



FCC PART 24E TEST AND MEASUREMENT REPORT

For

Whoop Wireless, Inc.

5913 NW 31st Ave., Fort Lauderdale,

Germantown, FL 33309, USA

FCC ID: 2AEQJ-CP4-001

Report Type: **Product Type:** Original Report Industrial Booster Ronak Patel f'ofstel **Prepared By:** Test Engineer **Report Number:** R1506022-24 Rev B **Report Date:** 2015-07-29 Simon Ma Samon elle **Reviewed By:** RF Lead Bay Area Compliance Laboratories Corp. 1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732 9164

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^{*} This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*"

TABLE OF CONTENTS

1	GF	ENERAL INFORMATION	5
	1.1	PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
	1.2	MECHANICAL DESCRIPTION	5
	1.3	Objective	5
	1.4	RELATED SUBMITTAL(S)/GRANT(S)	
	1.5	TEST METHODOLOGY	
	1.6	Measurement Uncertainty	
	1.7	TEST FACILITY	6
2	SY	STEM TEST CONFIGURATION	8
	2.1	JUSTIFICATION	8
	2.2	EUT Exercise Software	
	2.3	EQUIPMENT MODIFICATIONS	
	2.4	EUT INTERNAL CONFIGURATION	
	2.5	LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	8
	2.6	POWER SUPPLY AND LINE FILTERS	8
	2.7	INTERFACE PORTS AND CABLING	8
3	SU	MMARY OF TEST RESULTS	9
4	FC	CC §2.1046 & §24.232(C) – RF OUTPUT POWER	10
	4.1	APPLICABLE STANDARDS	10
	4.2	TEST PROCEDURE	10
	4.3	TEST EQUIPMENT LIST AND DETAILS	
	4.4	TEST ENVIRONMENTAL CONDITIONS.	
	4.5	TEST RESULTS	11
5	FC	CC §2.1049 & §24.238(B) - OCCUPIED BANDWIDTH	21
	5.1	APPLICABLE STANDARDS	21
	5.2	TEST PROCEDURE	21
	5.3	TEST EQUIPMENT LIST AND DETAILS	
	5.4	TEST ENVIRONMENTAL CONDITIONS	
	5.5	TEST RESULTS	21
6	FC	CC §2.1053 & §24.238(A) - SPURIOUS RADIATED EMISSIONS	155
	6.1	APPLICABLE STANDARDS	
	6.2	TEST PROCEDURE	
	6.3	TEST EQUIPMENT LIST AND DETAILS	
	6.4	TEST SETUP BLOCK DIAGRAM	
	6.5	TEST ENVIRONMENTAL CONDITIONS	
	6.6	TEST RESULTS	
7	FC	CC §2.1051 & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	160
	7.1	APPLICABLE STANDARDS	
	7.2	TEST PROCEDURE	
	7.3	TEST EQUIPMENT LIST AND DETAILS	
	7.4	TEST ENVIRONMENTAL CONDITIONS	
_	7.5	TEST RESULTS	
8		CC §24.238(B) - BAND EDGE	
	8.1	APPLICABLE STANDARDS	
	8.2	TEST PROCEDURE	
	8.3	TEST EQUIPMENT LIST AND DETAILS	266

8.4	TEST ENVIRONMENTAL CONDITIONS	266
8.5	TEST RESULTS	266
9 FC	CC §20.21 – OUT OF BAND REJECTION	288
9.1	APPLICABLE STANDARD	288
9.2	TEST PROCEDURE	288
9.3	TEST EQUIPMENT LIST AND DETAILS	288
9.4	TEST ENVIRONMENTAL CONDITIONS	288
9.5	TEST RESULTS	288
10 FC	CC §2.1091 - RF EXPOSURE	290
10.1	APPLICABLE STANDARDS	290
10.2	MPE Prediction	290
10.3	TEST RESULTS	290
11 EX	XHIBIT A - FCC ID LABELING REQUIREMENTS	292
11.1	FCC ID LABEL REQUIREMENTS.	292
11.2	LABEL CONTENTS AND LOCATION	293
12 EX	XHIBIT B - EUT SETUP PHOTOGRAPHS	294
12.1	RADIATED EMISSION BELOW 1 GHZ FRONT VIEW AT 3 METERS	294
12.2	RADIATED EMISSION BELOW 1 GHZ REAR VIEW AT 3 METERS	294
12.3	RADIATED EMISSION ABOVE 1 GHZ FRONT VIEW AT 3 METERS	295
12.4	RADIATED EMISSION ABOVE 1 GHZ REAR VIEW AT 3 METERS	295
13 EX	XHIBIT C – EUT PHOTOGRAPHS	296
13.1	EUT – Front View	296
	EUT – REAR VIEW	
13.3	EUT – RIGHT SIDE VIEW	297
13.4	EUT – LEFT SIDE VIEW	297
13.5	EUT – TOP VIEW	298
13.6	EUT – BOTTOM VIEW	298
13.7	UEUT – OPEN CASE VIEW	299
13.8	B EUT - PCB BOARD BOTTOM	299
13.9	EUT Adapter	300

DOCUMENT REVISION HISTORY

Revision Number Report Number		Description of Revision	Date of Revision
0	R1506022-24	Original Report	2015-07-09
1	R1506022-24 Rev A	Updated test data	2015-07-27
2	R1506022-24 Rev B	Updated test data	2015-07-29

1 General Information

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *Whoop Wireless, Inc.* and their product model: CP4-001, FCC ID: 2AEQJ-CP4-001, which will henceforth be referred to as the EUT (Equipment under Test). The EUT is a cellular band amplifier for both downlink and uplink. The EUT operates in the frequency band of 1900MHz for LTE, GSM, CDMA and WCDMA in uplink and downlink.

1.2 Mechanical Description

The EUT measures approximately 17cm (L) x 13cm (W) x3cm (H) and weighs 1kg.

The test data gathered are from typical production sample, serial number: R1506022-1, assigned by BACL.

1.3 Objective

This type approval report is prepared on behalf of *Whoop Wireless, Inc.* in accordance with Part 2, Subpart J, Part 20.21, Part 24 Subpart E, of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC/IC rules for RF output power, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation and band edge

1.4 Related Submittal(s)/Grant(s)

No Related Submittals

1.5 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 20.21 – Signal Boosters

Part 24 Subpart E – Broadband PCS

Applicable Standards: TIA/EIA603-D, C63.4-2014, FCC KDB 935210.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

FCC ID: 2AEQJ-CP4-001

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2011, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

1.7 Test Facility

Bay area compliance Laboratories Corp. (BACL) is:

- 1- An independent Commercial Test Laboratory accredited to **ISO 17025: 2005** by **A2LA**, in the fields of: Electromagnetic Compatibility & Telecommunications covering Emissions, Immunity, Radio, RF Exposure, Safety and Telecom. This includes NEBS (Network Equipment Building System), Wireless RF, Telecommunications Terminal Equipment (TTE); Network Equipment; Information Technology Equipment (ITE); Medical Electrical Equipment; Industrial, Commercial, and Medical Test Equipment; Professional Audio and Video Equipment; Electronic (Digital) Products; Industrial and Scientific Instruments; Cabled Distribution Systems and Energy Efficiency Lighting.
- 2- An ENERGY STAR Recognized Laboratory, for the LM80 Testing, a wide variety of Luminares and Computers.
- 3- A NIST Designated Phase-I and Phase-II CAB including: ACMA (Australian Communication and Media Authority), BSMI (Bureau of Standards, Metrology and Inspection of Taiwan), IDA (Infocomm Development Authority of Singapore), IC(Industry Canada), Korea (Ministry of Communications Radio Research Laboratory), NCC (Formerly DGT; Directorate General of Telecommunication of Chinese Taipei) OFTA (Office of the Telecommunications Authority of Hong Kong), Vietnam, VCCI Voluntary Control Council for Interference of Japan and a designated EU CAB (Conformity Assessment Body) (Notified Body) for the EMC and R&TTE Directives.
- 4- A Product Certification Body accredited to **ISO Guide 65:1996** by **A2LA** to certify:
- 1- Unlicensed, Licensed radio frequency devices and Telephone Terminal Equipment for the FCC. Scope A1, A2, A3, A4, B1, B2, B3, B4 & C.
- 2. Radio Standards Specifications (RSS) in the Category I Equipment Standards List and All Broadcasting Technical Standards (BETS) in Category I Equipment Standards List for Industry Canada.
- 3. Radio Communication Equipment for Singapore.
- 4. Radio Equipment Specifications, GMDSS Marine Radio Equipment Specifications, and Fixed Network Equipment Specifications for Hong Kong.
- 5. Japan MIC Telecommunication Business Law (A1, A2) and Radio Law (B1, B2 and B3).
- 6. Audio/Video, Battery Charging Systems, Computers, Displays, Enterprise Servers, Imaging Equipment, Set-Top Boxes, Telephony, Televisions, Ceiling Fans, CFLs (Including GU24s), Decorative Light Strings, Integral LED Lamps, Luminaires, Residential Ventilating Fans.

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2009, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

2.2 EUT Exercise Software

N/A: signal was sent through EUT using a signal generator. The device was set to normal operating mode.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 EUT Internal Configuration

Manufacturer	Description	Model	Serial Number	
Zore Access Tech	30-00010-PCB	CP4-002 REV A	-	

2.5 Local Support Equipment List and Details

Manufacturers Descriptions		Models	Serial Numbers
Dell	Dell Laptop		CN-0X2034-48643-3A6-8307
Agilent	Signal Generator	E4438C	MY45091309
Agilent	Signal Studio for WCDMA/LTE	N7600B	-

2.6 Power Supply and Line Filters

Manufacturers Descriptions		Models	Serial Numbers	
Switching Adapter	AC Adapter	GQ15-050250-CU	-	

2.7 Interface Ports and Cabling

Cable Description	Length (m)	From	То
RF cable	<1	Signal Generator	Input/ EUT
RF cable	<1	Output/ EUT	Spectrum Analyzer

3 Summary of Test Results

FCC Rules	Description of Tests	Results
§2.1046, §24.232(c)	RF Output Power	Compliant
§2.1049, §24.238(b)	Occupied Bandwidth	Compliant
§2.1053, §24.238(a)	Spurious Radiated Emissions	Compliant
§2.1053, §22.917(a)	Spurious Emissions at Antenna Terminals	Compliant
§2.1053, §22.917(b)	22.917(b) Band Edge	
§2.1055, §22.355	Frequency Stability	N/A ¹
§20.21	Out of Band Rejection	Compliant
§2.1091	RF Exposure	Compliant

 N/A^1 -The unit is a signal booster.

4 FCC §2.1046 & §24.232(c) – RF Output Power

4.1 Applicable Standards

According to FCC §24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

4.2 Test Procedure

Conducted:

The EUT was connected to the spectrum analyzer and Signal Generator followed by 50Ω - 75Ω matching pad.



4.3 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2014-10-16	1 year
Agilent	Signal Generator	E4438C	MY45091309	2014-07-15	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

4.4 Test Environmental Conditions

Temperature:	21-23° C	
Relative Humidity:	42-48 %	
ATM Pressure:	101.4-102 kPa	

The testing was performed by Ronak Patel 2015-06-08 to 2015-06-29 in the RF Site.

4.5 Test Results

ALC OFF

Mode		Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
	4000 1 577	Low	1930.2	-44.1	12.11	56.21
	1900 MHz Downlink	Middle	1960.0	-48.1	13.27	61.37
GSM/GPRS	Bowining	High	1989.8	-46.1	12.87	58.97
USIVI/UFKS	4000 3 577	Low	1850.2	-48	11.17	59.17
	1900 MHz Uplink	Middle	1880.0	-46	12.43	58.43
	Оринк	High	1909.8	-42	13.98	55.98

Mod	de	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
	10001577	Low	1930.8	-45.1	15.14	60.24
	1900 MHz Downlink	Middle	1960.0	-48.1	15.64	63.74
CDMA/EVDO		High	1989.2	-47.1	15.12	62.22
CDMA/E VDO		Low	1850.8	-48	13.73	61.73
	1900 MHz Uplink	Middle	1880.0	-47	14.42	61.42
	Эртик	High	1909.2	-43	15.47	58.47

Mode		Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		Low	1932.4	-49.1	15.49	64.59
	1900 MHz Downlink	Middle	1960.0	-51.1	16.04	67.14
WCDMA		High	1987.6	-52.1	15.71	67.81
WCDMA	1900 MHz Uplink	Low	1852.4	-49	12.44	61.44
		Middle	1880.0	-46	13.5	59.5
	o prime	High	1907.6	-42	14.47	56.47

LTE Band 2 DL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1930.7	-51.10	15.59	66.69
	1.4	1960	-53.10	15.63	68.73
		1989.3	-52.10	15.02	67.12
		1931.5	-50.10	15.67	65.77
	3	1960	-51.10	15.60	66.7
		1988.5	-50.10	15.35	65.45
		1932.5	-48.10	15.33	63.43
	5	1960	-50.10	15.25	65.35
QPSK		1987.5	-49.10	15.66	64.76
QPSK		1935	-47.10	15.82	62.92
	10	1960	-49.10	15.85	64.95
		1985	-48.10	15.25	63.35
		1937.5	-46.10	15.06	61.16
	15	1960	-46.10	15.35	61.45
		1982.5	-44.10	13.46	57.56
	20	1940	-45.10	15.52	60.62
		1960	-46.10	15.34	61.44
		1980	-43.10	12.82	55.92
	1.4	1930.7	-50.10	15.60	65.7
		1960	-53.10	15.38	68.48
		1989.3	-51.10	15.53	66.63
		1931.5	-50.10	15.76	65.86
	3	1960	-51.10	15.52	66.62
		1988.5	-50.10	15.10	65.2
		1932.5	-48.10	15.54	63.64
	5	1960	-50.10	15.72	65.82
16 OAM		1987.5	-50.10	15.17	65.27
16-QAM		1935	-46.10	15.82	61.92
	10	1960	-48.10	15.47	63.57
		1985	-46.10	14.68	60.78
		1937.5	-45.10	15.35	60.45
	15	1960	-48.10	15.11	63.21
		1982.5	-45.10	14.40	59.5
		1940	-46.10	15.89	61.99
	20	1960	-47.10	15.00	62.1
		1980	-44.10	13.66	57.76

LTE Band 2 DL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1930.7	-50.10	15.41	65.51
	1.4	1960	-52.10	15.81	67.91
		1989.3	-50.10	15.64	65.74
		1931.5	-51.10	15.54	66.64
	3	1960	-53.10	15.14	68.24
		1988.5	-51.10	15.65	66.75
		1932.5	-49.10	15.61	64.71
	5	1960	-50.10	15.32	65.42
(4 OAM		1987.5	-49.10	15.87	64.97
64-QAM		1935	-47.10	15.04	62.14
	10	1960	-49.10	15.47	64.57
		1985	-48.10	15.61	63.71
		1937.5	-45.10	15.48	60.58
	15	1960	-47.10	15.37	62.47
		1982.5	-43.10	13.88	56.98
		1940	-47.10	15.05	62.15
	20	1960	-47.10	15.89	62.99
		1980	-45.10	13.51	58.61

LTE Band 2 UL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1850.7	-50	15.77	65.77
	1.4	1880	-49	15.56	64.56
		1909.3	-46	15.77	61.77
		1851.5	-47	14.02	61.02
	3	1880	-45	15.68	60.68
		1908.5	-43	15.76	58.76
		1852.5	-45	13.15	58.15
	5	1880	-45	15.65	60.65
QPSK		1907.5	-42	15.22	57.22
QPSK		1855	-47	12.7	59.7
	10	1880	-44	15.89	59.89
		1905	-43	14.37	57.37
		1857.5	-46	13.31	59.31
	15	1880	-40	13.56	53.56
		1902.5	-43	13.48	56.48
	20	1860	-45	12.58	57.58
		1880	-42	13.29	55.29
		1900	-48	15.18	63.18
	1.4	1850.7	-51	15.43	66.43
		1880	-50	15.40	65.4
		1909.3	-47	15.39	62.39
		1851.5	-48	15.07	63.07
	3	1880	-45	13.50	58.5
		1908.5	-44	13.66	57.66
		1852.5	-46	12.56	58.56
	5	1880	-45	13.44	58.44
16 OAM		1907.5	-46	14.67	60.67
16-QAM		1855	-44	11.18	55.18
	10	1880	-42	12.09	54.09
		1905	-37	14.19	51.19
		1857.5	-46	12.51	58.51
	15	1880	-44	11.92	55.92
		1902.5	-45	12.86	57.86
		1860	-45	11.50	56.5
	20	1880	-47	11.36	58.36
		1900	-47	13.20	60.2

LTE Band 2 UL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1850.7	-49	14.95	63.95
	1.4	1880	-48	15.19	63.19
		1909.3	-45	15.46	60.46
		1851.5	-43	13.17	56.17
	3	1880	-43	13.75	56.75
		1908.5	-43	15.28	58.28
		1852.5	-45	15.86	60.86
	5	1880	-40	15.22	55.22
64 O A M		1907.5	-37	15.72	52.72
64-QAM	10	1855	-47	15.30	62.3
		1880	-39	15.18	54.18
		1905	-38	15.53	53.53
		1857.5	-45	14.38	59.38
	15	1880	-39	14.88	53.88
		1902.5	-37	14.78	51.78
		1860	-44	13.05	57.05
	20	1880	-38	14.70	52.7
		1900	-44	15.19	59.19

ALC ON

Mode		Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		Low	1930.2	-41.1	14.63	55.73
	1900 MHz Downlink	Middle	1960.0	-45.1	14.86	59.96
CCM/CDDC	Downink	High	1989.8	-43.1	14.49	57.59
GSM/GPRS		Low	1850.2	-45	11.08	56.08
_	1900 MHz Uplink	Middle	1880.0	-43	12.48	55.48
		High	1909.8	-39	13.83	52.83

Mode		Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		Low	1930.8	-42.1	15.54	57.64
	1900 MHz Downlink	Middle	1960.0	-45.1	16.11	61.21
CDMA/EVDO		High	1989.2	-44.1	15.77	59.87
CDMA/E V DO	1900 MHz	Low	1850.8	-45	13.28	58.28
1900 MHz Uplink		Middle	1880.0	-44	14.2	58.2
	High	1909.2	-40	15.2	55.2	

Mode		Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
	10001577	Low	1932.4	-46.1	15.72	61.82
	1900 MHz Downlink	Middle	1960.0	-48.1	15.27	63.37
WCDMA		High	1987.6	-49.1	14.76	63.86
WCDMA	1900 MHz Uplink	Low	1852.4	-46	15.65	61.65
		Middle	1880.0	-43	12.88	55.88
		High	1907.6	-39	14.68	53.68

LTE Band 2 DL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1930.7	-48.1	15.67	63.77
	1.4	1960	-50.1	15.47	65.57
		1989.3	-49.1	15.4	64.5
		1931.5	-47.1	16.44	63.54
	3	1960	-48.1	15.96	64.06
		1988.5	-47.1	16.09	63.19
		1932.5	-45.1	15.76	60.86
	5	1960	-47.1	16.27	63.37
ODCV		1987.5	-46.1	16.33	62.43
QPSK		1935	-44.1	16.16	60.26
	10	1960	-46.1	15.77	61.87
		1985	-45.1	16.28	61.38
		1937.5	-43.1	14.55	57.65
	15	1960	-43.1	16.63	59.73
		1982.5	-41.1	14	55.1
	20	1940	-42.1	15.89	57.99
		1960	-43.1	15.58	58.68
		1980	-40.1	13.15	53.25
	1.4	1930.7	-47.1	15.67	62.77
		1960	-50.1	15.47	65.57
		1989.3	-48.1	15.4	63.5
		1931.5	-47.1	16.44	63.54
	3	1960	-48.1	15.96	64.06
		1988.5	-47.1	16.09	63.19
		1932.5	-45.1	16.04	61.14
	5	1960	-47.1	16	63.1
160435		1987.5	-47.1	15.35	62.45
16-QAM		1935	-43.1	15.55	58.65
	10	1960	-45.1	15.84	60.94
		1985	-43.1	15.2	58.3
		1937.5	-42.1	15.49	57.59
	15	1960	-45.1	14.9	60
		1982.5	-42.1	14.47	56.57
		1940	-43.1	16	59.1
	20	1960	-44.1	15.25	59.35
		1980	-41.1	14.02	55.12

LTE Band 2 DL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1930.7	-47.1	15.8	62.9
	1.4	1960	-49.1	15.76	64.86
		1989.3	-47.1	16.13	63.23
		1931.5	-48.1	15.94	64.04
	3	1960	-50.1	15.75	65.85
		1988.5	-48.1	15.73	63.83
		1932.5	-46.1	15.95	62.05
	5	1960	-47.1	15.24	62.34
(4 OAM		1987.5	-46.1	16.9	63
64-QAM	10	1935	-44.1	14.53	58.63
		1960	-46.1	16.75	62.85
		1985	-45.1	16.15	61.25
		1937.5	-42.1	15.85	57.95
	15	1960	-44.1	15.61	59.71
		1982.5	-40.1	14.21	54.31
		1940	-44.1	14.86	58.96
	20	1960	-44.1	16.39	60.49
		1980	-42.1	13.79	55.89

LTE Band 2 UL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1850.7	-47	15.94	62.94
	1.4	1880	-46	15.85	61.85
		1909.3	-43	16.96	59.96
		1851.5	-44	13.87	57.87
	3	1880	-42	15.76	57.76
		1908.5	-40	15.89	55.89
		1852.5	-42	13.78	55.78
	5	1880	-42	15.98	57.98
ODCK		1907.5	-39	15.86	54.86
QPSK		1855	-44	12.09	56.09
	10	1880	-41	16.82	57.82
		1905	-40	14.72	54.72
		1857.5	-43	13.33	56.33
	15	1880	-37	13.92	50.92
		1902.5	-40	13.66	53.66
	20	1860	-42	13.21	55.21
		1880	-39	13.62	52.62
		1900	-45	15.82	60.82
	1.4	1850.7	-48	16.02	64.02
		1880	-47	15.37	62.37
		1909.3	-44	16	60
		1851.5	-45	14.65	59.65
	3	1880	-42	13.41	55.41
		1908.5	-41	13.94	54.94
		1852.5	-43	12.77	55.77
	5	1880	-42	13.94	55.94
16.0414		1907.5	-43	14.86	57.86
16-QAM		1855	-41	11.28	52.28
	10	1880	-39	13.42	52.42
		1905	-34	14.47	48.47
		1857.5	-43	13.15	56.15
	15	1880	-41	12.65	53.65
		1902.5	-42	13.4	55.4
		1860	-42	11.81	53.81
	20	1880	-44	11.35	55.35
		1900	-44	12.79	56.79

LTE Band 2 UL

Modulation Type	Channel Bandwidth (MHz)	Channel Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Gain (dB)
		1850.7	-46	16.86	62.86
	1.4	1880	-45	15.88	60.88
		1909.3	-42	17.43	59.43
		1851.5	-40	12.9	52.9
	3	1880	-40	13.67	53.67
		1908.5	-40	15.73	55.73
		1852.5	-42	16.47	58.47
	5	1880	-37	14.8	51.8
(4.0.434		1907.5	-34	15.63	49.63
64-QAM	10	1855	-44	15.58	59.58
		1880	-36	15.39	51.39
		1905	-35	16.46	51.46
		1857.5	-42	14.73	56.73
	15	1880	-36	15.38	51.38
		1902.5	-34	14.97	48.97
		1860	-41	13.15	54.15
	20	1880	-35	14.43	49.43
		1900	-41	15.11	56.11

5 FCC §2.1049 & §24.238(b) - Occupied Bandwidth

5.1 Applicable Standards

Requirements: §24.238(b)

5.2 Test Procedure

The EUT was connected to the spectrum analyzer and Signal Generator followed by 50Ω - 75Ω matching pad.

The resolution bandwidth of the spectrum analyzer was set to at least 1 to 5% of the OBW and the 26 dB & 99% bandwidth was recorded.



5.3 Test Equipment List and Details

Manufacturers	Descriptions	Models	Serial Numbers	Calibration Dates	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	MY44303352	2015-06-22	1 year
Agilent	Signal Generator	E4438C	MY45091309	2014-07-15	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

5.4 Test Environmental Conditions

Temperature:	21-23° C		
Relative Humidity:	42-48 %		
ATM Pressure:	101.4-102 kPa		

The testing was performed by Ronak Patel on 2015-06-08 to 2015-06-29 in the RF Site.

5.5 Test Results

Please refer to the following tables and plots.

ALC OFF

Mode		Channel	Frequency	26dB Bandwidth (kHz)	
			(MHz)	Input	Output
	4000 1 577	Low	1930.2	305.044	312.620
	1900 MHz Downlink	Middle	1960.0	311.797	315.043
GSM/GPRS		High	1989.8	303.576	321.309
USM/GPKS	4000 3 577	Low	1850.2	303.394	310.017
	1900 MHz Uplink	Middle	1880.0	307.680	314.370
		High	1909.8	313.984	318.261

Mode		Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
				Input	Output
		Low	1930.8	1.455	1.475
	1900 MHz Downlink	Middle	1960.0	1.459	1.454
CDMA/EVDO		High	1989.2	1.453	1.469
CDMA/EVDO	1900 MHz Uplink	Low	1850.8	1.466	1.459
		Middle	1880.0	1.459	1.470
		High	1909.2	1.466	1.472

Mode		Channel	Frequency	26 dB Bandwidth (MHz)	
			(MHz)	Input	Output
	40001577	Low	1932.4	4.859	4.805
	1900 MHz Downlink	Middle	1960.0	4.853	4.786
WCDMA		High	1987.6	4.886	4.783
WCDMA	1900 MHz Uplink	Low	1852.4	4.880	4.807
		Middle	1880.0	4.862	4.882
	Оринк	High	1907.6	4.920	4.883

LTE QPSK Band 2

Mode		CI. I	Frequency	26 dB Bandwidth (MHz)		
		Channel	(MHz)	Input	Output	
		Low	1930.7	1.383	1.345	
	1900 MHz Downlink	Middle	1960.0	1.380	1.390	
	Downink	High	1989.3	1.383	1.373	
LTE 1.4 MHz		Low	1850.7	1.337	1.368	
	1900 MHz Uplink	Middle	1880.0	1.359	1.363	
	Оринк	High	1909.3	1.339	1.398	
		Low	1931.5	3.113	3.062	
	1900 MHz Downlink	Middle	1960.0	3.112	3.089	
I TE 2 MII-	Downink	High	1988.5	3.112	3.065	
LTE 3 MHz		Low	1851.5	3.081	3.136	
	1900 MHz Uplink	Middle	1880.0	3.080	3.090	
	Оринк	High	1908.5	3.140	3.106	
		Low	1932.5	5.103	5.161	
	1900 MHz Downlink	Middle	1960.0	5.192	5.171	
I TE 5 MII-		High	1987.5	5.132	5.035	
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.133	5.132	
		Middle	1880.0	5.219	5.111	
		High	1907.5	5.174	5.153	
	1900 MHz Downlink	Low	1935	10.308	10.172	
		Middle	1960	10.467	10.277	
LTE 10 MIL		High	1985	10.568	10.249	
LTE 10 MHz		Low	1855	10.629	10.192	
	1900 MHz Uplink	Middle	1880	10.642	10.397	
	Оринк	High	1905	10.653	10.248	
		Low	1937.5	15.859	15.248	
	1900 MHz Downlink	Middle	1960.0	15.845	15.024	
I TE 15 MHz	Downink	High	1982.5	15.748	15.078	
LTE 15 MHz		Low	1857.5	15.817	15.260	
	1900 MHz Uplink	Middle	1880.0	15.739	15.435	
	Эрин	High	1902.5	15.782	15.227	
	4000	Low	1940	20.915	20.282	
	1900 MHz Downlink	Middle	1960	20.953	20.053	
LTE 20 MHz	20 minin	High	1980	20.940	20.031	
LIL 20 MIIIL	1000 MII	Low	1860	20.928	20.601	
	1900 MHz Uplink	Middle	1880	21.029	20.853	
	- F	High	1900	21.135	20.187	

LTE 16QAM Band 2

Mode		Channel	Frequency	26 dB Bandwidth (MHz)		
			(MHz)	Input	Output	
		Low	1930.7	1.368	1.474	
	1900 MHz Downlink	Middle	1960.0	1.374	1.474	
1.000 1.43.00	Downink	High	1989.3	1.348	1.463	
LTE 1.4 MHz		Low	1850.7	1.383	1.345	
	1900 MHz Uplink	Middle	1880.0	1.356	1.350	
	Оршк	High	1909.3	1.348	1.346	
		Low	1931.5	3.079	3.165	
	1900 MHz Downlink	Middle	1960.0	3.116	3.182	
I TEE 2 3 MI	Downink	High	1988.5	3.145	3.179	
LTE 3 MHz		Low	1851.5	3.141	3.153	
	1900 MHz Uplink	Middle	1880.0	3.092	3.092	
	Оршк	High	1908.5	3.140	3.058	
		Low	1932.5	5.189	5.197	
	1900 MHz Downlink	Middle	1960.0	5.144	5.227	
I TE 5 MI		High	1987.5	5.221	5.224	
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.153	5.161	
		Middle	1880.0	5.184	5.216	
		High	1907.5	5.129	5.142	
	1900 MHz Downlink	Low	1935	10.603	10.375	
		Middle	1960	10.410	10.316	
I TE 10 MI		High	1985	10.282	10.450	
LTE 10 MHz		Low	1855	10.576	10.164	
	1900 MHz Uplink	Middle	1880	10.288	10.275	
	Оршк	High	1905	10.526	10.306	
		Low	1937.5	15.738	15.346	
	1900 MHz Downlink	Middle	1960.0	15.717	15.327	
I TE 15 MII-	Downink	High	1982.5	15.746	15.132	
LTE 15 MHz		Low	1857.5	15.759	15.207	
	1900 MHz Uplink	Middle	1880.0	15.791	15.662	
	Оринк	High	1902.5	15.790	15.245	
		Low	1940	20.904	20.221	
	1900 MHz Downlink	Middle	1960	20.863	19.829	
LTE 20 MHz	Downink	High	1980	20.942	19.936	
	1000 3 577	Low	1860	21.050	19.993	
	1900 MHz Uplink	Middle	1880	21.062	20.251	
	- F	High	1900	21.058	20.266	

LTE 64QAM Band 2

Mode		Channel	Frequency	26 dB Bandwidth (MHz)		
			(MHz)	Input	Output	
		Low	1930.7	1.384	1.363	
	1900 MHz Downlink	Middle	1960.0	1.379	1.378	
	Downlink	High	1989.3	1.355	1.359	
LTE 1.4 MHz		Low	1850.7	1.356	1.341	
	1900 MHz Uplink	Middle	1880.0	1.332	1.351	
	Оршк	High	1909.3	1.357	1.336	
		Low	1931.5	3.099	3.103	
	1900 MHz Downlink	Middle	1960.0	3.106	3.094	
	Downink	High	1988.5	3.112	3.044	
LTE 3 MHz		Low	1851.5	3.121	3.102	
	1900 MHz Uplink	Middle	1880.0	3.121	3.102	
	Оршк	High	1908.5	3.074	3.107	
		Low	1932.5	5.219	5.145	
	1900 MHz Downlink	Middle	1960.0	5.213	5.175	
		High	1987.5	5.240	5.008	
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.176	5.130	
		Middle	1880.0	5.275	5.181	
		High	1907.5	5.184	5.191	
	1900 MHz Downlink	Low	1935	10.424	10.124	
		Middle	1960	10.419	10.355	
		High	1985	10.402	10.065	
LTE 10 MHz	1900 MHz Uplink	Low	1855	10.413	10.119	
		Middle	1880	10.258	10.325	
	Оршк	High	1905	10.376	10.103	
		Low	1937.5	15.679	15.453	
	1900 MHz Downlink	Middle	1960.0	15.689	15.308	
I TOTO 1.5 N. 611	Downink	High	1982.5	15.669	14.577	
LTE 15 MHz		Low	1857.5	15.682	15.363	
	1900 MHz Uplink	Middle	1880.0	15.639	15.366	
	Оршк	High	1902.5	15.759	15.340	
		Low	1940	21.016	19.880	
	1900 MHz Downlink	Middle	1960	21.061	19.563	
LTE 20 MHz	DOWNINK	High	1980	20.891	19.332	
LIL ZU MINZ	10003.55	Low	1860	20.929	19.985	
	1900 MHz Uplink	Middle	1880	20.836	20.696	
	O Prink	High	1900	20.948	20.219	

ALC ON

Mode		Channel	Frequency	26 dB Bandwidth (kHz)	
			(MHz)	Input	Output
	1900 MHz Downlink	Low	1930.2	305.044	309.714
		Middle	1960.0	311.797	314.285
GSM/GPRS		High	1989.8	303.576	308.922
USM/GPRS	1900 MHz Uplink	Low	1850.2	303.394	310.703
		Middle	1880.0	307.680	315.762
		High	1909.8	313.984	315.590

Mode		Cl. I	Frequency	26 dB Bandwidth (MHz)	
		Channel	(MHz)	Input	Output
1900 MHz		Low	1930.8	1.455	1.438
	1900 MHz Downlink	Middle	1960.0	1.459	1.437
CDMA/EVDO		High	1989.2	1.453	1.430
CDMA/EVDO	1900 MHz Uplink	Low	1850.8	1.466	1.432
		Middle	1880.0	1.459	1.431
		High	1909.2	1.466	1.430

Mode		Channel	Frequency	26 dB Bandwidth (MHz)	
			(MHz)	Input	Output
		Low	1932.4	4.859	4.655
	1900 MHz Downlink	Middle	1960.0	4.853	4.697
WCDMA		High	1987.6	4.886	4.674
WCDMA	1900 MHz Uplink	Low	1852.4	4.880	4.664
		Middle	1880.0	4.862	4.681
	Эртк	High	1907.6	4.920	4.678

LTE QPSK Band 2

Mode		<i>a</i>	Frequency	26 dB Bandwidth (MHz)		
		Channel	(MHz)	Input	Output	
		Low	1930.7	1.383	1.278	
	1900 MHz Downlink	Middle	1960.0	1.380	1.310	
	Downink	High	1989.3	1.383	1.285	
LTE 1.4 MHz		Low	1850.7	1.337	1.331	
	1900 MHz Uplink	Middle	1880.0	1.359	1.315	
	Оринк	High	1909.3	1.339	1.303	
		Low	1931.5	3.113	2.962	
	1900 MHz Downlink	Middle	1960.0	3.112	2.967	
LTE 2 MIL	Downink	High	1988.5	3.112	2.955	
LTE 3 MHz		Low	1851.5	3.081	2.978	
	1900 MHz Uplink	Middle	1880.0	3.080	2.988	
	Оринк	High	1908.5	3.140	2.993	
		Low	1932.5	5.103	4.896	
	1900 MHz Downlink	Middle	1960.0	5.192	4.922	
I TE 5 MIL		High	1987.5	5.132	4.831	
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.133	4.940	
		Middle	1880.0	5.219	4.926	
		High	1907.5	5.174	4.920	
	1900 MHz Downlink	Low	1935	10.308	9.761	
		Middle	1960	10.467	9.734	
LTE 10 MIL		High	1985	10.568	9.698	
LTE 10 MHz		Low	1855	10.629	9.695	
	1900 MHz Uplink	Middle	1880	10.642	9.888	
	Оринк	High	1905	10.653	9.727	
		Low	1937.5	15.859	14.595	
	1900 MHz Downlink	Middle	1960.0	15.845	14.503	
I TE 15 MHz	Downink	High	1982.5	15.748	14.410	
LTE 15 MHz		Low	1857.5	15.817	14.344	
	1900 MHz Uplink	Middle	1880.0	15.739	14.732	
	Эрин	High	1902.5	15.782	14.540	
	4000	Low	1940	20.915	19.443	
	1900 MHz Downlink	Middle	1960	20.953	18.837	
LTE 20 MHz	20 minin	High	1980	20.940	19.087	
	1000 MII	Low	1860	20.928	18.934	
	1900 MHz Uplink	Middle	1880	21.029	19.555	
	F	High	1900	21.135	18.764	

LTE 16QAM Band 2

Mode		Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	
				Input Output	
		Low	1930.7	1.368	1.285
LTE 1.4 MHz	1900 MHz Downlink	Middle	1960.0	1.374	1.264
	DOWNLINK	High	1989.3	1.348	1.277
	1900 MHz Uplink	Low	1850.7	1.383	1.318
		Middle	1880.0	1.356	1.306
		High	1909.3	1.348	1.309
LTE 3 MHz	1900 MHz Downlink	Low	1931.5	3.079	2.950
		Middle	1960.0	3.116	2.977
		High	1988.5	3.145	2.972
	1900 MHz Uplink	Low	1851.5	3.141	2.971
		Middle	1880.0	3.092	2.991
		High	1908.5	3.140	2.978
	1900 MHz Downlink	Low	1932.5	5.189	4.924
		Middle	1960.0	5.144	4.918
		High	1987.5	5.221	4.902
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.153	4.930
		Middle	1880.0	5.184	4.939
		High	1907.5	5.129	4.902
	1900 MHz Downlink	Low	1935	10.603	9.634
LTE 10 MHz		Middle	1960	10.410	9.736
		High	1985	10.282	9.810
	1900 MHz Uplink	Low	1855	10.576	9.768
		Middle	1880	10.288	9.807
		High	1905	10.526	9.798
LTE 15 MHz	1900 MHz Downlink	Low	1937.5	15.738	14.613
		Middle	1960.0	15.717	14.513
		High	1982.5	15.746	14.515
	1900 MHz Uplink	Low	1857.5	15.759	14.614
		Middle	1880.0	15.791	14.810
		High	1902.5	15.790	14.676
LTE 20 MHz	1900 MHz Downlink	Low	1940	20.904	19.570
		Middle	1960	20.863	19.137
		High	1980	20.942	19.163
	1900 MHz Uplink	Low	1860	21.050	19.217
		Middle	1880	21.062	19.887
		High	1900	21.058	19.219

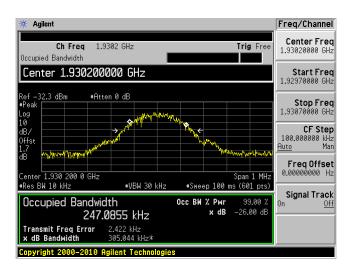
LTE 64QAM Band 2

Mode		Channel	Frequency	26 dB Bandwidth (MHz)	
			(MHz)	Input	Output
	1900 MHz Downlink	Low	1930.7	1.384	1.279
		Middle	1960.0	1.379	1.297
LTE 1.4 MHz		High	1989.3	1.355	1.289
	1900 MHz Uplink	Low	1850.7	1.356	1.281
		Middle	1880.0	1.332	1.285
		High	1909.3	1.357	1.292
	1900 MHz Downlink	Low	1931.5	3.099	2.971
		Middle	1960.0	3.106	2.995
LTE 3 MHz		High	1988.5	3.112	2.976
	1900 MHz Uplink	Low	1851.5	3.121	2.980
		Middle	1880.0	3.121	2.960
		High	1908.5	3.074	2.954
	1900 MHz Downlink	Low	1932.5	5.219	4.896
		Middle	1960.0	5.213	4.957
I TE 5 MIL		High	1987.5	5.240	4.887
LTE 5 MHz	1900 MHz Uplink	Low	1852.5	5.176	4.939
		Middle	1880.0	5.275	4.962
		High	1907.5	5.184	4.965
	1900 MHz Downlink	Low	1935	10.424	9.701
		Middle	1960	10.419	9.735
1 TEC 10 MI		High	1985	10.402	9.673
LTE 10 MHz	1900 MHz Uplink	Low	1855	10.413	9.689
		Middle	1880	10.258	9.887
		High	1905	10.376	9.805
	1900 MHz Downlink	Low	1937.5	15.679	14.532
		Middle	1960.0	15.689	14.845
LTE 15 MHz		High	1982.5	15.669	14.608
	1900 MHz Uplink	Low	1857.5	15.682	14.474
		Middle	1880.0	15.639	14.453
		High	1902.5	15.759	14.482
LTE 20 MHz	1900 MHz Downlink	Low	1940	21.016	19.260
		Middle	1960	21.061	19.181
		High	1980	20.891	19.180
	1900 MHz Uplink	Low	1860	20.929	19.314
		Middle	1880	20.836	19.479
		High	1900	20.948	19.347

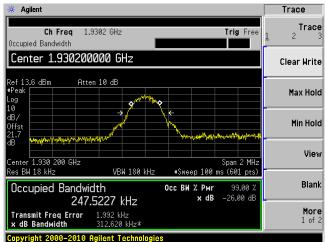
ALC OFF

GSM/GPRS DL

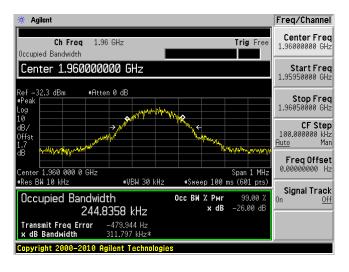
Low I/P



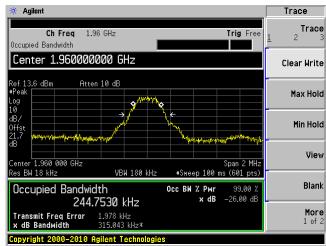
Low O/P



Middle I/P



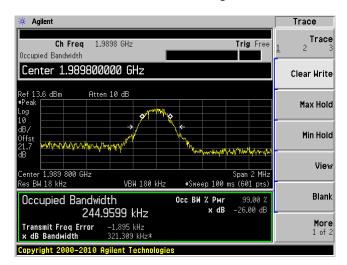
Middle O/P



High I/P

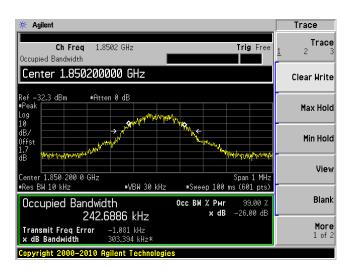
Agilent Trace Trace **Ch Freq** 1.9898 GHz Trig Free Occupied Bandwidth Center 1.989800000 GHz Clear Write Max Hold Min Hold View Center 1.989 800 0 GHz #Res BW 10 kHz #VBW 30 kHz Blank Occupied Bandwidth Occ BW % Pwr x dB 242.2173 kHz -26.00 dB More 1 of 2 Transmit Freq Error -991.013 Hz x dB Bandwidth 303.576 kHz**

High O/P

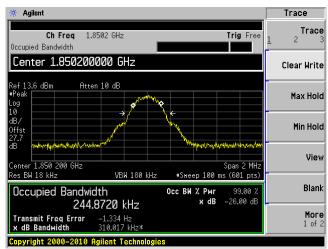


GSM/GPRS UL

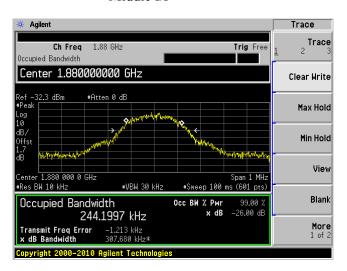
Low I/P



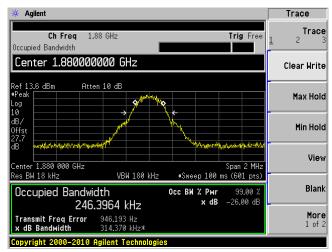
Low O/P



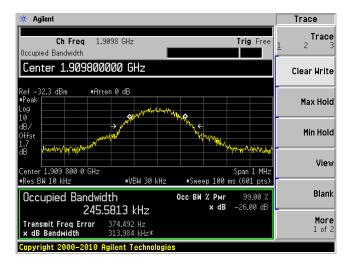
Middle I/P



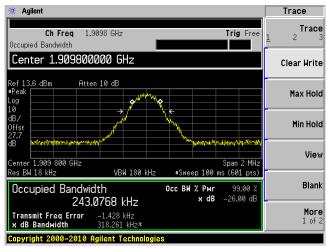
Middle O/P



High I/P

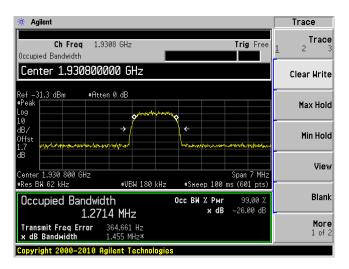


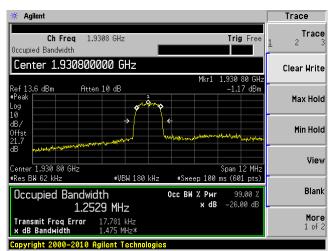
High O/P



CDMA / EVDO DL

Low I/P Low O/P

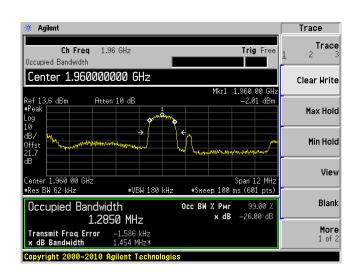




Middle I/P

🔆 Agilent Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Span 7.000000000 MHz Clear Write Ref -31.3 dBm #Atten 0 dB Max Hold Min Hold View Center 1.960 000 GHz #Res BW 62 kHz Span 7 MHz #Sweep 100 ms (601 pts) #VBW 180 kHz Blank Occ BW % Pwr Occupied Bandwidth 99.00 % x dB -26.00 dB 1.2670 MHz Transmit Freq Error x dB Bandwidth More 1 of 2 Copyright 2000-2010 Agilent Technologies

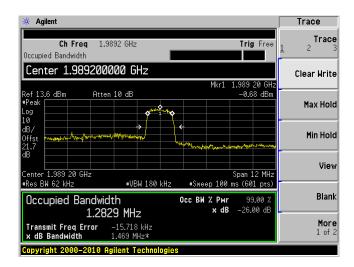
Middle O/P



High I/P

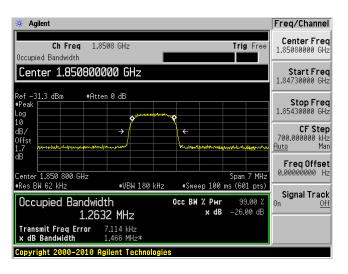
Agilent Trace Trace Ch Freq Trig Free Occupied Bandwidth Center 1.989200000 GHz Clear Write Ref -31.3 dBm #Peak #Atten 0 dB Max Hold Min Hold View Center 1.989 200 GHz #Res BW 62 kHz Span 7 MHz Sweep 100 ms (601 pts) #VBW 180 kHz Blank Occupied Bandwidth Occ BW % Pwr **x dB** -26.00 dB 1.2676 MHz More 1 of 2 Transmit Freq Error 4.370 kHz x dB Bandwidth 1.453 MHz*

High O/P

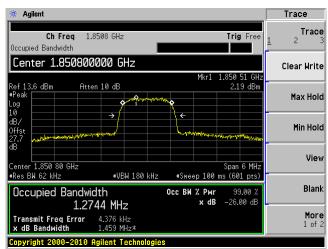


CDMA / EVDO UL

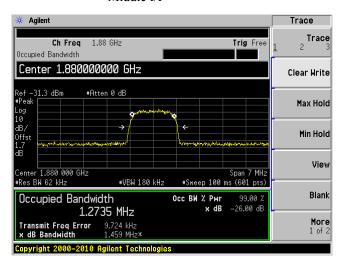
Low I/P



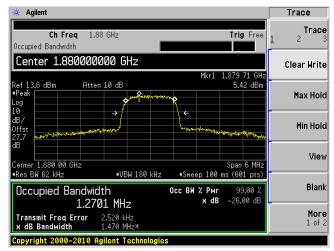
Low O/P



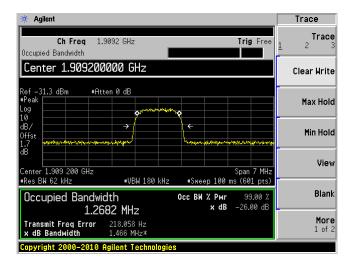
Middle I/P



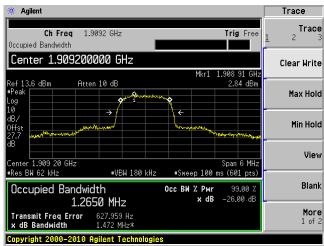
Middle O/P



High I/P

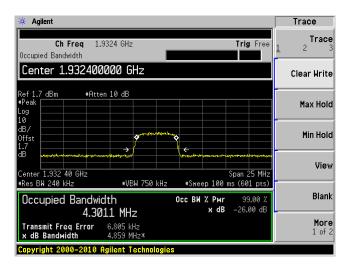


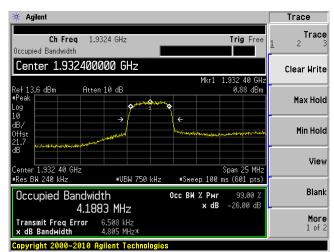
High O/P



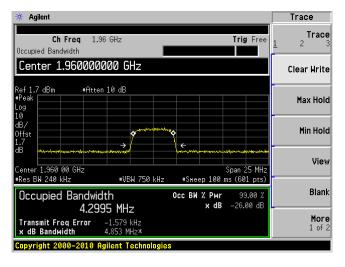
WCDMA DL

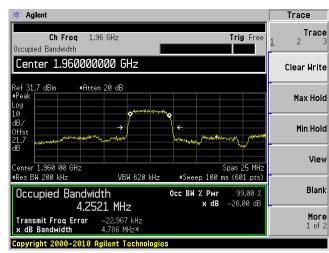
Low I/P Low O/P





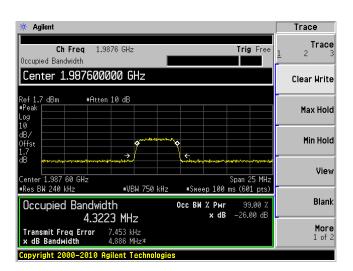
Middle I/P



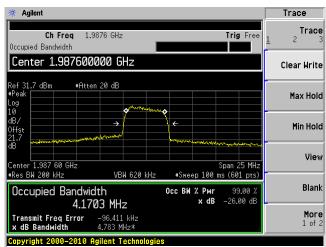


Middle O/P

High I/P

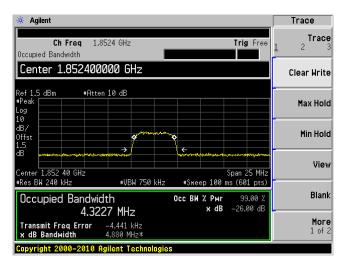


High O/P

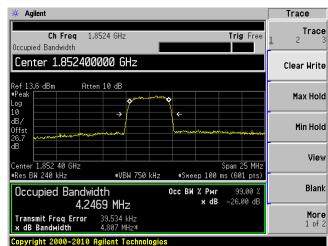


WCDMA UL

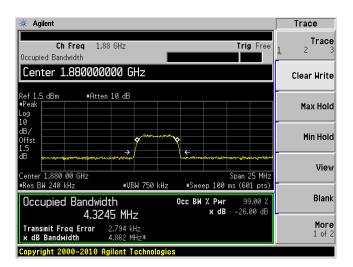
Low I/P



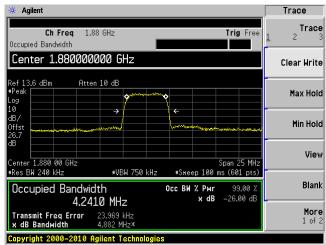
Low O/P



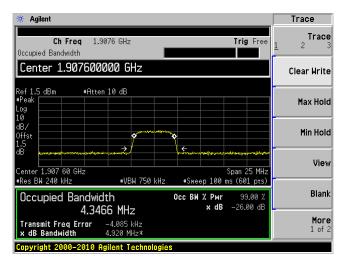
Middle I/P



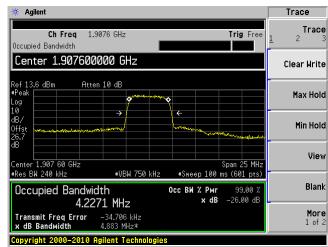
Middle O/P



High I/P

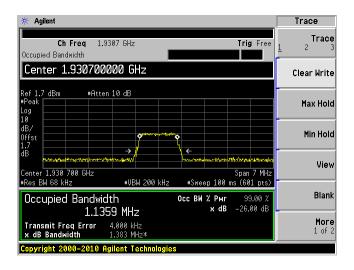


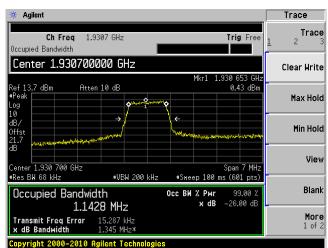
High O/P



LTE 1.4MHz QPSK DL

Low I/P Low O/P

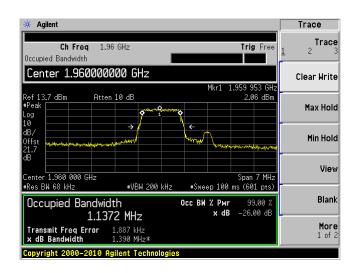




Middle I/P

Freq/Channel Center Freq 1.96000000 GHz Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Start Freq 1.95650000 GHz #Atten 10 dB Stop Freq 1.96350000 GHz **CF Step** 700.000000 kHz <u>Auto</u> Man Freq Offset 0.00000000 Hz Center 1.960 000 GHz Res BW 68 kHz #VBW 200 kHz #Sweep 100 ms (601 pts) Signal Track Occ BW % Pwr Occupied Bandwidth % Pwr 99.00 % x dB -26.00 dB 1.1407 MHz Transmit Freq Error x dB Bandwidth

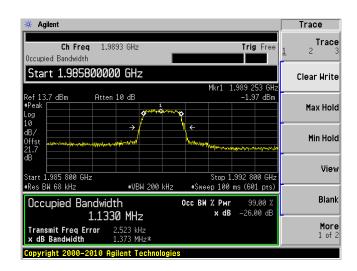
Middle O/P



High I/P

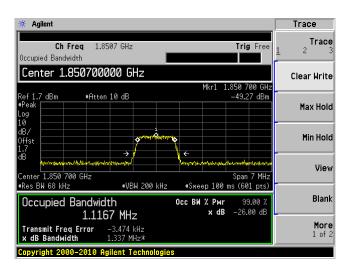
Agilent Trace Trace **Ch Freq** 1.9893 GHz Trig Free Occupied Bandwidth Center 1.989300000 GHz Clear Write Ref 1.7 dBm #Atten 10 dB Max Hold Min Hold View Center 1.989 300 GHz •Res BW 68 kHz Span 7 MHz #Sweep 100 ms (601 pts) #VBW 200 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % **x dB** −26.00 dB 1.1514 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth −3.215 kHz 1.383 MHz* Copyright 2000-2010 Agilent Technologies

High O/P

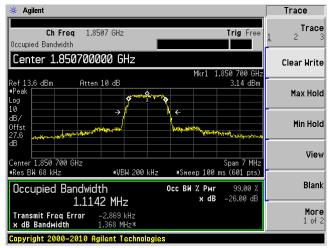


LTE 1.4MHz QPSK UL

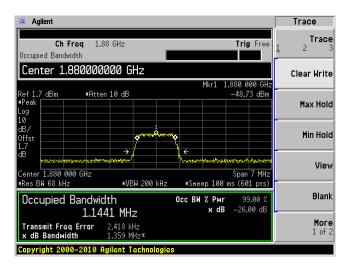
Low I/P



Low O/P



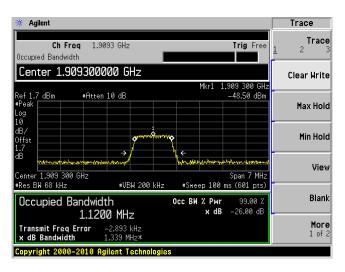
Middle I/P



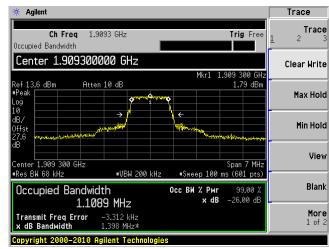
Middle O/P



High I/P

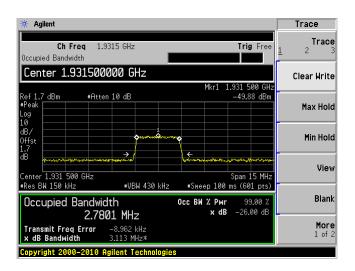


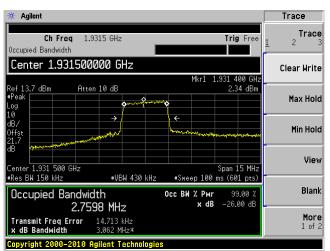
High O/P



LTE 3MHz QPSK DL

Low I/P Low O/P

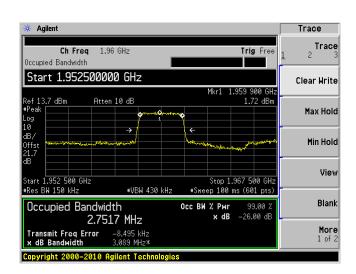




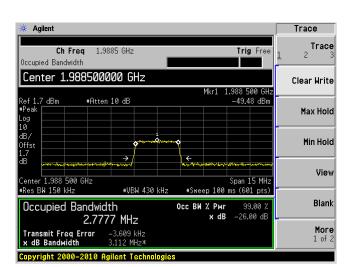
Middle I/P

Agilent Freq/Channel Center Freq 1.96000000 GHz Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Start Freq 1.95250000 GHz Mkr1 1.960 000 GH #Atten 10 dB -49.60 dBm **Stop Freq** 1.96750000 GHz Log 10 dB/ **CF Step** 1.50000000 MHz <u>Auto</u> Man <u>Auto</u> Freq Offset 0.00000000 Hz Span 15 MHz #Sweep 100 ms (601 pts) Center 1.960 000 GHz #Res BW 150 kHz #VBW 430 kHz Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 2.7813 MHz Transmit Freq Error -6.119 kHz x dB Bandwidth 3.112 MHz* Copyright 2000-2010 Agilent Technologies

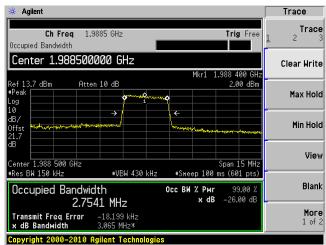
Middle O/P



High I/P

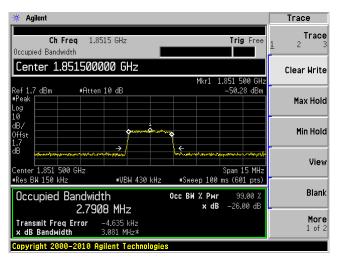


High O/P

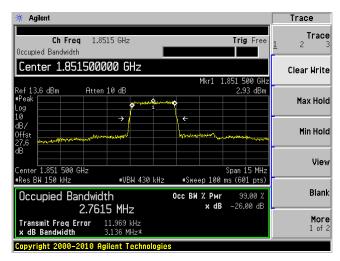


LTE 3MHz QPSK UL

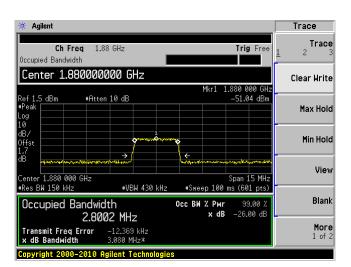
Low I/P



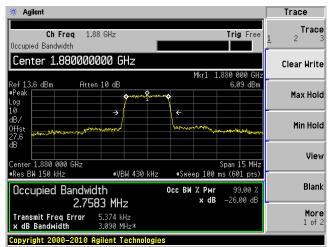
Low O/P



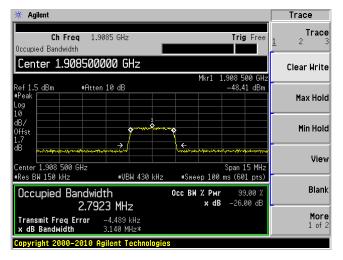
Middle I/P



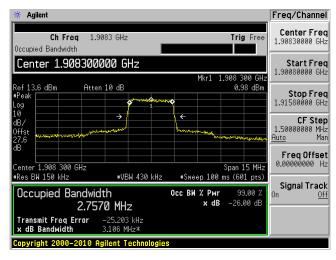
Middle O/P



High I/P

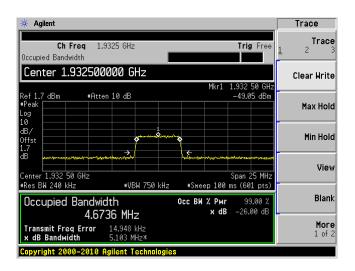


High O/P



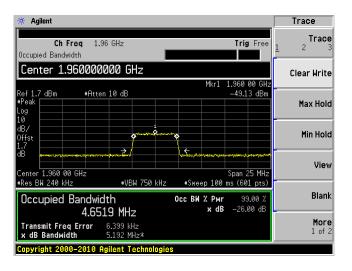
LTE 5MHz QPSK DL

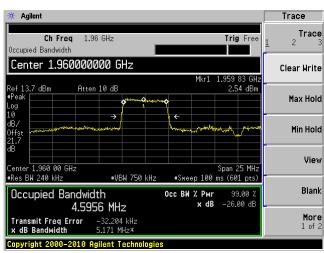
Low I/P Low O/P





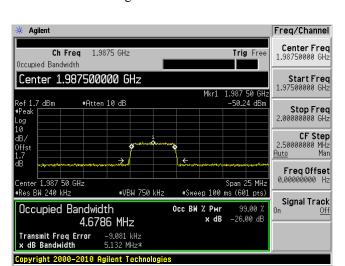
Middle I/P



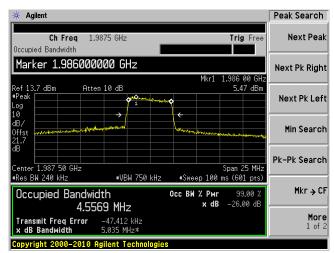


Middle O/P

High I/P

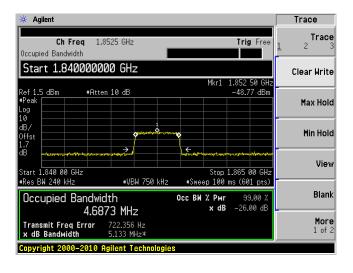


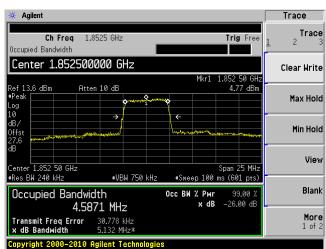
High O/P



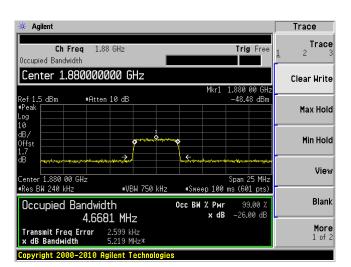
LTE 5MHz QPSK UL

Low I/P Low O/P

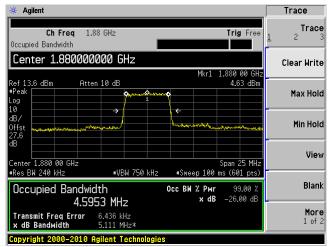




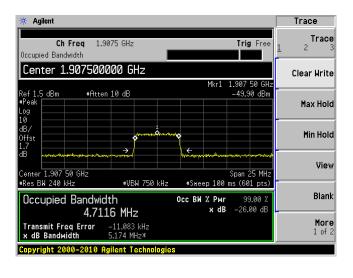
Middle I/P



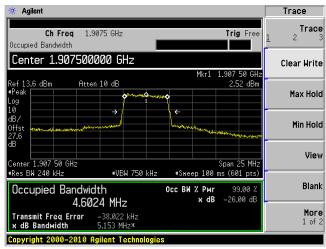
Middle O/P



High I/P

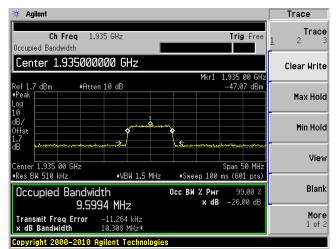


High O/P



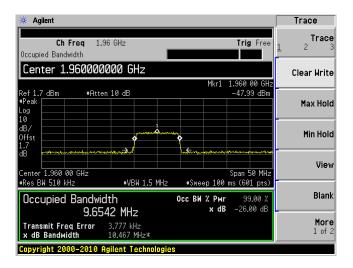
LTE 10MHz QPSK DL

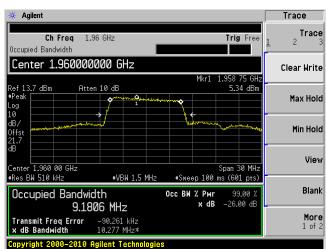
Low I/P Low O/P





Middle I/P Middle O/P

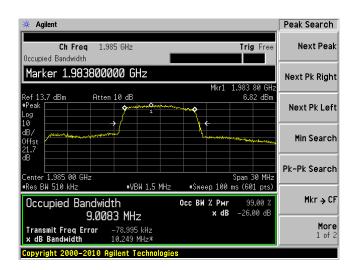




High I/P

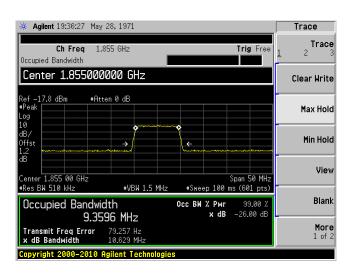
🔆 Agilent Trace Trace Ch Freq 1.935 GHz Trig Free Occupied Bandwidth Center 1.935000000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.935 00 GHz #Res BW 510 kHz Span 50 MHz #Sweep 100 ms (601 pts) #VBW 1.5 MHz Blank Occ BW % Pwr 99.00 % x dB -26.00 dB Occupied Bandwidth 9.5994 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth –11.264 kHz 10.308 MHz*

High O/P

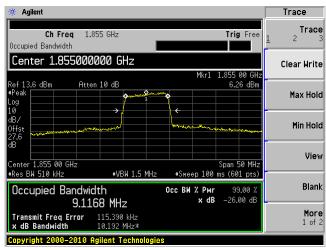


LTE 10MHz QPSK UL

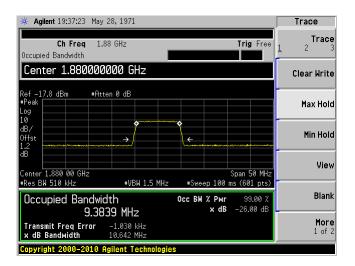
Low I/P



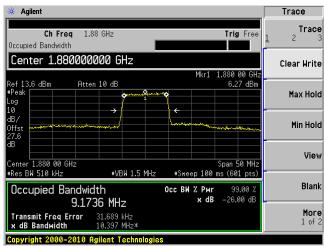
Low O/P



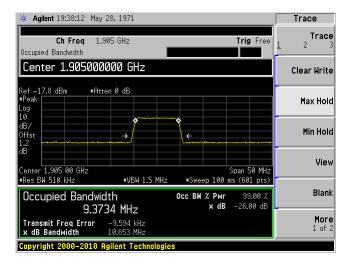
Middle I/P



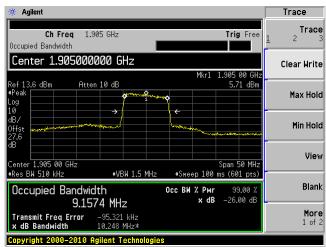
Middle O/P



High I/P

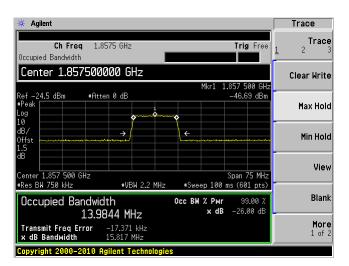


High O/P

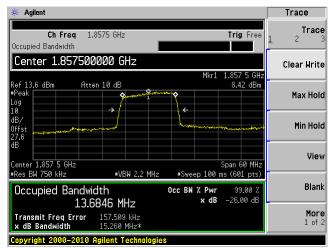


LTE 15MHz QPSK UL

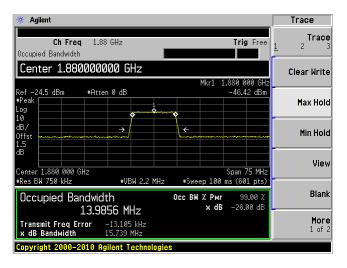
Low I/P



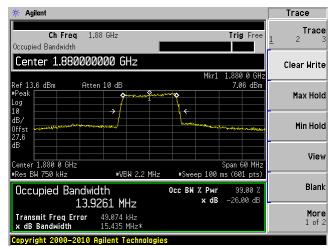
Low O/P



Middle I/P



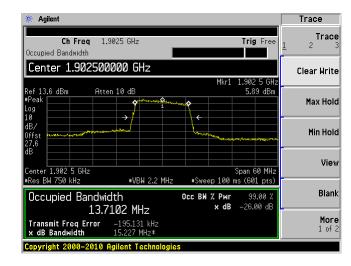
Middle O/P



High I/P

Agilent Trace Trace Trig Free Occupied Bandwidth Center 1.902500000 GHz Clear Write Mkr1 1.902 500 GHz -46.56 dBm Ref -24.5 dBm #Atten 0 dB Max Hold Min Hold View Center 1.902 500 GHz #Res BW 750 kHz Span 75 MHz #Sweep 100 ms (601 pts) *VBW 2.2 MHz Blank Occ BW % Pwr x dB Occupied Bandwidth 99.00 % -26.00 dB 14.0180 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth Copyright 2000-2010 Agilent Technologies

High O/P

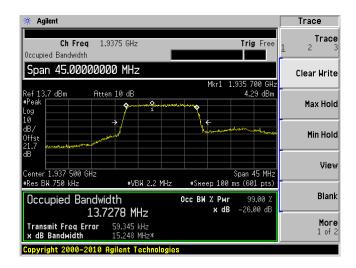


LTE 15MHz QPSK DL

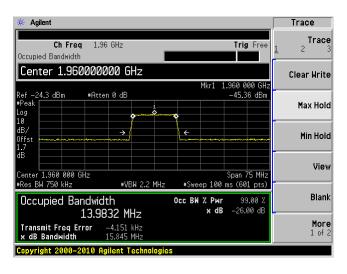
Low I/P

Agilent Trace Trace Ch Freq 1.9375 GHz Trig Free Occupied Bandwidth Center 1.937500000 GHz Clear Write Ref -24.3 dBm #Atten 0 dB -45.43 dBm Max Hold Min Hold View #VBW 2.2 MHz #Res BW 750 kHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99 00 % x dB -26.00 dB 13.9686 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth –12.344 kHz 15.859 MHz Copyright 2000-2010 Agilent Technologi

Low O/P



Middle I/P



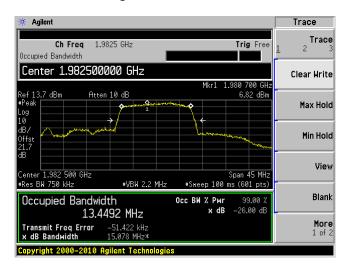
Middle O/P



High I/P

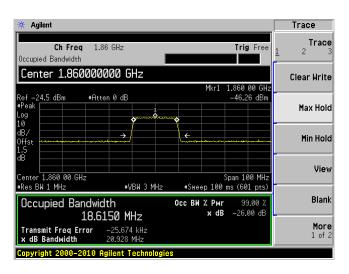
🔆 Agilent Trace Trace **Ch Freq** 1.9825 GHz Trig Free Occupied Bandwidth Center 1.982500000 GHz Clear Write Mkr1 1.982 500 GHz -45.33 dBm Ref -24.3 dBm #Peak #Atten 0 dB Max Hold Min Hold View #VBW 2.2 MHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 -26.00 dB x dB 13.9921 MHz Transmit Freq Error -5.800 kHz x dB Bandwidth 15.748 MHz More 1 of 2 Copyright 2000-2010 Agilent Technologies

High O/P

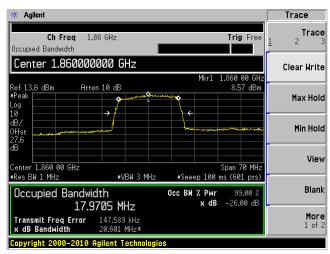


LTE 20MHz QPSK UL

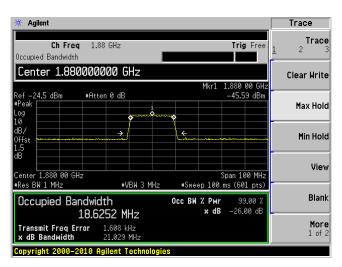
Low I/P



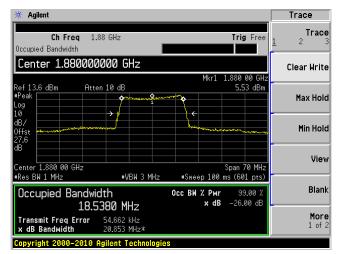
Low O/P



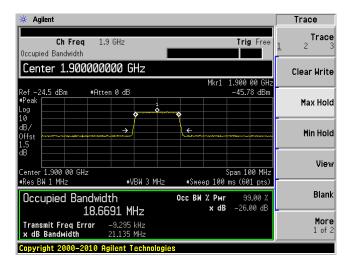
Middle I/P



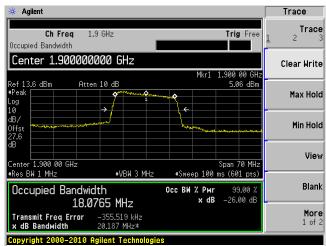
Middle O/P



High I/P

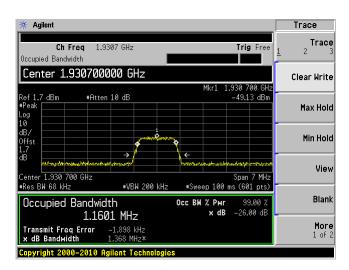


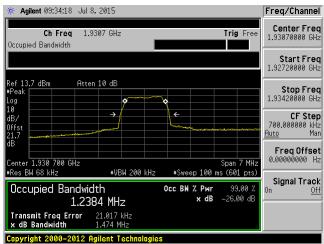
High O/P



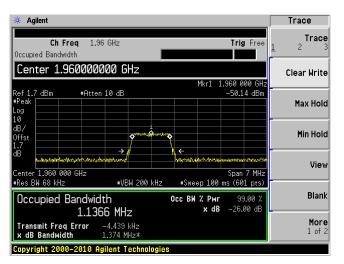
LTE 1.4MHz 16QAM DL

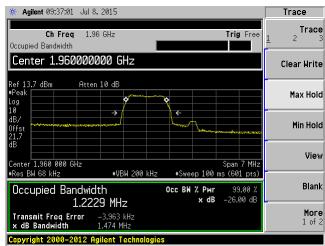
Low I/P Low O/P



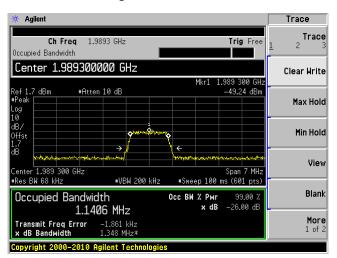


Middle I/P Middle O/P

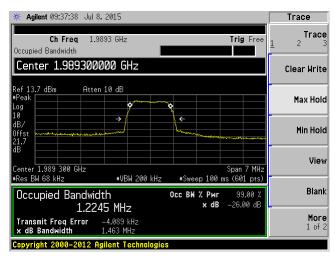




High I/P

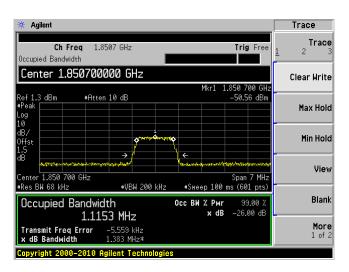


High O/P

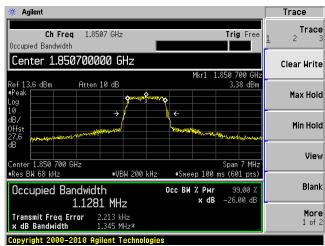


LTE 1.4MHz 16QAM UL

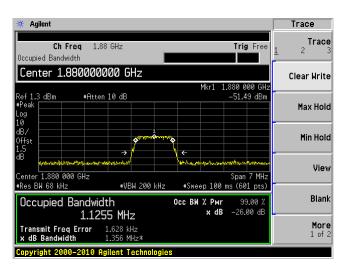
Low I/P



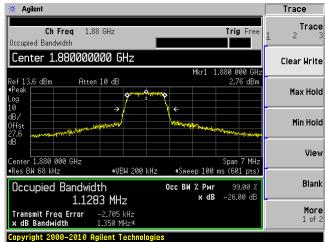
Low O/P



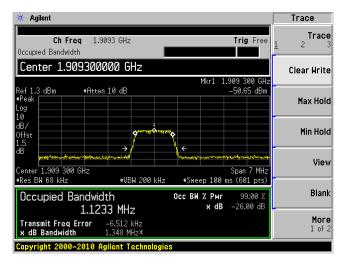
Middle I/P



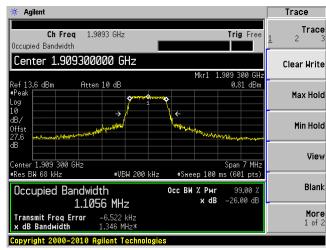
Middle O/P



High I/P



High O/P

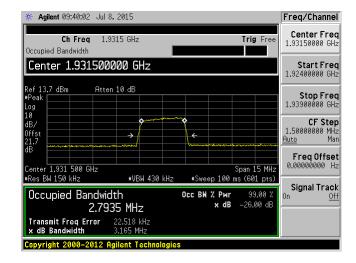


LTE 3MHz 16QAM DL

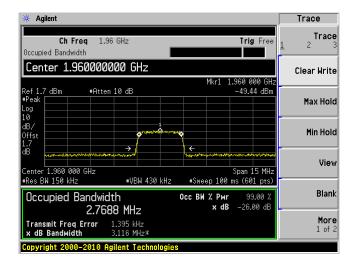
Low I/P

Agilent Trace Trace **Ch Freq** 1.9315 GHz Trig Free Occupied Bandwidth Center 1.931500000 GHz Clear Write Mkr1 1.931 500 GH #Atten 10 dB Max Hold Min Hold View Span 15 MHz #Sweep 100 ms (601 pts) Center 1.931 500 GHz #Res BW 150 kHz #VBW 430 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 2.7980 MHz More 1 of 2 Transmit Freq Error 6.203 kHz x dB Bandwidth 3.079 MHz* Copyright 2000-2010 Agilent Technologies

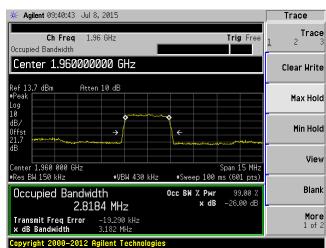
Low O/P



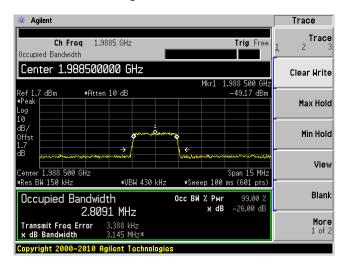
Middle I/P



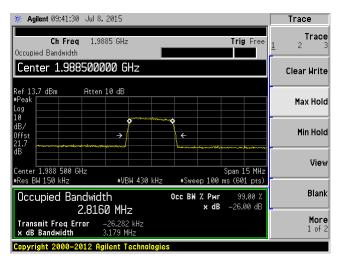
Middle O/P



High I/P

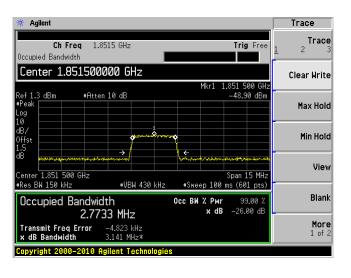


High O/P

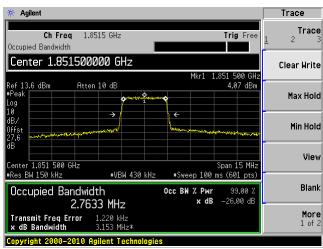


LTE 3MHz 16QAM UL

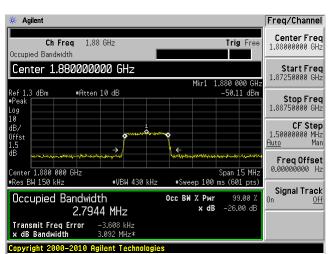
Low I/P



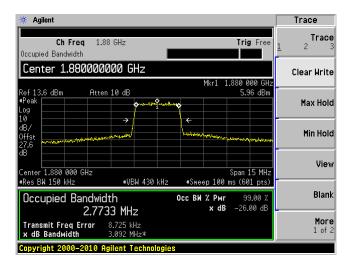
Low O/P



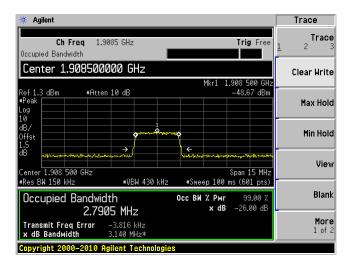
Middle I/P



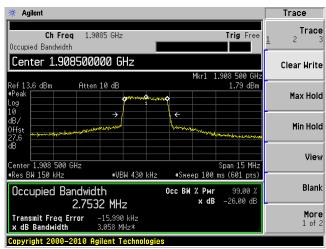
Middle O/P



High I/P

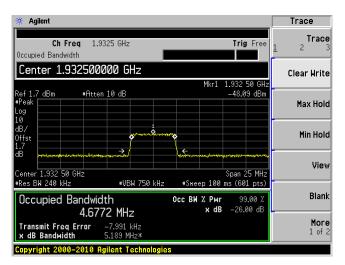


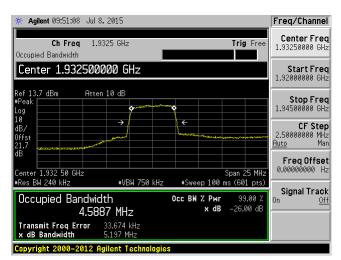
High O/P



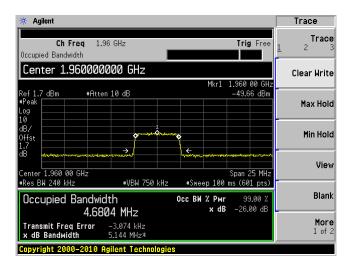
LTE 5MHz 16QAM DL

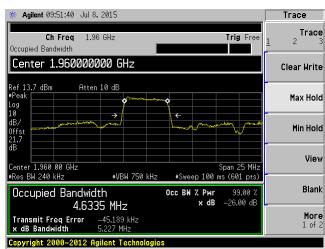
Low I/P Low O/P





Middle I/P Middle O/P

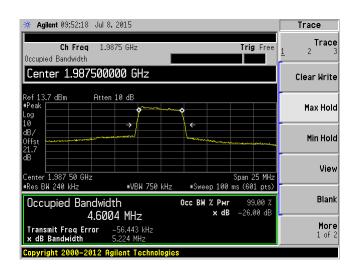




High I/P

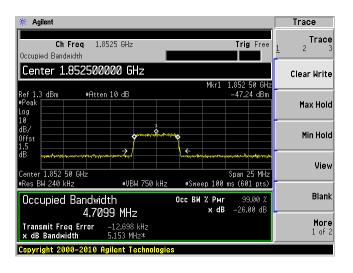
Trace Ch Freq 1.9875 GHz Trig Free Occupied Bandwidth Center 1.987500000 GHz Clear Write Mkr1 1.987 50 GHz -48.96 dBm #Atten 10 dB Max Hold dB/ Min Hold View Center 1.987 50 GHz #Res BW 240 kHz #VBW 750 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 -26.00 dB x dB 4.6776 MHz Transmit Freq Error -3.647 kHz x dB Bandwidth 5.221 MHz* More 1 of 2 Copyright 2000-2010 Agilent Technologies

High O/P

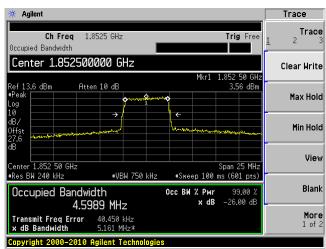


LTE 5MHz 16QAM UL

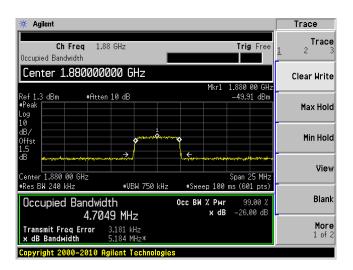
Low I/P



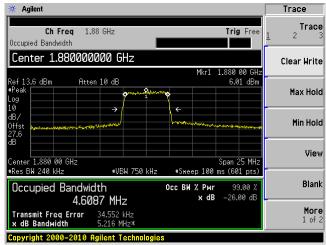
Low O/P



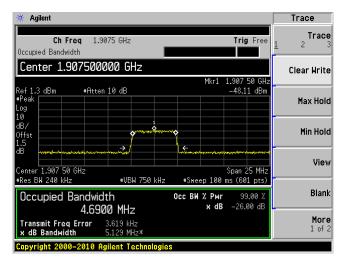
Middle I/P



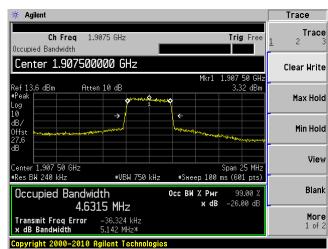
Middle O/P



High I/P

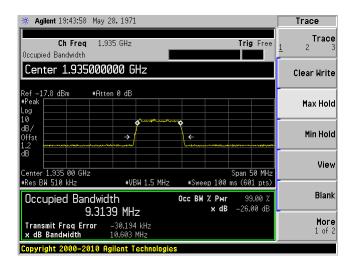


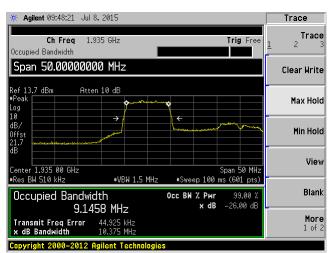
High O/P



LTE 10MHz 16QAM DL

Low I/P Low O/P

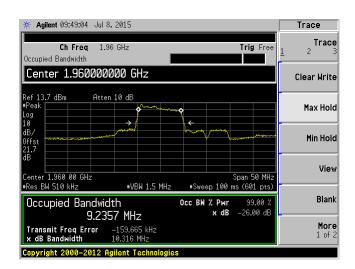




Middle I/P

Agilent Trace Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.960 00 GHz #Res BW 510 kHz Span 50 MHz *Sweep 100 ms (601 pts) #VBW 1.5 MHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 9.6222 MHz More 1 of 2 Transmit Freq Error 6.400 kHz x dB Bandwidth 10.410 MHz* Copyright 2000-2010 Agilent Technologies

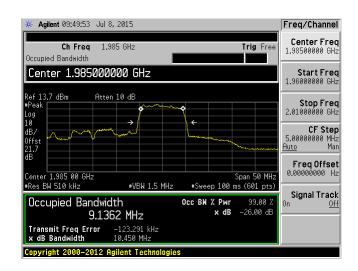
Middle O/P



High I/P

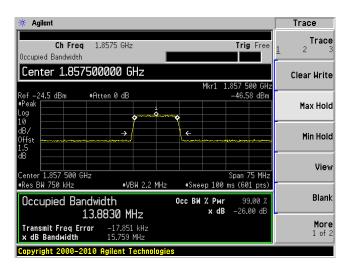
. Agilent Trace Trace Ch Freq 1.9825 GHz Trig Fre Occupied Bandwidth Center 1.982500000 GHz Clear Write -45.58 dBm #Atten 0 dB Max Hold Min Hold View Center 1.982 500 GHz #Res BW 750 kHz #VBW 2.2 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth 0cc BW % Pwr 99.00 % x dB -26.00 dB 13.9134 MHz Transmit Freq Error -8.338 kHz x dB Bandwidth 15.746 MHz More 1 of 2

High O/P

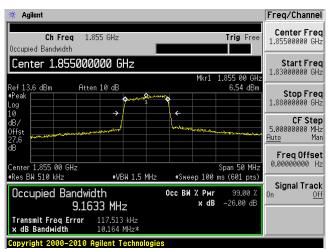


LTE 10MHz 16QAM UL

Low I/P



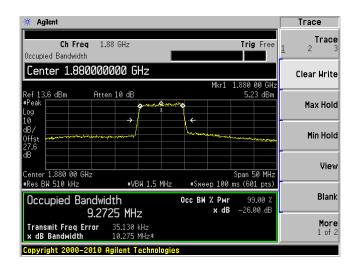
Low O/P



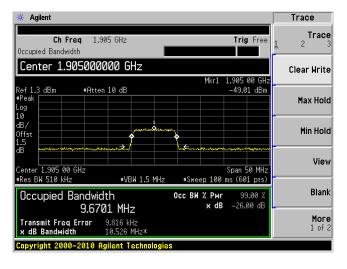
Middle I/P

Agilent Trace Trace Ch Freq 1.88 GHz Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write 1.880 00 GHz -46.48 dBm #Atten 10 dB Max Hold dB/ Offst Min Hold *VBW 1.5 MHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 2 x dB -26.00 dB 9.7088 MHz Transmit Freq Error 29.150 kHz x dB Bandwidth 10.288 MHz* More 1 of 2 Copyright 2000-2010 Agilent Technologie

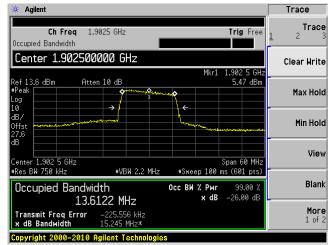
Middle O/P



High I/P

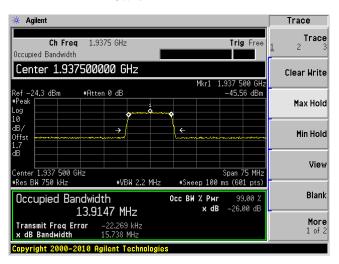


High O/P

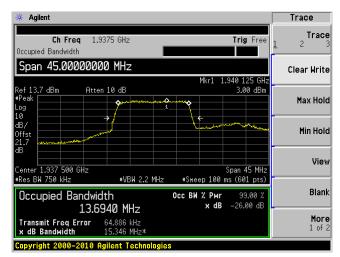


LTE 15MHz 16QAM DL

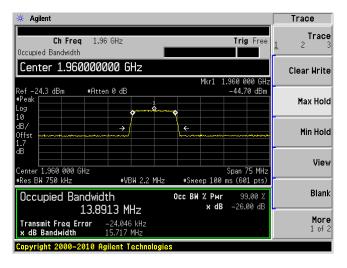
Low I/P



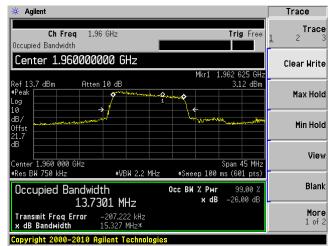
Low O/P



Middle I/P



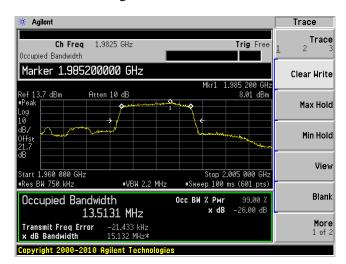
Middle O/P



High I/P

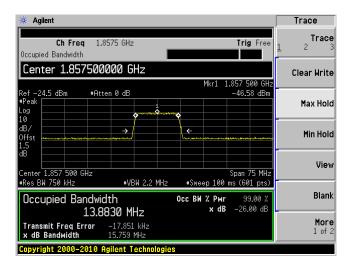
Agilent Trace Trace **Ch Freq** 1.9825 GHz Trig Free Occupied Bandwidth Center 1.982500000 GHz Clear Write Ref -24.3 dBm #Peak Max Hold Min Hold View Span 75 MHz *Sweep 100 ms (601 pts) Center 1.982 500 GH: #Res BW 750 kHz #VBW 2.2 MHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % 13.9134 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth

High O/P

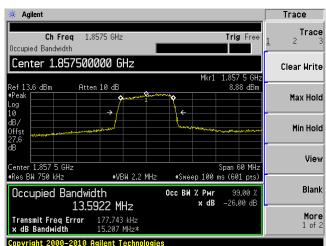


LTE 15MHz 16QAM UL

Low I/P



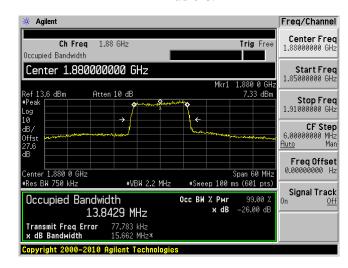
Low O/P



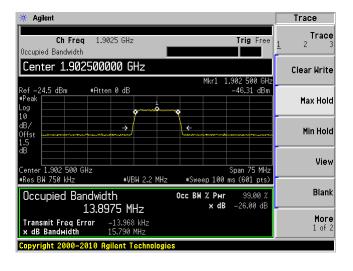
Middle I/P

Agilent Trace Trace Ch Freq 1.88 GHz Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write 1.880 000 GHz -45.99 dBm Ref -24.5 dBm #Atten 0 dB Max Hold dB/ Min Hold View Center 1.880 000 GHz #Res BW 750 kHz *VBW 2.2 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99.00 2 -26.00 dB x dB 13.9217 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth 512.886 Hz 15.791 MHz Copyright 2000-2010 Agilent Technologies

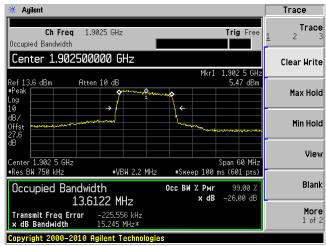
Middle O/P



High I/P



High O/P



LTE 20MHz 16QAM DL

Low I/P

Trig Free

Span 100 MHz #Sweep 100 ms (601 pts)

Occ BW % Pwr 99.00 % x dB -26.00 dB

* Agilent

Occupied Bandwidth

Center 1.940 00 GHz #Res BW 1 MHz

Transmit Freq Error x dB Bandwidth

Occupied Bandwidth

Ref -24.3 dBm #Peak

Ch Freq 1.94 GHz

#Atten 0 dB

18.4802 MHz

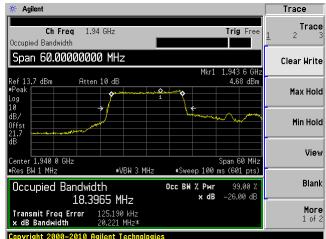
Center 1.940000000 GHz

Trace
Trace
2 3
Clear Write
Max Hold
Min Hold
View

Blank

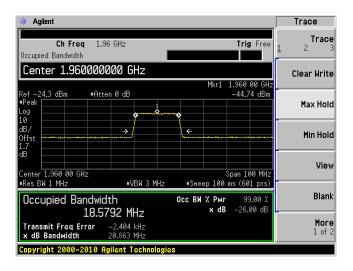
More 1 of 2

Low O/P



Middle I/P

#VBW 3 MHz

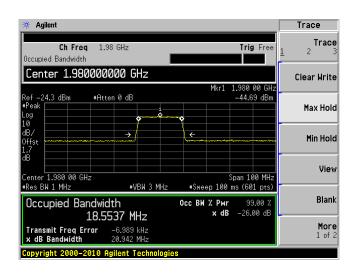


Middle O/P



High I/P

High O/P

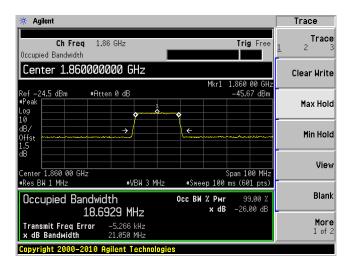


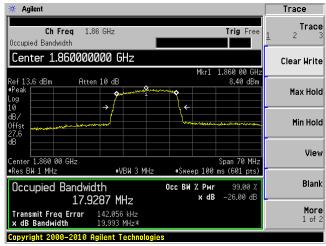


LTE 20MHz 16QAM UL

Low I/P

Low O/P





More 1 of 2

Middle I/P

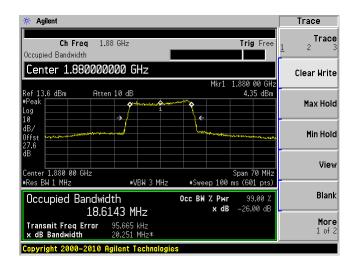
-28.032 kHz 21.062 MHz

Copyright 2000-2010 Agilent Technologie

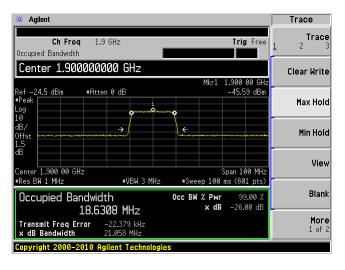
Transmit Freq Error x dB Bandwidth

* Agilent Trace Trace Ch Freq Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write Ref -24.5 dBm #Peak #Atten 0 dB -45.60 dBm Max Hold Min Hold View Center 1.880 00 GHz #Res BW 1 MHz Span 100 MHz #Sweep 100 ms (601 pts) #VBW 3 MHz Blank Occupied Bandwidth Occ BW % Pwr x dB -26.00 dB 18.6261 MHz

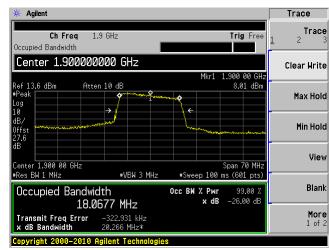
Middle O/P



High I/P

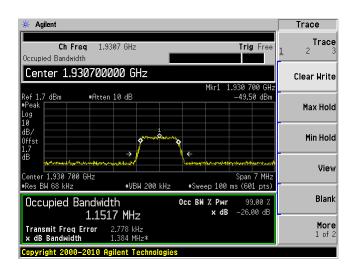


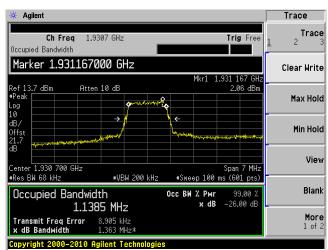
High O/P



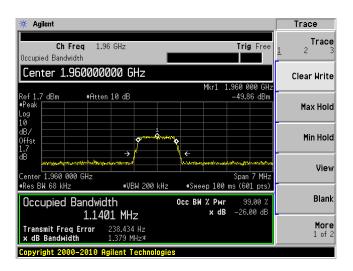
LTE 1.4MHz 64QAM DL

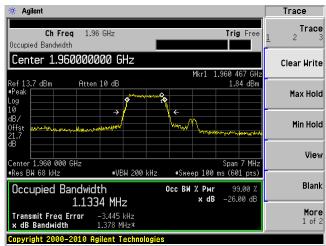
Low I/P Low O/P





Middle I/P Middle O/P

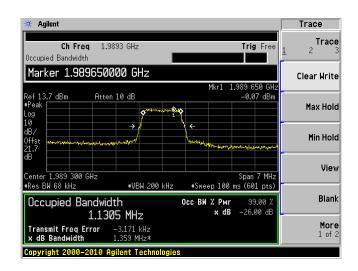




High I/P

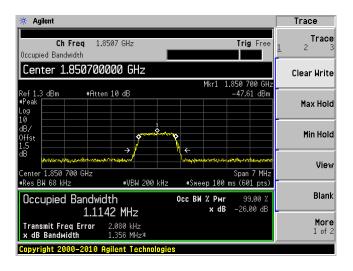
* Agilent Trace **Ch Freq** 1.9893 GHz Trig Free Occupied Bandwidth Center 1.989300000 GHz Clear Write -49.62 dBm #Atten 10 dB Max Hold Min Hold View Center 1.989 300 GHz #Res BW 68 kHz Span 7 MHz #Sweep 100 ms (601 pts) #VBW 200 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 1.1372 MHz More 1 of 2 Transmit Freq Error 4.259 kHz x dB Bandwidth 1.355 MHz*

High O/P

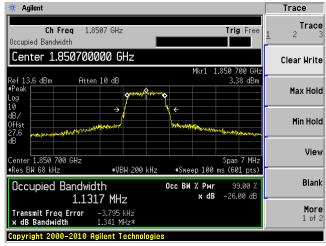


LTE 1.4MHz 64QAM UL

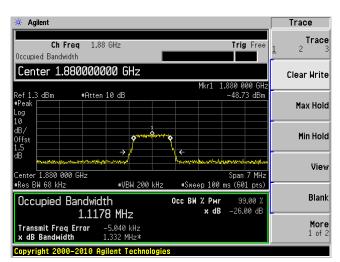
Low I/P



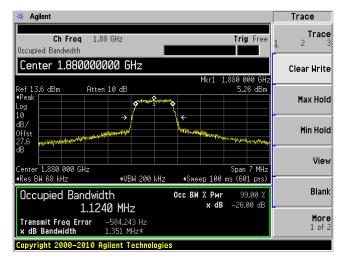
Low O/P



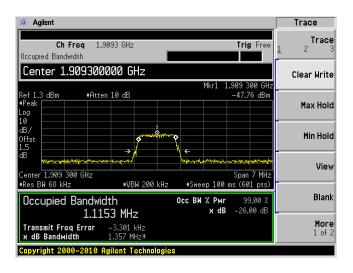
Middle I/P



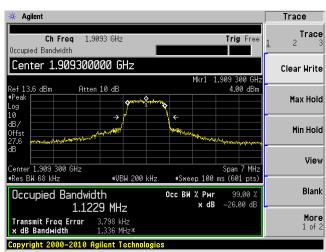
Middle O/P



High I/P



High O/P

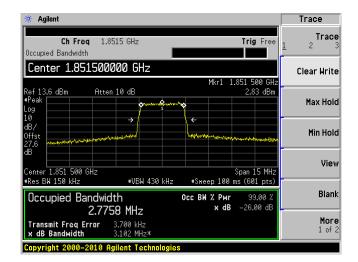


LTE 3MHz 64QAM UL

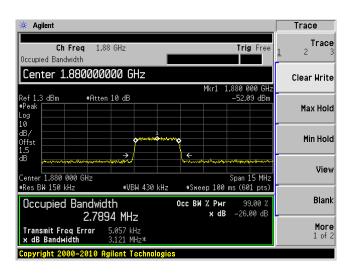
Low I/P

🔆 Agilent Trace Trace **Ch Freq** 1.8515 GHz Trig Free Occupied Bandwidth Center 1.851500000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.851 500 GHz #Res BW 150 kHz Span 15 MHz #VBW 430 kHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 2.7935 MHz More 1 of 2 Transmit Freq Error 1.921 kHz x dB Bandwidth 3.121 MHz* Copyright 2000-2010 Agilent Technologies

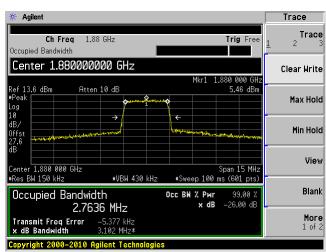
Low O/P



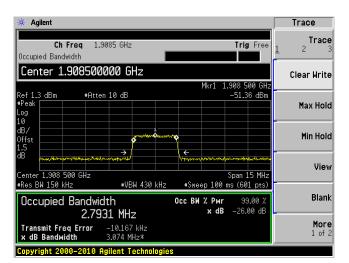
Middle I/P



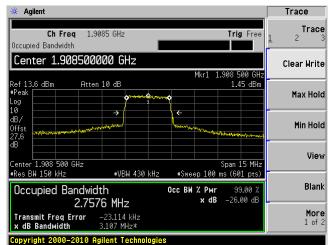
Middle O/P



High I/P

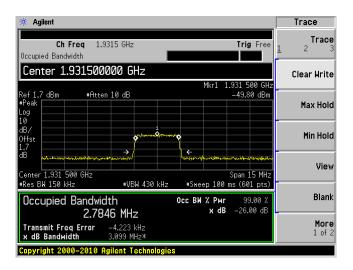


High O/P

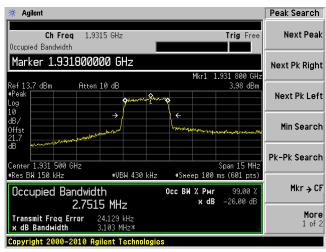


LTE 3MHz 64QAM DL

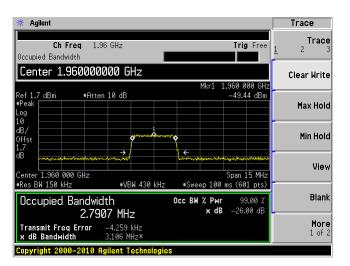
Low I/P



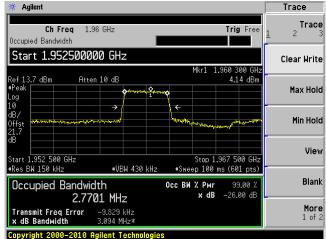
Low O/P



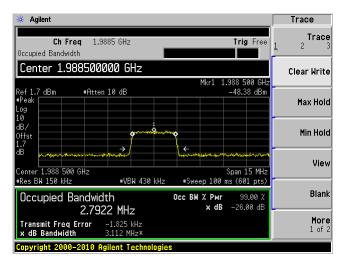
Middle I/P



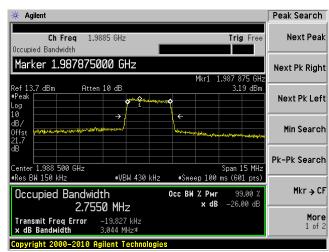
Middle O/P



High I/P

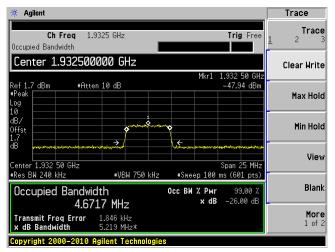


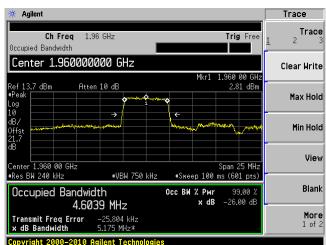
High O/P



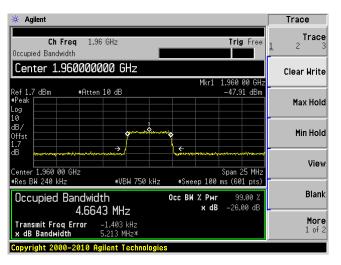
LTE 5MHz 64QAM DL

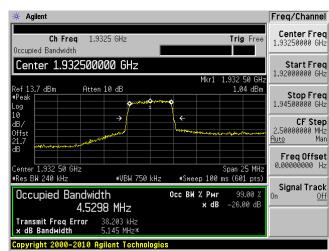
Low I/P Low O/P





Middle I/P Middle O/P

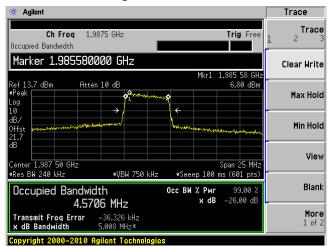




High I/P

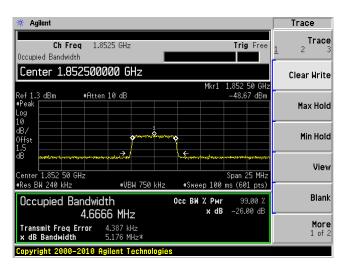
Agilent Trace Trace **Ch Freq** 1.9875 GHz Trig Free Occupied Bandwidth Center 1.987500000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.987 50 GHz #Res BW 240 kHz Span 25 MHz #Sweep 100 ms (601 pts) #VBW 750 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 4.6808 MHz Transmit Freq Error x dB Bandwidth More 1 of 2 14.945 kHz 5.240 MHz*

High O/P

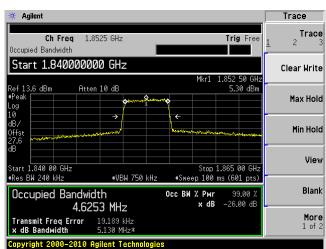


LTE 5MHz 64QAM UL

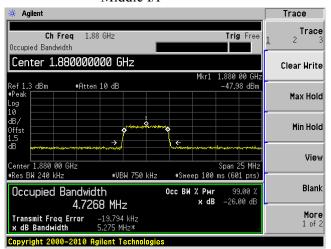
Low I/P



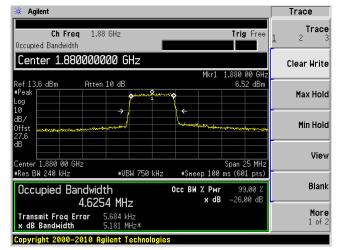
Low O/P



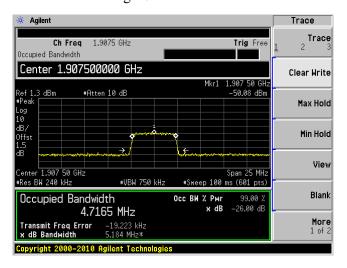
Middle I/P



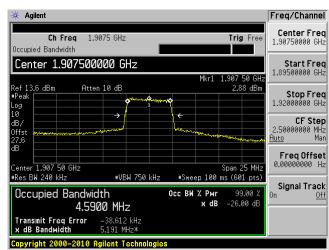
Middle O/P



High I/P

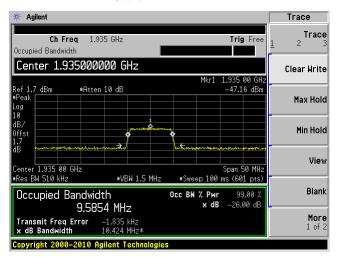


High O/P



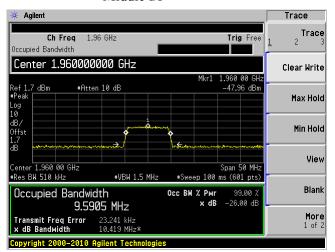
LTE 10MHz 64QAM DL

Low I/P Low O/P

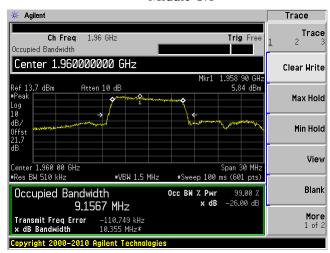




Middle I/P



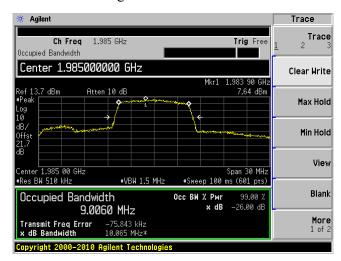
Middle O/P



High I/P

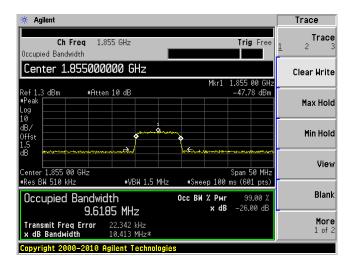
Trace Trace Ch Freq 1.985 GHz Trig Free Occupied Bandwidth Center 1.985000000 GHz Clear Write 1.985 00 GHz -48.71 dBm #Atten 10 dB Max Hold Min Hold View Center 1.985 00 GHz #Res BW 510 kHz #VBW 1.5 MHz Blank Occupied Bandwidth 0cc BW % Pwr 99.00 % x dB -26.00 dB 9.5799 MHz Transmit Freq Error 8.275 kHz x dB Bandwidth 10.402 MHz* More 1 of 2

High O/P

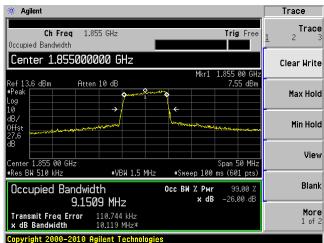


LTE 10MHz 64QAM UL

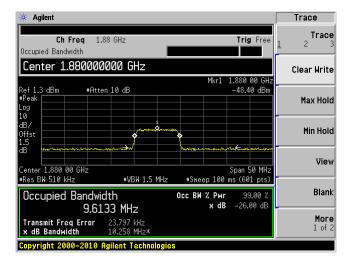
Low I/P



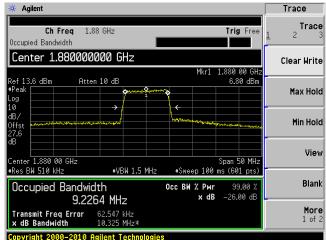
Low O/P



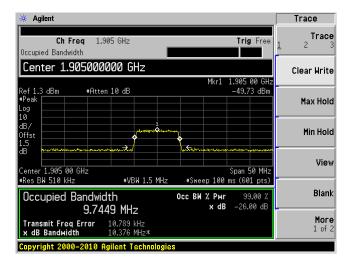
Middle I/P



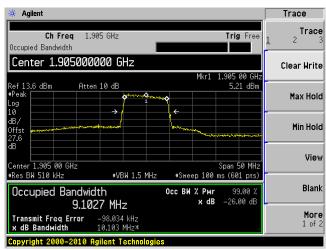
Middle O/P



High I/P

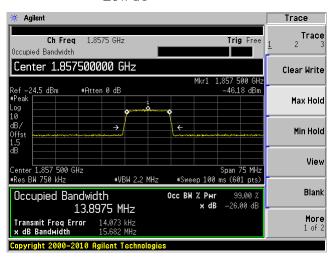


High O/P

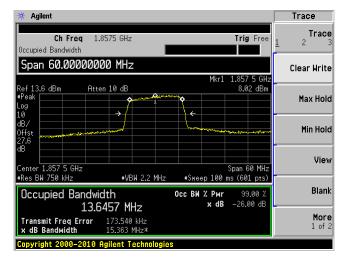


LTE 15MHz 64QAM UL

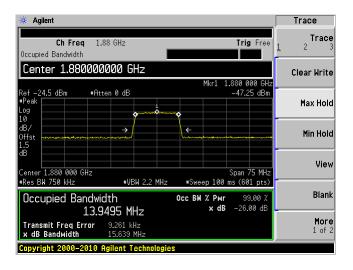
Low I/P



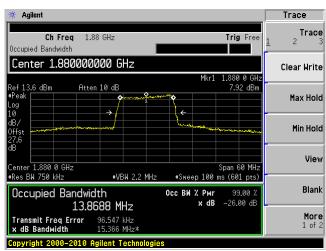
Low O/P



Middle I/P

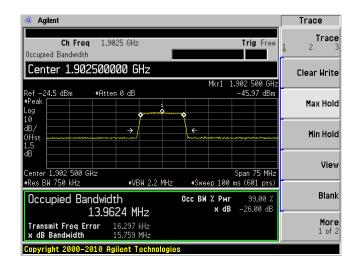


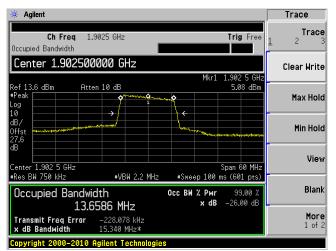
Middle O/P



High I/P

High O/P

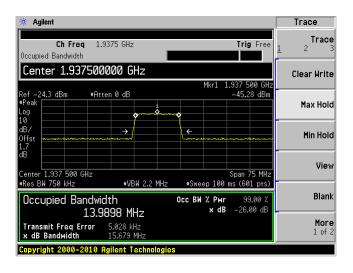


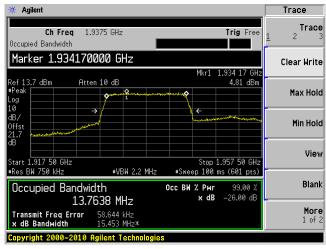


LTE 15MHz 64QAM DL

Low I/P

Low O/P

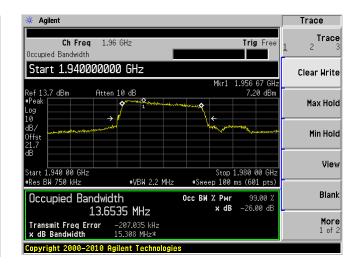




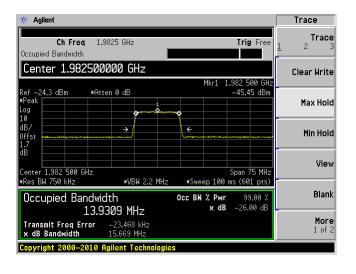
Middle I/P

Trace Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Clear Write Mkr1 1.960 000 GH -45.39 dBm #Atten 0 dB Max Hold Min Hold View Center 1.960 000 GHz #Res BW 750 kHz #VBW 2.2 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth 0cc BW % Pwr 99.00 % x dB -26.00 dB 13.9663 MHz Transmit Freq Error -296.329 Hz x dB Bandwidth 15.689 MHz More 1 of 2

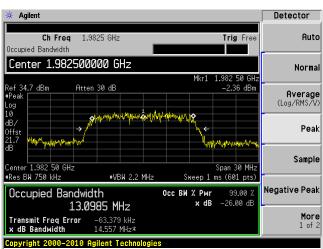
Middle O/P



High I/P

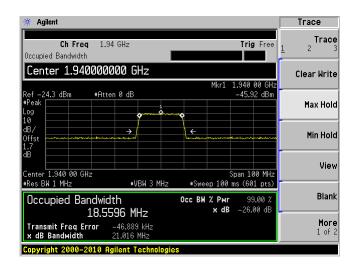


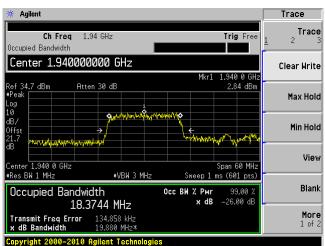
High O/P



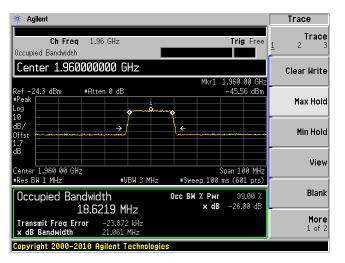
LTE 20MHz 64QAM DL

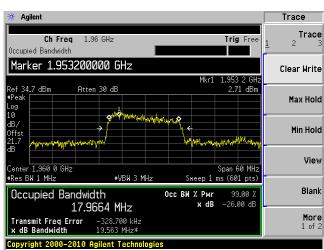
Low I/P Low O/P



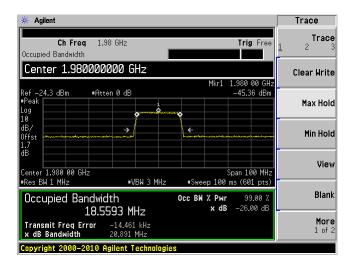


Middle I/P Middle O/P





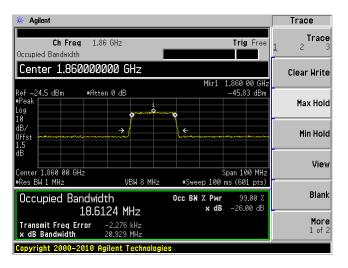
High I/P High O/P

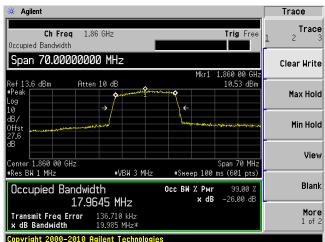




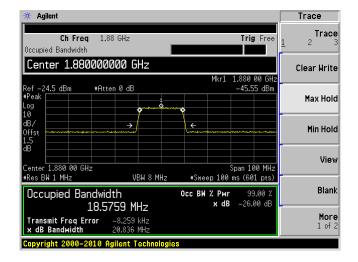
LTE 20MHz 64QAM UL

Low I/P Low O/P





Middle I/P

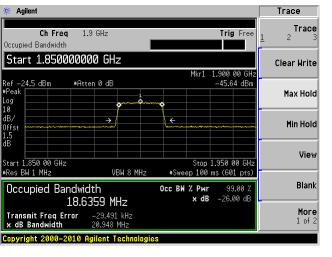




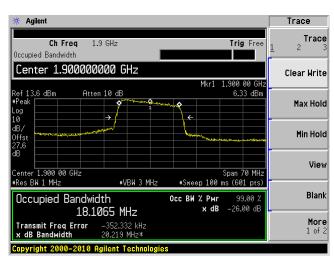
Middle O/P

High I/P

Agilent



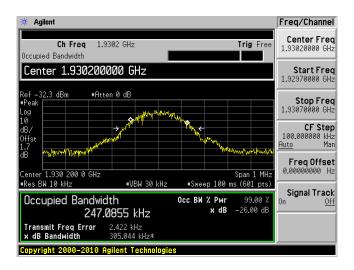
High O/P

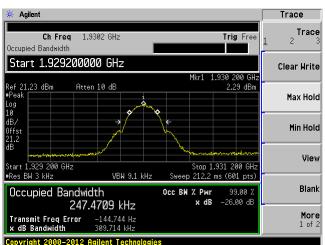


ALC ON

GSM/GPRS DL

Low I/P Low O/P

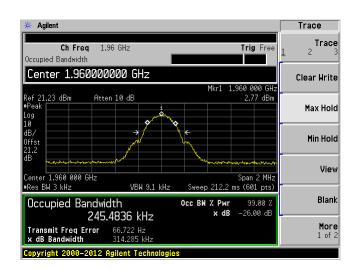




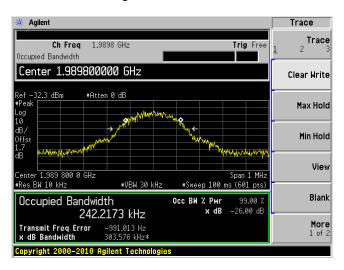
Middle I/P

Freq/Channel Center Freq Ch Freq 1.96 GHz Trig Free 1.96000000 GHz Occupied Bandwidth Center 1.960000000 GHz Start Freq 1.95950000 GHz Stop Freq 1.96050000 GHz **CF Step** 100.000000 kHz A<u>uto</u> Man <u>Auto</u> Freq Offset 0.00000000 Hz Center 1.960 000 0 GHz #Res BW 10 kHz Span 1 MHz #Sweep 100 ms (601 pts) #VBW 30 kHz Signal Track Occ BW % Pwr 99.00 % x dB -26.00 dB Occupied Bandwidth 244.8358 kHz Transmit Freq Error -479.944 Hz x dB Bandwidth 311.797 kHz** Copyright 2000-2010 Agilent Tec

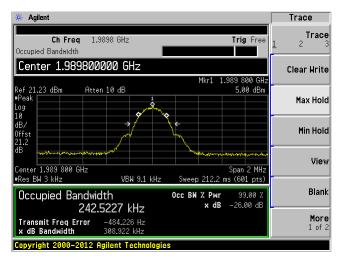
Middle O/P



High I/P

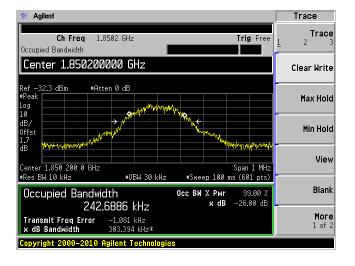


High O/P

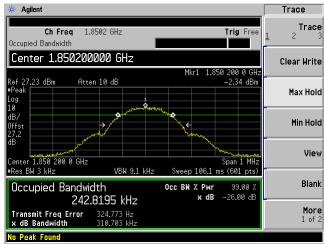


GSM/GPRS UL

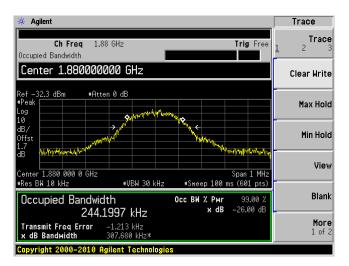
Low I/P



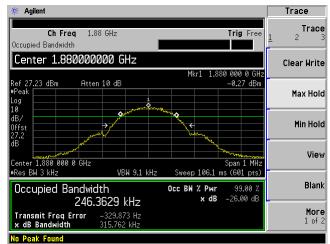
Low O/P



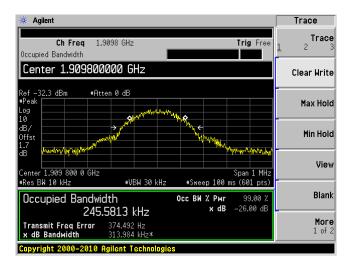
Middle I/P



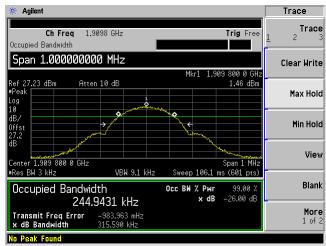
Middle O/P



High I/P

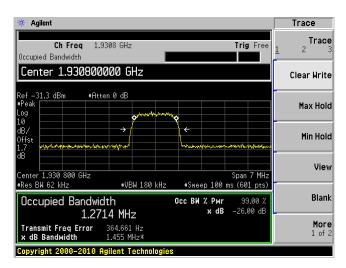


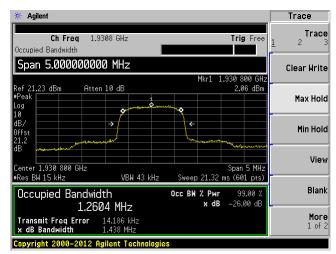
High O/P



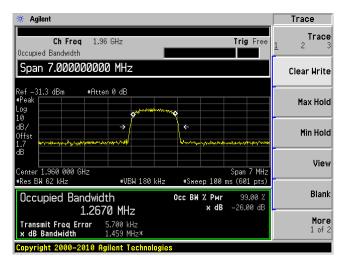
CDMA / EVDO DL

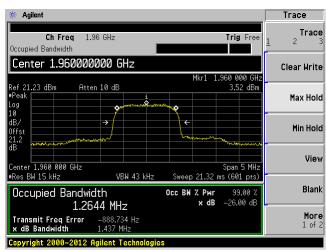
Low I/P Low O/P



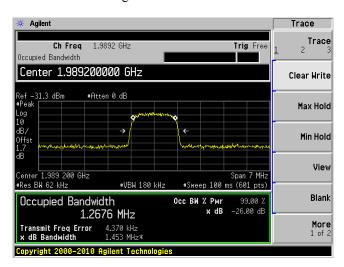


Middle I/P Middle O/P

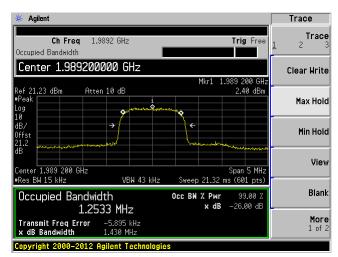




High I/P

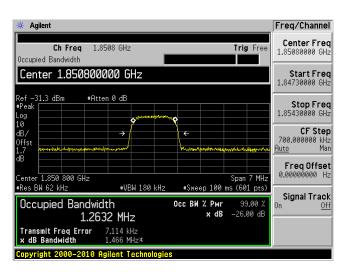


High O/P

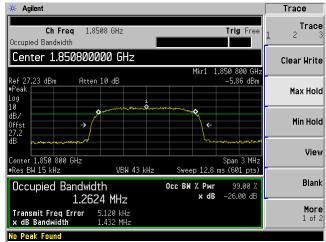


CDMA / EVDO UL

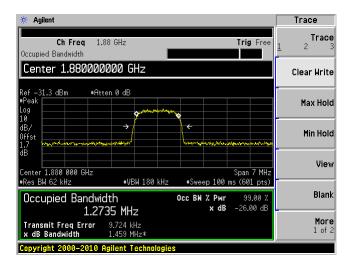
Low I/P



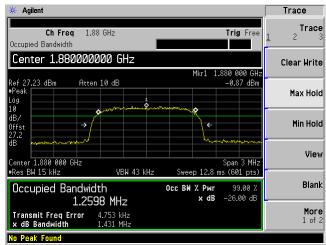
Low O/P



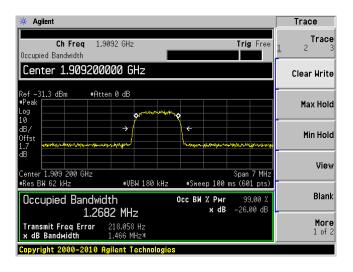
Middle I/P



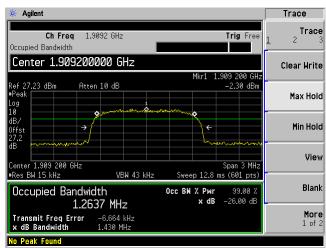
Middle O/P



High I/P

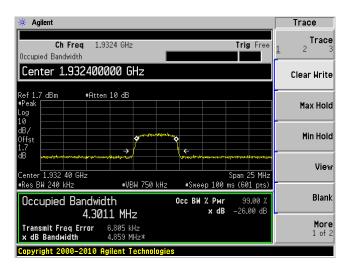


High O/P

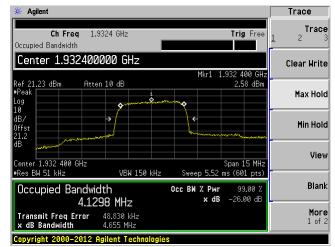


WCDMA DL

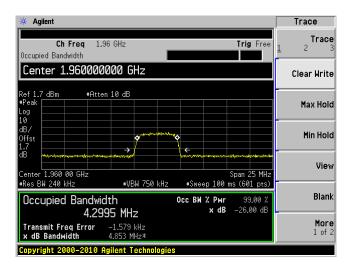
Low I/P



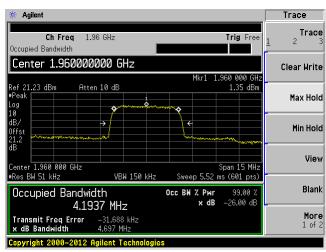
Low O/P



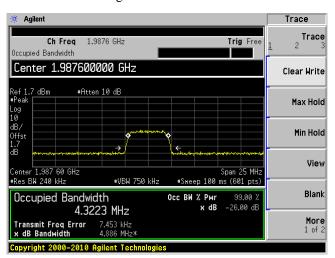
Middle I/P



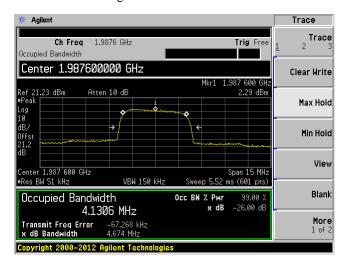
Middle O/P



High I/P

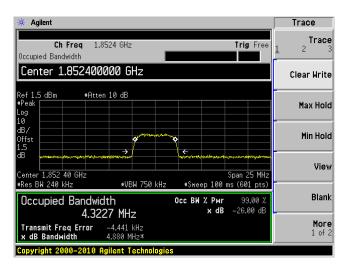


High O/P

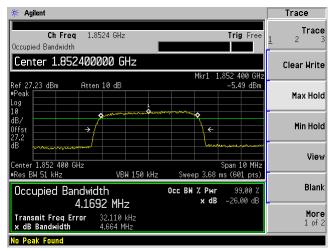


WCDMA UL

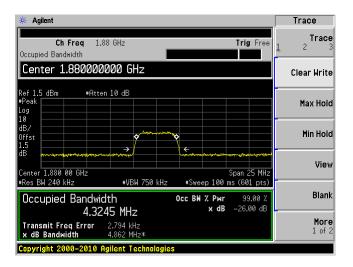
Low I/P



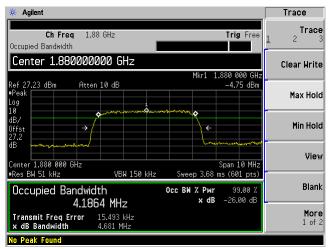
Low O/P



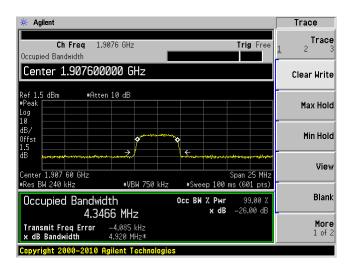
Middle I/P



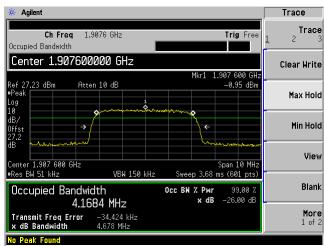
Middle O/P



High I/P



High O/P

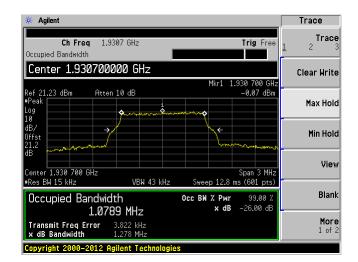


LTE 1.4MHz QPSK DL

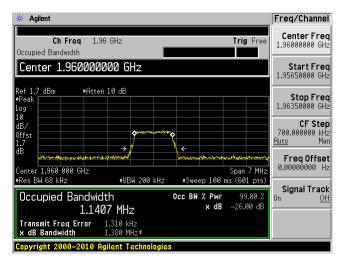
Low I/P

Trace **Ch Freq** 1.9307 GHz Trig Free Occupied Bandwidth Center 1.930700000 GHz Clear Write Ref 1.7 dBm #Atten 10 dB Max Hold Min Hold View Span 7 MHz #Sweep 100 ms (601 pts) Center 1.930 700 GHz Res BW 68 kHz #VBW 200 kHz Blank Occ BW % Pwr 99.00 % Occupied Bandwidth -26.00 dB 1.1359 MHz More 1 of 2 Transmit Freq Error 4.000 kHz x dB Bandwidth 1.383 MHz* pyright 2000-2010 Agilent Technologies

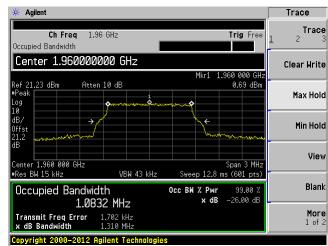
Low O/P



Middle I/P



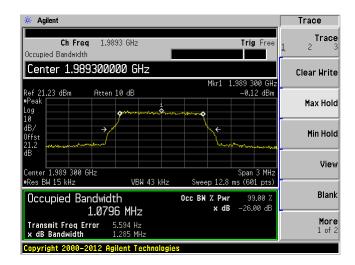
Middle O/P



High I/P

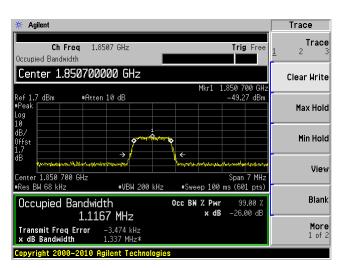
Trace Ch Freq 1.9893 GHz Trig Free Occupied Bandwidth Center 1.989300000 GHz Clear Write Ref 1.7 dBm #Atten 10 dB Max Hold Min Hold View Center 1.989 300 GHz Res BW 68 kHz Span 7 MHz #Sweep 100 ms (601 pts) #VBW 200 kHz Blank Occ BW % Pwr 99.00 % Occupied Bandwidth -26.00 dB 1.1514 MHz More 1 of 2 Transmit Freq Error -3.215 kHz x dB Bandwidth 1.383 MHz* Copyright 2000-2010 Agilent Technologies

High O/P

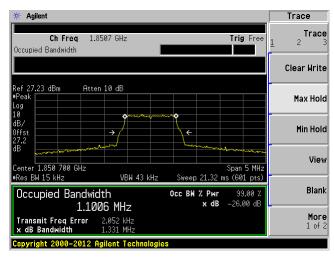


LTE 1.4MHz QPSK UL

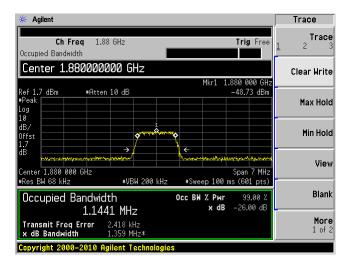
Low I/P



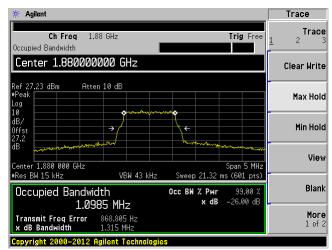
Low O/P



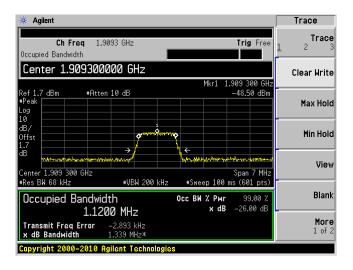
Middle I/P



Middle O/P



High I/P

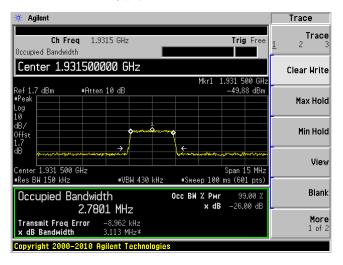


High O/P

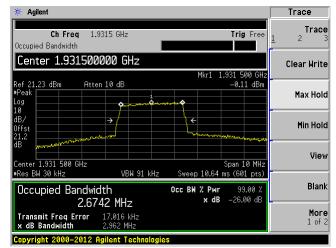


LTE 3MHz QPSK DL

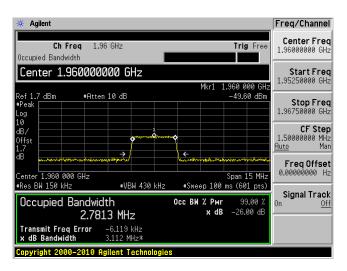
Low I/P



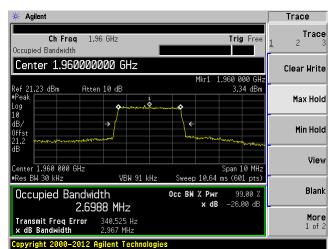
Low O/P



Middle I/P



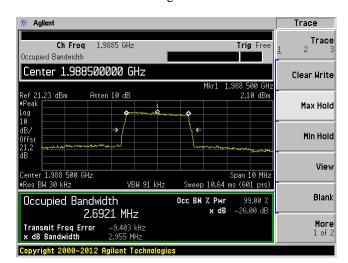
Middle O/P



High I/P

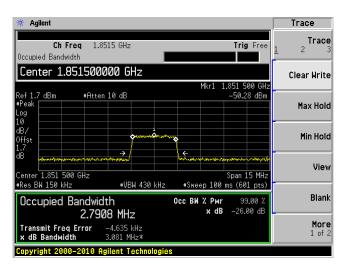
Agilent Trace **Ch Freq** 1.9885 GHz Trig Free Occupied Bandwidth Center 1.988500000 GHz Clear Write Mkr1 1.988 500 GH: -49.48 dBm Ref 1.7 dBm #Atten 10 dB Max Hold Min Hold View Span 15 MHz #Sweep 100 ms (601 pts) Center 1.988 500 GHz #Res BW 150 kHz #VBW 430 kHz Blank 99.00 % -26.00 dB Occupied Bandwidth Occ BW % Pwr x dB 2.7777 MHz Transmit Freq Error -3.609 kHz x dB Bandwidth 3.112 MHz* Copyright 2000-2010 Agilent Technologies

High O/P

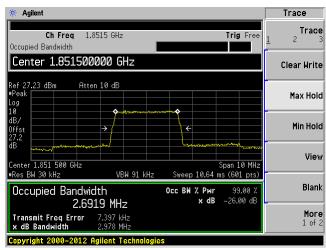


LTE 3MHz QPSK UL

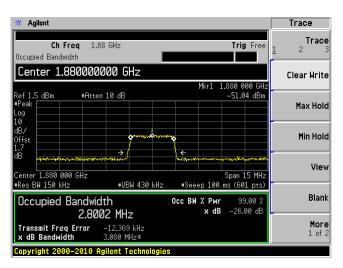
Low I/P



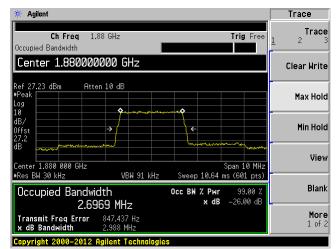
Low O/P



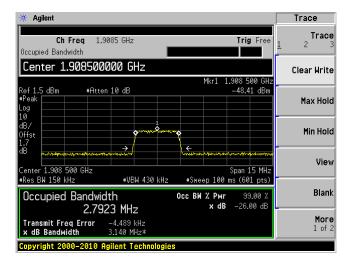
Middle I/P



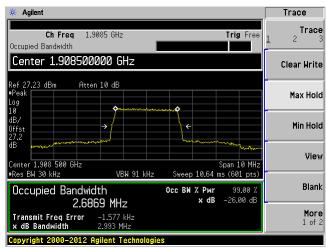
Middle O/P



High I/P

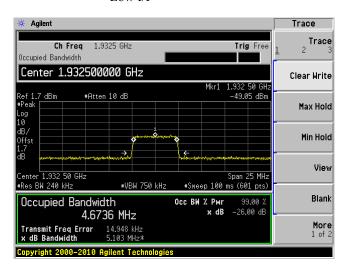


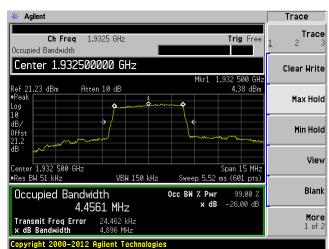
High O/P



LTE 5MHz QPSK DL

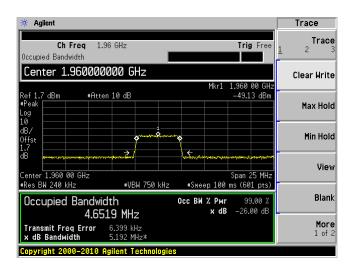
Low I/P



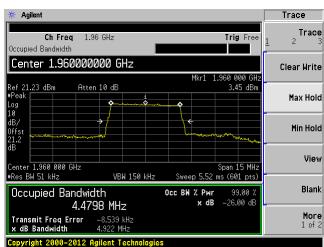


Low O/P

Middle I/P



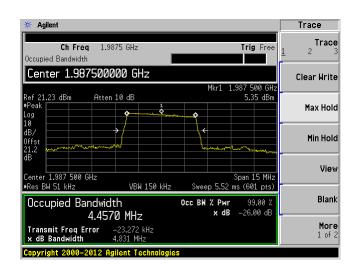
Middle O/P



High I/P

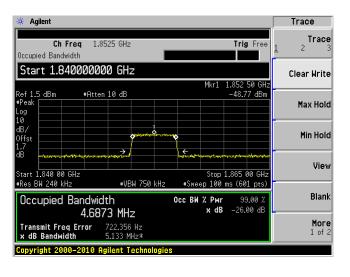
Agilent Freq/Channel Center Freq 1.98750000 GHz Ch Freq Trig Free Occupied Bandwidth Center 1.987500000 GHz Start Freq 1.97500000 GHz #Atten 10 dB Stop Freq 2.000000000 GHz **CF Step** 2.50000000 MHz A<u>uto</u> Man Freq Offset Span 25 MHz #Sweep 100 ms (601 pts) #VBW 750 kHz Signal Track Occ BW % Pwr 99.00 % x dB -26.00 dB Occupied Bandwidth 4.6786 MHz –9.081 kHz 5.132 MHz≭ Transmit Freq Error x dB Bandwidth Copyright 2000-2010 Agilent Technologies

High O/P



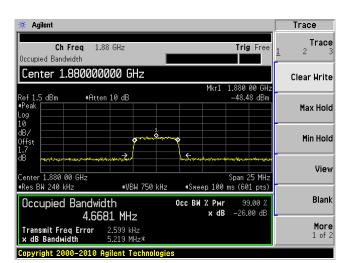
LTE 5MHz QPSK UL

Low I/P Low O/P

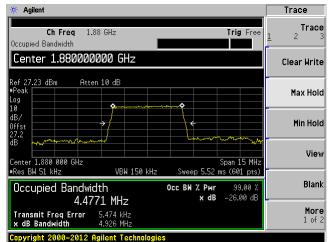




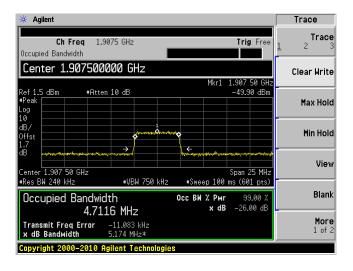
Middle I/P



Middle O/P



High I/P

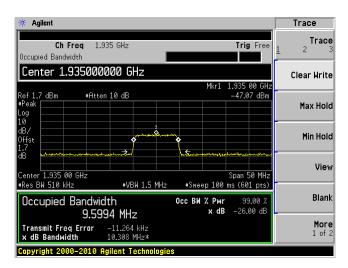


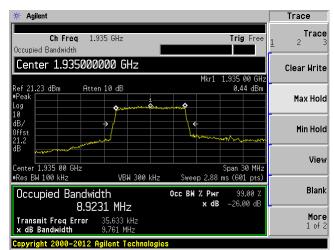
High O/P



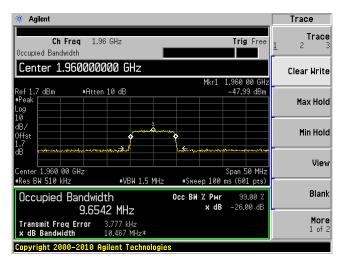
LTE 10MHz QPSK DL

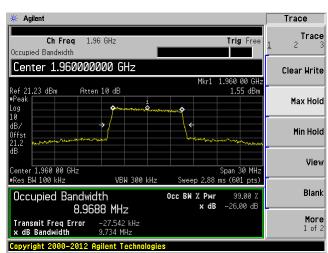
Low I/P Low O/P





Middle I/P Middle O/P

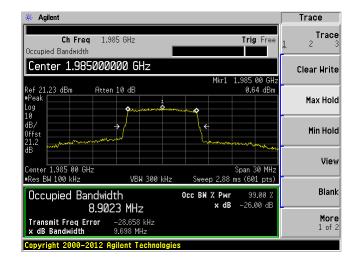




High I/P

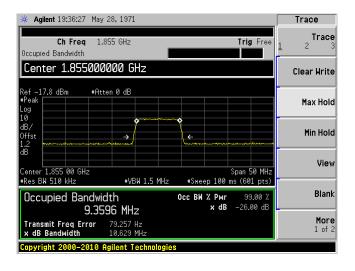
Agilent Trace Trace Ch Freq Trig Free Occupied Bandwidth Center 1.935000000 GHz Clear Write Mkr1 1.935 00 GHz -47.07 dBm Ref 1.7 dBm #Peak #Atten 10 dB Max Hold Min Hold View Span 50 MHz #Sweep 100 ms (601 pts) Center 1.935 00 GHz #Res BW 510 kHz *VBW 1.5 MHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 9.5994 MHz More 1 of 2 Transmit Freq Error -11.264 kHz x dB Bandwidth 10.308 MHz* Copyright 2000-2010 Agilent Technologies

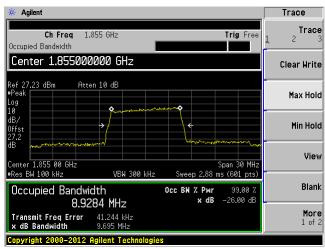
High O/P



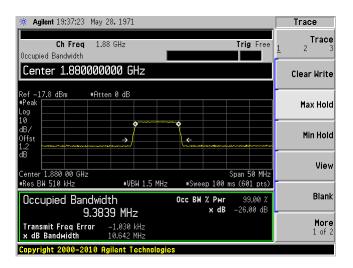
LTE 10MHz QPSK UL

Low I/P Low O/P

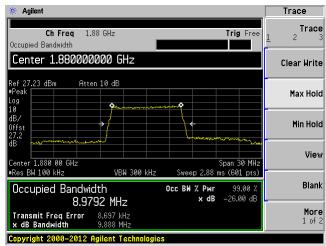




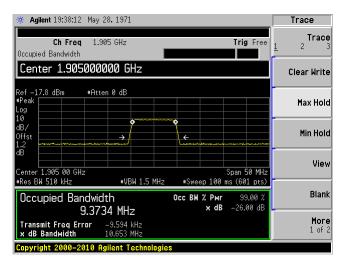
Middle I/P



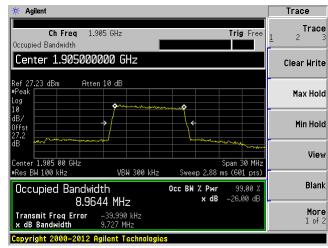
Middle O/P



High I/P

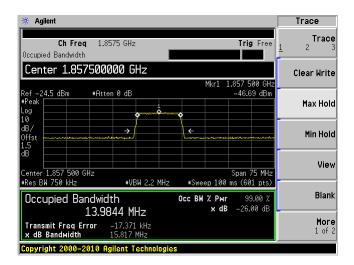


High O/P



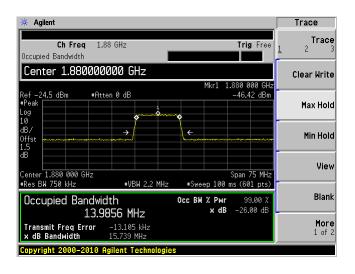
LTE 15MHz QPSK UL

Low I/P Low O/P

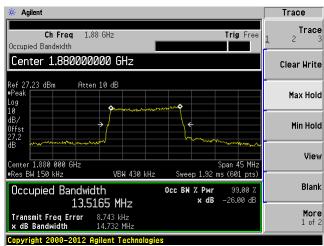




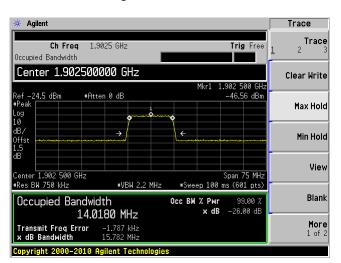
Middle I/P



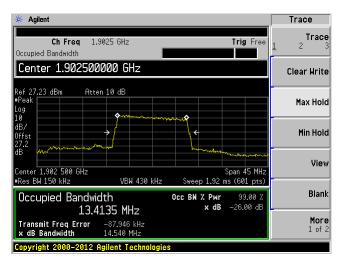
Middle O/P



High I/P

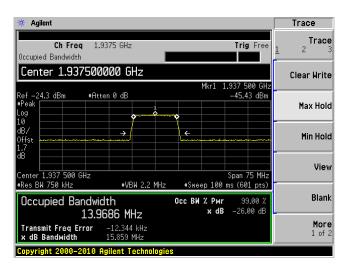


High O/P

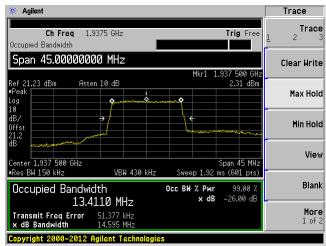


LTE 15MHz QPSK DL

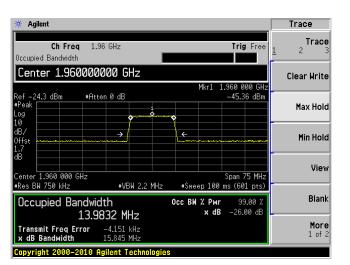
Low I/P



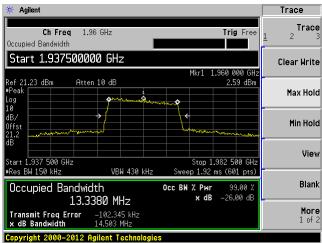
Low O/P



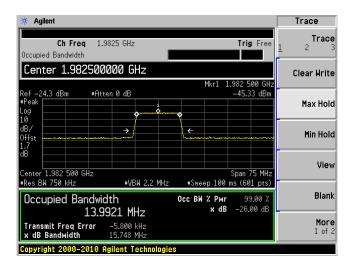
Middle I/P



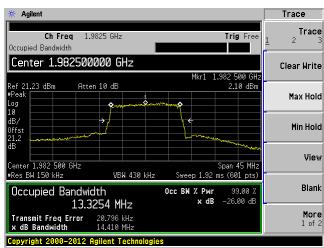
Middle O/P



High I/P

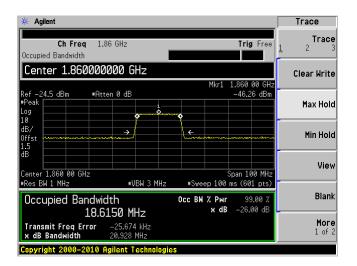


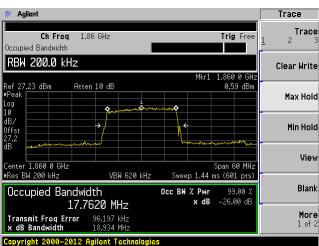
High O/P



LTE 20MHz QPSK UL

Low I/P Low O/P

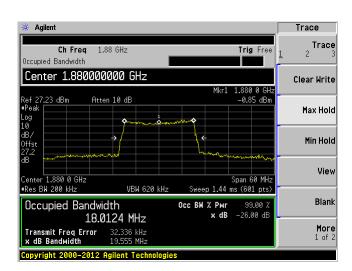




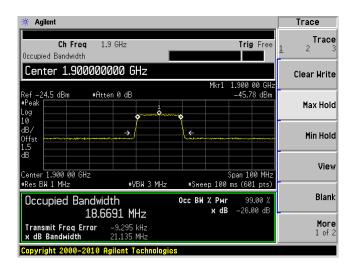
Middle I/P

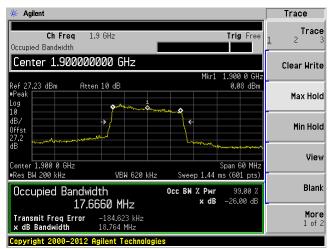
* Agilent Trace Trace Ch Freq 1.88 GHz Trig Free Center 1.880000000 GHz Clear Write Max Hold Min Hold View Center 1.880 00 GHz +Res BW 1 MHz Span 100 MHz #Sweep 100 ms (601 pts) #VBW 3 MHz Blank Occupied Bandwidth 0cc BW % Pwr 99.00 % x dB -26.00 dB 18.6252 MHz More 1 of 2 Transmit Freq Error 1.608 kHz x dB Bandwidth 21.029 MHz

Middle O/P



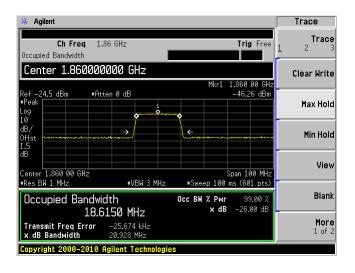
High I/P High O/P

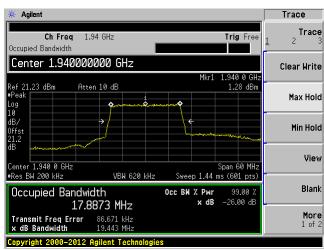




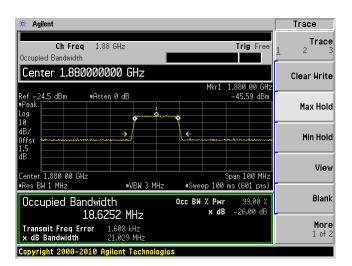
LTE 20MHz QPSK DL

Low I/P Low O/P

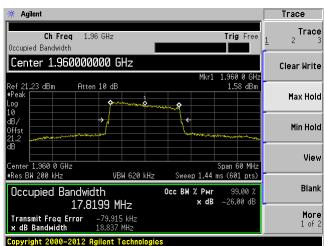




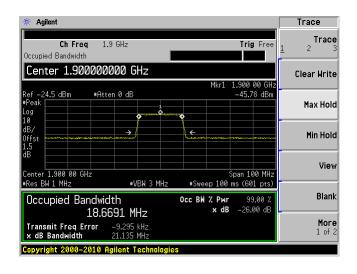
Middle I/P



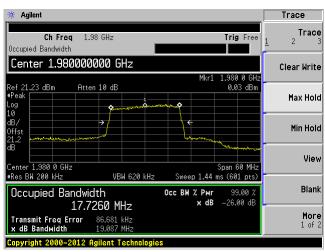
Middle O/P



High I/P

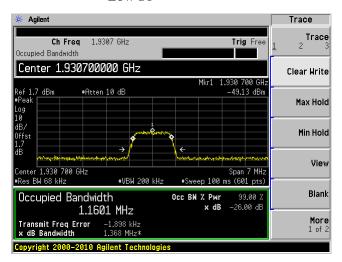


High O/P

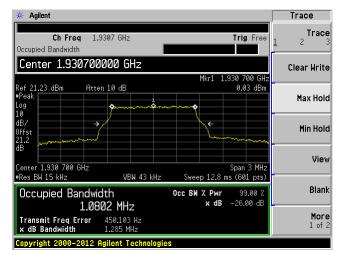


LTE 1.4MHz 16QAM DL

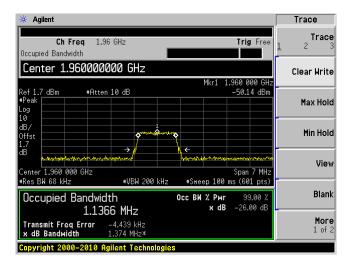
Low I/P



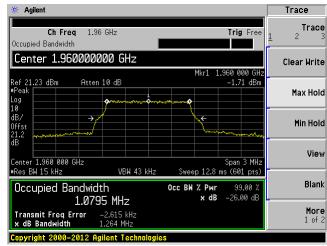
Low O/P



Middle I/P



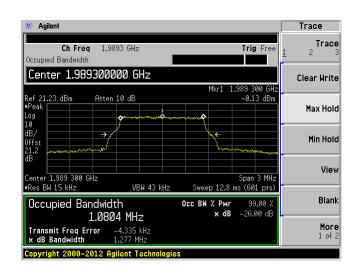
Middle O/P



High I/P

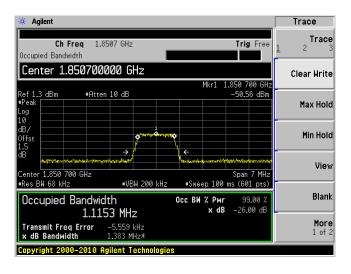
Trace Trace **Ch Freq** 1.9893 GHz Trig Free Occupied Bandwidth Center 1.989300000 GHz Clear Write -49.24 dBı #Atten 10 dB Max Hold Min Hold View Center 1.989 300 GHz #Res BW 68 kHz #VBW 200 kHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth **/ Рыг** 99.00 % **х dB** –26.00 dB Occ BW % Pwr 1.1406 MHz Transmit Freq Error -1.861 kHz x dB Bandwidth 1.348 MHz* More 1 of 2

High O/P

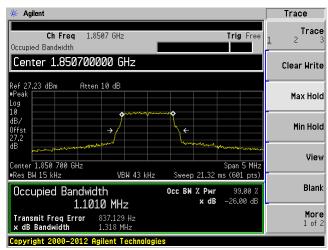


LTE 1.4MHz 16QAM UL

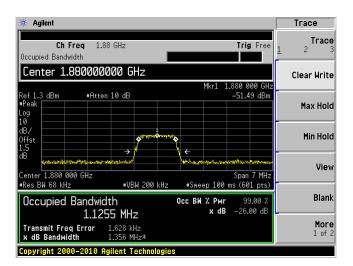
Low I/P



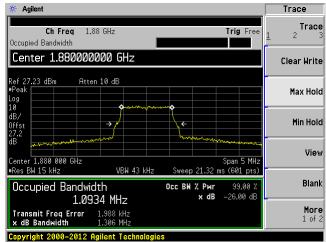
Low O/P



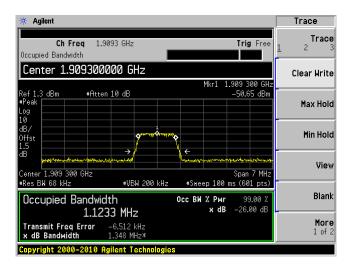
Middle I/P



Middle O/P



High I/P



High O/P

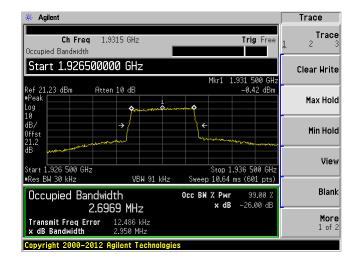


LTE 3MHz 16QAM DL

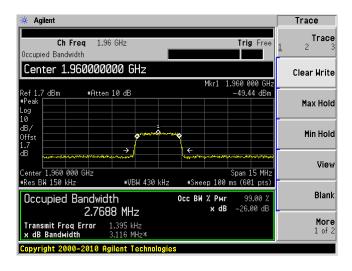
Low I/P

* Agilent Trace Trace **Ch Freq** 1.9315 GHz Trig Free Occupied Bandwidth Center 1.931500000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Span 15 MHz #Sweep 100 ms (601 pts) Center 1.931 500 GHz #Res BW 150 kHz #VBW 430 kHz Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 2.7980 MHz More 1 of 2 Transmit Freq Error 6.203 kHz x dB Bandwidth 3.079 MHz* Copyright 2000-2010 Agilent Technologies

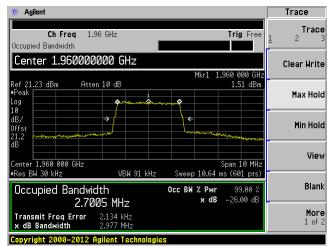
Low O/P



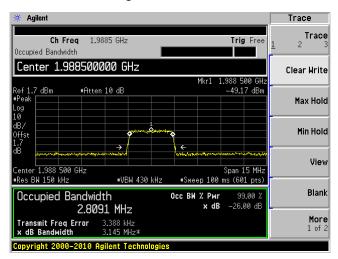
Middle I/P



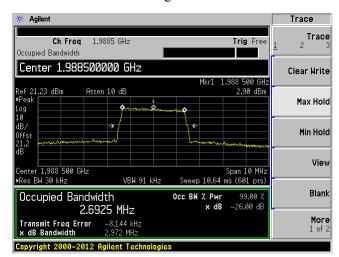
Middle O/P



High I/P

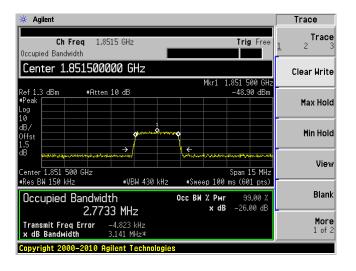


High O/P

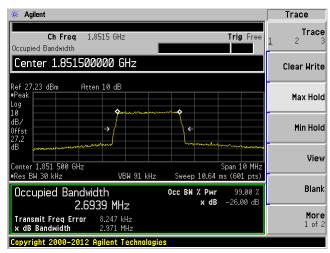


LTE 3MHz 16QAM UL

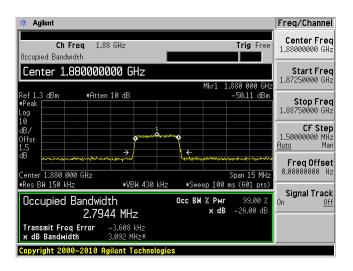
Low I/P



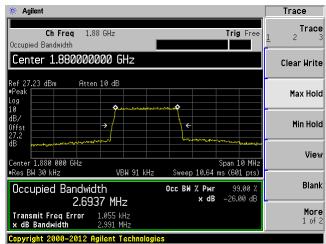
Low O/P



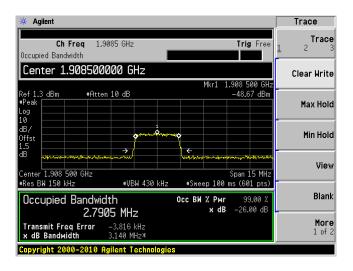
Middle I/P



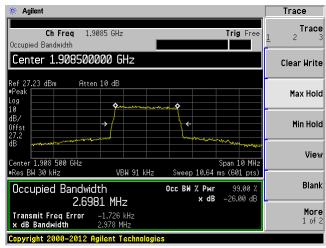
Middle O/P



High I/P

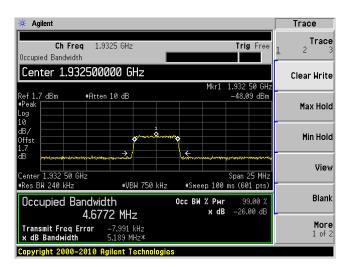


High O/P



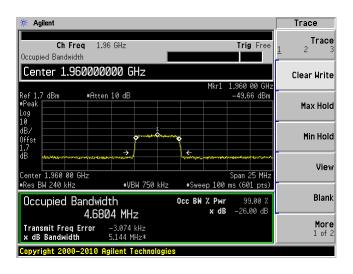
LTE 5MHz 16QAM DL

Low I/P Low O/P

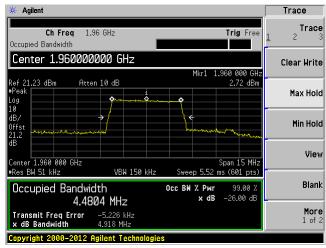




Middle I/P



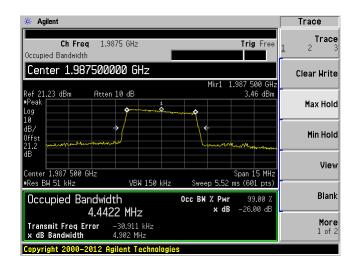
Middle O/P



High I/P

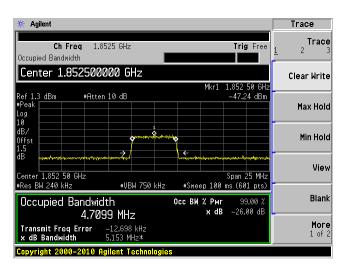
Agilent Trace Trace Ch Freq Trig Free Occupied Bandwidth Center 1.987500000 GHz Clear Write Ref 1.7 dBm #Peak #Atten 10 dB Max Hold Min Hold View Span 25 MHz *Sweep 100 ms (601 pts) Center 1.987 50 GHz #Res BW 240 kHz #VBW 750 kHz Blank Occupied Bandwidth Occ BW % Pwr x dB −26.00 dB 4.6776 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth –3.647 kHz 5.221 MHz*

High O/P

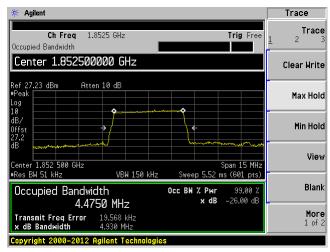


LTE 5MHz 16QAM UL

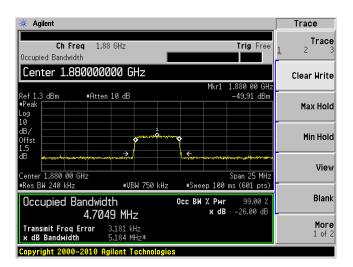
Low I/P



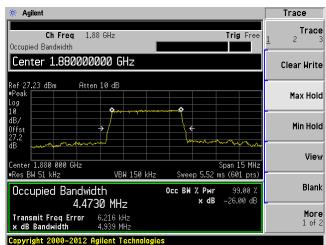
Low O/P



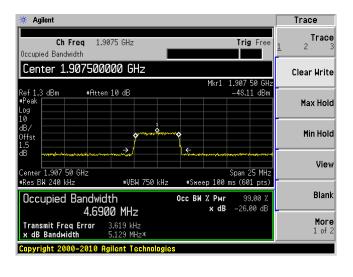
Middle I/P



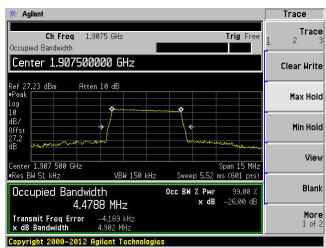
Middle O/P



High I/P

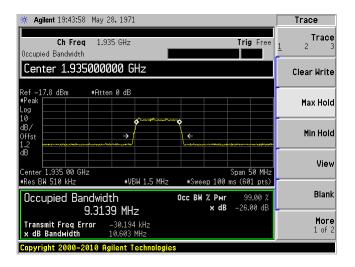


High O/P

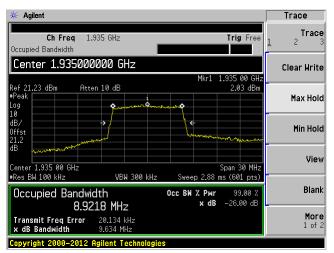


LTE 10MHz 16QAM DL

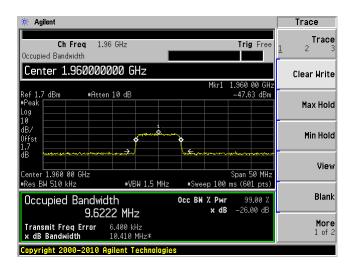
Low I/P



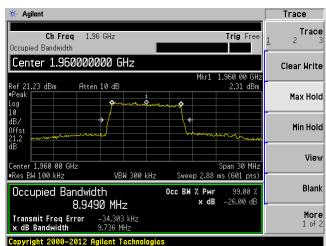
Low O/P



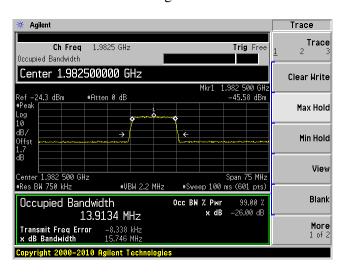
Middle I/P



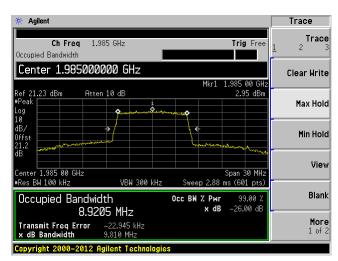
Middle O/P



High I/P

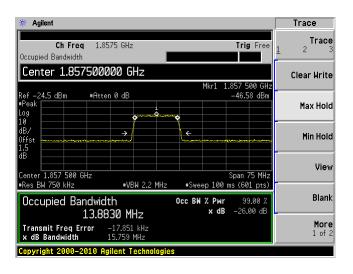


High O/P

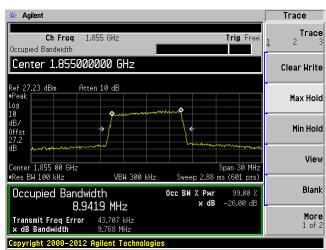


LTE 10MHz 16QAM UL

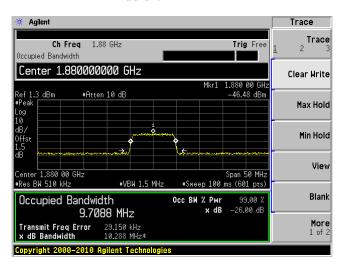
Low I/P



Low O/P



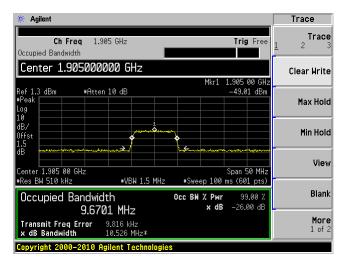
Middle I/P



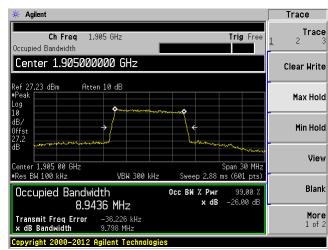
Middle O/P



High I/P

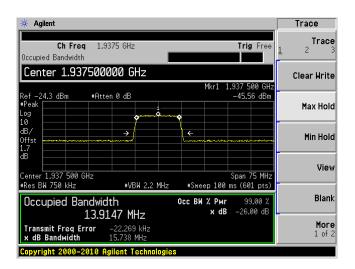


High O/P



LTE 15MHz 16QAM DL

Low I/P Low O/P

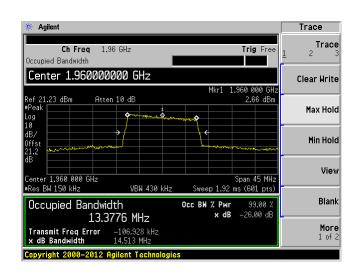




Middle I/P

Agilent Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Clear Write #Atten 0 dB -44.70 dBm Max Hold Min Hold View Center 1.960 000 GHz #Res BW 750 kHz *VBW 2.2 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99.00 2 x dB -26.00 dB 13.8913 MHz More 1 of 2 Transmit Freq Error -24.046 kHz x dB Bandwidth 15.717 MHz Copyright 2000-2010 Agilent Technologies

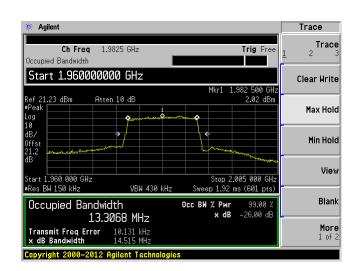
Middle O/P



High I/P

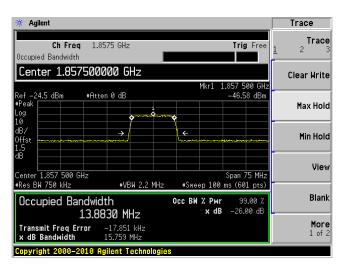
* Agilent Trace Trace Trig Free Occupied Bandwidth Center 1.982500000 GHz Clear Write 1.982 500 GHz -45.58 dBm Ref -24.3 dBm #Atten 0 dB Max Hold Min Hold View Center 1.982 500 GHz Span 75 MHz #Sweep 100 ms (601 pts) #VBW 2.2 MHz Blank Occ BW % Pwr Occupied Bandwidth 99.00 % **x dB** −26.00 dB 13.9134 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth Copyright 2000-2010 Agilent Technologies

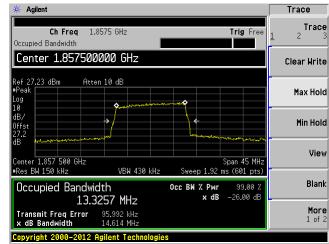
High O/P



LTE 15MHz 16QAM UL

Low I/P



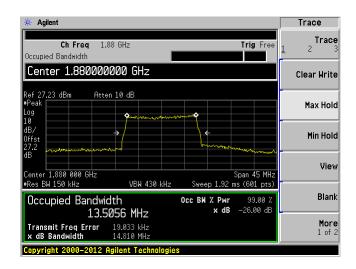


Low O/P

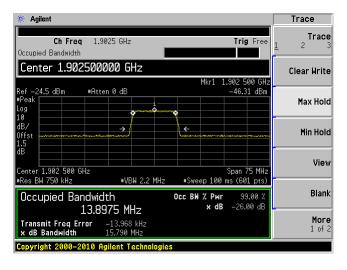
Middle I/P

Agilent Trace Trace Ch Freq Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write #Atten 0 dB Max Hold Min Hold View Center 1.880 000 GHz #Res BW 750 kHz Span 75 MHz Sweep 100 ms (601 pts) #VBW 2.2 MHz 0cc BW % Pwr 99.00 % x dB -26.00 dB Blank Occupied Bandwidth 13.9217 MHz More 1 of 2 Transmit Freq Error x dB Bandwidth Copyright 2000-2010 Agilent Technologies

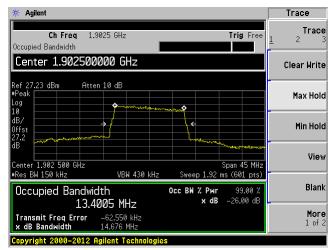
Middle O/P



High I/P



High O/P



LTE 20MHz 16QAM DL

Low I/P

Trig Free

Mkr1 1.940 00 GHz -45.87 dBm

Span 100 MHz

99.00 2

#Sweep 100 ms (601 pts)

x dB −26.00 dB

Occ BW % Pwr

🔆 Agilent

Occupied Bandwidth

Center 1.940 00 GHz #Res BW 1 MHz

Occupied Bandwidth

Transmit Freq Error x dB Bandwidth

Ref -24.3 dBm

Ch Freq 1.94 GHz

#Atten 0 dB

18.4802 MHz

Copyright 2000-2010 Agilent Technologies

Center 1.940000000 GHz

Trace
Trace
1 2 3

Clear Write

Max Hold

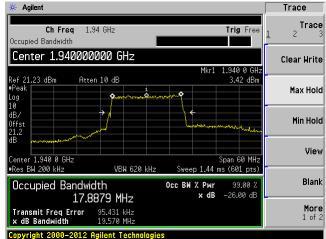
Min Hold

View

Blank

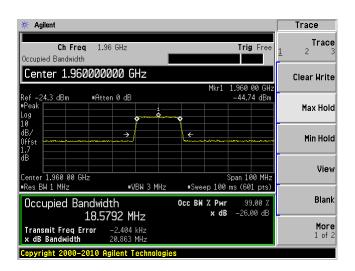
More 1 of 2

Low O/P

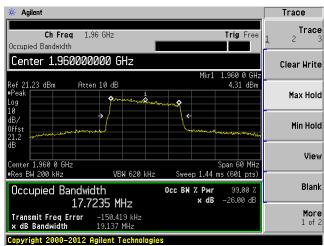


Middle I/P

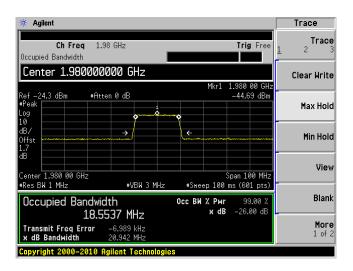
#VBW 3 MHz

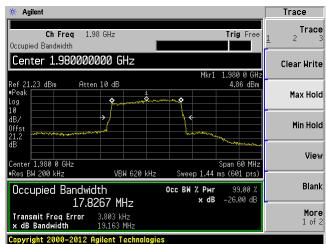


Middle O/P



High I/P

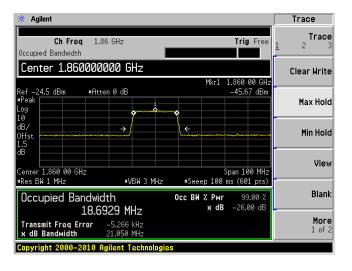


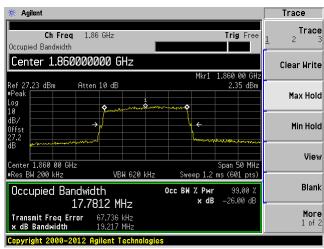


High O/P

LTE 20MHz 16QAM UL

Low I/P Low O/P





Blank

More 1 of 2

Middle I/P

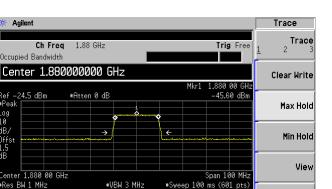
-24.5 dBm

Center 1.880 00 GHz #Res BW 1 MHz

Occupied Bandwidth

Transmit Freq Error -28.032 kHz x dB Bandwidth 21.062 MHz

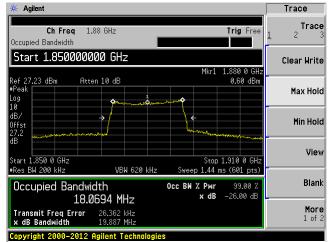
18.6261 MHz



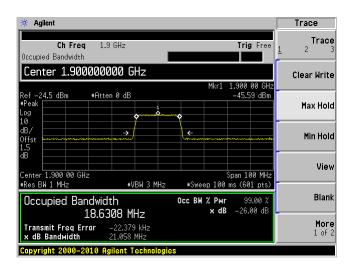
% Рыг 99.00 % **х dB** –26.00 dB

Occ BW % Pwr

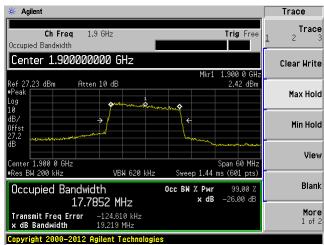
Middle O/P



High I/P

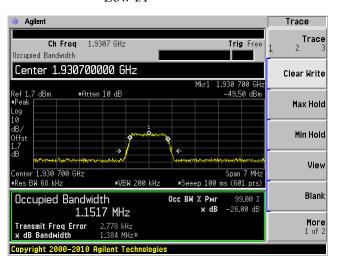


High O/P

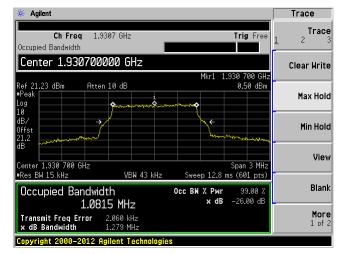


LTE 1.4MHz 64QAM DL

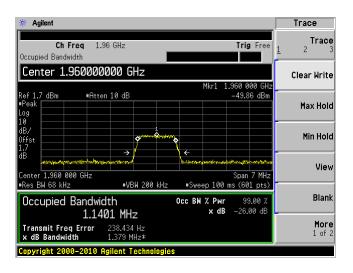
Low I/P



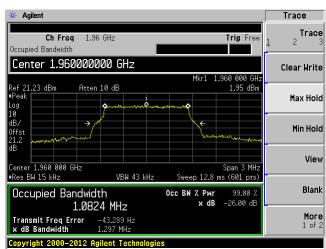
Low O/P



Middle I/P



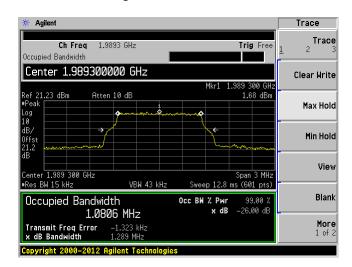
Middle O/P



High I/P

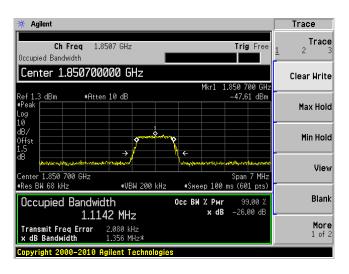
Agilent Trace Trace Ch Freq Trig Free Center 1.989300000 GHz Clear Write Ref 1.7 dBm #Peak #Atten 10 dB -49.62 dBm Max Hold Min Hold View Span 7 MHz #Sweep 100 ms (601 pts) Center 1.989 300 GHz #Res BW 68 kHz #VBW 200 kHz Blank Occ BW % Pwr Occupied Bandwidth x dB −26.00 dB 1.1372 MHz More 1 of 2 Transmit Freq Error 4.259 kHz x dB Bandwidth 1.355 MHz* Copyright 2000-2010 Agilent Technologies

High O/P

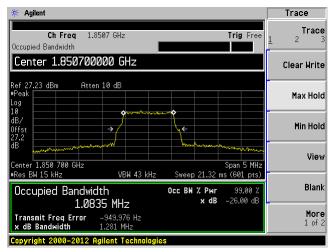


LTE 1.4MHz 64QAM UL

Low I/P

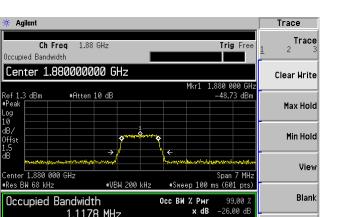


Low O/P

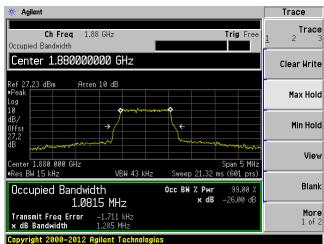


More 1 of 2

Middle I/P



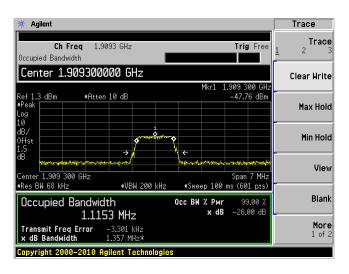
Middle O/P



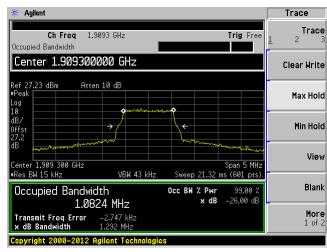
High I/P

1.1178 MHz

Transmit Freq Error -5.040 kHz x dB Bandwidth 1.332 MHz*

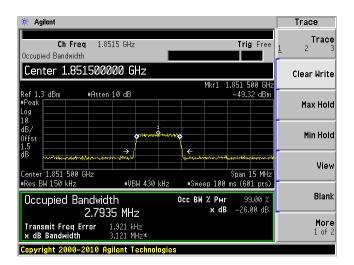


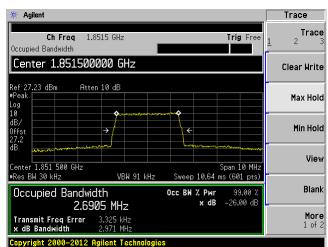
High O/P



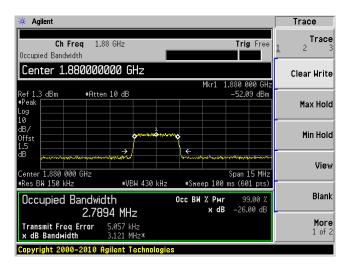
LTE 3MHz 64QAM UL

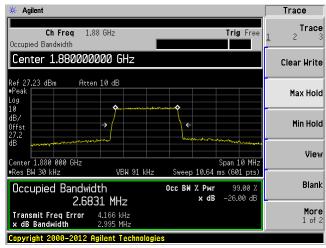
Low I/P Low O/P





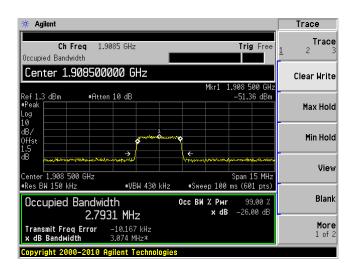
Middle I/P Middle O/P

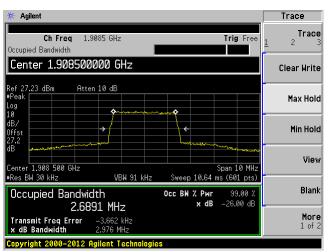




High I/P

High O/P

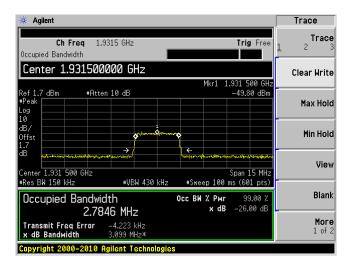


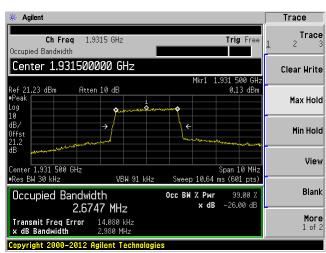


LTE 3MHz 64QAM DL

Low I/P

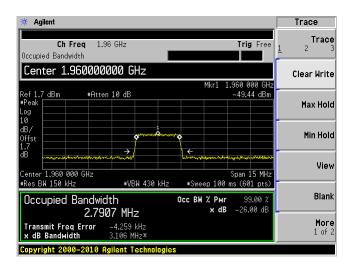
Low O/P

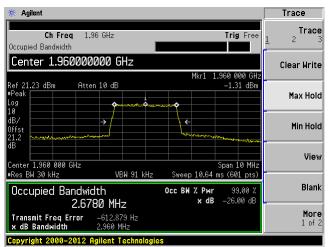




Middle I/P

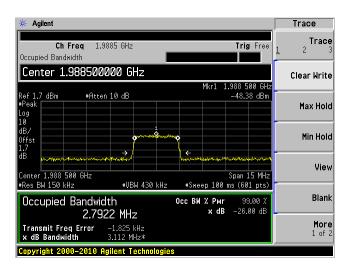
Middle O/P

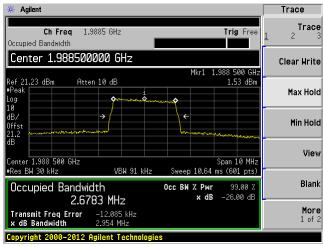




High I/P

High O/P



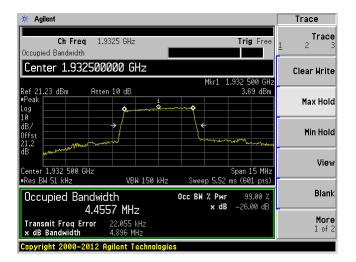


LTE 5MHz 64QAM DL

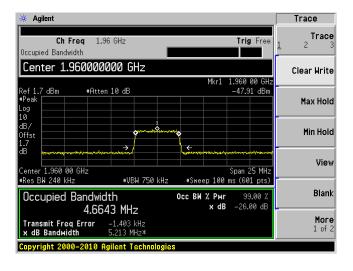
Low I/P

Agilent Trace Trace **Ch Freq** 1.9325 GHz Trig Free Occupied Bandwidth Center 1.932500000 GHz Clear Write #Atten 10 dB -47.94 dB Max Hold Min Hold View Center 1.932 50 GHz #Res BW 240 kHz Span 25 MHz #Sweep 100 ms (601 pts) #VBW 750 kHz Blank Occupied Bandwidth x dB -26.00 dB 4.6717 MHz More 1 of 2 Transmit Freq Error 1.846 kHz x dB Bandwidth 5.219 MHz** Copyright 2000-2010 Agilent Technologies

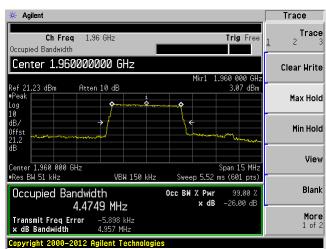
Low O/P



Middle I/P



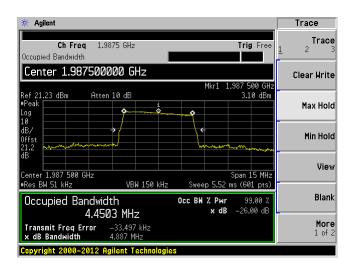
Middle O/P



High I/P

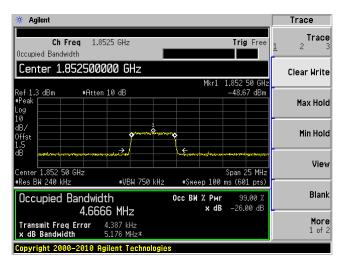
🔆 Agilent Trace Trace **Ch Freq** 1.9875 GHz Trig Free Occupied Bandwidth Center 1.987500000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.987 50 GHz #Res BW 240 kHz Span 25 MHz #Sweep 100 ms (601 pts) #VBW 750 kHz Blank Occupied Bandwidth x dB -26.00 dB 4.6808 MHz More 1 of 2 Transmit Freq Error 14.945 kHz x dB Bandwidth 5.240 MHz*

High O/P

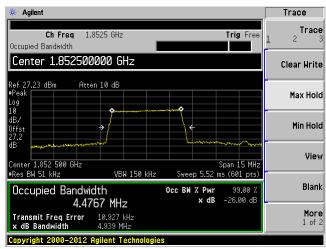


LTE 5MHz 64QAM UL

Low I/P



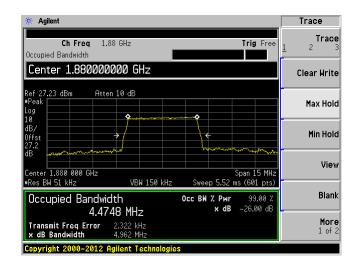
Low O/P



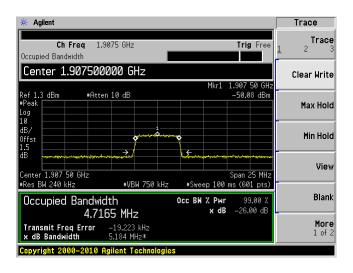
Middle I/P

Agilent Trace Trace Ch Freq 1.88 GHz Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.880 00 GHz #Res BW 240 kHz Span 25 MHz #Sweep 100 ms (601 pts) #VBW 750 kHz Blank Occupied Bandwidth x dB -26.00 dB 4.7268 MHz Transmit Freq Error -19.794 kHz x dB Bandwidth 5.275 MHz* More 1 of 2 Copyright 2000-2010 Agilent Technologie

Middle O/P



High I/P



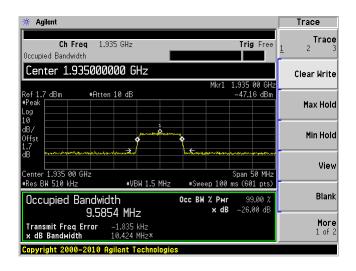
High O/P

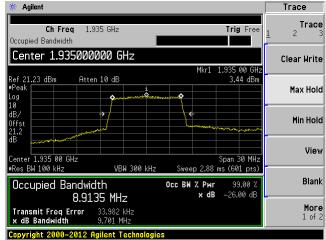


LTE 10MHz 64QAM DL

Low I/P

Low O/P

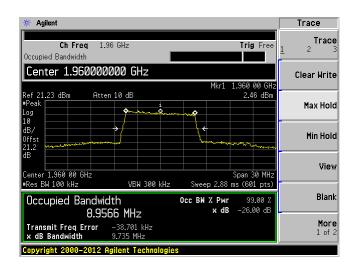




Middle I/P

Agilent Trace Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Clear Write 1.960 00 GHz #Atten 10 dB -47.96 dBm **Max Hold** Min Hold View Center 1.960 00 GHz #Res BW 510 kHz #VBW 1.5 MHz #Sweep 100 ms (601 pts) Blank Occ BW % Pwr 99.00 % x dB -26.00 dB Occupied Bandwidth 9.5905 MHz Transmit Freq Error x dB Bandwidth More 1 of 2 23.241 kHz 10.419 MHz* Copyright 2000-2010 Agilent Tec

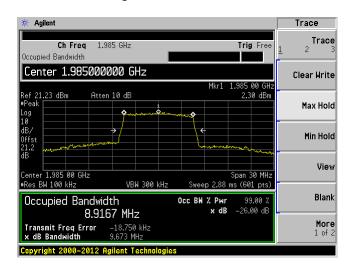
Middle O/P



High I/P

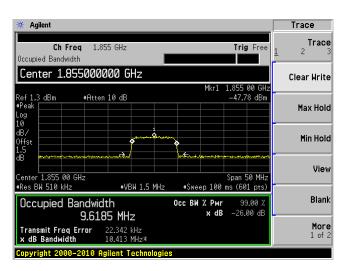
🔆 Agilent Trace Trace Ch Freq 1.985 GHz Trig Free Occupied Bandwidth Center 1.985000000 GHz Clear Write #Atten 10 dB Max Hold Min Hold View Center 1.985 00 GHz #Res BW 510 kHz *VBW 1.5 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -26.00 dB 9.5799 MHz Transmit Freq Error 8.275 kHz x dB Bandwidth 10.402 MHz* More 1 of 2 Copyright 2000-2010 Agilent Technologies

High O/P



LTE 10MHz 64QAM UL

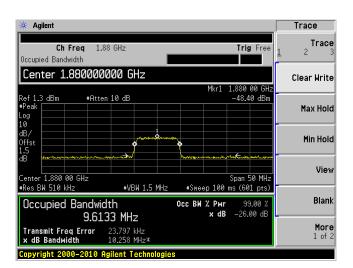
Low I/P



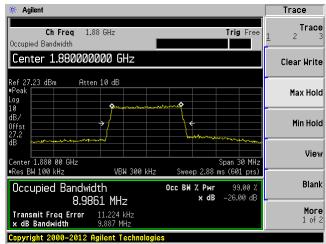
Low O/P



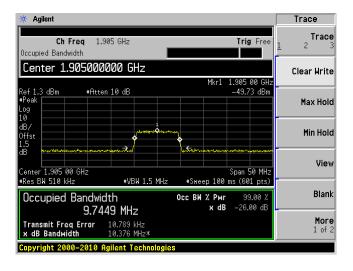
Middle I/P



Middle O/P



High I/P

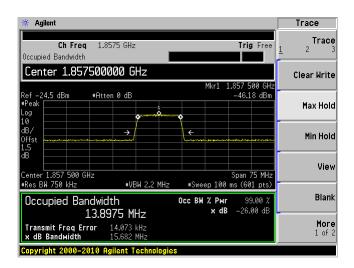


High O/P



LTE 15MHz 64QAM UL

Low I/P Low O/P

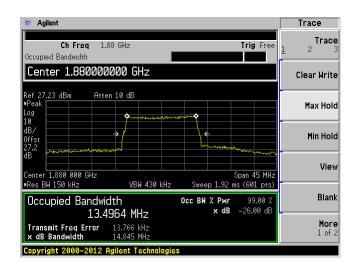




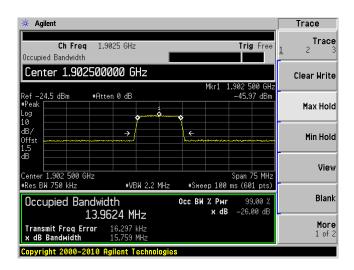
Middle I/P

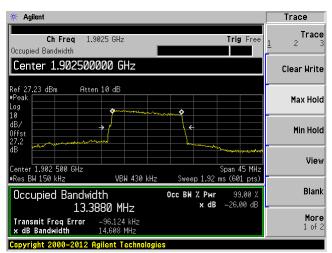
Agilent Trace Ch Freq 1.88 GHz Trig Free Occupied Bandwidth Center 1.880000000 GHz Clear Write Mkr1 1.880 000 GHz -47.25 dBm Ref -24.5 dBm #Atten 0 dB Max Hold Min Hold View Center 1.880 000 GHz #Res BW 750 kHz Span 75 MHz *Sweep 100 ms (601 pts) *VBW 2.2 MHz Blank Occ BW % Pwr Occupied Bandwidth -26.00 dB x dB 13.9495 MHz More 1 of 2 Transmit Freq Error 9.261 kHz x dB Bandwidth 15.639 MHz Copyright 2000-2010 Agilent Technologies

Middle O/P



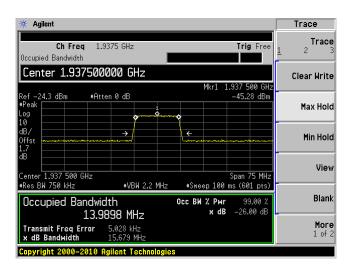
High I/P High O/P





LTE 15MHz 64QAM DL

Low I/P Low O/P

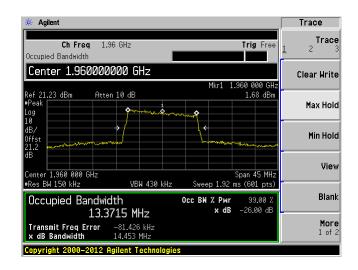




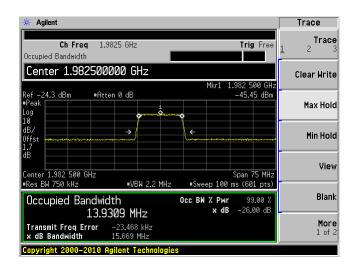
Middle I/P

Trace Ch Freq 1.96 GHz Trig Free Occupied Bandwidth Center 1.960000000 GHz Clear Write Mkr1 1.960 000 GH -45.39 dBm Ref -24.3 dBm #Peak #Atten 0 dB Max Hold Min Hold View 1.960 000 GHz *Res BW 750 kHz #VBW 2.2 MHz #Sweep 100 ms (601 pts) Blank Occupied Bandwidth Occ BW % Pwr 99.00 % -26.00 dB 13.9663 MHz x dB Transmit Freq Error -296.329 Hz x dB Bandwidth 15.689 MHz More 1 of 2 Copyright 2000-2010 Agilent Technologies

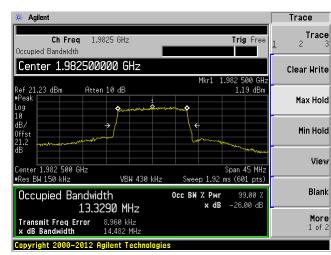
Middle O/P



High I/P

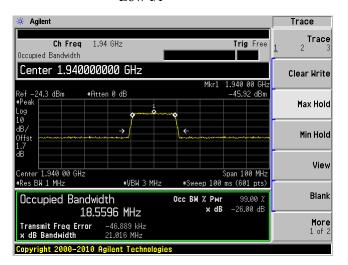


High O/P

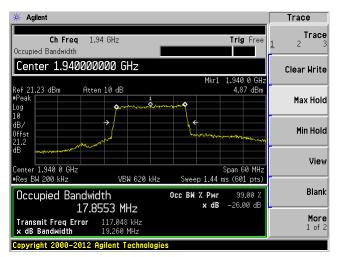


LTE 20MHz 64QAM DL

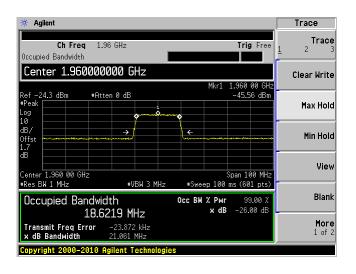
Low I/P



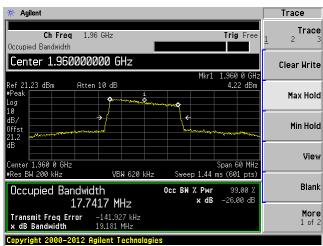
Low O/P



Middle I/P

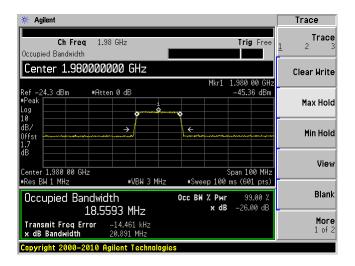


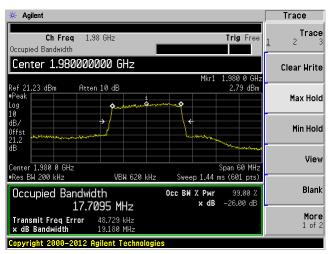
Middle O/P



High I/P

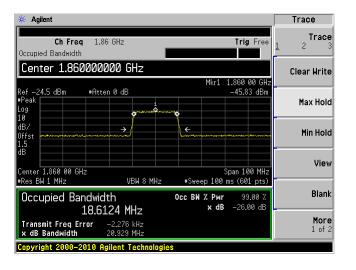
High O/P

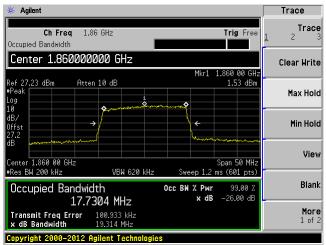




LTE 20MHz 64QAM UL

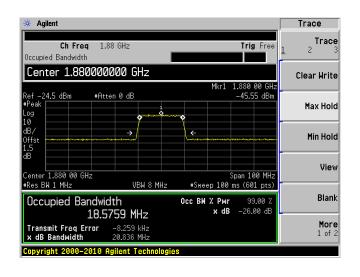
Low I/P Low O/P

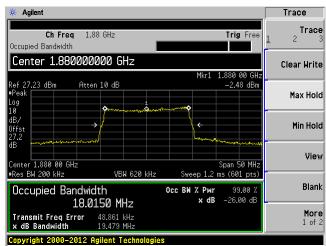




Middle I/P

Middle O/P





High I/P

High O/P

