FCC
MEASUREMENT AND TEST REPORT
For
ZTE Corporation

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

FCC ID: Q78-R8882 S1700
July 18, 2012

This Report Concerns: ☒ Original Report	**Equipment Type:** Macro Radio Remote Unit
Test Engineer:	Bloom
Report No.:	FCC-2011-088
Test Date:	June 5 – June 16, 2012
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2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8882 S1700 or the "EUT" as referred to in this report is a LTE Remote Radio Unit.

Technical specification:
Size: 472 mm x 320 mm x 152 mm (HxWxD)
Input voltage: -37Vdc~-57Vdc
Frequency range: 2110MHz~2155 MHz
(Bottom frequency is about 2110.25MHz, Middle frequency is about 2132.5MHz,Top frequency is about 2154.75MHz).
Max RF output power: 47.7dBm
Gain of the antenna: 15dBi
Modulation type of emission: LTE
Appearance of EUT:

FIGURE 1 APPEARANCE OF ZXSDR R8882 S1700

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.
FCC KDB 662911 D01 Multiple Transmitter Output v01 r01

Test Facility

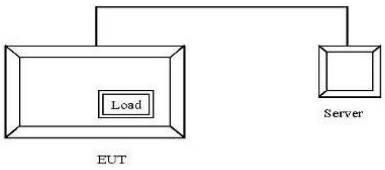
The Test site used by ZTE Corporation to collect test data is located in the 1/F,B2 Wing, ZTE Plaza, Keji Road South, Shenzhen, Guangdong, 518057, P.R.China, Tel: +86-755-26771609,Fax: +86-755-26770347. Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). ZTE Corporation EMC Lab was certificated by CNAS and the registration number was L0611. The FCC registration number of ZTE corporation EMC lab is 373926. The IC registration number of ZTE corporation EMC lab is 5200A. The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.
The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 0009043175. 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

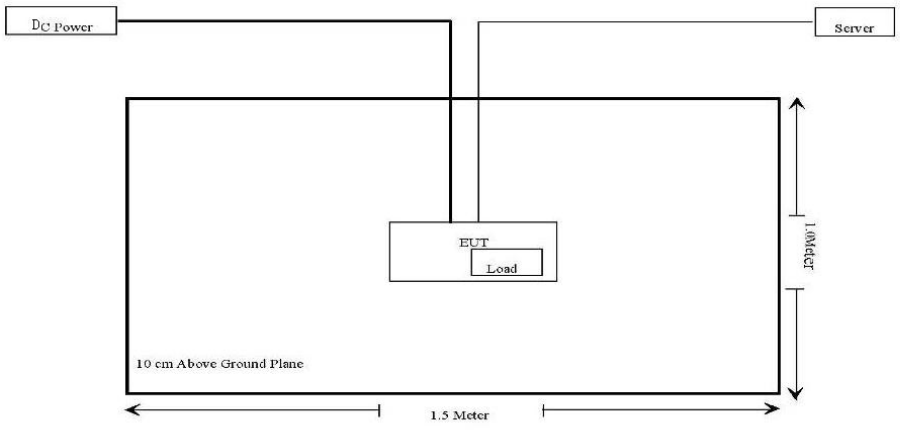
Description of Test Configuration

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.

Configuration of Test Setup



Block Diagram of Test Setup



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 § 2.1053, §27.53	Modulation Characteristic Spurious Radiated Emissions	Compliant 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.

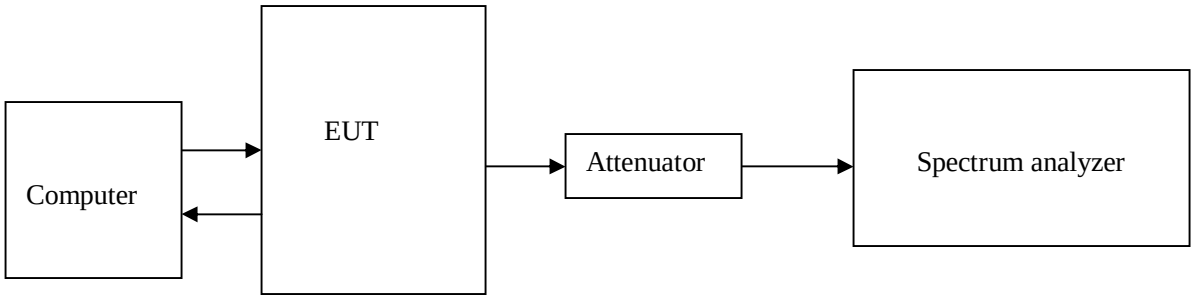
Note: ERP= Max output Power+ Antenna gain-Cable loss-2.15

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2012.04.10	2013.04.09
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2011.07.19	2012.07.19
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

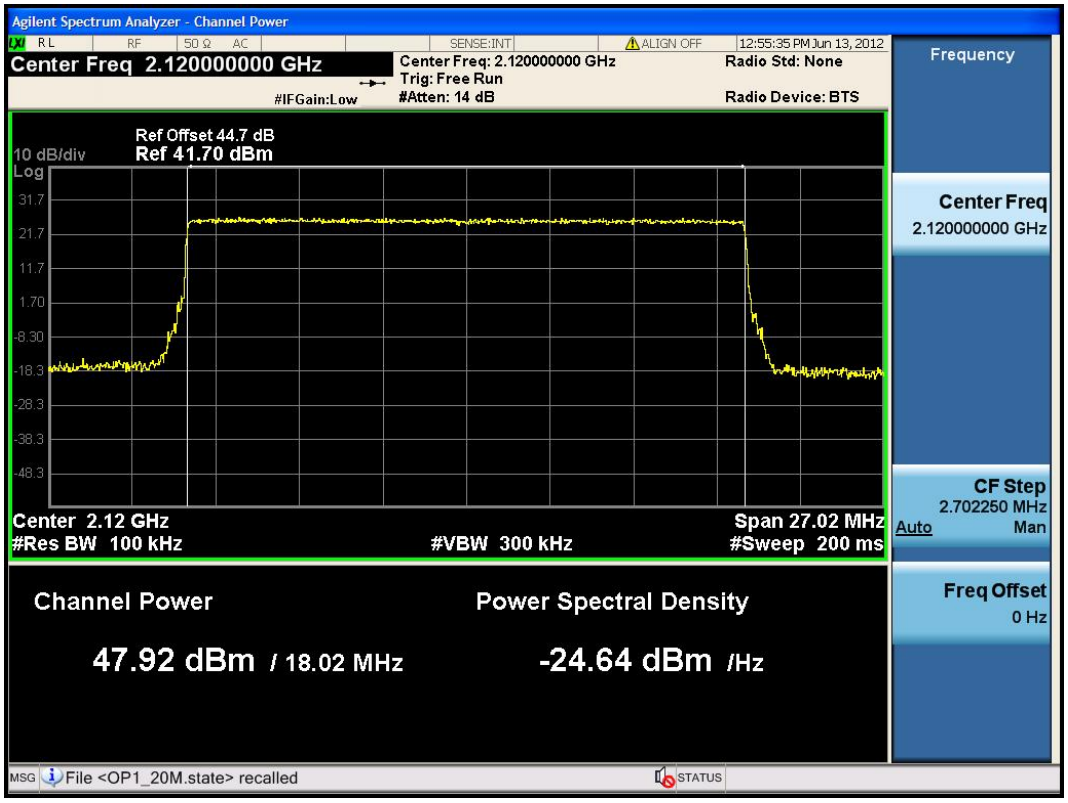
Test Result: Pass

Test Mode: Transmitting LTE

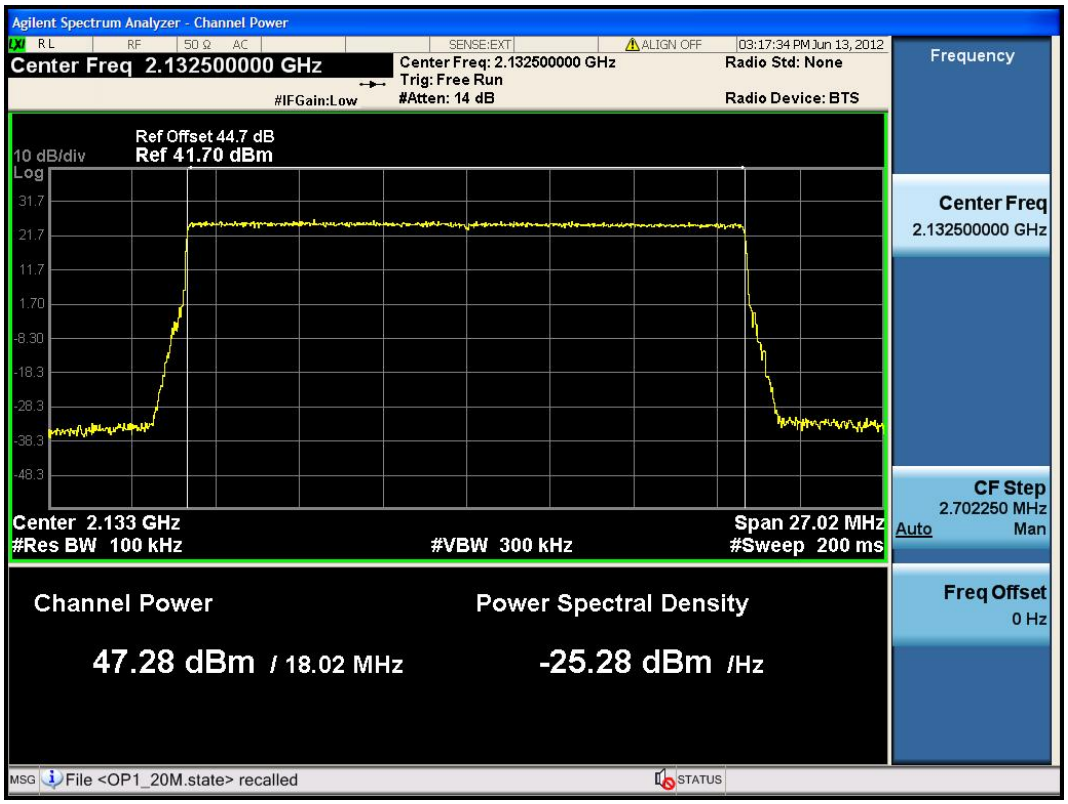
Test Data:

Channel Bandwidth	Port	Center Freq. (MHz)	Result RMS (dBm)	10log(N) (dBm)
20M	1	2120	47.92	50.92
		2132.5	47.28	50.28
		2145	47.82	50.82
	2	2120	47.83	50.83
		2132.5	47.43	50.43
		2145	47.84	50.84

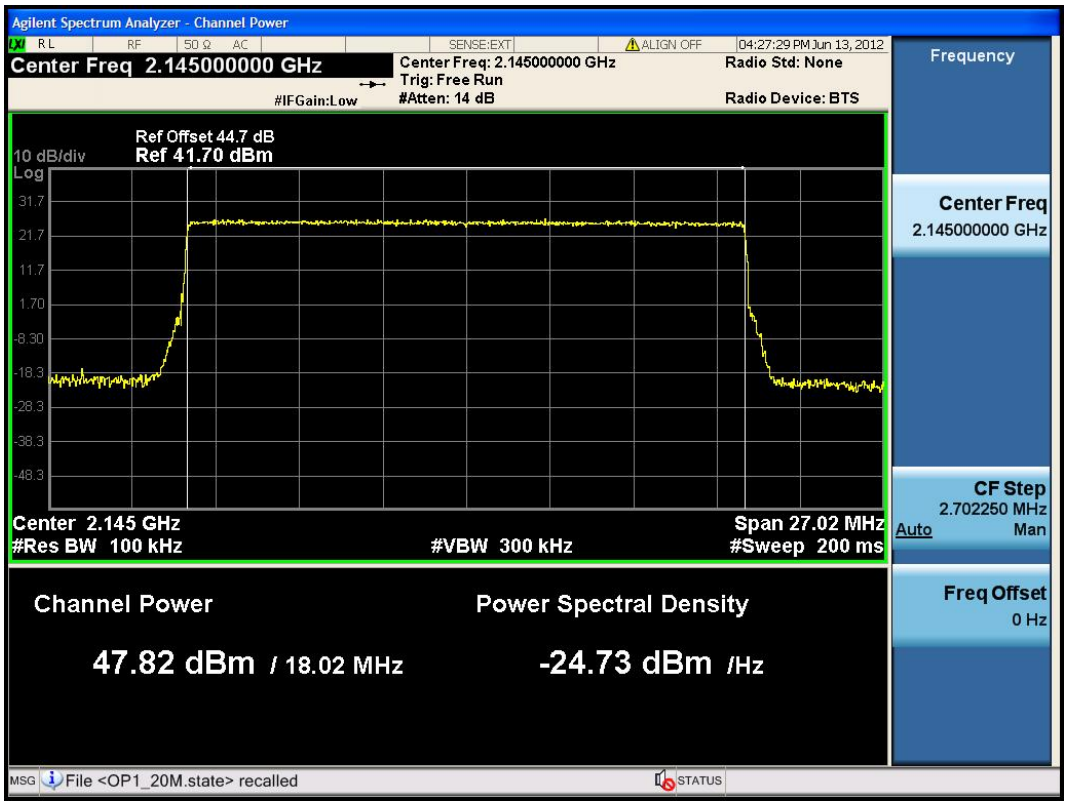
20M -Port 1 -2120MHz



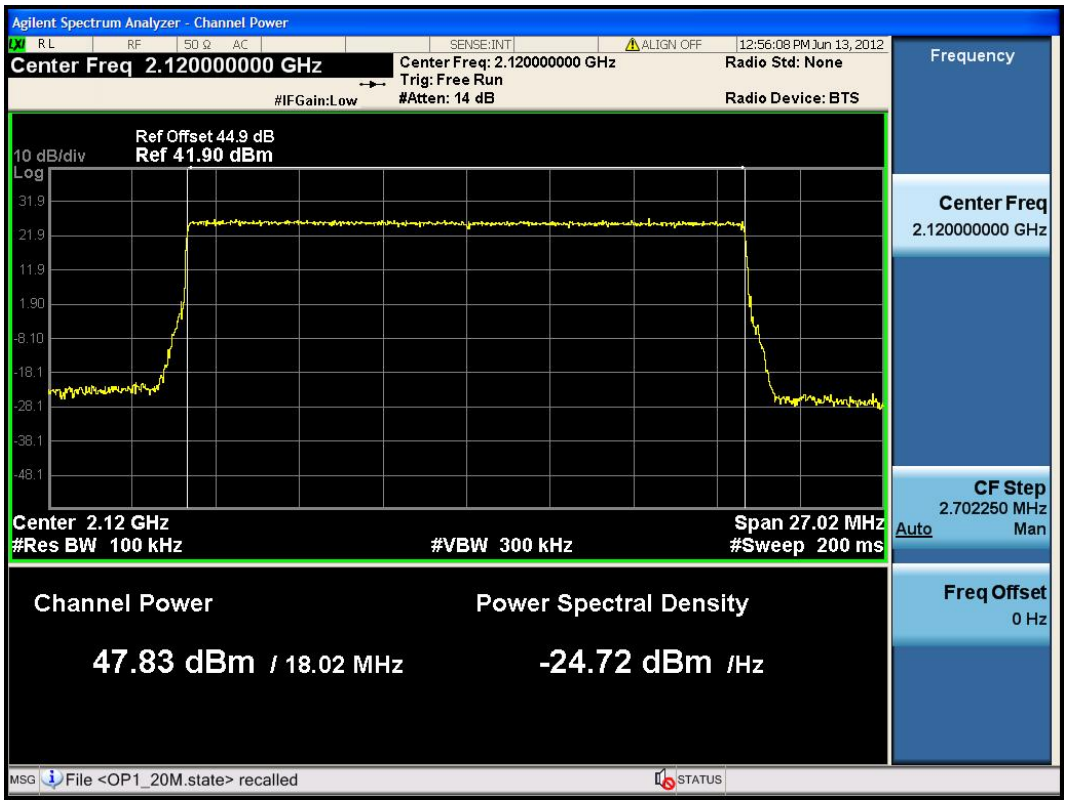
20M-Port 1 -2132.5MHz



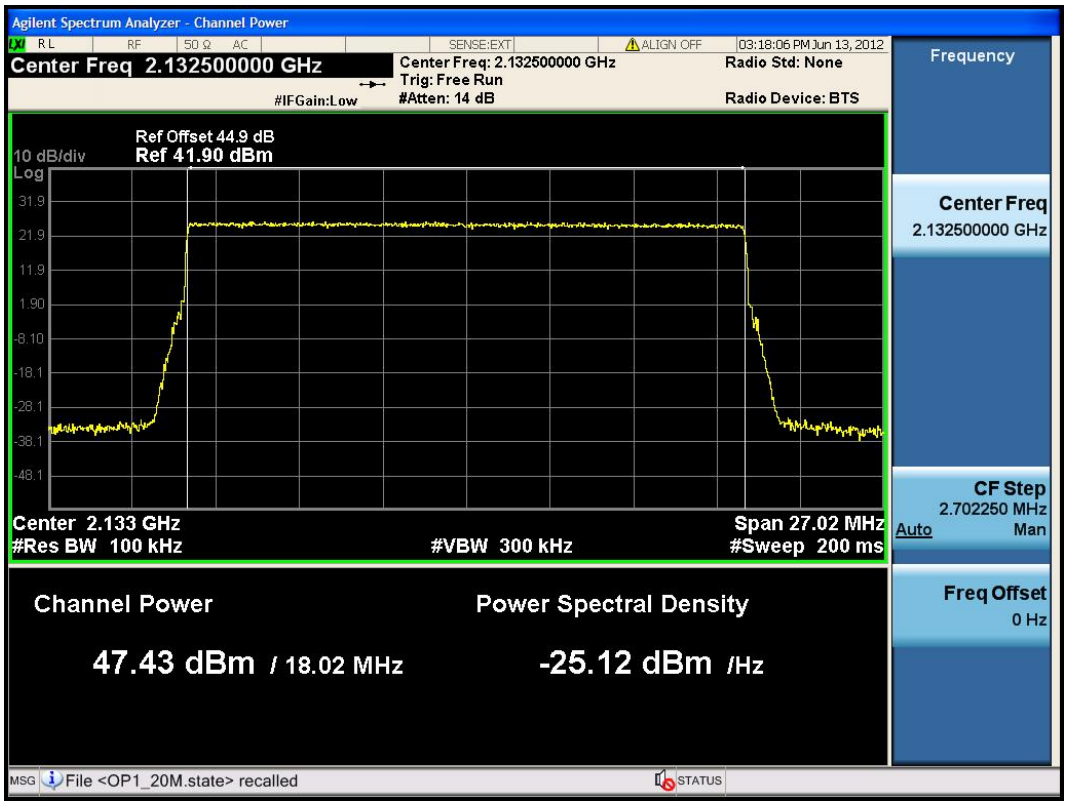
20M-Port 1 -2145MHz



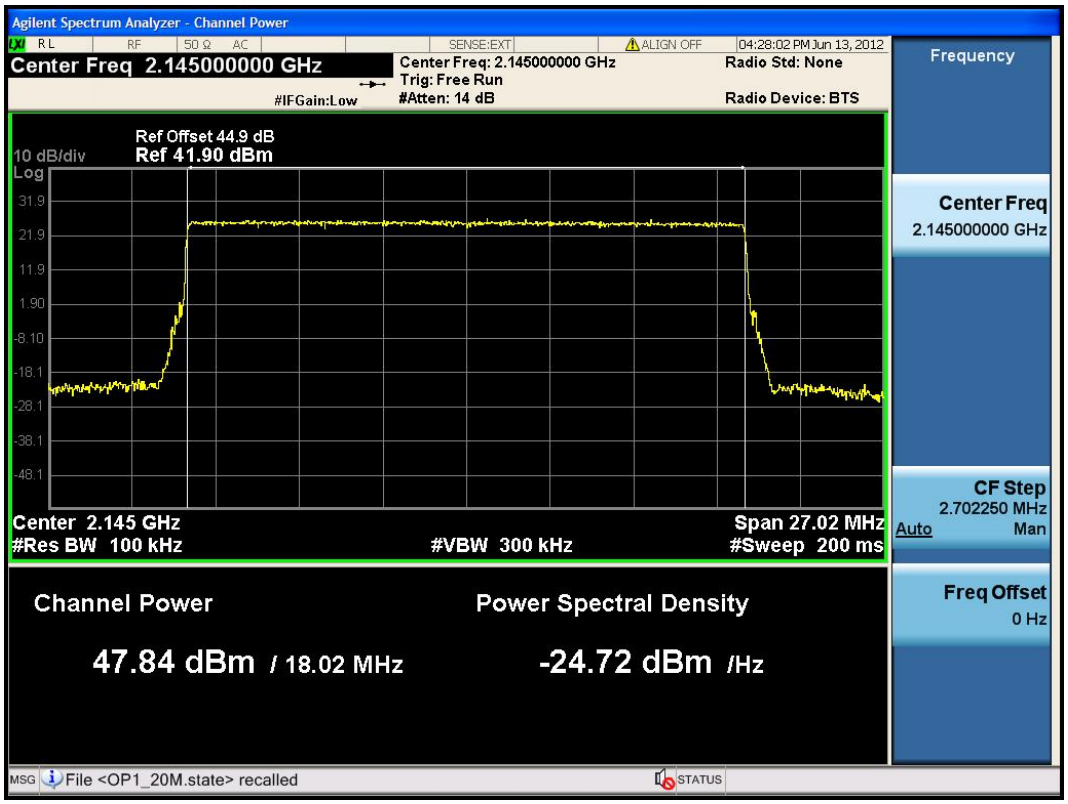
20M -Port 2 -2120MHz



20M-Port 2 -2132.5MHz

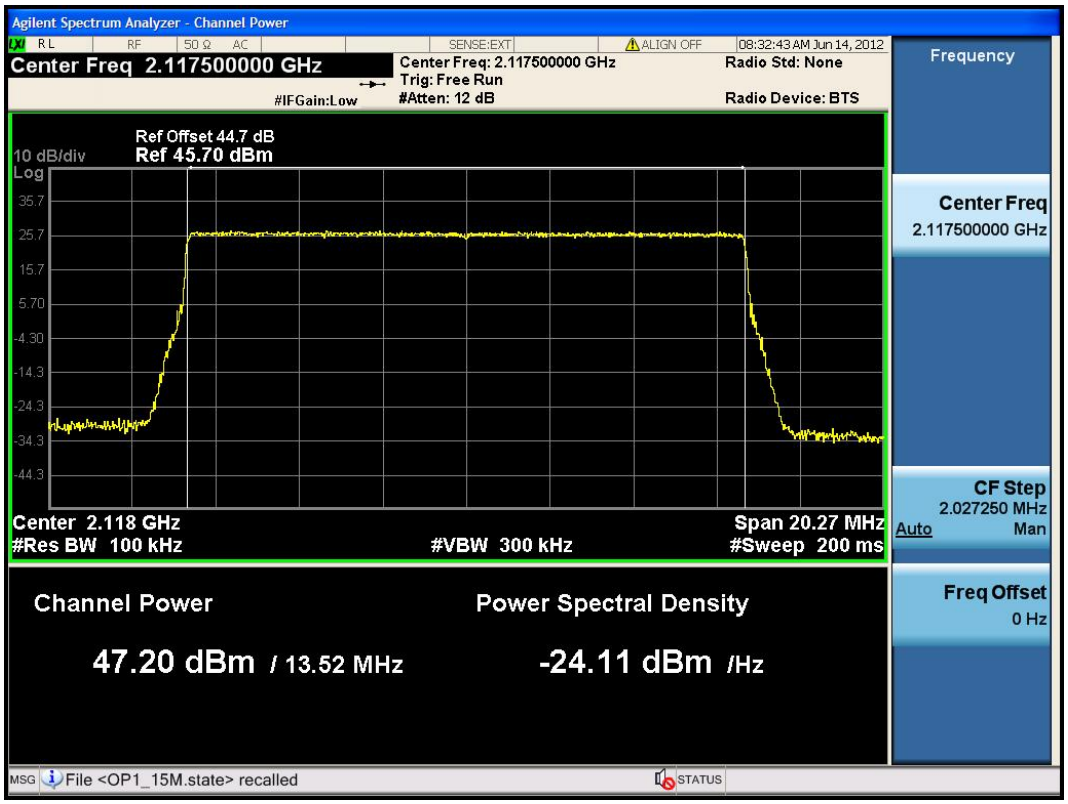


20M-Port 2 -2145MHz

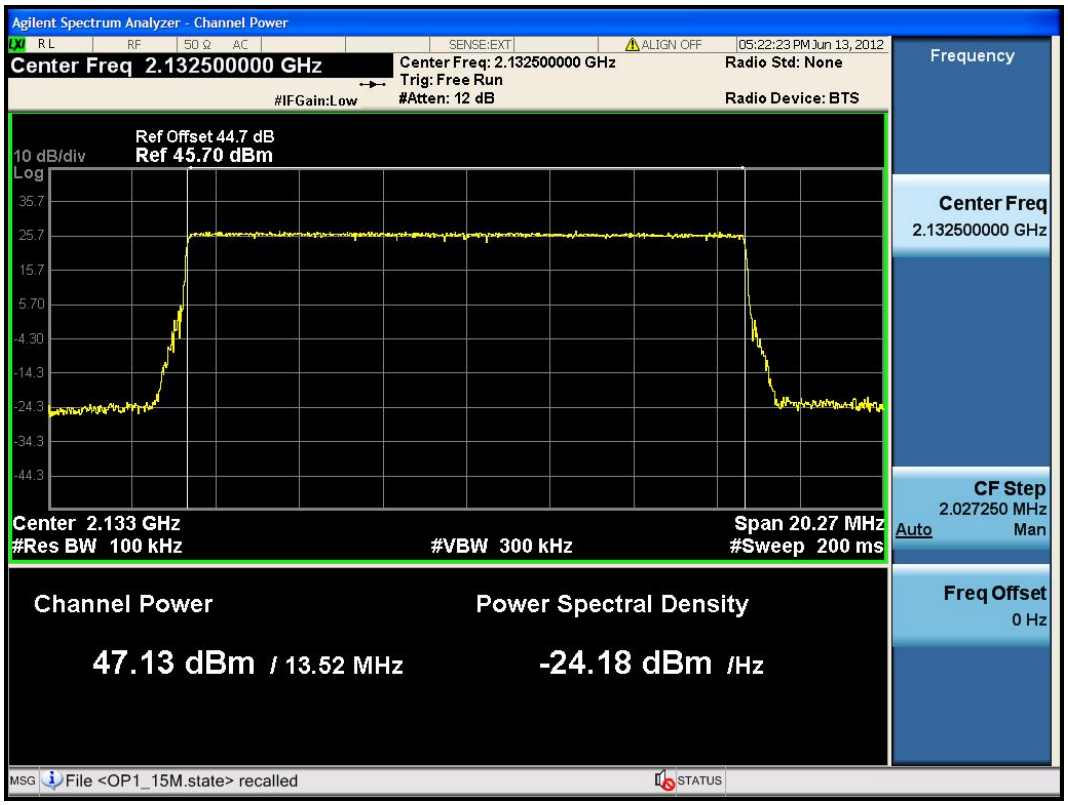


Channel Bandwidth	Port	Center Freq. (MHz)	Result RMS (dBm)	10log(N) (dBm)
15M	1	2117.5	47.20	50.20
		2132.5	47.13	50.13
		2147.5	47.31	50.31
	2	2117.5	47.37	50.37
		2132.5	47.46	50.46
		2147.5	47.55	50.55

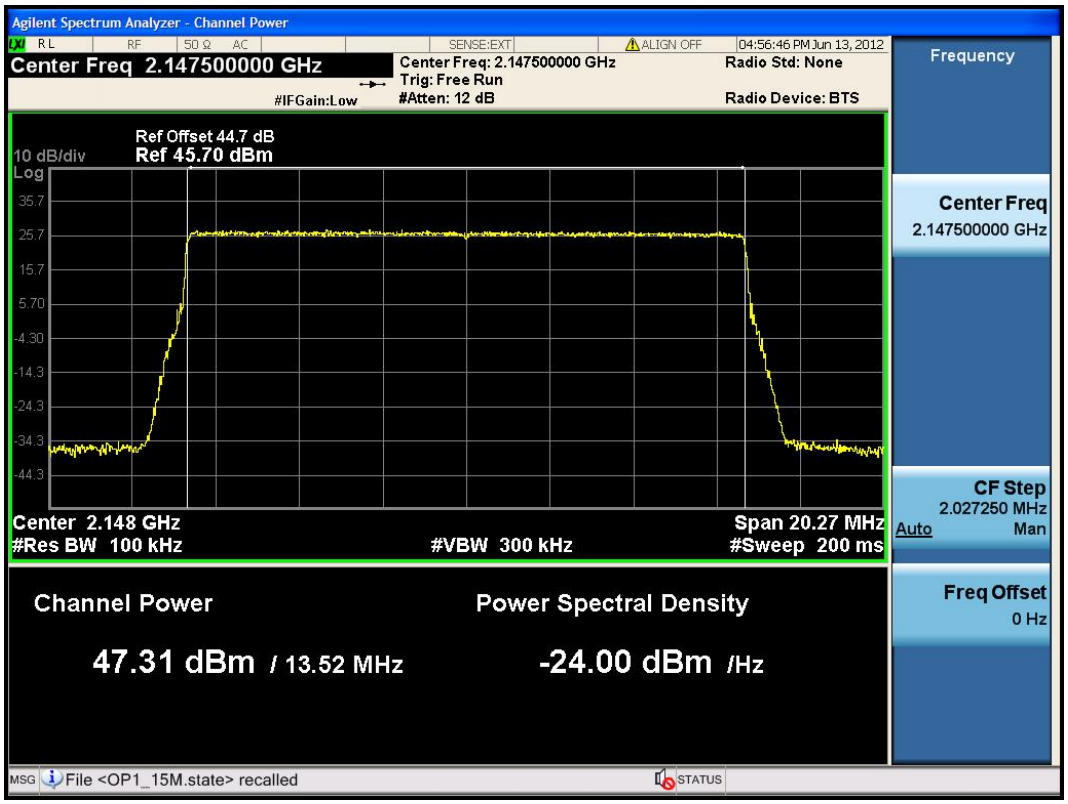
15M -Port 1 -2117.5MHz



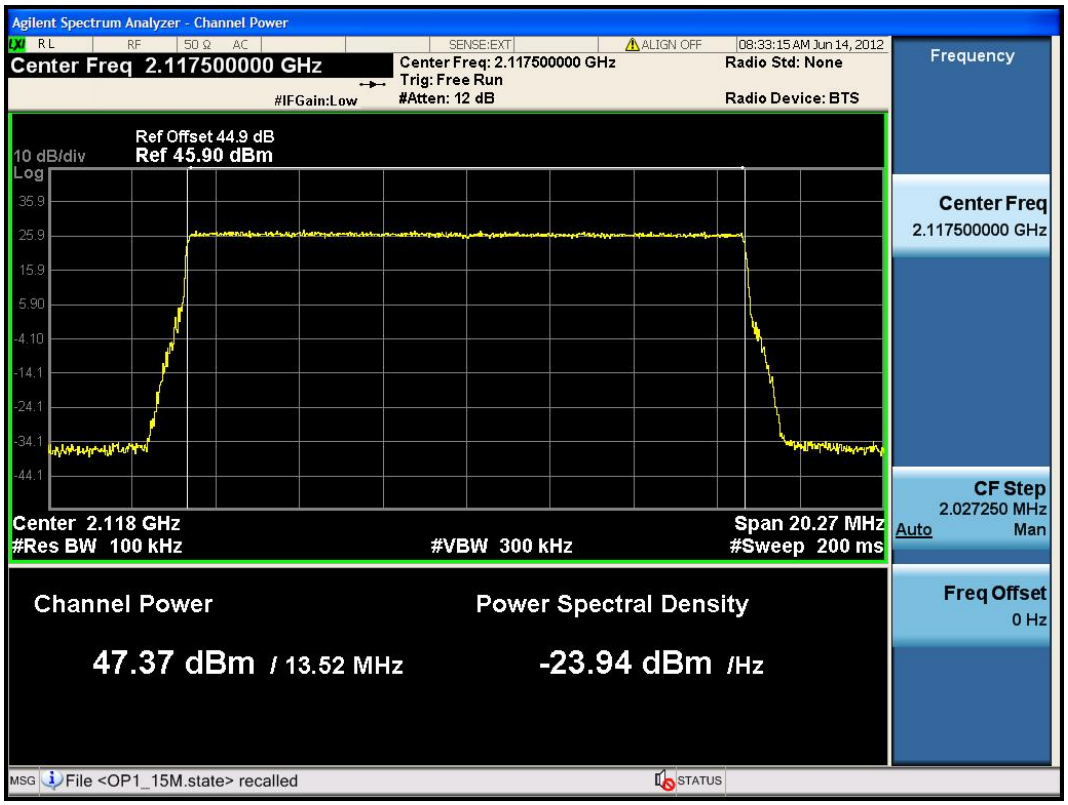
15M-Port 1 -2132.5MHz



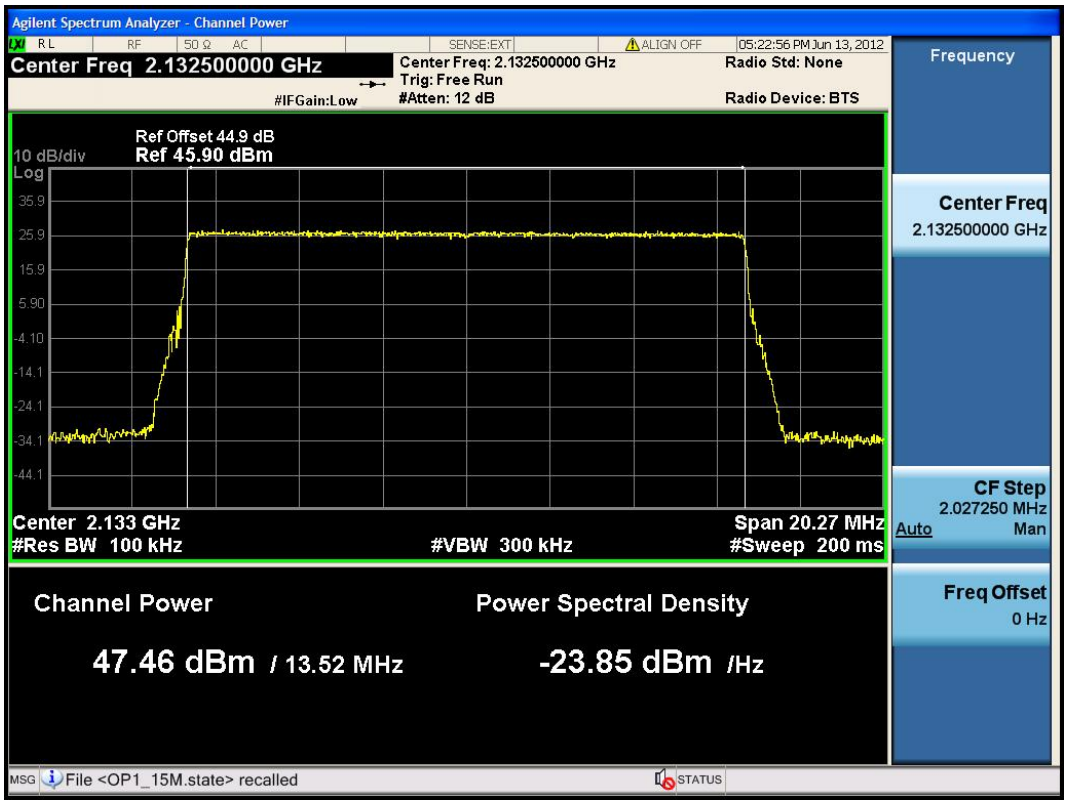
15M-Port 1 -2147.5MHz



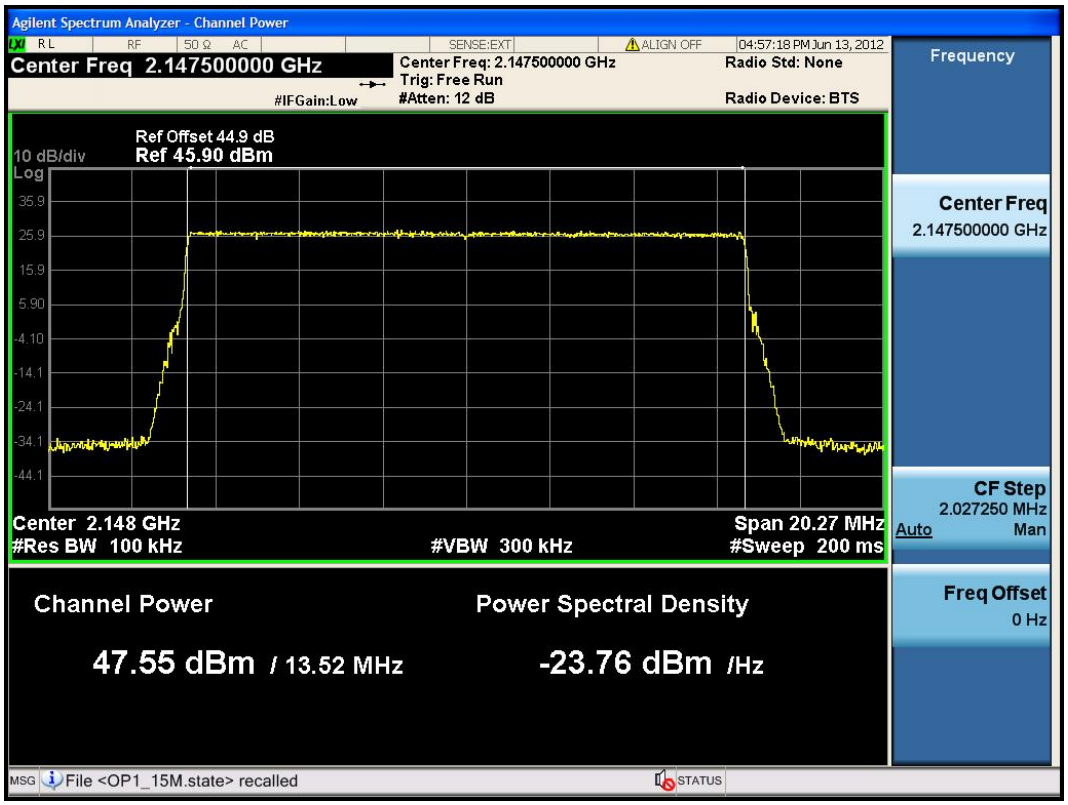
15M-Port 2-2117.5MHz



15M-Port 2 -2132.5MHz

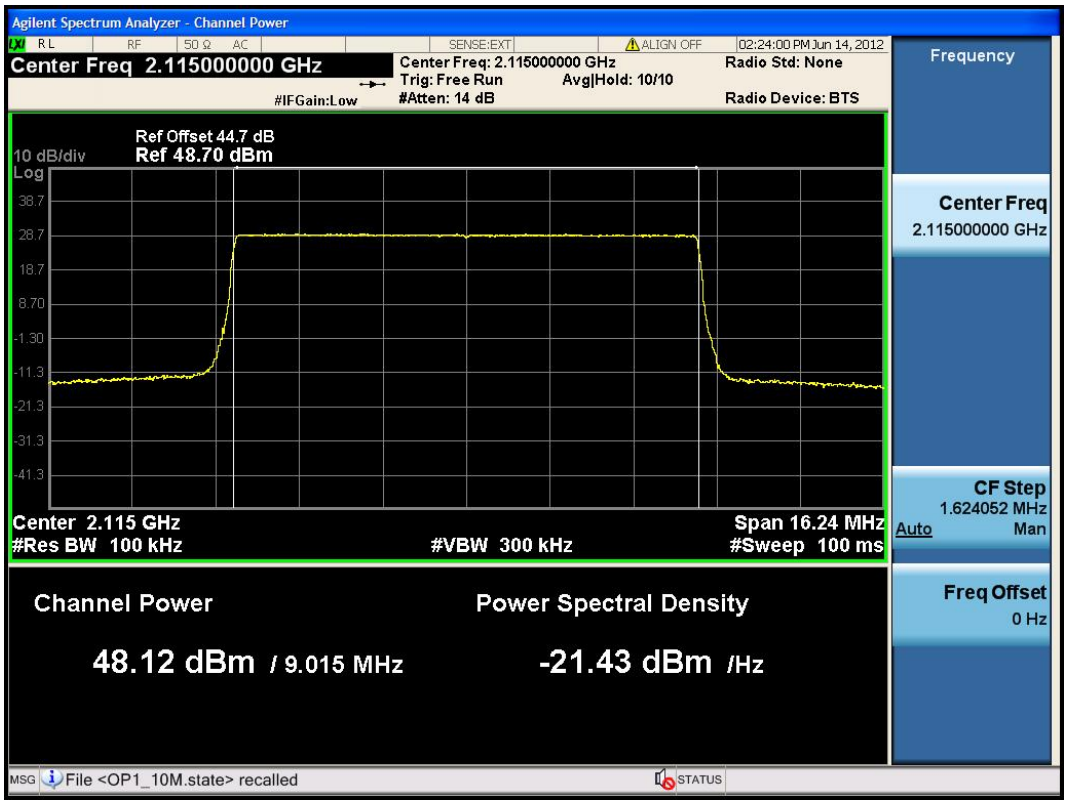


15M-Port 2 -2147.5MHz

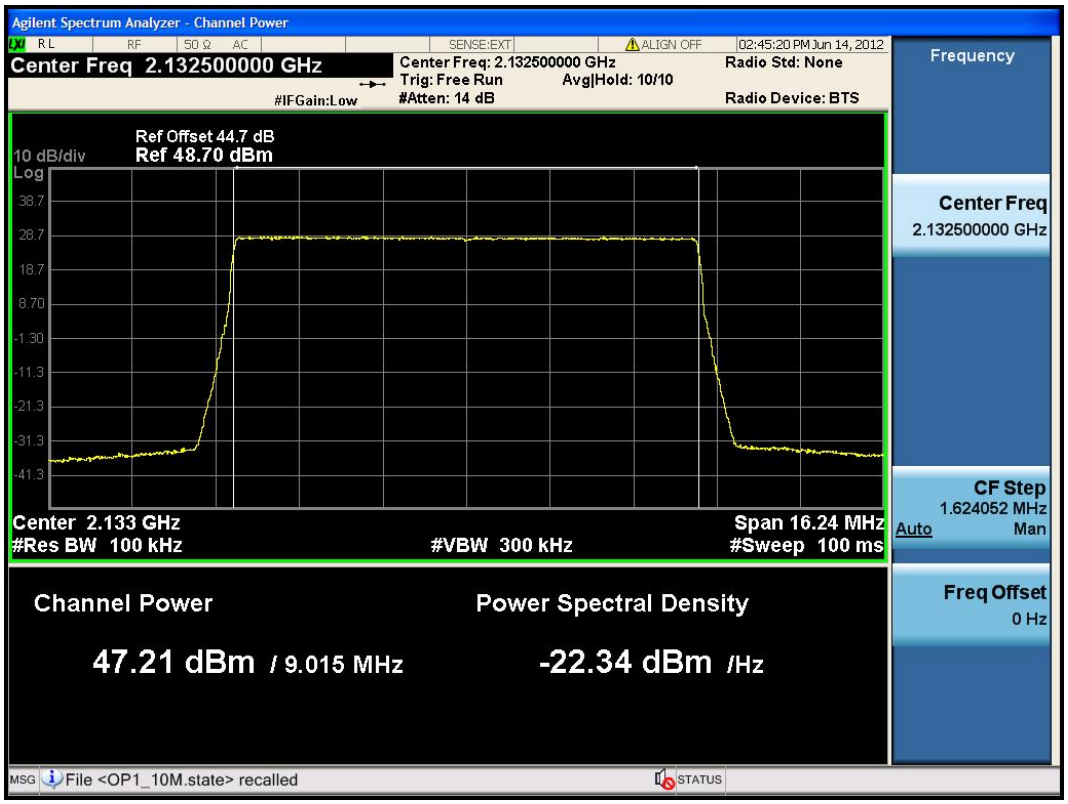


Channel Bandwidth	Port	Center Freq. (MHz)	Result RMS (dBm)	10log(N) (dBm)
10M	1	2115	48.12	51.12
		2132.5	47.21	50.21
		2150	47.44	50.44
	2	2115	47.89	50.89
		2132.5	47.33	50.33
		2150	47.61	50.61

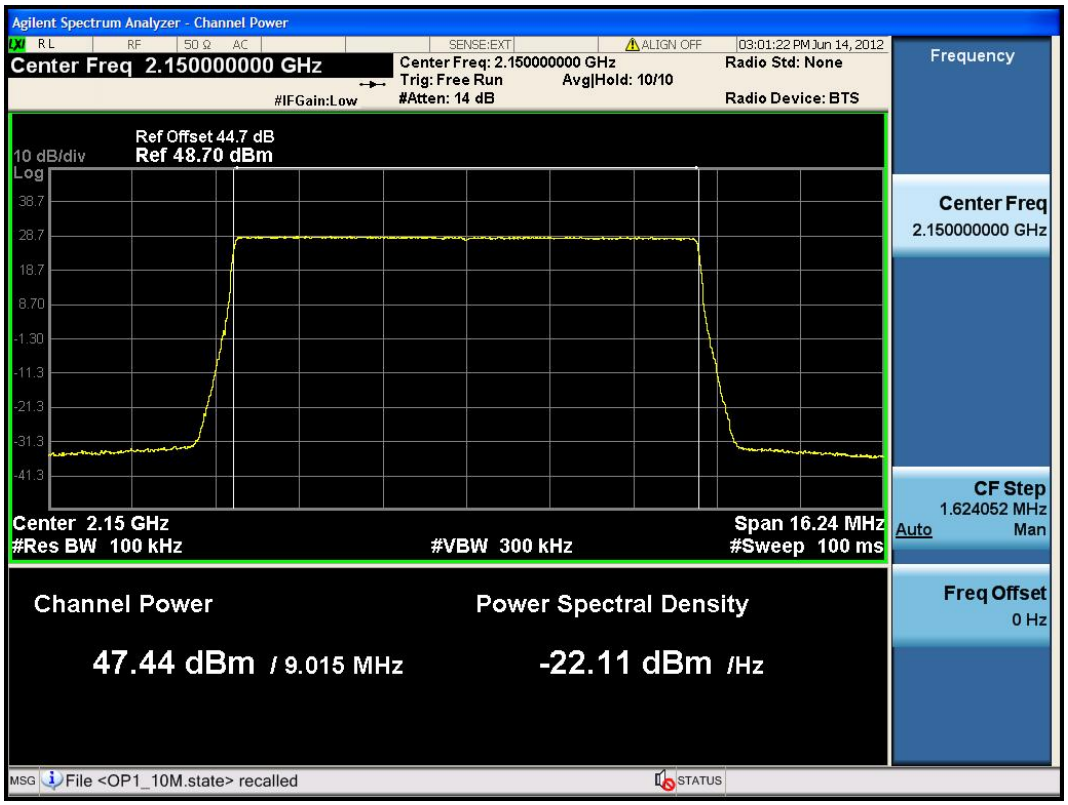
10M-Port 1 -2115MHz



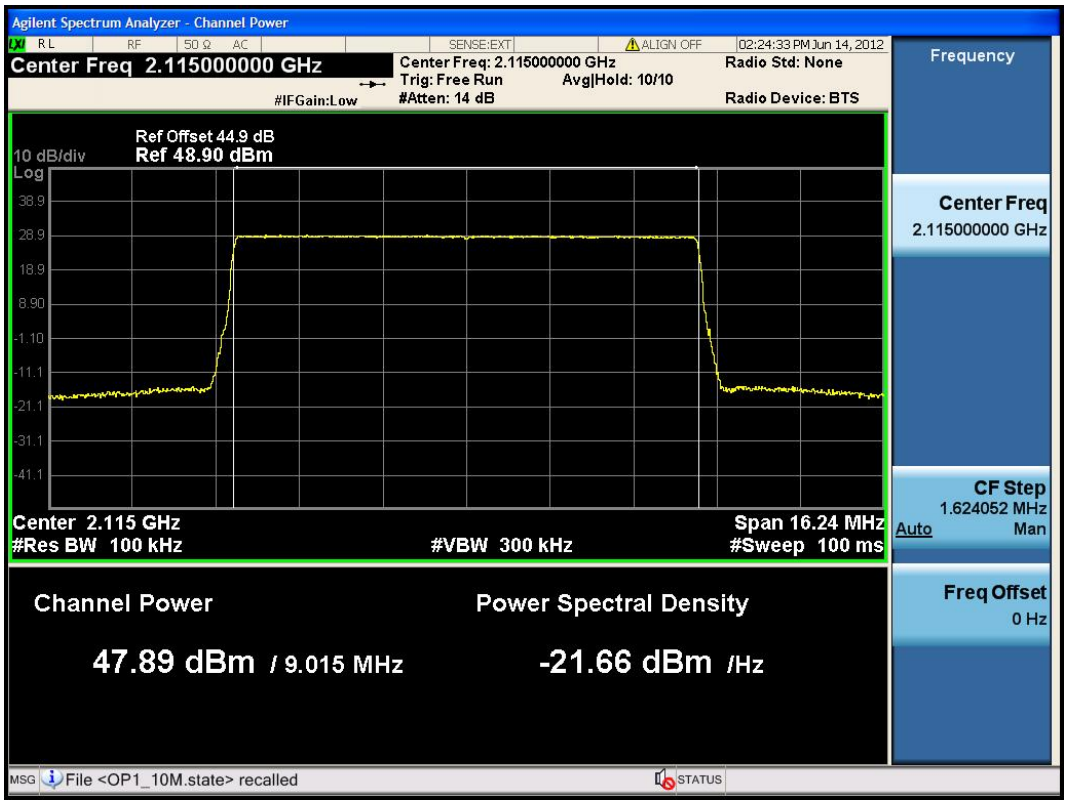
10M-Port 1 -2132.5MHz



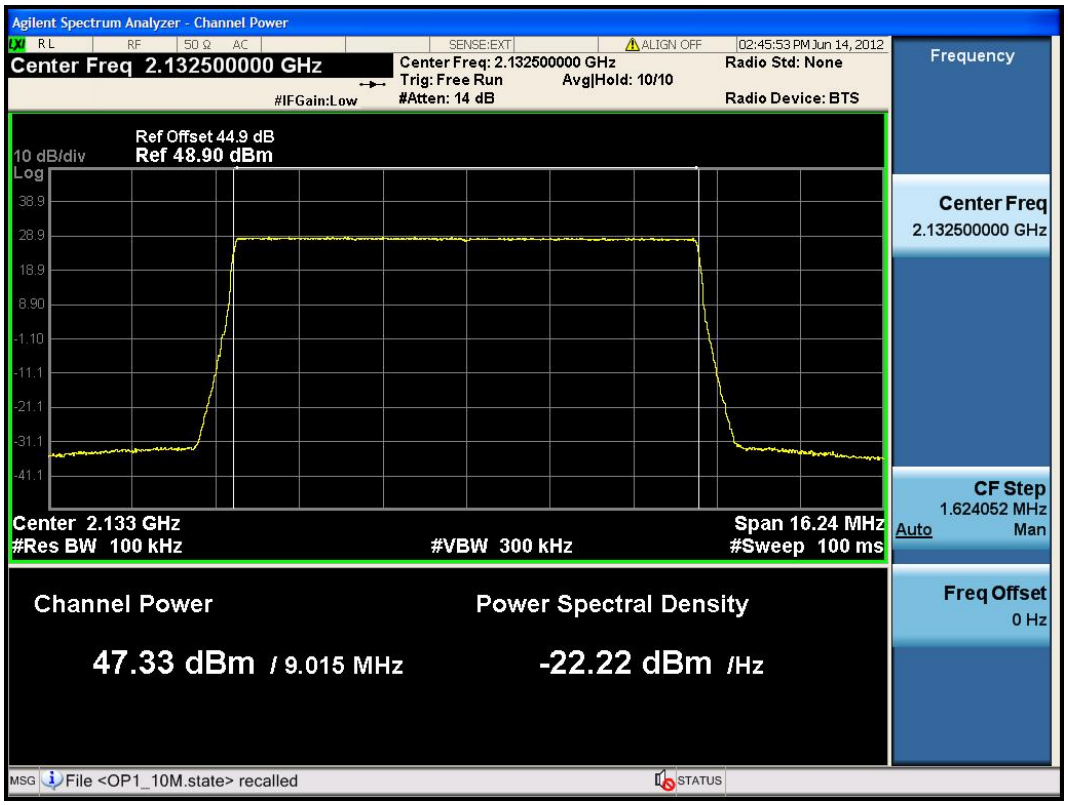
10M-Port 1 -2150MHz



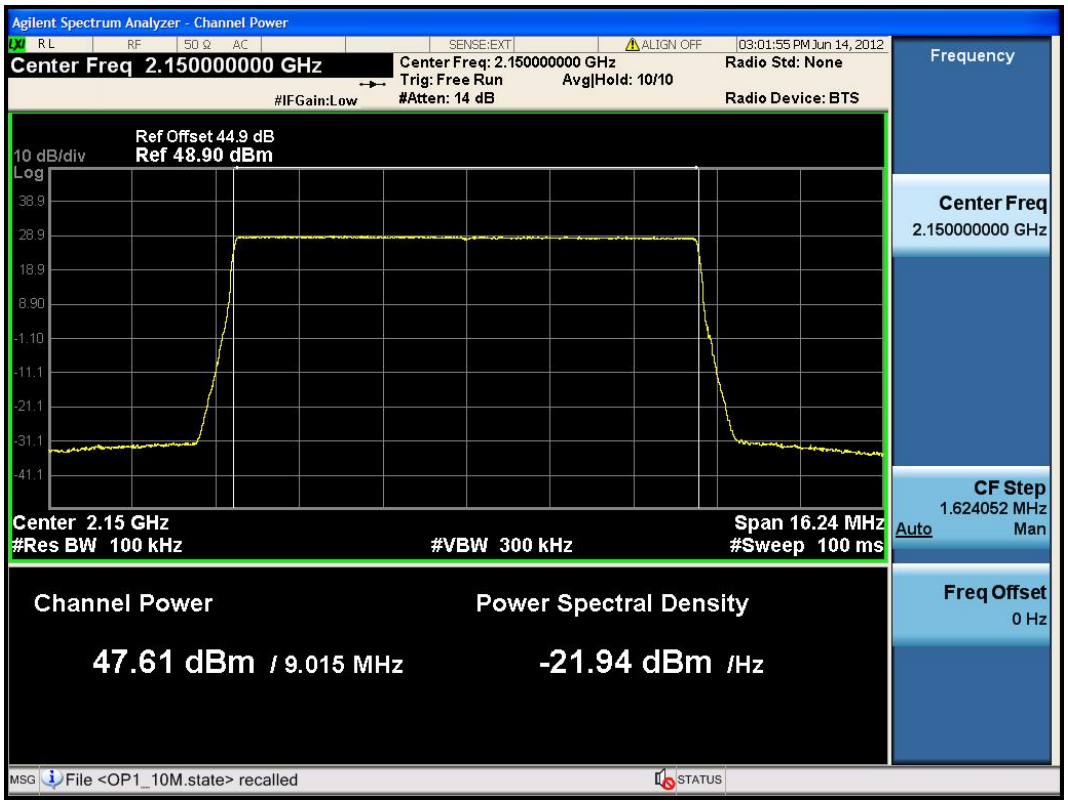
10M-Port 2 -2115MHz



10M-Port 2 -2132.5MHz

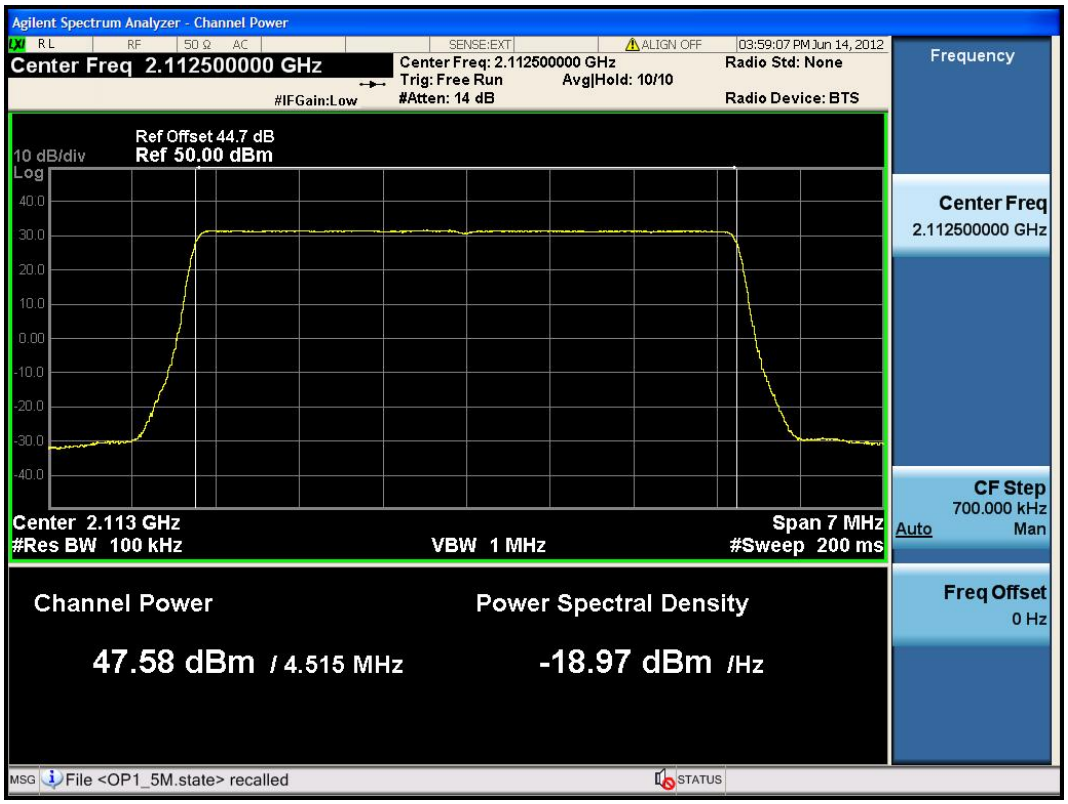


10M-Port 2 -2150MHz



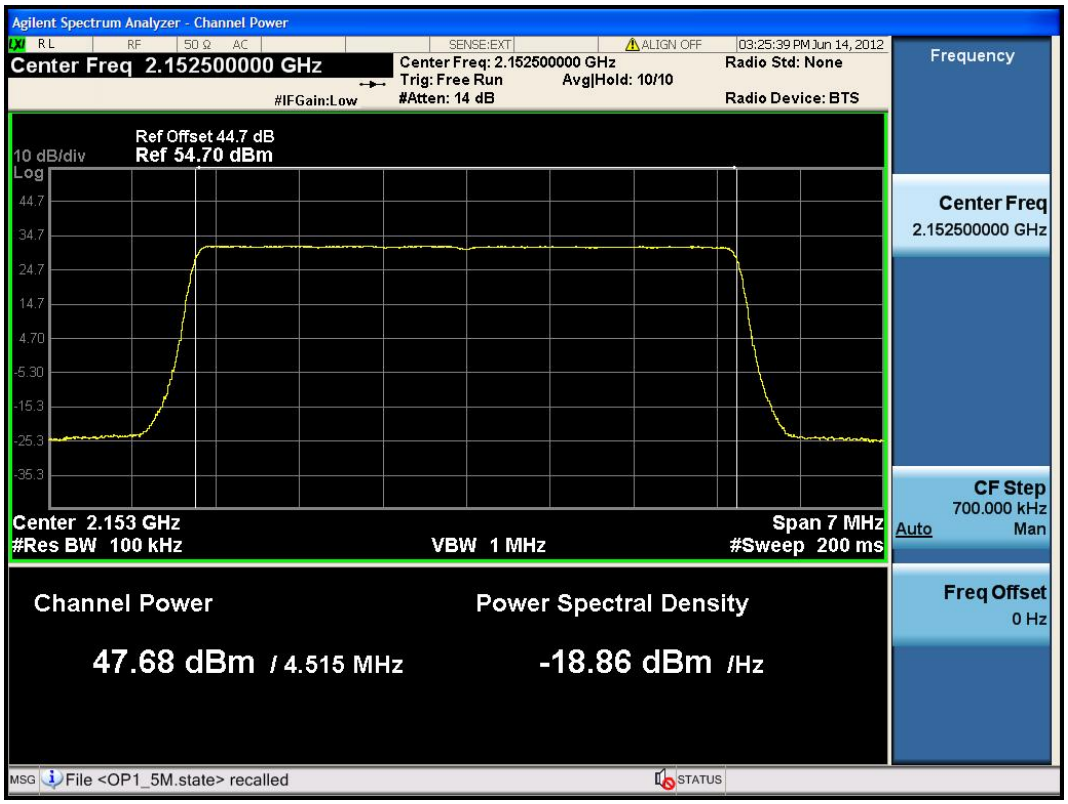
Channel Bandwidth	Port	Center Freq. (MHz)	Result RMS (dBm)	10log(N) (dBm)
5M	1	2112.5	47.58	50.58
		2132.5	47.33	50.33
		2152.5	47.68	50.68
	2	2112.5	47.59	50.59
		2132.5	47.55	50.55
		2152.5	47.58	50.58

5M-Port 1 -2112.5MHz

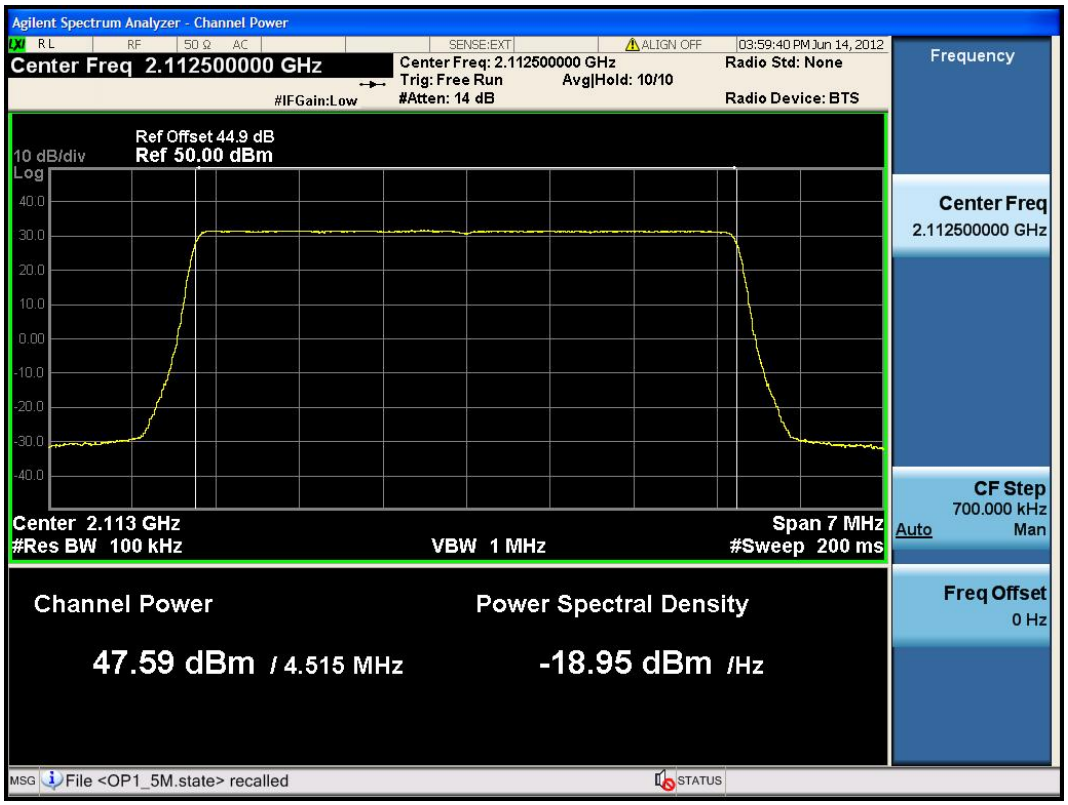


5M-Port 1 -2132.5MHz

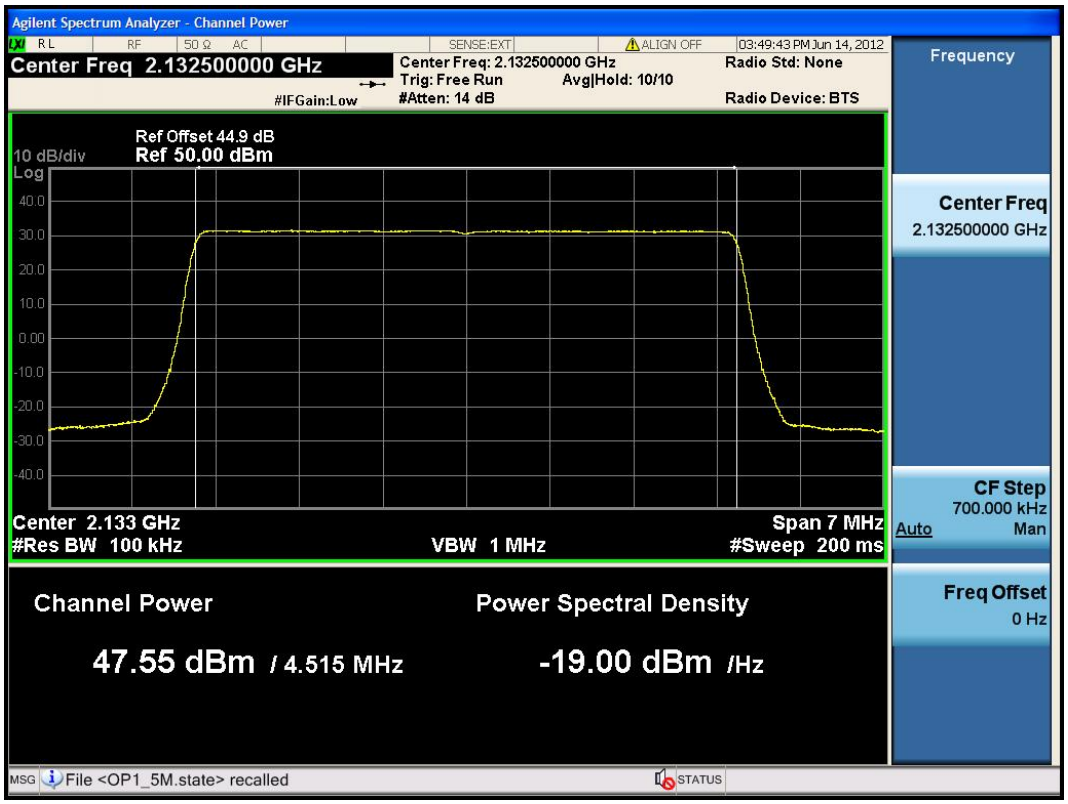
5M-Port 1 -2152.5MHz



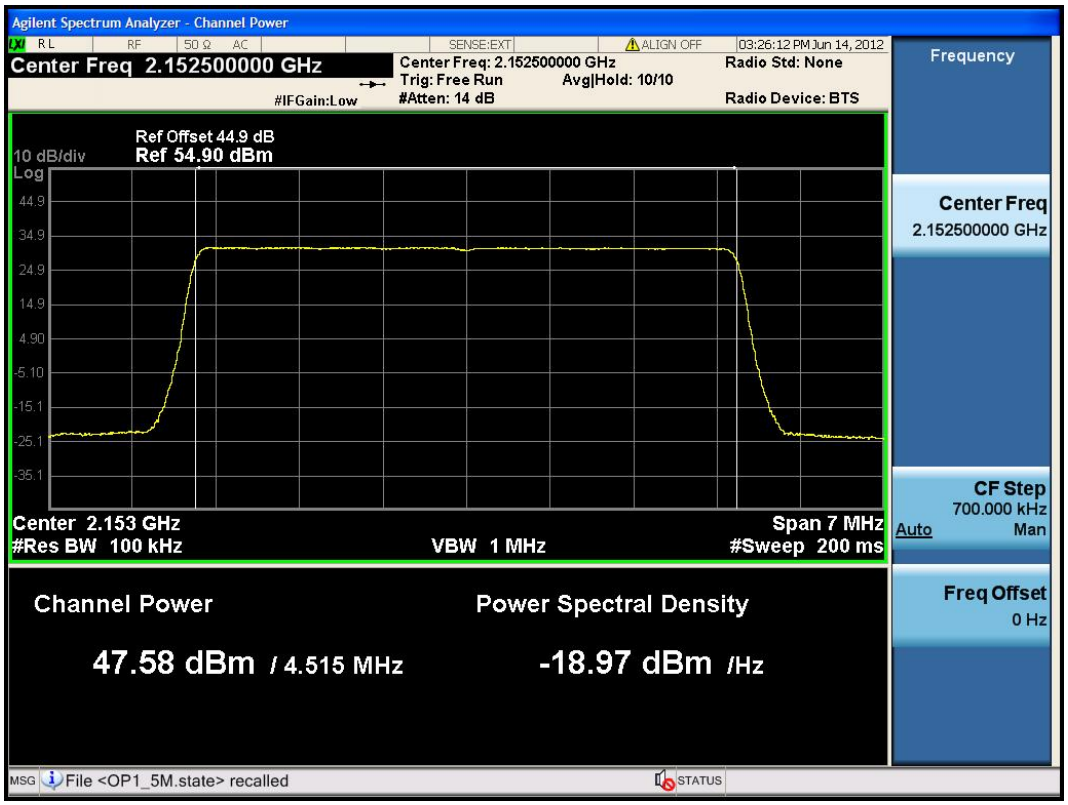
5M-Port 2 -2112.5MHz



5M-Port 2 -2132.5MHz



5M-Port 2 -2152.5MHz



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)

(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
$S = PG/ 4\pi R^2$
Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 48.2 (dBm) Maximum peak output power at antenna input terminals:66.069 (W), the cable loss is 3dB
Prediction distance: 400 (cm)
Predication frequency: 2110 (MHz)
Antenna Gain (typical): 15 (dBi)
Power density at predication frequency at 400 cm: 0.493(mW/cm^2)
MPE limit for uncontrolled exposure at prediction frequency: 1(mW/cm^2)

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	N9020A	MY48011941	2012.04.10	2013.04.09
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2011.07.19	2012.07.19
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

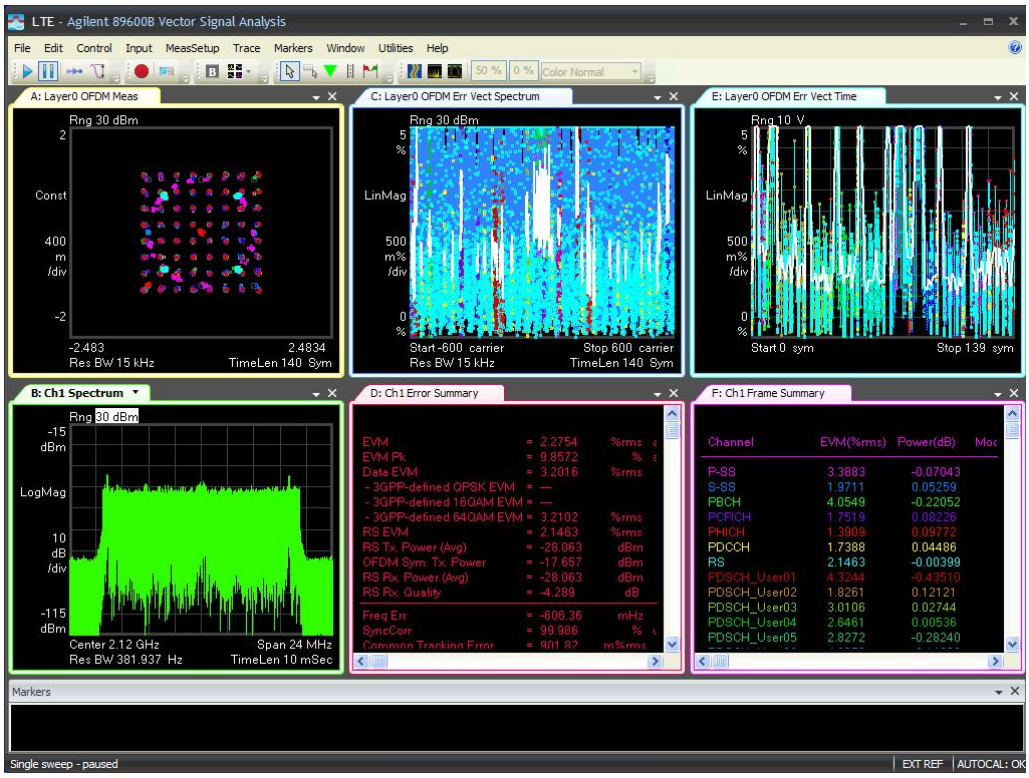
Test Mode: Transmitting LTE

Test Data:

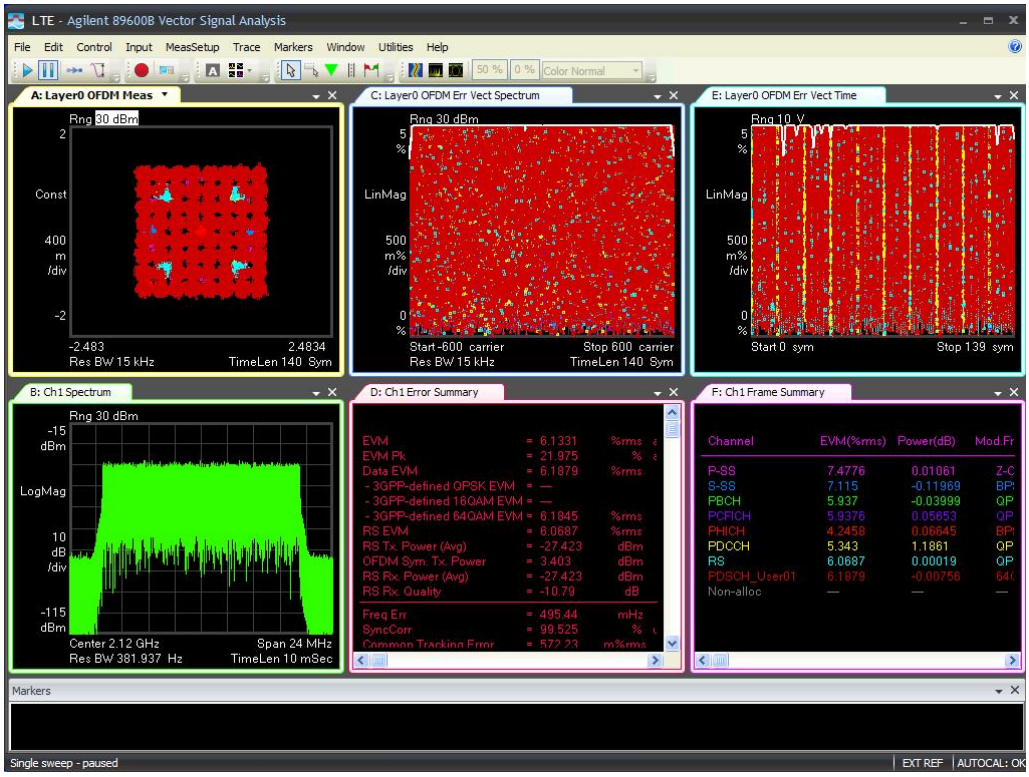
Channel Bandwidth :20M

Port	Frequency (MHz)	Test mode	EVM
1	2120	TM2.0	3.20
		TM3.1	6.18
		TM3.2	8.47
		TM3.3	12.13
	2132.5	TM2.0	3.88
		TM3.1	6.22
		TM3.2	8.67
		TM3.3	12.09
	2145	TM2.0	3.70
		TM3.1	6.22
		TM3.2	8.67
		TM3.3	12.29
2	2120	TM2.0	3.24
		TM3.1	6.19
		TM3.2	8.70
		TM3.3	12.19
	2132.5	TM2.0	2.80
		TM3.1	6.20
		TM3.2	8.69
		TM3.3	12.29
	2145	TM2.0	3.05
		TM3.1	6.22
		TM3.2	8.70
		TM3.3	12.26

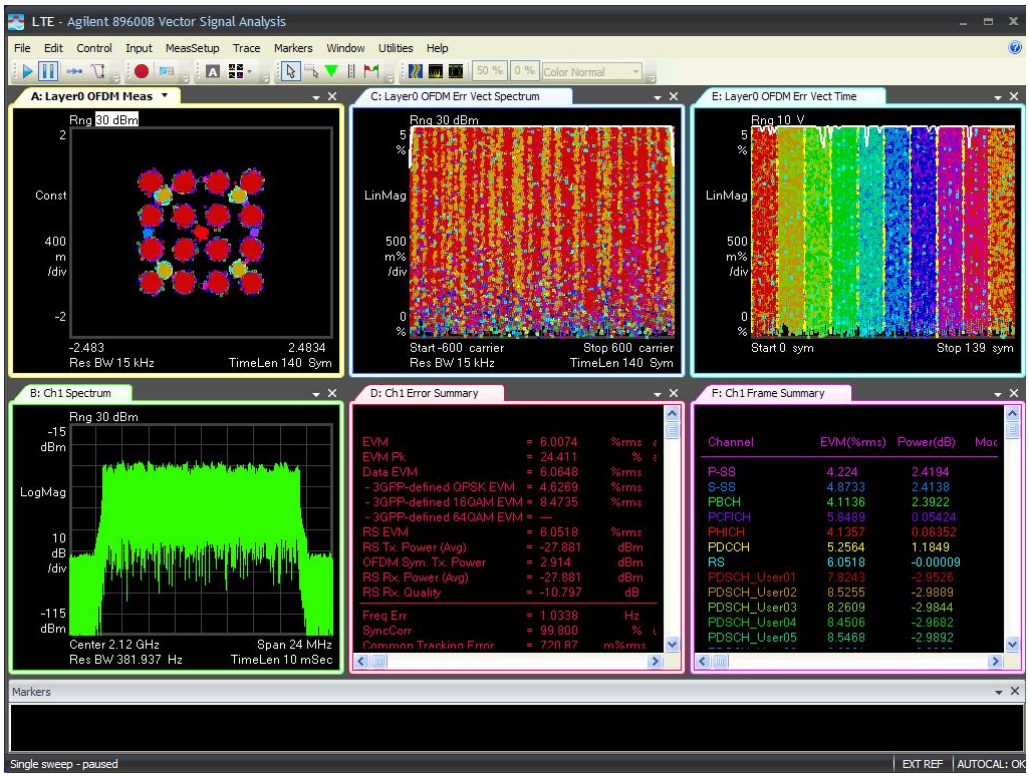
20M-Port 1 -2120MHz-TM2.0



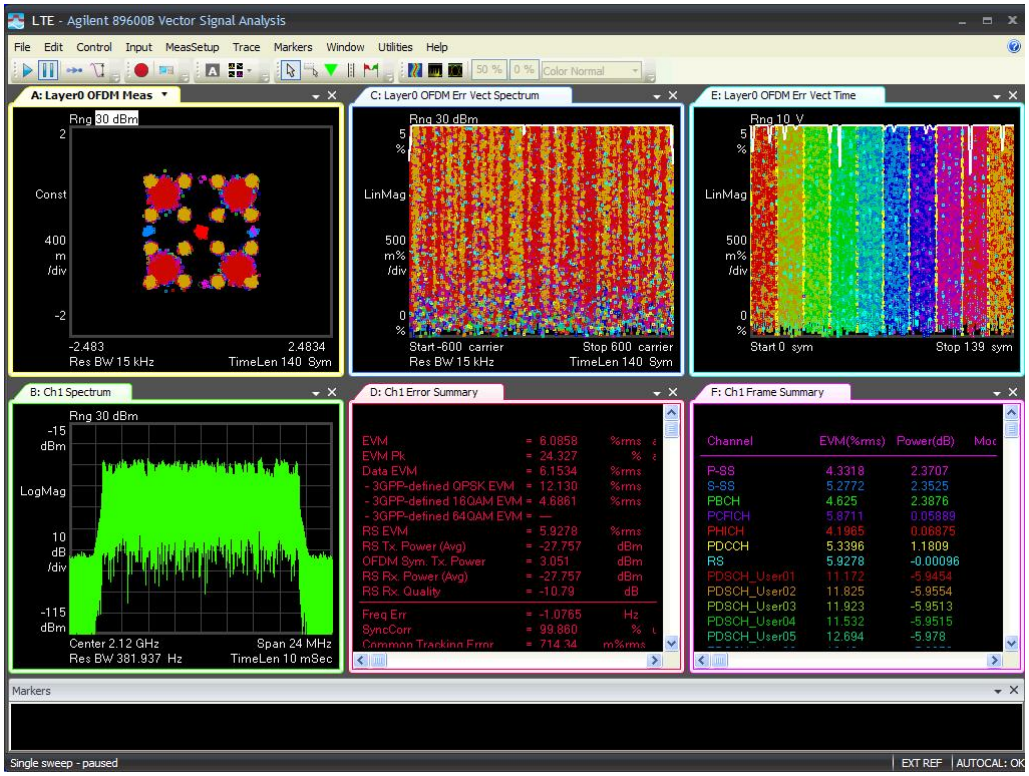
20M-Port 1 -2120MHz -TM3.1



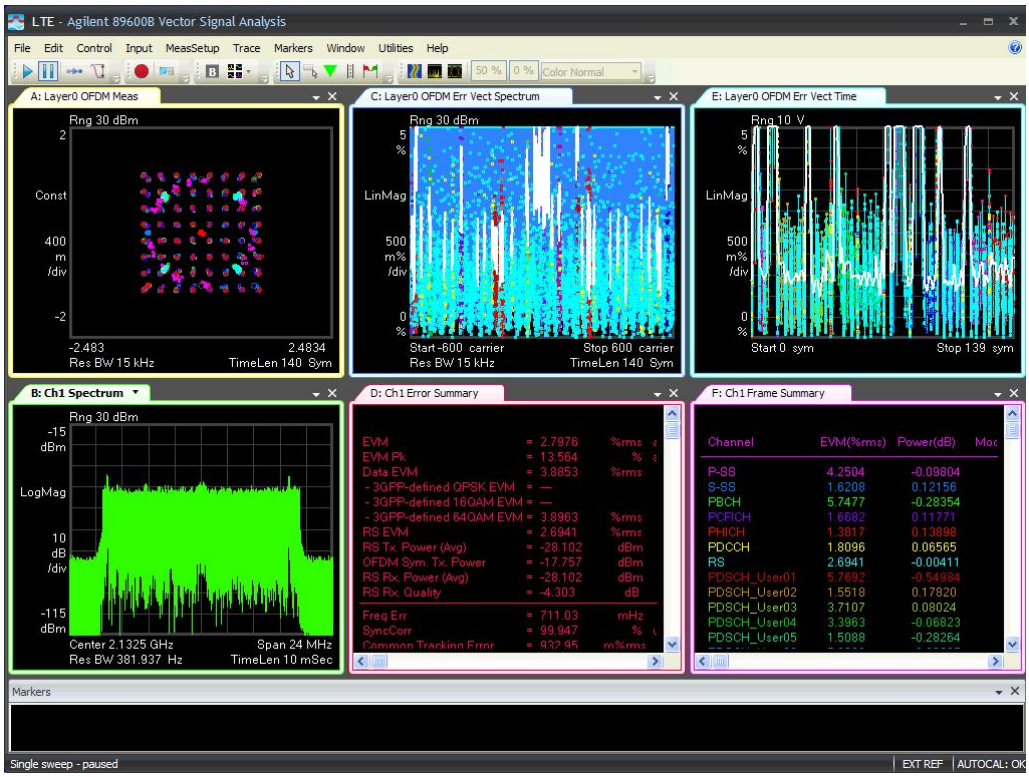
20M-Port 1 -2120MHz -TM3.2



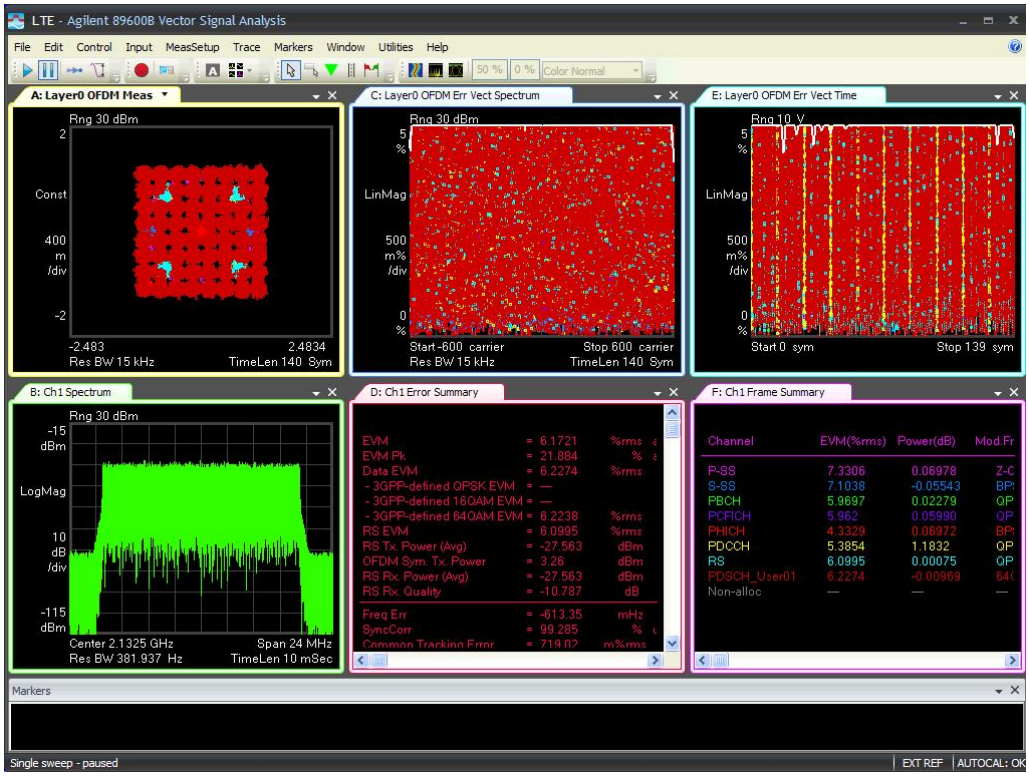
20M-Port 1 -2120MHz -TM3.3



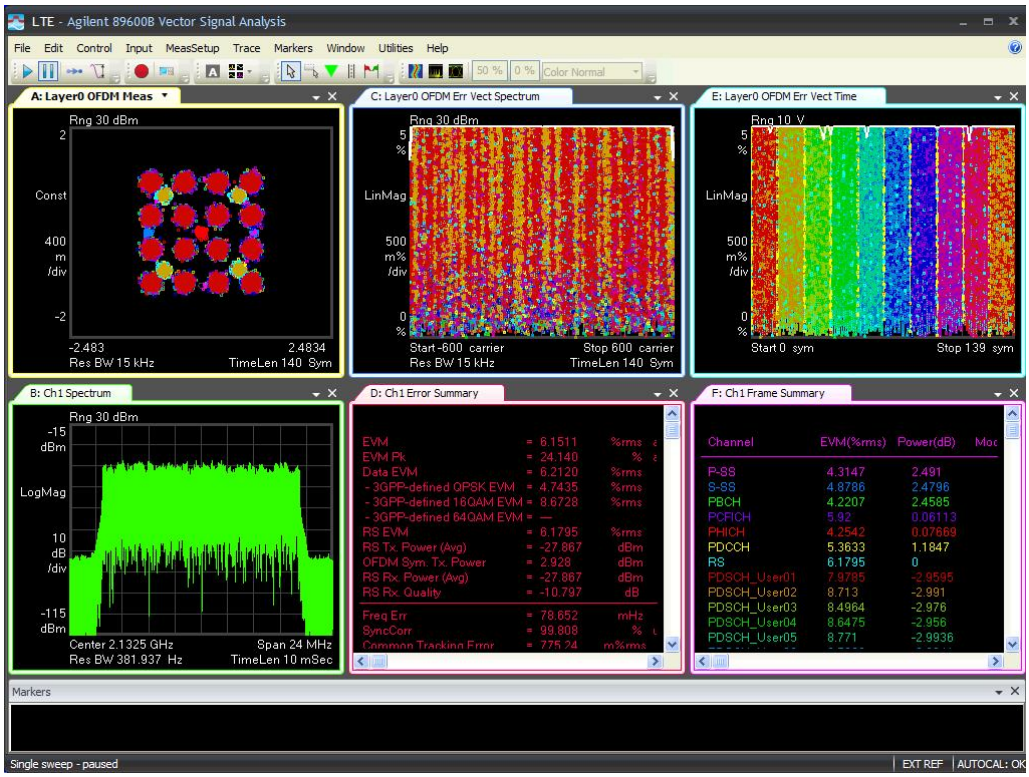
20M-Port 1 -2132.5MHz-TM2.0



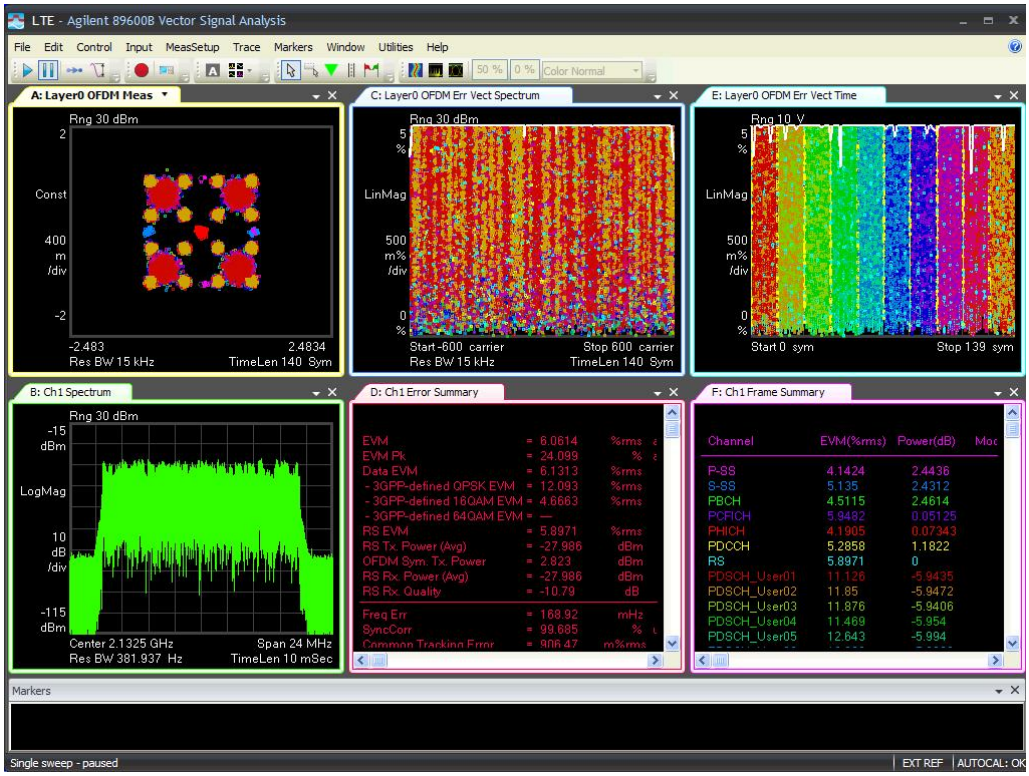
20M-Port 1 -2132.5MHz-TM3.1



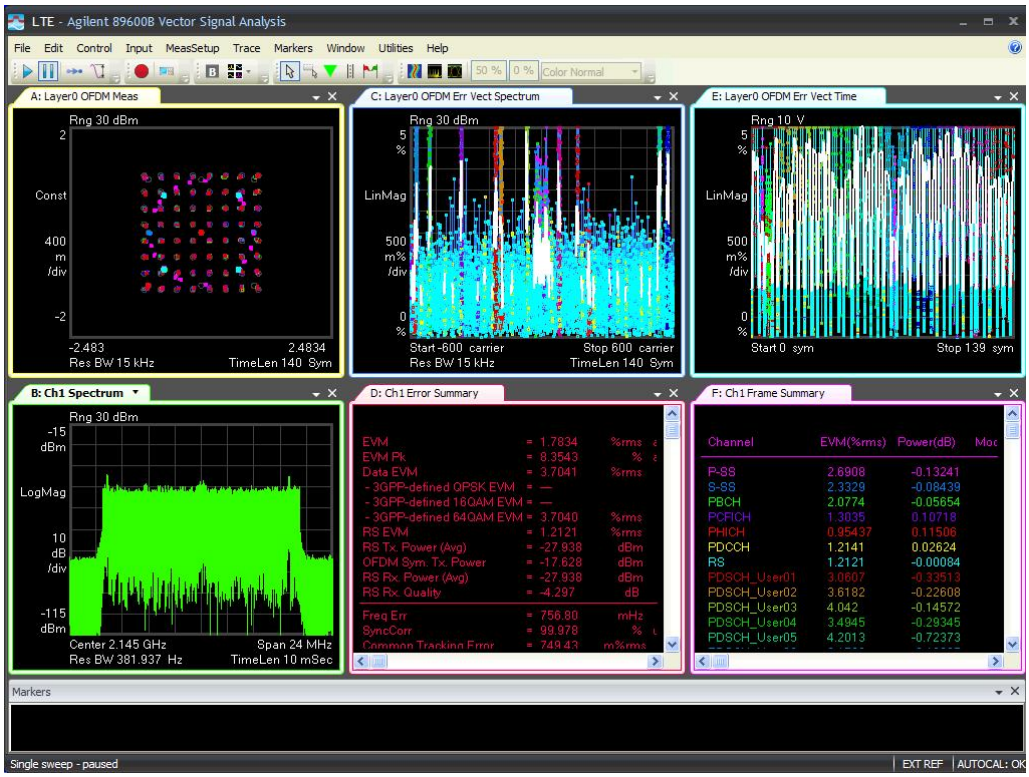
20M-Port 1 -2132.5MHz-TM3.2



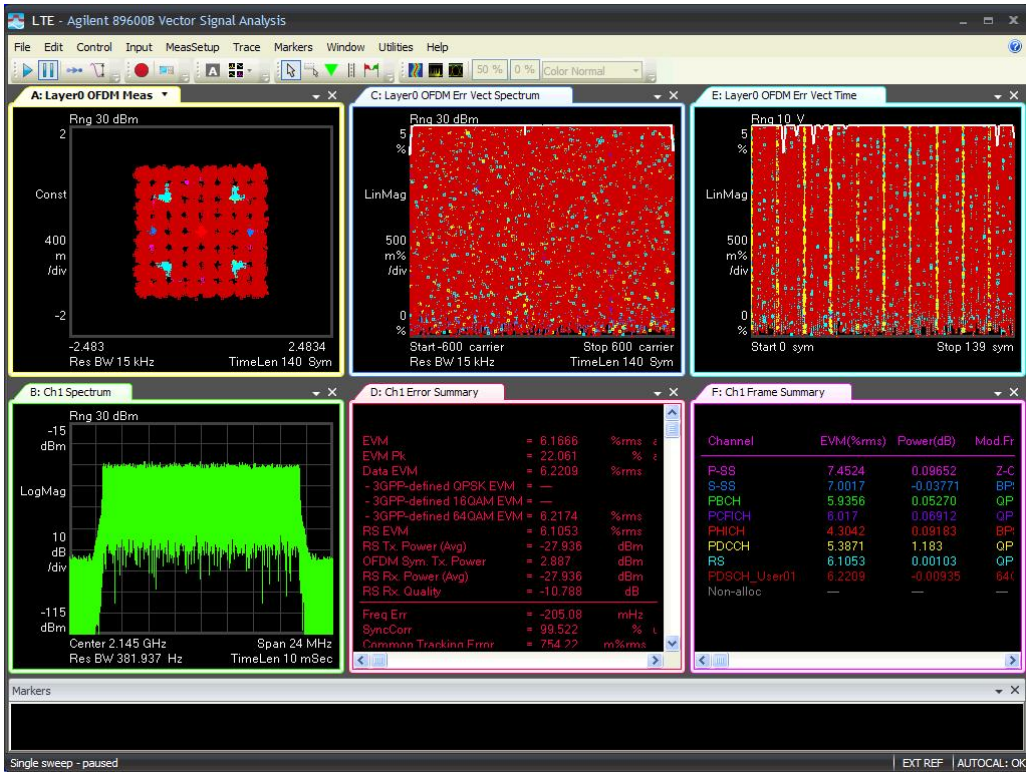
20M-Port 1 -2132.5MHz-TM3.3



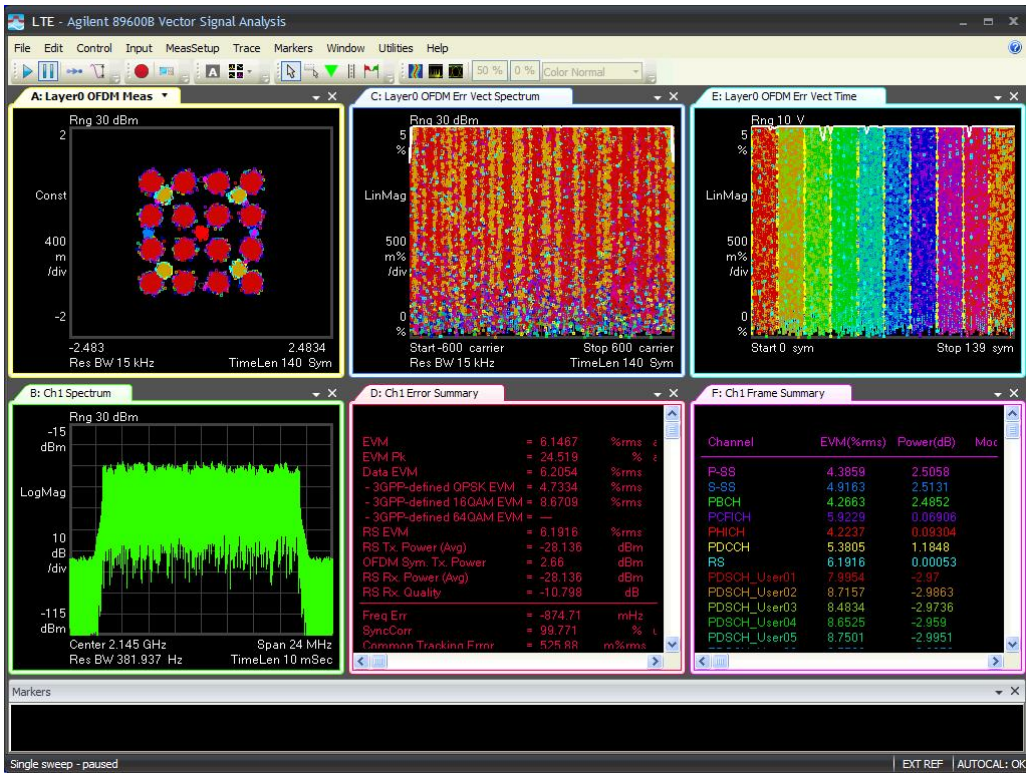
20M-Port 1 -2145MHz-TM2.0



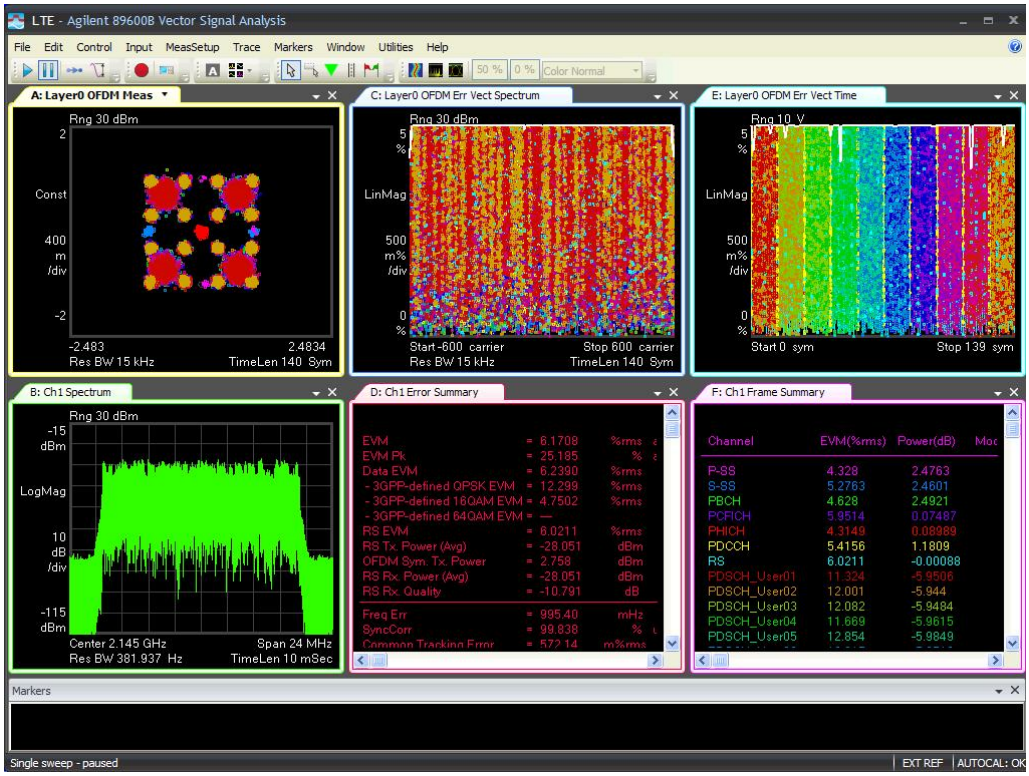
20M-Port 1 -2145MHz-TM3.1



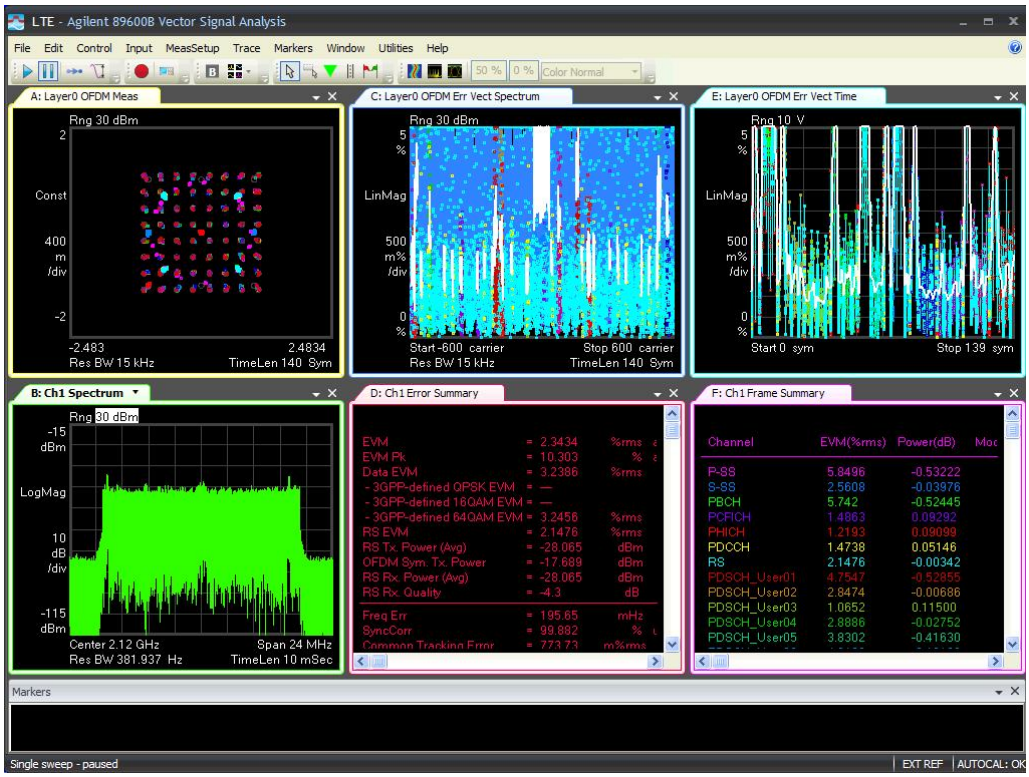
20M-Port 1 -2145MHz-TM3.2



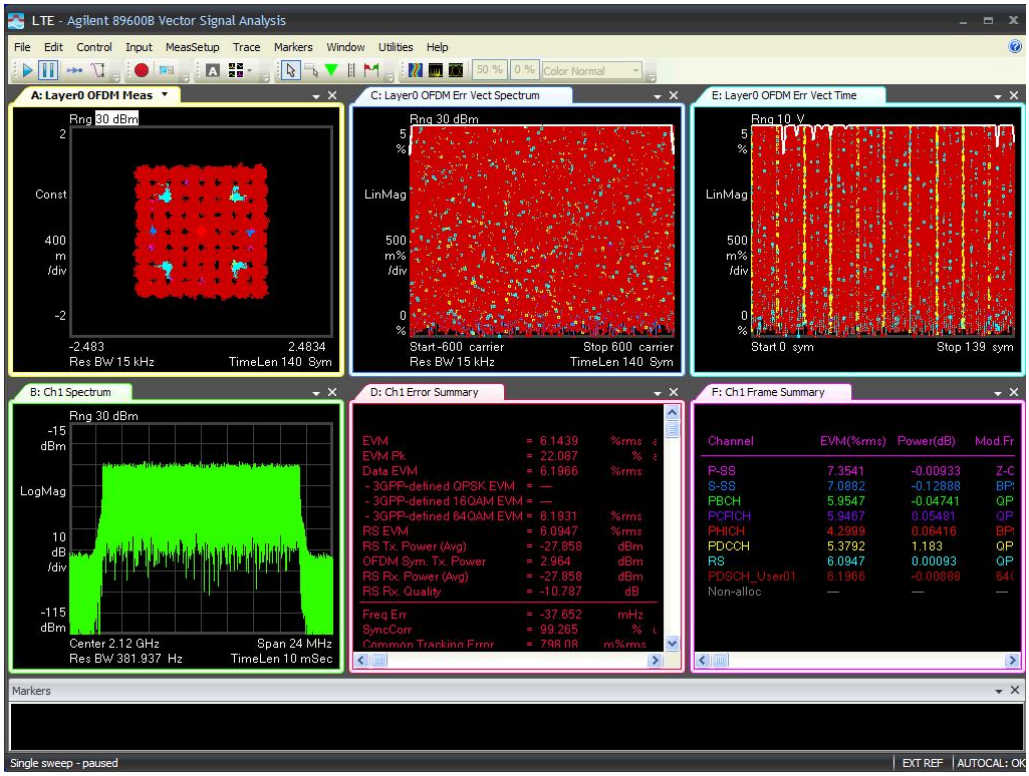
20M-Port 1 -2145MHz-TM3.3



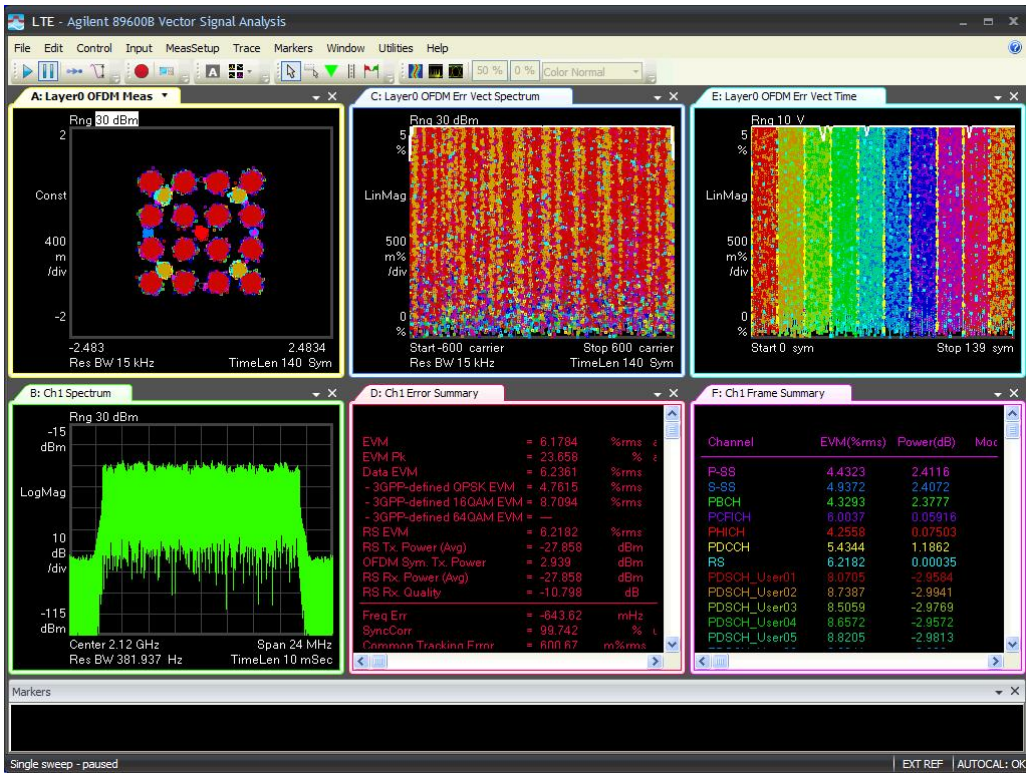
20M-Port 2 -2120MHz-TM2.0



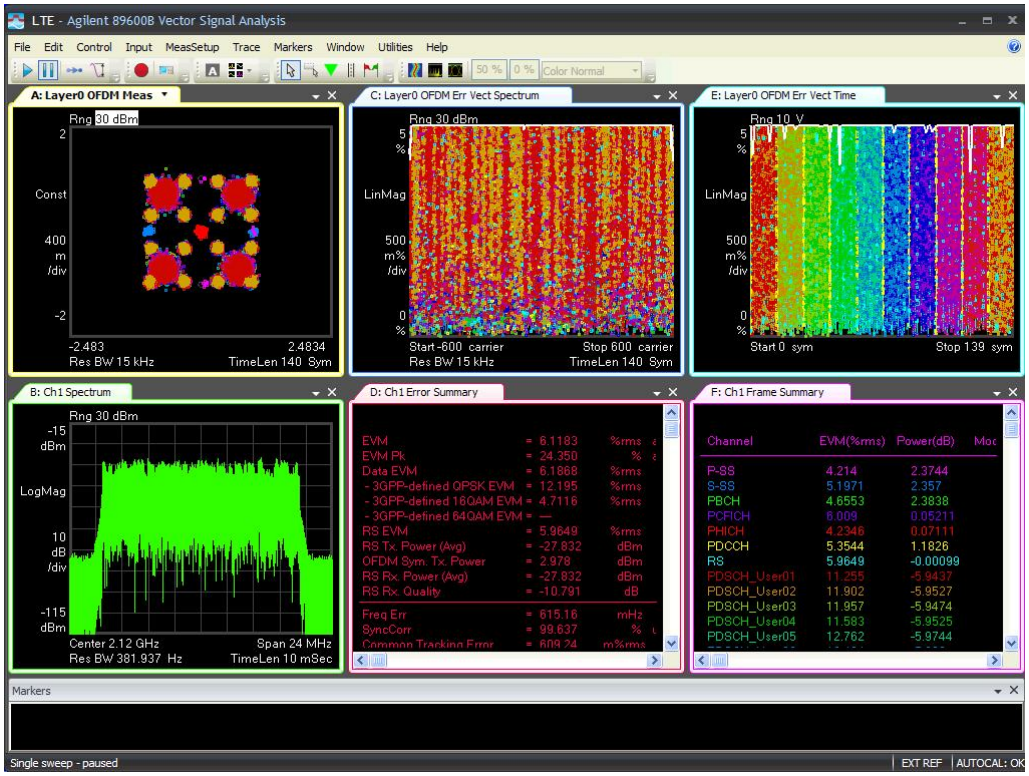
20M-Port 2 -2120MHz -TM3.1



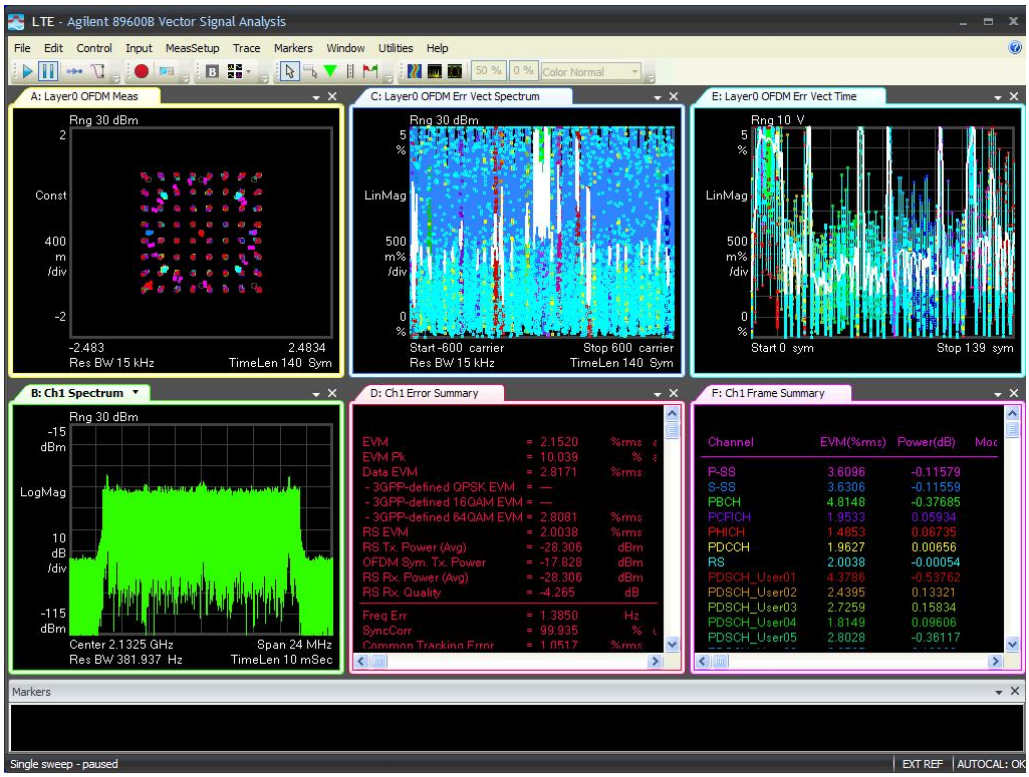
20M-Port 2 -2120MHz -TM3.2



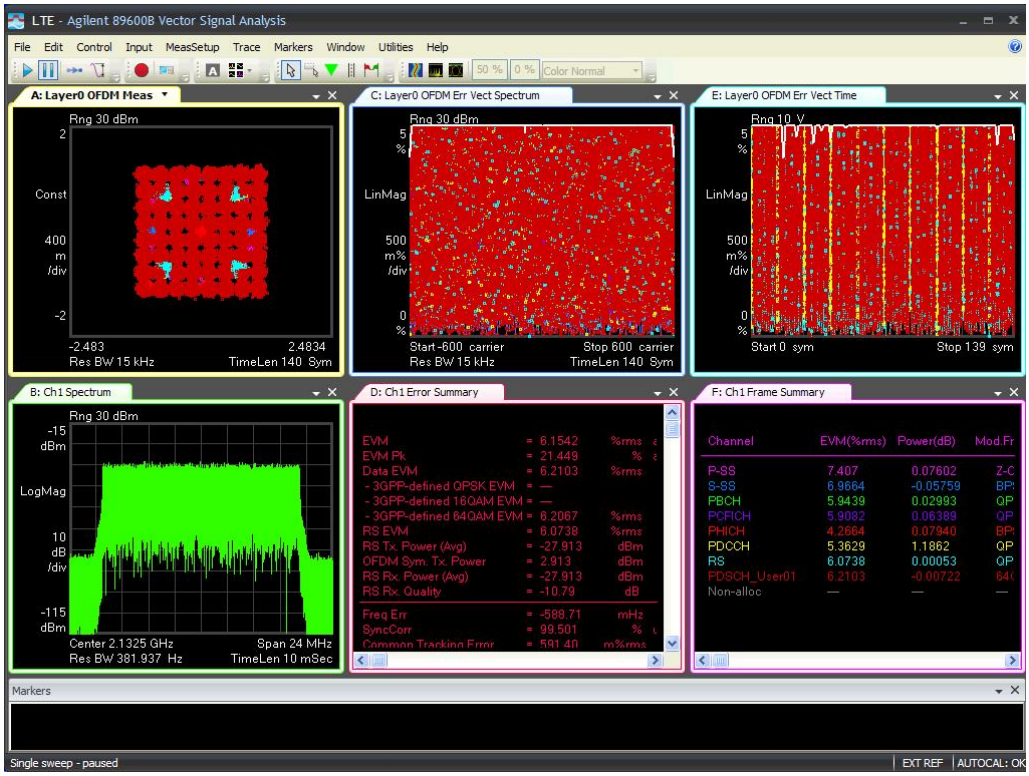
20M-Port 2 -2120MHz -TM3.3



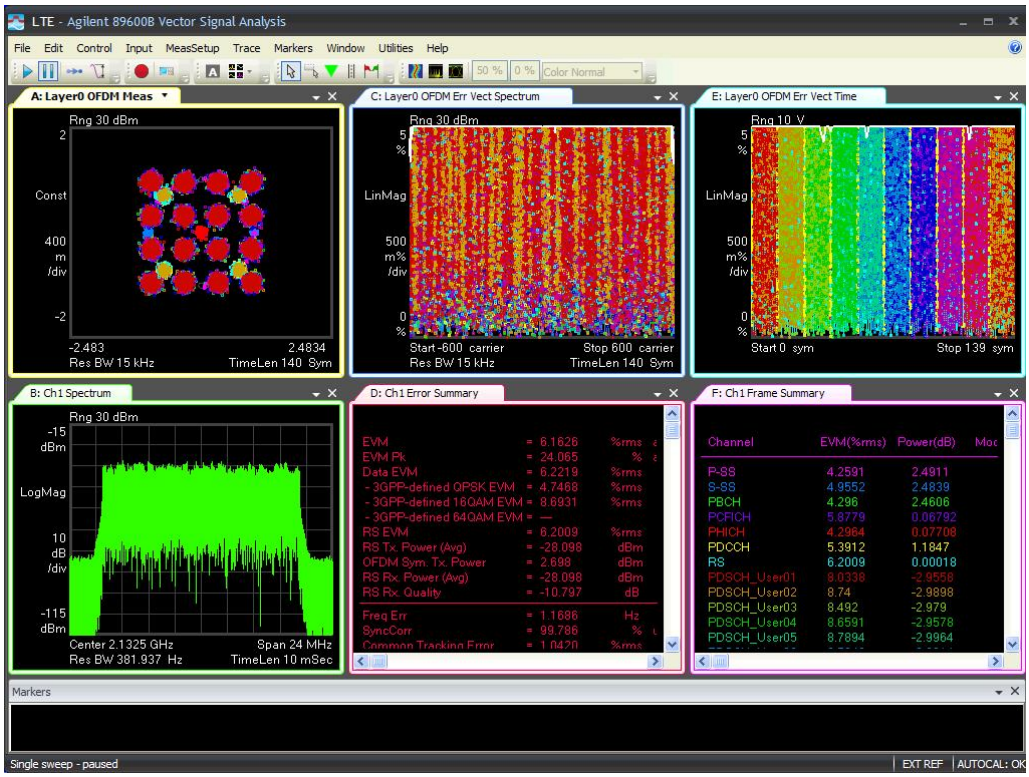
20M-Port 2 -2132.5MHz-TM2.0



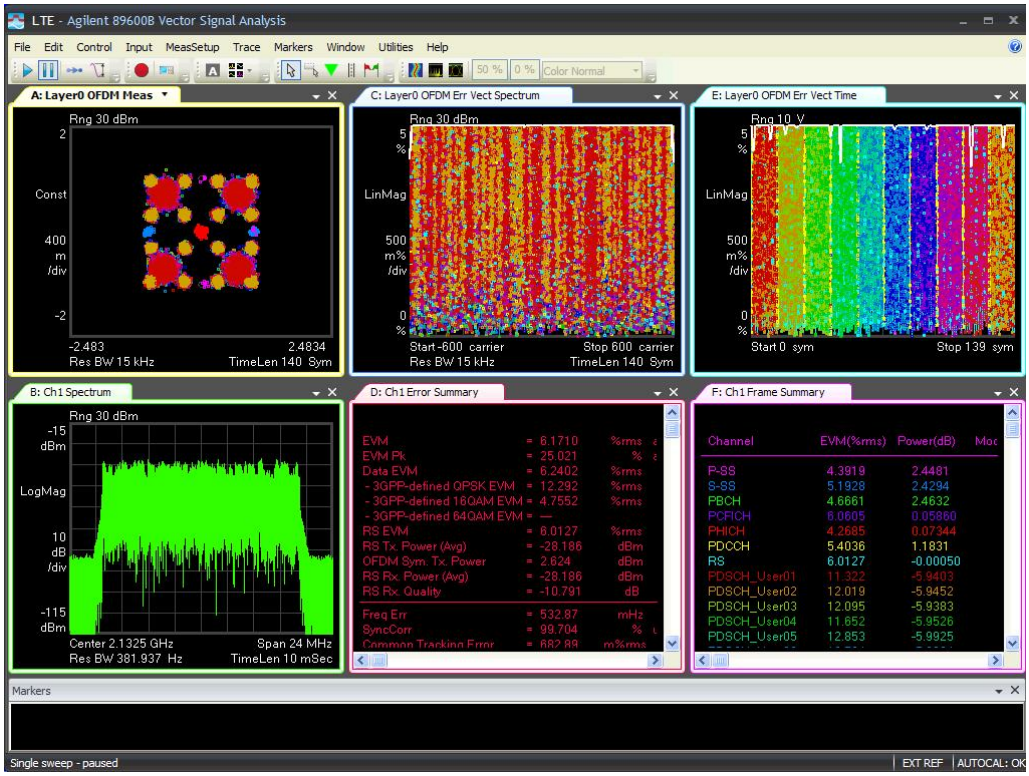
20M-Port 2 -2132.5MHz-TM3.1



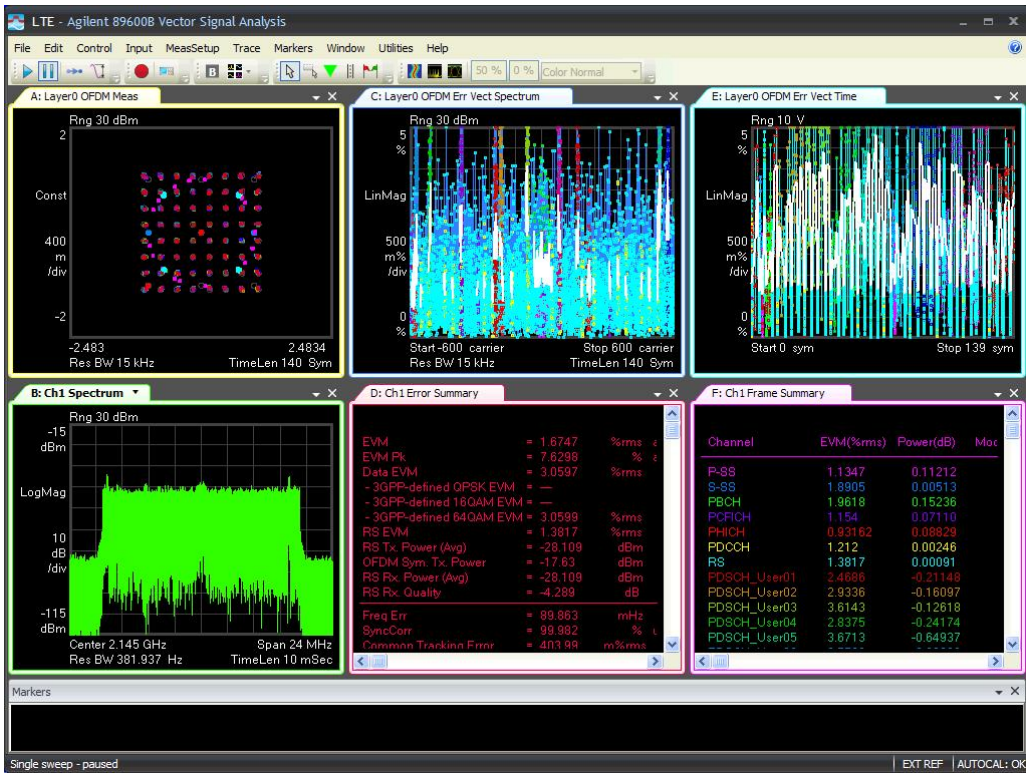
20M-Port 2 -2132.5MHz-TM3.2



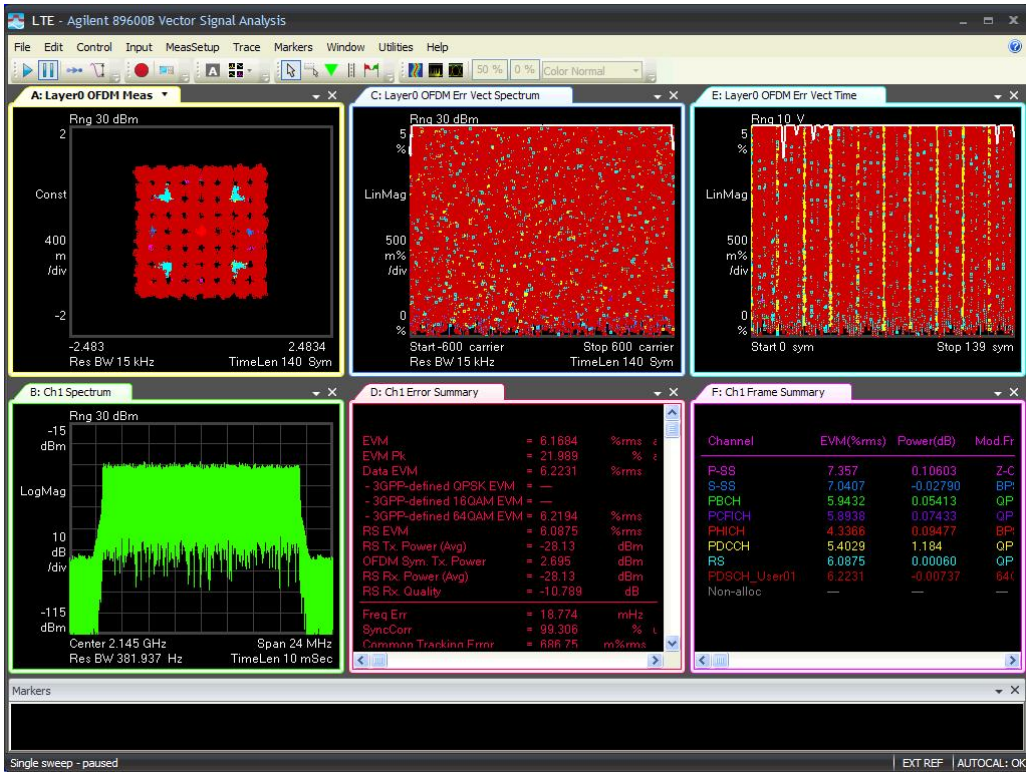
20M-Port 2 -2132.5MHz-TM3.3



20M-Port 2 -2145MHz-TM2.0



20M-Port 2 -2145MHz-TM3.1



20M-Port 2 -2145MHz-TM3.2