

FCC MEASUREMENT AND TEST REPORT

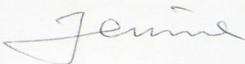
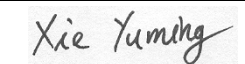
For

ZTE Corporation

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

FCC ID: ZXSDR R8882 S1900

June 10, 2015

This Report Concerns: ☒ Original Report		Equipment Type: Macro Remote Radio Unit
Test Engineer:		
Report No.:	RF2015234RZ	
Test Date:	June 1 – June 10, 2015	
Reviewed By:		
Prepared By:	ZTETS Corporation	
ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China 518057, P.R.China Tel: +86-755-26770000 Fax: +86-755-26771999		

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 ZTE Corporation. 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).....	5
	Test Methodology	5
	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.....	39
	Applicable standard: FCC §2.1091 §1.1037	39
	Limit.....	39
	Test Data.....	40
	Test Result: pass.....	40
7	MODULATION CHARACTERISTIC.....	40
	Applicable Standard: FCC §2.1047	40
	Test Equipment List and Details.....	40
	Test Procedure.....	41
	Test Data Environmental Conditions	41
	Test Result: Pass.....	41
	Test Mode: Transmitting LTE	41
	Test Data:.....	41
8	SPURIOUS RADIATED EMISSIONS	161
	Applicable Standard: FCC CFR 47 §2.1053.....	161
	Test Equipment List and Details.....	161
	Test Procedure.....	162
	Test Results Summary: PASS	163
	Environmental Conditions	163
	Test data	163
9	SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....	164
	Applicable Standard: FCC§2.1051, §24.238.....	164
	Test Equipment List and Details.....	164
	Test Procedure.....	165
	Test Data Environmental Conditions	165
	Test Result: Pass.....	165
	Test Mode: Transmitting LTE	165
	Test Data:.....	165
10	OCCUPIED BANDWIDTH.....	285
	Applicable Standard: FCC §2.1049	285

Test Equipment List and Details:.....	285
Test Procedure.....	286
Environmental Conditions	286
Test Result: Pass.....	286
Test Mode: Transmitting LTE	286
Test Data.....	286
11 BAND EDGES	316
Applicable Standard: FCC §2.1051, §24.238.....	316
Test Equipment List and Details.....	316
Test Procedure.....	317
Test Data Environmental Conditions	317
Test Result: Pass.....	317
Test Mode: Transmitting LTE	317
Test Data.....	317
12 FREQUENCY STABILITY	347
Applicable Standard: FCC § 2.1055, §24.235.....	347
Test Equipment List and Details.....	347
Test Procedure.....	348
Environmental Conditions	348
Test Result: Pass.....	348
Test Mode: Transmitting LTE	348
Test Data.....	348
Frequency Stability Versus Temperature.....	348
Frequency Stability Versus Voltage.....	351

2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8882 S1900 or the "EUT" as referred to in this report is a Macro Remote Radio Unit

Technical specification:

Size: 472 mm x 320 mm x 150 mm (HxWxD)

Input voltage: -37V~-60V

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

Max RF output power: 46dBm

Gain of the antenna: 15dBi

Appearance of EUT:

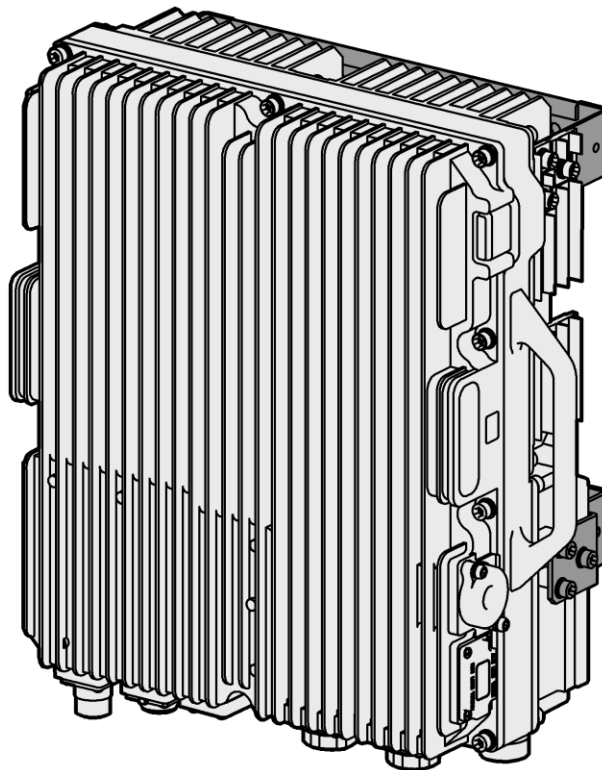


FIGURE 1 APPEARANCE OF ZXSDR R8882 S1900

Objective

This type approval report is prepared on behalf of ZTE Corporation 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 27 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 ZTETS Corporation 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

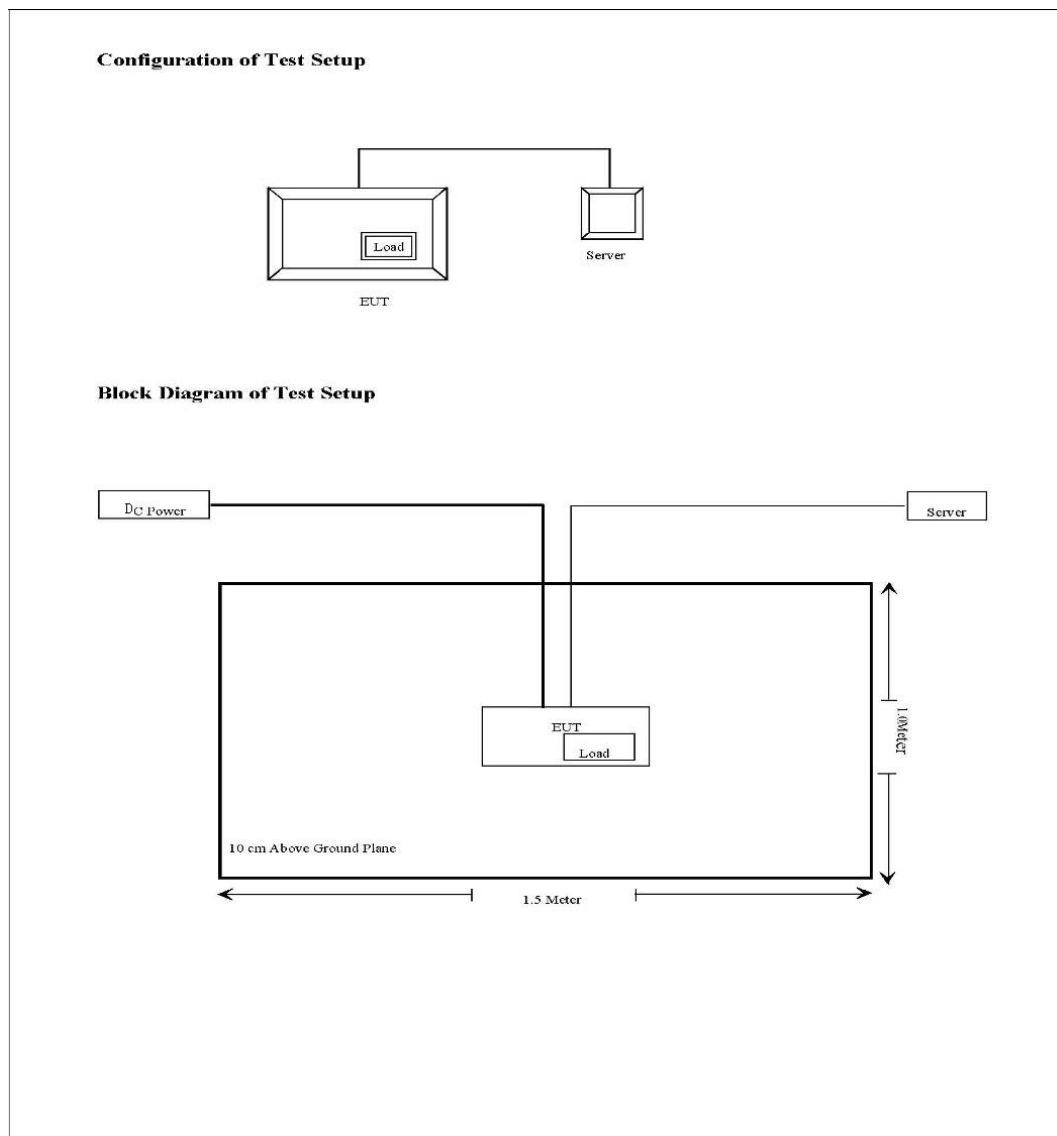
Justification

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

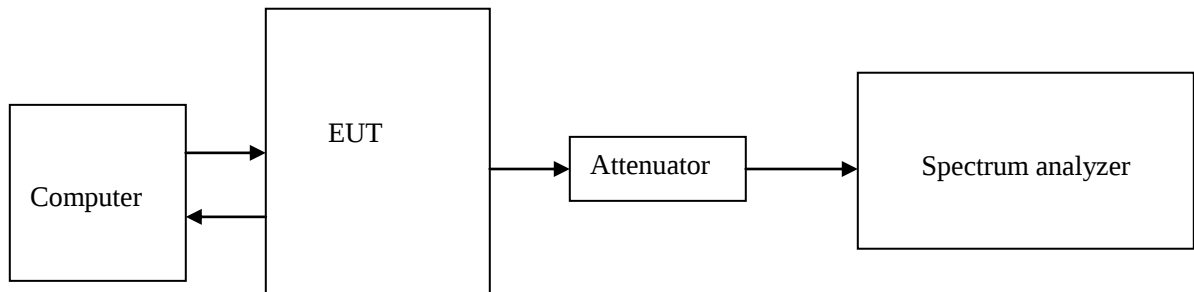
According to FCC §2.1046 & 24.232, the EIRP (equivalent isotropically radiated power) must not exceed 1640Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2015.04.17	2016.04.17
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2015.04.17	2016.04.17
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 40dB, Cable Loss is about 1.5dB

Environmental Conditions

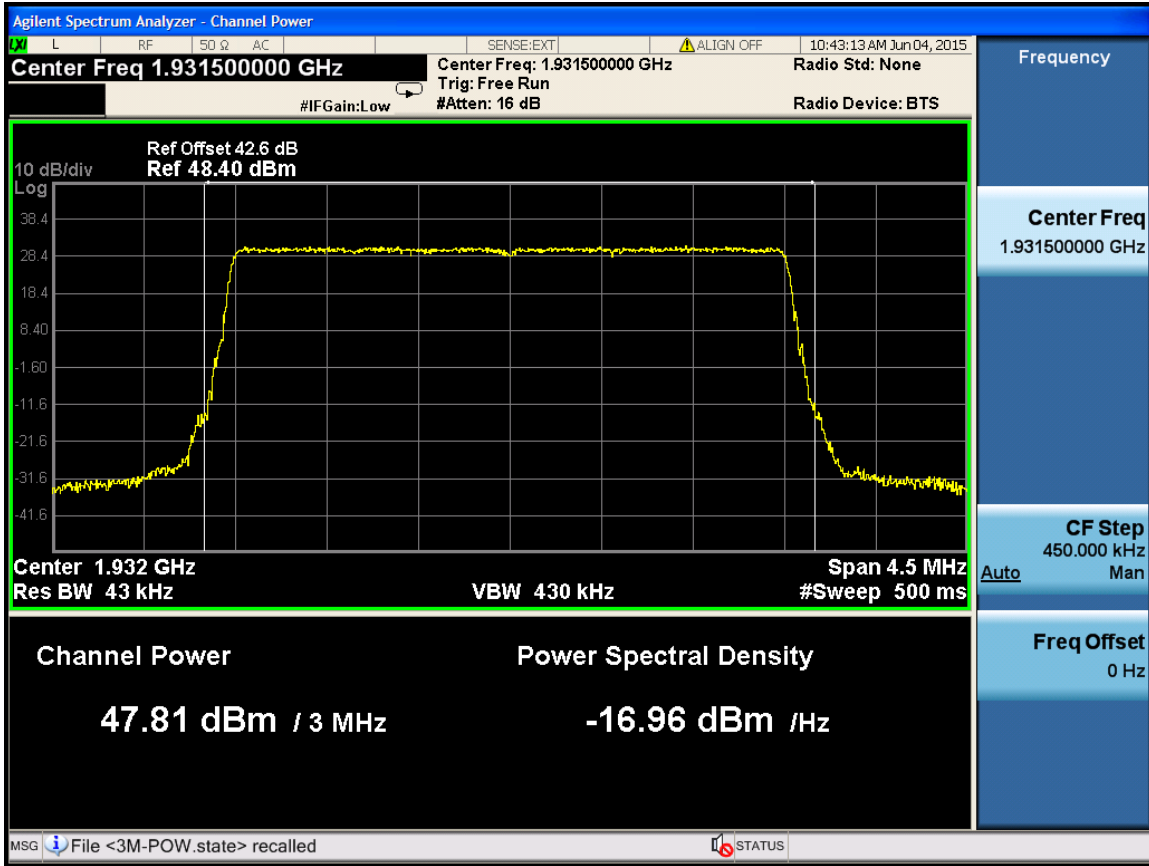
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

Test Result: Pass**Test Mode:** Transmitting LTE**Test Data:**

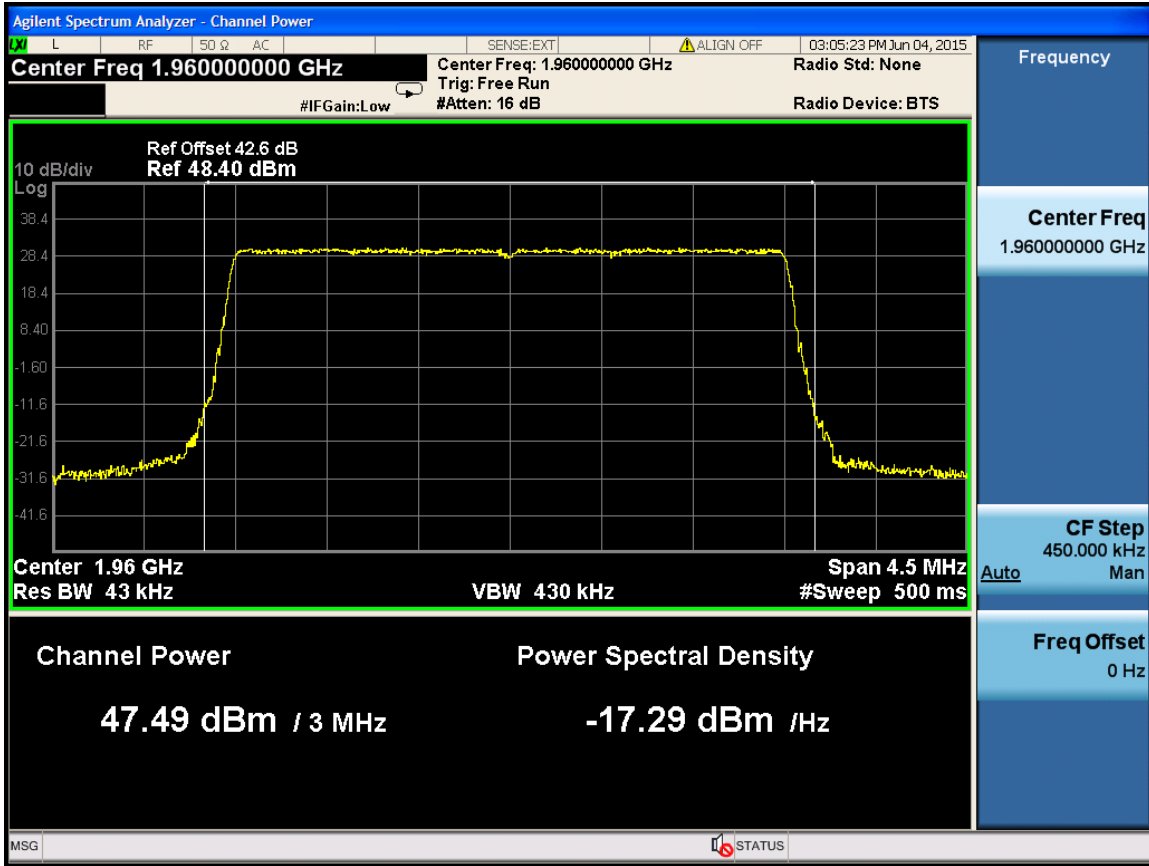
Channel Bandwidth :3M

Port	Center Freq. (MHz)	Max output Power in dBm	Antenna gain dBi	Cable Loss dB	equivalent isotropically radiated power dBm Of single antenna	Total Power in W Of single antenna
1	1931.5	47.81	15	3	59.81	957.194
	1960	47.49	15	3	59.49	889.201
	1988.5	47.55	15	3	59.55	901.571
4	1931.5	47.88	15	3	59.88	972.747
	1960	47.59	15	3	59.59	909.913
	1988.5	47.56	15	3	59.56	903.649

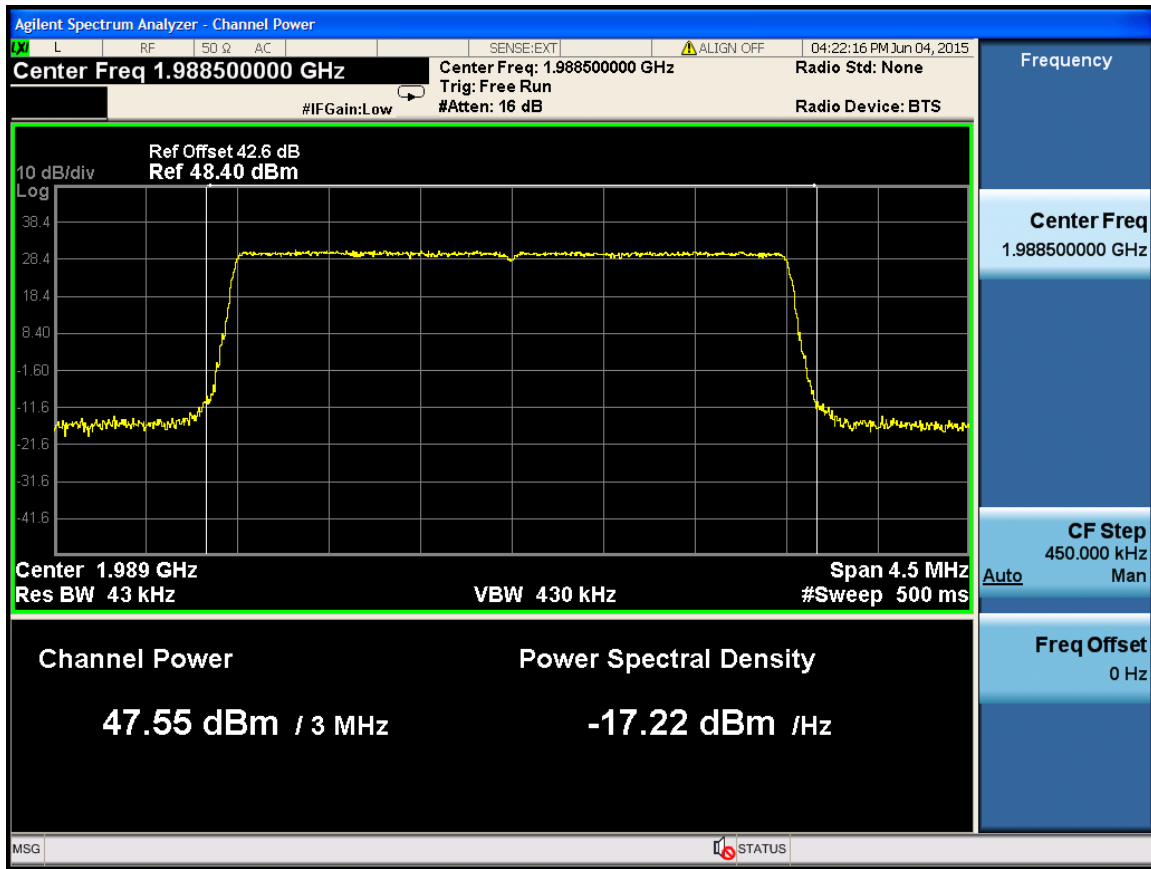
3M -Port 1 -1931.5MHz



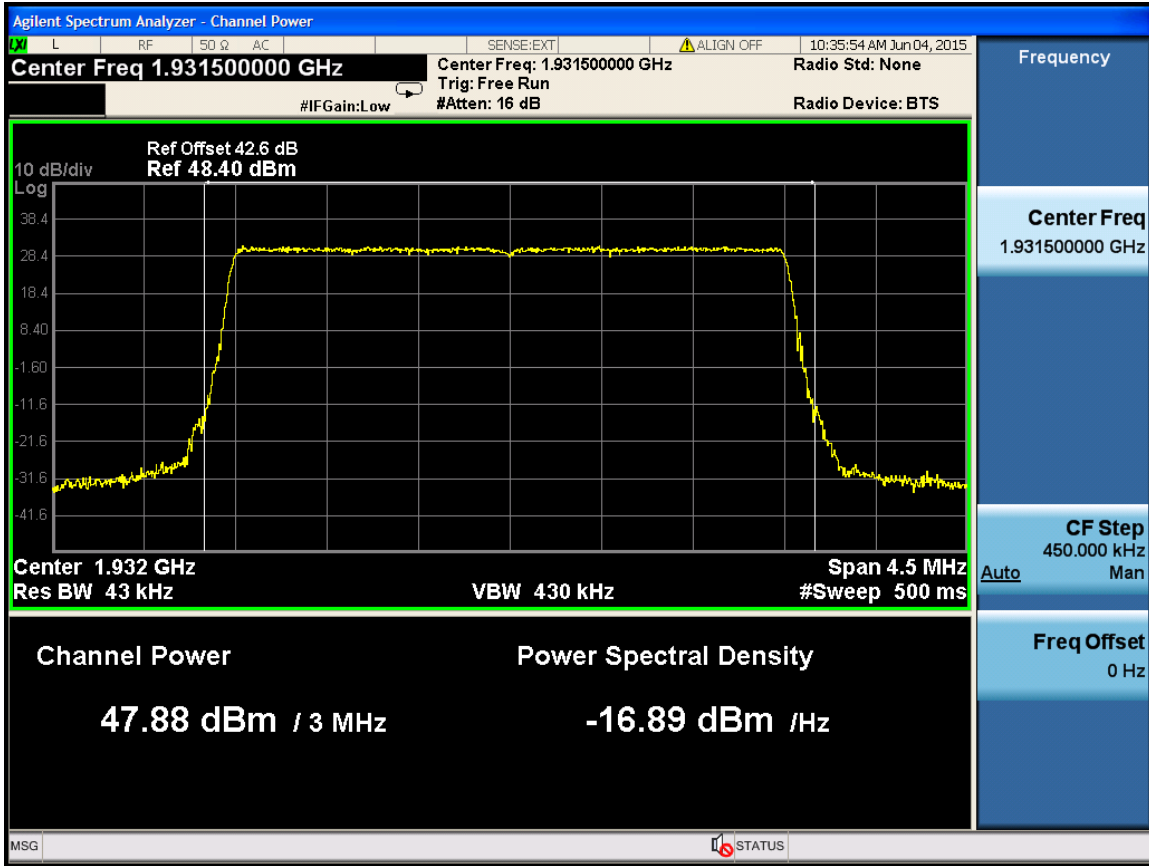
3M -Port 1 -1960MHz



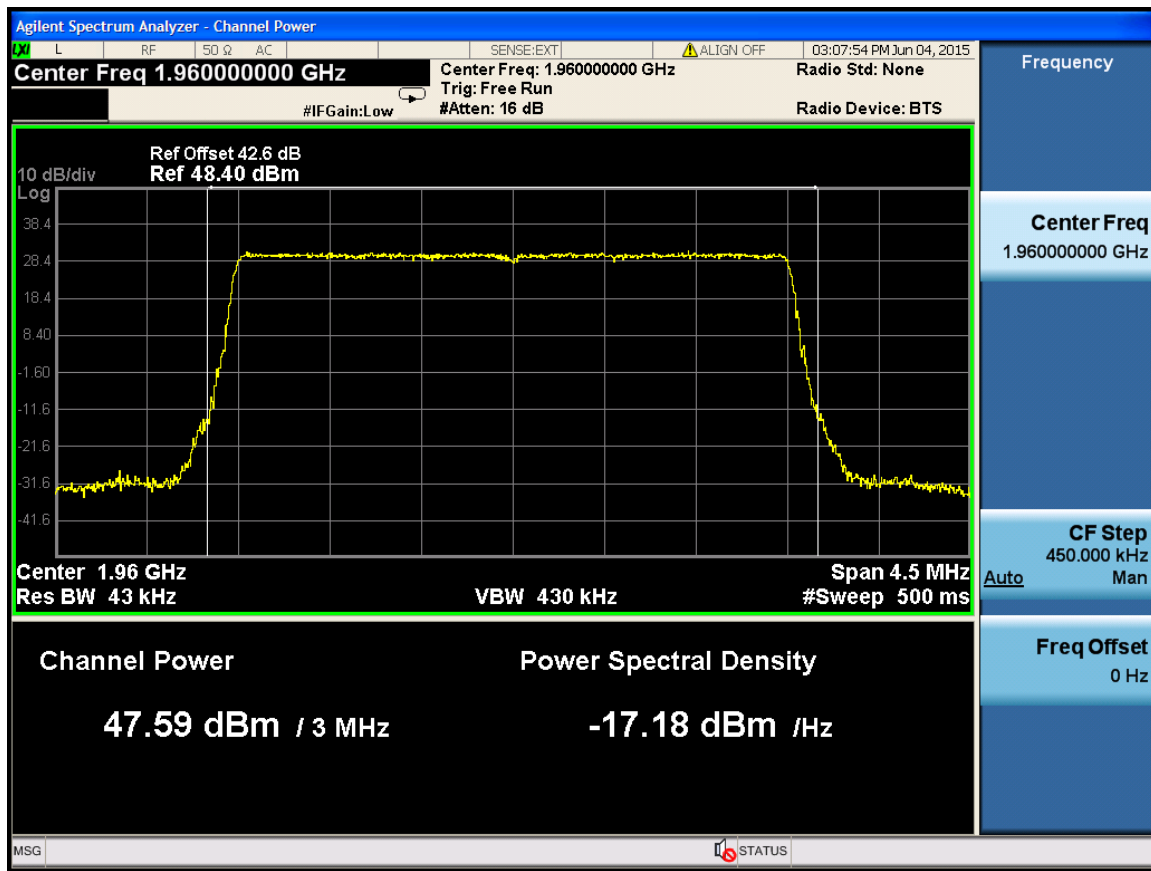
3M -Port 1 -1988.5MHz



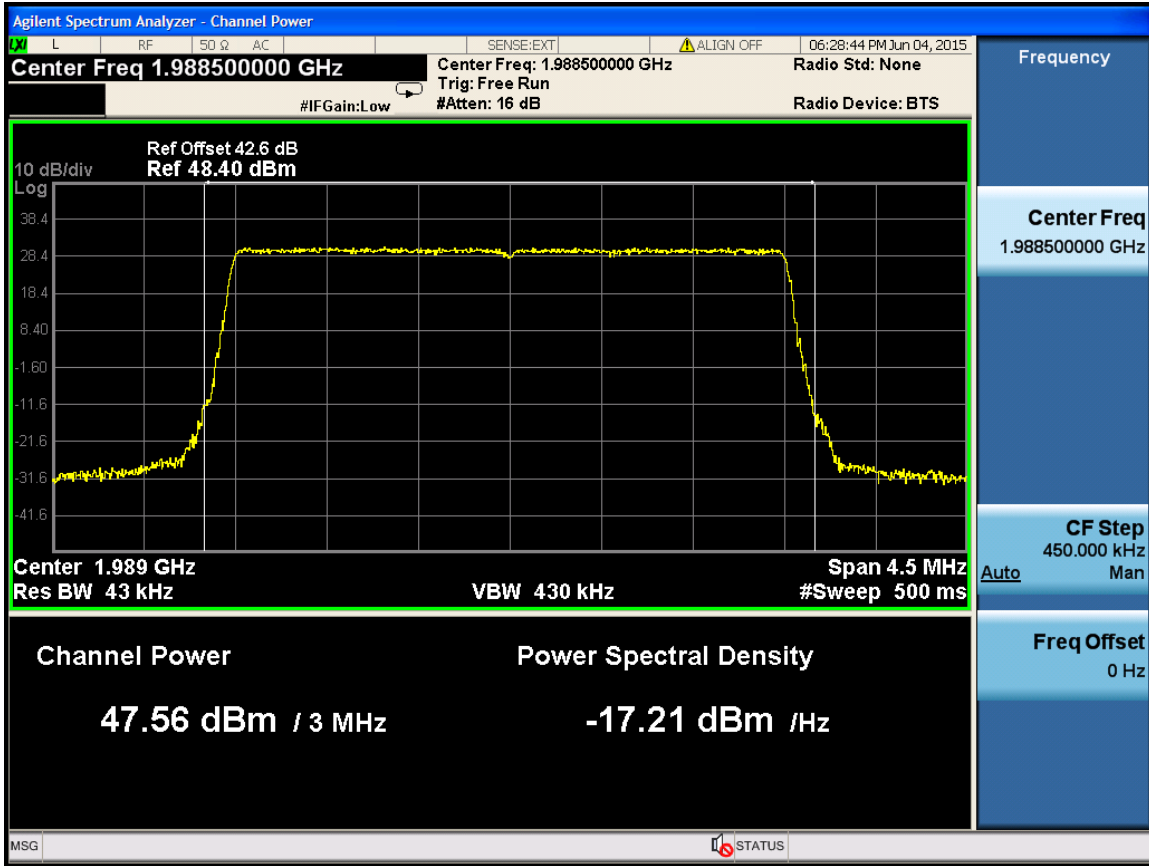
3M -Port 4 -1931.5MHz



3M -Port 4 -1960MHz



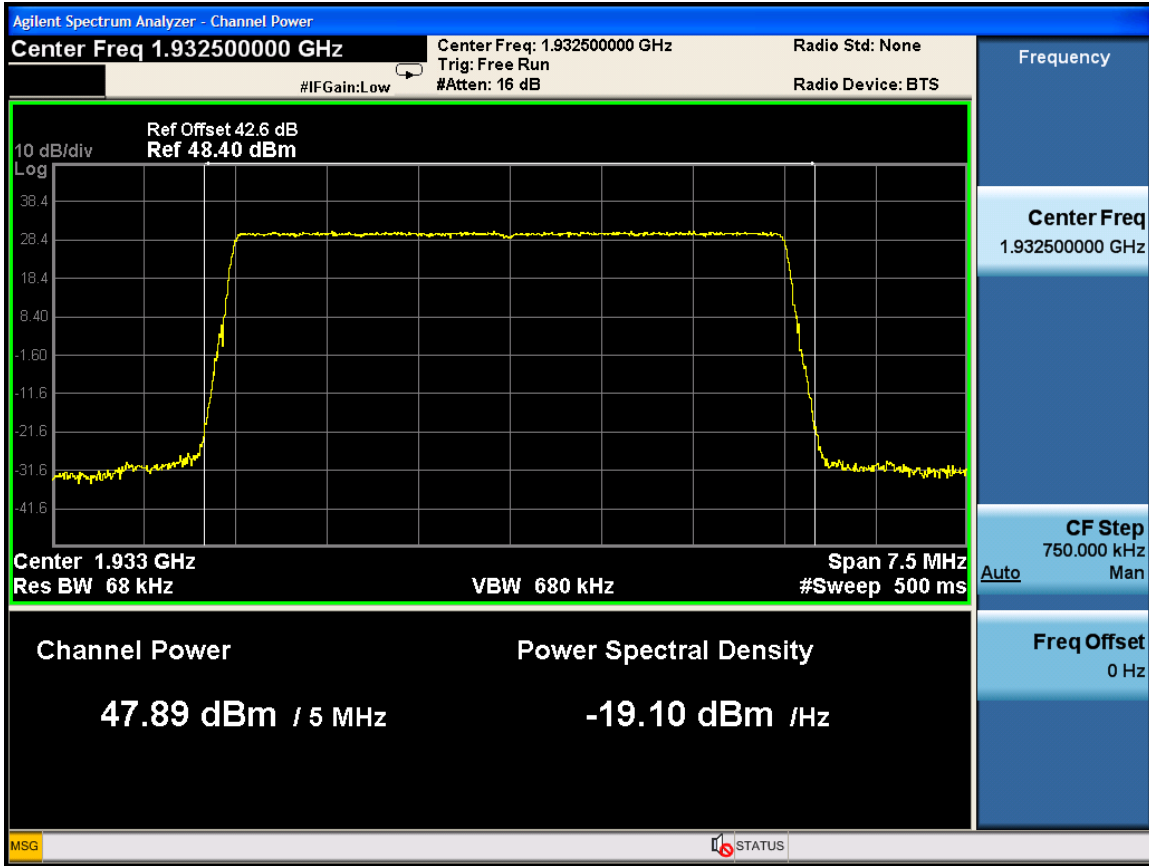
3M -Port 4 -1988.5MHz



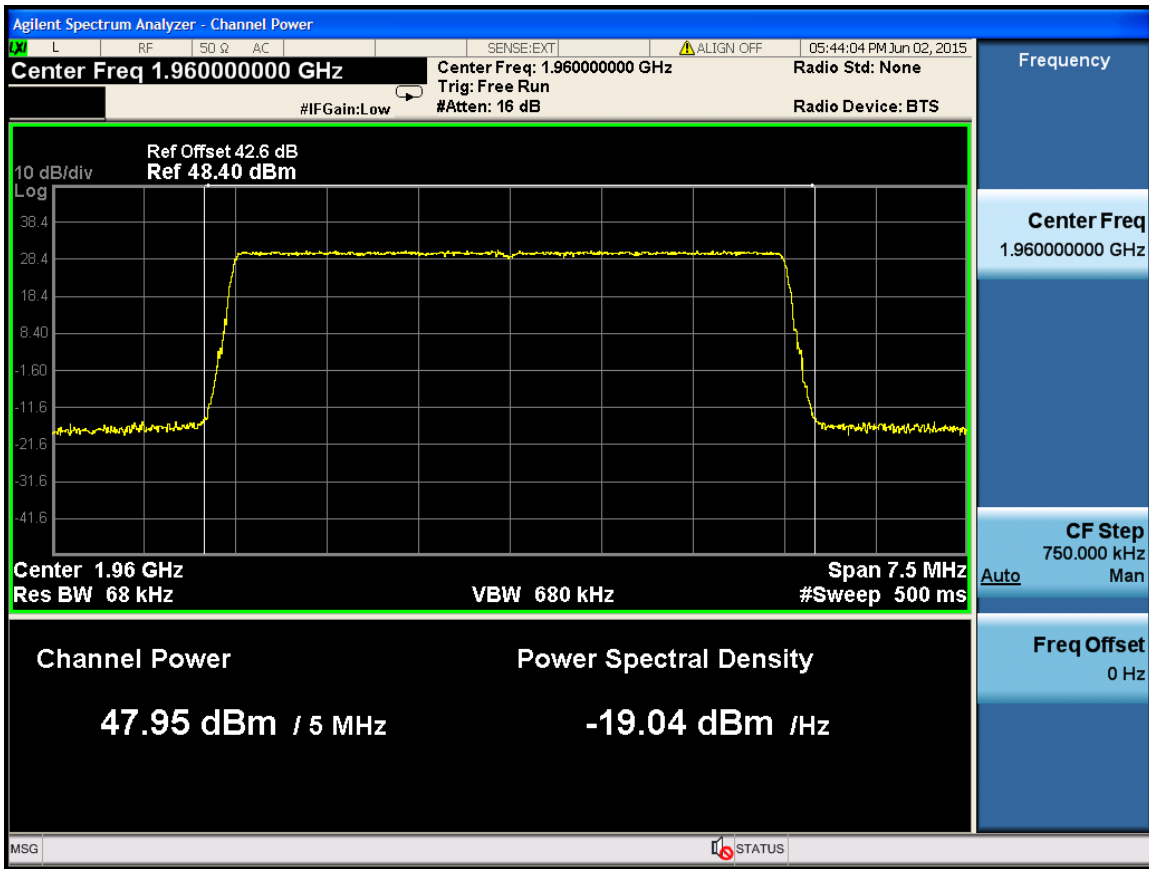
Channel Bandwidth :5M

Port	Center Freq. (MHz)	Max output Power in dBm	Antenna gain dBi	Cable Loss dB	equivalent isotropically radiated power dBm Of single antenna	Total Power in W Of single antenna
1	1932.5	47.89	15	3	59.89	974.990
	1960	47.95	15	3	59.95	988.553
	1987.5	47.97	15	3	59.97	993.116
4	1932.5	47.88	15	3	59.88	972.747
	1960	48.03	15	3	60.03	1006.932
	1987.5	47.68	15	3	59.68	928.966

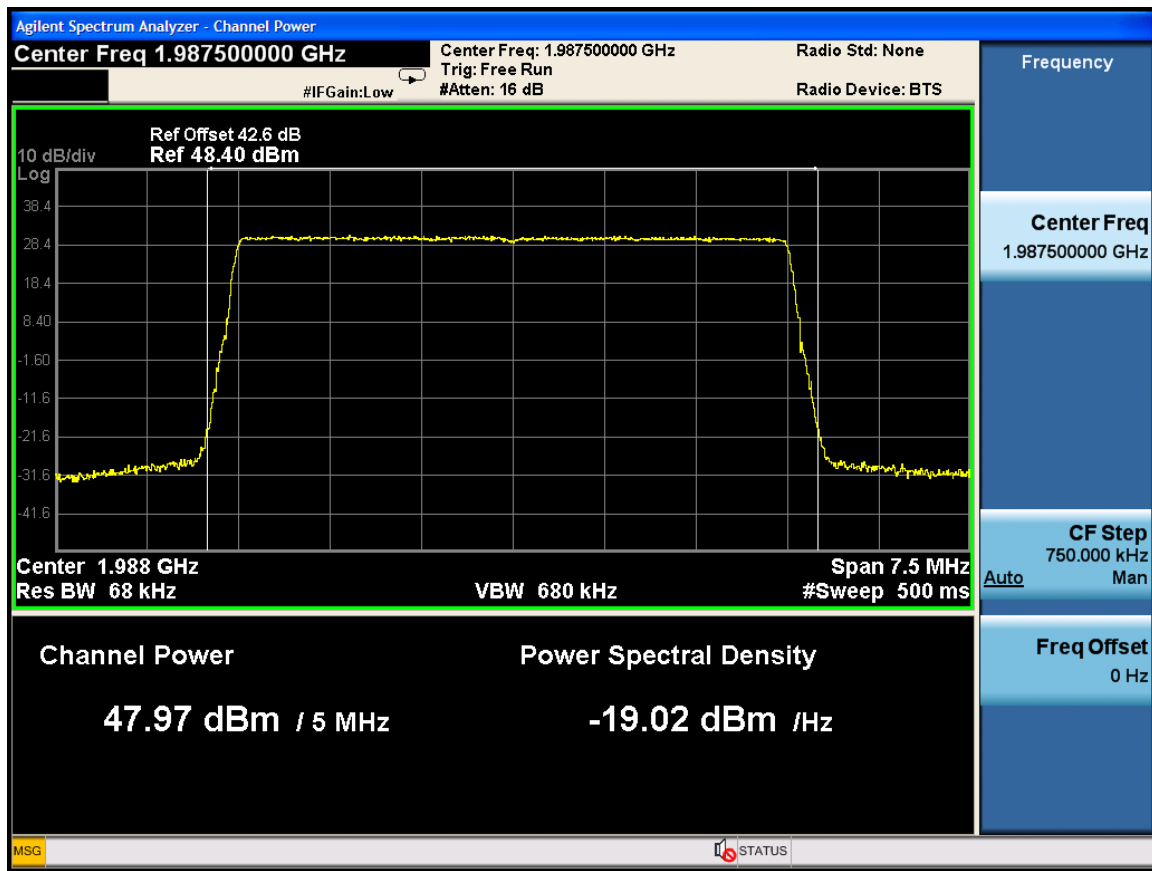
5M -Port 1 -1932.5MHz



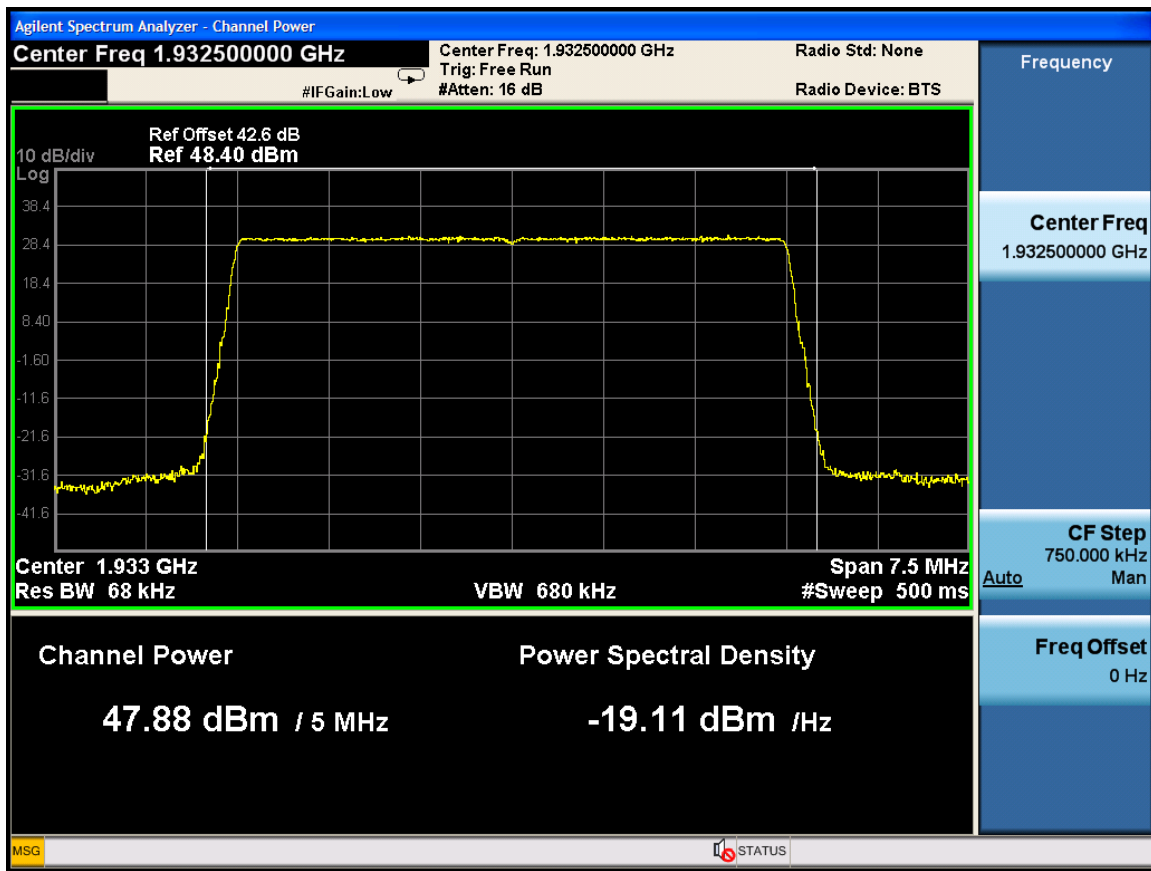
5M -Port 1 -1960MHz



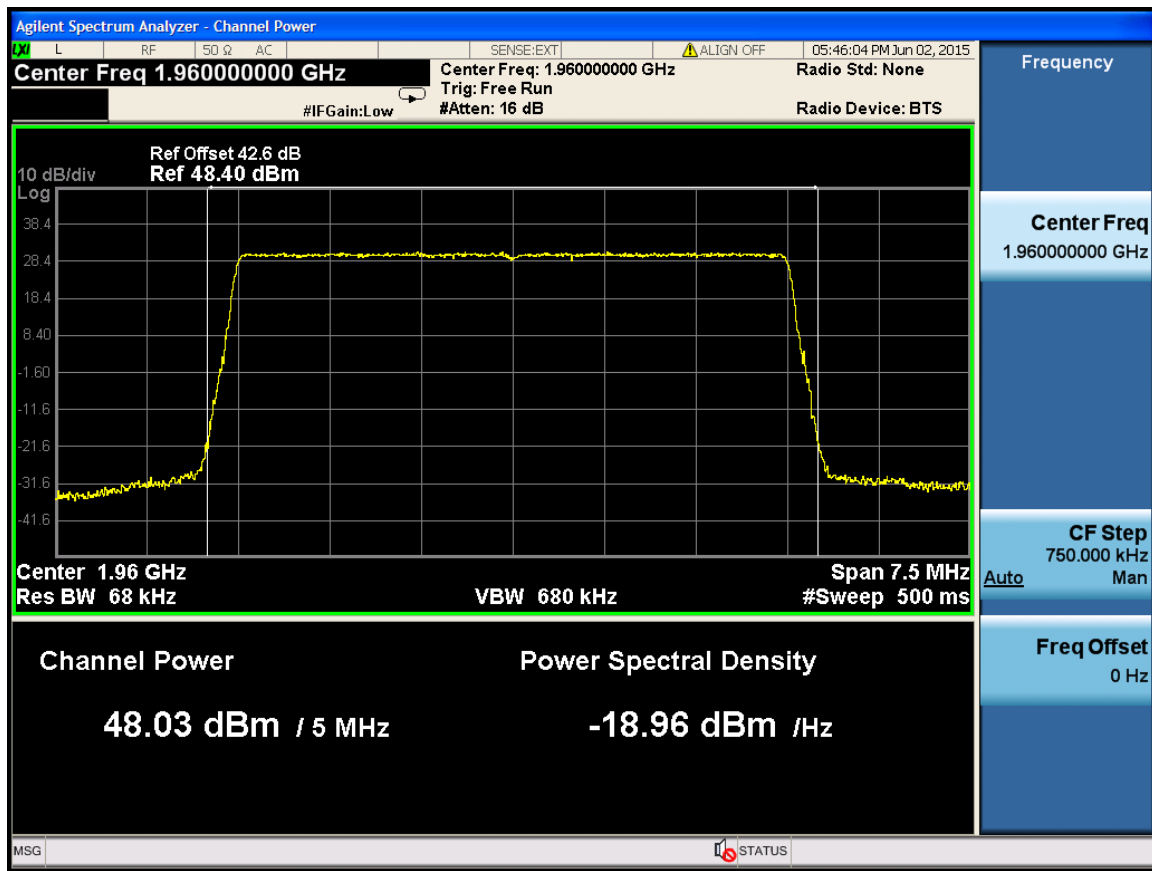
5M -Port 1 -1987.5MHz



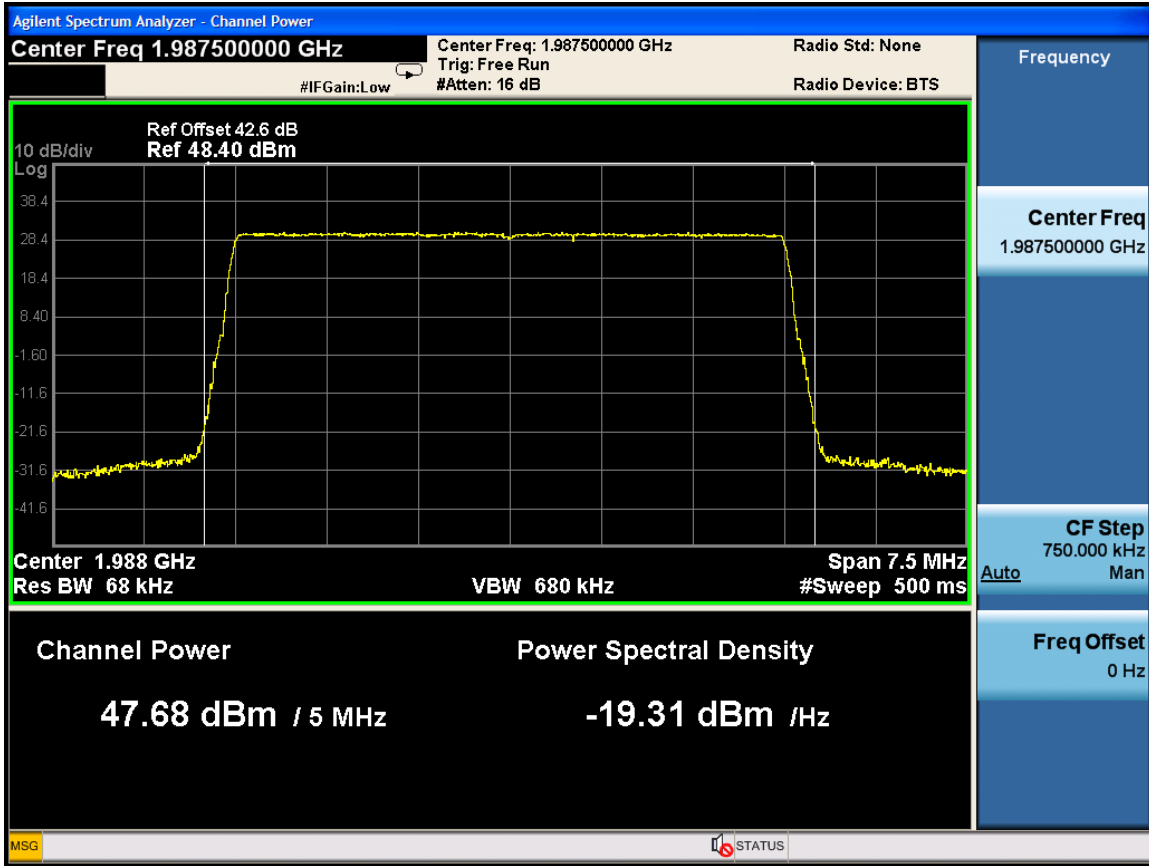
5M -Port 4 -1932.5MHz



5M -Port 4 -1960MHz



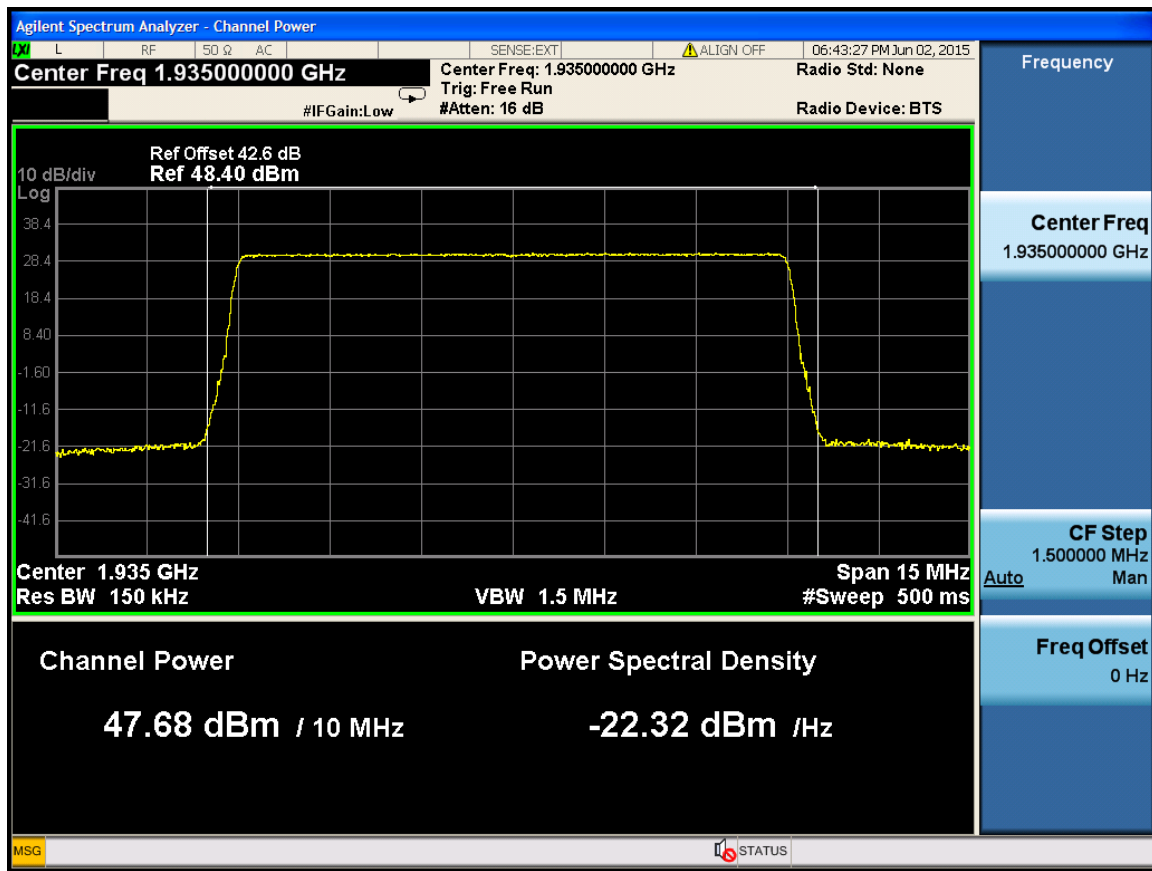
5M -Port 4 -1987.5MHz



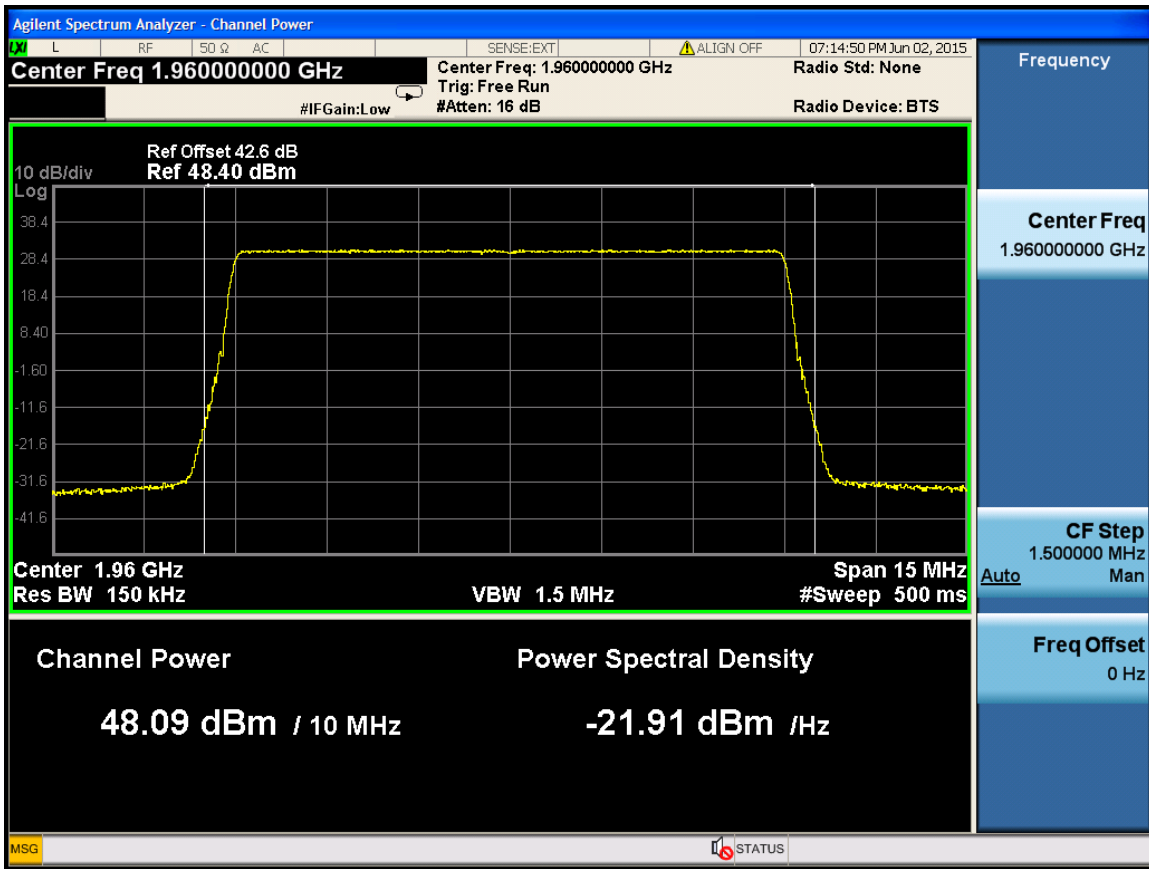
Channel Bandwidth :10M

Port	Center Freq. (MHz)	Max output Power in dBm	Antenna gain dBi	Cable Loss dB	equivalent isotropically radiated power dBm Of single antenna	Total Power in W Of single antenna
1	1935	47.68	15	3	59.68	928.966
	1960	48.09	15	3	60.09	1020.939
	1985	47.86	15	3	59.86	968.278
4	1935	47.68	15	3	59.68	928.966
	1960	48.09	15	3	60.09	1020.939
	1985	47.86	15	3	59.86	968.278

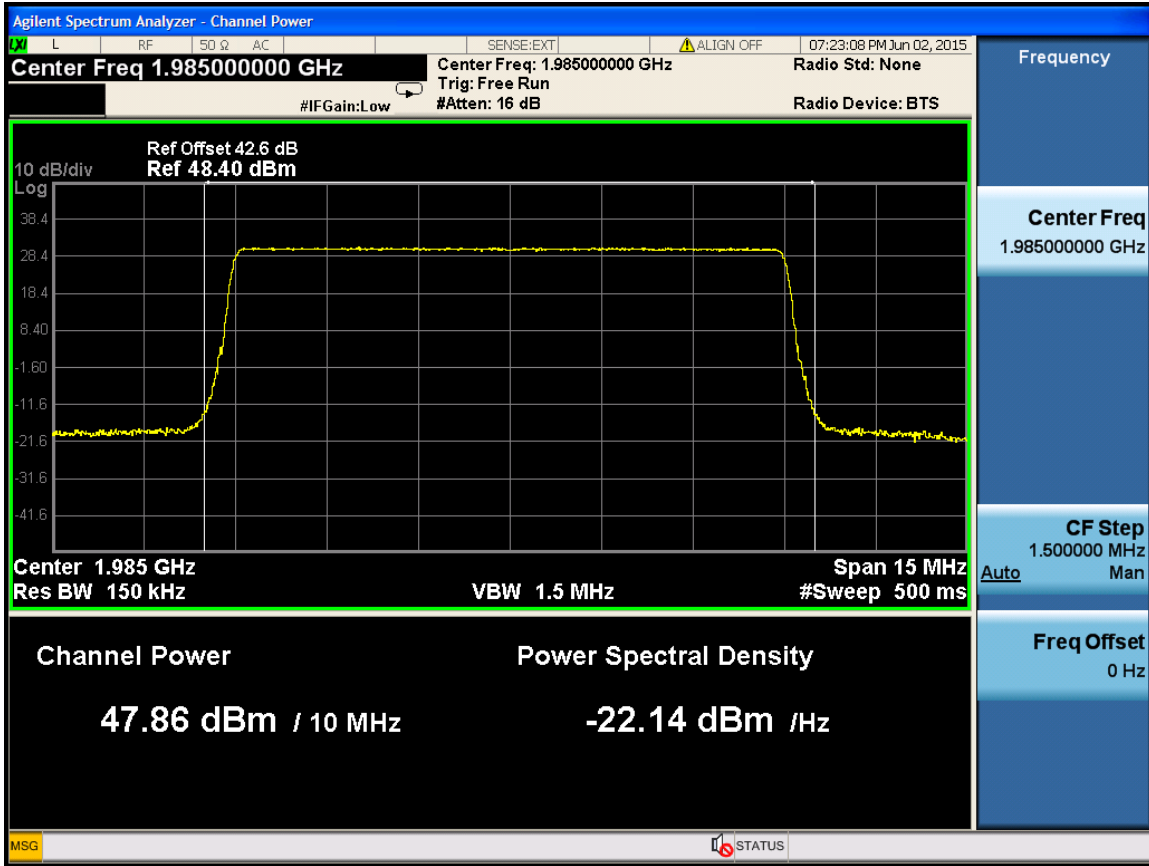
10M -Port 1 -1935MHz



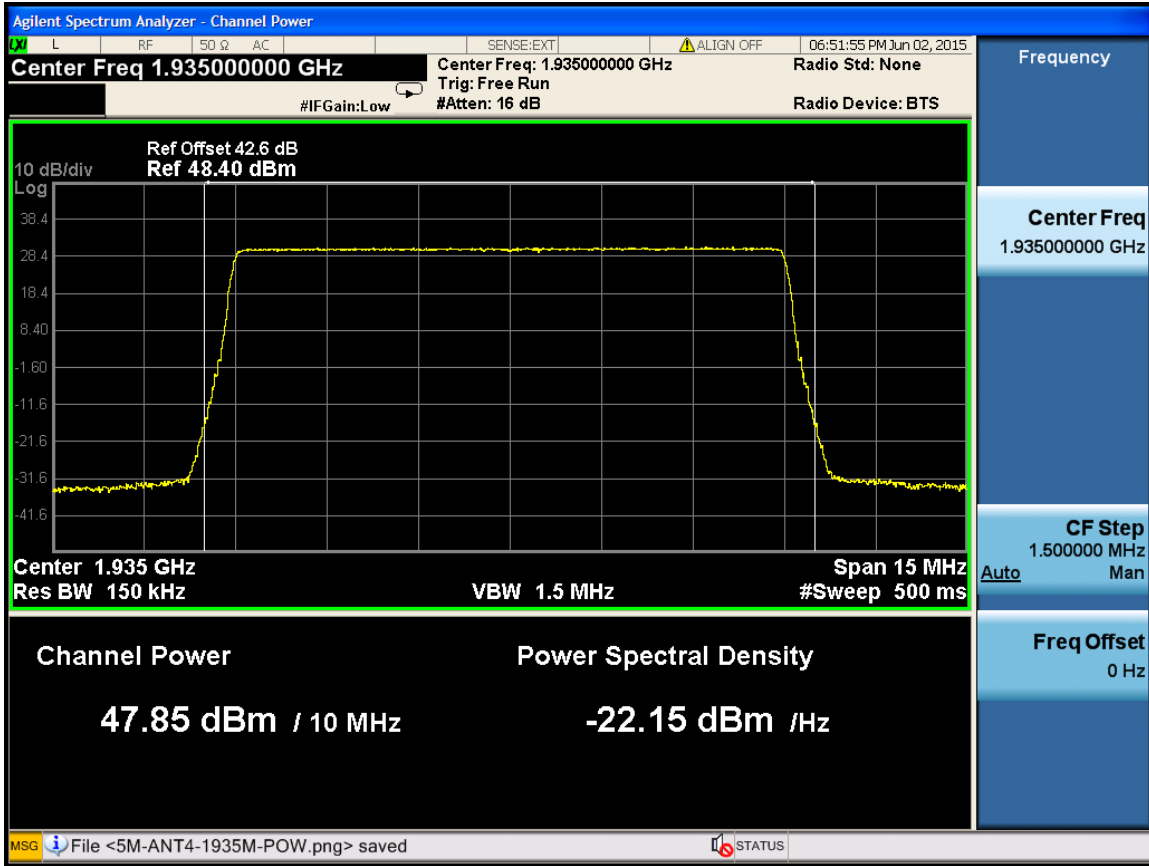
10M -Port 1 -1960MHz



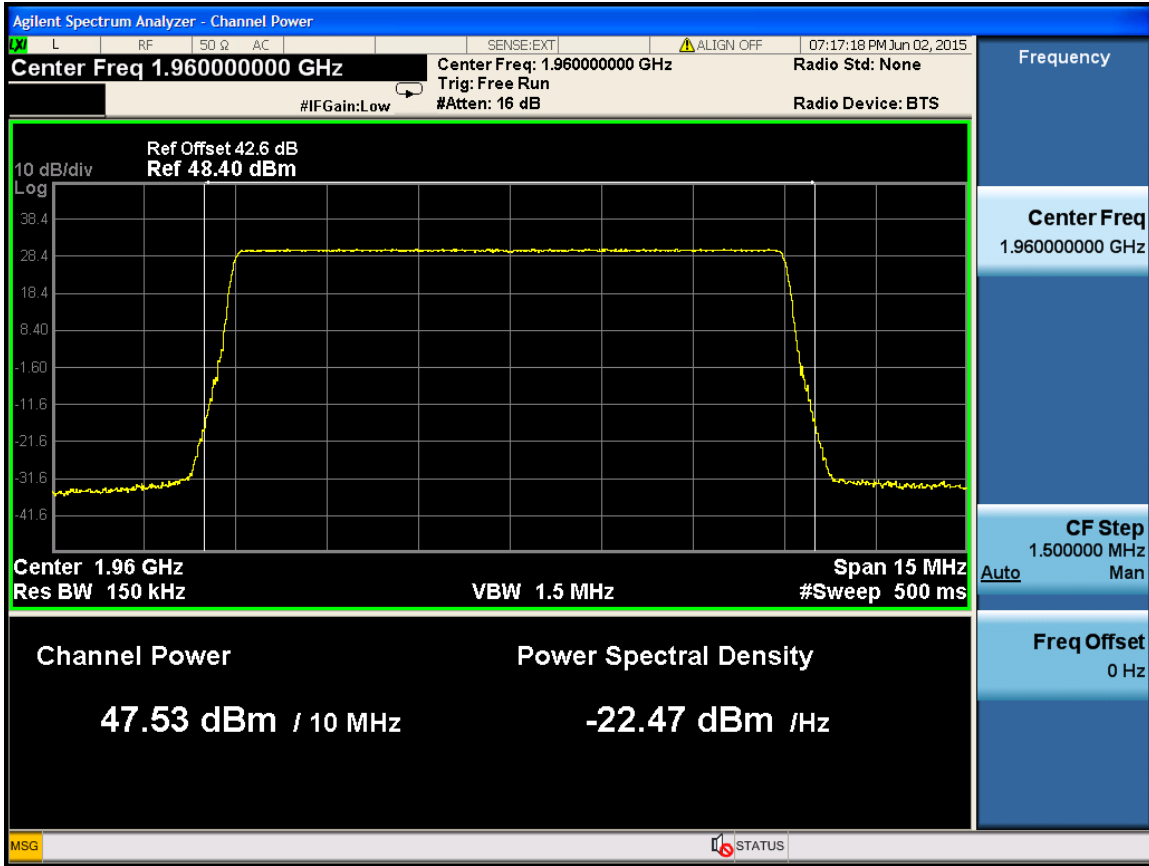
10M -Port 1 -1985MHz



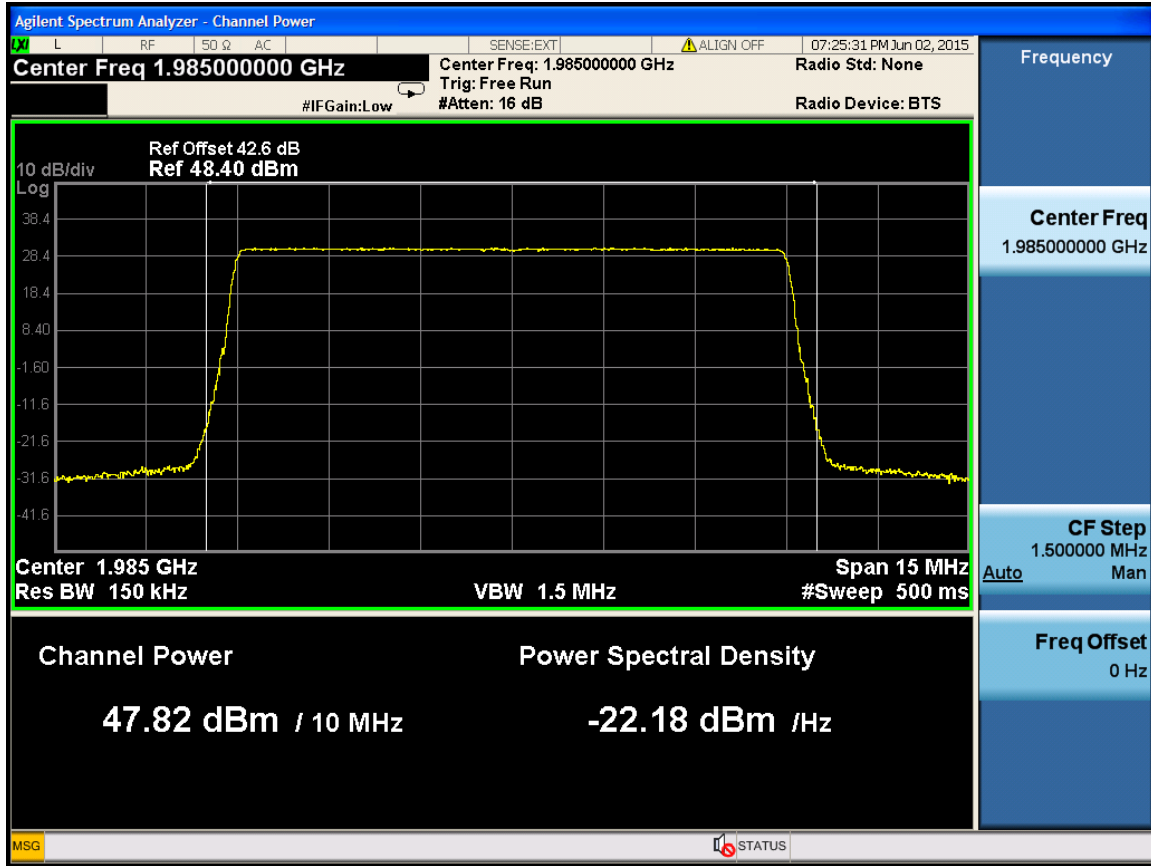
10M -Port 4 -1935MHz



10M -Port 4 -1960MHz



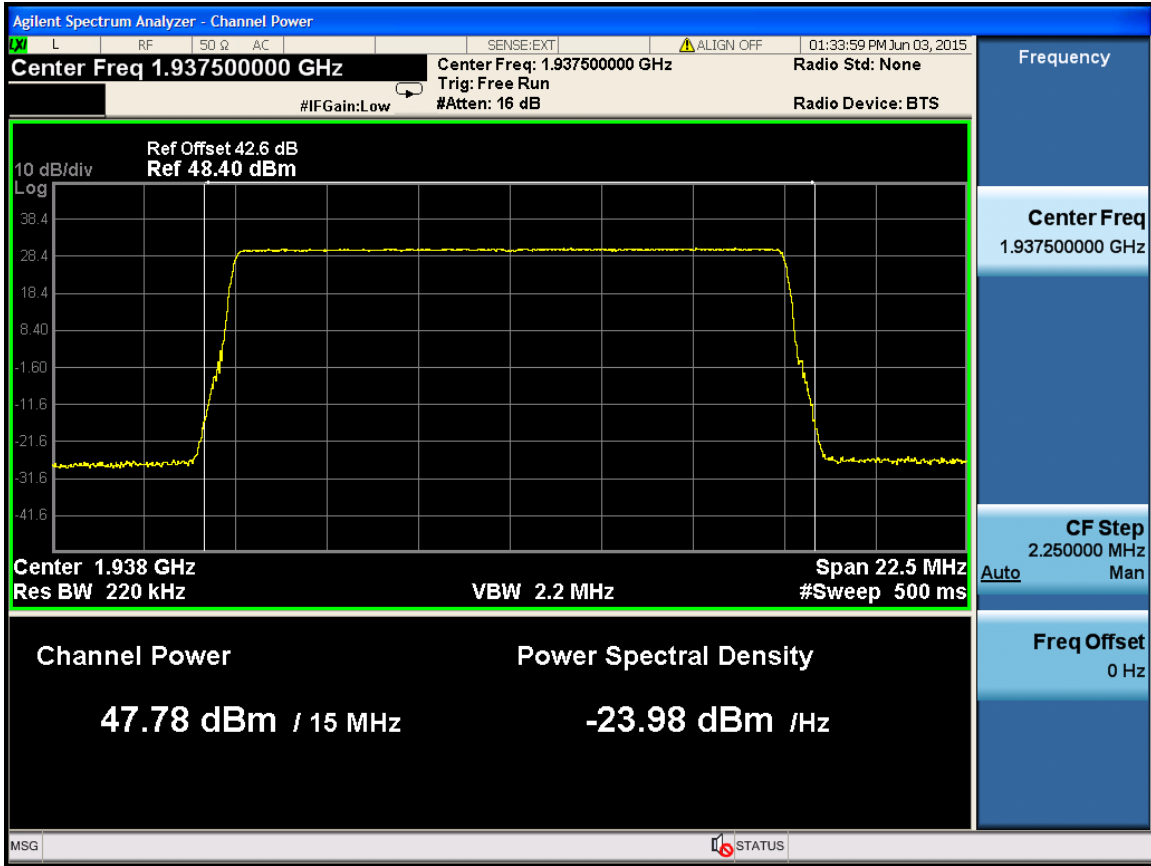
10M -Port 4 -1985MHz



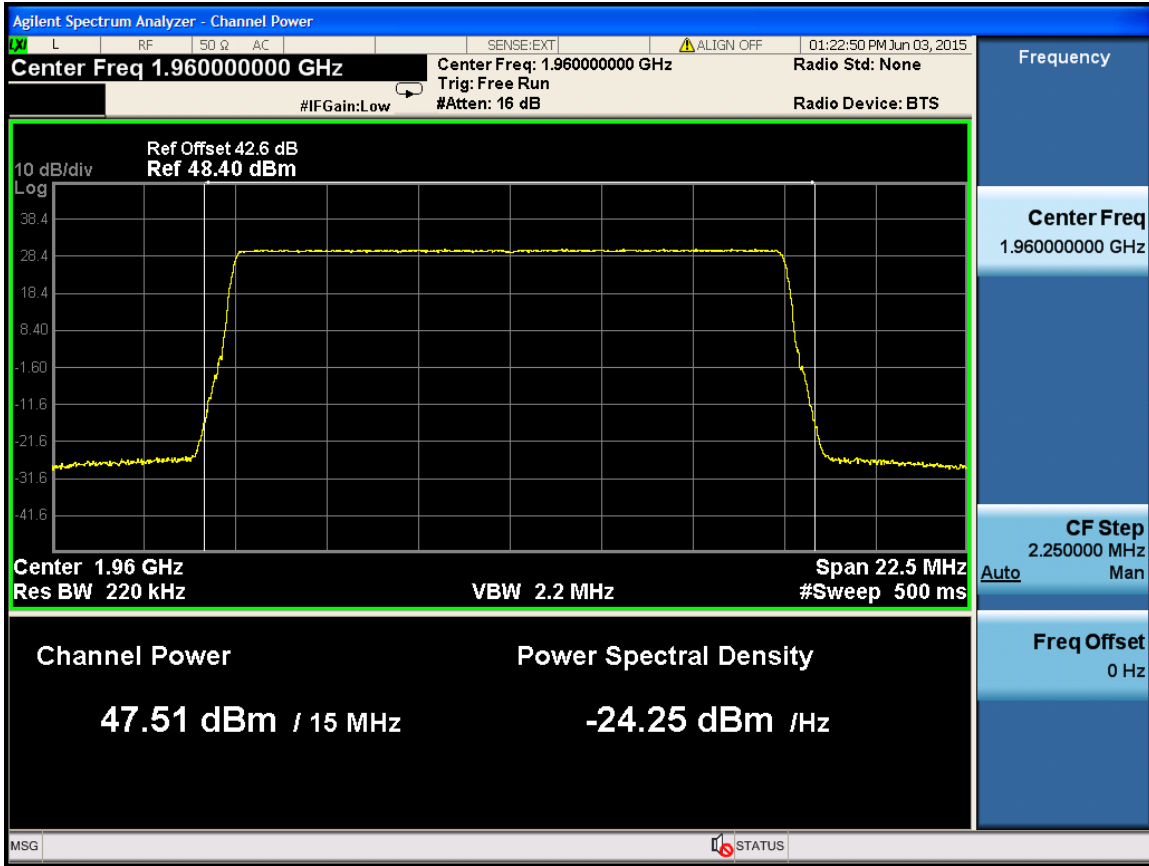
Channel Bandwidth :15M

Port	Center Freq. (MHz)	Max output Power in dBm	Antenna gain dBi	Cable Loss dB	equivalent isotropically radiated power dBm Of single antenna	Total Power in W Of single antenna
1	1937.5	47.78	15	3	59.78	950.605
	1960	47.51	15	3	59.51	893.305
	1982.5	47.93	15	3	59.93	984.011
4	1937.5	47.78	15	3	59.78	950.605
	1960	47.46	15	3	59.46	883.080
	1982.5	47.65	15	3	59.65	922.571

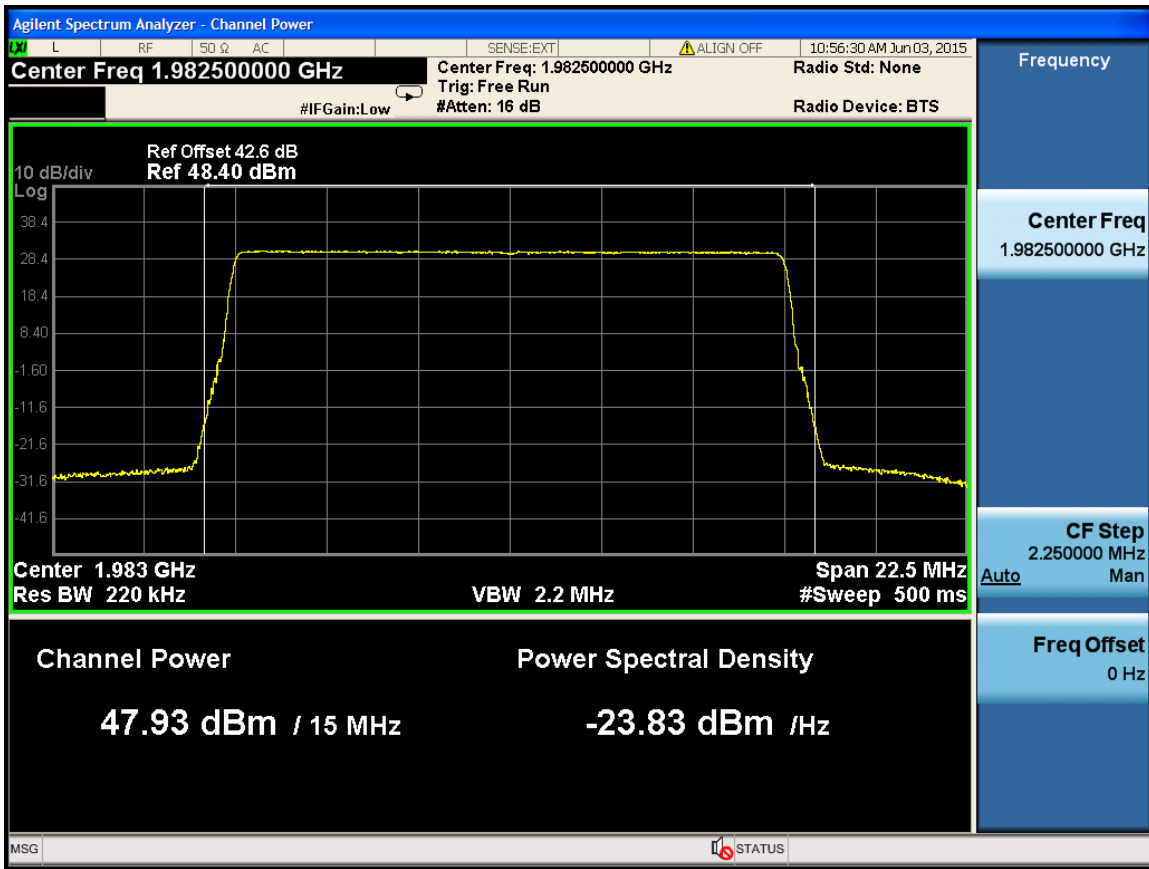
15M -Port 1 -1937.5MHz



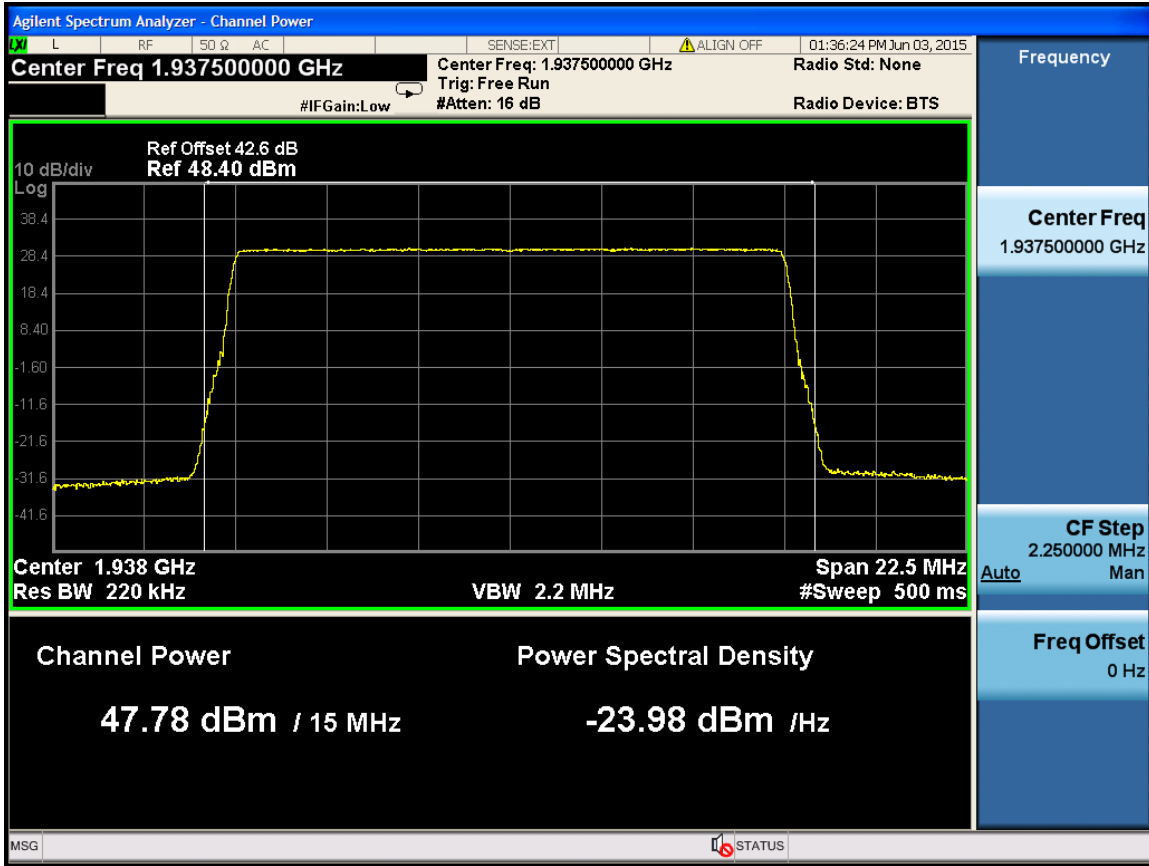
15M -Port 1 -1960MHz



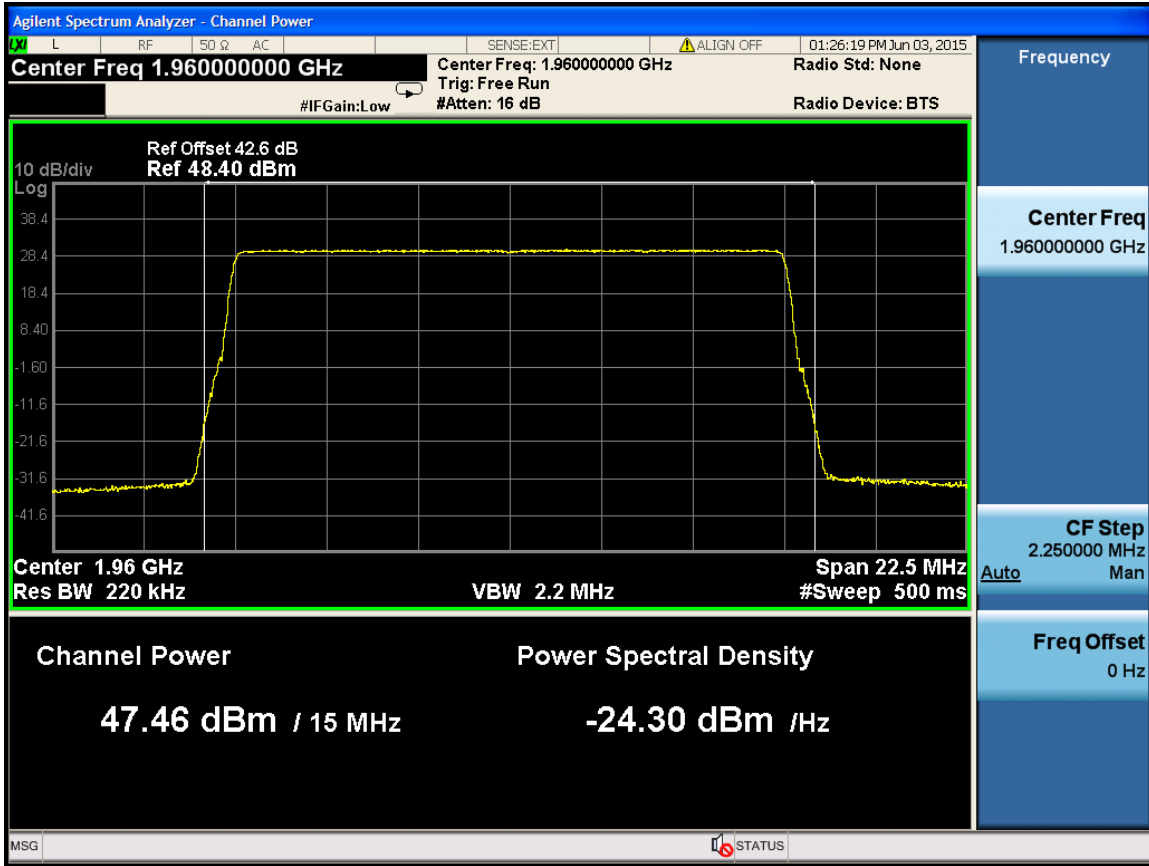
15M -Port 1 -1982.5MHz



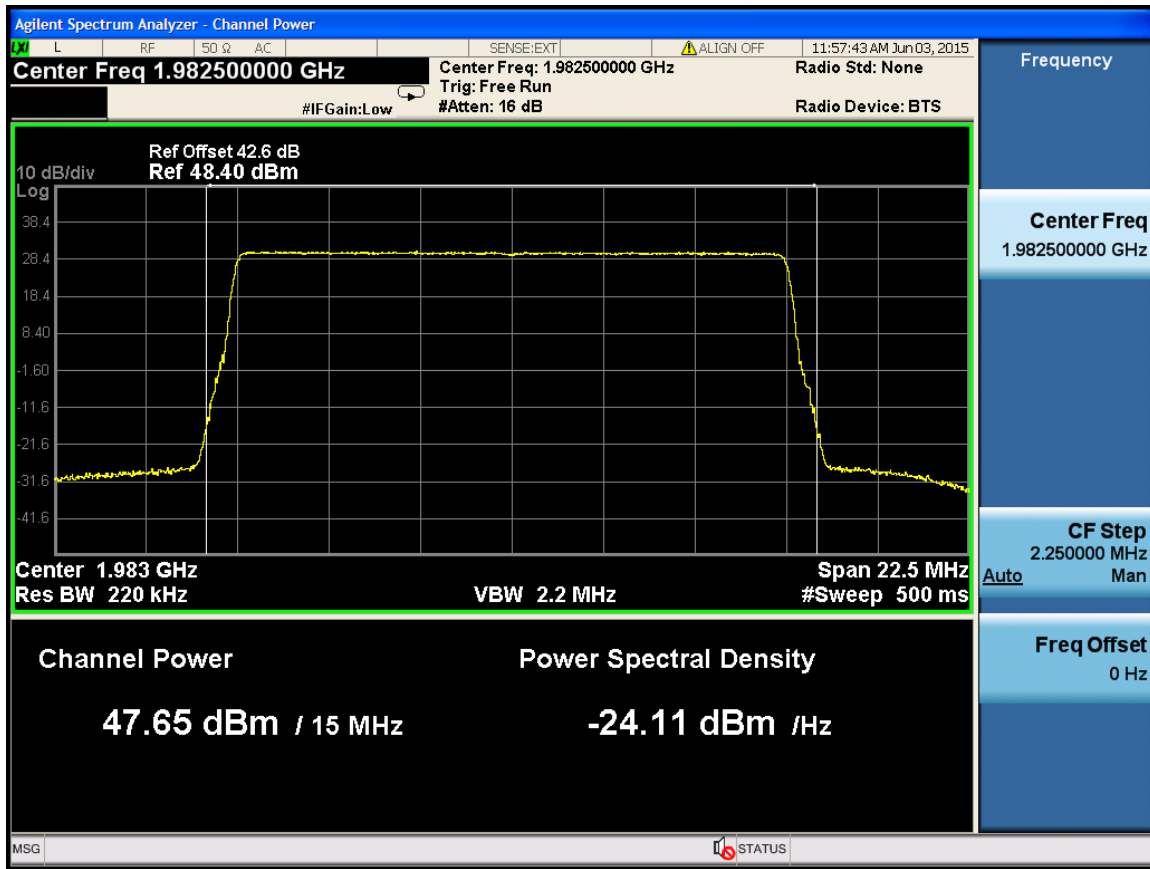
15M -Port 4 -1937.5MHz



15M -Port 4 -1960MHz



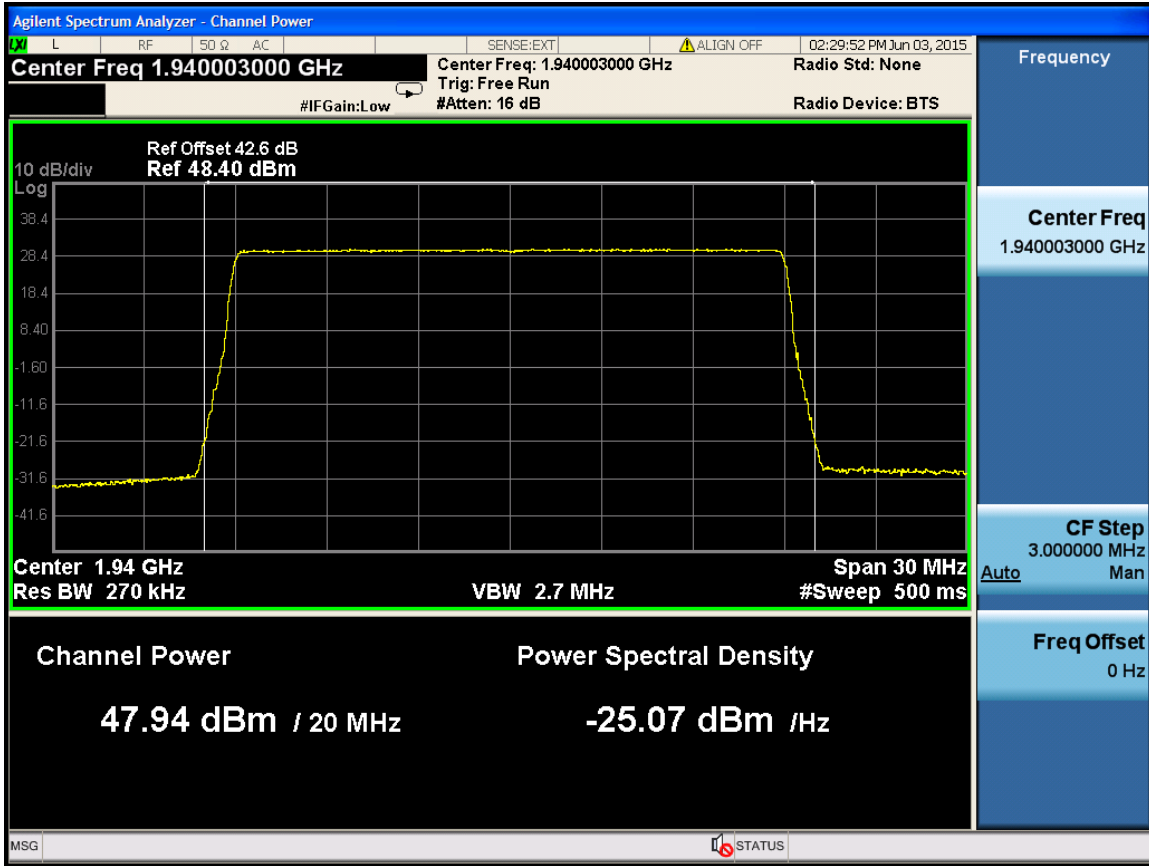
15M -Port 4 -1982.5MHz



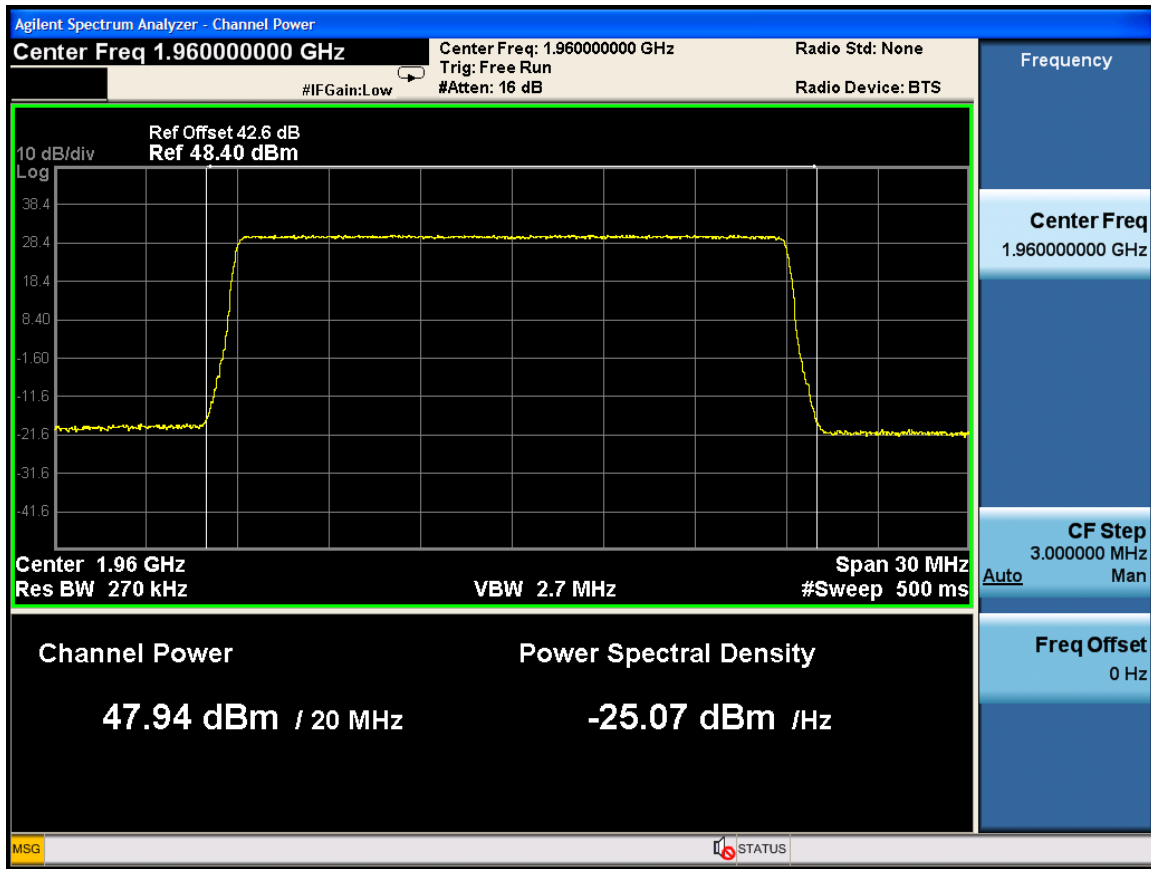
Channel Bandwidth :20M

Port	Center Freq. (MHz)	Max output Power in dBm	Antenna gain dBi	Cable Loss dB	equivalent isotropically radiated power dBm Of single antenna	Total Power in W Of single antenna
1	1940	47.94	15	3	59.94	986.279
	1960	47.94	15	3	59.94	986.279
	1980	47.87	15	3	59.87	970.510
4	1940	47.63	15	3	59.63	918.333
	1960	47.84	15	3	59.84	963.829
	1980	47.78	15	3	59.78	950.605

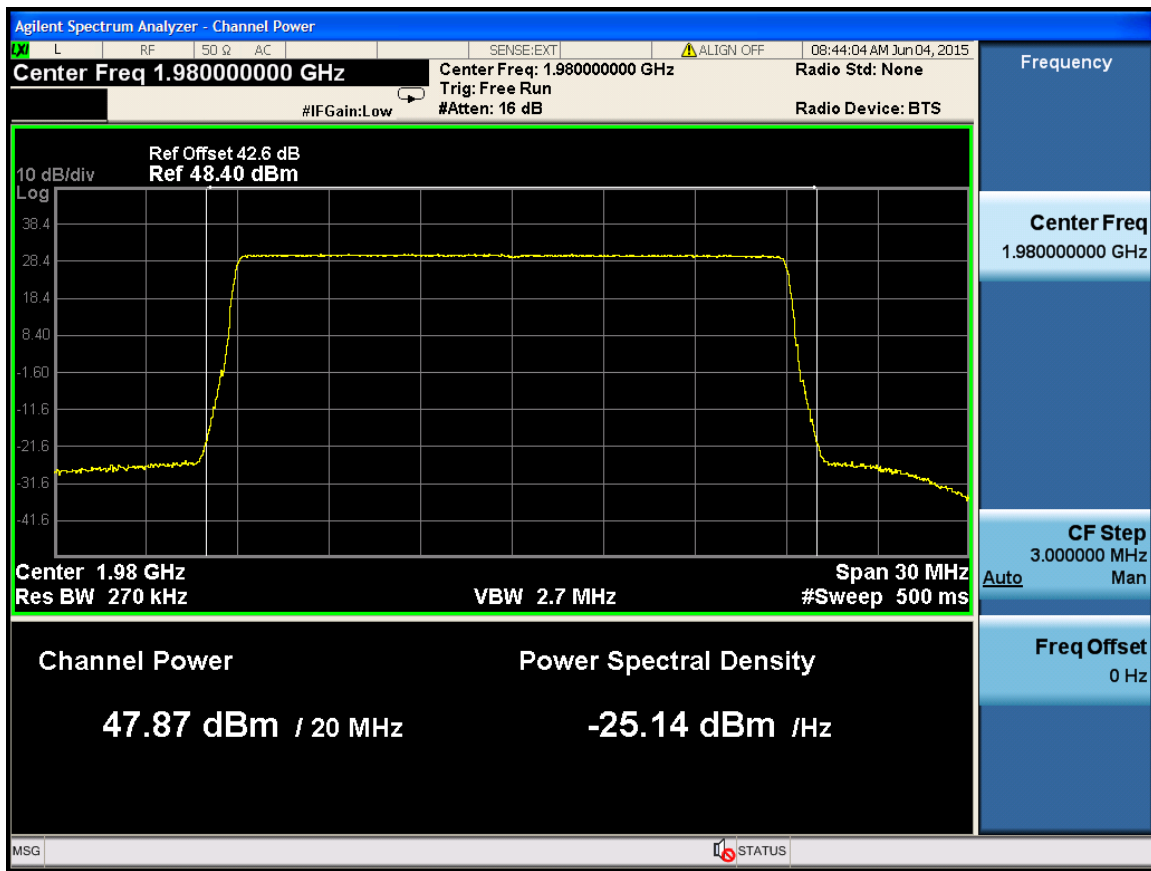
20M -Port 1 -1940MHz



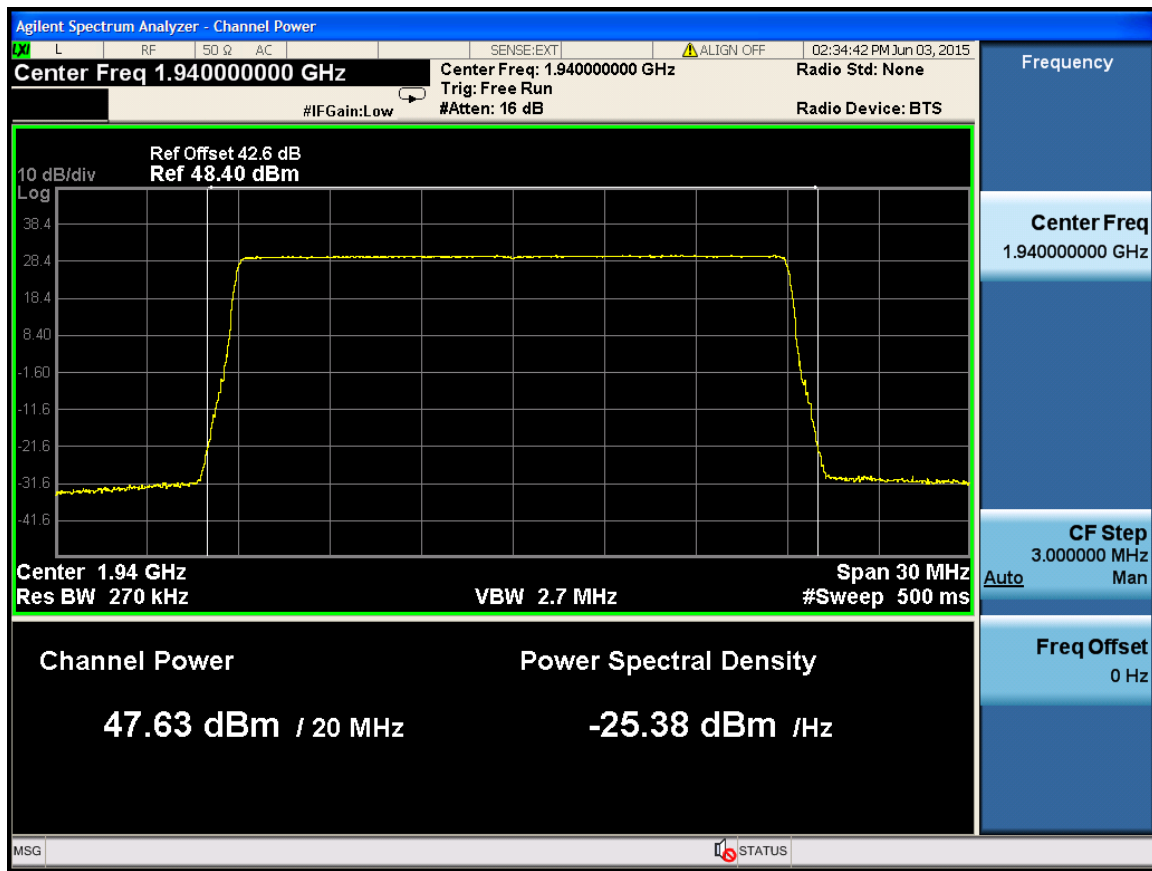
20M -Port 1 -1960MHz



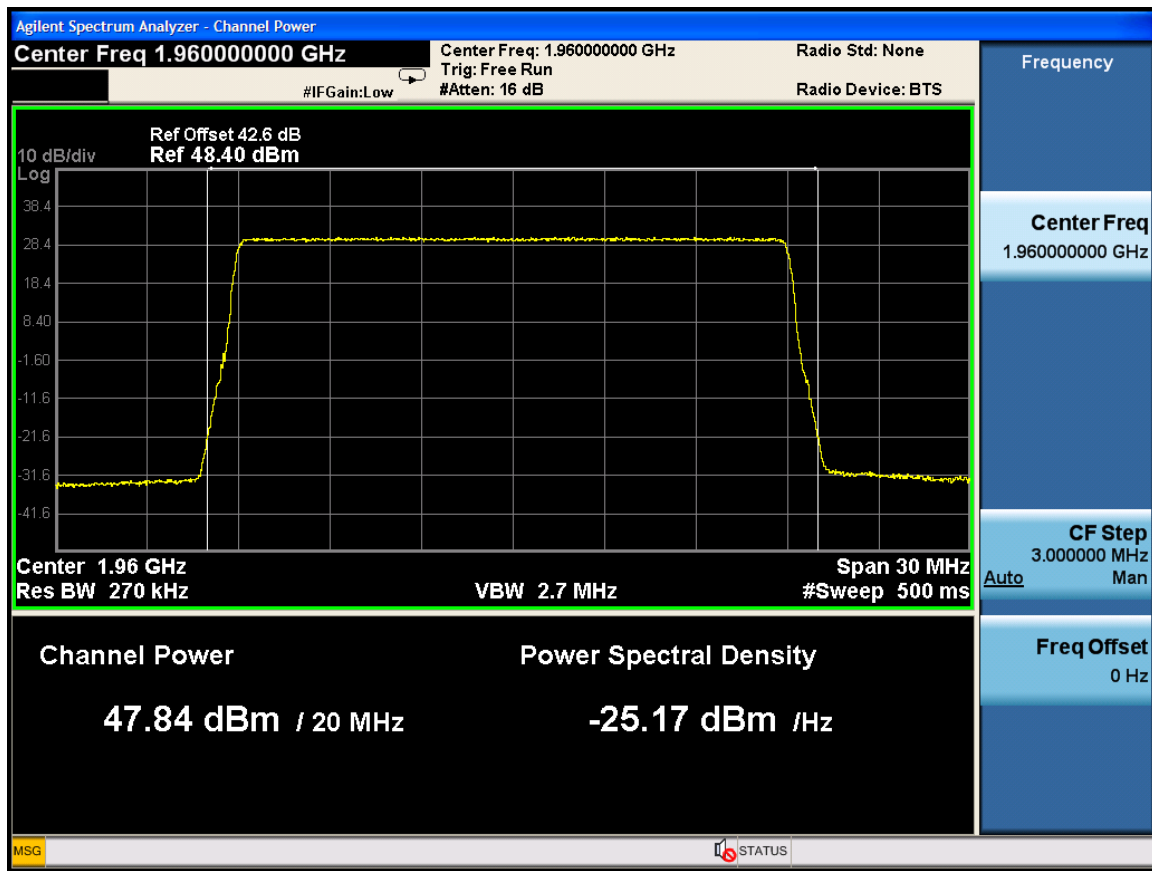
20M -Port 1 -1980MHz



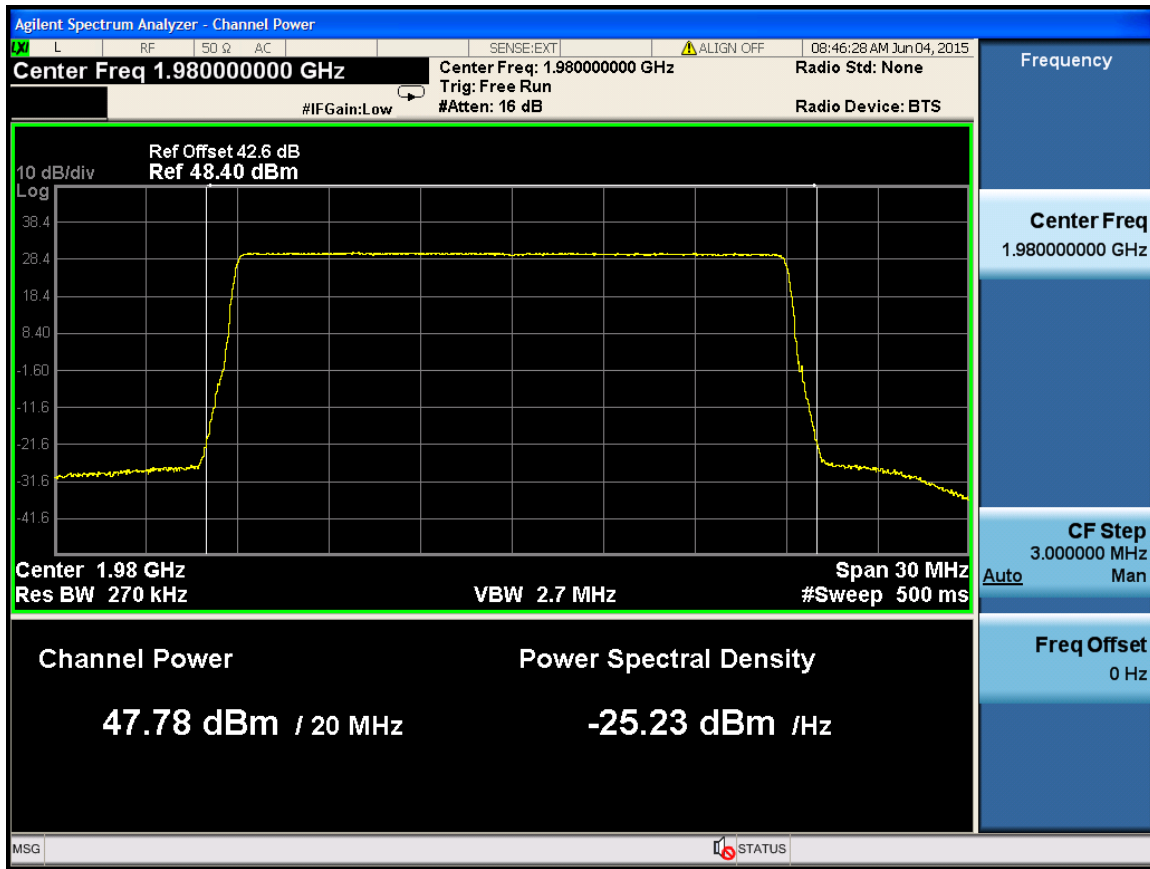
20M -Port 4 -1940MHz



20M -Port 4 -1960MHz



20M -Port 4 -1980MHz



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)

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \text{EIRP} / 4\pi R^2$$

Where: S = power density

R = 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=1mW/cm²

$$\Rightarrow R = 3.61\text{m.}$$

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	2015.04.17	2016.04.17
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2015.04.17	2016.04.17

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:

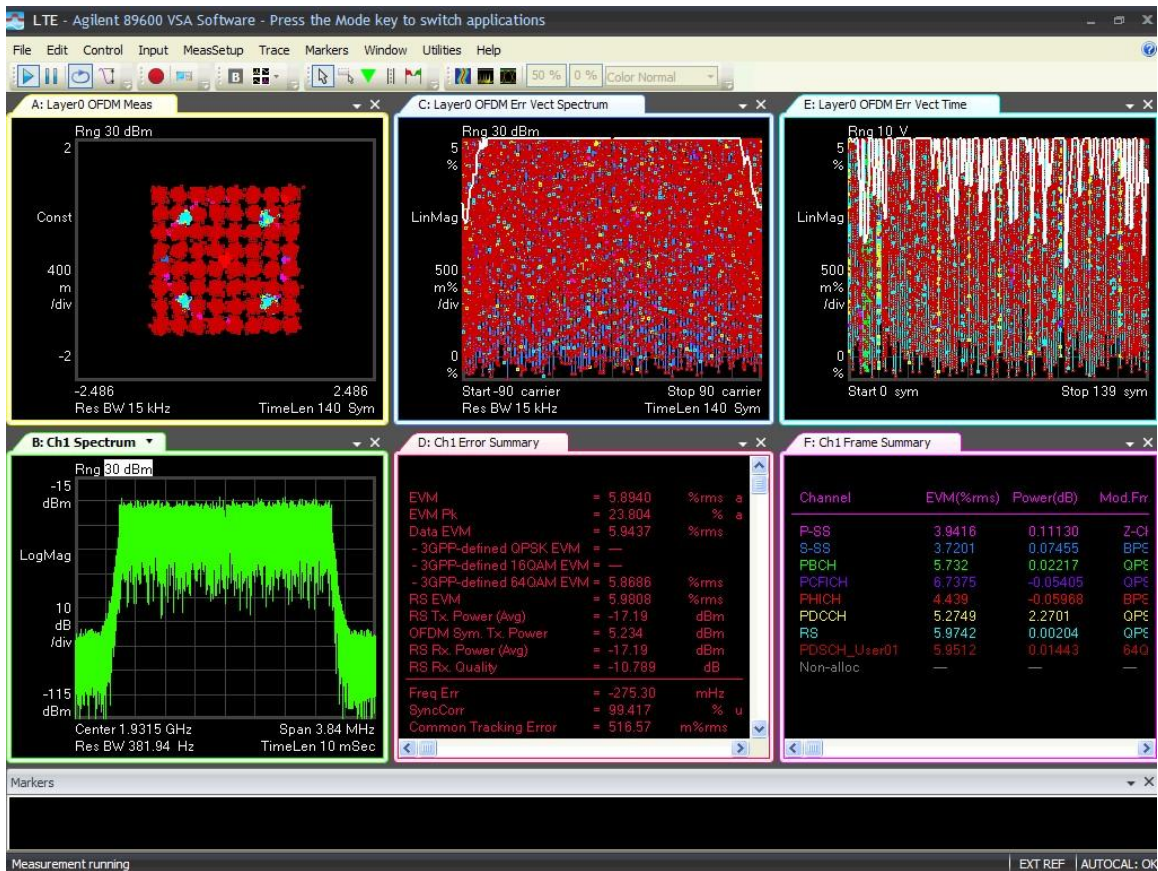
Channel Bandwidth :3M			
Port	Frequency (MHz)	Test mode	EVM%
1	1931.5	TM2.0	1.1518
		TM3.1	5.8686
		TM3.2	10.611
		TM3.3	8.6093
	1960	TM2.0	1.2259
		TM3.1	5.8389
		TM3.2	10.588
		TM3.3	8.4936
	1988.5	TM2.0	2.1700
		TM3.1	5.8738
		TM3.2	10.676
		TM3.3	8.6162
4	1931.5	TM2.0	1.1668
		TM3.1	5.8638
		TM3.2	10.578
		TM3.3	8.6229

1960	TM2.0	1.1081
	TM3.1	5.8653
	TM3.2	10.612
	TM3.3	8.3222
1988.5	TM2.0	2.0910
	TM3.1	5.8642
	TM3.2	10.654
	TM3.3	8.6335

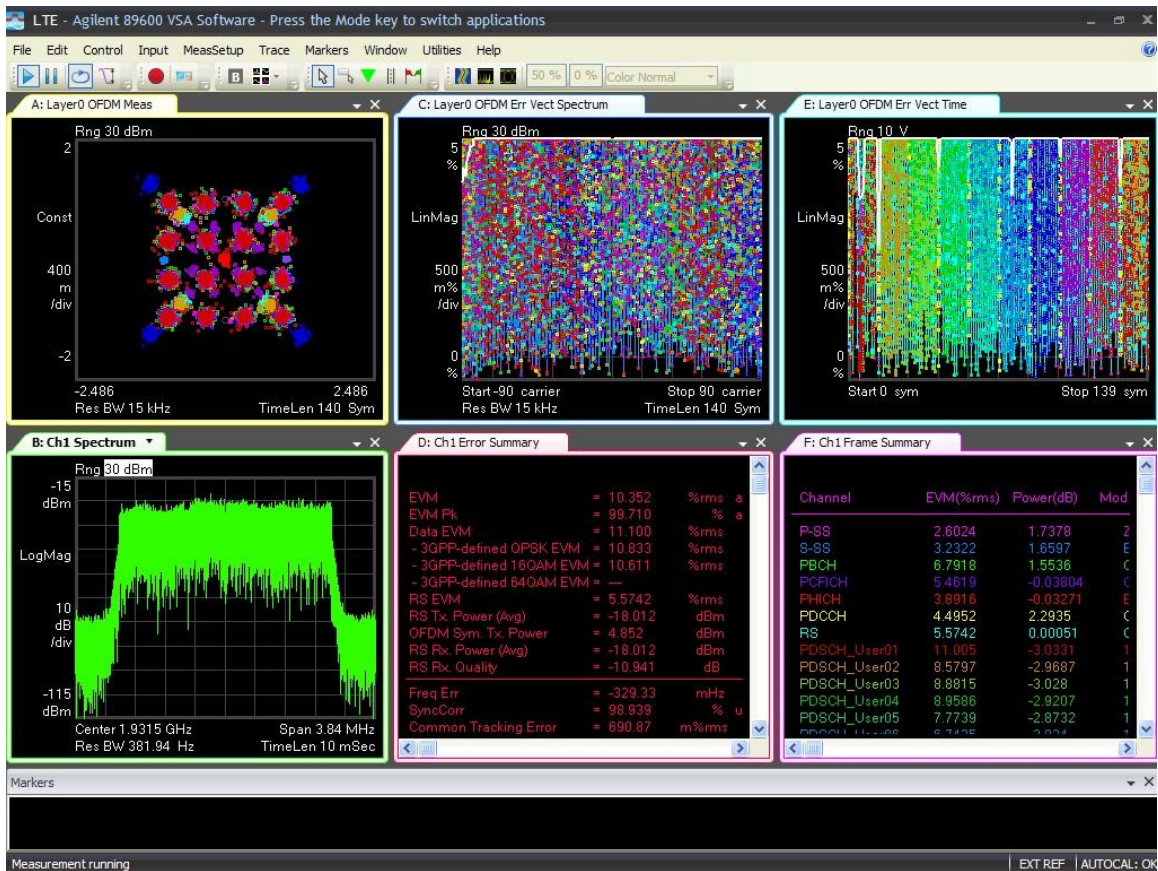
3M -Port 1 -1931.5MHz-TM2.0



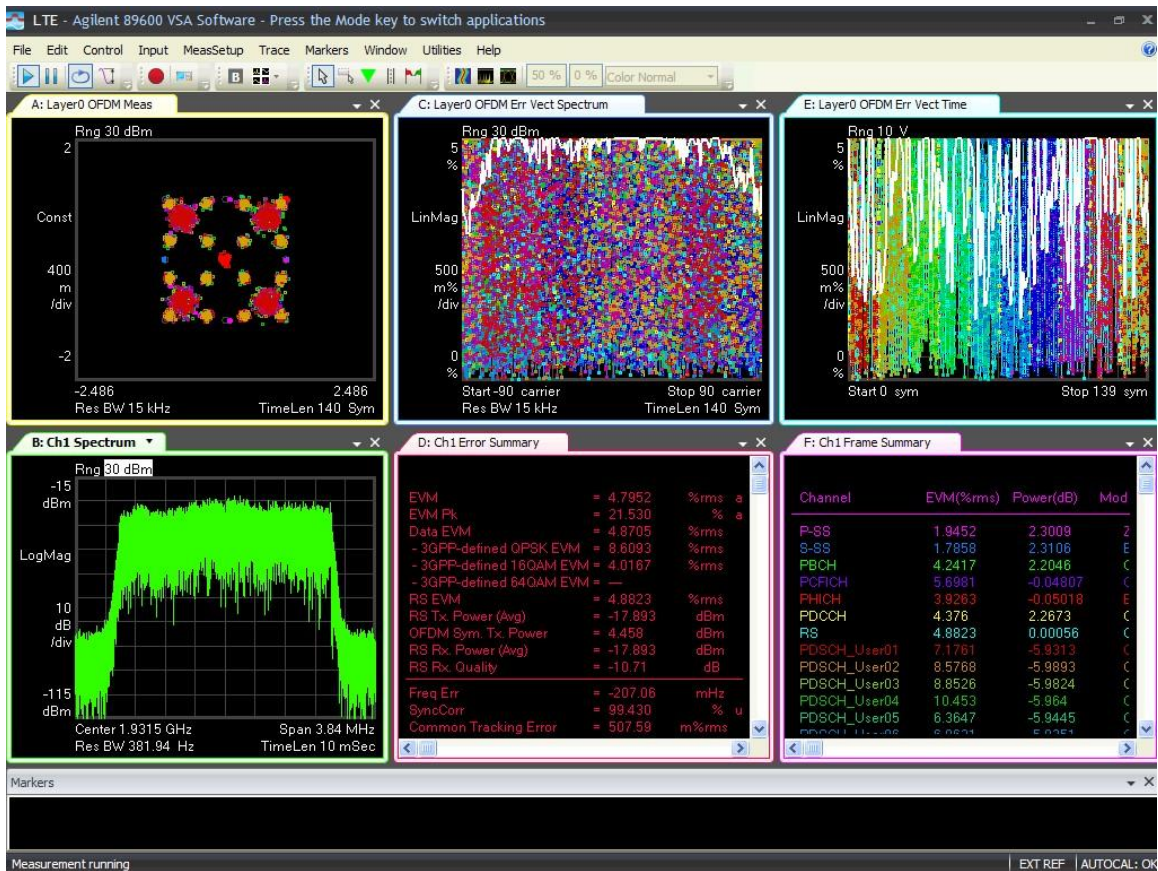
3M -Port 1 -1931.5MHz -TM3.1



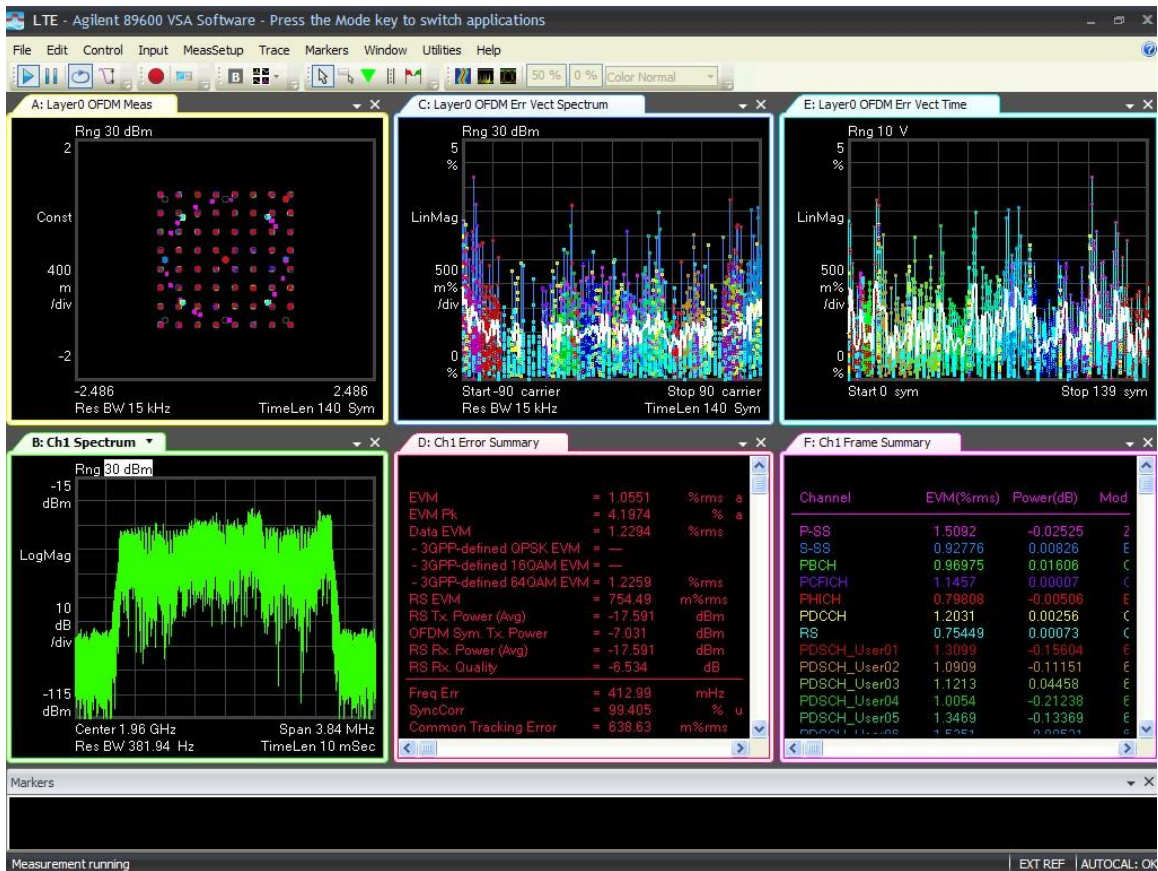
3M -Port 1 -1931.5MHz -TM3.2



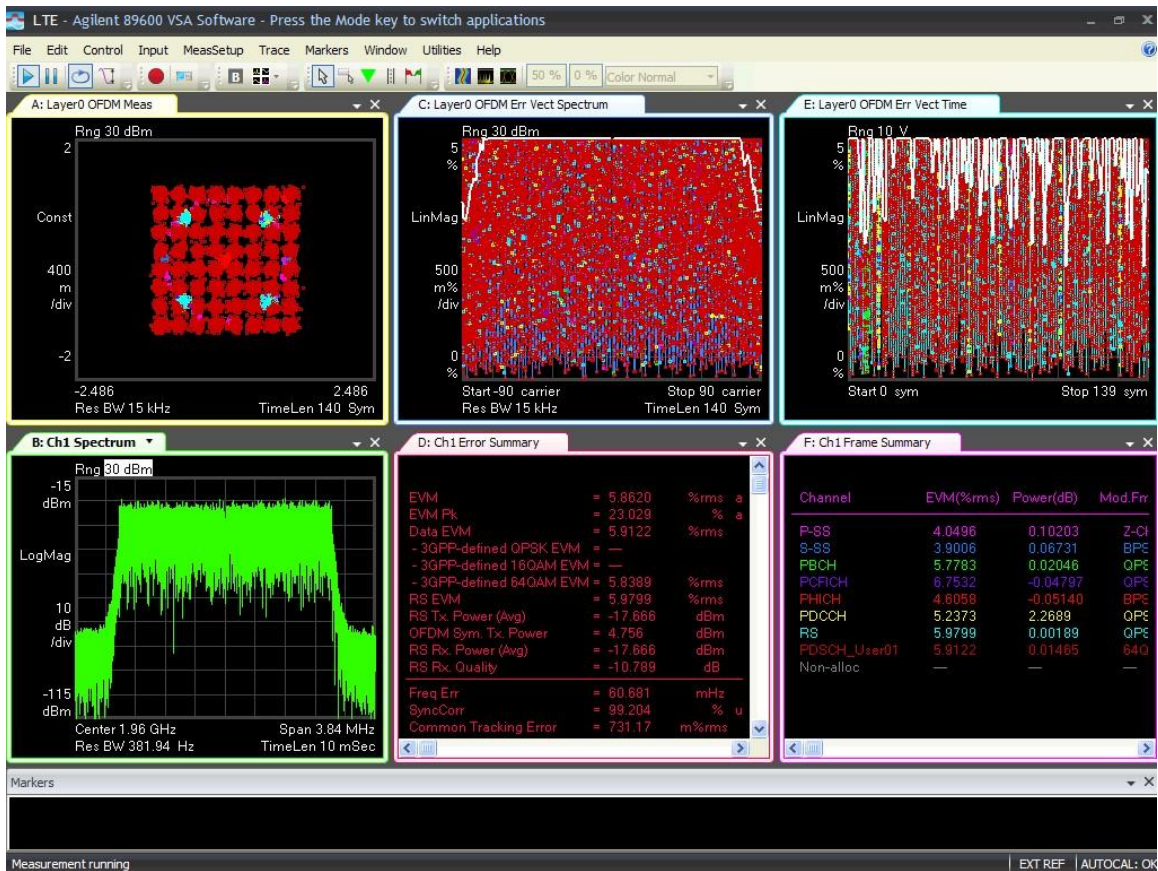
3M -Port 1 -1931.5MHz -TM3.3



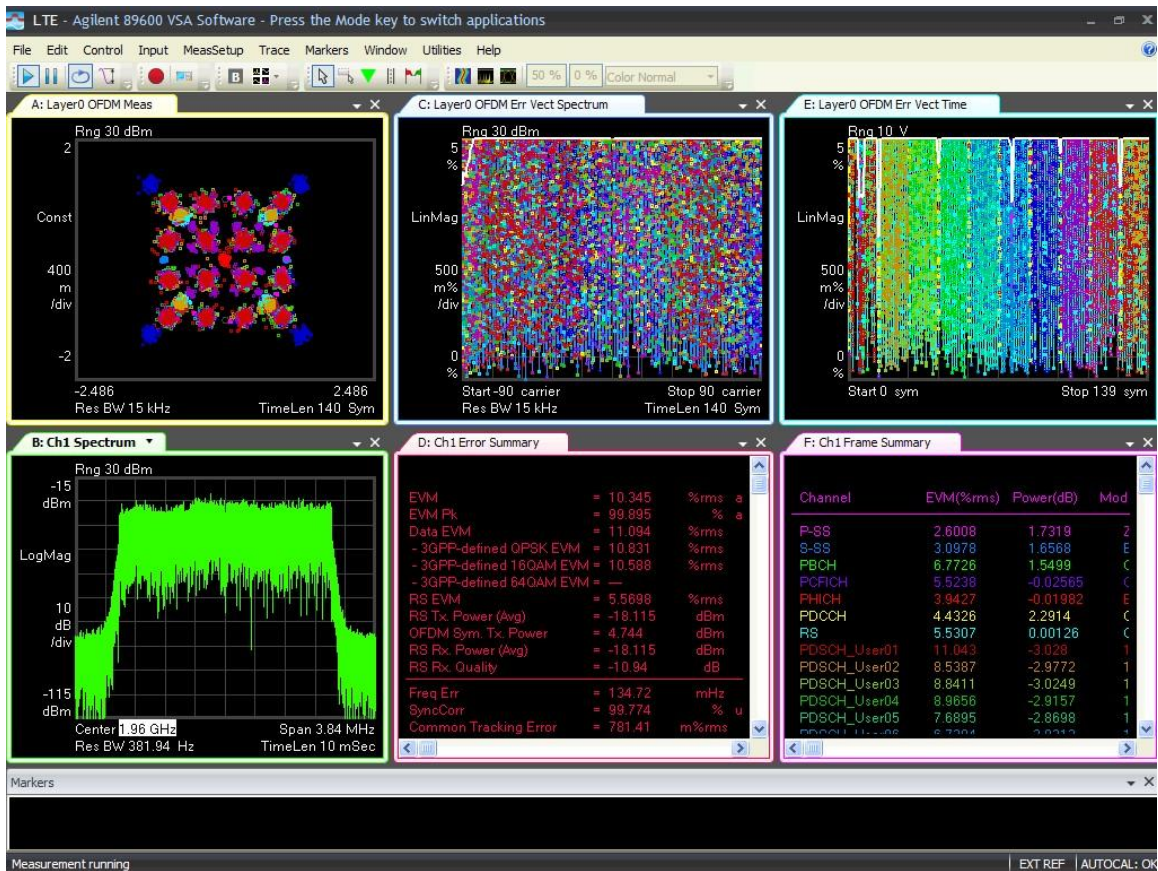
3M -Port 1 -1960MHz-TM2.0



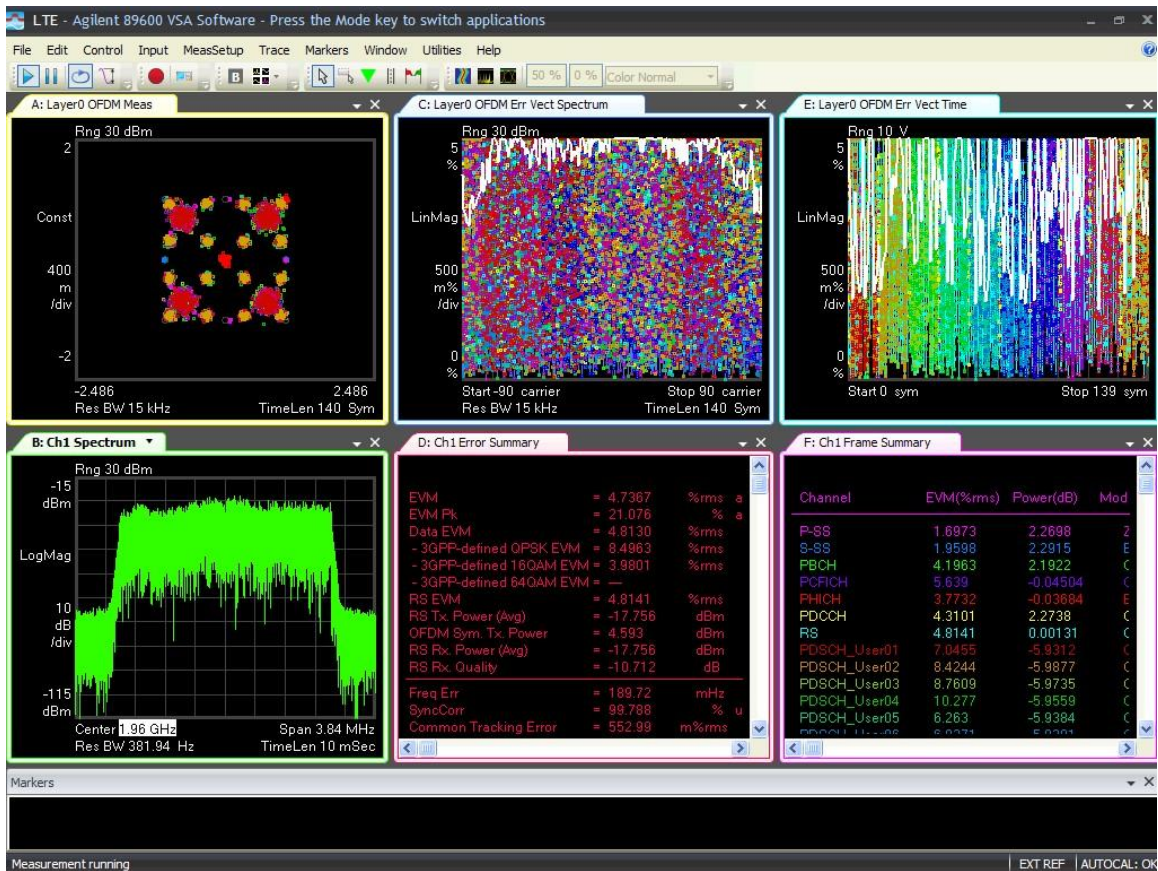
3M -Port 1 -1960MHz -TM3.1



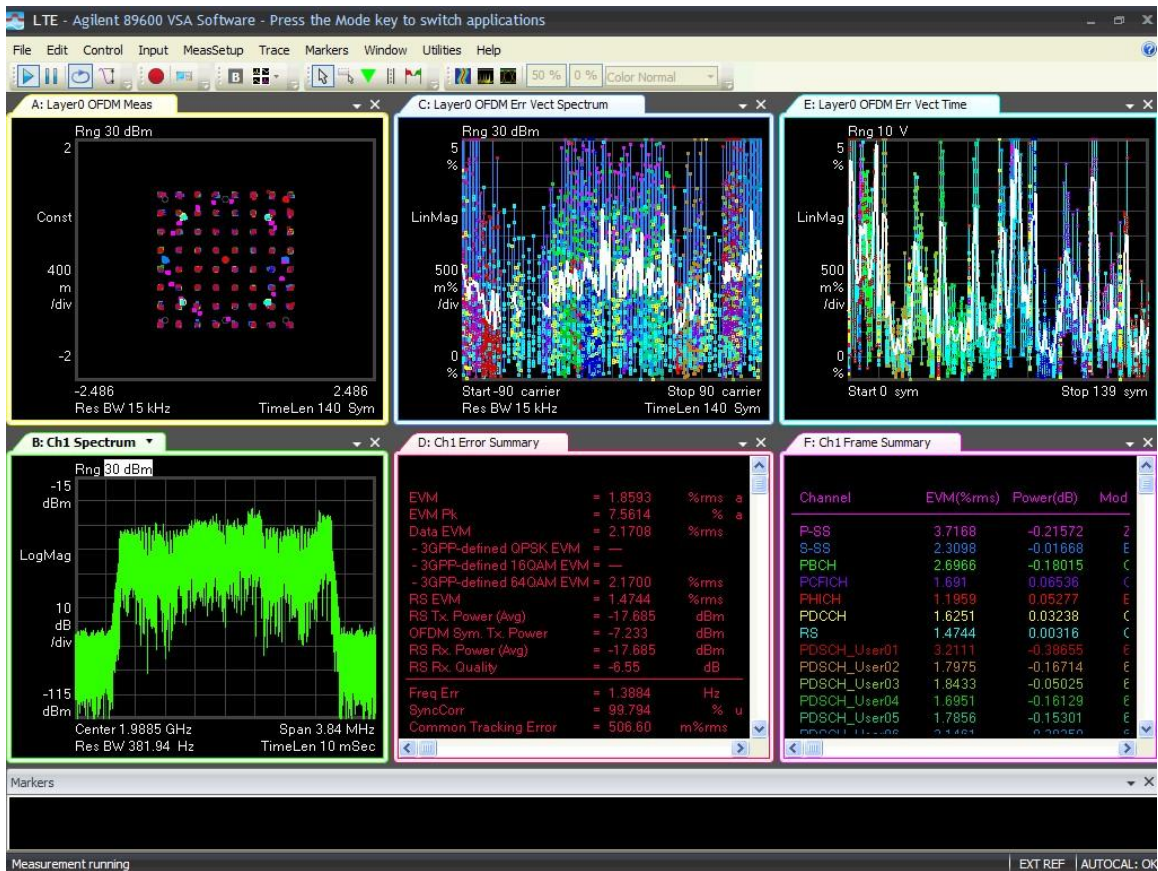
3M -Port 1 -1960MHz -TM3.2



3M -Port 1 -1960MHz -TM3.3



3M -Port 1 -1988.5MHz-TM2.0



3M -Port 1 -1988.5MHz -TM3.1