Appendix A

Transmitter Output Power

According to FCC Part 2.1046 & Part24.232

Conducted Power of Transmitter

		RF Output Power (Conducted)					
TEST CONDITIONS		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		29.47	33	29.34	33	29.22	33
TM2		26.07	33	26.03	33	25.92	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	Measured	Limit
TM3		22.38	33	22.09	33	21.95	33
TM4	Case1	21.47	33	21.09	33	20.85	33
	Case2	21.44	33	20.95	33	20.94	33
	Case3	21.01	33	20.79	33	20.58	33
	Case4	20.06	33	19.81	33	19.57	33

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

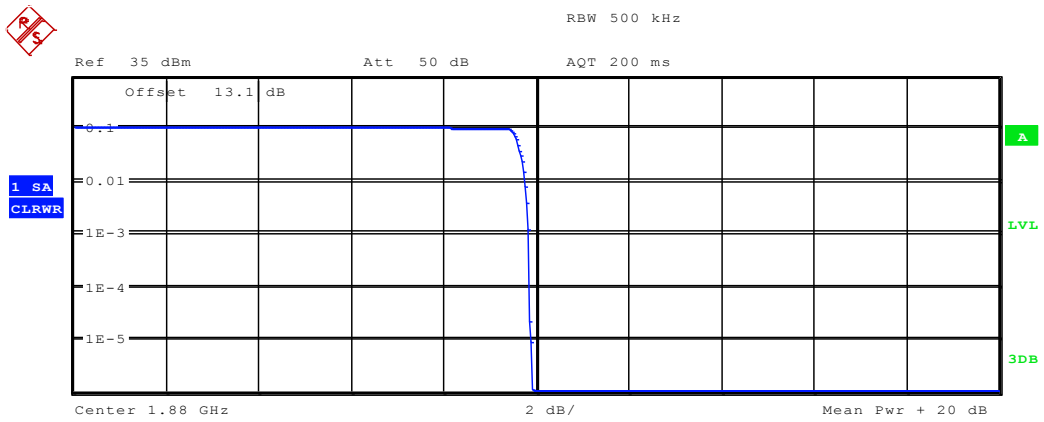
Peak-to-Average Ratio

		Peak-to-Average Ratio					
TEST CONDITIONS		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		9.73	13	**9.84**	13	9.75	13
TM2		12.78	13	**12.88**	13	12.76	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		3.35	13	**3.40**	13	3.37	13
TM4	Case1	3.26	13	3.29	13	3.28	13
	Case2	3.31	13	3.28	13	3.24	13
	Case3	3.26	13	3.21	13	3.22	13
	Case4	3.36	13	3.34	13	3.33	13

Test Plot of Peak-to-Average Ratio

Note: All relevant operation modes have been tested, and the worst case Plot is included in this report.

TM1



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 424kHz

	Trace 1
Mean	19.04 dBm
Peak	28.95 dBm
Crest	9.91 dB
10 %	9.46 dB
1 %	9.78 dB
.1 %	9.84 dB
.01 %	9.87 dB

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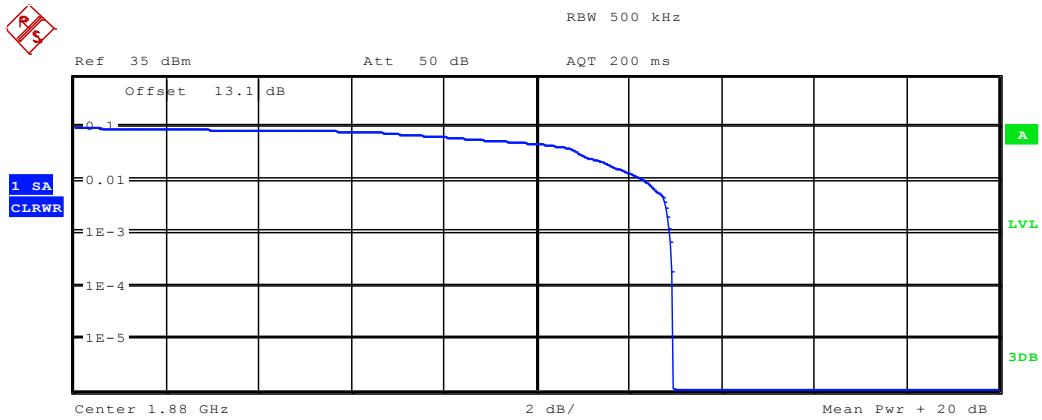
TM2

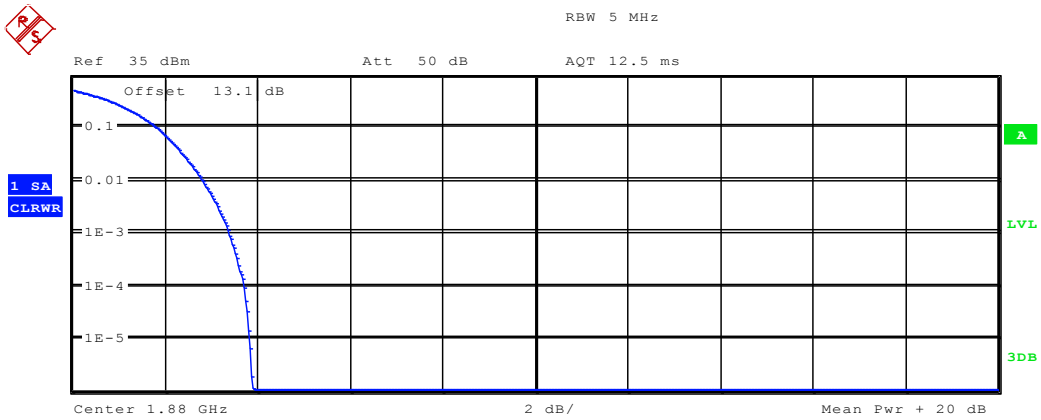


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 424kHz

	Trace 1
Mean	15.59 dBm
Peak	28.53 dBm
Crest	12.94 dB
10 %	1.76 dB
1 %	12.34 dB
.1 %	12.88 dB
.01 %	12.95 dB

Date: 7.AUG.2012 10:14:25

TM3/ TM4



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 7.1MHz

	Trace 1
Mean	21.54 dBm
Peak	25.42 dBm
Crest	3.89 dB
10 %	1.83 dB
1 %	2.79 dB
.1 %	3.40 dB
.01 %	3.72 dB

Date: 7.AUG.2012 10:02:38

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) [dBm]	FCC limit [dBm]	Result
TM1	1850.2	28.47	Horn Ant.	24.77	4.5	1	28.27	33	Pass
TM1	1880.0	28.34	Horn Ant.	24.64	4.5	1	28.14	33	Pass
TM1	1909.8	28.22	Horn Ant.	24.22	4.8	1	28.02	33	Pass
TM2	1850.2	25.07	Horn Ant.	21.37	4.5	1	24.87	33	Pass
TM2	1880.0	25.03	Horn Ant.	21.33	4.5	1	24.83	33	Pass
TM2	1909.8	24.92	Horn Ant.	20.92	4.8	1	24.72	33	Pass
TM3	1852.4	21.34	Horn Ant.	17.64	4.5	1	21.14	33	Pass
TM3	1880.0	21.11	Horn Ant.	17.41	4.5	1	20.91	33	Pass
TM3	1907.6	20.93	Horn Ant.	16.93	4.8	1	20.73	33	Pass

Note1: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

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

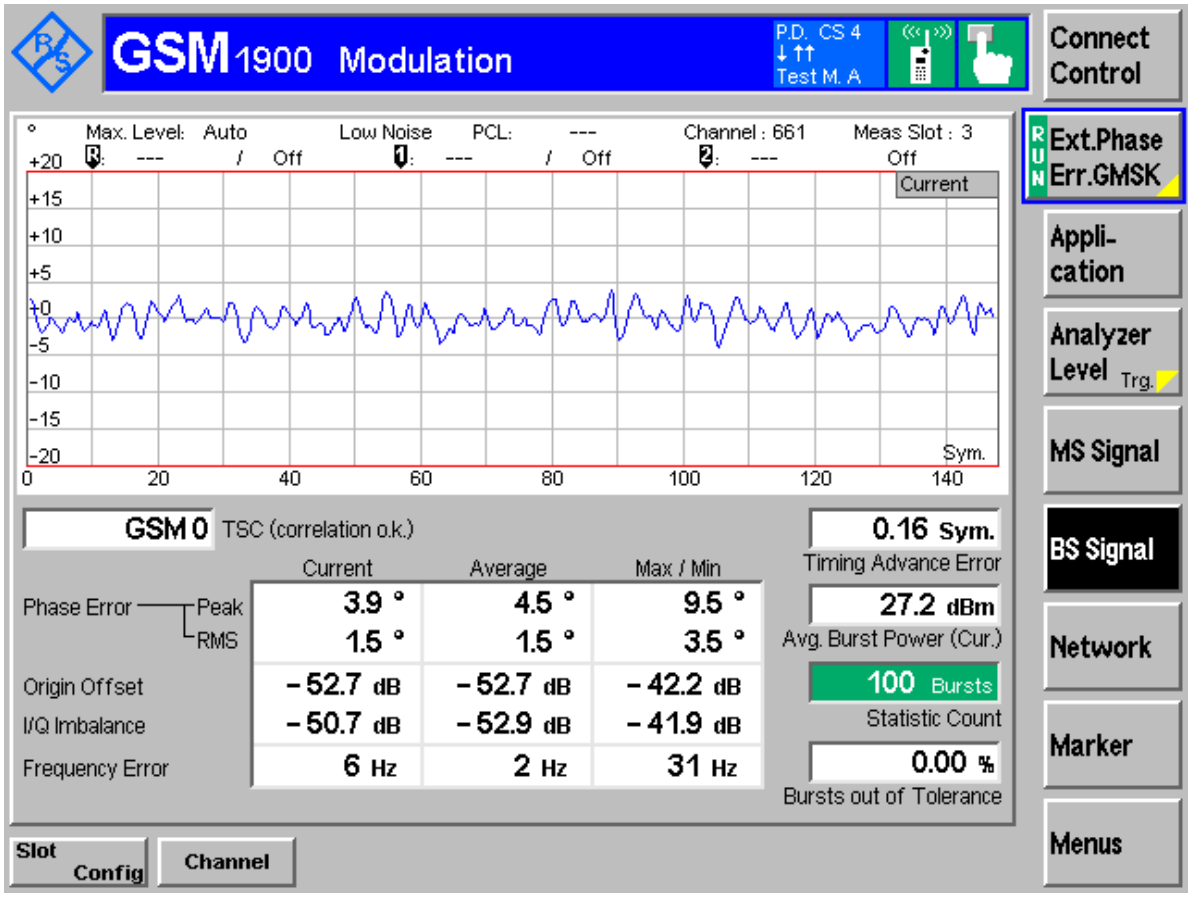
----------The END----------

Appendix B

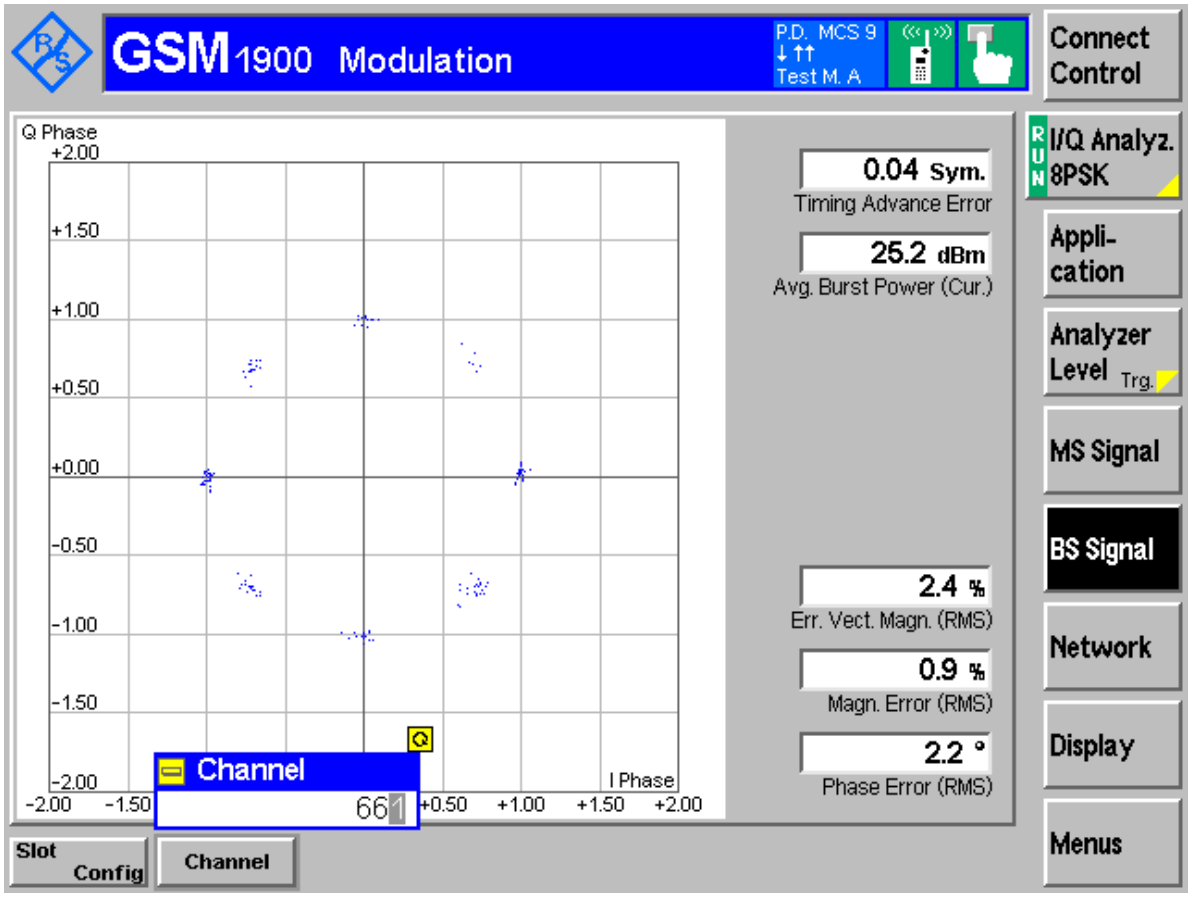
Modulation Characteristics

According to FCC Part 2.1047 & Part24 Subpart E

TM1:GPRS/GSM
Channel 661

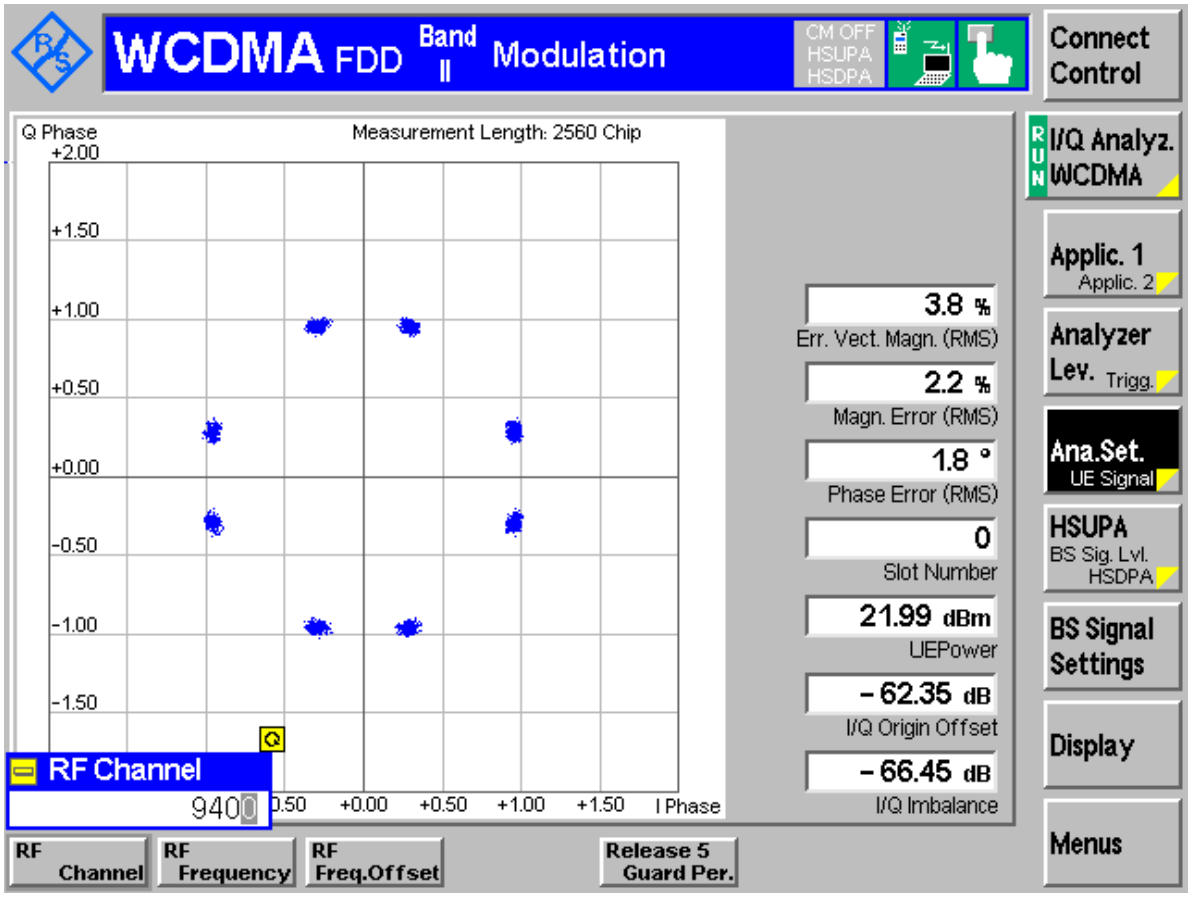


TM2:EDGE
Channel 661



TM3: WCDMA

Channel 9400



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

Appendix C

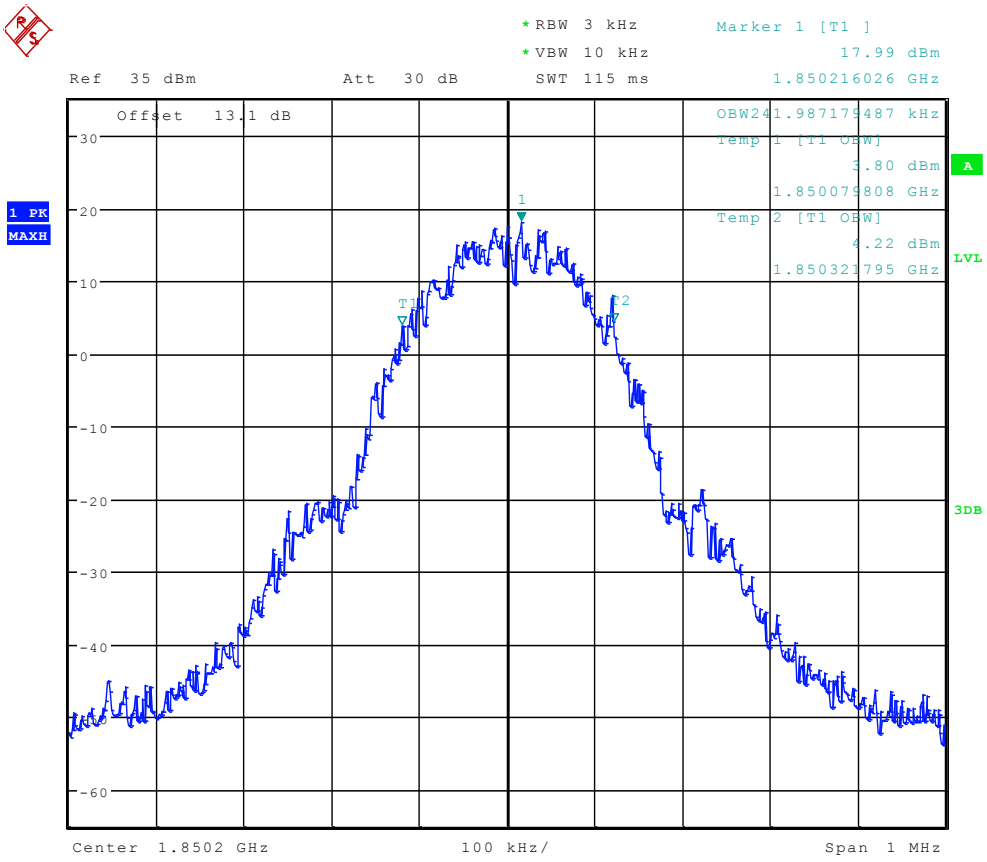
Occupied Bandwidth

According to FCC Part 2.1049 & Part 24 Subpart E

Table 1 Measurement Results

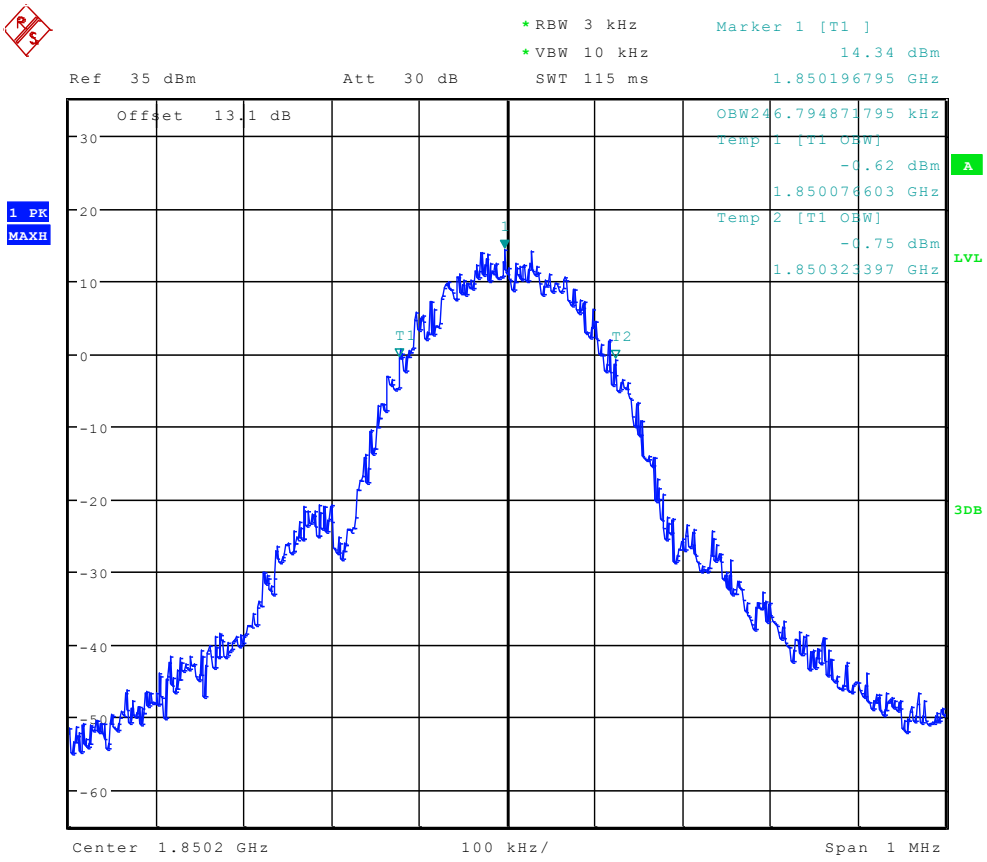
Test Mode	RF Channel	Occupied Bandwidth [kHz]	Verdict
TM1	512	241.99	Pass
	661	246.79	Pass
	810	243.59	Pass
TM2	512	246.79	Pass
	661	248.40	Pass
	810	240.38	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	9262	4.18	Pass
	9400	4.17	Pass
	9538	4.17	Pass

TM1:GPRS/GSM
Channel 512



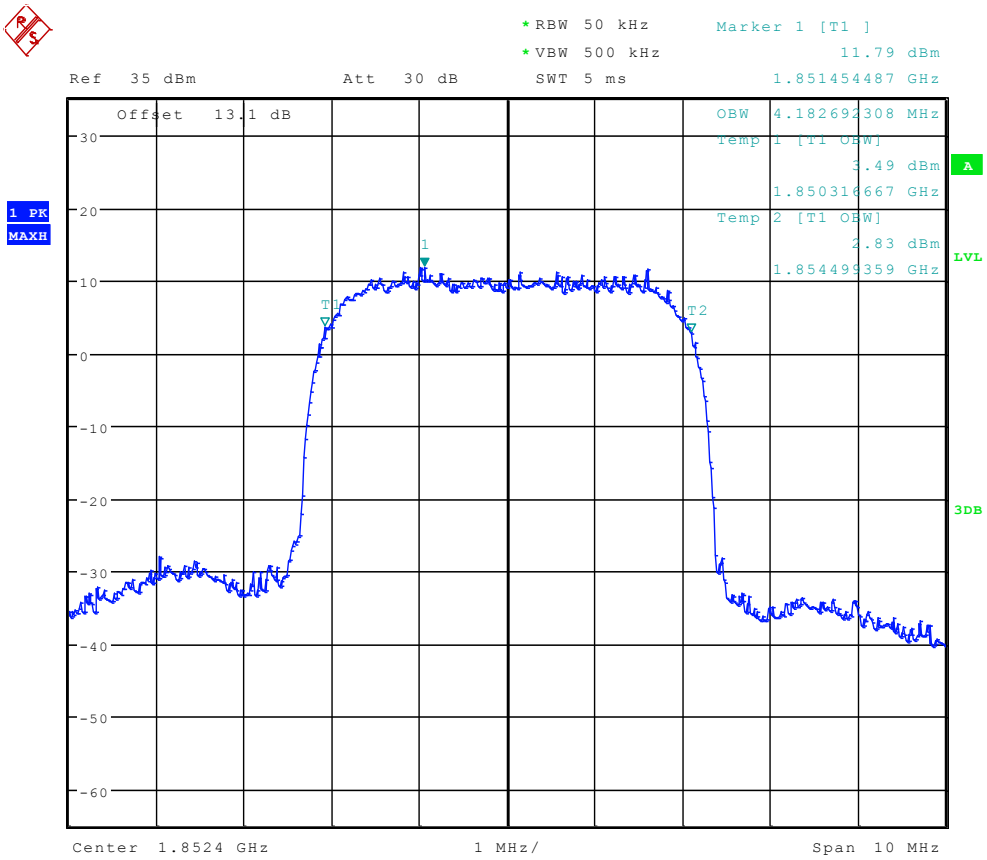
Date: 7.AUG.2012 09:39:48

TM2:EDGE
Channel 512

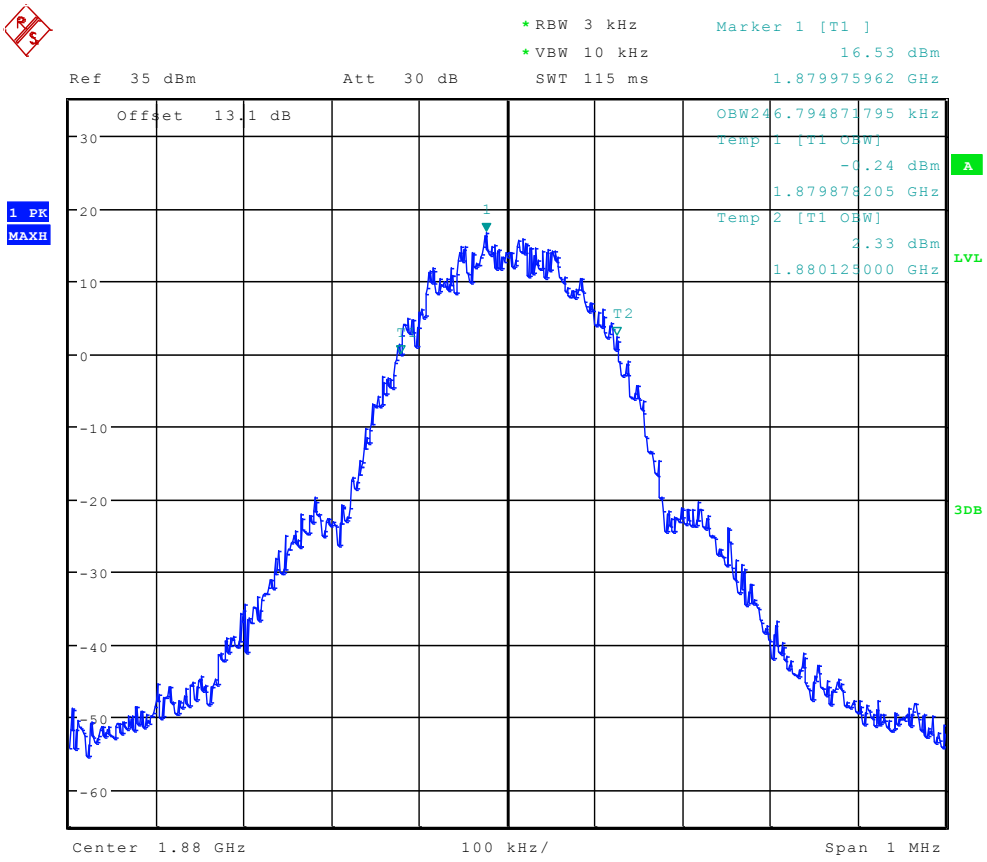


Date: 7.AUG.2012 09:45:40

TM3: WCDMA
Channel 9262

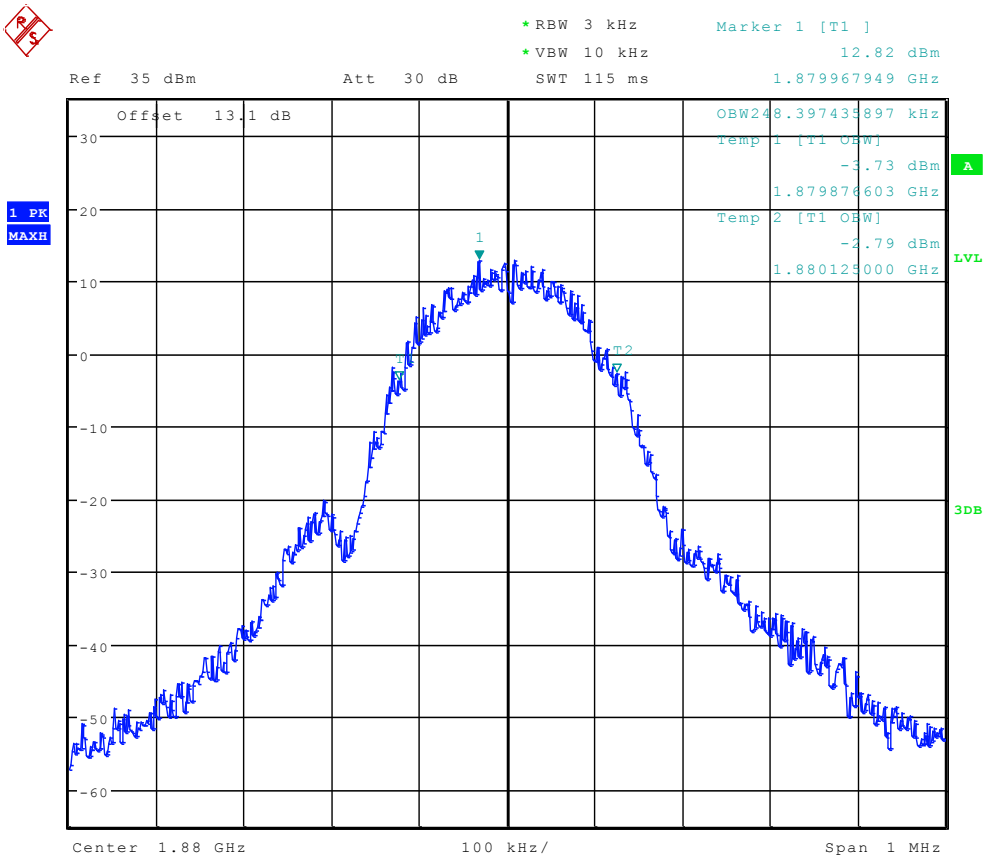


TM1:GPRS/GSM
Channel 661



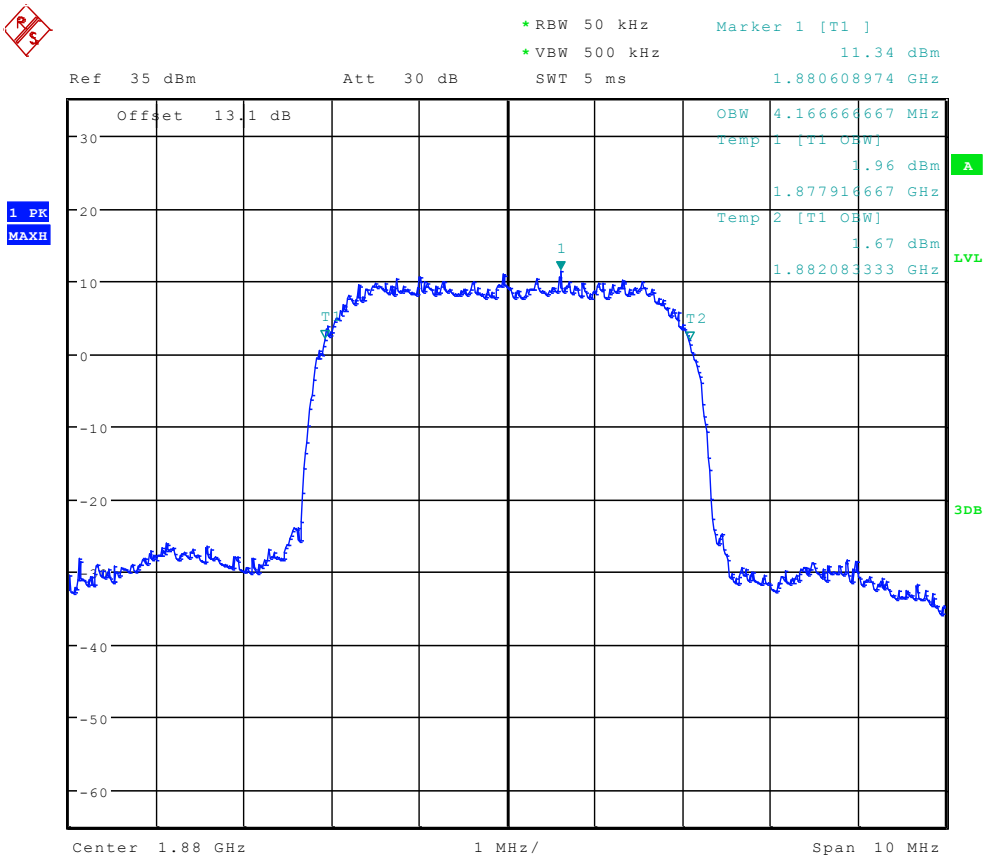
Date: 7.AUG.2012 09:40:01

TM2:EDGE
Channel 661



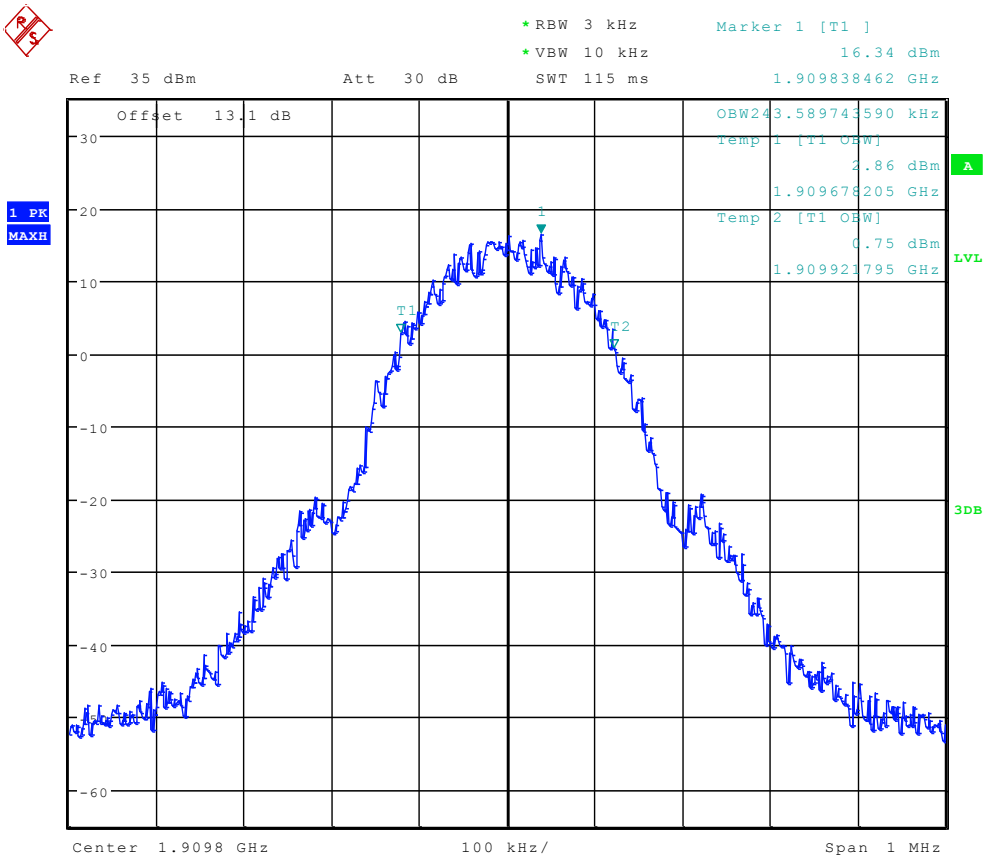
Date: 7.AUG.2012 09:45:54

TM3: WCDMA
Channel 9400



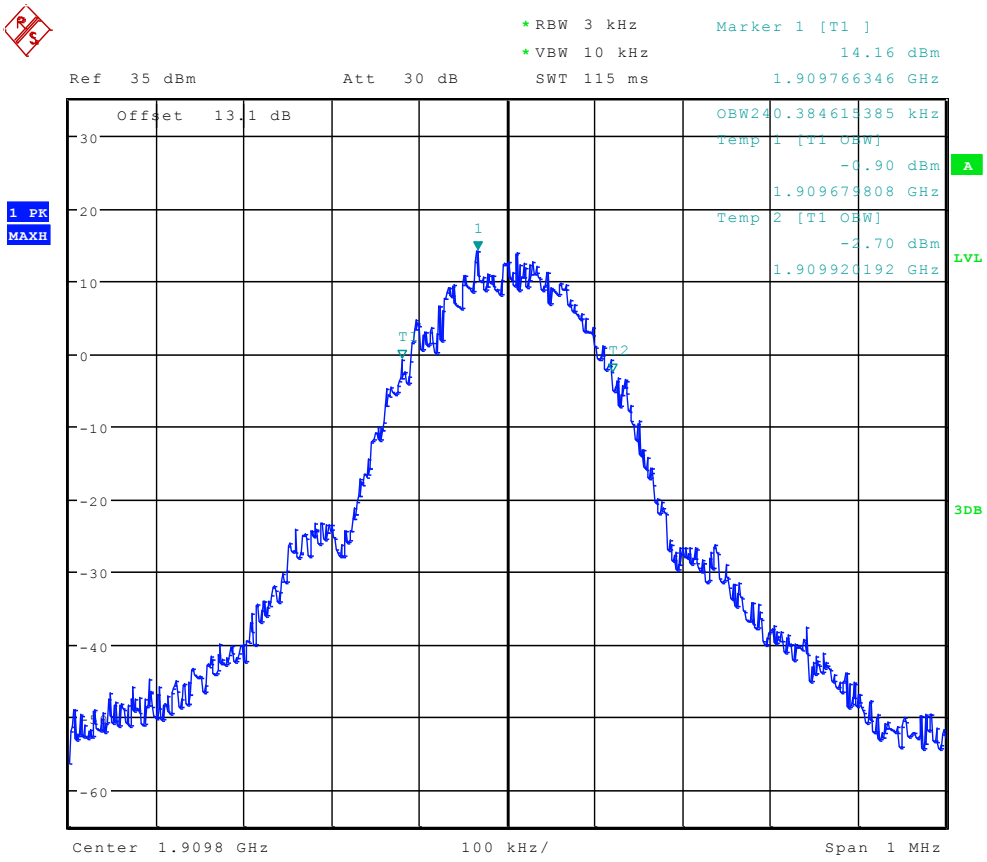
Date: 7.AUG.2012 09:51:29

TM1:GPRS/GSM
Channel 810



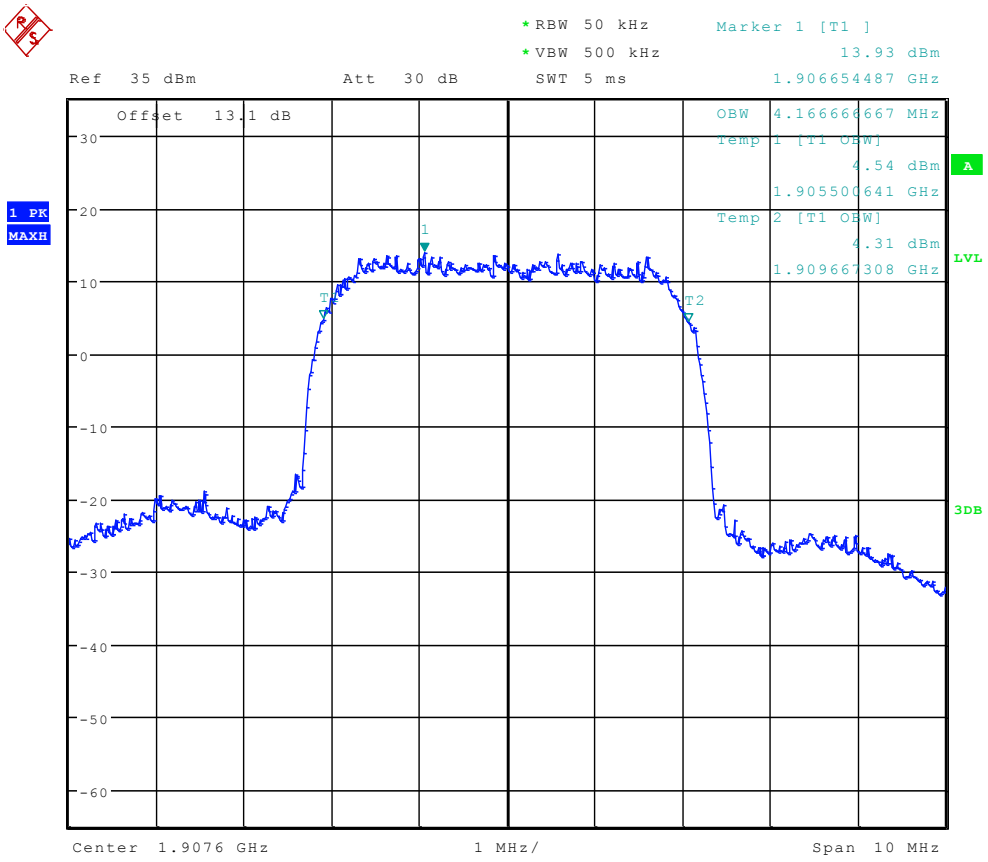
Date: 7.AUG.2012 09:40:15

TM2:EDGE
Channel 810



Date: 7.AUG.2012 09:46:07

TM3: WCDMA
Channel 9538



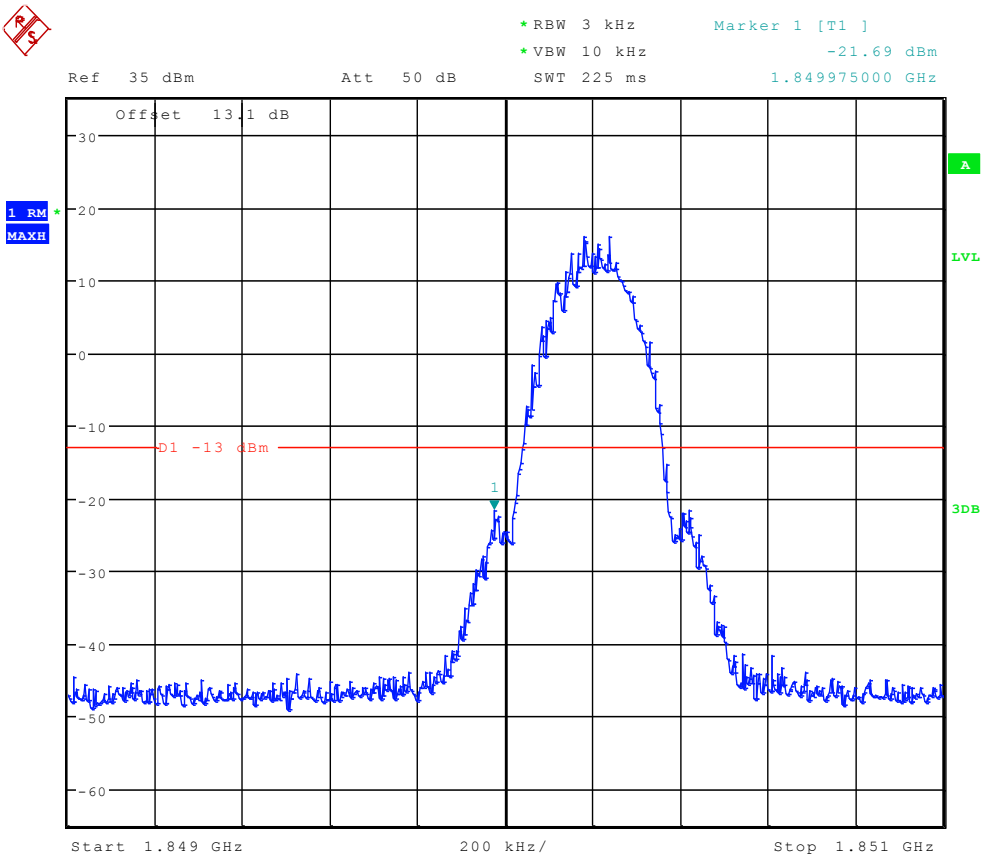
----------The END----------

Appendix D

Band Edges Compliance

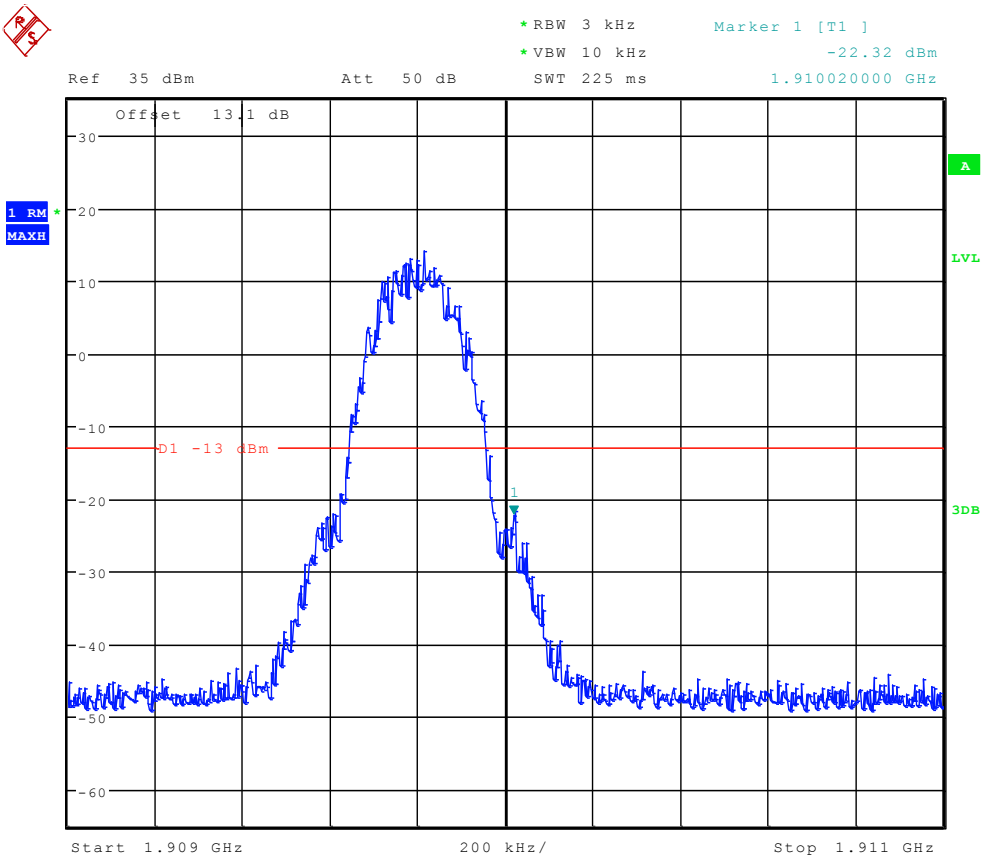
According to FCC Part 2.1051 & 24.238

TM1:GPRS/GSM
Left Edge
Channel 512



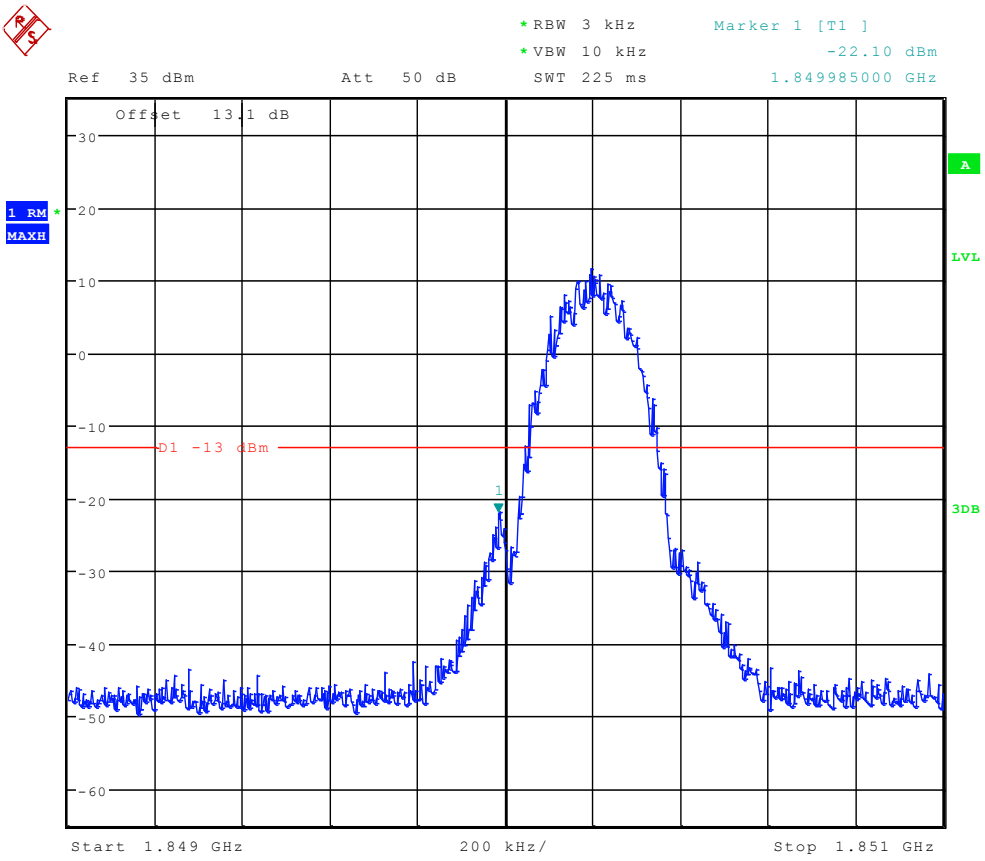
Date: 7.AUG.2012 09:42:59

Right Edge
Channel 810



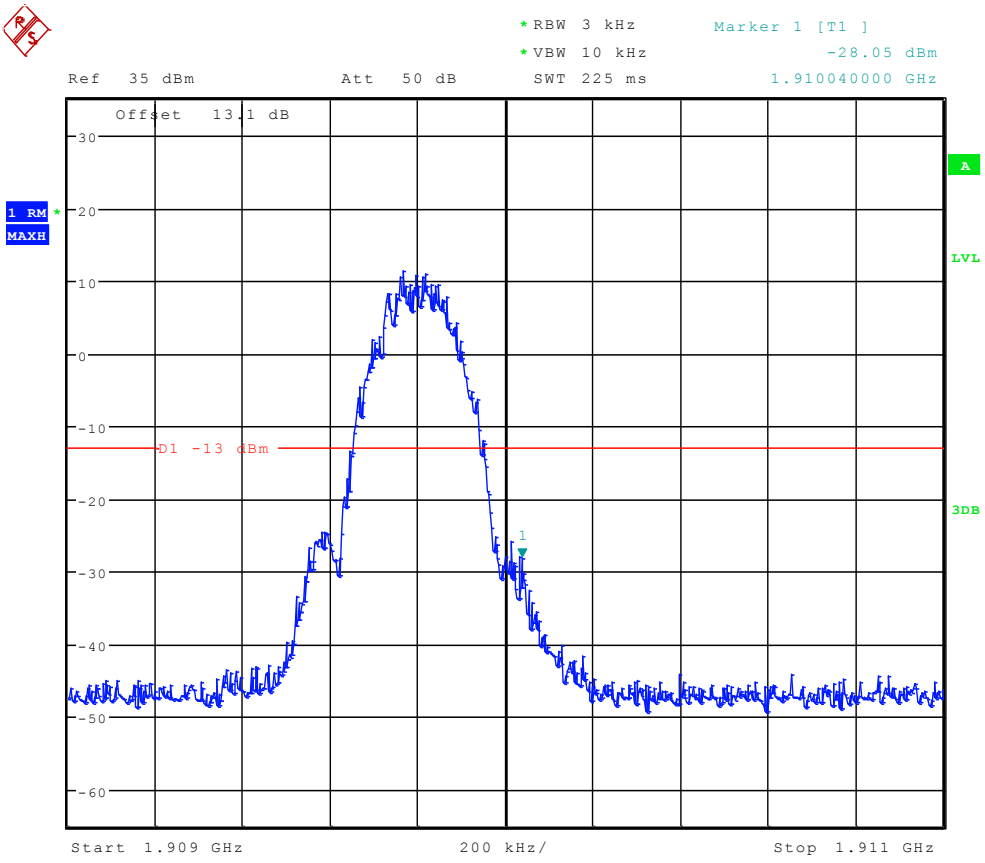
Date: 7.AUG.2012 09:43:17

TM2:EDGE
Left Edge
Channel 512



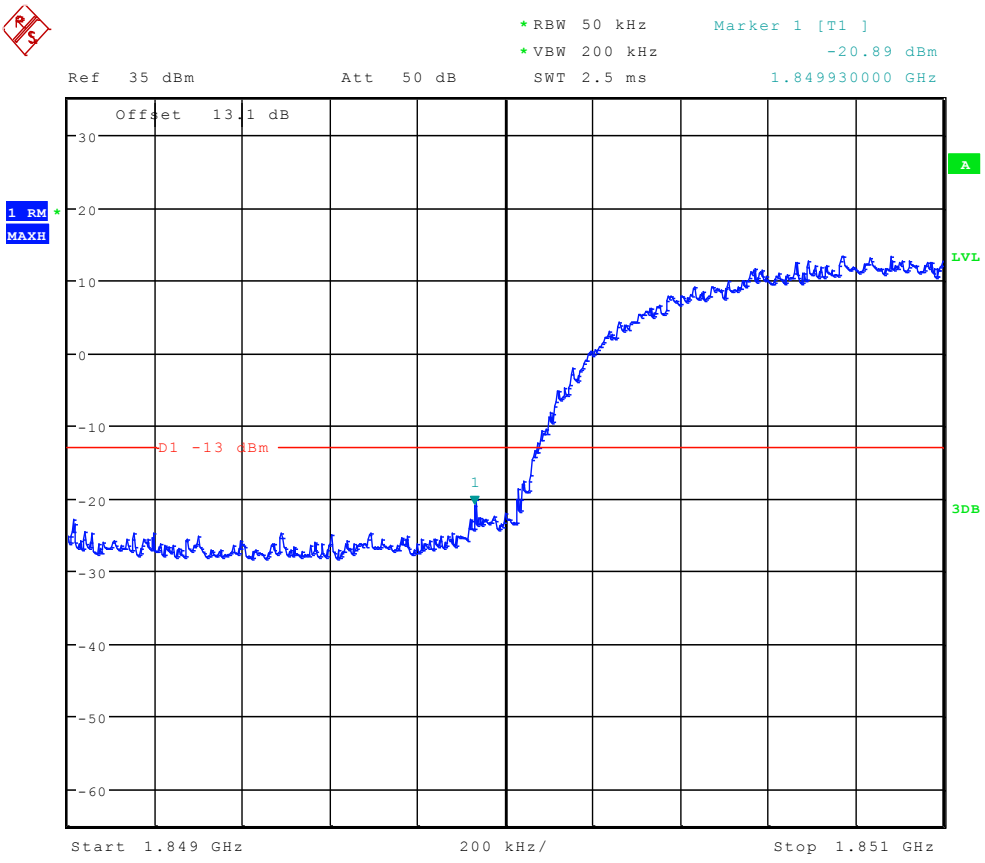
Date: 7.AUG.2012 09:48:36

Right Edge
Channel 810



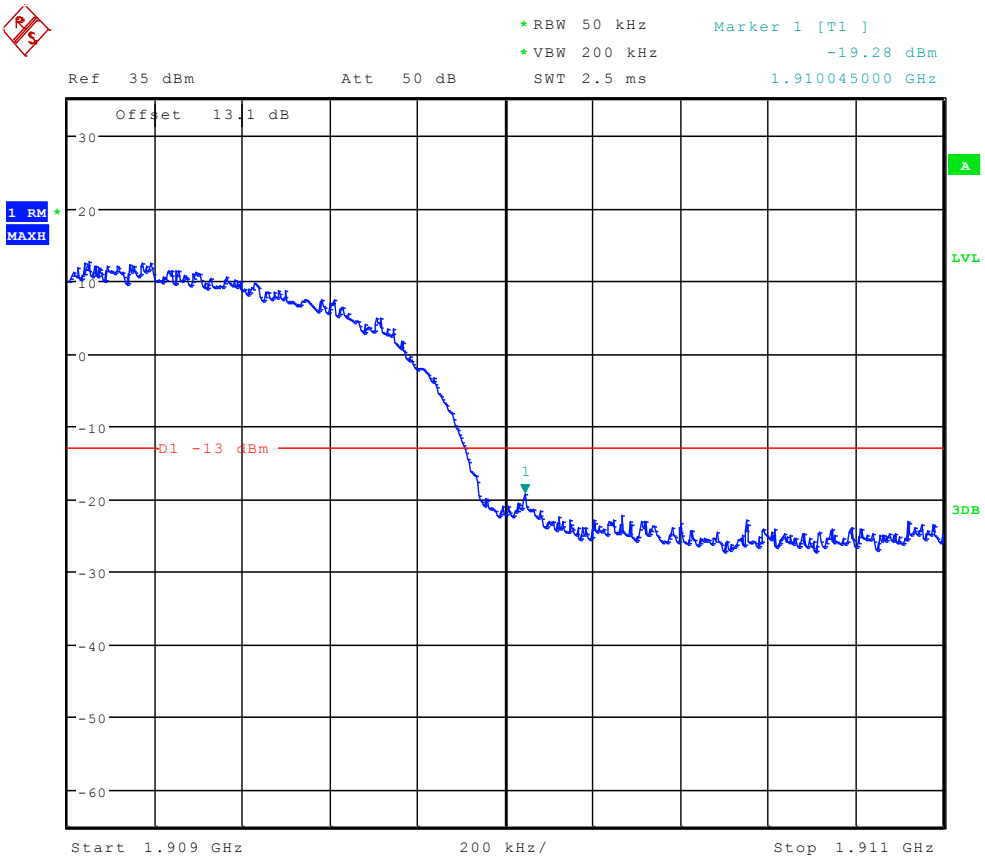
Date: 7.AUG.2012 09:49:01

TM3: WCDMA
Left Edge
Channel 9262



Date: 7.AUG.2012 09:55:22

Right Edge
Channel 9538



Date: 7.AUG.2012 09:55:36

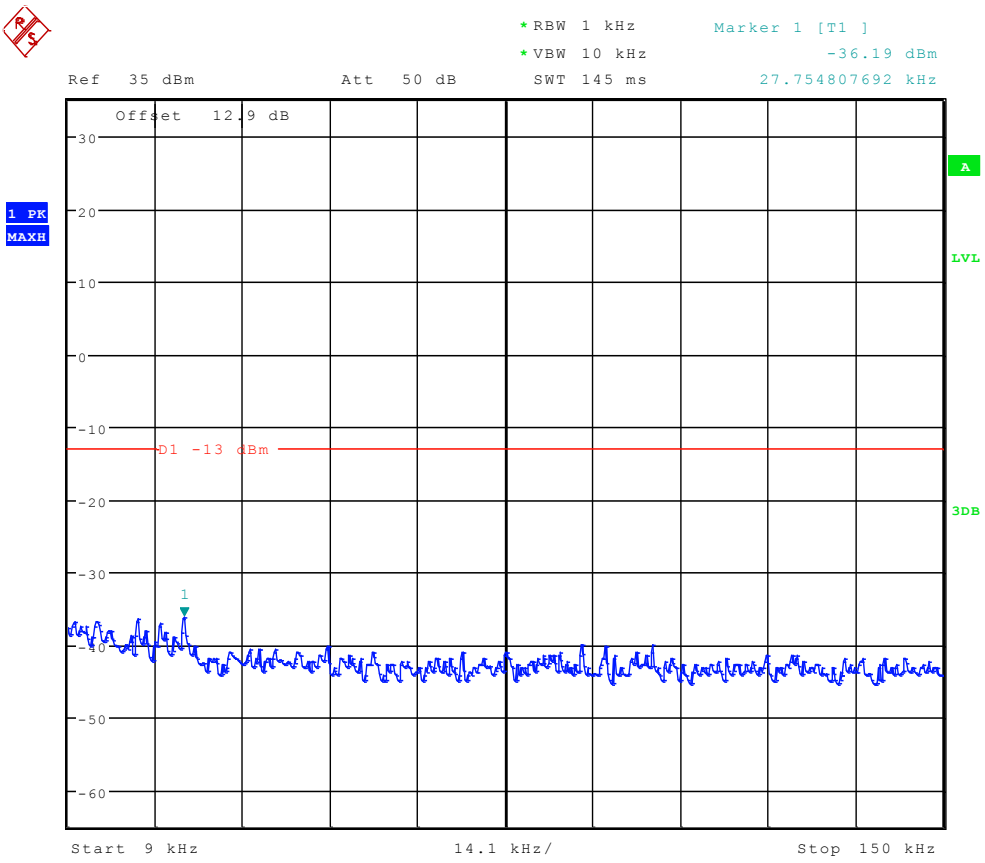
----------The END----------

Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & 24.238

TM1:GPRS/GSM
Channel 512



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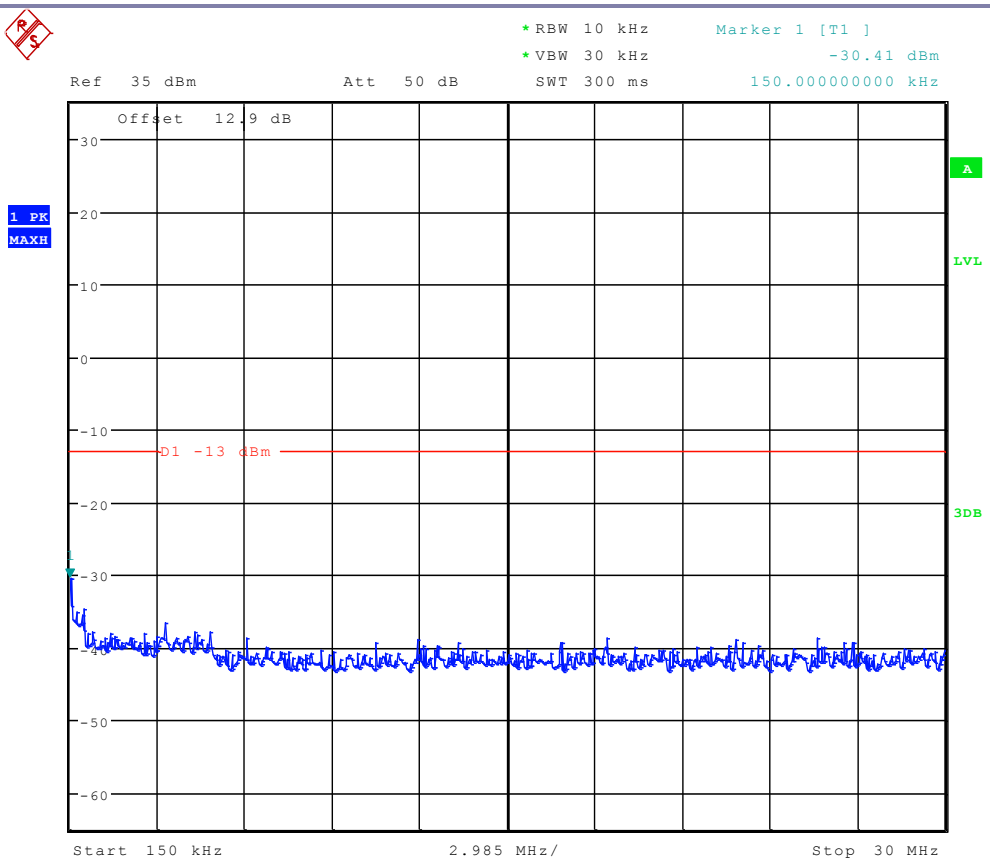
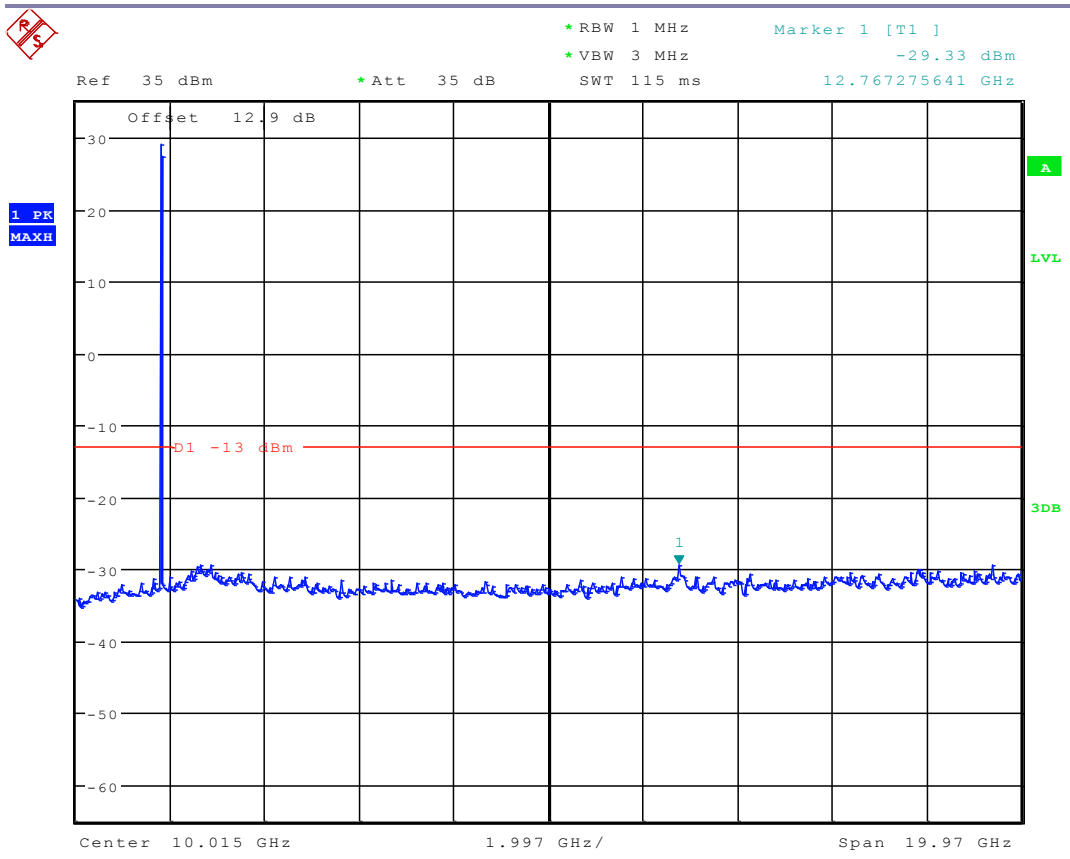
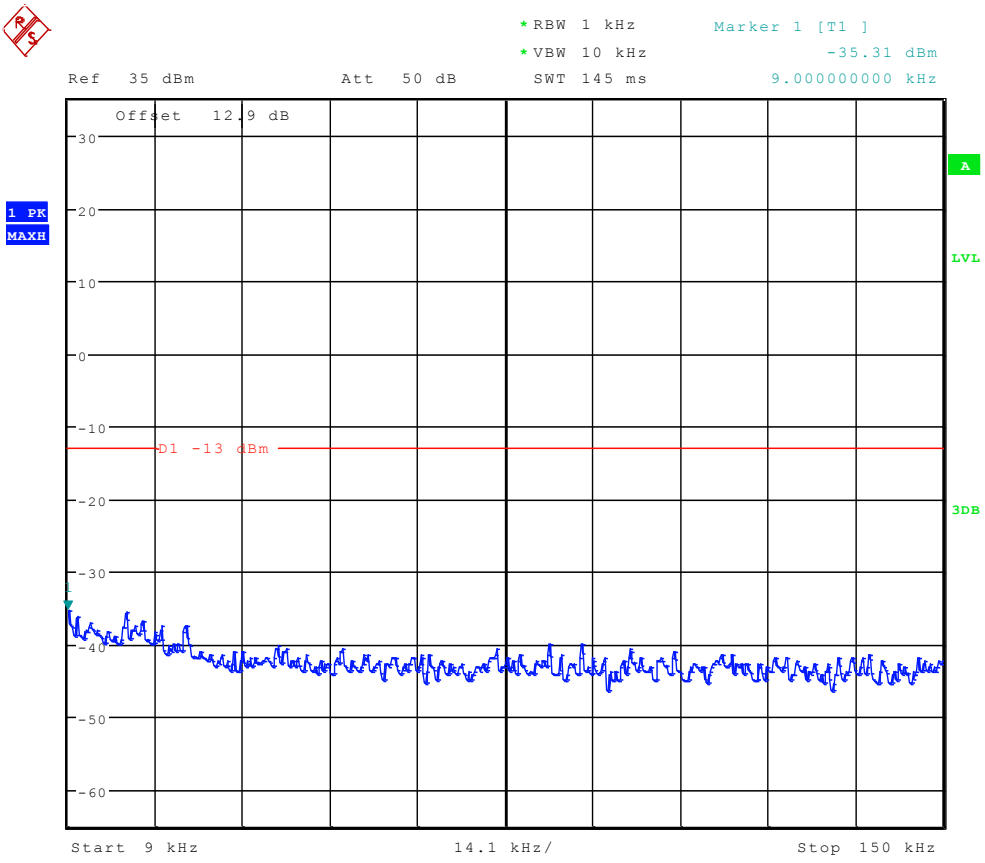


Date: 7.AUG.2012 09:41:14


*RBW 1 MHz
*VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.33 dBm
12.767275641 GHz
Ref 35 dBm
*Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

Channel 661



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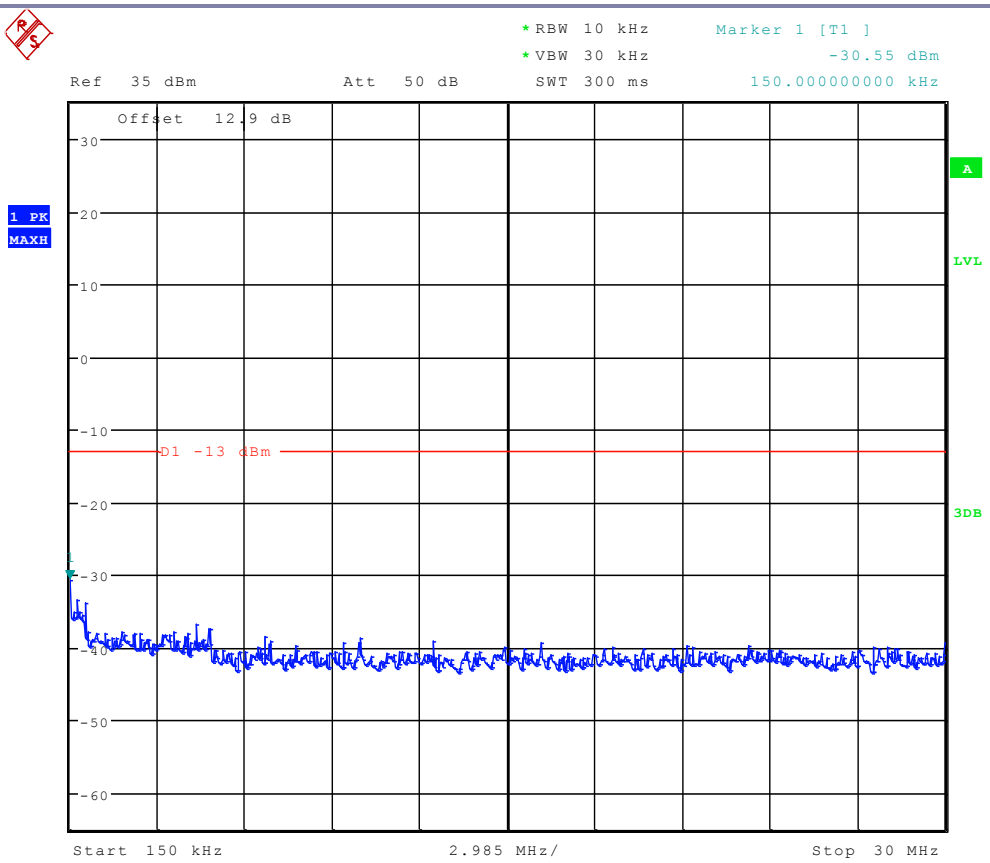

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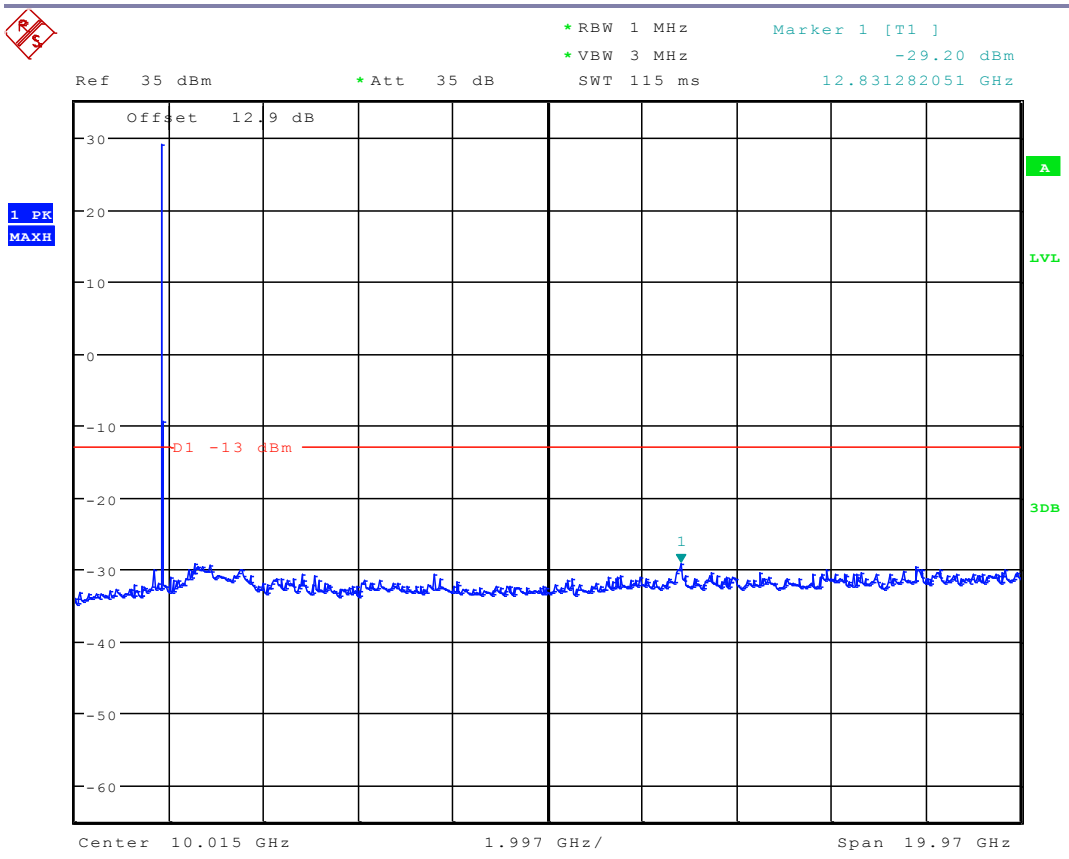
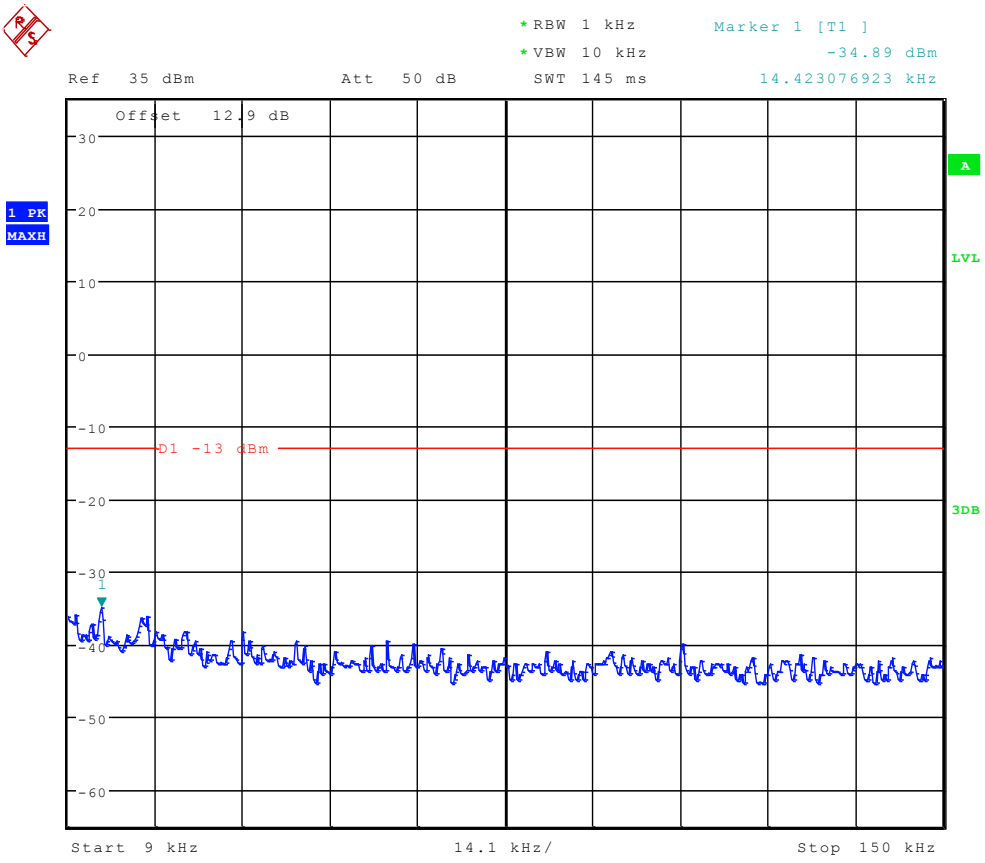
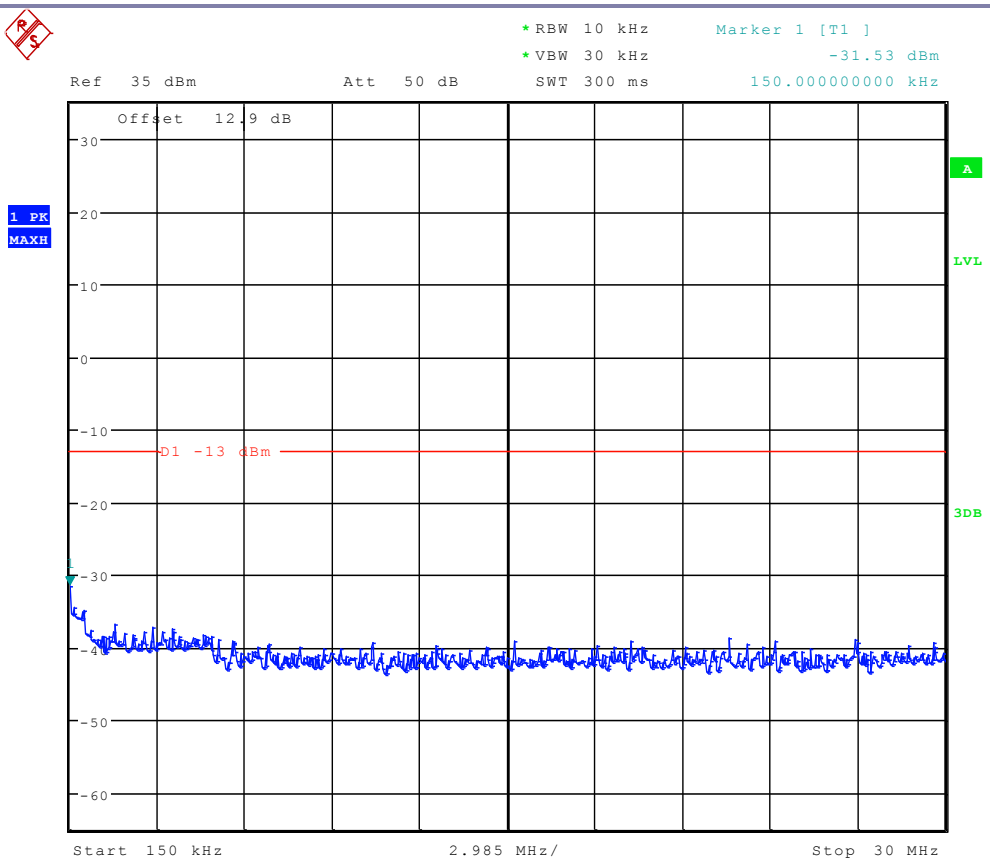

*RBW 1 MHz
*VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.20 dBm
12.831282051 GHz
Ref 35 dBm
*Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

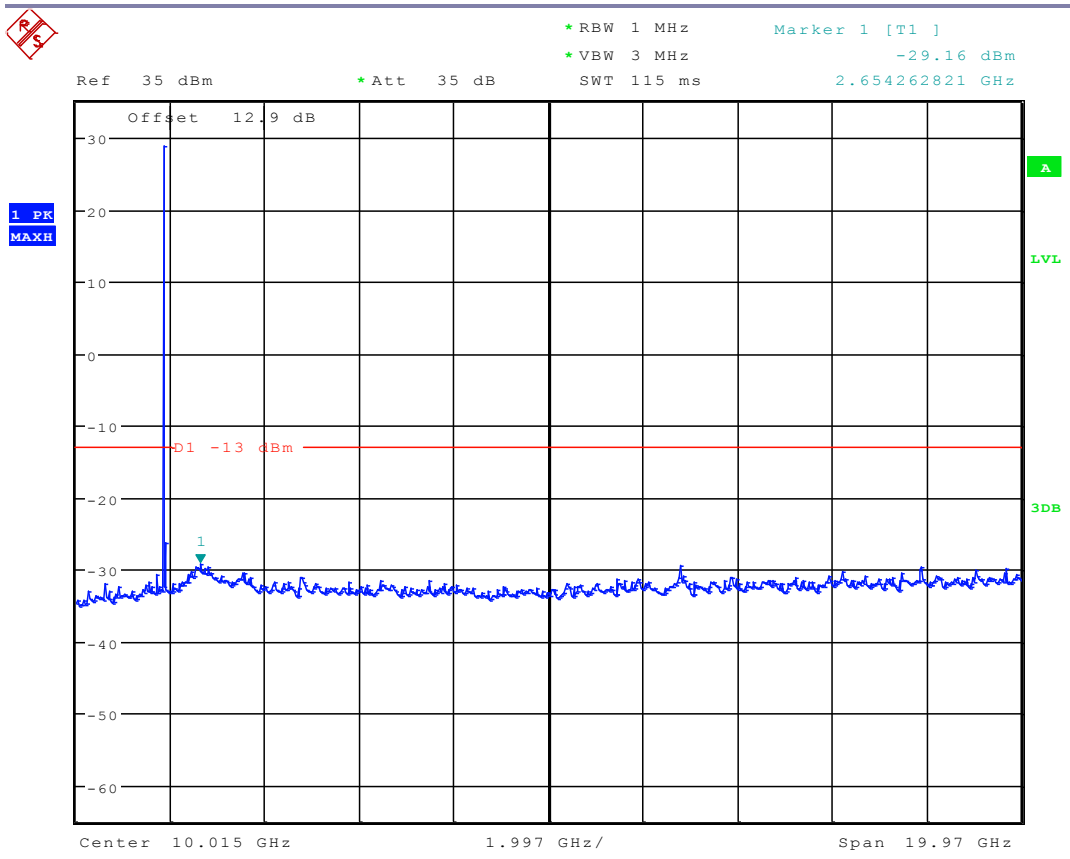
Channel 810



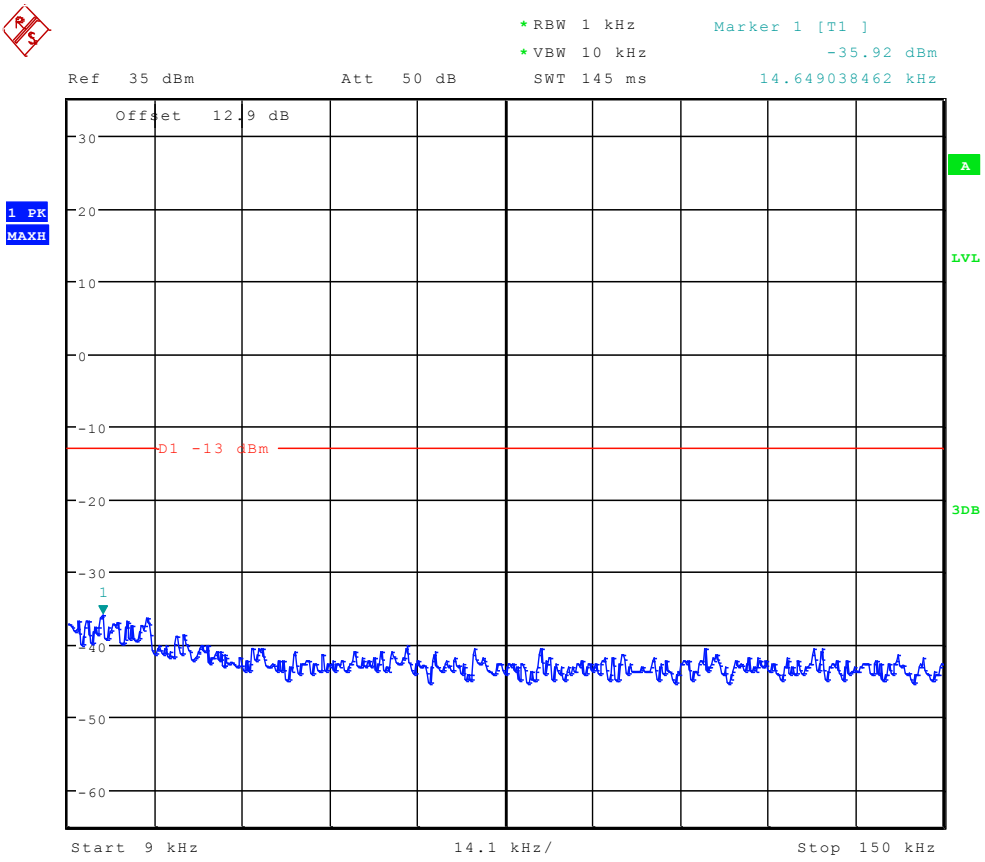
Date: 7.AUG.2012 09:40:59



Date: 7.AUG.2012 09:41:42


RBW 1 MHz
VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.16 dBm
2.654262821 GHz
Ref 35 dBm
Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
1
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

TM2:EDGE
Channel 512



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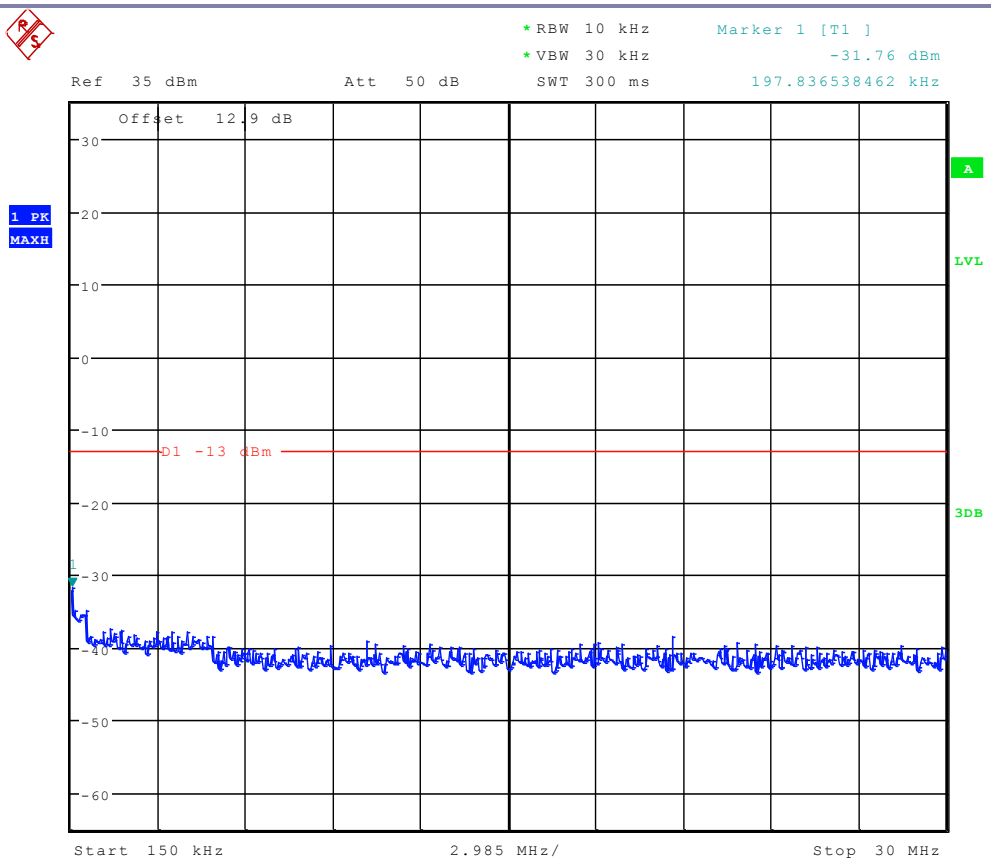
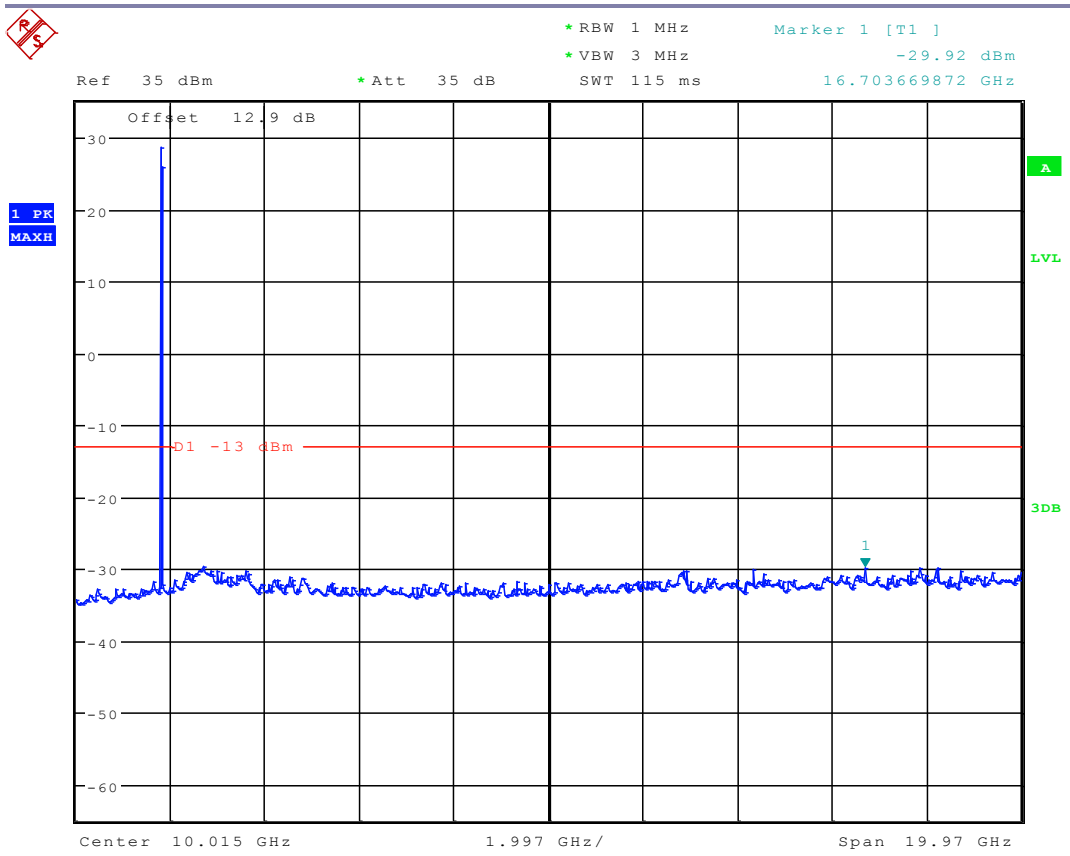
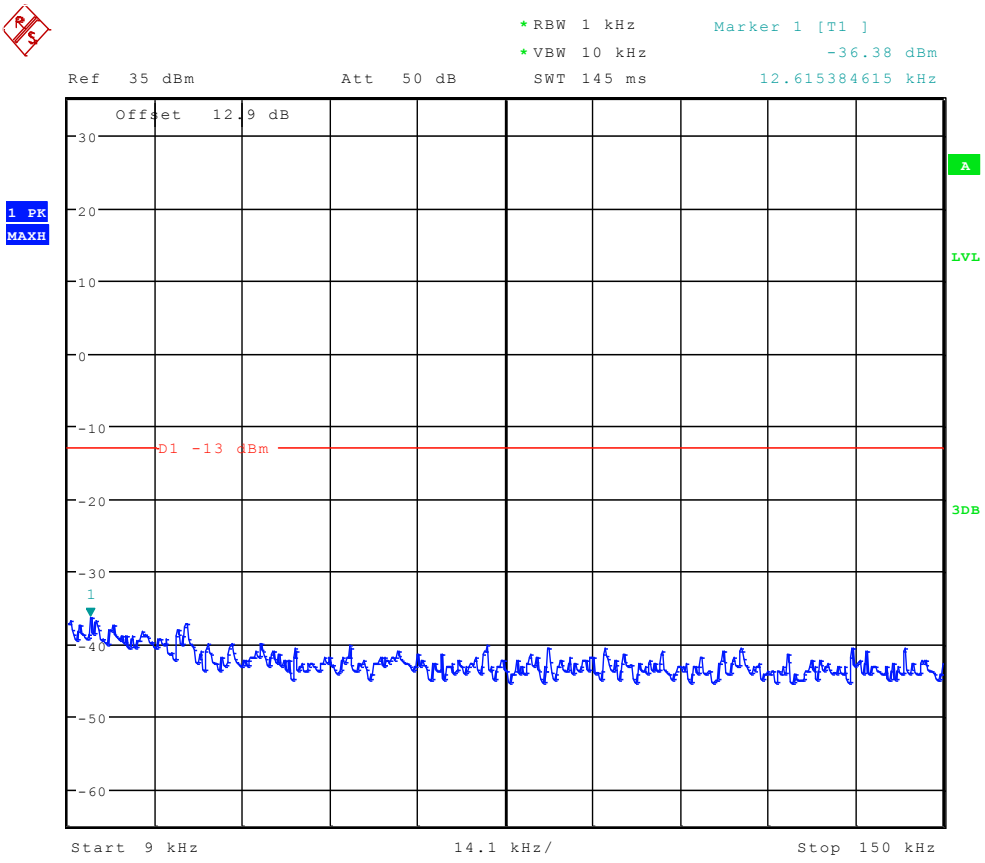


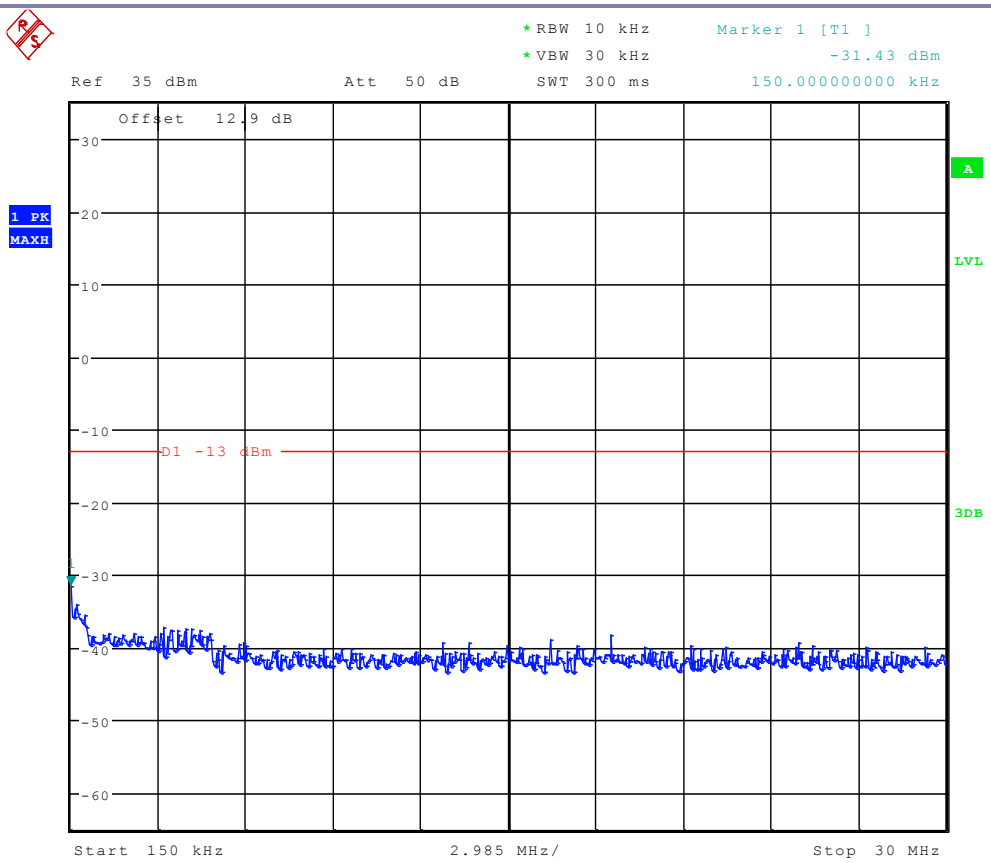
Date: 7.AUG.2012 09:47:06


RBW 1 MHz
VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.92 dBm
16.703669872 GHz
Ref 35 dBm
Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

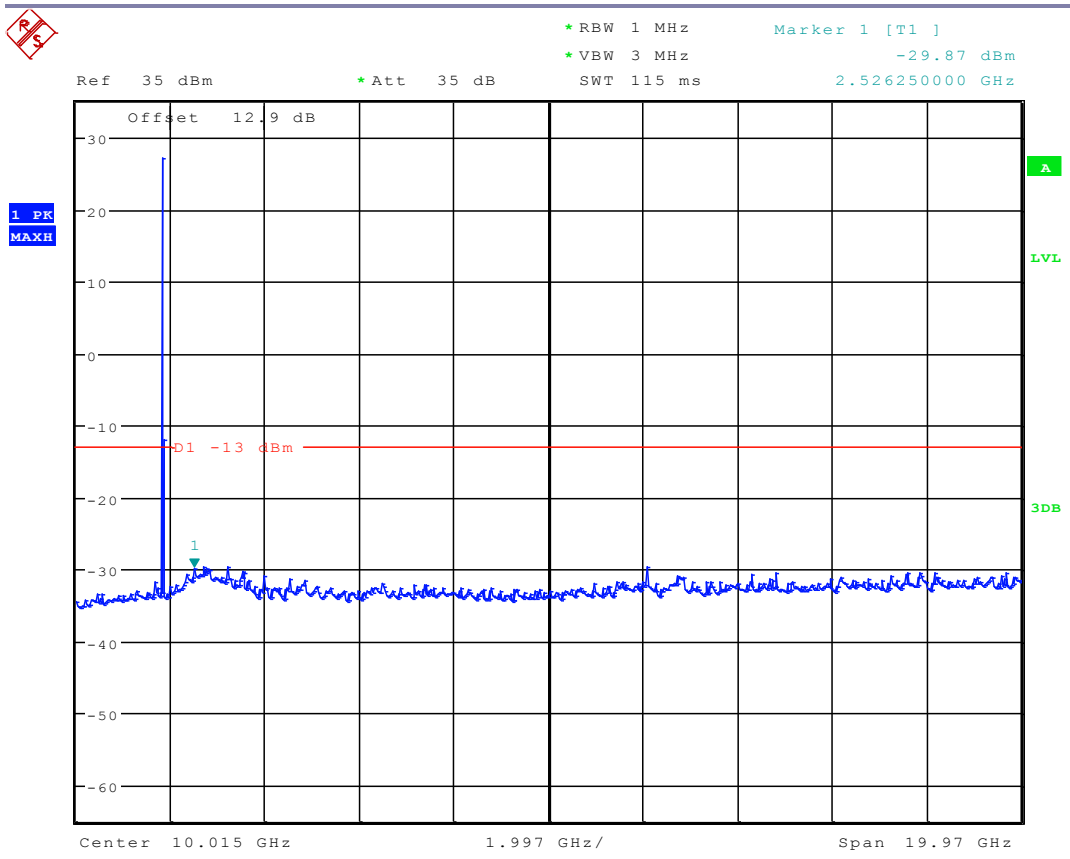
Channel 661



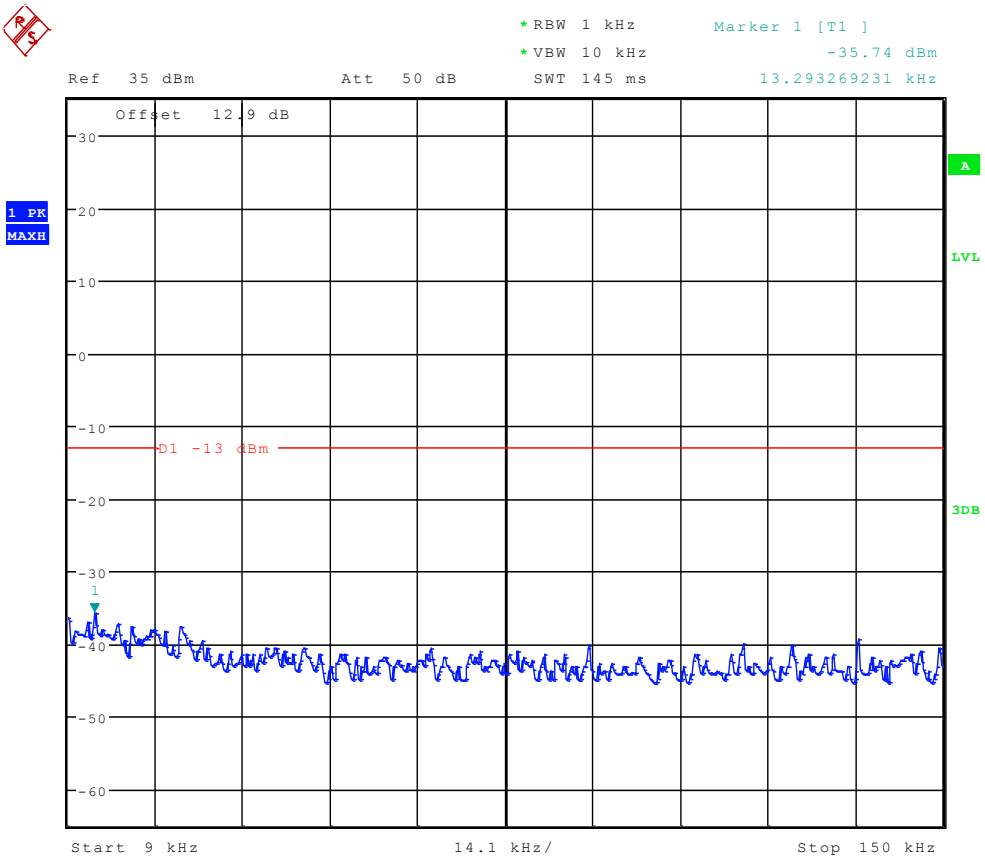
Date: 7.AUG.2012 09:46:37



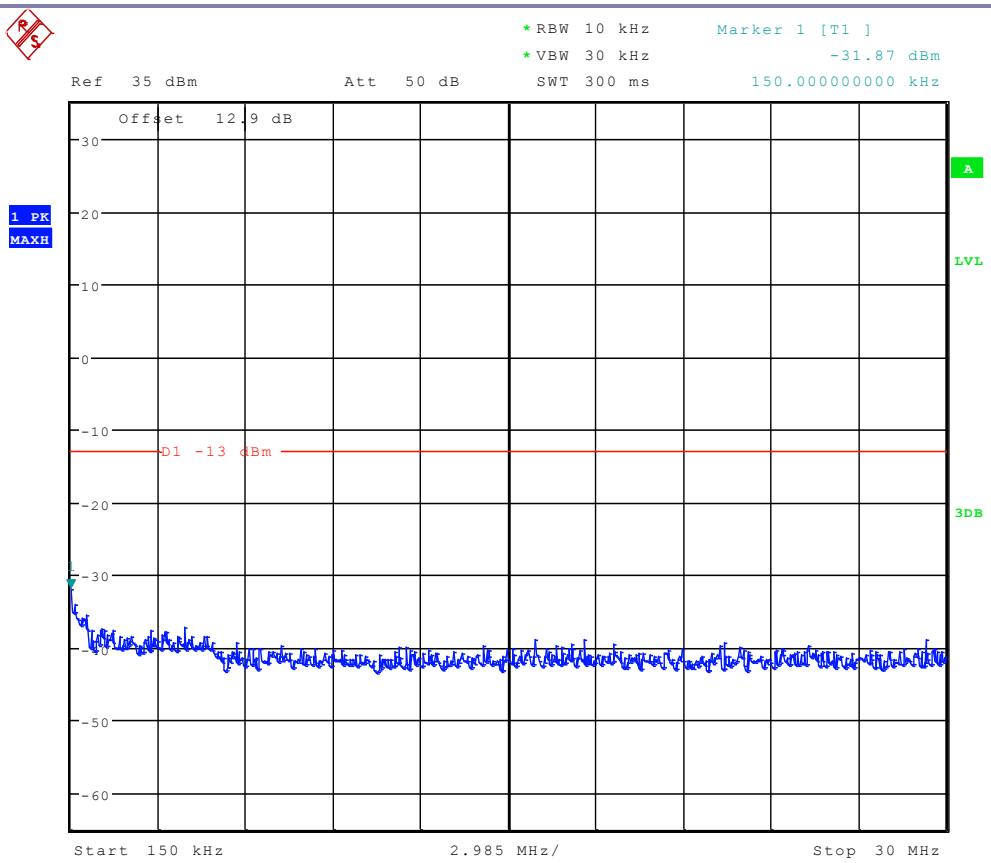
Date: 7.AUG.2012 09:47:20


*RBW 1 MHz
*VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.87 dBm
2.526250000 GHz
Ref 35 dBm
*Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

Channel 810



Date: 7.AUG.2012 09:46:51



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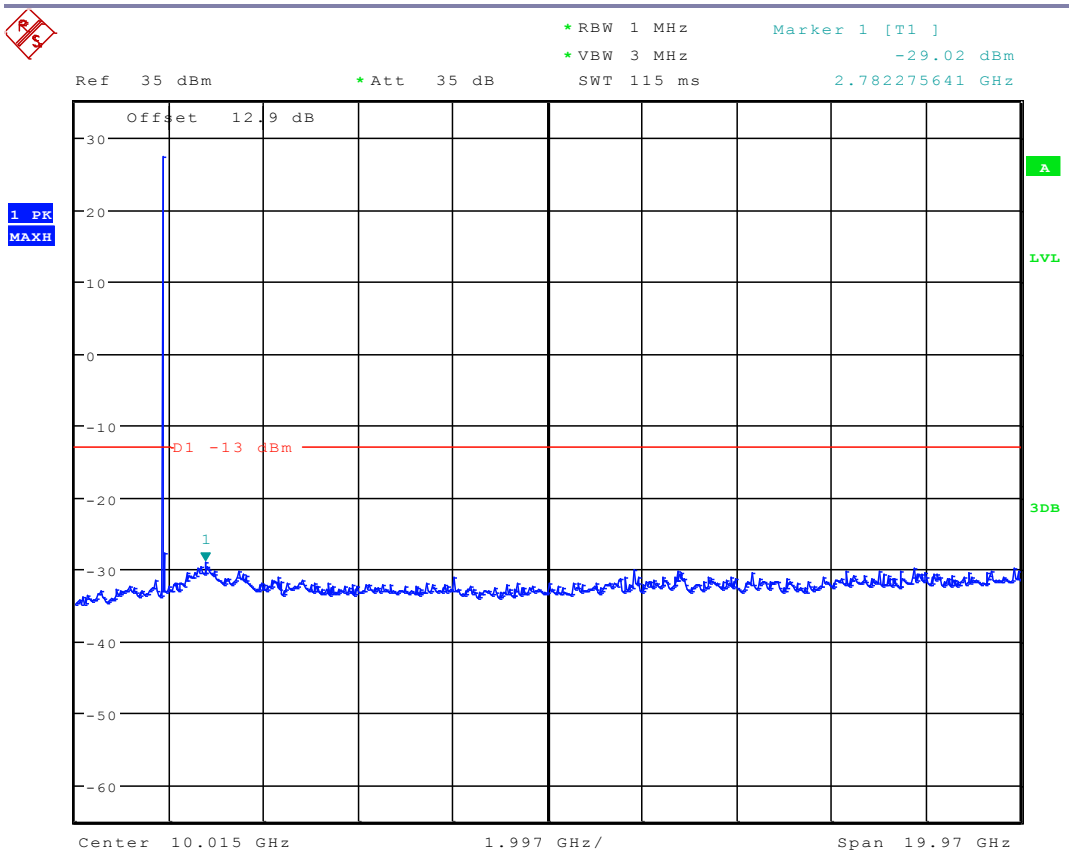
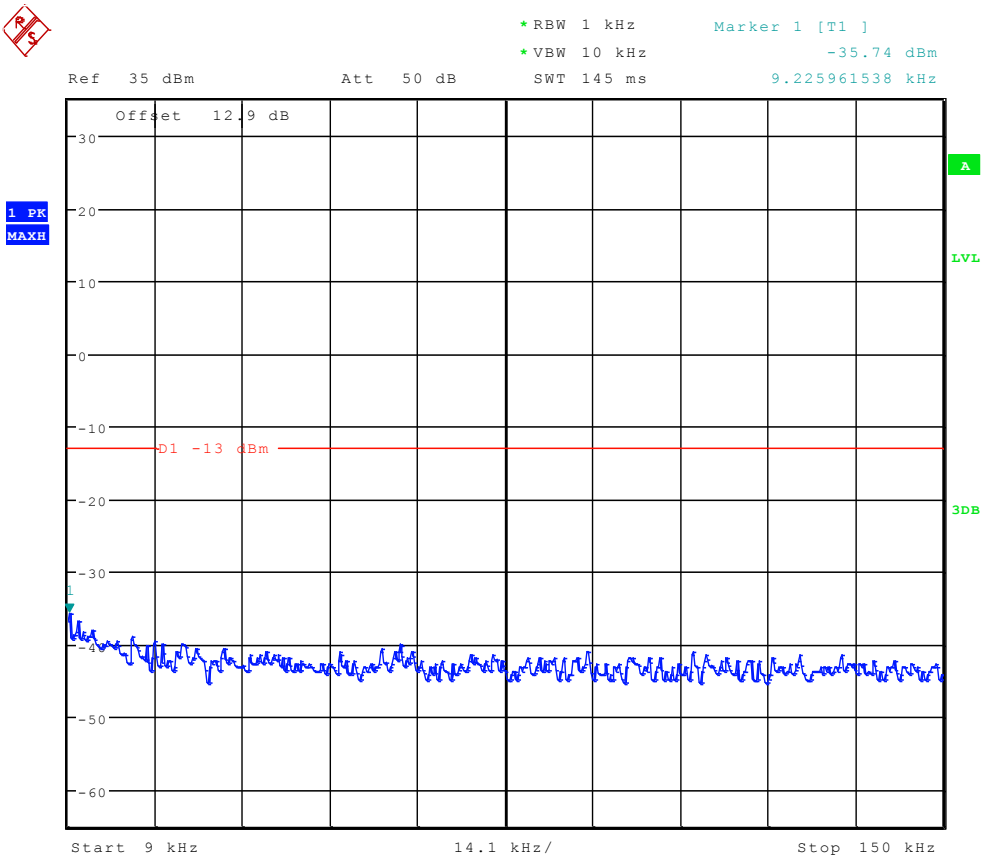
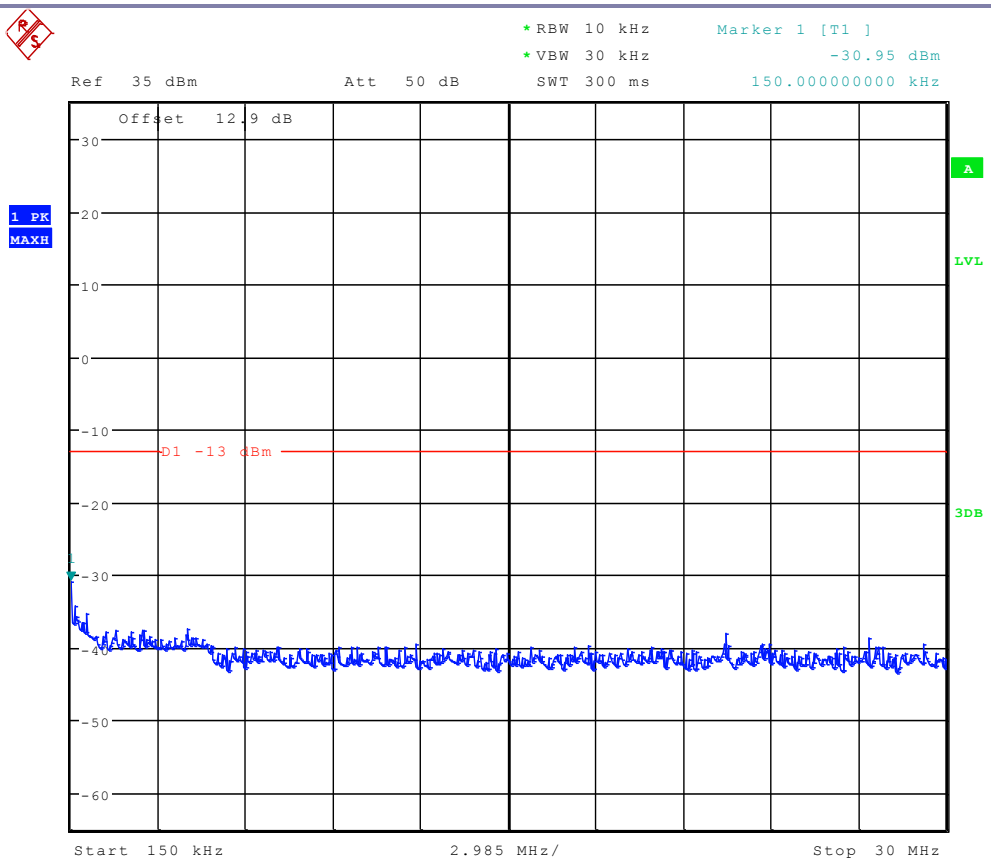

RBW 1 MHz
VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.02 dBm
2.782275641 GHz
Ref 35 dBm
Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

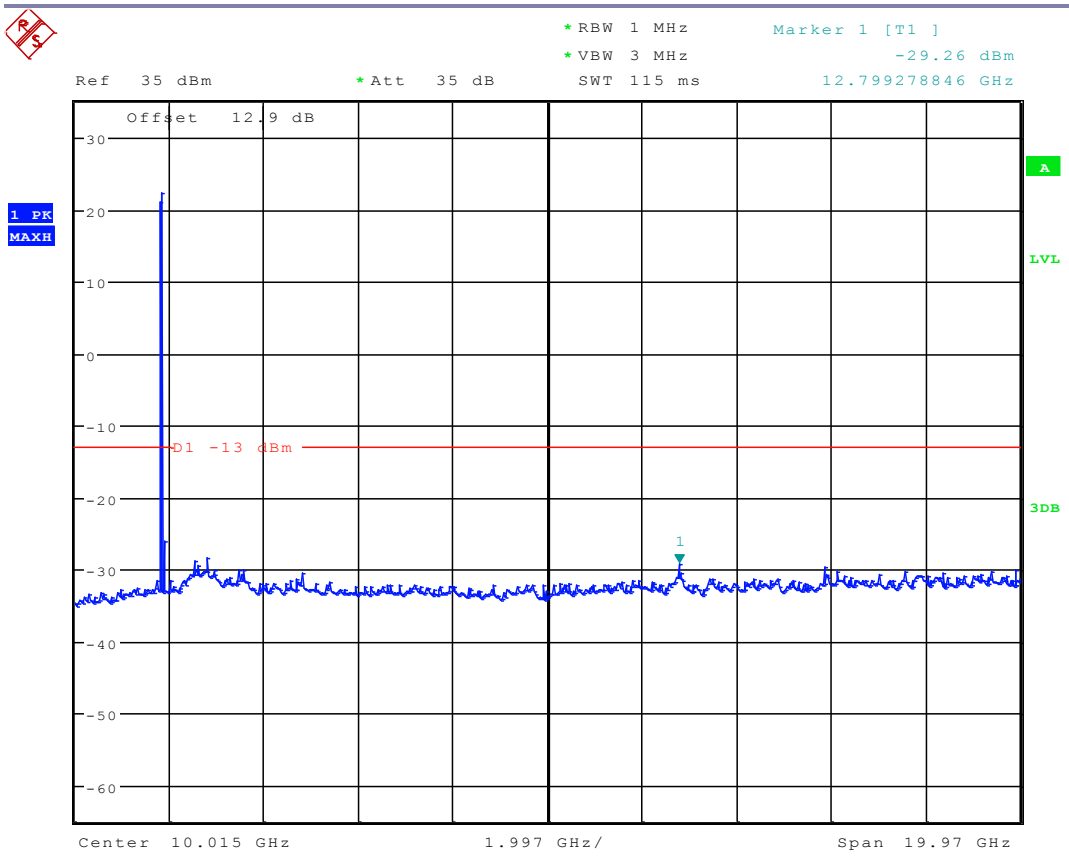
TM3: WCDMA
Channel 9262



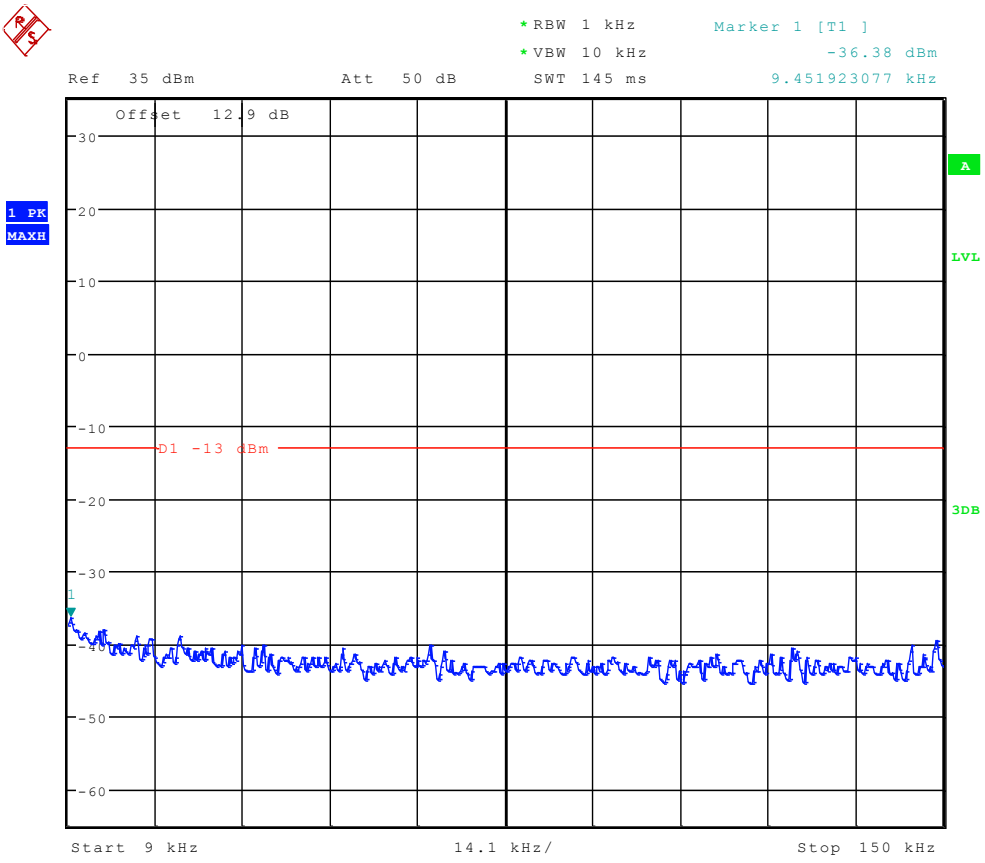
Date: 7.AUG.2012 09:52:52



Date: 7.AUG.2012 09:53:36


RBW 1 MHz
VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.26 dBm
12.799278846 GHz
Ref 35 dBm
Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

Channel 9400



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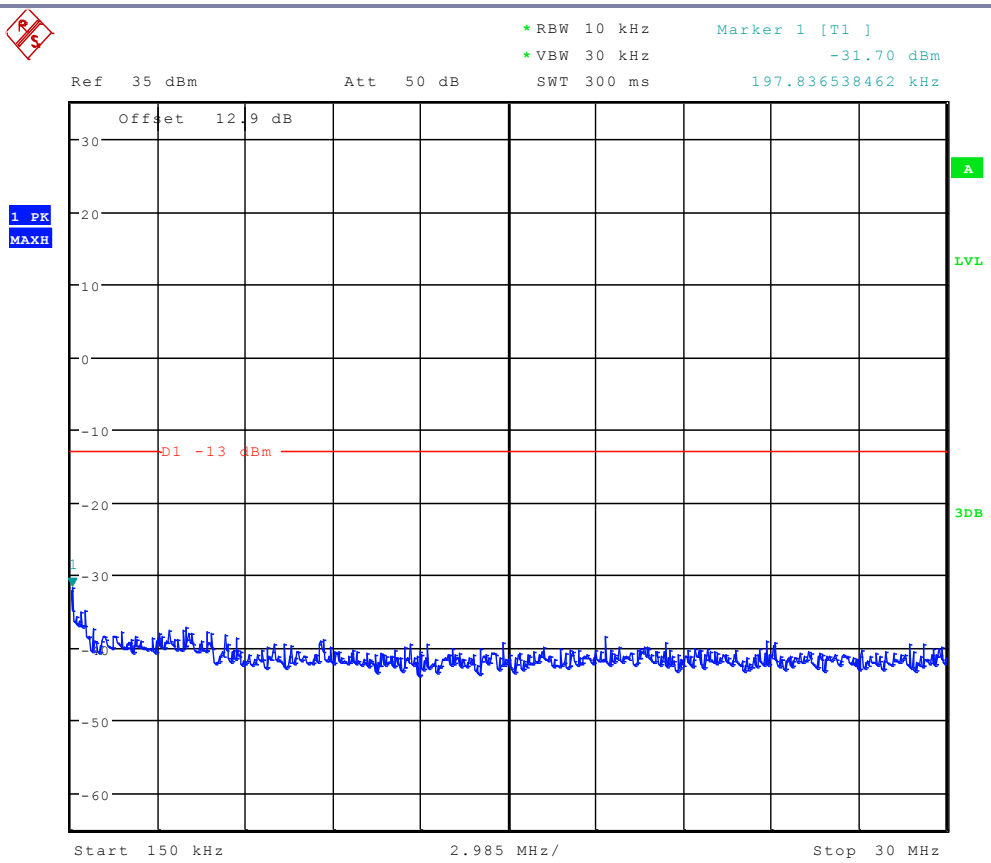
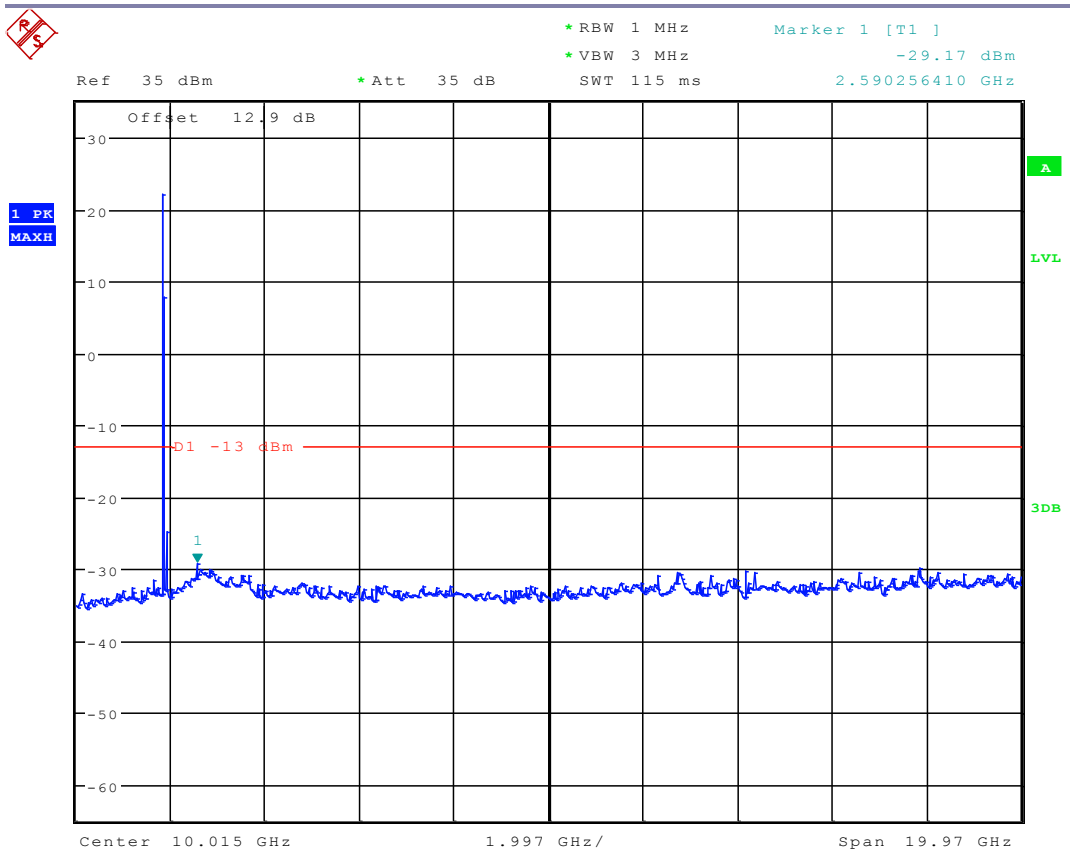
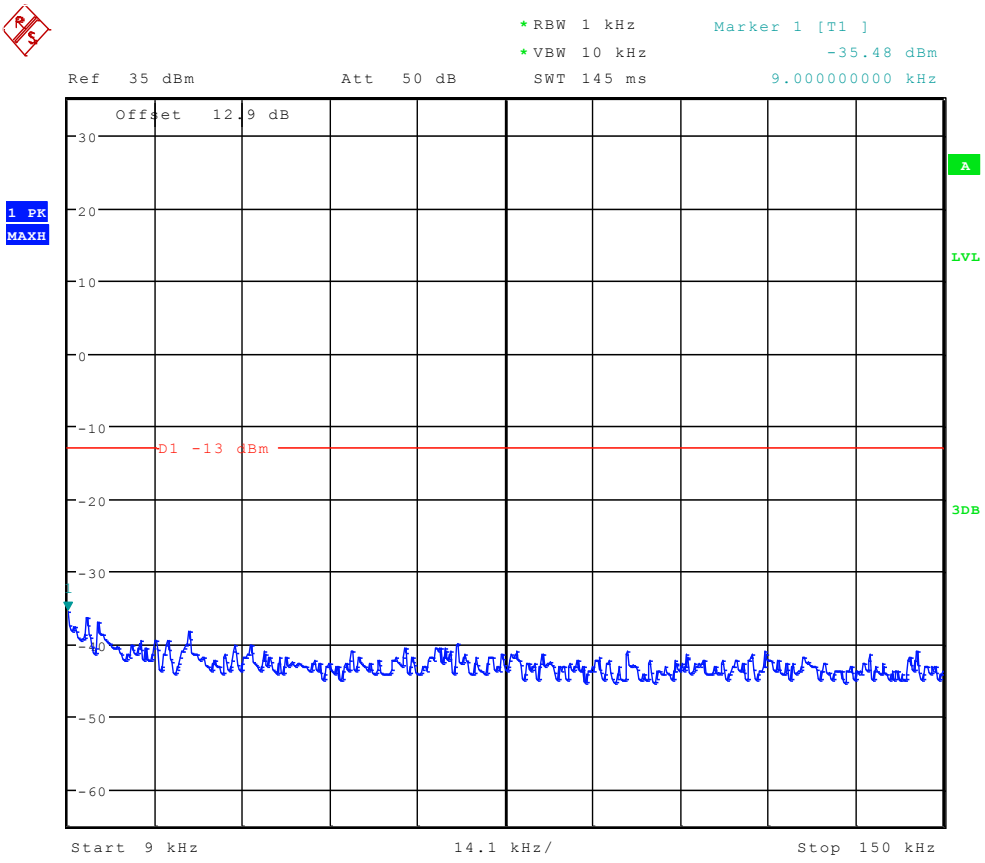


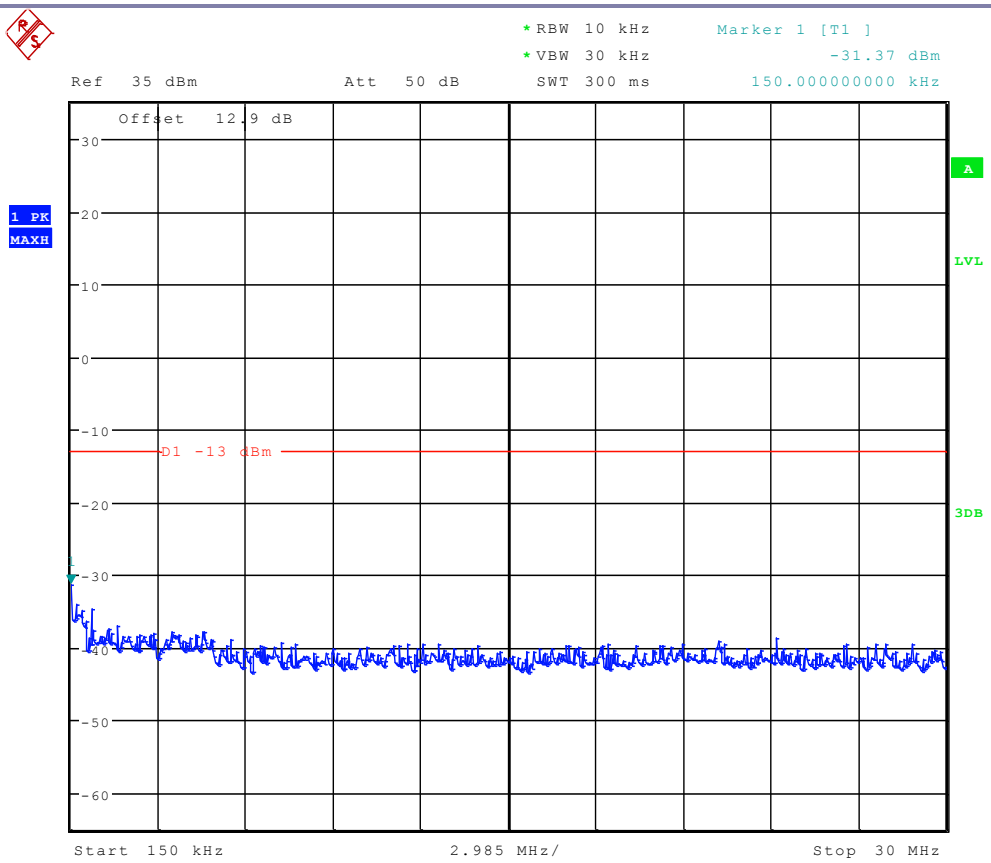
Date: 7.AUG.2012 09:53:50


*RBW 1 MHz
*VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.17 dBm
2.590256410 GHz
Ref 35 dBm
*Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
1
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

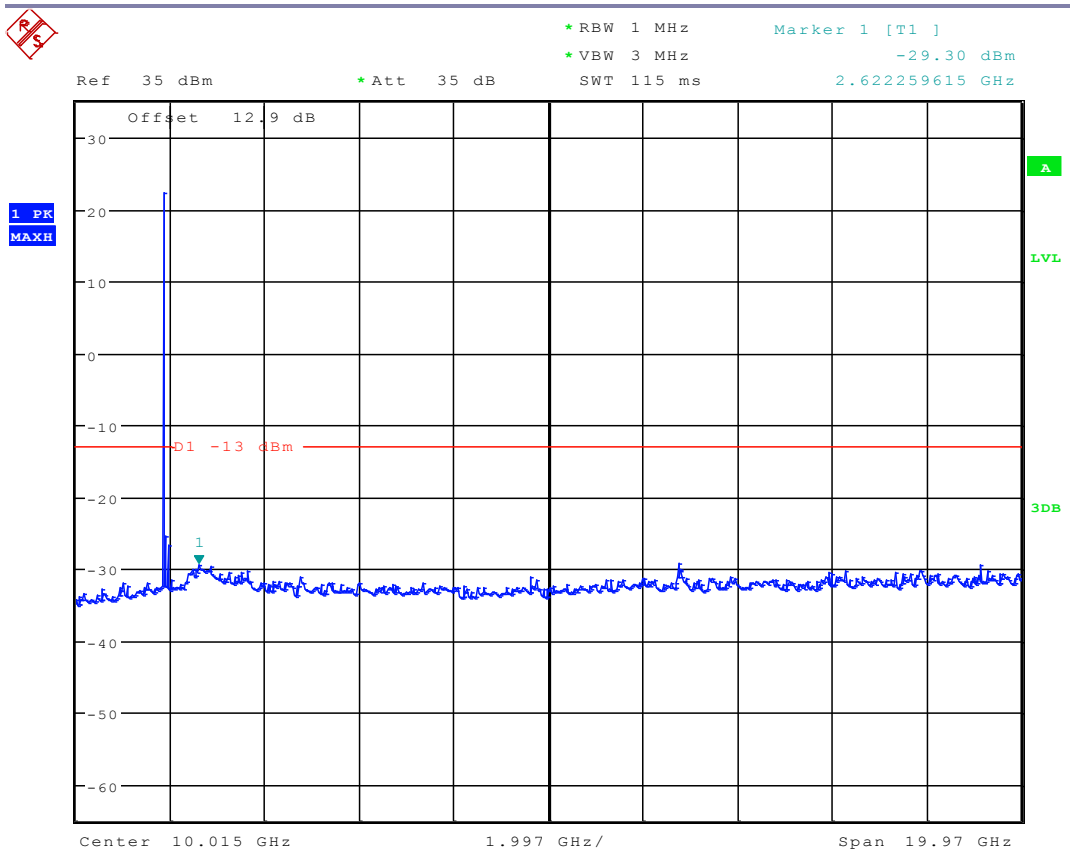
Channel 9538



Date: 7.AUG.2012 09:53:21



Date: 7.AUG.2012 09:54:04


*RBW 1 MHz
*VBW 3 MHz
SWT 115 ms
Marker 1 [T1]
-29.30 dBm
2.622259615 GHz
Ref 35 dBm
*Att 35 dB
Offset 12.9 dB
1 PK
MAXH
A
LVL
3DB
D1 -13 dBm
1
30
20
10
0
-10
-20
-30
-40
-50
-60
Center 10.015 GHz
1.997 GHz/
Span 19.97 GHz

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

Appendix F

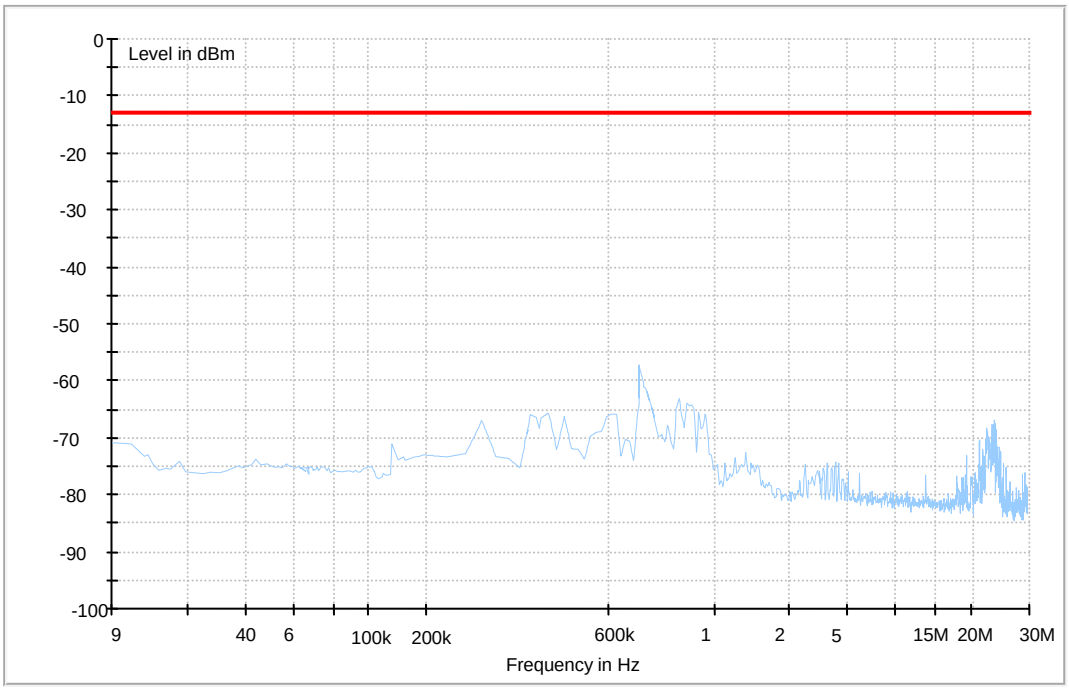
Radiated spurious emission

According to FCC Part 2.1053 & 24.238

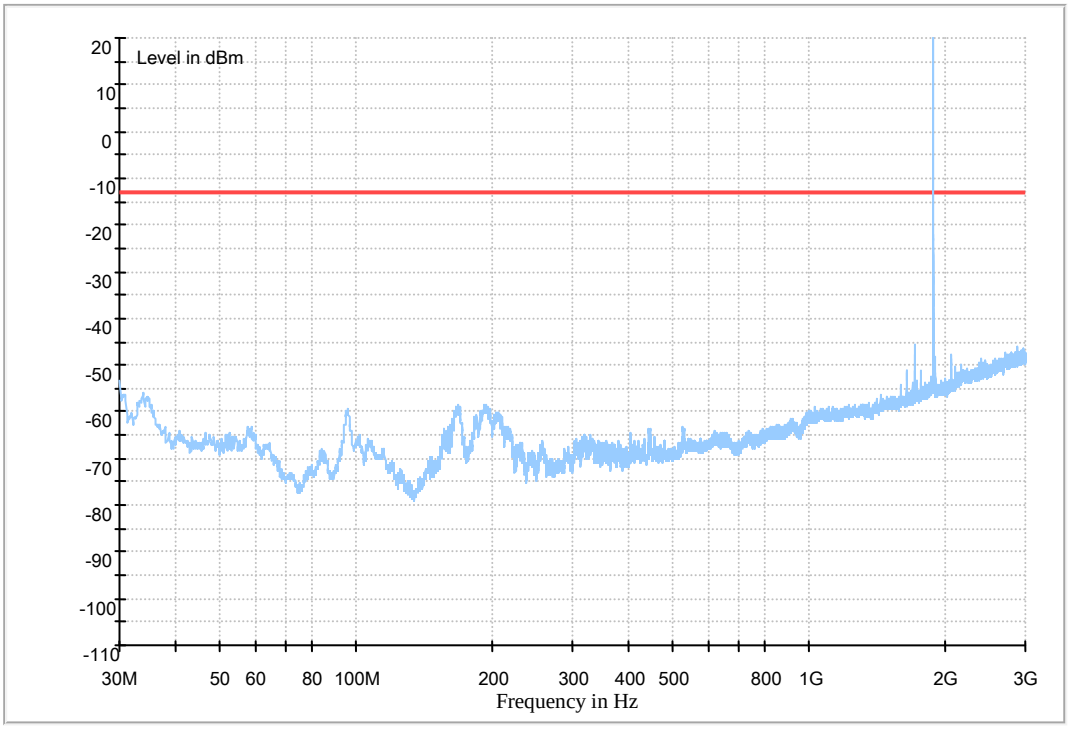
Note: 1. Simultaneous transmission was investigated and no new emissions were found.
2. RBW ≥ 1MHz, VBW > 3 x RBW.

GSM 1900

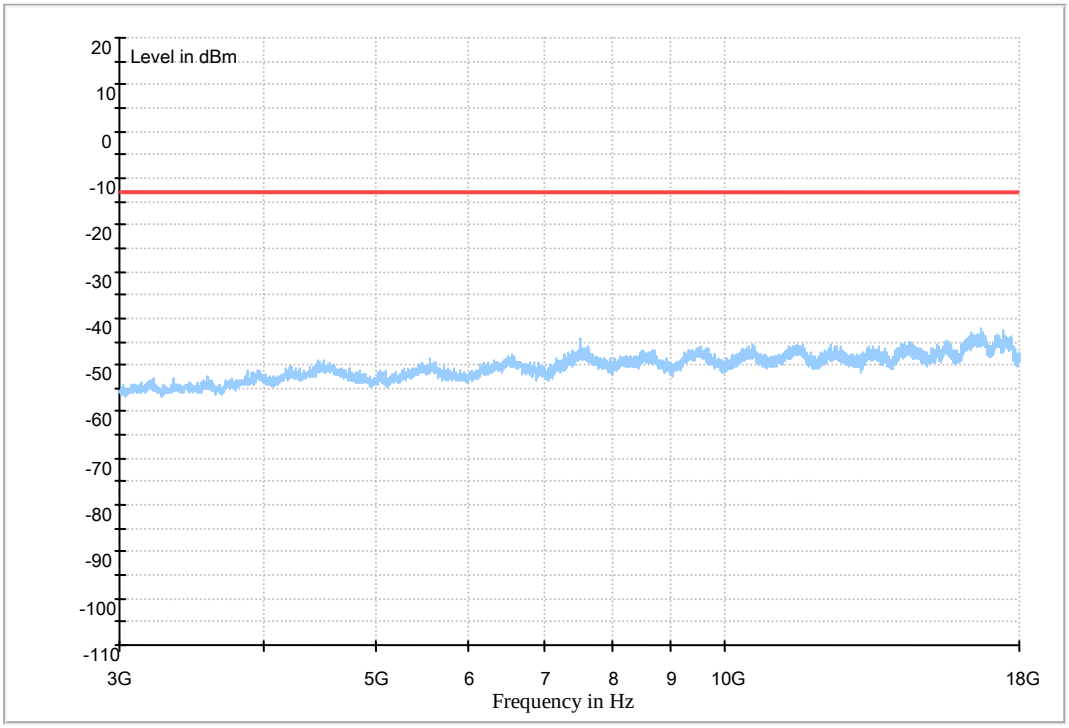
Traffic Mode (9kHz-30MHz)



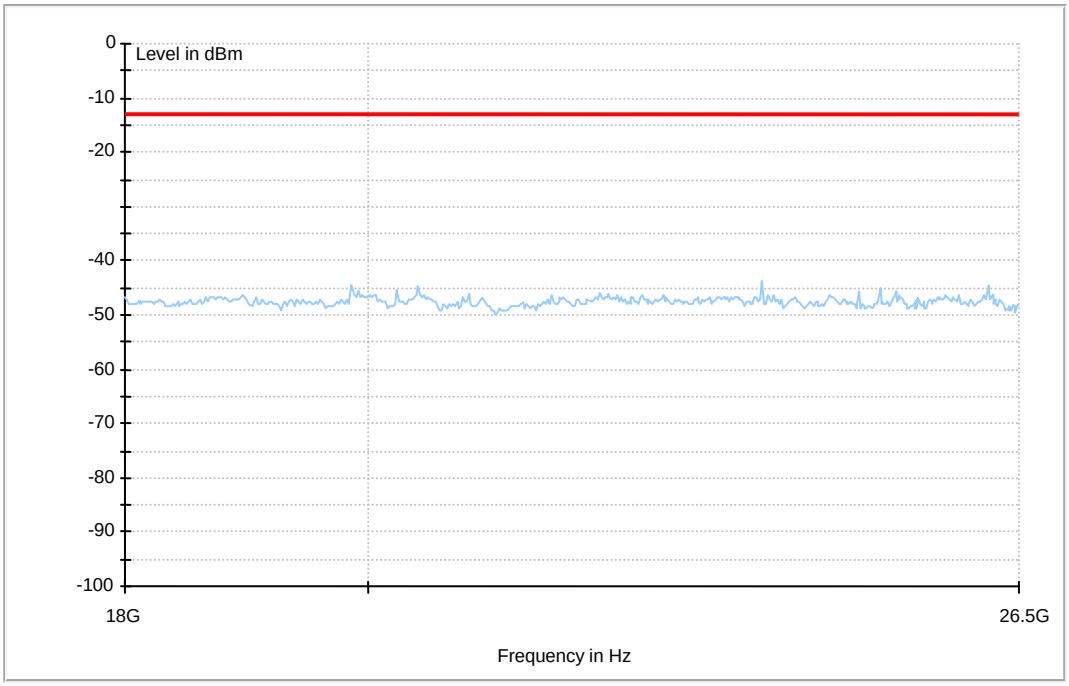
Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)

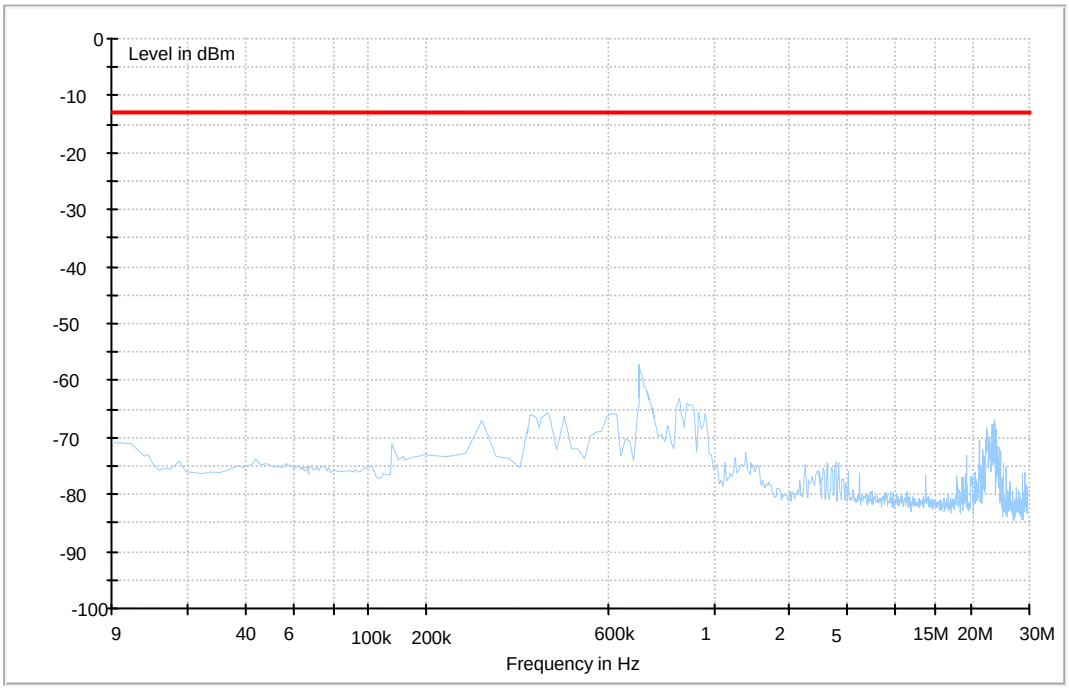


Traffic Mode (18GHz-26.5GHz)

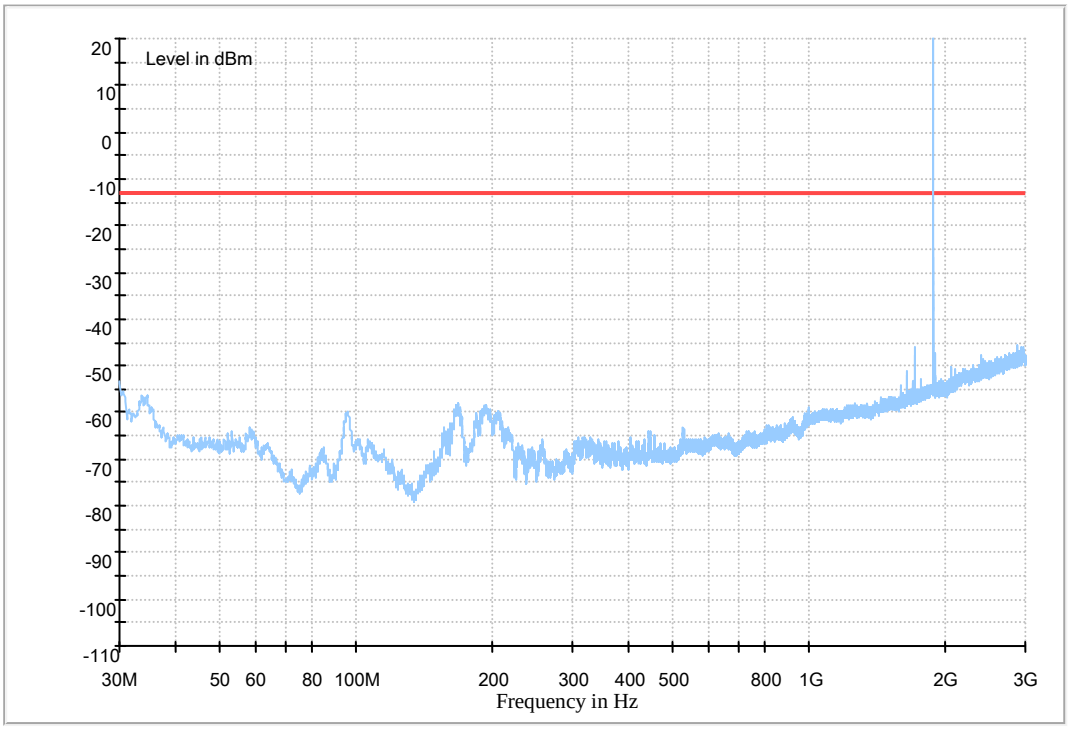


GPRS 1900

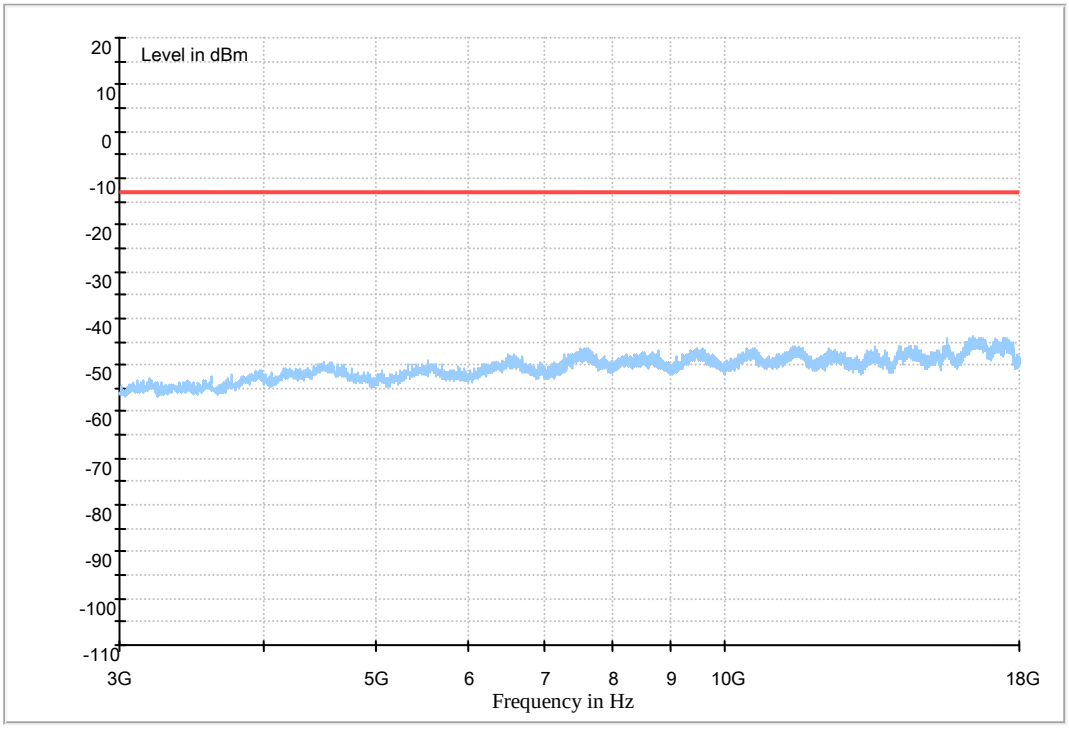
Traffic Mode (9kHz-30MHz)



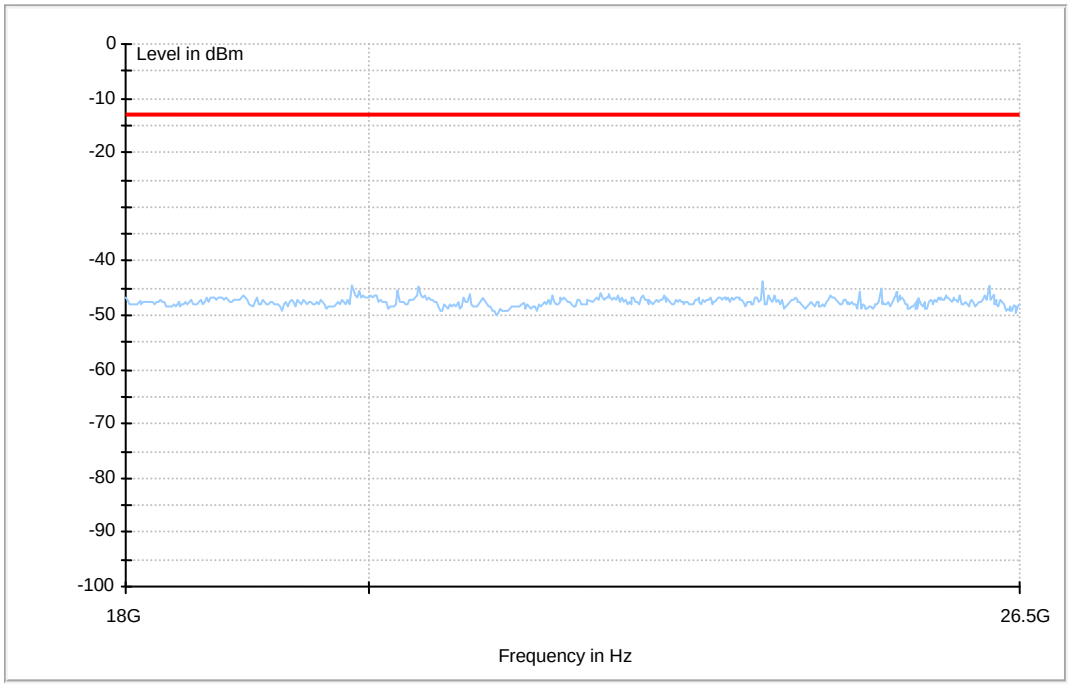
Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)

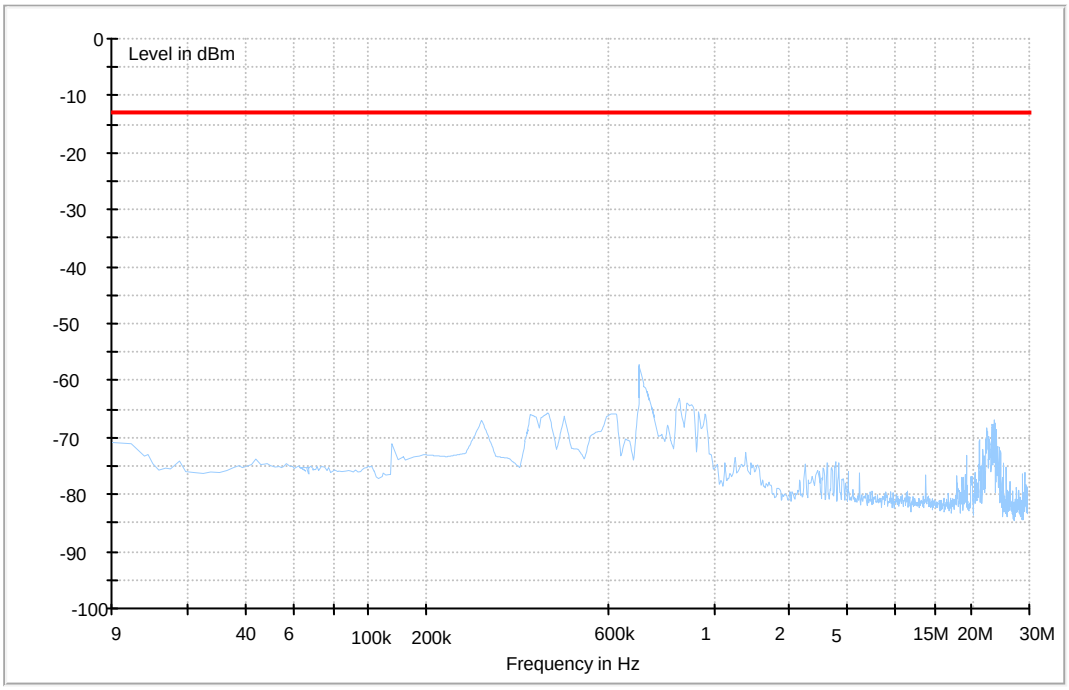


Traffic mode (18GHz-26.5GHz)

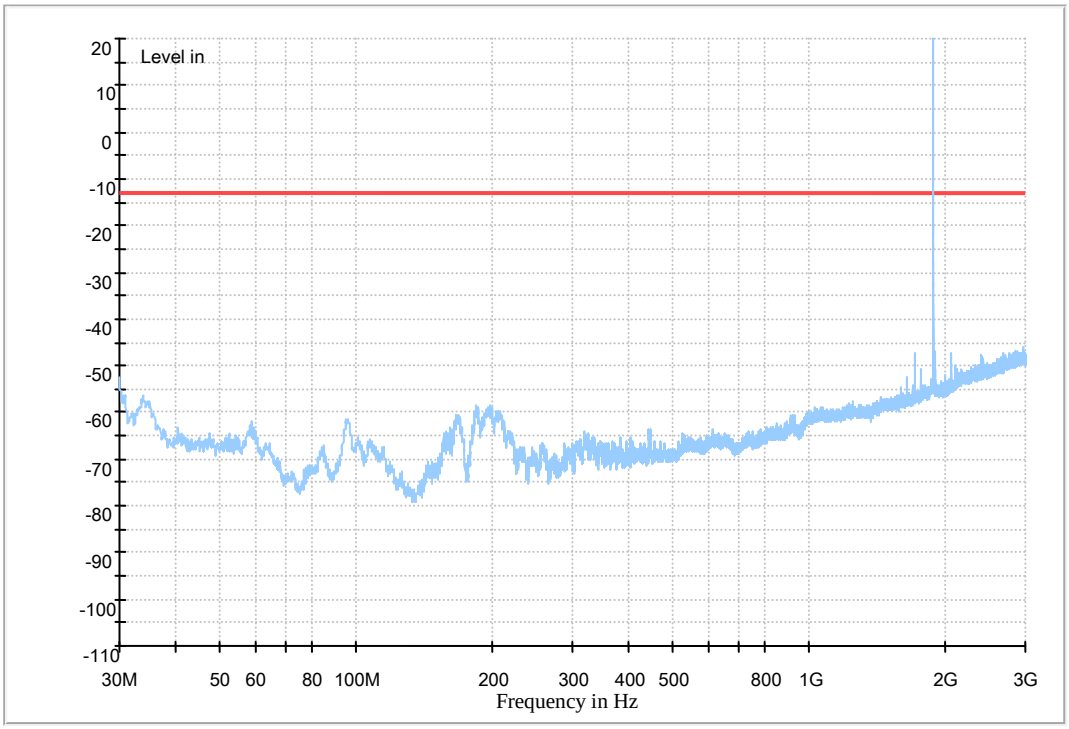


EDGE 1900

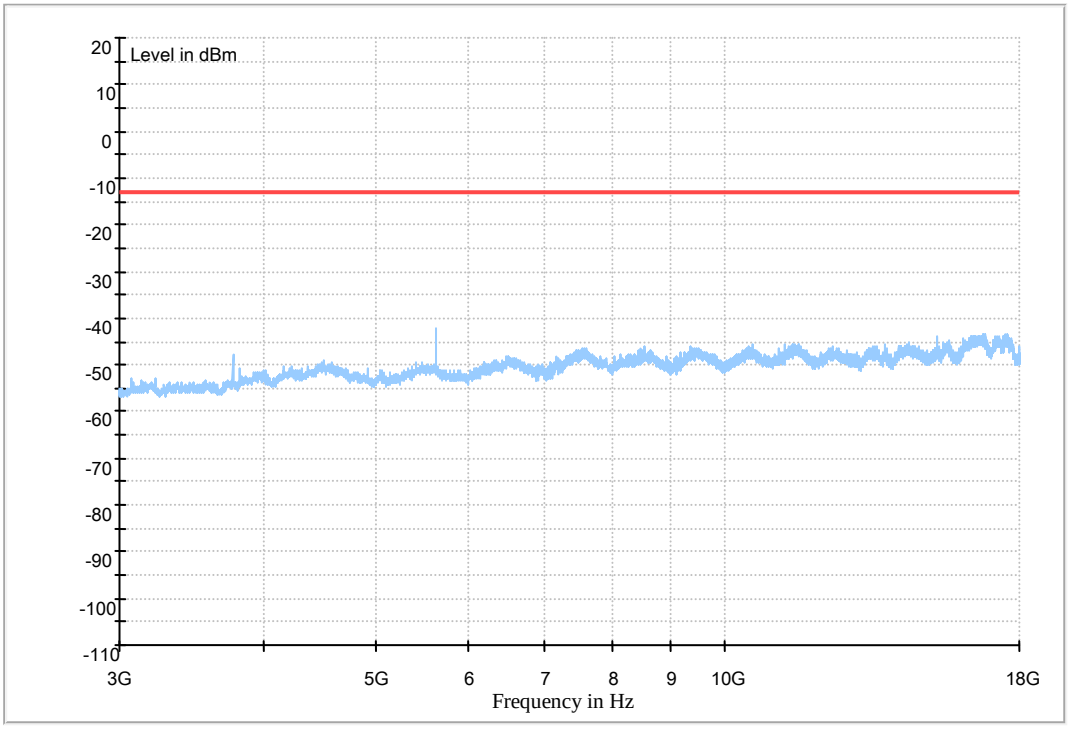
Traffic Mode (9kHz-30MHz)



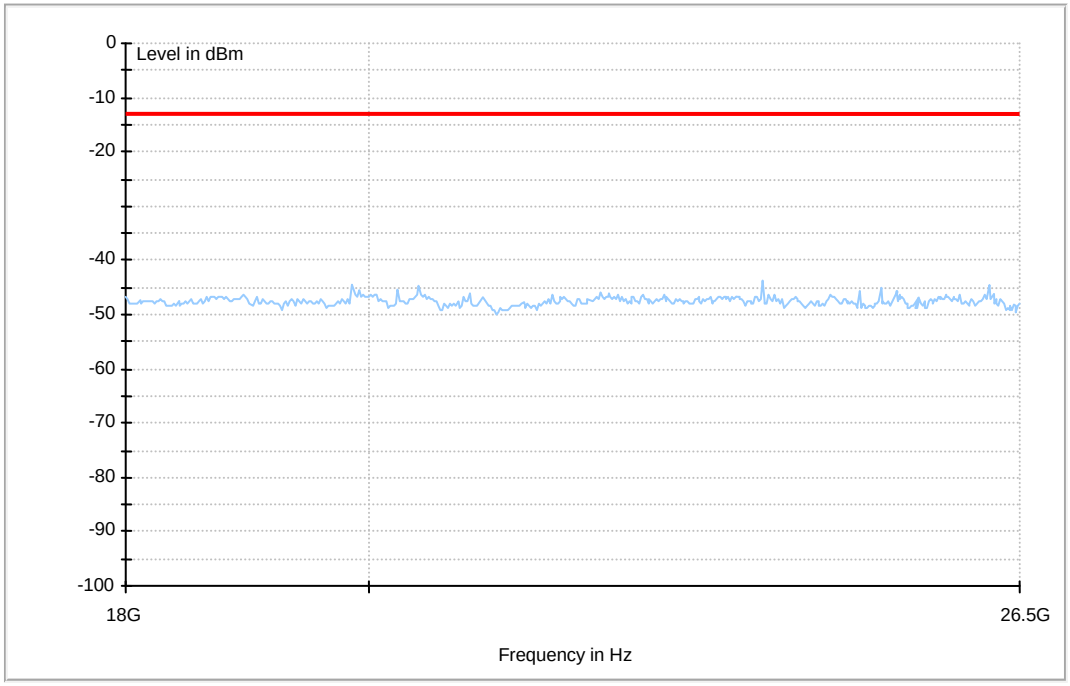
Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)

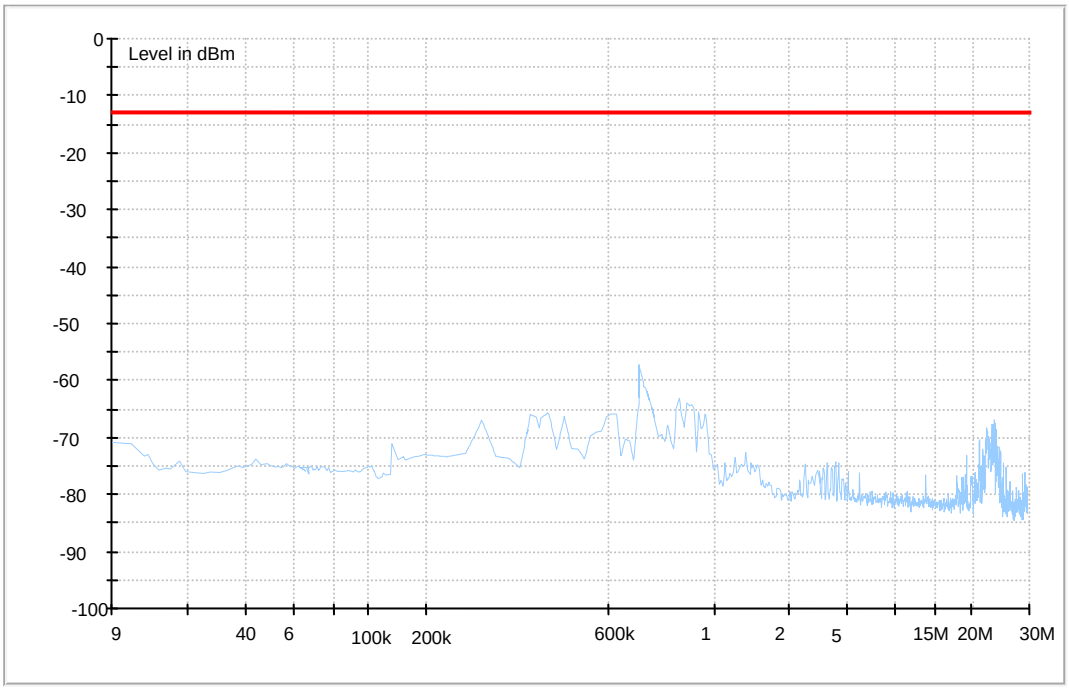


Traffic mode (18GHz-26.5GHz)

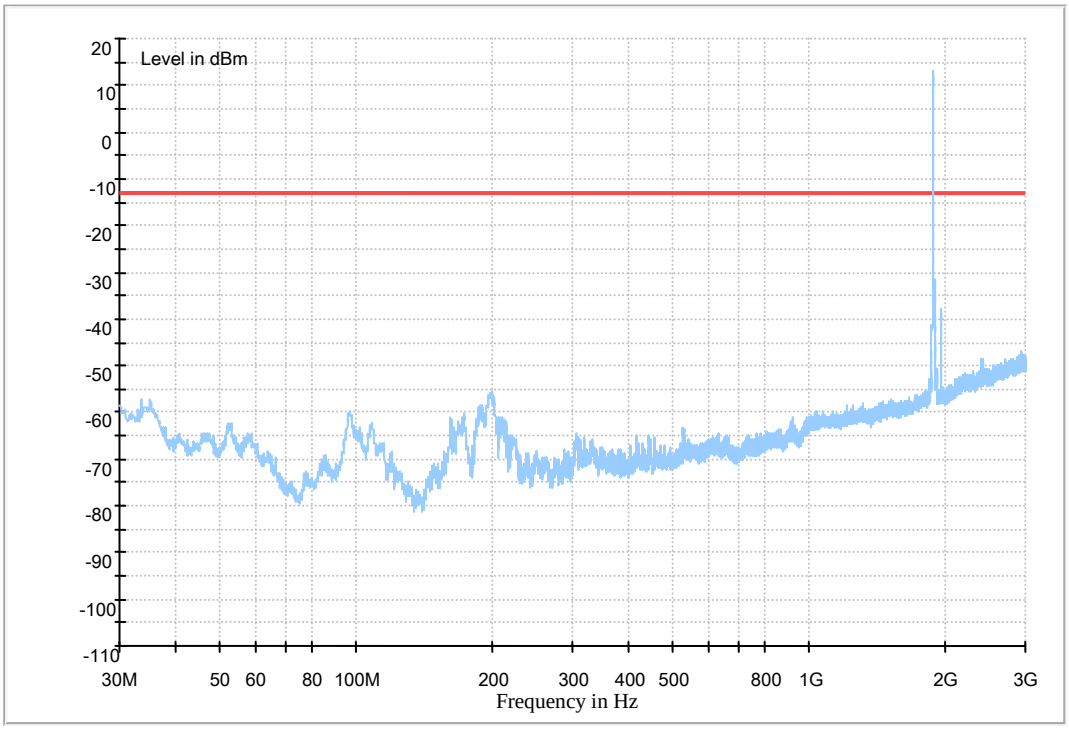


WCDMA 1900

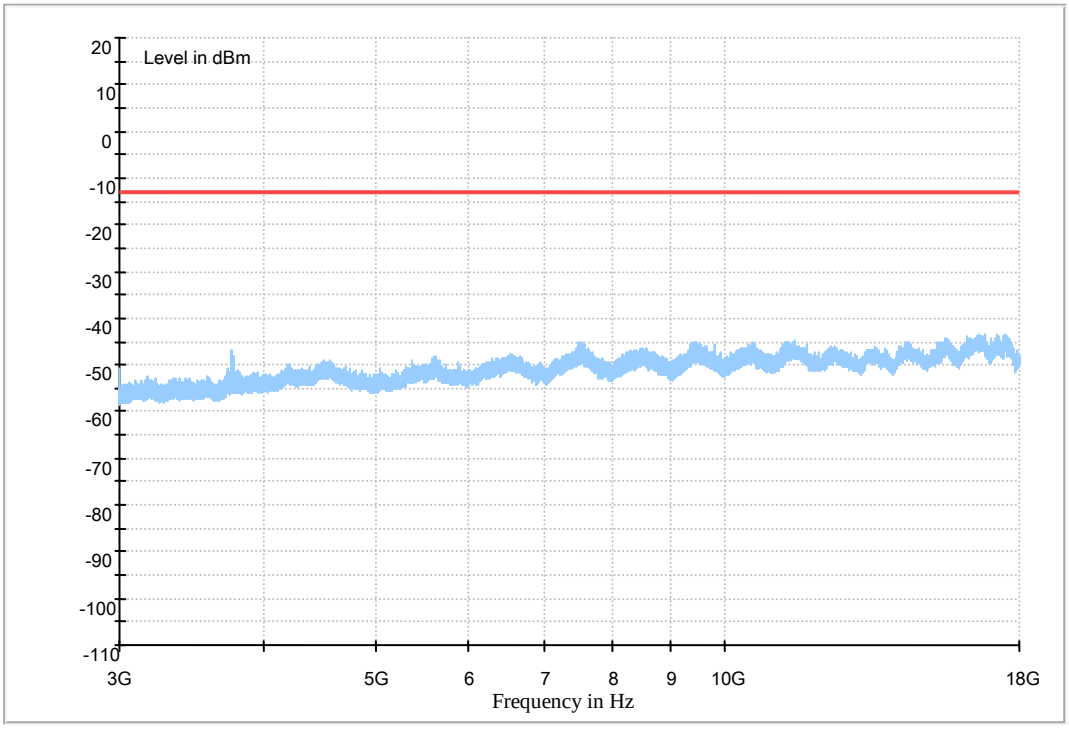
Traffic Mode (9kHz-30MHz)



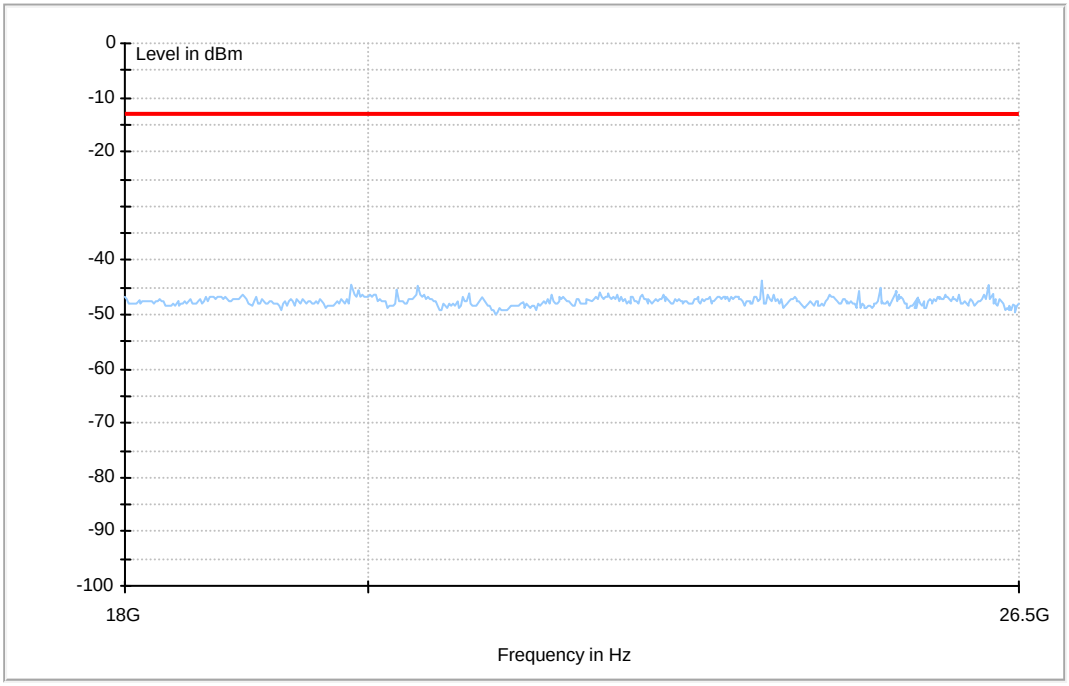
Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)

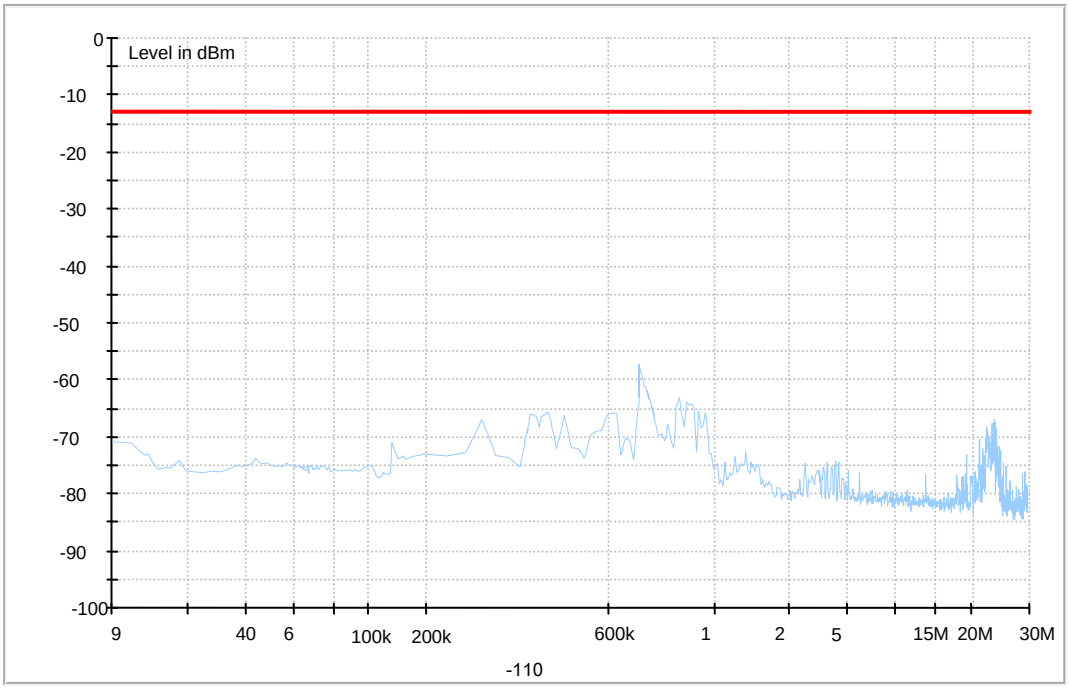


Traffic Mode (18GHz-26.5GHz)

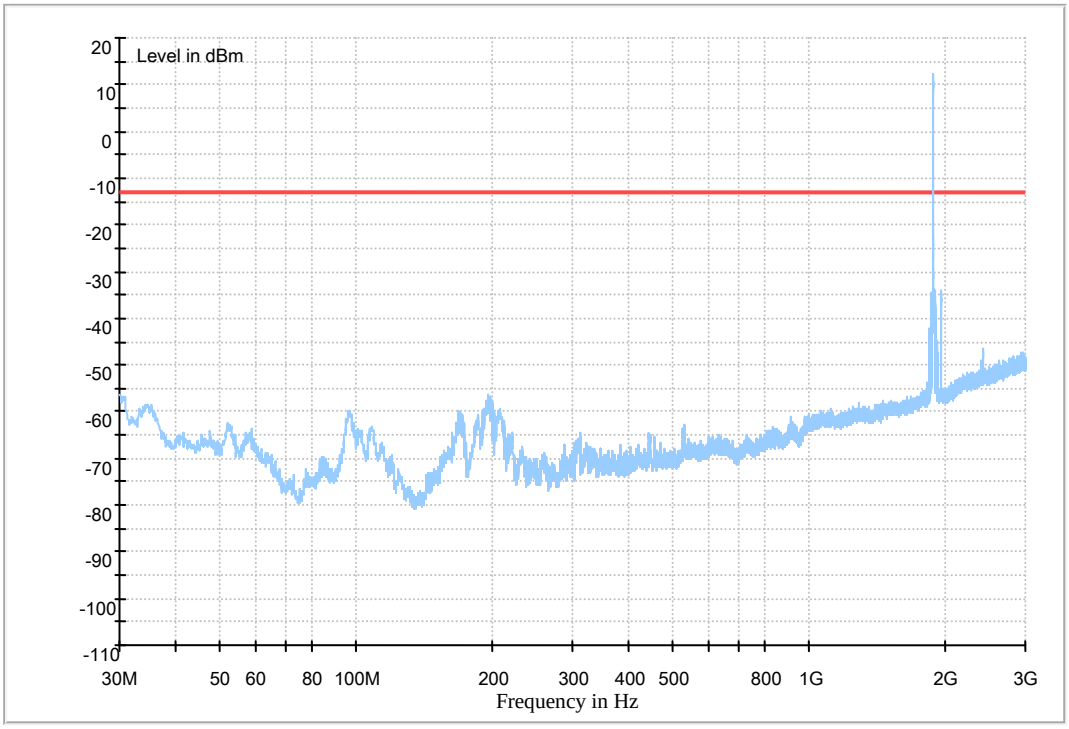


HSDPA 1900

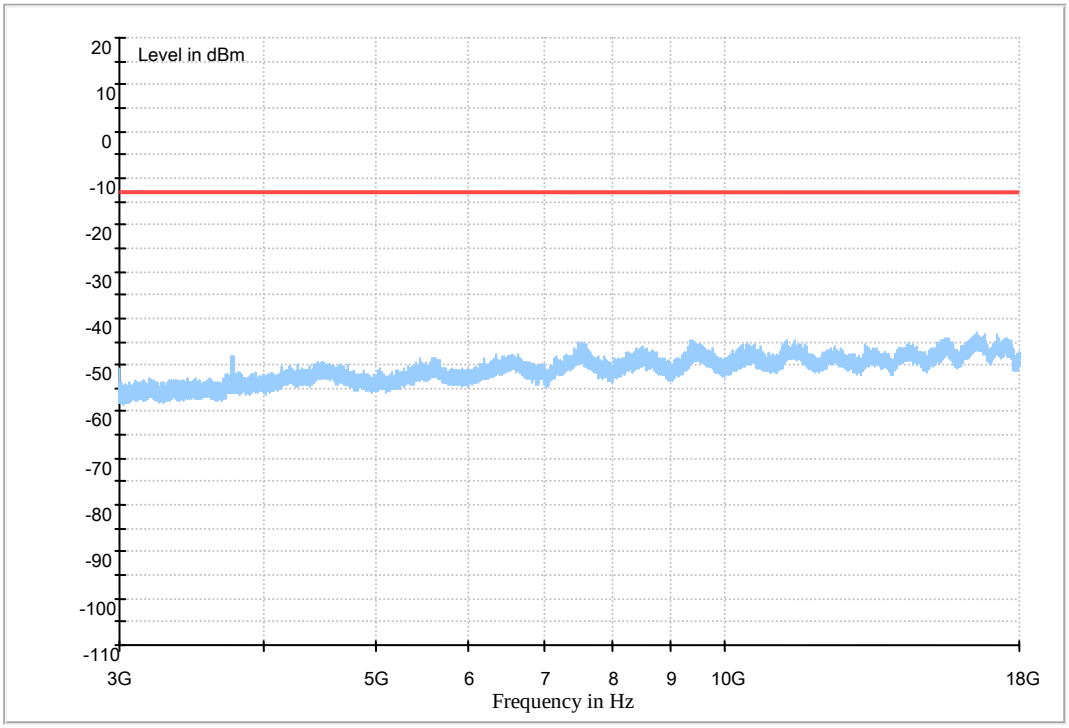
Traffic Mode (9kHz-30MHz)



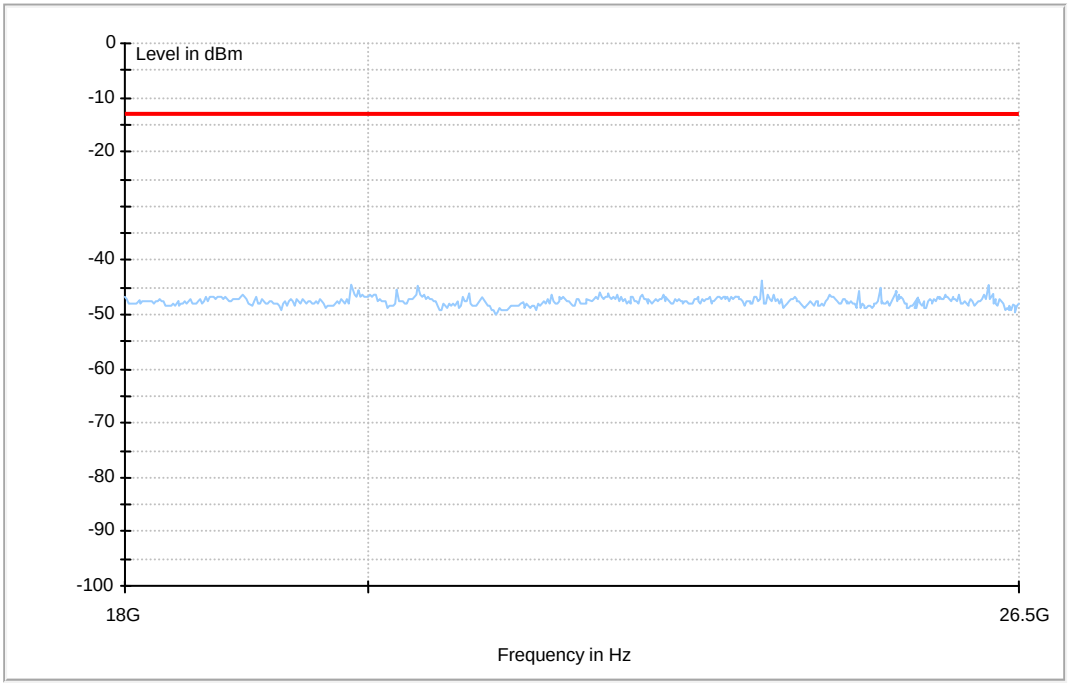
Traffic Mode (30MHz-3GHz)



Traffic Mode (3GHz-18GHz)

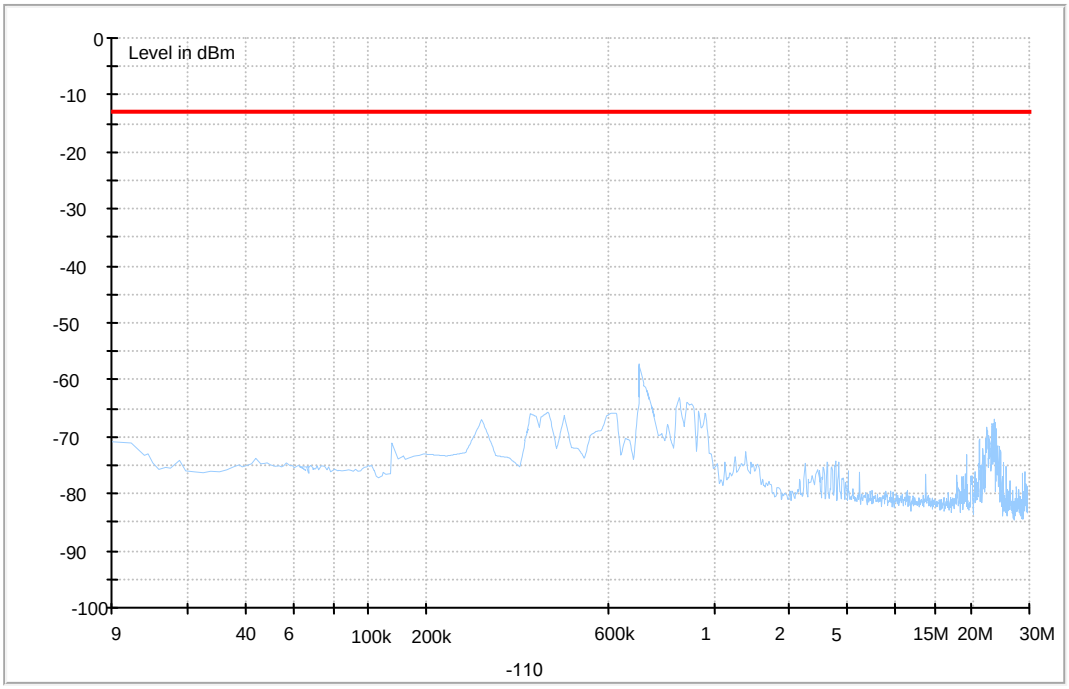


Traffic Mode (18GHz-26.5GHz)

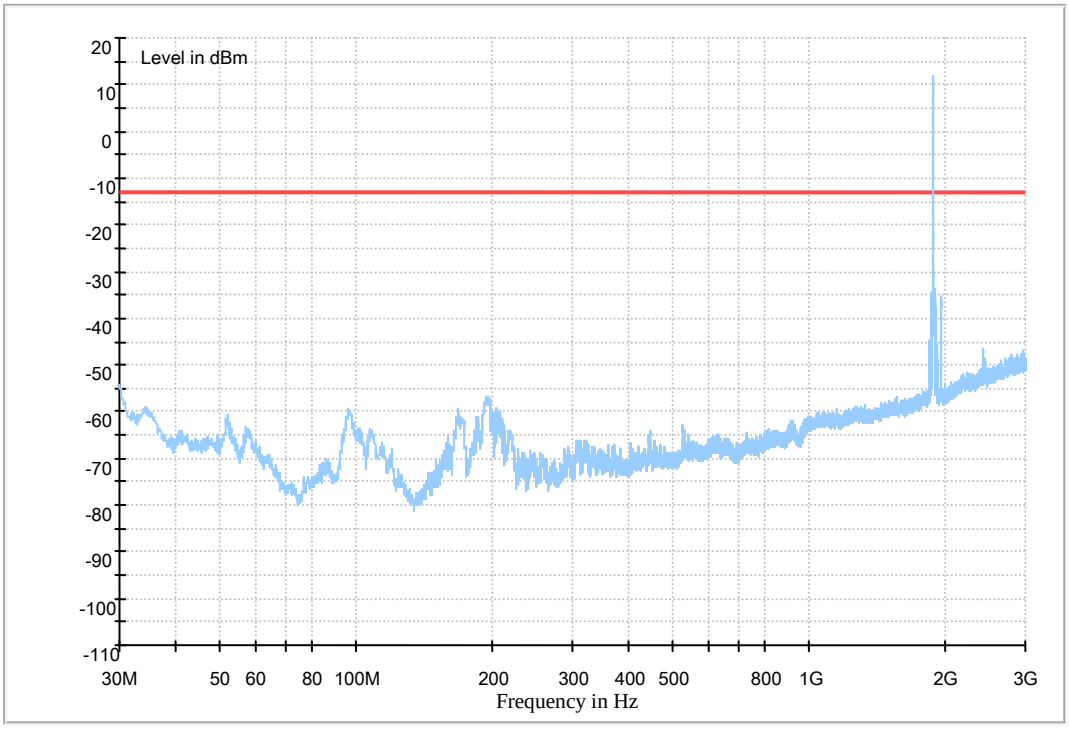


HSUPA 1900

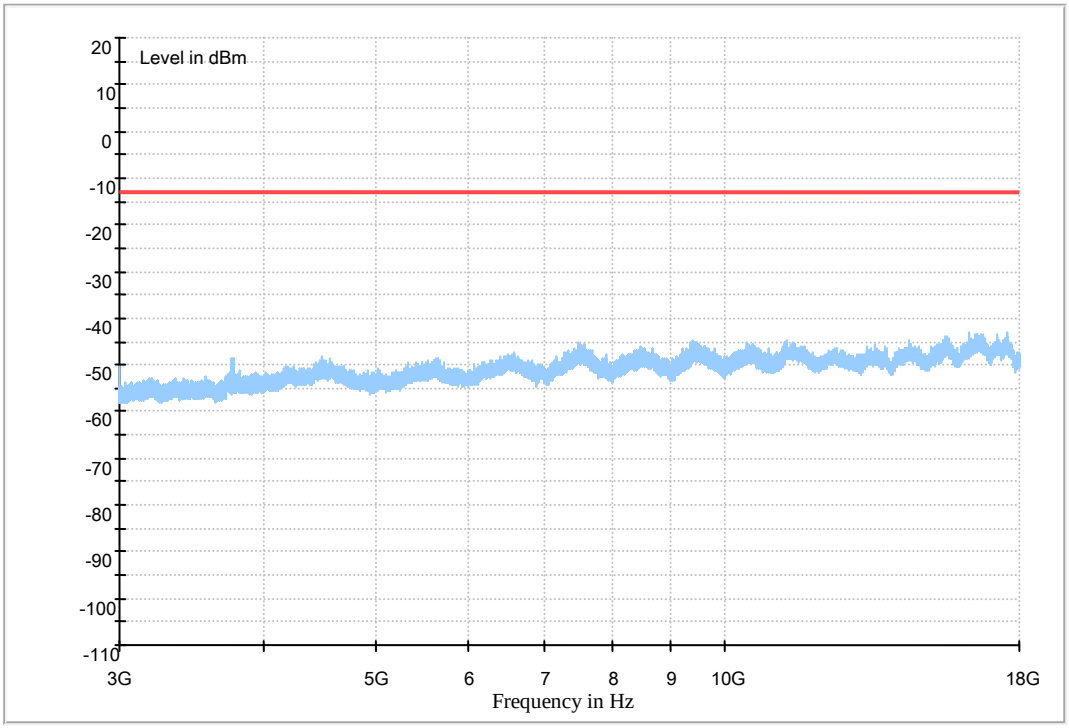
Traffic Mode (9kHz-30MHz)



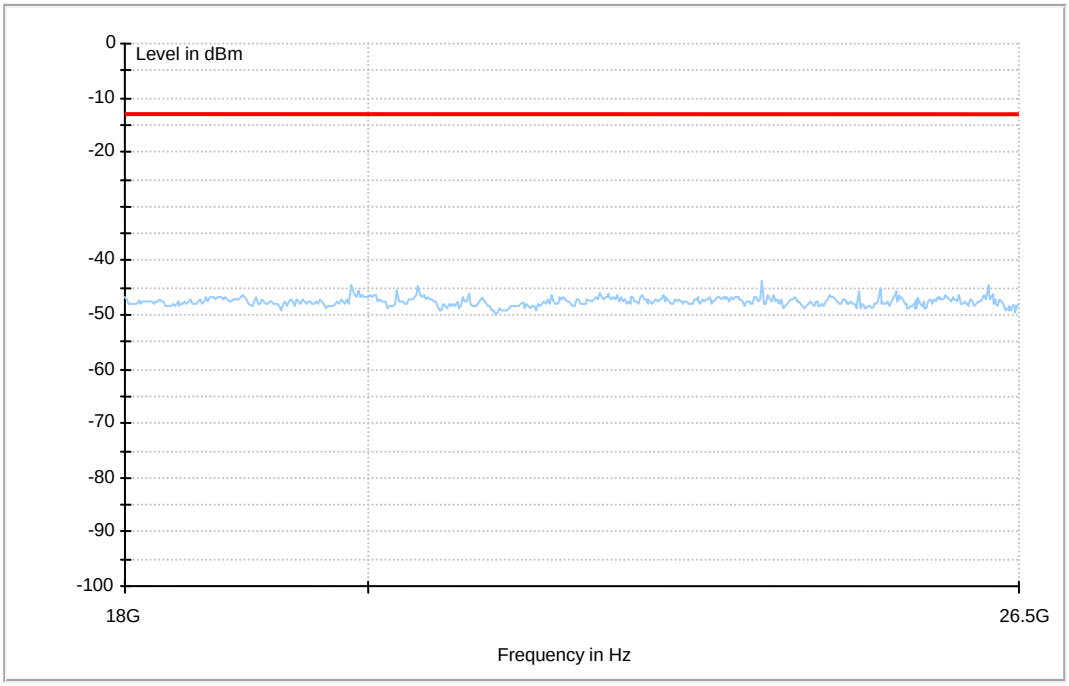
Traffic Mode (30MHz-3GHz)



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	-12	-0.00638	---	±2.5	Pass
			-20 °C	-7	-0.00372	---	±2.5	Pass
			-10 °C	13	0.00691	---	±2.5	Pass
			0 °C	24	0.01277	---	±2.5	Pass
			10 °C	-15	-0.00798	---	±2.5	Pass
			20 °C	-6	-0.00319	---	±2.5	Pass
			30 °C	14	0.00745	---	±2.5	Pass
			40 °C	-14	-0.00745	---	±2.5	Pass
			50 °C	15	0.00798	---	±2.5	Pass
TM 2	M	VN	-30 °C	-17	-0.00904	---	±2.5	Pass
			-20 °C	-13	-0.00691	---	±2.5	Pass
			-10 °C	9	0.00479	---	±2.5	Pass
			0 °C	-13	-0.00691	---	±2.5	Pass
			10 °C	-6	-0.00319	---	±2.5	Pass
			20 °C	29	0.01543	---	±2.5	Pass
			30 °C	-12	-0.00638	---	±2.5	Pass
			40 °C	-25	-0.01330	---	±2.5	Pass
			50 °C	15	0.00798	---	±2.5	Pass
TM 3	M	VN	-30 °C	19	0.01011	---	±2.5	Pass
			-20 °C	27	0.01436	---	±2.5	Pass
			-10 °C	-20	-0.01064	---	±2.5	Pass
			0 °C	13	0.00691	---	±2.5	Pass
			10 °C	19	0.01011	---	±2.5	Pass
			20 °C	-16	-0.00851	---	±2.5	Pass
			30 °C	-25	-0.01330	---	±2.5	Pass
			40 °C	19	0.01011	---	±2.5	Pass
			50 °C	8	0.00426	---	±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	-12	-0.00638	---	±2.5	Pass
			VN	-23	-0.01223	---	±2.5	Pass
			VH	8	0.00426	---	±2.5	Pass
TM 2	M	TN	VL	16	0.00851	---	±2.5	Pass
			VN	13	0.00691	---	±2.5	Pass
			VH	-20	-0.01064	---	±2.5	Pass
TM 3	M	TN	VL	10	0.00532	---	±2.5	Pass
			VN	9	0.00479	---	±2.5	Pass
			VH	29	0.01543	---	±2.5	Pass

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