FCC PART 22/24 TEST REPORT

for

GSM/GPRS Module

Model No.: SIM345

FCC ID: UDV0606020080117

of

Applicant: **Shanghai Simcom Ltd.**

Address: **SIM Technology Building, No.700 Yishan Road, Shanghai, P.R. China 200233**

Tested and Prepared

by

Taiwan ETS Product Service Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679

A2LA Accredited No.: 1983.02

PTCRB Accredited Type Certification Test House

Report No.: W6D20711-8718-P-22/24

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Taiwan ETS Product Service Co., Ltd.

Report Number: W6D20711-8718-P-22/24
FCC ID: UDV0606020080117

Certification of Test Report

Applicant : Shanghai Simcom Ltd.
SIM Technology Building, No.700 Yishan Road, Shanghai, 200233 Shanghai, P.R. China

Manufacturer : Shanghai Simcom Ltd.
SIM Technology Building, No.700 Yishan Road, Shanghai, 200233 Shanghai, P.R. China

Tested Equipment :

Type Description	: GSM/GPRS Module
Model Number	: SIM345
Series Number	: N/A
Brand Name	: SIMCOM
Operation Frequency	: 824.2-848.8MHz / 1850.2 - 1909.8 MHz
RF Output Power	1)824.2 - 848.8MHz :33.42 dBm (ERP) 2)1850.2 - 1909.8 : 32.87 dBm (EIRP)
Power Supply	: Adaptor (I/P: AC 100-240 V / 50-60 Hz / 0.3 A, O/P: 6 Vdc / 2 A)

Regulation Applied : 47CFR Part 22 (2005-10) and Part 24 (2005-10)

Test Method : 47CFR Part 2 (2005), TIA/EIA-603B (2002) and ANSI C63.4(2003)

I HEREBY CERTIFY THAT: The test results written in this report were derived conscientiously in accordance with the requirements and procedures of 47CFR Part 2(2005) and TIA-603-B(2002), and it was found that the device described above is in compliance with the applicable limits specified in 47CFR Part 22 and Part 24.

Note:

1. The result of this test report is valid only in connection to the sample has been tested at the laboratory of Taiwan ETS Product Service Co. Ltd.
2. This test report shall always be duplicated in full pages unless the written approval of the testing laboratory is obtained.

Test Engineer:

Date	ETS-Lab.	Name	Signature
January 25, 2008		Jay Chaing	Jay Chaing

Technical responsibility for area of testing:

Date	ETS	Name	Signature
January 25, 2008		Steven Chuang	Steven Chuang

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1. Summary

1.1 Description of tested equipment

The equipment tested is a GSM/GPRS Module. The operation frequency bands and rated RF output power are listed as follows:

824.2-848.8MHz (Cellular, Part 22), 2.5W (ERP)
1850.2-1909.8MHz (Cellular, Part 24), 1.5W (EIRP)

This test report only contains test requirements specified in 47CFR Part 22 and Part 24 for GSM/GPRS Module.

1.2 Date of testing processing

Test sample received: January 14, 2008

Test finished: January 24, 2008

Other Information: None

1.3 Modification Information

No modification was made during the all test items been performed.

1.4 Test standards

Technical standard: FCC Part 2 (2005), TIA-603-B (2002), ANSI C63.4 (2003)

Deviation from test standard: None

1.5 Summary of test result

Band: 850MHz

Section in this Report	Test Item	Relevant Section	Verdict
3.2	RF power output	2.1046(a), 22.913(a)	Pass
4.2	Modulation characteristics	2.1047	Not Required
5.2	Occupied bandwidth	2.1049(h)	Pass
6.2	Spurious emissions at antenna terminals	22.917(a), 2.1051	Pass
7.2	Field strength of spurious radiation	22.917(a), 2.1053	Pass
8.2	Frequency stability	2.1055(a) 2.1055(d)	Pass

Band: 1900MHz

Section in this Report	Test Item	Relevant Section	Verdict
3.2	RF power output	2.1046(a), 24.232(b)	Pass
4.2	Modulation characteristics	2.1047	Not Required
5.2	Occupied bandwidth	2.1049(h)	Pass
6.2	Spurious emissions at antenna terminals	24.238(a), 2.1051	Pass
7.2	Field strength of spurious radiation	24.238(a), 2.1053	Pass
8.2	Frequency stability	2.1055(a) 2.1055(d)	Pass

2. General Information

2.1 Testing laboratory

2.1.1 Location

OATS
No.5-1, Shuang Sing Village,
LiShuei Rd., Wanli Township,
Taipei County 207, Taiwan (R.O.C.)

Company
Taiwan ETS Product Service Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

2.1.2 Details of accreditation status

Accredited testing laboratory
A2LA-registration number: 1983.02
FCC filed test laboratory Reg. No. 930600
Industry Canada filed test laboratory Reg. No. IC 5679A-1
PTCRB Accredited Type Certification Test House

2.2 Details of approval holder

Name:	Shanghai Simcom Ltd.
Street:	SIM Technology Building, No.700 Yishan Road.,
Town:	Shanghai,
Country:	P.R. China 200233
Telephone:	+86-21-5427-8632
Fax:	+86-21-5427-8901

Manufacturer: (if applicable)

Name:	./.
Street:	./.
Town:	./.
Country:	./.

2.3 Description of Tested System

The EUT was tested alone without the Accessories or Peripherals.

Equipment	Model No.	Series No.	Software	Cable information	Note
		Without Peripherals			

Frequency Range:

Band: 850MHz

Band: 1900MHz

Frequencies Selected to be investigated:

Band: 850MHz

Low Frequency (ch 128) : 824.174 MHz

Mid Frequency (ch 188) : 836.154 MHz

High Frequency (ch 251) : 848.591 MHz

Band: 1900MHz

Low Frequency (ch 512) : 1850.060 MHz

Mid Frequency (ch 661) : 1879.740 MHz

High Frequency (ch 810) : 1909.940 MHz

Antenna Type : Vehicular Antenna

Antenna Gain : 3 dBi

Power supply : Adaptor (I/P: AC 100-240V / 50-60Hz / 0.3A, O/P: 6Vdc / 2A)

Operation modes : GSM , GPRS

2.4 Test environment

Temperature:	27 °C
Relative humidity content:	54 %
Air pressure:	86-103 Kpa

2.5 General Test Requirement

Radiated Emission: For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100 kHz respectively with an appropriate sweep speed.

For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

2.6 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2007/10/15	2008/10/14
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Function Test	
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2007/10/15	2008/10/14
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2007/10/15	2008/10/14
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2007/5/11	2008/5/10
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2007/10/23	2009/10/22
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2007/8/2	2008/8/1
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2007/11/2	2009/11/1
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2008/12/6
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2006/11/7	2008/11/6
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2007/10/29	2008/10/28
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2007/10/12	2009/10/11
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2007/12/3	2008/12/2
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2007/10/29	2008/10/28
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2007/10/11	2008/10/12
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	Function Test	
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	Function Test	
ETSTW-RE 017	Log-Periodic Antenna	HL025	352886/001	R&S	2006/5/4	2008/5/3
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2007/11/7	2010/11/6
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2007/10/9	2008/10/8
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	2007/6/29	2008/6/28
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/5/26	2008/5/25
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/5/26	2008/5/25
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2006/5/3	2008/5/2
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2007/10/9	2008/10/8
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2007/7/9	2008/7/8

ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2007/10/16	2009/10/15
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2006/5/8	2008/5/7
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2006/5/29	2008/5/28
ETSTW-RE 047	ESA-E SERIES SPECTRUM ANALYZER	E4445A	MY46181369	Agilent	2007/7/19	2008/7/18
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2008/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2007/7/16	2008/7/15
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2007/7/2	2009/7/1
ETSTW-GSM 01	SIM Simulator	IT3	B2004-50106	COMPRION	2007/7/23	2008/7/22
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	109439	R&S	2007/10/17	2008/10/16
ETSTW-GSM 03	Agilent 8960 Test Set 1	E5515C	GB44052675	Agilent	2006/6/26	2008/6/25
ETSTW-GSM 04	Agilent 8960 Test Set 2	E5515C	GB44052665	Agilent	2006/6/29	2008/6/28
ETSTW-GSM 05	Agilent 8960 Test Set 3	E5515C	GB44052652	Agilent	2006/7/11	2008/7/10
ETSTW-GSM 06	Agilent 8960 Test Set 4	E5515C	GB44052684	Agilent	2006/7/4	2008/6/3
ETSTW-GSM 07	Agilent 8960 Test Set 5	E5515C	GB44052658	Agilent	2006/7/12	2008/7/11
ETSTW-GSM 08	Agilent 8960 Test Set 6	E5515C	GB44052666	Agilent	2006/7/6	2008/7/5
ETSTW-GSM 09	Controller PC	Dell GX 270	700F61J	Dell	Function Test	
ETSTW-GSM 10	Anite Combiner	B4605/100	0053	Wessex / Anite	2006/9/22	2008/9/21
ETSTW-GSM 11	GSM 850,900,1800,1900 Test system	TS8950G	100039	R&S	2008/1/18	2010/1/17
ETSTW-GSM 12	Acoustical Calibrator	4231	2463874	Brüel&Kjær	2007/8/2	2008/8/1
ETSTW-GSM 13	Conditioning Amplifier	2690--0S2	2437856	Brüel&Kjær	2007/8/2	2008/8/1
ETSTW-GSM 14	Telephone Test Head	4602B	2465324	Brüel&Kjær	Function Test	
ETSTW-GSM 15	Mouth Simulator	4227	2462516	Brüel&Kjær	2007/8/2	2008/8/1
ETSTW-GSM 16	TEMP.&HUMIDITY CHAMBER	GTH-120-40-1P-U	MAA0501002	GIANT FORCE	2007/12/28	2008/12/27
ETSTW-GSM 17	ANTENNT COPLER	CMU-Z10	100988	R&S	Function Test	
ETSTW-GSM 18	AUDIO ANALYZER	UPL16	100173	R&S	2007/10/25	2008/10/24
ETSTW-GSM 23	SPLITTER	4901.19.A	None	SUHNER	Function Test	
ETSTW-GSM 24	Vibration Testing System	VS-100V	5494	Vibration	2007/12/11	2008/12/10
ETSTW-GSM 29	Microphone	4185	2463004	Brüel&Kjær	2007/8/2	2008/8/1
ETSTW-GSM 30	Ear Simulator	4195	2457416	Brüel&Kjær	2007/8/2	2008/8/1

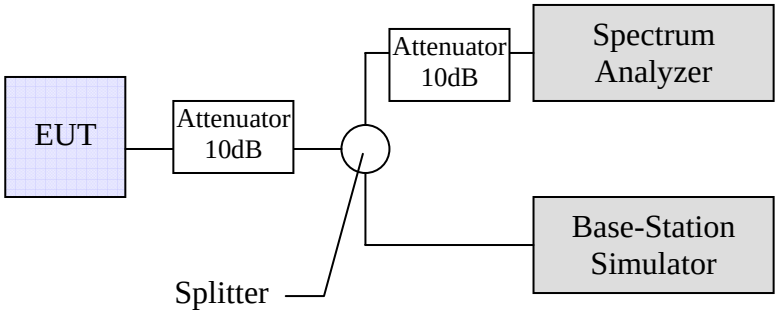
3. RF Power Output

3.1 Test procedure

3.1.1 Conducted Method

Per 47CFR Part 2.1046, the RF power output shall be measured at the RF output terminals and following procedure is employed:

The transmitter output was connected as the following figure:



The whole connection system is calibrated with a standard signal generator. Power on and make a link form simulator to EUT and then set the EUT to maximum output power.
Measure the RF power with the spectrum analyzer in accordance the following settings:

RBW: 300 kHz for Frequency below 1GHz and 1MHz for Frequency equal to and above 1GHz.
VBW: 300 kHz for Frequency below 1GHz and 1MHz for Frequency equal to and above 1GHz.
Span: 2MHz
Sweep: 3s

The power output at the transmitter antenna terminal is then determined by assign the value of the corrected factor to the spectrum analyzer reading.

Tests were performed at three frequencies (low , middle and high channels) and operation mode selected.

3.1.2 Radiated Method

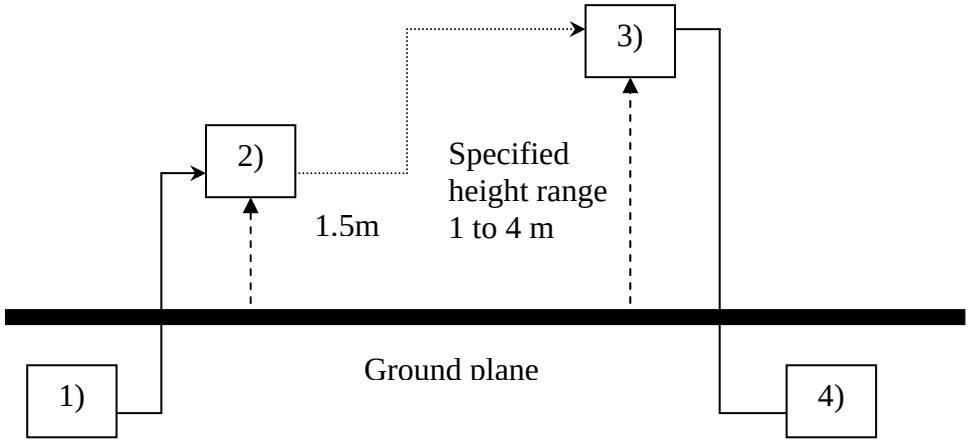
If the conducted measurement is not practical due to the integral antenna, the radiated measurement will be performed in accordance the following procedure:

The EUT was positioned on a non-conductive turntable, 0.8mabove the ground on an open test site.
The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer.

Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna.

Substitution RF power Measurement at Taiwan ETS Product Service Co., Ltd.
General :

The applied substitution method follows ANSI/TIA/EIA-603,ANSI/TIA/EIA-102.CAAA or the appropriate ETSI rules respectively.
The actual signal generated by the EUT can be determined by means of a substitution measurement in which a known signal source replaces the device to be measured.



1) Signal generator;
2) Substitution antenna;
3) Test antenna;
4) Spectrum analyzer or selective voltmeter.

The substitution antenna replaces the transmitter antenna at the same position and in vertical polarization. The frequency of the signal generator shall be adjusted to the measurement frequency.
The test antenna shall be raised or lowered, if necessary, to ensure that the maximum signal is still received. The input signal to the substitution antenna shall be adjusted in level until an equal or a known related level to that detected from the transmitter is obtained in the measurement receiver.
If a fully anechoic chamber is used as test site in order to provide free space conditions there is no need to change the height of the antenna.
The measurement will be repeated in horizontal position.
Calibration:
In order to make this kind of measurement more effective and to avoid subjective measurement faults ETS has installed automatic computer controlled measurement procedures.
With the above described substitution method a test site is calibrated over the full frequency range which is used in suitable frequency steps. For a certain power level on the substitution antenna the received power over the whole frequency range is documented. All necessary antenna gains, cable losses, filter losses and amplifications of preamplifiers are taken in

consideration. The summary of this calibration measurement performs a transducer factor that is related to the considered test site and a certain measurement distance. Differences of the radiated power levels of different test samples are determined by internal attenuation of measurement receiver. The proper function of such test site will be maintained by short term plausibility checks and periodical re-calibration.

Testing:
The test sample will be putted on the table at the defined position and the radiated power will be receiver and documented by the measurement receiver.
On test sites with ground plane the measurement antenna will be lowered and raised to maximum values at significant frequencies.
For peak power measurements the sample is turned by the turntable over 360 degree in order to find the direction with the maximum radiation or to document the max reading with the MAXHOLD function during the rotation.

3.2 Test Results

☑ Conducted Measurement
☐ Radiated Measurement

Frequency (MHz)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Result
824.204	33.08	35.23	38.45	Pass
836.268	33.25	35.40	38.45	Pass
848.870	33.42	35.57	38.45	Pass
1850.200	30.16	32.31	33	Pass
1880.072	30.51	32.66	33	Pass
1909.831	30.72	32.87	33	Pass

Test equipment: ETSTW-RE 003, ETSTW-RE 043, ETSTW-GSM 02

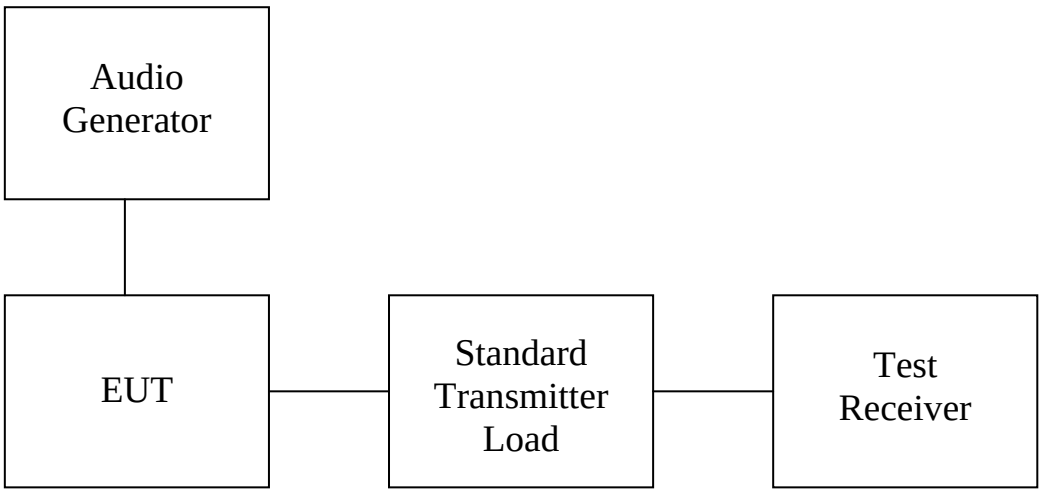
Note: Please refer to appendix A for plot data.

4. Modulation Characteristics

4.1 Test procedure

☐ A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.
The audio signal generator is connected to the audio input of the EUT with its full rating. The modulation response is measured at certain modulation frequencies, related to 1000Hz reference signal. Tests are performed for positive and negative modulation.

☐ Equipment which employs modulation Limiting: A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The audio signal generator is connected to the audio input of the EUT with its full rating. The modulation limiting is measured at certain modulation frequencies from 100Hz to 15kHz.



4.2 Test Results

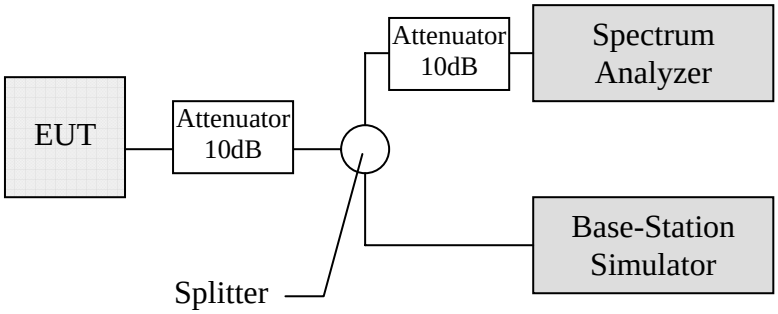
For digital modulation employed, this test item is not applicable.

5. Occupied Bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power. Near the carrier an Emission Mask is defined by the standard.

5.1 Test procedure

The RF output of the transceiver was connected as the following figure.
Occupied Bandwidth was measured with a occupied bandwidth function of the analyzer at 99% power was occupied. Then set the spectrum analyzer to cover the upper and lower band edges to measure emission mask.



5.2 Test Results

Occupied Channel Bandwidth (kHz)	
Channel 128	251.602564103
Channel 188	250.000000000
Channel 251	250.000000000
Channel 512	250.000000000
Channel 661	250.000000000
Channel 810	250.000000000
-26dB Channel Bandwidth (kHz)	
Channel 128	336.538461539
Channel 188	333.333333333
Channel 251	336.538461539
Channel 512	338.141025641
Channel 661	334.935897436
Channel 810	336.538461538

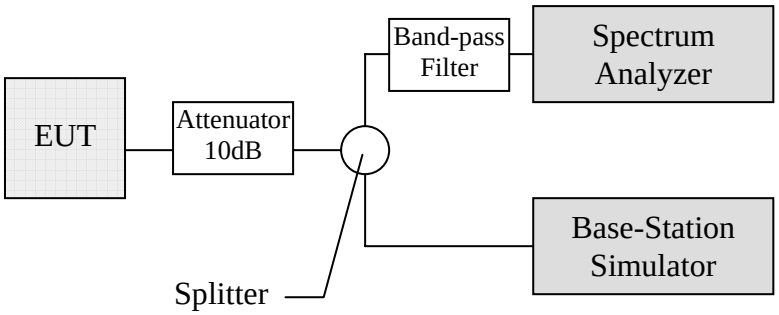
Test equipment: ETSTW-RE 003, ETSTW-RE 043, ETSTW-GSM 02

Note: Please refer to appendix for plot data.

6. Spurious Emissions at Antenna Terminals

6.1 Test procedure

This transmitter output was connected to a calibrated coaxial attenuator, the other end of which was connected to a spectrum analyzer via a three-port splitter. Please refer to the following figure. Transmitter output was derived with the spectrum analyzer in dBm.
The Spurious Emissions at Antenna Terminals was measured by the spectrum analyzer with a suitable notch filter and/or Band-pass filter.
Tests were performed with an un-modulated carrier at three frequencies (low, middle and high channels) and on all power levels, which can be set-up on the transmitters.



6.2 Test Results

CH128

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
126.442307692	-35.35	-13	-22.35
524.358974359	-35.87	-13	-22.87
1649.038462	-19.36	-13	-6.36
5769.400000	-38.10	-13	-25.10
9890.400000	-37.65	-13	-24.65
15.659800000	-37.06	-13	-24.06
18956.600000	-37.26	-13	-24.26

CH188

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
155.592948718	-36.04	-13	-23.04
553.846153846	-36.04	-13	-23.04
1673.076923	-19.66	-13	-6.66
4181.000000	-38.85	-13	-25.85
10870.600000	-38.35	-13	-25.35
15887.800000	-37.47	-13	-24.47
20905.000000	-36.75	-13	-23.75

CH251

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
92.660256410	-35.93	-13	-22.93
316.666666667	-36.03	-13	-23.03
1697.115385	-19.59	-13	-6.59
5941.600000	-38.47	-13	-25.47
8488.000000	-38.14	-13	-25.14
16127.200000	-37.34	-13	-24.34
21220.000000	-36.96	-13	-23.96

Idle mode

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
91.298076923	-43.40	-13	-30.40
405.128205128	-43.54	-13	-30.54
3163.461538	-44.26	-13	-31.26
7897.435897	-43.96	-13	-30.96
10055.288462	-43.90	-13	-30.90
16906.250000	-44.26	-13	-31.26
26363.782051	-44.35	-13	-31.35

CH512

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
164.583333333	-36.27	-13	-23.27
380.769230769	-35.85	-13	-22.85
3700.400000	-38.29	-13	-25.29
5550.600000	-36.17	-13	-23.17
11101.200000	-38.11	-13	-25.11
17655.048077	-36.29	-13	-23.29
22202.400000	-36.42	-13	-23.42

CH661

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
40.625000000	-35.93	-13	-22.93
964.102564103	-36.16	-13	-23.16
3760.000000	-39.68	-13	-26.68
5640.000000	-33.07	-13	-20.07
9400.000000	-36.74	-13	-23.74
14960.000000	-37.67	-13	-24.67
24360.000000	-35.06	-13	-22.06

CH810

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
180.384615385	-35.72	-13	-22.72
892.307692308	-35.48	-13	-22.48
3819.600000	-38.49	-13	-25.49
5730.769231	-32.67	-13	-19.67
11458.800000	-37.71	-13	-24.71
17188.200000	-37.68	-13	-24.68
24827.400000	-36.15	-13	-23.15

Idle mode

Frequency (MHz)	Power Measured (dBm)	Compliance Limit (dBm)	Margin (dB)
38.173076923	-44.31	-13	-31.31
314.102564103	-43.97	-13	-30.97
2288.461538	-44.08	-13	-31.08
4044.871795	-43.62	-13	-30.62
11212.339744	-44.36	-13	-31.36
14668.269231	-43.87	-13	-30.87
26173.076923	-43.93	-13	-30.93

Test equipment: ETSTW-RE 003, ETSTW-GSM 02, ETSTW-GSM 23

Note: Please refer to appendix C for plot data.

6.3 Explanation of test result

All factors like cable loss and external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

6.4 Calculation of Limit for Spurious at Antenna Terminals

Compliance with § 22.917(a) requires that any emission be attenuated below the transmitter power at least 43 + 10 log10 P (P = transmitter power in Watts).
The compliance limit was calculated as an example per the following:

Maximum transmitter output power: P=0.000011588 Watts
Required attenuation: A=43 + 10 log10 P
Limit for Spurious Emissions at Antenna Terminals: L=P-A=-13dBm

7. Field Strength of Spurious Radiation

7.1 Test procedure

The test procedure for filed strength measurement is same as radiated power except for a notch filter or band pass filter is used to avoid the influence of fundamental to the pre-amplifier.

The measurements below 1GHz were performed with a measurement bandwidth of 100kHz, above 1GHz with a bandwidth of 1 MHz.

7.2 Test Results

The measurements of the spurious emission at the upper, center and lower channel.

Active mode
3.6V

Model:	SIM345		Date:	2008/1/18			
Mode:	850 band (ch128)		Temperature:	26	°C	Engineer:	Michael
Polarization:	Horizontal		Humidity:	60	%		

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1649.299	-35.6	4.69	-30.91	-13.00	-17.91	200	150
2472.946	-56.87	6.41	-50.46	-13.00	-37.46	195	150
3296.800	-62.19	11.34	-50.85	-13.00	-37.85	210	150
4121.000	-57.78	11.91	-45.87	-13.00	-32.87	211	150
4945.200	-56.27	16.42	-39.85	-13.00	-26.85	220	150
5769.400	-59.30	18.73	-40.57	-13.00	-27.57	230	150
6593.600	-58.29	15.52	-42.77	-13.00	-29.77	250	150
7417.800	-56.11	11.70	-44.41	-13.00	-31.41	198	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1649.299	-43.8	4.03	-39.77	-13.00	-26.77	220	150
2472.946	-54.8	5.87	-48.93	-13.00	-35.93	215	150
3296.800	-63.15	10.19	-52.96	-13.00	-39.96	205	150
4121.000	-57.77	7.32	-50.45	-13.00	-37.45	218	150
4945.200	-56.13	9.29	-46.84	-13.00	-33.84	205	150
5769.400	-59.47	16.15	-43.32	-13.00	-30.32	196	150
6593.600	-59.13	13.52	-45.61	-13.00	-32.61	203	150
7417.800	-54.02	11.37	-42.65	-13.00	-29.65	211	150

Mode: 850 band (ch188)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1673.347	-42.04	4.98	-37.06	-13.00	-24.06	205	150
2508.600	-59.59	6.64	-52.95	-13.00	-39.95	222	150
3344.800	-62.74	11.80	-50.94	-13.00	-37.94	219	150
4181.000	-57.84	12.51	-45.33	-13.00	-32.33	201	150
5017.200	-57.05	16.30	-40.75	-13.00	-27.75	235	150
5853.400	-60.32	18.97	-41.35	-13.00	-28.35	220	150
6689.600	-58.86	13.62	-45.24	-13.00	-32.24	210	150
7525.800	-56.60	11.98	-44.62	-13.00	-31.62	192	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1673.347	-43.59	3.65	-39.94	-13.00	-26.94	208	150
2509.018	-56.62	6.23	-50.39	-13.00	-37.39	219	150
3440.882	-60.19	11.54	-48.65	-13.00	-35.65	230	150
4181.000	-58.33	8.31	-50.02	-13.00	-37.02	198	150
5017.200	-57.59	8.71	-48.88	-13.00	-35.88	236	150
5853.400	-60.52	15.77	-44.75	-13.00	-31.75	220	150
6689.600	-59.07	13.69	-45.38	-13.00	-32.38	227	150
7525.800	-55.34	11.76	-43.58	-13.00	-30.58	251	150

Mode: 850 band (ch251)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1697.395	-43.17	5.27	-37.9	-13.00	-24.9	208	150
2546.400	-62.06	6.83	-55.23	-13.00	-42.23	226	150
3395.200	-62.71	12.26	-50.45	-13.00	-37.45	230	150
4244.000	-58.16	13.40	-44.76	-13.00	-31.76	219	150
5092.800	-58.94	16.76	-42.18	-13.00	-29.18	235	150
5941.600	-60.15	18.13	-42.02	-13.00	-29.02	220	150
6790.400	-58.32	12.95	-45.37	-13.00	-32.37	199	150
7639.200	-56.34	11.86	-44.48	-13.00	-31.48	201	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1697.395	-45.97	3.27	-42.70	-13.00	-29.70	247	150
2545.090	-58.11	6.34	-51.77	-13.00	-38.77	231	150
3395.200	-62.10	11.48	-50.62	-13.00	-37.62	228	150
4244.000	-58.31	8.50	-49.81	-13.00	-36.81	230	150
5092.800	-57.95	9.29	-48.66	-13.00	-35.66	206	150
5941.600	-60.76	15.29	-45.47	-13.00	-32.47	199	150
6790.400	-59.06	13.50	-45.56	-13.00	-32.56	232	150
7639.200	-53.51	11.58	-41.93	-13.00	-28.93	250	150

4.0V

Mode: 850 band (ch128)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1649.299	-35.05	4.69	-30.36	-13.00	-17.36	210	150
2472.946	-56.3	6.41	-49.89	-13.00	-36.89	222	150
3296.800	-62.32	11.34	-50.98	-13.00	-37.98	201	150
4121.000	-58.68	11.91	-46.77	-13.00	-33.77	196	150
4945.200	-57.69	16.42	-41.27	-13.00	-28.27	230	150
5769.400	-59.78	18.73	-41.05	-13.00	-28.05	220	150
6593.600	-58.73	15.52	-43.21	-13.00	-30.21	195	150
7417.800	-55.61	11.70	-43.91	-13.00	-30.91	211	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1649.299	-43.79	4.03	-39.76	-13.00	-26.76	219	150
2472.946	-55.40	5.87	-49.53	-13.00	-36.53	231	150
3296.800	-63.05	10.19	-52.86	-13.00	-39.86	247	150
4121.000	-58.14	7.32	-50.82	-13.00	-37.82	205	150
4945.200	-54.76	9.29	-45.47	-13.00	-32.47	220	150
5769.400	-59.95	16.15	-43.80	-13.00	-30.80	231	150
6593.600	-59.06	13.52	-45.54	-13.00	-32.54	208	150
7417.800	-54.15	11.37	-42.78	-13.00	-29.78	197	150

Mode: 850 band (ch188)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1673.347	-42.14	4.98	-37.16	-13.00	-24.16	204	150
2509.018	-59.40	6.65	-52.75	-13.00	-39.75	236	150
3344.800	-62.82	11.80	-51.02	-13.00	-38.02	198	150
4181.000	-58.34	12.51	-45.83	-13.00	-32.83	221	150
5017.200	-55.66	16.30	-39.36	-13.00	-26.36	189	150
5853.400	-60.93	18.97	-41.96	-13.00	-28.96	200	150
6689.600	-58.68	13.62	-45.06	-13.00	-32.06	226	150
7525.800	-56.68	11.98	-44.70	-13.00	-31.70	213	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1673.347	-44.54	3.65	-40.89	-13.00	-27.89	198	150
2509.018	-58.21	6.23	-51.98	-13.00	-38.98	202	150
3344.800	-62.51	10.80	-51.71	-13.00	-38.71	211	150
4181.000	-57.77	8.31	-49.46	-13.00	-36.46	220	150
5017.200	-57.61	8.71	-48.90	-13.00	-35.90	196	150
5853.400	-60.05	15.77	-44.28	-13.00	-31.28	238	150
6689.600	-58.51	13.69	-44.82	-13.00	-31.82	224	150
7525.800	-53.65	11.76	-41.89	-13.00	-28.89	211	150

Mode: 850 band (ch251)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1697.395	-44.49	5.27	-39.22	-13.00	-26.22	252	150
2546.400	-62.08	6.83	-55.25	-13.00	-42.25	244	150
3395.200	-62.38	12.26	-50.12	-13.00	-37.12	231	150
4244.000	-58.03	13.40	-44.63	-13.00	-31.63	189	150
5092.800	-59.36	16.76	-42.60	-13.00	-29.60	220	150
5941.600	-60.37	18.13	-42.24	-13.00	-29.24	234	150
6790.400	-59.08	12.95	-46.13	-13.00	-33.13	219	150
7639.200	-56.72	11.86	-44.86	-13.00	-31.86	206	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1697.395	-46.61	3.27	-43.34	-13.00	-30.34	206	150
2545.09	-58.31	6.34	-51.97	-13.00	-38.97	191	150
3395.2	-62.37	11.48	-50.89	-13.00	-37.89	211	150
4244	-58.26	8.50	-49.76	-13.00	-36.76	208	150
5092.8	-57.8	9.29	-48.51	-13.00	-35.51	211	150
5941.6	-60.21	15.29	-44.92	-13.00	-31.92	226	150
6790.4	-58.69	13.50	-45.19	-13.00	-32.19	230	150
7639.2	-53.26	11.58	-41.68	-13.00	-28.68	199	150

Idle mode

3.6V

Mode: 850 band

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
159.319	18.26	peak	15.46	33.72	43.50	-9.78	219	330
483.767	7.21	peak	19.63	26.84	46.00	-19.16	222	195
851.303	5.80	peak	25.61	31.41	46.00	-14.59	210	220

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1979.960	44.11	---	-7.78	36.33	---	74.00	54.00	-37.67	260	150
3555.110	43.44	---	-0.81	42.63	---	74.00	54.00	-31.37	234	150
6589.178	40.35	---	4.77	45.12	---	74.00	54.00	-28.88	199	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
161.483	16.02	peak	15.39	31.41	43.50	-12.09	195	225
478.156	6.95	peak	19.55	26.50	46.00	-19.50	292	330
976.152	6.79	peak	27.24	34.03	46.00	-19.97	208	315

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2034.068	43.63	---	-7.39	36.24	---	74.00	54.00	-37.76	211	150
3753.507	42.74	---	0.41	43.15	---	74.00	54.00	-30.85	228	150
6589.178	40.12	---	4.77	44.89	---	74.00	54.00	-29.11	221	150

4.0V

Mode: 850 band

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
160.401	18.61	peak	15.44	34.05	43.50	-9.45	196	325
545.491	6.34	peak	20.65	26.99	46.00	-19.01	222	195
879.359	6.17	peak	25.82	31.99	46.00	-14.01	159	225

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
162.565	17.56	peak	15.33	32.89	43.50	-10.61	221	195
478.156	8.73	peak	19.55	28.28	46.00	-17.72	262	330
876.553	7.58	peak	25.77	33.35	46.00	-12.65	232	315

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2064.128	43.98	---	-7.12	36.86	---	74.00	54.00	-37.14	252	150
3711.423	43.48	---	0.25	43.73	---	74.00	54.00	-30.27	241	150
6677.355	40.47	---	4.34	44.81	---	74.00	54.00	-29.19	239	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2100.200	43.23	---	-6.80	36.43	---	74.00	54.00	-37.57	235	150
3657.315	42.86	---	-0.27	42.59	---	74.00	54.00	-31.41	233	150
6621.243	40.18	---	4.67	44.85	---	74.00	54.00	-29.15	220	150

Active mode
3.6V

Mode: 1900 band (ch512)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3703.337	-49.27	10.13	-39.14	-13.00	-26.14	233	150
5547.094	-49.62	18.64	-30.98	-13.00	-17.98	225	150
7400.800	-54.03	11.69	-42.33	-13.00	-29.33	218	150
9251.000	-73.39	31.23	-42.16	-13.00	-29.16	221	150
11101.200	-73.74	34.99	-38.74	-13.00	-25.74	196	150
12951.400	-73.22	36.85	-36.37	-13.00	-23.37	209	150
14801.600	-72.85	39.48	-33.37	-13.00	-20.37	214	150
16651.800	-72.00	37.90	-34.10	-13.00	-21.10	230	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3703.337	-52.99	10.21	-42.78	-13.00	-29.78	220	150
5547.094	-45.35	14.23	-31.12	-13.00	-18.12	210	150
7406.814	-51.51	11.33	-40.18	-13.00	-27.18	230	150
9251.000	-72.93	31.07	-41.86	-13.00	-28.86	232	150
11101.200	-71.77	35.34	-36.42	-13.00	-23.42	198	150
12951.400	-73.70	36.89	-36.81	-13.00	-23.81	198	150
14801.600	-73.53	37.56	-35.97	-13.00	-22.97	201	150
16650.800	-72.88	37.98	-34.90	-13.00	-21.90	222	150

Mode: 1900 band (ch661)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3761.834	-52.91	10.72	-42.19	-13.00	-29.19	199	150
5643.287	-47.39	18.08	-29.31	-13.00	-16.31	262	150
7519.038	-50.53	11.91	-38.62	-13.00	-25.62	237	150
9400.000	-72.75	31.21	-41.55	-13.00	-28.55	250	150
11200.000	-73.88	34.71	-39.18	-13.00	-26.18	211	150
13080.000	-73.30	36.50	-36.80	-13.00	-23.80	262	150
14960.000	-73.04	37.68	-35.36	-13.00	-22.36	196	150
16840.000	-72.42	38.48	-33.94	-13.00	-20.94	208	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3761.834	-55.02	10.19	-44.83	-13.00	-31.83	200	150
5635.270	-45.66	15.90	-29.76	-13.00	-16.76	204	150
7519.038	-49.90	11.73	-38.17	-13.00	-25.17	220	150
9400.000	-72.43	30.81	-41.63	-13.00	-28.63	224	150
11200.000	-73.16	35.02	-38.14	-13.00	-25.14	282	150
13080.000	-73.75	36.31	-37.44	-13.00	-24.44	224	150
14960.000	-73.41	37.02	-36.39	-13.00	-23.39	223	150
16840.000	-71.51	38.19	-33.32	-13.00	-20.32	239	150

Mode: 1900 band (ch810)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3820.331	-52.95	11.14	-41.81	-13.00	-28.81	223	150
5731.463	-54.91	17.79	-37.12	-13.00	-24.12	235	150
7639.279	-49.47	11.86	-37.61	-13.00	-24.61	221	150
9551.603	-69.59	33.51	-36.08	-13.00	-23.08	231	150
11458.800	-73.37	34.78	-38.59	-13.00	-25.59	216	150
13368.600	-72.75	38.11	-34.64	-13.00	-21.64	285	150
15278.400	-72.63	38.24	-34.39	-13.00	-21.39	197	150
17188.200	-72.95	37.88	-35.07	-13.00	-22.07	201	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3820.331	-55.29	10.29	-45.00	-13.00	-32.00	248	150
5731.463	-46.39	16.34	-30.05	-13.00	-17.05	220	150
7639.279	-46.38	11.58	-34.80	-13.00	-21.80	219	150
9551.603	-68.75	33.68	-35.07	-13.00	-22.07	238	150
11458.800	-73.94	34.77	-39.17	-13.00	-26.17	249	150
13368.600	-73.36	37.69	-35.67	-13.00	-22.67	201	150
15278.400	-71.93	37.61	-34.32	-13.00	-21.32	230	150
17188.200	-72.30	37.28	-35.02	-13.00	-22.02	221	150

4.0V

Mode: 1900 band (ch512)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3703.337	-50.18	10.13	-40.05	-13.00	-27.05	222	150
5547.094	-48.78	18.64	-30.14	-13.00	-17.14	209	150
7406.814	-52.36	11.70	-40.66	-13.00	-27.66	226	150
9251.000	-73.31	31.23	-42.08	-13.00	-29.08	230	150
11101.200	-72.88	34.99	-37.88	-13.00	-24.88	222	150
12951.400	-73.93	36.85	-37.08	-13.00	-24.08	199	150
14801.600	-73.56	39.48	-34.08	-13.00	-21.08	205	150
16651.800	-72.78	37.90	-34.88	-13.00	-21.88	232	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3703.337	-50.77	10.21	-40.56	-13.00	-27.56	206	150
5547.094	-44.02	14.23	-29.79	-13.00	-16.79	207	150
7406.814	-49.81	11.33	-38.48	-13.00	-25.48	218	150
9251.000	-73.30	31.07	-42.23	-13.00	-29.23	206	150
11101.200	-72.41	35.34	-37.06	-13.00	-24.06	217	150
12951.400	-73.32	36.89	-36.43	-13.00	-23.43	208	150
14801.600	-73.59	37.56	-36.03	-13.00	-23.03	221	150
16651.800	-72.41	37.99	-34.42	-13.00	-21.42	231	150

Mode: 1900 band (ch661)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3761.834	-53.67	10.72	-42.95	-13.00	-29.95	218	150
5643.287	-47.33	18.08	-29.25	-13.00	-16.25	208	150
7527.054	-50.96	12.00	-38.96	-13.00	-25.96	219	150
9400.000	-71.99	31.21	-40.79	-13.00	-27.79	208	150
11200.000	-73.28	34.71	-38.58	-13.00	-25.58	221	150
13080.000	-73.41	36.31	-37.10	-13.00	-24.10	201	150
14960.000	-72.69	37.02	-35.67	-13.00	-22.67	198	150
16840.000	-72.04	38.19	-33.85	-13.00	-20.85	220	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3761.834	-55.58	10.19	-45.39	-13.00	-32.39	206	150
5643.287	-48.65	15.98	-32.67	-13.00	-19.67	211	150
7527.054	-48.25	11.76	-36.49	-13.00	-23.49	230	150
9400.000	-72.49	30.81	-41.69	-13.00	-28.69	222	150
11200.000	-72.62	35.02	-37.60	-13.00	-24.60	239	150
13080.000	-73.85	36.50	-37.35	-13.00	-24.35	211	150
14960.000	-72.83	37.68	-35.15	-13.00	-22.15	236	150
16840.000	-72.54	38.48	-34.06	-13.00	-21.06	251	150

Mode: 1900 band (ch810)
Polarization: Horizontal

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3820.331	-53.85	11.14	-42.71	-13.00	-29.71	240	150
5731.463	-53.62	17.79	-35.83	-13.00	-22.83	280	150
7639.279	-49.38	11.86	-37.52	-13.00	-24.52	261	150
9542.084	-71.28	33.44	-37.84	-13.00	-24.84	221	150
11458.800	-73.65	34.78	-38.87	-13.00	-25.87	230	150
13368.600	-74.41	38.11	-36.30	-13.00	-23.30	281	150
15278.400	-74.16	38.24	-35.92	-13.00	-22.92	262	150
17188.200	-72.91	37.88	-35.03	-13.00	-22.03	252	150

Polarization: Vertical

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3820.331	-52.96	10.29	-42.67	-13.00	-29.67	201	150
5731.463	-49.09	16.34	-32.75	-13.00	-19.75	230	150
7639.279	-44.37	11.58	-32.79	-13.00	-19.79	220	150
9551.603	-68.96	33.68	-35.28	-13.00	-22.28	208	150
11458.800	-73.32	34.77	-38.55	-13.00	-25.55	229	150
13368.600	-73.15	37.69	-35.46	-13.00	-22.46	209	150
15278.400	-73.12	37.61	-35.51	-13.00	-22.51	226	150
17188.200	-71.90	37.28	-34.62	-13.00	-21.62	238	150

Idle mode

3.6V

Mode: 1900 band
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1943.888	43.52	---	-7.92	35.6	---	74	54	-38.4	210	150
3639.279	41.77	---	-0.47	41.3	---	74	54	-32.7	230	150
5458.918	38.9	---	2.29	41.19	---	74	54	-32.81	206	150
7398.798	42.71	---	2.00	44.71	---	74	54	-29.29	238	150
8942.385	26.68	---	23.11	43.79	---	74	54	-30.21	208	150
11617.235	24.52	---	28.53	47.05	---	74	54	-26.95	232	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1799.599	43.9	---	-8.50	35.4	---	74	54	-38.6	222	150
3639.279	44.11	---	-0.47	43.64	---	74	54	-30.36	219	150
5266.533	39.27	---	0.93	40.2	---	74	54	-33.8	222	150
7599.198	42.92	---	1.80	44.72	---	74	54	-29.28	237	150
9047.094	26.1	---	23.73	43.83	---	74	54	-30.17	200	150
11721.944	25.02	---	28.74	47.76	---	74	54	-26.24	231	150

4.0V

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1847.695	43.52	---	-8.31	35.21	---	74	54	-38.79	231	150
3681.363	44.2	---	-0.01	44.19	---	74	54	-29.81	218	150
4977.956	41.1	---	-0.99	40.11	---	74	54	-33.89	211	150
7374.75	42.95	---	1.95	44.9	---	74	54	-29.1	230	150
8951.904	26.01	---	23.16	43.17	---	74	54	-30.83	288	150
11721.944	25.02	---	28.74	47.76	---	74	54	-26.24	196	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
1775.551	43	---	-8.62	34.38	---	74	54	-39.62	209	150
3783.567	42.22	---	0.53	42.75	---	74	54	-31.25	231	150
5338.677	39.98	---	1.39	41.37	---	74	54	-32.63	209	150
7446.894	43.45	---	1.77	45.22	---	74	54	-28.78	225	150
9018.537	25.7	---	23.53	43.23	---	74	54	-30.77	220	150
11740.982	24.76	---	28.78	47.54	---	74	54	-26.46	261	150

Note: Please refer to appendix D for plot data.

7.3 Explanation of test result

Result Level = Reading Level + Corrected Factor

Corrected Factor = SG level – Received level-Cable loss + substitution antenna gain

7.4 Calculation of Limit for Field Strength of Spurious

Compliance with § 22.917(a) requires that any emission be attenuated below the transmitter power at least 43 + 10 log10 P (P = transmitter power in Watts).

The compliance limit was calculated as an example per the following:

Maximum transmitter radiated power: P=0.000011588 watt

Required attenuation: A=43 + 10 log10 P

Limit for Spurious Emissions at Antenna Terminals: L=P-A=-13dBm

Test equipment: ETSTW-RE 003, ETSTW-RE 017, ETSTW-RE 042, ETSTW-RE 043, ETSTW-RE 044, ETSTW-GSM 02

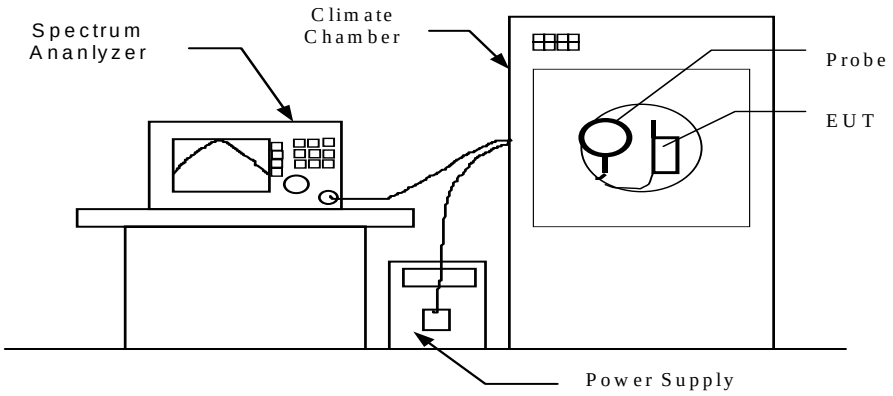
8. Frequency Stability

8.1 Test procedure

☑ The equipment under test was supplied with rated power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable, exited the chamber through an opening made for that purpose.
After the temperature stabilized the frequency output was recorded from the counter.

☐ An external variable power supply was used to supply nominal voltage and 85% to 115% of nominal voltage to the EUT under room temperature. Record the frequencies measured from the counter.

☑ End point voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer. Then record the frequencies measured from the counter.



8.2 Test Results

8.2.1 Frequency Stability vs. Temperature

CH128 824.175MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1235	1.50	±2.5
	-20	-1024	1.24	
	-10	-578	0.70	
	0	-256	0.31	
	10	-144	0.17	
	20	0	0	
	30	582	0.71	
	40	1107	1.34	
	50	1325	1.61	

CH188 836.154MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1224	1.46	±2.5
	-20	-1068	1.28	
	-10	-732	0.88	
	0	-458	0.55	
	10	-267	0.32	
	20	0	0	
	30	335	0.40	
	40	986	1.18	
	50	1157	1.38	

CH251 848.591MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1183	1.39	±2.5
	-20	-934	1.10	
	-10	-799	0.94	
	0	-578	0.68	
	10	-233	0.27	
	20	0	0	
	30	545	0.68	
	40	968	1.14	
	50	1127	1.33	

CH512 1850.060MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1275	0.68	±2.5
	-20	-1014	0.54	
	-10	-611	0.33	
	0	-260	0.14	
	10	-132	0.07	
	20	0	0	
	30	612	0.33	
	40	1096	0.59	
	50	1278	0.69	

CH661 1879.740MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1196	0.64	±2.5
	-20	-998	0.53	
	-10	-724	0.38	
	0	-466	0.25	
	10	-208	0.11	
	20	0	0	
	30	419	0.22	
	40	1008	0.54	
	50	1201	0.64	

CH810 1909.940MHz

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
4 VDC	-30	-1195	0.62	±2.5
	-20	-912	0.47	
	-10	-698	0.36	
	0	-432	0.23	
	10	-216	0.11	
	20	0	0	
	30	483	0.25	
	40	925	0.48	
	50	1184	0.62	

8.2.2 Frequency Stability vs. Voltage

CH128

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	545	0.66	±2.5

CH188

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	627	0.75	±2.5

CH251

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	548	0.65	±2.5

CH512

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	551	0.29	±2.5

CH661

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	600	0.32	±2.5

CH810

Supplied Voltage	Temperature (°C)	Frequency Drift (Hz)	Frequency Drift (ppm)	Limit (ppm)
End Point Voltage 4VDC	23.9	609	0.32	±2.5

Test equipment: ETSTW-CE009, ETSTW-RE 003, ETSTW-RE055, ETSTW-GSM 02

Appendix

A RF Power Output

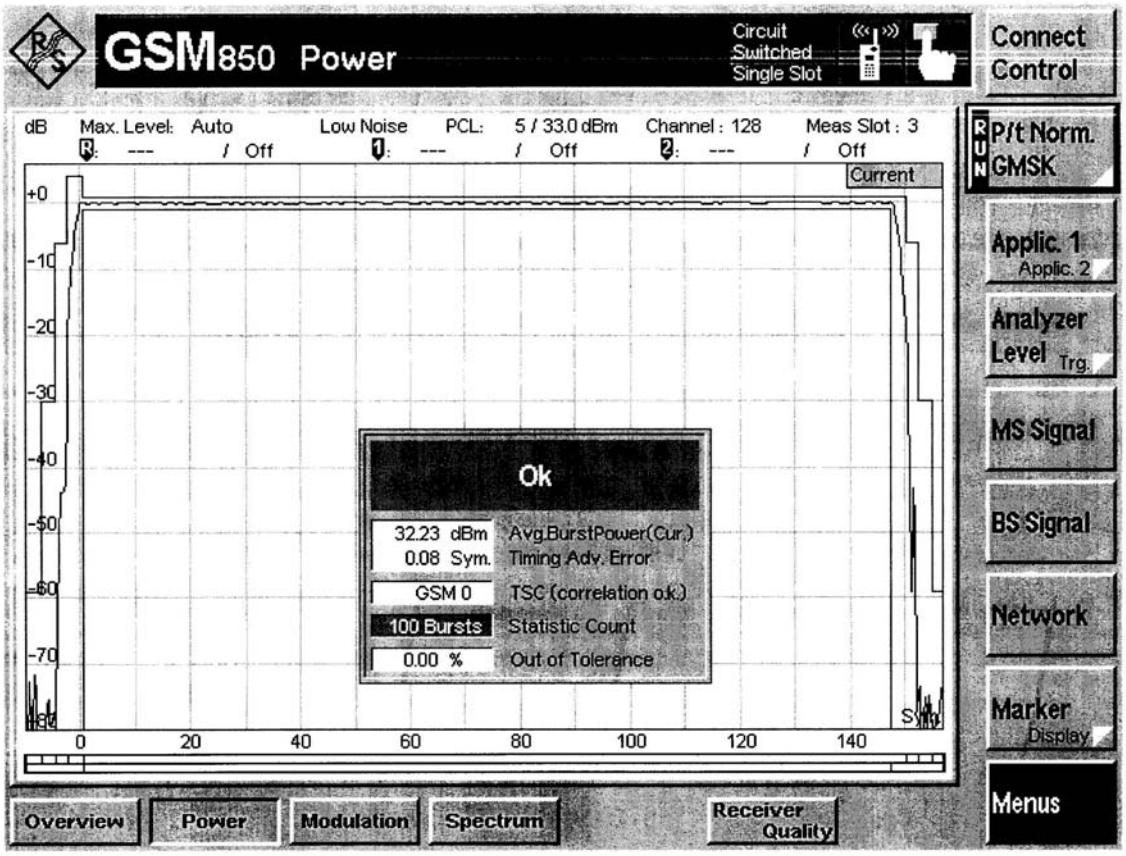
B Occupied Bandwidth / Emission Mask

C Spurious Emissions at Antenna Terminals

D Filed Strength of Spurious Emission

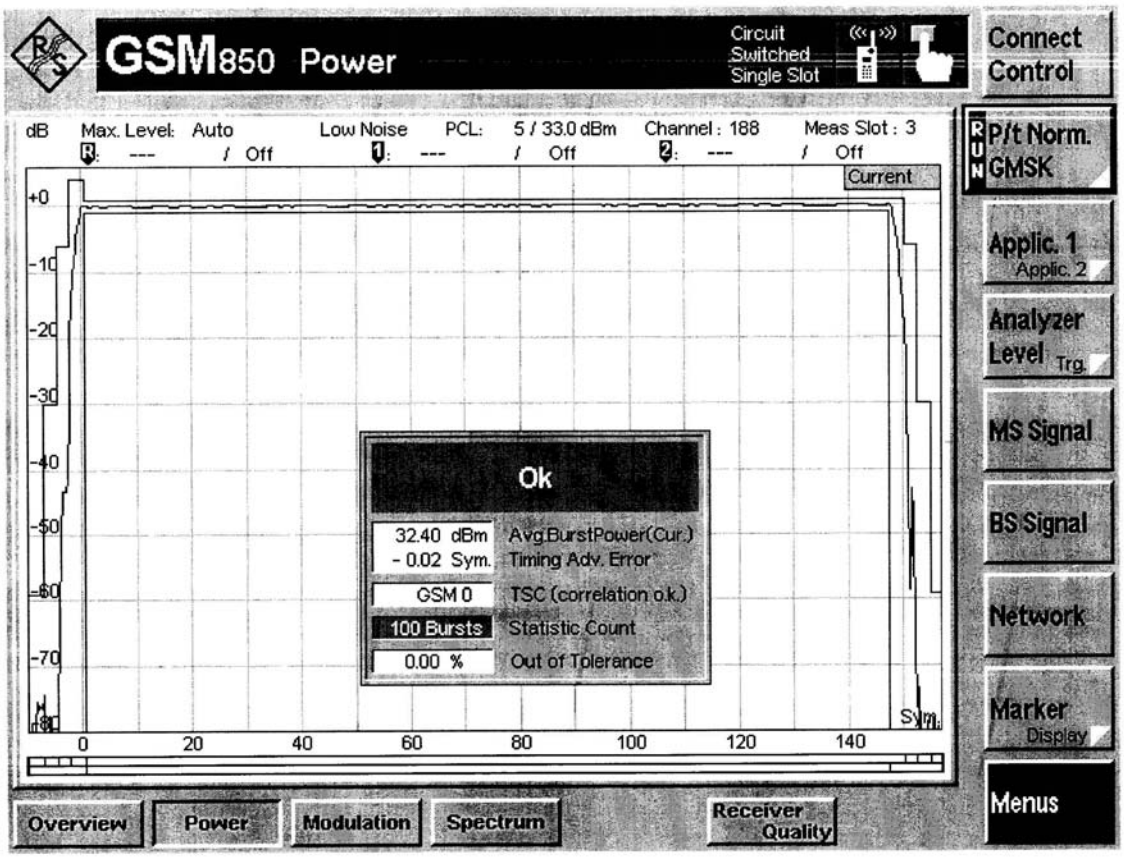
E EUT Photos

RF Power Output



-3°C
4.0

Report Number: W6D20711-8718-P-22/24
FCC ID: UDV0606020080117



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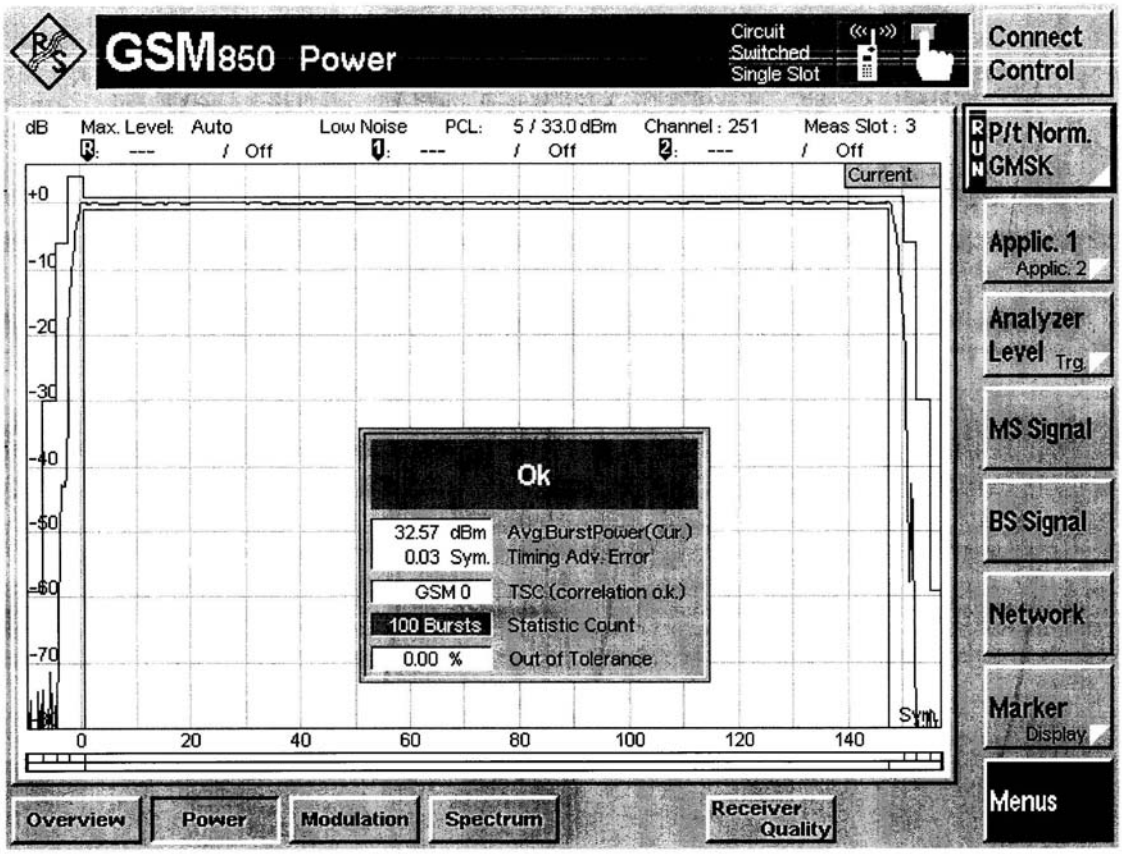
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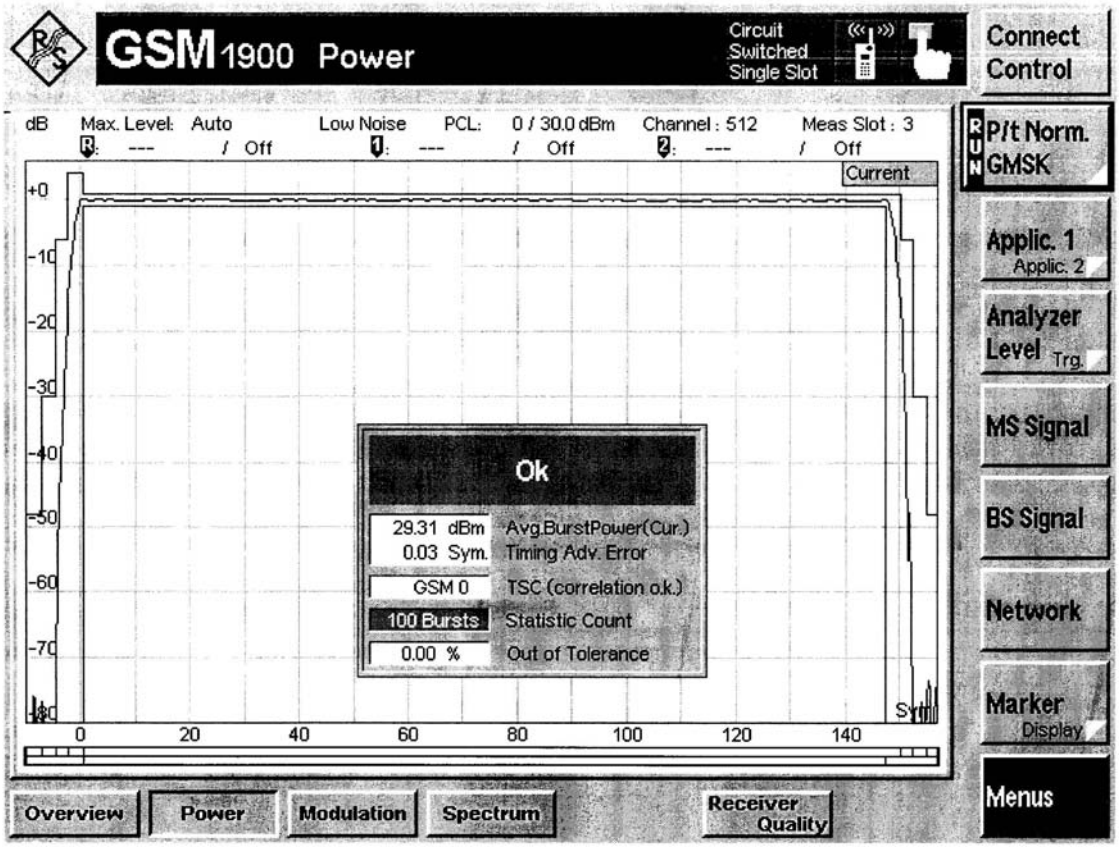
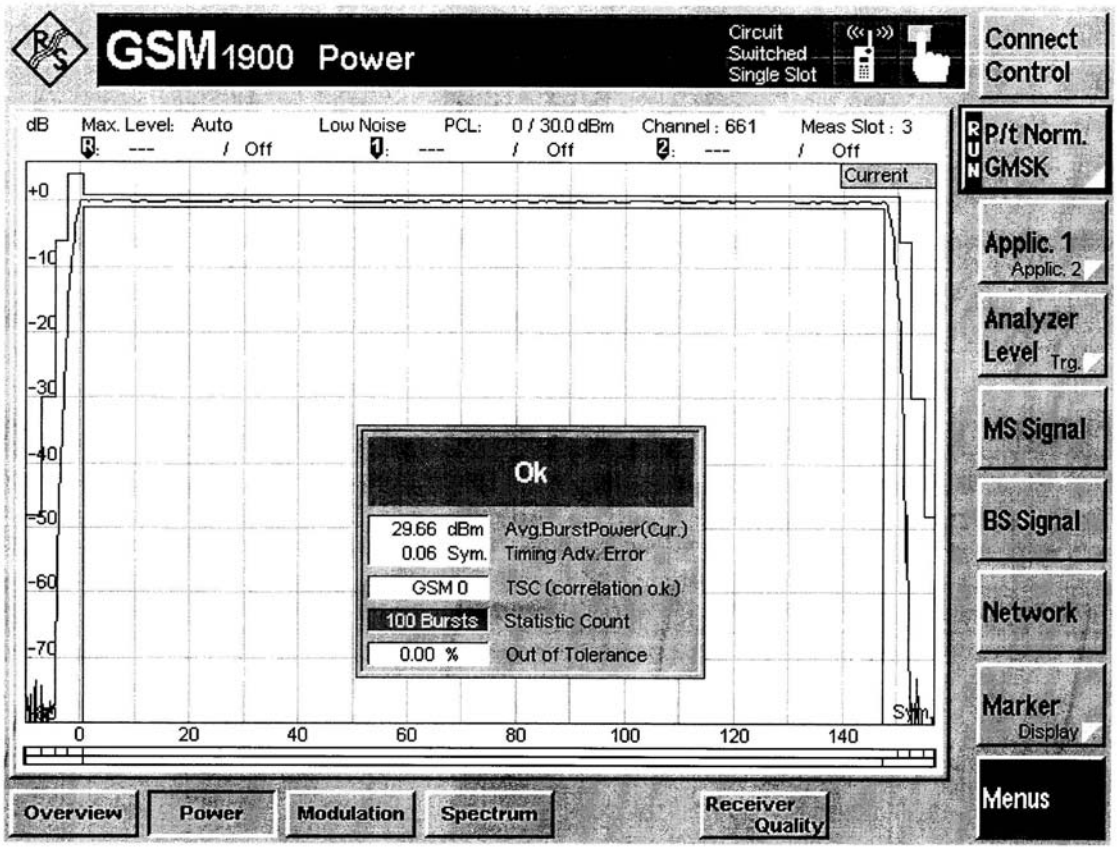
Circuit Switched Single Slot
Connect Control
dB Max. Level: Auto / Off
Low Noise PCL: 5 / 33.0 dBm / Off
Channel : 251 / Off
Meas Slot : 3 / Off
Current
RUN P/t Norm. GMSK
Applic. 1
Applic. 2
Analyzer Level Trg
MS Signal
BS Signal
Network
Marker Display
Menus
+0
-10
-20
-30
-40
-50
-60
-70
0
20
40
60
80
100
120
140
Sym
Ok
32.57 dBm Avg.BurstPower(Cur.)
0.03 Sym. Timing Adv. Error
GSM 0 TSC (correlation o.k.)
100 Bursts Statistic Count
0.00 % Out of Tolerance
Overview
Power
Modulation
Spectrum
Receiver Quality

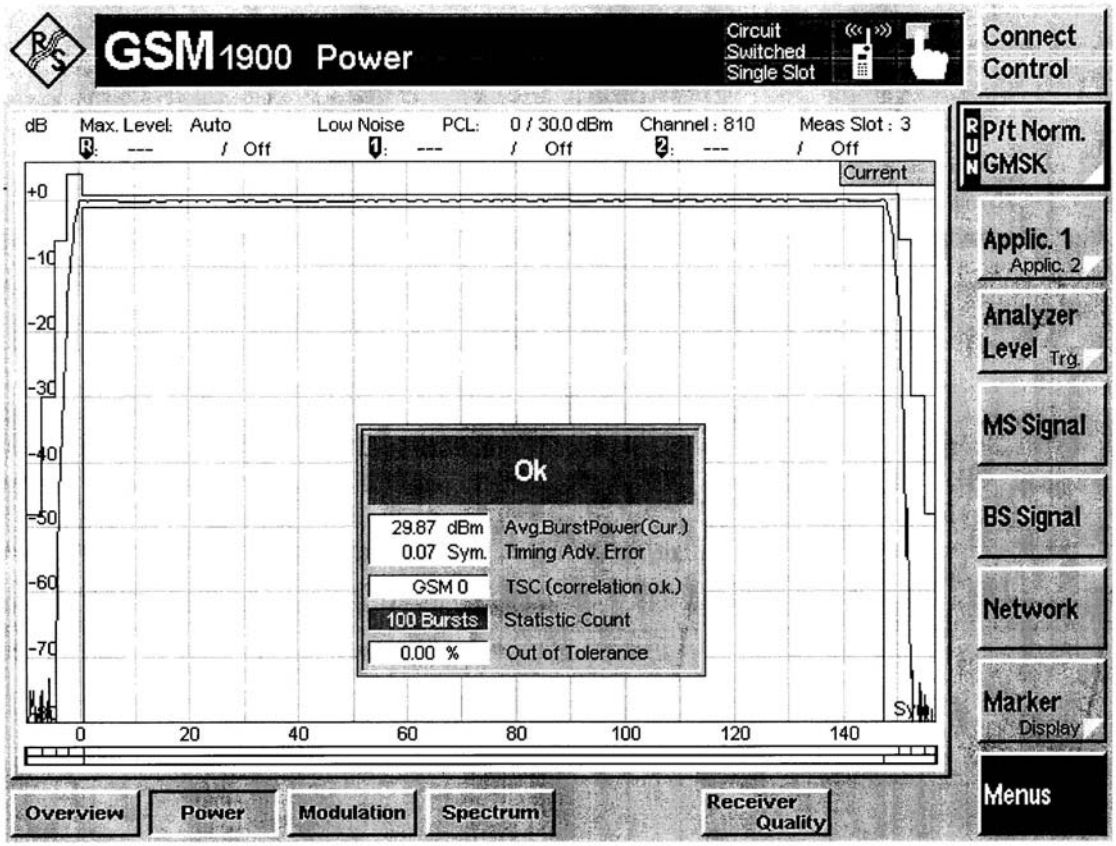

GSM 1900 Power
Circuit Switched Single Slot
Connect Control
dB
Max. Level: Auto
Low Noise
PCL: 0 / 30.0 dBm
Channel : 512
Meas Slot : 3
Off
Current
RUN P/t Norm. GMSK
Applic. 1
Applic. 2
Analyzer Level Trg.
MS Signal
BS Signal
Network
Marker Display
Menus
Ok
29.31 dBm Avg.BurstPower(Cur.)
0.03 Sym. Timing Adv. Error
GSM 0 TSC (correlation o.k.)
100 Bursts Statistic Count
0.00 % Out of Tolerance
Overview
Power
Modulation
Spectrum
Receiver Quality

25°C
4.0


GSM 1900 Power
Circuit Switched Single Slot
Connect Control
dB
Max. Level: Auto
Low Noise
PCL: 0 / 30.0 dBm
Channel : 661
Meas Slot : 3
Off
Current
+0
-10
-20
-30
-40
-50
-60
-70
0
20
40
60
80
100
120
140
Sym.
Ok
29.66 dBm
Avg.BurstPower(Cur.)
0.06 Sym.
Timing Adv. Error
GSM 0
TSC (correlation o.k.)
100 Bursts
Statistic Count
0.00 %
Out of Tolerance
RUN
P/t Norm. GMSK
Applic. 1
Applic. 2
Analyzer Level
Trg.
MS Signal
BS Signal
Network
Marker
Display
Menus
Overview
Power
Modulation
Spectrum
Receiver Quality

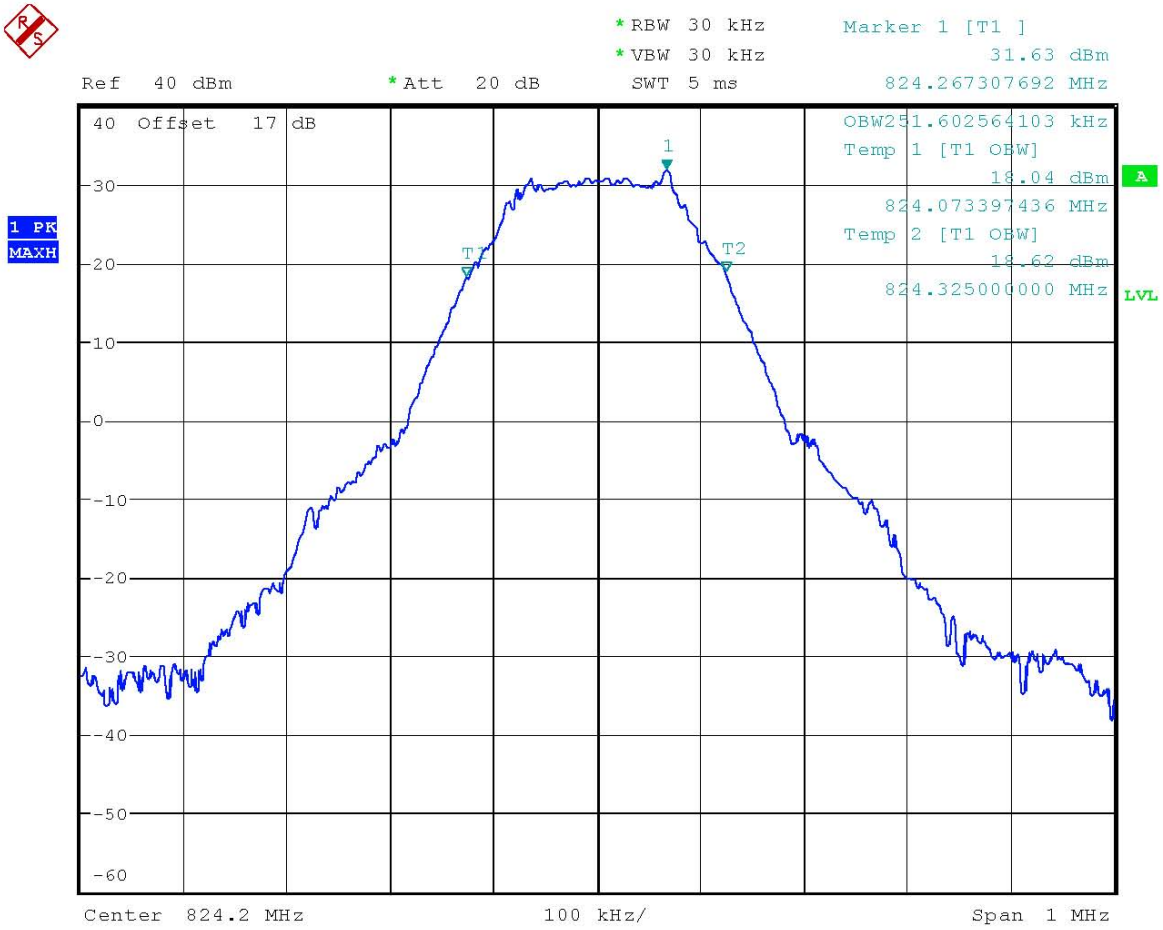
>5°C
4.0

Report Number: W6D20711-8718-P-22/24
FCC ID: UDV0606020080117



25°C
4.0

Occupied Bandwidth / Emission Mask



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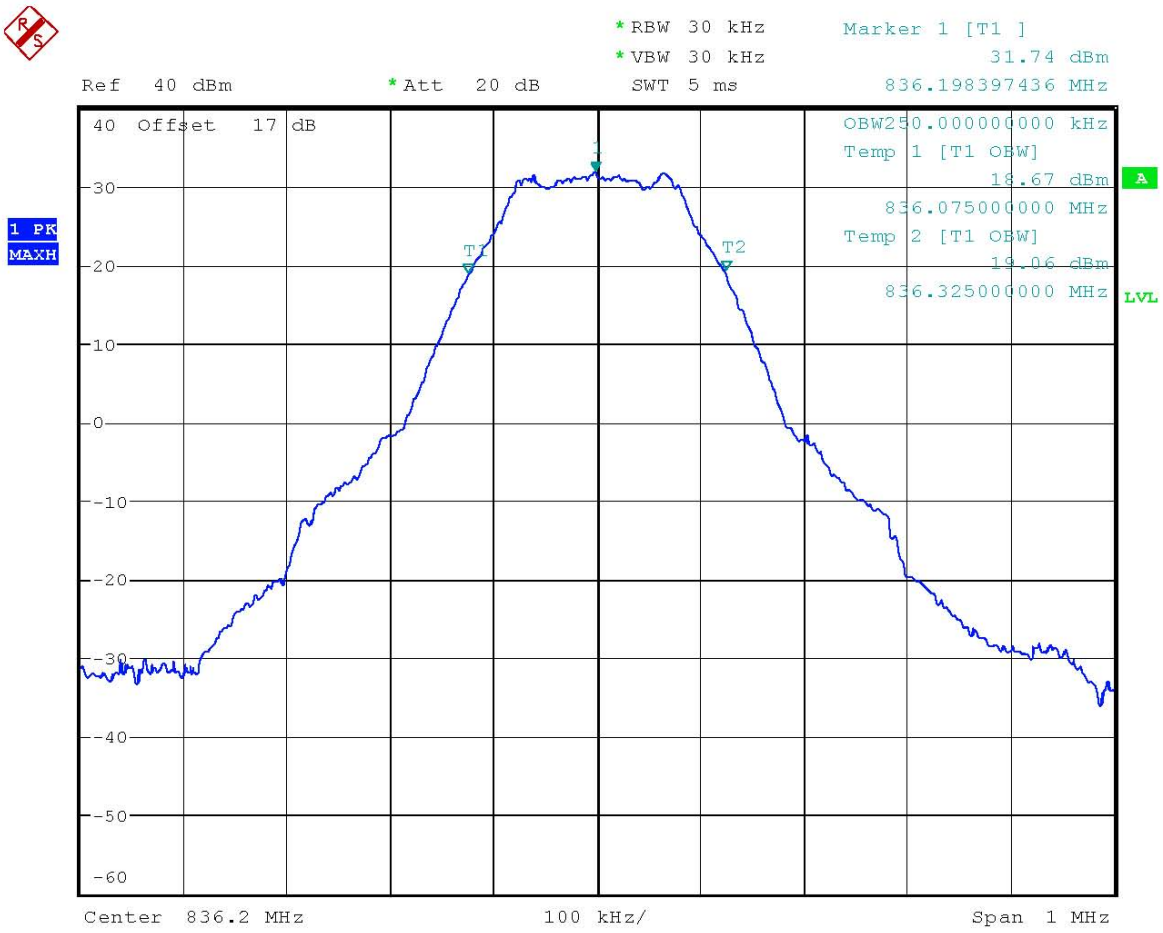

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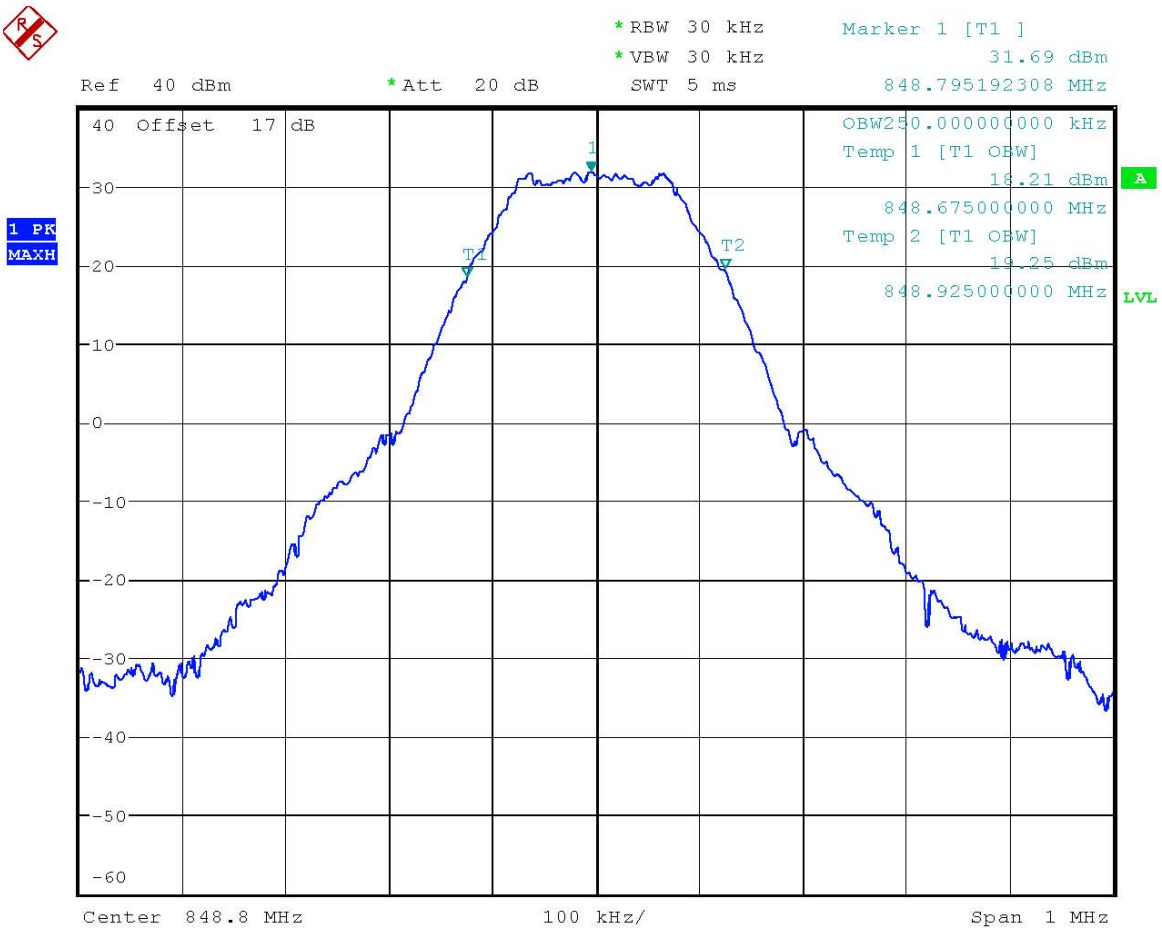

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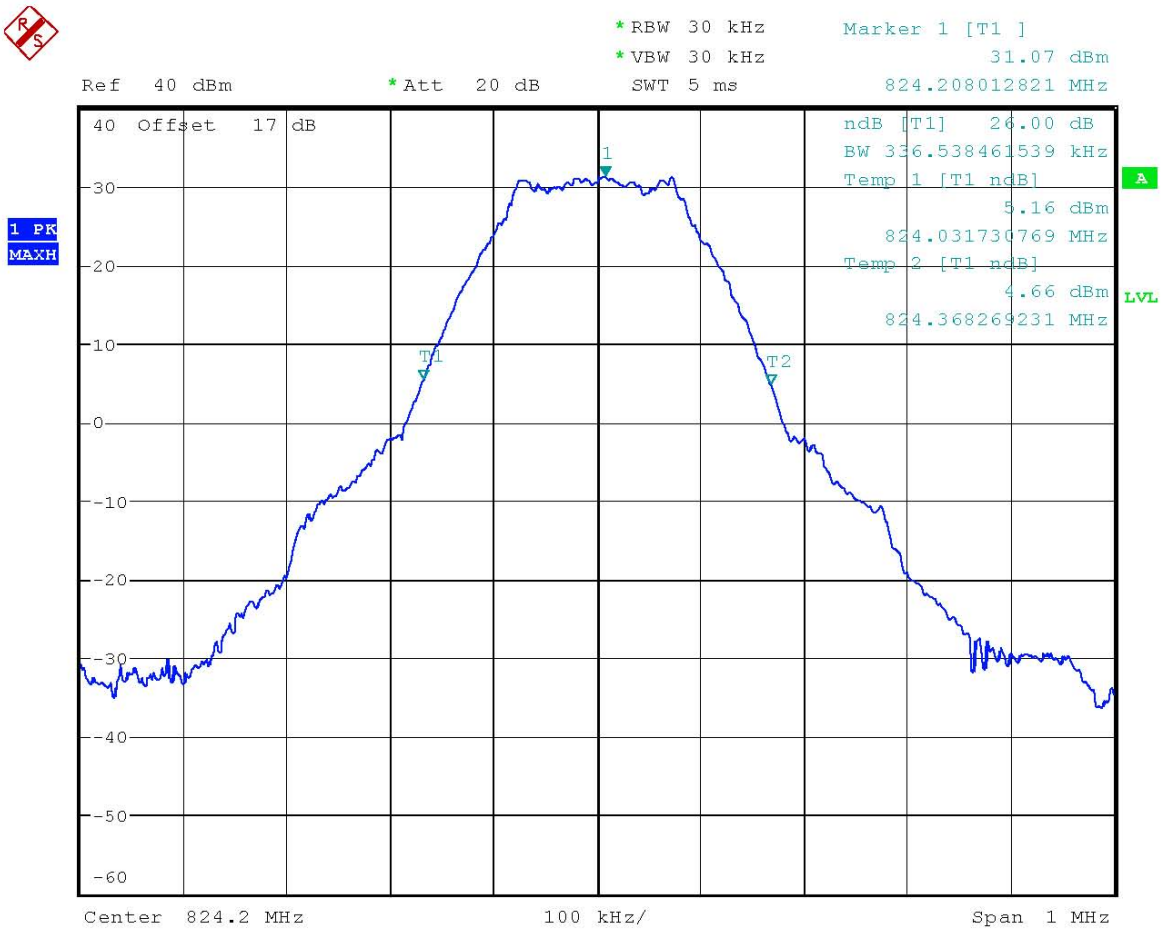

26dB 850Band CH128

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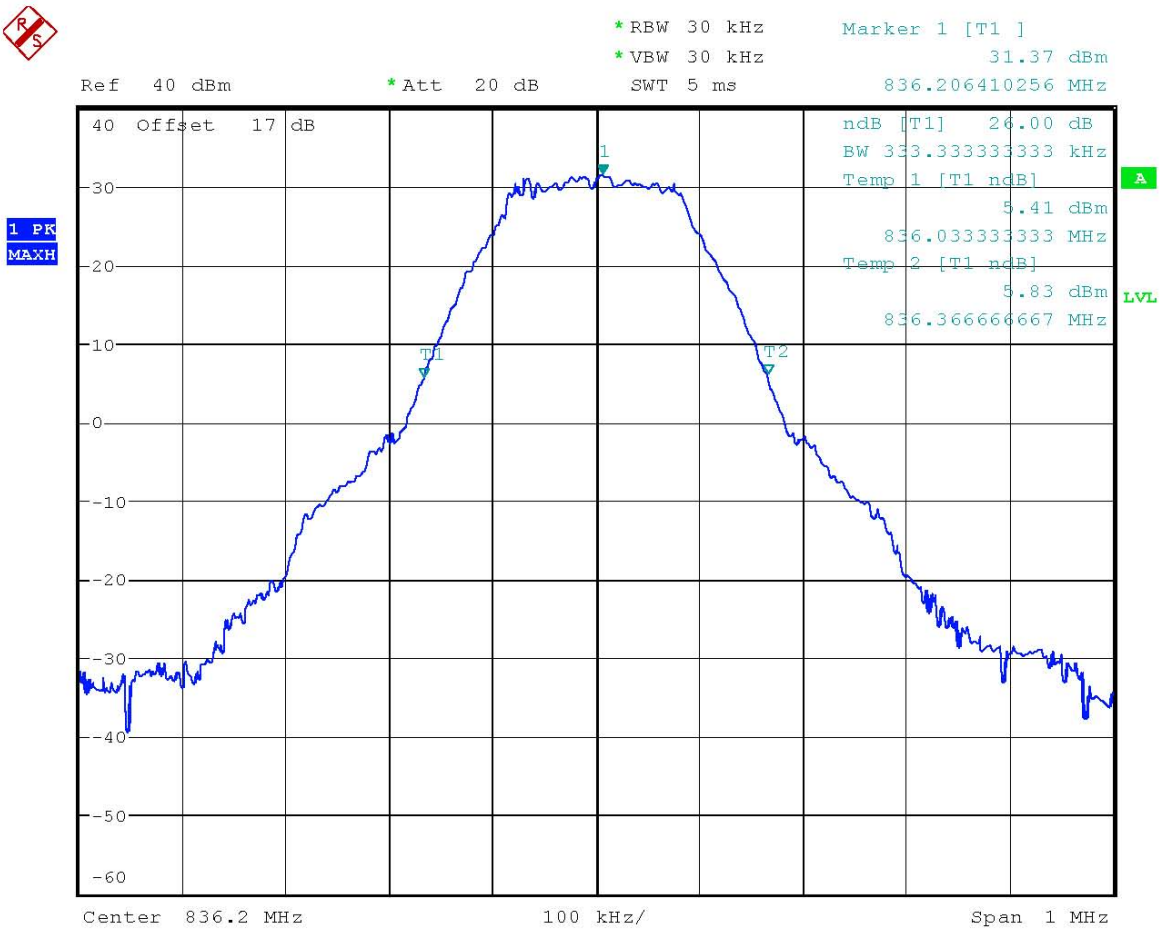
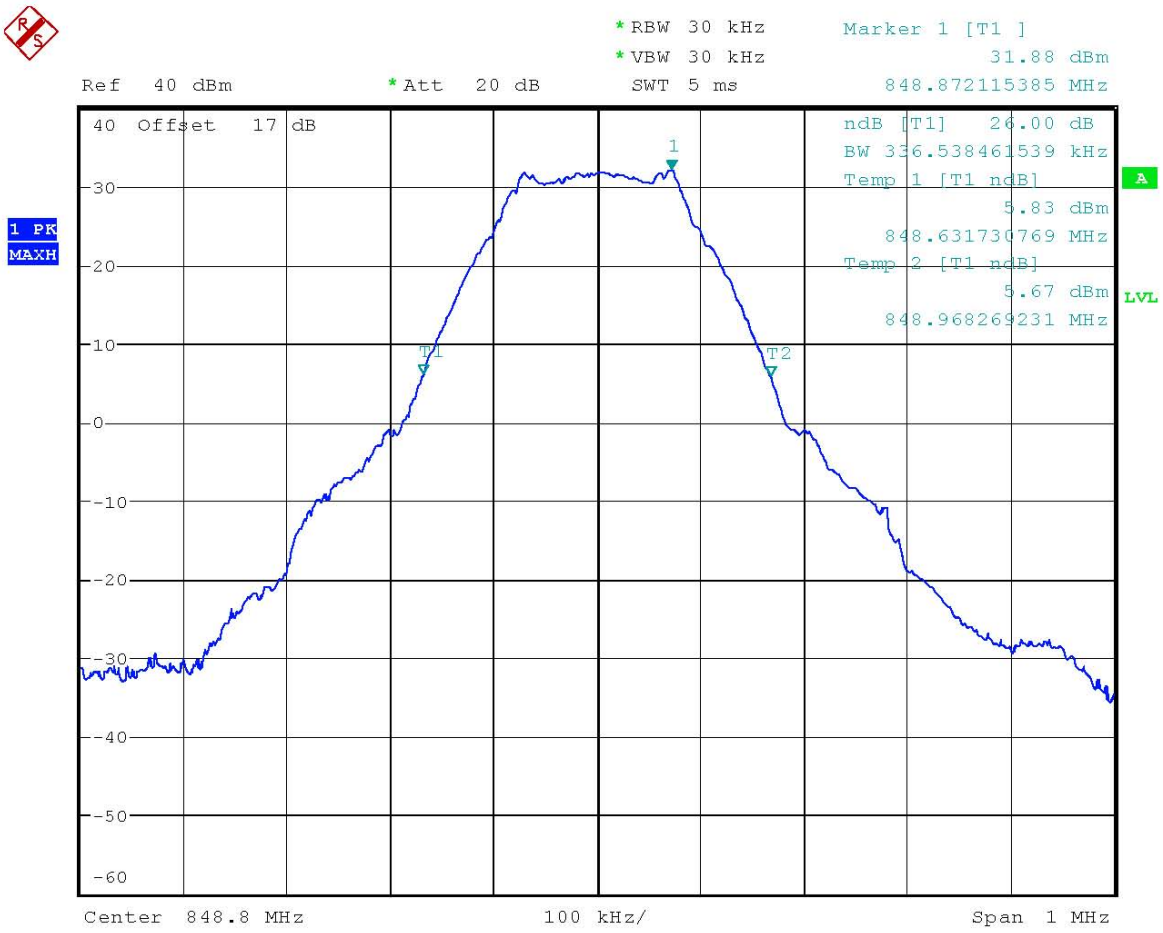


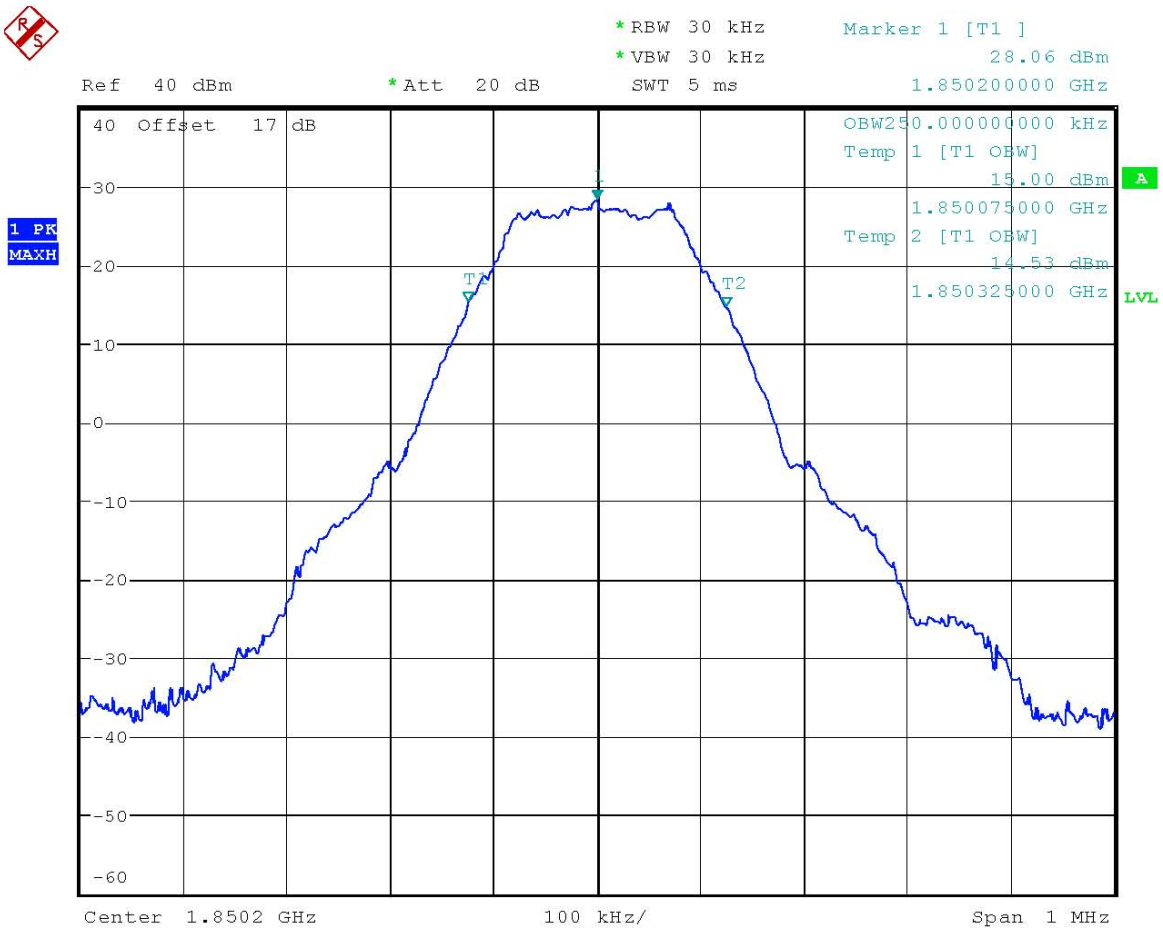
26dB 850Band CH188

Date: 17.JAN.2008 11:40:26



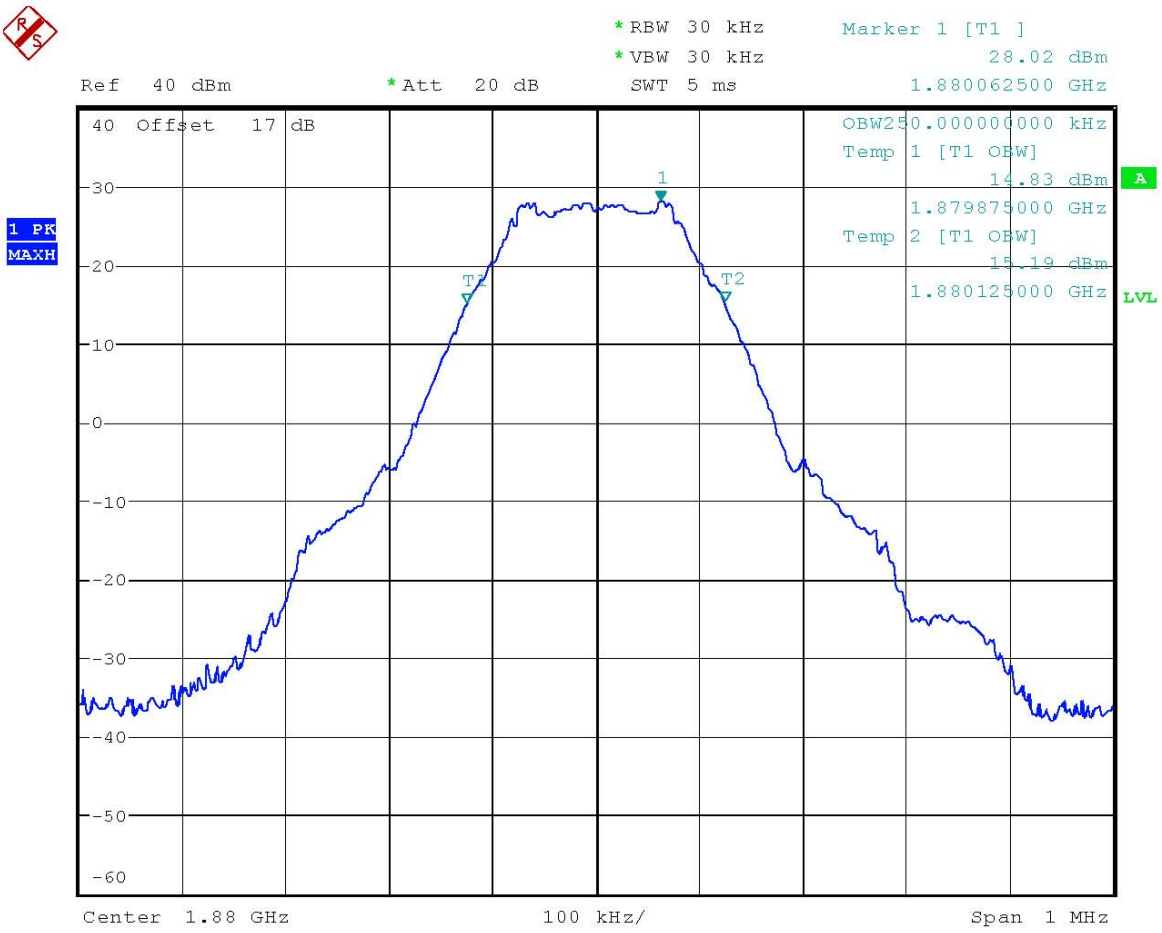
26dB 850Band CH251

Date: 17.JAN.2008 11:38:19



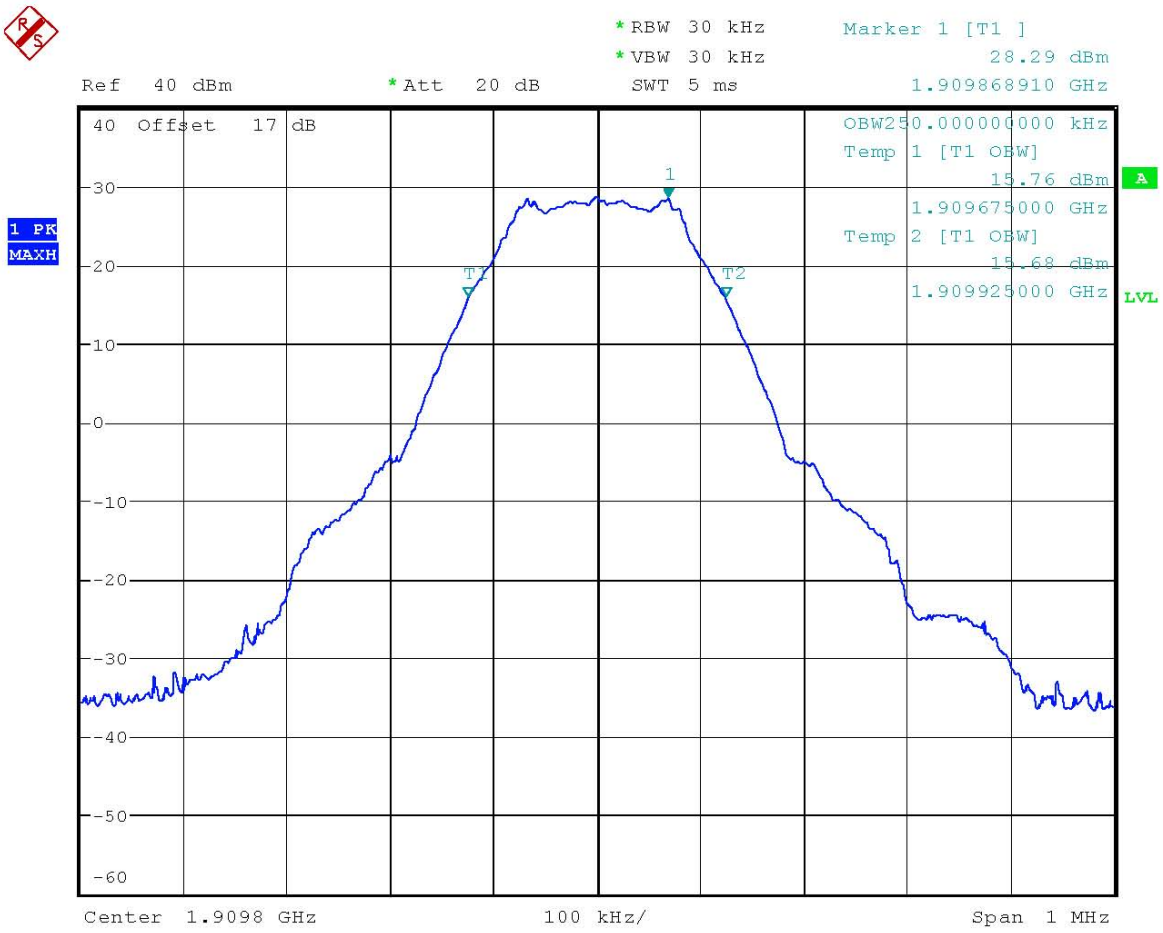
Ocupied Bandwidth 1900Band CH512

Date: 17.JAN.2008 08:47:36



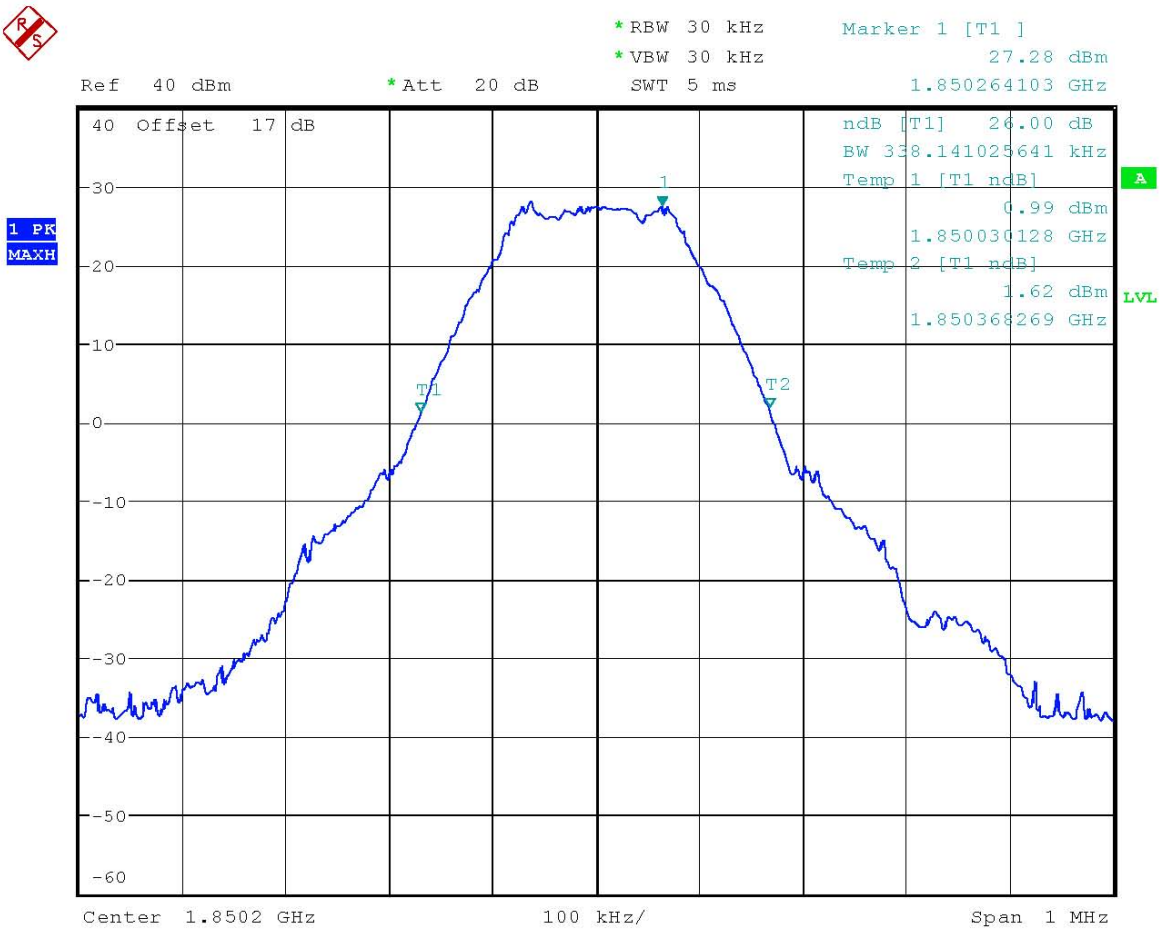
Ocupied Bandwidth 1900Band CH661

Date: 17.JAN.2008 08:46:45



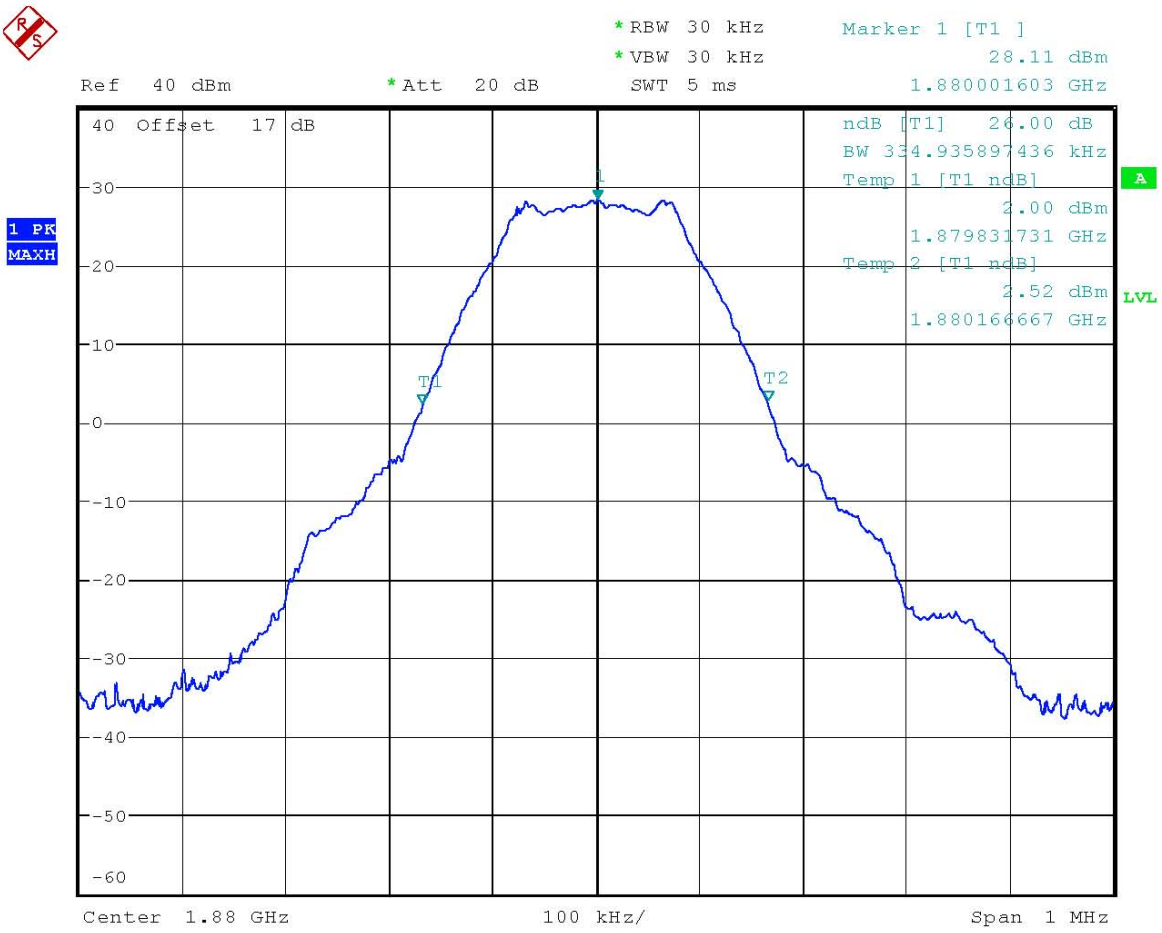
Ocupied Bandwidth 1900Band CH810

Date: 17.JAN.2008 08:45:44



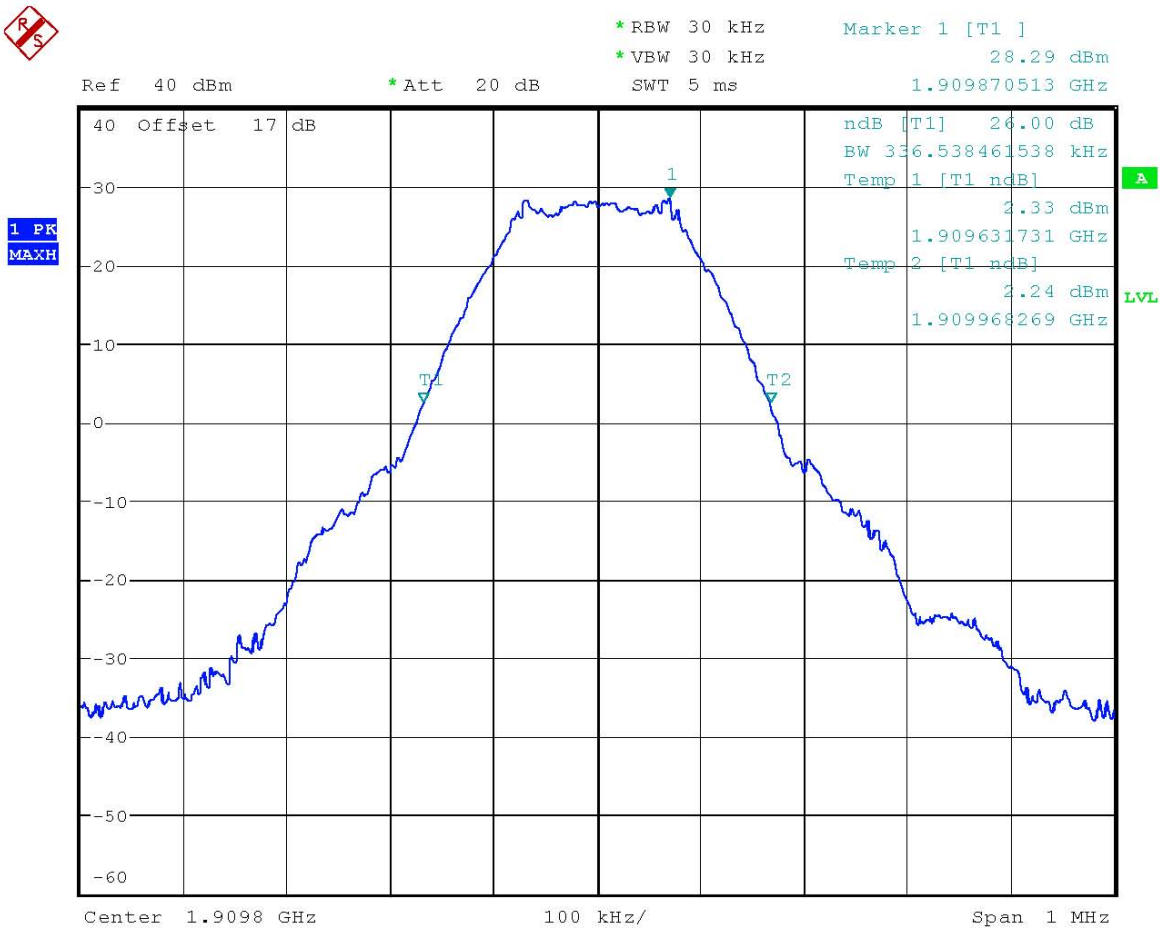
26dB 1900Band CH512

Date: 17.JAN.2008 08:42:05



26dB 1900Band CH661

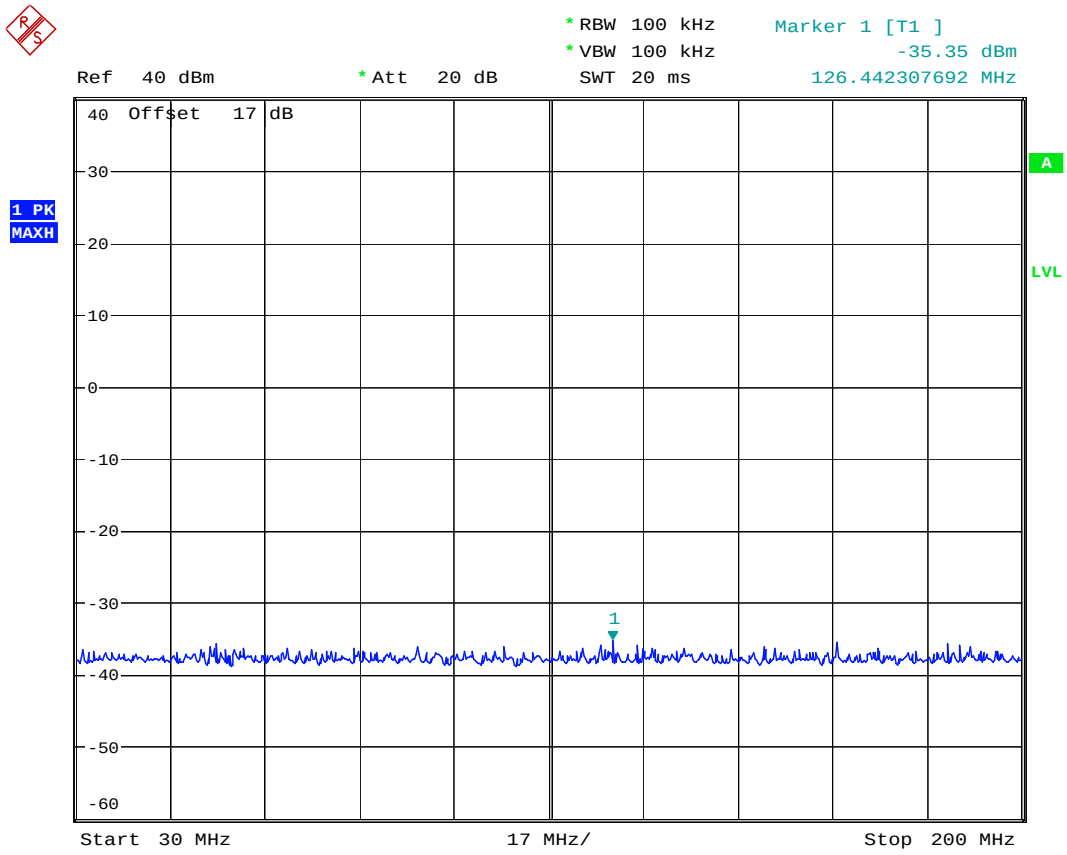
Date: 17.JAN.2008 08:40:50



26dB 1900Band CH810

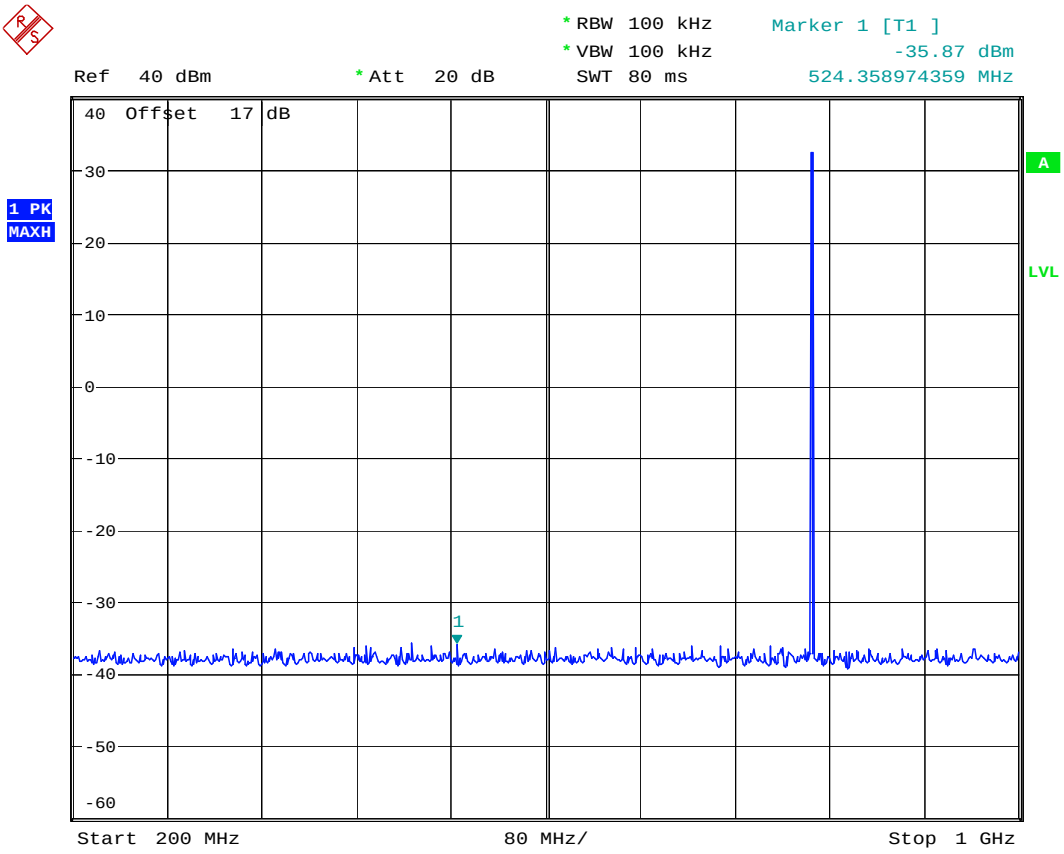
Date: 17.JAN.2008 08:43:05

Spurious Emissions at Antenna Terminals



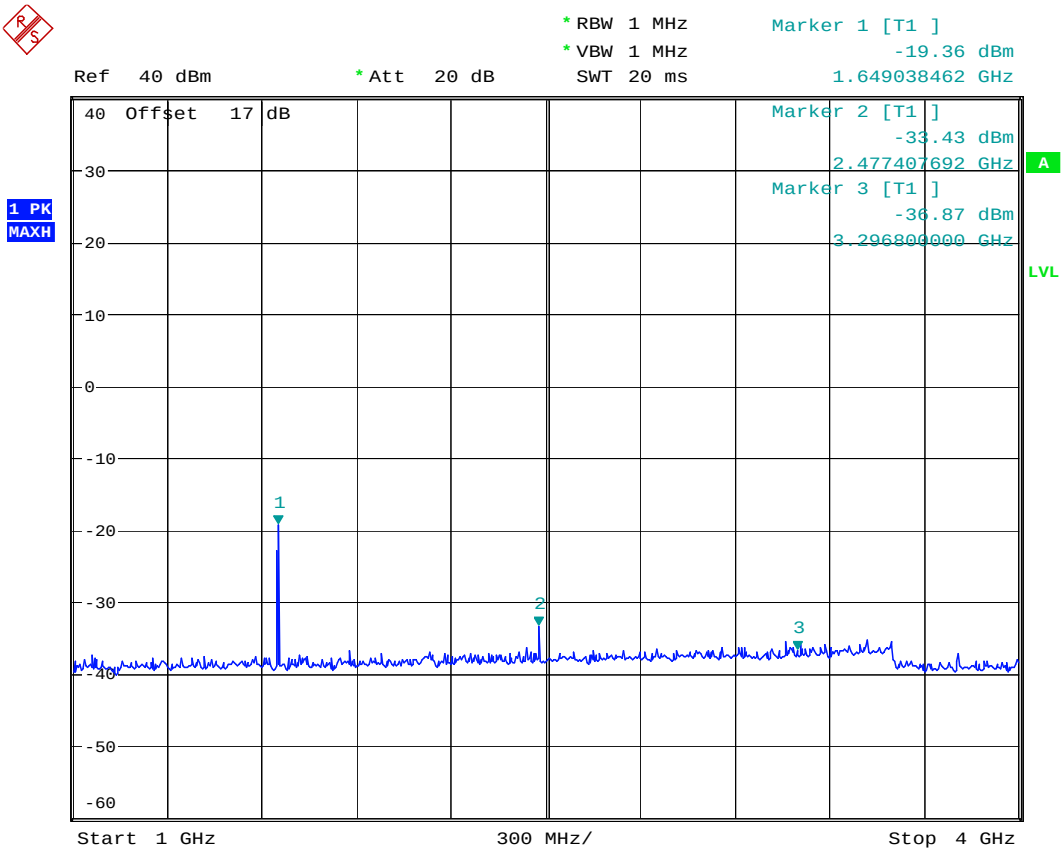
Conducted Spurious Emission 850Band CH128

Date: 17.JAN.2008 11:14:05



Conducted Spurious Emission 850Band CH128

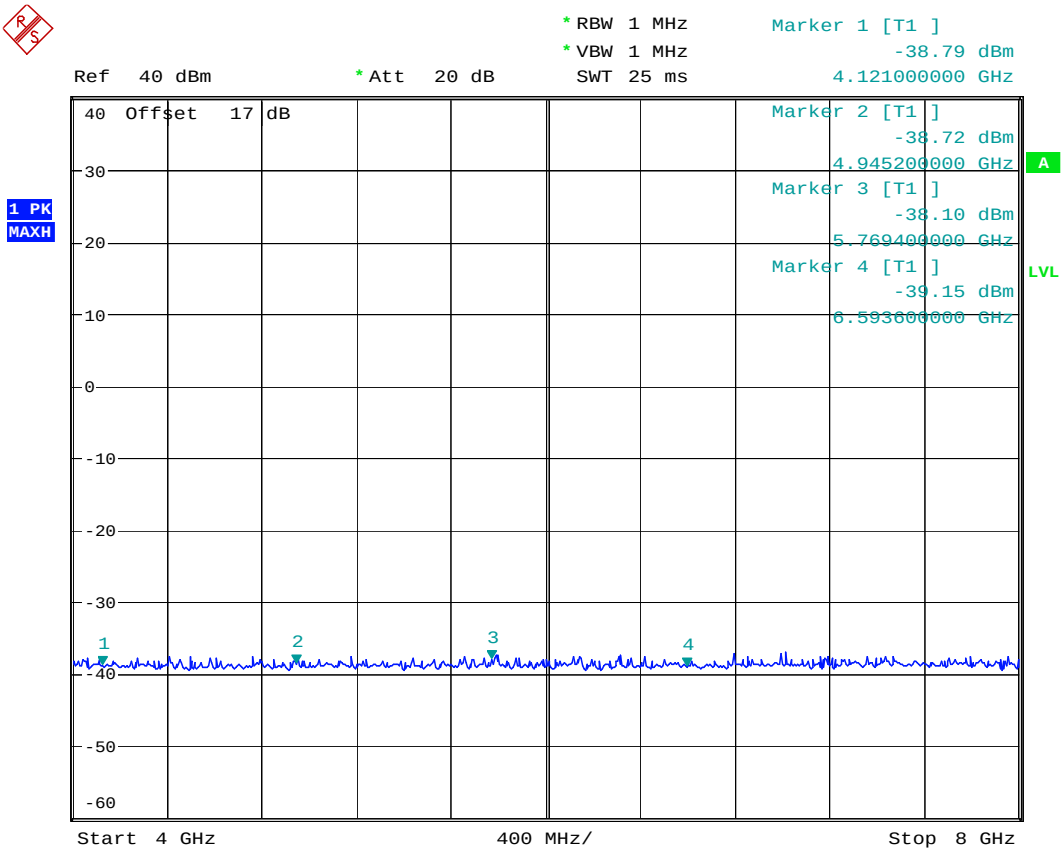
Date: 17.JAN.2008 11:14:42



Conducted Spurious Emission 850Band CH128

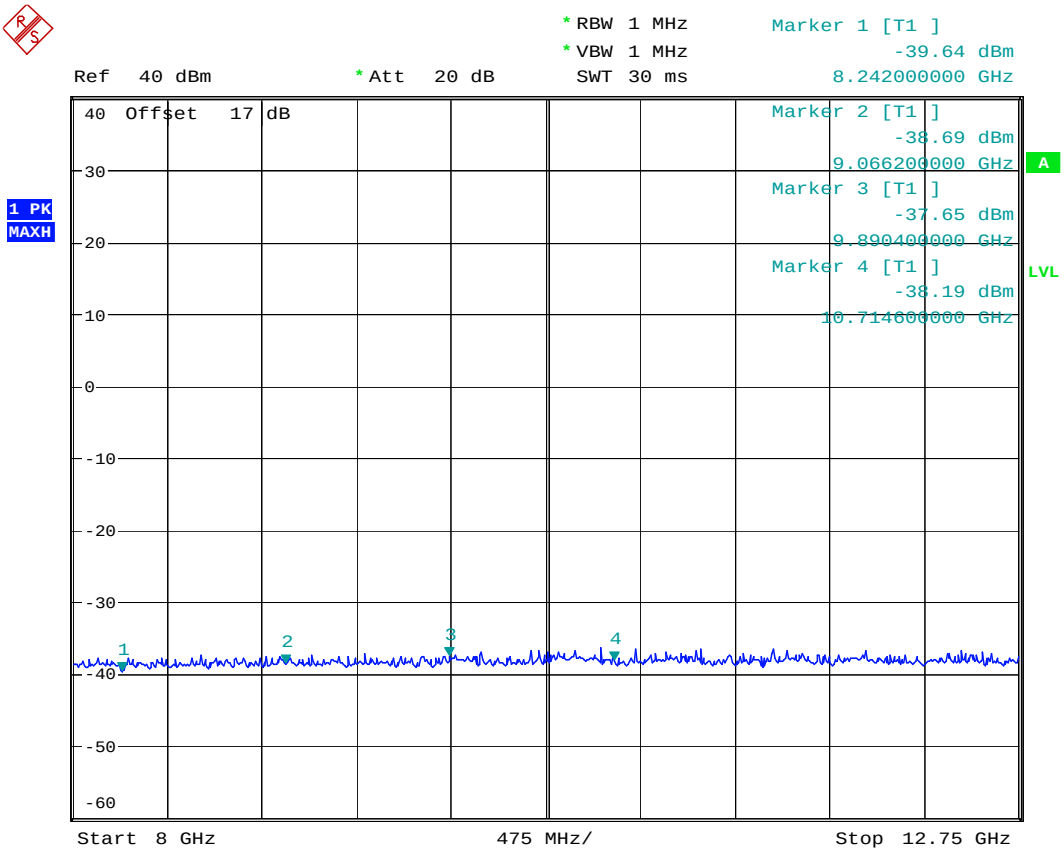
Date: 17.JAN.2008 11:19:40

Report Number: W6D20711-8718-P-22/24
FCC ID: UDV0606020080117



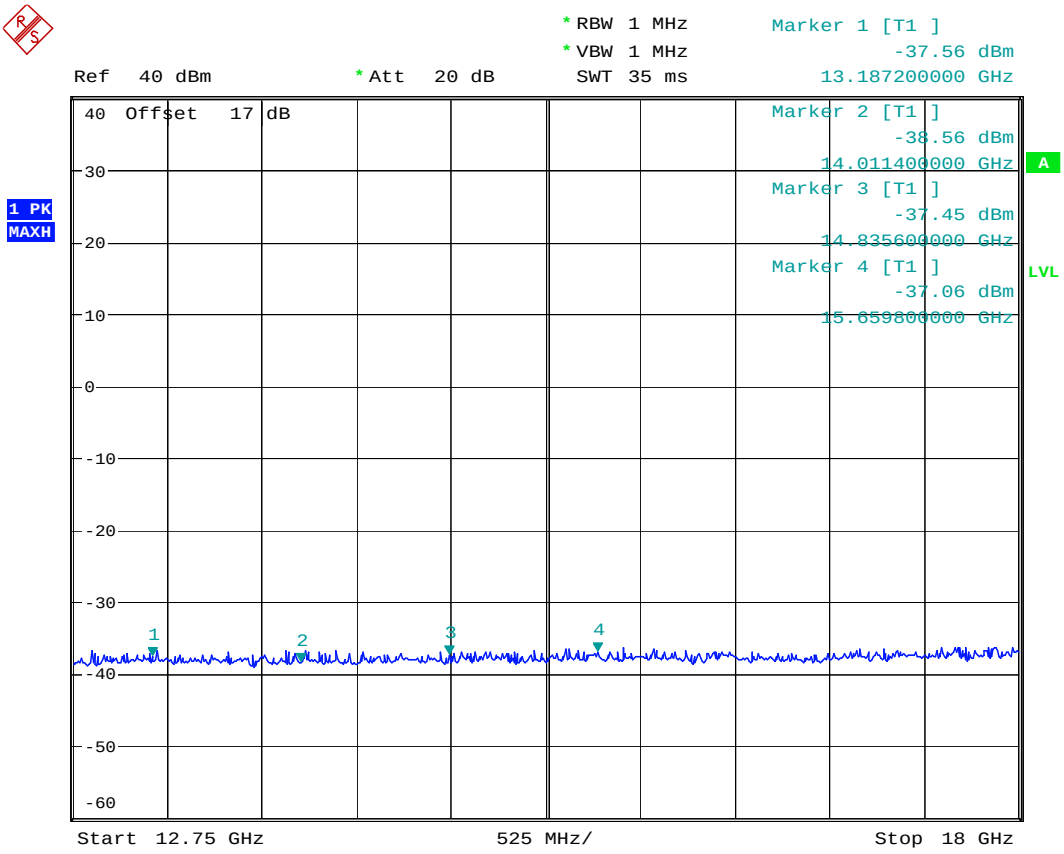
Conducted Spurious Emission 850Band CH128

Date: 17.JAN.2008 11:20:39



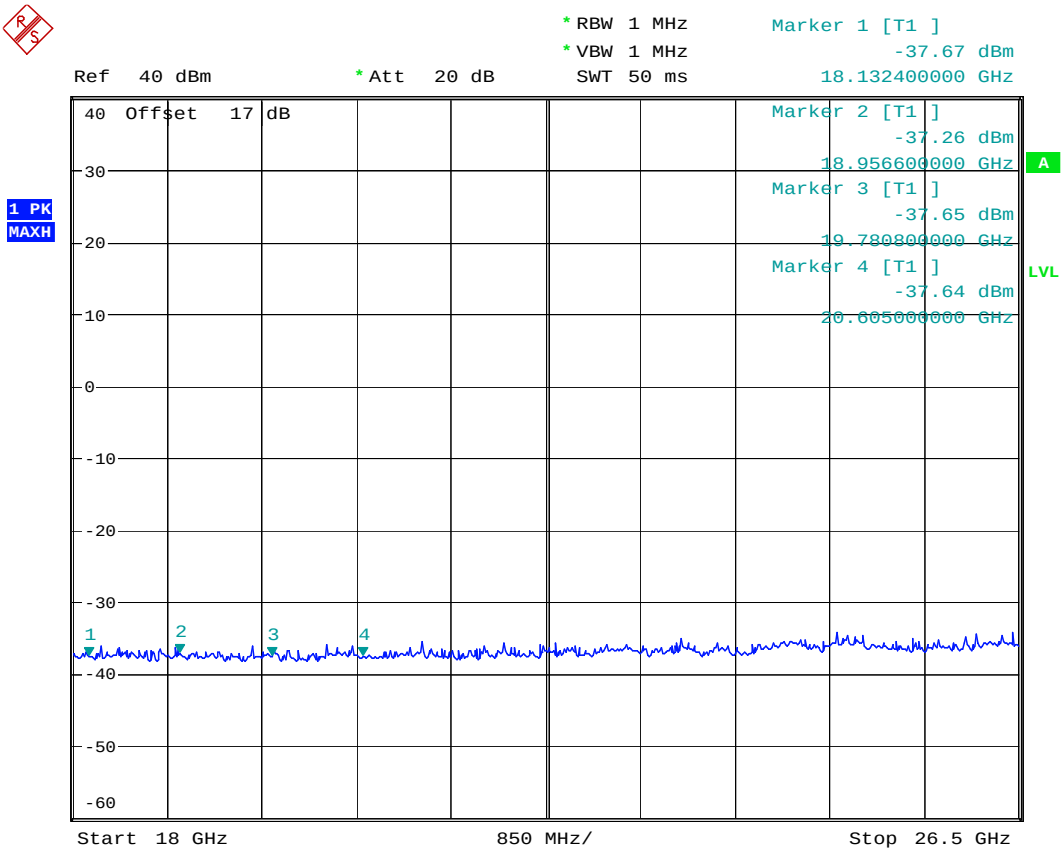
Conducted Spurious Emission 850Band CH128

Date: 17.JAN.2008 11:21:24



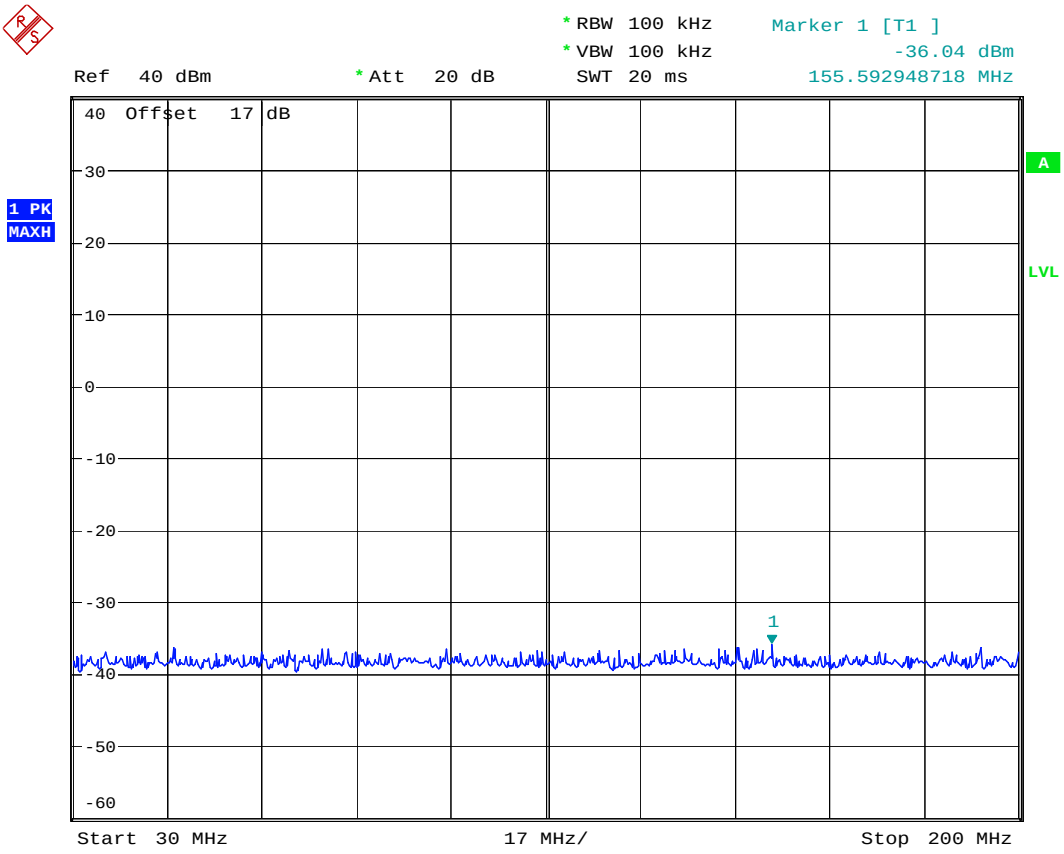
Conducted Spurious Emission 850Band CH128

Date: 17.JAN.2008 11:22:28



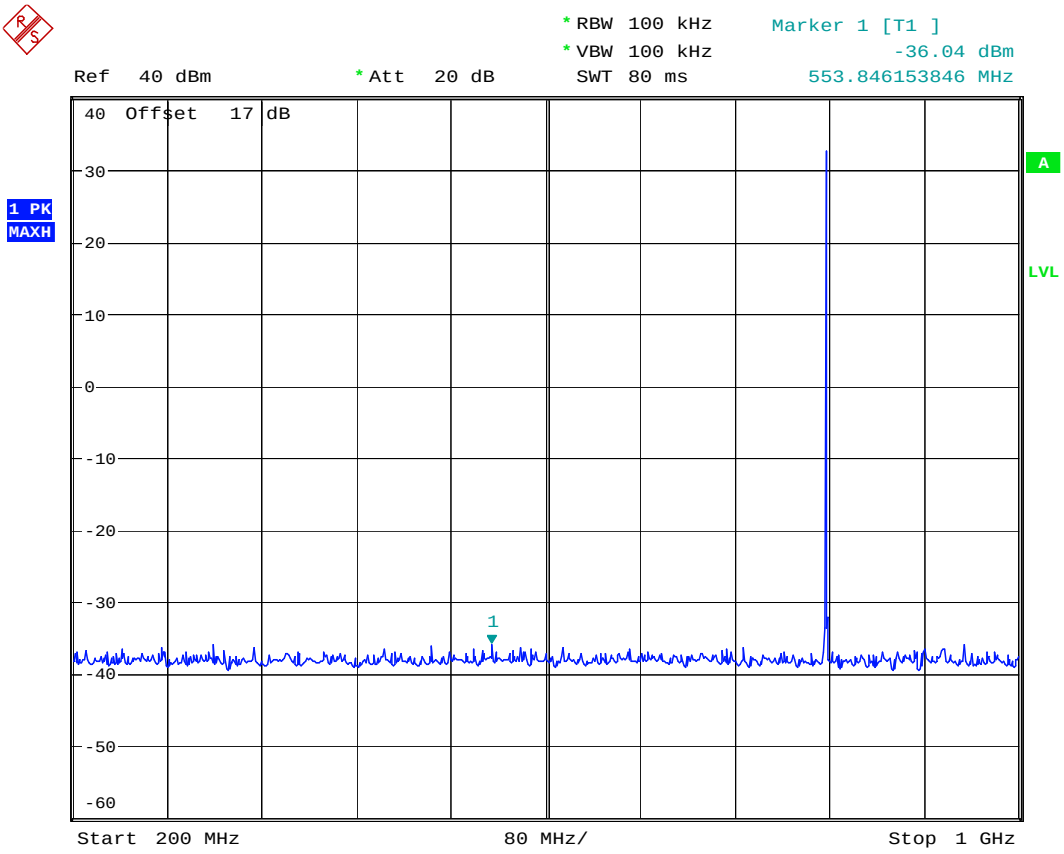
Conducted Spurious Emission 850Band CH128

Date: 17.JAN.2008 11:23:14



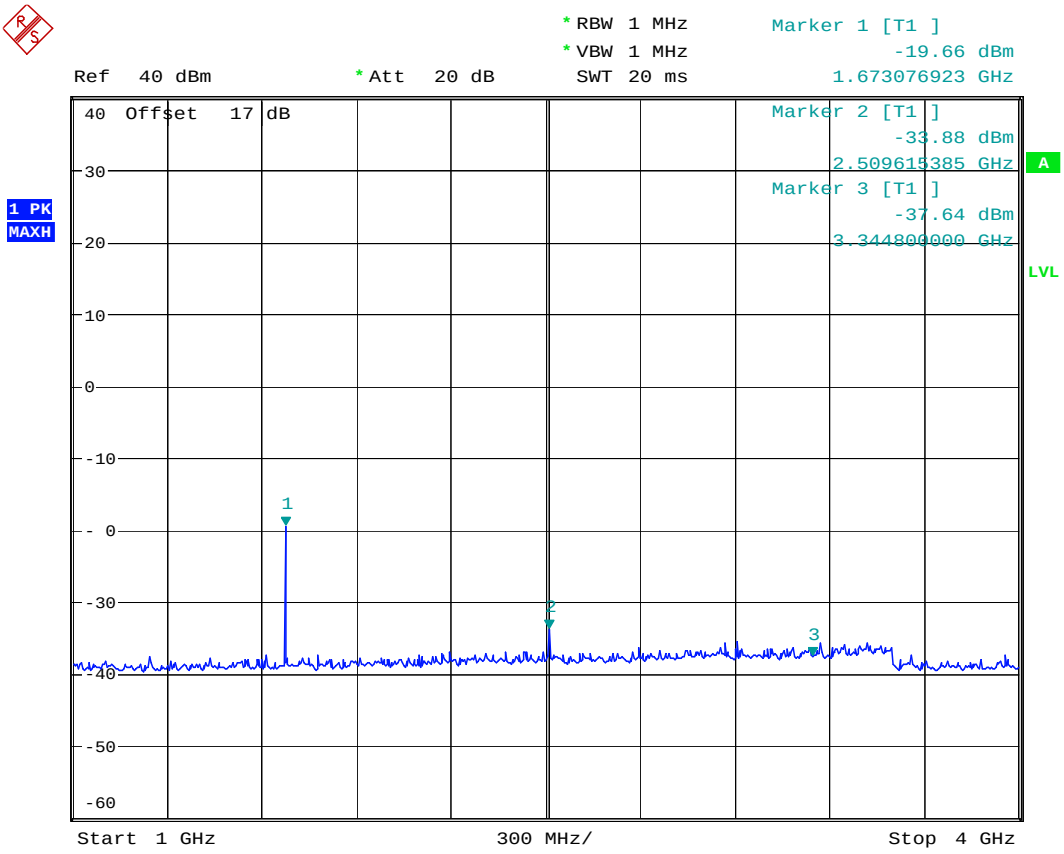
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:24:00



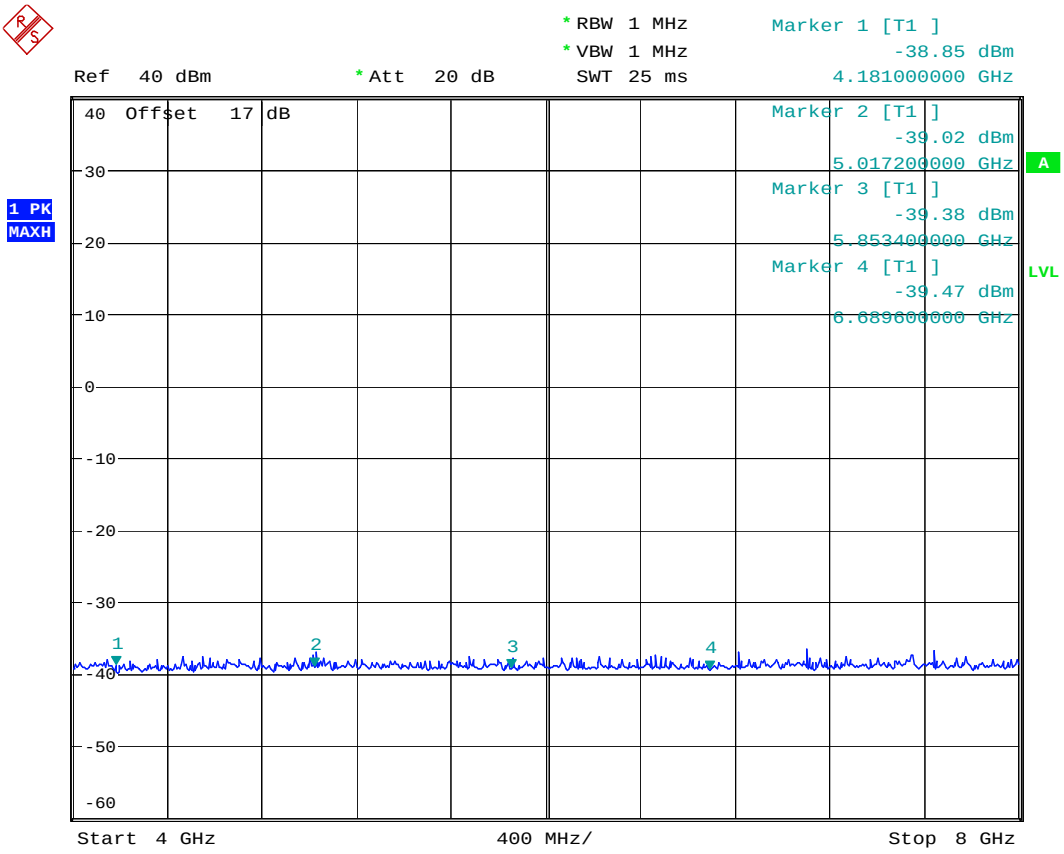
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:24:26



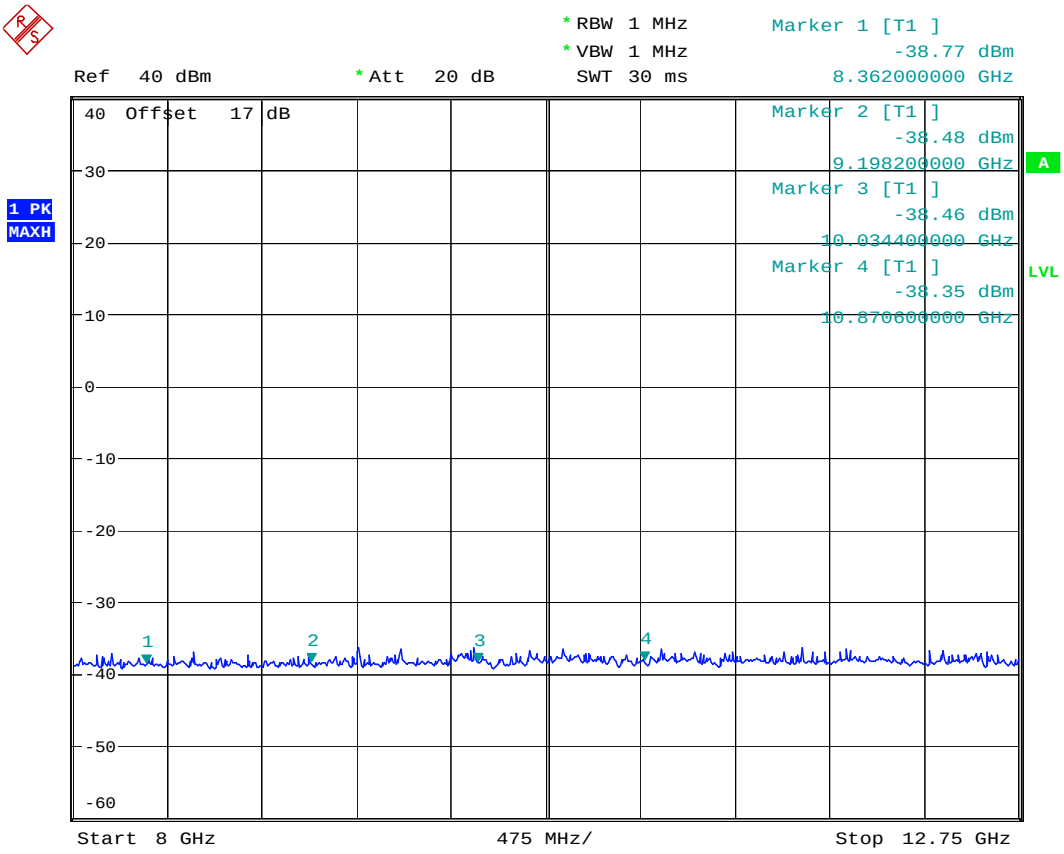
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:25:14



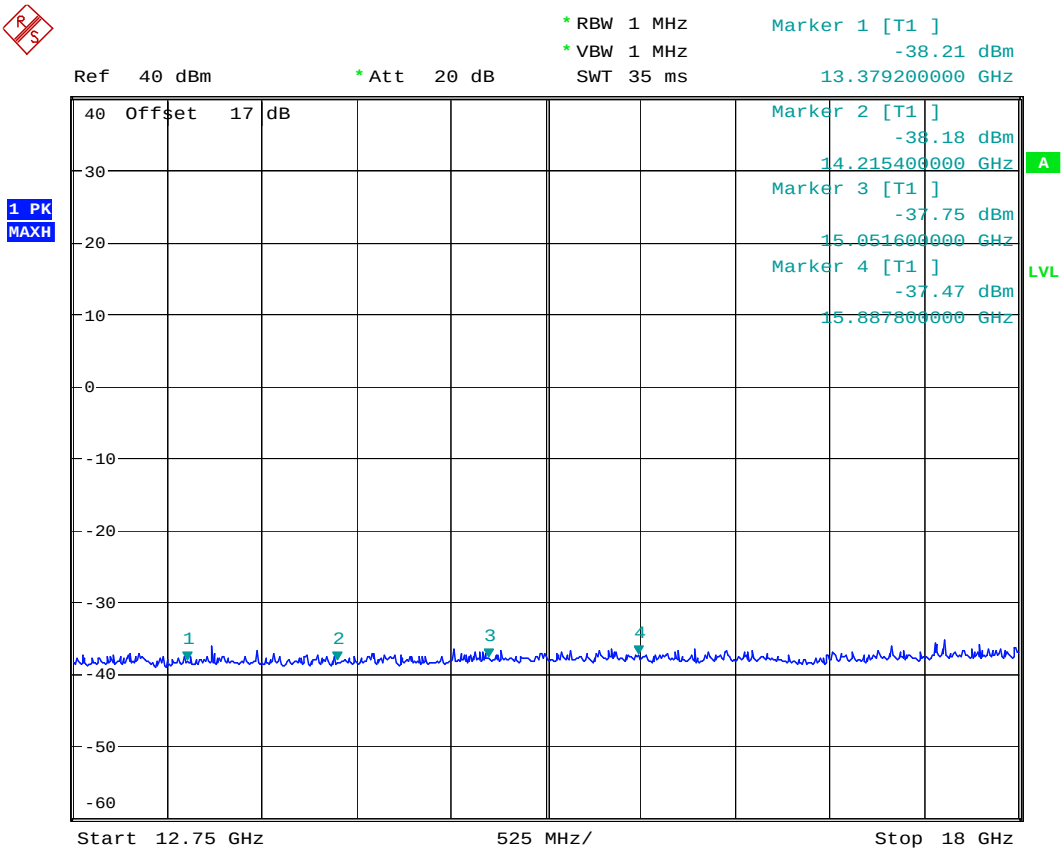
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:25:53



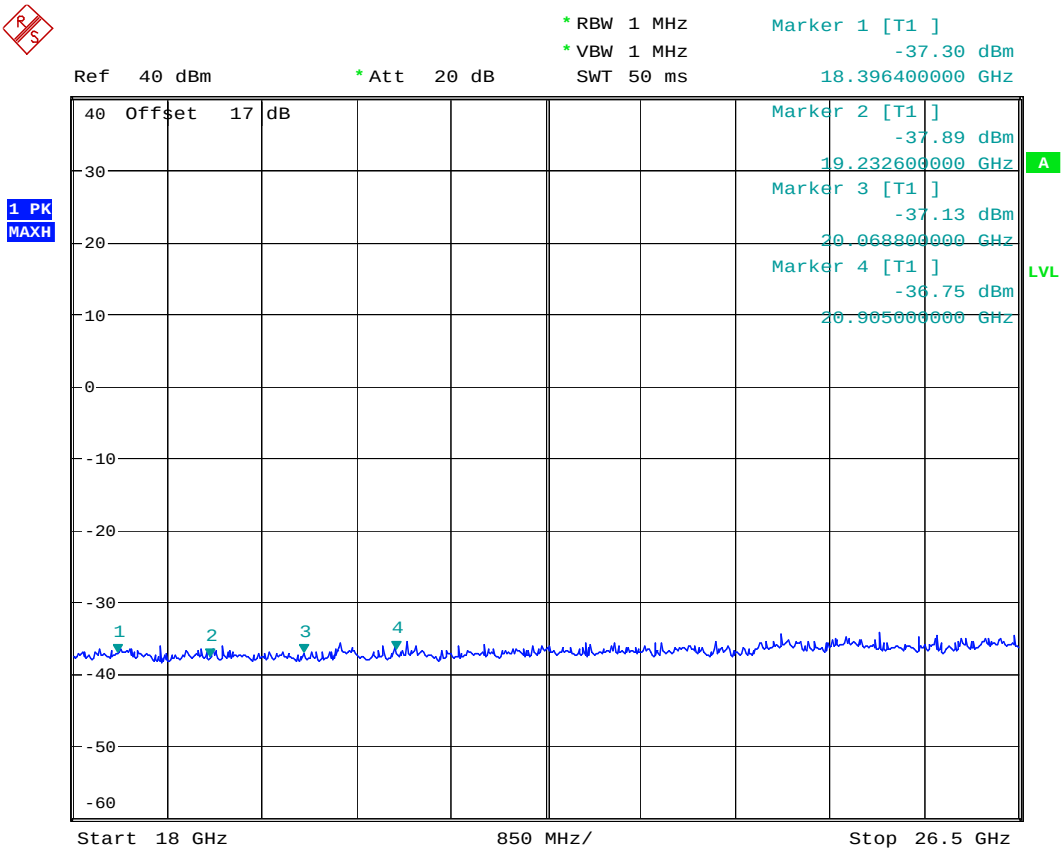
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:26:42



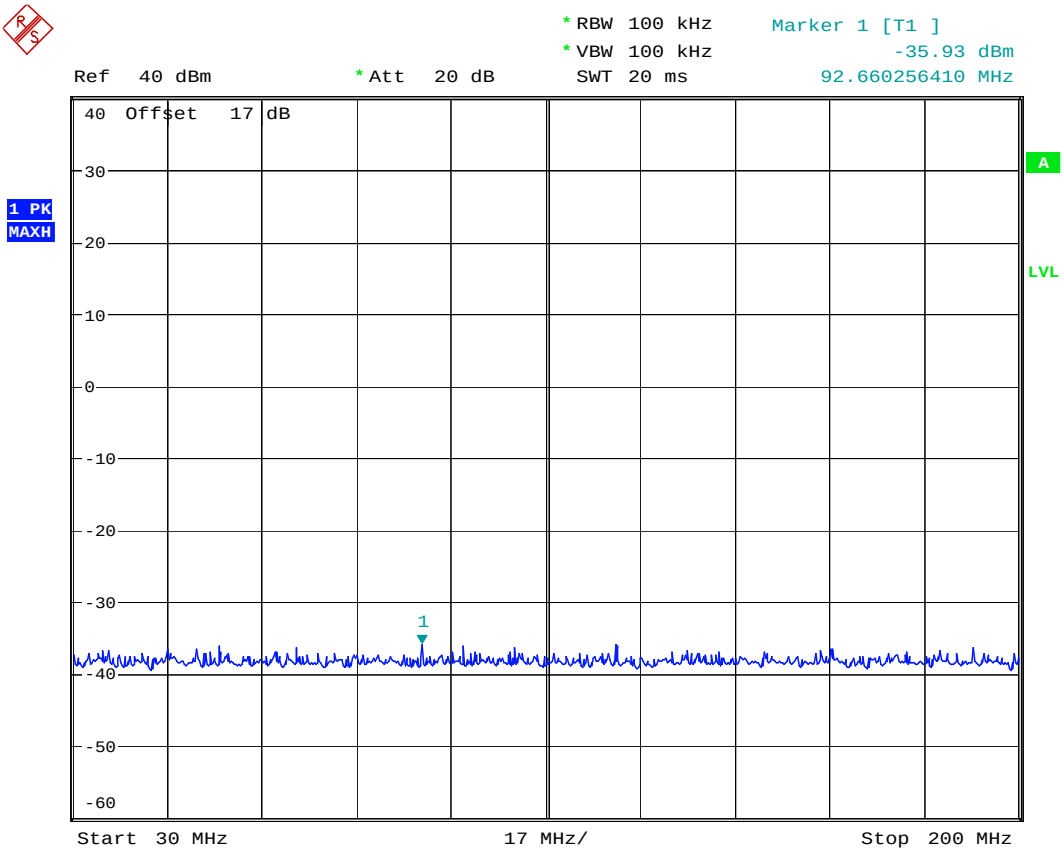
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:27:32



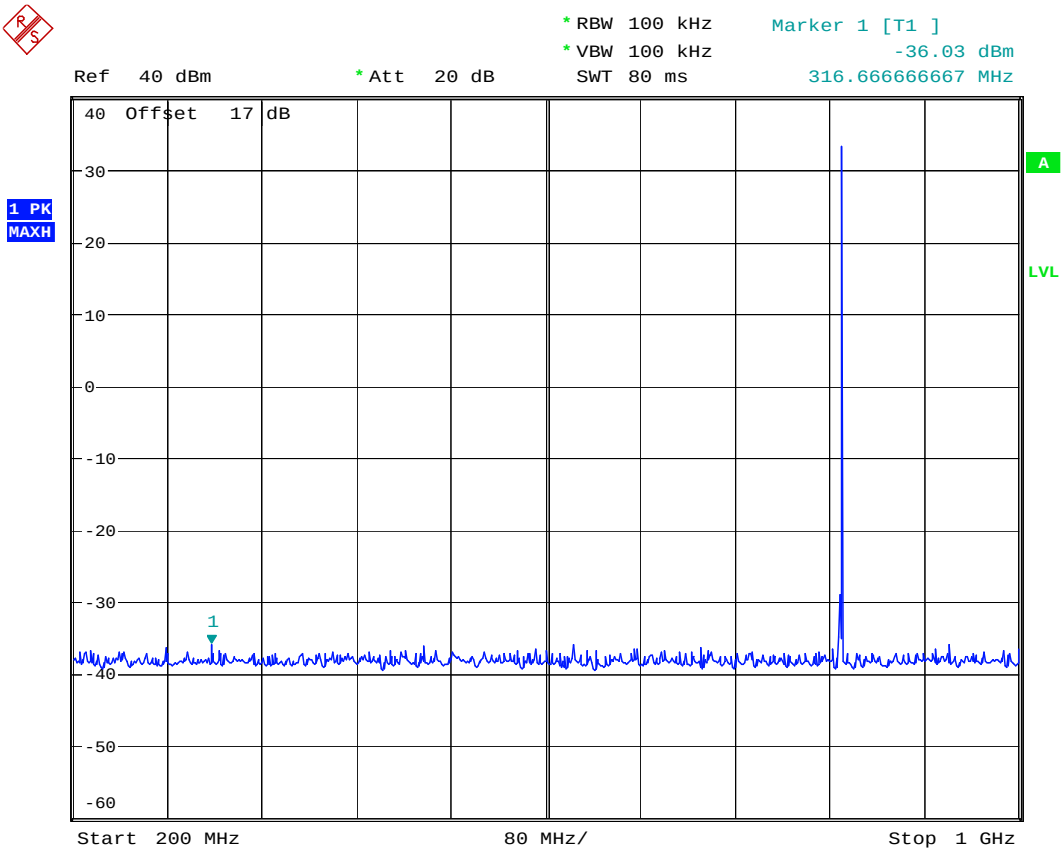
Conducted Spurious Emission 850Band CH188

Date: 17.JAN.2008 11:28:17



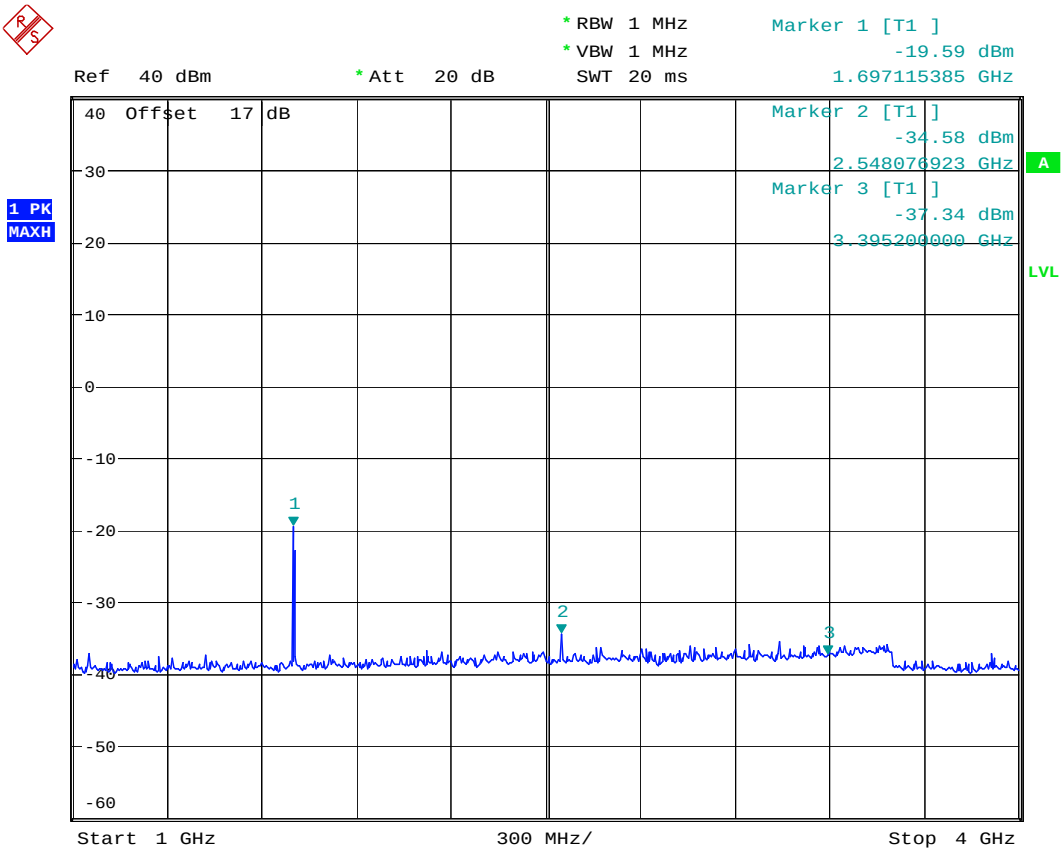
Conducted Spurious Emission 850Band CH251

Date: 17.JAN.2008 11:29:07



Conducted Spurious Emission 850Band CH251

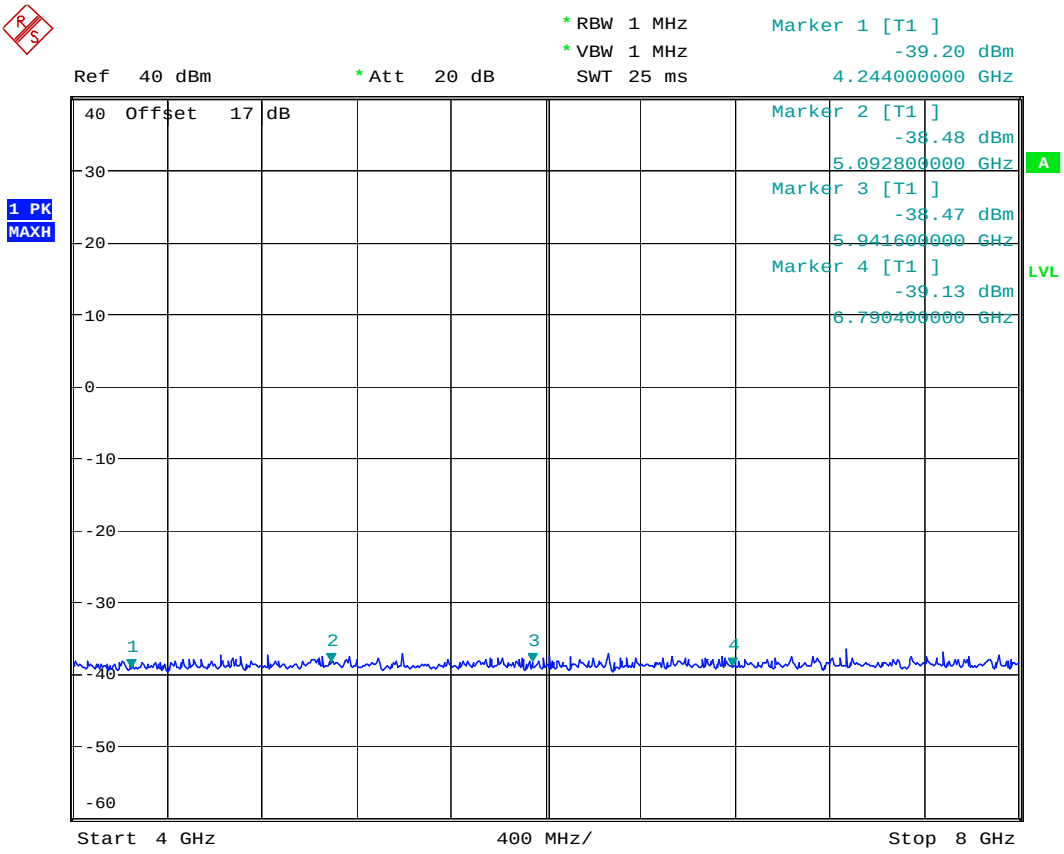
Date: 17.JAN.2008 11:29:34



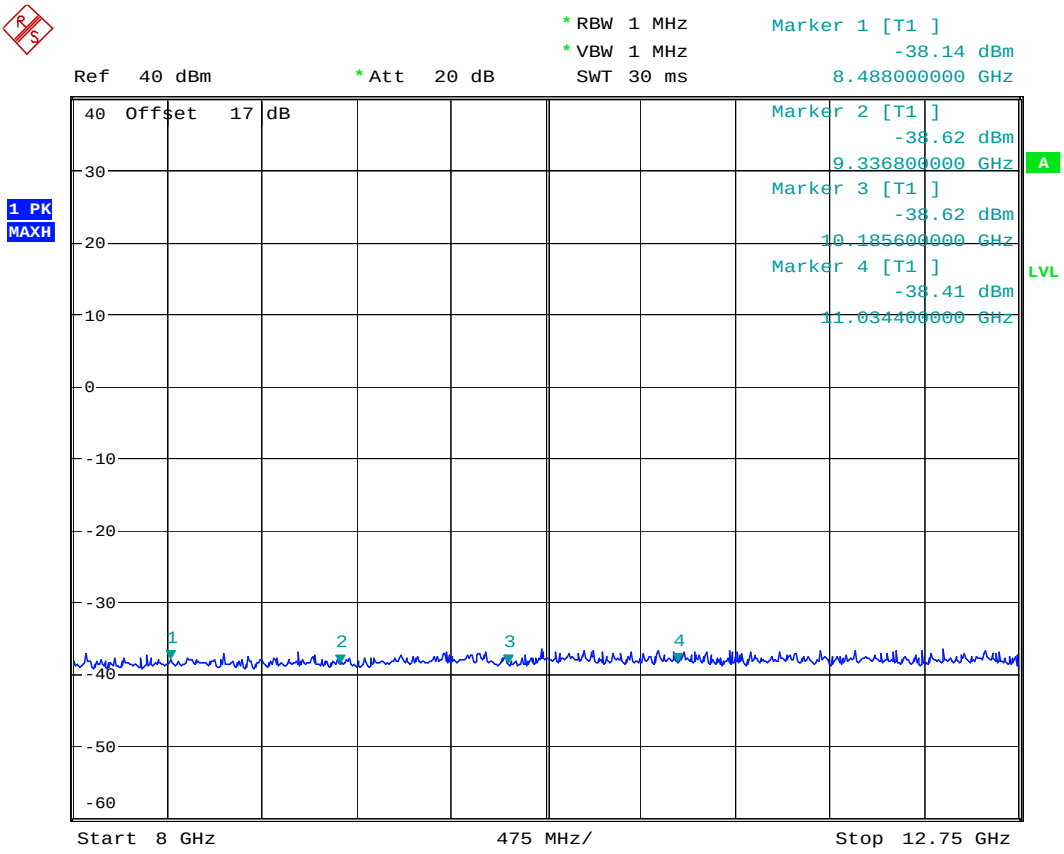
Conducted Spurious Emission 850Band CH251

Date: 17.JAN.2008 11:30:14

Report Number: W6D20711-8718-P-22/24
FCC ID: UDV0606020080117

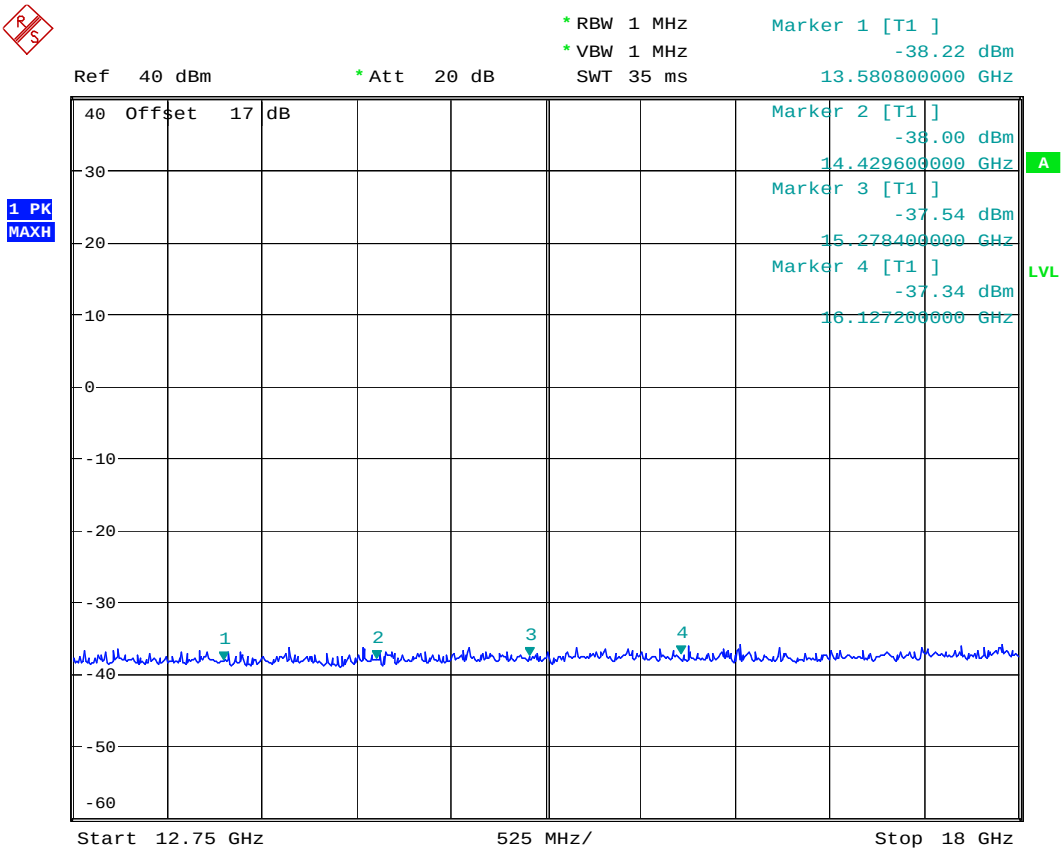


Conducted Spurious Emission 850Band CH251
Date: 17.JAN.2008 11:32:35



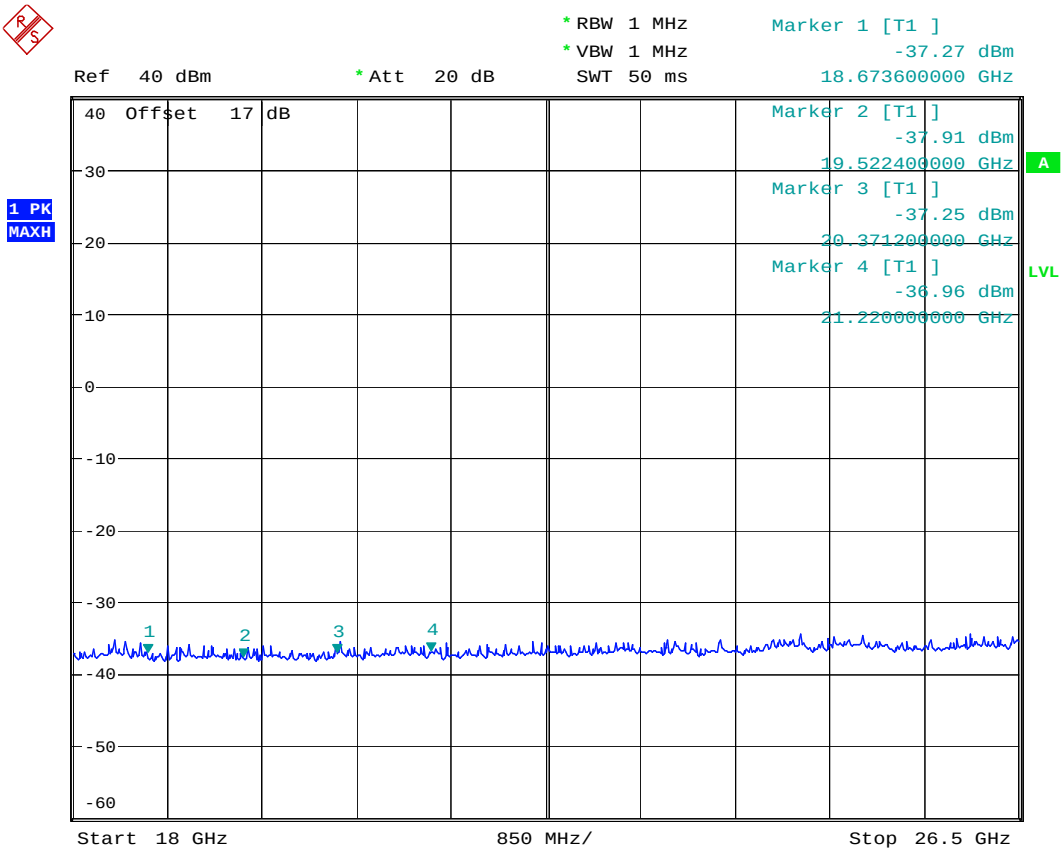
Conducted Spurious Emission 850Band CH251

Date: 17.JAN.2008 11:33:21



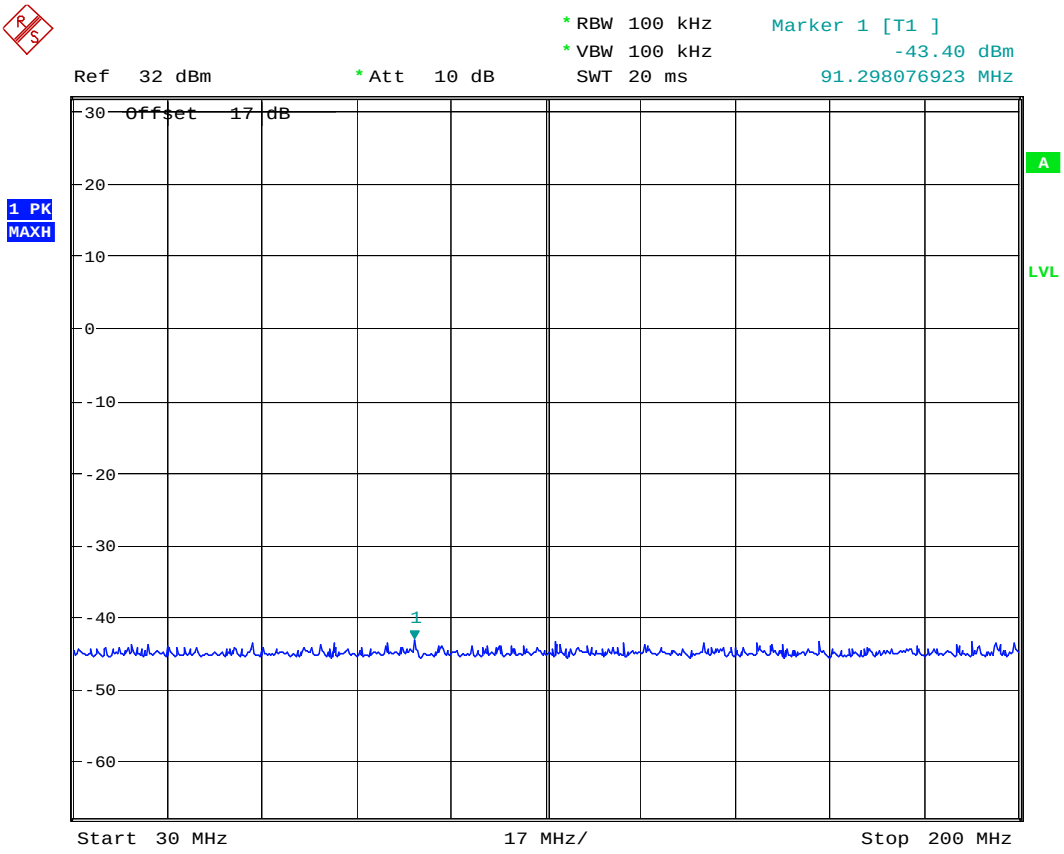
Conducted Spurious Emission 850Band CH251

Date: 17.JAN.2008 11:34:23



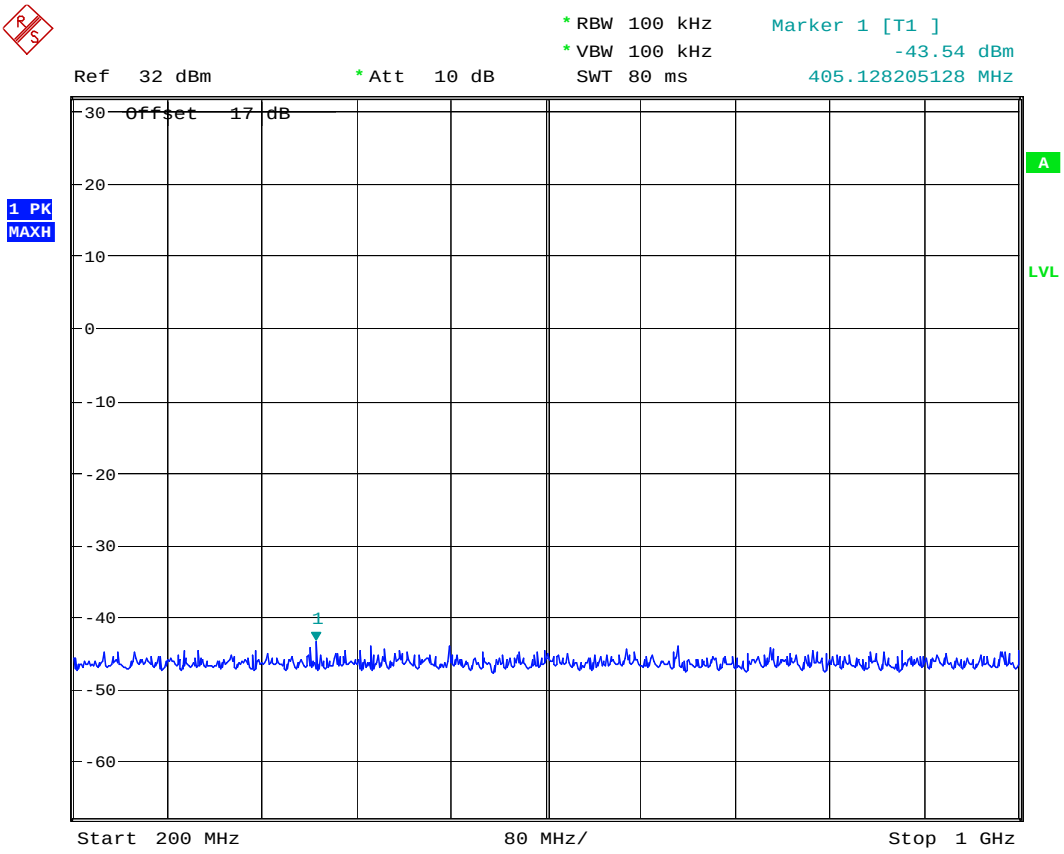
Conducted Spurious Emission 850Band CH251

Date: 17.JAN.2008 11:35:12



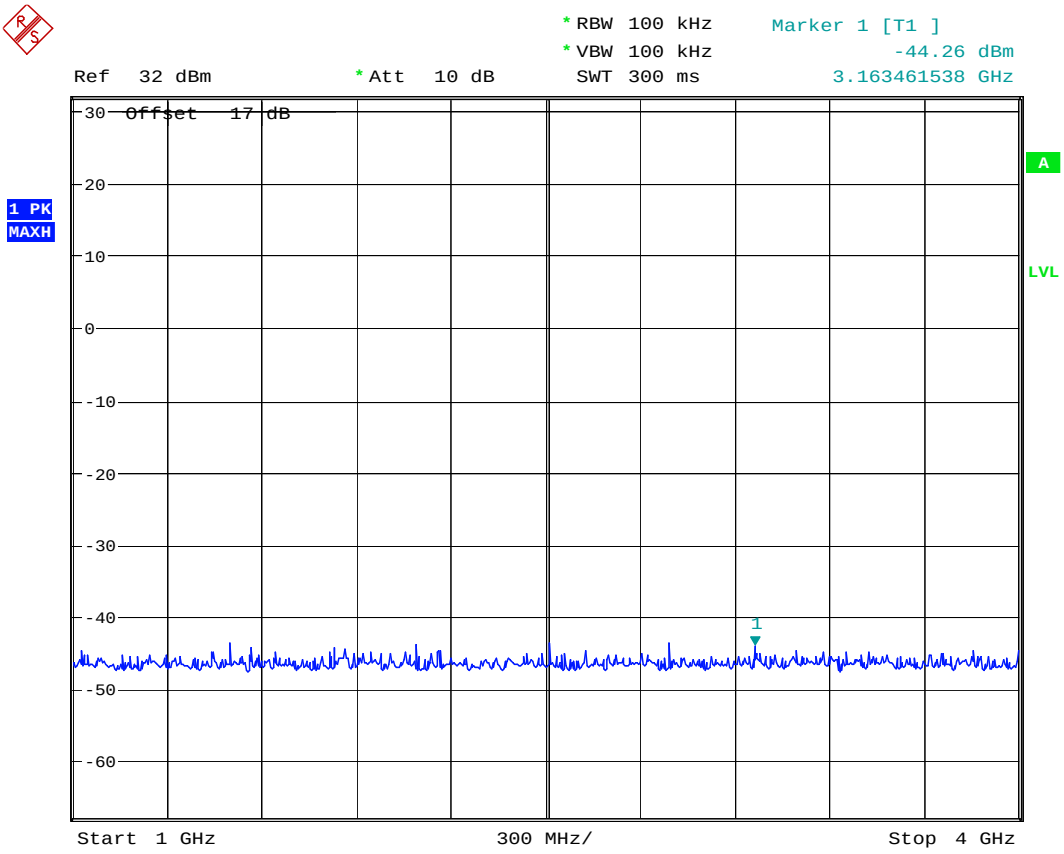
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:49:39



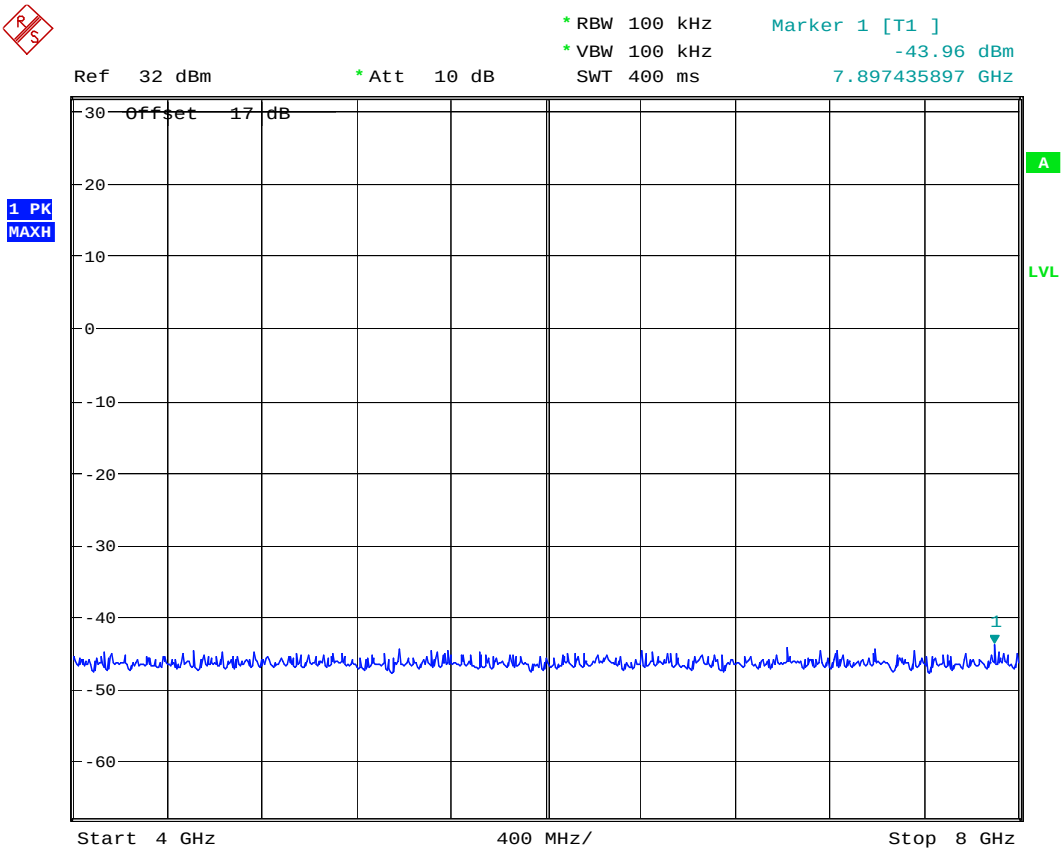
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:49:59



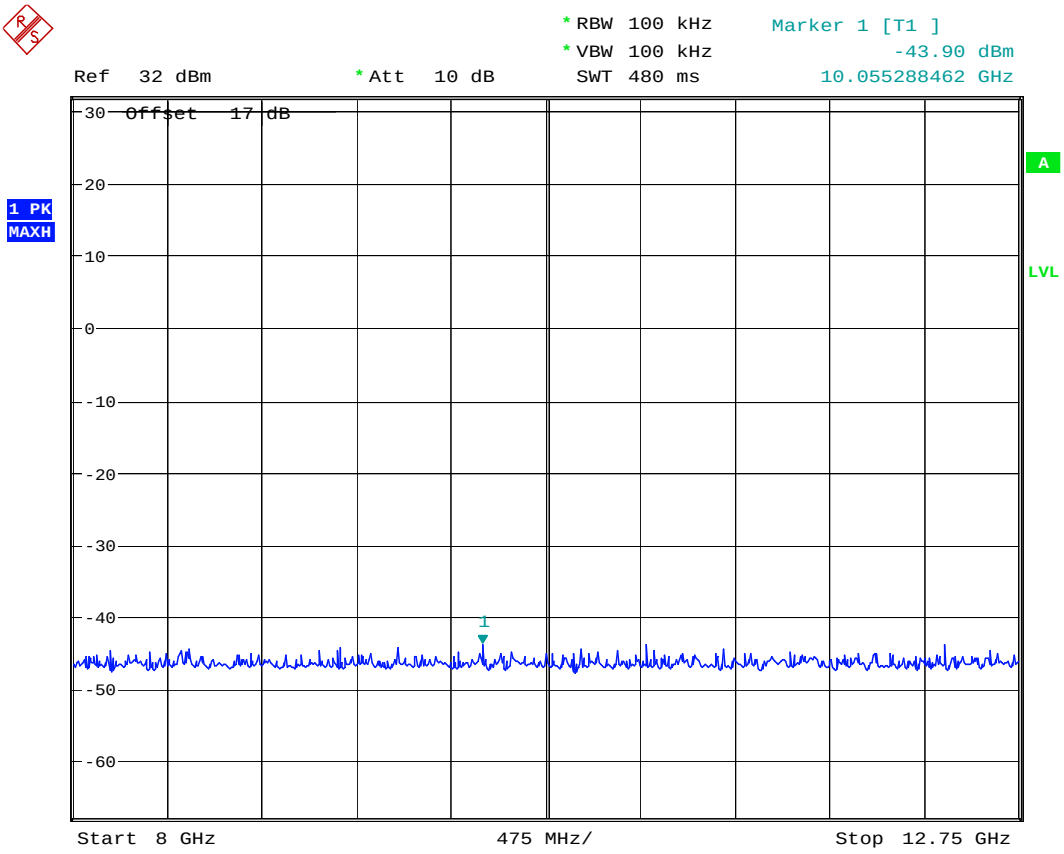
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:50:13



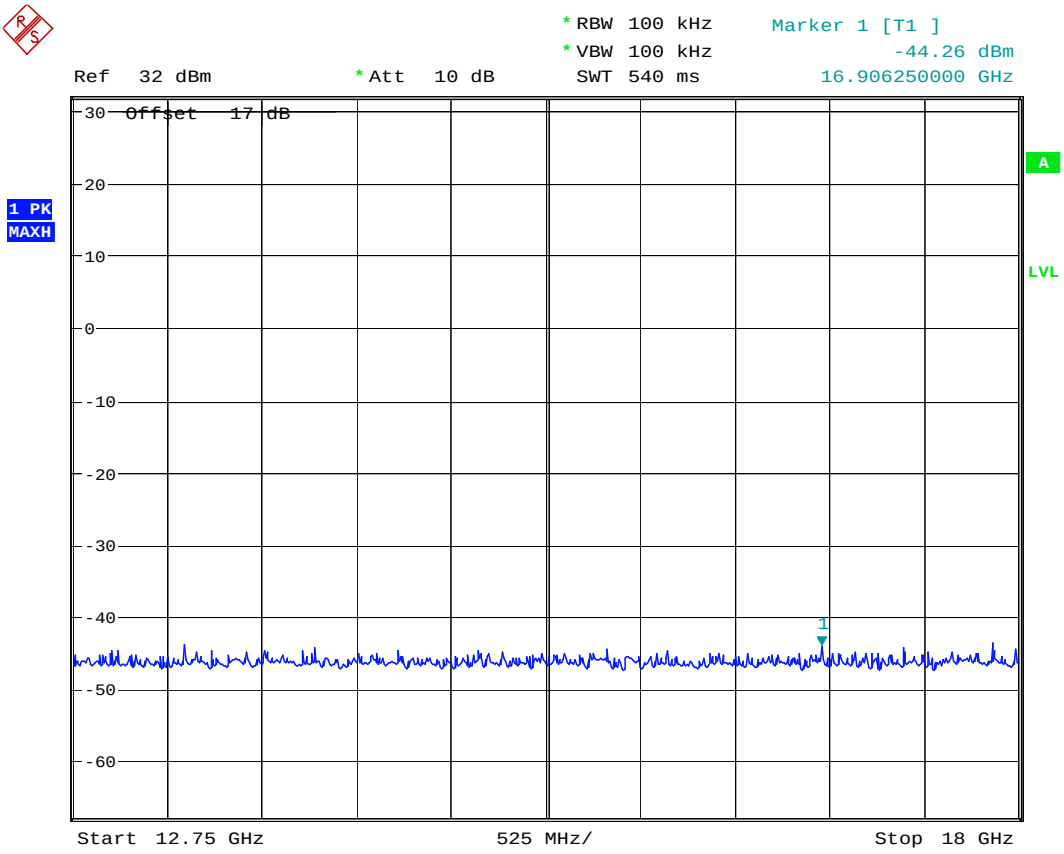
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:50:29



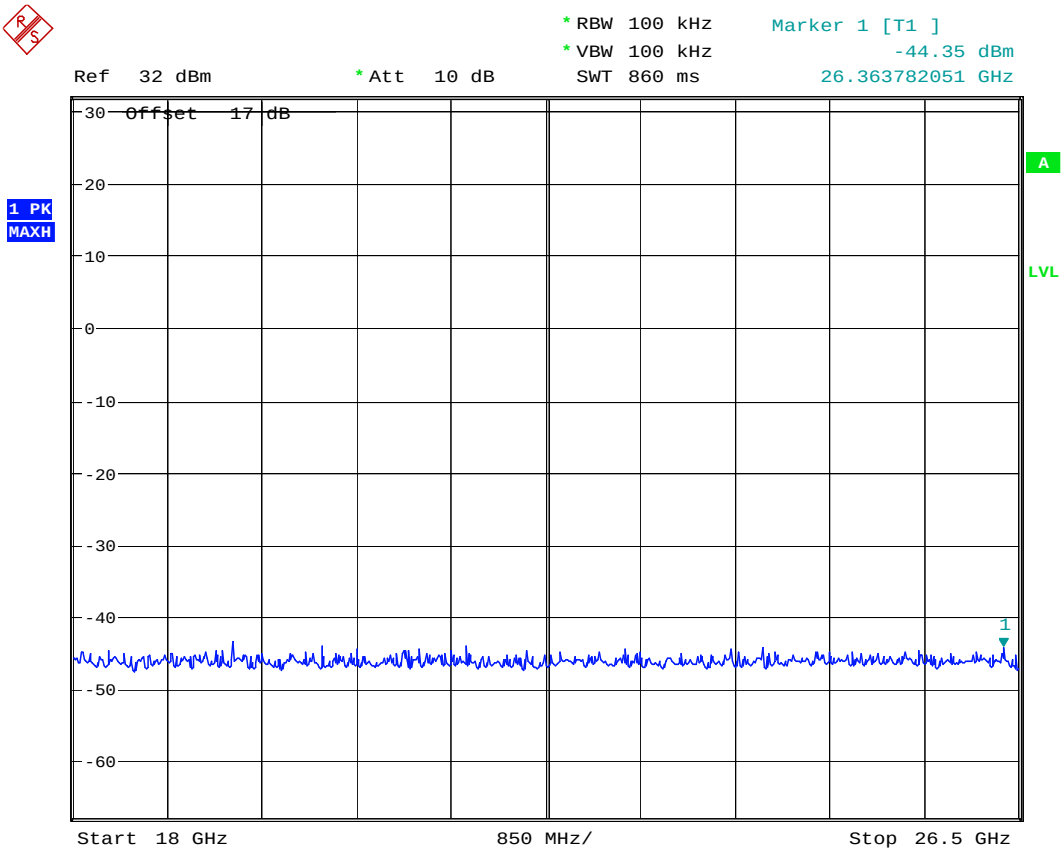
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:50:47



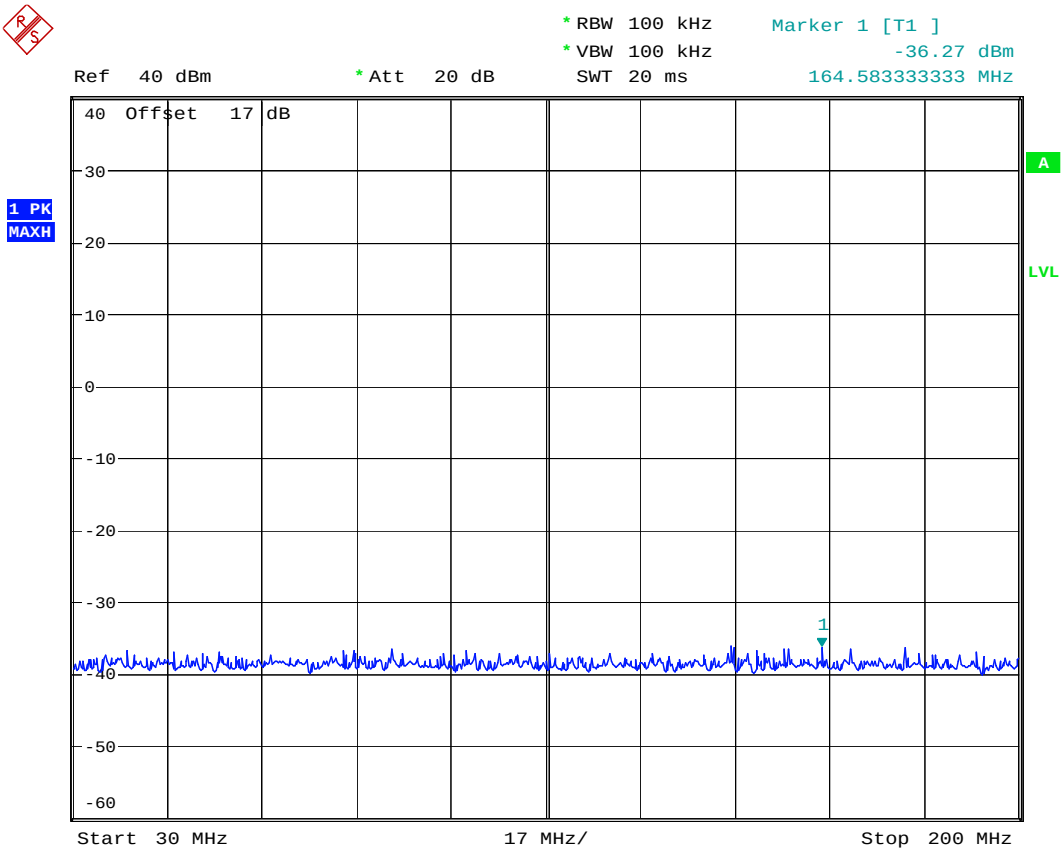
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:51:06



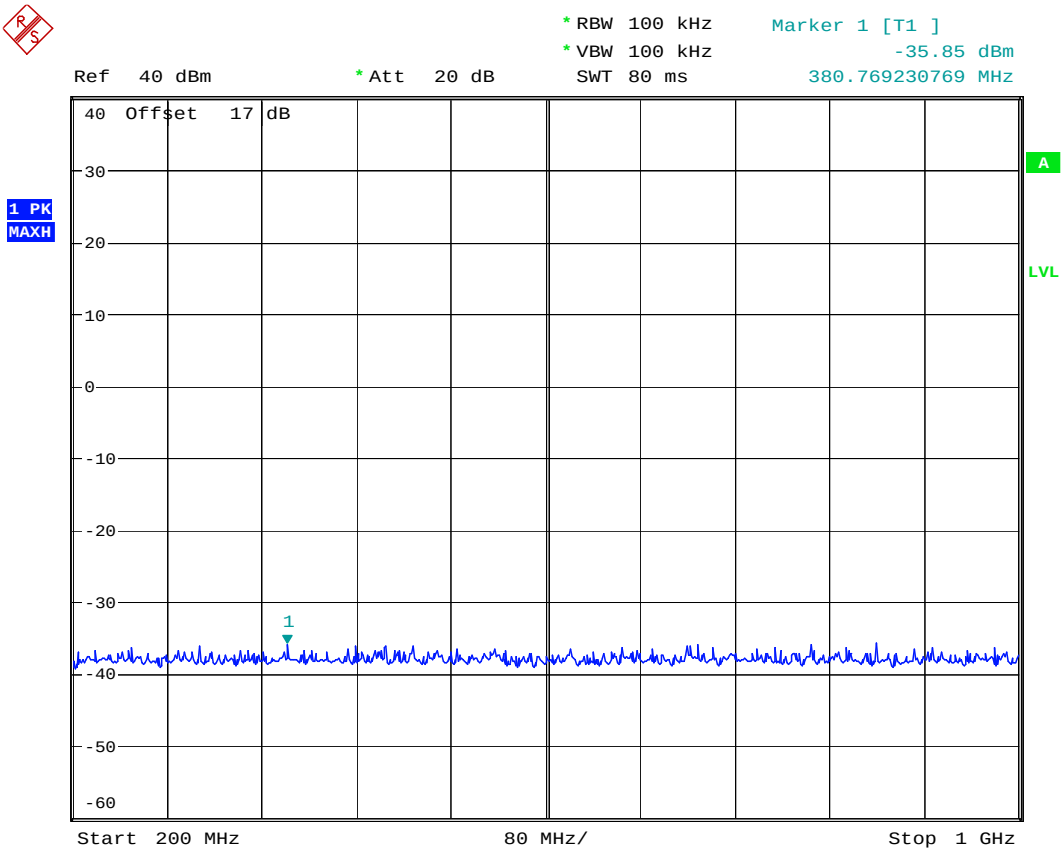
Conducted Spurious Emission 850Band idle mode

Date: 17.JAN.2008 11:51:22



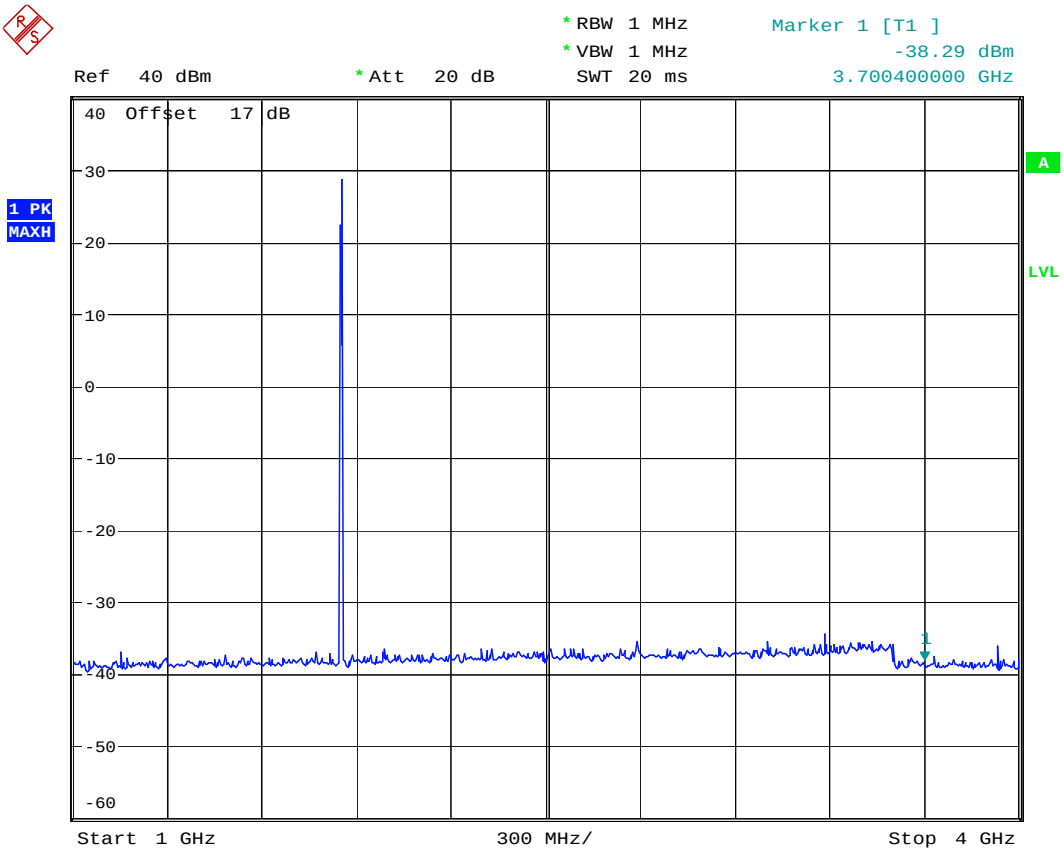
Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:25:48



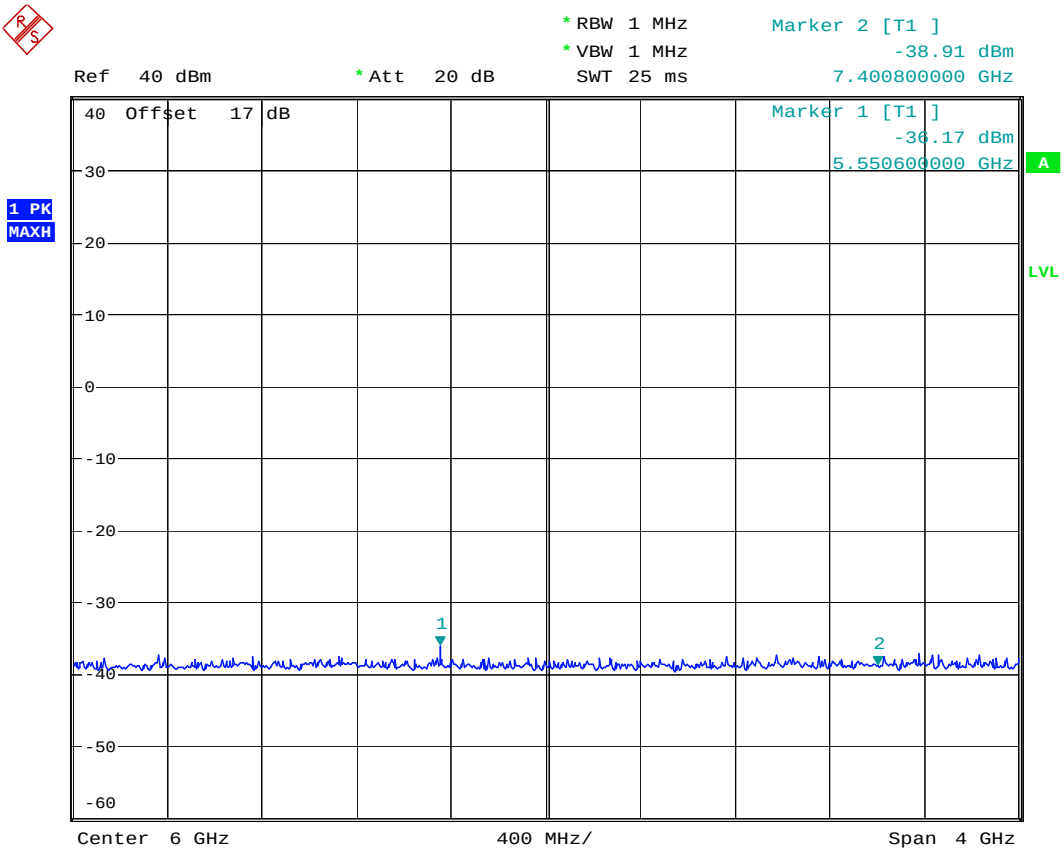
Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:26:23



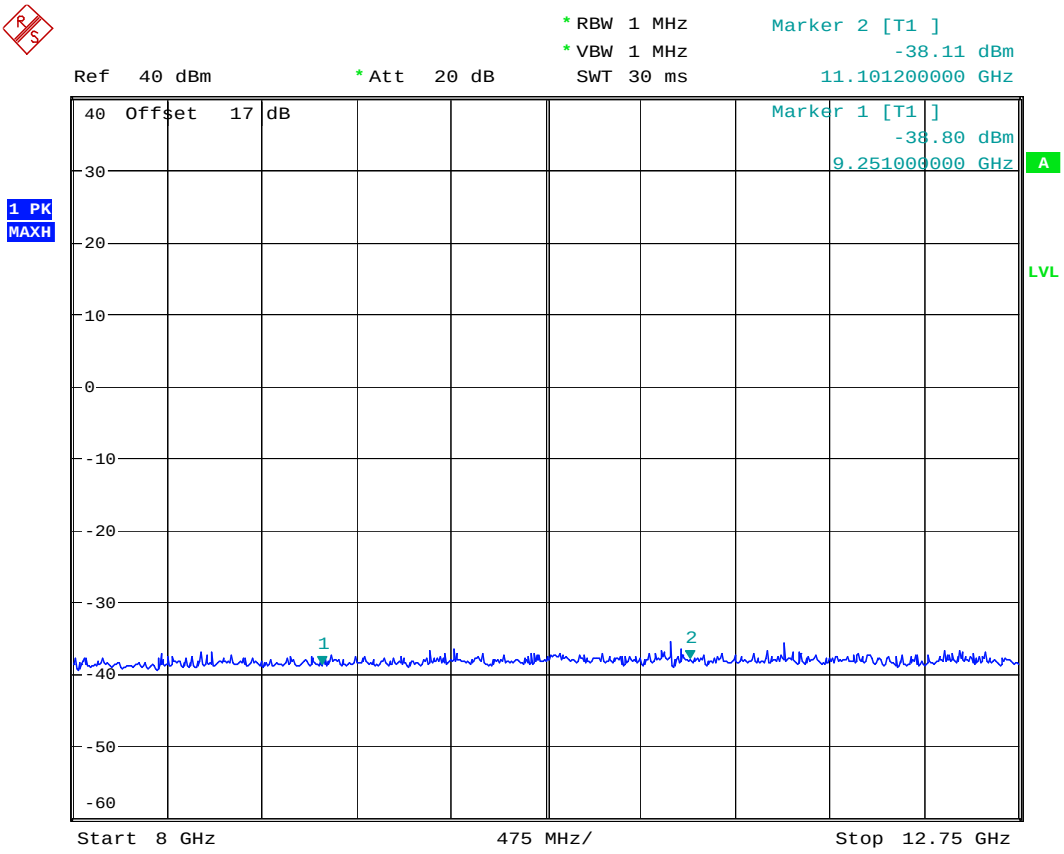
Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:27:52



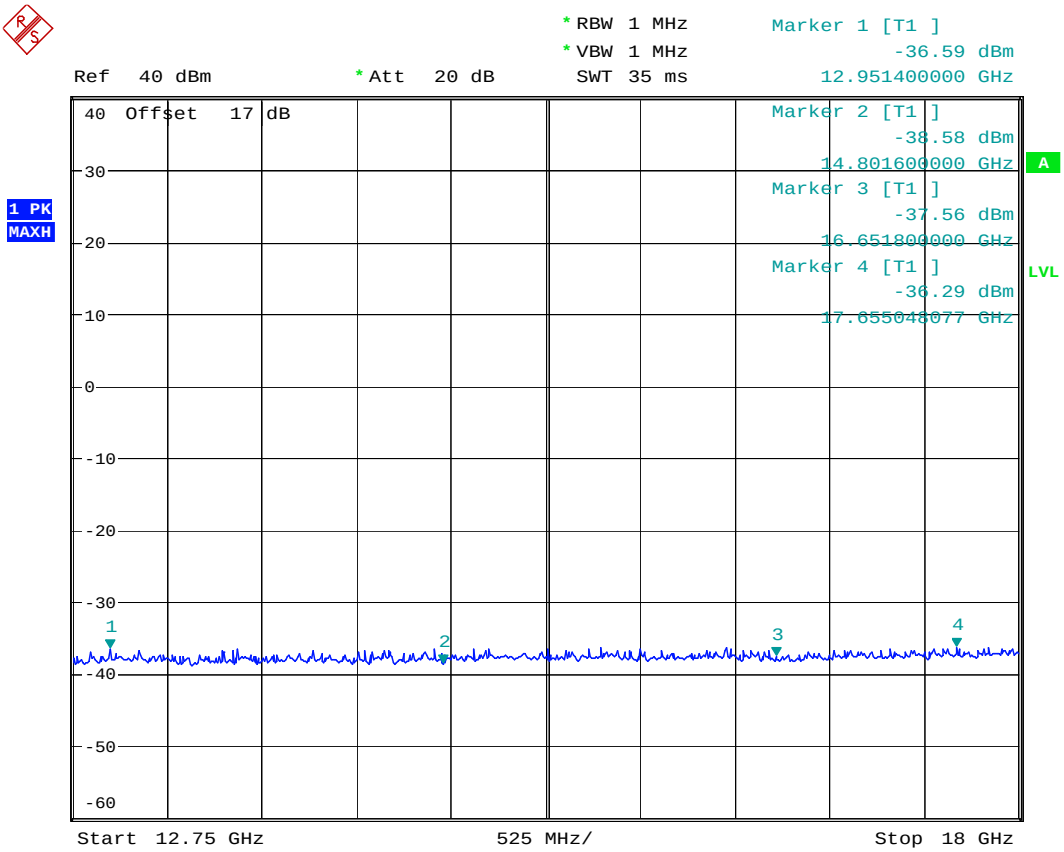
Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:28:36



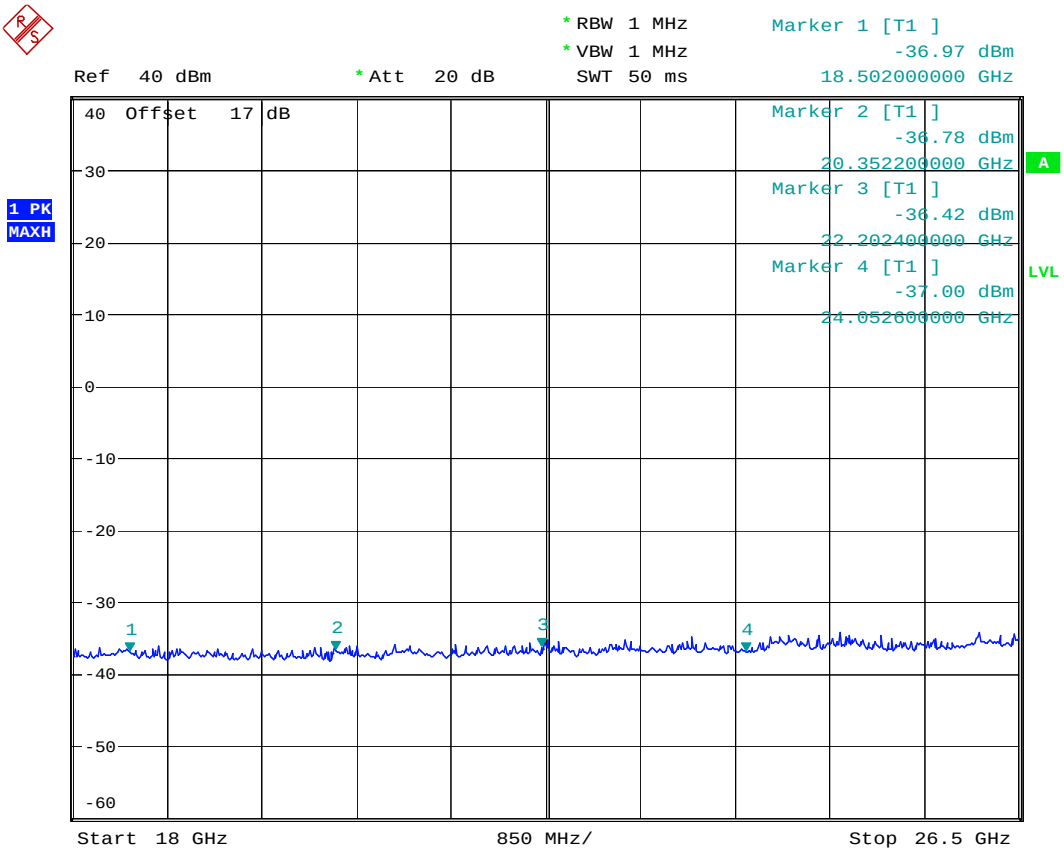
Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:29:26



Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:30:50



Conducted Spurious Emission 1900Band CH512

Date: 17.JAN.2008 09:31:59