

FCC MEASUREMENT AND TEST REPORT

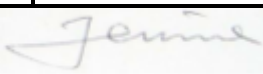
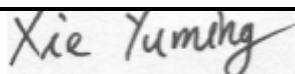
For

ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen,
Guangdong, China 518057

FCC ID: Q78-R8119F851719A

May 20, 2017

This Report Concerns: ☒ Original Report		Equipment Type: LTE Remote Radio Unit
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Report No:	RP20170504027-3	
Test Date:	Feb 28 – Mar 2, 2017	
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Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of ZRT EMC Shenzhen Laboratory. This report must not be used by the client to claim product certification 、 approval 、 or endorsement by any agency of the US Government.

1 TABLE OF CONTENTS

1 TABLE OF CONTENTS	2
2 GENERAL INFORMATION.....	4
Product Description for Equipment Under Test (EUT).....	4
Objective	4
Related Submittal(s)/Grant(s).....	4
Test Methodology	4
Test Facility.....	5
3 SYSTEM TEST CONFIGURATION.....	6
Description of Test Configuration	6
4 SUMMARY OF TEST RESULTS	7
5 TRANSMITTER OUTPUT POWER	8
Applicable Standard: FCC §2.1046, §24.232.....	8
Test Equipment List and Details.....	8
Test Procedure.....	8
Environmental Conditions	8
Test Result: Pass.....	9
Test Mode: Transmitting LTE	9
Test Data:.....	9
6 RF EXPOSURE.....	32
Applicable standard: FCC §2.1091 §1.1037	32
Limit.....	32
Test Data.....	32
Test Result: pass.....	33
7 MODULATION CHARACTERISTIC	33
Applicable Standard: FCC §2.1047	33
Test Equipment List and Details.....	33
Test Procedure.....	33
Test Data Environmental Conditions	33
Test Result: Pass.....	34
Test Mode: Transmitting LTE	34
Test Data:.....	34
8 SPURIOUS RADIATED EMISSIONS	131
Applicable Standard: FCC CFR 47 §2.1053.....	131
Test Equipment List and Details.....	131
Test Procedure.....	133
Test Results Summary: PASS	133
Environmental Conditions	133
Test data	133
9 SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....	136
Applicable Standard: FCC§2.1051, §24.238.....	136
Test Equipment List and Details.....	136
Test Procedure.....	136
Test Data Environmental Conditions	137
Test Result: Pass.....	137
Test Mode: Transmitting LTE	137
Test Data:.....	137
10 OCCUPIED BANDWIDTH.....	232
Applicable Standard: FCC §2.1049	232

Test Equipment List and Details:.....	232
Test Procedure.....	233
Environmental Conditions	233
Test Result: Pass.....	233
Test Mode: Transmitting LTE	233
Test Data.....	233
11 BAND EDGES	257
Applicable Standard: FCC §2.1051, §24.238.....	257
Test Equipment List and Details.....	257
Test Procedure.....	258
Test Data Environmental Conditions	258
Test Result: Pass.....	258
Test Mode: Transmitting LTE	258
Test Data.....	258
12 FREQUENCY STABILITY	306
Applicable Standard: FCC § 2.1055, §24.235.....	306
Test Equipment List and Details.....	306
Test Procedure.....	307
Environmental Conditions	307
Test Result: Pass.....	308
Test Mode: Transmitting LTE	308
Test Data.....	308
Frequency Stability Versus Temperature.....	308
Frequency Stability Versus Voltage.....	333

2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8119 F851719A or the "EUT" as referred to in this report is a LTE Remote Radio Unit.

Technical specification:

Size: 230 mm (Diameter) * 43.5 mm (Depth)

Input voltage: -48V

Frequency range: UL:1850MHz~1910MHz; DL: 1930MHz~1990 MHz

Max RF output power: 20dBm

Appearance of EUT:

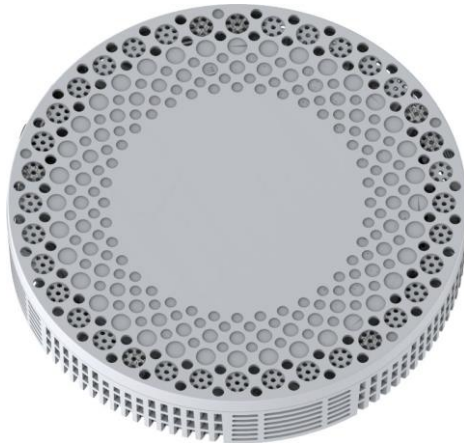


FIGURE 1 APPEARANCE OF ZXSDR R8119 F851719A

Objective

This type approval report is prepared on behalf of ZRT EMC Shenzhen Laboratory in accordance with Part 1、Part 2、part15、Part 24 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2 as well as the following parts:

Part 24 MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-C, Land Mobile FM or PM Communications

Equipment Measurement and Performance Standards.

All radiated and conducted measurement was performed at ZTE Corporation Reliability Testing Center. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Shenzhen ZTE Technology Service Co., Ltd to collect test data is located in the ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China, Tel: +86-755-26770000, Fax: +86-755-26771999. Test site at ZRT EMC Shenzhen Laboratory has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 0007895832. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

3 SYSTEM TEST CONFIGURATION

Description of Test Configuration

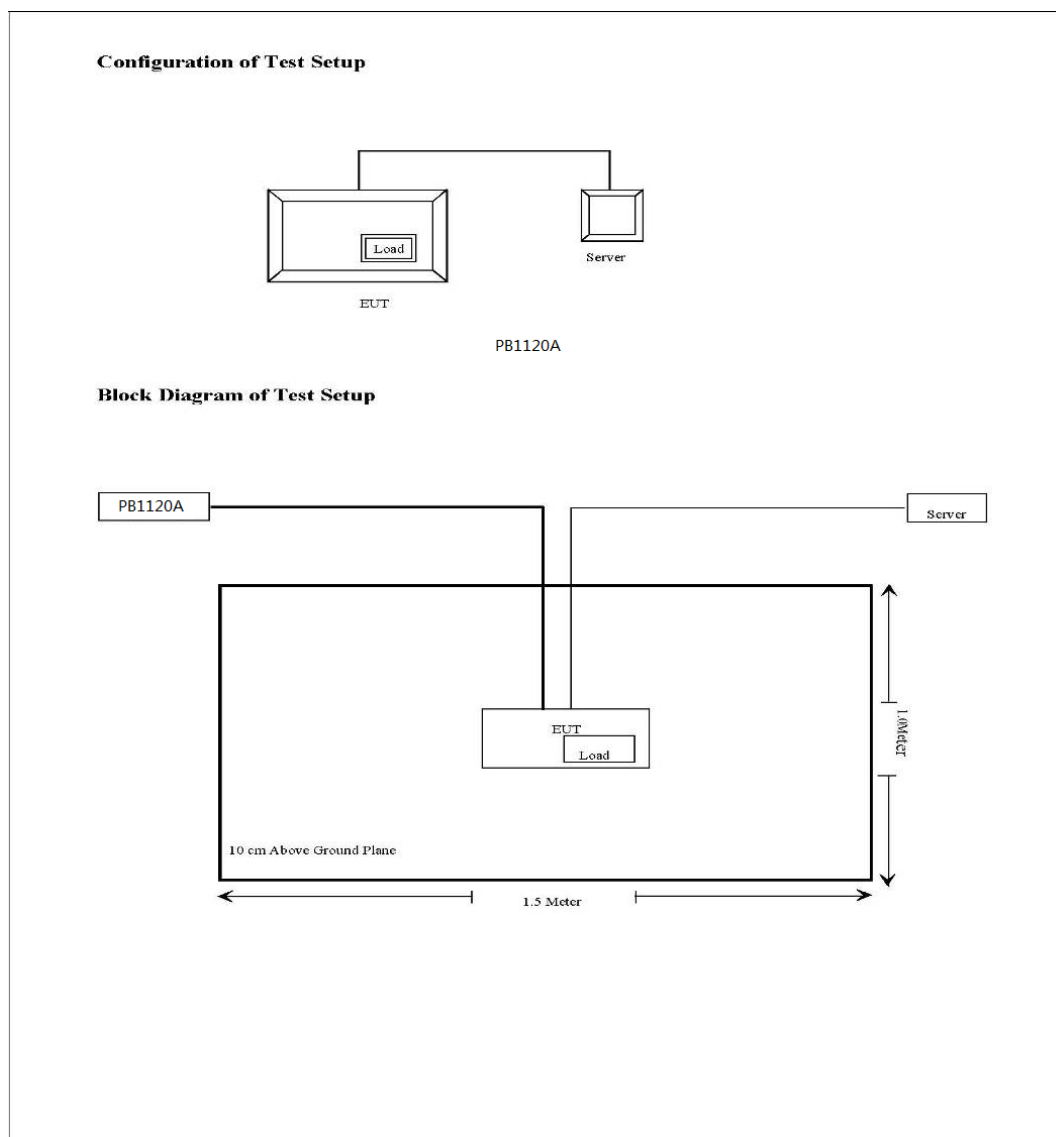
Justification

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

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

Equipment Modifications

ZTE Corporation has not done any modification on the EUT.



4 SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 2.1046 , §24.232	Transmitter output Power	Compliant
§ 2.1091 ,§1.1037	RF Exposure	Compliant
§ 2.1047	Modulation Characteristic	Compliant
§ 2.1053, §24.238	Spurious Radiated Emissions	Compliant
§ 2.1051, §24.238	Spurious Emissions AT Antenna Terminals	Compliant
§ 2.1049	Occupied Bandwidth	Compliant
§ 2.1051,§24.238	Band Edge	Compliant
§ 2.1055, ,§24.235	Frequency stability	Compliant

5 TRANSMITTER OUTPUT POWER

Applicable Standard: FCC §2.1046, §24.232

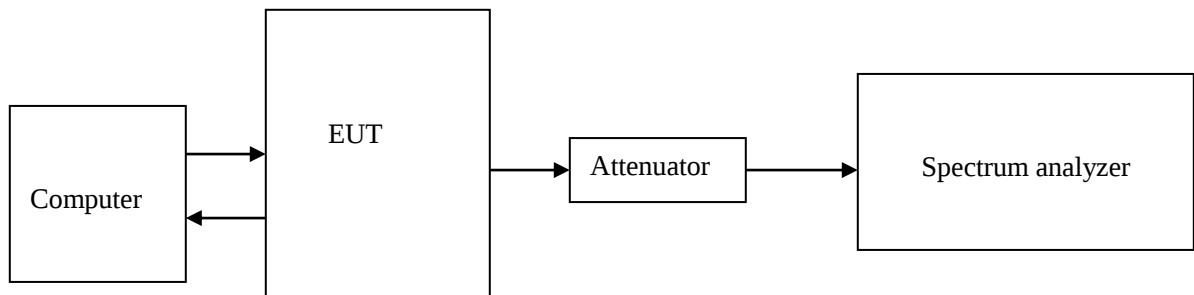
According to FCC §2.1046 & 24.232, the EIRP (equivalent isotropically radiated power) must not exceed 1640Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2016.09.12	2017.09.12
DTS	DTS 20dB Attenuator	DTS50-20-3-1	09112005	2016.09.12	2017.09.12
Silverline	Silverline RF Cable	SLA18-NMN1T	100311-04-0001	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attests that all calibration has been performed per the NVLAP requirements, traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 20dB, Cable Loss is about 1.4dB

Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

Test Result: Pass

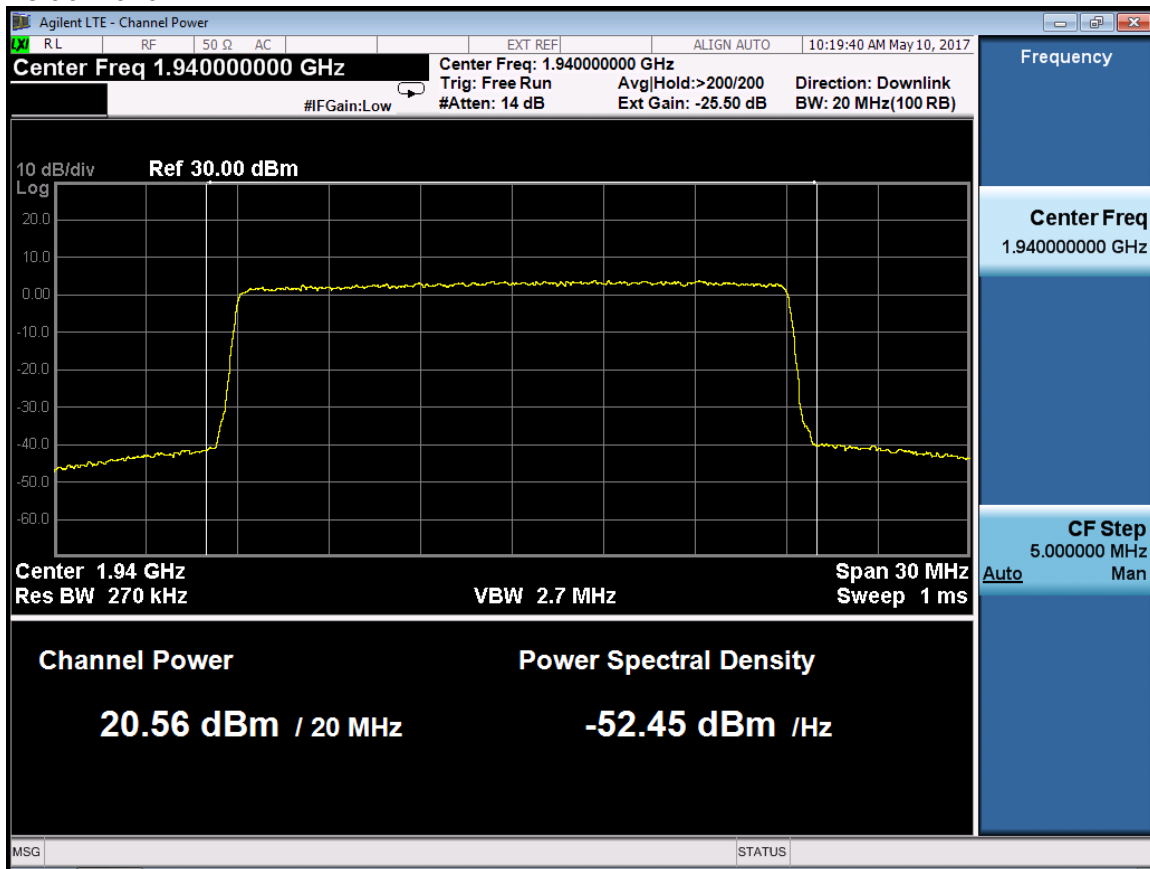
Test Mode: Transmitting LTE

Test Data:

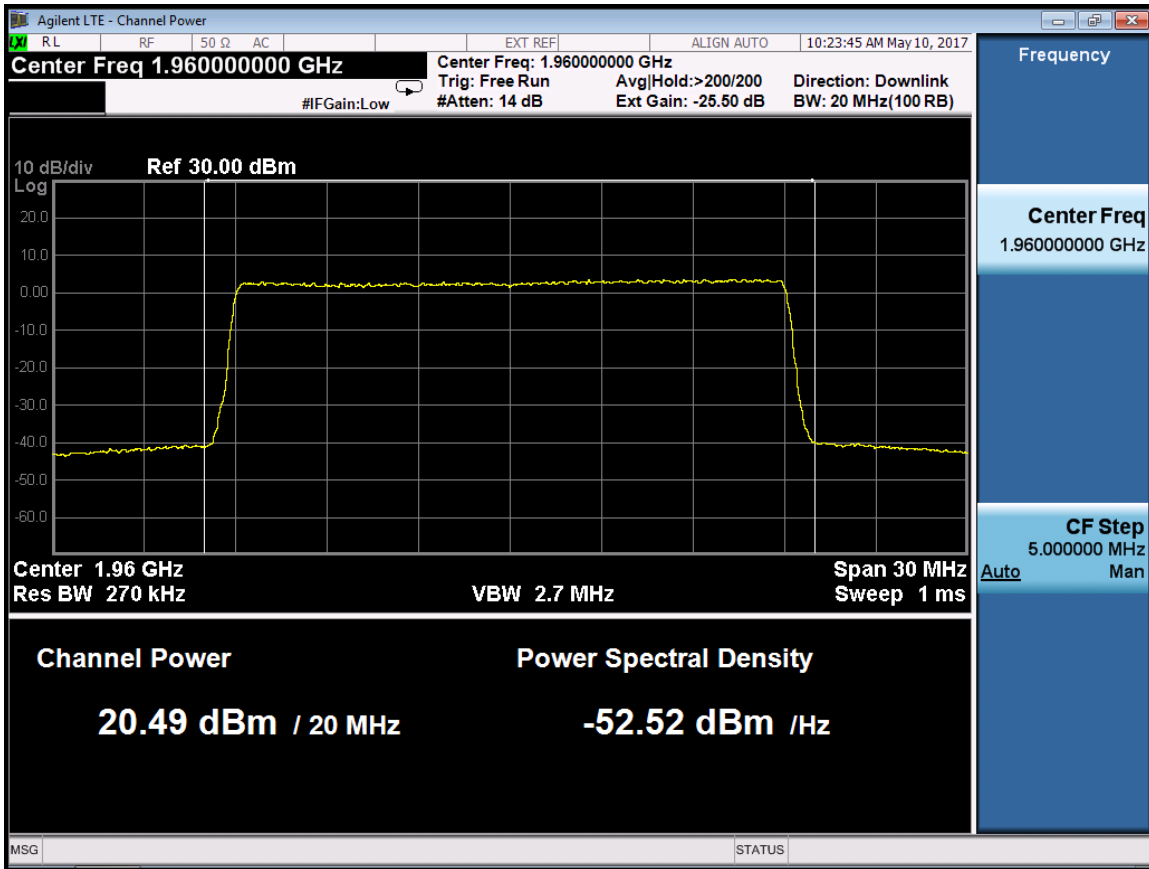
RF Bandwidth :IBW 20M(LTE 20M)

Port	Center Freq. (MHz)	Max output Power in dBm	Total Power in W Of single antenna
0	1940	20.5312	35.8
	1960	20.4942	35.78
	1980	20.7267	36.33
1	1940	19.6874	35.79
	1960	19.6591	35.79
	1980	19.6115	35.79

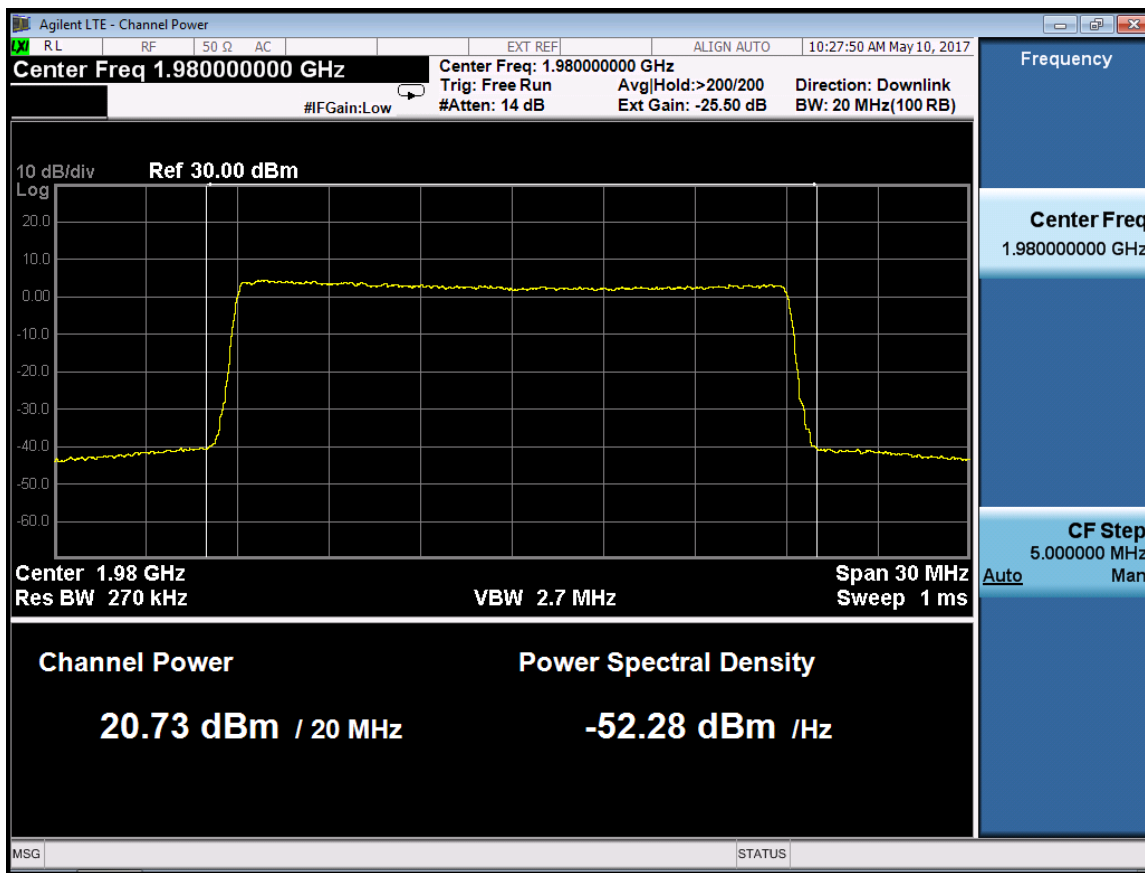
Port 0 -1940MHz



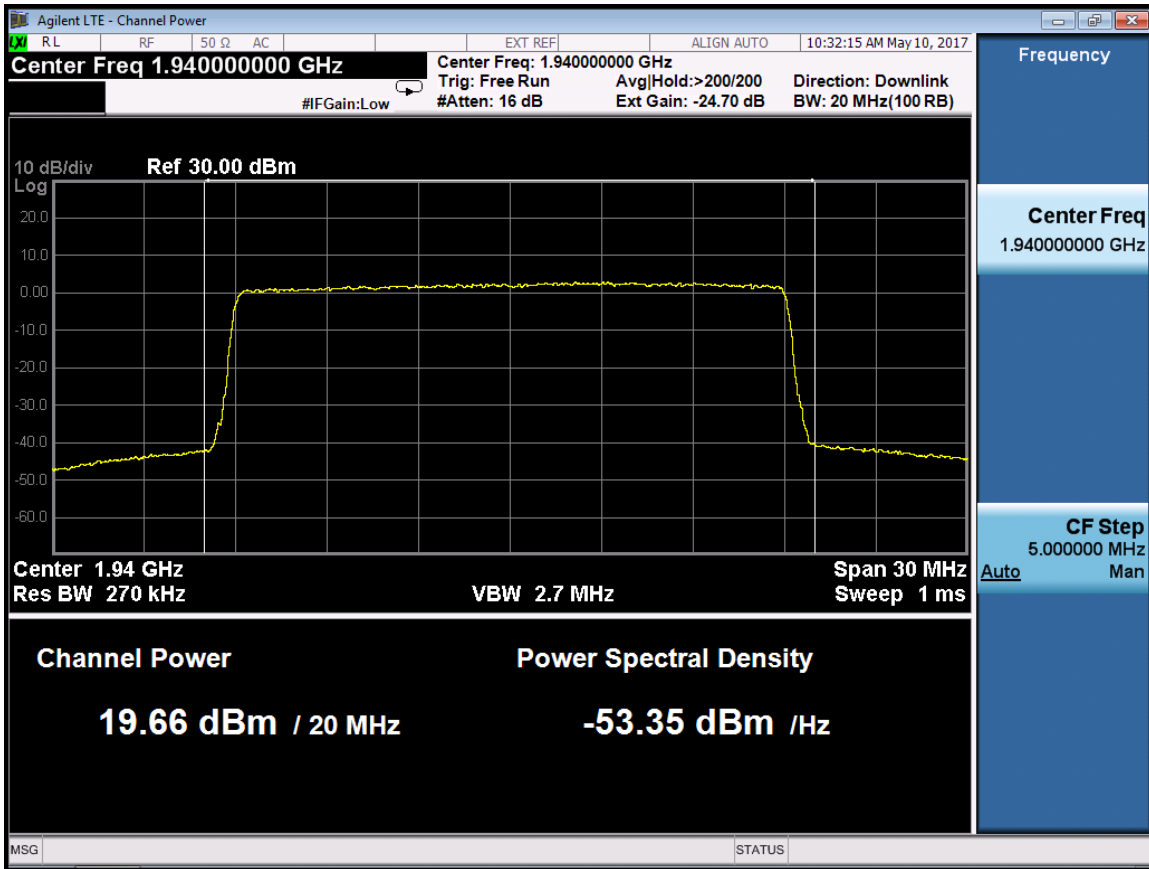
Port 0 -1960MHz



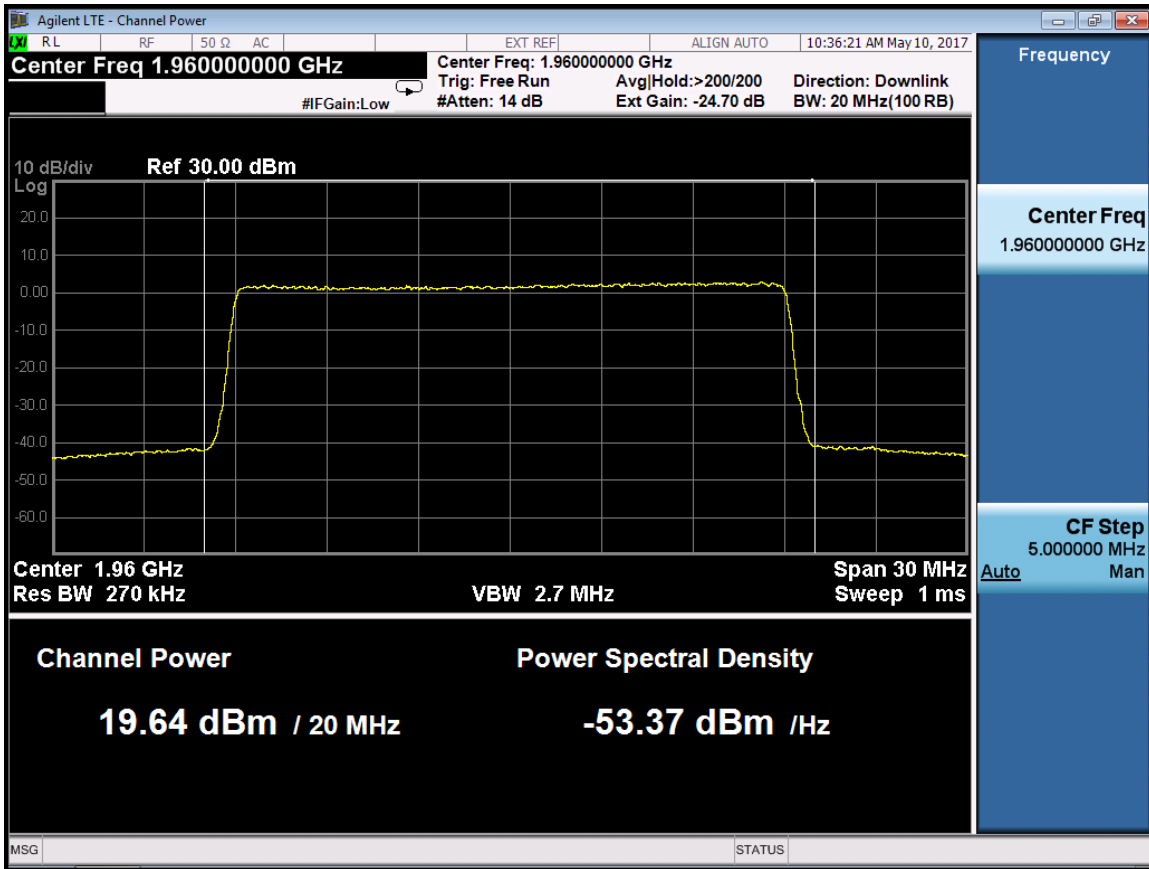
Port 0 -1980MHz



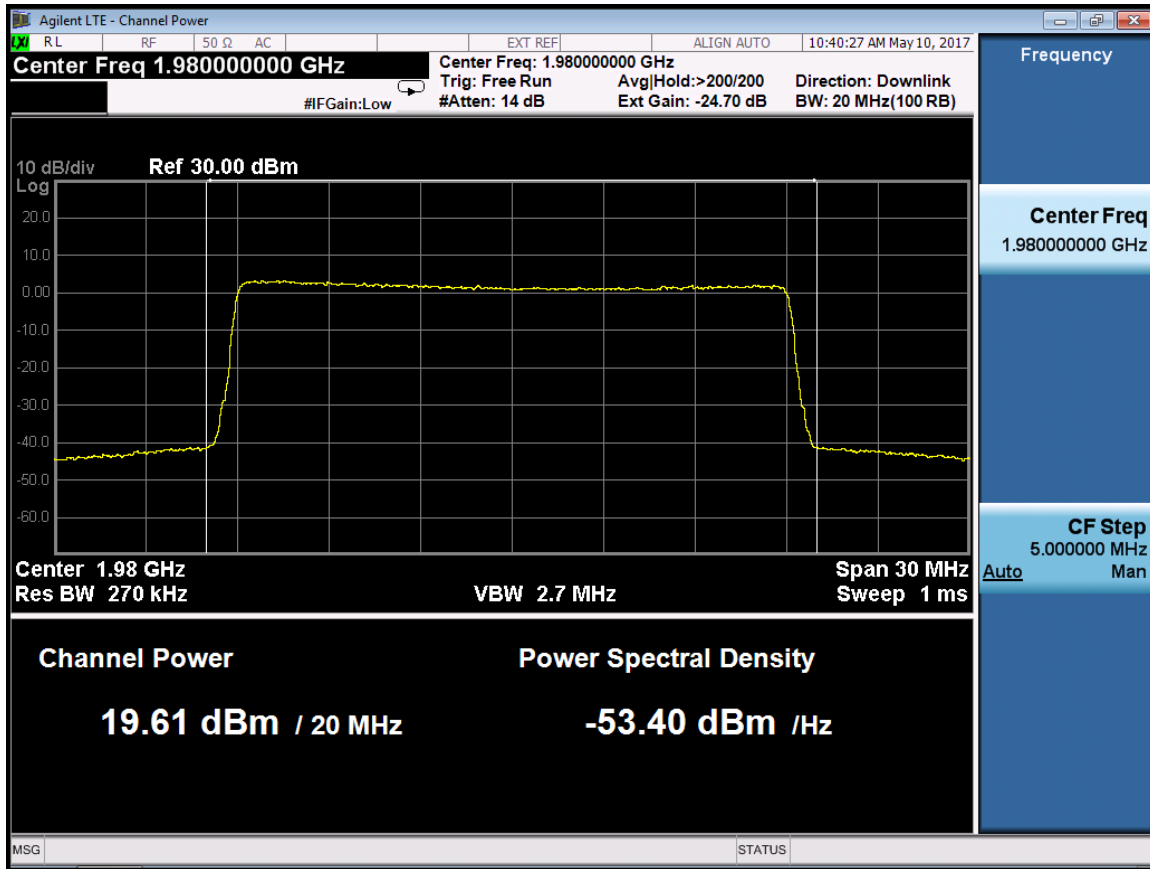
Port 1 -1940MHz



Port 1 -1960MHz



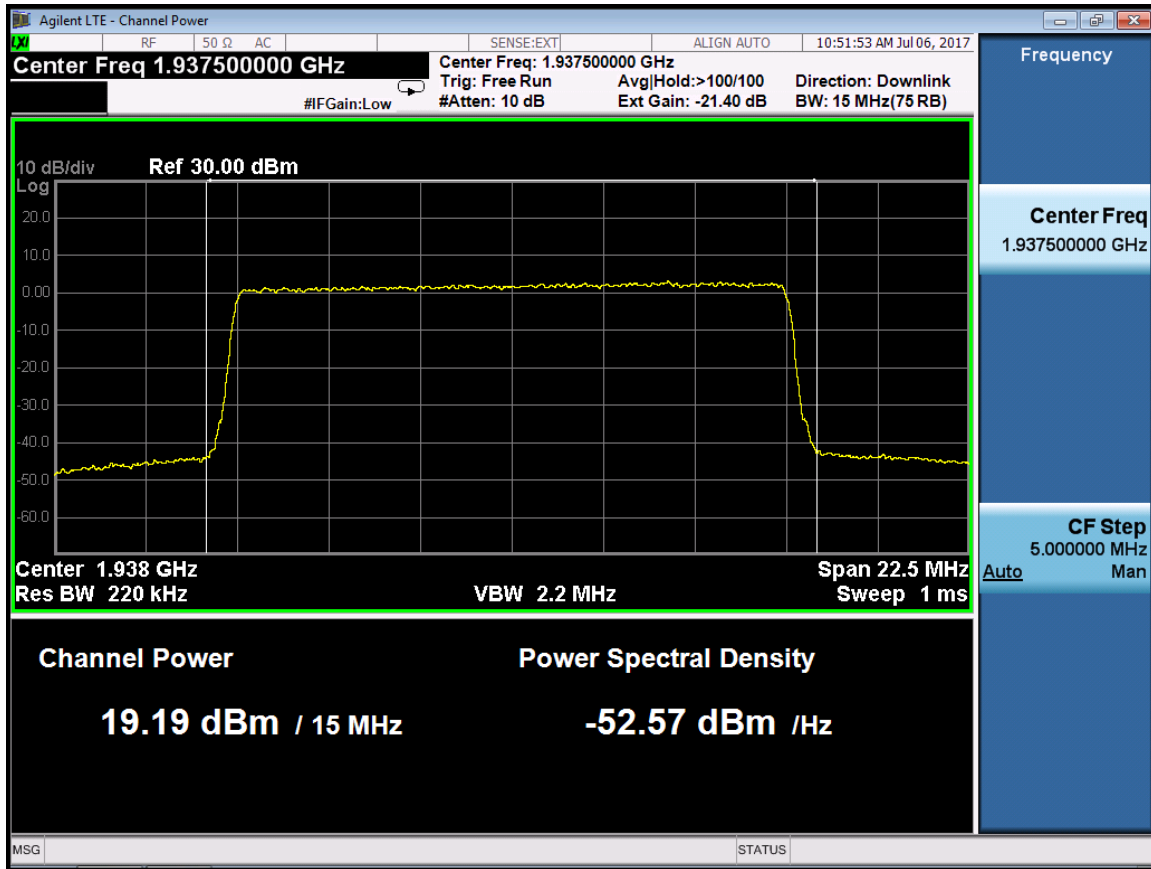
Port 1 -1980MHz



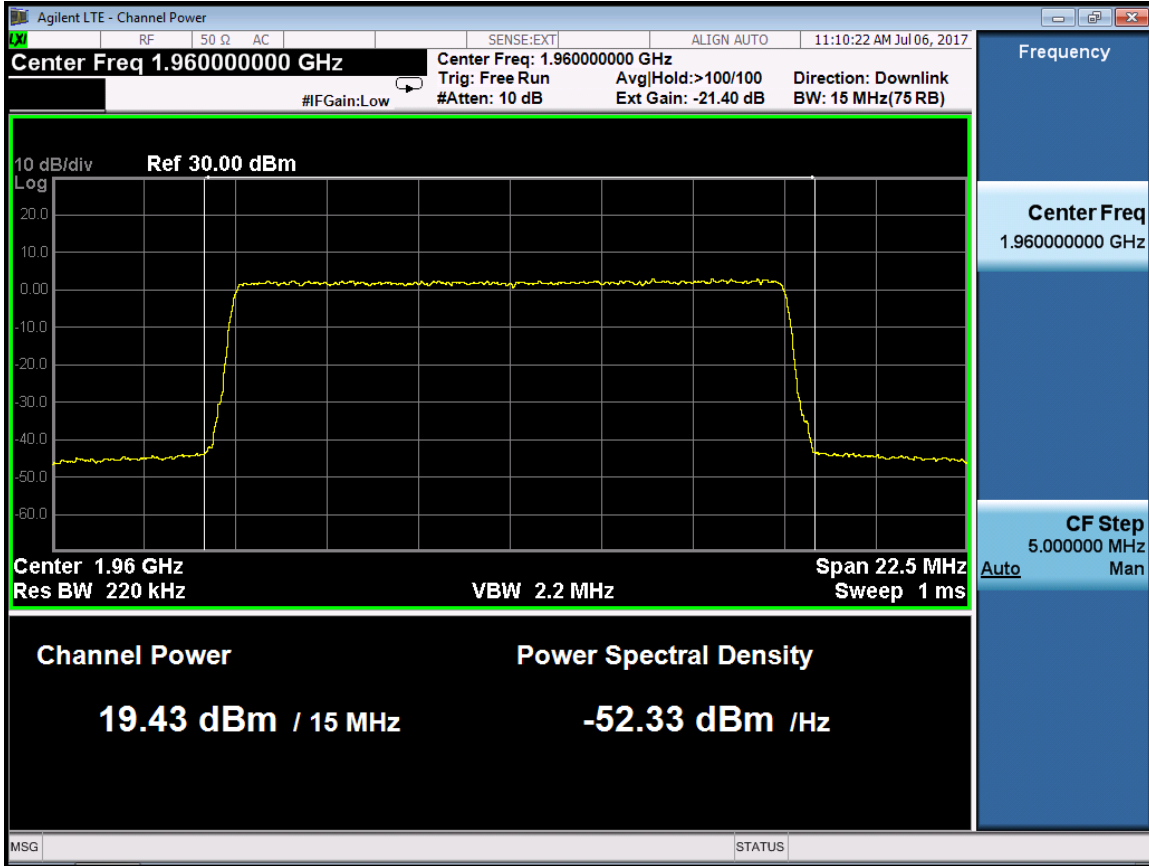
RF Bandwidth :IBW 15M(LTE 15M)

Port	Center Freq. (MHz)	Max output Power in dBm	Total Power in W Of single antenna
0	1937.5	19.19	35.8
	1960	19.43	35.7
	1982.5	19.40	35.8
1	1937.5	19.08	35.3
	1960	19.41	35.4
	1982.5	19.43	35.3

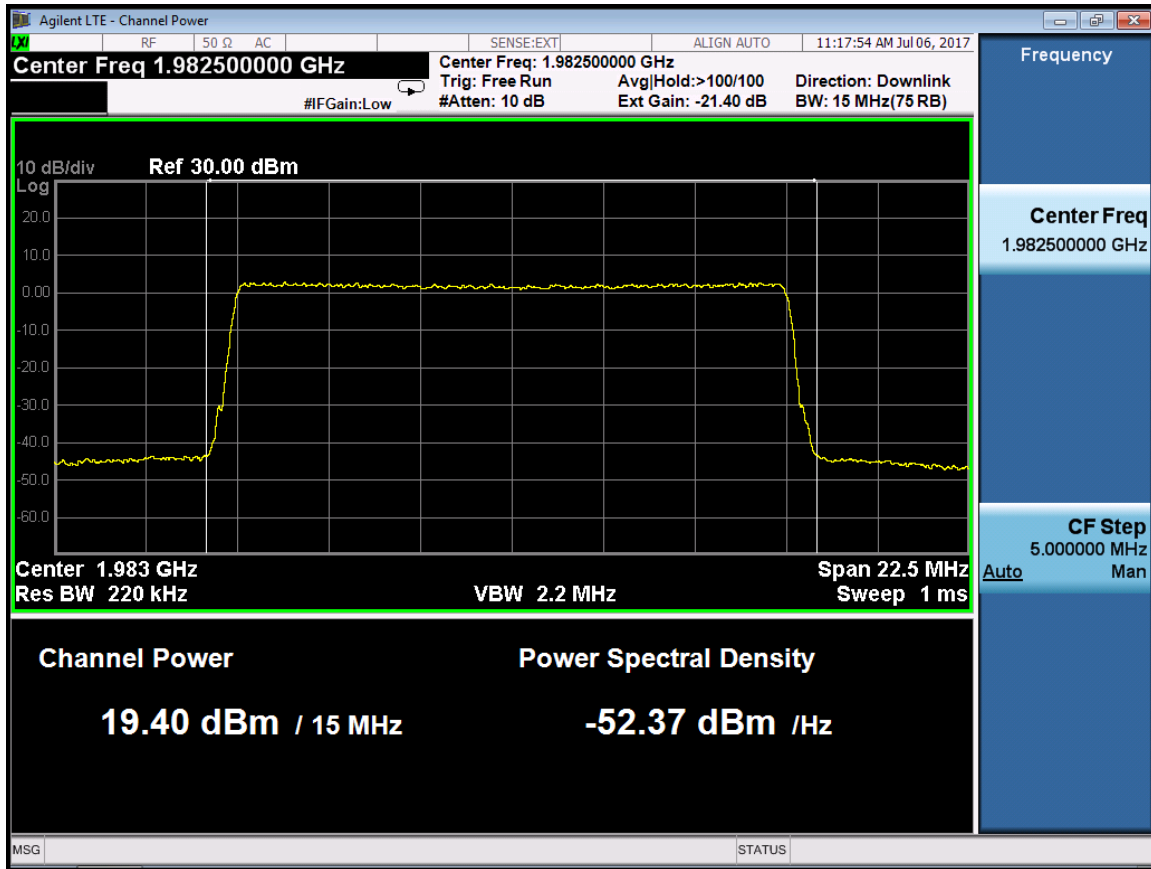
Port 0 -1937.5MHz



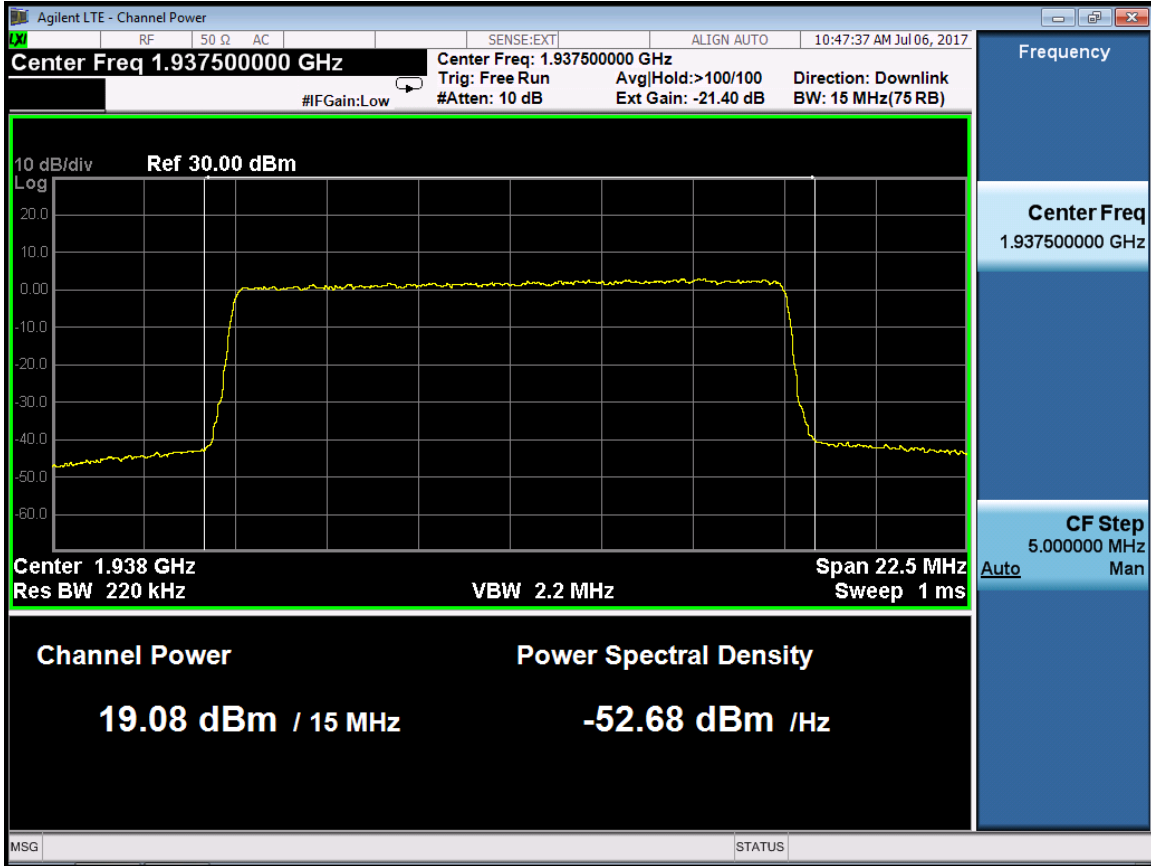
Port 0 -1960MHz



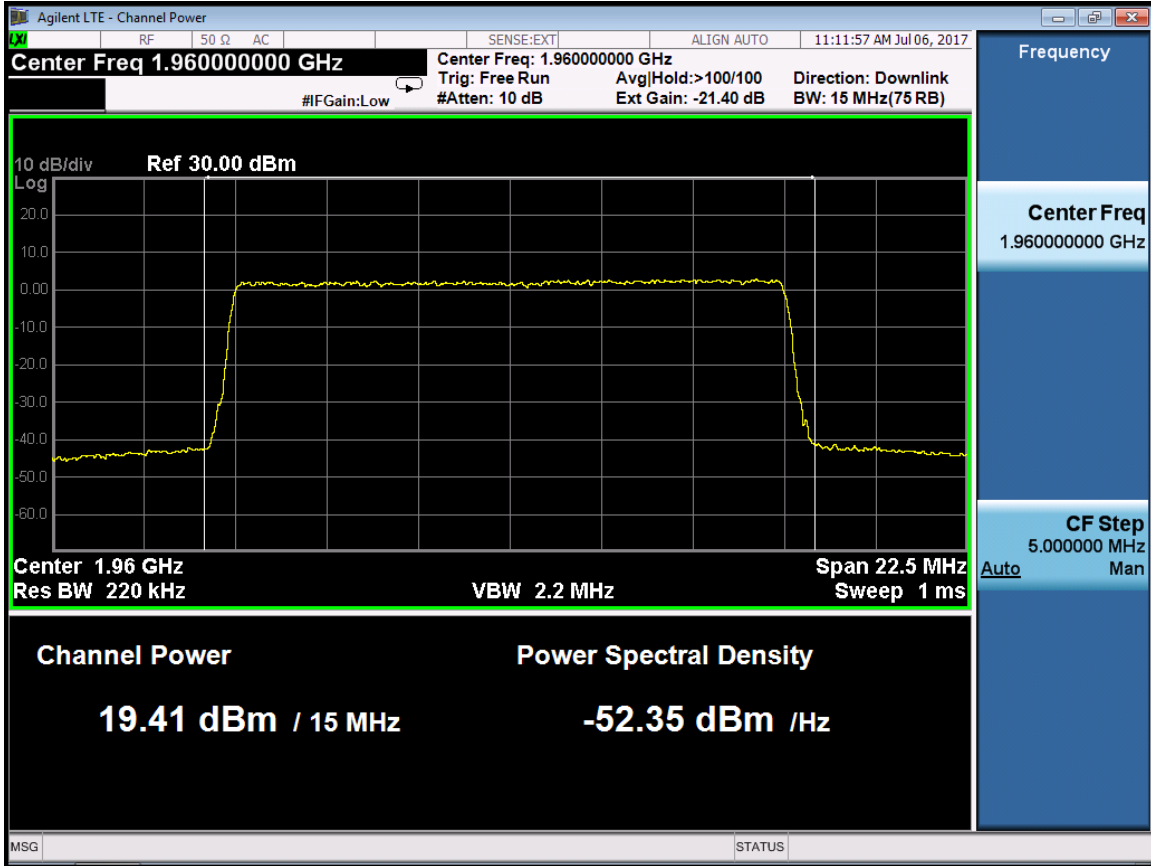
Port 0 -1982.5MHz



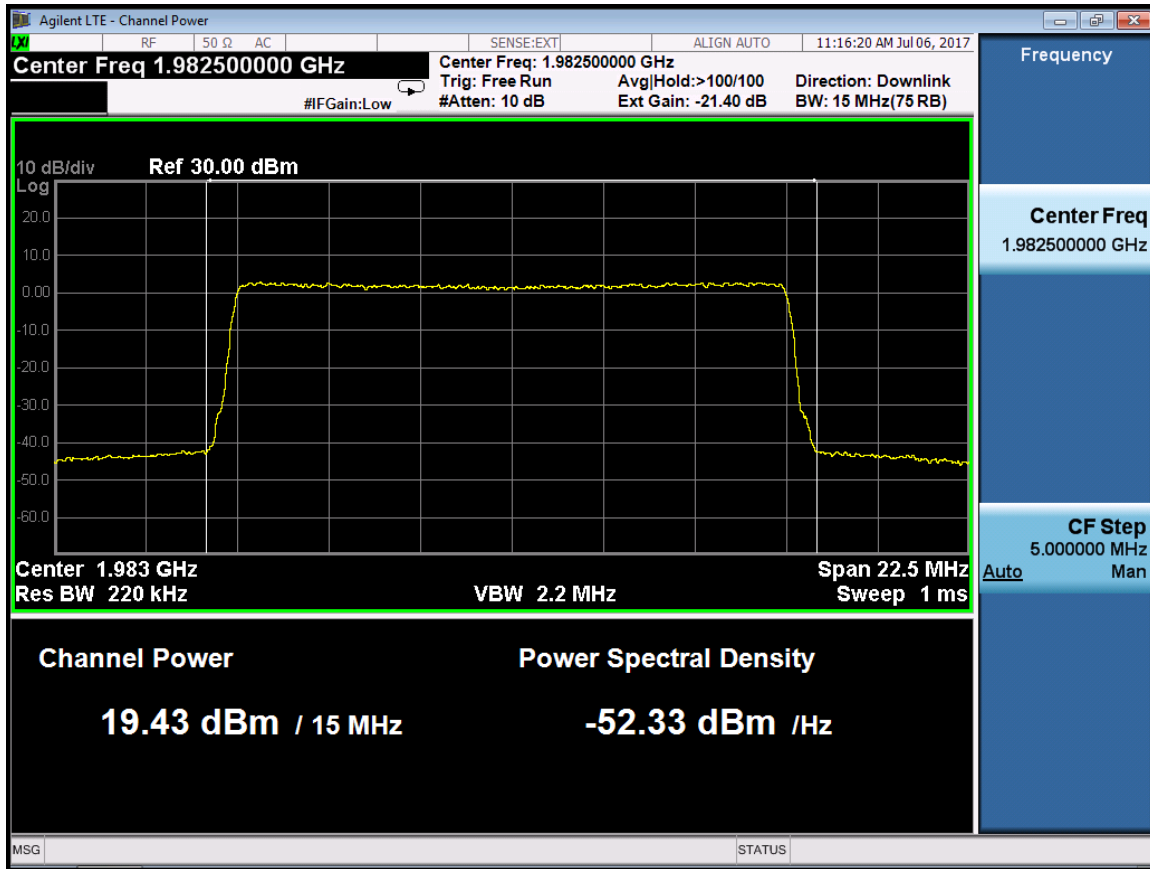
Port 1 -1937.5MHz



Port 1 -1960MHz



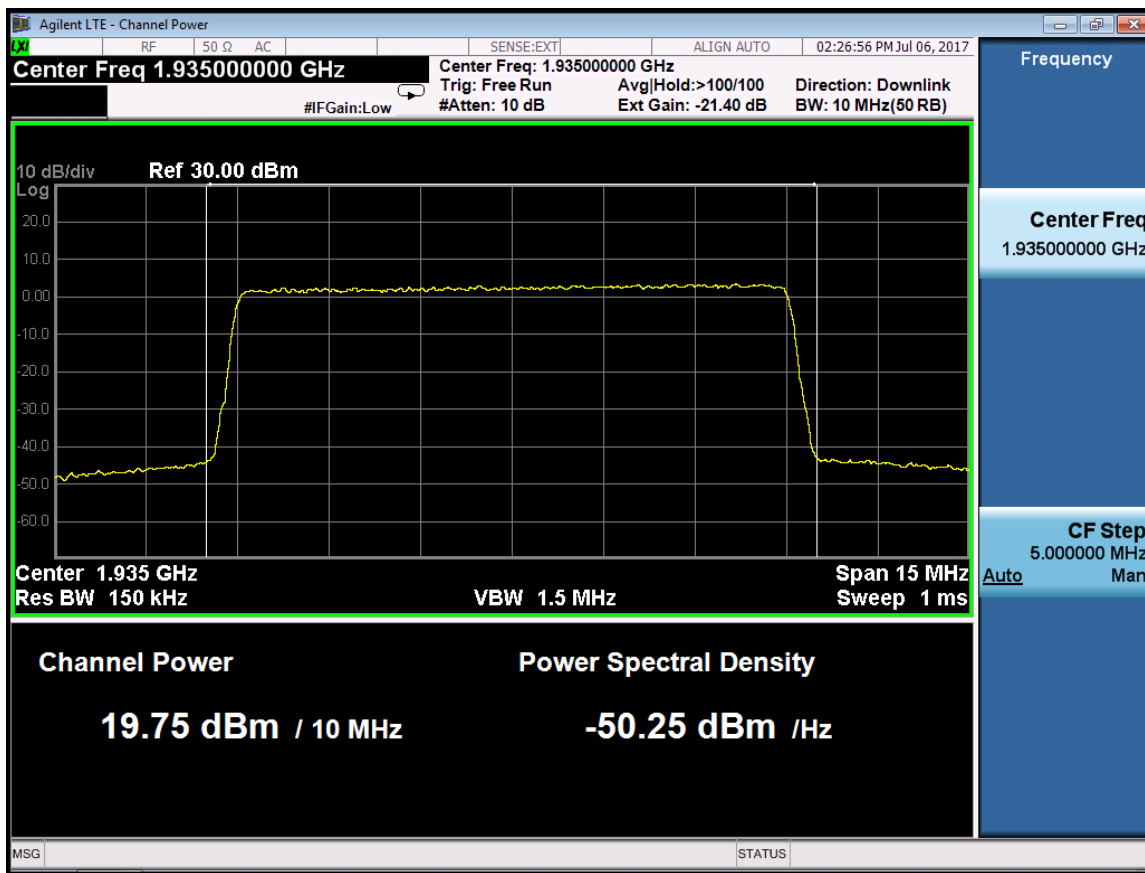
Port 1 -1982.5MHz



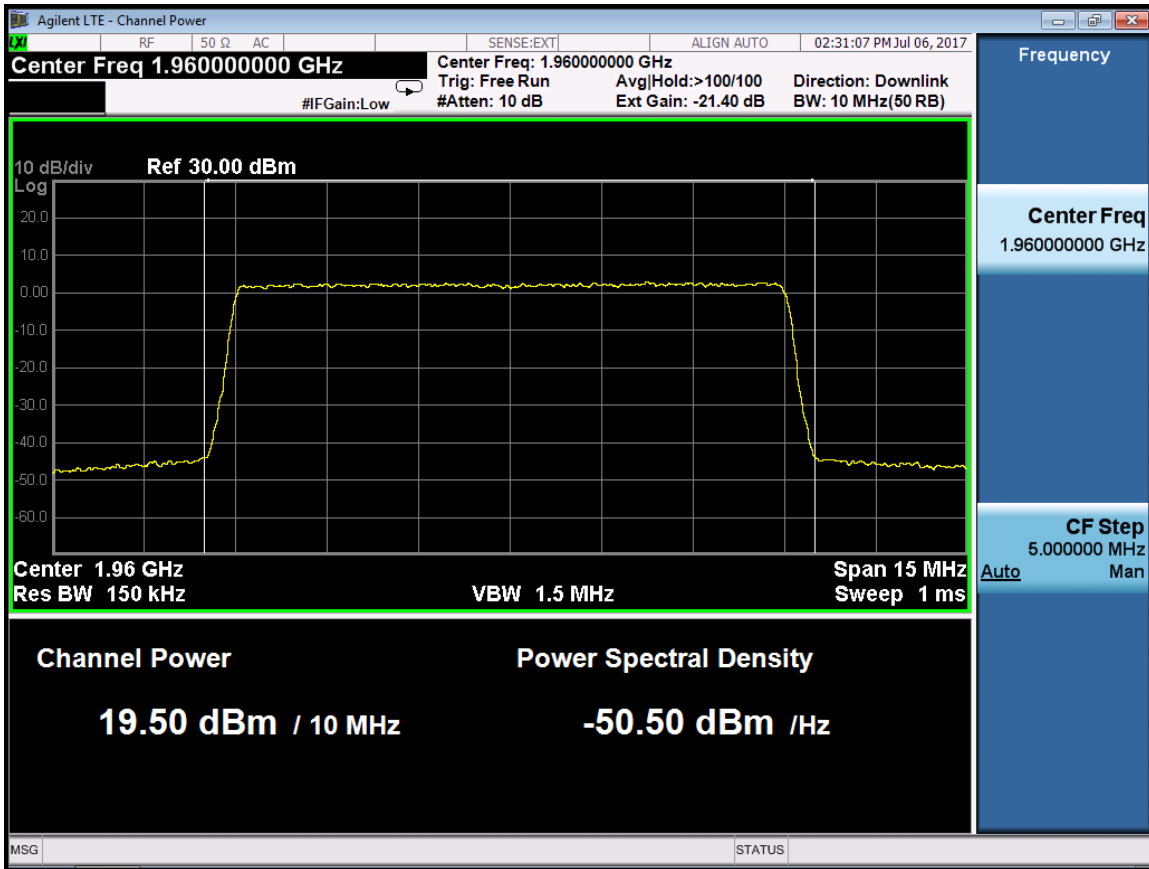
RF Bandwidth :IBW 10M(LTE 10M)

Port	Center Freq. (MHz)	Max output Power in dBm	Total Power in W Of single antenna
0	1935	19.75	35.5
	1960	19.50	35.4
	1985	18.78	35.3
1	1935	19.89	35.4
	1960	19.56	35.4
	1985	18.95	35.3

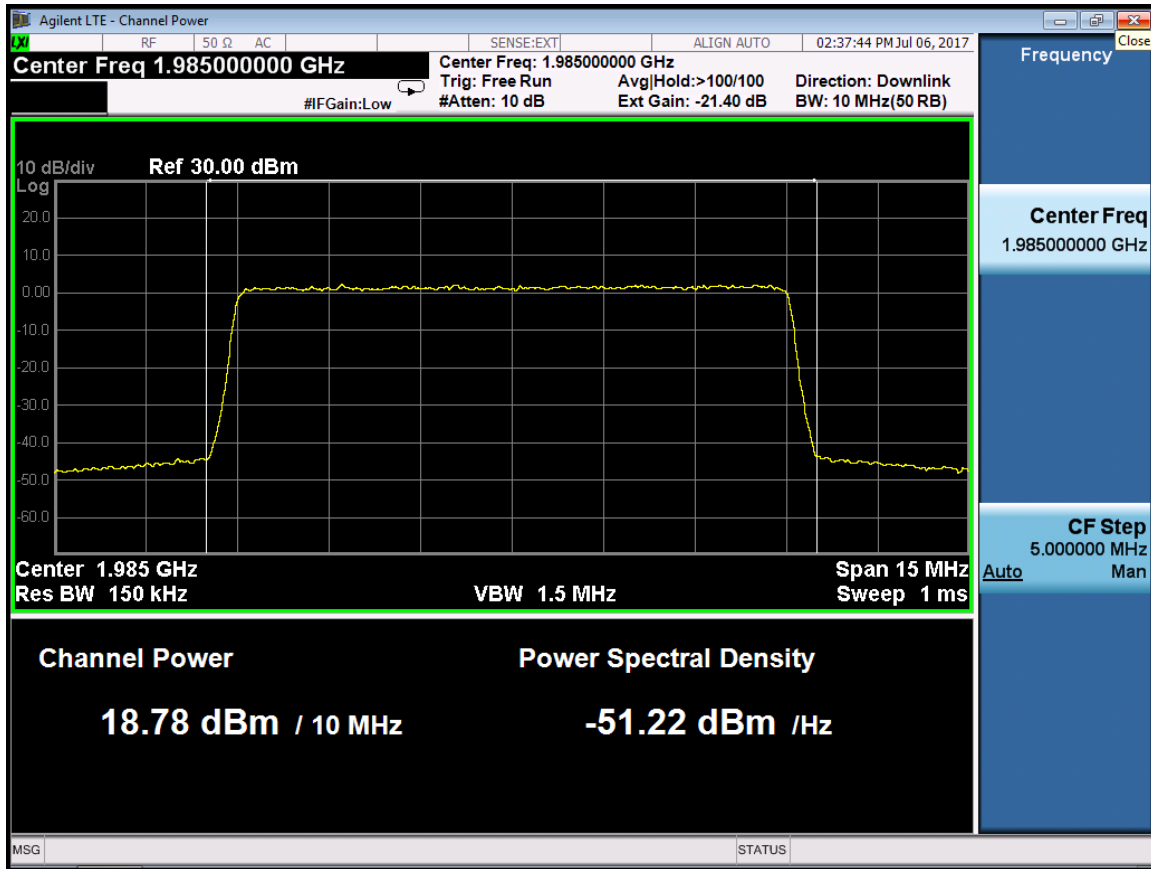
Port 0 -1935MHz



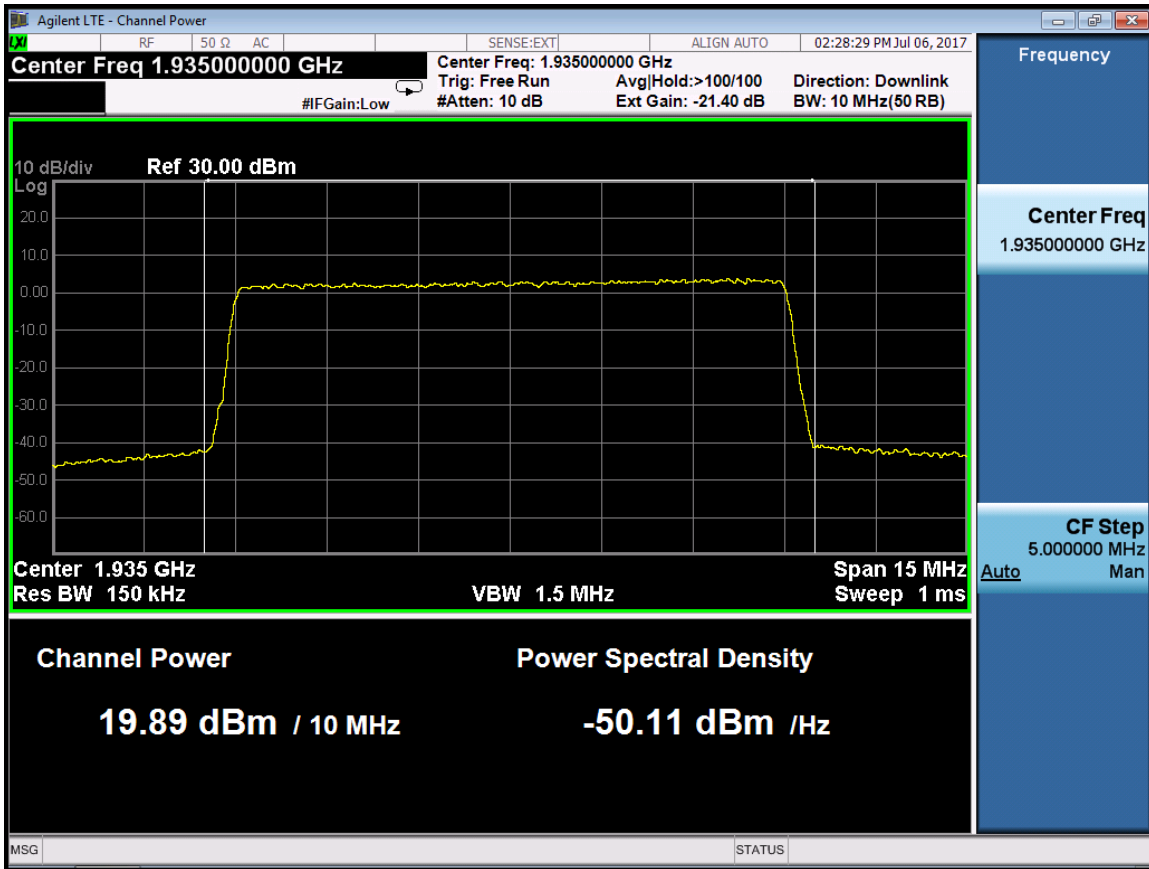
Port 0 -1960MHz



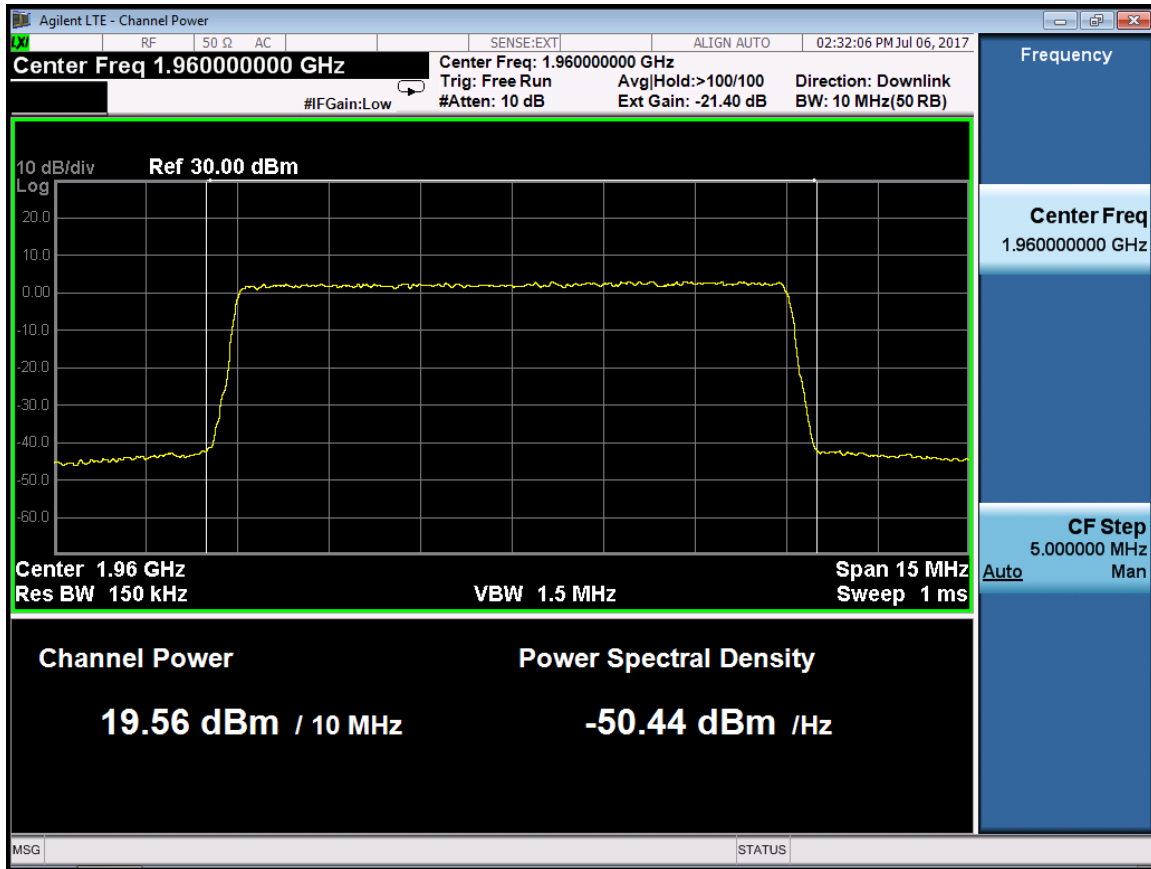
Port 0 -1985MHz



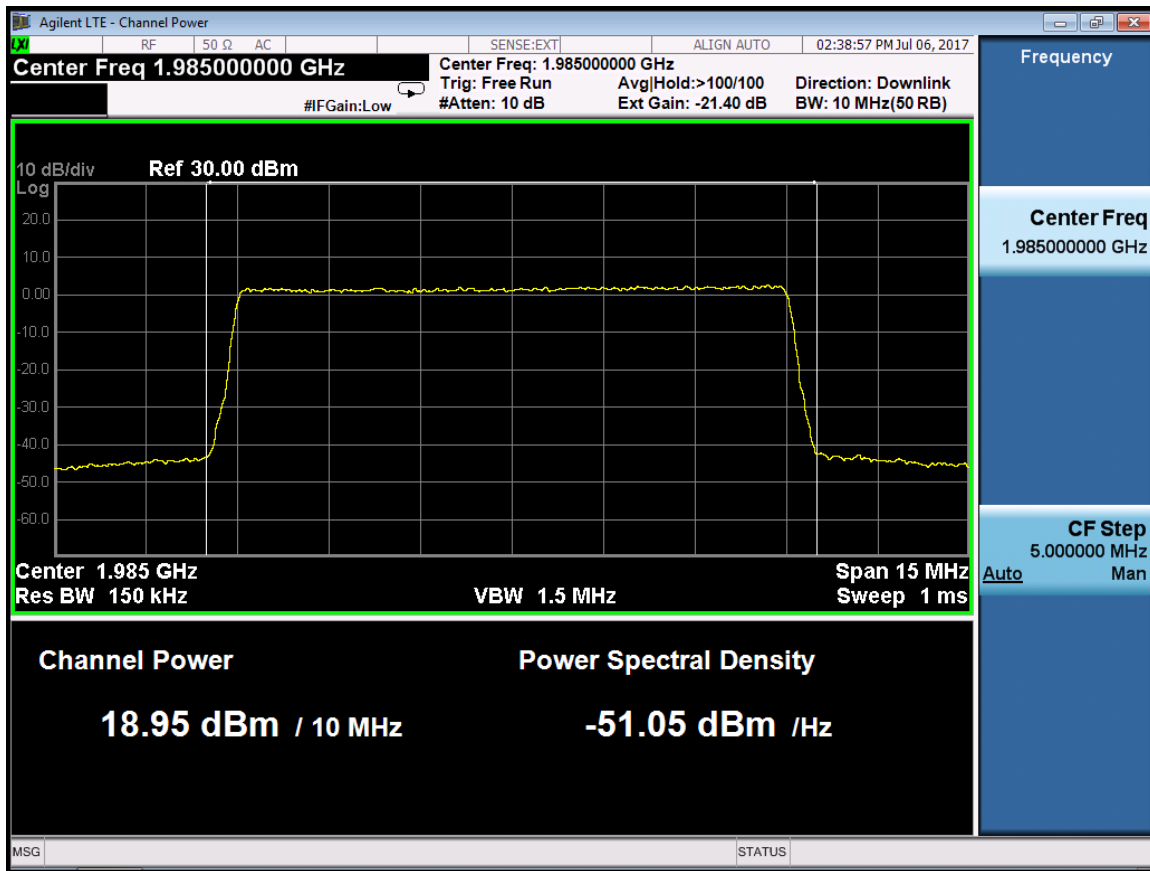
Port 1 -1935MHz



Port 1 -1960MHz



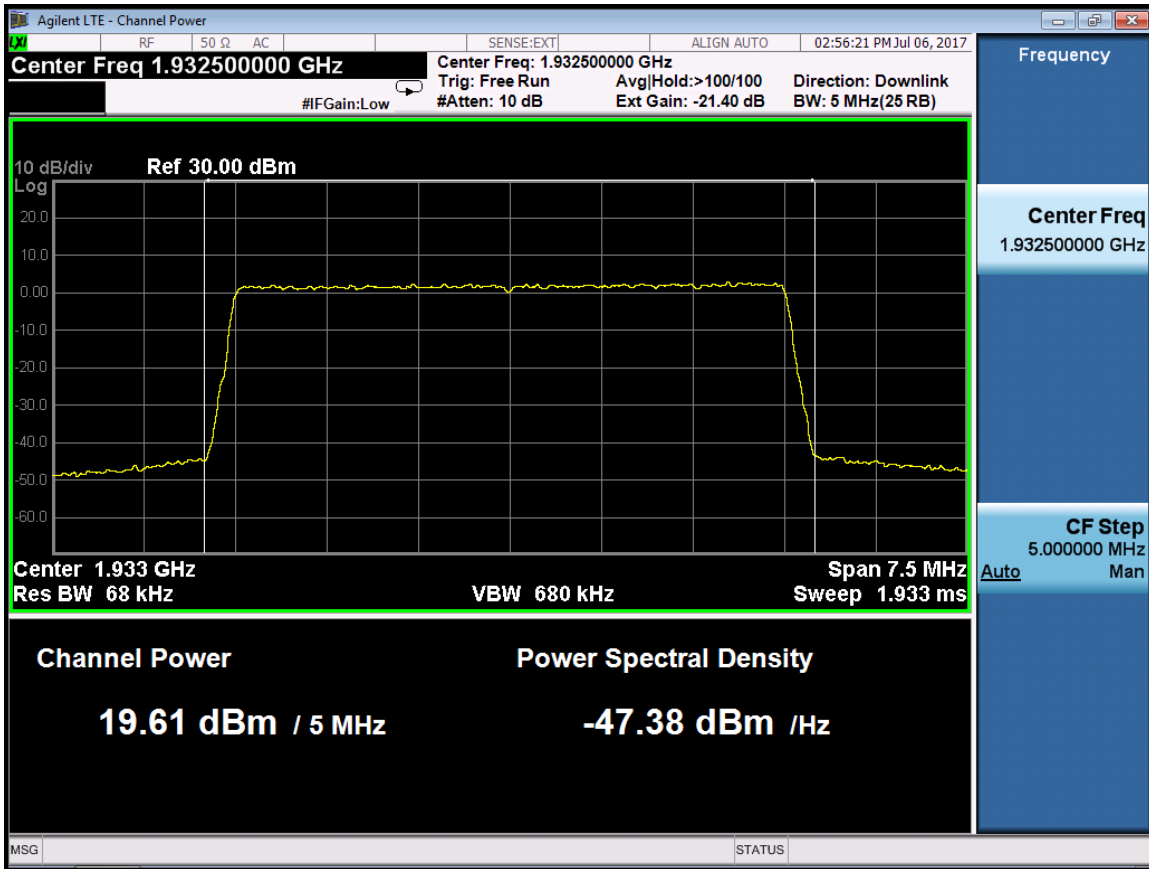
Port 1 -1985MHz



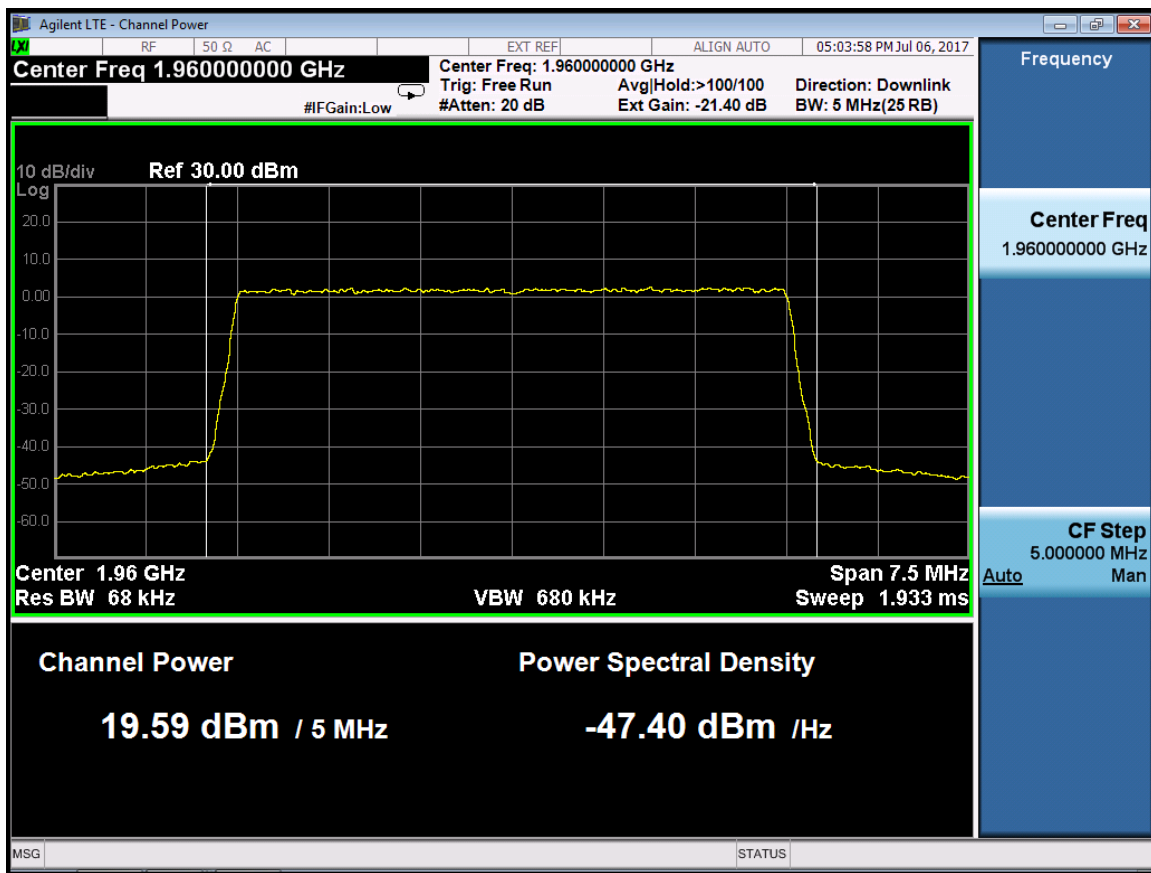
RF Bandwidth :IBW 5M(LTE 5M)

Port	Center Freq. (MHz)	Max output Power in dBm	Total Power in W Of single antenna
0	1932.5	19. 61	35. 4
	1960	19. 59	35. 3
	1987.5	18. 94	35. 2
1	1932.5	19. 74	35. 4
	1960	20. 23	35. 6
	1987.5	19. 60	35. 4

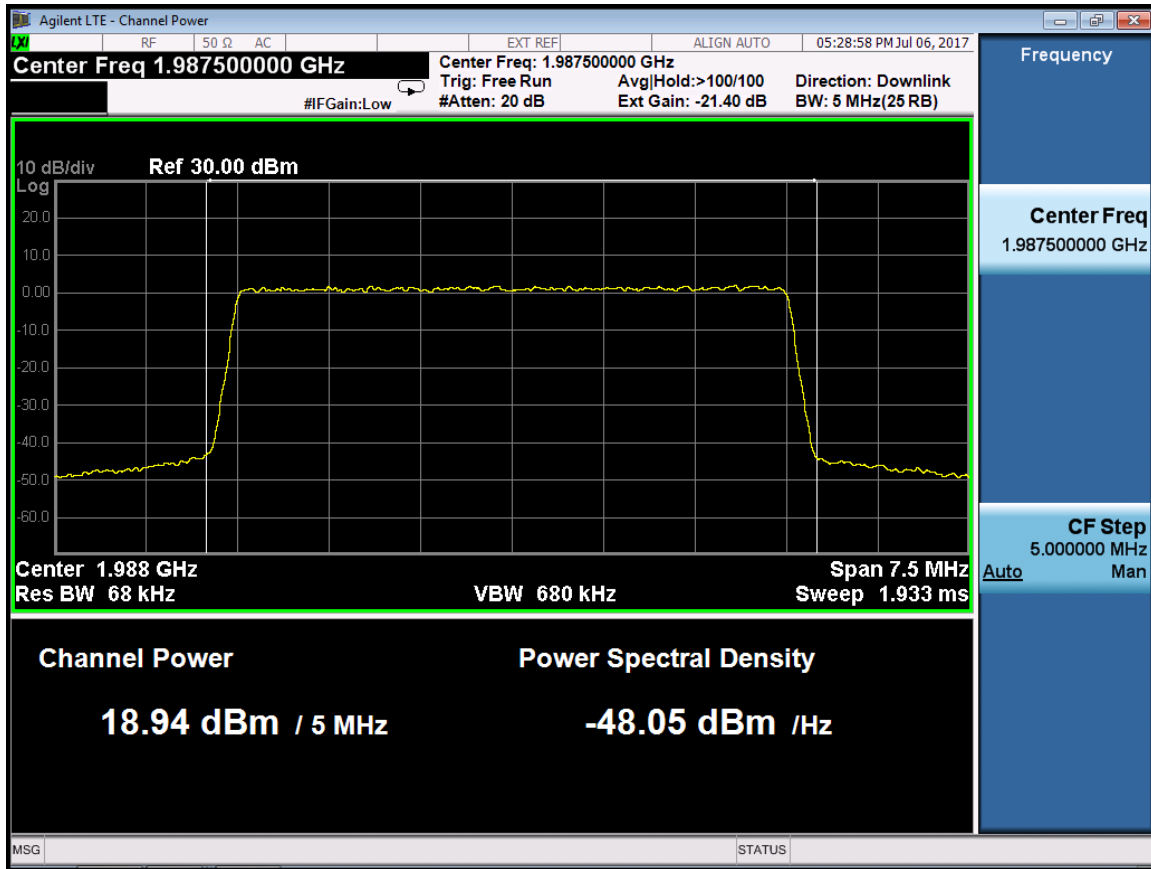
Port 0 -1932.5MHz



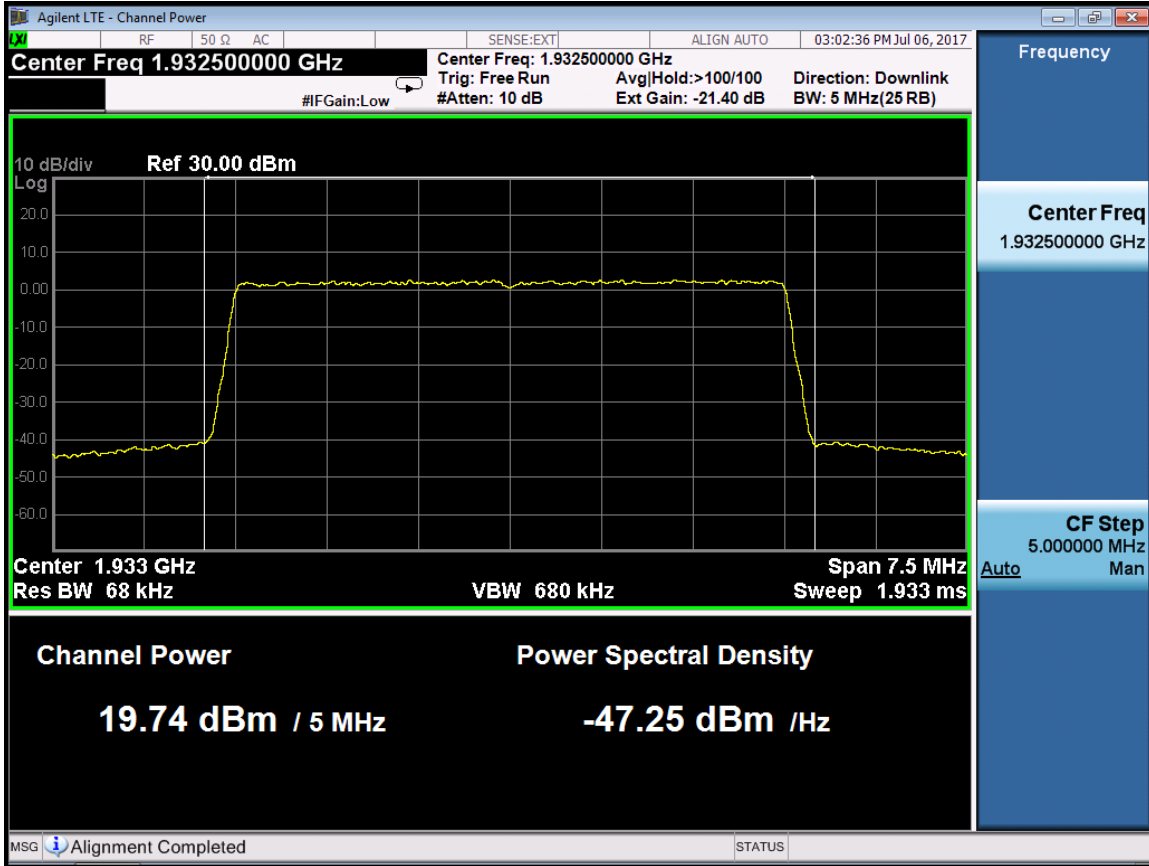
Port 0 -1960MHz



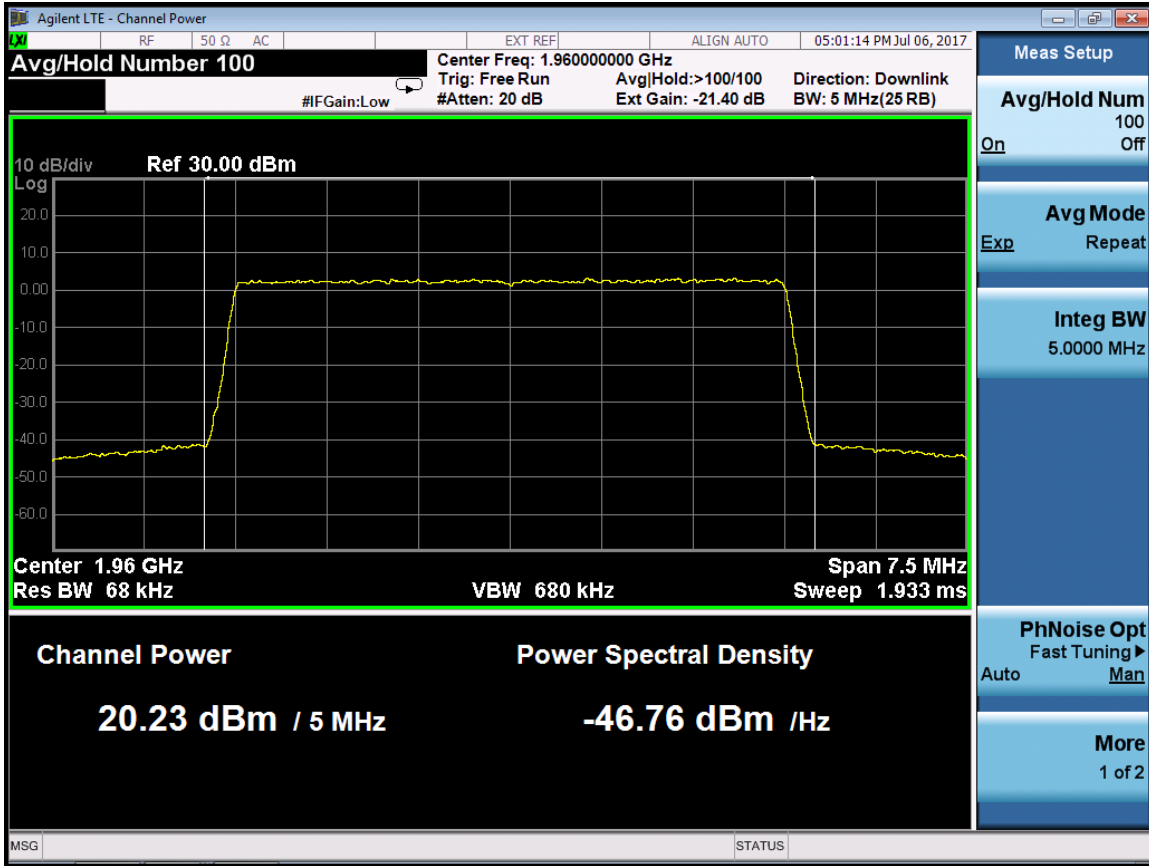
Port 0 -1987.5MHz



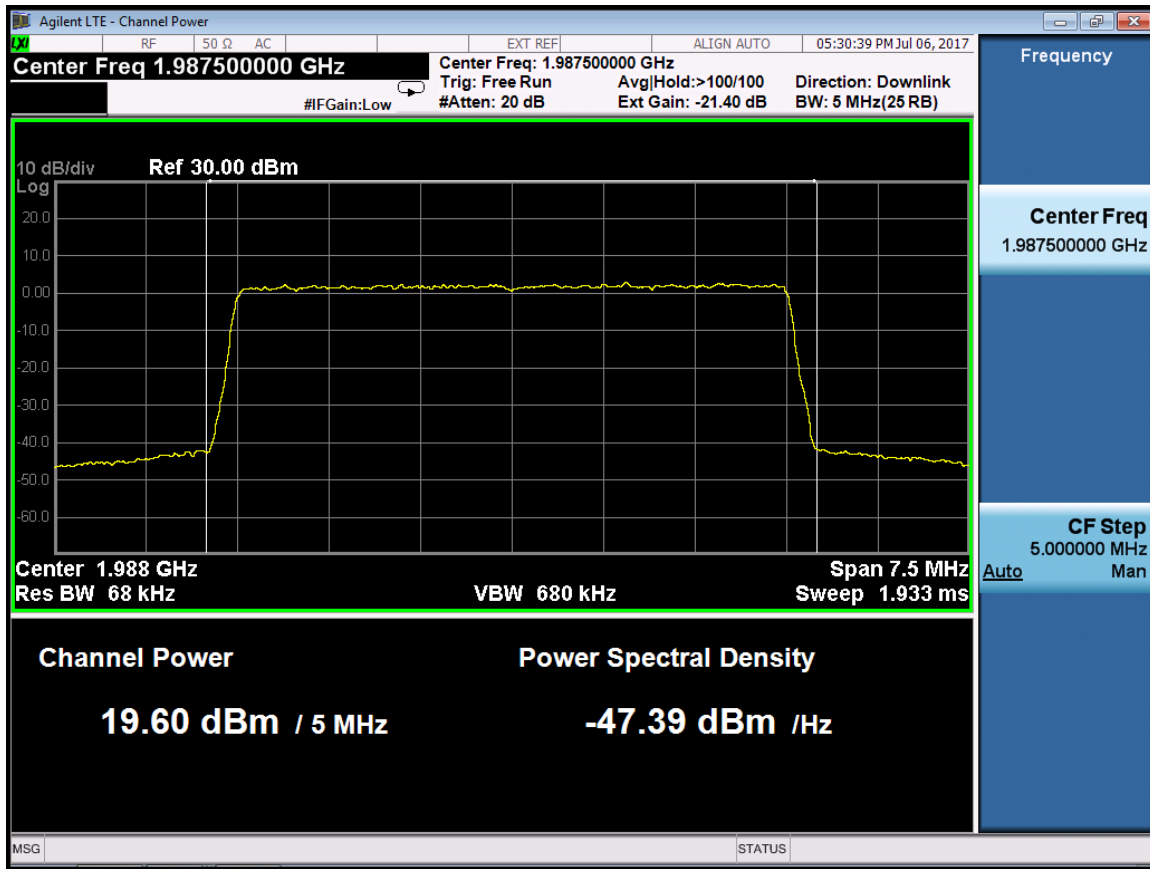
Port 1 -1932.5MHz



Port 1 -1960MHz



Port 1 -1987.5MHz



6 RF EXPOSURE

Applicable standard: FCC §2.1091 §1.1037

Limit

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

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

Test Data

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = EIRP / 4\pi R^2$$

Where: S = power density

$R = \text{distance to the center of radiation of the antenna} = [\text{EIRP} / 4\pi S]^{1/2}$

According to §24.232, the equivalent isotropically radiated power (EIRP) of base transmitters and cellular repeaters must not exceed 1640 Watts.

Frequency 1990MHz is between 1500MHz and 100,000MHz, and the Maximum $S=1\text{mW/cm}^2$

⇒ $R=3.61\text{m}$.

This equipment should be installed and operated with minimum distance 3.61m between the radiator& your body.

Test Result: pass

7 MODULATION CHARACTERISTIC

Applicable Standard: FCC §2.1047

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2016.09.12	2017.09.12
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2016.09.12	2017.09.12
Silverline	Silverline RF Cable	SLA18-NMN1T	100311-04-0001	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

LTE digital mode is used by EUT.

Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

Test Result: Pass

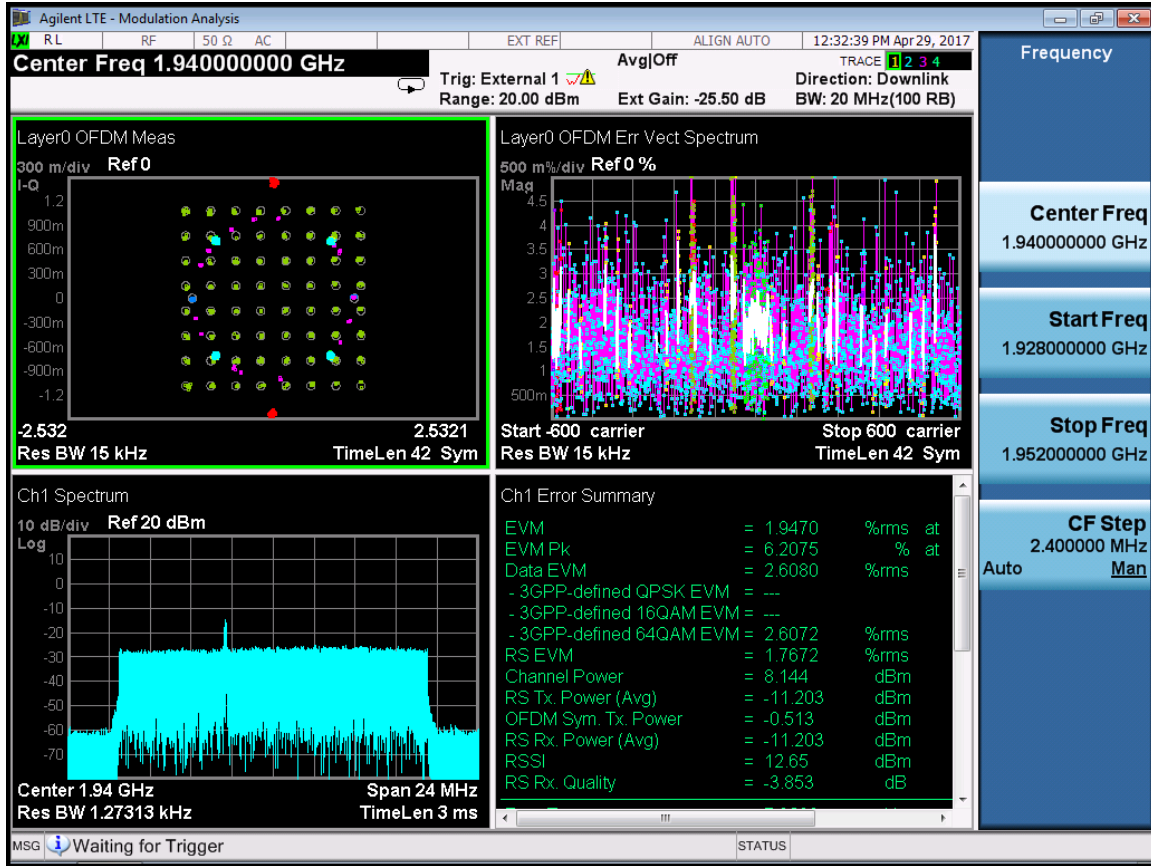
Test Mode: Transmitting LTE

Test Data:

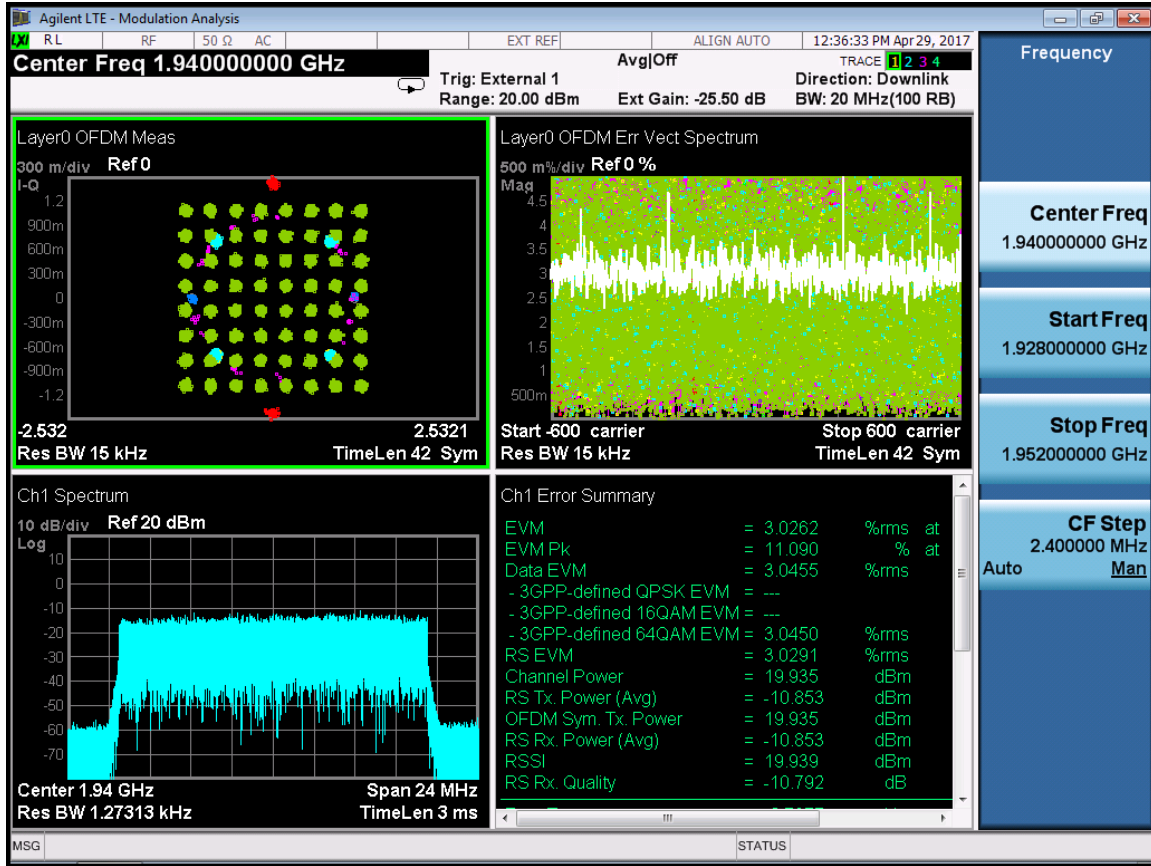
RF Bandwidth :IBW 20M(LTE 20M)

Port	RF Center Freq. (MHz)	Test mode	EVM%
0	1940	E-TM2	2.63
		E-TM3.1	3.02
		E-TM 3.2	4.42
		E-TM 3.3	5.92
	1960	E-TM2	2.68
		E-TM3.1	3.04
		E-TM 3.2	4.4
		E-TM 3.3	5.9
	1980	E-TM2	2.40
		E-TM3.1	3.04
		E-TM 3.2	4.43
		E-TM 3.3	5.93
1	1940	E-TM2	2.82
		E-TM3.1	3.11
		E-TM 3.2	4.53
		E-TM 3.3	6.1
	1960	E-TM2	2.83
		E-TM3.1	3.07
		E-TM 3.2	4.46
		E-TM 3.3	6.0
	1980	E-TM2	3.15
		E-TM3.1	3.17
		E-TM 3.2	4.47
		E-TM 3.3	6.02

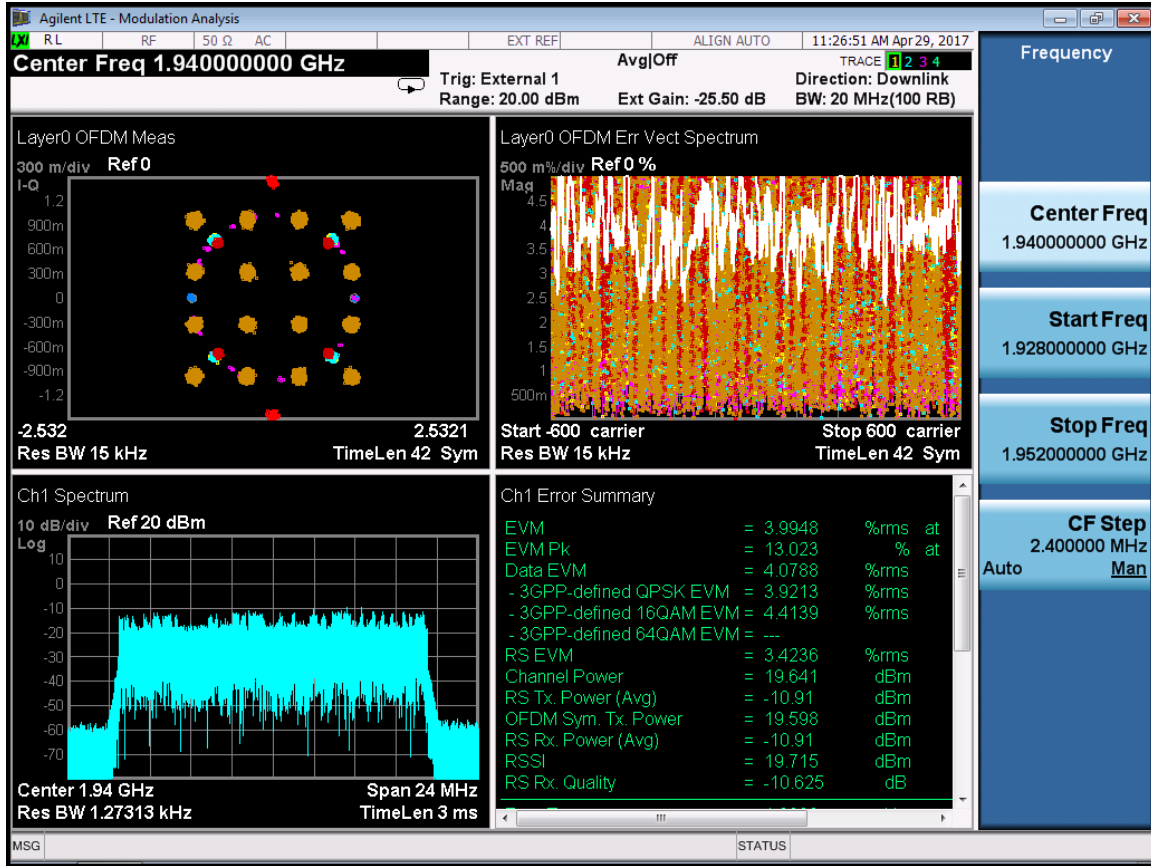
RF 1940M:
LTE 20M-Port 0-1940MHz-E-TM2



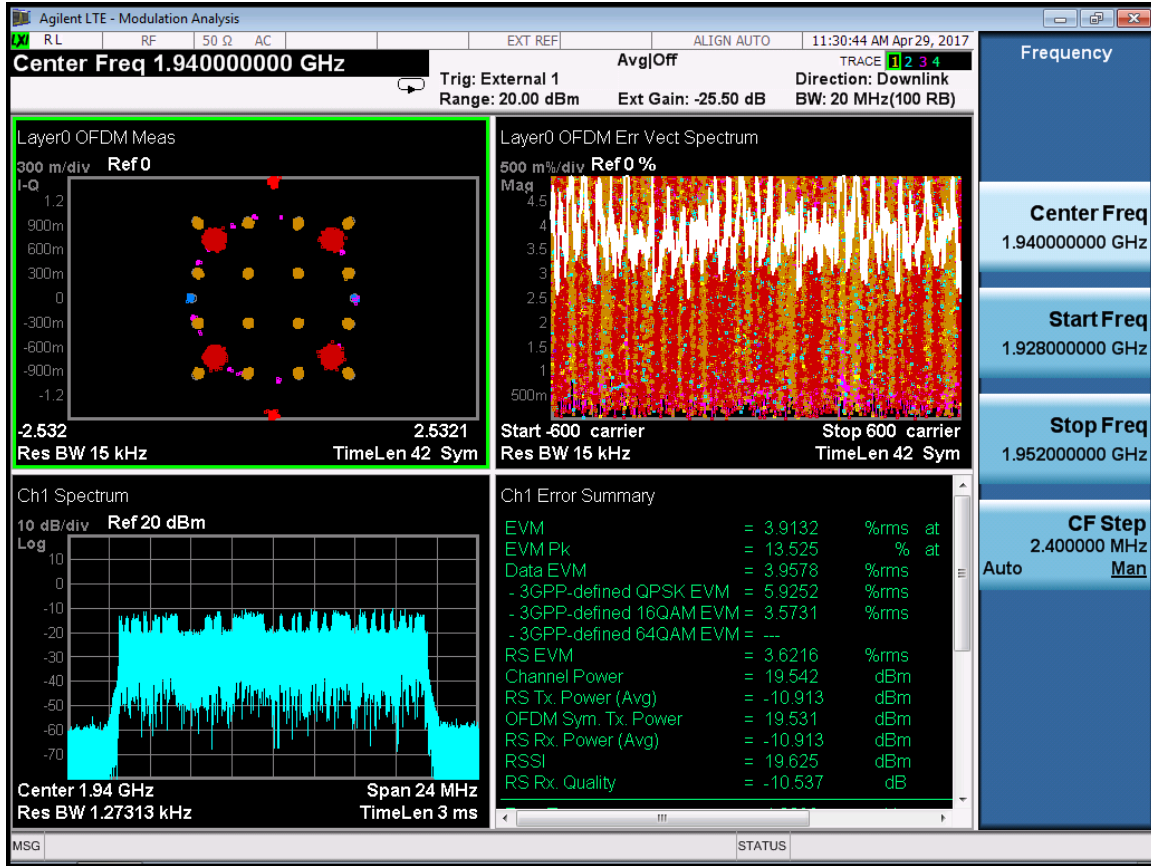
LTE 20M-Port 0-1940MHz-E-TM3.1



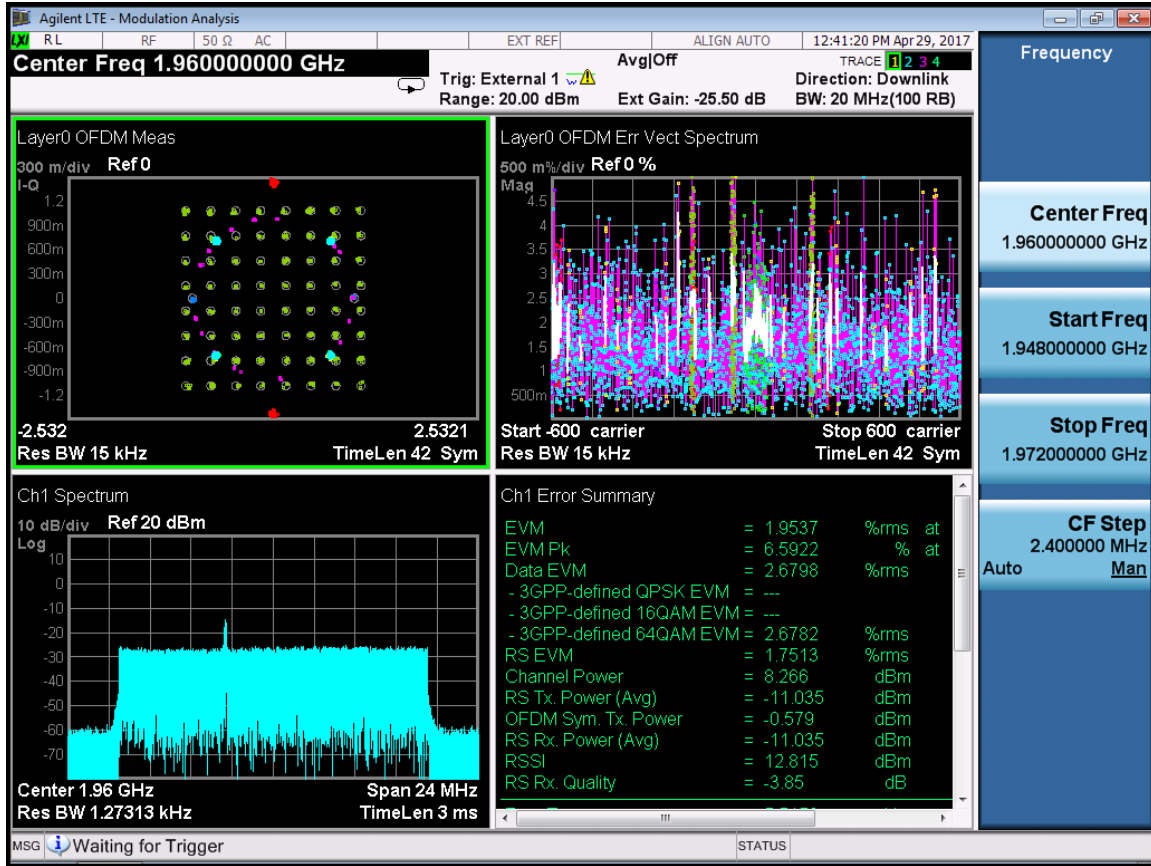
LTE 20M-Port 0-1940MHz-E-TM3.2



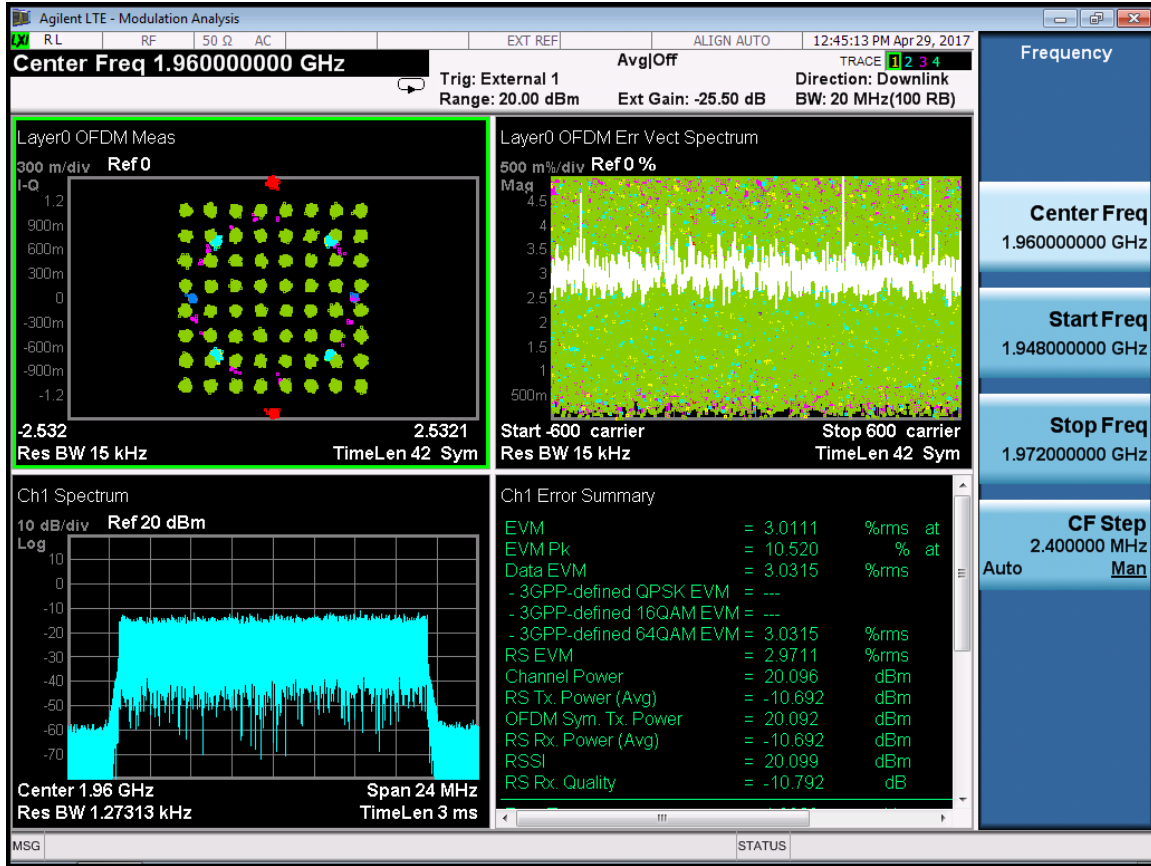
LTE 20M-Port 0-1940MHz-E-TM3.3



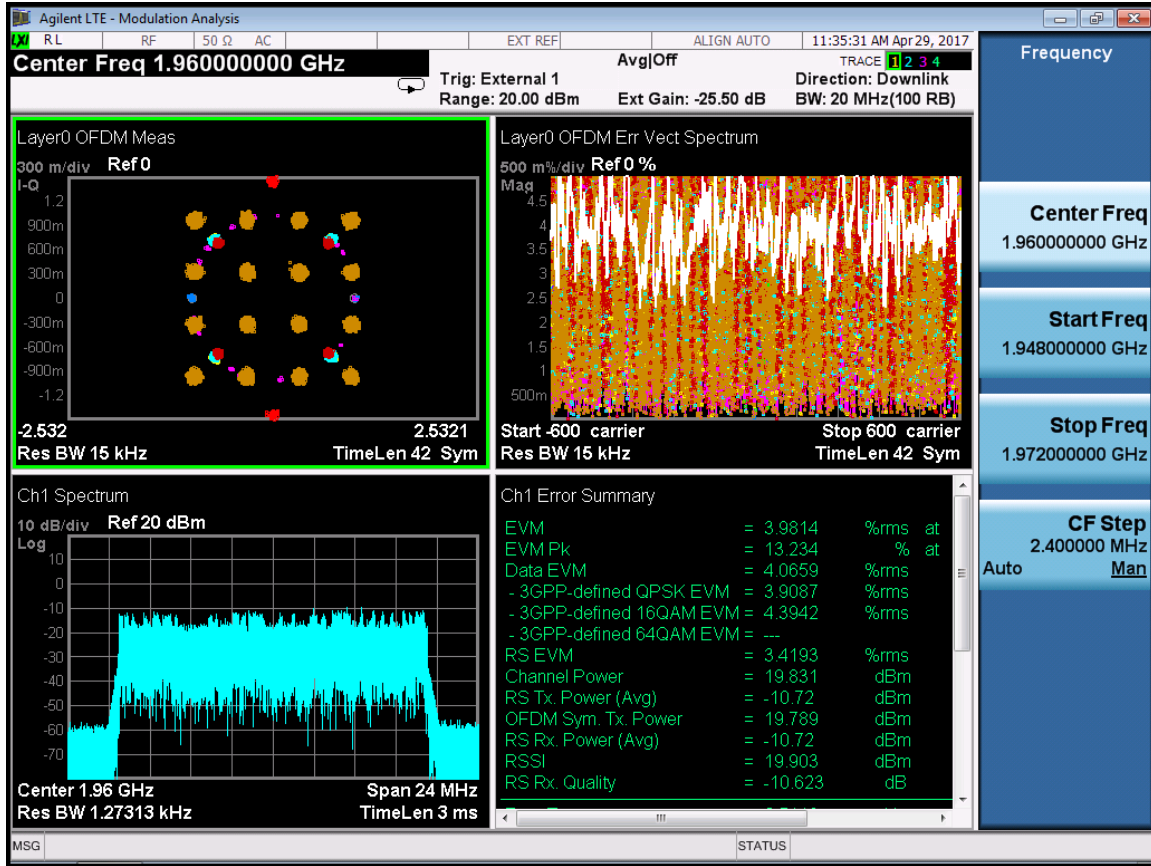
RF 1960M:
LTE 20M-Port 0-1960MHz-E-TM2



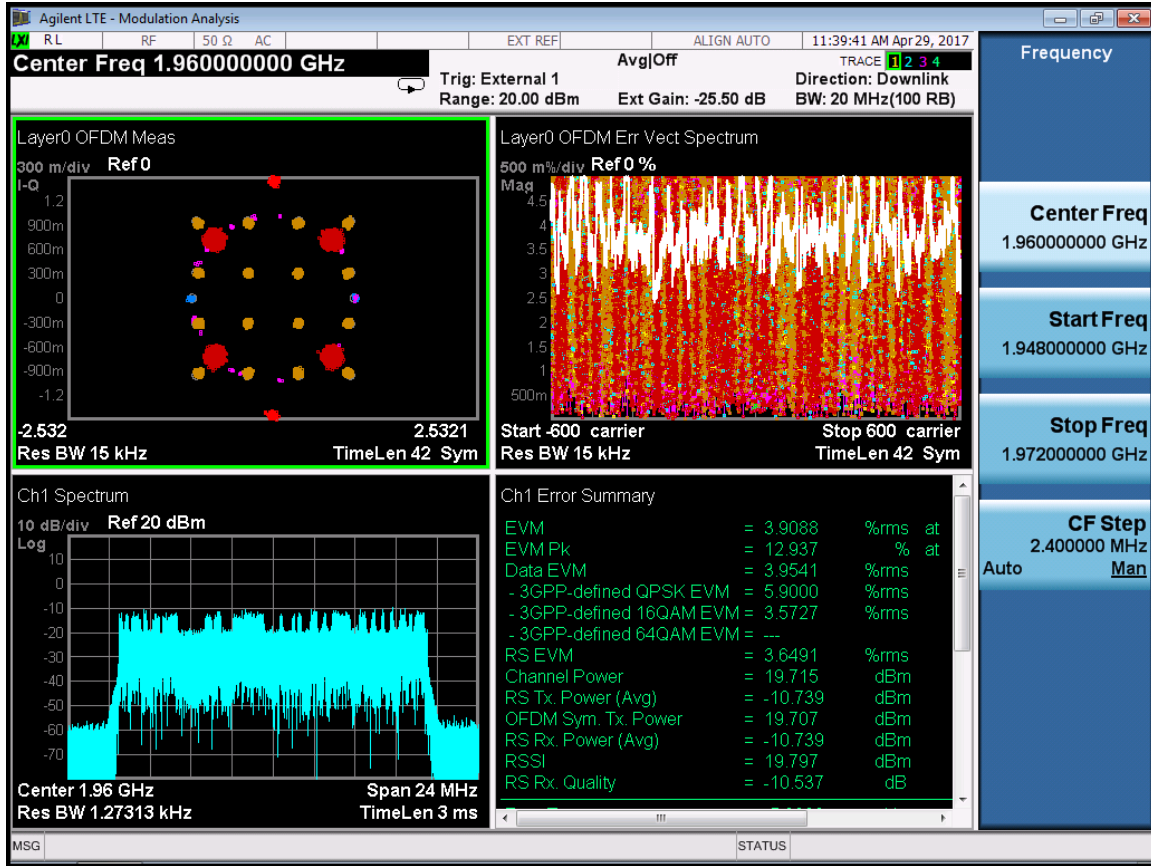
LTE 20M-Port 0-1960MHz-E-TM3.1



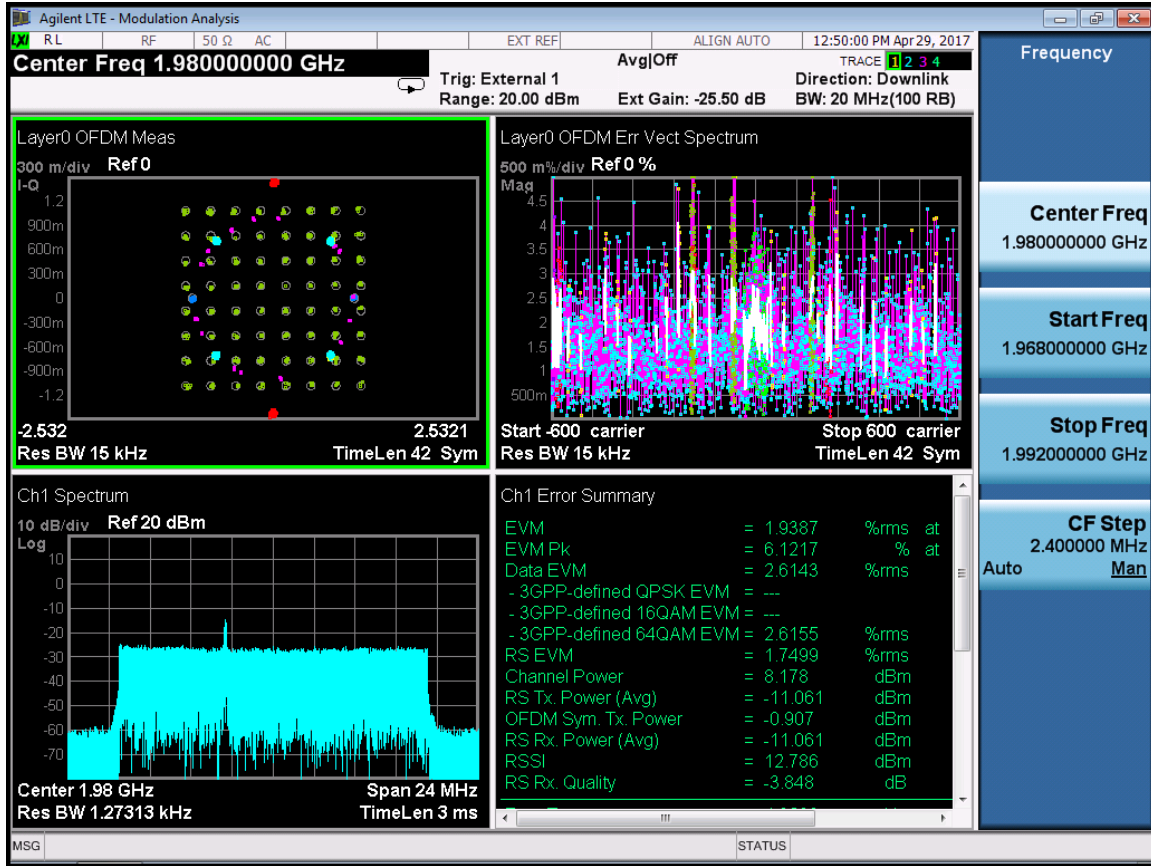
LTE 20M-Port 0-1960MHz-E-TM3.2



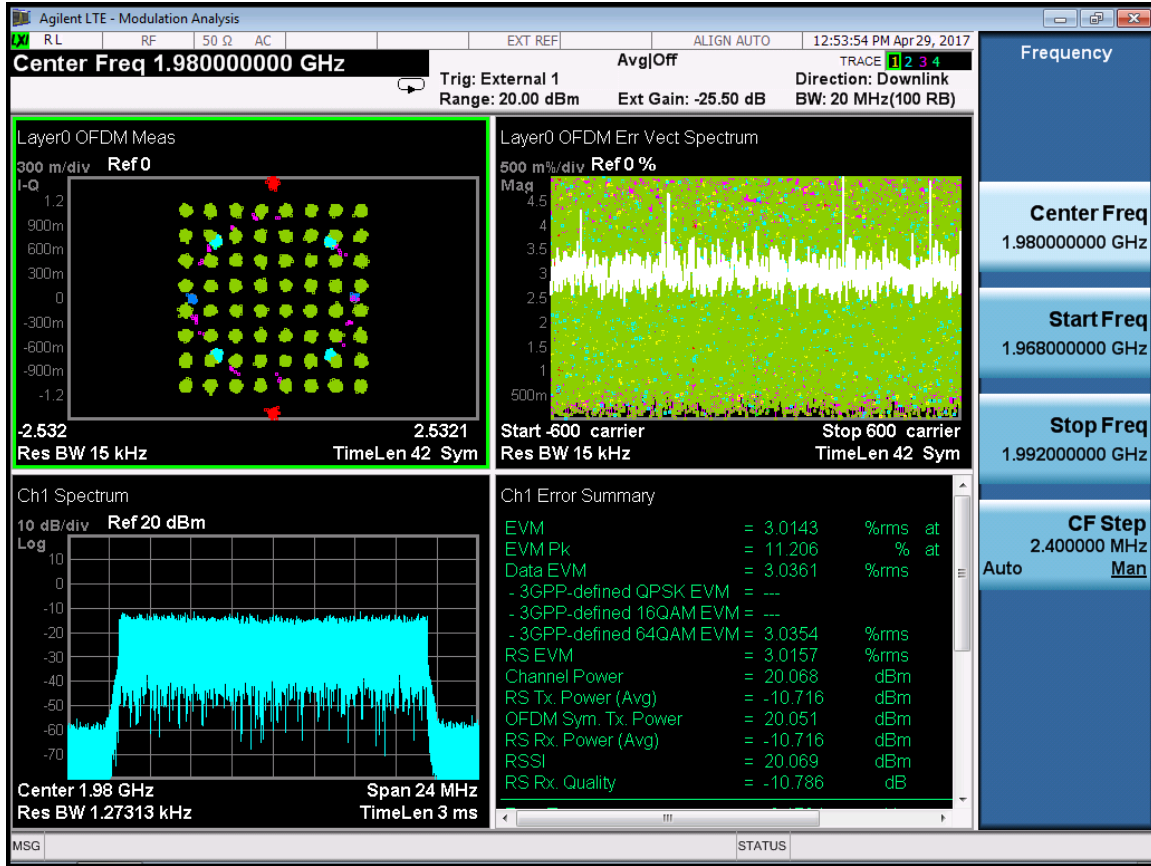
LTE 20M-Port 0-1960MHz-E-TM3.3



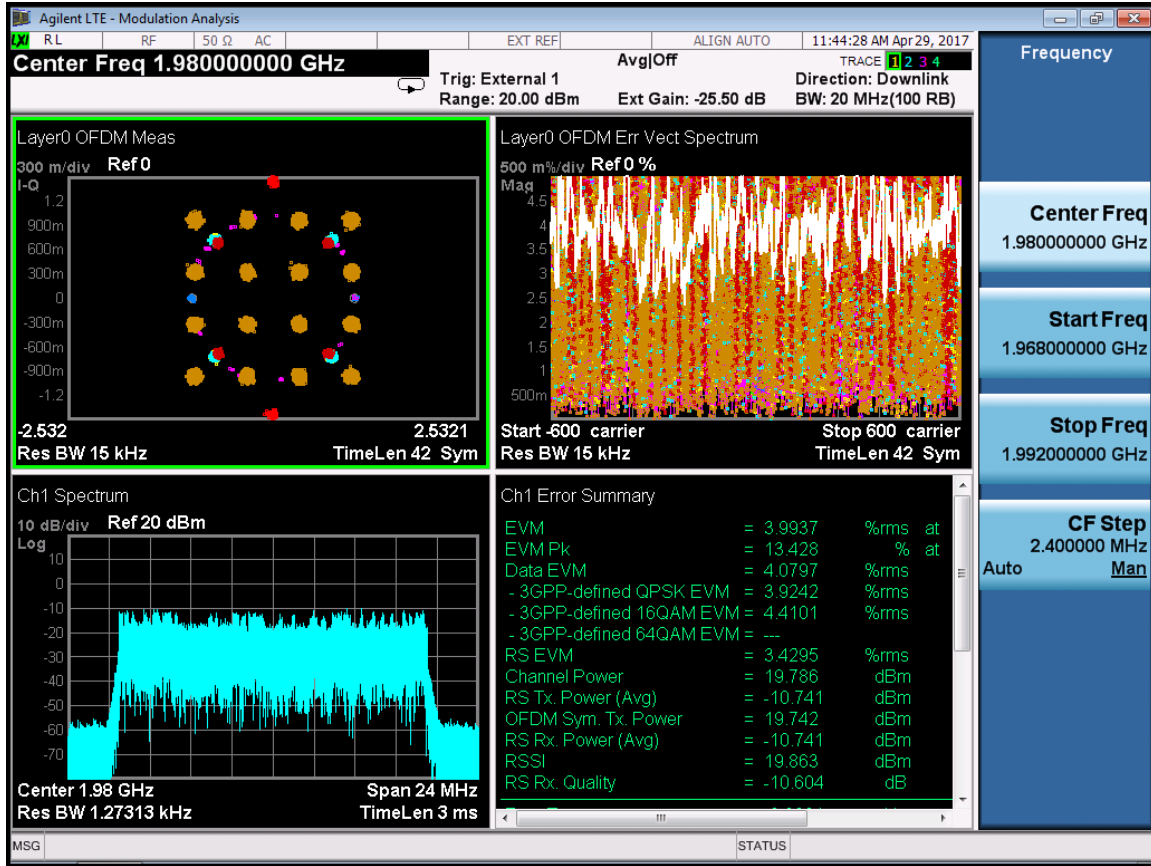
RF 1980M:
LTE 20M-Port 0-1980MHz-E-TM2



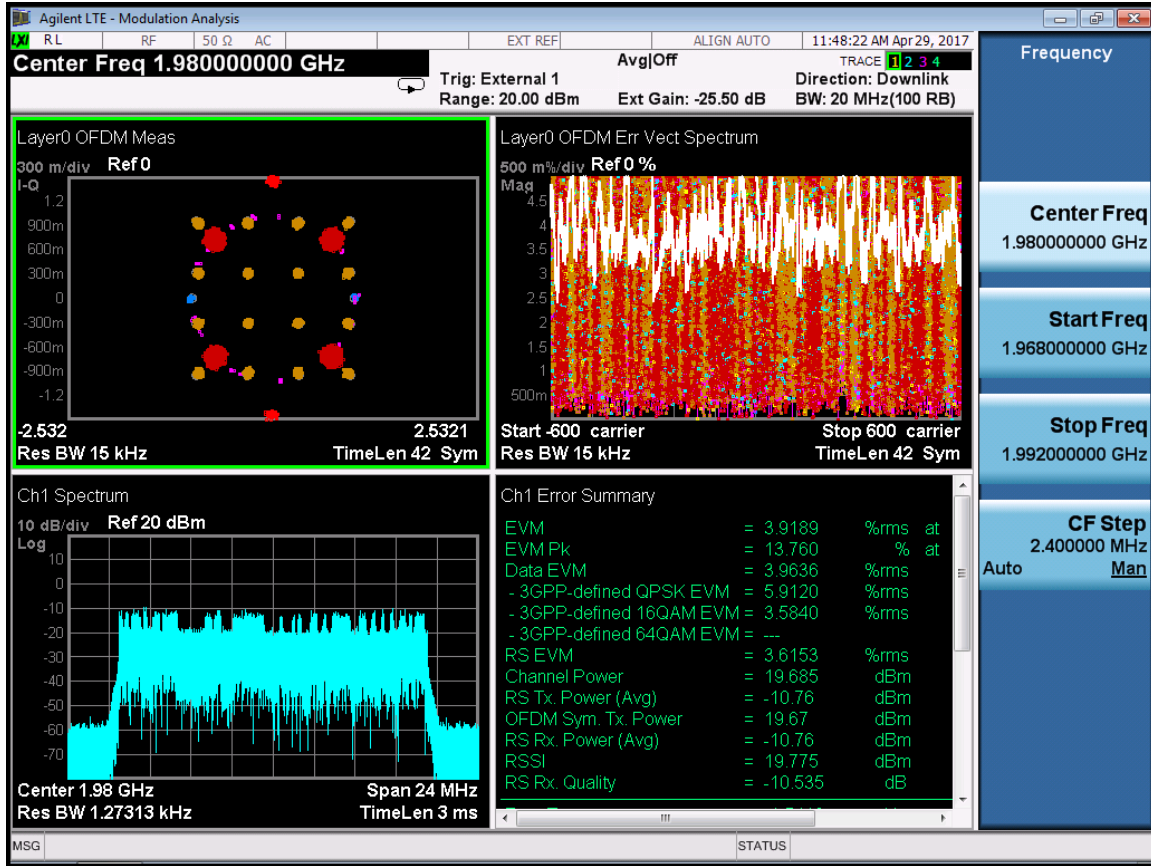
LTE 20M-Port 0-1980MHz-E-TM3.1



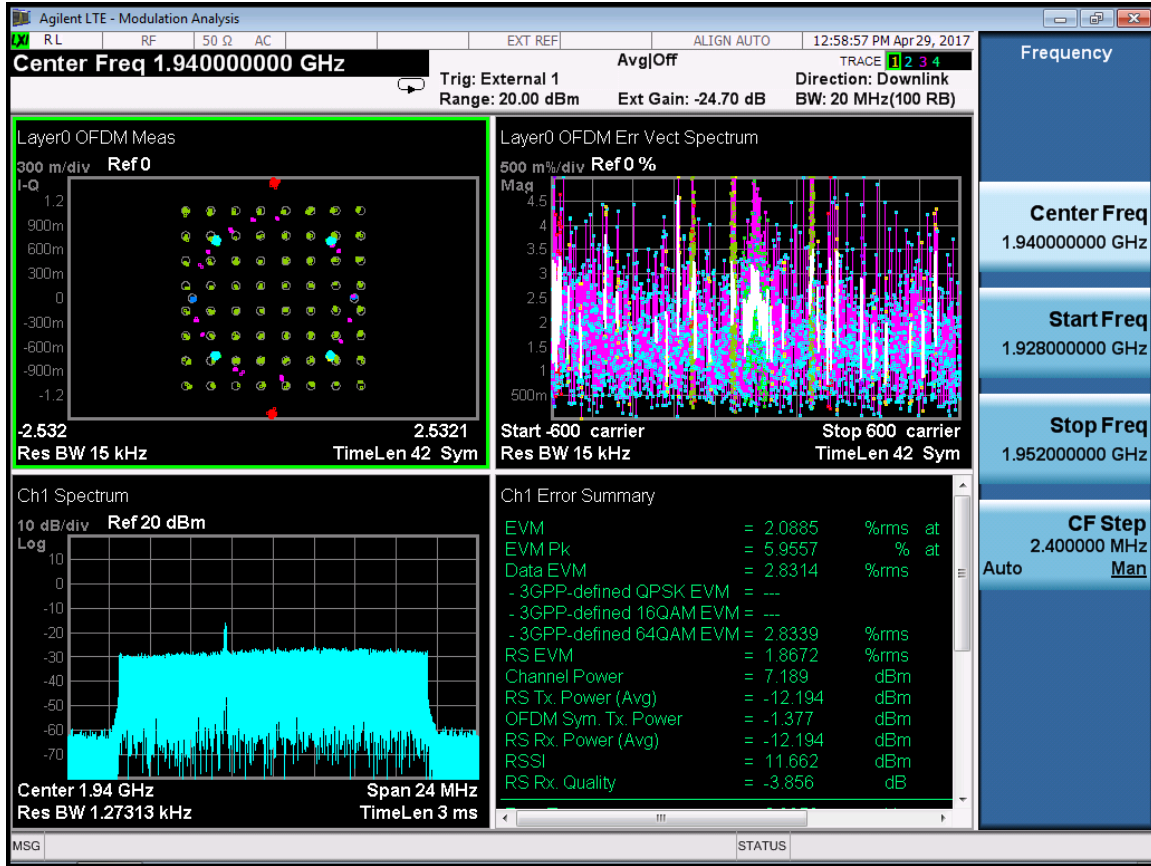
LTE 20M-Port 0-1980MHz-E-TM3.2



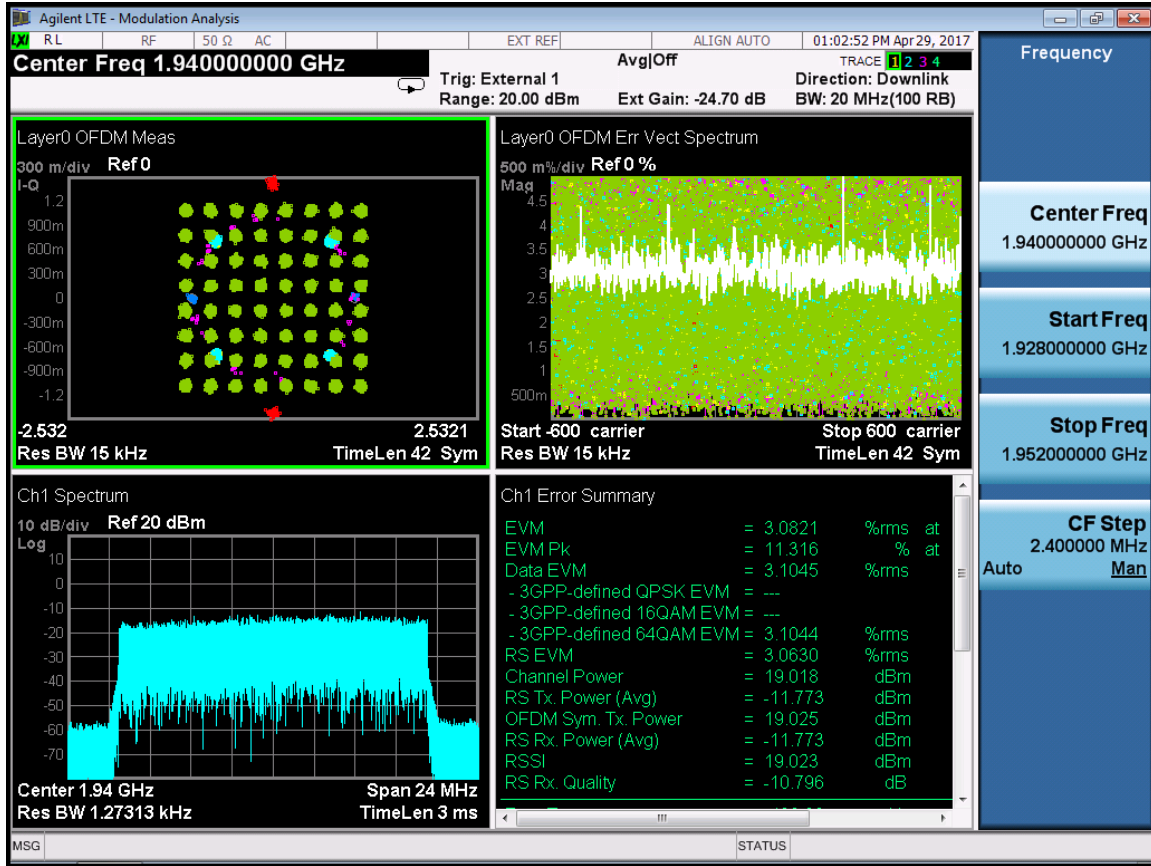
LTE 20M-Port 0-1980MHz-E-TM3.3



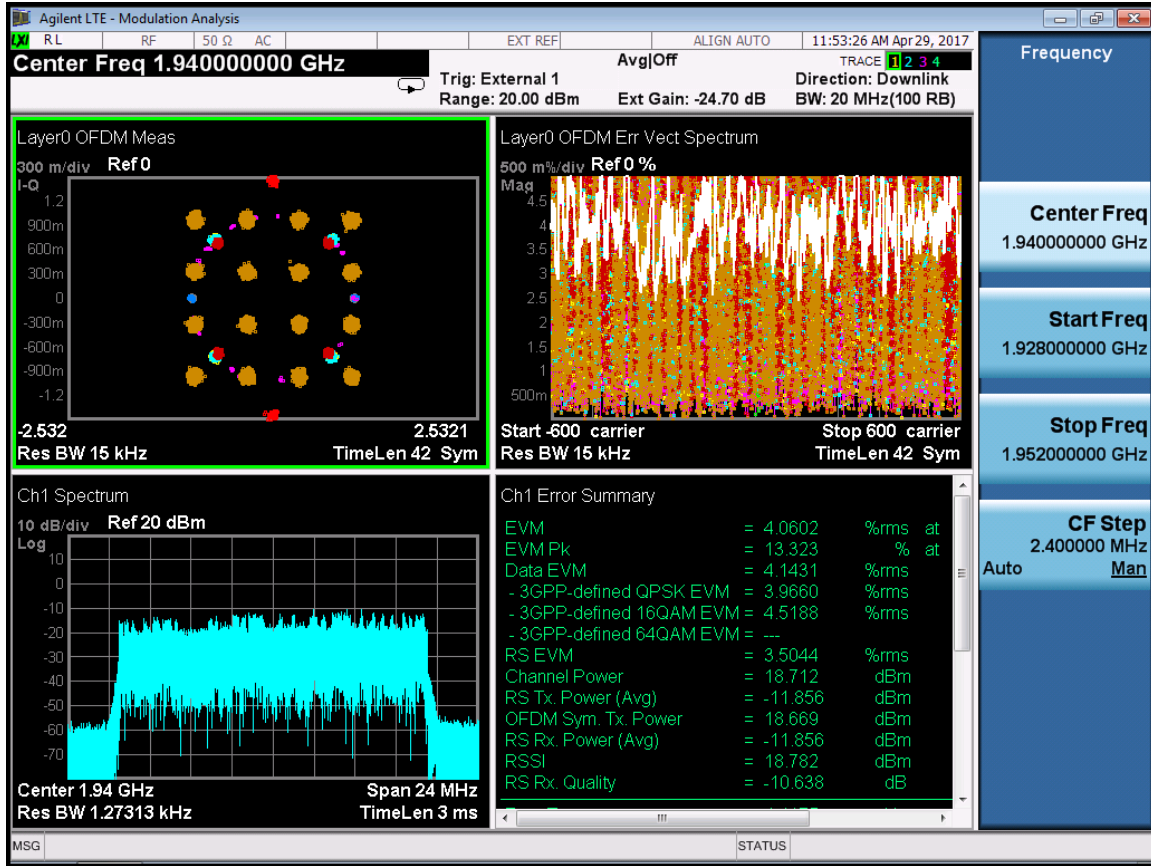
RF 1940M:
LTE 20M-Port 1-1940MHz-E-TM2



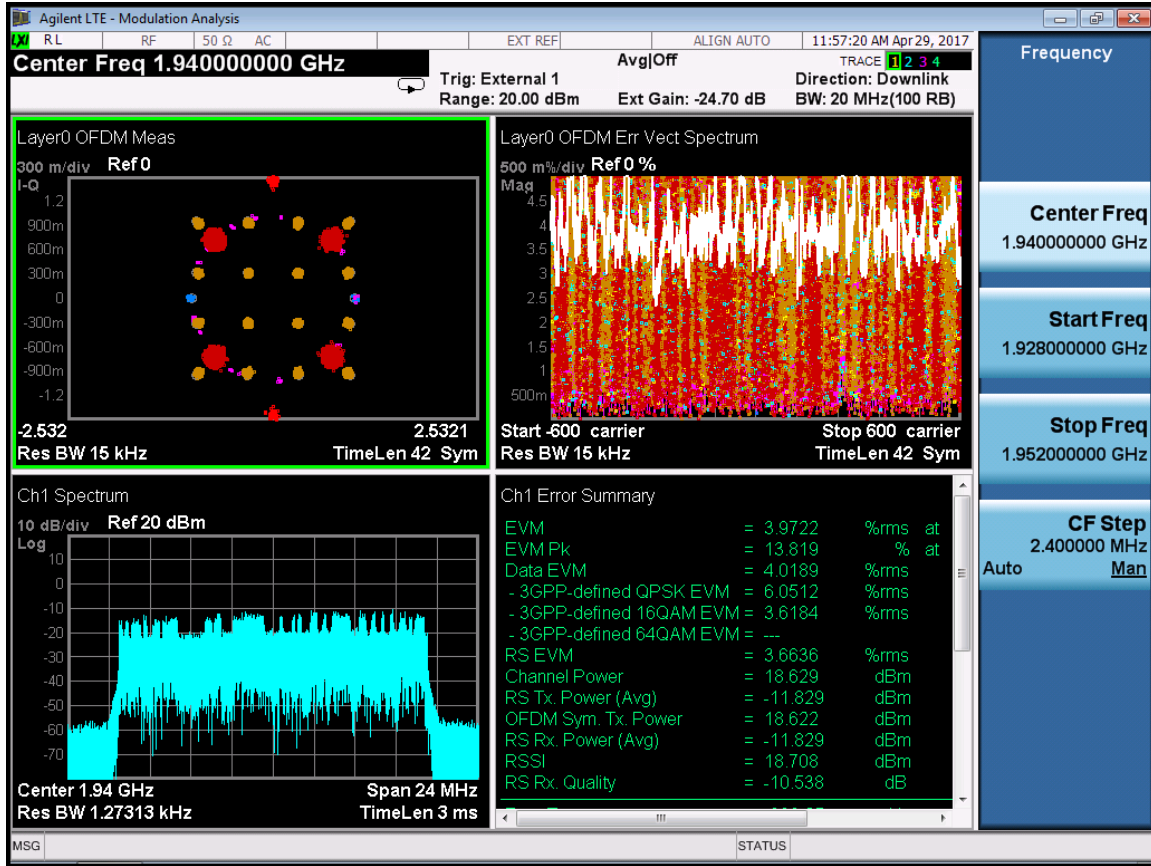
LTE 20M-Port 1-1940MHz-E-TM3.1



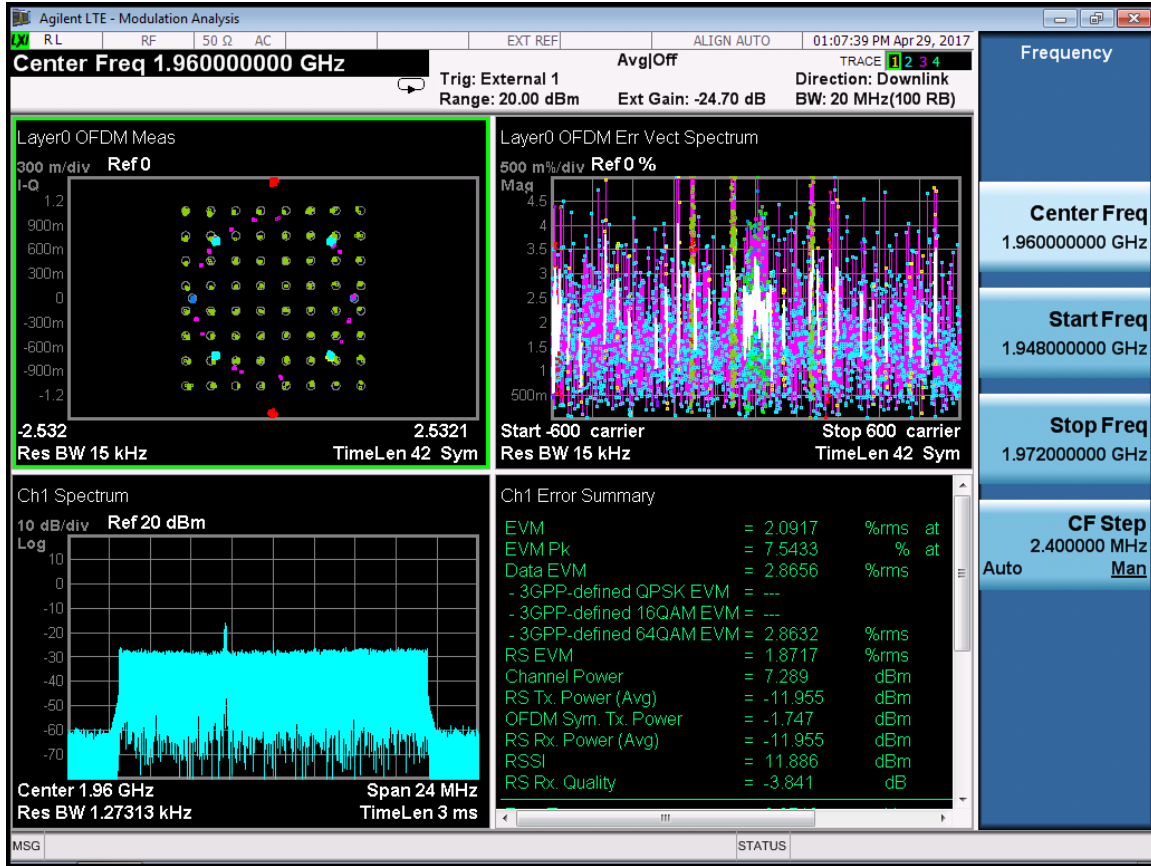
LTE 20M-Port 1-1940MHz-E-TM3.2



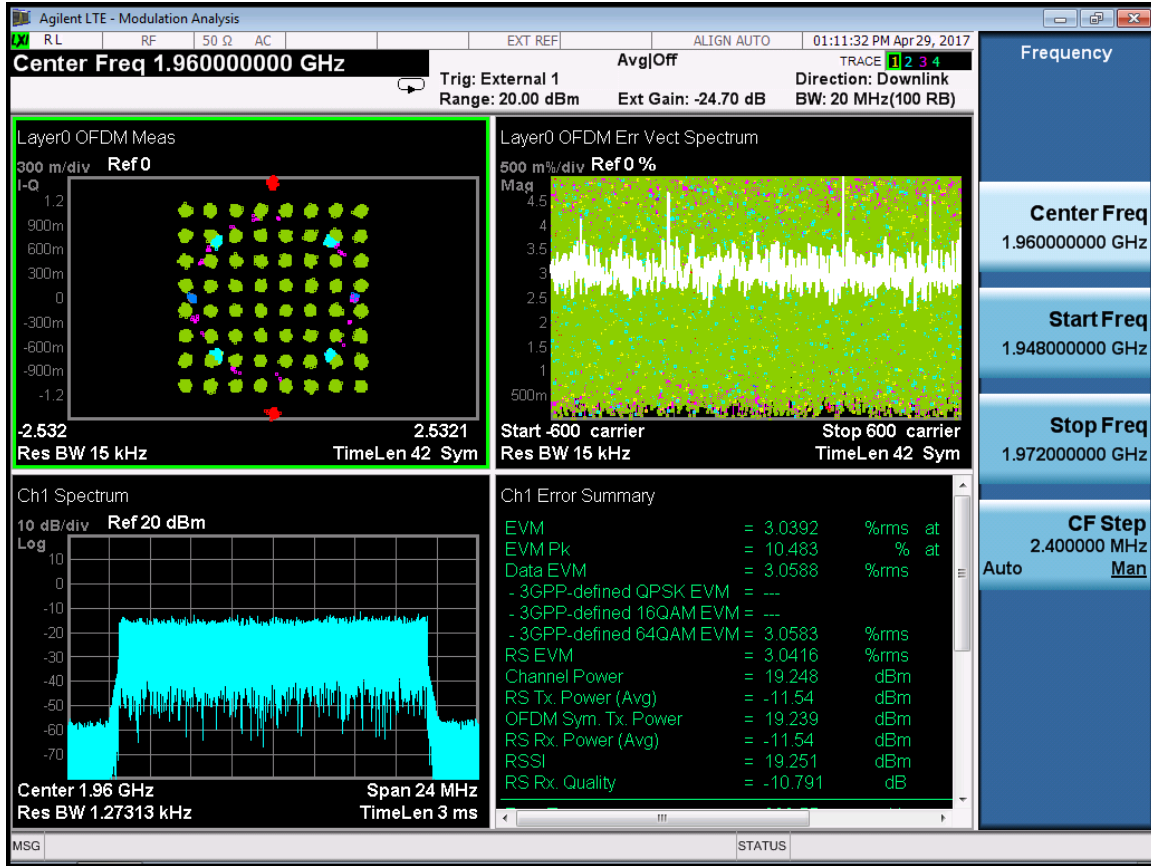
LTE 20M-Port 1-1940MHz-E-TM3.3



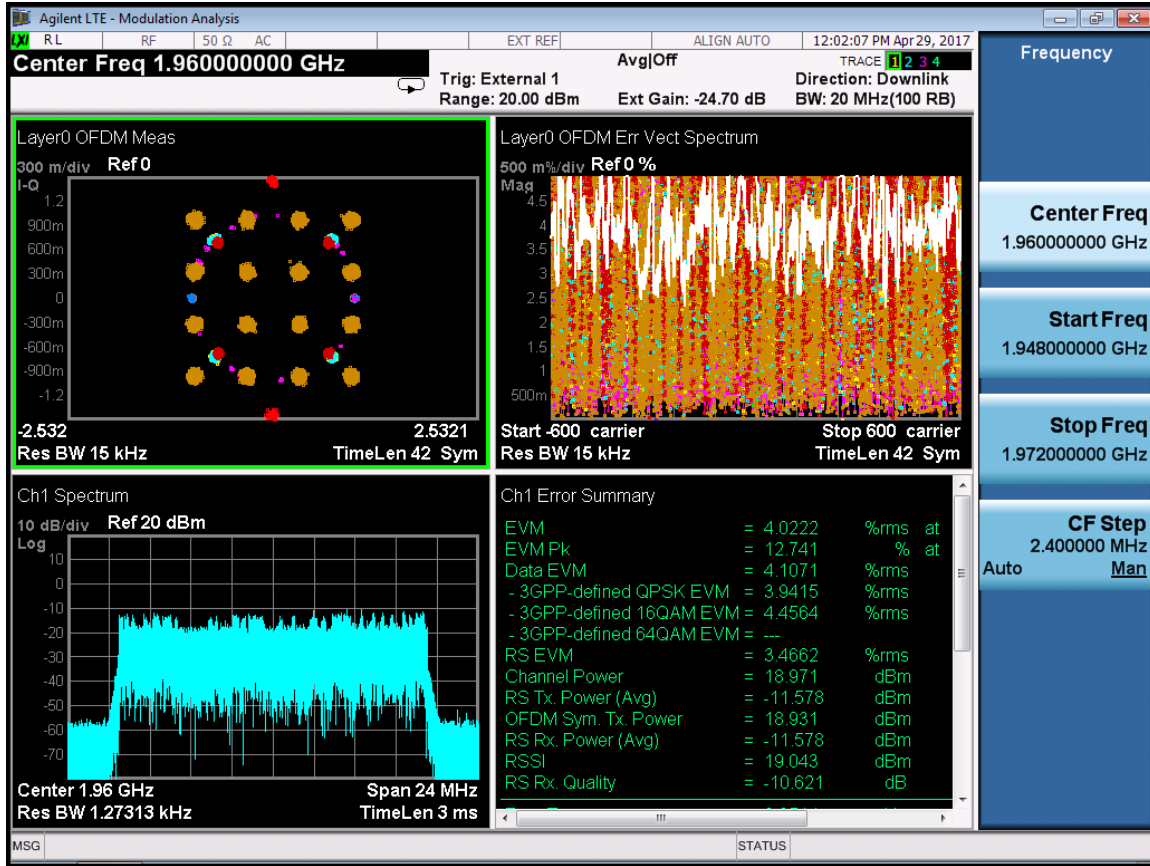
RF 1960M:
LTE 20M-Port 1-1960MHz-E-TM2



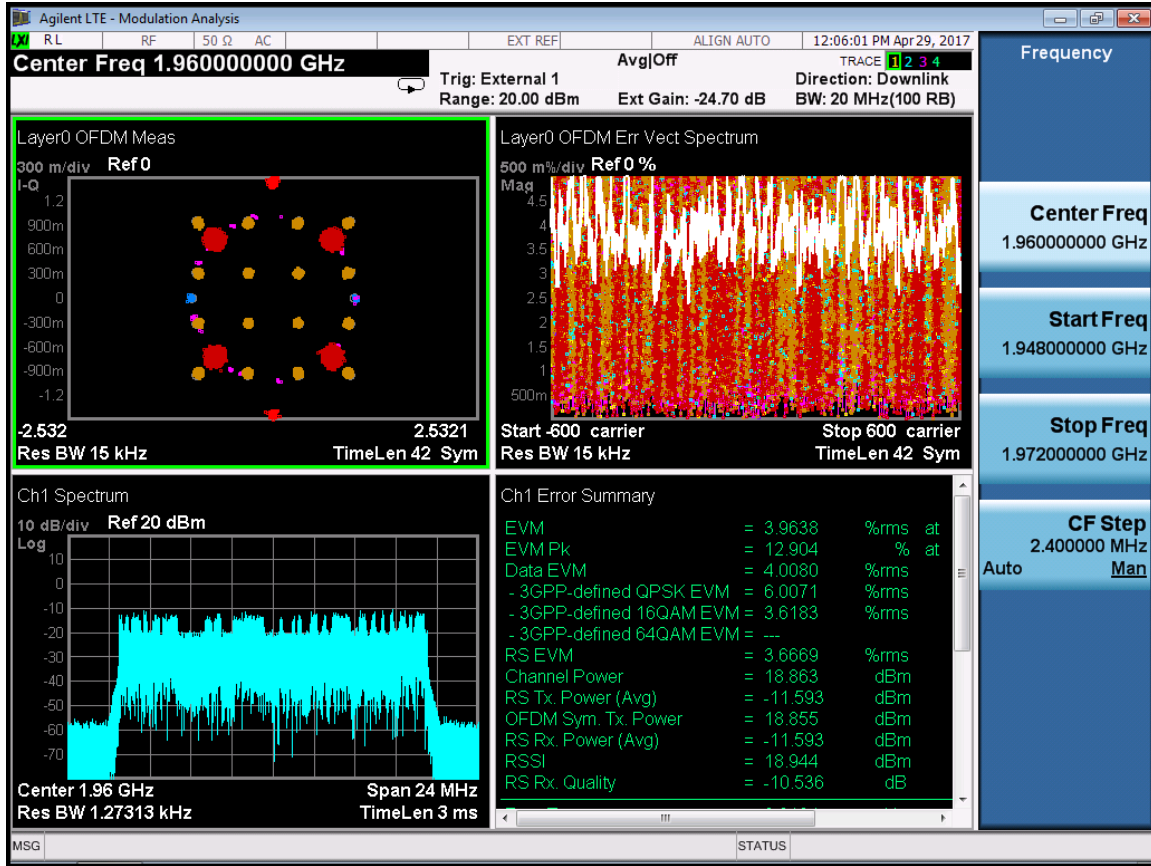
LTE 20M-Port 1-1960MHz-E-TM3.1



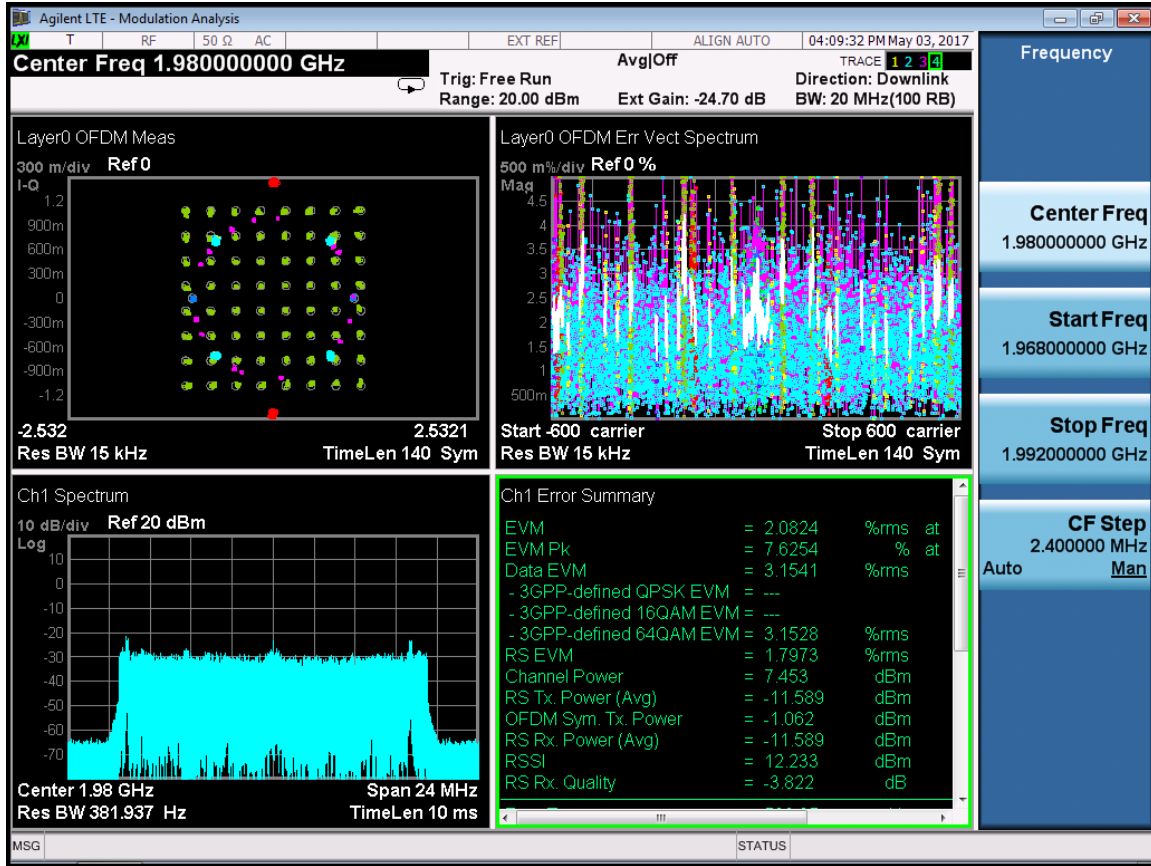
LTE 20M-Port 1-1960MHz-E-TM3.2



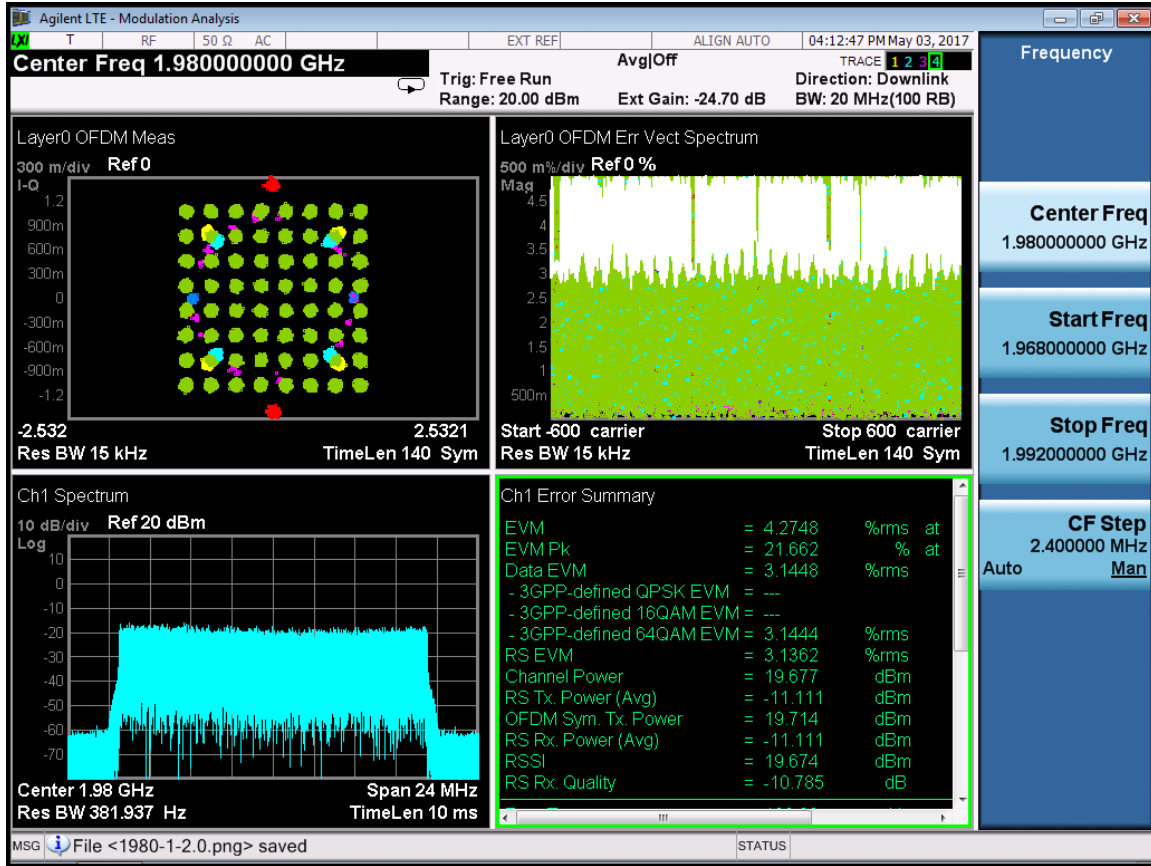
LTE 20M-Port 1-1960MHz-E-TM3.3



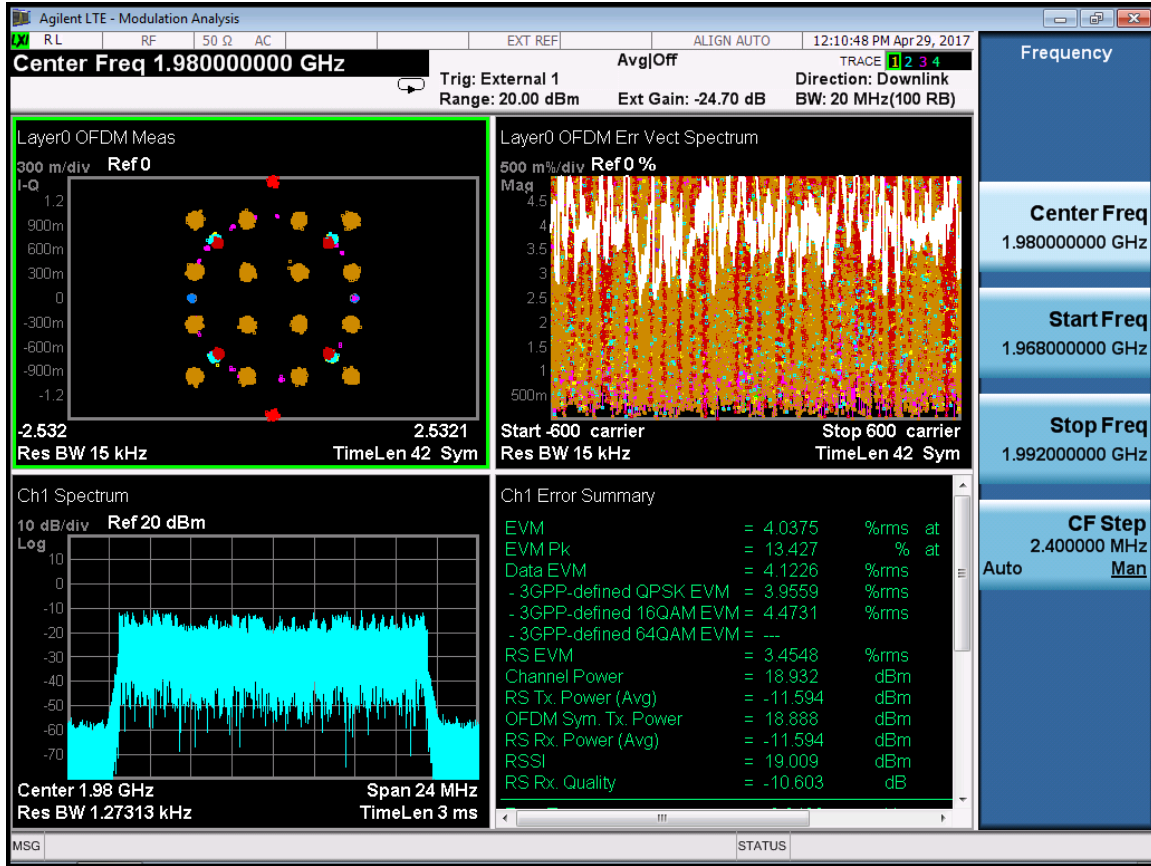
RF 1980M:
LTE 20M-Port 1-1980MHz-E-TM2



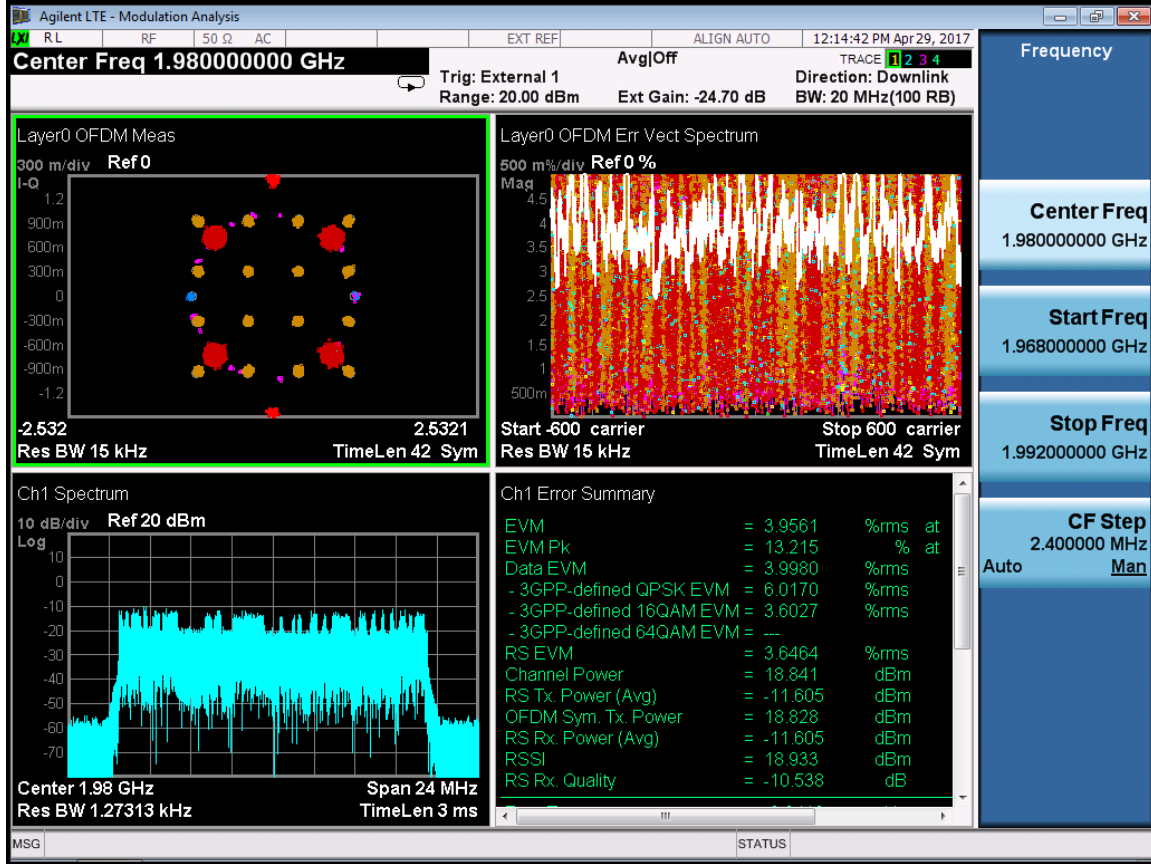
LTE 20M-Port 1-1980MHz-E-TM3.1



LTE 20M-Port 1-1980MHz-E-TM3.2



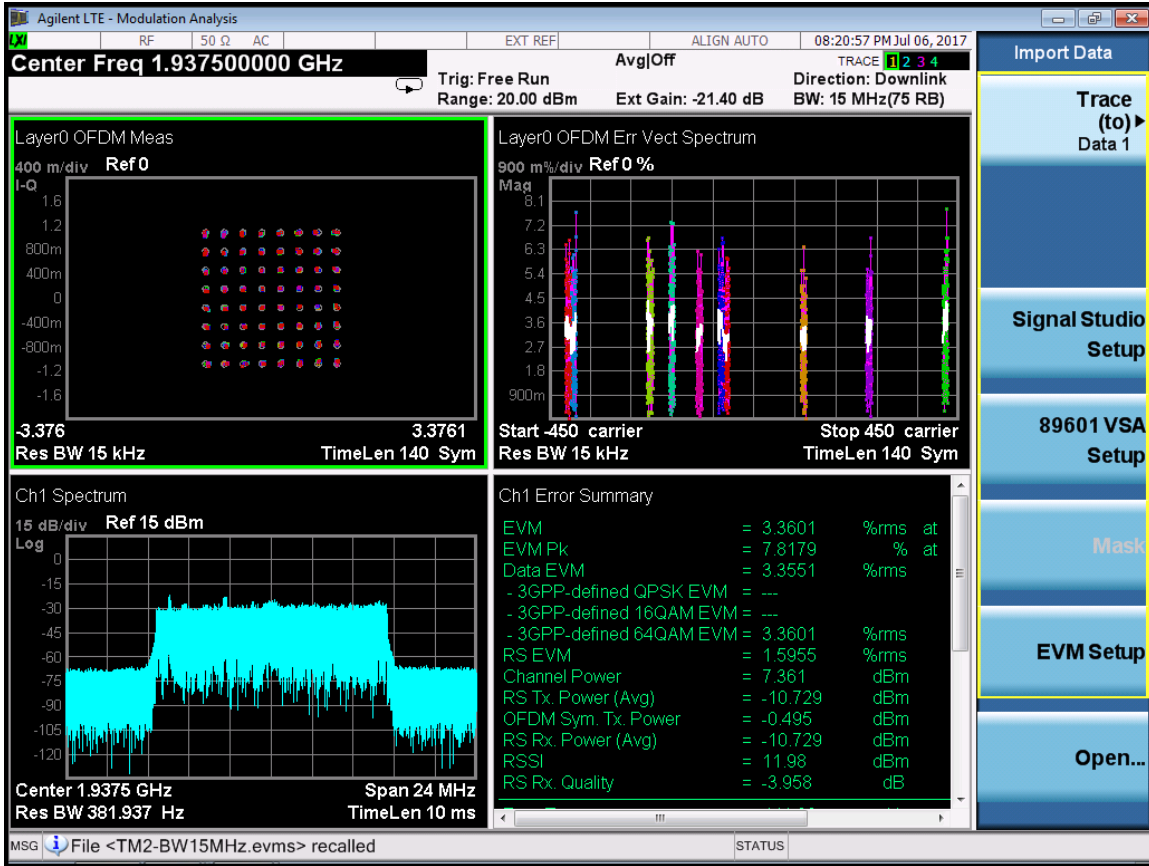
LTE 20M-Port 1-1980MHz-E-TM3.3



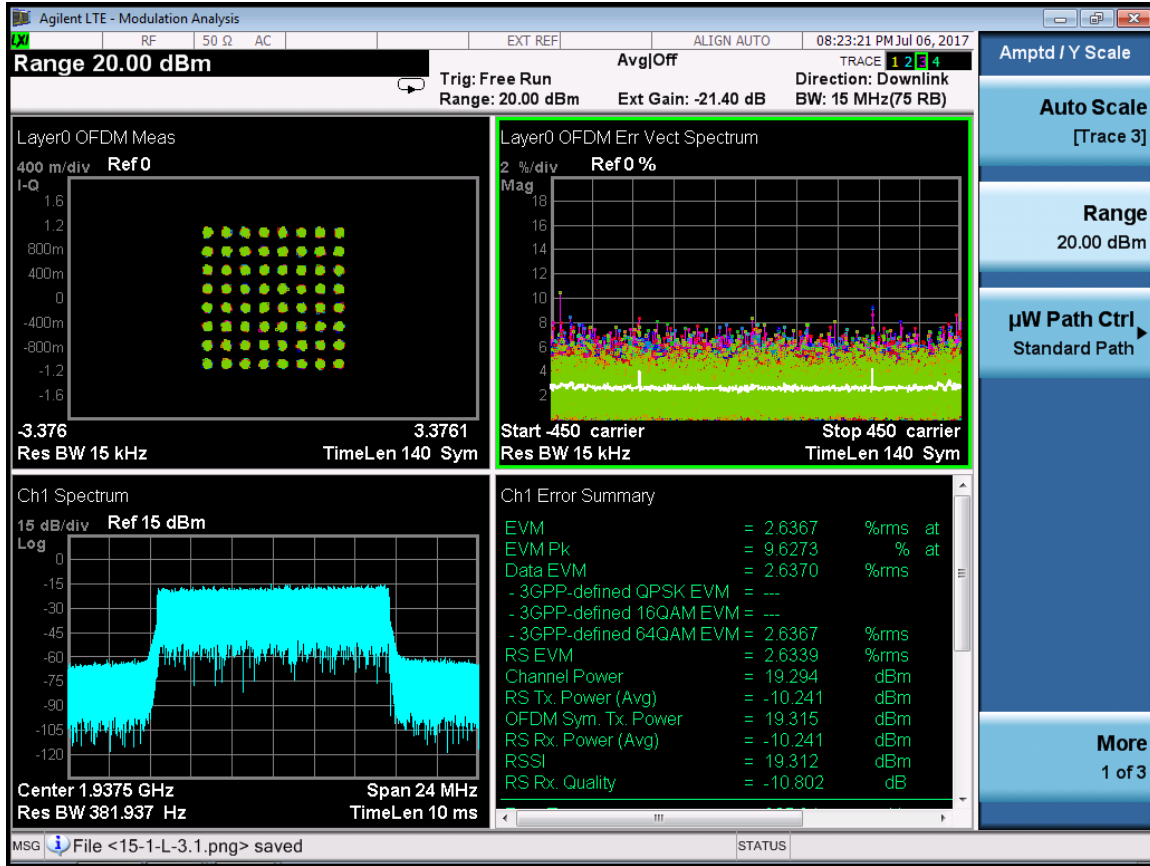
RF Bandwidth :IBW 15M(LTE 15M)

Port	RF Center Freq. (MHz)	Test mode	EVM%
0	1937.5	E-TM2	3.36
		E-TM3.1	2.64
		E-TM 3.2	3.61
		E-TM 3.3	5.44
	1960	E-TM2	3.02
		E-TM3.1	2.65
		E-TM 3.2	3.64
		E-TM 3.3	5.44
	1982.5	E-TM2	2.86
		E-TM3.1	2.69
		E-TM 3.2	3.66
		E-TM 3.3	5.48
1	1937.5	E-TM2	3.38
		E-TM3.1	2.71
		E-TM 3.2	3.69
		E-TM 3.3	5.55
	1960	E-TM2	3.02
		E-TM3.1	2.69
		E-TM 3.2	3.69
		E-TM 3.3	5.54
	1982.5	E-TM2	3.08
		E-TM3.1	2.71
		E-TM 3.2	3.69
		E-TM 3.3	5.56

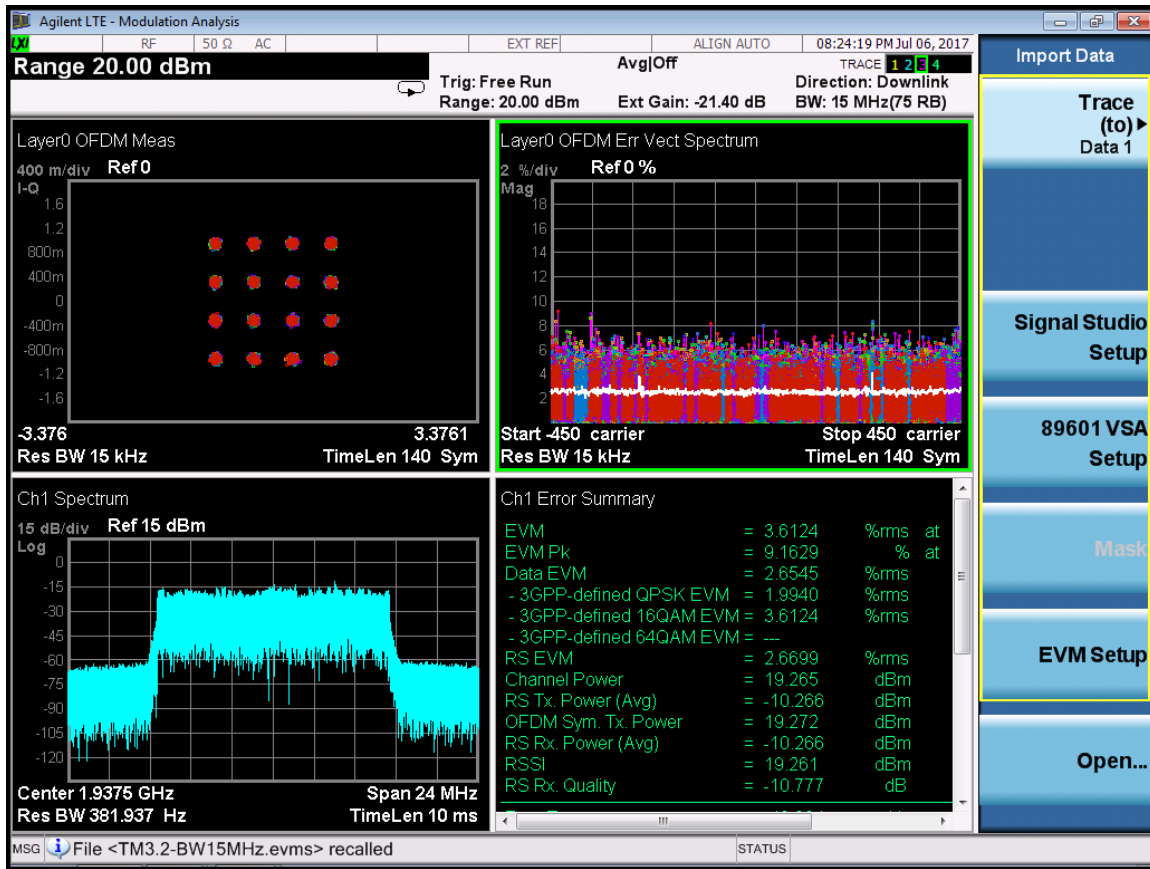
RF 1937.5M:
LTE 15M-Port 0-1937.5MHz-E-TM2



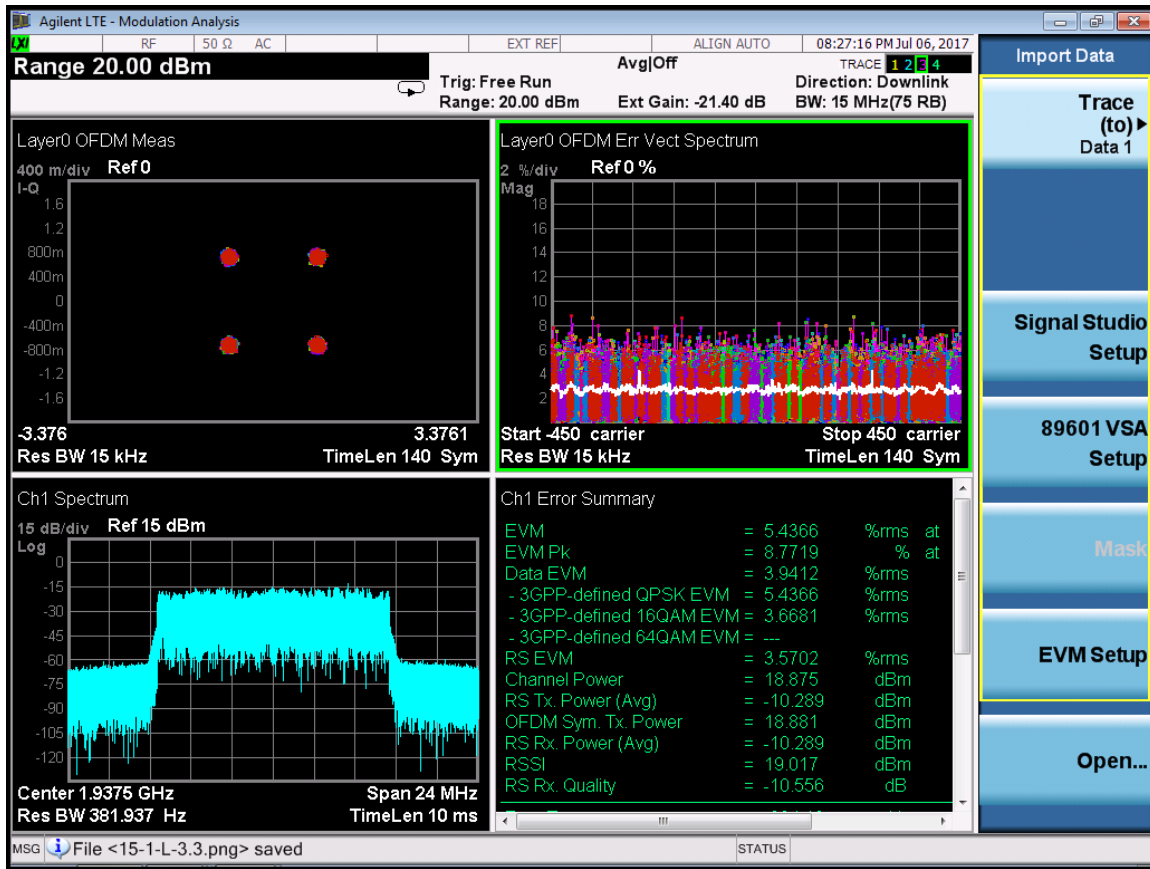
LTE 15M-Port 0-1937.5MHz-E-TM3.1



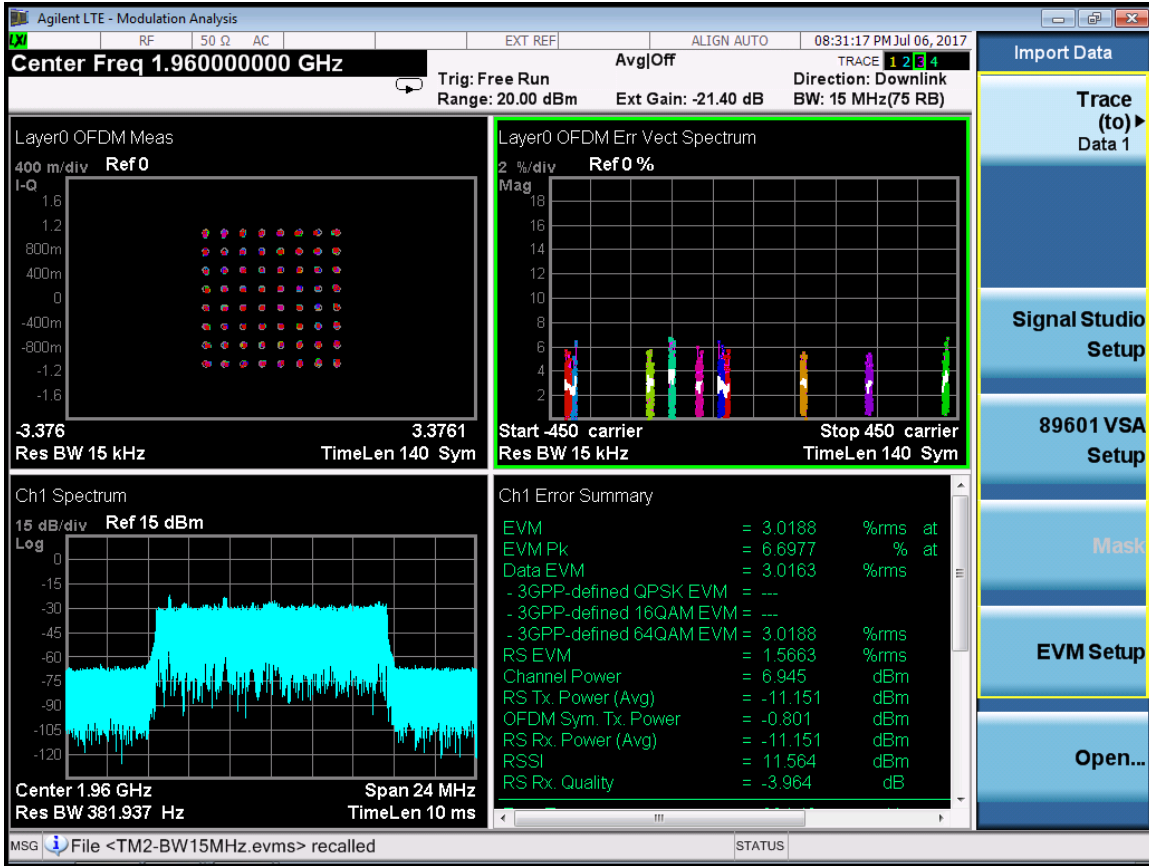
LTE 15M-Port 0-1937.5MHz-E-TM3.2



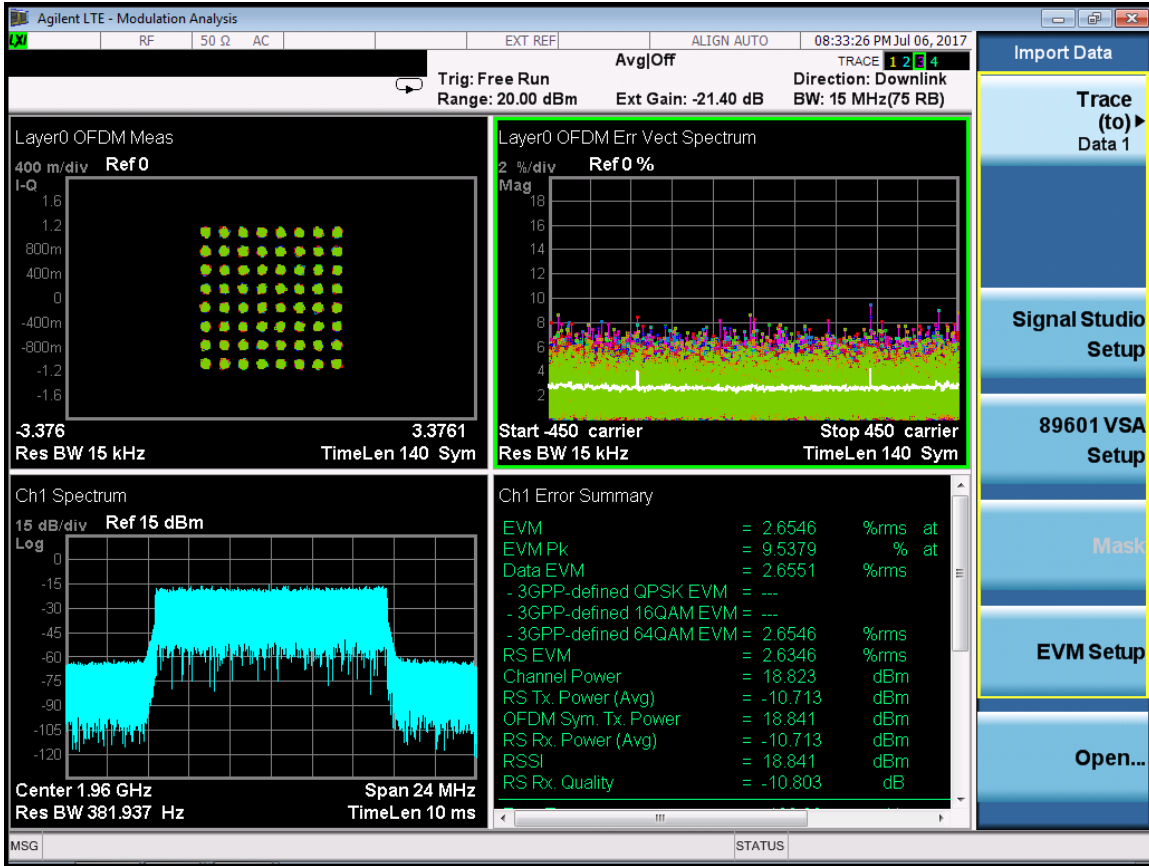
LTE 15M-Port 0-1937.5MHz-E-TM3.3



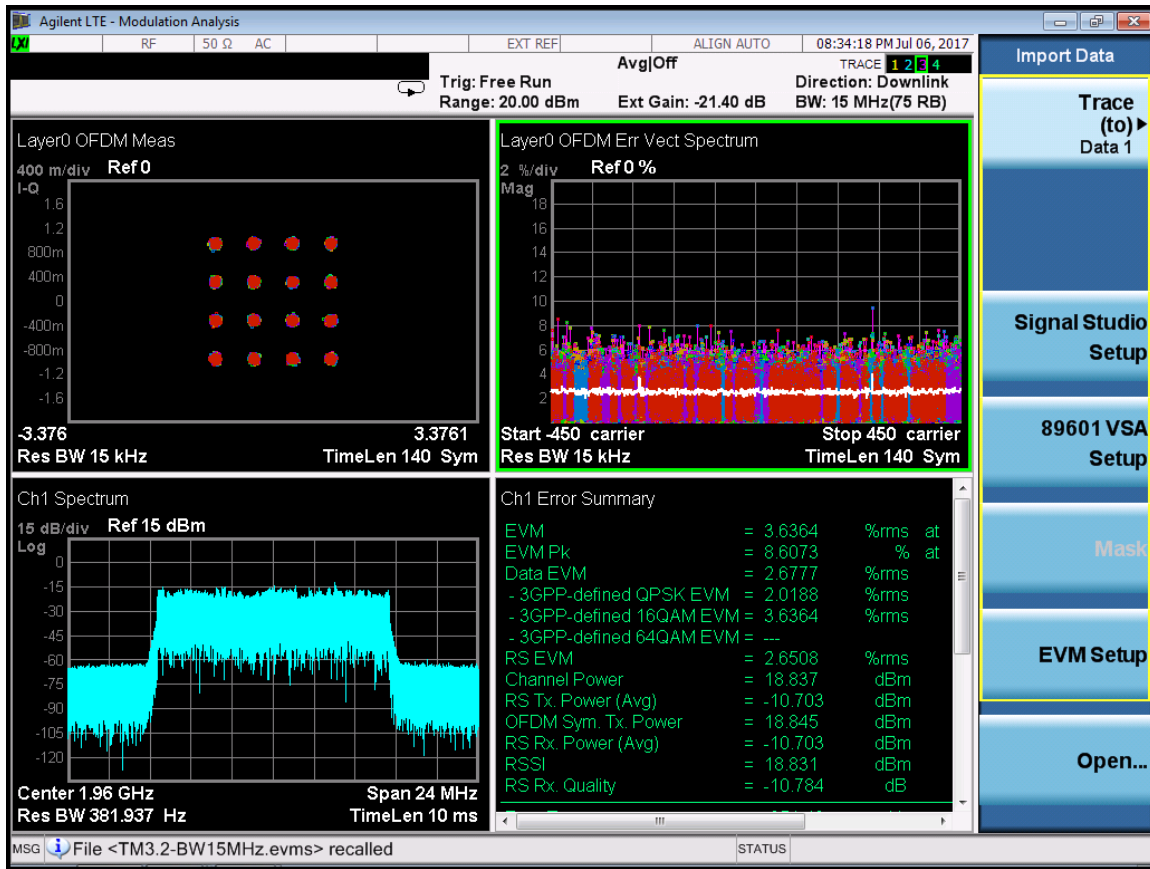
RF 1960M:
LTE 15M-Port 0-1960MHz-E-TM2



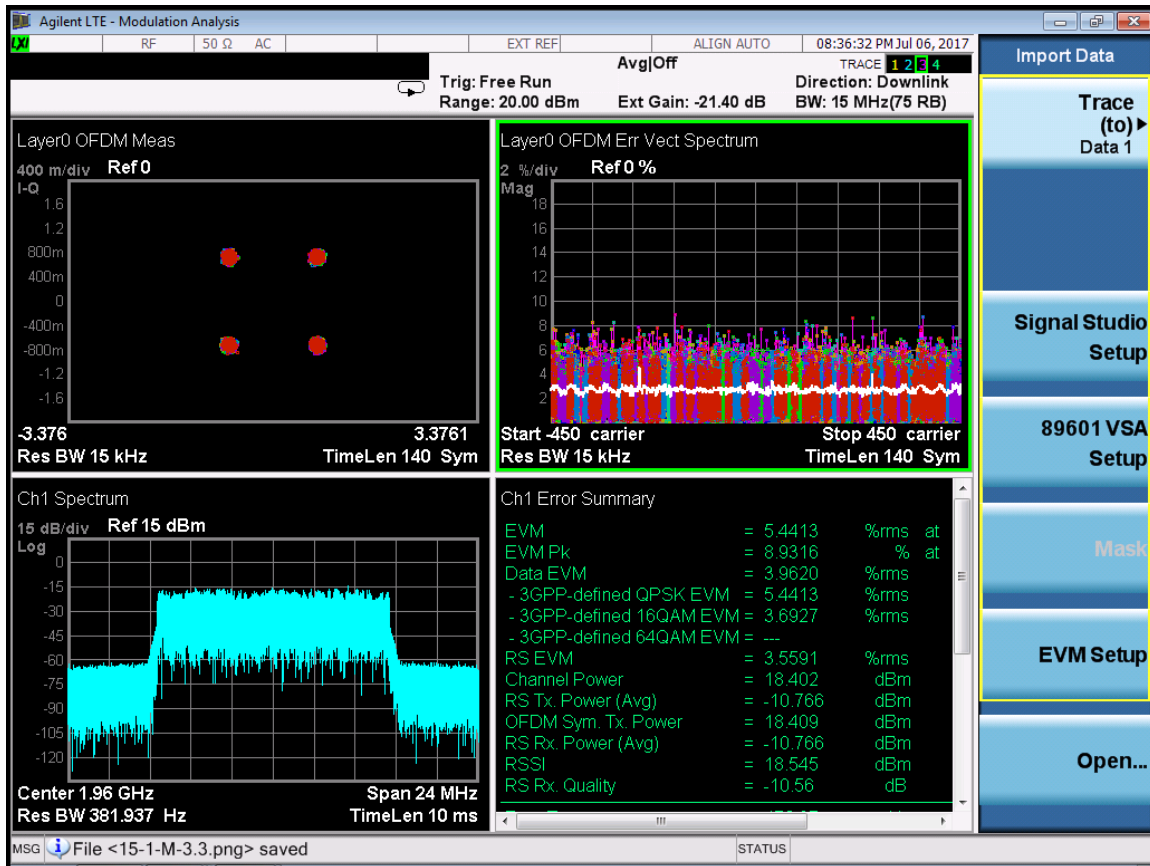
LTE 15M-Port 0-1960MHz-E-TM3.1



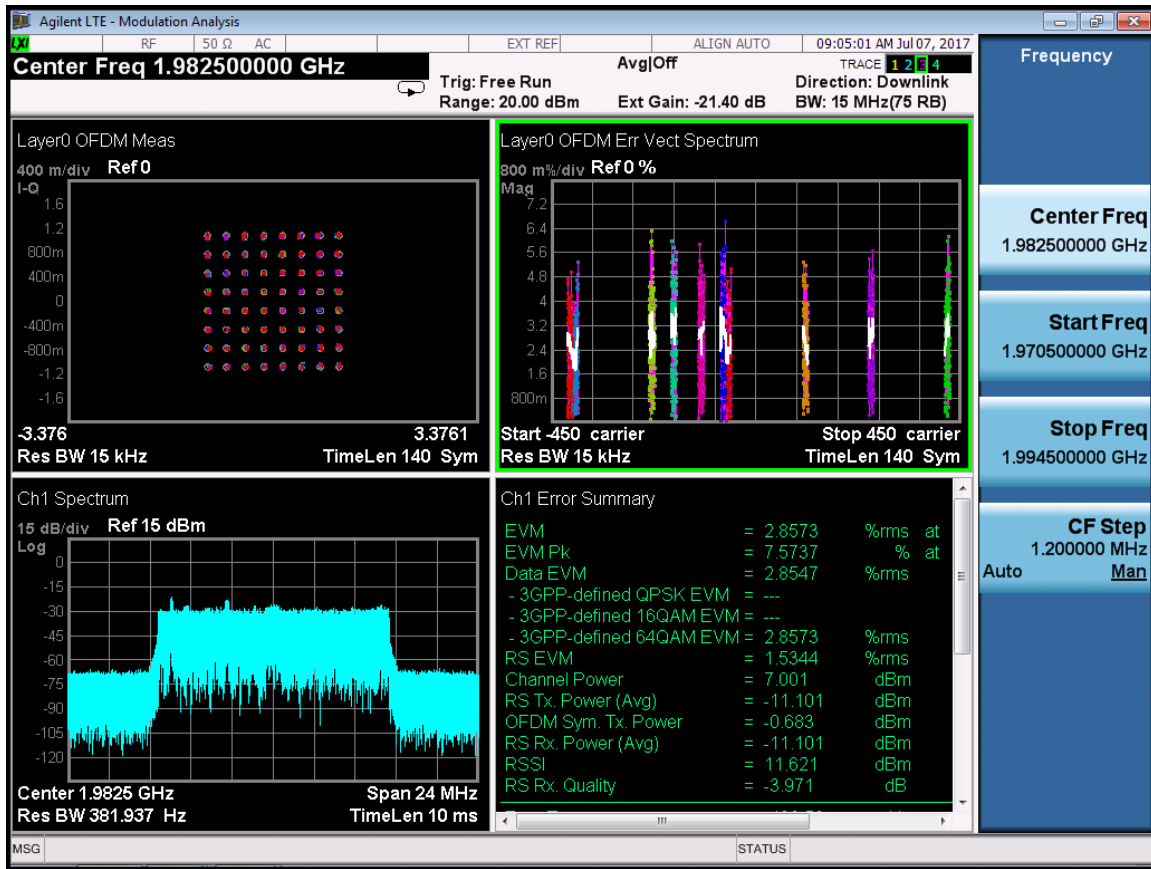
LTE 15M-Port 0-1960MHz-E-TM3.2



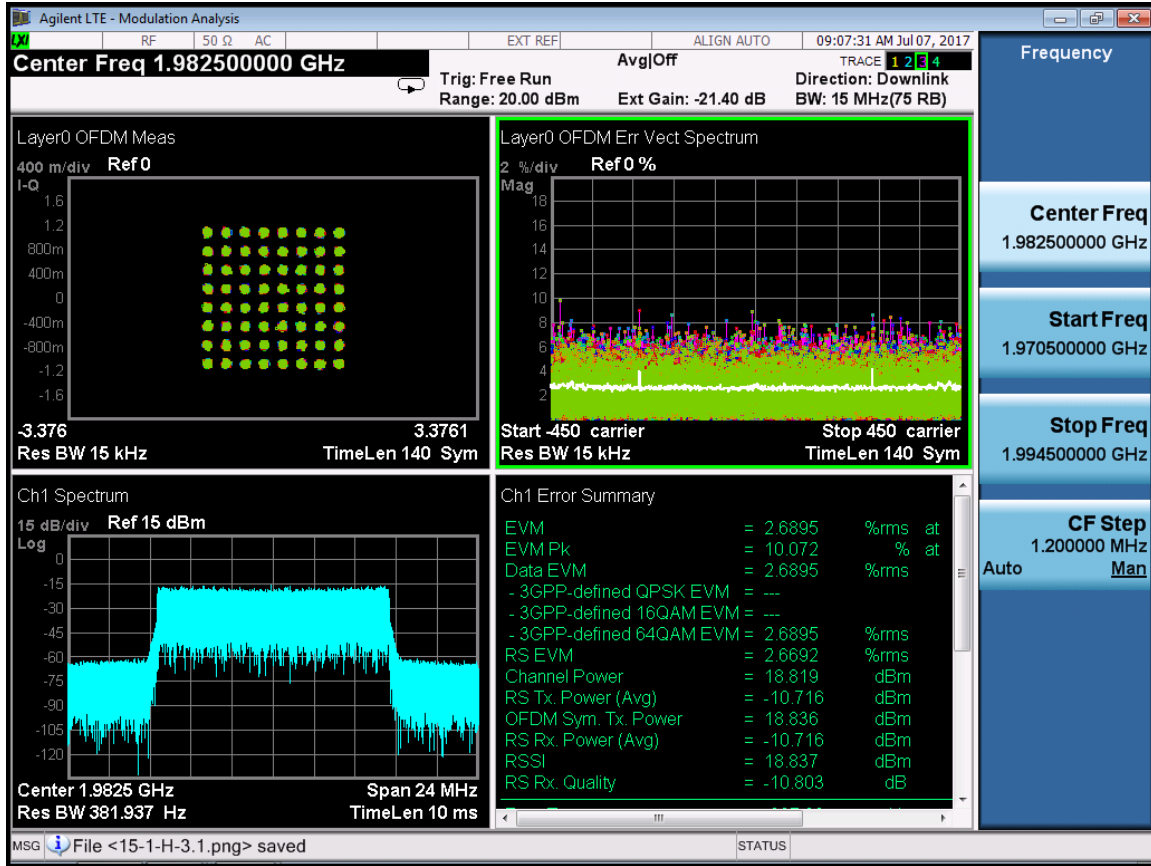
LTE 15M-Port 0-1960MHz-E-TM3.3



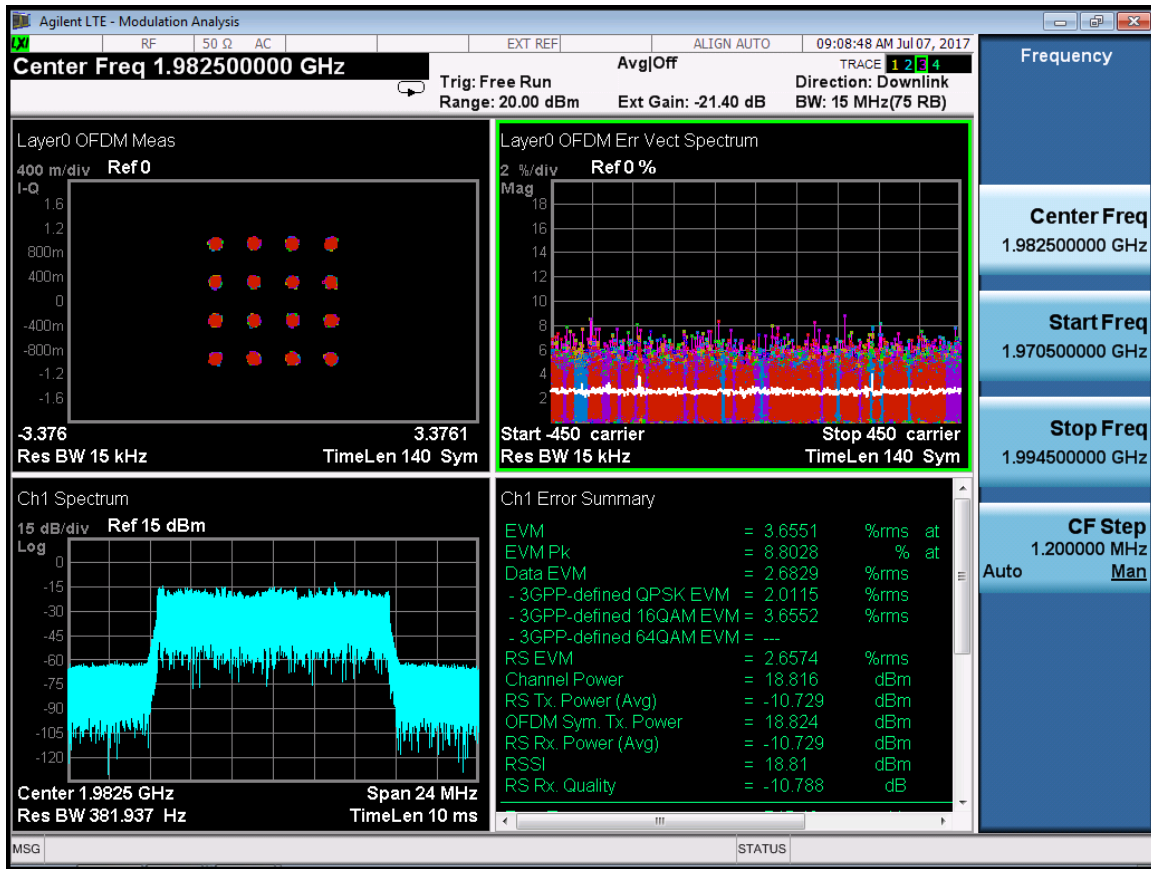
RF 1982.5M:
LTE 15M-Port 0-1982.5MHz-E-TM2



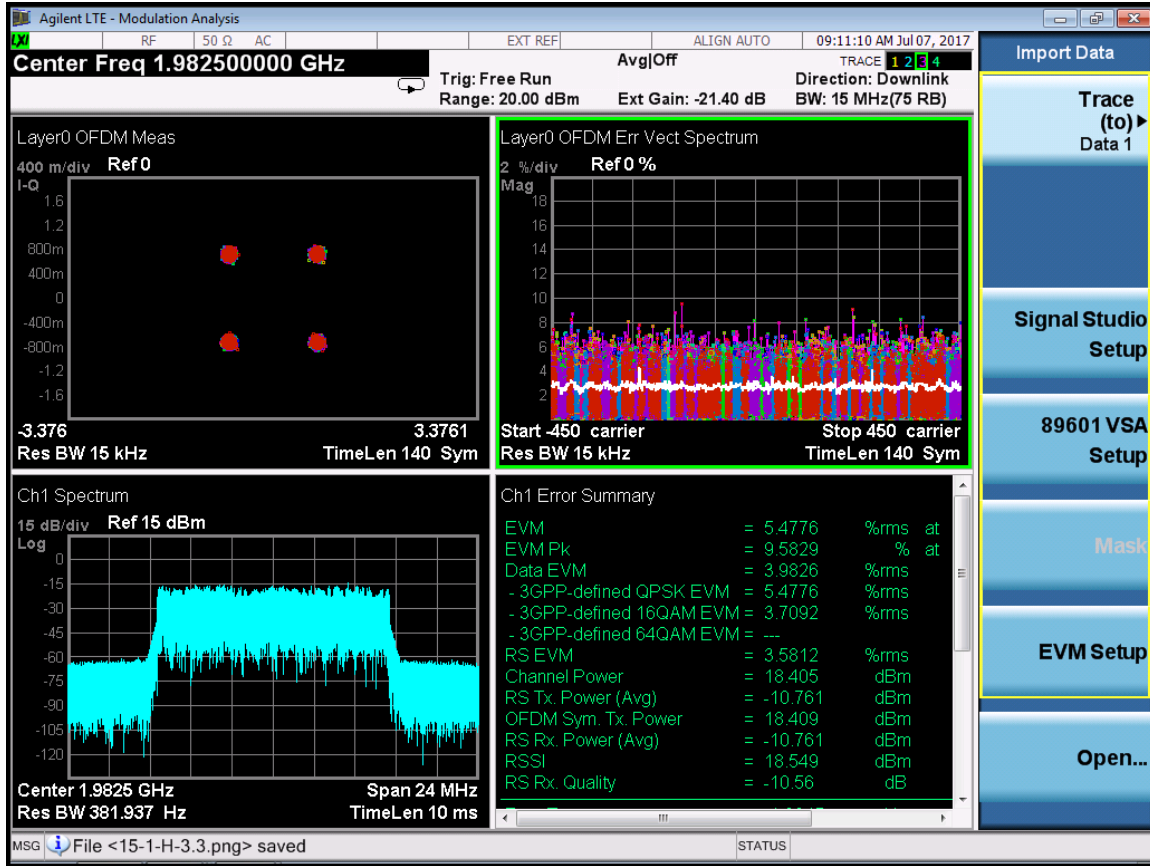
LTE 15M-Port 0-1982.5MHz-E-TM3.1



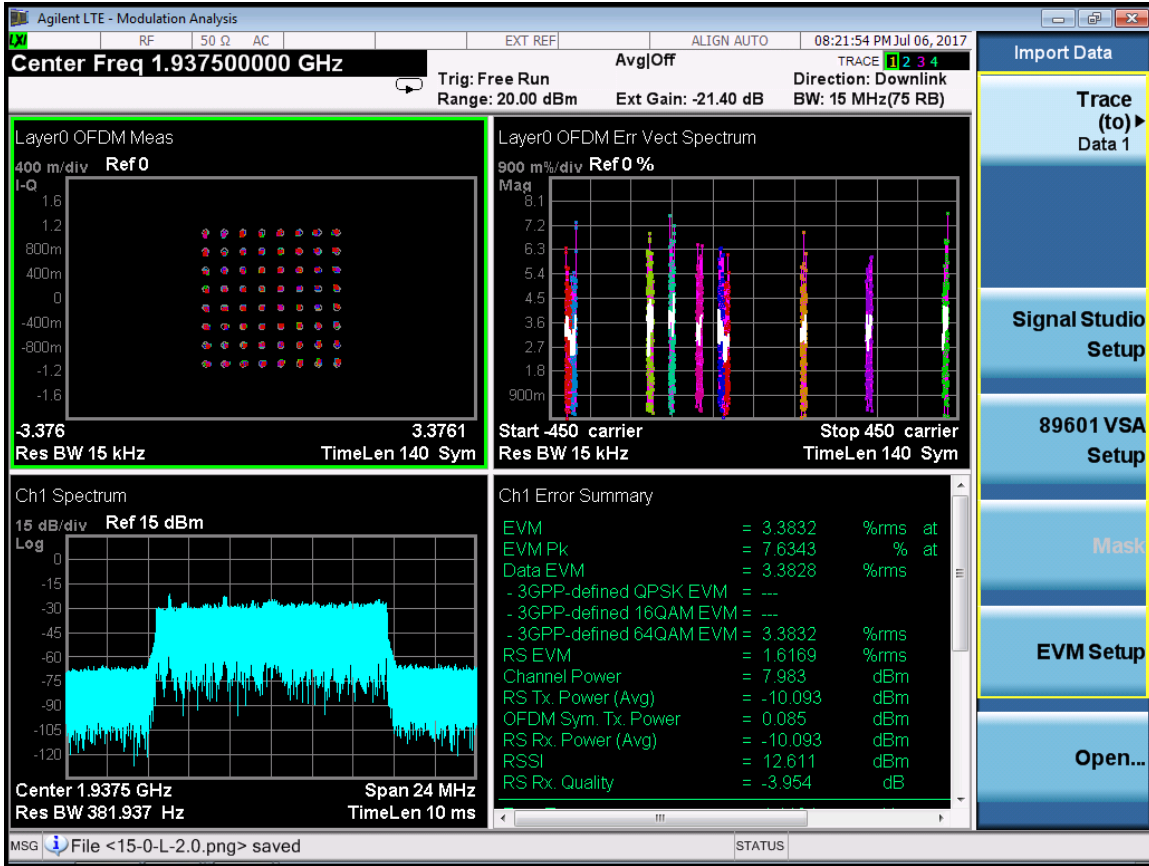
LTE 15M-Port 0-1982.5MHz-E-TM3.2



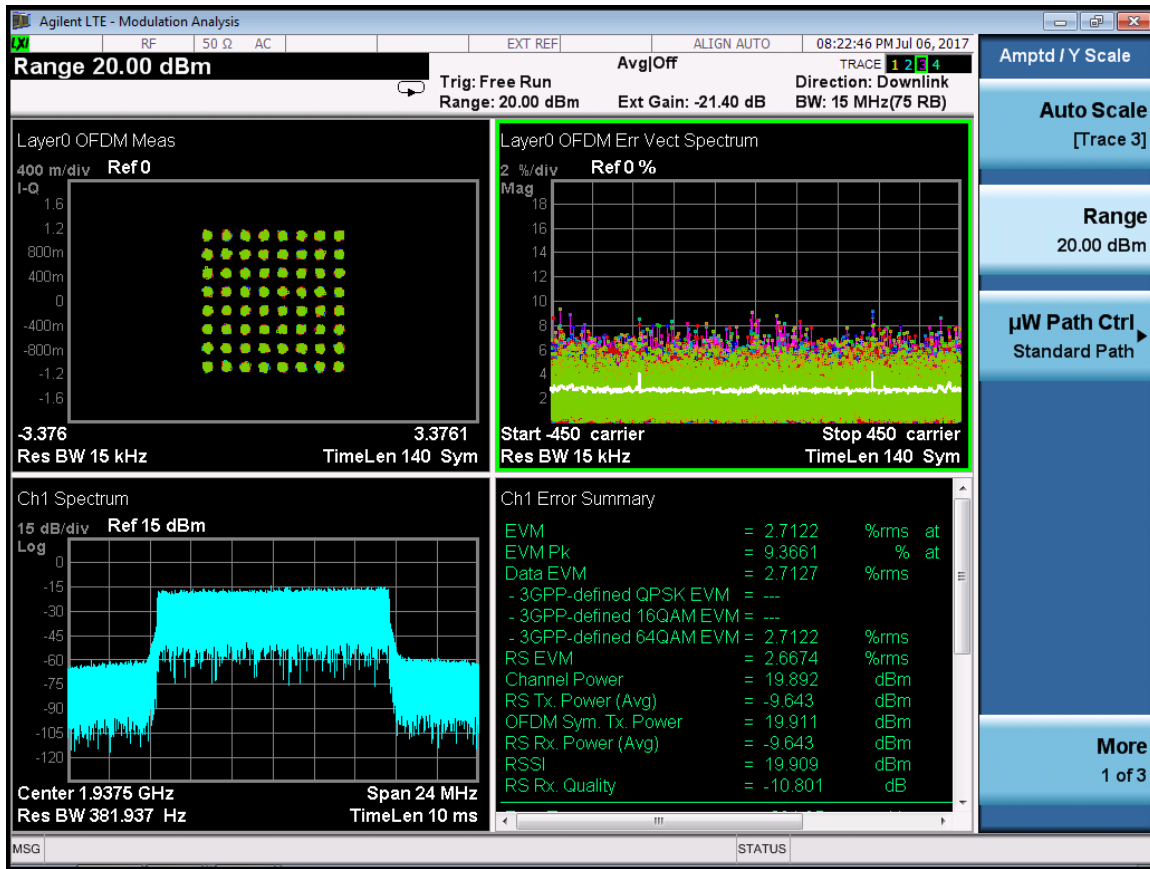
LTE 15M-Port 0-1982.5MHz-E-TM3.3



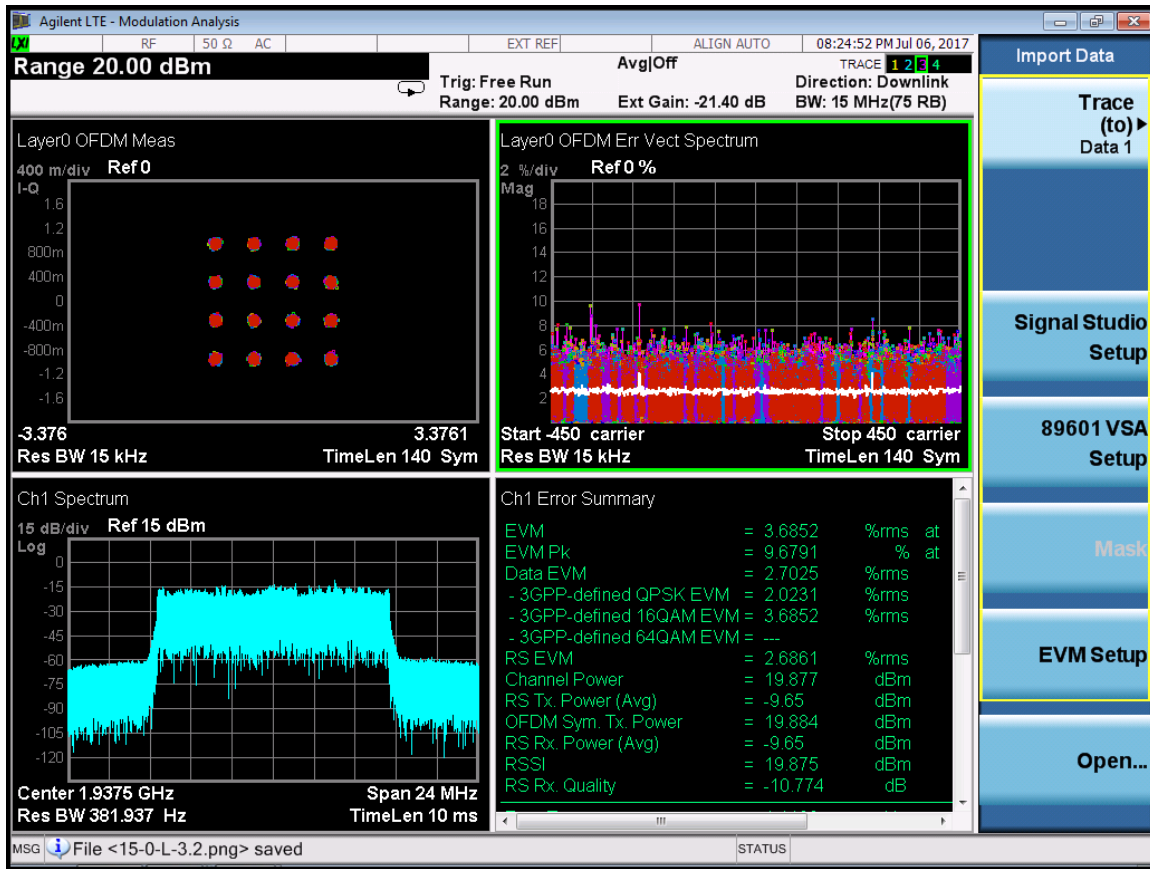
RF 1937.5M:
LTE 15M-Port 1-1937.5MHz-E-TM2



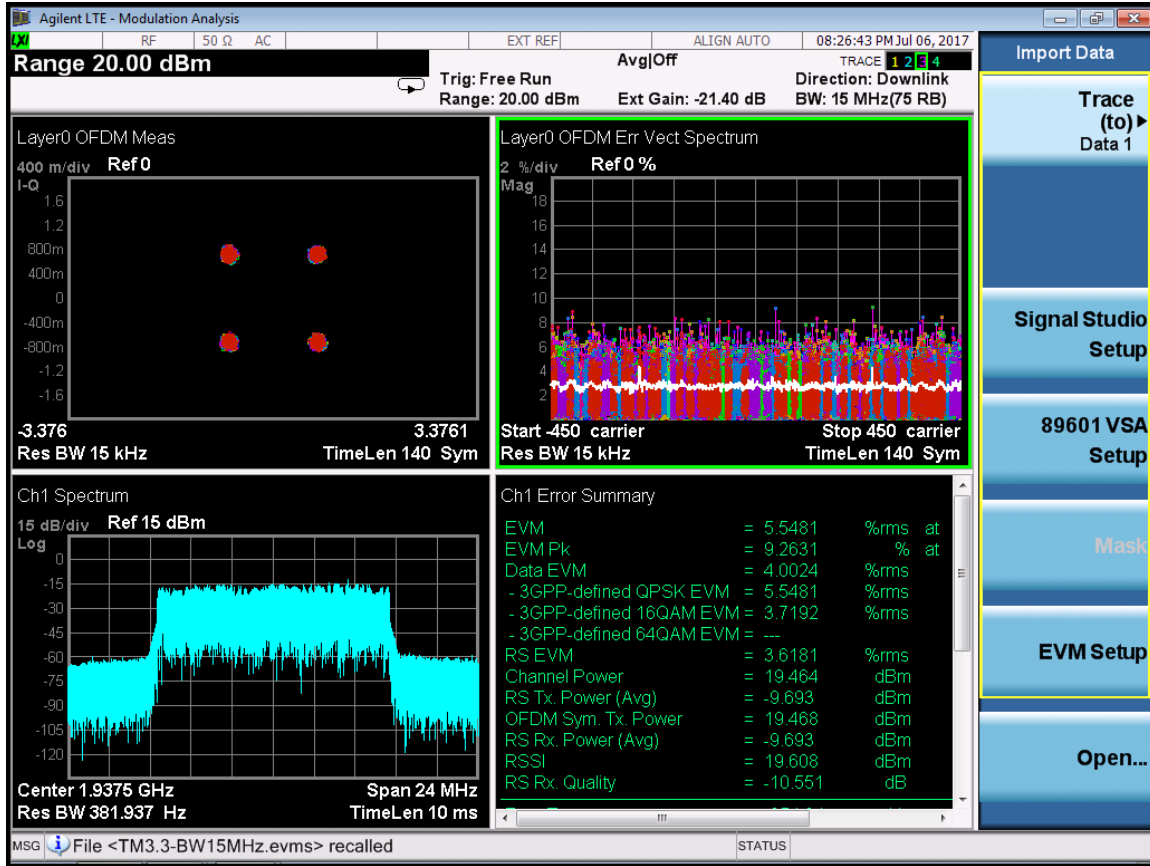
LTE 15M-Port 1-1937.5MHz-E-TM3.1



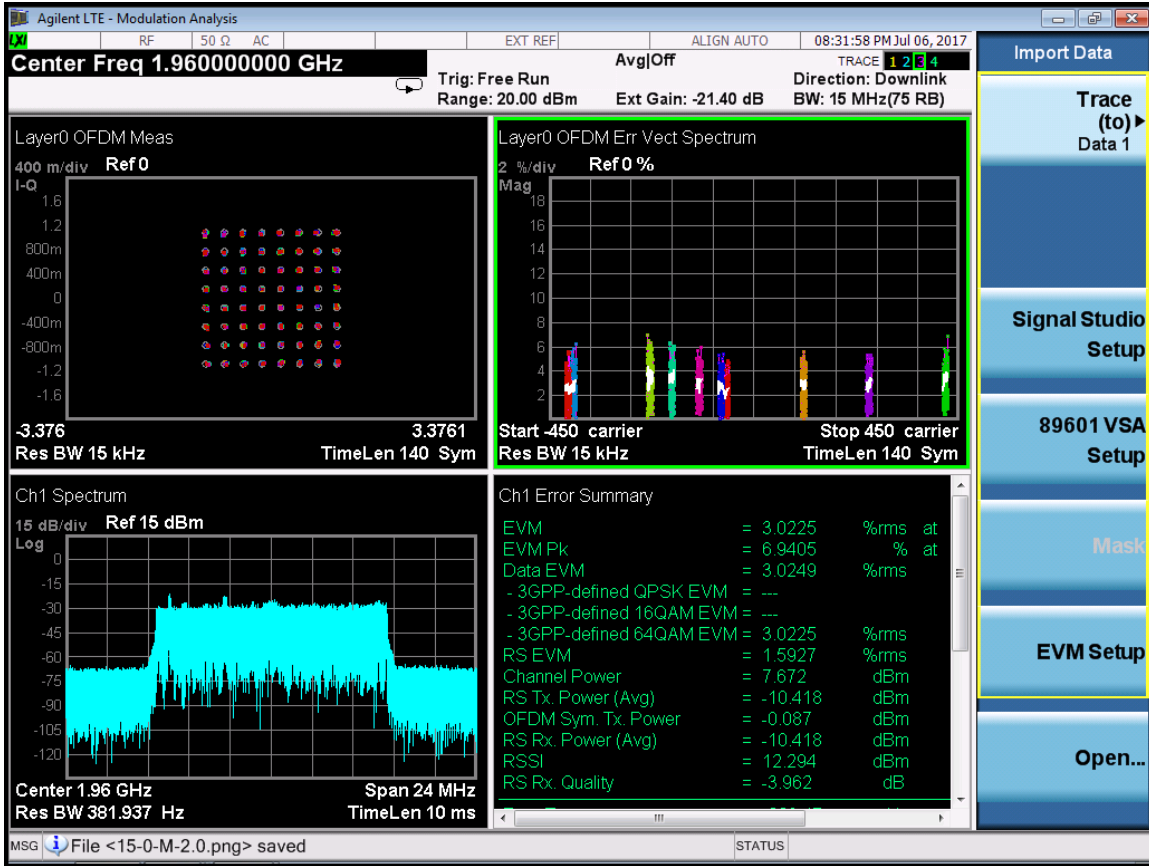
LTE 15M-Port 1-1937.5MHz-E-TM3.2



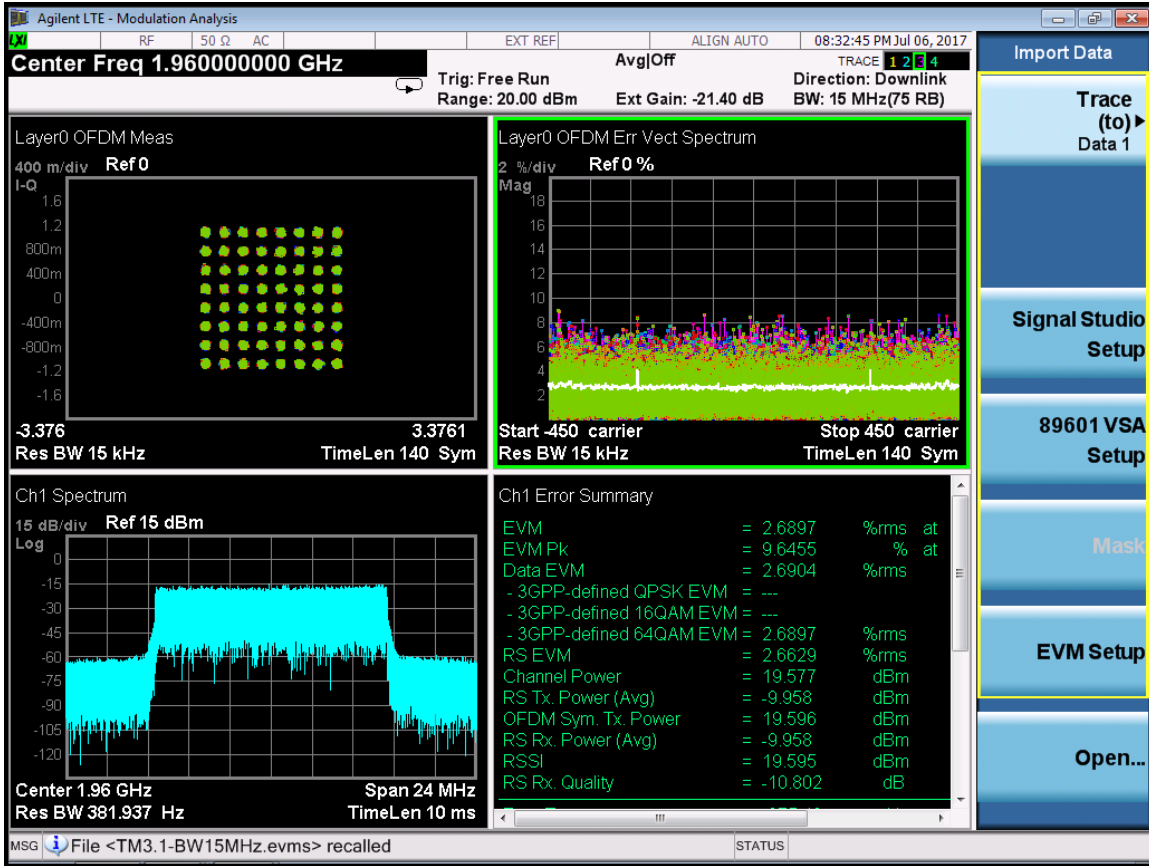
LTE 15M-Port 1-1937.5MHz-E-TM3.3



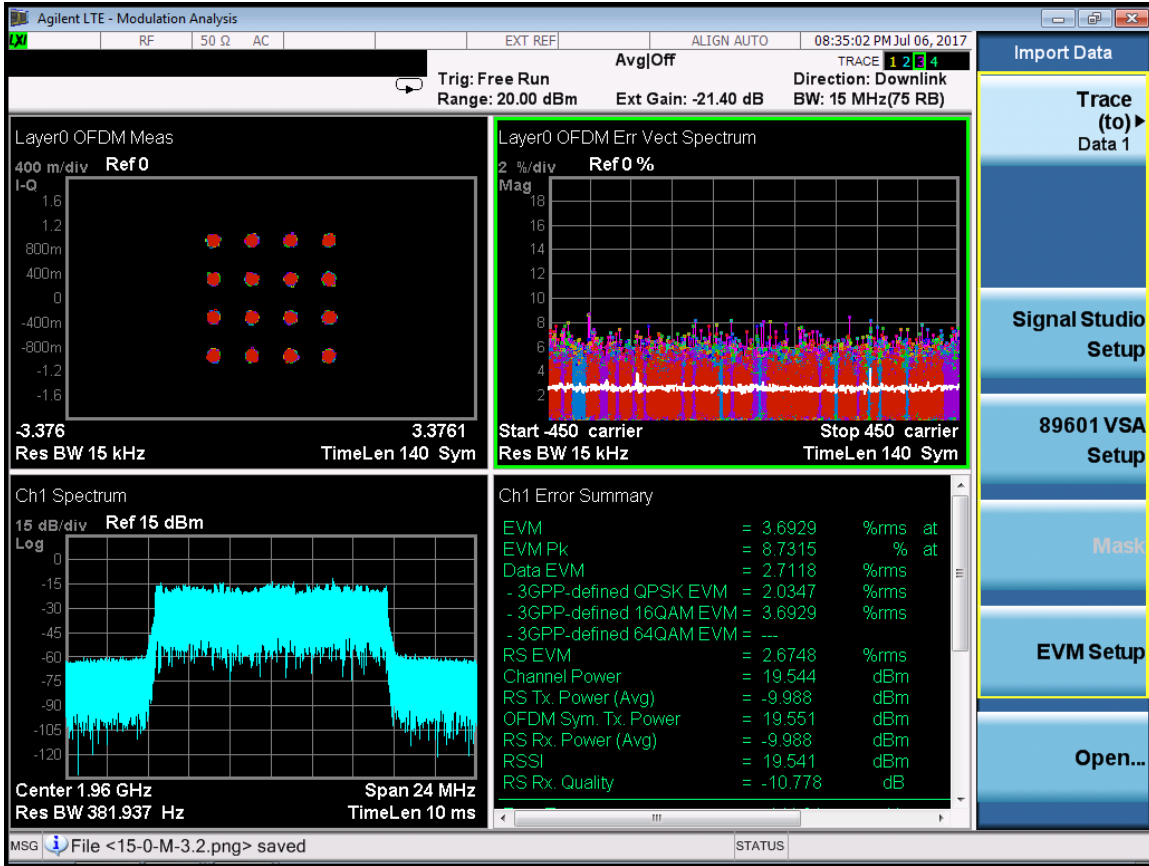
RF 1960M:
LTE 15M-Port 1-1960MHz-E-TM2



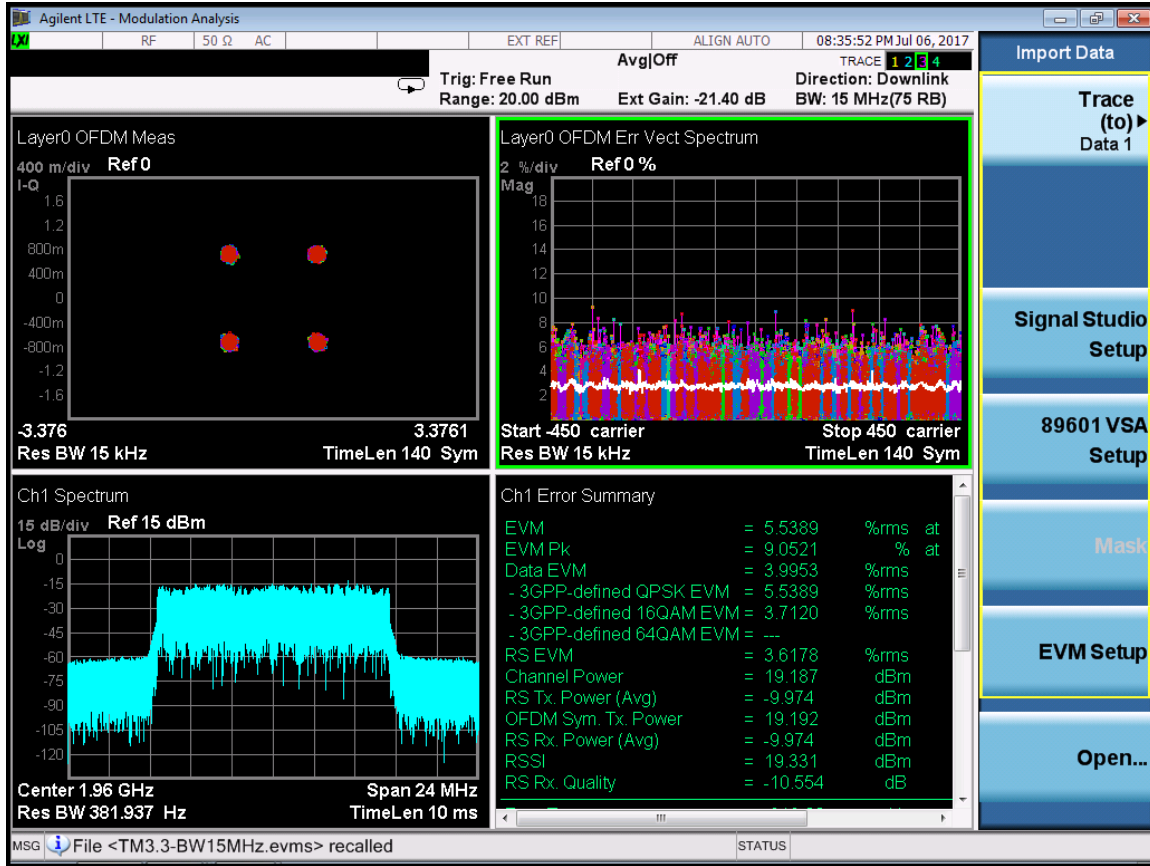
LTE 15M-Port 1-1960MHz-E-TM3.1



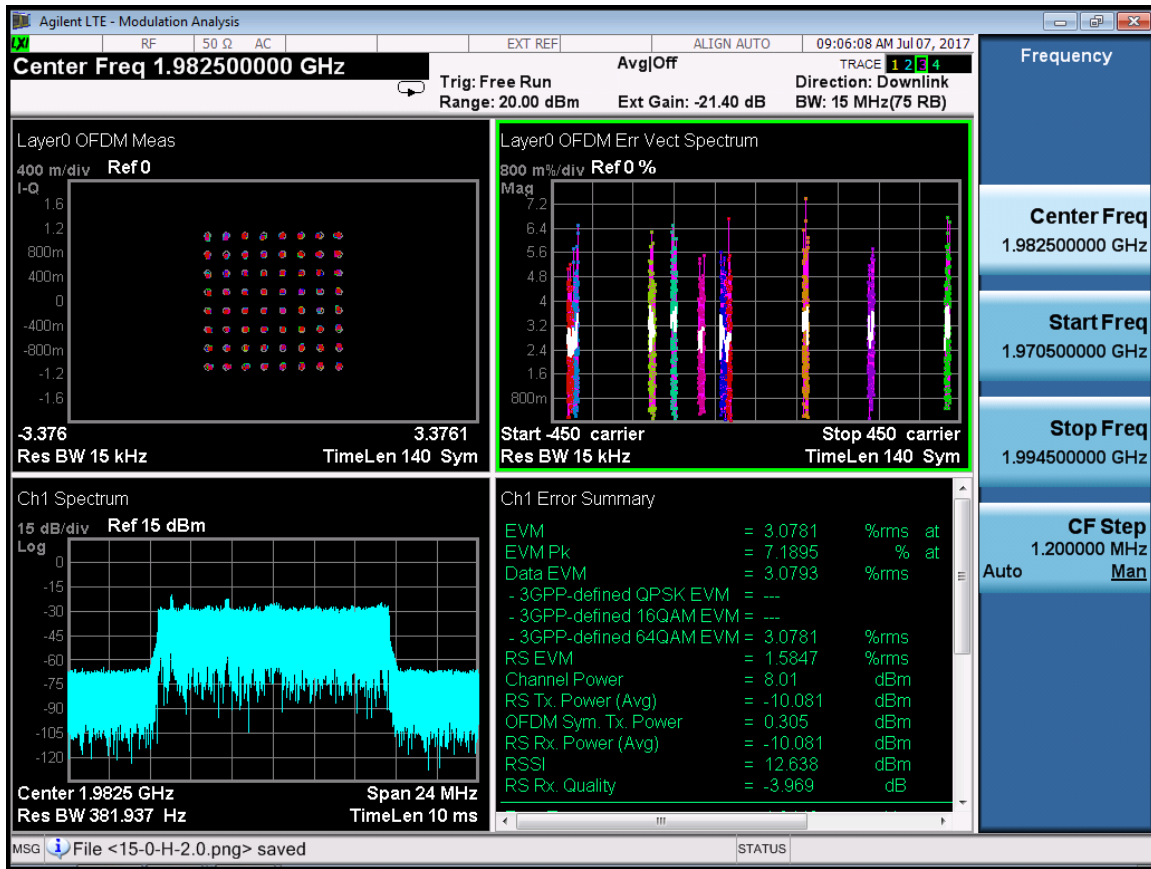
LTE 15M-Port 1-1960MHz-E-TM3.2



LTE 15M-Port 1-1960MHz-E-TM3.3



RF 1982.5M:
LTE 15M-Port 1-1982.5MHz-E-TM2



LTE 15M-Port 1-1982.5MHz-E-TM3.1