



Appendix A

Transmitter Output Power According to FCC Part 2.1046 & Part 22.913



Conducted Power of Transmitter

TEST CONDITIONS		RF Output Power (Conducted)					
		Channel128(L)		Channel192(M)		Channel251(H)	
		824.2MHz		837.0MHz		848.8MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM1		32.12	38.5	32.14	38.5	32.08	38.5
TM2		25.95	38.5	25.92	38.5	26.21	38.5
TEST CONDITIONS		Channel4132(L)		Channel4182(M)		Channel4233(H)	
		826.4MHz		836.4MHz		846.6MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM3		21.89	38.5	21.85	38.5	21.81	38.5
TM4	Case1	21.97	38.5	21.83	38.5	21.77	38.5
	Case2	21.12	38.5	21.15	38.5	21.16	38.5
	Case3	20.68	38.5	20.62	38.5	20.53	38.5
	Case4	20.56	38.5	20.65	38.5	20.66	38.5
TM5	Case1	21.08	38.5	20.96	38.5	20.88	38.5
	Case2	20.22	38.5	20.07	38.5	19.99	38.5
	Case3	20.09	38.5	19.97	38.5	19.92	38.5
	Case4	19.94	38.5	19.79	38.5	19.77	38.5
	Case5	21.16	38.5	21.01	38.5	20.94	38.5



Effective Radiated Power of Transmitter (ERP)

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBd]	Cable Loss [dB]	Substitution Level (ERP)	FCC limit [dBm]	Result
							[dBm]		
TM1	824.2	29.02	Dipole Ant.	32.47	-2.75	0.6	29.12	38.5	Pass
TM1	837.0	29.04	Dipole Ant.	32.59	-2.87	0.6	29.12	38.5	Pass
TM1	848.8	28.98	Dipole Ant.	32.38	-2.85	0.6	28.93	38.5	Pass
TM2	824.2	22.85	Dipole Ant.	26.22	-2.75	0.6	22.87	38.5	Pass
TM2	837.0	22.82	Dipole Ant.	26.32	-2.87	0.6	22.85	38.5	Pass
TM2	848.8	23.11	Dipole Ant.	26.6	-2.85	0.6	23.15	38.5	Pass
TM3	826.4	18.79	Dipole Ant.	22.19	-2.75	0.6	18.84	38.5	Pass
TM3	836.4	18.75	Dipole Ant.	22.24	-2.87	0.6	18.77	38.5	Pass
TM3	846.6	18.71	Dipole Ant.	22.23	-2.85	0.6	18.78	38.5	Pass

Note: a, For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

b, SGP=Signal Generator Level

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



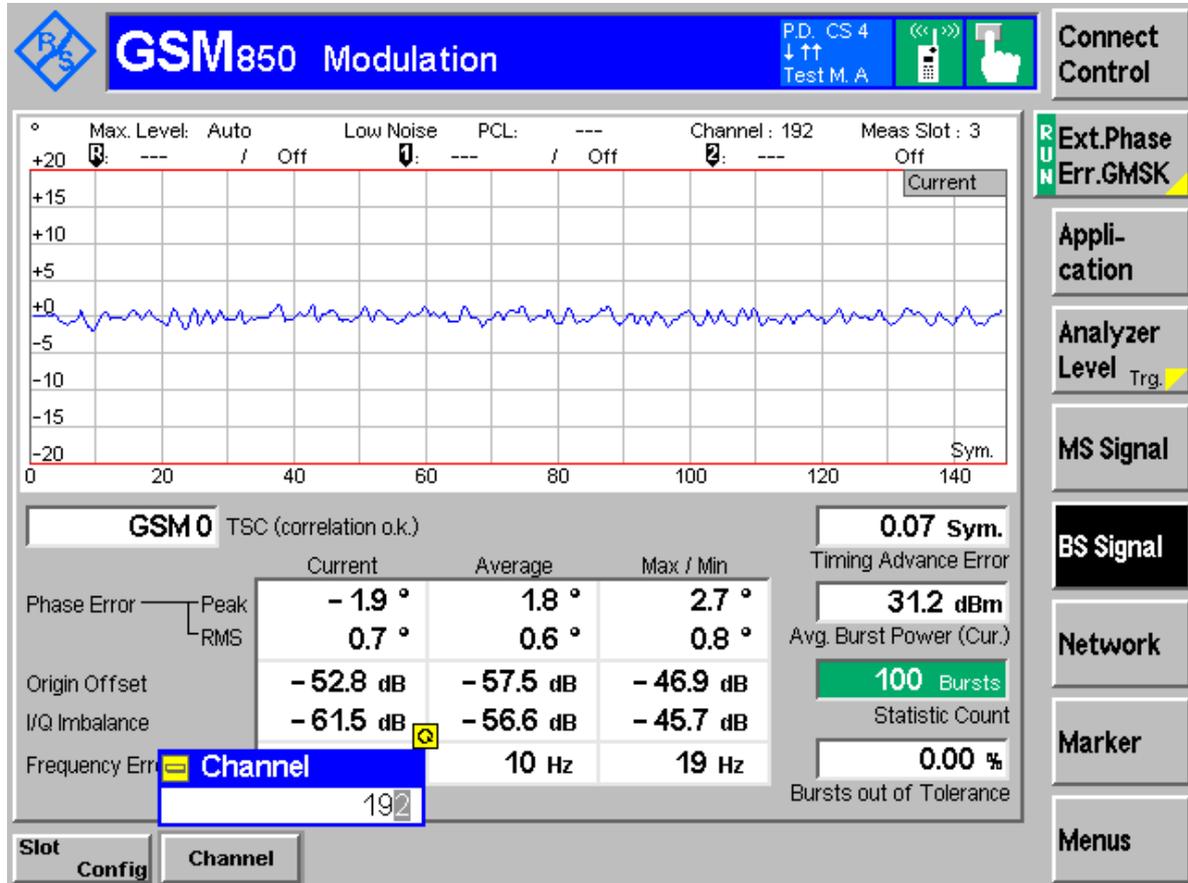
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

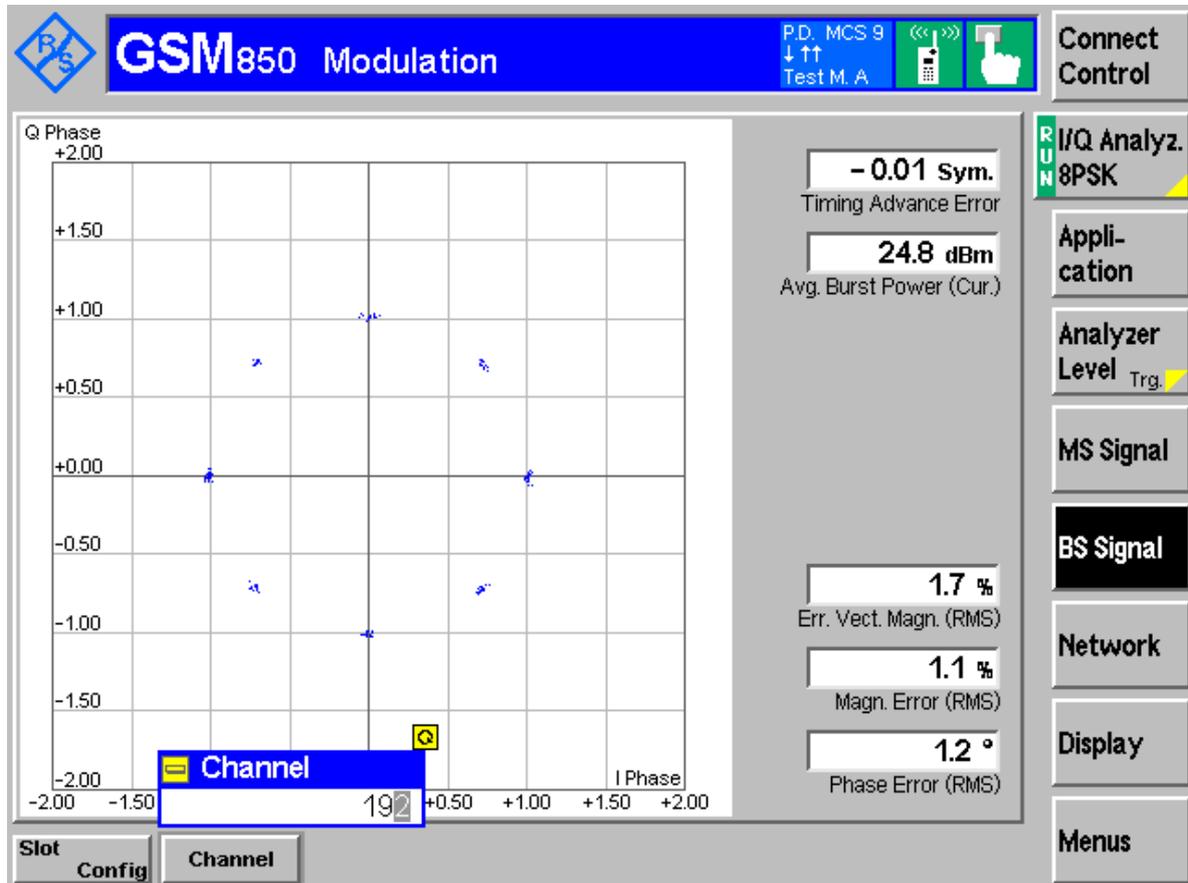


Channel 192 (TM1:GPRS/GSM)



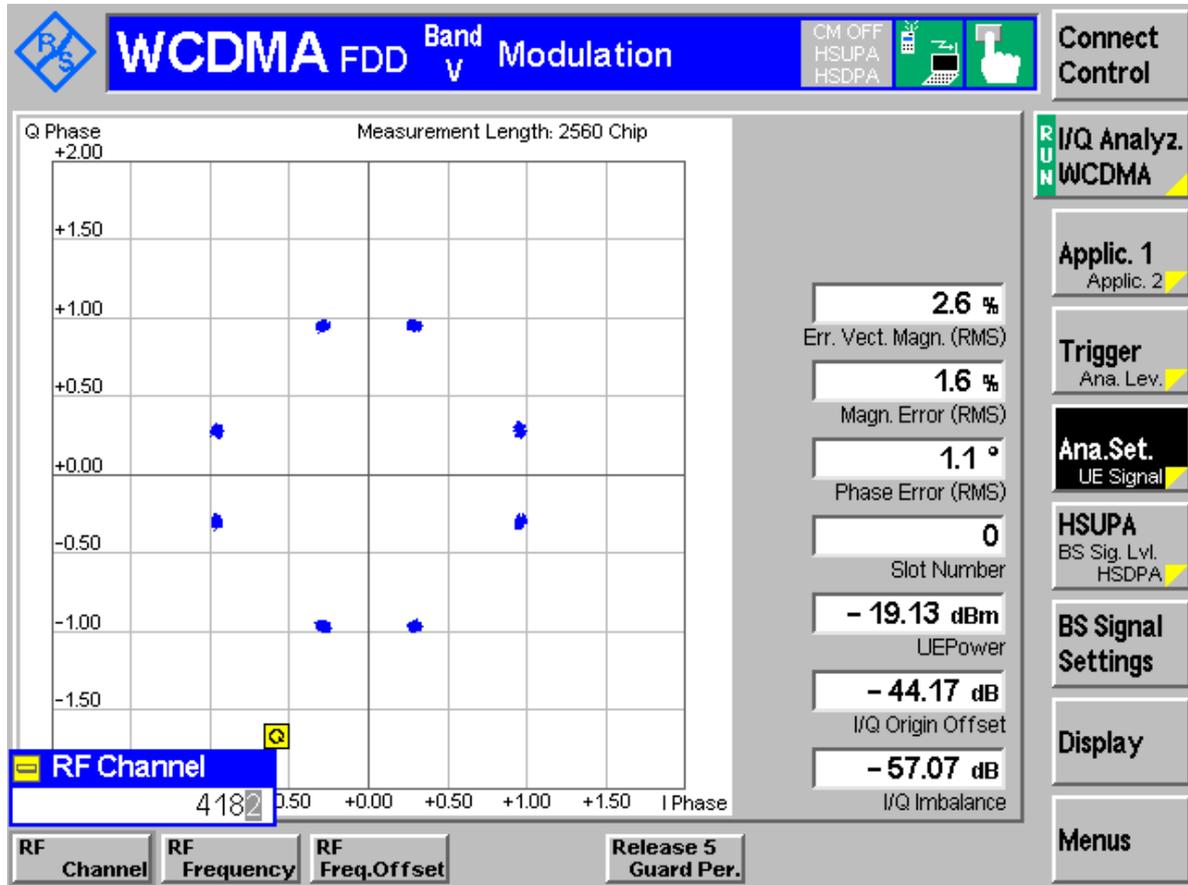


Channel 192 (TM2:EDGE)





Channel 4182 (TM3: WCDMA)



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



Appendix C

Occupied Bandwidth According to FCC Part 2.1049 & Part 22 Subpart H



Result Table

Table 1 Measurement Results

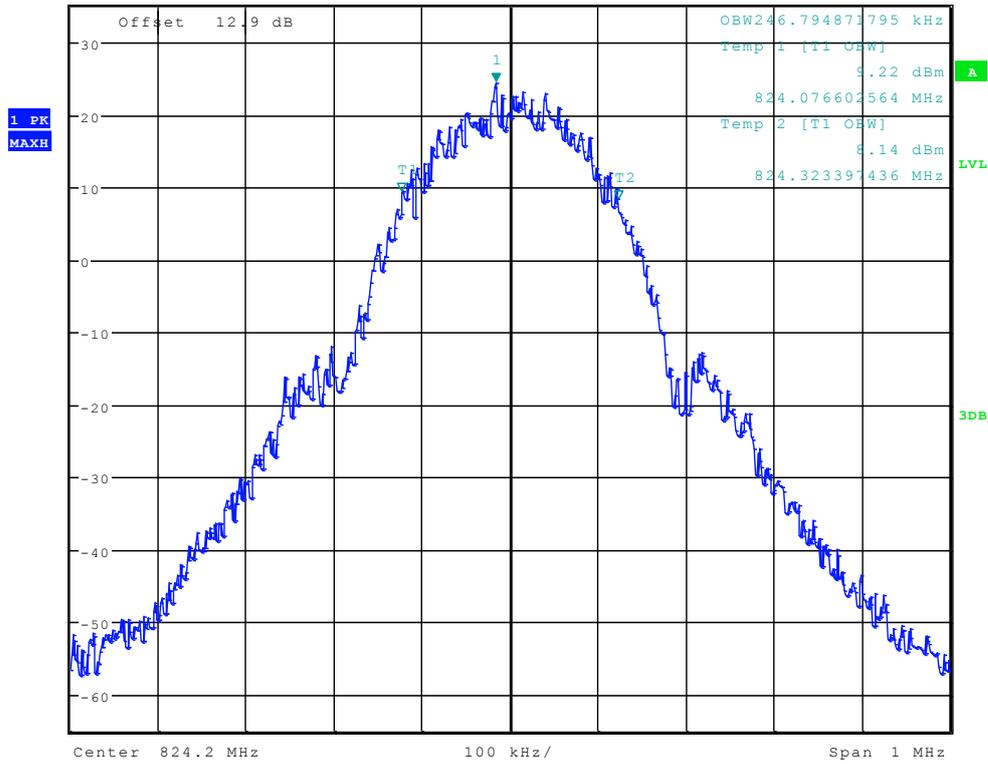
Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	128	246.79	Pass
	192	250.00	Pass
	251	246.79	Pass
TM2	128	245.19	Pass
	192	251.60	Pass
	251	238.78	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	4132	4.15	Pass
	4182	4.18	Pass
	4233	4.16	Pass



Channel 128 (TM1:GPRS/GSM)



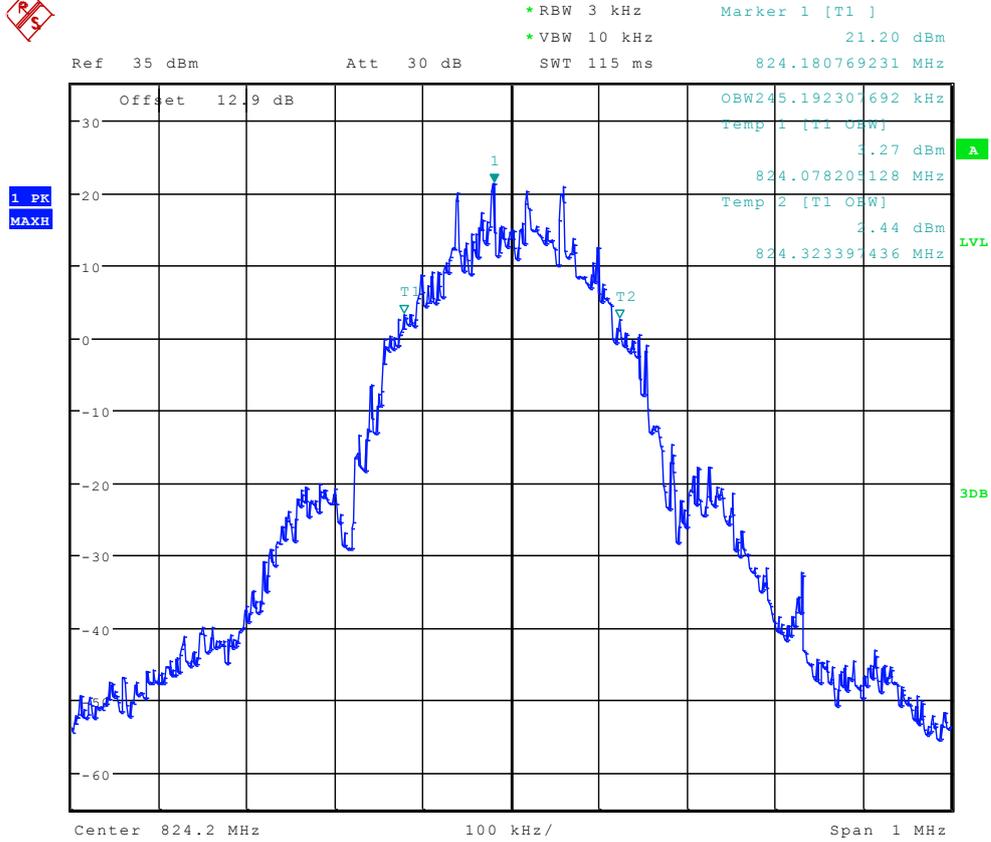
Ref 35 dBm Att 30 dB *RBW 3 kHz *VBW 10 kHz SWT 115 ms Marker 1 [T1] 24.34 dBm 824.183974359 MHz



Date: 29.AUG.2012 09:53:13



Channel 128 (TM2:EDGE)



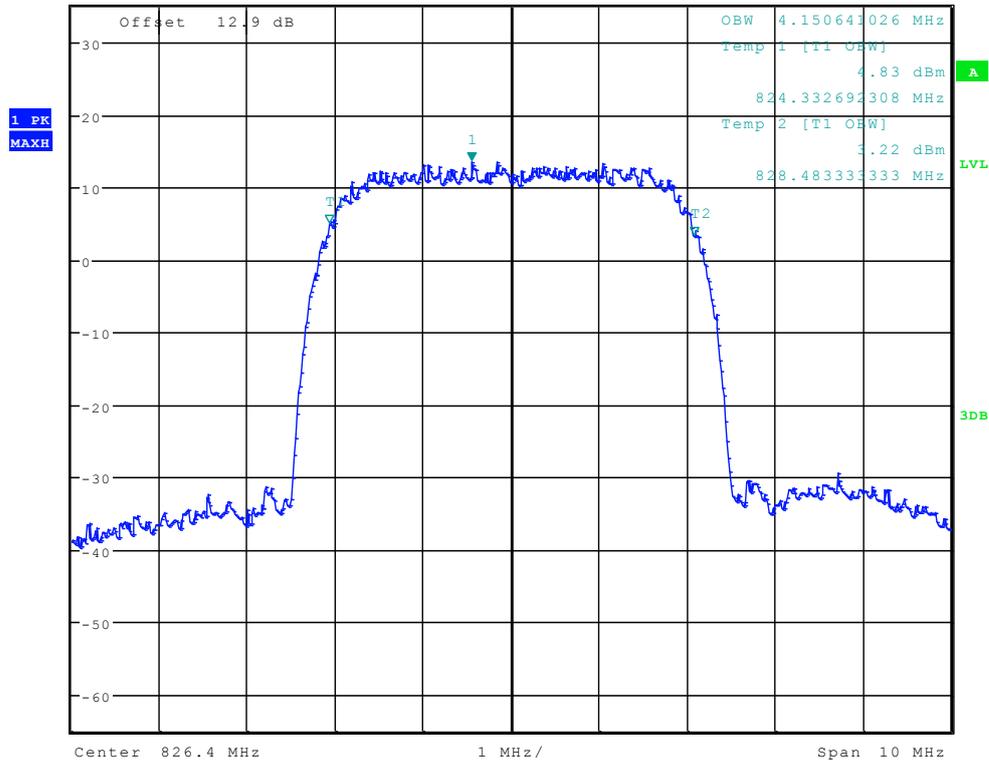
Date: 29.AUG.2012 10:03:07



Channel 4132 (TM3: WCDMA)



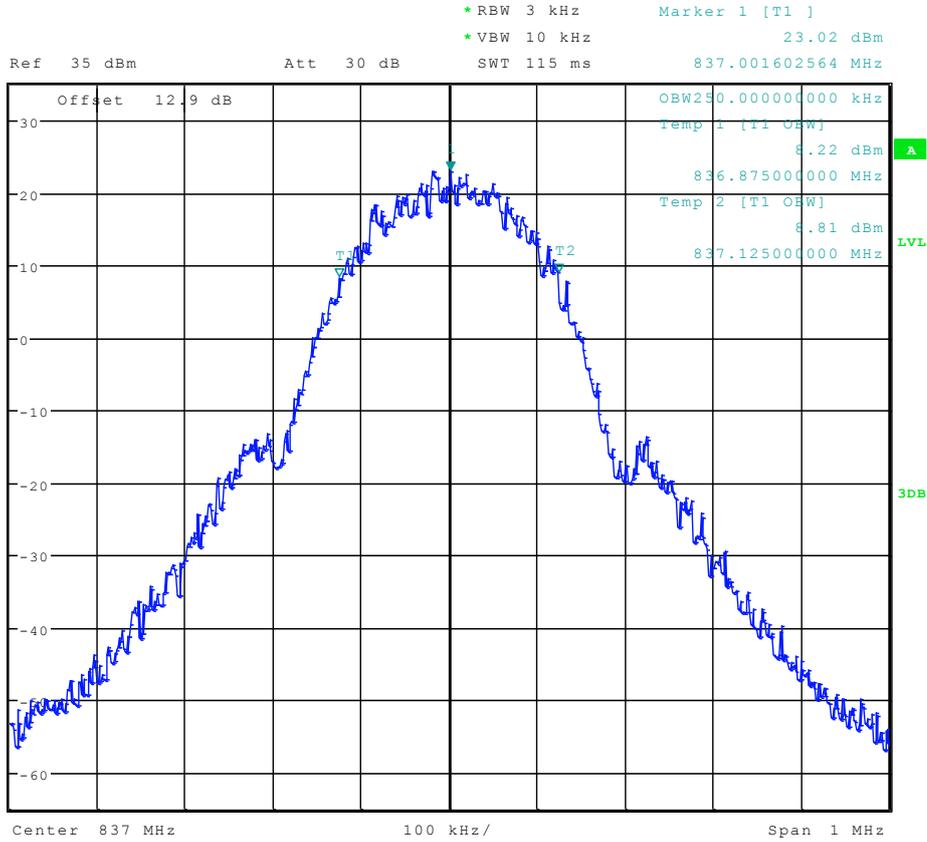
Ref 35 dBm Att 30 dB RBW 50 kHz VBW 500 kHz SWT 5 ms Marker 1 [T1] 13.55 dBm 825.951282051 MHz



Date: 29.AUG.2012 10:07:33



Channel 192 (TM1:GPRS/GSM)



Date: 29.AUG.2012 09:53:26

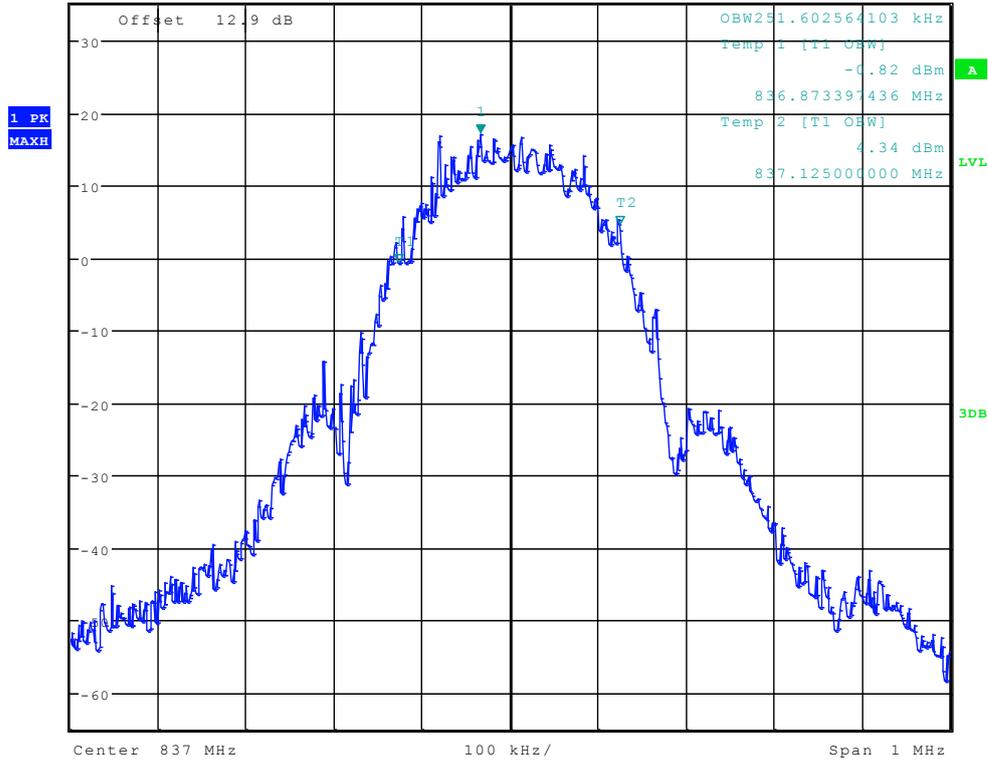


Channel 192 (TM2:EDGE)



Ref 35 dBm Att 30 dB SWT 115 ms

*RBW 3 kHz Marker 1 [T1] 17.04 dBm
*VBW 10 kHz 836.966346154 MHz



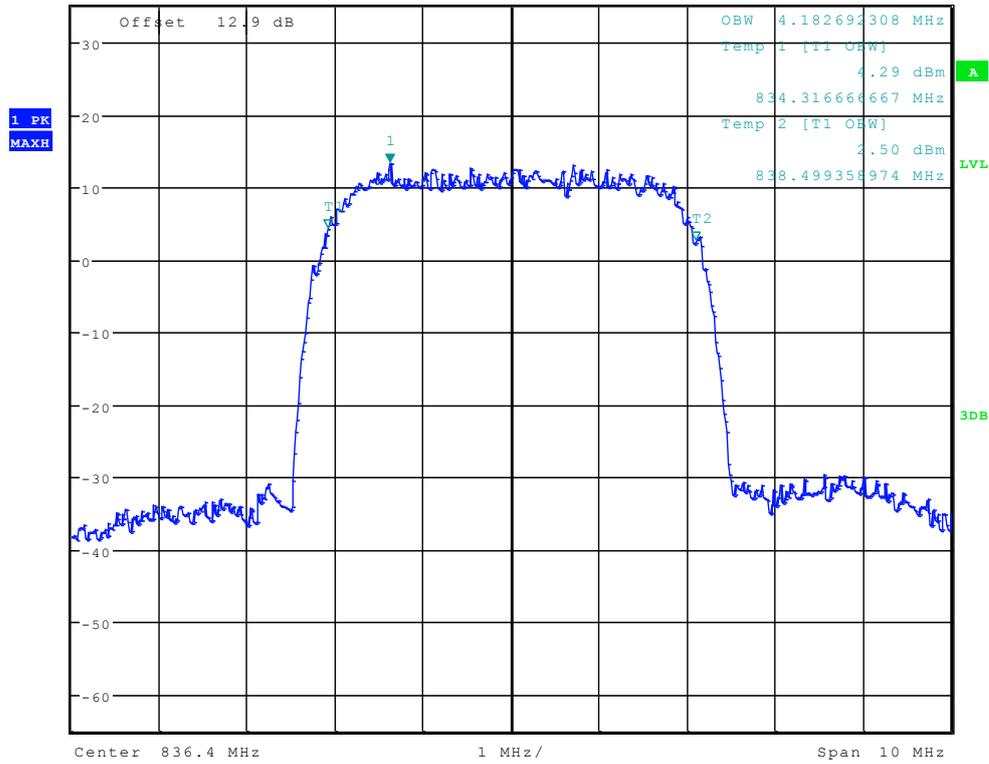
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Channel 4182 (TM3: WCDMA)



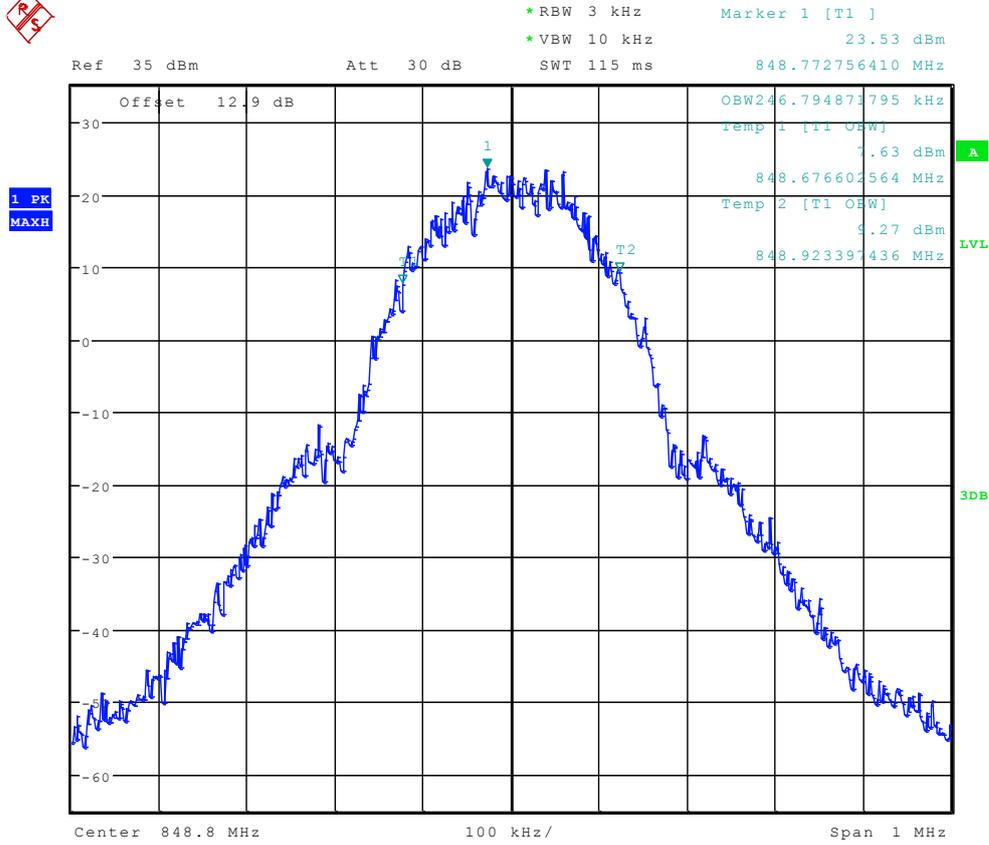
Ref 35 dBm Att 30 dB RBW 50 kHz Marker 1 [T1] 13.28 dBm
* VBW 500 kHz 835.021794872 MHz
SWT 5 ms



Date: 29.AUG.2012 10:07:47



Channel 251 (TM1:GPRS/GSM)



Date: 29.AUG.2012 09:53:40



Appendix D

Band Edges Compliance

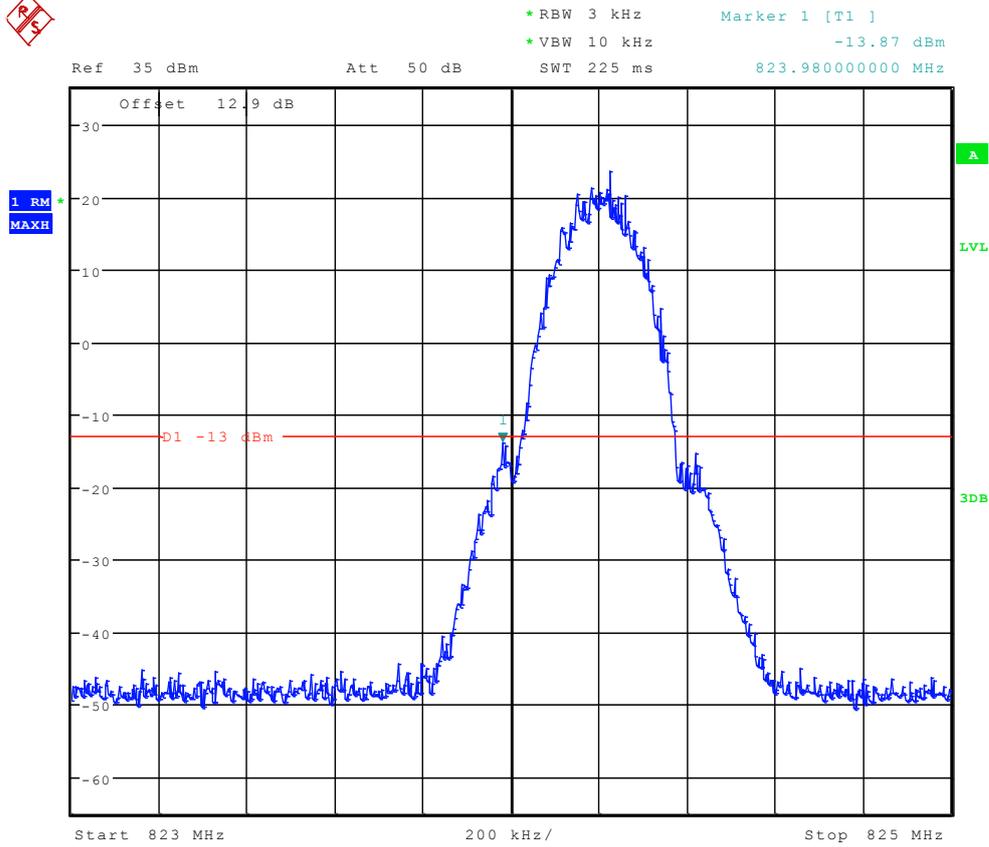
According to FCC Part 2.1051 & Part 22 Subpart H



TM1:GPRS/GSM

Left Edge

Channel 128



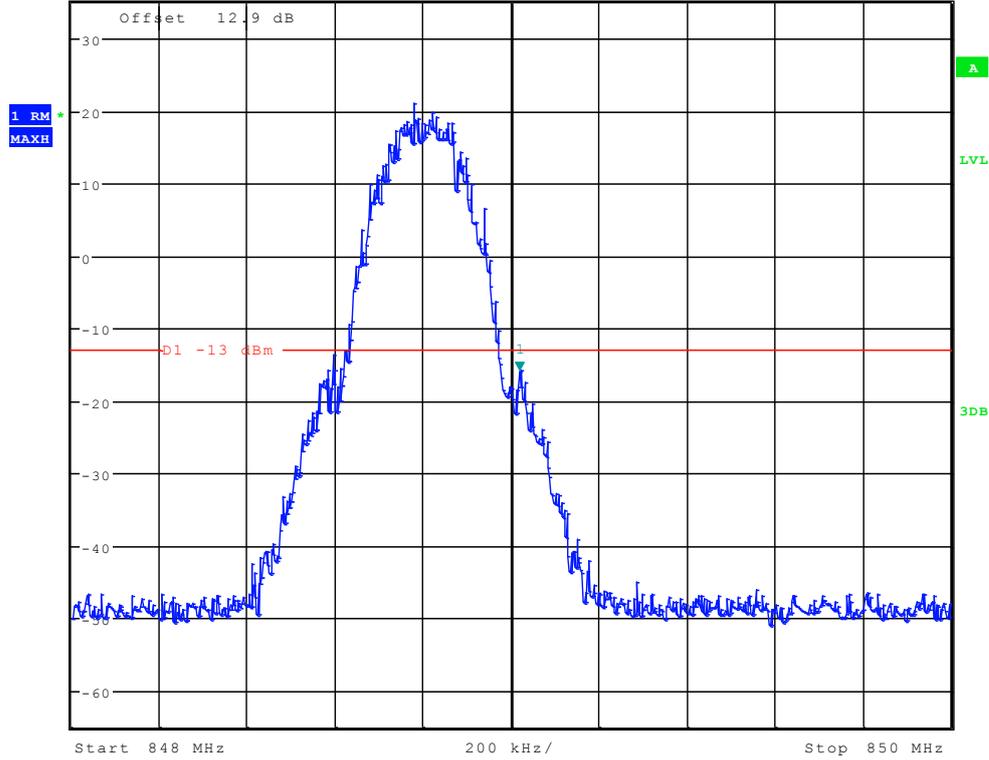
Date: 29.AUG.2012 09:57:29



Right Edge Channel 251



Ref 35 dBm Att 50 dB RBW 3 kHz Marker 1 [T1] 849.02000000 MHz
* VBW 10 kHz -15.99 dBm
SWT 225 ms



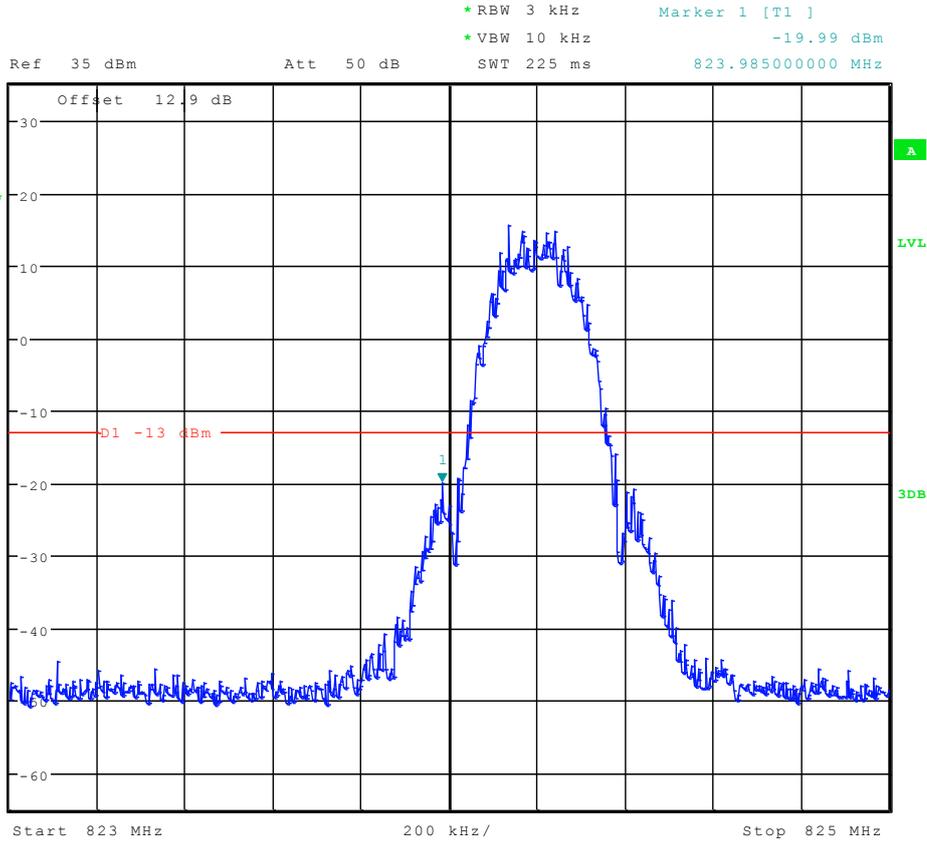
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TM2:EDGE

Left Edge

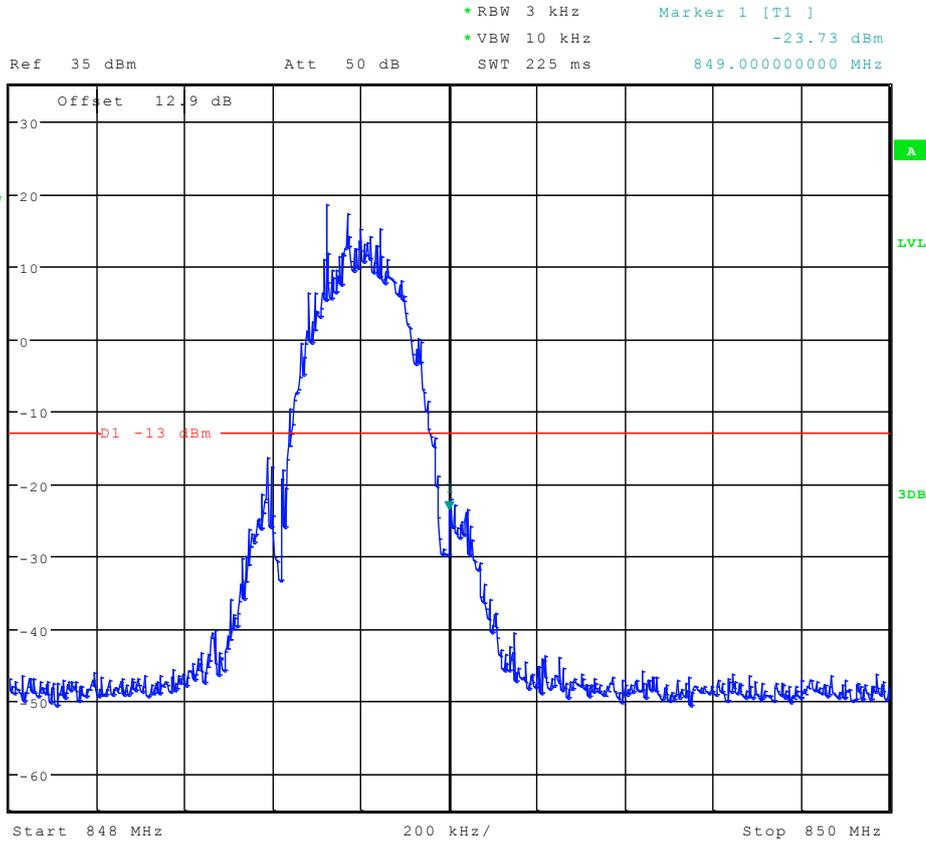
Channel 128



Date: 29.AUG.2012 10:02:29



Right Edge Channel 251



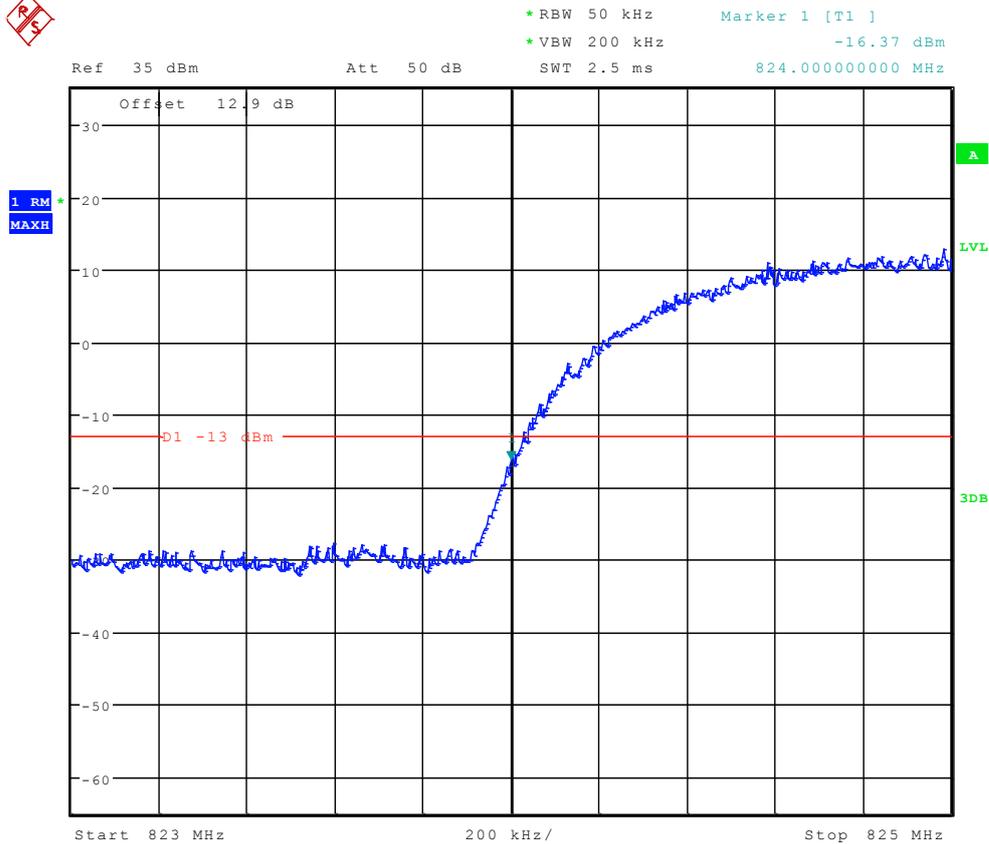
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TM3: WCDMA

Left Edge

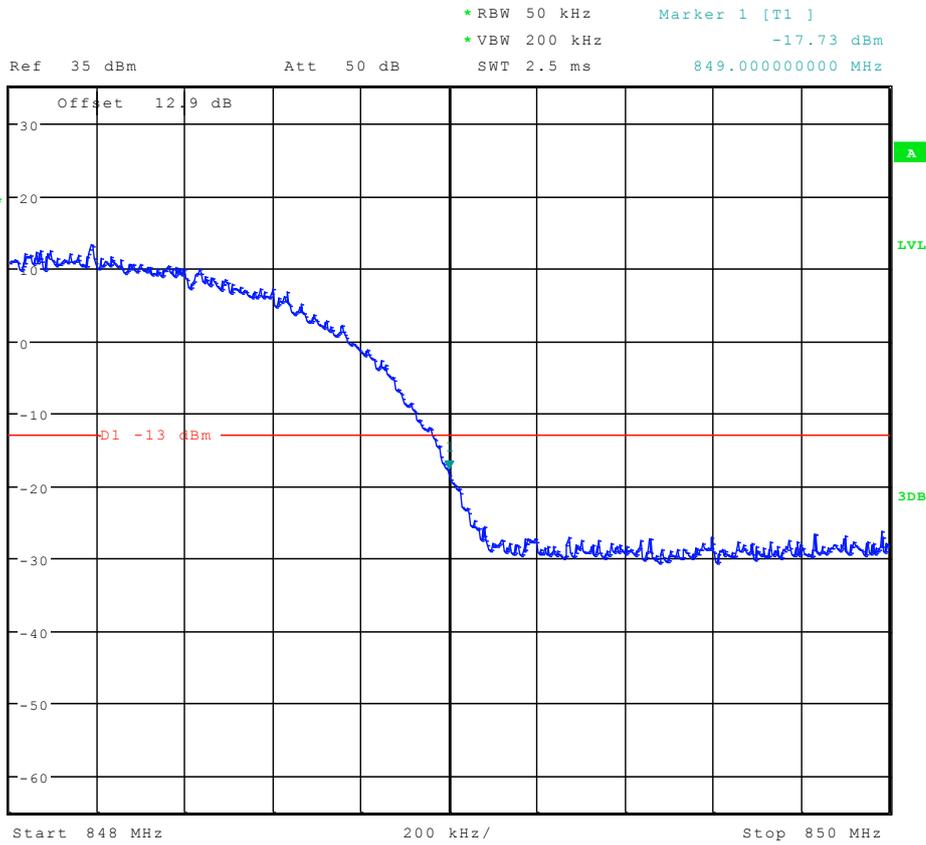
Channel 4132



Date: 29.AUG.2012 10:08:15



Right Edge Channel 4233



Date: 29.AUG.2012 10:08:28

-----END-----



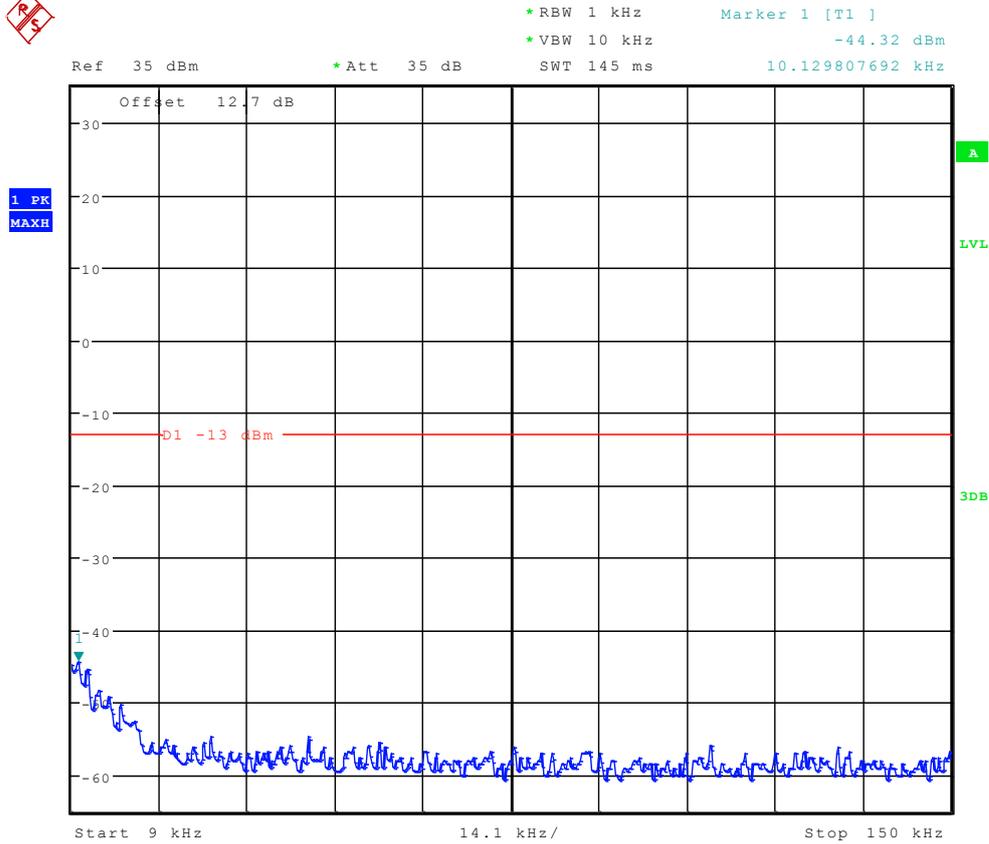
Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H



TM1:GPRS/GSM Channel 128

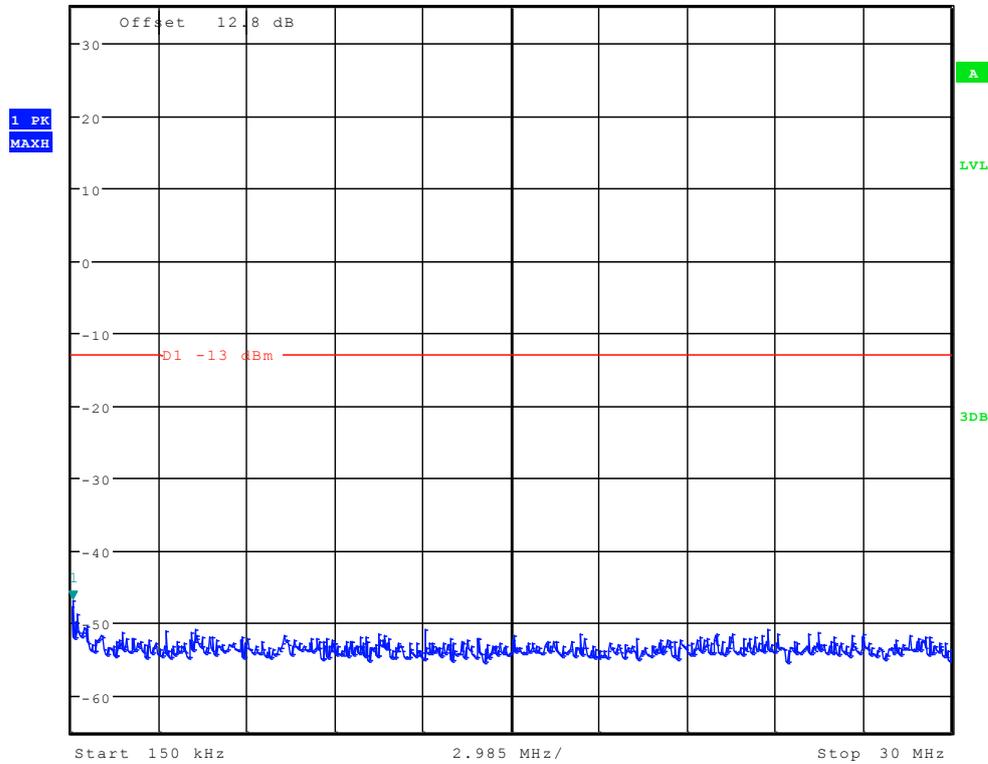


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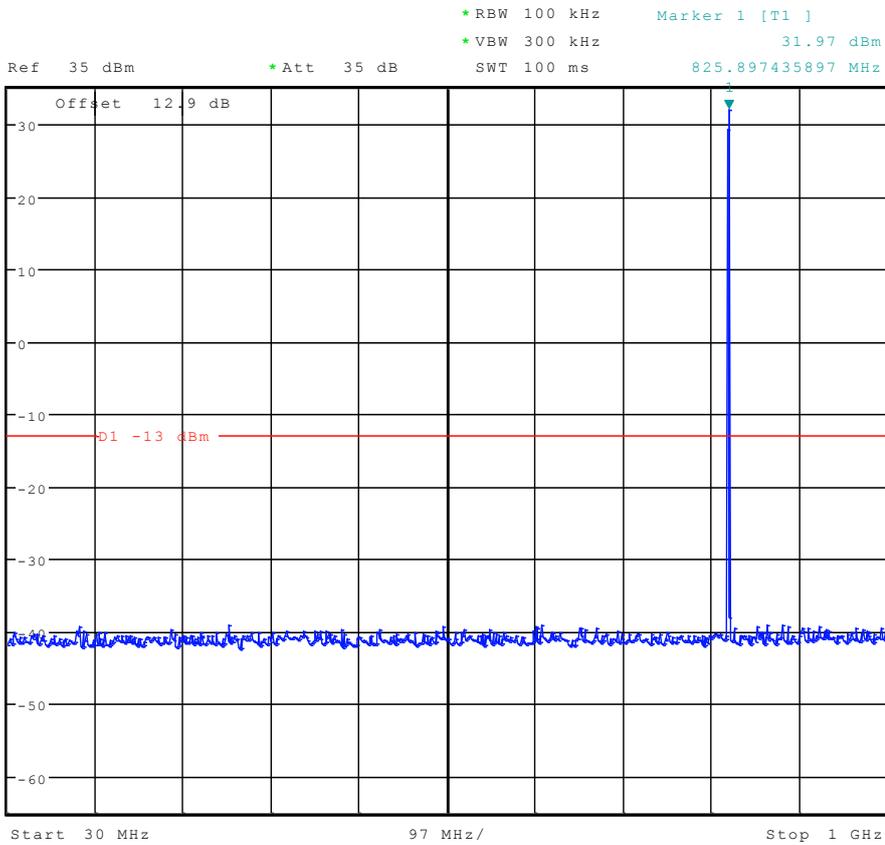


Ref 35 dBm * Att 35 dB * RBW 10 kHz * VBW 30 kHz * SWT 300 ms

Marker 1 [T1] -46.86 dBm 197.836538462 kHz



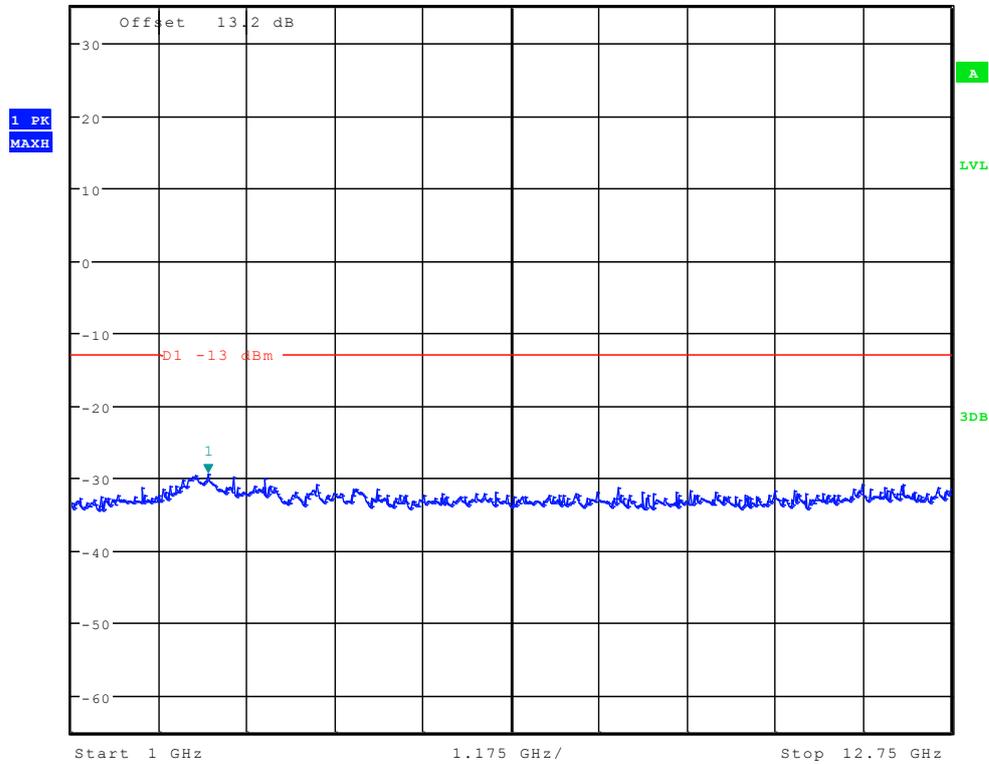
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Date: 29.AUG.2012 09:55:23



Ref 35 dBm * Att 35 dB SWT 70 ms * RBW 1 MHz Marker 1 [T1] * VBW 3 MHz -29.40 dBm 2.826522436 GHz



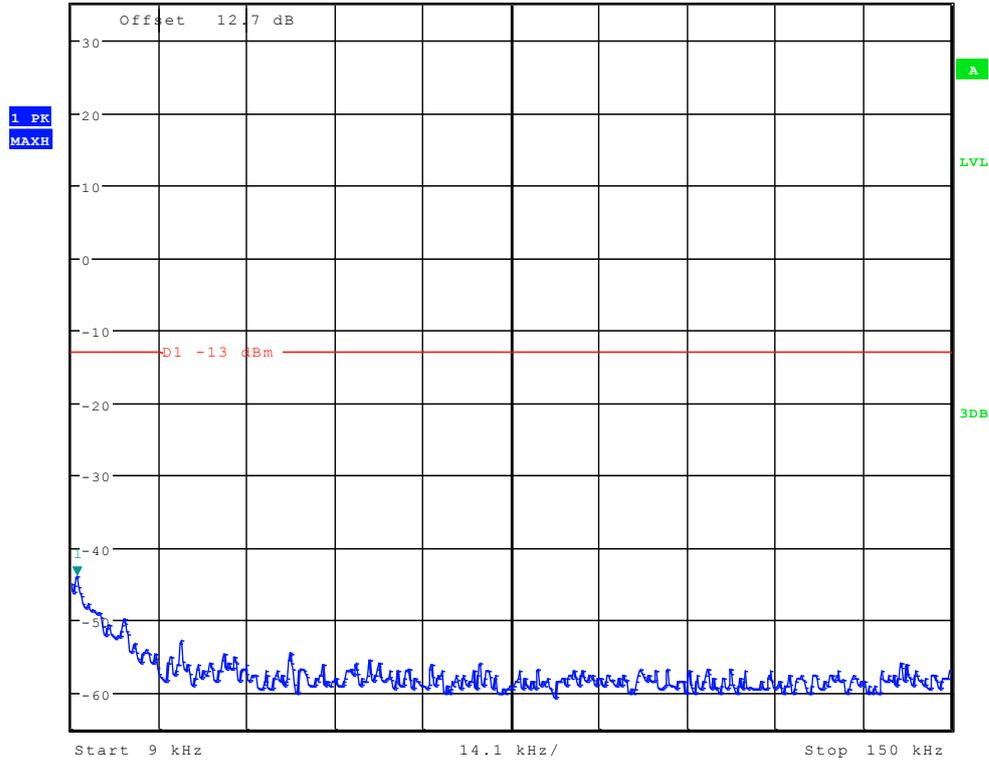
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Channel 192



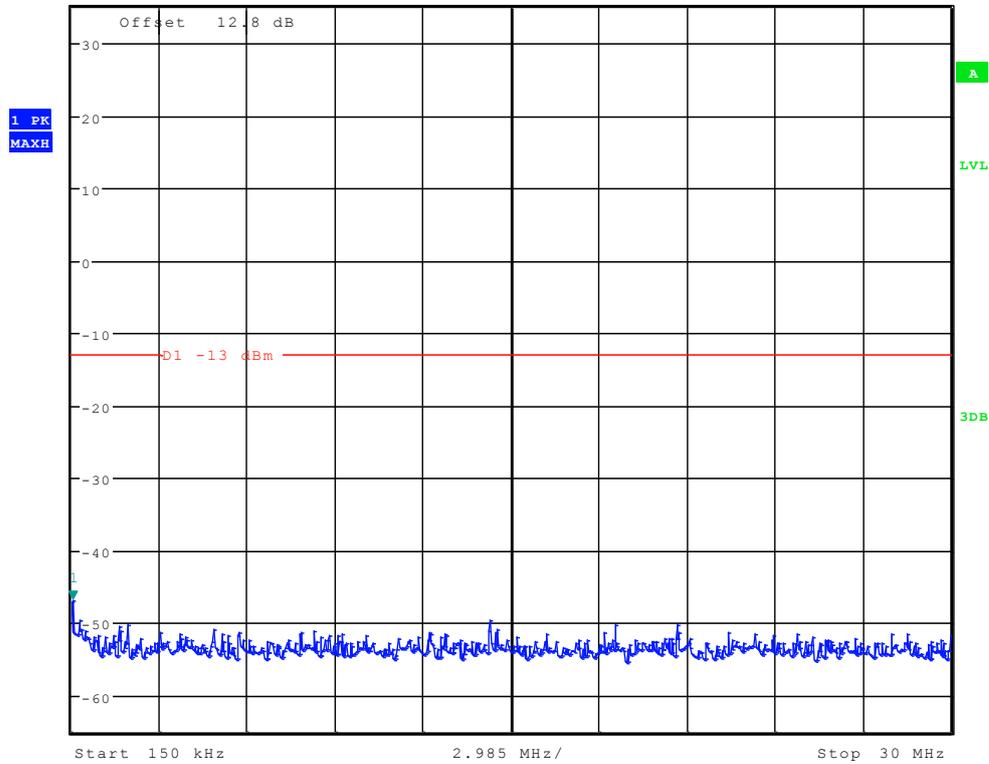
Ref 35 dBm * Att 35 dB SWT 145 ms Marker 1 [T1] -43.84 dBm
* RBW 1 kHz * VBW 10 kHz 9.903846154 kHz



Date: 29.AUG.2012 09:54:09



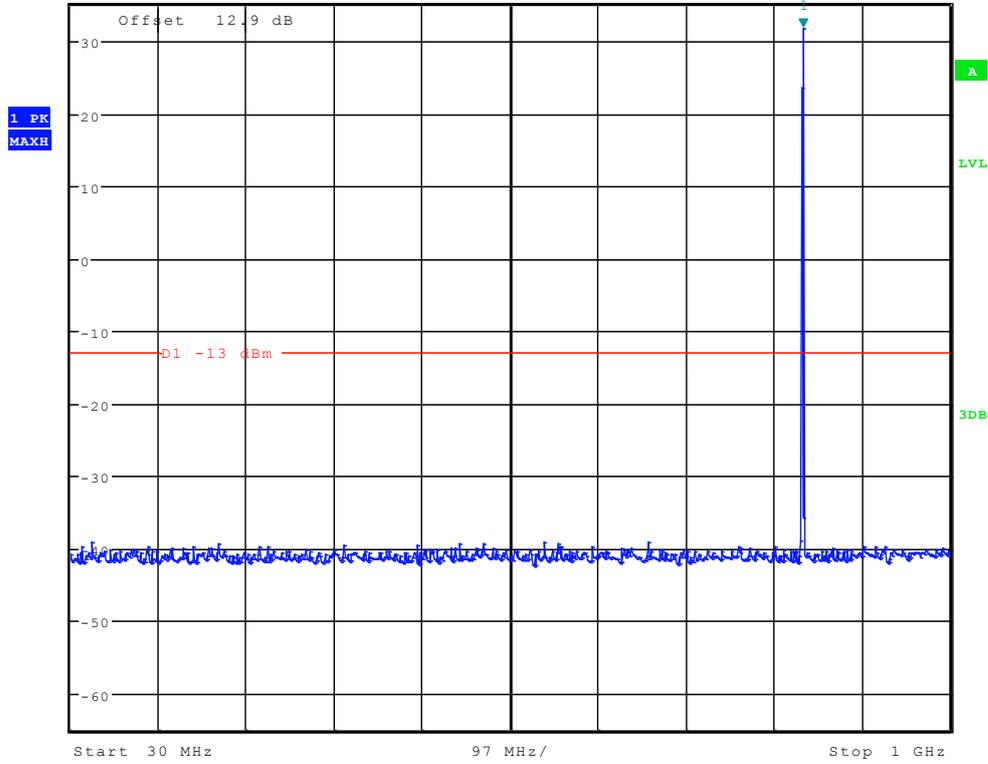
Ref 35 dBm * Att 35 dB * RBW 10 kHz Marker 1 [T1] * VBW 30 kHz -46.80 dBm
SWT 300 ms 197.836538462 kHz



Date: 29.AUG.2012 09:54:53



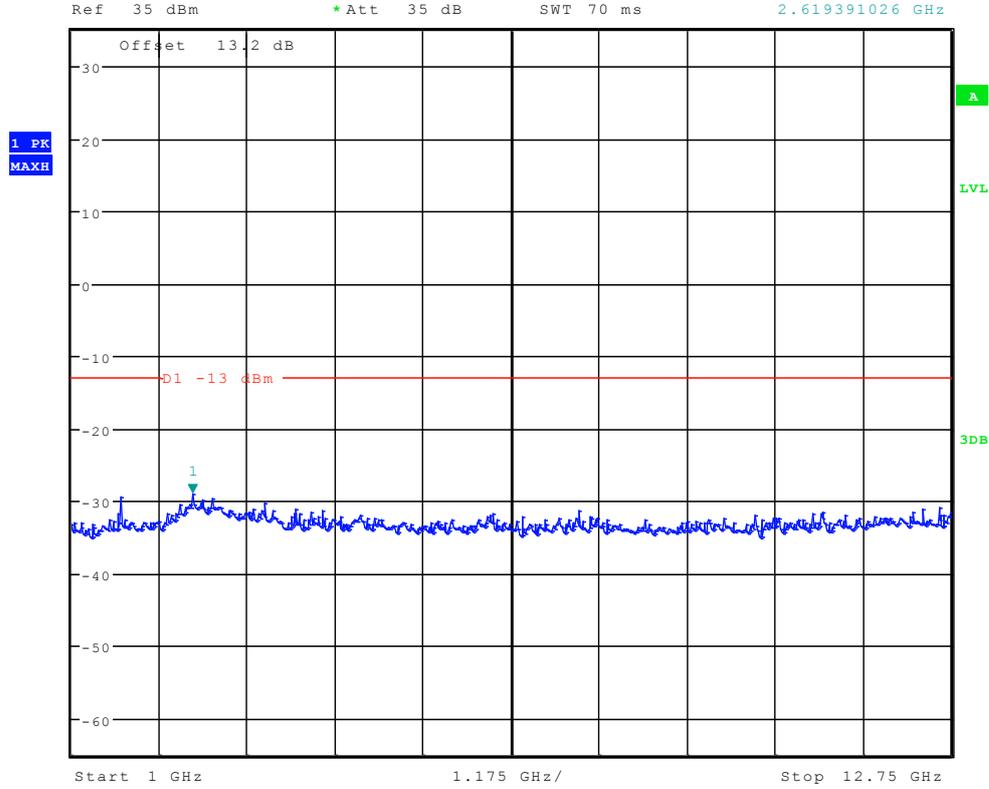
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 31.83 dBm
Ref 35 dBm * Att 35 dB SWT 100 ms 838.333333333 MHz



Date: 29.AUG.2012 09:55:37



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -29.06 dBm
SWT 70 ms 2.619391026 GHz



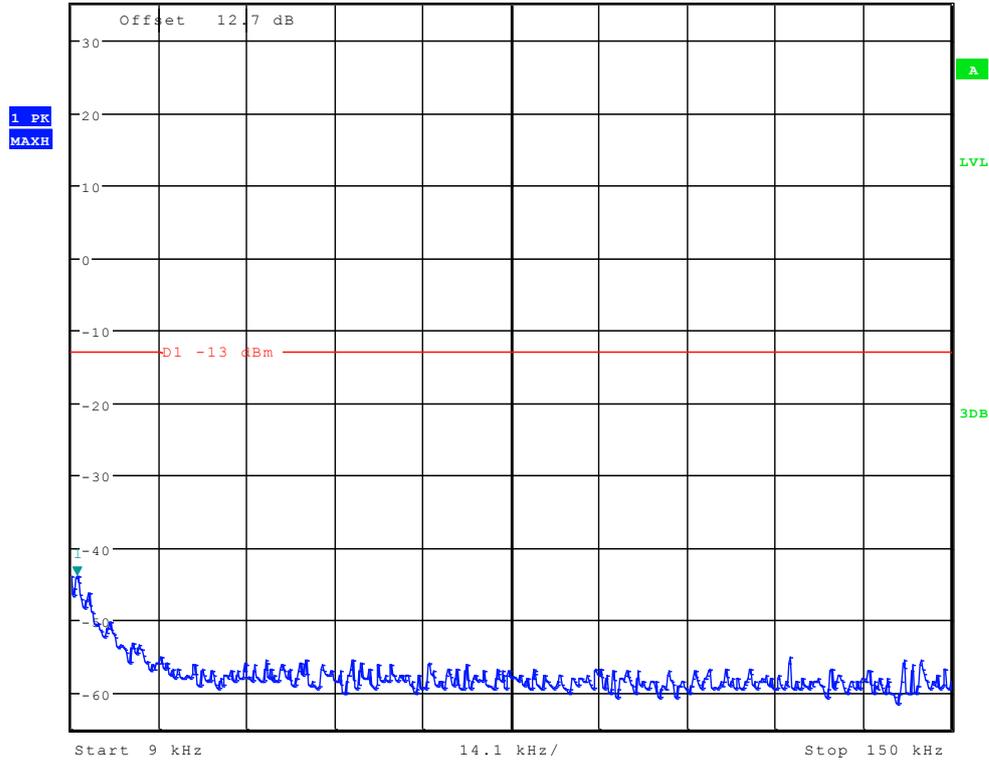
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Channel 251



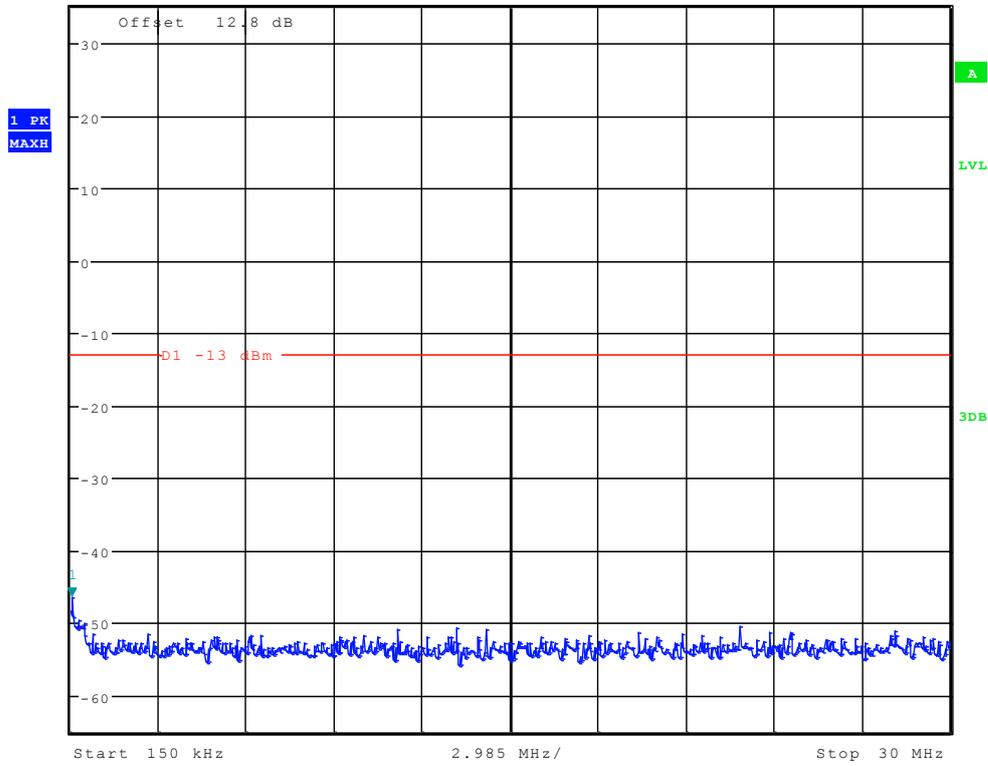
Ref 35 dBm * Att 35 dB SWT 145 ms Marker 1 [T1] -43.84 dBm
 * RBW 1 kHz * VBW 10 kHz 9.903846154 kHz



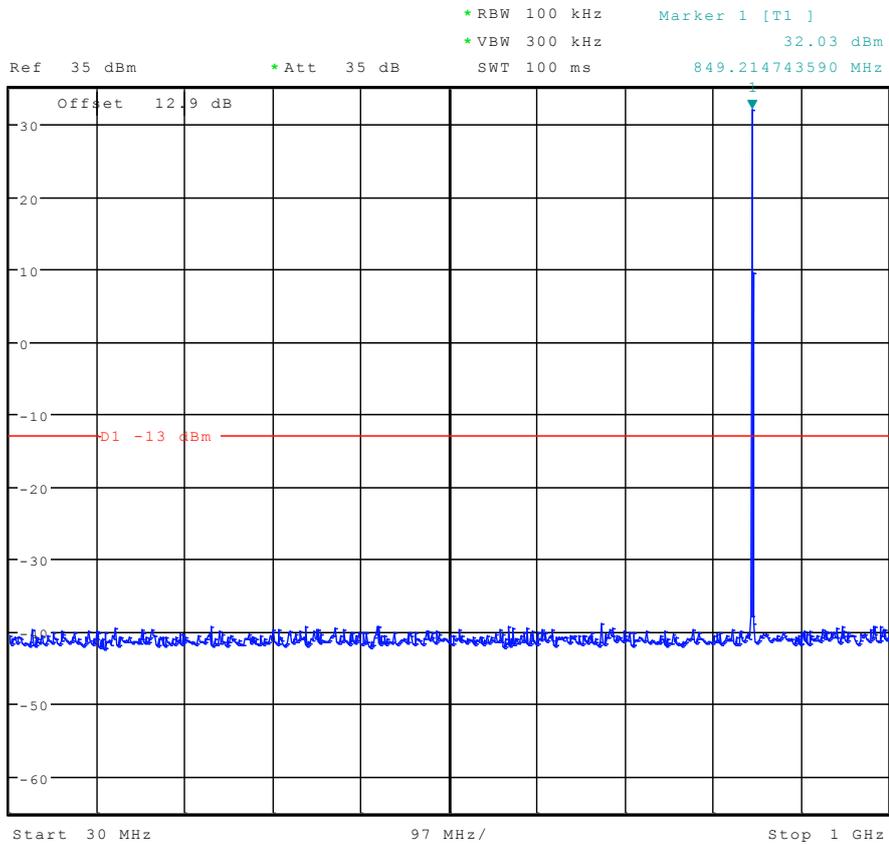
Date: 29.AUG.2012 09:54:24



* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.42 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz



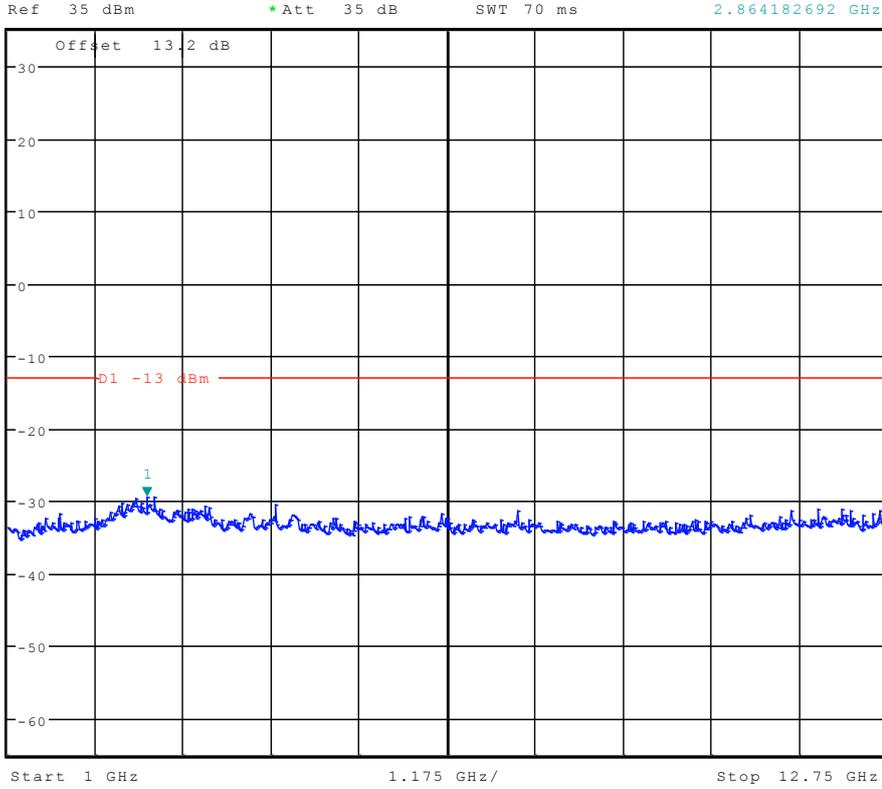
Date: 29.AUG.2012 09:55:08



Date: 29.AUG.2012 09:55:52



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -29.31 dBm
SWT 70 ms 2.864182692 GHz



Date: 29.AUG.2012 09:56:54

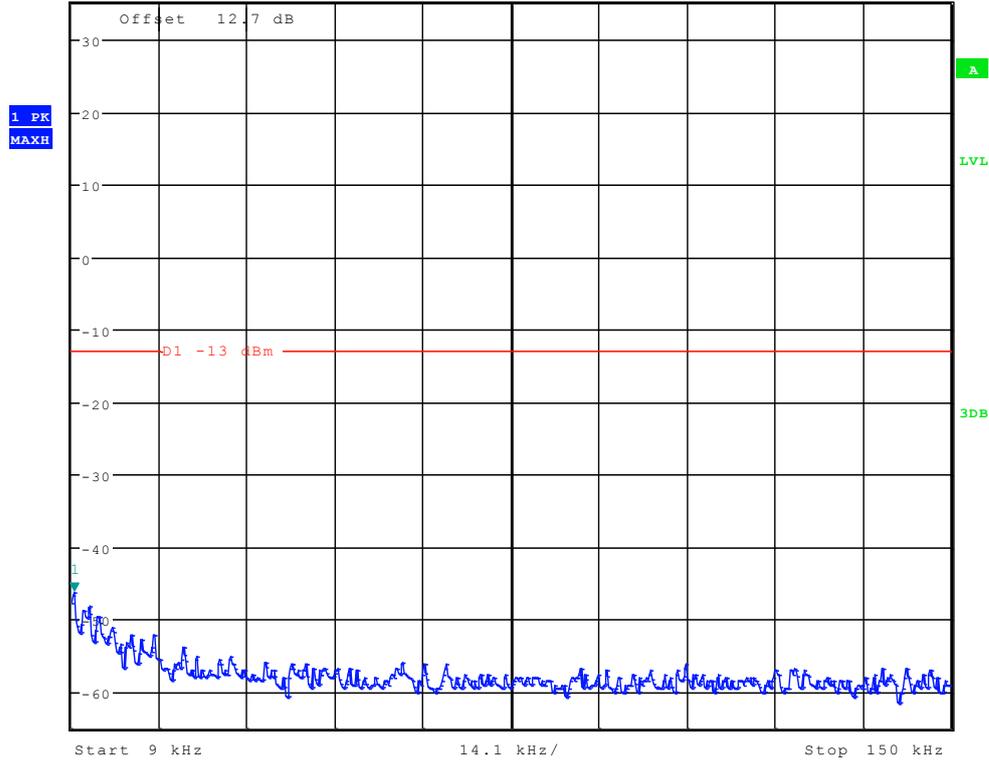


TM2:EDGE

Channel 128



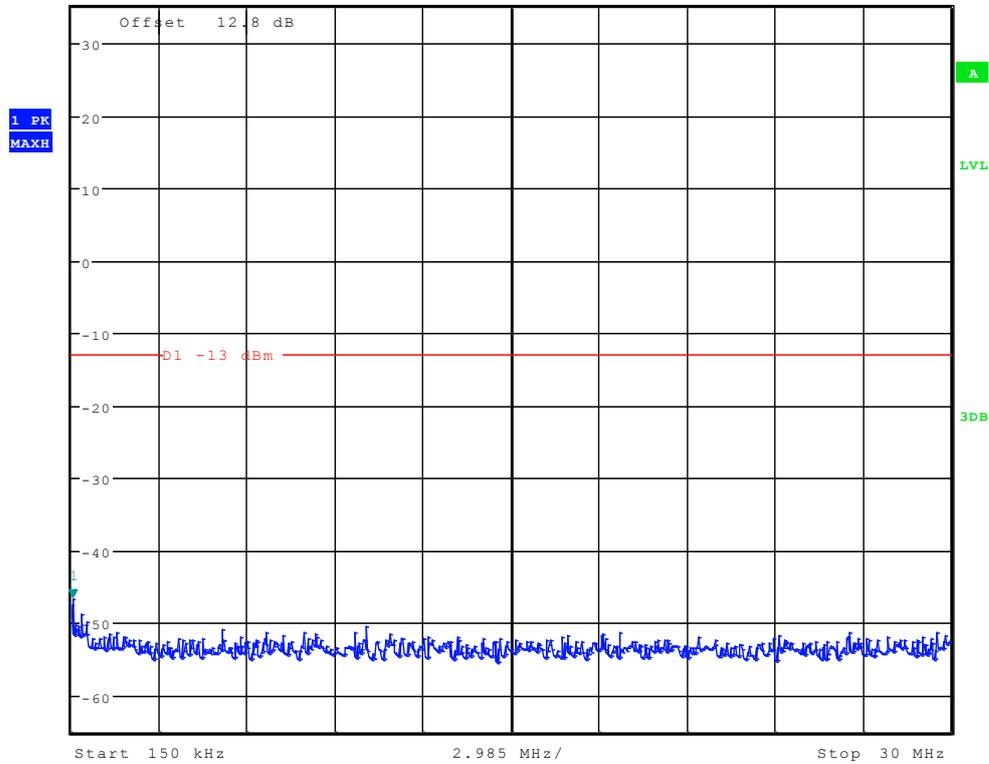
*RBW 1 kHz Marker 1 [T1]
 *VBW 10 kHz -46.15 dBm
 Ref 35 dBm *Att 35 dB SWT 145 ms 9.451923077 kHz



Date: 29.AUG.2012 10:03:49



Ref 35 dBm * Att 35 dB * RBW 10 kHz Marker 1 [T1]
 * VBW 30 kHz -46.69 dBm
 SWT 300 ms 197.836538462 kHz

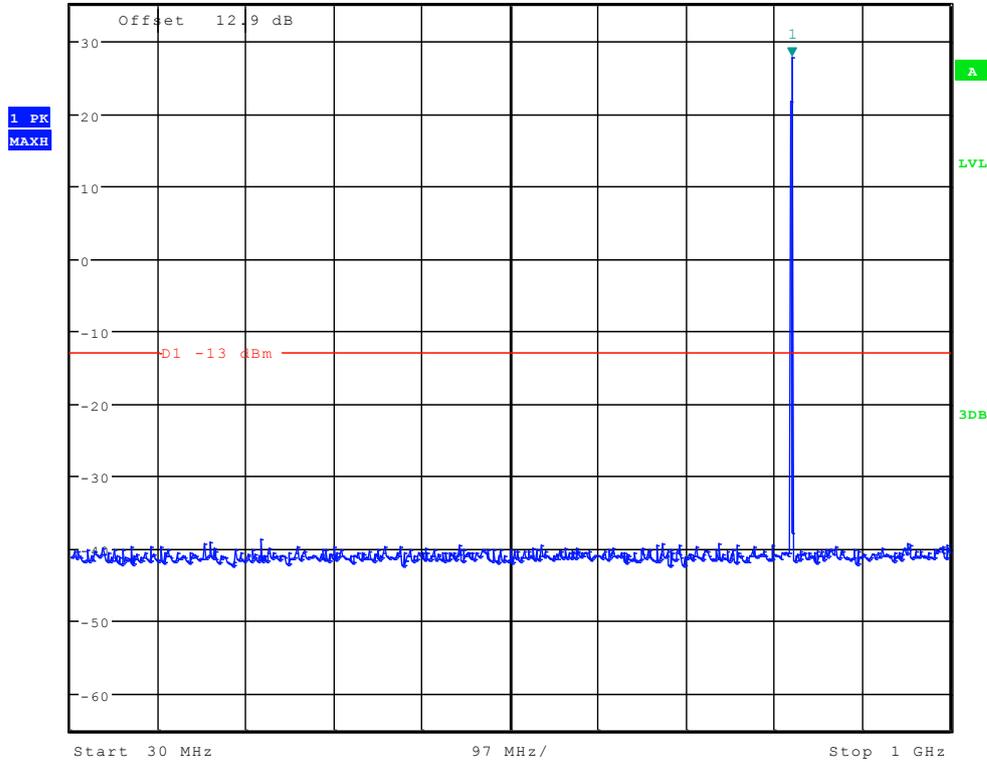


Date: 29.AUG.2012 10:04:33



Ref 35 dBm * Att 35 dB * RBW 100 kHz * VBW 300 kHz * SWT 100 ms

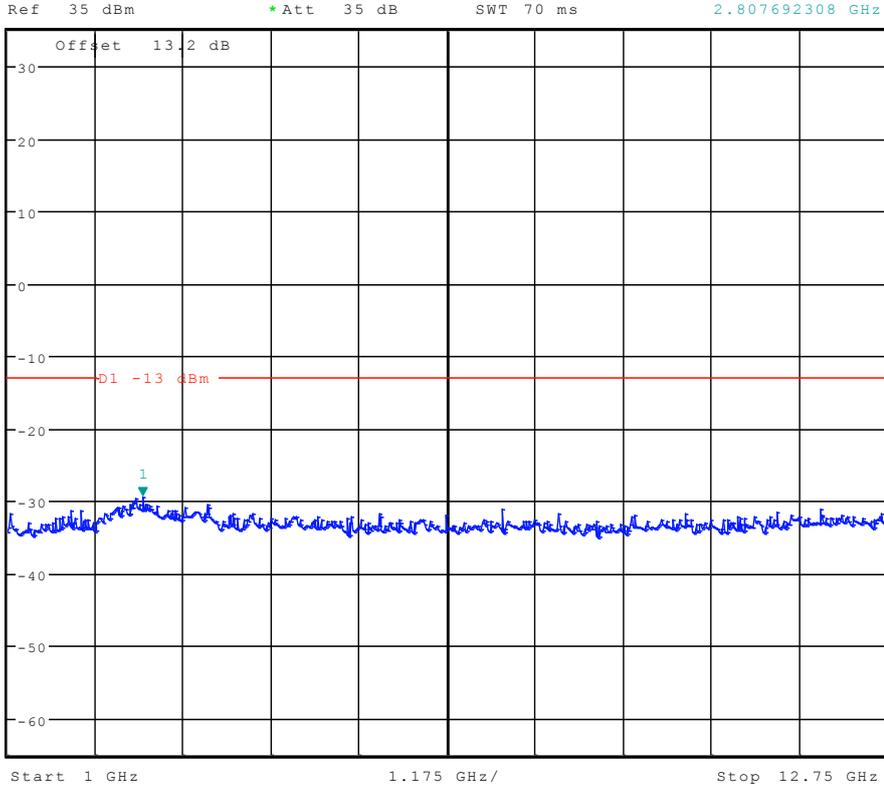
Marker 1 [T1] 27.68 dBm 825.897435897 MHz



Date: 29.AUG.2012 10:05:16



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -29.34 dBm
SWT 70 ms 2.807692308 GHz



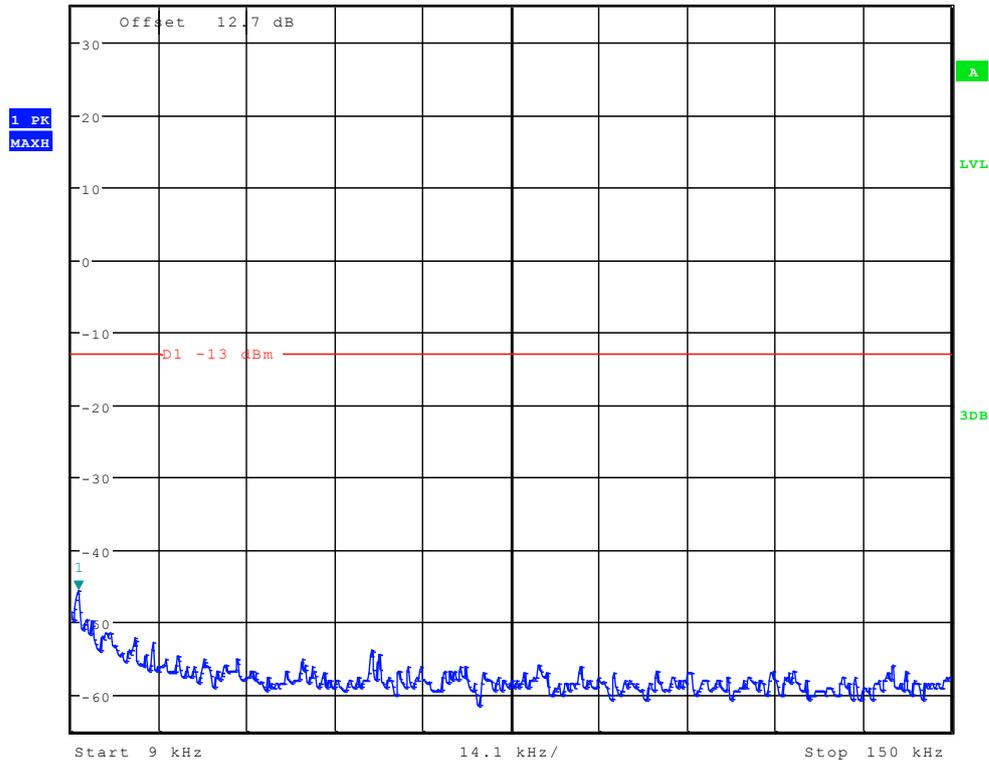
Date: 29.AUG.2012 10:06:00



Channel 192



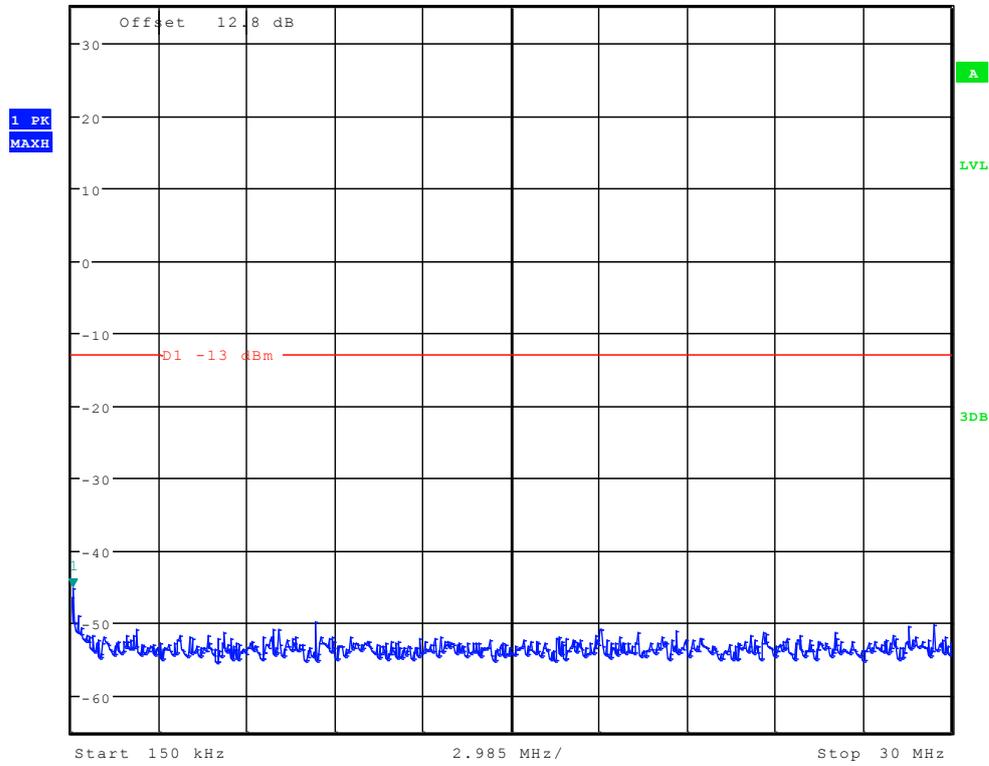
Ref 35 dBm *Att 35 dB SWT 145 ms Marker 1 [T1] -45.66 dBm
*RBW 1 kHz *VBW 10 kHz 10.129807692 kHz



Date: 29.AUG.2012 10:04:03



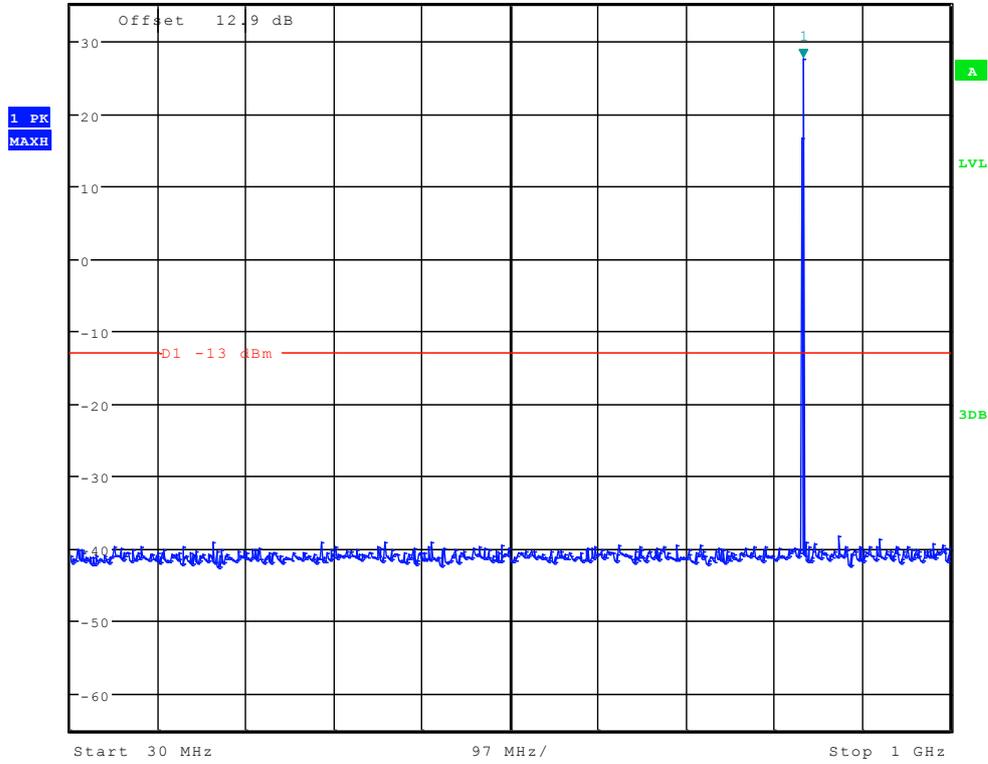
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -45.09 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz



Date: 29.AUG.2012 10:04:47



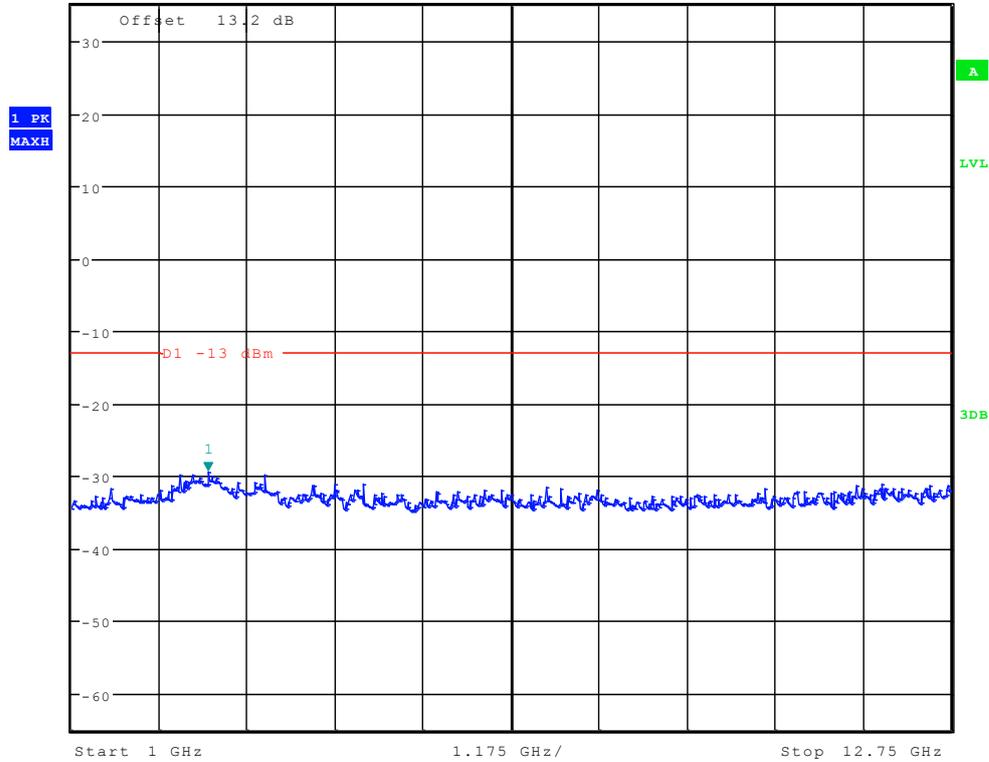
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 27.52 dBm
Ref 35 dBm * Att 35 dB SWT 100 ms 838.333333333 MHz



Date: 29.AUG.2012 10:05:31



* RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz -29.46 dBm
 Ref 35 dBm * Att 35 dB SWT 70 ms 2.826522436 GHz



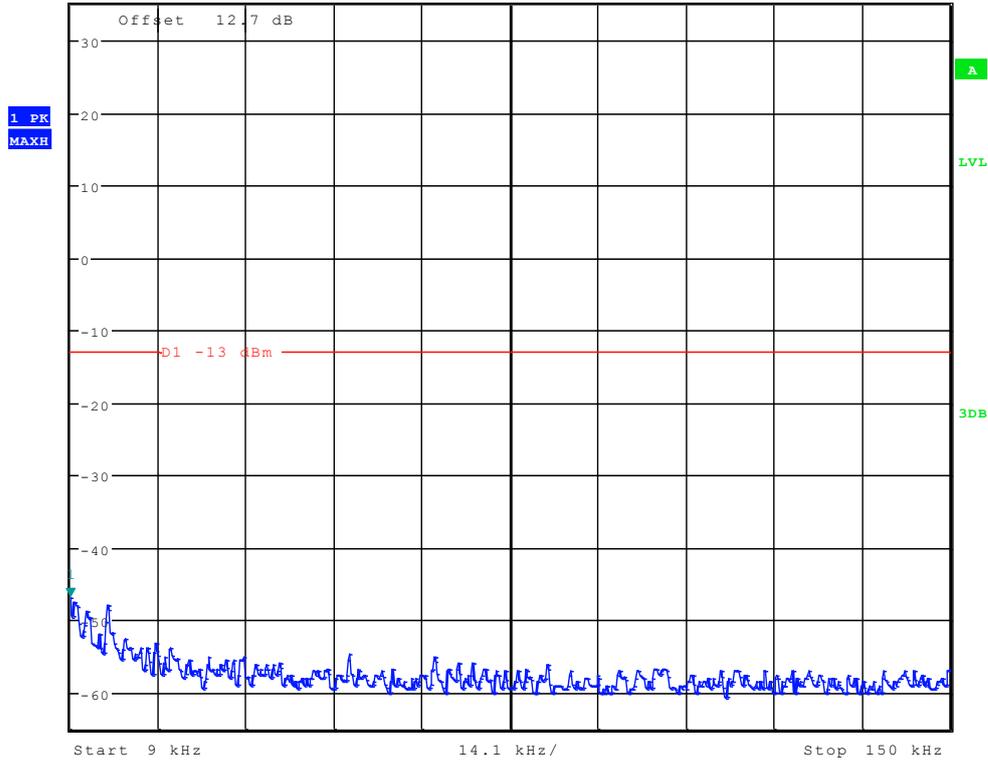
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Channel 251



Ref 35 dBm * Att 35 dB SWT 145 ms Marker 1 [T1] -46.79 dBm
* RBW 1 kHz * VBW 10 kHz 9.000000000 kHz

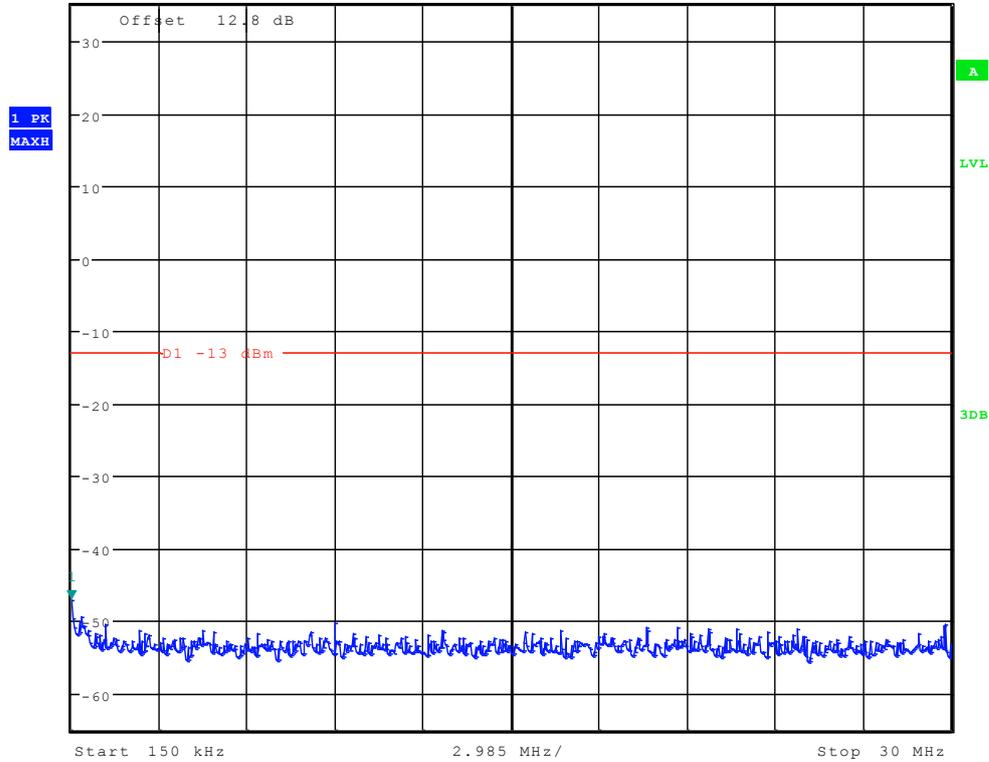


Date: 29.AUG.2012 10:04:18



Ref 35 dBm * Att 35 dB * RBW 10 kHz * VBW 30 kHz * SWT 300 ms

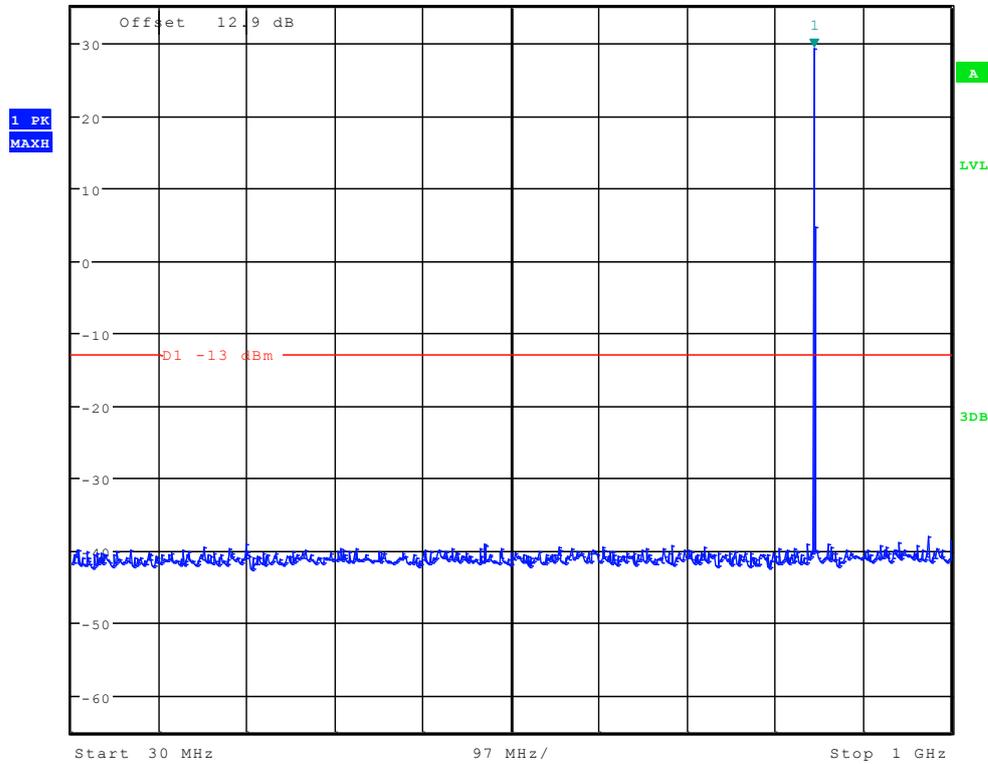
Marker 1 [T1] -47.14 dBm
150.00000000 kHz



Date: 29.AUG.2012 10:05:01



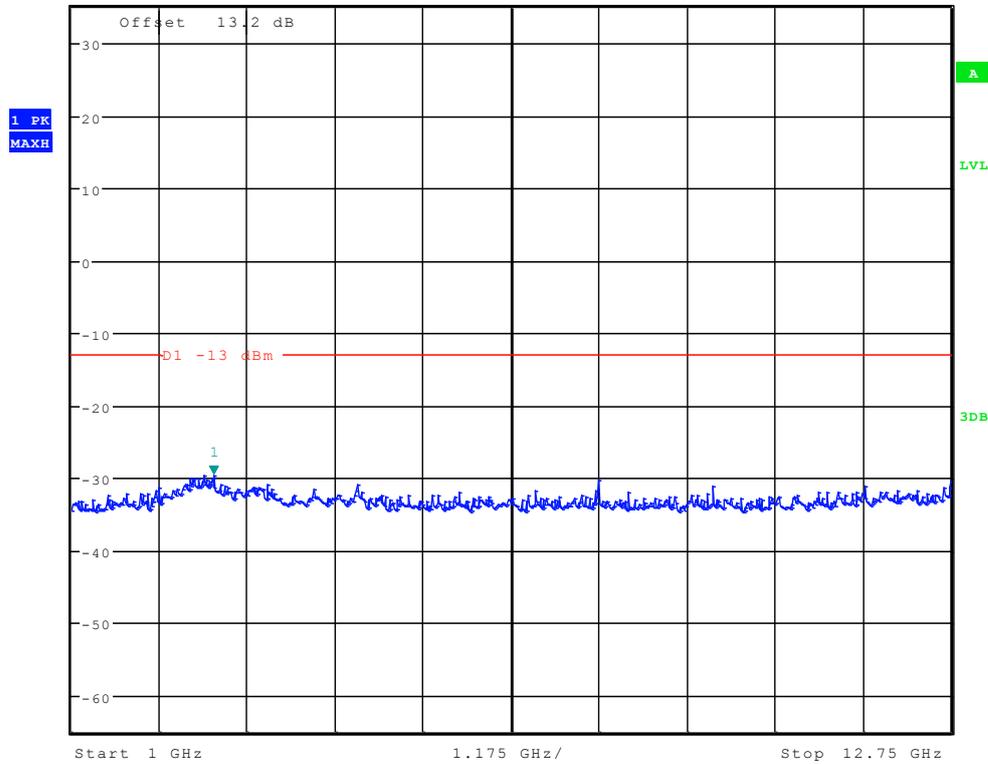
Ref 35 dBm * Att 35 dB SWT 100 ms * RBW 100 kHz Marker 1 [T1] 29.20 dBm
* VBW 300 kHz 849.214743590 MHz



Date: 29.AUG.2012 10:05:45



Ref 35 dBm * Att 35 dB SWT 70 ms * RBW 1 MHz Marker 1 [T1] * VBW 3 MHz -29.51 dBm 2.901842949 GHz



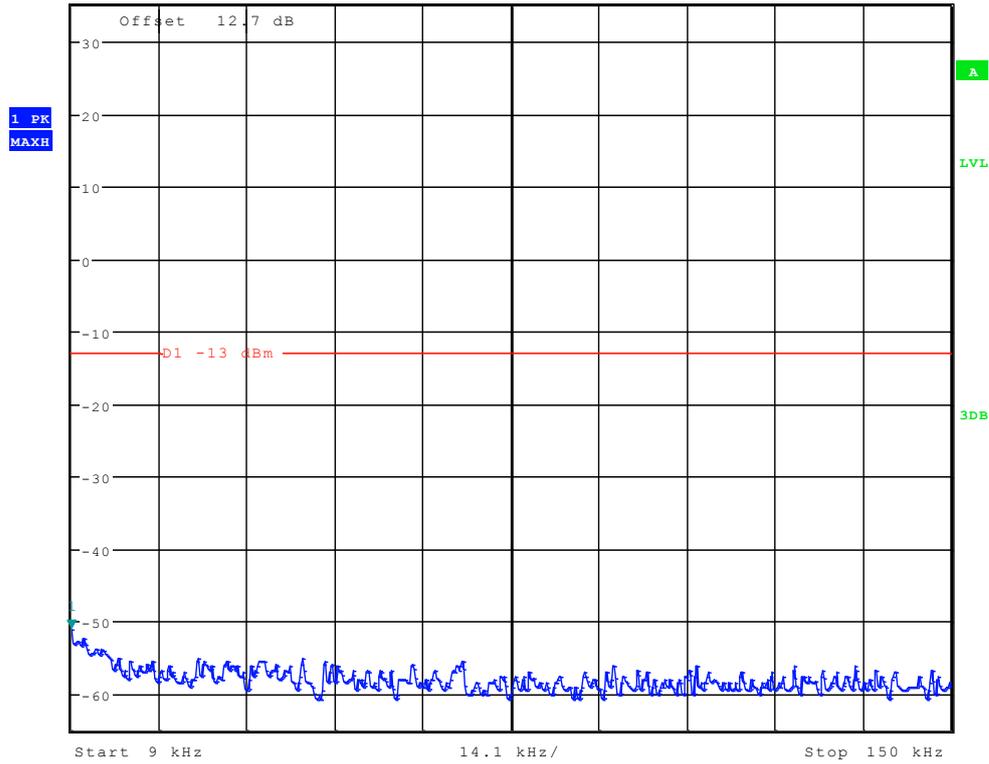
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TM3: WCDMA Channel 4132



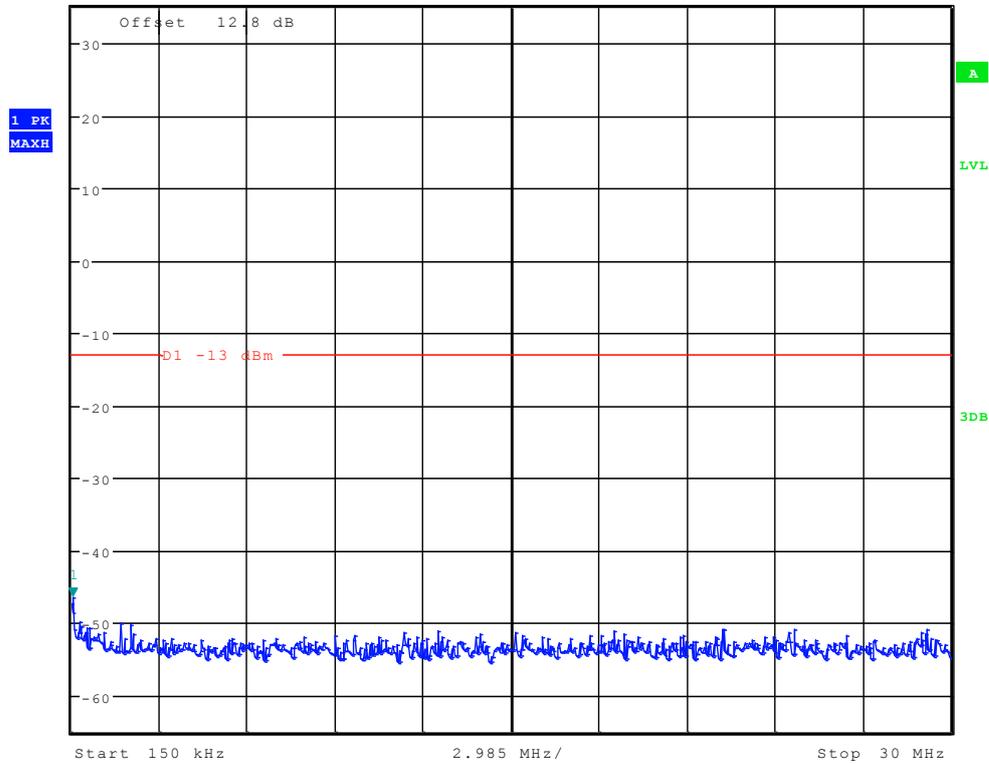
Ref 35 dBm * Att 35 dB * RBW 1 kHz Marker 1 [T1] -50.94 dBm
* VBW 10 kHz SWT 145 ms 9.000000000 kHz



Date: 29.AUG.2012 10:08:43



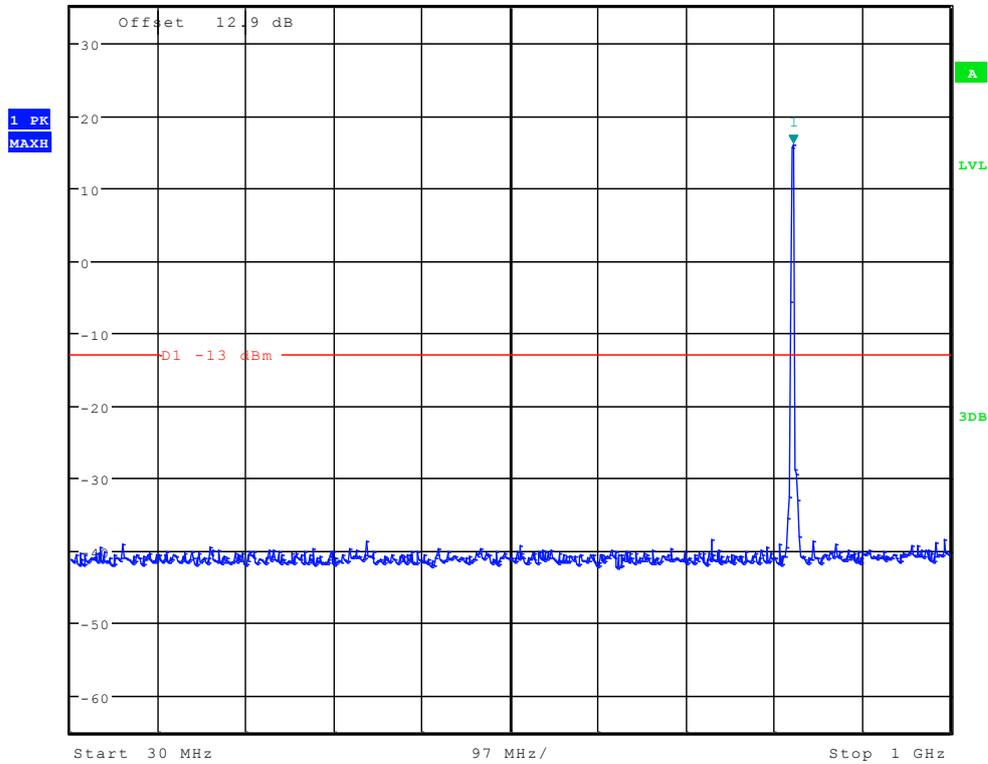
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.42 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz



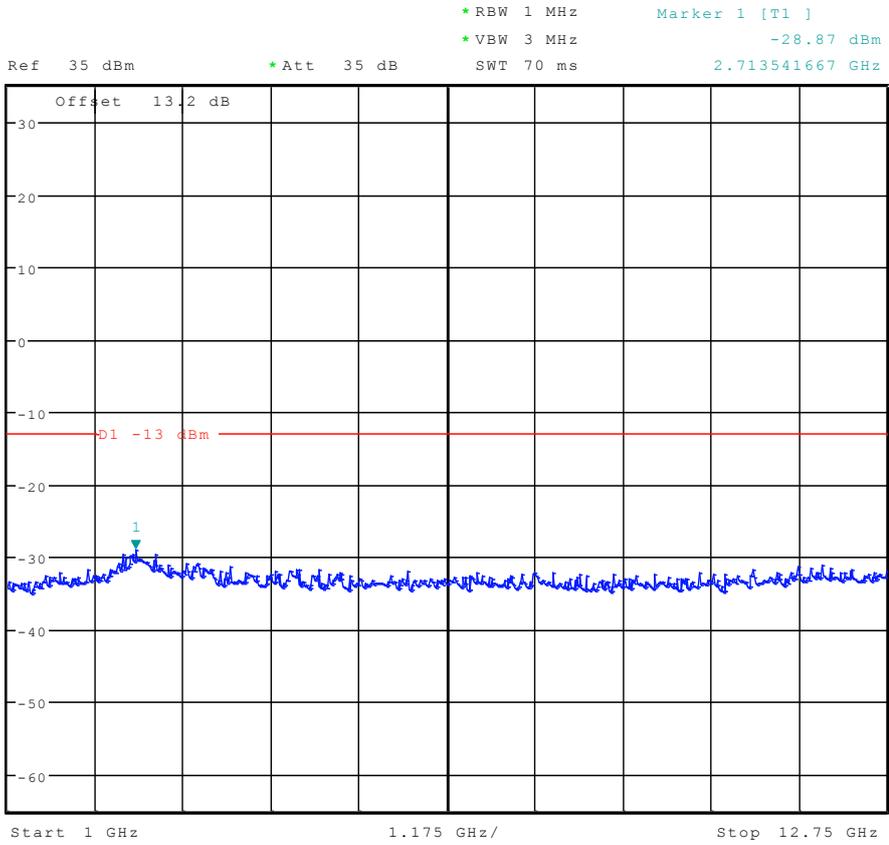
Date: 29.AUG.2012 10:09:27



Ref 35 dBm * Att 35 dB * RBW 100 kHz Marker 1 [T1] * VBW 300 kHz 15.89 dBm
SWT 100 ms 827.451923077 MHz



Date: 29.AUG.2012 10:10:11



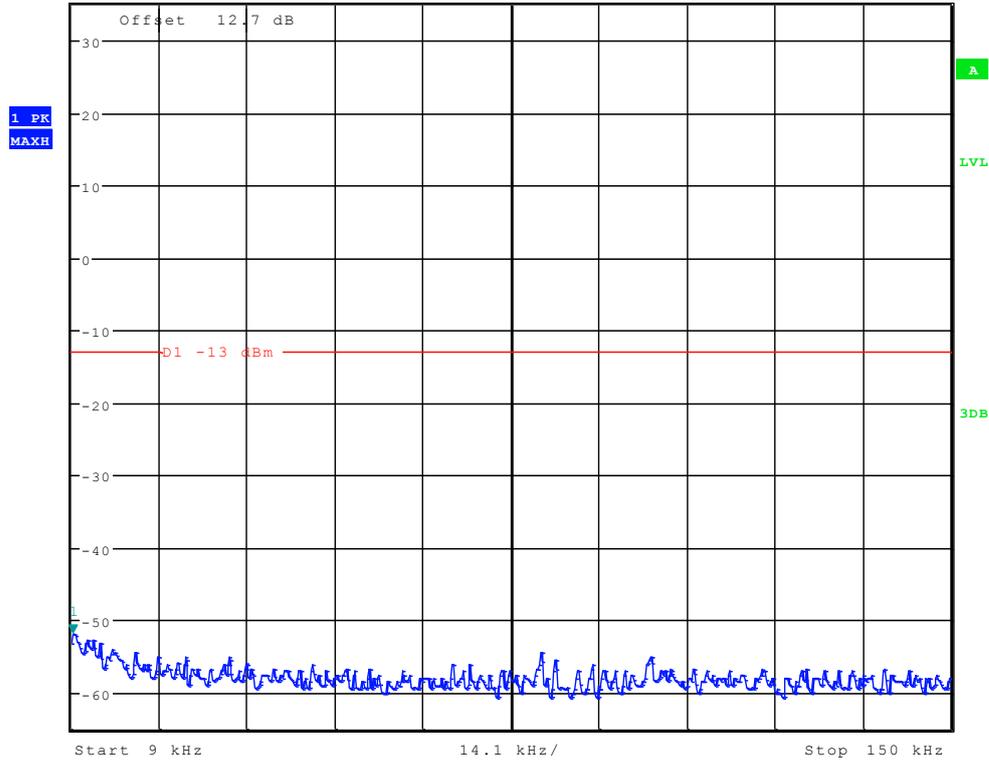
Date: 29.AUG.2012 10:10:54



Channel 4182



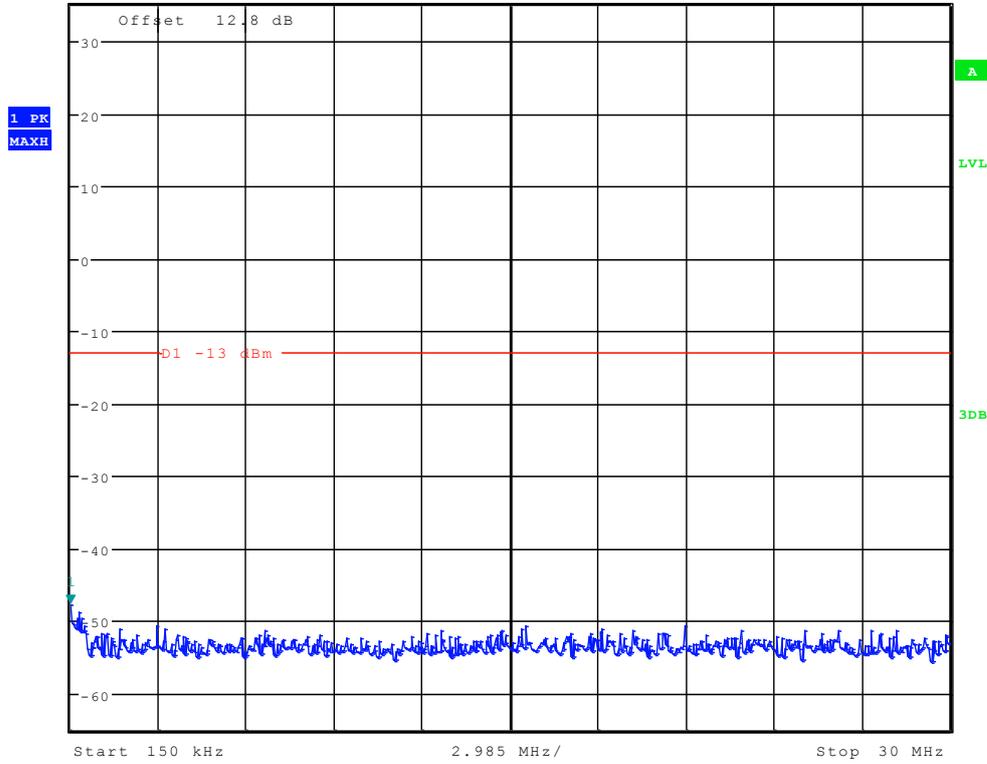
Ref 35 dBm *Att 35 dB *RBW 1 kHz Marker 1 [T1] -51.87 dBm
 *VBW 10 kHz 9.225961538 kHz
 SWT 145 ms



Date: 29.AUG.2012 10:08:57



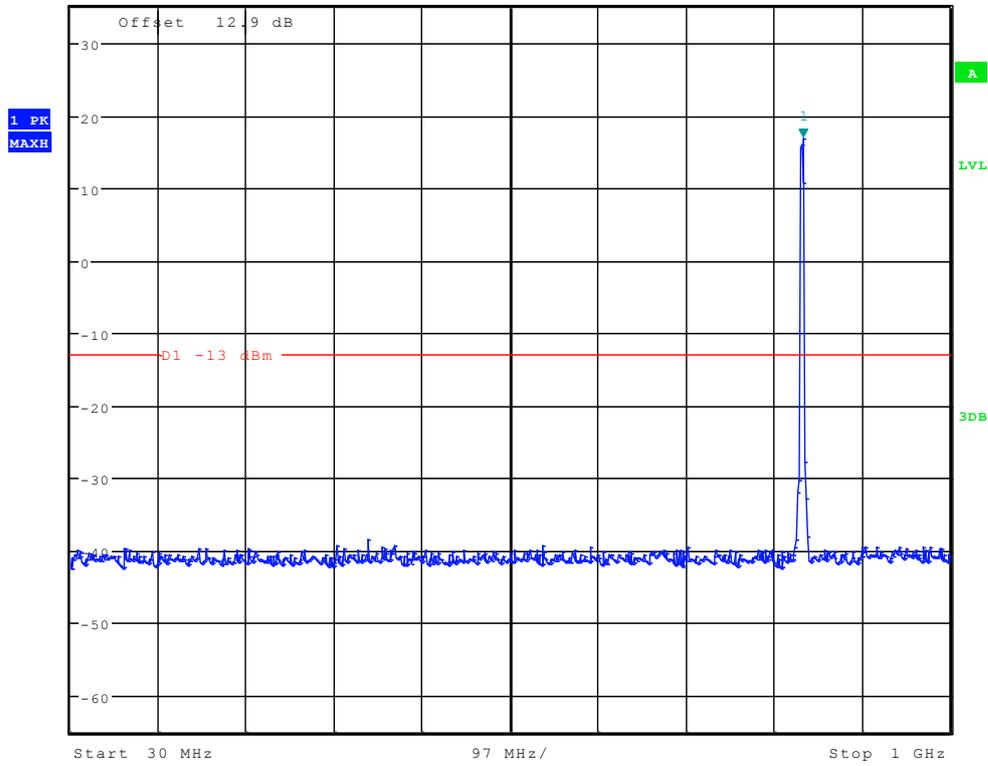
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.62 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 150.00000000 kHz



Date: 29.AUG.2012 10:09:41



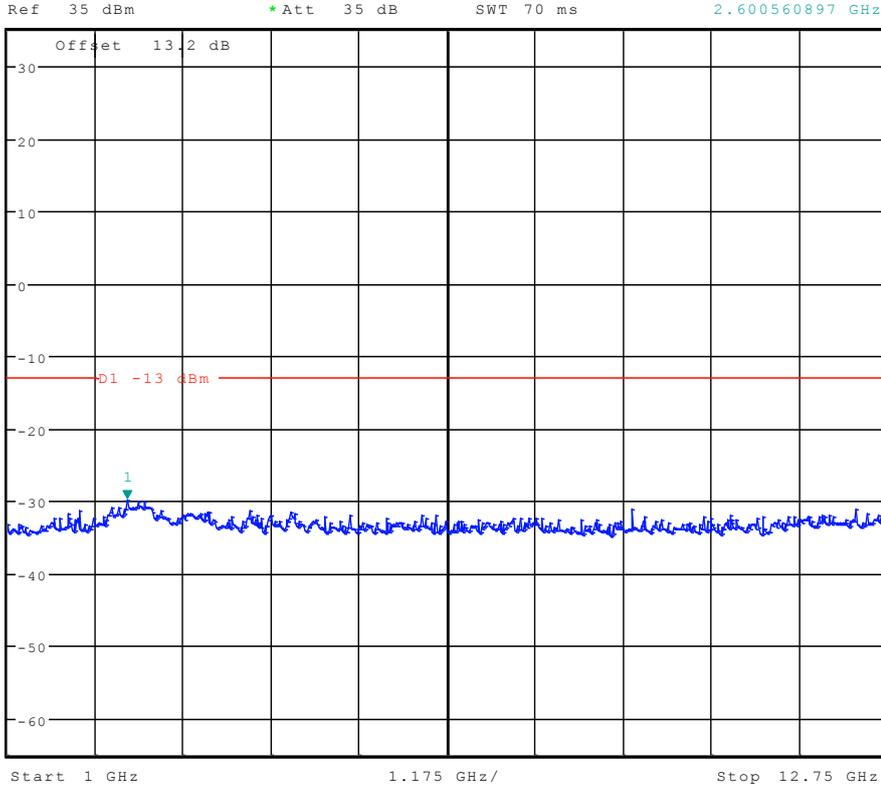
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 16.90 dBm
Ref 35 dBm * Att 35 dB SWT 100 ms 838.333333333 MHz



Date: 29.AUG.2012 10:10:25



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -29.91 dBm
SWT 70 ms 2.600560897 GHz



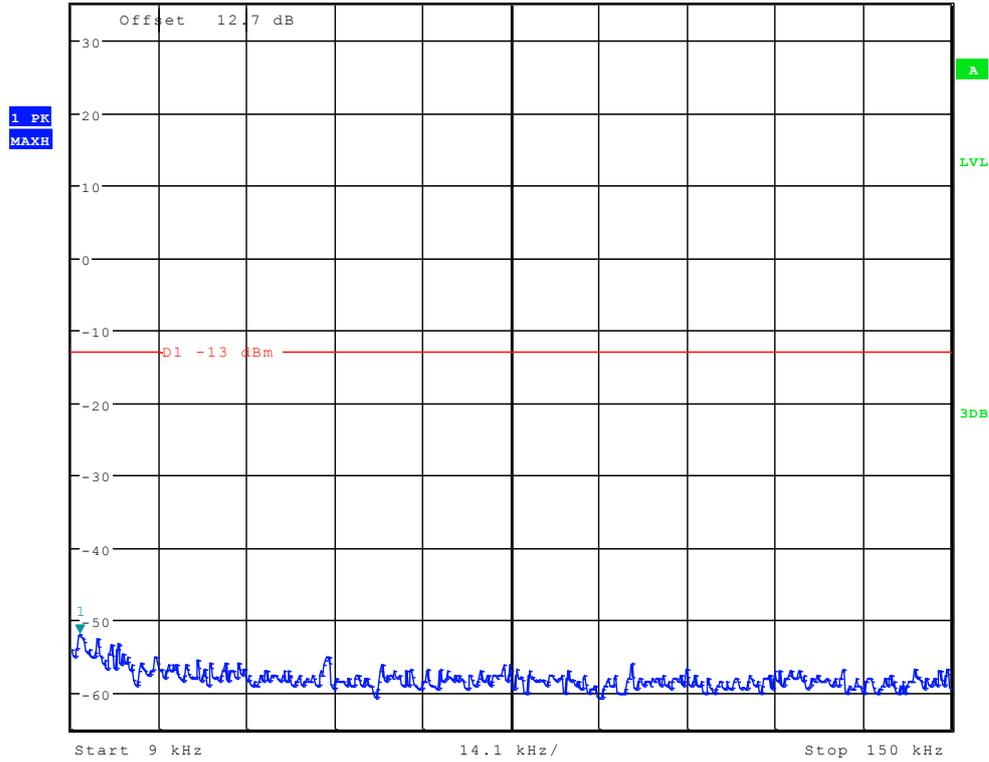
Date: 29.AUG.2012 10:11:09



Channel 4233



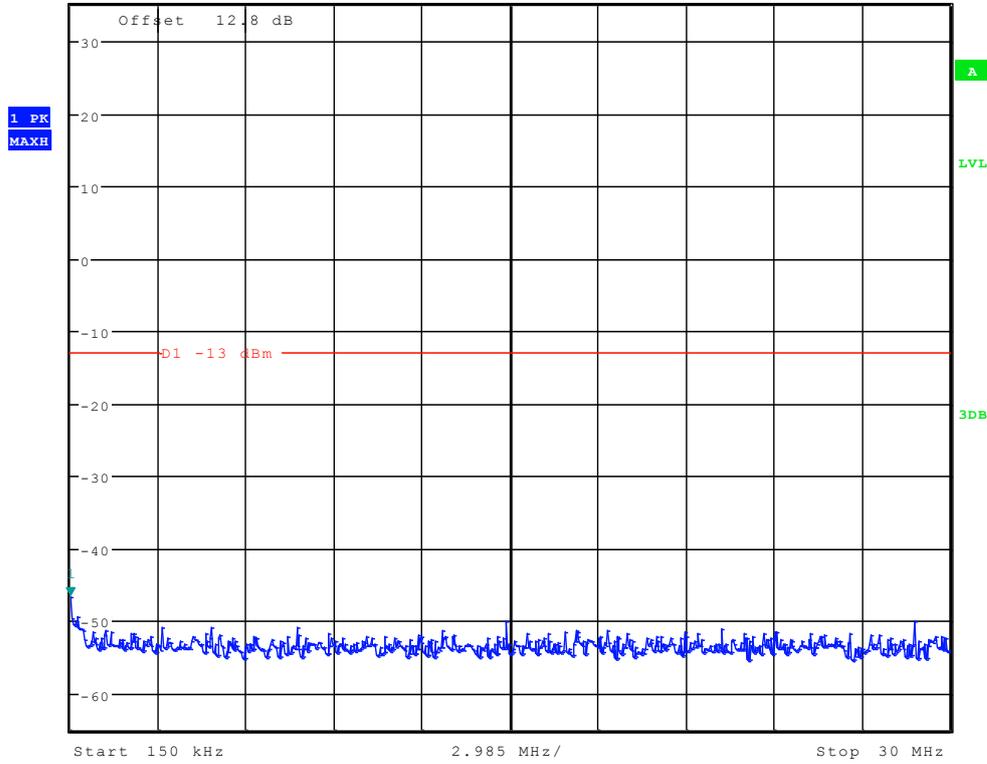
Ref 35 dBm *Att 35 dB *RBW 1 kHz Marker 1 [T1] -51.87 dBm
 *VBW 10 kHz 10.355769231 kHz
 SWT 145 ms



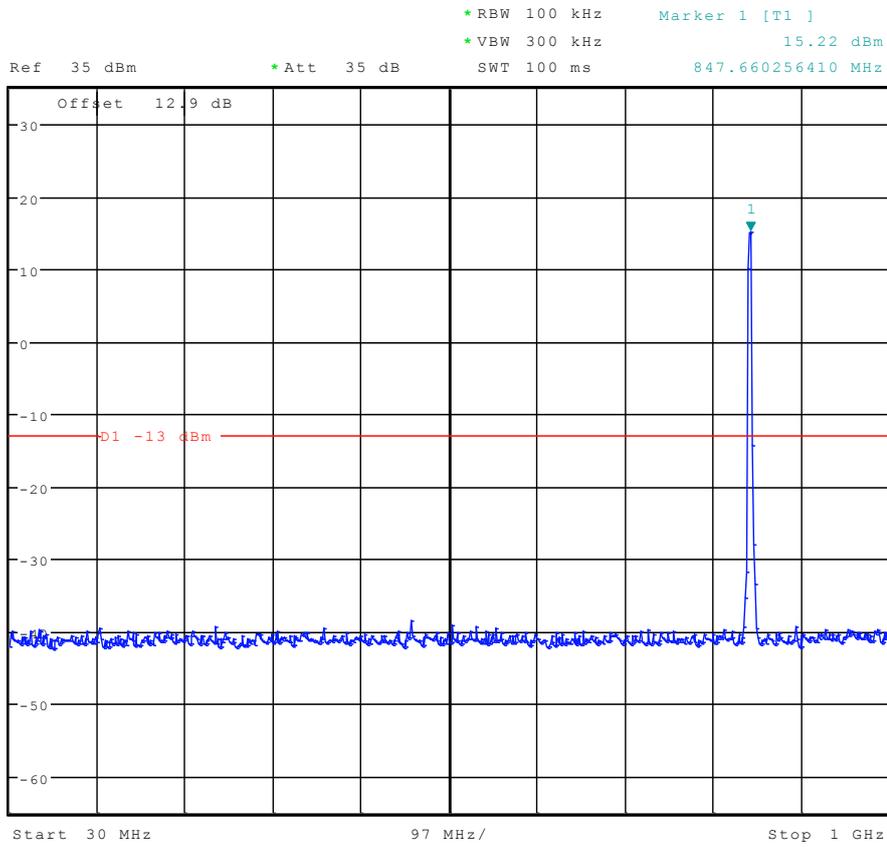
Date: 29.AUG.2012 10:09:12



* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -46.69 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 150.00000000 kHz



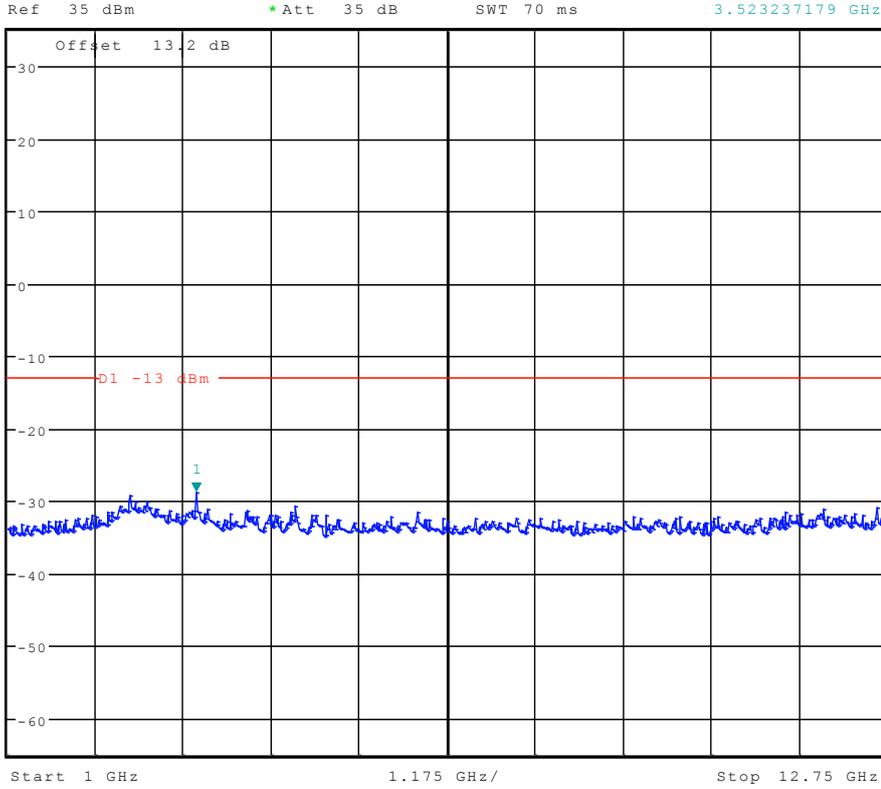
Date: 29.AUG.2012 10:09:56



Date: 29.AUG.2012 10:10:39



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -28.85 dBm
SWT 70 ms 3.523237179 GHz



Date: 29.AUG.2012 10:11:23

-----END-----

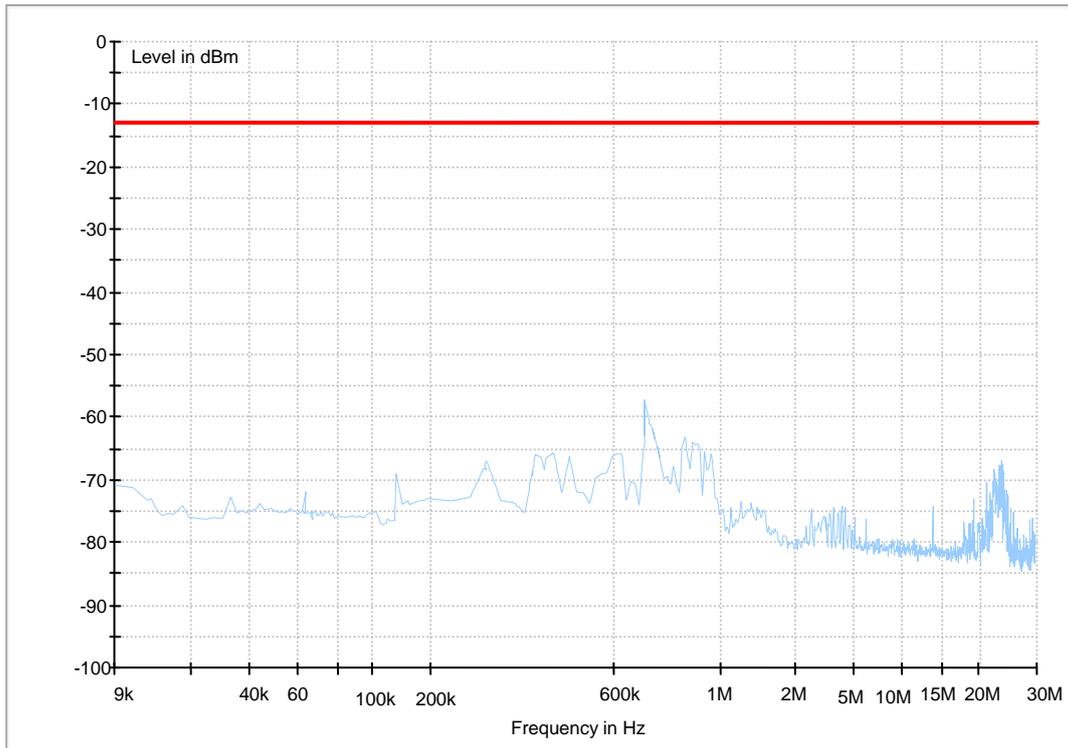
Appendix F

Radiated spurious emission

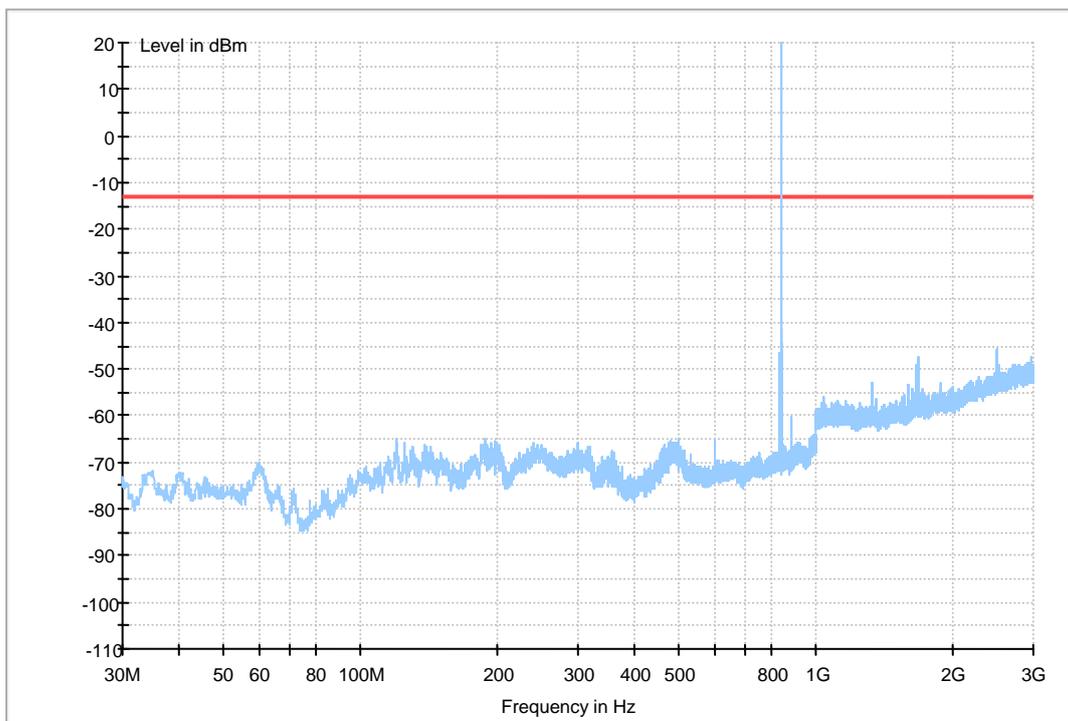
According to FCC Part 2.1053& Part 22.917

GPRS 850

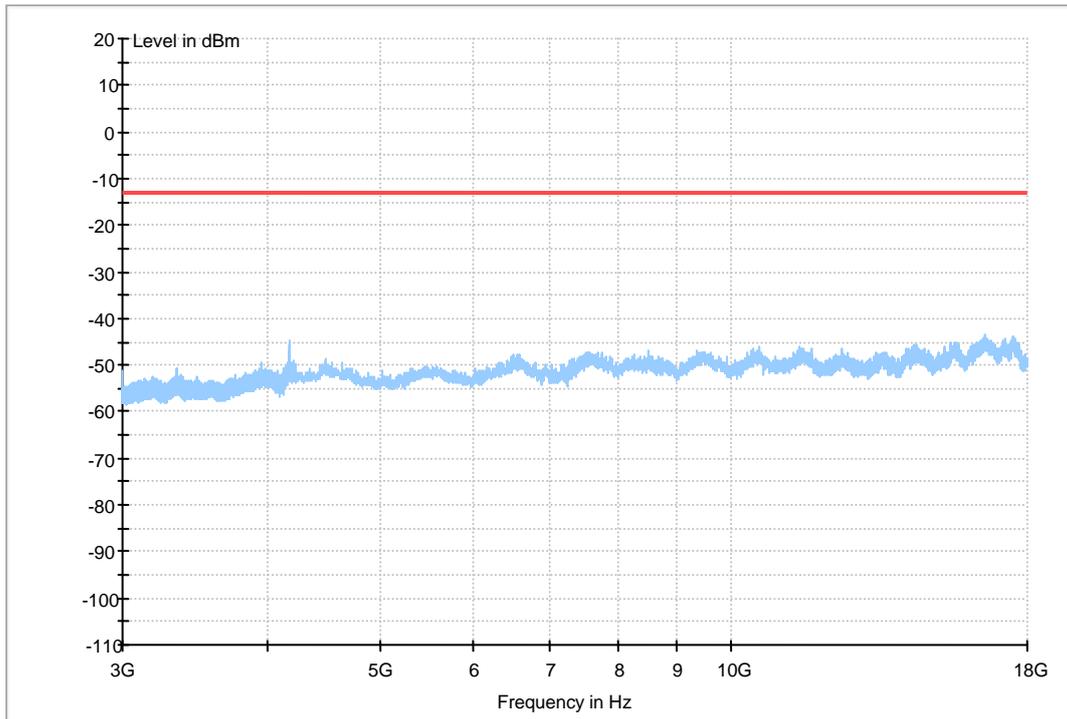
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

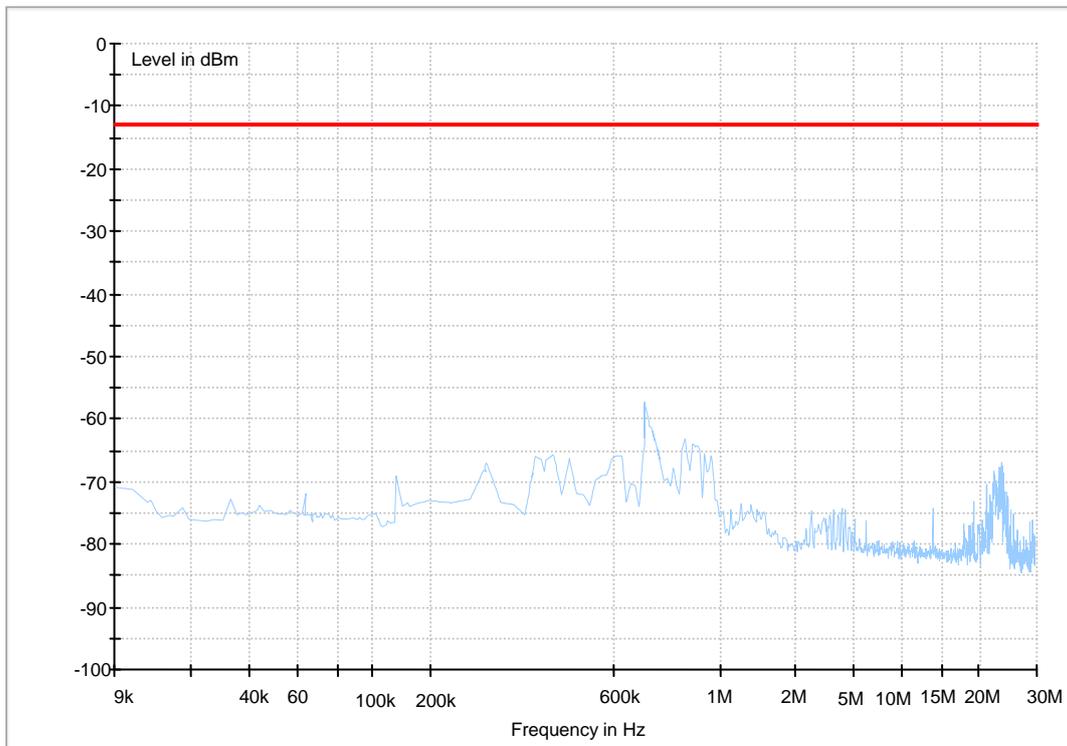


Traffic Mode (3GHz-18GHz)

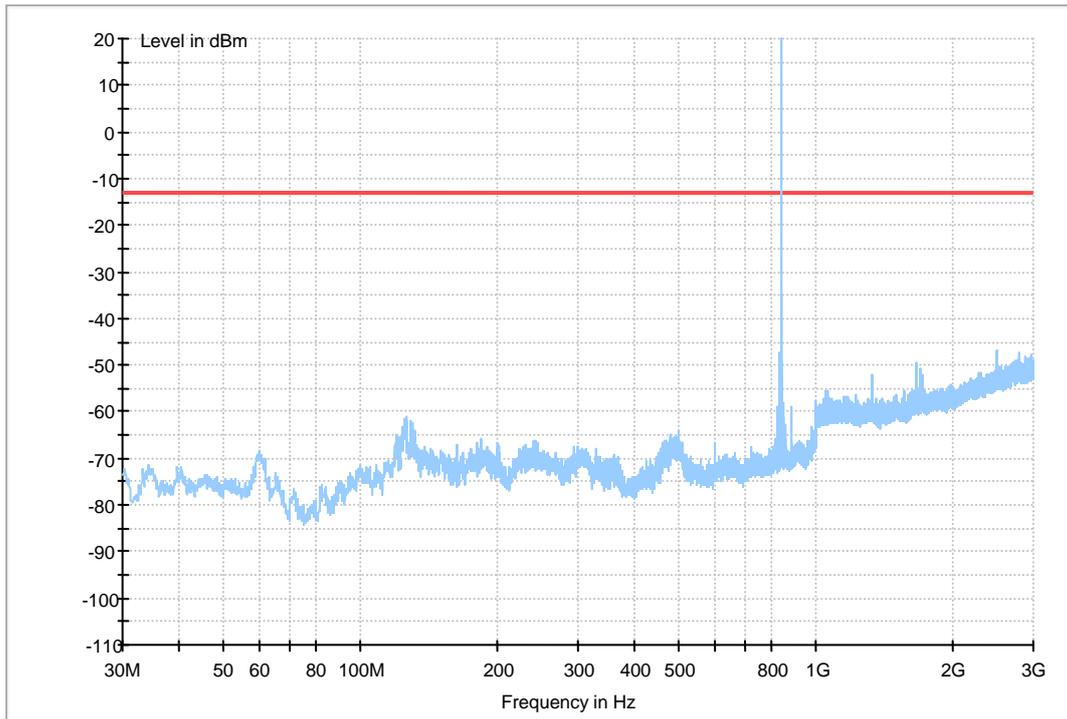


EDGE 850

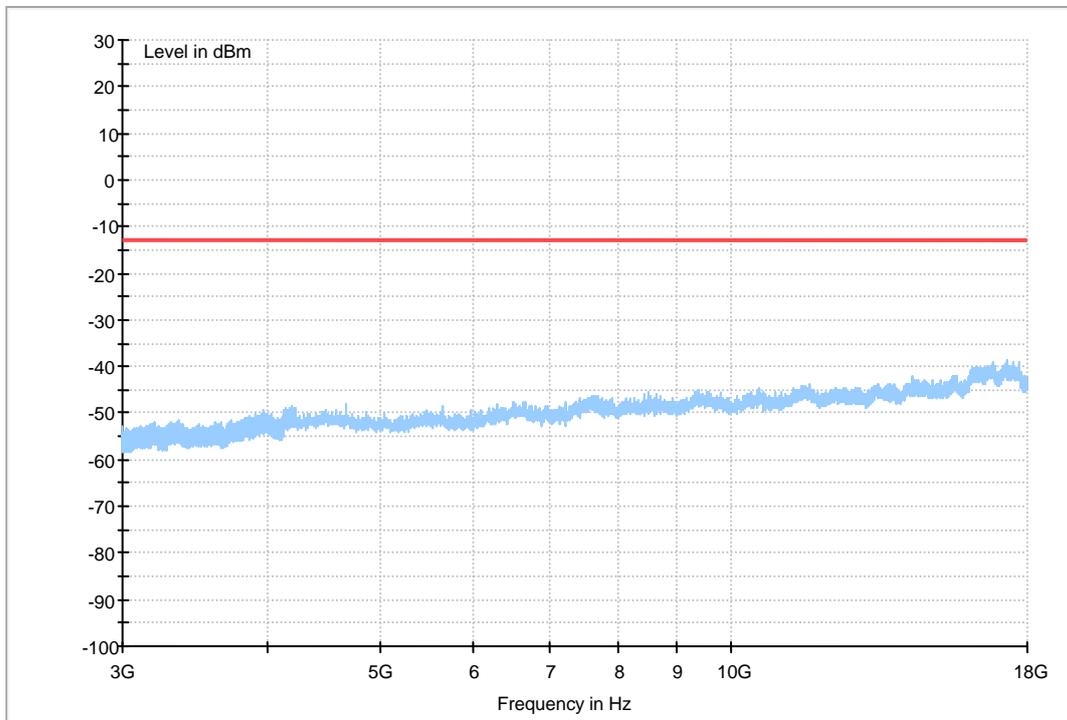
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

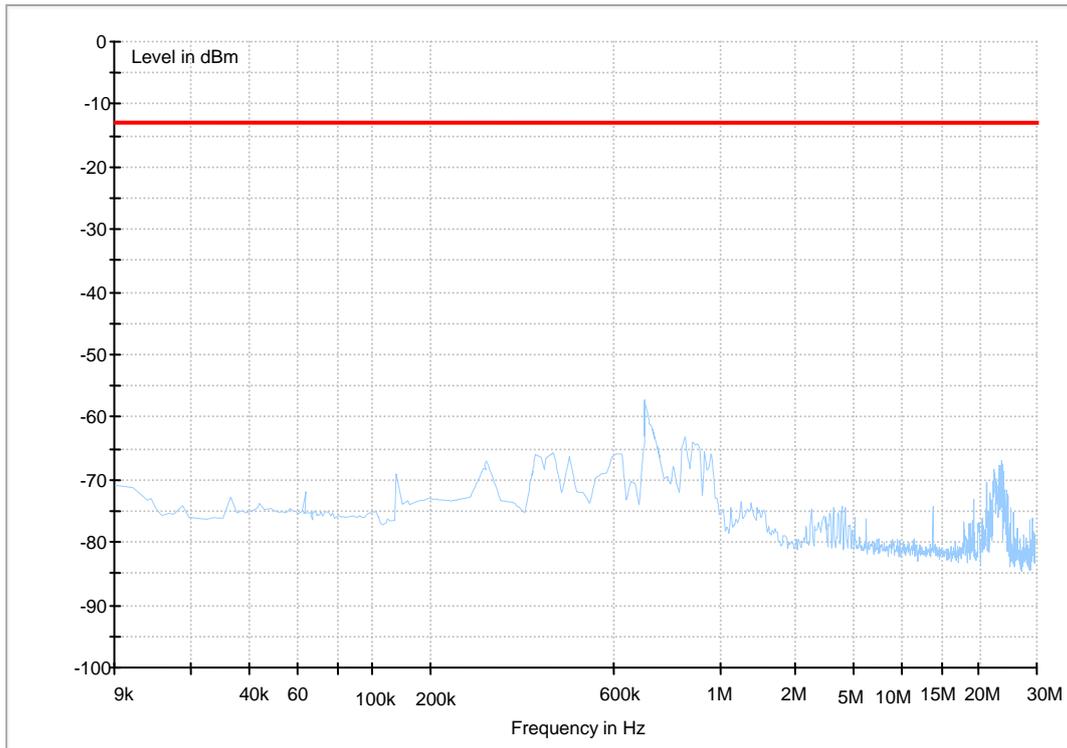


Traffic Mode (3GHz-18GHz)

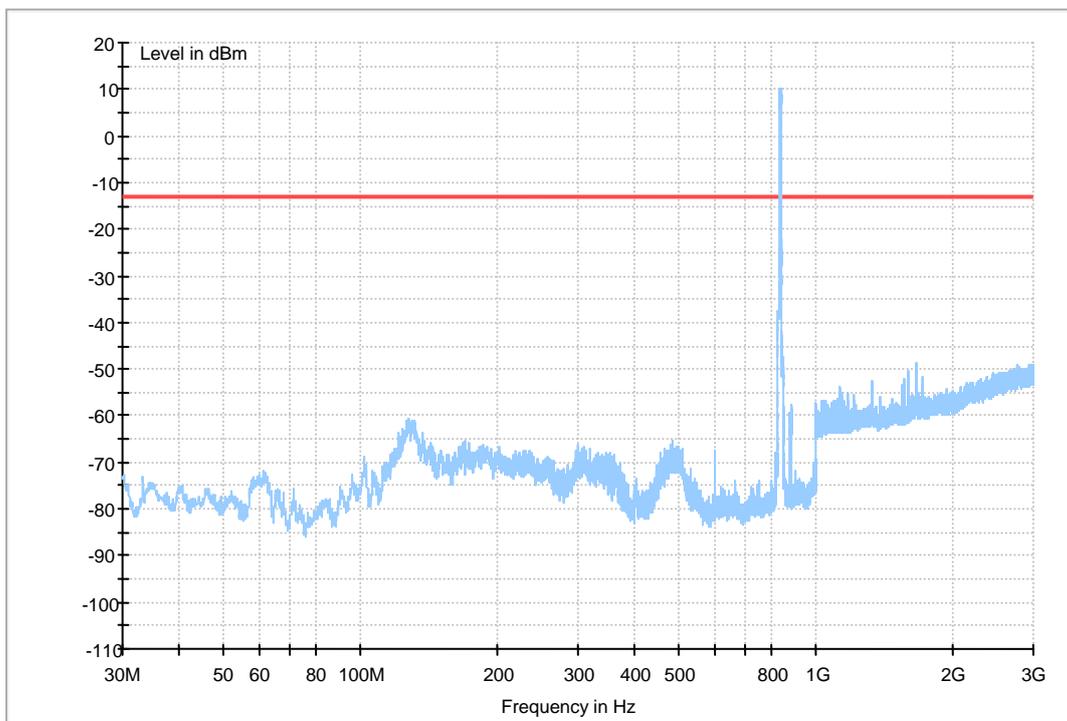


WCDMA Band V

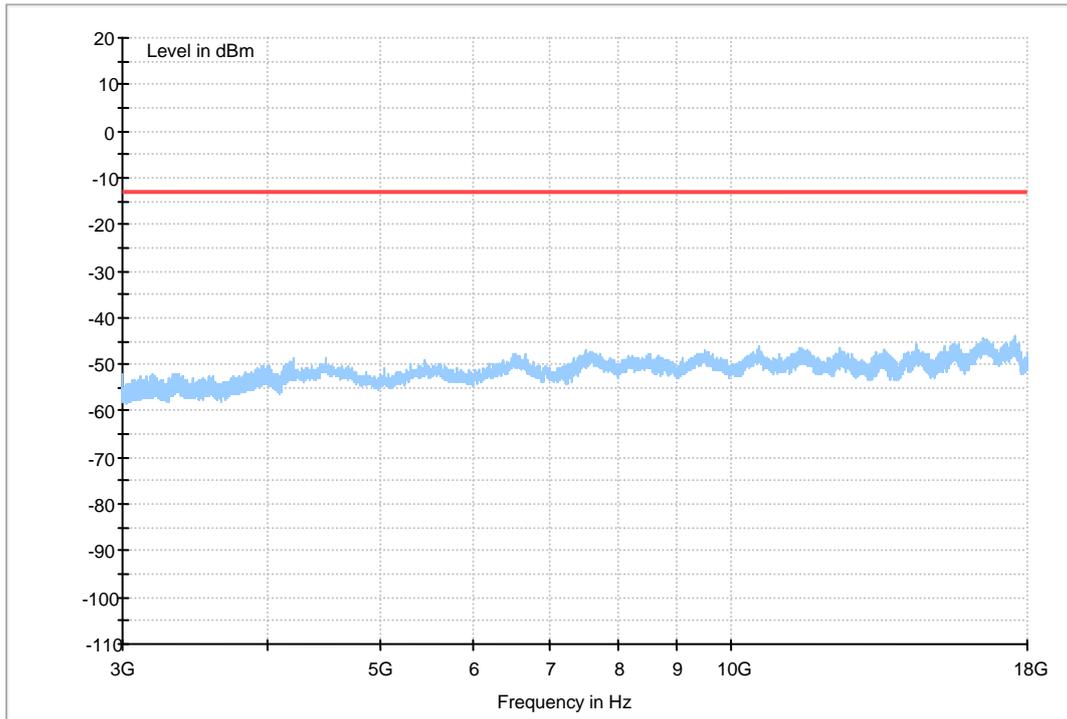
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

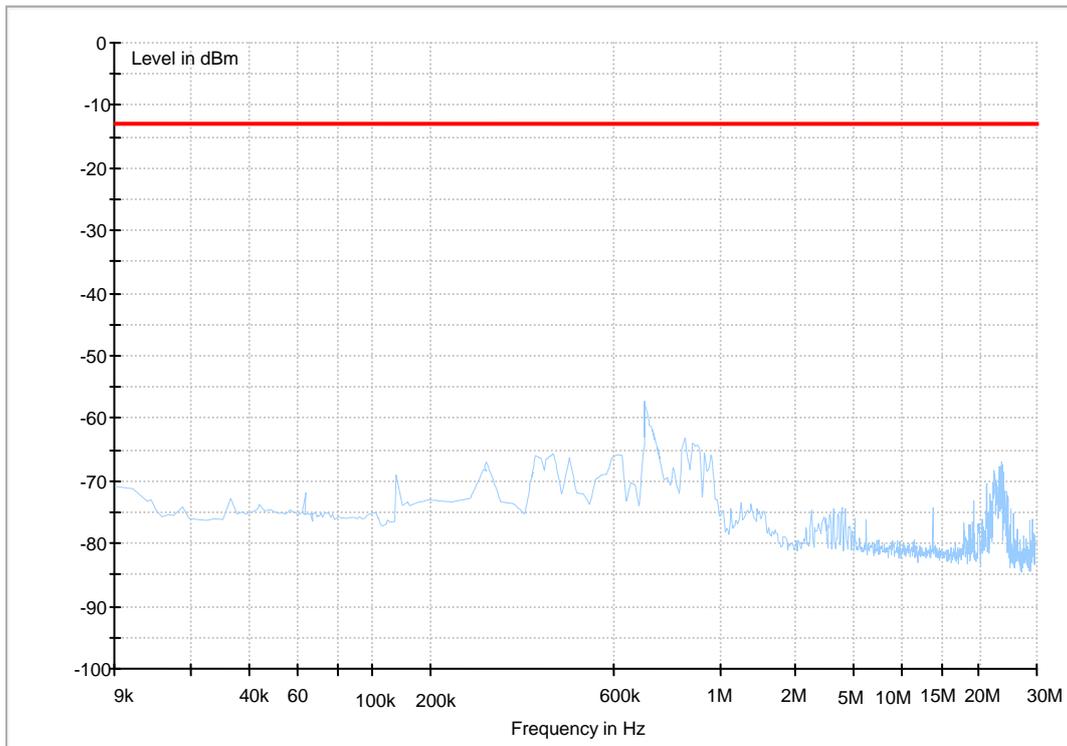


Traffic Mode (3GHz-18GHz)

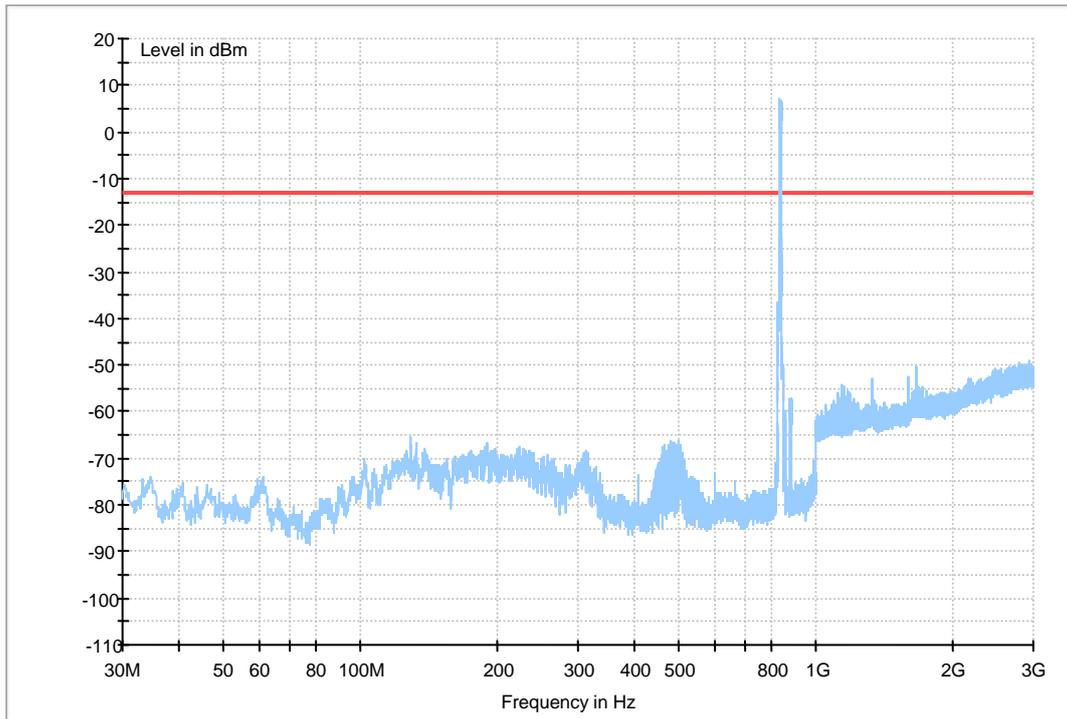


HSDPA Band V

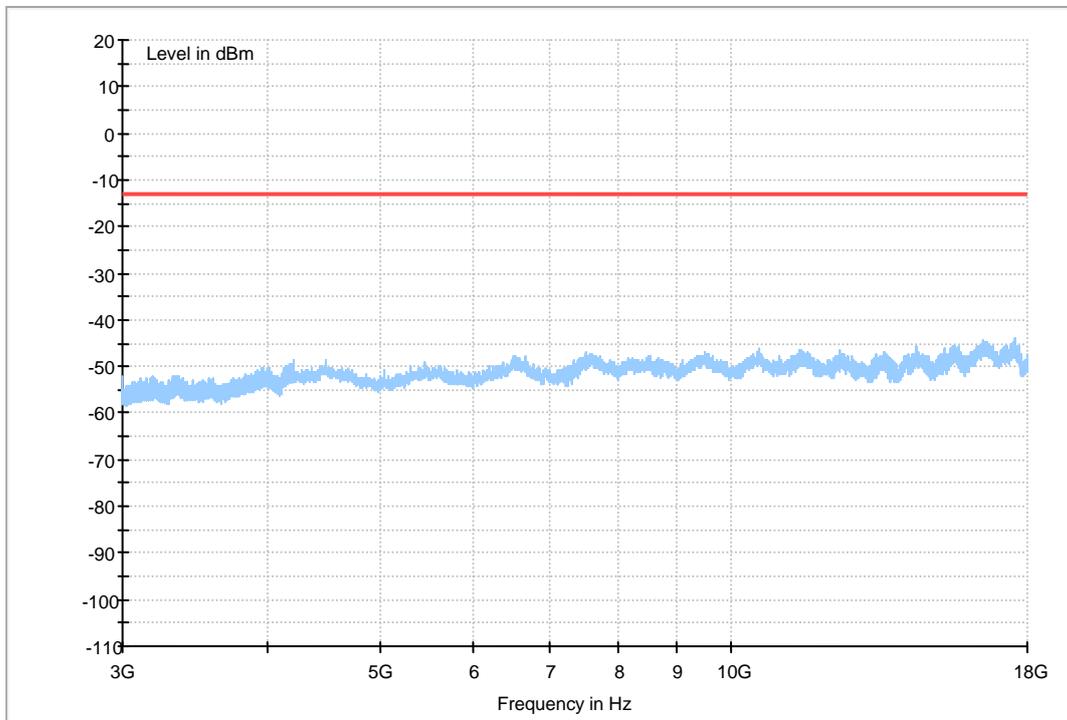
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz).

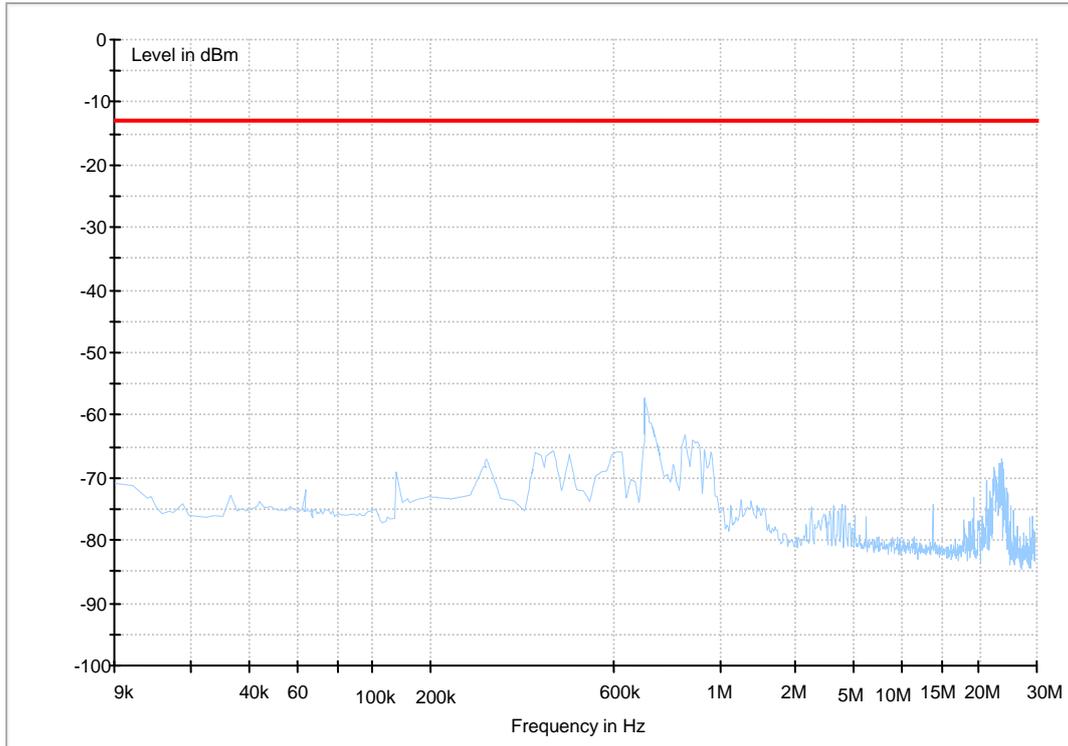


Traffic Mode (3GHz-18GHz)

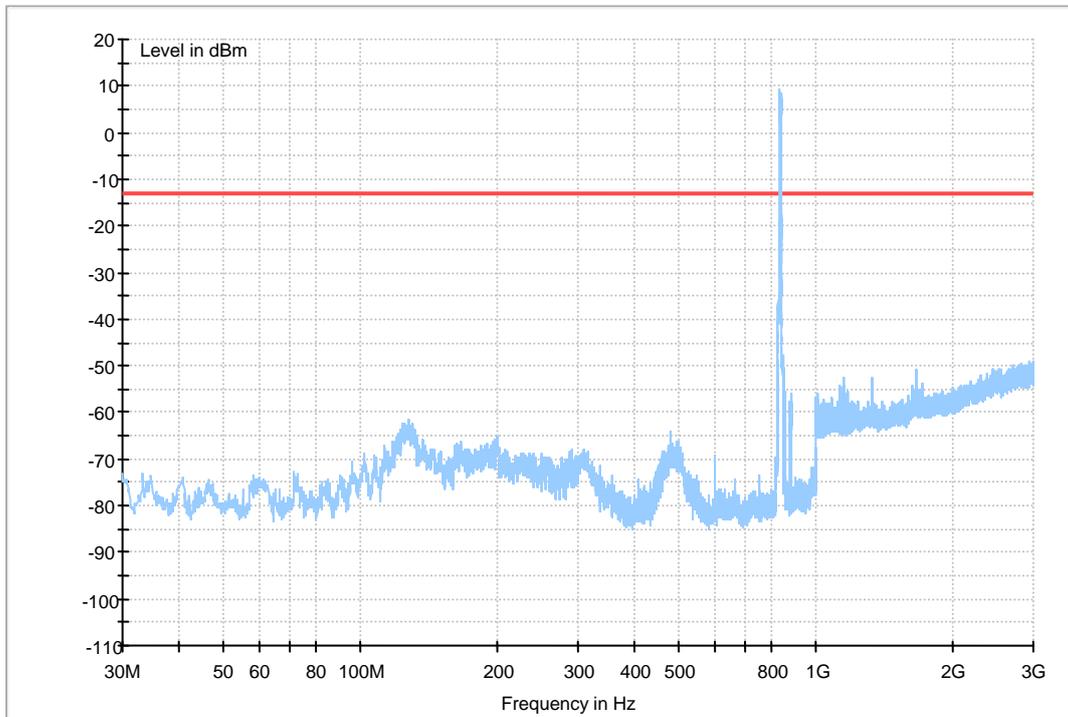


HSUPA Band V

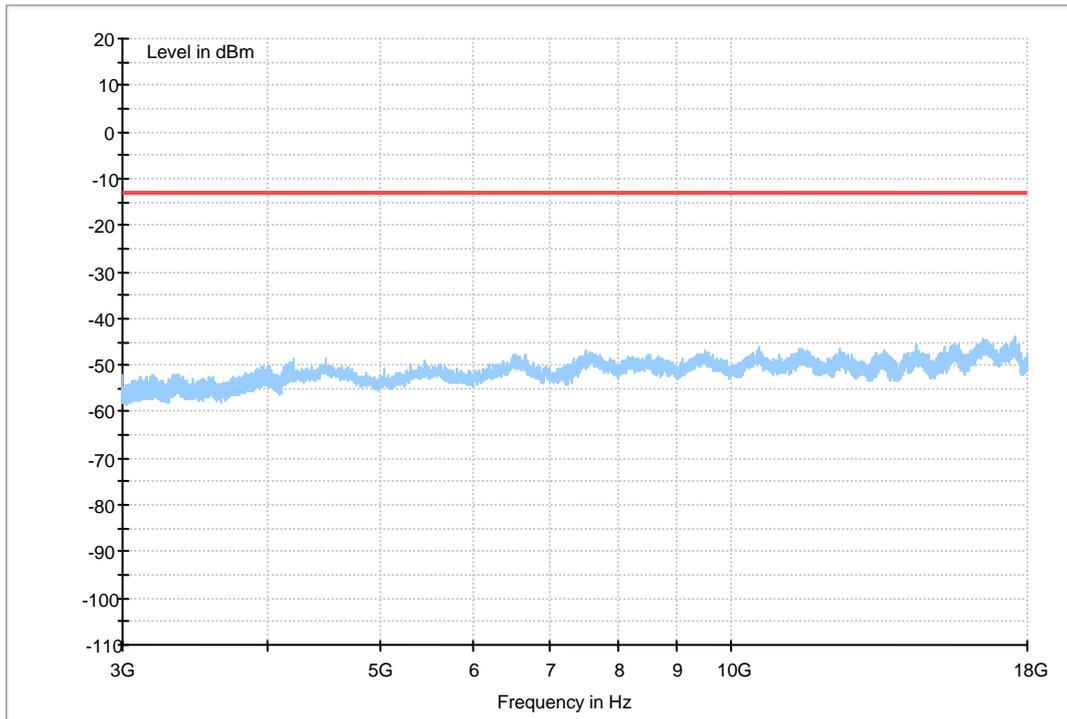
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)



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



Appendix G

Frequency Stability

According to FCC Part 2.1055 & Part 22.355



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	-23	-0.02748	---	±2.5	Pass
			-20 °C	-19	-0.02270	---	±2.5	Pass
			-10 °C	14	0.01673	---	±2.5	Pass
			0 °C	-17	-0.02031	---	±2.5	Pass
			10 °C	-20	-0.02389	---	±2.5	Pass
			20 °C	-19	-0.02270	---	±2.5	Pass
			30 °C	22	0.02628	---	±2.5	Pass
			40 °C	19	0.02270	---	±2.5	Pass
			50 °C	7	0.00836	---	±2.5	Pass
TM 2	M	VN	-30 °C	-19	-0.02270	---	±2.5	Pass
			-20 °C	-18	-0.02151	---	±2.5	Pass
			-10 °C	-9	-0.01075	---	±2.5	Pass
			0 °C	-11	-0.01314	---	±2.5	Pass
			10 °C	-8	-0.00956	---	±2.5	Pass
			20 °C	15	0.01792	---	±2.5	Pass
			30 °C	-11	-0.01314	---	±2.5	Pass
			40 °C	15	0.01792	---	±2.5	Pass
			50 °C	-13	-0.01553	---	±2.5	Pass
TM 3	M	VN	-30 °C	-11	-0.01314	---	±2.5	Pass
			-20 °C	-20	-0.02389	---	±2.5	Pass
			-10 °C	16	0.01912	---	±2.5	Pass
			0 °C	-6	-0.00717	---	±2.5	Pass
			10 °C	16	0.01912	---	±2.5	Pass
			20 °C	24	0.02867	---	±2.5	Pass
			30 °C	19	0.02270	---	±2.5	Pass
			40 °C	25	0.02987	---	±2.5	Pass
			50 °C	14	0.01673	---	±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	11	0.01314	---	±2.5	Pass
			VN	-20	-0.02389	---	±2.5	Pass
			VH	17	0.02031	---	±2.5	Pass
TM 2	M	TN	VL	17	0.02031	---	±2.5	Pass
			VN	-21	-0.02509	---	±2.5	Pass
			VH	-19	-0.02270	---	±2.5	Pass
TM 3	M	TN	VL	22	0.02628	---	±2.5	Pass
			VN	-22	-0.02628	---	±2.5	Pass
			VH	-9	-0.01075	---	±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)

-----The End-----