



FCC&IC RF Test Report

**Product Name: HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone
with Bluetooth**

Model Number: HUAWEI U8651T, U8651T, U8651, Astro

**Report No: SYBH(Z-RF)002022012-2001
FCC ID: QISU8651T
IC ID: 6369A-U8651T**

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
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Applicant: Huawei Technologies Co., Ltd.
Address: Huawei Base, Bantian, Longgang District, Shenzhen
 518129, P.R. China
Date of Receipt Test Item: Jan.10, 2012
Start Date of Test: Jan.10, 2012
End Date of Test: Jan.17, 2012

Test Result: Pass

Approved By Senior Engineer Jan.18, 2012 Dai Linjun
 Date Name Signature

Reviewed By Jan.18, 2012 Cousy Xu
 Date Name Signature

Operator Jan.18, 2012 Huang Qiuliang
 Date Name Signature



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1 General Information

1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 2:2010, Subpart J
47 CFR FCC Part 22:2010, Subpart H
RSS-Gen Issue 3:
RSS-132 Issue 2:
measurement standard: ANSI/TIA-603-C:2004

1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.
Address: Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R.
China

1.3 Test Environment Condition

Ambient Temperature: 20 – 25 °C
Ambient Relative Humidity: 45 – 55 %
Atmospheric Pressure: 101 kPa



2 Summary

Table 1 Summary of results

Cellular Band			
Test Case	FCC Part No.	Requirements	Result
Transmitter Output Power	2.1046 & 22.913	ERP not exceed 7 W Peak-to-average ratio not exceed 13 dB	Pass
Modulation Characteristics	2.1047	Digital modulation	Pass
Occupied Bandwidth	2.1049	(Not specified)	Pass
Band Edges Compliance	2.1051 & 22.917	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 22.917	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/100 kHz, 30 MHz to 10 th harmonics	Pass
Field Strength of Spurious Radiation	2.1053 & 22.917	Below -13 dBm/100 kHz	Pass
Frequency Stability	2.1055 & 22.355	Maintained within the tolerances of ± 2.5 ppm	Pass

Table 2 Summary of results

Cellular Band			
Test Case	Requirements	Requirements	Result
Transmitter Output Power	RSS-Gen, §4.8; RSS-132, §4.4	ERP not exceed 6.3 W Peak-to-average ratio not exceed 13 dB	Pass
Modulation Characteristics	RSS-132, §4.2	Digital modulation	Pass
Occupied Bandwidth	RSS-Gen, §4.6	(Not specified)	Pass
Band Edges Compliance	RSS-Gen, §4.9; RSS-132, §4.5	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	RSS-Gen, §4.9; RSS-132, §4.5	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/100 kHz (EBW \leq 4 MHz), 30 MHz to 5 th harmonics Below -13 dBm/1 MHz (EBW > 4 MHz), 30 MHz to 5 th harmonics	Pass
Field Strength of Spurious Radiation	RSS-Gen, §4.9; RSS-132, §4.5	Below -13 dBm/100 kHz (EBW \leq 4 MHz) Below -13 dBm/1 MHz (EBW > 4 MHz)	Pass
Frequency Stability	RSS-Gen, §4.7; RSS-132, §4.3	Maintained within the tolerances of ± 1.5 ppm	Pass
Receiver Spurious Emissions	RSS-Gen, §4.10; RSS-Gen, §6; RSS-132, §4.6	Below 2 nW/4 kHz (-57 dBm/4 kHz), for 30 MHz - 1000 MHz Below 5 nW/MHz (-53 dBm/MHz), for above 1 GHz	Pass



3 Product Description

3.1 Production Information

3.1.1 General Description

HUAWEI U8651T, U8651T, U8651, Astro subscriber equipment in the WCDMA/GSM system. The HSDPA/UMTS frequency band is Band IV and Band II and Band V. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850 and WCDMA BAND V test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSDPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video, MMS service, GPS,AGPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.1.2 Board

Table 1 Board Information

HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth		
HUAWEI U8651T, U8651T, U8651, Astro		
Board and Module		
Hardware Version	Software Version	Serial Number
HD4U865M	U8651V100R001USAC85B865SP01	G9E2A11191600138

3.1.3 Adapter

AC/DC Adapter Model	HW-050100U1W
Manufacturer	Huawei Technologies Co., Ltd.
Input Voltage	~100-240V 50/60Hz 0.2A
Output Voltage	5V  1A
Rated Power	5W

3.1.4 Battery

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB5K1H Rated capacity: 1400mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V



4 Test Description

4.1.1 Supported Frequency Range

Characteristics	Description
Downlink	869 to 894 MHz;
Uplink	824 to 849 MHz

4.1.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	GSM UMTS
TX Output Power (per Antenna Port)	GSM system: 33dBm UMTS system: 24dBm
Channel Spacing(s) / Bandwidth(s)	GSM system: 200 kHz UMTS system: 5 MHz
Designation of Emissions	GSM system: 249KGXW (GMSK modulation), 246KG7W (8PSK modulation)) UMTS system: 4M18F9W

4.1.3 Antenna Gain

Antenna Gain(dBi):	-2
Antenna Gain(dBd):	-4.15

4.1.4 Power Supply

	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to Adapter (DC power)	DC Voltage Nominal: $\overline{\equiv}$ +3.7V DC Voltage Range: $\overline{\equiv}$ +3.6 V to +4.2V



5 General Test Conditions / Configurations

5.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Bottom (B)	Middle (M)	Top (T)
TM1/TM2	TX	Channel 128	Channel 192	Channel 251
		824.2MHz	837.0MHz	848.8MHz
	RX	Channel 128	Channel 192	Channel 251
		869.2MHz	882.0MHz	893.8MHz
TM3/TM4/TM5	TX	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4MHz	846.6MHz
	RX	Channel 4357	Channel 4407	Channel 4458
		871.4MHz	881.4MHz	891.6MHz

5.2 Test Modes

Test Mode	Test Modes Description
TM1	GSM/GPRS, GMSK modulation
TM2	EDGE, 8PSK modulation
TM3	WCDMA QPSK modulation
TM4	HSDPA 16QAM modulation

5.3 Test Environments

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.6V
	VN	3.7V
	VH	4.2V

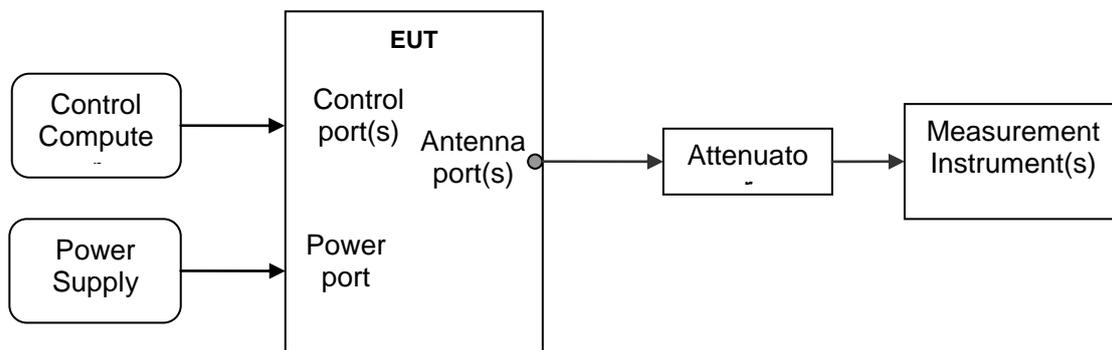
NOTE: VL= lower extreme test voltages
 VN= nominal voltage
 VH= upper extreme test voltage
 TN= nominal temperature

5.4 Test Setups

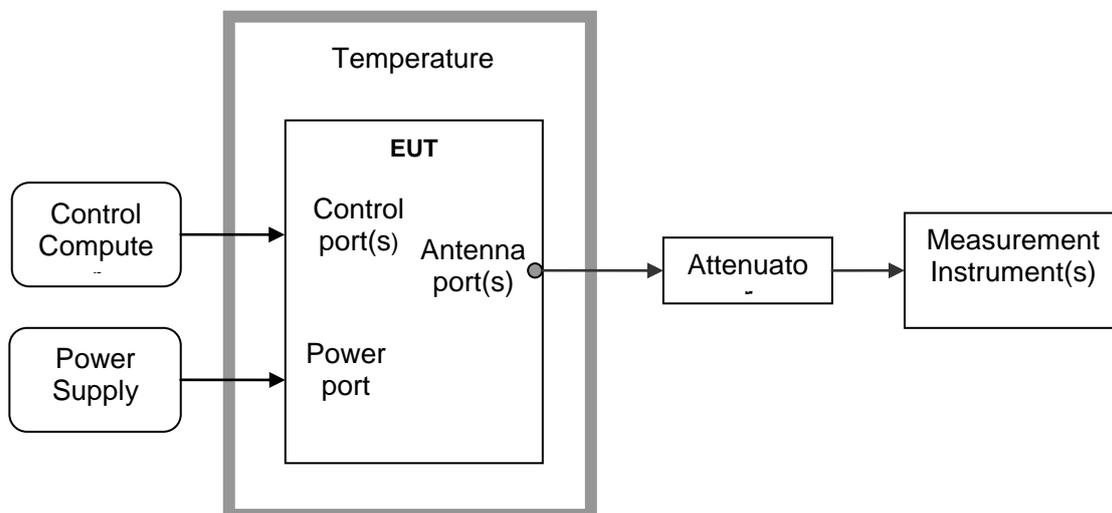
5.4.1 General Test Setup Configurations

Configuration	Description
Test Antenna Ports	Until otherwise declared, all TX tests are ONLY performed at the main Transmitter antenna port (e.g. TRXA, TXA and so on) of the EUT, and all RX tests are ONLY performed at the main Receiver antenna port (e.g. TRXA, RXA and so on) of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

5.4.2 Test Setup 1



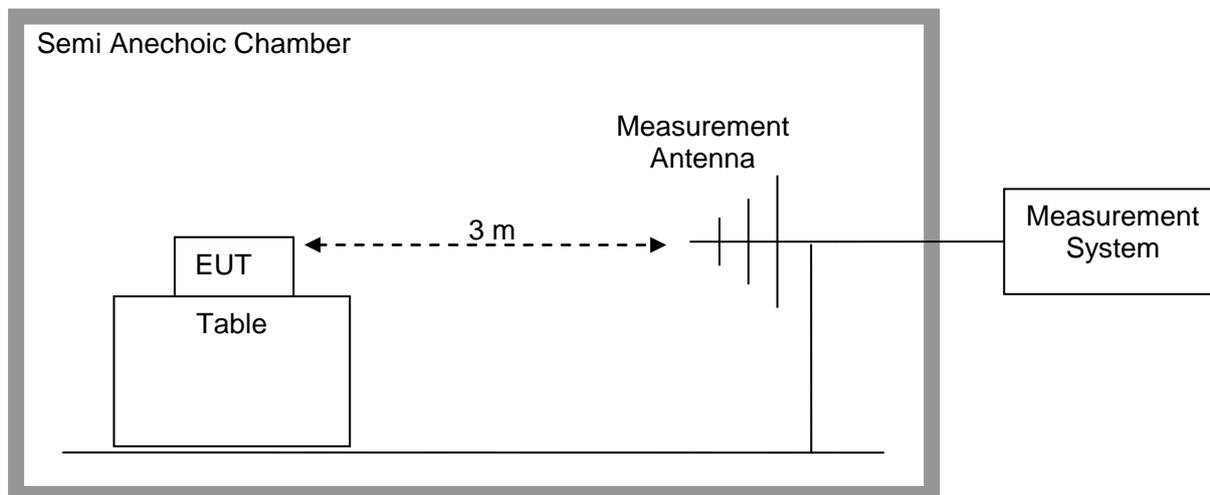
5.4.3 Test Setup 2



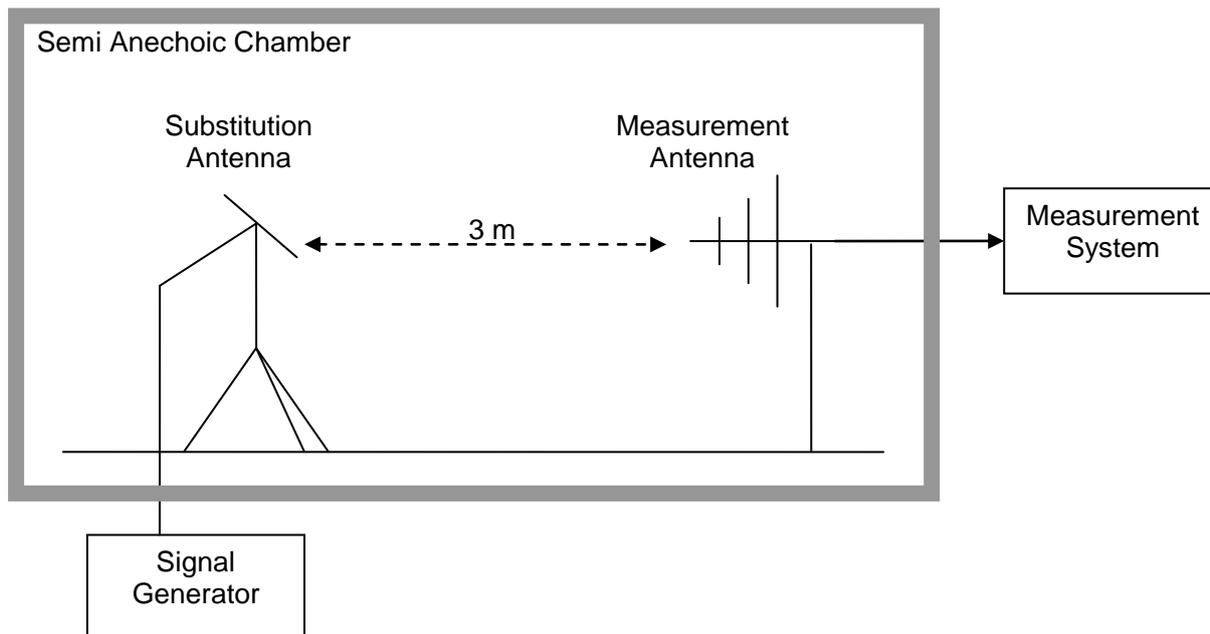
5.4.4 Test Setup 3

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

Step 1: Pre-test



Step 2: Substitution method to verify the maximum ERP





5.5 Test Conditions

Test Case	Test Conditions	
Transmitter Output Power	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1 & Setup 3
	Detector	RMS
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3/TM4
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	B, T
	Test Mode	TM1/TM2/TM3
Spurious Emission at Antenna Terminals	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Field Strength of Spurious Radiation	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	PK
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3/TM4
Frequency Stability	Test Configuration	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) 85%, 100% and 115% of Rated Voltage at Ambient Temperature.
	Test Setup	Test Setup 2



Test Case	Test Conditions	
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3



6 Main Test Instruments

Table 2 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Apr.20,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Jan.03,2013
Signal generator	Agilent	E8257D	MY49281095	Jul.9.2012
Test receiver	R&S	ESU26	100150	May.29.2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	919/1009	Jan.29.2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	Jan.29.2012
Horn Antenna	R & S	HF906	100683	May.15, 2012
Horn Antenna	R & S	HF906	100684	Jul.01, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-357	May.15, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-356	May.15, 2012



7 Test Results

No.	Test Item	Test Result
1	Transmitter Output Power	Appendix A
2	Modulation Characteristics	Appendix B
3	Occupied Bandwidth	Appendix C
4	Band Edges Compliance	Appendix D
5	Spurious Emission at Antenna Terminals	Appendix E
6	Field Strength of Spurious Radiation	Appendix F
7	Frequency Stability	Appendix G
8	Receiver Spurious Emissions	Appendix H
9	Photos of Test Setup	Appendix I

NOTE: The Appendix I only photos of Test Setup, no test data.



8 Measurement Uncertainty

For a 95% confidence level ($k=2$), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
Transmitter Output Power	Power (dBm)	U =0.39 dB
Occupied Bandwidth	Magnitude (%)	U=0.2%
Band Edge Compliance	Disturbance Power (dBm)	U=2.0 dB
Conducted Spurious Emissions	Disturbance Power (dBm)	U=2.0 dB
Field Strength of Spurious Radiation	ERP (dBm)	U=4.6 dB (30 MHz – 1GHz) U=3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy (ppm)	U=0.21 ppm

The END



Appendix A

Transmitter Output Power According to FCC Part 2.1046 & Part 22.913 & RSS-132



Conducted Power of Transmitter

Table 1 Measurement Results

		RF Output Power (Conducted)					
TEST CONDITIONS		Channel128(B)		Channel192(M)		Channel251(T)	
		824.2MHz		837.0MHz		848.8MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM1		31.42	38.50	31.52	38.50	31.53	38.50
TM2		27.11	38.50	27.23	38.50	27.26	38.50
TEST CONDITIONS		Channel4132(B)		Channel4182(M)		Channel4233(T)	
		826.4MHz		836.4MHz		846.6MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM3		22.12	38.50	21.96	38.50	22.16	38.50
TM4	Case1	22.03	38.50	21.85	38.50	22.01	38.50
	Case2	21.85	38.50	21.71	38.50	21.87	38.50
	Case3	21.35	38.50	21.19	38.50	21.40	38.50
	Case4	21.42	38.50	21.40	38.50	21.37	38.50



Peak-to-Average Ratio

Table 1 Measurement Results

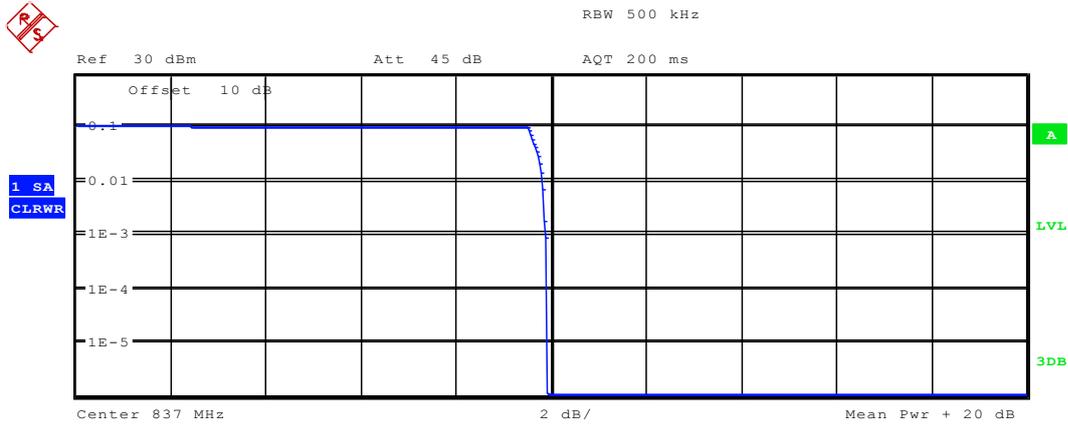
TEST CONDITIONS		Channel128(B)		Channel192(M)		Channel251(T)	
		824.2MHz		837.0MHz		848.8MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM1		9.57	13.0	9.90	13.0	9.41	13.0
TM2		9.36	13.0	9.74	13.0	9.28	13.0
TEST CONDITIONS		Channel4132(B)		Channel4182(M)		Channel4233(T)	
		826.4MHz		836.4MHz		846.6MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM3		2.01	13.0	3.30	13.0	2.35	13.0
TM4	Case1	3.01	13.0	3.01	13.0	2.39	13.0
	Case2	2.36	13.0	3.12	13.0	2.22	13.0
	Case3	2.78	13.0	2.98	13.0	2.68	13.0
	Case4	2.24	13.0	2.86	13.0	2.89	13.0



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

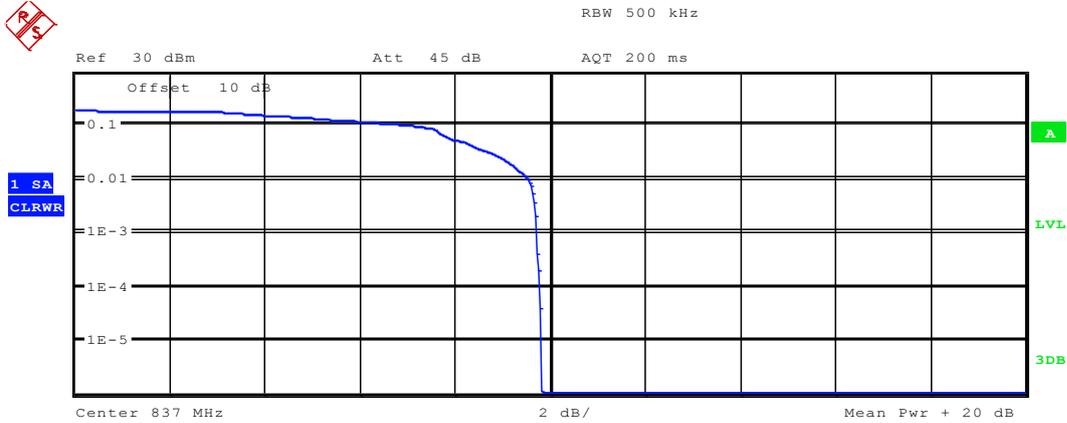


Complementary Cumulative Distribution Function
 NOF samples: 100000, Usable BW: 424kHz

Trace 1	
Mean	14.53 dBm
Peak	24.44 dBm
Crest	9.92 dB
10 %	9.52 dB
1 %	9.84 dB
.1 %	9.90 dB
.01 %	9.94 dB



TM2



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

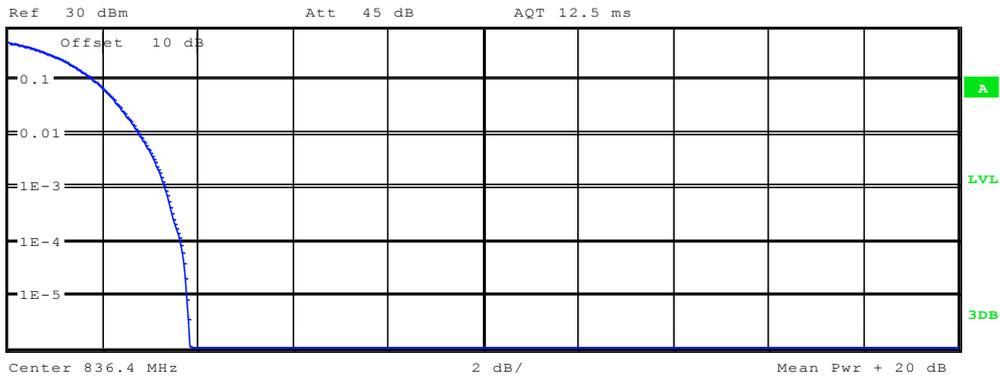
Trace 1	
Mean	11.26 dBm
Peak	21.06 dBm
Crest	9.80 dB
10 %	7.21 dB
1 %	9.55 dB
.1 %	9.74 dB
.01 %	9.81 dB



TM3/TM4



RBW 5 MHz



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

		Trace 1	
Mean		14.40	dBm
Peak		18.23	dBm
Crest		3.83	dB
10 %		1.79	dB
1 %		2.76	dB
.1 %		3.30	dB
.01 %		3.65	dB



Effective Radiated Power of Transmitter (ERP)

Table 2 Substitution Results

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	27.27	Dipole Ant.	30.64	-2.75	0.6	27.29	38.5	Pass
TM1	837.0	27.37	Dipole Ant.	30.86	-2.87	0.6	27.39	38.5	Pass
TM1	848.8	27.38	Dipole Ant.	30.85	-2.85	0.6	27.4	38.5	Pass
TM2	824.2	22.96	Dipole Ant.	26.33	-2.75	0.6	22.98	38.5	Pass
TM2	837.0	23.08	Dipole Ant.	26.57	-2.87	0.6	23.1	38.5	Pass
TM2	848.8	23.11	Dipole Ant.	26.58	-2.85	0.6	23.13	38.5	Pass
TM3	826.4	17.97	Dipole Ant.	21.34	-2.75	0.6	17.99	38.5	Pass
TM3	836.4	17.81	Dipole Ant.	21.3	-2.87	0.6	17.83	38.5	Pass
TM3	846.6	18.01	Dipole Ant.	21.48	-2.85	0.6	18.03	38.5	Pass

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

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

b, SGP=Signal Generator Level

The END



Appendix B

Modulation Characteristics

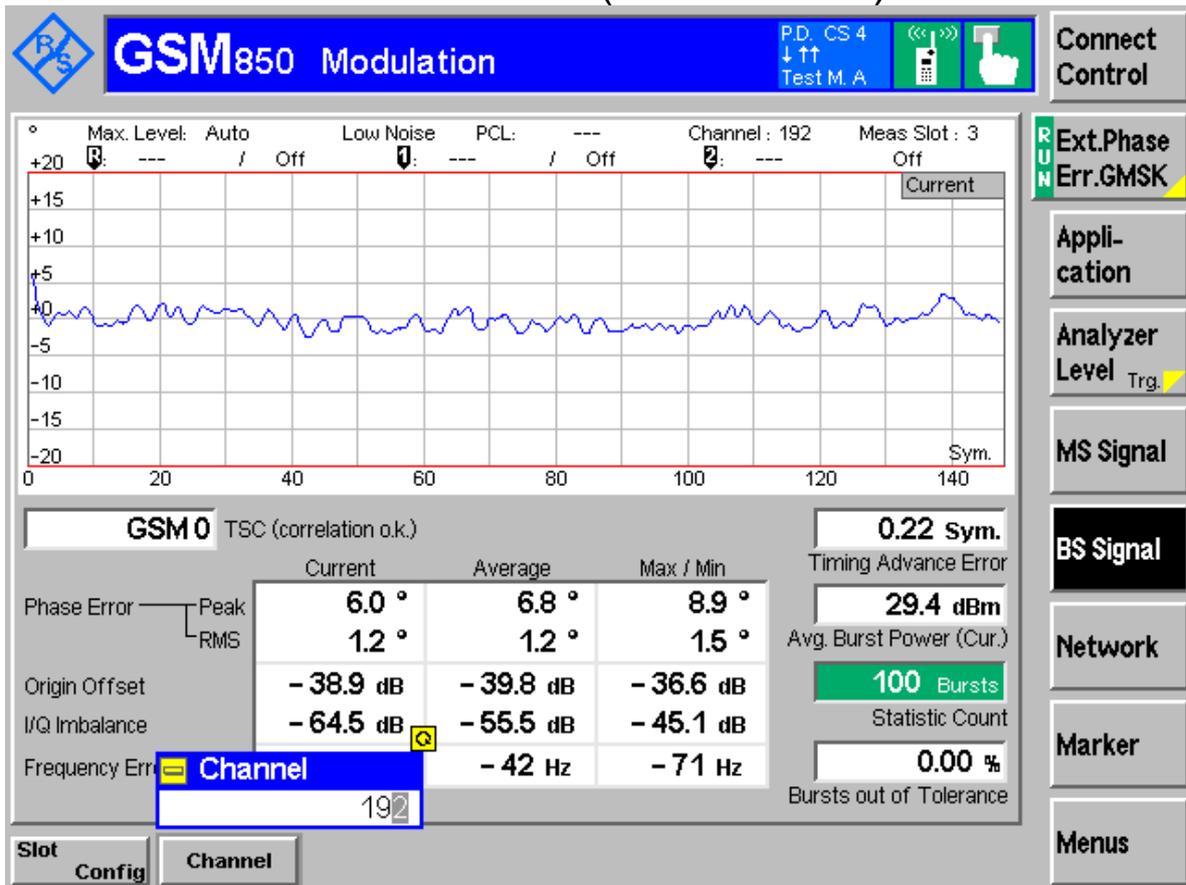
According to FCC Part 2.1047 & Part22 Subpart H
& RSS-132



1 Test Plot

1.1 Test Mode = TM 1

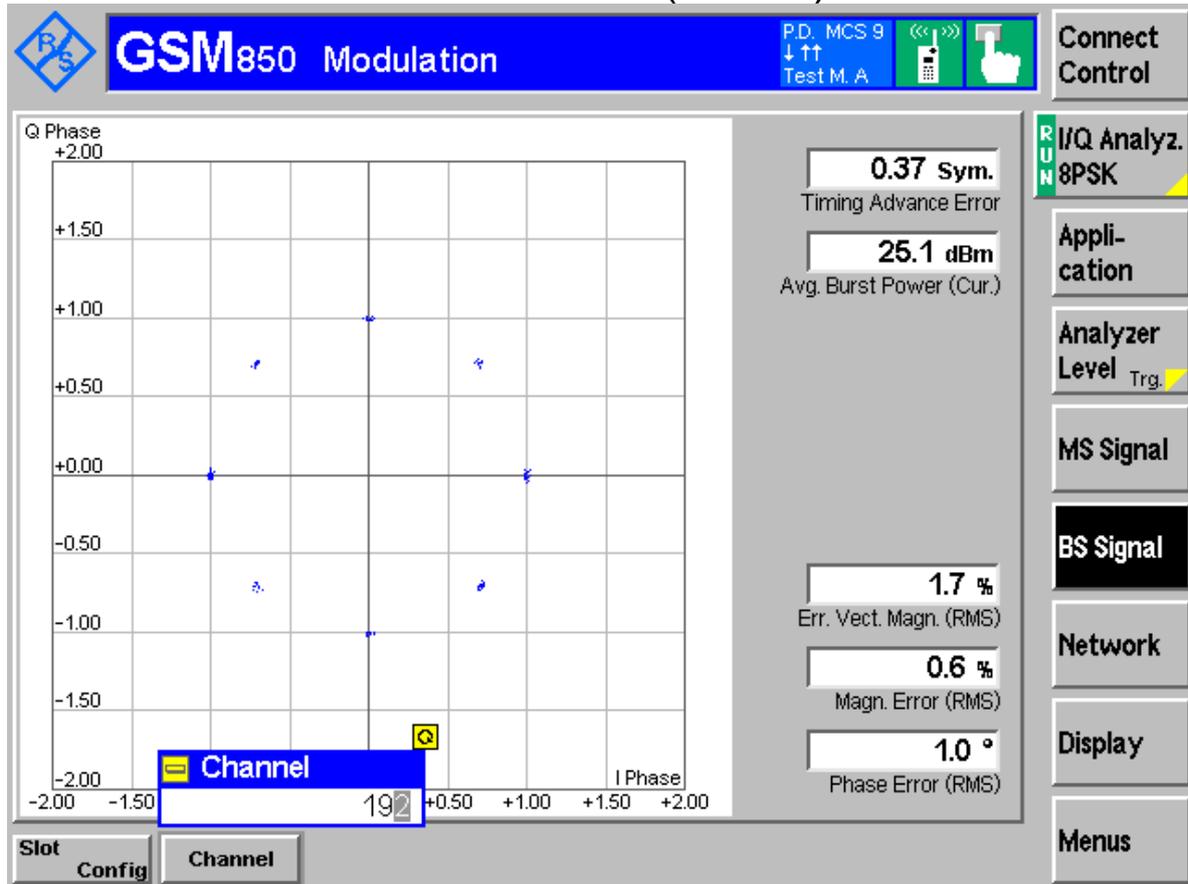
Channel 192 (GPRS/GSM)





1.2 Test Mode = TM 2

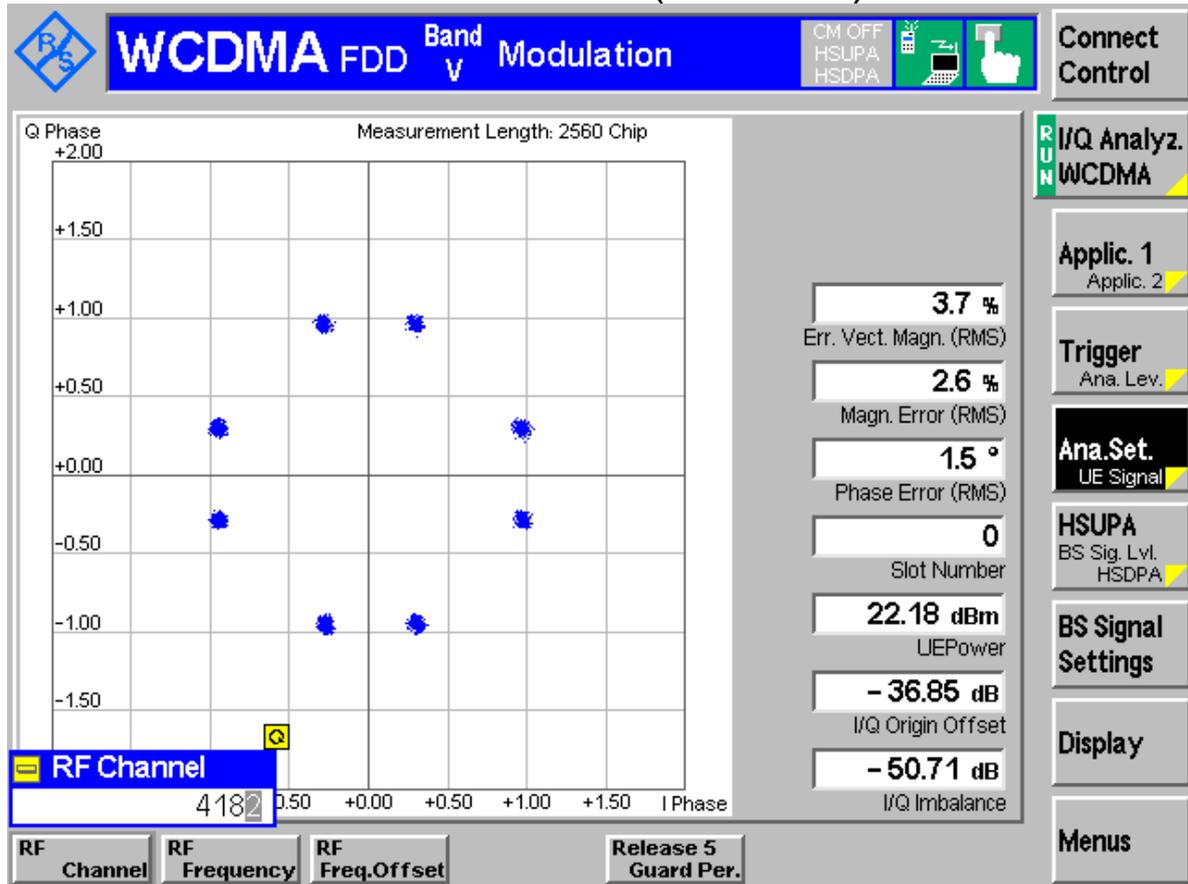
Channel 192 (EDGE)





1.3 Test Mode = TM 3

Channel 4182 (WCDMA)



The END



Appendix C

Occupied Bandwidth

According to FCC Part 2.1049 & Part 22 Subpart H
& RSS-132



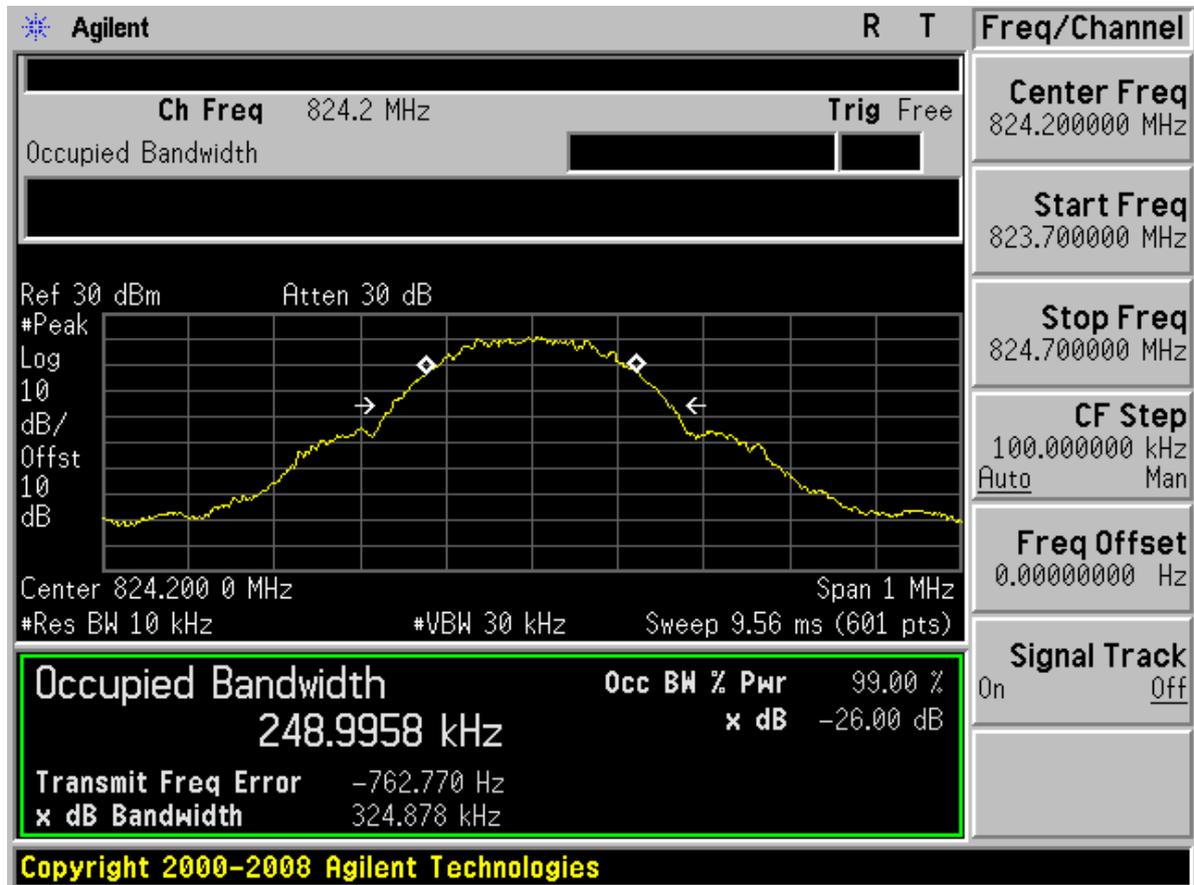
Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [kHz]	-26dB BW [kHz]	Verdict
TM1	128	249.0	324.9	Pass
	192	246.8	319.6	Pass
	251	241.2	316.5	Pass
TM2	128	245.6	317.7	Pass
	192	243.2	316.0	Pass
	251	240.8	320.7	Pass
Test Mode	RF Channel	Occupied Bandwidth [MHz]	-26dB BW [MHz]	Verdict
TM3	4132	4.17	4.66	Pass
	4182	4.17	4.65	Pass
	4233	4.18	4.66	Pass



Channel 128(TM1:GPRS/GSM)



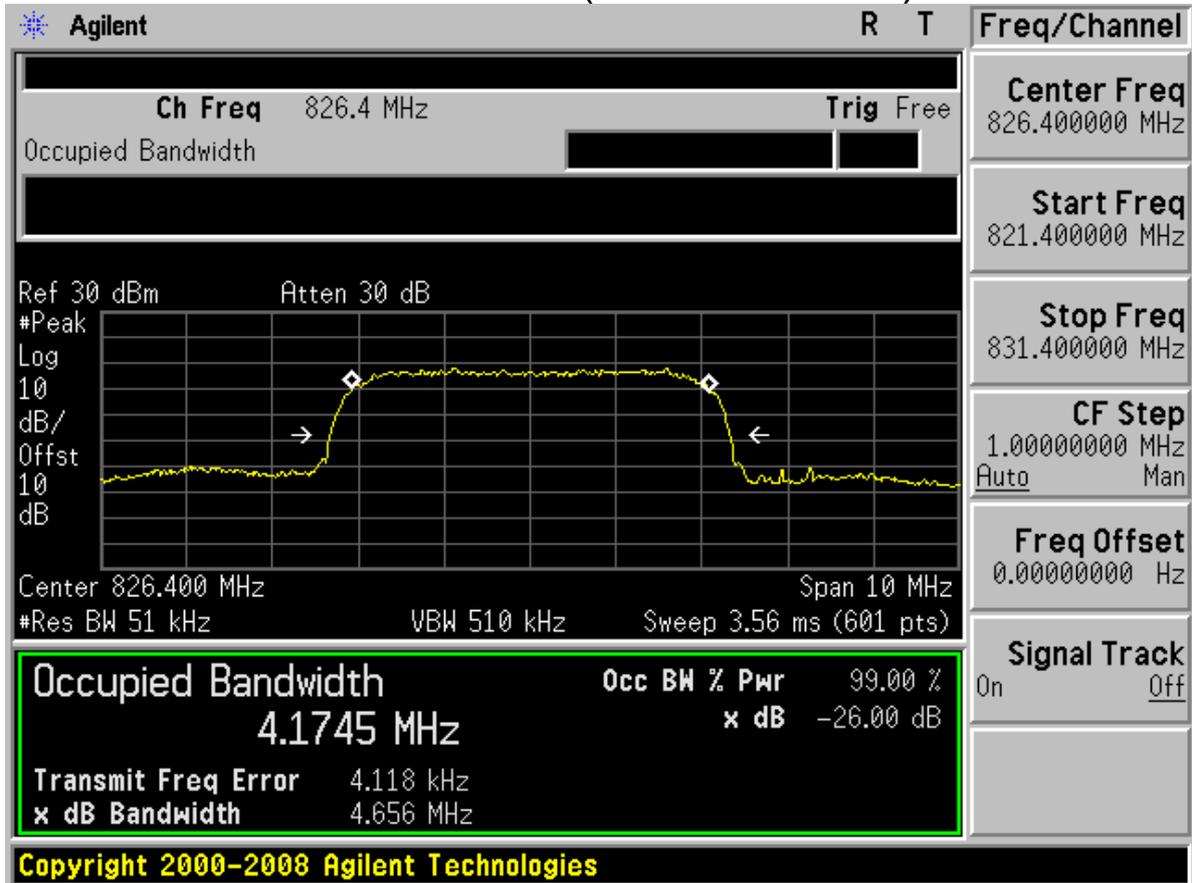


Channel 128(TM2:EDGE)



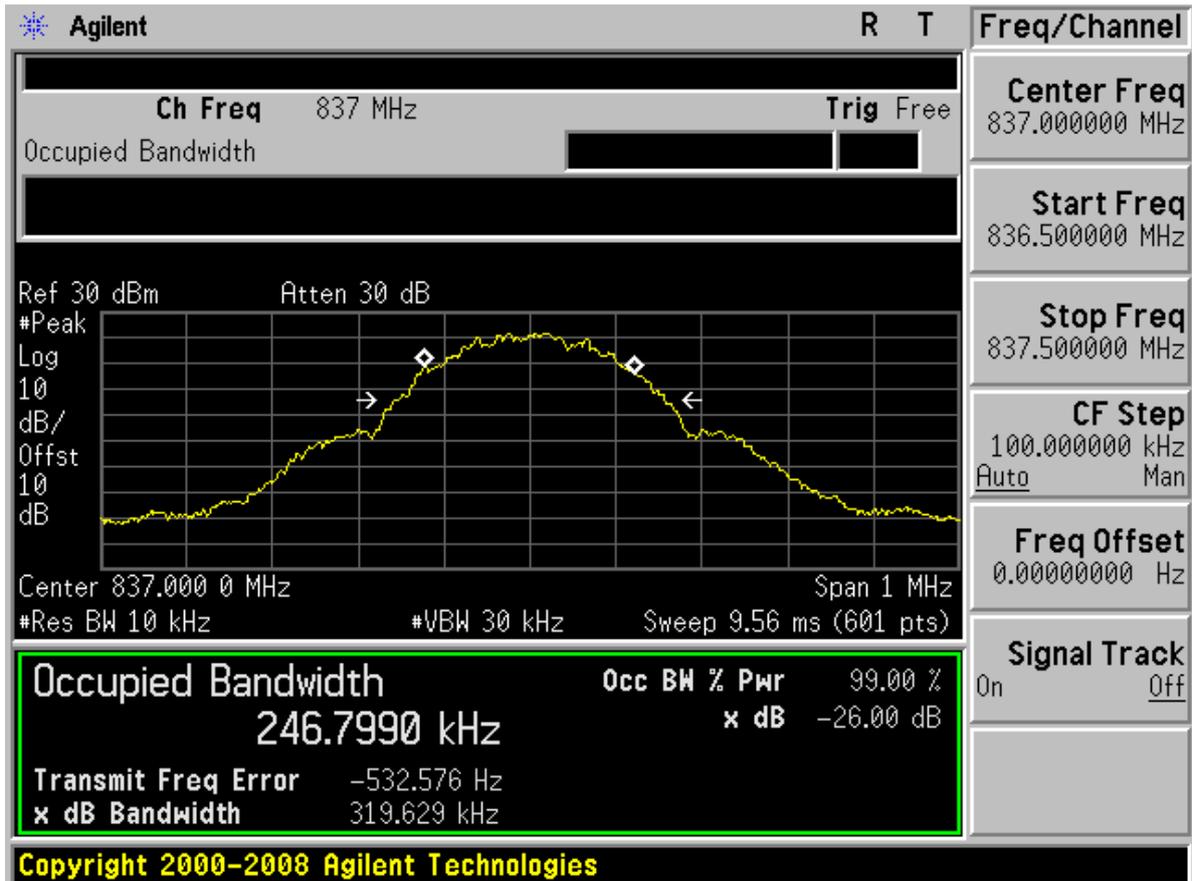


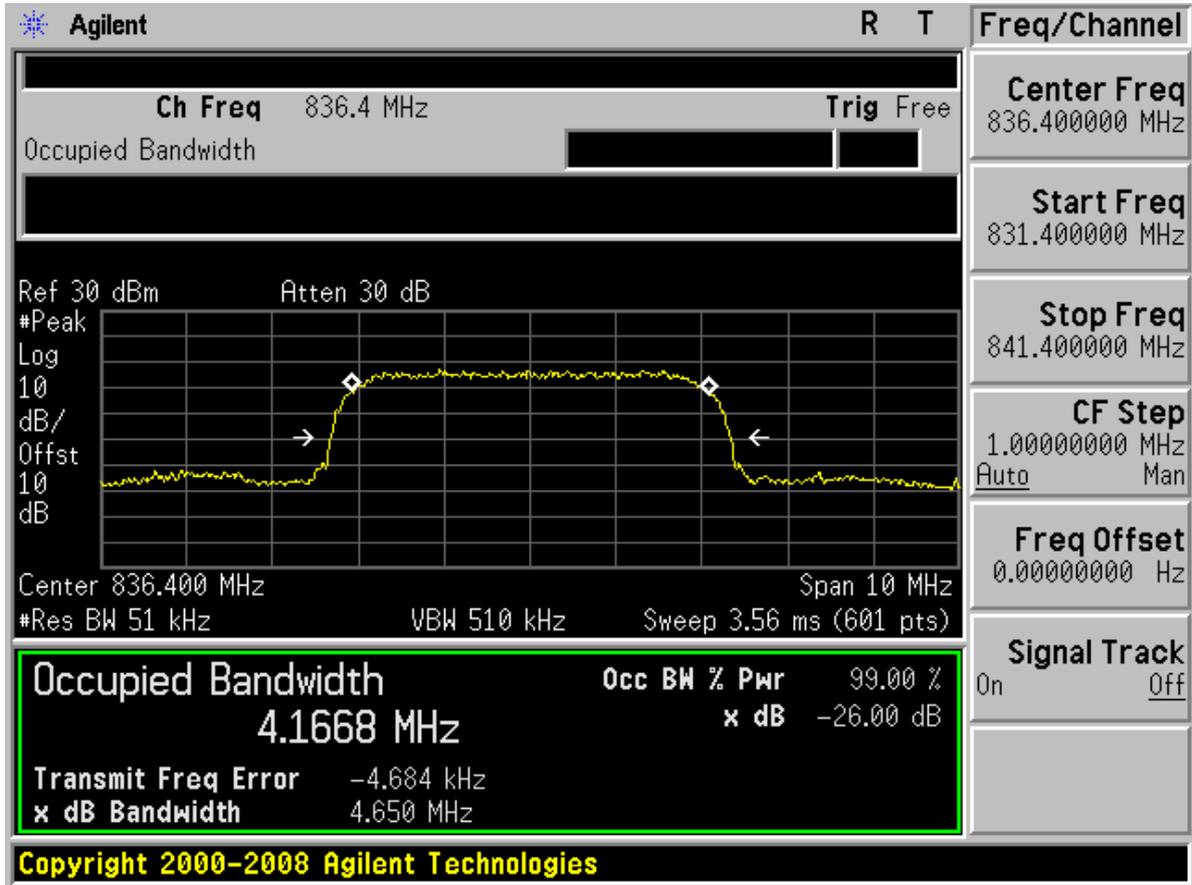
Channel 4132(TM3: WCDMA)





Channel 192(TM1:GPRS/GSM)







Channel 251(TM1:GPRS/GSM)



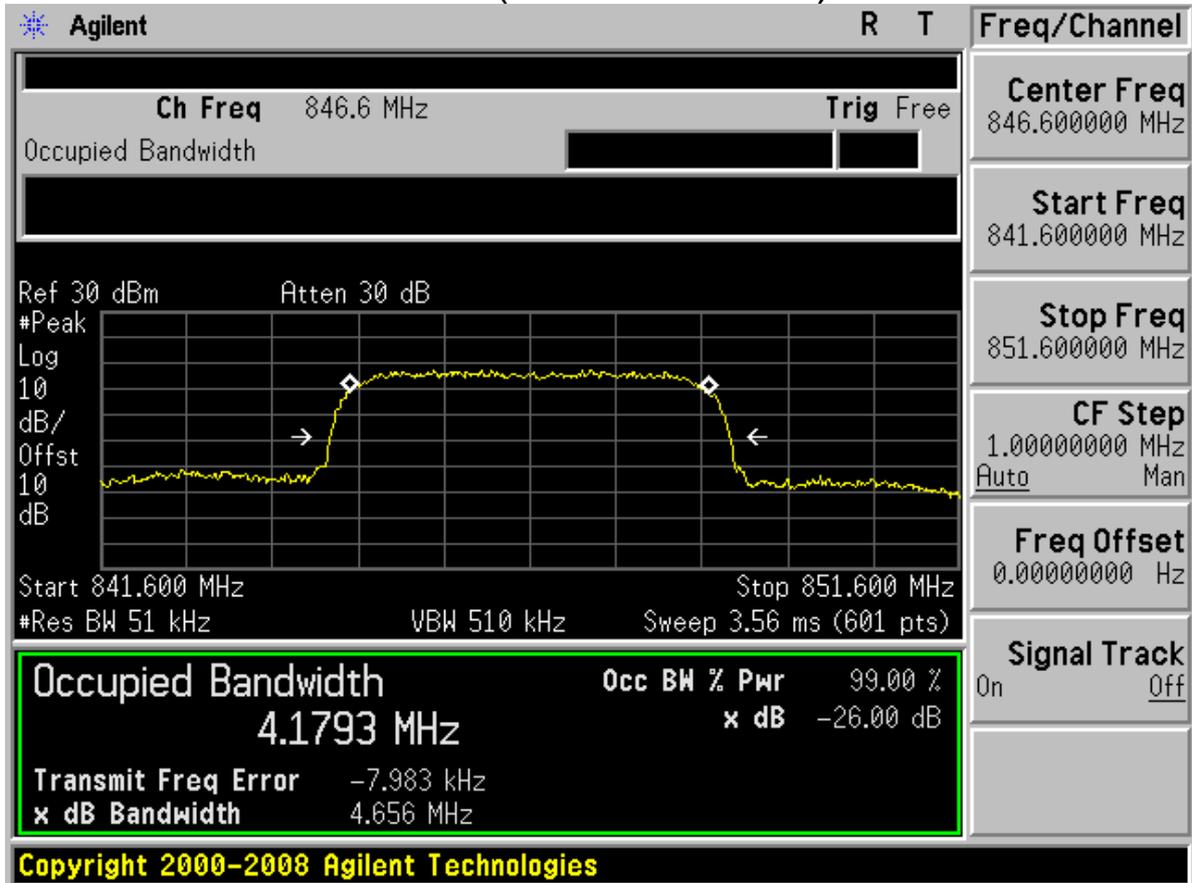


Channel 251(TM2:EDGE)





Channel 4233(TM3: WCDMA)



The END



Appendix D

Band Edges Compliance

According to FCC Part 2.1051 & Part 22 Subpart H
& RSS-132



26dB Occupied Bandwidth

Note: All relevant operation modes have been tested, and the widest case data is included in this table.

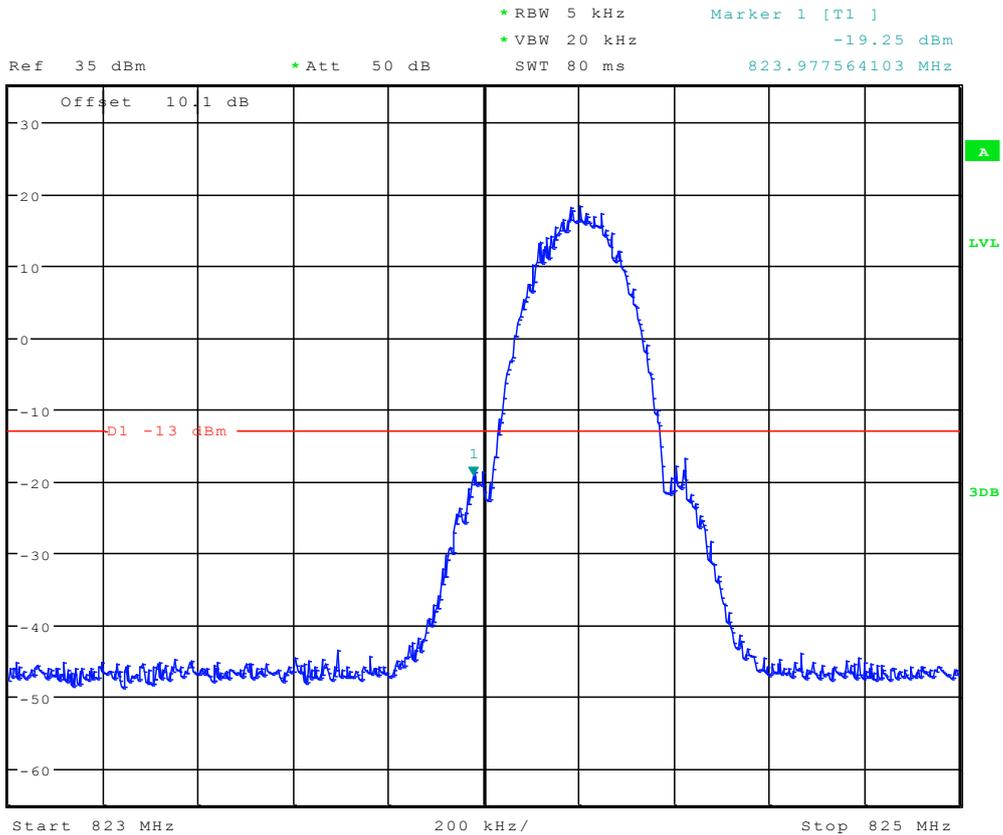
Mode	-26dB BW [kHz]	RBW to Measure Band Edge [kHz]
TM1/TM2	324.9	≥ 3.25 , used 5
TM3	4660	≥ 46.6 used 50



TM1:GPRS/GSM

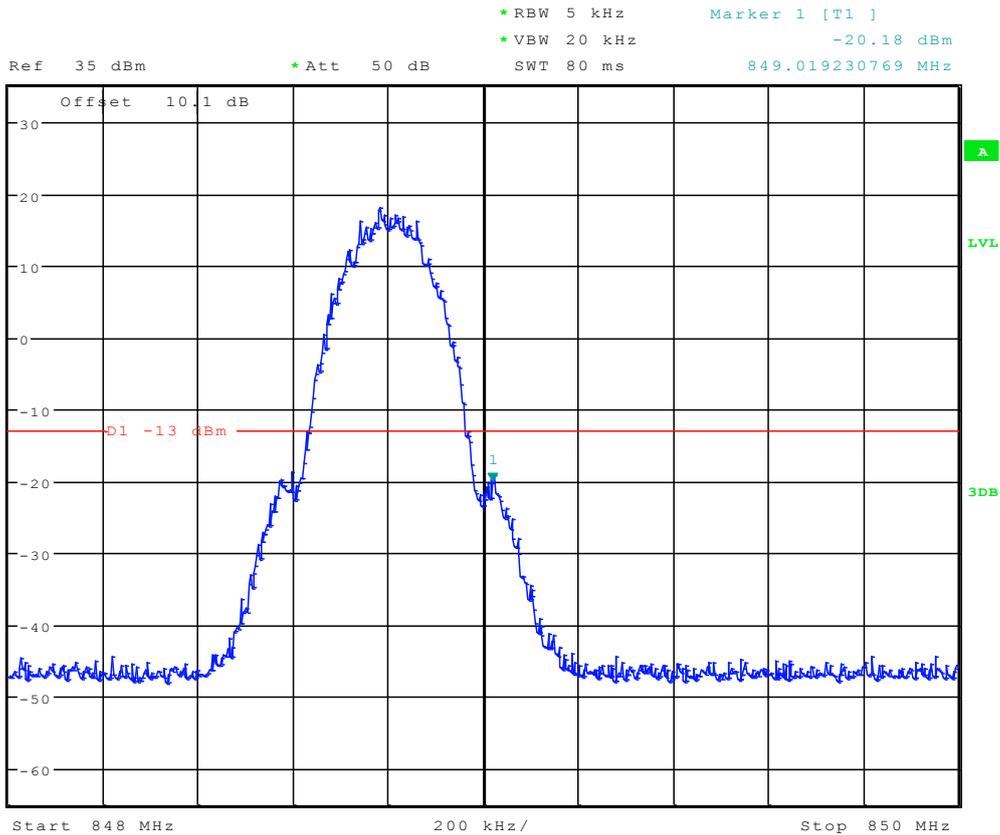
Left Edge

Channel 128





Right Edge Channel 251

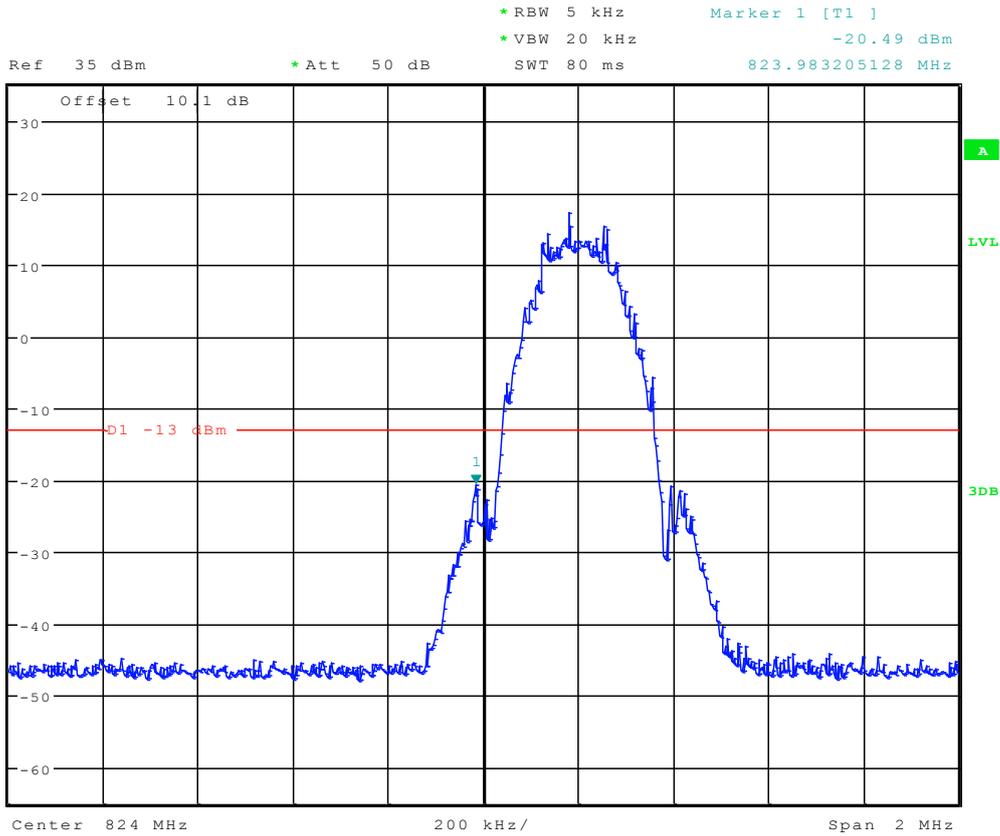




TM2:EDGE

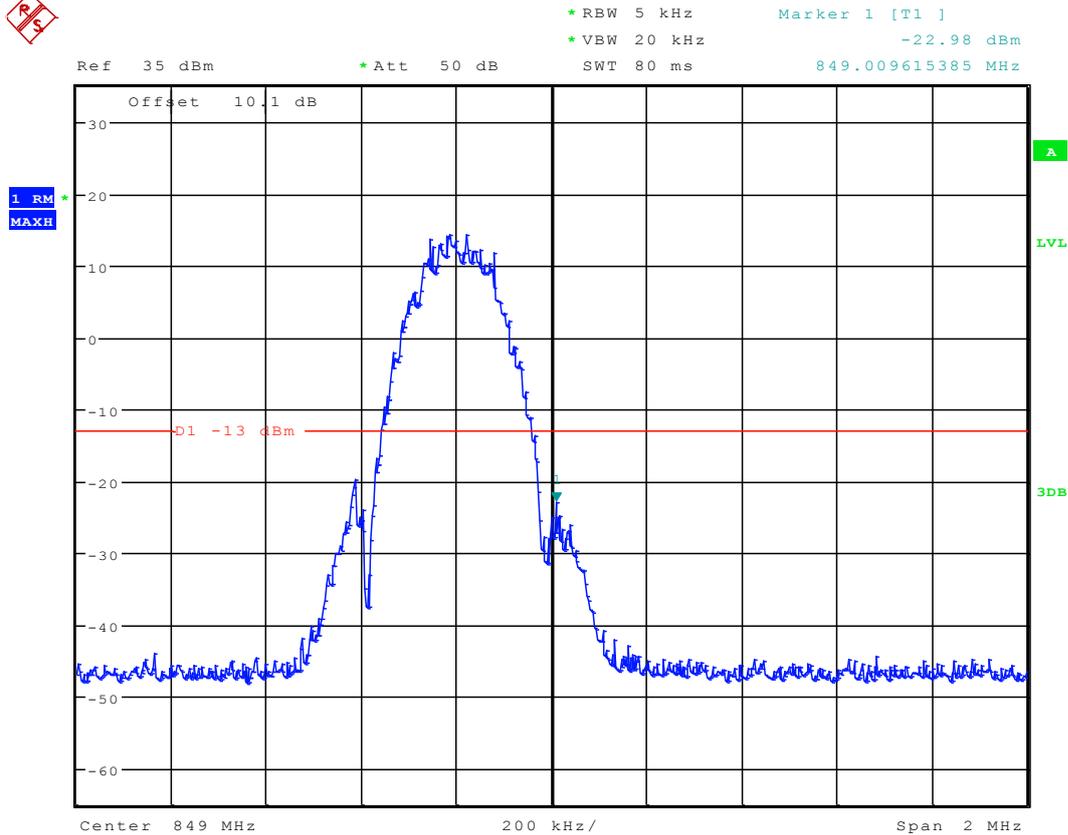
Left Edge

Channel 128





Right Edge Channel 251

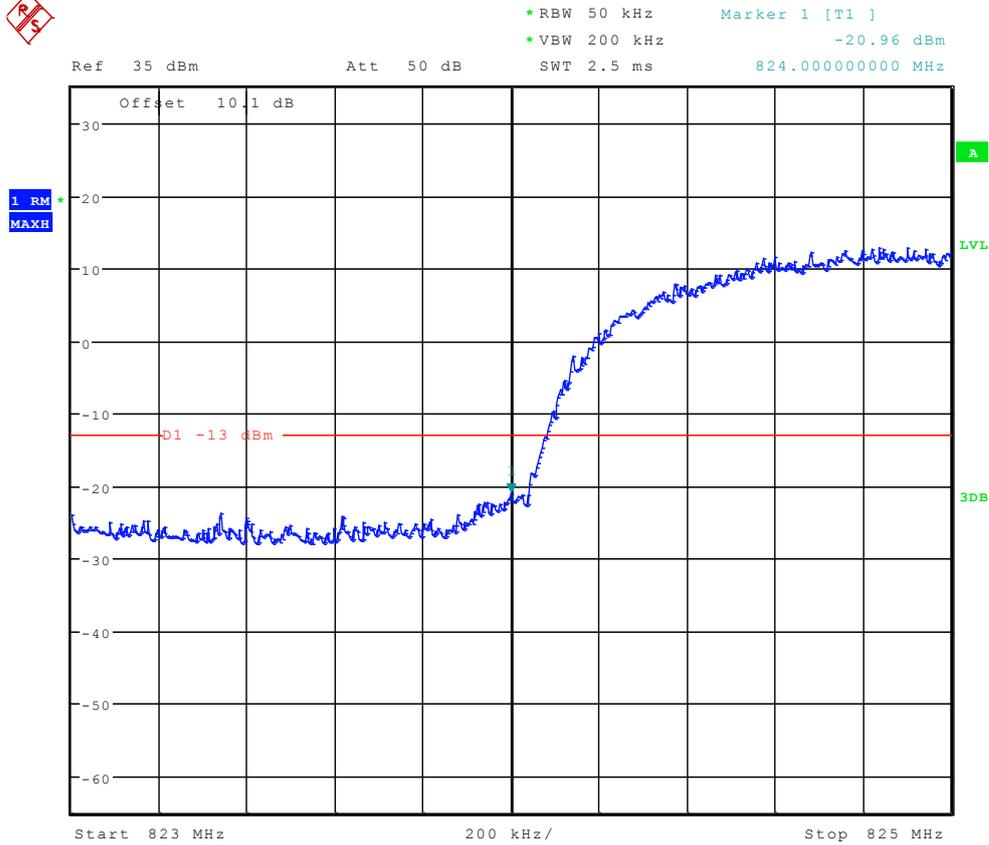




TM3: WCDMA

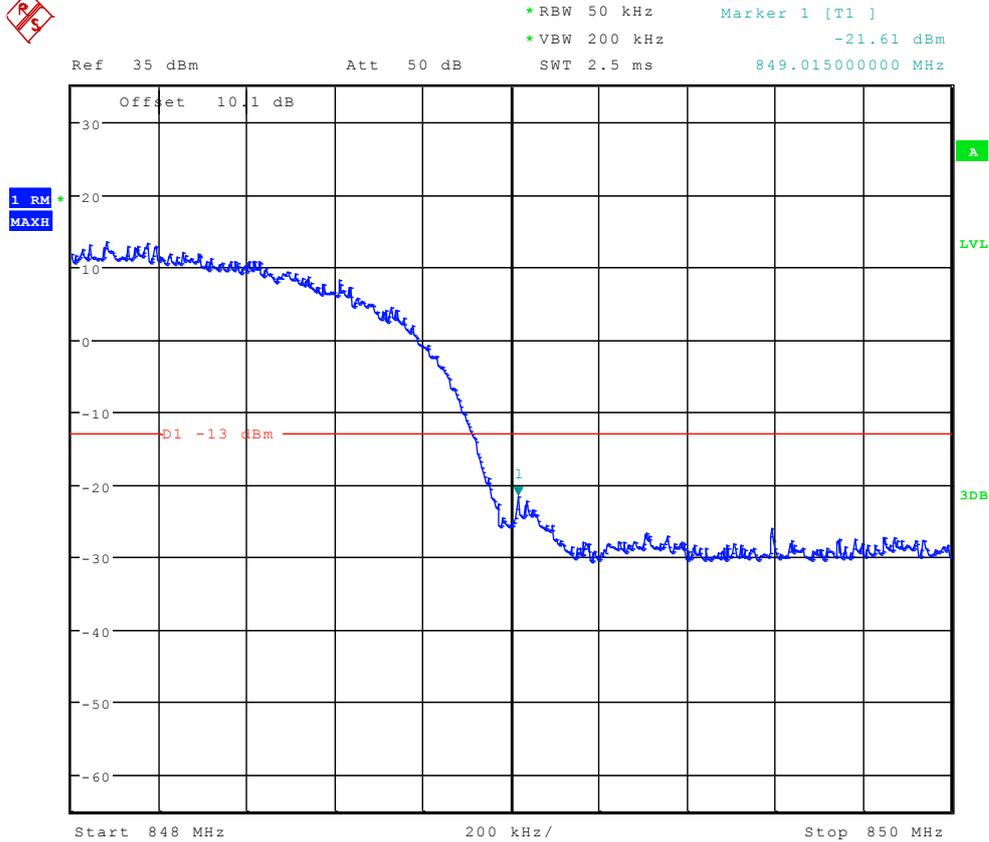
Left Edge

Channel 4132





Right Edge Channel 4233



The END



Appendix E

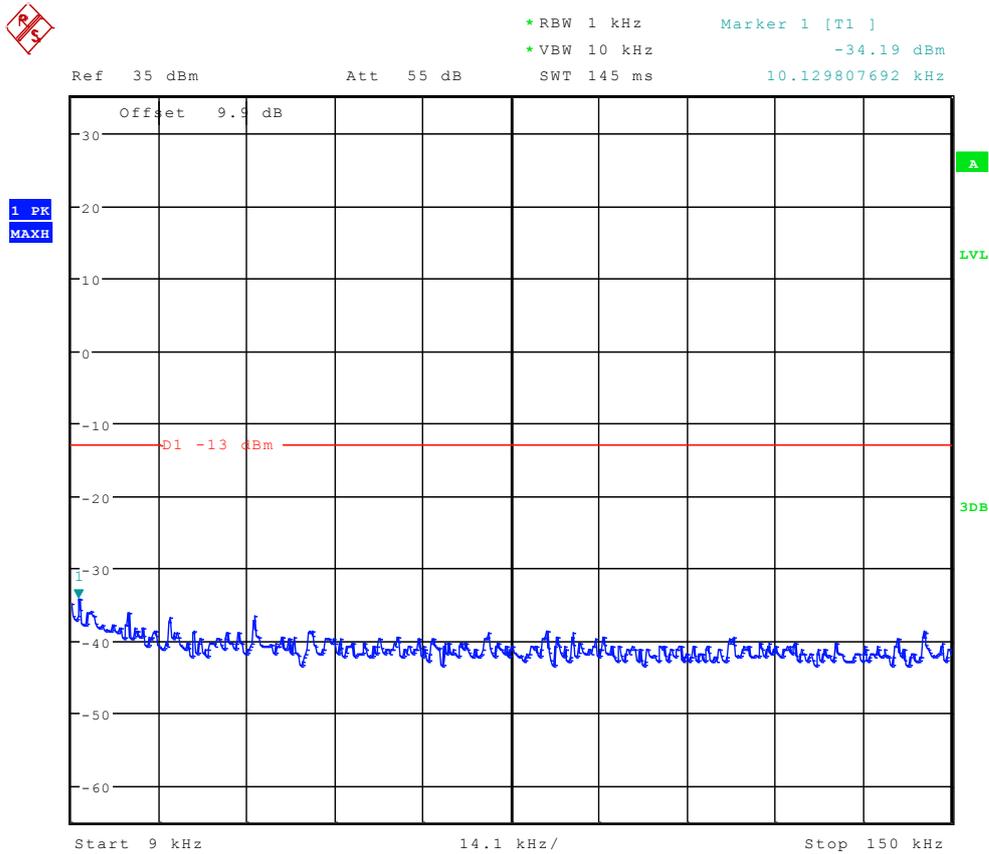
Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H
& RSS-132



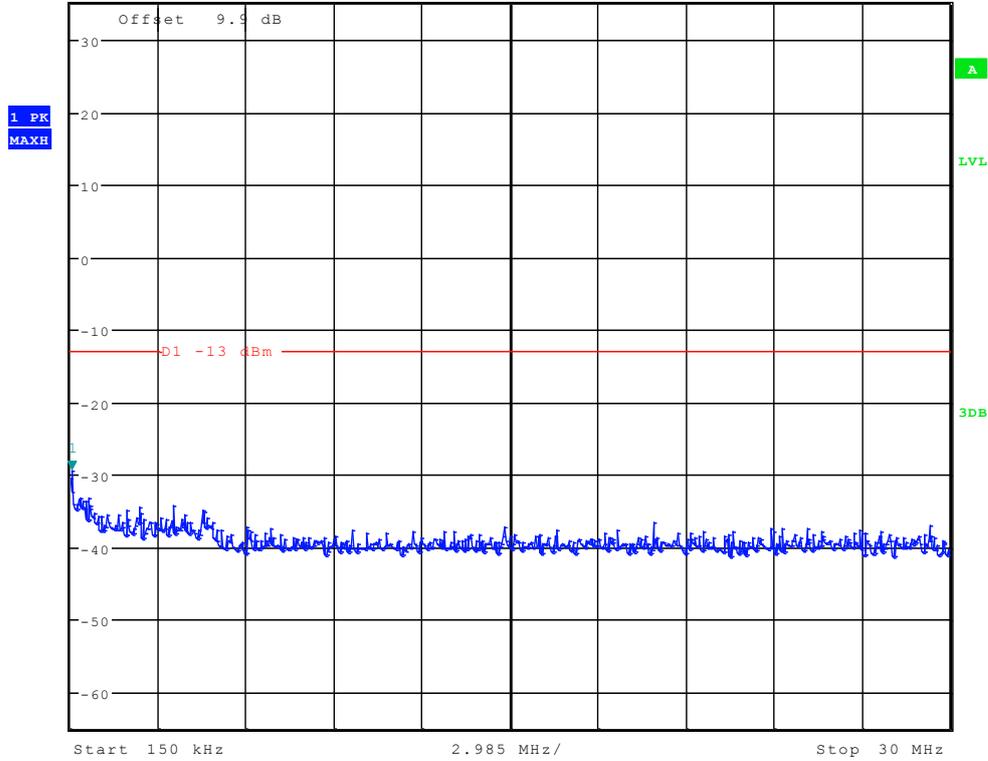
TM1: GPRS/GSM

Channel 128



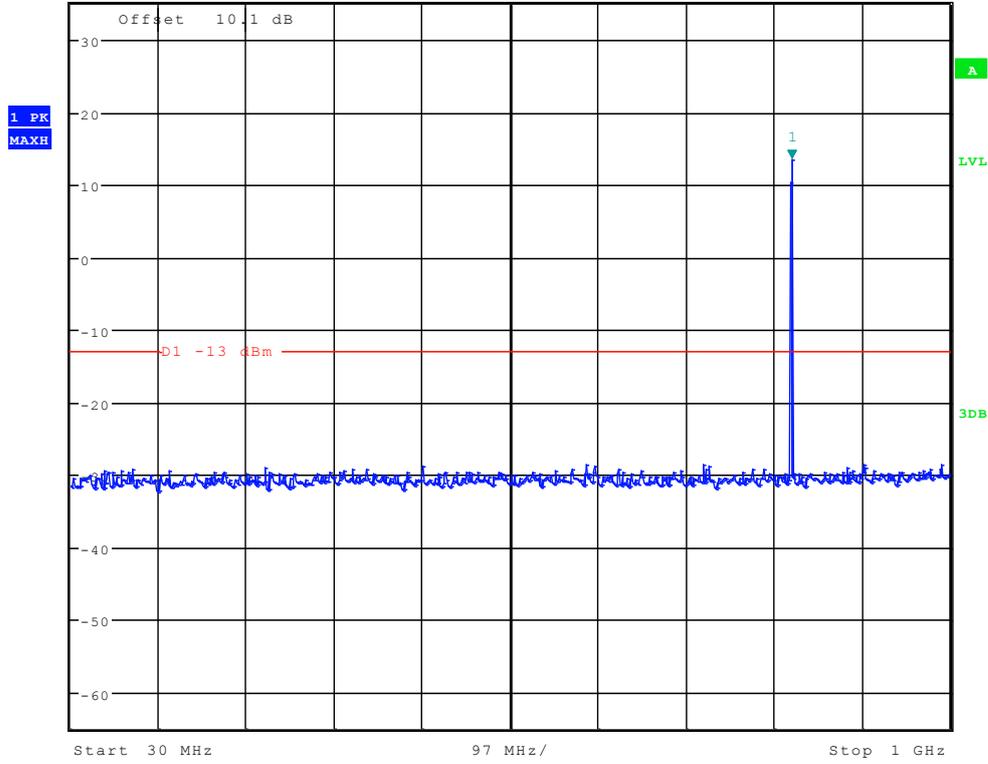


Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.48 dBm



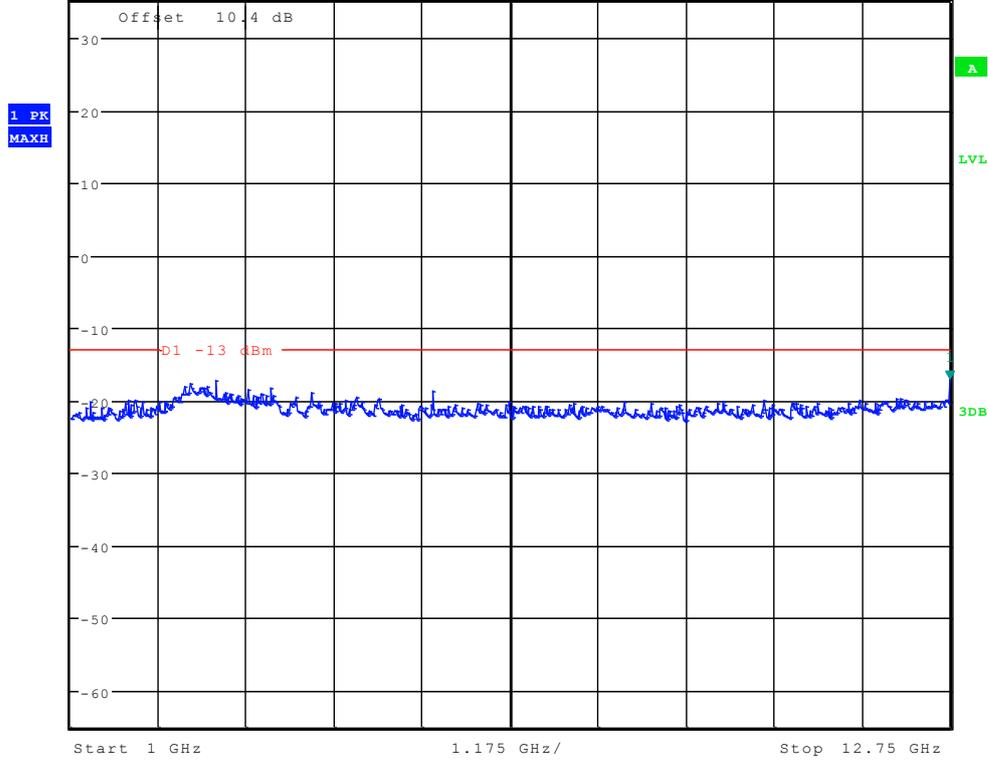


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz 13.42 dBm
825.897435897 MHz



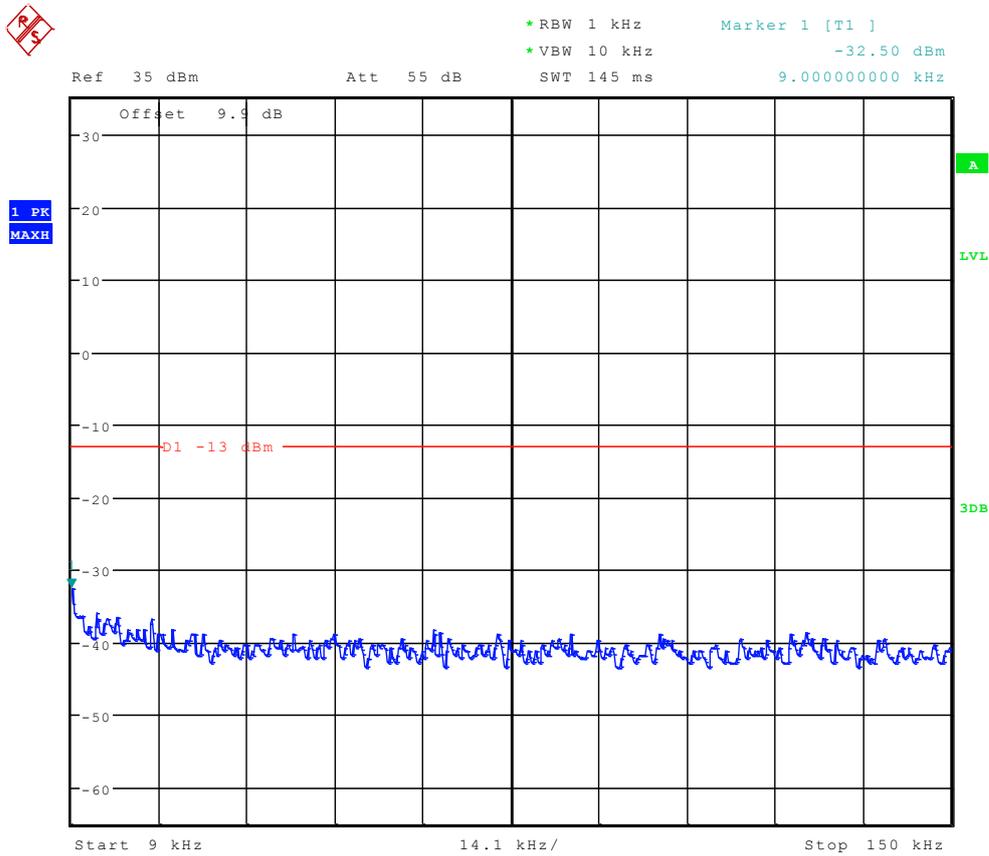


Ref 35 dBm Att 50 dB SWT 70 ms 12.75000000 GHz
*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -17.12 dBm



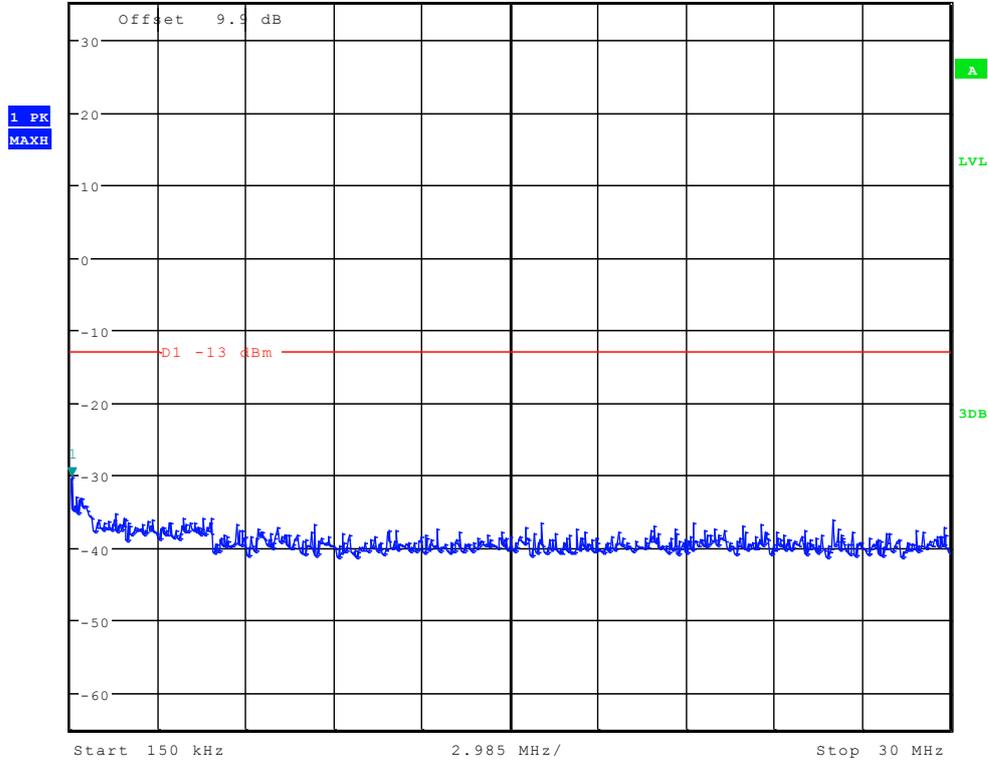


Channel 192



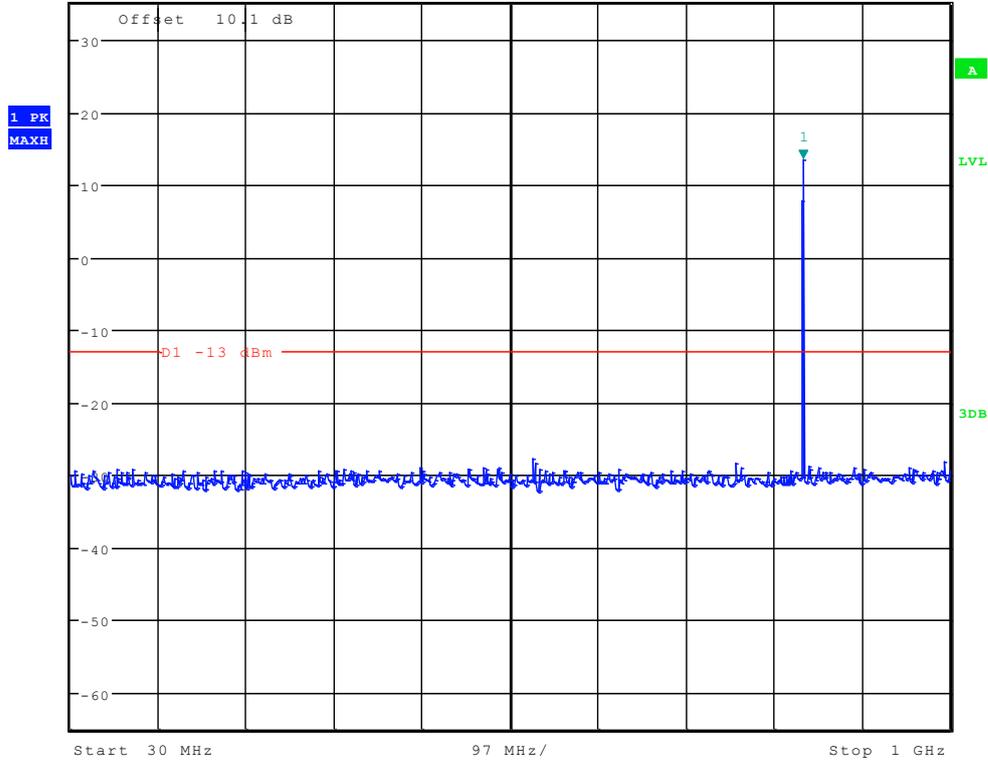


Ref 35 dBm Att 55 dB SWT 300 ms
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -30.28 dBm
197.836538462 kHz



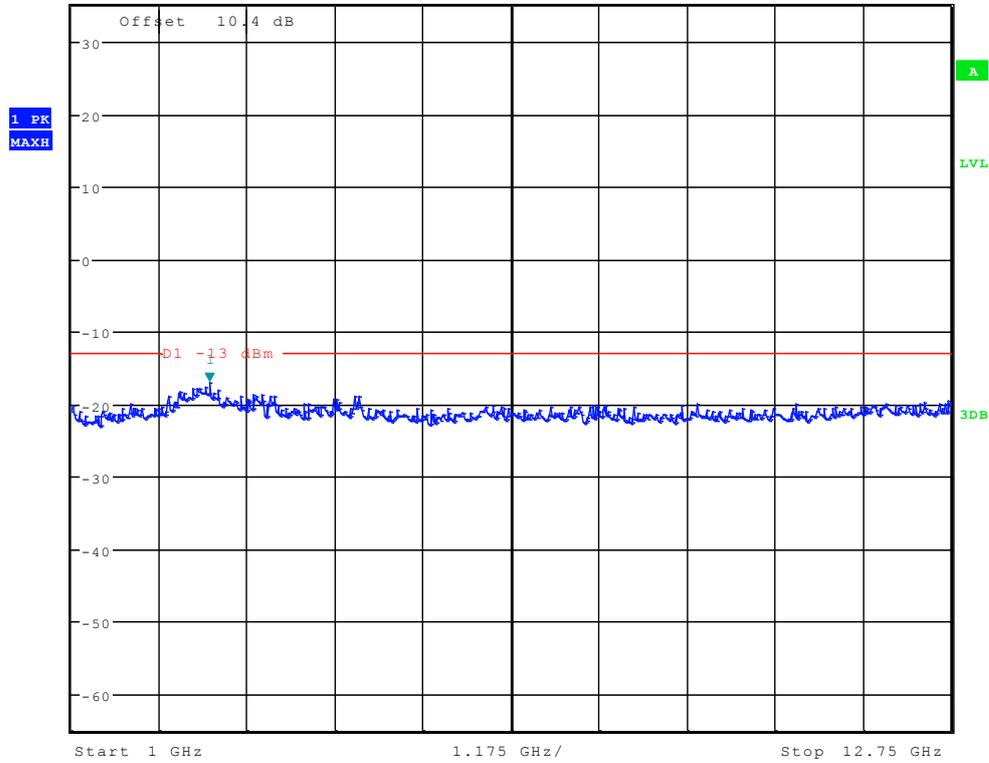


Ref 35 dBm Att 50 dB SWT 100 ms 838.333333333 MHz
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz 13.38 dBm



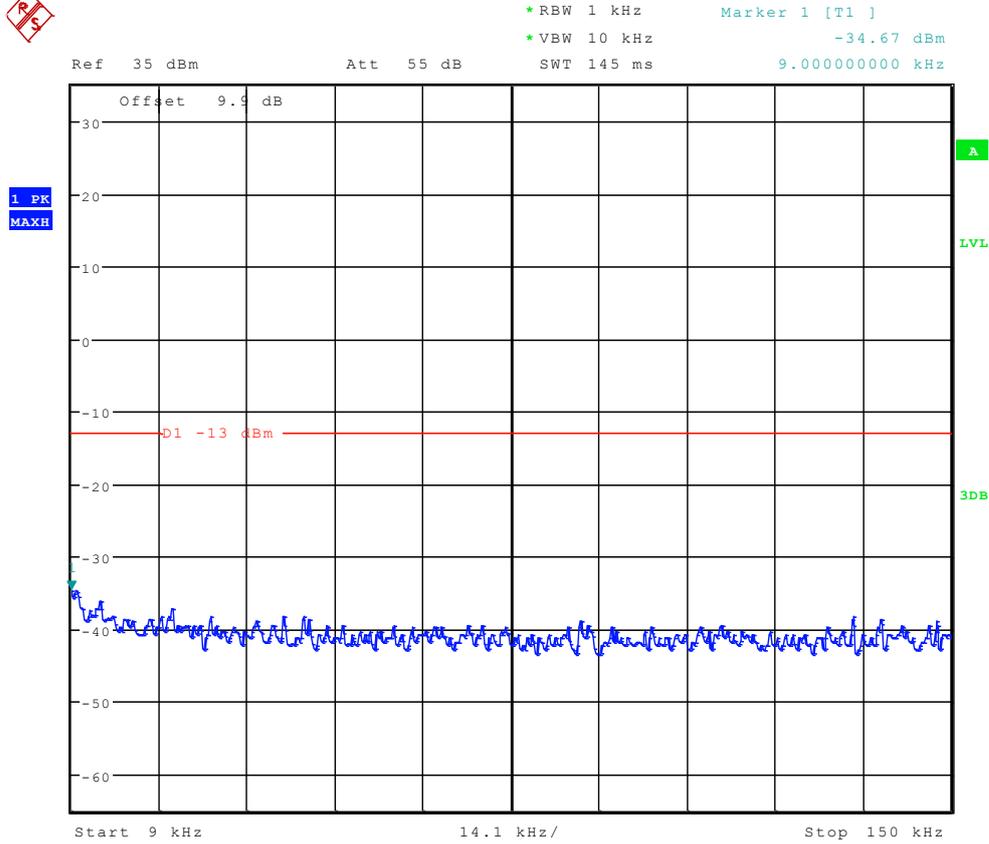


*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -17.09 dBm
 Ref 35 dBm Att 50 dB SWT 70 ms 2.845352564 GHz



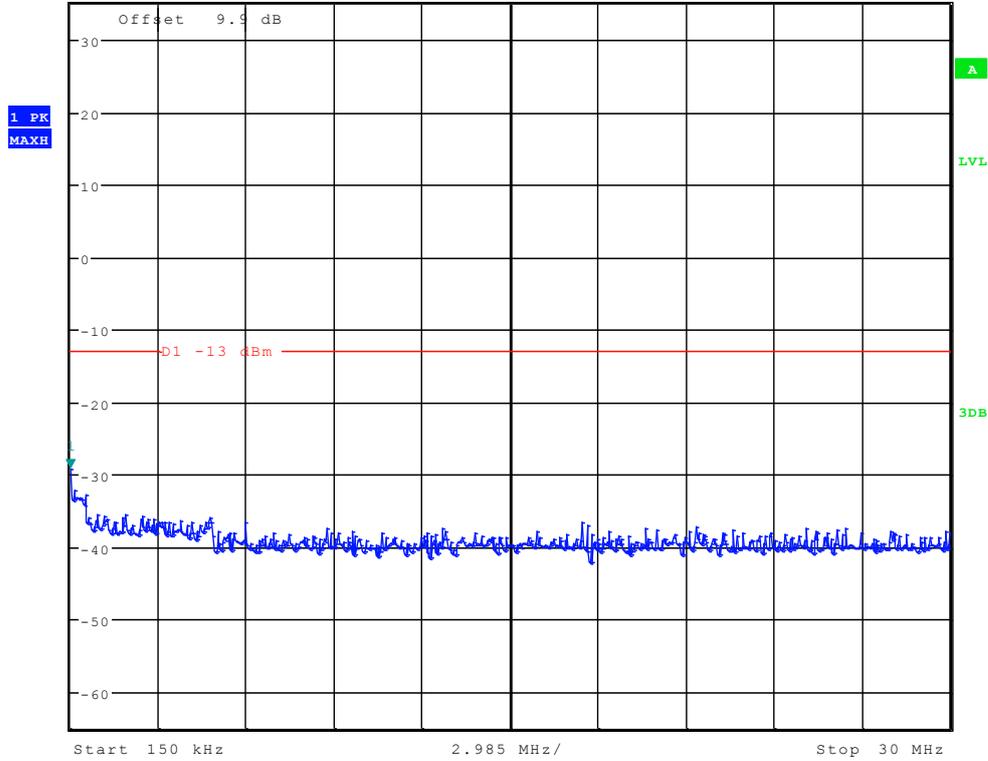


Channel 251



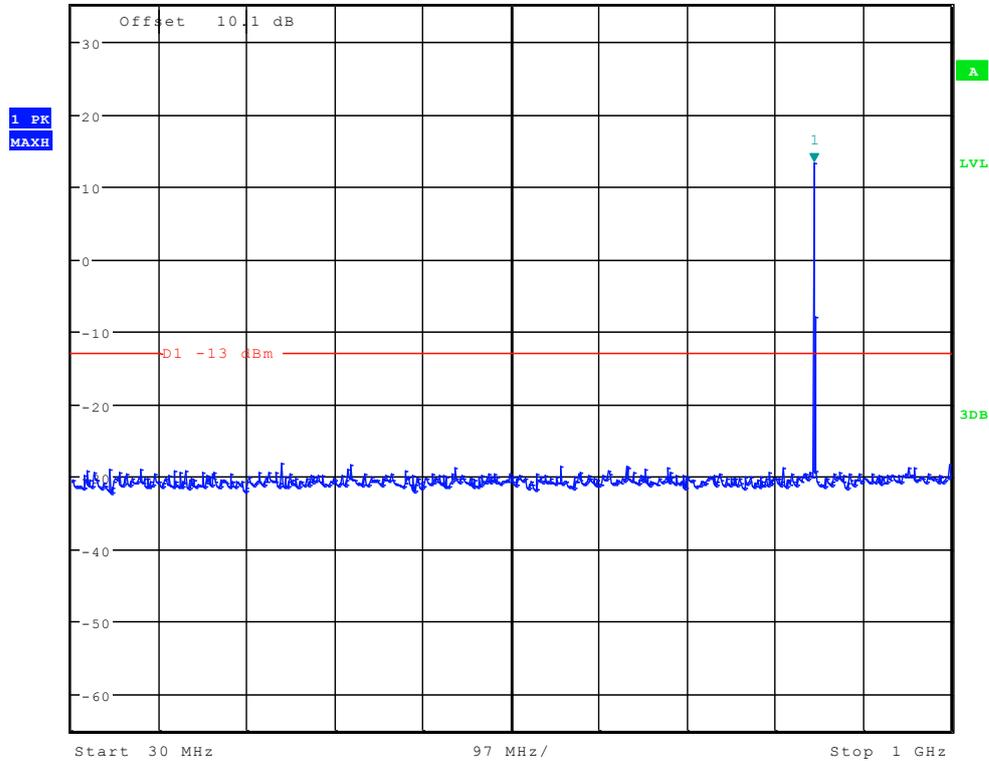


Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.21 dBm



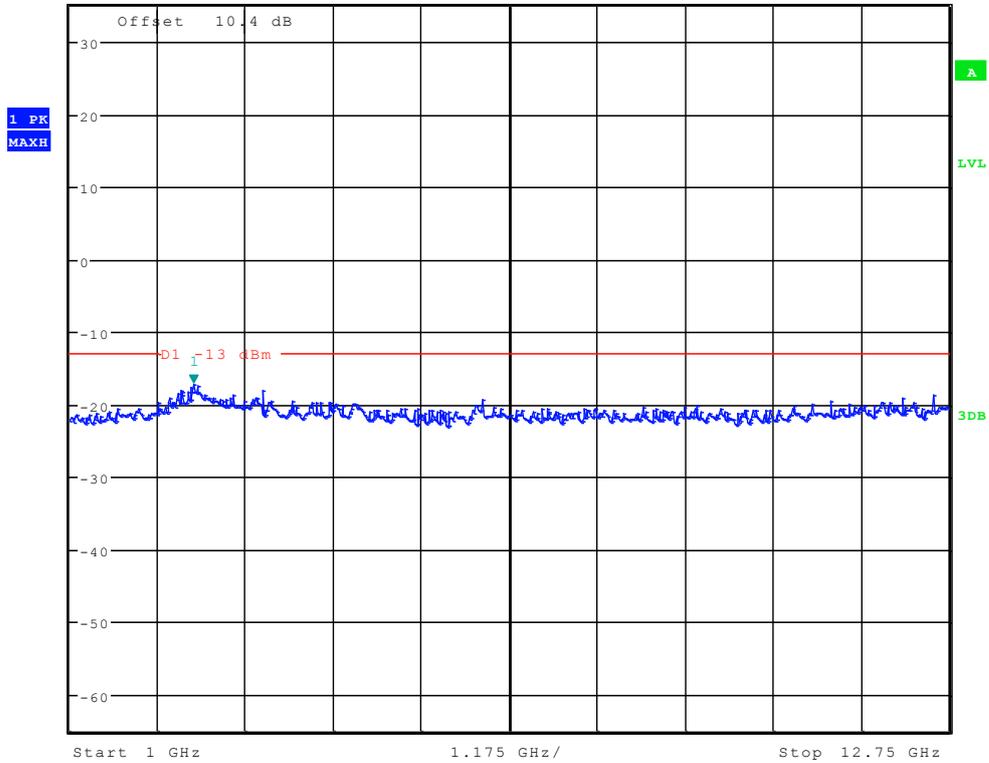


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz 13.33 dBm
849.214743590 MHz



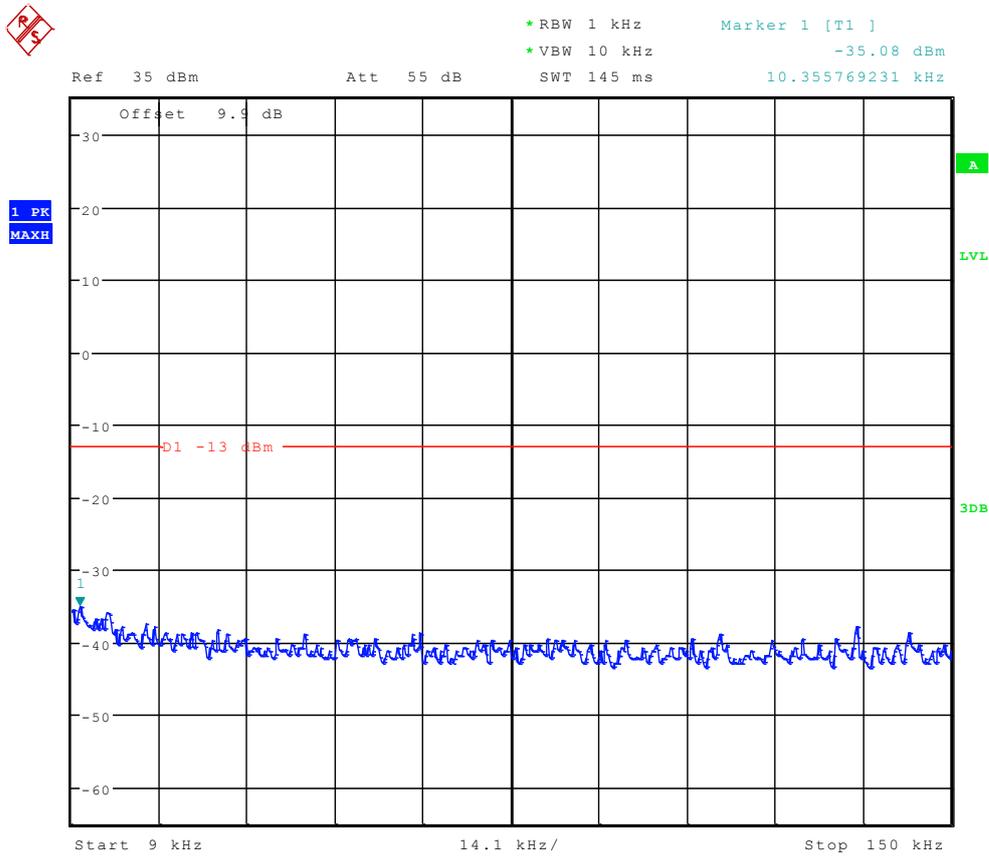


* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -17.22 dBm
Ref 35 dBm Att 50 dB SWT 70 ms 2.657051282 GHz



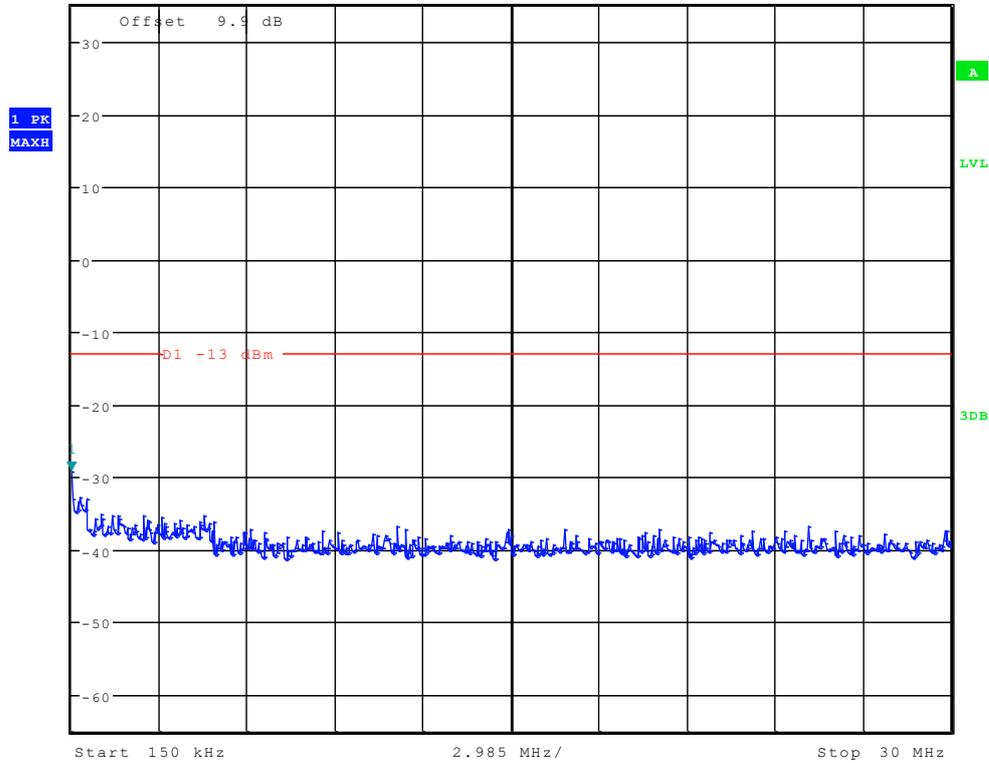


TM2: EDGE Channel 128



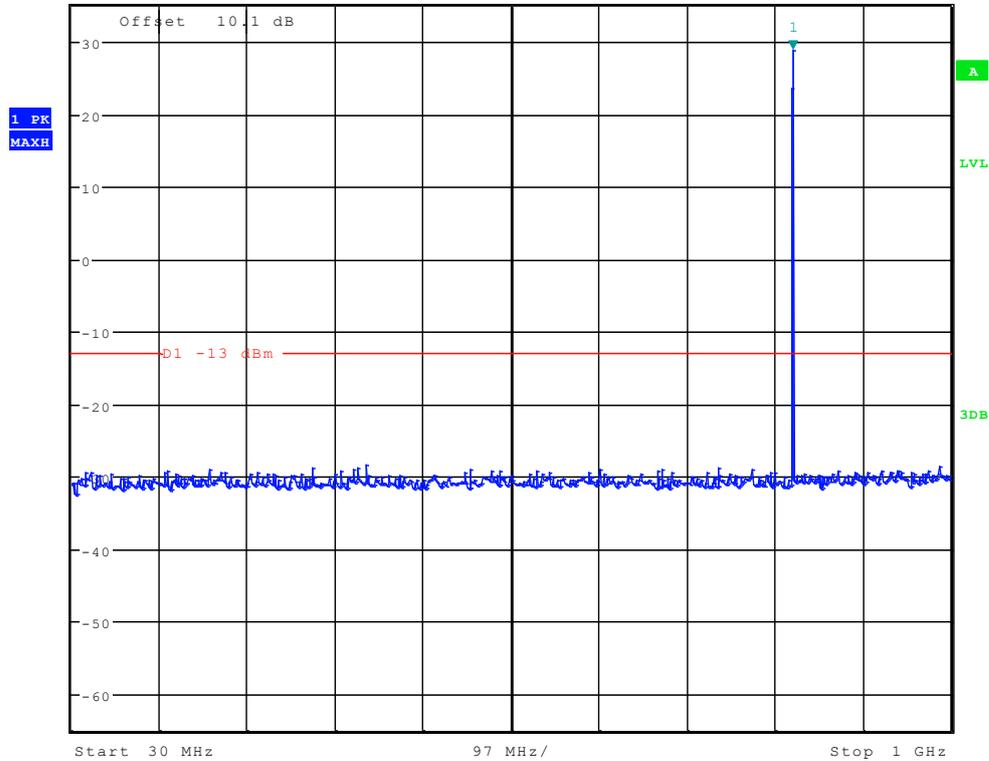


Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.16 dBm



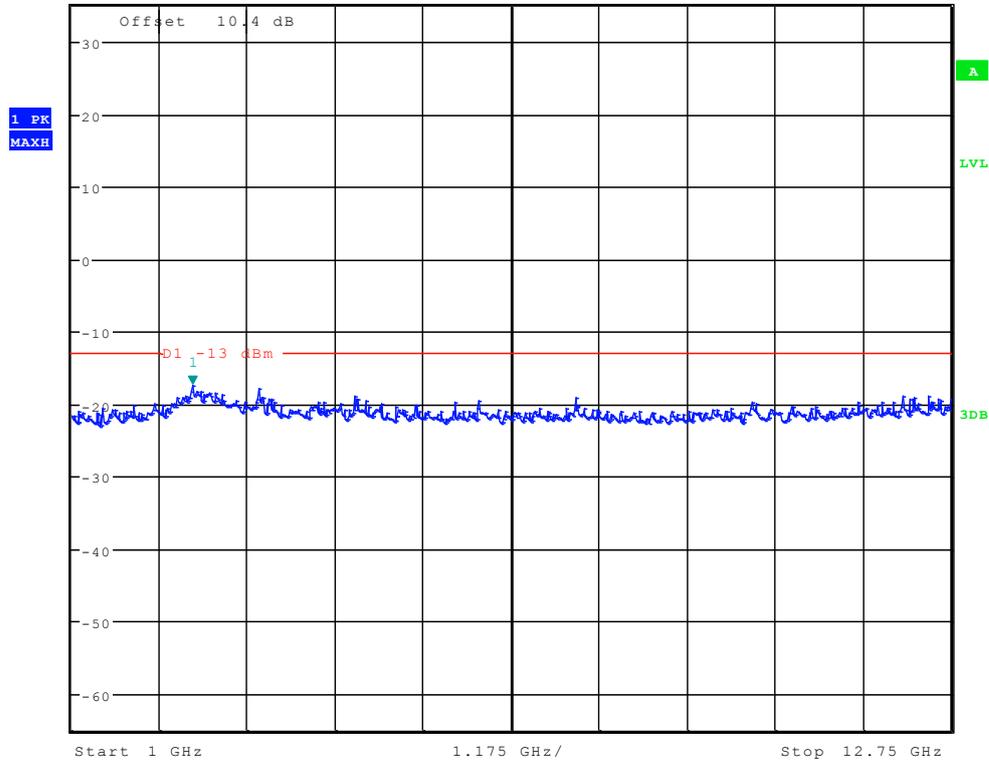


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1] 28.82 dBm
*VBW 300 kHz 825.897435897 MHz



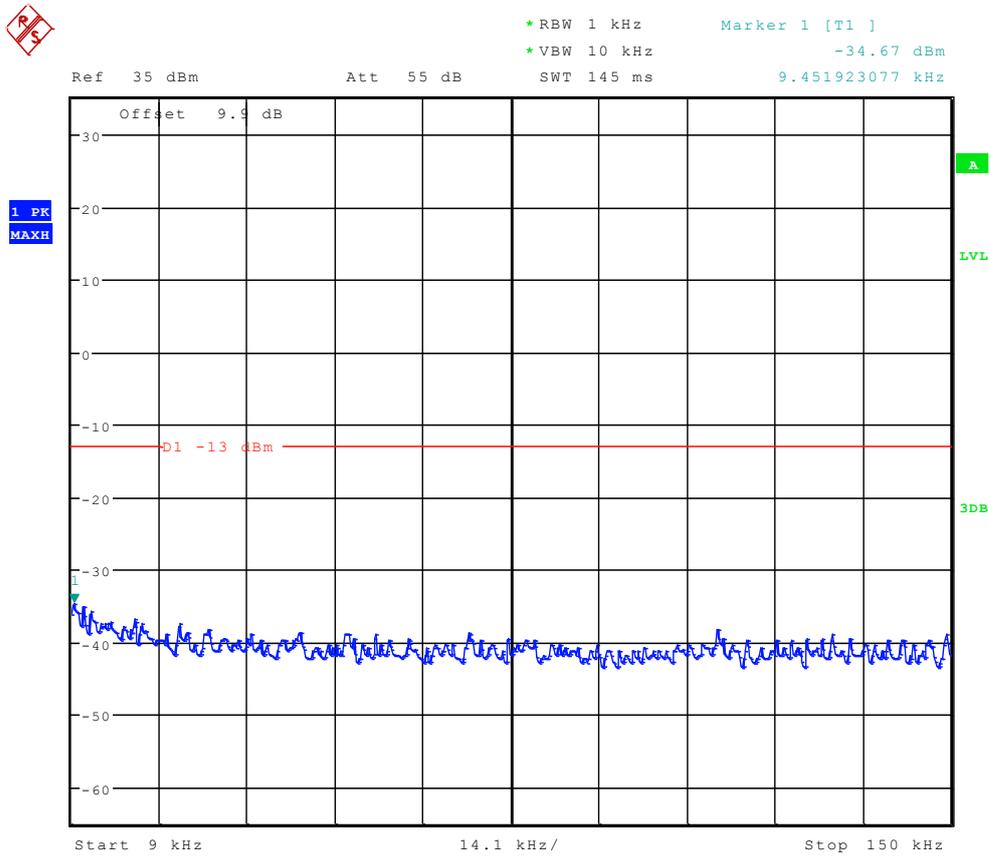


Ref 35 dBm Att 50 dB SWT 70 ms
*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -17.41 dBm
2.619391026 GHz



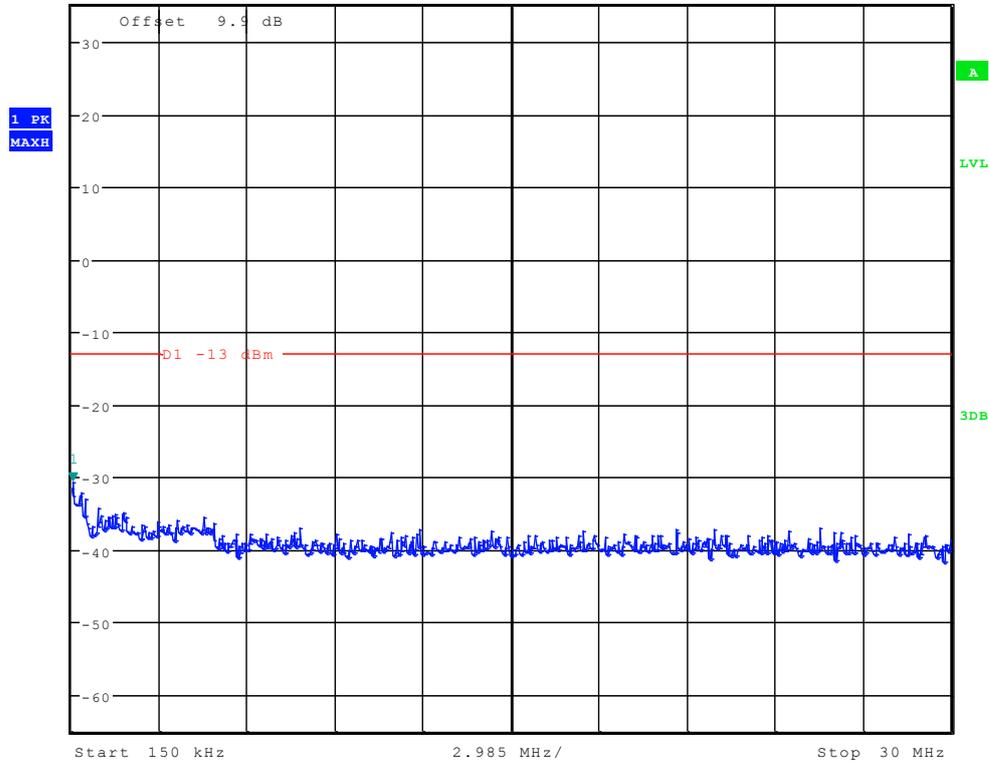


Channel 192



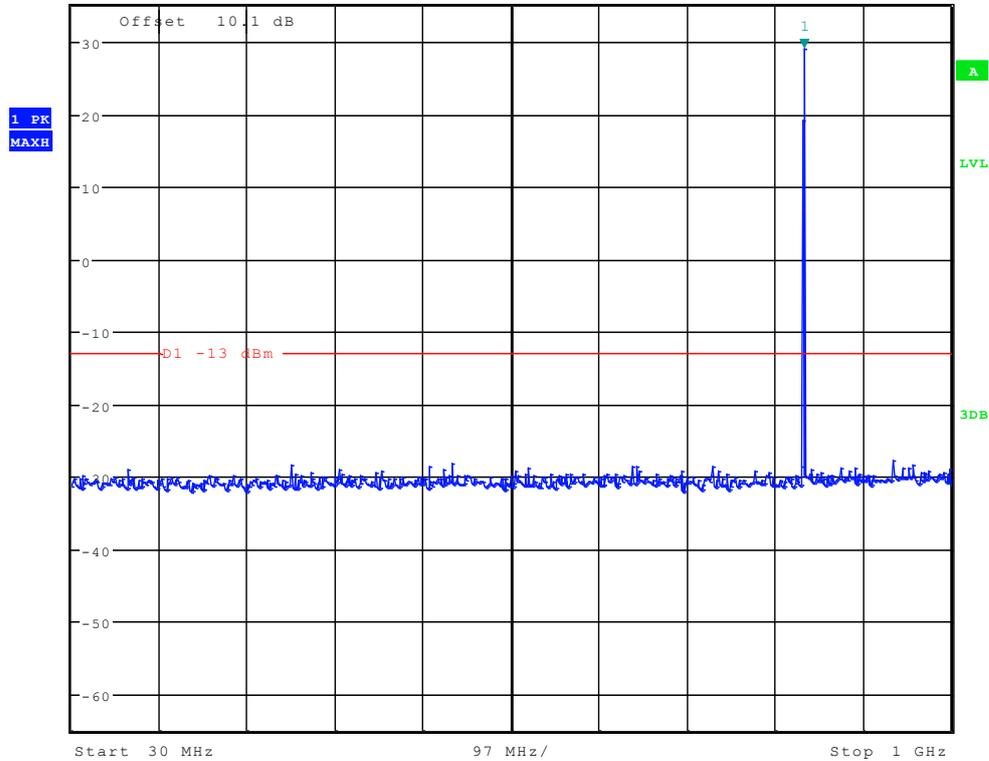


Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -30.70 dBm



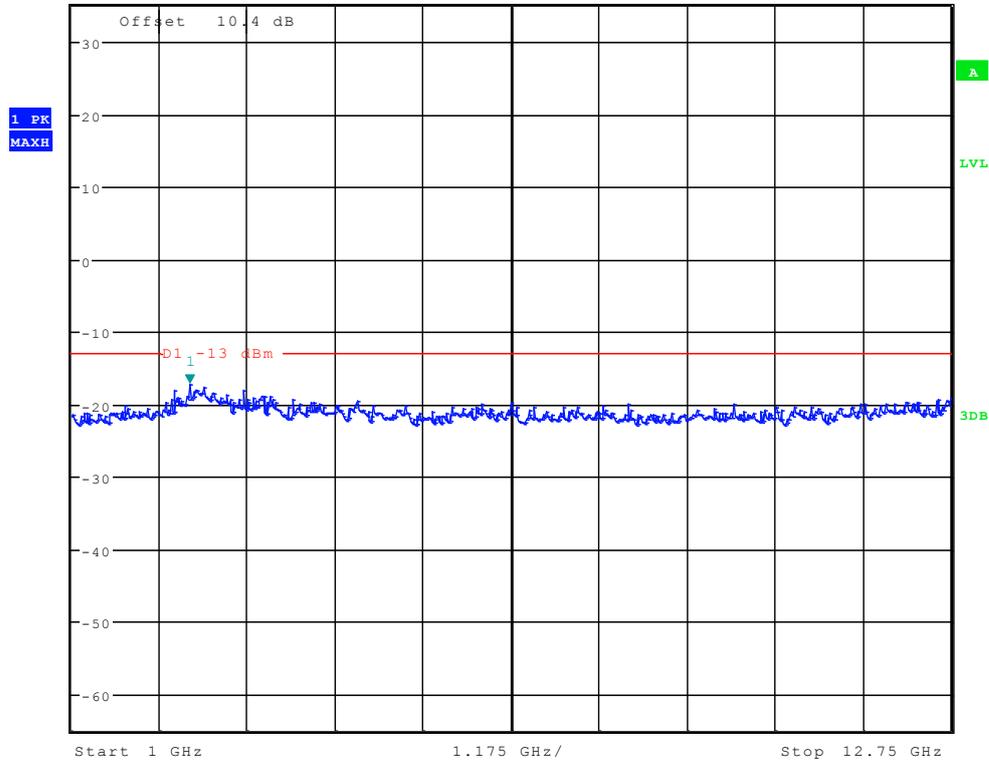


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1] 29.07 dBm
*VBW 300 kHz 838.3333333333 MHz



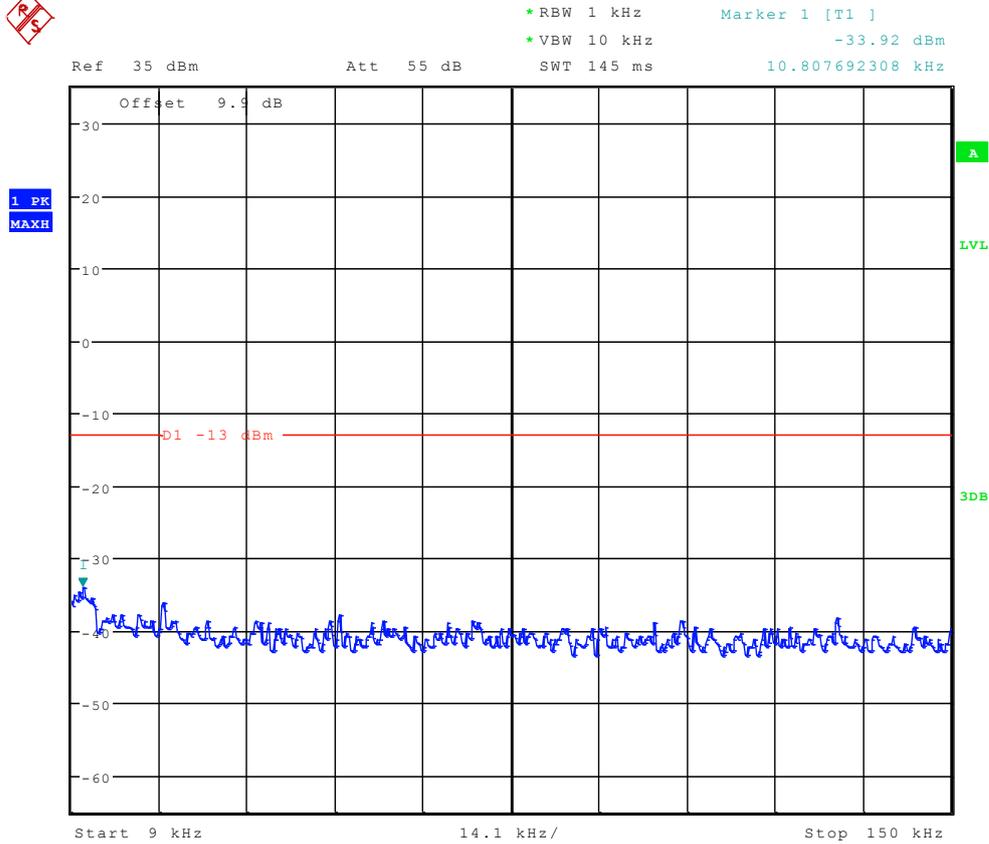


*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -17.14 dBm
 Ref 35 dBm Att 50 dB SWT 70 ms 2.581730769 GHz



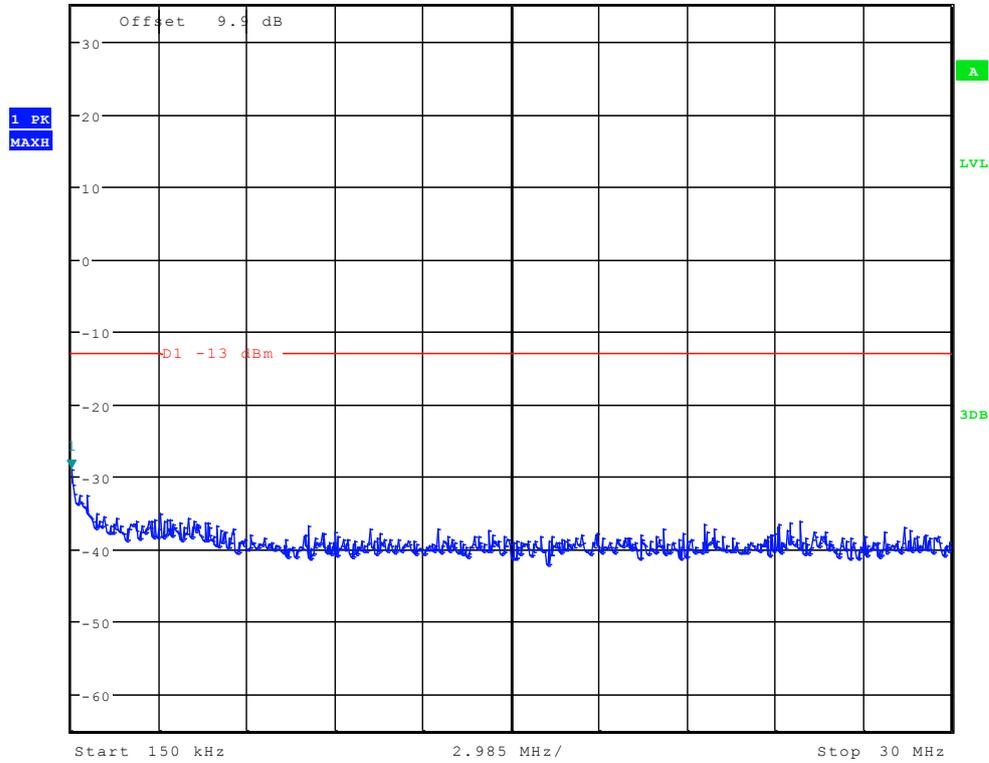


Channel 251



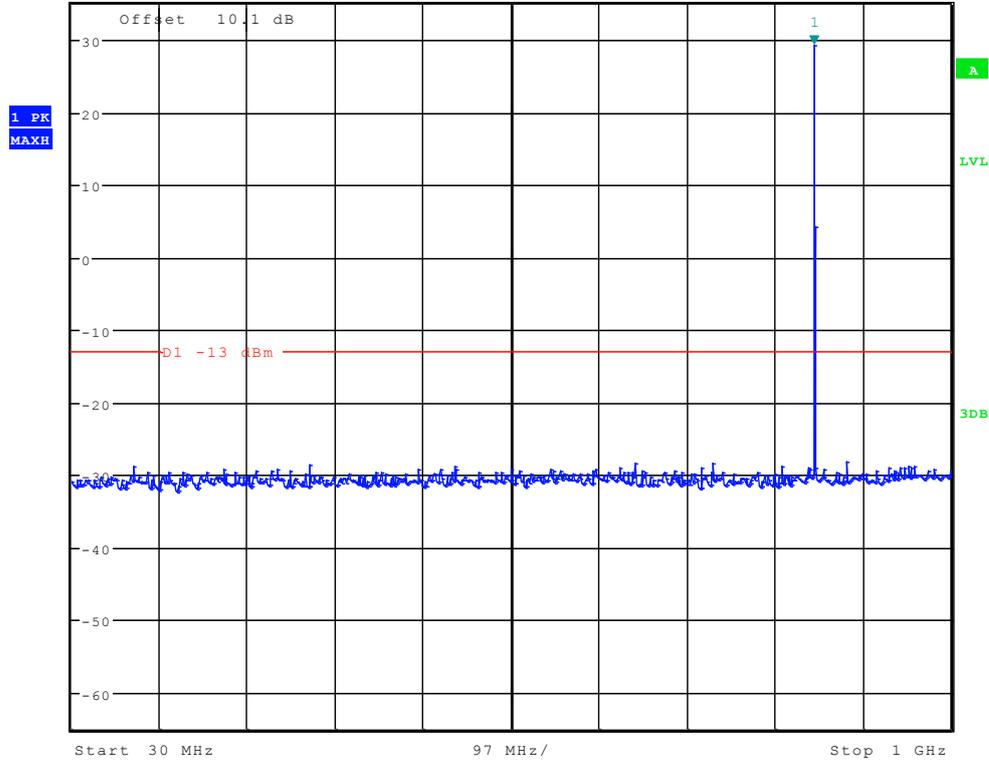


Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
 *RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz -29.00 dBm



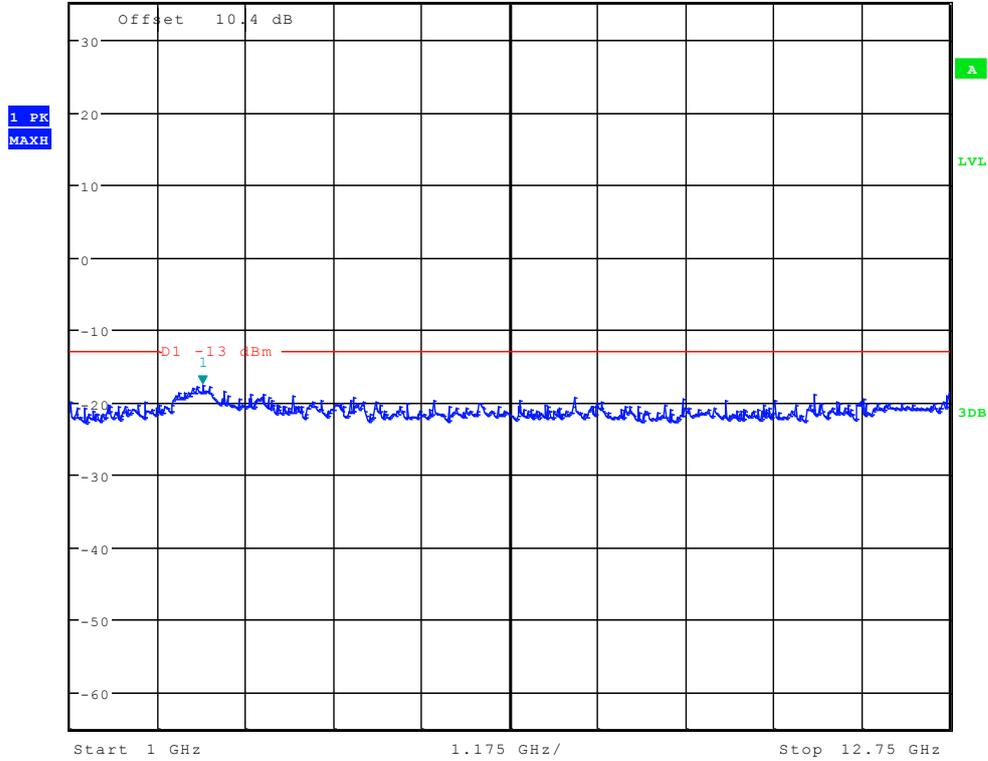


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1] 29.13 dBm
*VBW 300 kHz 849.214743590 MHz



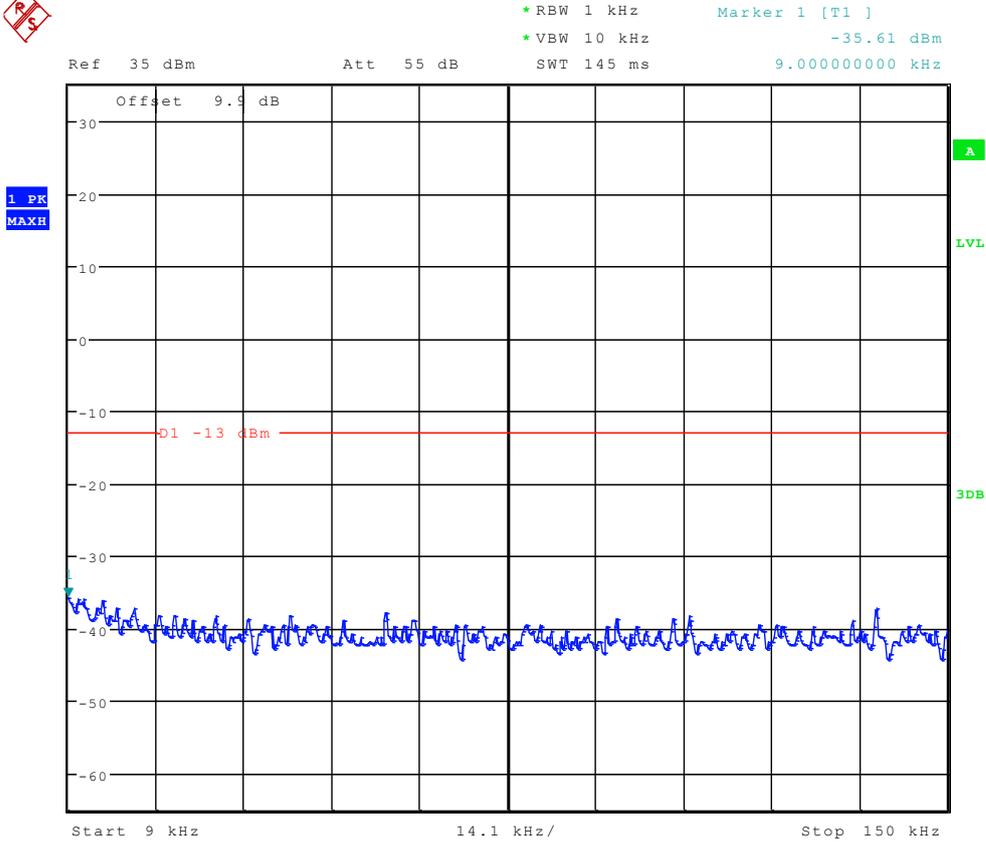


* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz -17.68 dBm
Ref 35 dBm Att 50 dB SWT 70 ms 2.770032051 GHz



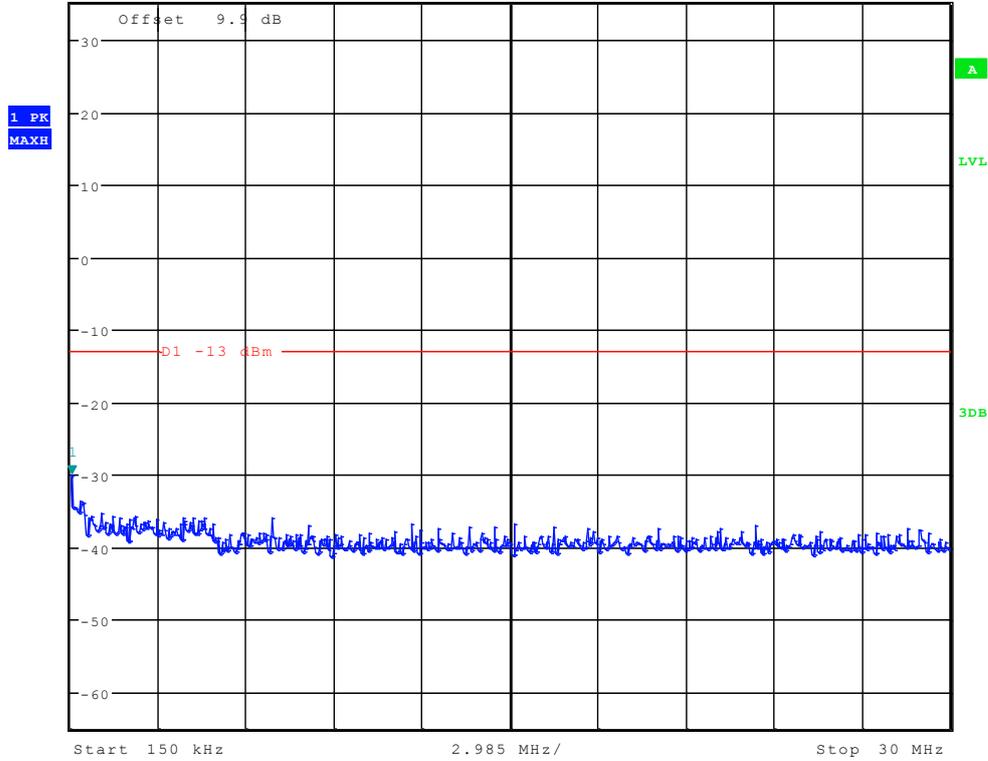


TM3: WCDMA Channel 4132



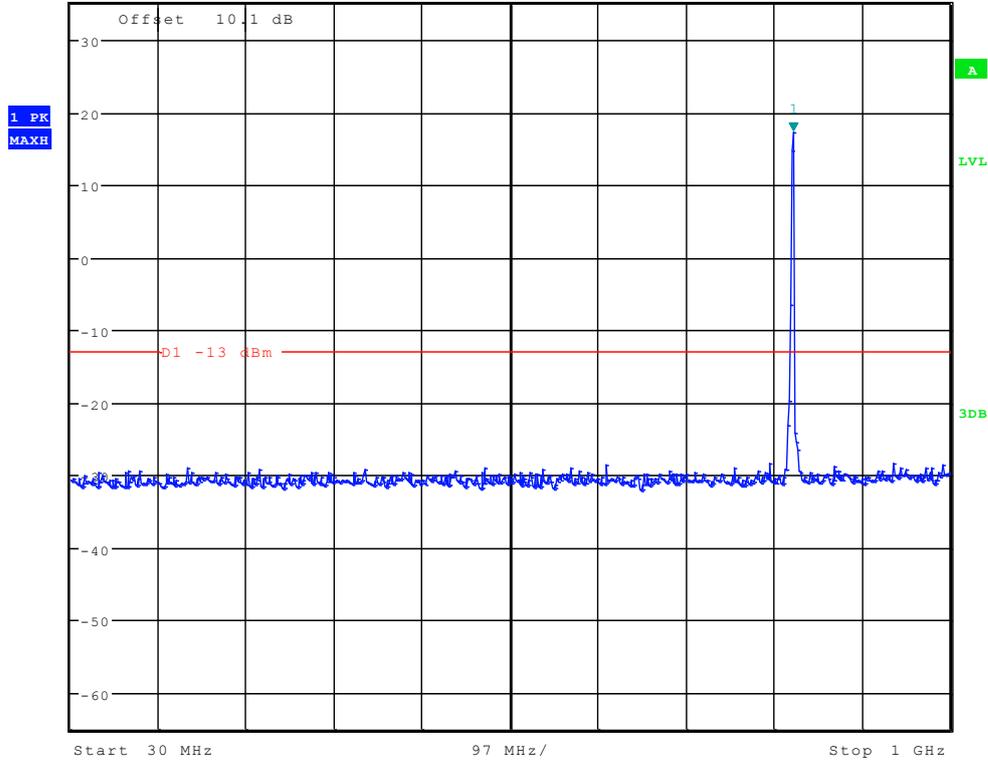


Ref 35 dBm Att 55 dB SWT 300 ms 197.836538462 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -30.10 dBm



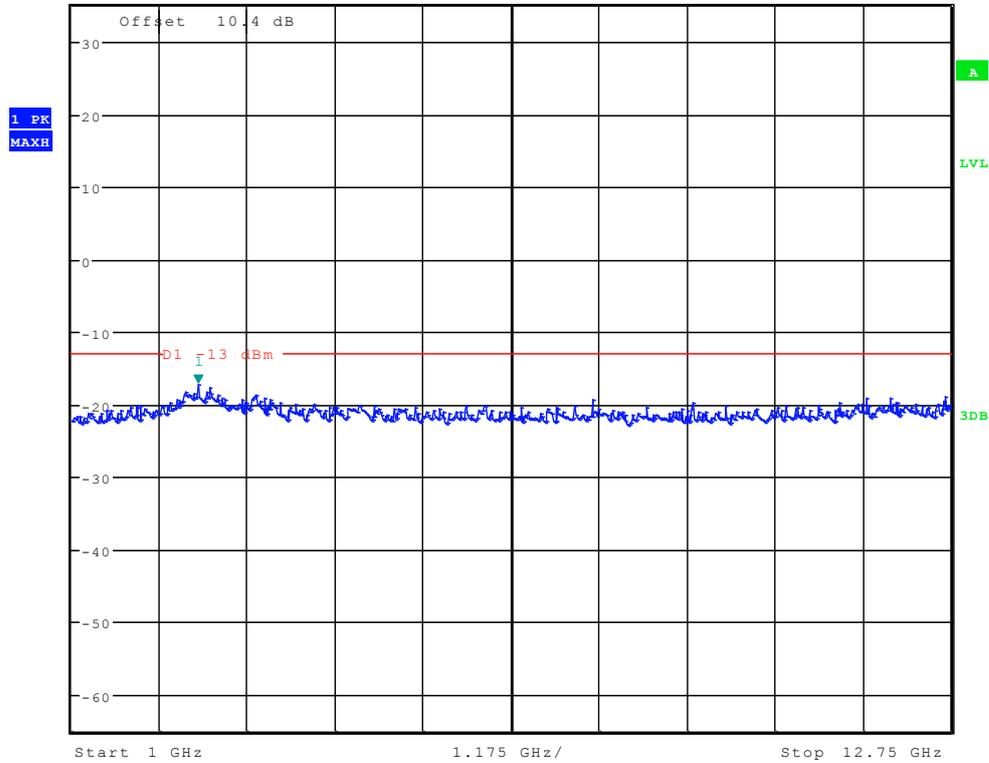


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz 17.32 dBm
827.451923077 MHz





Ref 35 dBm Att 50 dB SWT 70 ms
*RBW 1 MHz Marker 1 [T1] -17.29 dBm
*VBW 3 MHz 2.694711538 GHz

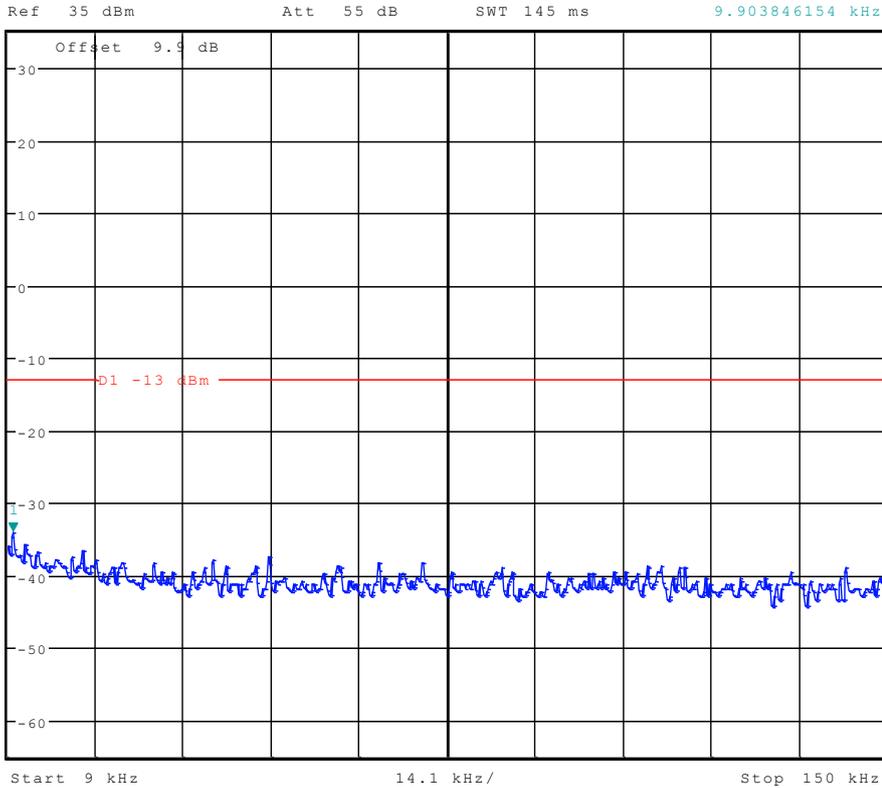




Channel 4182

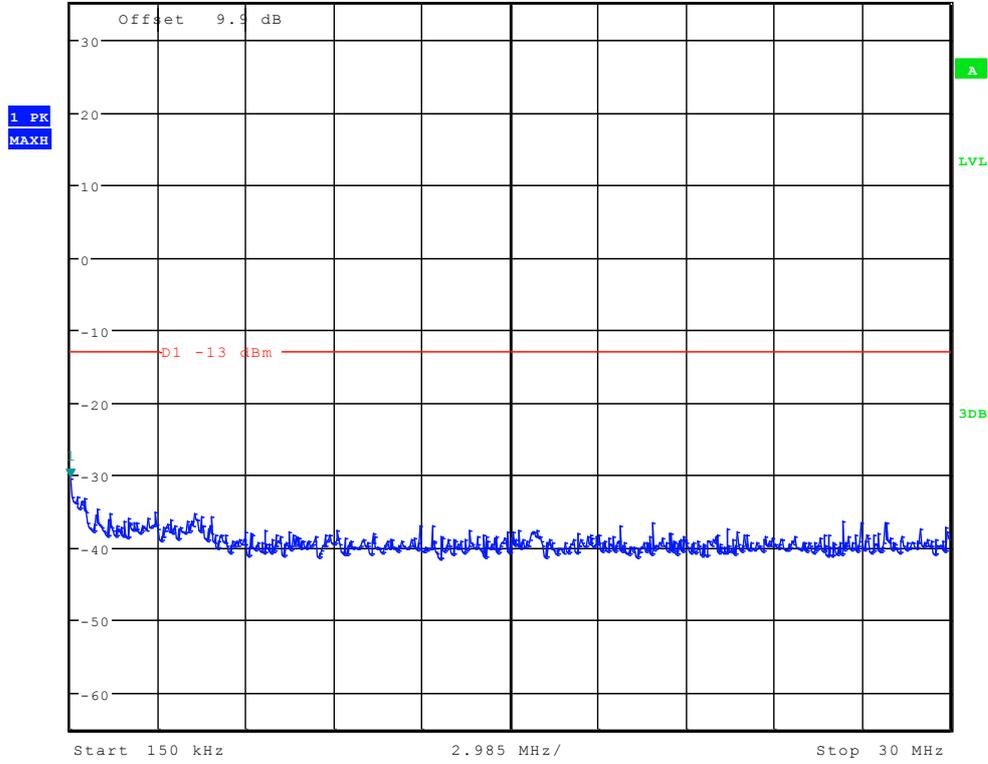


*RBW 1 kHz Marker 1 [T1]
 *VBW 10 kHz -33.92 dBm
 SWT 145 ms 9.903846154 kHz



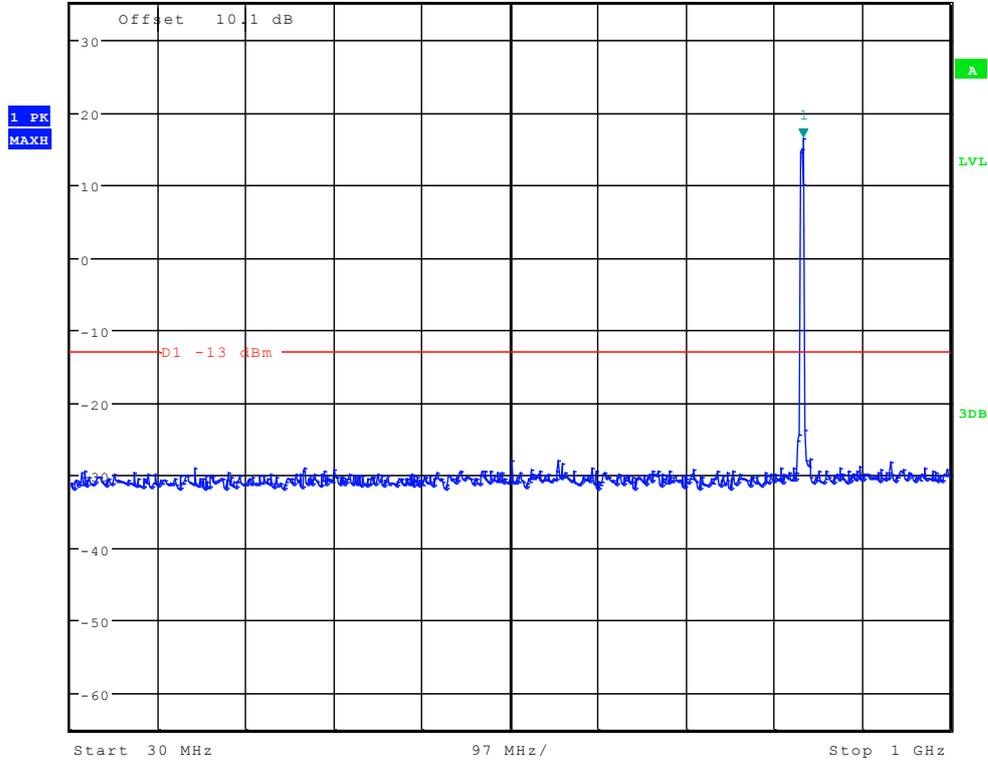


Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -30.46 dBm



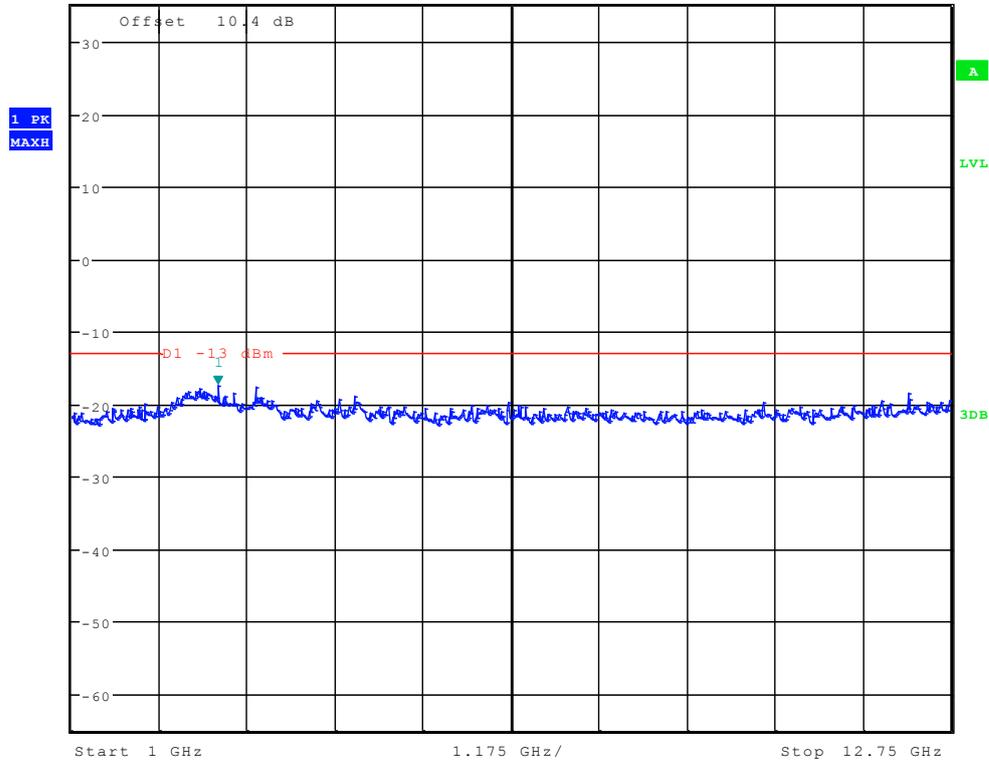


Ref 35 dBm Att 50 dB SWT 100 ms 838.333333333 MHz
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz 16.47 dBm





*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -17.40 dBm
 Ref 35 dBm Att 50 dB SWT 70 ms 2.958333333 GHz

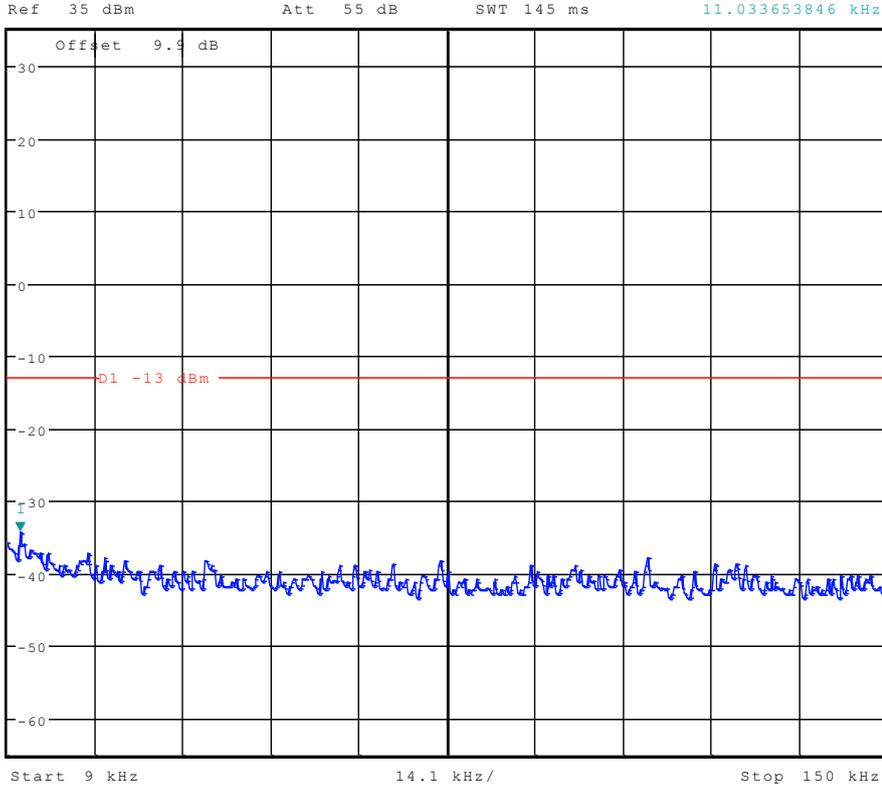




Channel 4233

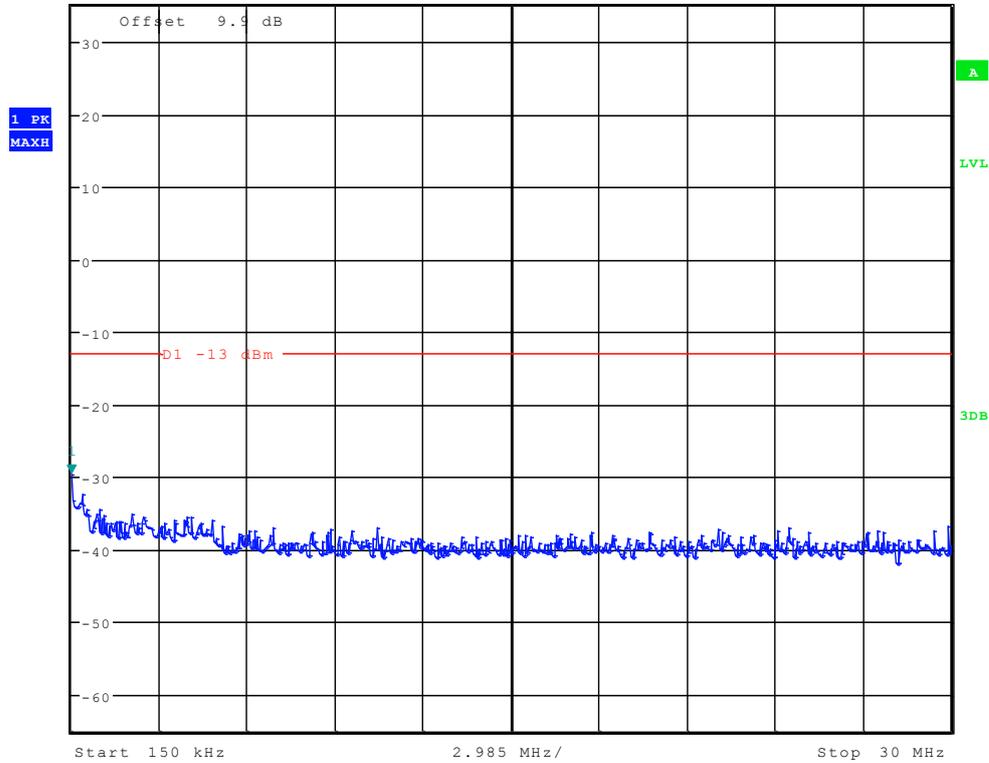


*RBW 1 kHz Marker 1 [T1]
 *VBW 10 kHz -34.19 dBm
 SWT 145 ms 11.033653846 kHz



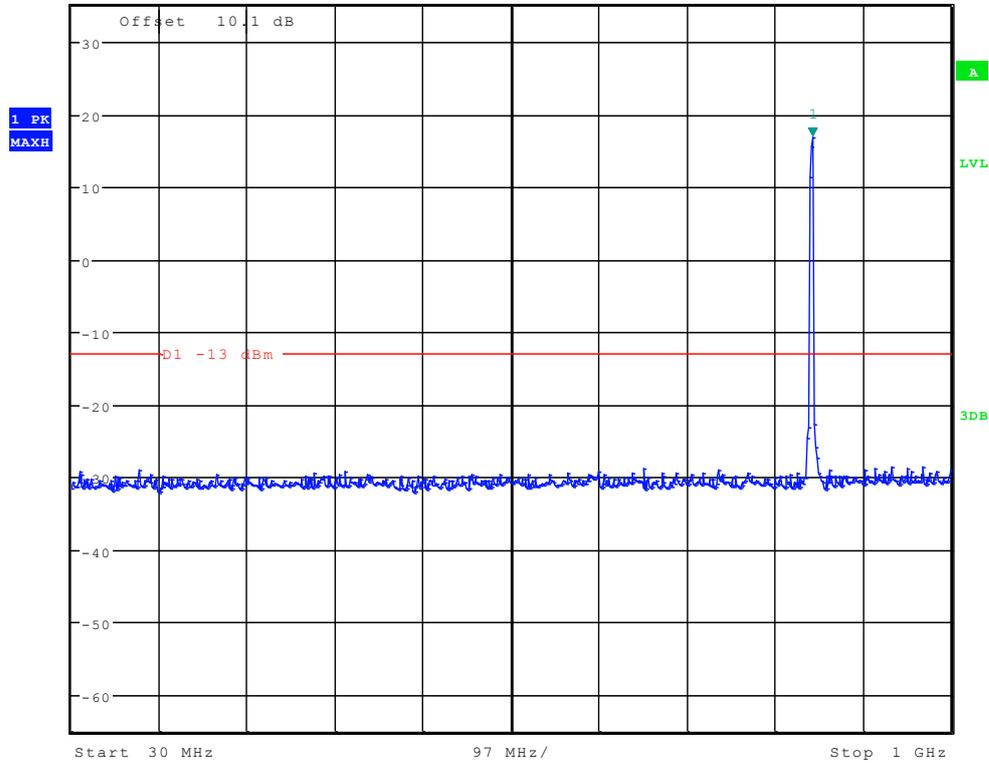


Ref 35 dBm Att 55 dB SWT 300 ms 150.00000000 kHz
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -29.59 dBm



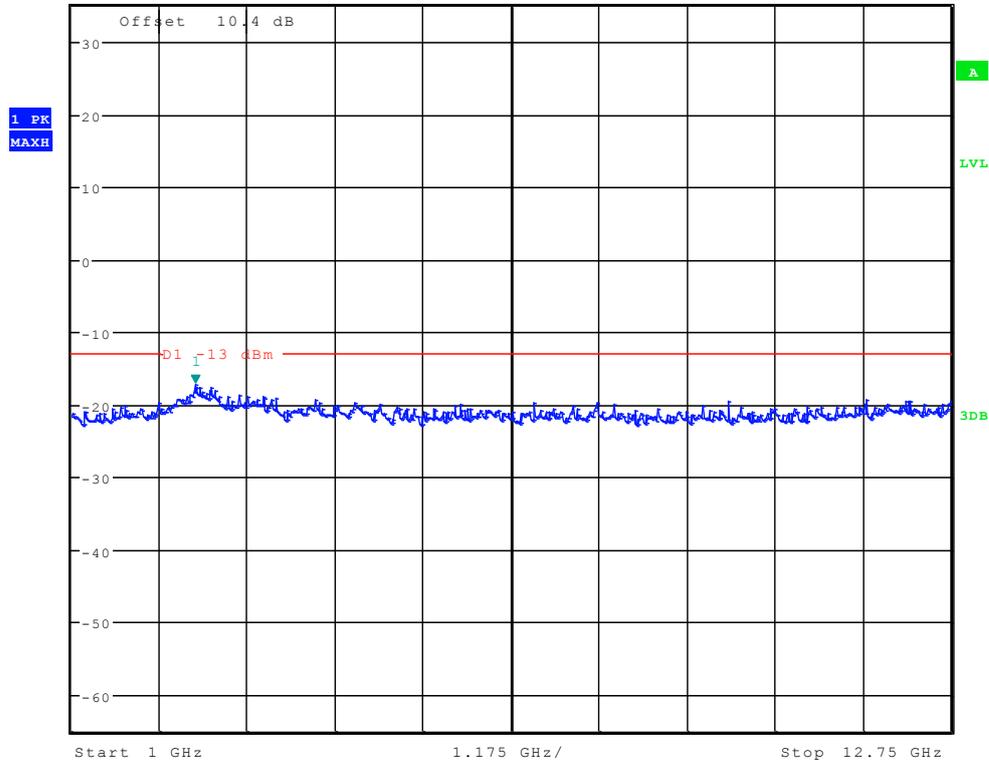


Ref 35 dBm Att 50 dB SWT 100 ms
*RBW 100 kHz Marker 1 [T1] 16.77 dBm
*VBW 300 kHz 847.660256410 MHz





Ref 35 dBm Att 50 dB SWT 70 ms
*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -17.13 dBm
2.657051282 GHz



The END



Appendix F

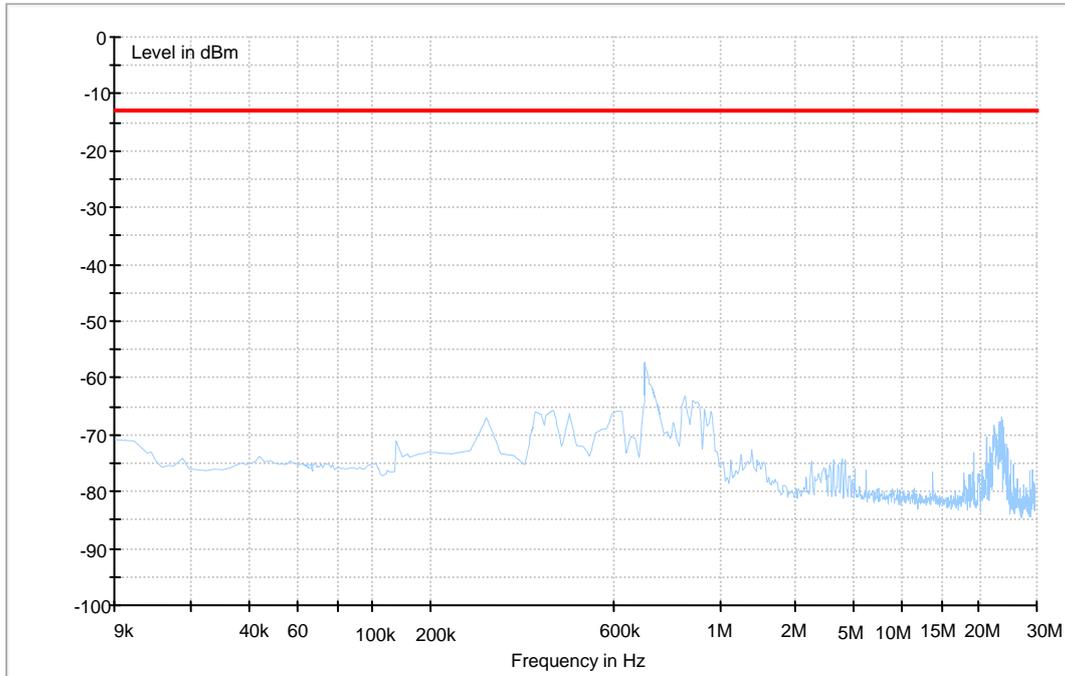
Field Strength of Spurious Emissions

According to FCC Part 2.1053 & Part22.917
& RSS-132



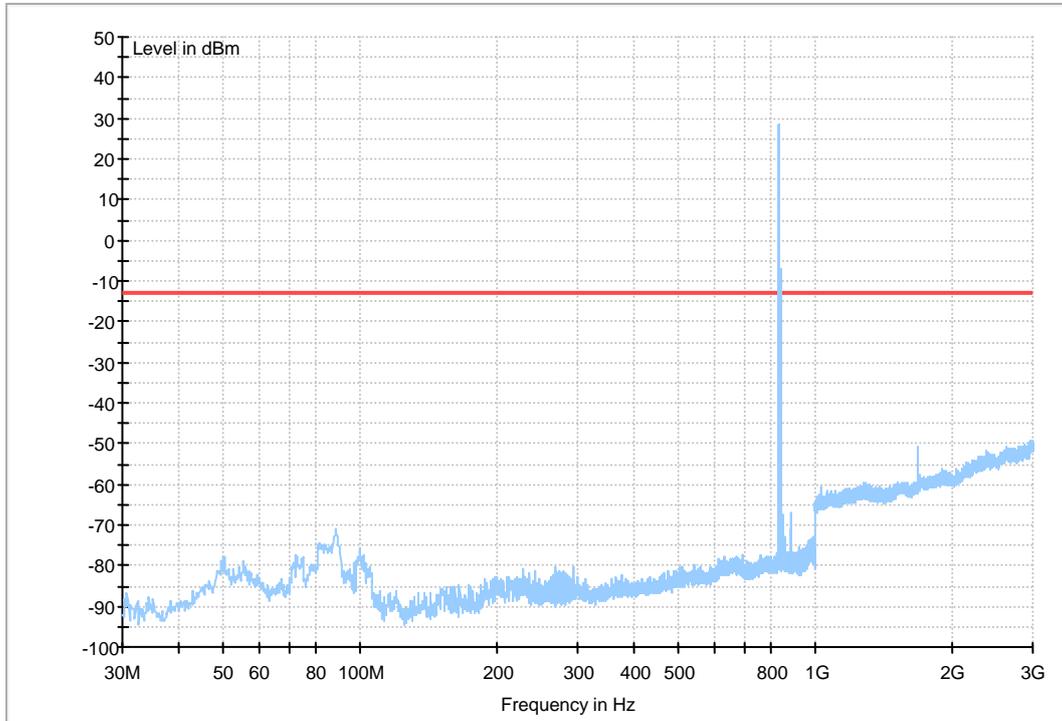
GSM 850

Traffic Mode (9kHz-30MHz)



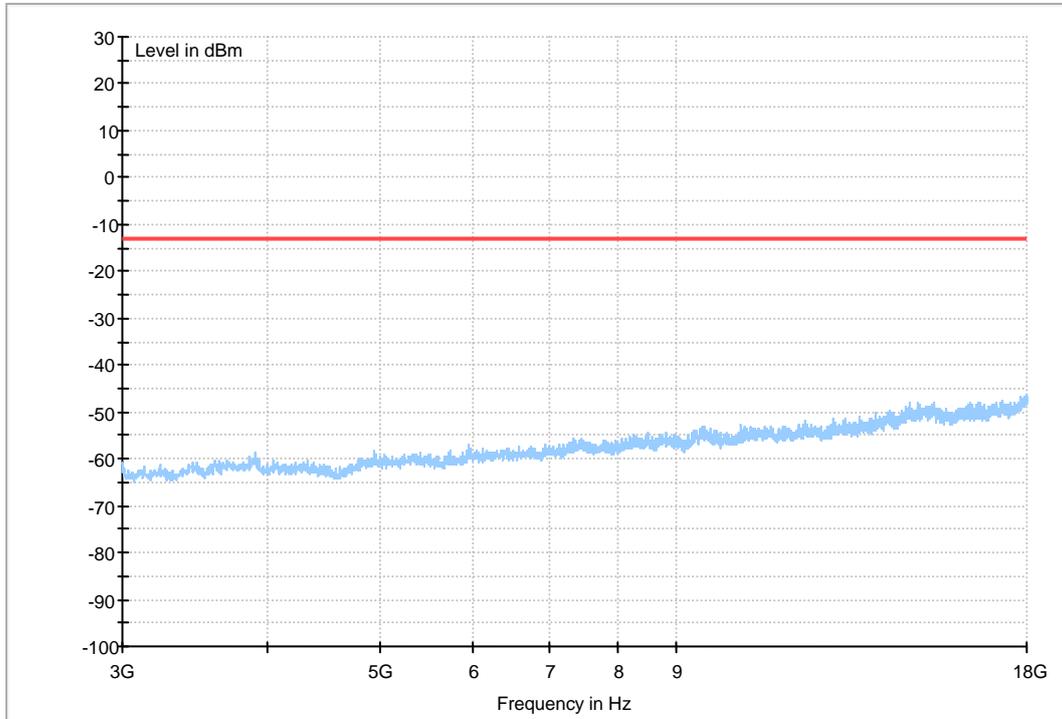


Traffic Mode (30MHz-3GHz)





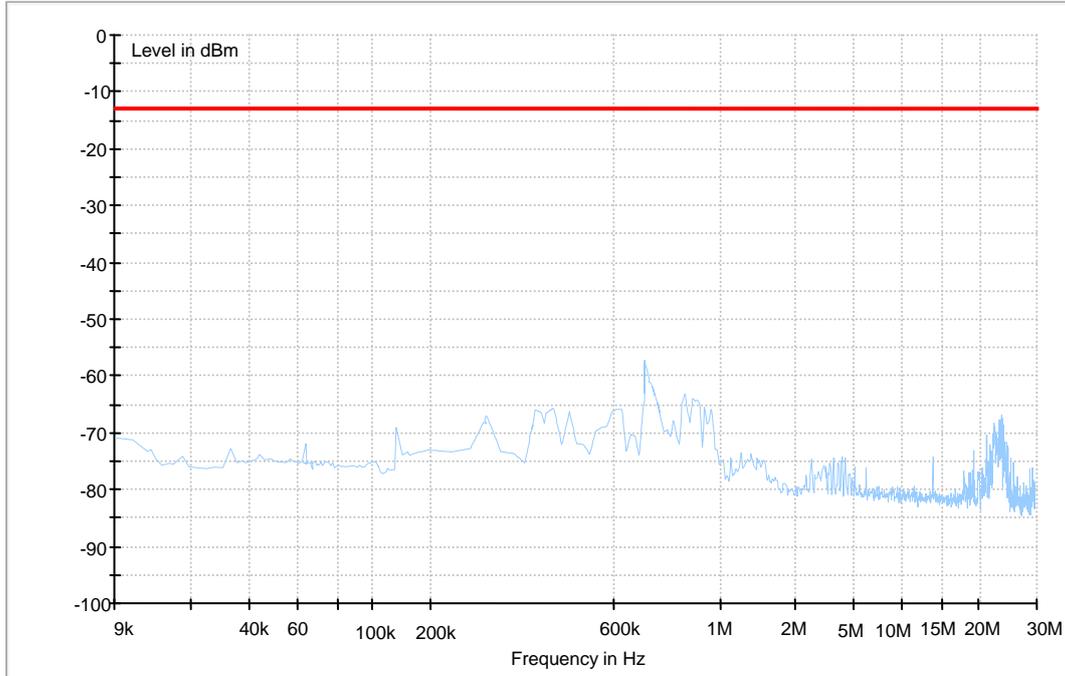
Traffic Mode (3GHz-18GHz)





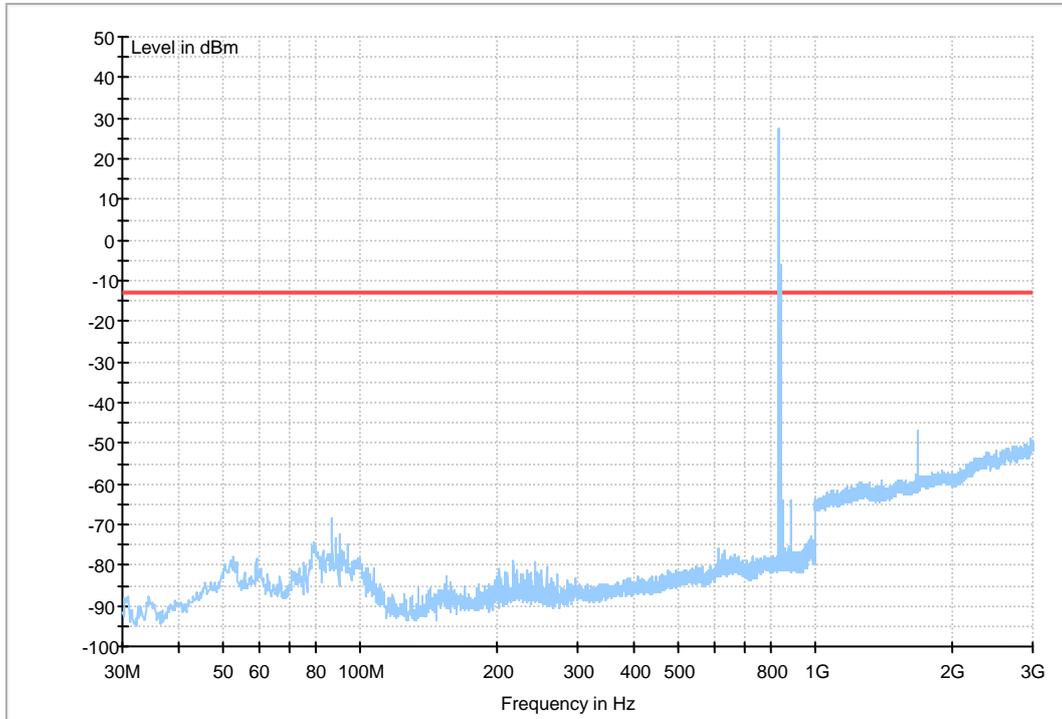
GPRS 850

Traffic Mode (9kHz-30MHz)



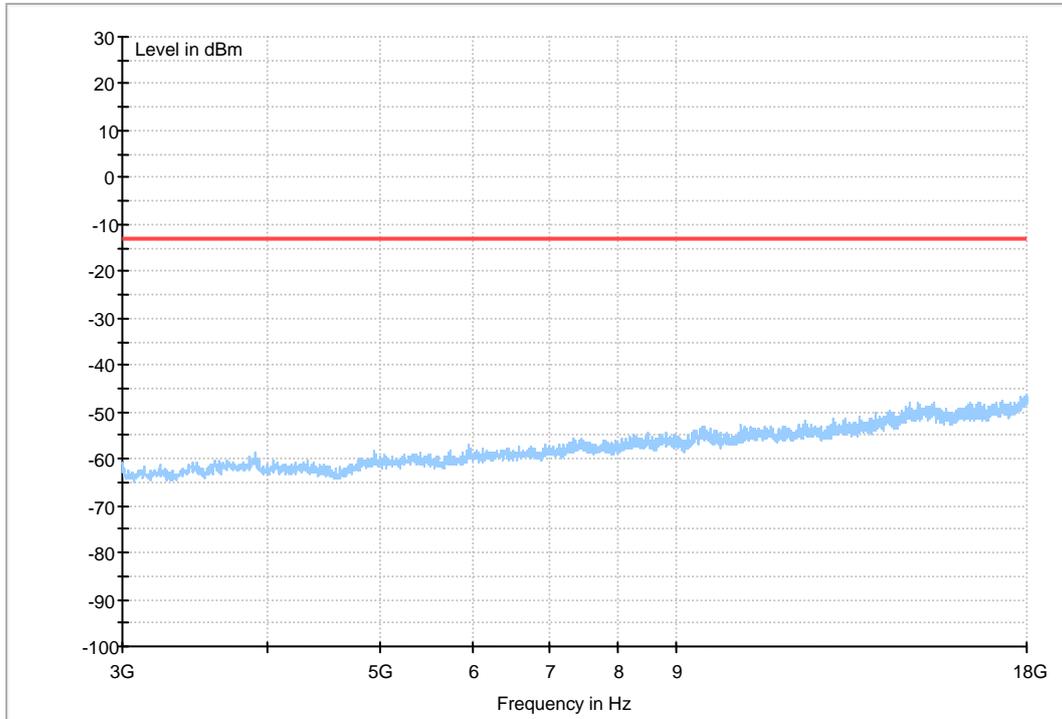


Traffic Mode (30MHz-3GHz)





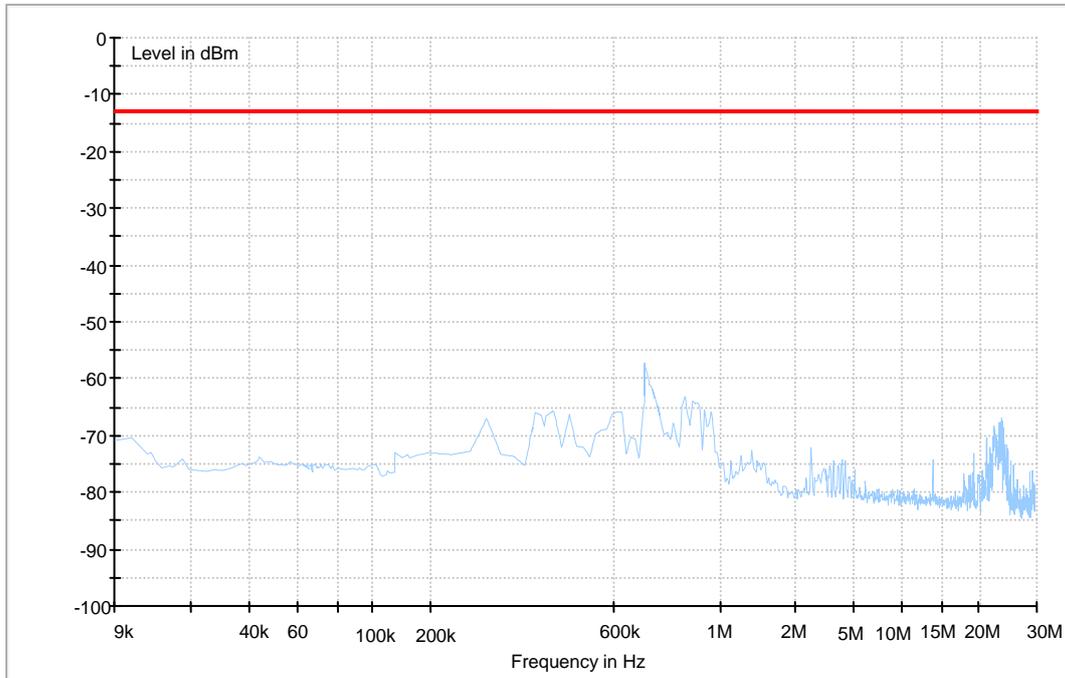
Traffic Mode (3GHz-18GHz)





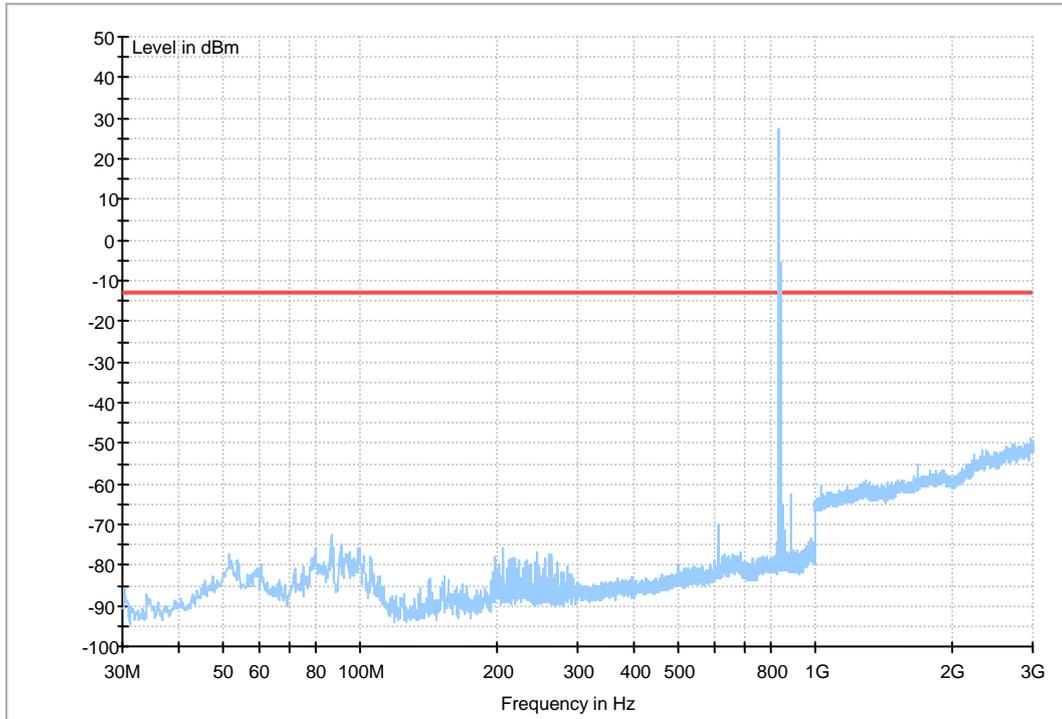
EDGE 850

Traffic Mode (9kHz-30MHz)



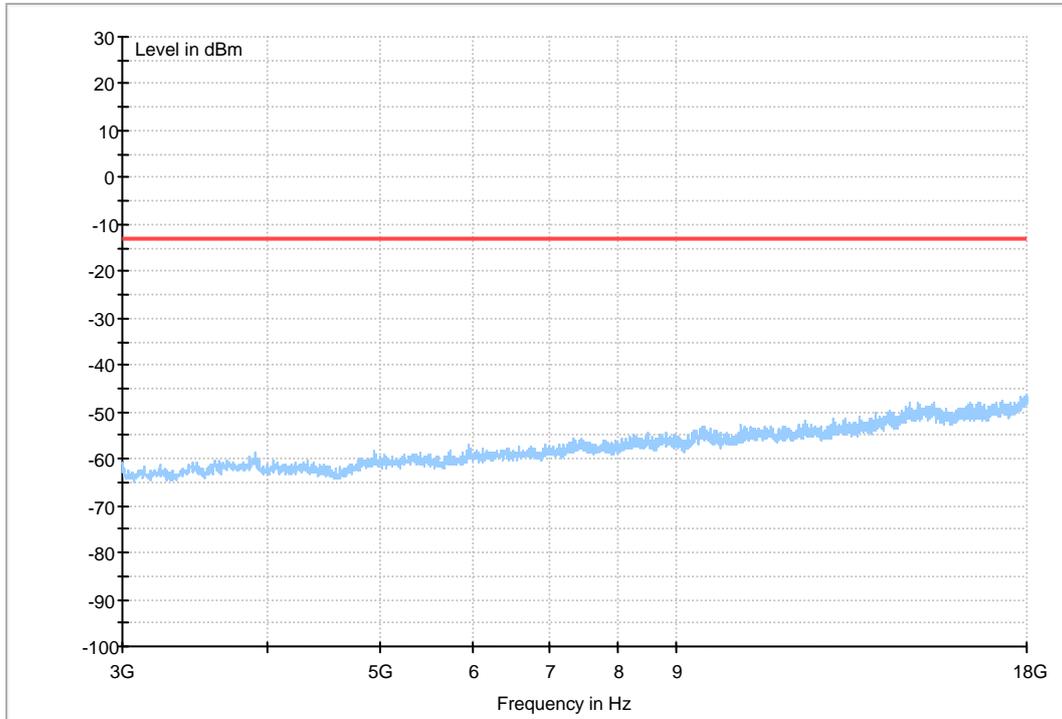


Traffic Mode (30MHz-3GHz)





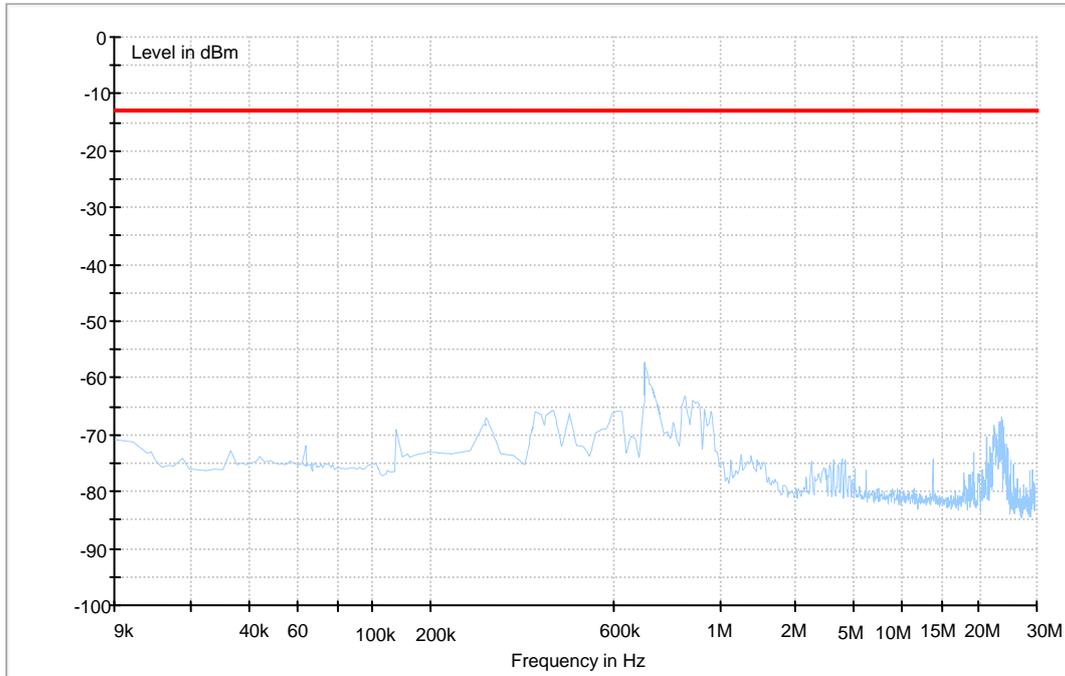
Traffic Mode (3GHz-18GHz)





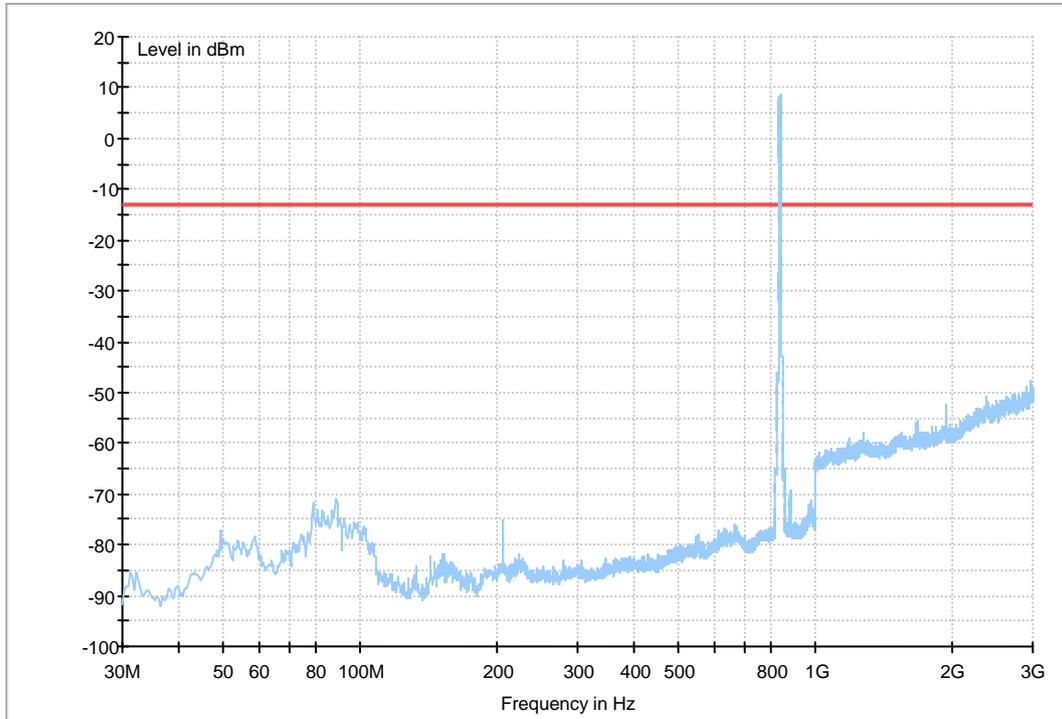
WCDMA 850

Traffic Mode (9kHz-30MHz)



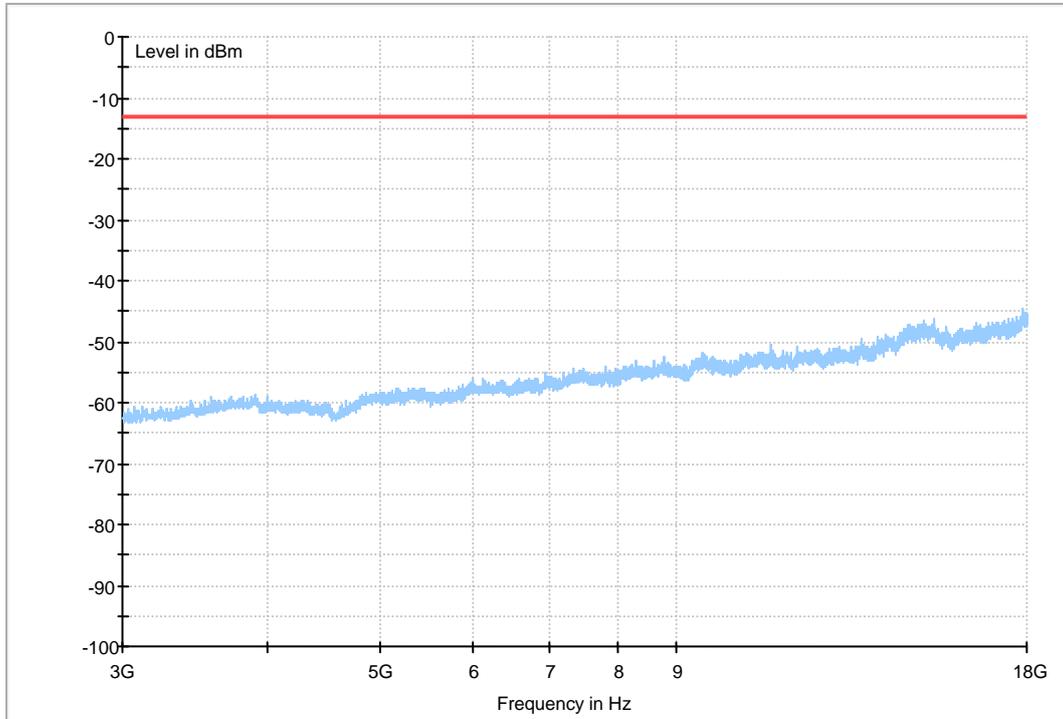


Traffic Mode (30MHz-3GHz)





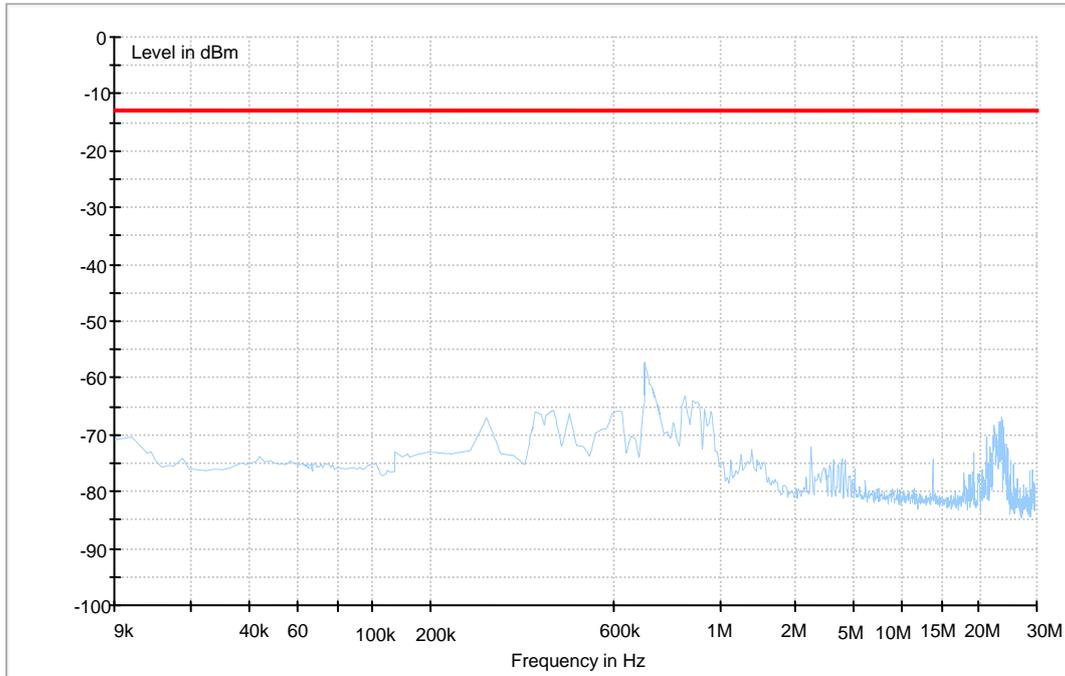
Traffic Mode (3GHz-18GHz)





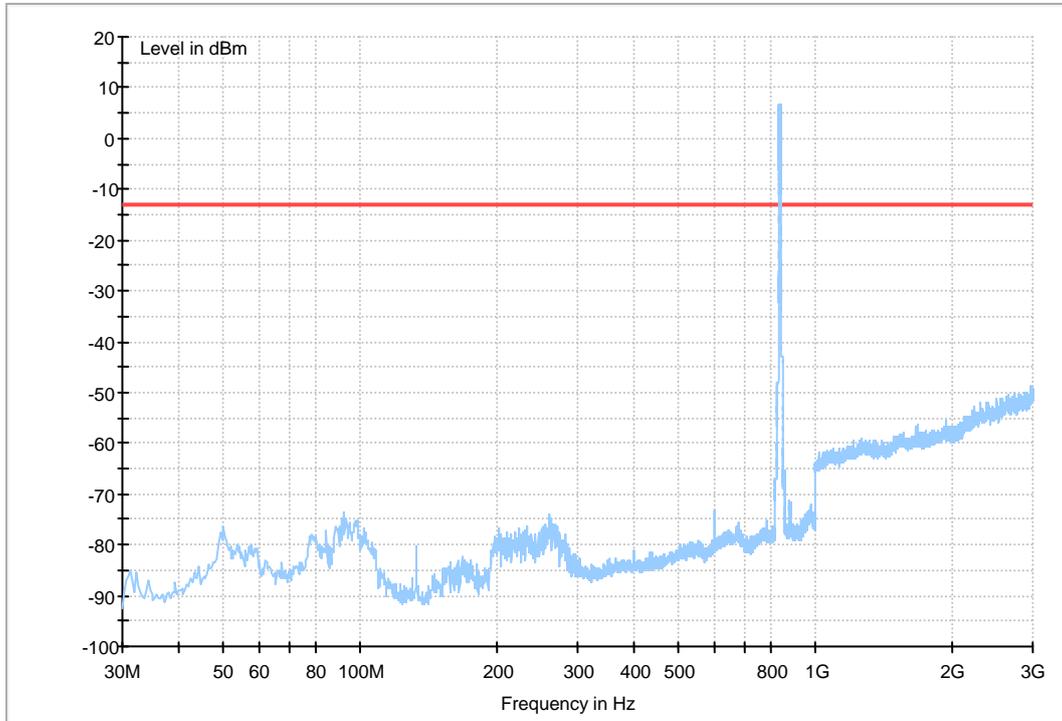
HSDPA 850

Traffic Mode (9kHz-30MHz)



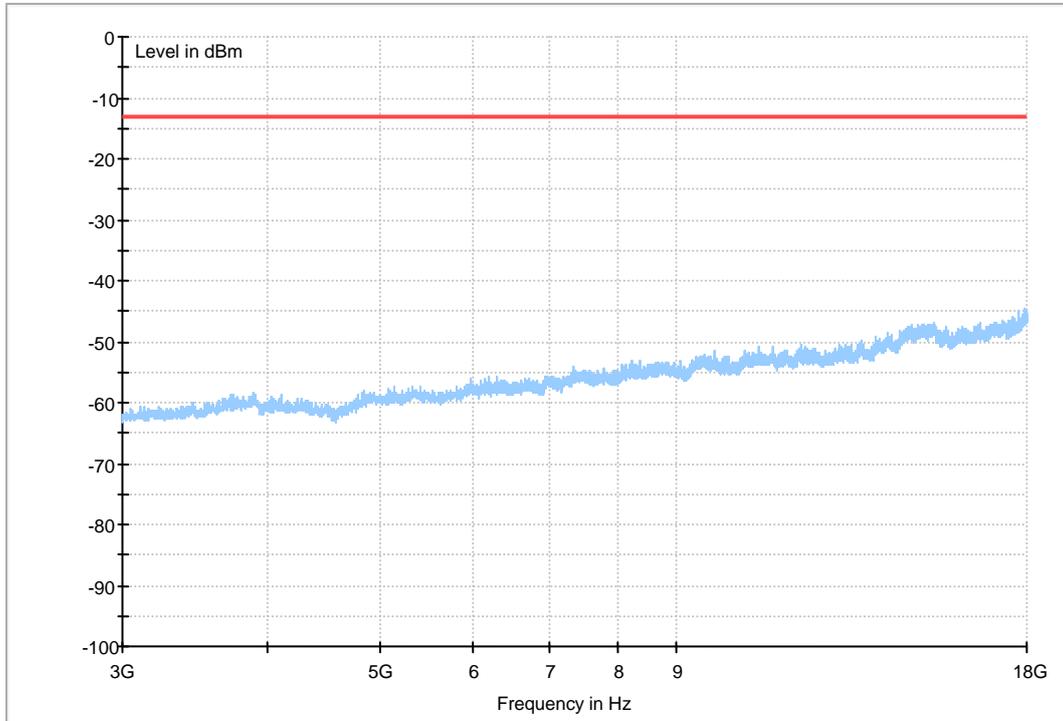


Traffic Mode (30MHz-3GHz)





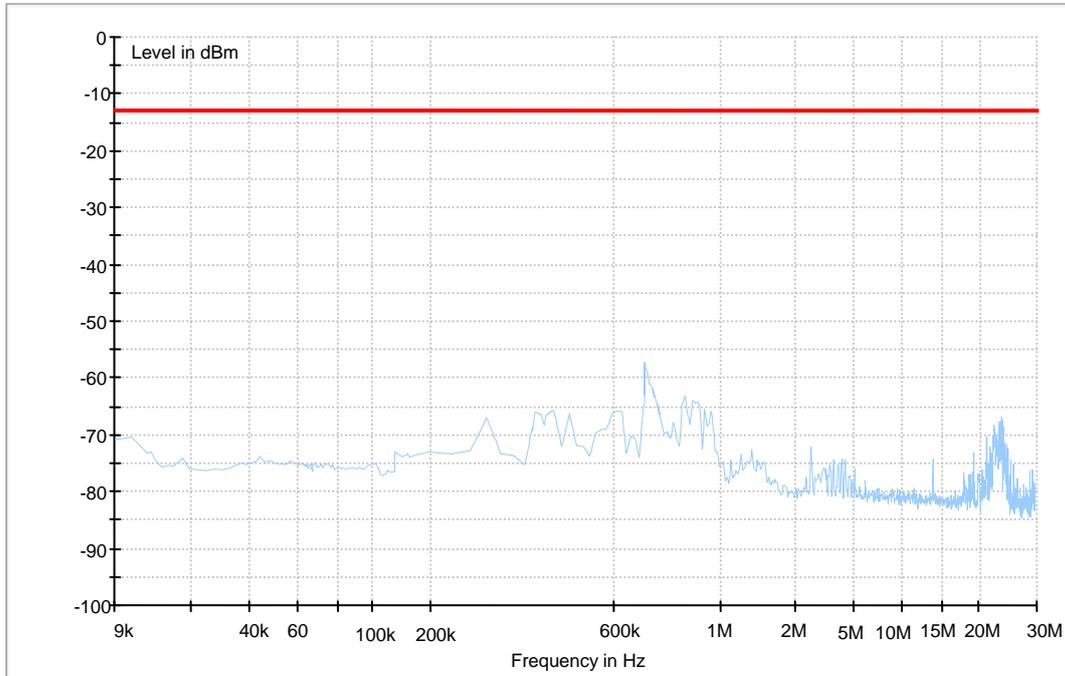
Traffic Mode (3GHz-18GHz)





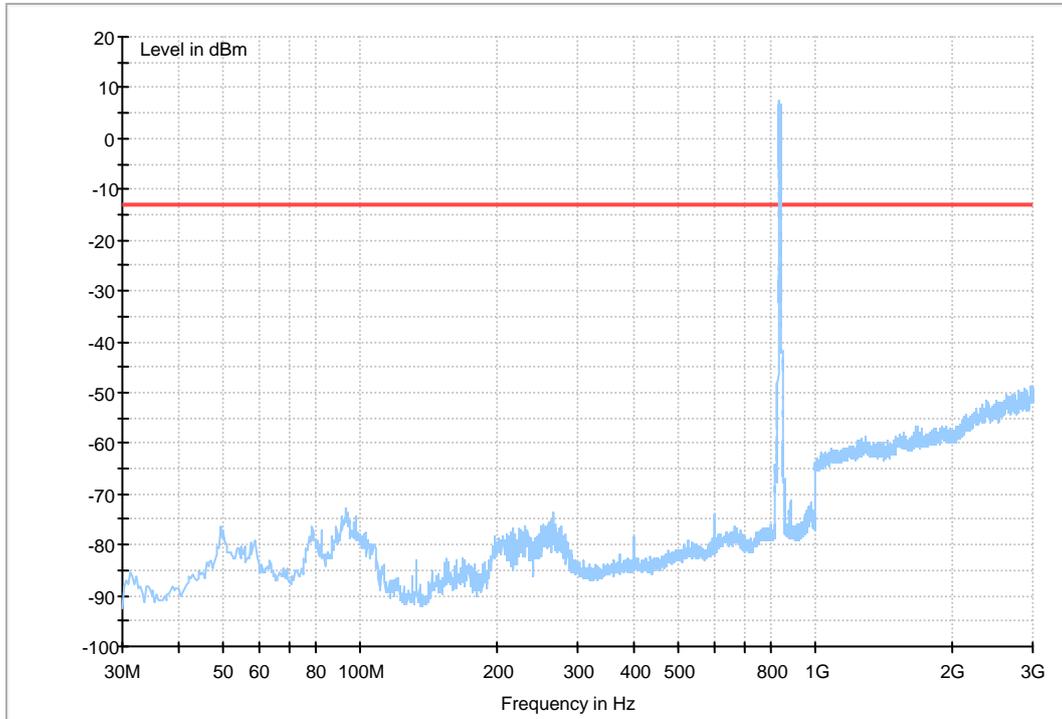
HSUPA 850

Traffic Mode (9kHz-30MHz)



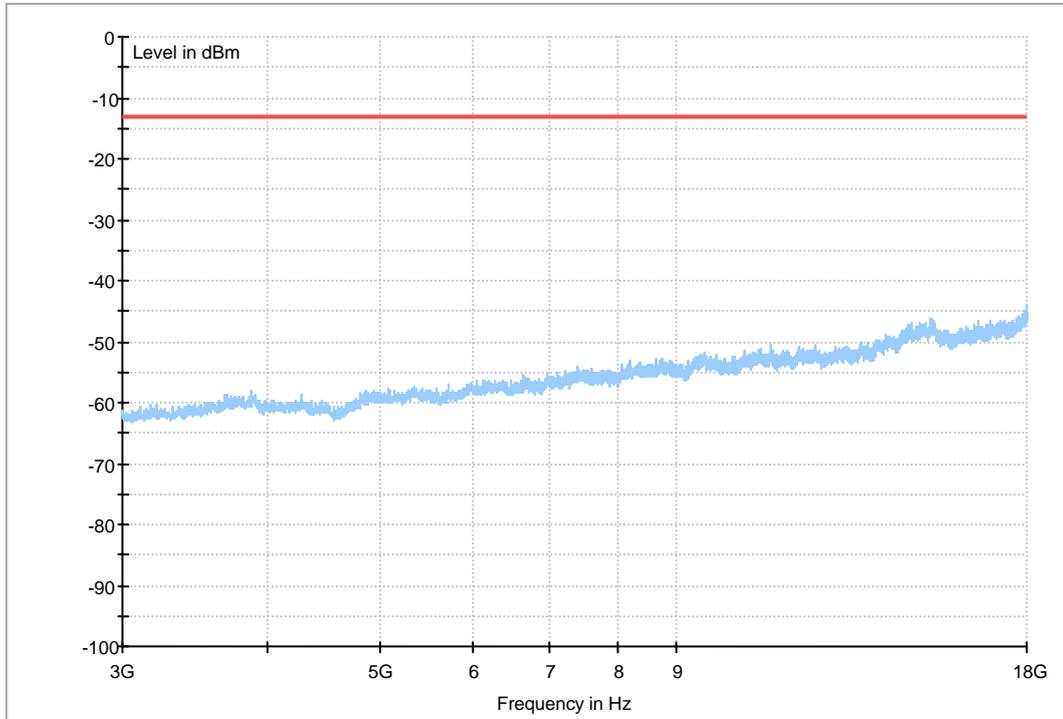


Traffic Mode (30MHz-3GHz)





Traffic Mode (3GHz-18GHz)



The END



Appendix G

Frequency Stability

According to FCC Part 2.1055& Part 22.355
& RSS-132



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	11	0.013142	---	±2.5	Pass
			-20 °C	14	0.016726	---	±2.5	Pass
			-10 °C	-17	-0.02031	---	±2.5	Pass
			0 °C	7	0.008363	---	±2.5	Pass
			10 °C	16	0.019116	---	±2.5	Pass
			20 °C	-14	-0.01673	---	±2.5	Pass
			30 °C	-16	-0.01912	---	±2.5	Pass
			40 °C	9	0.010753	---	±2.5	Pass
			50 °C	-19	-0.0227	---	±2.5	Pass
TM 2	M	100%	-30 °C	9	0.010753	---	±2.5	Pass
			-20 °C	-14	-0.01673	---	±2.5	Pass
			-10 °C	13	0.015532	---	±2.5	Pass
			0 °C	-19	-0.0227	---	±2.5	Pass
			10 °C	10	0.011947	---	±2.5	Pass
			20 °C	12	0.014337	---	±2.5	Pass
			30 °C	-10	-0.01195	---	±2.5	Pass
			40 °C	9	0.010753	---	±2.5	Pass
			50 °C	11	0.013142	---	±2.5	Pass
TM 3	M	100%	-30 °C	9	0.01076	---	±2.5	Pass
			-20 °C	11	0.013152	---	±2.5	Pass
			-10 °C	-13	-0.01554	---	±2.5	Pass
			0 °C	12	0.014347	---	±2.5	Pass
			10 °C	-18	-0.02152	---	±2.5	Pass
			20 °C	-17	-0.02033	---	±2.5	Pass
			30 °C	-12	-0.01435	---	±2.5	Pass
			40 °C	13	0.015543	---	±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	20 °C	85 %	19	0.0227	---	±2.5	Pass
			100 %	18	0.021505	---	±2.5	Pass
			115 %	11	0.013142	---	±2.5	Pass
TM 2	M	20 °C	85 %	-9	-0.01075	---	±2.5	Pass
			100 %	-13	-0.01553	---	±2.5	Pass
			115 %	14	0.016726	---	±2.5	Pass
TM 3	M	20 °C	85 %	-17	-0.02033	---	±2.5	Pass
			100 %	17	0.020325	---	±2.5	Pass
			115 %	-16	-0.01913	---	±2.5	Pass

The END



Appendix H

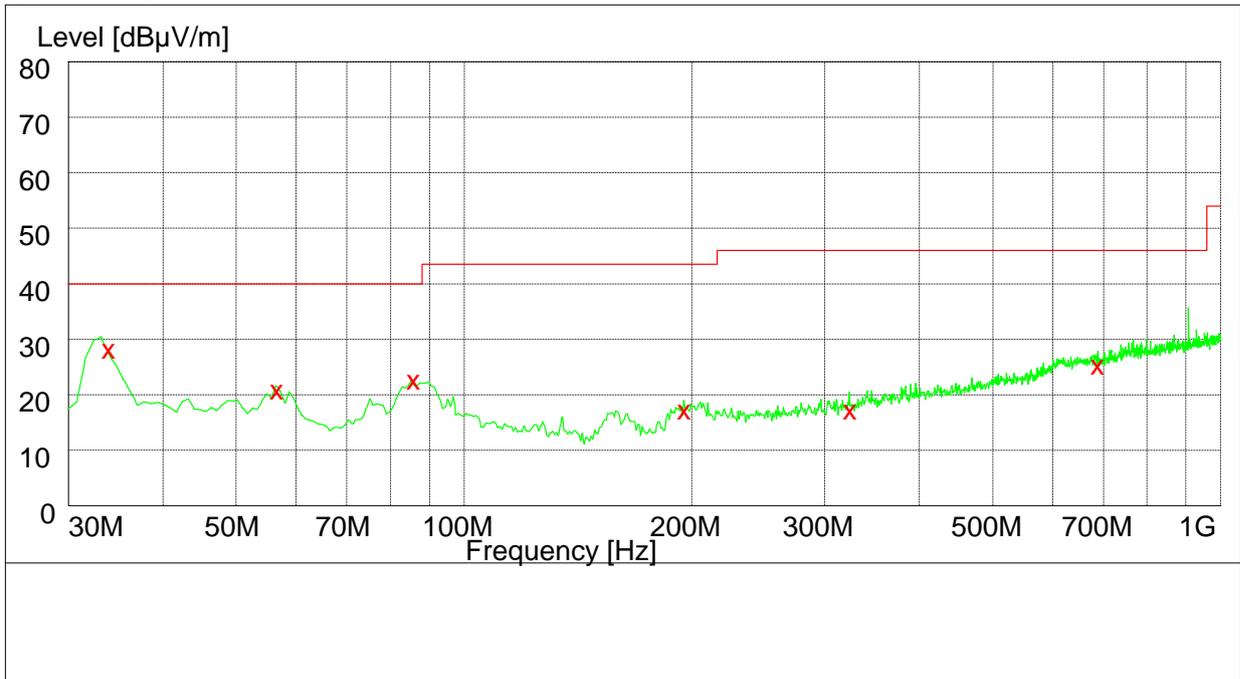
Receiver Spurious Emissions

According to RSS-132



This test was carried out in all the test modes, Here only the worst test result was shown.

30MHz-1GHz

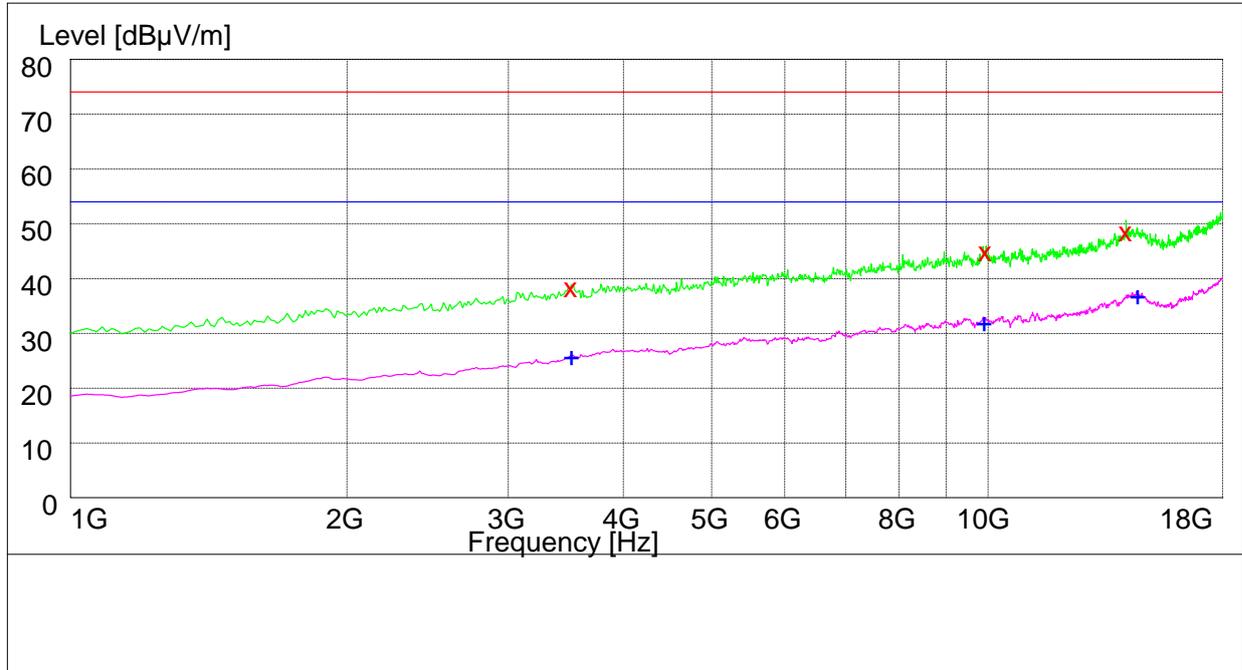


MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Trans d dB	Limit dBµV/m	Margin dB	Heig ht cm	Azimet h deg	Polarisation
33.960000	25.40	14.8	40.0	14.6	101.0	29.00	VERTICAL
56.640000	18.10	14.1	40.0	21.9	100.0	271.00	VERTICAL
85.980000	19.90	11.2	40.0	20.1	149.0	100.00	VERTICAL
196.080000	14.50	12.3	43.5	29.0	100.0	200.00	VERTICAL
324.180000	14.40	15.7	46.0	31.6	104.0	209.00	HORIZONTAL
688.680000	22.50	22.0	46.0	23.5	104.0	298.00	HORIZONTAL



1GHz-18GHz



MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBµV/m	Trans d dB	Limit dBµV/m	Margin dB	Heig ht cm	Azimet h deg	Polarisation
3515.000000	36.80	-6.0	74.0	37.2	149.0	356.00	HORIZONTAL
9942.500000	43.40	8.1	74.0	30.6	140.0	66.00	HORIZONTAL
14136.000000	47.00	13.5	74.0	27.0	109.0	38.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Trans d dB	Limit dBµV/m	Margin dB	Heig ht cm	Azimet h deg	Polarisation
3514.500000	24.20	-6.0	54.0	29.8	100.0	237.00	HORIZONTAL
9883.000000	30.50	8.0	54.0	23.5	100.0	48.00	VERTICAL
14534.500000	35.30	14.5	54.0	18.7	137.0	241.00	HORIZONTAL

The END