



FCC Test Report of E392u-511
FCC ID: QISE392U-511



Appendix A

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



Conducted Power of Transmitter

Table 1 Measurement Results

		RF Output Power (Conducted)					
TEST CONDITIONS		Channel512(B)		Channel661(M)		Channel810(T)	
		1850.2MHz		1880.0MHz		1909.8MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM1		28.91	30	28.82	30	28.48	30
TM2		25.28	30	25.21	30	25.11	30
TEST CONDITIONS		Channel9262(B)		Channel9400(M)		Channel9538(T)	
		1852.4MHz		1880.0MHz		1907.6MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM3		22.45	30	22.19	30	22.12	30
TM4	Case1	22.26	30	22.07	30	22.02	30
	Case2	22.43	30	22.05	30	22.13	30
	Case3	21.74	30	21.48	30	21.85	30
	Case4	21.82	30	21.45	30	21.83	30
TM5	Case1	21.77	30	21.38	30	21.7	30
	Case2	20.17	30	20.04	30	20.34	30
	Case3	20.91	30	20.77	30	20.47	30
	Case4	20.64	30	20.67	30	20.65	30
	Case5	21.8	30	21.57	30	20.88	30



Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 2 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
TM1	1850.2	31.91	Horn Ant.	28.36	4.5	1	31.86	33	Pass
TM1	1880.0	31.82	Horn Ant.	28.28	4.5	1	31.78	33	Pass
TM1	1909.8	31.48	Horn Ant.	27.72	4.8	1	31.52	33	Pass
TM2	1850.2	28.28	Horn Ant.	24.82	4.5	1	28.32	33	Pass
TM2	1880.0	28.21	Horn Ant.	24.78	4.5	1	28.28	33	Pass
TM2	1909.8	28.11	Horn Ant.	24.37	4.8	1	28.17	33	Pass
TM3	1852.4	25.45	Horn Ant.	21.93	4.5	1	25.43	33	Pass
TM3	1880.0	25.19	Horn Ant.	21.76	4.5	1	25.26	33	Pass
TM3	1907.6	25.12	Horn Ant.	21.35	4.8	1	25.15	33	Pass

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

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

b, SGP=Signal Generator Level



Appendix B

Modulation Characteristics

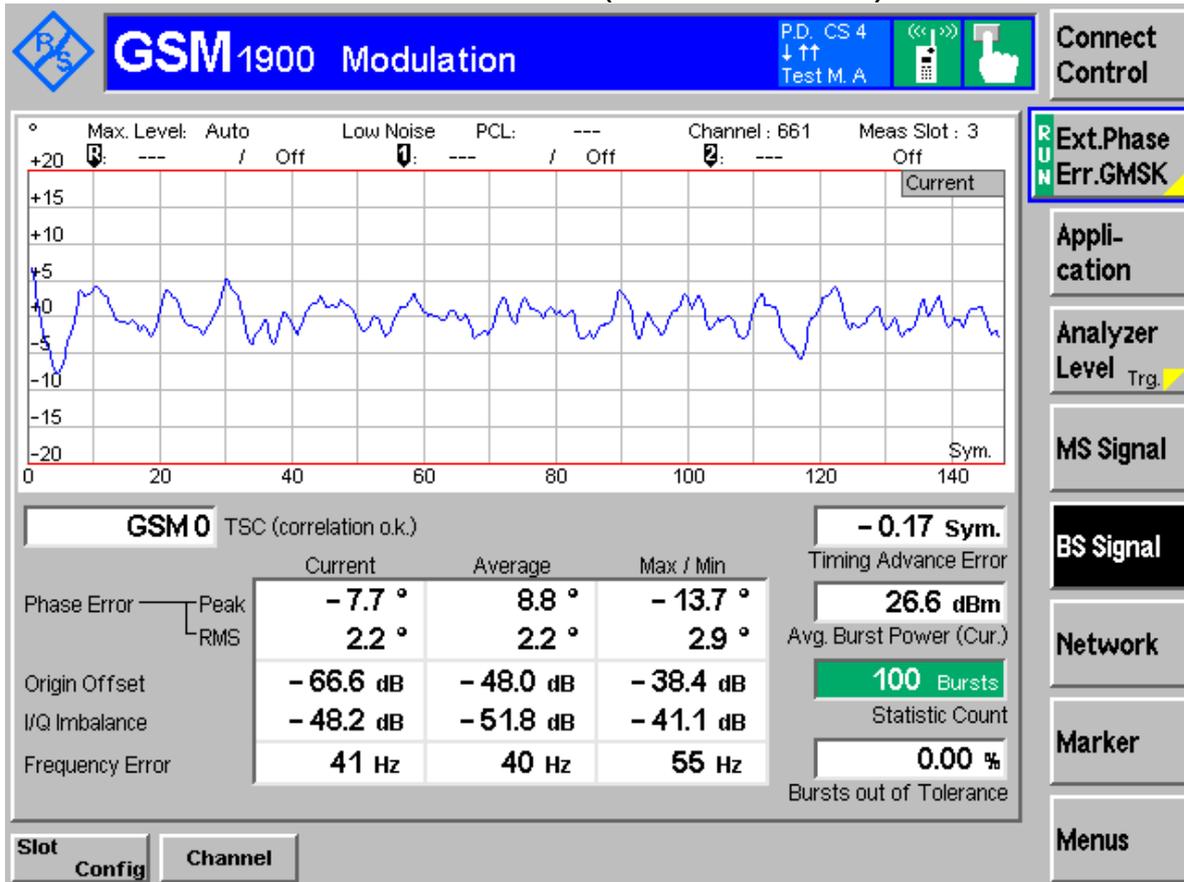
According to FCC Part 2.1047 & Part24 Subpart E



1 Test Plot

1.1 Test Mode = TM 1

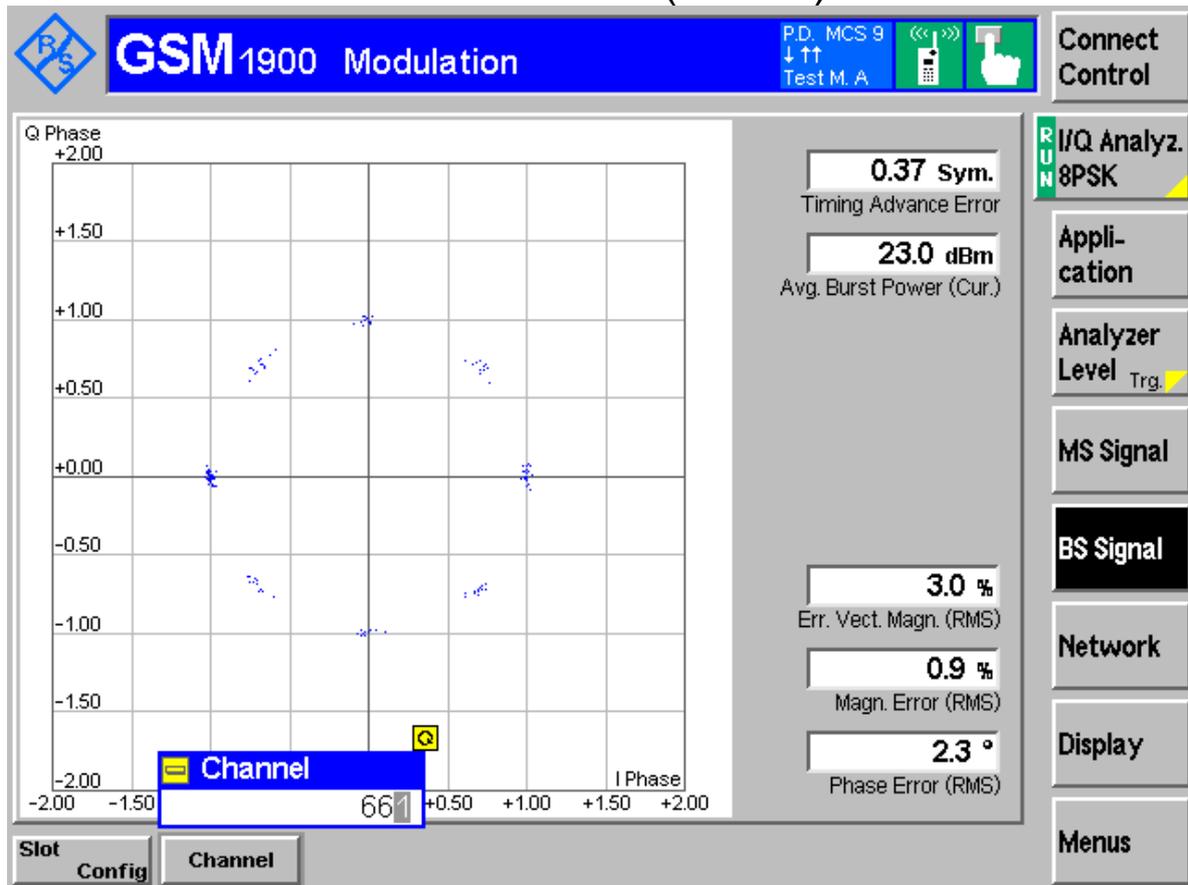
Channel 661 (GPRS/GSM)





1.2 Test Mode = TM 2

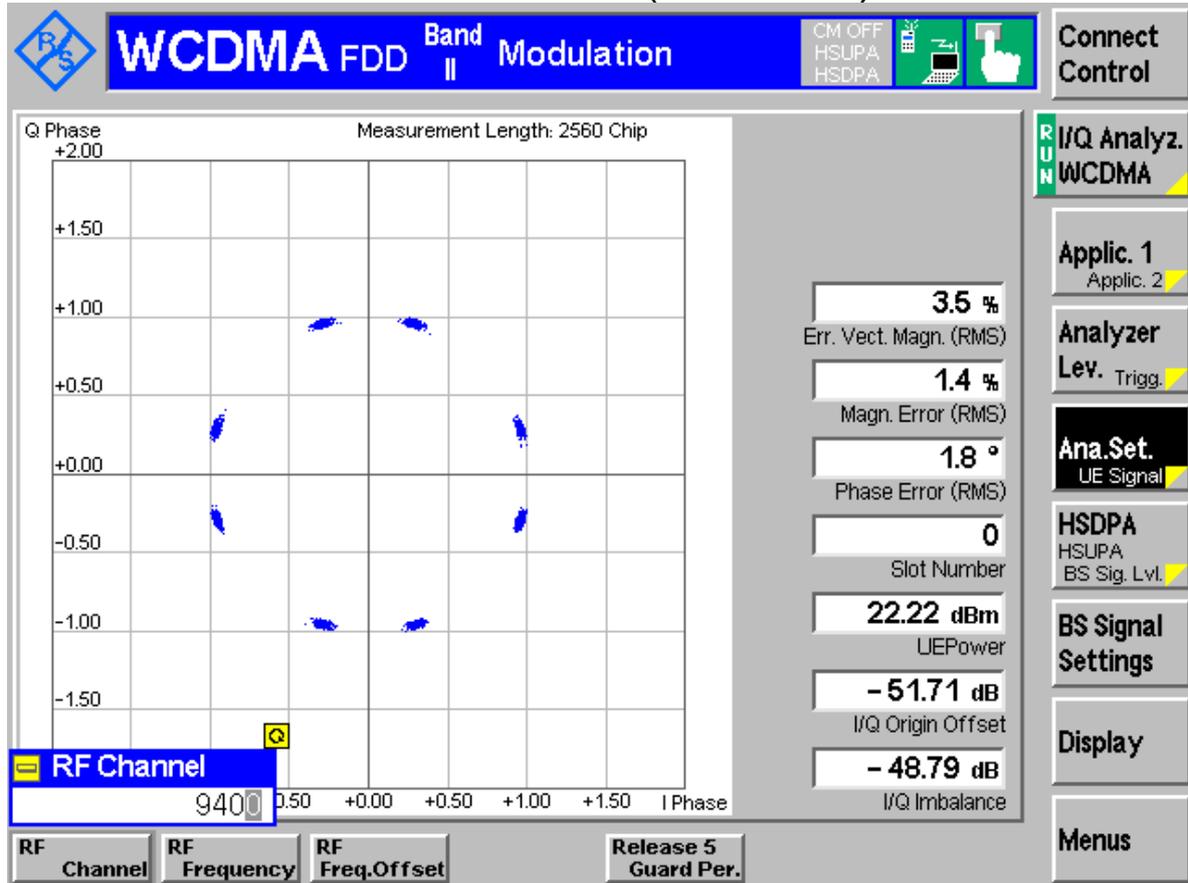
Channel 661 (EDGE)





1.3 Test Mode = TM 3

Channel 9400 (WCDMA)



END



Appendix C

Occupied Bandwidth According to FCC Part 2.1049 & Part24 Subpart E



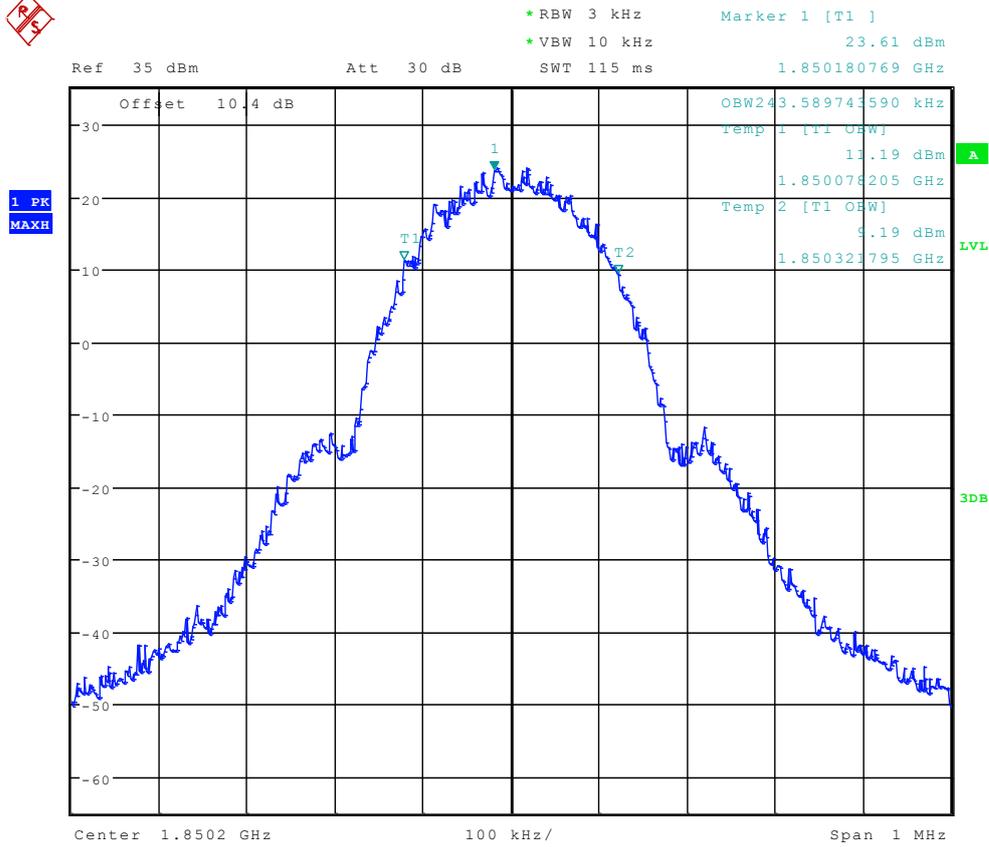
Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	512	243.60	Pass
	661	248.40	Pass
	810	250.00	Pass
TM2	512	238.78	Pass
	661	241.99	Pass
	810	245.19	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	9262	4.15	Pass
	9400	4.13	Pass
	9538	4.15	Pass



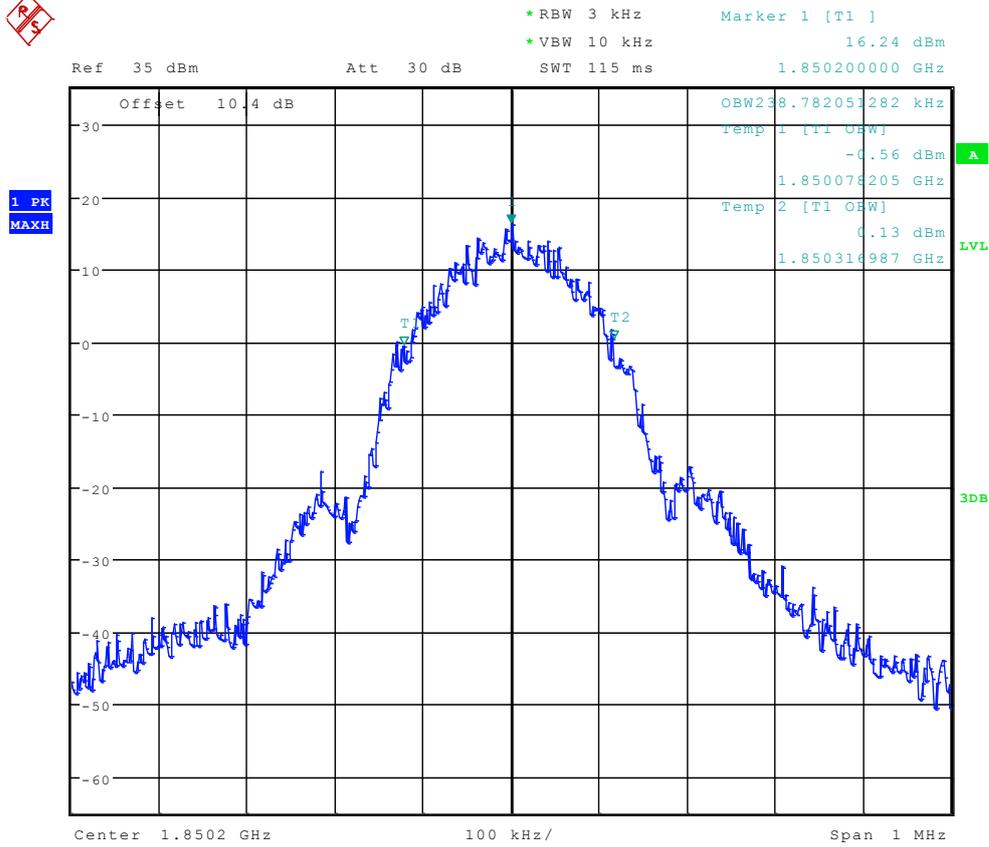
TM1:GPRS/GSM Channel 512



Date: 23.DEC.2011 10:25:06



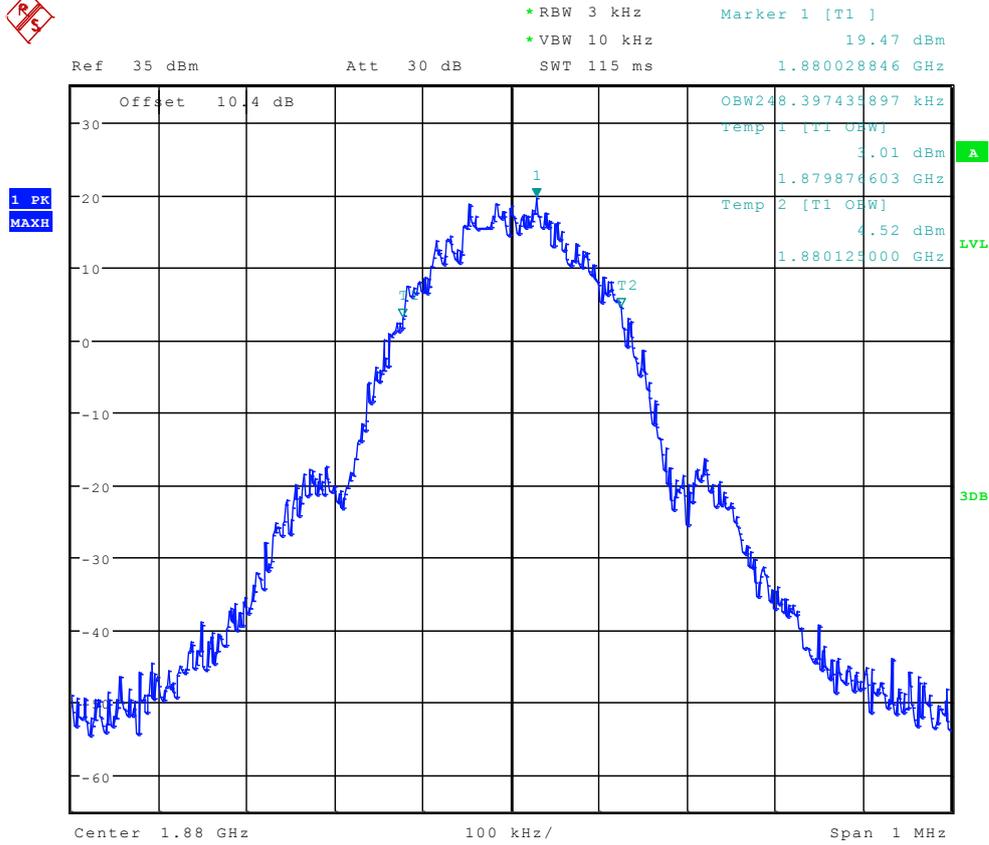
TM2:EDGE Channel 512



Date: 23.DEC.2011 10:56:48



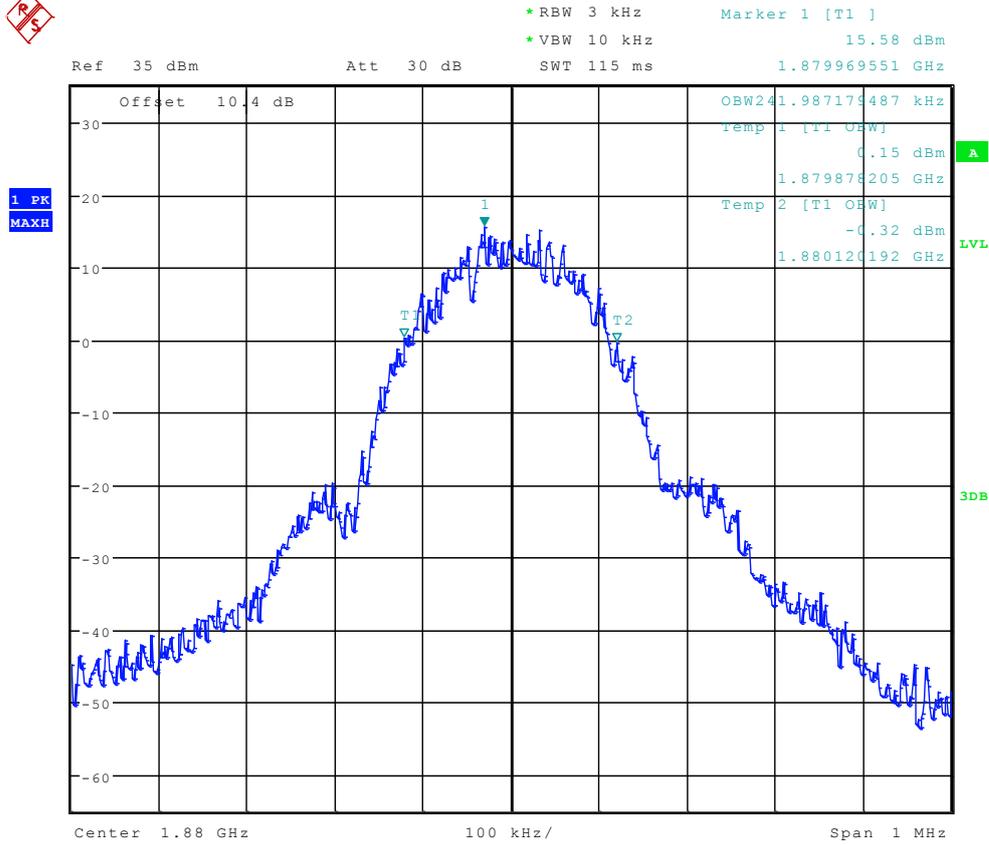
TM1:GPRS/GSM Channel 661



Date: 23.DEC.2011 10:25:20



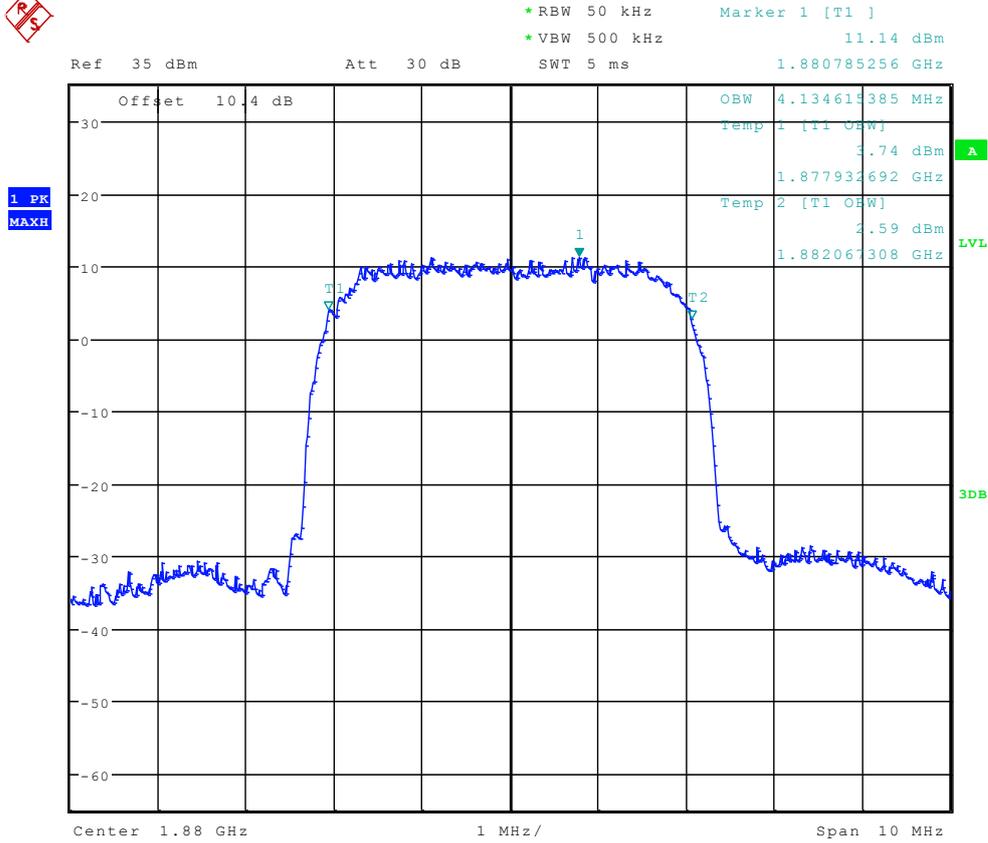
TM2:EDGE Channel 661



Date: 23.DEC.2011 10:57:02



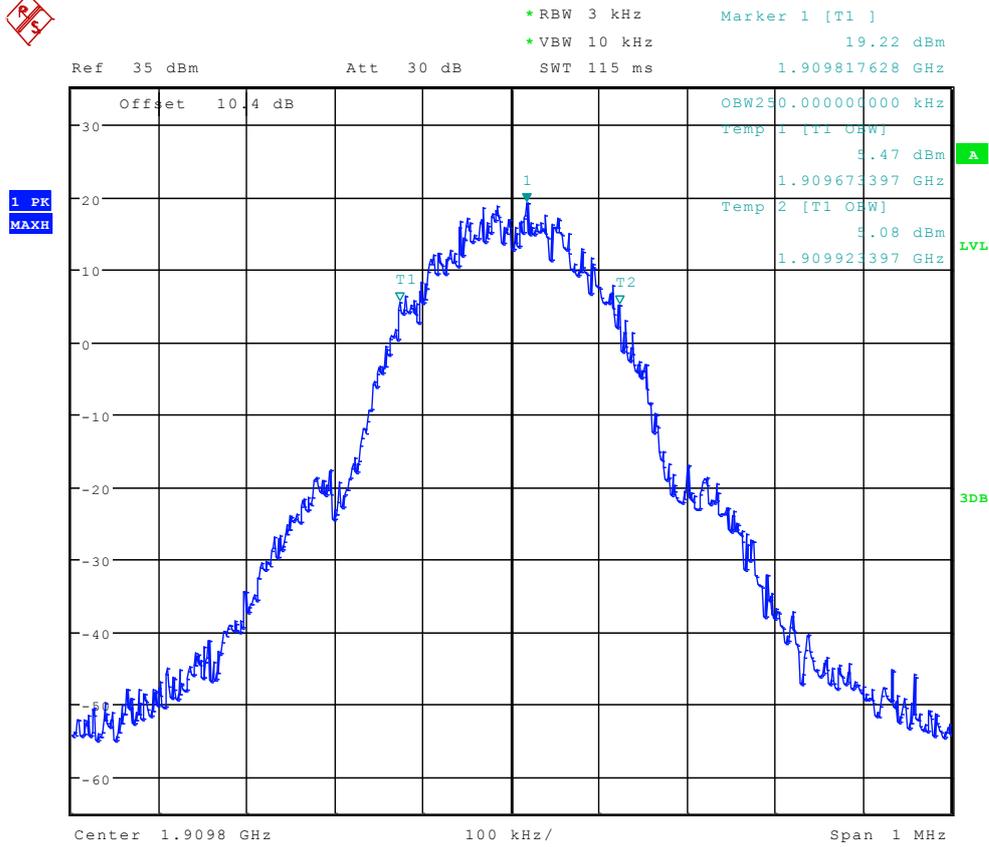
TM3: WCDMA Channel 9400



Date: 23.DEC.2011 10:48:41



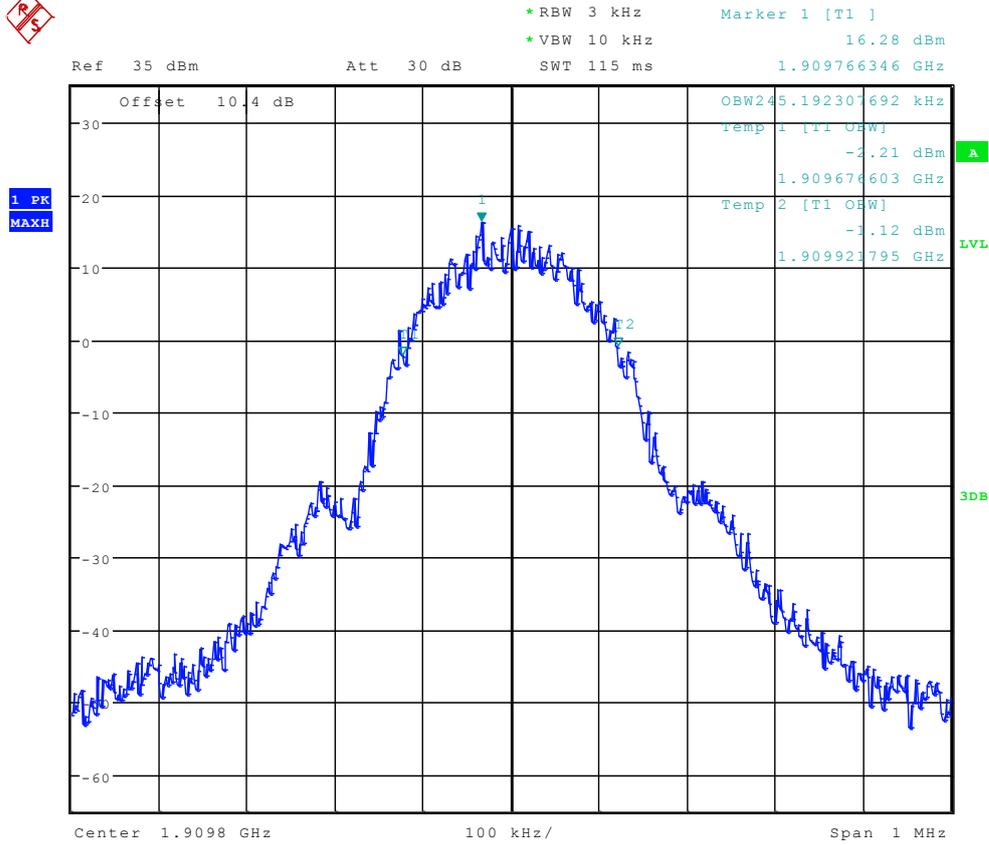
TM1:GPRS/GSM Channel 810



Date: 23.DEC.2011 10:25:34



TM2:EDGE Channel 810



Date: 23.DEC.2011 10:57:16



Appendix D

Band Edges Compliance

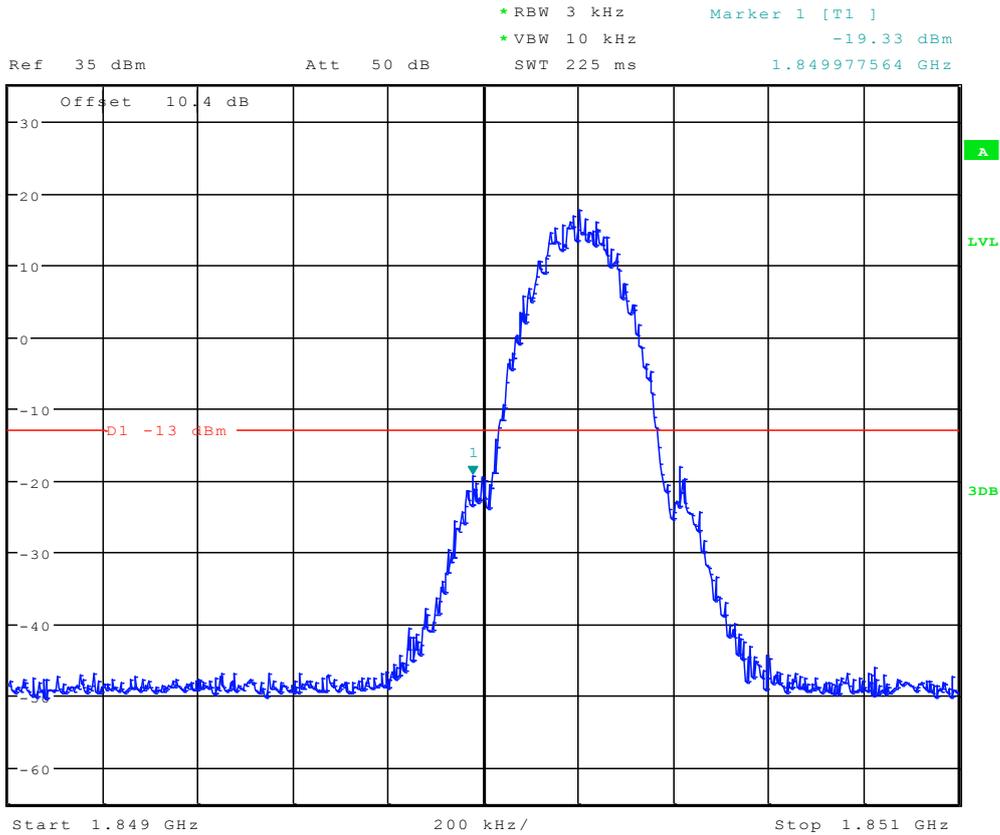
According to FCC Part 2.1051 & Part24 Subpart E



TM1:GPRS/GSM

Left Edge

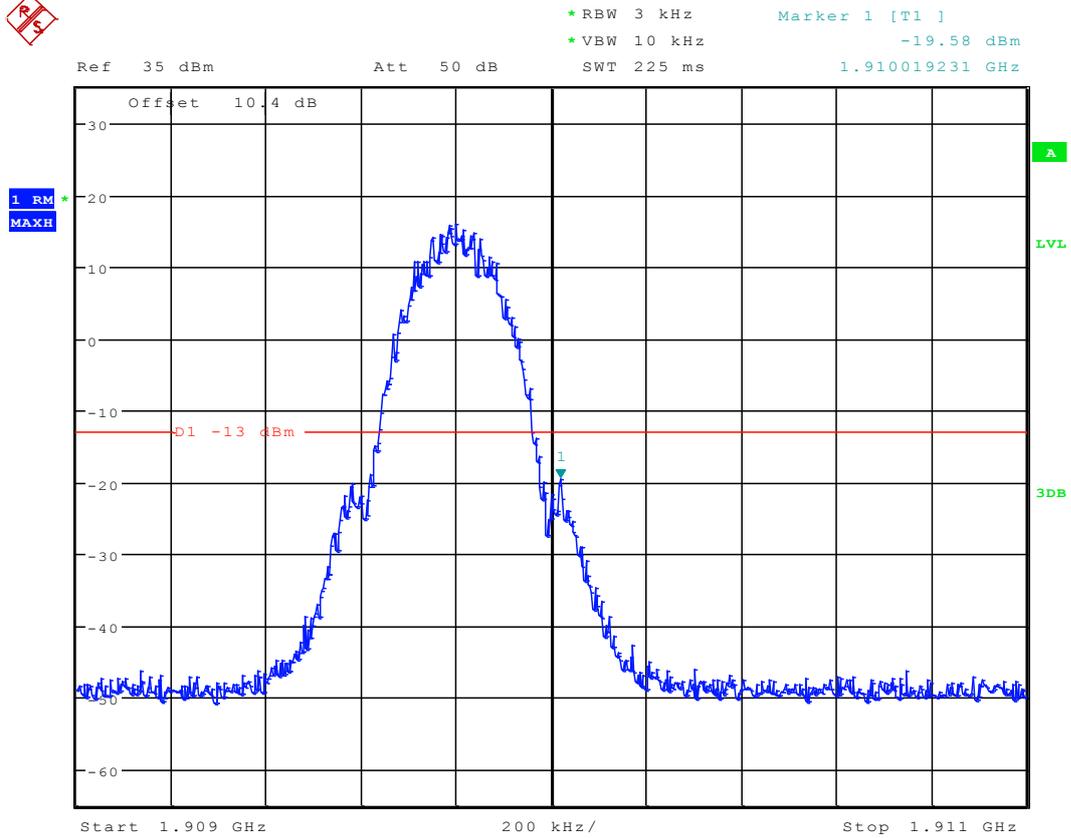
Channel 512



Date: 23.DEC.2011 12:03:09



Right Edge Channel 810



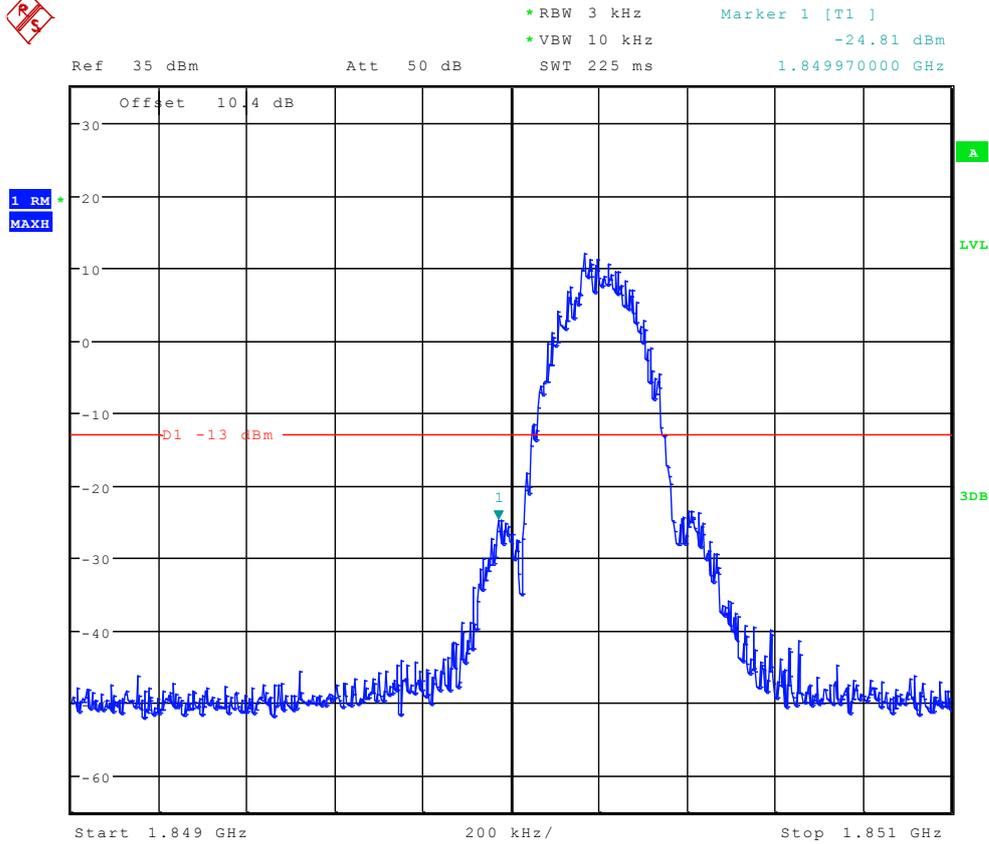
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TM2:EDGE

Left Edge

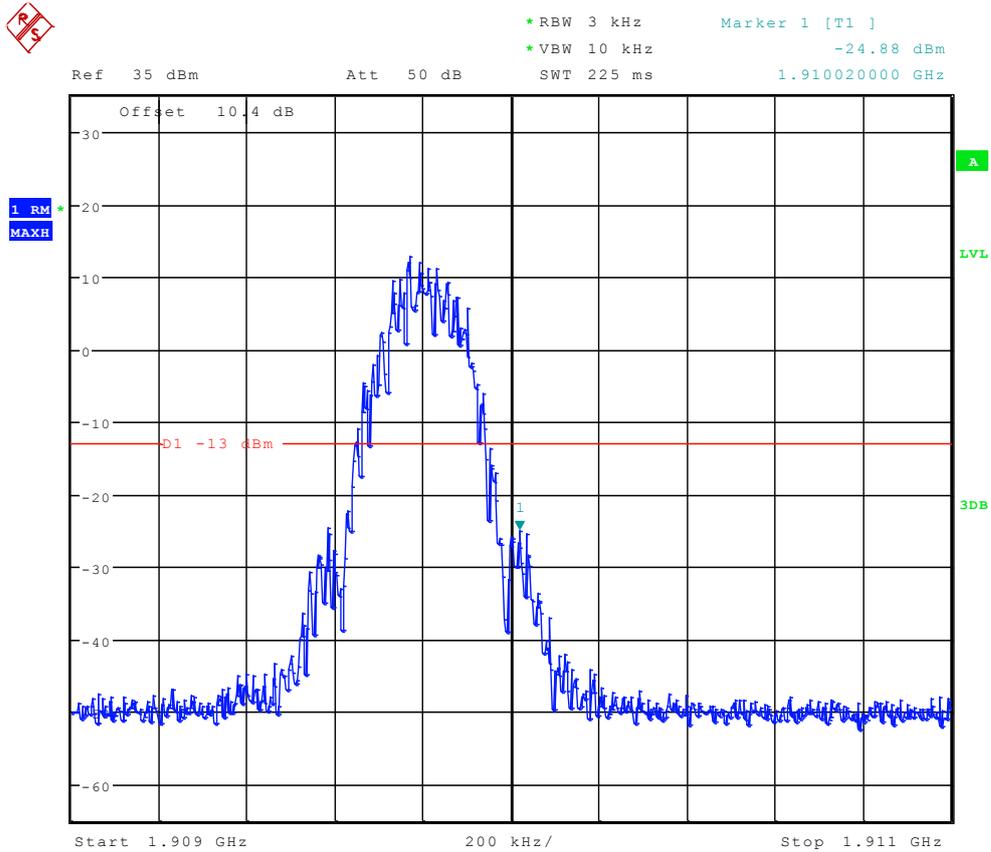
Channel 512



Date: 23.DEC.2011 10:33:35



Right Edge Channel 810



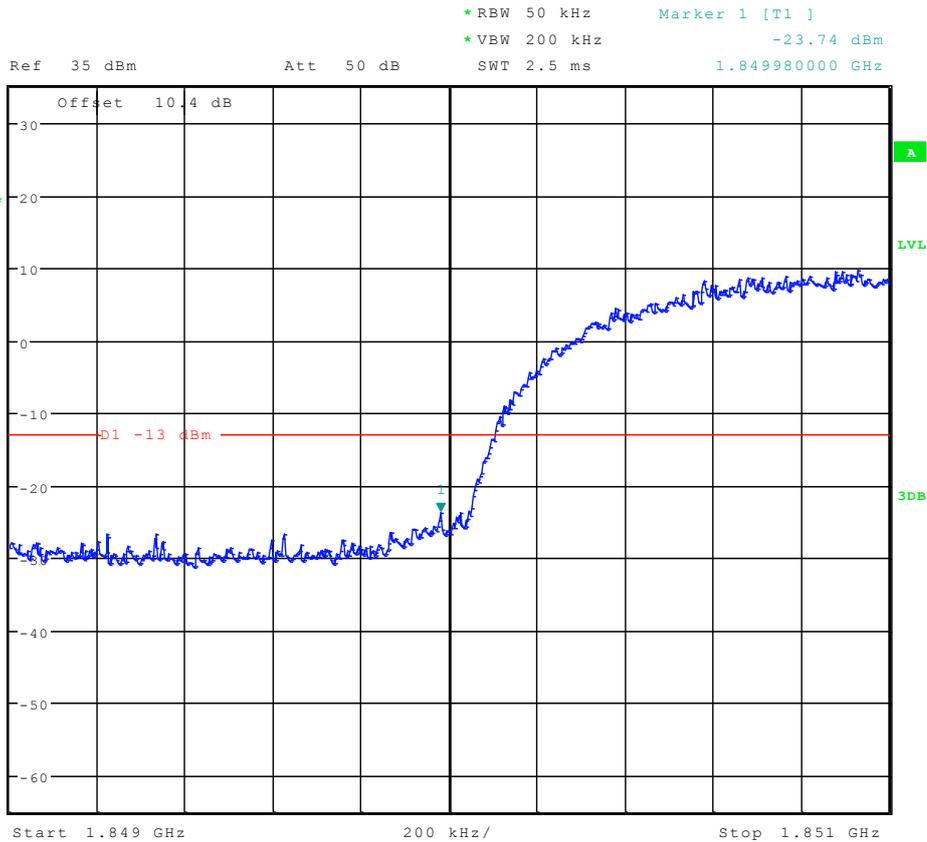
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TM3: WCDMA

Left Edge

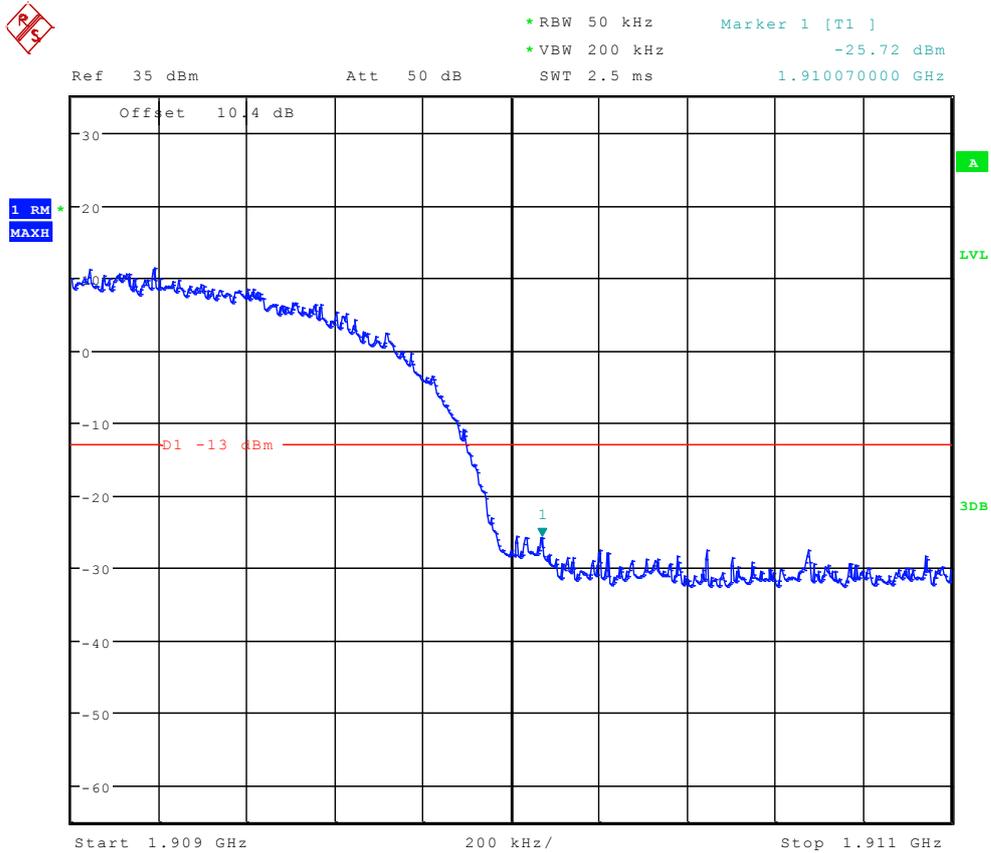
Channel 9262



Date: 23.DEC.2011 10:53:46



Right Edge Channel 9538



Date: 23.DEC.2011 10:54:00

END



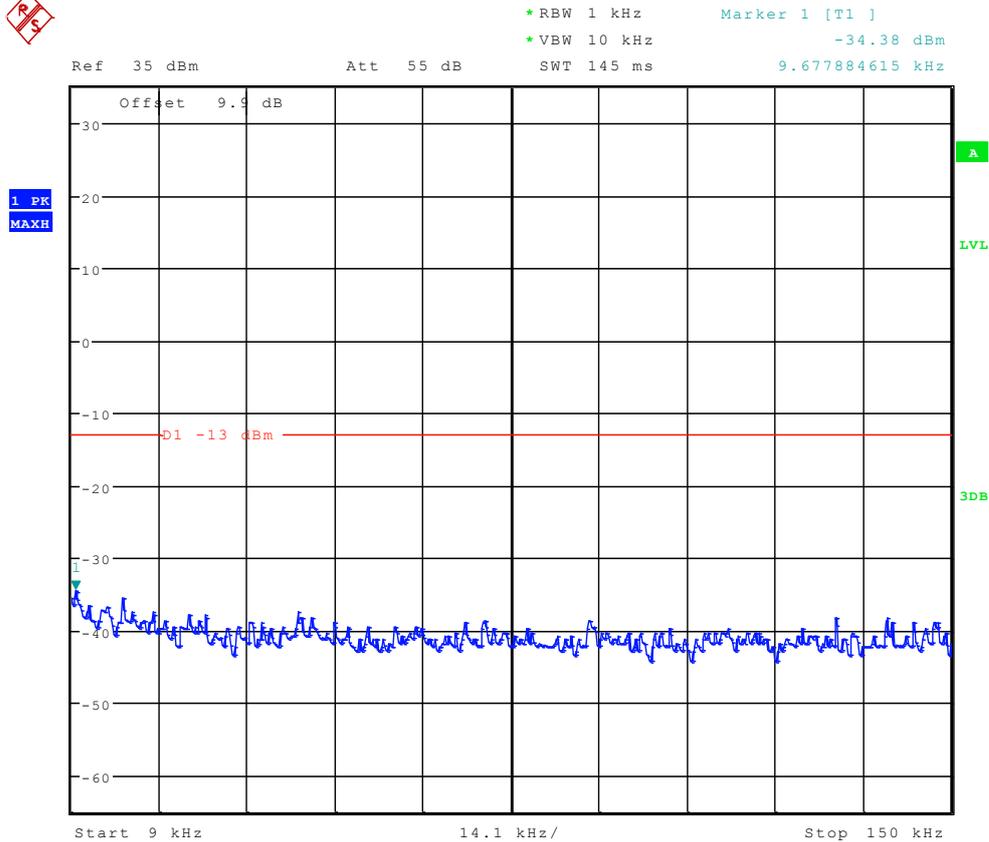
Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part24 Subpart E



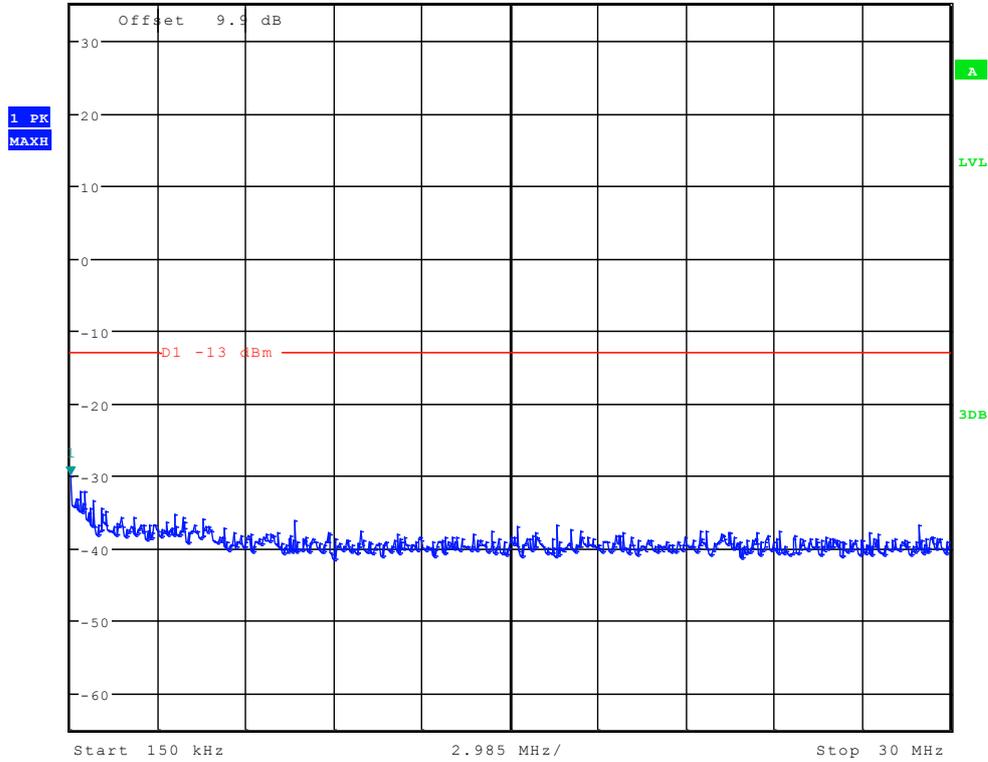
TM1:GPRS/GSM Channel 512



Date: 23.DEC.2011 10:25:49



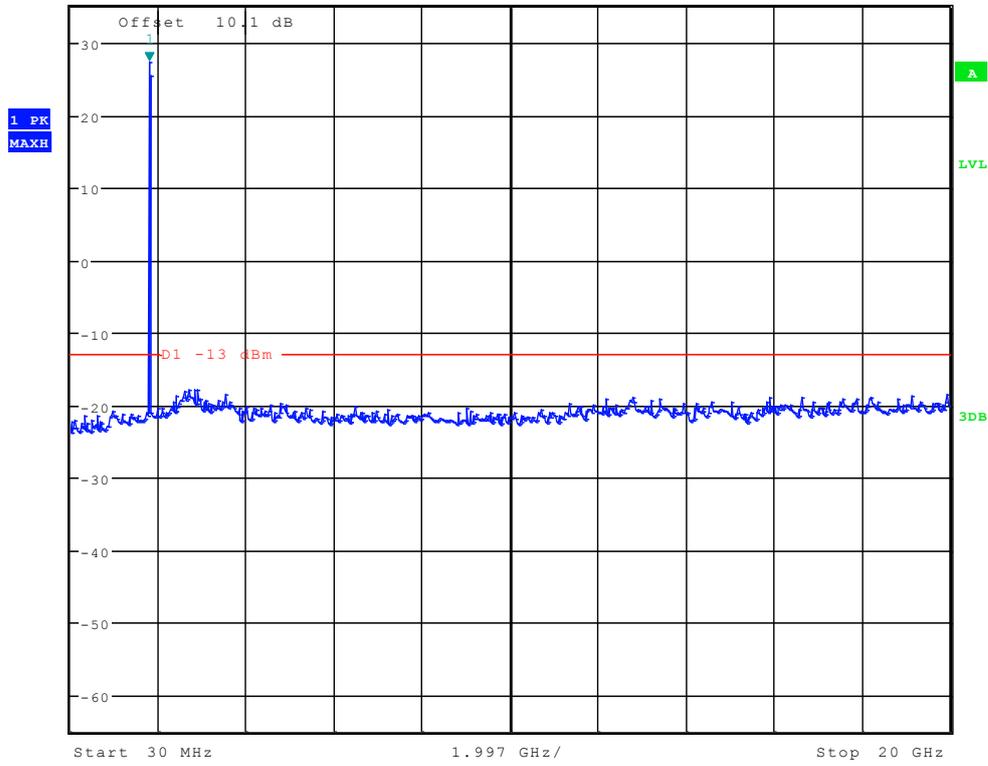
Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.93 dBm



Date: 23.DEC.2011 10:26:32



Ref 35 dBm Att 50 dB SWT 115 ms
 *RBW 1 MHz Marker 1 [T1] 27.31 dBm
 *VBW 3 MHz 1.822179487 GHz



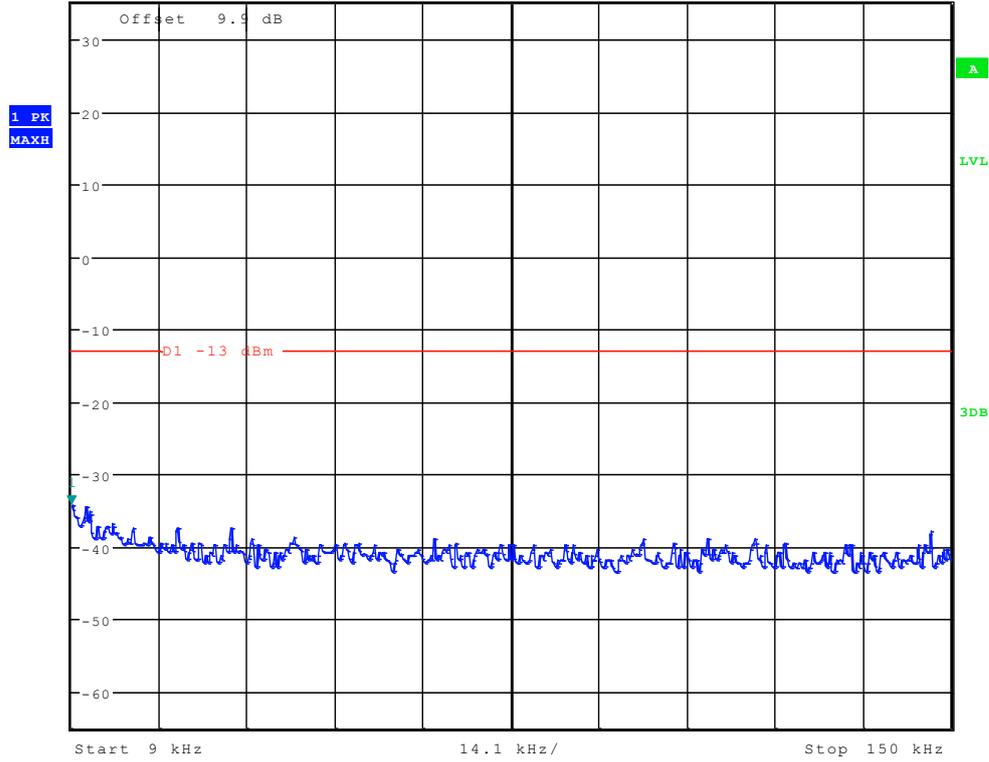
Date: 23.DEC.2011 10:27:16



Channel 661



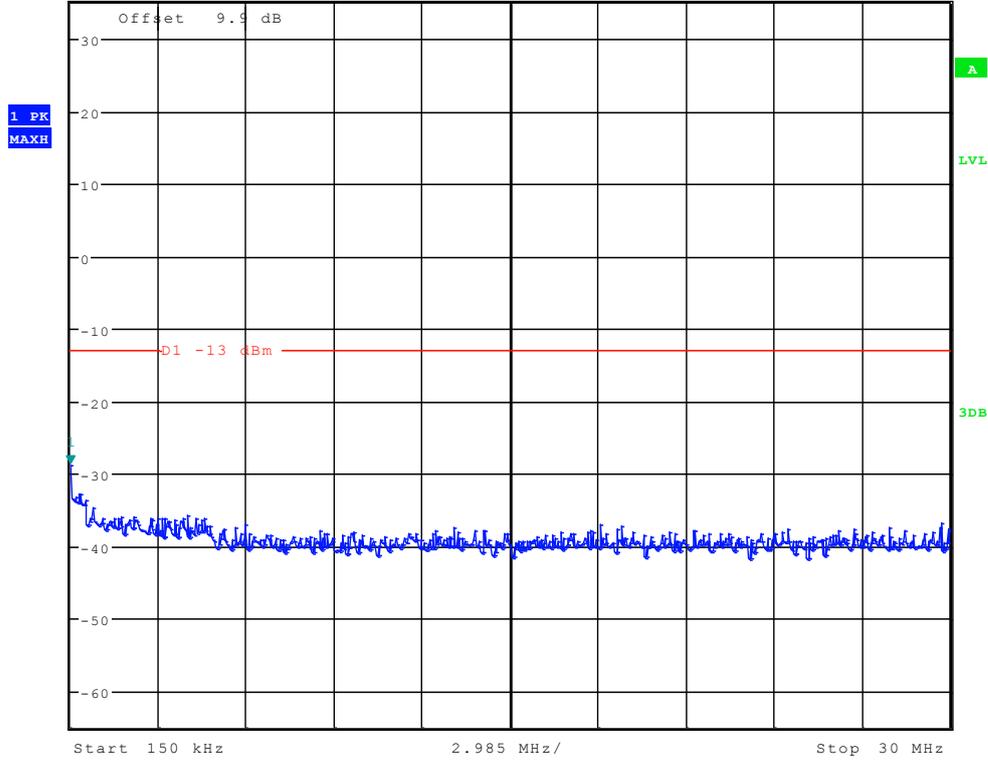
Ref 35 dBm Att 55 dB SWT 145 ms Marker 1 [T1] -34.19 dBm
 *RBW 1 kHz *VBW 10 kHz 9.000000000 kHz



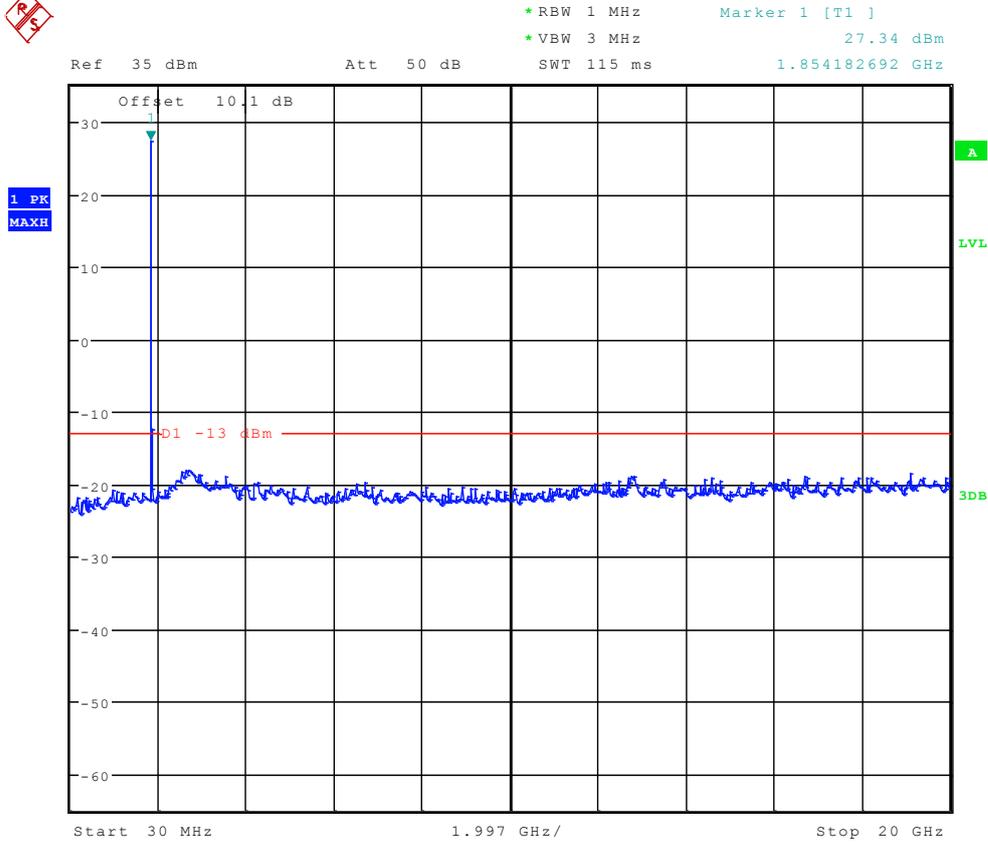
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Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -28.85 dBm



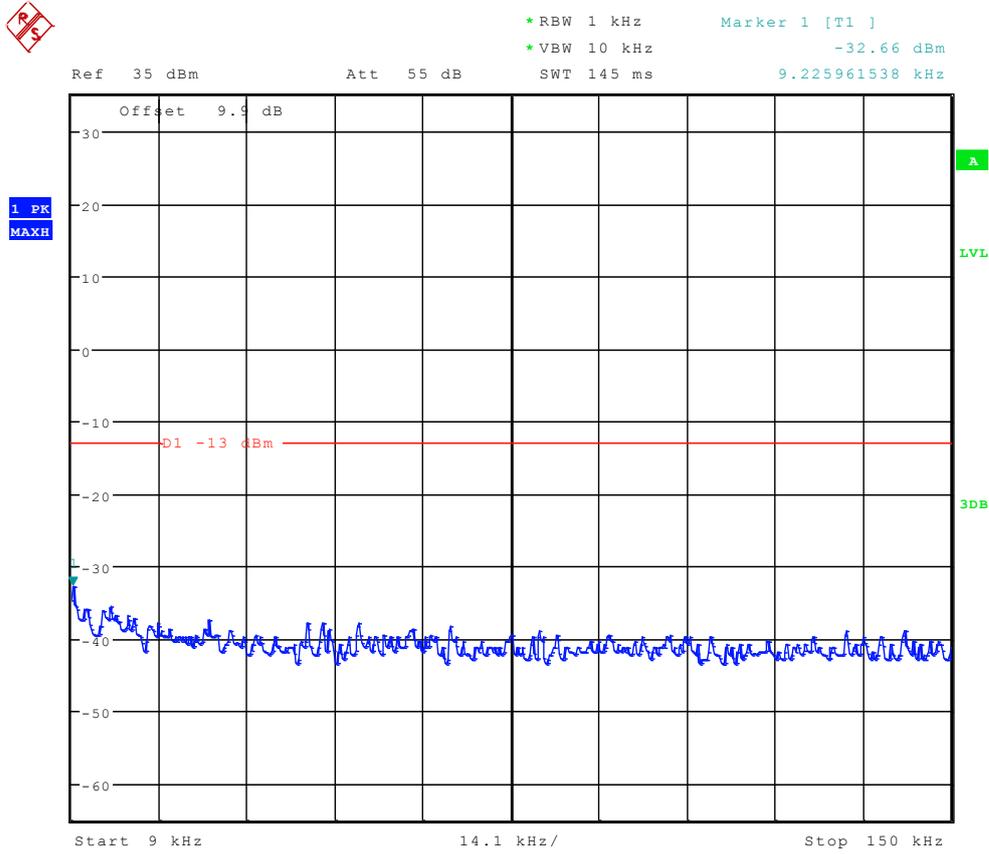
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Date: 23.DEC.2011 10:27:31



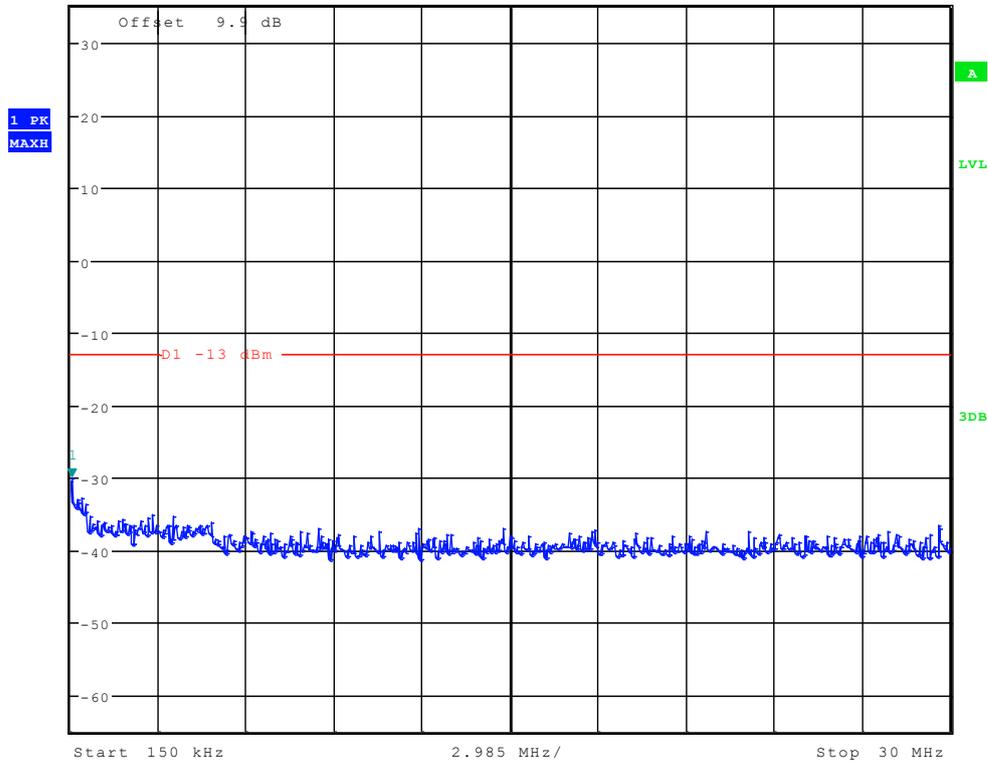
Channel 810



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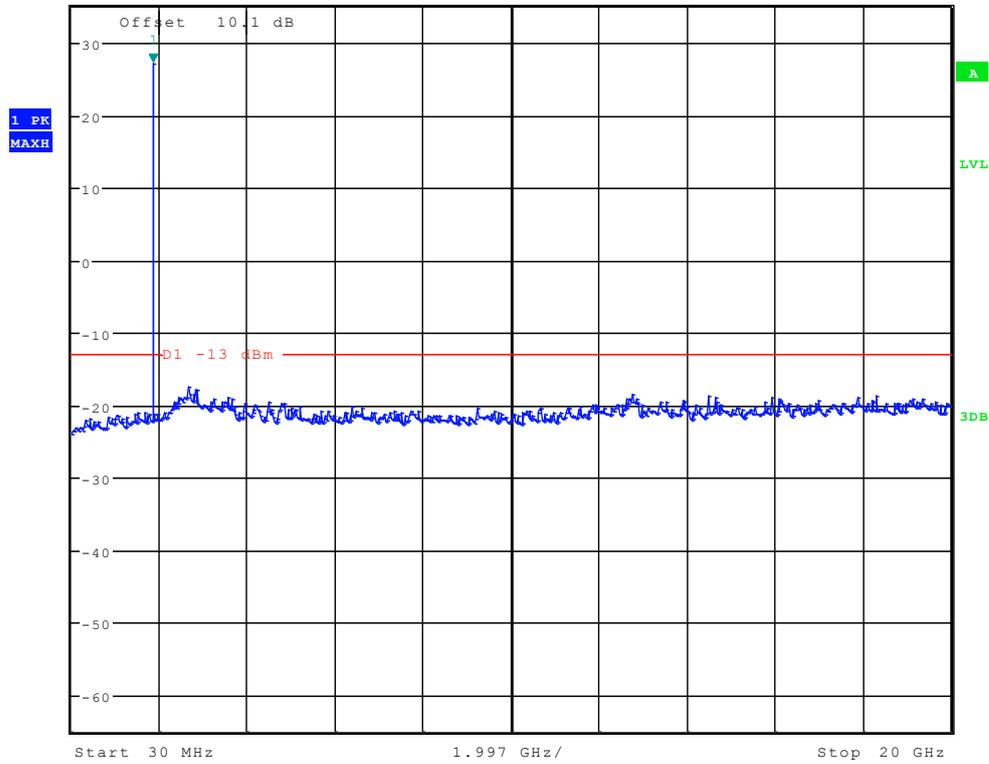
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz -29.98 dBm
 Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz



Date: 23.DEC.2011 10:27:01



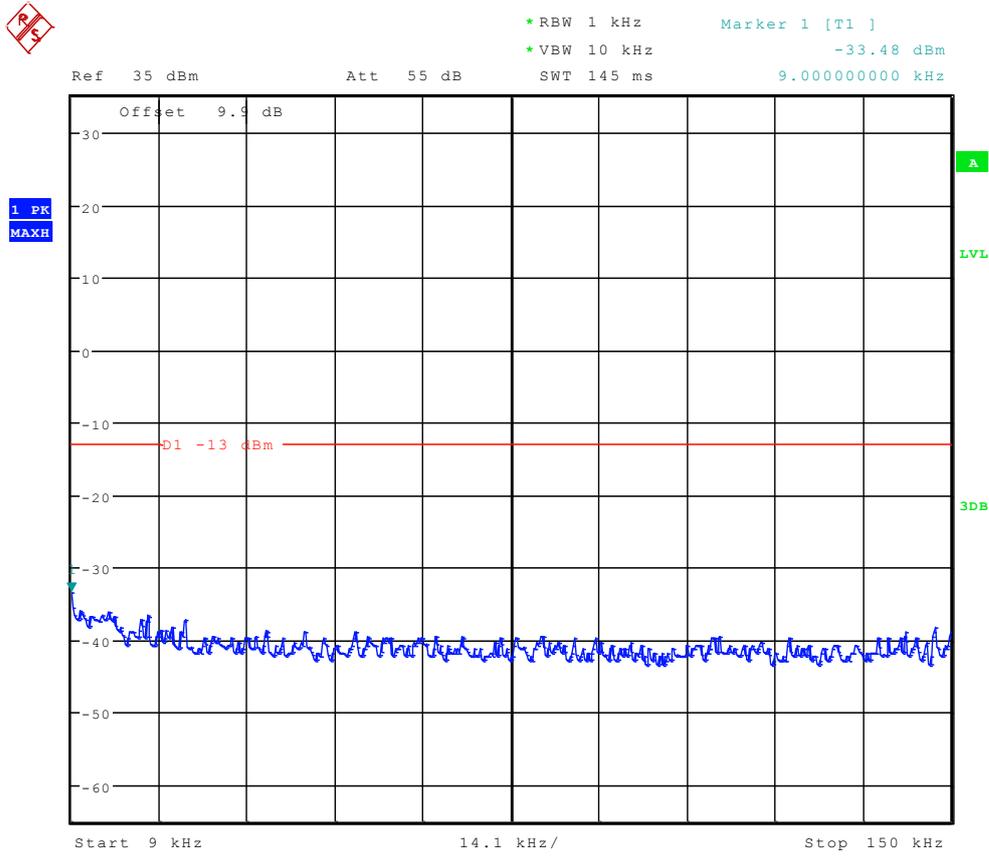
Ref 35 dBm Att 50 dB SWT 115 ms Marker 1 [T1] 27.02 dBm
*RBW 1 MHz *VBW 3 MHz 1.886185897 GHz



Date: 23.DEC.2011 10:27:45



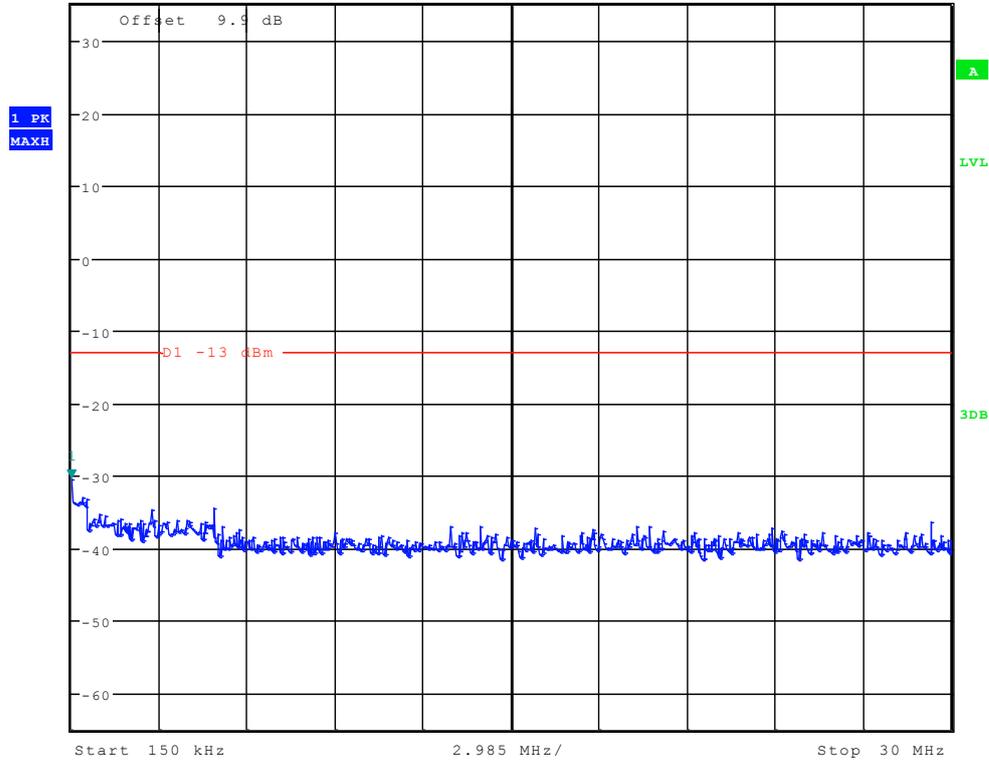
TM2:EDGE Channel 512



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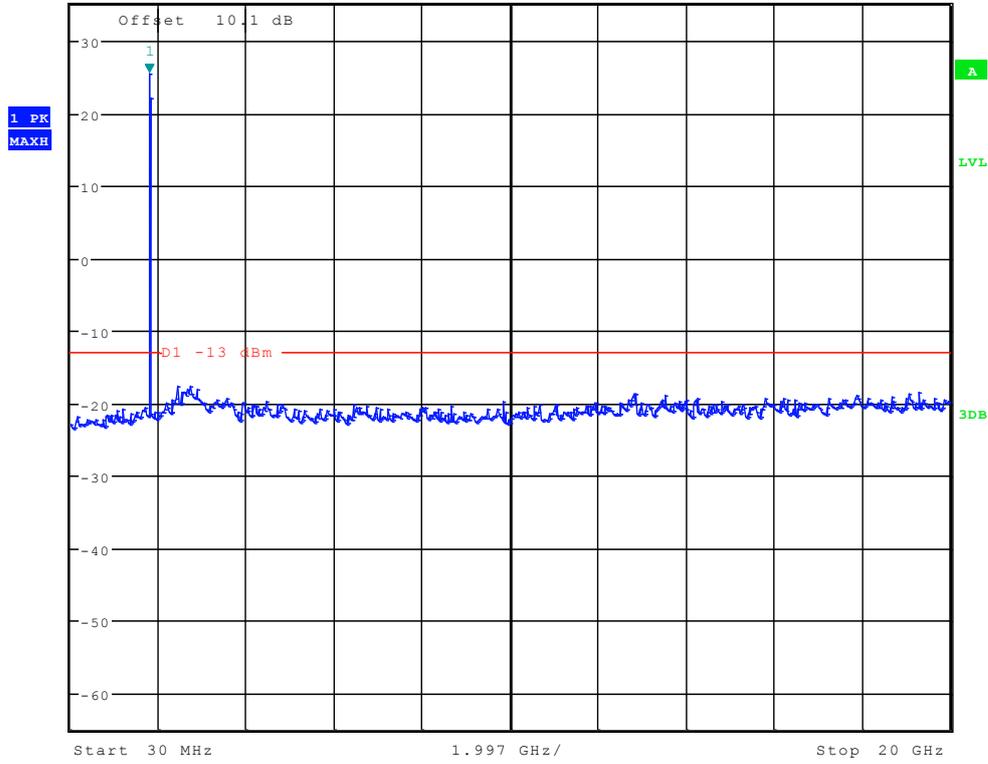
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*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -30.40 dBm



Date: 23.DEC.2011 10:32:05



Ref 35 dBm Att 50 dB SWT 115 ms
*RBW 1 MHz Marker 1 [T1] 25.38 dBm
*VBW 3 MHz 1.822179487 GHz



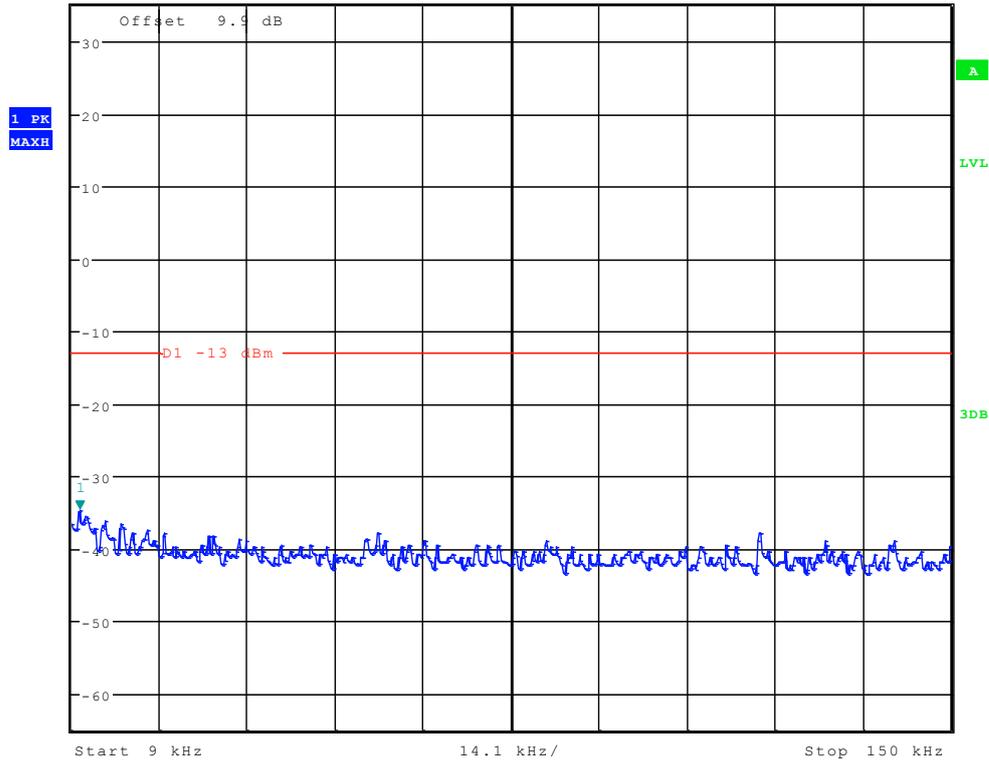
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Channel 661



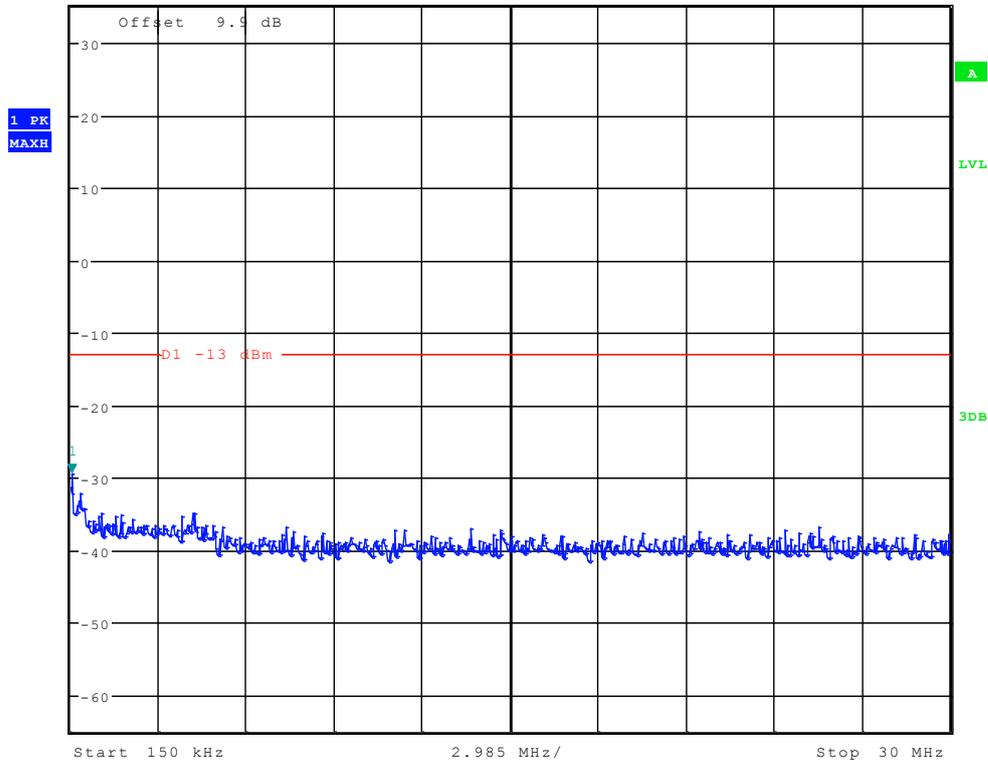
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Date: 23.DEC.2011 10:31:35



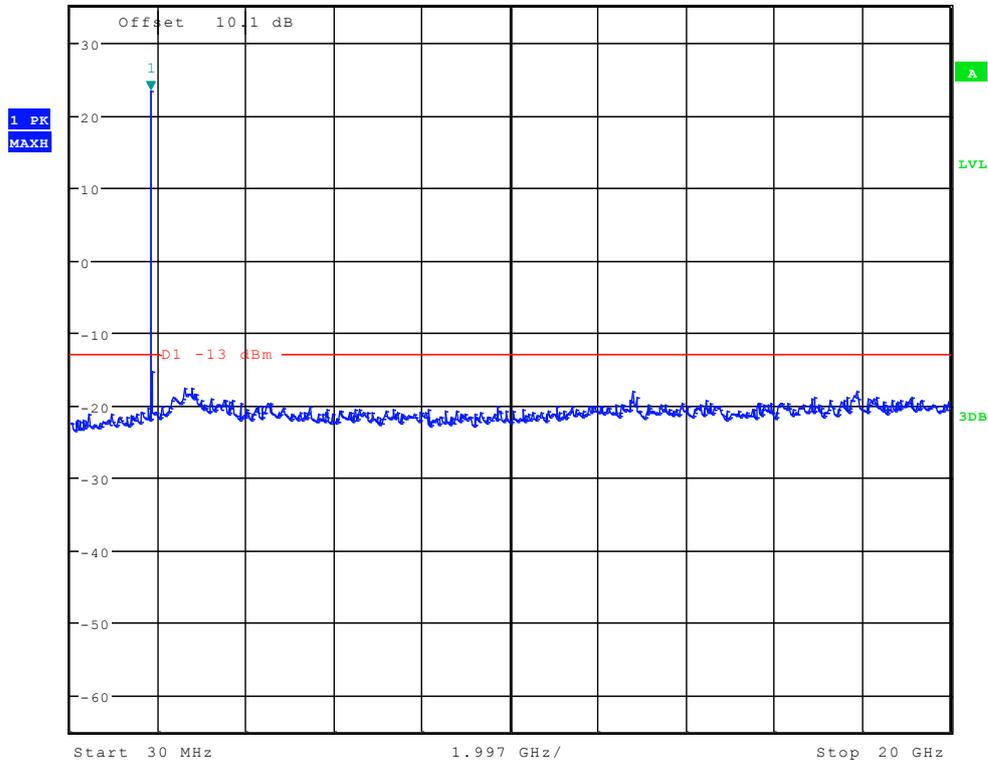
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.43 dBm
Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz



Date: 23.DEC.2011 10:32:19



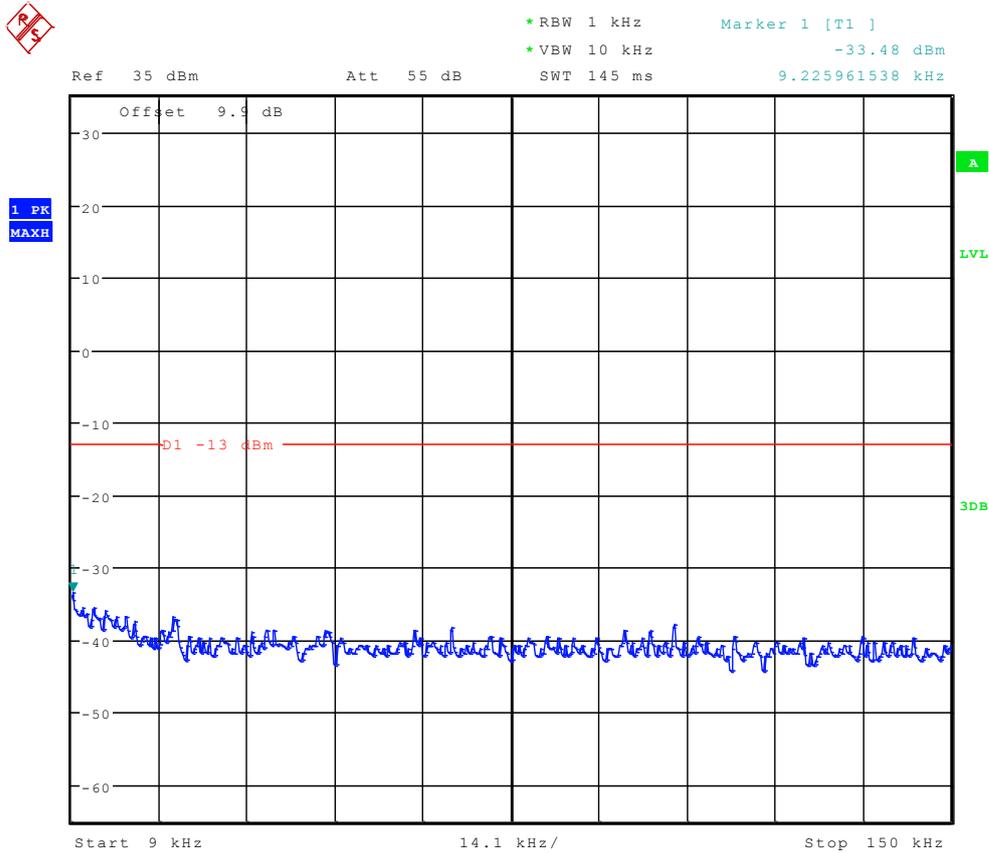
Ref 35 dBm Att 50 dB SWT 115 ms
*RBW 1 MHz Marker 1 [T1] 23.38 dBm
*VBW 3 MHz 1.854182692 GHz



Date: 23.DEC.2011 10:33:03



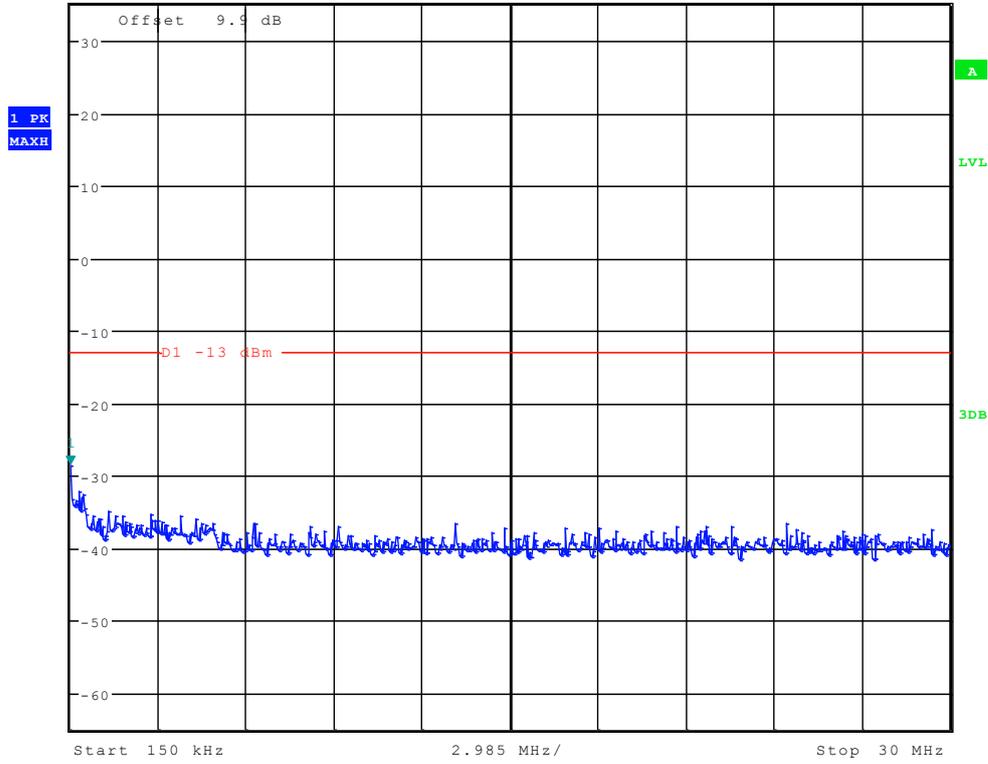
Channel 810



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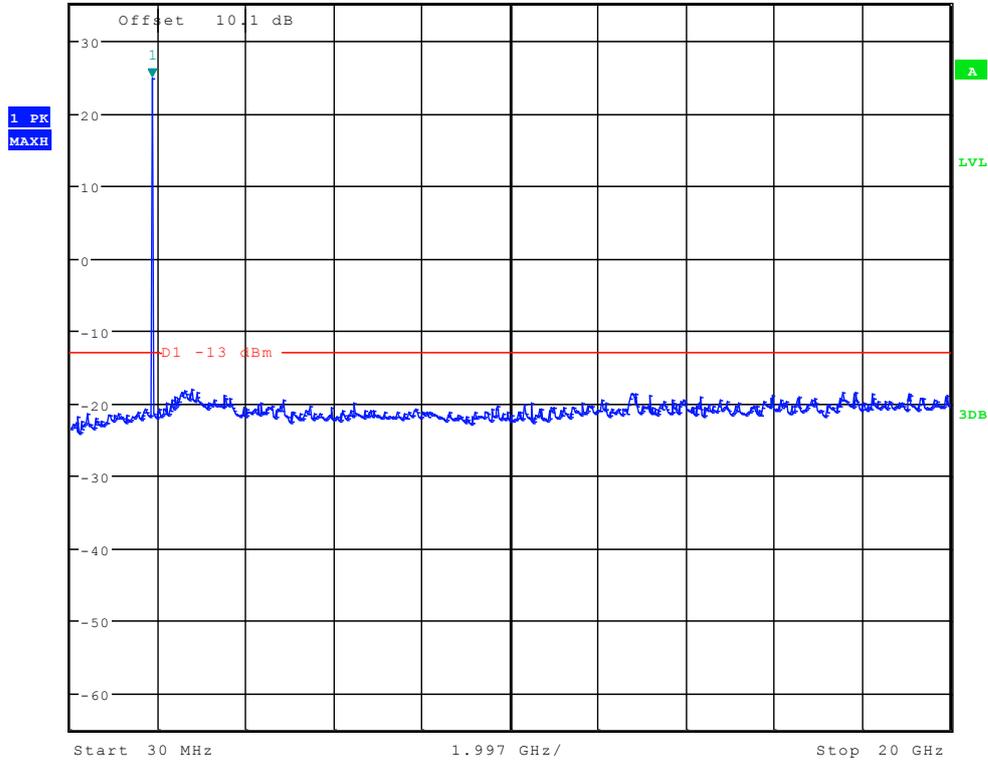
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*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -28.60 dBm



Date: 23.DEC.2011 10:32:33



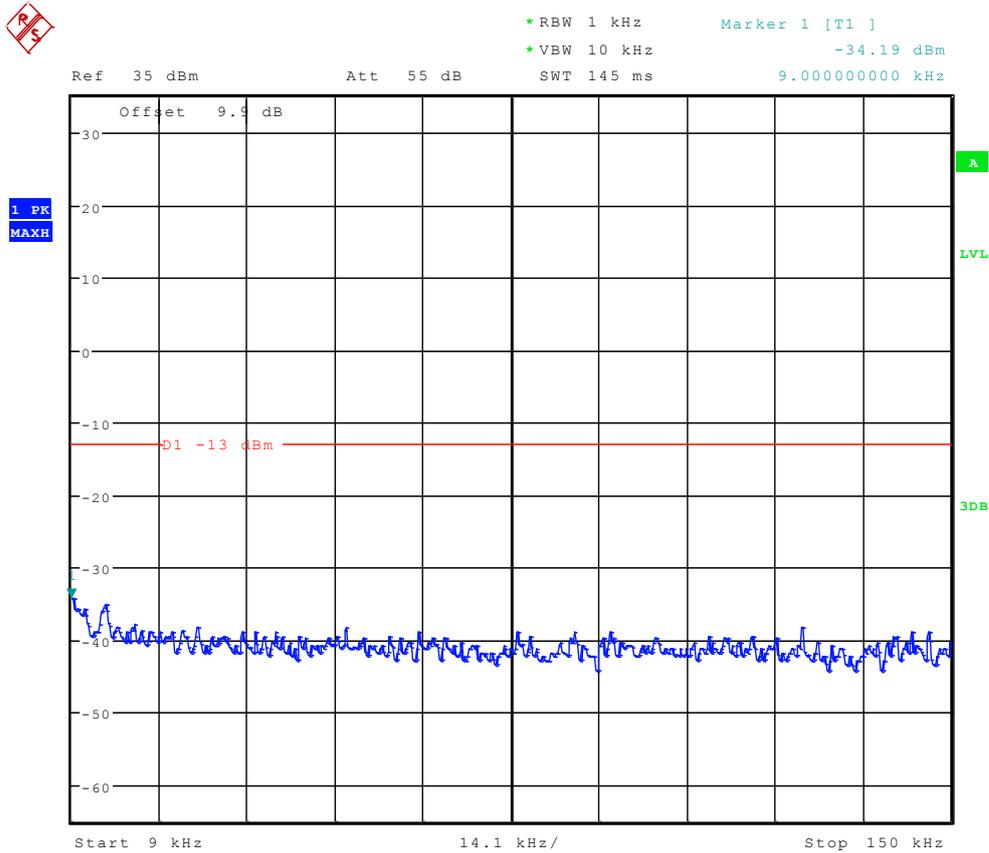
Ref 35 dBm Att 50 dB SWT 115 ms
*RBW 1 MHz Marker 1 [T1] 24.84 dBm
*VBW 3 MHz 1.886185897 GHz



Date: 23.DEC.2011 10:33:18



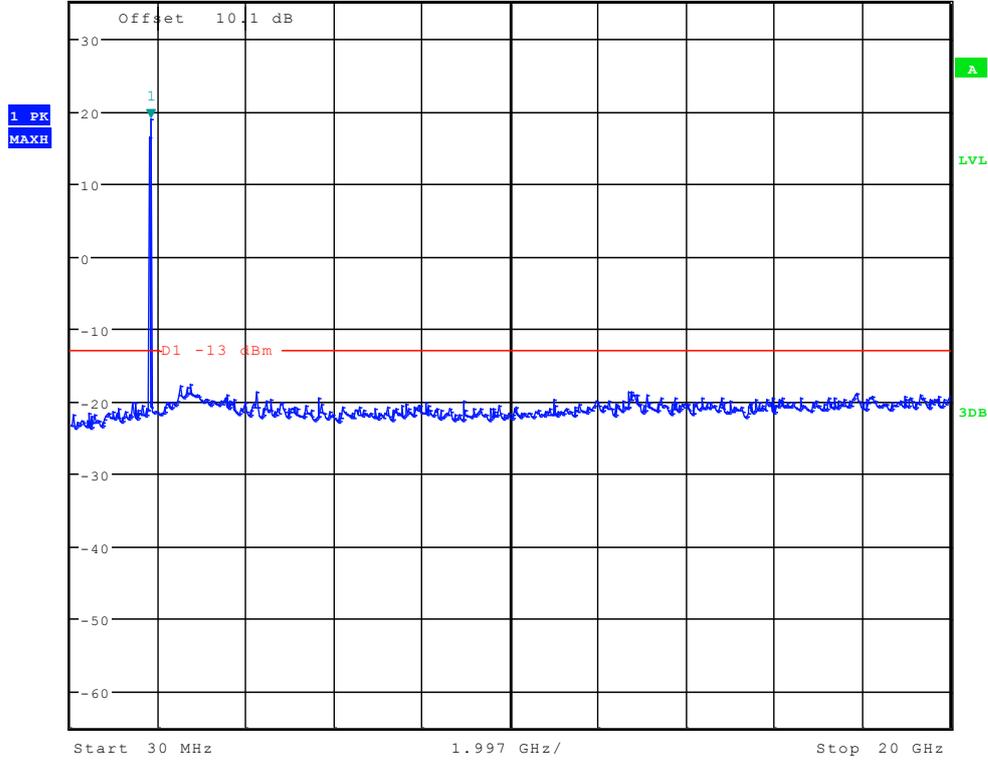
TM3: WCDMA Channel 9262



Date: 23.DEC.2011 10:49:09



Ref 35 dBm Att 50 dB SWT 115 ms
 *RBW 1 MHz Marker 1 [T1] 18.93 dBm
 *VBW 3 MHz 1.854182692 GHz



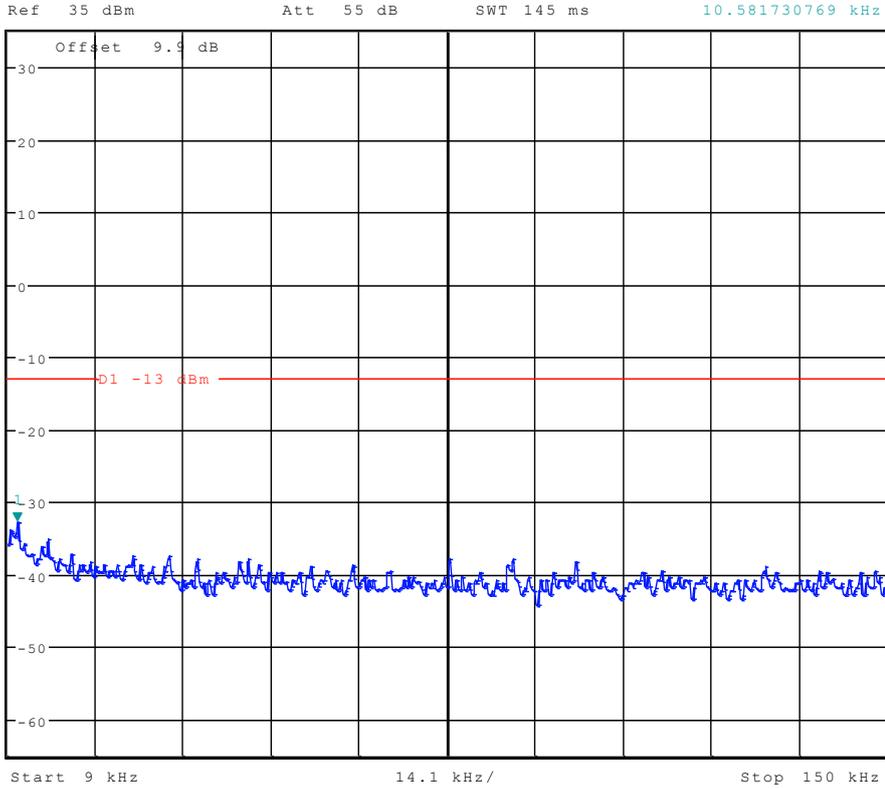
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Channel 9400



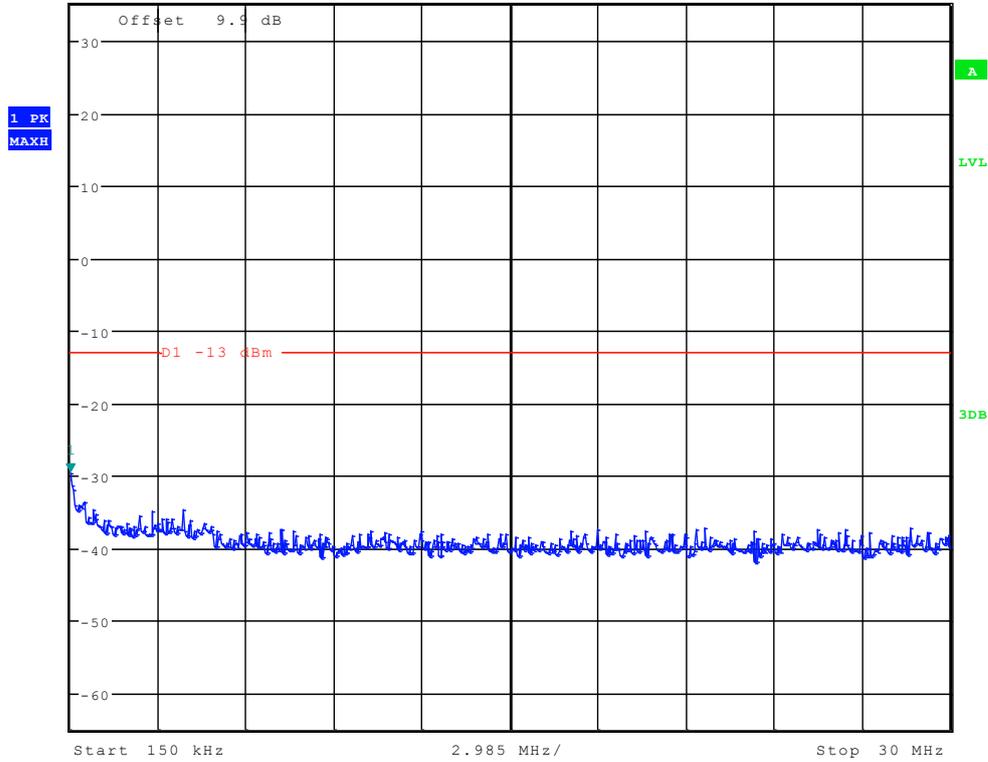
*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -32.66 dBm
SWT 145 ms 10.581730769 kHz



Date: 23.DEC.2011 10:49:24



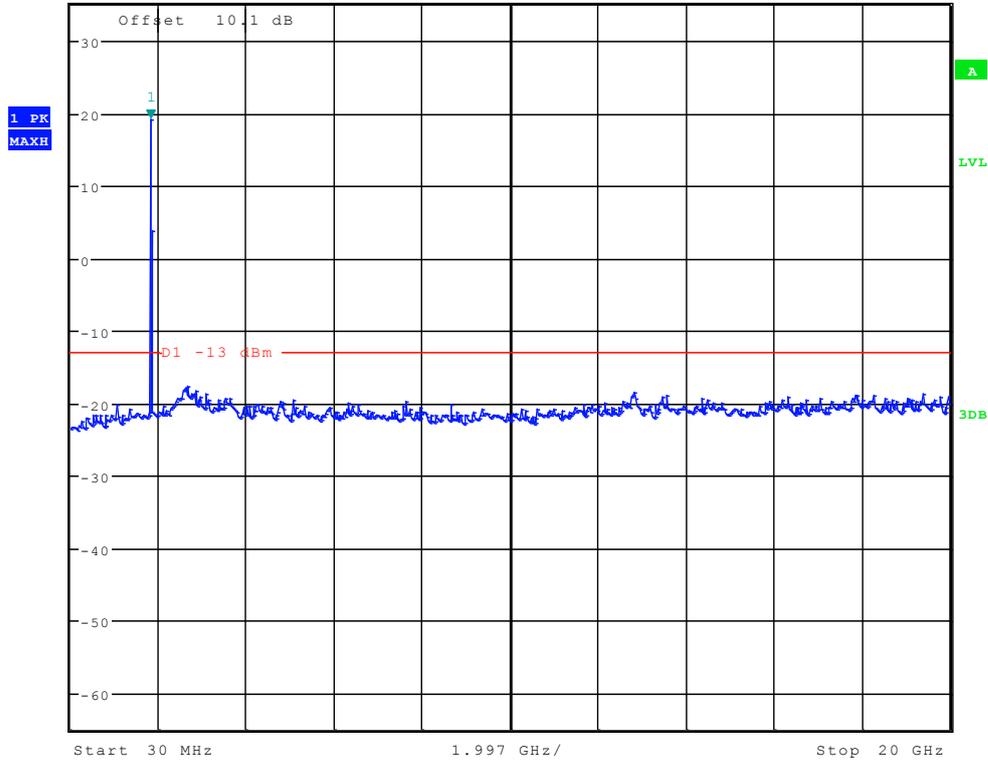
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*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.64 dBm



Date: 23.DEC.2011 10:50:07



Ref 35 dBm Att 50 dB SWT 115 ms
 *RBW 1 MHz Marker 1 [T1] 19.10 dBm
 *VBW 3 MHz 1.854182692 GHz



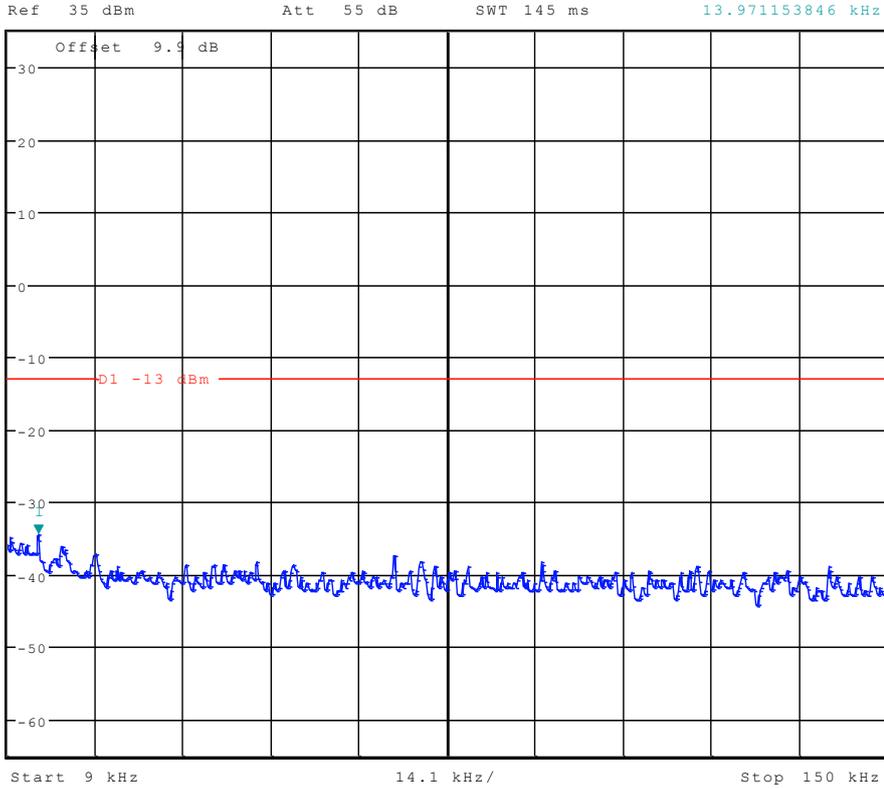
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Channel 9538



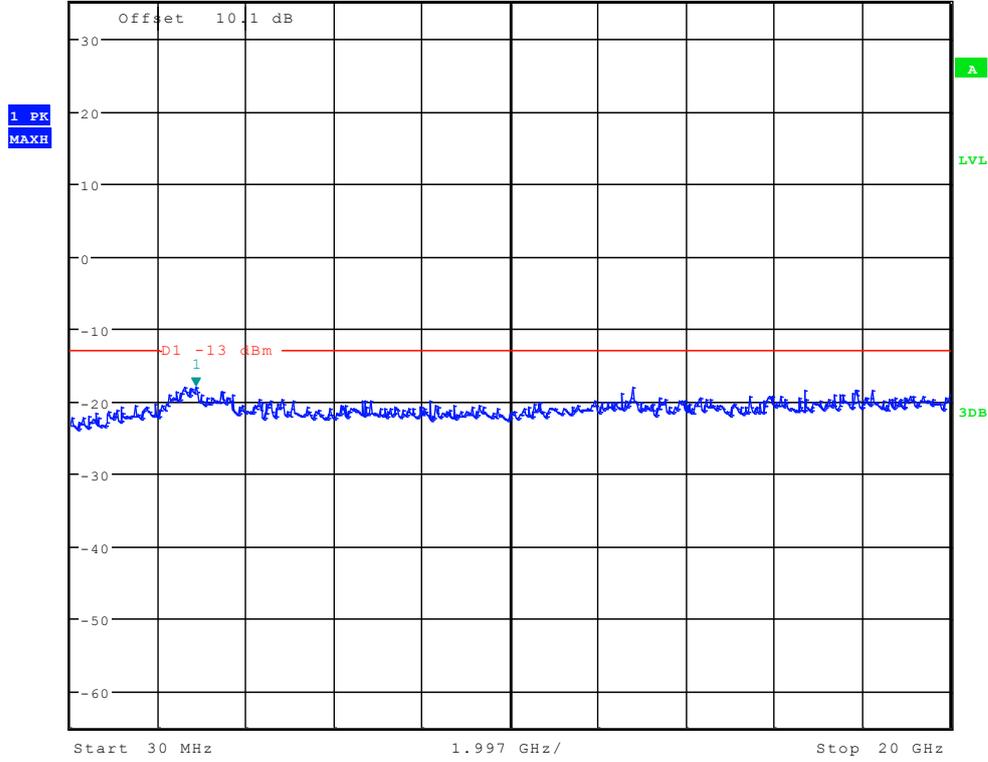
*RBW 1 kHz Marker 1 [T1]
*VBW 10 kHz -34.38 dBm
SWT 145 ms 13.971153846 kHz



Date: 23.DEC.2011 10:49:38



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -18.06 dBm
Ref 35 dBm Att 50 dB SWT 115 ms 2.878285256 GHz



Date: 23.DEC.2011 10:51:06

END



Appendix F

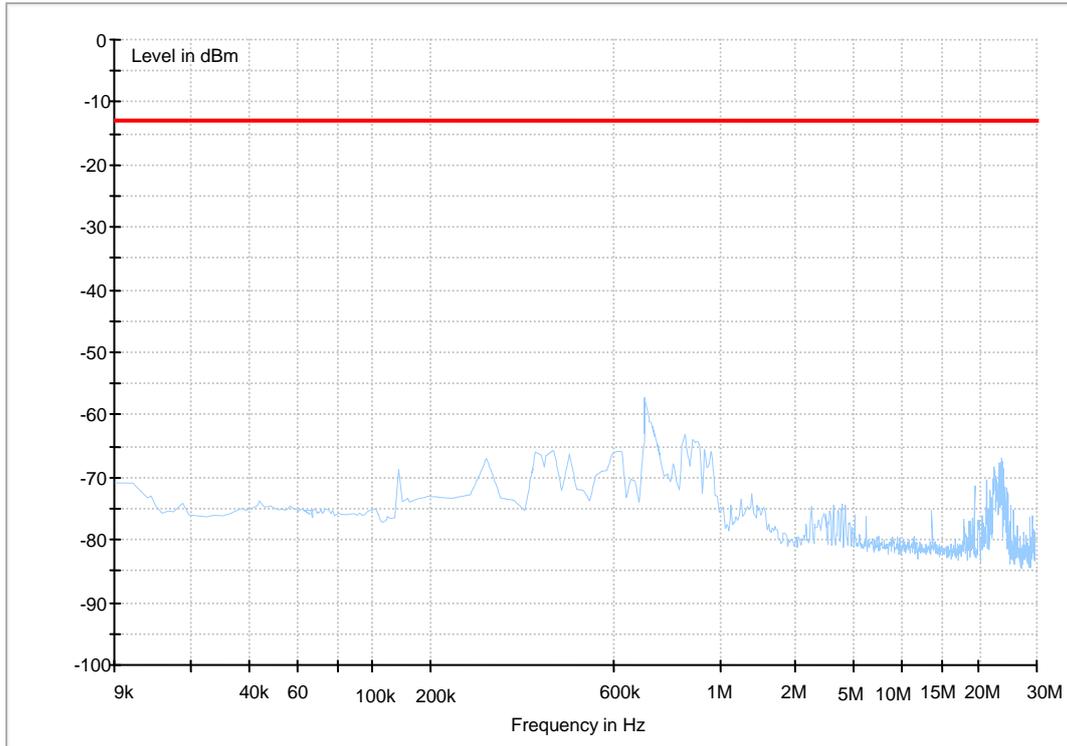
Radiated spurious emission

According to FCC Part 2.1053 & Part 24.238



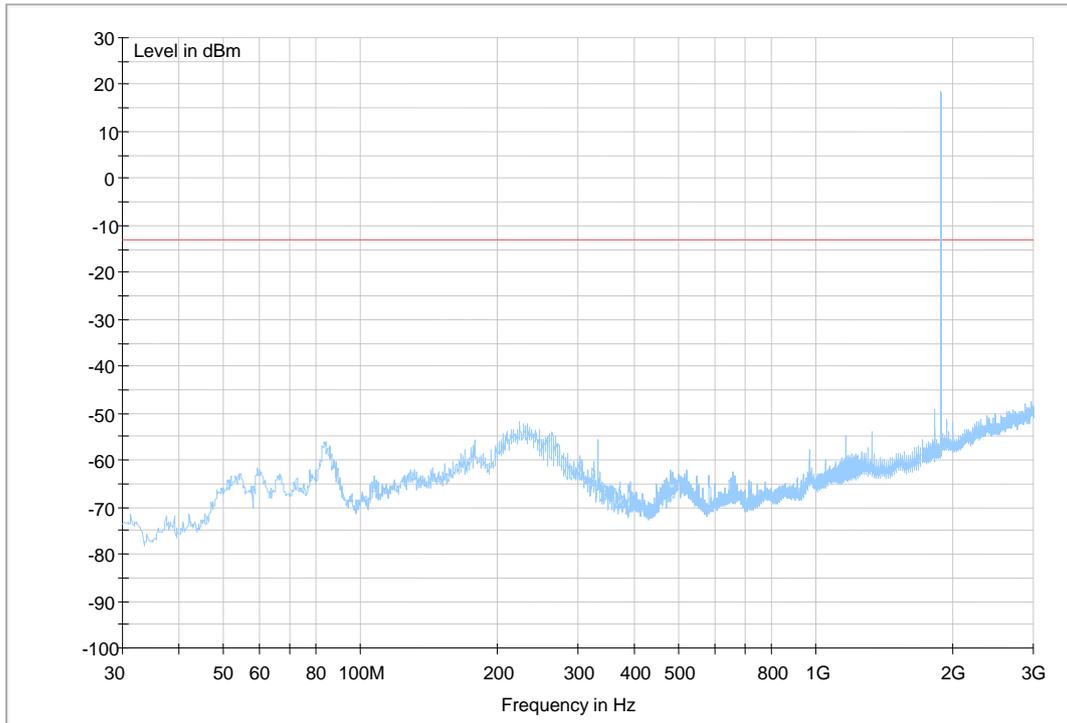
GPRS 1900

(9kHz-30MHz)



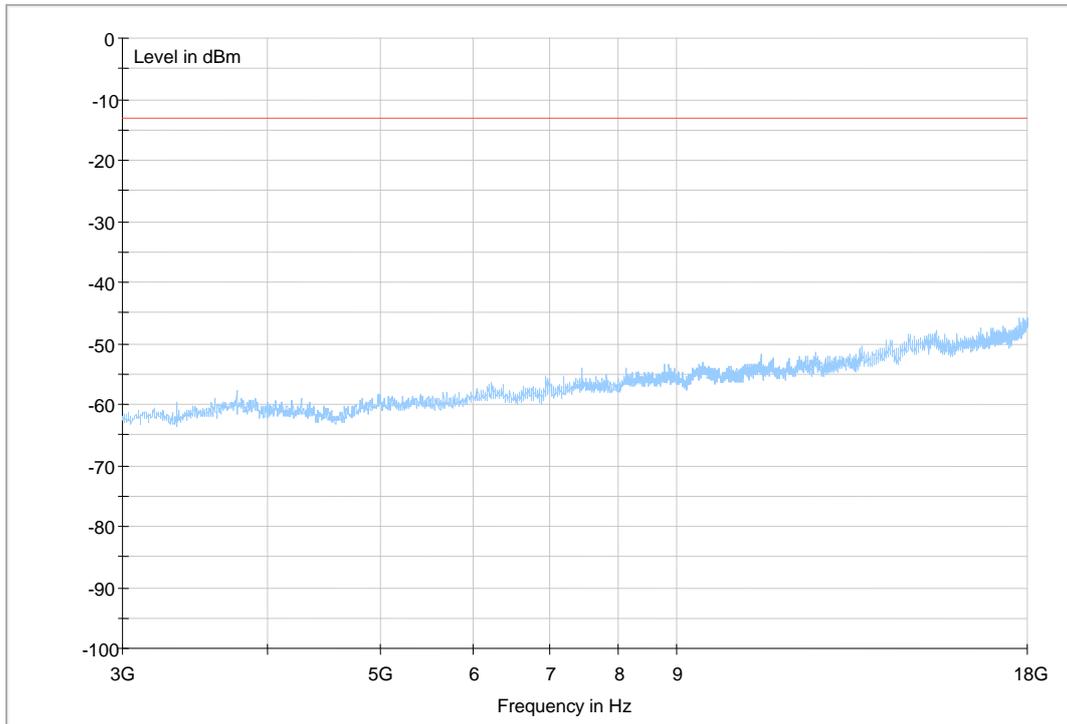


(30MHz~3GHz)



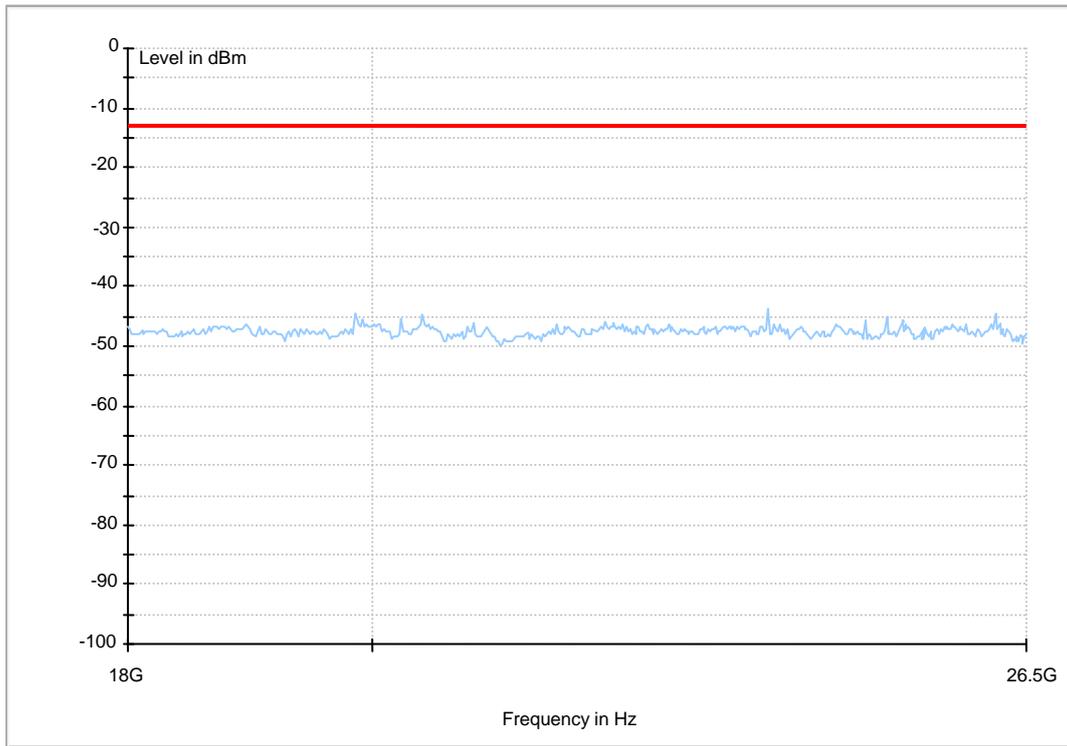


(3GHz~18GHz)





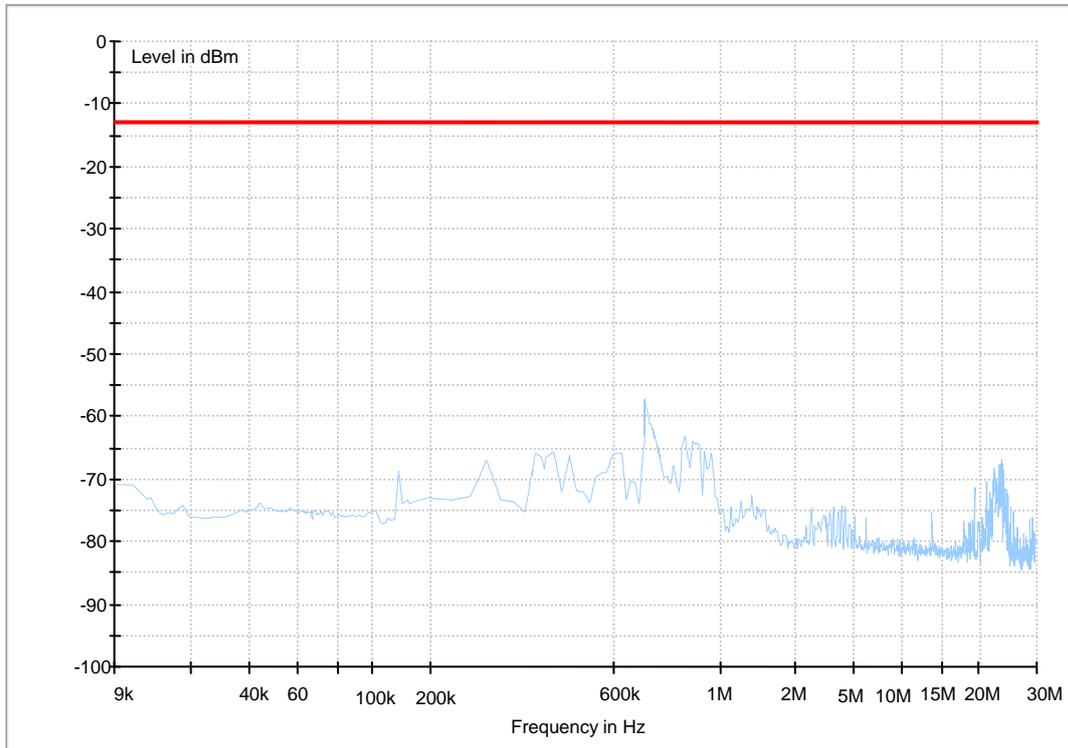
(18GHz-26.5GHz)





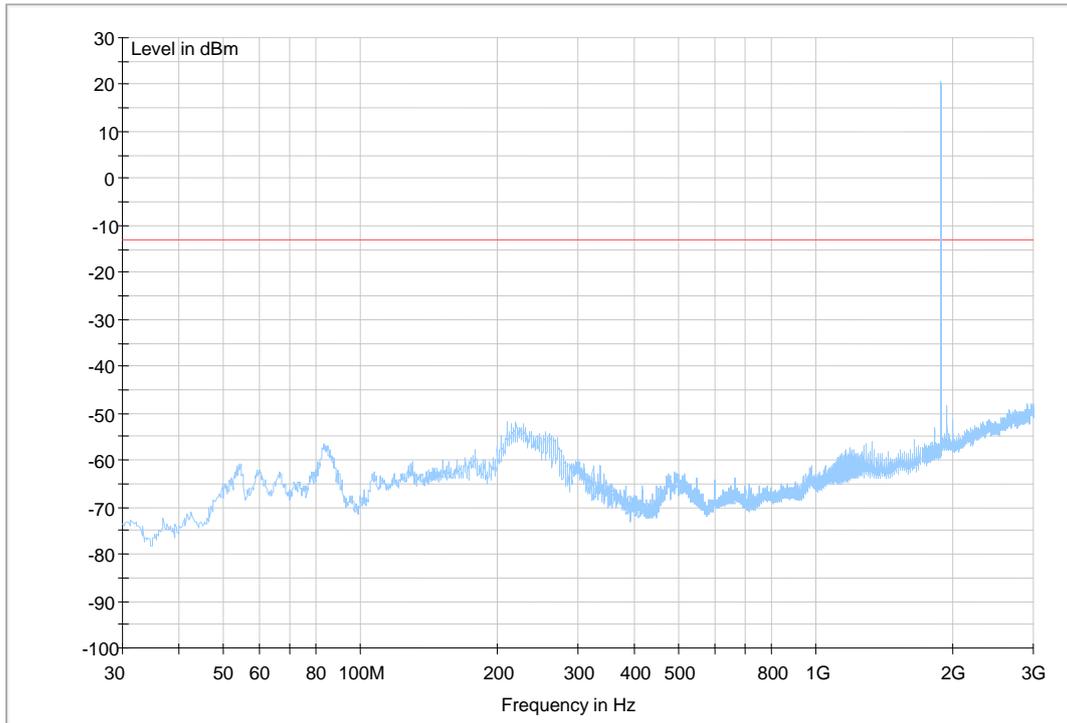
EDGE 1900

(9kHz-30MHz)



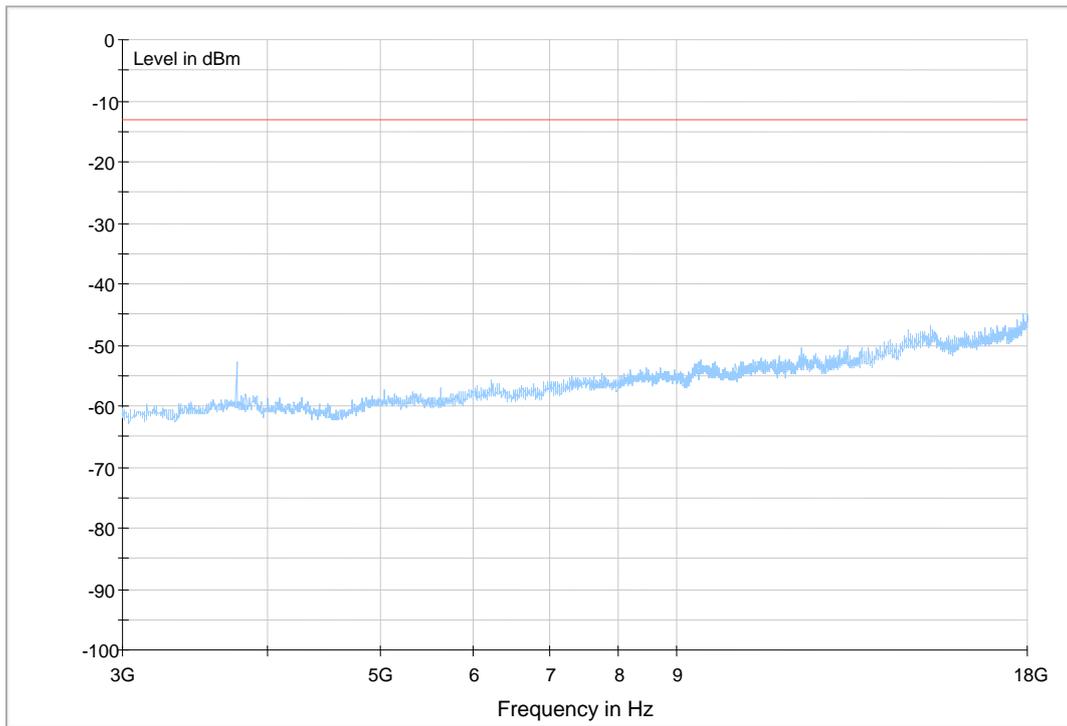


(30MHz~3GHz)



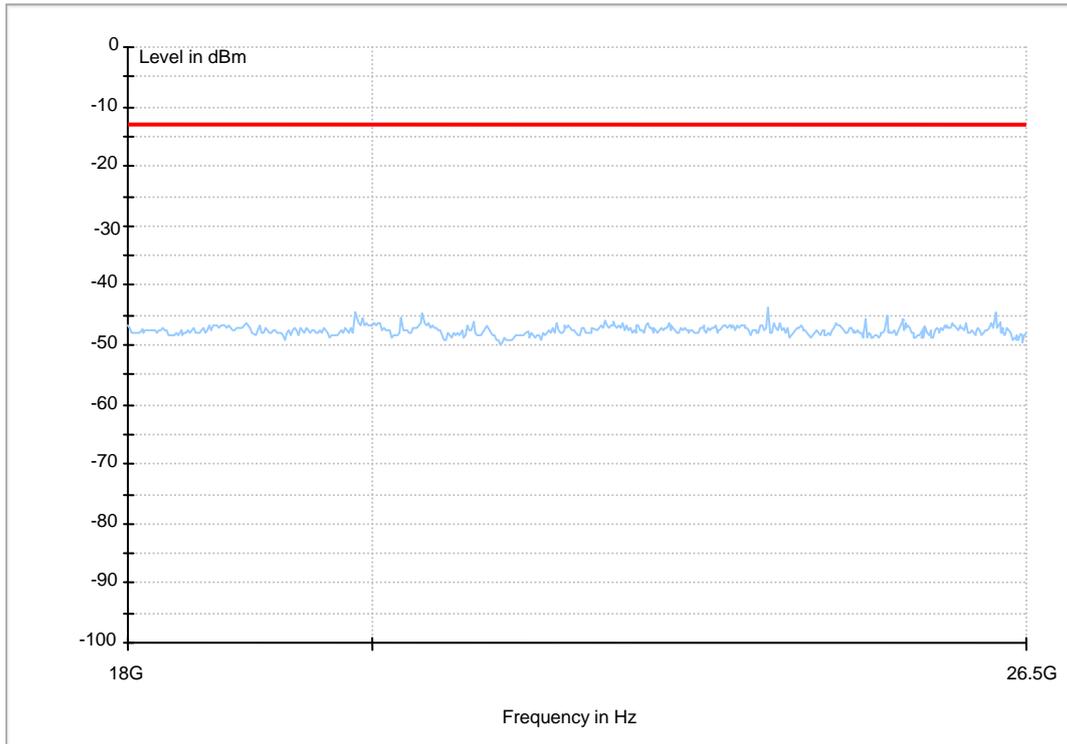


(3GHz~18GHz)





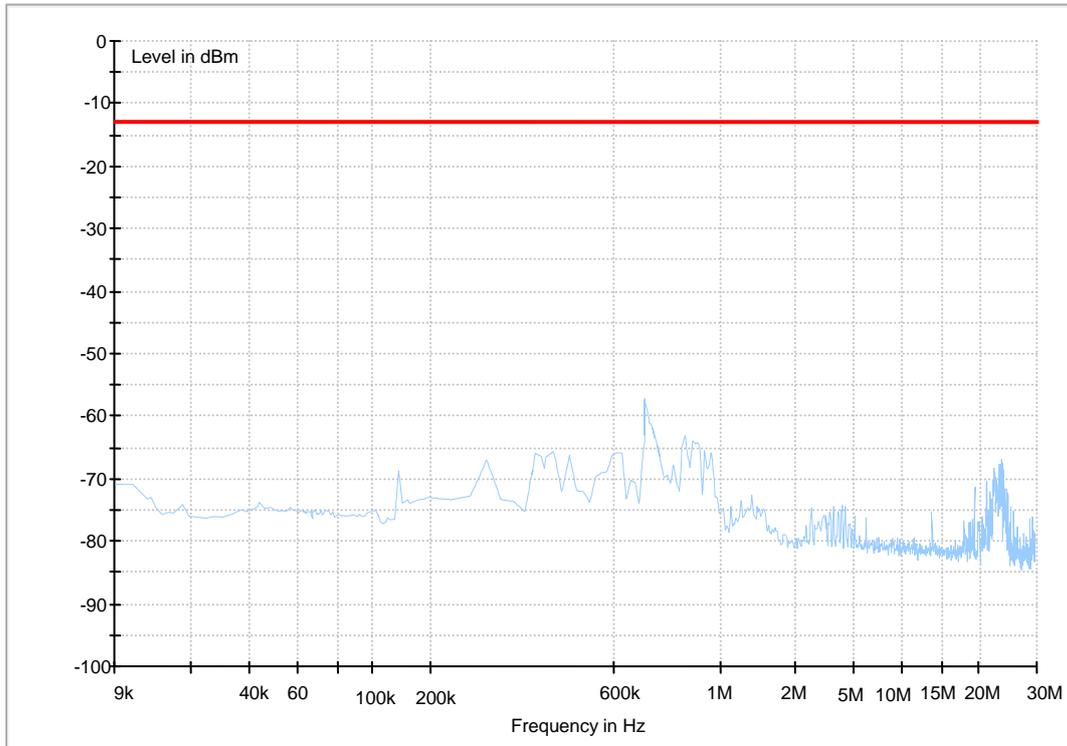
(18GHz-26.5GHz)





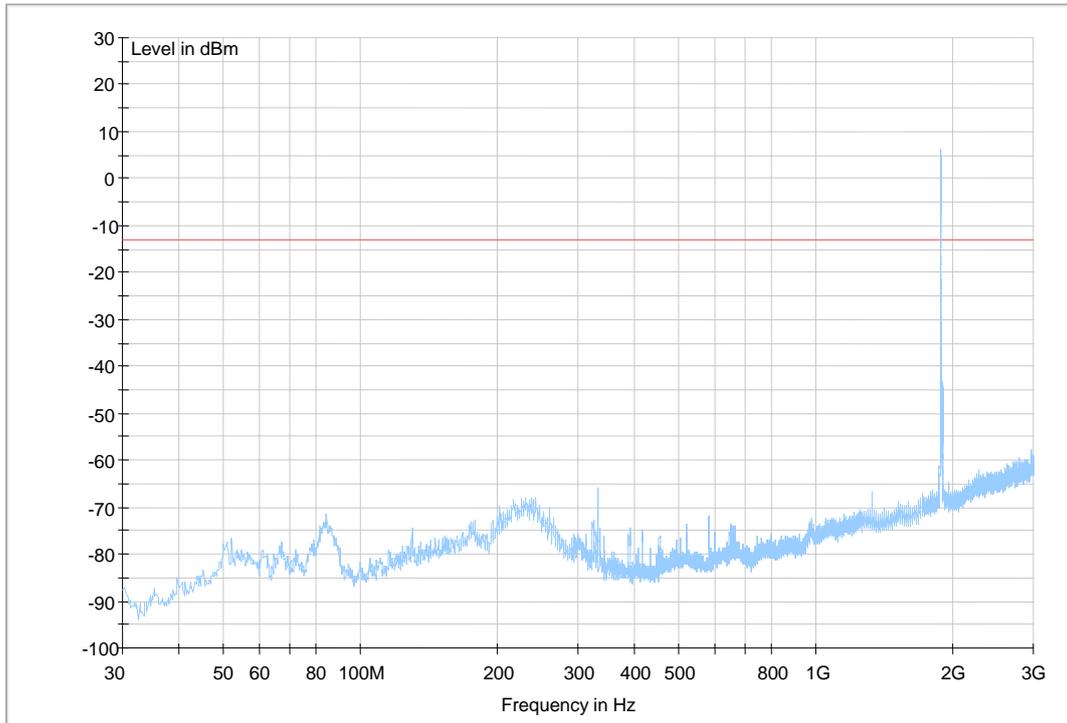
WCDMA Band II

(9KHz~30MHz)



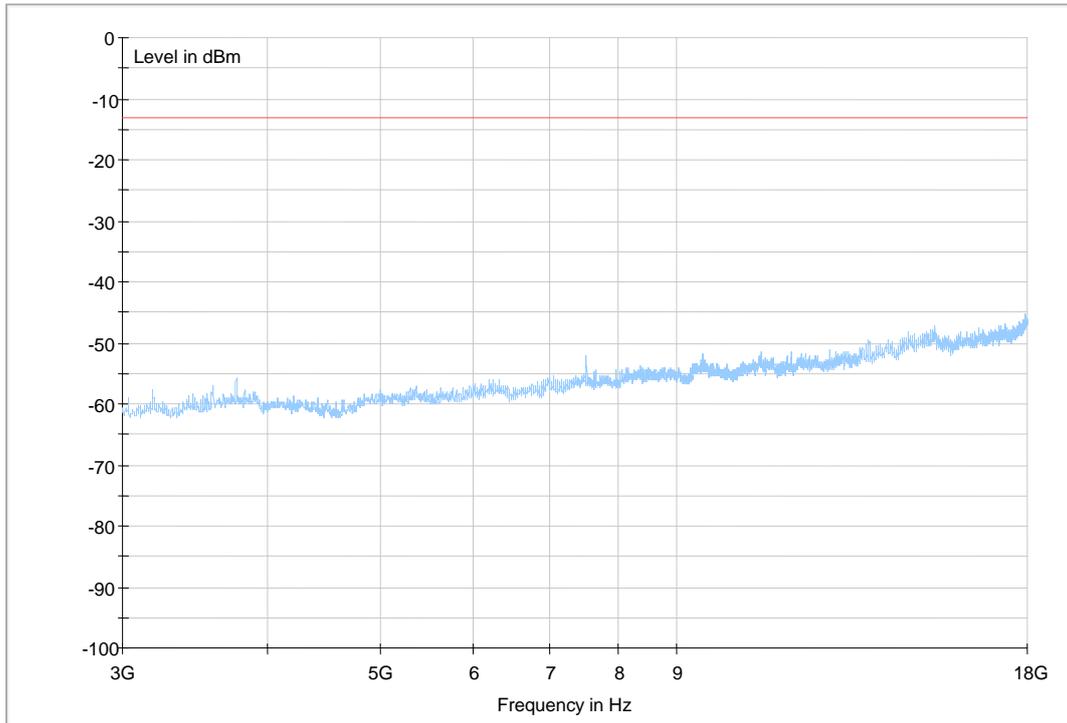


(30MHz~3GHz)



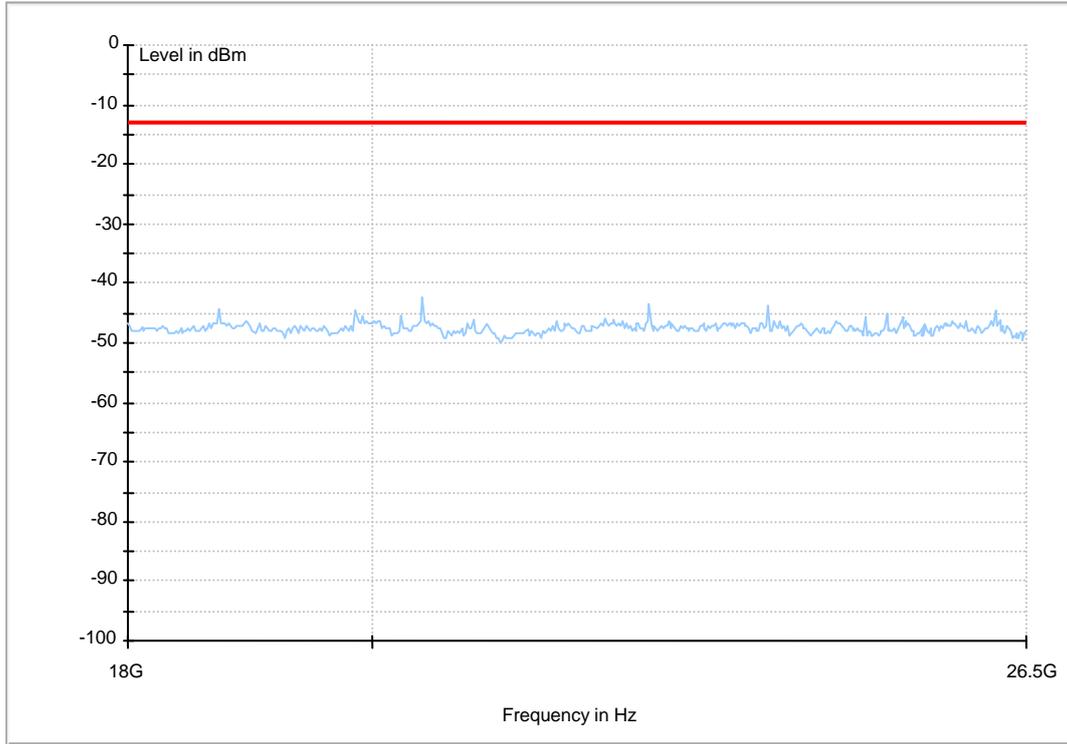


(3GHz~18GHz)





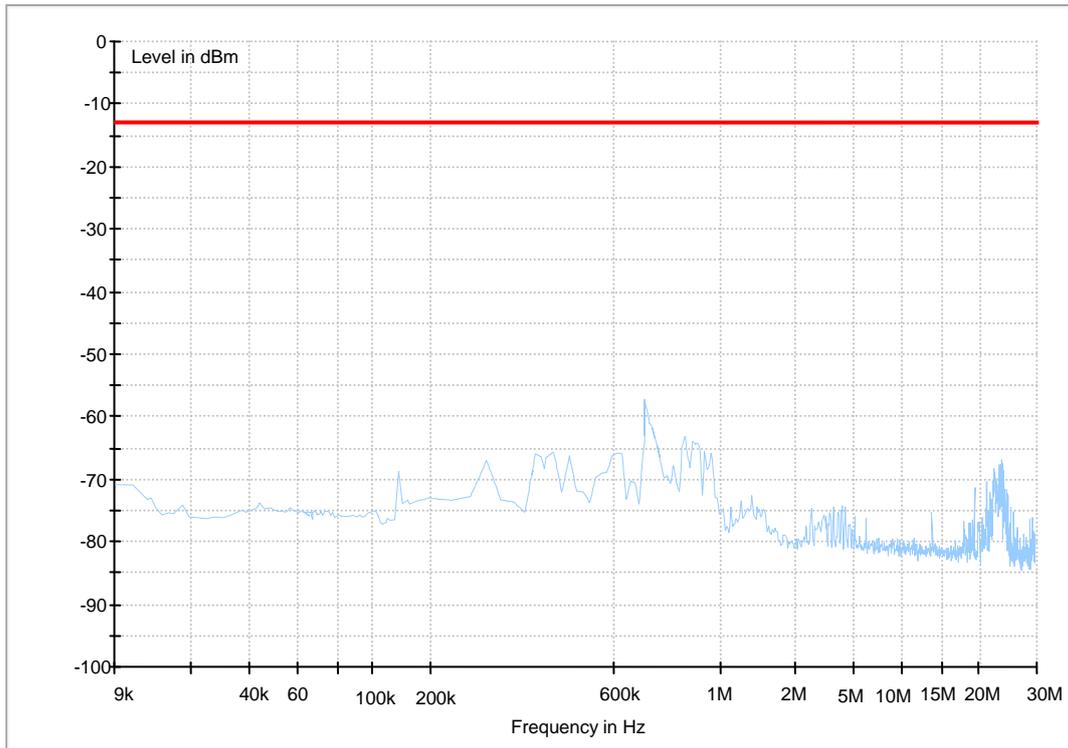
(18GHz~26.5GHz)





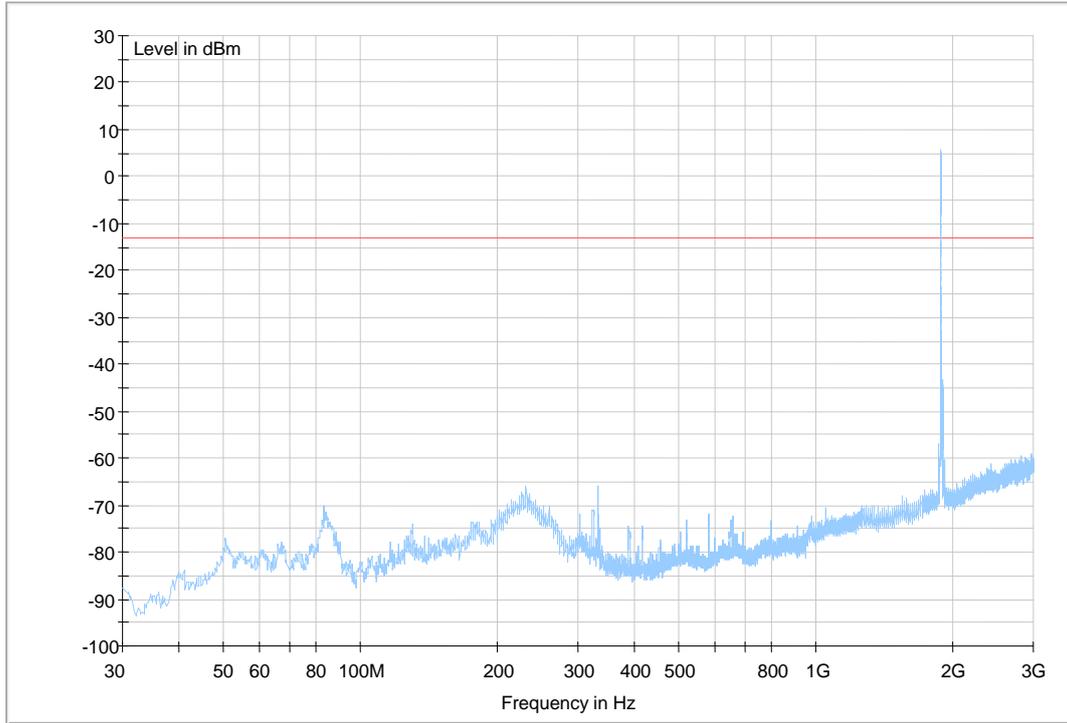
HSDPA Band II

(9KHz~30MHz)



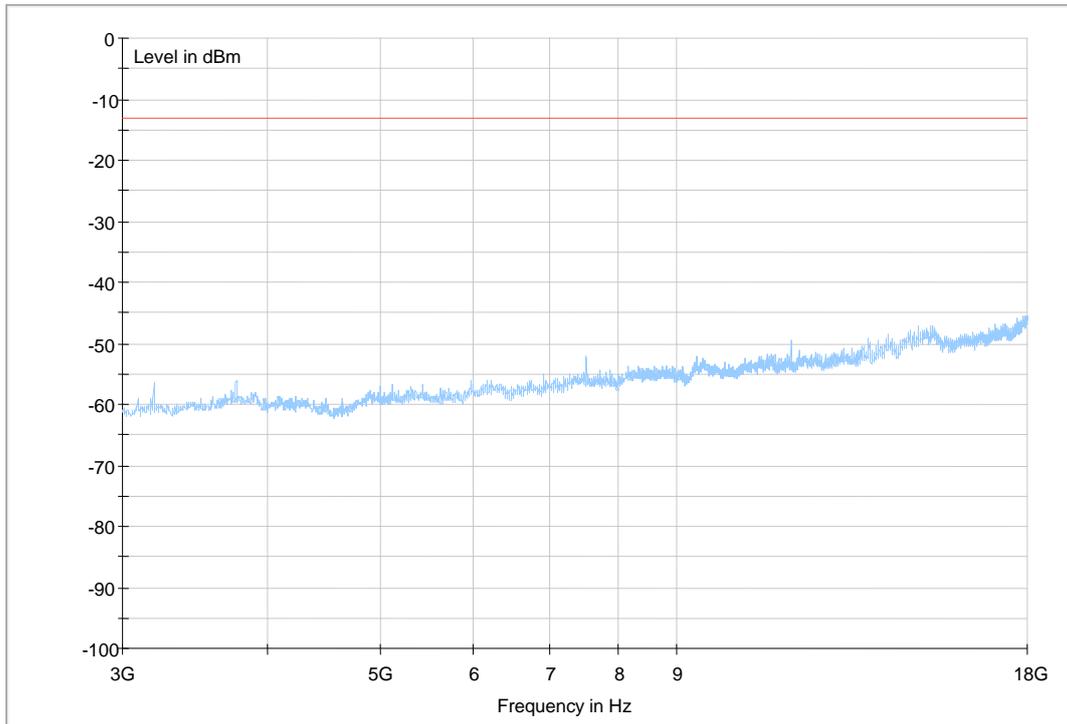


(30MHz ~3GHz)



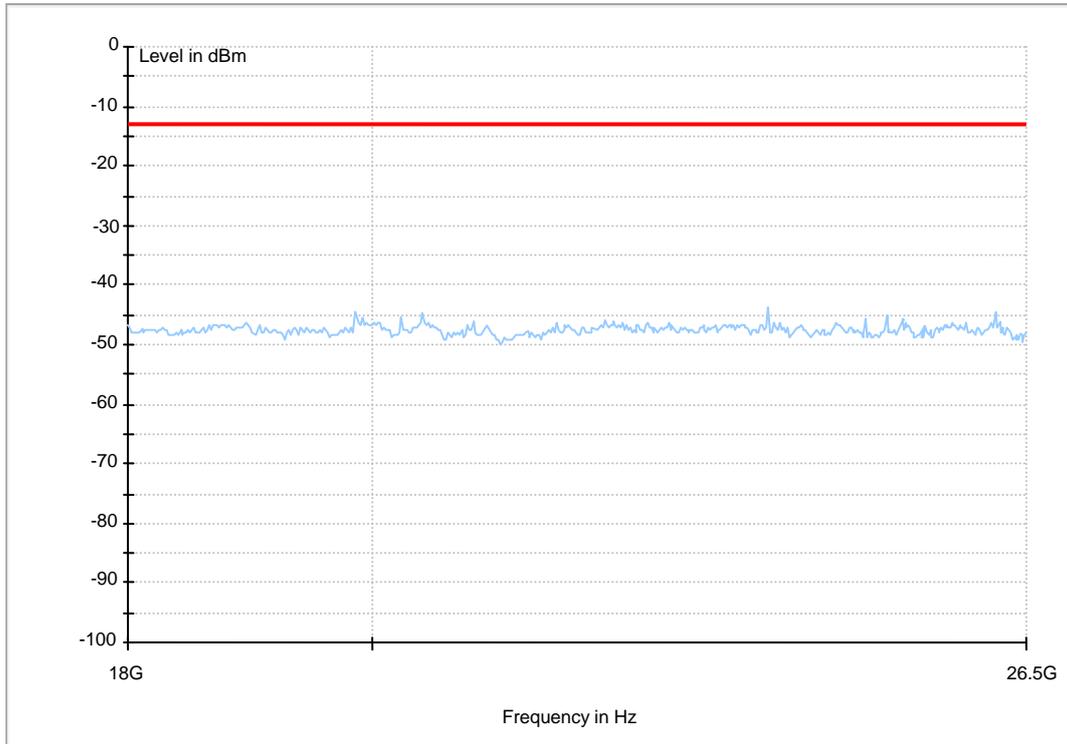


(3GHz~18GHz)





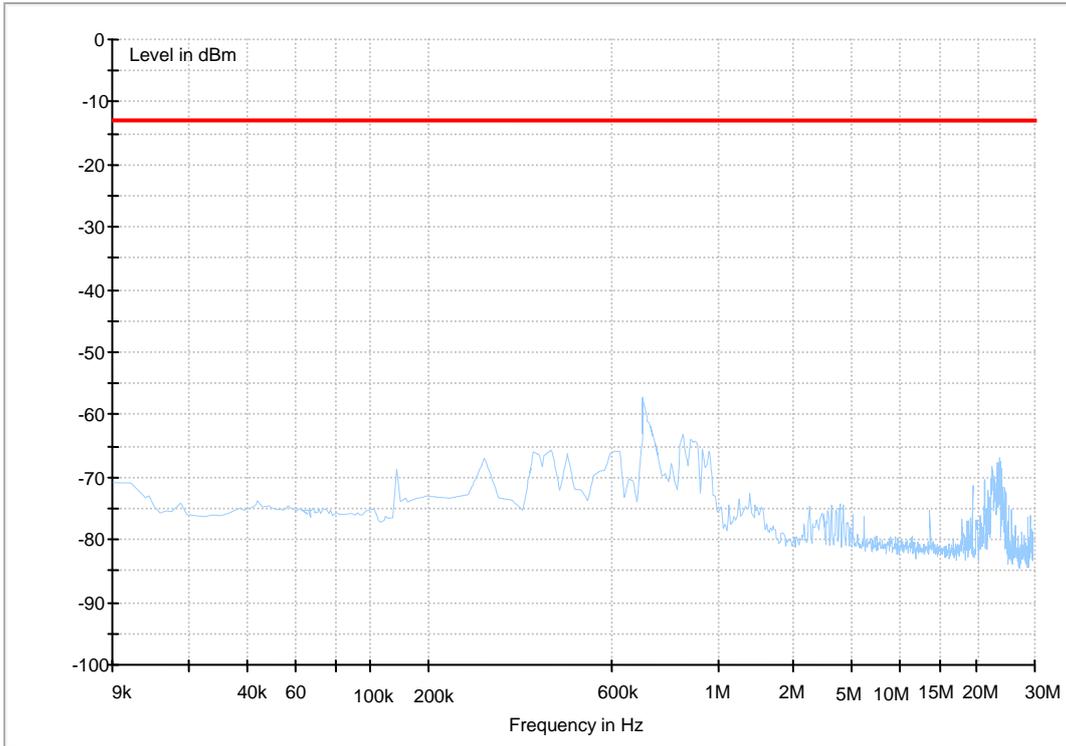
(18GHz~26.5GHz)





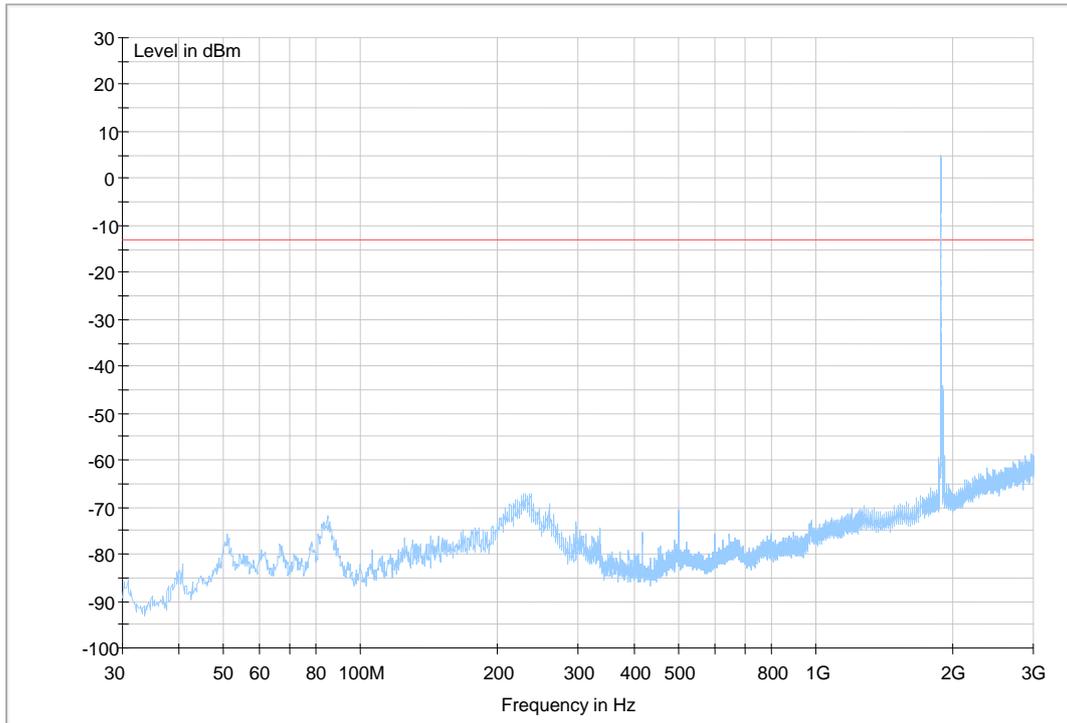
HSUPA Band II

(9 KHz~30MHz)



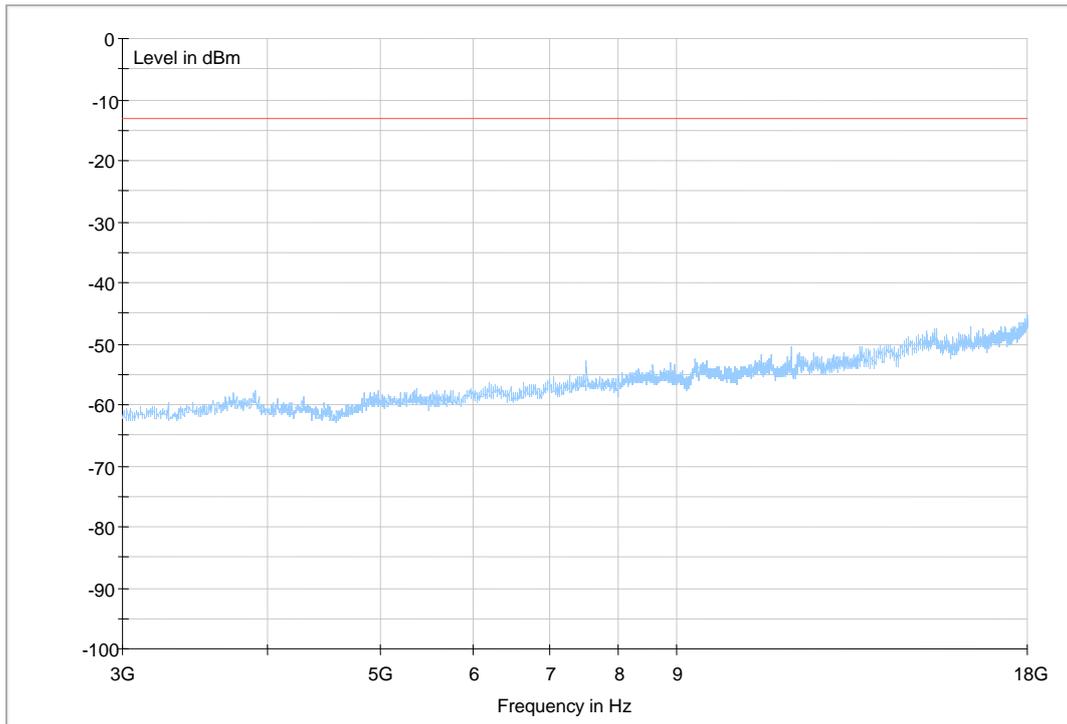


(30MHz~3GHz)



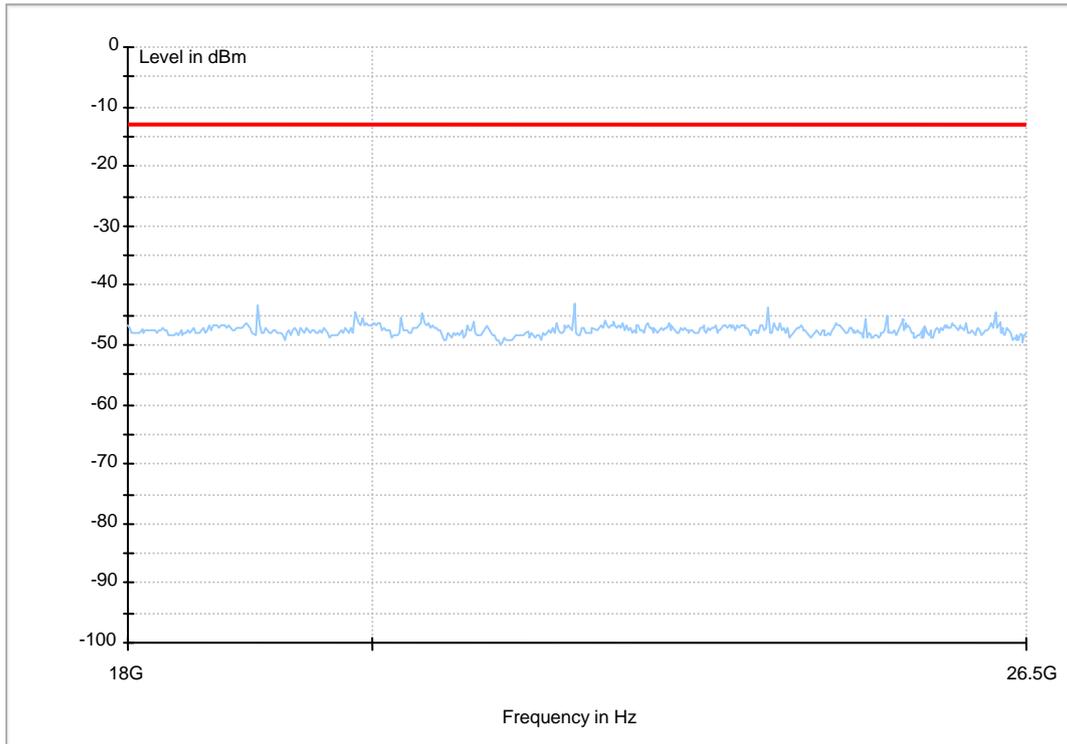


(3GHz~18GHz)





(18GHz~26.5GHz)



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	100%	-30 °C	-15	-0.007979	---	±2.5	Pass
			-20 °C	-13	-0.006915	---	±2.5	Pass
			-10 °C	9	0.004787	---	±2.5	Pass
			0 °C	-12	-0.006383	---	±2.5	Pass
			10 °C	16	0.008511	---	±2.5	Pass
			20 °C	-7	-0.003723	---	±2.5	Pass
			30 °C	10	0.005319	---	±2.5	Pass
			40 °C	-11	0.005851	---	±2.5	Pass
			50 °C	13	0.006915	---	±2.5	Pass
TM 2	M	100%	-30 °C	12	0.006383	---	±2.5	Pass
			-20 °C	-16	-0.008511	---	±2.5	Pass
			-10 °C	13	0.006915	---	±2.5	Pass
			0 °C	-15	-0.007979	---	±2.5	Pass
			10 °C	11	0.005851	---	±2.5	Pass
			20 °C	10	0.005319	---	±2.5	Pass
			30 °C	-9	-0.004787	---	±2.5	Pass
			40 °C	12	0.006383	---	±2.5	Pass
			50 °C	14	0.007447	---	±2.5	Pass
TM 3	M	100%	-30 °C	13	0.006915	---	±2.5	Pass
			-20 °C	-17	-0.009043	---	±2.5	Pass
			-10 °C	-12	-0.00638	---	±2.5	Pass
			0 °C	11	0.005851	---	±2.5	Pass
			10 °C	-19	-0.010106	---	±2.5	Pass
			20 °C	-18	-0.009574	---	±2.5	Pass
			30 °C	-9	-0.004787	---	±2.5	Pass
			40 °C	17	0.009043	---	±2.5	Pass
			50 °C	10	0.005319	---	±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	20 °C	85 %	12	0.006383	---	±2.5	Pass
			100 %	-13	-0.006915	---	±2.5	Pass
			115 %	10	0.005319	---	±2.5	Pass
TM 2	M	20 °C	85 %	-14	-0.007447	---	±2.5	Pass
			100 %	10	0.005319	---	±2.5	Pass
			115 %	17	0.009043	---	±2.5	Pass
TM 3	M	20 °C	85 %	-15	-0.007979	---	±2.5	Pass
			100 %	9	0.004787	---	±2.5	Pass
			115 %	11	0.005851	---	±2.5	Pass