



FCC Test Report of K4305
FCC ID: QISK4305



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	32.28	38.5	32.34	38.5	32.23	38.5
TM2	25.91	38.5	25.74	38.5	25.33	38.5



Effective Radiated Power of Transmitter (ERP)

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (ERP)	FCC limit [dBm]	Result
							[dBm]		
TM1	824.2	31.8	Dipole Ant.	34.95	-2.75	0.6	31.6	38.5	Pass
TM1	837.0	31.86	Dipole Ant.	35.13	-2.87	0.6	31.66	38.5	Pass
TM1	848.8	31.75	Dipole Ant.	35	-2.85	0.6	31.55	38.5	Pass
TM2	824.2	25.43	Dipole Ant.	28.58	-2.75	0.6	25.23	38.5	Pass
TM2	837.0	25.26	Dipole Ant.	28.8	-2.87	0.6	25.33	38.5	Pass
TM2	848.8	24.85	Dipole Ant.	28.46	-2.85	0.6	25.01	38.5	Pass

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

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

b, SGP=Signal Generator Level

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



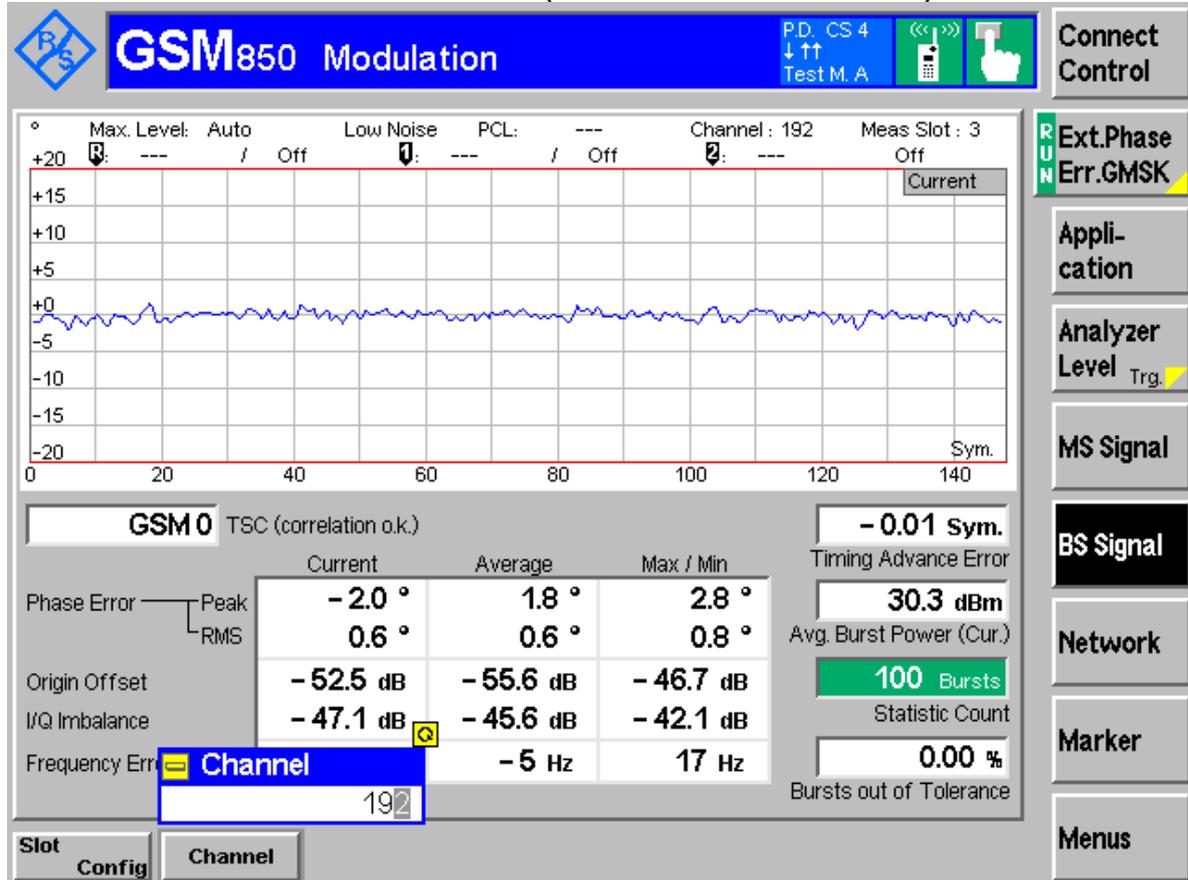
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

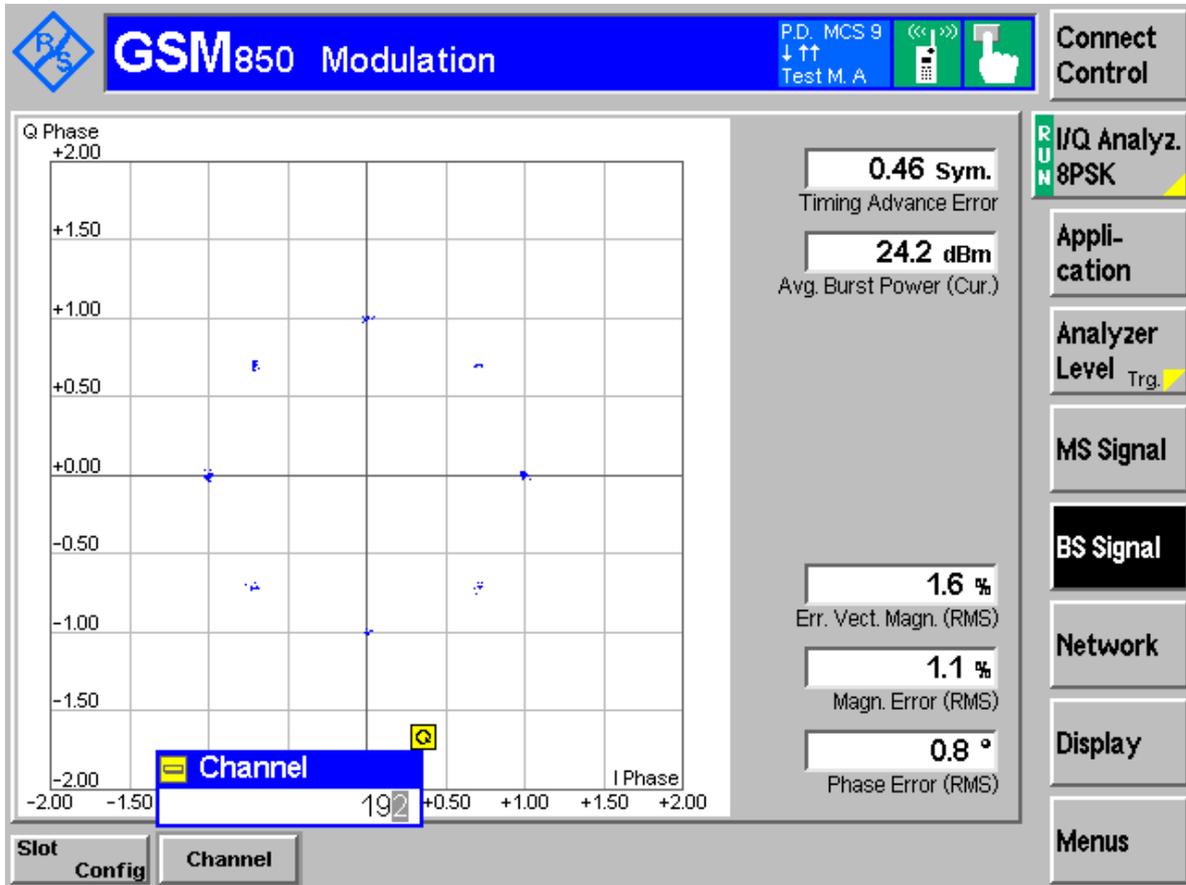


Channel 192(TM1:GPRS/GSM)





Channel 192(TM2:EDGE)



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



Appendix C

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



Result Table

Table 1 Measurement Results

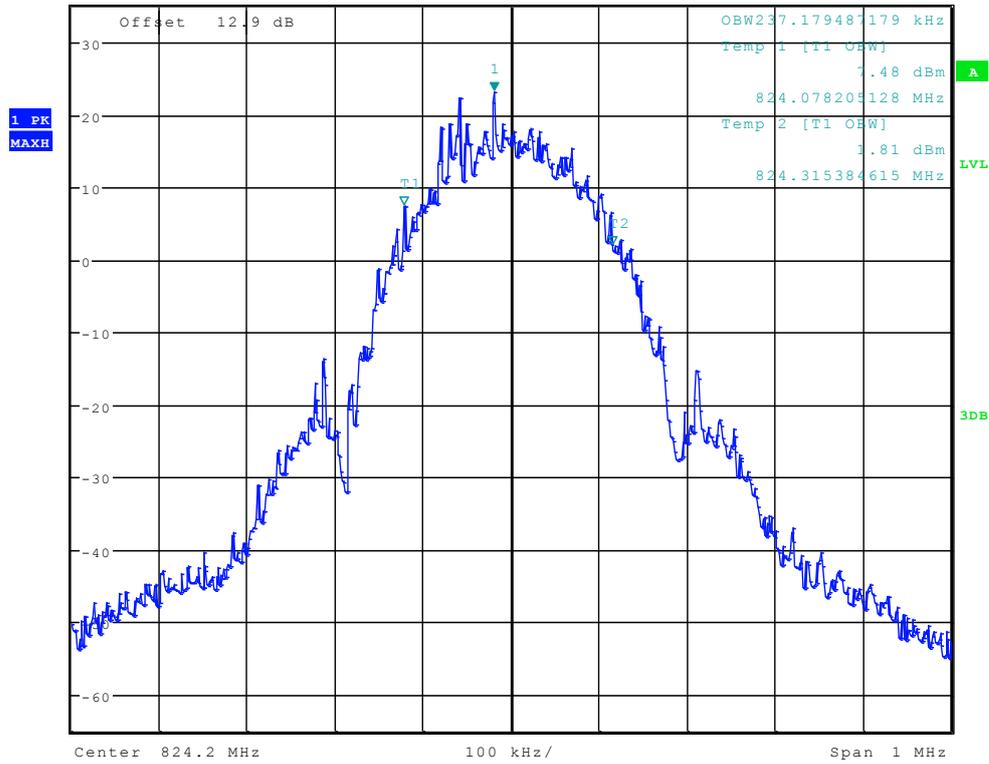
Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	128	248.39	Pass
	192	243.59	Pass
	251	245.19	Pass
TM2	128	237.18	Pass
	192	243.59	Pass
	251	243.59	Pass



Channel 128 (TM2:EDGE)



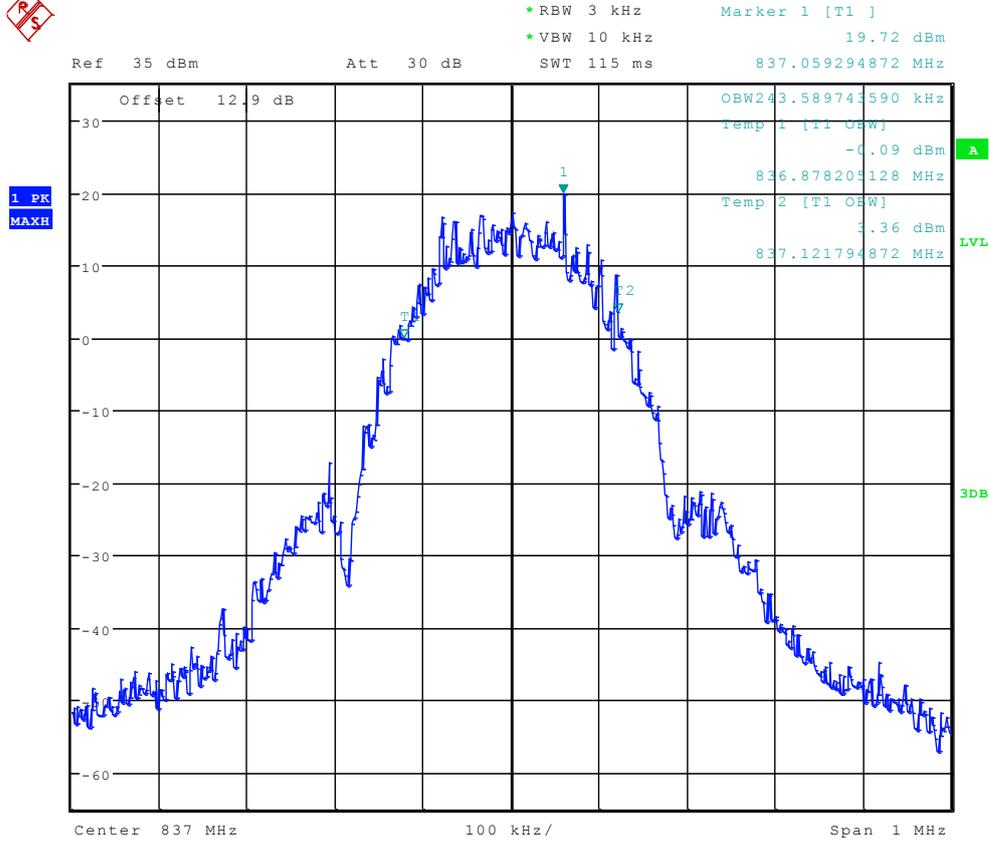
Ref 35 dBm Att 30 dB RBW 3 kHz VBW 10 kHz SWT 115 ms Marker 1 [T1] 23.21 dBm 824.180769231 MHz



Date: 8.AUG.2012 22:14:28



Channel 192 (TM2:EDGE)



Date: 8.AUG.2012 22:14:42



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Appendix D

Band Edges Compliance

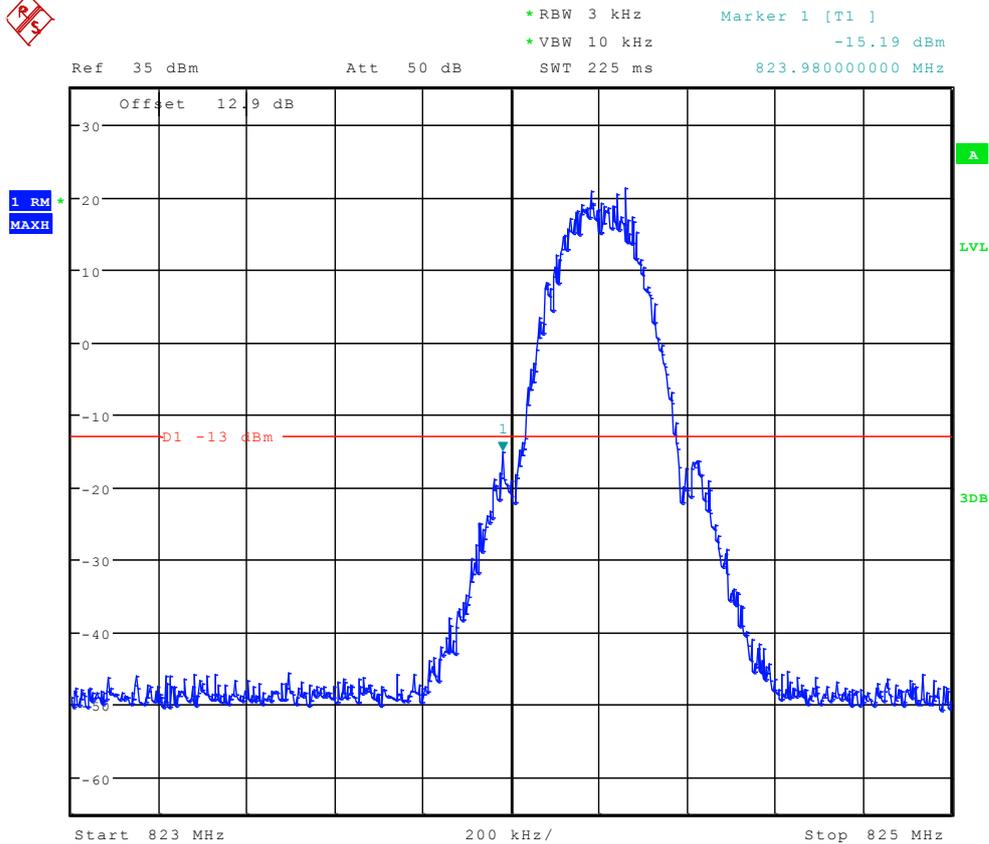
According to FCC Part 2.1051 & Part22 Subpart H



TM1:GPRS/GSM

Left Edge

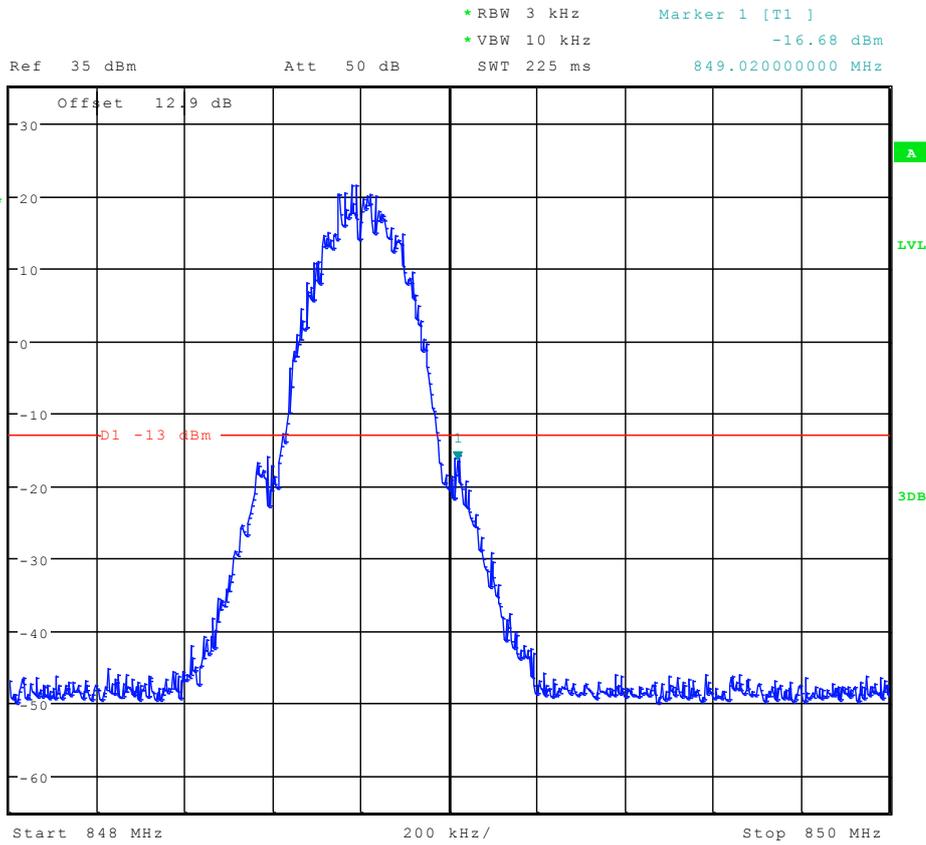
Channel 128



Date: 8.AUG.2012 22:11:58



Right Edge Channel 251



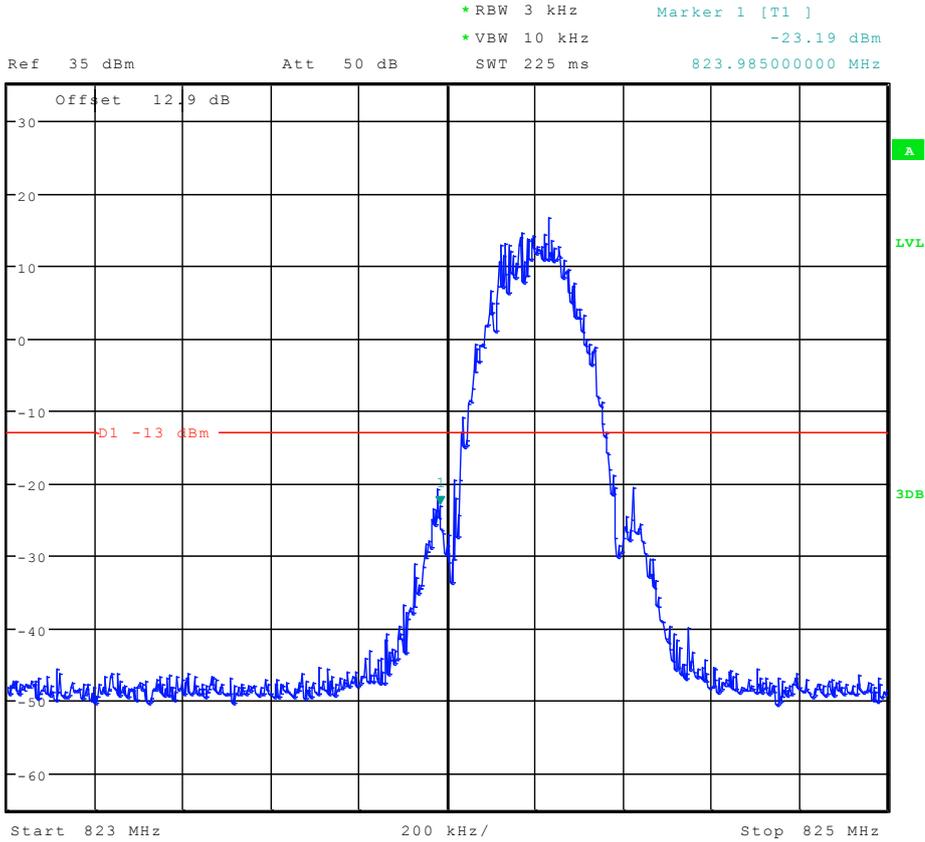
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TM2:EDGE

Left Edge

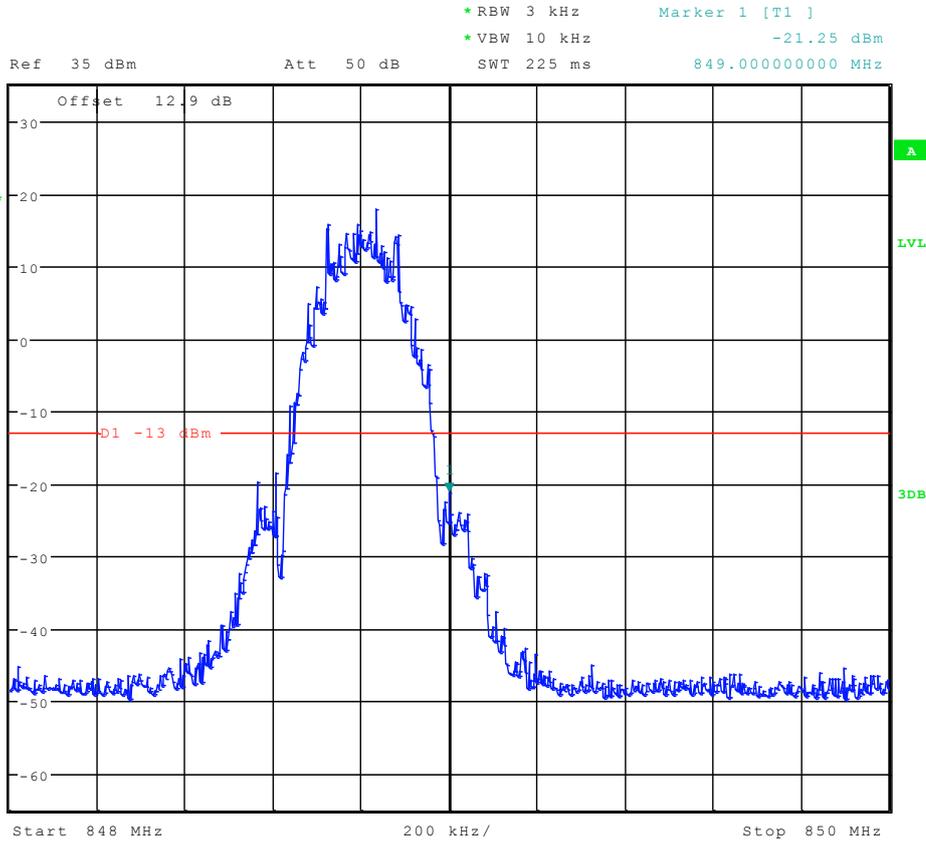
Channel 128



Date: 8.AUG.2012 22:18:38



Right Edge Channel 251



Date: 8.AUG.2012 22:19:16

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Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part22 Subpart H

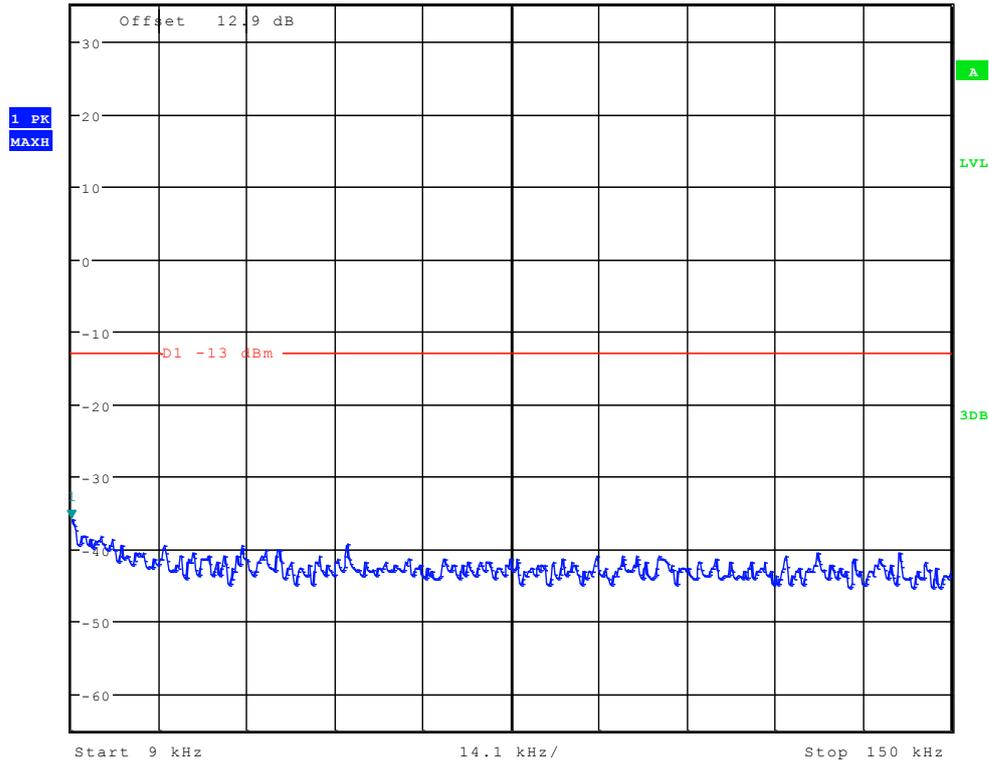


TM1:GPRS/GSM

Channel 128



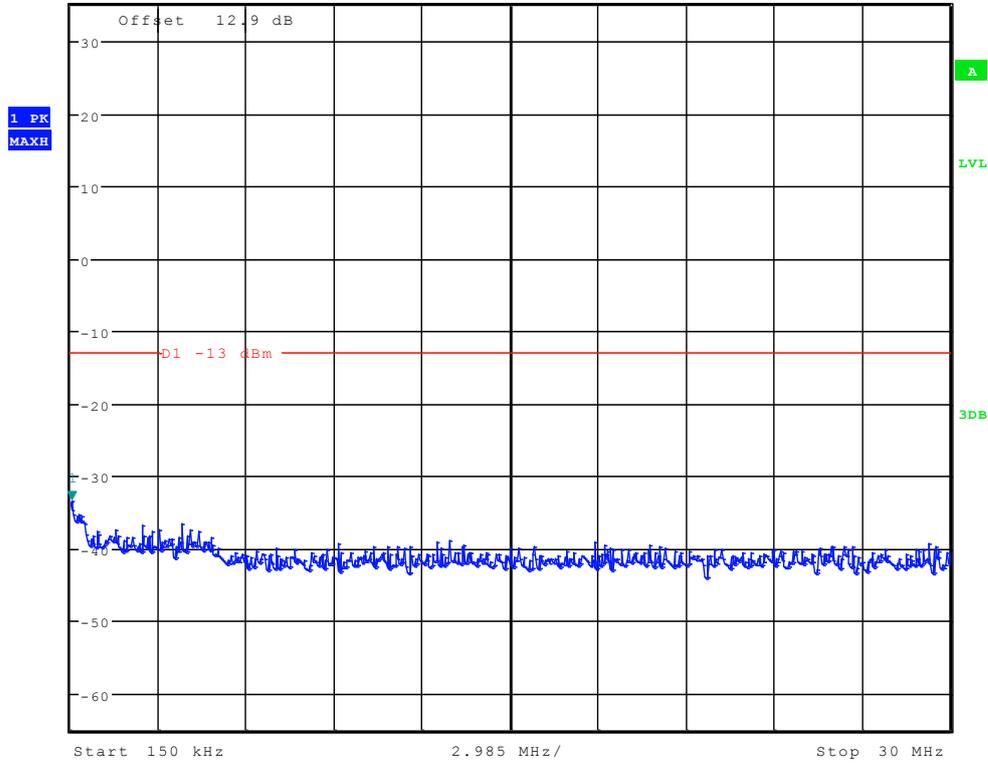
*RBW 1 kHz Marker 1 [T1]
 *VBW 10 kHz -35.92 dBm
 Ref 35 dBm Att 50 dB SWT 145 ms 9.000000000 kHz



Date: 8.AUG.2012 22:07:27



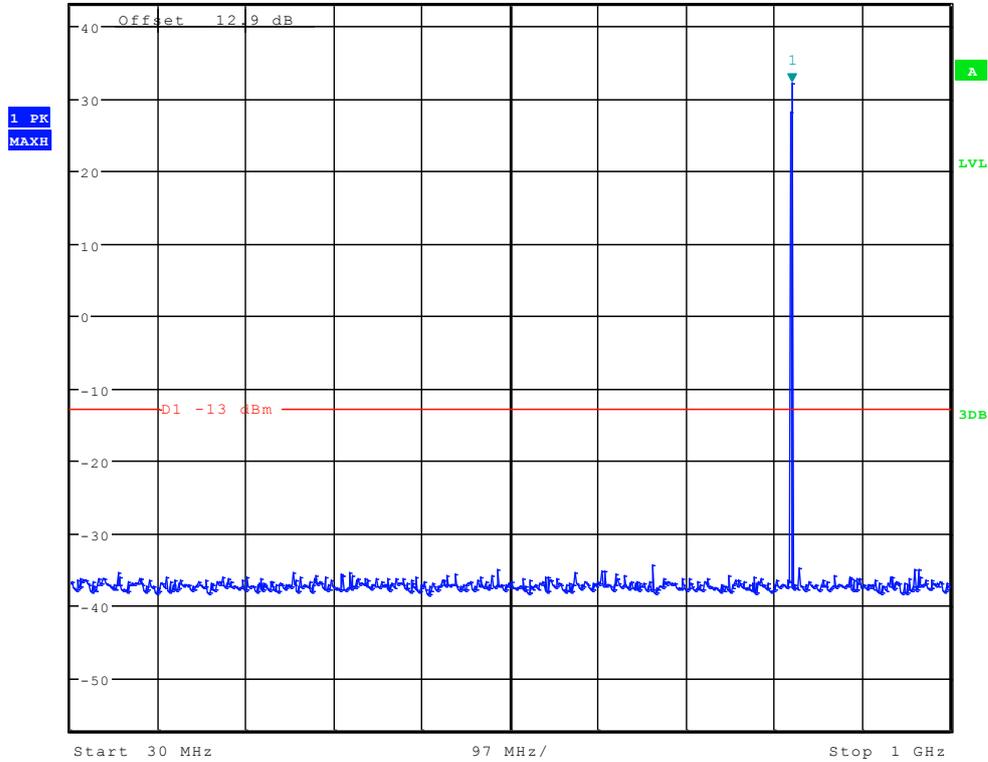
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -33.42 dBm
Ref 35 dBm Att 50 dB SWT 300 ms 197.836538462 kHz



Date: 8.AUG.2012 22:08:11



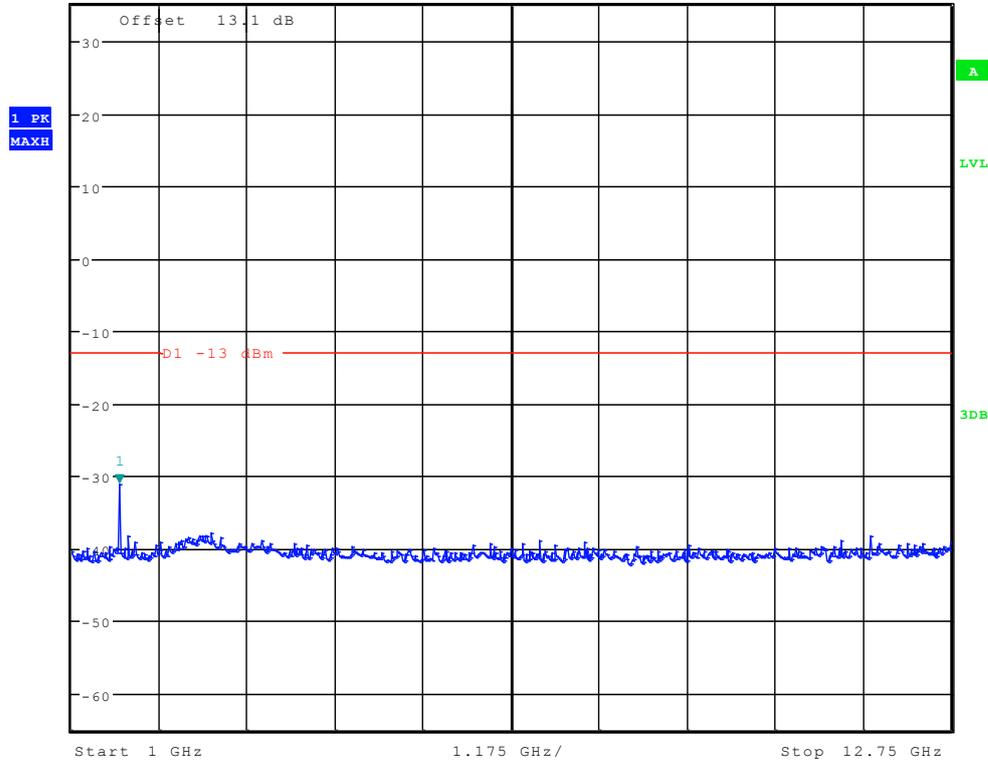
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 32.16 dBm
Ref 42.9 dBm * Att 25 dB SWT 100 ms 825.897435897 MHz



Date: 8.AUG.2012 22:10:25



Ref 35 dBm * Att 25 dB * RBW 1 MHz * VBW 3 MHz * SWT 70 ms Marker 1 [T1]
-31.08 dBm
1.640224359 GHz



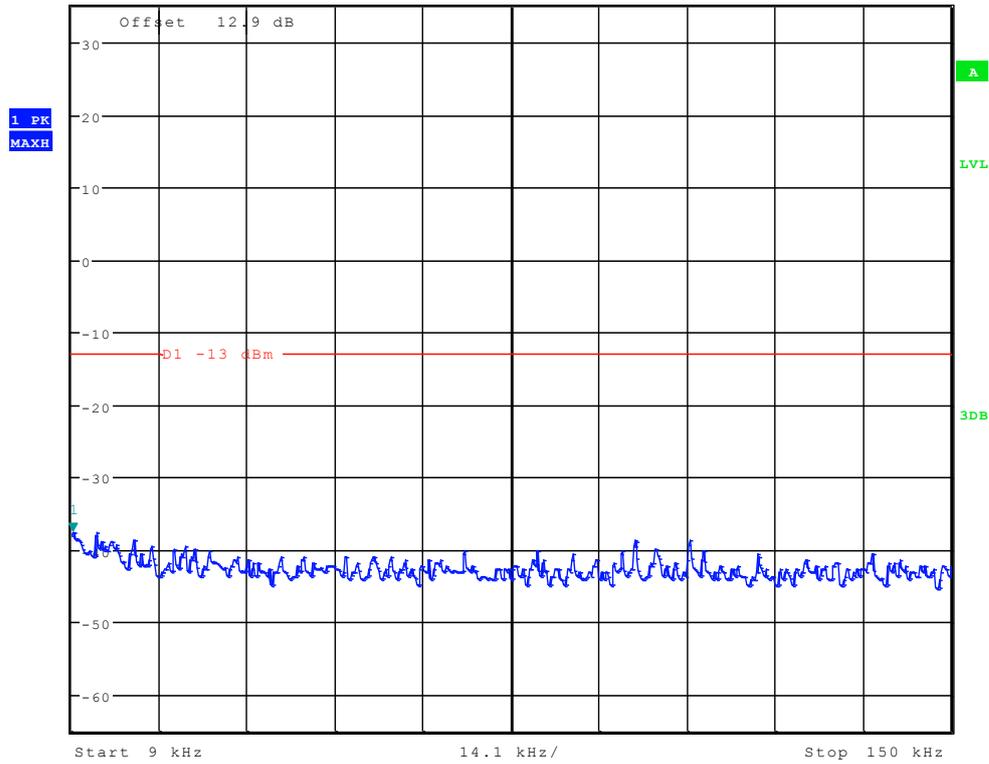
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Channel 192



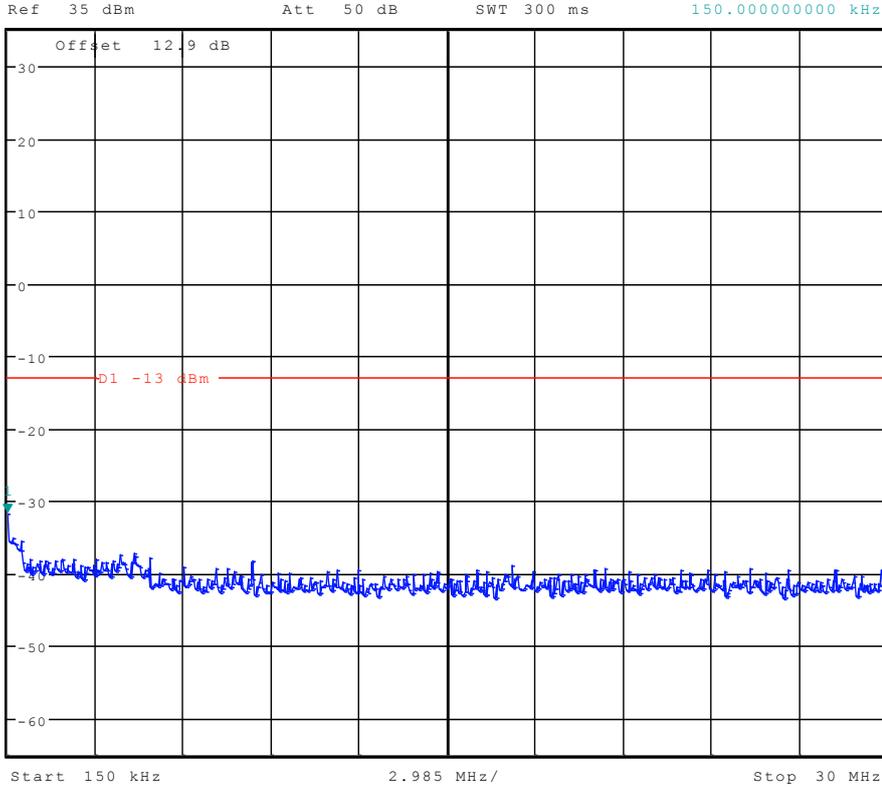
Ref 35 dBm Att 50 dB *RBW 1 kHz Marker 1 [T1] *VBW 10 kHz -37.61 dBm
SWT 145 ms 9.225961538 kHz



Date: 8.AUG.2012 22:07:41



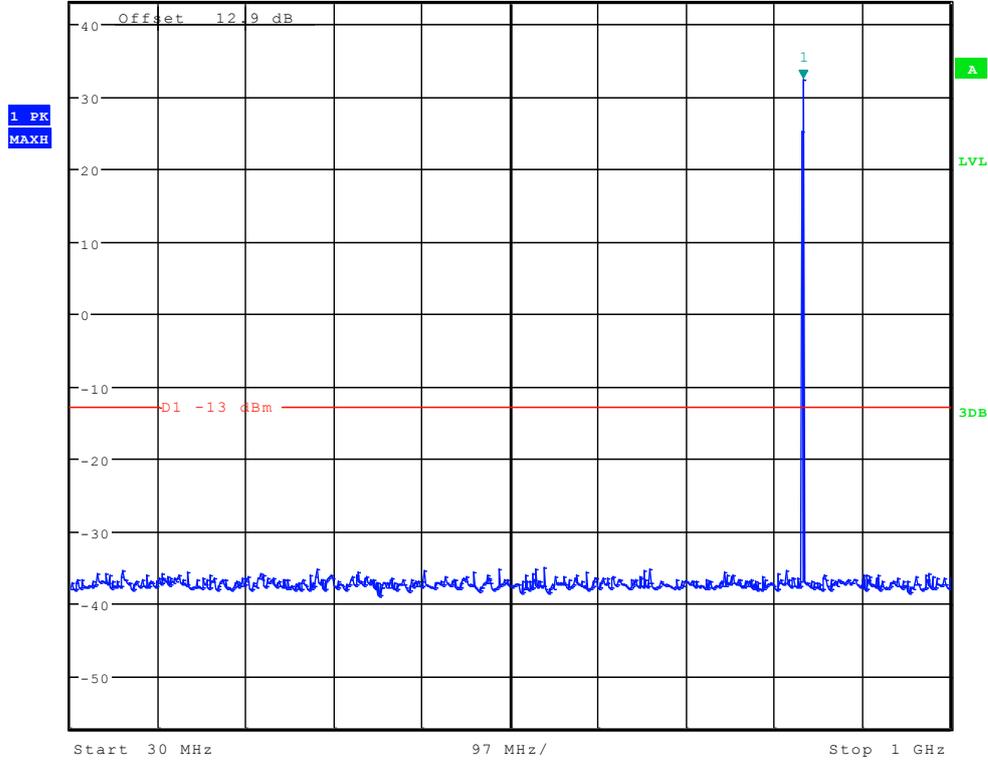
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -31.76 dBm
SWT 300 ms 150.00000000 kHz



Date: 8.AUG.2012 22:08:25



* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 32.21 dBm
Ref 42.9 dBm * Att 25 dB SWT 100 ms 838.333333333 MHz

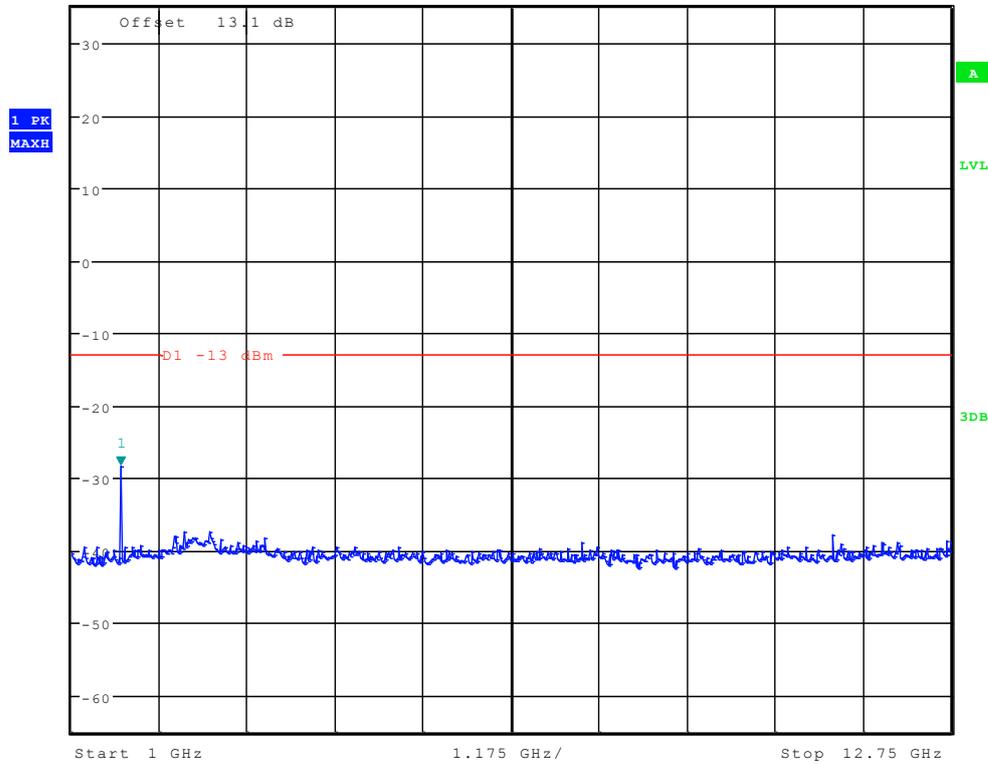


Date: 8.AUG.2012 22:10:40



Ref 35 dBm * Att 25 dB * RBW 1 MHz * VBW 3 MHz * SWT 70 ms

Marker 1 [T1] -28.32 dBm 1.659054487 GHz



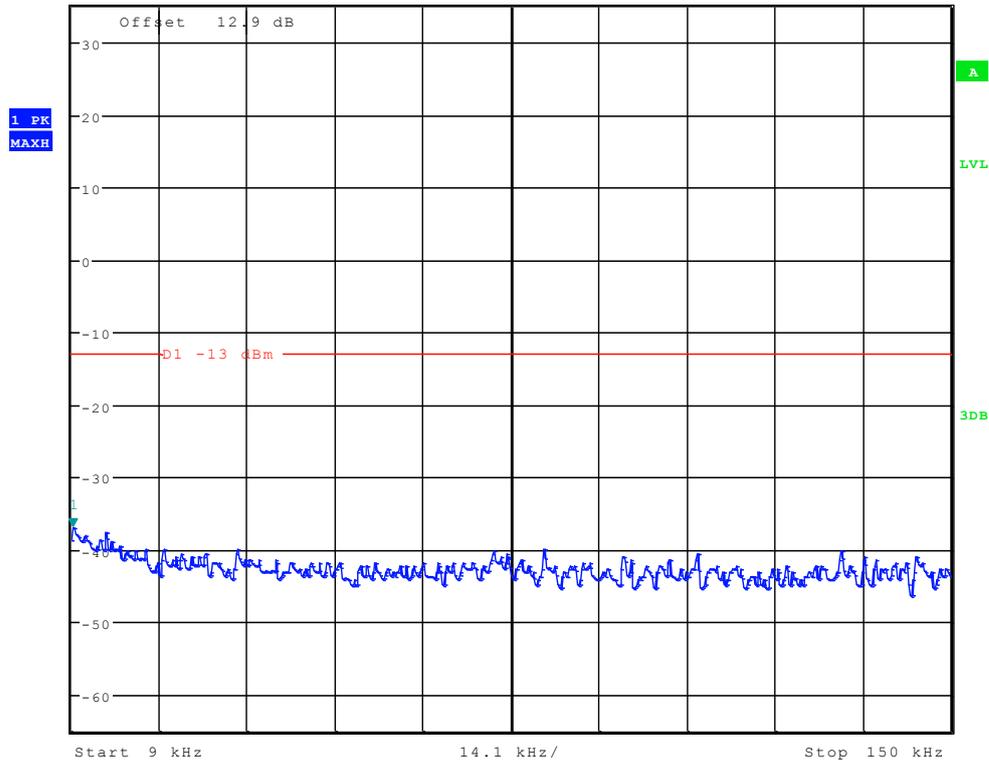
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Channel 251



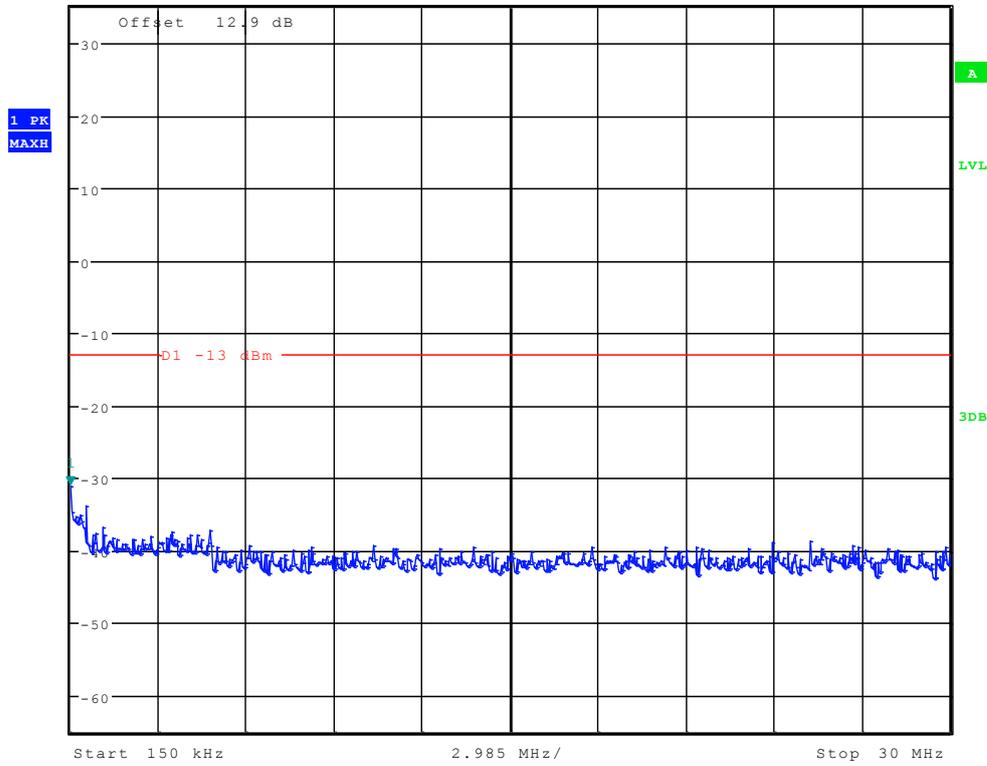
Ref 35 dBm Att 50 dB SWT 145 ms 9.225961538 kHz
*RBW 1 kHz Marker 1 [T1] -36.87 dBm
*VBW 10 kHz



Date: 8.AUG.2012 22:07:56



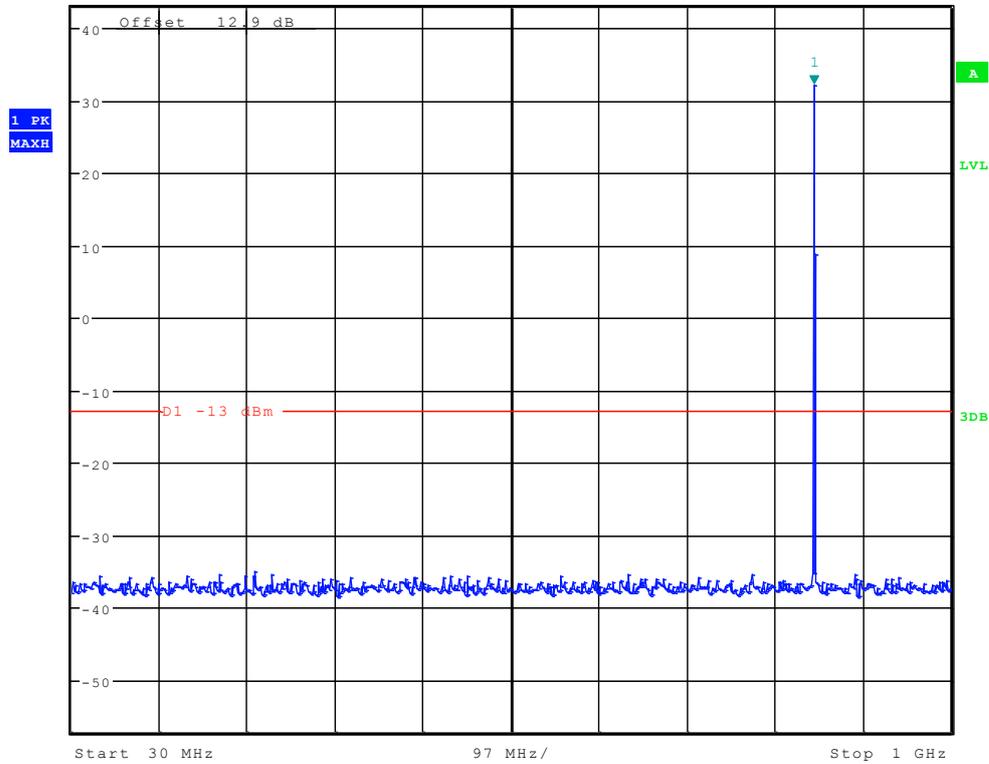
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -31.16 dBm
Ref 35 dBm Att 50 dB SWT 300 ms 150.00000000 kHz



Date: 8.AUG.2012 22:08:40



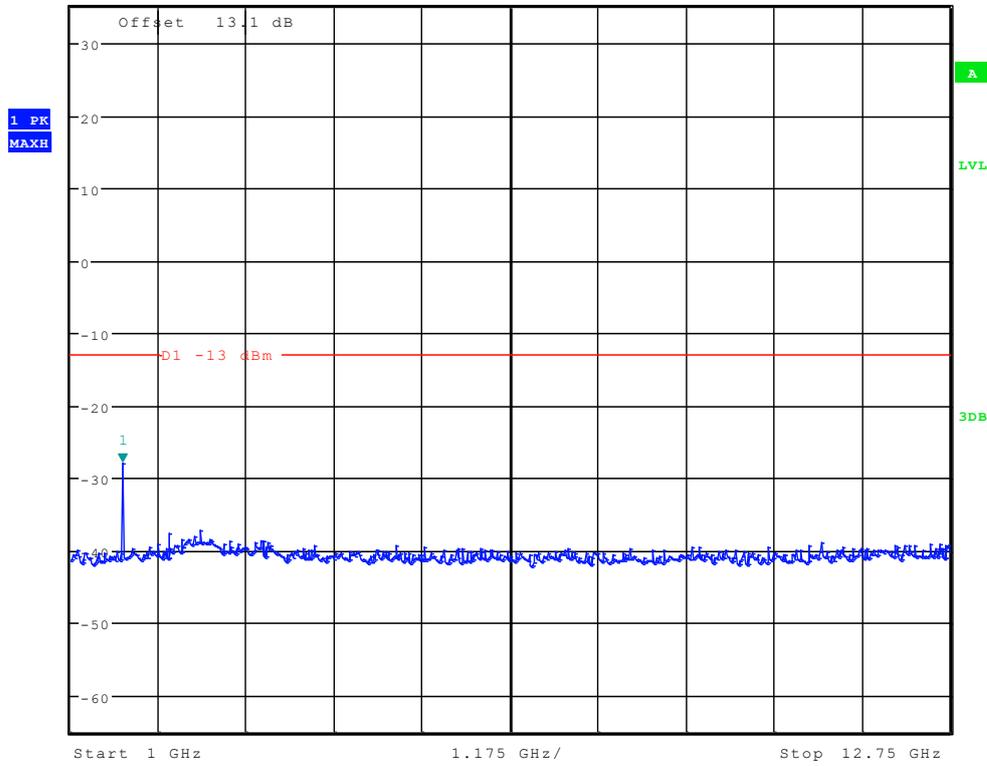
Ref 42.9 dBm * Att 25 dB SWT 100 ms * RBW 100 kHz Marker 1 [T1] 32.12 dBm
* VBW 300 kHz 849.214743590 MHz



Date: 8.AUG.2012 22:10:54



Ref 35 dBm * Att 25 dB * RBW 1 MHz * VBW 3 MHz * SWT 70 ms
Marker 1 [T1] -27.87 dBm
1.696714744 GHz



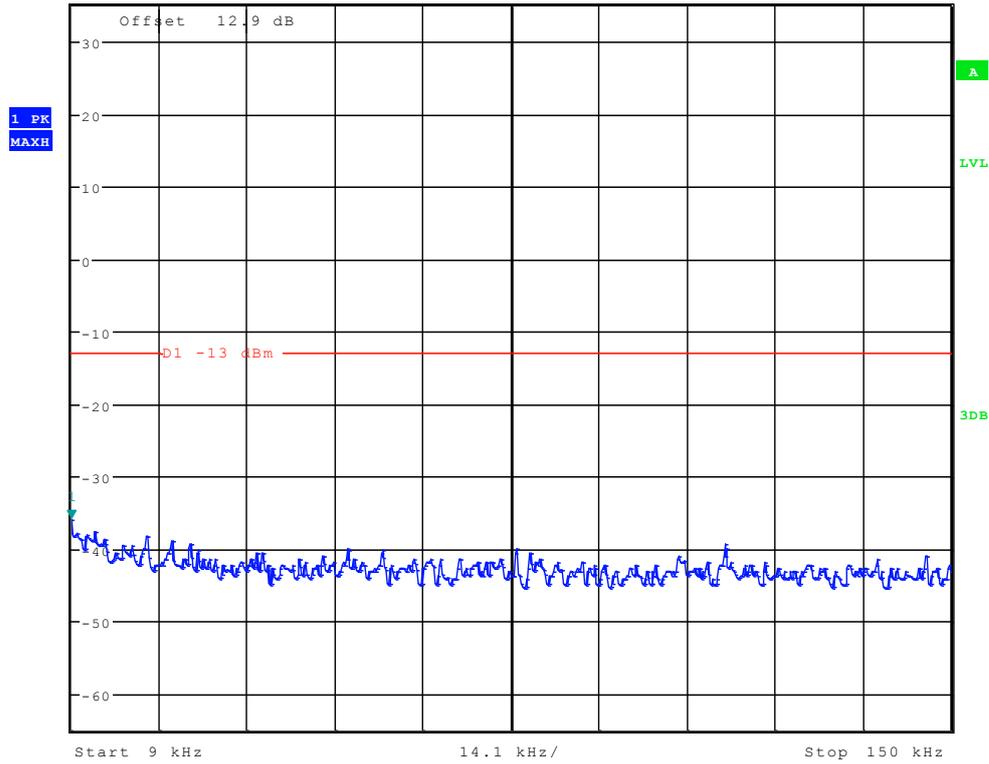
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TM2:EDGE Channel 128



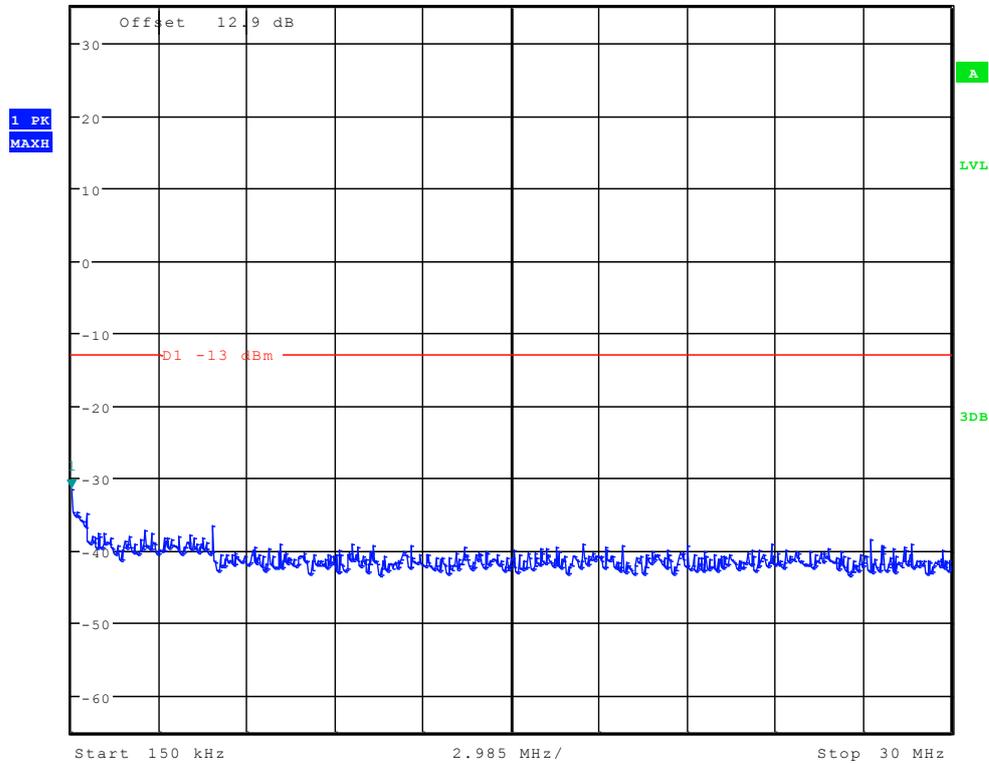
Ref 35 dBm Att 50 dB SWT 145 ms 9.000000000 kHz
 *RBW 1 kHz Marker 1 [T1] -35.92 dBm
 *VBW 10 kHz



Date: 8.AUG.2012 22:15:10



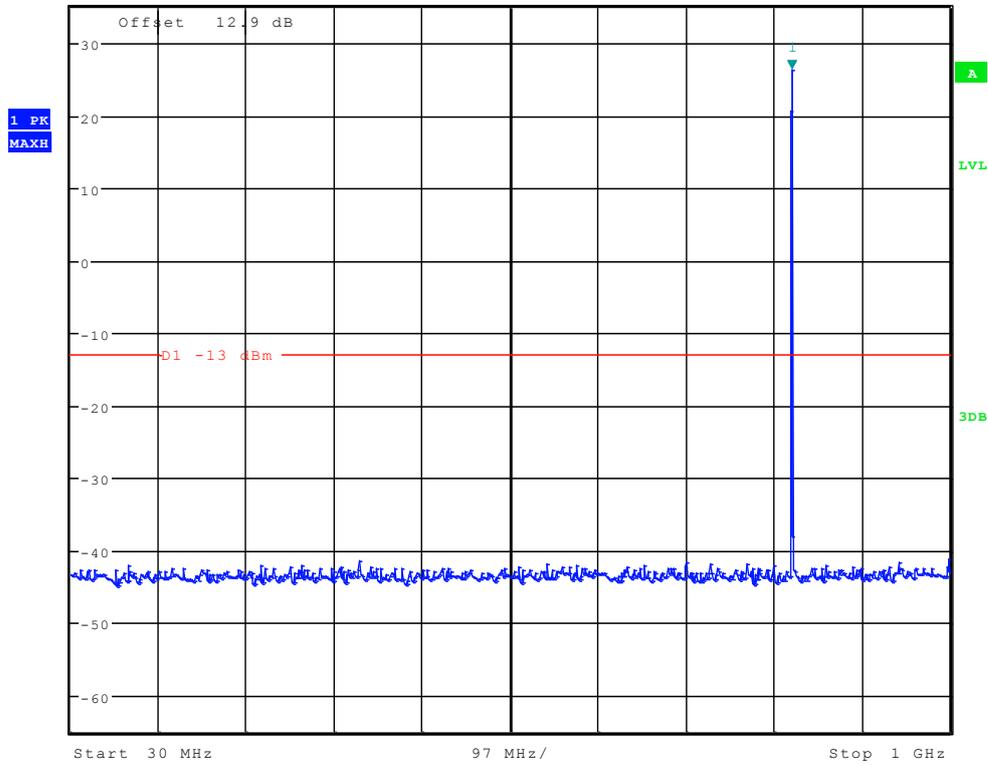
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -31.43 dBm
Ref 35 dBm Att 50 dB SWT 300 ms 150.00000000 kHz



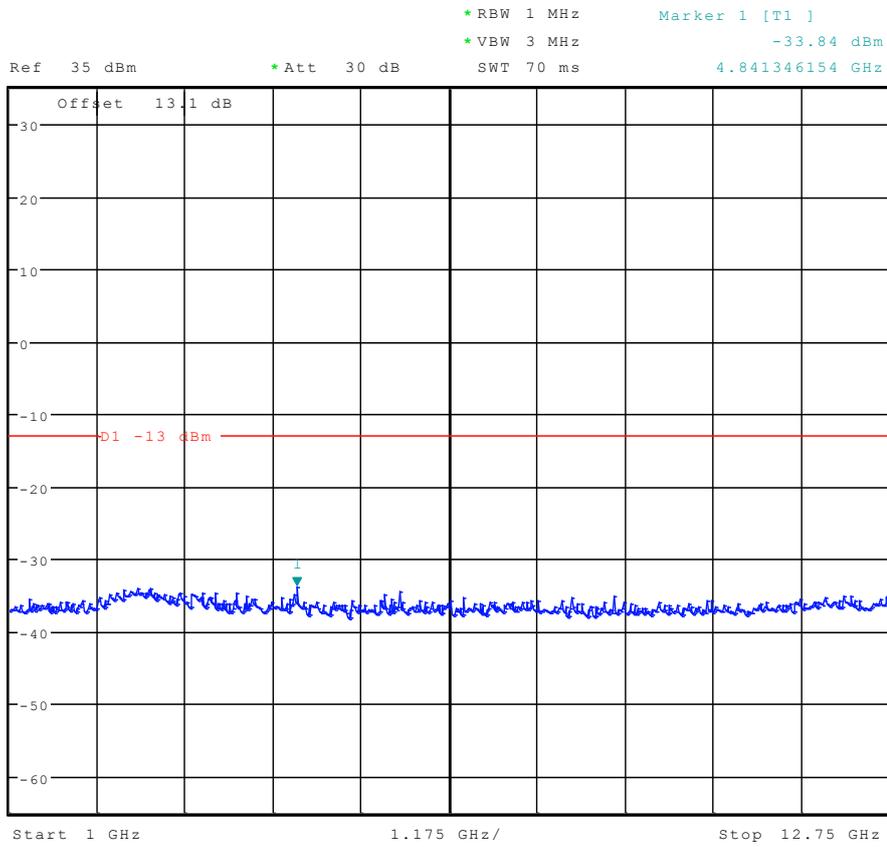
Date: 8.AUG.2012 22:15:54



* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 26.37 dBm
Ref 35 dBm * Att 30 dB SWT 100 ms 825.897435897 MHz



Date: 8.AUG.2012 22:16:56



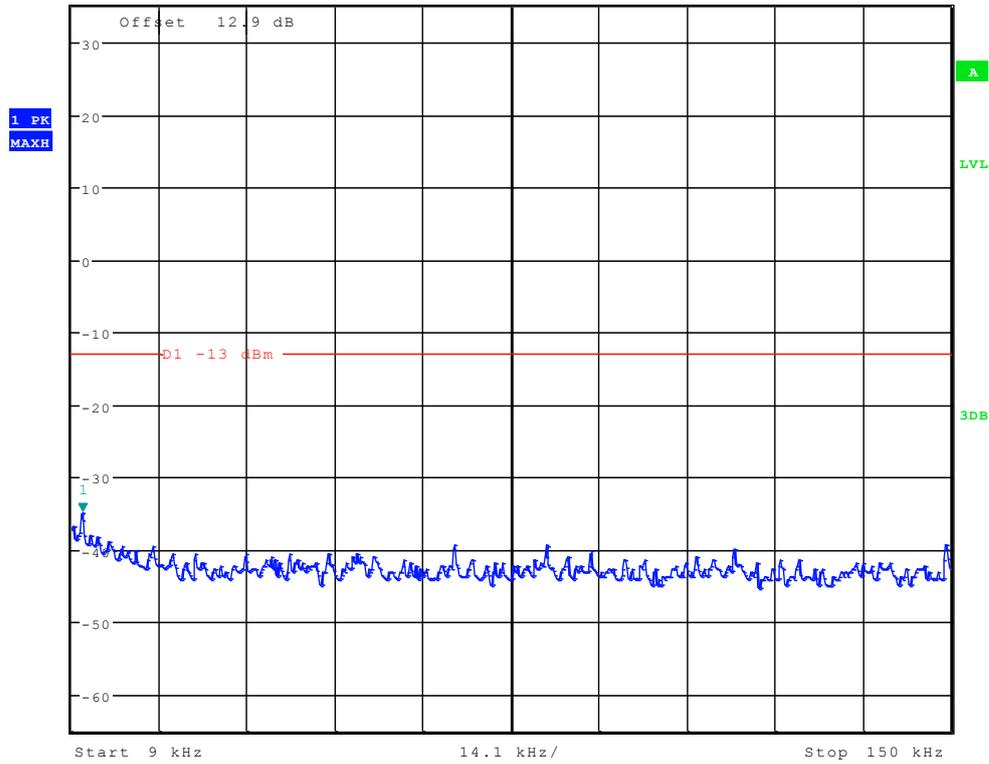
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Channel 192



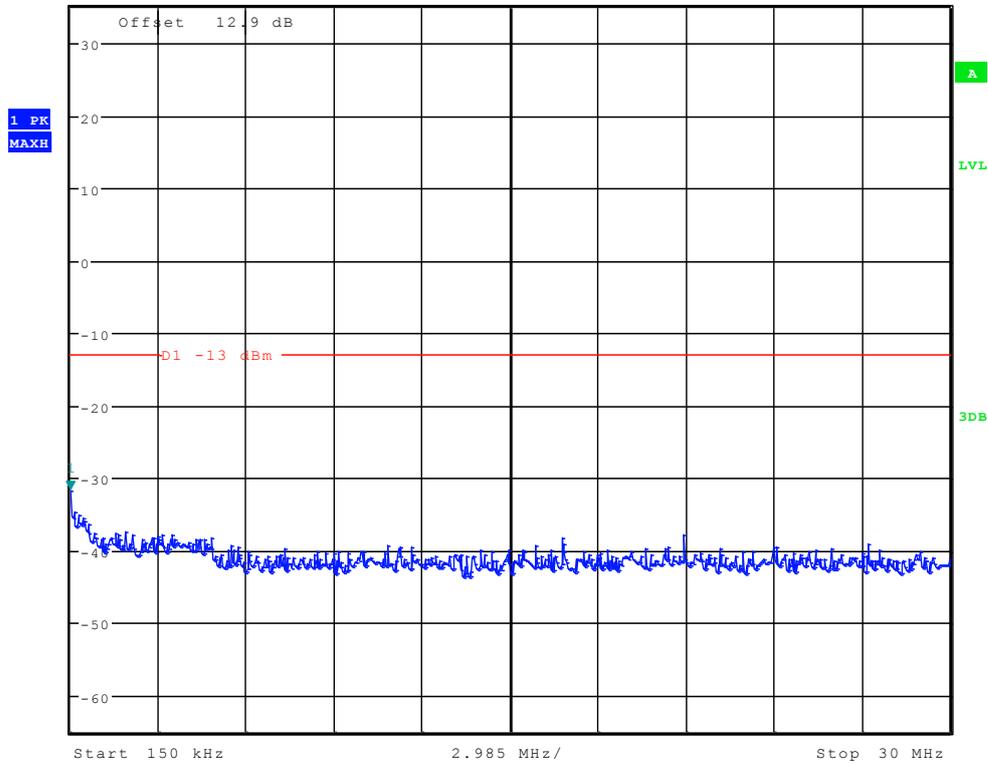
Ref 35 dBm Att 50 dB *RBW 1 kHz Marker 1 [T1] *VBW 10 kHz -34.89 dBm
SWT 145 ms 10.807692308 kHz



Date: 8.AUG.2012 22:15:25



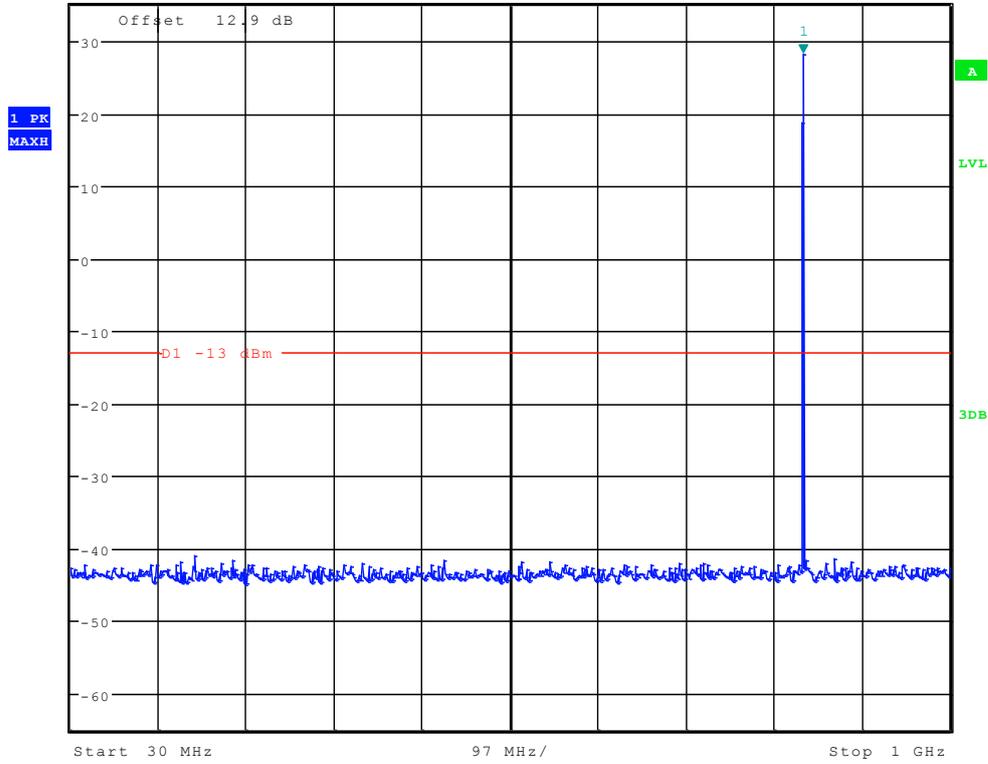
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -31.76 dBm
Ref 35 dBm Att 50 dB SWT 300 ms 150.00000000 kHz



Date: 8.AUG.2012 22:16:08



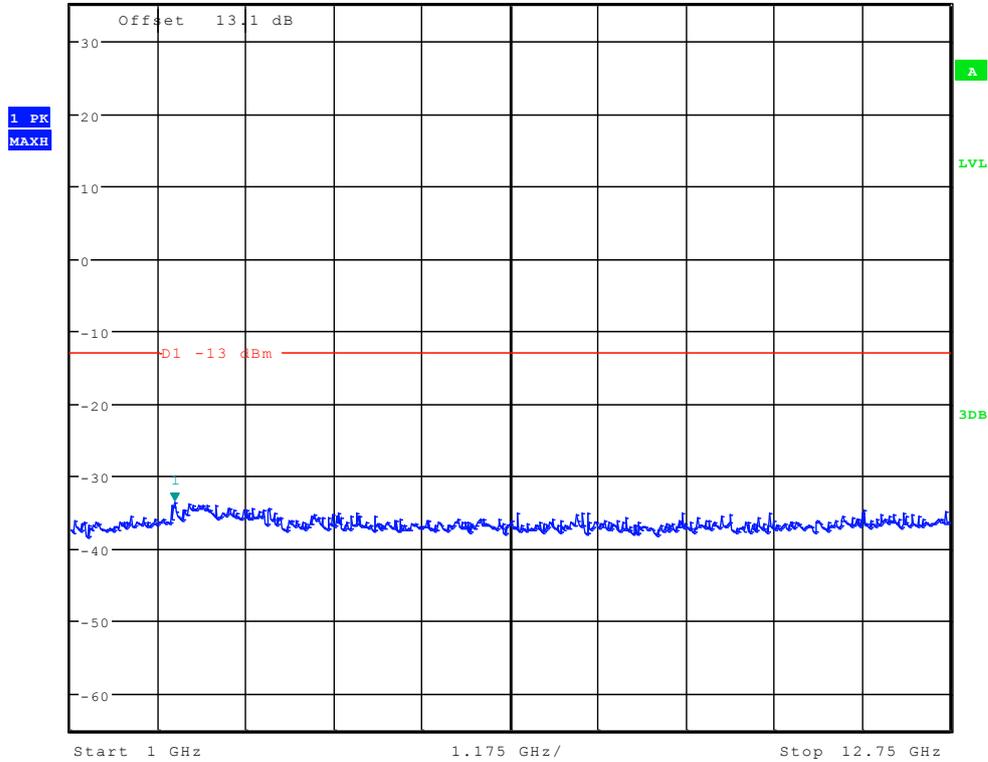
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 28.14 dBm
Ref 35 dBm * Att 30 dB SWT 100 ms 838.333333333 MHz



Date: 8.AUG.2012 22:17:10



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -33.58 dBm
Ref 35 dBm * Att 30 dB SWT 70 ms 2.393429487 GHz



Date: 8.AUG.2012 22:17:54

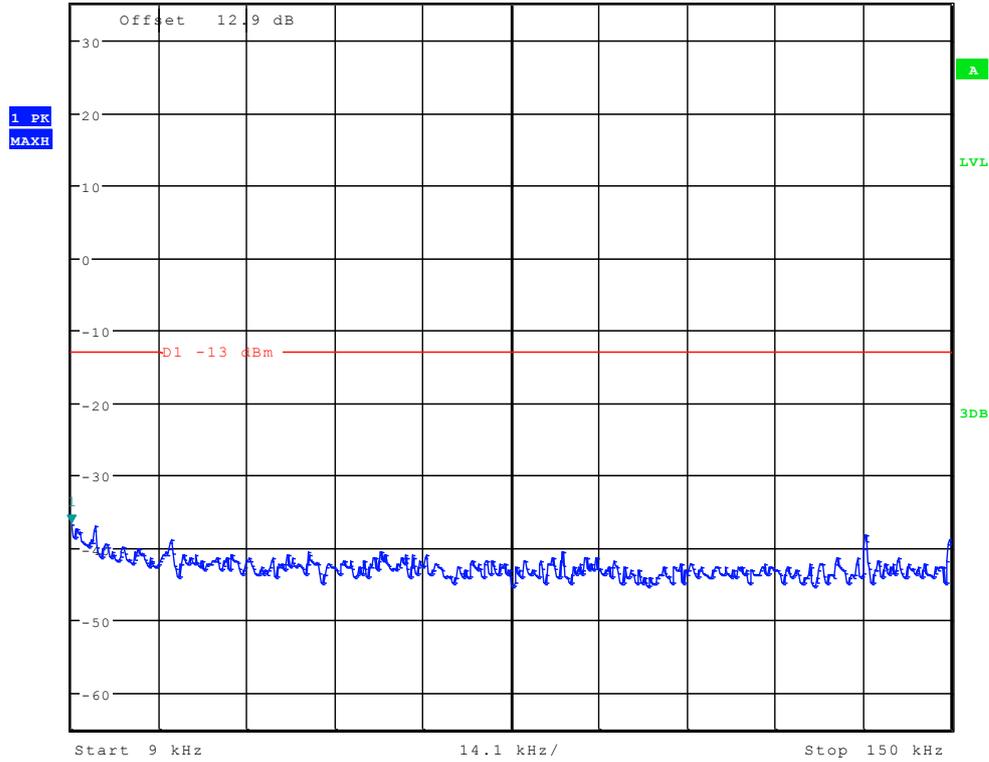


Channel 251



*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -36.67 dBm
SWT 145 ms 9.000000000 kHz

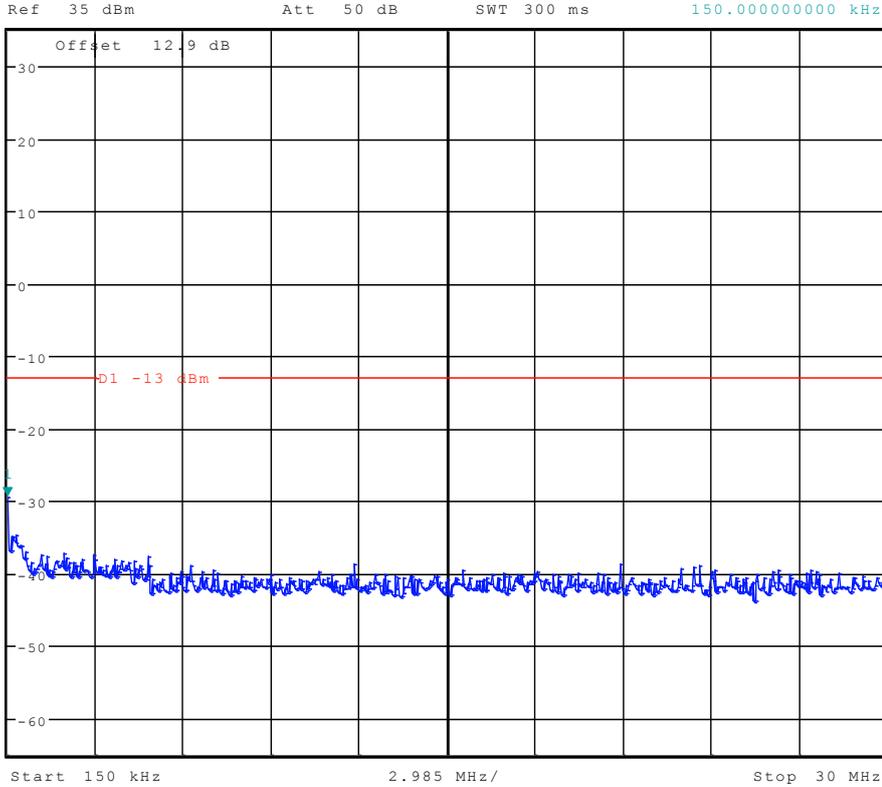
Ref 35 dBm Att 50 dB



Date: 8.AUG.2012 22:15:39



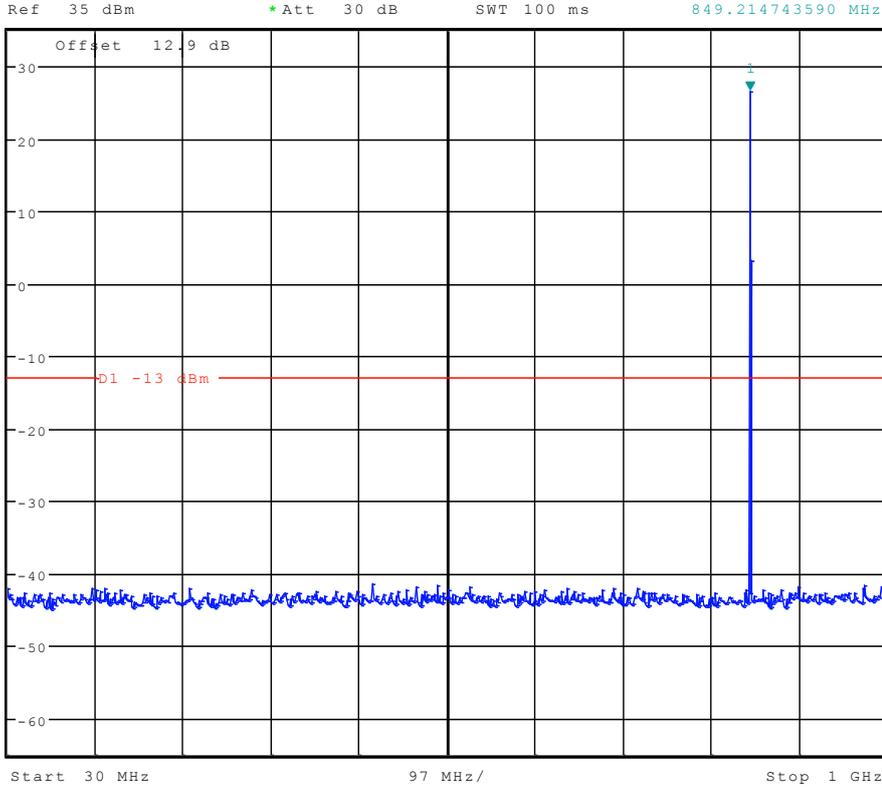
* RBW 10 kHz Marker 1 [T1]
* VBW 30 kHz -29.37 dBm
SWT 300 ms 150.00000000 kHz



Date: 8.AUG.2012 22:16:23



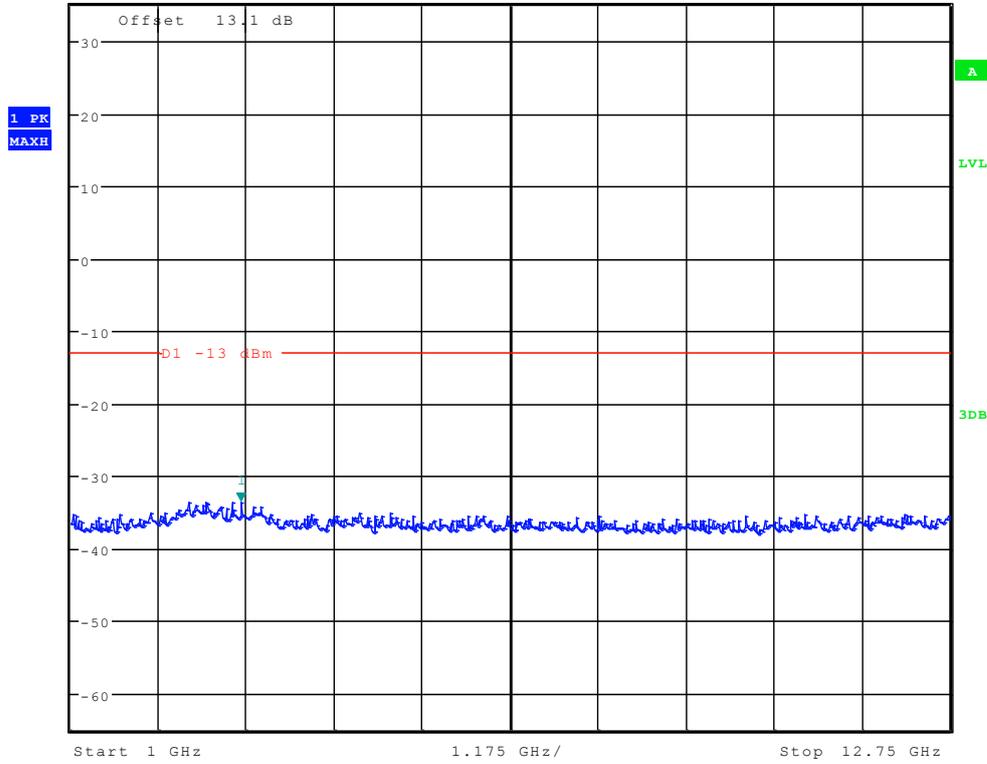
* RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz 26.53 dBm
SWT 100 ms 849.214743590 MHz



Date: 8.AUG.2012 22:17:25



Ref 35 dBm * Att 30 dB * RBW 1 MHz Marker 1 [T1] -33.53 dBm
* VBW 3 MHz SWT 70 ms 3.278445513 GHz



Date: 8.AUG.2012 22:18:09

-----END-----



Appendix F

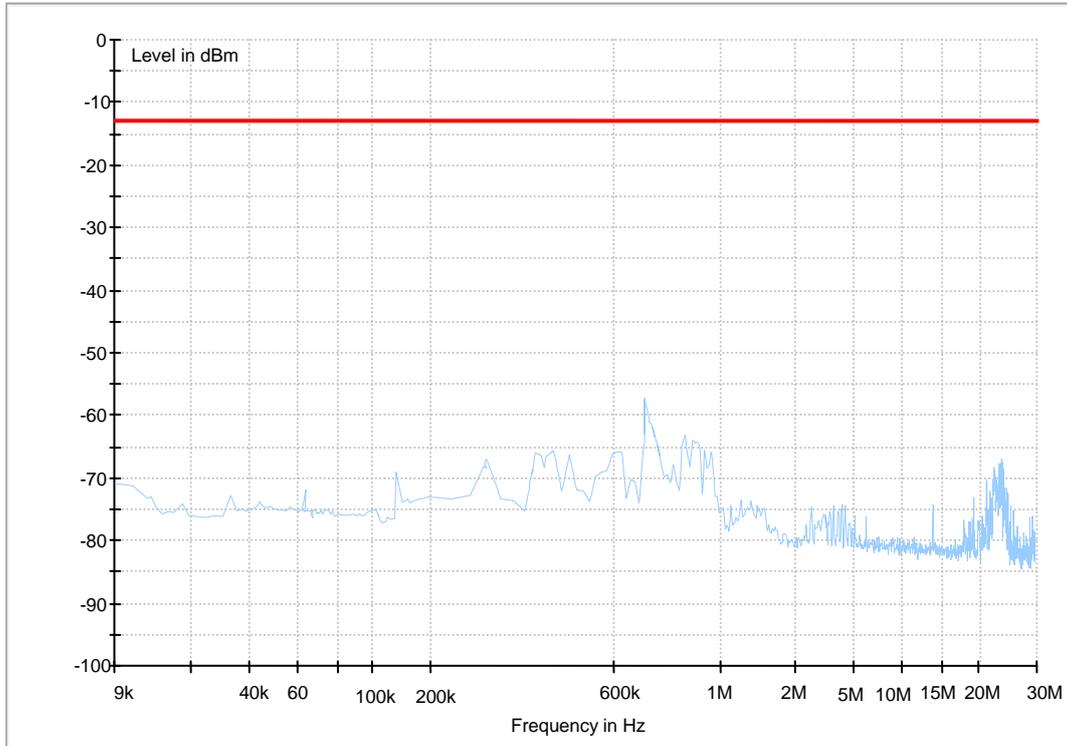
Radiated spurious emission

According to FCC Part 2.1053& Part 22.917



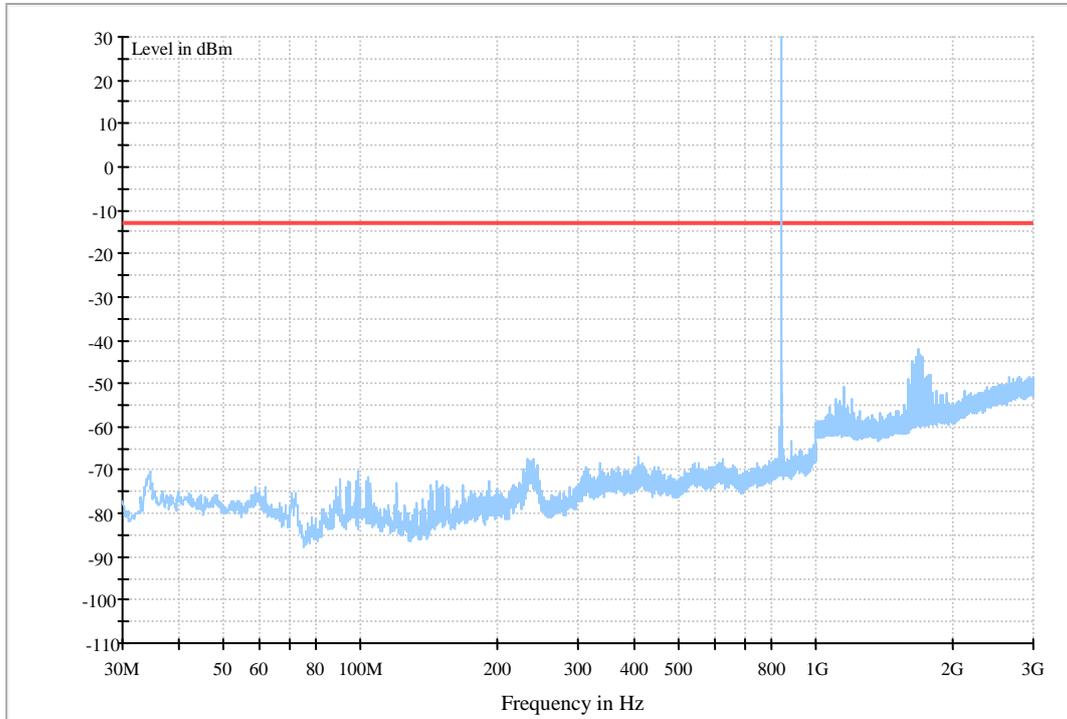
GPRS850

Traffic Mode (9kHz-30MHz)



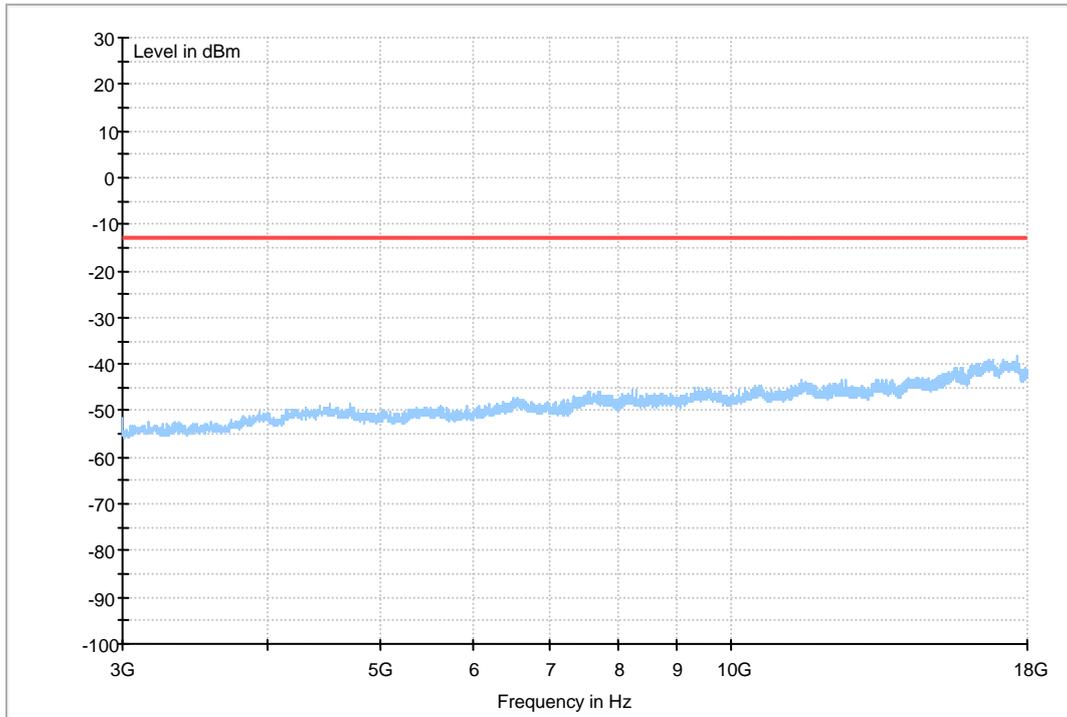


Traffic Mode (30MHz-3GHz)





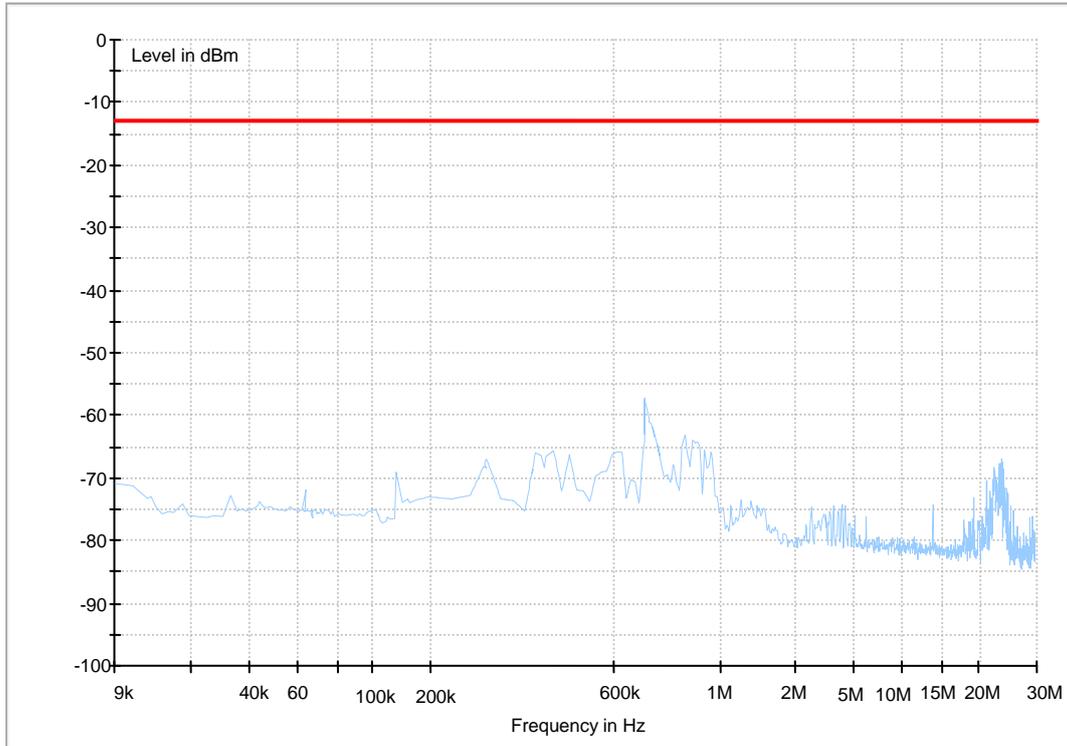
Traffic Mode (3GHz-18GHz)





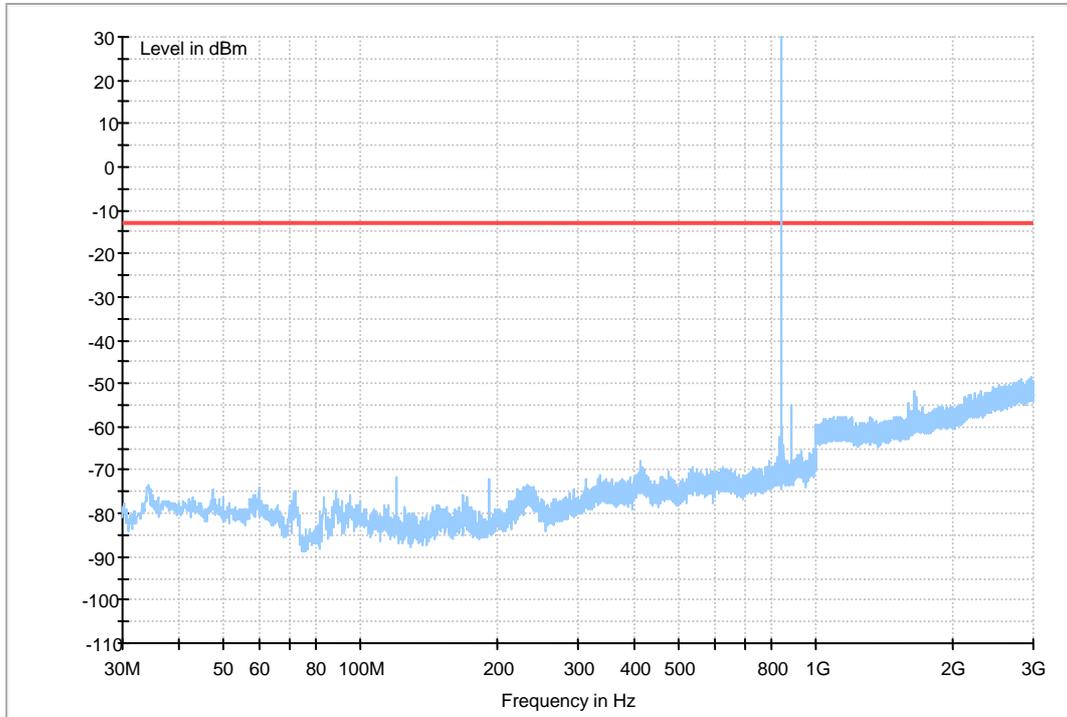
EDGE850

Traffic Mode (9kHz-30MHz)



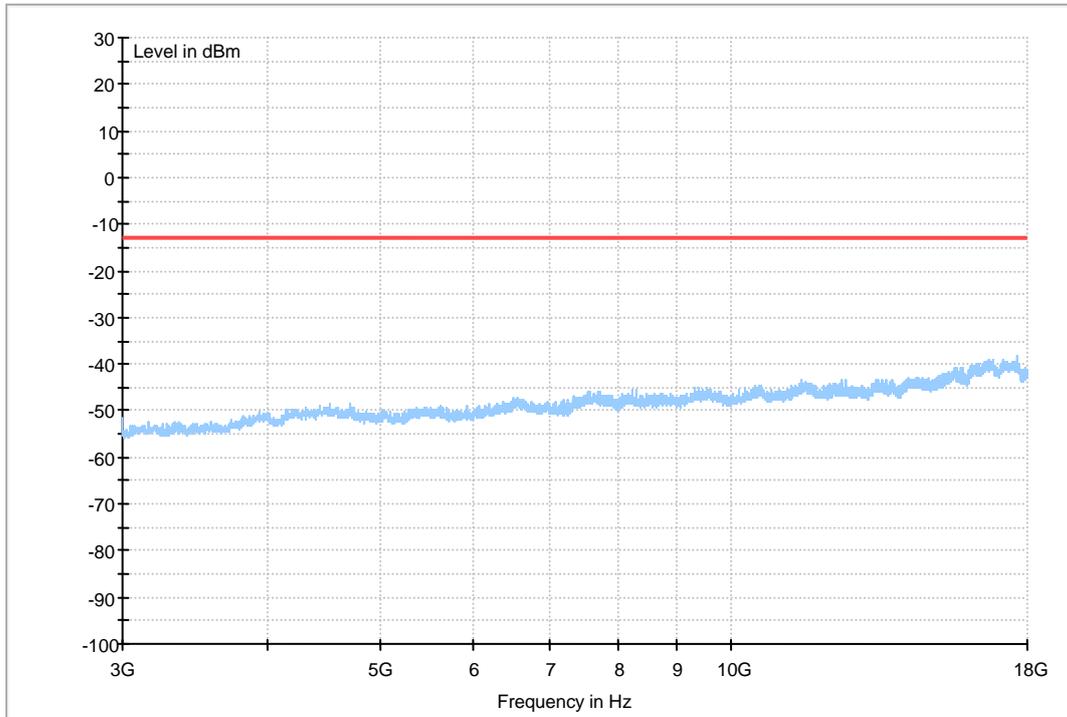


Traffic Mode (30MHz-3GHz)





Traffic Mode (3GHz-18GHz)



-----THE END-----



FCC Test Report of K4305
FCC ID: QISK4305



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	-16	-0.01912	---	±2.5	Pass
			-10 °C	16	0.01912	---	±2.5	Pass
			0 °C	9	0.01075	---	±2.5	Pass
			10 °C	-18	-0.02151	---	±2.5	Pass
			20 °C	12	0.01434	---	±2.5	Pass
			30 °C	-16	-0.01912	---	±2.5	Pass
			40 °C	-14	-0.01673	---	±2.5	Pass
			50 °C	7	0.00836	---	±2.5	Pass
TM 2	M	VN	-30 °C	16	0.01912	---	±2.5	Pass
			-20 °C	19	0.02270	---	±2.5	Pass
			-10 °C	-18	-0.02151	---	±2.5	Pass
			0 °C	-17	-0.02031	---	±2.5	Pass
			10 °C	25	0.02987	---	±2.5	Pass
			20 °C	15	0.01792	---	±2.5	Pass
			30 °C	-6	-0.00717	---	±2.5	Pass
			40 °C	-18	-0.02151	---	±2.5	Pass
			50 °C	-8	-0.00956	---	±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	0.02389	---	±2.5	Pass
			VN	-13	-0.01553	---	±2.5	Pass
			VH	16	0.01912	---	±2.5	Pass
TM 2	M	TN	VL	-15	-0.01792	---	±2.5	Pass
			VN	12	0.01434	---	±2.5	Pass
			VH	-14	-0.01673	---	±2.5	Pass

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



Appendix H

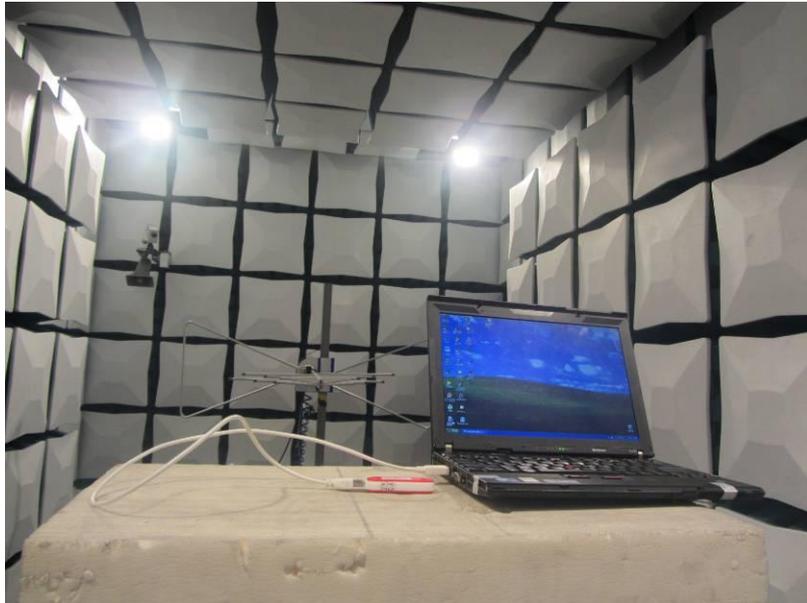
Photos of Radiated Spurious Emissions



Photos of Test Setup



1 Radiated Spurious Emissions



Radiated Spurious Emission (below 3GHz)



Radiated Spurious Emission (3GHz to18GHz)



Radiated Spurious Emission (18GHz to26.5GHz)