World Standardization Certification &Testing CO.,LTD
World Standardization Safety and EMC Testing Centre

FCC ID
TEST REPORT

for

Motorcycle Alarm System

MODEL: 68958-07BR

FCC ID: MKFARI0910

Test Report Number: WSCT10060184E
Issued Date:August 26 , 2010

Issued for

Kenwo Industries Limited

Unit 1-2, 7/F, Block A, Hi-Tech Ind Ctr 5 Park Tin Par Street Tsuen Wan,Hong Kong

Issued By:

WORLD STANDARDIZATION CERTIFICATION & TESTING CO., LTD.
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Revision History Of Report

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	WSCT10060184E	Initial Issue	ALL	Kallen Wang

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1 TEST CERTIFICATION

Product:	Motorcycle Alarm System
Model:	68958-07BR
Applicant:	**Kenwo Industries Limited** Unit 1-2, 7/F, Block A, Hi-Tech Ind Ctr 5 Park Tin Par Street Tsuen Wan,Hong Kong
Factory:	**Kenwo manufacturing Factory** Linwu Industrial Area,Junzibu,GuanLan, Baoan ,Shenzhen, China
Trade Mark:	N/A
Tested:	June 09~August 26, 2010
Test Voltage:	DC 12.6 V
Applicable Standards:	FCC Part 2 Subpart J, FCC Part 22 Subpart H, FCC Part 24 Subpart E, TIA/EIA 603-C,ANSI C63.4:2003

Deviation from Applicable Standard
None

The above equipment has been tested by World Standardization Certification & Testing Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: ***Davis Zhou*** ***Date:*** ***2010-08-25***

(Davis Zhou)

Check By: ***Date:*** ***2010-08-25***

(Kelly Wu)

Approved By: ***Date:*** ***2010-08-25***

(Kallen Wang)

2 TEST RESULT SUMMARY

FCC Rules	Item	Result
§ 1.1307 § 2.1093	RF Exposure(MPE)	PASS
§ 2.1046 § 22.913(a) § 24.232(c)	RF Output Power	PASS
§ 2.1047	Modulation characteristics	PASS
§ 2.1049 § 22.905 § 22.917 § 24.238	99%&-26dB Occupied Bandwidth	PASS
§ 2.1051 § 22.917(a) § 24.238(a)	Spurious Emissions at Antenna Terminal	PASS
§ 2.1053 § 22.917(a) § 24.238(a)	Field Strength of Spurious Radiation	PASS
§ 22.917(a) § 24.238(a)	Out of band emission,Bnad Edge	PASS
§ 2.1055 § 22.355 § 24.235	Frequency stability vs.temperature Frequency stability vs.voltage	PASS

Note: 1. The test result judgment is decided by the limit of test standard
2. The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

Product	Motorcycle Alarm System
Trade Mark	N/A
Model	68958-07BR
Applicant	Kenwo Industries Limited
EUT Type	Prototype Sample.
Serial Number	N/A
Antenna Type	Integral Antenna
EUT Power Rating	DC12.6 V
Temperature Range(Operating)	+15 ~+ 35℃
Type of the Equipment	Transmitter
Operating Frequency	GSM850：824.2-848.8MHz、 Pcs1900: 1850.2—1909.8MHz
Modulation type	GMSK
Transmitter Output Power	Cellular Band: 33 dBm max., PCS Band: 30 dBm max.

Note: N/A stand for no applicable.

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
N/A	N/A	N/A

Models difference

N/A

4 FACILITIES AND ACCREDITATIONS

4.1. FACILITIES

All measurement facilities used to collect the measurement data are located at

1-2/F, DaChong Science&Technology Building, No.28 of Tonggu Road,Nanshan District, ShenZhen.PRC

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

4.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC (certificate registration number is 276008)
	TIMCO (certificate registration number is Q2001)
Japan	VCCI
	(certificate registration number is C-2912, R-2662)
Germany	TUV Rheinland
Canada	INDUSTRY CANADA
	(certificated registration number is 46405-7700)

Copies of granted accreditation certificates are available for downloading from our web site, http://www.wsct.org.cn

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency		Uncertainty
Conducted emissions	9kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~1000MHz	+/- 4.93dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 TEST EQUIPMENTS

Instrument Type	Manufacturer	Model	Serial No.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI	100379	2010-12-05
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2010-12-05
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2010-12-05
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2010-12-05
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2010-12-05
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2011-02-16
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2011-02-16
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2011-02-16
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2011-02-16
System Controller	CT	SC100	-	2011-02-16
Printer	EPSON	PHOTO EX3	CFNH234850	2011-02-16
FM-AM Signal Generator	JUNG.JIN	SG-150M	389911177	2011-02-16
Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2011-02-16
Oscillator	KENWOOD	AG-203D	3070002	2011-02-16
Power meter	Anritsu	ML2487A	6K00003613	2011-02-16
Power sensor	Anritsu	MA2491A	32263	2011-02-16
Spectrum Analyzer	ROHDE&SCHWARZ	FSU	-	2011-02-16
Power Supply	LW	APS1502	-	2011-02-16
5K VA AC Power Source	California Instruments	5001iX	56060	2011-02-16
CDN	EM TEST	CDN M2/M3	-	2011-02-16

Attenuation	EM TEST	ATT6/75	-	2011-02-16
Resistance	EM TEST	R100	-	2011-02-16
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2011-02-16
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2011-02-16
Power Amplifier	AR	150W1000	300999	2011-02-16
Field probe	Holaday	HI-6005	105152	2011-02-16
Bilog Antenna	Chase	CBL6111C	2576	2011-02-16
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2011-02-16
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2011-02-16
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2011-02-16
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2011-02-16

6.0 RF EXPOSURE

6.1 Applicable Standards:

§1.1310 and §2.1093

According to 1.1307(b)(1), systems operating under the provisions of this section shall be operated in Manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to 1.1310 and 2.1091 RF exposure is calculated . Limits for Maximum Pemissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	824/f	2.19/f	*($180/f^2$)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	--.	--.	f/1500	30
1500 - 100,000	--	--	1.0	30

6.2 Test Data:

S=PG/4∏R2

Where: S= Power density

P= Power input to antenna

G=Power gain of the antenna in the direction of interest relative to an isotropic radiator

R=Distance to the center of raidation of the antenna

Maximum peak output power at antenna input terminal : 32.42 (dBm) =**1.745(W)**

Prediction distance 20 (cm)

Prediction frequency :850 (MHz)

Antenna Gain: 1.0dBi

Power density at predication frequency at 20cm :0.347(mW/cm2)

MPE Limit for uncontrolled exposure at prediction frequency : 850/1500=**0.567(mW/cm2)**

7.0 MODULATION CHARACTERISTIC

7.1 Applicable Standards:

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

8.0 RF OUTPUT POWER

8.1 Applicable Standards

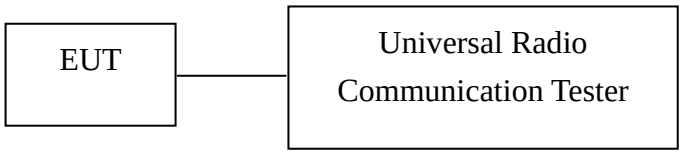
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

8.2 Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

Please refer to TIA 603-C section 2.2.17

8.3 Test Data:

Environmental conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

Conducted Power

Cellular Band Part 22H

GSM

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	824.2	32.42	38.45
Middle	836.6	32.12	38.45
High	848.8	31.96	38.45

GPRS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	824.2	32.38	38.45
Middle	836.6	32.10	38.45
High	848.8	31.98	38.45

PCS Band Part 24E

GSM

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	1850.2	29.01	33
Middle	1880.0	29.42	33
High	1909.8	29.03	33

GPRS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
Low	1850.2	29.02	33
Middle	1880.0	29.38	33
High	1909.8	28.98	33

Radiated Power (ERP and EIRP)

Cellular Band Part 22H

GSM:

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	FCC Part 22H Limit (dBm)
Frequency (MHz)	Receiver Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Polar (H/V)				
Frequency in Low Channel											
824.2	115.03	120	1.0	H	824.2	25.75	H	0	0.9	24.85	38.45
824.2	117.50	80	1.5	V	824.2	28.46	V	0	0.9	27.56	38.45
Frequency in Middle Channel											
836.6	117.36	120	125	H	836.6	28.39	H	0	0.9	27.49	38.45
836.6	117.56	88	155	V	836.6	28.64	V	0	0.9	27.74	38.45
Frequency in High Channel											
848.8	117.71	120	1.0	H	848.8	28.81	H	0	0.9	27.91	38.45
848.8	117.74	82	1.54	V	848.8	28.99	V	0	0.9	28.09	38.45

GPRS:

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	FCC Part 22H Limit (dBm)
Frequency (MHz)	Receiver Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Polar (H/V)				
Frequency in Low Channel											
824.2	115.14	120	1.0	H	824.2	25.86	H	0	0.90	24.96	38.45
824.2	117.48	80	1.5	V	824.2	28.44	V	0	0.90	27.54	38.45
Frequency in Middle Channel											
836.6	117.41	120	125	H	836.6	28.44	H	0	0.9	27.54	38.45
836.6	117.53	88	155	V	836.6	28.61	V	0	0.9	27.71	38.45
Frequency in High Channel											
848.8	117.56	120	1.0	H	848.8	28.66	H	0	0.9	27.76	38.45
848.8	117.69	82	1.54	V	848.8	28.94	V	0	0.9	28.04	38.45

PCS Band Part 24E

GSM:

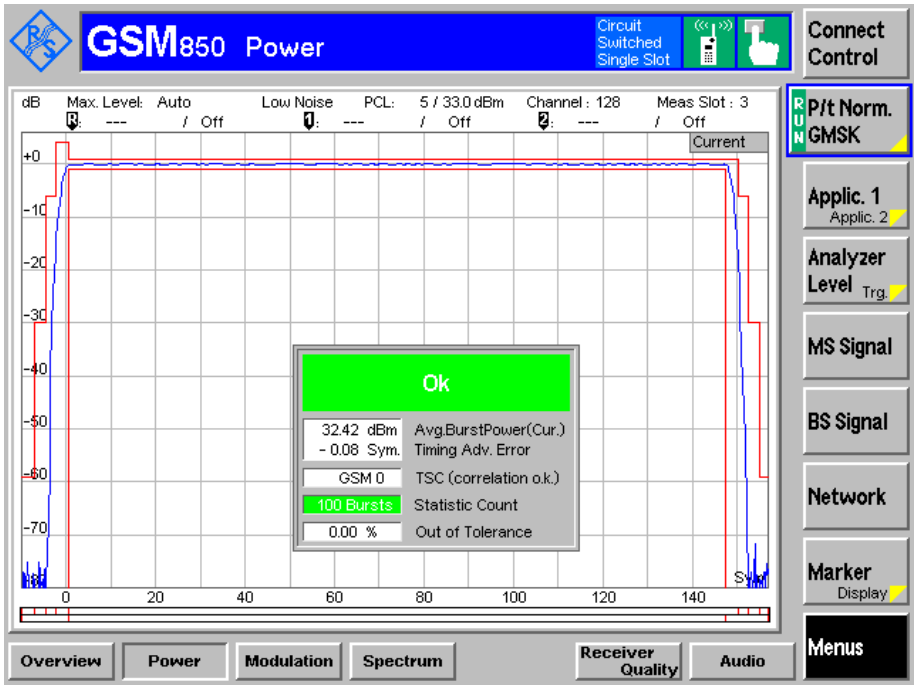
Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	FCC Part 24E Limit (dBm)
Frequency (MHz)	Receiver Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Polar (H/V)				
Frequency in Low Channel											
1850.2	118.63	240	1.8	H	1850.2	17.45	H	6.2	1.02	22.63	33
1850.2	124.45	80	1.0	V	1850.2	24.61	V	6.2	1.02	29.79	33
Frequency in Middle Channel											
1880	119.0/	230	1.85	H	1880	17.78	H	6.2	1.03	22.95	33
1880	125.38	82	1.0	V	1880	24.38	V	6.2	1.03	29.55	33
Frequency in High Channel											
1909.8	119.40	240	1.9	H	1909.8	19.66	H	6.2	1.03	24.83	33
1909.8	124.79	82	1.04	V	1909.8	24.59	V	6.2	1.03	29.76	33

GPRS:

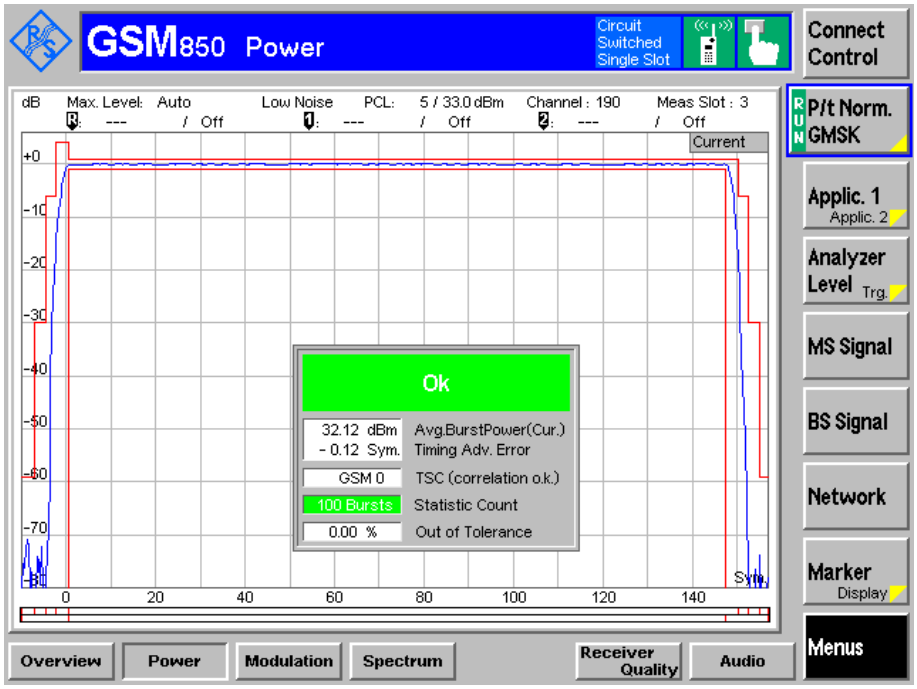
Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	FCC Part 24E Limit (dBm)
Frequency (MHz)	Receiver Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Polar (H/V)				
Frequency in Low Channel											
1850.2	117.90	240	1.8	H	1850.2	16.72	H	6.2	1.02	21.90	33
1850.2	122.96	80	1.0	V	1850.2	23.12	V	6.2	1.02	28.30	33
Frequency in Middle Channel											
1880	120.09	230	1.85	H	1880	18.87	H	6.2	1.03	24.04	33
1880	122.60	82	1.0	V	1880	21.6	V	6.2	1.03	26.77	33
Frequency in High Channel											
1909.8	116.89	240	1.9	H	1909.8	17.15	H	6.2	1.03	22.32	33
1909.8	122.37	82	1.04	V	1909.8	22.17	V	6.2	1.03	27.34	33

Plots of Conducted Output Power for Cellular Band (GSM):

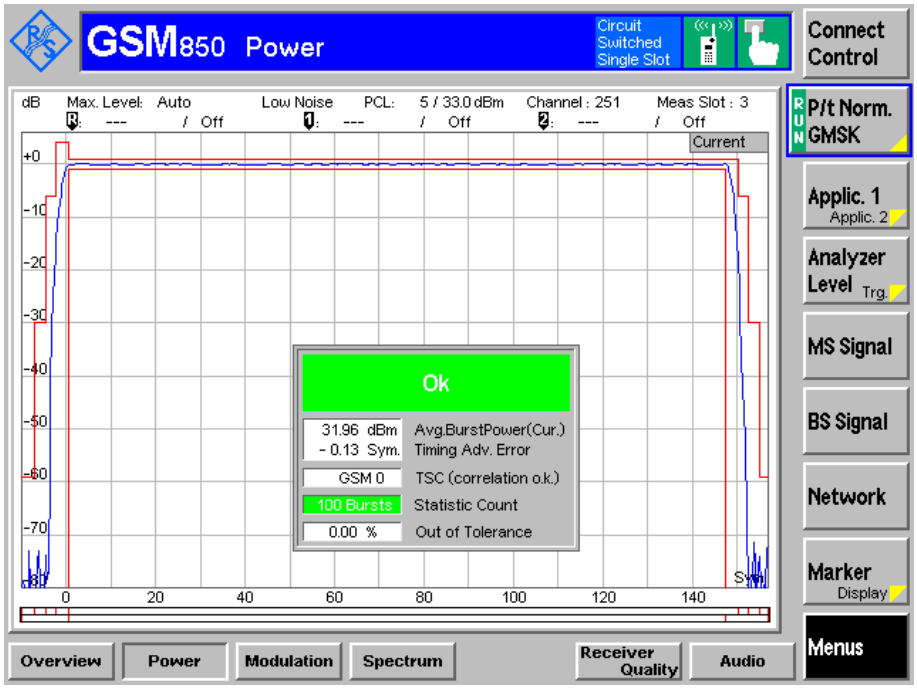
Low Channel



Middle Channel

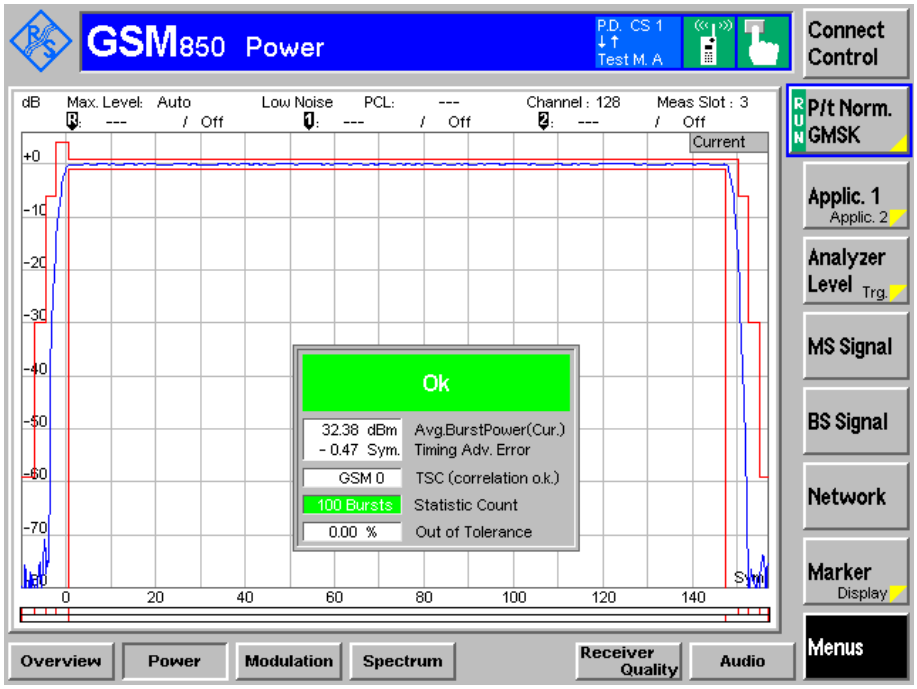


High Channel

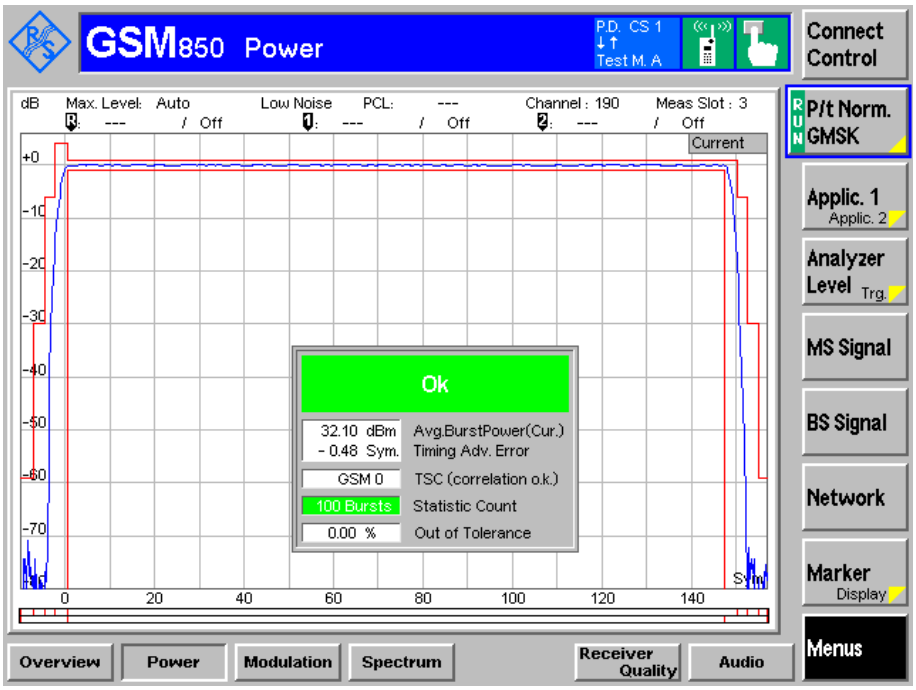


Plots of Conducted Output Power for Cellular Band (GPRS):

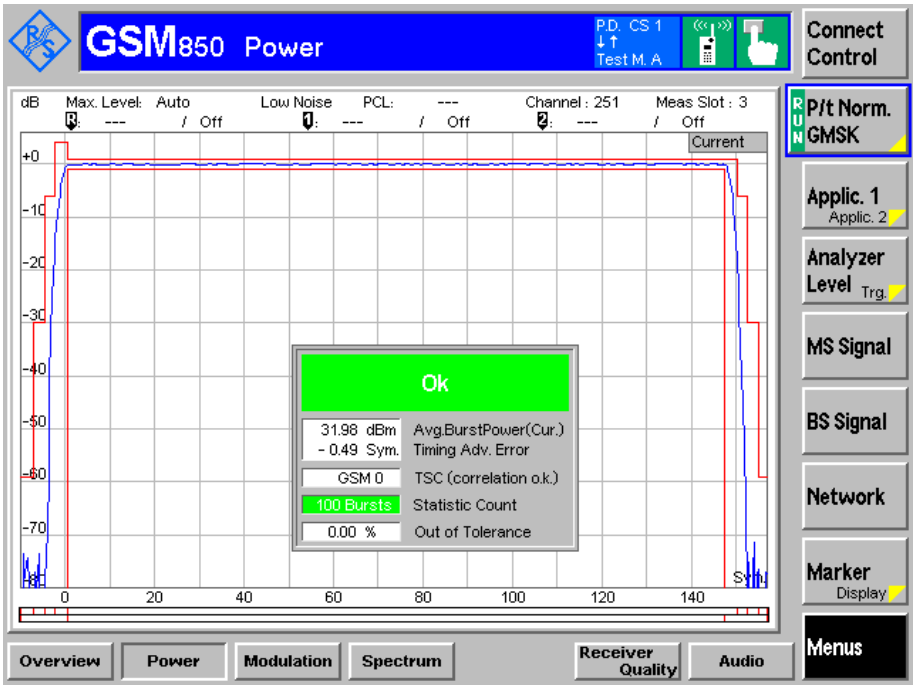
Low Channel



Middle channel

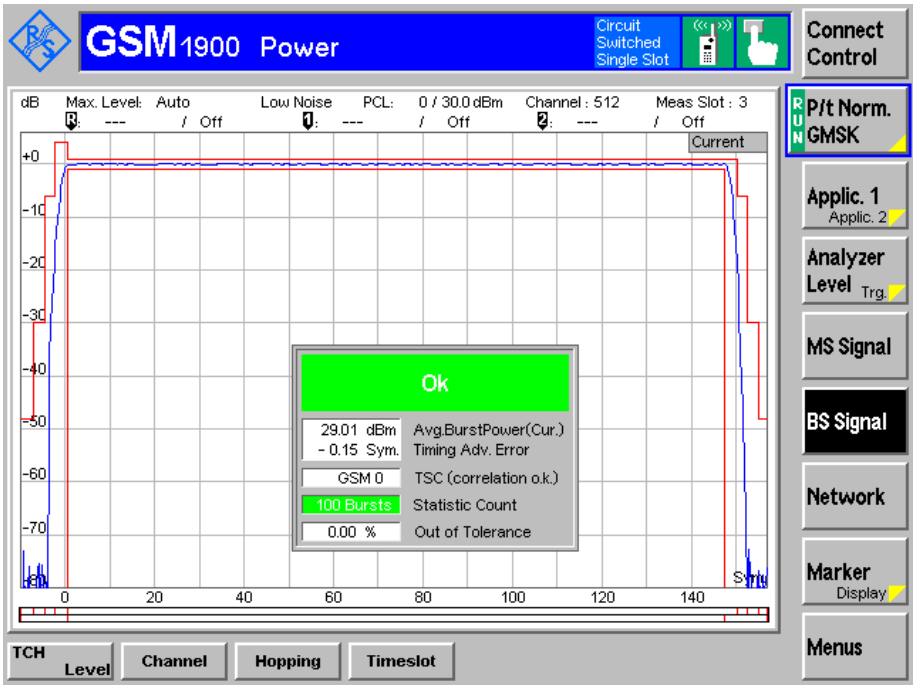


High channel

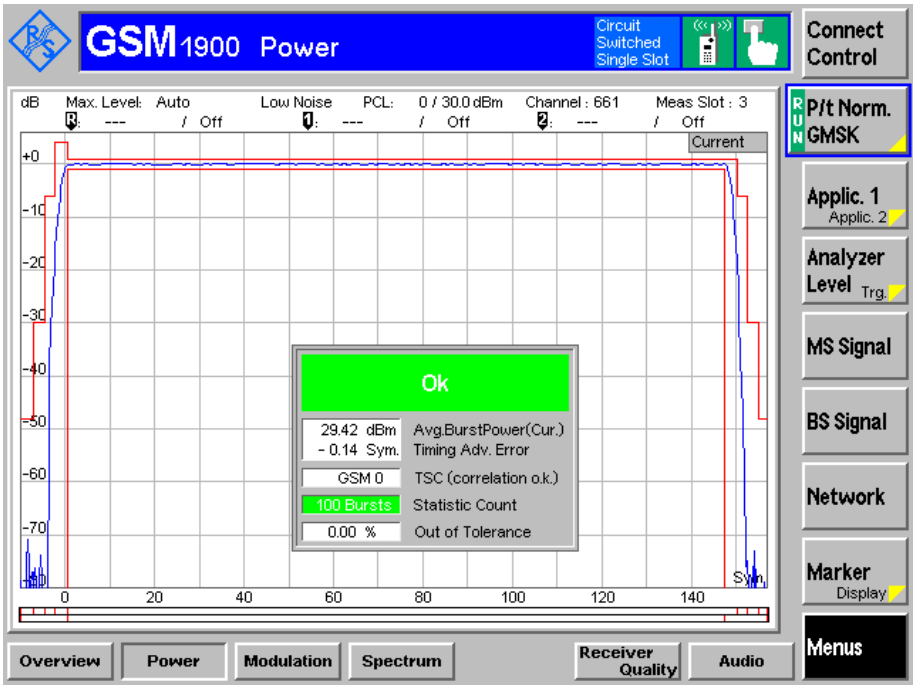


Plots of Conducted Output Power for PCS Band (GSM):

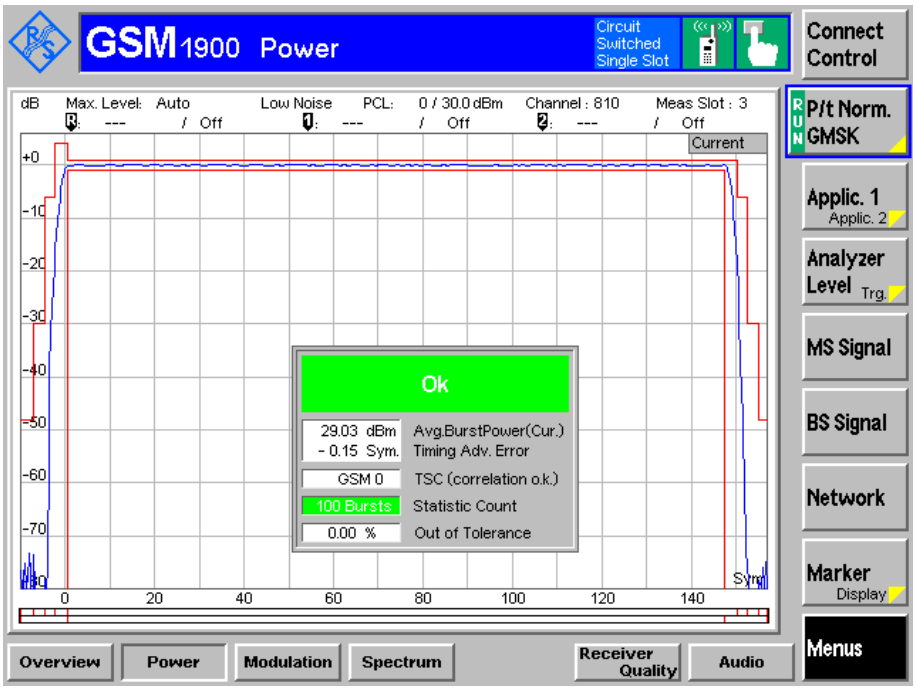
Low Channel



Middle Channel

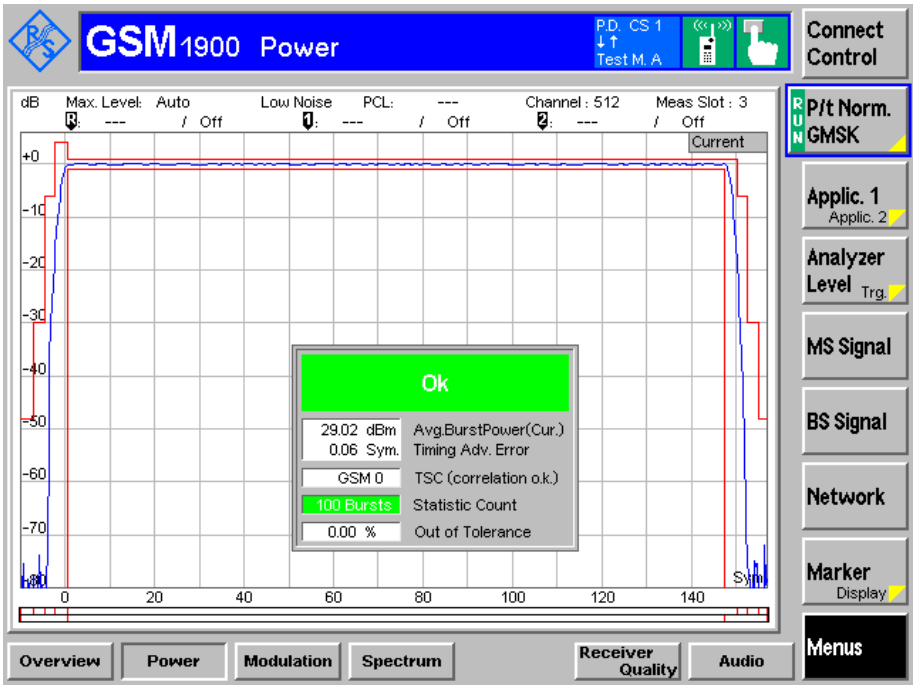


High channel

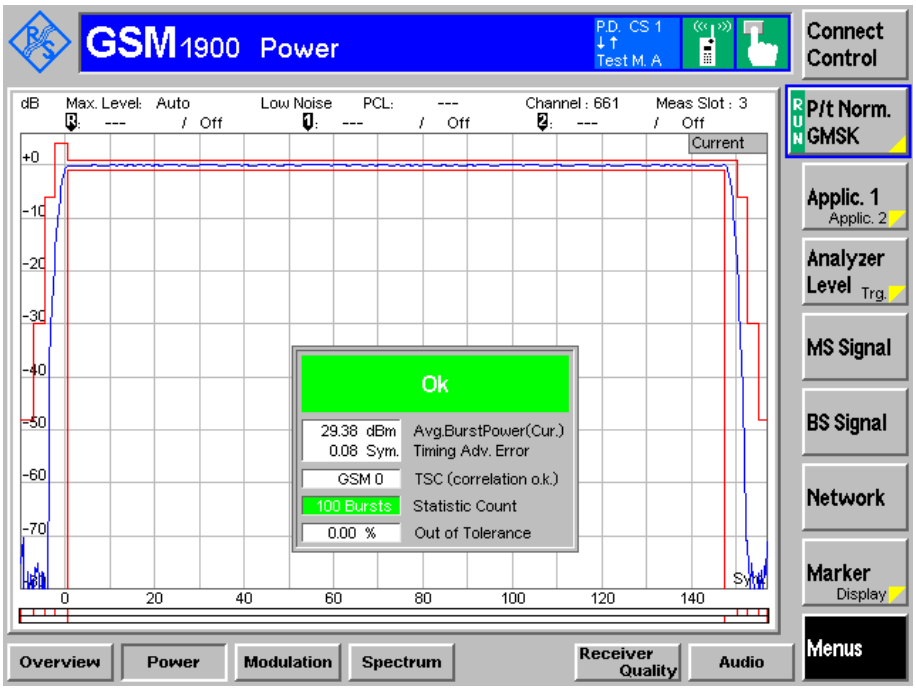


Plots of Conducted Output Power for PCS Band (GPRS):

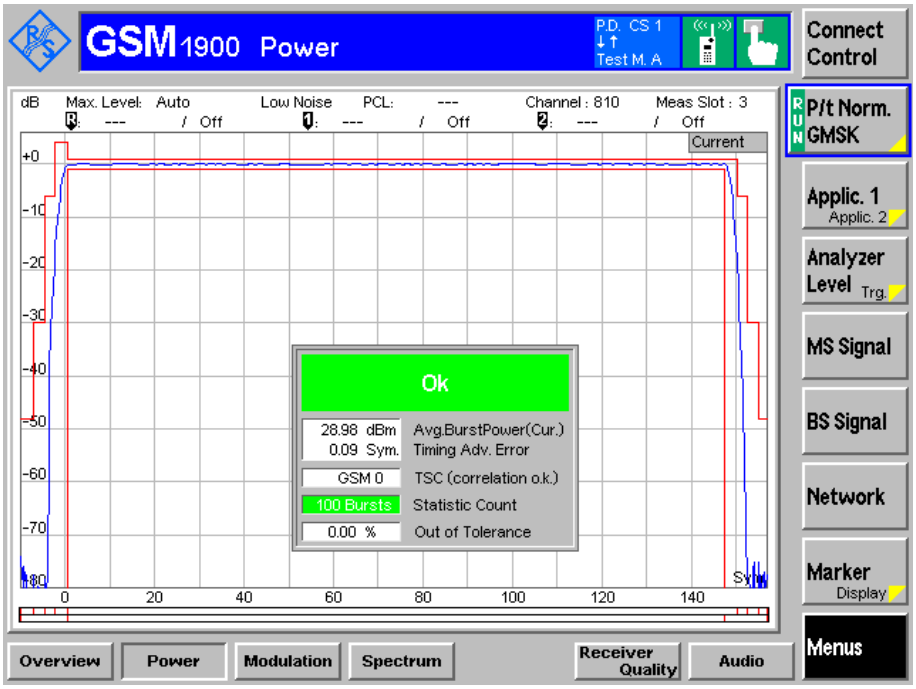
Low Channel



Middle channel



High channel



9.0 Occupied Bandwidth

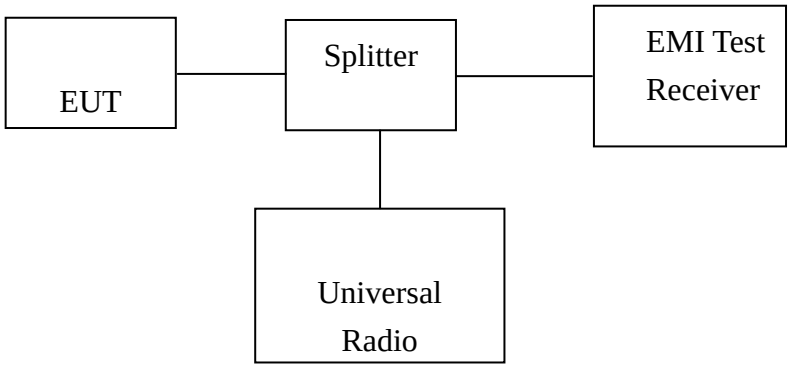
9.1 Applicable Standards:

CFR 47 §2.1049, §22.917, §22.905 and §24.238.

9.2 Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 3 kHz (Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.



9.3 Test Data:

Environmental conditions:

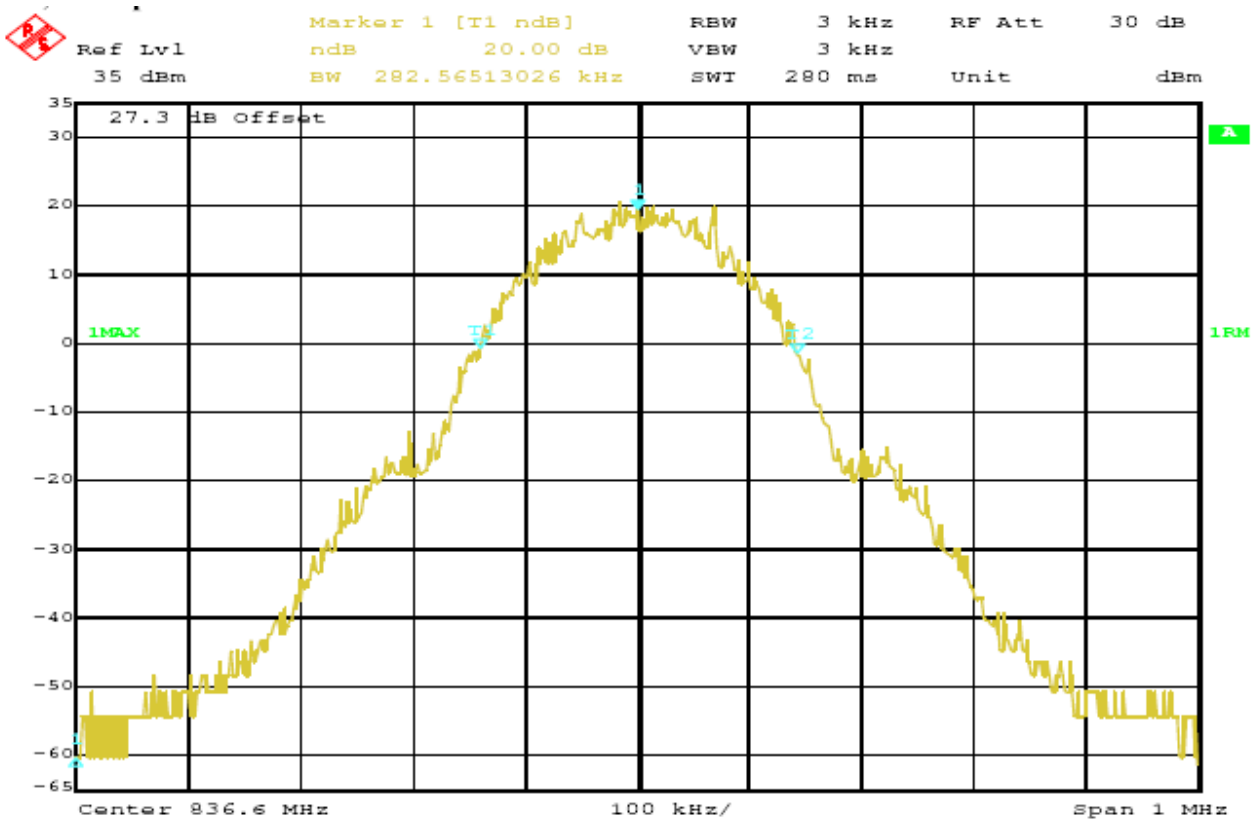
Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

For GSM 850

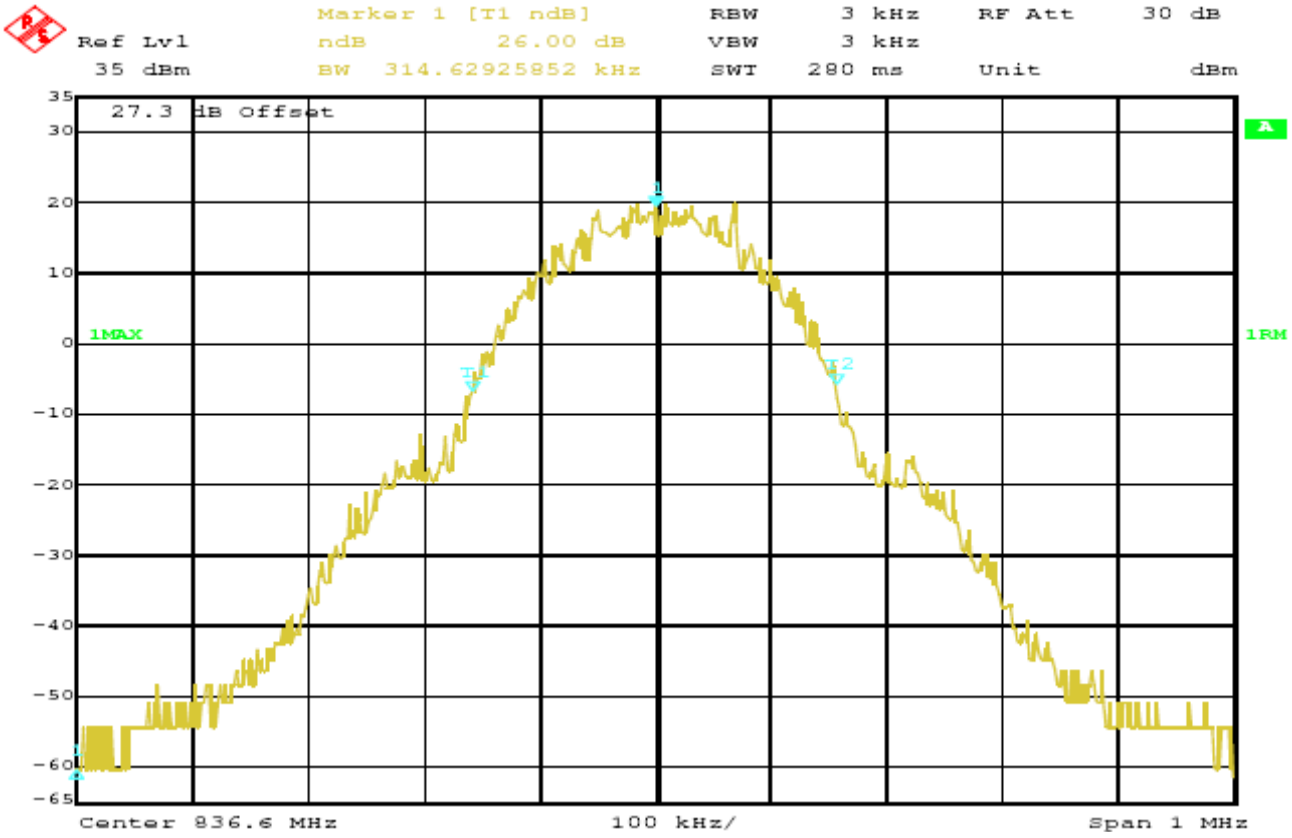
Channel	Channel frequency (MHz)	99% Power Bandwidth (kHz)	26 dB Bandwidth (kHz)
Channel 190	836.6	282.5	314.6

Please refer to the following plots.

99% Power Bandwidth



26 dB bandwidth

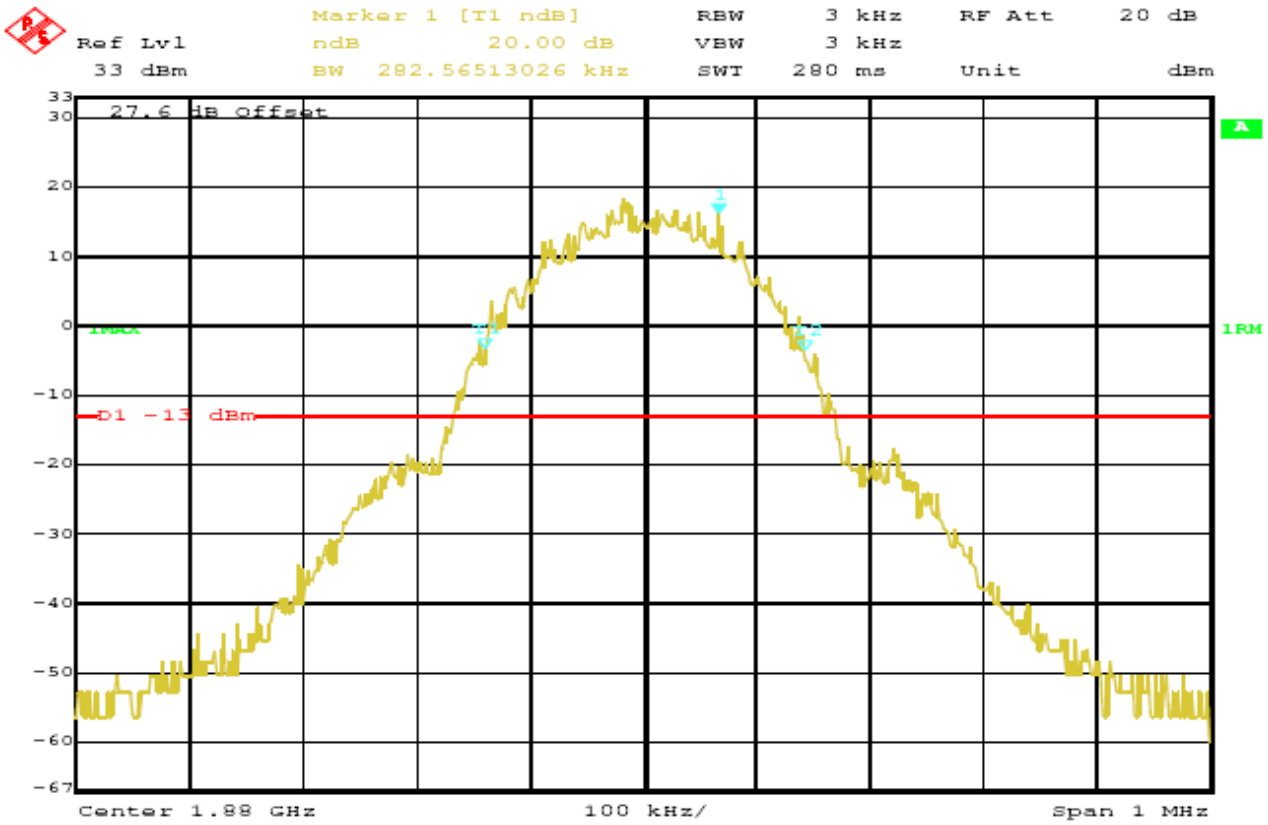


For PCS1900

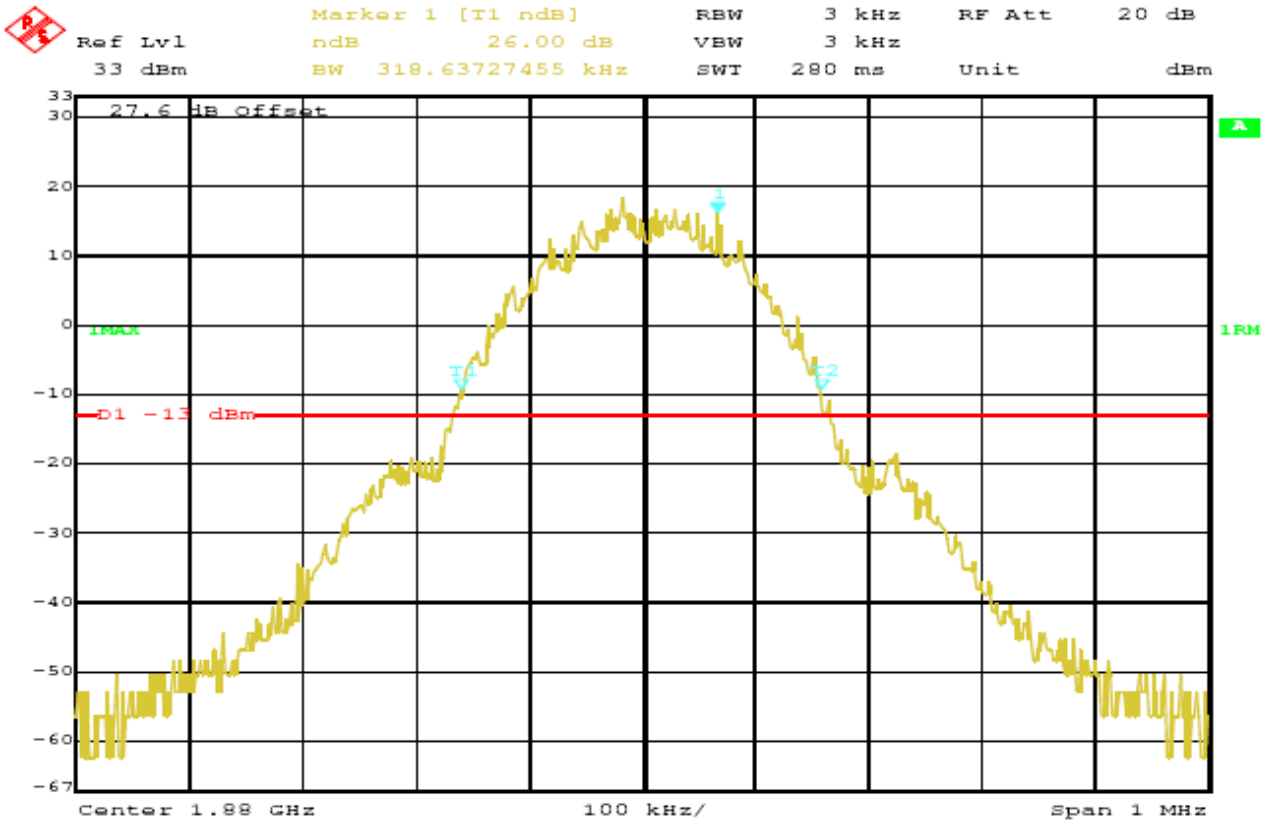
Channel	Channel frequency (MHz)	99% Power Bandwidth (kHz)	26 dB Bandwidth (kHz)
Channel 661	1880.0	282.6	334.0

Please refer to the following plots.

99% Power Bandwidth



26 dB Bandwidth



10.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

10.1 Applicable Standards

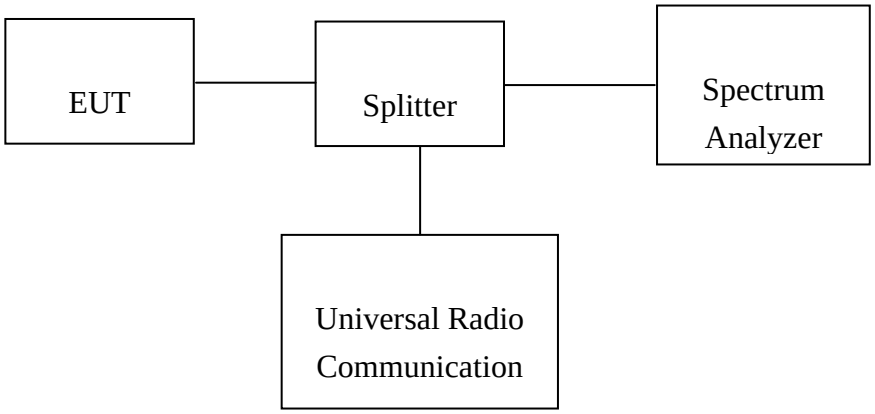
CFR 47 §2.1051, §22.917(a) and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in

§ 2.1051.

10.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



10.3 Test Data:

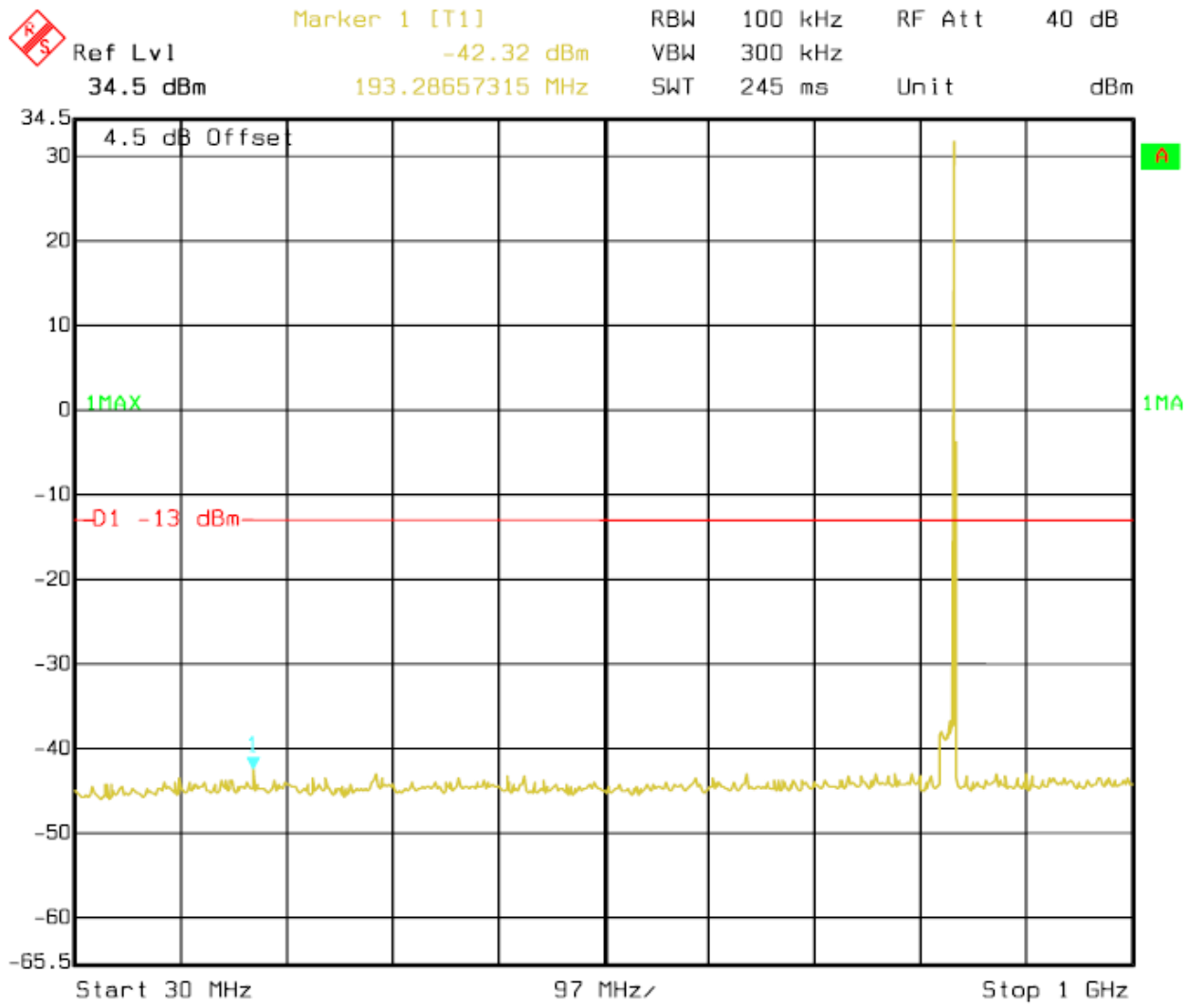
Environmental conditions:

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

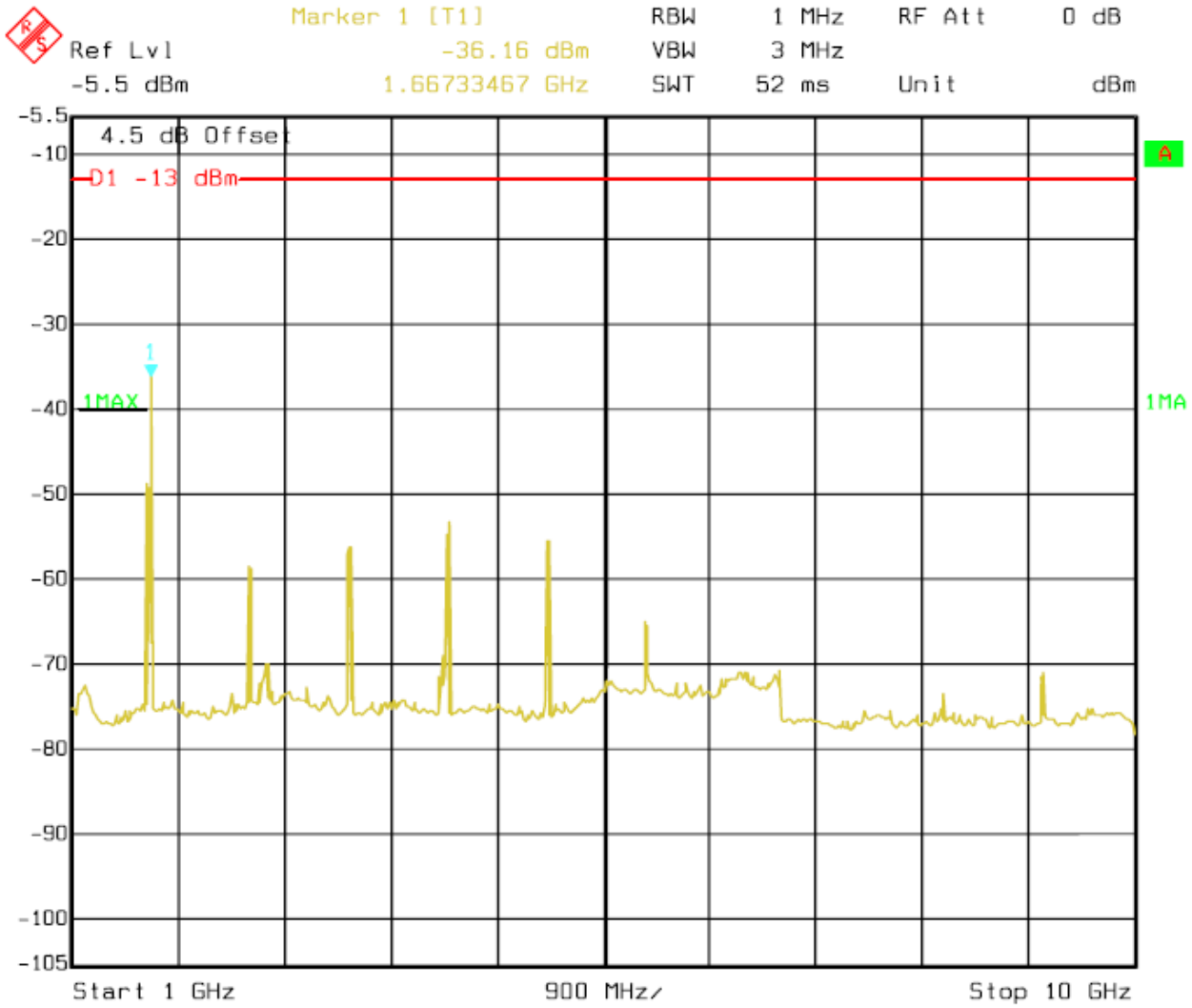
Please refer to the hereinafter plots.

For GSM 850

30MHz-1000MHz - Middle Channel

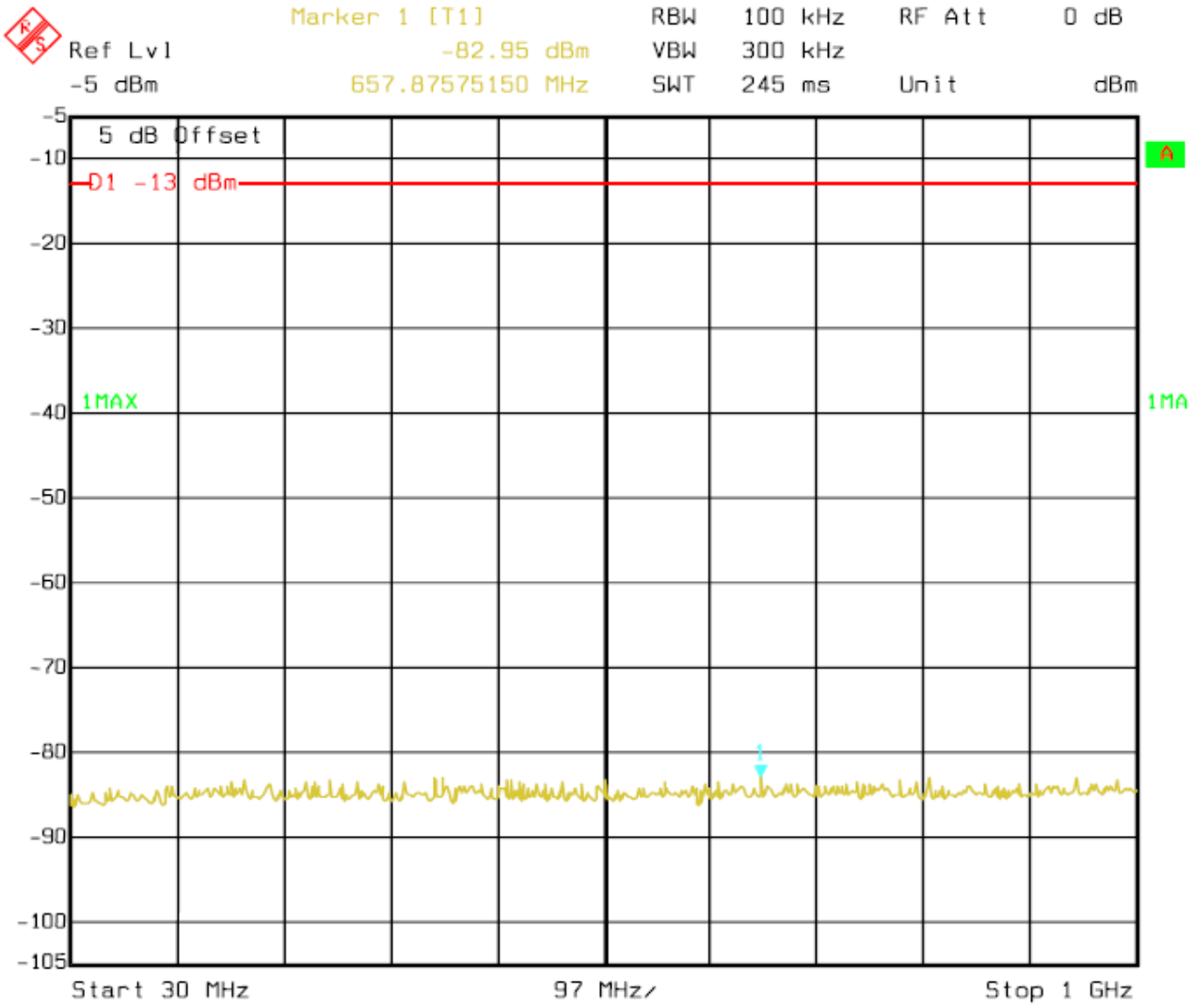


1GHz-10GHz - Middle Channel

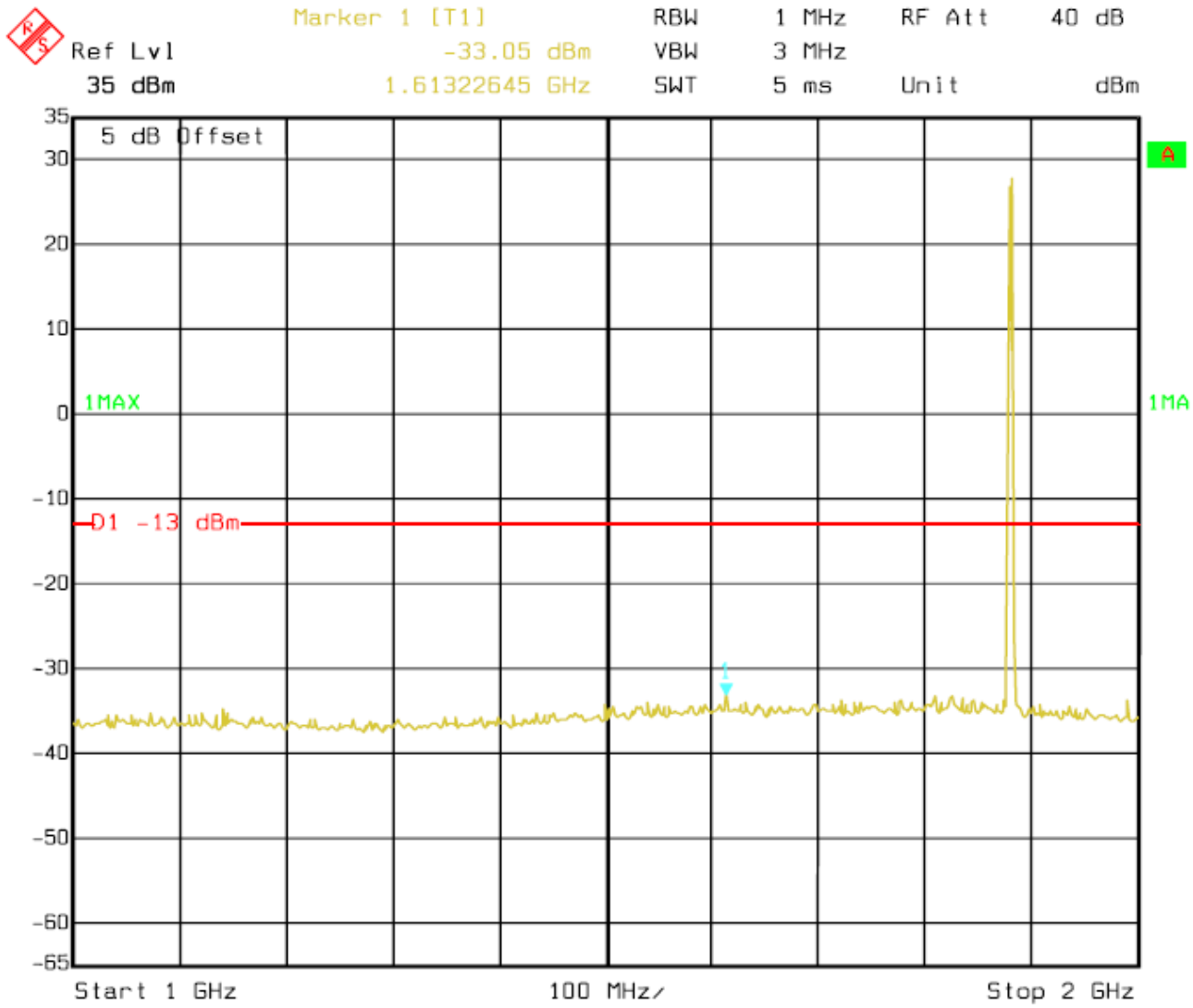


For PCS 1900

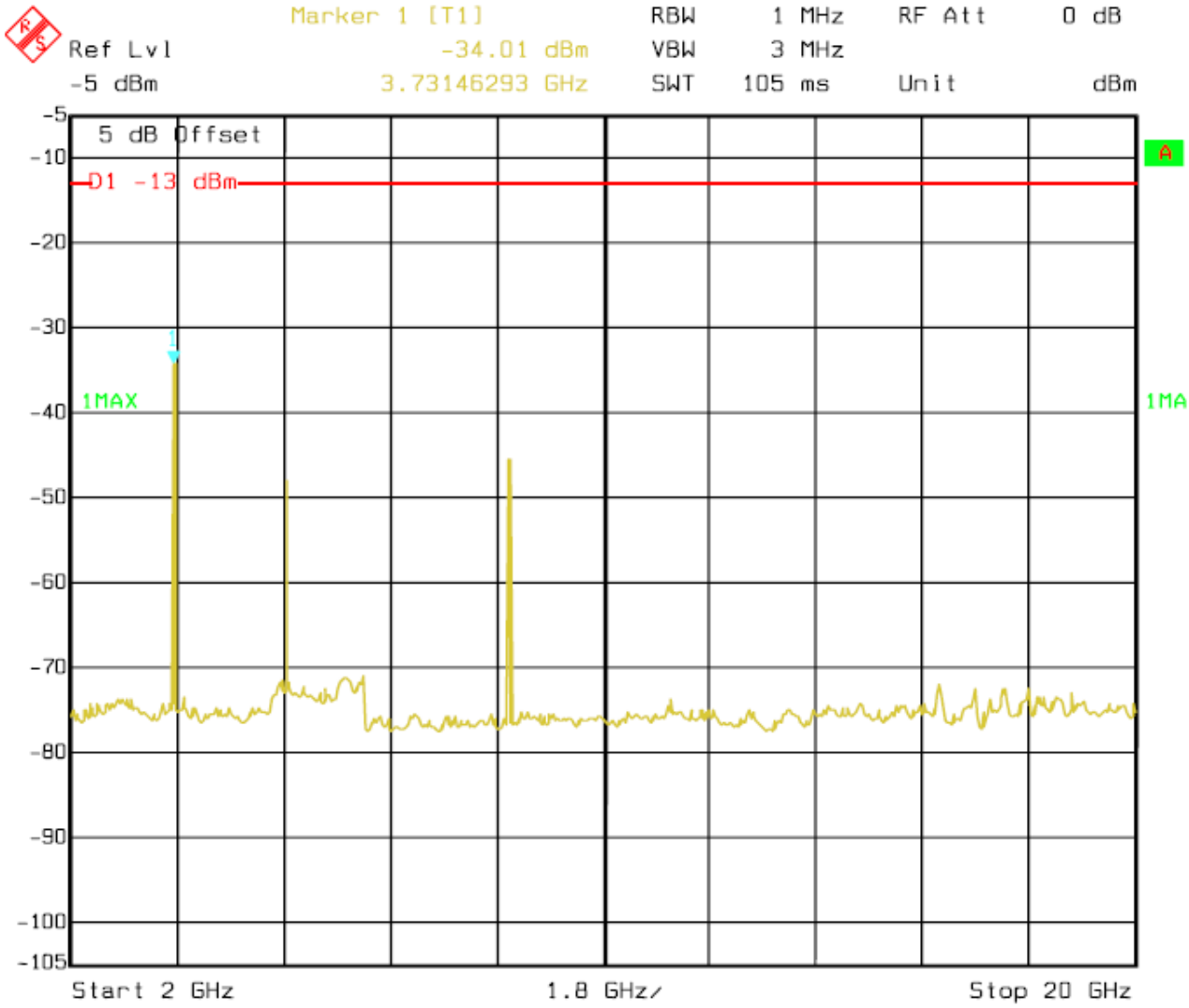
30MHz-1000MHz - Middle Channel



1GHz-2GHz - Middle Channel

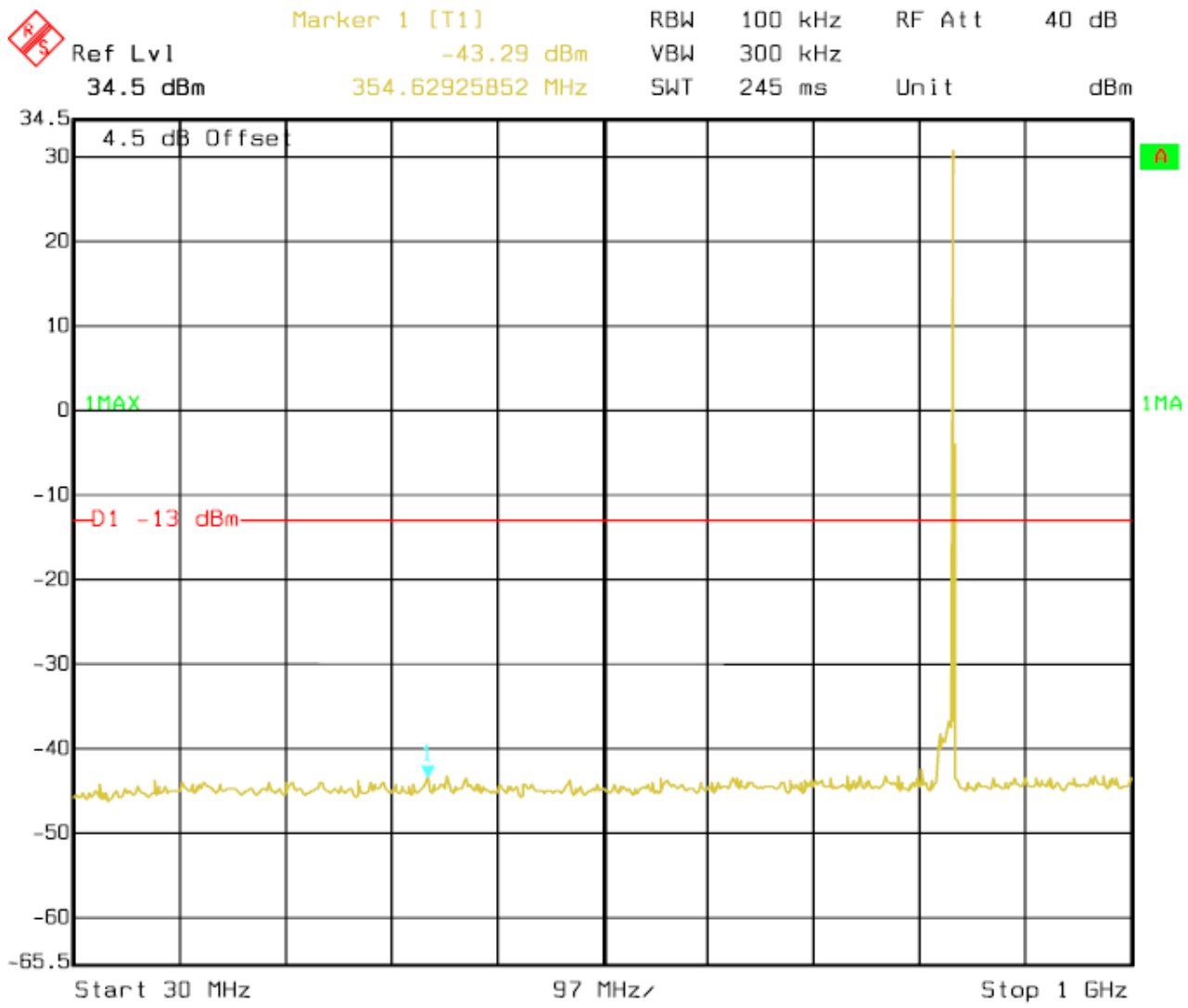


2GHz-20GHz - Middle Channel

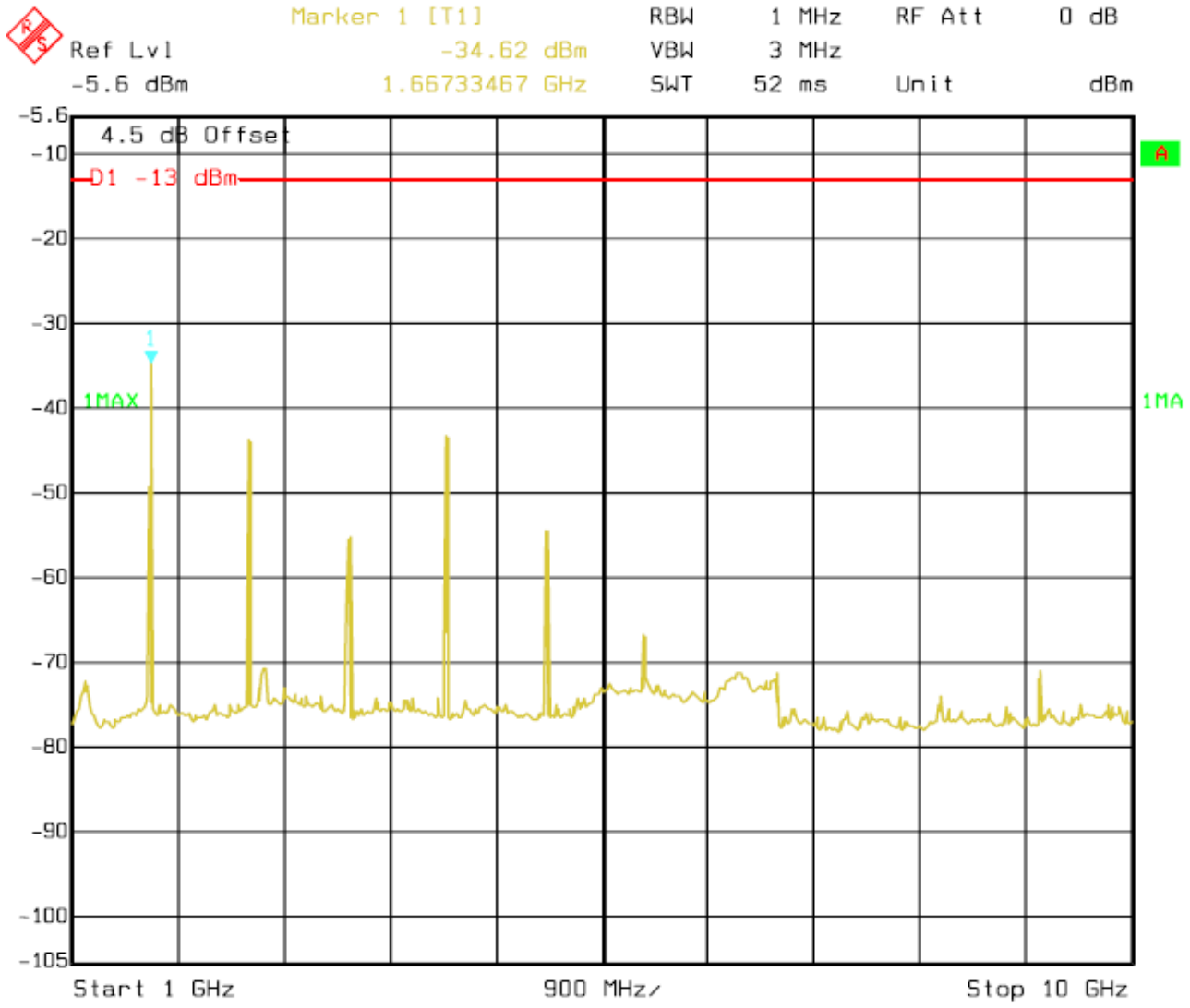


For GPRS (850 MHz)

30MHz-1000MHz - Middle Channel

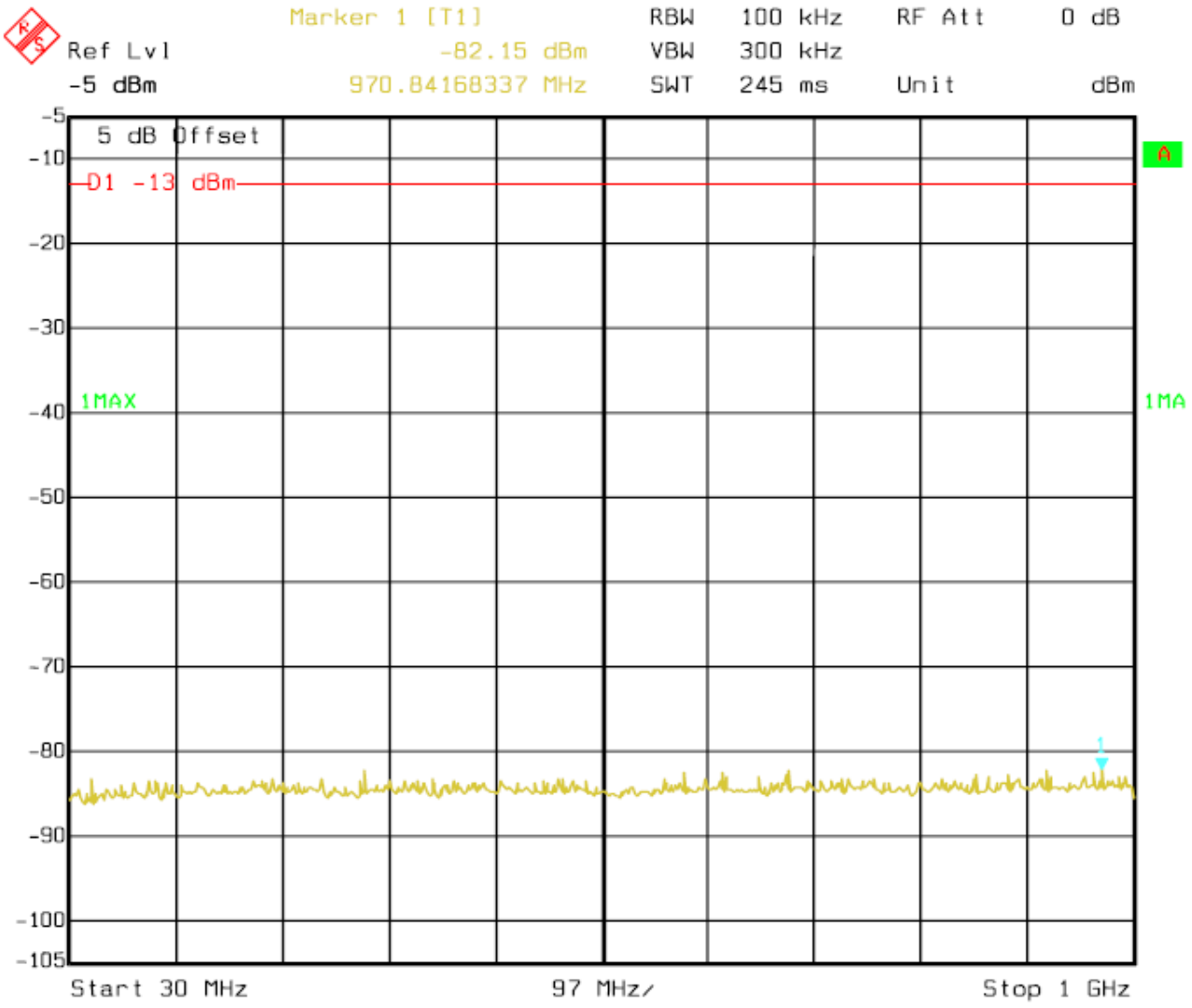


1GHz-10GHz - Middle Channel

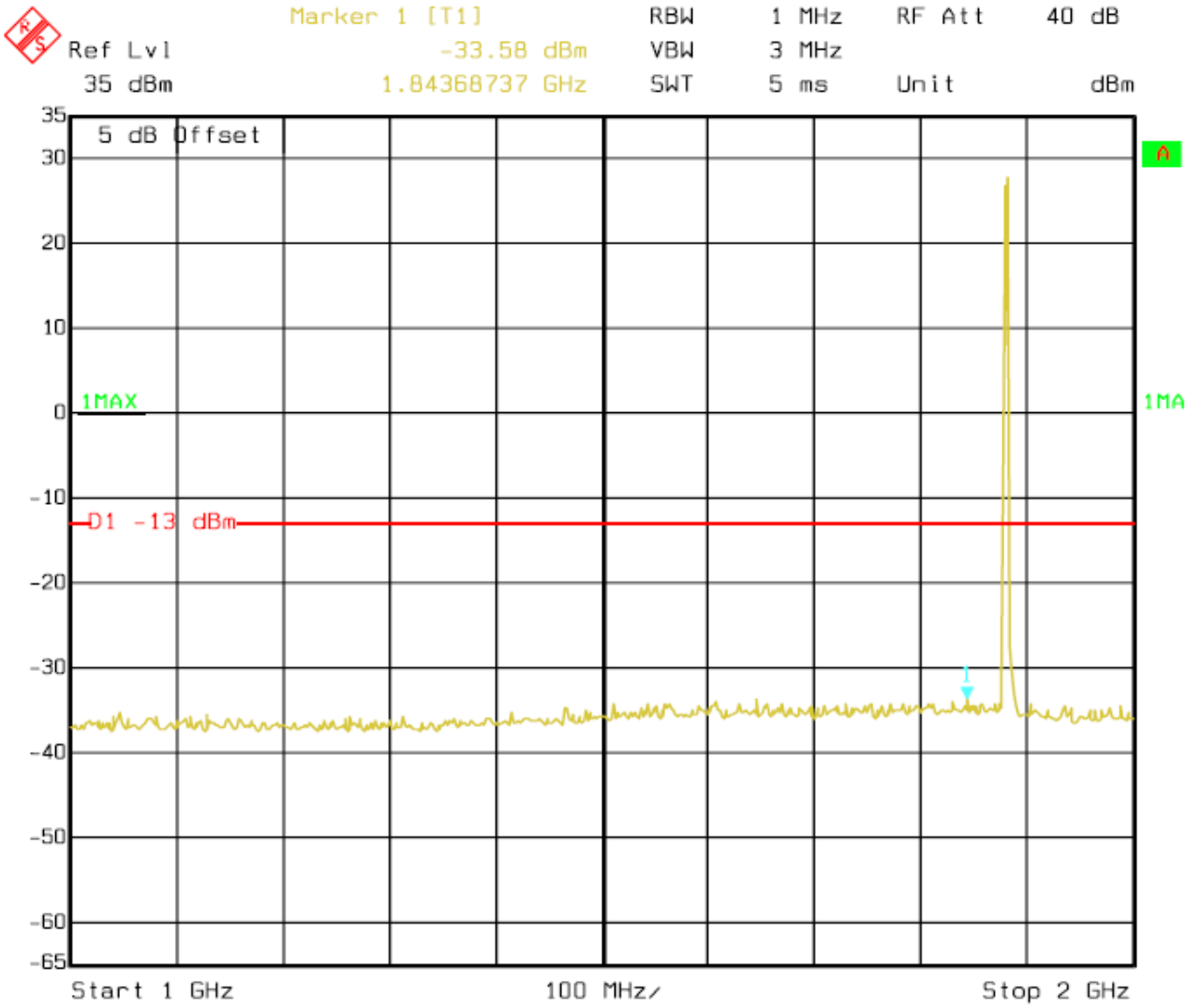


For GPRS (1900 MHz)

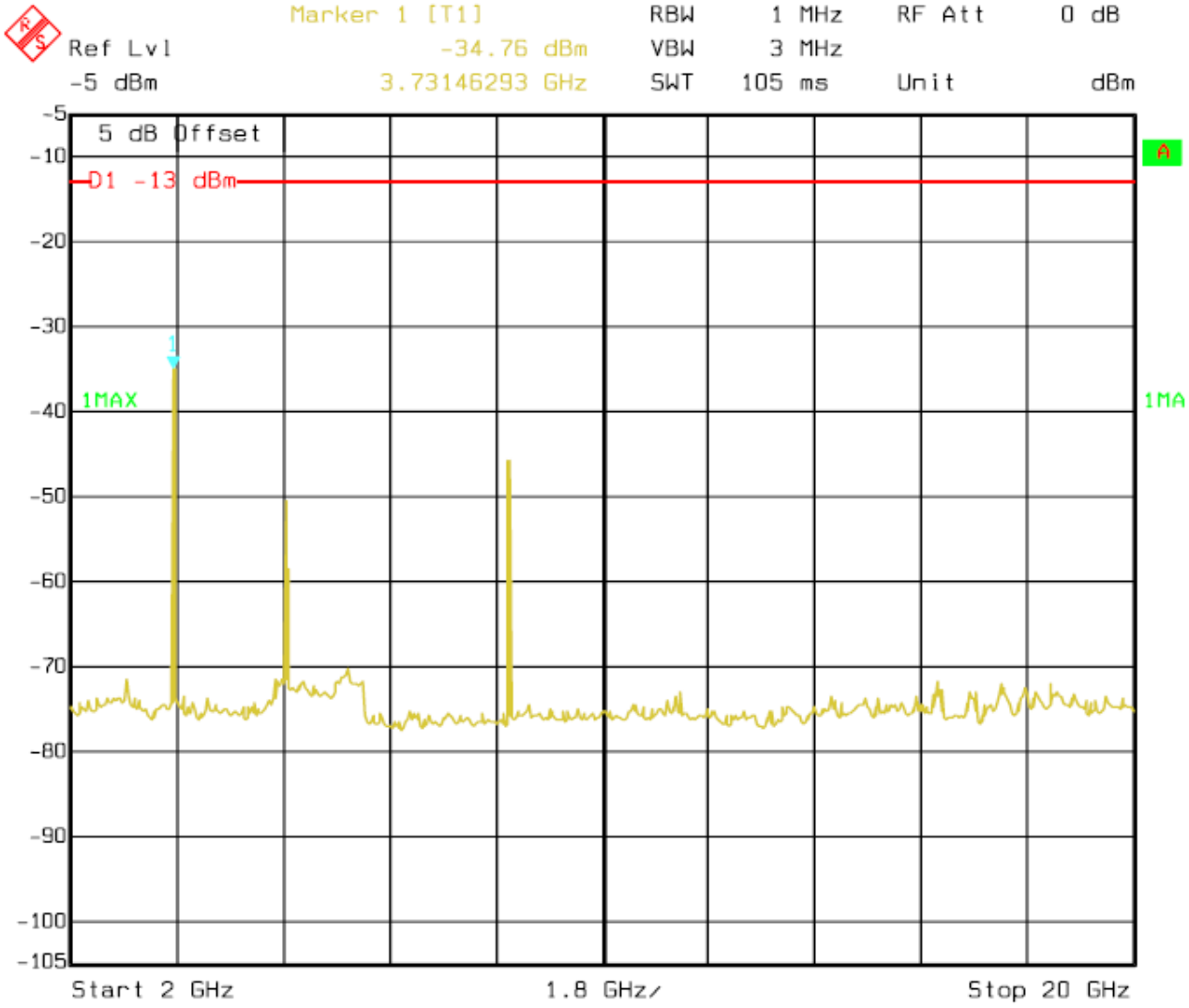
30MHz-1000MHz - Middle Channel



1GHz-2GHz - Middle Channel



2GHz-20GHz - Middle Channel



11.0 SPURIOUS RADIATED EMISSIONS

11.1 Applicable Standards:

CFR 47 § 2.1053, 22.917 and § 24.238.

11.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

11.3 Test Data:

Environmental conditions:

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

For GSM 850 Band: Below 1GHz:

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute	Limit	Margin
Frequency (MHz)	Reading (dBµV)	Angle Degree	Height Meter	Polar H/V	Frequency (MHz)	Level (dBm)	Gain (dBi)	Loss (dB)	Level (dBm)	(dBm)	(dB)
Middle Channel											
782.89	37.53	242	1.2	V	782.89	-61.3	0	0.88	-62.18	-13	49.18
757.41	38.12	70	1.5	V	757.41	-62.1	0	0.86	-62.96	-13	49.96
80.40	25.07	150	1.5	H	80.40	-67.3	0	0.45	-67.75	-13	54.75
158.93	21.58	210	1.0	H	158.93	-73.6	0	0.48	-74.08	-13	61.08

For PCS 1900 Band: Below 1GHz

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute	Limit	Margin
Frequency (MHz)	Reading (dBµV)	Angle Degree	Height Meter	Polar H/V	Frequency (MHz)	Level (dBm)	Gain (dBi)	Loss (dB)	Level (dBm)	(dBm)	(dB)
Middle Channel											
900.15	42.38	137.0	1.2	V	900.15	-53.7	0	0.76	-54.46	-13	41.46
760.70	37.15	199.0	1.3	V	760.70	-58.4	0	0.86	-59.26	-13	46.26
952.09	32.99	130	1.5	H	952.09	-59.8	0	0.86	-60.66	-13	47.66
900.15	35.81	240	1.2	H	900.15	-60.3	0	0.76	-61.06	-13	48.06

For GSM 850 Band: above 1GHz:

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute	Limit	Margin
Frequency (MHz)	Reading (dBμV)	Angle Degree	Height Meter	Polar H/V	Frequency (MHz)	Level (dBm)	Gain (dBi)	Loss (dB)	Level (dBm)	(dBm)	(dB)
Middle Channel											
2509.8	63.66	210	1.8	H	2509.8	-38.58	7.3	1.19	-32.47	-13	19.47
1673.2	59.98	220	1	V	1673.2	-40.27	6.2	0.94	-35.01	-13	22.01
2509.8	59.82	130	1.5	V	2509.8	-42.00	7.3	1.19	-35.89	-13	22.89
1673.2	56.42	100	1.9	H	1673.2	-43.73	6.2	0.94	-38.47	-13	25.47
1937.9	50.03	180	1.6	V	1937.9	-44.8	6.1	1.04	-39.74	-13	26.74
3346.6	44.53	150	1.4	V	3346.6	-59.11	6.7	1.38	-53.79	-13	40.79
3346.6	44.12	130	1.6	H	3346.6	-59.75	6.7	1.38	-54.43	-13	41.43

For PCS 1900 Band: above 1GHz

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute	Limit	Margin
Frequency (MHz)	Reading (dBμV)	Angle Degree	Height Meter	Polar H/V	Frequency (MHz)	Level (dBm)	Gain (dBi)	Loss (dB)	Level (dBm)	(dBm)	(dB)
Middle Channel											
3760	52.81	200	1.6	V	3760	-50.71	6.9	1.47	-45.28	-13	32.28
3760	51.94	190	1.9	H	3760	-51.44	6.9	1.47	-46.01	-13	33.01
7520	43.98	110	1.5	V	7520	-56.06	7.6	2.09	-50.55	-13	37.55
5640	44.59	80	1.5	V	5640	-57.43	8.3	1.76	-50.89	-13	37.89
7520	43.46	180	1.5	H	7520	-56.52	7.6	2.09	-51.01	-13	38.01
5640	43.83	170	1.6	H	5640	-58.39	8.3	1.76	-51.85	-13	38.85

12.0 BAND EDGES

12.1 Applicable Standards:

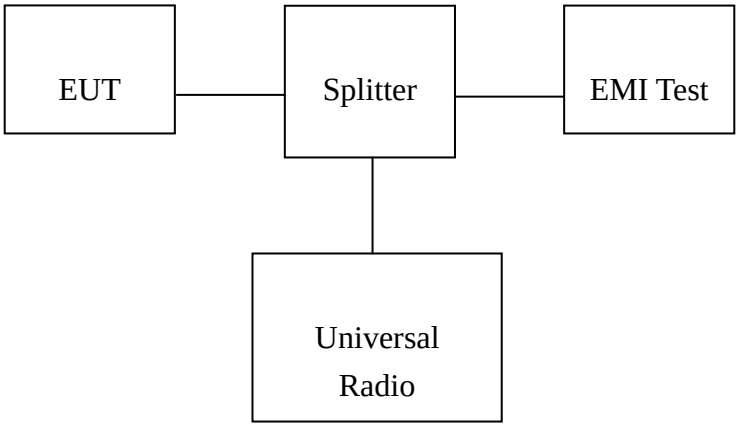
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

12.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.



12.3 Test Data

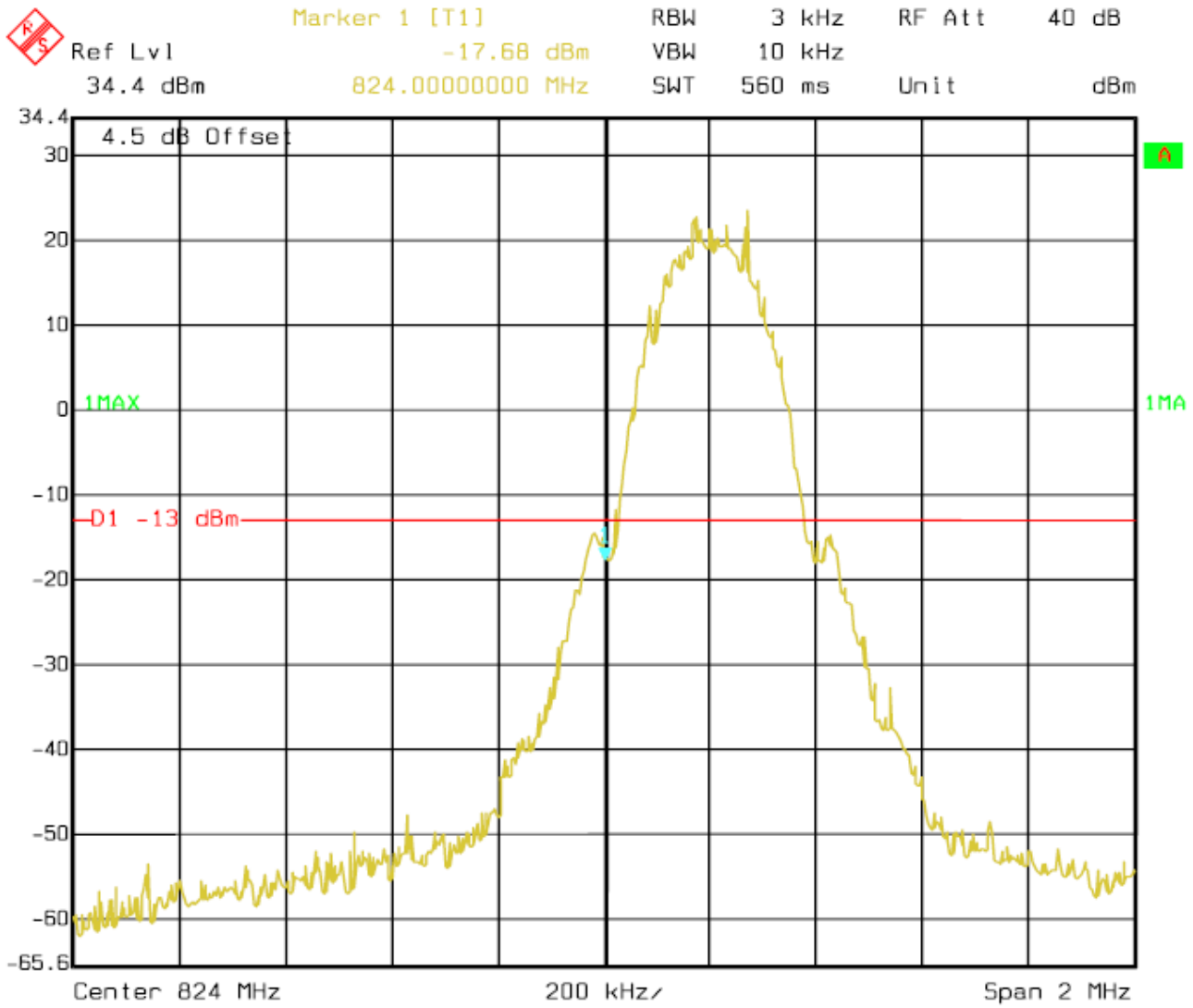
Environmental conditions:

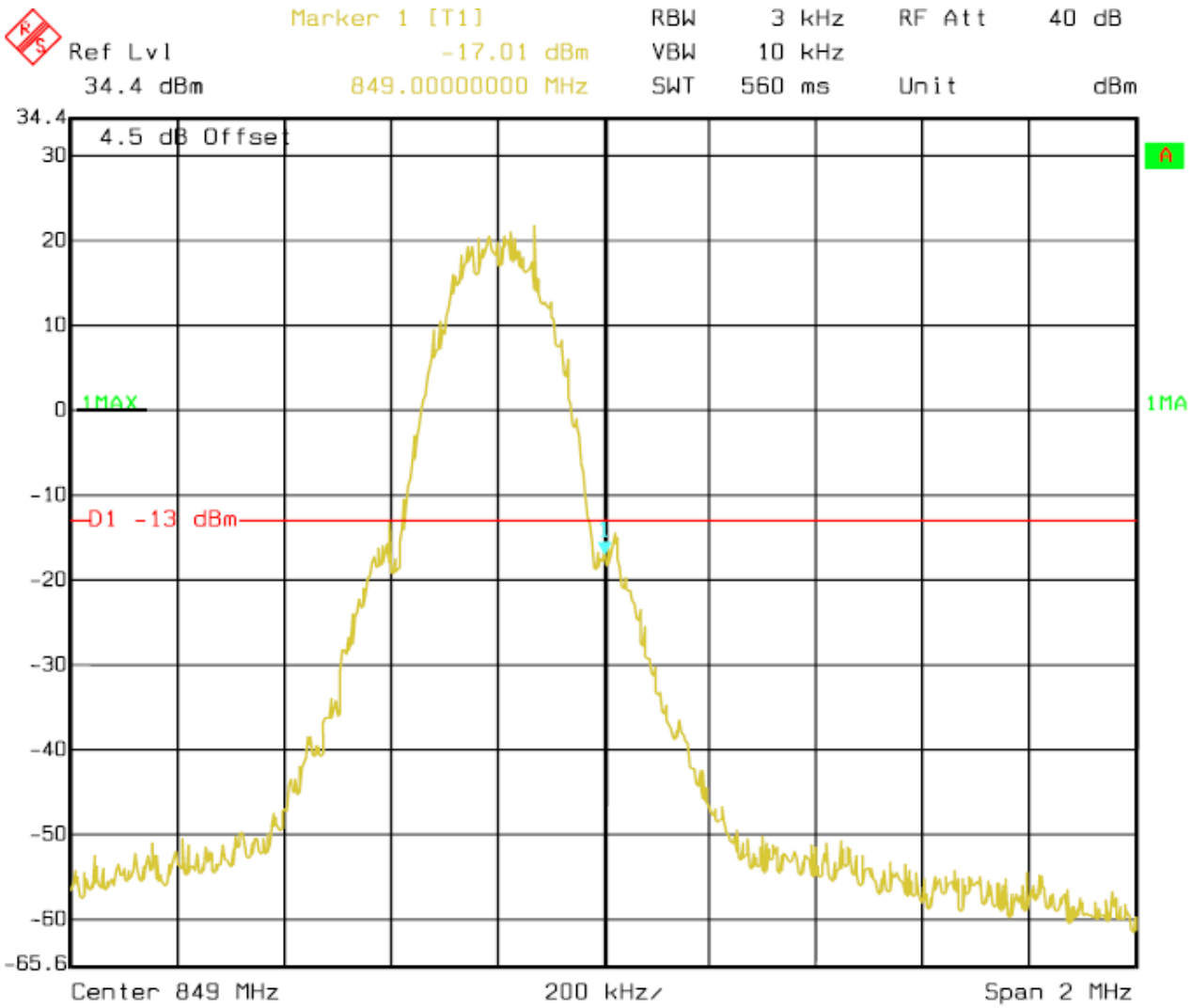
Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

Please refer to the following tables and plots.

For GSM 850

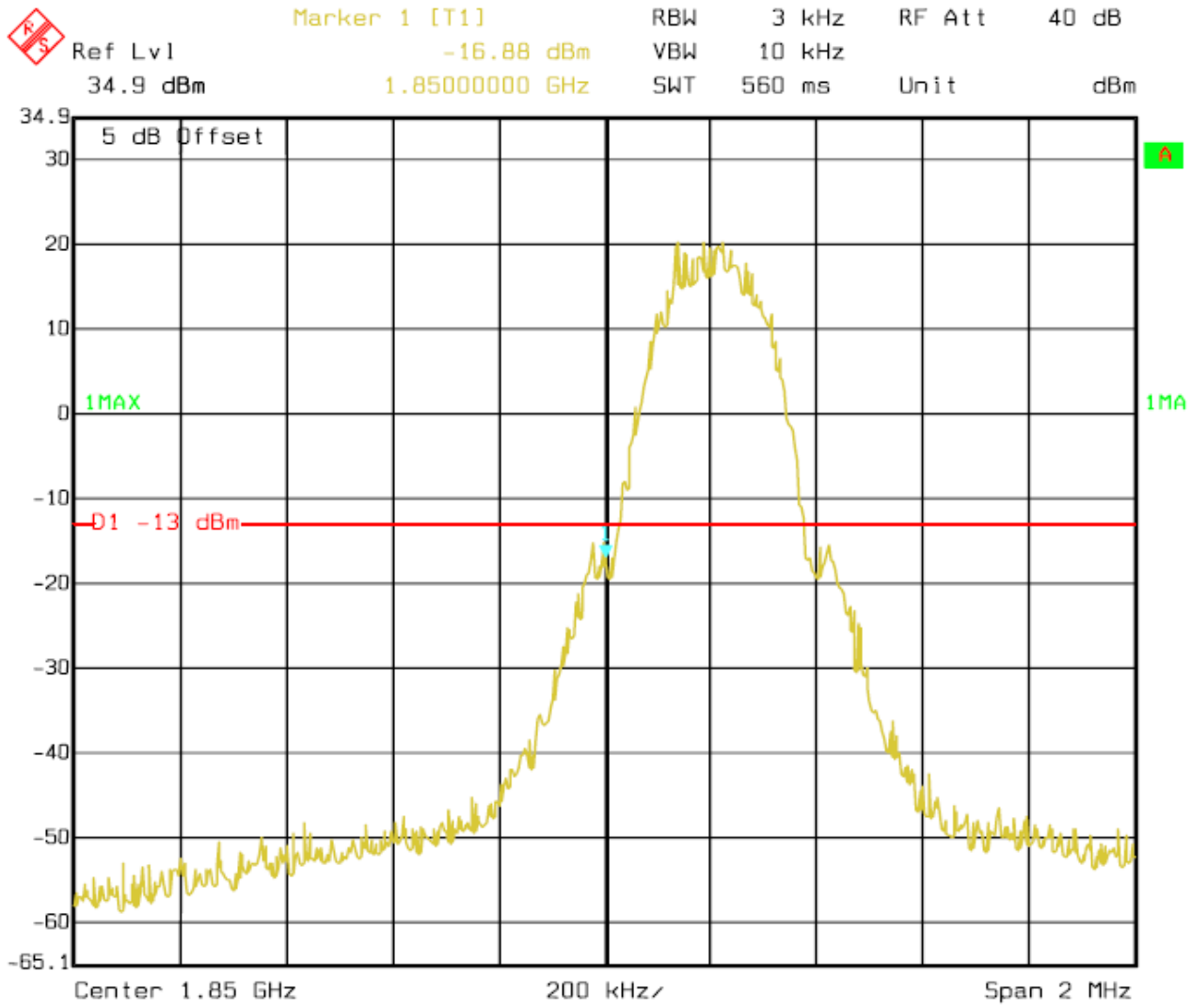
Frequency (MHz)	Emission (dBm)	Limit (dBm)
824	-17.68	-13
849	-17.01	-13

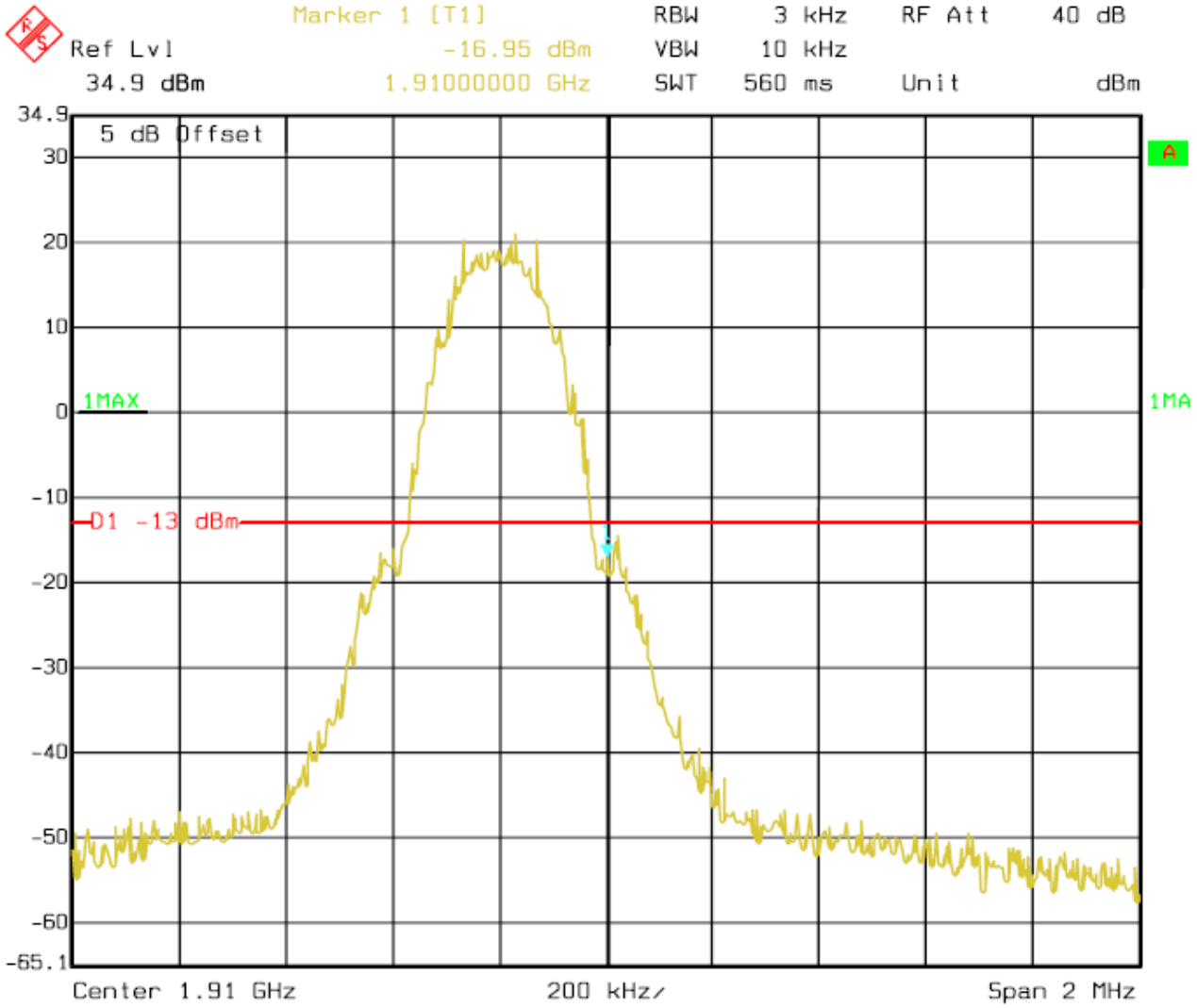




For PCS1900

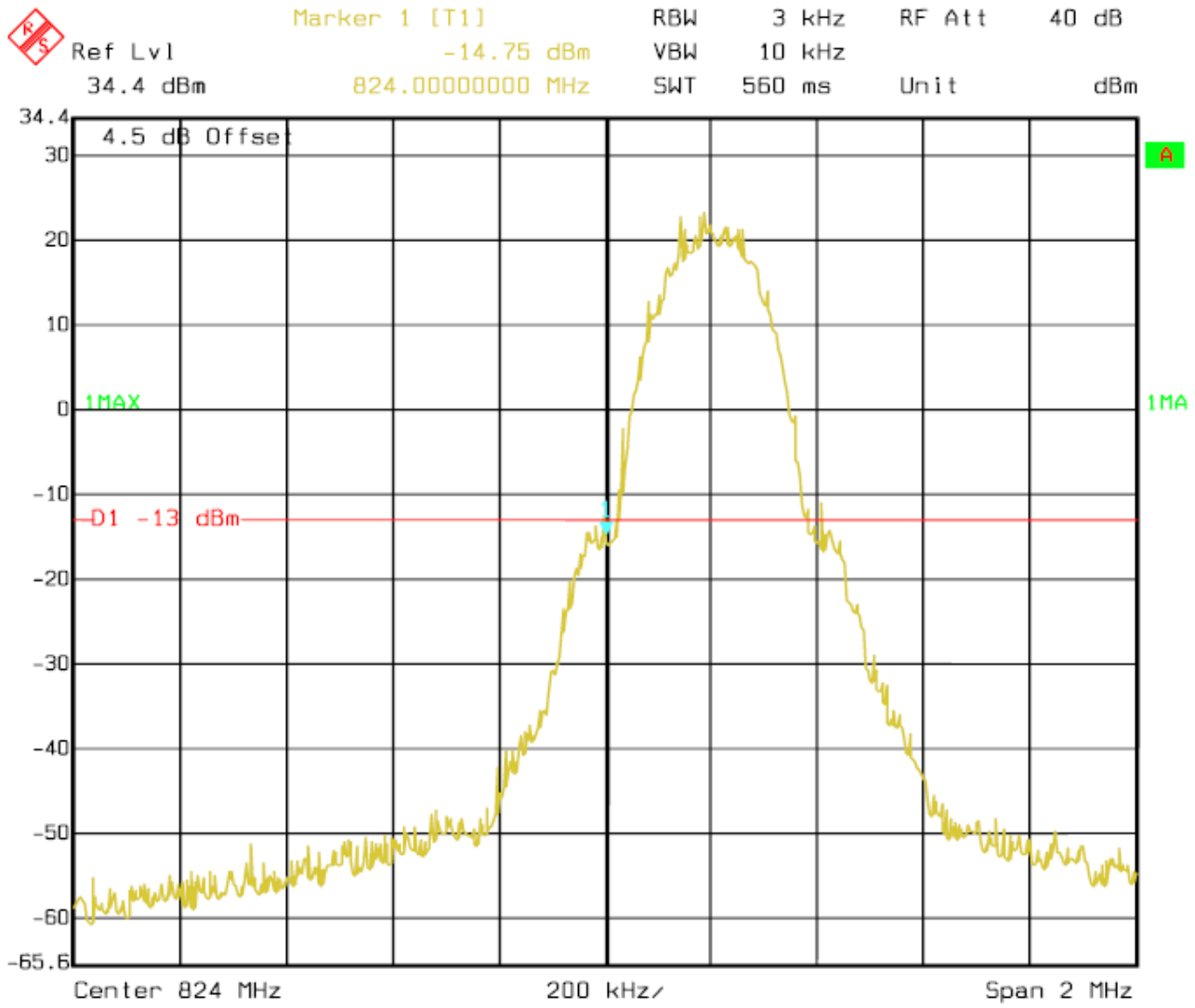
Frequency (MHz)	Emission (dBm)	Limit (dBm)
1850	-16.88	-13
1910	-16.95	-13

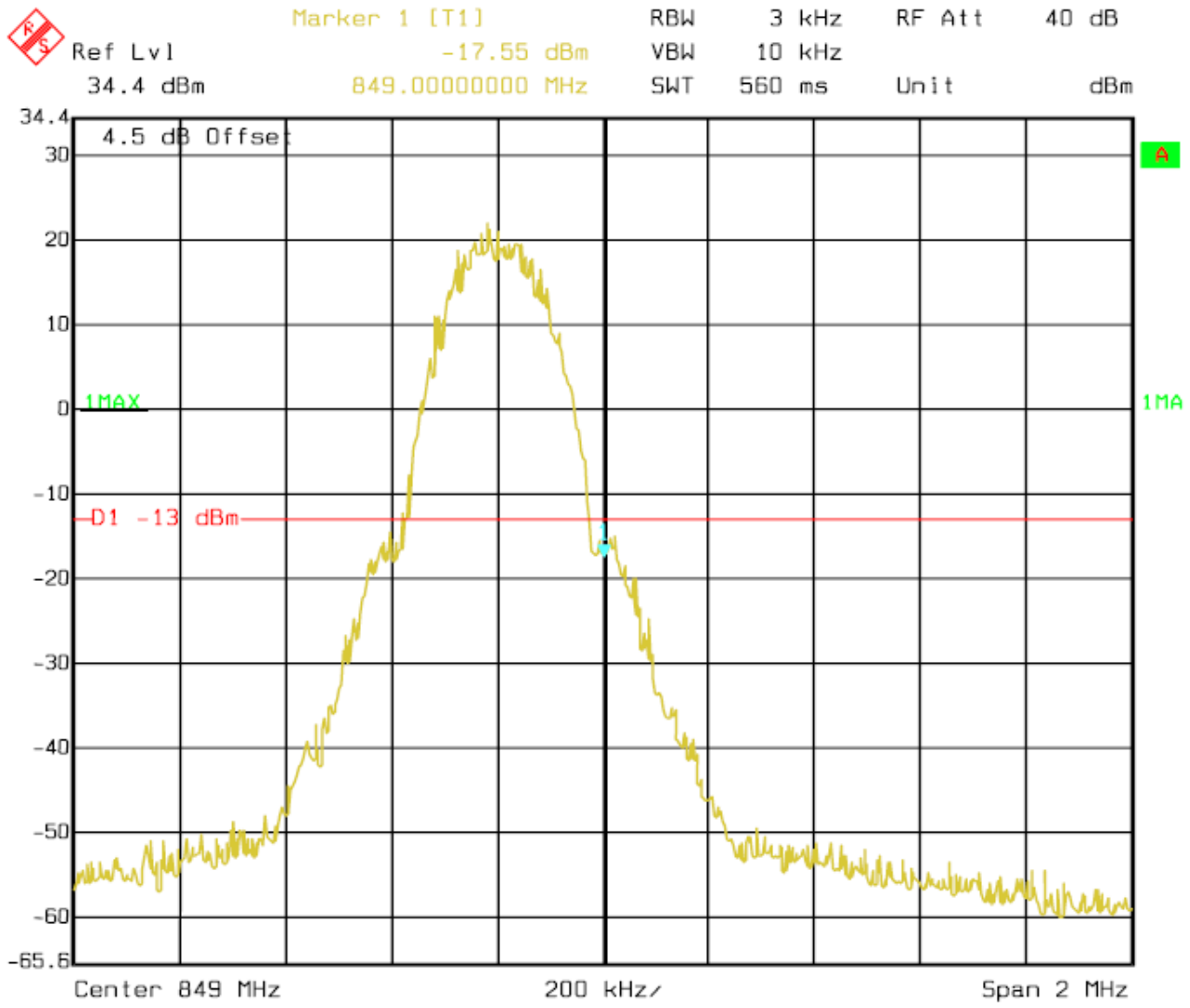




For GPRS (850 MHz)

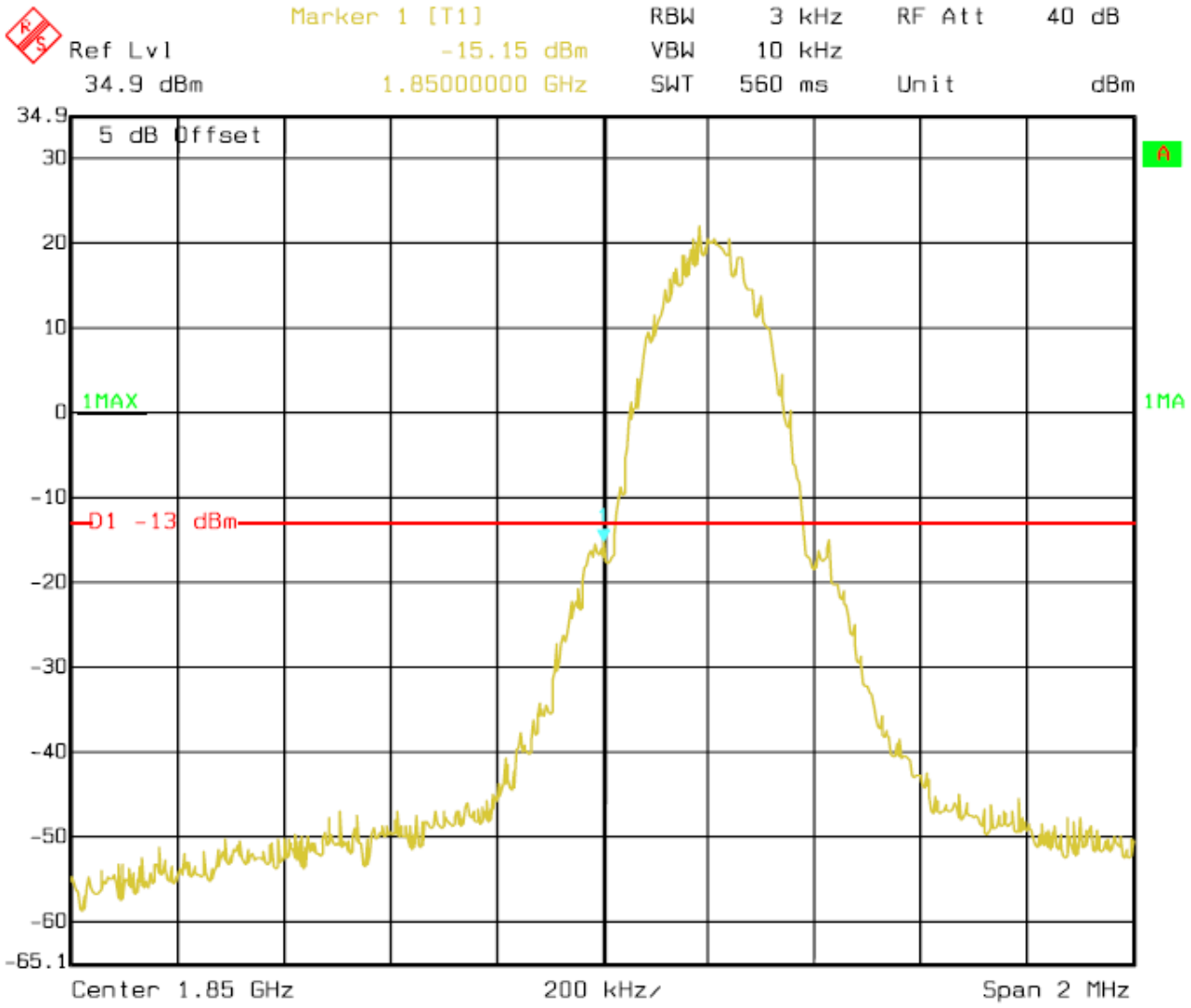
Frequency (MHz)	Emission (dBm)	Limit (dBm)
824	-14.75	-13
849	-17.55	-13

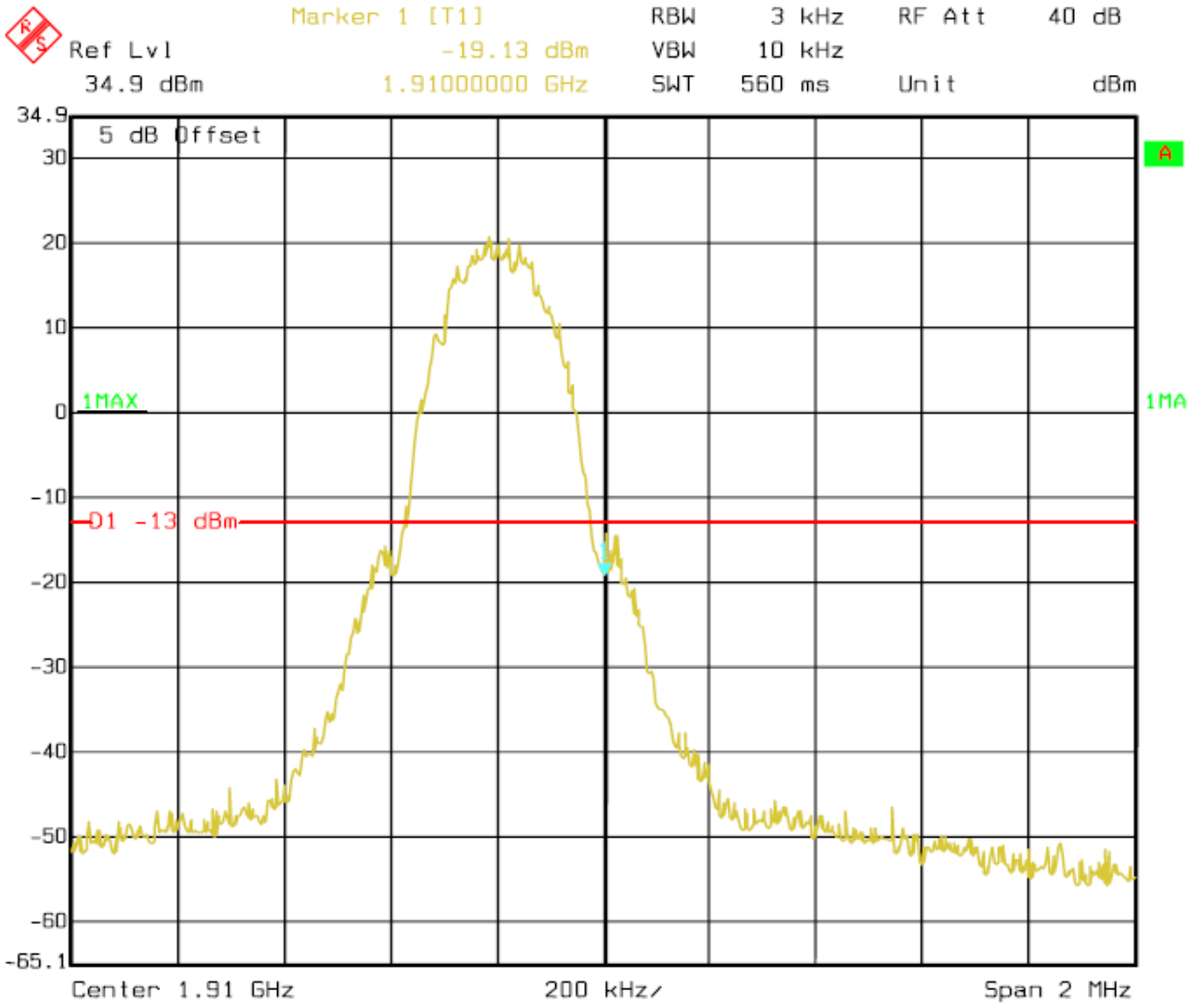




For GPRS (1900 MHz)

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1850	-15.15	-13
1910	-19.13	-13





13.0 FREQUENCY STABILITY

13.1 Applicable Standards:

CFR47 § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

13.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set 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 the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

13.3 Test Data

Environmental conditions:

Temperature:	25 ℃
Relative Humidity:	56%
ATM Pressure:	100.0kPa

Cellular Band:

Middle channel, fo =836.6MHz				
Temperature (℃)	**Power Supplied (V)**	**Frequency Error (Hz)**	**Error (ppm)**	**Limit (ppm)**
-30	10.2	-21	-0.0251	2.5
	12.0	-24	-0.0287	2.5
	13.8	-23	-0.0275	2.5
-20	10.2	-21	-0.0251	2.5
	12.0	-27	-0.0323	2.5
	13.8	-24	-0.0287	2.5
-10	10.2	-23	-0.0275	2.5
	12.0	-23	-0.0275	2.5
	13.8	-24	-0.0287	2.5
0	10.2	-23	-0.0275	2.5
	12.0	-23	-0.0275	2.5
	13.8	-24	-0.0287	2.5
10	10.2	-32	-0.0383	2.5
	12.0	-25	-0.0299	2.5
	13.8	-24	-0.0287	2.5
20	10.2	-28	-0.0335	2.5
	12.0	-37	-0.0442	2.5
	13.8	-25	-0.0299	2.5
30	10.2	-59	-0.0705	2.5
	12.0	-27	-0.0323	2.5
	13.8	-32	-0.0383	2.5
40	10.2	-70	-0.0837	2.5
	12.0	-41	-0.0490	2.5
	13.8	-32	-0.0383	2.5
50	10.2	-72	-0.0861	2.5
	12.0	-34	-0.0406	2.5
	13.8	-32	-0.0383	2.5

PCS Band:

Middle channel, fo =1880MHz				
Temperature (℃)	**Power Supplied (V)**	**Frequency Error (Hz)**	**Error (ppm)**	**Limit (ppm)**
-30	10.2	-17	-0.0090	2.5
	12.0	-15	-0.0080	2.5
	13.8	-14	-0.0074	2.5
-20	10.2	-16	-0.0085	2.5
	12.0	-15	-0.0080	2.5
	13.8	-16	-0.0085	2.5
-10	10.2	-18	-0.0096	2.5
	12.0	-8	-0.0043	2.5
	13.8	-16	-0.0085	2.5
0	10.2	-18	-0.0096	2.5
	12.0	-17	-0.0090	2.5
	13.8	-16	-0.0085	2.5
10	10.2	-14	-0.0074	2.5
	12.0	-15	-0.0080	2.5
	13.8	-16	-0.0085	2.5
20	10.2	-21	-0.0112	2.5
	12.0	-22	-0.0117	2.5
	13.8	-18	-0.0096	2.5
30	10.2	-26	-0.0138	2.5
	12.0	-24	-0.0128	2.5
	13.8	-18	-0.0096	2.5
40	10.2	-31	-0.0165	2.5
	12.0	-28	-0.0149	2.5
	13.8	-18	-0.0096	2.5
50	10.2	-28	-0.0149	2.5
	12.0	-29	-0.0154	2.5
	13.8	-18	-0.0096	2.5