Radio Test Report

Application for Grant of Equipment Authorization

FCC Part 24 & IC RSS-133
1930MHz – 1995MHz

FCC ID:	**VBNFHFB-01**
IC:	**661W-FHFB**
Product Name:	**Flexi Multiradio BTS**
Model(s):	**FHFB**
APPLICANT:	**Nokia Solutions and Networks 6000 Connection Drive Irving, TX 75039**
TEST SITE(S):	**National Technical Systems - Plano 1701 E Plano Pkwy #150 Plano, TX 75074**
REPORT DATE:	**Feb 10, 2015**
FINAL TEST DATES:	**Nov 17 – Dec 8, 2014**
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REVISION HISTORY

Rev#	Date	Comments	Modified By
0	Jan 8, 2015	1st release	Yunus Faziloglu
1	Feb 10, 2015	To address TCB comments	Yunus Faziloglu

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SCOPE

Tests have been performed on Nokia Solutions and Networks product Flexi Multiradio BTS Model FHFB, pursuant to the relevant requirements of the following standard(s) in order to obtain device certification against the regulatory requirements of the Federal Communications Commission and Industry Canada.

- Code of Federal Regulations (CFR) Title 47 Part 2
- Industry Canada RSS-Gen Issue 4, November 2014
- CFR 47 Part 24 Subpart E – Broadband PCS
- RSS-133 Issue 6, January 2013 (2GHz Personal Communications Services)

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards:

ANSI C63.4-2009
ANSI TIA-603-C
FCC KDB 971168 D01 v02r02

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC and Industry Canada performance and procedural standards.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of Nokia Solutions and Networks product Flexi Multiradio BTS Model FHFB and therefore apply only to the tested sample. The sample was selected and prepared by Hobert Smith of Nokia Solutions and Networks.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, the device requires certification. Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

Testing was performed only on Model FHFB. No additional models were described or supplied for testing.

STATEMENT OF COMPLIANCE

The tested sample of Nokia Solutions and Networks product Flexi Multiradio BTS Model FHFB complied with the requirements of the standards and frequency bands declared in the scope of this test report.

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS

FCC Part 24 & IC RSS-133 (Base Stations Operating in 1930MHz-1995MHz band)

FCC	Canada	Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
§24.229	RSS-133 Section 6.1	Frequency range(s)	1932.4-1992.6 (5M-WCDMA) 1930.7-1994.3 (1.4M-LTE) 1931.5-1993.5 (3M-LTE) 1932.5-1992.5 (5M-LTE) 1935-1990 (10M-LTE) 1937.5-1987.5 (15M-LTE) 1940-1985 (20M-LTE)	1930-1995 MHz	Pass
§2.1047	RSS-133 Section 6.2	Modulation Type	WCDMA: QPSK, 16QAM, 64QAM (5M only for each) LTE: QPSK, 16QAM, 64QAM (1.4M, 3M, 5M, 10M, 15M, 20M for each)	Digital	Pass
§24.232	RSS-133 Section 6.4	Output Power	Conducted Output Power (Highest on Port 4) Peak: 56.16dBm (WCDMA) RMS: 46.04Bm (WCDMA) Peak: 56.78dBm (LTE) RMS: 46.01Bm (LTE) EIRP will depend on antenna gain (unknown)	FCC: 1640W EIRP IC: 100W Conducted	Pass
§24.232	RSS-133 Section 6.4	Peak to Average Ratio	11.05dB highest	<= 13 dB	Pass
§24.238	-	Emission Bandwidth (26dB)	4.607MHz (5M-WCDMA) 1.329MHz (1.4M-LTE) 2.949MHz (3M-LTE) 4.924MHz (5M-LTE) 9.838MHz (10M-LTE) 14.722MHz (15M-LTE) 19.610MHz (20M-LTE)	Remain in Block	Pass
-	RSS-133 Section 2.3	Emission Bandwidth (99%)	4.100MHz (5M-WCDMA) 1.127MHz (1.4M-LTE) 2.718MHz (3M-LTE) 4.515MHz (5M-LTE) 9.023MHz (10M-LTE) 13.515MHz (15M-LTE) 18.013MHz (20M-LTE)	Remain in Block	Pass
Transmitter spurious emissions[3]					
§24.238	RSS-133 Section 6.5.1	At the antenna terminals	< -19.03dBm	-19.03 dBm (per TX chain)	Pass
		Field strength	50.6dBuV/m at 3m Eq. to -44.6dBm EIRP	-13 dBm EIRP	Pass
Receiver spurious emissions[2]					
Other details					
§24.235	RSS-133 Section 6.3	Frequency stability	Stays within block	N/A[1]	Pass
§2.1093	RSS-102	RF Exposure	N/A		Pass[4]

Notes

Note 1 – The requirement for frequency stability is that the signal remains within the authorized frequency block.
Note 2 – As the frequency of operation is above 960 MHz there are no technical requirements for spurious emissions from

the receiver.
Note 3 – The measurement at the channel edge is made with a resolution bandwidth of at least 1% of the emission bandwidth. For measurements more than 1MHz from the edge of the channel, the measurement bandwidth is 1MHz.
Note 4 – Applicant's declaration on a separate exhibit based on hypothetical antenna gains.

	Emission Designators					
	LTE-QPSK		LTE-16QAM		LTE-64QAM	
	FCC	IC	FCC	IC	FCC	IC
1.4M	1M33F9W	1M13F9W	1M30F9W	1M12F9W	1M29F9W	1M12F9W
3M	2M95F9W	2M72F9W	2M95F9W	2M71F9W	2M94F9W	2M72F9W
5M	4M92F9W	4M50F9W	4M90F9W	4M49F9W	4M91F9W	4M52F9W
10M	9M81F9W	9M00F9W	9M79F9W	9M02F9W	9M84F9W	9M01F9W
15M	14M7F9W	13M5F9W	14M6F9W	13M5F9W	14M7F9W	13M5F9W
20M	19M6F9W	18M0F9W	19M5F9W	18M0F9W	19M6F9W	18M0F9W

	Emission Designators					
	WCDMA-QPSK		WCDMA-16QAM		WCDMA-64QAM	
	FCC	IC	FCC	IC	FCC	IC
5M	4M61F9W	4M10F9W	4M60F9W	4M10F9W	4M59F9W	4M09F9W

Note: FCC based on 26dB emissions bandwidth, IC based on 99% emissions bandwidth

EXTREME CONDITIONS

Frequency stability is determined over extremes of temperature and voltage. The extremes of voltage were 85 to 115 percent of the nominal value.

The extremes of temperature were -30°C to +50°C as specified in FCC §2.1055(a)(1).

MEASUREMENT UNCERTAINTIES

Measurement uncertainties of the test facility based on a 95% confidence level are as follows,

Test	**Uncertainty**
Radio frequency	± 0.2ppm
RF power conducted	±1.2 dB
RF power radiated	±3.3 dB
RF power density conducted	±1.2 dB
Spurious emissions conducted	±1.2 dB
Adjacent channel power	±0.4 dB
Spurious emissions radiated	±4 dB
Temperature	±1°C
Humidity	±1.6 %
Voltage (DC)	±0.2 %
Voltage (AC)	±0.3 %

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The equipment under test is a Nokia Solutions and Networks Flexi Multiradio BTS (base transceiver station) Remote Radio Head (RRH) module, model FHFB, which covers 3GPP frequency bands 2 and 25 (Downlink: 1930 to 1995 MHz). The FHFB has 4 co-located transmitters with each transmit port supporting 40 watts maximum rated RF output power. The FHFB hardware is multi-standard capable (GSM/EDGE/WCDMA/LTE), but for this effort WCDMA and LTE modes are tested. For LTE, the FHFB supports six channel bandwidths (1.4, 3, 5, 10, 15 and 20 MHz) and for WCDMA it supports a 5 MHz channel bandwidth. The FHFB supports three downlink modulation types for LTE and WCDMA (QPSK, 16QAM and 64QAM). The FHFB supports 4x4 MIMO operations. Multi-carrier operation up to 4 carriers is supported. The FHFB has external interfaces including DC power, ground, antennas (TX/RX), RX monitor, EAC (external alarm), optical (OBSAI) and remote electrical tilt (RET). The RRH with applicable installation kits may be pole or wall mounted.

Following tables show channel numbers and frequencies for LTE and WCDMA modes.

	Downlink EARFCN	Downlink Frequency (MHz)	LTE Channel Bandwidth					
			1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Band 25 (Ant 1, 2, 3, 4)	8040	1930	Bandedge	Bandedge	Bandedge	Bandedge	Bandedge	Bandedge
	.....							
	8047	1930.7	Bottom Ch					
	.....							
	8055	1931.5		Bottom Ch				
	.....							
	8065	1932.5			Bottom Ch			
	.....							
	8090	1935				Bottom Ch		
	.....							
	8115	1937.5					Bottom Ch	
	.....							
	8140	1940						Bottom Ch
	.....							
	8365	1962.5	Middle Ch	Middle Ch	Middle Ch	Middle Ch	Middle Ch	Middle Ch
	.....							
	8590	1985						Top Channel
	.....							
	8615	1987.5					Top Channel	
	.....							
	8640	1990				Top Channel		
	.....							
	8665	1992.5			Top Channel			
	.....							
	8675	1993.5		Top Channel				
	.....							
	8683	1994.3	Top Channel					
	.....							
	8690	1995	Bandedge	Bandedge	Bandedge	Bandedge	Bandedge	Bandedge

	Downlink UARFCN	Downlink Frequency (MHz)	WCDMA Channel
Band 25 (Ant 1, 2, 3, 4)	.....	1930	Bandedge
	.....		
	9662	1932.4	Bottom Channel
	9663	1932.6	Bottom Channel + 1
	.....		
	9812	1962.4	Middle Channel
	.....		
	9962	1992.4	Top Channel - 1
	9963	1992.6	Top Channel
	.....		
	.....	1995	Bandedge

The sample was received on Nov 17, 2014 and tested on Nov 17 - Dec 8, 2014. The EUT consisted of the following component(s):

Company	Model	Description	Serial/Part Number	FCC ID / IC#
Nokia Solutions and Networks	FHFB	Flexi Multiradio BTS RRH	Part# 473042A.101 Serial# L9144000909	FCC ID: VBNFHFB-01 IC: 661W-FHFB

ENCLOSURE

The EUT enclosure is made of heavy duty aluminum and measures approximately 12(W) x 7(D) x 24(H) inches.

AUXILLARY EQUIPMENT

Company	Model	Description	Serial/Part Number	FCC ID
Nokia	FOSH	6GHz SFP Module (Plugs into FHFB Opt Ports 1 & 2)	Part: 472579A.101 (2 units/RRH)	N/A

SUPPORT EQUIPMENT

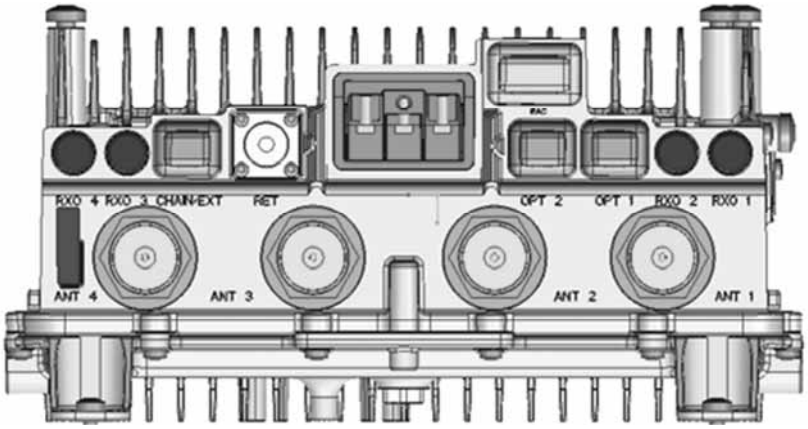
Company	Model	Description	Serial Number	FCC ID
Nokia	FSMF	Flexi System Module	Part: 472181A.103	N/A
Nokia	FBBA	Baseband Extension Module	Part: 472182A.101 (2 units/FSMF)	N/A
HP	EliteBook 6930p	Laptop PC	N/A	N/A

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Cable	Type	Shield	Length	Used in Test	Quantity	Termination
Power Input	Power	No	~ 3m	Yes	1	Power Supply
Earth	Earth	No	~ 1m	Yes	1	Lab Earth Ground
Antenna	RF	Yes	~ 3m	Yes	4	50Ω Load

The connector layout for FHFB is provided below:



EUT OPERATION

During testing, the EUT was transmitting continuously with 100% duty-cycle at full power on all chains.

EUT FIRMWARE/SOFTWARE

The laptop PC connects to the FSMF System Module over the LMP (Ethernet) port. The system module controls the FHFB RRH via an optical (OBSAI) interface. The laptop PC is used for changing configuration settings, monitoring tests and controlling the BTS. The following software versions were used for FHFB testing:

(1) RRH Unit Software: FRM3411R04_FHFB_RFC_DVMOFF

(2) System Module Software: FB_PS_REL_2013_09_016

MODIFICATIONS

No modifications were made to the EUT during testing.

TESTING

GENERAL INFORMATION

Antenna port measurements were taken at NTS Plano branch located at 1701 E Plano Pkwy #150 Plano, TX 75074.

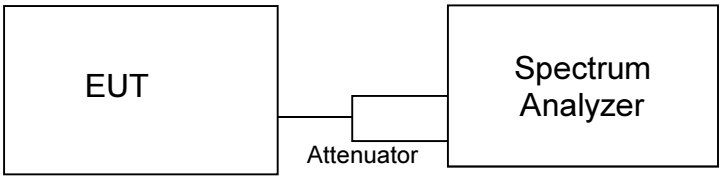
Radiated spurious emissions measurements were taken at the NTS Plano Anechoic Chamber listed below. The sites conform to the requirements of ANSI C63.4-2009 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4:2007 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are on file with the FCC and industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 1	A2LA Accredited Designation Number US1077	IC 4319A	1701 E Plano Pkwy #150 Plano, TX 75074.

Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements.

MEASUREMENT PROCEDURES

Output power, emission bandwidth, conducted spurious, conducted bandedge and carrier frequency stability measurements were all performed via a spectrum analyzer connected to the individual RF chains via a 40dB attenuator and an RF cable. The EUT was operating in 4x4 MIMO configuration at full power for all tests. While measuring one transmit chain, others were terminated with termination blocks. All measurements were corrected for the insertion loss of the attenuator and cable inserted between the RF port of the EUT and the spectrum analyzer. Simple test diagram is shown below.



Test Configuration for Antenna Port Measurements

26dB emission bandwidth was measured in accordance with Section 4.1 of FCC KDB 971168 D01 v02r02. 99% occupied bandwidth was measured in accordance with Section 6.6 of RSS-Gen Issue 4. For both measurements an NTS custom software tool was used. Spectrum analyzer settings are shown on their corresponding plots in test results section.

Emissions at the band-edges were also captured with an NTS custom software tool with settings described in the corresponding sections of the FCC and IC rules. Spectrum analyzer settings are shown on their corresponding plots in test results section. Power reduction on lowest and highest channels were necessary for LTE 3M, 5M, 10M, 15M and 20M modes.

Peak and average output power measurements were performed in accordance with FCC KDB 971168 D01 v02r02. An NTS custom software tool was used for power integration to compensate for resolution bandwidth limitations of the spectrum analyzer and settings are shown on their corresponding plots in test results section.

Peak to average power ratio was calculated in accordance with Section 5.7.2 of FCC KDB 971168 D01 v02r02.

Conducted spurious emissions were captured with TILE6 software which corrected the readings for cable loss and attenuator loss across the 9kHz-20GHz frequency span. Settings of the spectrum analyzer are described in the corresponding test result section.

For frequency stability, the EUT was placed inside a temperature chamber with all support and test equipment located outside of the chamber. Temperature was varied across the specified range in 10 degree increments and EUT was allowed enough time to stabilize at each temperature step. Bandedge measurements were performed at the lowest and highest channels to verify that the carrier stayed within the authorized frequency block.

Transmitter radiated spurious emissions measurements were made in accordance with ANSI C63.4-2009 by measuring the field strength of the emissions from the device at 3m test distance. The eirp limit as specified in the relevant rule part(s) is converted to a field strength at the test distance and the emissions from the EUT are then compared to that limit. Only emissions within 20dB of this limit are subjected to a substitution measurement in accordance with TIA-603-C-2004. Both preliminary and final measurements were performed at the same FCC listed test chamber. Preliminary scans were performed with TILE6 software. This software corrected the measurements for antenna factors, cable losses and pre-amplifier gains. Both polarizations of the receiving antenna ware scanned from 30MHz to 20GHz with a peak detector (RBW=1MHz, VBW=3MHz, with trace max hold over multiple sweeps). Based on the preliminary scan results, frequencies of interest have been maximized via rotating the EUT 360 degrees and varying the height of the test antenna (1m to 4m). Final measurements were also taken with the peak detector as described above. A biconilog antenna was used for 30MHz-1GHz range. A double ridged waveguide horn antenna was used for 1-18GHz range and a smaller double ridged waveguide horn antenna was used for 18-20GHz range. The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. EUT was placed on a non-conductive RF transparent structure to provide 80cm height from the ground floor. A motorized turntable allowed it to be rotated during testing to determine the angle with the highest level of emissions.

Receiver radiated spurious emissions testing was not applicable to the EUT since its receive frequency was outside the 30MHz-960MHz range for its WCDMA and LTE functions.

Test Equipment

NTS Equipment #	Description	Manufacturer	Model	Calibration Duration	Calibration Due Date
E1529P	PSA	Agilent	E4446A	12 Months	2/14/2015
E1554P	PreAmp (1GHz-40GHz)	MITEQ	JS32-00104000-62-5P	12 Months	5/14/2015
E1279P	PreAmp (30MHz-1GHz)	MITEQ	AM-1431-N-1179SC	12 Months	2/8/2015
E1524P	Biconilog Antenna (30MHz-1GHz)	ETS Lindgren	3142D	12 Months	3/10/2015
E1019P	Horn Antenna (1GHz-18GHz)	EMCO	3115	12 Months	10/23/2015
E1068P	Horn Antenna (18GHz-40GHz)	EMCO	3116	12 Months	5/12/2015
E1447P	RMS Multimeter	Fluke	87V	12 Months	5/20/2015
ENV1384P	Data Acquisition Switch Unit	Agilent	34970A	12 Months	2/24/2015
ENV1195P	Climatic Chamber	Thermotron	SE-300-2-2	N/A	No Calibration Required

Appendix A Test Data

RF Output Power

RF output power has been measured in both Peak and RMS Average terms for each transmit chain at center channel for all modulations and bandwidth modes.. Peak to average ratio (PAR) has been calculated as described in Section 5.7.2 of KDB971168 D01 v02r02 and all results are presented in tabular form below. Highest PAR found (11.05 dB) is below the 13dB maximum limit.

LTE Results:

		LTE - QPSK			LTE - 16QAM			LTE - 64QAM		
		Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)
Port 1 Center Channel	**1.4M**	53.05	45.11	7.94	54.51	45.64	8.87	54.17	45.64	8.53
	3M	54.76	45.19	9.57	55.23	45.76	9.47	55.28	45.71	9.57
	5M	54.86	44.78	10.08	56.29	45.49	10.8	55.51	45.48	10.03
	10M	55.68	45.39	10.29	56.46	45.63	10.83	55.67	45.48	10.19
	15M	55.53	45.66	9.87	56.63	45.74	10.89	55.68	45.73	9.95
	20M	55.67	45.47	10.2	56.43	45.63	10.8	55.74	45.63	10.11
Port 2 Center Channel	**1.4M**	53.8	45.35	8.45	54.14	45.46	8.68	53.9	45.34	8.56
	3M	54.84	45.31	9.53	54.98	45.36	9.62	54.96	45.48	9.48
	5M	55.11	44.93	10.18	55.95	45.05	10.9	55.16	45.12	10.04
	10M	55.18	44.94	10.24	56.04	45.19	10.85	55.31	45.1	10.21
	15M	55.22	45.21	10.01	56.21	45.35	10.86	55.35	45.35	10
	20M	55.37	45.24	10.13	55.84	45.19	10.65	55.38	45.24	10.14
Port 3 Center Channel	**1.4M**	53.69	45.16	8.53	54.58	45.83	8.75	54.25	45.8	8.45
	3M	54.12	44.08	10.04	55.37	45.85	9.52	55.34	45.73	9.61
	5M	55.49	45.4	10.09	56.38	45.47	10.91	55.59	45.55	10.04
	10M	55.65	45.36	10.29	56.47	45.67	10.8	55.74	45.55	10.19
	15M	55.5	45.57	9.93	56.54	45.79	10.75	55.85	45.8	10.05
	20M	55.72	45.74	9.98	56.51	45.68	10.83	55.83	45.76	10.07
Port 4 Center Channel	**1.4M**	53.86	45.35	8.51	54.63	45.96	8.67	54.4	45.93	8.47
	3M	54.38	44.97	9.41	55.53	45.9	9.63	55.53	45.96	9.57
	5M	55.57	45.61	9.96	56.55	45.78	10.77	55.72	45.7	10.02
	10M	55.86	45.54	10.32	56.61	45.81	10.8	55.86	45.69	10.17
	15M	55.74	45.74	10	**56.78**	**46.01**	10.77	55.95	45.91	10.04
	20M	55.81	45.83	9.98	56.47	45.75	10.72	55.97	45.93	10.04
Combined Center Channel	**1.4M**	59.63	51.26	8.37	60.49	51.75	8.74	60.2	51.7	8.5
	3M	60.56	50.93	9.63	61.3	51.74	9.56	61.3	51.74	9.56
	5M	61.29	51.21	10.08	62.32	51.48	10.84	61.52	51.49	10.03
	10M	61.62	51.33	10.29	62.42	51.6	10.82	61.67	51.48	10.19
	15M	61.52	51.57	9.95	62.57	51.75	10.82	61.73	51.72	10.01
	20M	61.67	51.6	10.07	62.34	51.59	10.75	61.76	51.67	10.09

Based on the results above, Port 4 had slightly higher power levels than others and therefore Port 4 was selected for all the remaining LTE mode antenna port tests on the product. Subsequently output power levels on lowest and highest channels were tested only on Port 4 and results presented below.

		LTE - QPSK			LTE - 16QAM			LTE - 64QAM		
		Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)
Port 4 Bottom Channel	1.4M	53.68	45.14	8.54	53.95	44.96	8.99	53.61	45.12	8.49
	3M	52.43	42.41	10.02	53.83	44.05	9.78	53.83	44.04	9.79
	5M	52.71	42.27	10.44	55.01	44.05	10.96	54.11	44.01	10.1
	10M	52.92	42.53	10.39	55.09	44.08	11.01	54.35	44.15	10.2
	15M	54.58	44.59	9.99	55.41	44.48	10.93	54.48	44.5	9.98
	20M	54.76	44.63	10.13	55.48	44.58	10.9	54.6	44.56	10.04
Port 4 Bottom Channel + 1	1.4M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3M	54.79	45.39	9.4	54.93	45.39	9.54	54.96	45.34	9.62
	5M	55.27	45.13	10.14	55.97	45.18	10.79	55.17	45.2	9.97
	10M	55.61	45.39	10.22	56.28	45.39	10.89	55.42	45.32	10.1
	15M	55.64	45.74	9.9	56.57	45.71	10.86	55.64	45.74	9.9
	20M	55.85	45.77	10.08	56.61	45.75	10.86	55.79	45.78	10.01
Port 4 Top Channel - 1	1.4M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3M	54.75	45.3	9.45	54.84	45.37	9.47	54.85	45.23	9.62
	5M	55.19	45.13	10.06	55.92	45.13	10.79	55.08	45.16	9.92
	10M	55.42	45.25	10.17	56.04	45.33	10.71	55.3	45.33	9.97
	15M	55.52	45.59	9.93	56.57	45.67	10.9	55.52	45.5	10.02
	20M	55.74	45.65	10.09	56.47	45.68	10.79	55.66	45.68	9.98
Port 4 Top Channel	1.4M	53.63	45.05	8.58	53.8	45.1	8.7	53.57	45.06	8.51
	3M	52.53	42.44	10.09	53.87	44.12	9.75	53.8	44.01	9.79
	5M	52.58	42.19	10.39	54.93	43.88	**11.05**	54.07	43.86	10.21
	10M	54.42	43.94	10.48	54.93	44.04	10.89	54.21	44.11	10.1
	15M	54.36	44.3	10.06	55.35	44.45	10.9	54.41	44.37	10.04
	20M	54.56	44.38	10.18	55.3	44.41	10.89	54.57	44.5	10.07

In order to meet bandedge requirements power levels at lowest and highest channels had to be reduced as listed below,

	LTE - QPSK		LTE - 16QAM		LTE - 64QAM	
	Low	High	Low	High	Low	High
1.4M	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
3M	Note 3	Note 3	Note 2	Note 2	Note 2	Note 2
5M	Note 3	Note 3	Note 2	Note 2	Note 2	Note 2
10M	Note 3	Note 2	Note 2	Note 2	Note 2	Note 2
15M	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
20M	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
Note 1: No power reduction						
Note 2: 10W power reduction						
Note 3: 20W power reduction						

WCDMA Results:

		WCDMA - QPSK			WCDMA - 16QAM			WCDMA - 64QAM		
		Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)
Port 1 Center	**5M**	55.91	45.38	10.53	55.64	45.78	9.86	55.72	45.76	9.96
Port 2 Center	**5M**	55.53	45.05	10.48	55.3	45.32	9.98	55.32	45.41	9.91
Port 3 Center	**5M**	56.06	45.58	10.48	55.73	45.68	10.05	55.83	45.88	9.95
Port 4 Center	**5M**	**56.16**	45.63	10.53	55.8	45.89	9.91	55.94	**46.04**	9.9
Combined Center	**5M**	61.94	51.44	10.5	61.64	51.69	9.95	61.73	51.8	9.93

Based on the results above, Port 4 had slightly higher power levels than others and therefore Port 4 was selected for all the remaining WCDMA mode antenna port tests on the product. Subsequently output power levels on lowest and highest channels were tested only on Port 4 and results presented below.

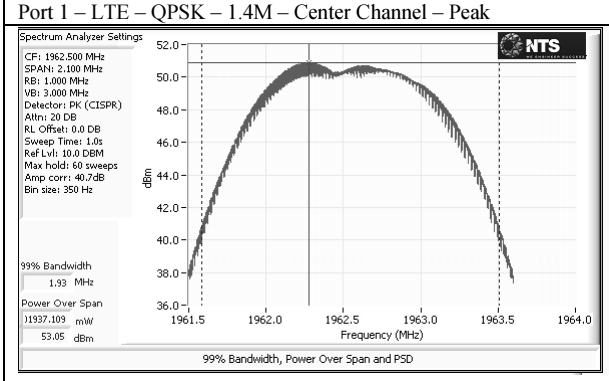
		WCDMA - QPSK			WCDMA - 16QAM			WCDMA - 64QAM		
		Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)	Peak (dBm)	Average (dBm)	PAR (dB)
Port 4 Bottom	**5M**	55.46	44.97	10.49	55.28	45.4	9.88	55.35	45.5	9.85
Port 4 Top	**5M**	55.3	44.81	10.49	55.17	45.23	9.94	55.25	45.35	9.9

For WCDMA, power reductions at lowest and highest channels were not needed to meet bandedge requirements.

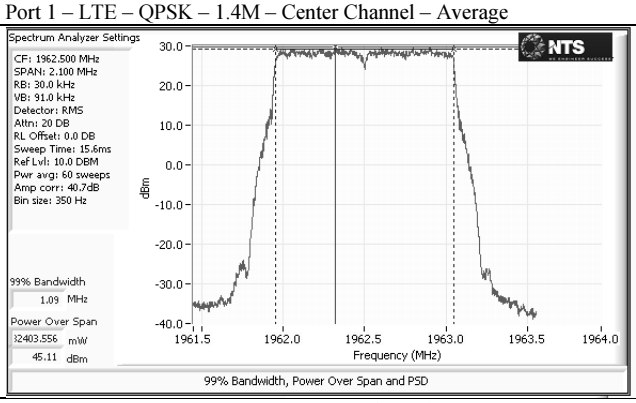
All corresponding plots included on the following pages. Total path loss of 40.7dB (Attenuator Loss: 40dB, RF cable loss: 0.7dB) accounted in via reference level offset to the spectrum analyzer.

LTE Plots:

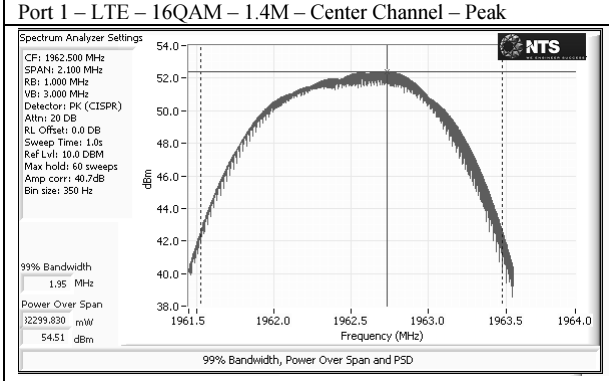
Port 1 – LTE – QPSK – 1.4M – Center Channel – Peak



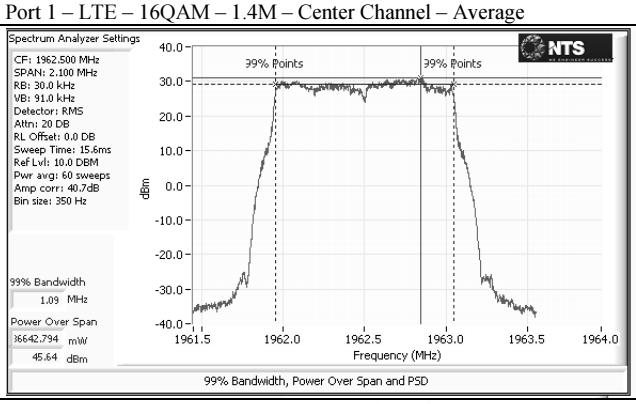
Port 1 – LTE – QPSK – 1.4M – Center Channel – Average



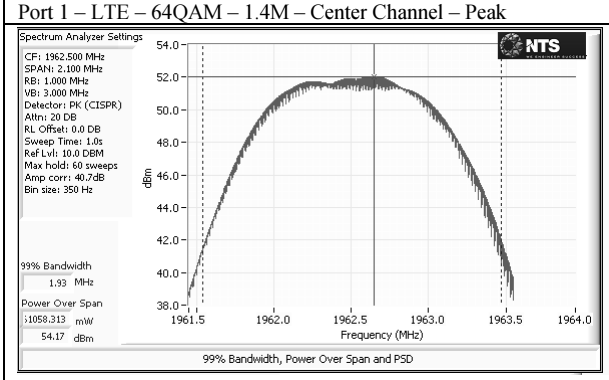
Port 1 – LTE – 16QAM – 1.4M – Center Channel – Peak



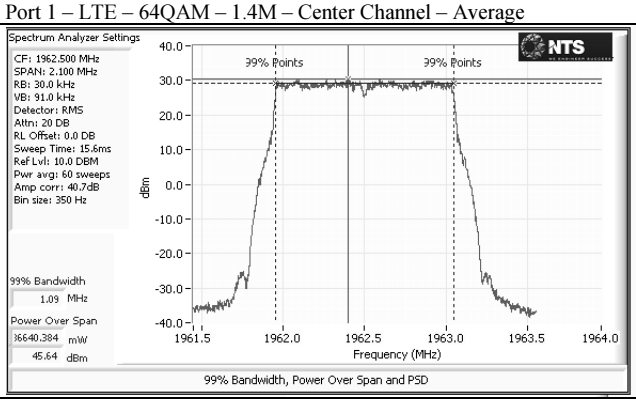
Port 1 – LTE – 16QAM – 1.4M – Center Channel – Average



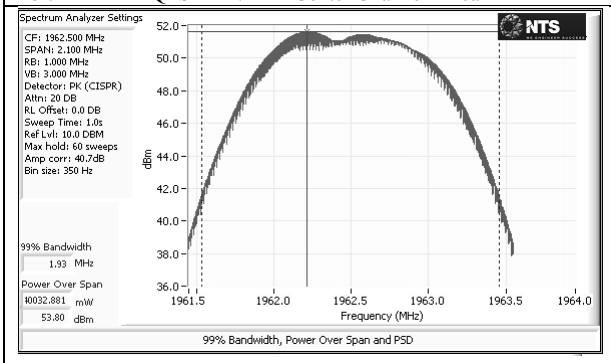
Port 1 – LTE – 64QAM – 1.4M – Center Channel – Peak



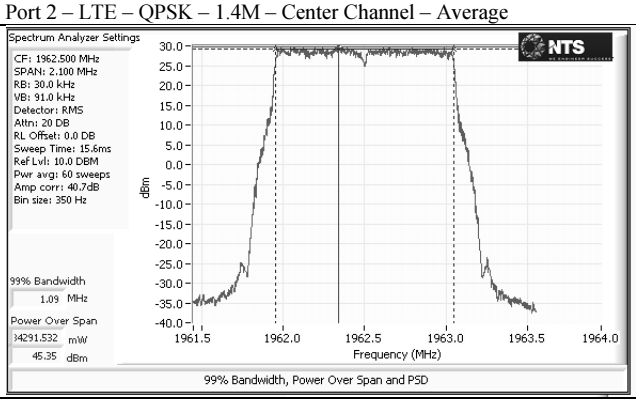
Port 1 – LTE – 64QAM – 1.4M – Center Channel – Average



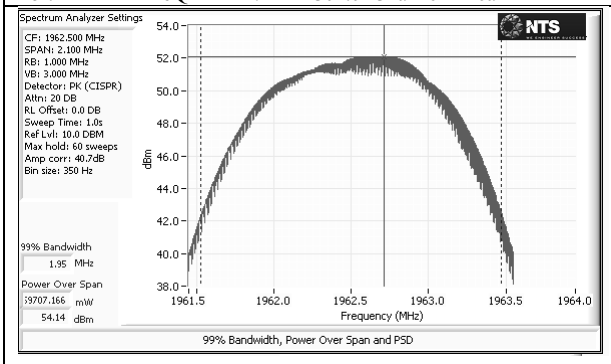
Port 2 – LTE – QPSK – 1.4M – Center Channel – Peak



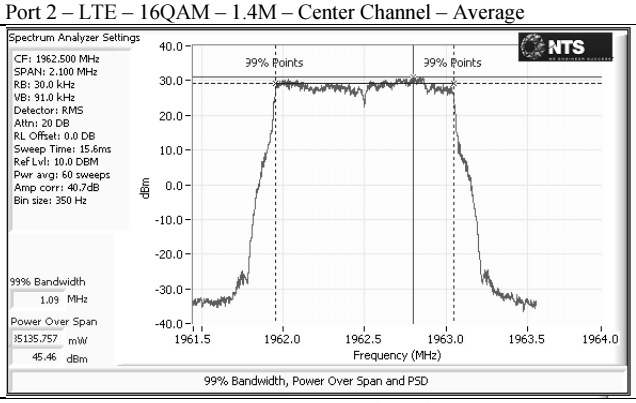
Port 2 – LTE – QPSK – 1.4M – Center Channel – Average



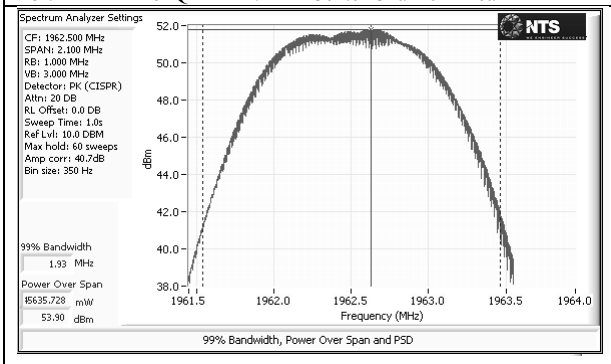
Port 2 – LTE – 16QAM – 1.4M – Center Channel – Peak



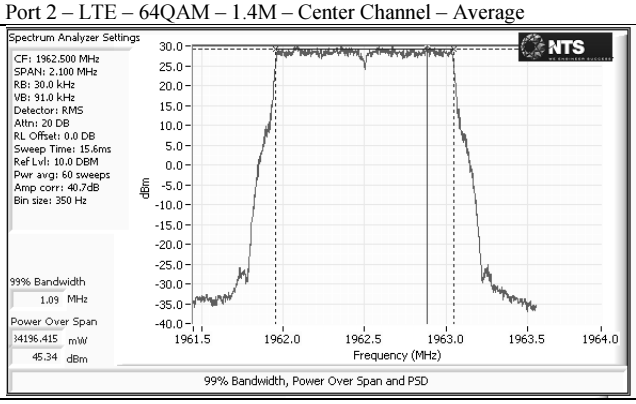
Port 2 – LTE – 16QAM – 1.4M – Center Channel – Average



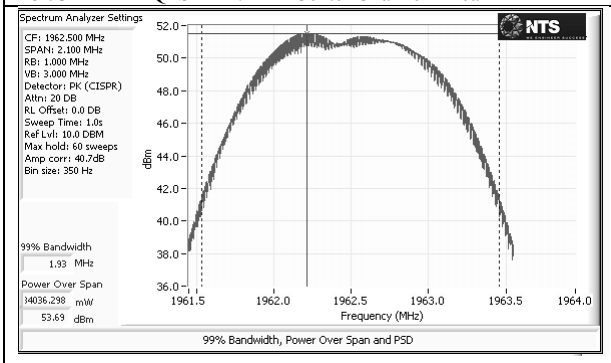
Port 2 – LTE – 64QAM – 1.4M – Center Channel – Peak



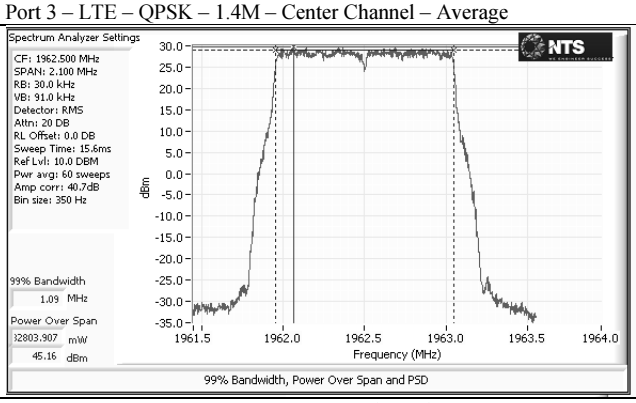
Port 2 – LTE – 64QAM – 1.4M – Center Channel – Average



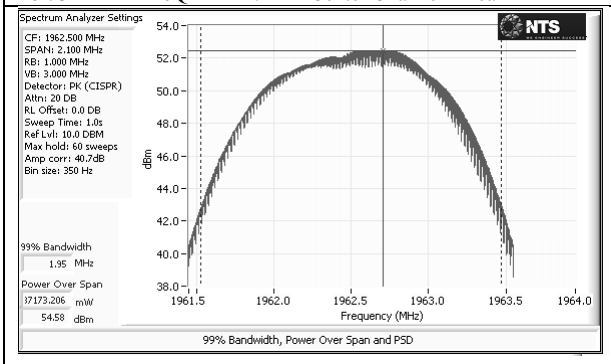
Port 3 – LTE – QPSK – 1.4M – Center Channel – Peak



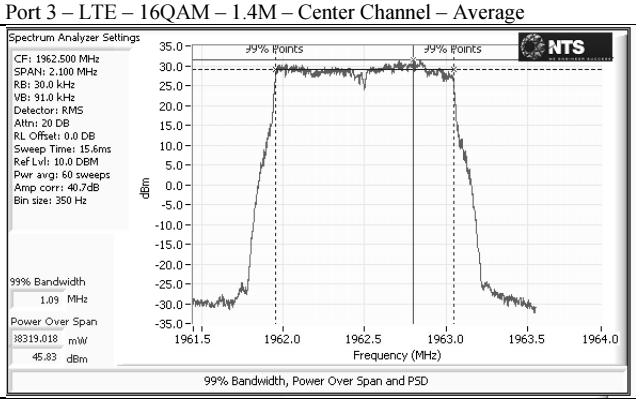
Port 3 – LTE – QPSK – 1.4M – Center Channel – Average



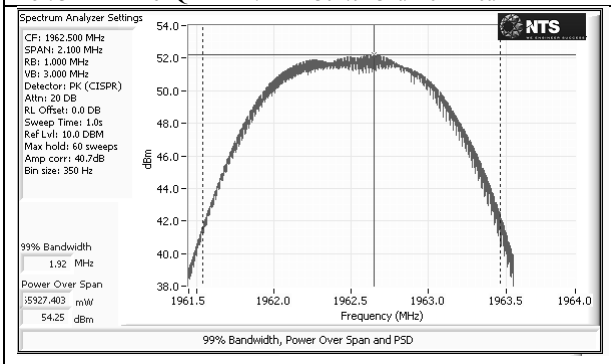
Port 3 – LTE – 16QAM – 1.4M – Center Channel – Peak



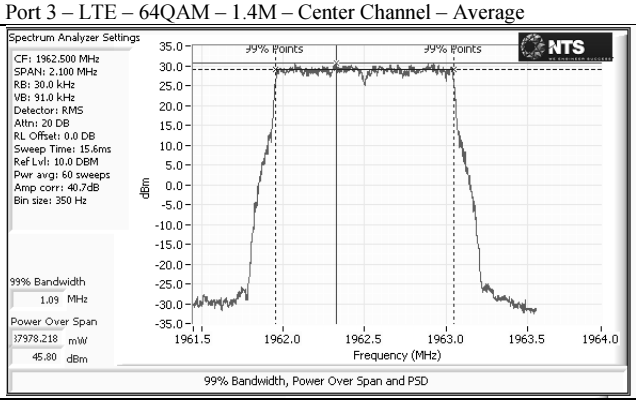
Port 3 – LTE – 16QAM – 1.4M – Center Channel – Average



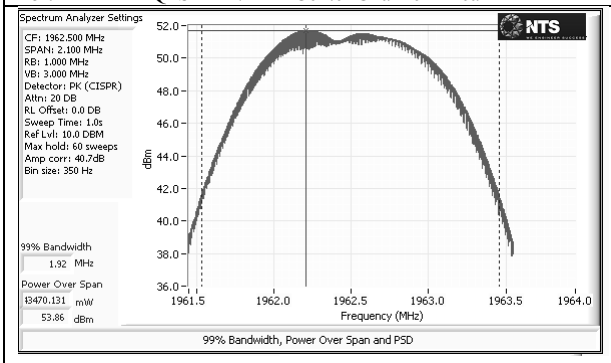
Port 3 – LTE – 64QAM – 1.4M – Center Channel – Peak



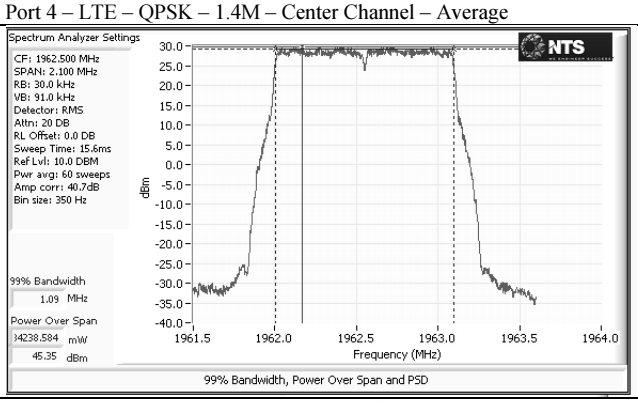
Port 3 – LTE – 64QAM – 1.4M – Center Channel – Average



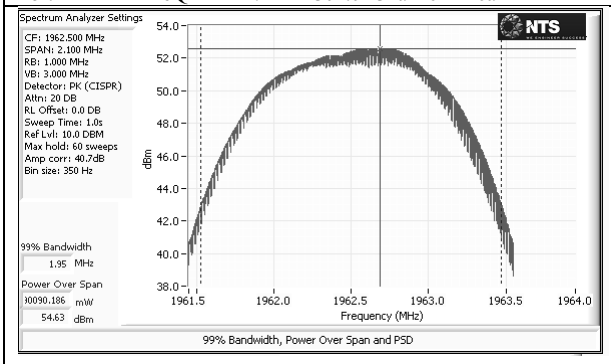
Port 4 – LTE – QPSK – 1.4M – Center Channel – Peak



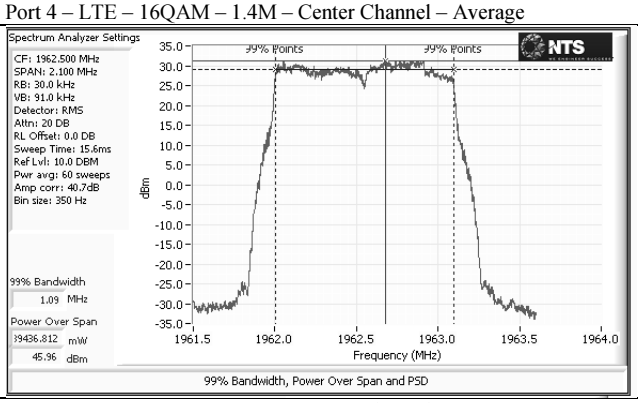
Port 4 – LTE – QPSK – 1.4M – Center Channel – Average



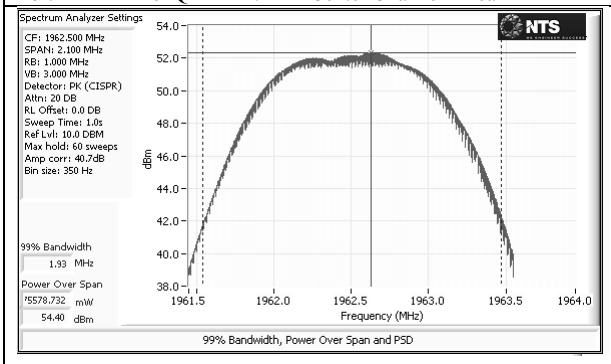
Port 4 – LTE – 16QAM – 1.4M – Center Channel – Peak



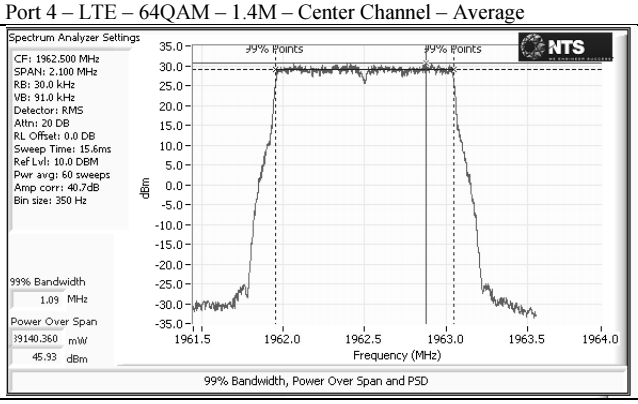
Port 4 – LTE – 16QAM – 1.4M – Center Channel – Average



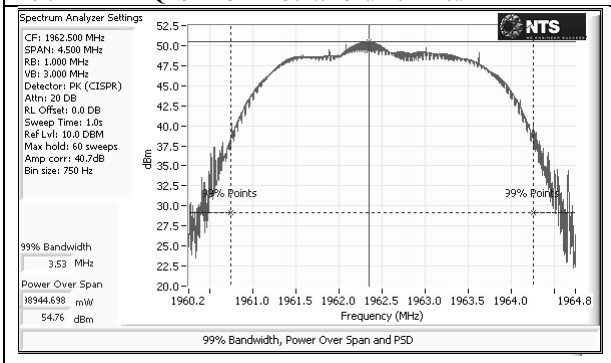
Port 4 – LTE – 64QAM – 1.4M – Center Channel – Peak



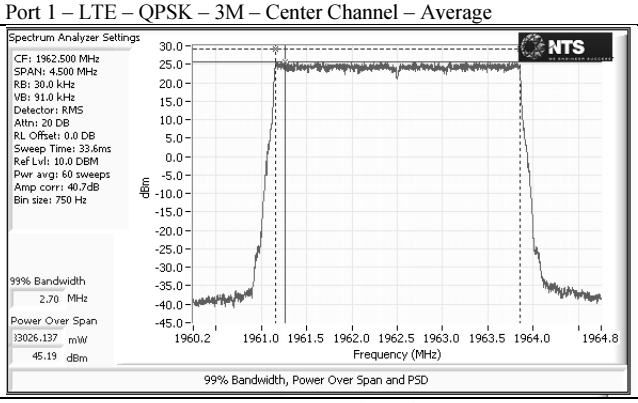
Port 4 – LTE – 64QAM – 1.4M – Center Channel – Average



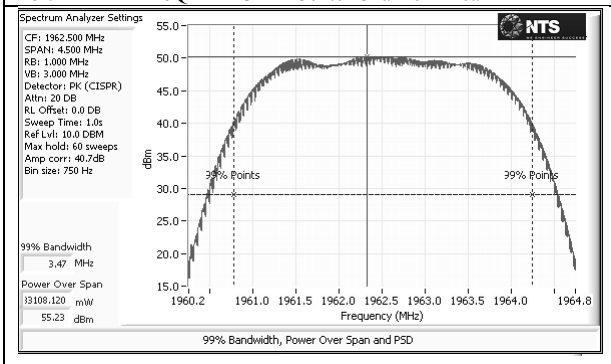
Port 1 – LTE – QPSK – 3M – Center Channel – Peak



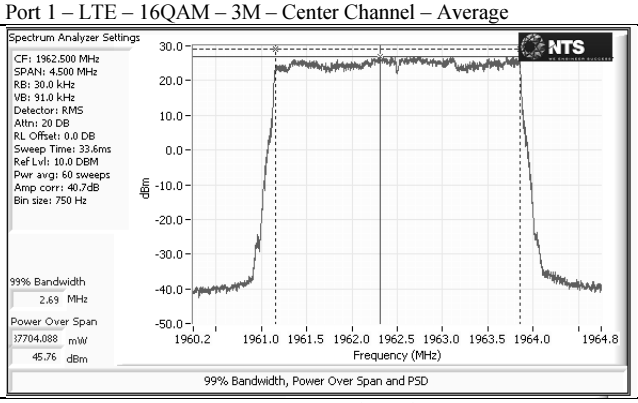
Port 1 – LTE – QPSK – 3M – Center Channel – Average



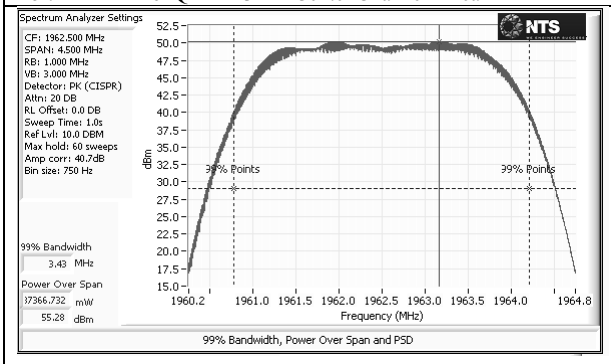
Port 1 – LTE – 16QAM – 3M – Center Channel – Peak



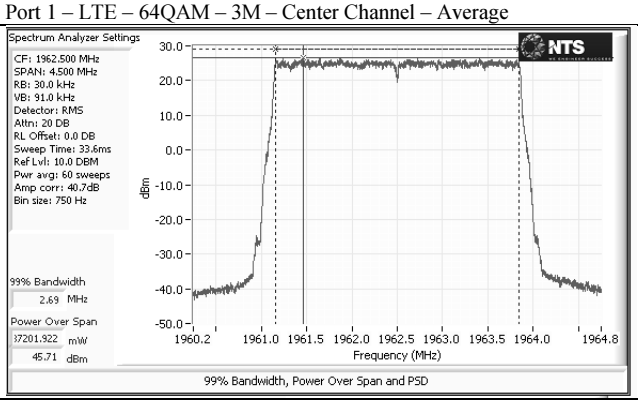
Port 1 – LTE – 16QAM – 3M – Center Channel – Average



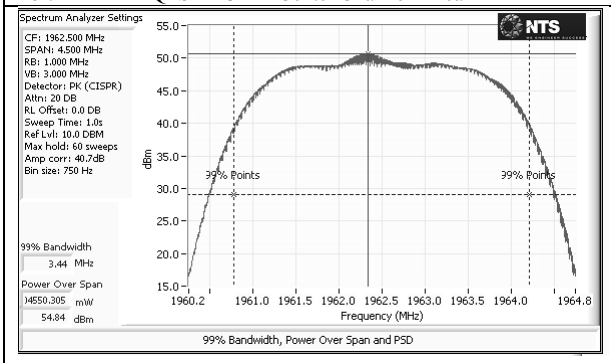
Port 1 – LTE – 64QAM – 3M – Center Channel – Peak



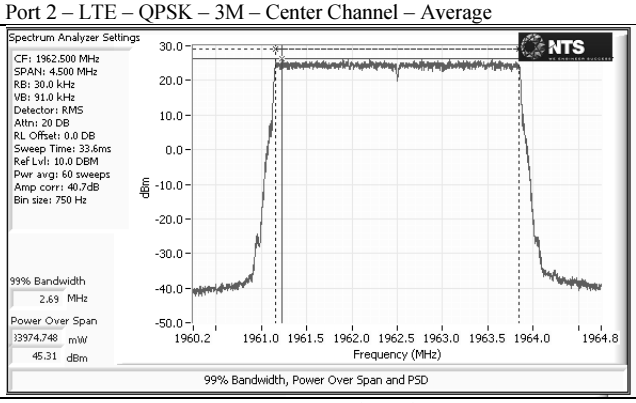
Port 1 – LTE – 64QAM – 3M – Center Channel – Average



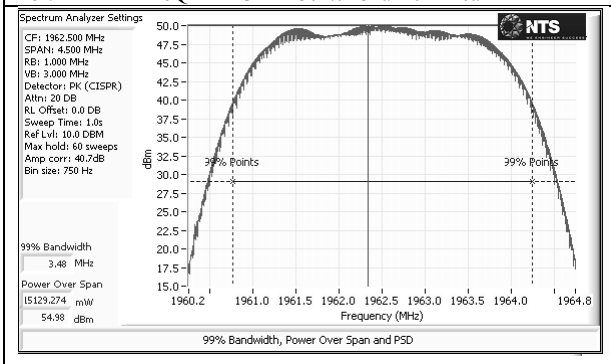
Port 2 – LTE – QPSK – 3M – Center Channel – Peak



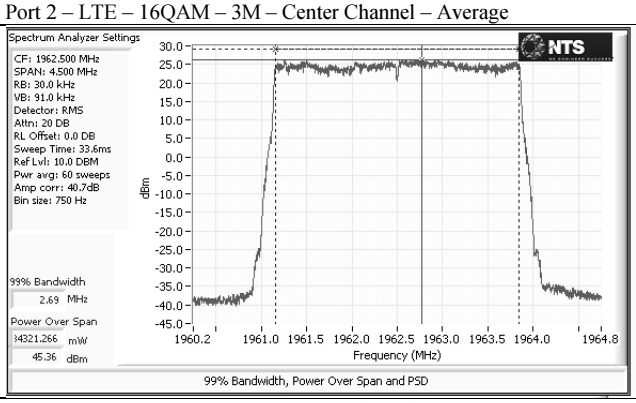
Port 2 – LTE – QPSK – 3M – Center Channel – Average



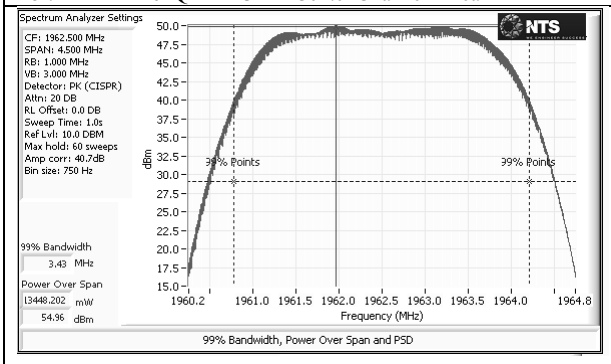
Port 2 – LTE – 16QAM – 3M – Center Channel – Peak



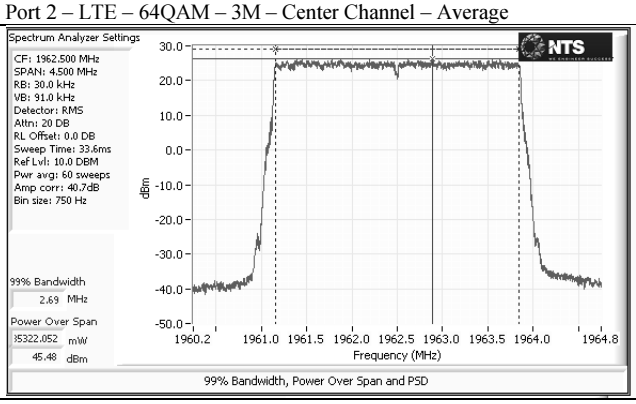
Port 2 – LTE – 16QAM – 3M – Center Channel – Average



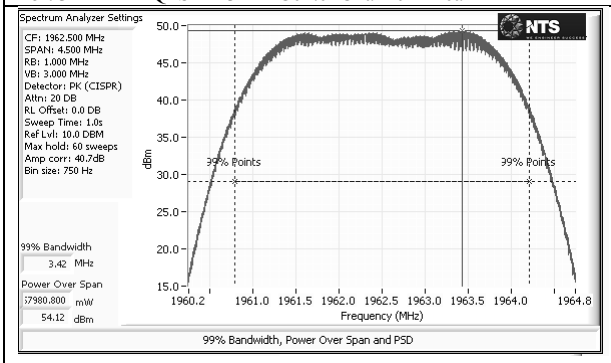
Port 2 – LTE – 64QAM – 3M – Center Channel – Peak



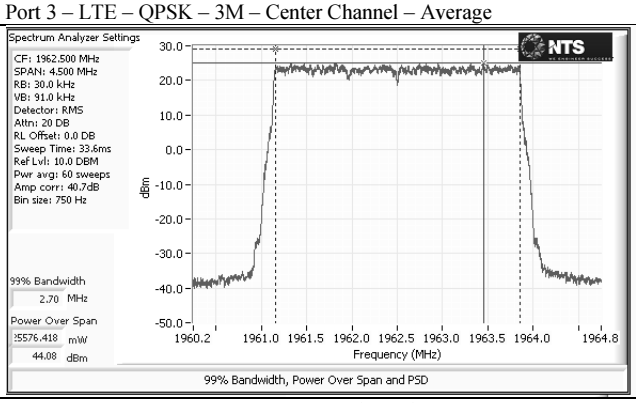
Port 2 – LTE – 64QAM – 3M – Center Channel – Average



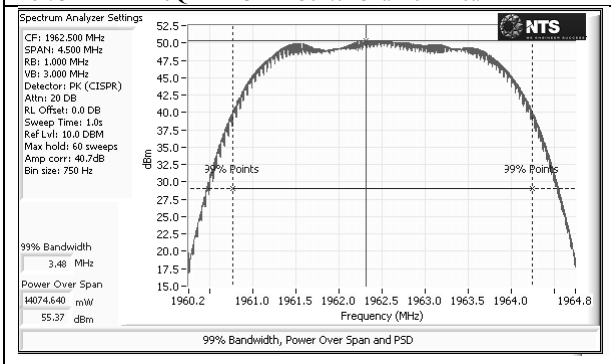
Port 3 – LTE – QPSK – 3M – Center Channel – Peak



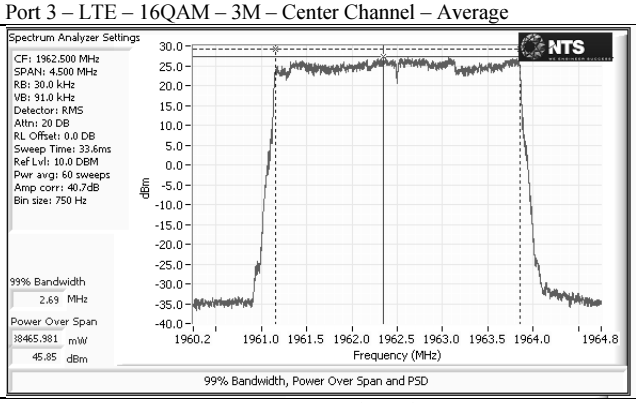
Port 3 – LTE – QPSK – 3M – Center Channel – Average



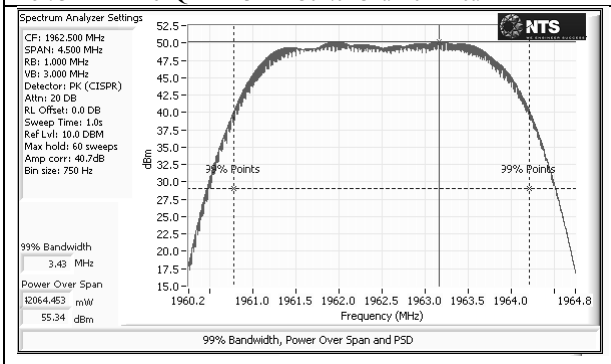
Port 3 – LTE – 16QAM – 3M – Center Channel – Peak



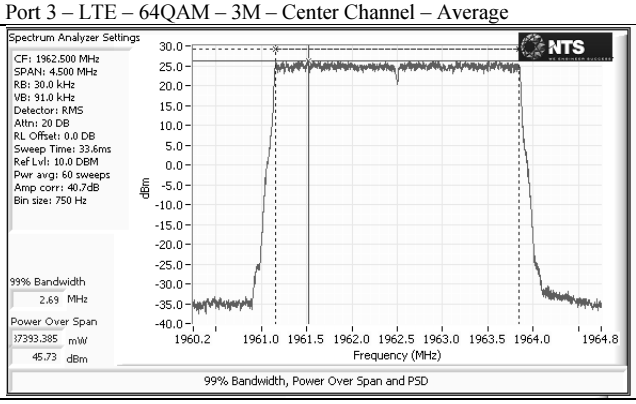
Port 3 – LTE – 16QAM – 3M – Center Channel – Average



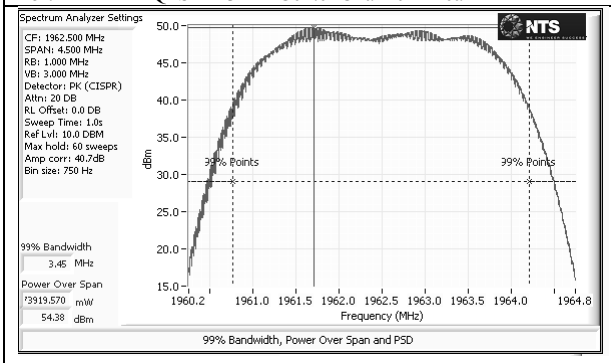
Port 3 – LTE – 64QAM – 3M – Center Channel – Peak



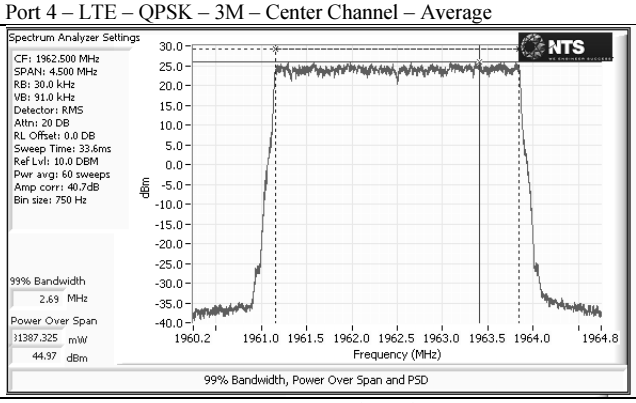
Port 3 – LTE – 64QAM – 3M – Center Channel – Average



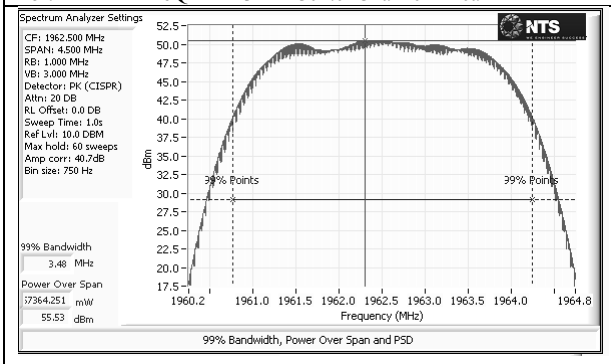
Port 4 – LTE – QPSK – 3M – Center Channel – Peak



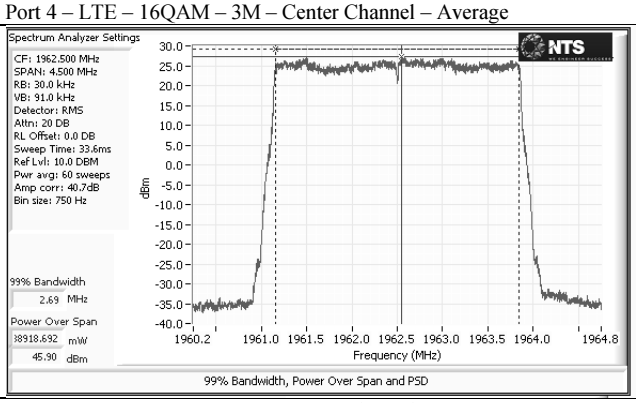
Port 4 – LTE – QPSK – 3M – Center Channel – Average



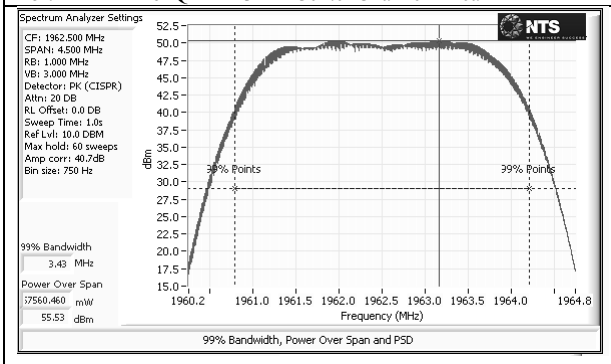
Port 4 – LTE – 16QAM – 3M – Center Channel – Peak



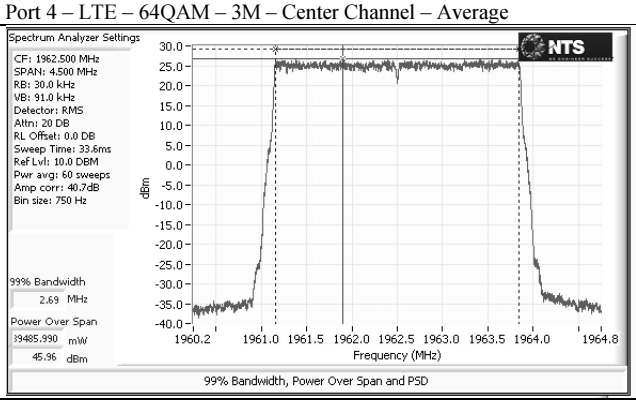
Port 4 – LTE – 16QAM – 3M – Center Channel – Average



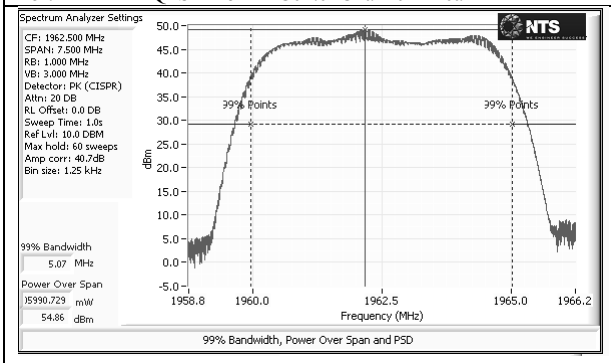
Port 4 – LTE – 64QAM – 3M – Center Channel – Peak



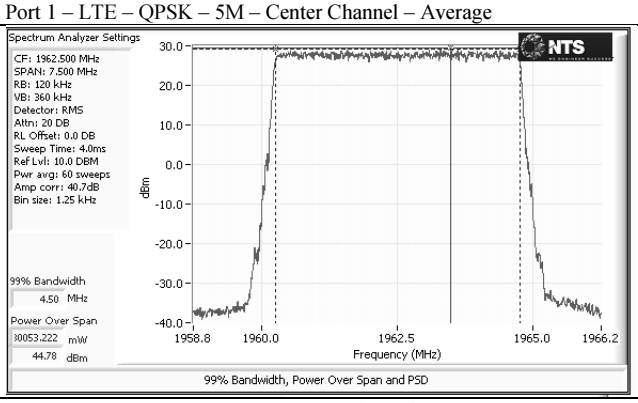
Port 4 – LTE – 64QAM – 3M – Center Channel – Average



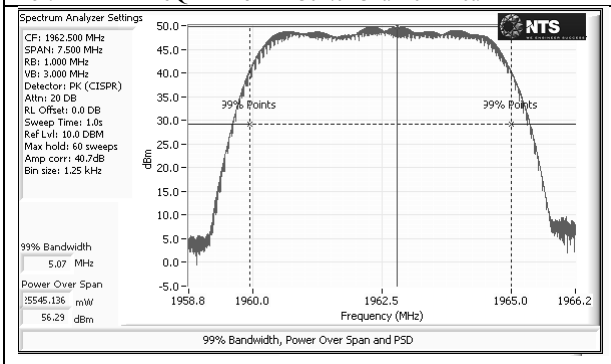
Port 1 – LTE – QPSK – 5M – Center Channel – Peak



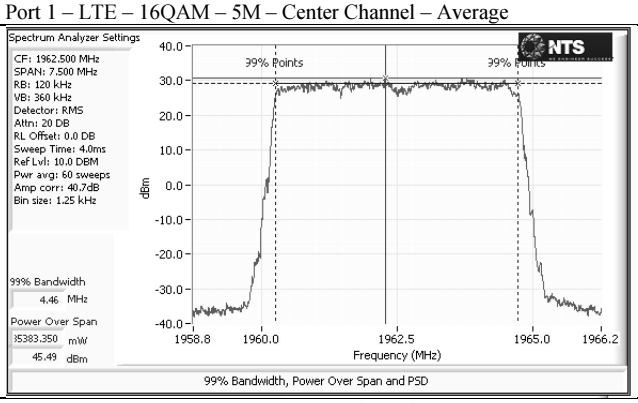
Port 1 – LTE – QPSK – 5M – Center Channel – Average



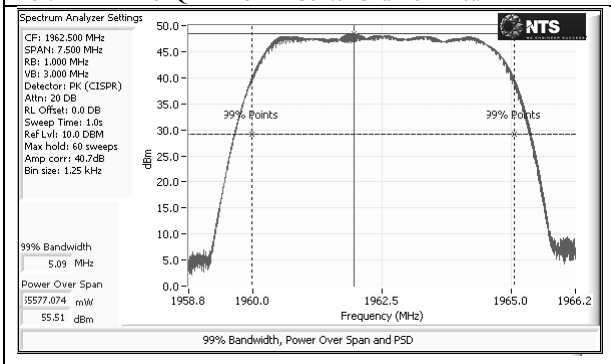
Port 1 – LTE – 16QAM – 5M – Center Channel – Peak



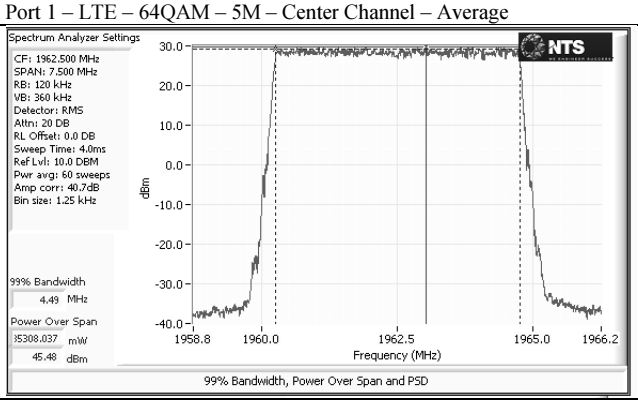
Port 1 – LTE – 16QAM – 5M – Center Channel – Average



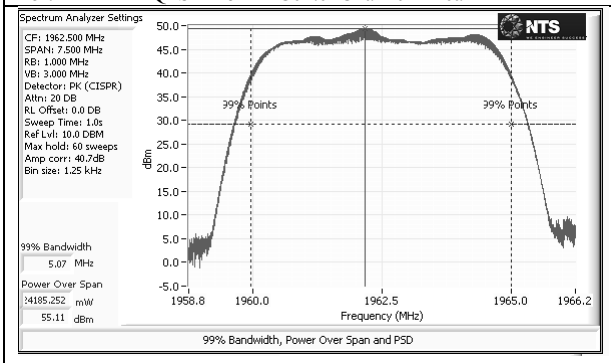
Port 1 – LTE – 64QAM – 5M – Center Channel – Peak



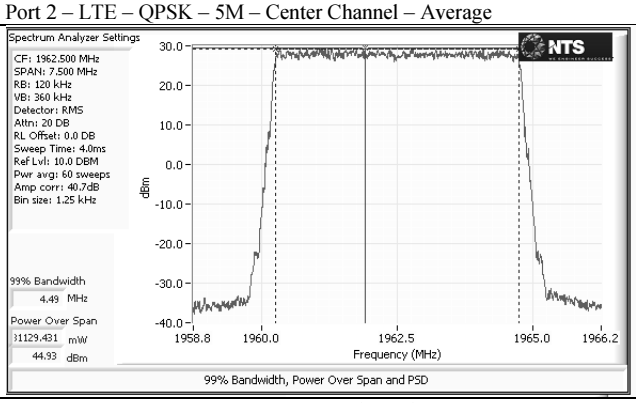
Port 1 – LTE – 64QAM – 5M – Center Channel – Average



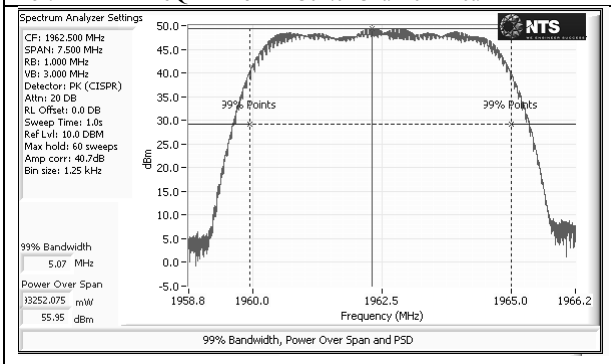
Port 2 – LTE – QPSK – 5M – Center Channel – Peak



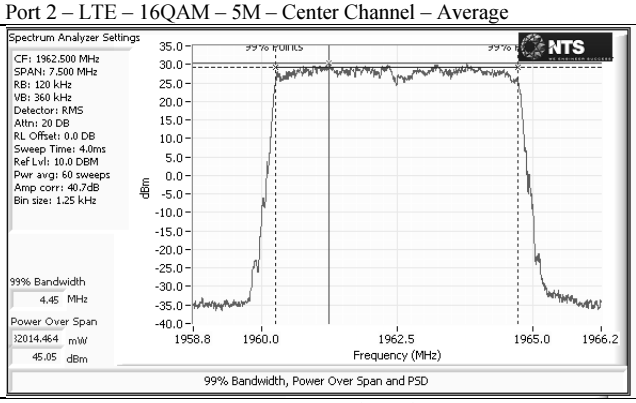
Port 2 – LTE – QPSK – 5M – Center Channel – Average



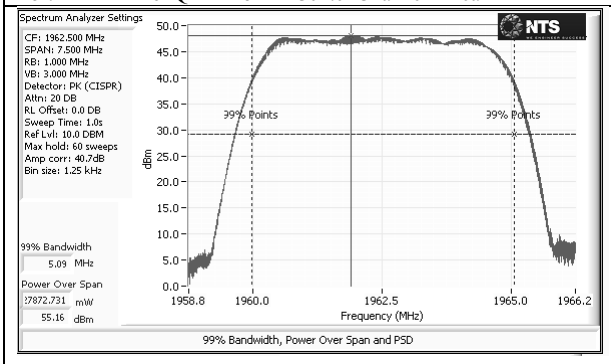
Port 2 – LTE – 16QAM – 5M – Center Channel – Peak



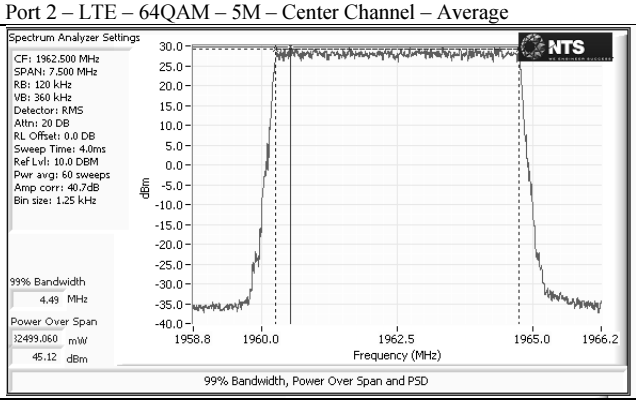
Port 2 – LTE – 16QAM – 5M – Center Channel – Average



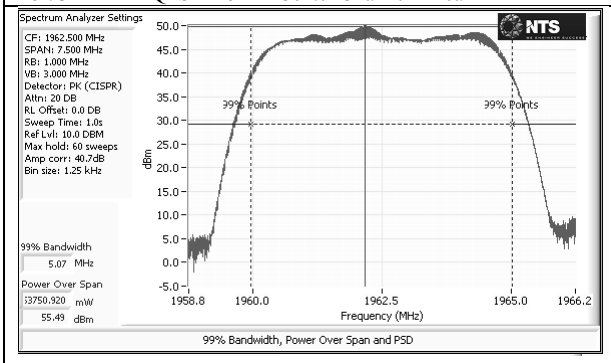
Port 2 – LTE – 64QAM – 5M – Center Channel – Peak



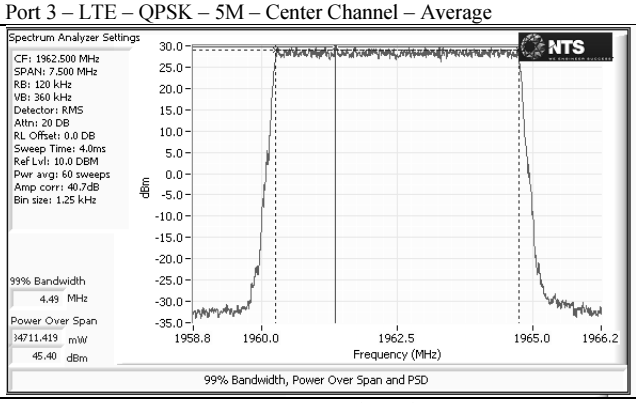
Port 2 – LTE – 64QAM – 5M – Center Channel – Average



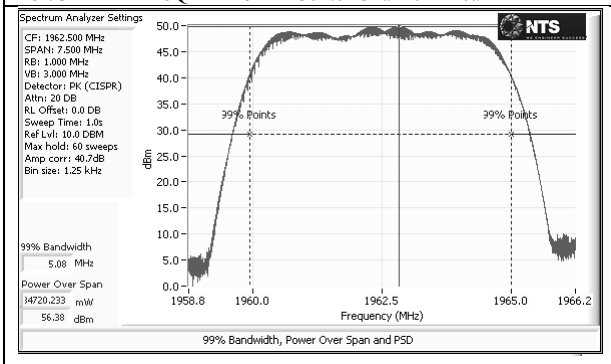
Port 3 – LTE – QPSK – 5M – Center Channel – Peak



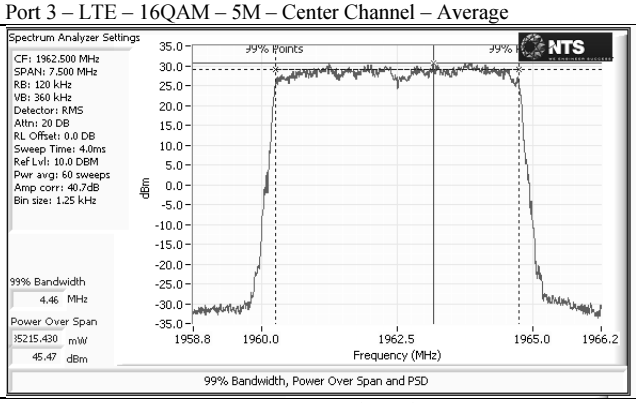
Port 3 – LTE – QPSK – 5M – Center Channel – Average



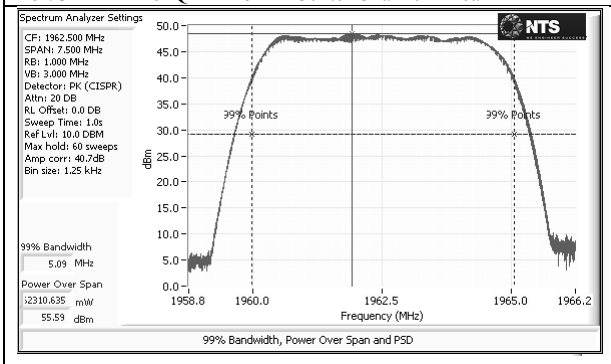
Port 3 – LTE – 16QAM – 5M – Center Channel – Peak



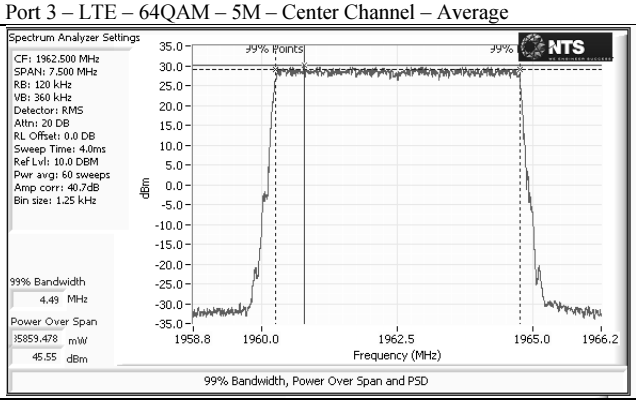
Port 3 – LTE – 16QAM – 5M – Center Channel – Average



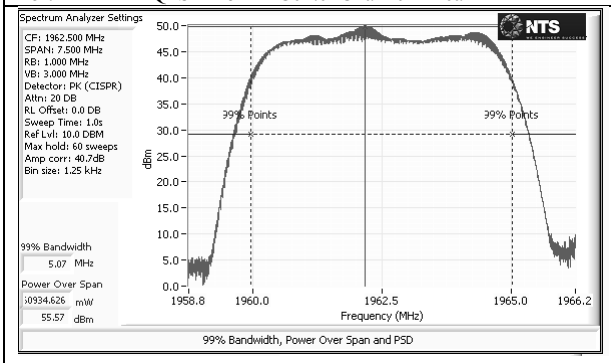
Port 3 – LTE – 64QAM – 5M – Center Channel – Peak



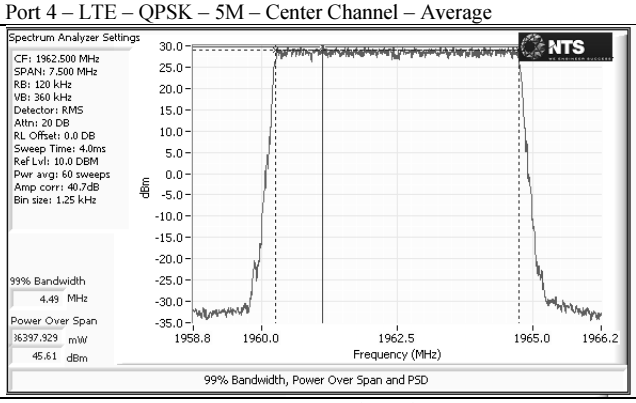
Port 3 – LTE – 64QAM – 5M – Center Channel – Average



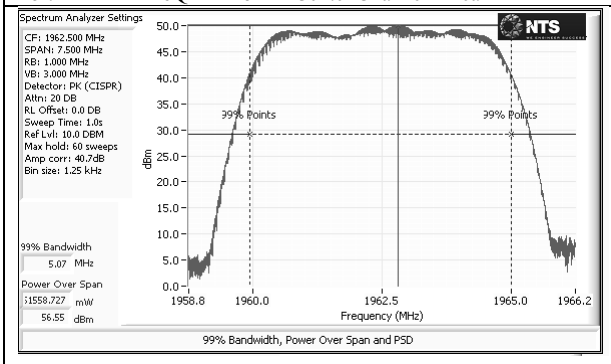
Port 4 – LTE – QPSK – 5M – Center Channel – Peak



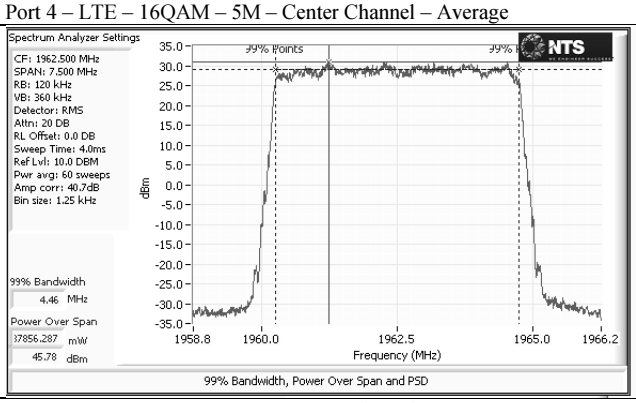
Port 4 – LTE – QPSK – 5M – Center Channel – Average



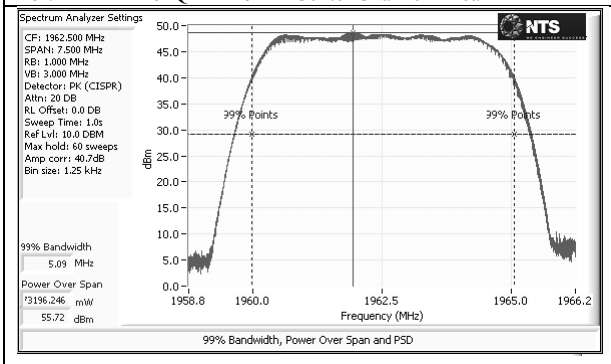
Port 4 – LTE – 16QAM – 5M – Center Channel – Peak



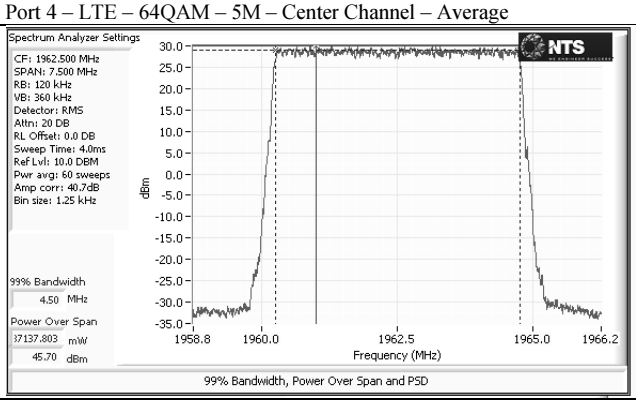
Port 4 – LTE – 16QAM – 5M – Center Channel – Average



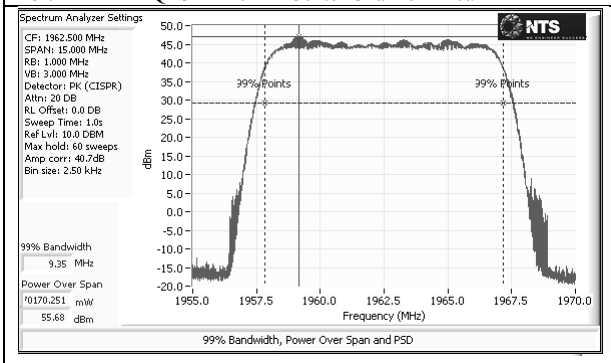
Port 4 – LTE – 64QAM – 5M – Center Channel – Peak



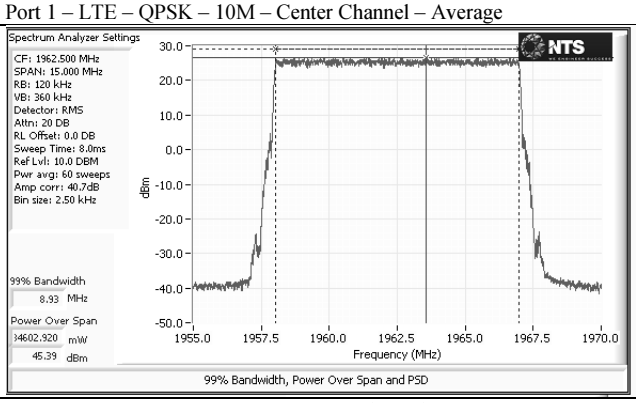
Port 4 – LTE – 64QAM – 5M – Center Channel – Average



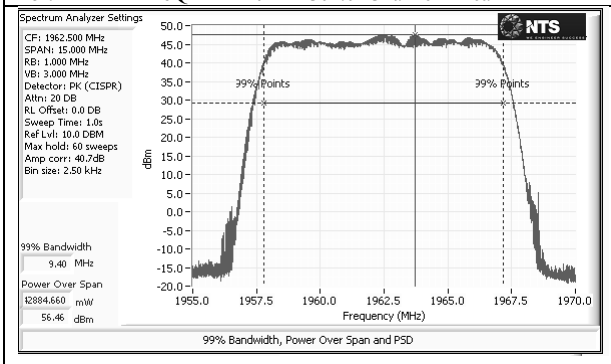
Port 1 – LTE – QPSK – 10M – Center Channel – Peak



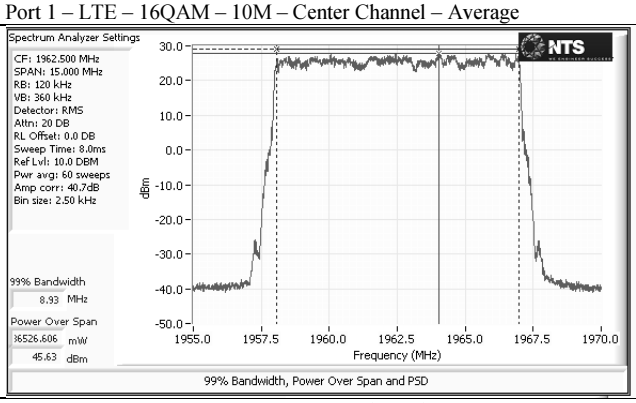
Port 1 – LTE – QPSK – 10M – Center Channel – Average



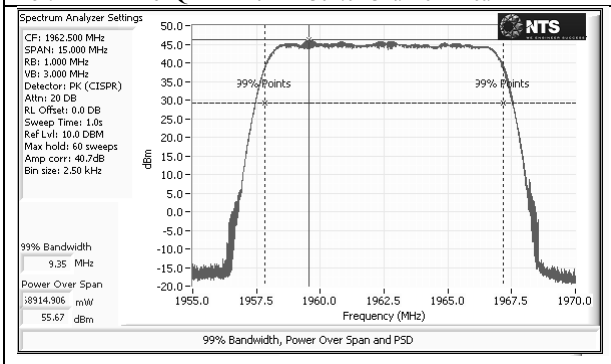
Port 1 – LTE – 16QAM – 10M – Center Channel – Peak



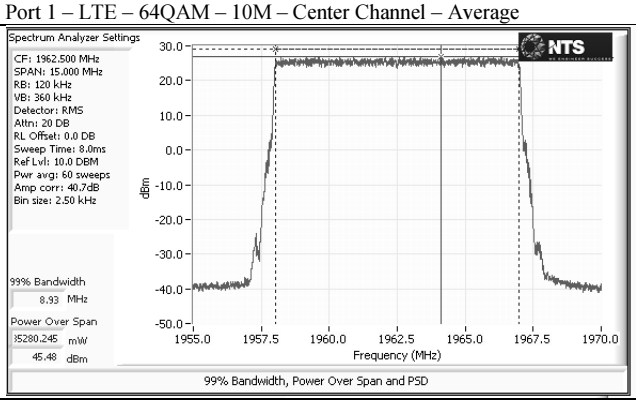
Port 1 – LTE – 16QAM – 10M – Center Channel – Average



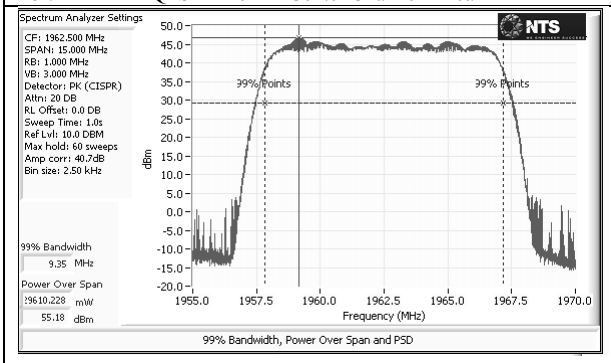
Port 1 – LTE – 64QAM – 10M – Center Channel – Peak



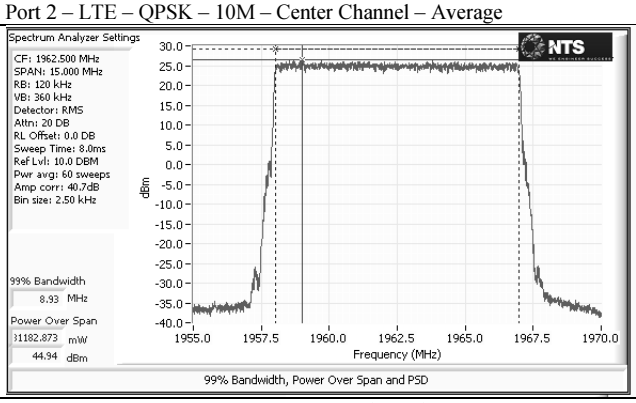
Port 1 – LTE – 64QAM – 10M – Center Channel – Average



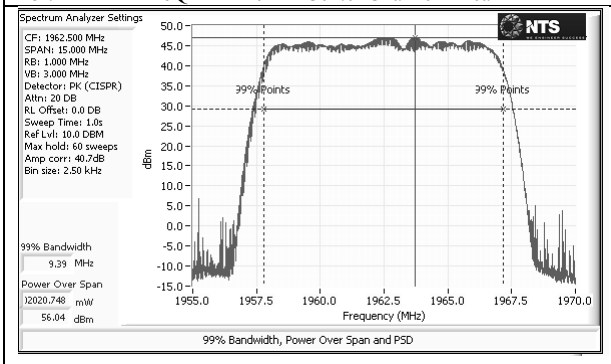
Port 2 – LTE – QPSK – 10M – Center Channel – Peak



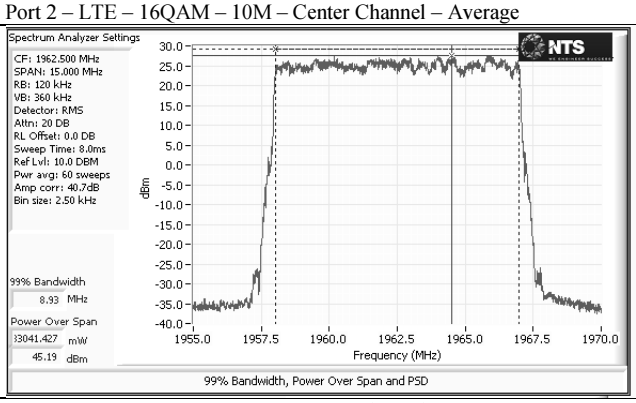
Port 2 – LTE – QPSK – 10M – Center Channel – Average



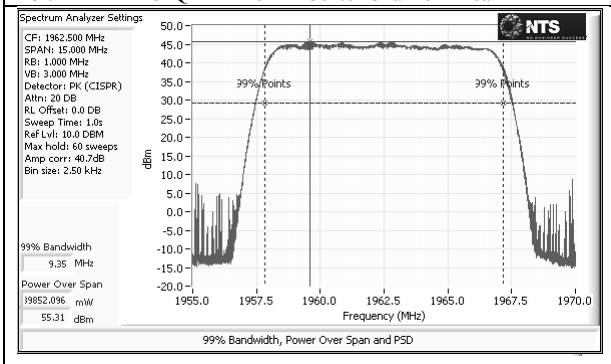
Port 2 – LTE – 16QAM – 10M – Center Channel – Peak



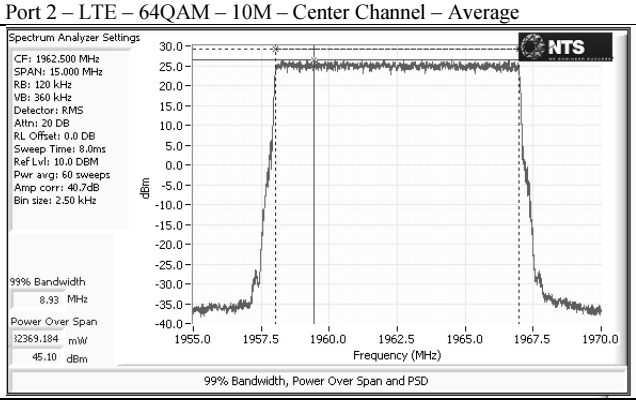
Port 2 – LTE – 16QAM – 10M – Center Channel – Average



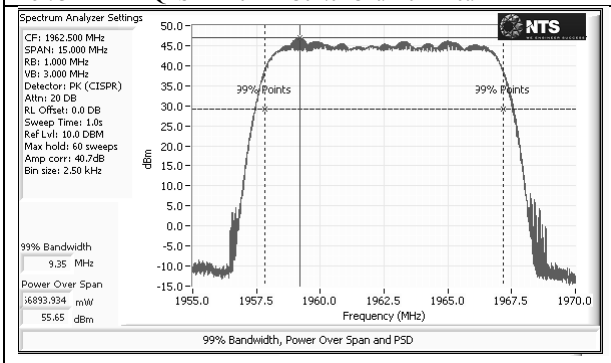
Port 2 – LTE – 64QAM – 10M – Center Channel – Peak



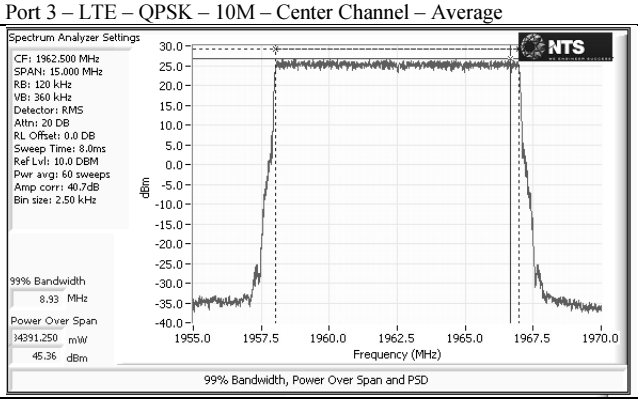
Port 2 – LTE – 64QAM – 10M – Center Channel – Average



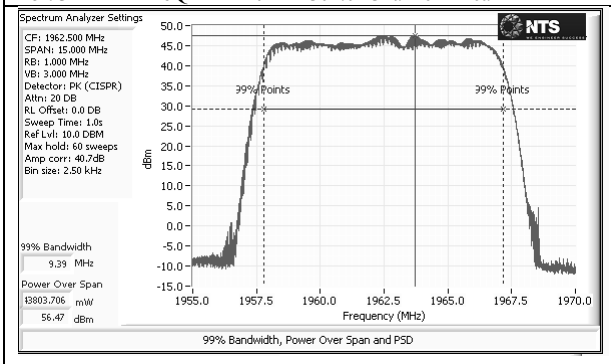
Port 3 – LTE – QPSK – 10M – Center Channel – Peak



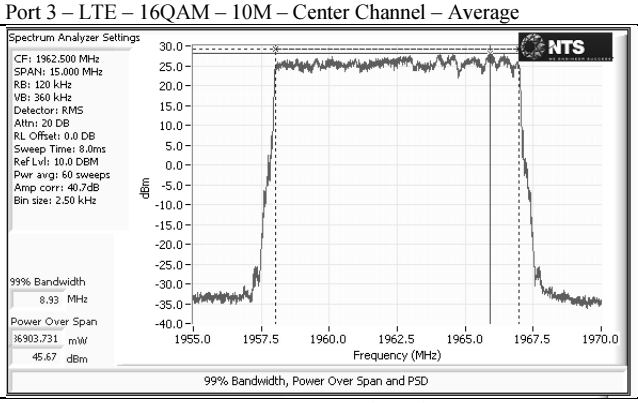
Port 3 – LTE – QPSK – 10M – Center Channel – Average



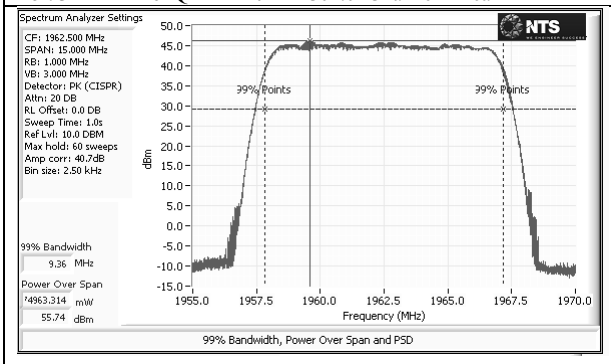
Port 3 – LTE – 16QAM – 10M – Center Channel – Peak



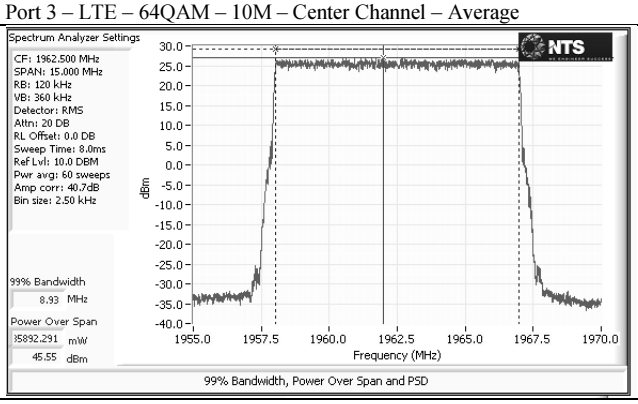
Port 3 – LTE – 16QAM – 10M – Center Channel – Average



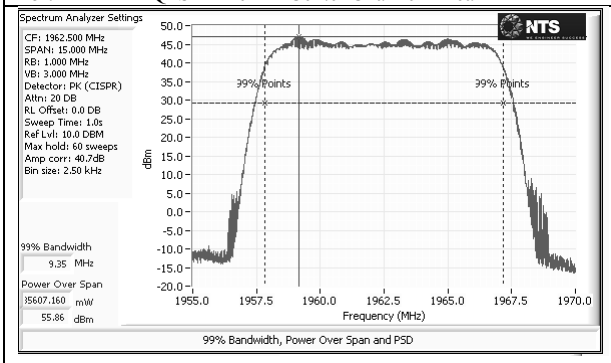
Port 3 – LTE – 64QAM – 10M – Center Channel – Peak



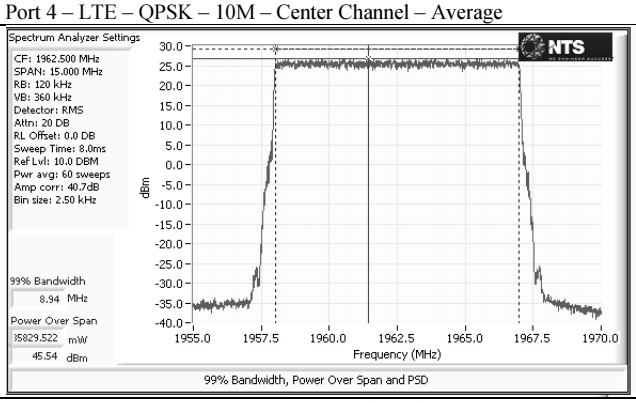
Port 3 – LTE – 64QAM – 10M – Center Channel – Average



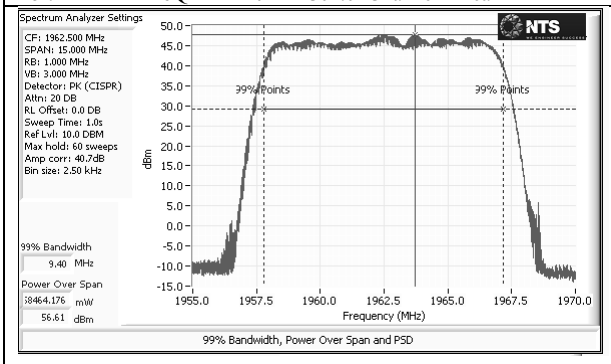
Port 4 – LTE – QPSK – 10M – Center Channel – Peak



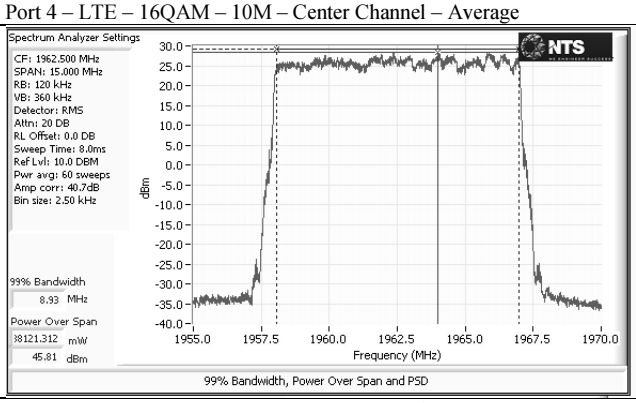
Port 4 – LTE – QPSK – 10M – Center Channel – Average



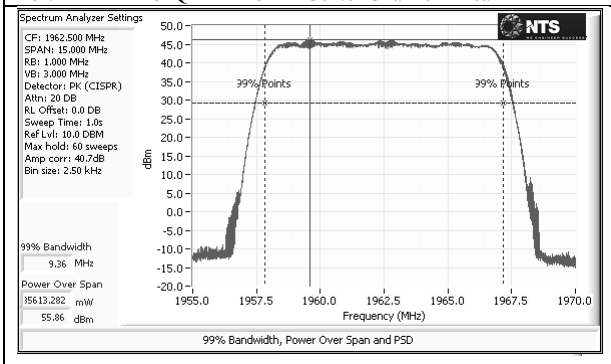
Port 4 – LTE – 16QAM – 10M – Center Channel – Peak



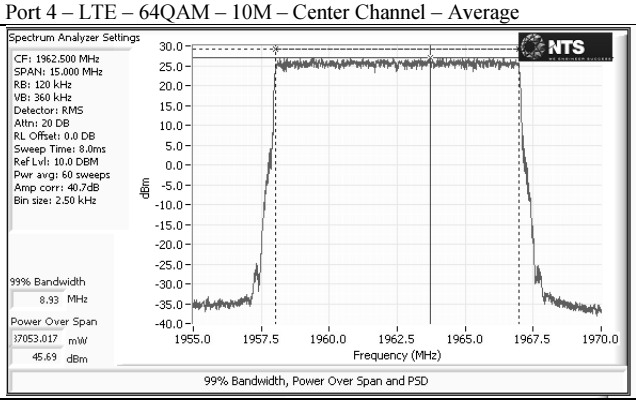
Port 4 – LTE – 16QAM – 10M – Center Channel – Average



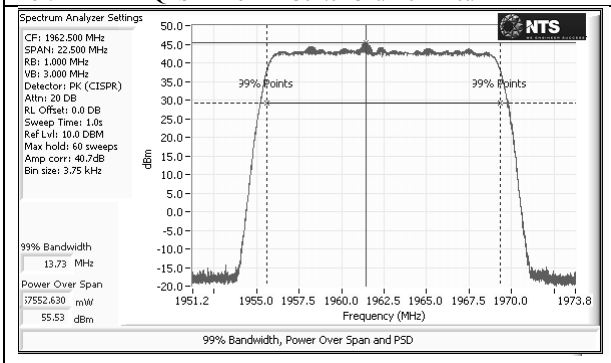
Port 4 – LTE – 64QAM – 10M – Center Channel – Peak



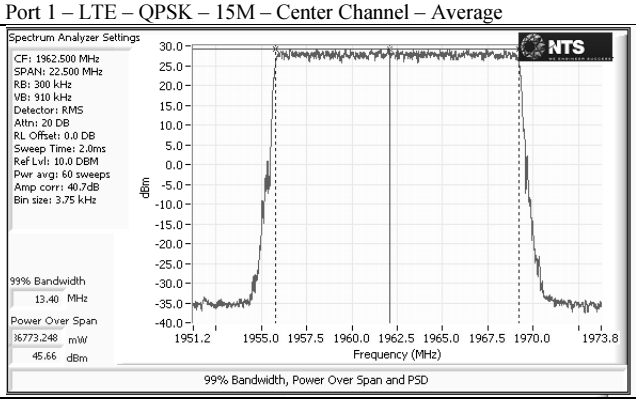
Port 4 – LTE – 64QAM – 10M – Center Channel – Average



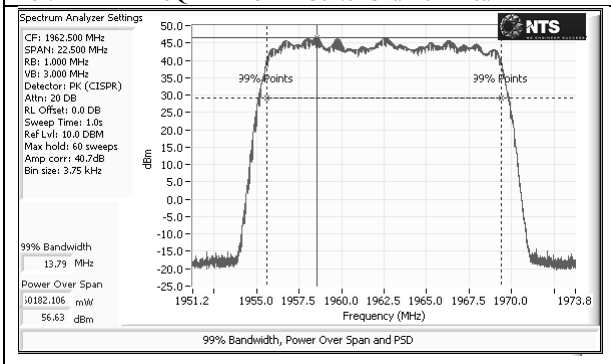
Port 1 – LTE – QPSK – 15M – Center Channel – Peak



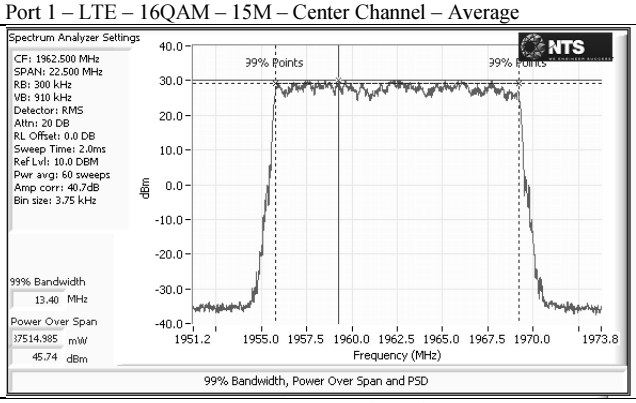
Port 1 – LTE – QPSK – 15M – Center Channel – Average



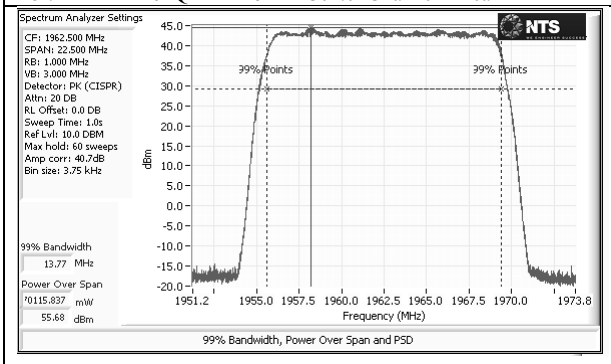
Port 1 – LTE – 16QAM – 15M – Center Channel – Peak



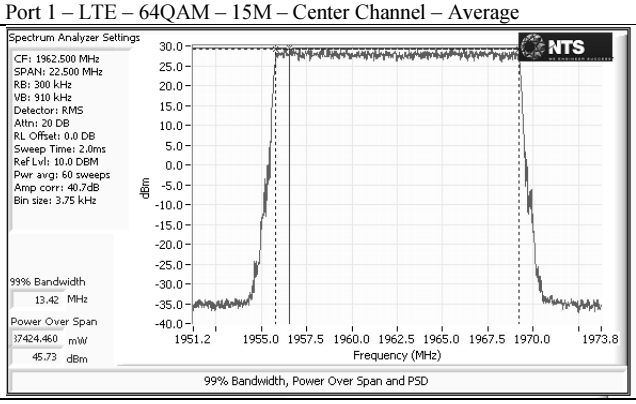
Port 1 – LTE – 16QAM – 15M – Center Channel – Average



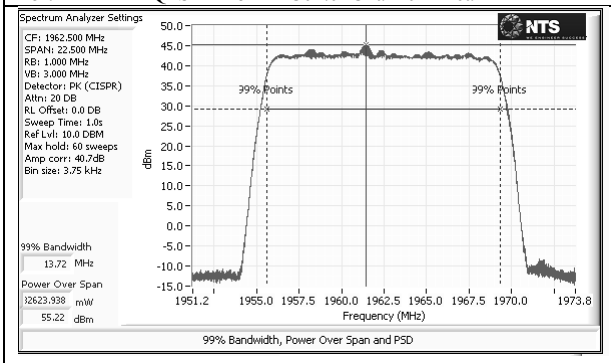
Port 1 – LTE – 64QAM – 15M – Center Channel – Peak



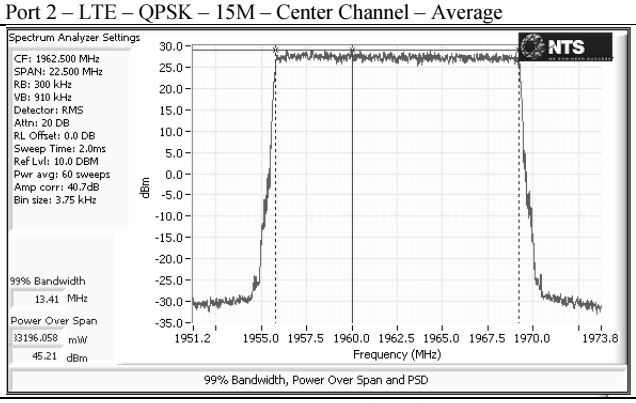
Port 1 – LTE – 64QAM – 15M – Center Channel – Average



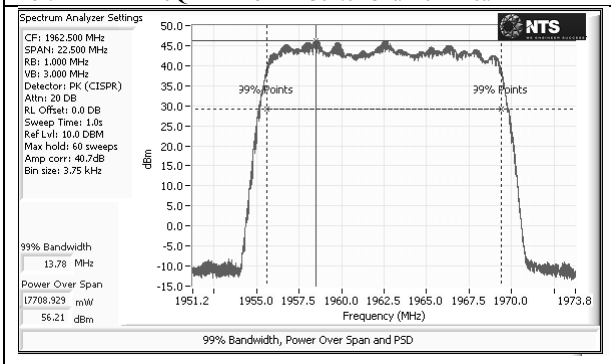
Port 2 – LTE – QPSK – 15M – Center Channel – Peak



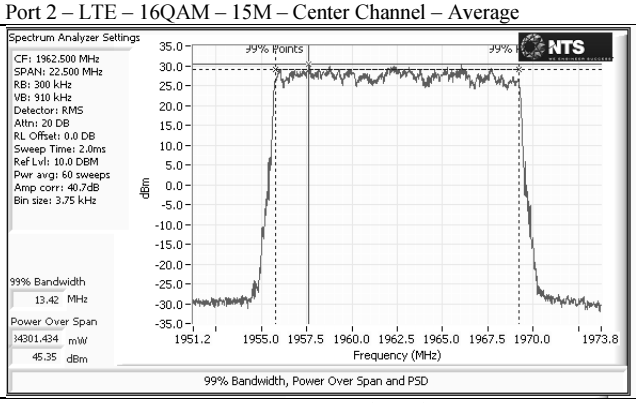
Port 2 – LTE – QPSK – 15M – Center Channel – Average



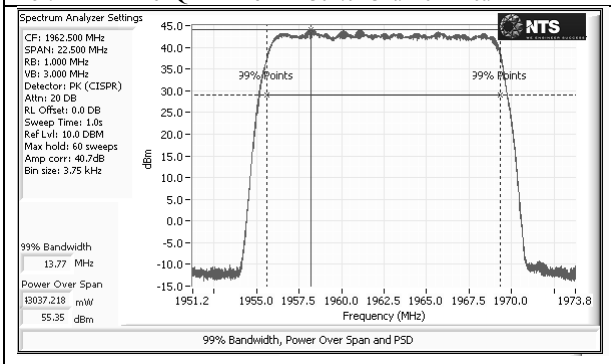
Port 2 – LTE – 16QAM – 15M – Center Channel – Peak



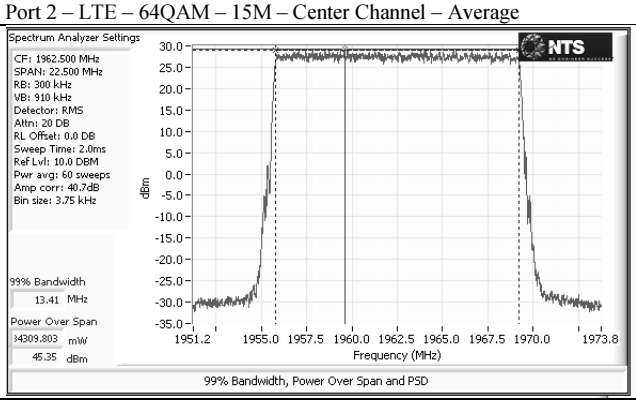
Port 2 – LTE – 16QAM – 15M – Center Channel – Average



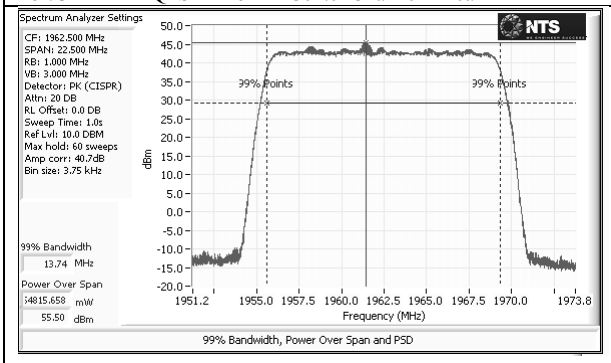
Port 2 – LTE – 64QAM – 15M – Center Channel – Peak



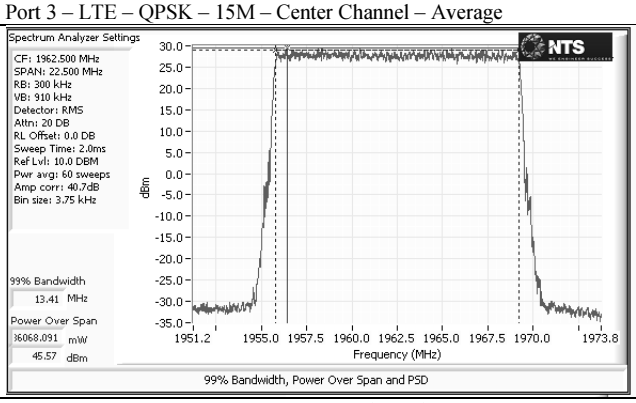
Port 2 – LTE – 64QAM – 15M – Center Channel – Average



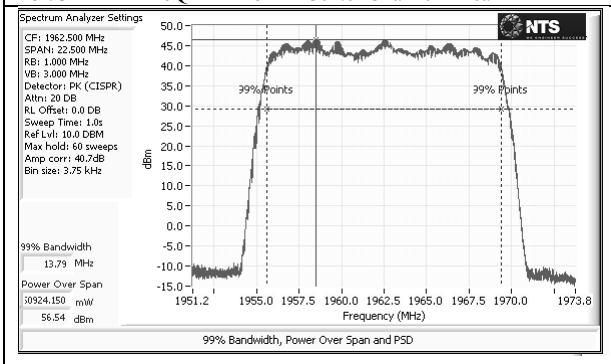
Port 3 – LTE – QPSK – 15M – Center Channel – Peak



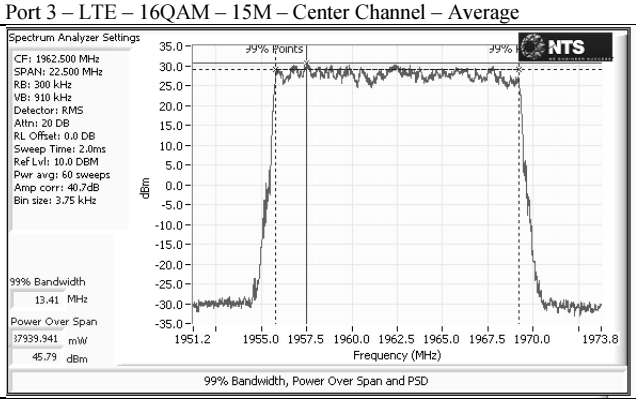
Port 3 – LTE – QPSK – 15M – Center Channel – Average



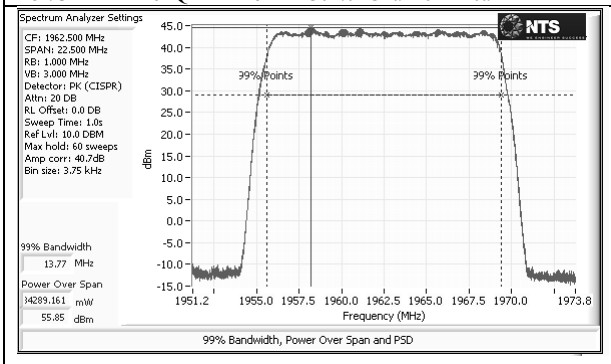
Port 3 – LTE – 16QAM – 15M – Center Channel – Peak



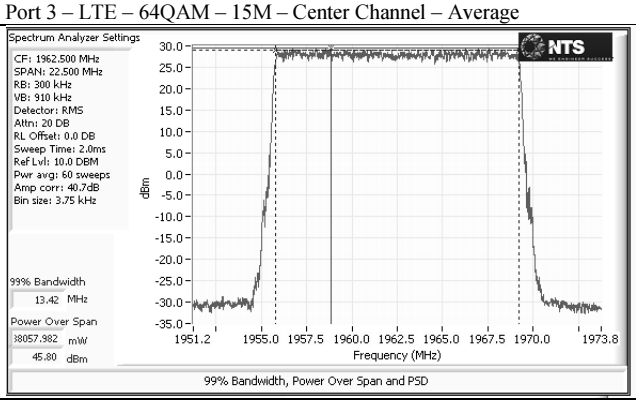
Port 3 – LTE – 16QAM – 15M – Center Channel – Average



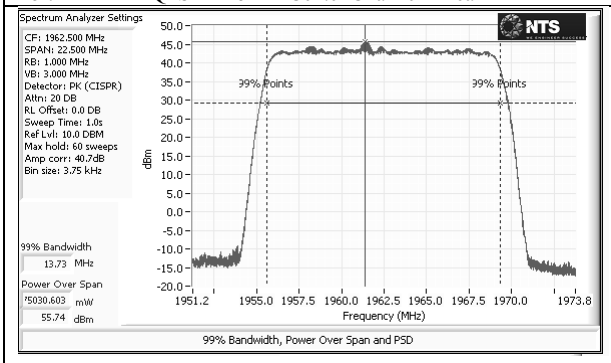
Port 3 – LTE – 64QAM – 15M – Center Channel – Peak



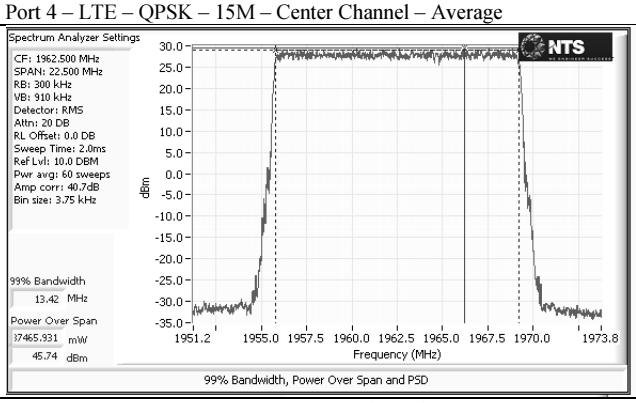
Port 3 – LTE – 64QAM – 15M – Center Channel – Average



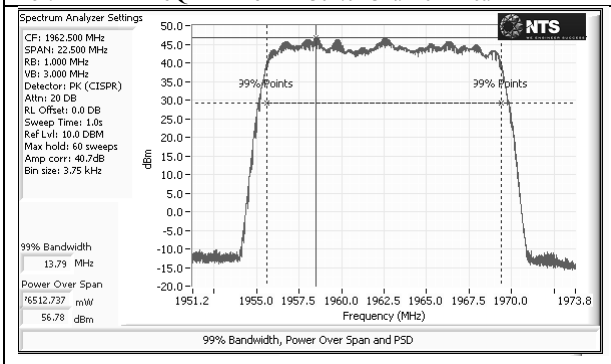
Port 4 – LTE – QPSK – 15M – Center Channel – Peak



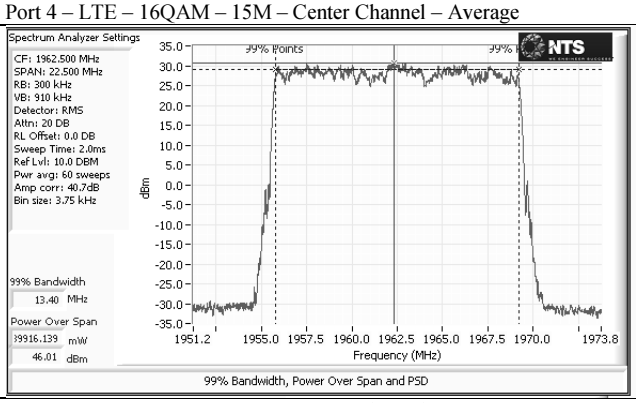
Port 4 – LTE – QPSK – 15M – Center Channel – Average



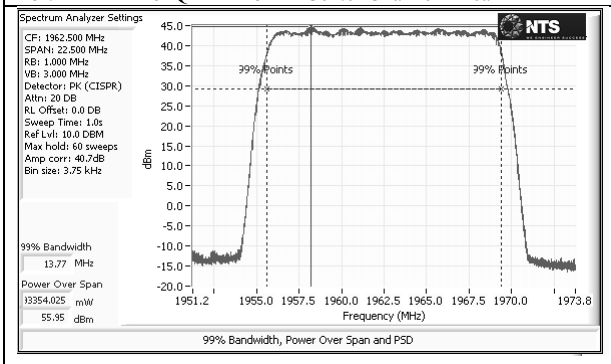
Port 4 – LTE – 16QAM – 15M – Center Channel – Peak



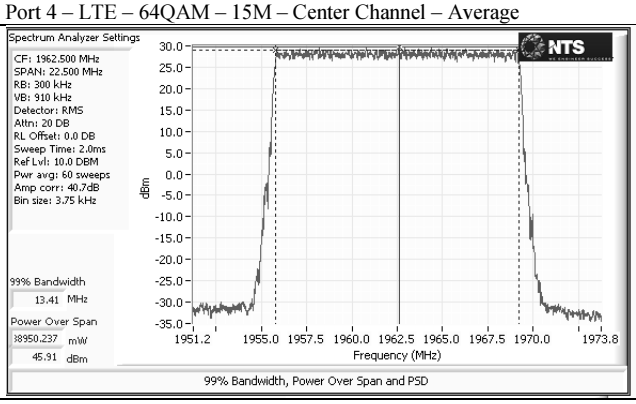
Port 4 – LTE – 16QAM – 15M – Center Channel – Average



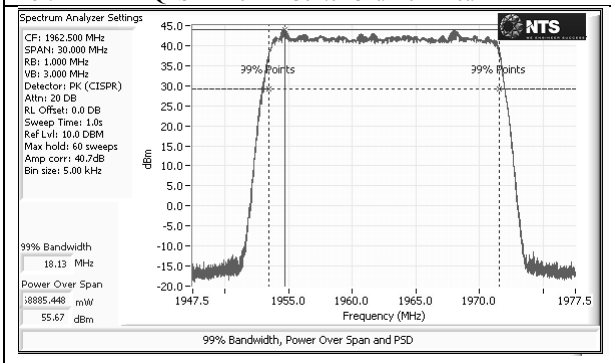
Port 4 – LTE – 64QAM – 15M – Center Channel – Peak



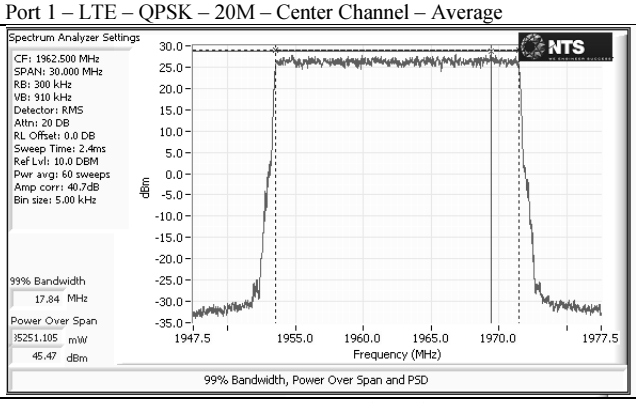
Port 4 – LTE – 64QAM – 15M – Center Channel – Average



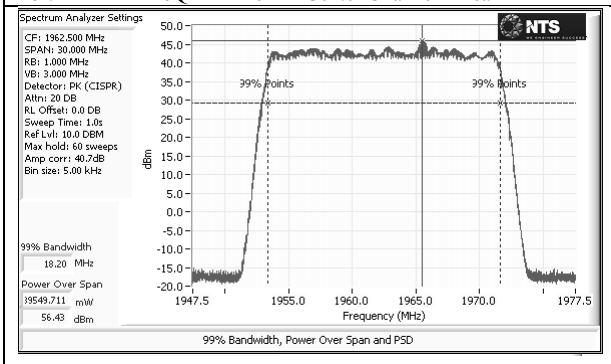
Port 1 – LTE – QPSK – 20M – Center Channel – Peak



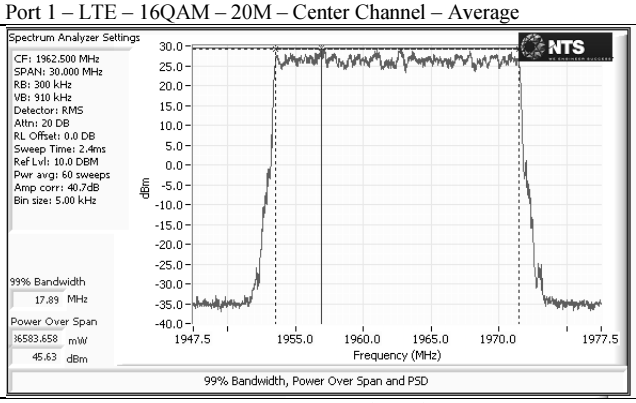
Port 1 – LTE – QPSK – 20M – Center Channel – Average



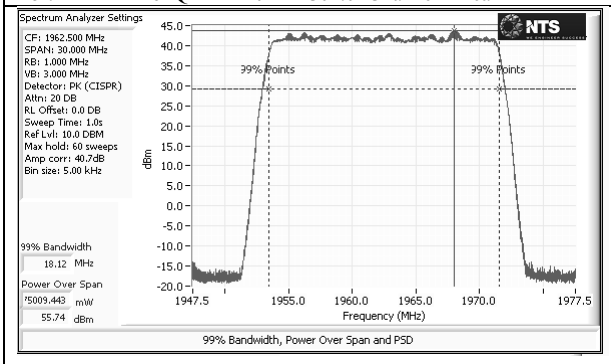
Port 1 – LTE – 16QAM – 20M – Center Channel – Peak



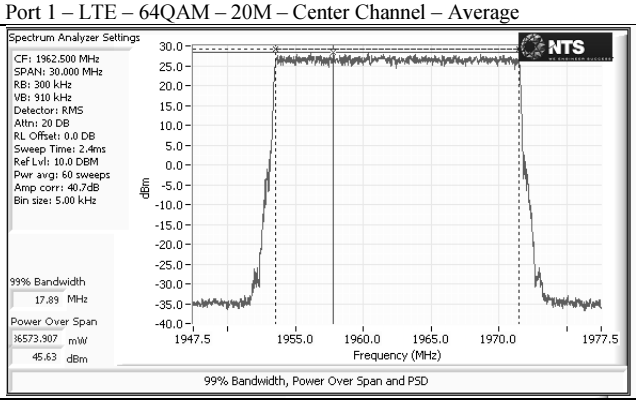
Port 1 – LTE – 16QAM – 20M – Center Channel – Average



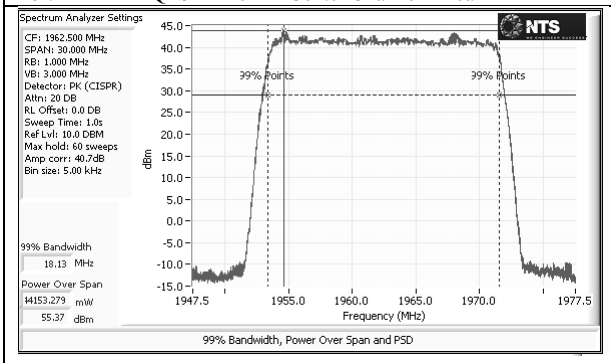
Port 1 – LTE – 64QAM – 20M – Center Channel – Peak



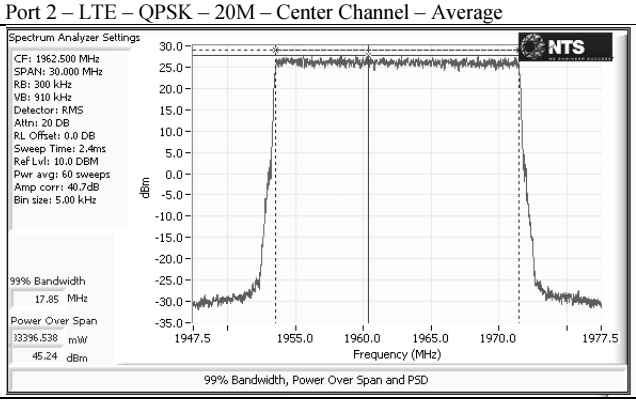
Port 1 – LTE – 64QAM – 20M – Center Channel – Average



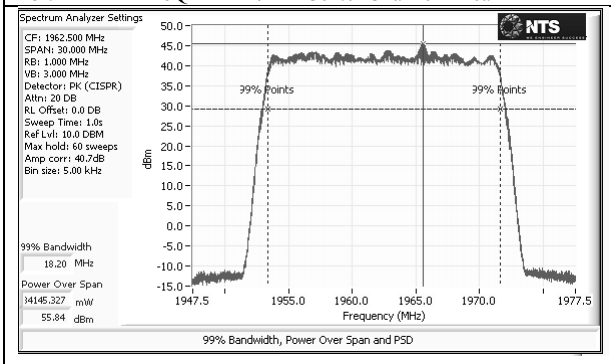
Port 2 – LTE – QPSK – 20M – Center Channel – Peak



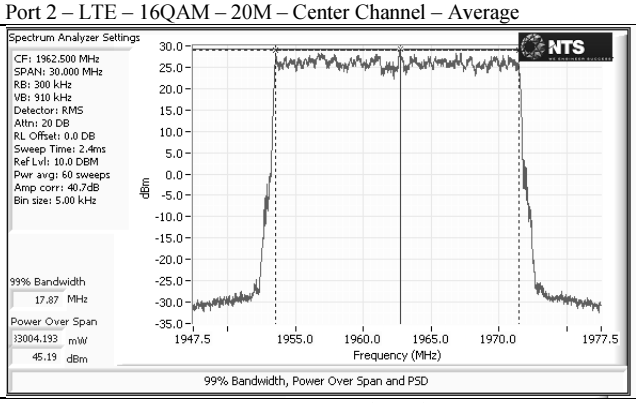
Port 2 – LTE – QPSK – 20M – Center Channel – Average



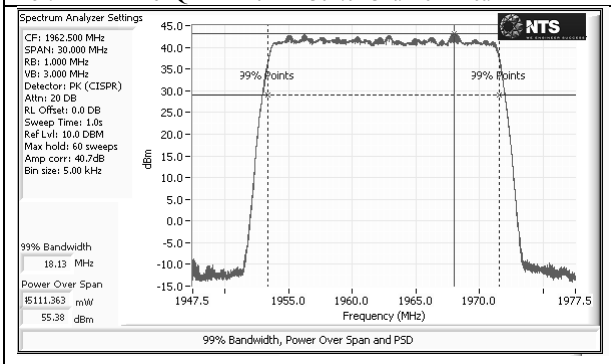
Port 2 – LTE – 16QAM – 20M – Center Channel – Peak



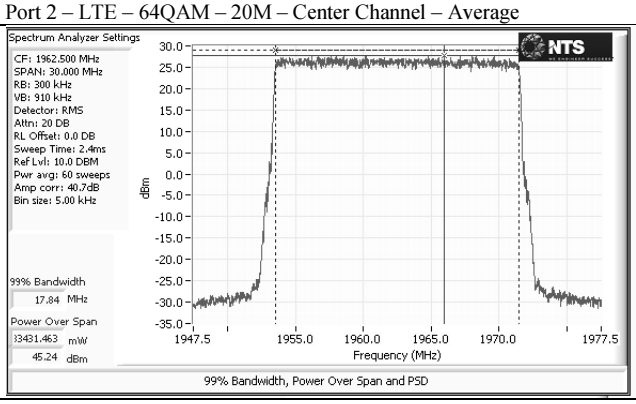
Port 2 – LTE – 16QAM – 20M – Center Channel – Average



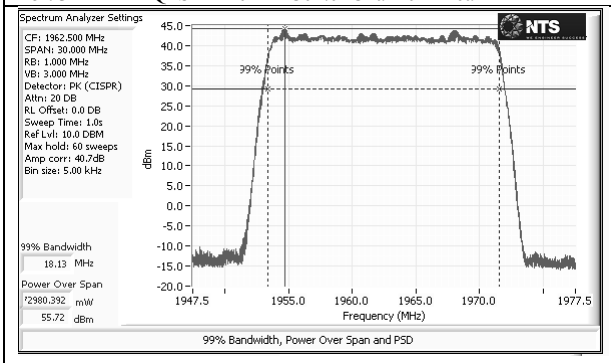
Port 2 – LTE – 64QAM – 20M – Center Channel – Peak



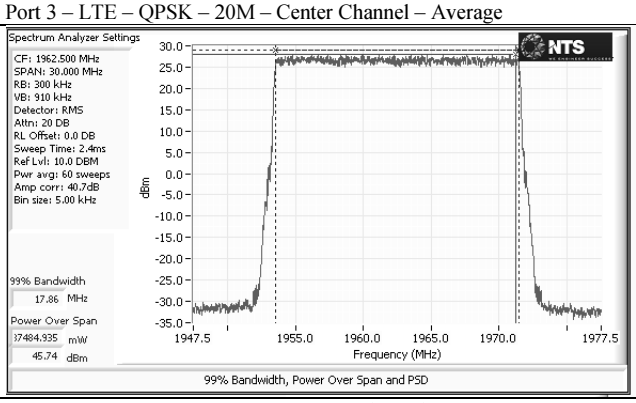
Port 2 – LTE – 64QAM – 20M – Center Channel – Average



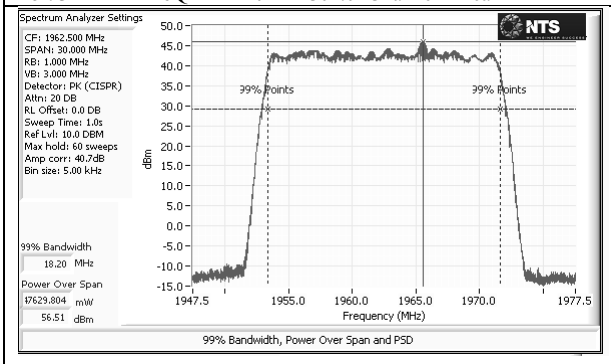
Port 3 – LTE – QPSK – 20M – Center Channel – Peak



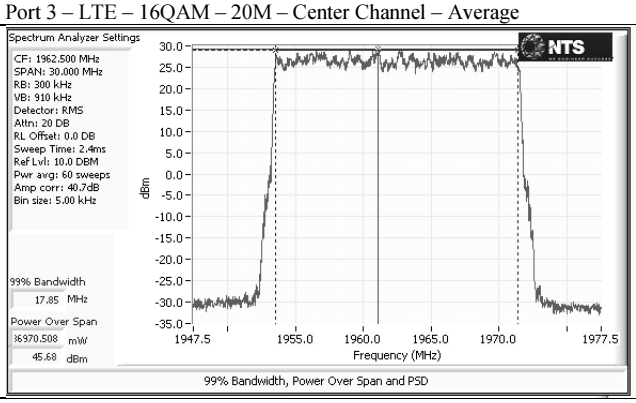
Port 3 – LTE – QPSK – 20M – Center Channel – Average



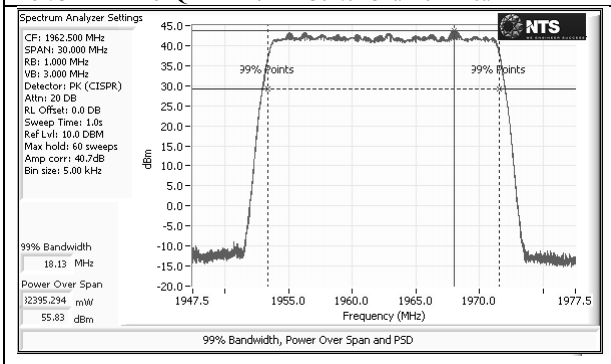
Port 3 – LTE – 16QAM – 20M – Center Channel – Peak



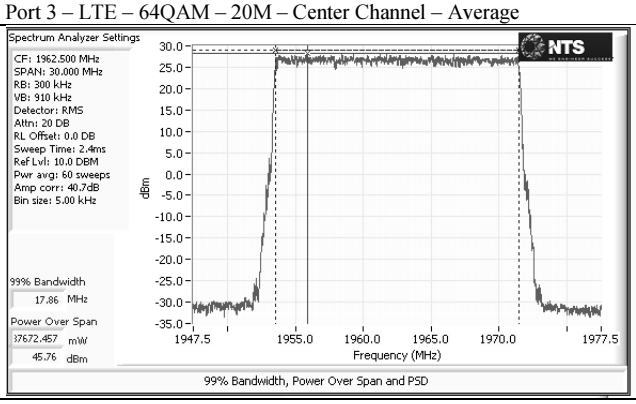
Port 3 – LTE – 16QAM – 20M – Center Channel – Average



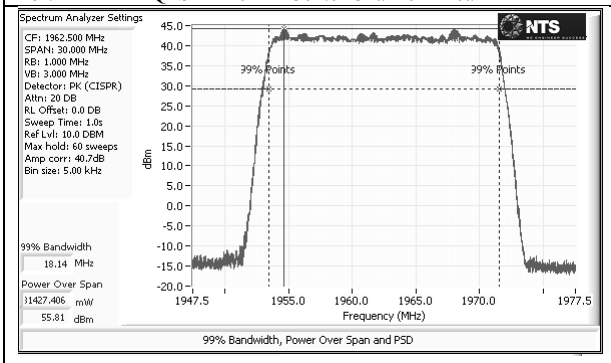
Port 3 – LTE – 64QAM – 20M – Center Channel – Peak



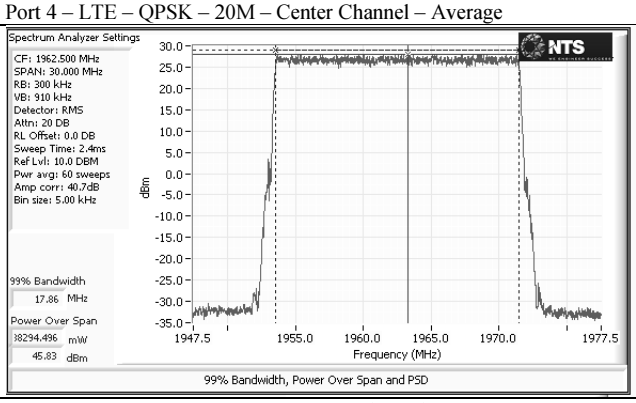
Port 3 – LTE – 64QAM – 20M – Center Channel – Average



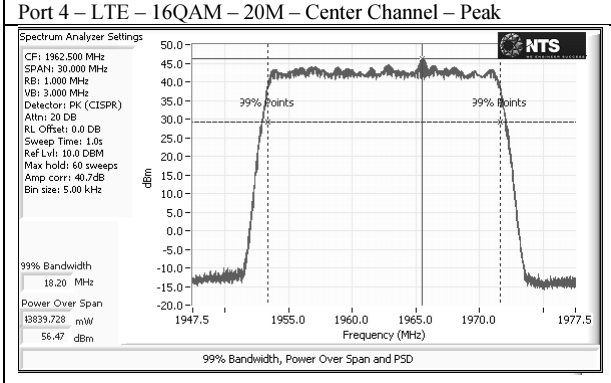
Port 4 – LTE – QPSK – 20M – Center Channel – Peak



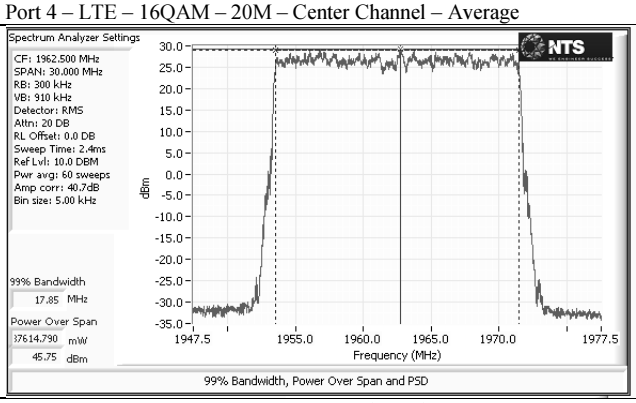
Port 4 – LTE – QPSK – 20M – Center Channel – Average



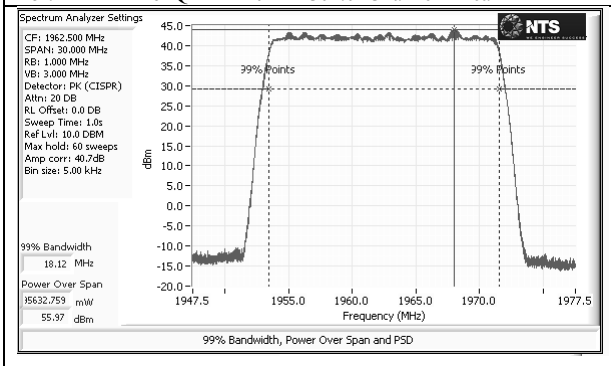
Port 4 – LTE – 16QAM – 20M – Center Channel – Peak



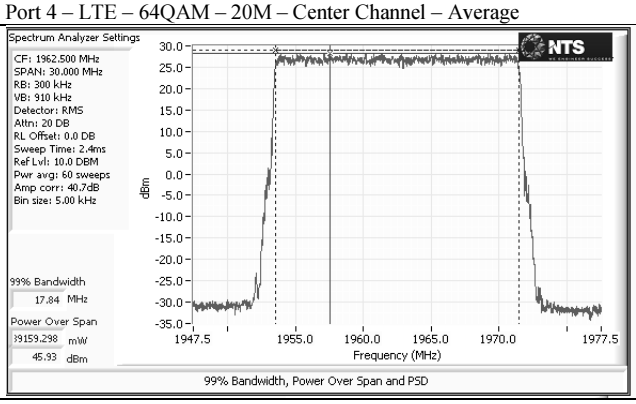
Port 4 – LTE – 16QAM – 20M – Center Channel – Average



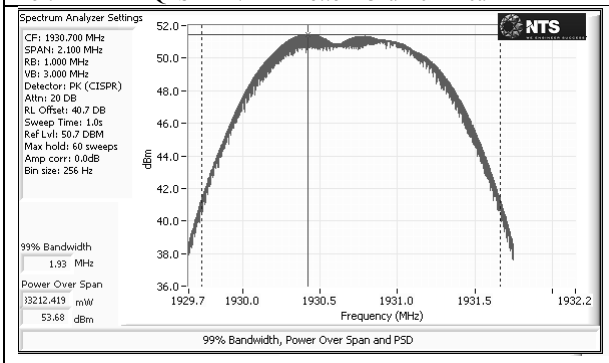
Port 4 – LTE – 64QAM – 20M – Center Channel – Peak



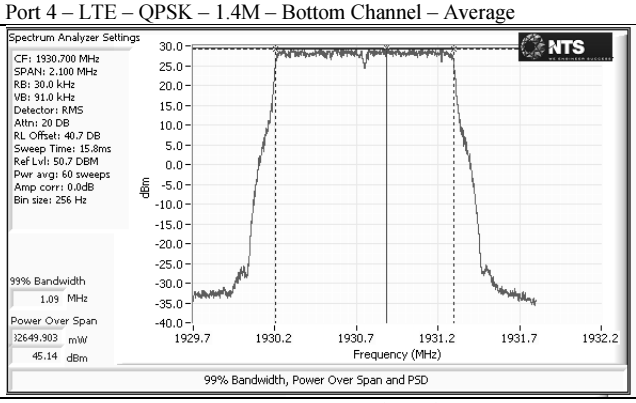
Port 4 – LTE – 64QAM – 20M – Center Channel – Average



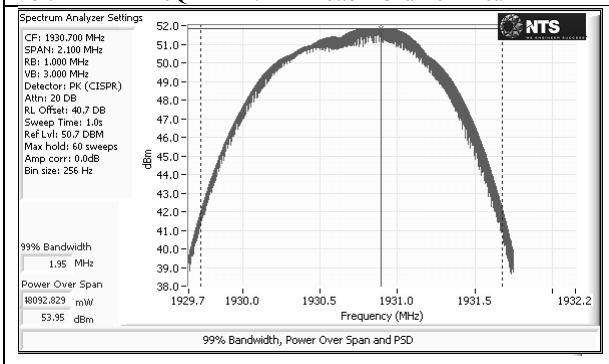
Port 4 – LTE – QPSK – 1.4M – Bottom Channel – Peak



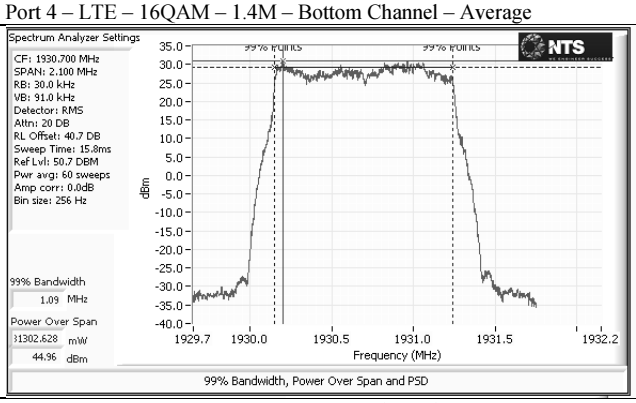
Port 4 – LTE – QPSK – 1.4M – Bottom Channel – Average



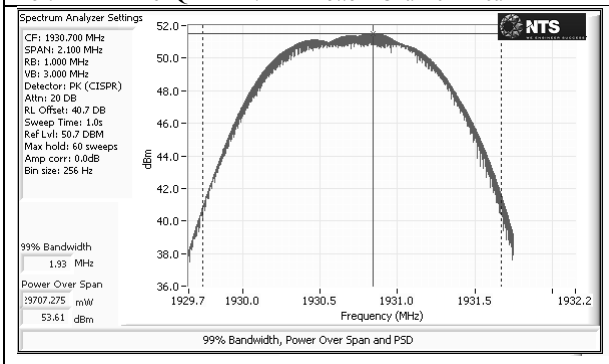
Port 4 – LTE – 16QAM – 1.4M – Bottom Channel – Peak



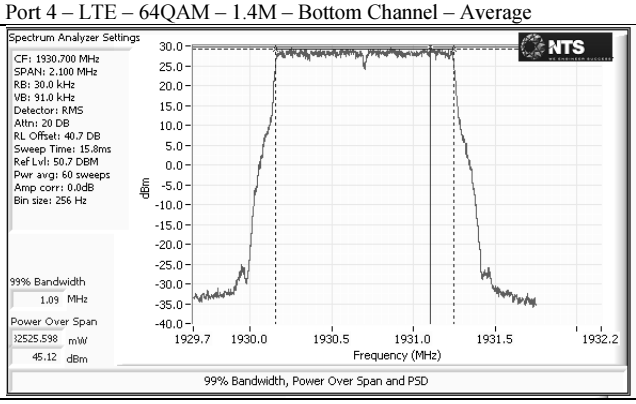
Port 4 – LTE – 16QAM – 1.4M – Bottom Channel – Average



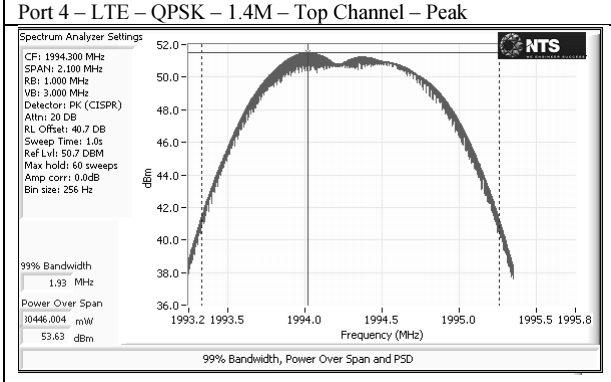
Port 4 – LTE – 64QAM – 1.4M – Bottom Channel – Peak



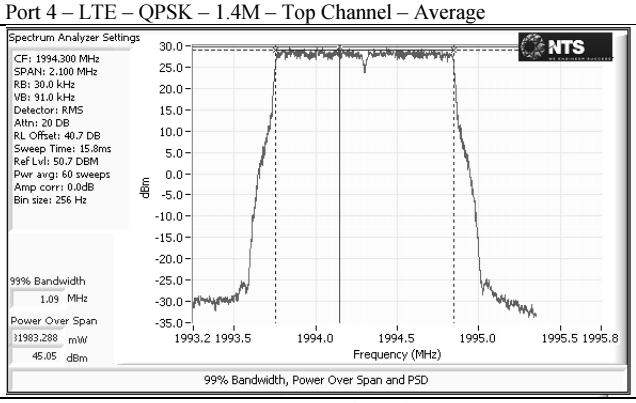
Port 4 – LTE – 64QAM – 1.4M – Bottom Channel – Average



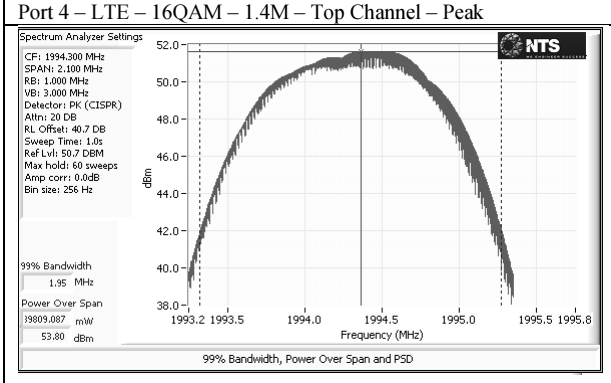
Port 4 – LTE – QPSK – 1.4M – Top Channel – Peak



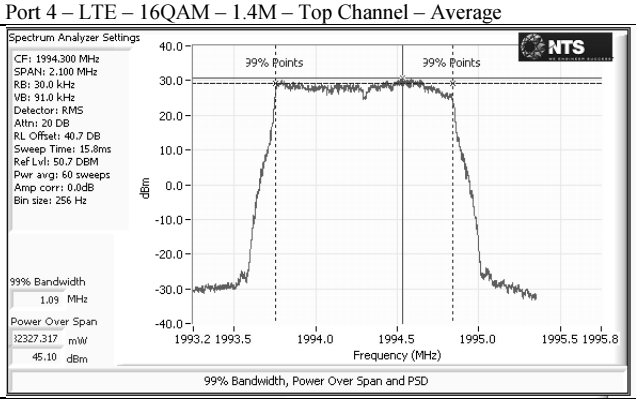
Port 4 – LTE – QPSK – 1.4M – Top Channel – Average



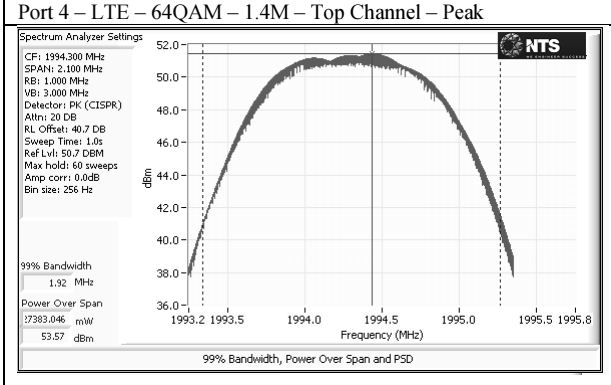
Port 4 – LTE – 16QAM – 1.4M – Top Channel – Peak



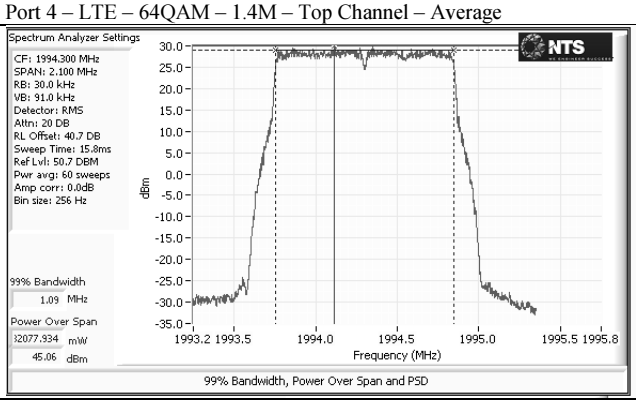
Port 4 – LTE – 16QAM – 1.4M – Top Channel – Average



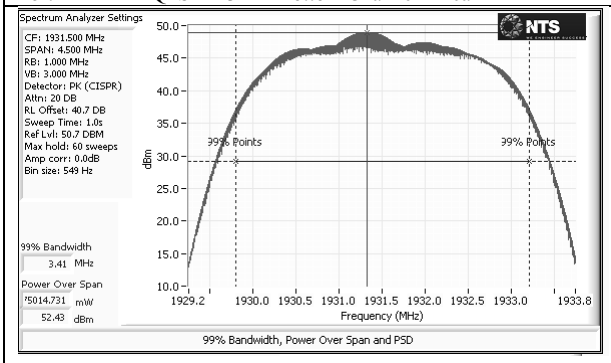
Port 4 – LTE – 64QAM – 1.4M – Top Channel – Peak



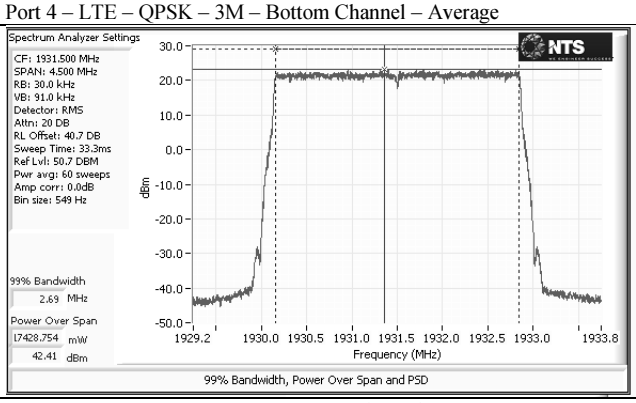
Port 4 – LTE – 64QAM – 1.4M – Top Channel – Average



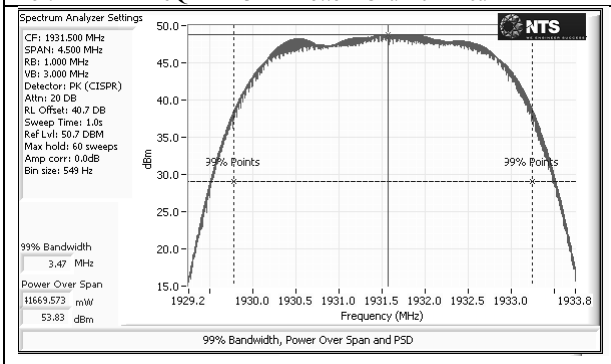
Port 4 – LTE – QPSK – 3M – Bottom Channel – Peak



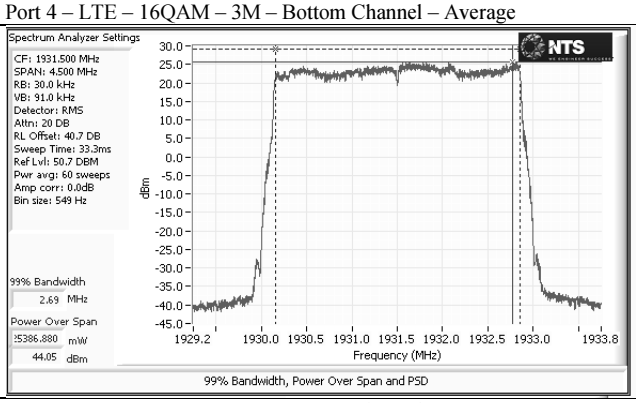
Port 4 – LTE – QPSK – 3M – Bottom Channel – Average



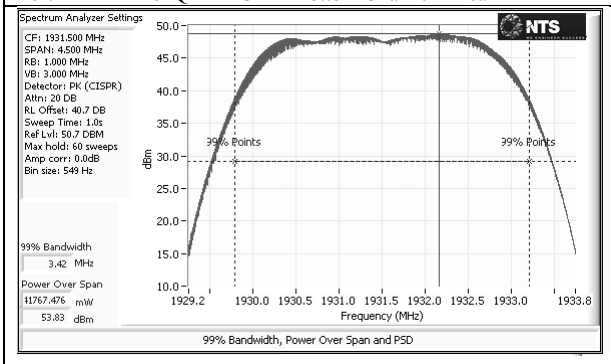
Port 4 – LTE – 16QAM – 3M – Bottom Channel – Peak



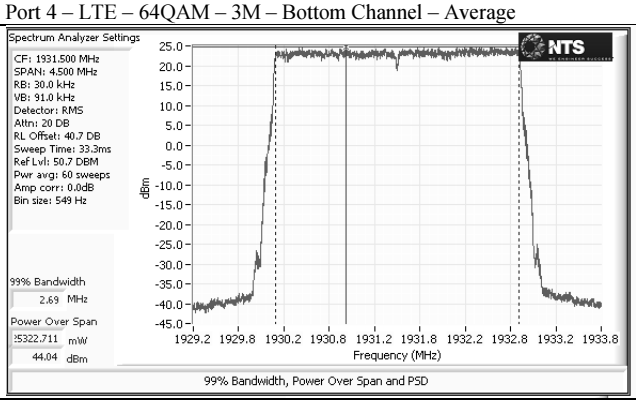
Port 4 – LTE – 16QAM – 3M – Bottom Channel – Average



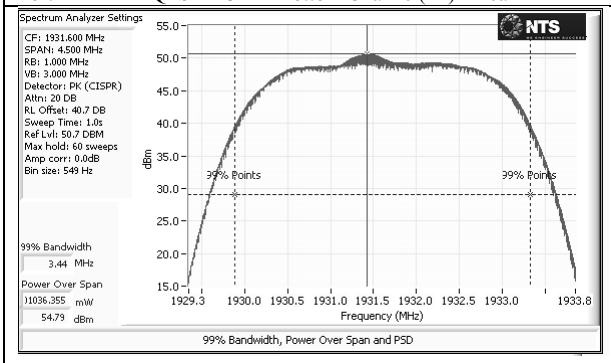
Port 4 – LTE – 64QAM – 3M – Bottom Channel – Peak



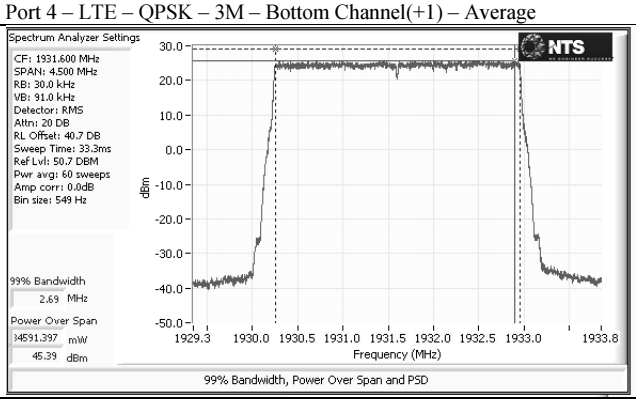
Port 4 – LTE – 64QAM – 3M – Bottom Channel – Average



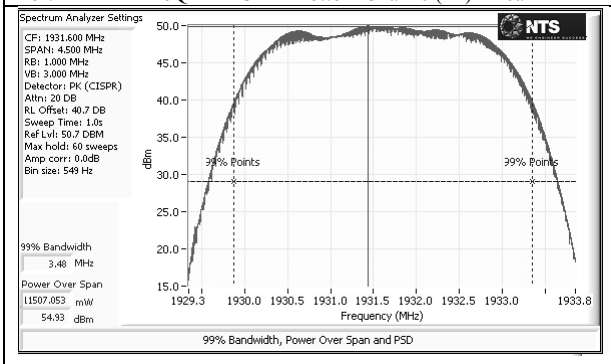
Port 4 – LTE – QPSK – 3M – Bottom Channel(+1) – Peak



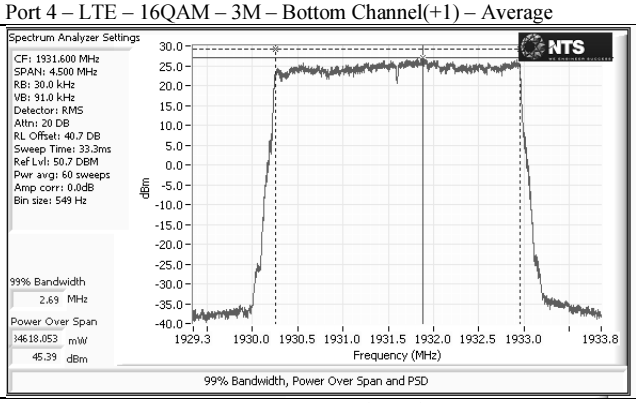
Port 4 – LTE – QPSK – 3M – Bottom Channel(+1) – Average



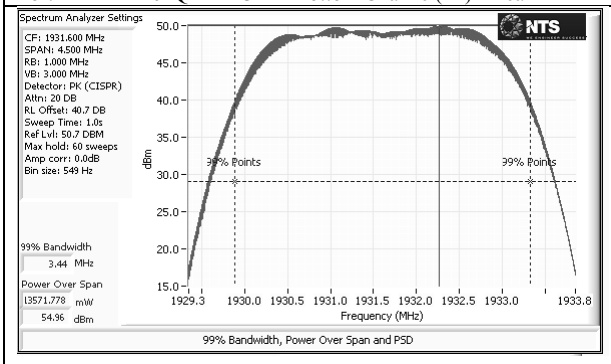
Port 4 – LTE – 16QAM – 3M – Bottom Channel(+1) – Peak



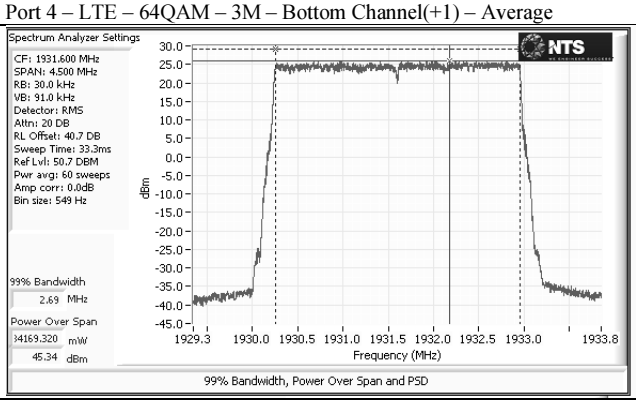
Port 4 – LTE – 16QAM – 3M – Bottom Channel(+1) – Average



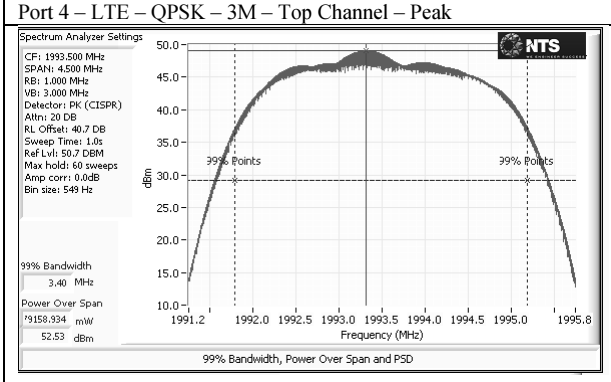
Port 4 – LTE – 64QAM – 3M – Bottom Channel(+1) – Peak



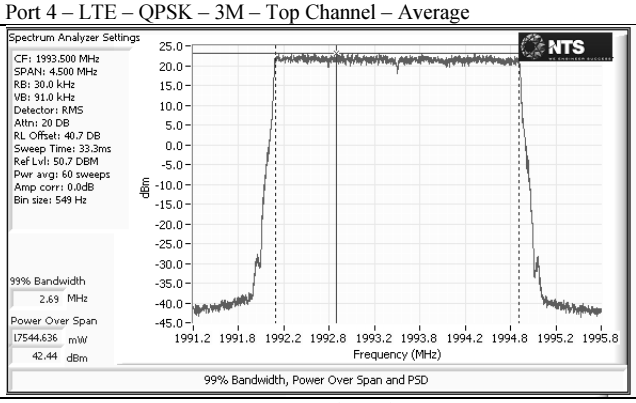
Port 4 – LTE – 64QAM – 3M – Bottom Channel(+1) – Average



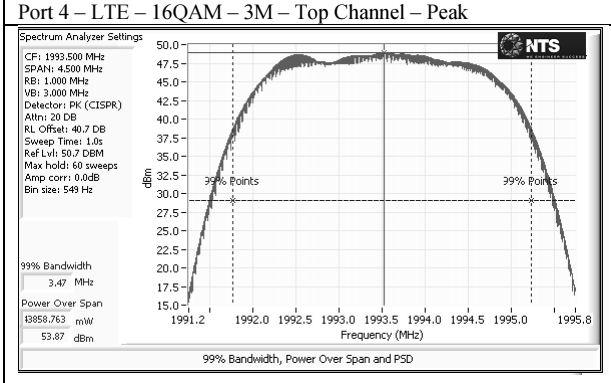
Port 4 – LTE – QPSK – 3M – Top Channel – Peak



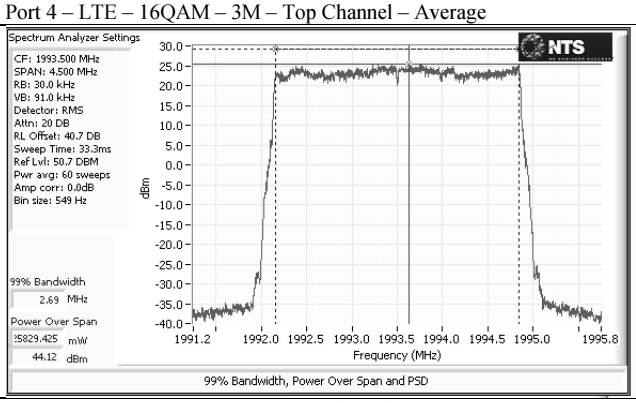
Port 4 – LTE – QPSK – 3M – Top Channel – Average



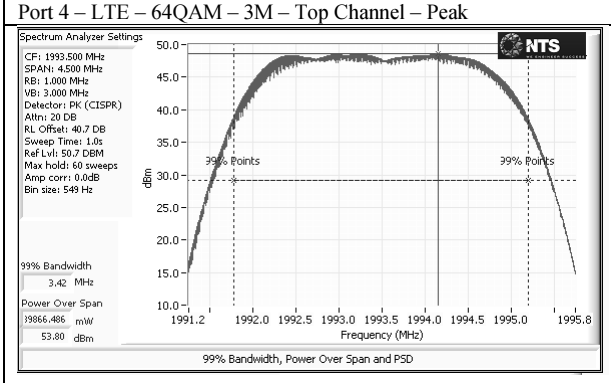
Port 4 – LTE – 16QAM – 3M – Top Channel – Peak



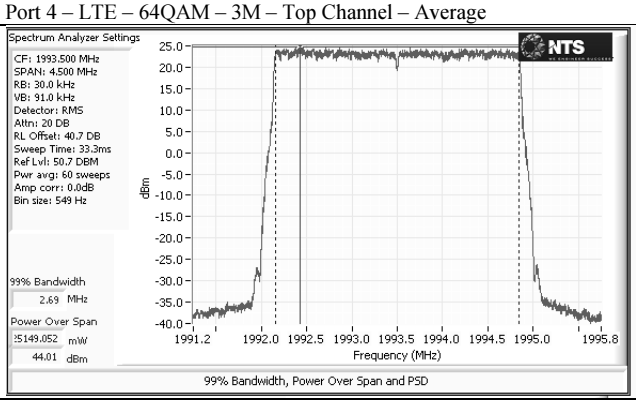
Port 4 – LTE – 16QAM – 3M – Top Channel – Average



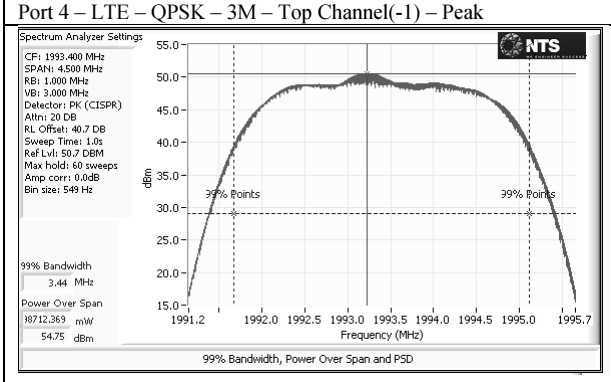
Port 4 – LTE – 64QAM – 3M – Top Channel – Peak



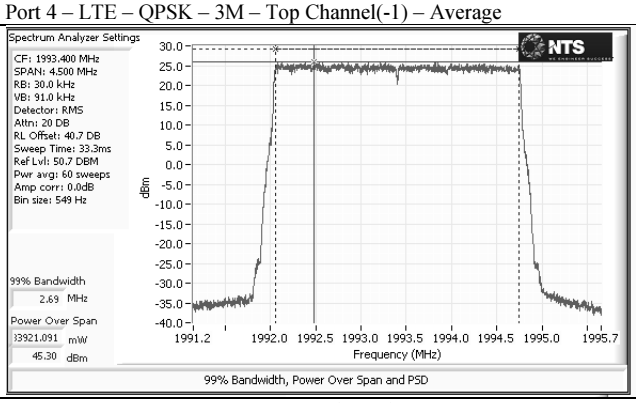
Port 4 – LTE – 64QAM – 3M – Top Channel – Average



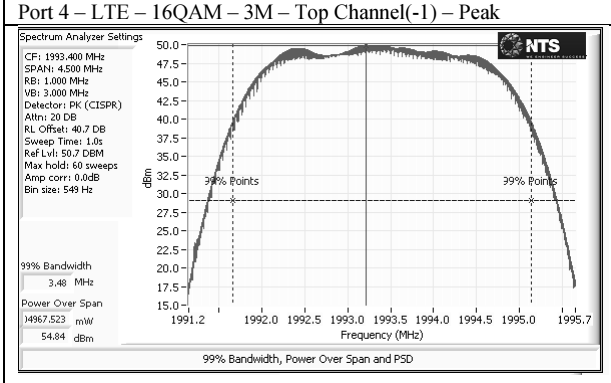
Port 4 – LTE – QPSK – 3M – Top Channel(-1) – Peak



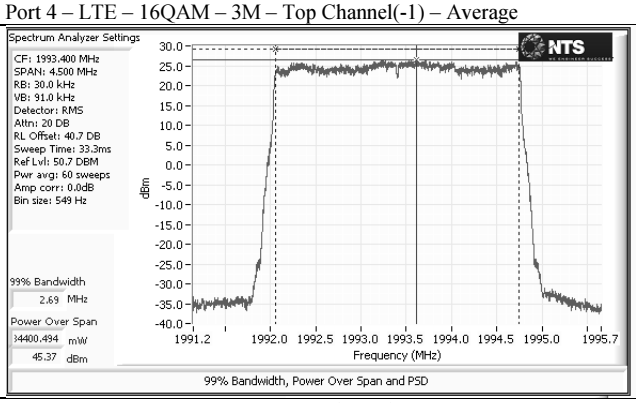
Port 4 – LTE – QPSK – 3M – Top Channel(-1) – Average



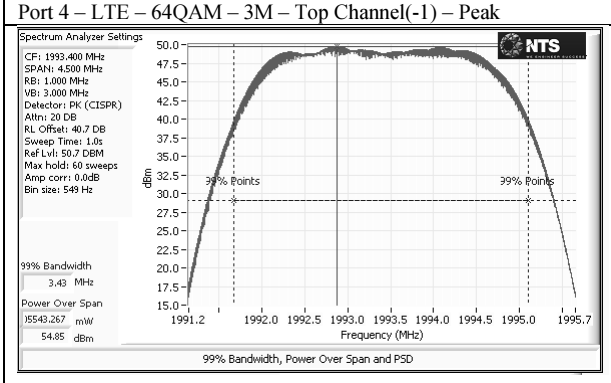
Port 4 – LTE – 16QAM – 3M – Top Channel(-1) – Peak



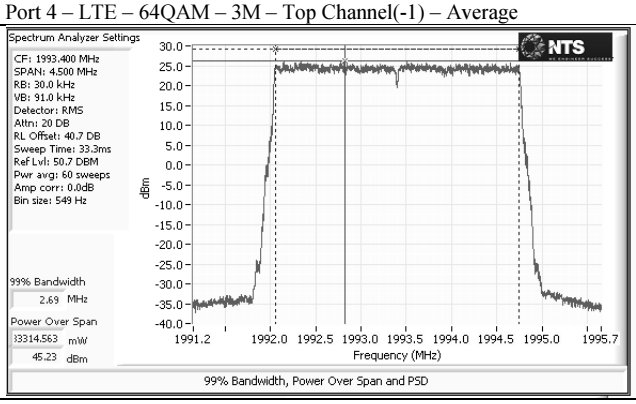
Port 4 – LTE – 16QAM – 3M – Top Channel(-1) – Average



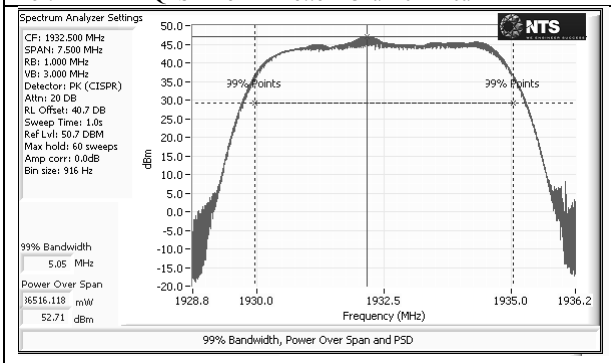
Port 4 – LTE – 64QAM – 3M – Top Channel(-1) – Peak



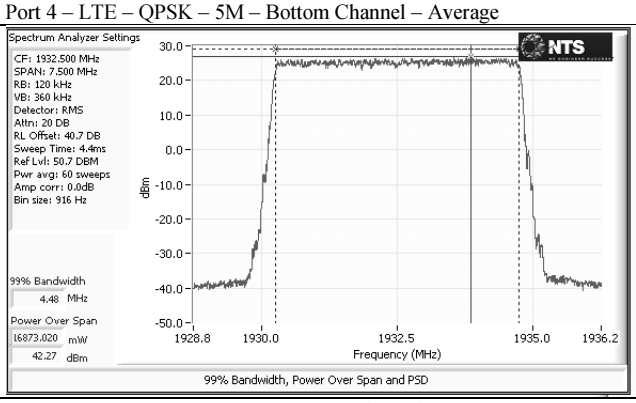
Port 4 – LTE – 64QAM – 3M – Top Channel(-1) – Average



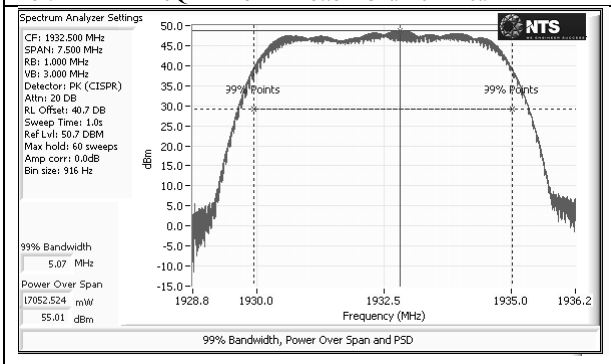
Port 4 – LTE – QPSK – 5M – Bottom Channel – Peak



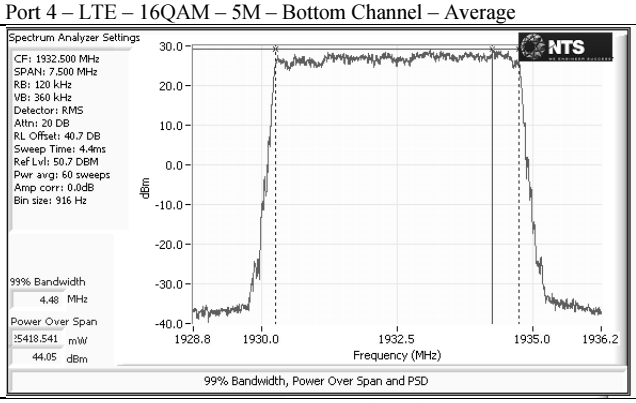
Port 4 – LTE – QPSK – 5M – Bottom Channel – Average



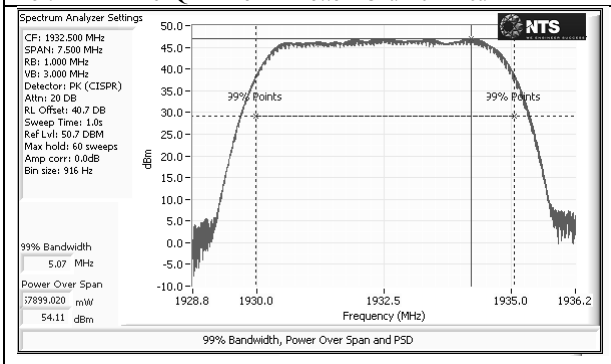
Port 4 – LTE – 16QAM – 5M – Bottom Channel – Peak



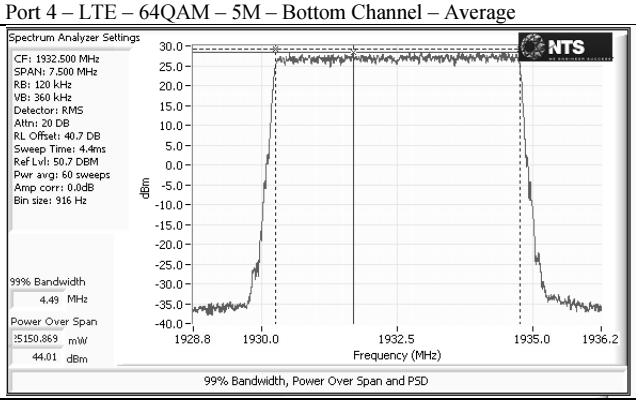
Port 4 – LTE – 16QAM – 5M – Bottom Channel – Average



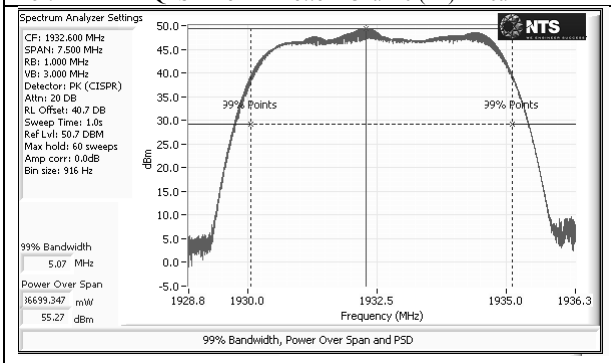
Port 4 – LTE – 64QAM – 5M – Bottom Channel – Peak



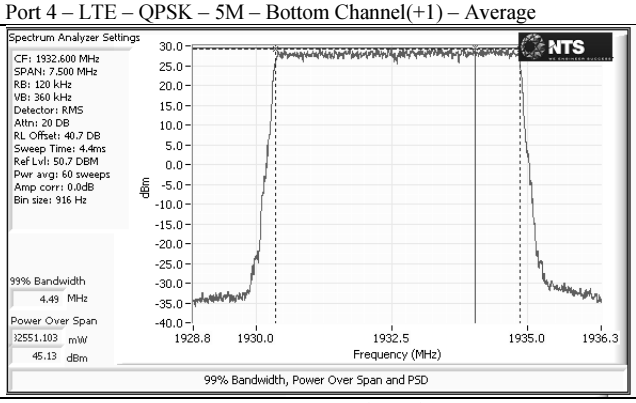
Port 4 – LTE – 64QAM – 5M – Bottom Channel – Average



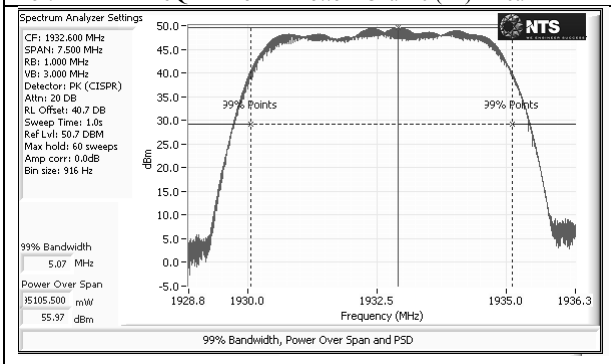
Port 4 – LTE – QPSK – 5M – Bottom Channel(+1) – Peak



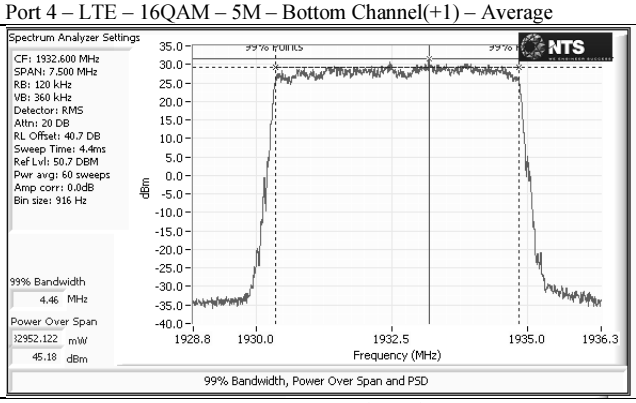
Port 4 – LTE – QPSK – 5M – Bottom Channel(+1) – Average



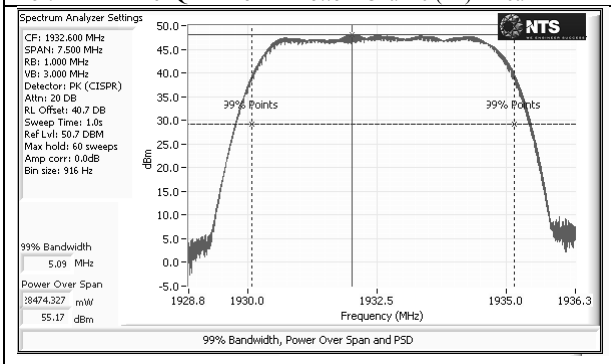
Port 4 – LTE – 16QAM – 5M – Bottom Channel(+1) – Peak



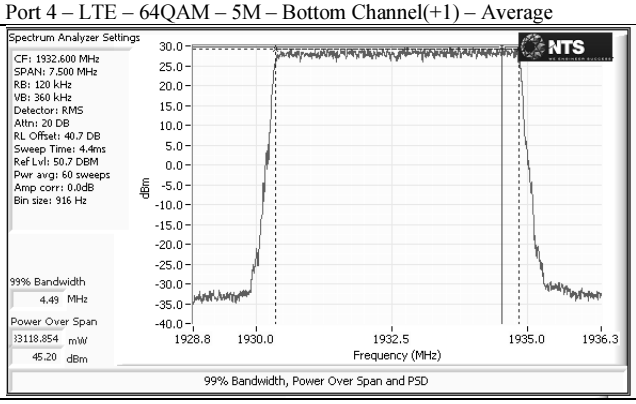
Port 4 – LTE – 16QAM – 5M – Bottom Channel(+1) – Average



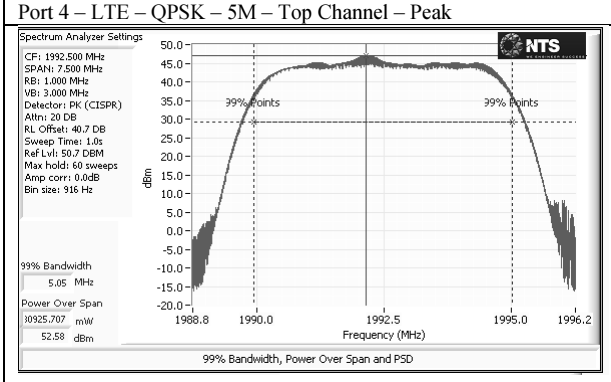
Port 4 – LTE – 64QAM – 5M – Bottom Channel(+1) – Peak



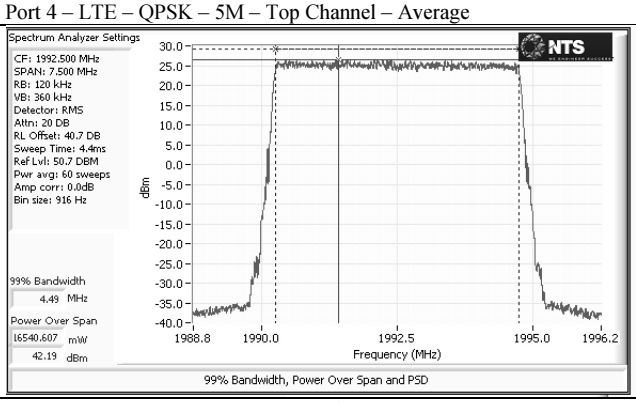
Port 4 – LTE – 64QAM – 5M – Bottom Channel(+1) – Average



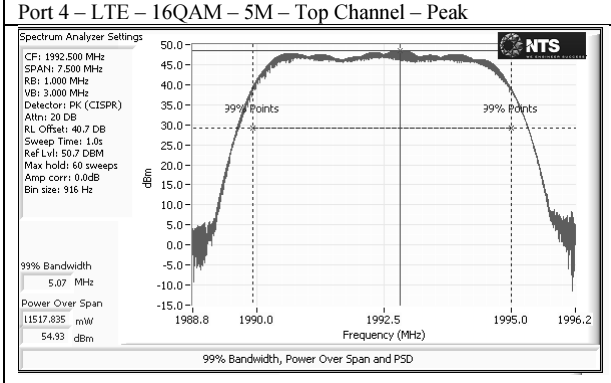
Port 4 – LTE – QPSK – 5M – Top Channel – Peak



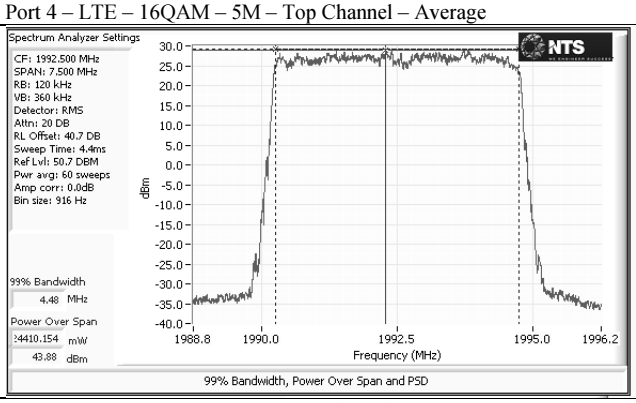
Port 4 – LTE – QPSK – 5M – Top Channel – Average



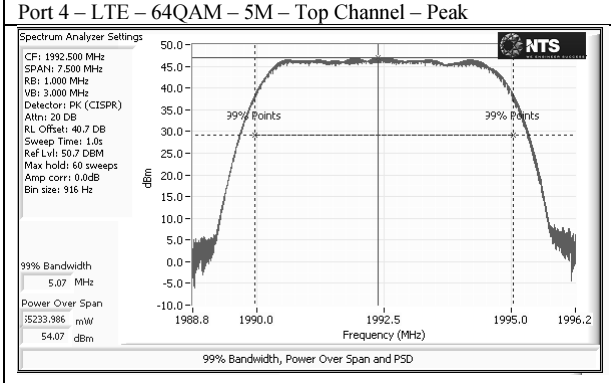
Port 4 – LTE – 16QAM – 5M – Top Channel – Peak



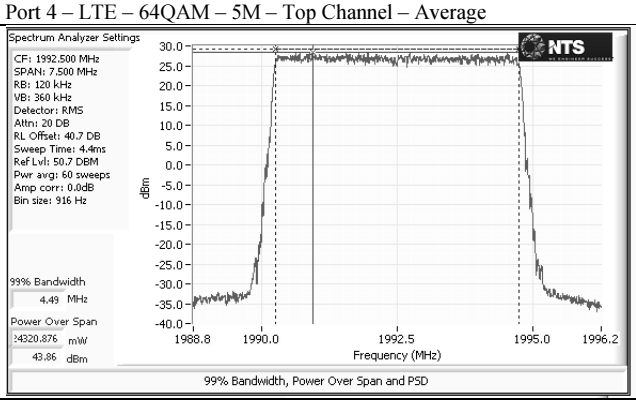
Port 4 – LTE – 16QAM – 5M – Top Channel – Average



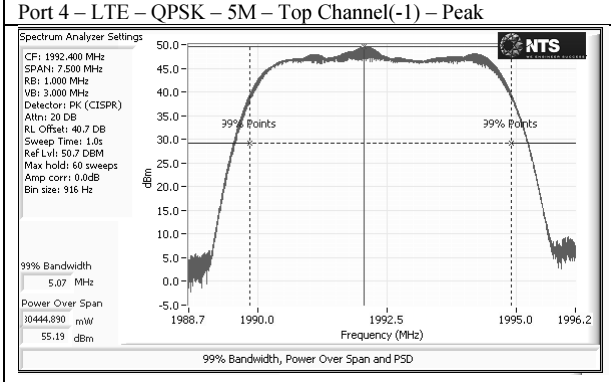
Port 4 – LTE – 64QAM – 5M – Top Channel – Peak



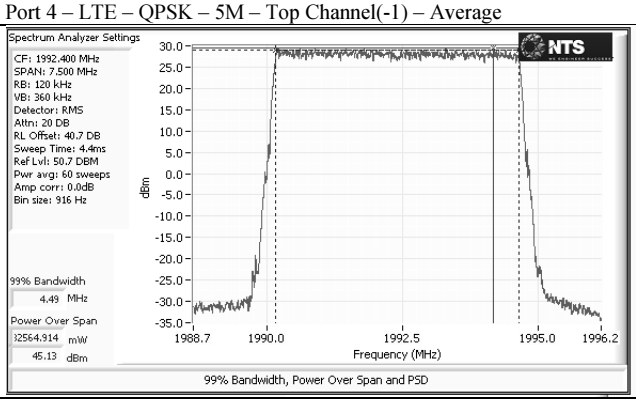
Port 4 – LTE – 64QAM – 5M – Top Channel – Average



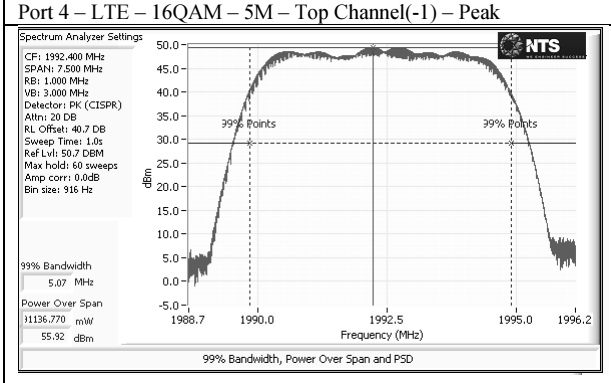
Port 4 – LTE – QPSK – 5M – Top Channel(-1) – Peak



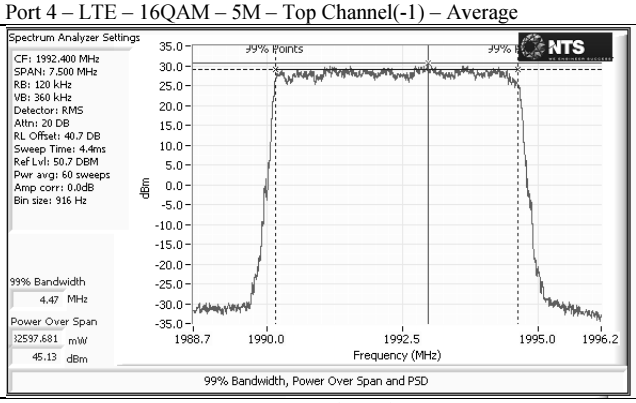
Port 4 – LTE – QPSK – 5M – Top Channel(-1) – Average



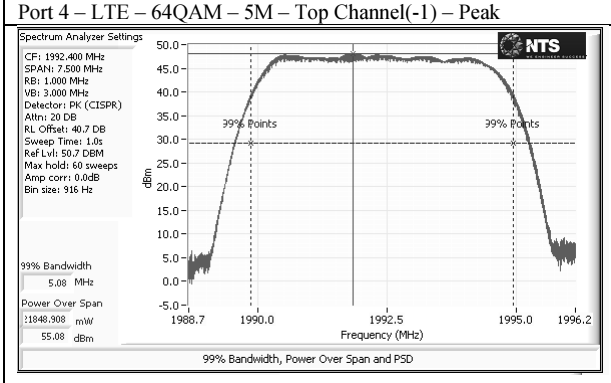
Port 4 – LTE – 16QAM – 5M – Top Channel(-1) – Peak



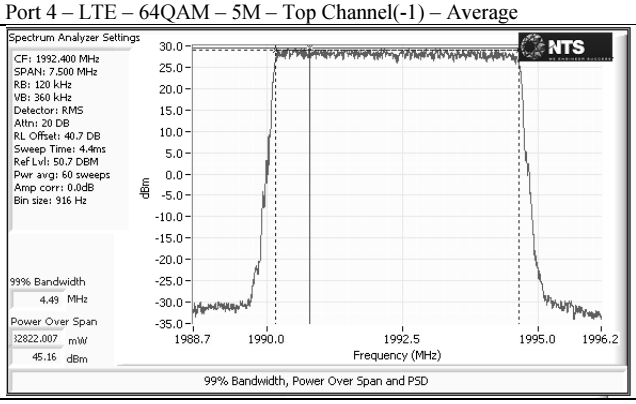
Port 4 – LTE – 16QAM – 5M – Top Channel(-1) – Average



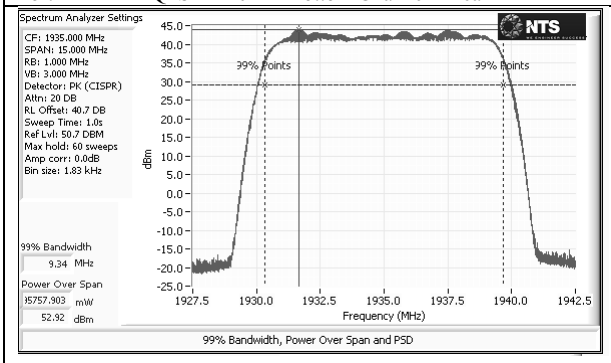
Port 4 – LTE – 64QAM – 5M – Top Channel(-1) – Peak



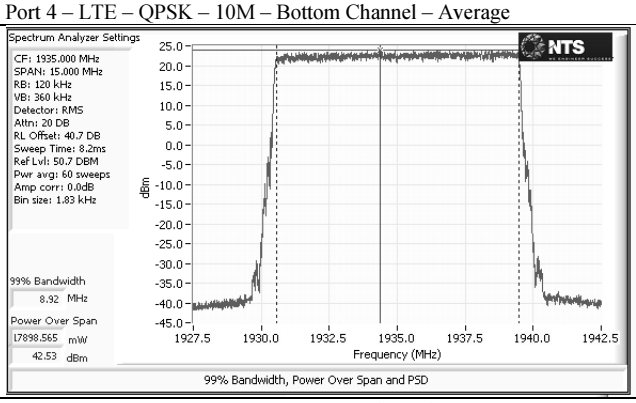
Port 4 – LTE – 64QAM – 5M – Top Channel(-1) – Average



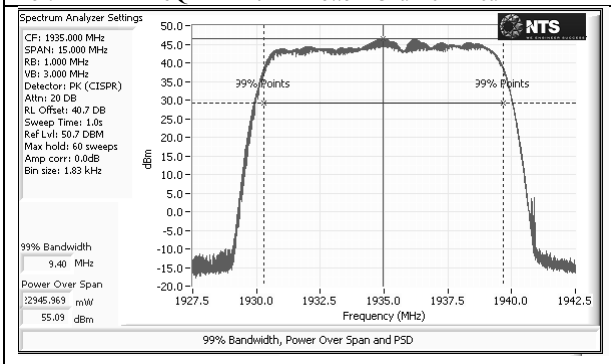
Port 4 – LTE – QPSK – 10M – Bottom Channel – Peak



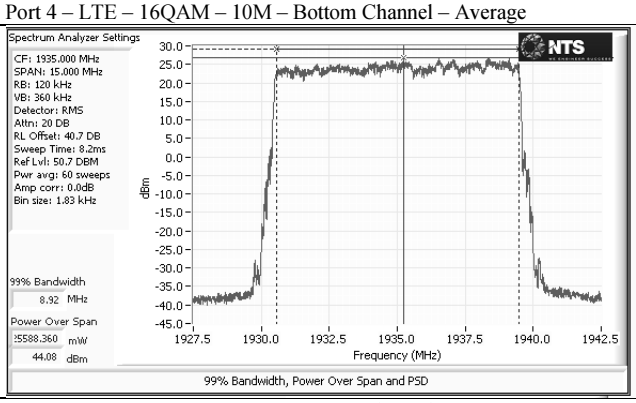
Port 4 – LTE – QPSK – 10M – Bottom Channel – Average



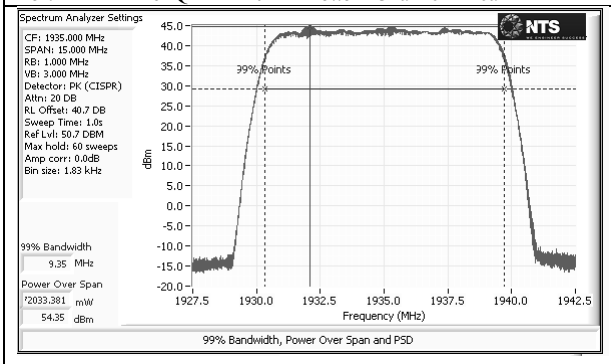
Port 4 – LTE – 16QAM – 10M – Bottom Channel – Peak



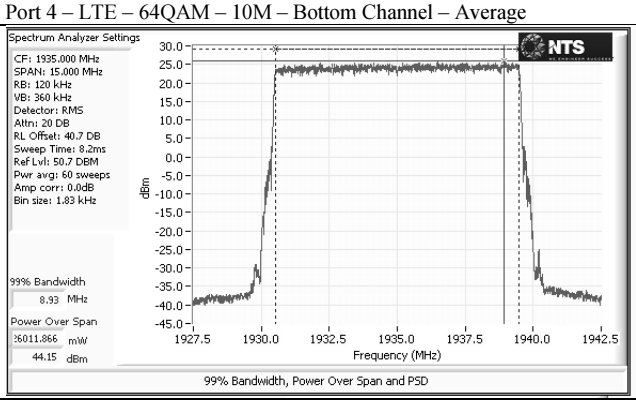
Port 4 – LTE – 16QAM – 10M – Bottom Channel – Average



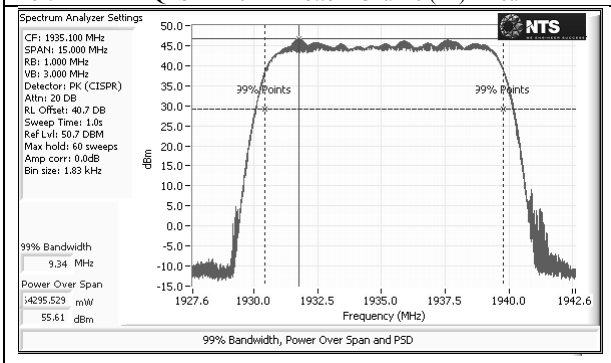
Port 4 – LTE – 64QAM – 10M – Bottom Channel – Peak



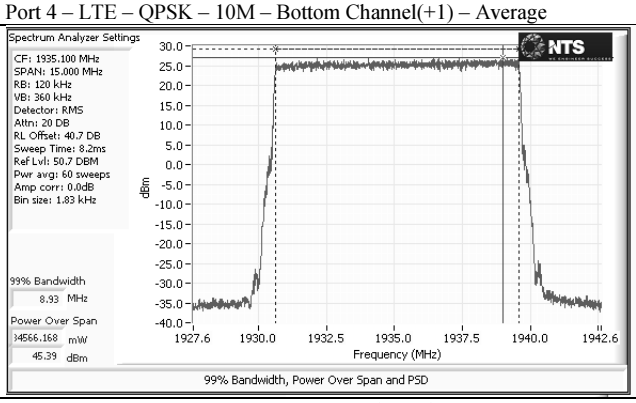
Port 4 – LTE – 64QAM – 10M – Bottom Channel – Average



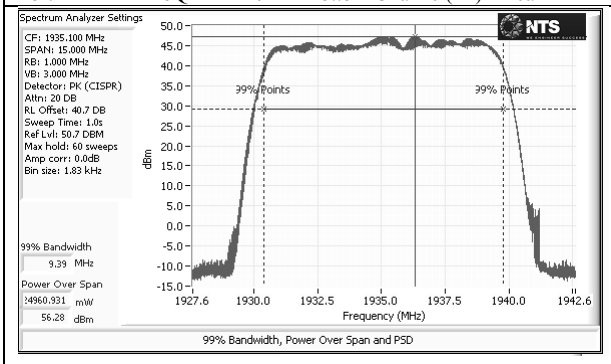
Port 4 – LTE – QPSK – 10M – Bottom Channel(+1) – Peak



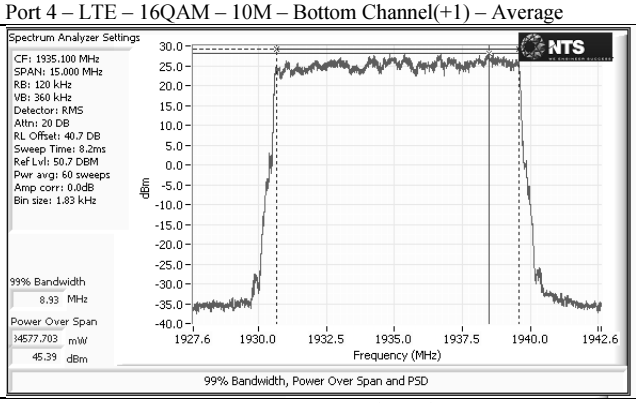
Port 4 – LTE – QPSK – 10M – Bottom Channel(+1) – Average



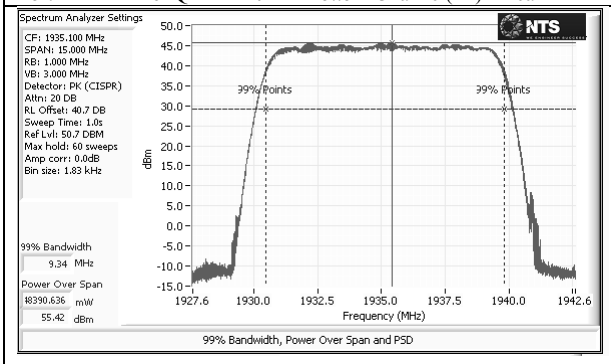
Port 4 – LTE – 16QAM – 10M – Bottom Channel(+1) – Peak



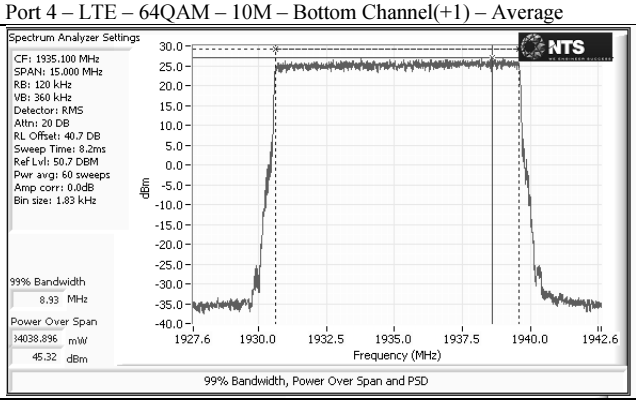
Port 4 – LTE – 16QAM – 10M – Bottom Channel(+1) – Average



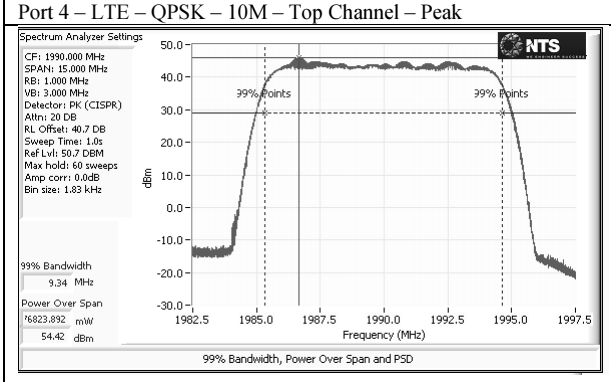
Port 4 – LTE – 64QAM – 10M – Bottom Channel(+1) – Peak



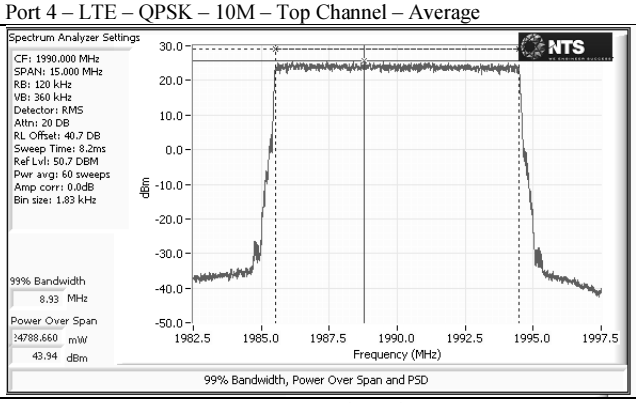
Port 4 – LTE – 64QAM – 10M – Bottom Channel(+1) – Average



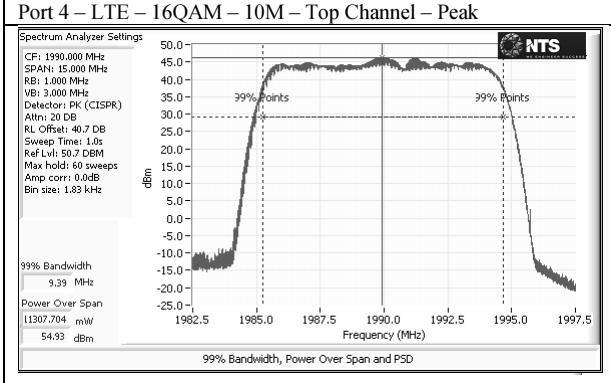
Port 4 – LTE – QPSK – 10M – Top Channel – Peak



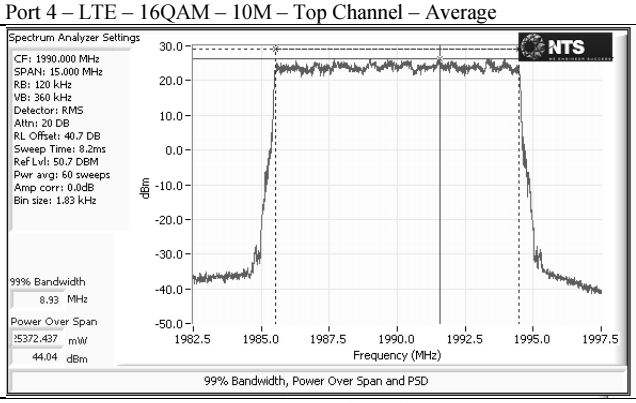
Port 4 – LTE – QPSK – 10M – Top Channel – Average



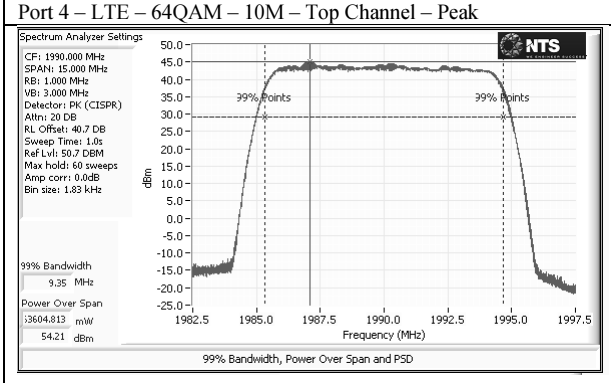
Port 4 – LTE – 16QAM – 10M – Top Channel – Peak



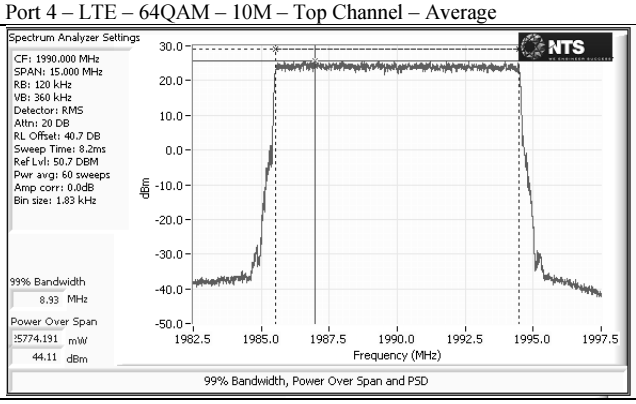
Port 4 – LTE – 16QAM – 10M – Top Channel – Average



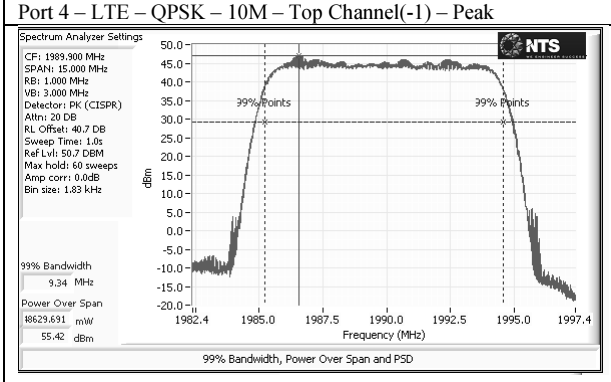
Port 4 – LTE – 64QAM – 10M – Top Channel – Peak



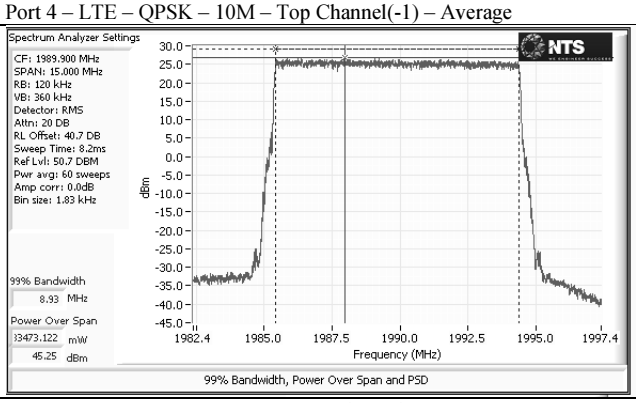
Port 4 – LTE – 64QAM – 10M – Top Channel – Average



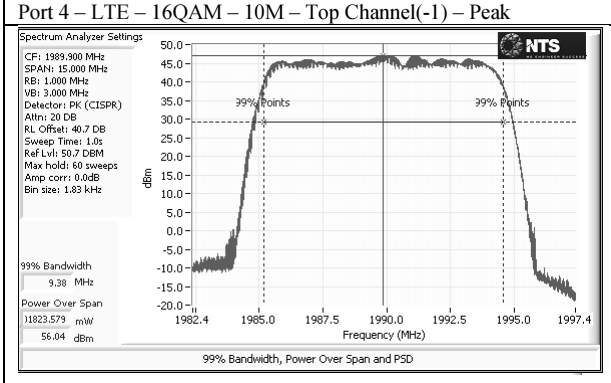
Port 4 – LTE – QPSK – 10M – Top Channel(-1) – Peak



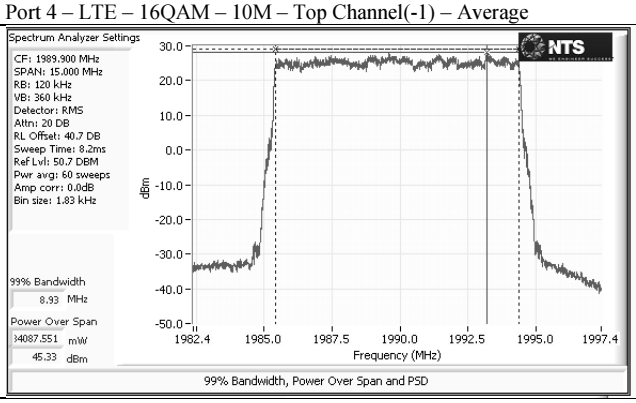
Port 4 – LTE – QPSK – 10M – Top Channel(-1) – Average



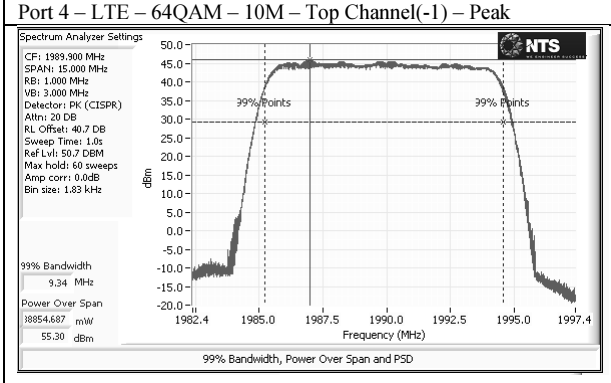
Port 4 – LTE – 16QAM – 10M – Top Channel(-1) – Peak



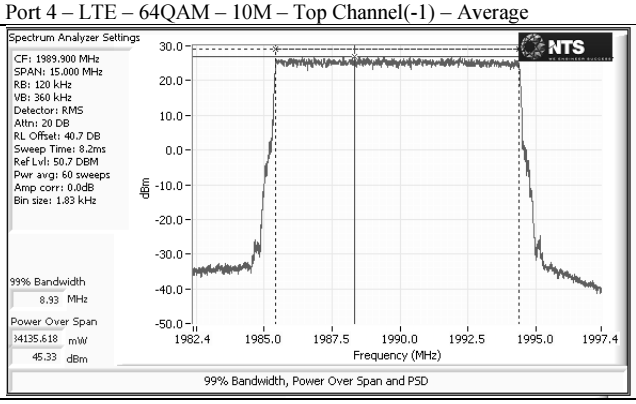
Port 4 – LTE – 16QAM – 10M – Top Channel(-1) – Average



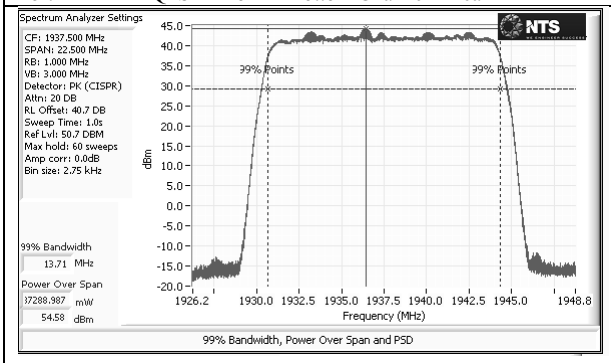
Port 4 – LTE – 64QAM – 10M – Top Channel(-1) – Peak



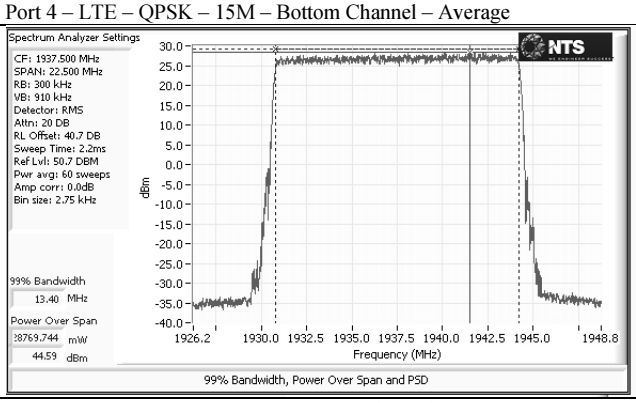
Port 4 – LTE – 64QAM – 10M – Top Channel(-1) – Average



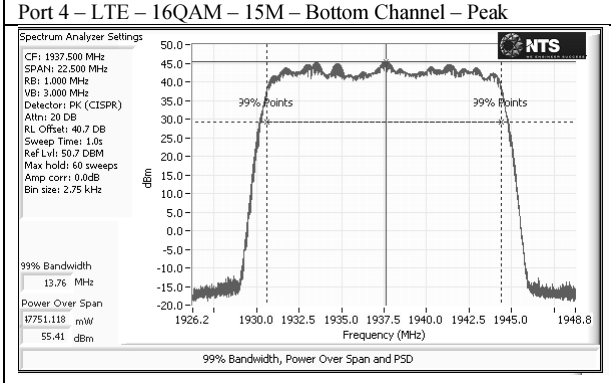
Port 4 – LTE – QPSK – 15M – Bottom Channel – Peak



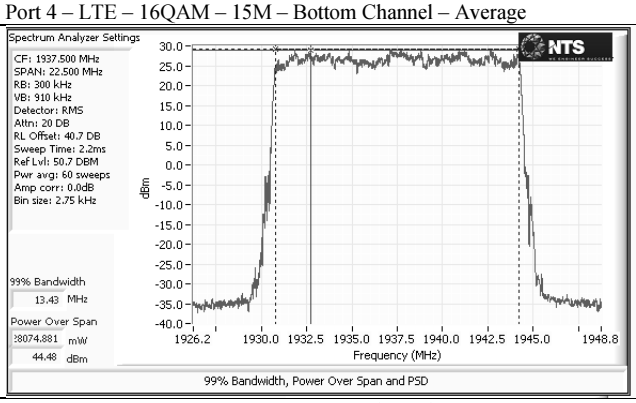
Port 4 – LTE – QPSK – 15M – Bottom Channel – Average



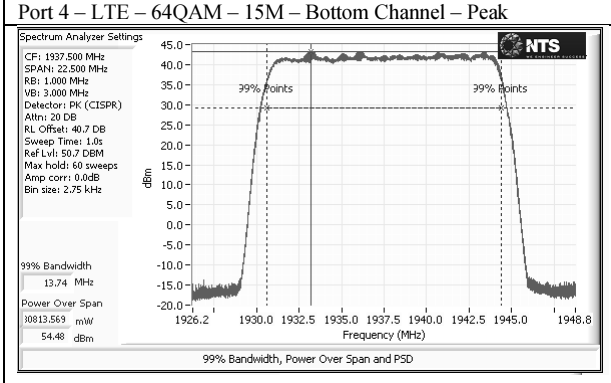
Port 4 – LTE – 16QAM – 15M – Bottom Channel – Peak



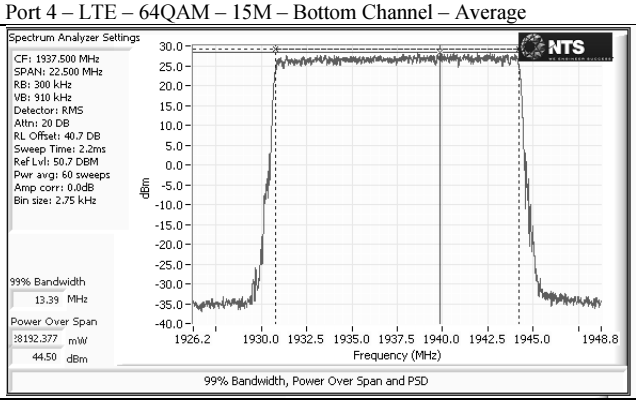
Port 4 – LTE – 16QAM – 15M – Bottom Channel – Average



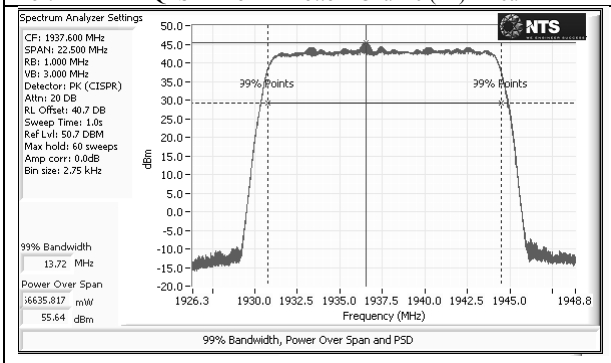
Port 4 – LTE – 64QAM – 15M – Bottom Channel – Peak



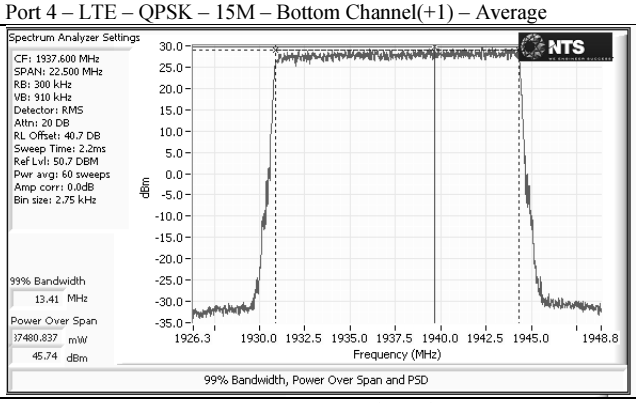
Port 4 – LTE – 64QAM – 15M – Bottom Channel – Average



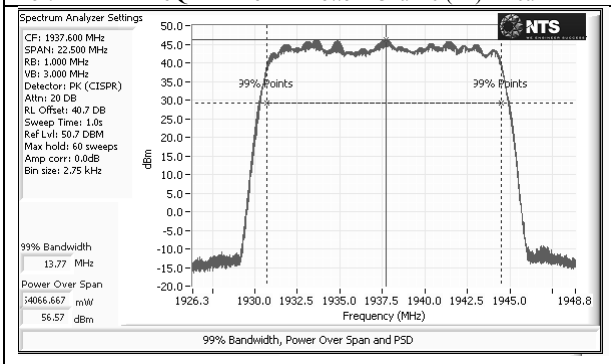
Port 4 – LTE – QPSK – 15M – Bottom Channel(+1) – Peak



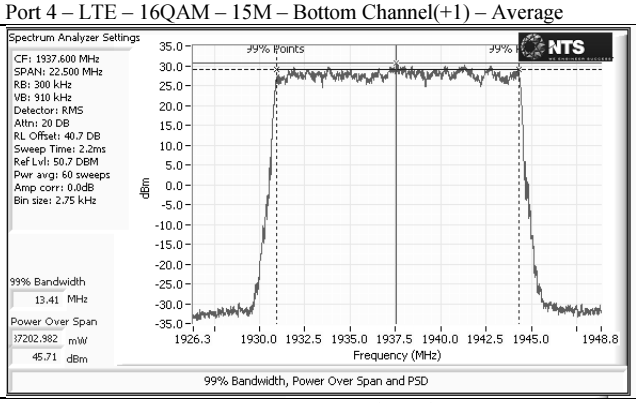
Port 4 – LTE – QPSK – 15M – Bottom Channel(+1) – Average



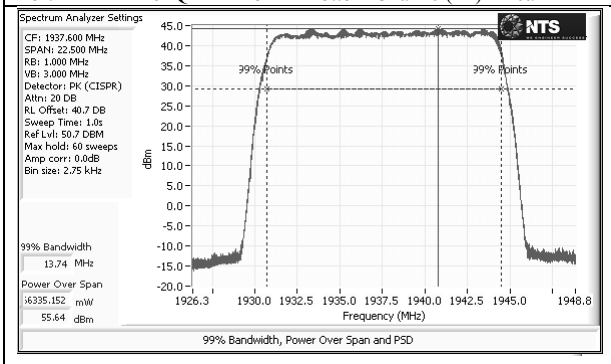
Port 4 – LTE – 16QAM – 15M – Bottom Channel(+1) – Peak



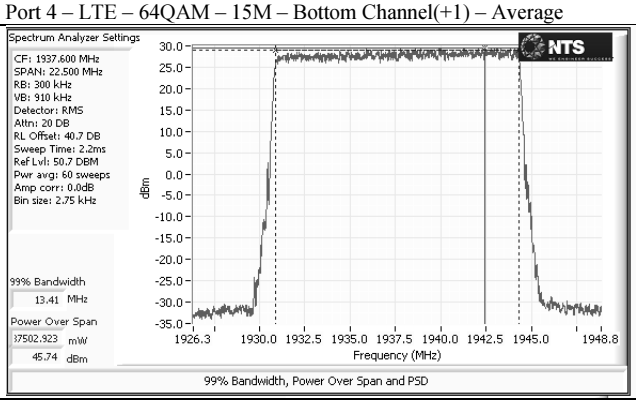
Port 4 – LTE – 16QAM – 15M – Bottom Channel(+1) – Average



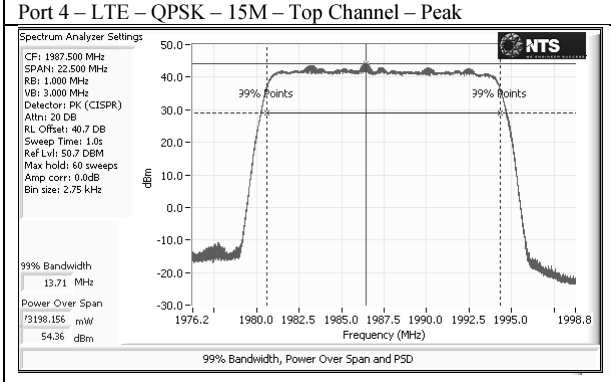
Port 4 – LTE – 64QAM – 15M – Bottom Channel(+1) – Peak



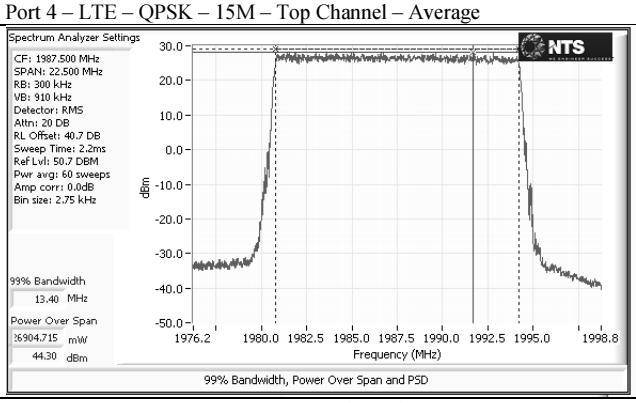
Port 4 – LTE – 64QAM – 15M – Bottom Channel(+1) – Average



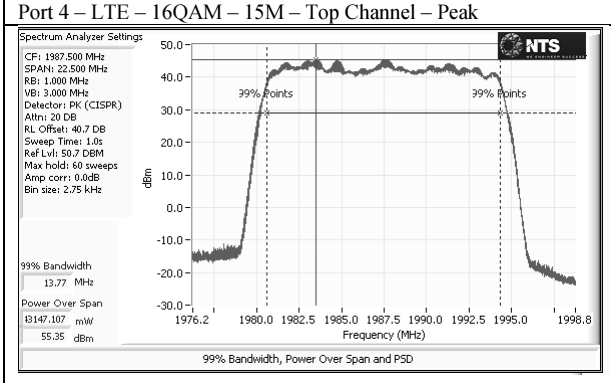
Port 4 – LTE – QPSK – 15M – Top Channel – Peak



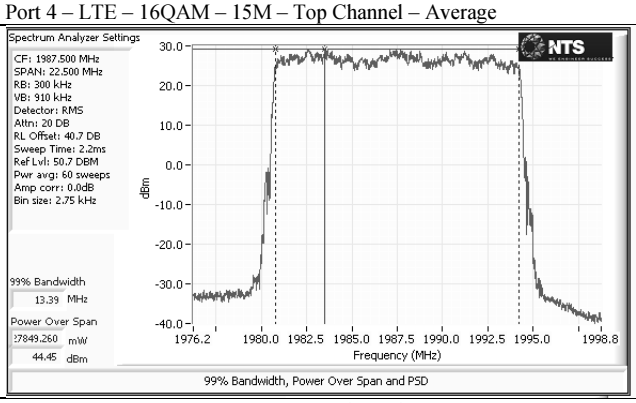
Port 4 – LTE – QPSK – 15M – Top Channel – Average



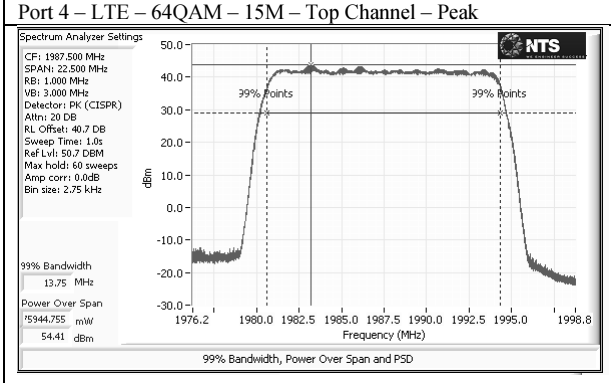
Port 4 – LTE – 16QAM – 15M – Top Channel – Peak



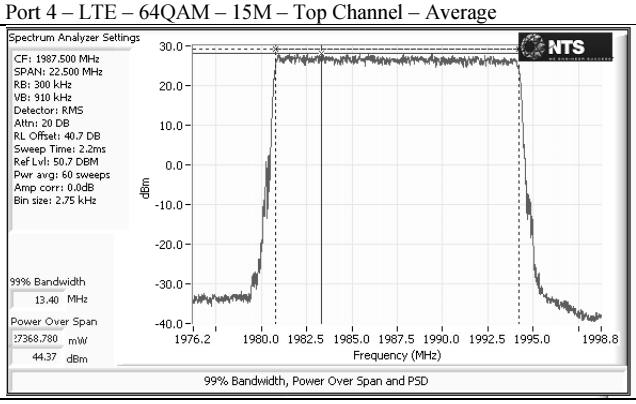
Port 4 – LTE – 16QAM – 15M – Top Channel – Average



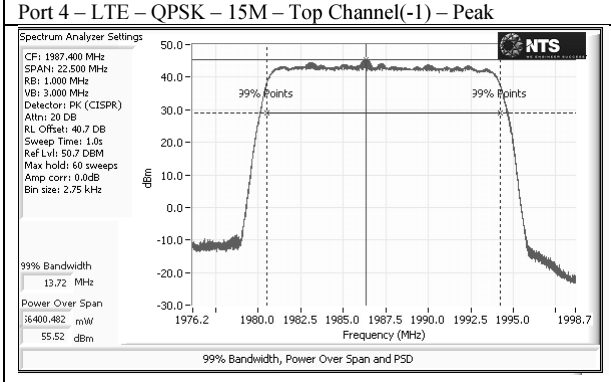
Port 4 – LTE – 64QAM – 15M – Top Channel – Peak



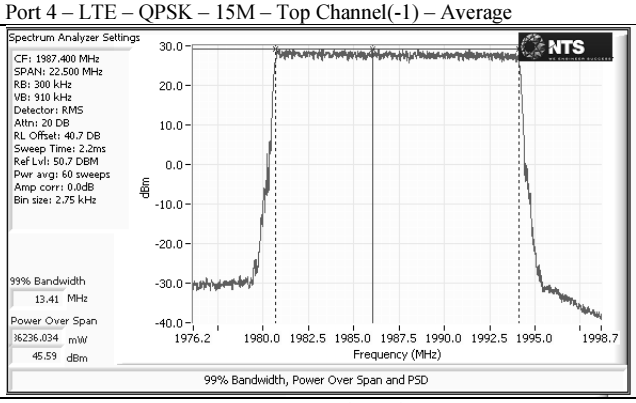
Port 4 – LTE – 64QAM – 15M – Top Channel – Average



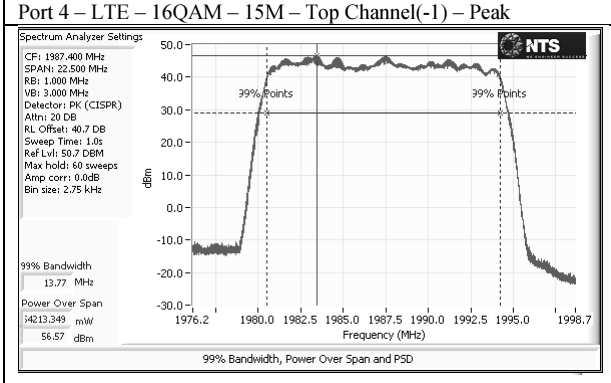
Port 4 – LTE – QPSK – 15M – Top Channel(-1) – Peak



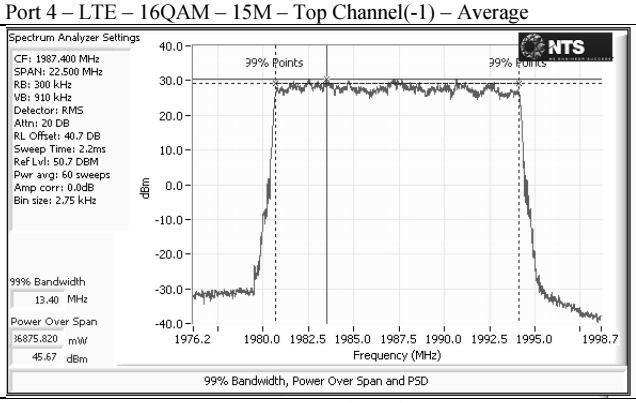
Port 4 – LTE – QPSK – 15M – Top Channel(-1) – Average



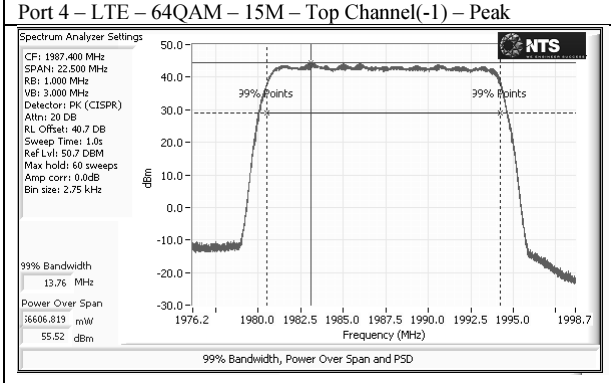
Port 4 – LTE – 16QAM – 15M – Top Channel(-1) – Peak



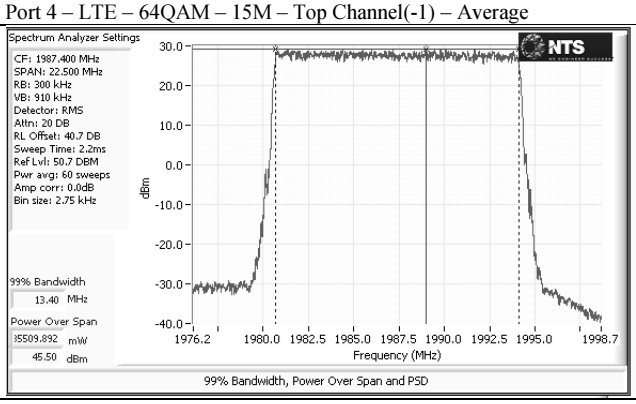
Port 4 – LTE – 16QAM – 15M – Top Channel(-1) – Average



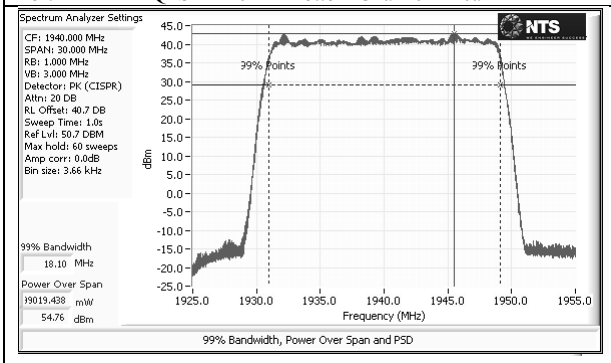
Port 4 – LTE – 64QAM – 15M – Top Channel(-1) – Peak



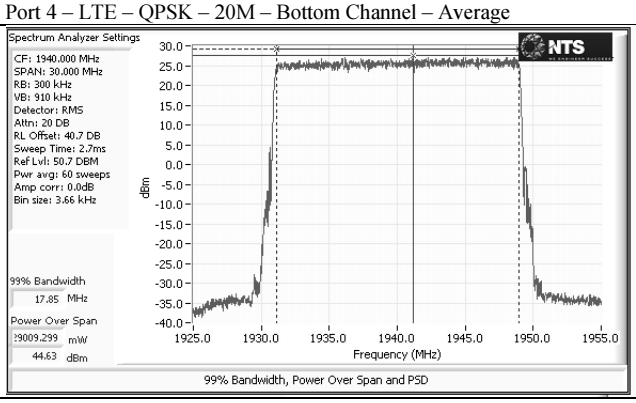
Port 4 – LTE – 64QAM – 15M – Top Channel(-1) – Average



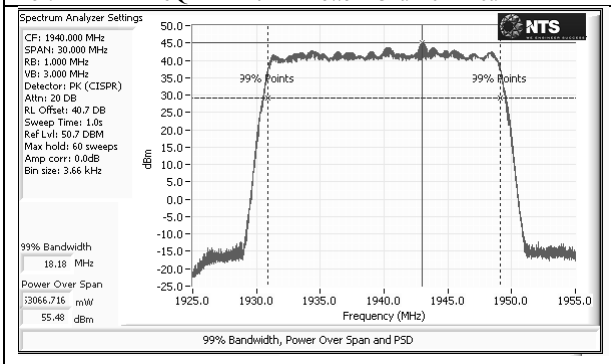
Port 4 – LTE – QPSK – 20M – Bottom Channel – Peak



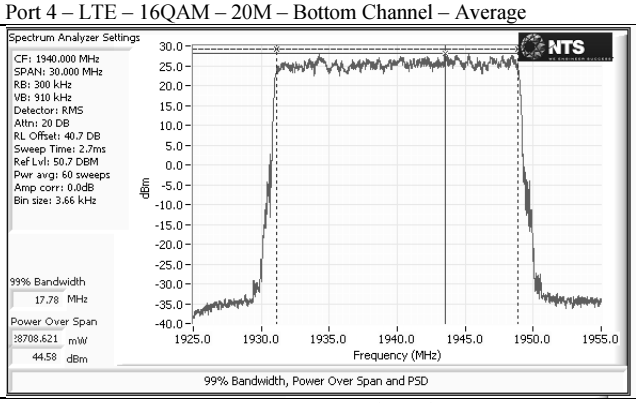
Port 4 – LTE – QPSK – 20M – Bottom Channel – Average



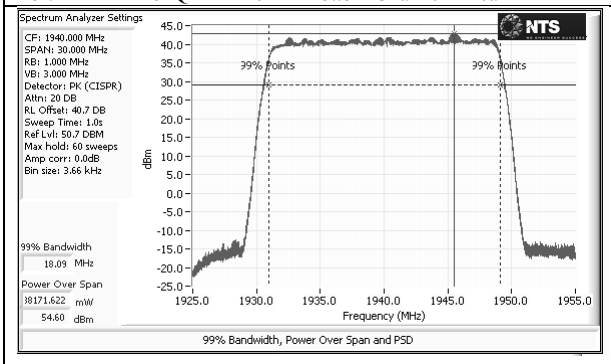
Port 4 – LTE – 16QAM – 20M – Bottom Channel – Peak



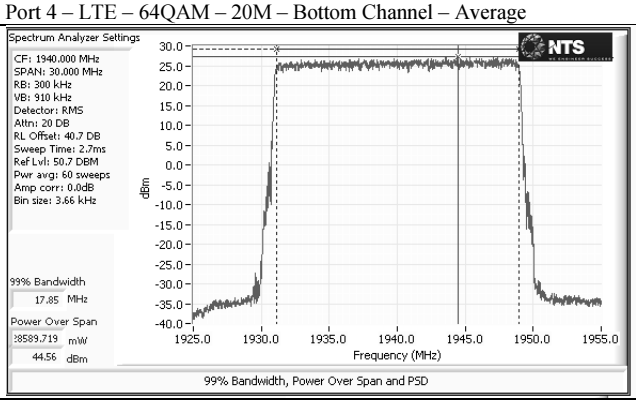
Port 4 – LTE – 16QAM – 20M – Bottom Channel – Average



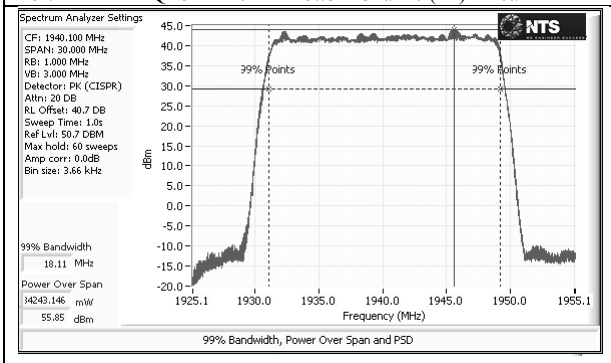
Port 4 – LTE – 64QAM – 20M – Bottom Channel – Peak



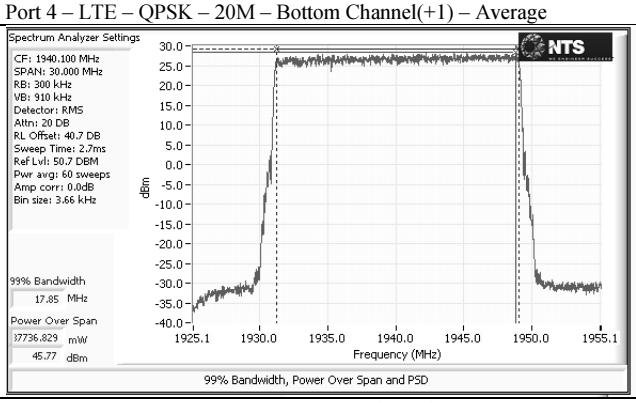
Port 4 – LTE – 64QAM – 20M – Bottom Channel – Average



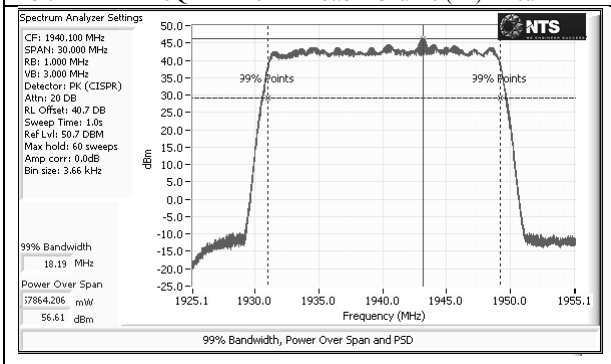
Port 4 – LTE – QPSK – 20M – Bottom Channel(+1) – Peak



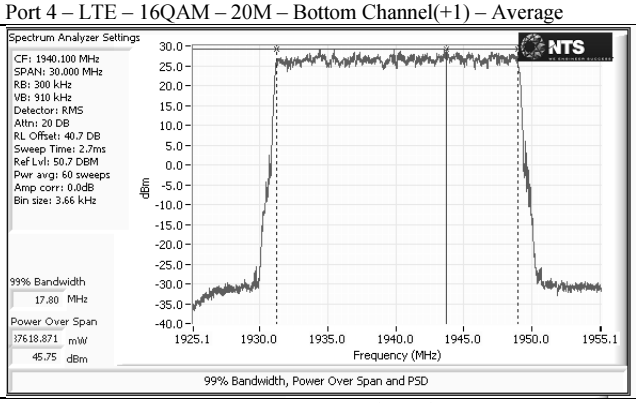
Port 4 – LTE – QPSK – 20M – Bottom Channel(+1) – Average



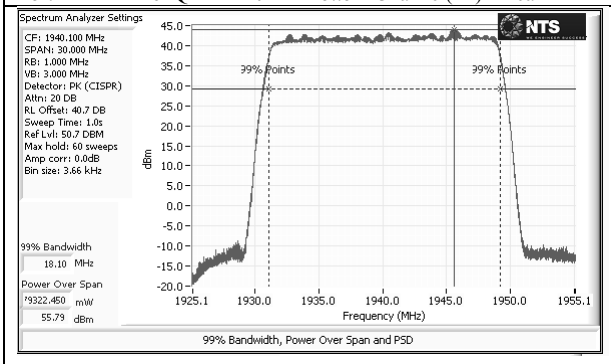
Port 4 – LTE – 16QAM – 20M – Bottom Channel(+1) – Peak



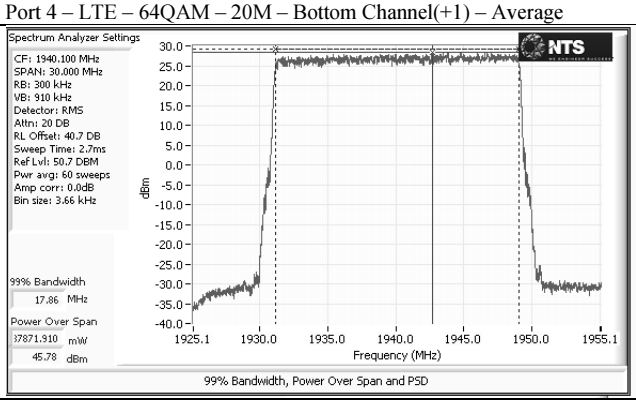
Port 4 – LTE – 16QAM – 20M – Bottom Channel(+1) – Average



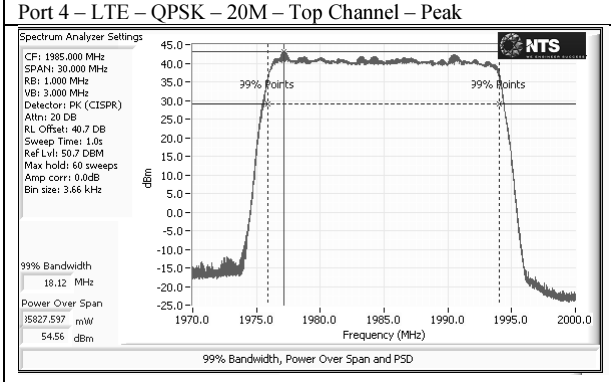
Port 4 – LTE – 64QAM – 20M – Bottom Channel(+1) – Peak



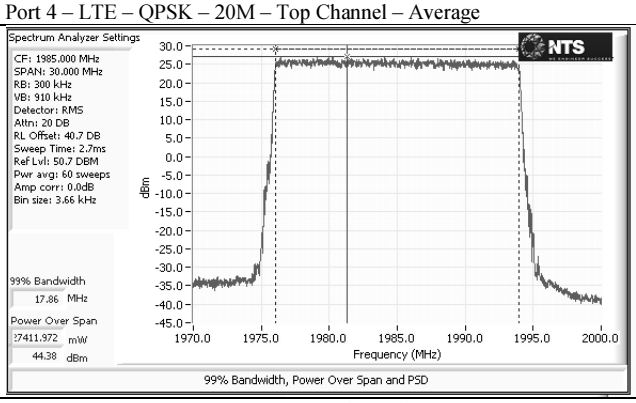
Port 4 – LTE – 64QAM – 20M – Bottom Channel(+1) – Average



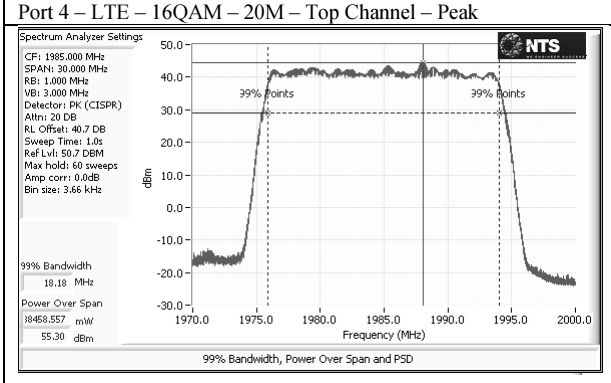
Port 4 – LTE – QPSK – 20M – Top Channel – Peak



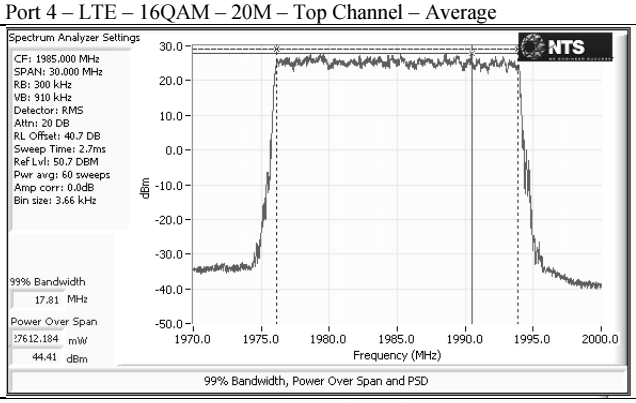
Port 4 – LTE – QPSK – 20M – Top Channel – Average



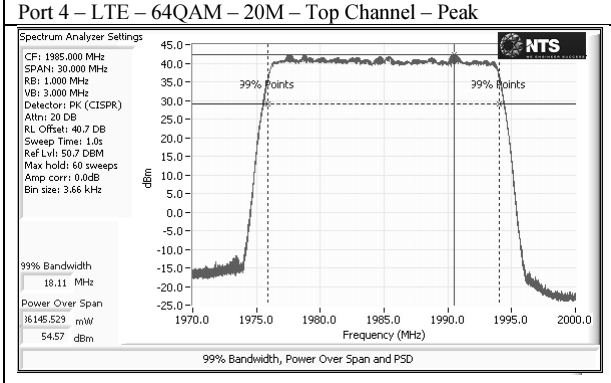
Port 4 – LTE – 16QAM – 20M – Top Channel – Peak



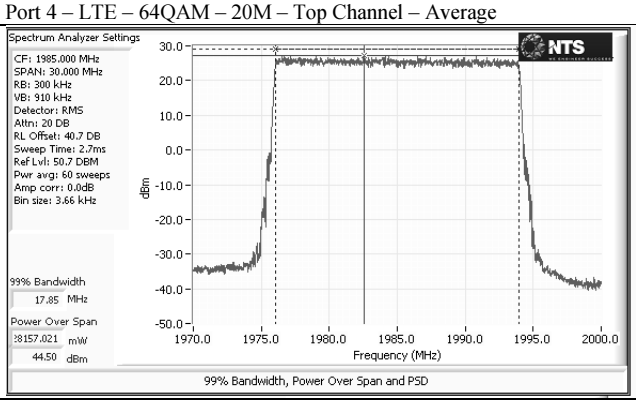
Port 4 – LTE – 16QAM – 20M – Top Channel – Average



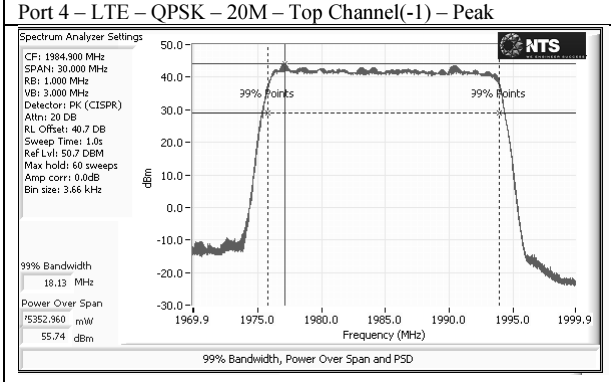
Port 4 – LTE – 64QAM – 20M – Top Channel – Peak



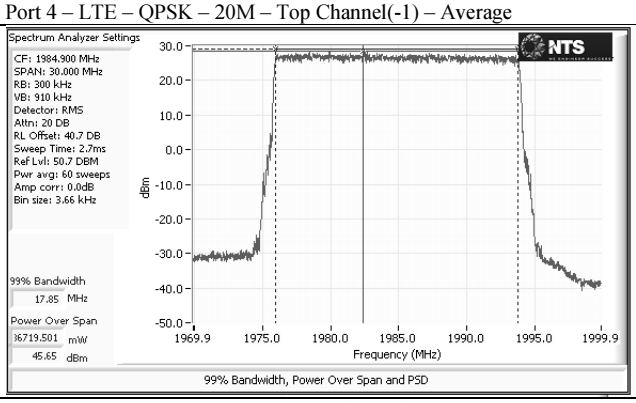
Port 4 – LTE – 64QAM – 20M – Top Channel – Average



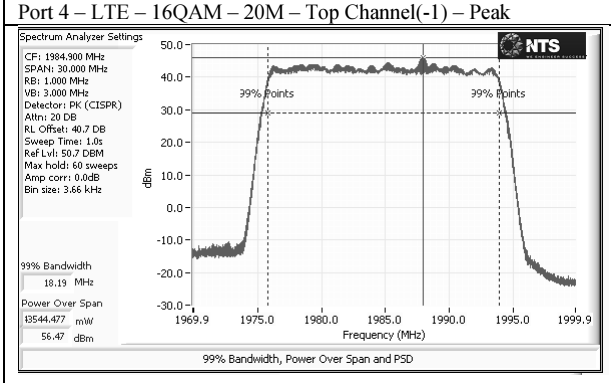
Port 4 – LTE – QPSK – 20M – Top Channel(-1) – Peak



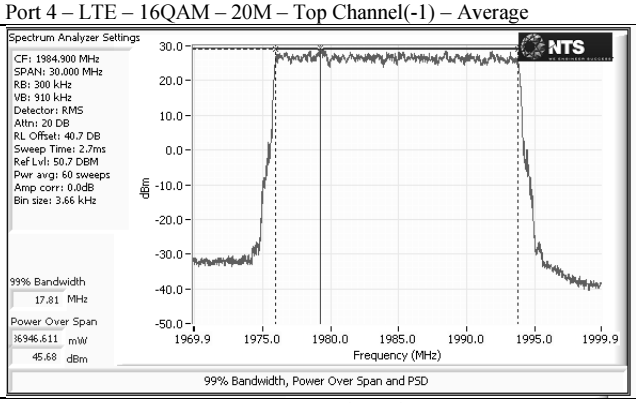
Port 4 – LTE – QPSK – 20M – Top Channel(-1) – Average



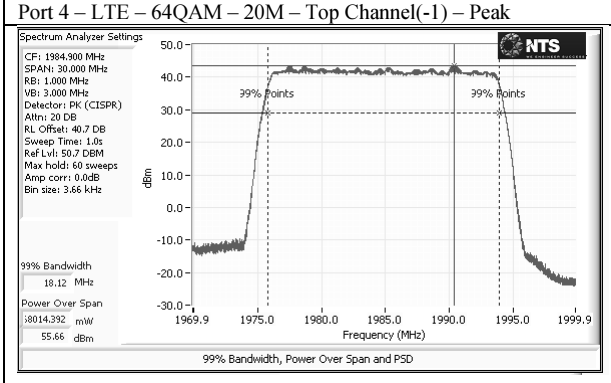
Port 4 – LTE – 16QAM – 20M – Top Channel(-1) – Peak



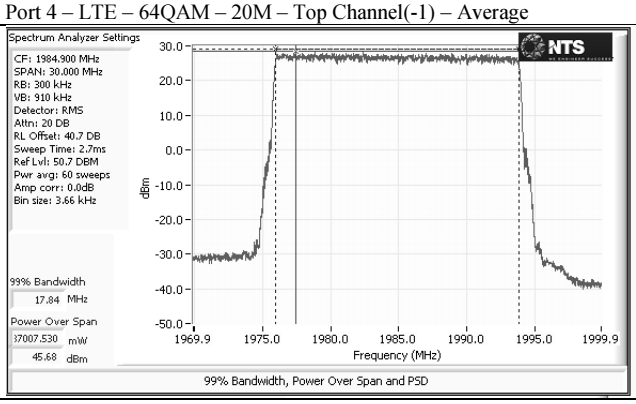
Port 4 – LTE – 16QAM – 20M – Top Channel(-1) – Average



Port 4 – LTE – 64QAM – 20M – Top Channel(-1) – Peak

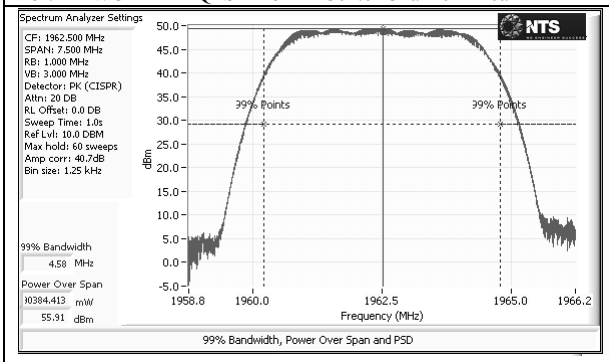


Port 4 – LTE – 64QAM – 20M – Top Channel(-1) – Average

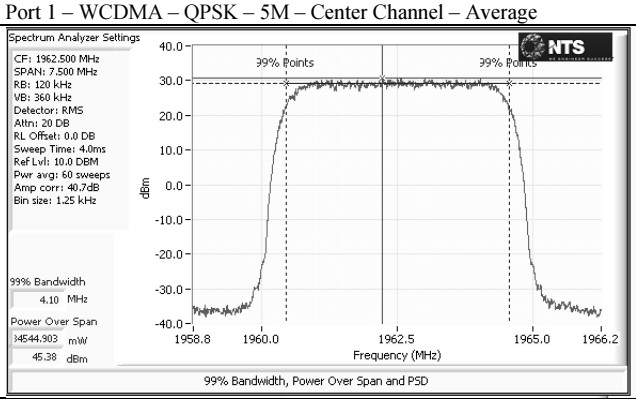


WCDMA Plots:

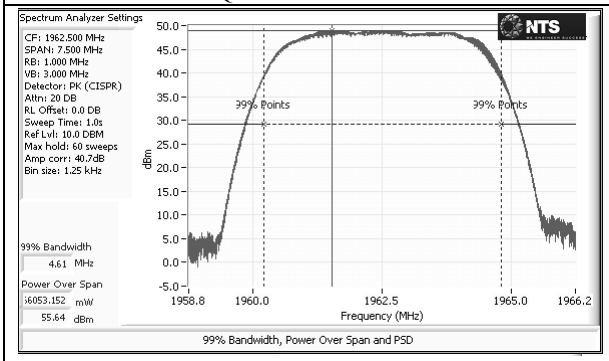
Port 1 – WCDMA – QPSK – 5M – Center Channel – Peak



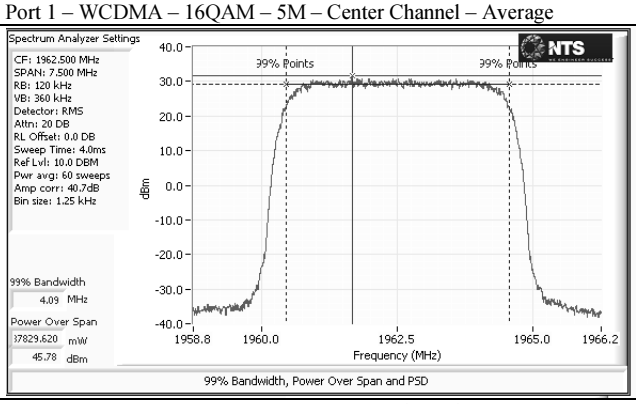
Port 1 – WCDMA – QPSK – 5M – Center Channel – Average



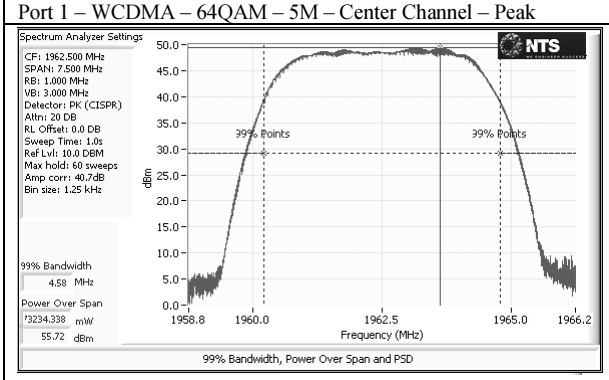
Port 1 – WCDMA – 16QAM – 5M – Center Channel – Peak



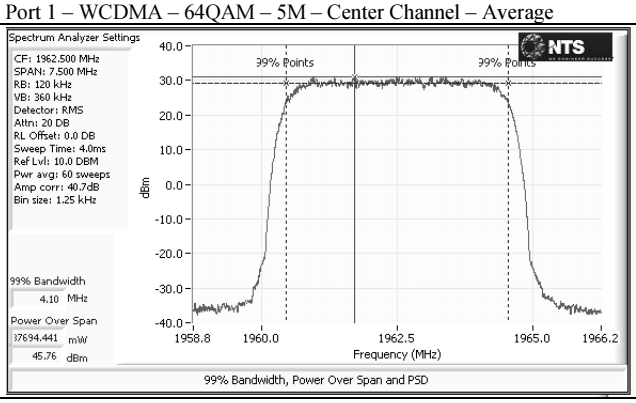
Port 1 – WCDMA – 16QAM – 5M – Center Channel – Average



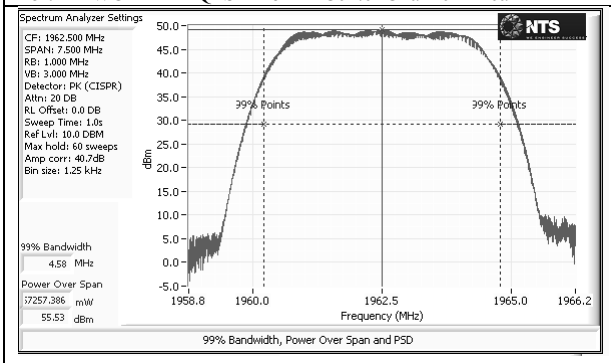
Port 1 – WCDMA – 64QAM – 5M – Center Channel – Peak



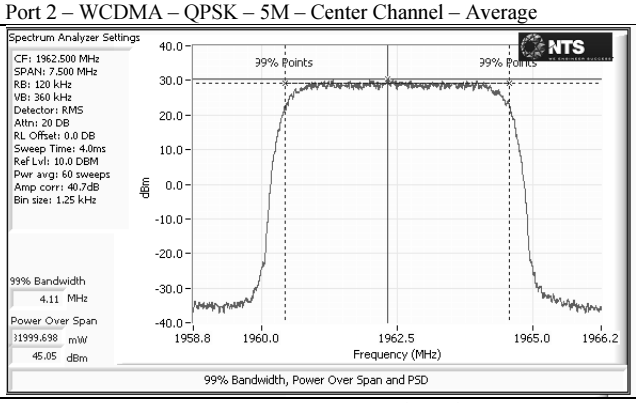
Port 1 – WCDMA – 64QAM – 5M – Center Channel – Average



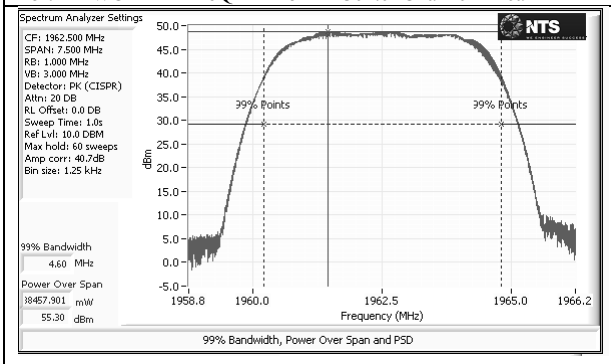
Port 2 – WCDMA – QPSK – 5M – Center Channel – Peak



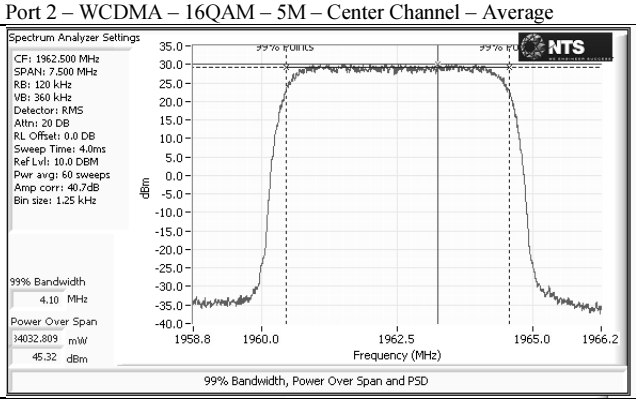
Port 2 – WCDMA – QPSK – 5M – Center Channel – Average



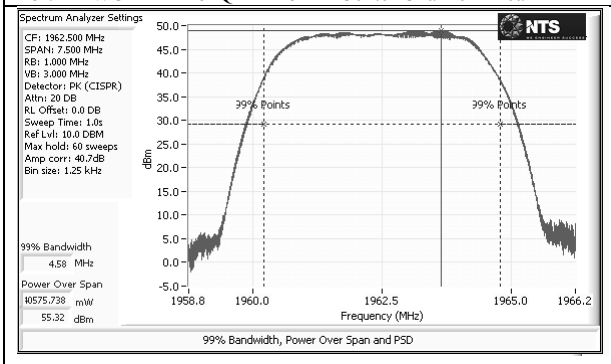
Port 2 – WCDMA – 16QAM – 5M – Center Channel – Peak



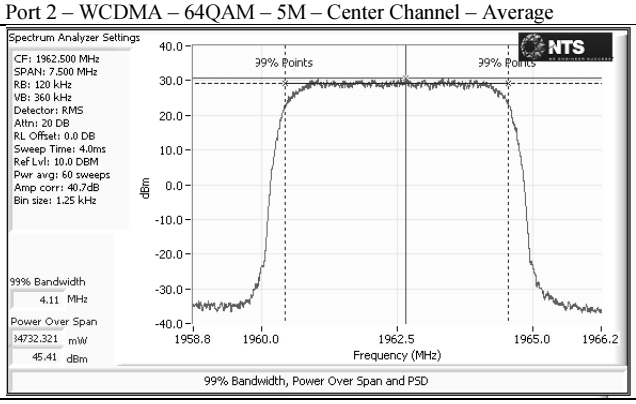
Port 2 – WCDMA – 16QAM – 5M – Center Channel – Average



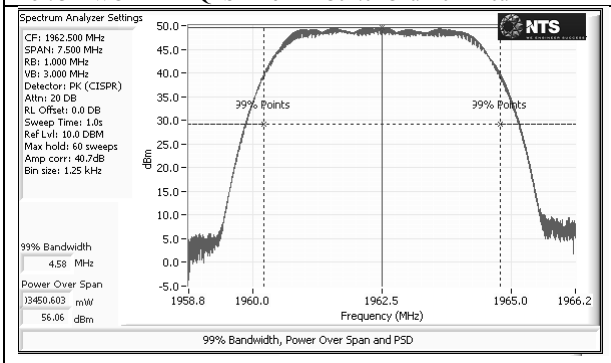
Port 2 – WCDMA – 64QAM – 5M – Center Channel – Peak



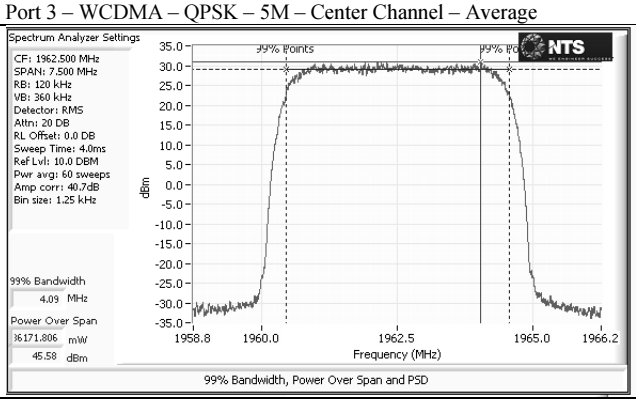
Port 2 – WCDMA – 64QAM – 5M – Center Channel – Average



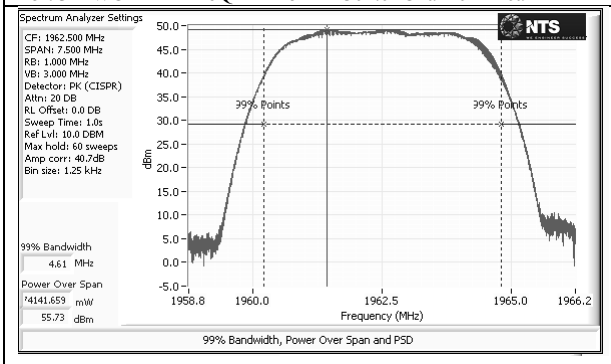
Port 3 – WCDMA – QPSK – 5M – Center Channel – Peak



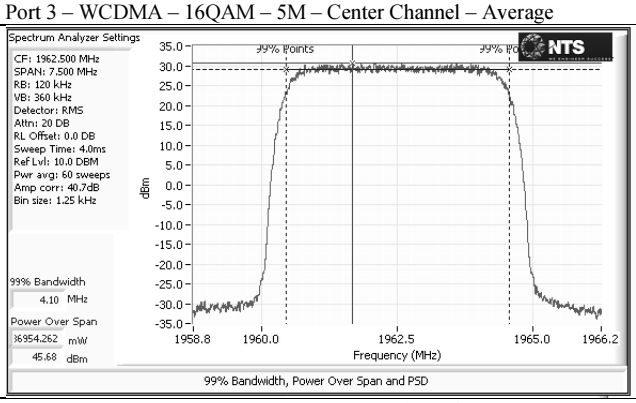
Port 3 – WCDMA – QPSK – 5M – Center Channel – Average



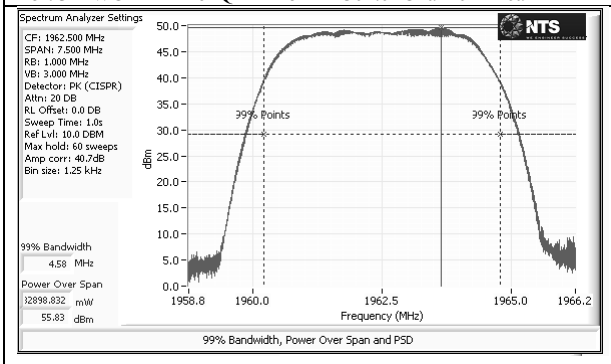
Port 3 – WCDMA – 16QAM – 5M – Center Channel – Peak



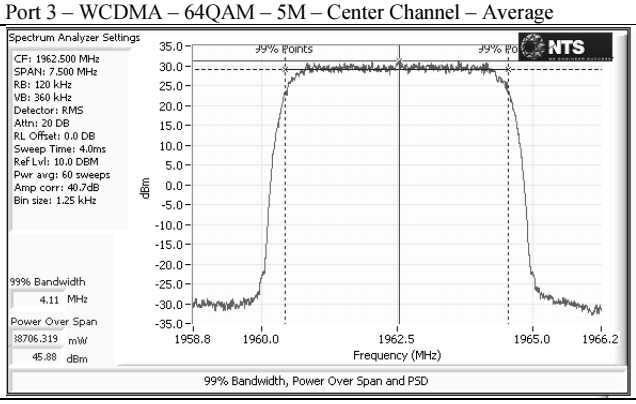
Port 3 – WCDMA – 16QAM – 5M – Center Channel – Average



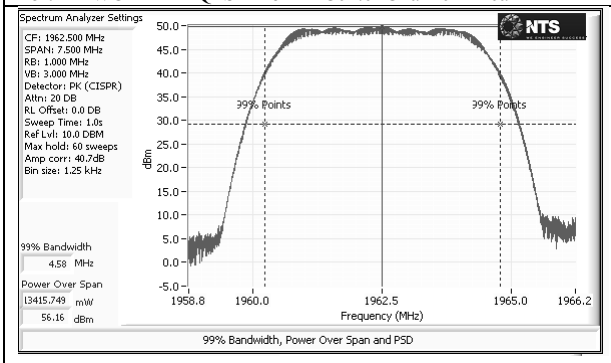
Port 3 – WCDMA – 64QAM – 5M – Center Channel – Peak



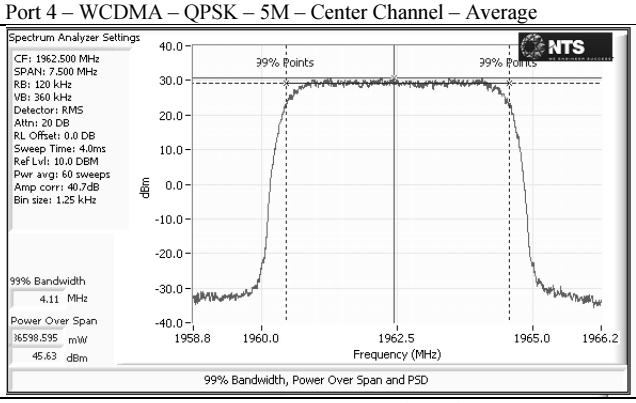
Port 3 – WCDMA – 64QAM – 5M – Center Channel – Average



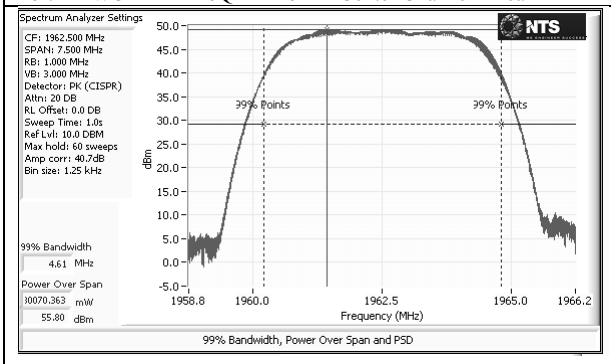
Port 4 – WCDMA – QPSK – 5M – Center Channel – Peak



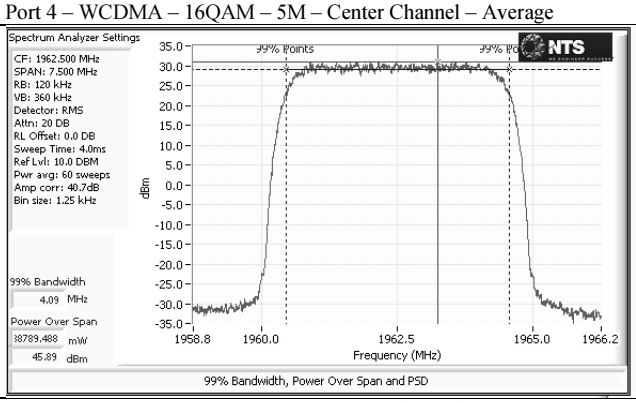
Port 4 – WCDMA – QPSK – 5M – Center Channel – Average



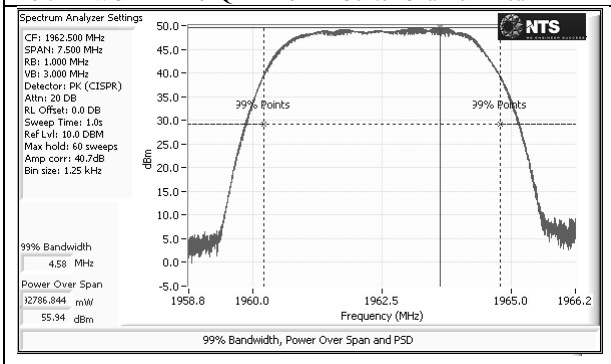
Port 4 – WCDMA – 16QAM – 5M – Center Channel – Peak



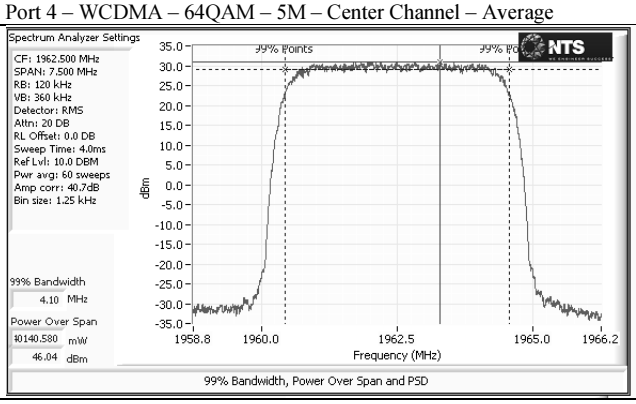
Port 4 – WCDMA – 16QAM – 5M – Center Channel – Average



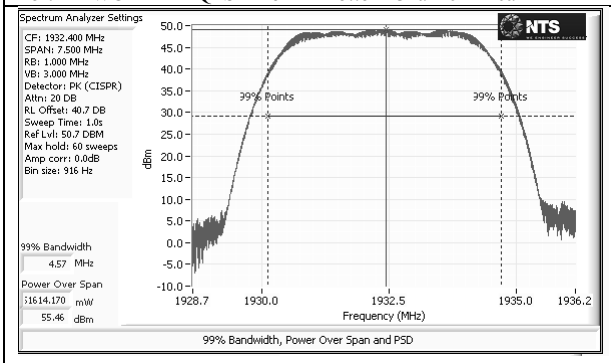
Port 4 – WCDMA – 64QAM – 5M – Center Channel – Peak



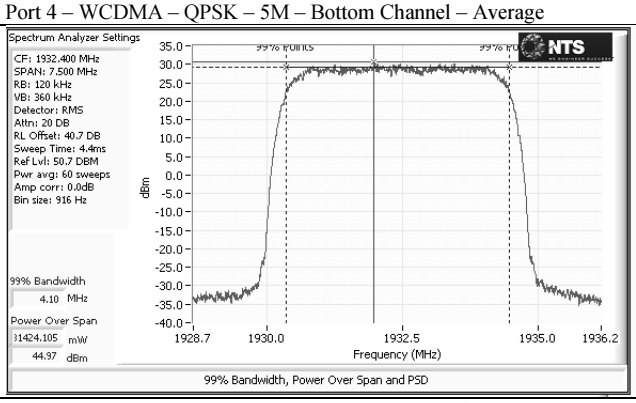
Port 4 – WCDMA – 64QAM – 5M – Center Channel – Average



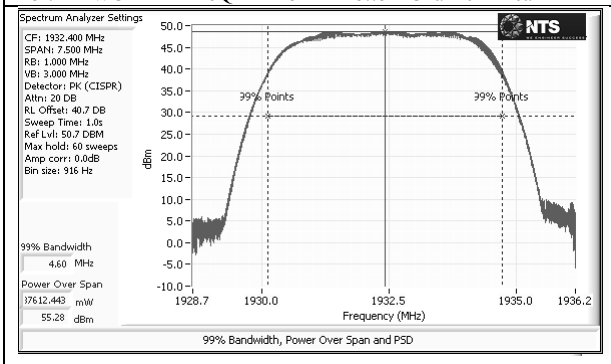
Port 4 – WCDMA – QPSK – 5M – Bottom Channel – Peak



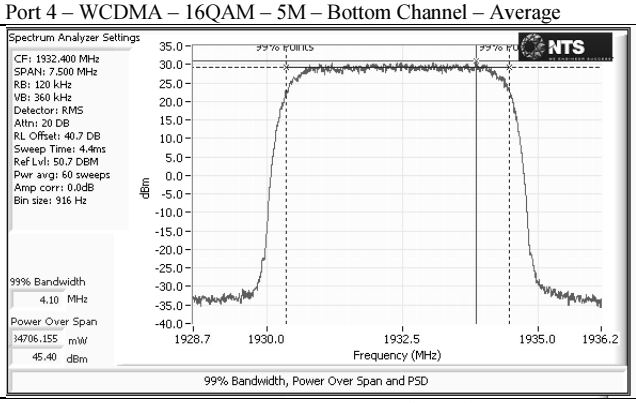
Port 4 – WCDMA – QPSK – 5M – Bottom Channel – Average



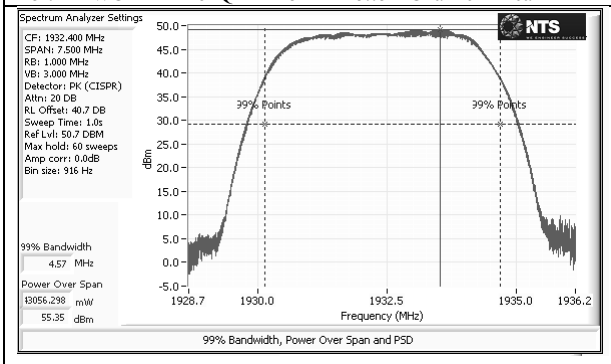
Port 4 – WCDMA – 16QAM – 5M – Bottom Channel – Peak



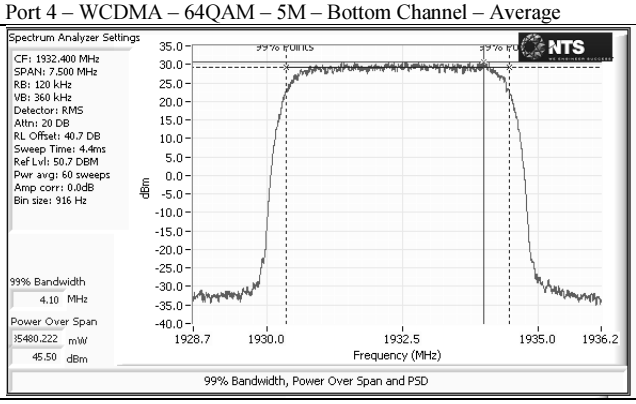
Port 4 – WCDMA – 16QAM – 5M – Bottom Channel – Average



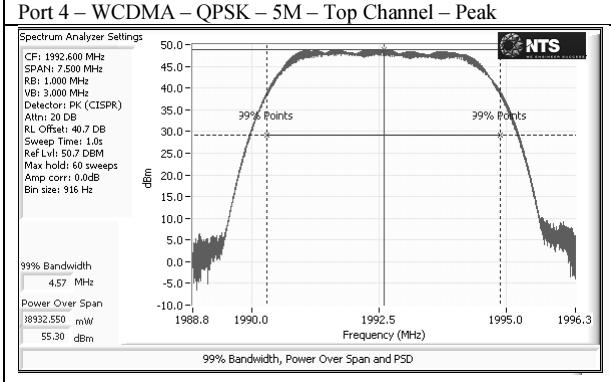
Port 4 – WCDMA – 64QAM – 5M – Bottom Channel – Peak



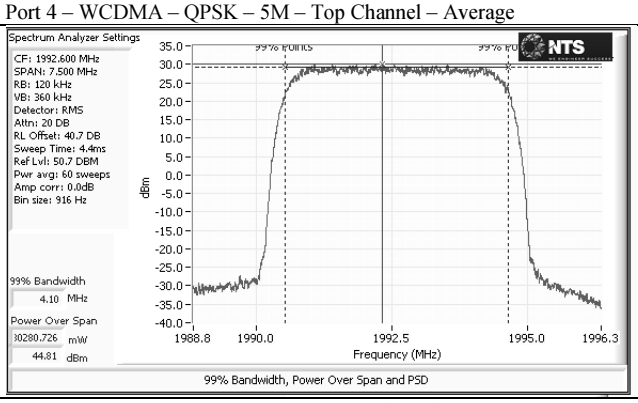
Port 4 – WCDMA – 64QAM – 5M – Bottom Channel – Average



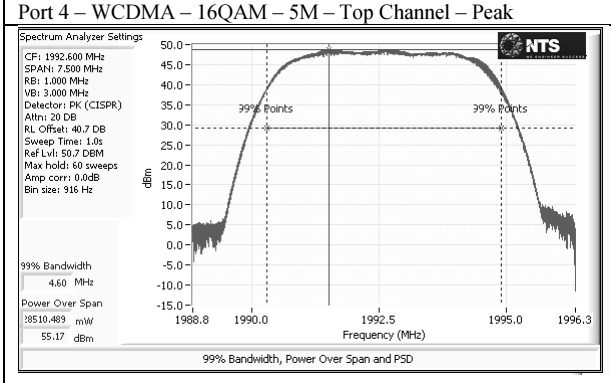
Port 4 – WCDMA – QPSK – 5M – Top Channel – Peak



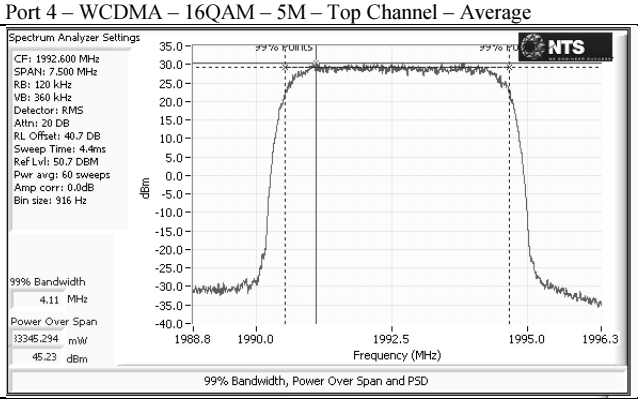
Port 4 – WCDMA – QPSK – 5M – Top Channel – Average



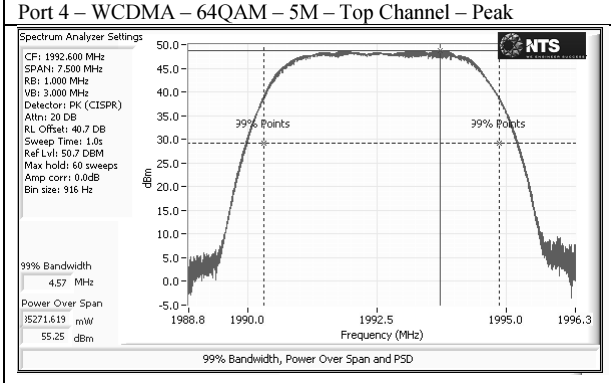
Port 4 – WCDMA – 16QAM – 5M – Top Channel – Peak



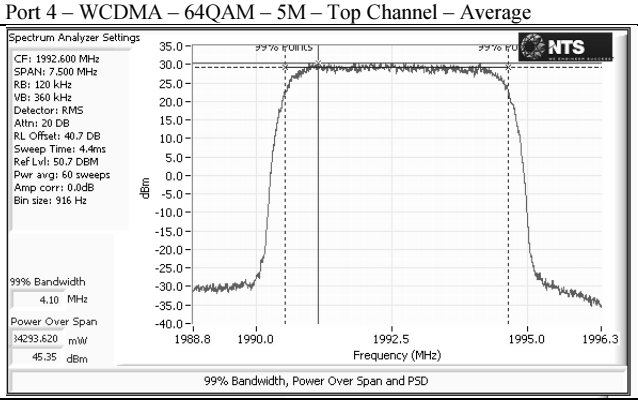
Port 4 – WCDMA – 16QAM – 5M – Top Channel – Average



Port 4 – WCDMA – 64QAM – 5M – Top Channel – Peak



Port 4 – WCDMA – 64QAM – 5M – Top Channel – Average



Emission Bandwidths (26dB and 99%)

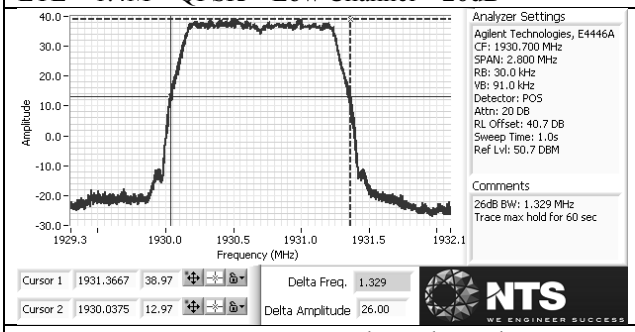
Emissions bandwidths were measured on bottom and top channels for all modulations and bandwidth modes on Port 4 and results presented below. Highest emission bandwidths for each channel bandwidth mode are marked in bold.

	LTE - QPSK				LTE - 16QAM				LTE - 64QAM			
	Low		High		Low		High		Low		High	
	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)
1.4M	**1.329**	**1.127**	1.322	1.124	1.296	1.115	1.296	1.114	1.286	1.115	1.287	1.115
3M	2.944	2.717	**2.949**	2.716	2.948	2.714	2.947	2.714	2.939	**2.718**	2.943	2.717
5M	4.921	4.5	**4.924**	4.498	4.899	4.493	4.899	4.492	4.912	**4.515**	4.912	4.512
10M	9.798	9.003	9.805	8.997	9.785	9.017	9.782	**9.023**	9.825	9.007	**9.838**	9.007
15M	14.677	13.495	14.652	13.495	14.622	13.51	14.572	13.515	14.677	13.505	**14.722**	**13.515**
20M	**19.61**	17.967	19.55	17.96	19.503	18.013	19.53	**18.013**	19.577	17.96	19.577	17.967

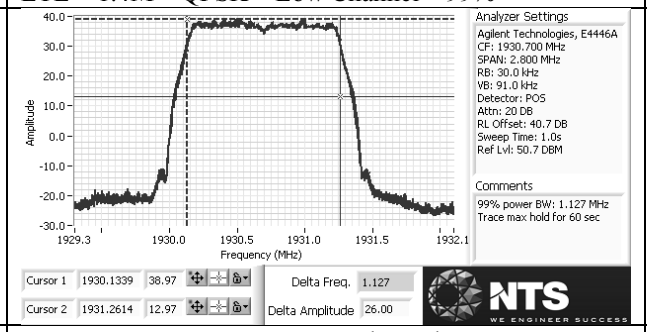
	WCDMA - QPSK				WCDMA - 16QAM				WCDMA - 64QAM			
	Low		High		Low		High		Low		High	
	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)
5M	**4.607**	**4.1**	4.6	4.098	4.603	4.1	4.594	4.099	4.593	4.093	4.586	4.093

Corresponding plots included on the following pages.

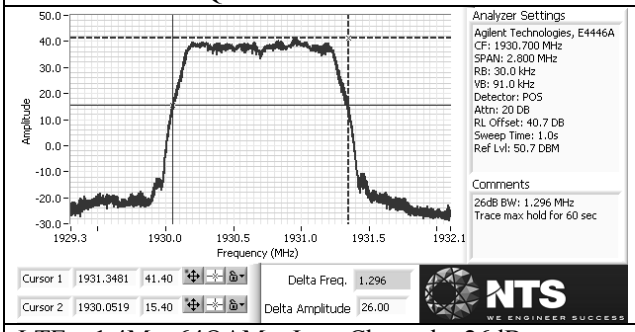
LTE – 1.4M – QPSK – Low Channel – 26dB



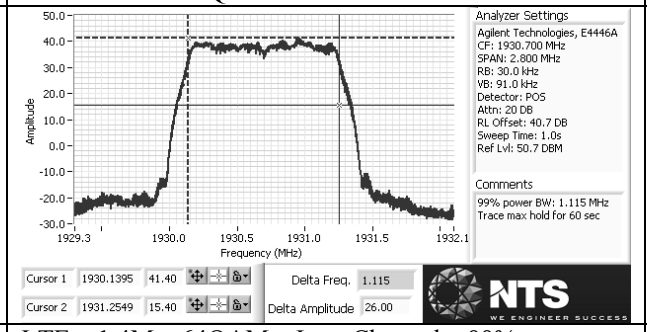
LTE – 1.4M – QPSK – Low Channel – 99%



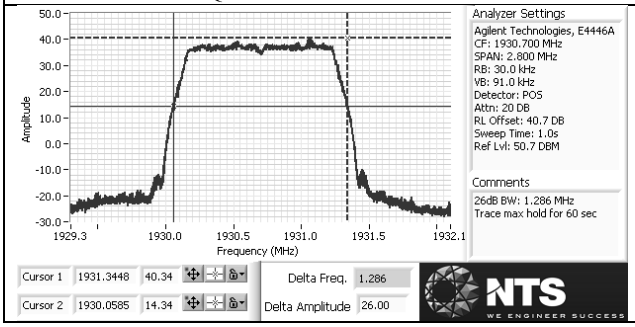
LTE – 1.4M – 16QAM – Low Channel – 26dB



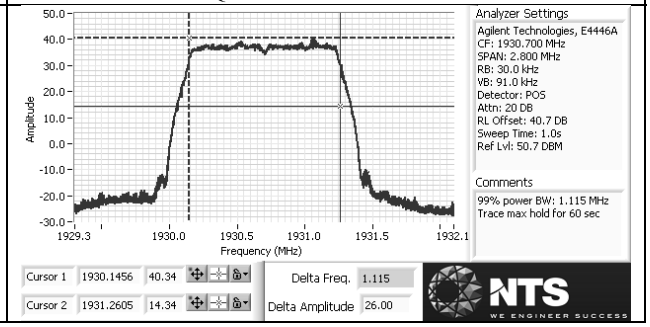
LTE – 1.4M – 16QAM – Low Channel – 99%



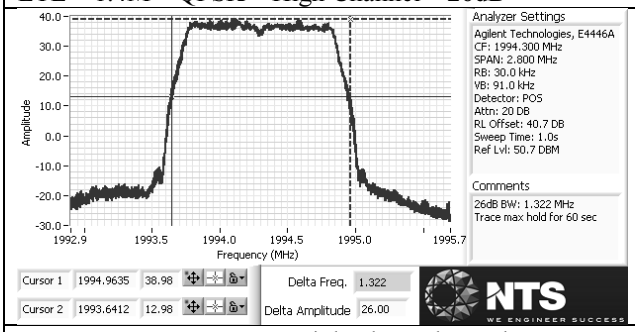
LTE – 1.4M – 64QAM – Low Channel – 26dB



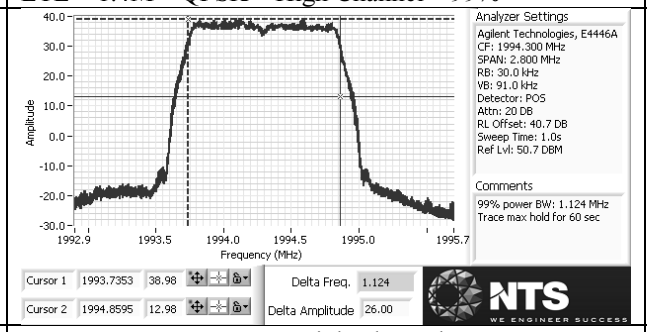
LTE – 1.4M – 64QAM – Low Channel – 99%



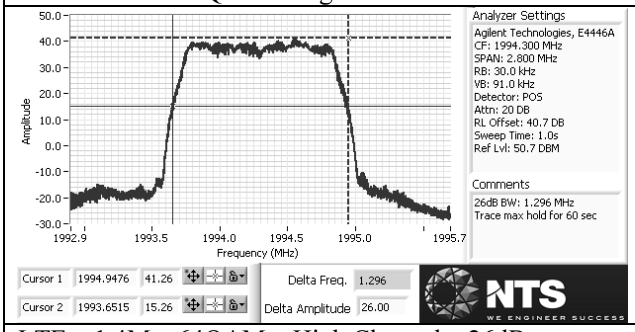
LTE – 1.4M – QPSK – High Channel – 26dB



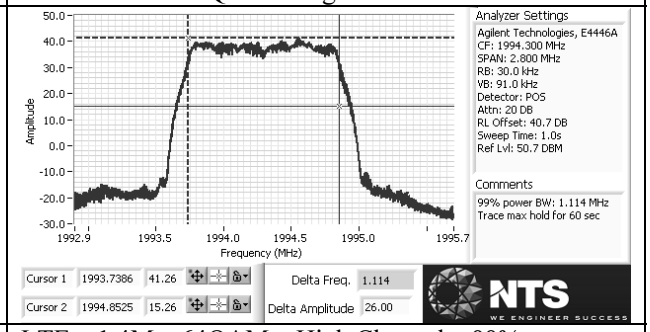
LTE – 1.4M – QPSK – High Channel – 99%



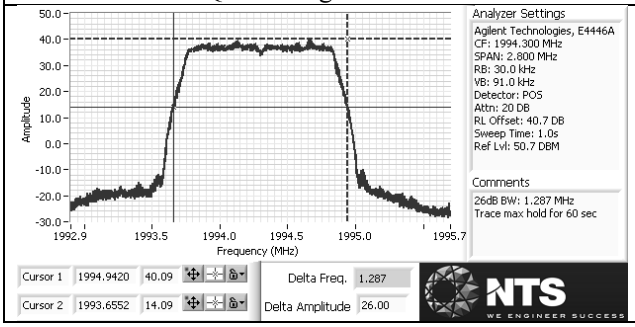
LTE – 1.4M – 16QAM – High Channel – 26dB



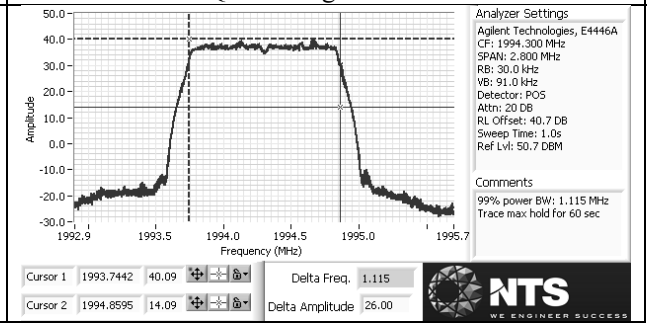
LTE – 1.4M – 16QAM – High Channel – 99%



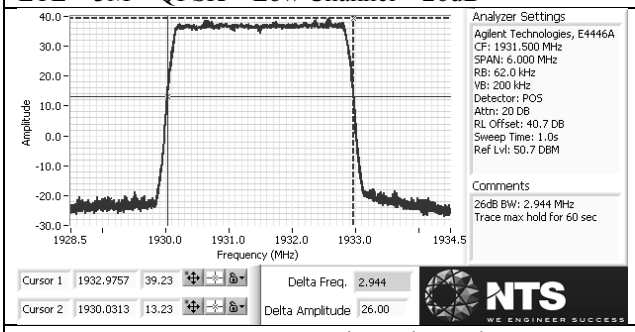
LTE – 1.4M – 64QAM – High Channel – 26dB



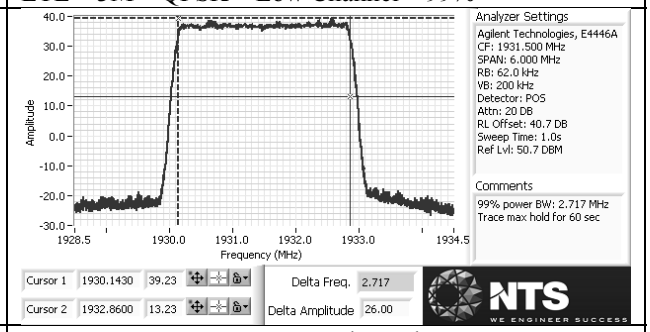
LTE – 1.4M – 64QAM – High Channel – 99%



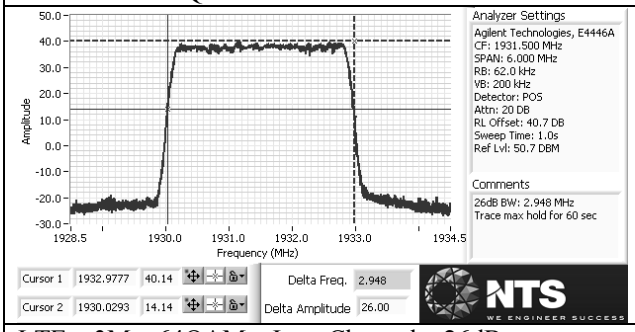
LTE – 3M – QPSK – Low Channel – 26dB



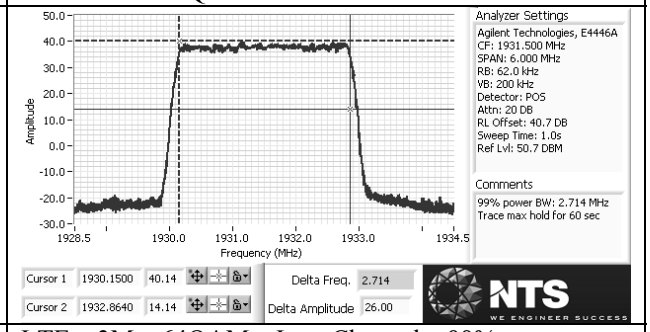
LTE – 3M – QPSK – Low Channel – 99%



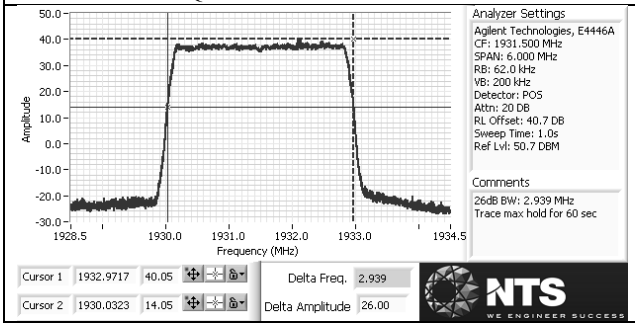
LTE – 3M – 16QAM – Low Channel – 26dB



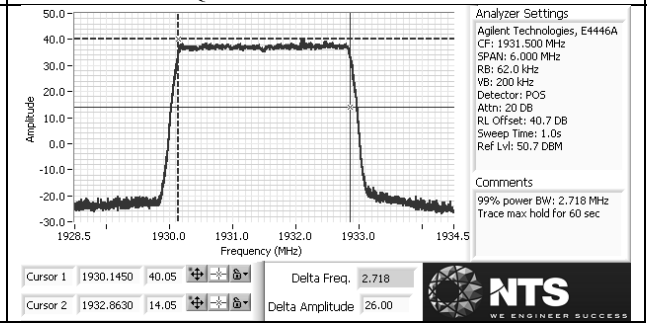
LTE – 3M – 16QAM – Low Channel – 99%



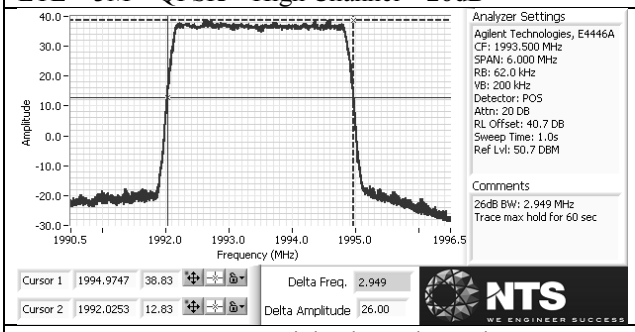
LTE – 3M – 64QAM – Low Channel – 26dB



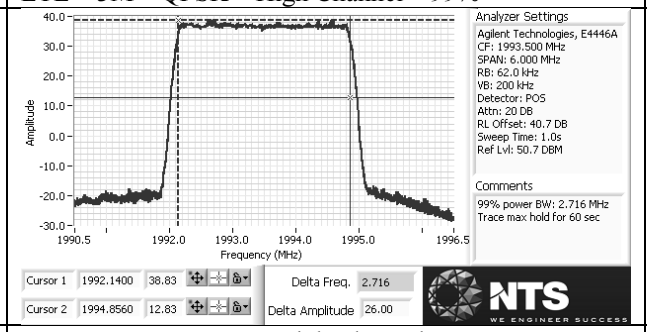
LTE – 3M – 64QAM – Low Channel – 99%



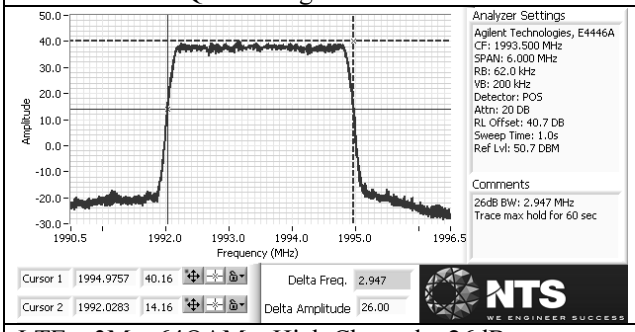
LTE – 3M – QPSK – High Channel – 26dB



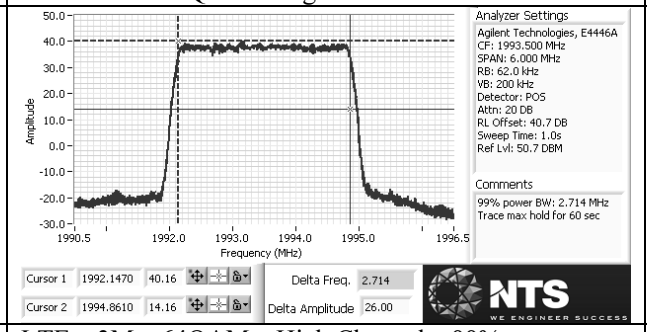
LTE – 3M – QPSK – High Channel – 99%



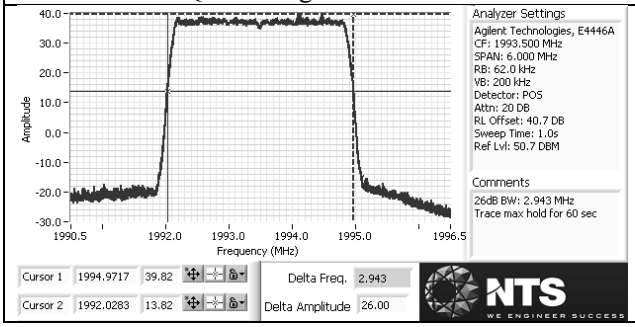
LTE – 3M – 16QAM – High Channel – 26dB



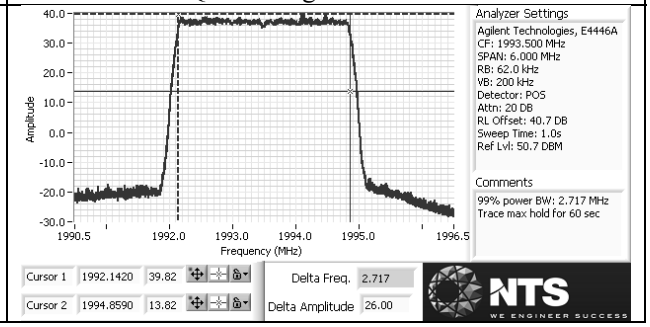
LTE – 3M – 16QAM – High Channel – 99%



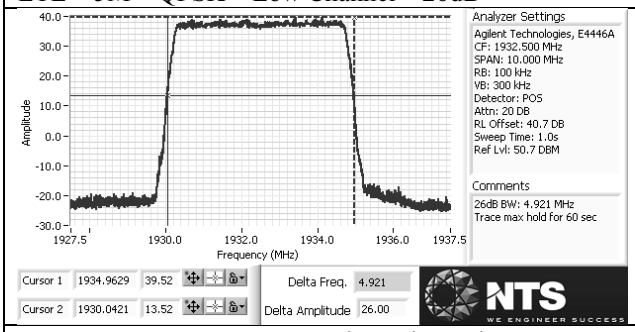
LTE – 3M – 64QAM – High Channel – 26dB



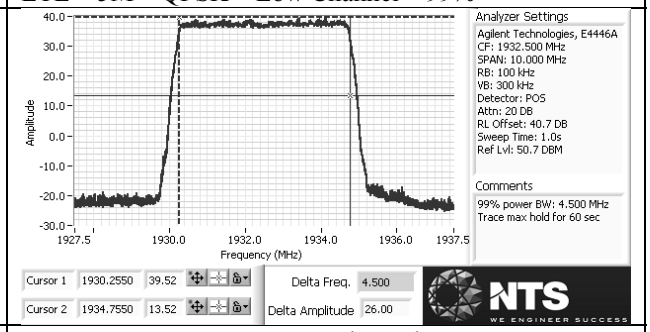
LTE – 3M – 64QAM – High Channel – 99%



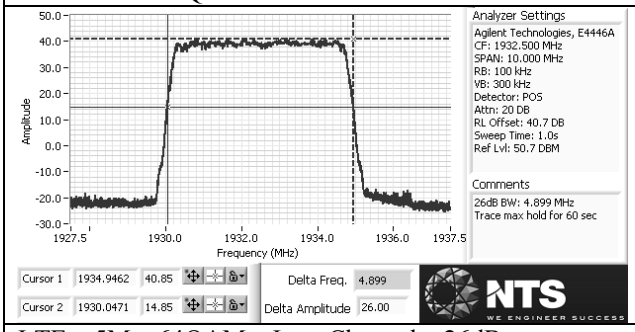
LTE – 5M – QPSK – Low Channel – 26dB



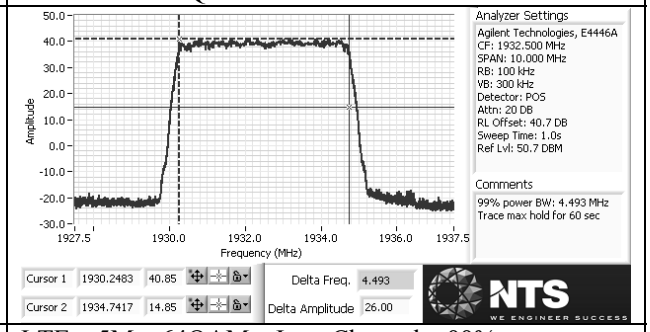
LTE – 5M – QPSK – Low Channel – 99%



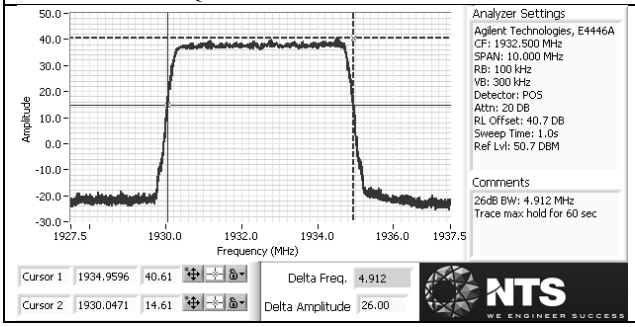
LTE – 5M – 16QAM – Low Channel – 26dB



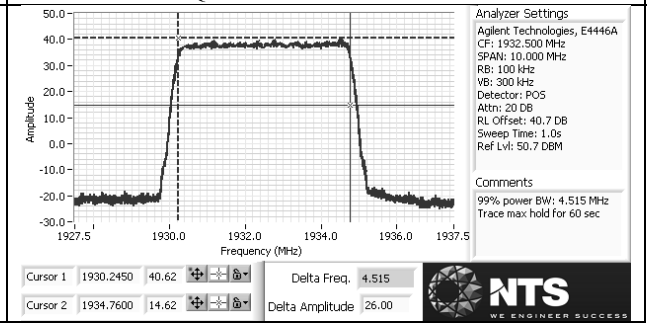
LTE – 5M – 16QAM – Low Channel – 99%



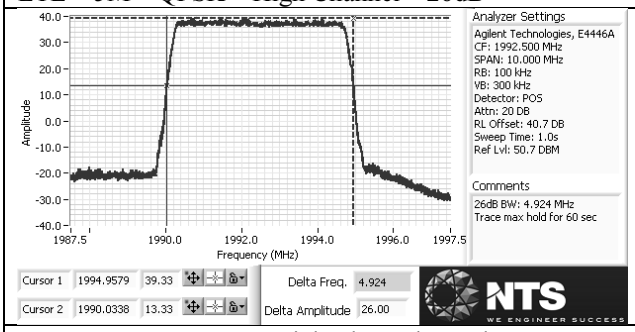
LTE – 5M – 64QAM – Low Channel – 26dB



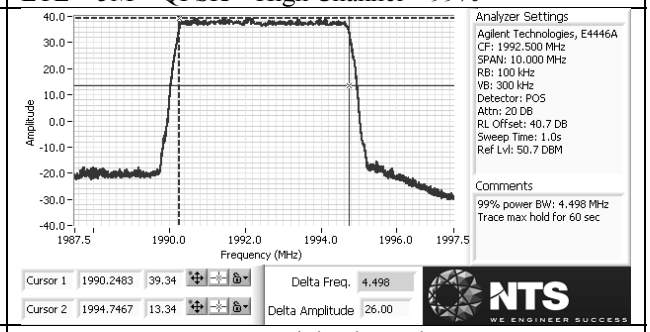
LTE – 5M – 64QAM – Low Channel – 99%



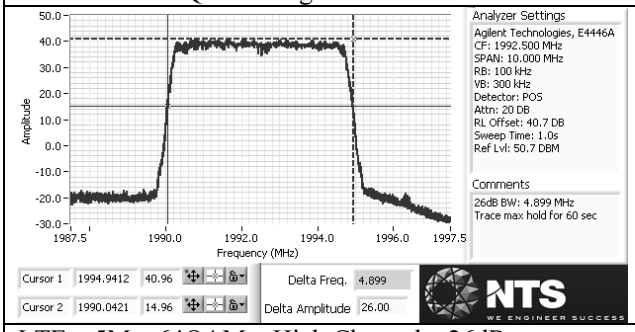
LTE – 5M – QPSK – High Channel – 26dB



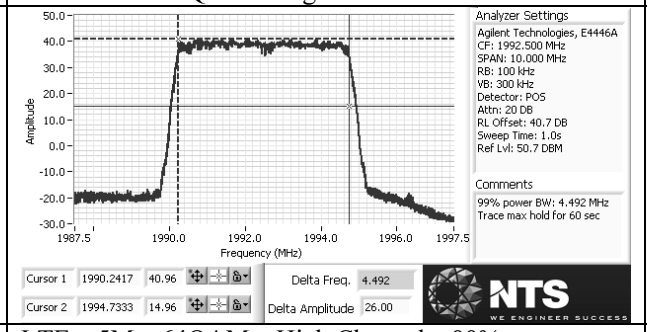
LTE – 5M – QPSK – High Channel – 99%



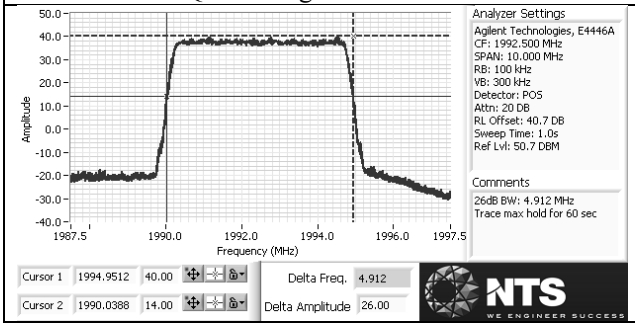
LTE – 5M – 16QAM – High Channel – 26dB



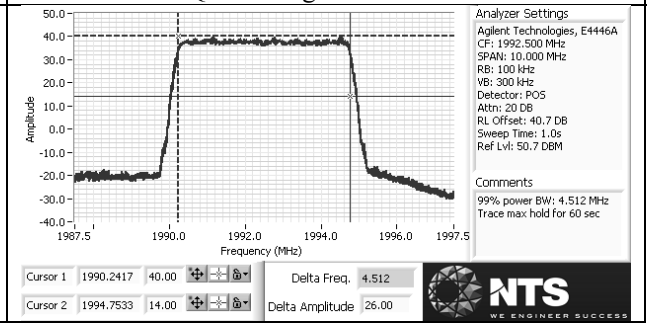
LTE – 5M – 16QAM – High Channel – 99%



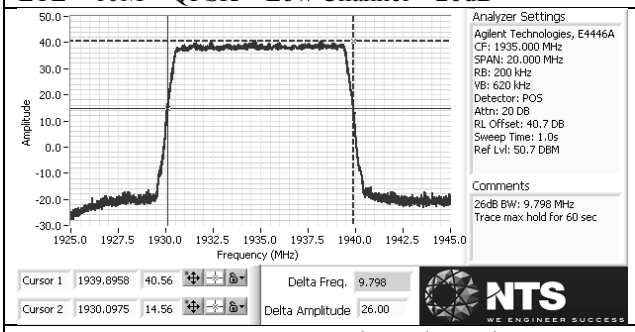
LTE – 5M – 64QAM – High Channel – 26dB



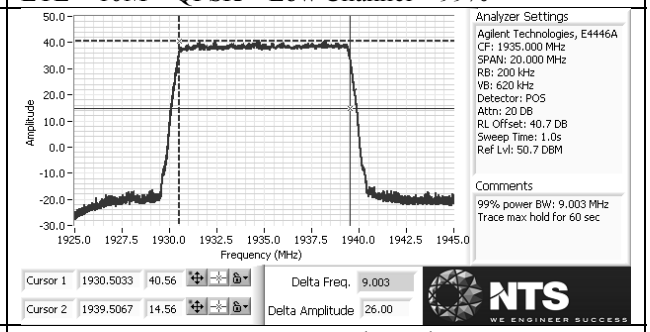
LTE – 5M – 64QAM – High Channel – 99%



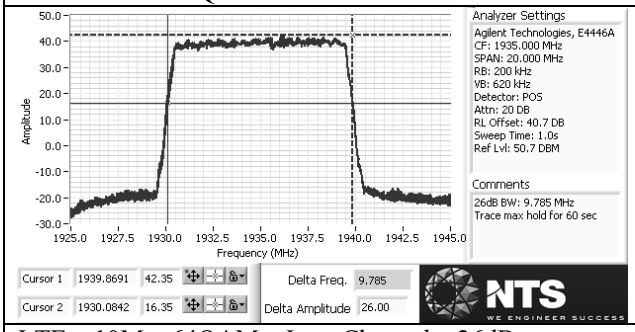
LTE – 10M – QPSK – Low Channel – 26dB



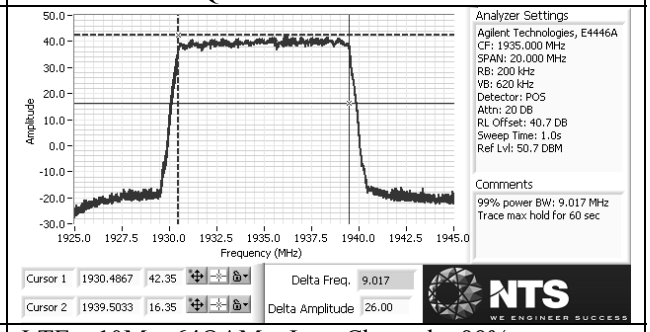
LTE – 10M – QPSK – Low Channel – 99%



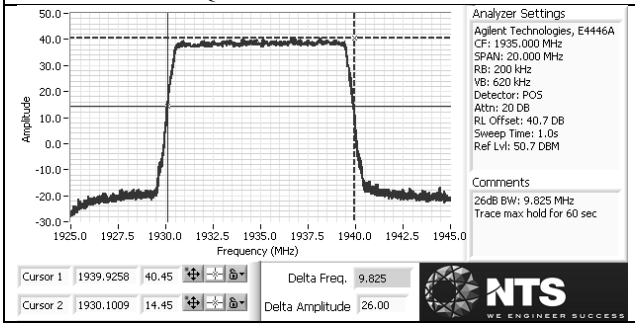
LTE – 10M – 16QAM – Low Channel – 26dB



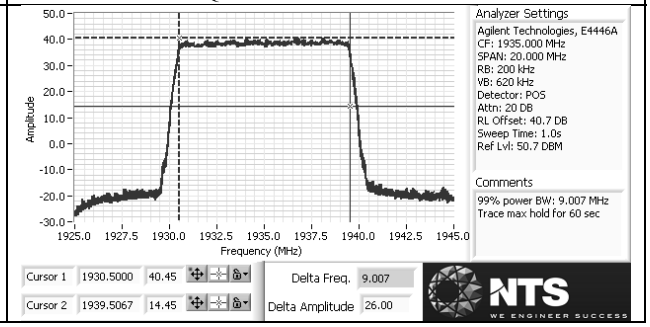
LTE – 10M – 16QAM – Low Channel – 99%



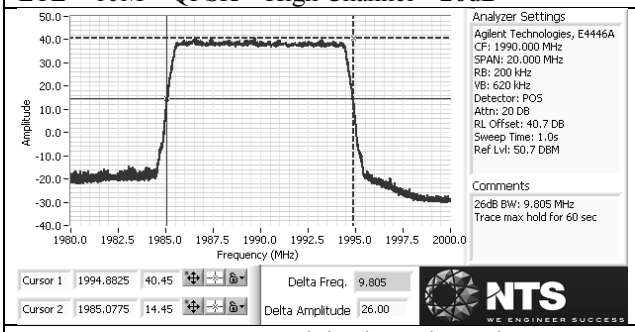
LTE – 10M – 64QAM – Low Channel – 26dB



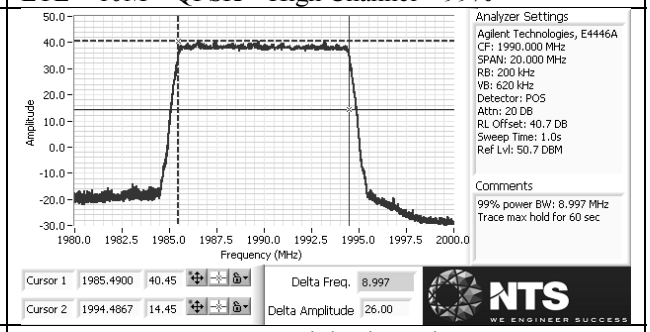
LTE – 10M – 64QAM – Low Channel – 99%



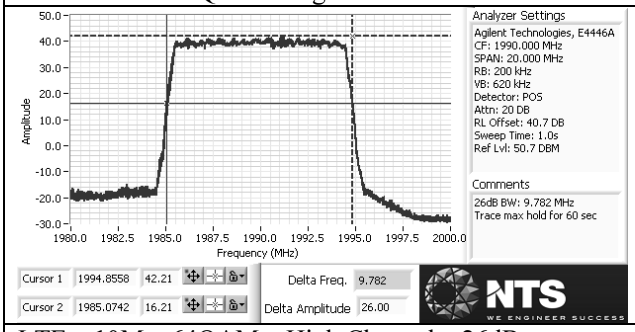
LTE – 10M – QPSK – High Channel – 26dB



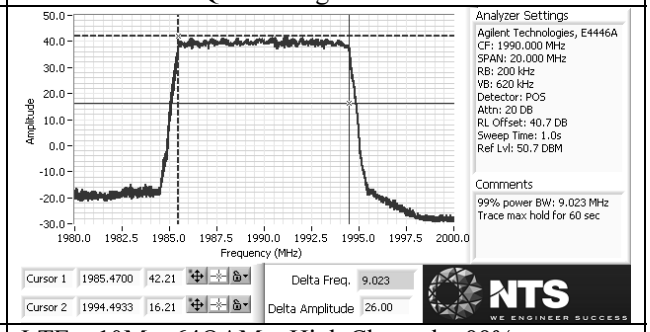
LTE – 10M – QPSK – High Channel – 99%



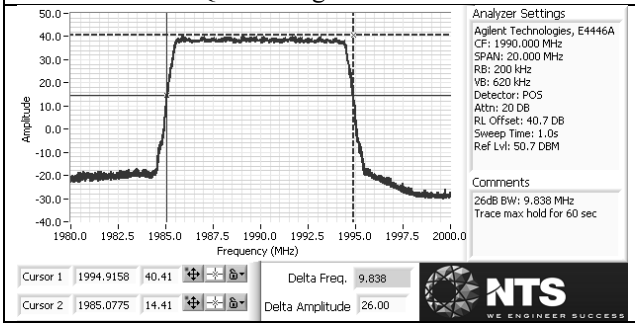
LTE – 10M – 16QAM – High Channel – 26dB



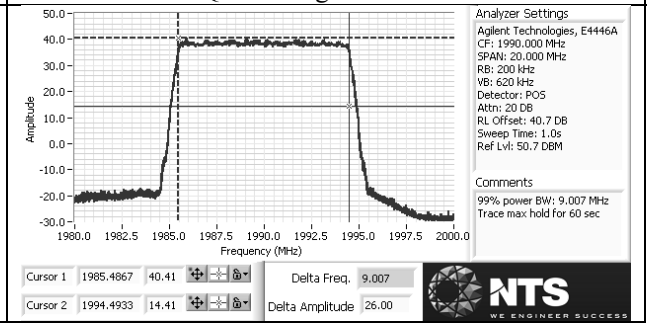
LTE – 10M – 16QAM – High Channel – 99%



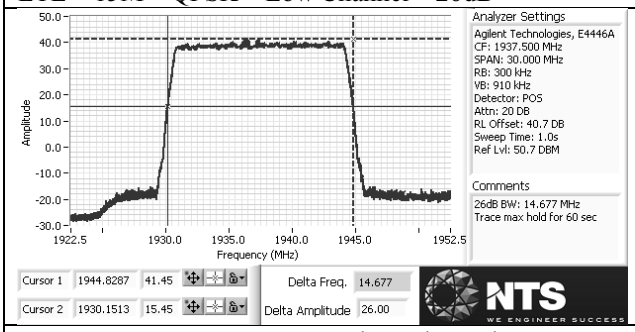
LTE – 10M – 64QAM – High Channel – 26dB



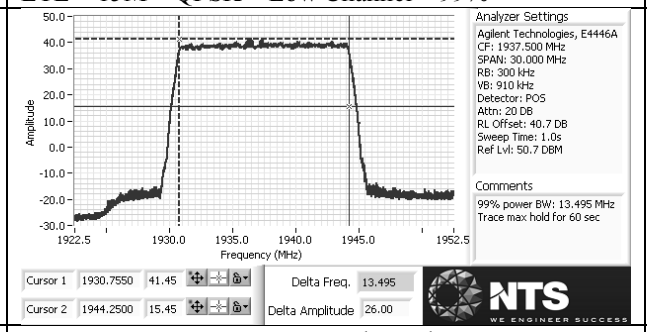
LTE – 10M – 64QAM – High Channel – 99%



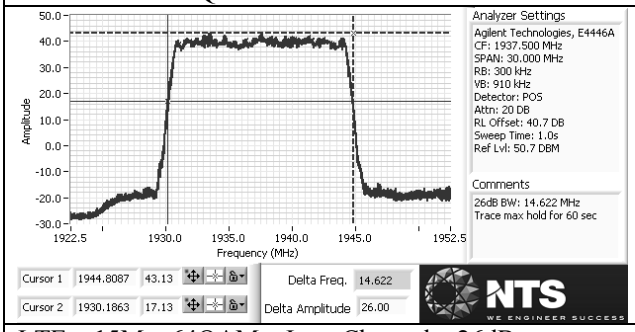
LTE – 15M – QPSK – Low Channel – 26dB



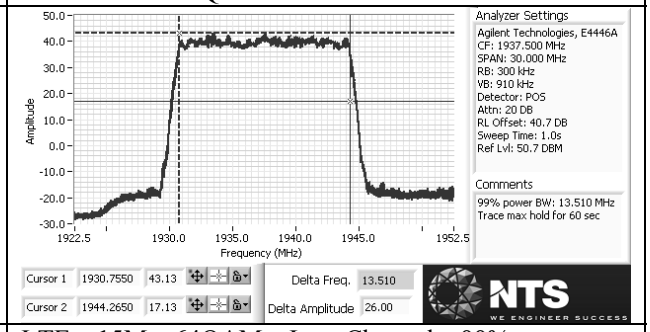
LTE – 15M – QPSK – Low Channel – 99%



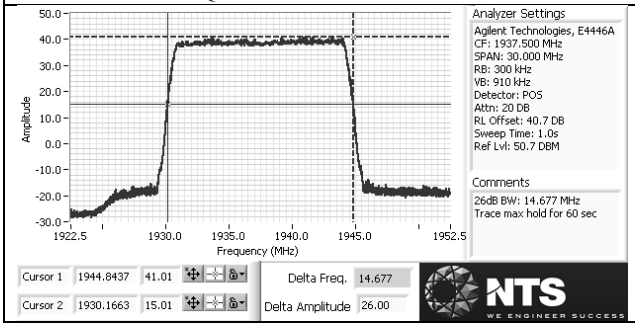
LTE – 15M – 16QAM – Low Channel – 26dB



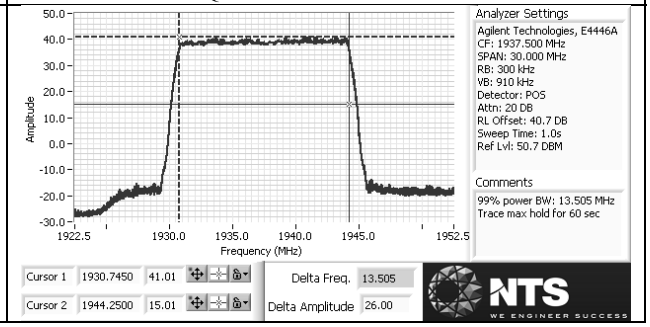
LTE – 15M – 16QAM – Low Channel – 99%



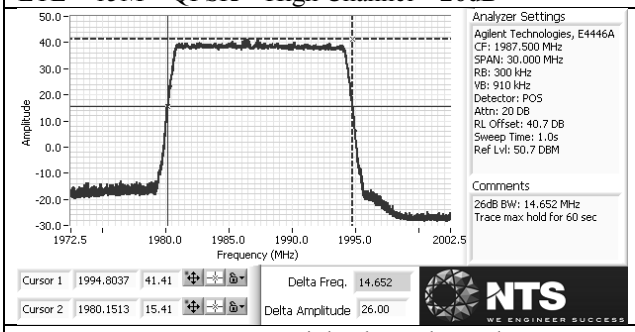
LTE – 15M – 64QAM – Low Channel – 26dB



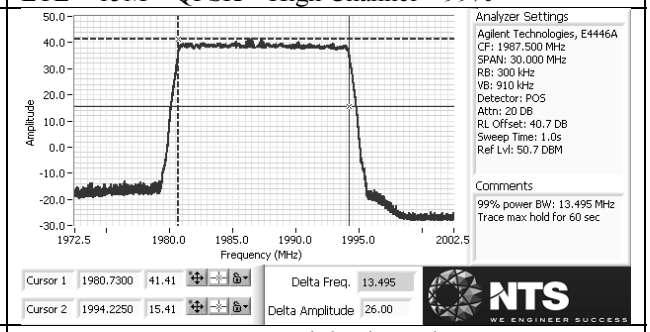
LTE – 15M – 64QAM – Low Channel – 99%



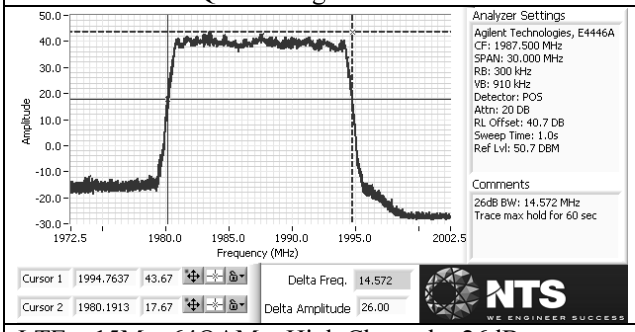
LTE – 15M – QPSK – High Channel – 26dB



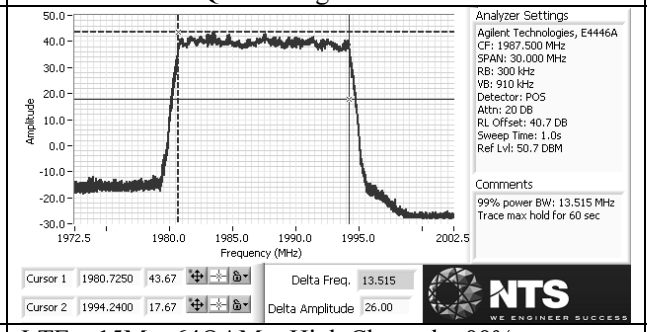
LTE – 15M – QPSK – High Channel – 99%



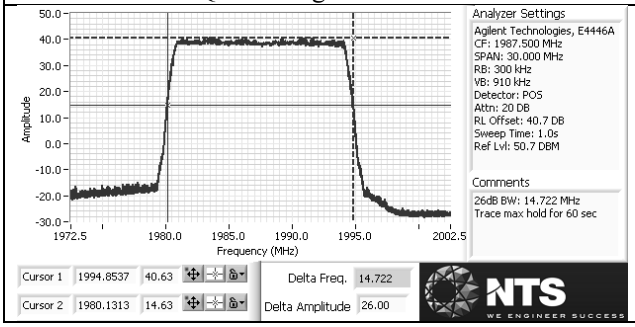
LTE – 15M – 16QAM – High Channel – 26dB



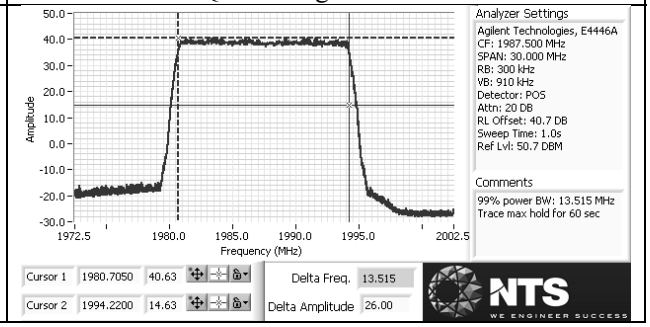
LTE – 15M – 16QAM – High Channel – 99%



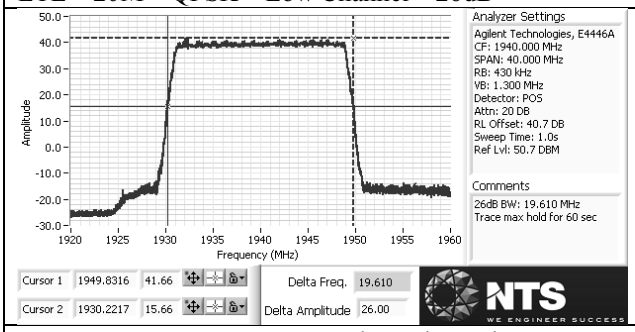
LTE – 15M – 64QAM – High Channel – 26dB



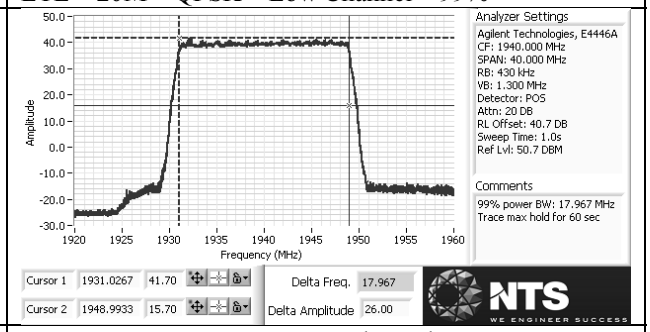
LTE – 15M – 64QAM – High Channel – 99%



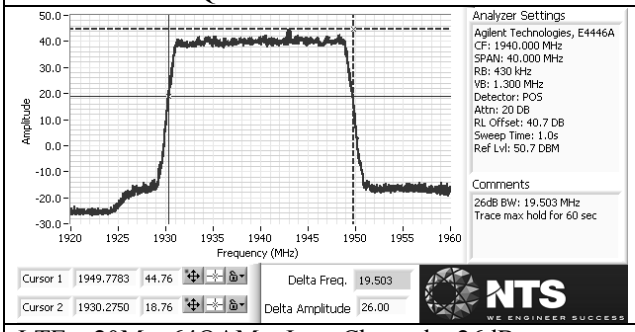
LTE – 20M – QPSK – Low Channel – 26dB



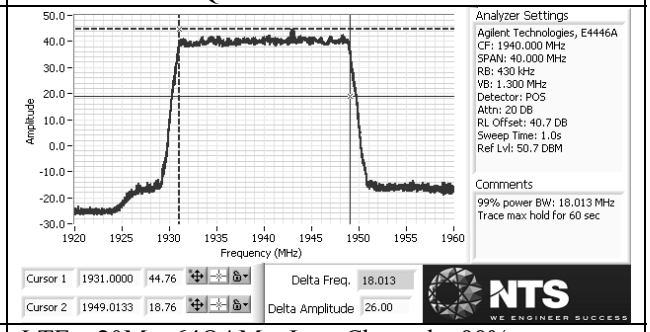
LTE – 20M – QPSK – Low Channel – 99%



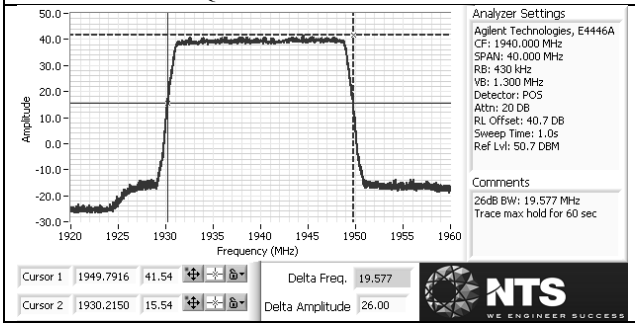
LTE – 20M – 16QAM – Low Channel – 26dB



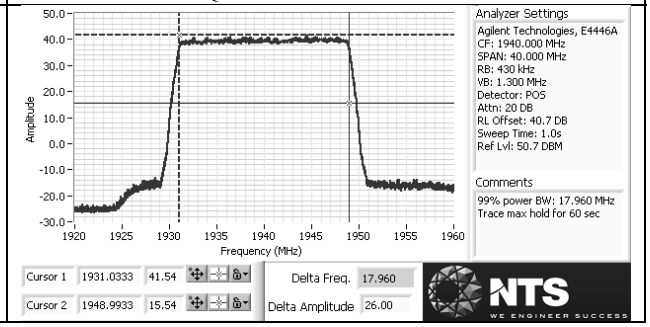
LTE – 20M – 16QAM – Low Channel – 99%



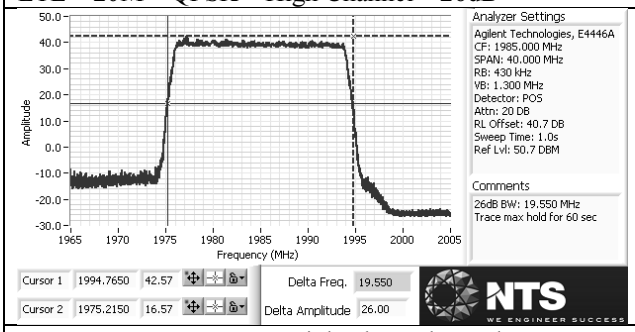
LTE – 20M – 64QAM – Low Channel – 26dB



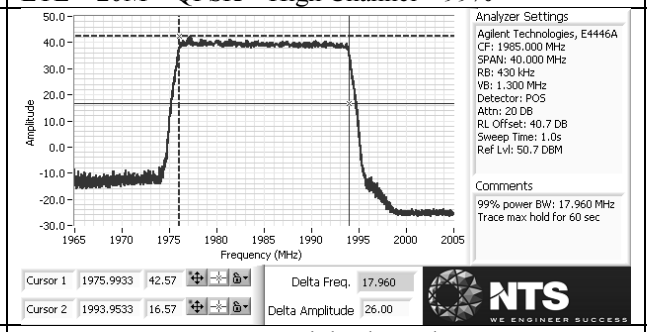
LTE – 20M – 64QAM – Low Channel – 99%



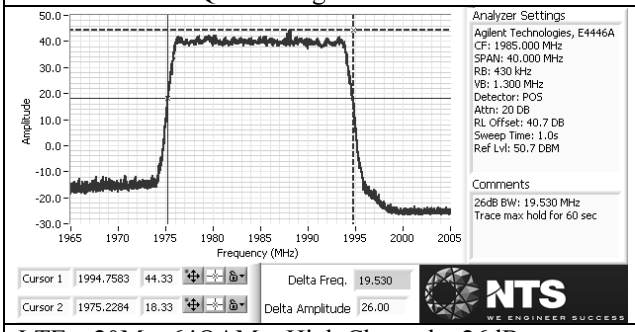
LTE – 20M – QPSK – High Channel – 26dB



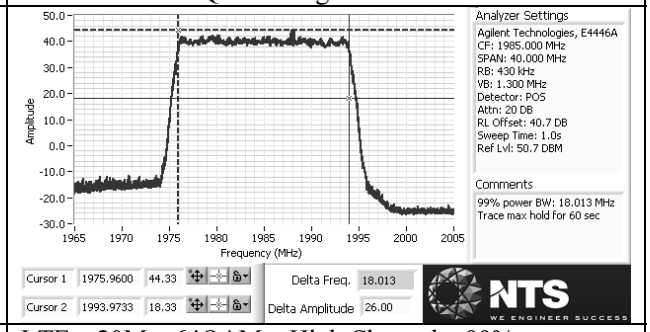
LTE – 20M – QPSK – High Channel – 99%



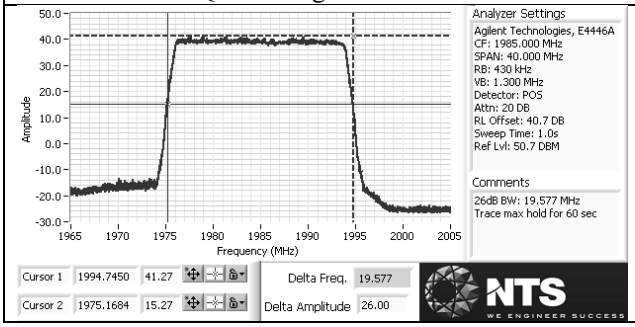
LTE – 20M – 16QAM – High Channel – 26dB



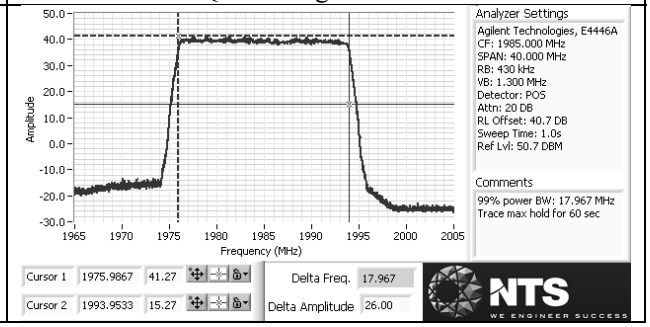
LTE – 20M – 16QAM – High Channel – 99%



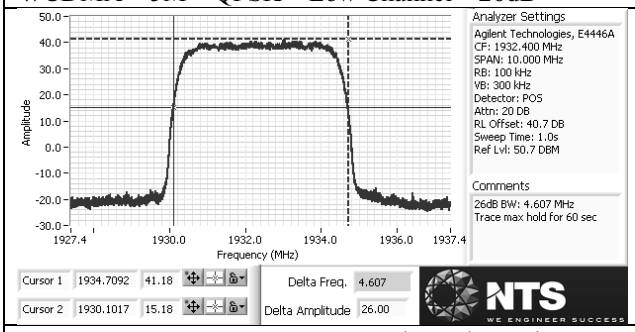
LTE – 20M – 64QAM – High Channel – 26dB



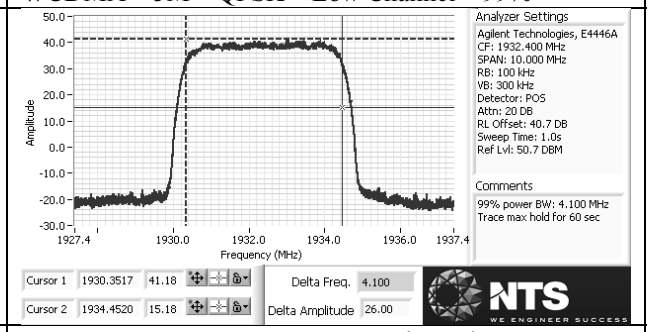
LTE – 20M – 64QAM – High Channel – 99%



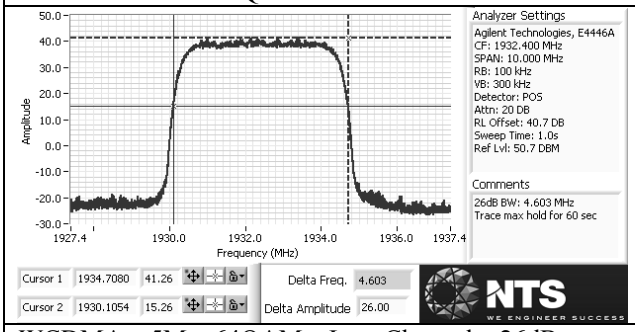
WCDMA – 5M – QPSK – Low Channel – 26dB



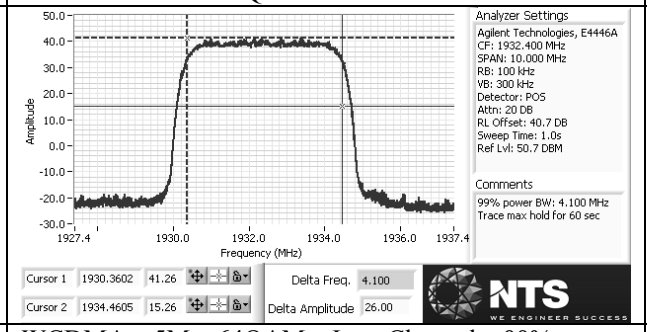
WCDMA – 5M – QPSK – Low Channel – 99%



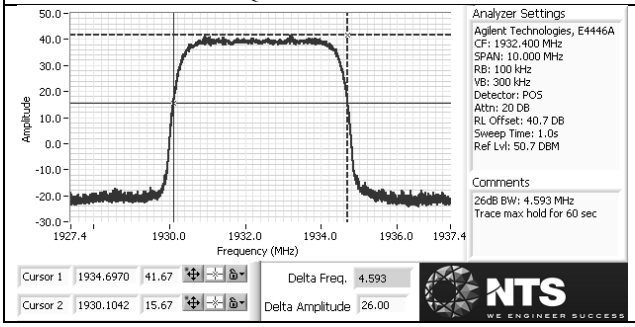
WCDMA – 5M – 16QAM – Low Channel – 26dB



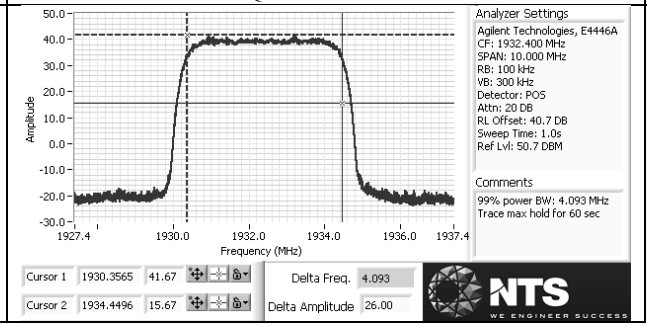
WCDMA – 5M – 16QAM – Low Channel – 99%



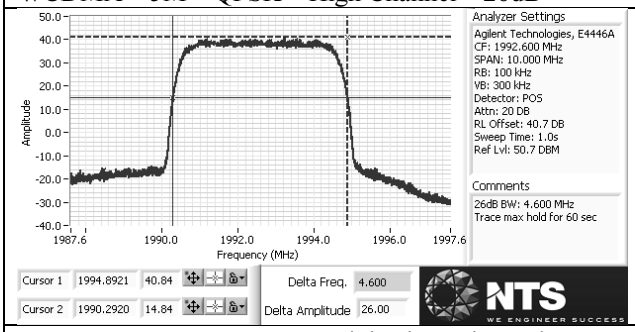
WCDMA – 5M – 64QAM – Low Channel – 26dB



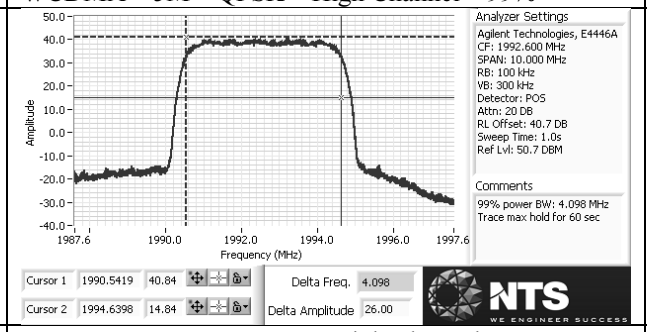
WCDMA – 5M – 64QAM – Low Channel – 99%



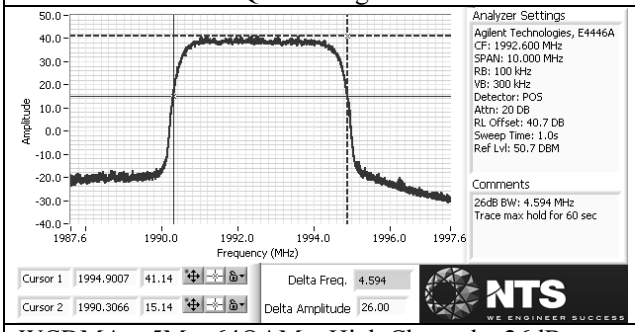
WCDMA – 5M – QPSK – High Channel – 26dB



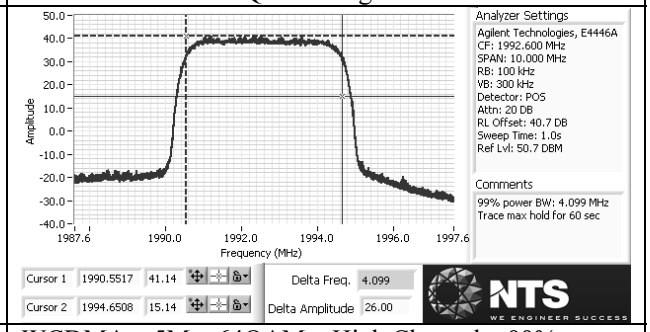
WCDMA – 5M – QPSK – High Channel – 99%



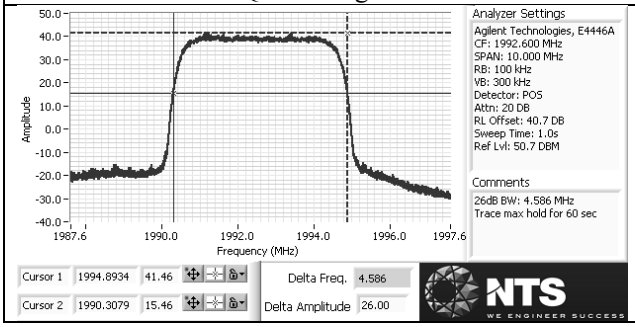
WCDMA – 5M – 16QAM – High Channel – 26dB



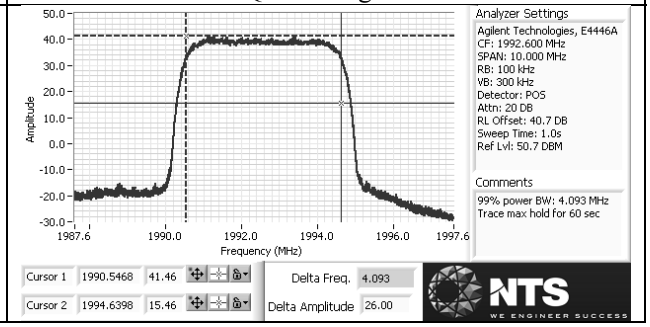
WCDMA – 5M – 16QAM – High Channel – 99%



WCDMA – 5M – 64QAM – High Channel – 26dB



WCDMA – 5M – 64QAM – High Channel – 99%



Antenna Port Conducted Bandedge

Tests performed at Port 4 on lowest and highest channels for all modulations and channel bandwidth modes. Due to 4x4 MIMO operation, limit is -19.03dBm (-13dBm – 10*log(4)) per FCC KDB 662911D01 v02r01. For multicarrier mode, only 2 carrier configuration has been tested since carriers have the highest power in that configuration. For low end, one of the carriers was transmitting at the lowest channel and the 2nd carrier was transmitting on the next channel above that. Similarly, for high end, one of the carriers was transmitting at the highest channel and the 2nd carrier was transmitting on the next channel below that. For LTE, only 1.4MHz bandwidth mode was tested for multicarrier configuration since narrowest bandwidth results with the highest power spectral density. To observe any intermodulation products occurring around the authorized block edges, frequency span has been extended 30MHz beyond the authorized block edges of 1930MHz and 1995MHz.

LTE 3MHz, 5MHz, 10MHz, 15MHz and 20MHz modes required power reduction at the lowest and highest channels as described in output power section of this report. The columns shaded in gray below are for those channels that are immediately inside the lowest and highest channels. These channels were tested at full power to ensure bandedge compliance.

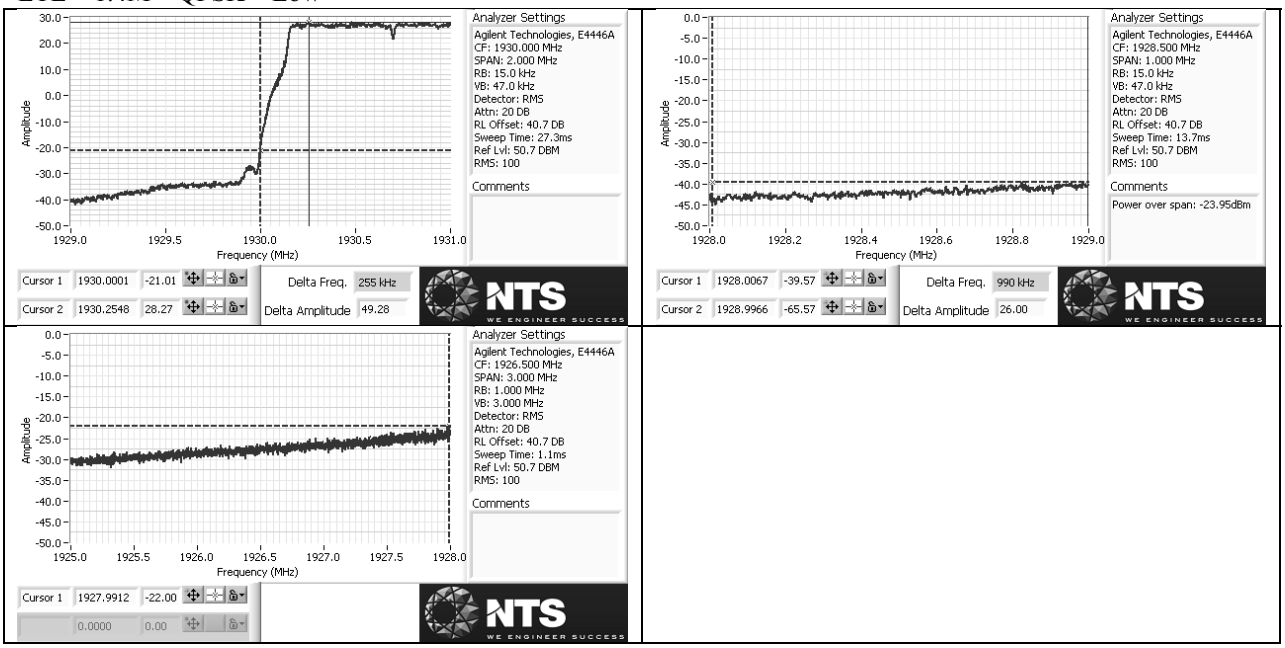
Total path loss of 40.7dB accounted in via reference level offset to the spectrum analyzer.

	LTE - QPSK				LTE - 16QAM				LTE - 64QAM			
	Low		High		Low		High		Low		High	
1.4M	-21.01		-20.26		-21.29		-20.1		-21.88		-20.79	
3M	-20.72	-33.51	-30.31	-20.34	-20.35	-32.97	-29.56	-20.04	-20.6	-33.44	-29.61	-19.52
5M	-19.94	-23.67	-24.07	-20.53	-20.25	-23.17	-23.43	-19.7	-20.45	-24.8	-23.67	-20.31
10M	-20.59	-25.54	-24.08	-20.09	-20.33	-24.37	-25.12	-20.97	-20.06	-24.82	-25.49	-21.46
15M	-19.71	-24.71	-24.9	-21.66	-20.42	-23.82	-24.86	-22.34	-19.79	-25.18	-24.06	-23.64
20M	-20.45	-24.13	-24.61	-21.72	-20.79	-23.77	-25.08	-21.25	-21.01	-23.51	-23.86	-22.15
1.4M Dual	-22.35		-22.4		-22.68		-22.62		-23.74		-22.56	

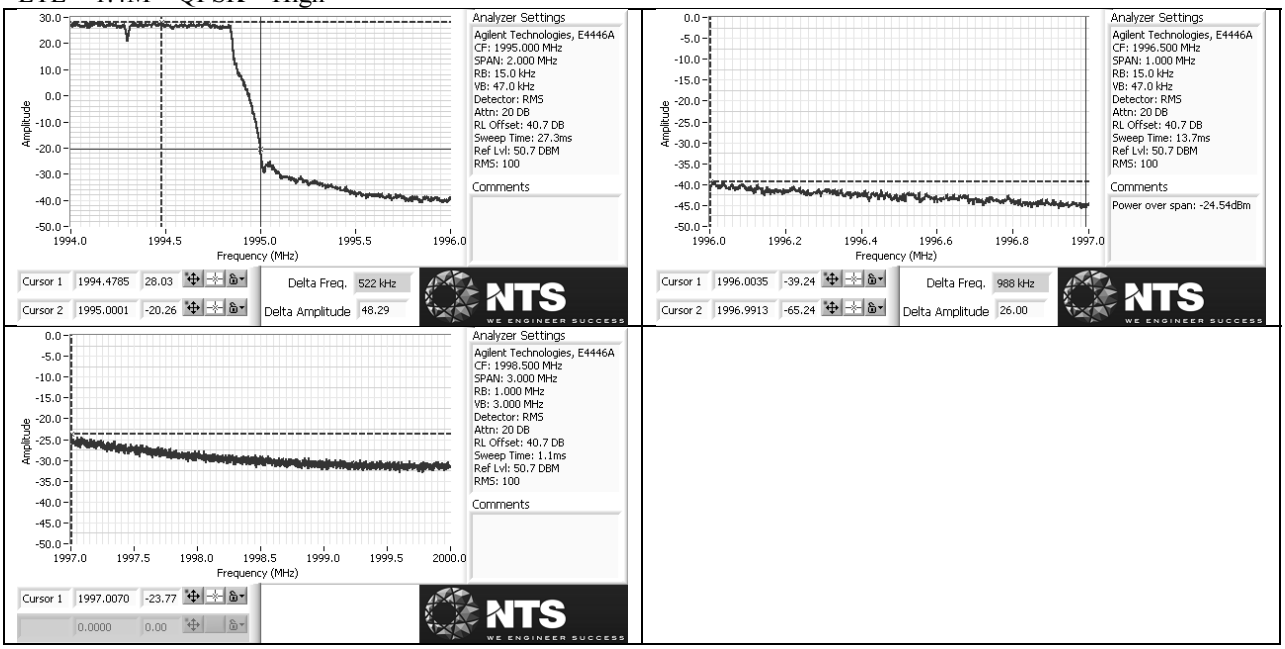
	WCDMA - QPSK		WCDMA - 16QAM		WCDMA - 64QAM	
	Low	High	Low	High	Low	High
5M	-20.3	-20.46	-20.09	-19.32	-19.58	-19.22
5M Dual	-23.15	-23.05	-21.62	-20.56	-22.72	-21.62

All corresponding plots are included on the following pages.

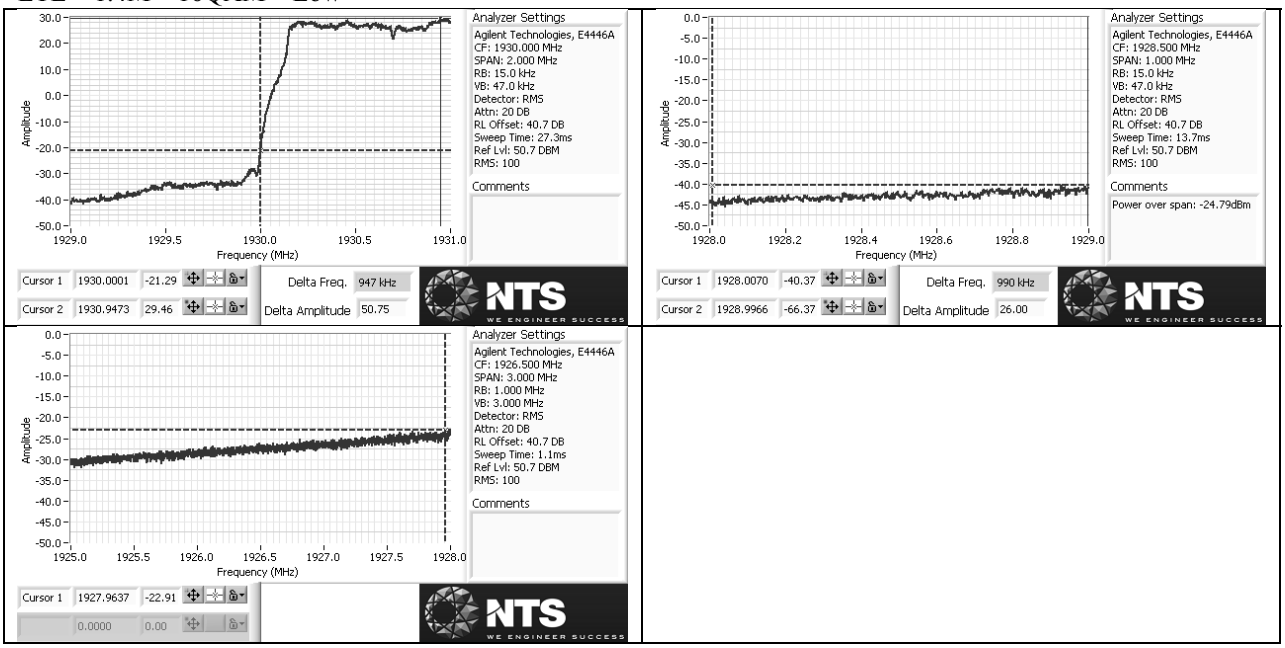
LTE – 1.4M – QPSK – Low



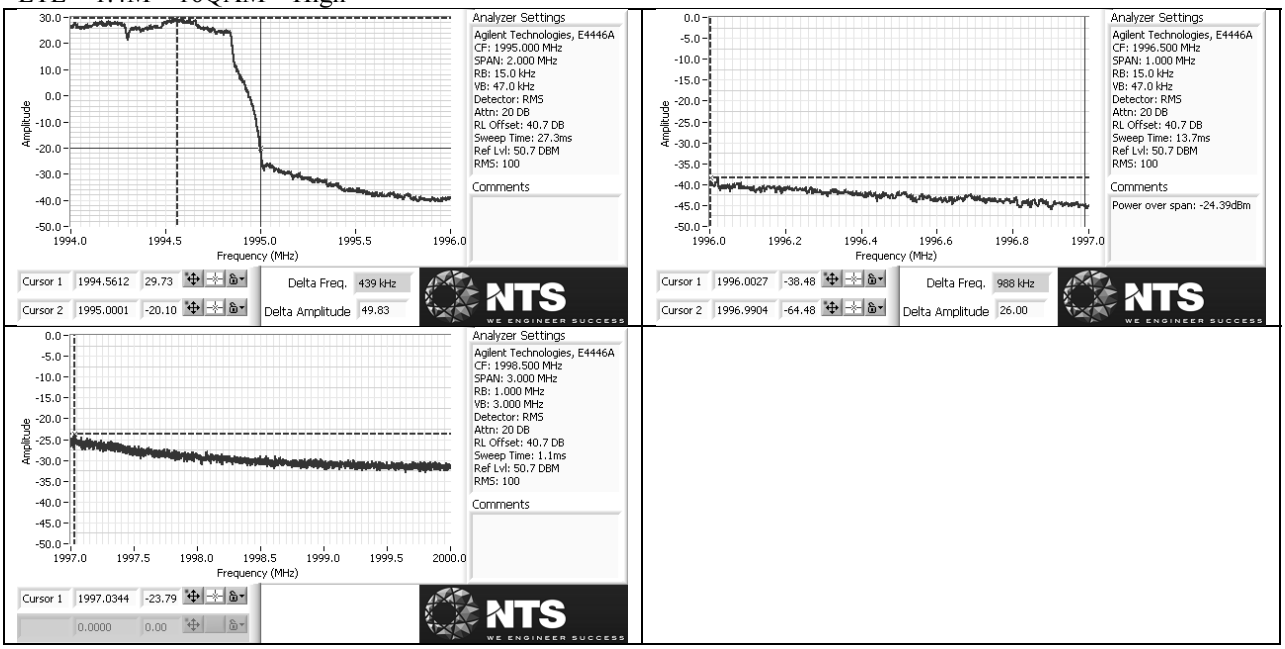
LTE – 1.4M – QPSK – High



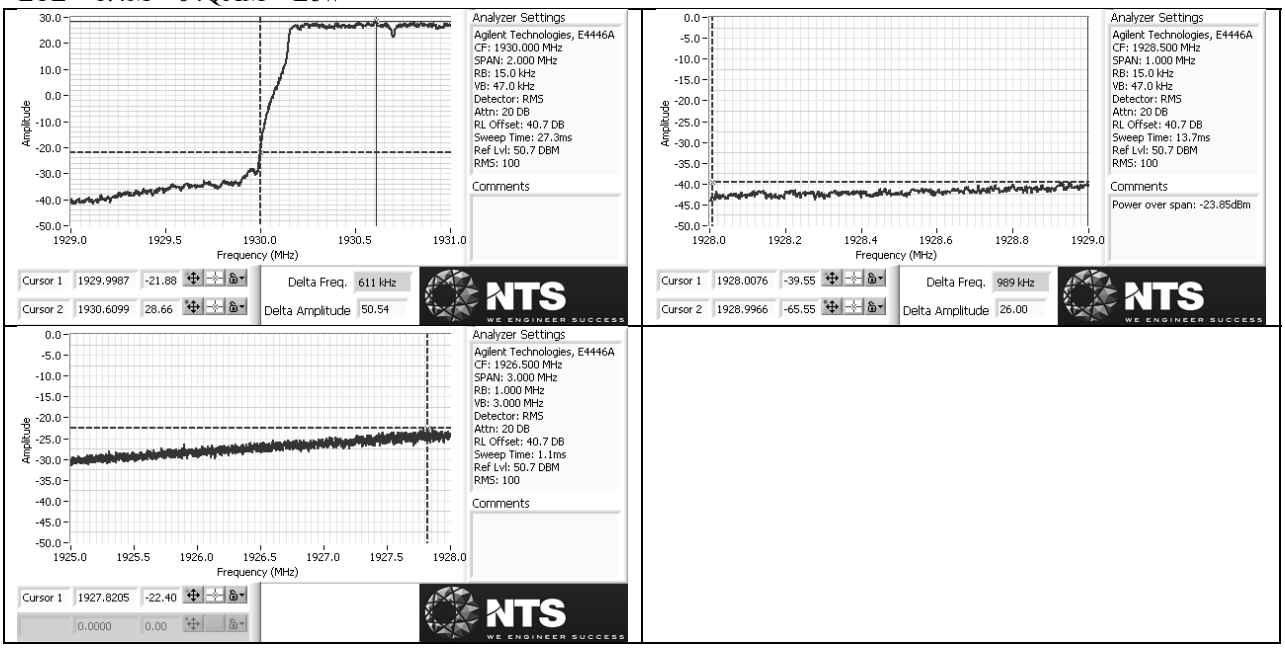
LTE – 1.4M – 16QAM – Low



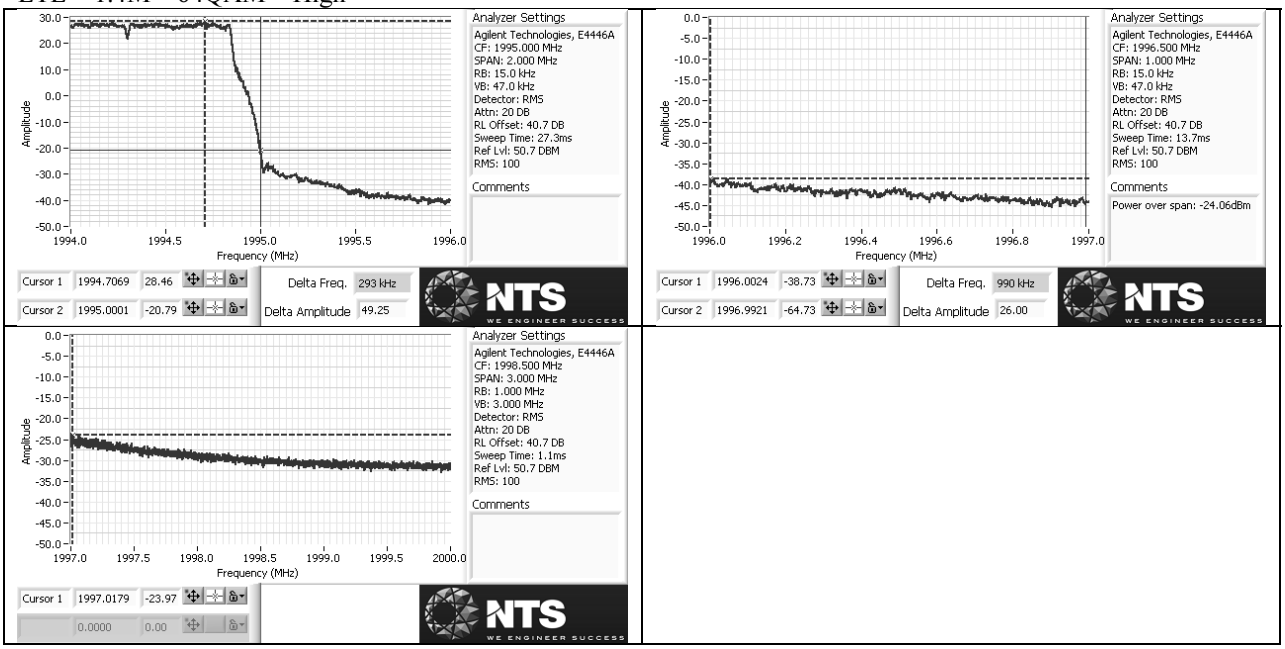
LTE – 1.4M – 16QAM – High



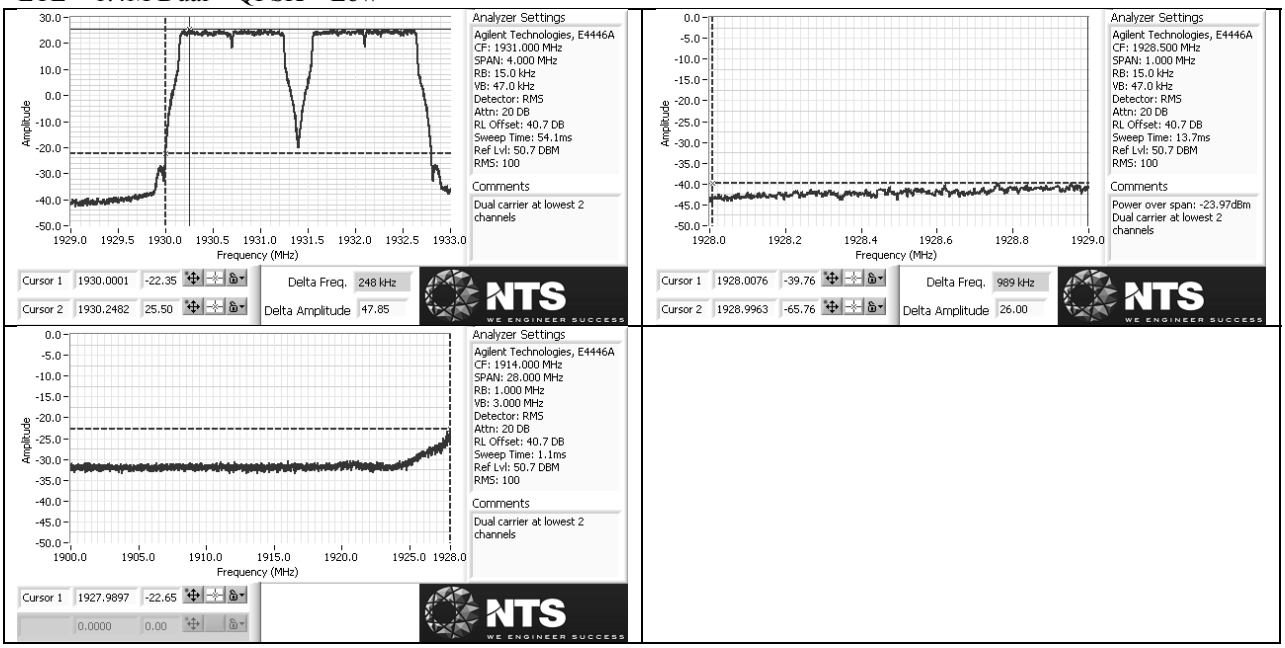
LTE – 1.4M – 64QAM – Low



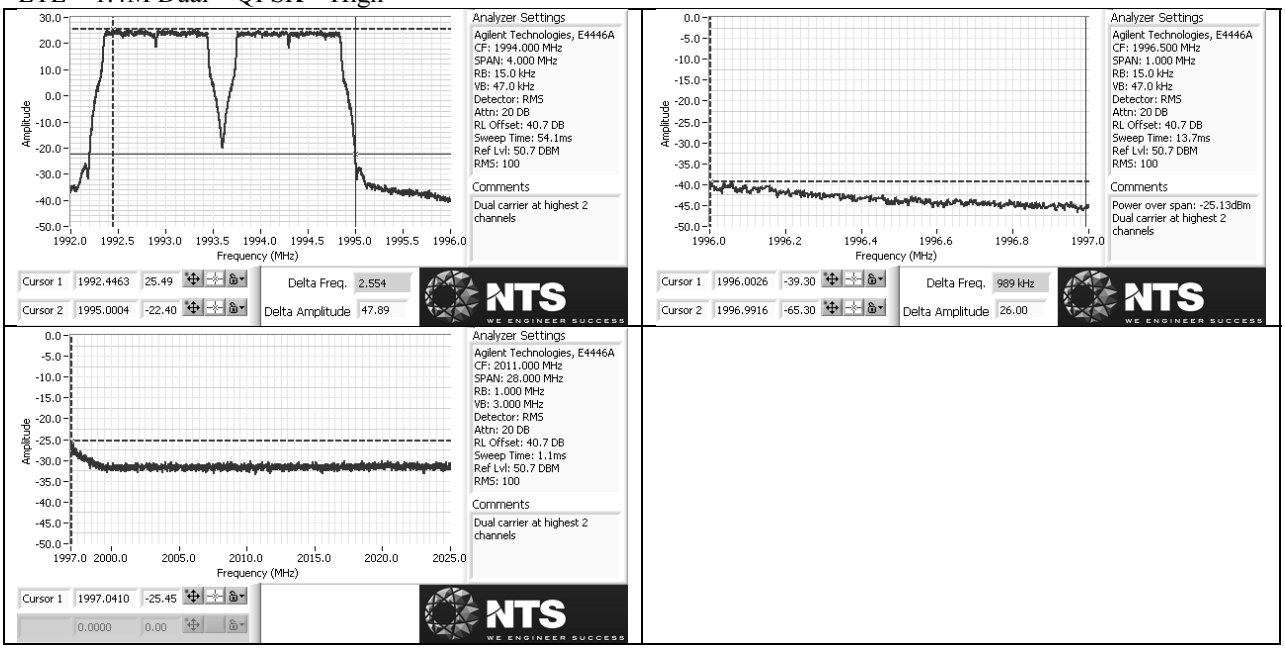
LTE – 1.4M – 64QAM – High



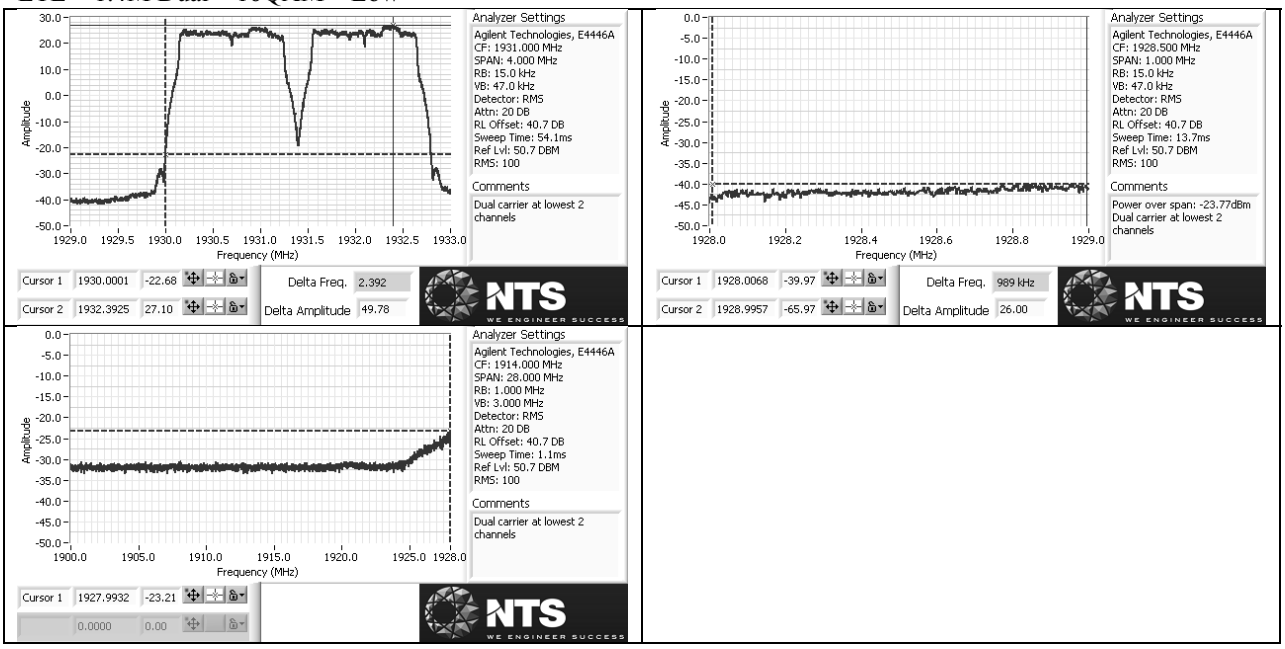
LTE – 1.4M Dual – QPSK – Low



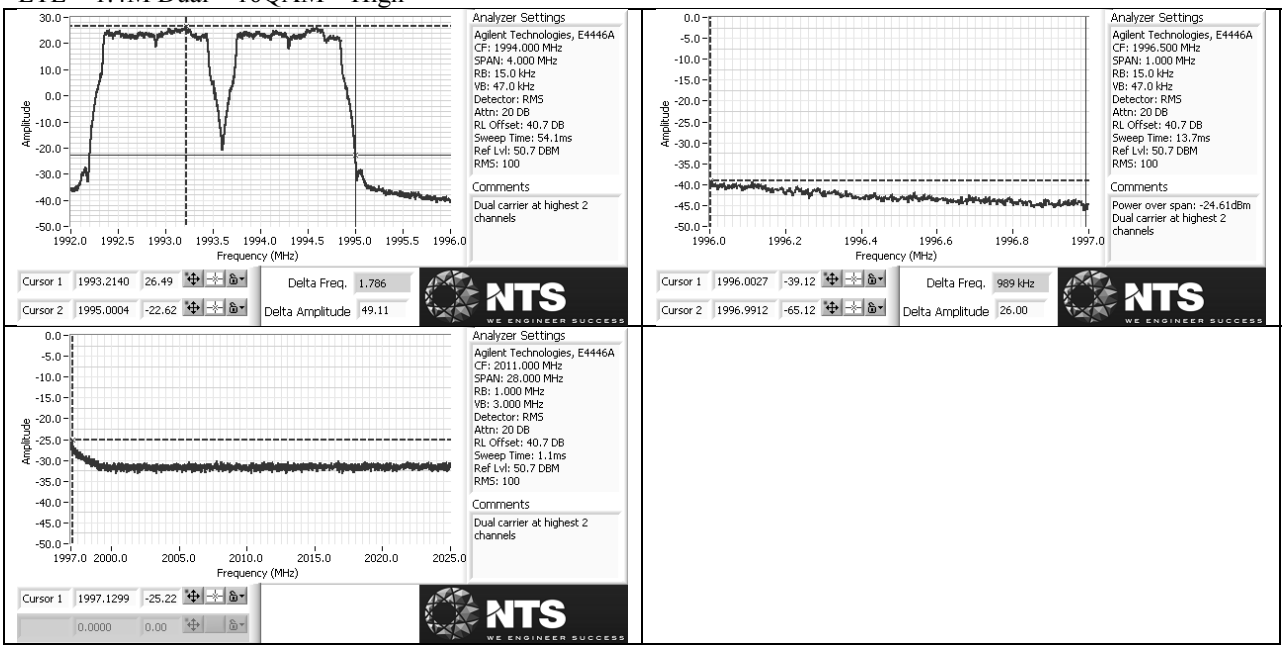
LTE – 1.4M Dual – QPSK – High



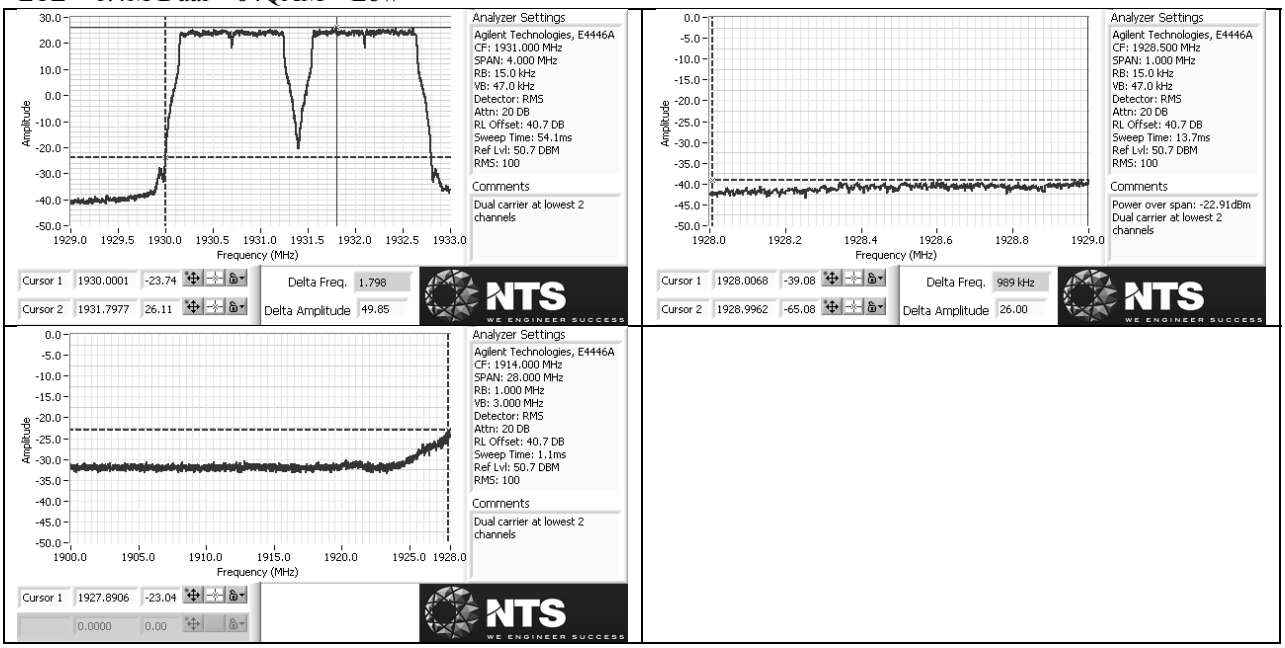
LTE – 1.4M Dual – 16QAM – Low



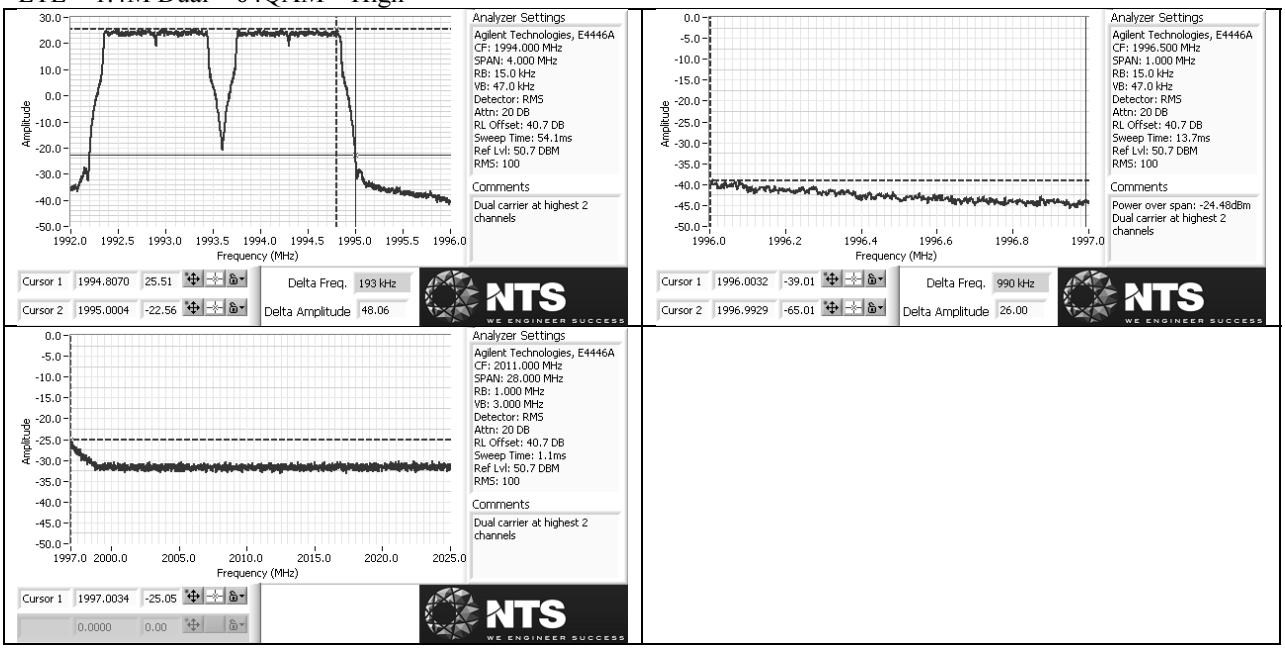
LTE – 1.4M Dual – 16QAM – High



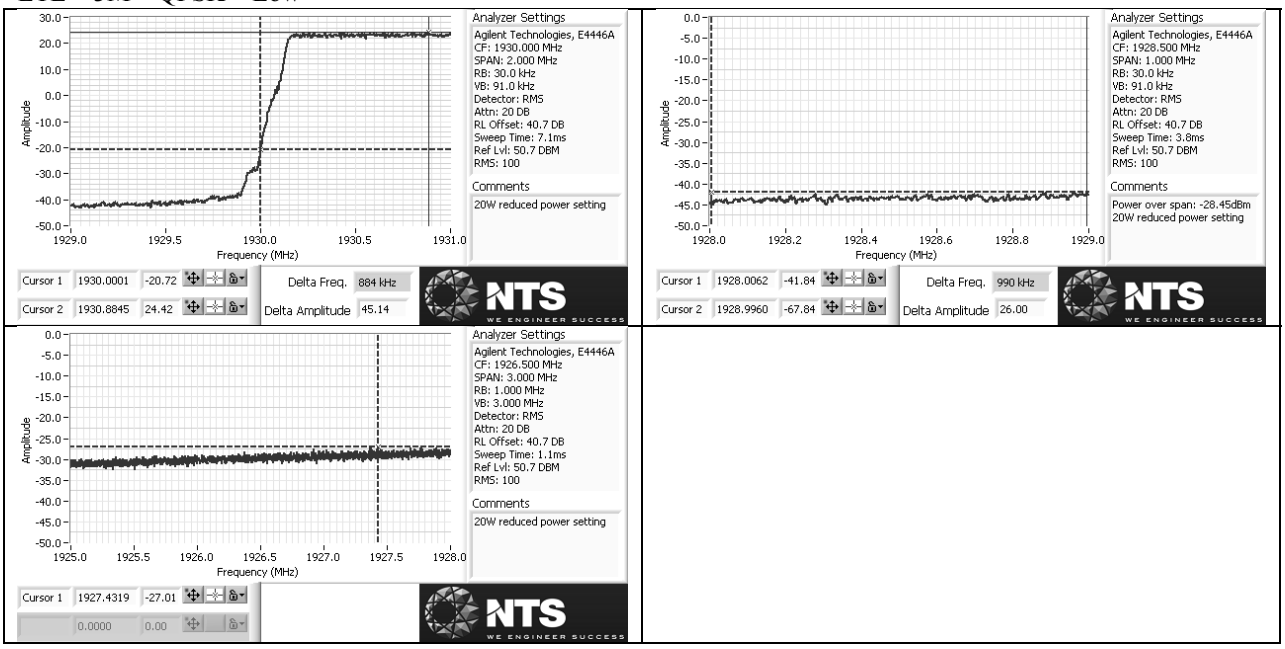
LTE – 1.4M Dual – 64QAM – Low



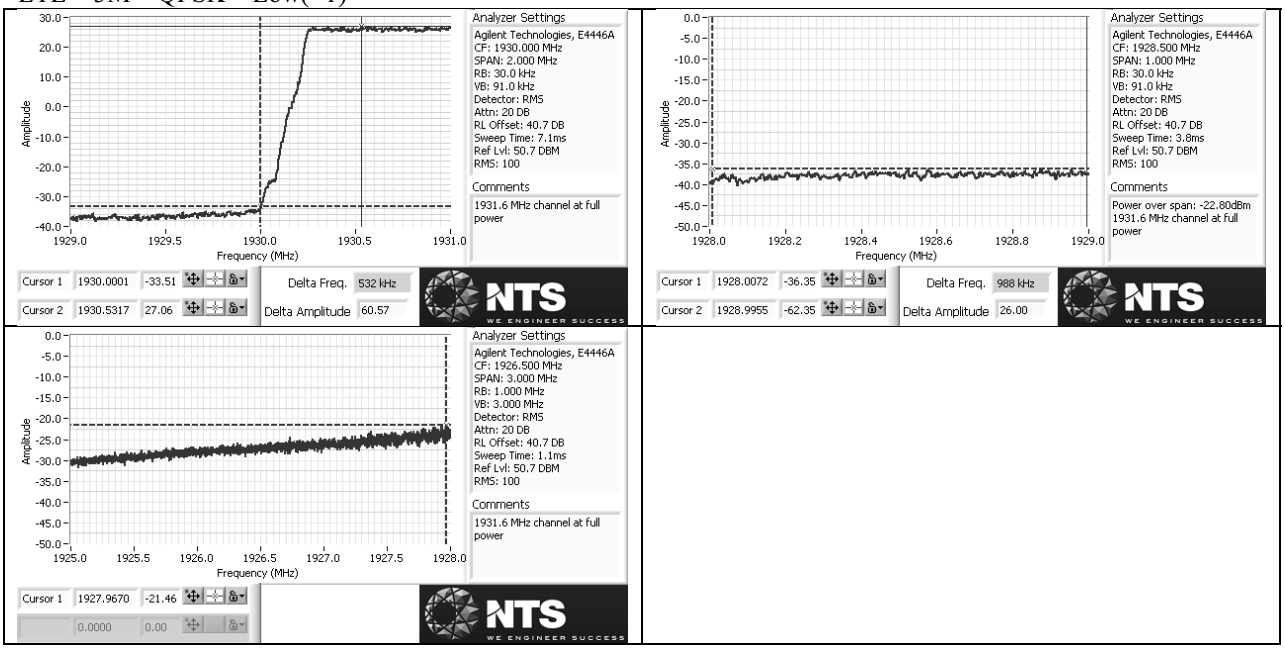
LTE – 1.4M Dual – 64QAM – High



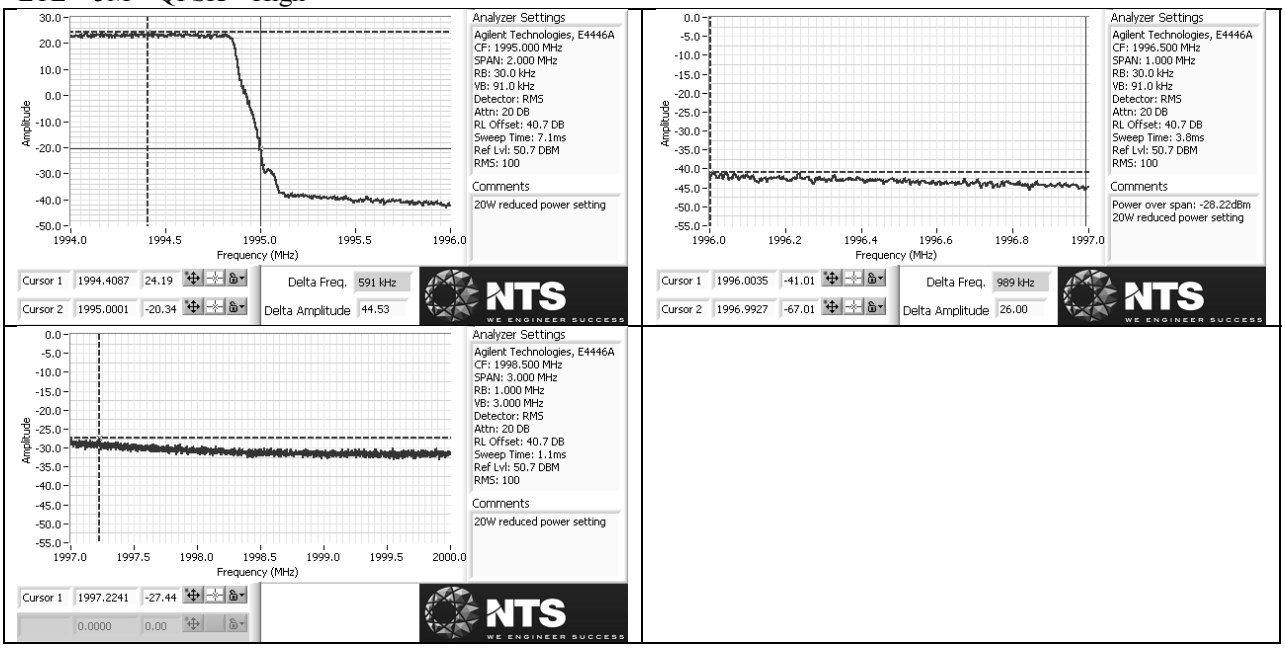
LTE – 3M – QPSK – Low



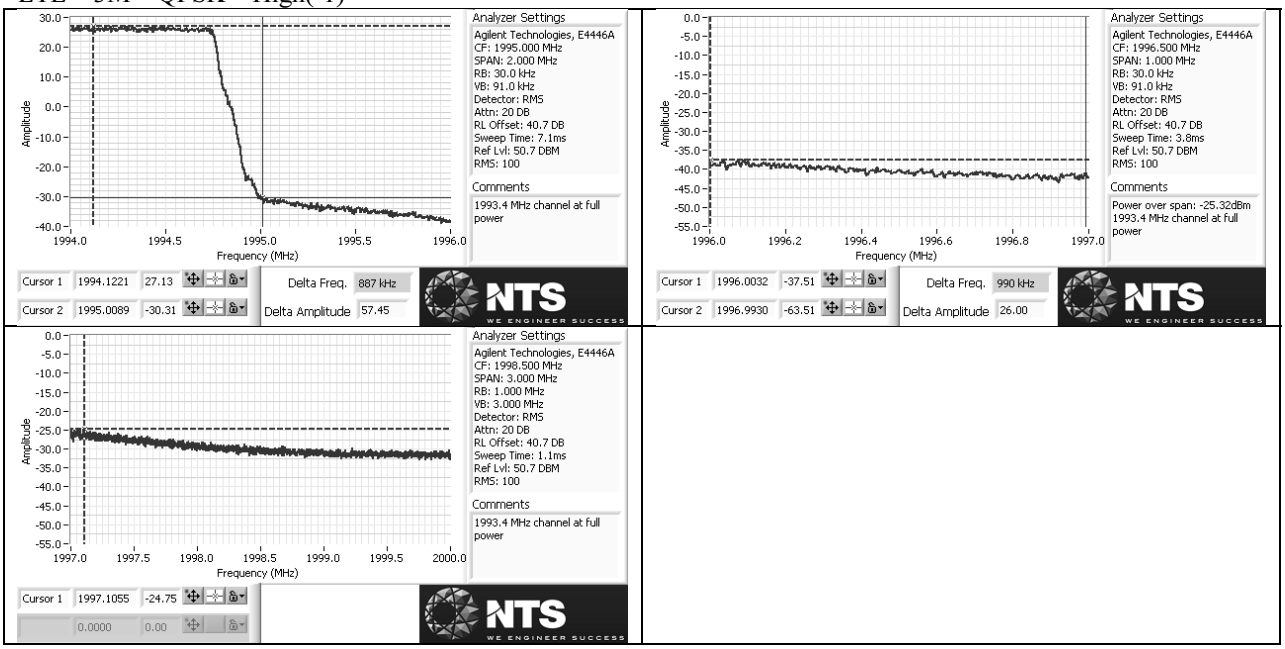
LTE – 3M – QPSK – Low(+1)



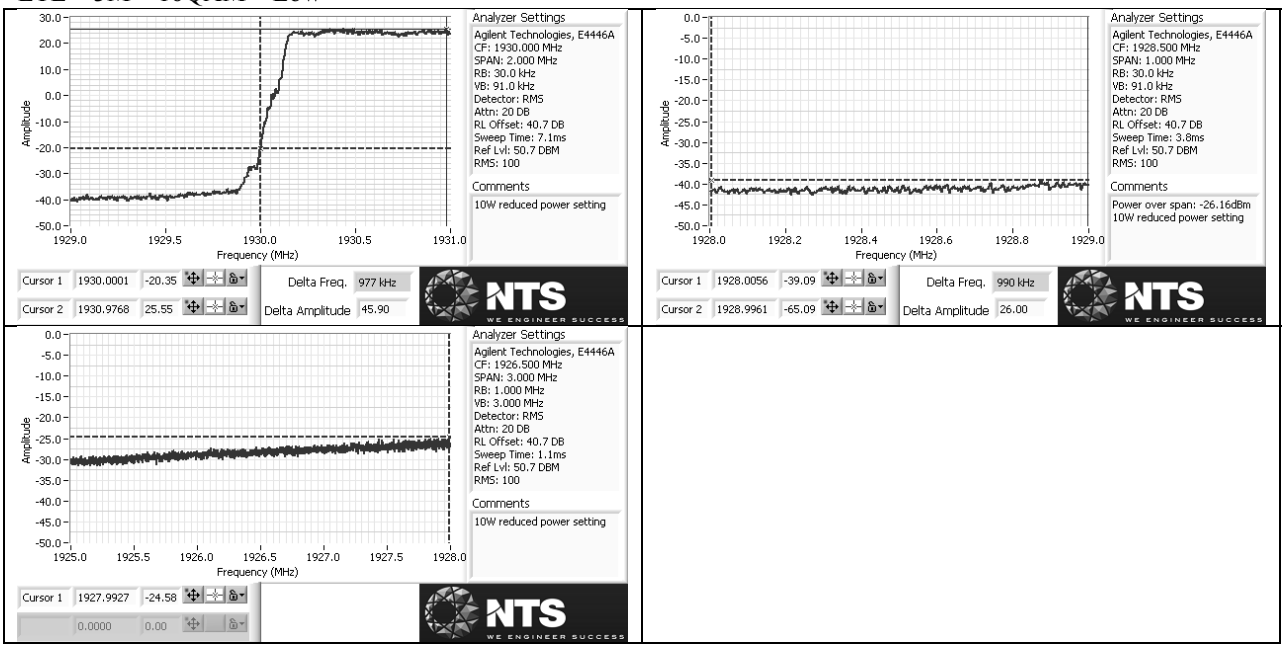
LTE – 3M – QPSK – High



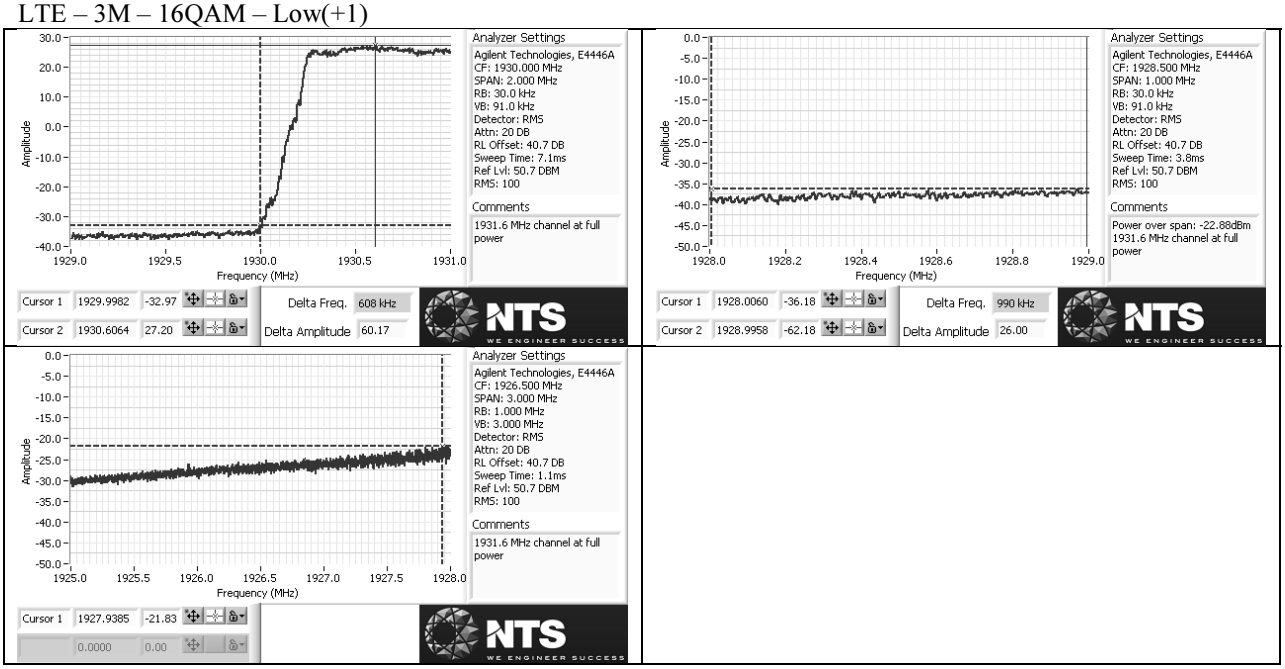
LTE – 3M – QPSK – High(-1)



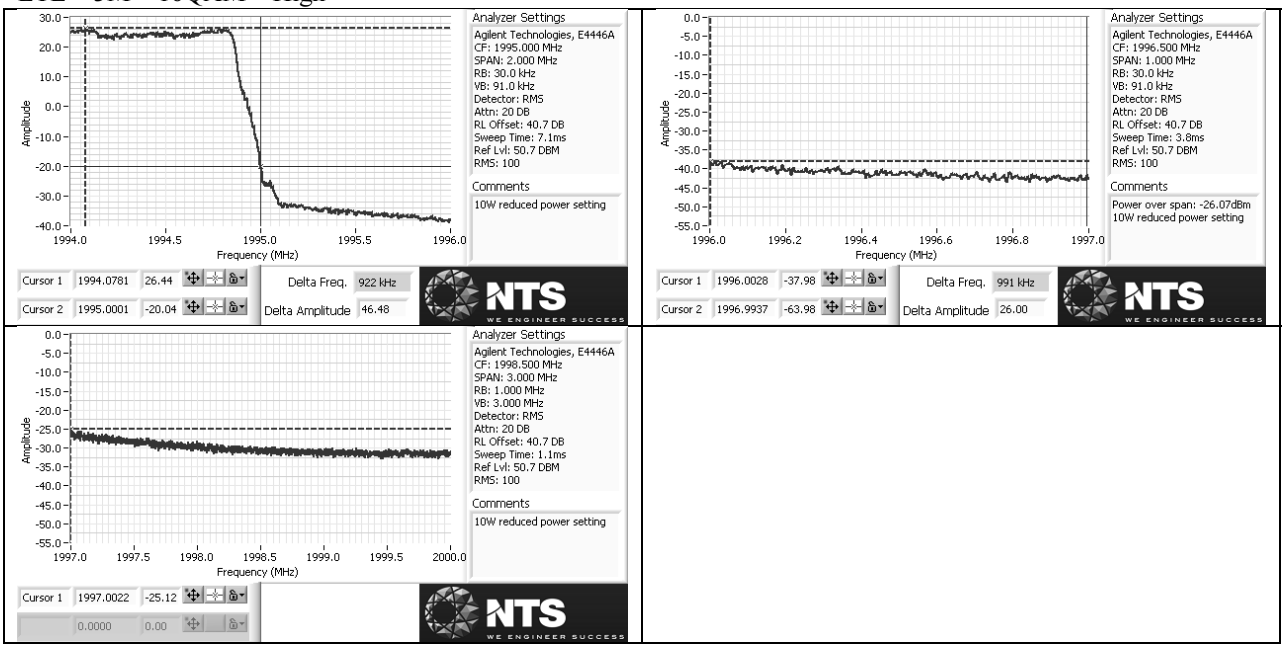
LTE – 3M – 16QAM – Low



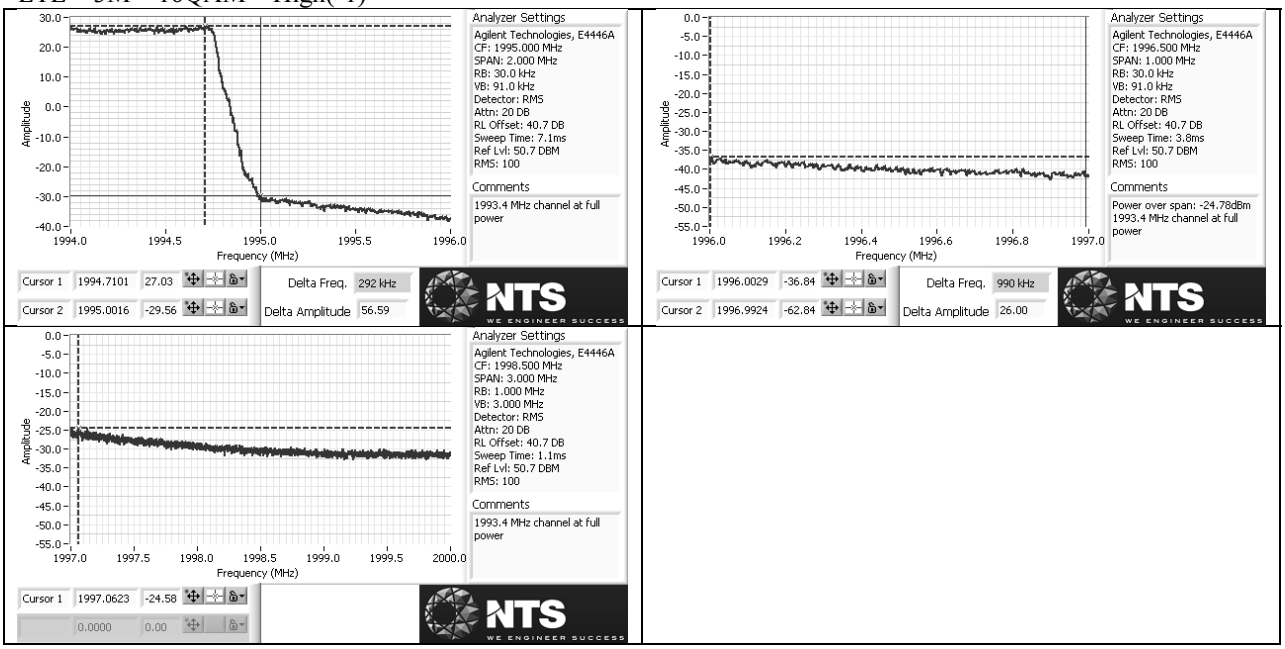
LTE – 3M – 16QAM – Low(+1)



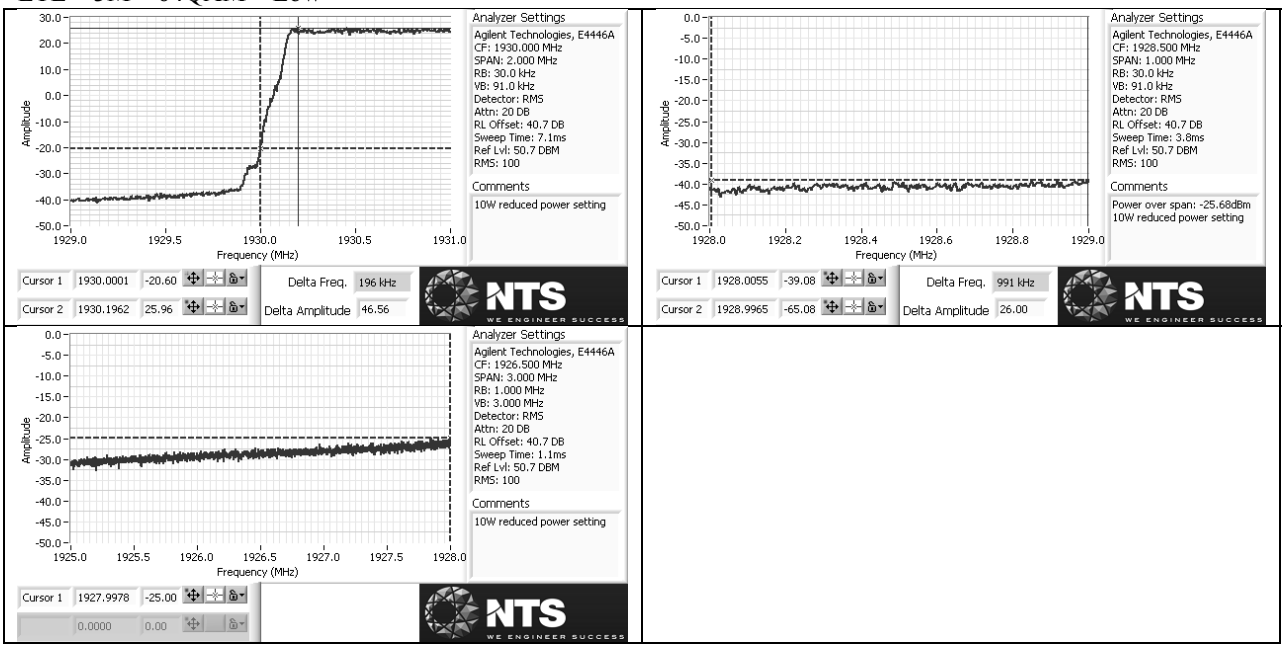
LTE – 3M – 16QAM – High



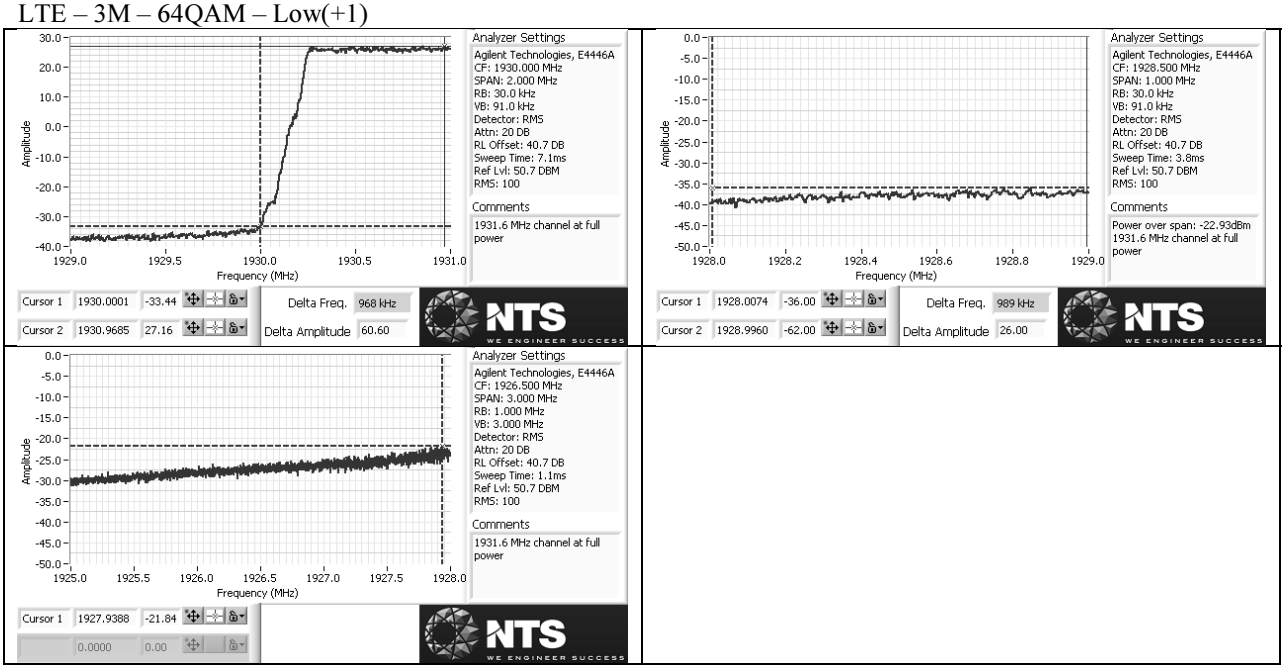
LTE – 3M – 16QAM – High(-1)



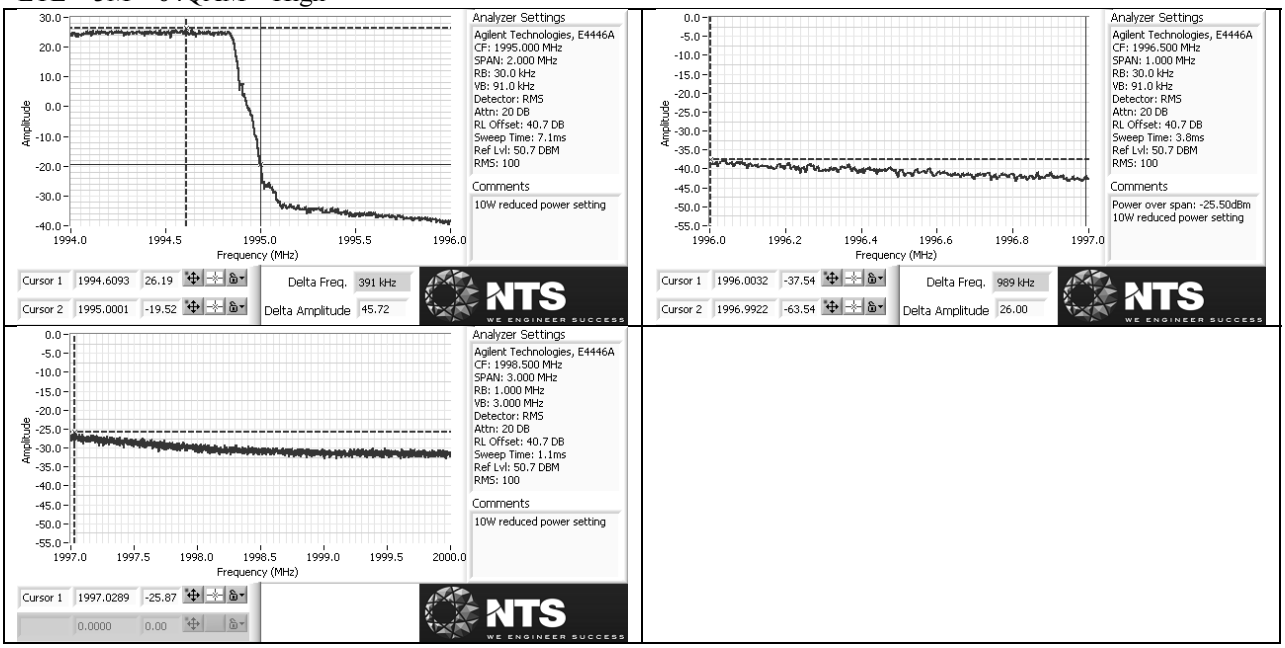
LTE – 3M – 64QAM – Low



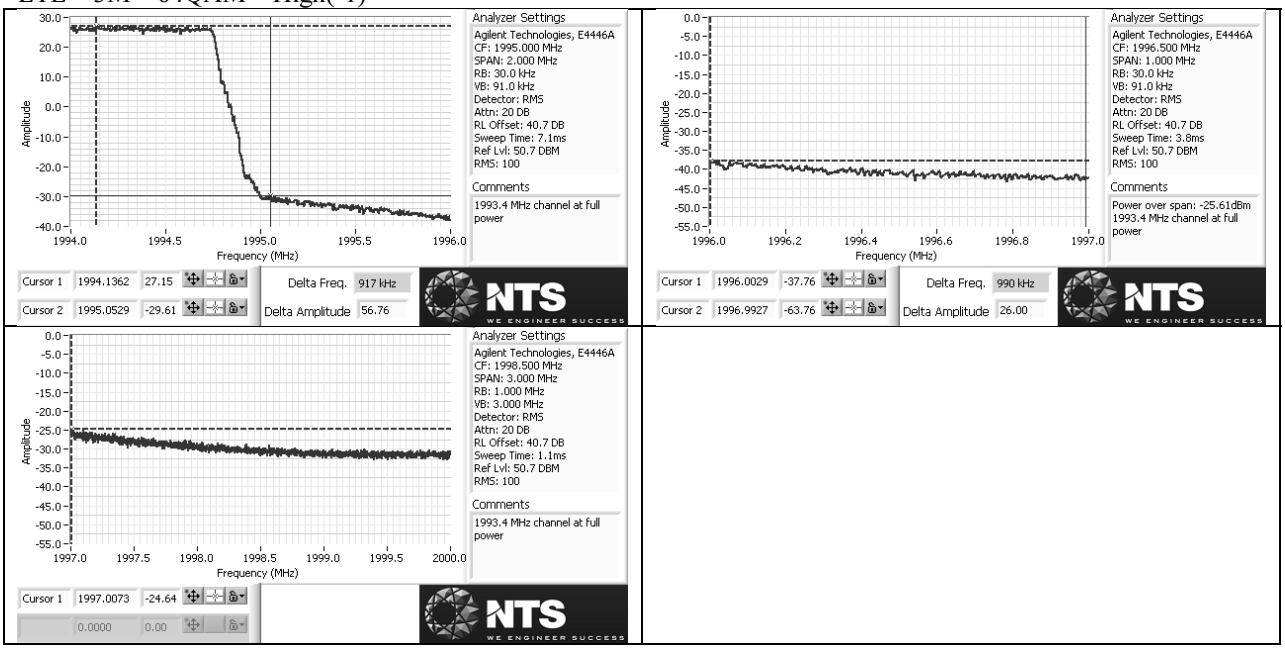
LTE – 3M – 64QAM – Low(+1)



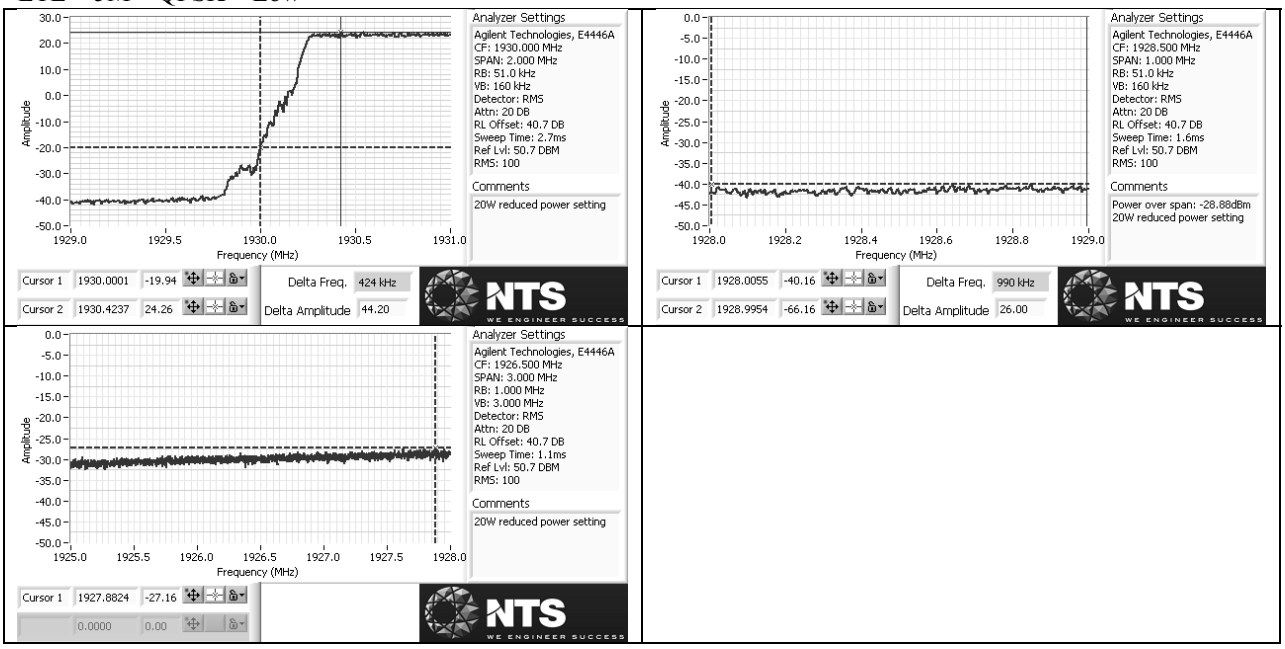
LTE – 3M – 64QAM – High



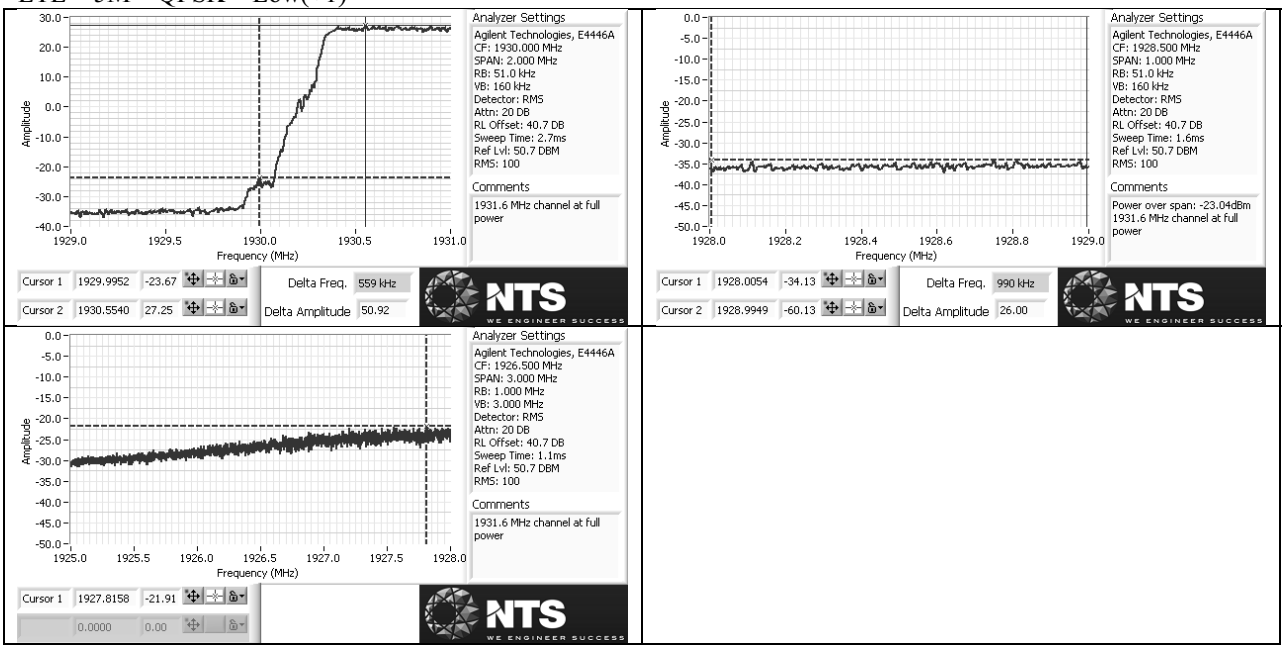
LTE – 3M – 64QAM – High(-1)



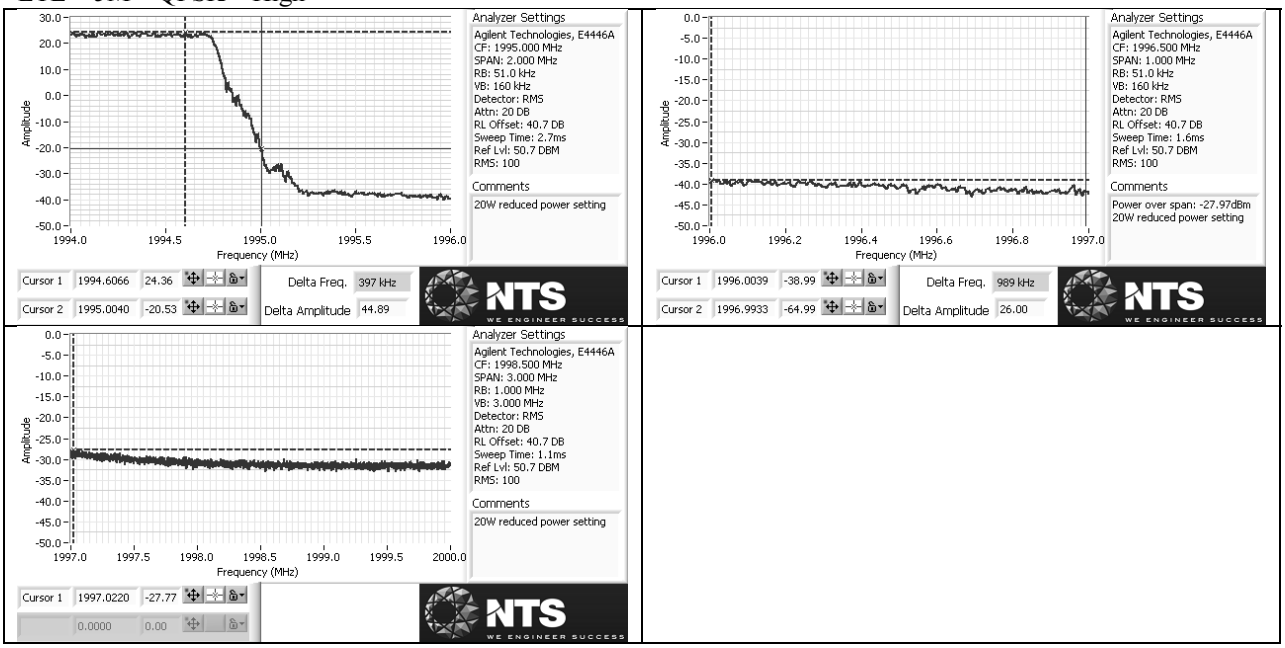
LTE – 5M – QPSK – Low



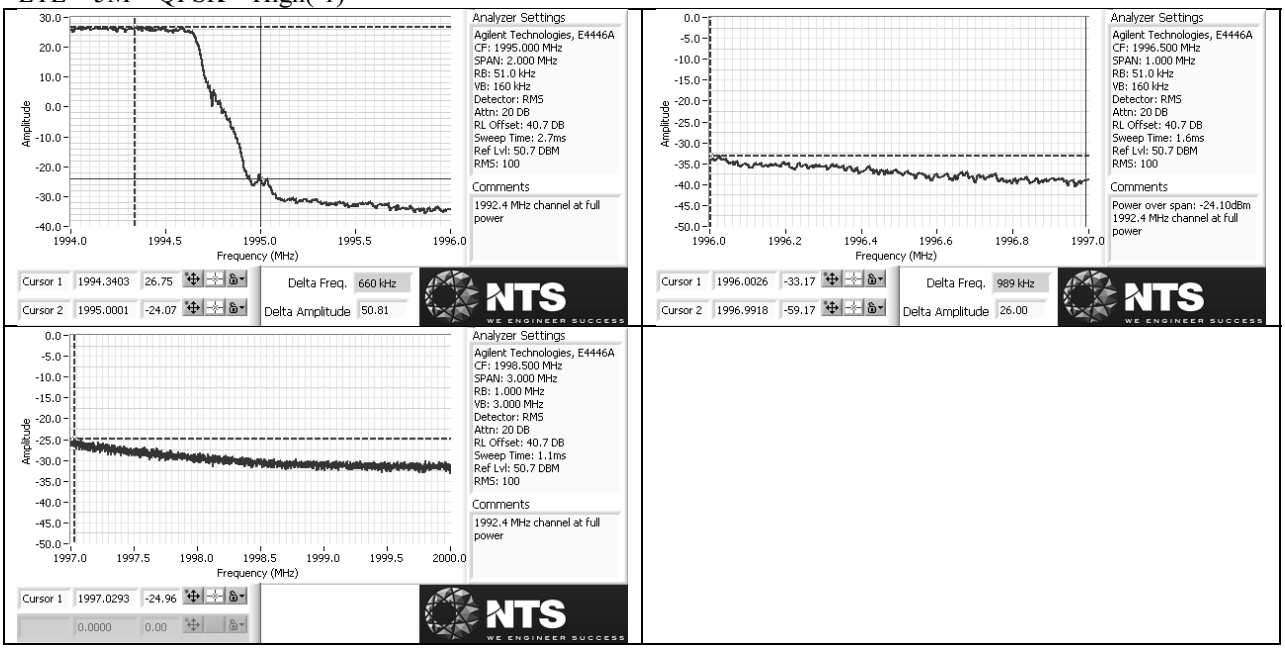
LTE – 5M – QPSK – Low(+1)



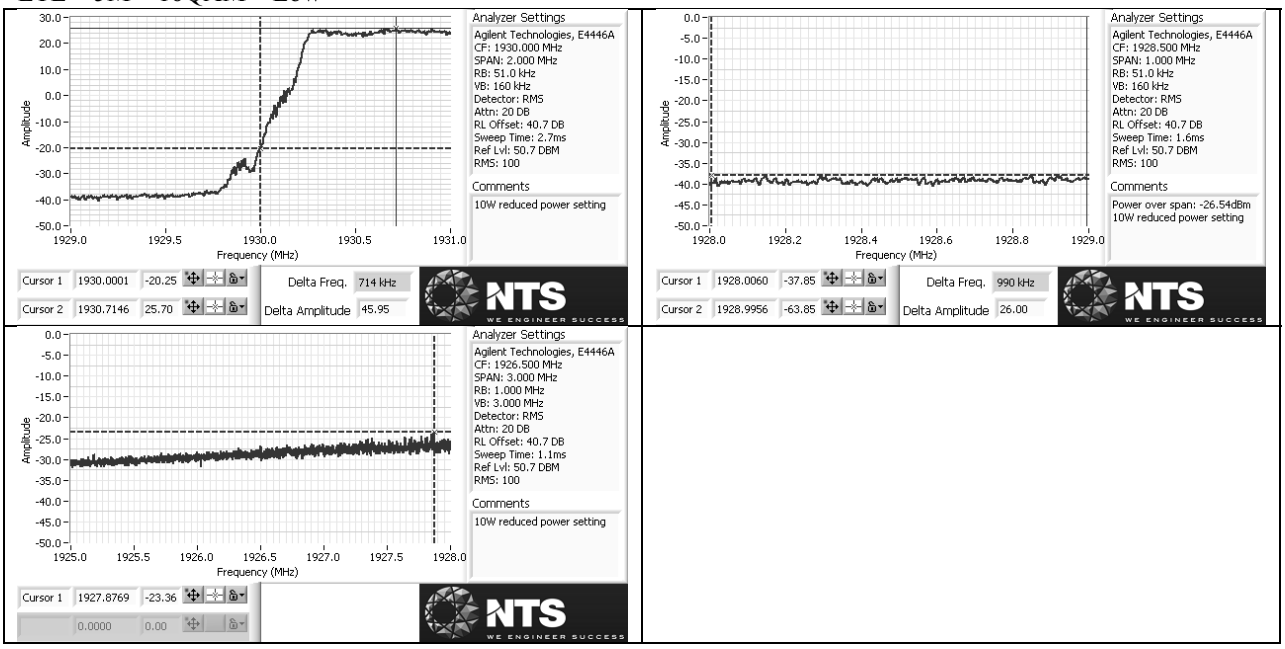
LTE – 5M – QPSK – High



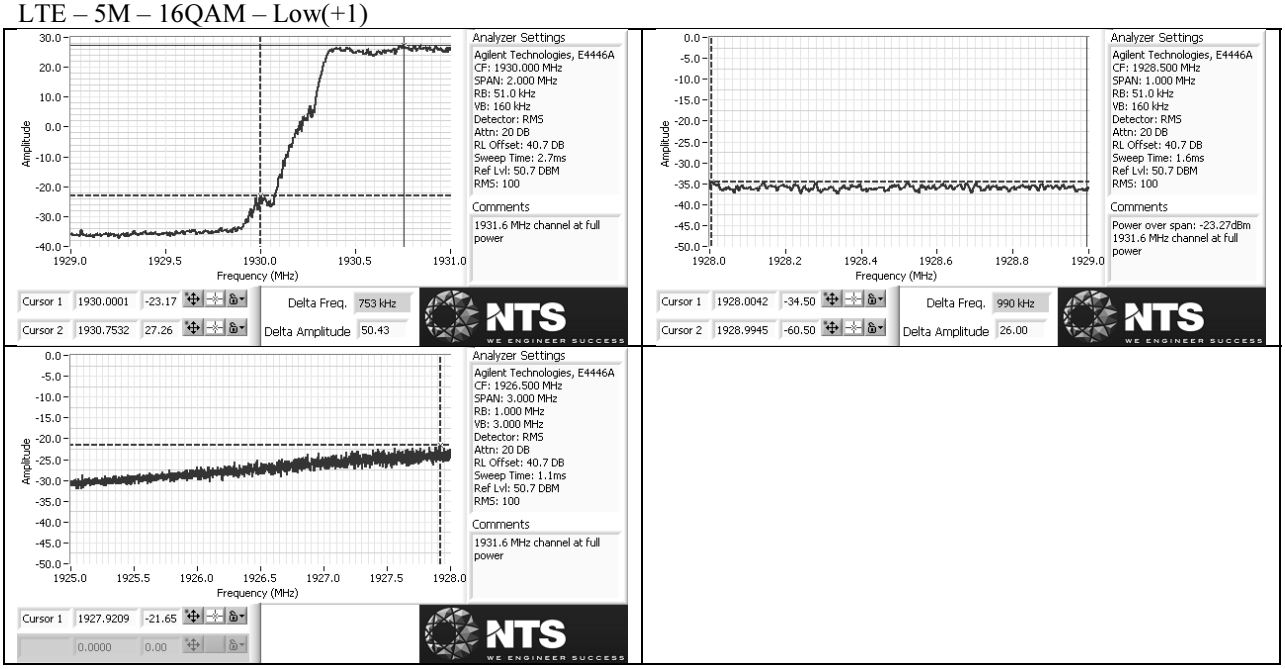
LTE – 5M – QPSK – High(-1)



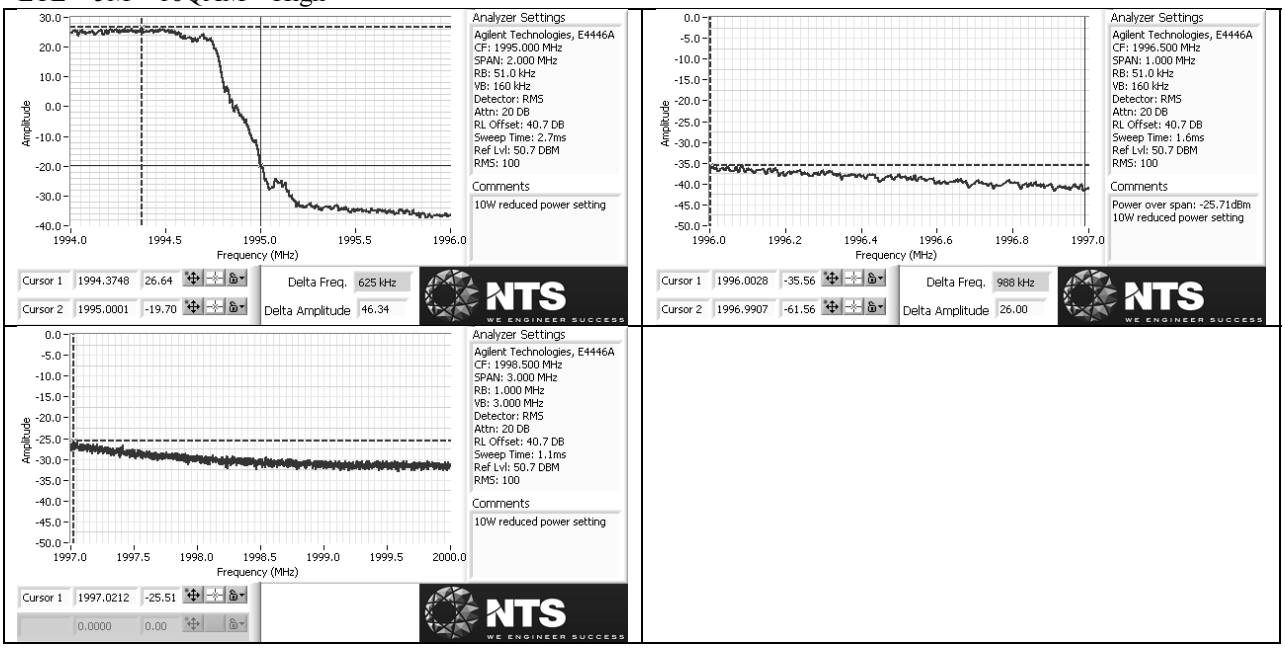
LTE – 5M – 16QAM – Low



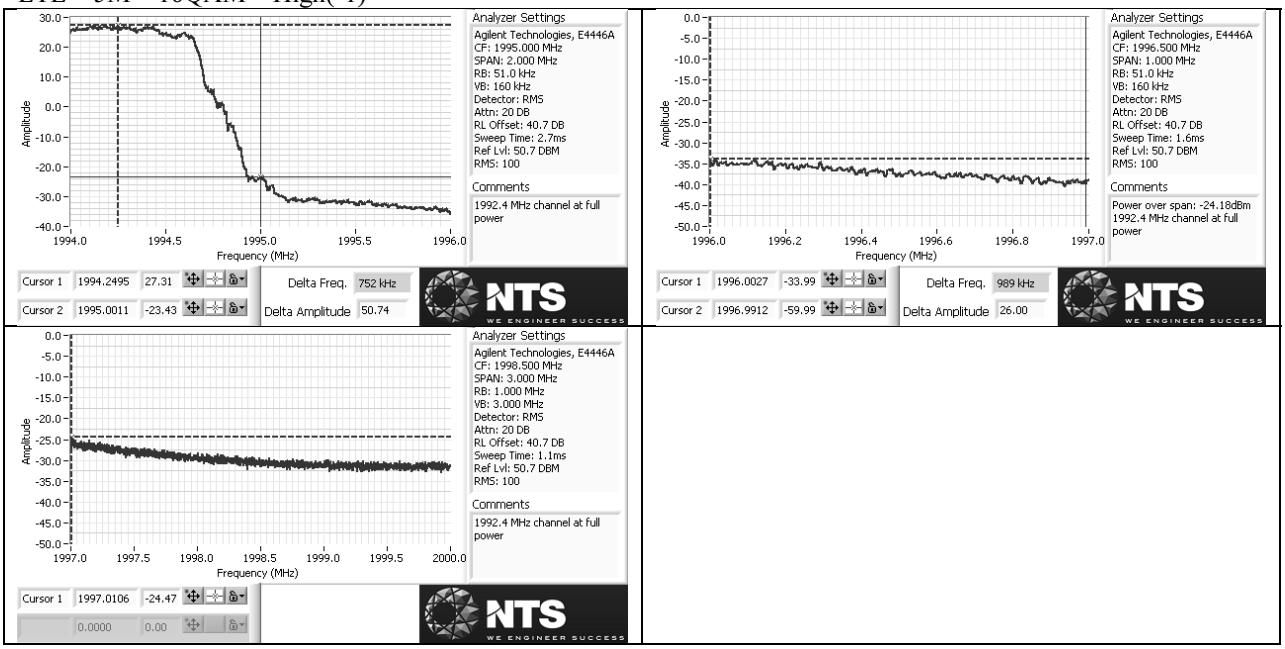
LTE – 5M – 16QAM – Low(+1)



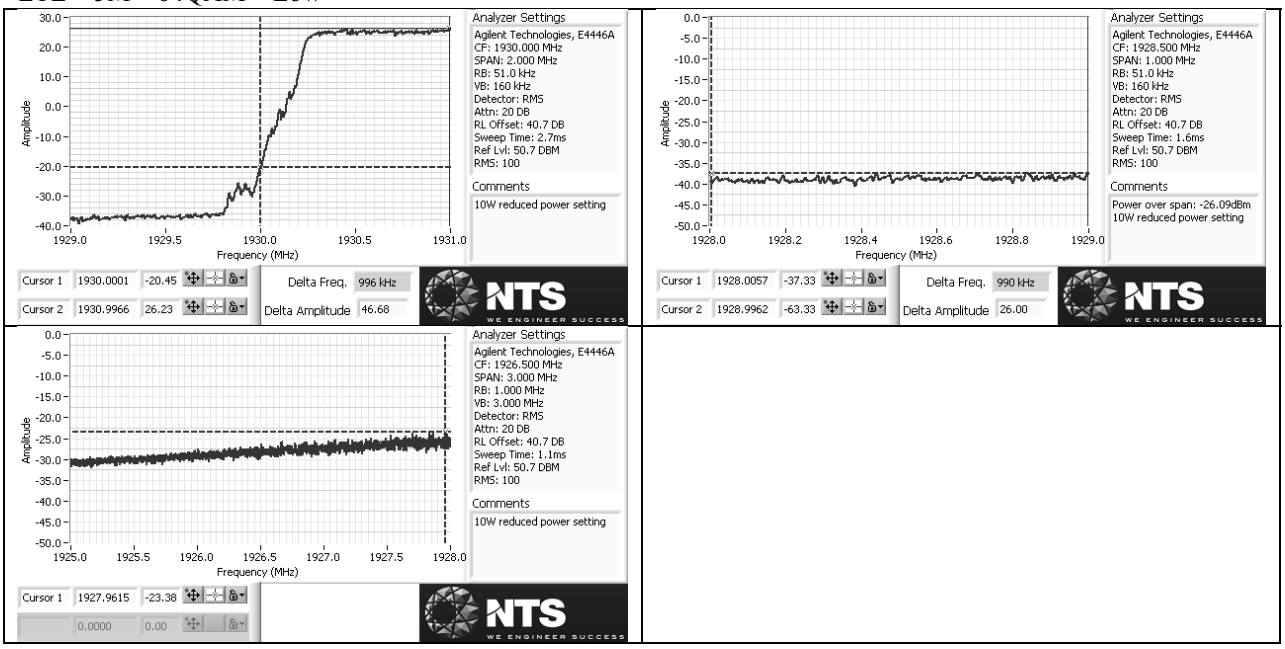
LTE – 5M – 16QAM – High



LTE – 5M – 16QAM – High(-1)



LTE – 5M – 64QAM – Low



LTE – 5M – 64QAM – Low(+1)