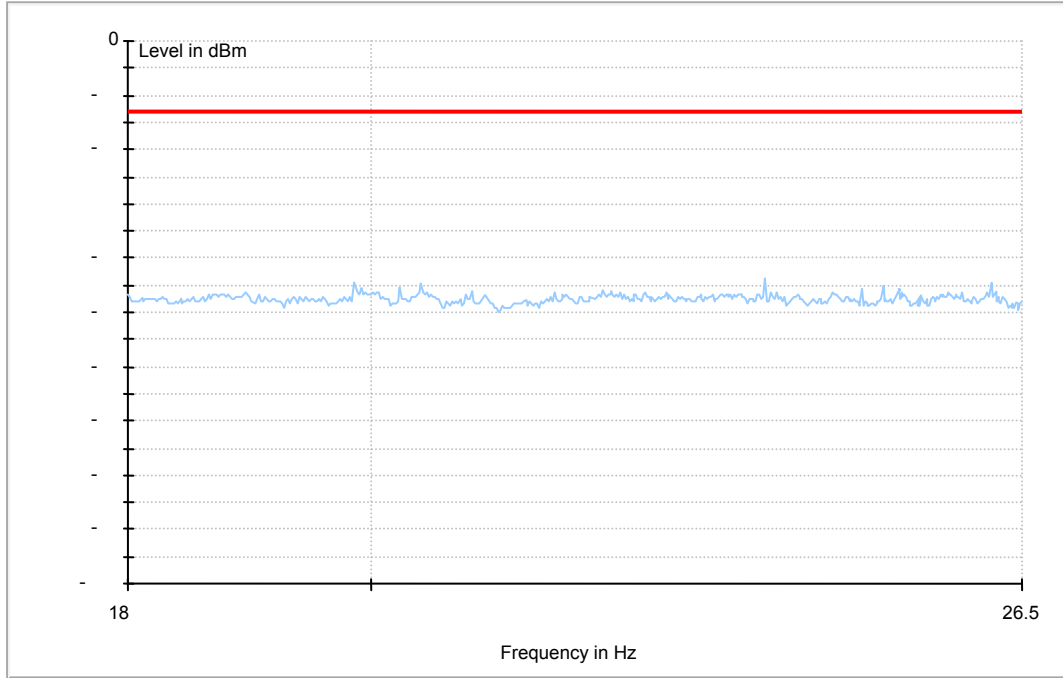


Traffic Mode (3GHz-18GHz)





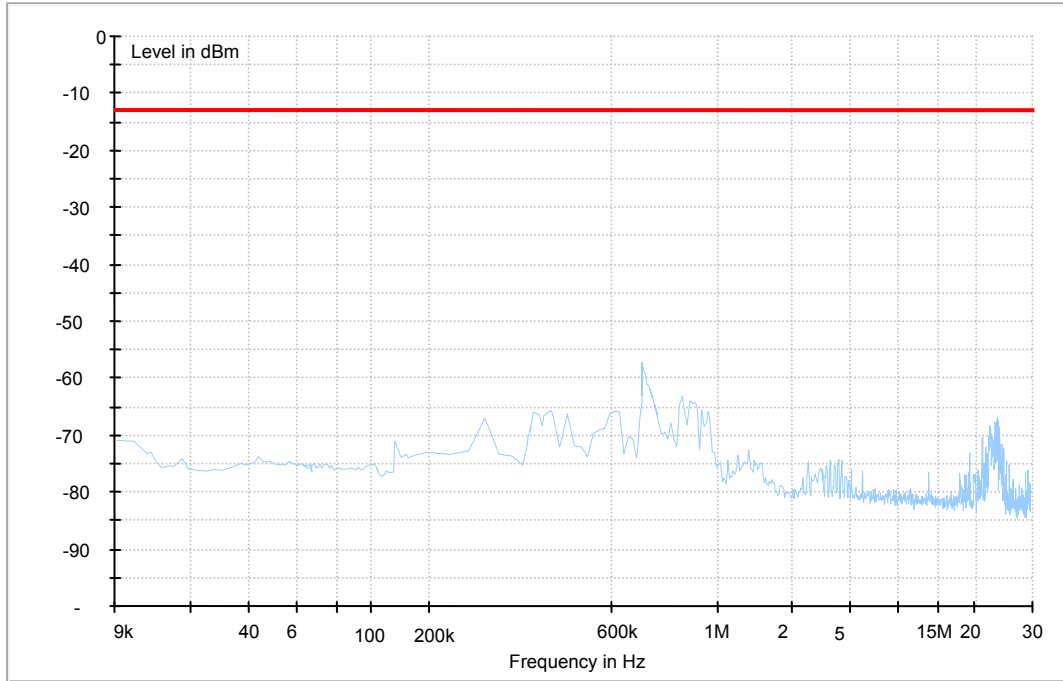
Traffic Mode (18GHz-26.5GHz)



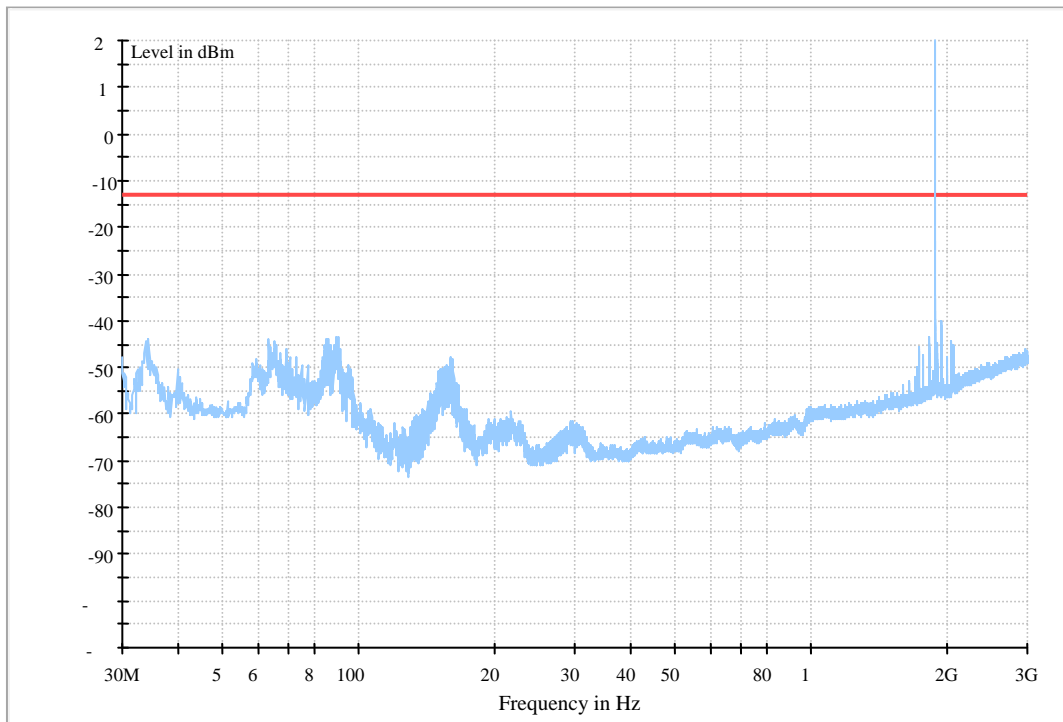


GPRS 1900

Traffic Mode (9kHz-30MHz)

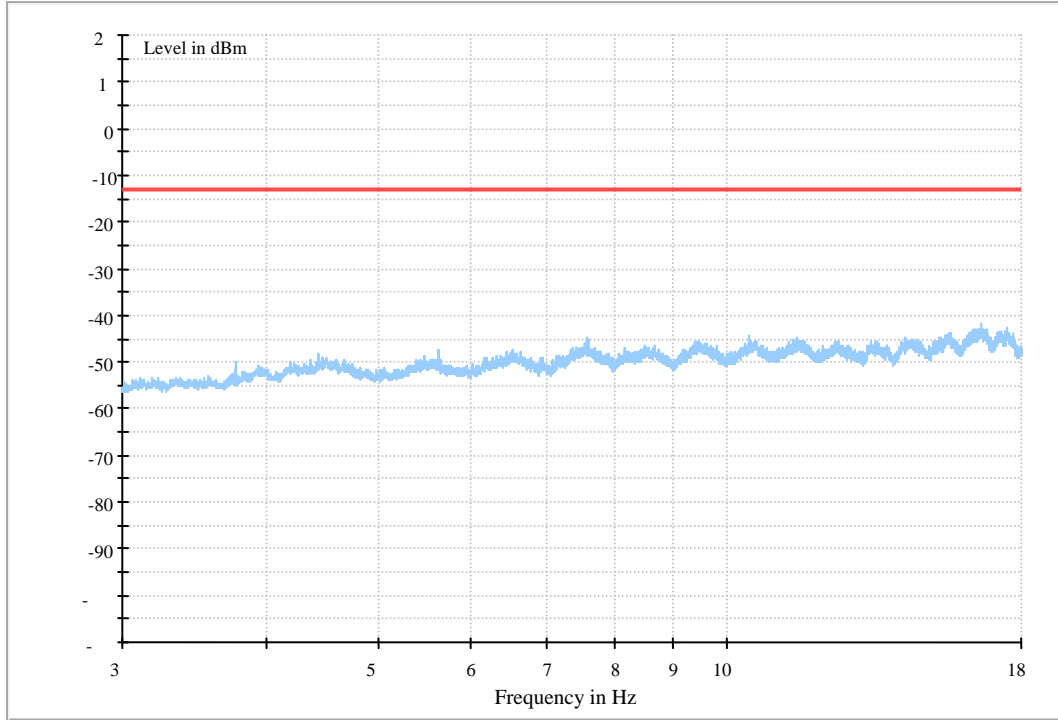


Traffic Mode (30MHz-3GHz)

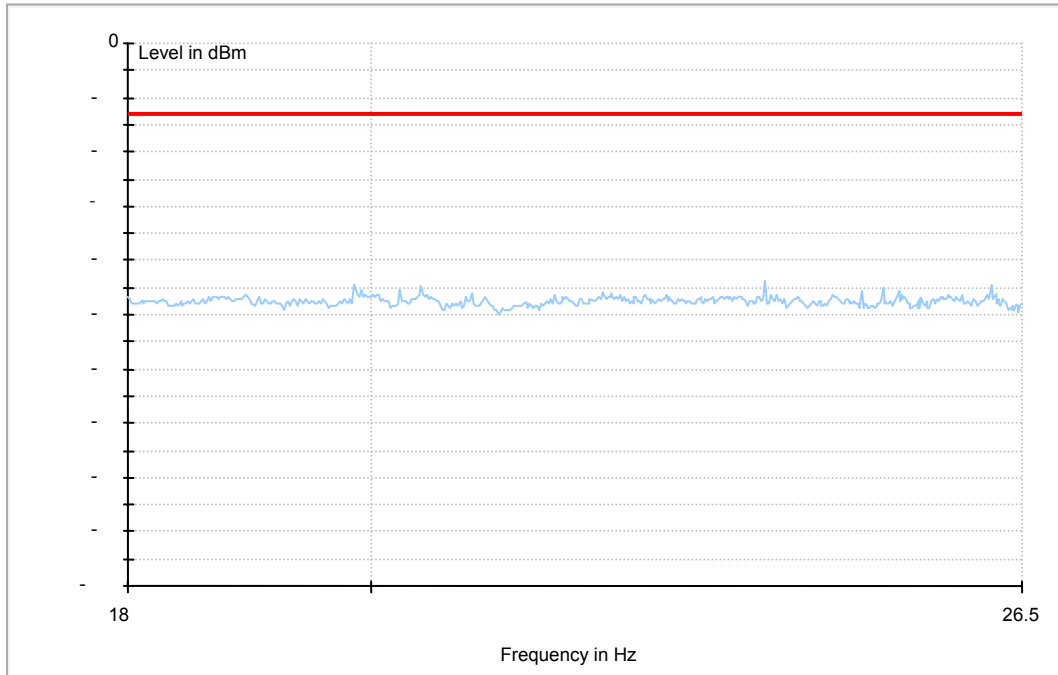




Traffic Mode (3GHz-18GHz)



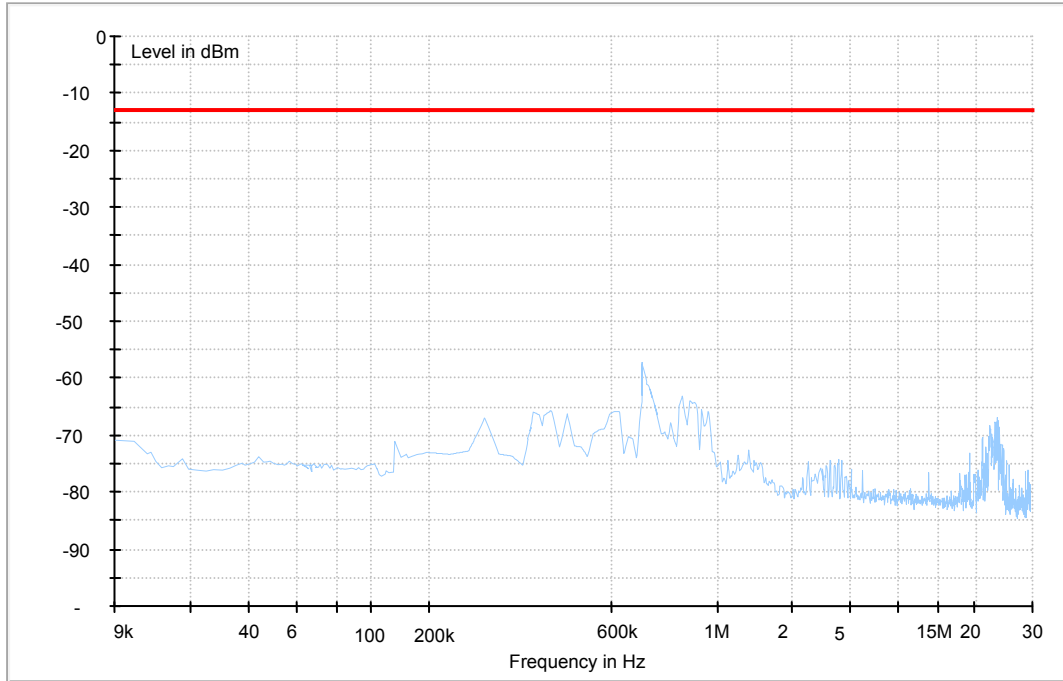
Traffic Mode (18GHz-26.5GHz)



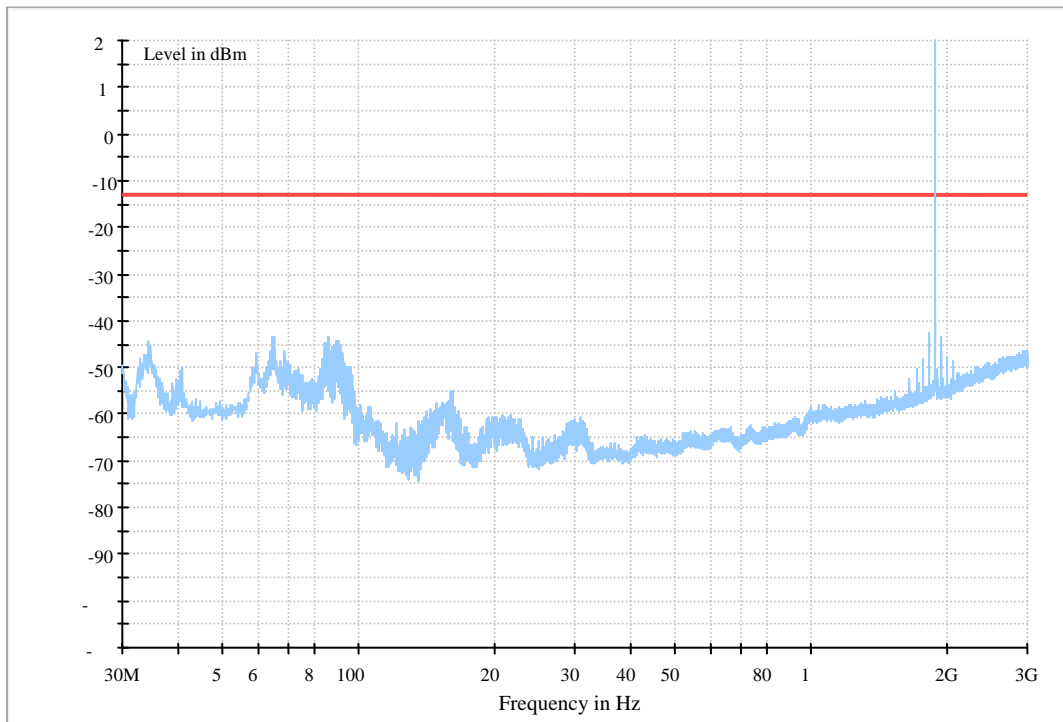


EDGE 1900

Traffic Mode (9kHz-30MHz)

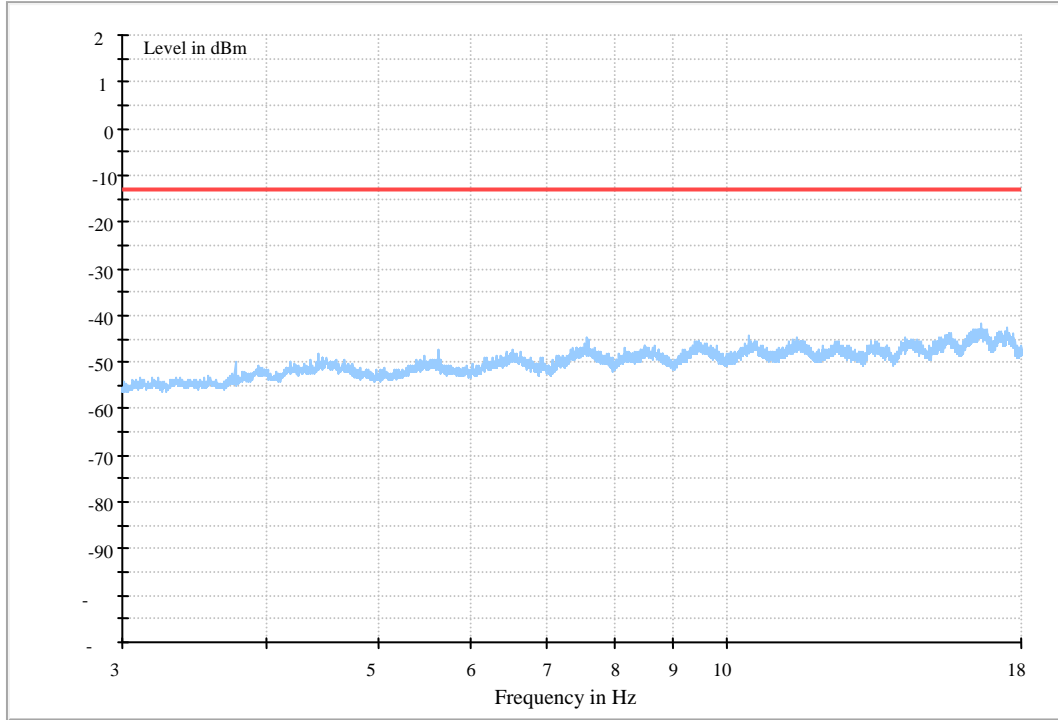


Traffic Mode (30MHz-3GHz)

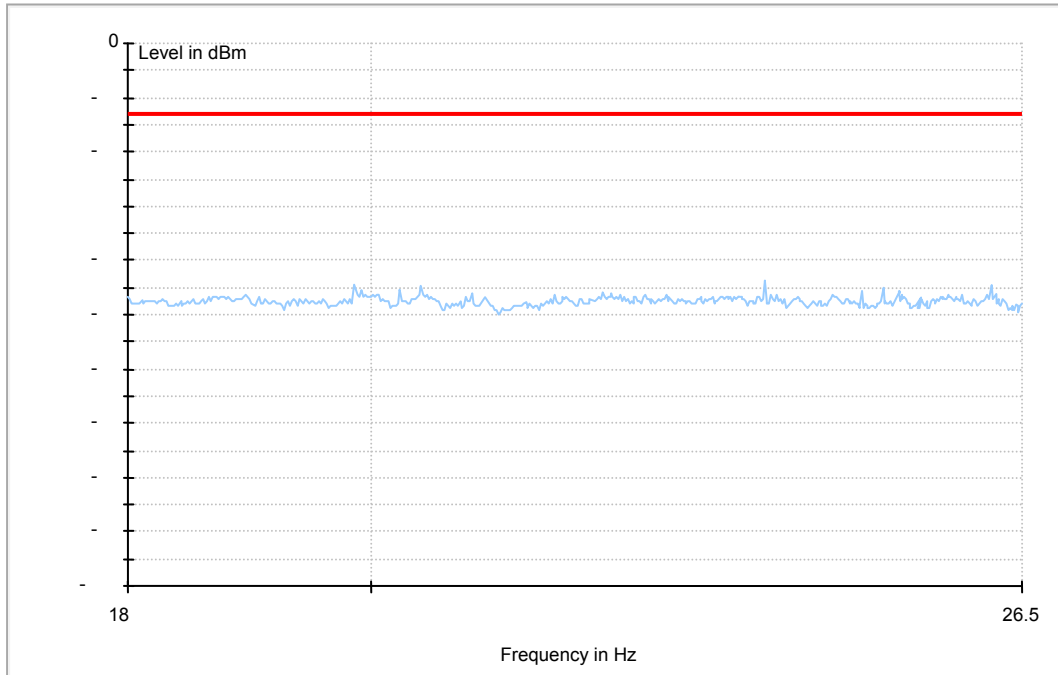




Traffic Mode (3GHz-18GHz)



Traffic Mode (18GHz-26.5GHz)



-----END-----



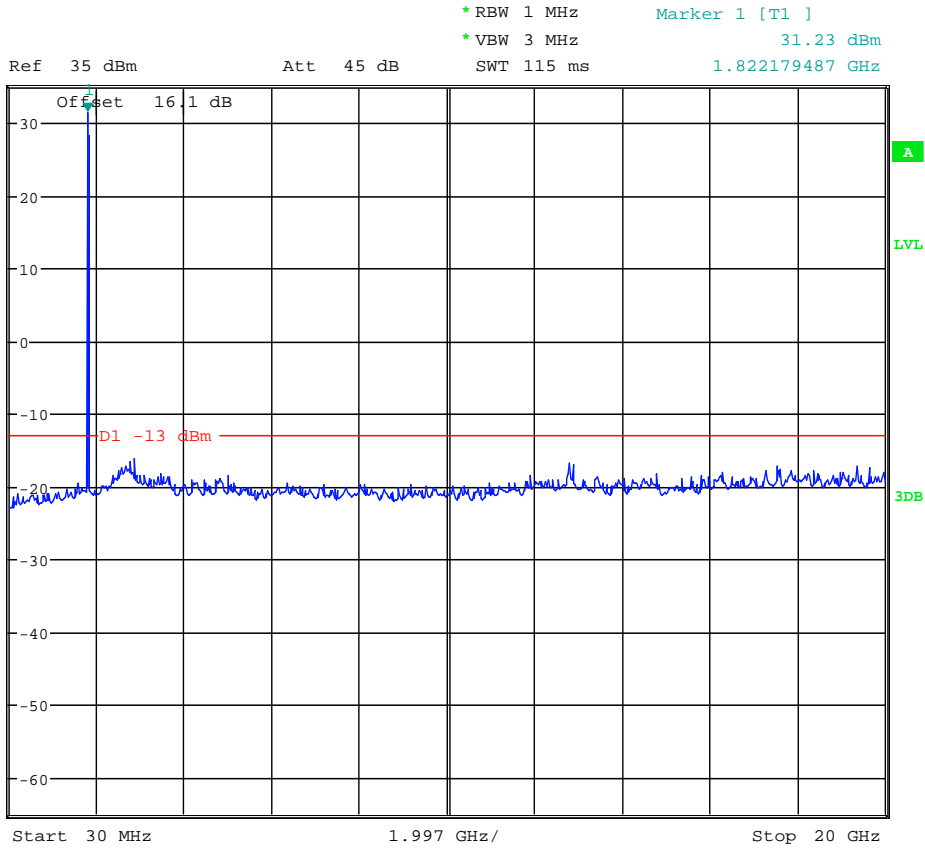
Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & 24.238



TM1:GPRS/GSM Channel 512



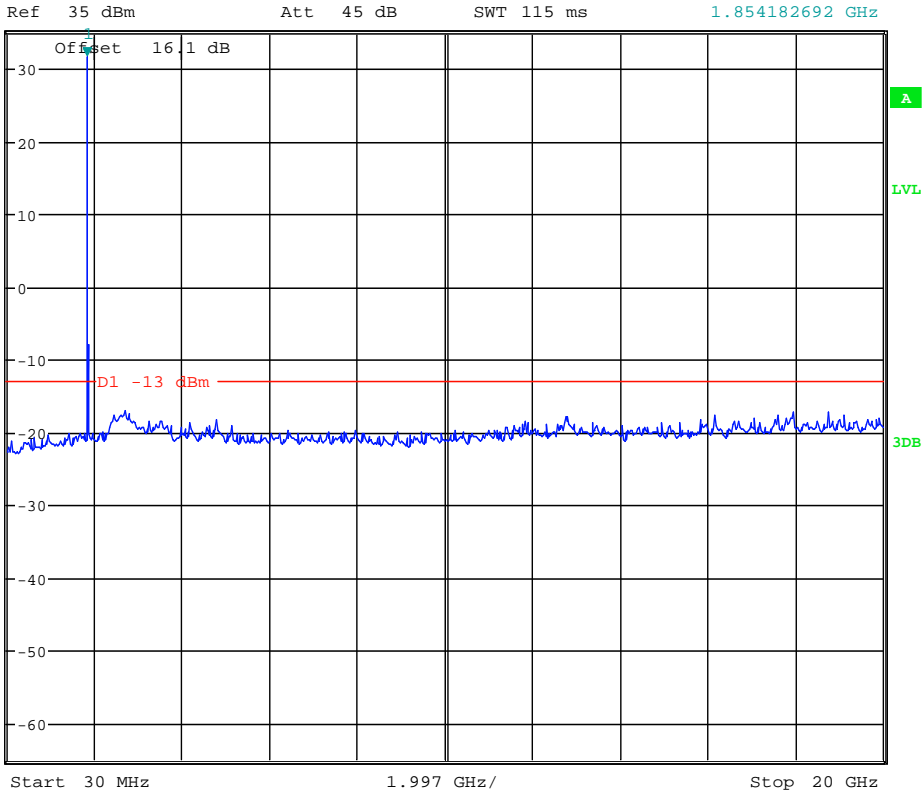
Date: 26.APR.2012 11:59:08



Channel 661



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 31.64 dBm
SWT 115 ms 1.854182692 GHz

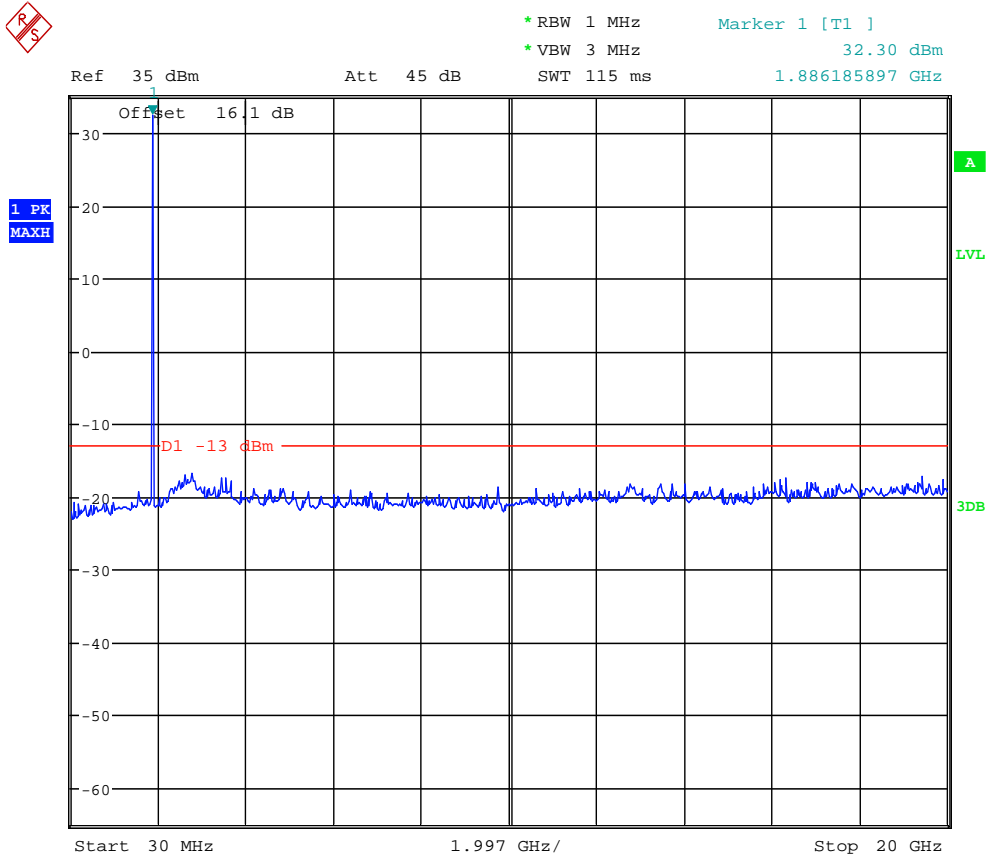


Date: 26.APR.2012 11:59:22





Channel 810



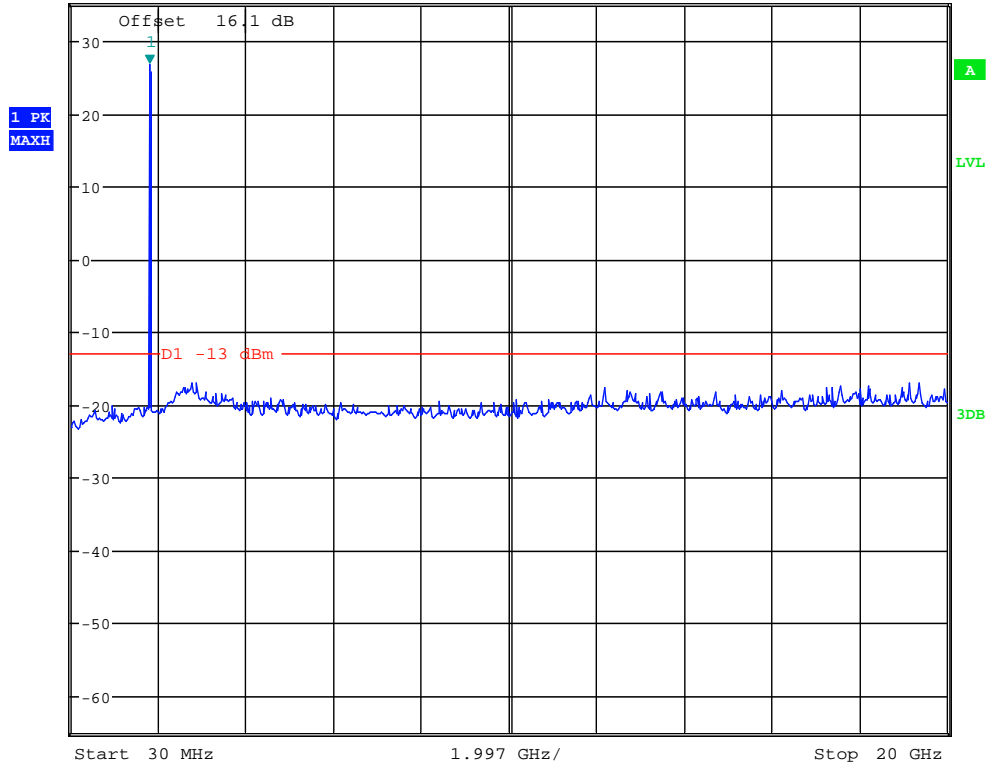
Date: 26.APR.2012 11:59:37



TM2:EDGE Channel 512



Ref 35 dBm Att 45 dB SWT 115 ms
* RBW 1 MHz * VBW 3 MHz
Marker 1 [T1] 26.78 dBm
1.822179487 GHz



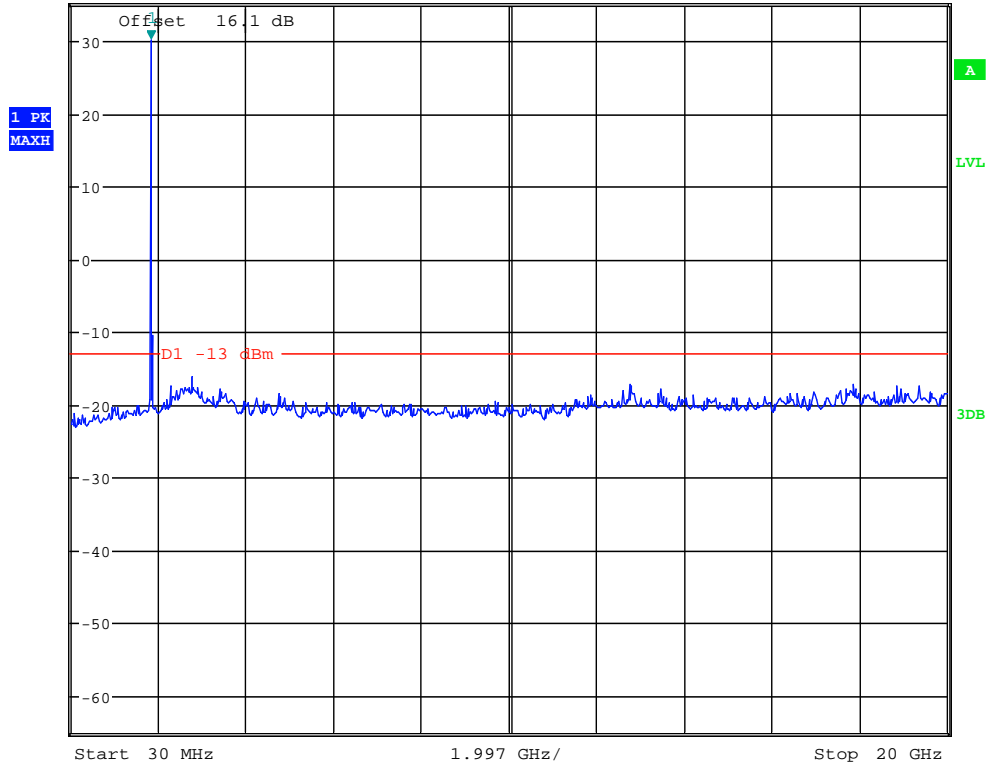
Date: 26.APR.2012 12:06:32



Channel 661



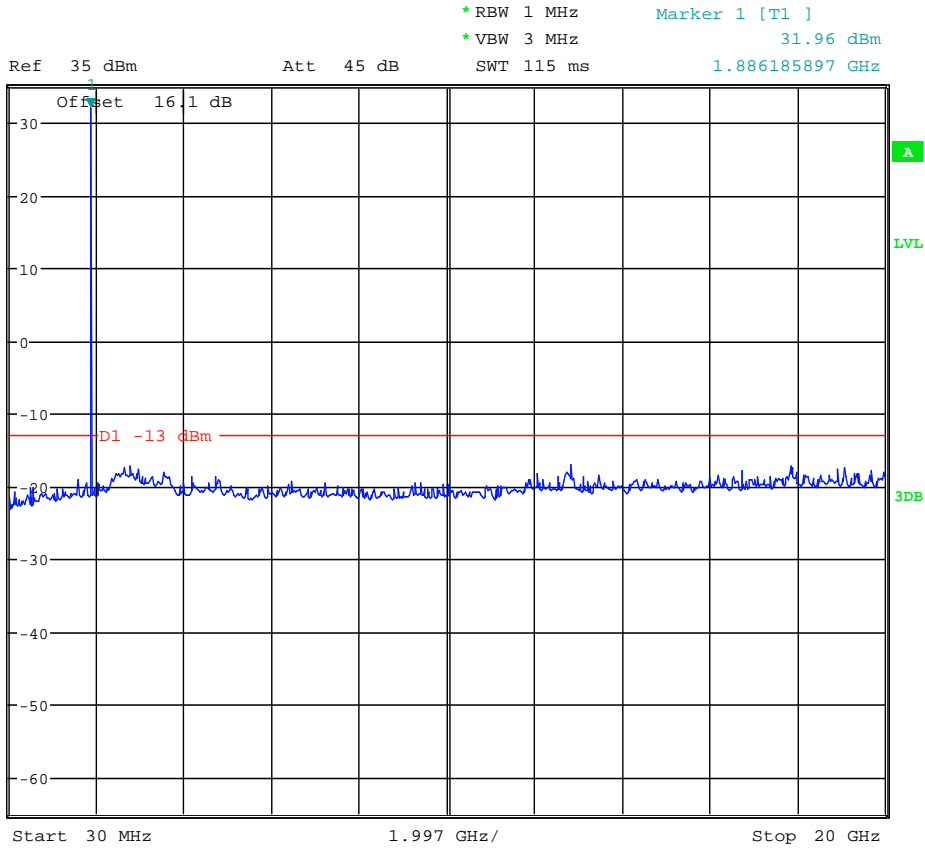
Ref 35 dBm Att 45 dB SWT 115 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1] 30.01 dBm
1.854182692 GHz



Date: 26.APR.2012 12:06:46



Channel 810



Date: 26.APR.2012 12:07:01

-----The END-----



Appendix G

Frequency Stability According to FCC Part 2.1055& Part 24.235



Frequency Error vs. Temperature:

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	VN	-30 °C	-16	-0.00851	---	±2.5	Pass
			-20 °C	17	0.00904	---	±2.5	Pass
			-10 °C	11	0.00585	---	±2.5	Pass
			0 °C	-18	-0.00957	---	±2.5	Pass
			10 °C	-17	-0.00904	---	±2.5	Pass
			20 °C	23	0.01223	---	±2.5	Pass
			30 °C	-15	-0.00798	---	±2.5	Pass
			40 °C	12	0.00638	---	±2.5	Pass
			50 °C	-18	-0.00957	---	±2.5	Pass
TM 2	M	VN	-30 °C	11	0.00585	---	±2.5	Pass
			-20 °C	-20	-0.01064	---	±2.5	Pass
			-10 °C	14	0.00745	---	±2.5	Pass
			0 °C	-16	-0.00851	---	±2.5	Pass
			10 °C	24	0.01277	---	±2.5	Pass
			20 °C	-14	-0.00745	---	±2.5	Pass
			30 °C	-21	-0.01117	---	±2.5	Pass
			40 °C	15	0.00798	---	±2.5	Pass
			50 °C	-27	-0.01436	---	±2.5	Pass



Frequency Error vs. Voltage:

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	TN	VL	14	0.00745	---	±2.5	Pass
			VN	-16	-0.00851	---	±2.5	Pass
			VH	-22	-0.01170	---	±2.5	Pass
TM 2	M	TN	VL	19	0.01011	---	±2.5	Pass
			VN	-18	-0.00957	---	±2.5	Pass
			VH	13	0.00692	---	±2.5	Pass

-----The END-----



Appendix H

Photos of Radiated Spurious Emissions



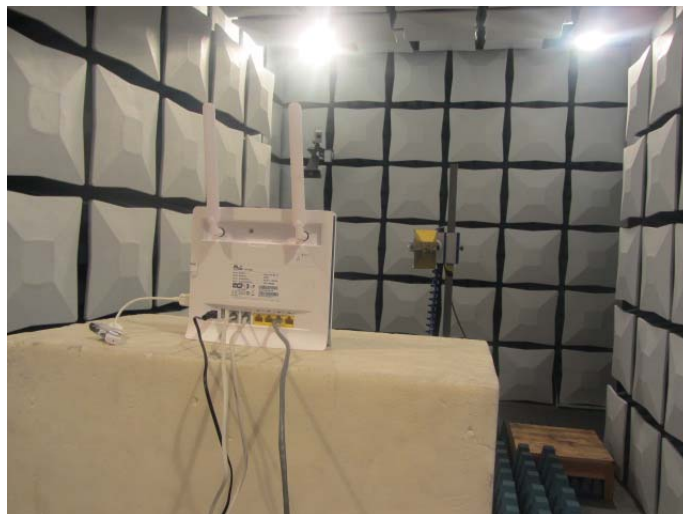
Photos of Test Setup



1 Radiated Spurious Emissions



Radiated Spurious Emission (below 3GHz)



Radiated Spurious Emission (3GHz to18GHz)



Radiated Spurious Emission (18GHz to26.5GHz)