

FCC MEASUREMENT AND TEST REPORT

For

ZTE Corporation

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

FCC ID: Q78-R8882L718

May 30, 2014

This Report Concerns: ☒ Original Report		Equipment Type: LTE Remote Radio Unit
Test Engineer:	Bloom <i>Bloom</i>	
Report No.:	RP20140035RP	
Test Date:	May 1 – May 30, 2014	
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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 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.

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2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8882 L718 or the "EUT" as referred to in this report is a LTE Remote Radio Unit.

Technical specification:

Size: 380 mm x 320 mm x 140 mm (HxWxD)

Input voltage: -37V~-57V

Frequency range: 746MHz~756 MHz and 758MHz~768 MHz

(Bottom frequency is about 748.5MHz, Middle frequency is about 753.5MHz, Top frequency is about 765.5MHz).

Max RF output power: 46dBm

Gain of the antenna: 15dBi

Appearance of EUT:

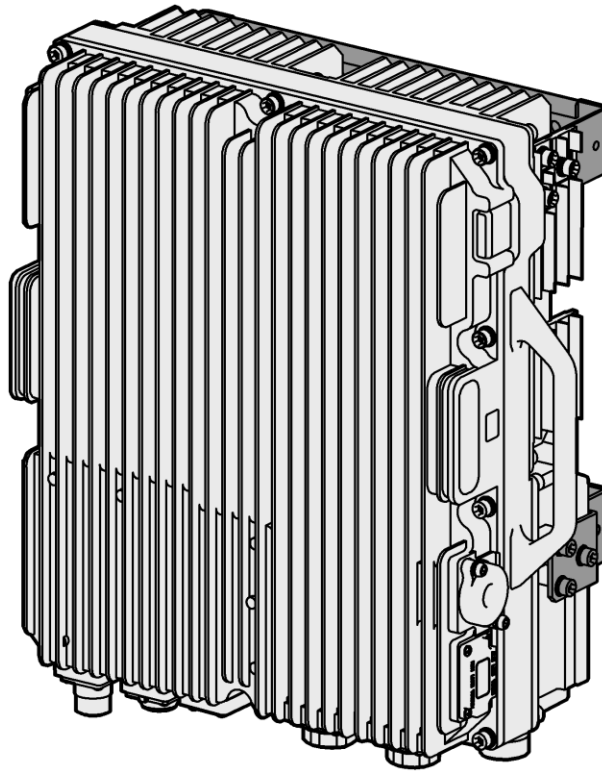


FIGURE 1 APPEARANCE OF ZXSDR R8882 L718

Objective

This type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Part 15, Part 27 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

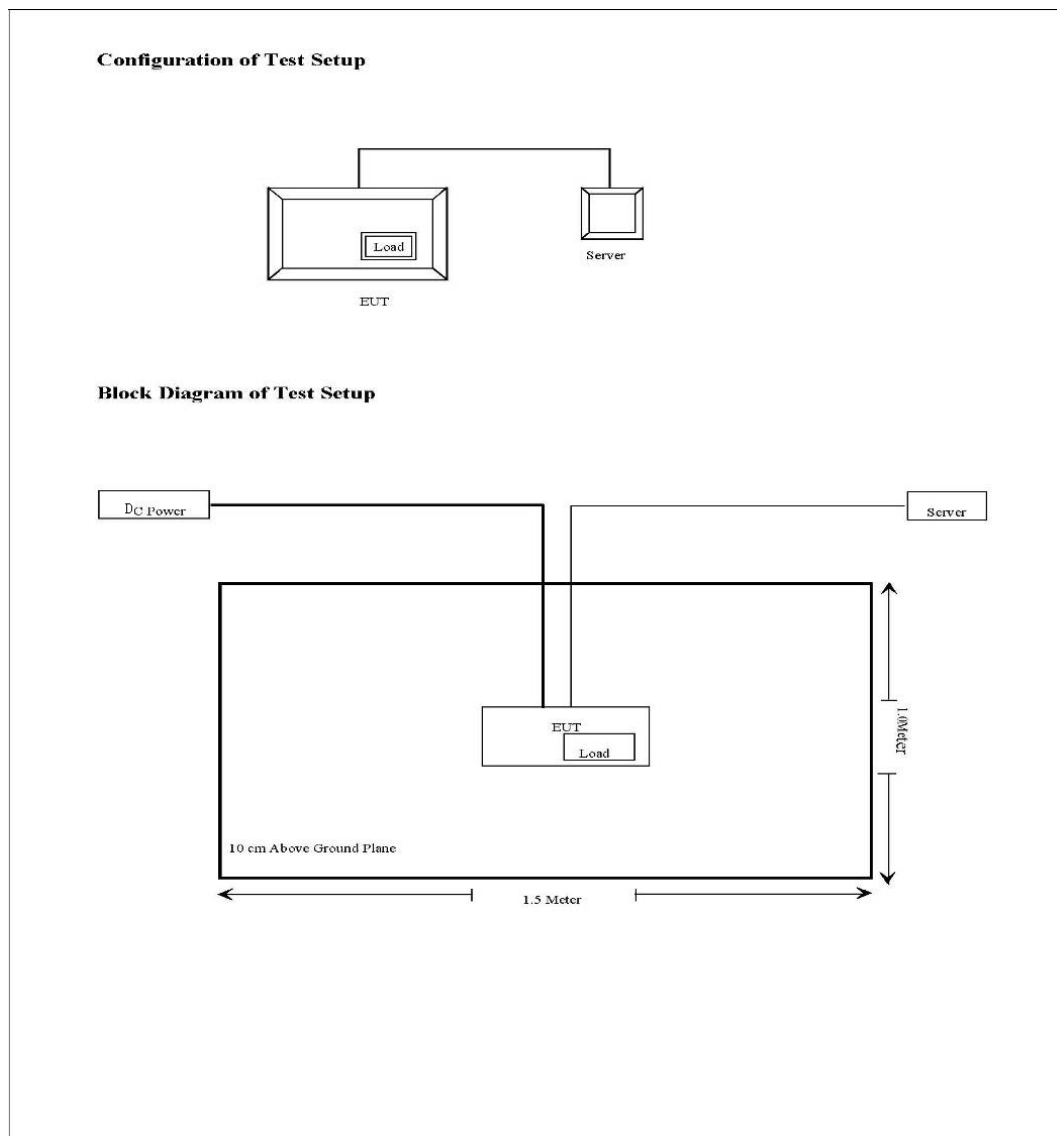
Justification

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 , §27.50	Transmitter output Power	Compliant
§ 2.1091 , §1.1037	RF Exposure	Compliant
§ 2.1047	Modulation Characteristic	Compliant
§ 2.1053, §27.53	Spurious Radiated Emissions	Compliant
§ 2.1051, §27.53	Spurious Emissions AT Antenna Terminals	Compliant
§ 2.1049, §27.53	Occupied Bandwidth	Compliant
§ 2.1051, §27.53	Band Edge	Compliant
§ 2.1055	Frequency stability	Compliant

5 TRANSMITTER OUTPUT POWER

Applicable Standard: FCC §2.1046, §27.50

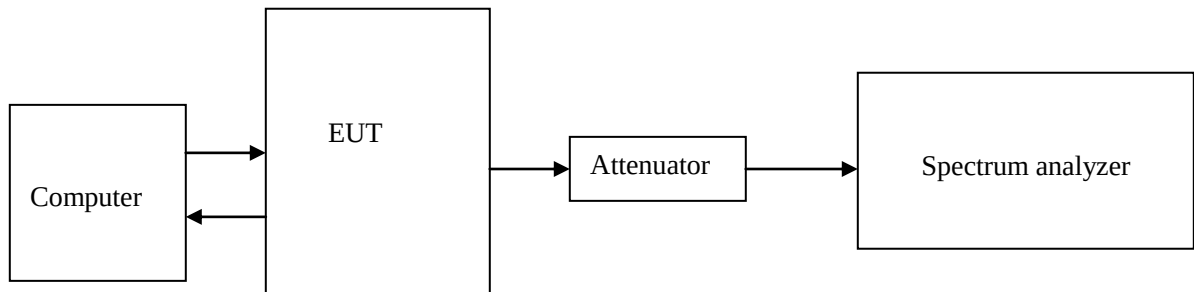
According to FCC §2.1046 & §27.50, the ERP (equivalent radiated power) must not exceed 1000 Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2013.06.18	2014.06.18
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2013.07.19	2014.07.19
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

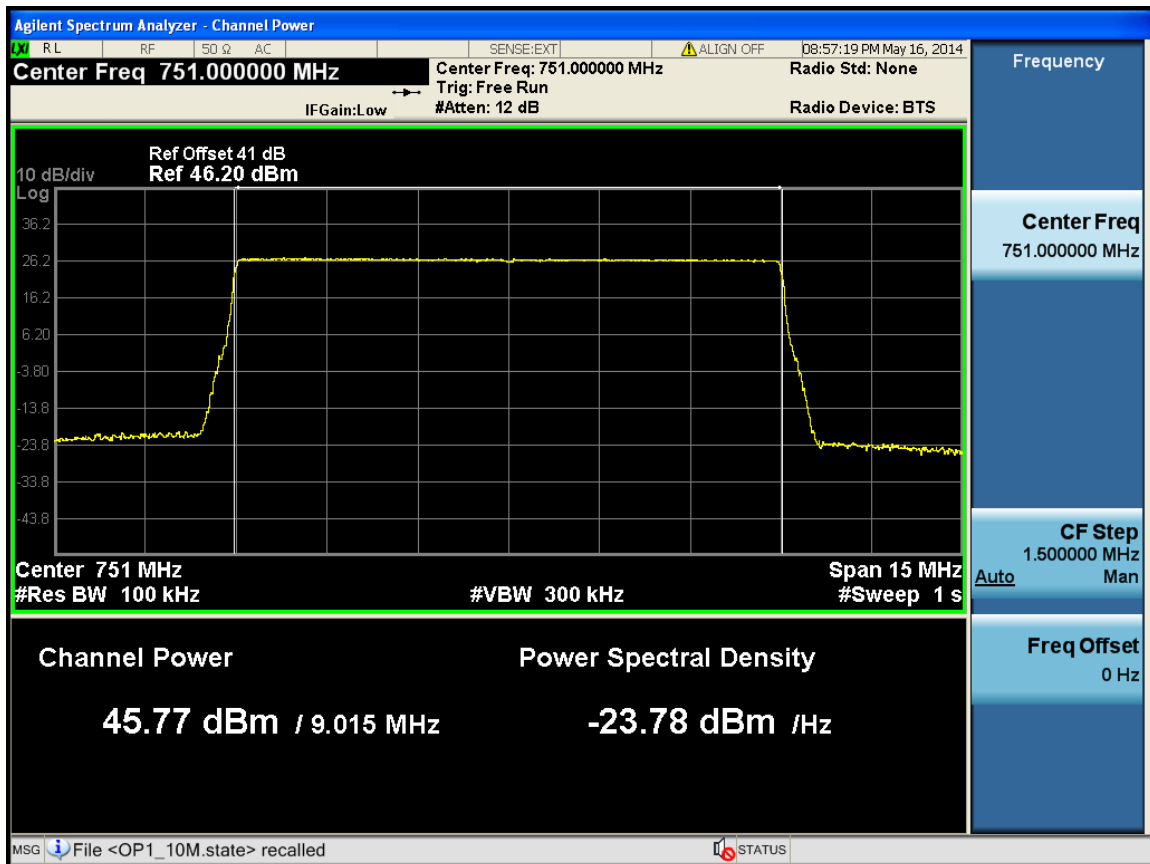
Test Mode: Transmitting LTE

Test Data:

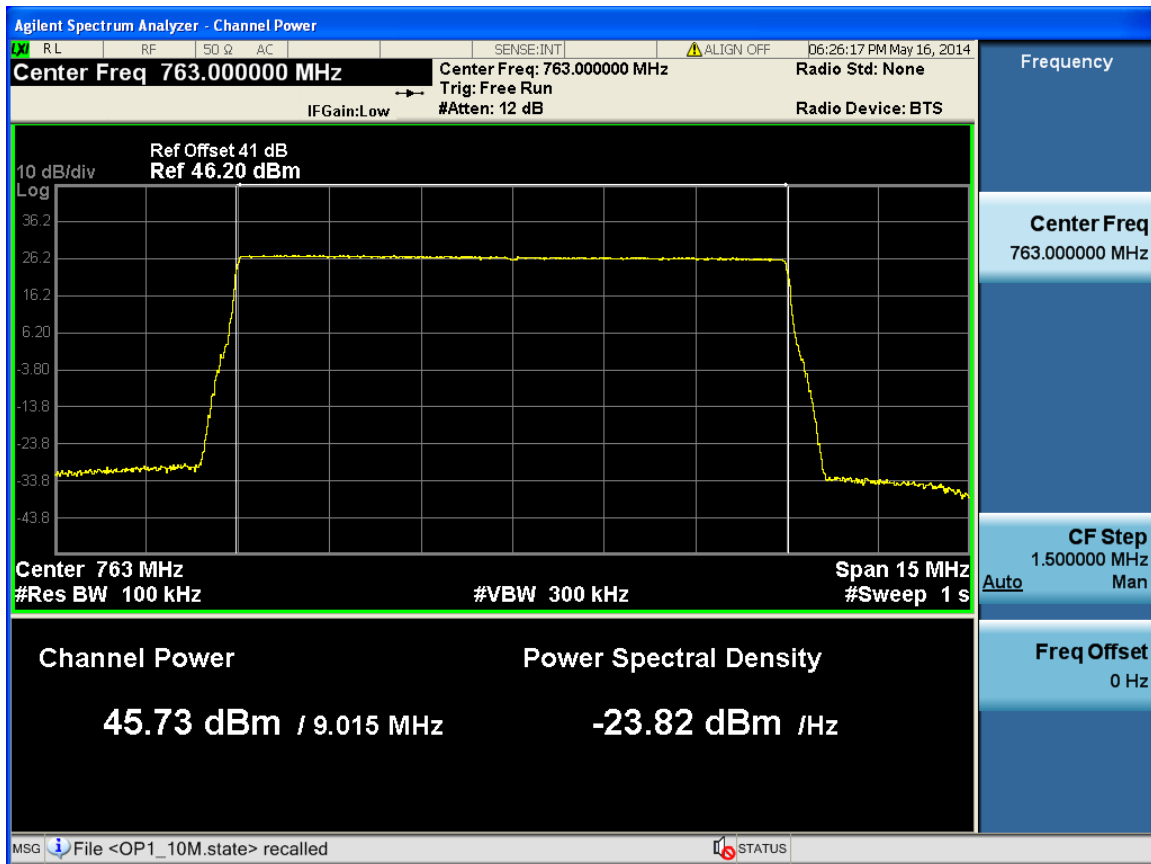
Channel Bandwidth :10M

Port	Center Freq. (MHz)	Max output Power in dBm
1	751	45.77
	763	45.73
2	751	46.20
	763	46.02

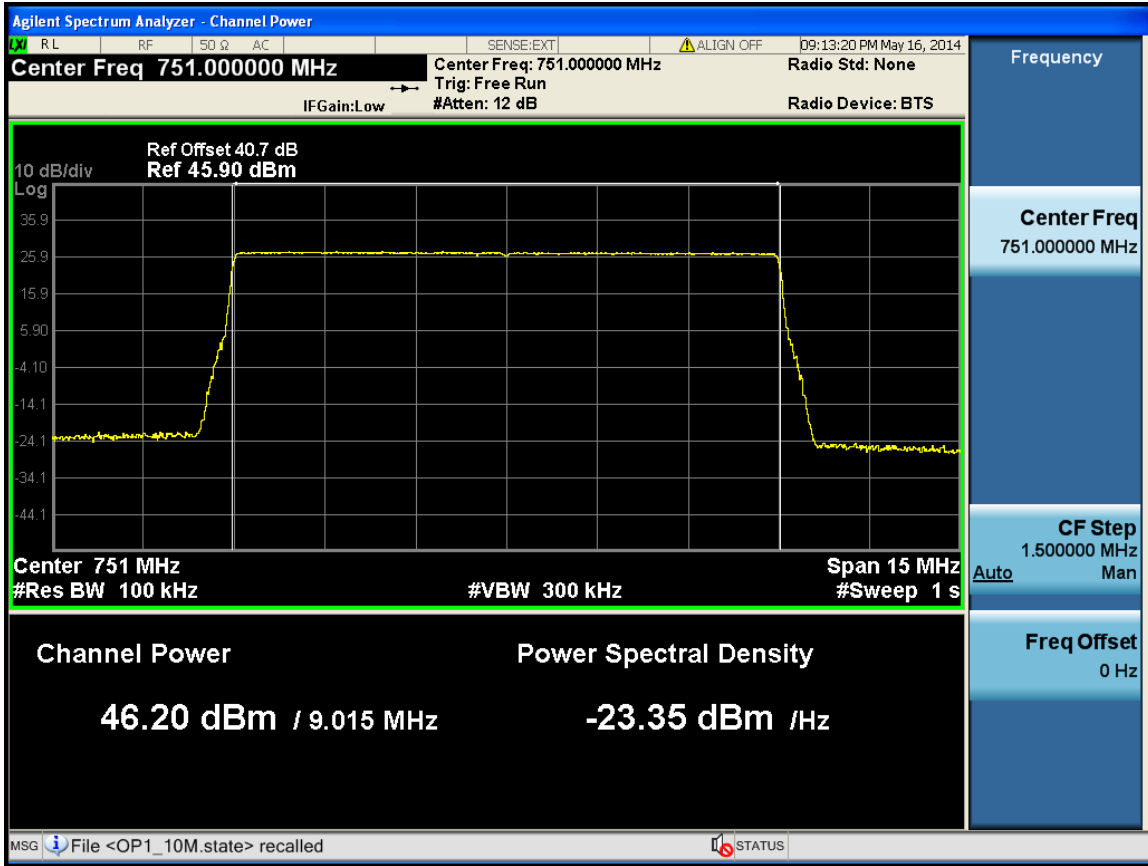
10M -Port 1 -751MHz



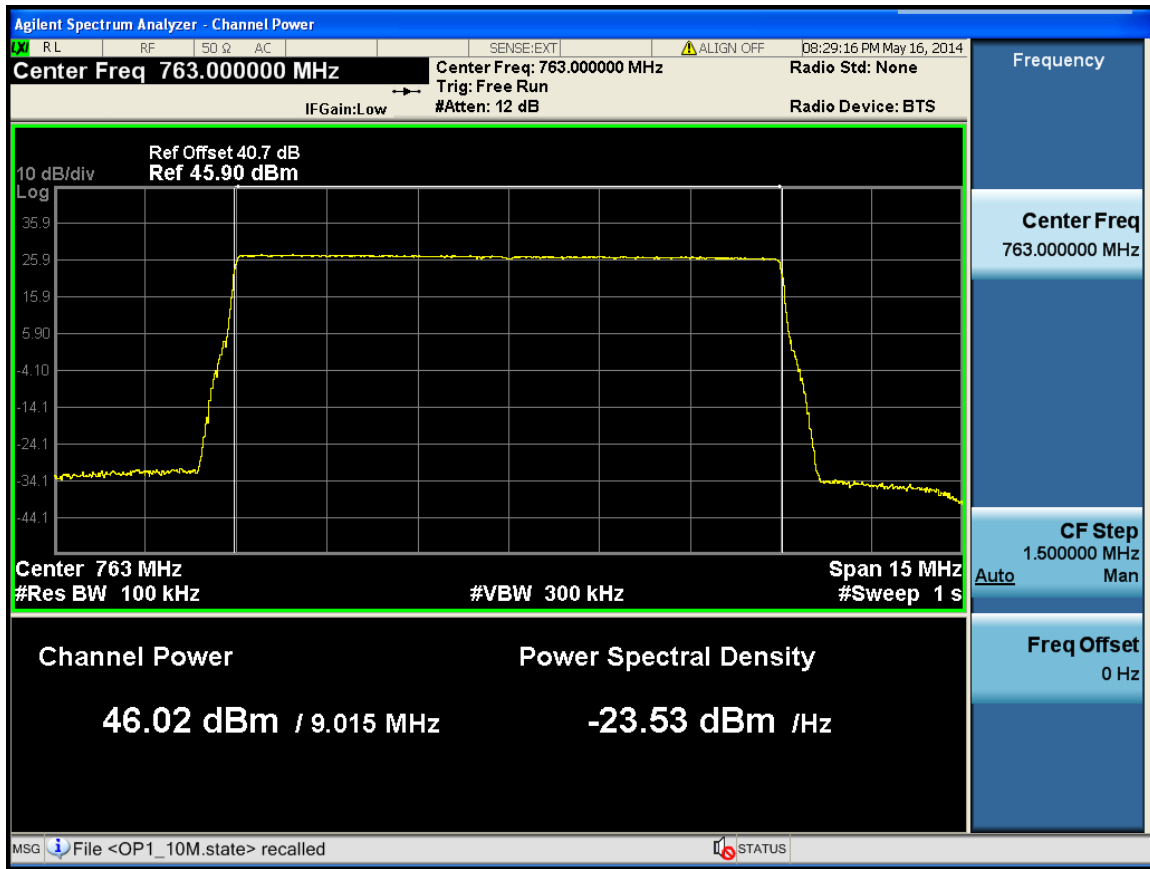
10M -Port 1 -763MHz



10M -Port 2 -751MHz



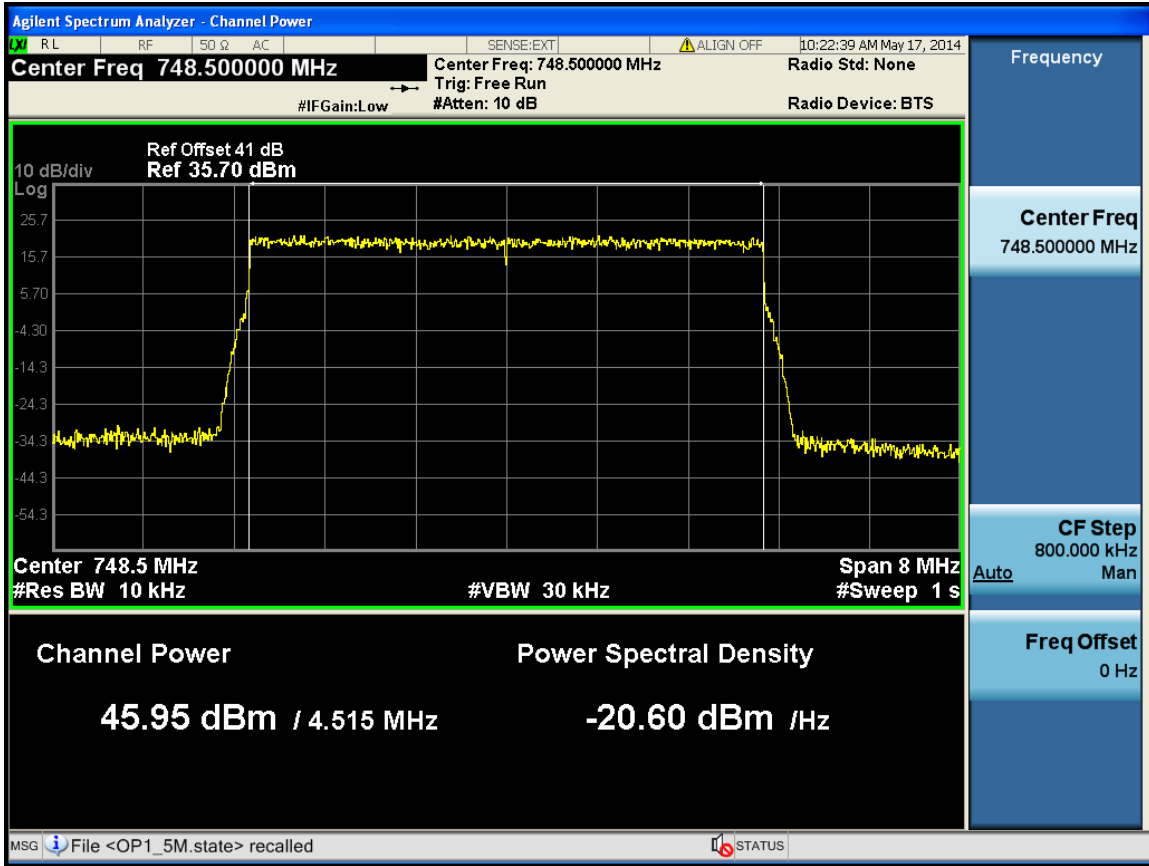
10M -Port 2 -763MHz



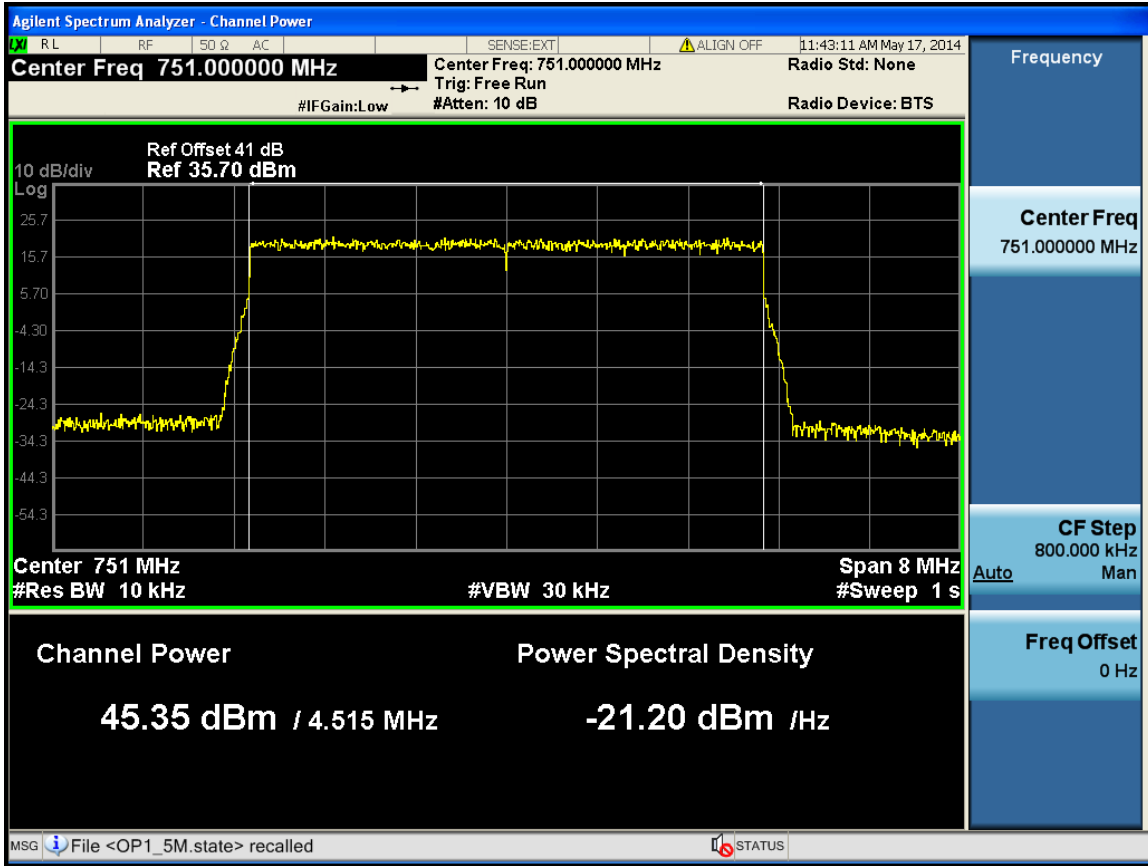
Channel Bandwidth :5M

Port	Center Freq. (MHz)	Max output Power in dBm
1	748.5	45.95
	751	45..35
	753.5	45.67
	760.5	45.73
	763	45.80
	765.5	45.74
2	748.5	46.32
	751	45.86
	753.5	46.42
	760.5	46.31
	763	46.02
	765.5	46.23

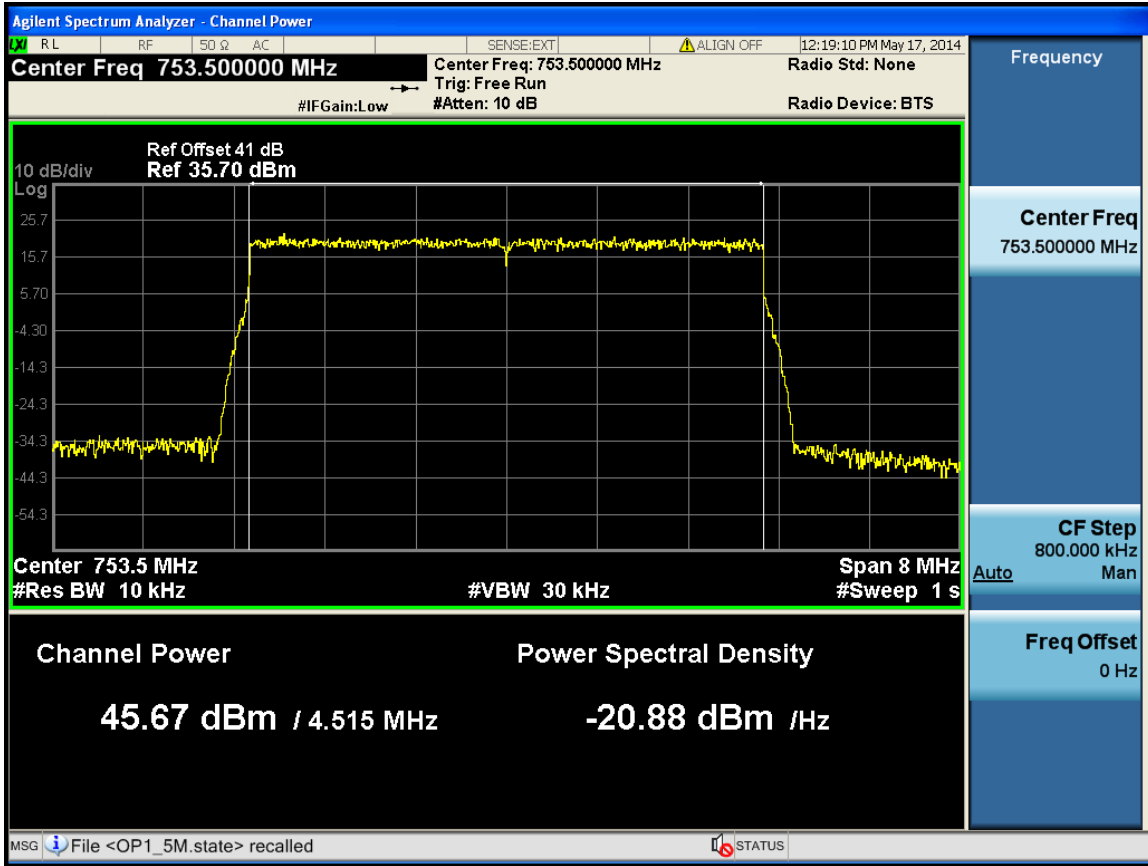
5M -Port 1 -748.5MHz



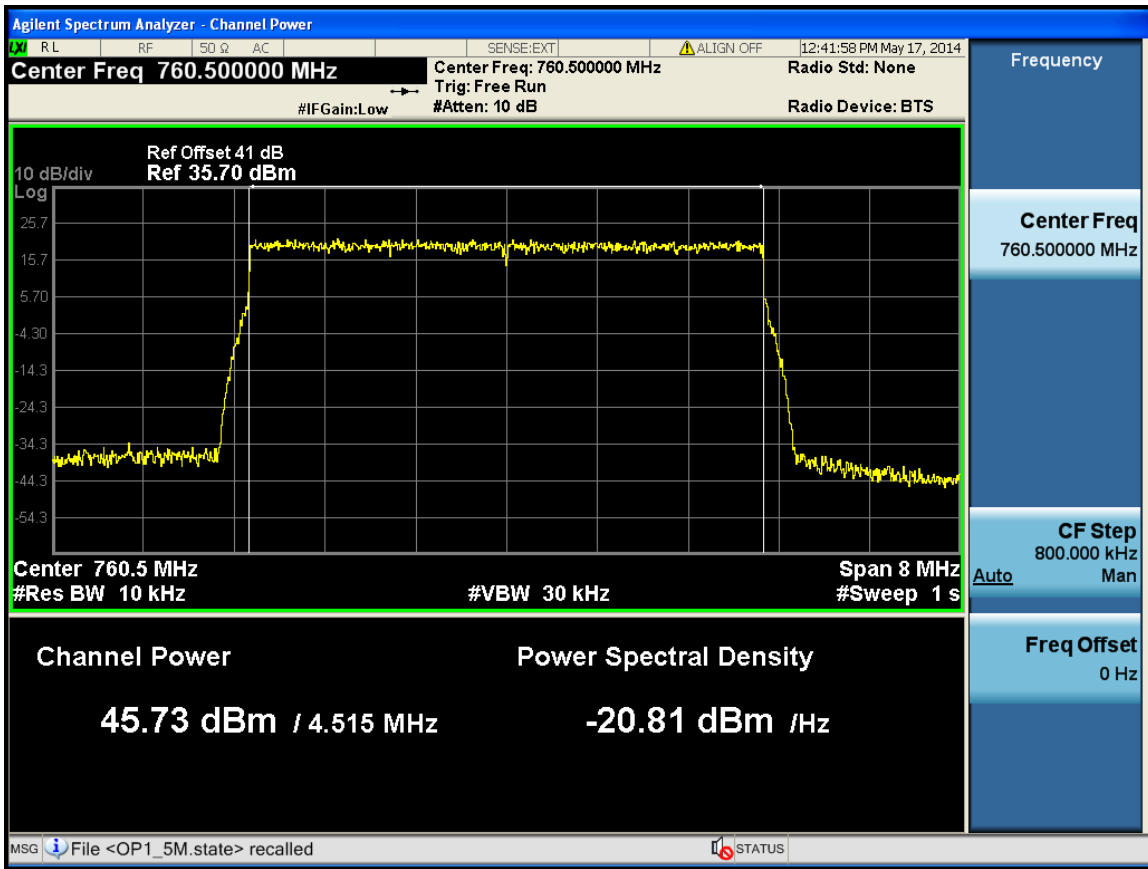
5M -Port 1 -751MHz



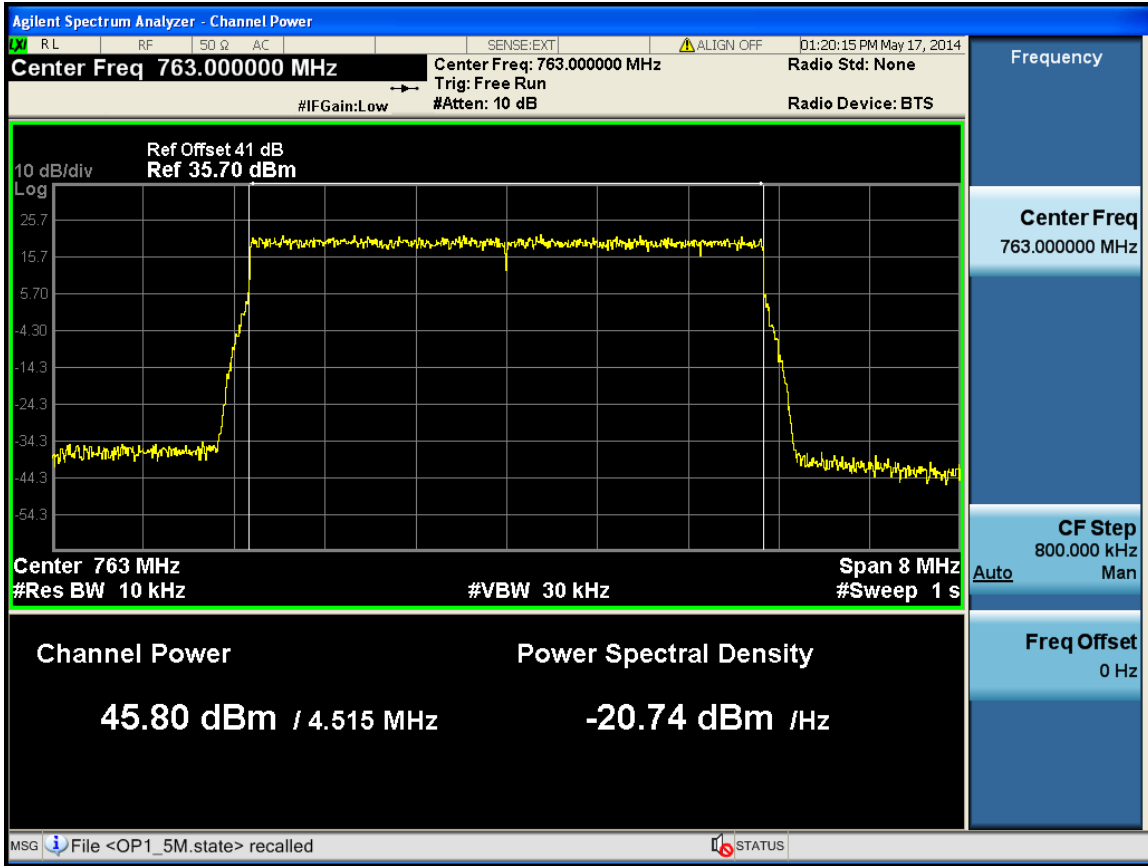
5M -Port 1 -753.5MHz



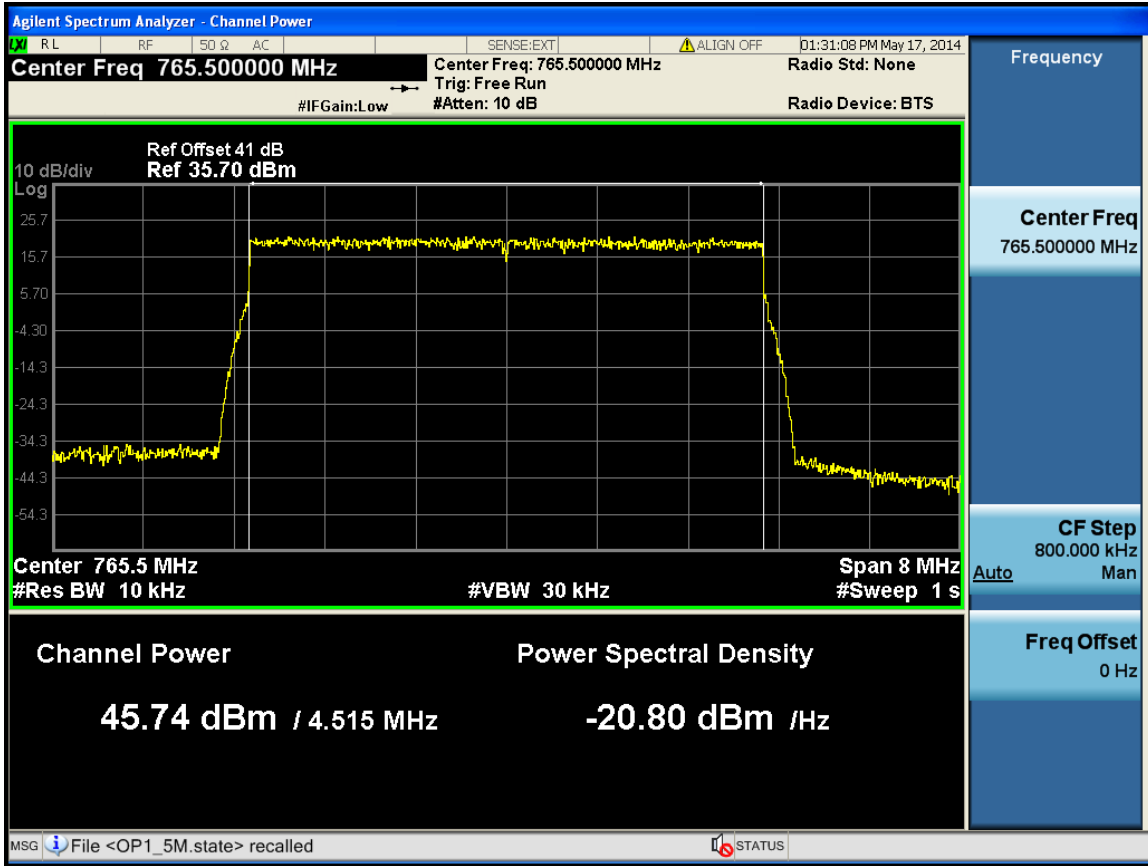
5M -Port 1 -760.5MHz



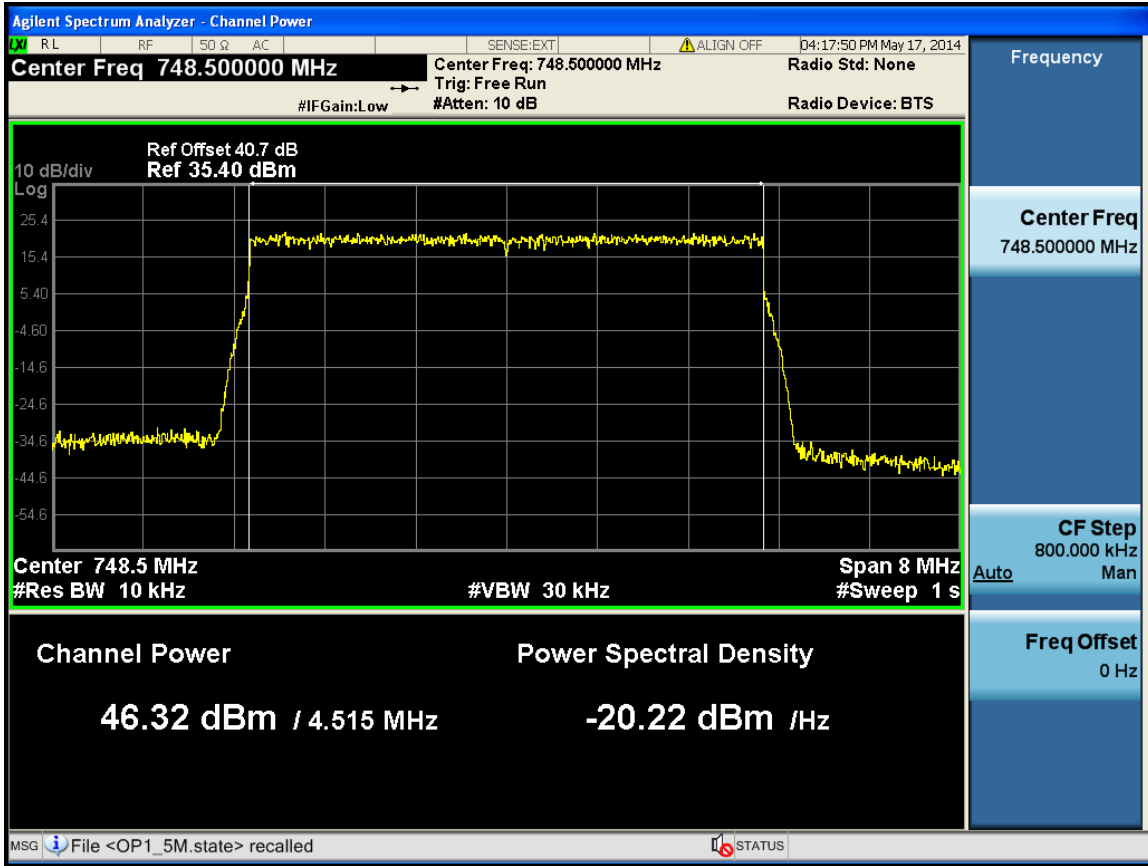
5M -Port 1 -763MHz



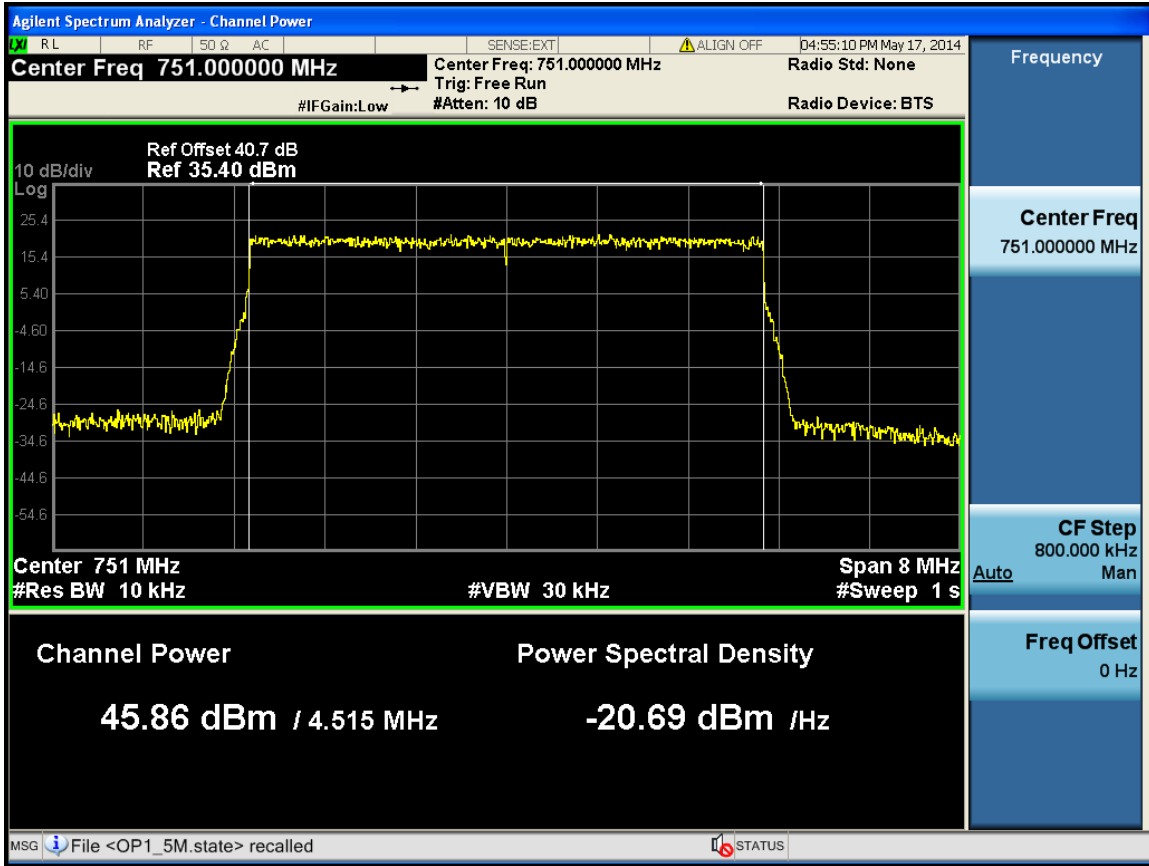
5M -Port 1 -765.51MHz



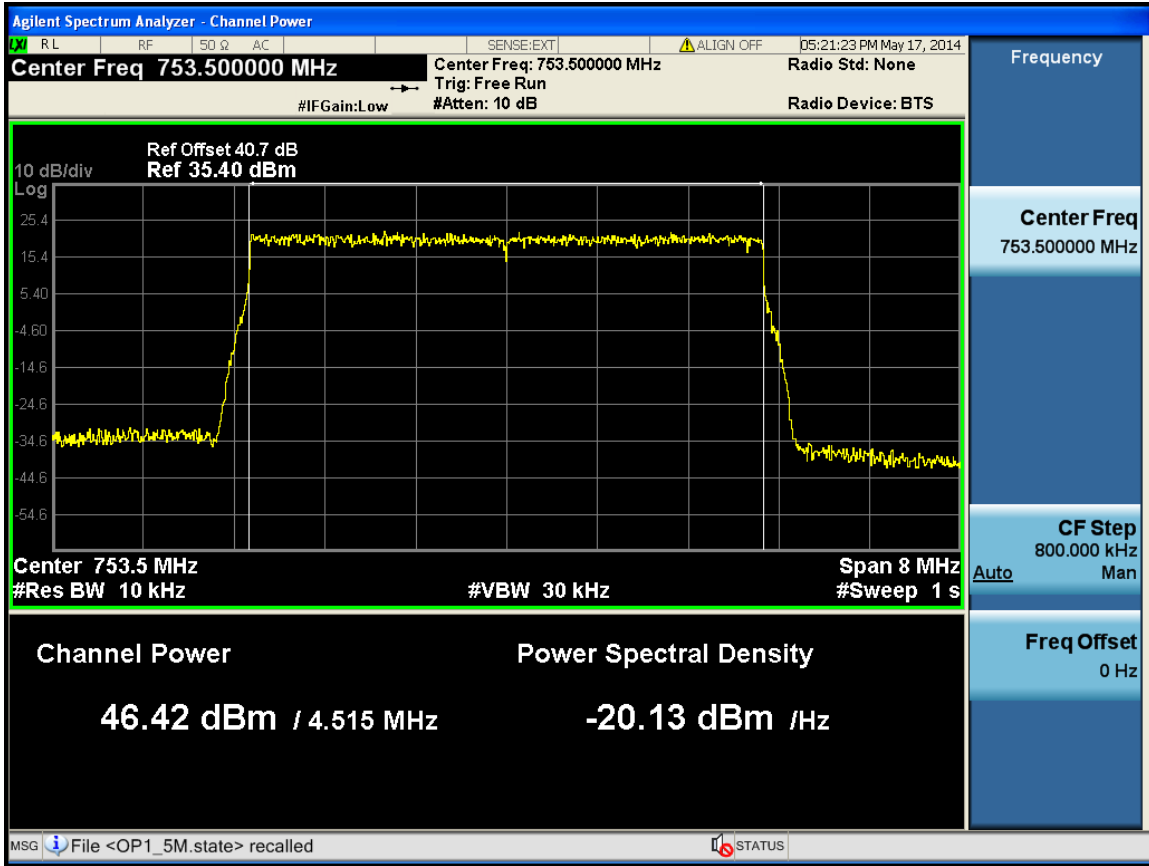
5M -Port 2 -748.5MHz



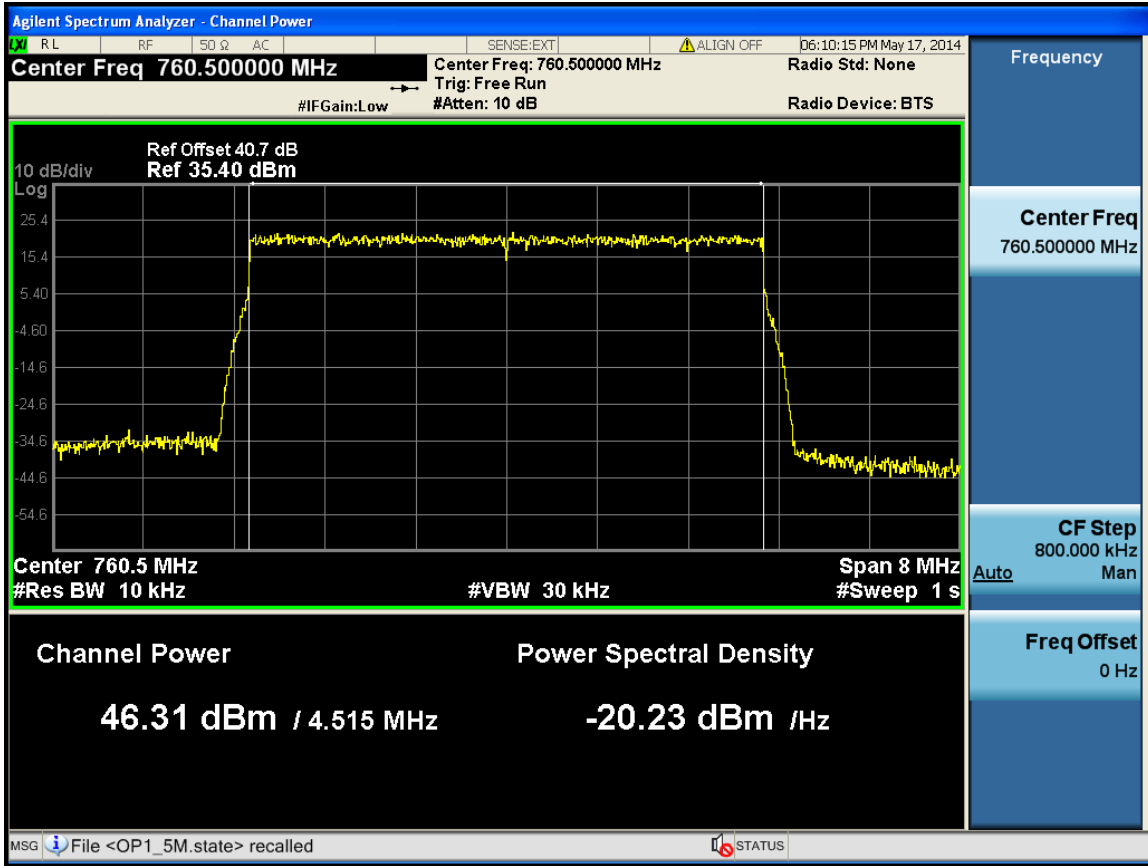
5M -Port 2 -751MHz



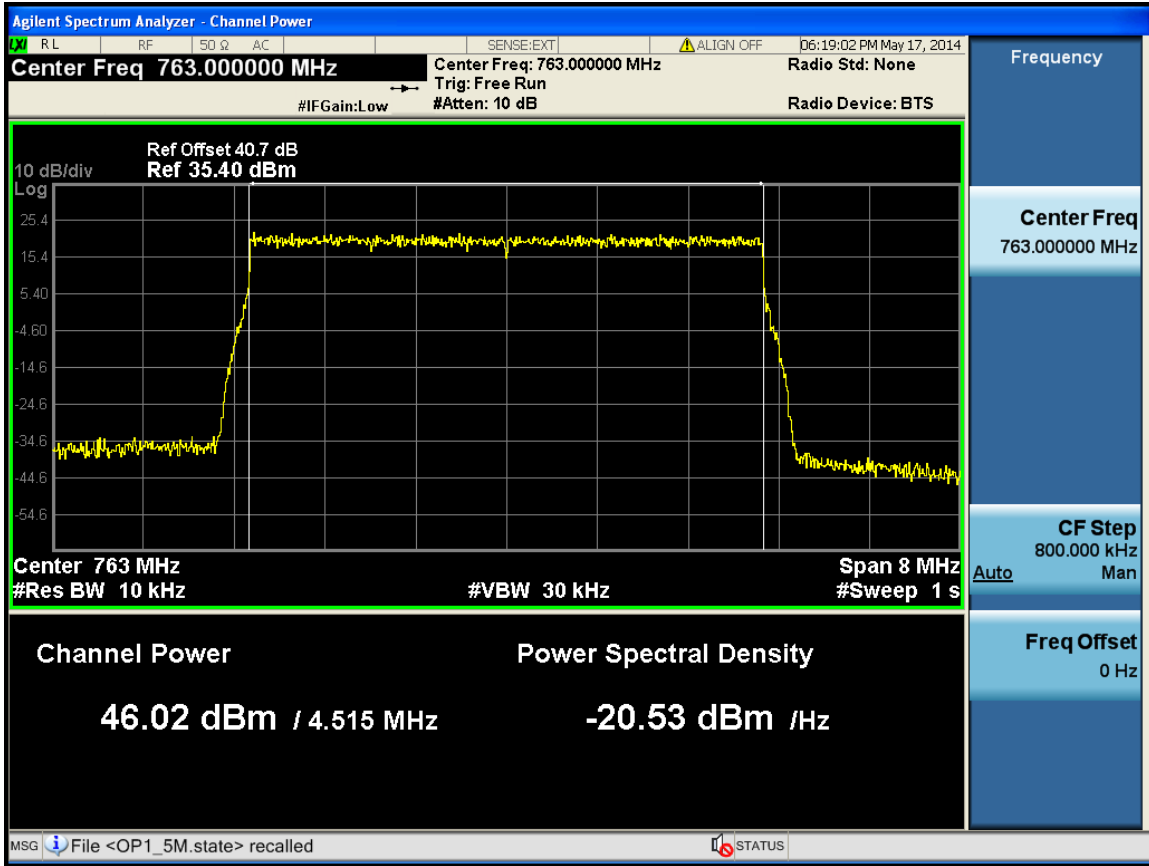
5M -Port 2 -753.5MHz



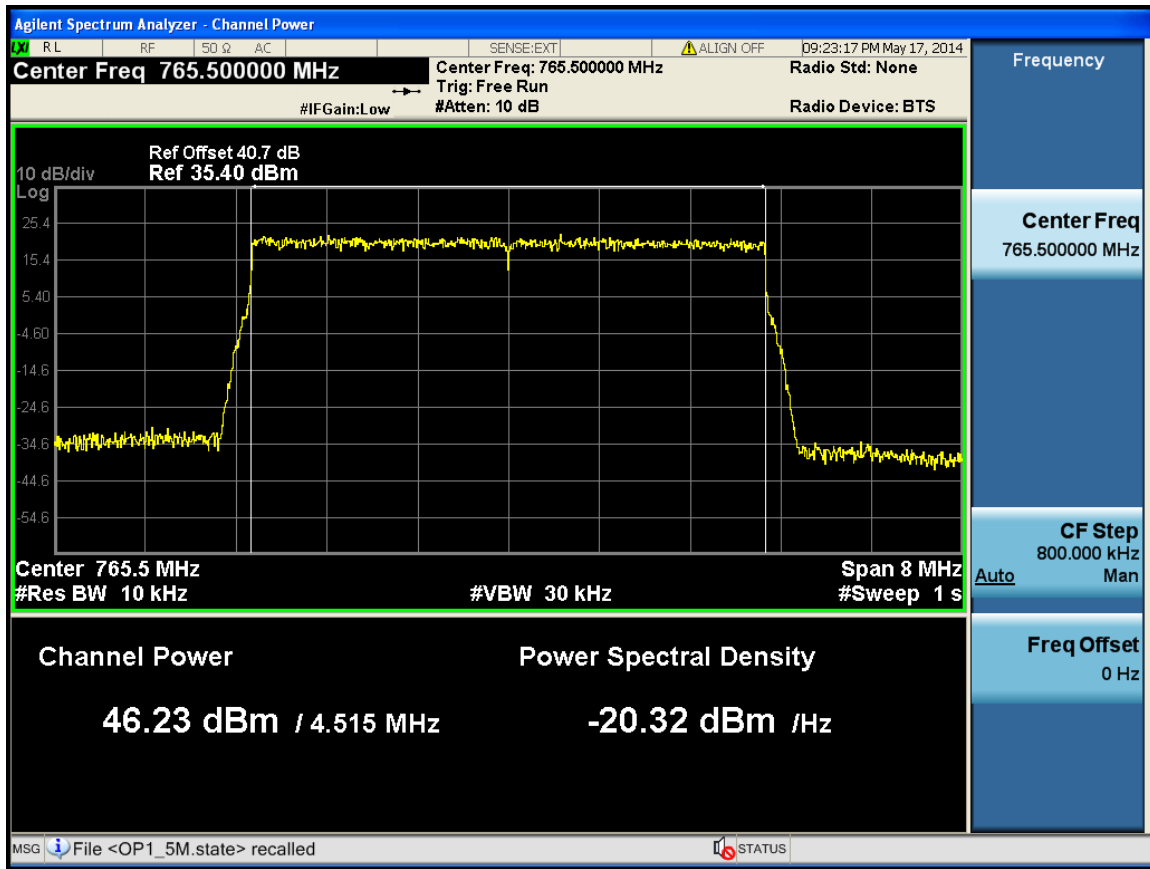
5M -Port 2 -760.5MHz



5M -Port 2 -763MHz



5M -Port 2 -765.51MHz



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

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

Where: S = power density

EIRP= equivalent isotropically radiated power=ERP+2.15dB

R = distance to the center of radiation of the antenna= [(ERP+2.15dB)/4πS]^{1/2}

According to §27.50 , the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1000 Watts.

Frequency 768MHz is between 300MHz and 1500MHz, and the Maximum

$$S=768/1500=0.512\text{Mw/cm}^2$$

$$\Rightarrow R=6.24\text{m.}$$

This equipment should be installed and operated with minimum distance 6.24m 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	2013.06.18	2014.06.18
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2013.07.19	2014.07.19
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

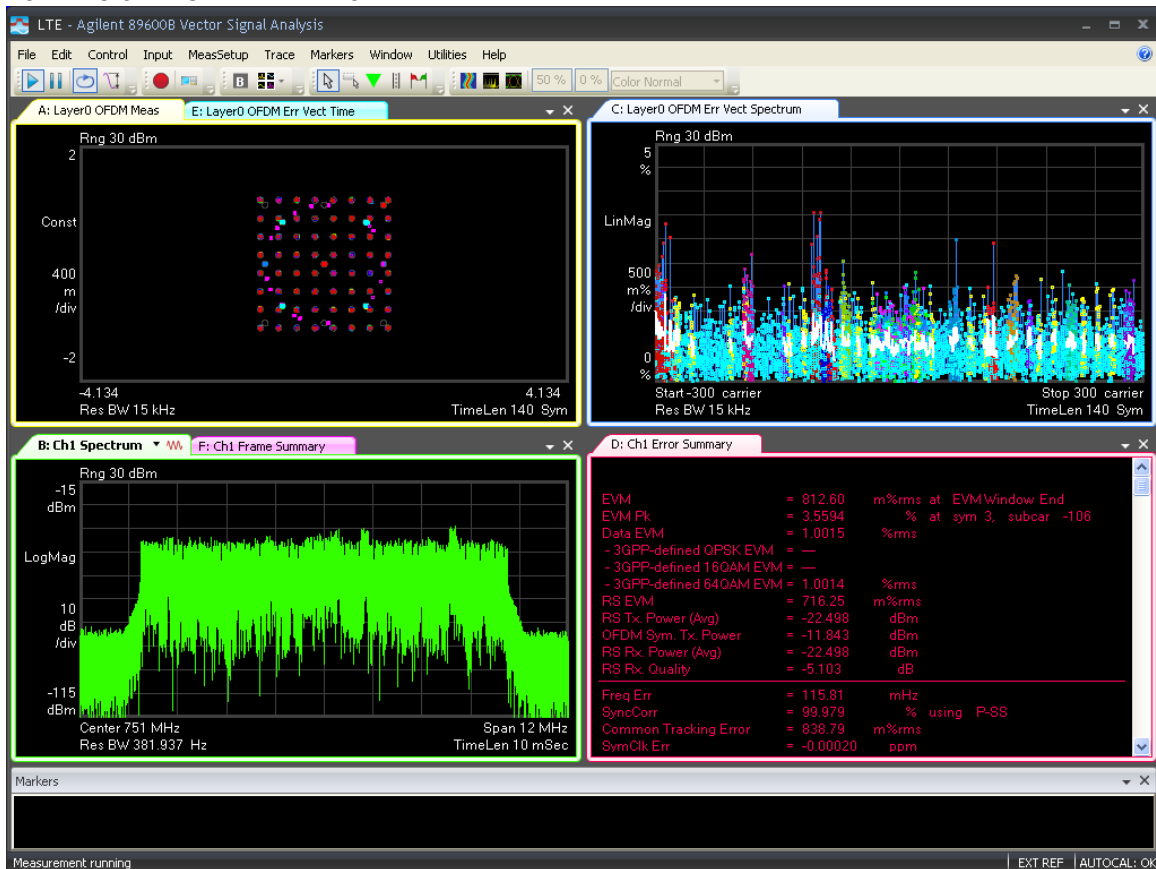
Test Mode: Transmitting LTE

Test Data:

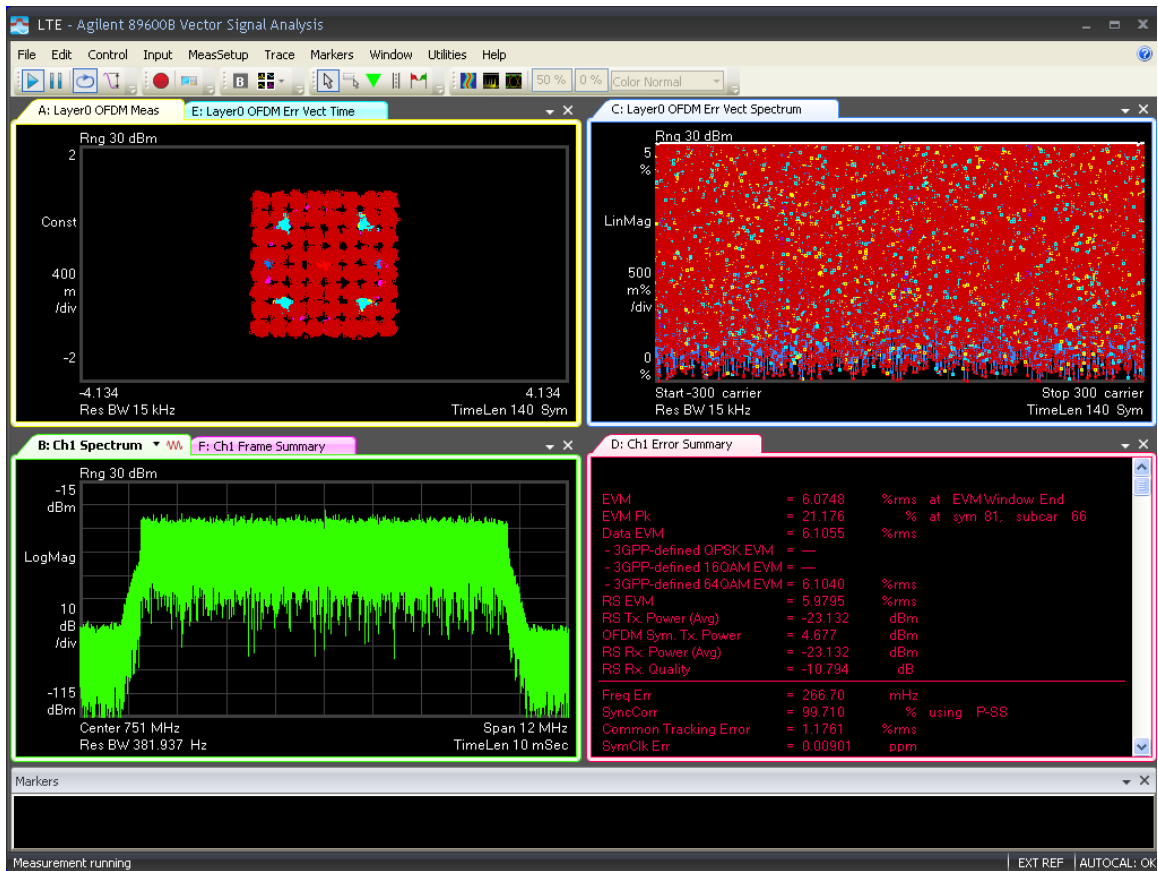
Channel Bandwidth :10M

Port	Frequency (MHz)	Test mode	EVM
1	751	TM2.0	1.001
		TM3.1	6.10
		TM3.2	7.12
		TM3.3	9.75
	763	TM2.0	0.983
		TM3.1	5.94
		TM3.2	6.91
		TM3.3	9.44
2	751	TM2.0	0.984
		TM3.1	6.07
		TM3.2	7.05
		TM3.3	9.69
	763	TM2.0	0.982
		TM3.1	5.94
		TM3.2	9.690
		TM3.3	9.47

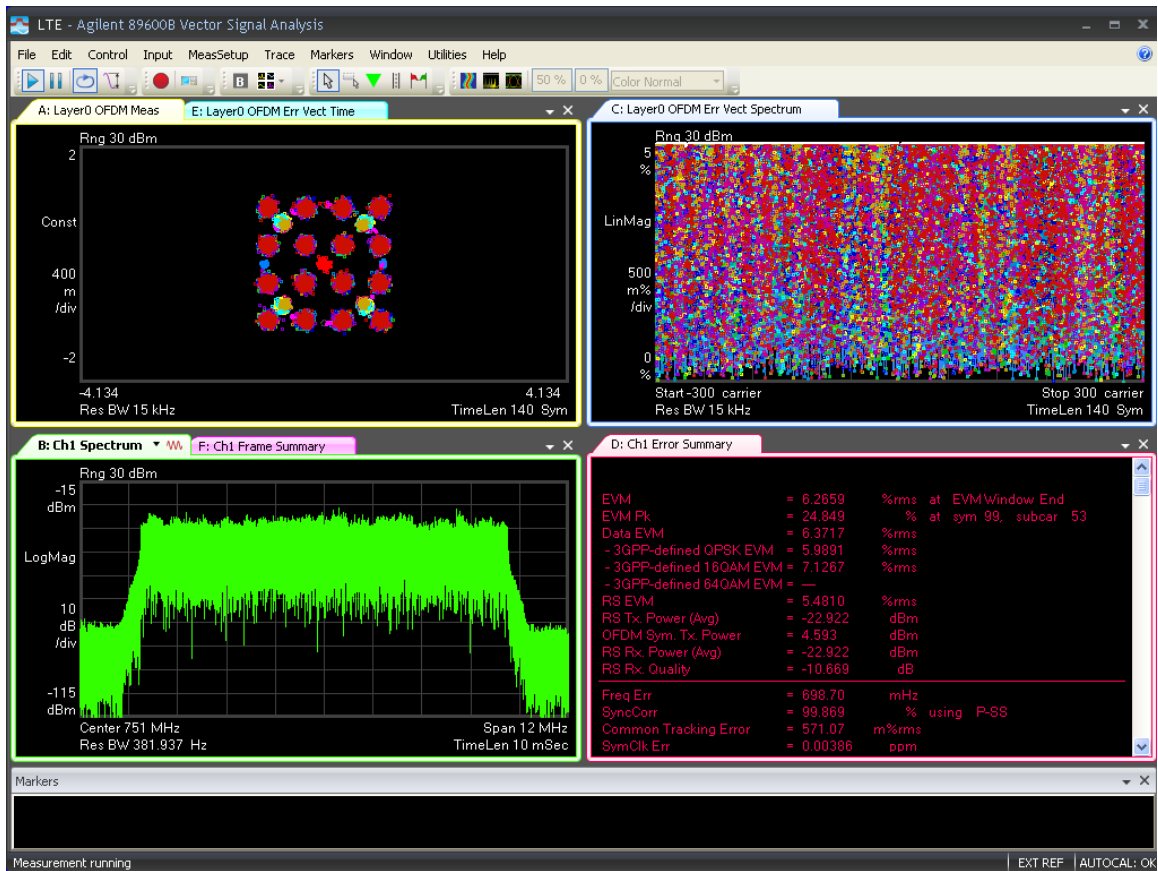
10M -Port 1 -751MHz-TM2.0



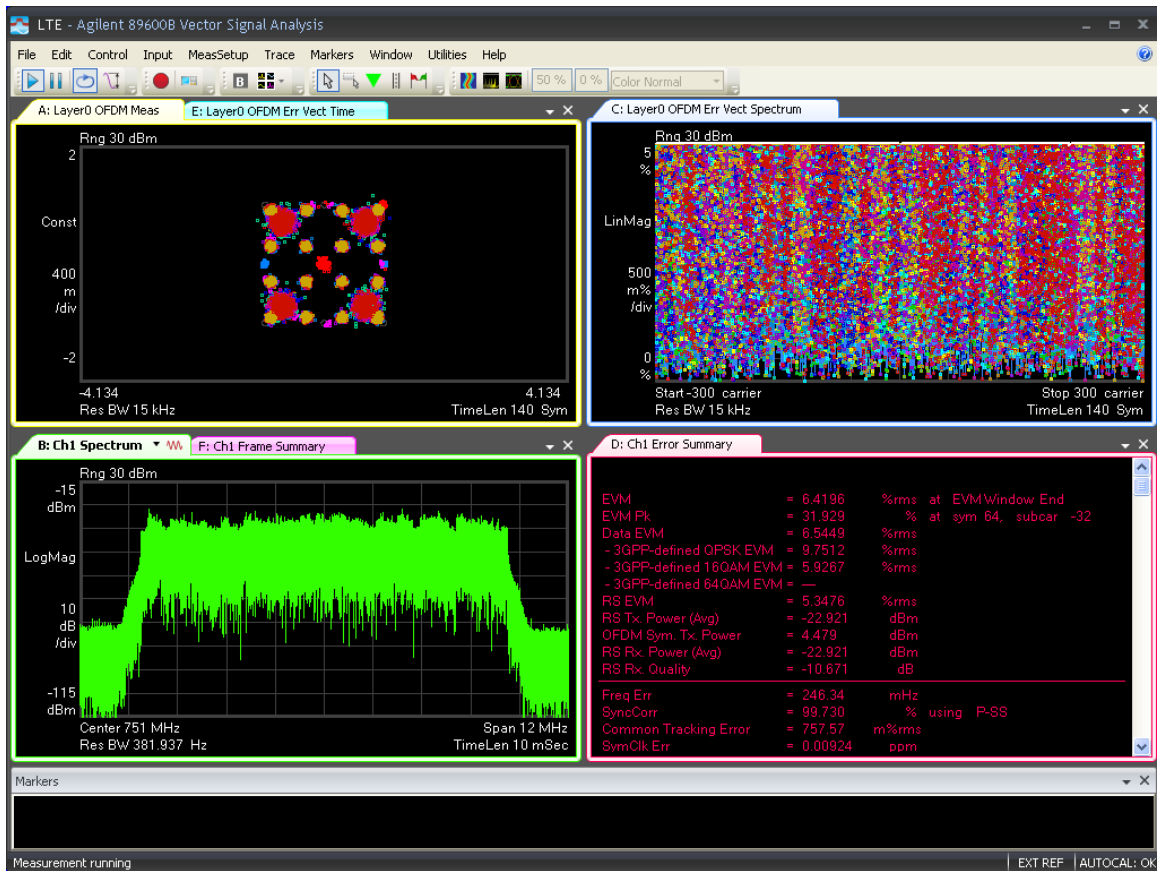
10M -Port 1 -751MHz-TM3.1



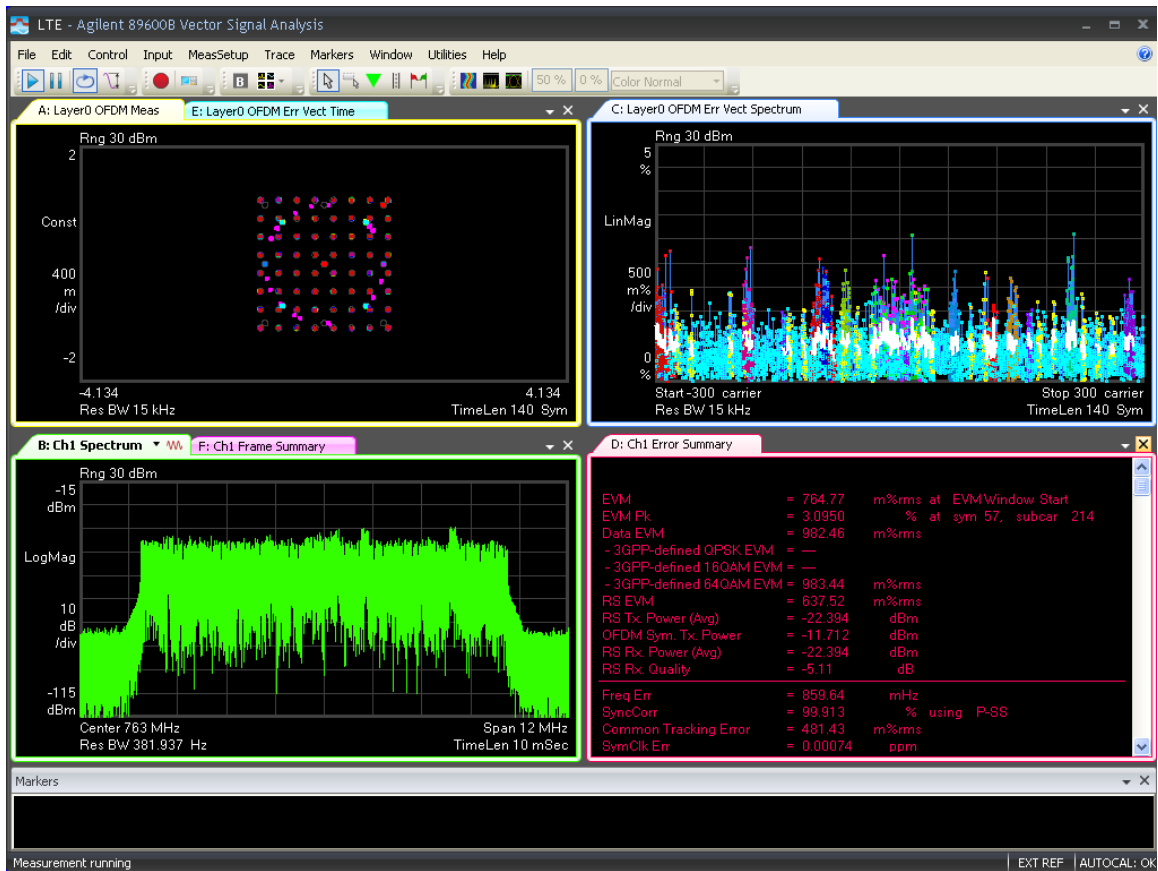
10M -Port 1 -751MHz-TM3.2



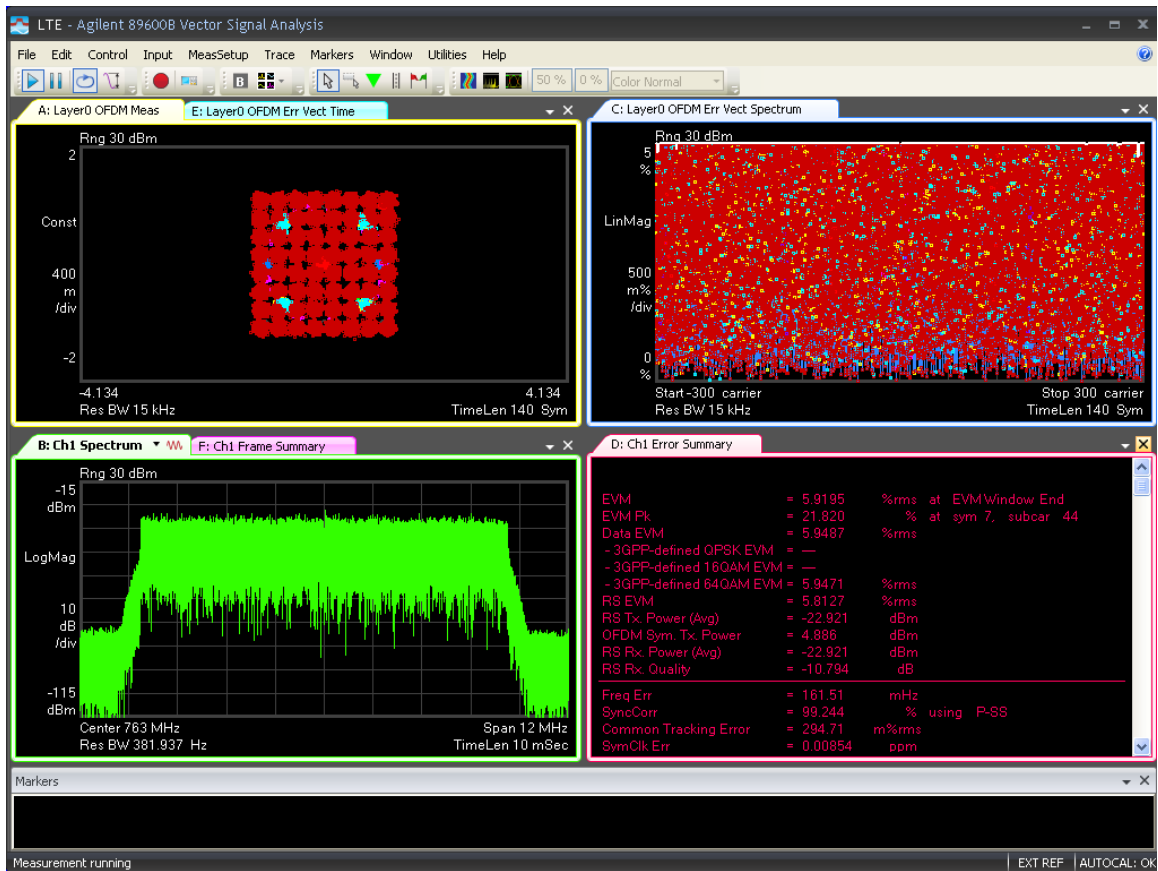
10M -Port 1 -751MHz-TM3.3



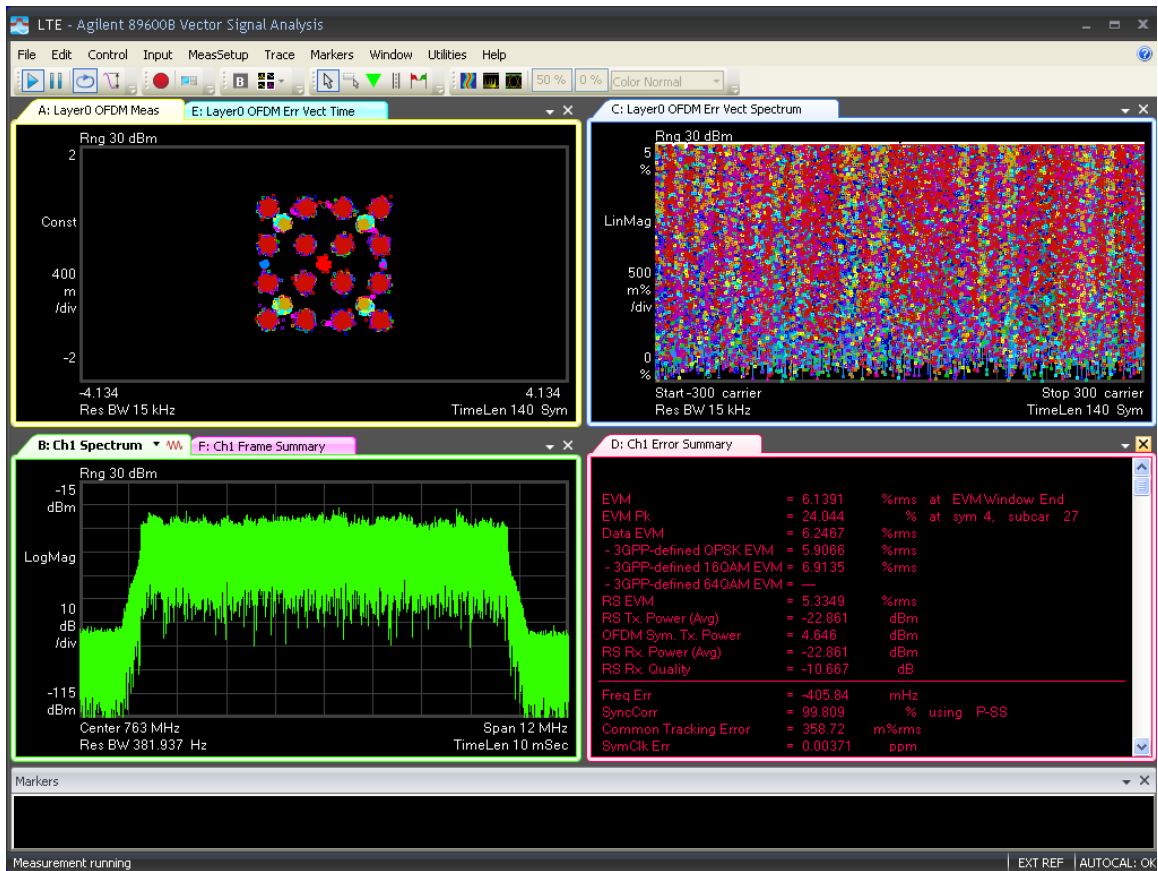
10M -Port 1 -763MHz-TM2.0



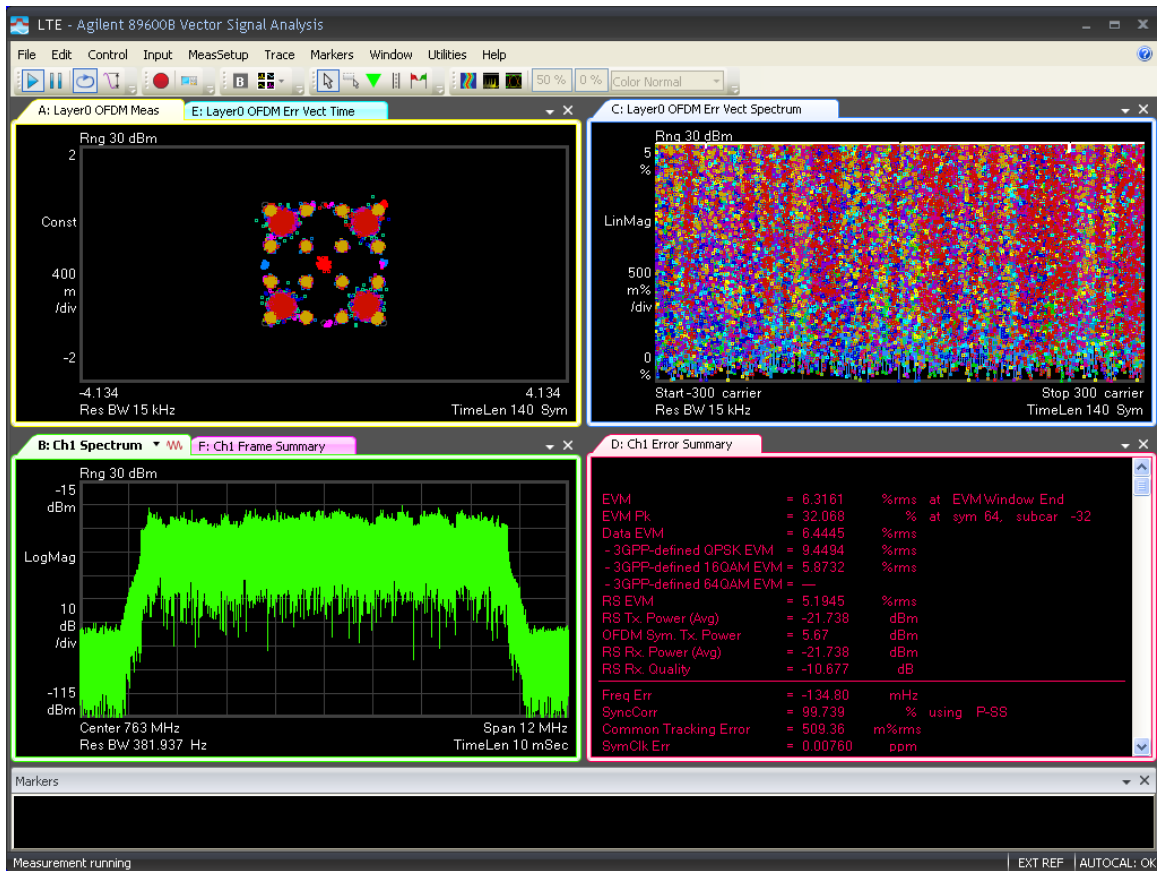
10M -Port 1 -763MHz-TM3.1



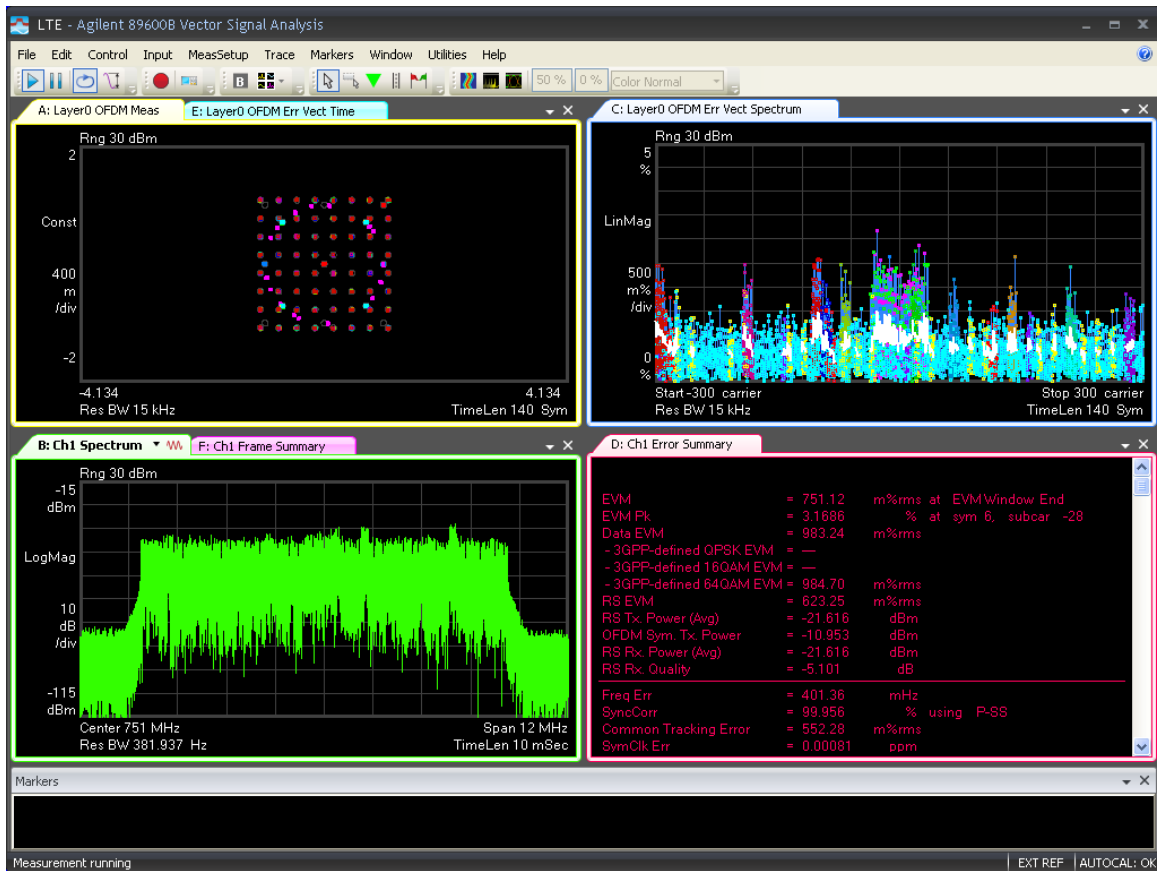
10M -Port 1 -763MHz-TM3.2



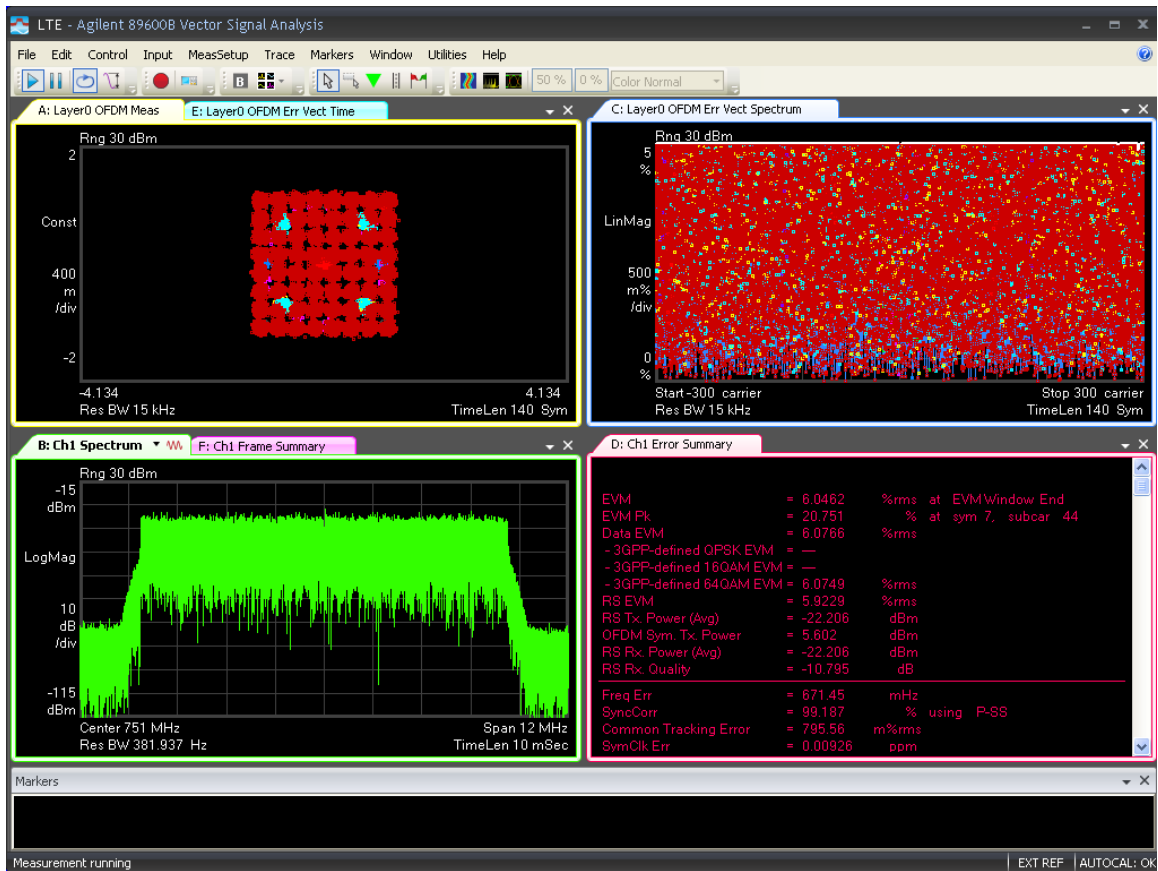
10M -Port 1 -763MHz-TM3.3



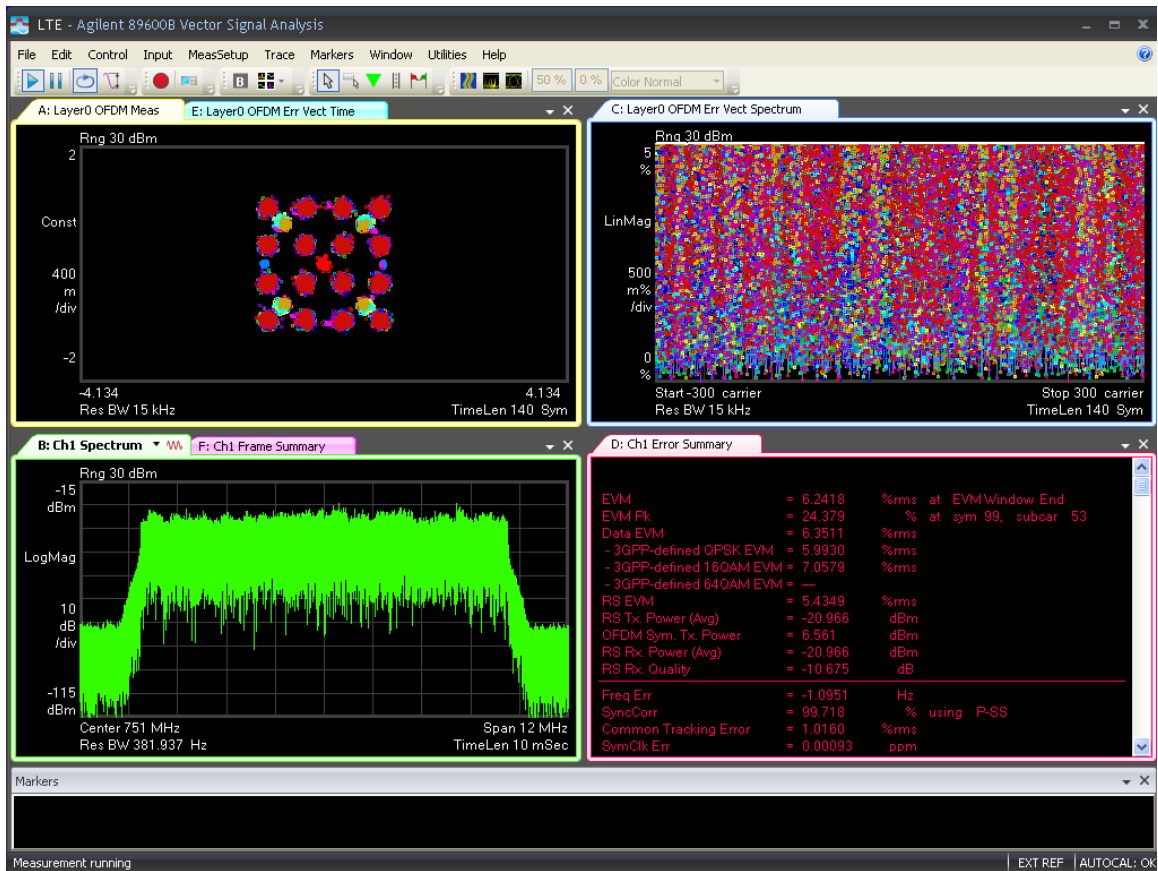
10M -Port 2-751MHz-TM2.0



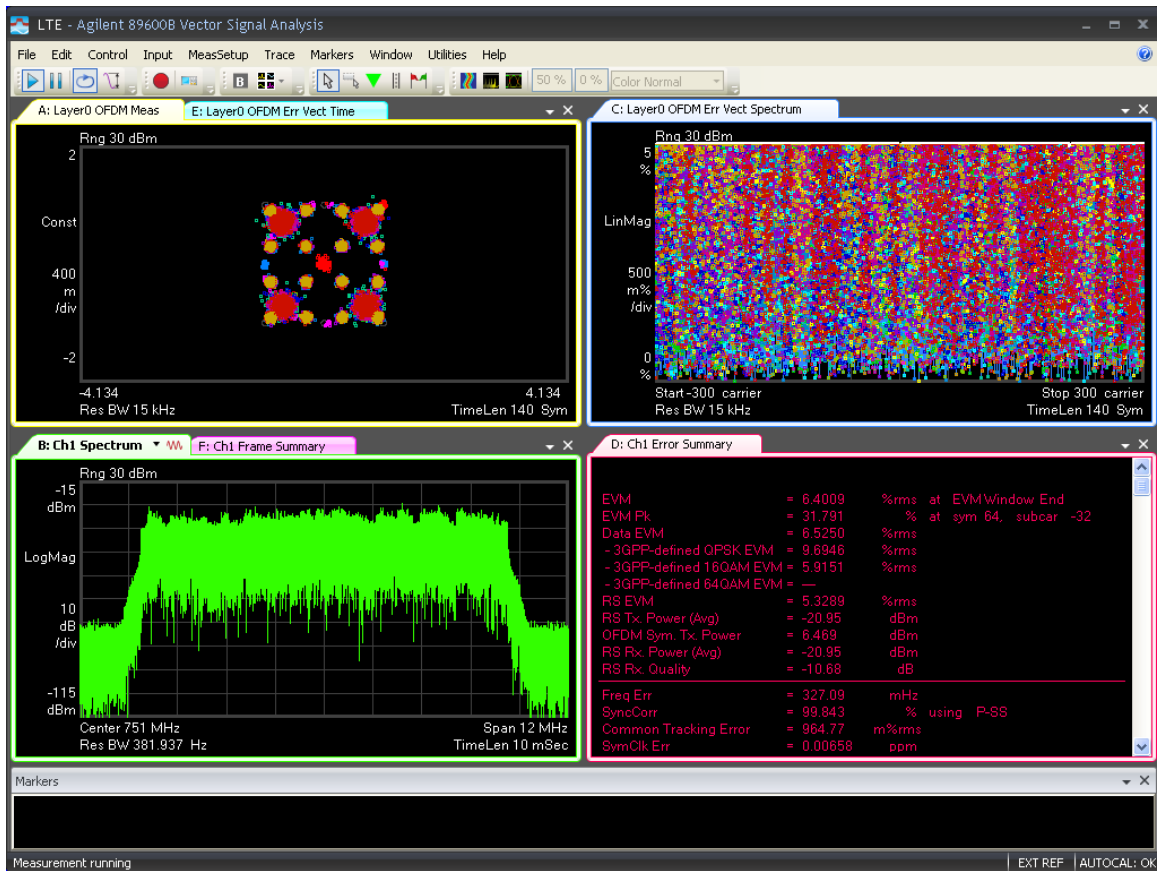
10M -Port 2 -751MHz-TM3.1



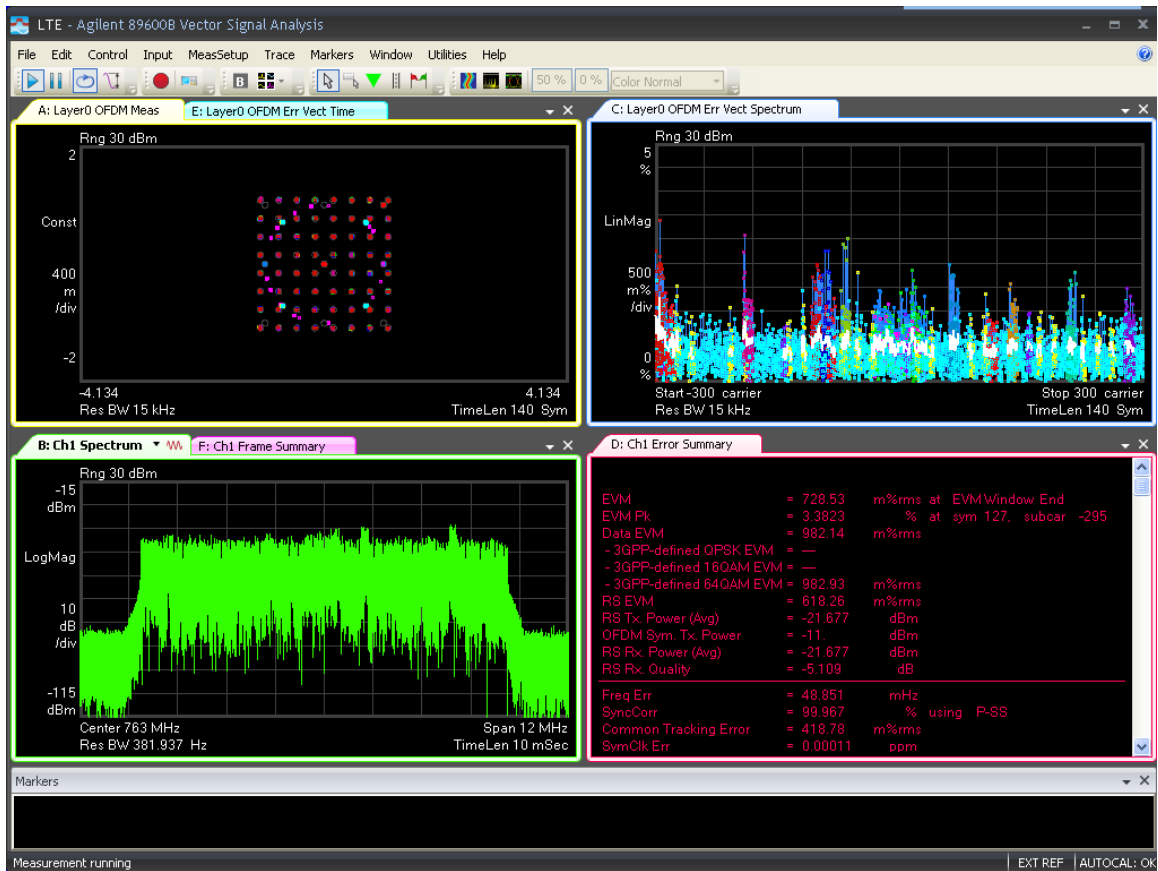
10M -Port 2 -751MHz-TM3.2



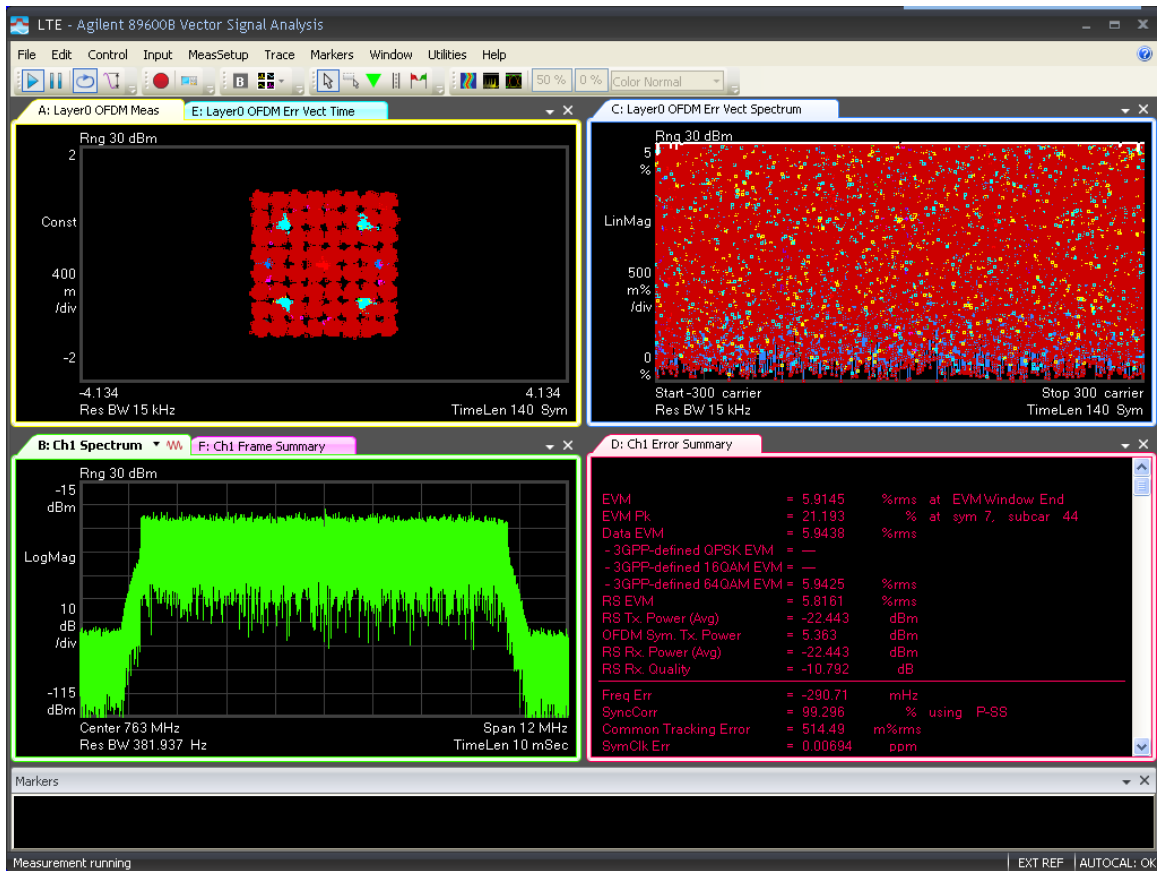
10M -Port 2 -751MHz-TM3.3



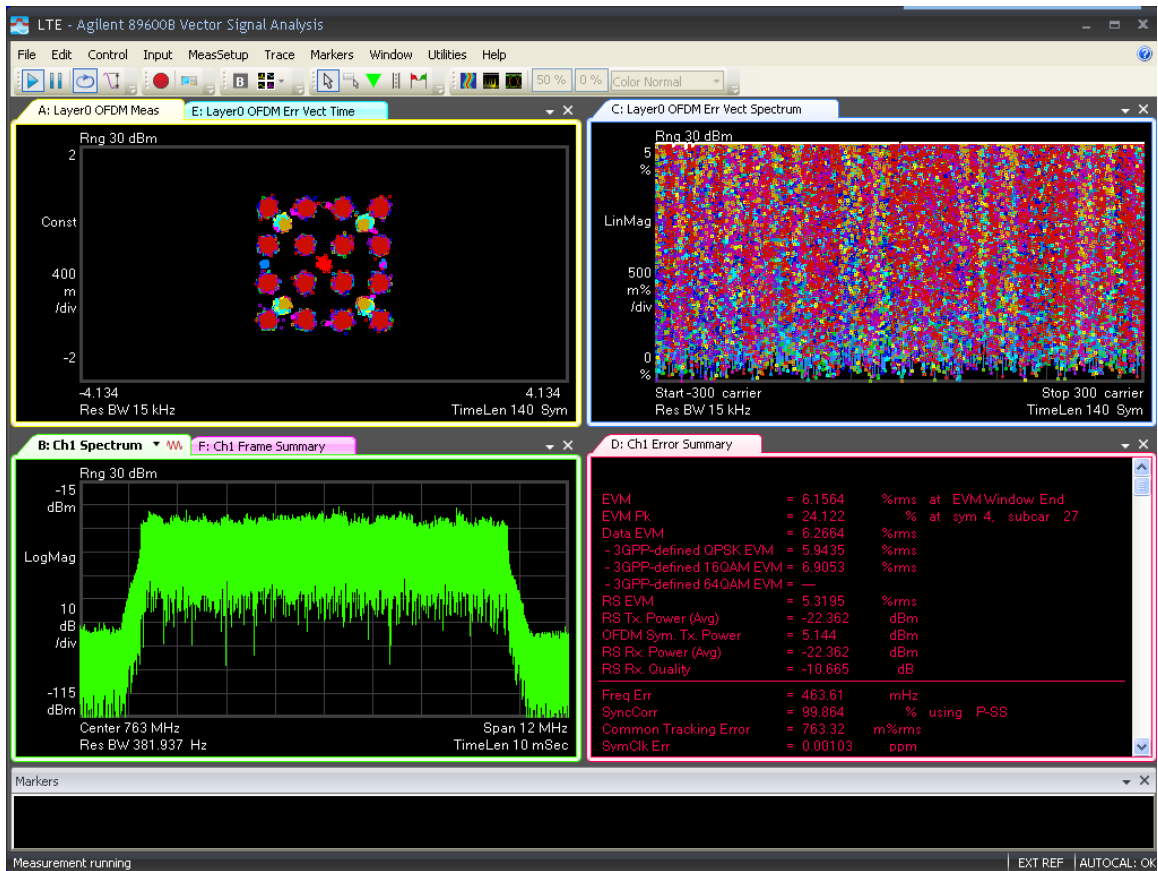
10M -Port 2 -763MHz-TM2.0



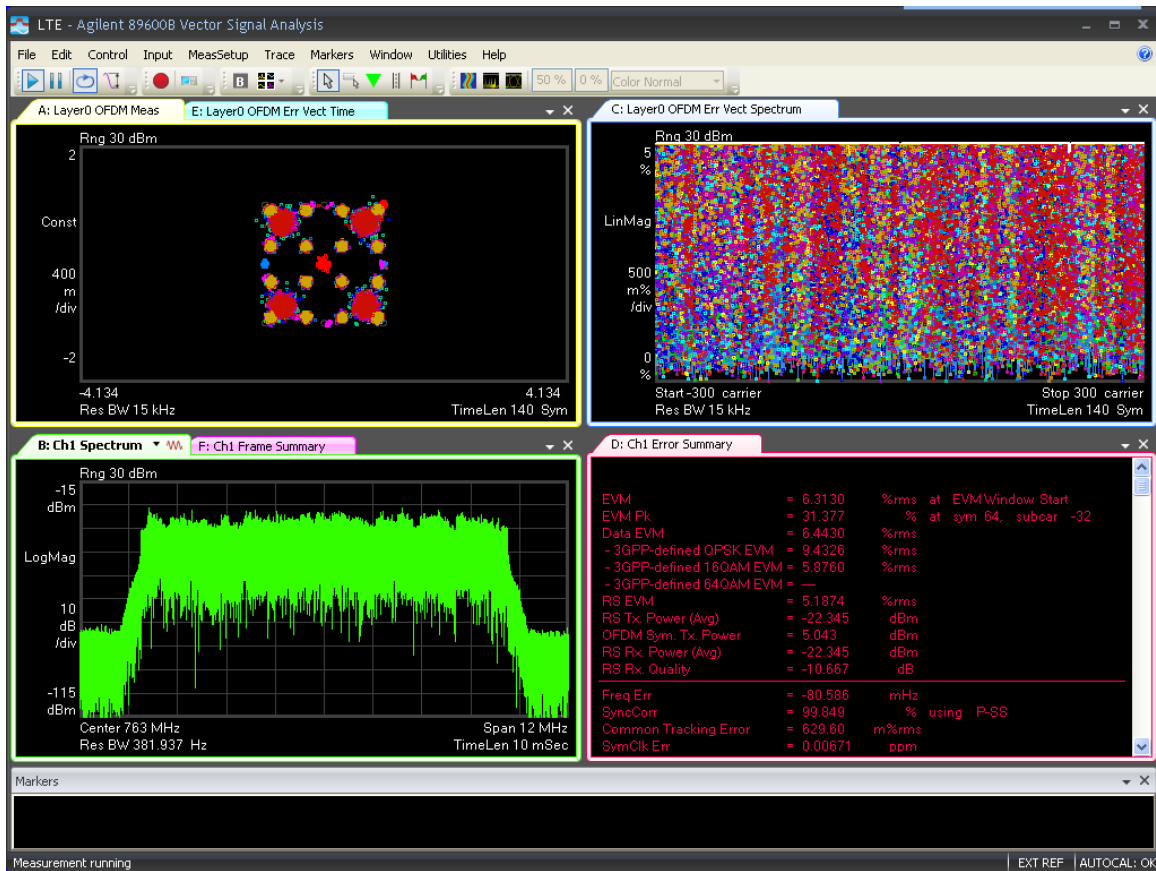
10M -Port 2 -763MHz-TM3.1



10M -Port 2 -763MHz-TM3.2



10M -Port 2 -763MHz-TM3.3

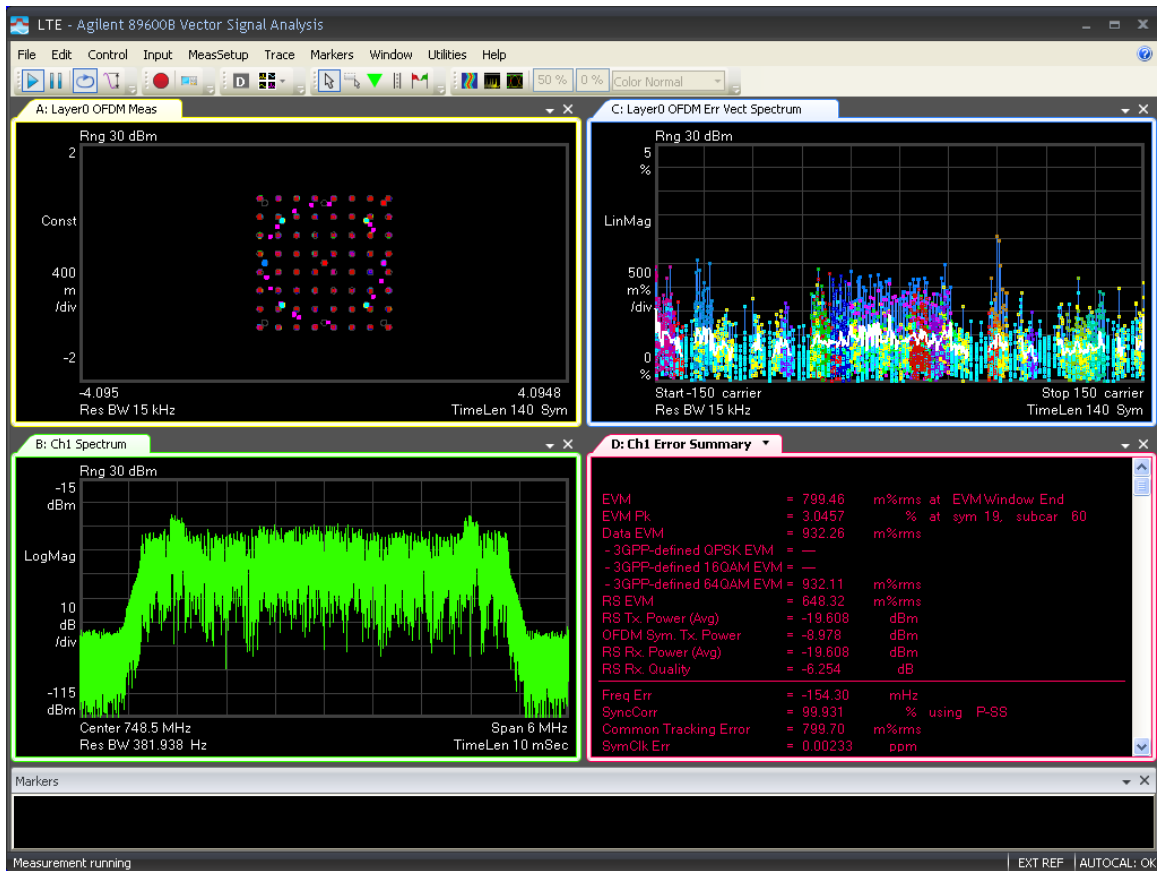


Channel Bandwidth :5M

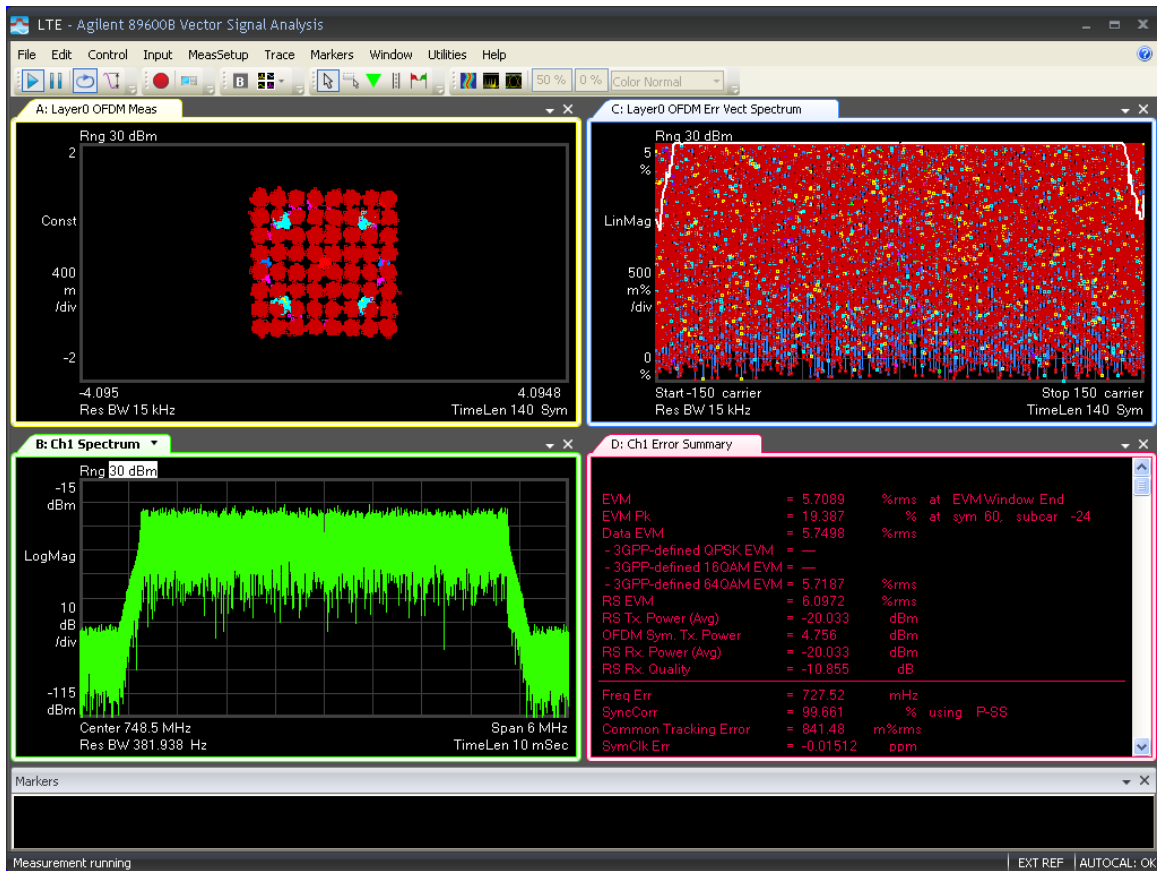
Port	Frequency (MHz)	Test mode	EVM
1	748.5	TM2.0	0.932
		TM3.1	5.71
		TM3.2	6.86
		TM3.3	10.83
	751	TM2.0	0.943
		TM3.1	5.78
		TM3.2	7.00
		TM3.3	11.08
	753.5	TM2.0	0.854
		TM3.1	5.086
		TM3.2	6.11
		TM3.3	11.36
	760.5	TM2.0	0.909
		TM3.1	5.33
		TM3.2	6.428
		TM3.3	10.70
	763	TM2.0	0.914
		TM3.1	5.64
		TM3.2	6.49

1	765.5	TM3.3	10.72
		TM2.0	0.908
		TM3.1	5.63
		TM3.2	6.81
		TM3.3	11.30
	748.5	TM2.0	0.953
		TM3.1	5.63
		TM3.2	6.81
		TM3.3	11.35
	751	TM2.0	0.869
		TM3.1	5.77
		TM3.2	6.97
		TM3.3	10.37
	753.5	TM2.0	0.893
		TM3.1	5.64
		TM3.2	6.83
		TM3.3	10.73
	760.5	TM2.0	0.894
		TM3.1	5.66
		TM3.2	6.82
		TM3.3	10.69
	763	TM2.0	0.863
		TM3.1	5.65
		TM3.2	6.804
		TM3.3	11.33
	765.5	TM2.0	0.873
		TM3.1	5.65
		TM3.2	6.84
		TM3.3	11.348

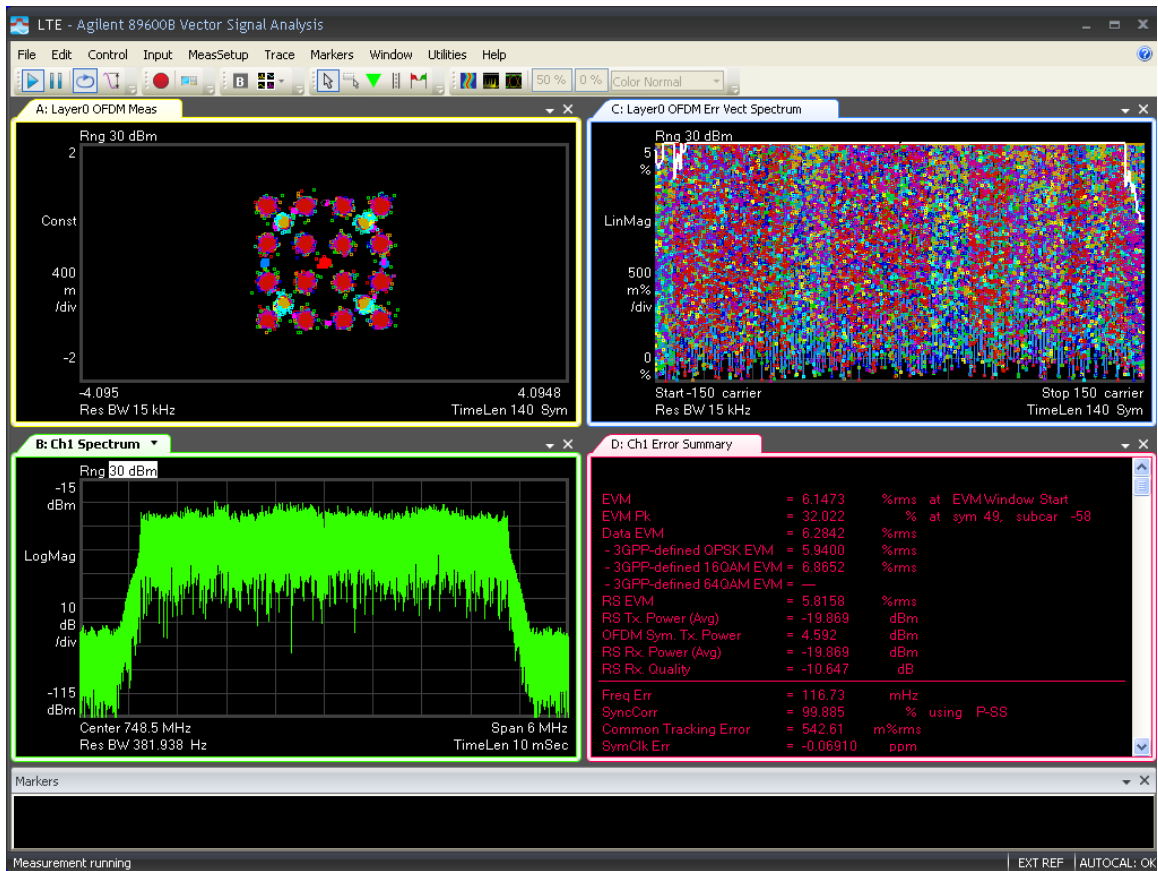
5M -Port 1 -748.5MHz-TM2.0



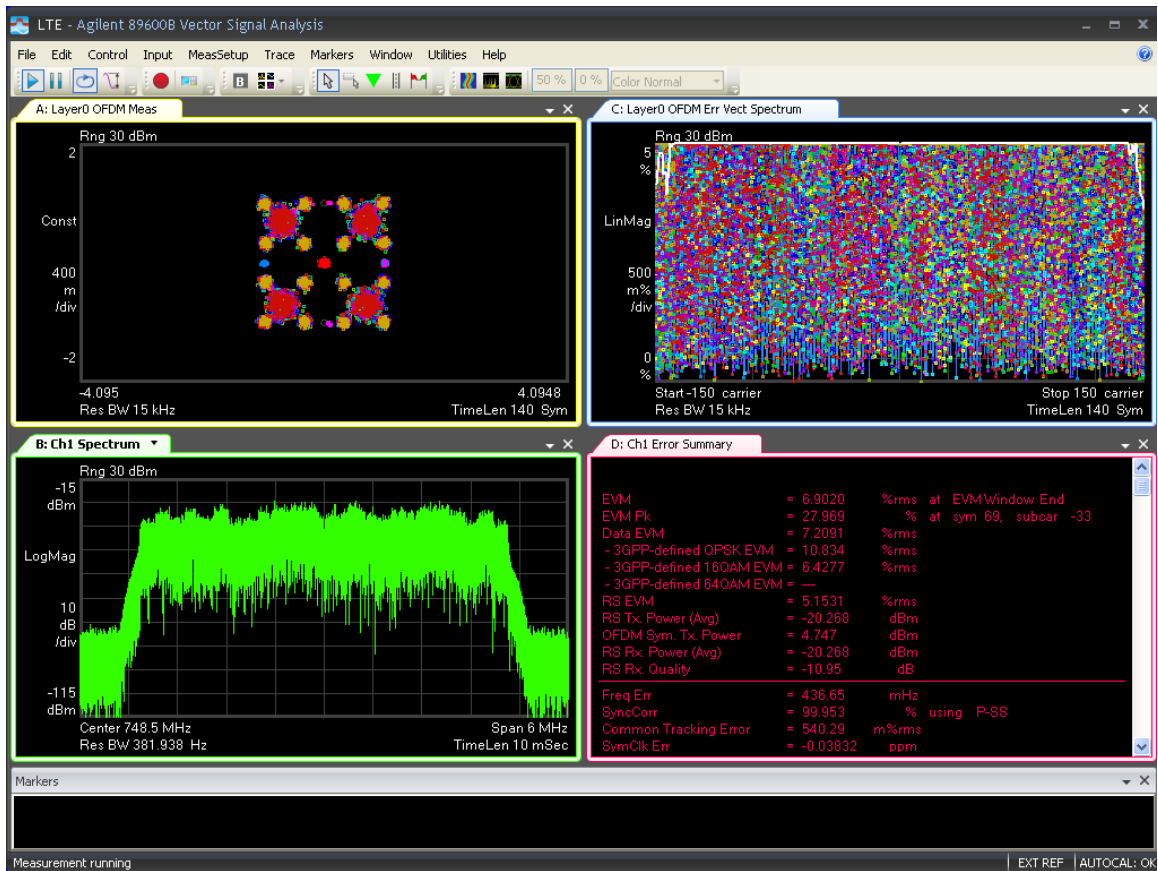
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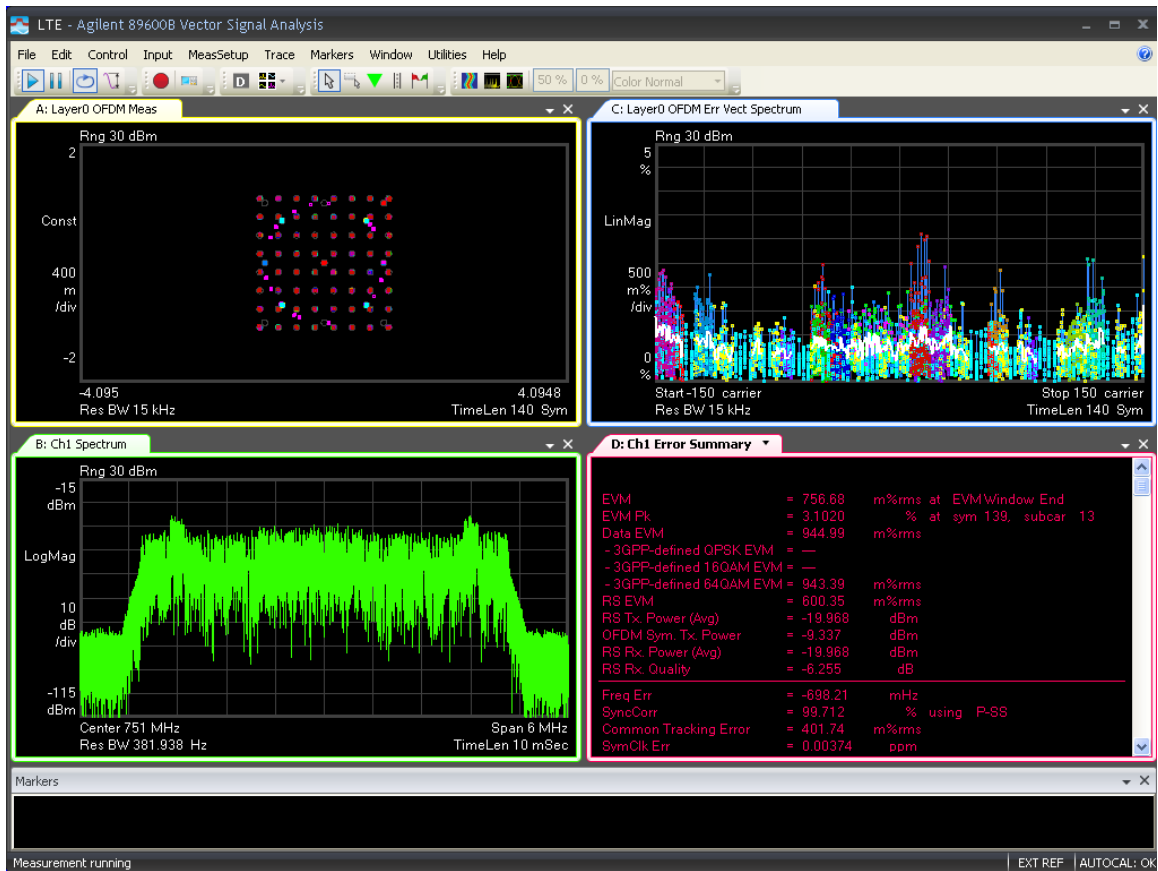
5M -Port 1 -748.5MHz-TM3.2



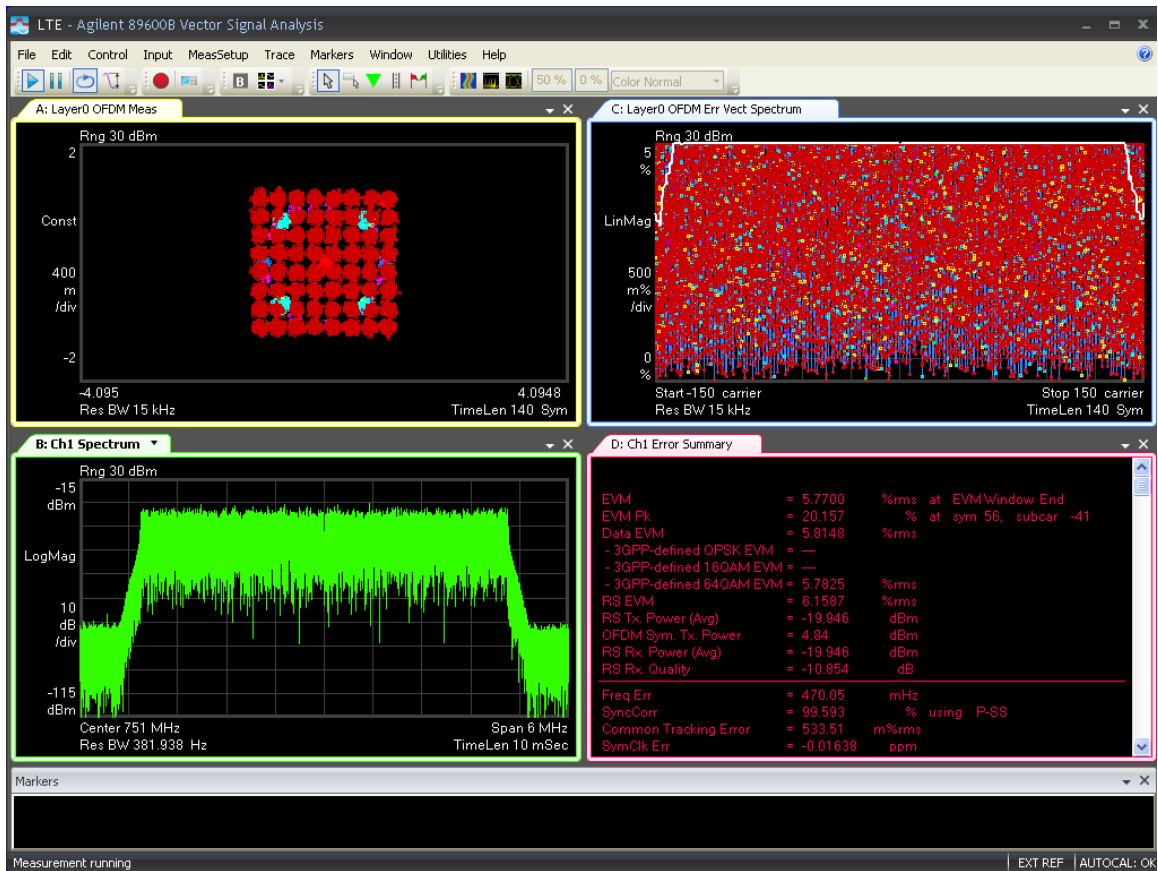
5M -Port 1 -748.5MHz-TM3.3



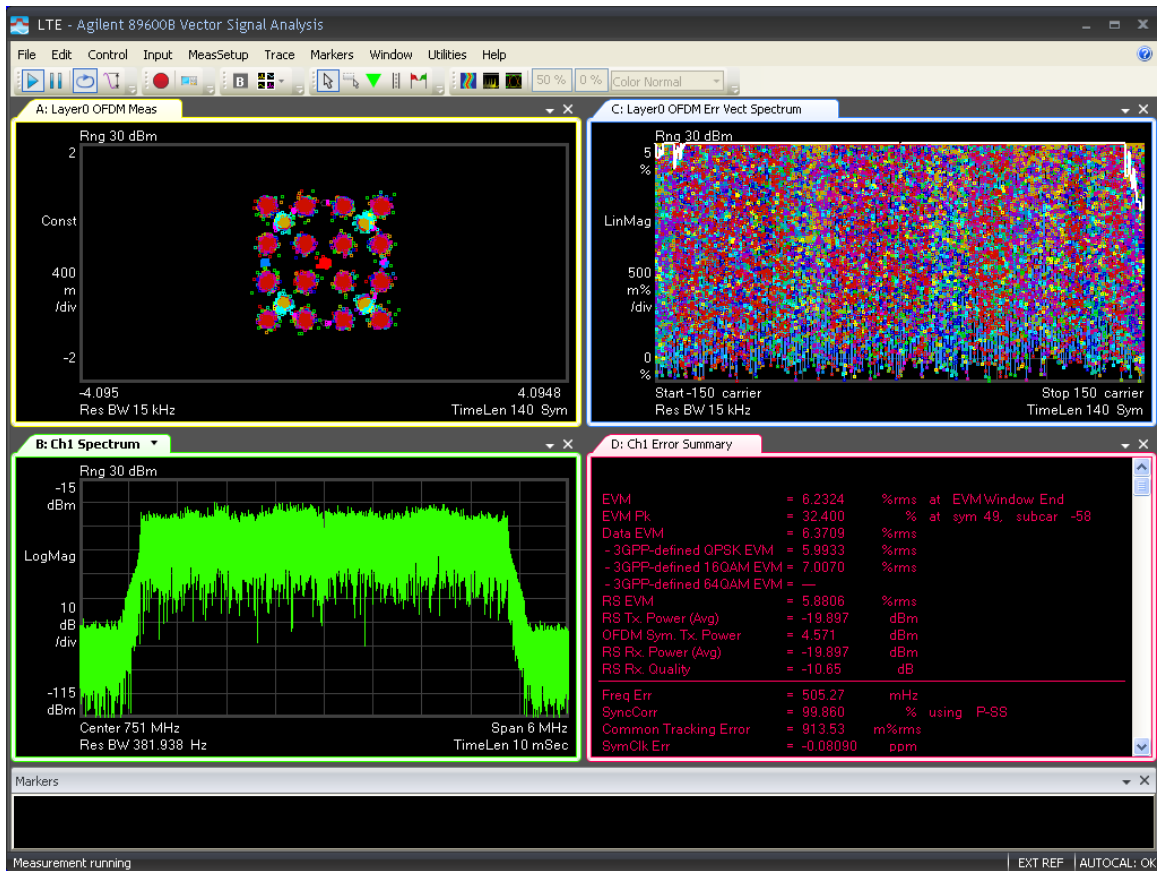
5M -Port 1 -751MHz-TM2.0



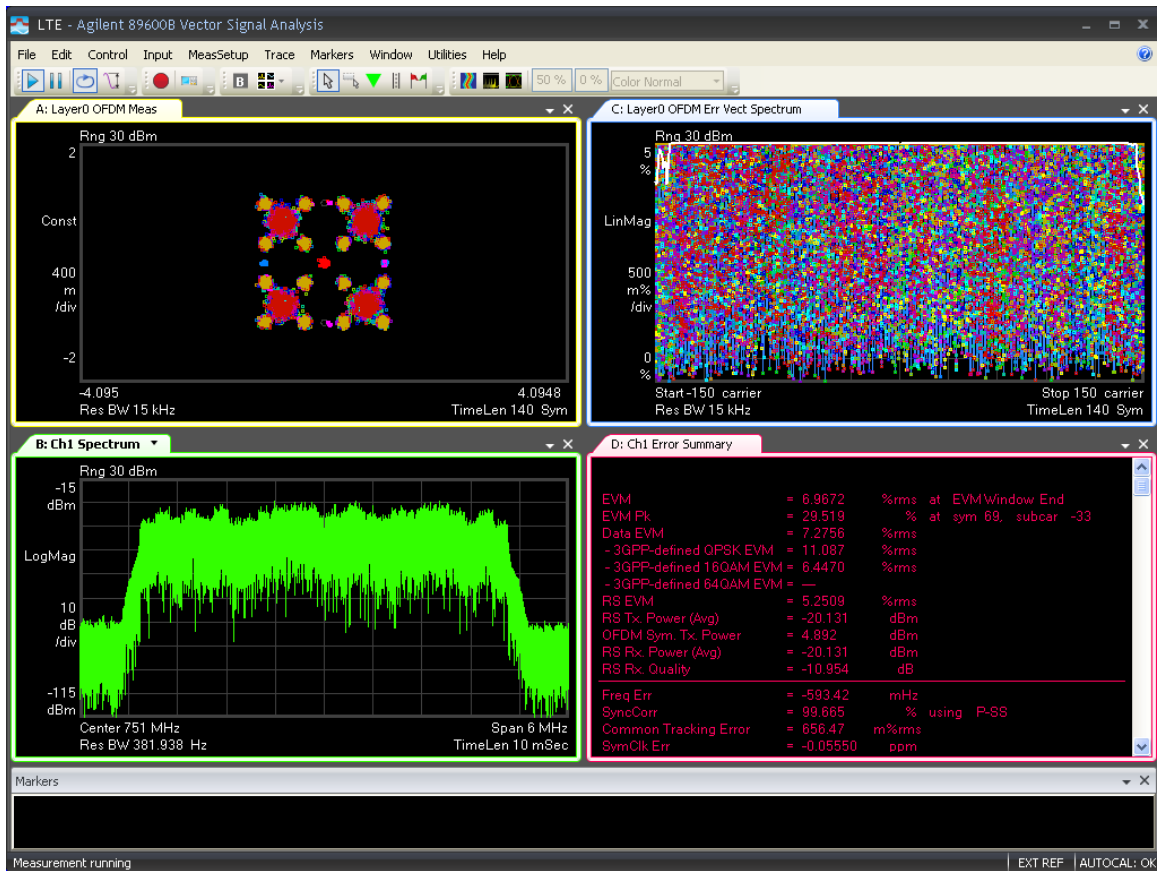
5M -Port 1 -751MHz-TM3.1



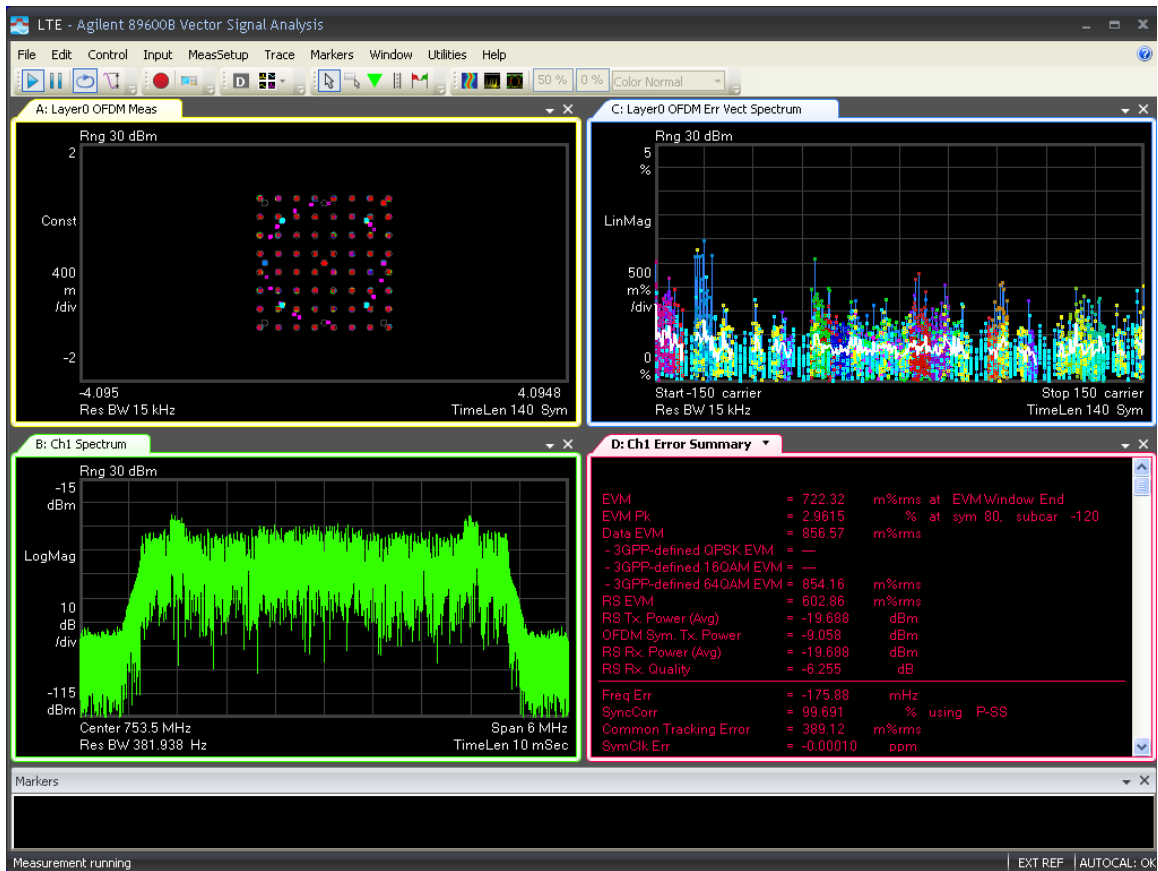
5M -Port 1 -751.5MHz-TM3.2



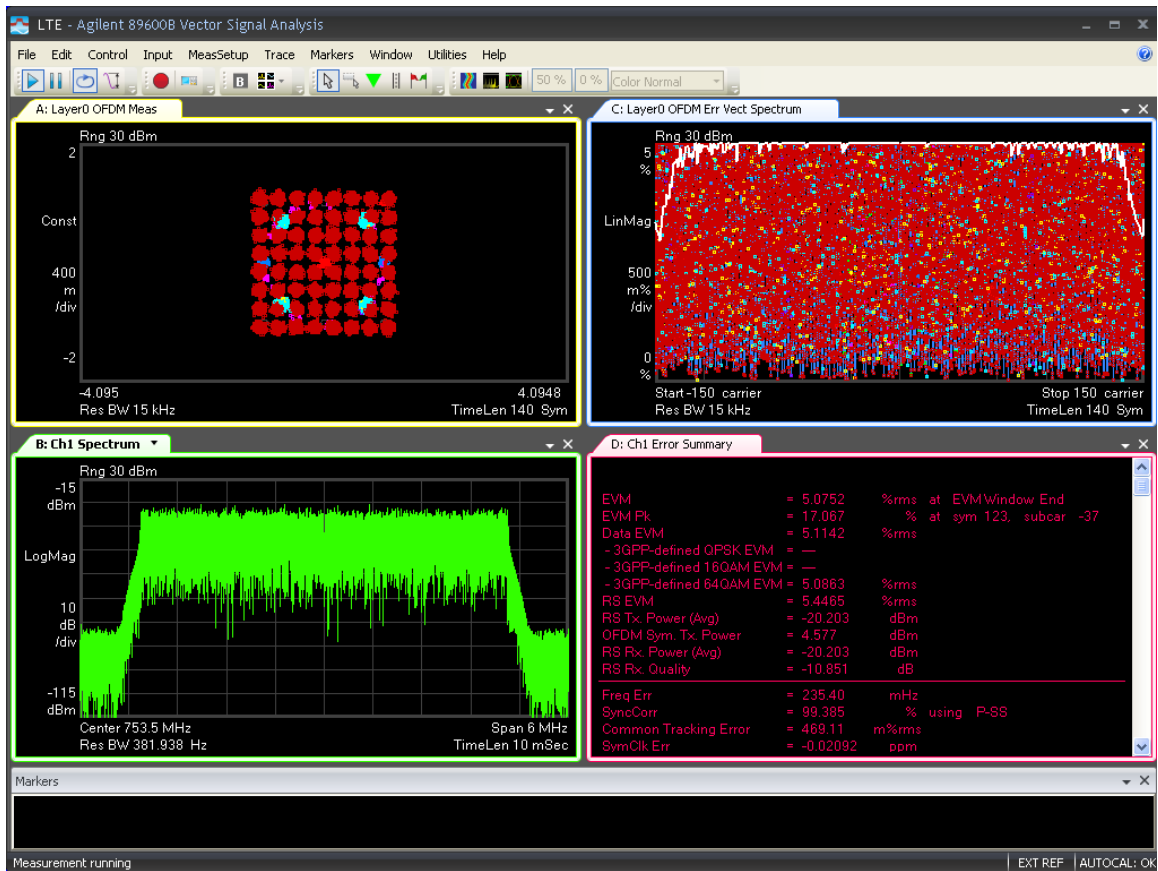
5M -Port 1 -751.5MHz-TM3.3



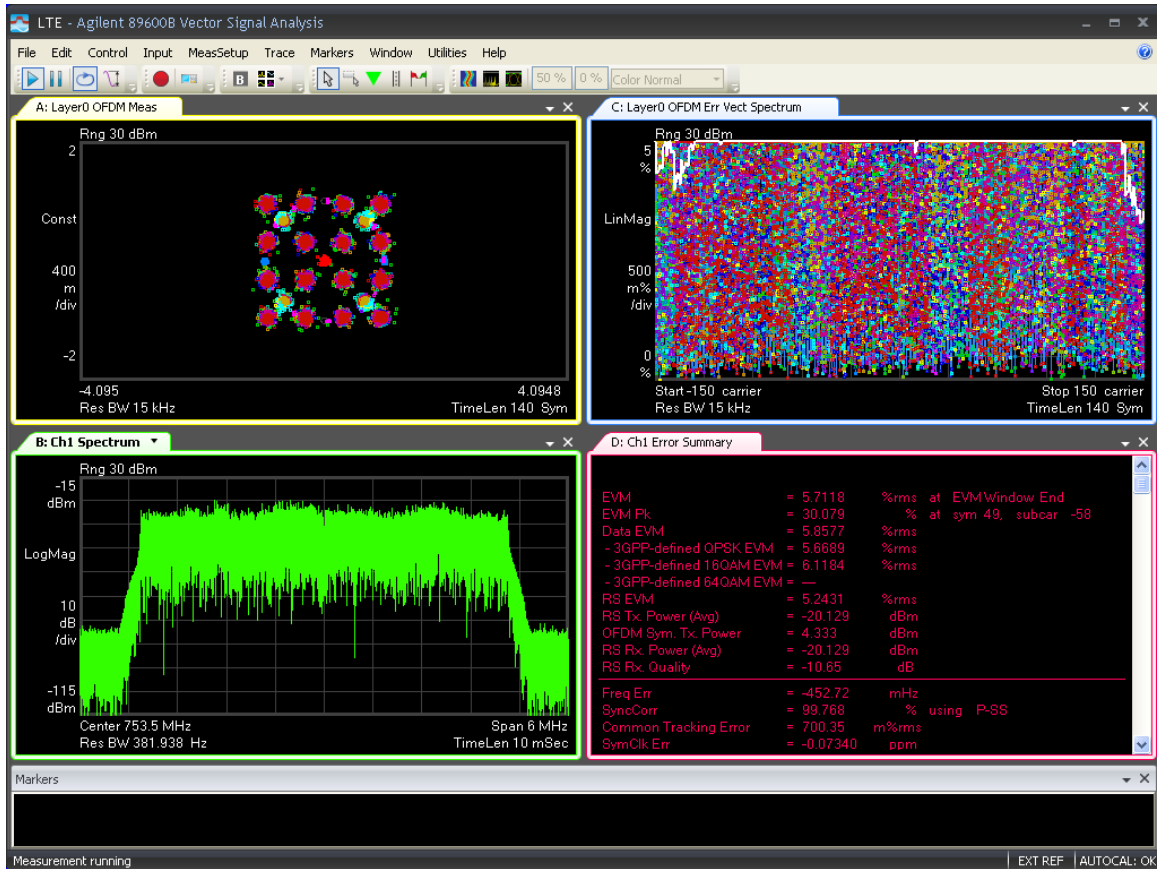
5M -Port 1 -753.5MHz-TM2.0



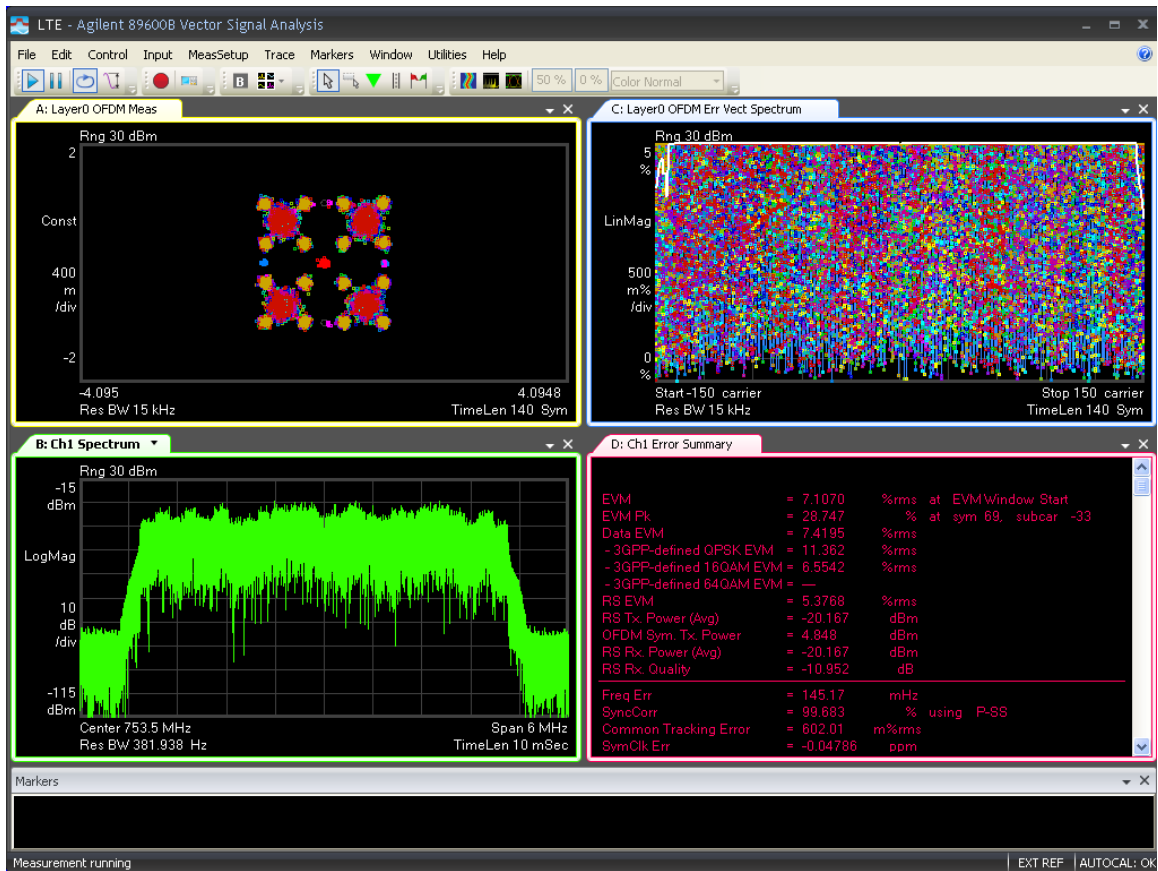
5M -Port 1 -753.5MHz-TM3.1



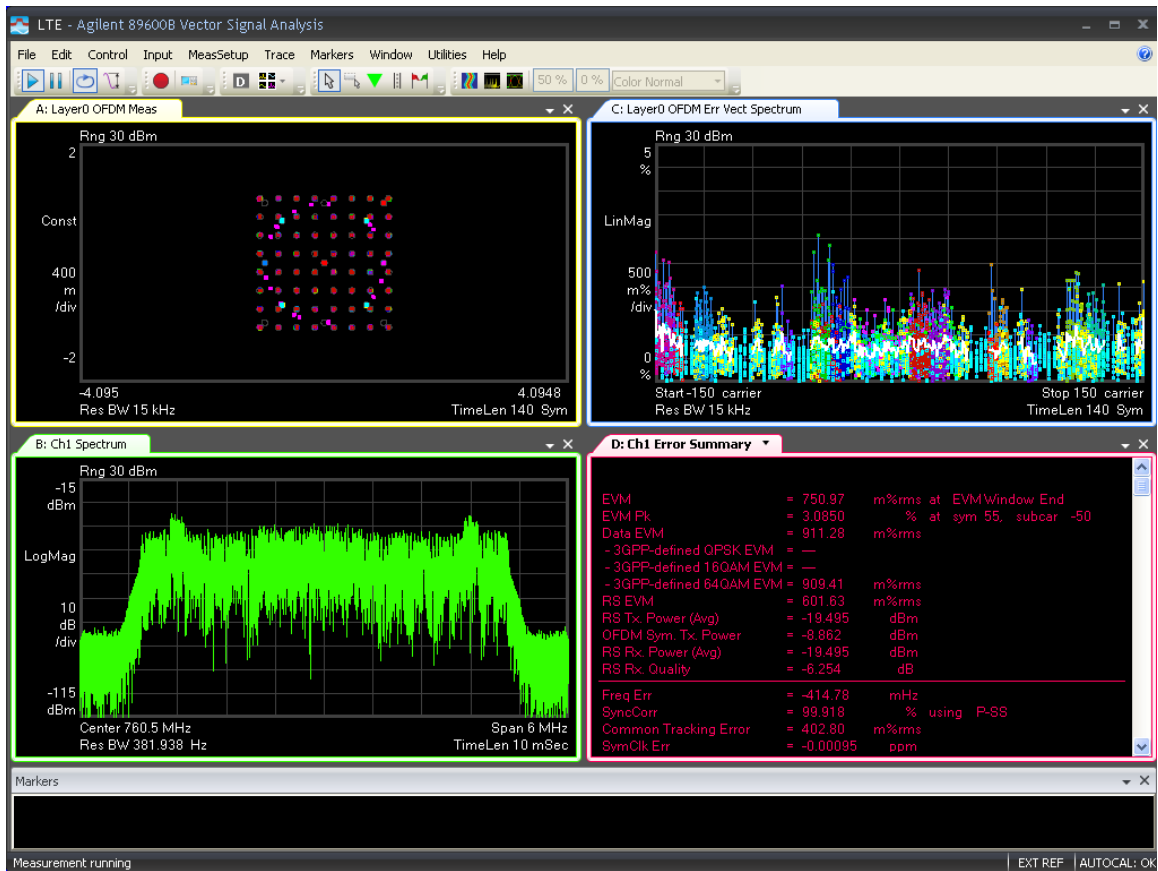
5M -Port 1 -753.5MHz-TM3.2



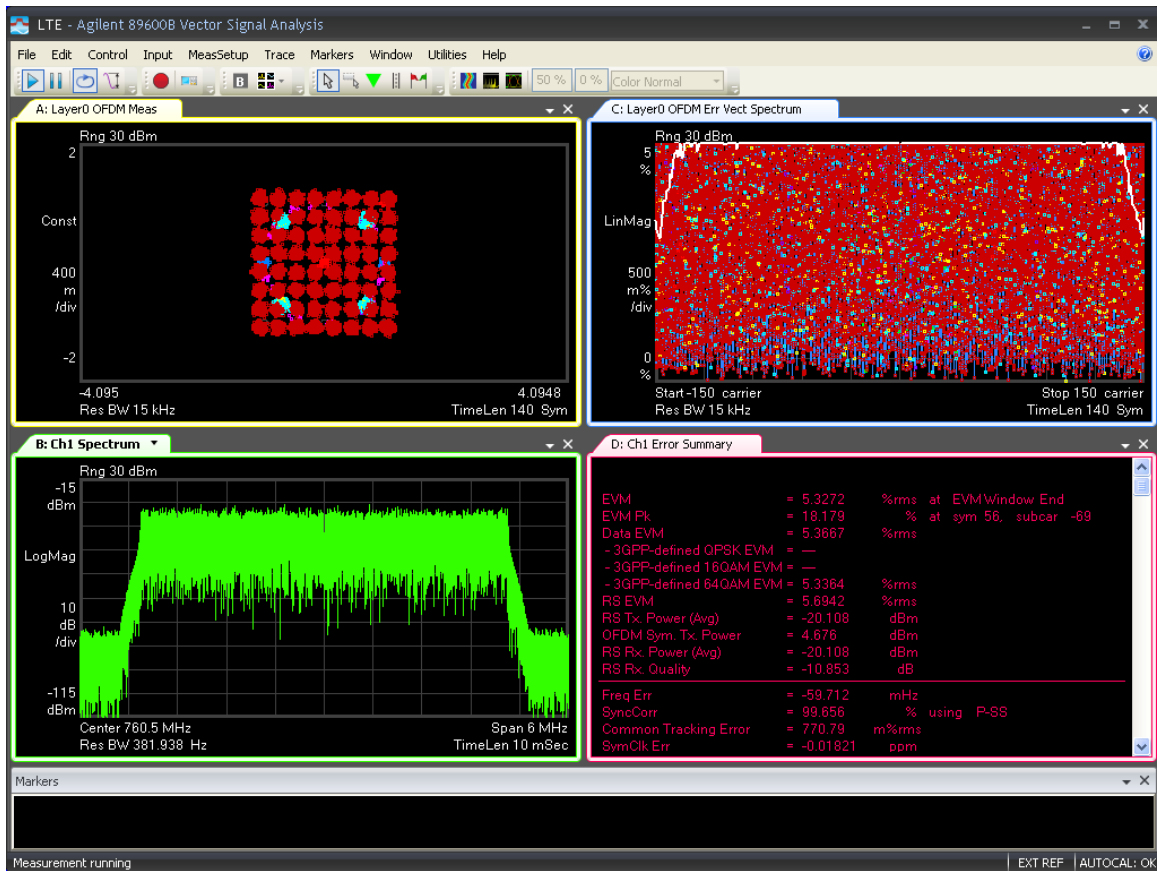
5M -Port 1 -753.5MHz-TM3.3



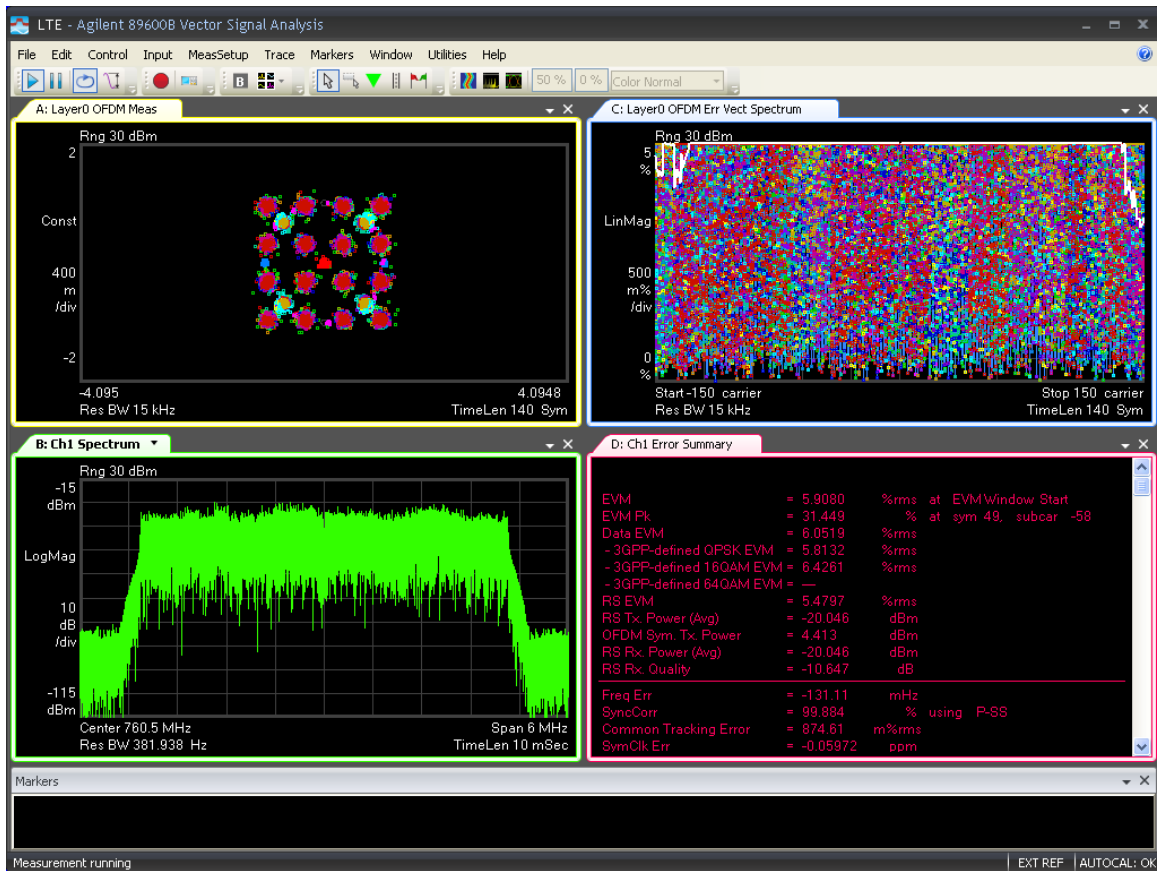
5M -Port 1 -760.5MHz-TM2.0



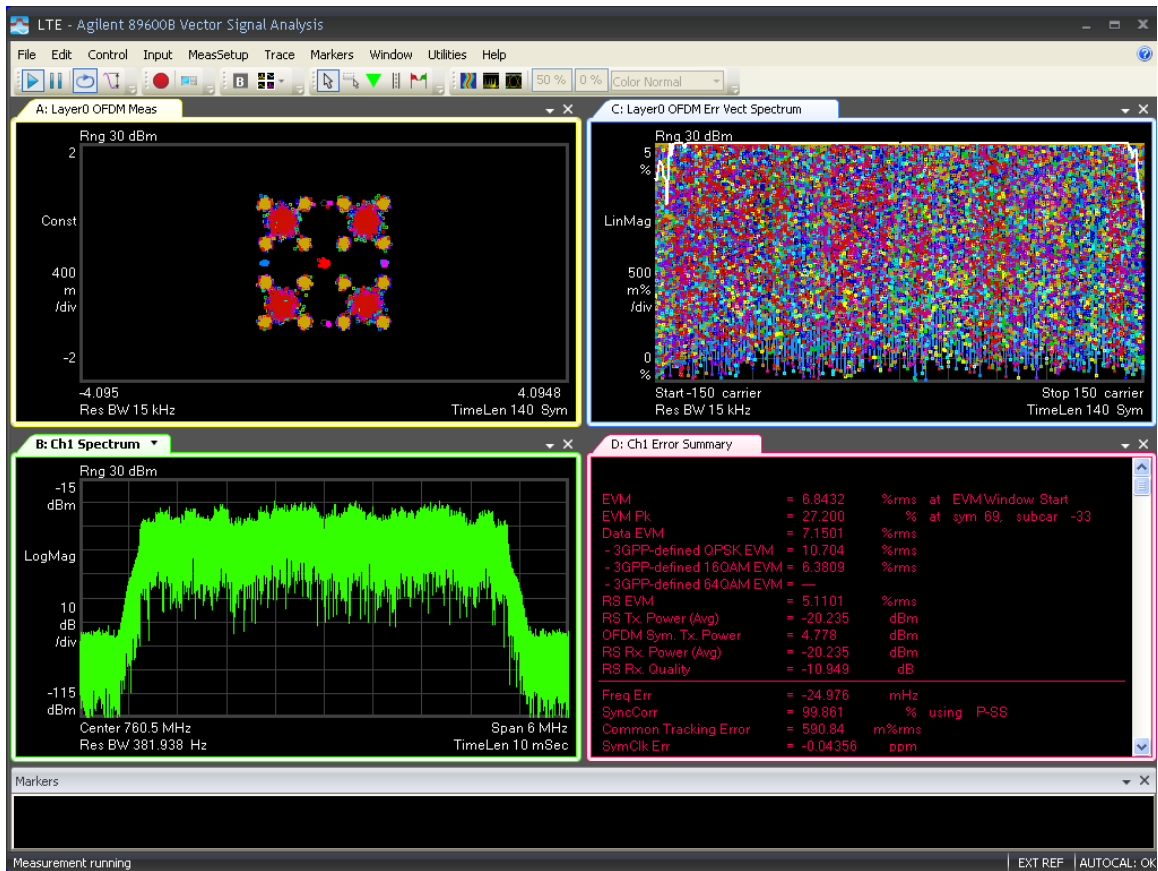
5M -Port 1 -760.5MHz-TM3.1



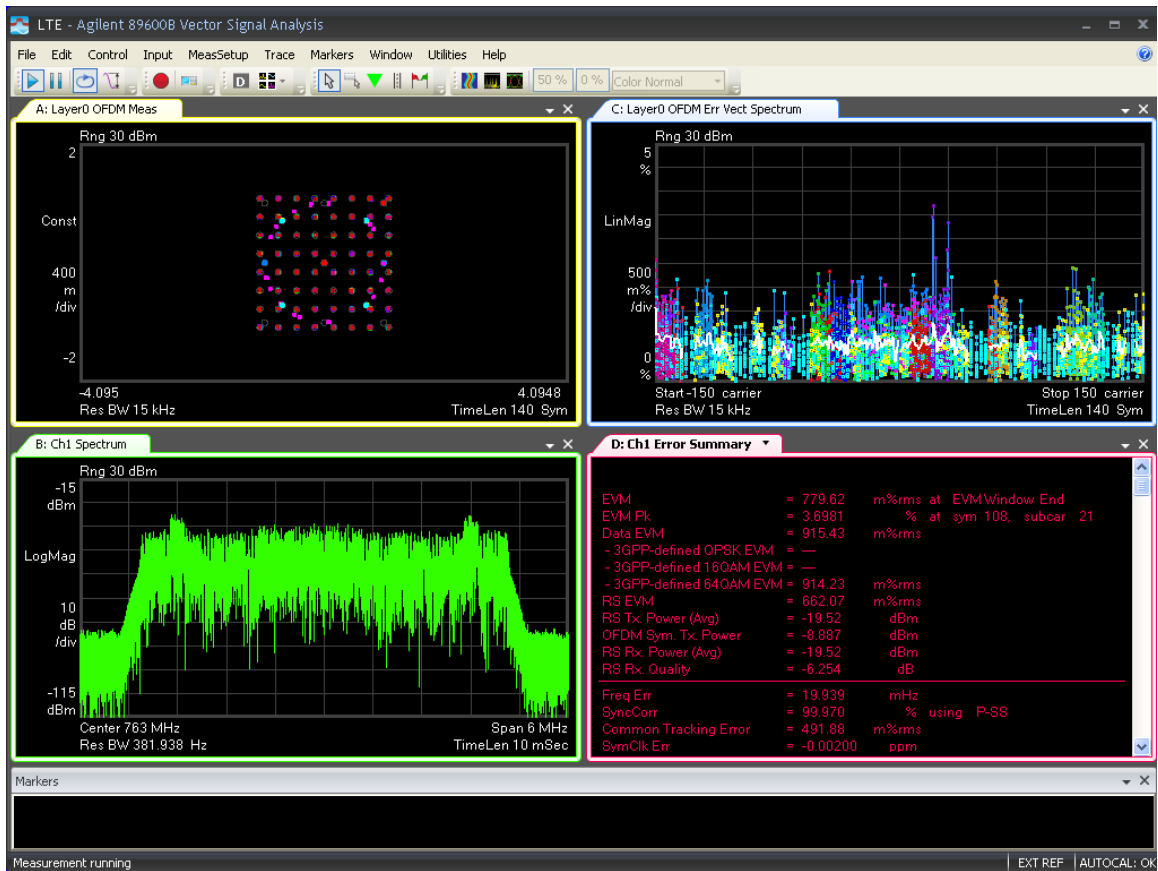
5M -Port 1 -760.5MHz-TM3.2



5M -Port 1 -760.5MHz-TM3.3



5M -Port 1 -763MHz-TM2.0



5M -Port 1 -763MHz-TM3.1