



Appendix A

Transmitter Output Power According to FCC Part 2.1046 & Part22.913



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 | | 32.48 | 38.5 | 32.51 | 38.5 | 32.39 | 38.5 |
| TM2 | | 27.32 | 38.5 | 27.22 | 38.5 | 26.96 | 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 |
| TM3 | | 23.42 | 38.5 | 22.94 | 38.5 | 23.40 | 38.5 |
| TM4 | Case1 | 22.80 | 38.5 | 22.40 | 38.5 | 22.86 | 38.5 |
| | Case2 | 22.71 | 38.5 | 22.25 | 38.5 | 22.74 | 38.5 |
| | Case3 | 22.26 | 38.5 | 21.66 | 38.5 | 22.23 | 38.5 |
| | Case4 | 22.22 | 38.5 | 21.76 | 38.5 | 22.25 | 38.5 |
| TM5 | Case1 | 22.77 | 38.5 | 21.96 | 38.5 | 22.07 | 38.5 |
| | Case2 | 21.30 | 38.5 | 20.71 | 38.5 | 21.32 | 38.5 |
| | Case3 | 21.38 | 38.5 | 20.97 | 38.5 | 21.47 | 38.5 |
| | Case4 | 21.75 | 38.5 | 21.20 | 38.5 | 21.89 | 38.5 |
| | Case5 | 22.77 | 38.5 | 21.96 | 38.5 | 21.94 | 38.5 |

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



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) [dBm] | FCC limit [dBm] | Result |
|-----------|-------------|-------------------|---------------------------|-----------|-------------------------|-----------------|--------------------------------|-----------------|--------|
| TM1 | 824.2 | 26.05 | Dipole Ant. | -2.75 | -2.75 | 0.6 | 25.85 | 38.5 | Pass |
| TM1 | 837.0 | 26.08 | Dipole Ant. | -2.87 | -2.87 | 0.6 | 25.88 | 38.5 | Pass |
| TM1 | 848.8 | 25.96 | Dipole Ant. | -2.85 | -2.85 | 0.6 | 26.10 | 38.5 | Pass |
| TM2 | 824.2 | 20.89 | Dipole Ant. | -2.75 | -2.75 | 0.6 | 20.69 | 38.5 | Pass |
| TM2 | 837.0 | 20.79 | Dipole Ant. | -2.87 | -2.87 | 0.6 | 20.59 | 38.5 | Pass |
| TM2 | 848.8 | 20.53 | Dipole Ant. | -2.85 | -2.85 | 0.6 | 20.33 | 38.5 | Pass |
| TM3 | 826.4 | 16.96 | Dipole Ant. | -2.75 | -2.75 | 0.6 | 16.76 | 38.5 | Pass |
| TM3 | 836.4 | 16.5 | Dipole Ant. | -2.87 | -2.87 | 0.6 | 16.70 | 38.5 | Pass |
| TM3 | 846.6 | 16.97 | Dipole Ant. | -2.85 | -2.85 | 0.6 | 16.77 | 38.5 | Pass |

Note1: 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

Note2: RBW > emission bandwidth, VBW > 3 x RBW.

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



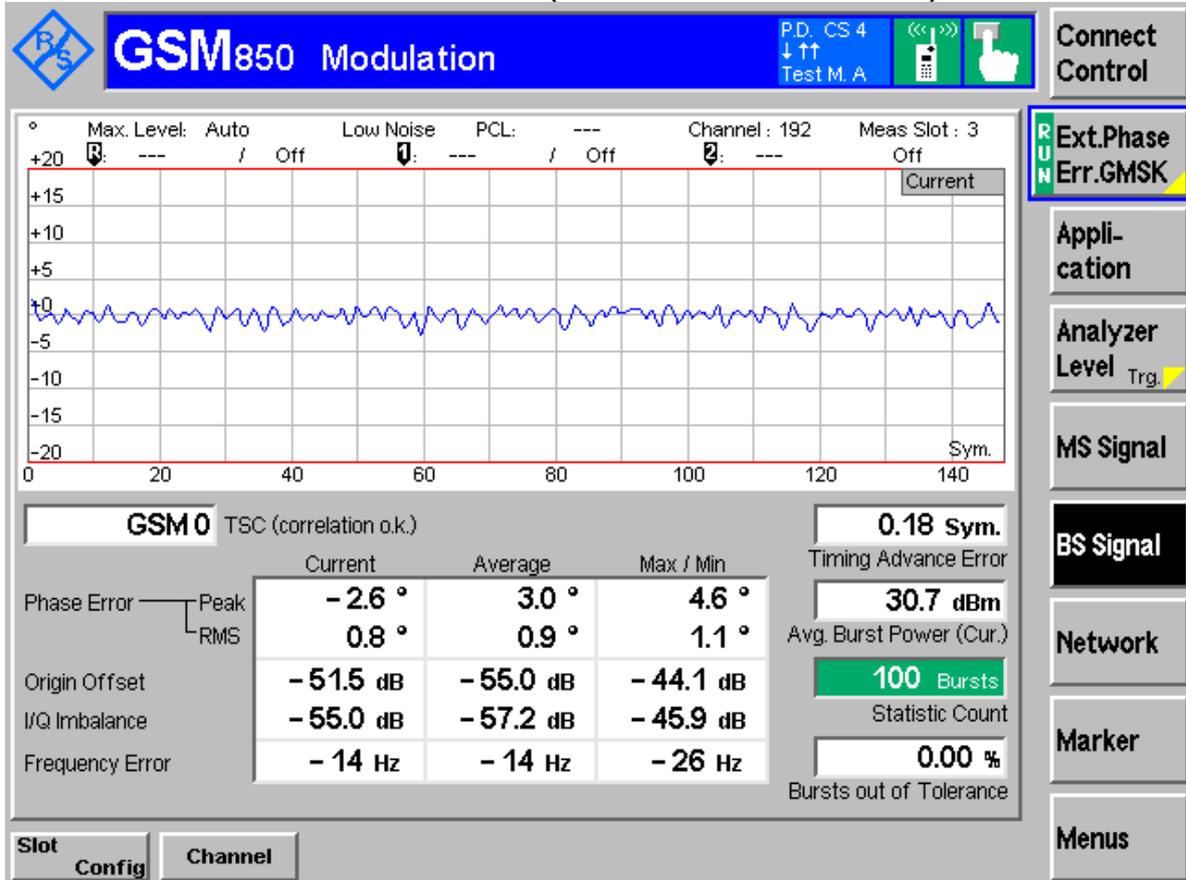
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

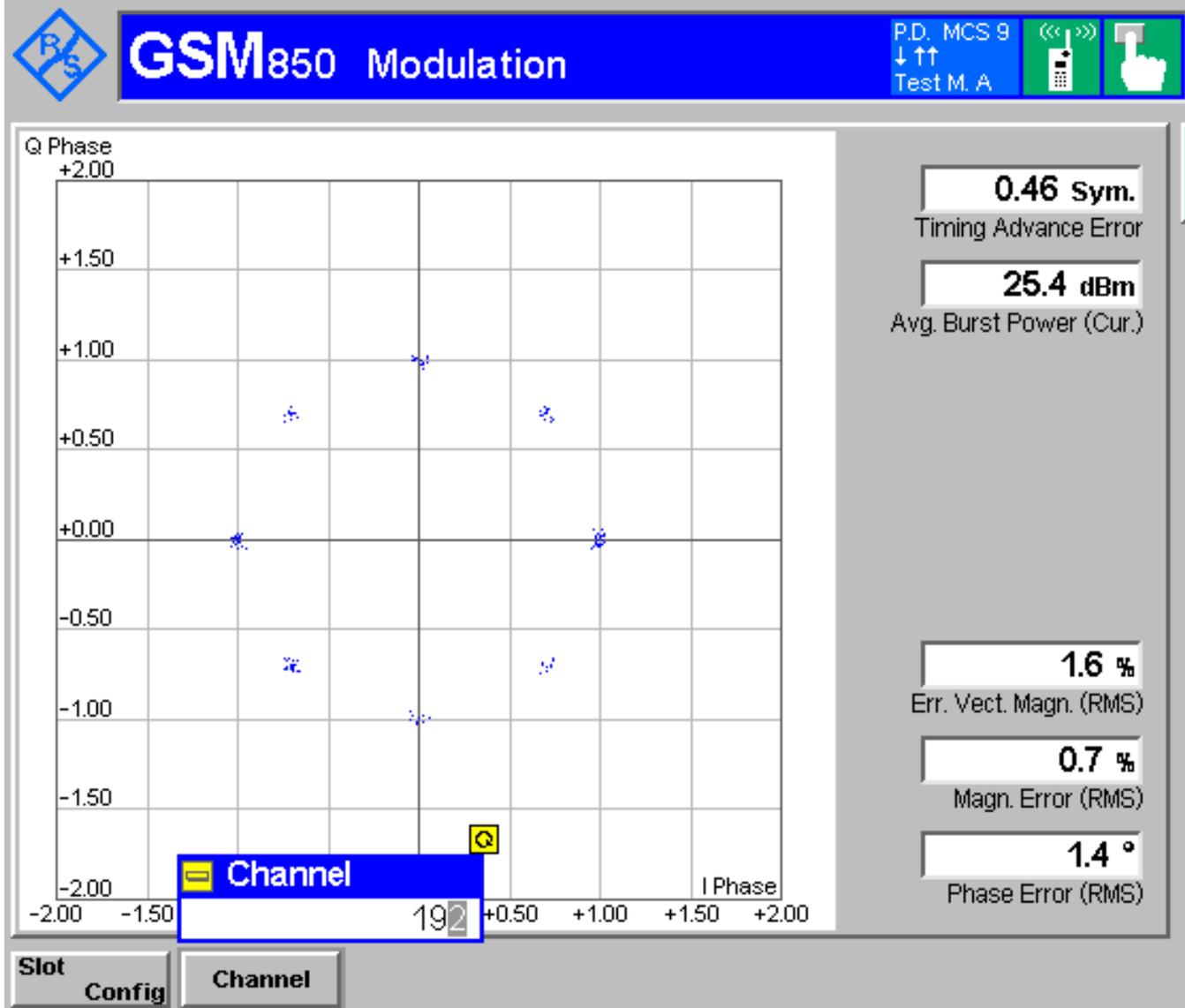


Channel 192 (TM1:GPRS/GSM)



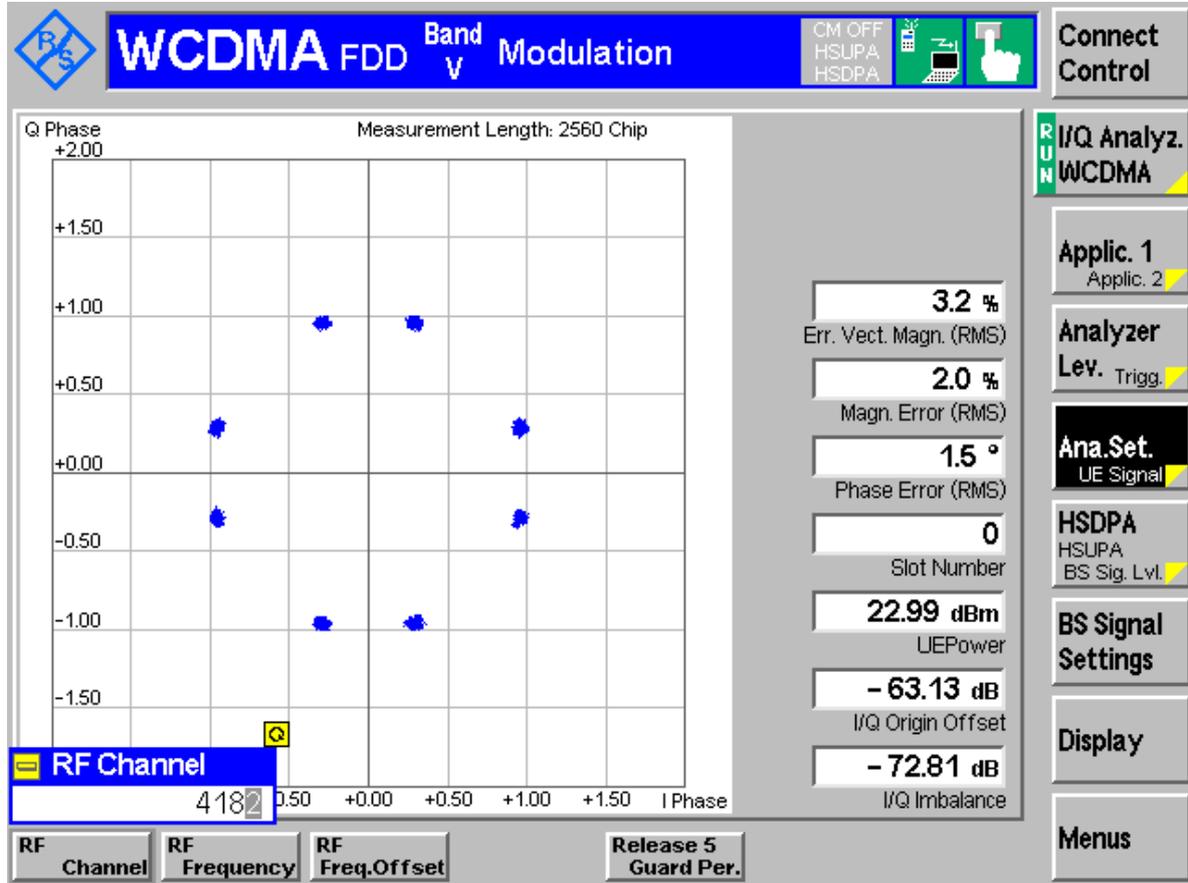


Channel 192 (TM2:EDGE)





Channel 4182 (TM3: WCDMA)



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



Appendix C

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



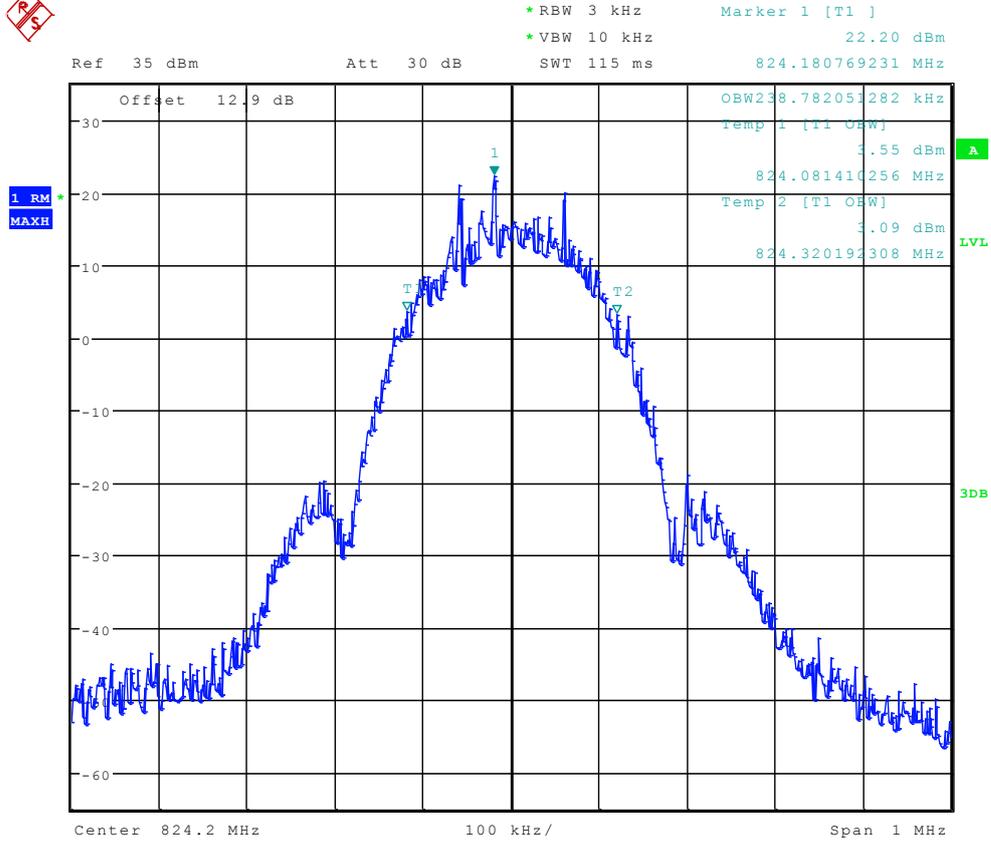
Result Table

Table 1 Measurement Results

| Test Mode | RF Channel | Occupied Bandwidth [kHz] | Verdict |
|-----------|------------|--------------------------|---------|
| TM1 | 128 | 246.80 | Pass |
| | 192 | 245.20 | Pass |
| | 251 | 246.80 | Pass |
| TM2 | 128 | 238.79 | Pass |
| | 192 | 248.40 | Pass |
| | 251 | 245.20 | Pass |
| Test Mode | RF Channel | Occupied Bandwidth [MHz] | Verdict |
| TM3 | 4132 | 4.14 | Pass |
| | 4182 | 4.14 | Pass |
| | 4233 | 4.16 | Pass |



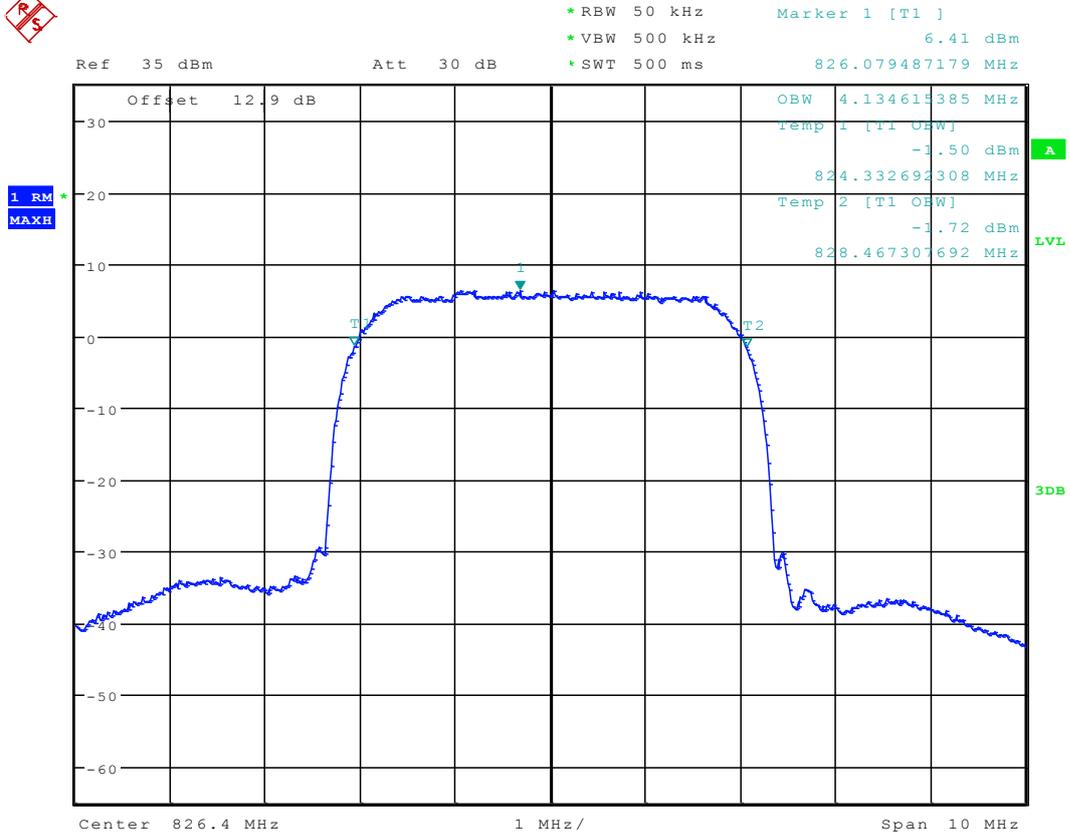
Channel 128 (TM2:EDGE)



Date: 24.SEP.2012 23:35:50



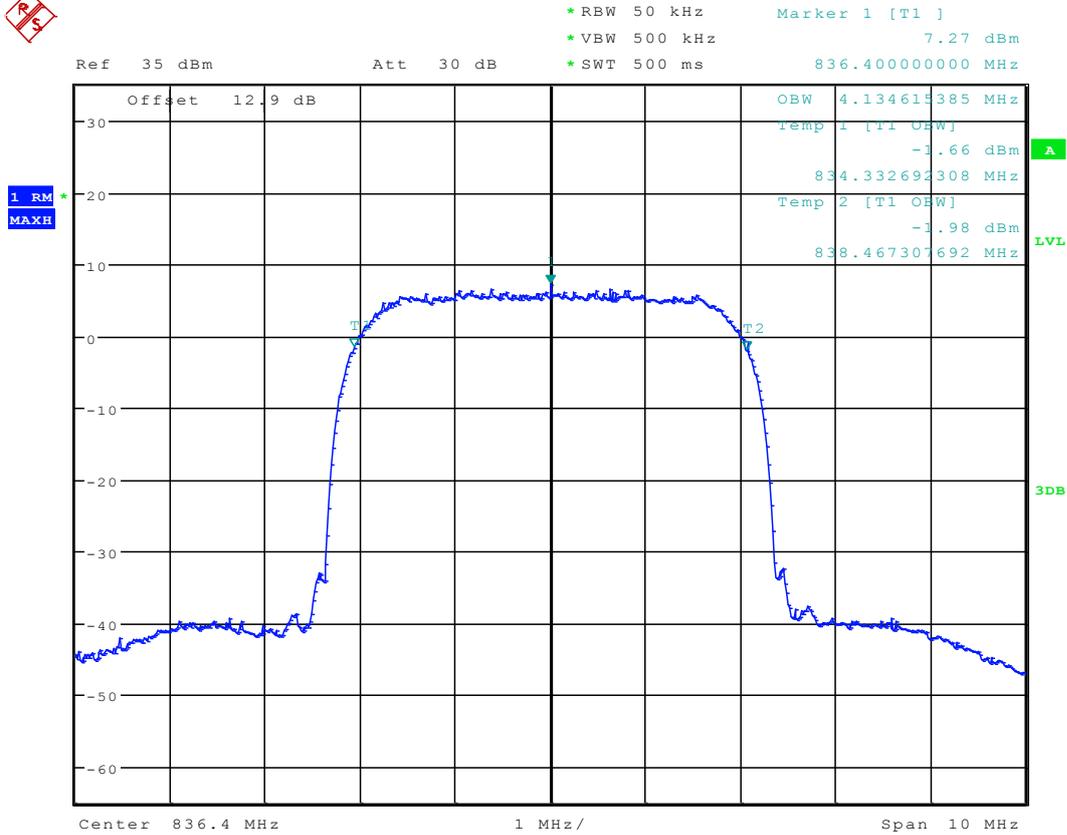
Channel 4132 (TM3: WCDMA)



Date: 26.SEP.2012 00:06:01



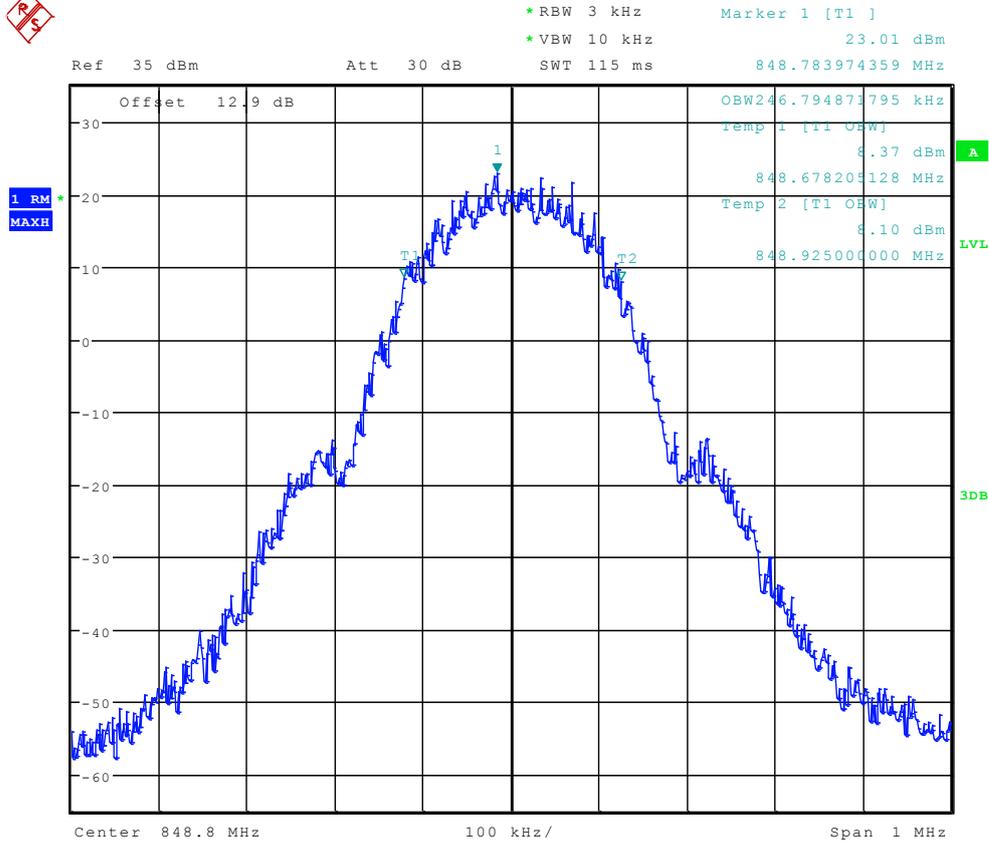
Channel 4182 (TM3: WCDMA)



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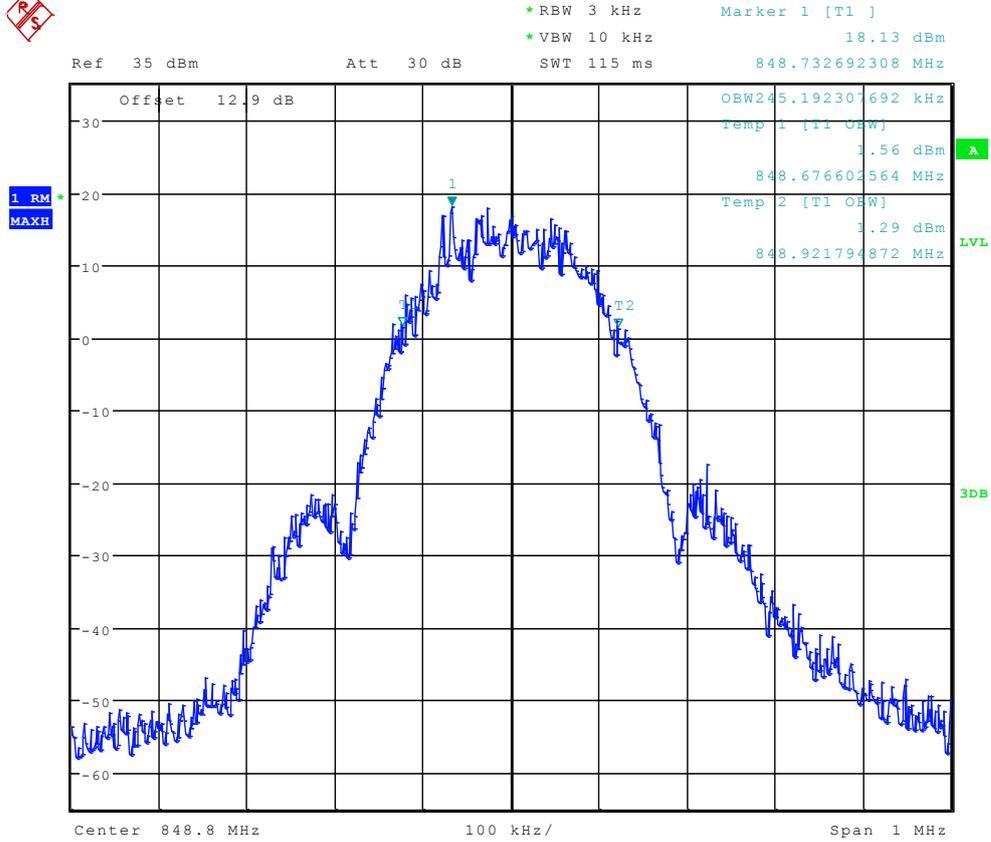
Channel 251 (TM1:GPRS/GSM)



Date: 24.SEP.2012 23:30:54



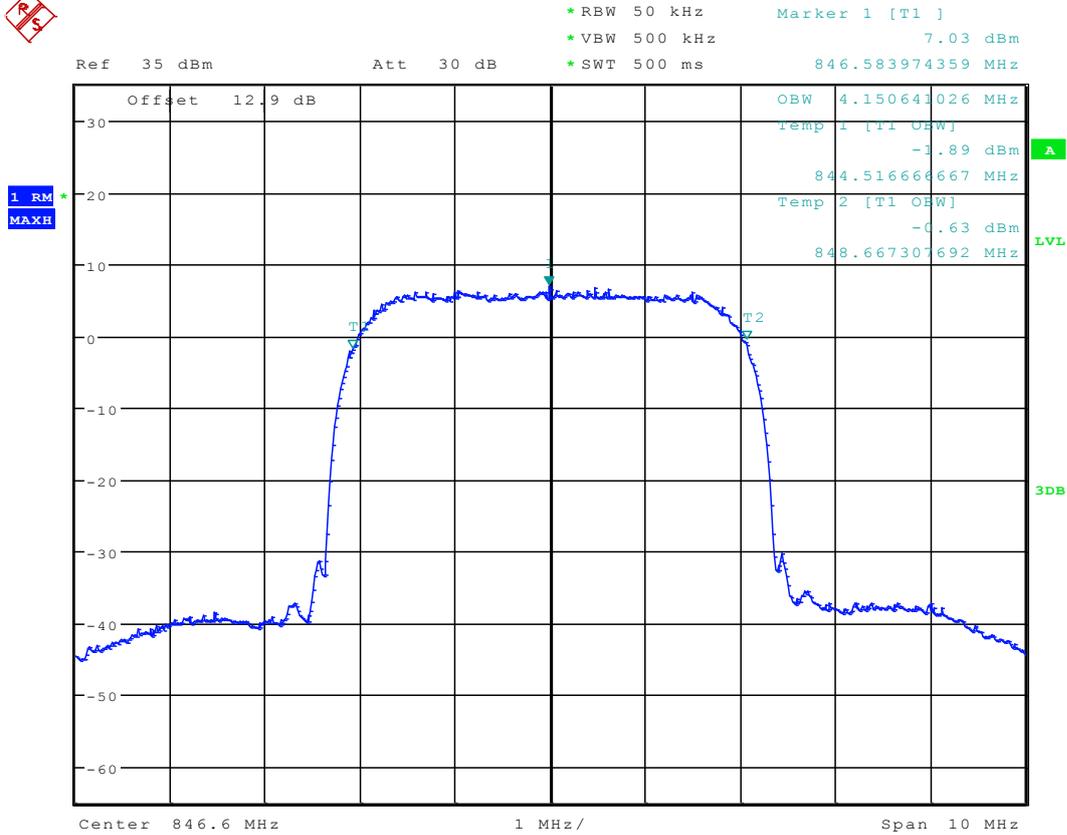
Channel 251 (TM2:EDGE)



Date: 24.SEP.2012 23:36:17



Channel 4233 (TM3: WCDMA)



Date: 26.SEP.2012 00:06:29

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



Appendix D

Band Edges Compliance

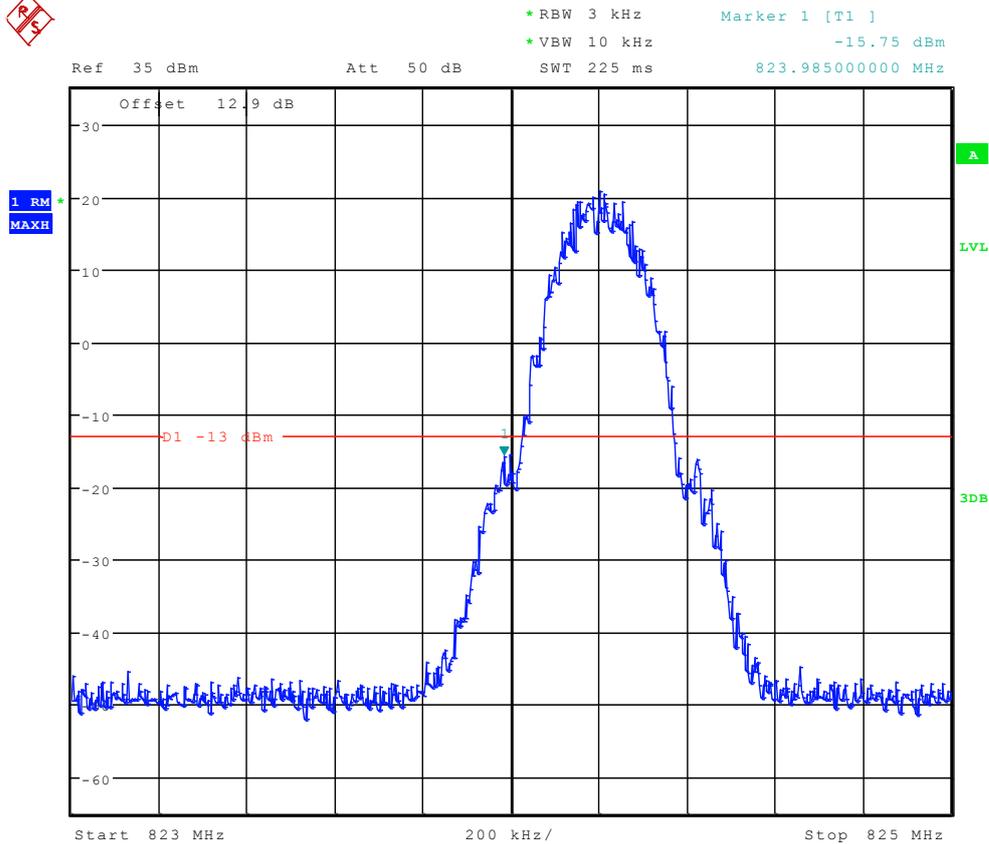
According to FCC Part 2.1051 & Part 22 Subpart H



TM1:GPRS/GSM

Left Edge

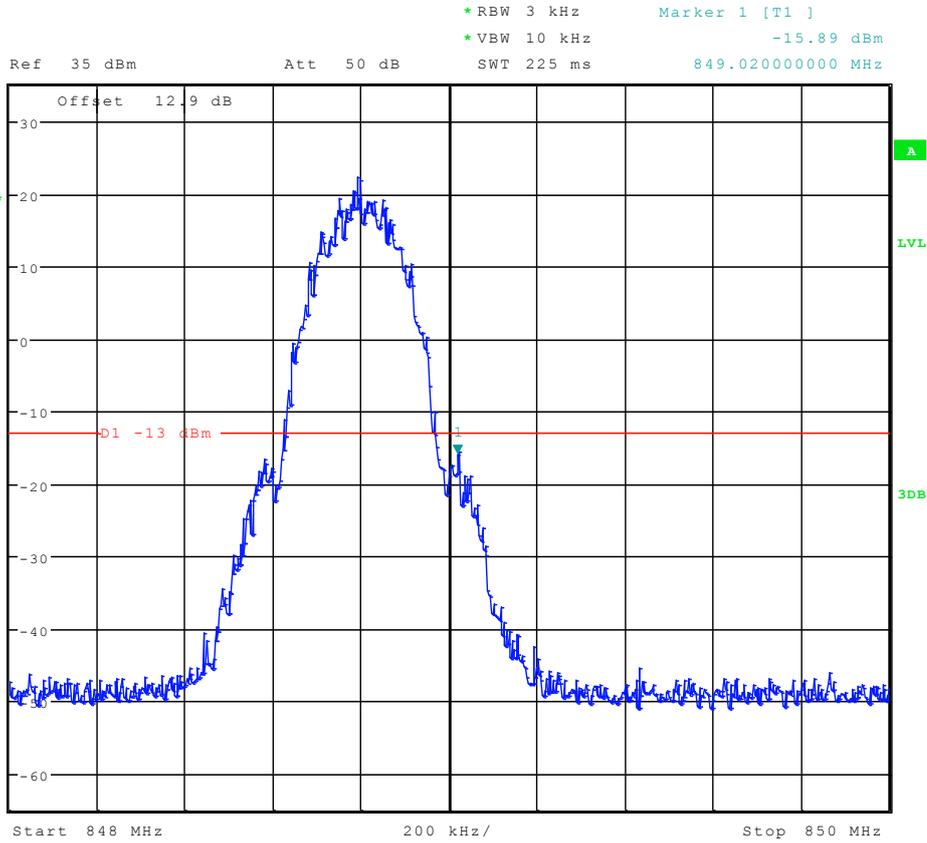
Channel 128



Date: 24.SEP.2012 23:33:52



Right Edge Channel 251



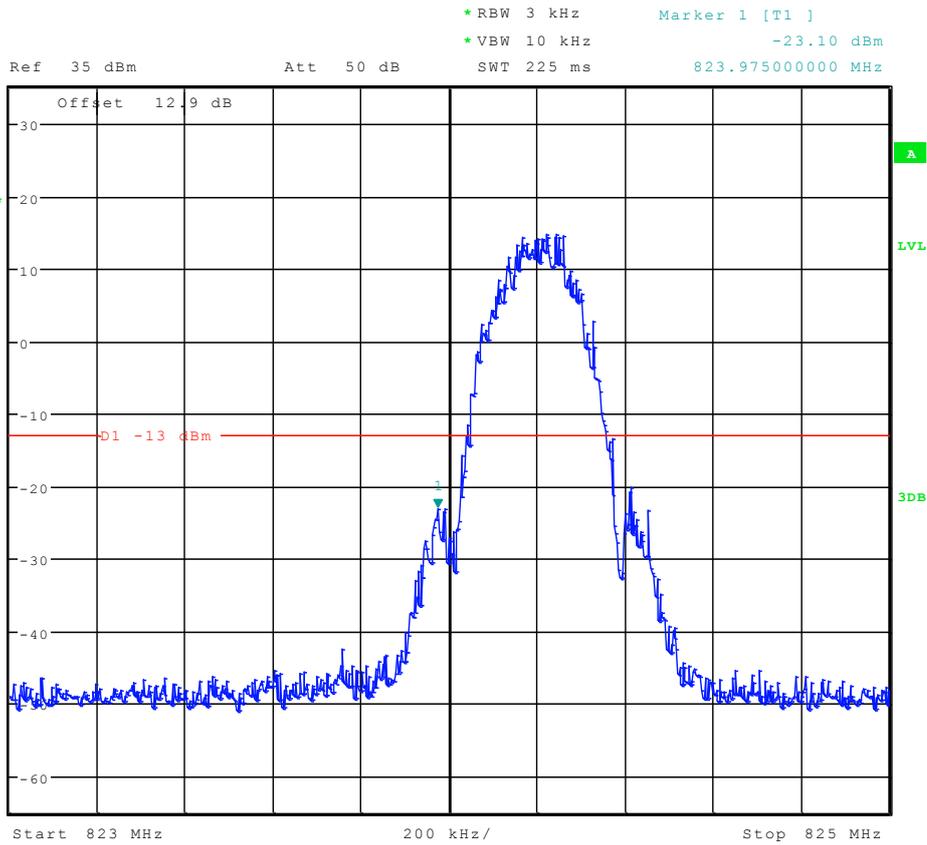
Date: 24.SEP.2012 23:34:09



TM2:EDGE

Left Edge

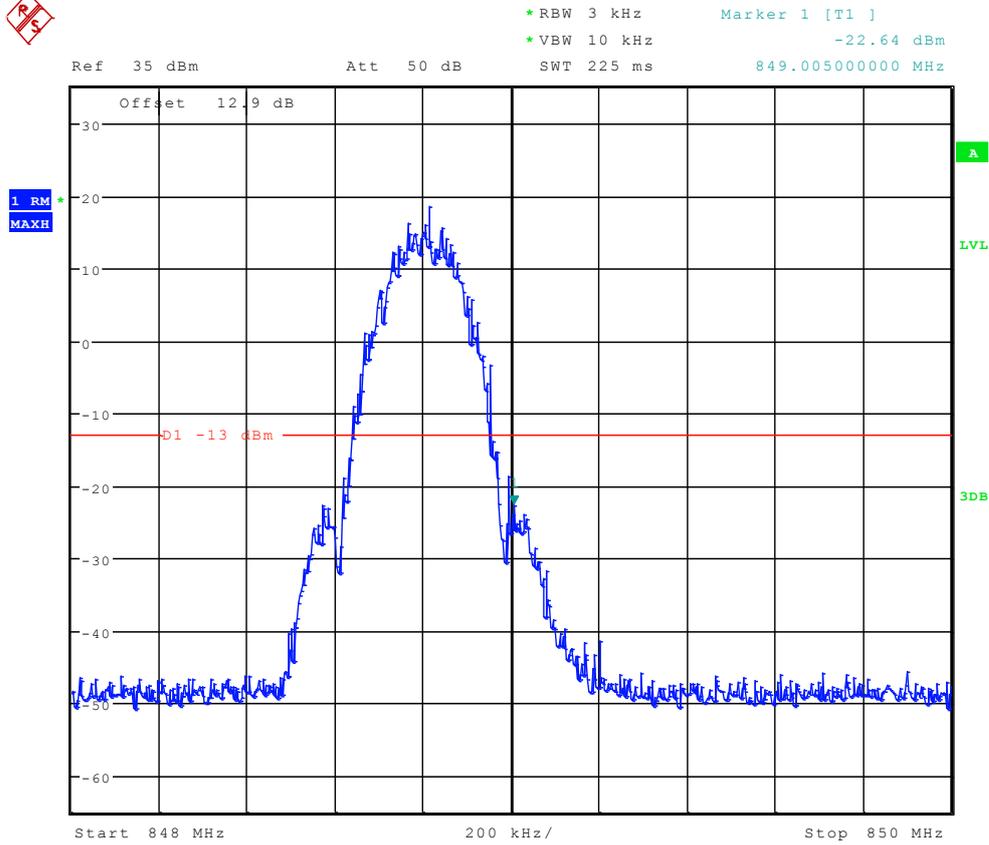
Channel 128



Date: 24.SEP.2012 23:35:14



Right Edge Channel 251



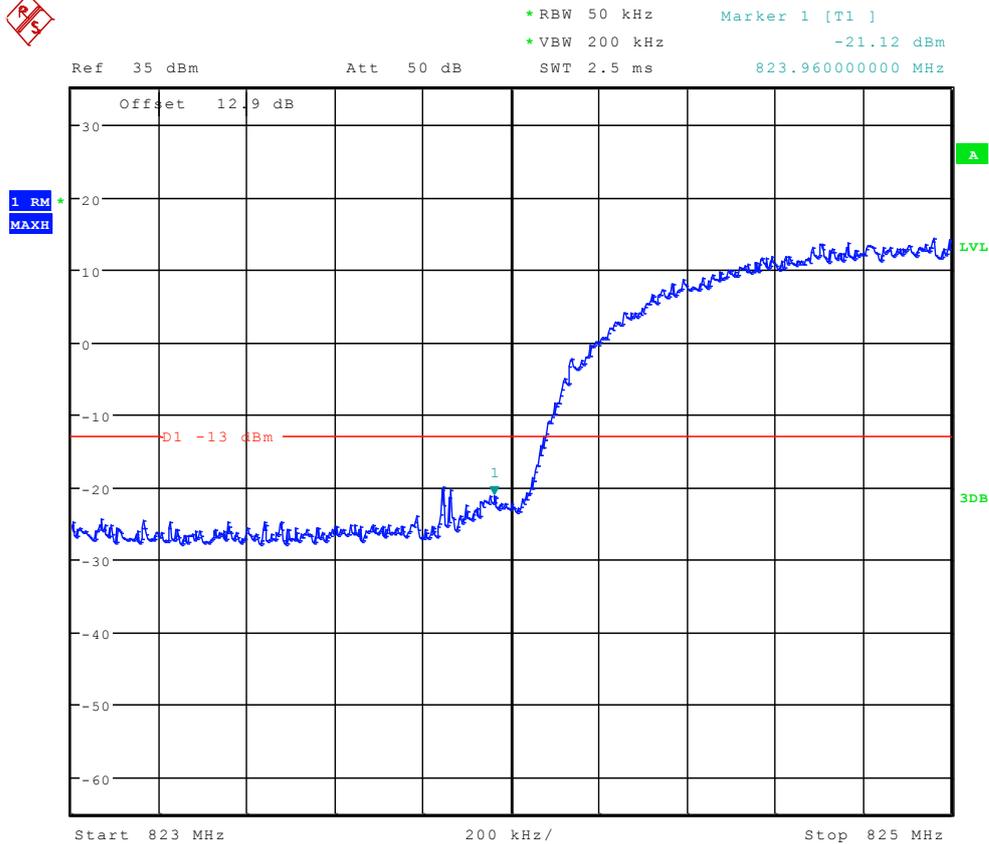
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TM3: WCDMA

Left Edge

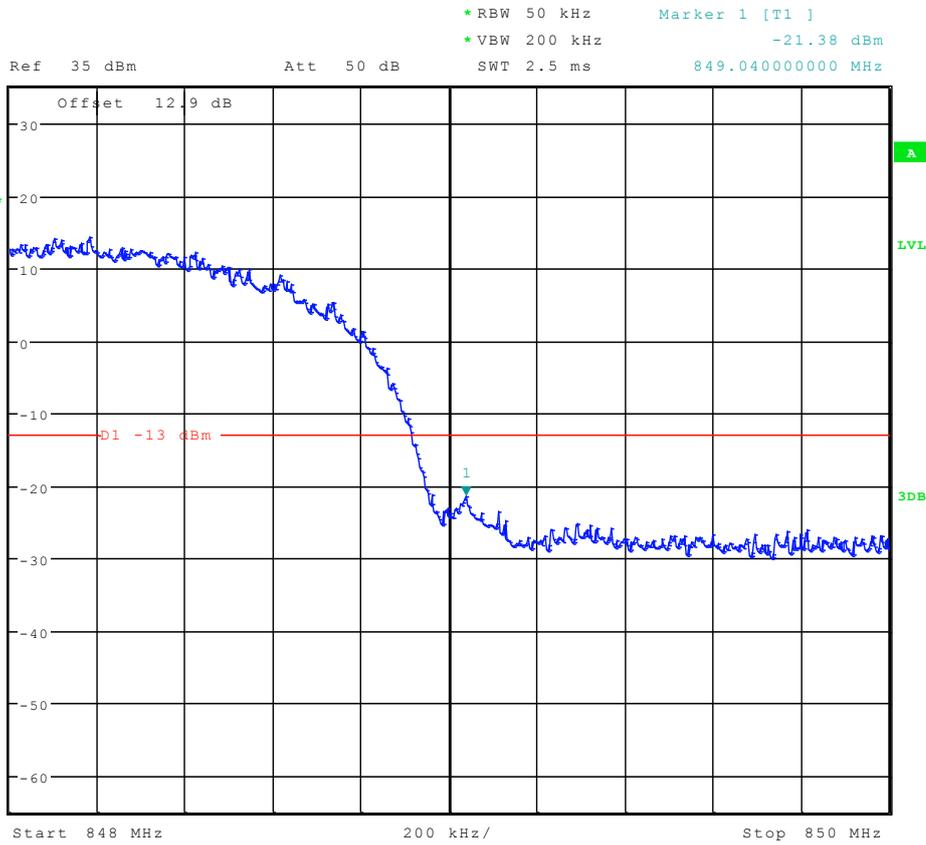
Channel 4132



Date: 24.SEP.2012 23:40:30



Right Edge Channel 4233



Date: 24.SEP.2012 23:40:43

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



Appendix E

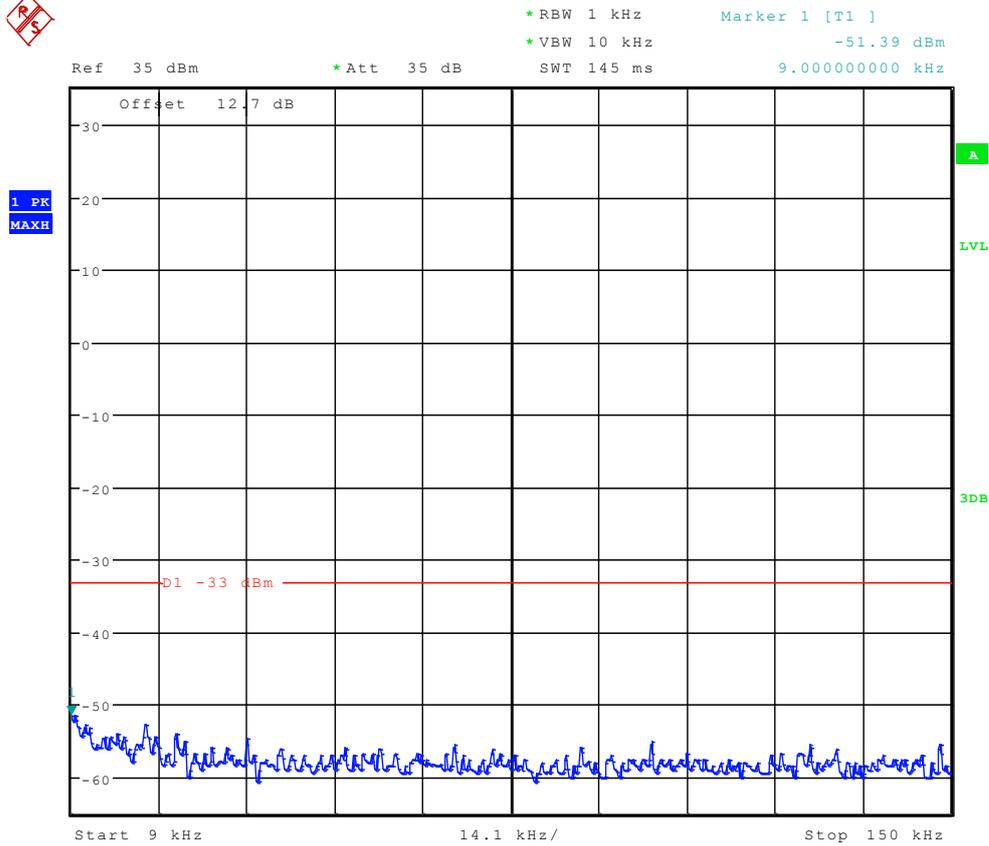
Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H



TM1:GPRS/GSM

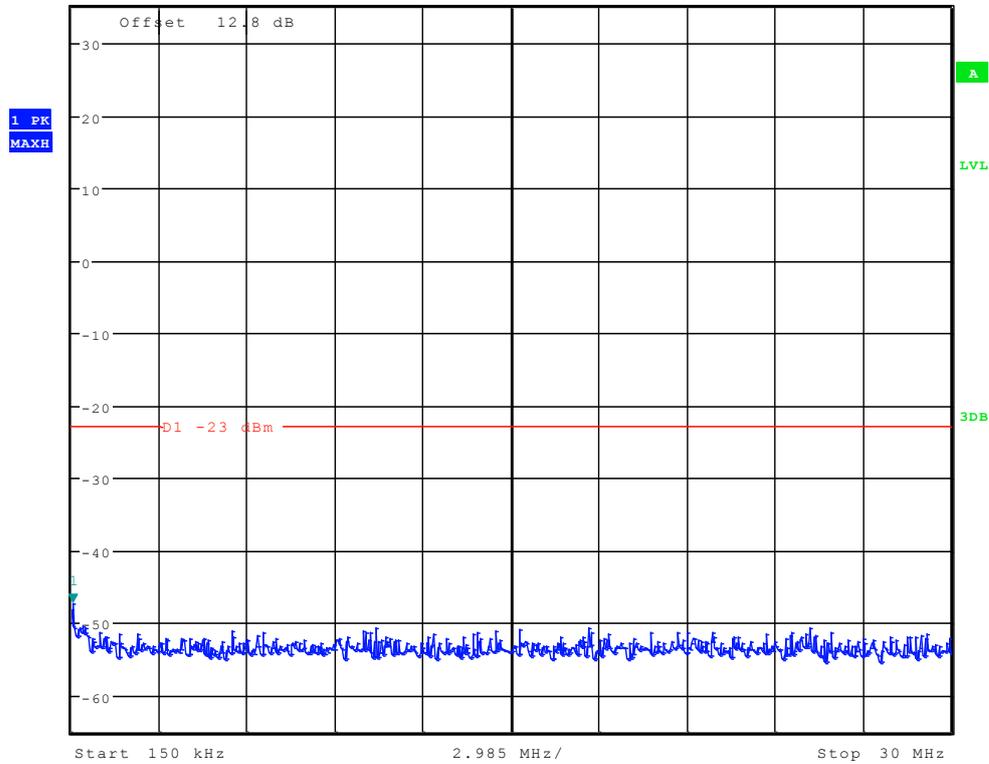
Channel 128



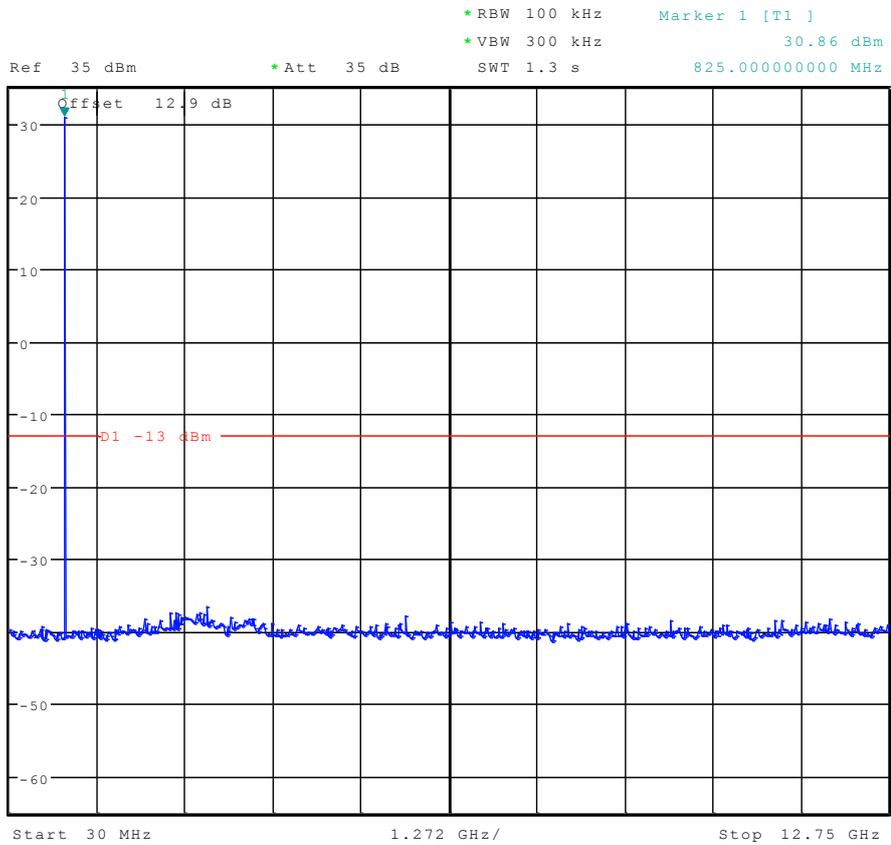
Date: 24.SEP.2012 23:31:09



Ref 35 dBm * Att 35 dB * RBW 10 kHz Marker 1 [T1] * VBW 30 kHz -47.32 dBm
SWT 300 ms 197.836538462 kHz



Date: 24.SEP.2012 23:31:52



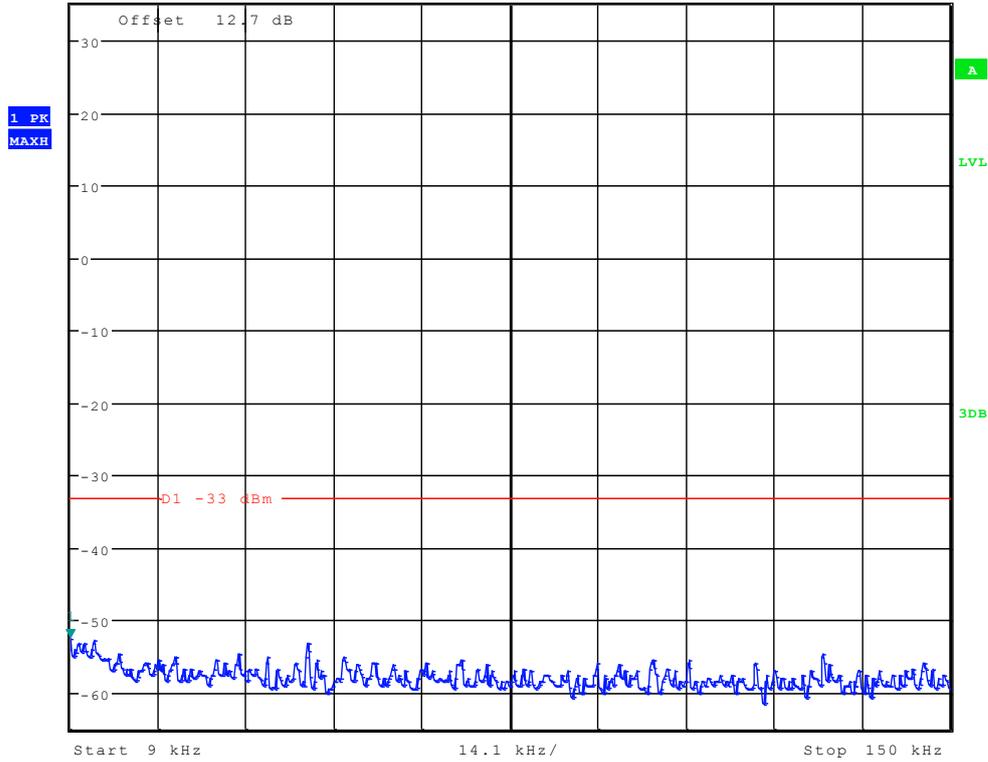
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Channel 192



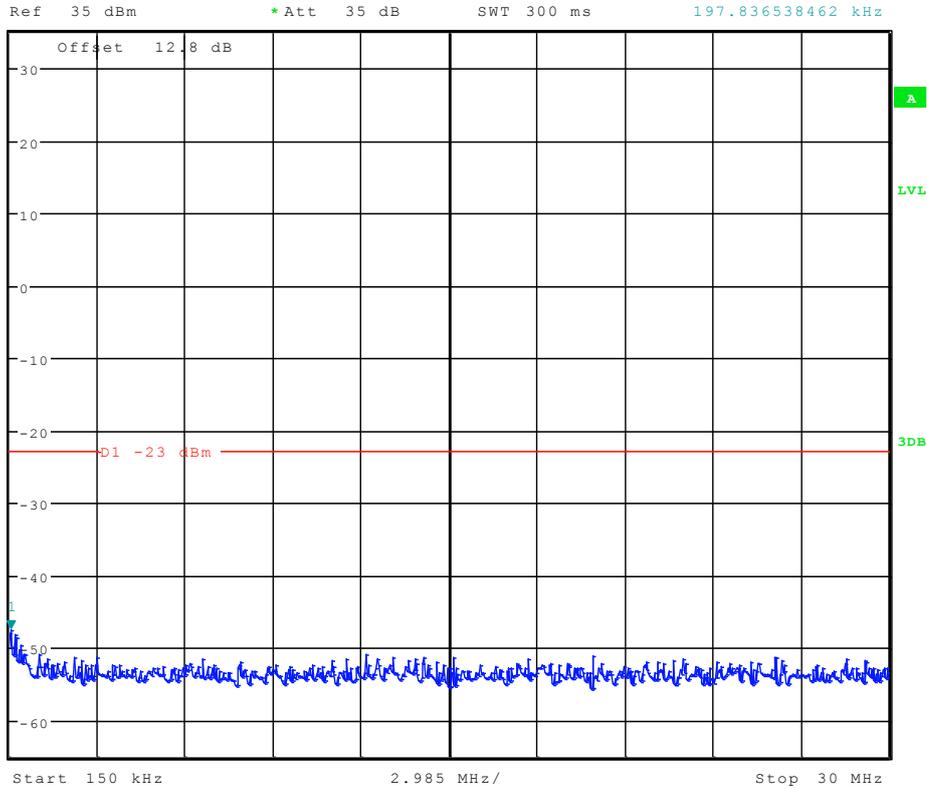
Ref 35 dBm * Att 35 dB SWT 145 ms Marker 1 [T1] -52.59 dBm
 * RBW 1 kHz * VBW 10 kHz 9.000000000 kHz



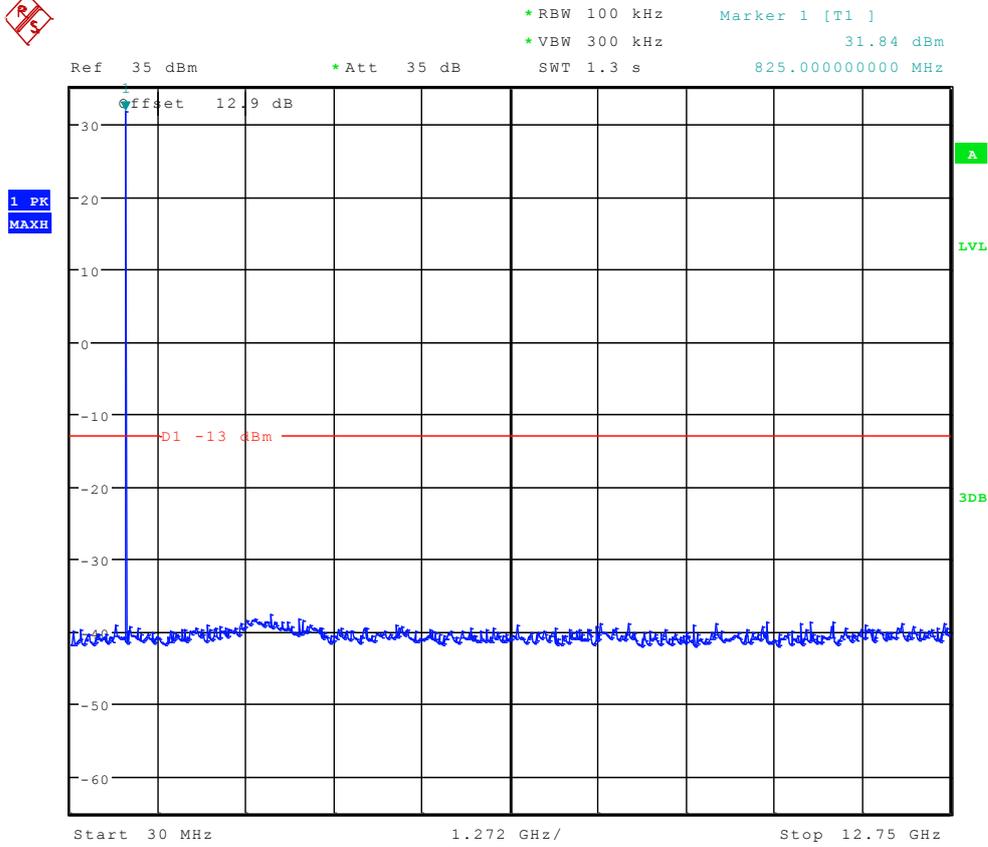
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* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.38 dBm
SWT 300 ms 197.836538462 kHz



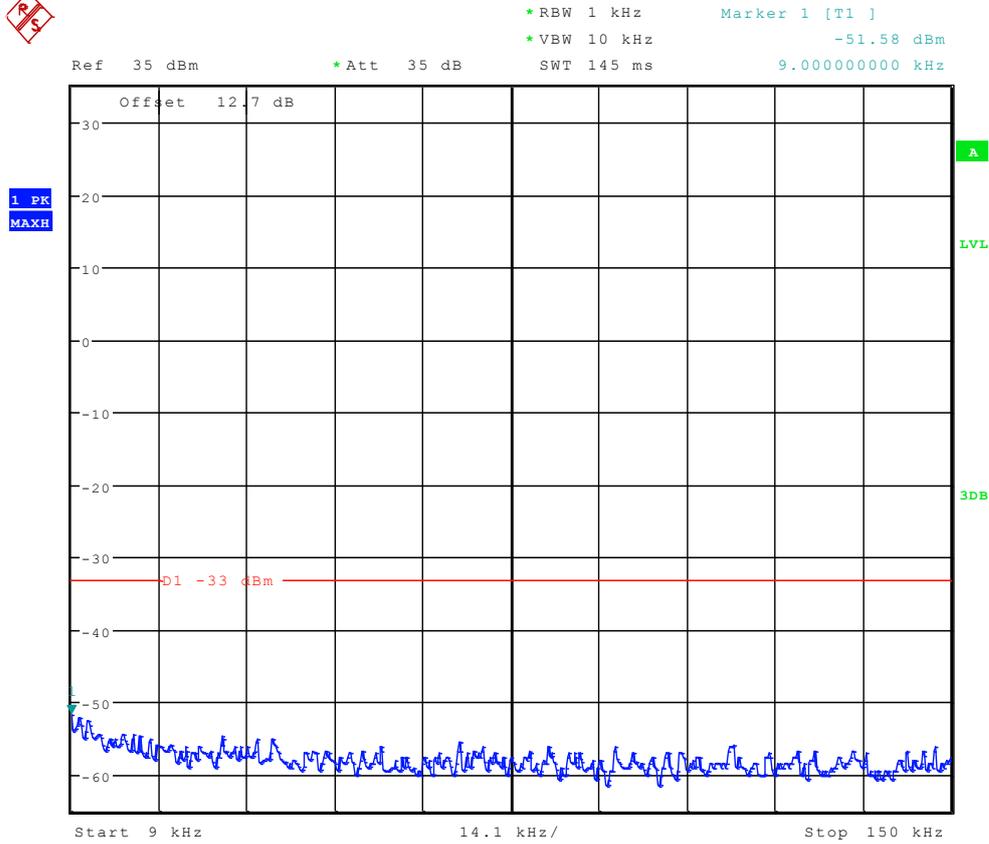
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Date: 24.SEP.2012 23:33:21



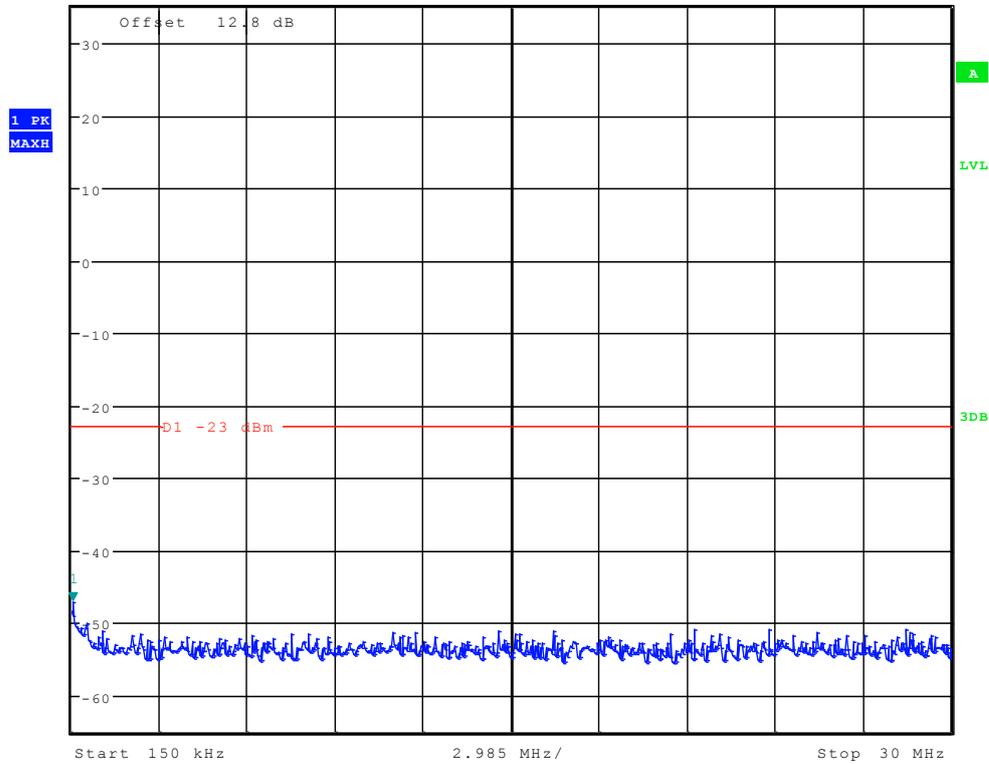
Channel 251



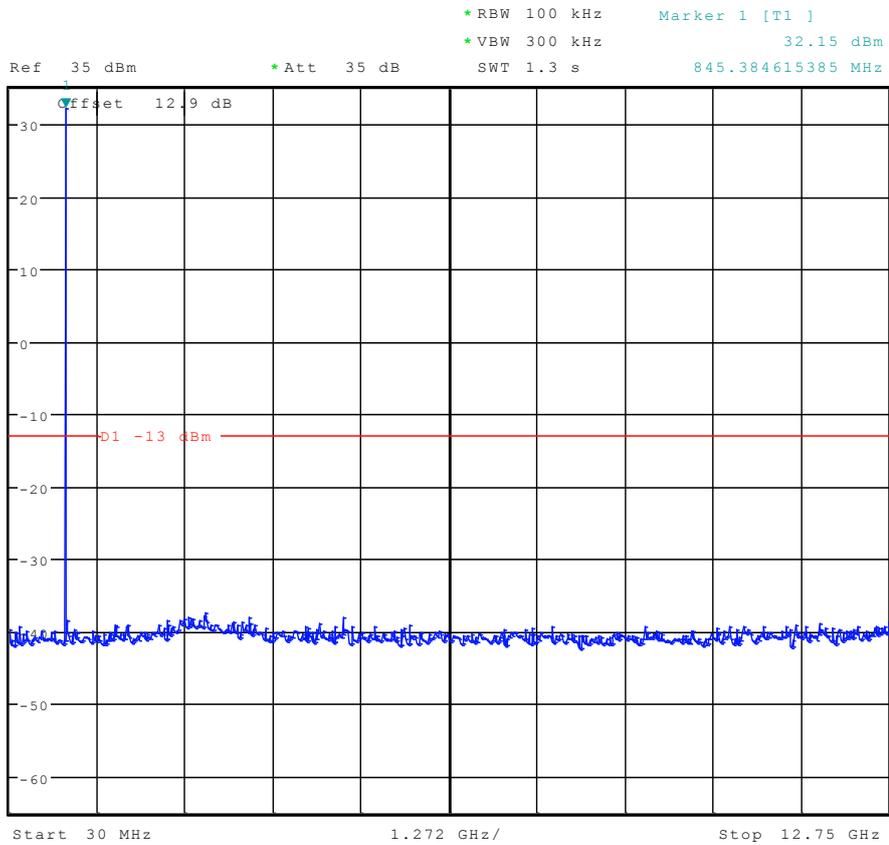
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* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.03 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz



Date: 24.SEP.2012 23:32:21



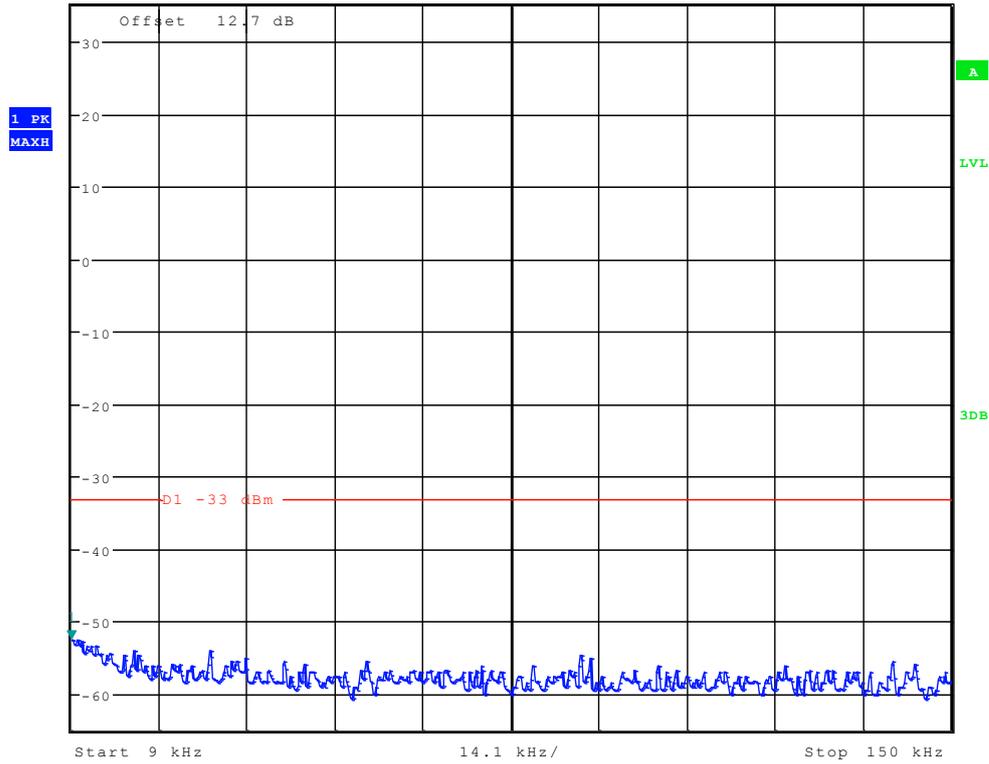
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TM2:EDGE Channel 128



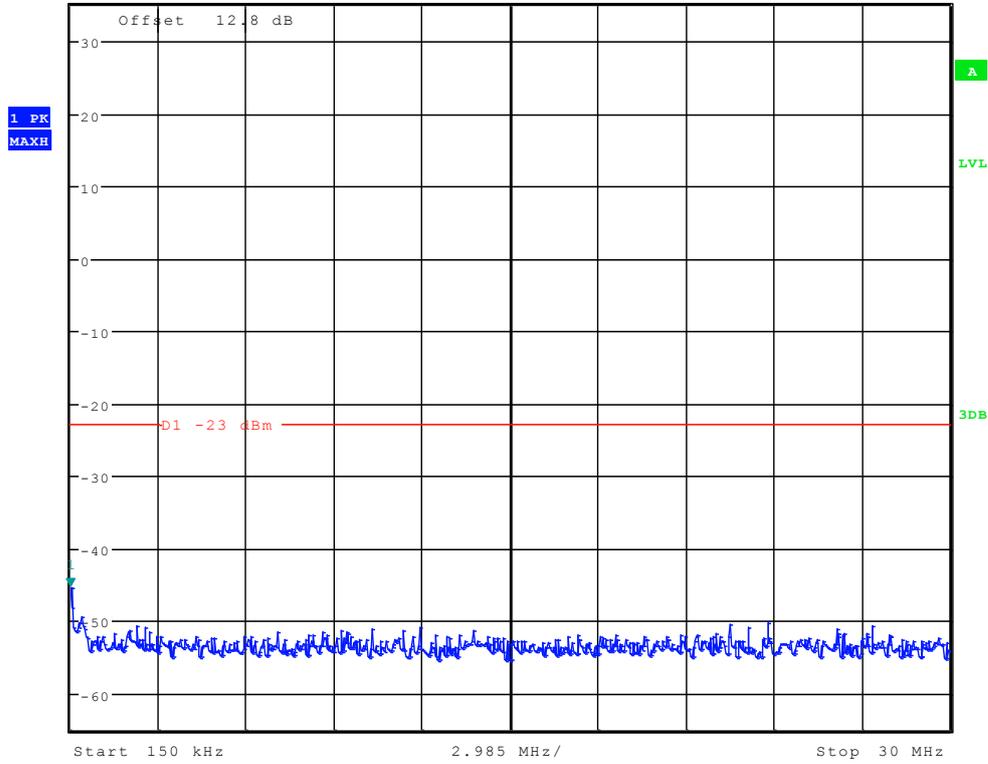
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 * RBW 1 kHz Marker 1 [T1] -52.59 dBm
 * VBW 10 kHz



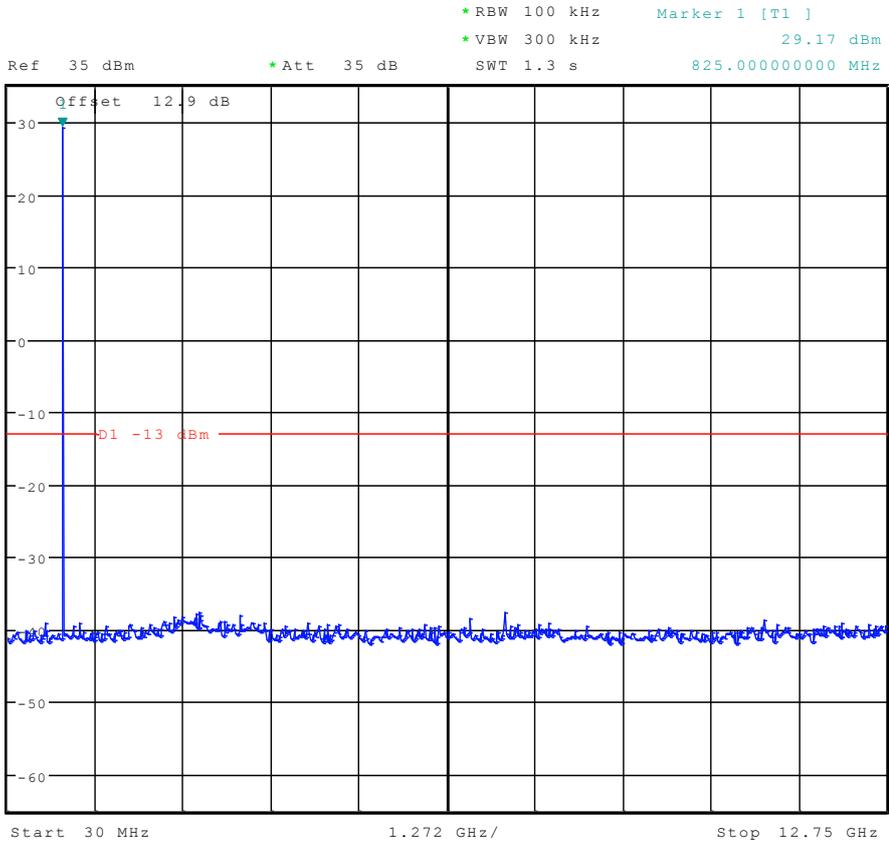
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SWT 300 ms 150.00000000 kHz



Date: 24.SEP.2012 23:37:16



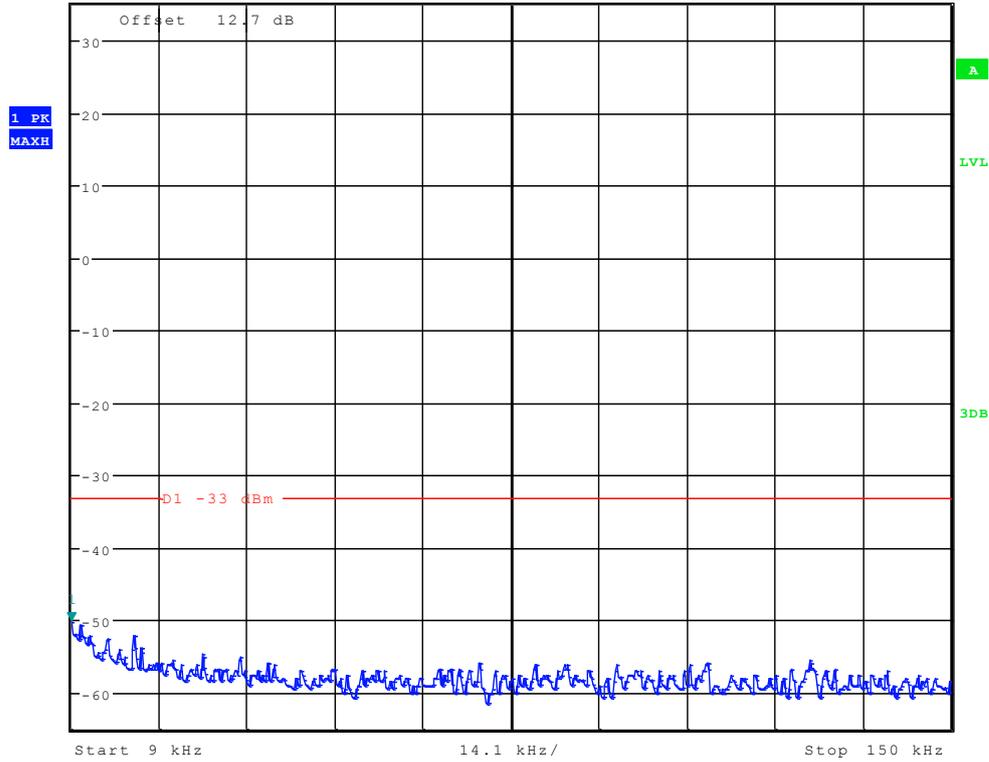
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Channel 192



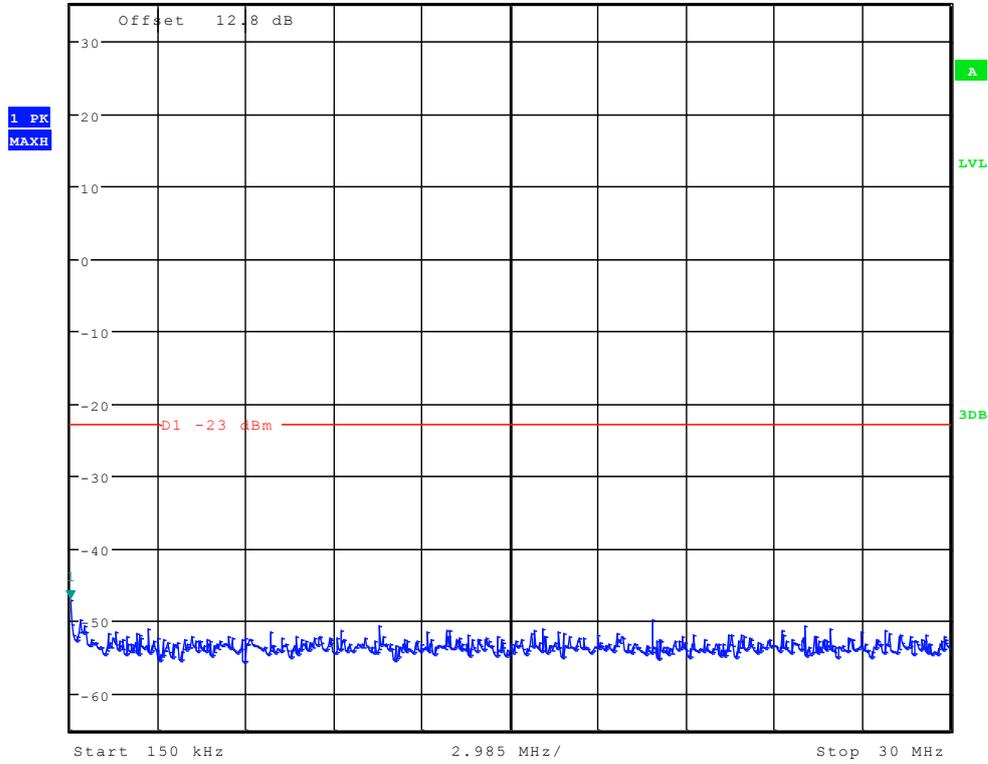
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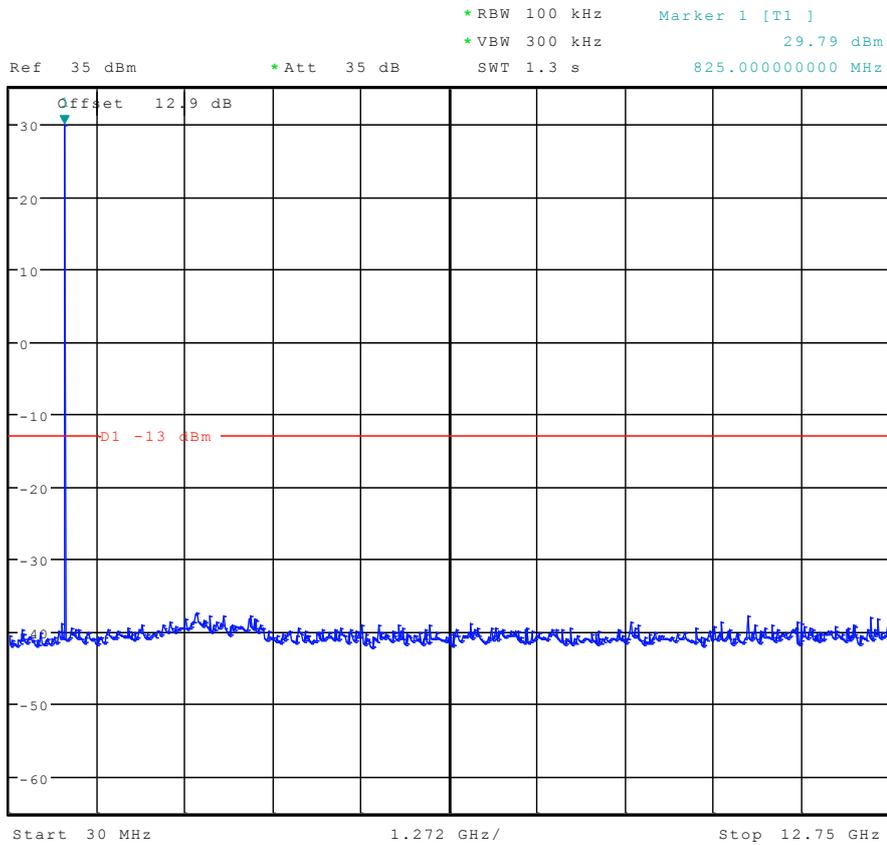
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* RBW 10 kHz Marker 1 [T1] -46.97 dBm
* VBW 30 kHz 150.00000000 kHz



Date: 24.SEP.2012 23:37:30



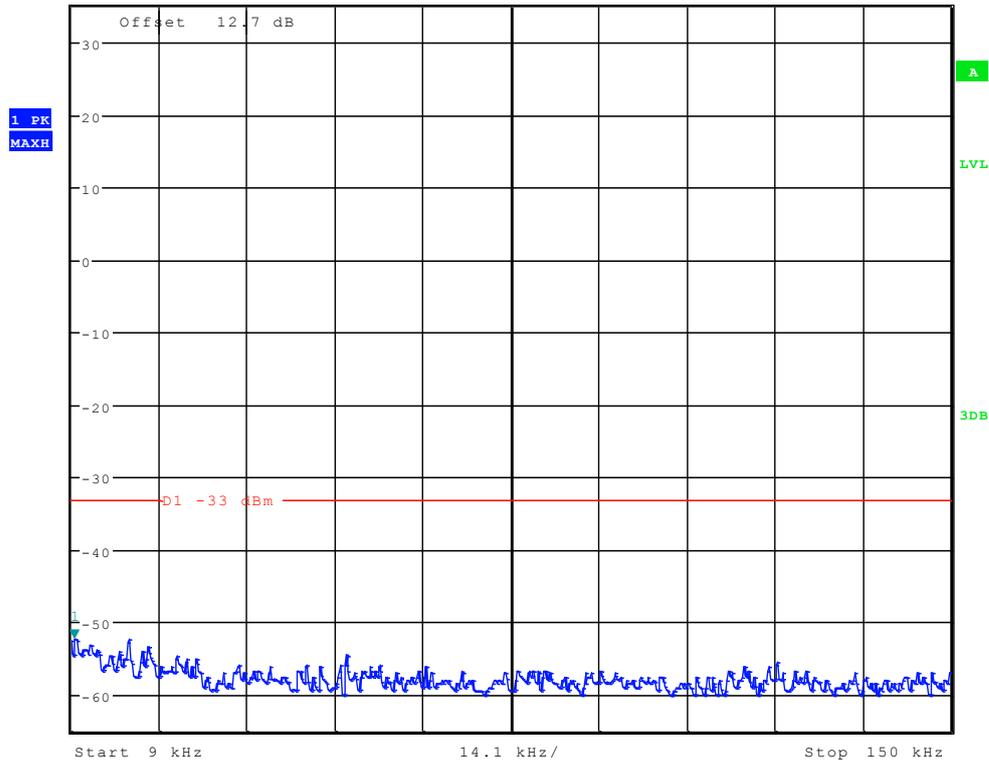
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Channel 251



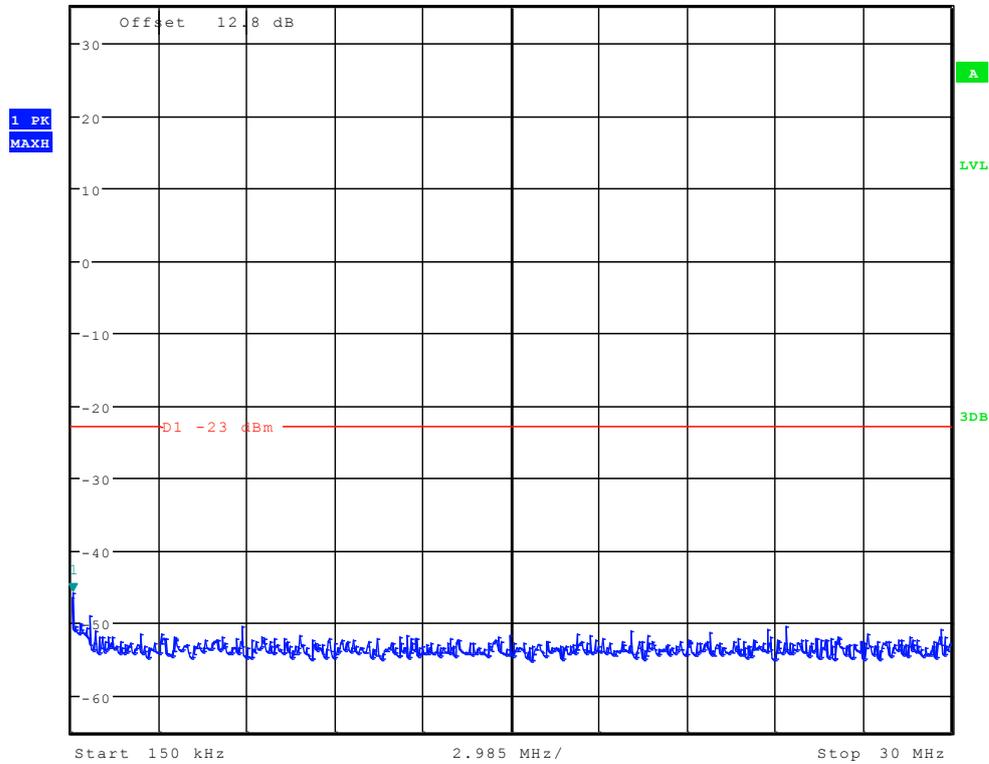
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Date: 24.SEP.2012 23:37:01



* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -45.85 dBm
Ref 35 dBm * Att 35 dB SWT 300 ms 197.836538462 kHz

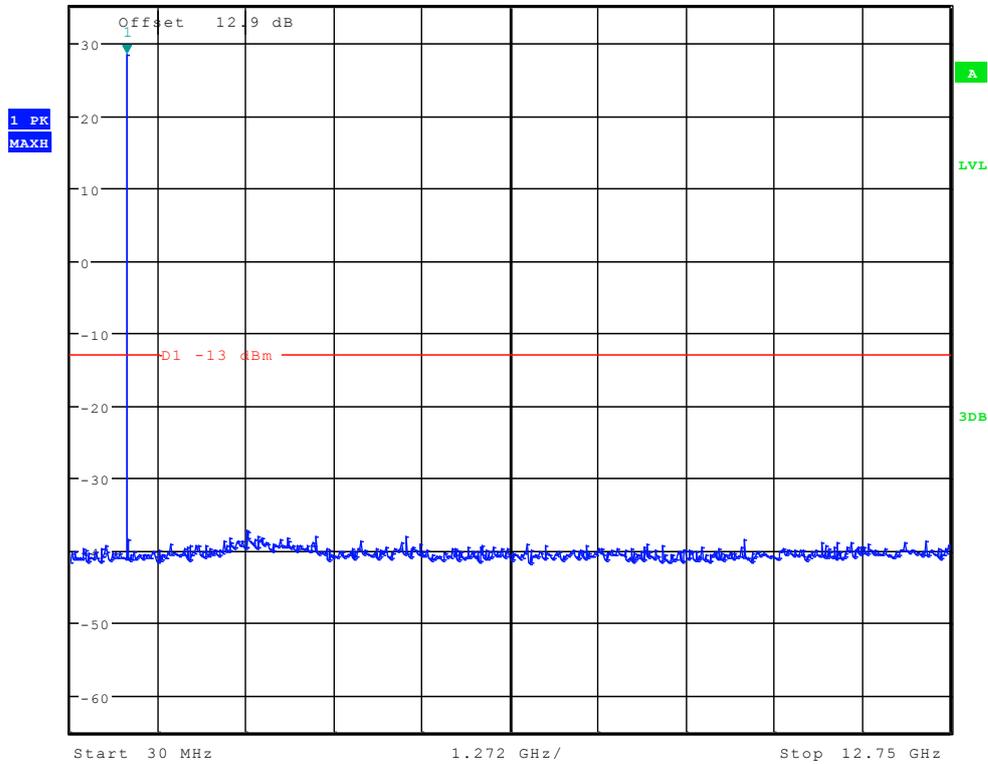


Date: 24.SEP.2012 23:37:44



Ref 35 dBm * Att 35 dB * RBW 100 kHz * VBW 300 kHz * SWT 1.3 s

Marker 1 [T1] 28.42 dBm
845.384615385 MHz



Date: 24.SEP.2012 23:38:35

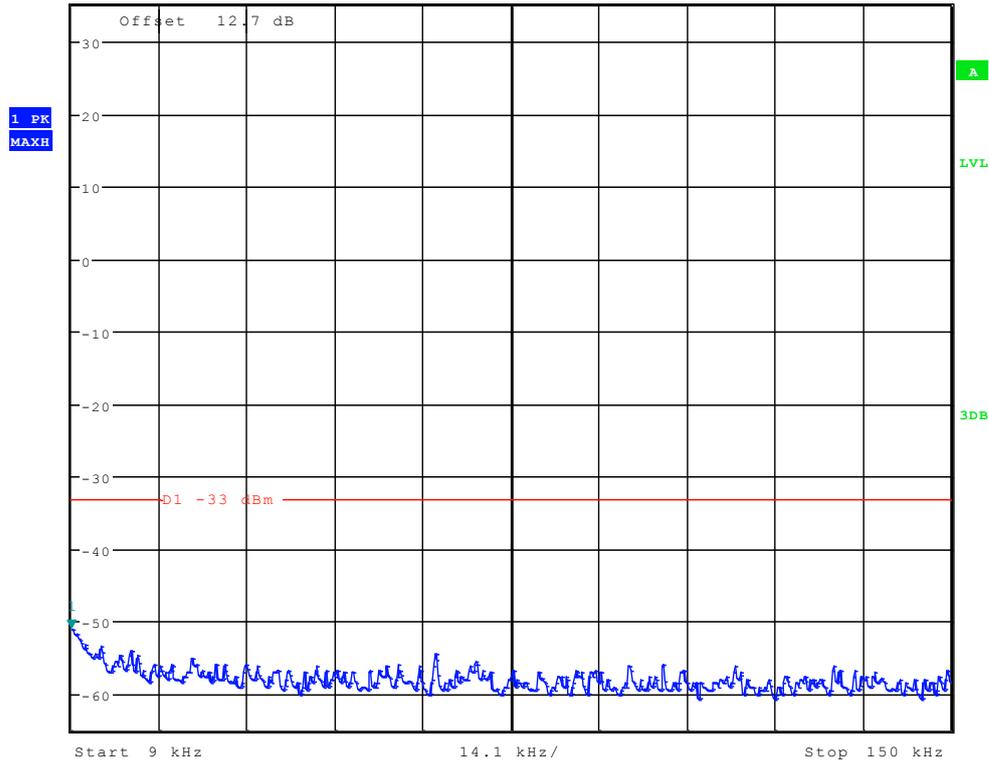


TM3: WCDMA

Channel 4132



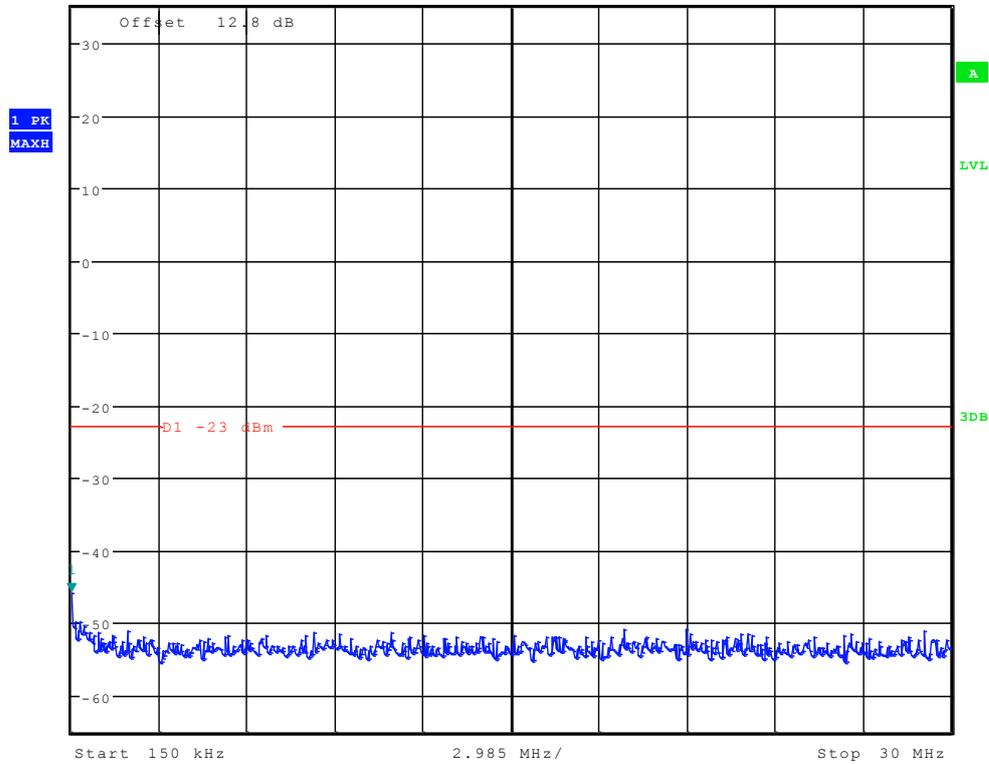
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 * VBW 10 kHz



Date: 24.SEP.2012 23:40:58



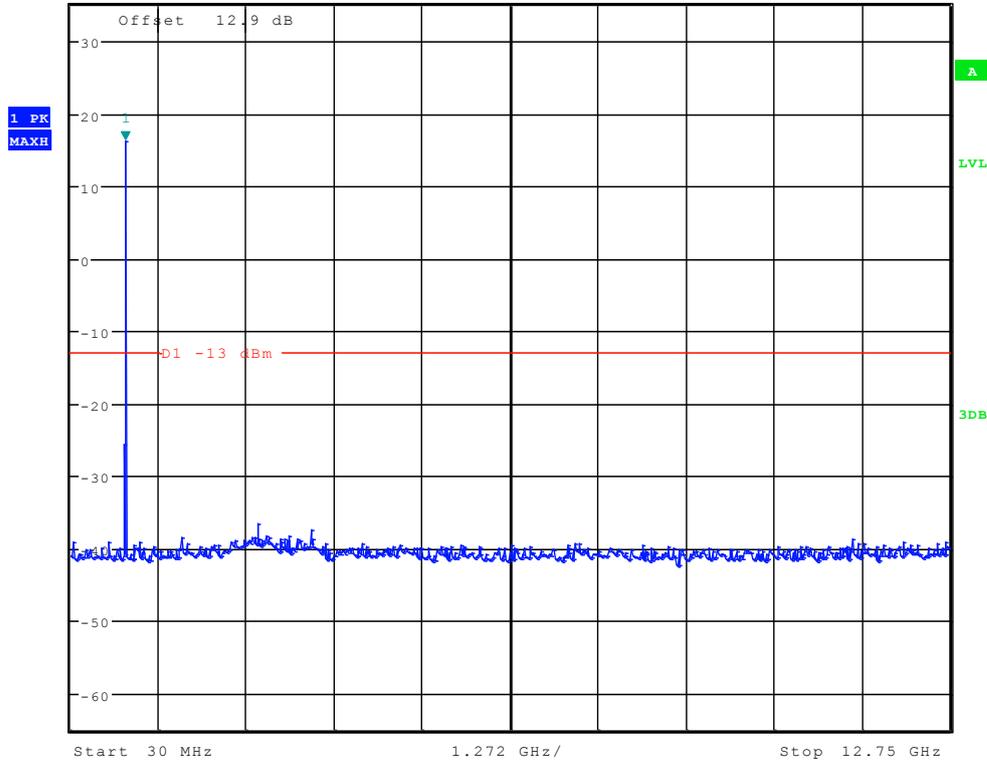
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SWT 300 ms 150.00000000 kHz



Date: 24.SEP.2012 23:41:42



Ref 35 dBm * Att 35 dB * RBW 100 kHz * VBW 300 kHz * Marker 1 [T1]
SWT 1.3 s 16.25 dBm 825.00000000 MHz



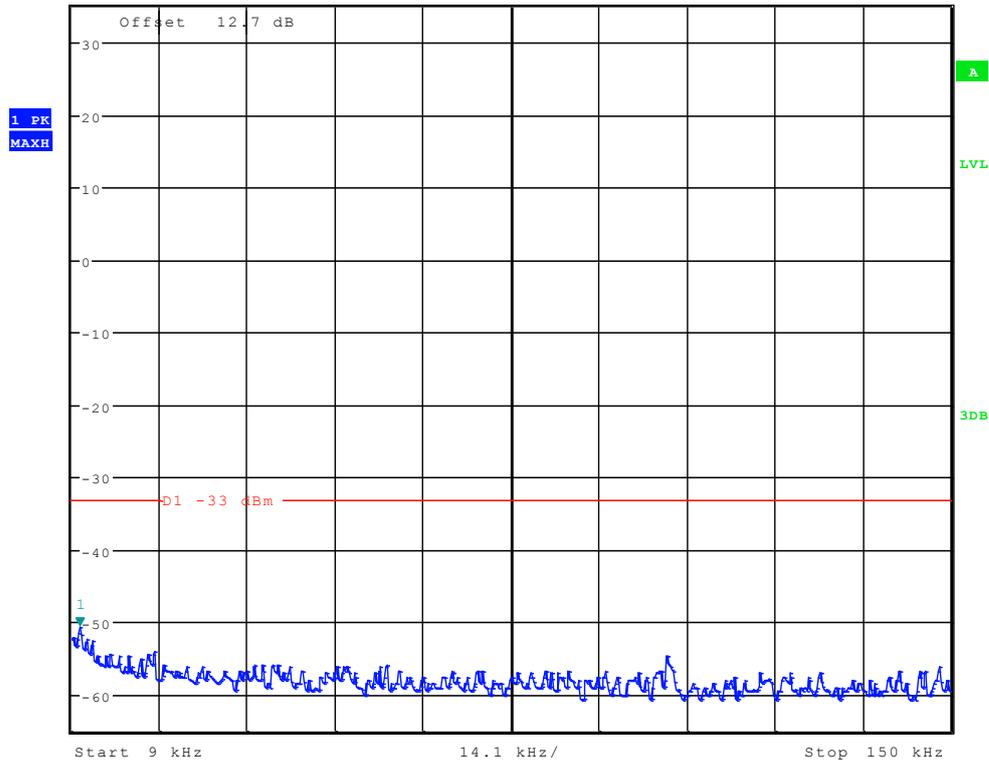
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Channel 4182



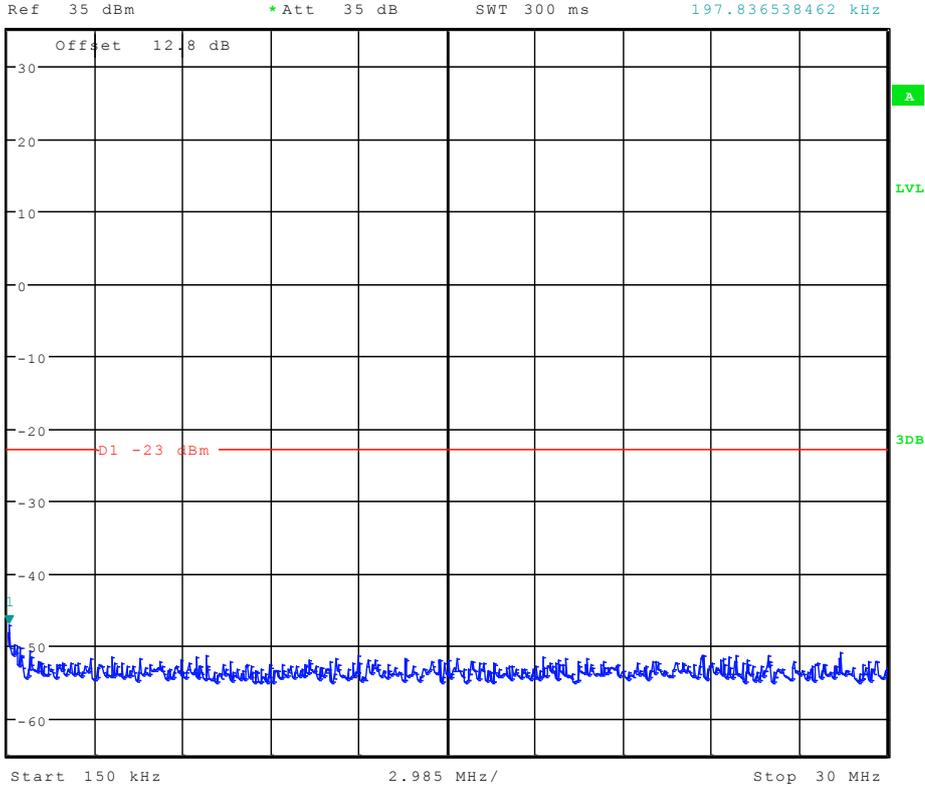
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 * RBW 1 kHz * VBW 10 kHz 10.355769231 kHz



Date: 24.SEP.2012 23:41:13



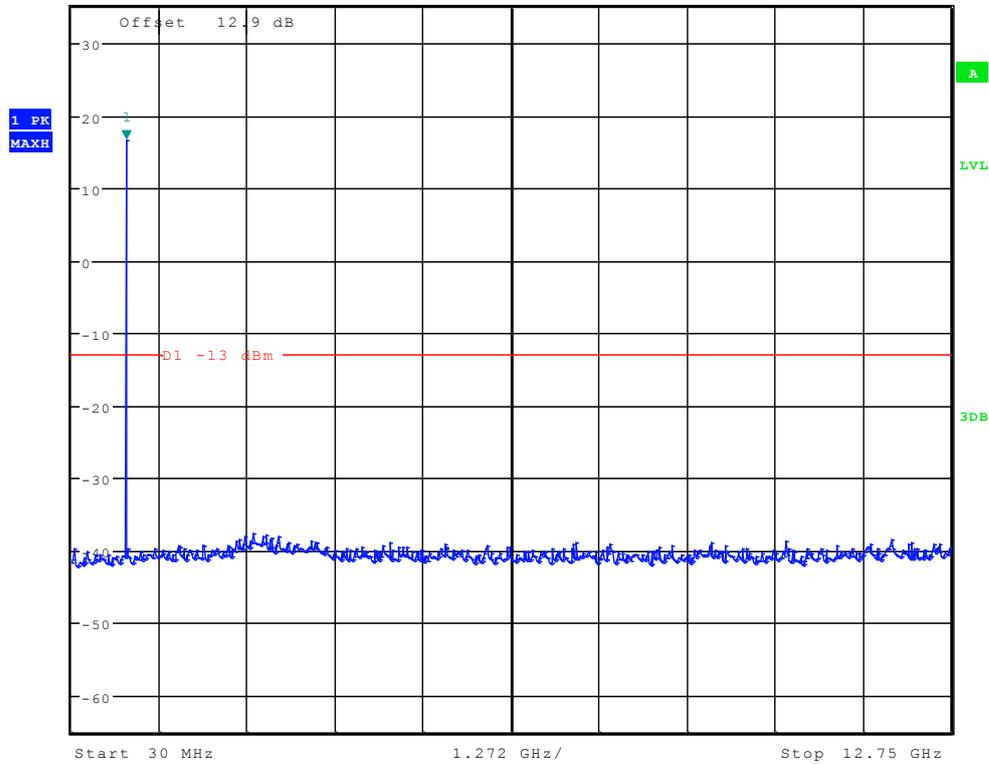
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -47.14 dBm
SWT 300 ms 197.836538462 kHz



Date: 24.SEP.2012 23:41:56



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 * RBW 100 kHz Marker 1 [T1] 16.54 dBm
 * VBW 300 kHz



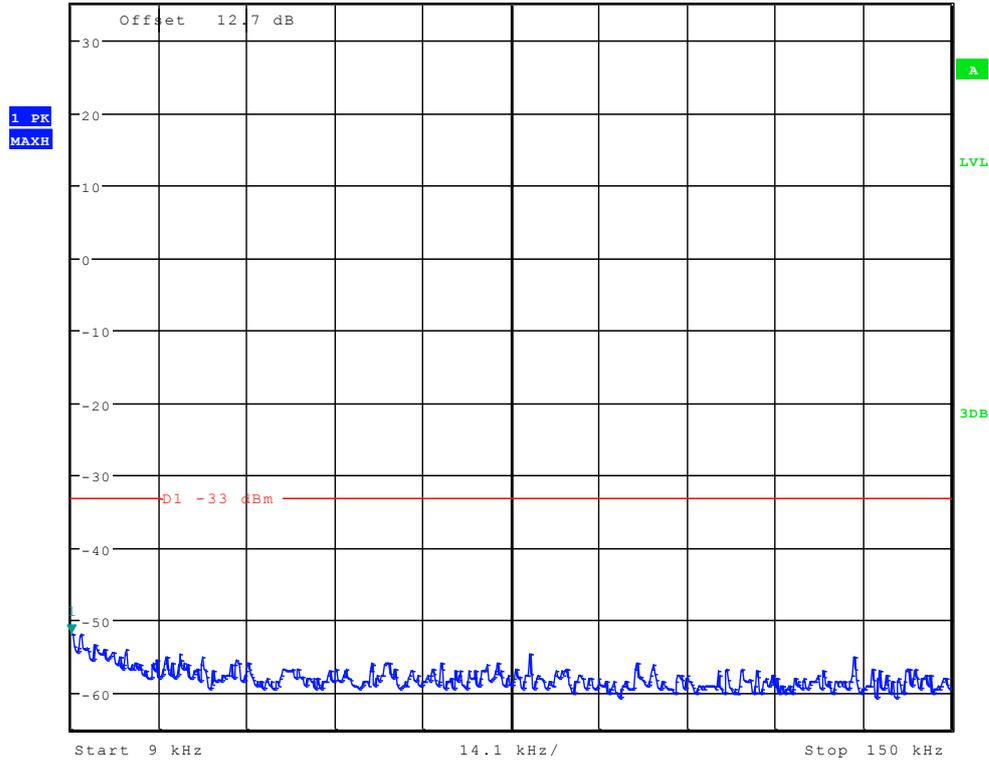
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Channel 4233



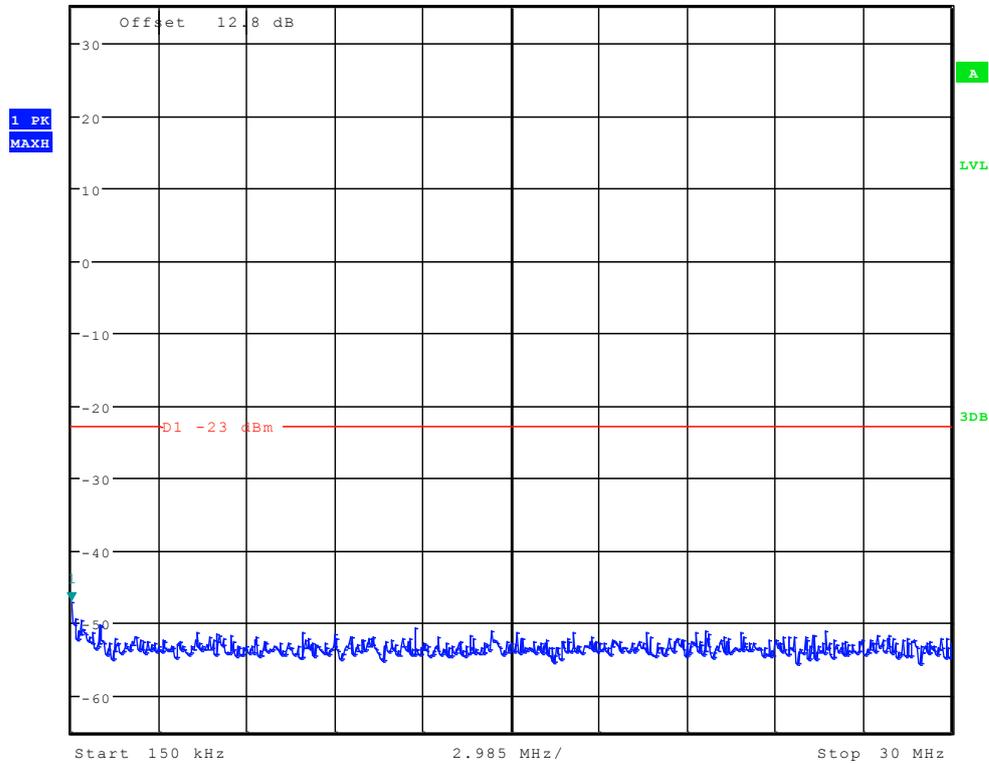
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 * VBW 10 kHz 9.000000000 kHz
 SWT 145 ms



Date: 24.SEP.2012 23:41:27



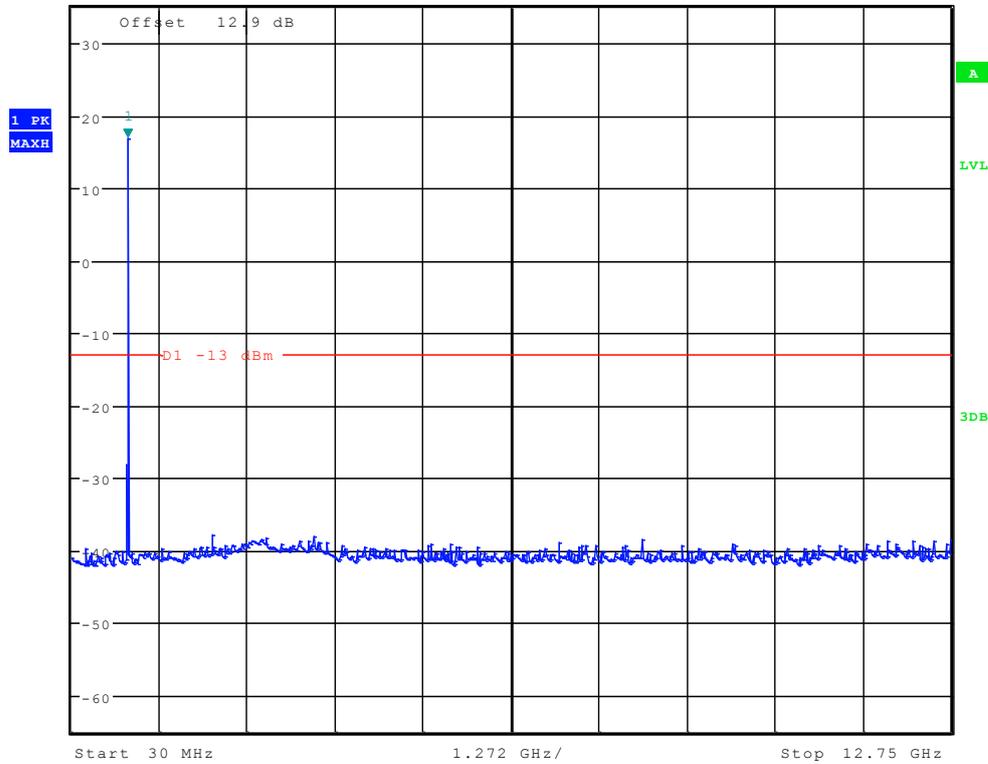
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* VBW 30 kHz -47.14 dBm
SWT 300 ms 150.00000000 kHz



Date: 24.SEP.2012 23:42:11



Ref 35 dBm * Att 35 dB SWT 1.3 s
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 16.85 dBm
845.384615385 MHz



Date: 24.SEP.2012 23:42:55

-----END-----



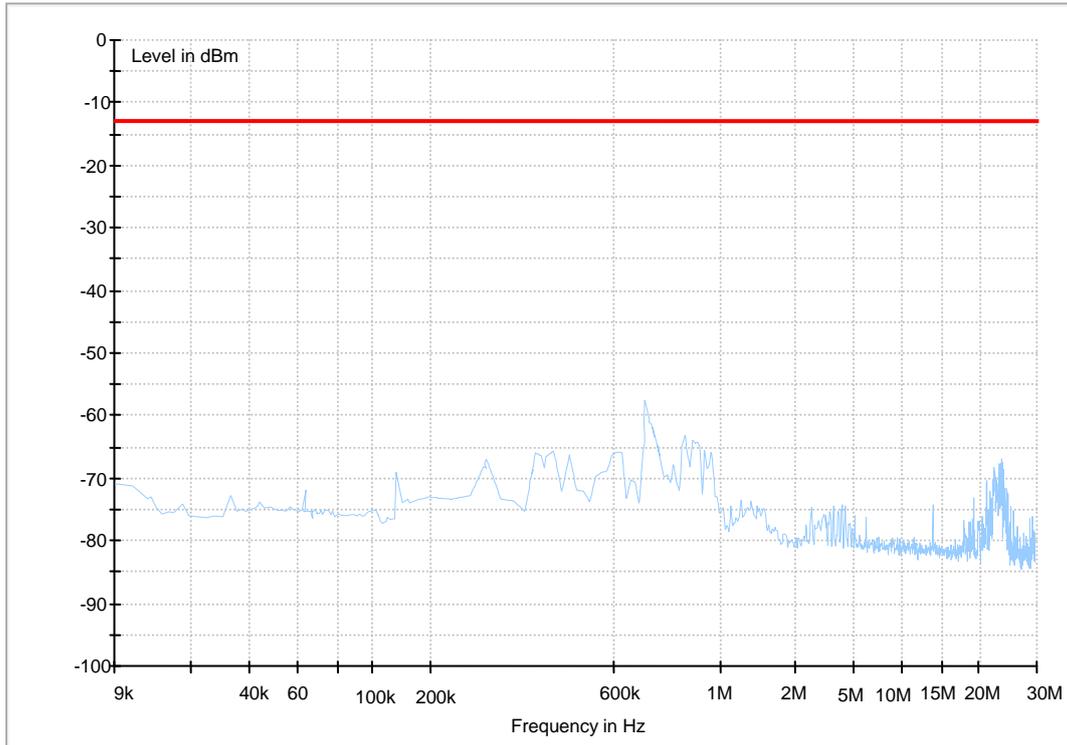
Appendix F

Radiated spurious emission

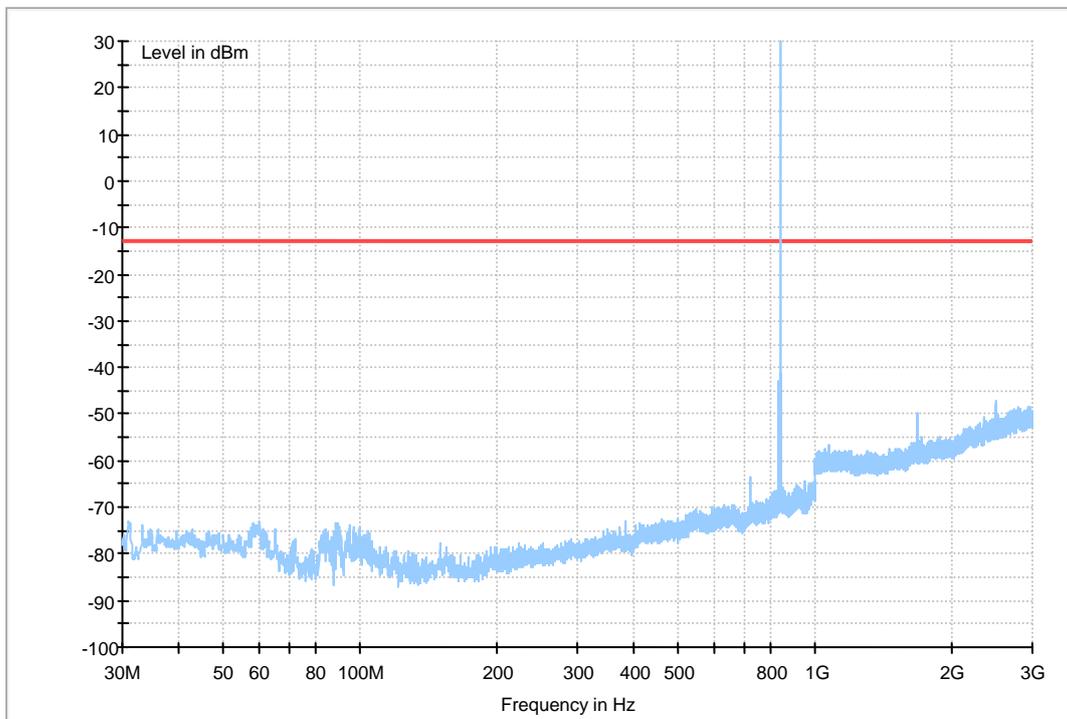
According to FCC Part 2.1053& Part 22.917

GSM850

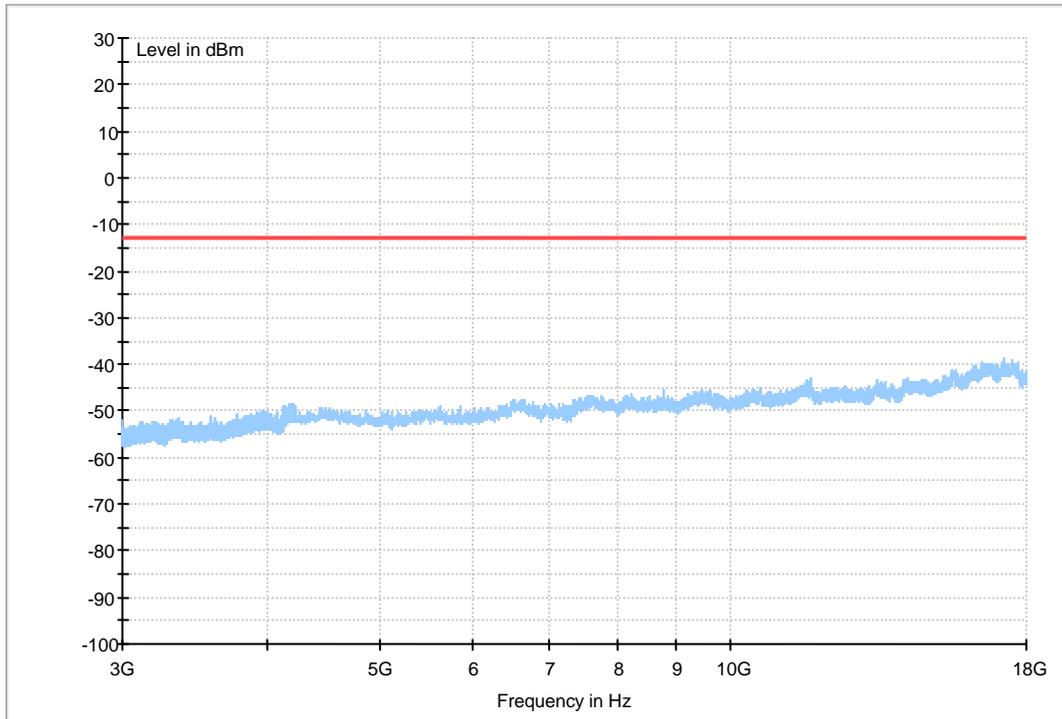
(9kHz~30MHz)



(30MHz~3GHz)

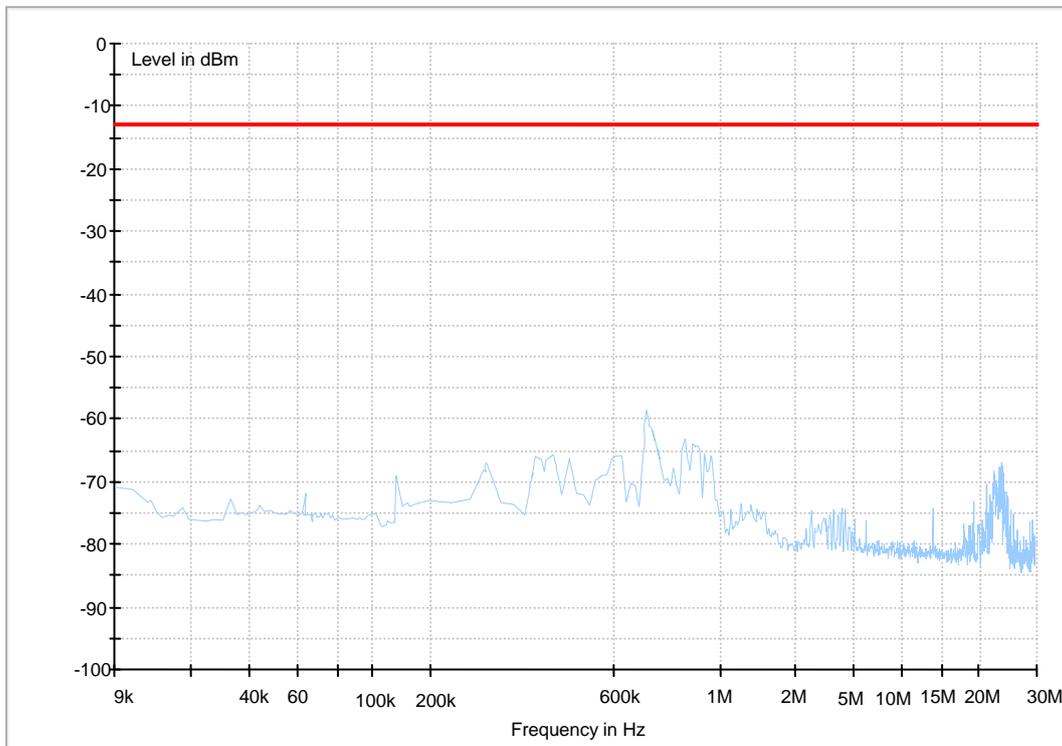


(3GHz~18GHz)

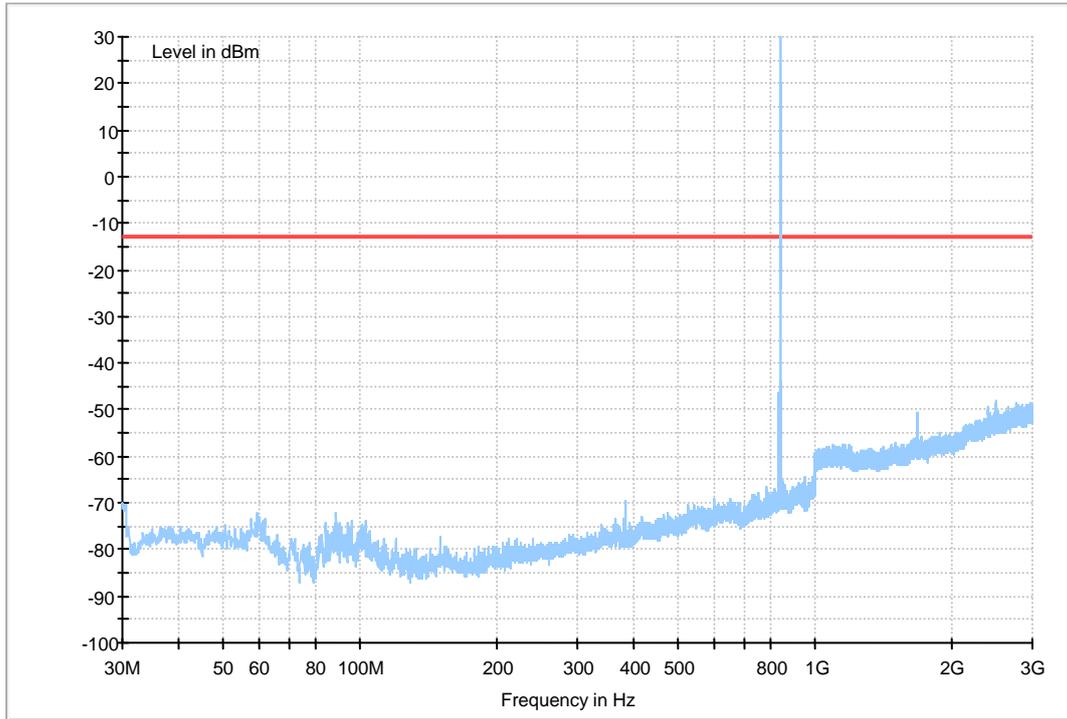


GPRS 850

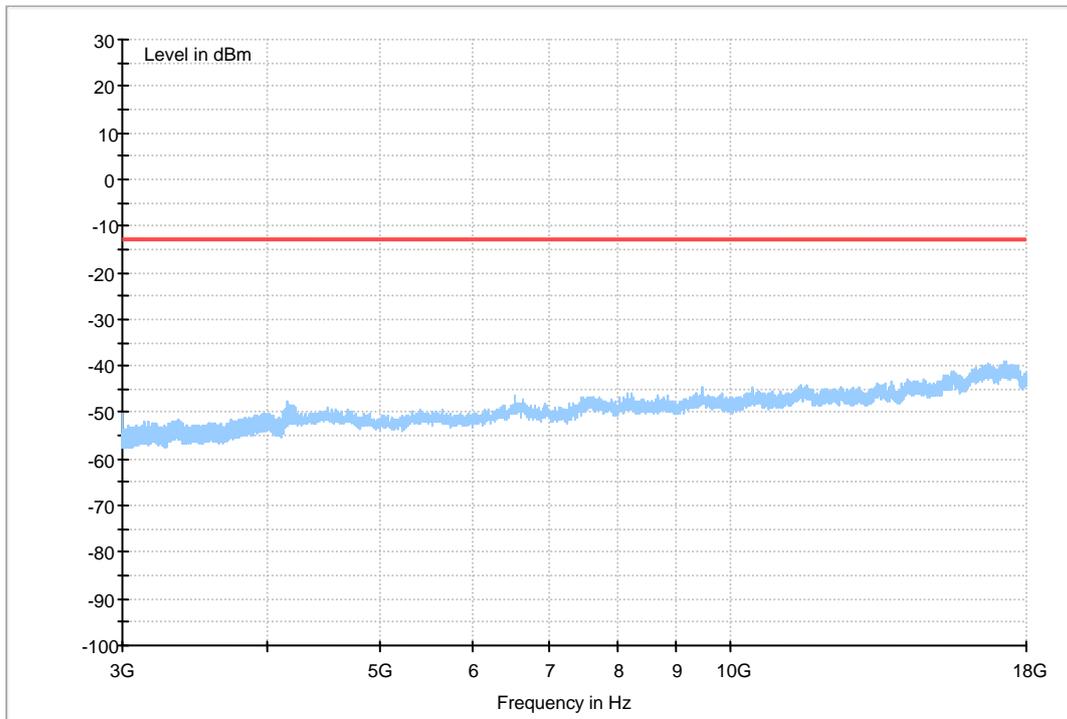
(9kHz~30MHz)



(30MHz~3GHz)

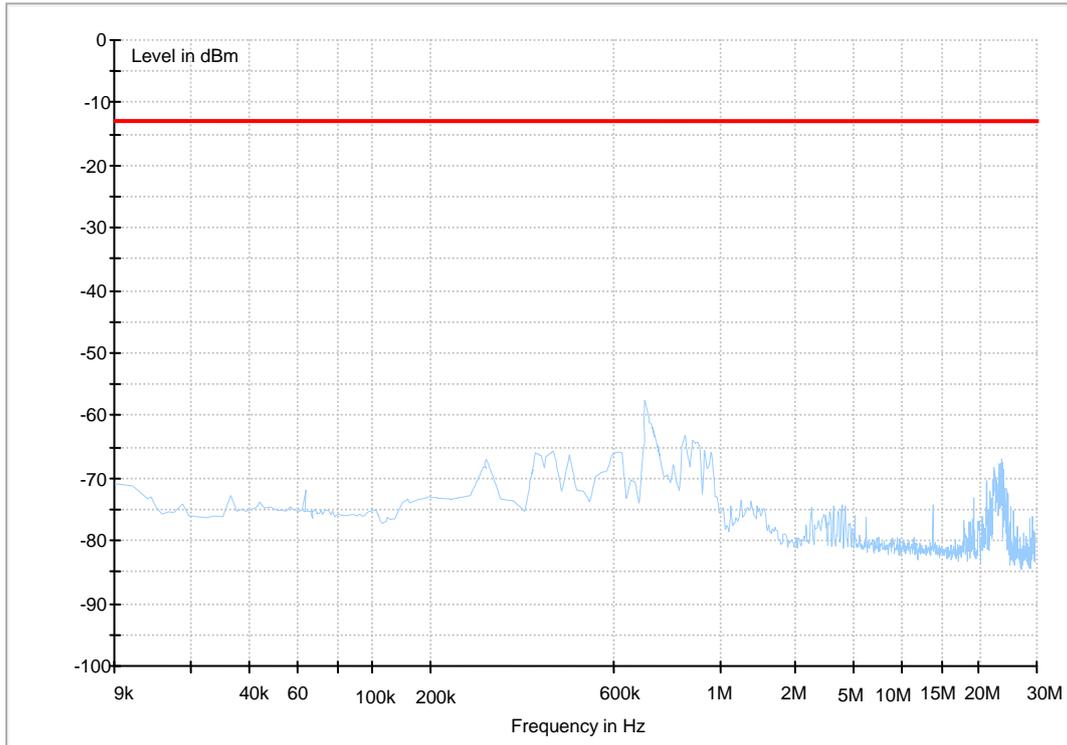


(3GHz~18GHz)

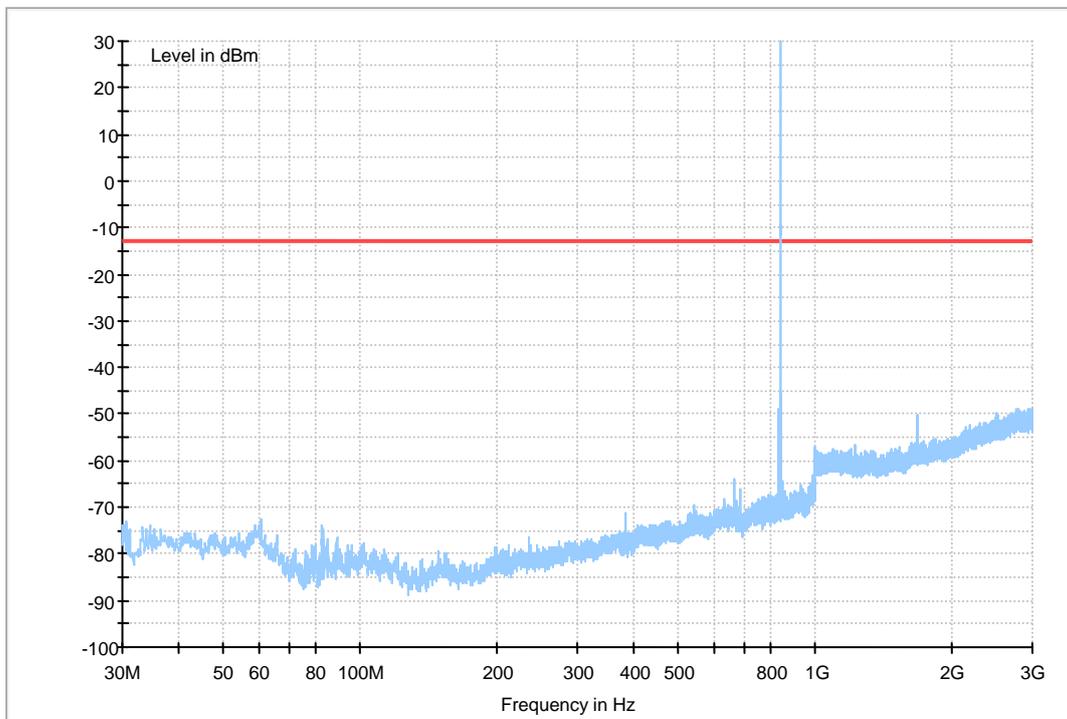


EDGE 850

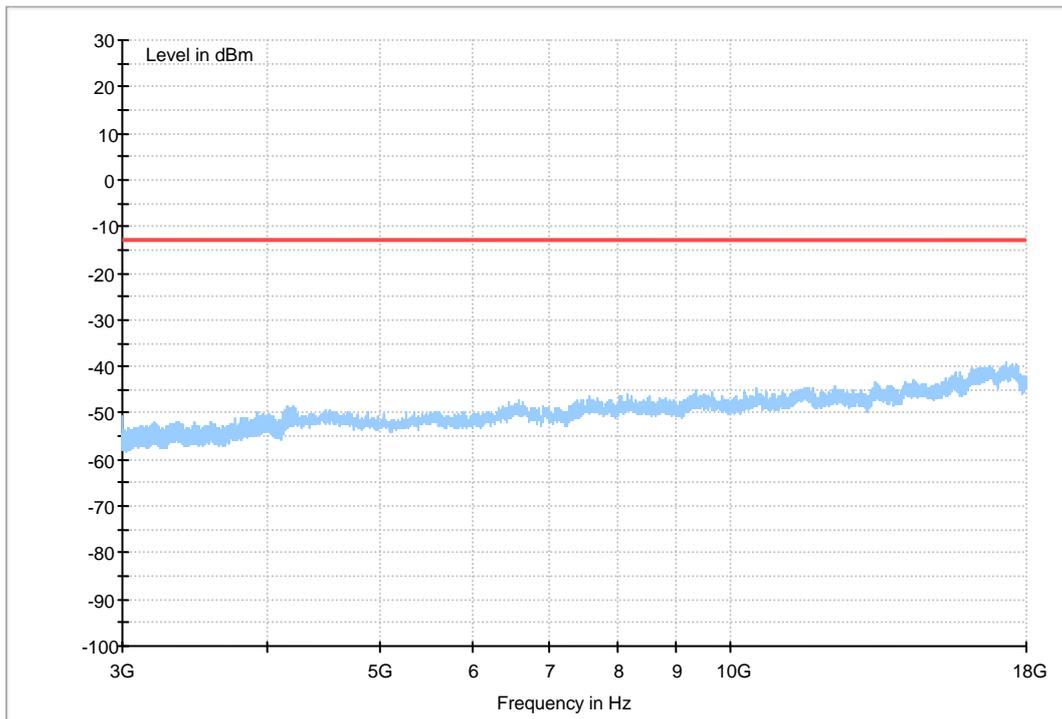
(9kHz~30MHz)



(30MHz~3GHz)

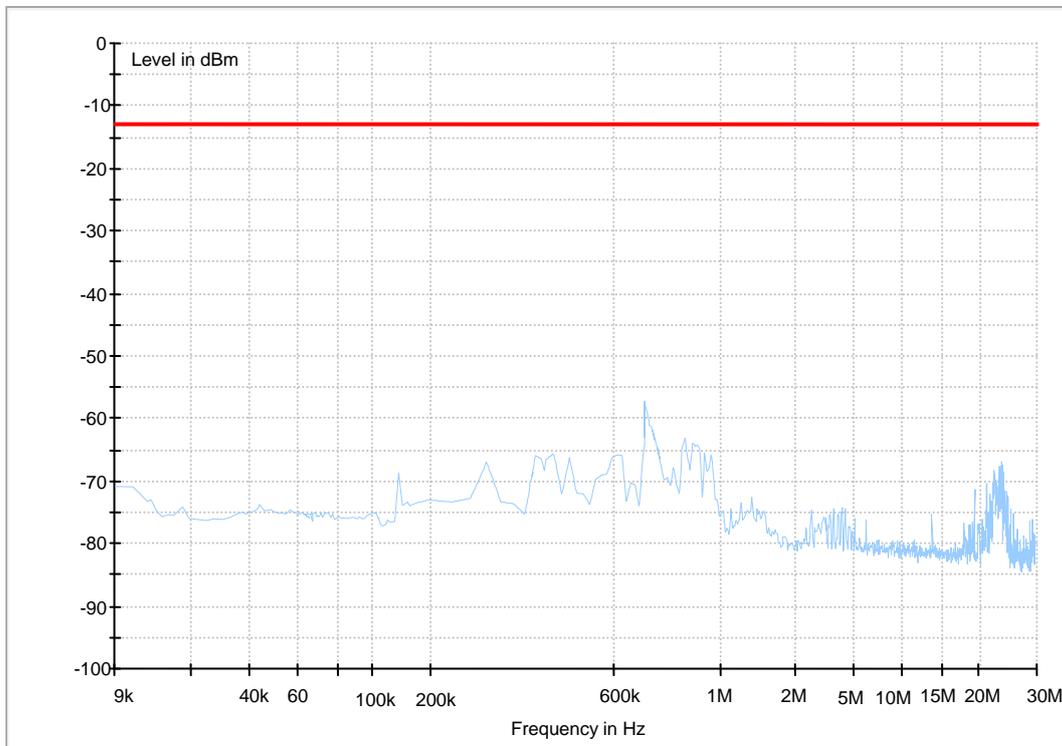


(3GHz~18GHz)

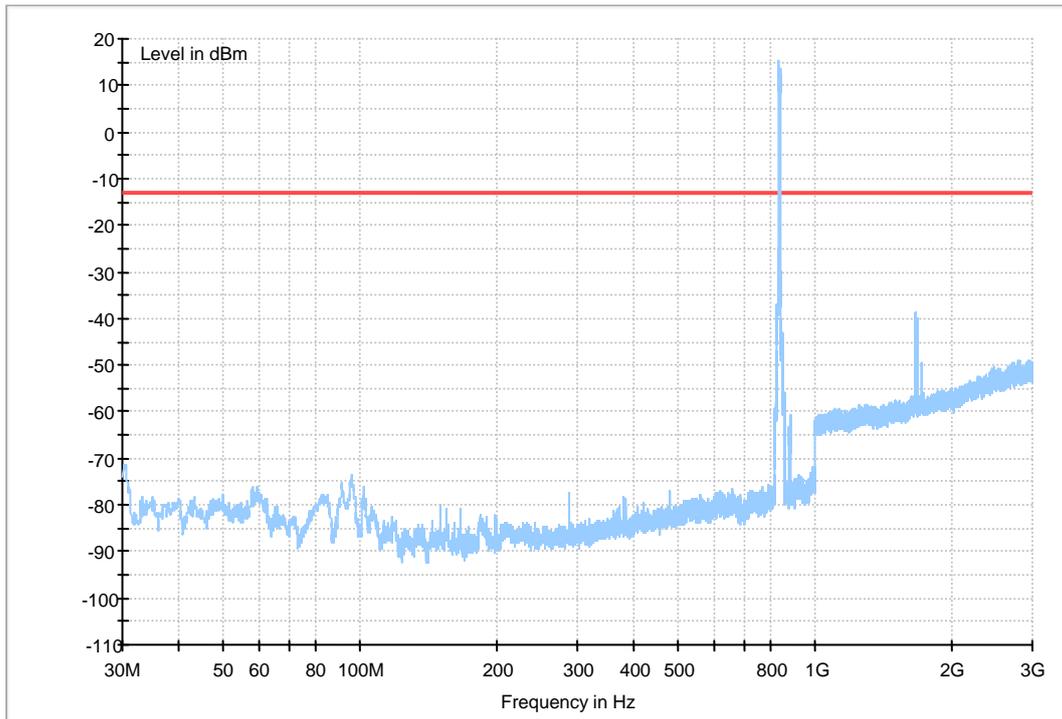


WCDMA Band V

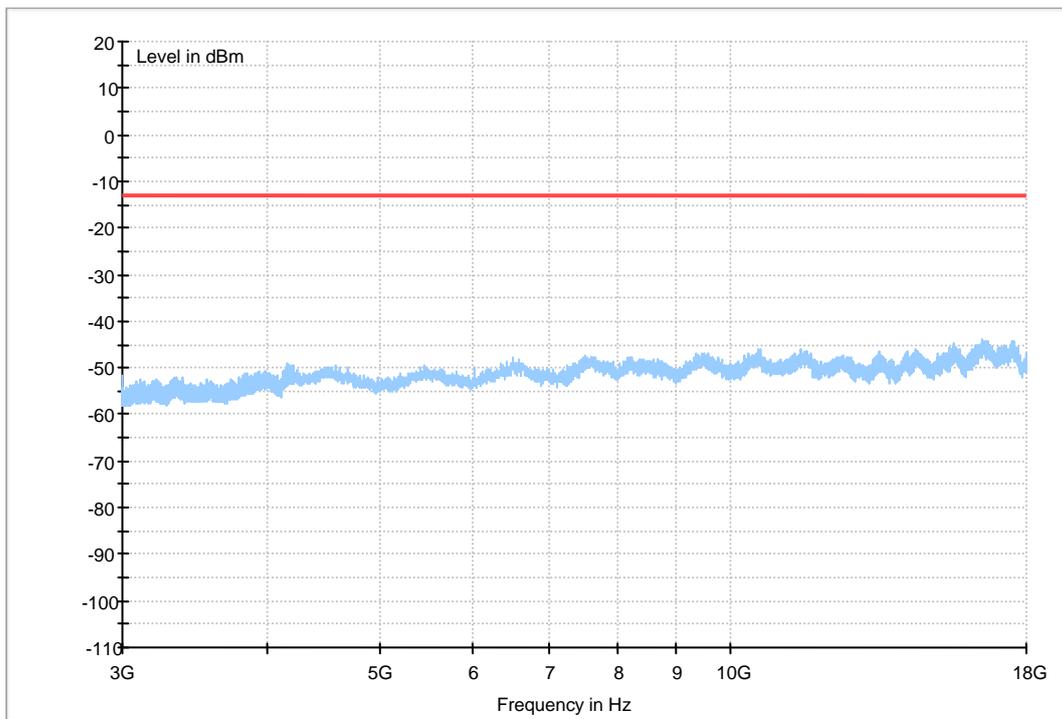
(9KHz~30MHz)



(30MHz~3GHz)

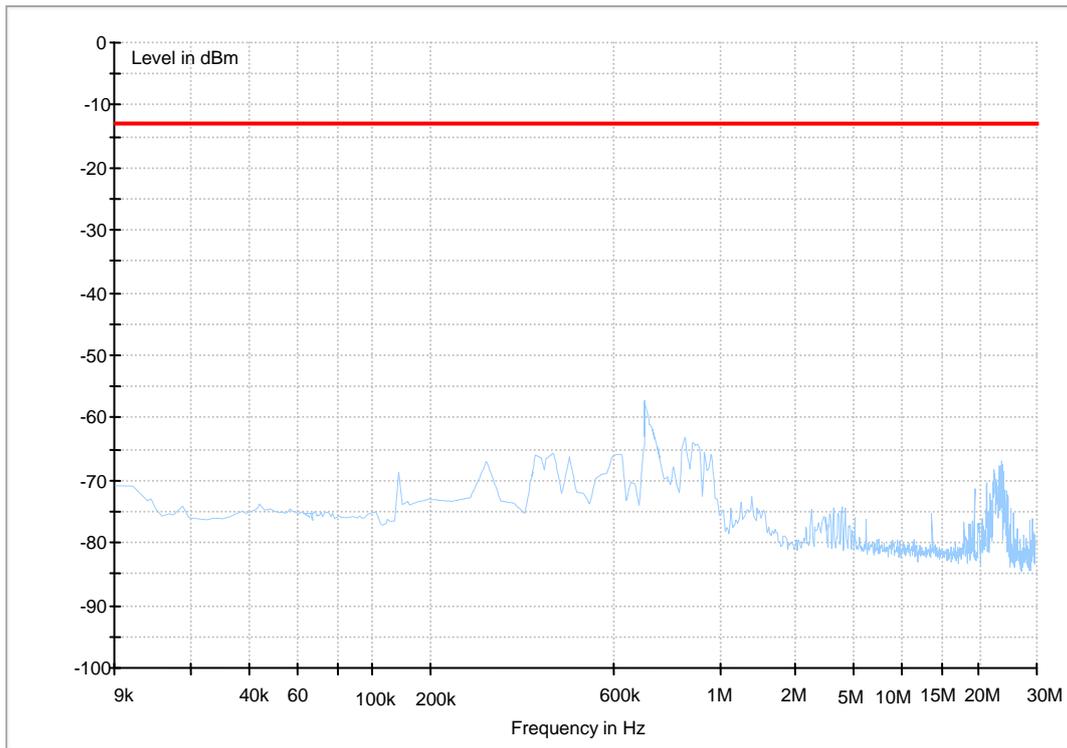


(3GHz~18GHz)

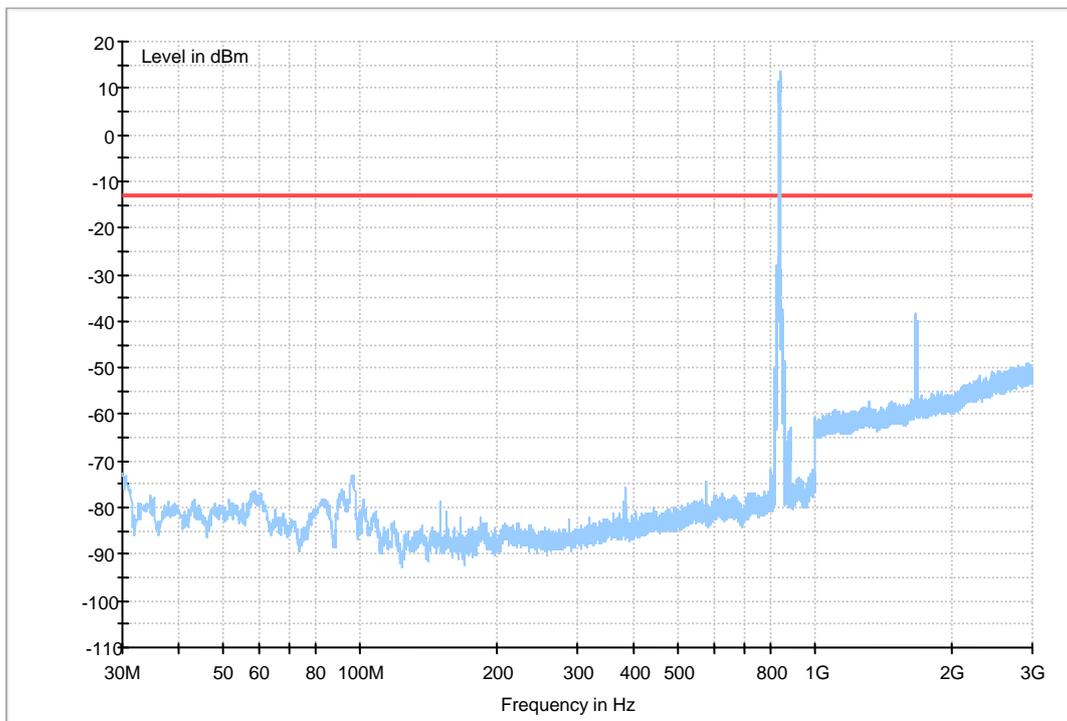


HSDPA Band V

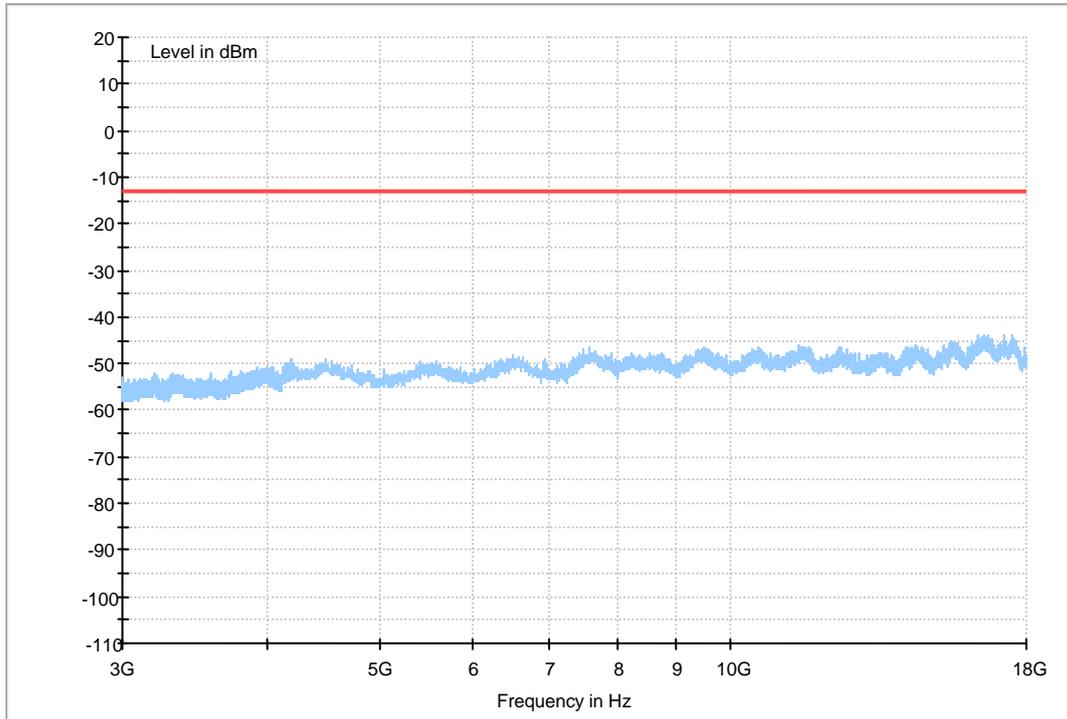
(9KHz~30MHz)



(30MHz~3GHz)

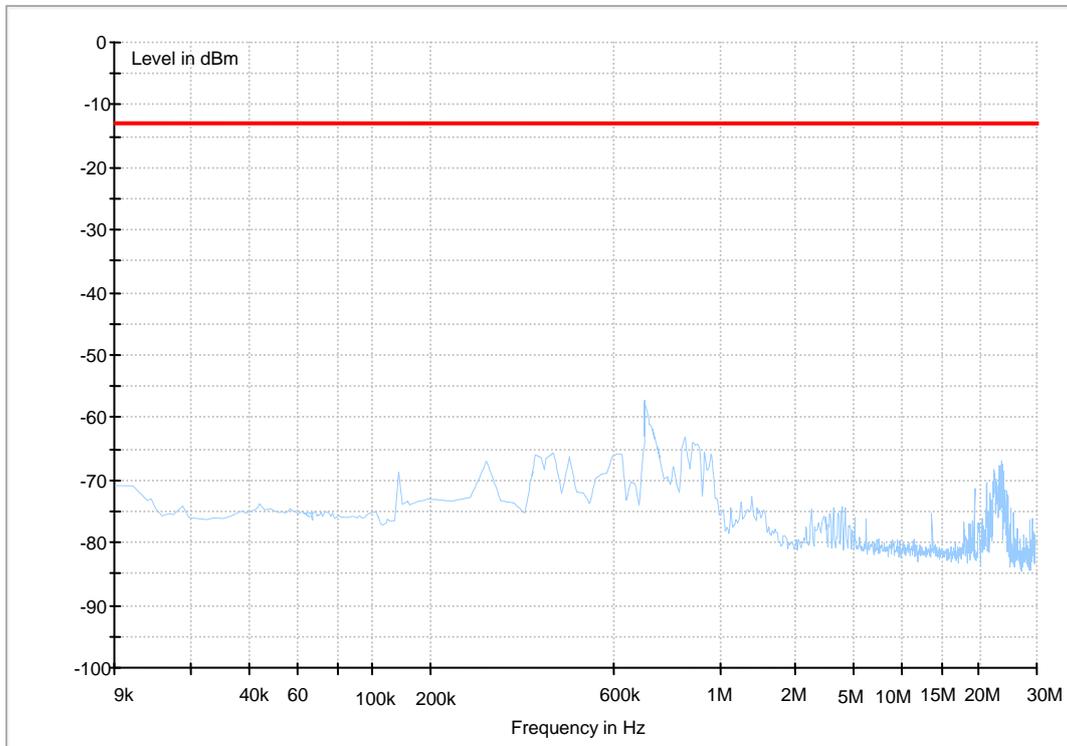


(3GHz~18GHz)

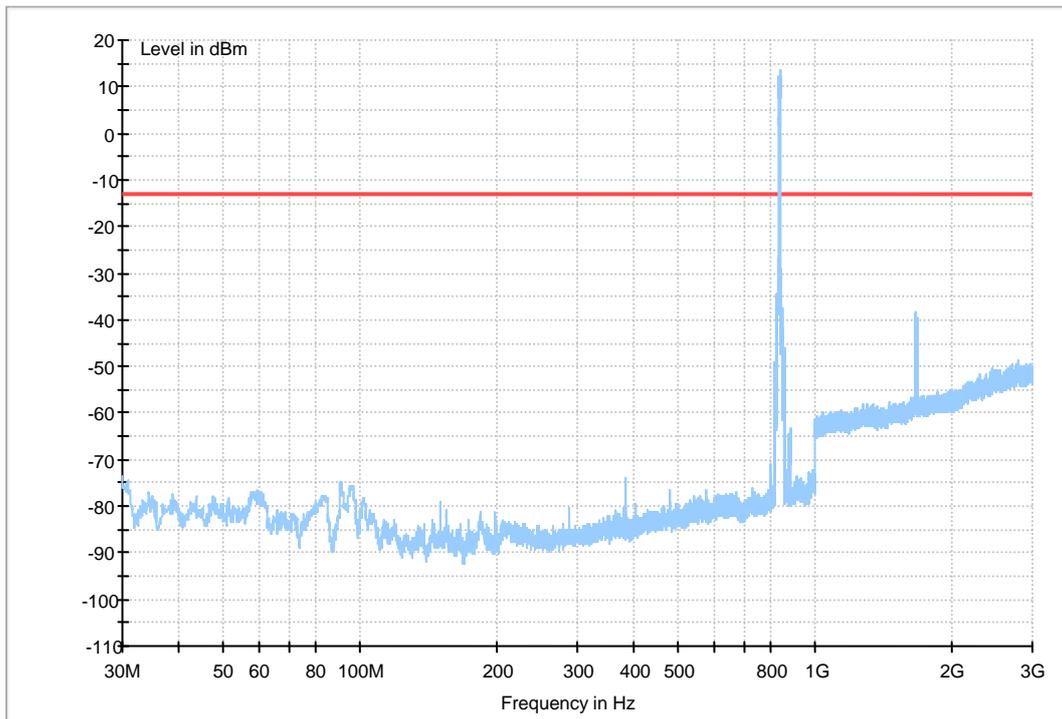


HSUPA Band V

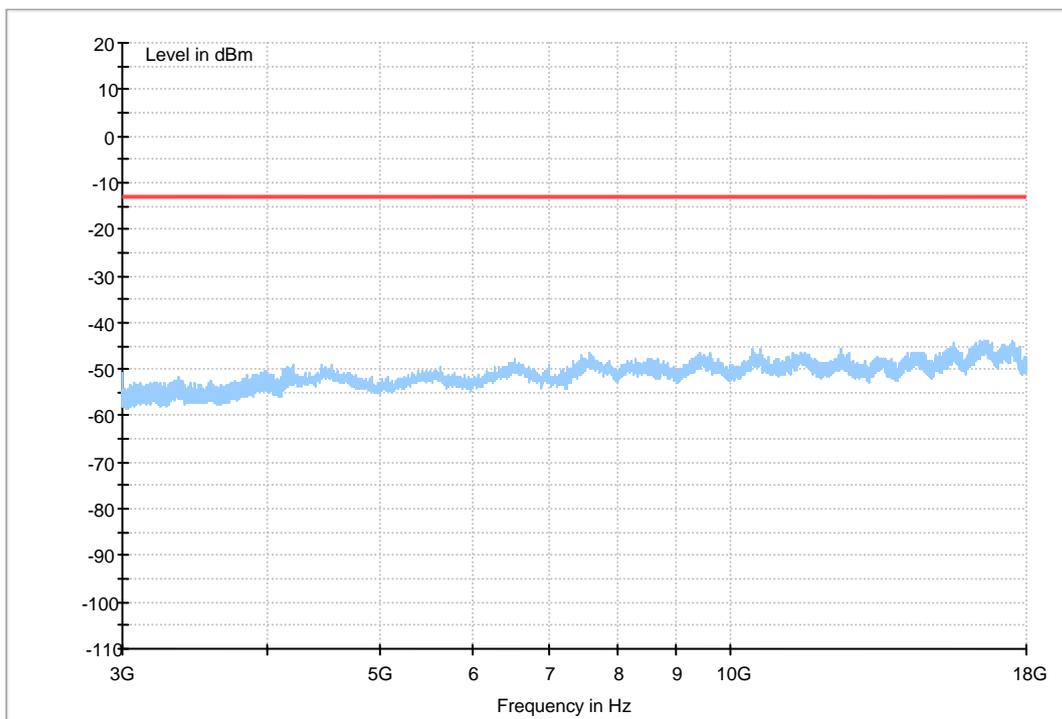
(9KHz~30MHz)



(30MHz~3GHz)



(3GHz~18GHz)



-----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 | -24 | -0.02867 | --- | ±2.5 | Pass |
| | | | -20 °C | 16 | 0.01912 | --- | ±2.5 | Pass |
| | | | -10 °C | 27 | 0.03226 | --- | ±2.5 | Pass |
| | | | 0 °C | 13 | 0.01553 | --- | ±2.5 | Pass |
| | | | 10 °C | 19 | 0.02270 | --- | ±2.5 | Pass |
| | | | 20 °C | 12 | 0.01434 | --- | ±2.5 | Pass |
| | | | 30 °C | 17 | 0.02031 | --- | ±2.5 | Pass |
| | | | 40 °C | -20 | -0.02389 | --- | ±2.5 | Pass |
| | | | 50 °C | -15 | -0.01792 | --- | ±2.5 | Pass |
| TM 2 | M | VN | -30 °C | -15 | -0.01792 | --- | ±2.5 | Pass |
| | | | -20 °C | 28 | 0.03345 | --- | ±2.5 | Pass |
| | | | -10 °C | -16 | -0.01912 | --- | ±2.5 | Pass |
| | | | 0 °C | 26 | 0.03106 | --- | ±2.5 | Pass |
| | | | 10 °C | 29 | 0.03465 | --- | ±2.5 | Pass |
| | | | 20 °C | 22 | 0.02628 | --- | ±2.5 | Pass |
| | | | 30 °C | -20 | -0.02389 | --- | ±2.5 | Pass |
| | | | 40 °C | 23 | 0.02748 | --- | ±2.5 | Pass |
| | | | 50 °C | 26 | 0.03106 | --- | ±2.5 | Pass |
| TM 3 | M | VN | -30 °C | -18 | -0.02152 | --- | ±2.5 | Pass |
| | | | -20 °C | -17 | -0.02033 | --- | ±2.5 | Pass |
| | | | -10 °C | -22 | -0.02630 | --- | ±2.5 | Pass |
| | | | 0 °C | -23 | -0.02750 | --- | ±2.5 | Pass |
| | | | 10 °C | 15 | 0.01793 | --- | ±2.5 | Pass |
| | | | 20 °C | 20 | 0.02391 | --- | ±2.5 | Pass |
| | | | 30 °C | -22 | -0.02630 | --- | ±2.5 | Pass |
| | | | 40 °C | -6 | -0.00717 | --- | ±2.5 | Pass |
| | | | 50 °C | -14 | -0.01674 | --- | ±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 | -23 | -0.02748 | --- | ±2.5 | Pass |
| | | | VN | -9 | -0.01075 | --- | ±2.5 | Pass |
| | | | VH | -17 | -0.02031 | --- | ±2.5 | Pass |
| TM 2 | M | TN | VL | 11 | 0.01314 | --- | ±2.5 | Pass |
| | | | VN | -21 | -0.02509 | --- | ±2.5 | Pass |
| | | | VH | -10 | -0.01195 | --- | ±2.5 | Pass |
| TM 3 | M | TN | VL | 21 | 0.02511 | --- | ±2.5 | Pass |
| | | | VN | -20 | -0.02391 | --- | ±2.5 | Pass |
| | | | VH | 26 | 0.03109 | --- | ±2.5 | Pass |

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