

RED-Radio Test Report

For

ASBISc Enterprises PLC

Kids Smartwatch

Model No.: CNE-KW21, CNE-KW21XX(XX could be A-Z)

Prepared For : ASBISc Enterprises PLC
Address : 43 Kolonakiou street, Diamond Court, 4103, Ayios Athabasios, Limassol,
Cyprius

Prepared By : Shenzhen Anbotech Compliance Laboratory Limited
Address : 1/F, Building D, Sogood Science and Technology Park, Sanwei
community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong,
China.518102
Tel: (86) 755-26366440 Fax: (86) 755-26314772

Report Number : SZAWW190103001-04W

Date of Receipt : Jan. 03, 2019

Date of Test : Jan. 03~ 19, 2019

Date of Report : Jan. 21, 2019

Contents

1. General Information.....	6
1.1. Client Information.....	6
1.2. Description of Device (EUT).....	6
1.3. Auxiliary Equipment Used During Test.....	7
1.4 Test Standard Description.....	7
1.5 Additional Information.....	7
1.6 Test Conditions.....	7
1.7 Measurement Uncertainty (95% confidence levels, k=2).....	8
1.8 Measurement and Test Setup.....	8
1.9 Test Equipment List.....	10
2. Summary of Test Results.....	11
3. Transmitter-Frequency Error and Phase Error.....	13
3.1. Test Limit.....	13
3.2. Test Setup.....	13
3.3. Test Procedure.....	13
3.4. Test Result.....	13
4. Transmitter - Frequency Error under Multipath and Interference Conditions.....	22
4.1. Test Limit.....	22
4.2. Test Setup.....	22
4.3. Test Procedure.....	22
4.4. Test Result.....	22
5. Frequency Error and Phase Error in GPRS Multislot Configuration.....	26
5.1. Test Limit.....	26
5.2. Test Setup.....	26
5.3. Test Procedure.....	26
5.4. Test Result.....	26
6. Transmitter Output Power and Burst Timing.....	35
6.1. Test Limit.....	35
6.2. Test Setup.....	35
6.3. Test Procedure.....	35
6.4. Test Result.....	35
7. Transmitter - Output RF Spectrum.....	55
7.1. Test Limit.....	55
7.2. Test Setup.....	55
7.3. Test Procedure.....	55
7.4. Test Result.....	55
8. Transmitter Output Power in GPRS Multislot Configuration.....	94
8.1. Test Limit.....	94
8.2. Test Setup.....	94
8.3. Test Procedure.....	94
8.4. Test Result.....	94
9. Output RF Spectrum in GPRS Multislot Configuration.....	114

9.1. Test Limit.....	114
9.2. Test Setup.....	114
9.3. Test Procedure.....	114
9.4. Test Result.....	114
10. Conducted Spurious Emissions.....	141
10.1. Test Limit.....	141
10.2. Test Setup.....	141
10.3. Test Procedure.....	142
10.4. Test Result.....	142
11. Radiated Spurious Emissions.....	147
11.1. Test Limit.....	147
11.2. Test Setup.....	147
11.3. Test Procedure.....	148
11.4. Test Result.....	148
11.5. Test Results for MS in idle mode.....	149
12. Receiver Blocking and Spurious Response.....	150
12.1. Test Limit.....	150
12.2. Test Setup.....	152
12.3. Test Procedure.....	152
12.4. Test Result.....	152
13. Receiver Blocking and Spurious Response - Speech Channels.....	154
13.1. Test Limit.....	154
13.2. Test Setup.....	154
13.3. Test Procedure.....	154
13.4. Test Result.....	155
14. Am suppression - Speech Channels.....	156
14.1. Test Limit.....	156
14.2. Test Procedures.....	156
14.3. Test Setup.....	156
14.4. Test Results.....	156
15. Intermodulation Rejection.....	157
15.1. Test Limit.....	157
15.2. Test Procedures.....	157
15.3. Test Setup.....	157
15.4. Test Results.....	158
16. Adjacent Channel Rejection.....	159
16.1. Test Limit.....	159
16.2. Test Procedures.....	159
16.3. Test Setup.....	160
16.4. Test Results.....	160
17. Reference Sensitivity.....	162
17.1. Test Limit.....	162
17.2. Test Procedures.....	163
17.3. Test Setup.....	163
17.4. Test Results.....	163

18. Reference Sensitivity.....	165
18.1. Test Limit.....	165
18.2. Test Procedures.....	166
18.3. Test Setup.....	166
18.4. Test Results.....	166
19. PICS/PIXIT Information of The EUT.....	168
20. Test setup photo.....	169

TEST REPORT

Applicant : ASBISc Enterprises PLC
Manufacturer : ASBISc Enterprises PLC
Product Name : Kids Smartwatch
Model No. : CNE-KW21, CNE-KW21XX(XX could be A-Z)
Trade Mark : Canyon
Rating(s) : Input: DC 3.8V, 500mA (with DC 3.7V, 400 mAh Battery inside)

Test Standard(s) : ETSI EN301 511 V12.5.1(2017-03)

Test Method(s) : ETSI TS 151 010-1 V13.5.0 (2017-11)

The device described above is tested by Shenzhen Anbotech Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotech Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the ETSI EN301 511 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotech Compliance Laboratory Limited.

Date of Test

Jan. 03~ 19, 2019

Prepared By



Oliay Yang

(Engineer / Oliay Yang)

Reviewer

Snowy Meng

(Supervisor / Snowy Meng)

Approved & Authorized Signer

Sally Zhang

(Manager / Sally Zhang)

1. General Information

1.1. Client Information

Applicant	:	ASBISc Enterprises PLC
Address	:	43 Kolonakiou street, Diamond Court, 4103, Ayios Athabasilos, Limassol, Cyprius
Manufacturer	:	ASBISc Enterprises PLC
Address	:	43 Kolonakiou street, Diamond Court, 4103, Ayios Athabasilos, Limassol, Cyprius
Factory	:	Jiangsu JinYiDa Energy Technology Co.,Ltd
Address	:	JingKou Industrial Park, JingKou District, Zhenjiang City

1.2. Description of Device (EUT)

Product Name	:	Kids Smartwatch
Model No.	:	CNE-KW21, CNE-KW21XX(XX could be A-Z) (Note: All samples are the same except the appearance, so we prepare "CNE-KW21" for test only.)
Trade Mark	:	Canyon
Test Power Supply	:	DC 3.7V Battery inside
Product Description	Operation Frequency:	GSM 900: 880 -915 MHz (TX); 935 - 963 MHz (RX) DCS1800: 1710 -1785 MHz (TX); 1805-1880 MHz (RX)
	Modulation Type:	GMSK
	Radio Technology	GSM/GPRS (900/1800)
	Power Class	GSM900: 4, GSM1800: 1
	Multislot Class	GPRS: 12
	Antenna Type:	PIFA Antenna
	Antenna Gain(Peak):	GSM 900: -2.53 dBi DCS1800: 0.72 dBi

Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Auxiliary Equipment Used During Test

N/A	:	
-----	---	--

1.4 Test Standard Description

ETSI EN 301 511 V12.5.1: Global System for Mobile communications (GSM);

Mobile Stations (MS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

ETSI TS 151 010-1 V13.5.0: Digital cellular telecommunications system (Phase 2+);

Mobile Station (MS) conformance specification; Part 1: Conformance specification
(ETSI TS 151 010-1 version 13.5.0 Release 12)

1.5 Additional Information

N/A

1.6 Test Conditions

Temperature:	15-35 ° C	
Relative humidity content:	Up to 75 %	
Details of power supply:	230 V AC	
- Extreme test conditions:	Operating voltage of the mobile	
	Vnom= 3.70 V	DC
	Vmin = 3.33 V	DC
	Vmax = 4.07 V	DC
- Extreme temperature:	-20° C / 60° C	
Vibration	Frequency	ASD
	5Hz-20Hz	0,96 m2/s3
	20 Hz to 500 Hz	0,96 m2/s3 at 20 Hz, thereafter -3 dB/Octave
Other parameter:	None	

General Test Conditions

GSM900	LCH	MCH	HCH
GPRS900	880.2	902.6	914.8
EGPRS900			

DCS1800	LCH	MCH	HCH
GPRS1800	1710.2	1747.4	1784.8
EGPRS1800			

VL	VN	VH	TL	TN	TH
Low voltage	Normal voltage	High voltage	Low temperature	Normal temperature	High temperature

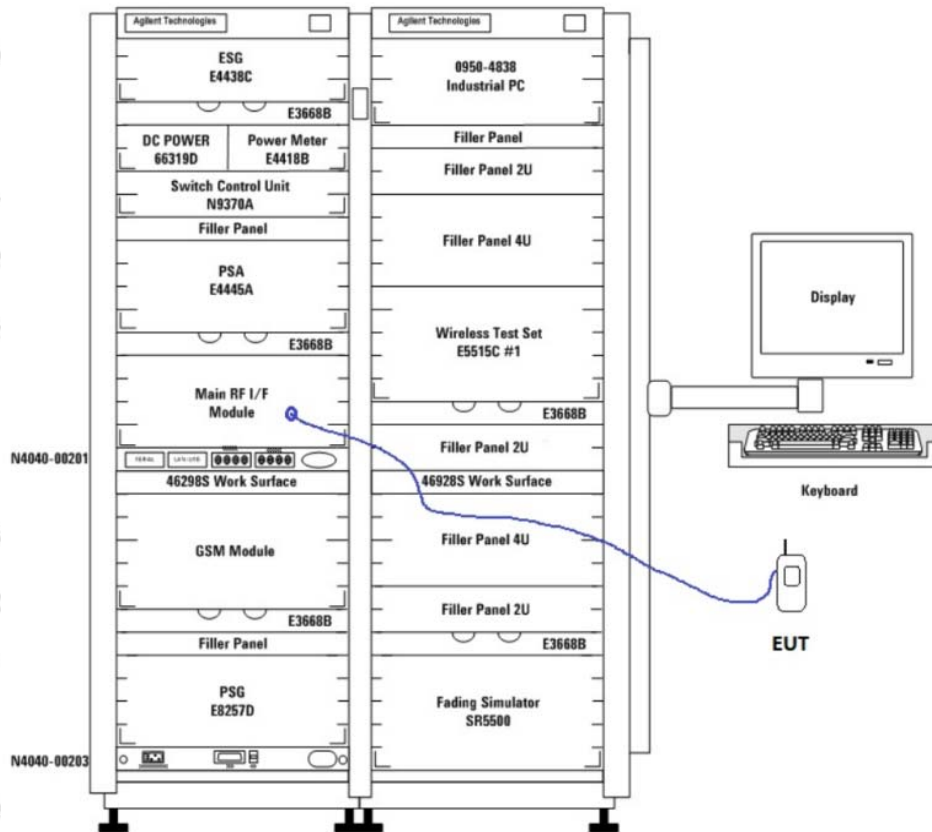
1.7 Measurement Uncertainty (95% confidence levels, k=2)

Maximum measurement uncertainty

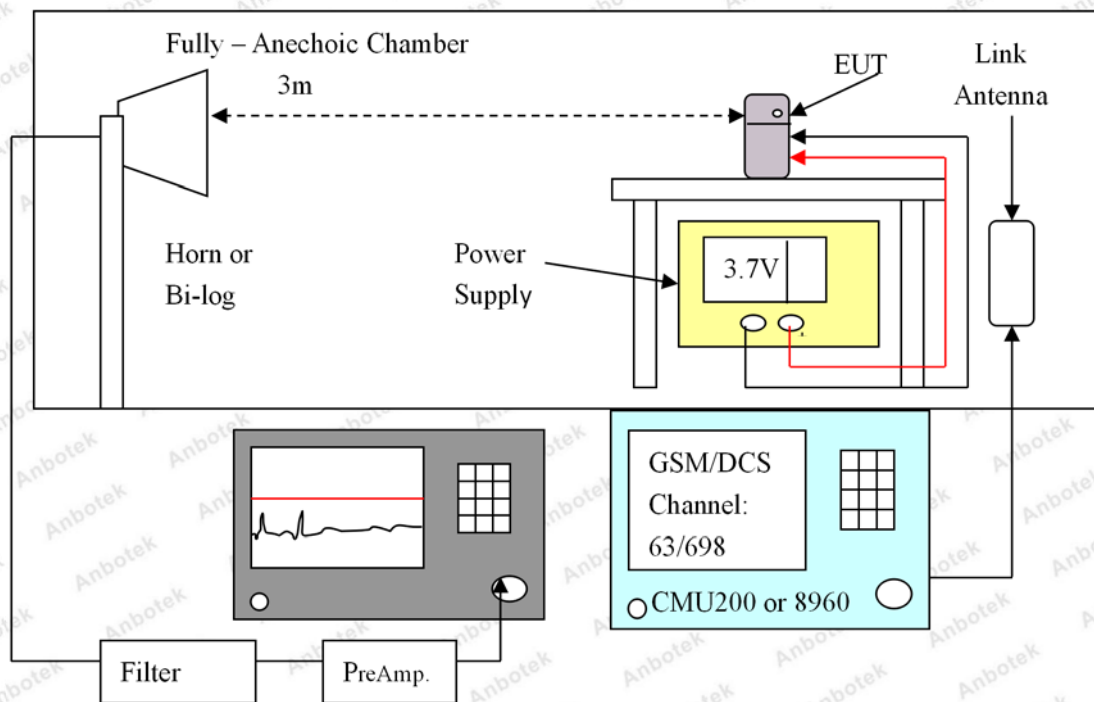
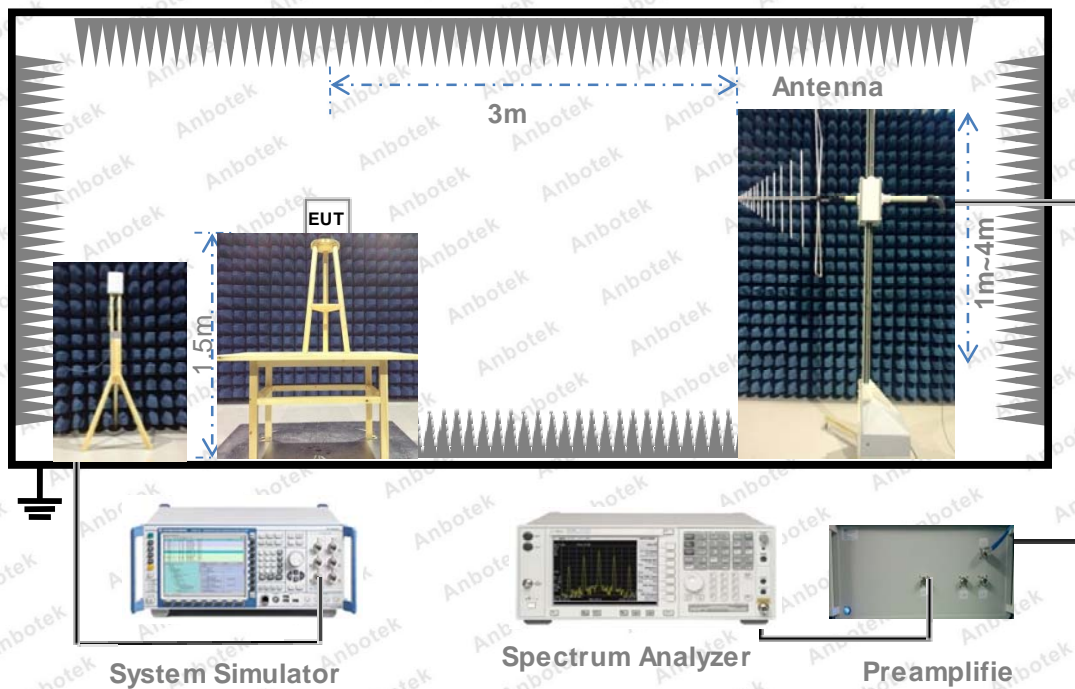
Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1,5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±1 °C
Humidity	±5 %
DC and low frequency voltages	±3 %
Time	±5 %
Duty Cycle	±5 %

1.8 Measurement and Test Setup

1.8.1 Conducted Test Setup



1.8.2 Radiated Test Setup



1.9 Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 05, 2018	1 Year
2.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Nov. 05, 2018	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 05, 2018	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 19, 2018	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 19, 2018	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
9.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 05, 2018	1 Year
10.	DC Power Supply	IVYTECH	IV3605	1804D360510	Apr. 02, 2018	1 Year
11.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Nov. 01, 2018	1 Year
12.	Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	117888	Nov. 05, 2018	1 Year
13.	Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	104209	Nov. 05, 2018	1 Year
14.	High-Pass Filter	CDKMV	ZHPF-BM110 0 -4000-0730	B2015094550	Nov. 08, 2018	1 Year
15.	High-Pass Filter	CDKMV	ZHPF-M3.5 -18G-3834	1307006523	Nov. 05, 2018	1 Year
16.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063507	Nov. 05, 2018	1 Year
17.	4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	Nov. 05, 2018	1 Year

2. Summary of Test Results

3GPP TS 51.010-1 Item	EN 301 511 Reference	TEST DESCRIPTION	GSM 900	DCS 1800
12.1.1	4.2.12	Conducted spurious emissions - MS allocated a channel	Pass	Pass
		Voltage High	Pass	Pass
		Voltage Low	Pass	Pass
12.1.2	4.2.13	Conducted spurious emissions - MS in idle mode	Pass	Pass
		Voltage High	Pass	Pass
		Voltage Low	Pass	Pass
12.2.1	4.2.16	Radiated spurious emissions - MS allocated a channel	Pass	Pass
		Voltage High	Pass	Pass
		Voltage Low	Pass	Pass
12.2.2	4.2.17	Radiated spurious emissions - MS in idle mode	Pass	Pass
		Voltage High	Pass	Pass
		Voltage Low	Pass	Pass
13.1	4.2.1	Transmitter – Frequency error and phase error	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass
		Vibration (X axis)	Pass	Pass
		Vibration (Y axis)	Pass	Pass
13.2	4.2.2	Vibration (Z axis)	Pass	Pass
		Transmitter – Frequency error under multipath and interference conditions	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
13.3.4.1	4.2.5	Temperature Low, Voltage Low	Pass	Pass
		Transmitter output power and burst timing - MS with external antenna	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass

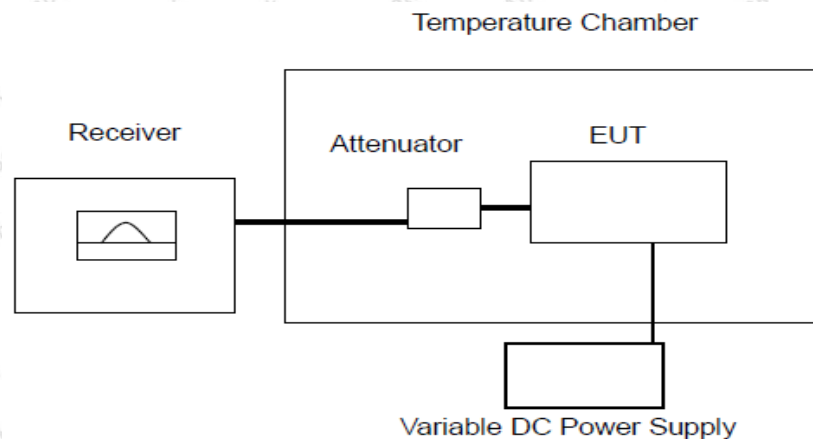
3GPP TS 51.010-1 Item	EN 301 511 Reference	TEST DESCRIPTION	GSM 900	DCS 1800
13.4	4.2.6	Transmitter - Output RF spectrum	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass
13.16.1	4.2.4	Frequency error and phase error in GPRS multislot configuration	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass
		Vibration (X axis)	Pass	Pass
		Vibration (Y axis)	Pass	Pass
13.16.2-1	4.2.10	Transmitter output power in GPRS multislot configuration - MS with external antenna connector	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass
13.16.3	4.2.11	Output RF spectrum in GPRS multislot configuration	Pass	Pass
		Temperature High, Voltage High	Pass	Pass
		Temperature High, Voltage Low	Pass	Pass
		Temperature Low, Voltage High	Pass	Pass
		Temperature Low, Voltage Low	Pass	Pass
14.7.1	4.2.20	Receiver Blocking and spurious response - speech channels	Pass	Pass
13.17.1	4.2.22	Frequency error and Modulation accuracy in EGPRS Configuration	N/A	N/A
13.17.2	4.2.23	Frequency error under multipath and interference conditions in EGPRS Configuration	N/A	N/A
13.17.3	4.2.24	EGPRS Transmitter output power	N/A	N/A
13.17.4	4.2.25	Output RF spectrum in EGPRS configuration	N/A	N/A
14.18.5	4.2.26	Blocking and spurious response in EGPRS configuration	N/A	N/A

3. Transmitter-Frequency Error and Phase Error

3.1. Test Limit

1. The MS carrier frequency shall be accurate to within 0,1 ppm, or accurate to within 0,1 ppm compared to signals received from the BS. For GSM 400 MS a value of 0,2 ppm shall be used in both cases.
 - 1.1 Under normal conditions; 3GPP TS 05.10, subclause 6.1.
 - 1.2 Under vibration conditions; 3GPP TS 05.10, subclause 6.1; 3GPP TS 05.05, annex D in subclause D.2.3.
 - 1.3 Under extreme conditions; 3GPP TS 05.10, subclause 6.1; 3GPP TS 05.05, subclause 4.4; 3GPP TS 05.05, annex D in subclauses D.2.1 and D.2.2.
2. The RMS phase error (difference between the phase error trajectory and its linear regression on the active part of the time slot) for each burst shall not be greater than 5 degrees.
 - 2.1 Under normal conditions; 3GPP TS 05.05, subclause 4.6.
 - 2.2 Under vibration conditions; 3GPP TS 05.05, subclause 4.6; 3GPP TS 05.05, annex D in subclause D.2.3.
 - 2.3 Under extreme conditions; 3GPP TS 05.05, subclause 4.6; 3GPP TS 05.05, annex D in subclauses D.2.1 and D.2.2.
3. The maximum peak deviation during the useful part of each burst shall not be greater than 20 degrees.
 - 3.1 Under normal conditions; 3GPP TS 05.05, subclause 4.6.
 - 3.2 Under vibration conditions; 3GPP TS 05.05, subclause 4.6; 3GPP TS 05.05, annex D in subclause D.2.3.
 - 3.3 Under extreme conditions; 3GPP TS 05.05, subclause 4.6; 3GPP TS 05.05, annex D in subclauses D.2.1 and D.2.2.

3.2. Test Setup



3.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.1.2 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.1.2 for the measurement method.

3.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (880.2MHz)	NT/NV	8	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	5	88	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TL/VH	16	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	10	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	9	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	Vibration	8	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (880.2MHz)	NT/NV	5	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	9	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	8	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	11	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

	TH/VH	16	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	Vibration	3	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (902.6MHz)	NT/NV	14	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TL/VL	17	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TL/VH	15	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	6	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TH/VH	16	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	Vibration	13	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (902.6MHz)	NT/NV	10	90.3	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VL	16	90.3	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VH	12	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TH/VL	8	90.3	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TH/VH	18	90.3	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	Vibration	7	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (914.8MHz)	NT/NV	4	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VL	14	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VH	4	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TH/VL	8	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS

	TH/VH	4	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	Vibration	-6	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (914.8MHz)	NT/NV	2	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VL	12	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TL/VH	9	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TH/VL	4	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	TH/VH	13	91.5	PASS	RMS	0.3	5	PASS
					Peak	1.0	20	PASS
	Vibration	8	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (1710.2MHz)	NT/NV	-7	171	PASS	RMS	0.7	5	PASS
					Peak	1.7	20	PASS
	TL/VL	0	171	PASS	RMS	0.5	5	PASS
					Peak	1.5	20	PASS
	TL/VH	-2	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VL	3	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VH	-9	171	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	Vibration	-9	171	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS

MS under maximum power control level (15)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (1710.2MHz)	NT/NV	-4	171	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	TL/VL	4	171	PASS	RMS	0.6	5	PASS
					Peak	1.7	20	PASS
	TL/VH	-3	171	PASS	RMS	0.6	5	PASS
					Peak	1.7	20	PASS
	TH/VL	6	171	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS

	TH/VH	-6	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	Vibration	-7	171	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (1747.4MHz)	NT/NV	-4	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	TL/VL	3	174.7	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TL/VH	-8	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	TH/VL	-1	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	TH/VH	-6	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	Vibration	-7	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS

MS under maximum power control level (15)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (1747.4MHz)	NT/NV	-2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TL/VL	-3	174.7	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS
	TL/VH	-5	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	TH/VL	-2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VH	3	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	Vibration	-2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (1784.8MHz)	NT/NV	-5	178.5	PASS	RMS	0.9	5	PASS
					Peak	2.1	20	PASS
	TL/VL	1	178.5	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS
	TL/VH	-4	178.5	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VL	-5	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS

	TH/VH	-3	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	Vibration	-1	178.5	PASS	RMS	0.9	5	PASS
					Peak	2.1	20	PASS

MS under maximum power control level (15)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (1784.8MHz)	NT/NV	-3	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TL/VL	-3	178.5	PASS	RMS	0.9	5	PASS
					Peak	2.2	20	PASS
	TL/VH	-3	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TH/VL	-2	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TH/VH	-1	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	Vibration	6	178.5	PASS	RMS	0.9	5	PASS
					Peak	2.1	20	PASS

4. Transmitter - Frequency Error under Multipath and Interference Conditions

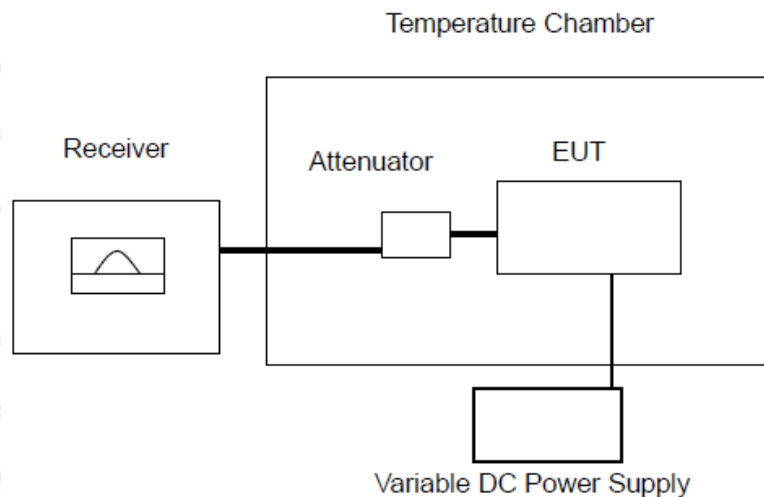
4.1. Test Limit

The frequency error, with reference to the SS carrier frequency as measured in repeats of step e), for each measured burst shall be less than the values shown in tables 13-1a and 13-1b

**Requirements for frequency error under multipath,
Doppler shift and interference conditions**

T-GSM 810, GSM 850 and GSM 900		DCS 1 800		PCS 1 900	
Propagation condition	Permitted frequency error	Propagation condition	Permitted frequency error	Propagation condition	Permitted frequency error
RA250	±300 Hz	RA130	±400 Hz	RA130	±420 Hz
HT100	±180 Hz	HT100	±350 Hz	HT100	±370 Hz
TU50	±160 Hz	TU50	±260 Hz	TU50	±280 Hz
TU3	±230 Hz	TU1,5	±320 Hz	TU1,5	±330 Hz

4.2. Test Setup



4.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.2.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.2.4 for the measurement method.

4.4. Test Result

Temperature:	24.9° C	Relative Humidity:	65 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

Fading set	Test conditions	Power control LEVEL	Result				
			GSM900				
			ARFCN				
			LCH	MCH	HCH	Limit	Result
RA250	NT/NV	5	5	11	5	±300	PASS
		19	6	20	7	±300	PASS
	TL/VL	5	6	13	8	±300	PASS
		19	7	6	8	±300	PASS
	TL/VH	5	7	7	12	±300	PASS
		19	18	9	8	±300	PASS
	TH/VL	5	10	5	5	±300	PASS
		19	5	7	6	±300	PASS
	TH/VH	5	-3	6	-4	±300	PASS
		19	-1	6	8	±300	PASS
HT100	NT/NV	5	2	19	3	±180	PASS
		19	-5	14	2	±180	PASS
	TL/VL	5	14	6	11	±180	PASS
		19	9	8	11	±180	PASS
	TL/VH	5	15	6	15	±180	PASS
		19	7	1	12	±180	PASS
	TH/VL	5	4	3	5	±180	PASS
		19	10	6	9	±180	PASS
	TH/VH	5	15	9	-2	±180	PASS
		19	5	6	9	±180	PASS
TU50	NT/NV	5	1	16	4	±160	PASS
		19	5	16	1	±160	PASS
	TL/VL	5	9	8	10	±160	PASS
		19	10	-3	11	±160	PASS
	TL/VH	5	4	5	8	±160	PASS
		19	9	6	4	±160	PASS
	TH/VL	5	11	7	9	±160	PASS
		19	4	4	8	±160	PASS
	TH/VH	5	6	9	8	±160	PASS
		19	4	5	6	±160	PASS
TU3	NT/NV	5	10	7	-1	±230	PASS

	TL/VL	19	13	6	-2	±230	PASS
		5	11	7	9	±230	PASS
		19	8	12	11	±230	PASS
	TL/VH	5	5	18	8	±230	PASS
		19	7	19	7	±230	PASS
	TH/VL	5	11	-5	7	±230	PASS
		19	9	12	6	±230	PASS
	TH/VH	5	4	8	4	±230	PASS
		19	5	12	7	±230	PASS

Fading set	Test conditions	Power control LEVEL	Result				
			DCS1800				
			ARFCN				
			LCH	MCH	HCH	Limit	Result
RA130	NT/NV	0	-8	-5	-5	±400	PASS
		15	-5	-1	-3	±400	PASS
	TL/VL	0	-10	-5	-8	±400	PASS
		15	-2	5	-9	±400	PASS
	TL/VH	0	0	-10	-10	±400	PASS
		15	5	-3	1	±400	PASS
	TH/VL	0	-7	-8	-9	±400	PASS
		15	-6	-9	-5	±400	PASS
	TH/VH	0	-12	-12	-10	±400	PASS
		15	-5	-8	-5	±400	PASS
HT100	NT/NV	0	-11	-6	-8	±350	PASS
		15	-5	1	-2	±350	PASS
	TL/VL	0	-8	-10	1	±350	PASS
		15	-4	-4	-9	±350	PASS
	TL/VH	0	-10	-8	2	±350	PASS
		15	-4	-2	-1	±350	PASS
	TH/VL	0	-13	-14	-11	±350	PASS
		15	0	-8	-5	±350	PASS
	TH/VH	0	-14	-10	-13	±350	PASS
		15	-7	0	-3	±350	PASS
TU50	NT/NV	0	-7	-2	-8	±260	PASS

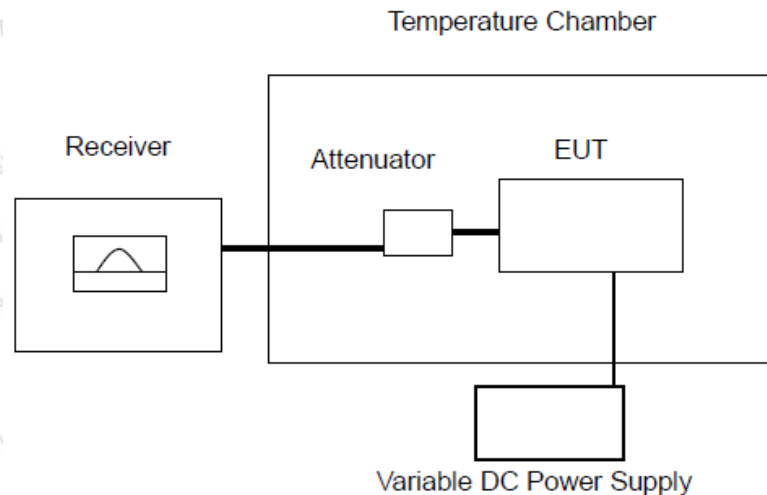
	TL/VL	15	-5	-6	-3	±260	PASS
		0	-3	-8	-2	±260	PASS
	TL/VH	15	0	-5	2	±260	PASS
		0	-9	-2	-7	±260	PASS
	TH/VL	15	-4	0	3	±260	PASS
		0	-4	-11	-6	±260	PASS
	TH/VH	15	-1	-8	-7	±260	PASS
		0	-12	-15	-10	±260	PASS
TU1.5	NT/NV	15	-9	-12	-4	±260	PASS
		0	-7	-10	-6	±320	PASS
	TL/VL	15	-2	-3	-3	±320	PASS
		0	-1	-5	-2	±320	PASS
	TL/VH	15	2	-6	6	±320	PASS
		0	-6	-3	-7	±320	PASS
	TH/VL	15	-5	-3	-7	±320	PASS
		0	-4	-10	-5	±320	PASS
	TH/VH	15	0	-9	-6	±320	PASS
		0	-10	-11	-16	±320	PASS
		15	-5	-6	-4	±320	PASS
		0					

5. Frequency Error and Phase Error in GPRS Multislot Configuration

5.1. Test Limit

1. For all measured bursts, the frequency error, derived in step c.6), shall be less than $10E-7$
2. For all measured bursts, the RMS phase error, derived in step c.8), shall not exceed 5 degrees.
3. For all measured bursts, each individual phase error, derived in step c.7), shall not exceed 20 degrees

5.2. Test Setup



5.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.1.2 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.1.3 for the measurement method.

5.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (880.2MHz)	NT/NV	10	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	8	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	9	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	10	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	9	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	Vibration	10	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (880.2MHz)	NT/NV	12	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	11	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	13	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	11	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	12	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

					Peak	1.1	20	PASS
	Vibration	12	88	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (902.6MHz)	NT/NV	12	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	11	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	TL/VH	10	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	13	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	11	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS
	Vibration	9	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (902.6MHz)	NT/NV	14	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	12	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	11	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	13	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	13	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	Vibration	13	90.3	PASS	RMS	0.4	5	PASS
					Peak	1.0	20	PASS

MS under maximum power control level (5)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (914.8MHz)	NT/NV	10	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	9	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	9	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	9	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	Vibration	10	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (19)

GSM 900	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (914.8MHz)	NT/NV	10	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VL	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TL/VH	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VL	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS
	TH/VH	11	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

					Peak	1.1	20	PASS
	Vibration	12	91.5	PASS	RMS	0.4	5	PASS
					Peak	1.1	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (1710.2MHz)	NT/NV	-3	171	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TL/VL	0	171	PASS	RMS	0.6	5	PASS
					Peak	1.8	20	PASS
	TL/VH	-2	171	PASS	RMS	0.6	5	PASS
					Peak	1.8	20	PASS
	TH/VL	2	171	PASS	RMS	0.7	5	PASS
					Peak	2.0	20	PASS
	TH/VH	1	171	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS
	Vibration	0	171	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS

MS under maximum power control level (15)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
LCH (1710.2MHz)	NT/NV	1	171	PASS	RMS	0.7	5	PASS
					Peak	1.7	20	PASS
	TL/VL	2	171	PASS	RMS	0.6	5	PASS
					Peak	1.7	20	PASS
	TL/VH	1	171	PASS	RMS	0.6	5	PASS
					Peak	1.5	20	PASS
	TH/VL	1	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VH	1	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	Vibration	1	171	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (1747.4MHz)	NT/NV	-2	174.7	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TL/VL	-1	174.7	PASS	RMS	0.6	5	PASS
					Peak	1.8	20	PASS
	TL/VH	0	174.7	PASS	RMS	0.7	5	PASS
					Peak	2.0	20	PASS
	TH/VL	2	174.7	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS

	TH/VH	-1	174.7	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	Vibration	3	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS

MS under maximum power control level (15)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
MCH (1747.4MHz)	NT/NV	1	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TL/VL	2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.7	20	PASS
	TL/VH	2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	TH/VL	2	174.7	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS
	TH/VH	5	174.7	PASS	RMS	0.8	5	PASS
					Peak	1.8	20	PASS
	Vibration	2	174.7	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS

MS under maximum power control level (0)

DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (1784.8MHz)	NT/NV	6	178.5	PASS	RMS	1.0	5	PASS
					Peak	2.3	20	PASS
	TL/VL	10	178.5	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS

	TL/VH	9	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TH/VL	5	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TH/VH	6	178.5	PASS	RMS	0.9	5	PASS
					Peak	2.1	20	PASS
	Vibration	10	178.5	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS

MS under maximum power control level (15)

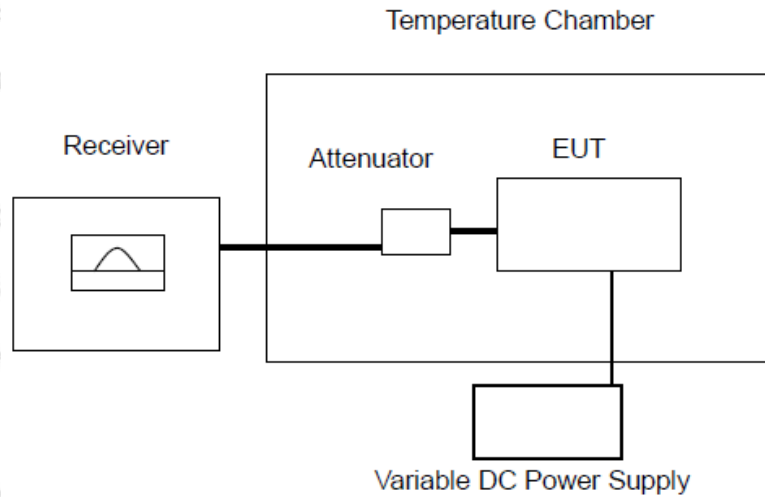
DCS1800	Test Condition	Frequency Error (Hz)	Limit (Hz)	Result	Phase Error (deg)		Limit (deg)	Result
HCH (1784.8MHz)	NT/NV	9	178.5	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS
	TL/VL	10	178.5	PASS	RMS	0.8	5	PASS
					Peak	1.9	20	PASS
	TL/VH	5	178.5	PASS	RMS	0.8	5	PASS
					Peak	2.0	20	PASS
	TH/VL	10	178.5	PASS	RMS	0.7	5	PASS
					Peak	1.7	20	PASS
	TH/VH	9	178.5	PASS	RMS	0.7	5	PASS
					Peak	1.8	20	PASS
	Vibration	7	178.5	PASS	RMS	0.7	5	PASS
					Peak	1.9	20	PASS

6. Transmitter Output Power and Burst Timing

6.1. Test Limit

Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.3.5

6.2. Test Setup



6.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.3.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.3.4 for the measurement method

6.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

NT/NV Condition:

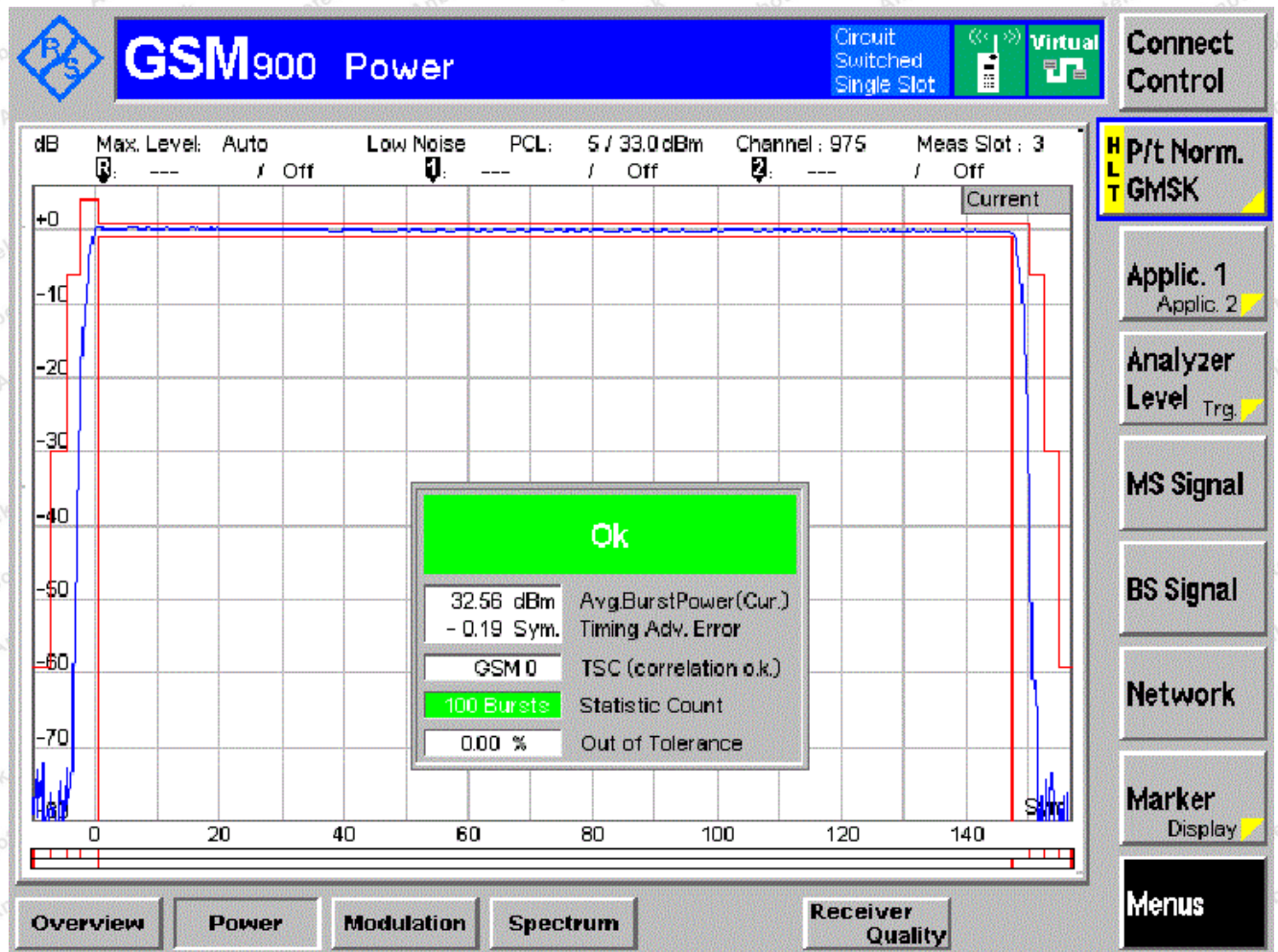
Transmitter Output power(dBm)	Power level	Result			
		Traffic Channels			
GSM900		LCH	MCH	HCH	Result
TN/VN	5	32.56	33.13	33.18	PASS
	12	18.36	18.86	18.95	PASS
	19	4.78	5.08	5.16	PASS

Transmitter Output power(dBm)	Power level	Result			
		Traffic Channels			
DCS1800		LCH	MCH	HCH	Result
TN/VN	0	30.14	30.15	30.46	PASS
	8	13.81	14.04	14.30	PASS
	15	0.83	0.82	1.05	PASS

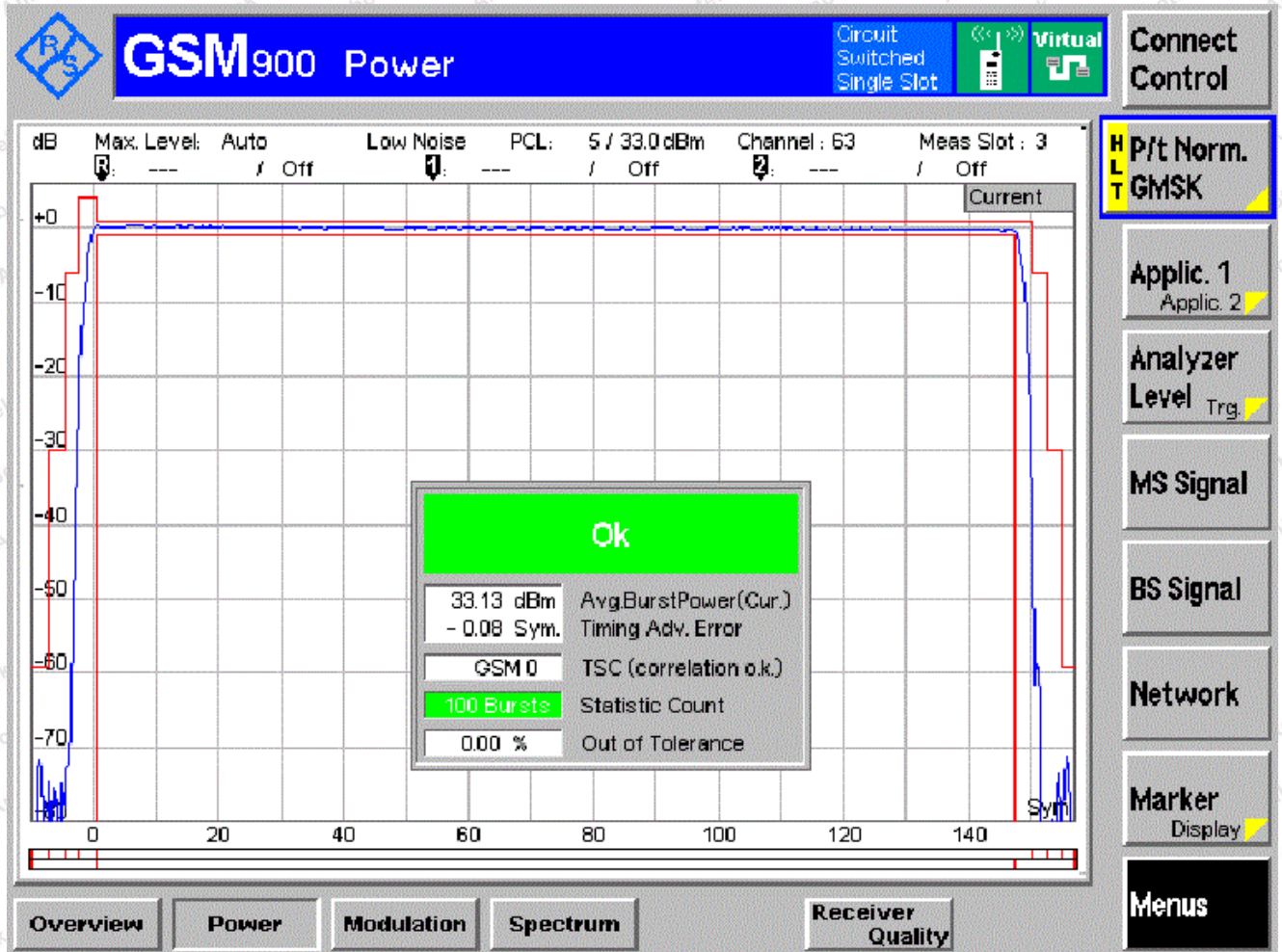
Power VS Time Graph	ACCESS BURST	Result		
		Traffic Channels		
GSM900	Power level	LCH	MCH	HCH
TN/VN	5	PASS	PASS	PASS
	12	PASS	PASS	PASS
	19	PASS	PASS	PASS

Power VS Time Graph	ACCESS BURST	Result		
		Traffic Channels		
DCS1800	Power level	LCH	MCH	HCH
TN/VN	0	PASS	PASS	PASS
	8	PASS	PASS	PASS
	15	PASS	PASS	PASS

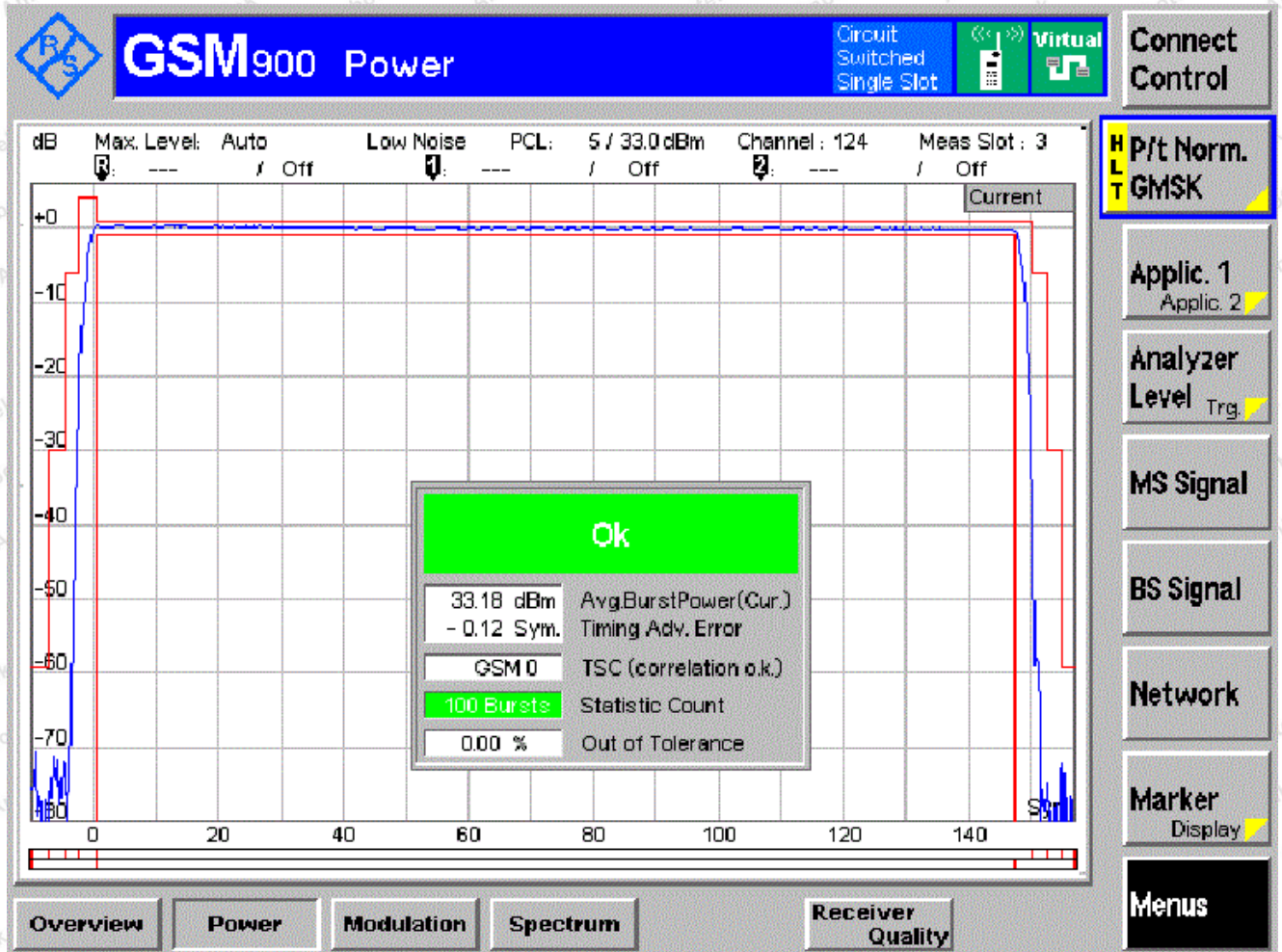
Graphs of output power and burst timing
GSM 900 TN/VN
Channel LCH PCL 5



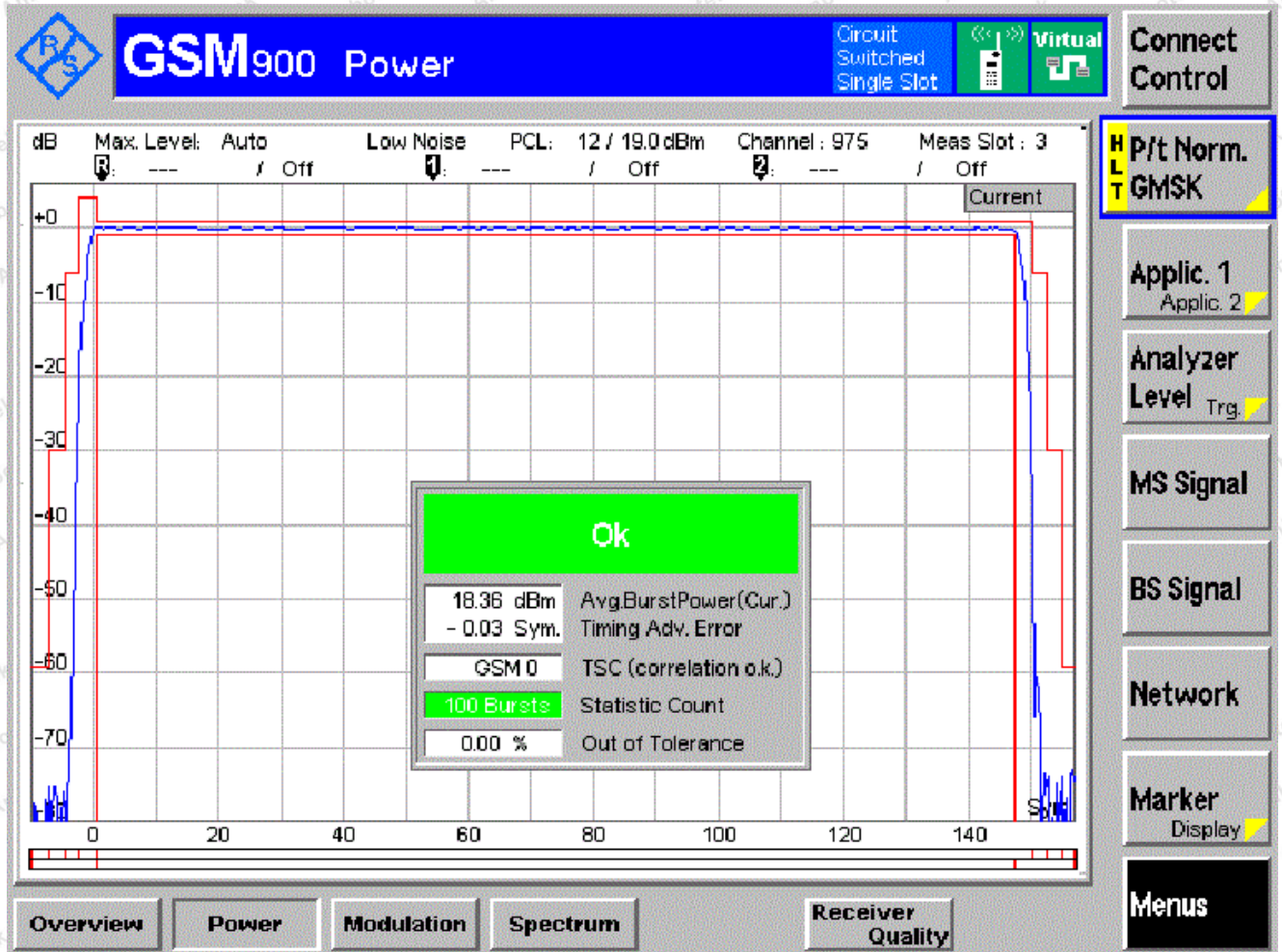
Channel MCH PCL 5



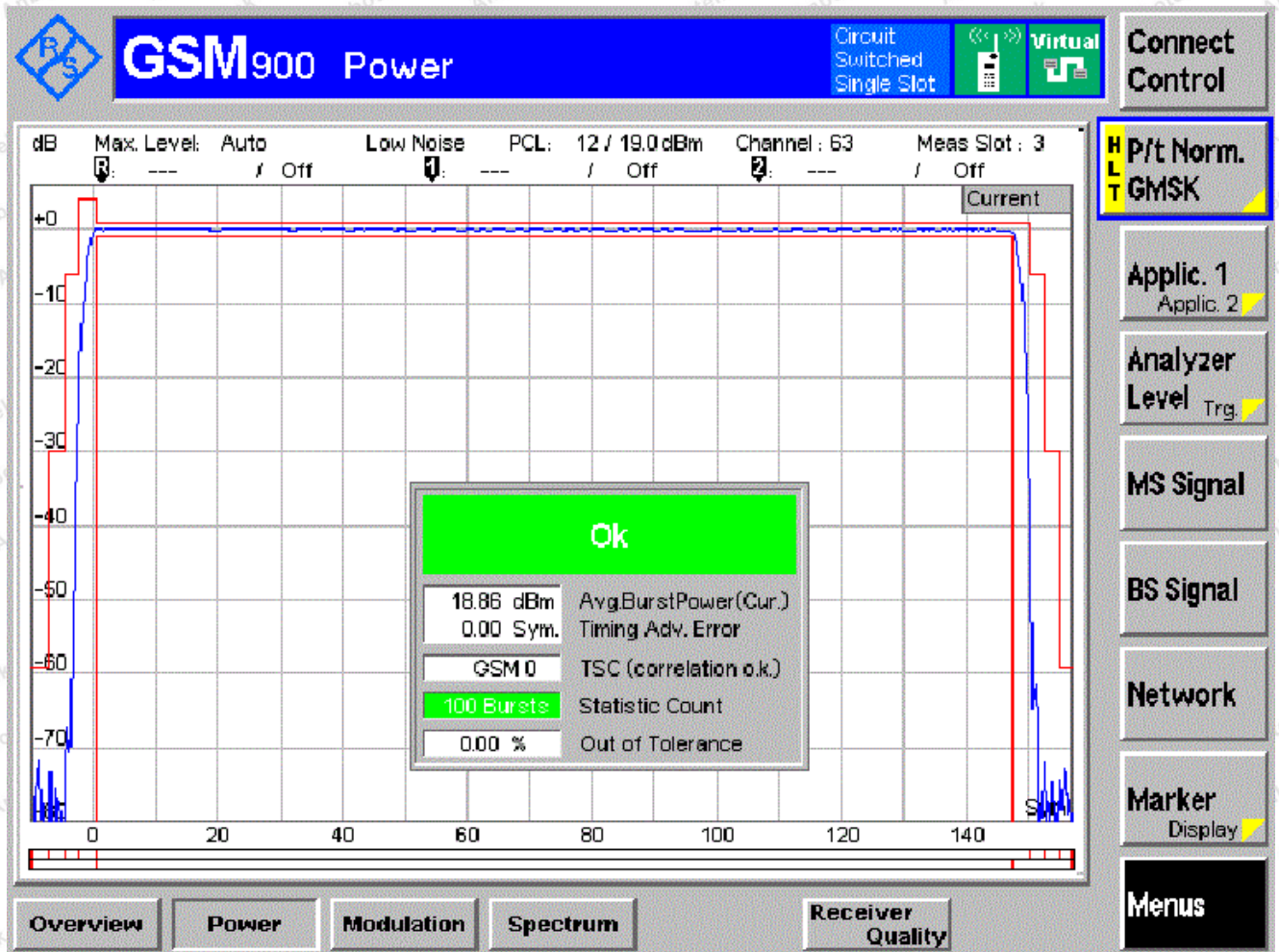
Channel HCH PCL 5



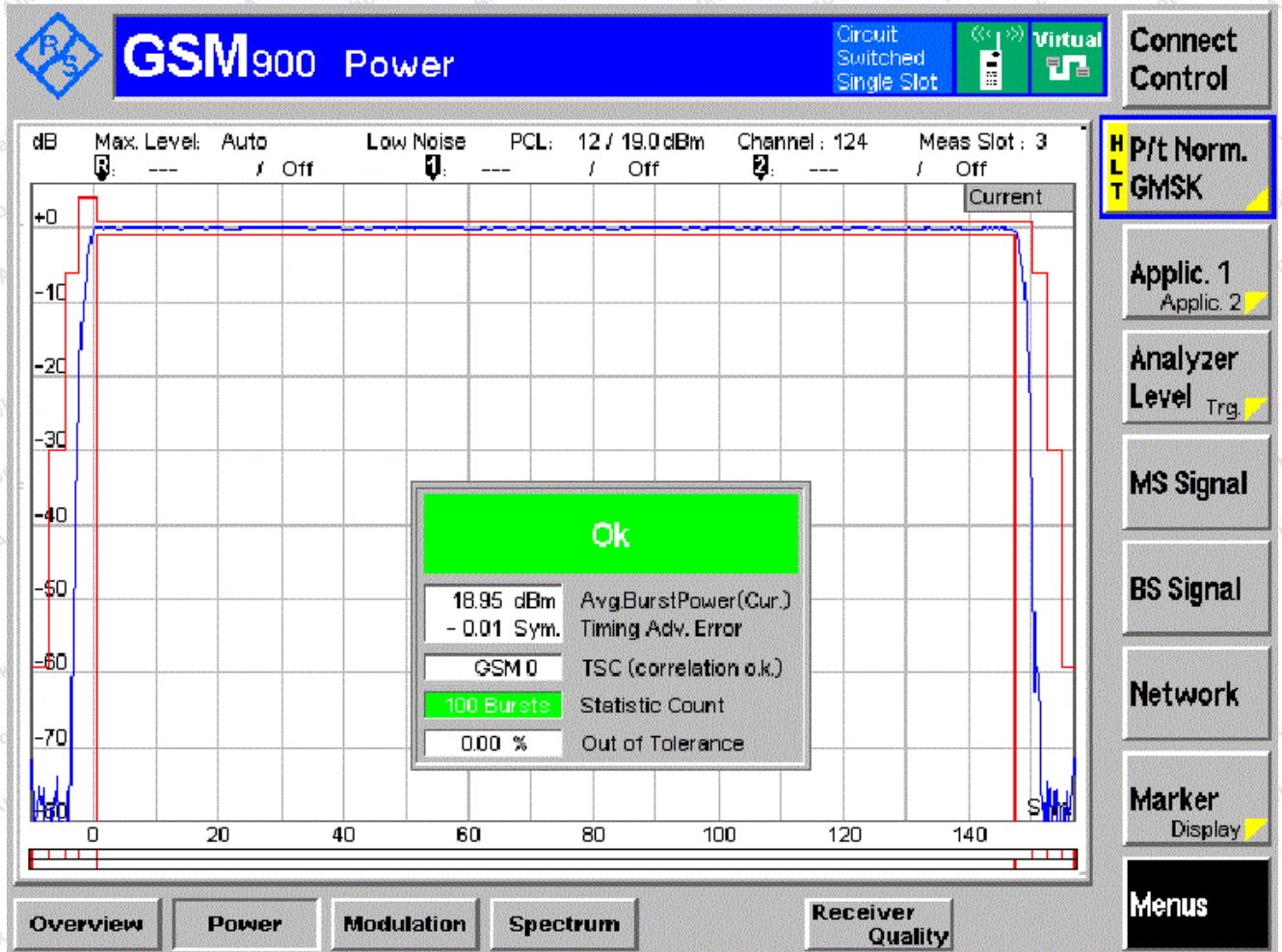
Channel LCH PCL 12



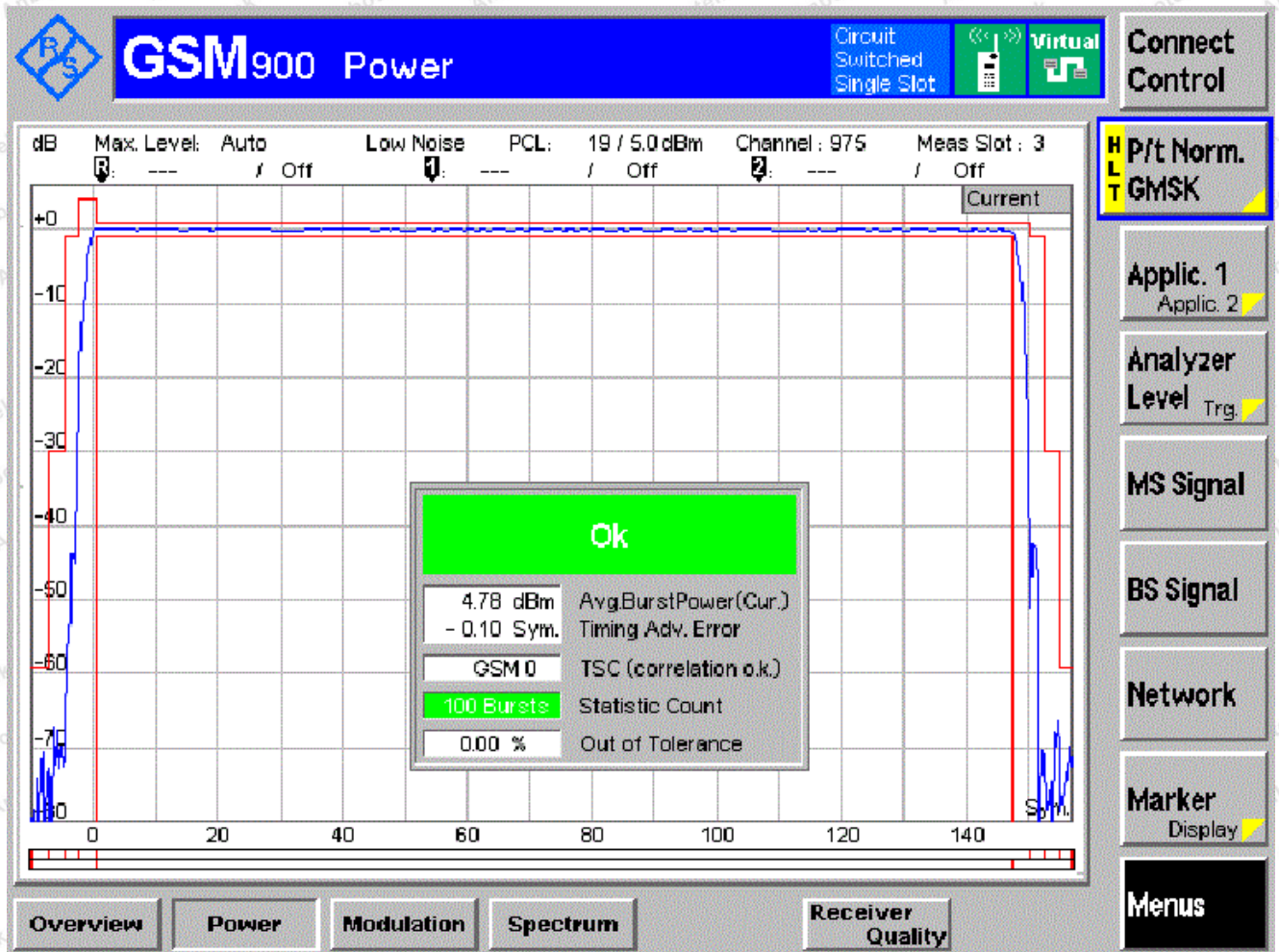
Channel MCH PCL 12



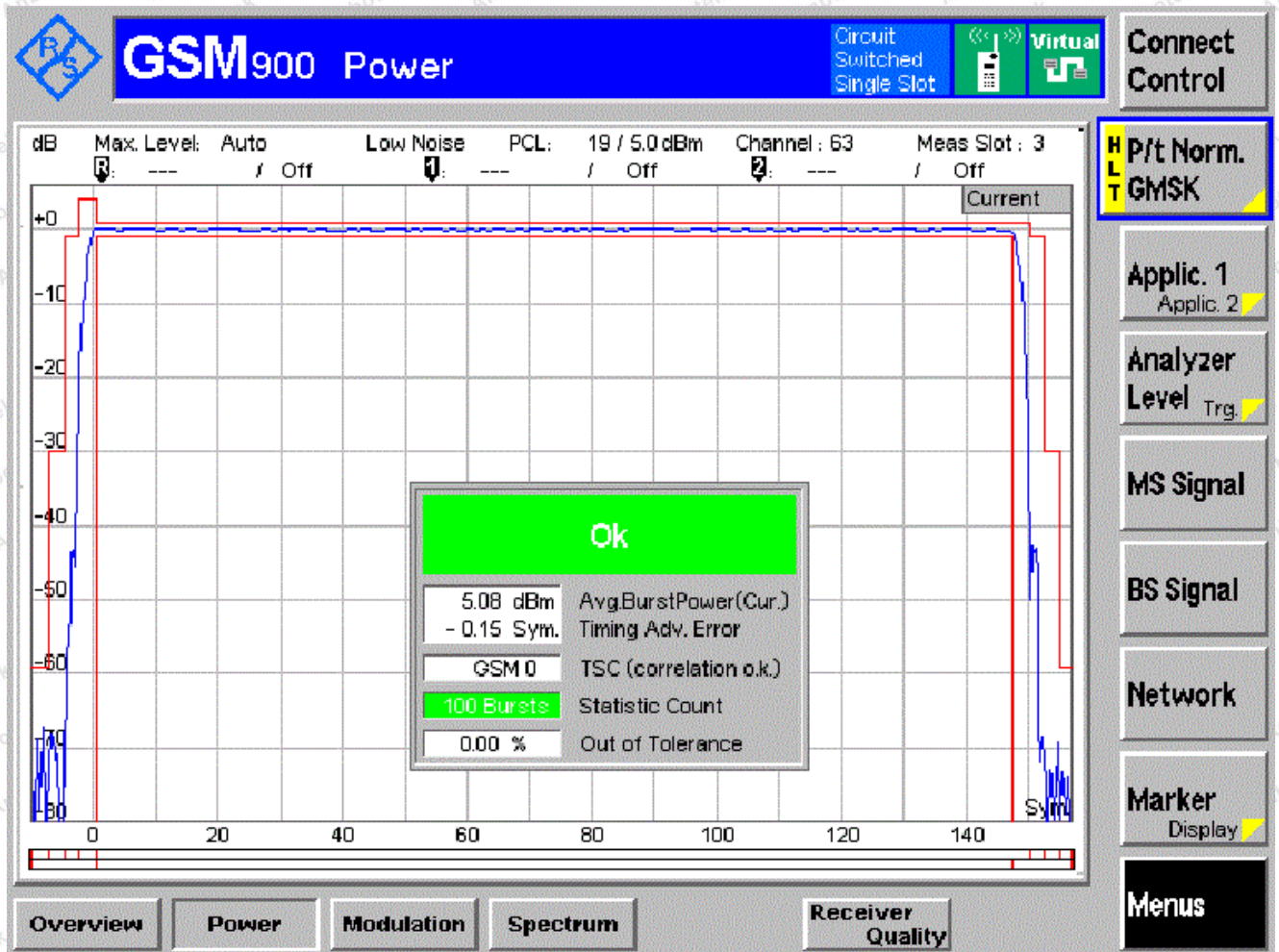
Channel HCH PCL 12



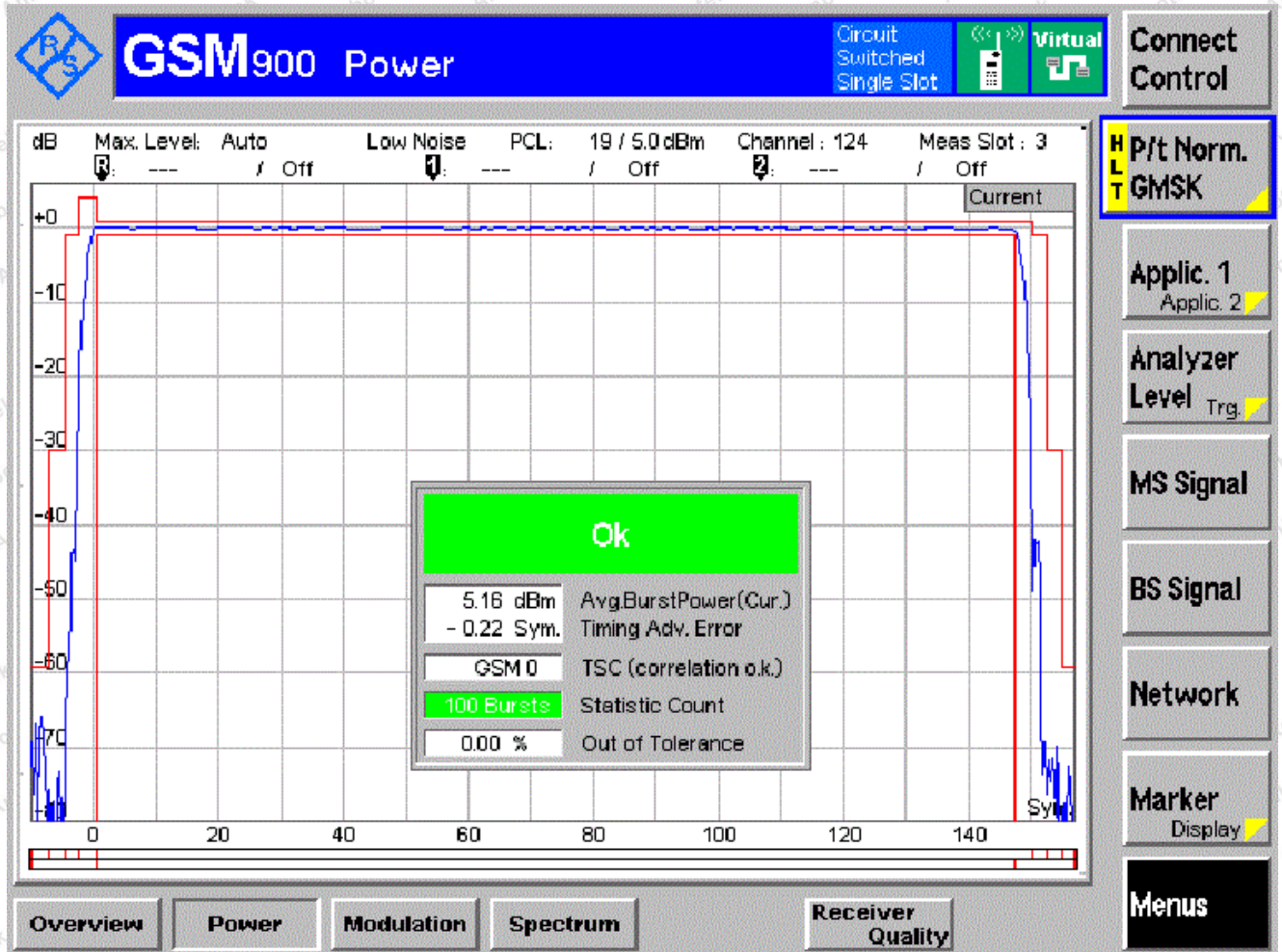
Channel LCH PCL 19



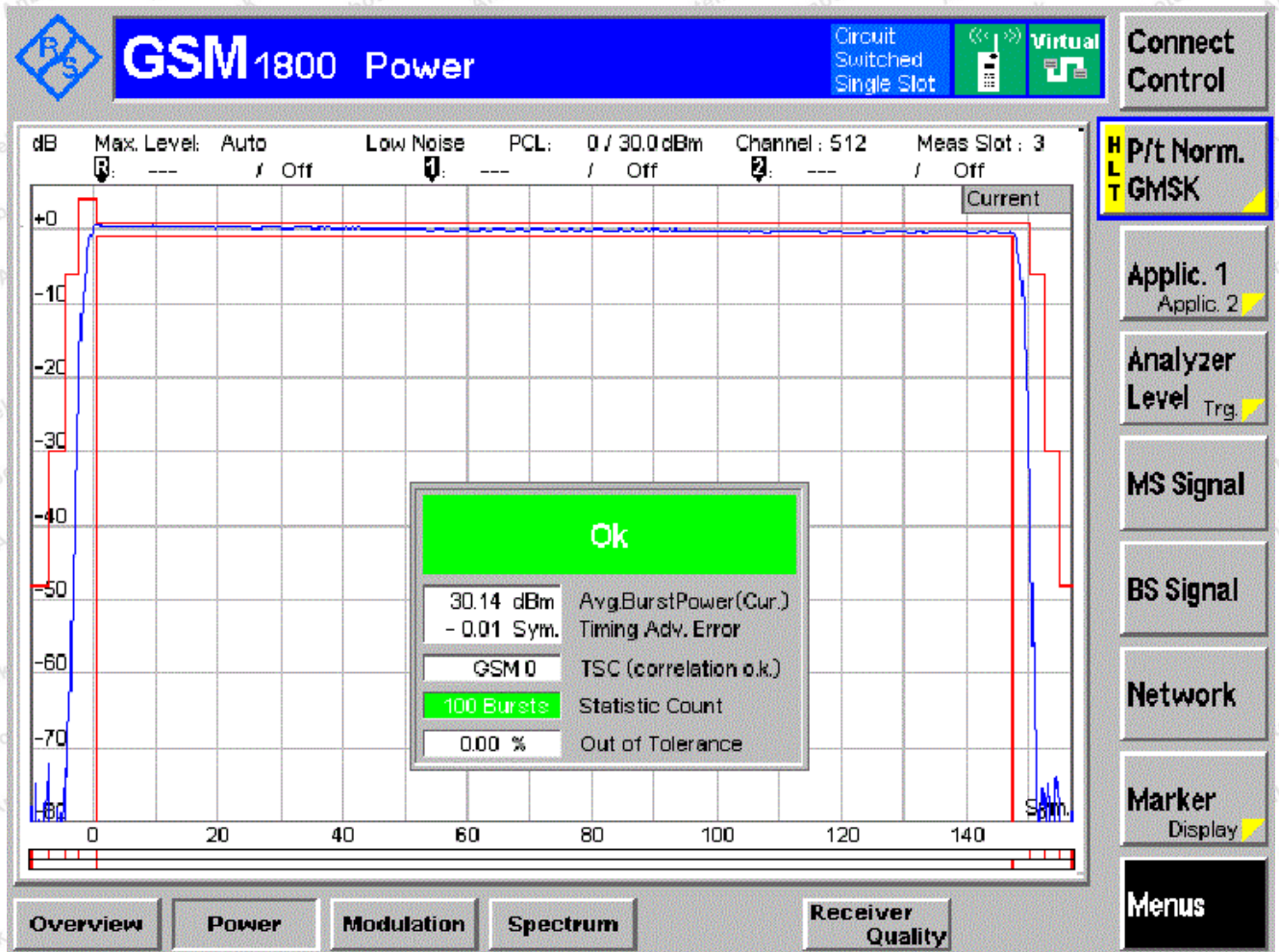
Channel MCH PCL 19



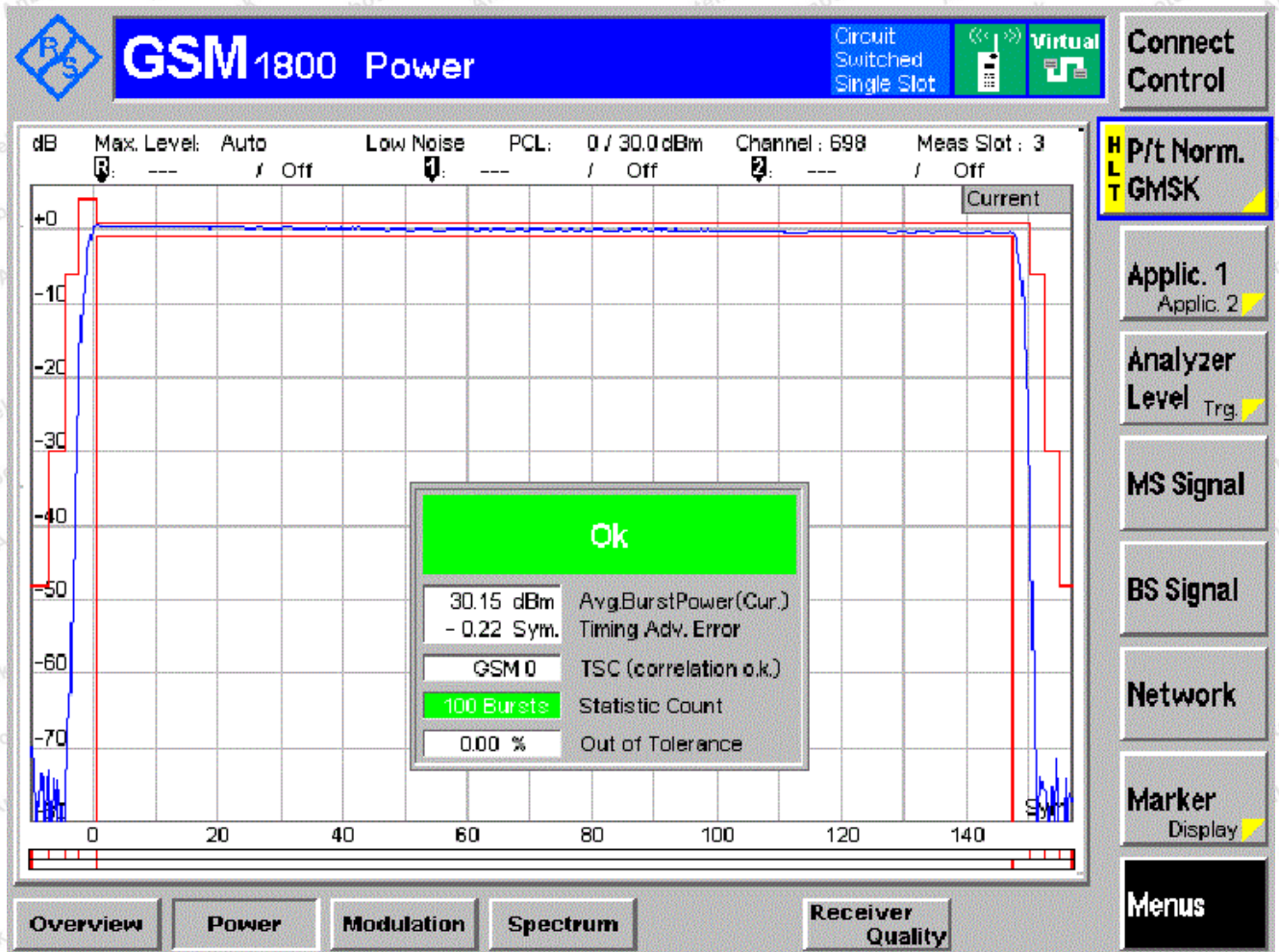
Channel HCH PCL 19



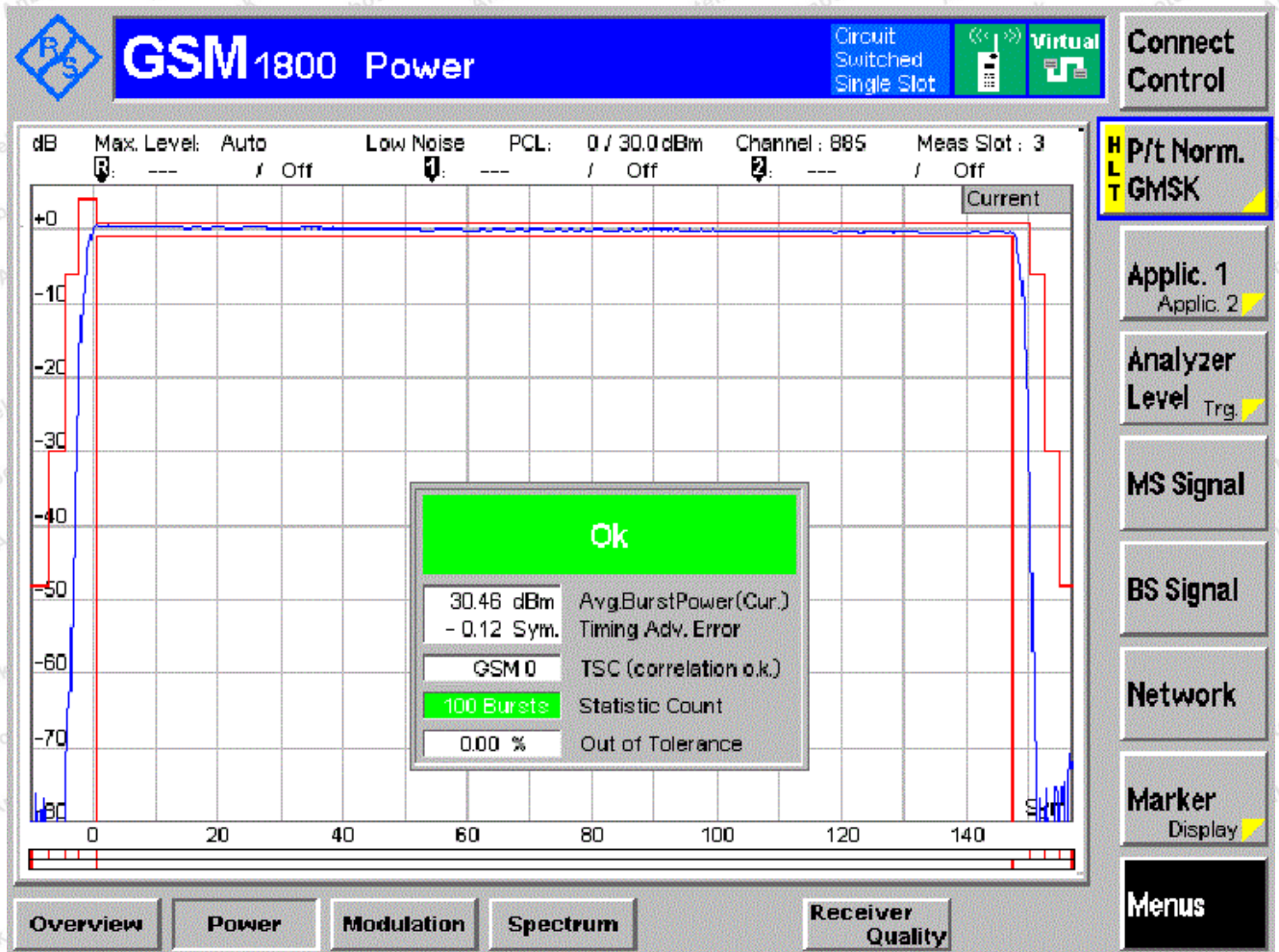
DCS1800 TN/VN
Channel LCH PCL 0



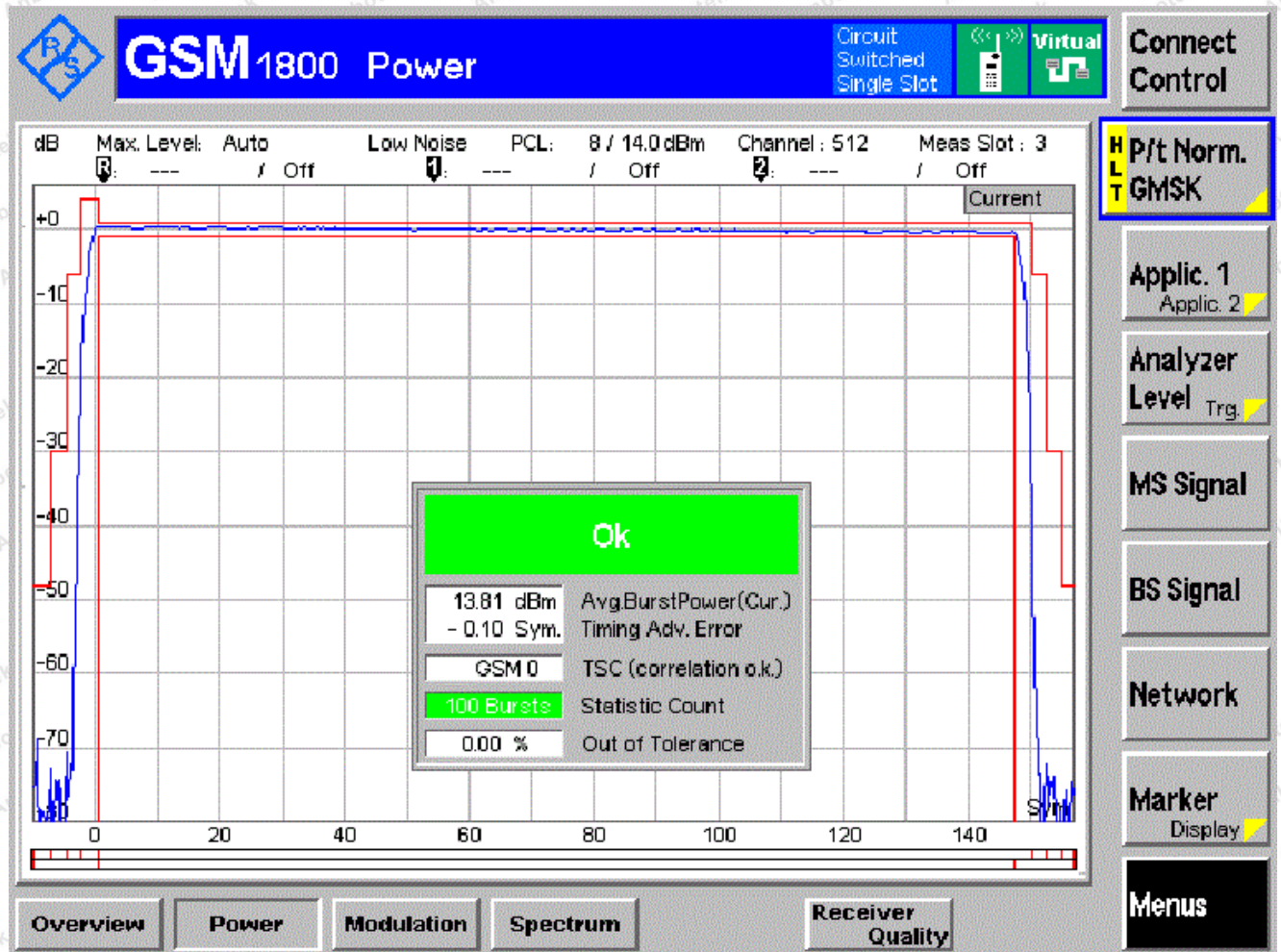
Channel MCH PCL 0



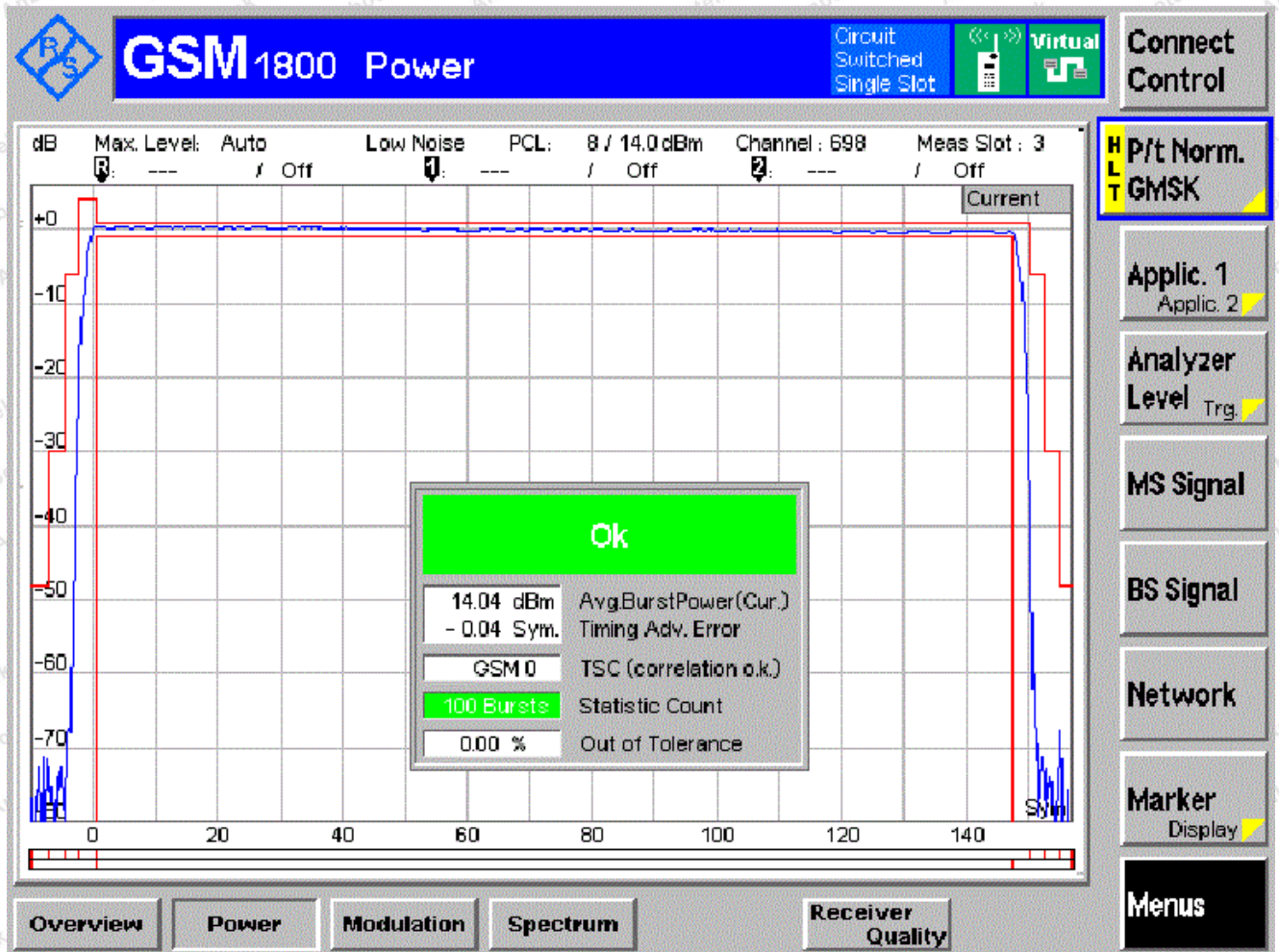
Channel HCH PCL 0



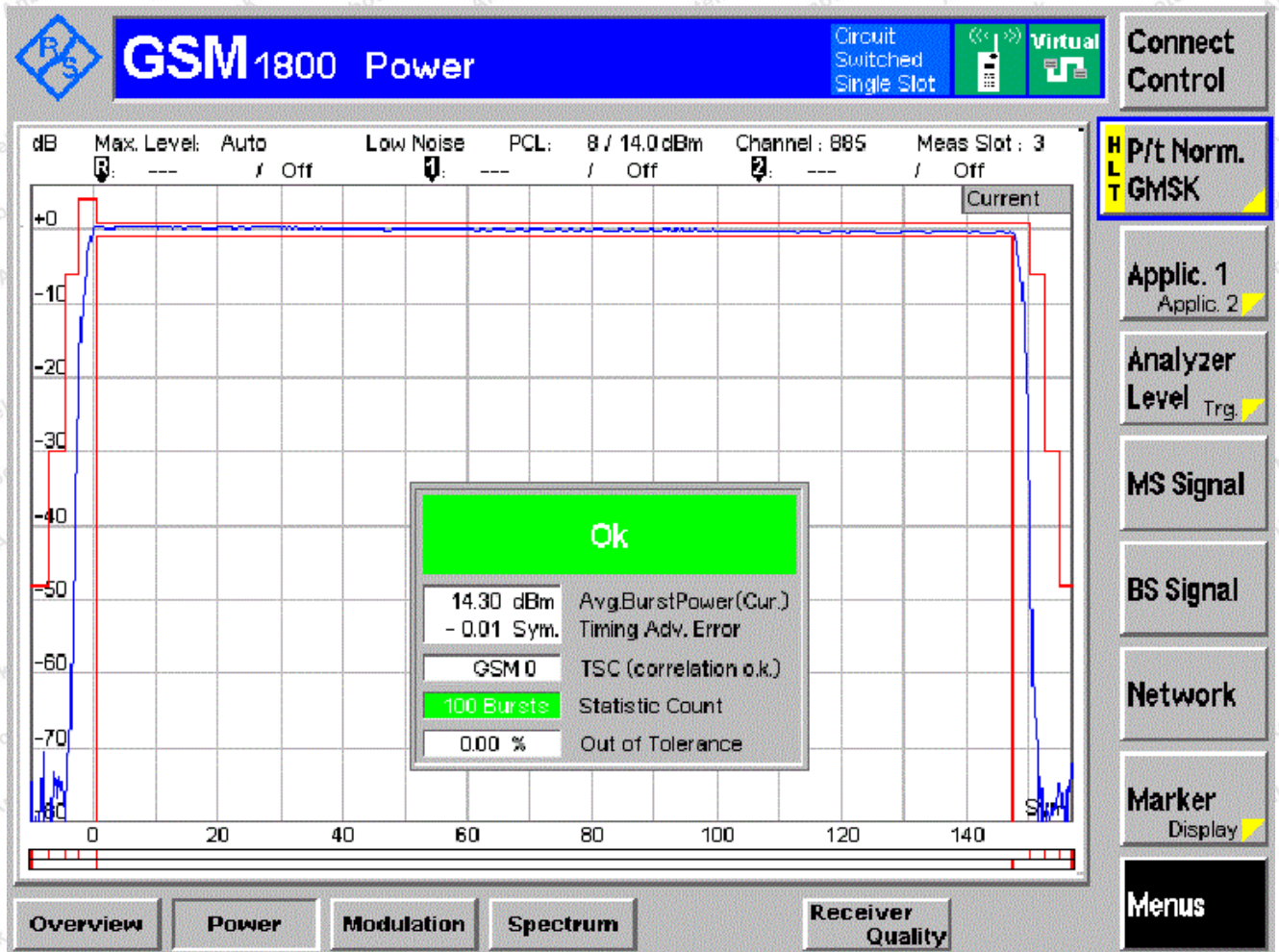
Channel LCH PCL 8



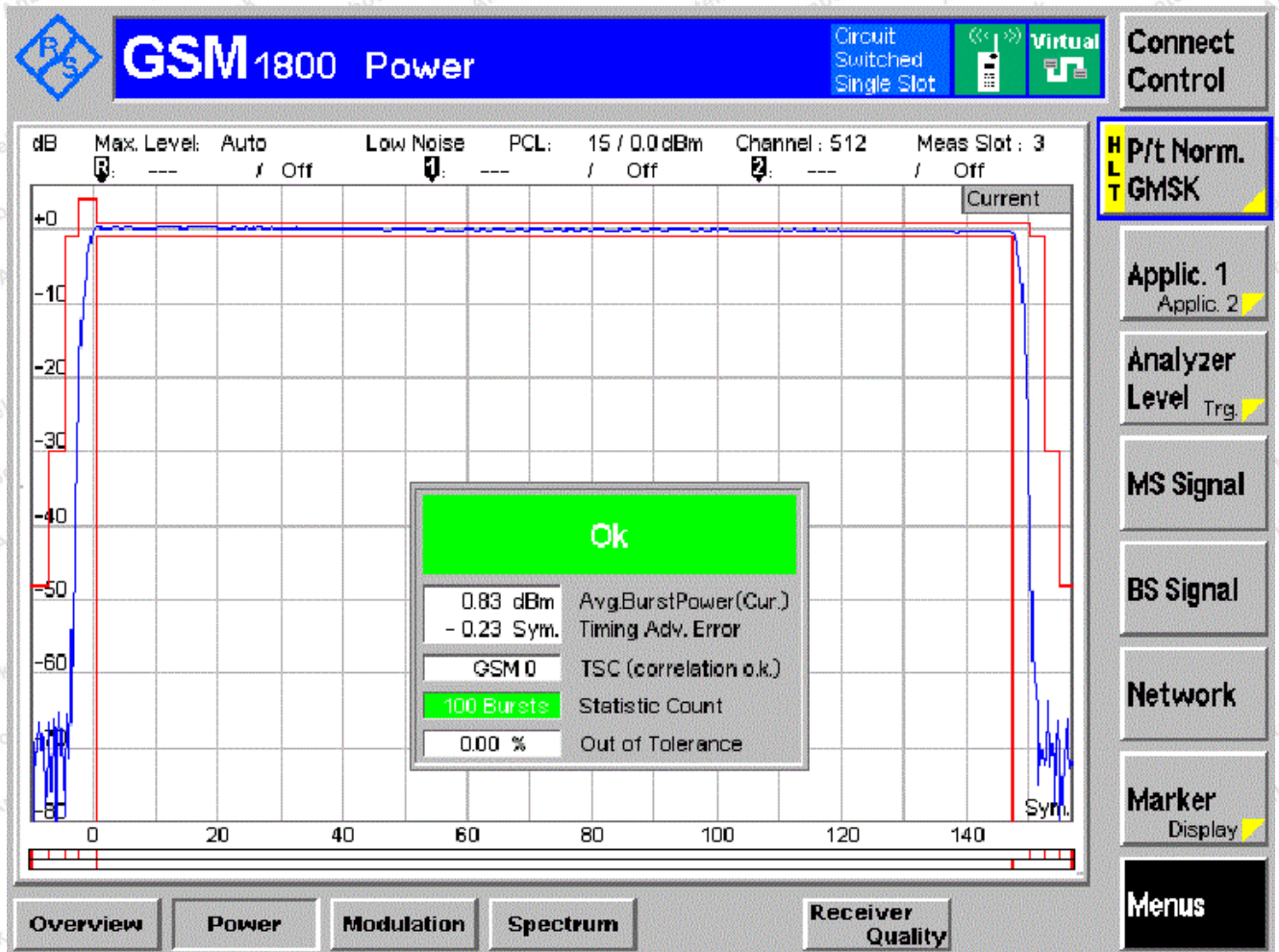
Channel MCH PCL 8



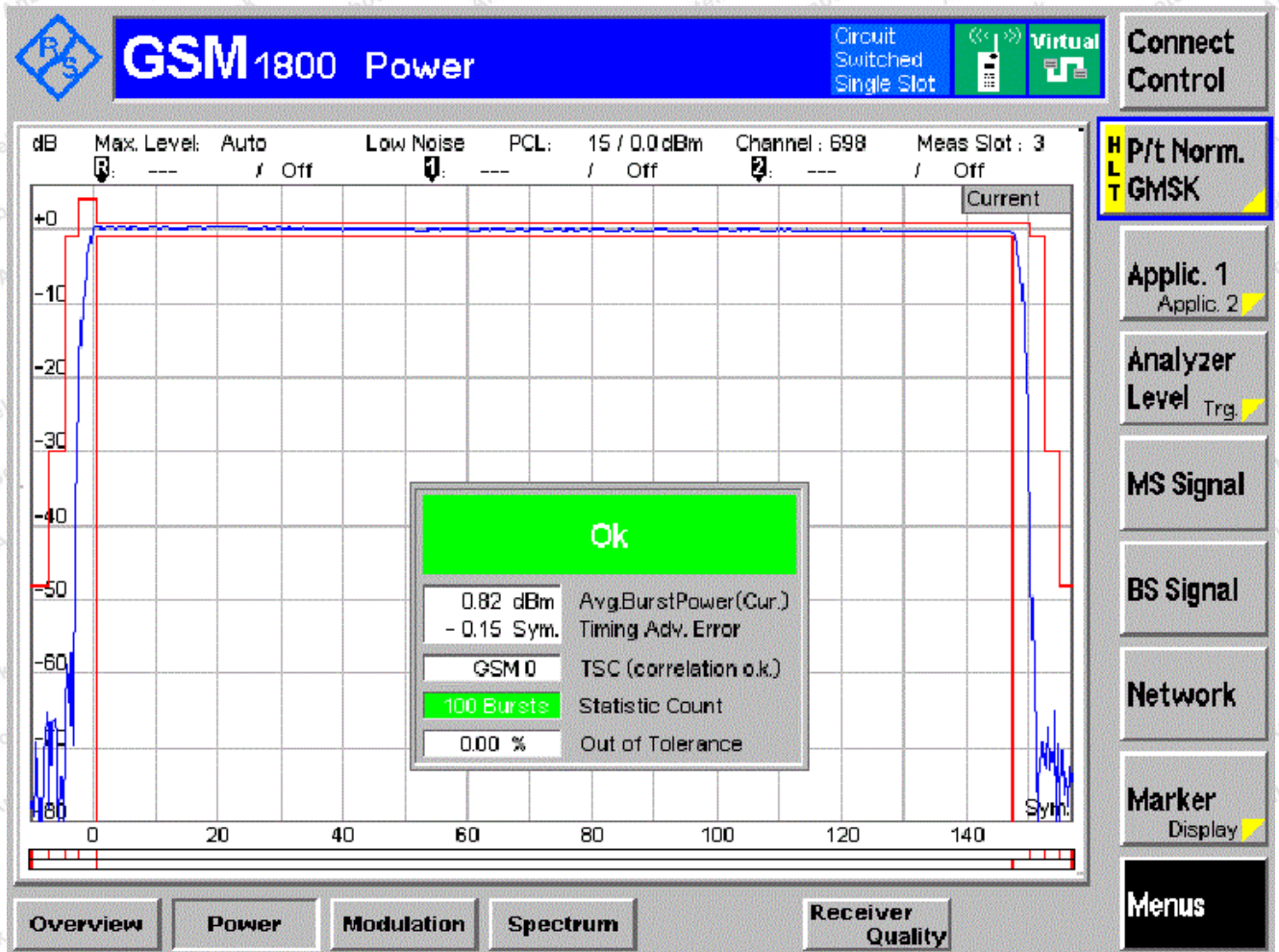
Channel HCH PCL 8



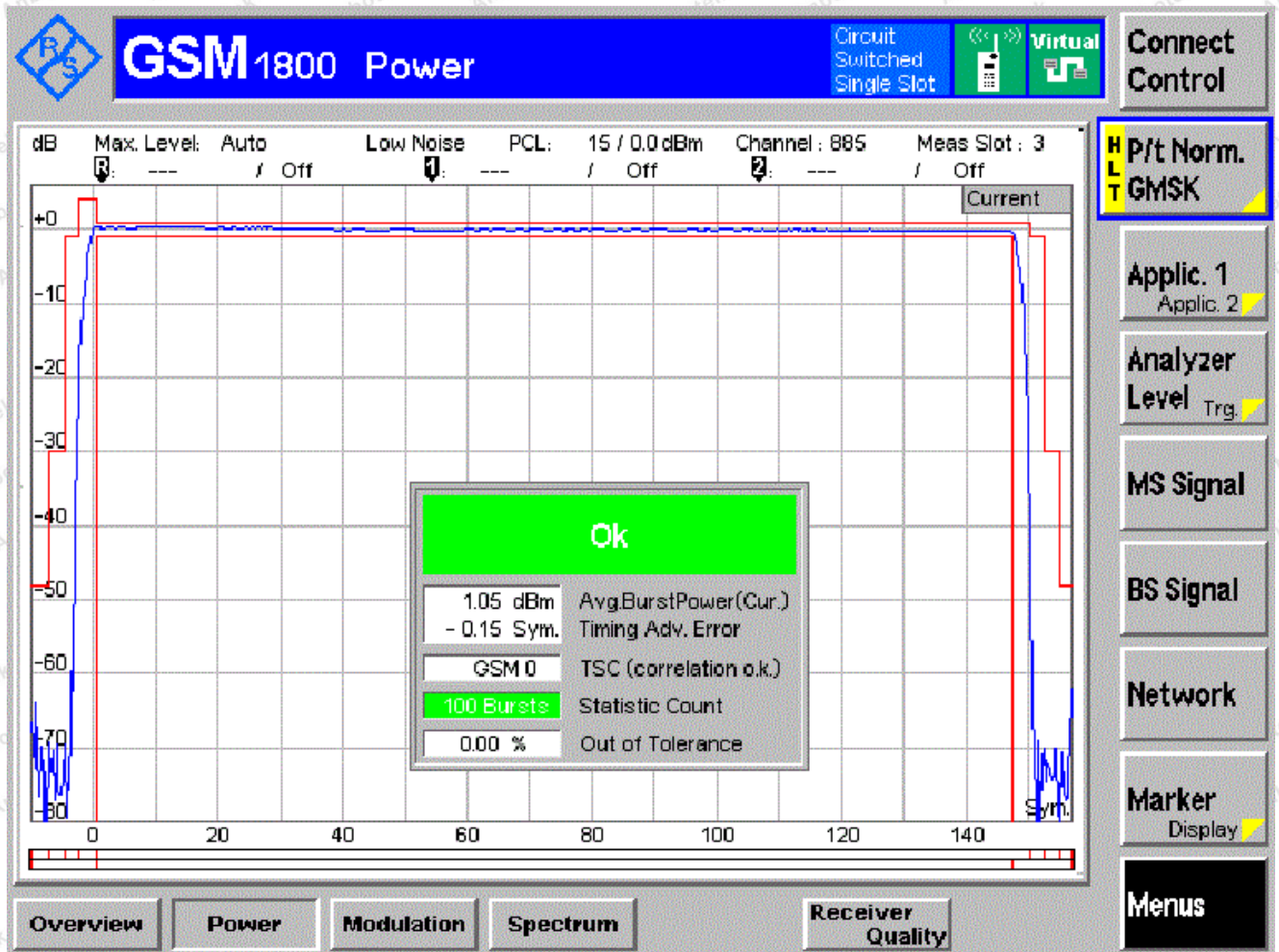
Channel LCH PCL 8



Channel MCH PCL 15



Channel HCH PCL 15

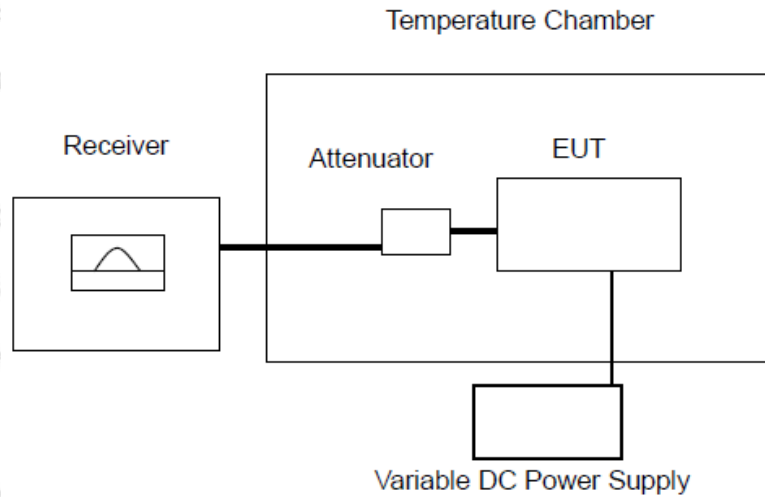


7. Transmitter - Output RF Spectrum

7.1. Test Limit

Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.4.5

7.2. Test Setup



7.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.4.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.4.4 for the measurement method.

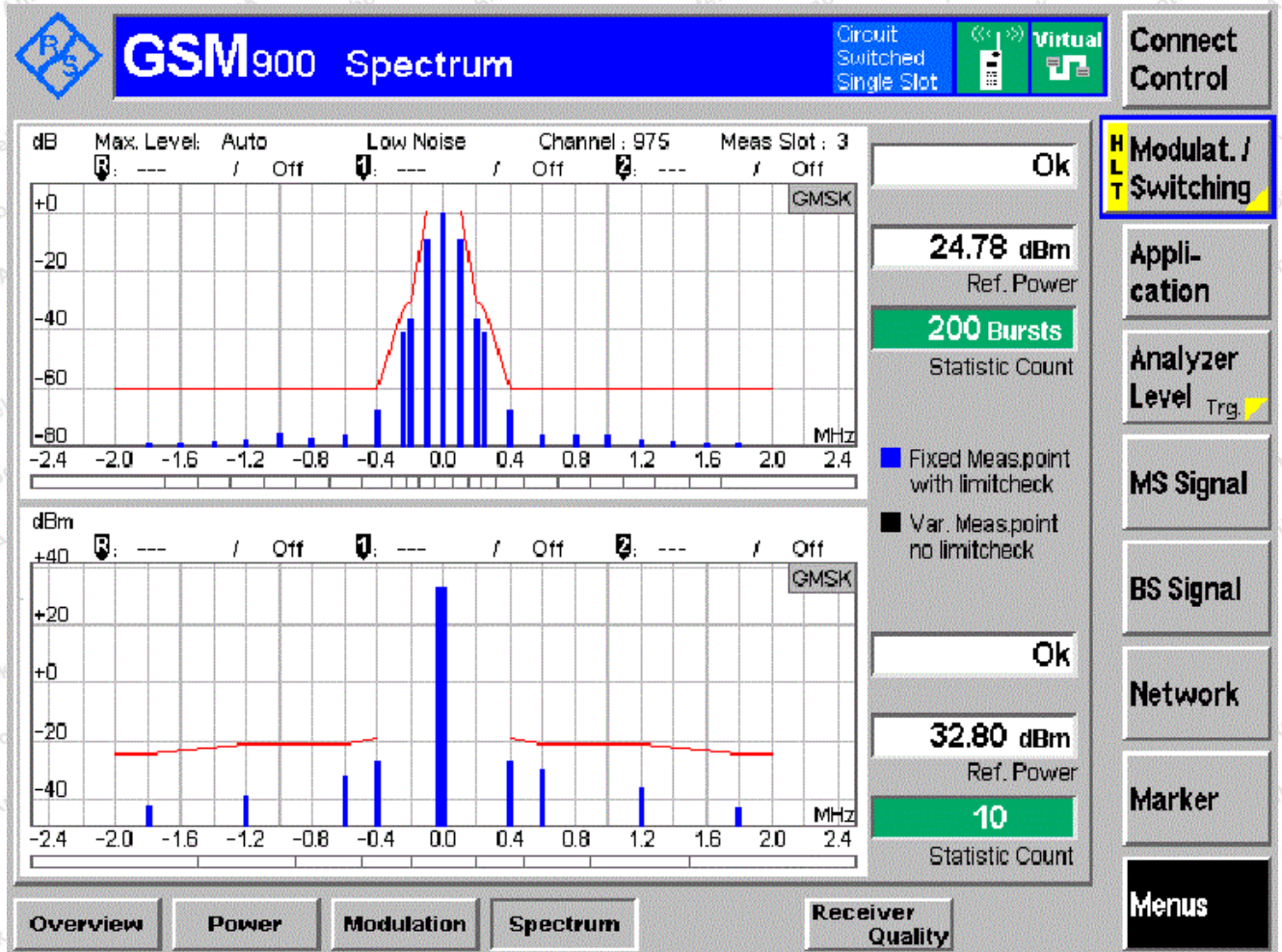
7.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

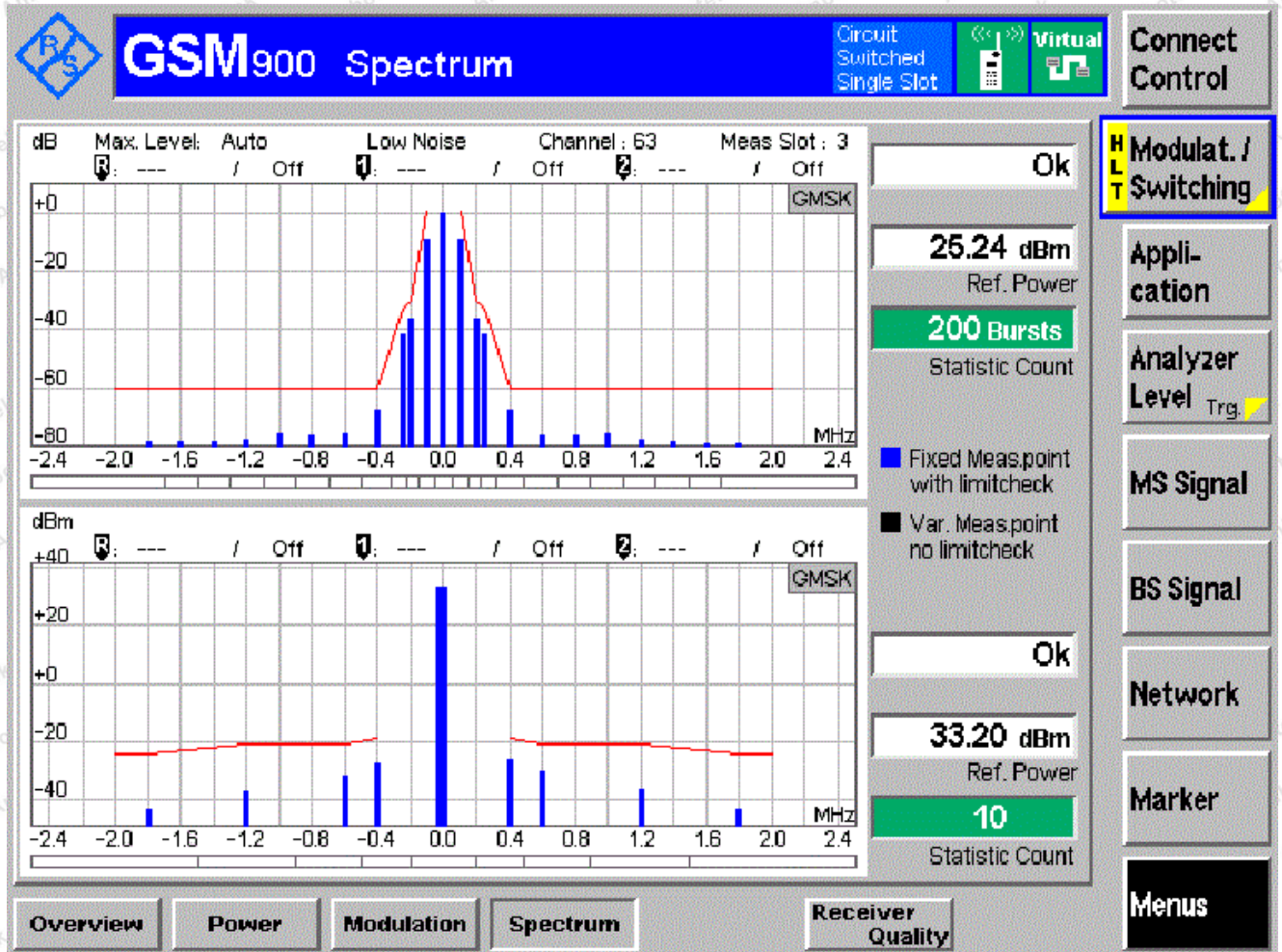
Modulation& switch Spectrum	Power level	Result		
		Traffic Channels		
GSM900		LCH	MCH	HCH
TN/VN	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TL/VL	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TL/VH	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TH/VL	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TH/VH	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS

Modulation& switch Spectrum	Power level	Result		
		Traffic Channels		
DCS1800		LCH	MCH	HCH
TN/VN	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TL/VL	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TL/VH	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TH/VL	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TH/VH	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS

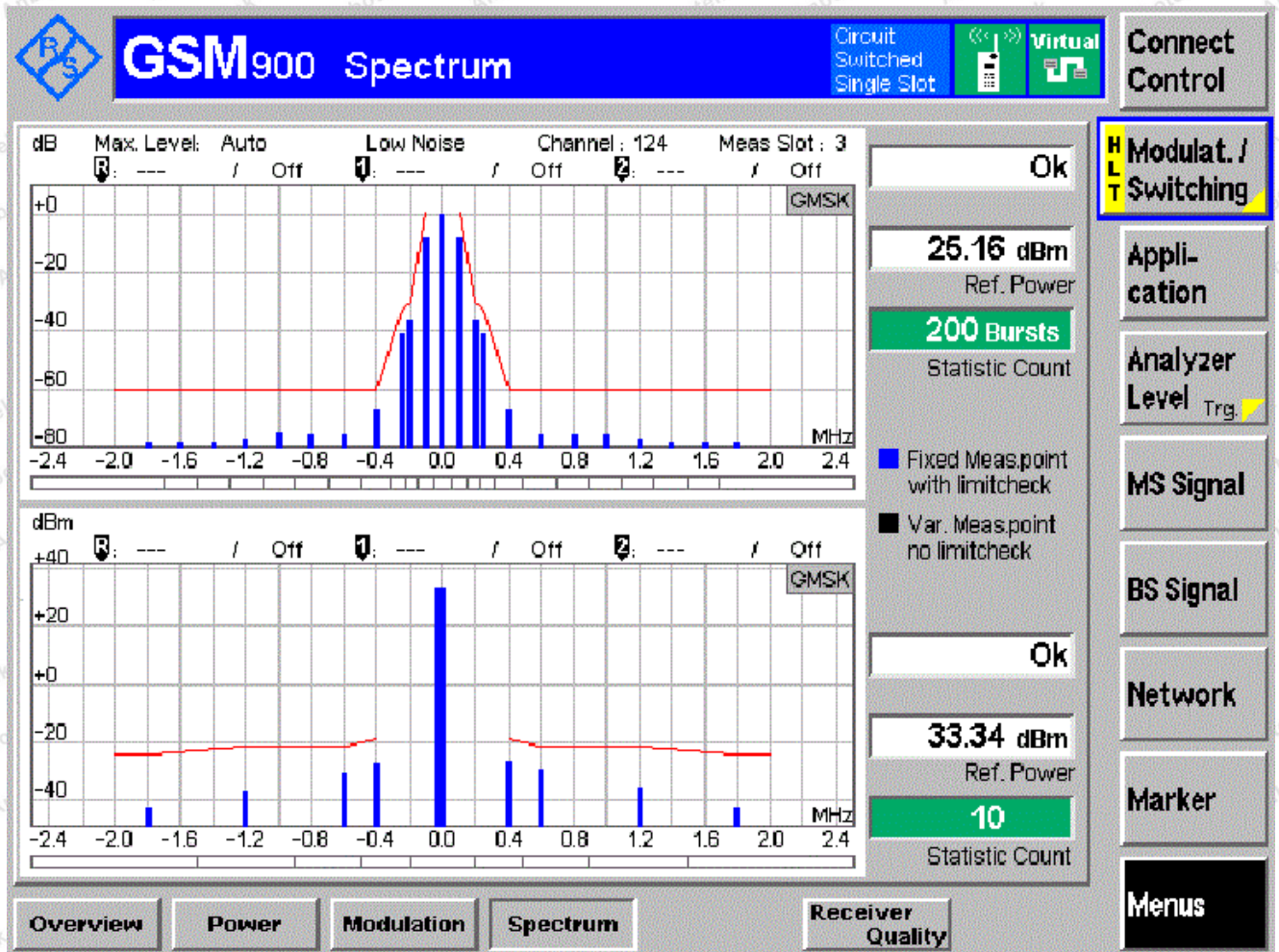
a) GSM 900 TN/VN
Channel LCH PCL 5



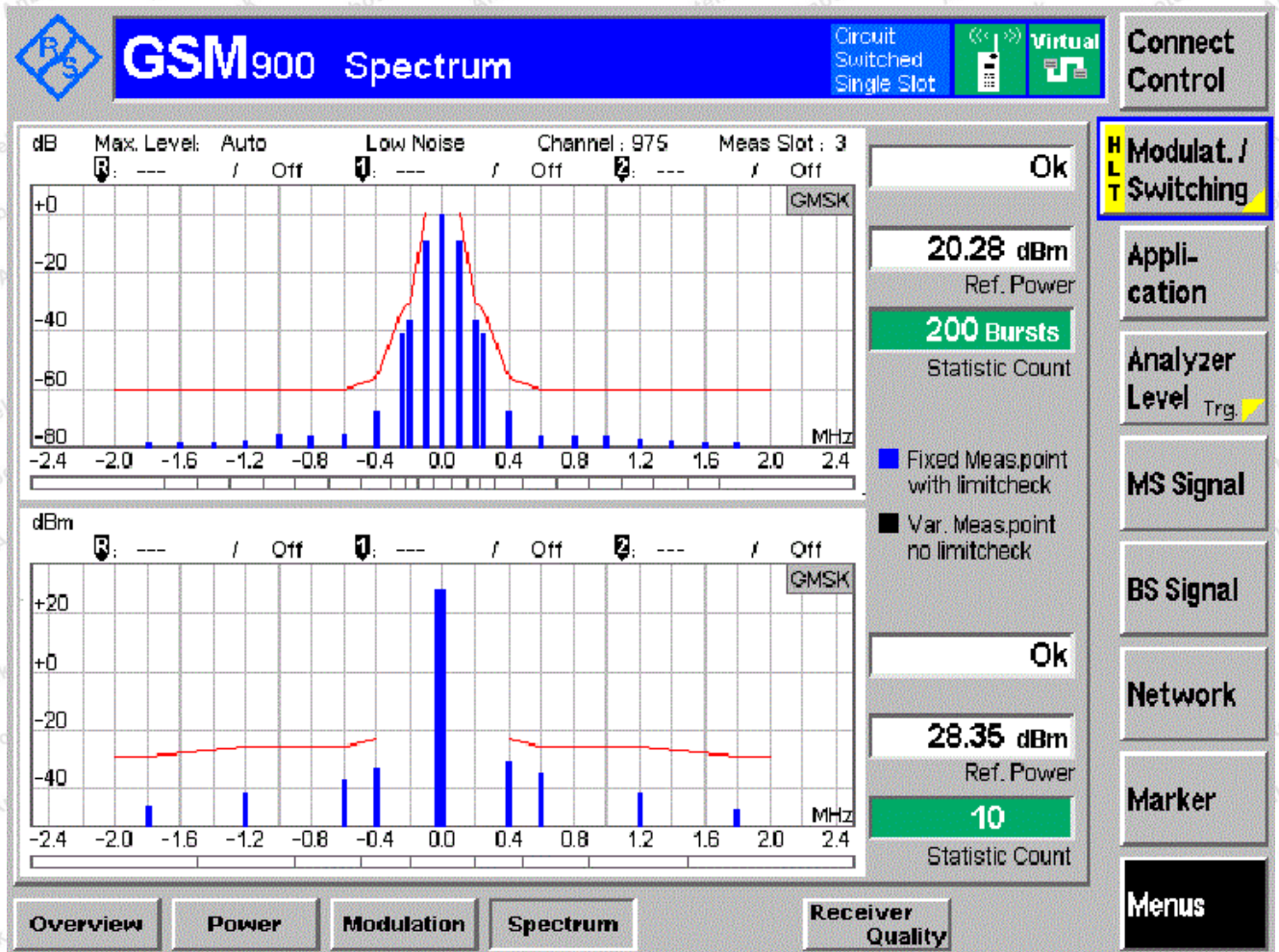
Channel MCH PCL 5



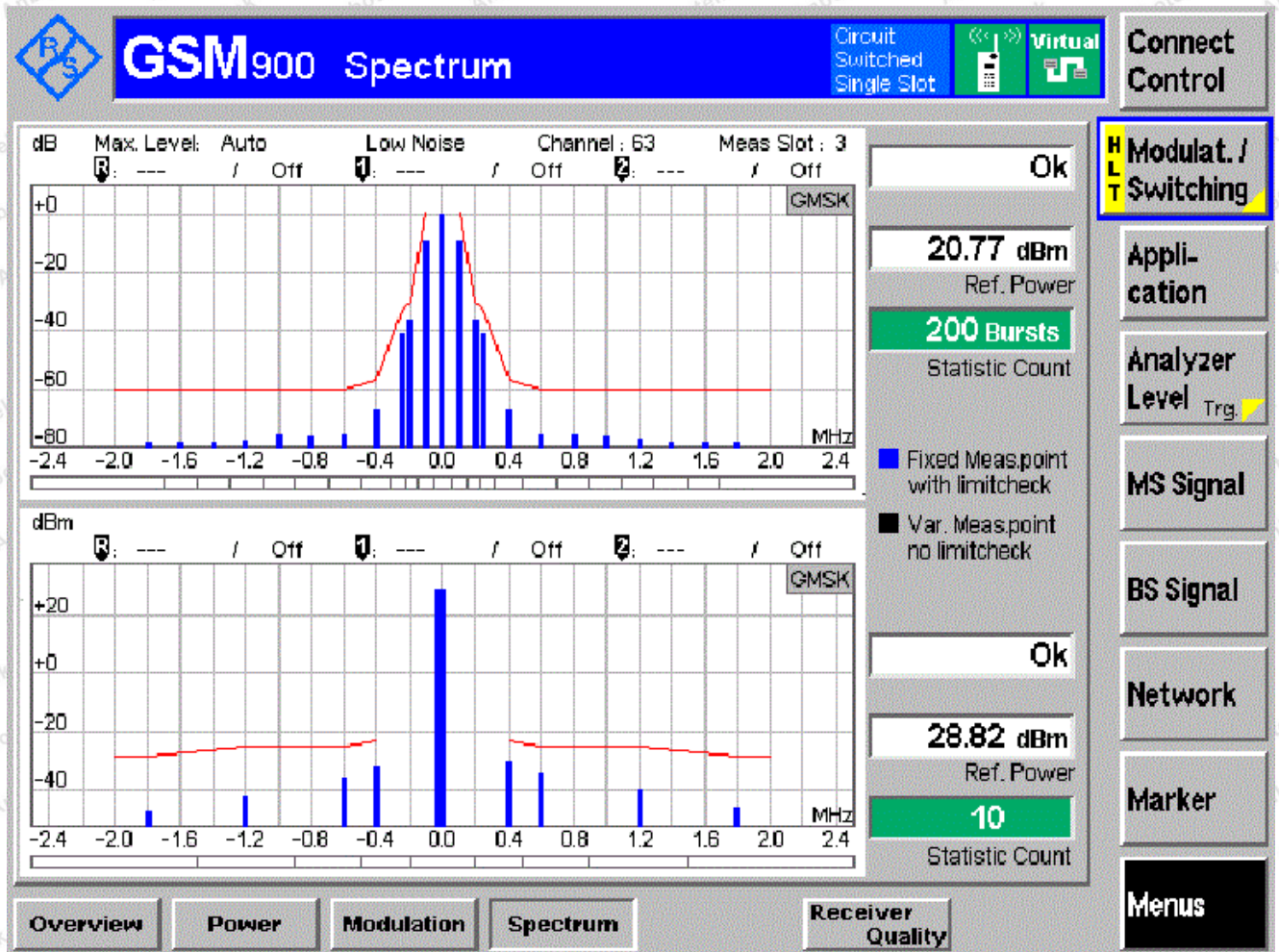
Channel HCH PCL 5



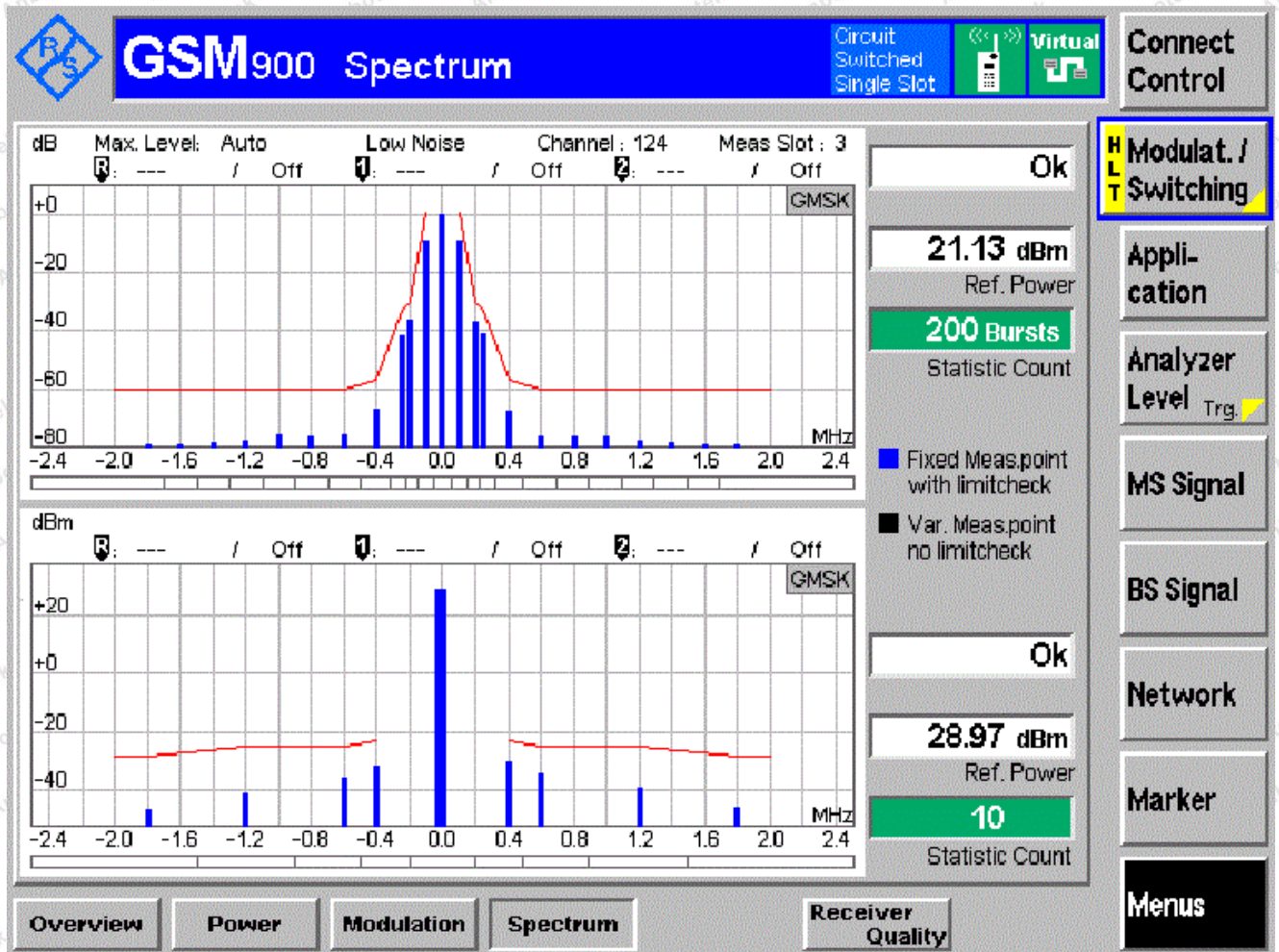
Channel LCH PCL 7



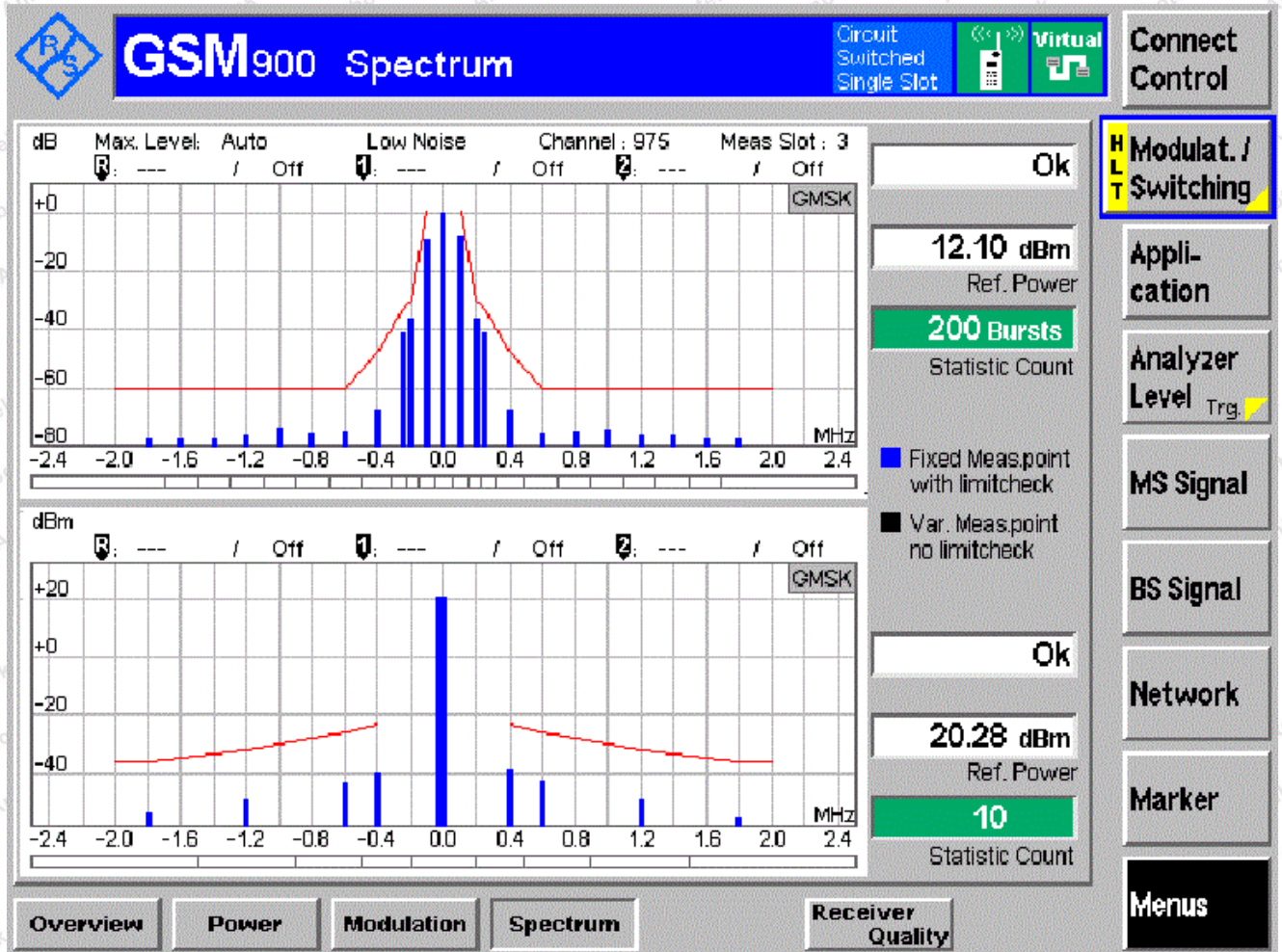
Channel MCH PCL 7



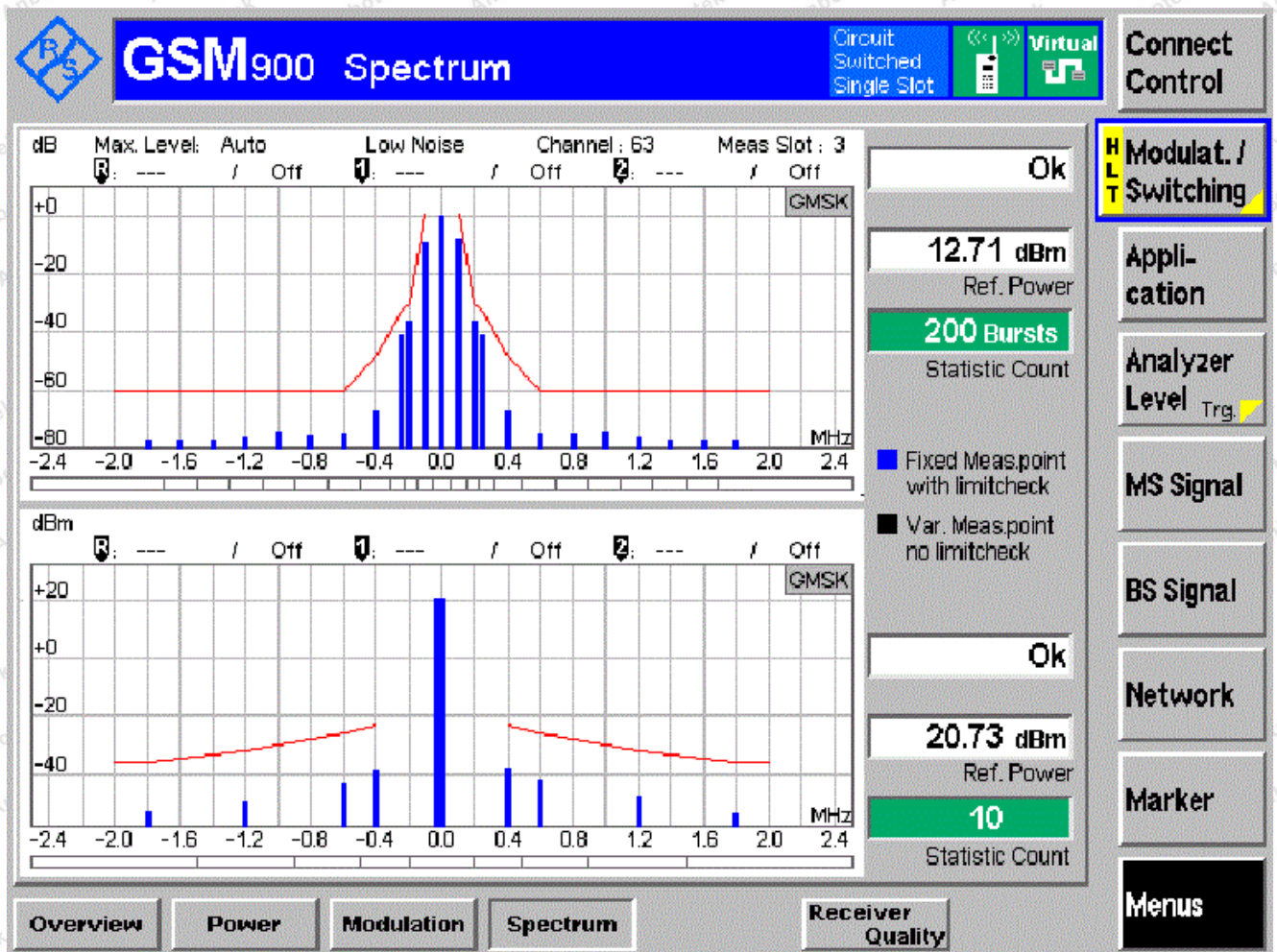
Channel HCH PCL 7



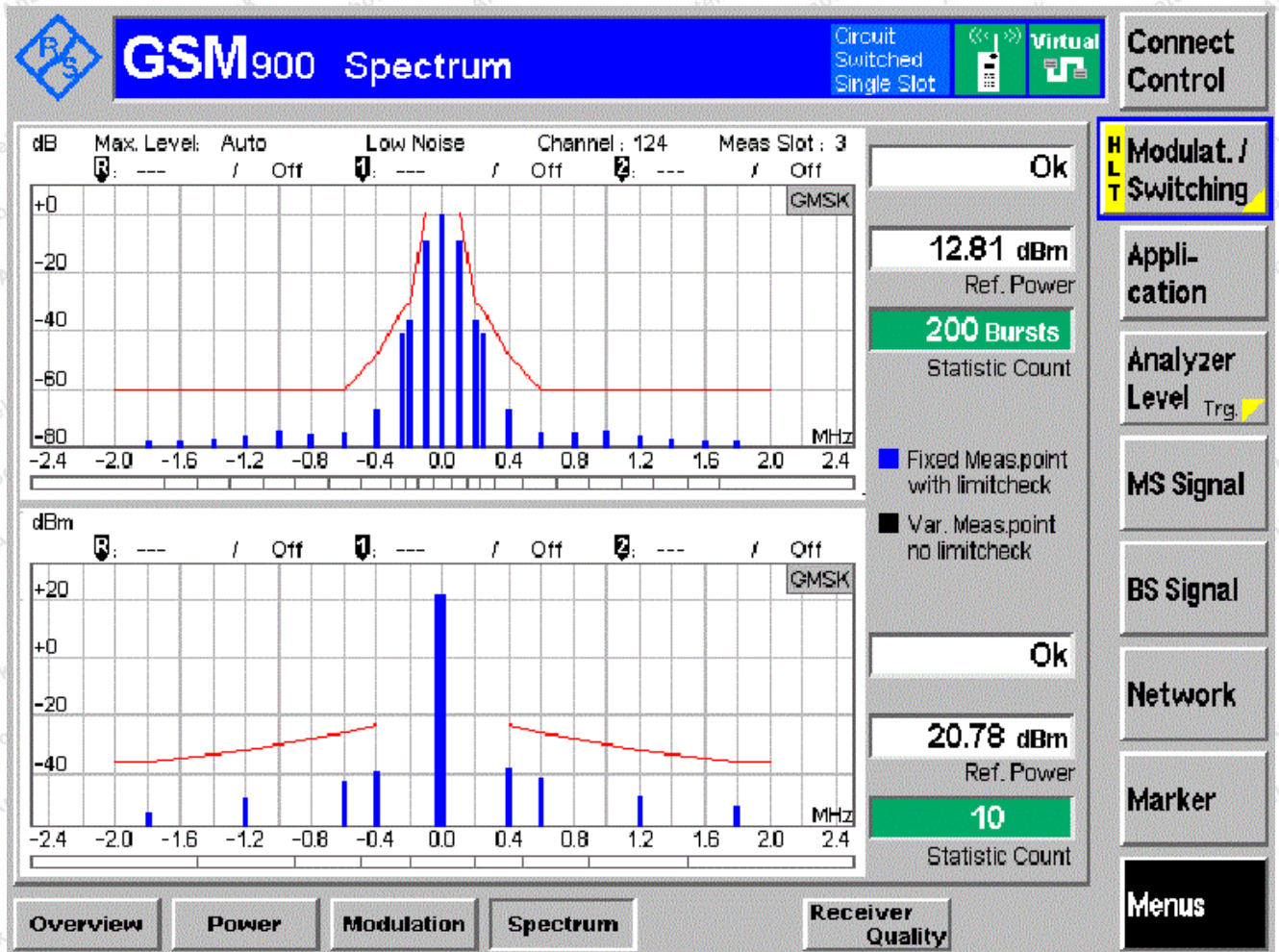
Channel LCH PCL 11



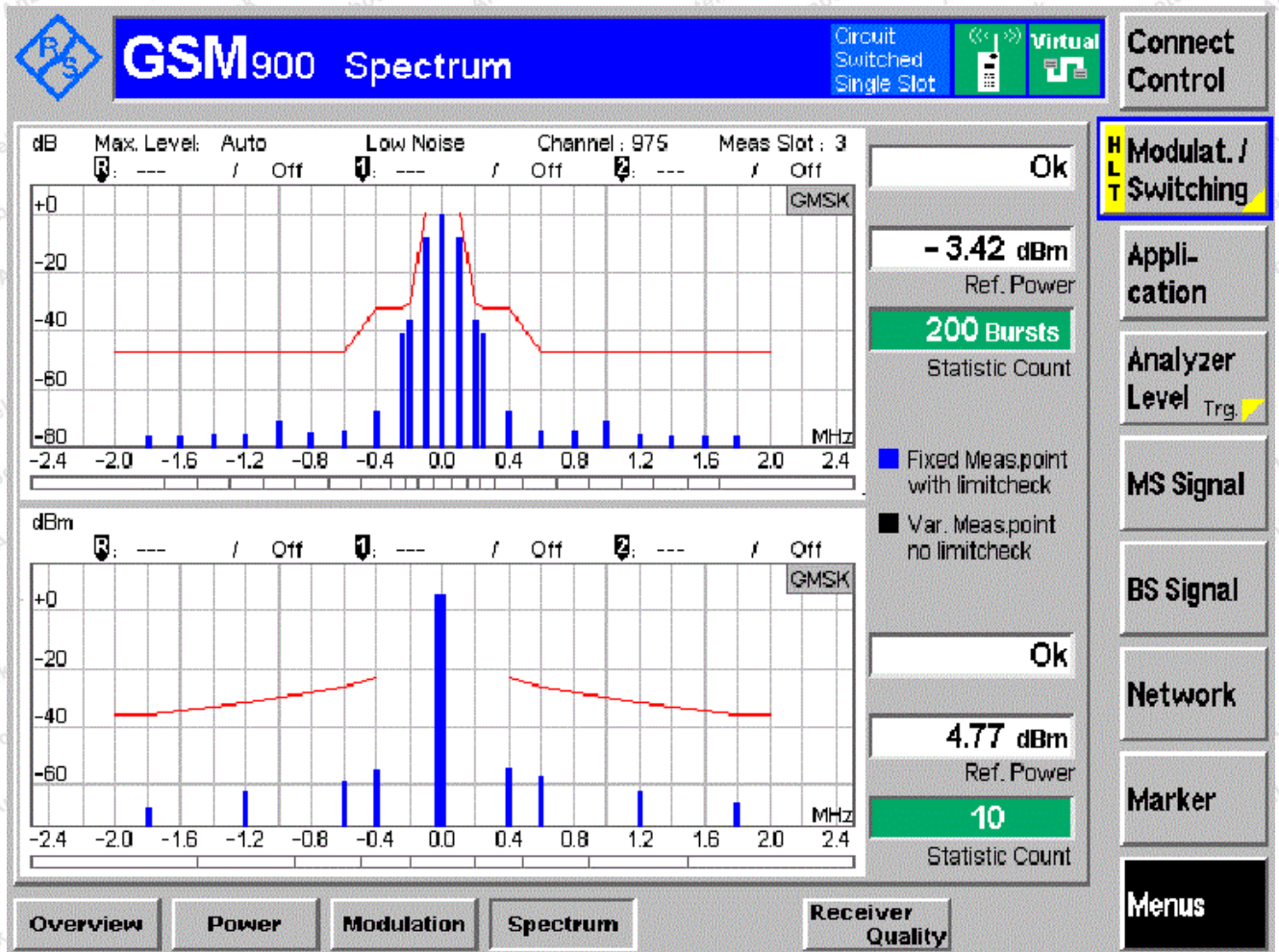
Channel MCH PCL 11



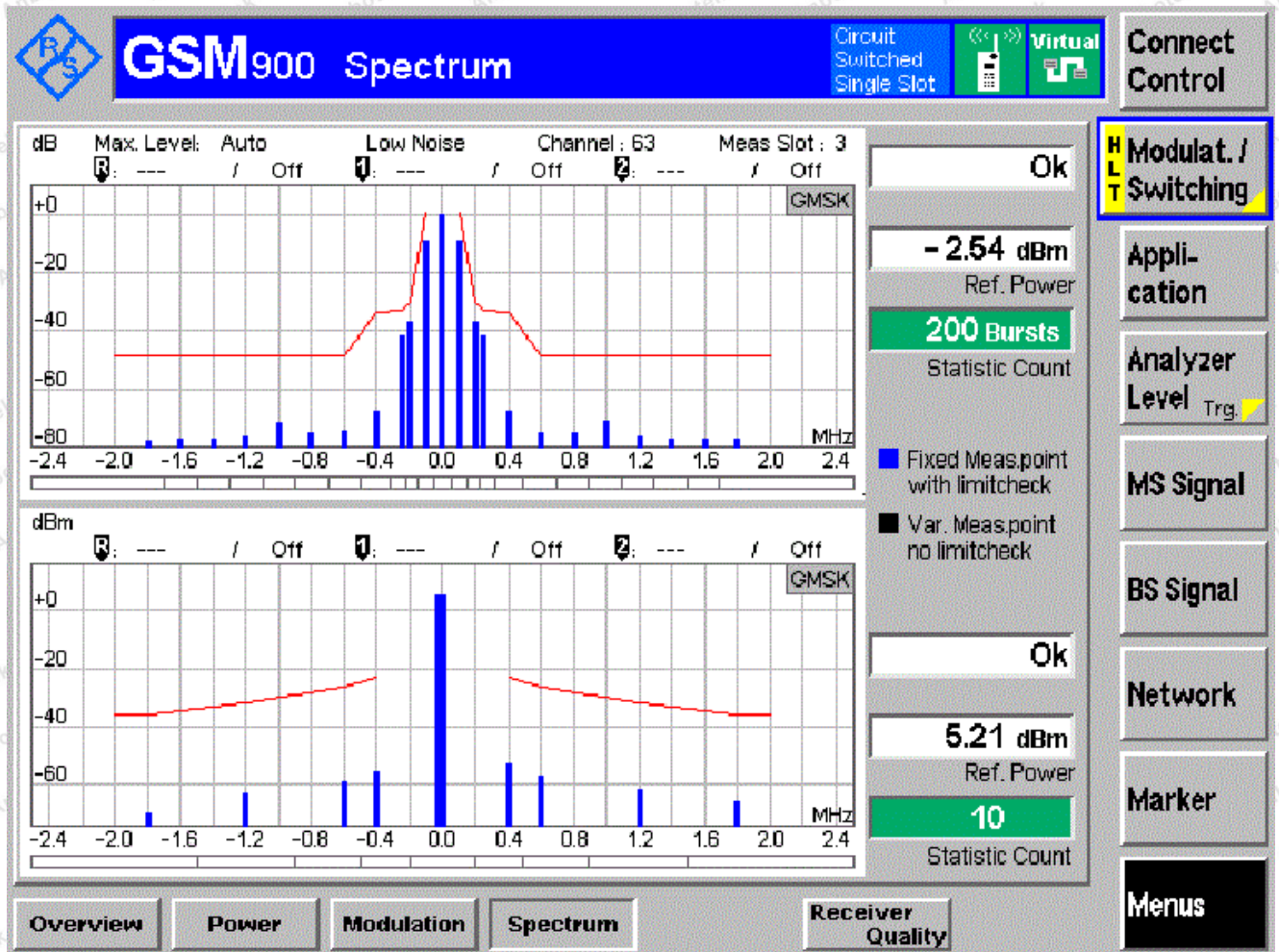
Channel HCH PCL 11



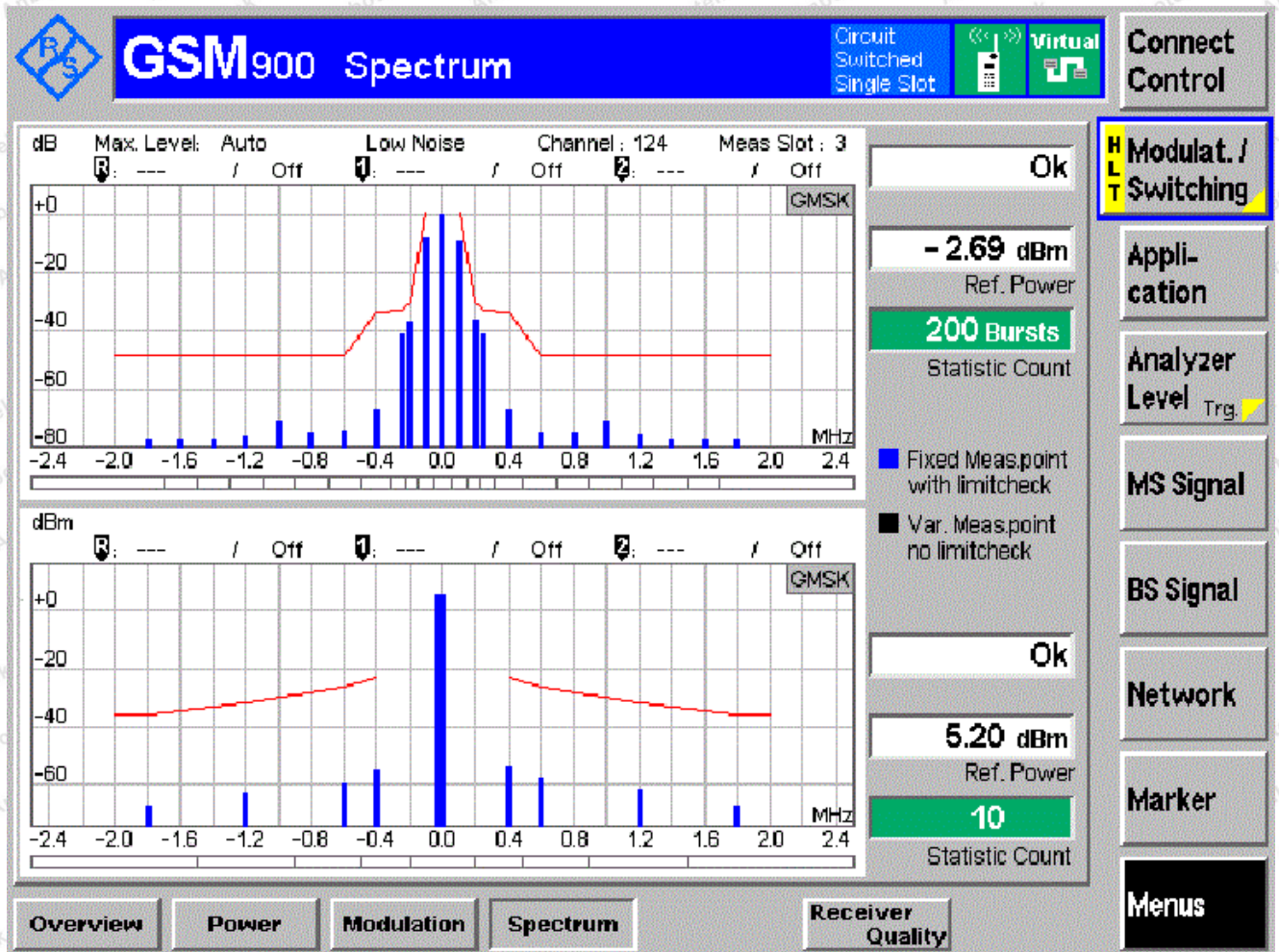
Channel LCH PCL 19



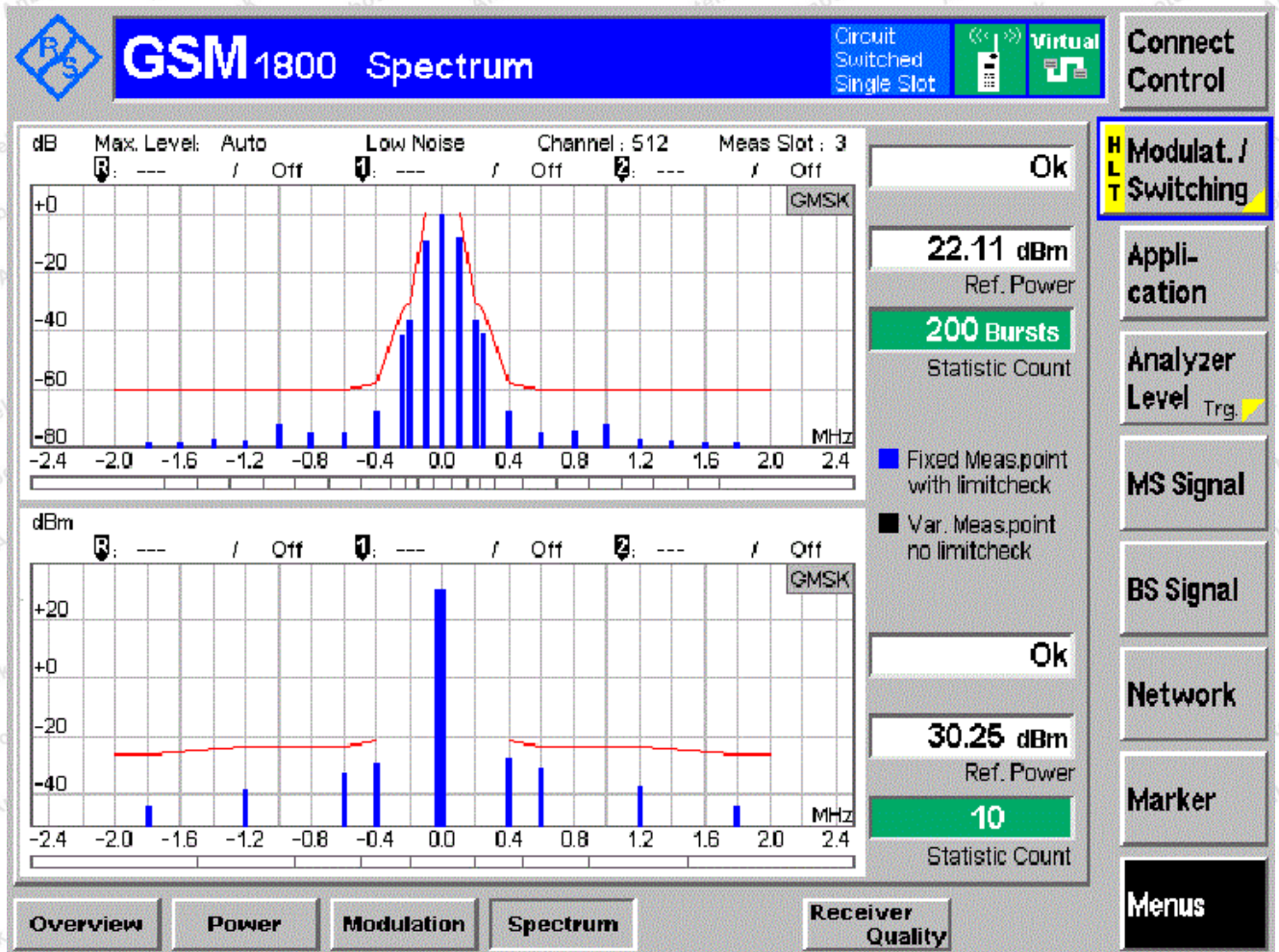
Channel MCH PCL 19



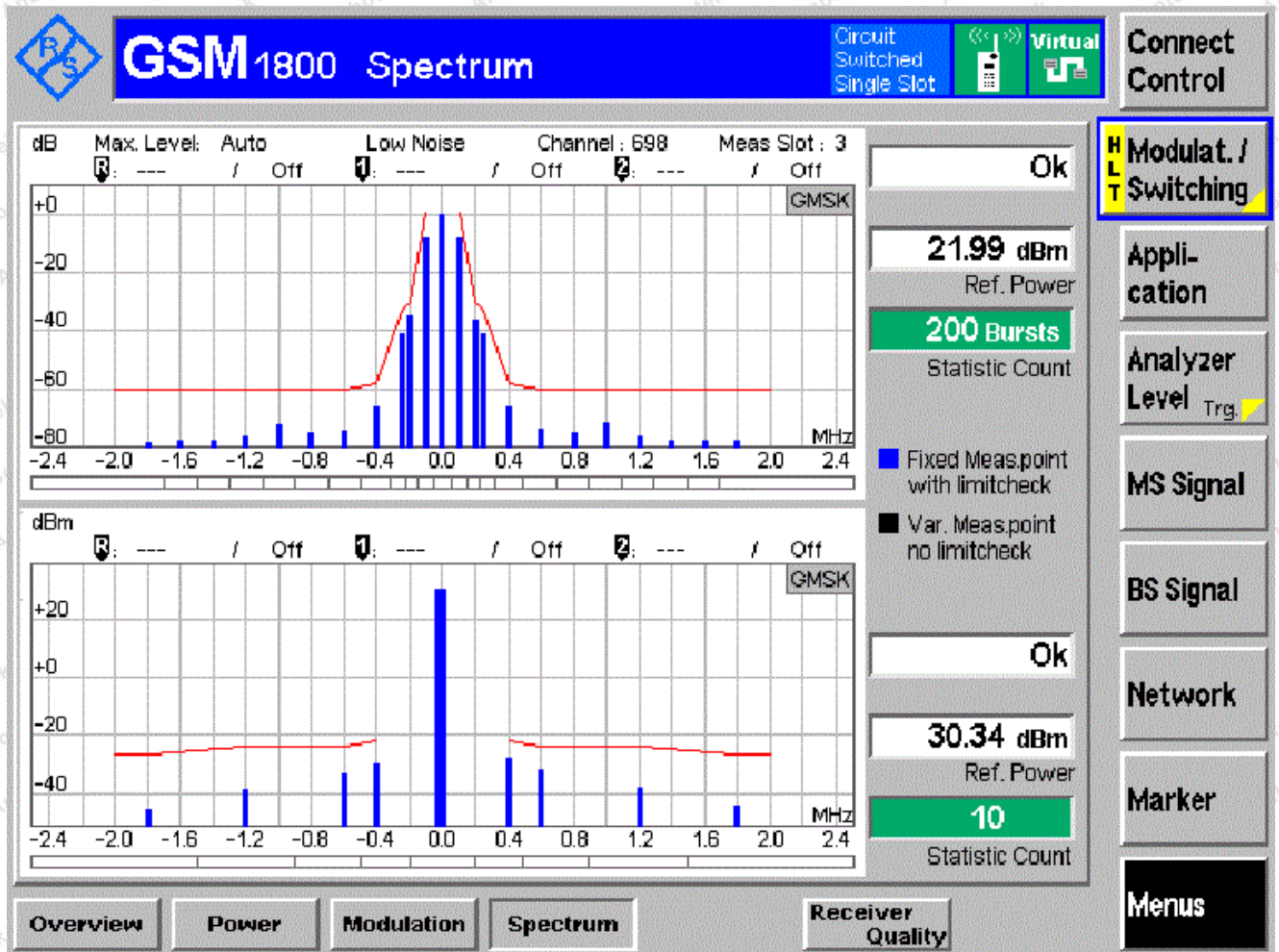
Channel HCH PCL 19



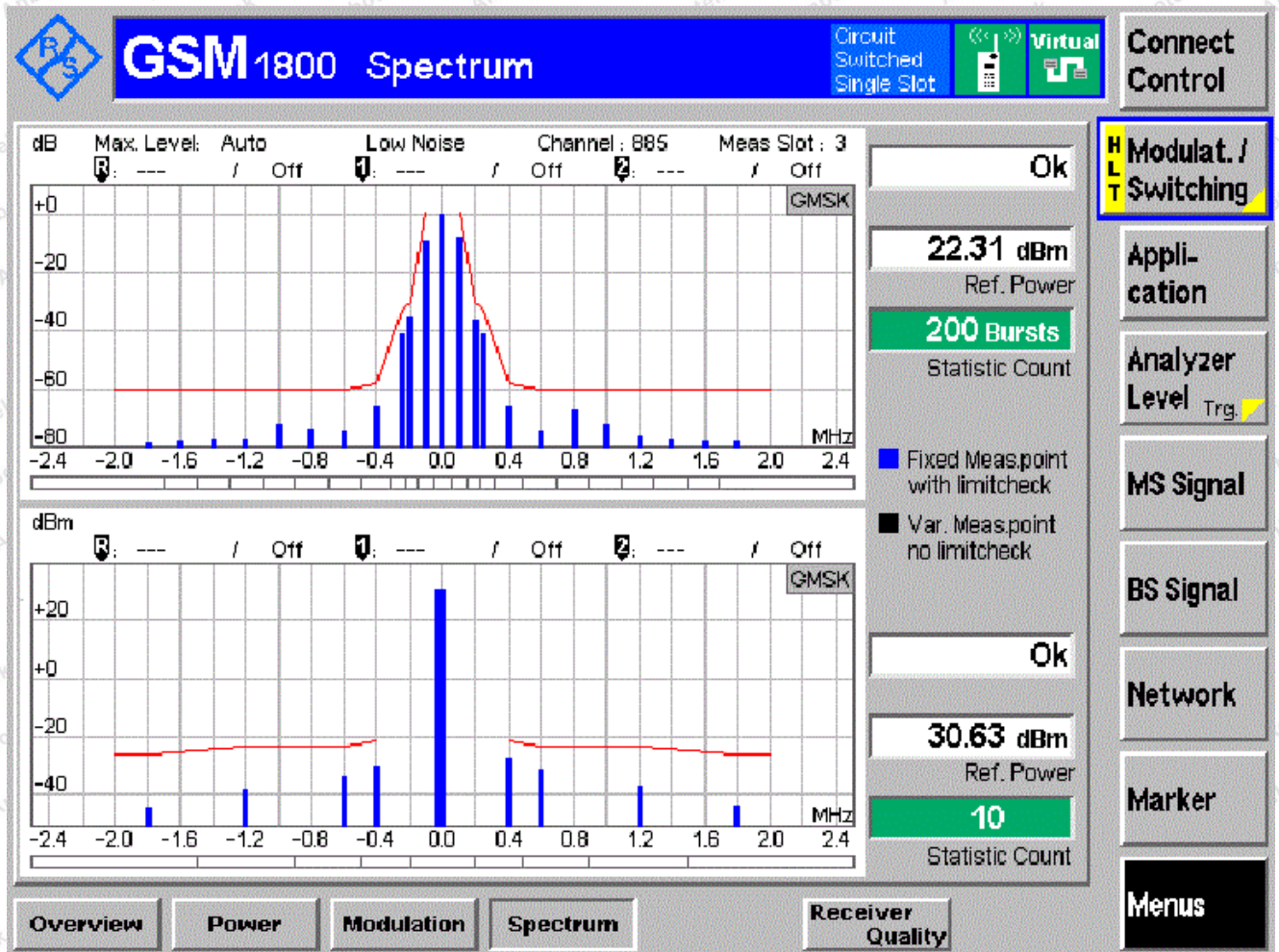
b) DCS1800 TN/VN
Channel LCH PCL 0



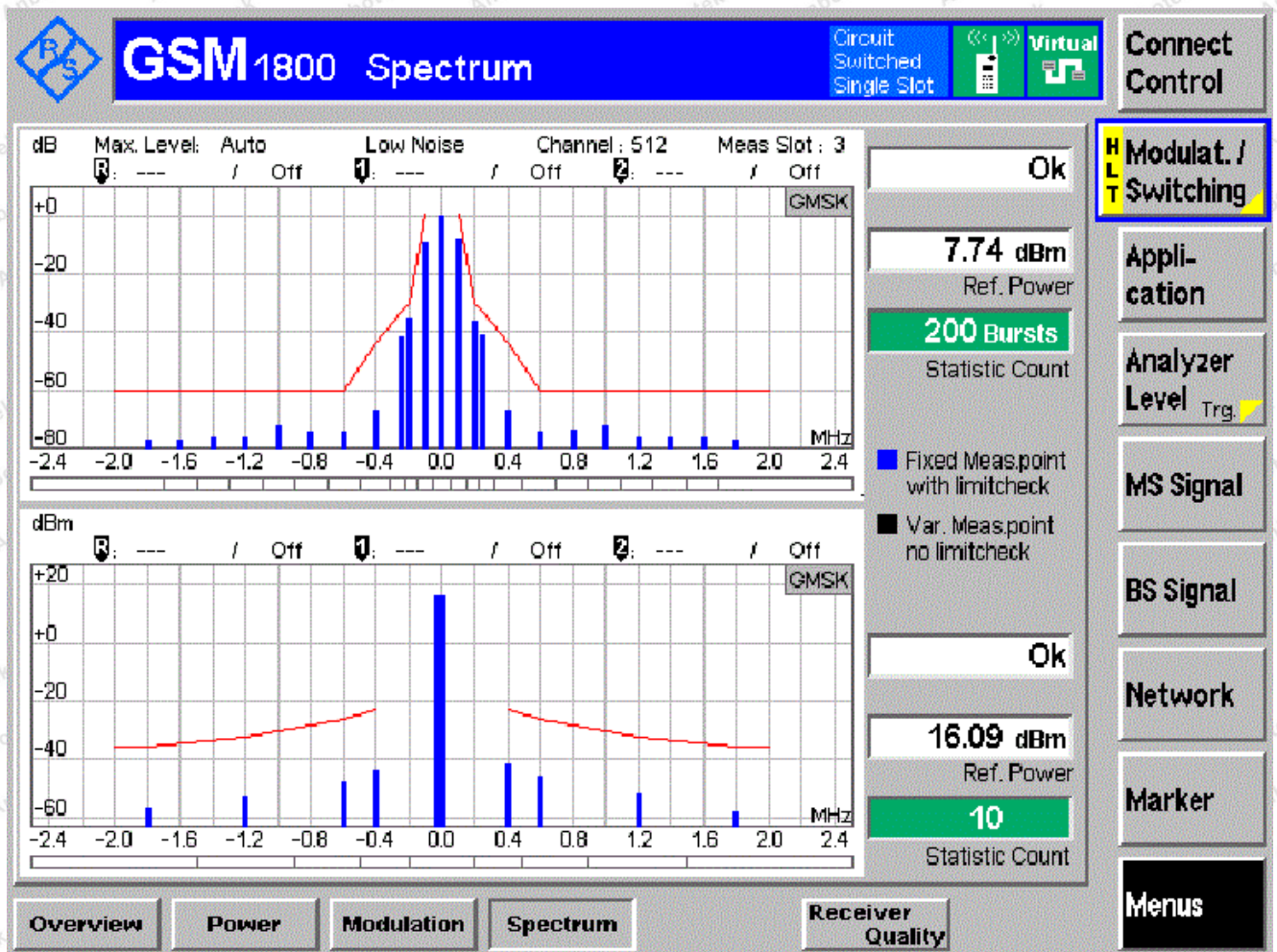
Channel MCH PCL 0



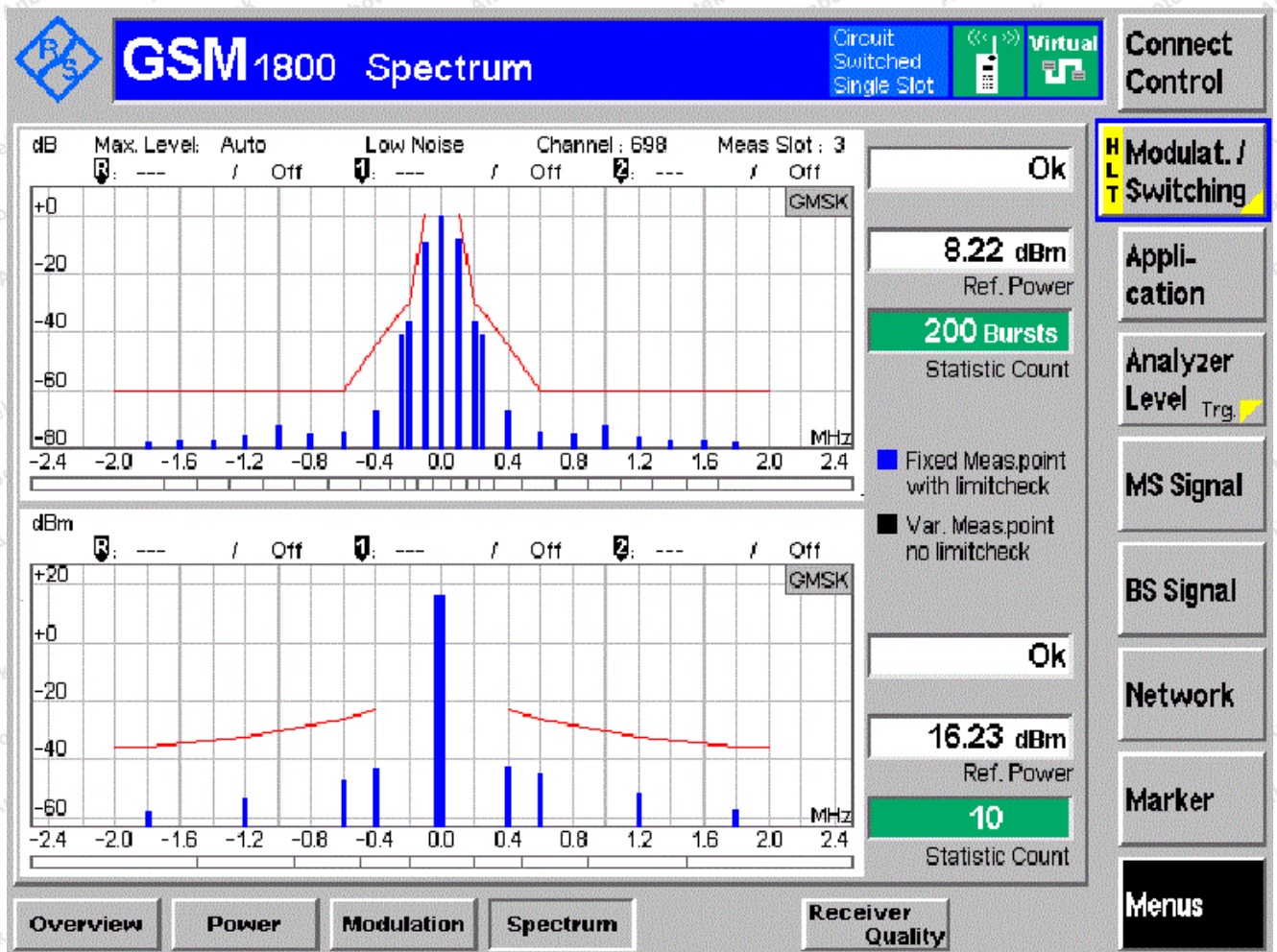
Channel HCH PCL 0



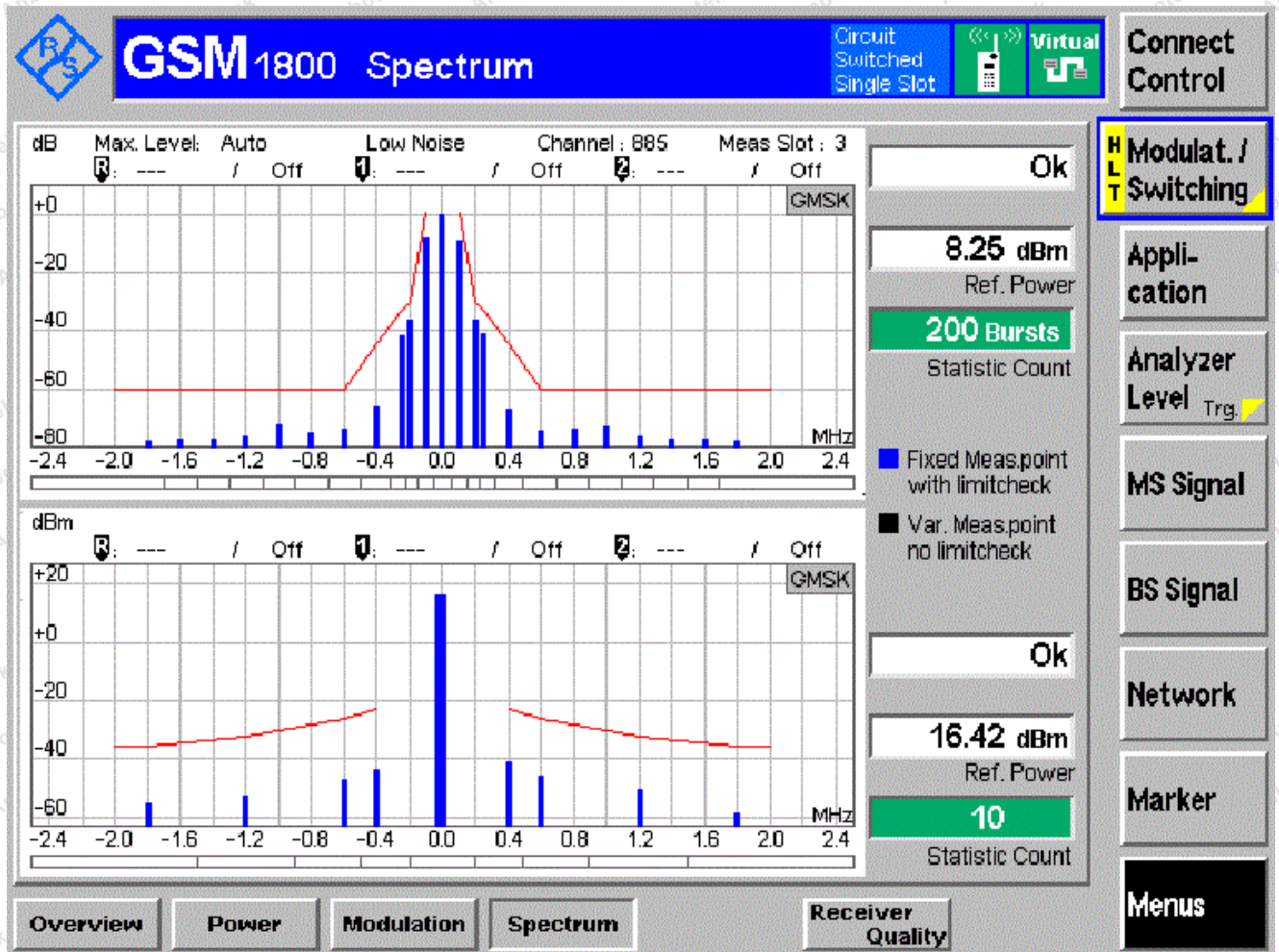
Channel LCH PCL 7



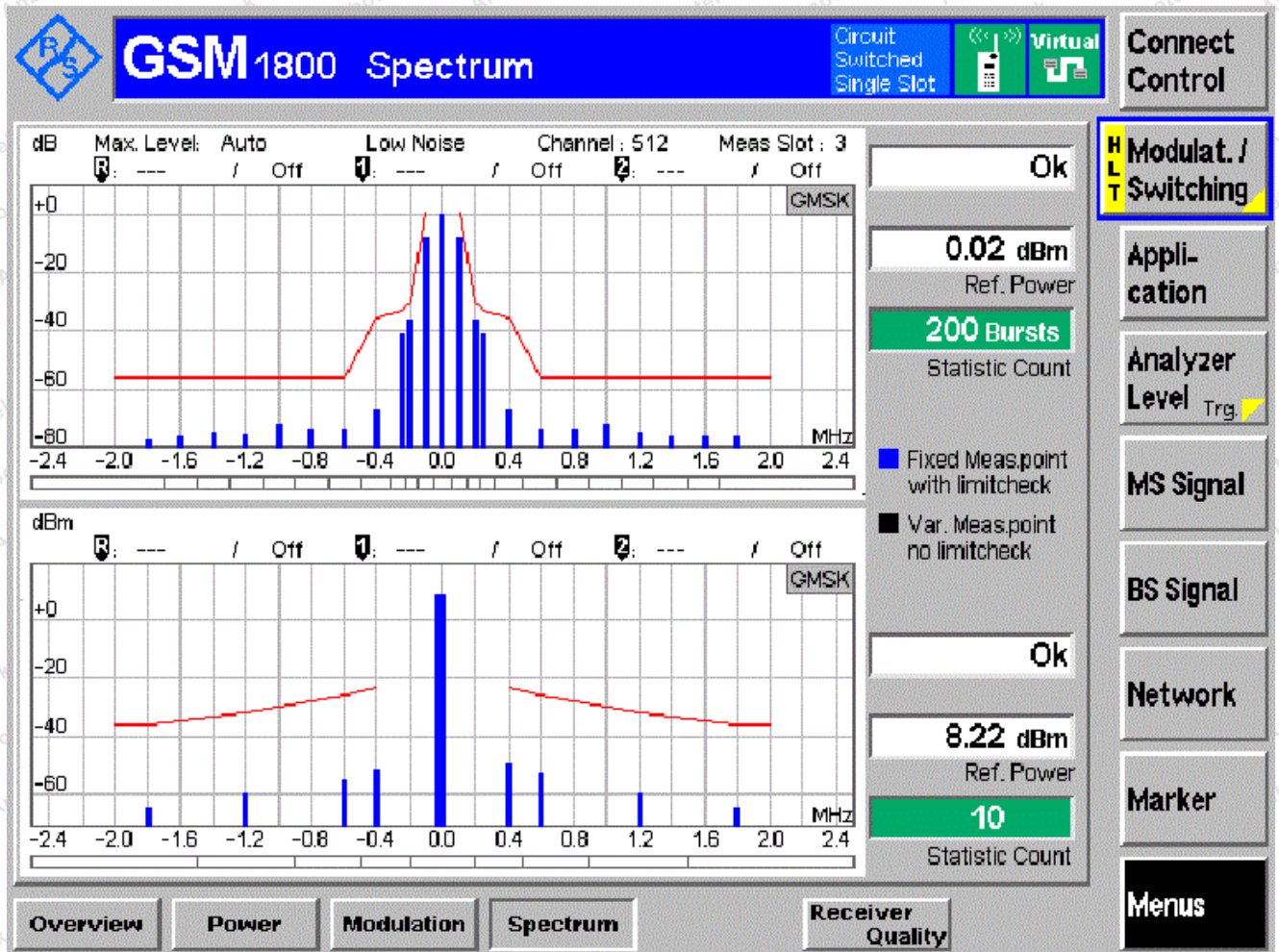
Channel MCH PCL 7



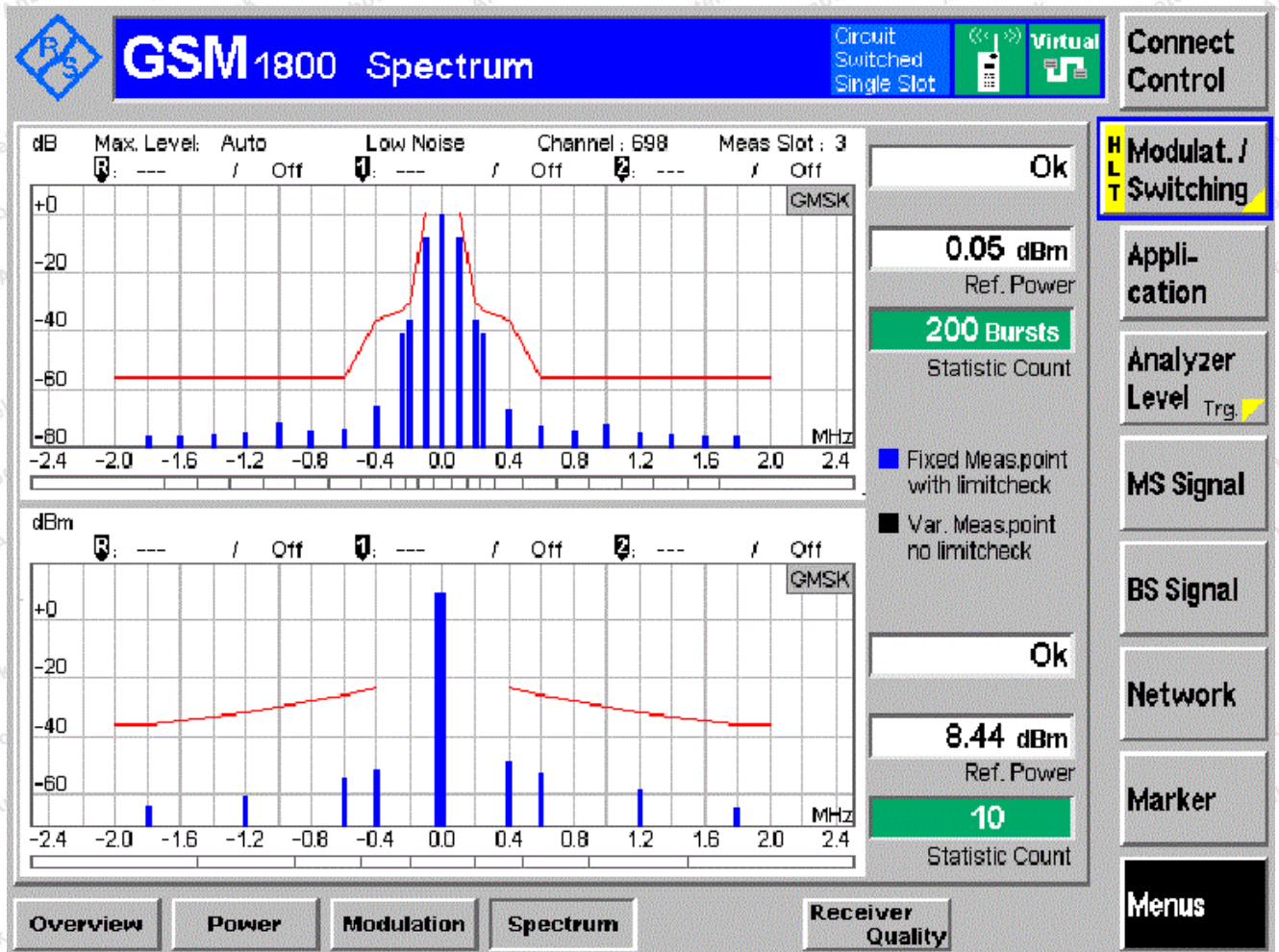
Channel HCH PCL 7



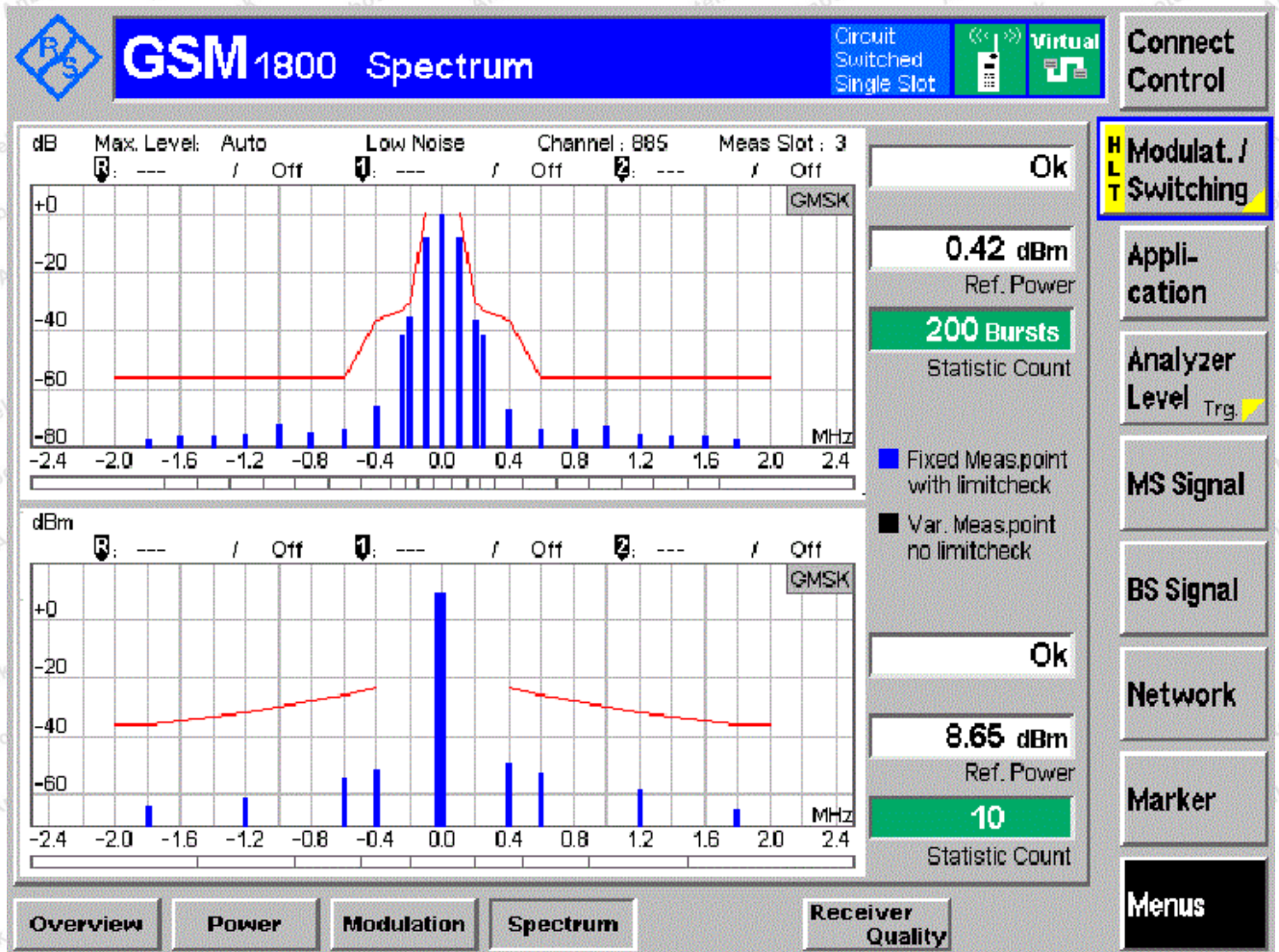
Channel LCH PCL 7

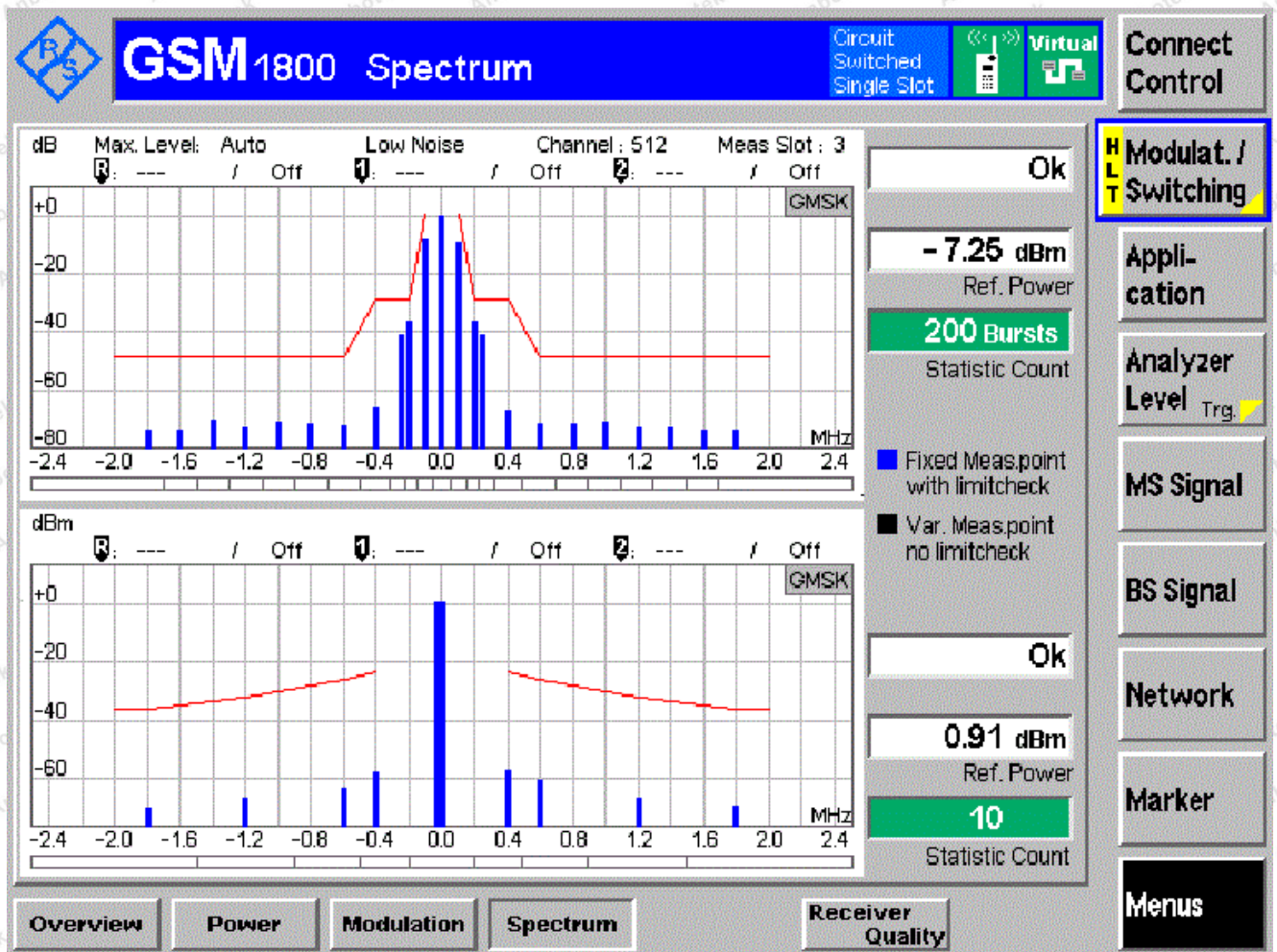


Channel MCH PCL 11

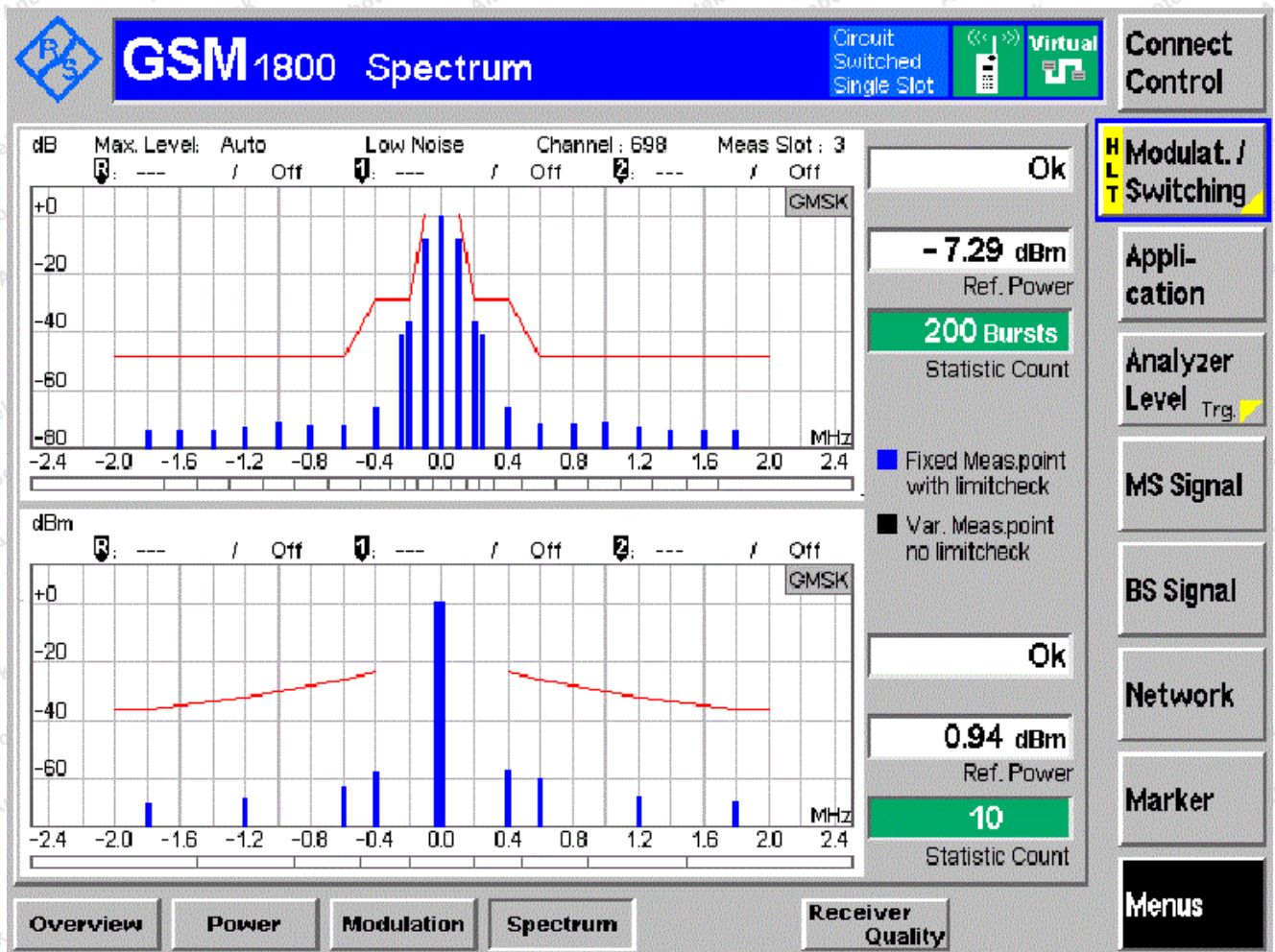


Channel HCH PCL 11

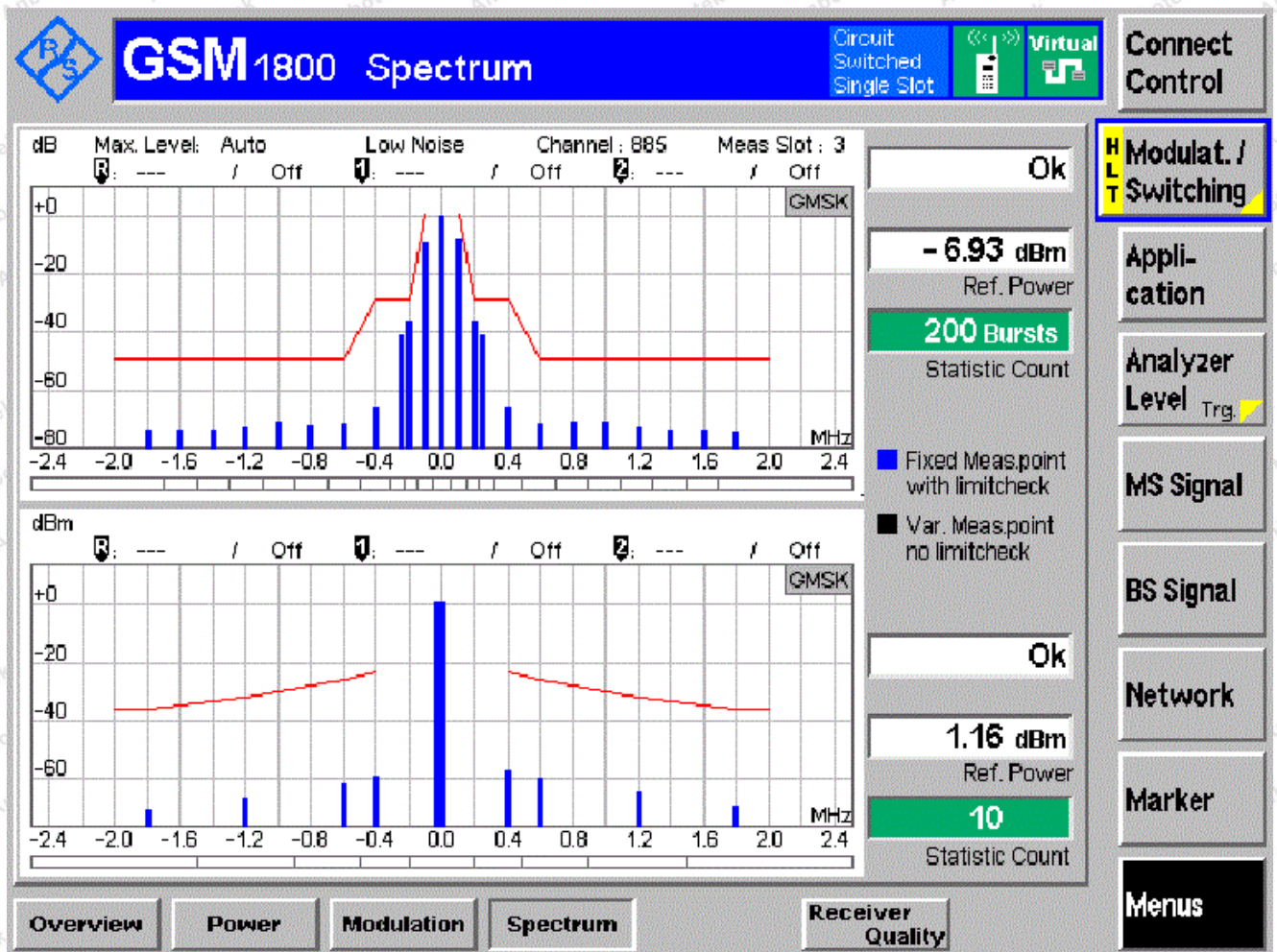




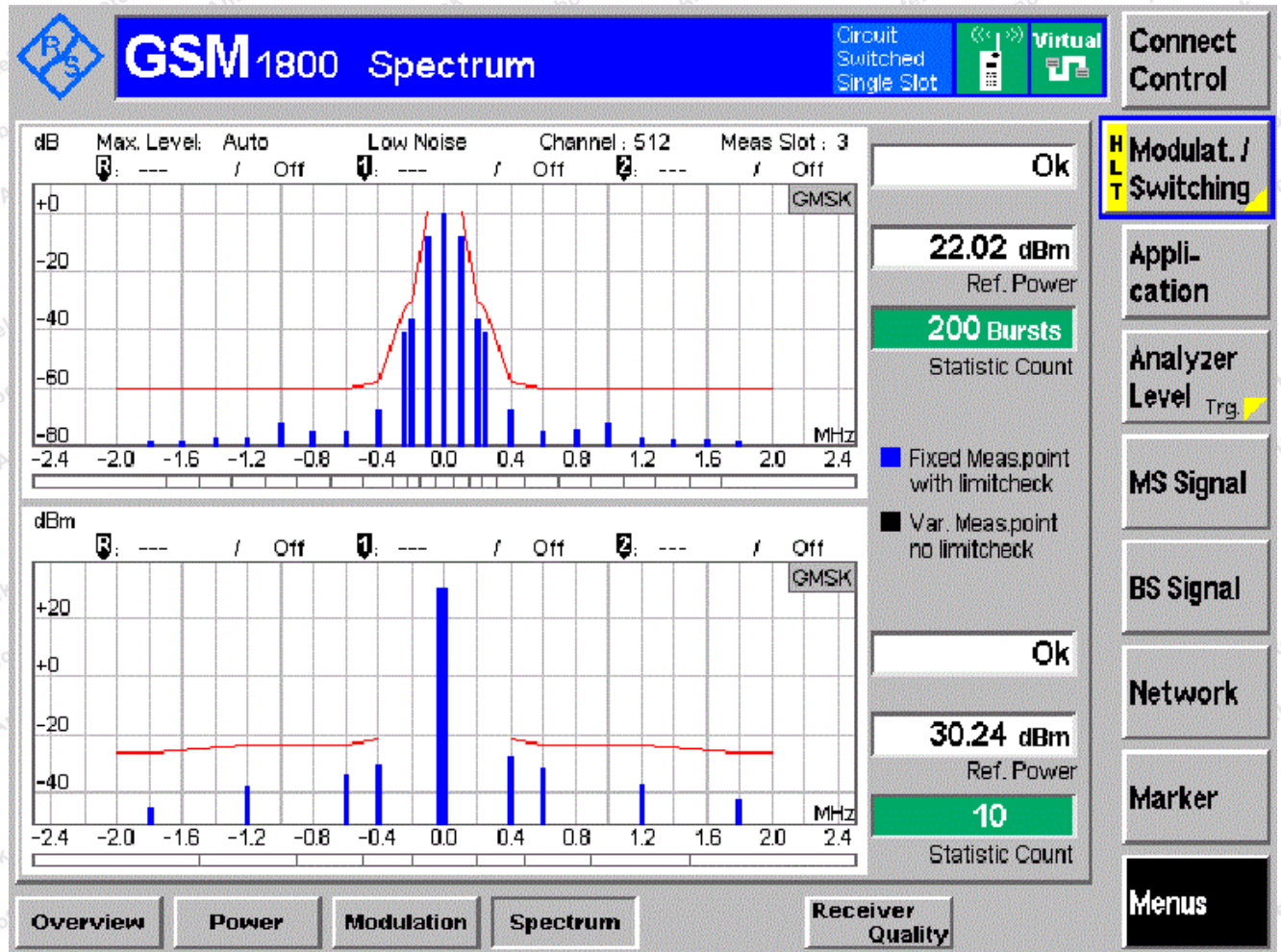
Channel MCH PCL 15



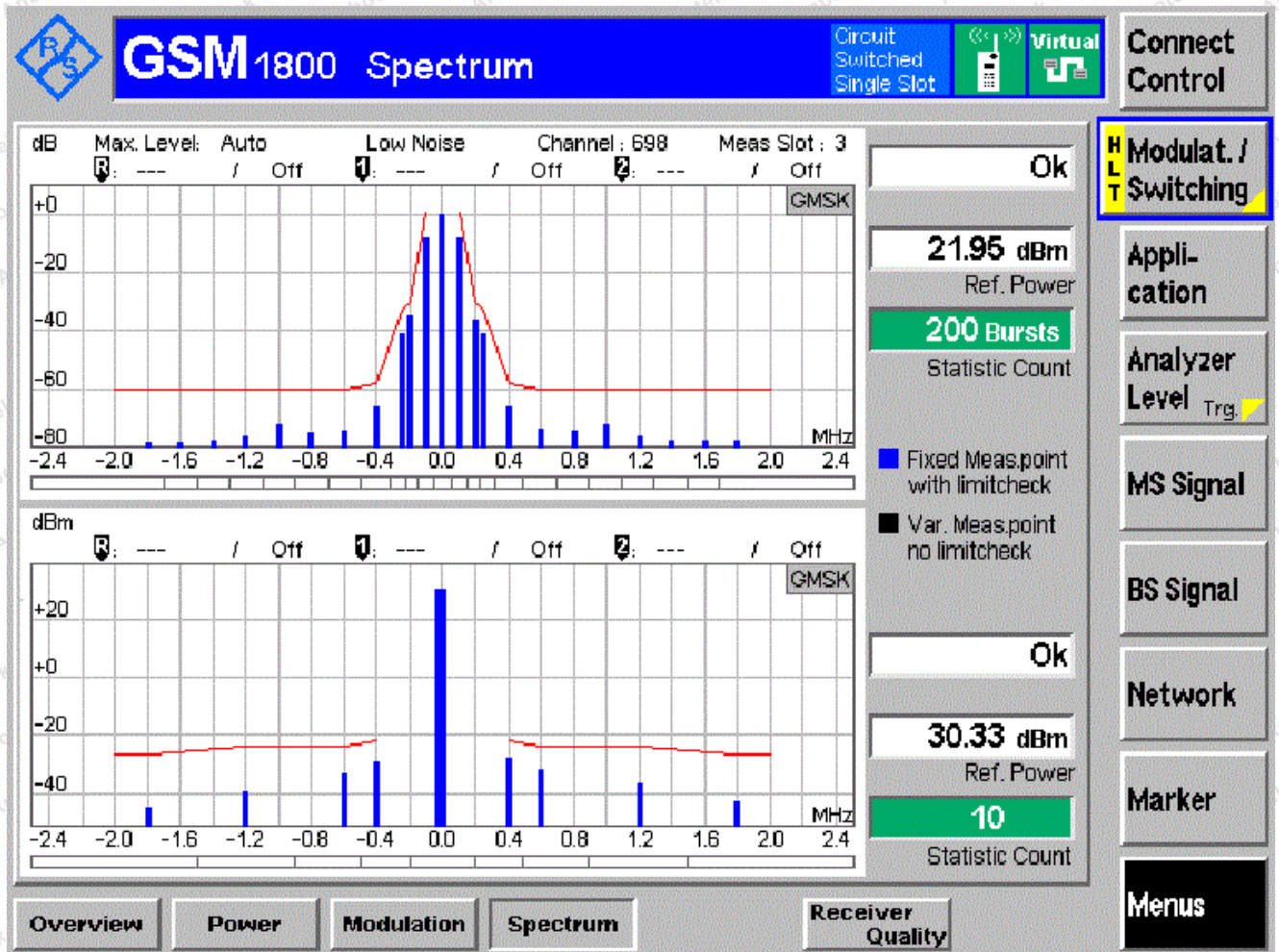
Channel HCH PCL 15



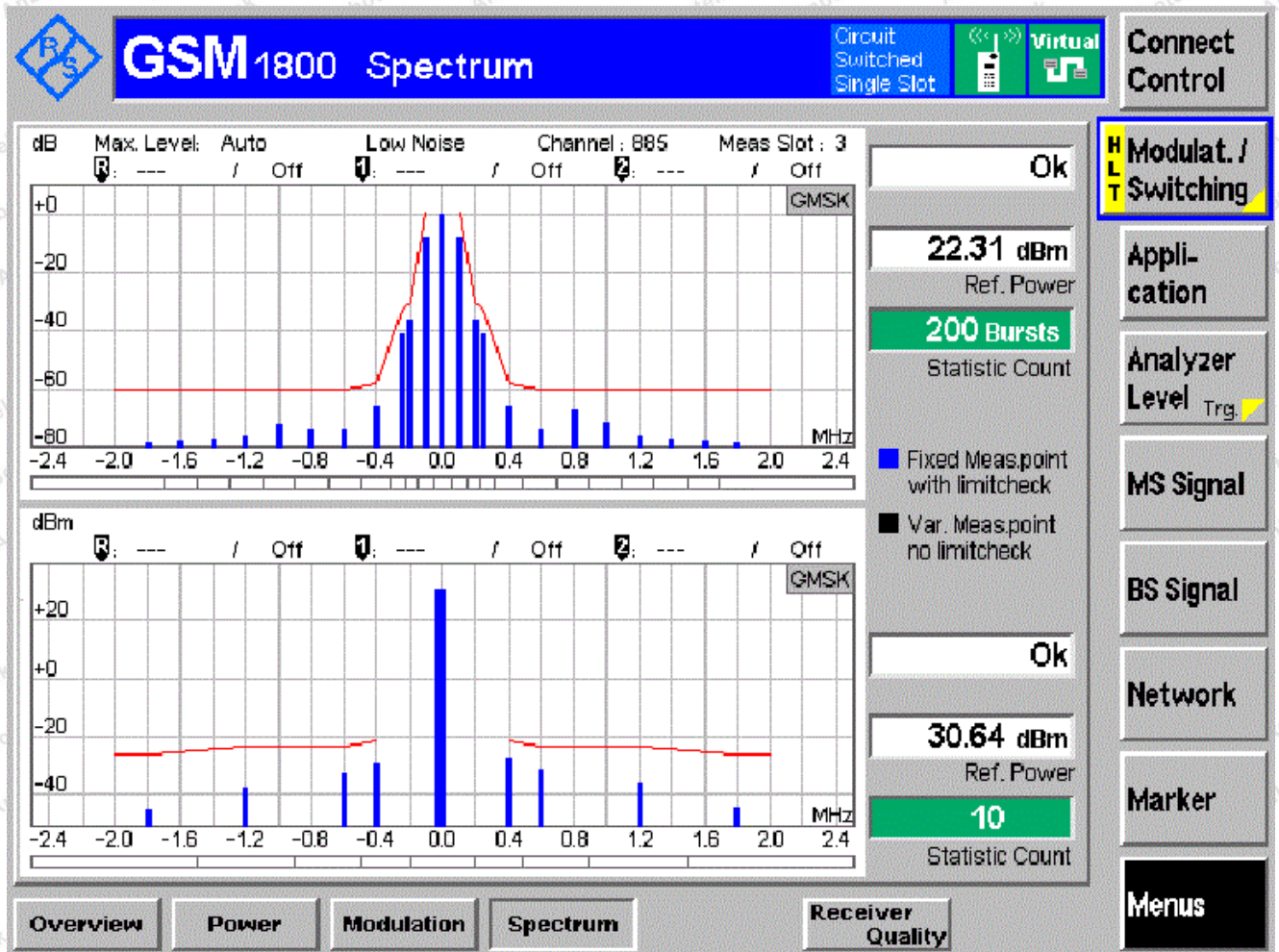
c) DCS1800 TL/VL
Channel LCH PCL 0



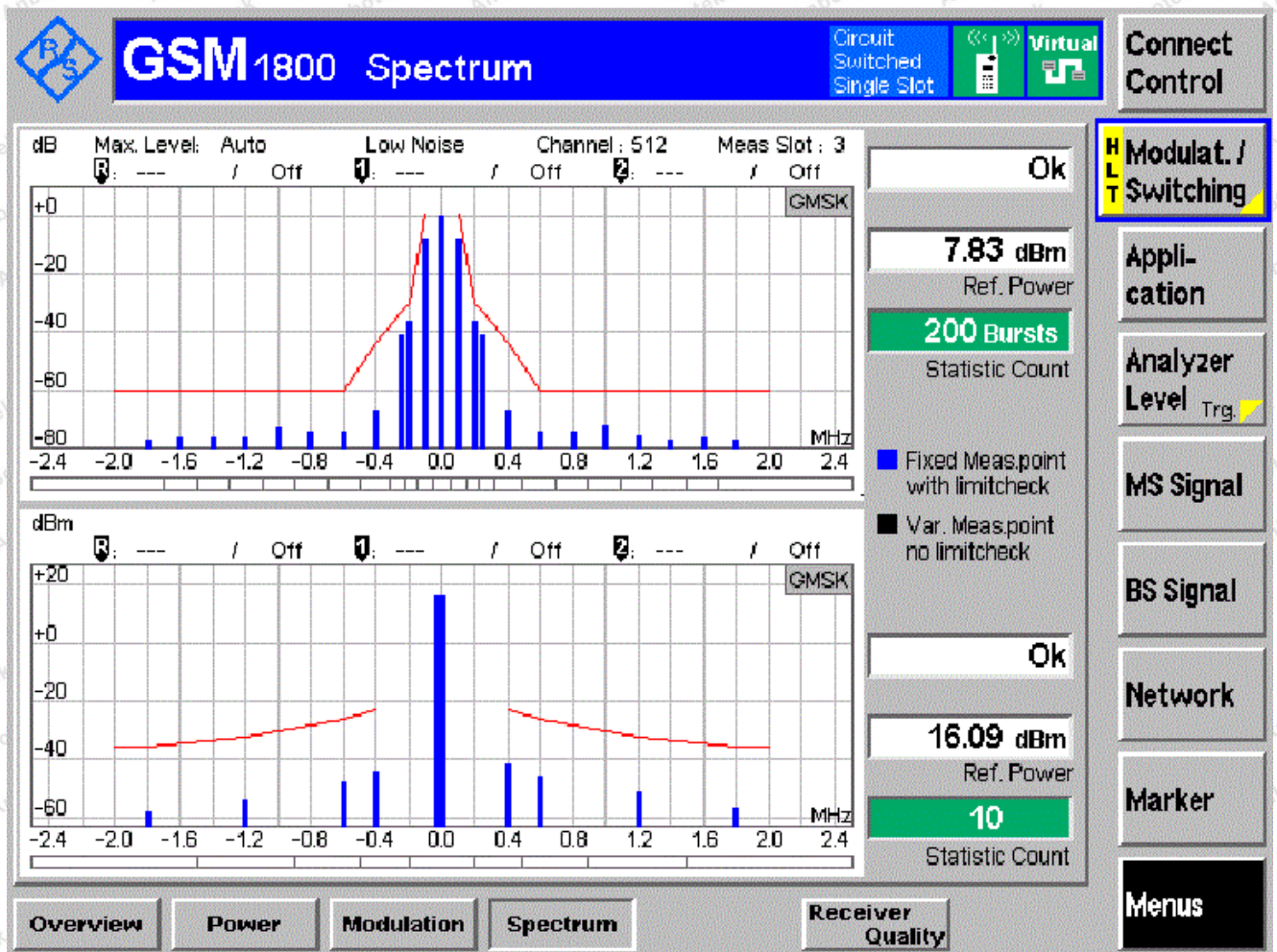
Channel MCH PCL 0



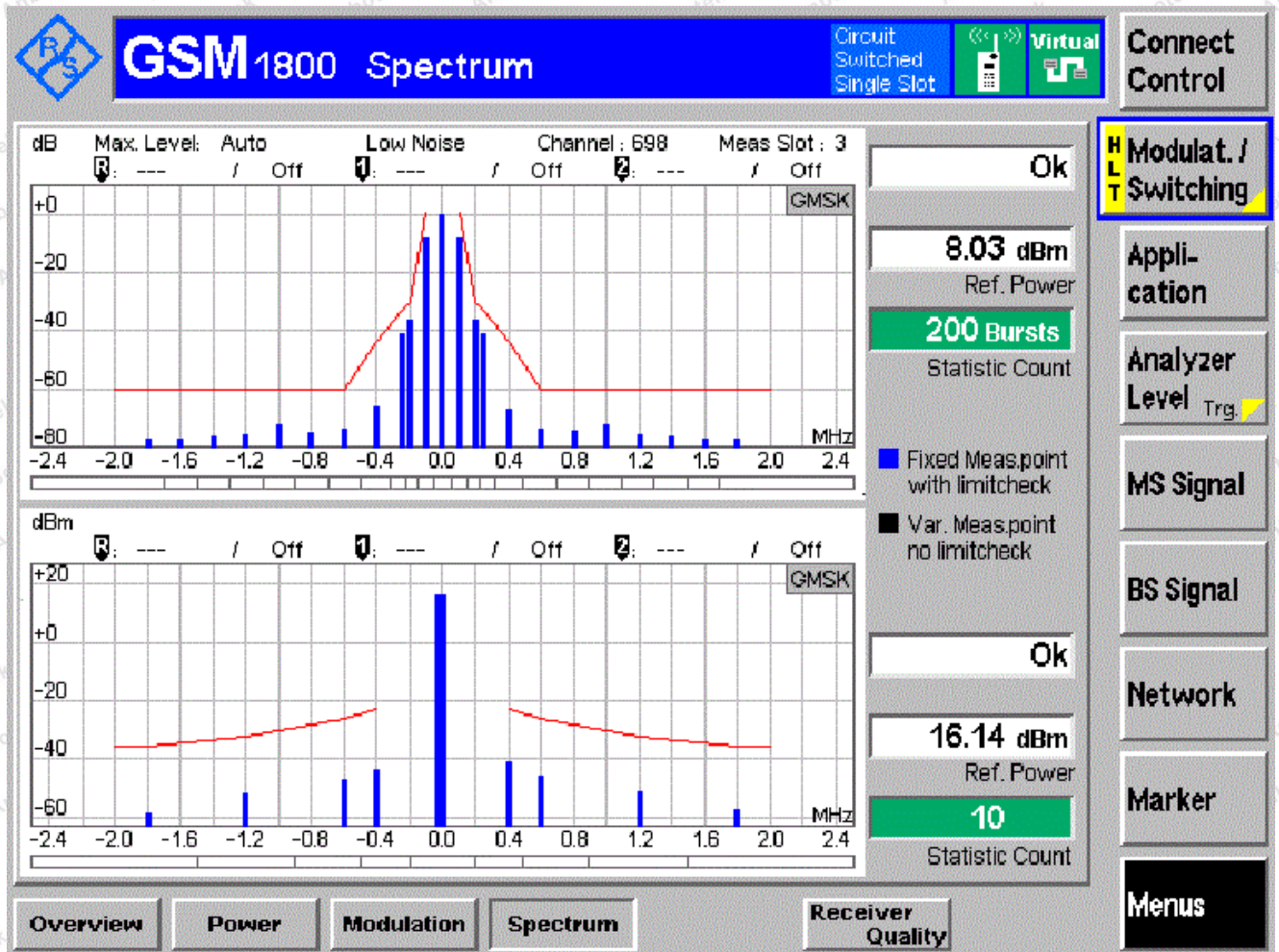
Channel HCH PCL 0



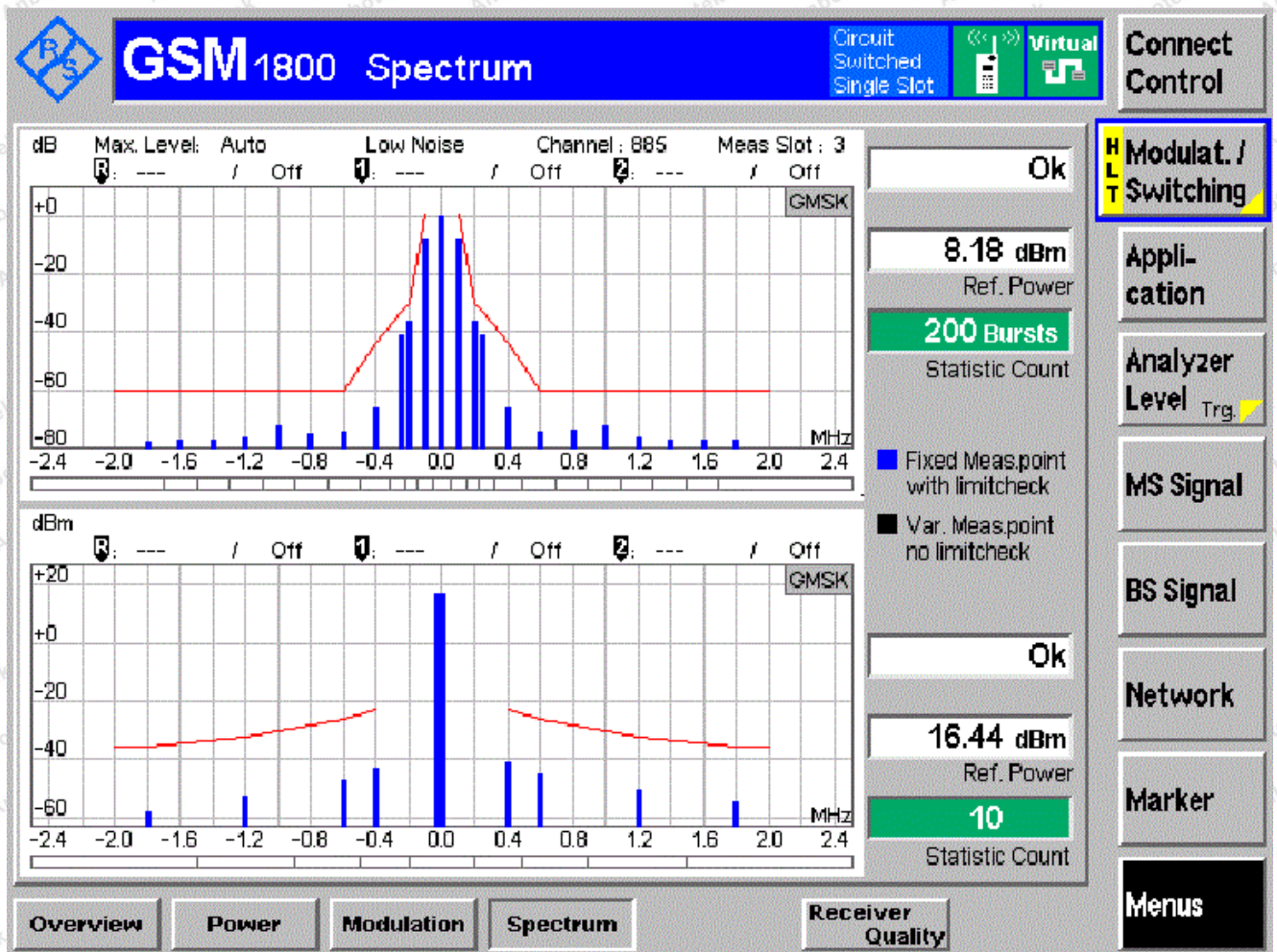
Channel LCH PCL 7



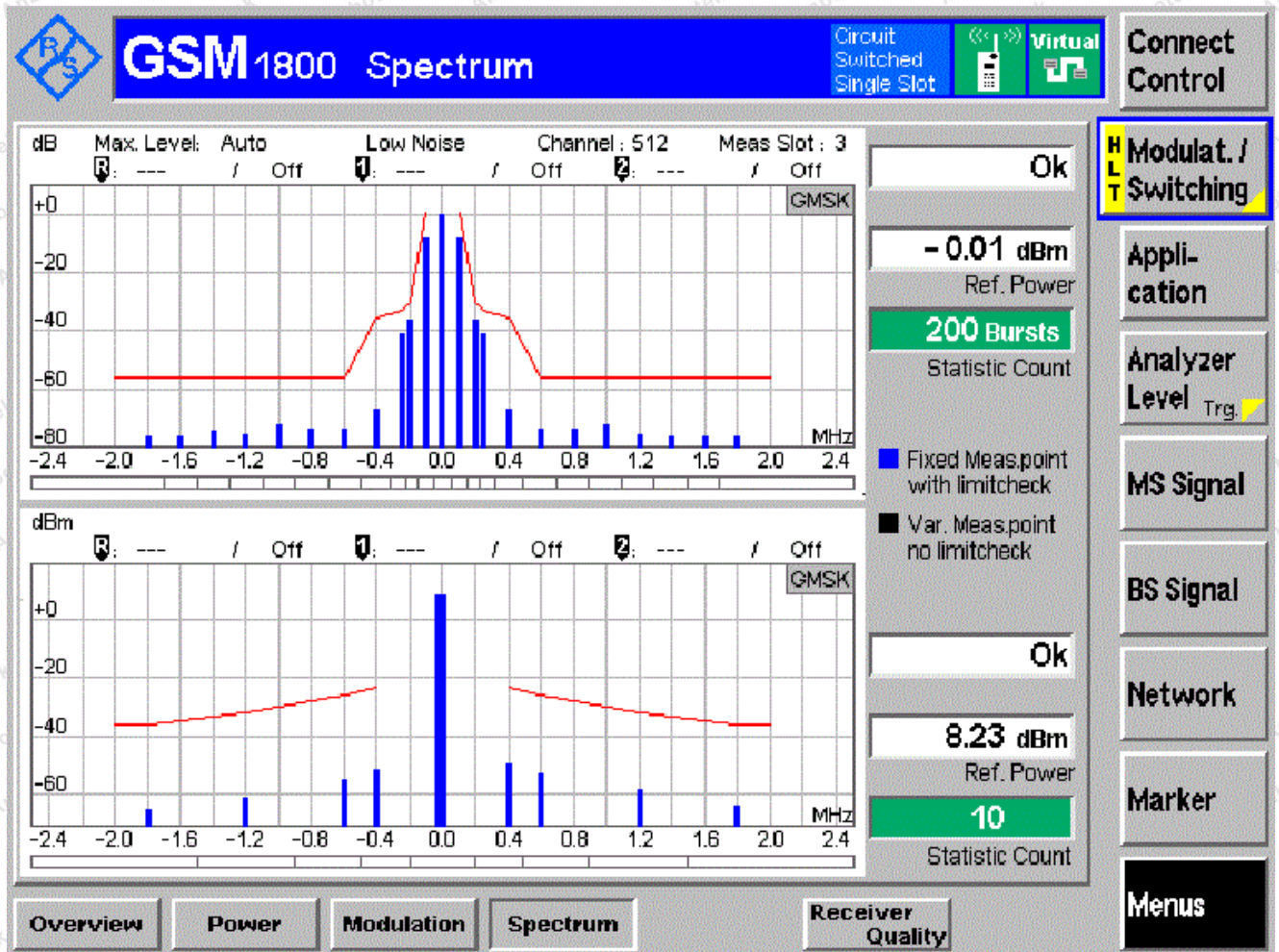
Channel MCH PCL 7



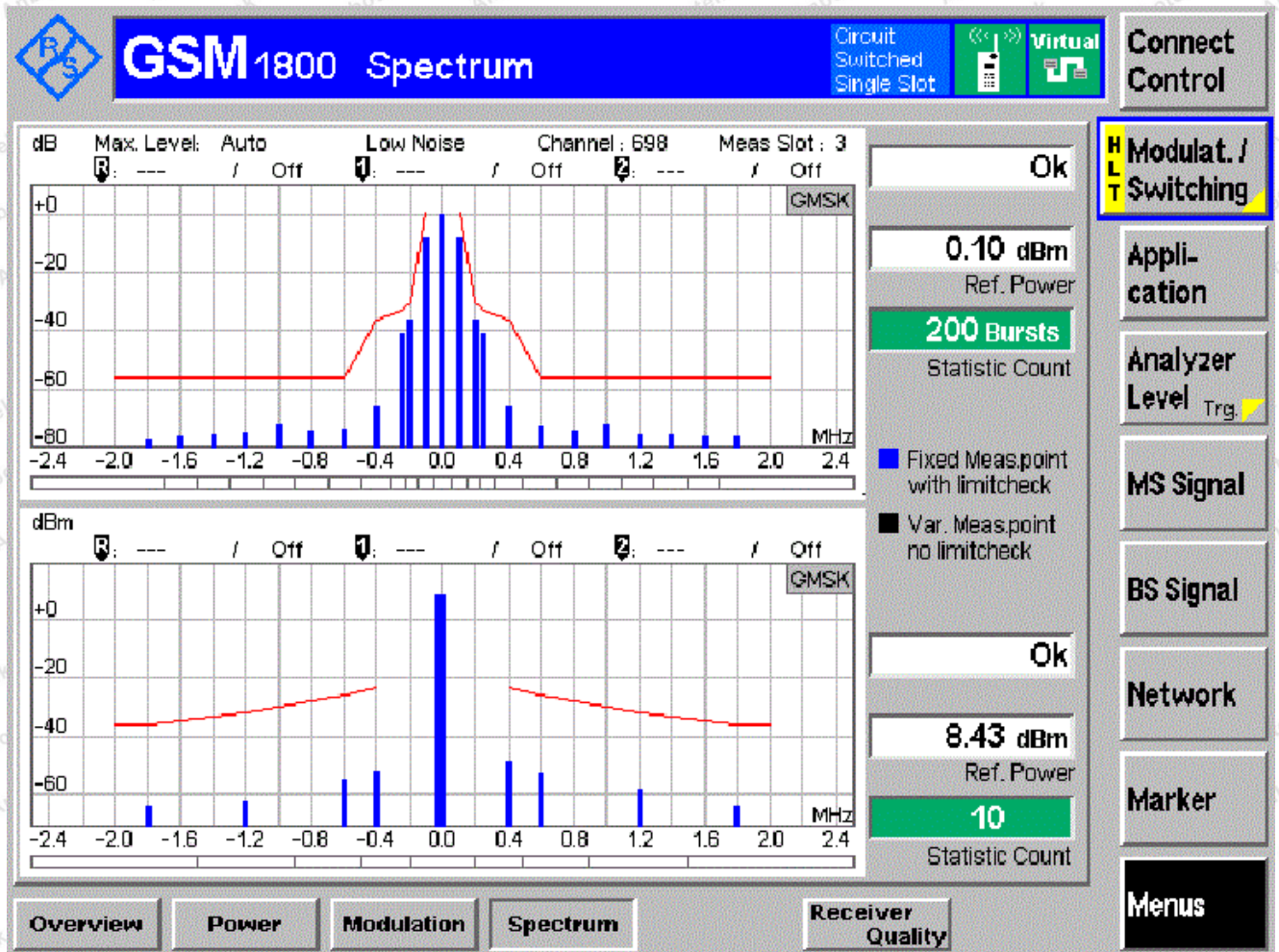
Channel HCH PCL 7



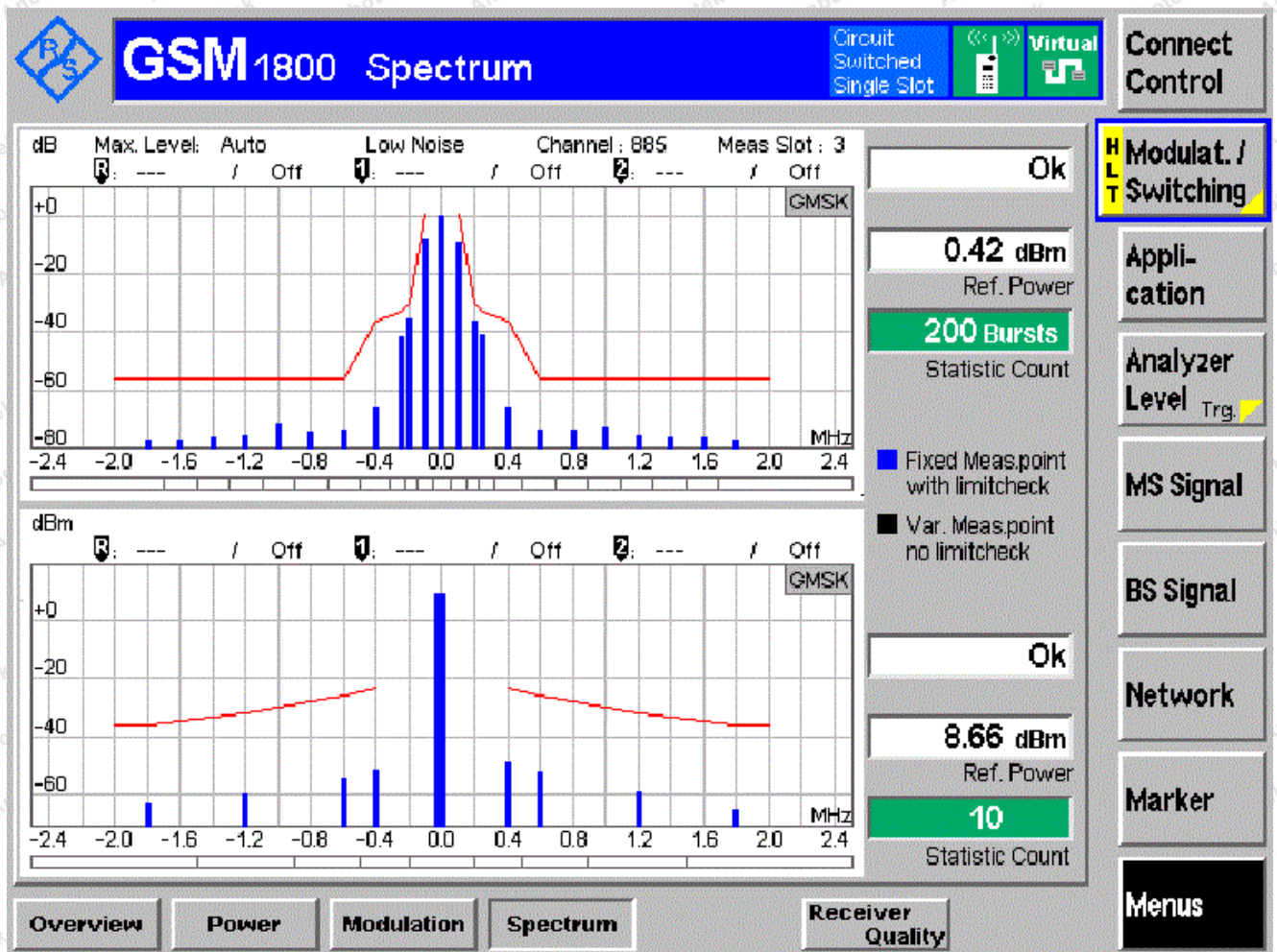
Channel LCH PCL 7

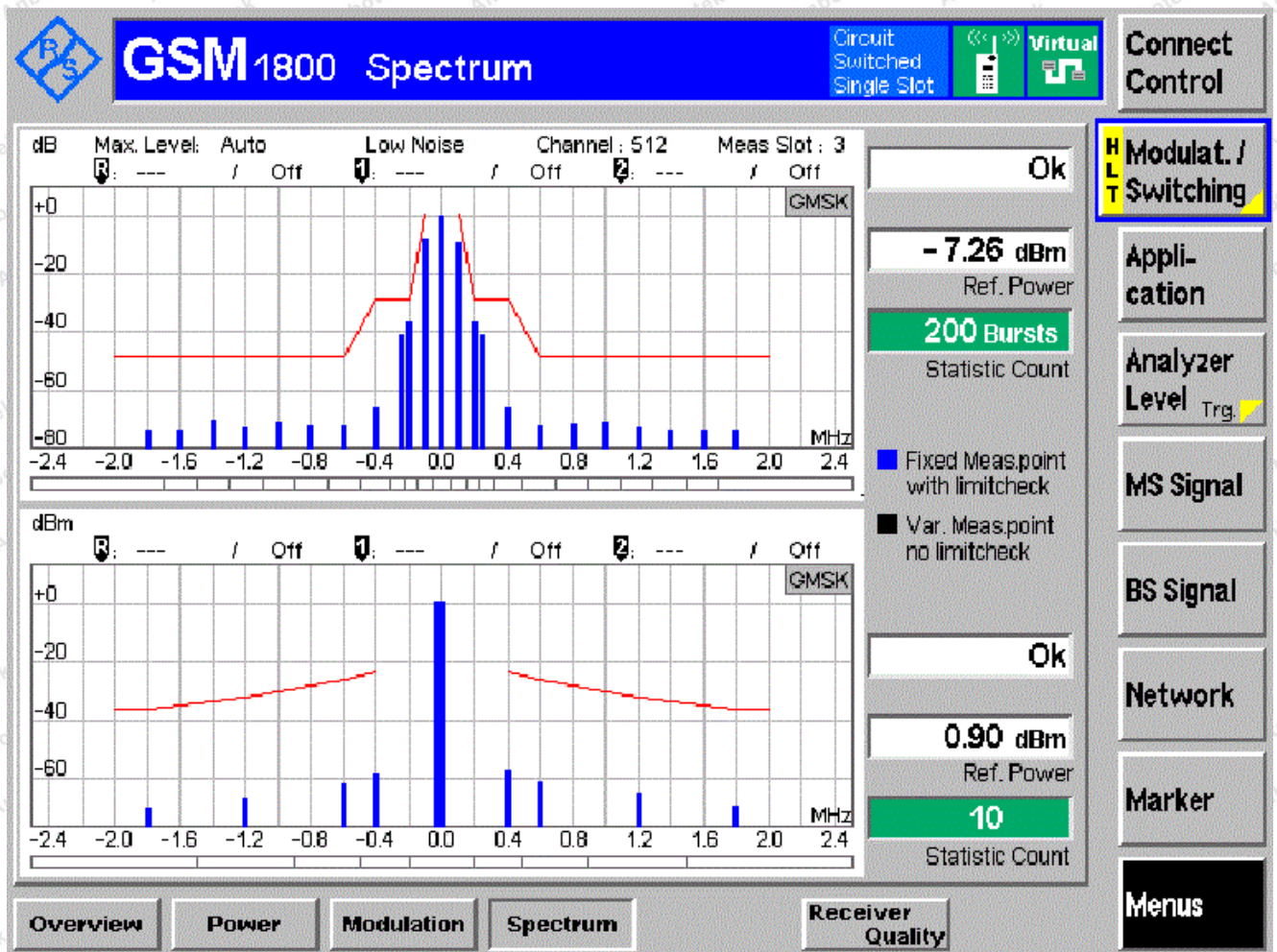


Channel MCH PCL 11

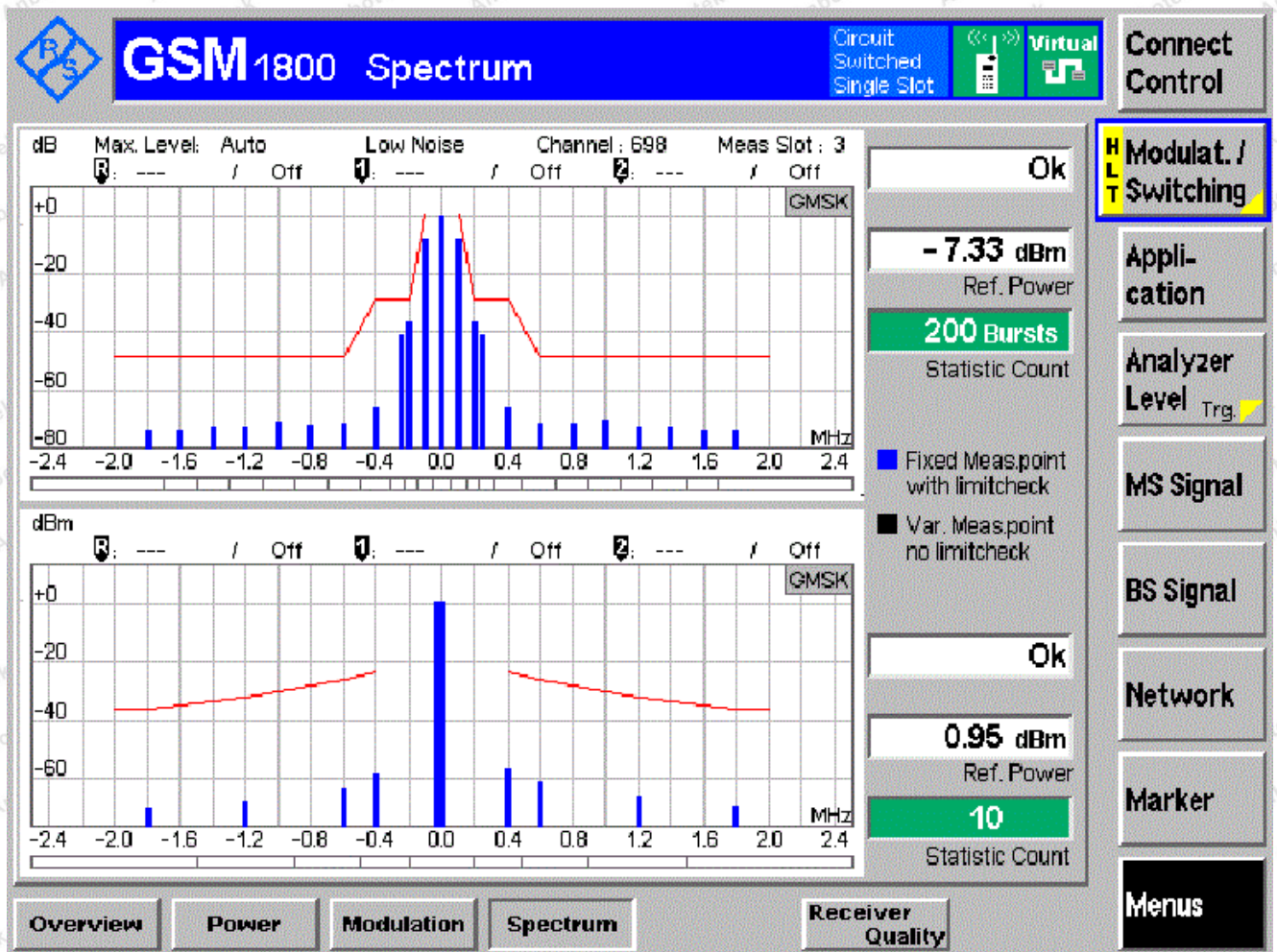


Channel HCH PCL 11

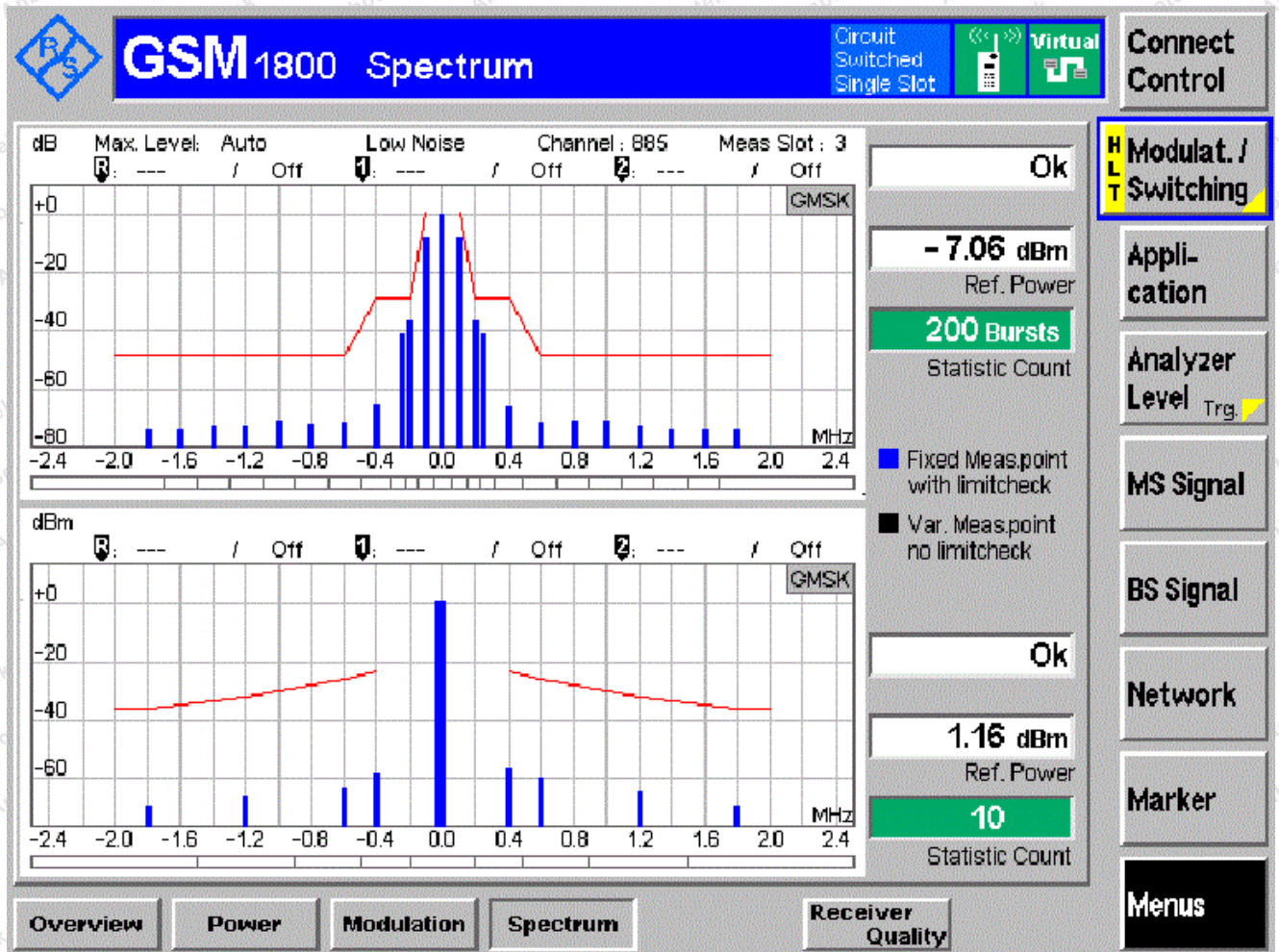




Channel MCH PCL 15



Channel HCH PCL 15

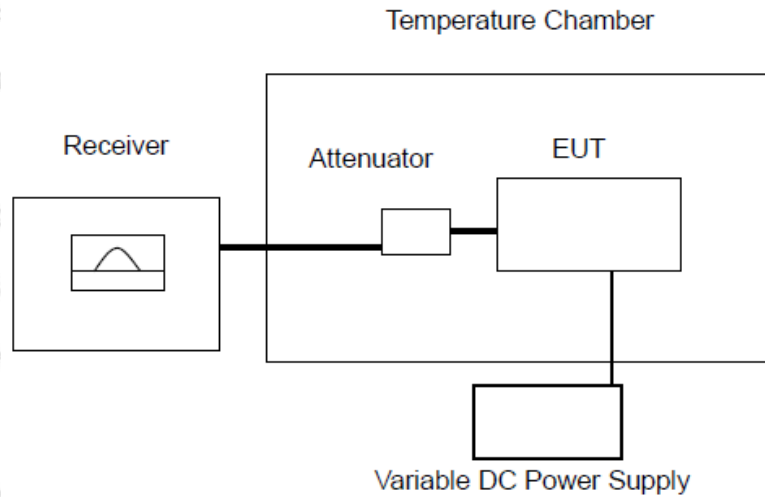


8. Transmitter Output Power in GPRS Multislo Configuration

8.1. Test Limit

Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.2.5

8.2. Test Setup



8.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.2.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.2.4 for the measurement method..

8.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

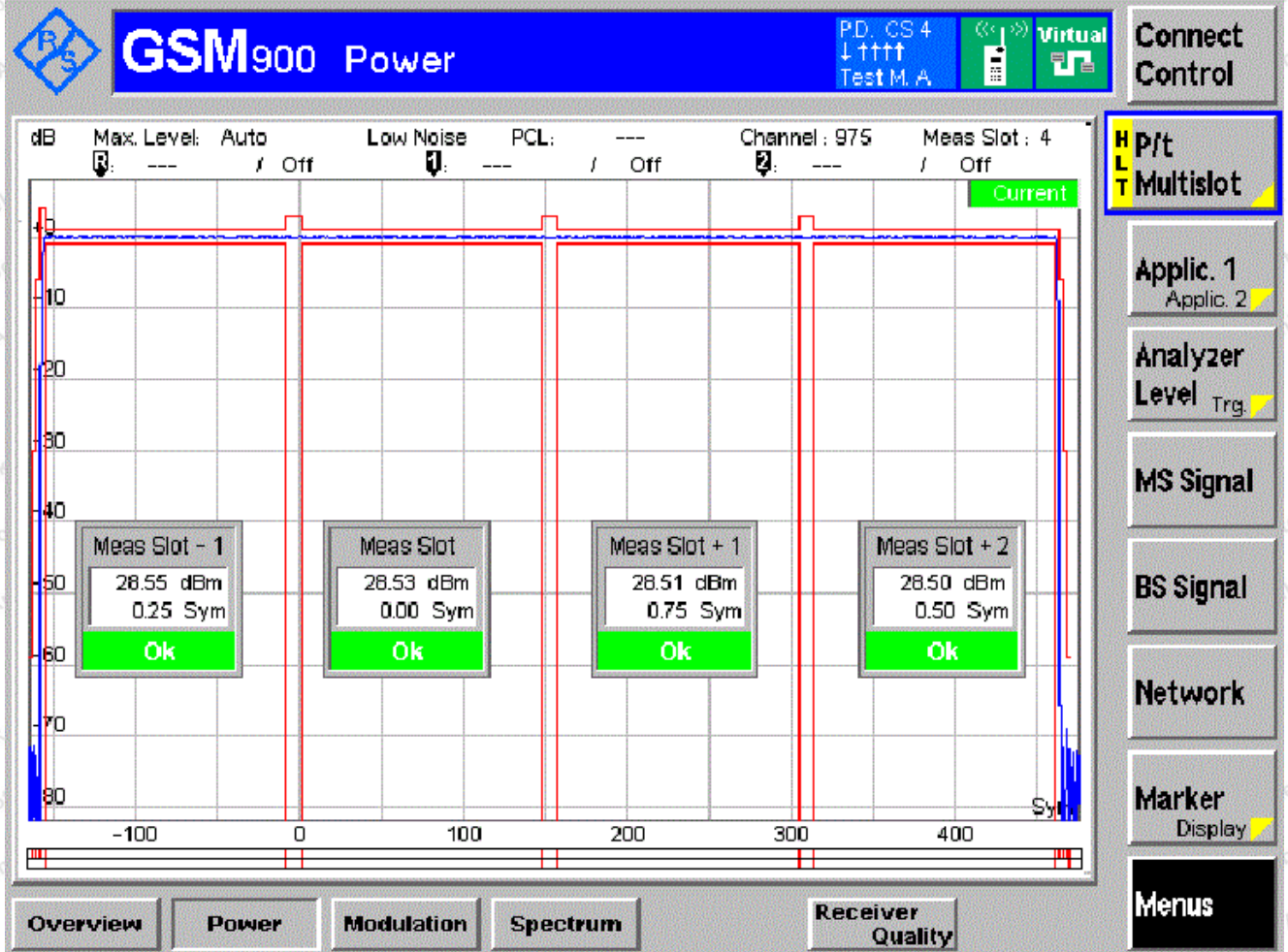
Transmitter Output power(dBm)	Power level	Result			
		Traffic Channels			
GSM900		LCH	MCH	HCH	Result
TN/VN	5	28.52	29.03	29.13	PASS
	12	19.13	19.69	19.76	PASS
	19	6.61	7.22	7.28	PASS

Transmitter Output power(dBm)	Power level	Result			
		Traffic Channels			
DCS1800		LCH	MCH	HCH	Result
TN/VN	0	27.57	28.80	29.65	PASS
	8	16.53	16.89	17.01	PASS
	15	5.06	5.12	5.23	PASS

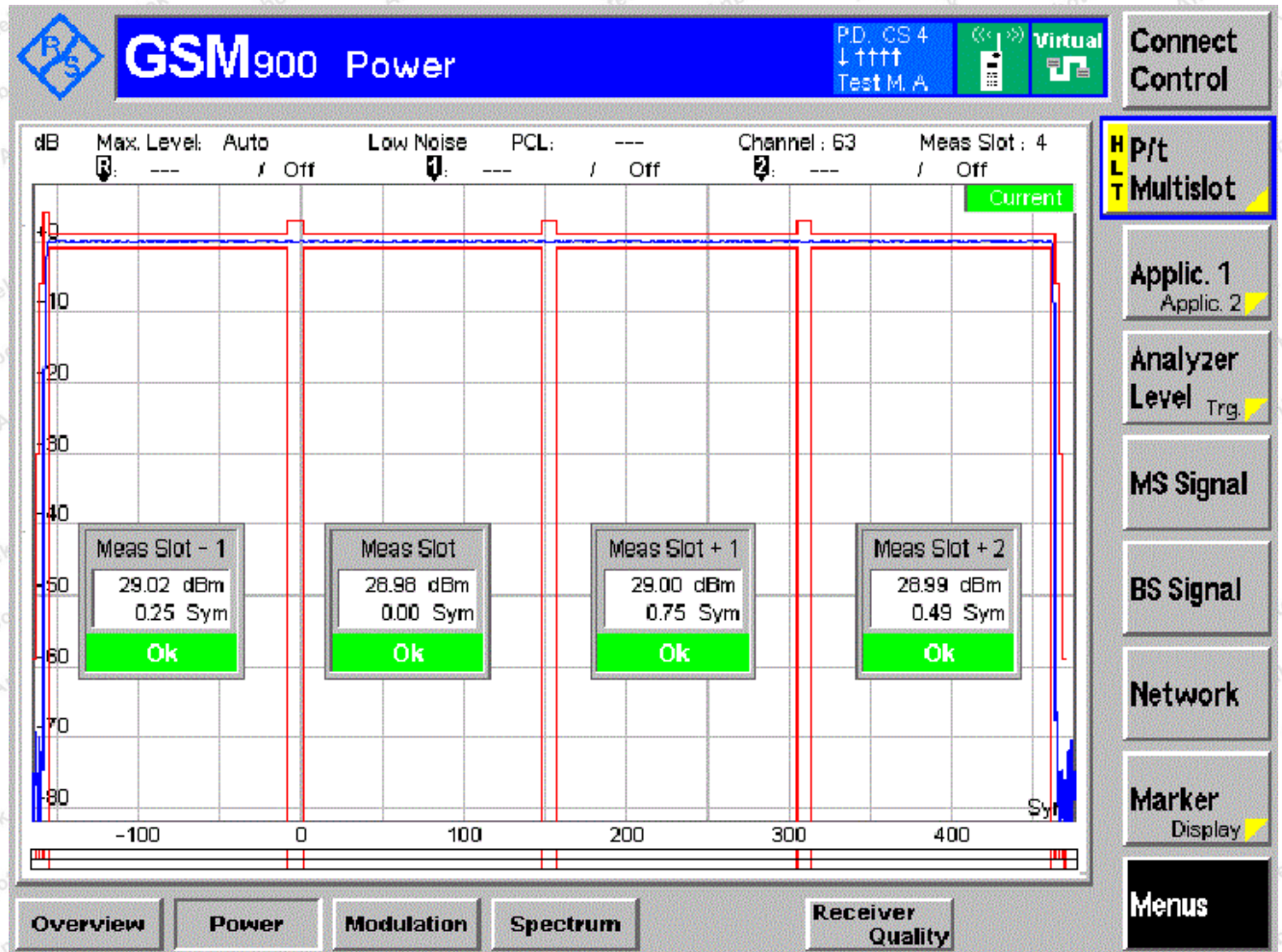
NT/NV Condition:

a) GSM 900 TN/VN

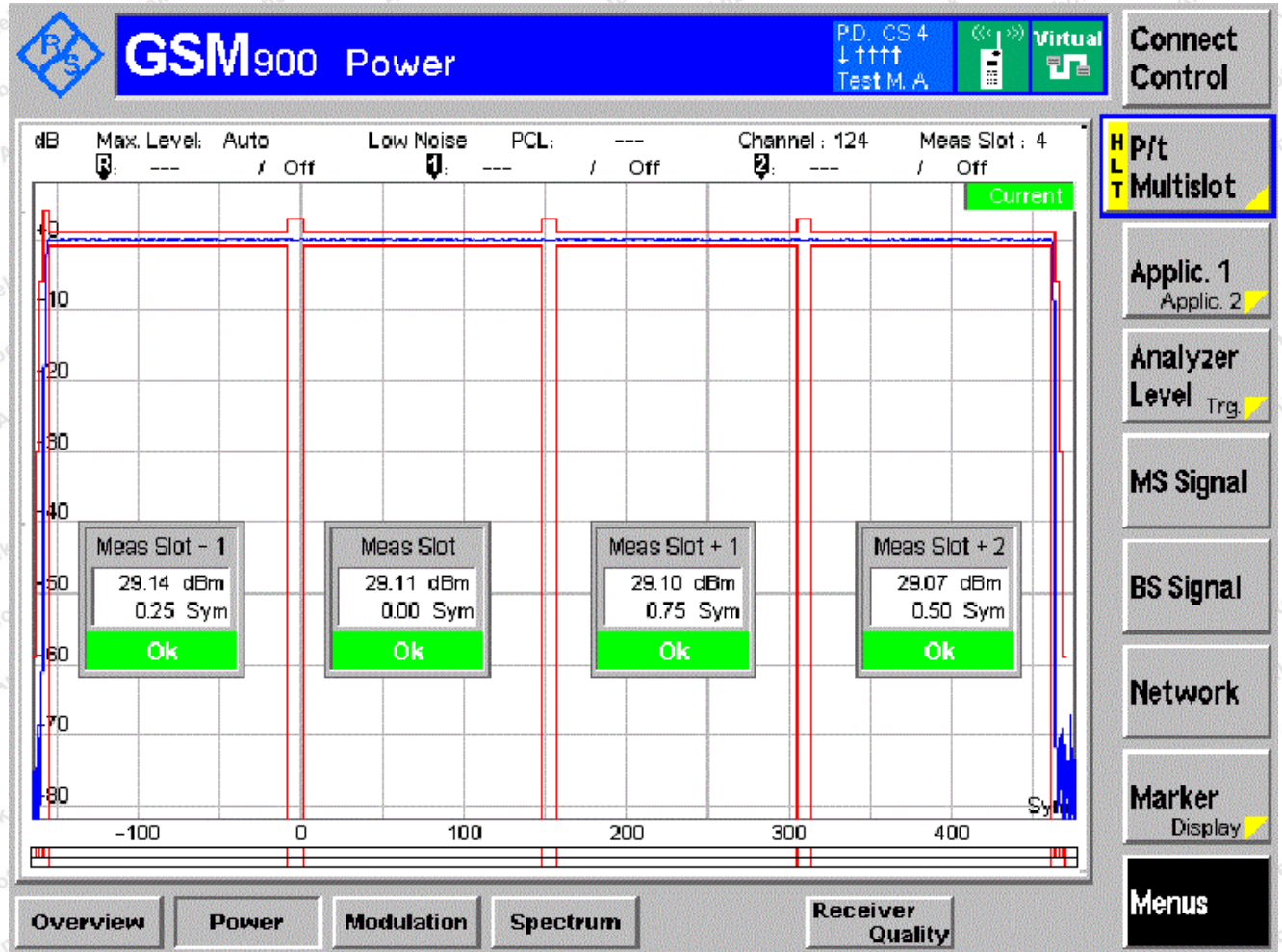
Channel LCH PCL 5



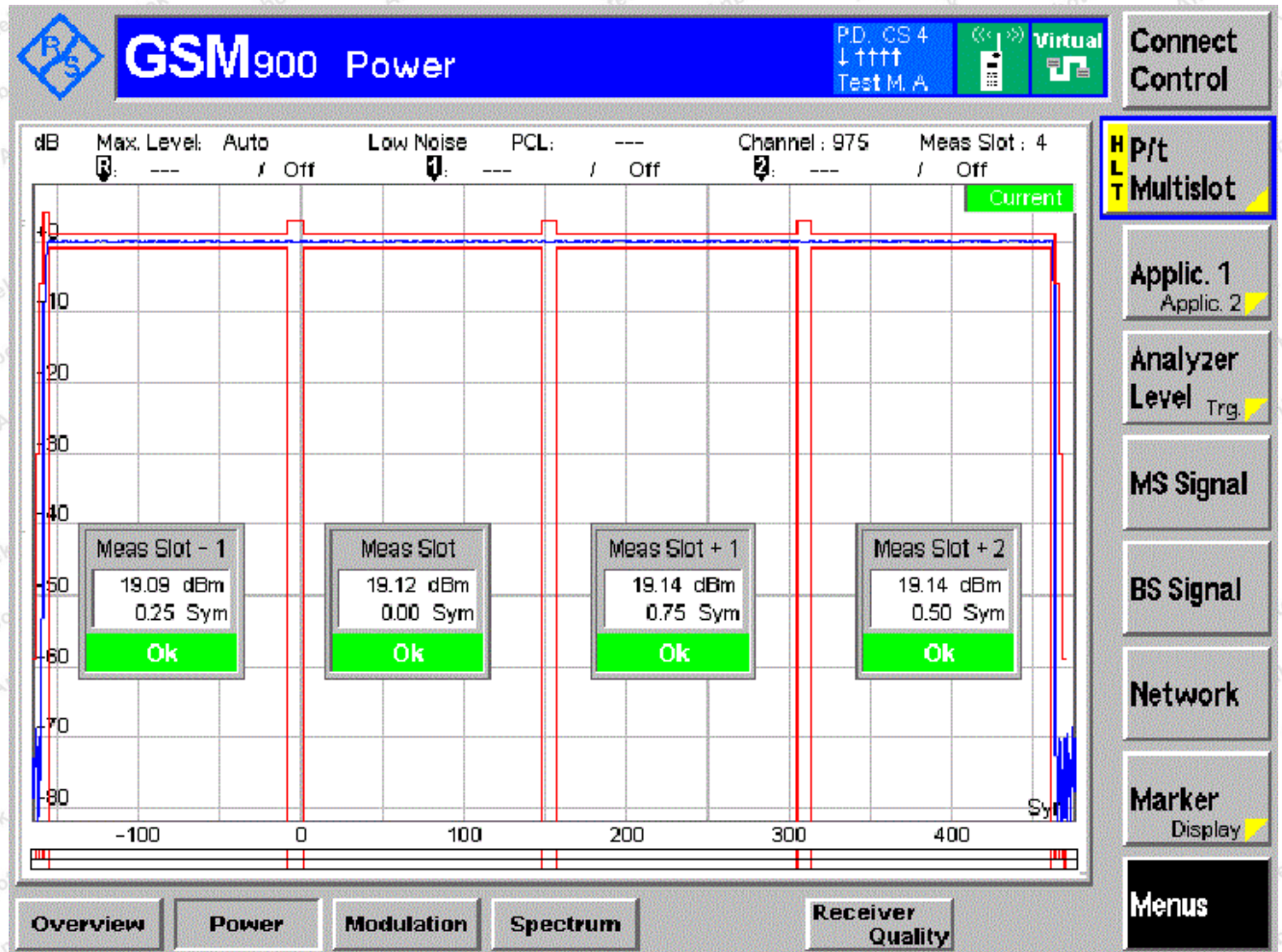
Channel MCH PCL 5



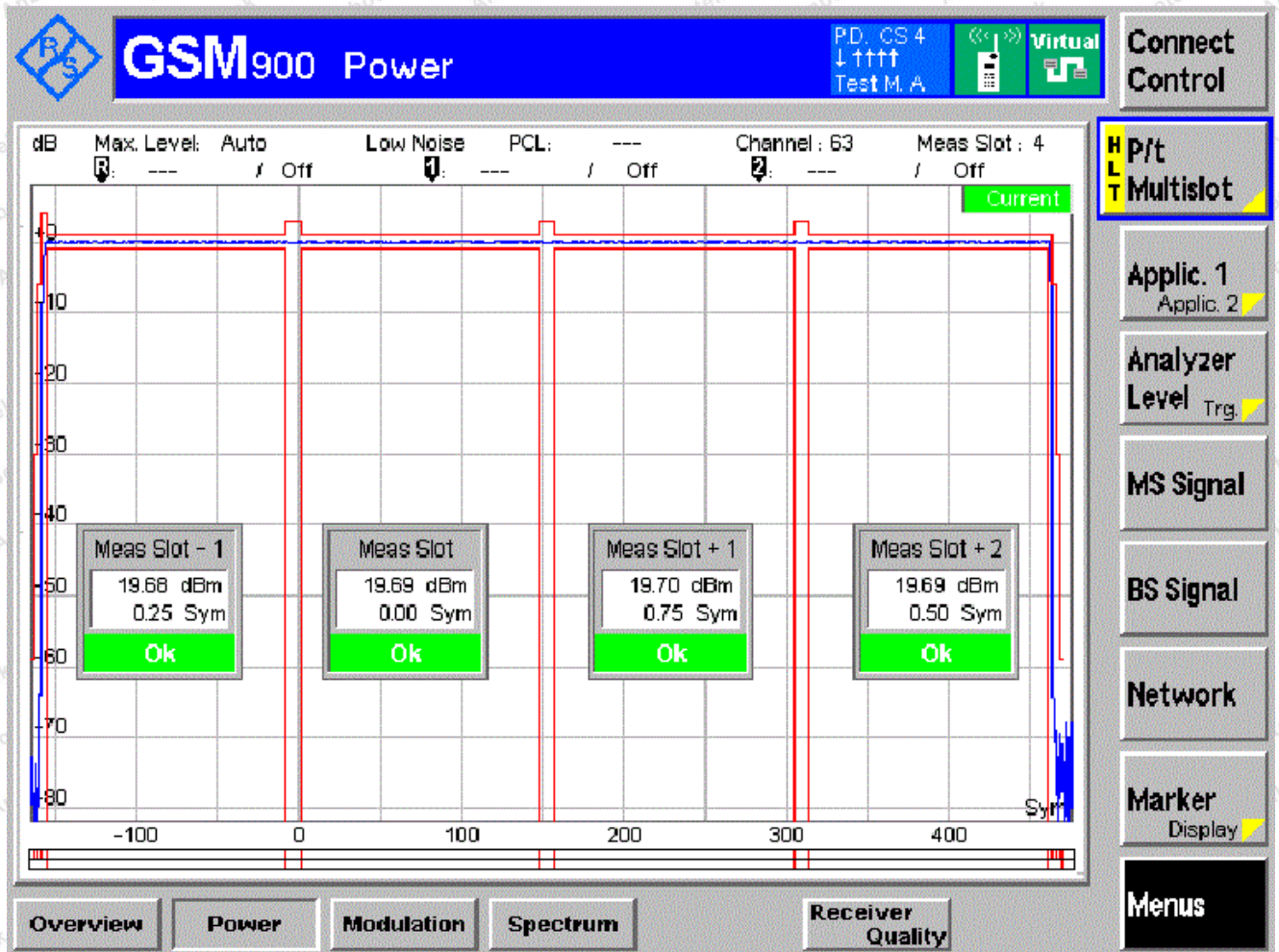
Channel HCH PCL 5



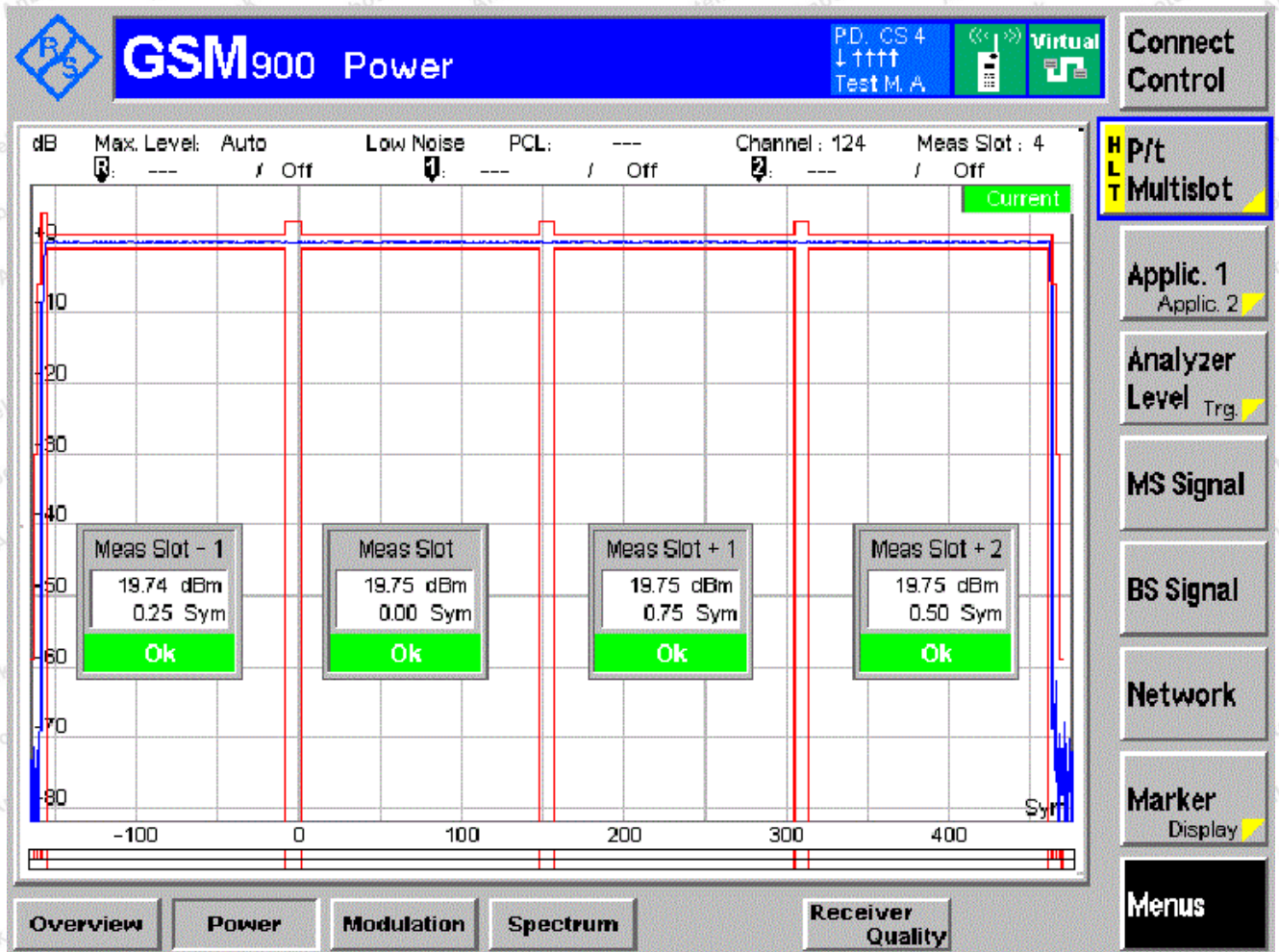
Channel LCH PCL 12



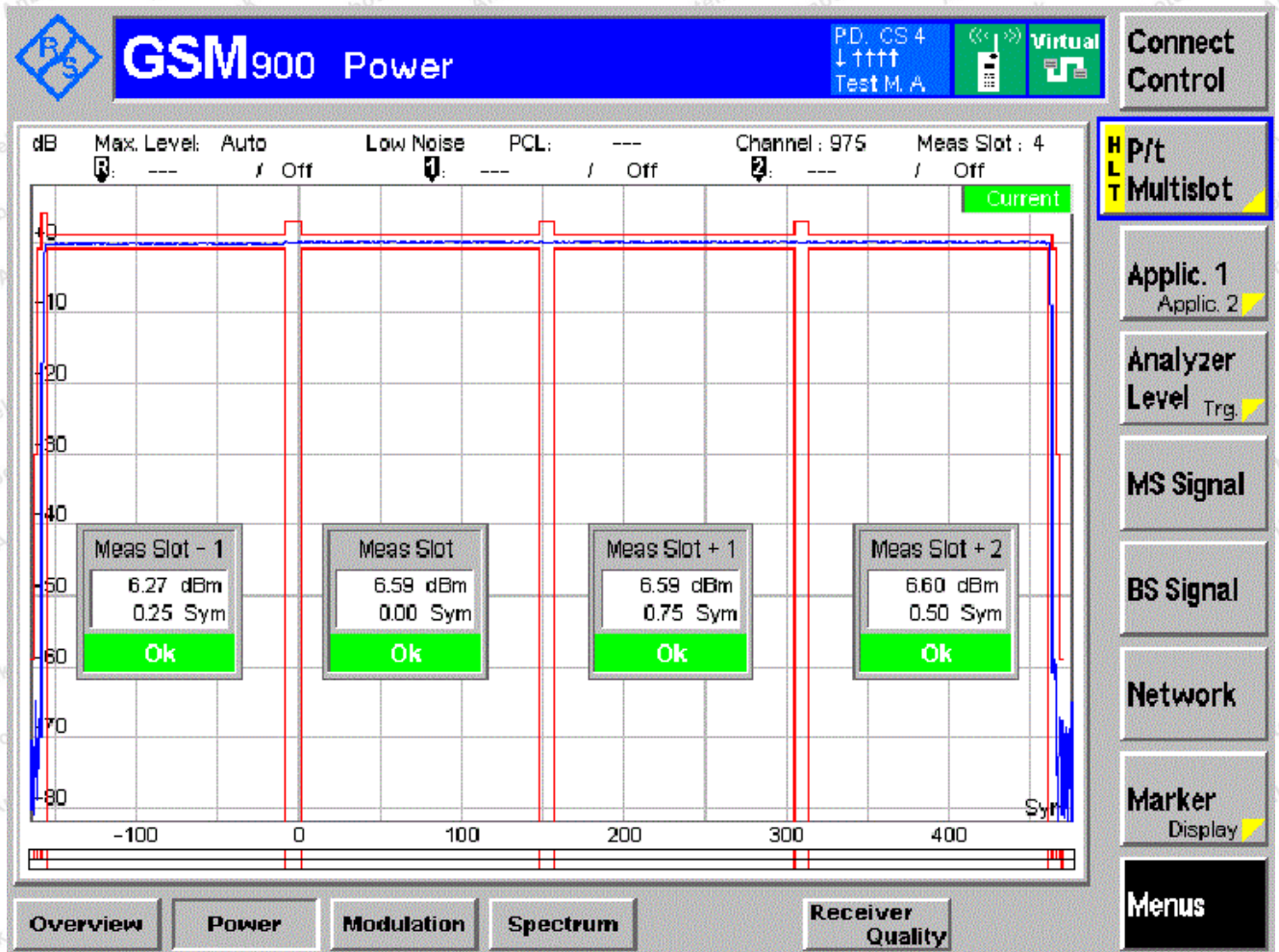
Channel MCH PCL 12



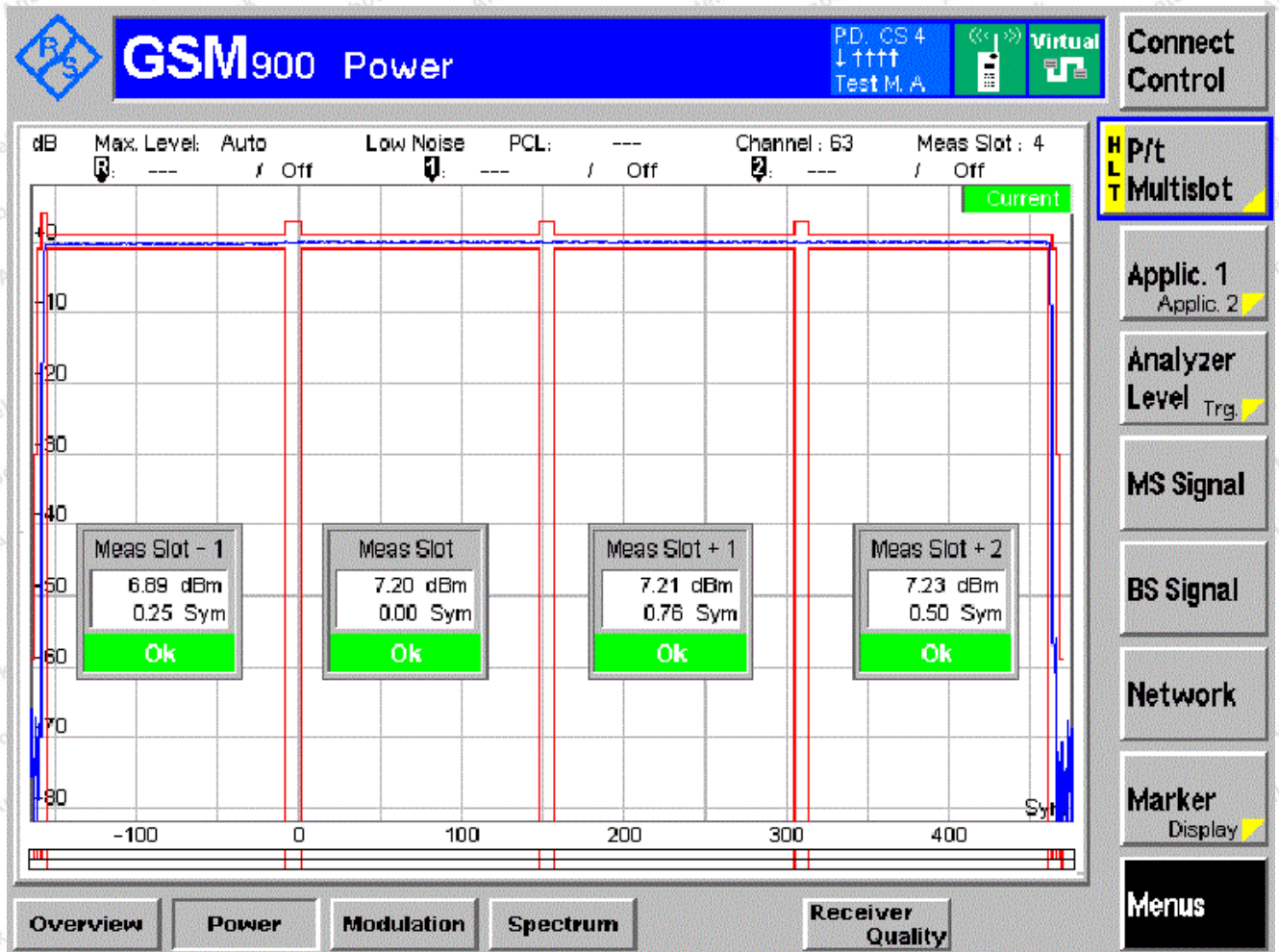
Channel HCH PCL 12



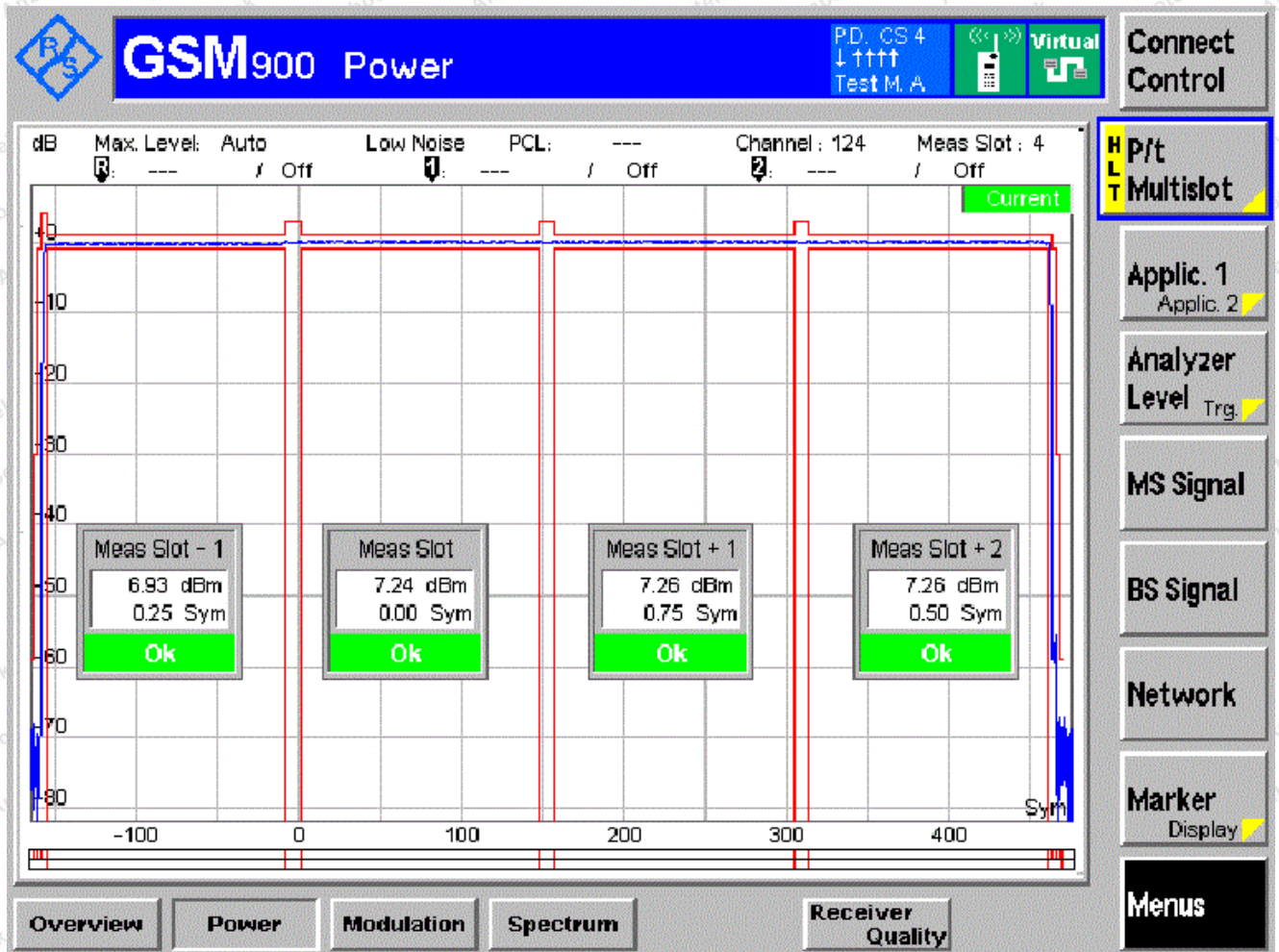
Channel LCH PCL 19



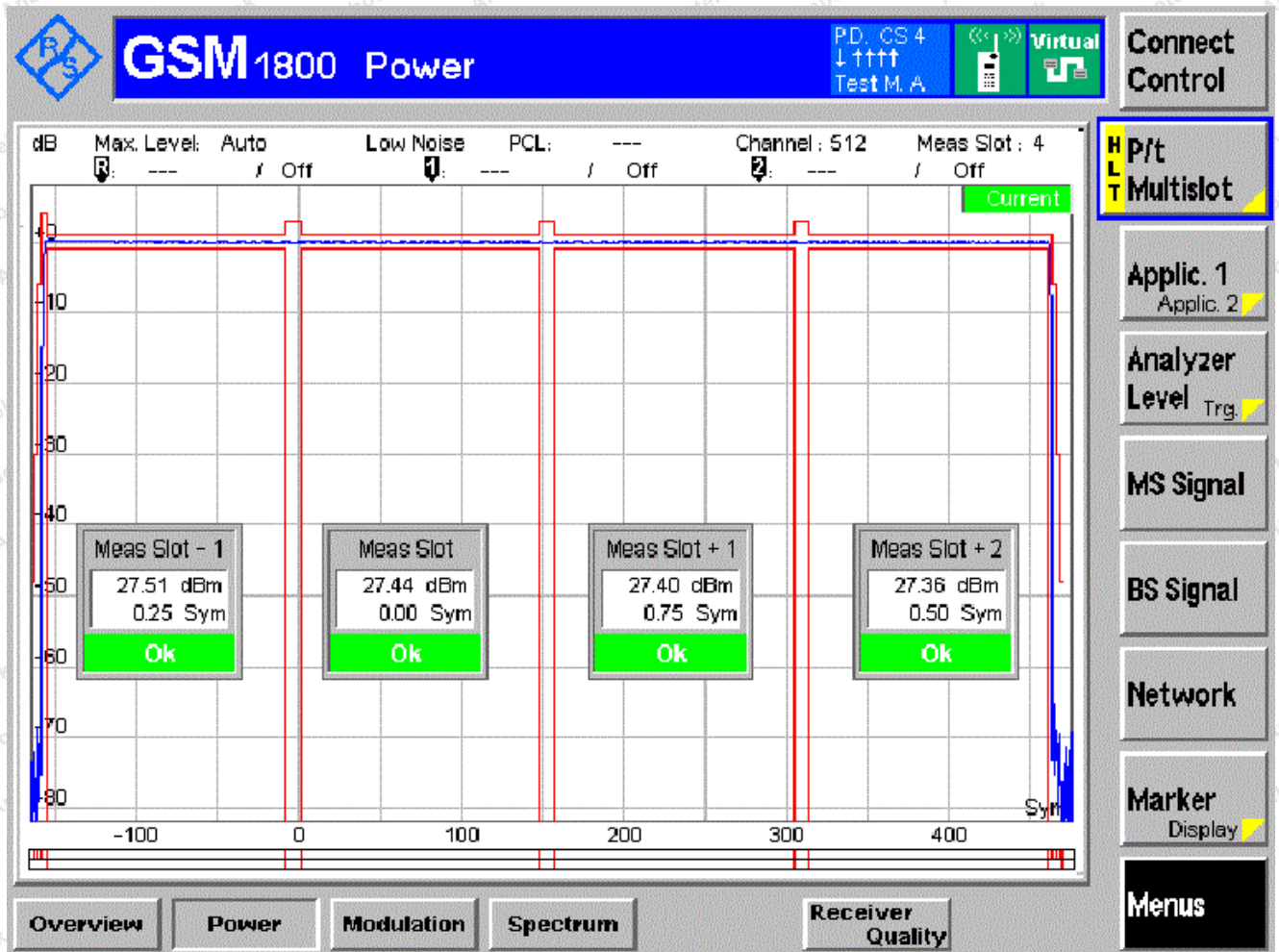
Channel MCH PCL 19

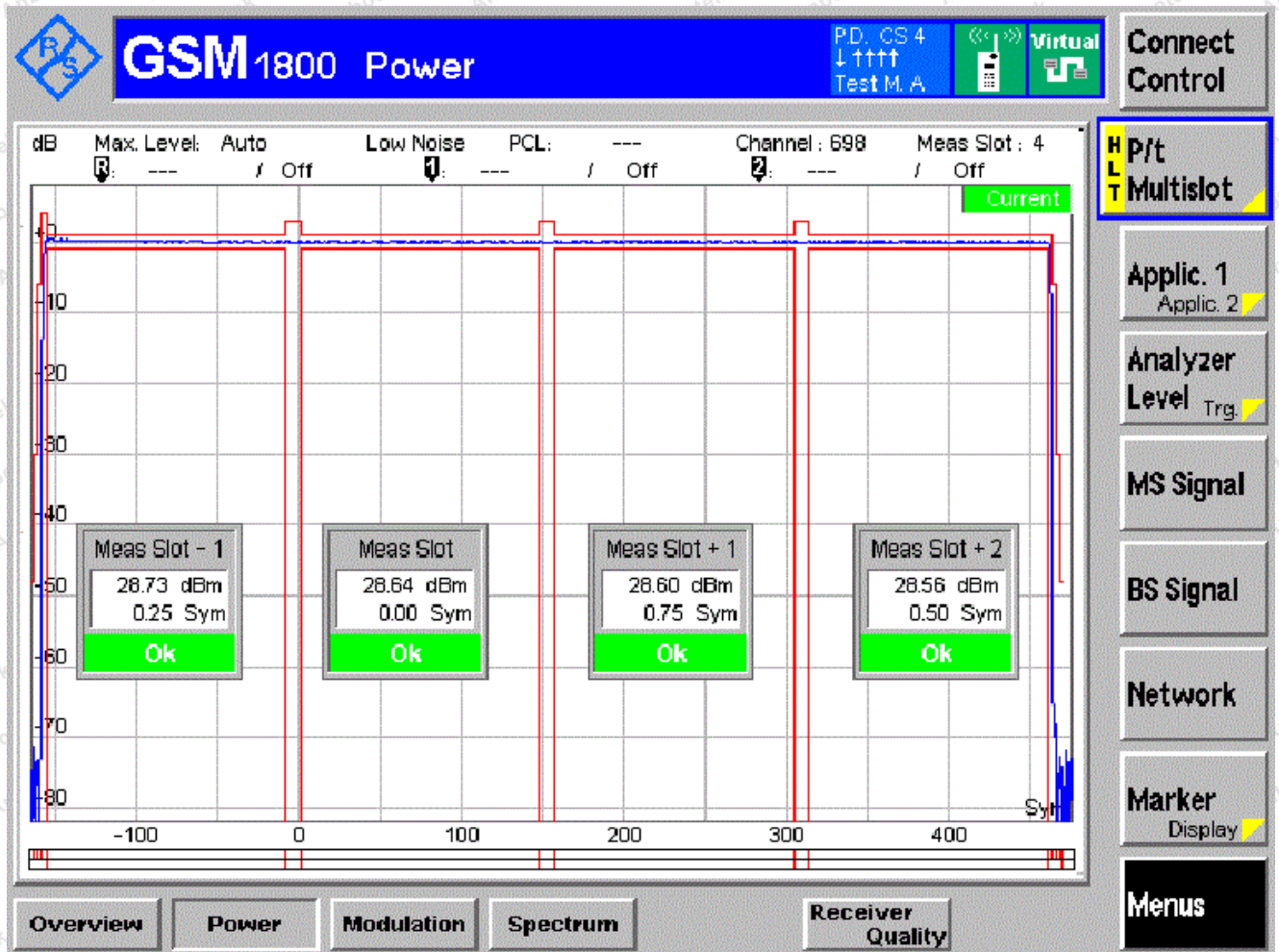


Channel HCH PCL 19

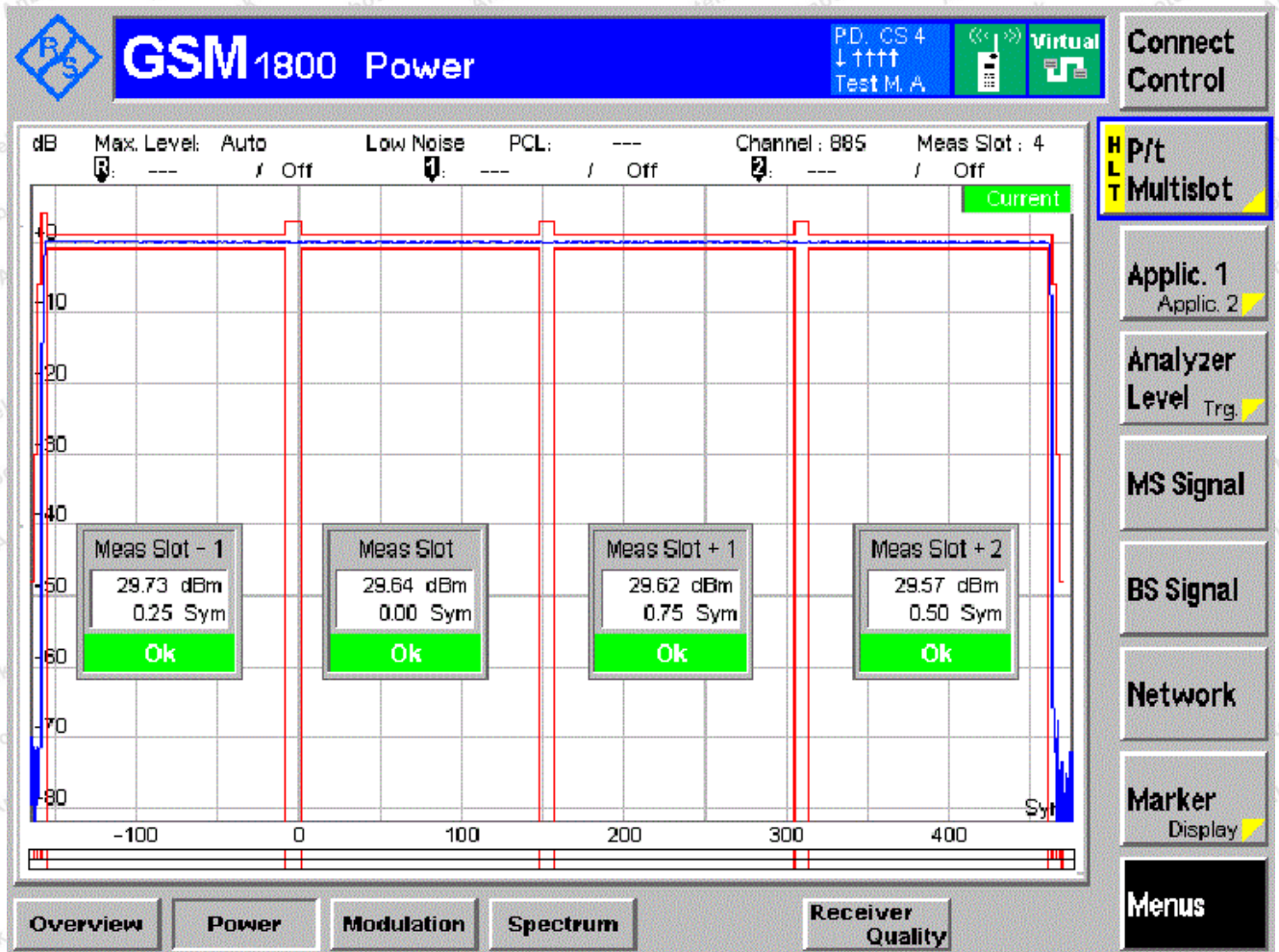


b) DCS1800 TN/VN
Channel LCH PCL 0

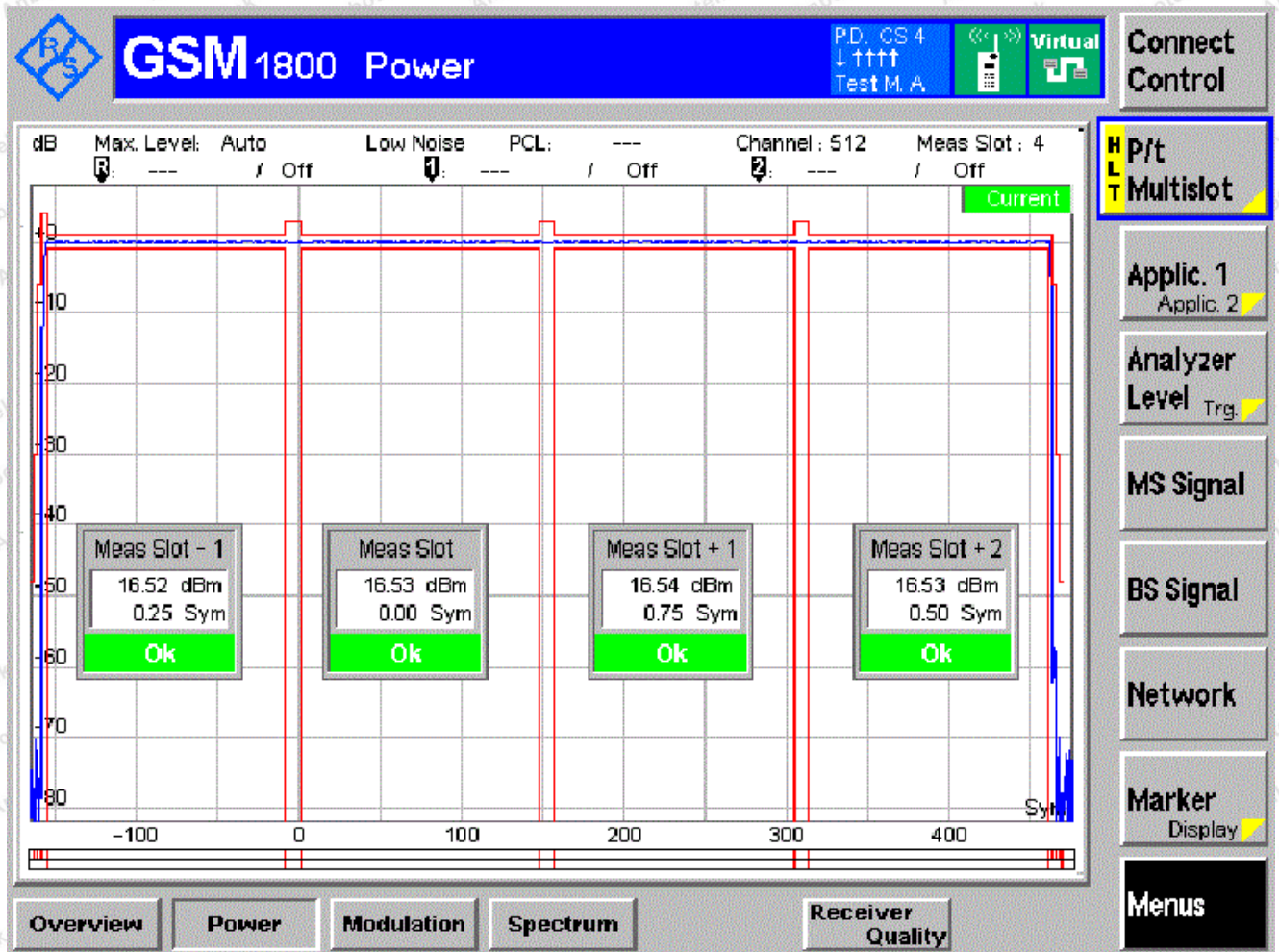




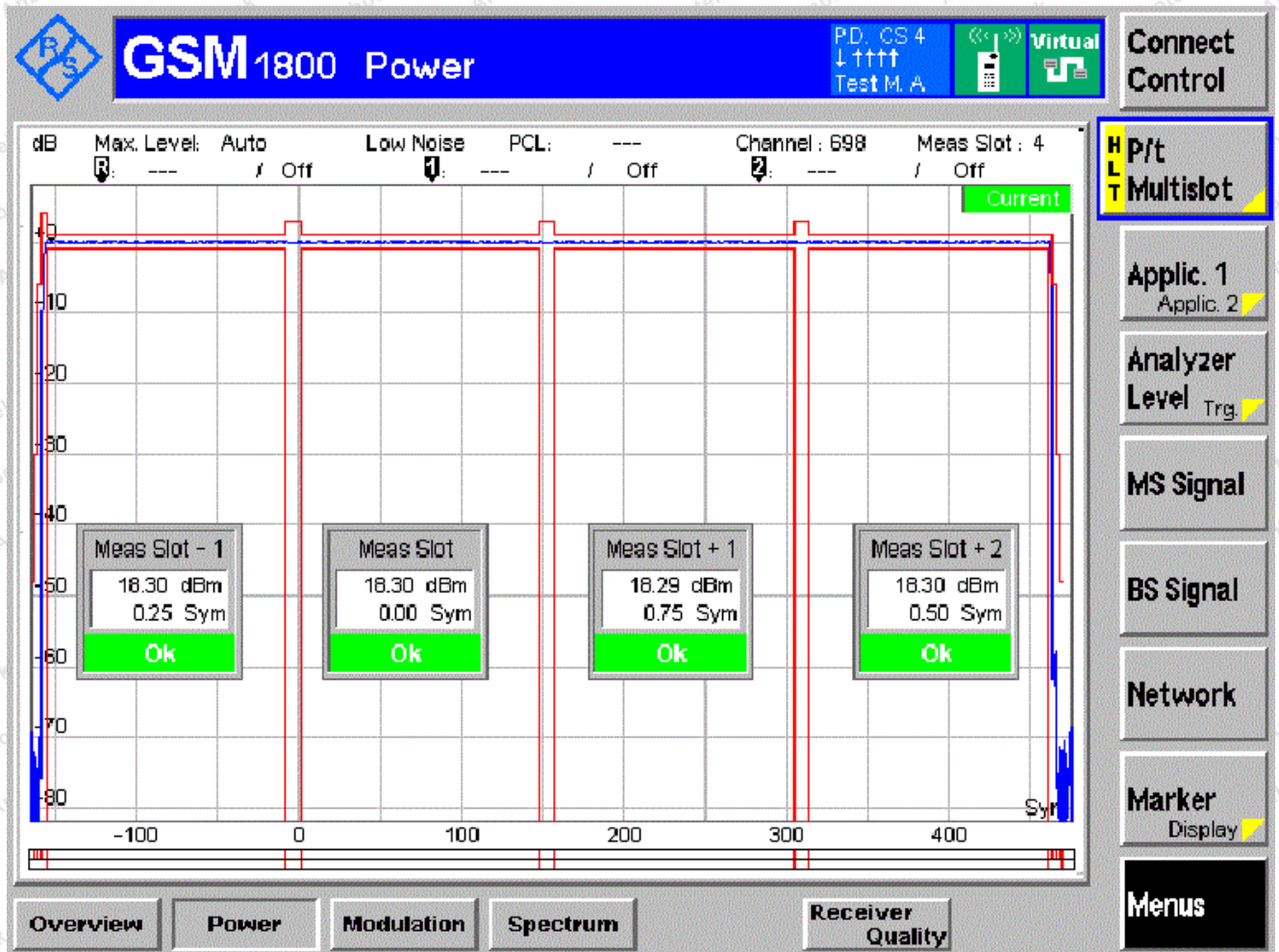
Channel HCH PCL 0



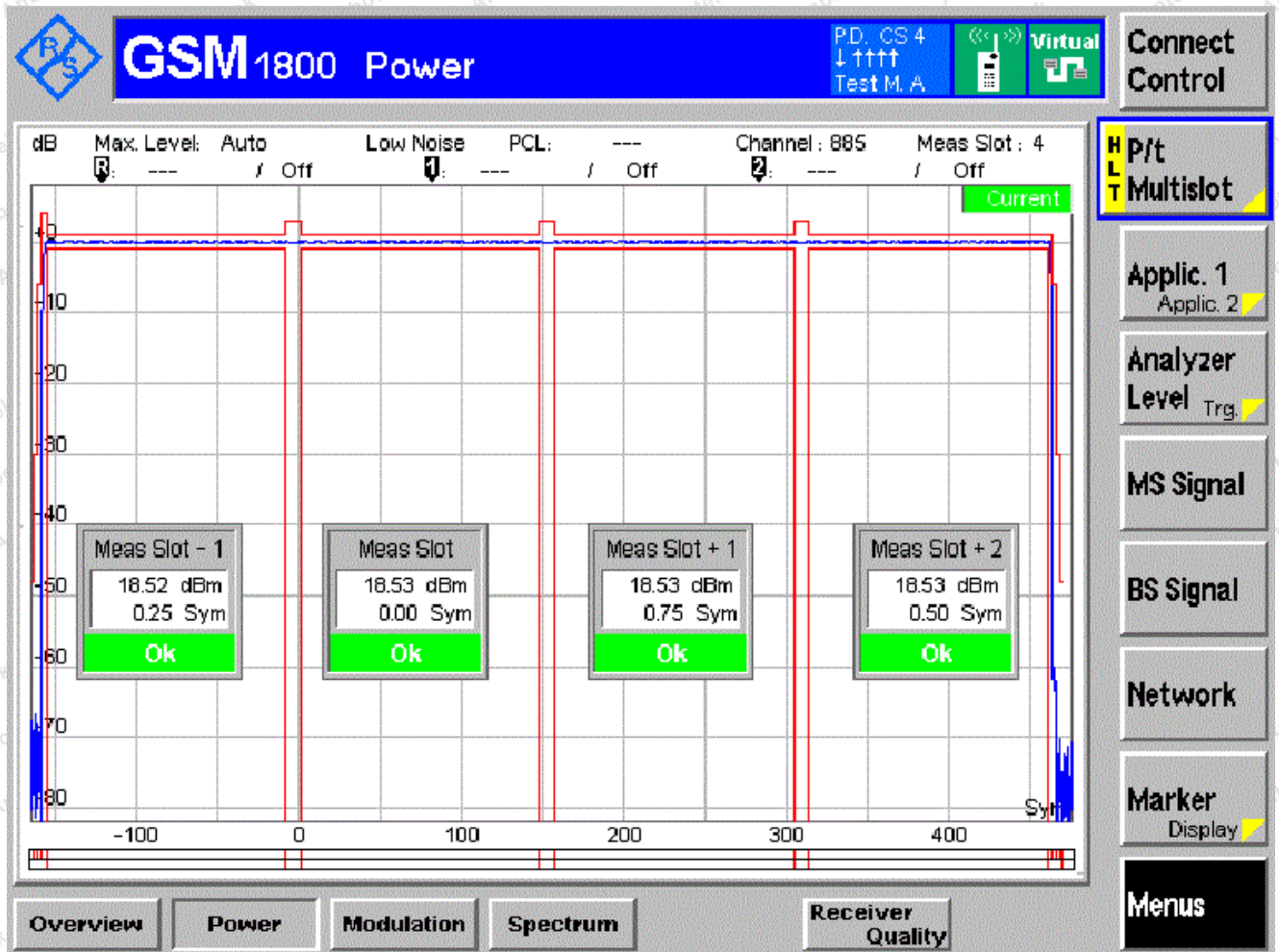
Channel LCH PCL 8

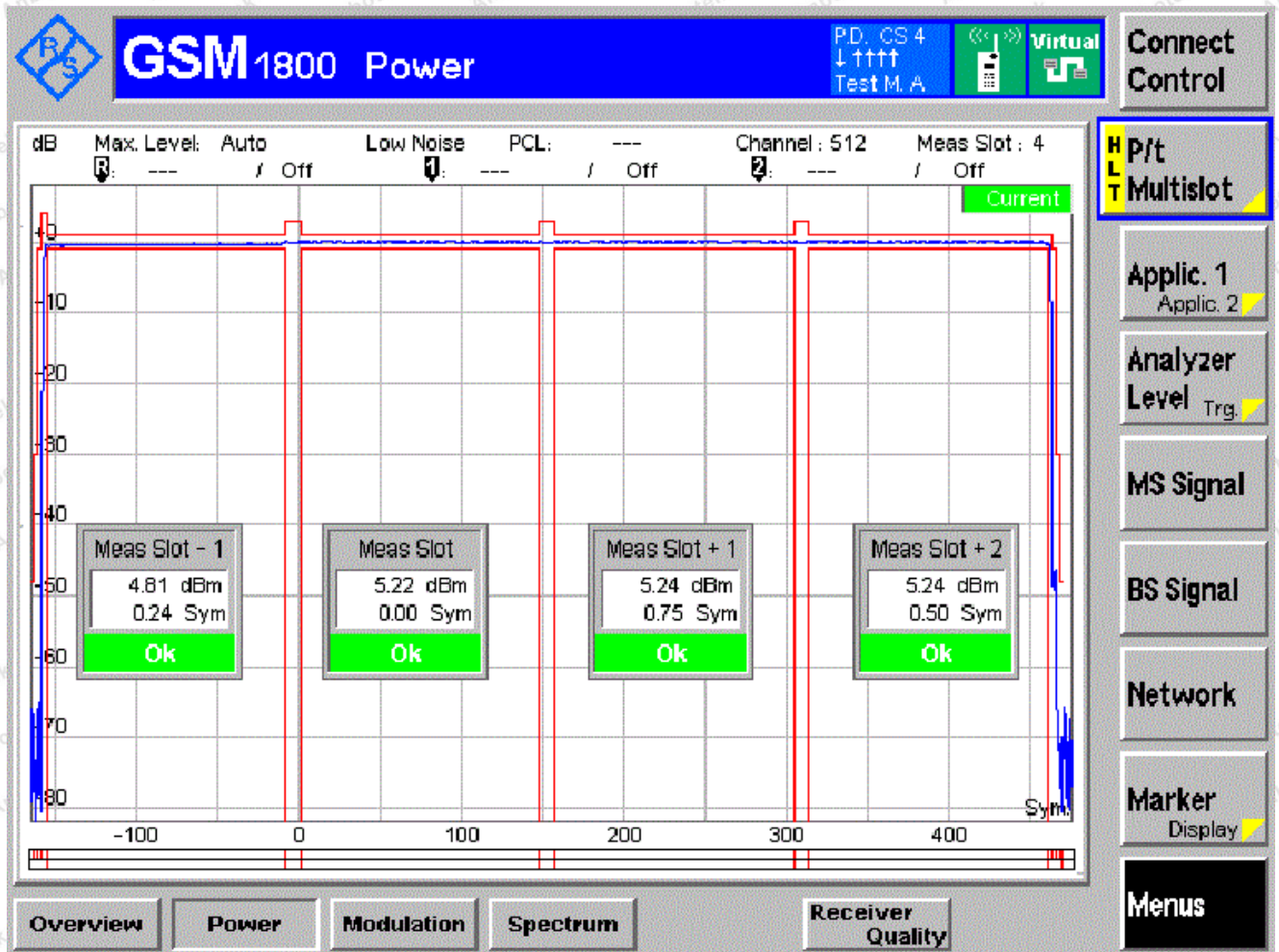


Channel MCH PCL 8

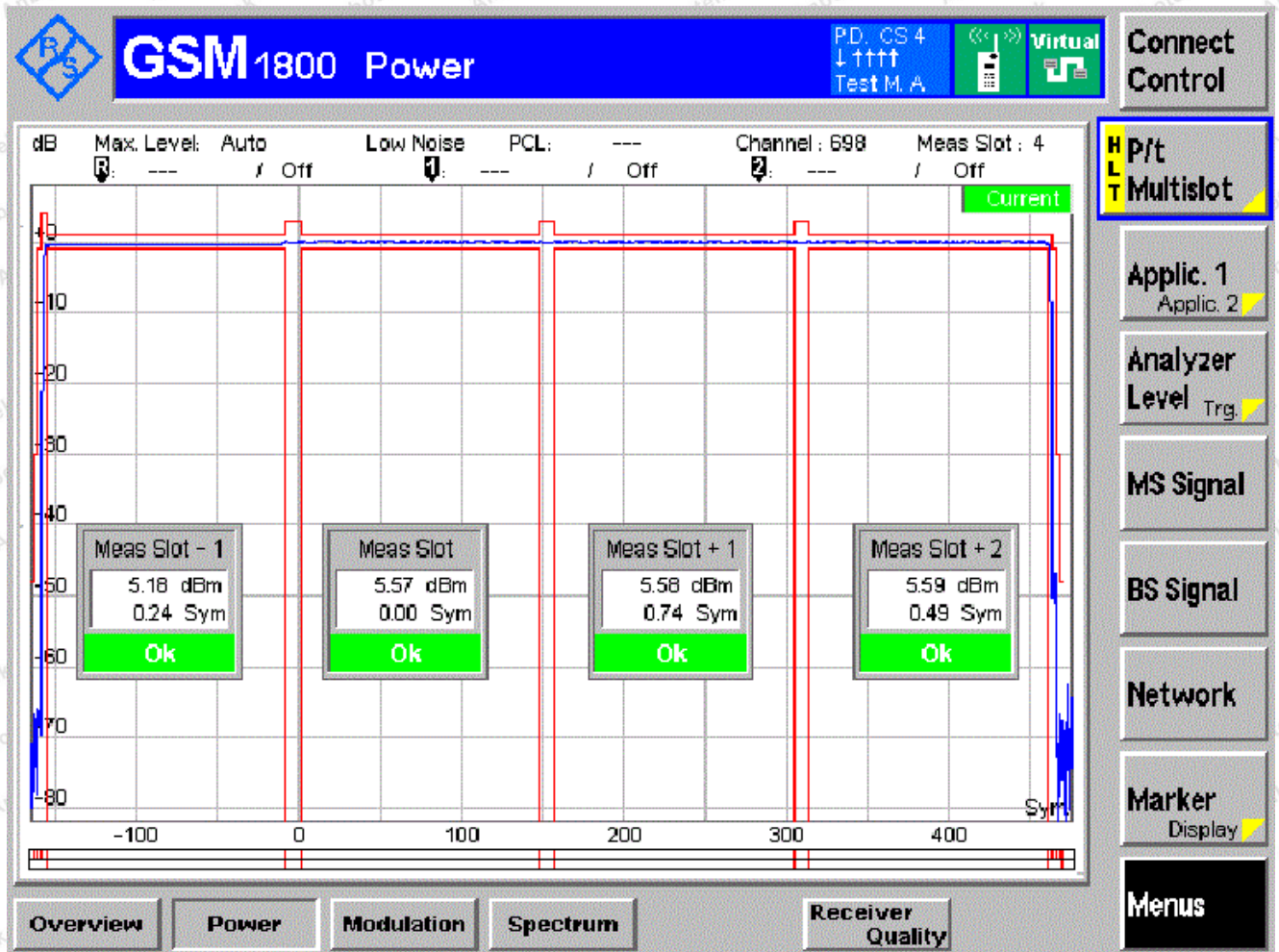


Channel HCH PCL 8

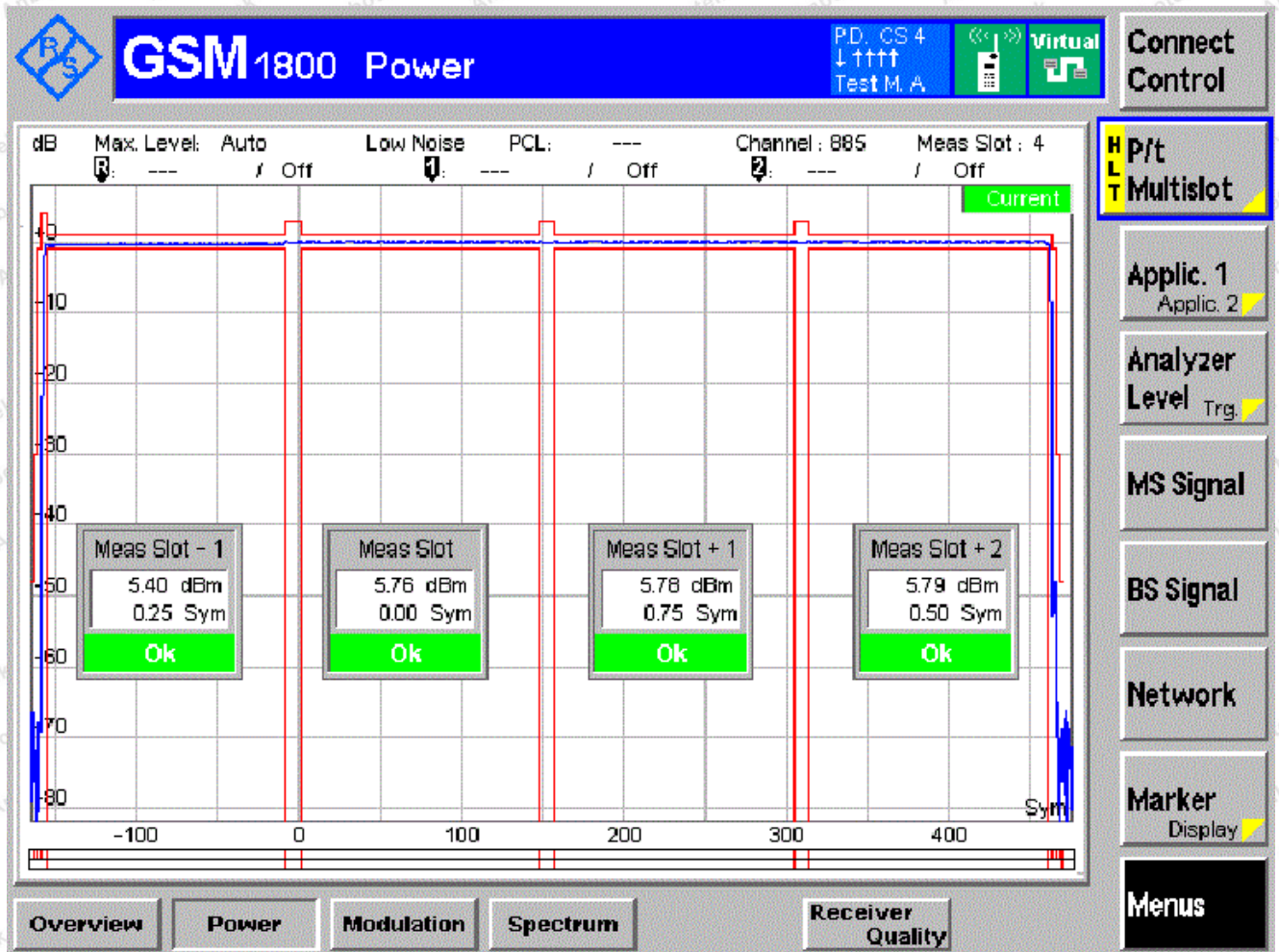




Channel MCH PCL 15



Channel HCH PCL 15

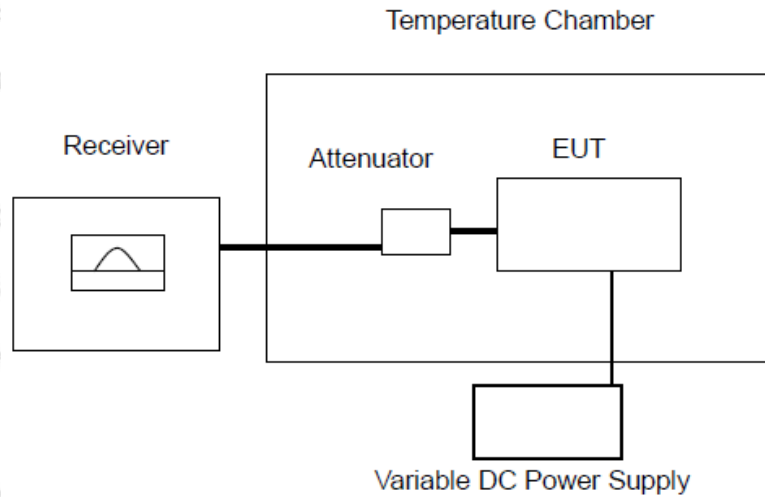


9. Output RF Spectrum in GPRS Multislot Configuration

9.1. Test Limit

Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.3.5

9.2. Test Setup



9.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.3.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.16.3.4 for the measurement method.

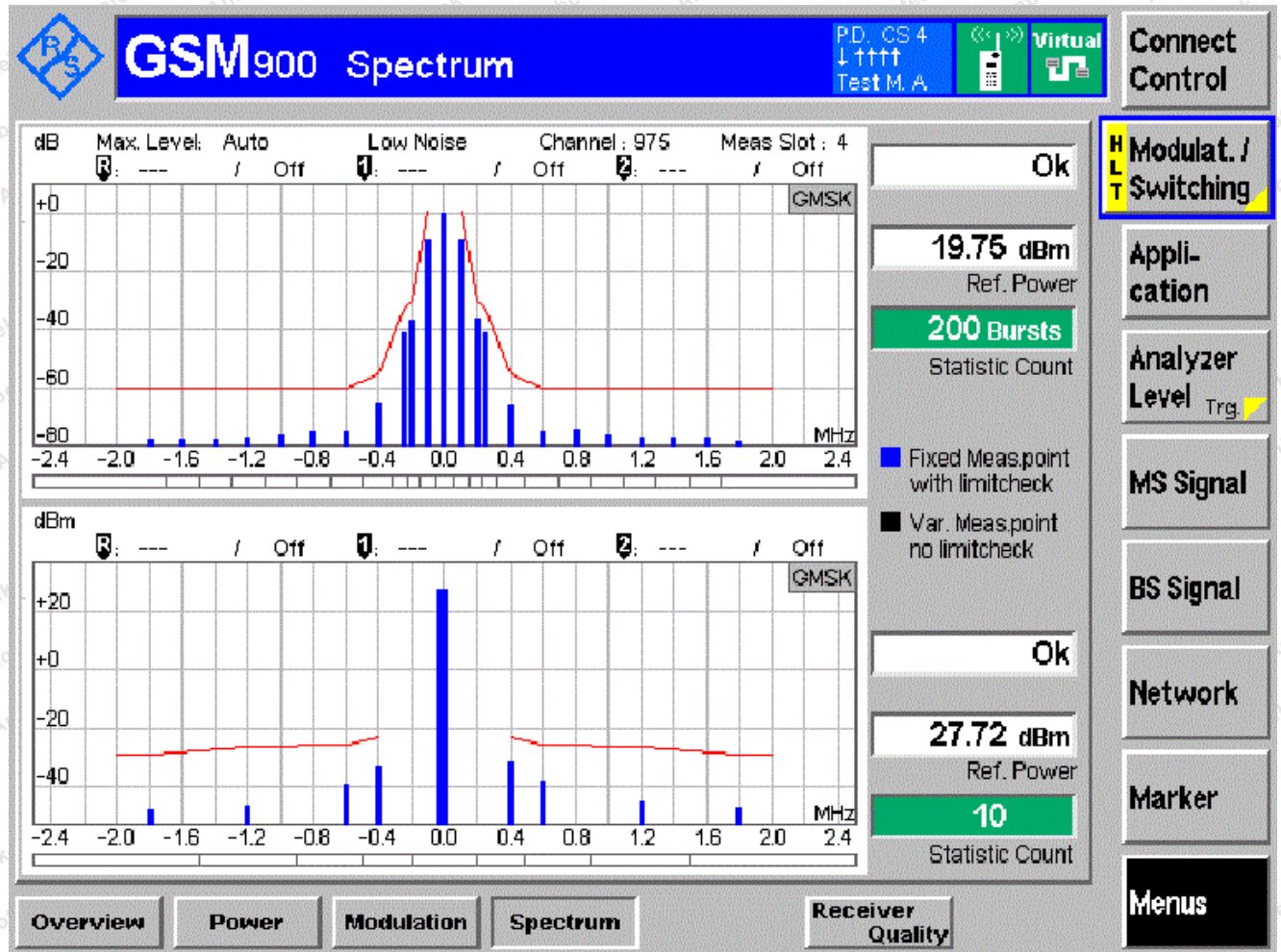
9.4. Test Result

Temperature:	25° C	Relative Humidity:	63 %
Pressure:	1012 hPa	Test Voltage:	DC 3.7V Battery inside

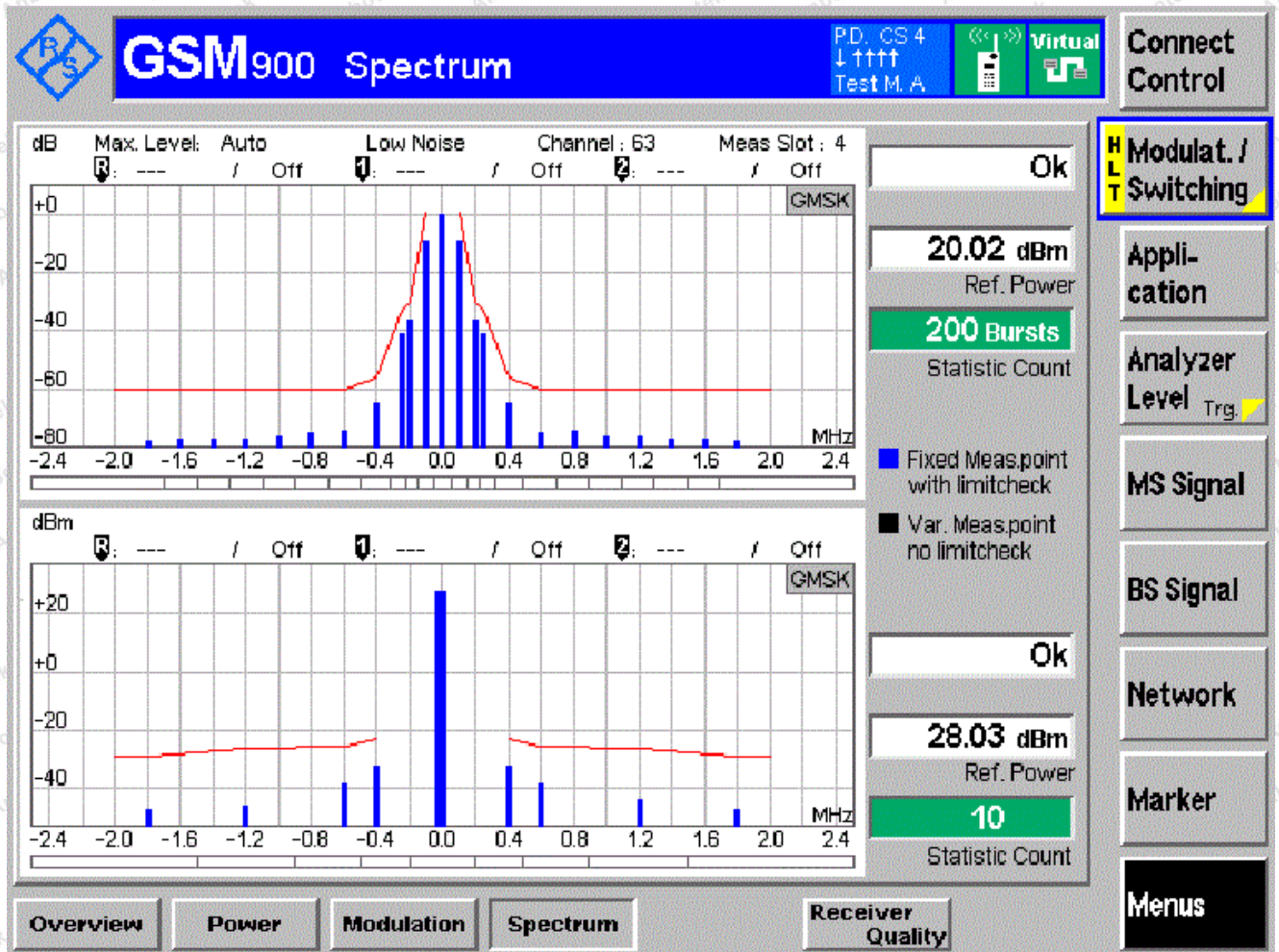
Modulation& switch Spectrum	Power level	Result		
		Traffic Channels		
GSM900		LCH	MCH	HCH
TN/VN	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TL/VL	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TL/VH	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TH/VL	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS
TH/VH	5	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	19	PASS	PASS	PASS

Modulation& switch Spectrum	Power level	Result		
		Traffic Channels		
DCS1800		LCH	MCH	HCH
TN/VN	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TL/VL	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TL/VH	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TH/VL	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS
TH/VH	0	PASS	PASS	PASS
	7	PASS	PASS	PASS
	11	PASS	PASS	PASS
	15	PASS	PASS	PASS

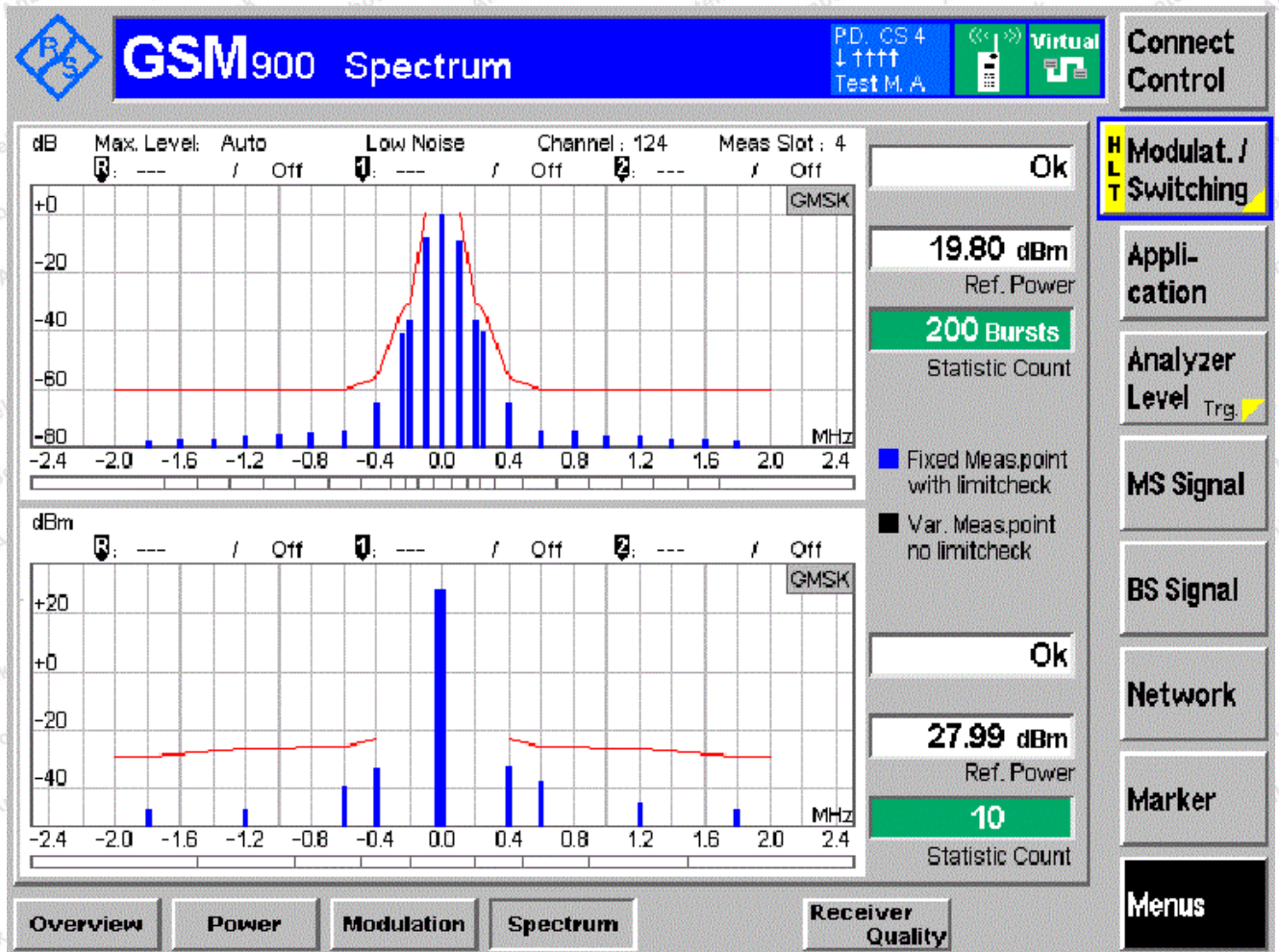
a) GSM 900 TN/VN
Channel LCH PCL 5



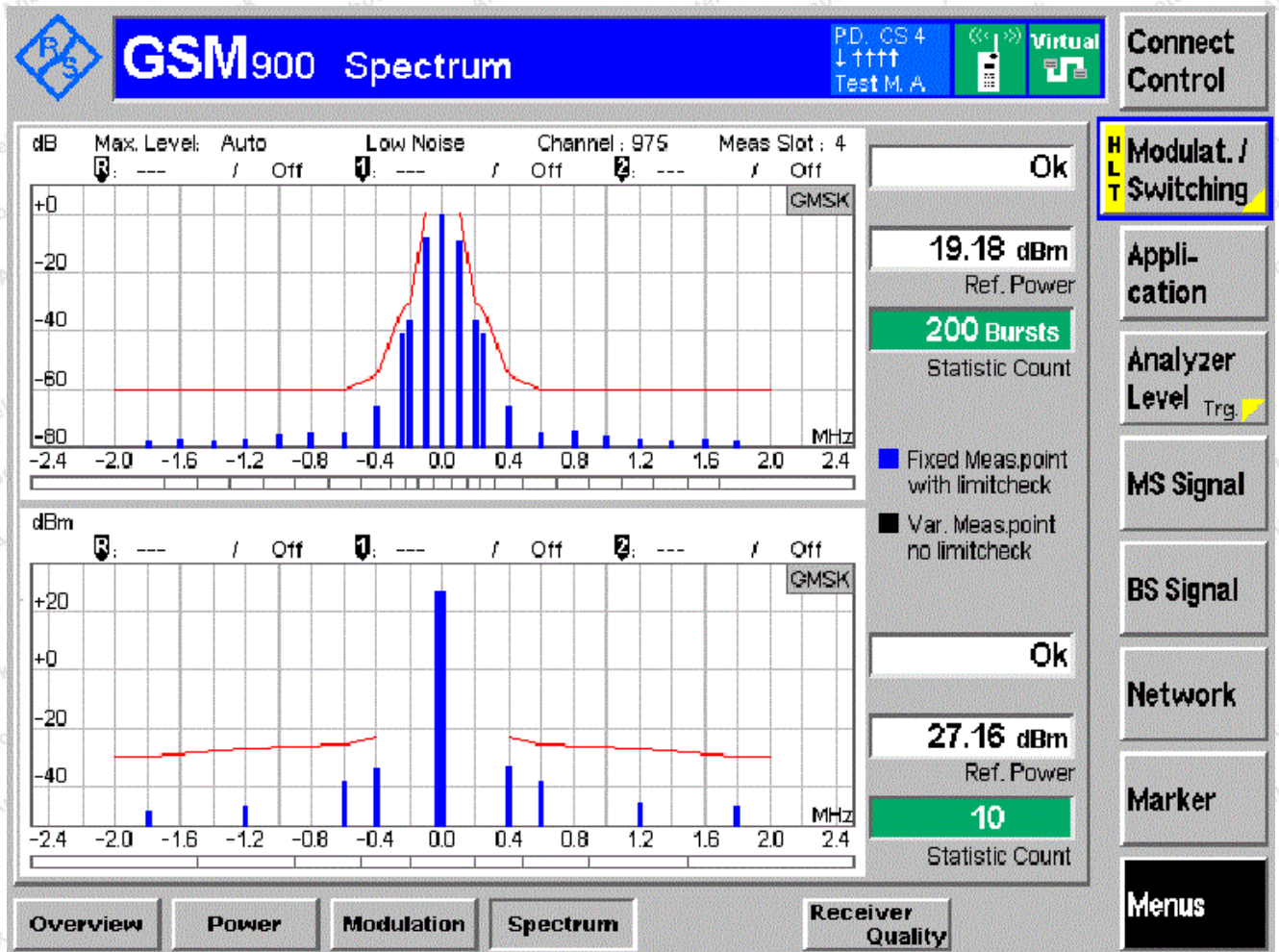
Channel MCH PCL 5

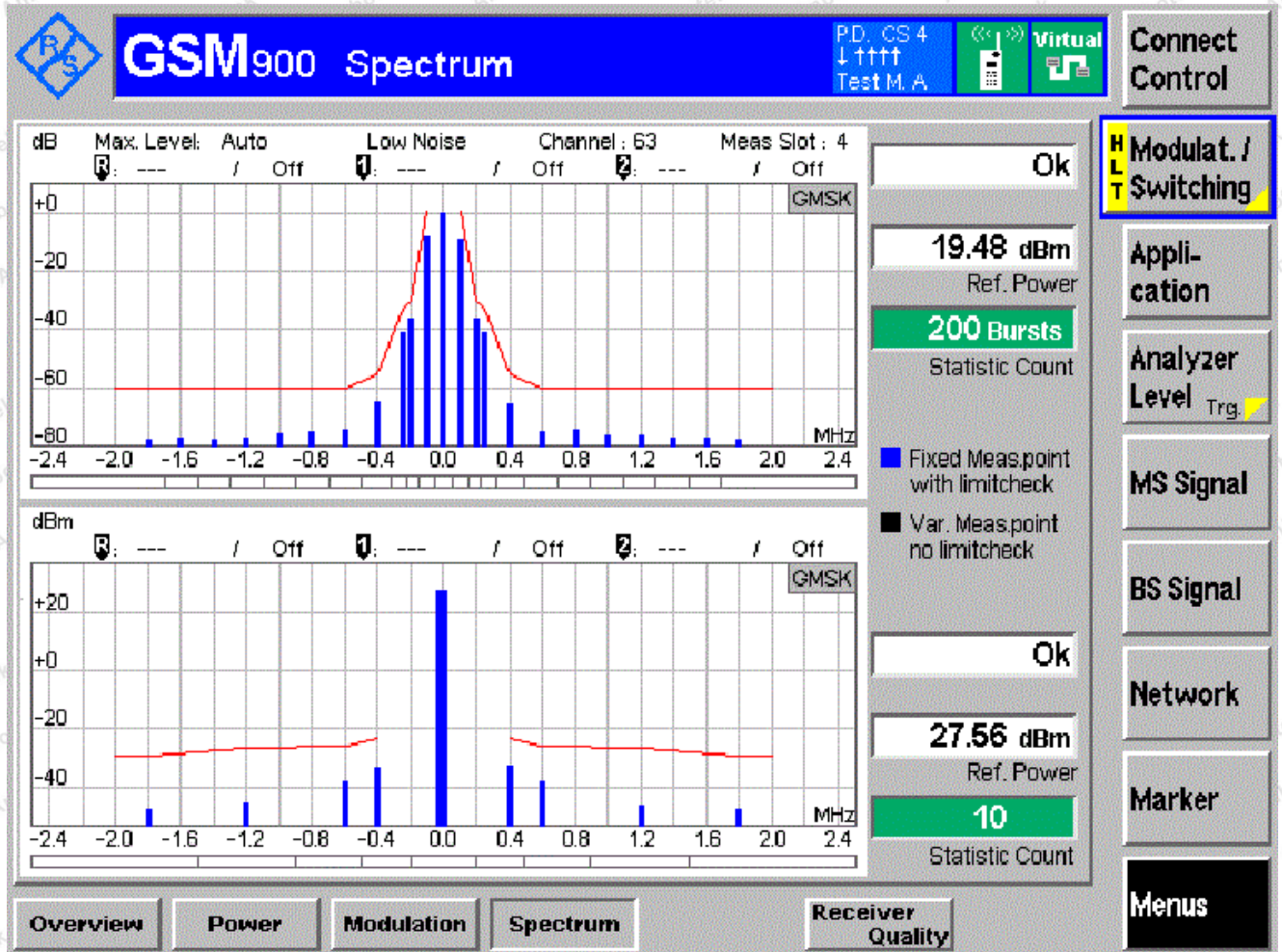


Channel HCH PCL 5

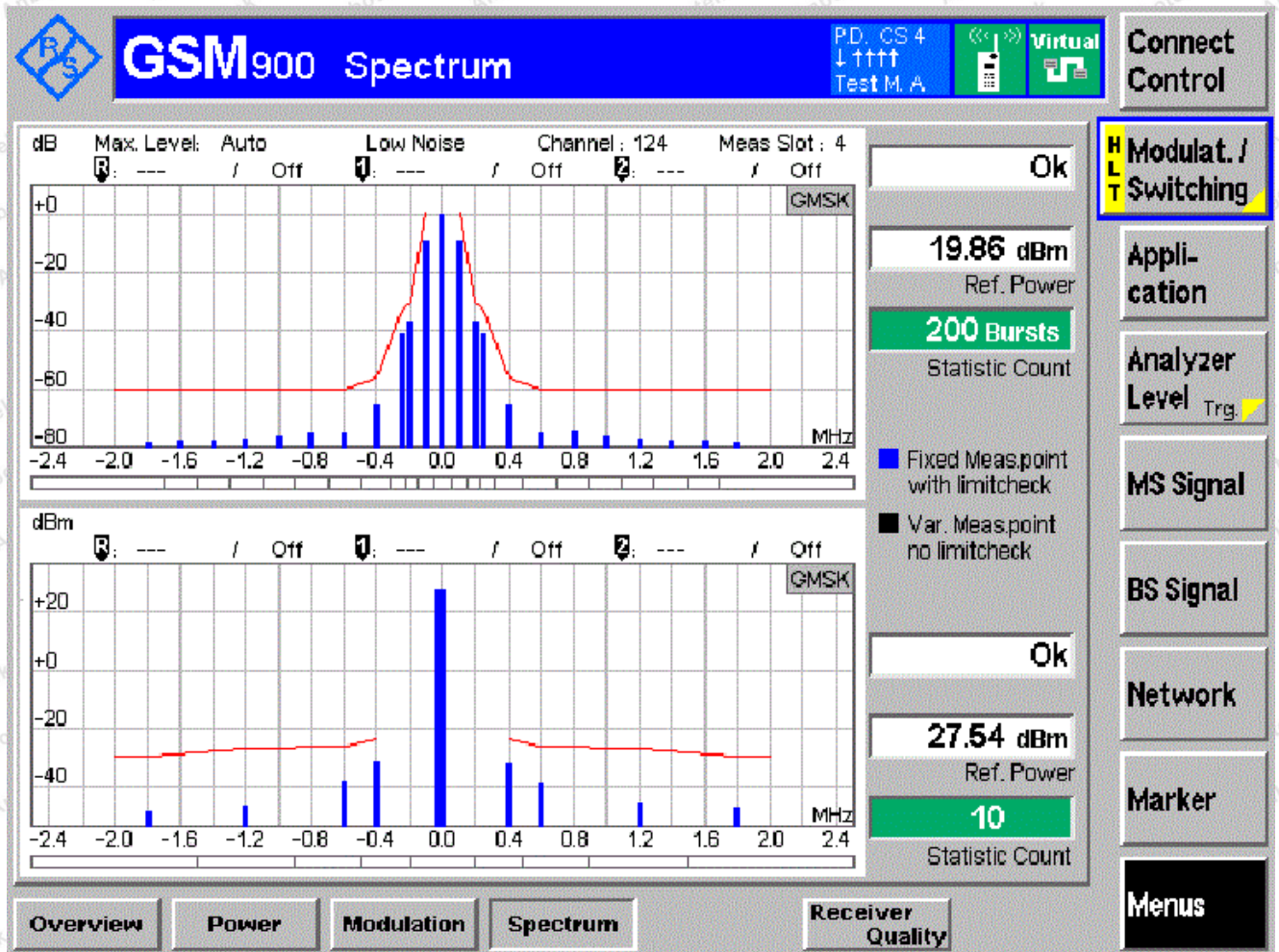


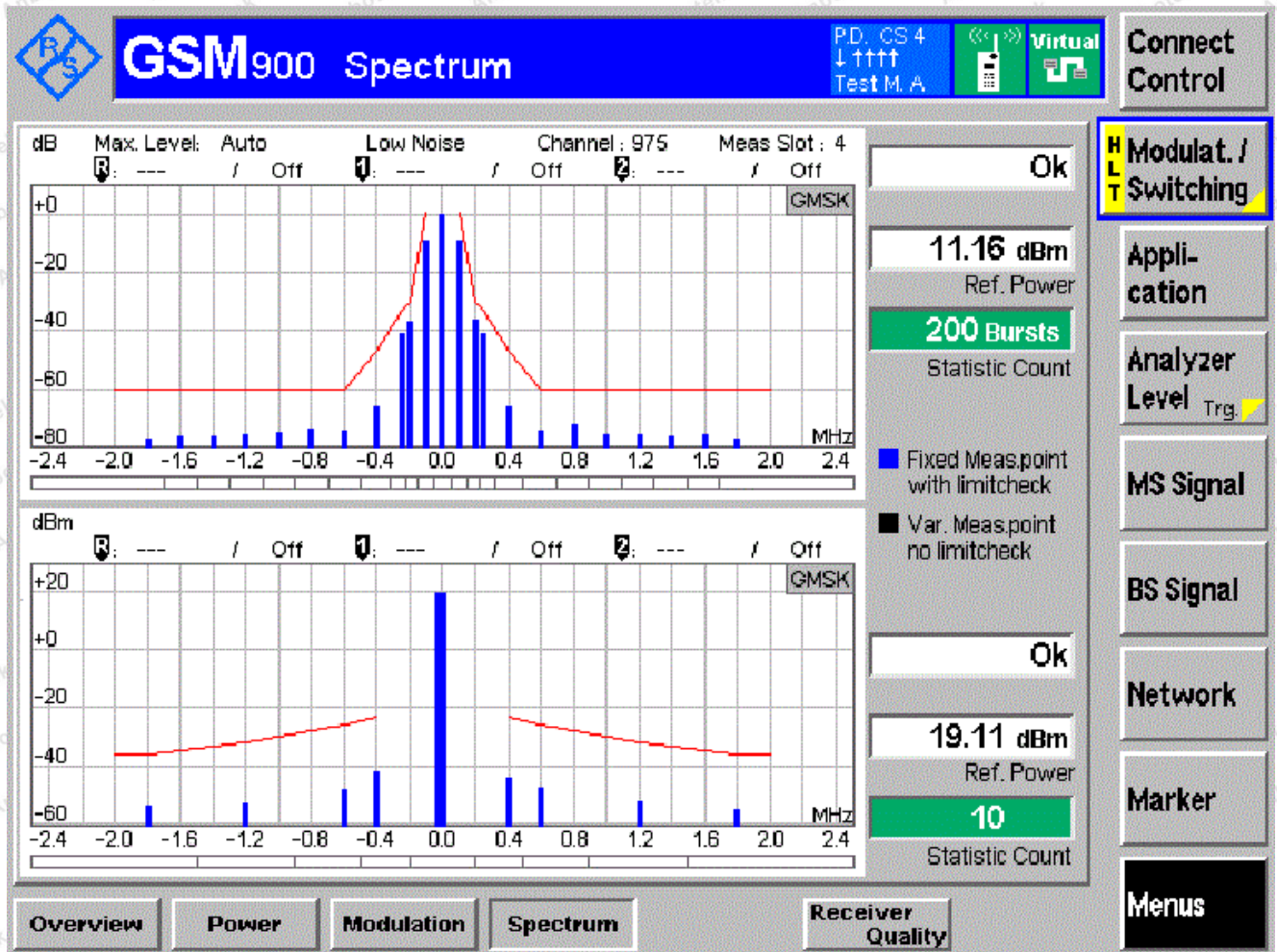
Channel LCH PCL 7



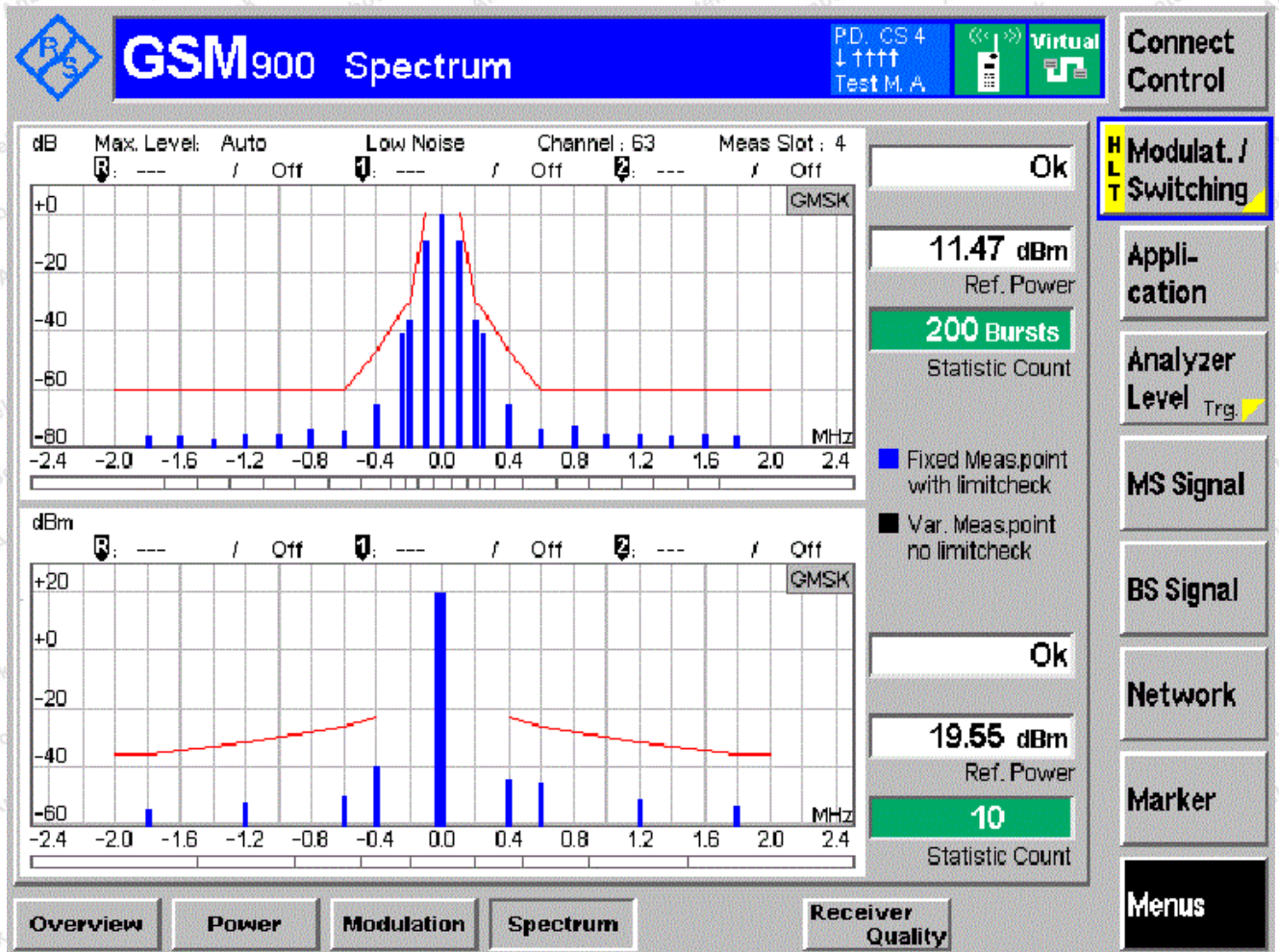


Channel HCH PCL 7

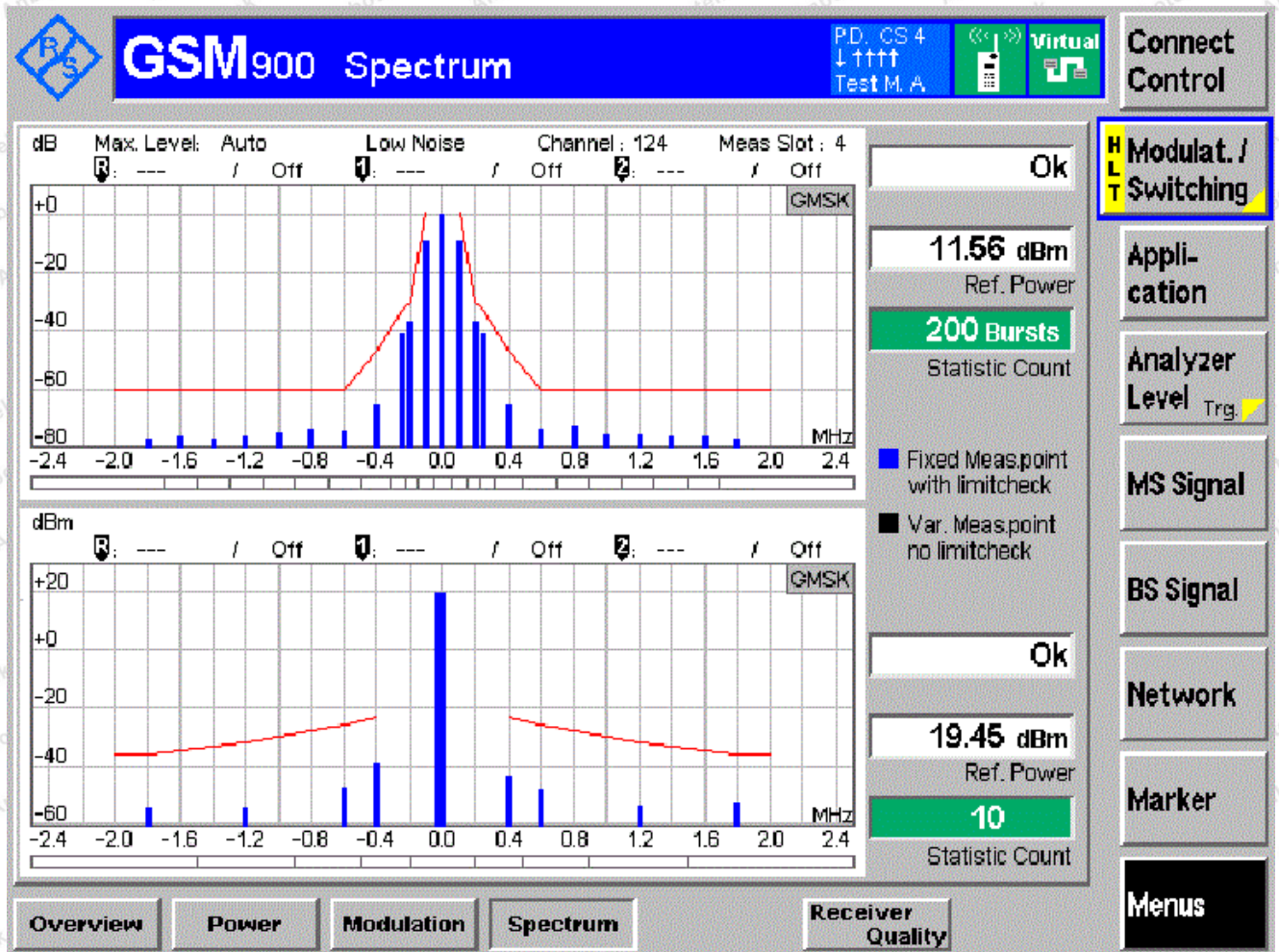




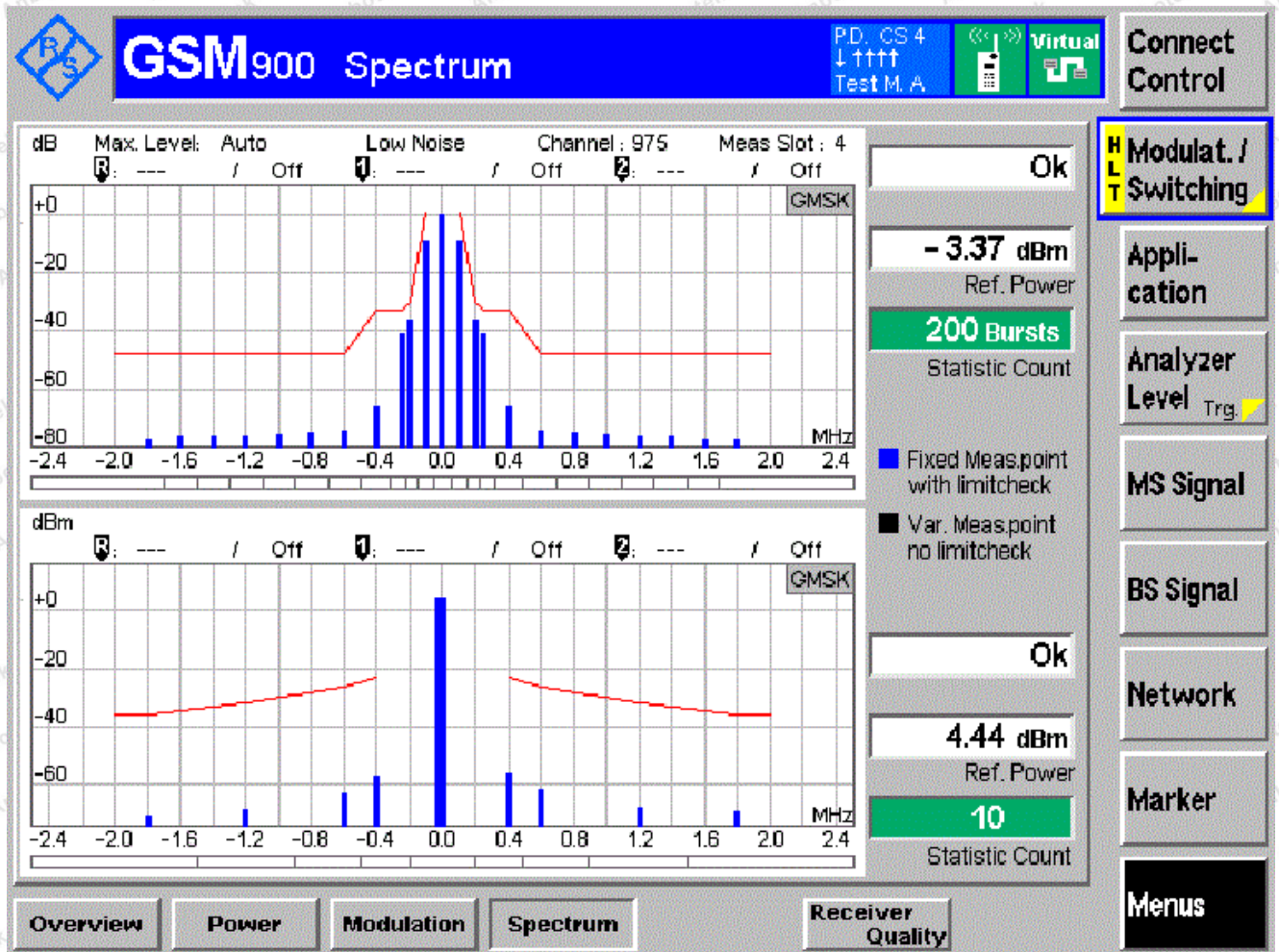
Channel MCH PCL 11



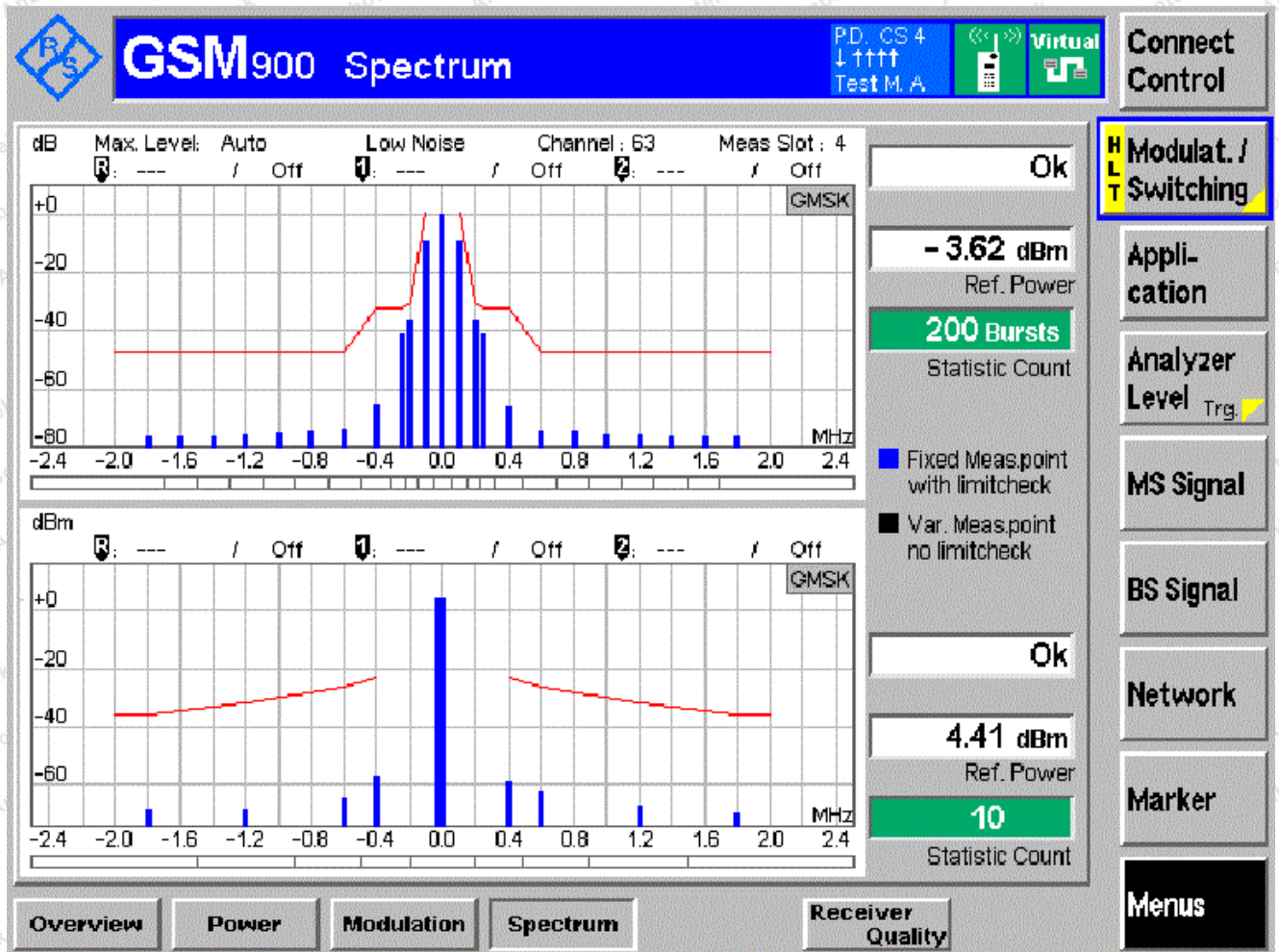
Channel HCH PCL 11



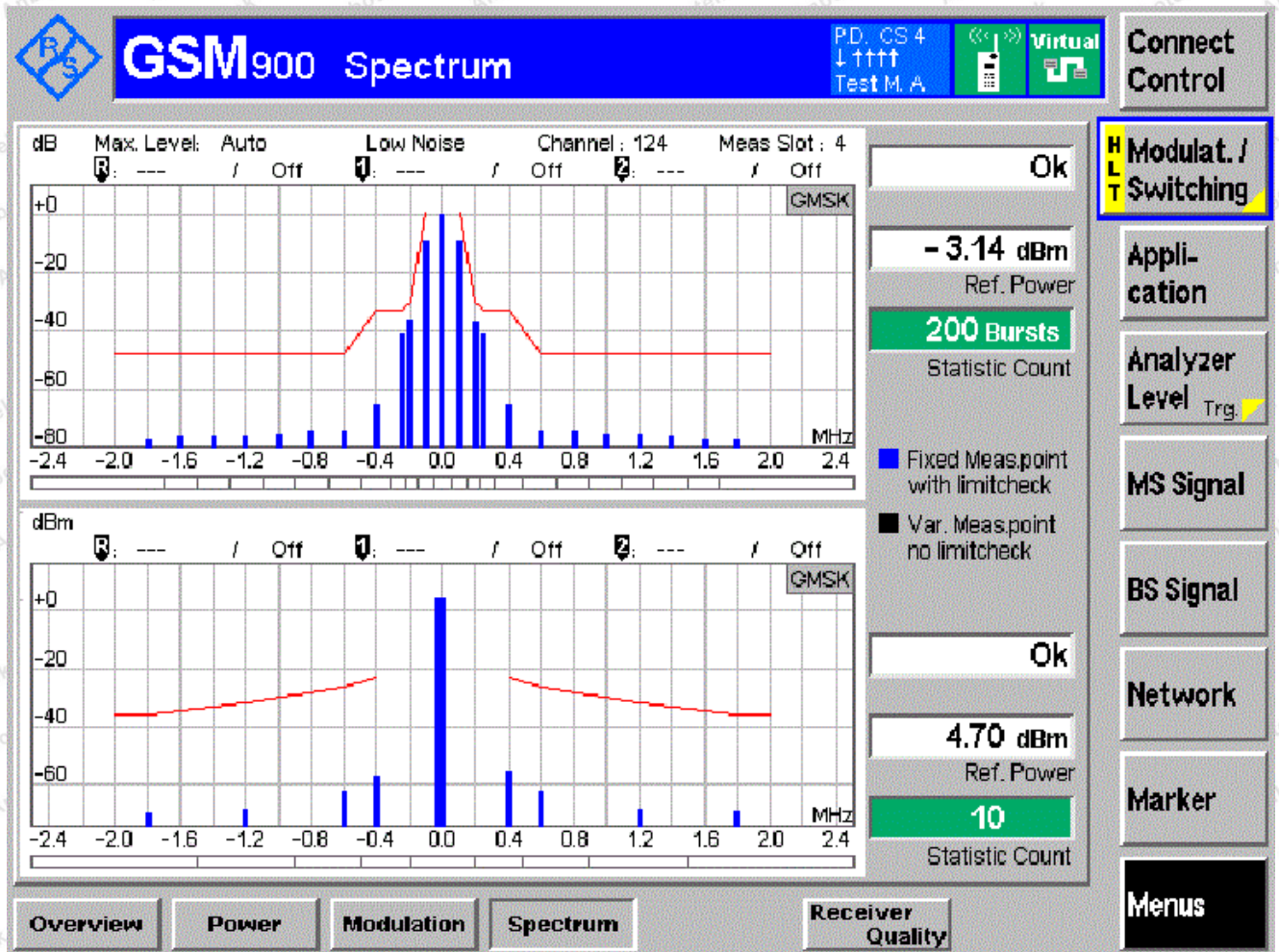
Channel LCH PCL 19



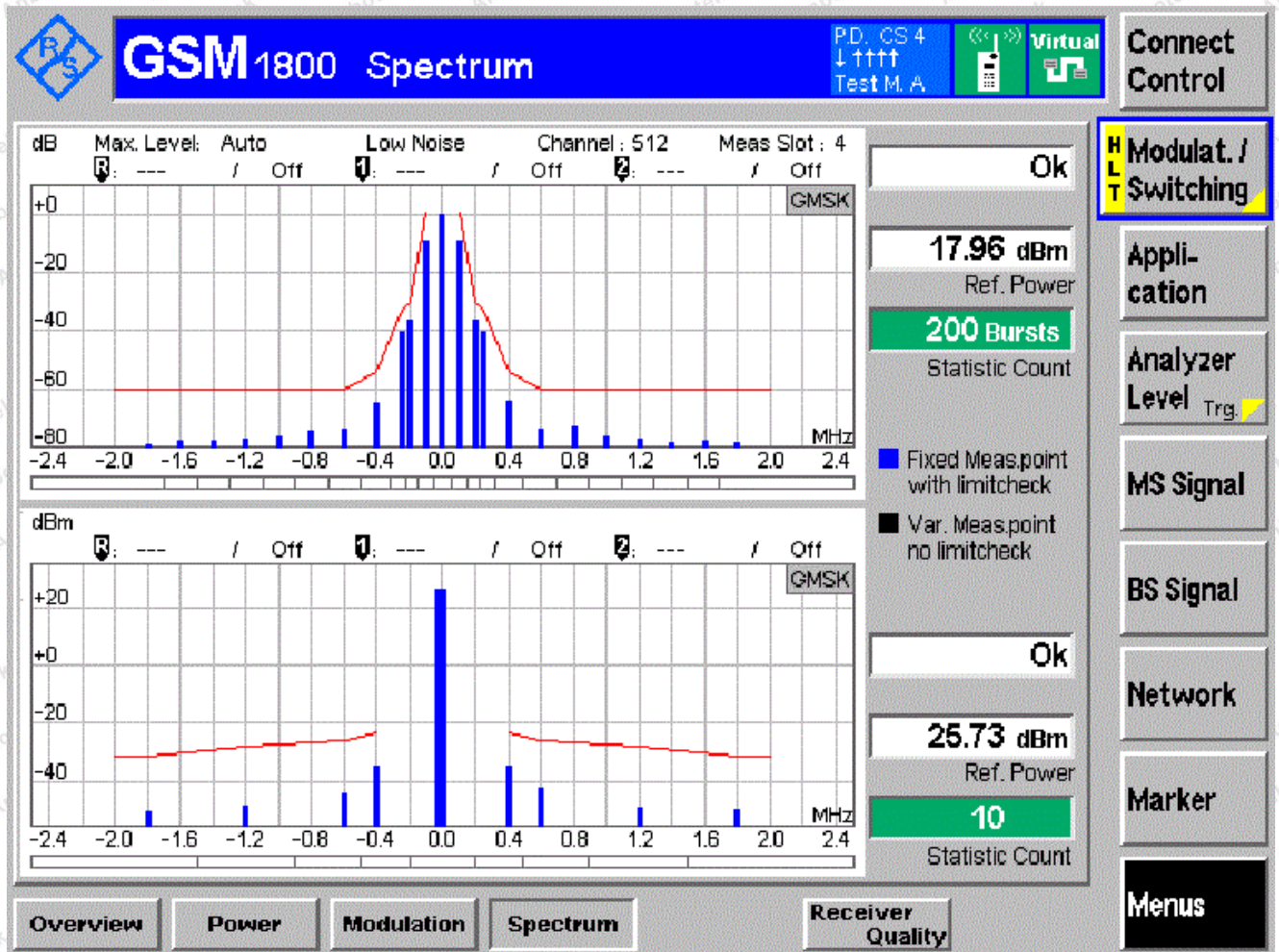
Channel MCH PCL 19



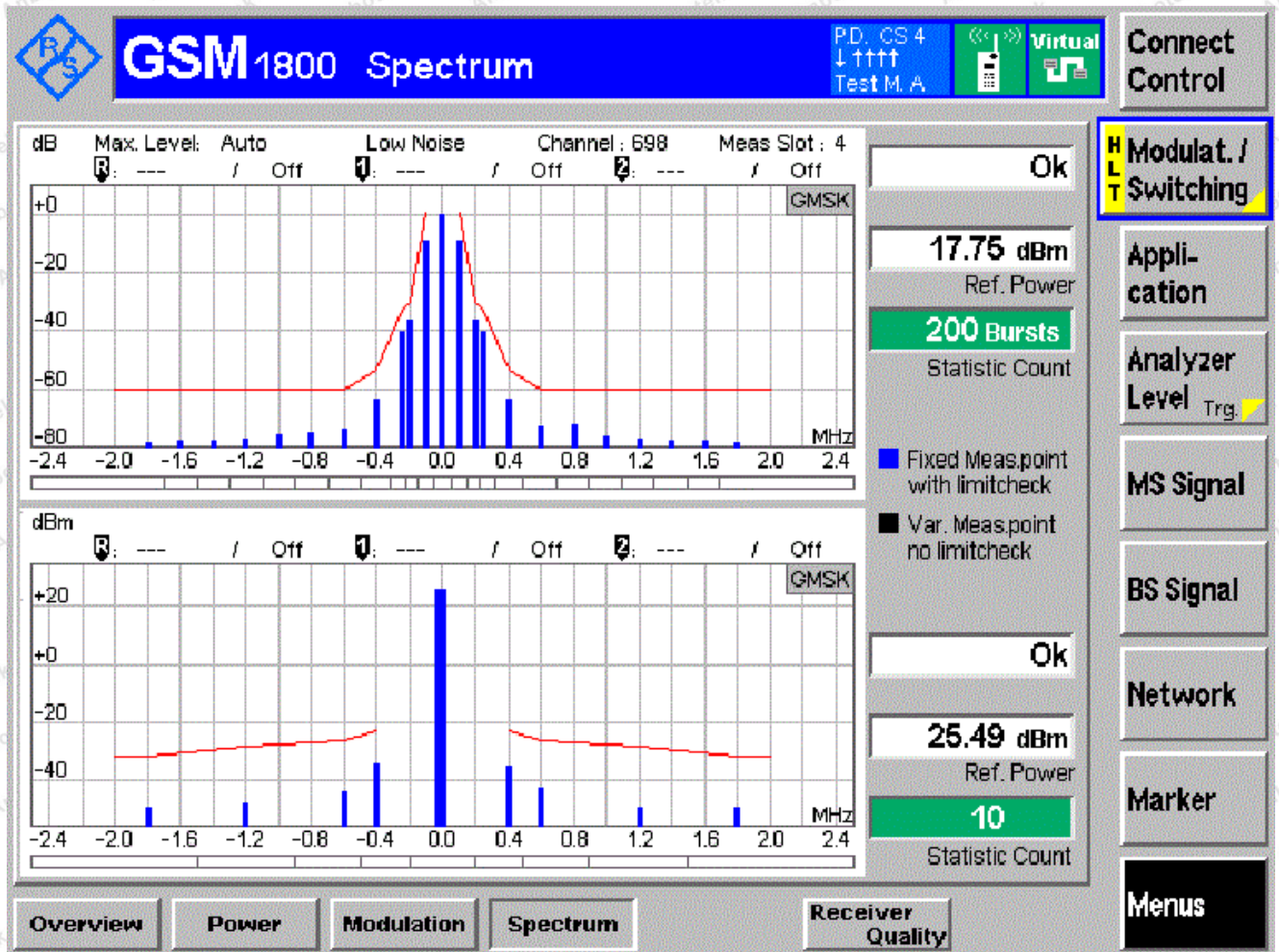
Channel HCH PCL 19



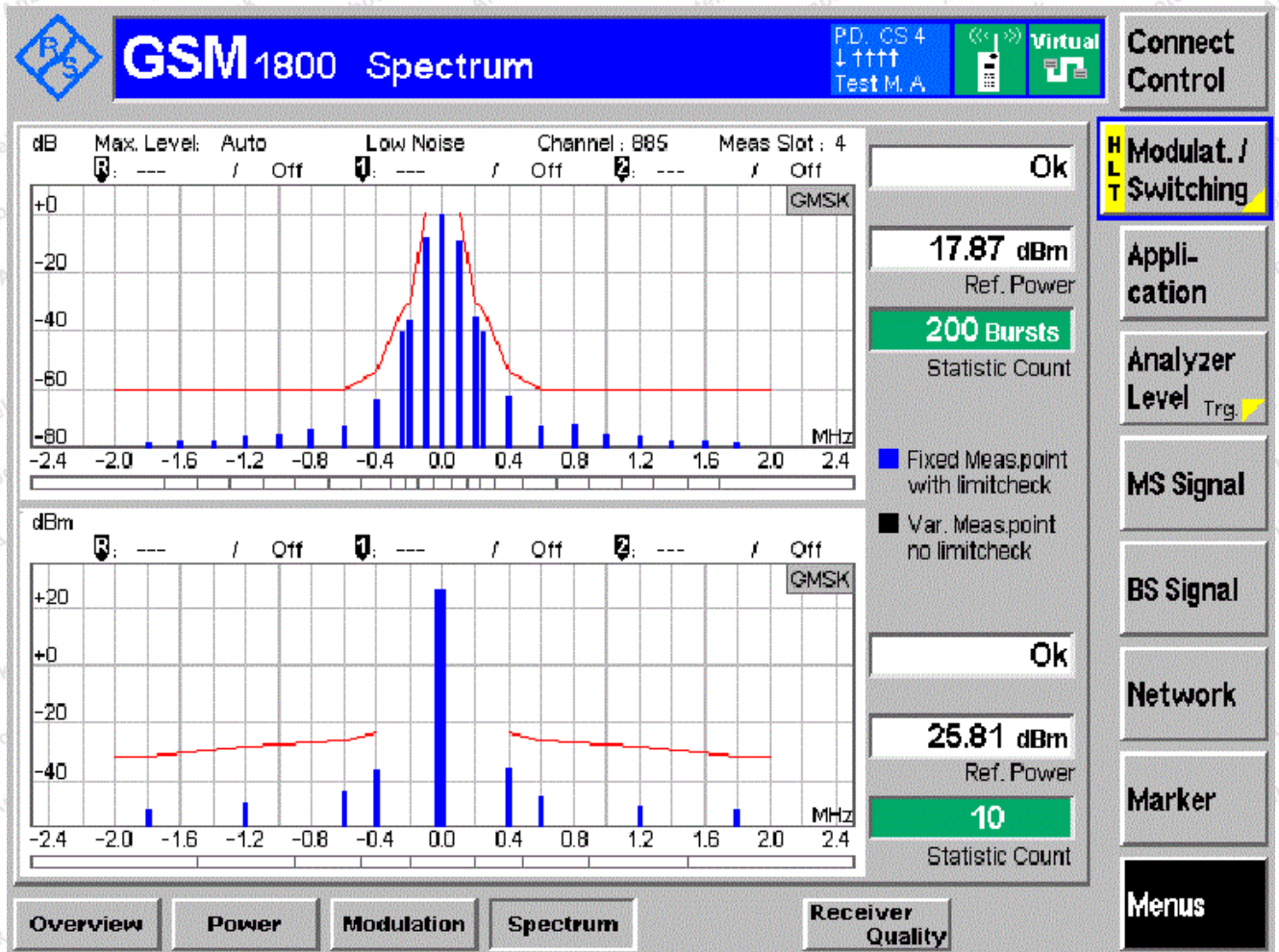
b) DCS1800 TN/VN
Channel LCH PCL 0

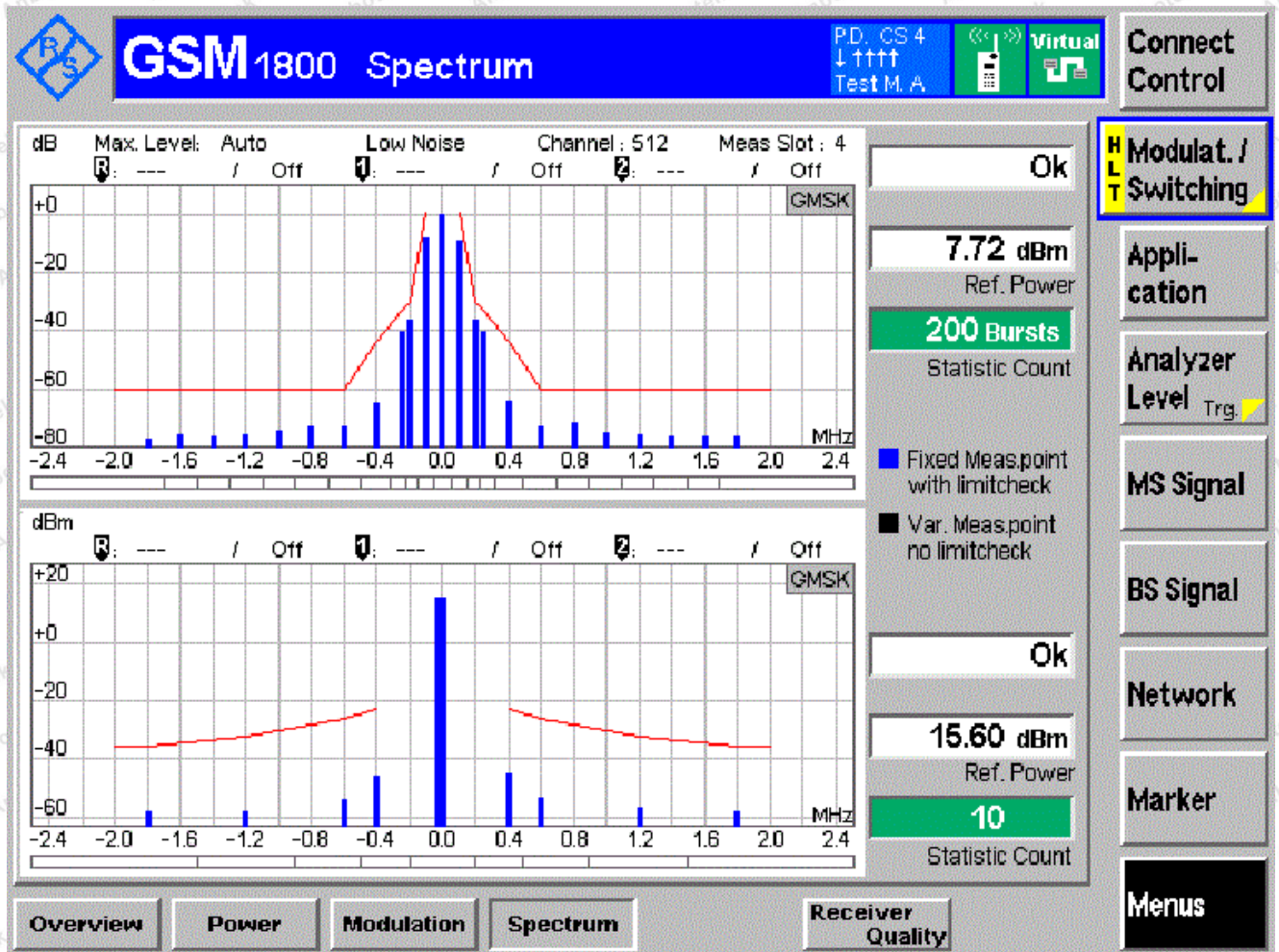


Channel MCH PCL 0

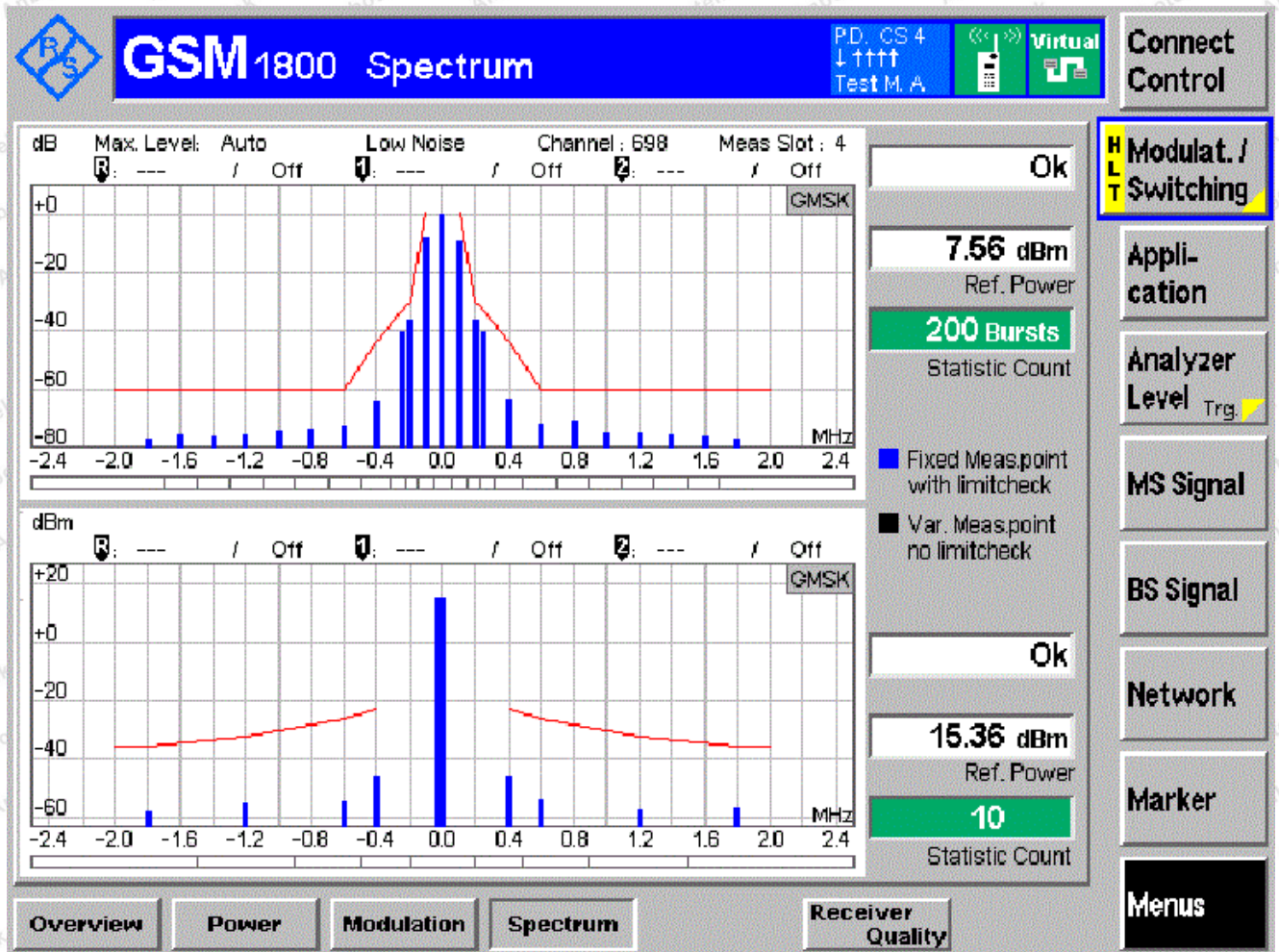


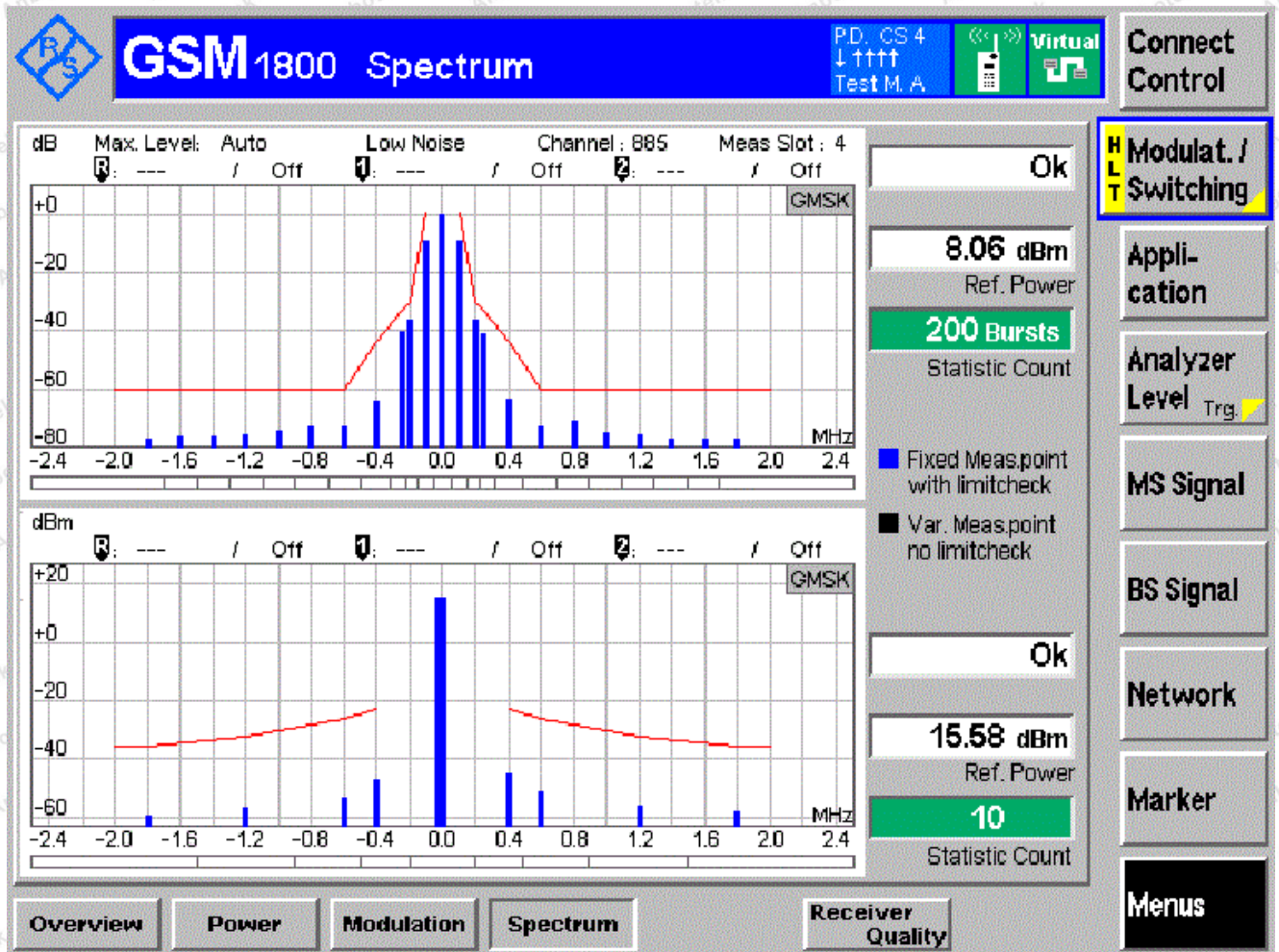
Channel HCH PCL 0



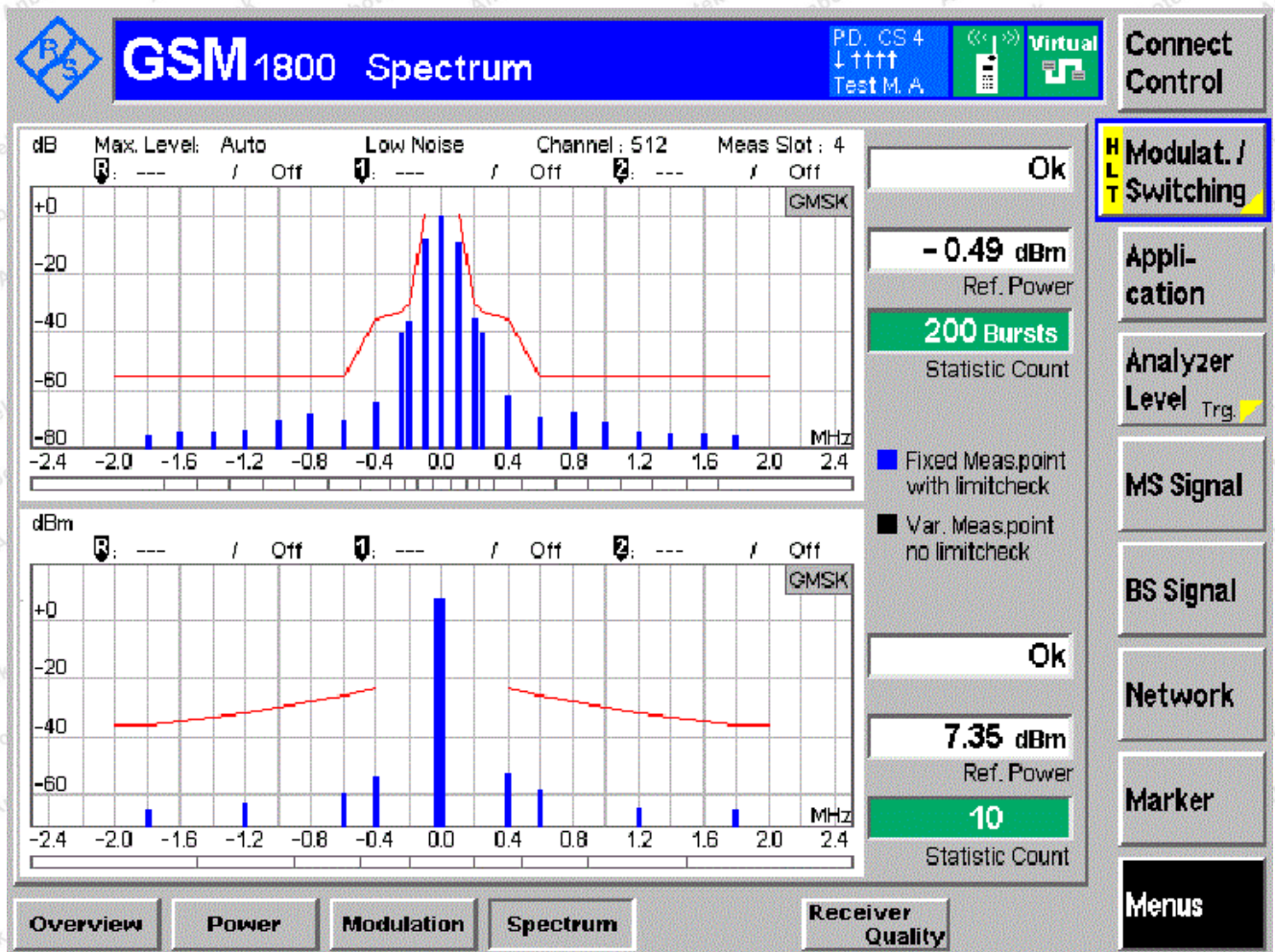


Channel MCH PCL 7

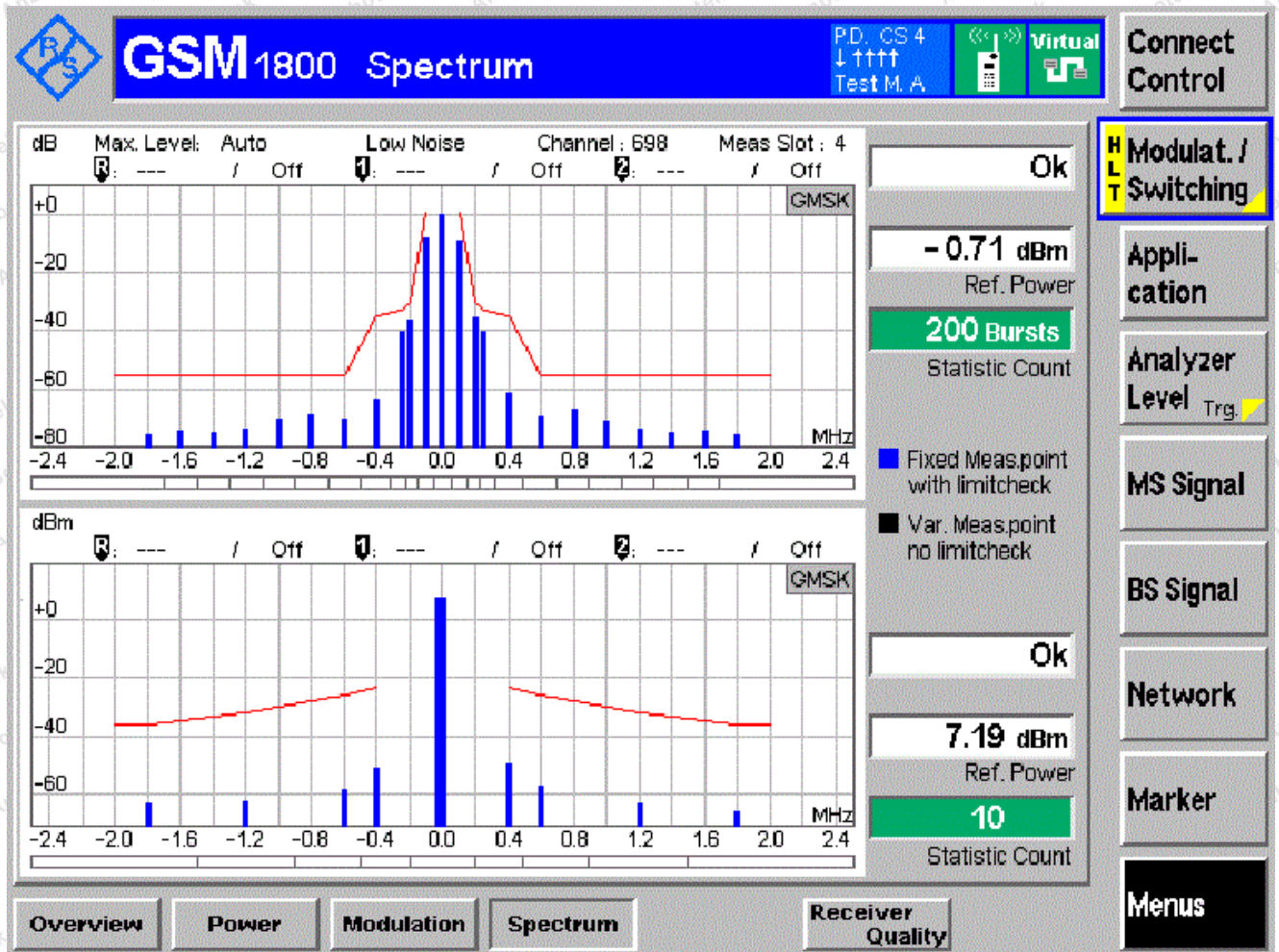




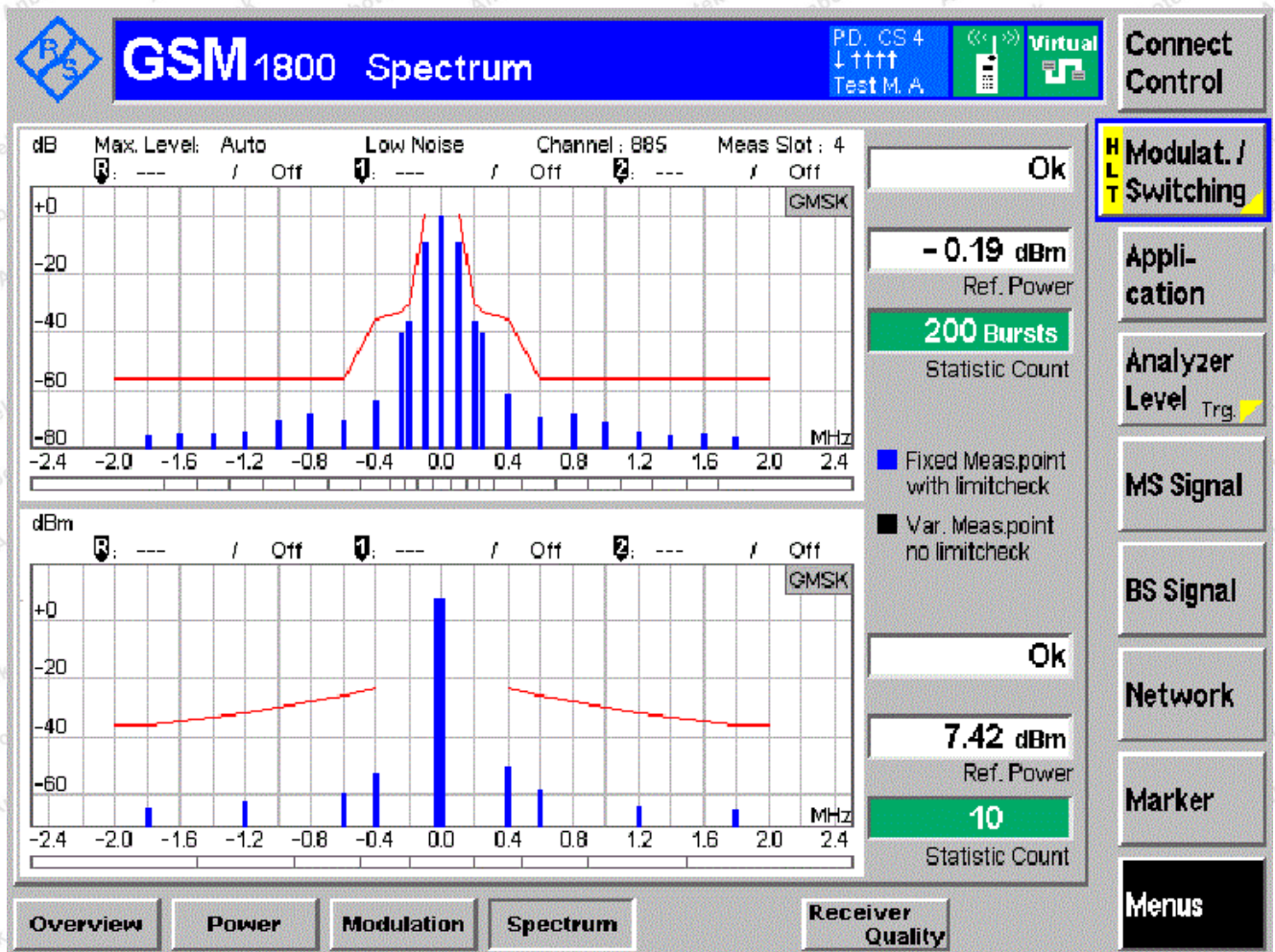
Channel LCH PCL 7



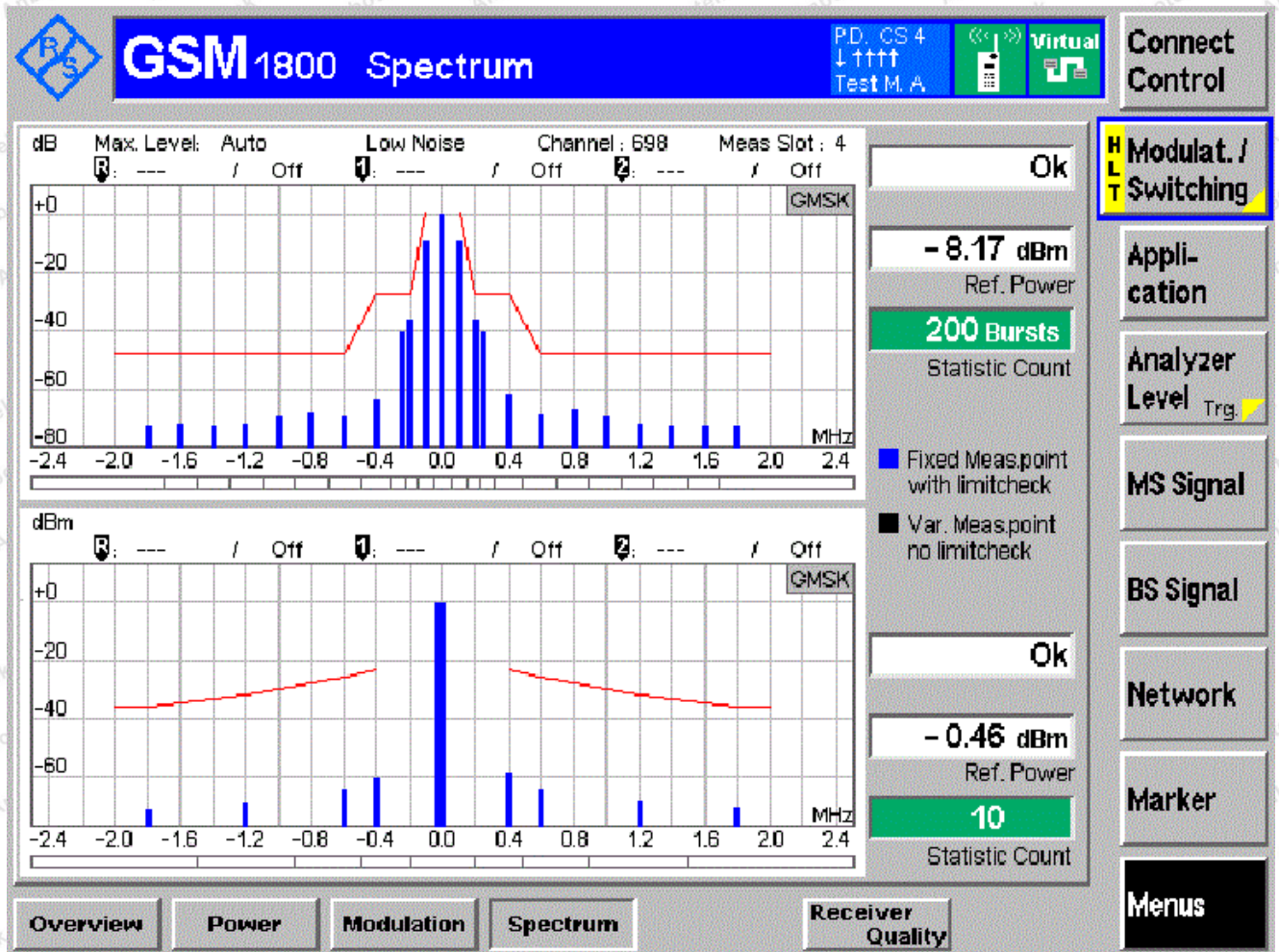
Channel MCH PCL 11



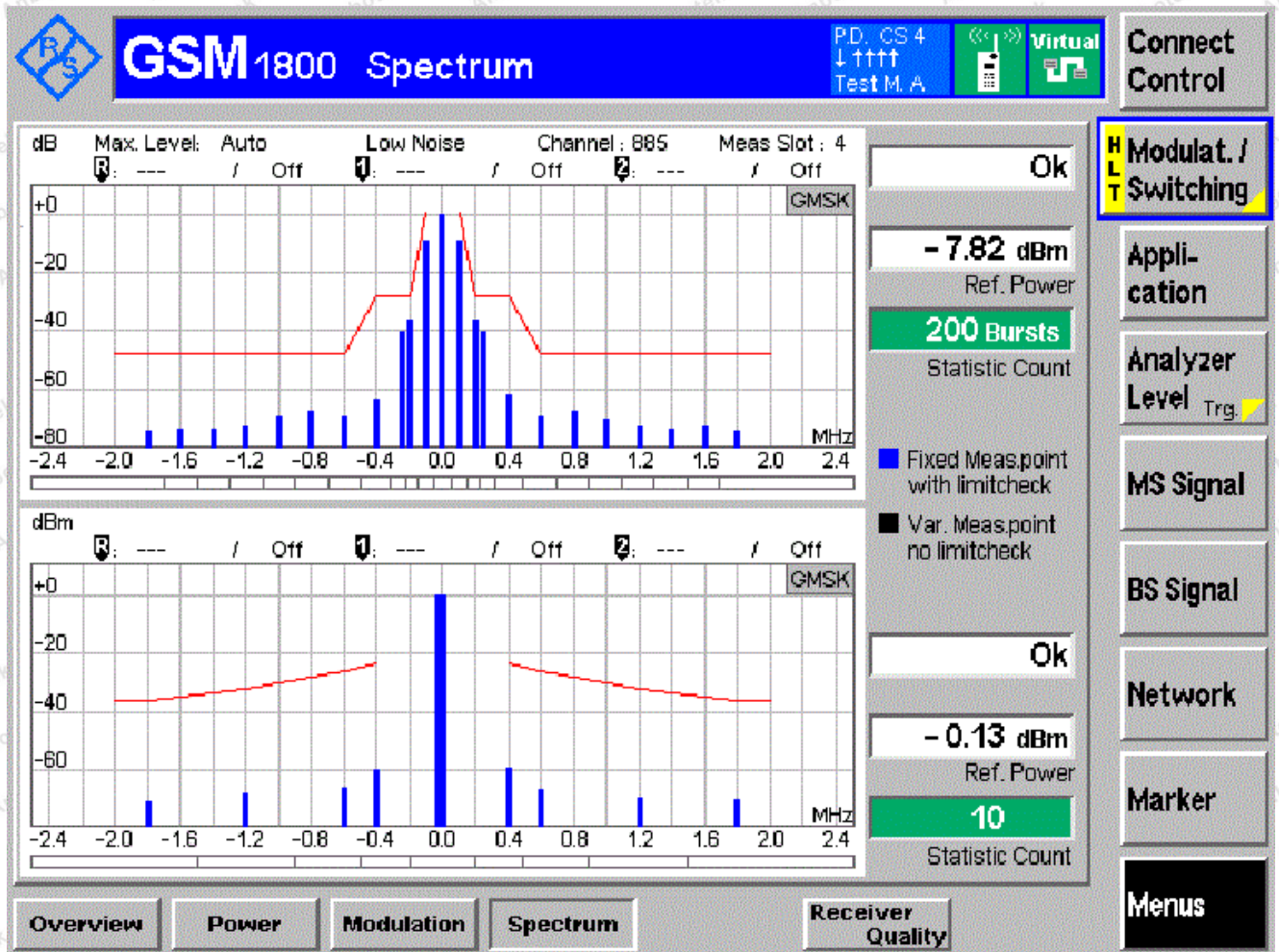
Channel HCH PCL 11







Channel HCH PCL 15



10. Conducted Spurious Emissions

10.1. Test Limit

The conducted spurious power emitted by the MS, when allocated a channel, shall be no more than the levels in below table under normal voltage and extrem voltage conditions:

Frequency range	Power level in dBm		
	GSM 400, GSM 700, T-GSM 810 GSM 850, GSM 900	DCS 1 800	PCS 1 900
9 kHz to 1 GHz	-36	-36	-36
1 GHz to 12,75 GHz	-30		-30
1 GHz to 1 710 MHz		-30	
1 710 MHz to 1 785 MHz		-36	
1 785 MHz to 12,75 GHz		-30	

MS in idle mode

Frequency range		Power level in dBm	
		GSM 400, T-GSM 810 GSM 900, DCS 1 800	GSM 700, GSM 850, PCS 1 900
100 kHz to 880 MHz		-57	-57
880 MHz to 915 MHz		-59	-57
915 MHz to 1 000 MHz		-57	-57
1 GHz to 1 710 MHz		-47	
1 710 MHz to 1 785 MHz		-53	
1 785 MHz to 12,75 GHz		-47	
1 GHz to 1 850 MHz			-47
1 850 MHz to 1 910 MHz			-53
1 910 MHz to 12,75 GHz			-47

10.2. Test Setup

Refer to clause 1.6

10.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 12.1.1.3&12.1.2.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 12.1.1.4&12.1.2.4 for the measurement method.

10.4. Test Result

MS allocated a channel:

Conducted spurious emissions	GSM900;MCH					
Frequency range	RBW(Hz)	VL(dBm)	VN(dBm)	VH(dBm)	Max.Limit(dBm)	Result
9kHz~100kHz	1k	-45.61	-45.93	-45.07	-36	PASS
100kHz~50MHz	10k	-47.42	-48.04	-48.39	-36	PASS
50MHz~500MHz	100k	-43.46	-43.51	-43.70	-36	PASS
500MHz~850MHz	3M	-42.40	-41.85	-42.19	-36	PASS
850MHz~863MHz	1M	-47.12	-46.93	-46.87	-36	PASS
863MHz~870MHz	300k	-51.05	-51.81	-50.83	-36	PASS
870MHz~880MHz	100k	-56.42	-57.49	-56.97	-36	PASS
915MHz~925MHz	100k	-53.14	-53.69	-53.46	-36	PASS
963MHz~1GHz	3M	-42.30	-41.89	-43.21	-36	PASS
1GHz~1805MHz	3M	-30.81	-30.87	-30.91	-30	PASS
1880MHz~12.75GHz	3M	-31.50	-31.35	-31.37	-30	PASS
896.6MHz~900.8MHz	30K	-51.02	-51.96	-51.41	-36	PASS
904.4MHz~908.6MHz	30K	-47.99	-48.71	-48.76	-36	PASS
880MHz~896.6MHz	100K	-54.31	-54.41	-53.49	-36	PASS
908.6MHz~915MHz	100K	-52.07	-52.09	-52.77	-36	PASS

Conducted spurious emissions	DCS1800;MCH					
Frequency range	RBW(Hz)	VL(dBm)	VN(dBm)	VH(dBm)	Max.Limit(dBm)	Result
9kHz~100kHz	1k	-45.30	-45.21	-46.17	-36	PASS
100kHz~50MHz	10k	-47.62	-47.84	-47.87	-36	PASS
50MHz~500MHz	100k	-53.42	-53.97	-53.72	-36	PASS
500MHz~925MHz	3M	-39.09	-39.93	-39.20	-36	PASS
963MHz~1GHz	3M	-47.06	-47.19	-47.74	-36	PASS
1GHz~1680MHz	3M	-34.65	-34.89	-35.08	-30	PASS
1680MHz~1690MHz	1M	-45.64	-46.41	-46.37	-30	PASS
1690MHz~1700MHz	300k	-51.81	-51.51	-51.87	-30	PASS
1700MHz~1710MHz	100k	-56.73	-56.82	-56.02	-30	PASS
1785MHz~1795MHz	100K	-56.30	-56.33	-56.38	-30	PASS
1795MHz~1805MHz	300k	-51.34	-50.99	-50.67	-30	PASS
1880MHz~12.75GHz	3M	-33.83	-34.66	-34.60	-30	PASS
1741.4MHz~1745.6GHz	30K	-54.36	-54.35	-53.62	-36	PASS
1749.2MHz~1753.4MHz	30K	-53.17	-53.16	-53.20	-36	PASS
1710MHz~1741.4MHz	100K	-55.76	-56.19	-55.77	-36	PASS
1753.4MHz~1785MHz	100K	-55.18	-55.44	-55.17	-36	PASS

MS in idle mode:

Conducted spurious emissions	GSM900;VN			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
9kHz~100kHz	1k	-57	-59.13	PASS
100kHz~50MHz	10k	-57	-59.74	PASS
50MHz~880MHz	100k	-57	-63.63	PASS
880MHz~915MHz	100k	-59	-62.84	PASS
915MHz~1000MHz	100k	-57	-61.33	PASS
1GHz~1710MHz	100k	-47	-55.03	PASS
1710MHz~1785MHz	100k	-53	-55.65	PASS
1785MHz~12.75GHz	100k	-47	-57.09	PASS

Conducted spurious emissions	GSM900;VL			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
9kHz~100kHz	1k	-57	-59.14	PASS
100kHz~50MHz	10k	-57	-59.69	PASS
50MHz~880MHz	100k	-57	-63.03	PASS
880MHz~915MHz	100k	-59	-63.33	PASS
915MHz~1000MHz	100k	-57	-60.66	PASS
1GHz~1710MHz	100k	-47	-54.67	PASS
1710MHz~1785MHz	100k	-53	-56.25	PASS
870MHz~880MHz	100k	-36	-57.16	PASS

Conducted spurious emissions	GSM900;VH			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
915MHz~925MHz	100k	-36	-58.71	PASS
963MHz~1GHz	3M	-36	-60.14	PASS
1GHz~1805MHz	3M	-30	-63.91	PASS
1880MHz~12.75GHz	3M	-30	-63.83	PASS
896.4MHz~900.6MHz	30K	-36	-61.53	PASS
904.2MHz~908.4MHz	30K	-36	-54.85	PASS
880MHz~896.4MHz	100K	-36	-56.29	PASS
908.4MHz~915MHz	100K	-36	-56.82	PASS

Conducted spurious emissions	DCS1800;VN			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
9kHz~100kHz	1k	-57	-72.19	PASS
100kHz~50MHz	10k	-57	-58.70	PASS
50MHz~880MHz	100k	-57	-62.48	PASS
880MHz~915MHz	100k	-59	-63.09	PASS
915MHz~1000MHz	100k	-57	-56.84	PASS
1GHz~1710MHz	100k	-47	-66.05	PASS
1710MHz~1785MHz	100k	-53	-56.31	PASS
1785MHz~12.75GHz	100k	-47	-65.14	PASS

Conducted spurious emissions	DCS1800;VL			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
9kHz~100kHz	1k	-57	-71.97	PASS
100kHz~50MHz	10k	-57	-57.57	PASS
50MHz~880MHz	100k	-57	-63.26	PASS
880MHz~915MHz	100k	-59	-63.64	PASS
915MHz~1000MHz	100k	-57	-57.23	PASS
1GHz~1710MHz	100k	-47	-65.86	PASS
1710MHz~1785MHz	100k	-53	-56.85	PASS
1785MHz~12.75GHz	100k	-47	-65.23	PASS

Conducted spurious emissions	DCS1800;VH			
Frequency range	RBW(Hz)	Max.Limit(dBm)	MCH(dBm)	Result
9kHz~100kHz	1k	-57	-71.84	PASS
100kHz~50MHz	10k	-57	-58.17	PASS
50MHz~880MHz	100k	-57	-63.01	PASS
880MHz~915MHz	100k	-59	-63.28	PASS
915MHz~1000MHz	100k	-57	-57.79	PASS
1GHz~1710MHz	100k	-47	-66.28	PASS
1710MHz~1785MHz	100k	-53	-55.97	PASS
1785MHz~12.75GHz	100k	-47	-64.93	PASS

11. Radiated Spurious Emissions

11.1. Test Limit

The power of any spurious emission shall not exceed the levels given in below table

MS allocated a channel

Frequency range	Power level in dBm		
	GSM 400, GSM 700, T-GSM 810 GSM 850, GSM 900	DCS 1 800	PCS 1 900
30 MHz to 1 GHz	-36	-36	-36
1 GHz to 4 GHz	-30		-30
1 GHz to 1 710 MHz		-30	
1 710 MHz to 1 785 MHz		-36	
1 785 MHz to 4GHz		-30	

MS in idle mode

Frequency range		Power level in dBm	
		GSM 400, T-GSM 810 GSM 900, DCS 1 800	GSM 700, GSM 850, PCS 1 900
30 MHz to 880 MHz	880 MHz	-57	-57
880 MHz to 915 MHz	915 MHz	-59	-57
915 MHz to 1 000 MHz	1 000 MHz	-57	-57
1 GHz to 1 710 MHz	1 710 MHz	-47	
1 710 MHz to 1 785 MHz	1 785 MHz	-53	
1 785 MHz to 4 GHz	4 GHz	-47	
1 GHz to 1 850 MHz	1 850 MHz		-47
1 850 MHz to 1 910 MHz	1 910 MHz		-53
1 910 MHz to 4 GHz	4 GHz		-47

11.2. Test Setup

Refer to clause 3

11.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 12.2.1.3&12.2.2.3 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 12.2.1.4&12.2.2.4 for the measurement method.
3. All supported bands(GSM900 and DCS1800) have been tested, only worst data listed.

11.4. Test Result

Test Mode: GSM 900 Middle Channel CH63:902.6MHz Normal power supply				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
258.6	V	-50.95	-36	14.95
459.3	V	-63.57	-36	27.57
715.7	V	-56.89	-36	20.89
1805.2	V	-42.56	-30	12.56
308.9	H	-56.88	-36	20.88
437.4	H	-54.18	-36	18.18
510.0	H	-53.82	-36	17.82
1805.2	H	-42.60	-30	12.60

Test Mode: DCS 1800 Middle Channel CH698:1747.4MHz Normal power supply				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
259.2	V	-54.34	-36	18.34
459.7	V	-58.16	-36	22.16
715.6	V	-57.38	-36	21.38
3494.8	V	-42.78	-30	12.78
308.9	H	-59.44	-36	23.44
437.5	H	-63.79	-36	27.79
509.4	H	-58.53	-36	22.53
3494.8	H	-39.53	-30	9.53

11.5. Test Results for MS in idle mode

Test result (GSM900)				
Test Mode: Idle mode Normal power supply				
Frequency (MHz)	Antenna polarization	Result (dBm)	Limit (dBm)	Margin (dB)
259.6	V	-73.10	-57	16.10
460.4	V	-72.00	-57	15.00
715.5	V	-75.89	-57	18.89
309.1	H	-76.77	-57	19.77
437.4	H	-76.29	-57	19.29
509.6	H	-73.81	-57	16.81

12.Receiver Blocking and Spurious Response

12.1. Test Limit

The fixed testing of the conformance requirement is done using the minimum number of samples and the limit RBER given in table

Channel	Type of measurement	Test limit error rate %	Minimum number of samples
TCH/FS Class II	RBER	2,439	8 200

Statistical test limits for blocking performance of EGPRS mobiles

Blocking and spurious response for EGPRS mobiles						
	blocks per s	Orig. BLER requirement	Derived test limit	Target number of samples	Target test time (s)	Target test time (hh:mm:ss)
One time slot:						
PDTCH/MCS-4	50	0,100000	0,125100	3221	64	00:01:04
USF/MCS-4	50	0,010000	0,012510	32214	644	00:10:44
PDTCH/MCS-9	50	0,100000	0,125100	3221	64	00:01:04
USF/MCS-9	50	0,010000	0,012510	32214	644	00:10:44
Two time slots:						
PDTCH/MCS-4	100	0,100000	0,125100	3221	32	00:00:32
USF/MCS-4	100	0,010000	0,012510	32214	322	00:05:22
PDTCH/MCS-9	100	0,100000	0,125100	3221	32	00:00:32
USF/MCS-9	100	0,010000	0,012510	32214	322	00:05:22
Three time slots:						
PDTCH/MCS-4	150	0,100000	0,125100	3221	21	00:00:21
USF/MCS-4	150	0,010000	0,012510	32214	215	00:03:35
PDTCH/MCS-9	150	0,100000	0,125100	3221	21	00:00:21
USF/MCS-9	150	0,010000	0,012510	32214	215	00:03:35
Four time slots:						

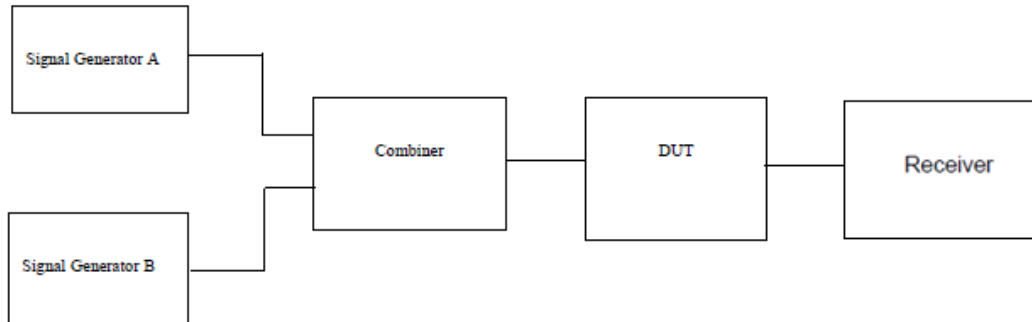
slots						
PDTCH/MCS-4	200	0,100000	0,125100	3221	16	00:00:16
USF/MCS-4	200	0,010000	0,012510	32214	161	00:02:41
PDTCH/MCS-9	200	0,100000	0,125100	3221	16	00:00:16
USF/MCS-9	200	0,010000	0,012510	32214	161	00:02:41

Statistical test limits for blocking performance of EGPRS mobiles

Blocking and spurious response for EGPRS mobiles						
	blocks per s	Orig. BLER requirement	Derived test limit	Target number of samples	Target test time (s)	Target test time (hh:mm:ss)
One time slot:						
PDTCH/MCS-4	50	0,100000	0,125100	3221	64	00:01:04
USF/MCS-4	50	0,010000	0,012510	32214	644	00:10:44
PDTCH/MCS-9	50	0,100000	0,125100	3221	64	00:01:04
USF/MCS-9	50	0,010000	0,012510	32214	644	00:10:44
Two time slots:						
PDTCH/MCS-4	100	0,100000	0,125100	3221	32	00:00:32
USF/MCS-4	100	0,010000	0,012510	32214	322	00:05:22
PDTCH/MCS-9	100	0,100000	0,125100	3221	32	00:00:32
USF/MCS-9	100	0,010000	0,012510	32214	322	00:05:22
Three time slots						
PDTCH/MCS-4	150	0,100000	0,125100	3221	21	00:00:21
USF/MCS-4	150	0,010000	0,012510	32214	215	00:03:35
PDTCH/MCS-9	150	0,100000	0,125100	3221	21	00:00:21
USF/MCS-9	150	0,010000	0,012510	32214	215	00:03:35
Four time slots						
PDTCH/MCS-4	200	0,100000	0,125100	3221	16	00:00:16
USF/MCS-4	200	0,010000	0,012510	32214	161	00:02:41

PDTCH/MCS-9	200	0,100000	0,125100	3221	16	00:00:16
USF/MCS-9	200	0,010000	0,012510	32214	161	00:02:41

12.2. Test Setup



12.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 14.7.1.5&14.18.5.5 for the test conditions.
2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 14.7.1.4&14.18.5.4 for the measurement method.

12.4. Test Result

GSM900

Channel(MHz)	Test condition	number of samples	RBBER(%)	Limit(%)	Result
880.2	normal	10000	0.658	2.439	PASS
902.6		10000	0.449		
914.8		10000	0.597		

GPRS900

Channel(MHz)	Test condition	number of samples	RBBER(%)	Limit(%)	Result
880.2	normal	10000	1.269	2.439	PASS
902.6		10000	1.247		
914.8		10000	1.845		

DCS1800

Channel(MHz)	Test condition	number of samples	RBBER(%)	Limit(%)	Result
1710.2	normal	10000	0.556	2.439	PASS
1747.4		10000	0.845		
1784.8		10000	1.265		

GPRS1800

Channel(MHz)	Test condition	number of samples	RBBER(%)	Limit(%)	Result
1710.2	normal	10000	0.532	2.439	PASS
1747.4		10000	0.624		
1784.8		10000	0.887		

13.Receiver Blocking and Spurious Response - Speech Channels

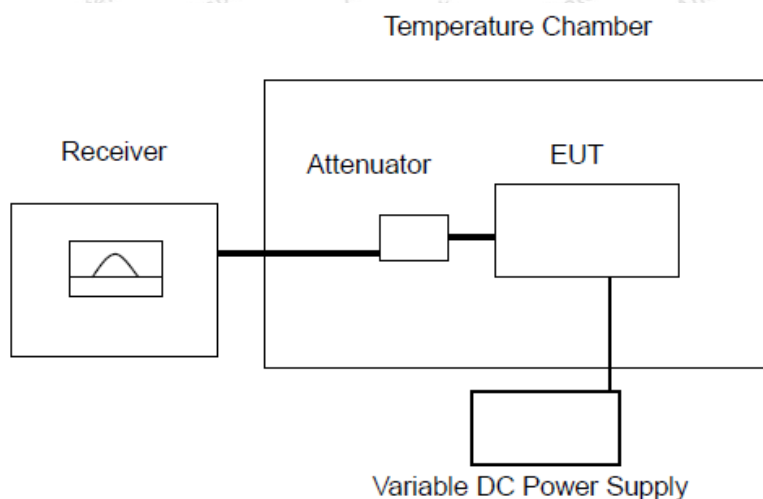
13.1. Test Limit

The frequency error, with reference to the SS carrier frequency as measured in repeats of step e), for each measured burst shall be less than the values shown in table

Requirements for frequency error under multipath, Doppler shift and interference conditions

GSM 400		T-GSM 810, GSM 850 and GSM 900		DCS 1 800 and PCS 1 900	
Propagation condition	Permitted frequency error	Propagation condition	Permitted frequency error	Propagation condition	Permitted frequency error
RA500	± 300 Hz	RA250	± 300 Hz	RA130	± 400 Hz
HT200	± 180 Hz	HT100	± 180 Hz	HT100	± 350 Hz
TU100	± 163 Hz	TU50	± 163 Hz	TU50	± 263 Hz
TU6	± 230 Hz	TU3	± 230 Hz	TU1,5	± 320 Hz

13.2. Test Setup



13.3. Test Procedure

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.17.2.3 for the test conditions.

2. Please refer to ETSI TS 151 010-1 V13.5.0 clause 13.17.2.4 for the measurement method..

13.4. Test Result

FREQUENCY	Measurement Result	
	GSM900	
	Small MS	
	Interference Level in dBμVemf()	Result
FR +/- 600 kHz to FR +/- 800 kHz	71	Pass
FR +/- 800 kHz to FR +/- 1,6 MHz	75	Pass
FR +/- 1,6 MHz to FR +/- 3 MHz	90	Pass
915 MHz to FR - 3 MHz	88	Pass
FR + 3 MHz to 980 MHz	97	Pass
835 MHz to <915 MHz	114	Pass
>980 MHz to 1000 MHz	116	Pass
100 kHz to <835 MHz	92	Pass
>1000 MHz to 12,75 GHz	93	Pass

FREQUENCY	Measurement Result	
	DCS1800	
	Small MS	
	Interference Level in dBμVemf()	Result
FR +/- 600 kHz to FR +/- 800 kHz		Pass
FR +/- 800 kHz to FR +/- 1,6 MHz	71	Pass
FR +/- 1,6 MHz to FR +/- 3 MHz	79	Pass
1785 MHz to FR - 3 MHz	88	Pass
FR + 3 MHz to 1920 MHz	88	Pass
100 kHz to 1705 MHz	115	Pass
>1705 MHz to <1785 MHz	102	Pass
>1920 MHz to 1980 MHz	102	Pass
>1980 MHz to 12,75 GHz	91	Pass

14. Am suppression - Speech Channels

14.1. Test Limit

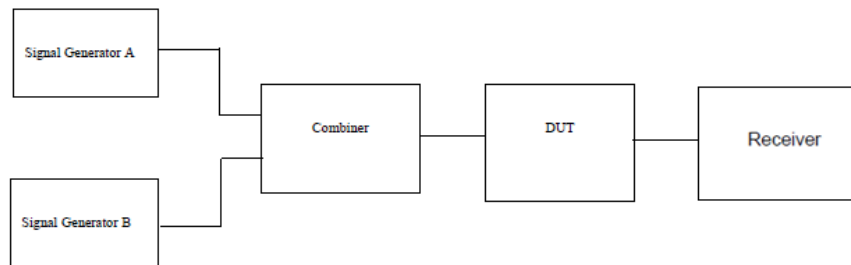
The error rates measured in this test shall not exceed the test limit error rate values given in table

Channel	Type of measurement	Test limit error rate %	Minimum number of samples
TCH/FS Class II	RBER	2,439	8 200

14.2. Test Procedures

1. Please refer to ETSI TS 151 010-1 V13.5.0 clause 14.8.1.4 for the measurement method.

14.3. Test Setup



14.4. Test Results

GSM900

Channel(MHz)	Test condition	number of samples	RBER(%)	Limit(%)	Result
880.2	normal	10000	0.774	2.439	PASS
902.6		10000	0.541		
914.8		10000	0.695		

DCS1800

Channel(MHz)	Test condition	number of samples	RBER(%)	Limit(%)	Result
1710.2	normal	10000	0.793	2.439	PASS
1747.4		10000	0.852		
1784.8		10000	0.666		

15. Intermodulation Rejection

15.1. Test Limit

Limits for Intermodulation rejection - speech channels

Channel	Propagation conditions	Type of measurement	Test limit error rate %	Minimum number of samples
TCH/FS Class II	Static	RBER	2,439	8 200

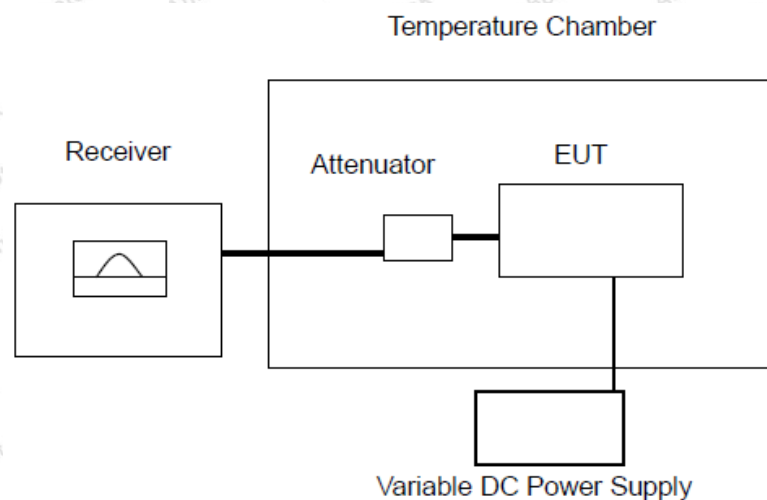
Limits for Intermodulation rejection - control channels

Channel	Propagation conditions	Type of measurement	GSM 400, GSM 700, T-GSM 810, GSM 850 and GSM 900		DCS 1 800 and PCS 1 900	
			Test limit error rate %	Minimum No. of max-samples	Test limit error rate %	Min No. of max-samples
FACCH/F	TUhigh/No FH	FER	8,961	6 696	4,368	13 736

15.2. Test Procedures

- Please refer to ETSI TS 151 010-1 V13.5.0 clause 14.6.1.4.2& clause 14.6.2.4.2 for the measurement method.

15.3. Test Setup



15.4. Test Results

intermodulation rejection- speech channels (GSM900)				
Channel(MHz)	conditions	No. of samples	RBER(%)	Limit(%)
902.4	Static	10000	0.741	2.439
intermodulation rejection- speech channels (DCS1800)				
Channel(MHz)	conditions	No. of samples	RBER(%)	Limit(%)
1747.4	Static	10000	0.962	2.439

intermodulation rejection- control channels (GSM900)				
Channel(MHz)	conditions	No. of samples	FER(%)	Limit(%)
902.4	TUhigh/No FH	10000	0.857	8.961
intermodulation rejection- control channels (DCS1800)				
Channel(MHz)	conditions	No. of samples	FER(%)	Limit(%)
1747.4	TUhigh/No FH	10000	0.9632	4.368

16. Adjacent Channel Rejection

16.1. Test Limit

Limits for adjacent channel selectivity-speech channels

			SM 400, GSM 700, T-GSM, 810, GSM 850 and GSM 900		DCS 1 800 and PCS 1 900	
Interference at	Channel	Type of measurement	Test limit error rate%	Minimum No. of samples	Test limit error rate%	Minimum No. of samples
200 kHz	TCH/FS	FER	6,742* α	8 900	3,371* α	17 800
	class Ib	RBER	0,420/ α	1 000 000	0,270/ α	2 000 000
	class II	RBER	8,333	630 000	8,333	1 200 000
400 kHz Interferer TUhigh	TCH/FS	FER	6,742* α	8 900	3,371* α	17 800
	class Ib	RBER	0,420/ α	1 000 000	0,270/ α	2 000 000
	class II	RBER	8,333	630 000	8,333	1 200 000
400 kHz Interferer Static	TCH/FS	FER	11,461* α	8 900	5,714* α	10 500
	class Ib	RBER	0,756/ α	1 000 000	0,483/ α	1 200 000
	class II	RBER	9,167	630 000	9,167	720 000

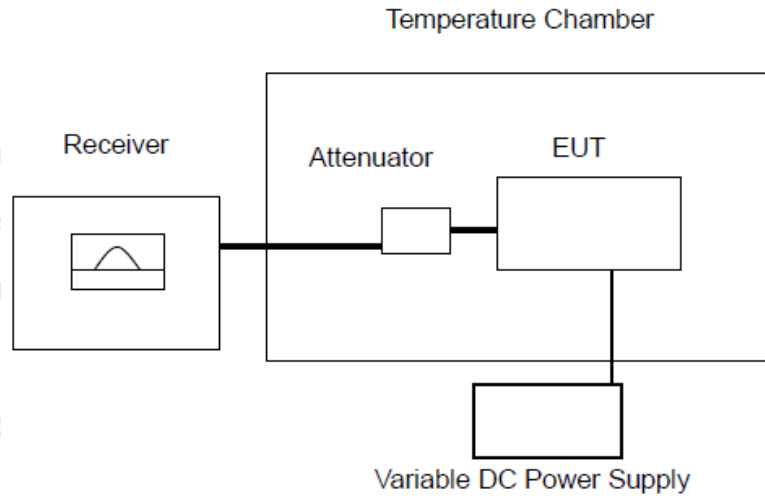
Limits for adjacent channel selectivity- control channels

Interference at	Channel	Type of measurement	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples
200 kHz/400 kHz interferer faded	Propagation conditions	FER	10,640	5 639	3,808	15 756
400 kHz interferer static	FACCH/F	FER	19,152	3 133	6,832	8 782

16.2. Test Procedures

1. Please refer to ETSI TS 151 010-1 clause 14.5.1.4&14.5.2.4 for the measurement method.

16.3. Test Setup



16.4. Test Results

Reference sensitivity - TCH/FS(GSM900)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	200KHz	902.6	8900	Pass
	400 kHz Interferer TUhigh		8900	Pass
	400 kHz Interferer Static		8900	Pass
class Ib(RBER)	200KHz	902.6	1000000	Pass
	400 kHz Interferer TUhigh		1000000	Pass
	400 kHz Interferer Static		1000000	Pass
class II(RBER)	200KHz	902.6	600000	Pass
	400 kHz Interferer TUhigh		600000	Pass
	400 kHz Interferer Static		600000	Pass
α =1				

Reference sensitivity - TCH/FS(DCS1800)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	200KHz	1747.4	17800	Pass
	400 kHz Interferer TUhigh		17800	Pass
	400 kHz Interferer Static		17800	Pass
class Ib(RBER)	200KHz	1747.4	2000000	Pass
	400 kHz Interferer TUhigh		2000000	Pass
	400 kHz Interferer Static		2000000	Pass
class II(RBER)	200KHz	1747.4	120000	Pass
	400 kHz Interferer TUhigh		120000	Pass
	400 kHz Interferer Static		120000	Pass
$\alpha=1$				

17. Reference Sensitivity

17.1. Test Limit

Limits for GSM 400, GSM 700, T-GSM 810, GSM 850 and GSM 900 sensitivity

Channels	Propagation conditions TUhigh		Propagation conditions RA		Propagation conditions HT		Static conditions	
	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples
TCH/FS FER class Ib(RBER)	6,742* α	8 900					0,122* α	164 000
class II(RBER)	0,42/ α	1 000					0,41/ α	20 000
	8,333	000	7,5	24 000	9,333	63 000	2,439	000
		120 000						8 200

Limits for DCS 1 800 and PCS 1 900 sensitivity

Channels	Propagation conditions TUhigh		Propagation conditions RA		Propagation conditions HT		Static conditions	
	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples	Test limit error rate %	Minimum No. of samples
TCH/FS FER class Ib(RBER)	4478* α	13400					0,122* α	164 000
class II(RBER)	0.32/ α	1 500					0,41/ α	20 000
	8,333	000	7,5	24 000	9,333	30 000	2,439	000
		63 000						8 200

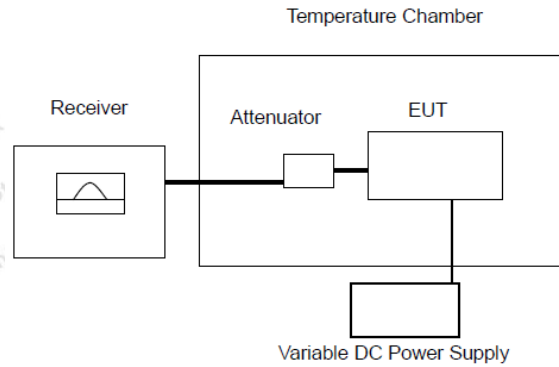
Limits for FACCH/F sensitivity

			GSM 400, GSM 700, T-GSM 810, GSM 850 and GSM 900		DCS 1 800 and PCS 1 900	
Channels	Type of Propagation measurements		Test limit error rate %	Minimum No of samples	Test limit error rate %	Minimum No of samples
FACCH/F	FER	TUhigh	8,961	6696	4,368	13736

17.2. Test Procedures

1. Please refer to ETSI TS 151 010-1 clause 14.2.1.4&14.2.3.4 for the measurement method.

17.3. Test Setup



17.4. Test Results

Reference sensitivity - TCH/FS(GSM900)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	TUhigh	902.6	8900	Pass
	Static		164000	Pass
class Ib(RBER)	TUhigh	902.6	1000000	Pass
	Static		20000000	Pass
class II(RBER)	TUhigh	902.6	120000	Pass
	RA		24000	Pass
	HT		60000	Pass
	Static		8200	Pass
$\alpha = 1$				

Reference sensitivity - TCH/FS(DCS1800)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	TUhigh	1747.4	13400	Pass
	Static		164000	Pass
class Ib(RBER)	TUhigh	1747.4	1500000	Pass
	Static		20000000	Pass
class II(RBER)	TUhigh	1747.4	60000	Pass
	RA		24000	Pass
	HT		30000	Pass
	Static		82000	Pass
$\alpha = 1$				

Reference sensitivity - TCH/FS(GSM900)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	TUhigh	902.6	7000	Pass

Reference sensitivity - TCH/FS(DCS1800)				
Test style	Test condition	Channel (MHz)	No. of samples	Result
FER	TUhigh	1747.4	14000	Pass

18. Reference Sensitivity

18.1. Test Limit

The block error rate (BLER) performance for PDTCH/MCS1 to 4 shall not exceed 10 % at input levels according to the table 14.18-3a; and for PDTCH/MCS5 to 9 shall not exceed 10 % or 30 % depending on Coding Schemes at input levels according to the table 14.18-3b.

Table 14.18-3a: PDTCH Sensitivity Input Level for GMSK modulation

Type of channel		Propagation conditions				
		static	TUhigh (no FH)	TUhigh (ideal FH)	RA (no FH)	HT (no FH)
GSM 400, GSM 700, GSM 850 and GSM 900						
PDTCH/CS-1	dBm	-104	-102.5	-103	-103	-102
PDTCH/CS-2	dBm	-104	-100.5	-101	-100.5	-100
PDTCH/CS-3	dBm	-104	-96.5	-96.5	-92.5	-95.5
PDTCH/CS-4	dBm	-101.5	-91	-91	(note)	(note)
DCS 1 800 and PCS 1 900						
PDTCH/CS-1	dBm	-104	-102.5	-103	-103	-101.5
PDTCH/CS-2	dBm	-104	-100.5	-101	-100.5	-99.5
PDTCH/CS-3	dBm	-104	-96.5	-96.5	-92.5	-94.5
PDTCH/CS-4	dBm	-101.5	-90.5	-90.5	(note)	(note)
NOTE: PDTCH/MCS-4 can not meet the reference performance for some propagation conditions						

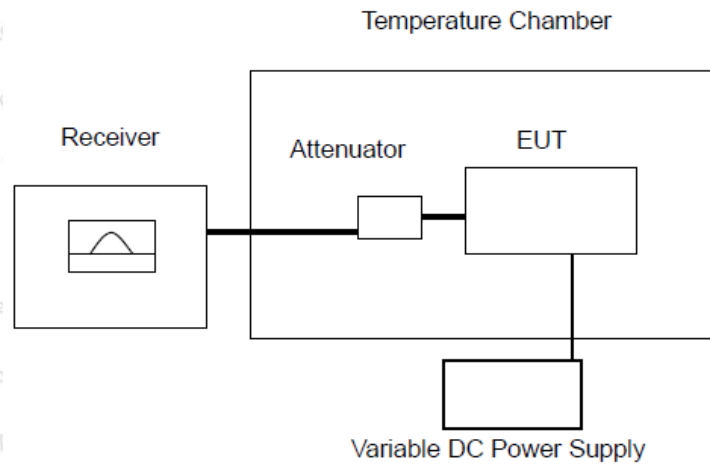
PDTCH Sensitivity Input Level for MS for 8-PSK modulation

Type of channel		Propagation conditions				
		static	TUhigh (no FH)	TUhigh (ideal FH)	RA (no FH)	HT (no FH)
GSM 400, GSM 700, GSM 850 and GSM 900						
PDTCH/CS-5	dBm	-98	-93	-94	-93	-92
PDTCH/CS-6	dBm	-96	-91	-91.5	-88	-89
PDTCH/CS-7	dBm	-93	-84	-84	(note 2)	(note 2)
PDTCH/CS-8	dBm	90.5	-83(note 3)	-83(note 3)	(note 2)	(note 2)
PDTCH/CS-9	dBm	-86	-78.5(note 3)	-78.5(note 3)	(note 2)	(note 2)
DCS 1 800 and PCS 1 900						
PDTCH/CS-5	dBm	-98	-93.5	-93.5	-93	-89.5
PDTCH/CS-6	dBm	-96	-91	-91	-88	-83.5
PDTCH/CS-7	dBm	-93	-81.5	-80.5	(note 2)	(note 2)
PDTCH/CS-8	dBm	-90.5	-80(note 3)	-80(note 3)	(note 2)	(note 2)
PDTCH/CS-9	dBm	-86	(note 2)	(note 2)	(note 2)	(note 2)
NOTE: PDTCH/MCS-4 can not meet the reference performance for some propagation conditions						

18.2. Test Procedures

1. Please refer to ETSI TS 151 010-1 clause 14.18.1.4 for the measurement method.

18.3. Test Setup



18.4. Test Results

GPRS900					
Test style	Test condition	Channel (MHz)	Input level(dBm)	Reading (%)	Limit (%)
PDTCH/CS-1	static	902.6	-105	1.01	10
	TUhigh (no FH)		-105	0.80	
	TUhigh (ideal FH)		-105	1.38	
	RA (no FH)		-103	0.78	
	HT (no FH)		-104	0.65	
PDTCH/CS-2	static	902.6	-105	0.82	10
	TUhigh (no FH)		-101	1.24	
	TUhigh (ideal FH)		-102	1.54	
	RA (no FH)		-103	1.48	
	HT (no FH)		-99	1.15	
PDTCH/CS-3	static	902.6	-105	0.57	10
	TUhigh (no FH)		-98	0.66	
	TUhigh (ideal FH)		-99	1.45	
	RA (no FH)		-98	0.58	
	HT (no FH)		-96	1.36	
PDTCH/CS-4	static	902.6	-101	1.33	10

	TUhigh (no FH)		-90	1.08	
	TUhigh (ideal FH)		-90	1.18	

GPRS1800					
Test style	Test condition	Channel (MHz)	Input level(dBm))	Reading (%)	Limit (%)
PDTCH/CS-1	static	1747.4	-104	1.39	10
	TUhigh (no FH)		-104	1.51	
	TUhigh (ideal FH)		-104	1.03	
	RA (no FH)		-104	0.73	
	HT (no FH)		-103	0.72	
PDTCH/CS-2	static	1747.4	-104	0.71	10
	TUhigh (no FH)		-100	0.51	
	TUhigh (ideal FH)		-101	1.26	
	RA (no FH)		-101	0.48	
	HT (no FH)		-99	0.60	
PDTCH/CS-3	static	1747.4	-104	0.90	10
	TUhigh (no FH)		-98	1.24	
	TUhigh (ideal FH)		-99	1.20	
	RA (no FH)		-98	1.15	
	HT (no FH)		-94	1.43	
PDTCH/CS-4	static	1747.4	-101	0.59	10
	TUhigh (no FH)		-88	0.70	
	TUhigh (ideal FH)		-88	1.26	

19. PICS/PIXIT Information of The EUT

Type of Mobile Station (Re. ETSI EN301 511 Annex A)

Item	Type of Mobile Station	Support	Mnemonic
1	HSCSD Multislot MS	N	Type_HSCSD_Multislot
2	R-GSM MS	N	Type_R-GSM
3	Support of GPRS Multislot class on the uplink	Y	Type_GPRS_Multislot_uplink
4	EGPRS	Y	Type_EGPRS
5	EGPRS capable of 8PSK in Uplink, of all Multislot classes	Y	Type_EGPRS_8PSK_uplink

ADDITIONAL INFORMATION (Re. ETSI EN301 511 Annex A)

Item	Additional Information	Support	Mnemonic
1	Telephony.	Y	TSPC_Serv_TS11
2	Permanent Antenna Connector.	N	TSPC_AddInfo_PermAntenna

20. Test setup photo

Photo of Radiation Emission Test



----- End of Report -----