



---

# Appendix A

## Transmitter Output Power According to FCC Part 2.1046 & Part24.232



## Conducted Power of Transmitter

TEST CONDITIONS		RF Output Power (Conducted)					
		Channel512(L)		Channel661(M)		Channel810(H)	
		1850.2MHz		1880.0MHz		1909.8MHz	
		dBm		dBm		dBm	
$T_{nom} / V_{nom}$		Measured	Limit	Measured	Limit	Measured	Limit
TM1		29.05	33	28.89	33	28.81	33
TM2		25.51	33	25.01	33	24.98	33
TEST CONDITIONS		Channel9262(L)		Channel9400(M)		Channel9538(H)	
		1852.4MHz		1880.0MHz		1907.6MHz	
		dBm		dBm		dBm	
		$T_{nom} / V_{nom}$		Measured	Limit	Measured	Limit
TM3		21.96	33	21.94	33	21.71	33
TM4	Case1	22.01	33	21.92	33	21.98	33
	Case2	22.25	33	22.06	33	21.93	33
	Case3	21.75	33	21.49	33	21.58	33
	Case4	21.31	33	21.32	33	21.51	33
TM5	Case1	20.78	33	20.96	33	20.79	33
	Case2	20.31	33	20.13	33	19.89	33
	Case3	20.17	33	20.11	33	19.83	33
	Case4	19.91	33	19.92	33	19.83	33
	Case5	21.19	33	21.03	33	20.88	33



## Peak-to-Average Ratio

TEST CONDITIONS		Peak-to-Average Ratio					
		Channel512(L)		Channel661(M)		Channel810(H)	
		1850.2MHz		1880.0MHz		1909.8MHz	
		dB		dB		dB	
$T_{nom} / V_{nom}$		Measured	Limit	Measured	Limit	Measured	Limit
TM1		0.99	13	0.90	13	1.03	13
TM2		2.76	13	2.63	13	2.13	13
TEST CONDITIONS		Channel9262(L)		Channel9400(M)		Channel9538(H)	
		1852.4MHz		1880.0MHz		1907.6MHz	
		dB		dB		dB	
$T_{nom} / V_{nom}$		Measured	Limit	Measured	Limit	Measured	Limit
TM3		7.21	13	7.34	13	7.26	13
TM4	Case1	7.23	13	7.19	13	7.18	13
	Case2	7.25	13	7.20	13	7.15	13
	Case3	7.18	13	7.16	13	7.17	13
	Case4	7.19	13	7.09	13	7.11	13
TM5	Case1	7.21	13	7.16	13	7.08	13
	Case2	7.12	13	7.11	13	7.05	13
	Case3	6.98	13	6.89	13	6.95	13
	Case4	6.87	13	6.82	13	6.81	13
	Case5	6.79	13	6.67	13	6.75	13



### Effective Isotropic Radiated Power of Transmitter (EIRP)

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP)	FCC limit [dBm]	Result
							[dBm]		
TM1	1850.2	27.35	Horn Ant.	23.83	4.5	1	27.33	33	Pass
TM1	1880.0	27.19	Horn Ant.	23.64	4.5	1	27.14	33	Pass
TM1	1909.8	27.11	Horn Ant.	23.34	4.8	1	27.14	33	Pass
TM2	1850.2	23.81	Horn Ant.	20.36	4.5	1	23.86	33	Pass
TM2	1880.0	23.31	Horn Ant.	19.83	4.5	1	23.33	33	Pass
TM2	1909.8	23.28	Horn Ant.	19.44	4.8	1	23.24	33	Pass
TM3	1852.4	20.26	Horn Ant.	16.72	4.5	1	20.22	33	Pass
TM3	1880.0	20.24	Horn Ant.	16.72	4.5	1	20.22	33	Pass
TM3	1907.6	20.01	Horn Ant.	16.31	4.8	1	20.11	33	Pass

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

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

b, SGP=Signal Generator Level

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



---

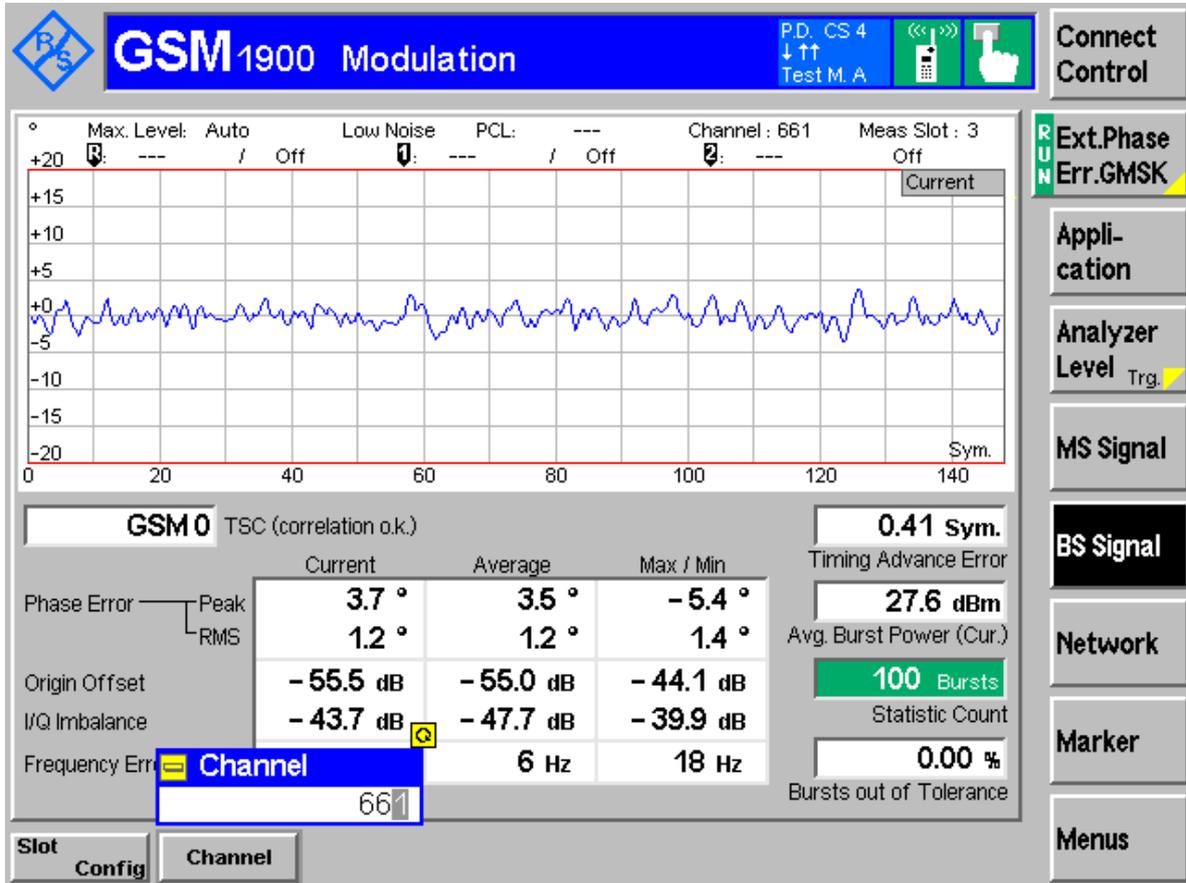
## Appendix B

# Modulation Characteristics

According to FCC Part 2.1047 & Part24 Subpart E



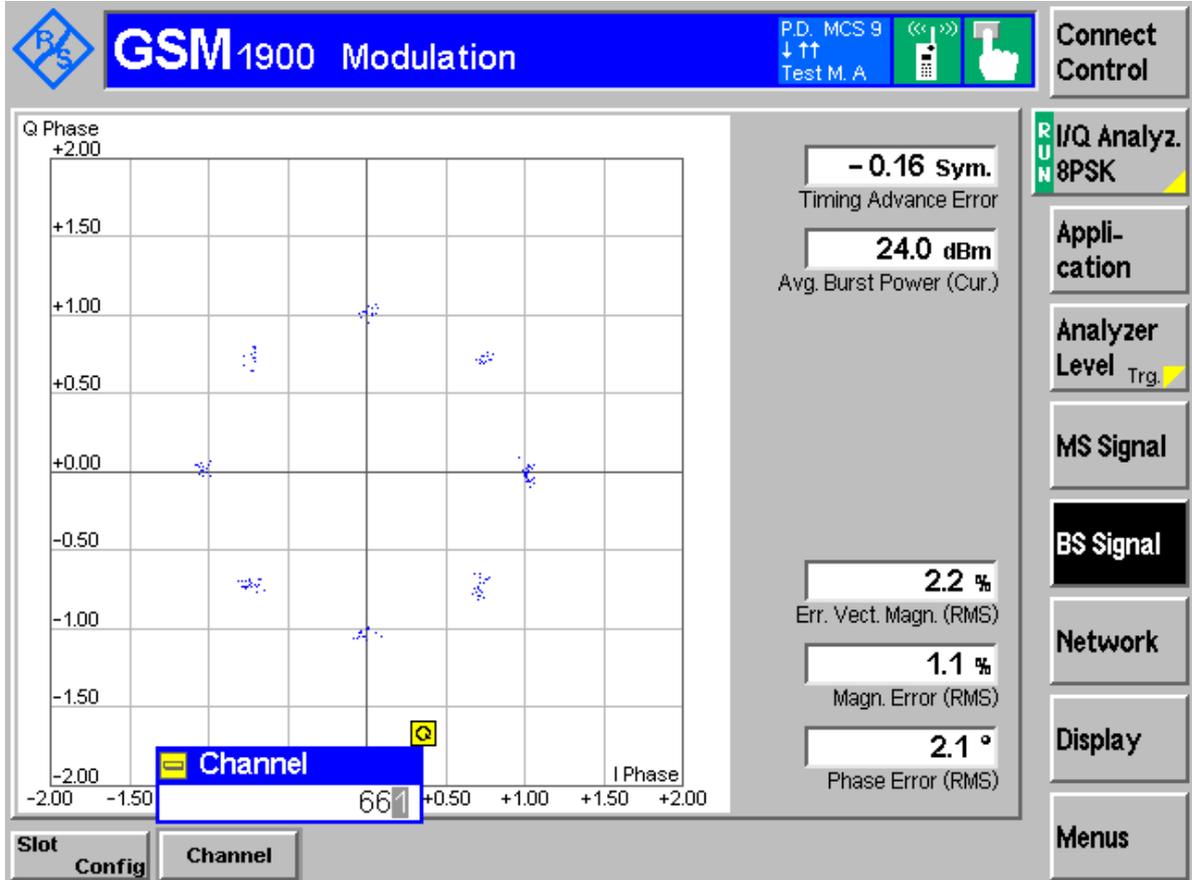
## TM1:GPRS/GSM Channel 661



## TM2:EDGE

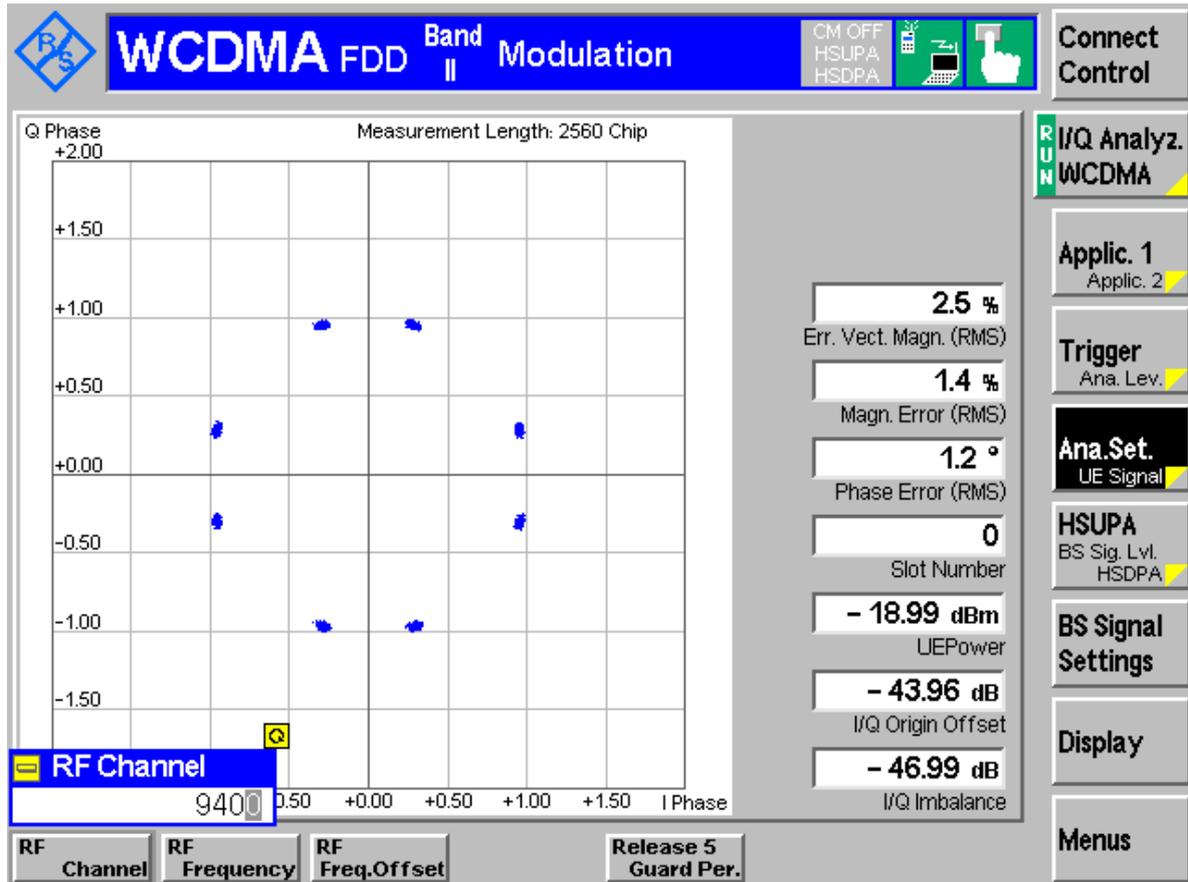


# Channel 661





## TM3: WCDMA Channel 9400



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



---

# Appendix C

## Occupied Bandwidth According to FCC Part 2.1049 & Part24 Subpart E



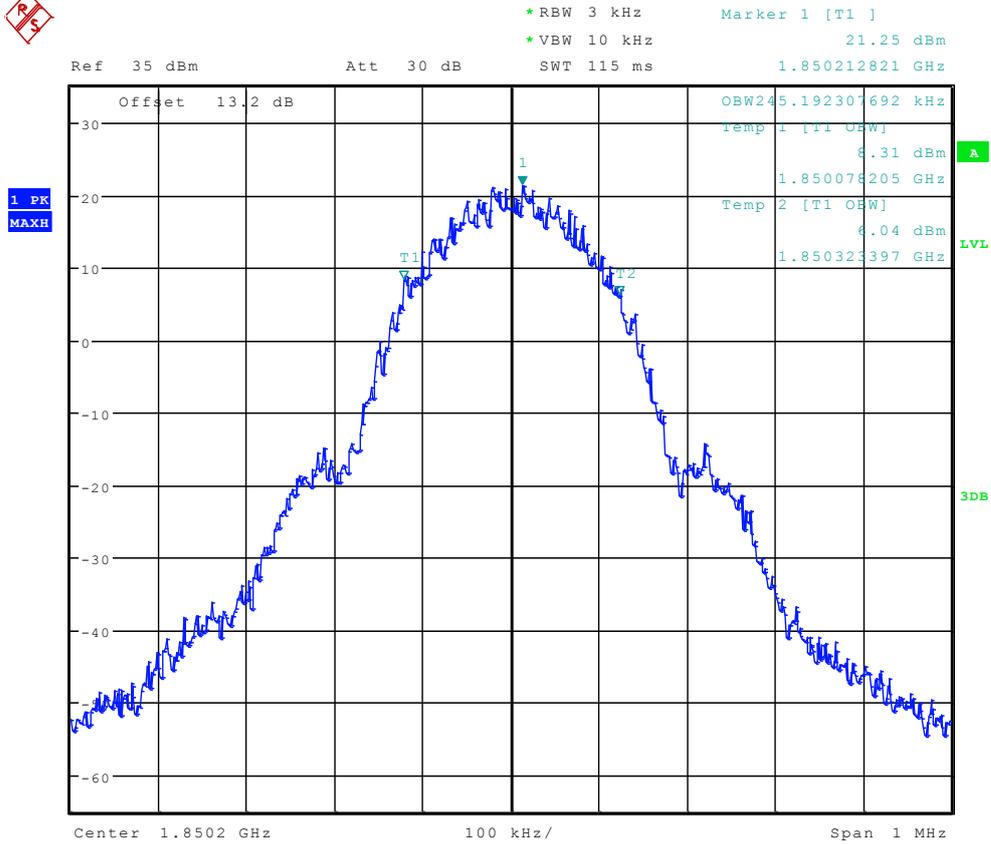
Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	512	245.19	Pass
	661	250.00	Pass
	810	246.79	Pass
TM2	512	248.39	Pass
	661	253.20	Pass
	810	250.00	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	9262	4.15	Pass
	9400	4.15	Pass
	9538	4.16	Pass



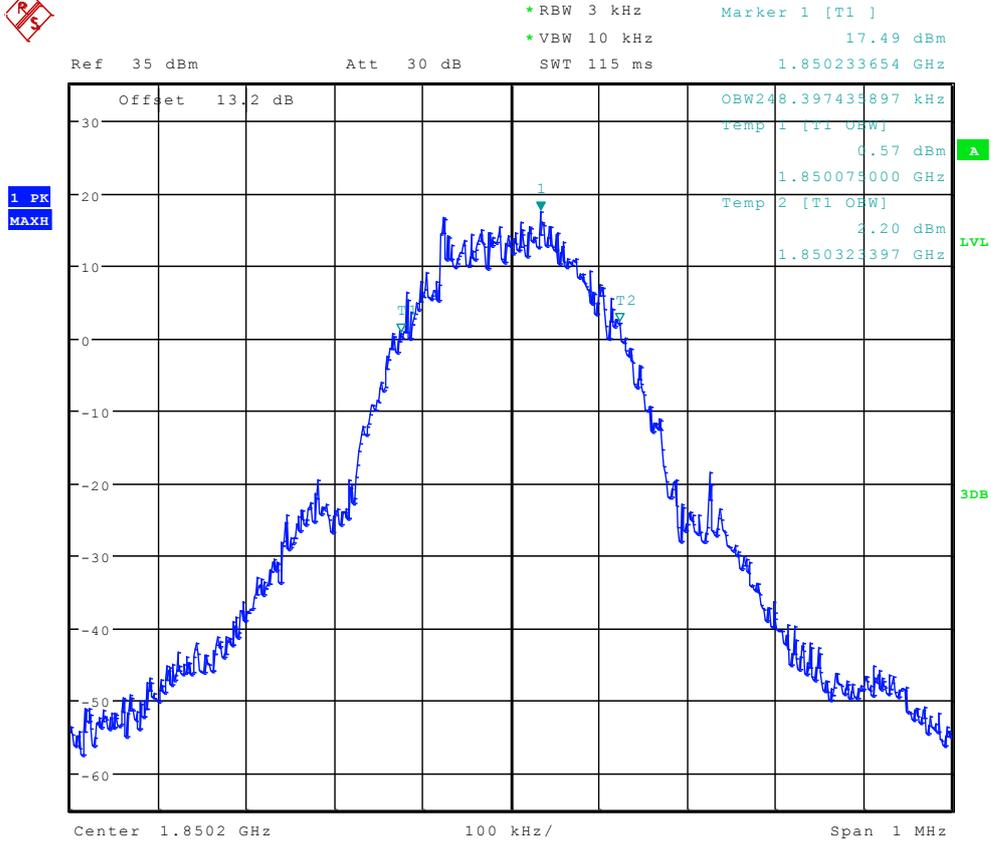
# TM1:GPRS/GSM Channel 512



Date: 29.AUG.2012 10:17:00



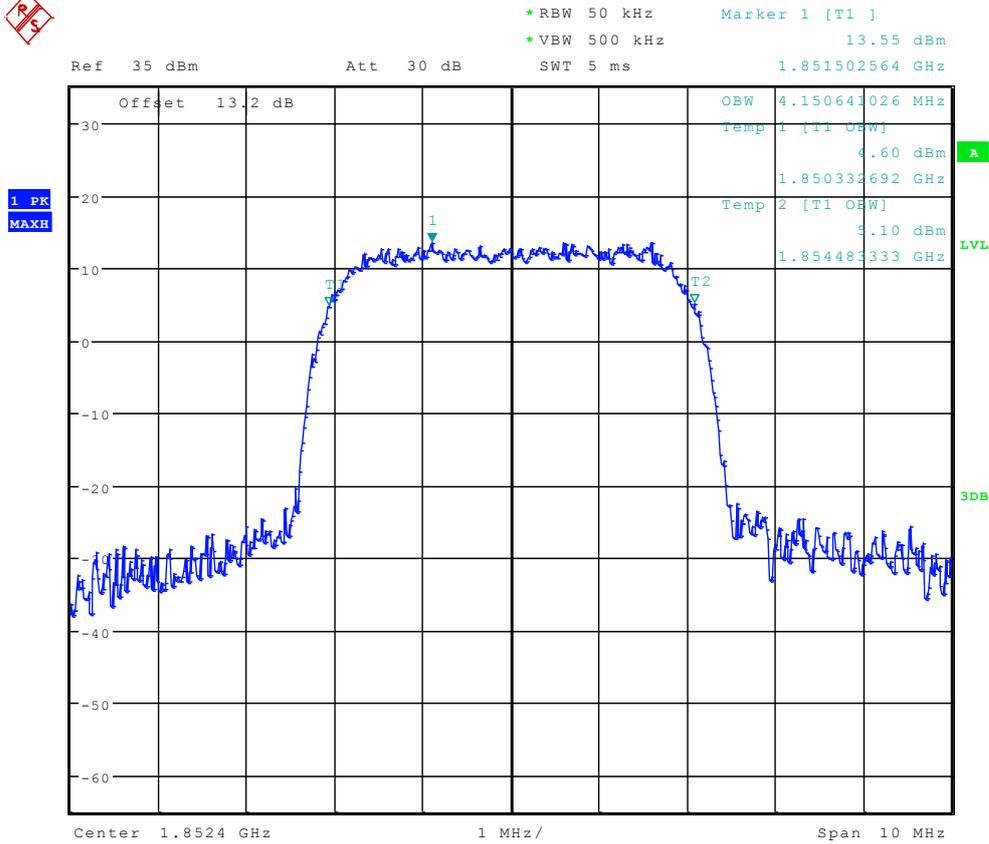
# TM2:EDGE Channel 512



Date: 29.AUG.2012 10:31:23



# TM3: WCDMA Channel 9262



Date: 29.AUG.2012 10:35:37

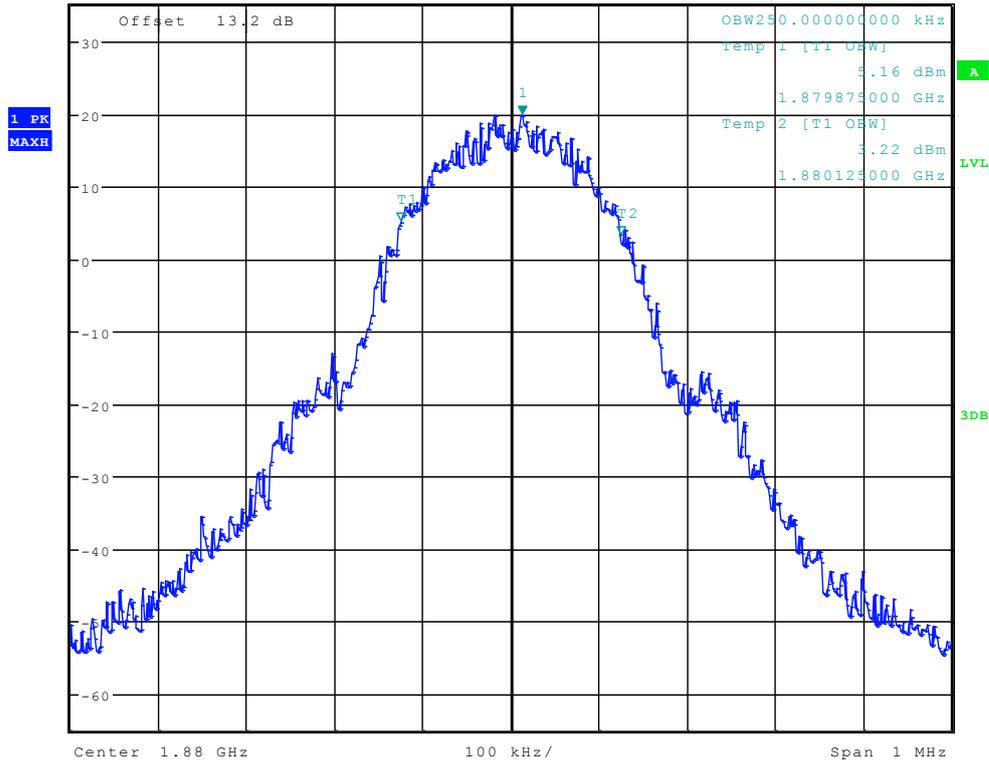


# TM1:GPRS/GSM

## Channel 661



\*RBW 3 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      19.81 dBm  
Ref 35 dBm      Att 30 dB      SWT 115 ms      1.880012821 GHz



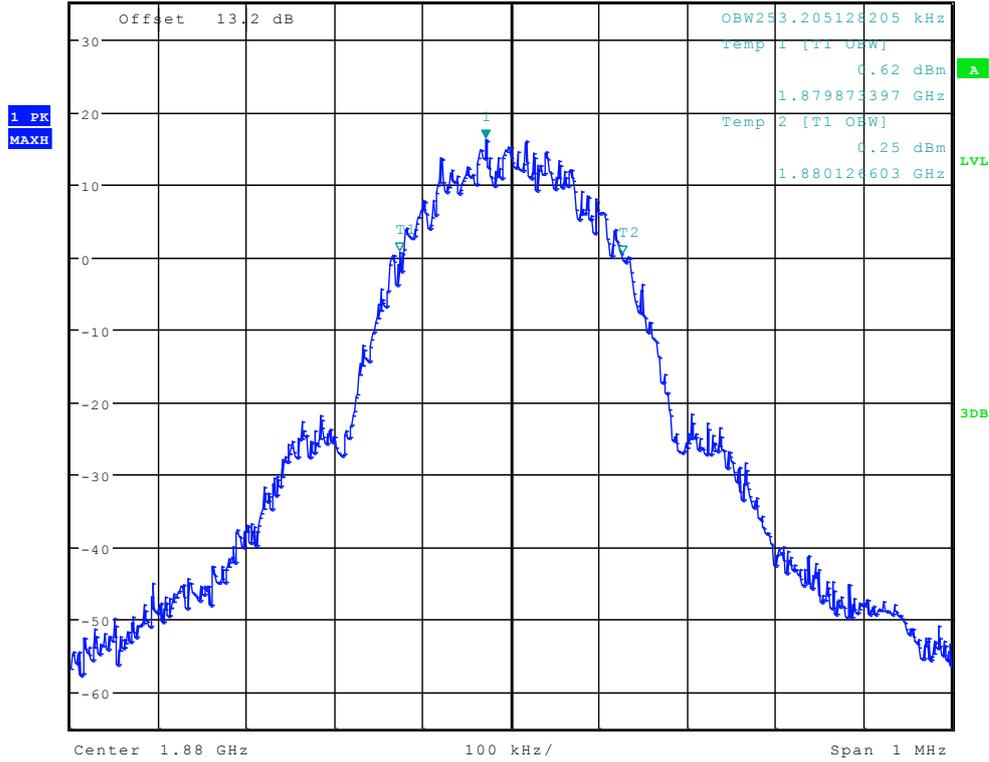
Date: 29.AUG.2012 10:17:13



# TM2:EDGE Channel 661



\*RBW 3 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      16.12 dBm  
 Ref 35 dBm      Att 30 dB      SWT 115 ms      1.879971154 GHz



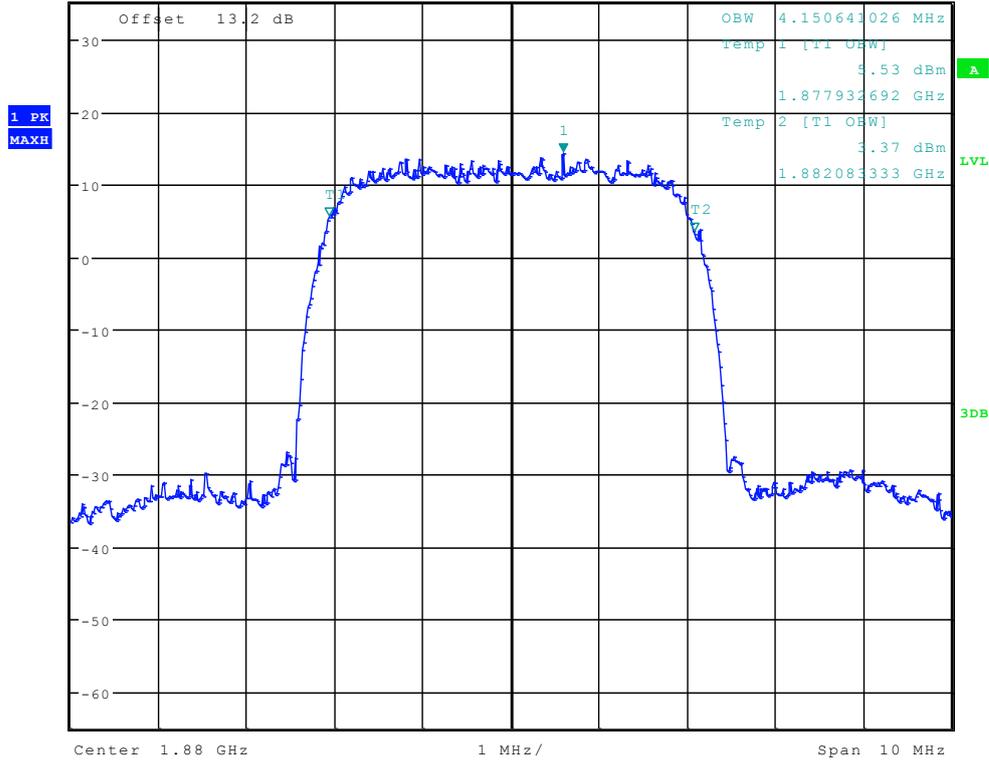
Date: 29.AUG.2012 10:31:36



# TM3: WCDMA Channel 9400



Ref 35 dBm      Att 30 dB      SWT 5 ms      Marker 1 [T1]      14.27 dBm  
\*RBW 50 kHz      \*VBW 500 kHz      1.880592949 GHz



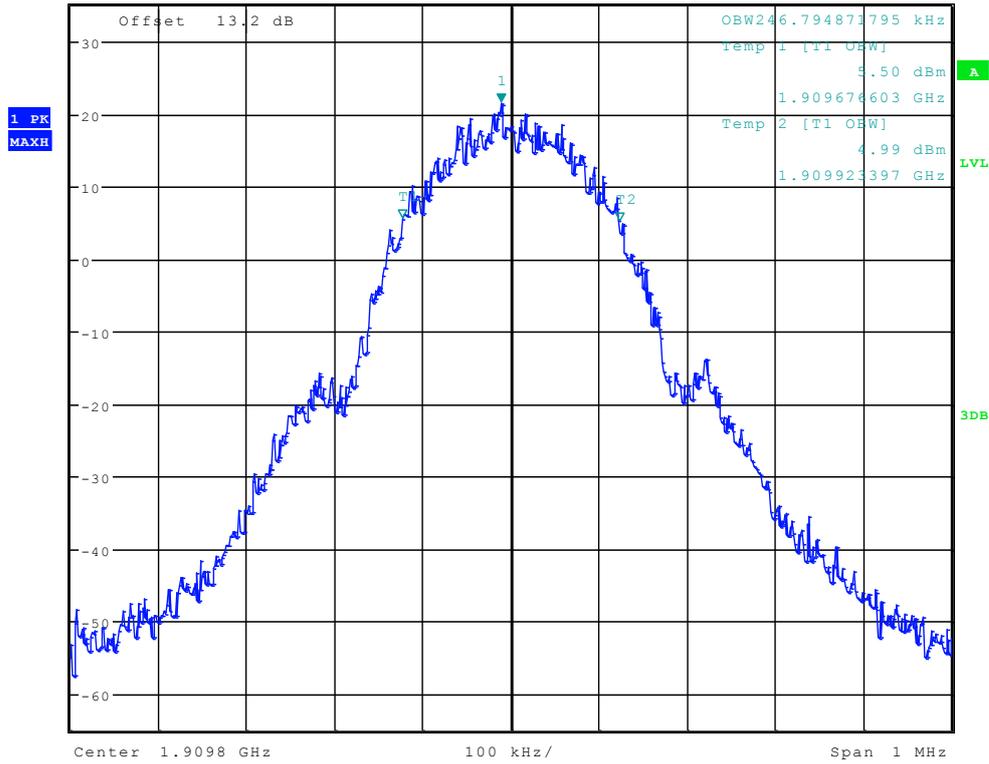
Date: 29.AUG.2012 10:35:50



# TM1:GPRS/GSM Channel 810



\*RBW 3 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      21.39 dBm  
 Ref 35 dBm      Att 30 dB      SWT 115 ms      1.909788782 GHz



Date: 29.AUG.2012 10:17:27

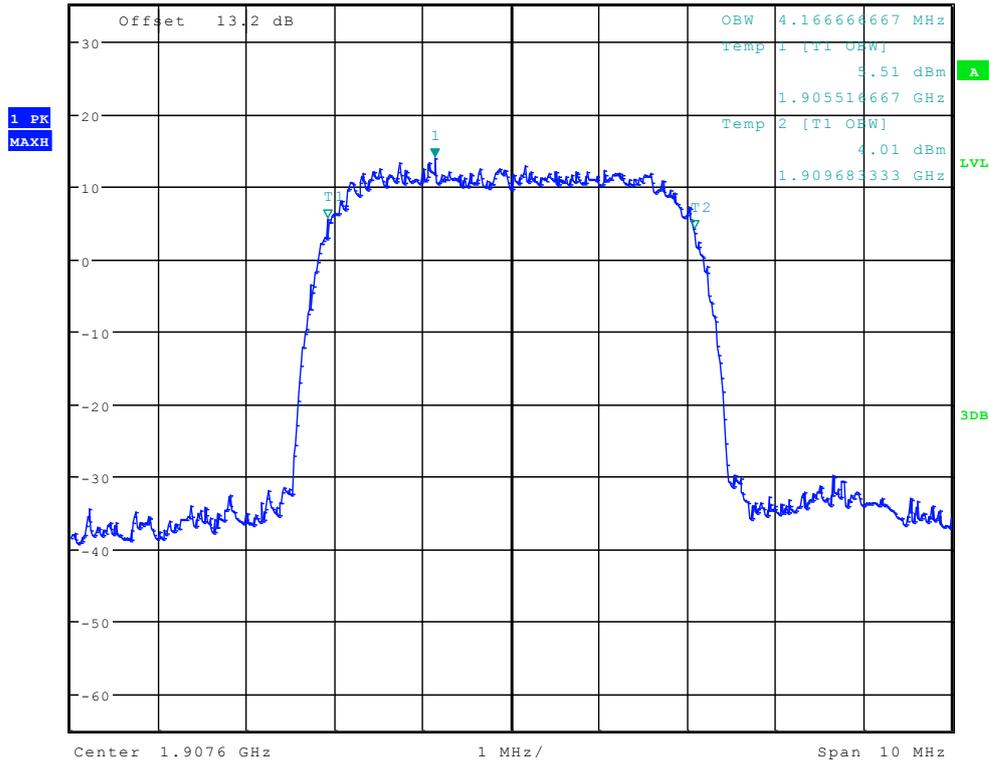




# TM3: WCDMA Channel 9538



\*RBW 50 kHz      Marker 1 [T1 ]  
\*VBW 500 kHz      13.82 dBm  
Ref 35 dBm      Att 30 dB      SWT 5 ms      1.906734615 GHz



Date: 29.AUG.2012 10:36:04

-----END-----



---

# Appendix D

## Band Edges Compliance

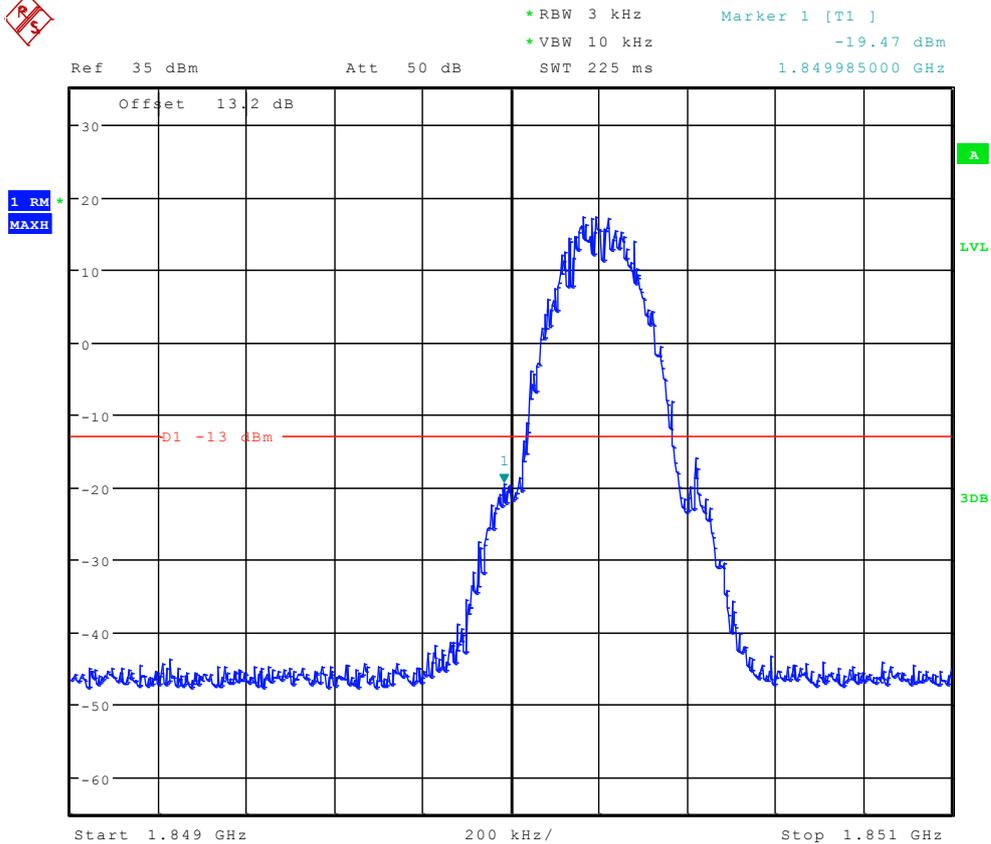
According to FCC Part 2.1051 & Part24 Subpart E



# TM1:GPRS/GSM

## Left Edge

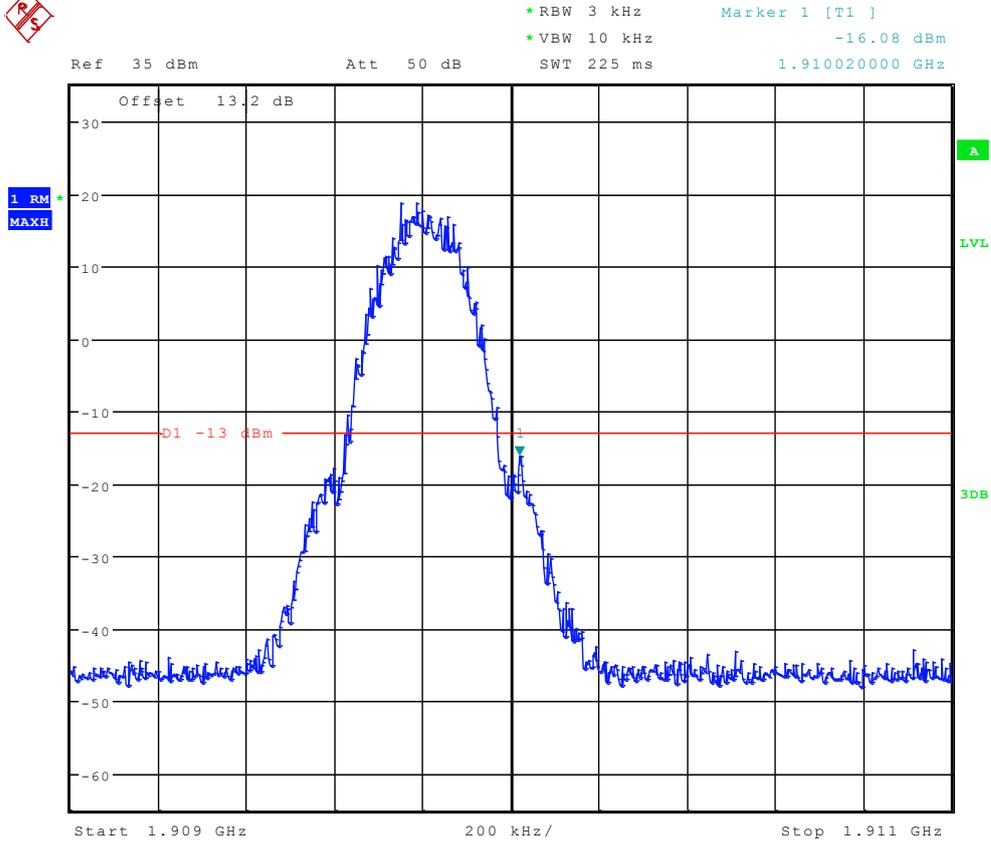
### Channel 512



Date: 29.AUG.2012 10:20:41



## Right Edge Channel 810



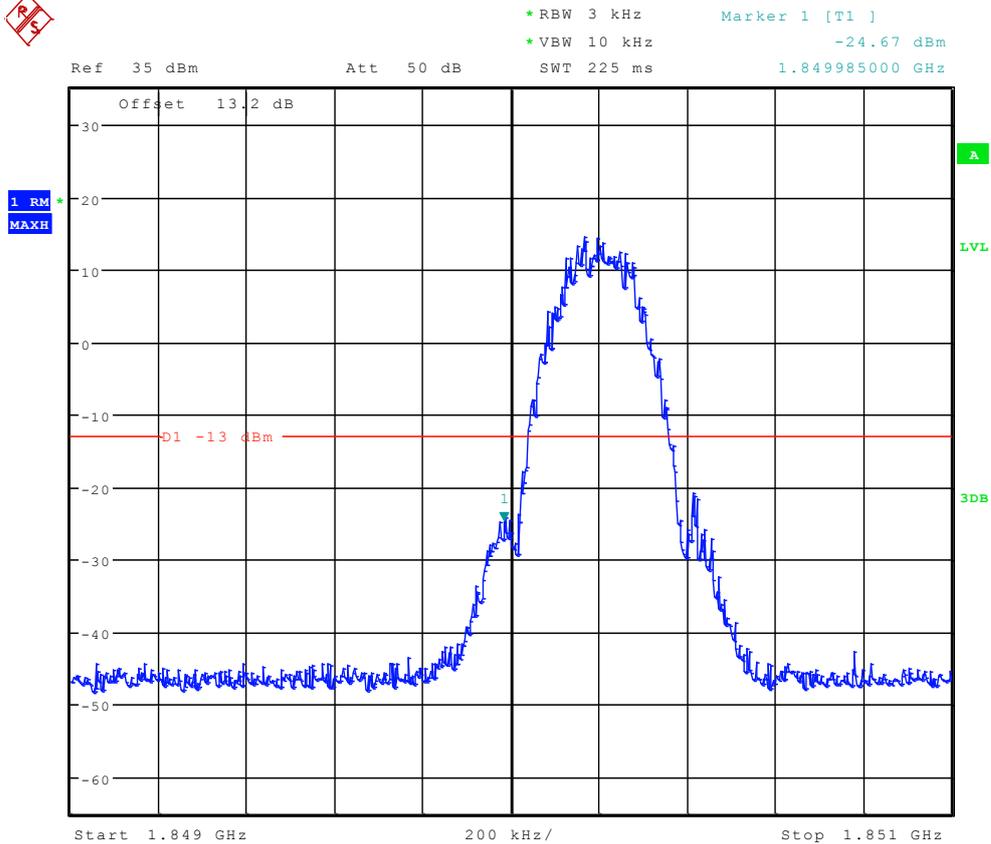
Date: 29.AUG.2012 10:21:32



# TM2:EDGE

## Left Edge

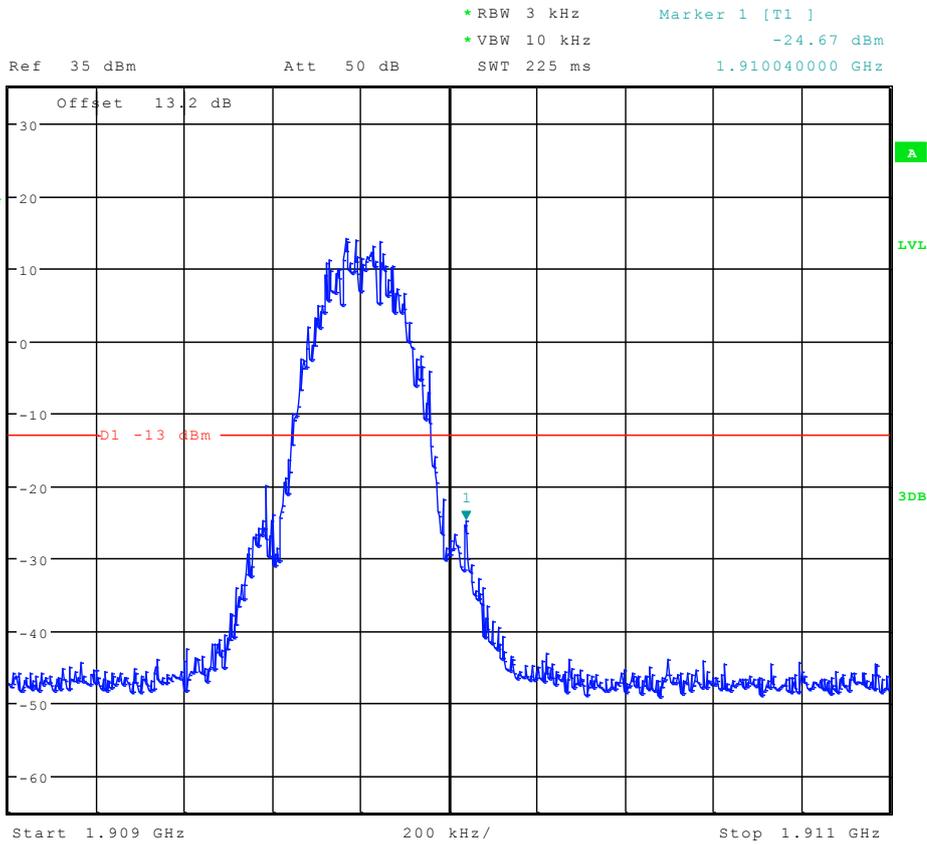
### Channel 512



Date: 29.AUG.2012 10:30:47



## Right Edge Channel 810



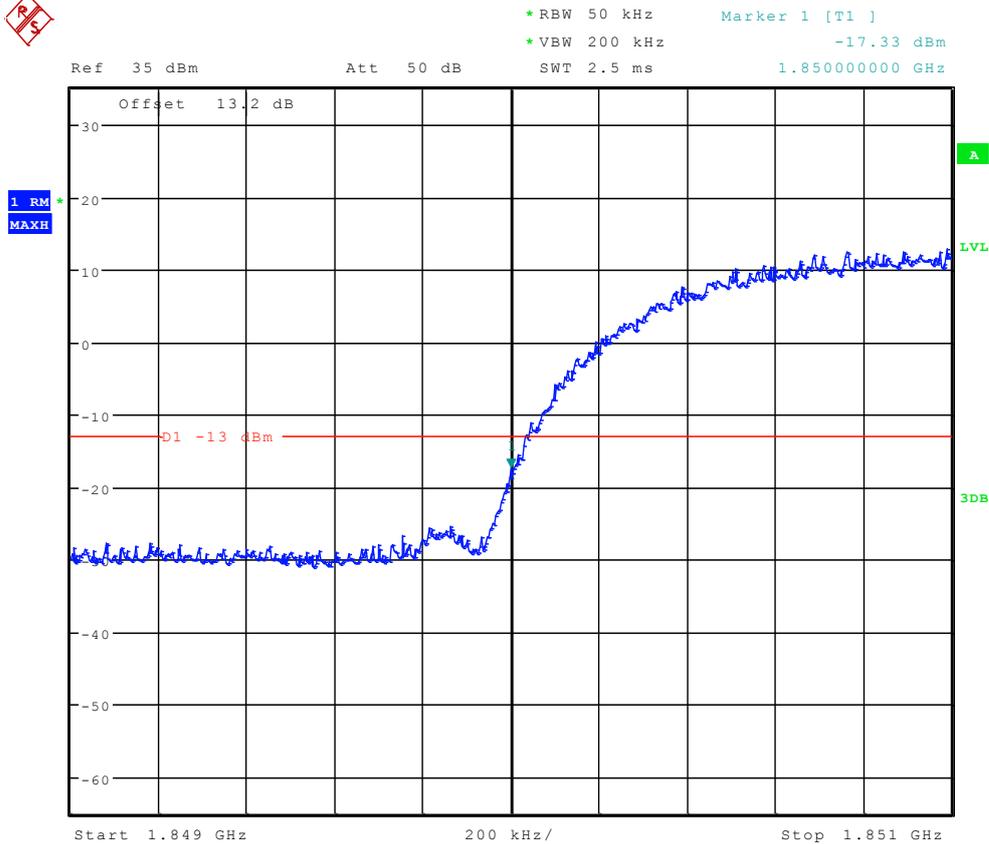
Date: 29.AUG.2012 10:31:09



# TM3: WCDMA

## Left Edge

### Channel 9262



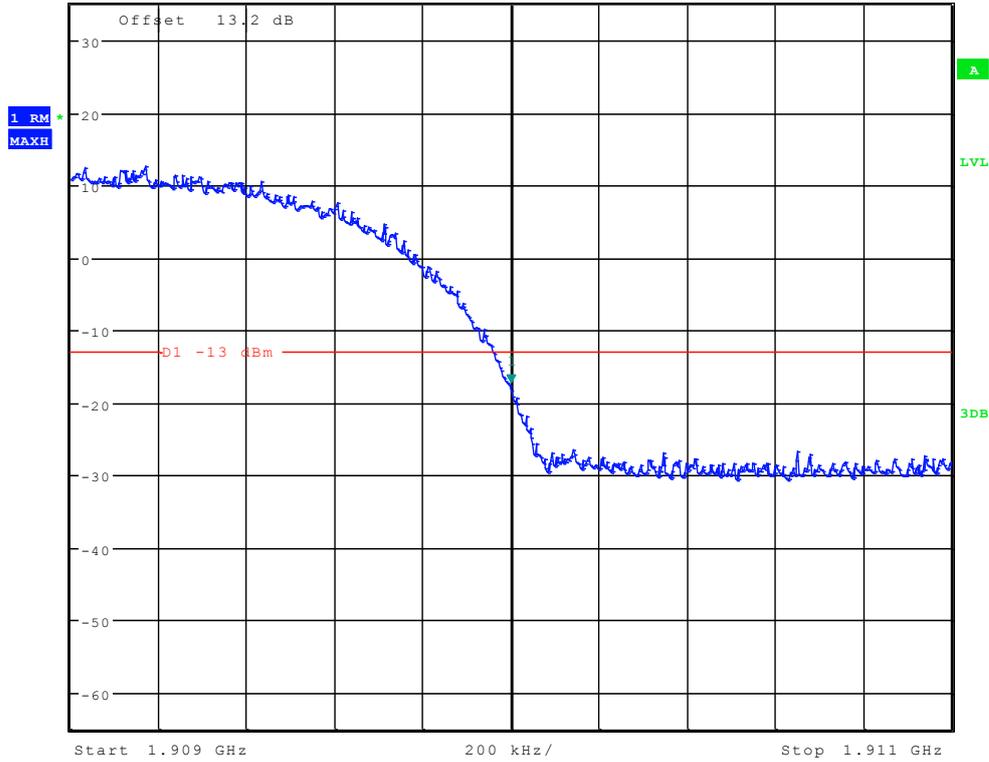
Date: 29.AUG.2012 10:36:18



## Right Edge Channel 9538



Ref 35 dBm      Att 50 dB      \*RBW 50 kHz      Marker 1 [T1]      -17.46 dBm  
\*VBW 200 kHz      SWT 2.5 ms      1.910000000 GHz



Date: 29.AUG.2012 10:36:32

-----END-----



---

# Appendix E

## Spurious Emission at Antenna Terminal

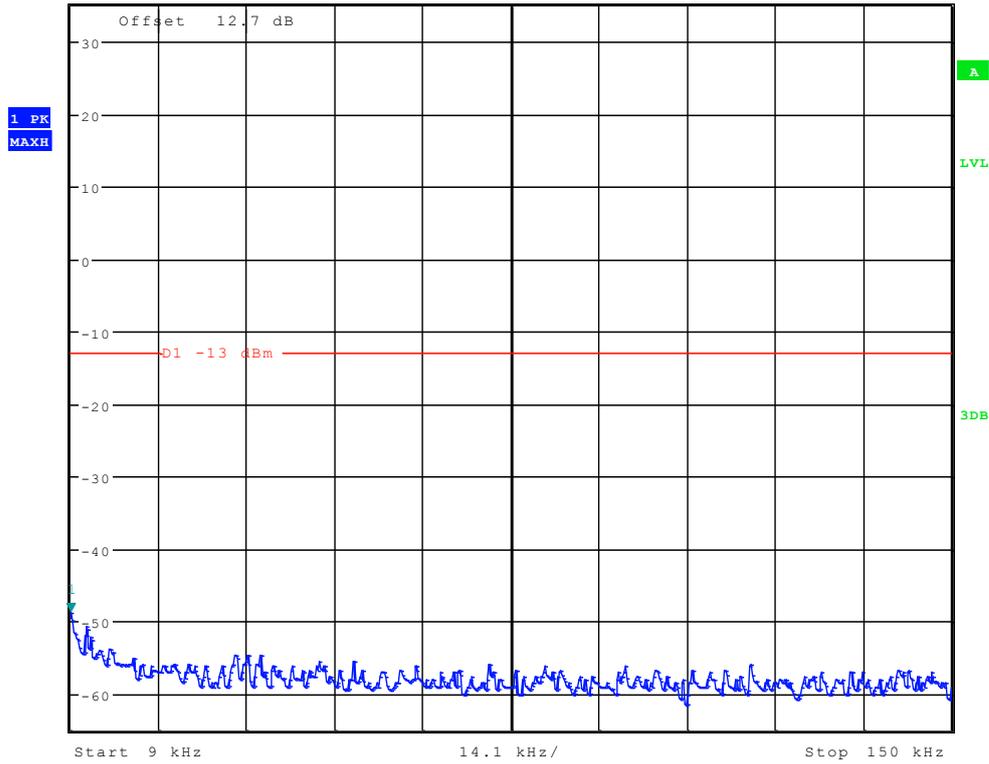
According to FCC Part 2.1051 & Part24 Subpart E



# TM1:GPRS/GSM Channel 512



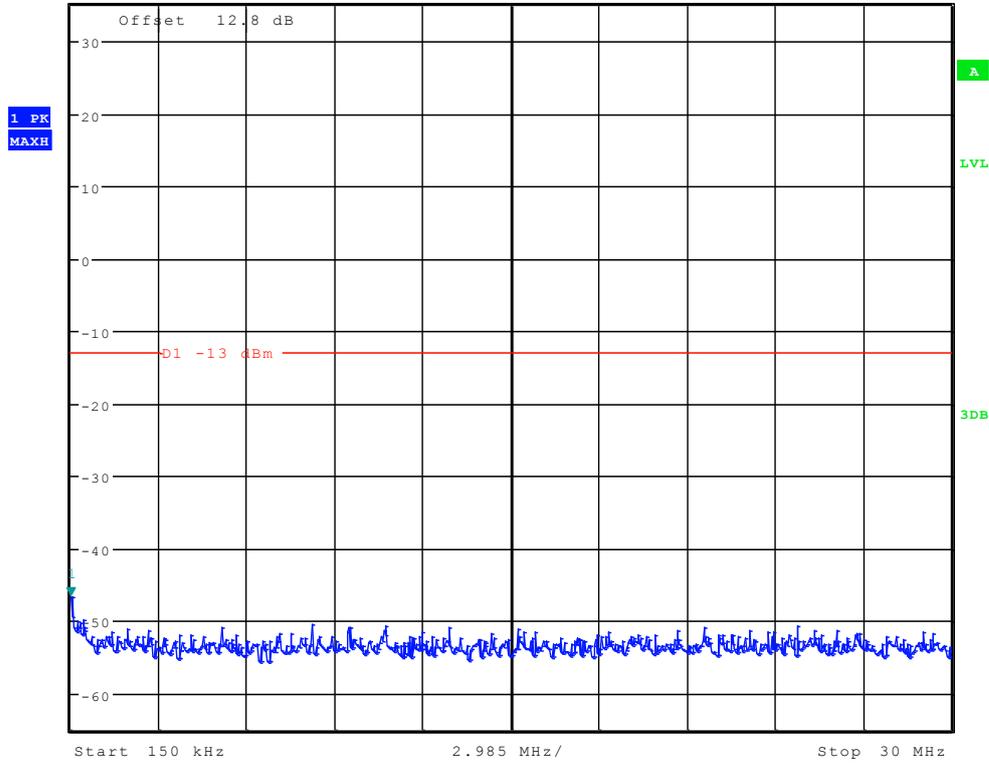
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -48.76 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      9.000000000 kHz



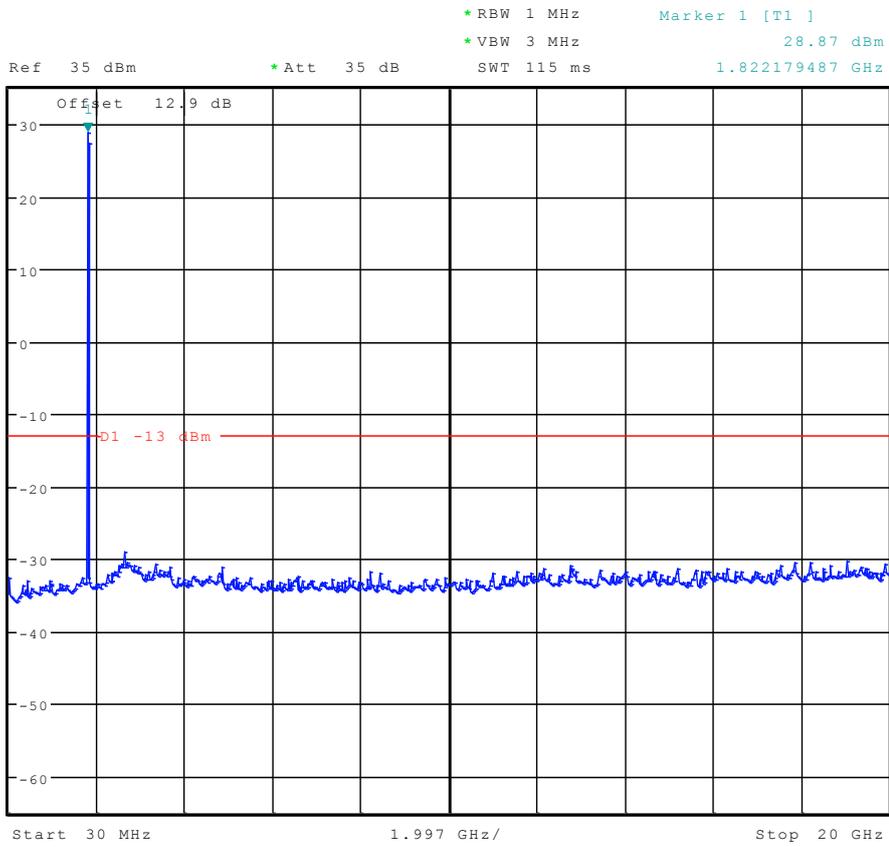
Date: 29.AUG.2012 10:17:42



Ref 35 dBm \* Att 35 dB \* RBW 10 kHz \* VBW 30 kHz \* SWT 300 ms Marker 1 [T1 ]  
-46.53 dBm  
150.00000000 kHz



Date: 29.AUG.2012 10:18:26



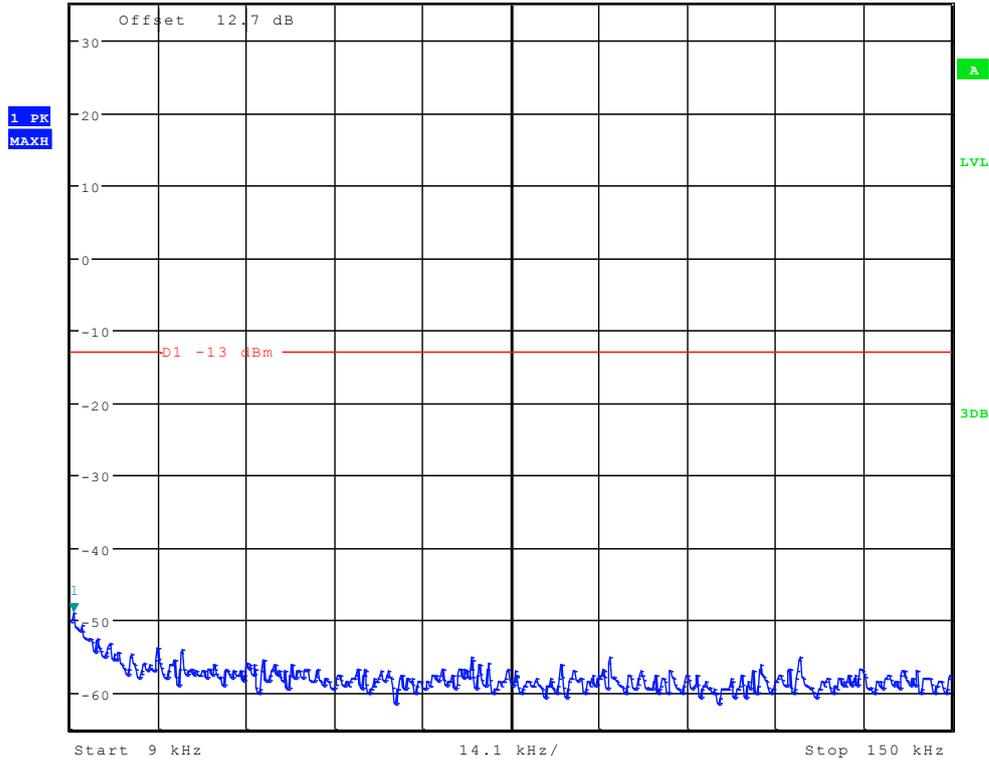
Date: 29.AUG.2012 10:19:10



## Channel 661



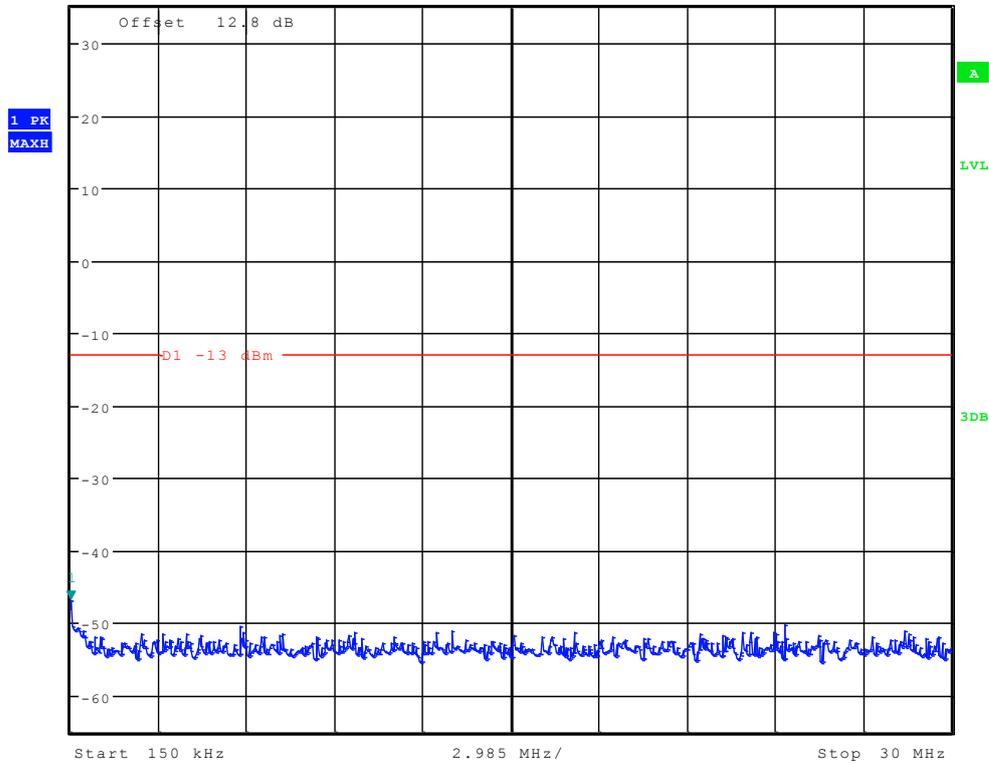
Ref 35 dBm      \* Att 35 dB      SWT 145 ms      Marker 1 [T1]      -48.96 dBm  
 \* RBW 1 kHz      \* VBW 10 kHz      9.451923077 kHz



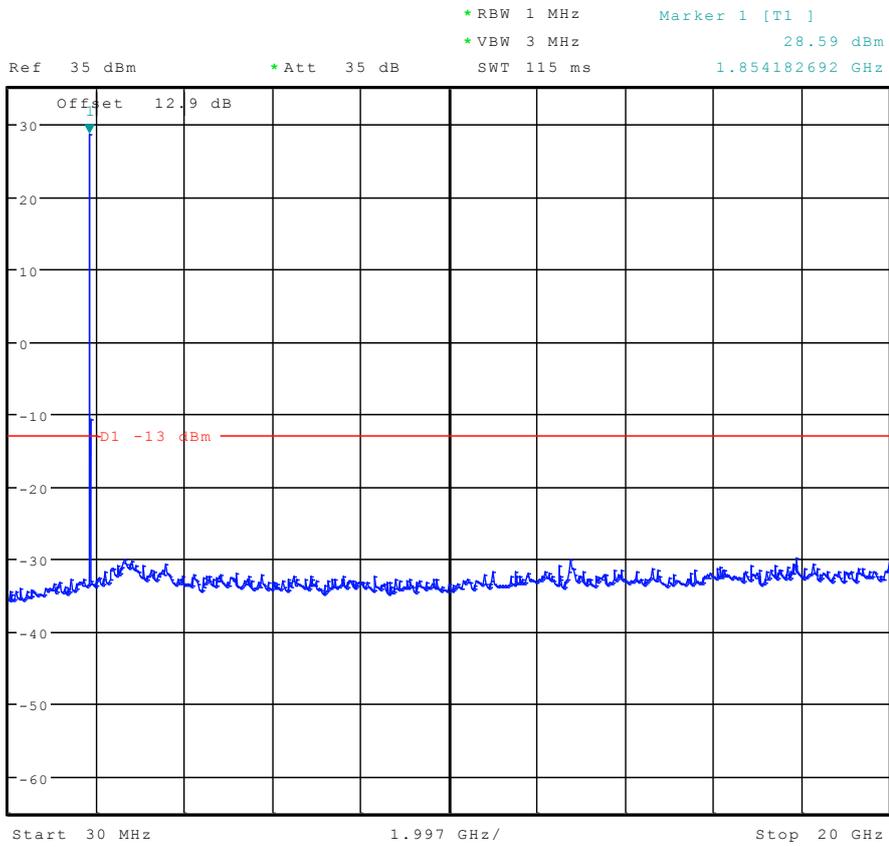
Date: 29.AUG.2012 10:17:56



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.86 dBm  
Ref 35 dBm      \* Att 35 dB      SWT 300 ms      150.00000000 kHz



Date: 29.AUG.2012 10:18:40



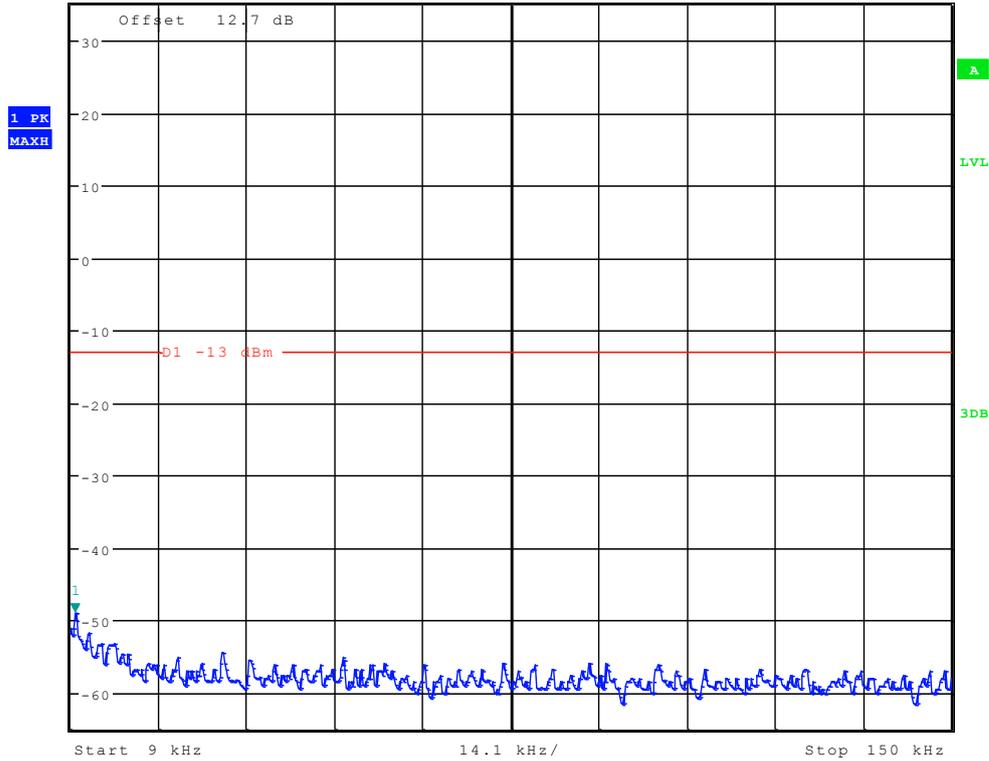
Date: 29.AUG.2012 10:19:24



# Channel 810



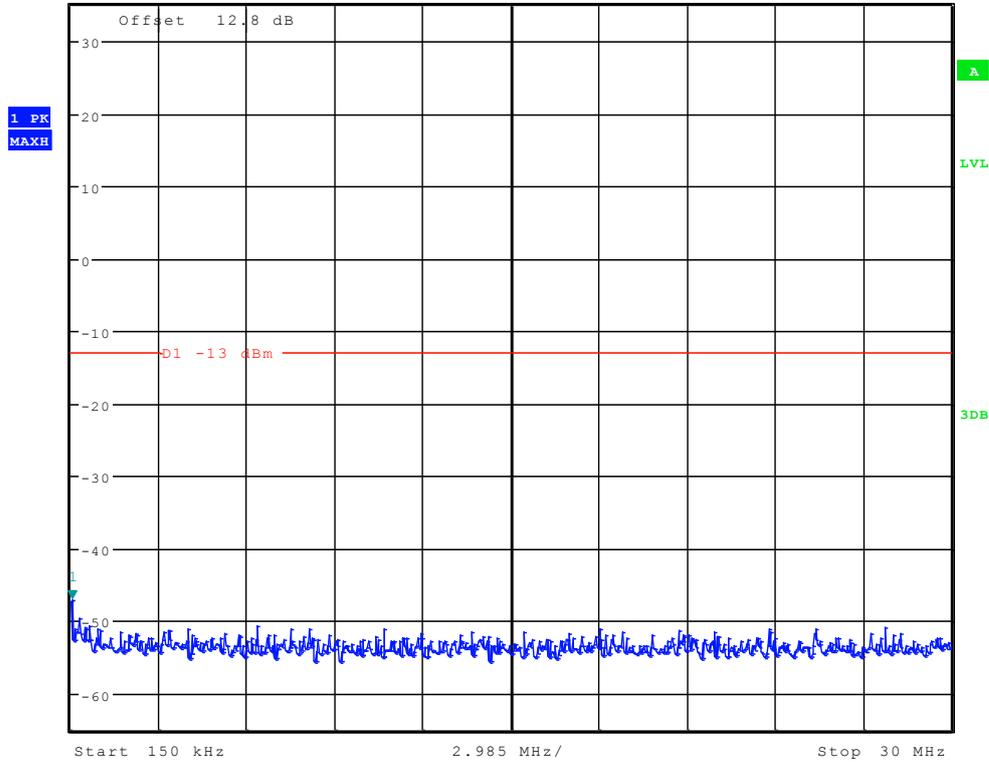
Ref 35 dBm      \* Att 35 dB      SWT 145 ms      Marker 1 [T1]      -48.96 dBm  
\* RBW 1 kHz      \* VBW 10 kHz      9.677884615 kHz



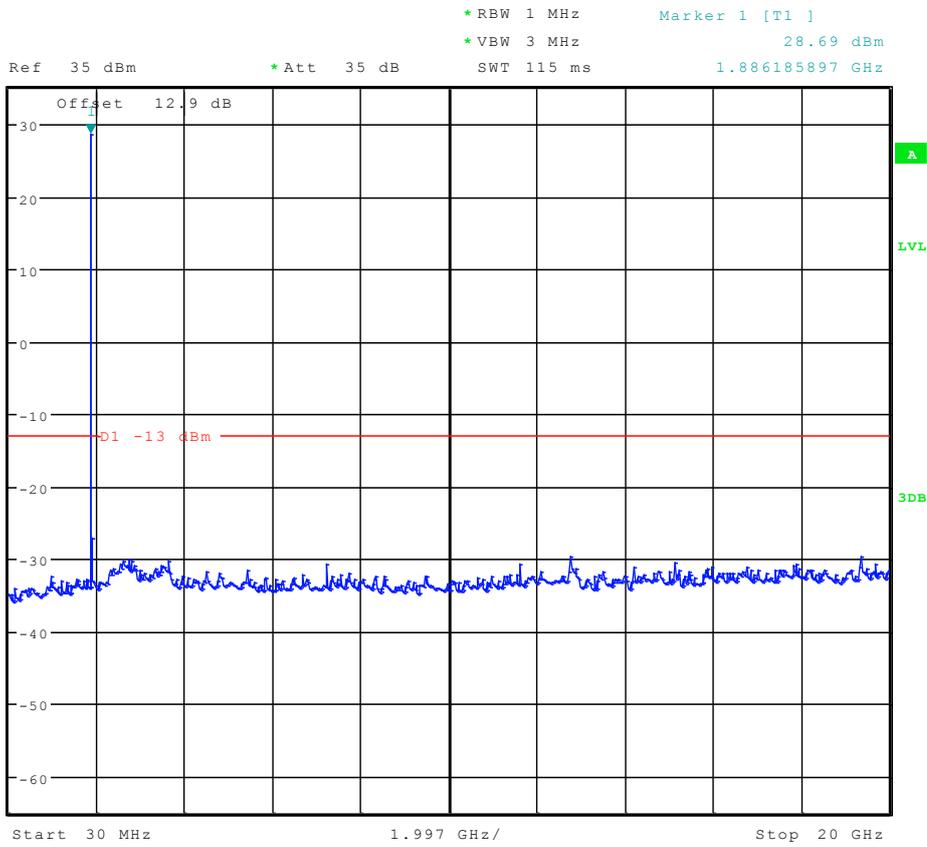
Date: 29.AUG.2012 10:18:11



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.03 dBm  
Ref 35 dBm      \* Att 35 dB      SWT 300 ms      197.836538462 kHz



Date: 29.AUG.2012 10:18:55



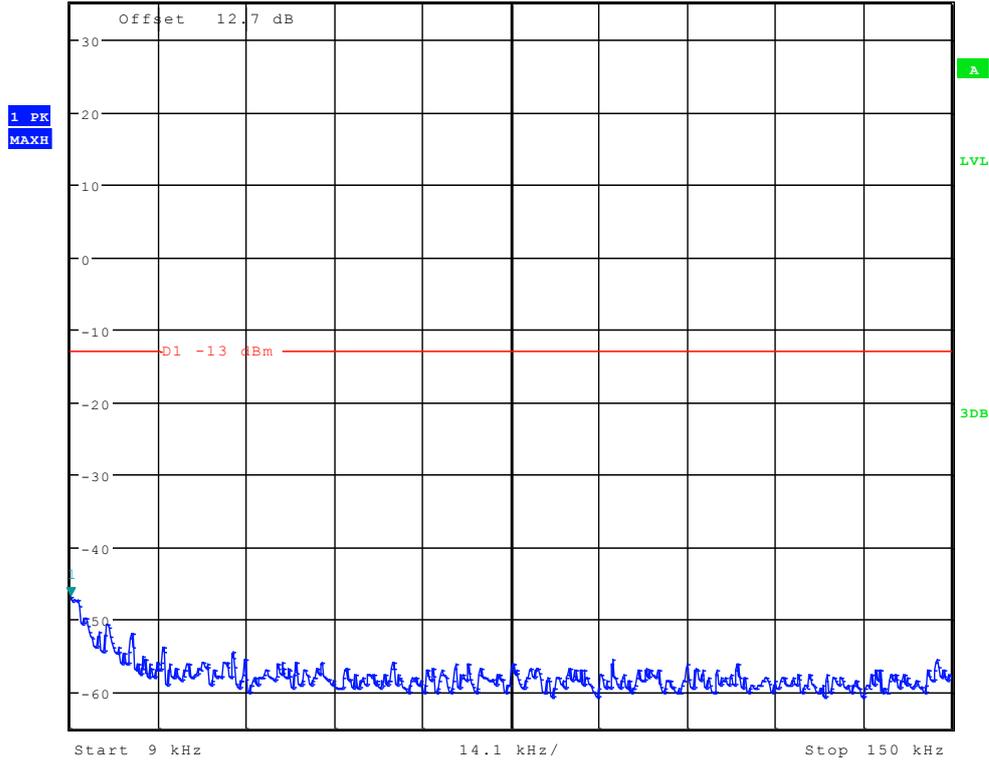
Date: 29.AUG.2012 10:19:38



# TM2:EDGE Channel 512



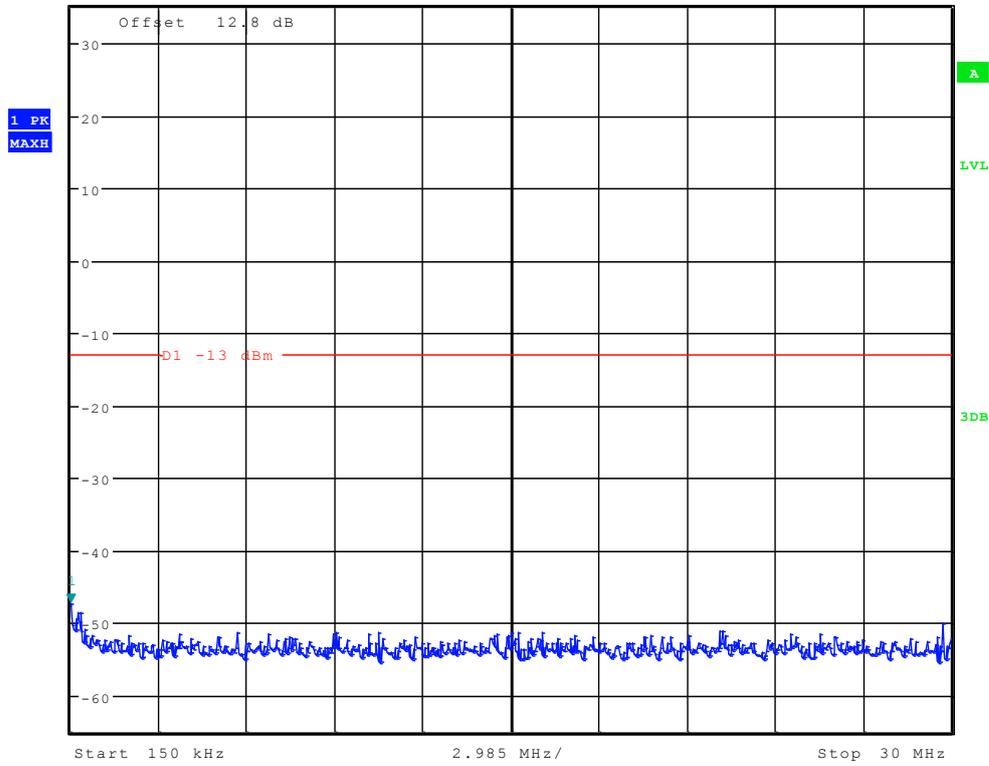
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -46.79 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      9.000000000 kHz



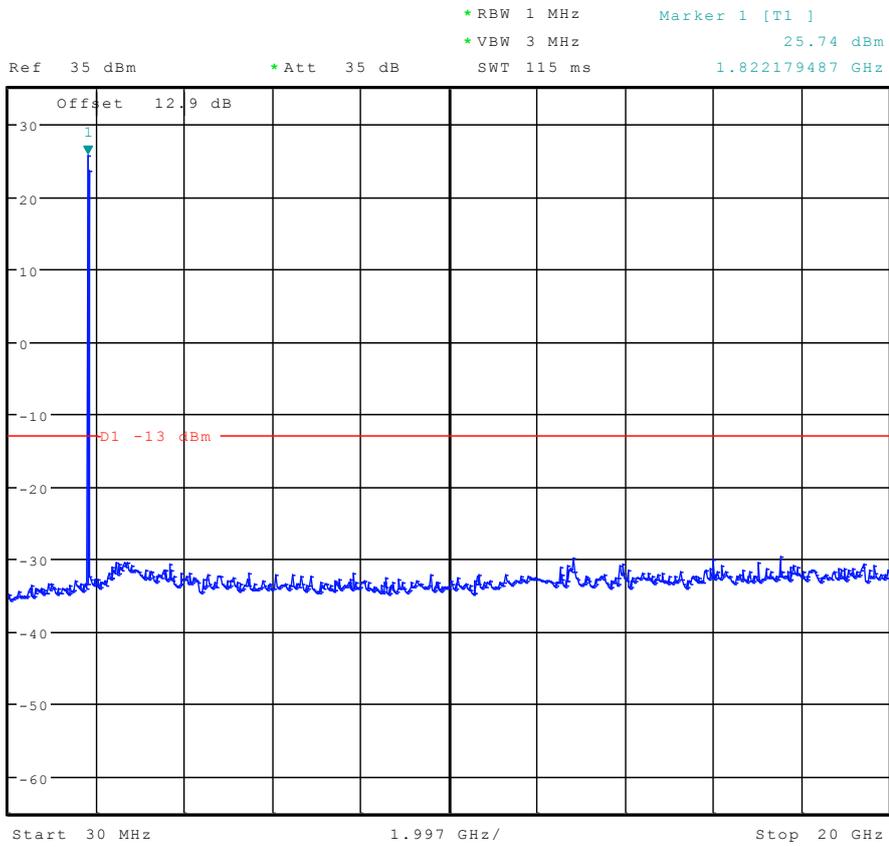
Date: 29.AUG.2012 10:32:05



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.32 dBm  
Ref 35 dBm      \* Att 35 dB      SWT 300 ms      150.00000000 kHz



Date: 29.AUG.2012 10:32:49



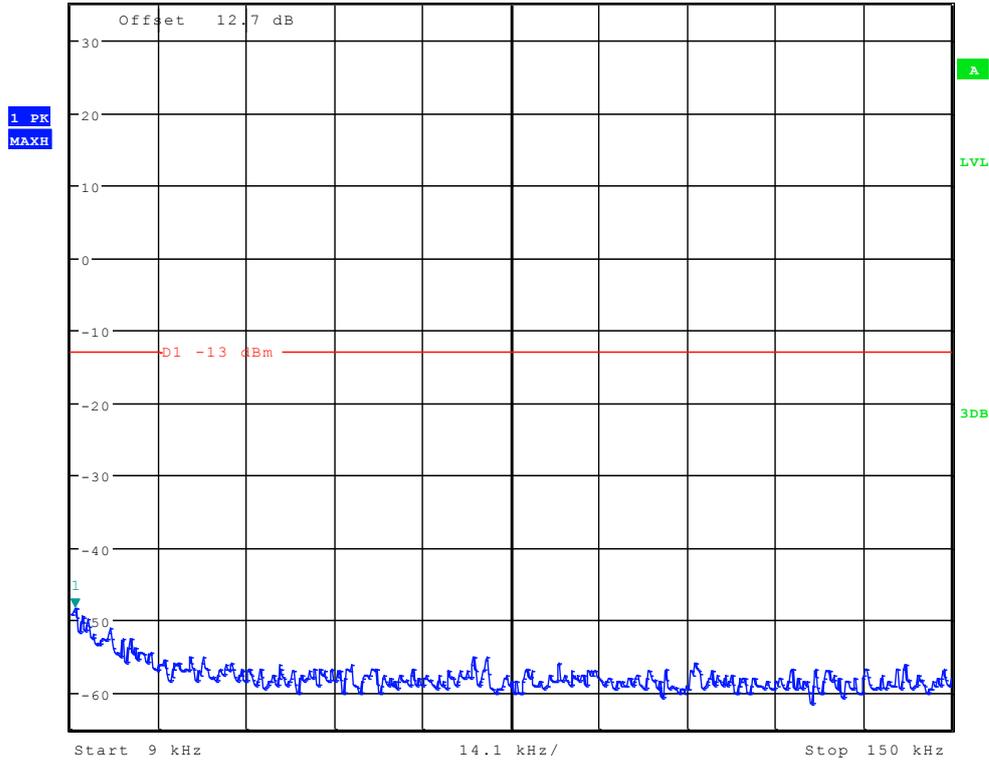
Date: 29.AUG.2012 10:33:33



## Channel 661



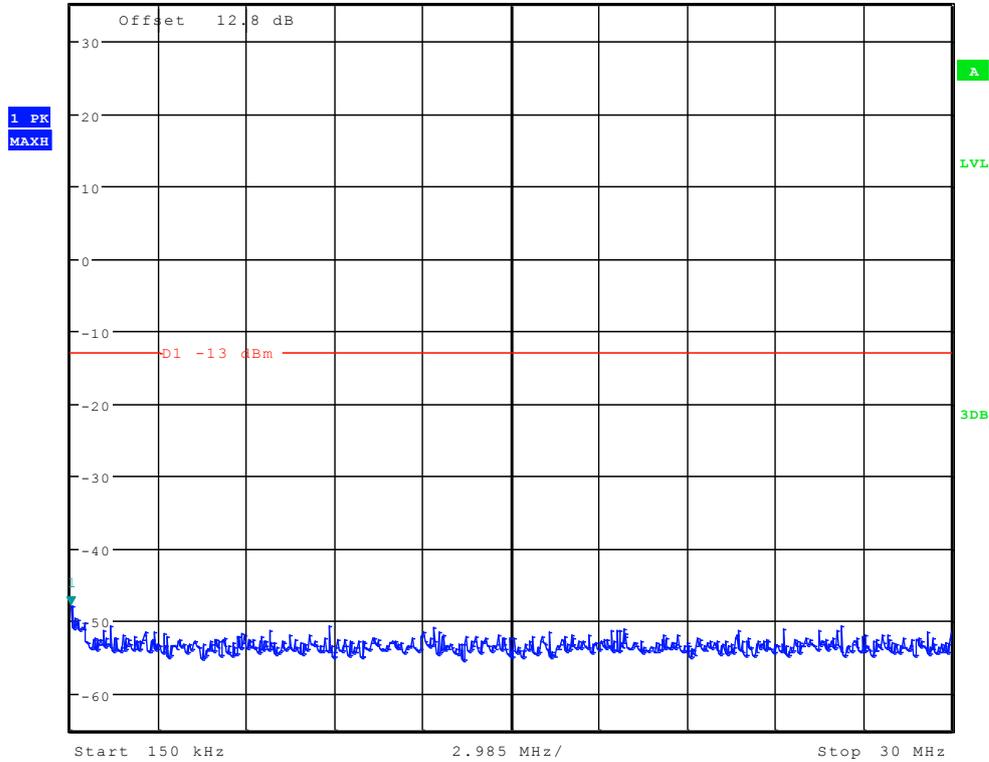
Ref 35 dBm      \* Att 35 dB      SWT 145 ms      Marker 1 [T1]      -48.29 dBm  
\* RBW 1 kHz      \* VBW 10 kHz      9.677884615 kHz



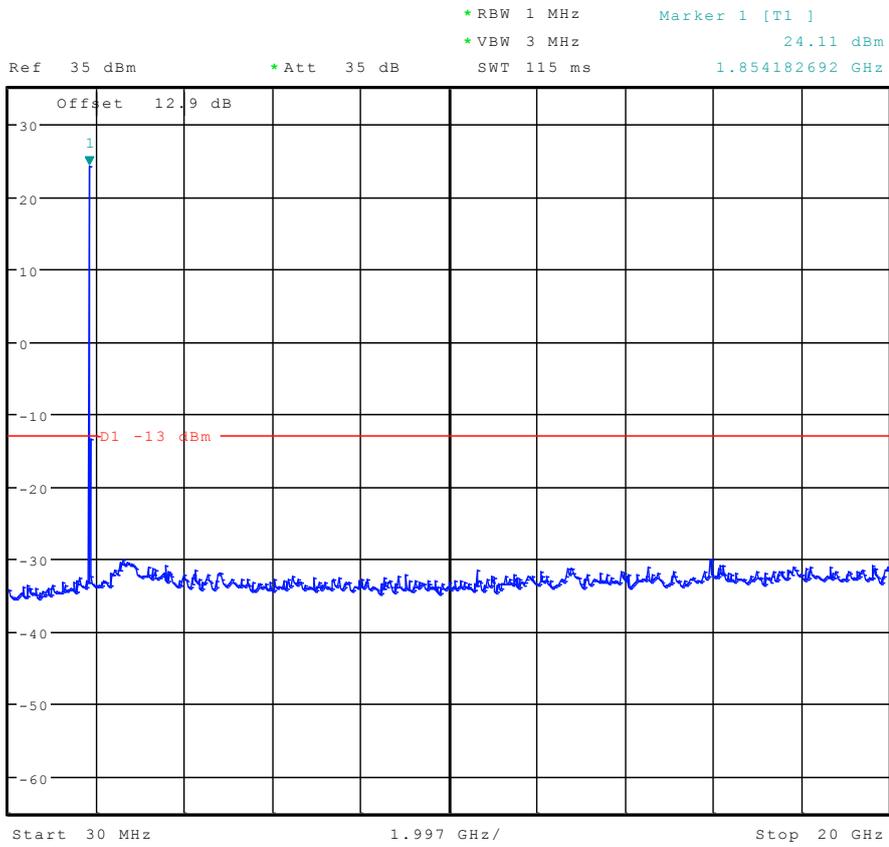
Date: 29.AUG.2012 10:32:20



Ref 35 dBm      \* Att 35 dB      \* RBW 10 kHz      Marker 1 [T1]      \* VBW 30 kHz      -47.80 dBm  
SWT 300 ms      150.00000000 kHz



Date: 29.AUG.2012 10:33:03



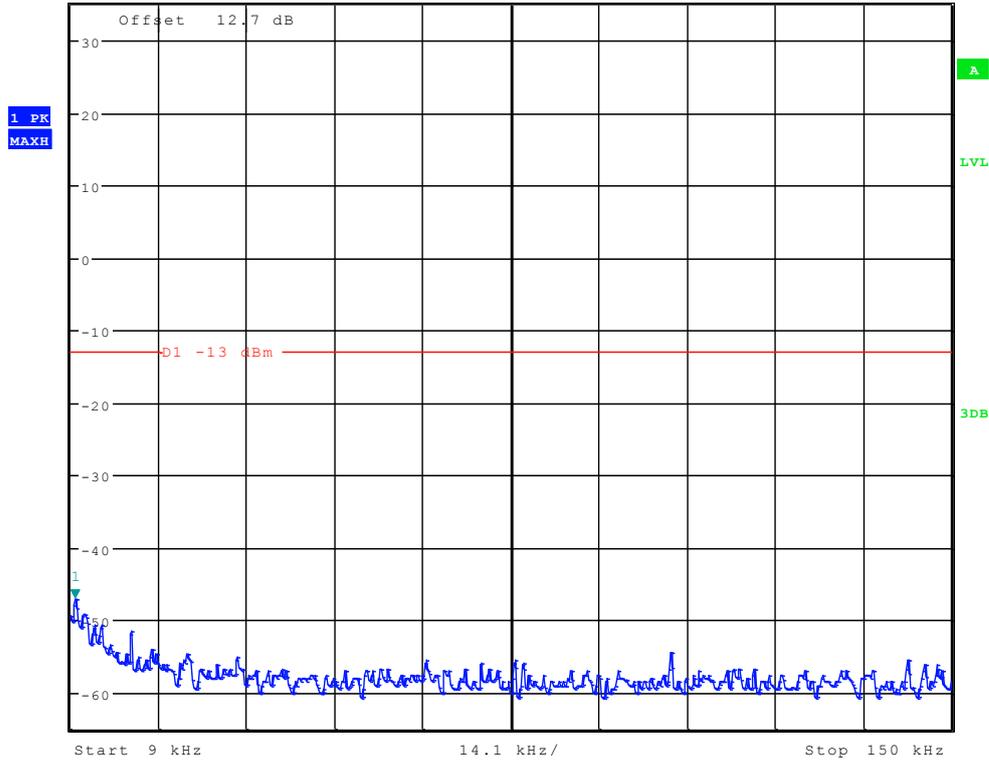
Date: 29.AUG.2012 10:33:47



## Channel 810



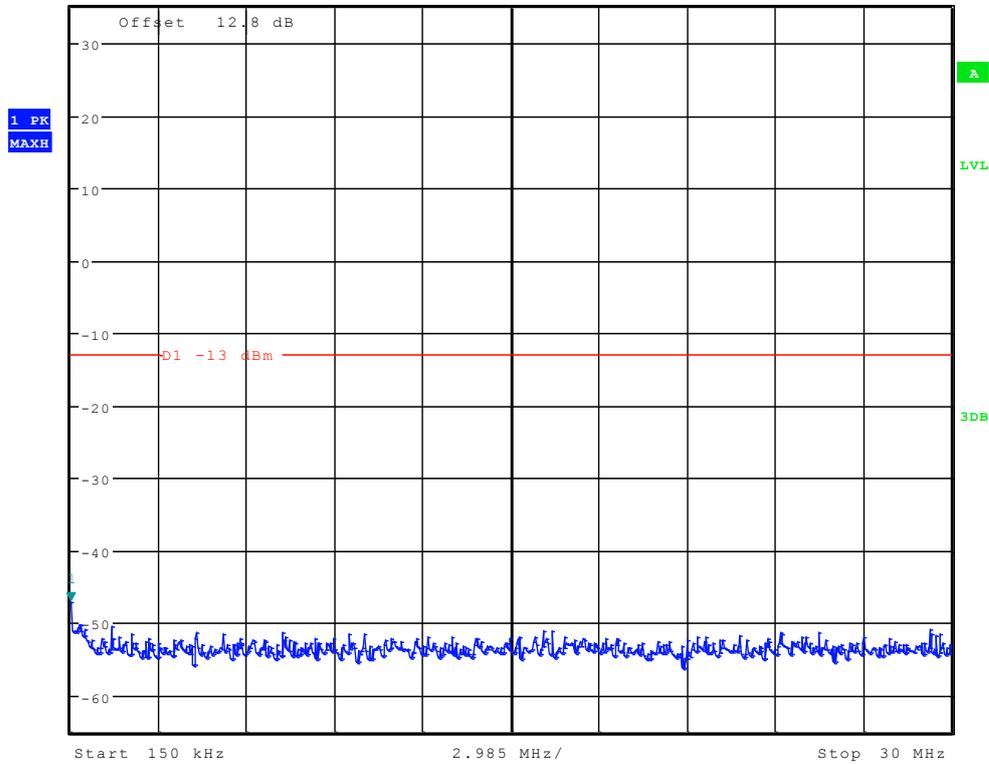
Ref 35 dBm      \* Att 35 dB      SWT 145 ms      \* RBW 1 kHz      Marker 1 [T1]      -46.96 dBm  
\* VBW 10 kHz      9.677884615 kHz



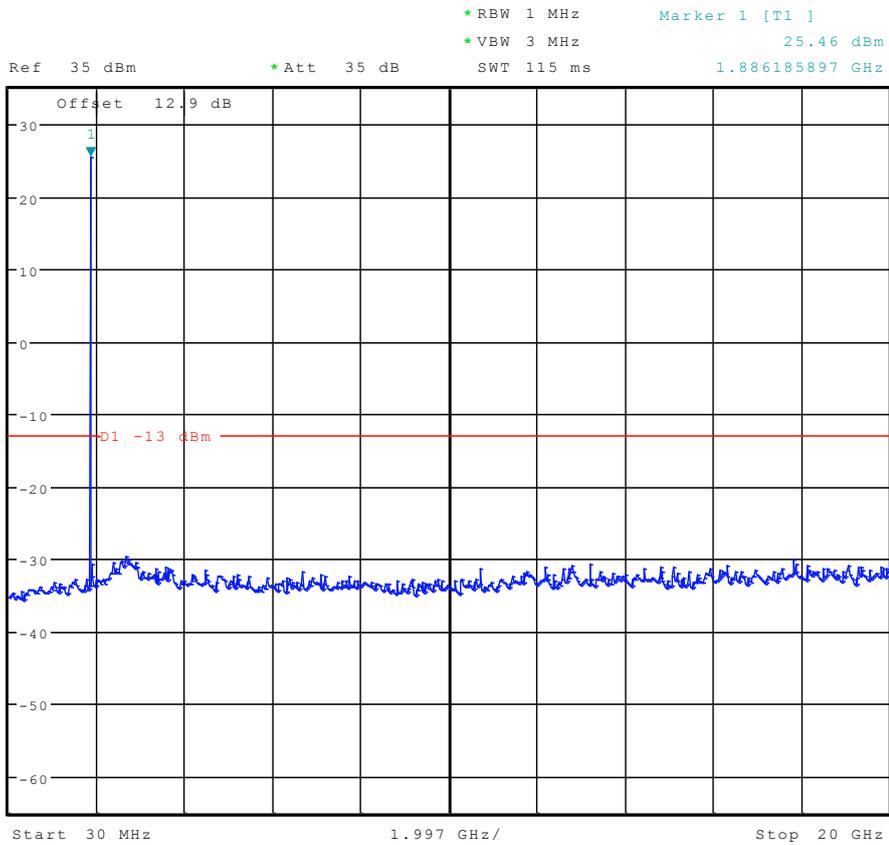
Date: 29.AUG.2012 10:32:34



Ref 35 dBm \* Att 35 dB SWT 300 ms  
\* RBW 10 kHz Marker 1 [T1] -47.14 dBm  
\* VBW 30 kHz 150.00000000 kHz



Date: 29.AUG.2012 10:33:18



Date: 29.AUG.2012 10:34:02

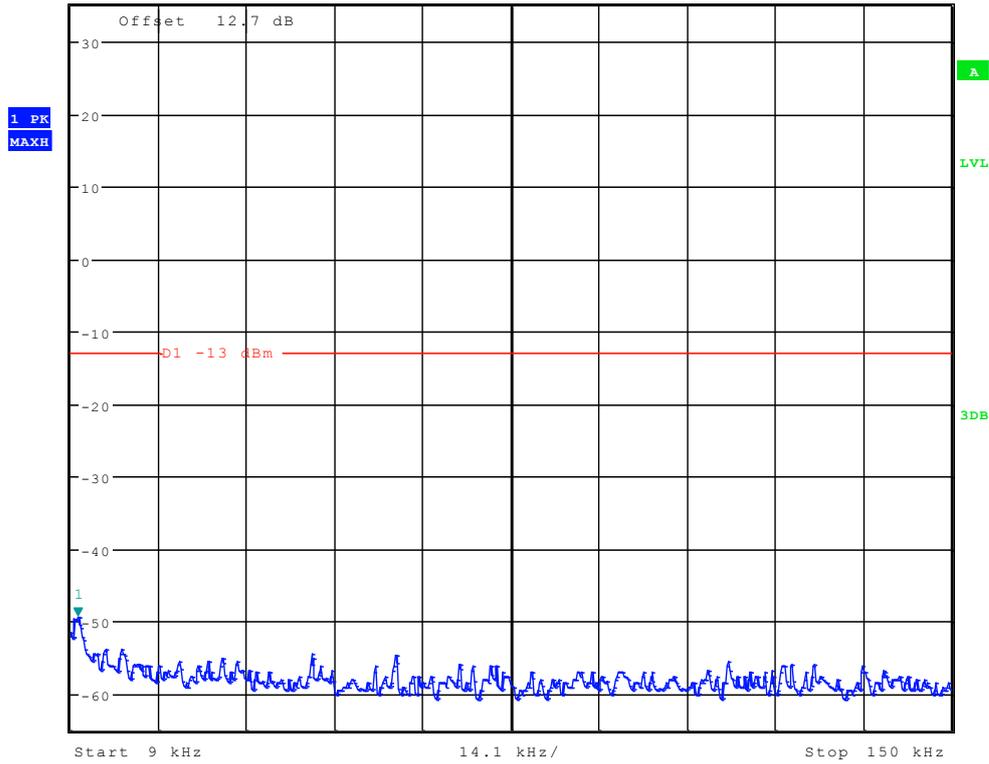


# TM3: WCDMA

## Channel 9262



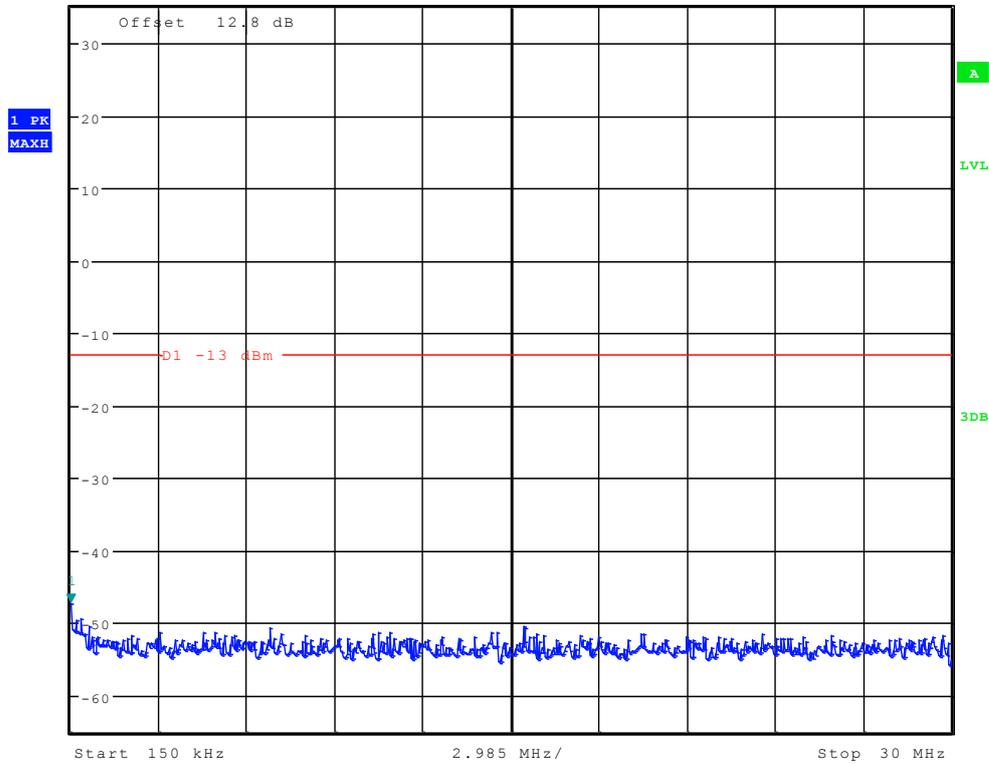
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -49.32 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      10.129807692 kHz



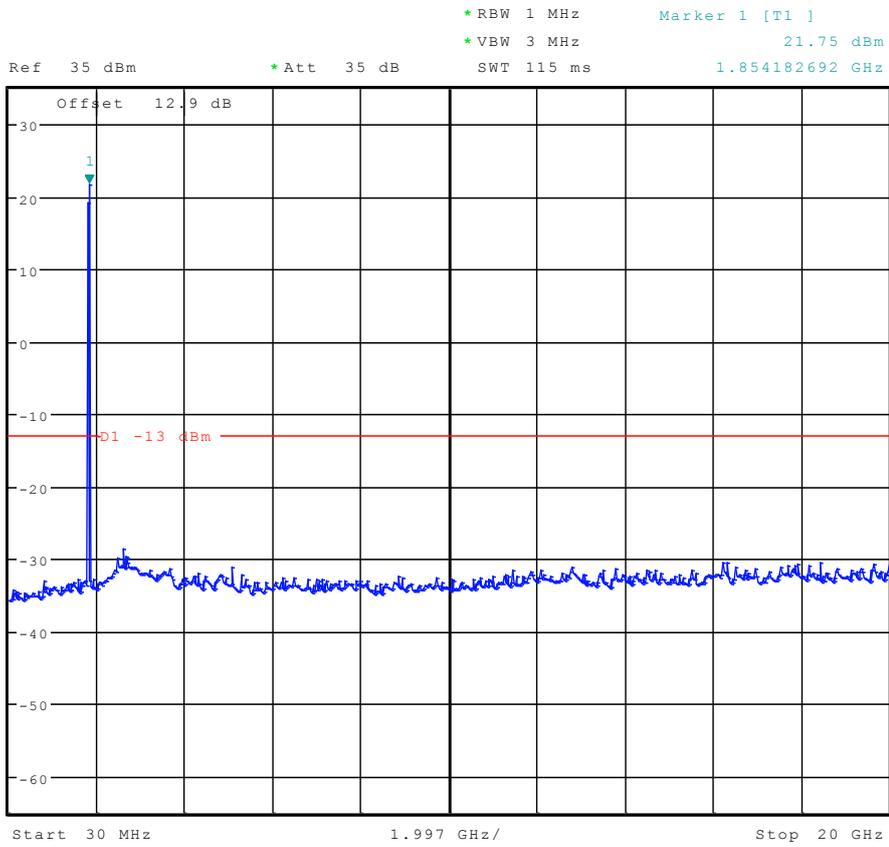
Date: 29.AUG.2012 10:36:47



Ref 35 dBm \* Att 35 dB \* RBW 10 kHz Marker 1 [T1 ]  
\* VBW 30 kHz -47.32 dBm  
SWT 300 ms 150.00000000 kHz



Date: 29.AUG.2012 10:37:31



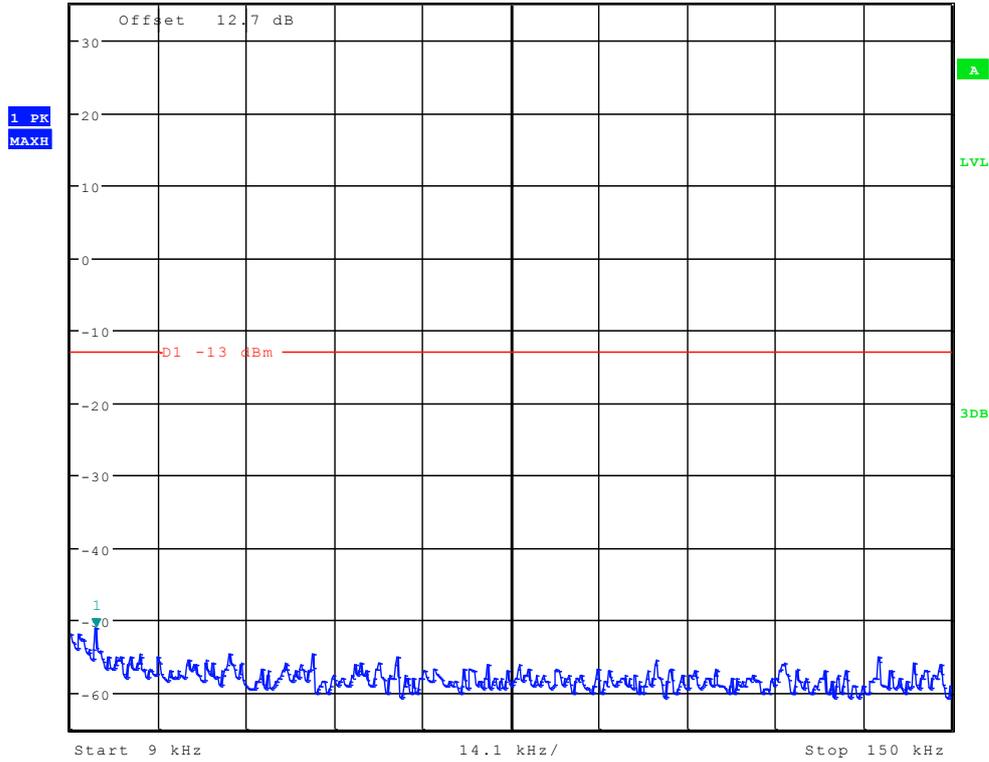
Date: 29.AUG.2012 10:38:14



## Channel 9400



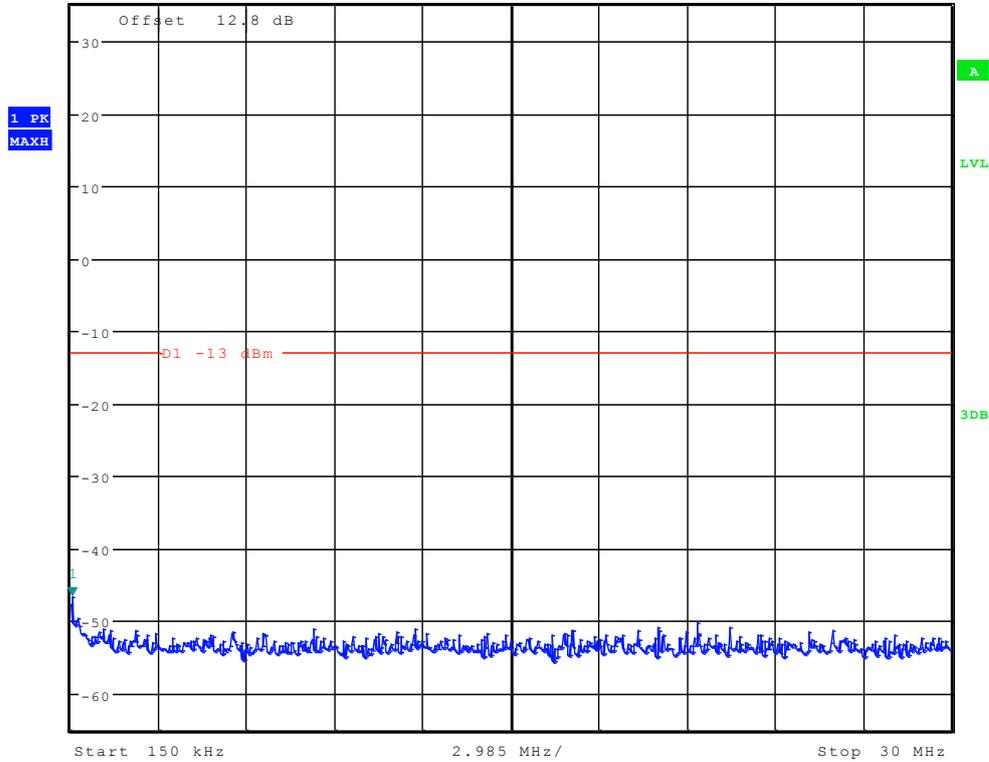
Ref 35 dBm      \* Att 35 dB      \* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -50.94 dBm  
 SWT 145 ms      13.067307692 kHz



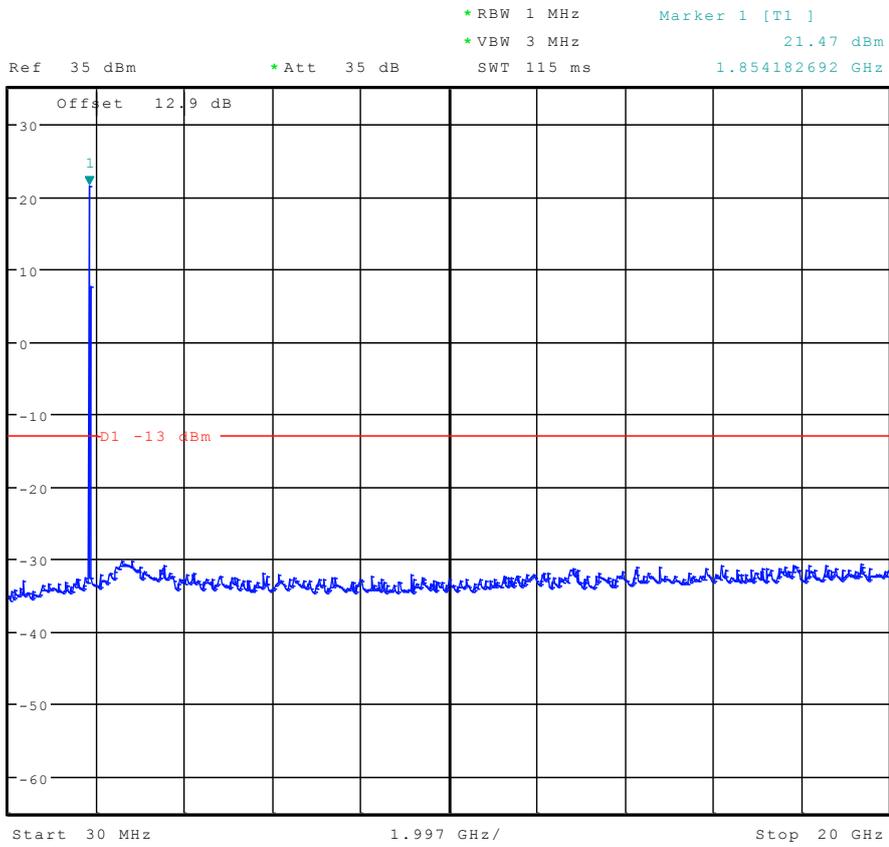
Date: 29.AUG.2012 10:37:01



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



Date: 29.AUG.2012 10:37:45



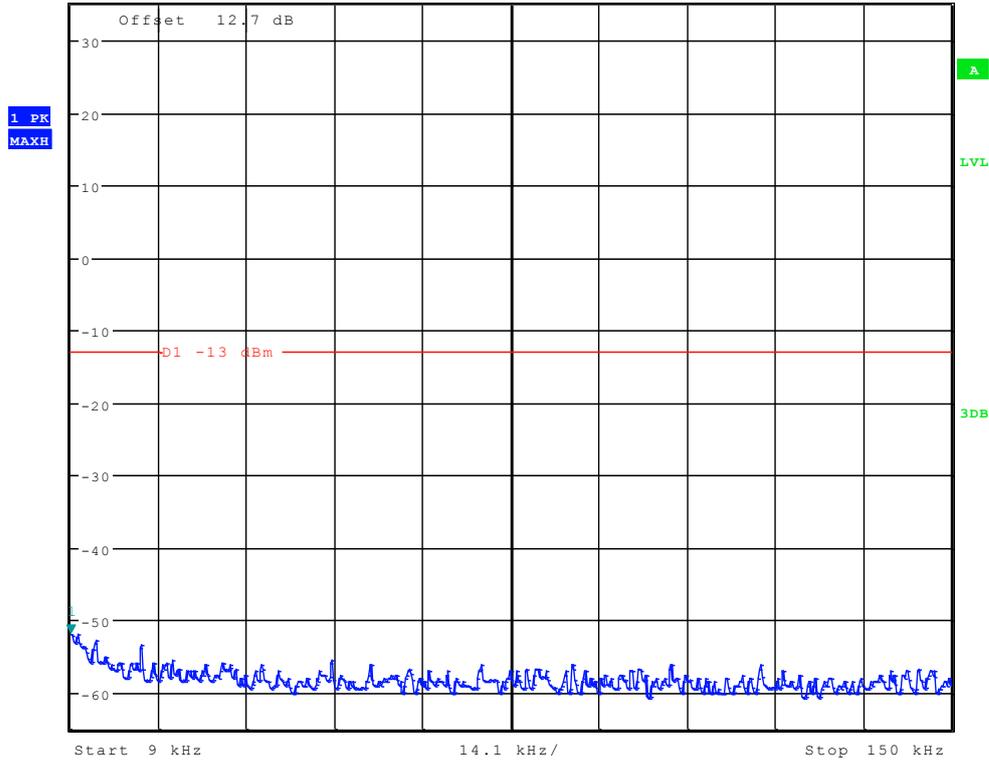
Date: 29.AUG.2012 10:38:29



## Channel 9538



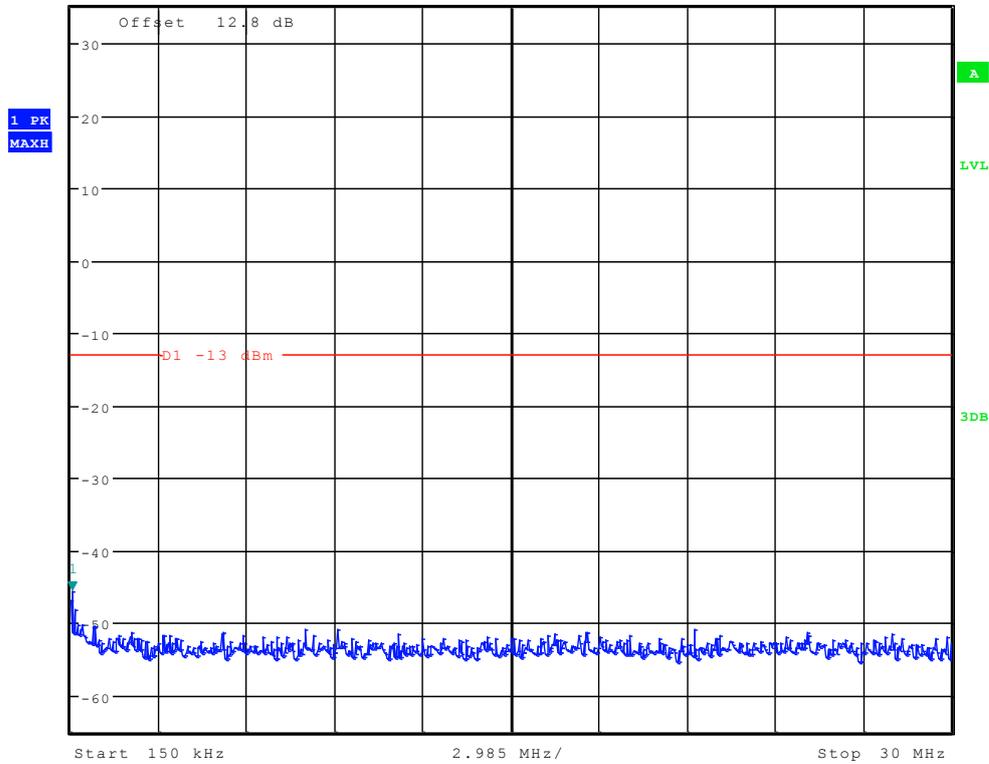
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -51.87 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      9.000000000 kHz



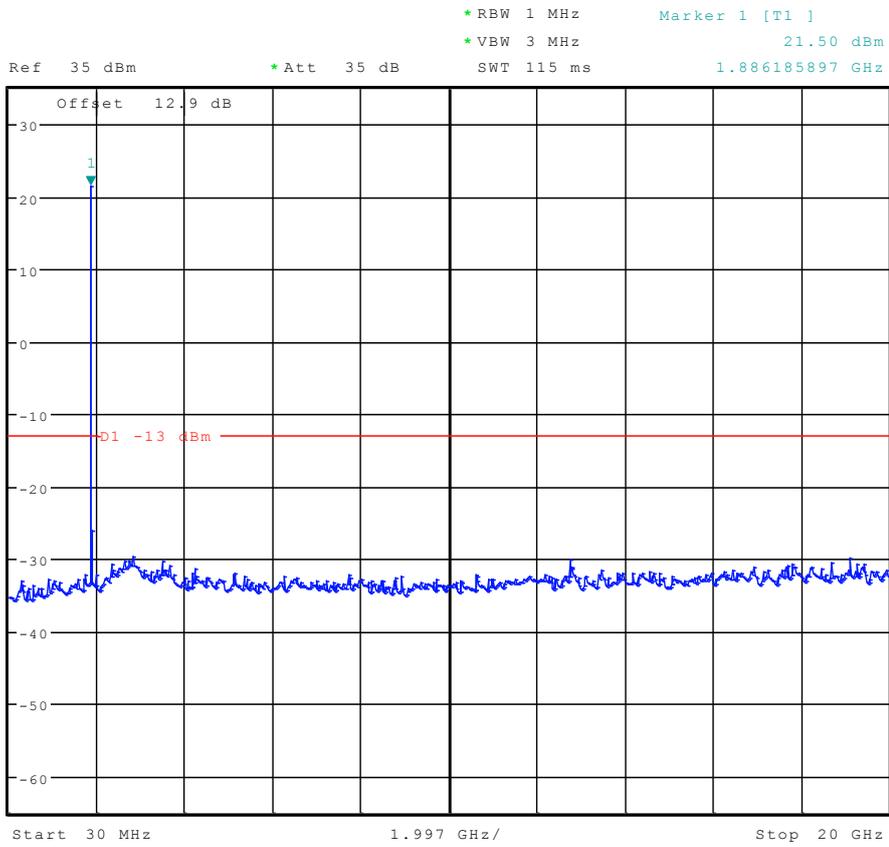
Date: 29.AUG.2012 10:37:16



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -45.61 dBm  
Ref 35 dBm      \* Att 35 dB      SWT 300 ms      197.836538462 kHz



Date: 29.AUG.2012 10:37:59



Date: 29.AUG.2012 10:38:43

-----END-----



# **Appendix F**

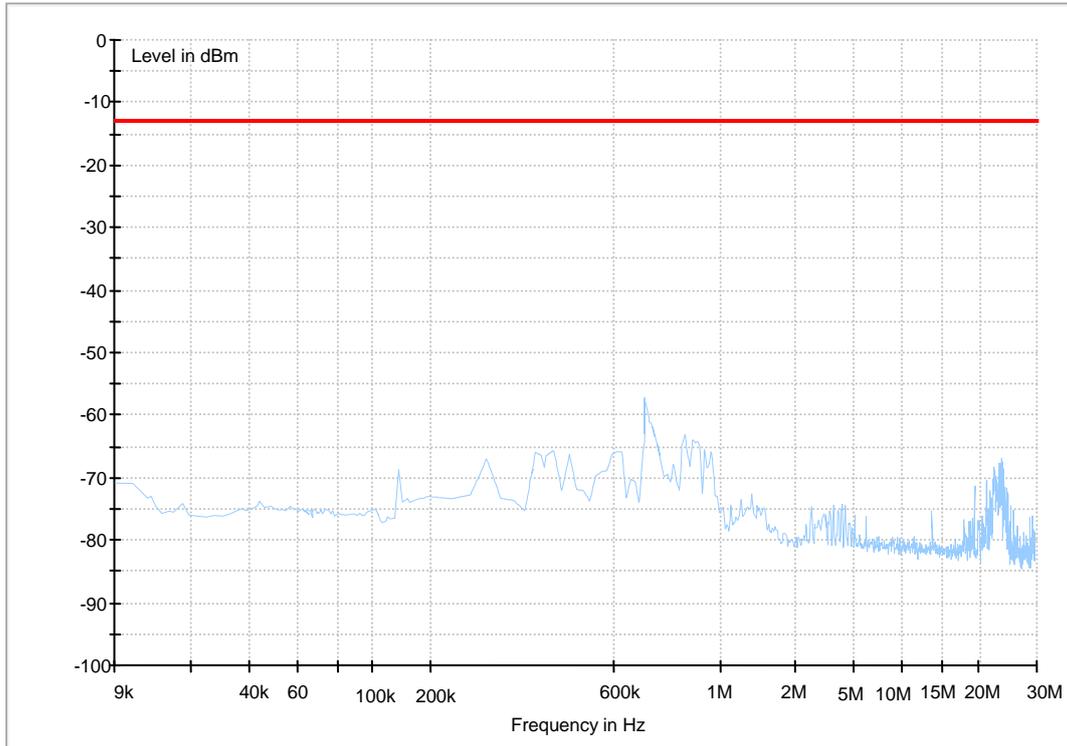
## **Radiated spurious emission**

**According to FCC Part 2.1053& Part 24.238**

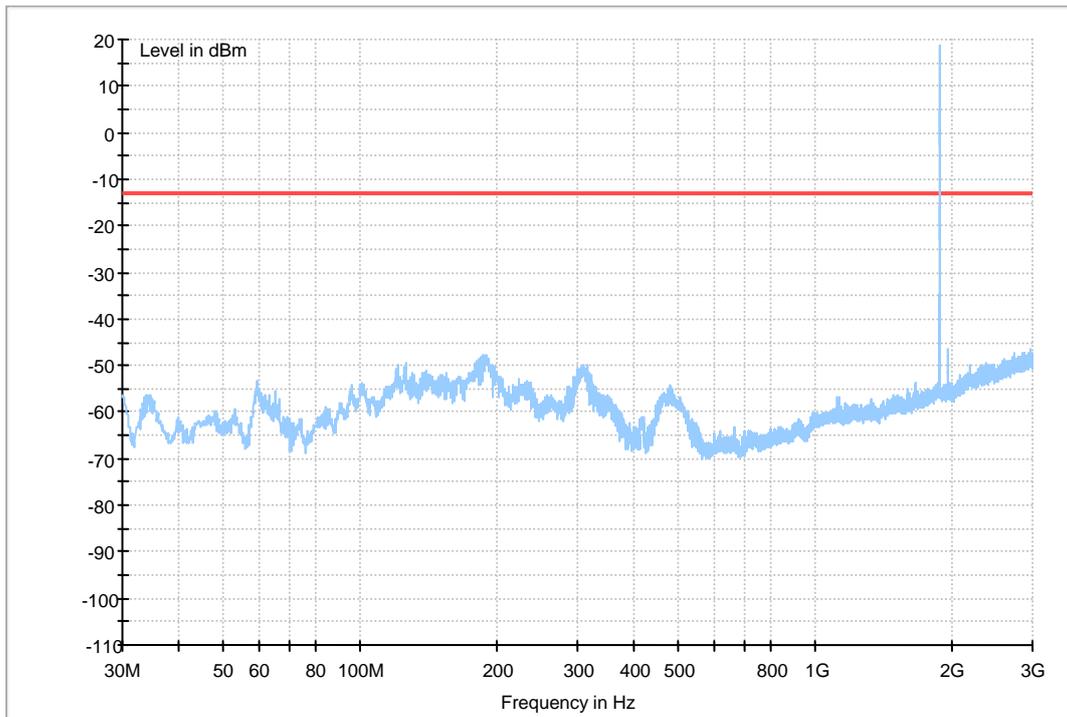


## GPRS 1900

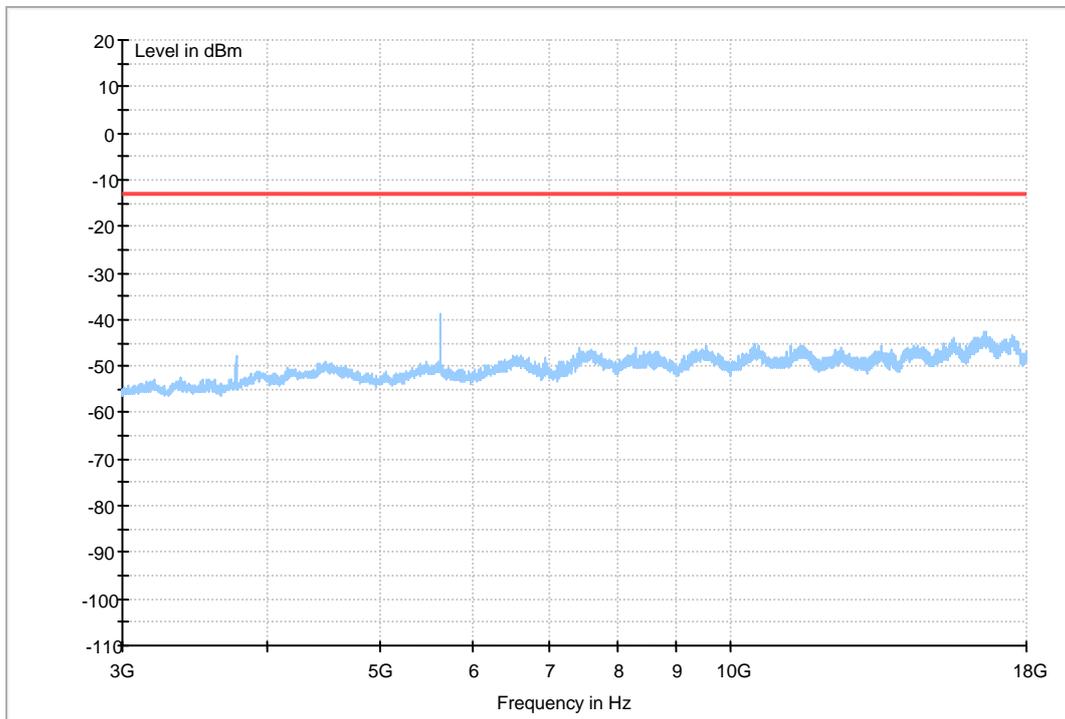
### Traffic Mode (9kHz-30MHz)



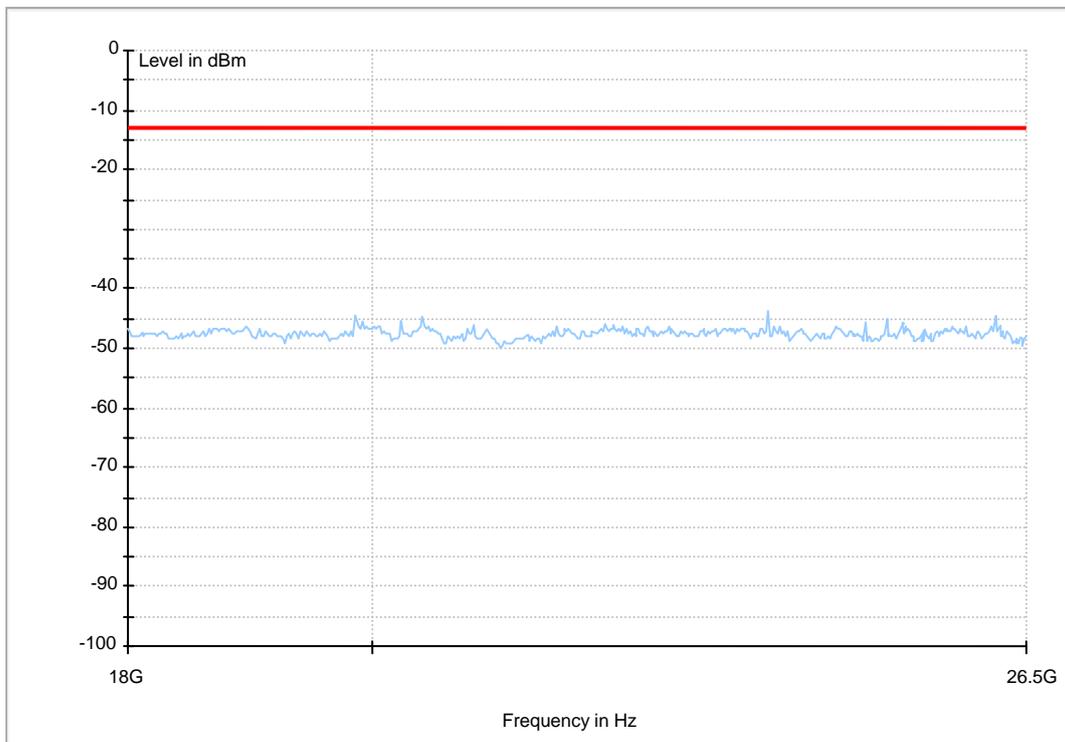
### Traffic Mode (30MHz~3GHz)



### Traffic Mode (3GHz~18GHz)



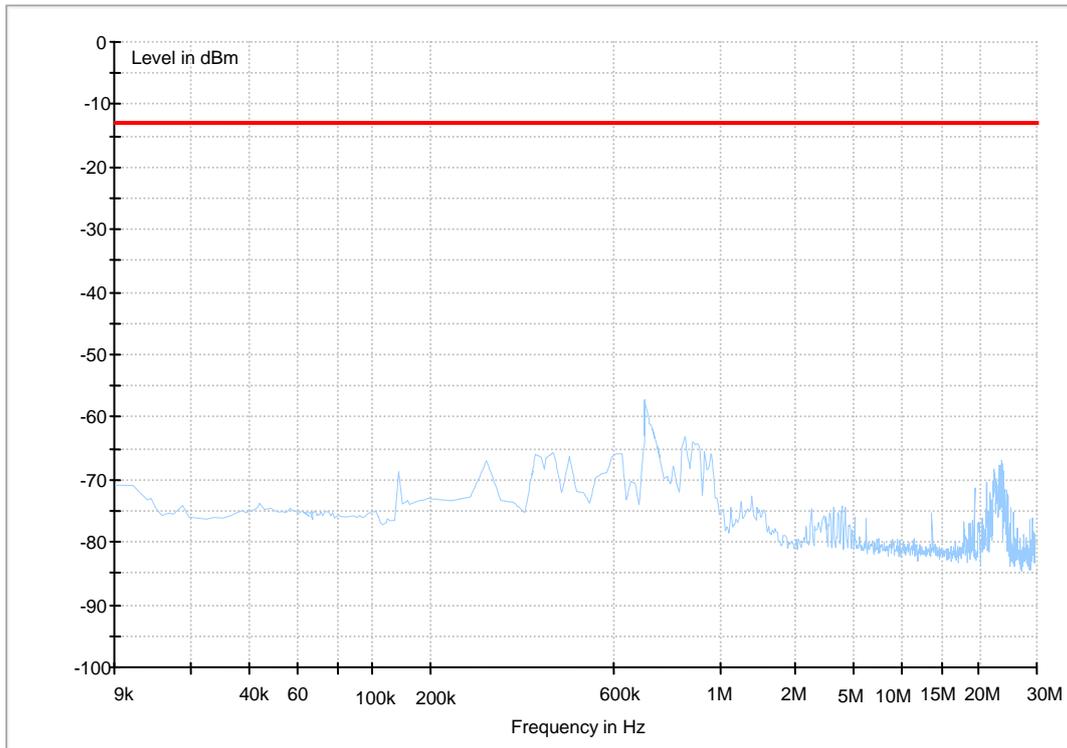
### Traffic Mode (18GHz~26.5GHz)



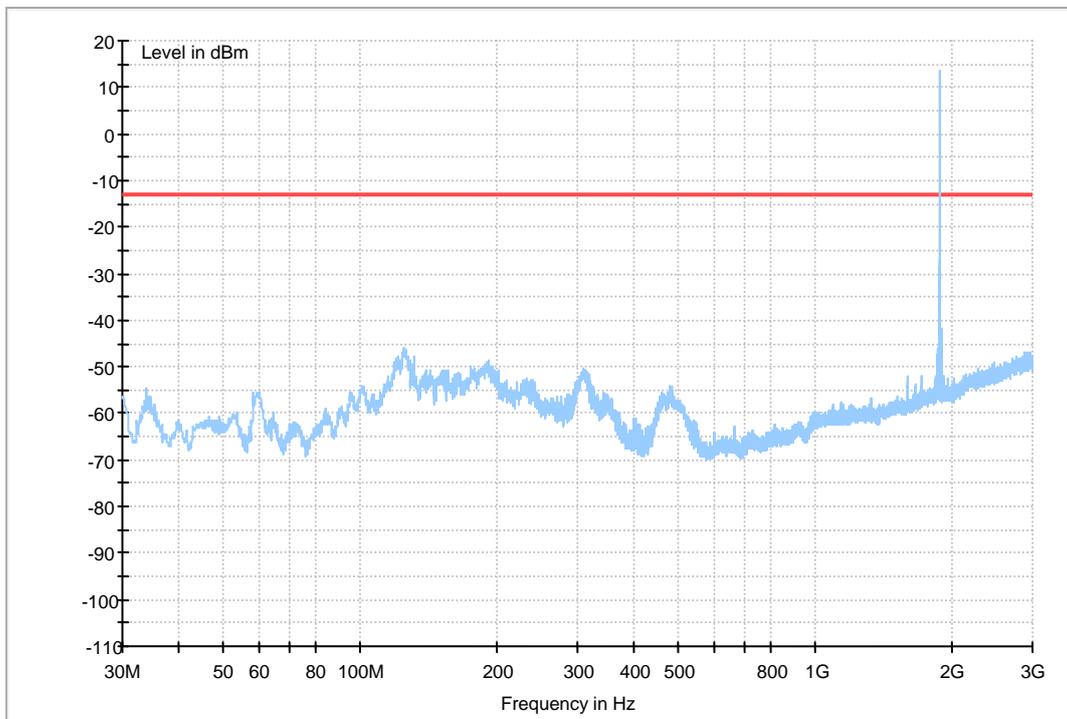


## EDGE 1900

### Traffic Mode (9kHz-30MHz)

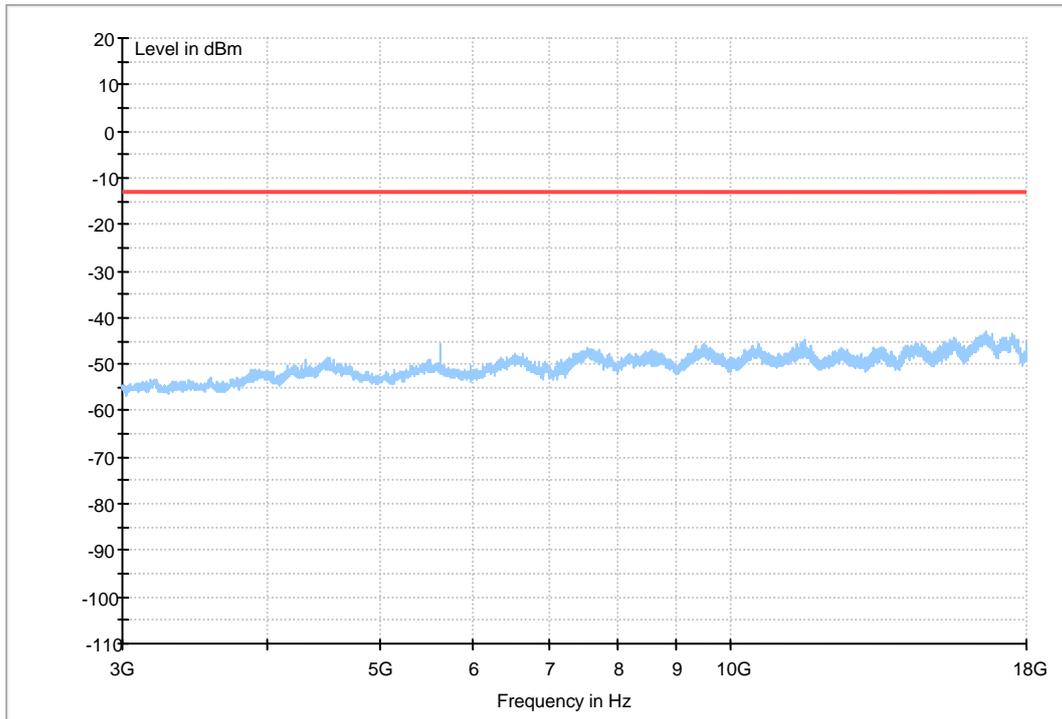


### Traffic Mode (30MHz~3GHz)

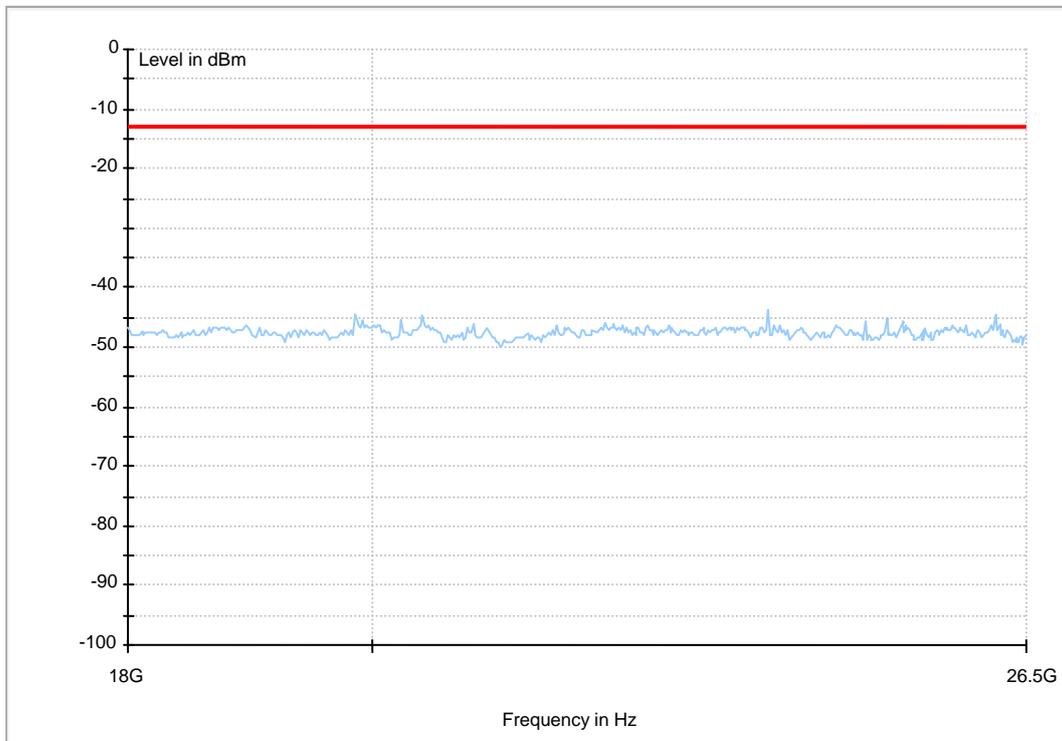




### Traffic Mode (3GHz~18GHz)



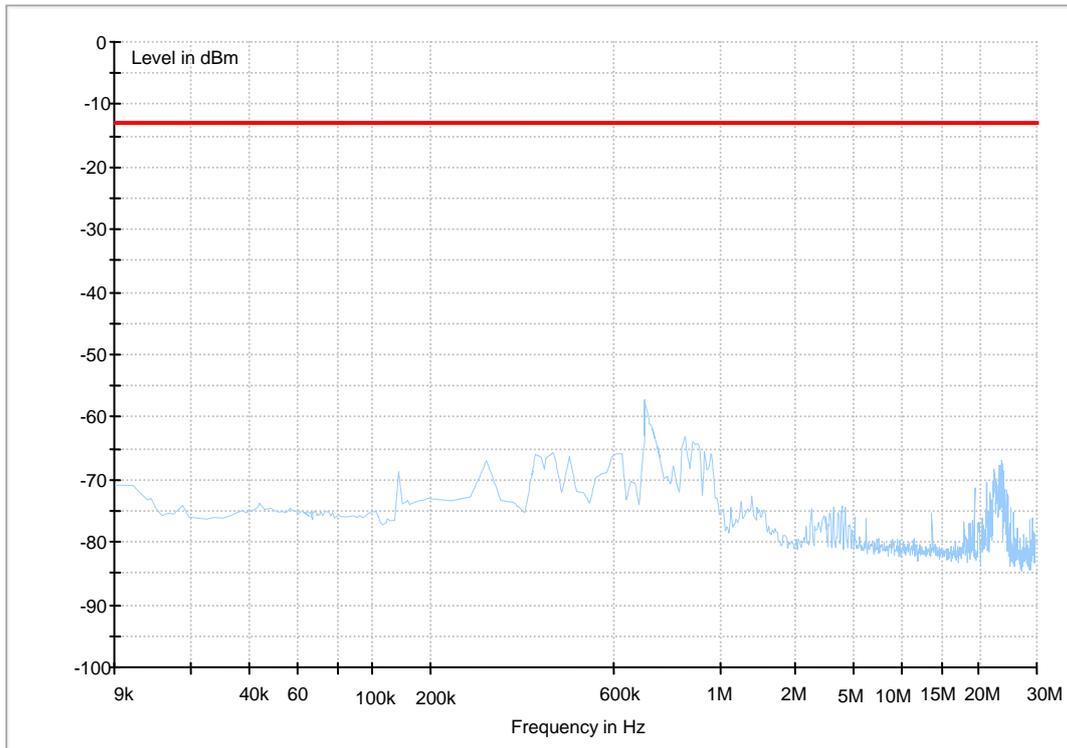
### Traffic Mode (18GHz-26.5GHz)



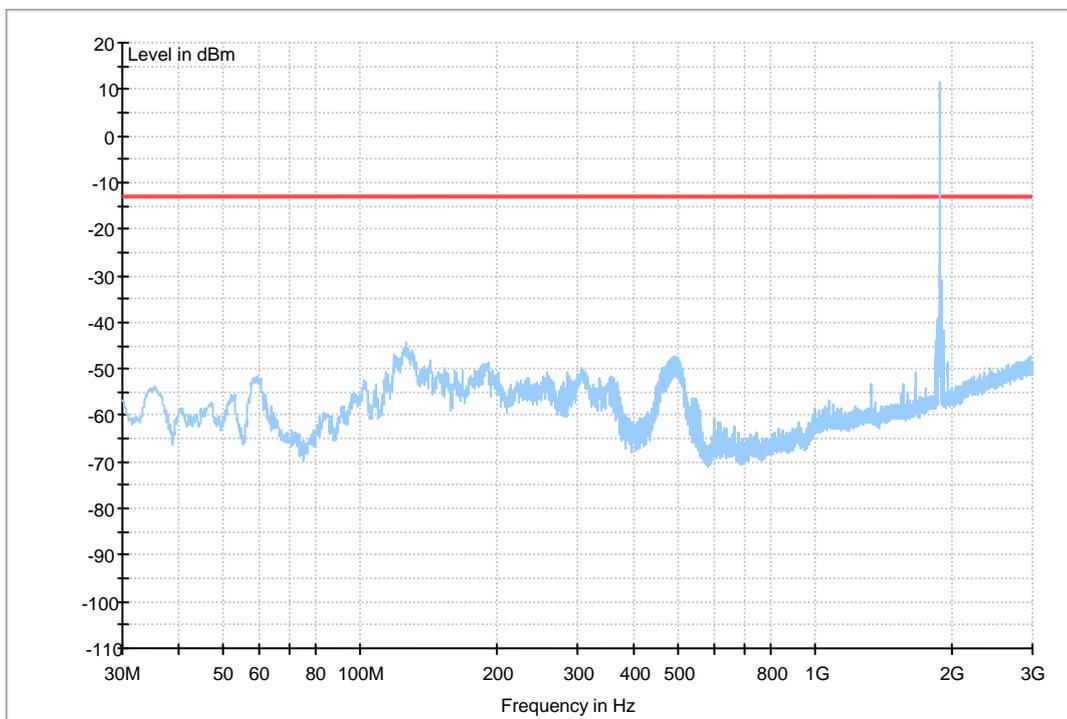


## WCDMA Band II

Traffic Mode (9kHz-30MHz)

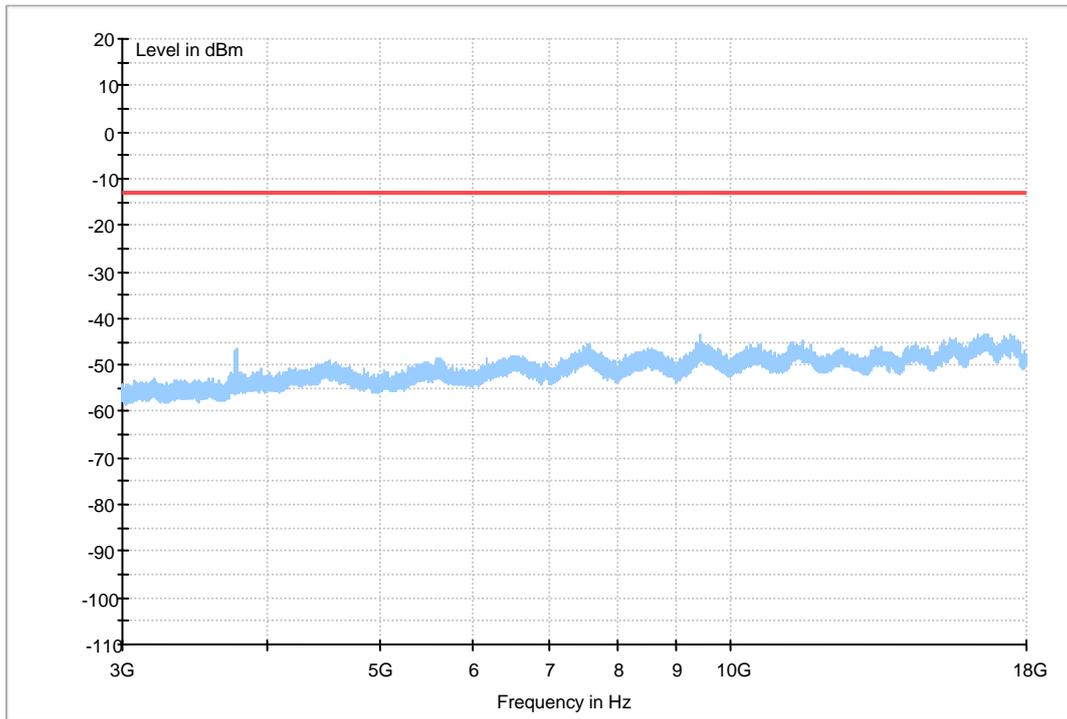


Traffic Mode (30MHz~3GHz)

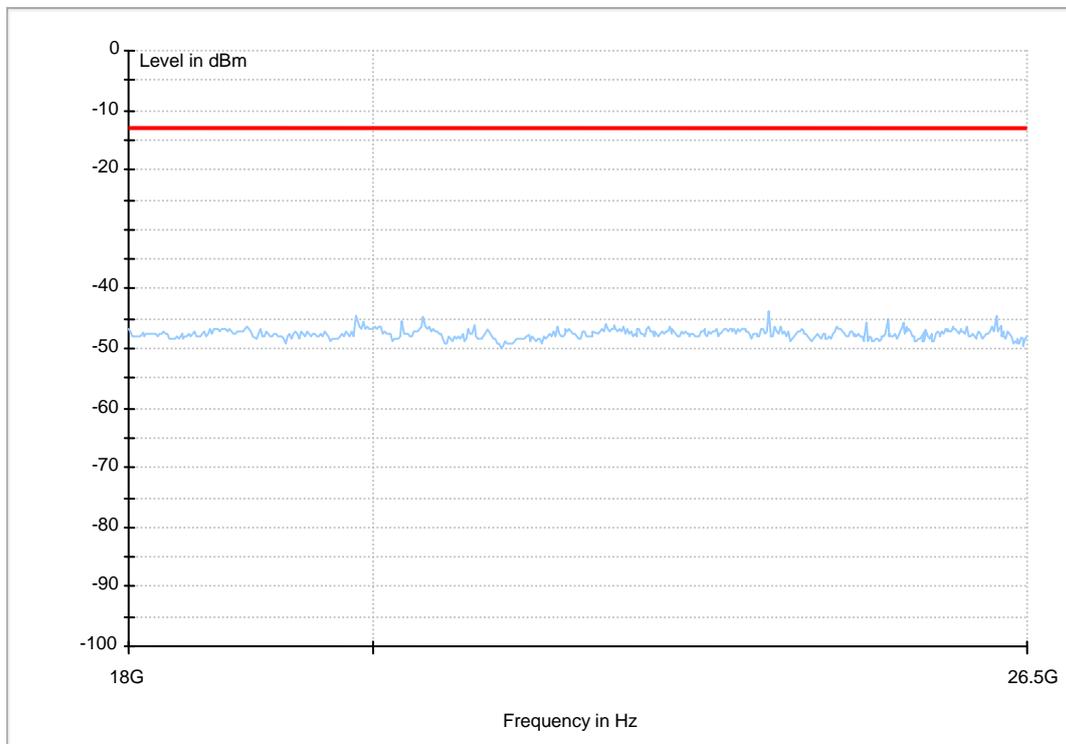




### Traffic Mode (3GHz~18GHz)



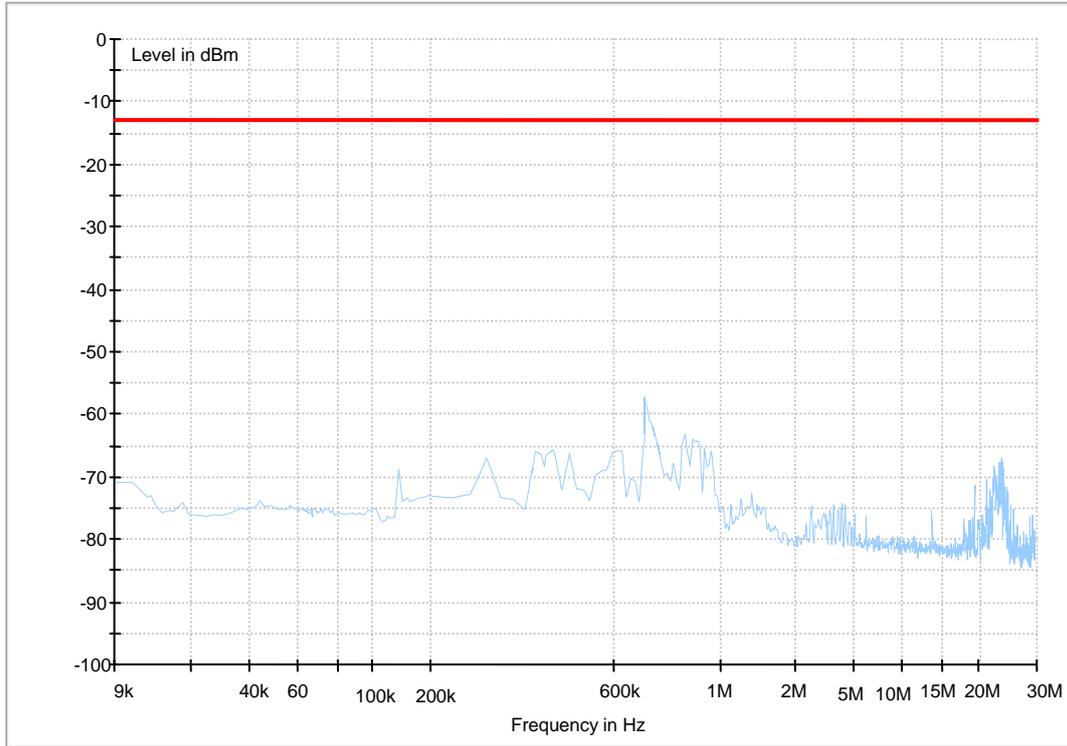
### Traffic Mode (18GHz~26.5GHz)



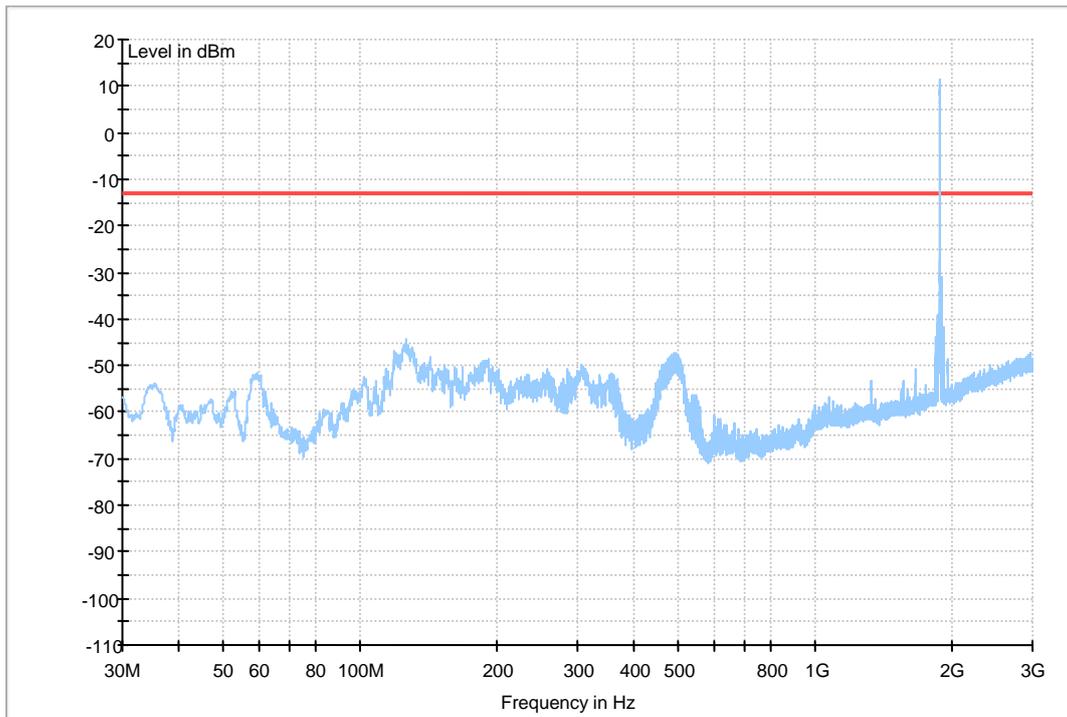


## HSDPA Band II

Traffic Mode (9kHz-30MHz)

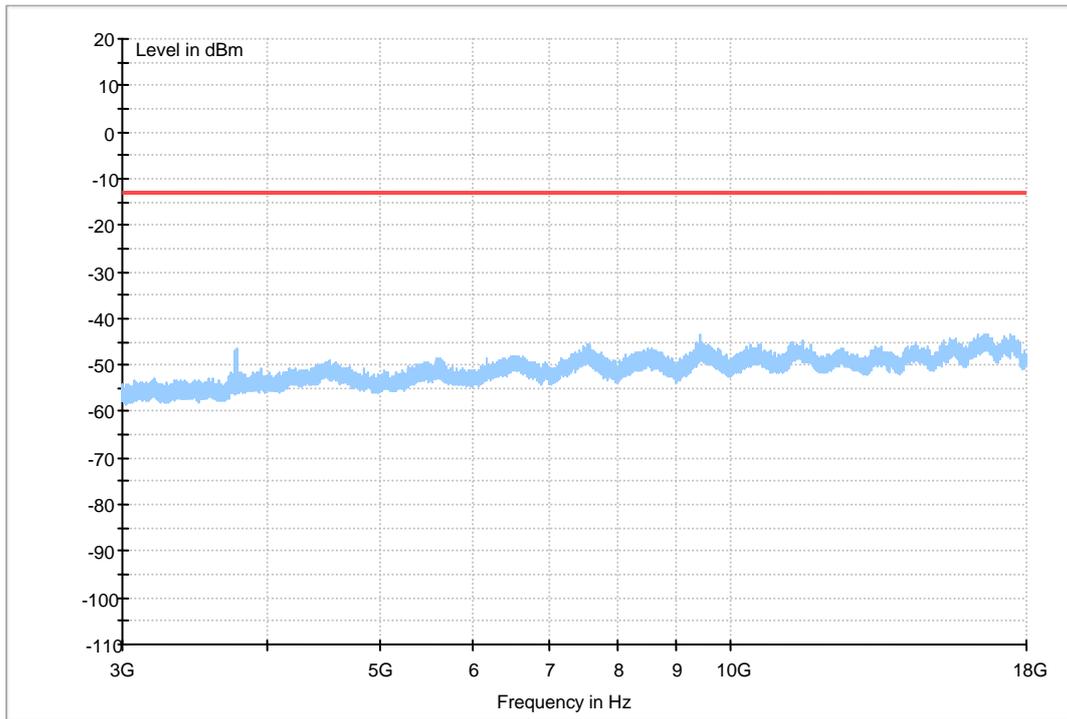


Traffic Mode (30MHz ~3GHz)

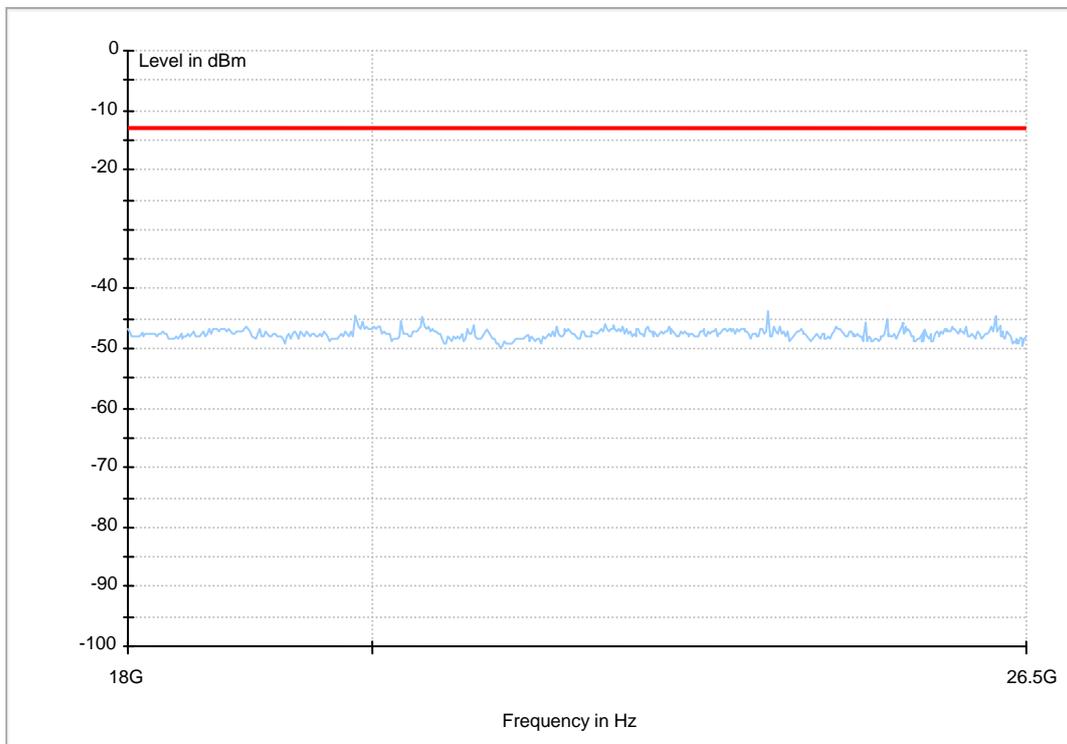




### Traffic Mode (3GHz~18GHz)

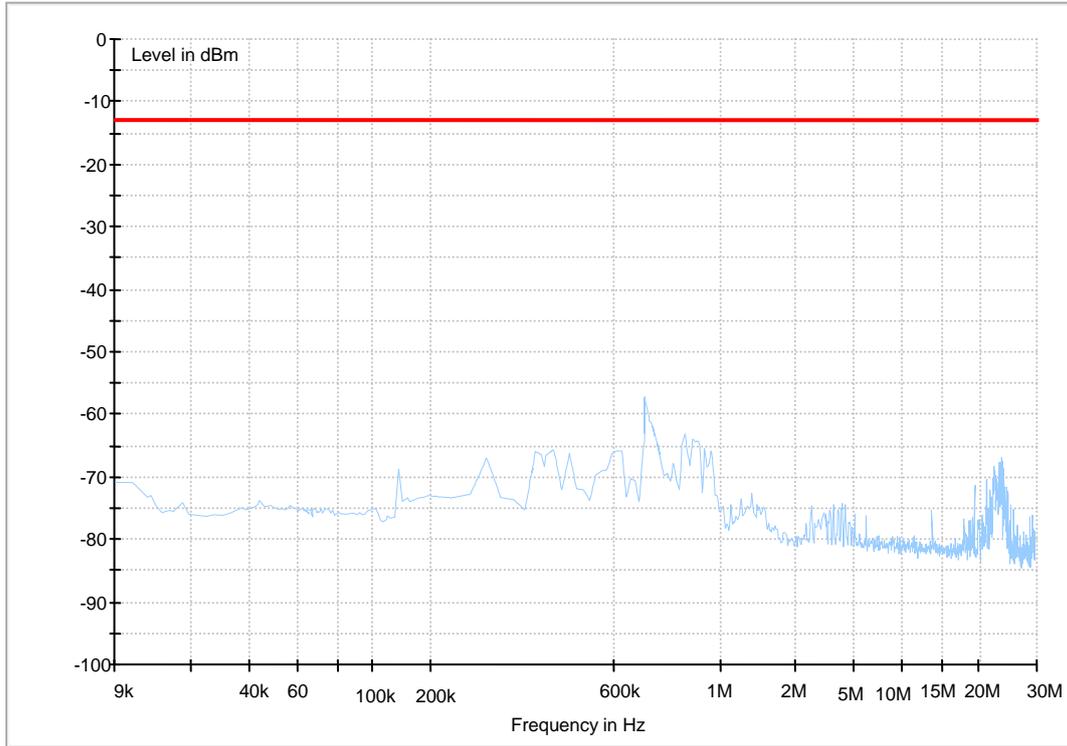


### Traffic Mode (18GHz~26.5GHz)

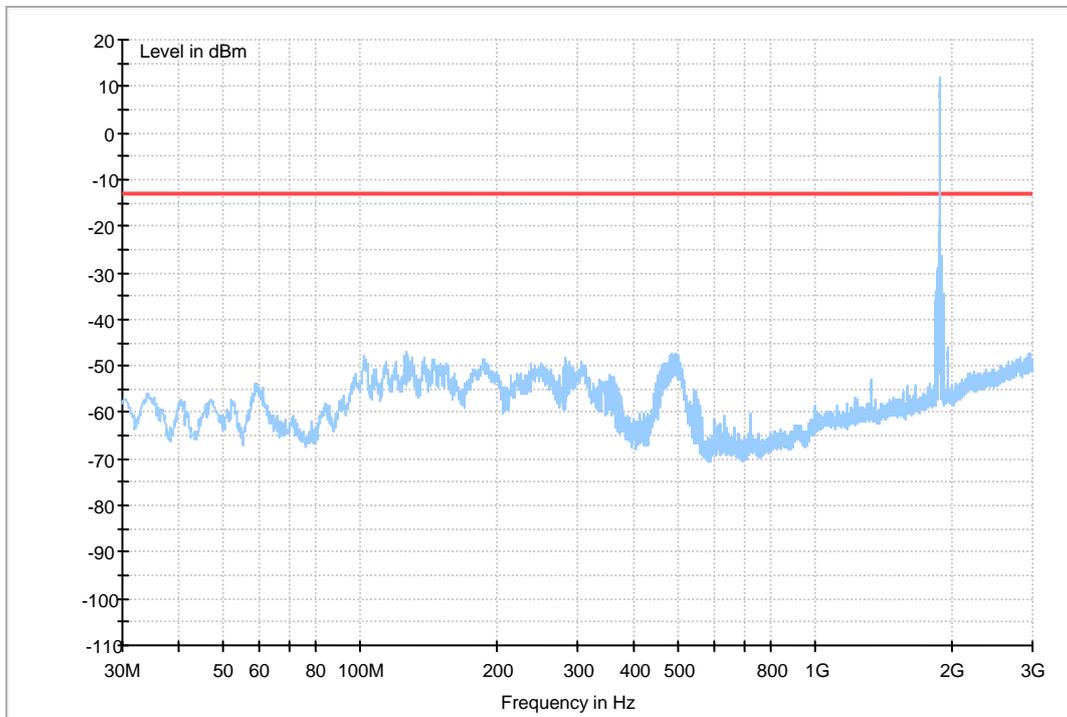


## HSUPA Band II

Traffic Mode (9kHz-30MHz)

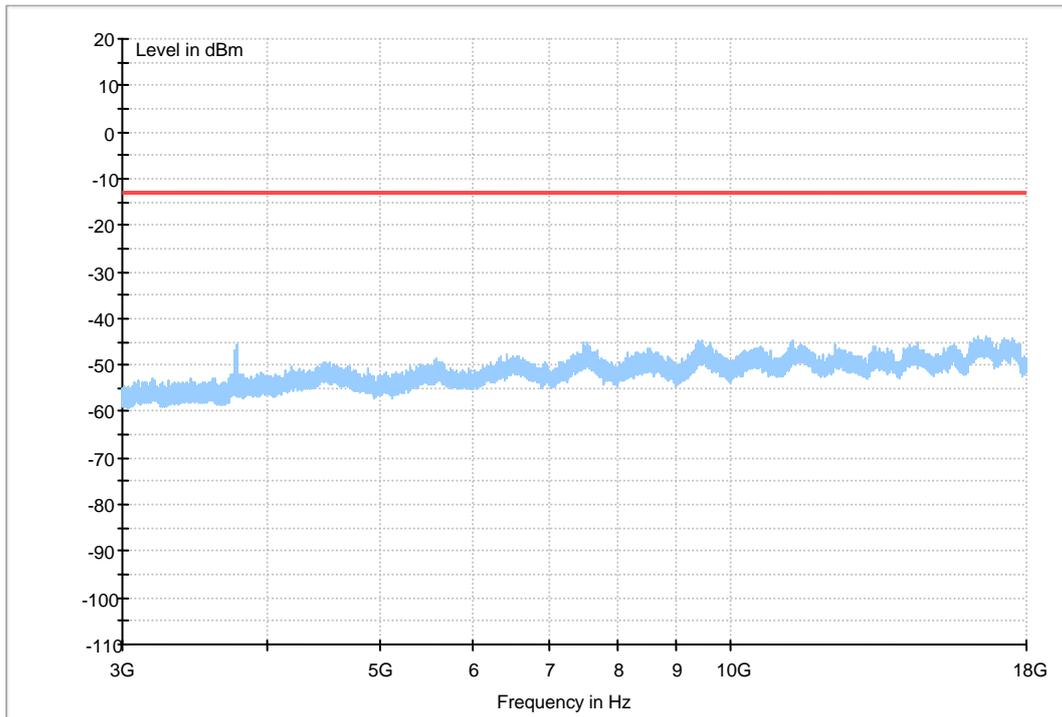


Traffic Mode (30MHz~3GHz)

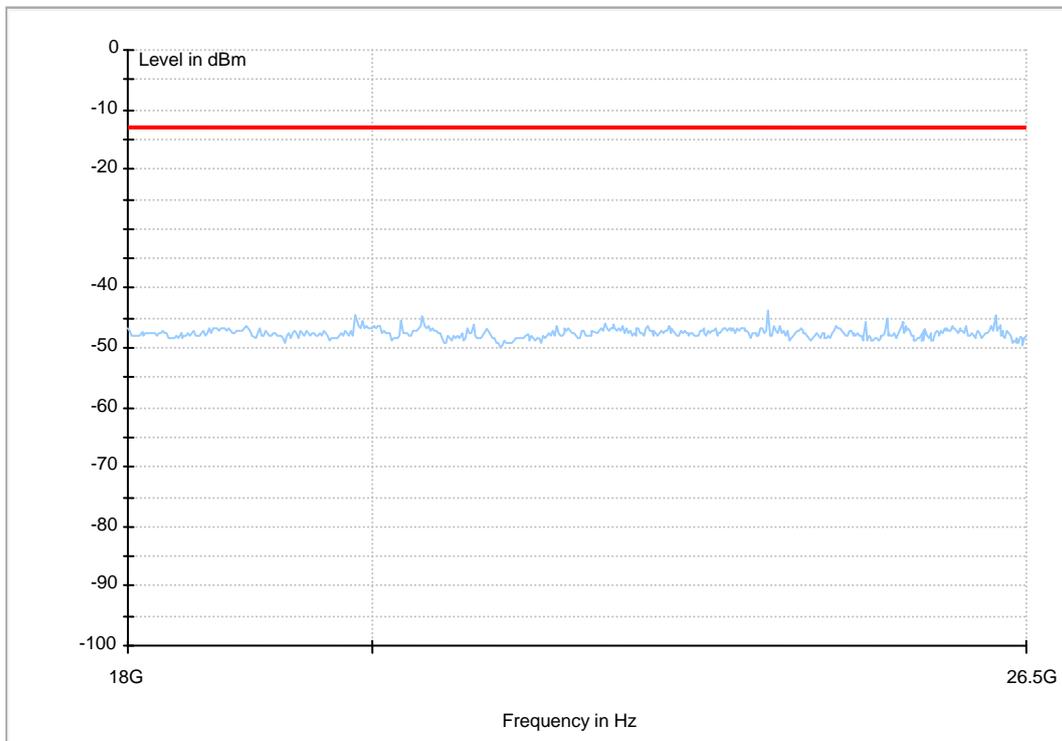




### Traffic Mode (3GHz~18GHz)



### Traffic Mode (18GHz~26.5GHz)



-----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	13	0.00691	---	±2.5	Pass
			-20 °C	-24	-0.01277	---	±2.5	Pass
			-10 °C	21	0.01117	---	±2.5	Pass
			0 °C	-18	-0.00957	---	±2.5	Pass
			10 °C	7	0.00372	---	±2.5	Pass
			20 °C	15	0.00798	---	±2.5	Pass
			30 °C	17	0.00904	---	±2.5	Pass
			40 °C	-6	-0.00319	---	±2.5	Pass
			50 °C	24	0.01277	---	±2.5	Pass
TM 2	M	VN	-30 °C	-19	-0.01011	---	±2.5	Pass
			-20 °C	-12	-0.00638	---	±2.5	Pass
			-10 °C	26	0.01383	---	±2.5	Pass
			0 °C	-7	-0.00372	---	±2.5	Pass
			10 °C	-21	-0.01117	---	±2.5	Pass
			20 °C	-13	-0.00691	---	±2.5	Pass
			30 °C	-6	-0.00319	---	±2.5	Pass
			40 °C	8	0.00426	---	±2.5	Pass
			50 °C	-13	-0.00691	---	±2.5	Pass
TM 3	M	VN	-30 °C	11	0.00585	---	±2.5	Pass
			-20 °C	-6	-0.00319	---	±2.5	Pass
			-10 °C	29	0.01543	---	±2.5	Pass
			0 °C	-12	-0.00638	---	±2.5	Pass
			10 °C	25	0.01330	---	±2.5	Pass
			20 °C	17	0.00904	---	±2.5	Pass
			30 °C	-13	-0.00691	---	±2.5	Pass
			40 °C	27	0.01436	---	±2.5	Pass
			50 °C	28	0.01489	---	±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	-20	-0.01064	---	±2.5	Pass
			VN	-17	-0.00904	---	±2.5	Pass
			VH	-18	-0.00957	---	±2.5	Pass
TM 2	M	TN	VL	-8	-0.00426	---	±2.5	Pass
			VN	24	0.01277	---	±2.5	Pass
			VH	17	0.00904	---	±2.5	Pass
TM 3	M	TN	VL	27	0.01436	---	±2.5	Pass
			VN	16	0.00851	---	±2.5	Pass
			VH	24	0.01277	---	±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)

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