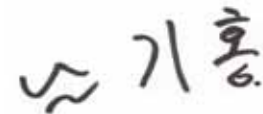


6.3.4 Test Result for Part 27 C (AWS-1)

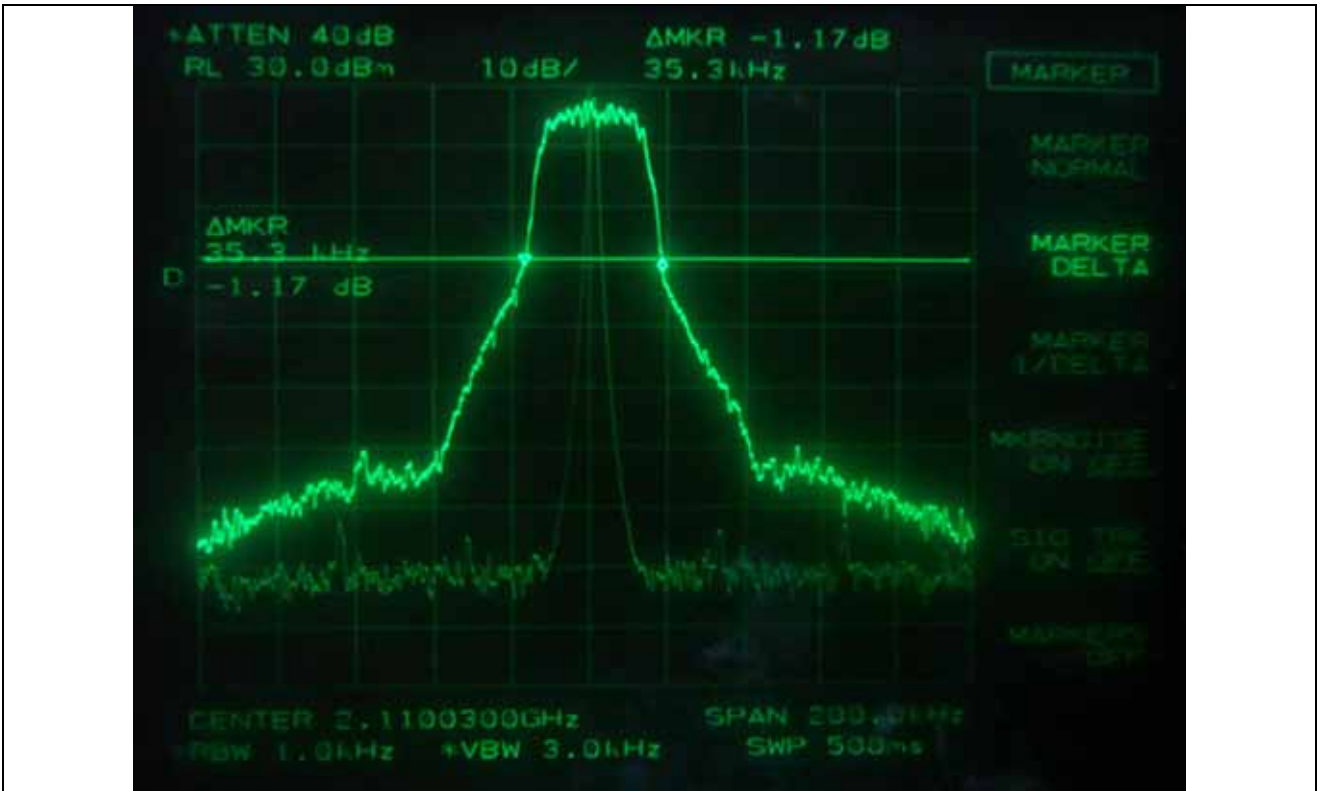
- . Test Date : April 13 ~ 14, 2011
- . Temperature : 24 °C
- . Relative humidity : 48 % R.H.
- . Test Result : Pass

Modulation	Channel	26 dB Bandwidth (kHz)	99 % Occupied Bandwidth (kHz)
TDMA	Low	35.3	29.33
	Middle	35.3	29.33
	High	35.3	29.33
GSM	Low	348	255
	Middle	348	255
	High	348	253.8
EDGE	Low	332	255
	Middle	332	255
	High	332	255
CDMA	Low	1 600	1 350
	Middle	1 600	1 350
	High	1 600	1 342
1xEVDO	Low	1 600	1 350
	Middle	1 600	1 350
	High	1 600	1 350
WCDMA	Low	4 720	4 200
	Middle	4 720	4 217
	High	4 720	4 217

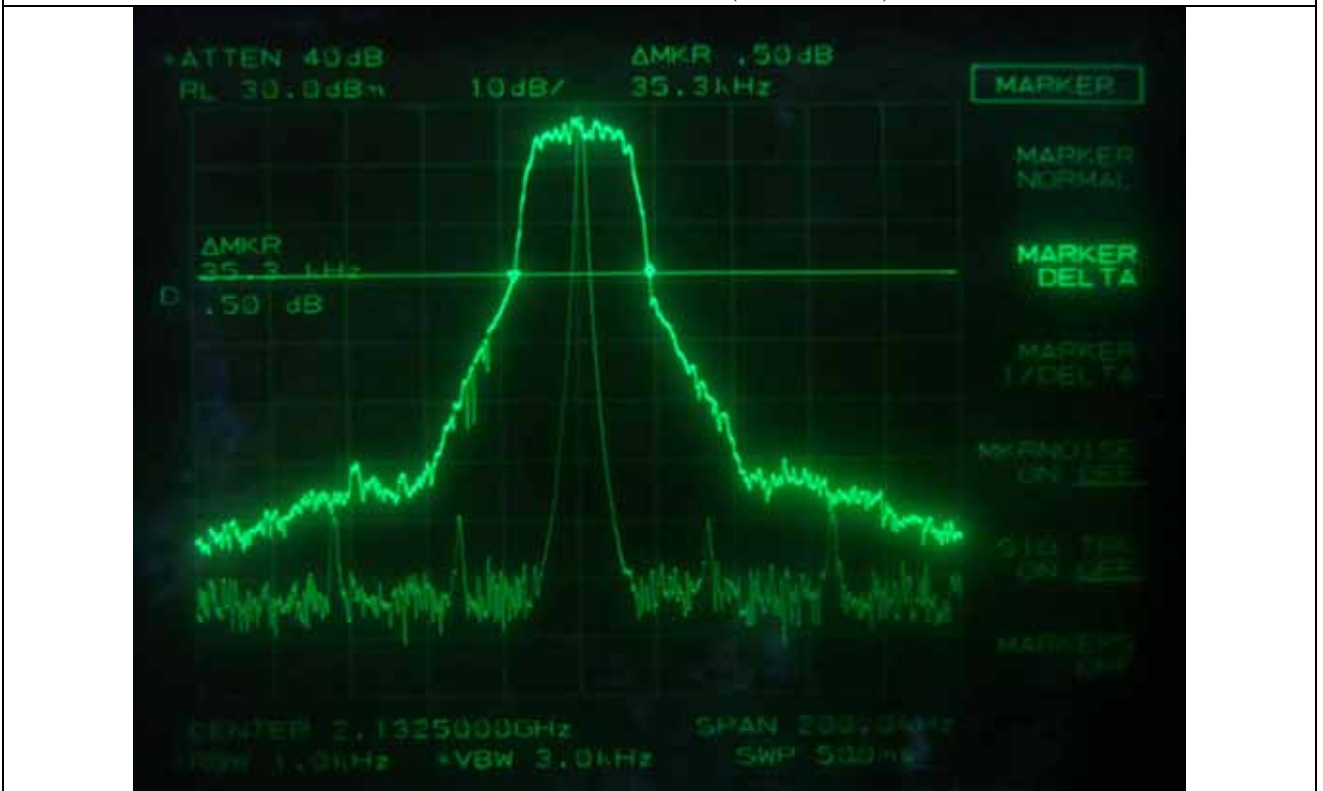
Remark: According to above result, the carrier frequency shall be within the frequency block edges.



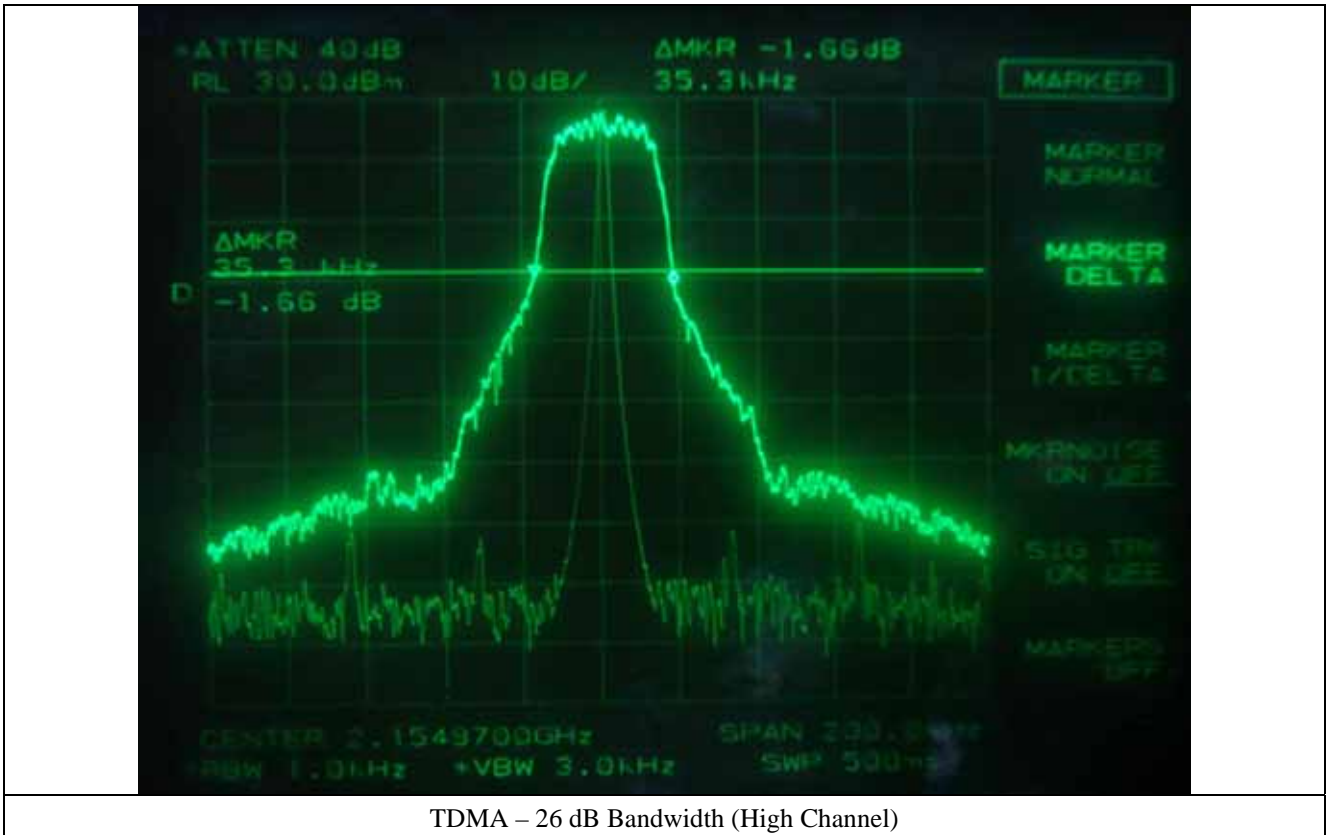
Tested by: Ki-Hong, Nam / Senior Engineer

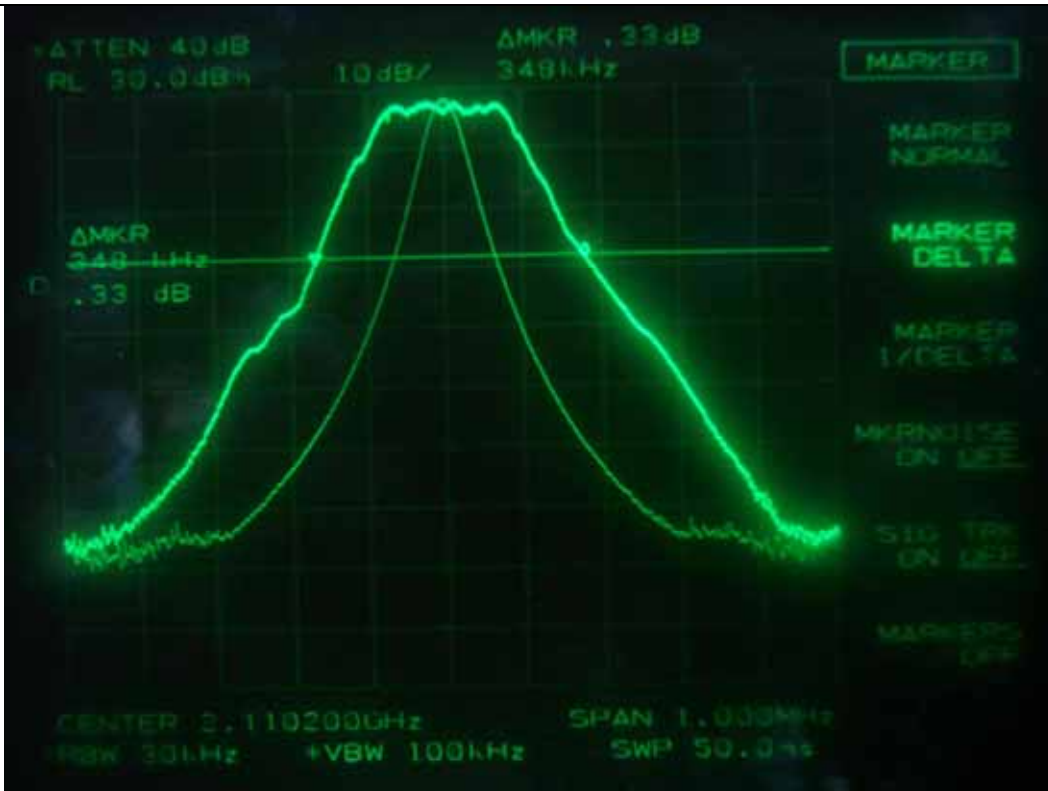


TDMA – 26 dB Bandwidth (Low Channel)

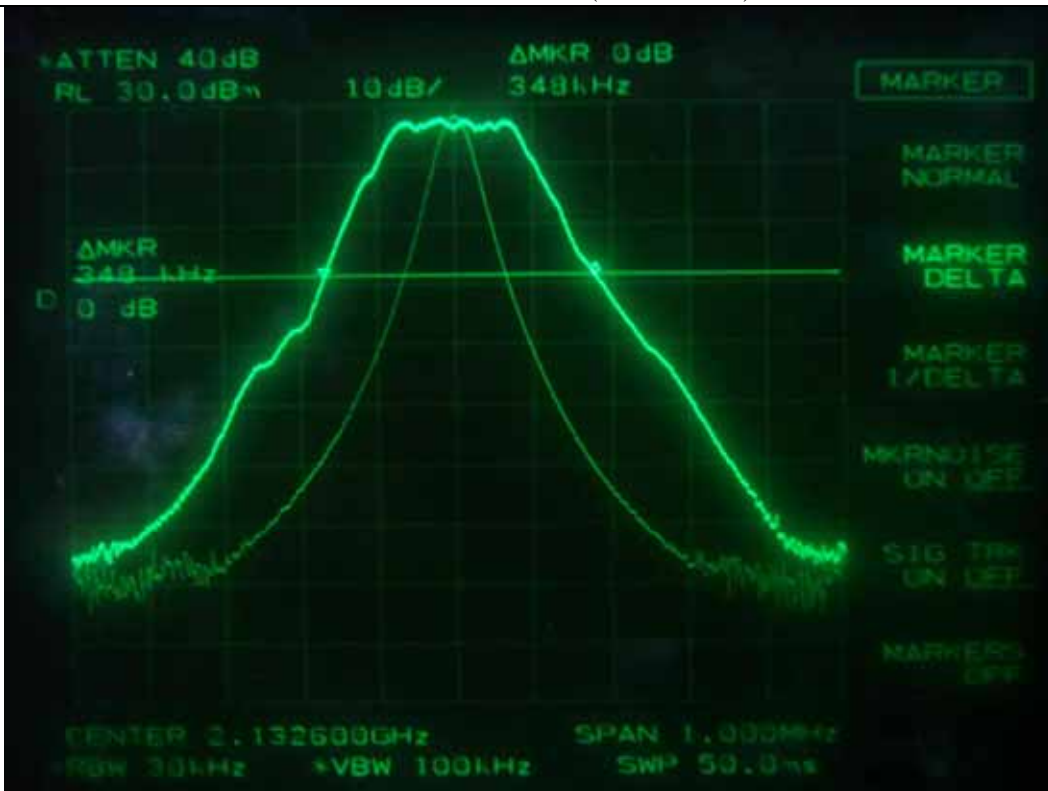


TDMA – 26 dB Bandwidth (Middle Channel)

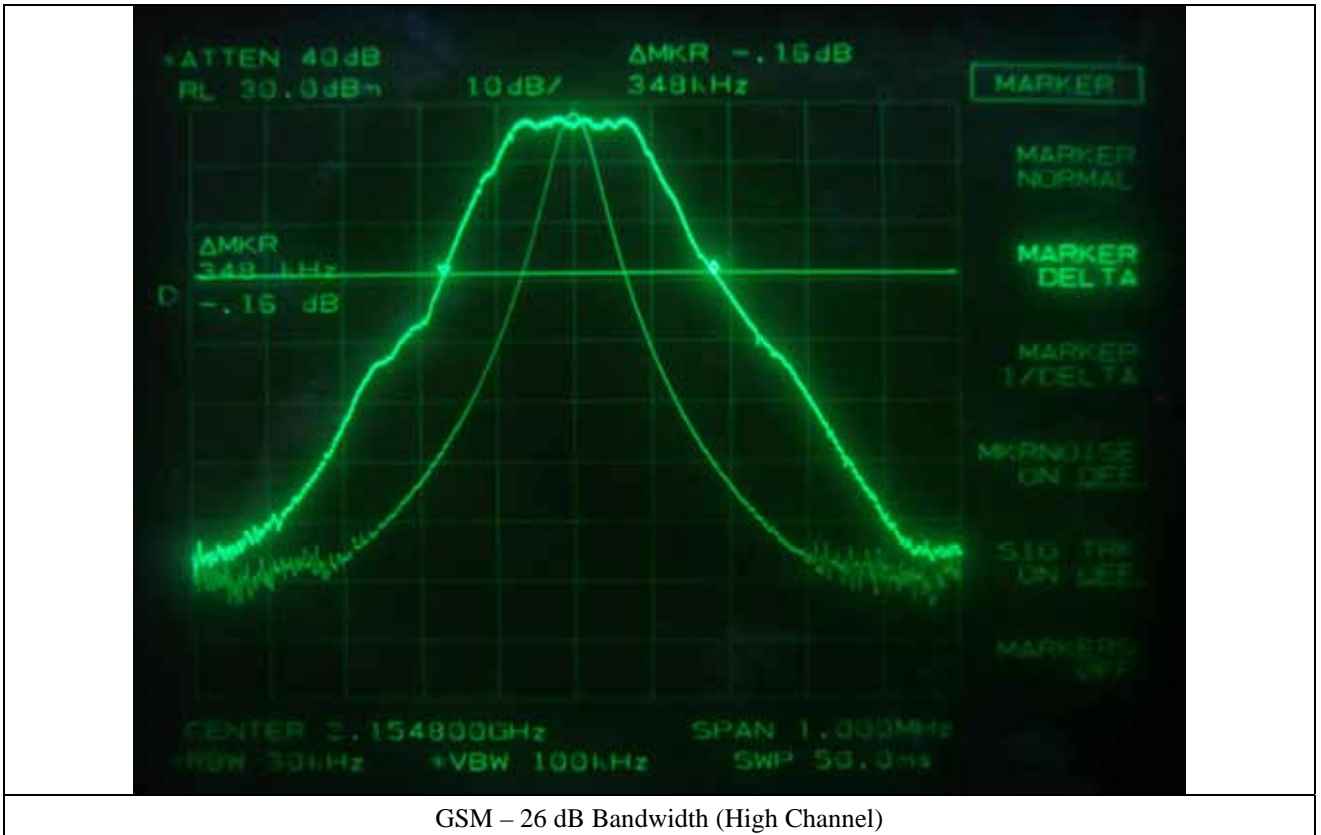


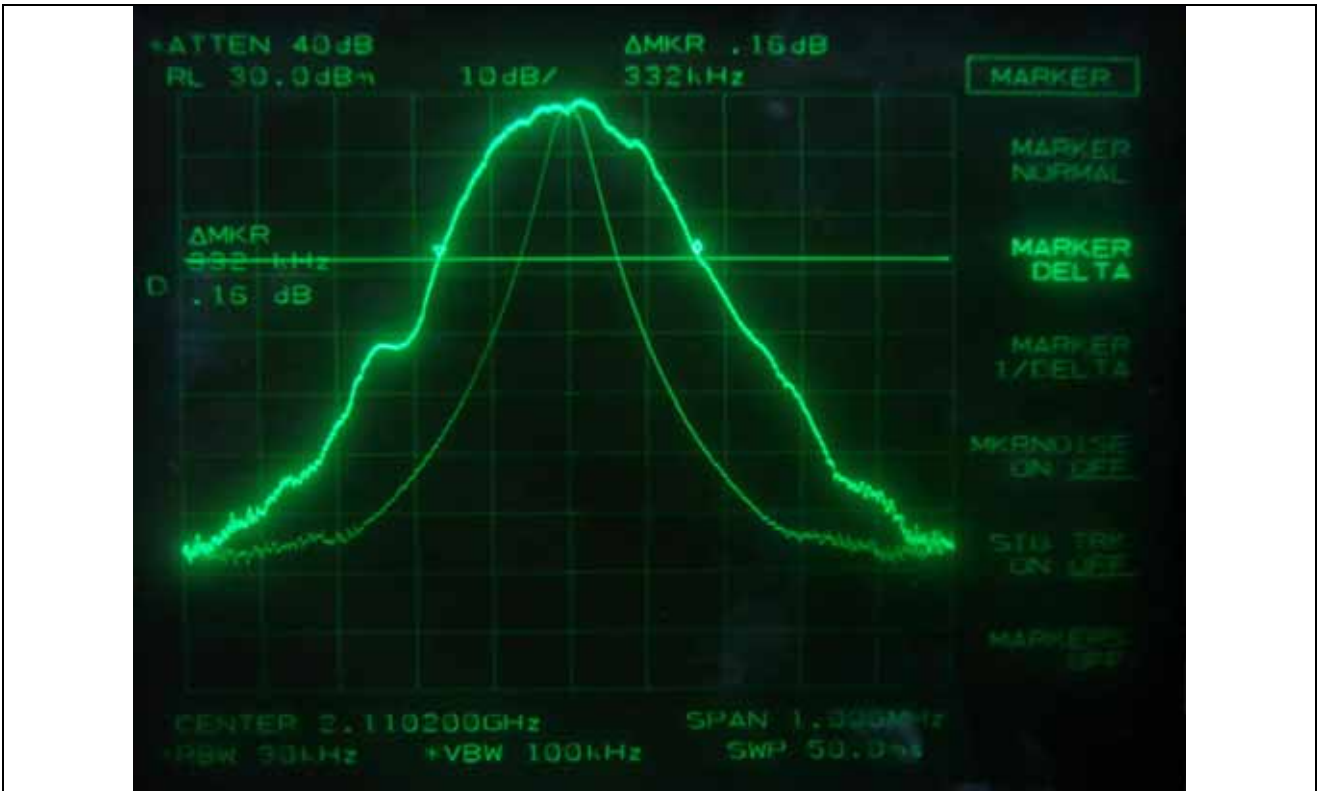


GSM – 26 dB Bandwidth (Low Channel)



GSM – 26 dB Bandwidth (Middle Channel)

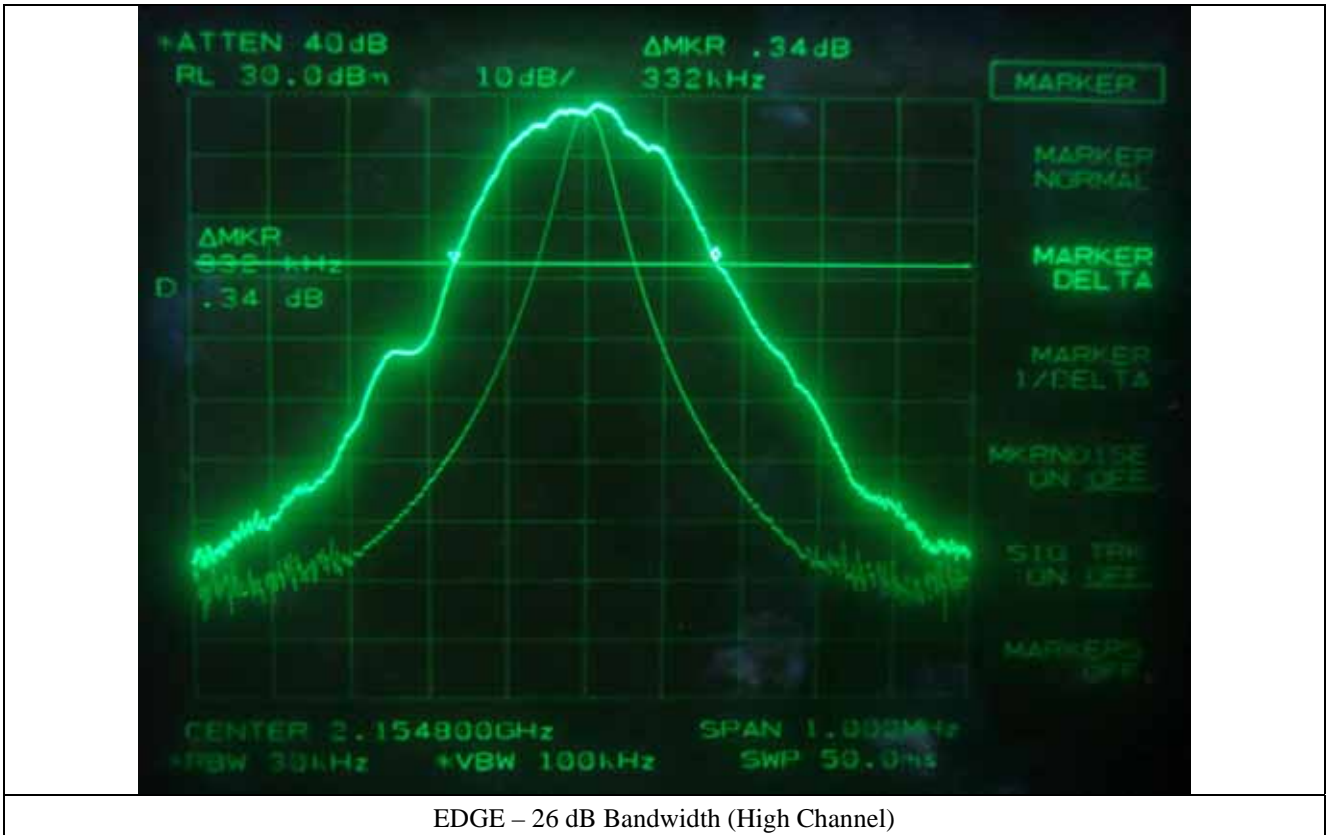


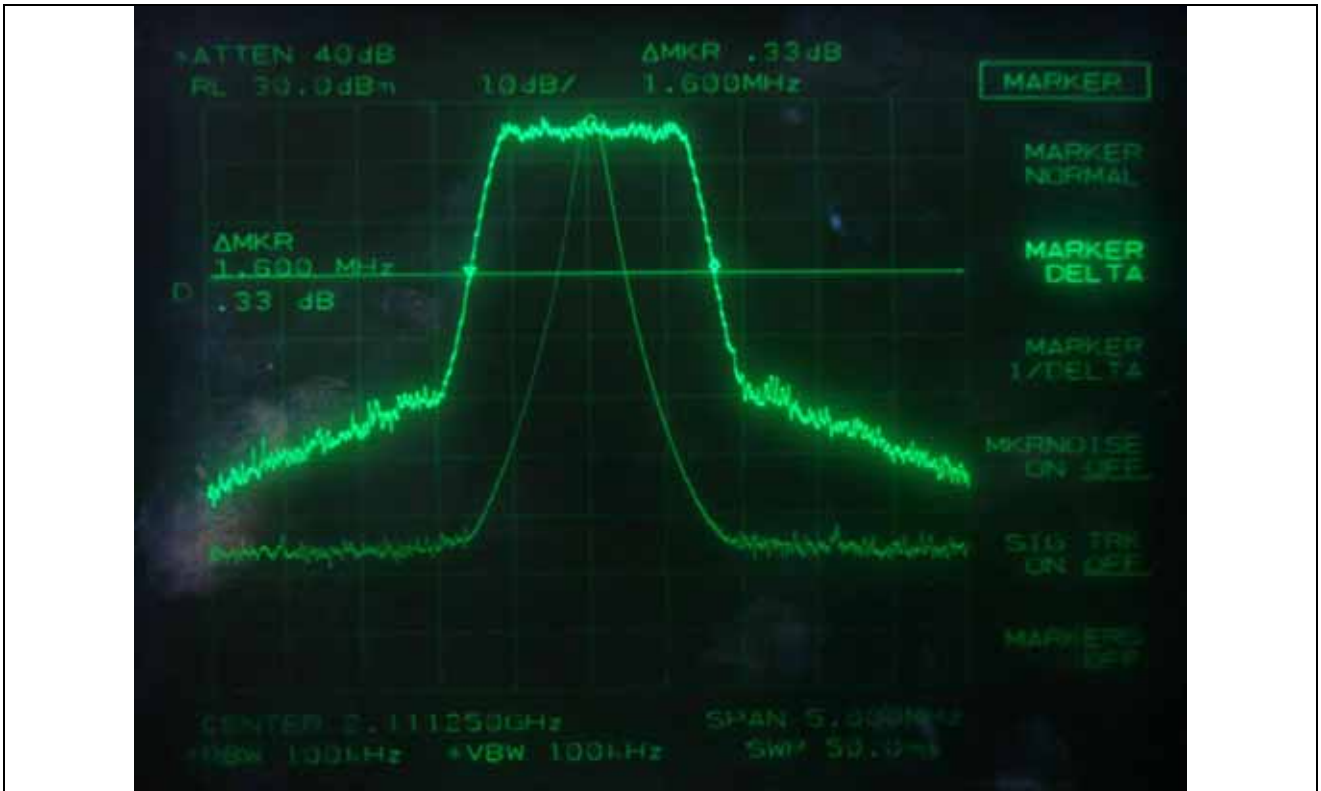


EDGE – 26 dB Bandwidth (Low Channel)

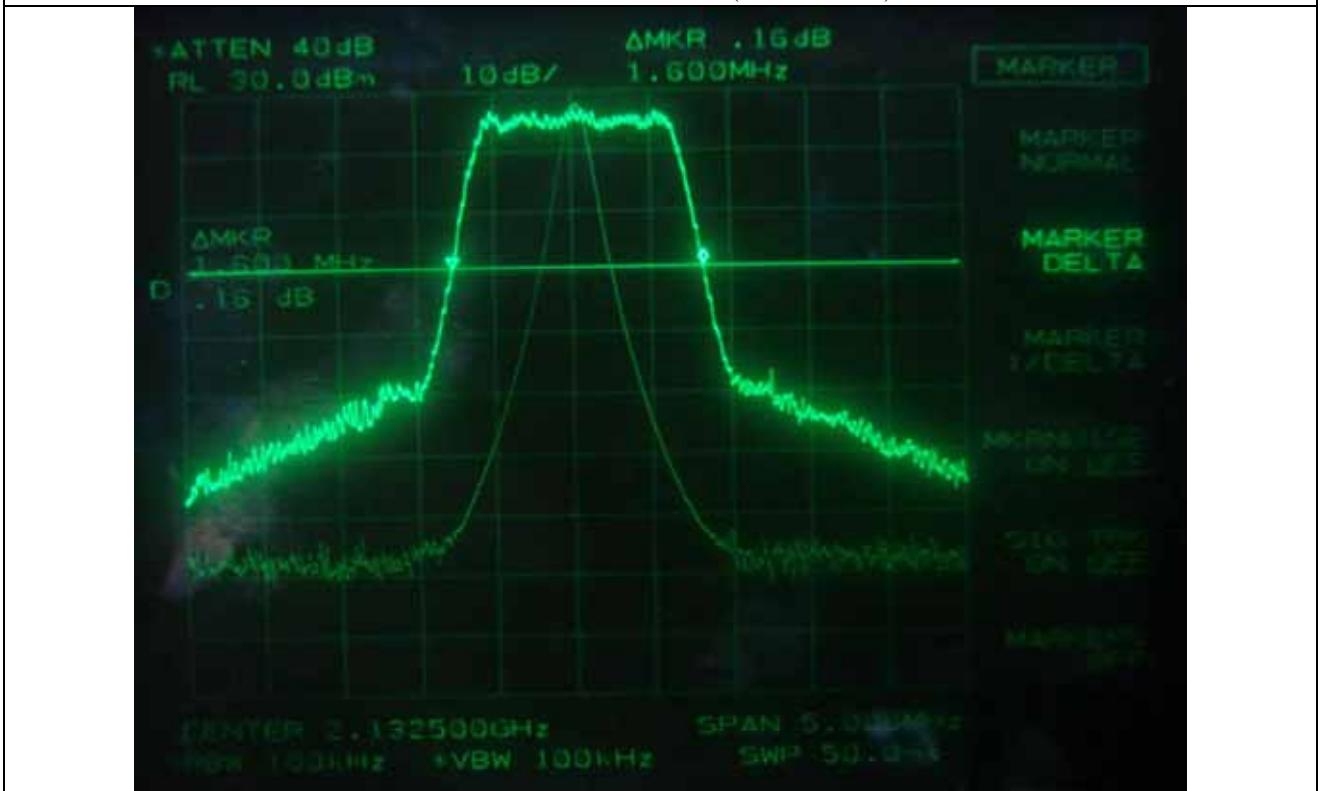


EDGE – 26 dB Bandwidth (Middle Channel)

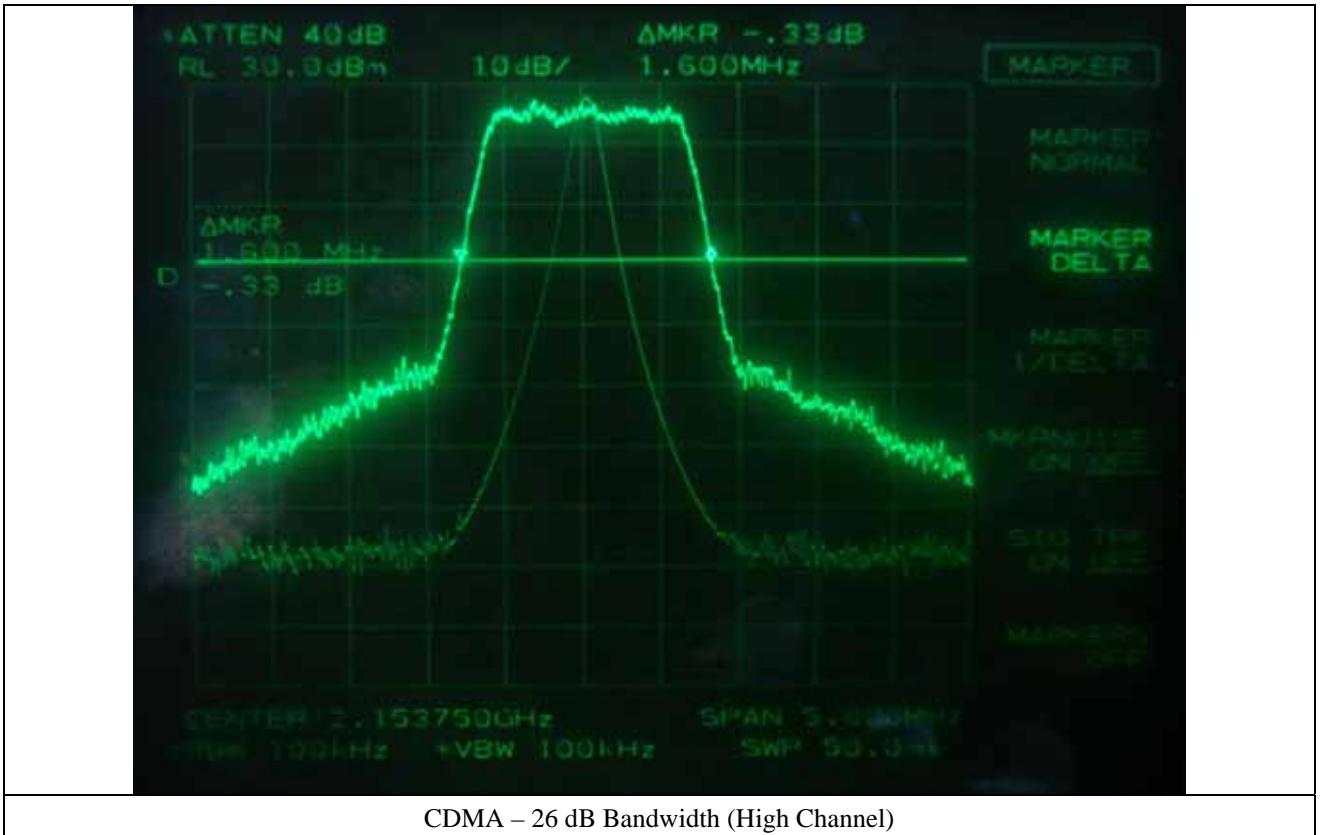


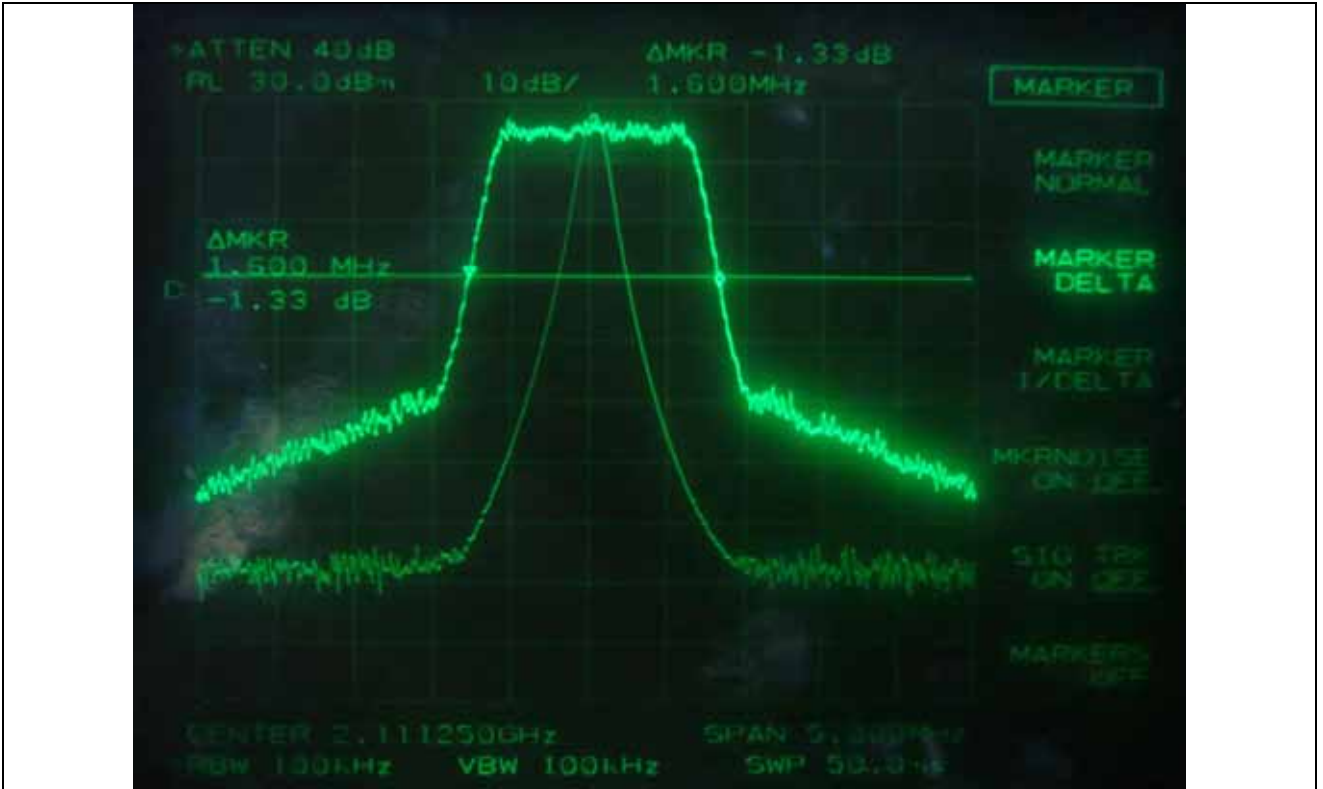


CDMA – 26 dB Bandwidth (Low Channel)

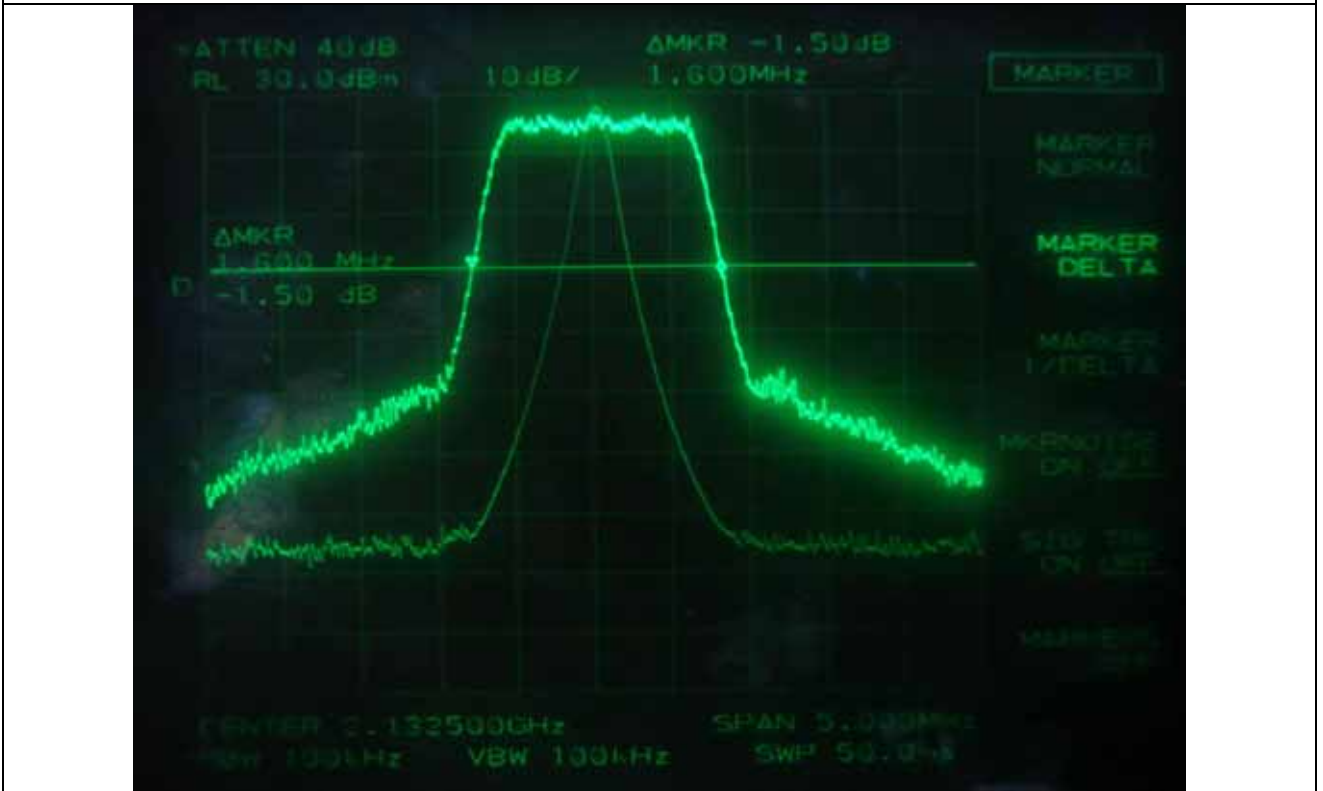


CDMA – 26 dB Bandwidth (Middle Channel)

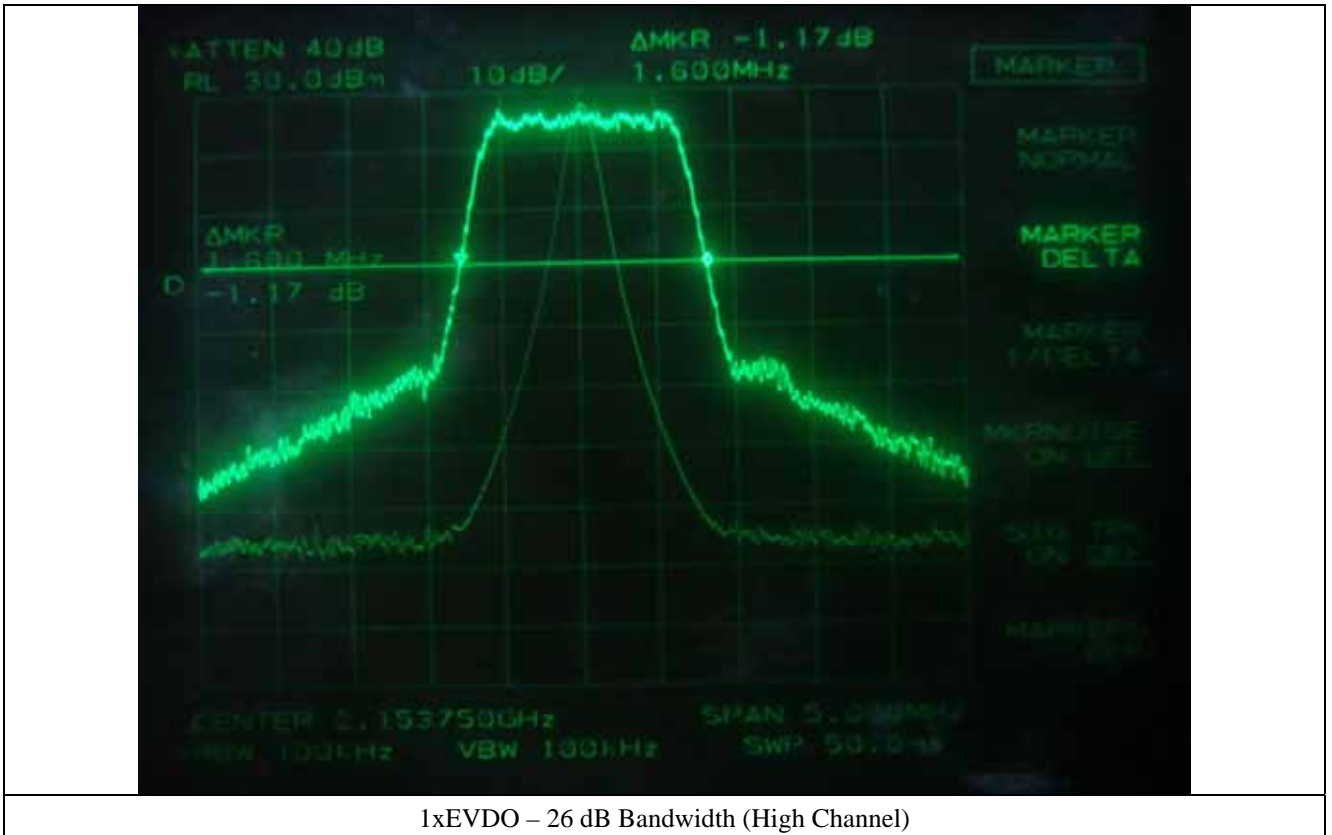


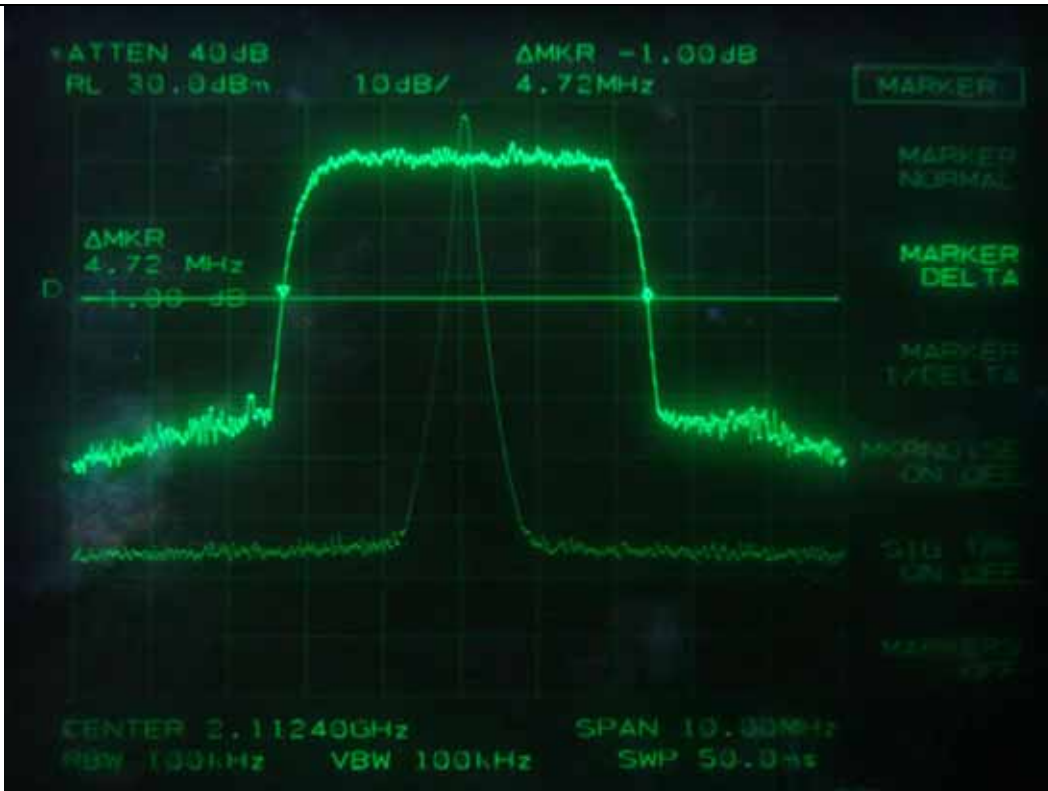


1xEVDO – 26 dB Bandwidth (Low Channel)

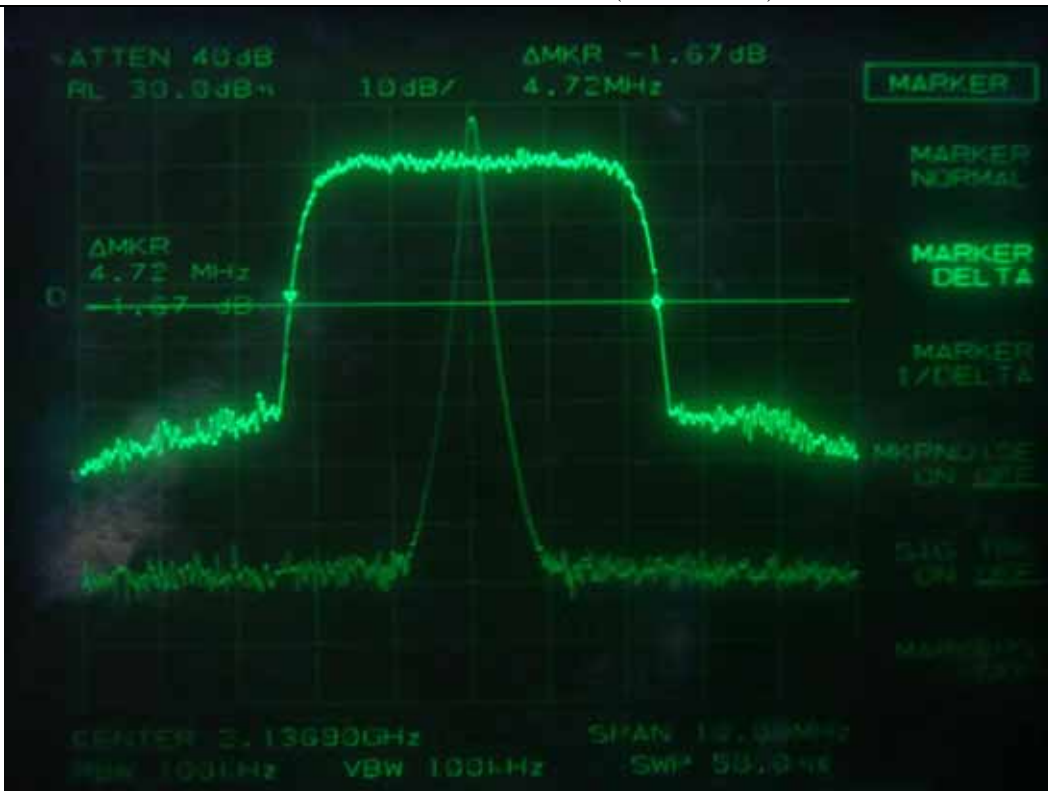


1xEVDO – 26 dB Bandwidth (Middle Channel)

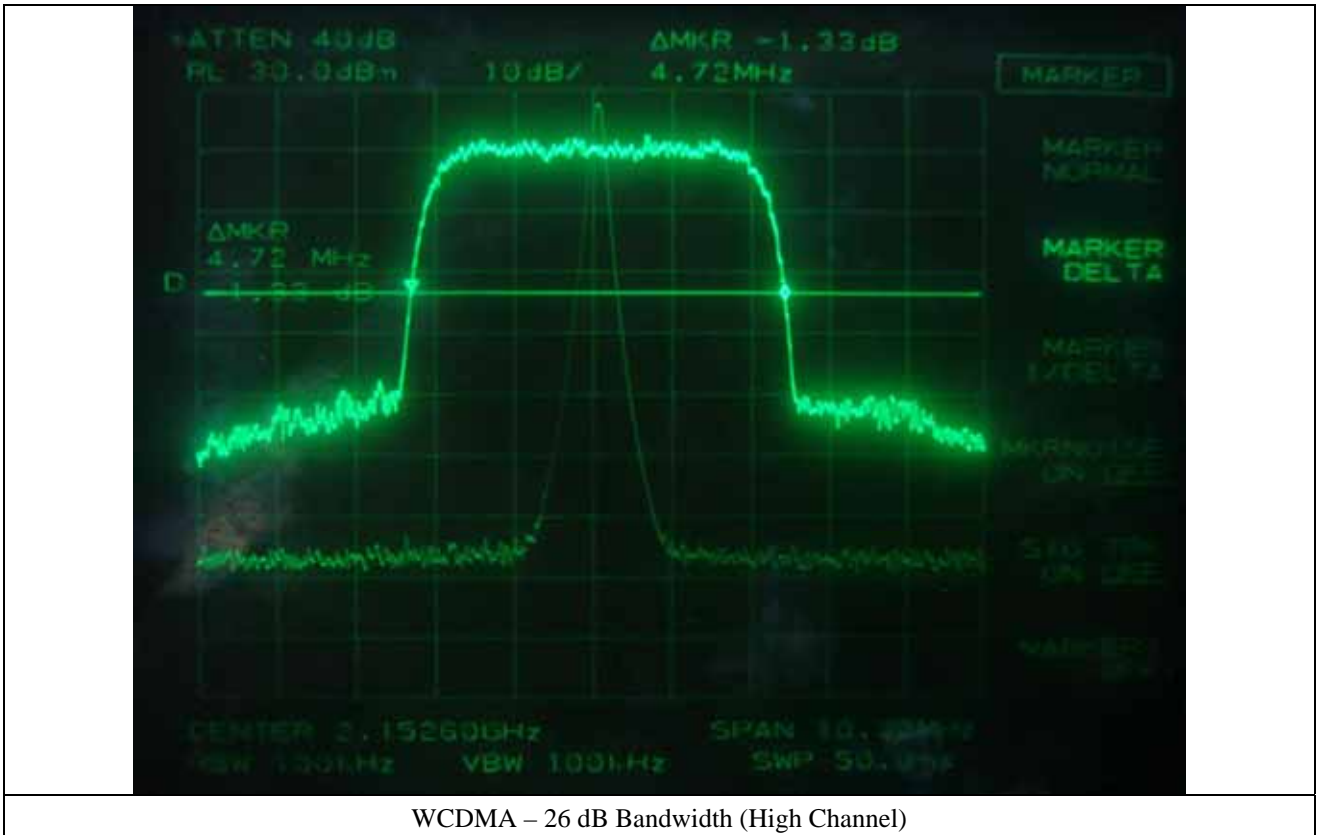


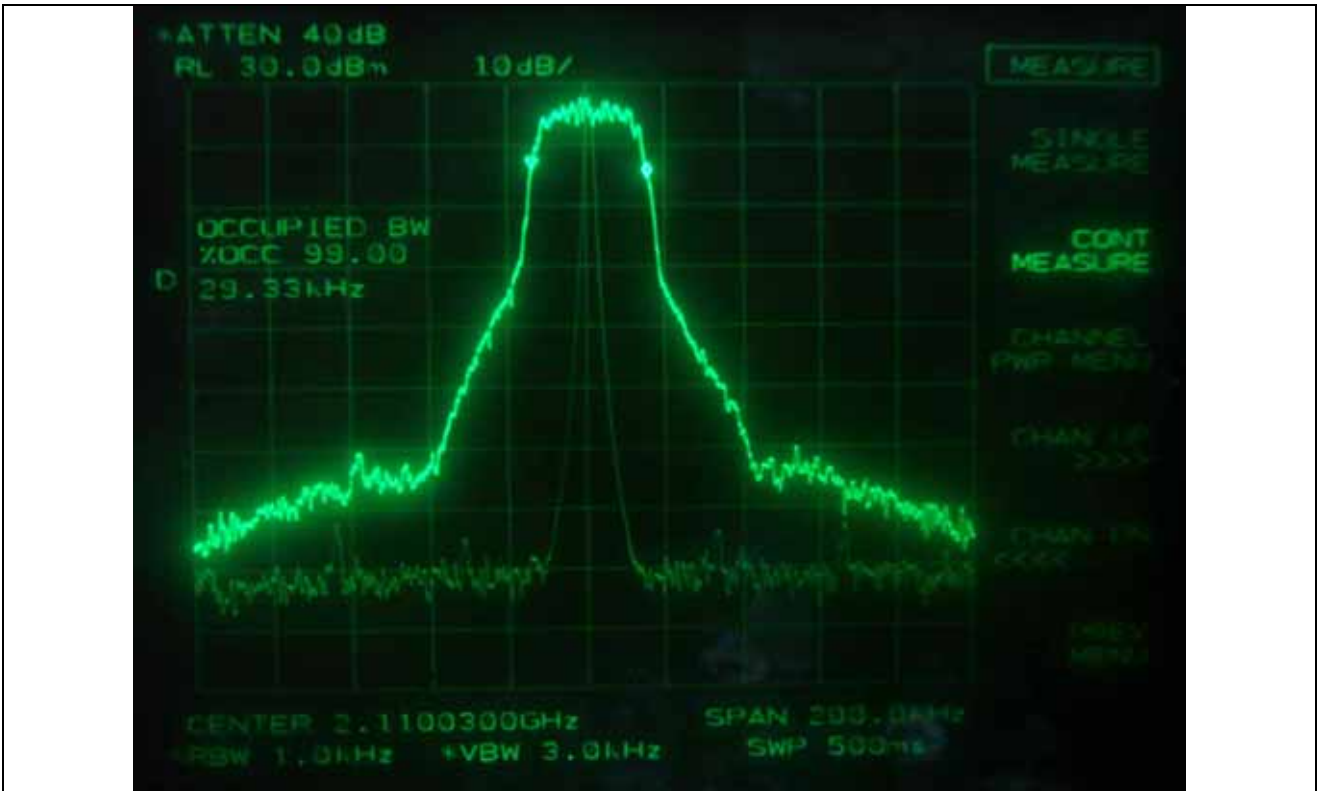


WCDMA – 26 dB Bandwidth (Low Channel)

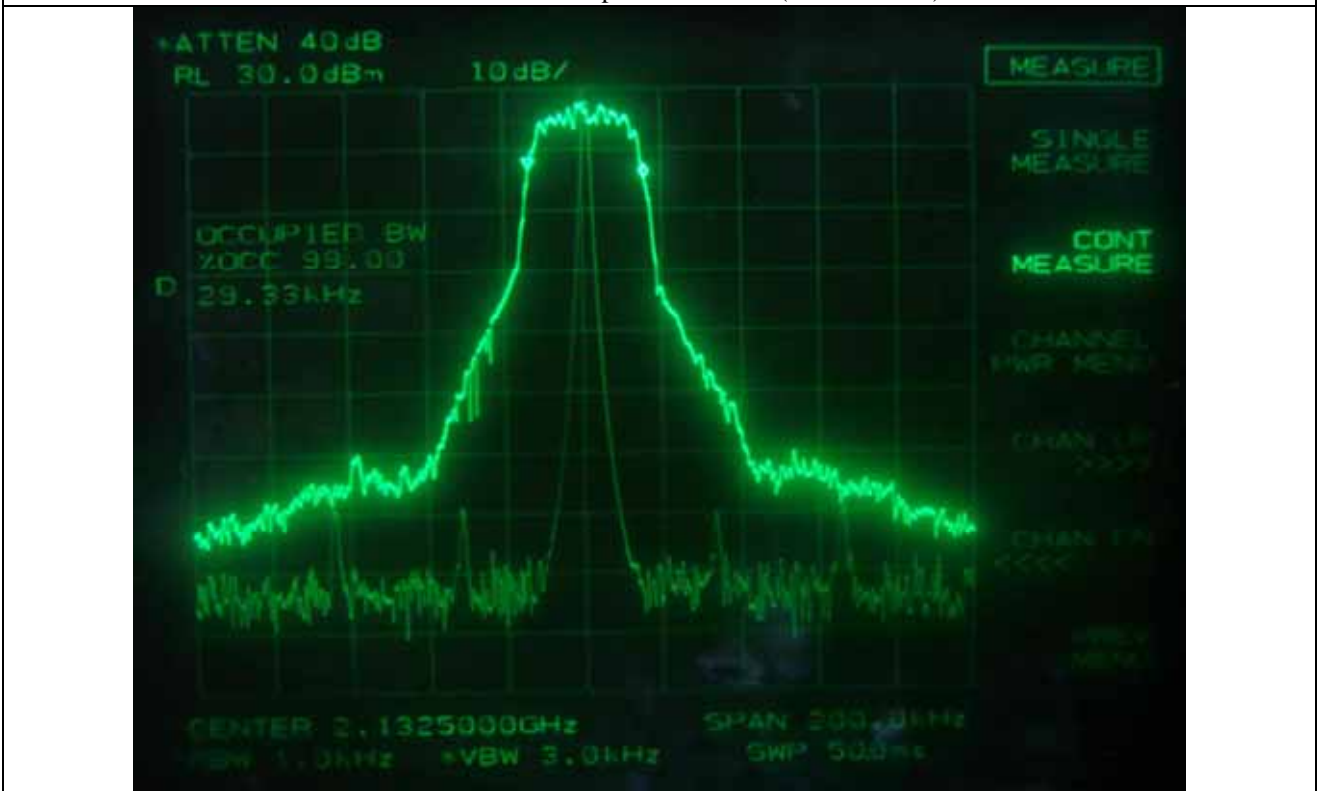


WCDMA – 26 dB Bandwidth (Middle Channel)

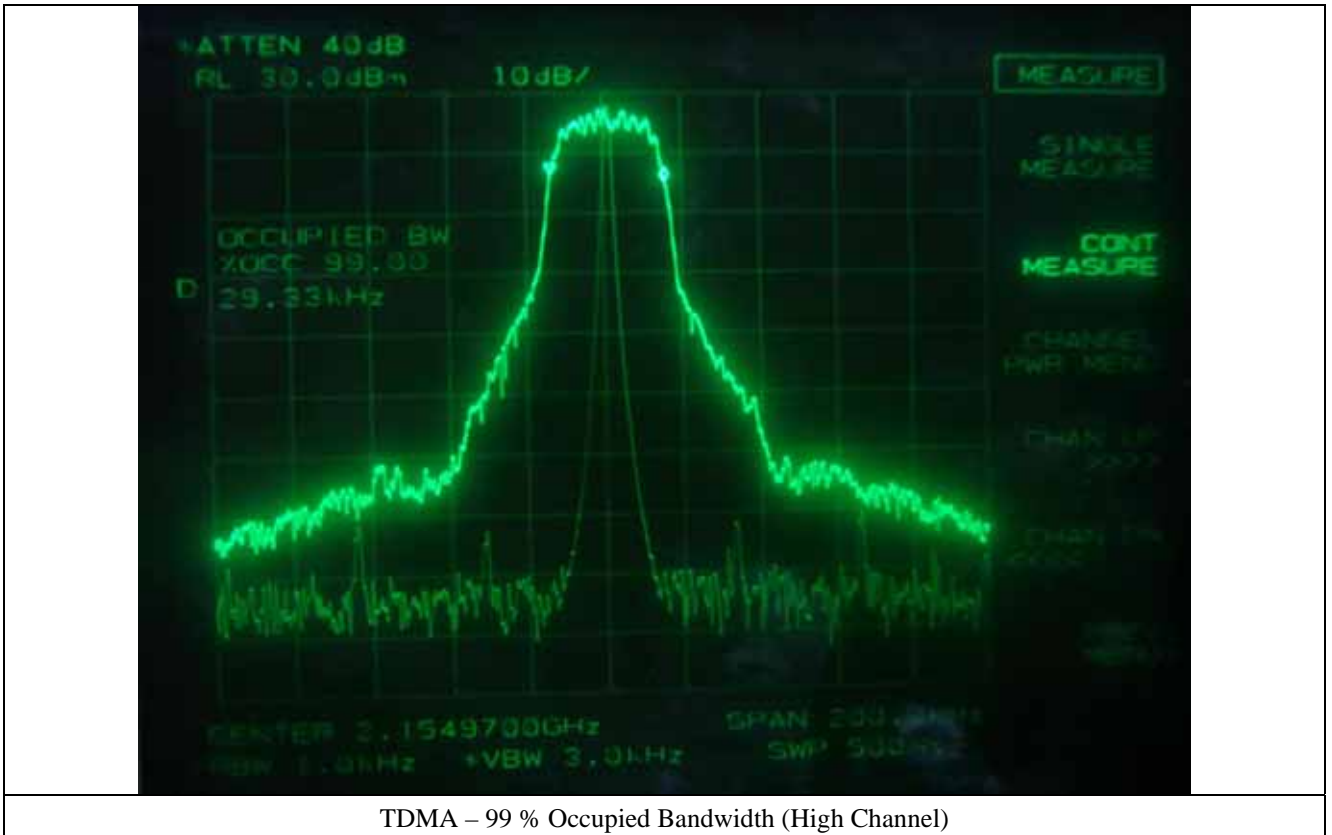


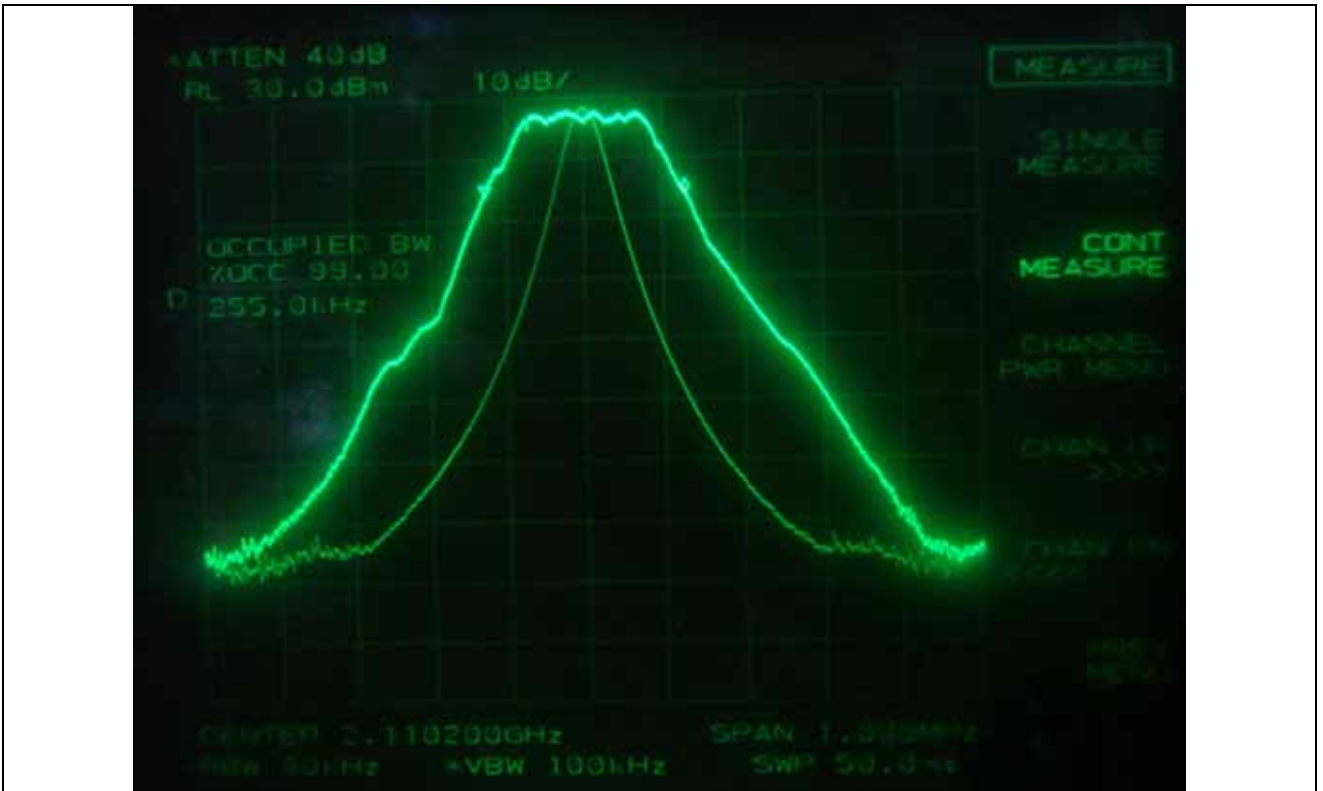


TDMA – 99 % Occupied Bandwidth (Low Channel)



TDMA – 99 % Occupied Bandwidth (Middle Channel)

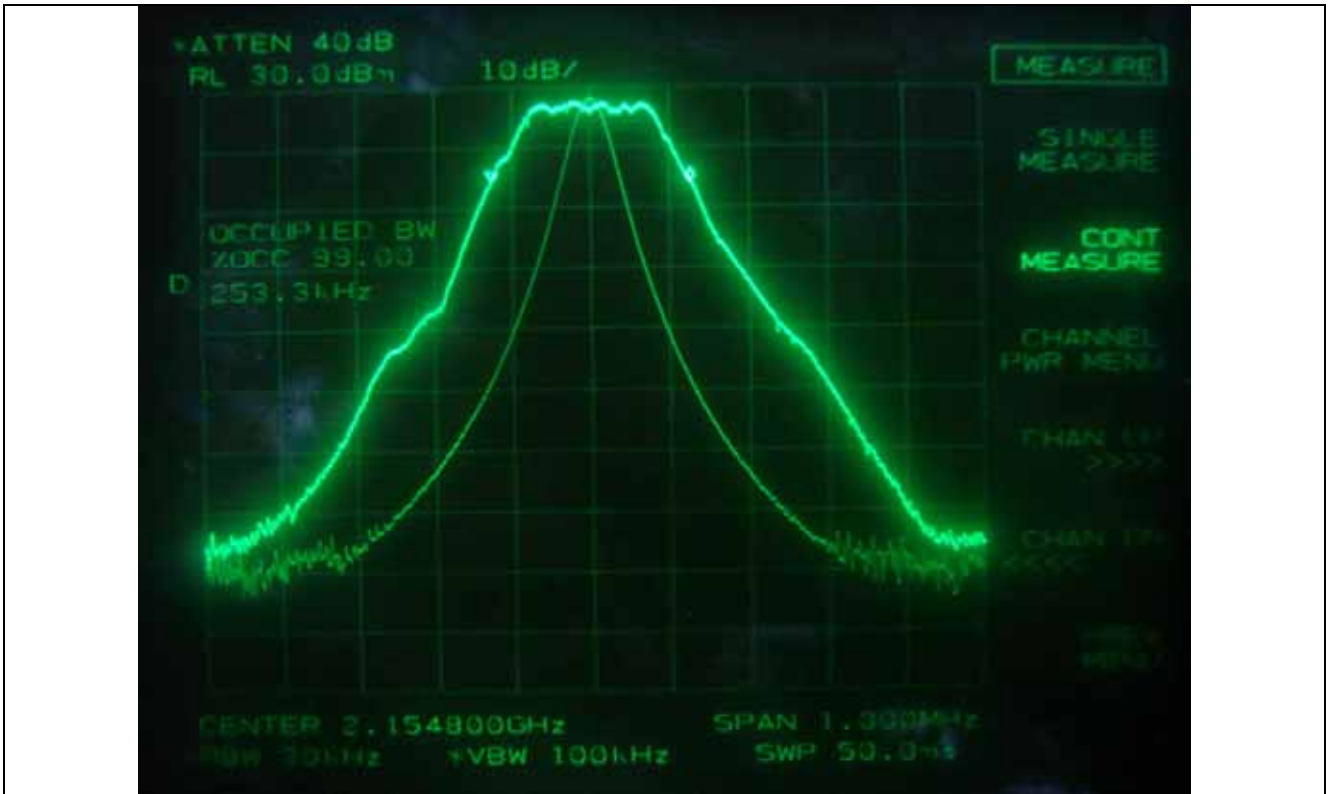




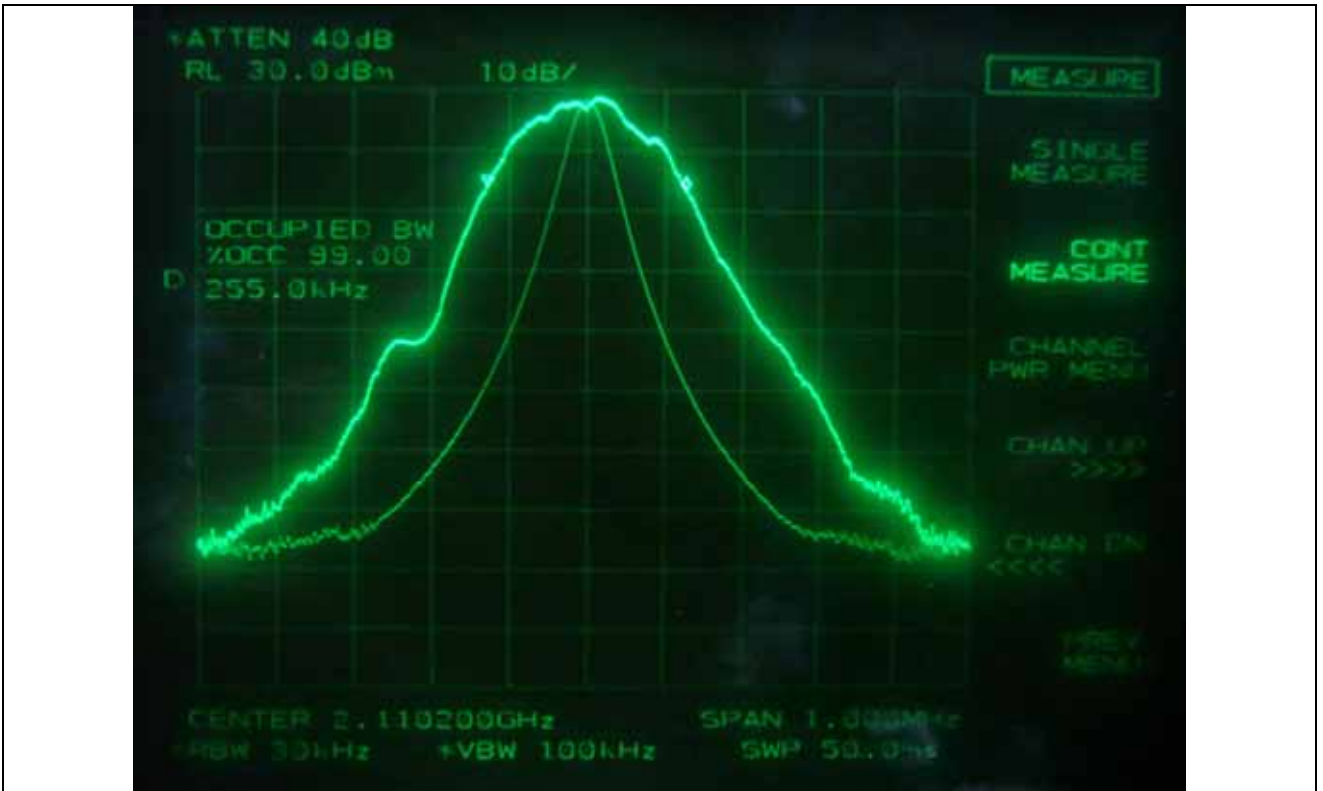
GSM – 99 % Occupied Bandwidth (Low Channel)



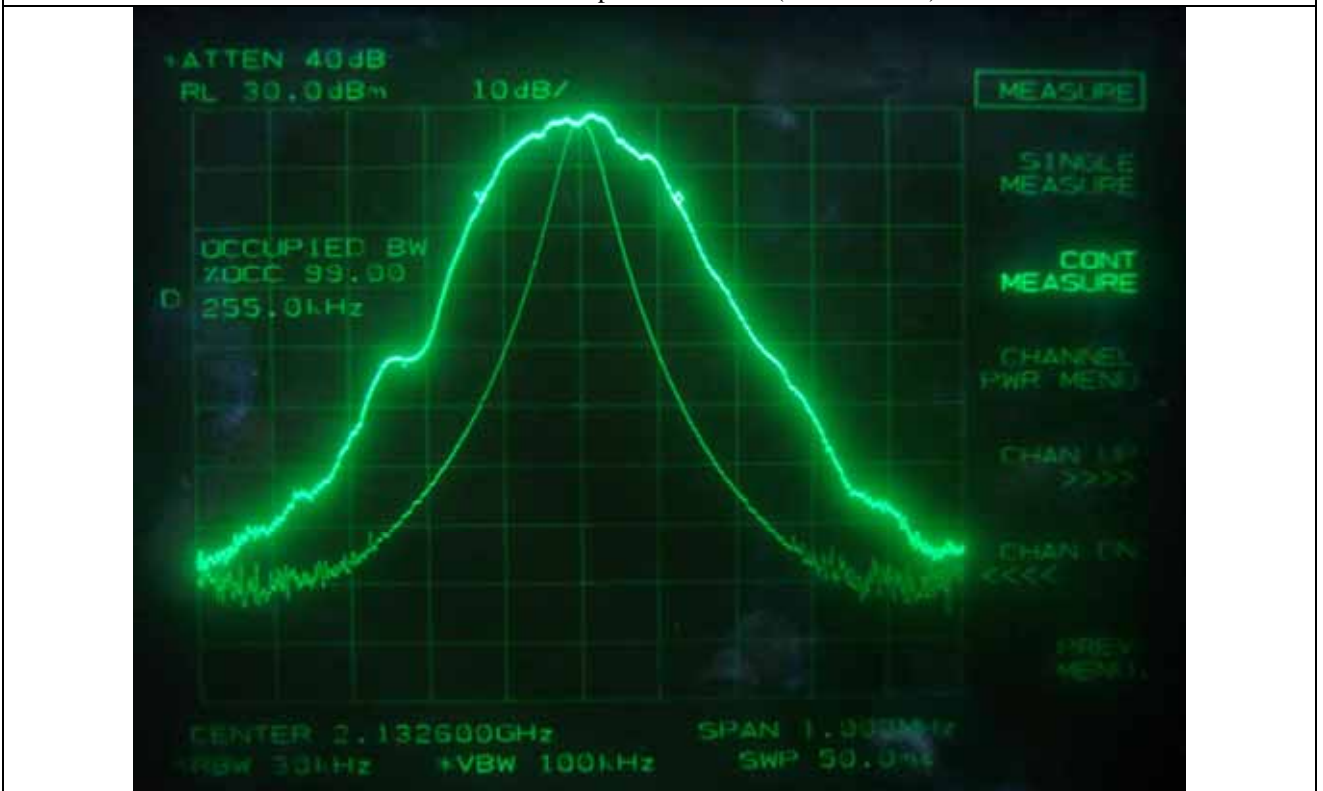
GSM – 99 % Occupied Bandwidth (Middle Channel)



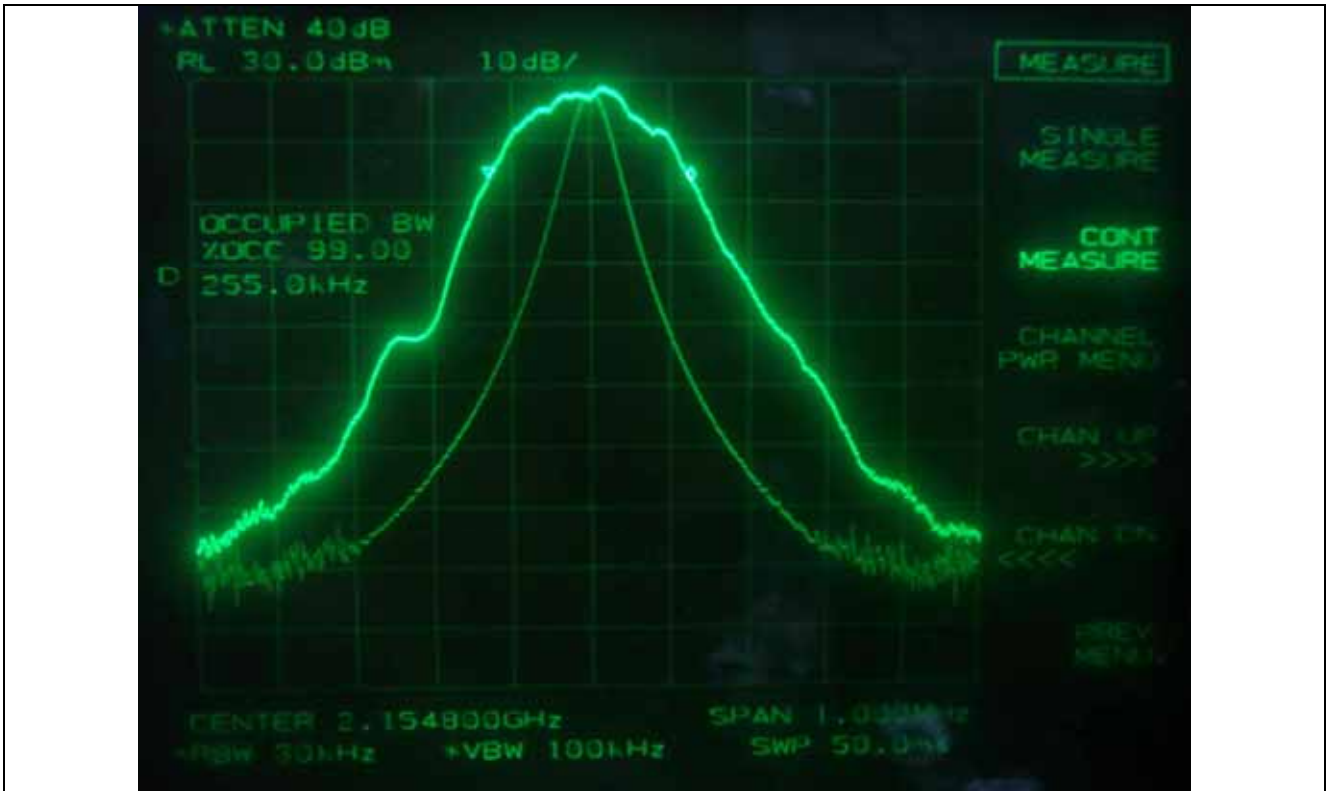
GSM – 99 % Occupied Bandwidth (High Channel)



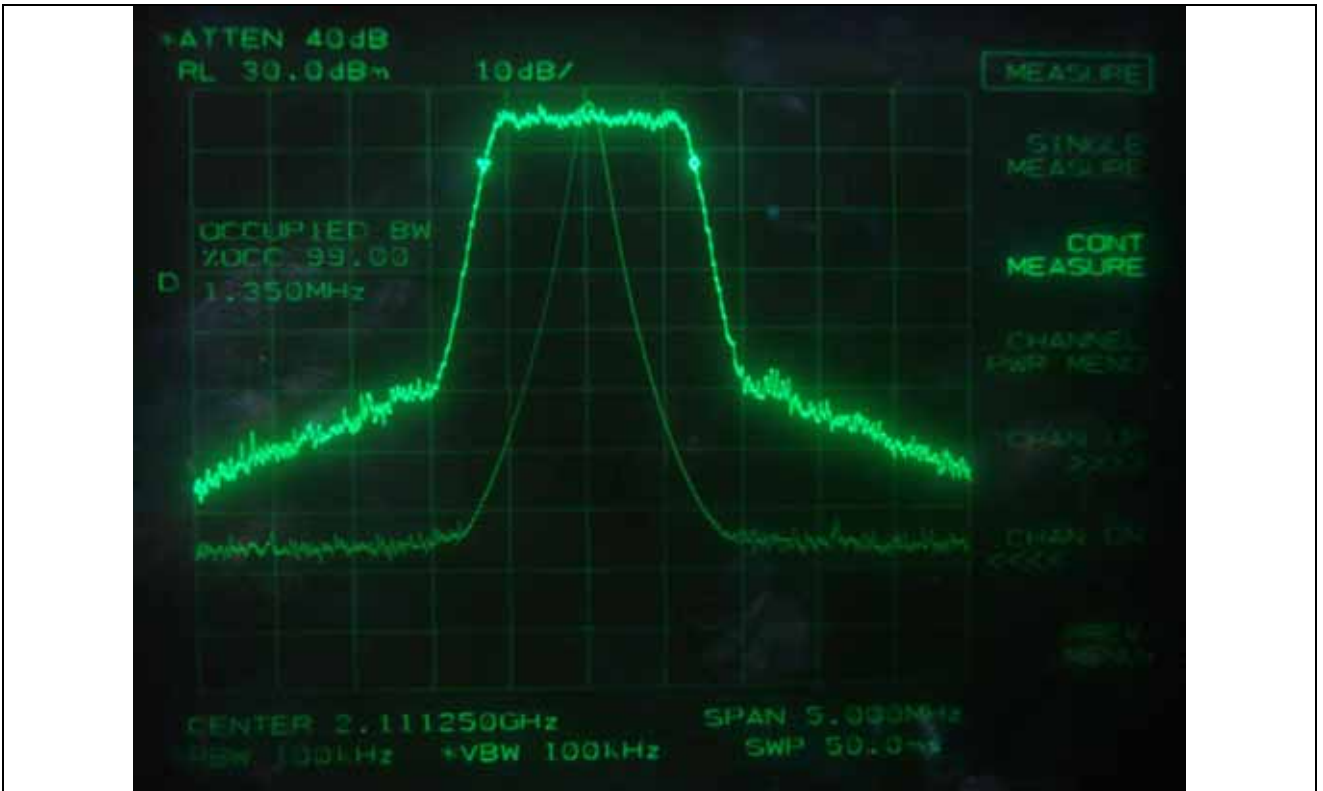
EDGE – 99 % Occupied Bandwidth (Low Channel)



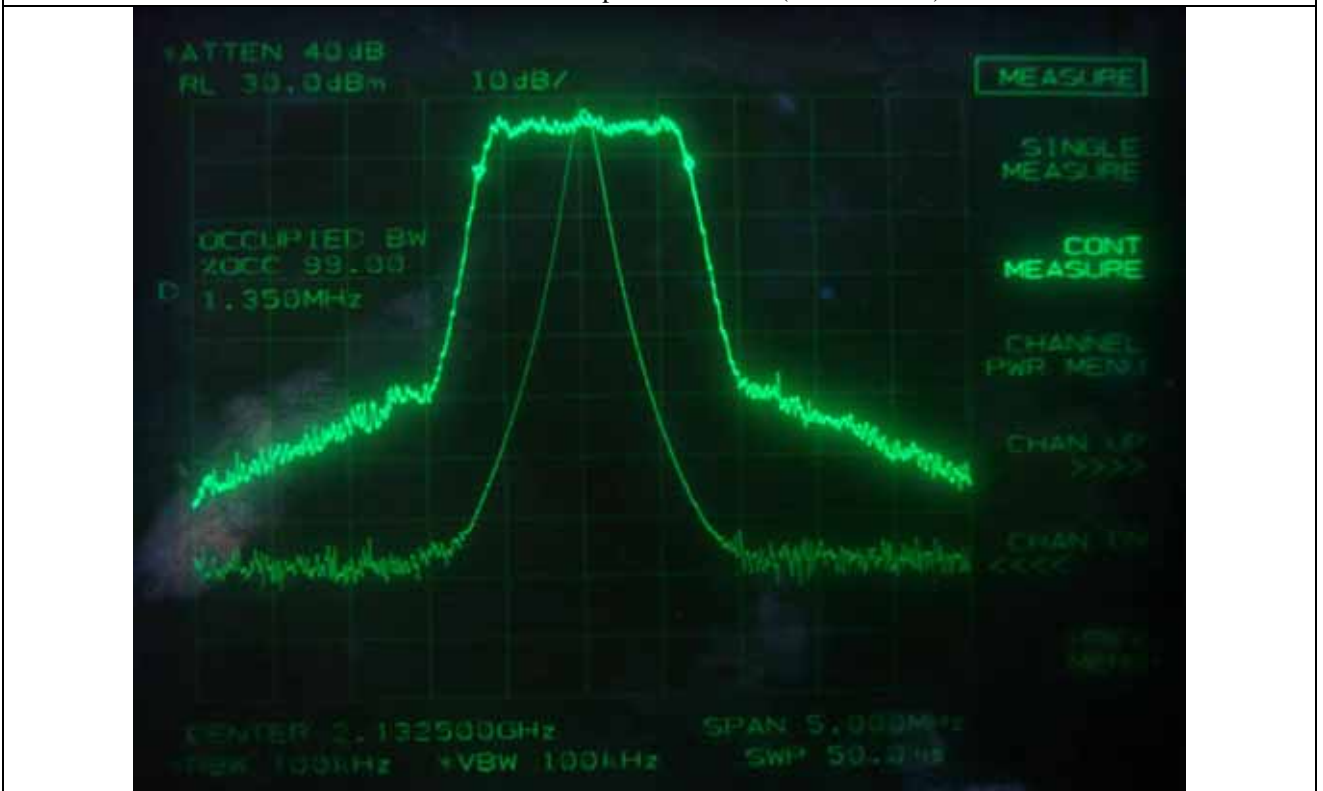
EDGE – 99 % Occupied Bandwidth (Middle Channel)



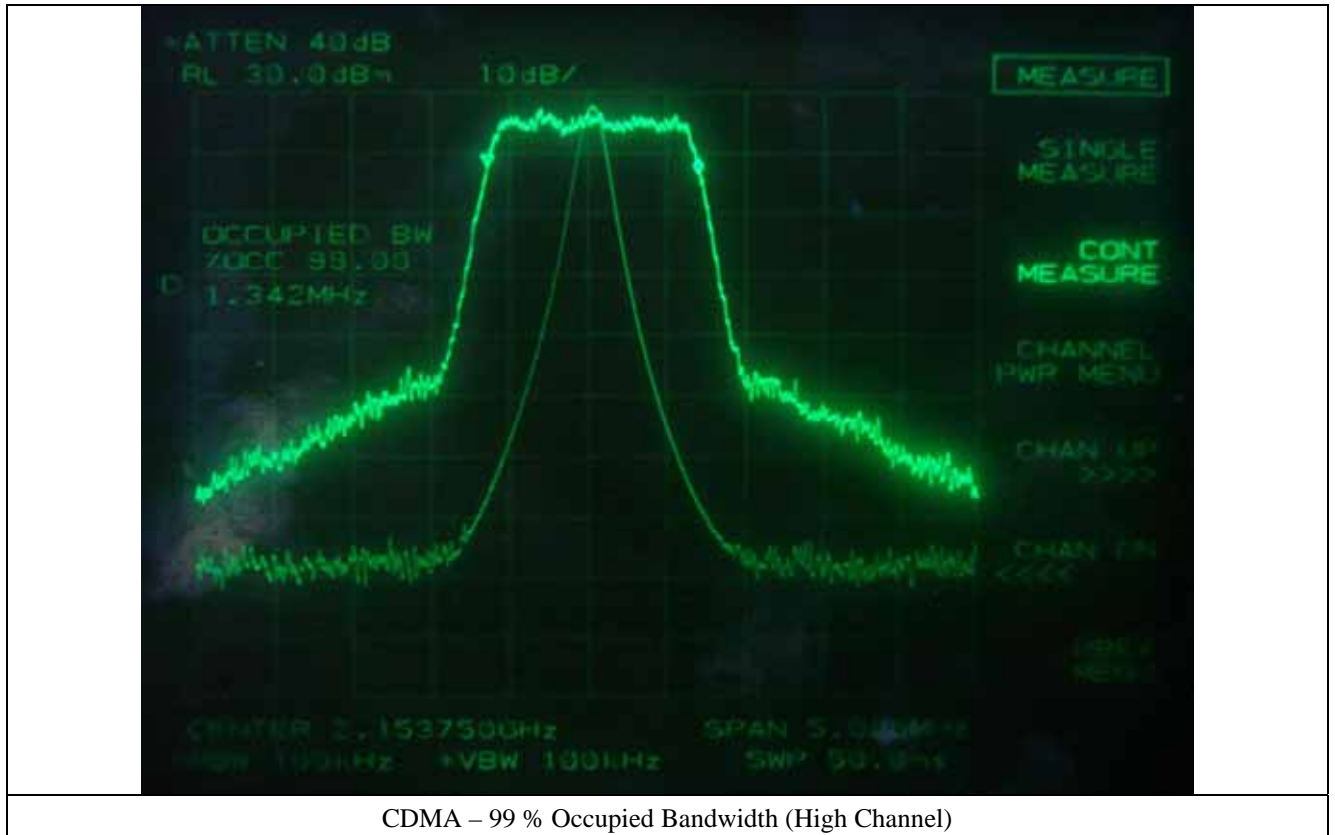
EDGE – 99 % Occupied Bandwidth (High Channel)

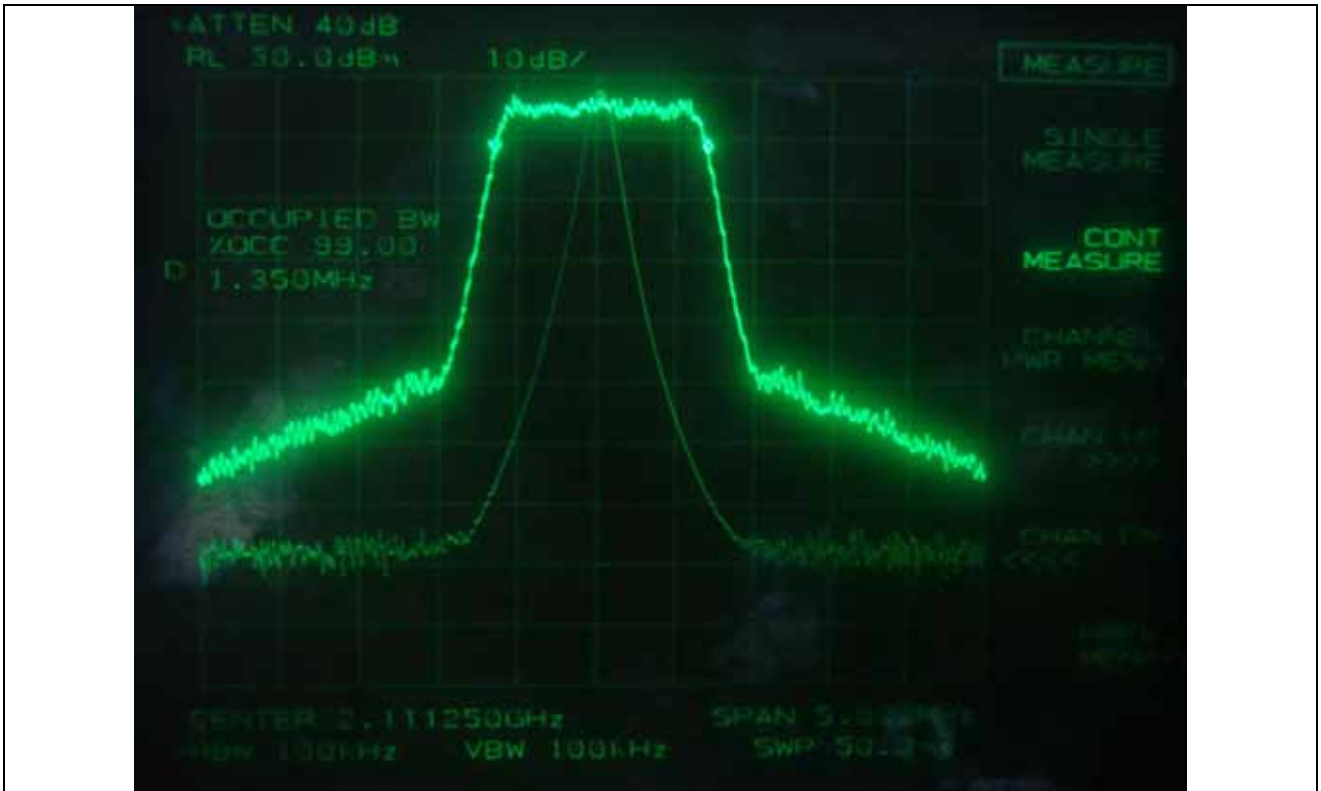


CDMA – 99 % Occupied Bandwidth (Low Channel)

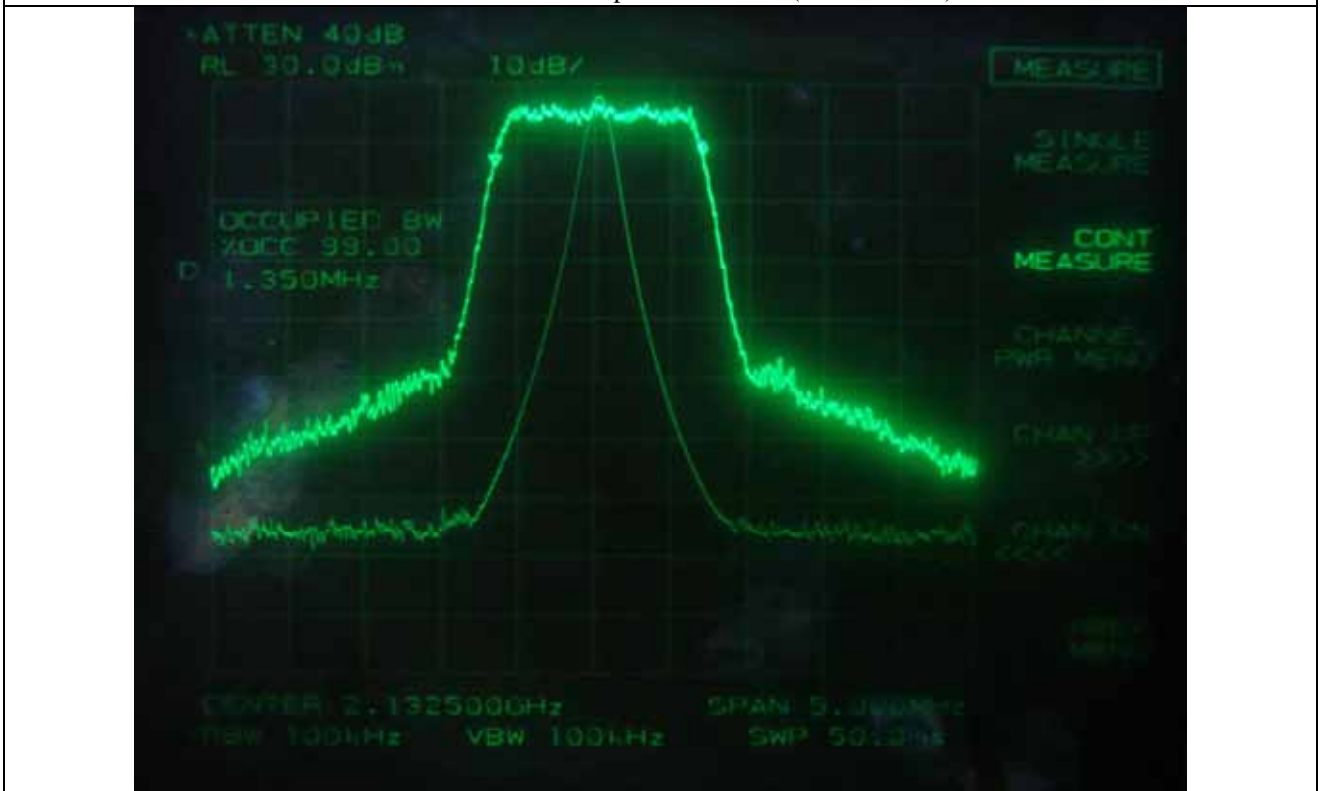


CDMA – 99 % Occupied Bandwidth (Middle Channel)

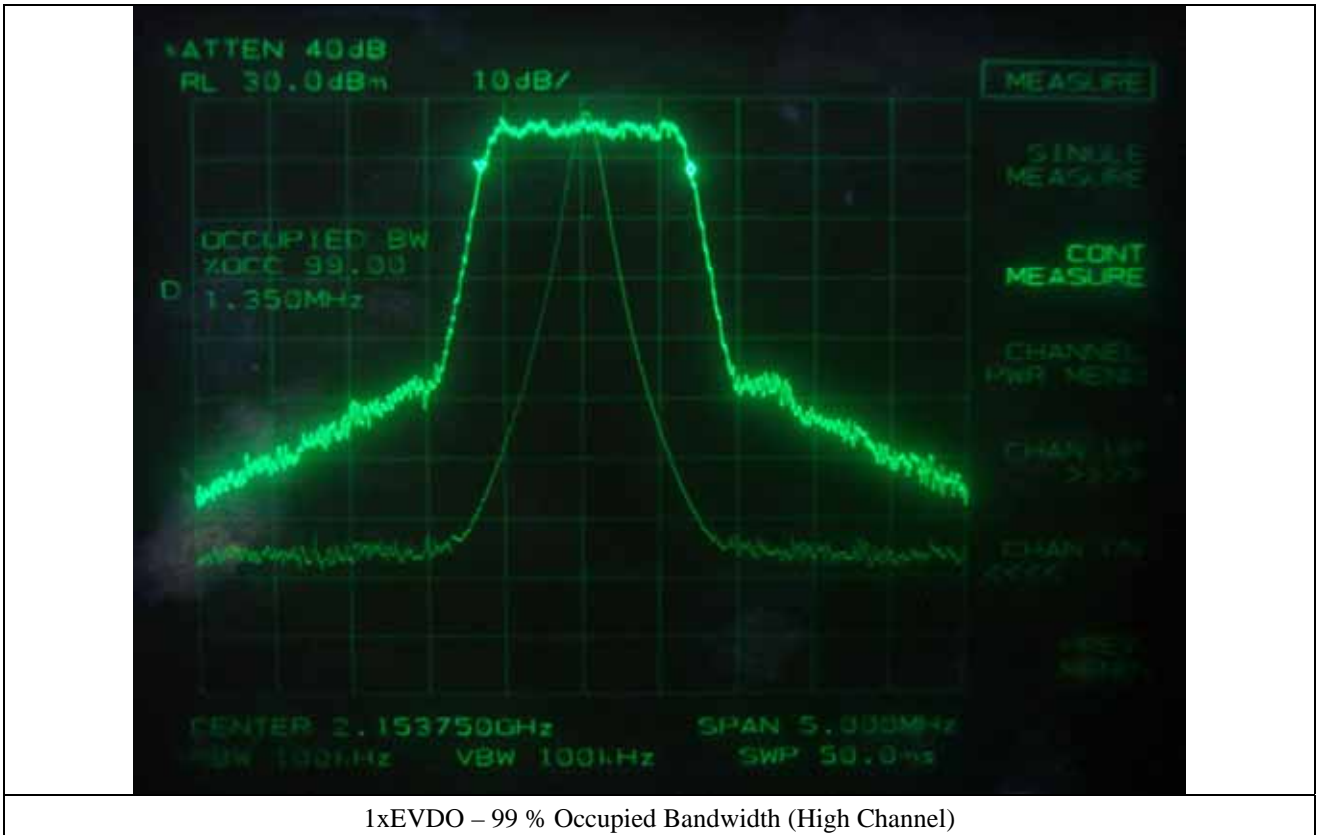


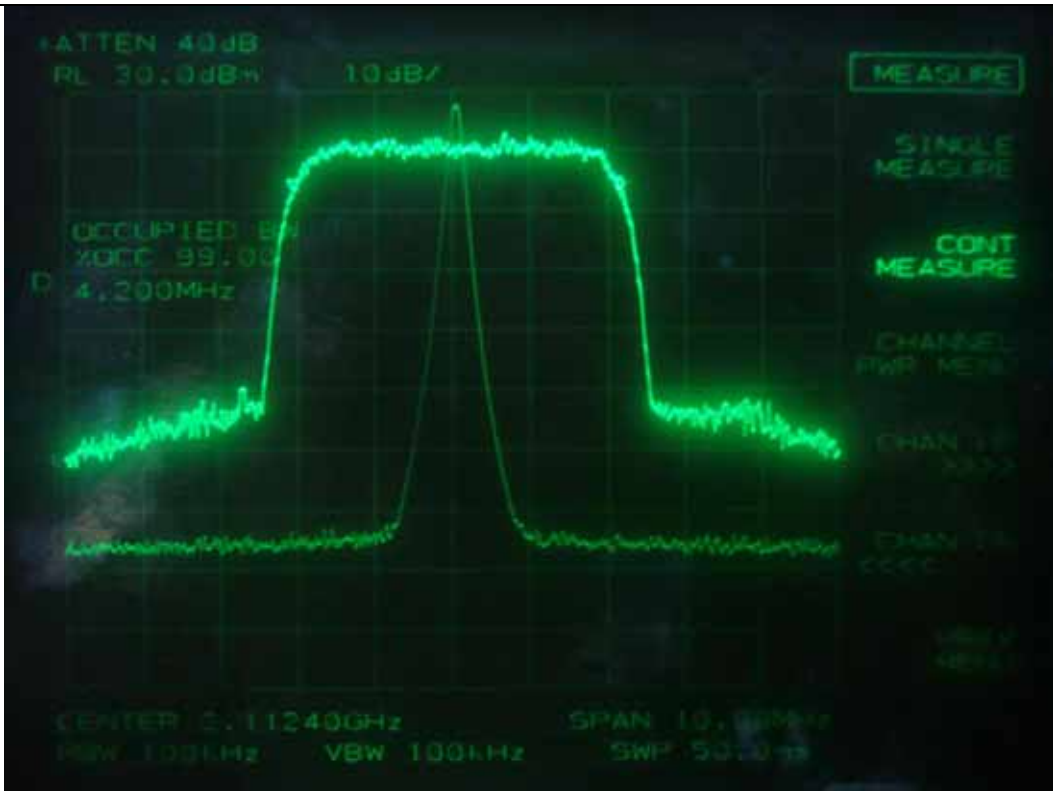


1xEVDO – 99 % Occupied Bandwidth (Low Channel)

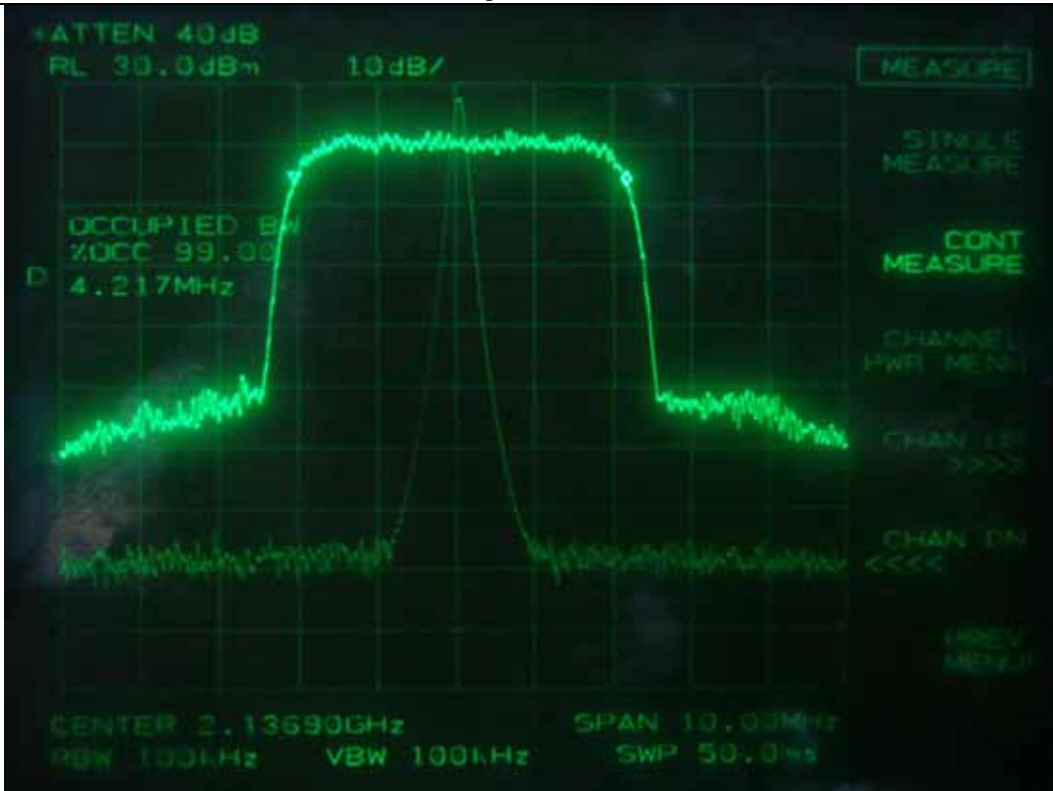


1xEVDO – 99 % Occupied Bandwidth (Middle Channel)

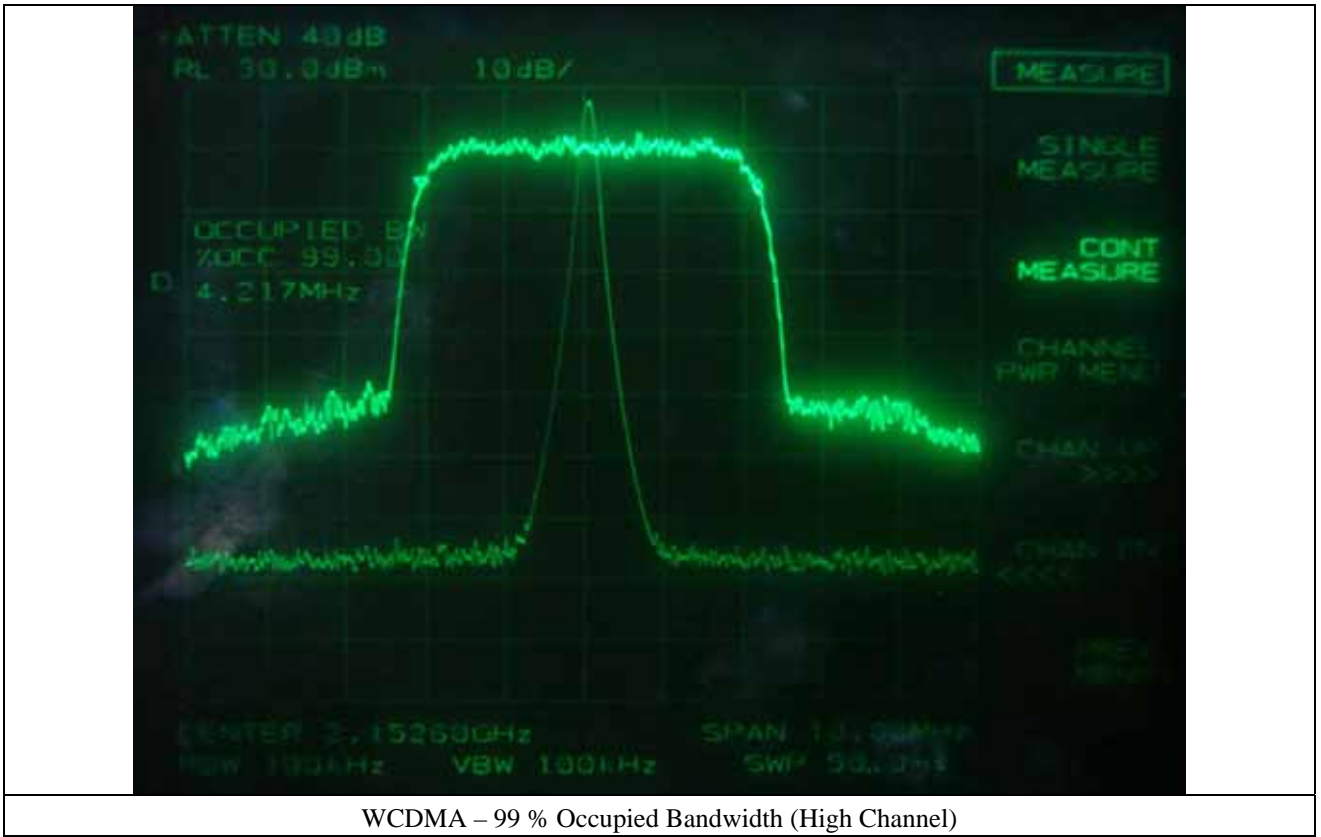


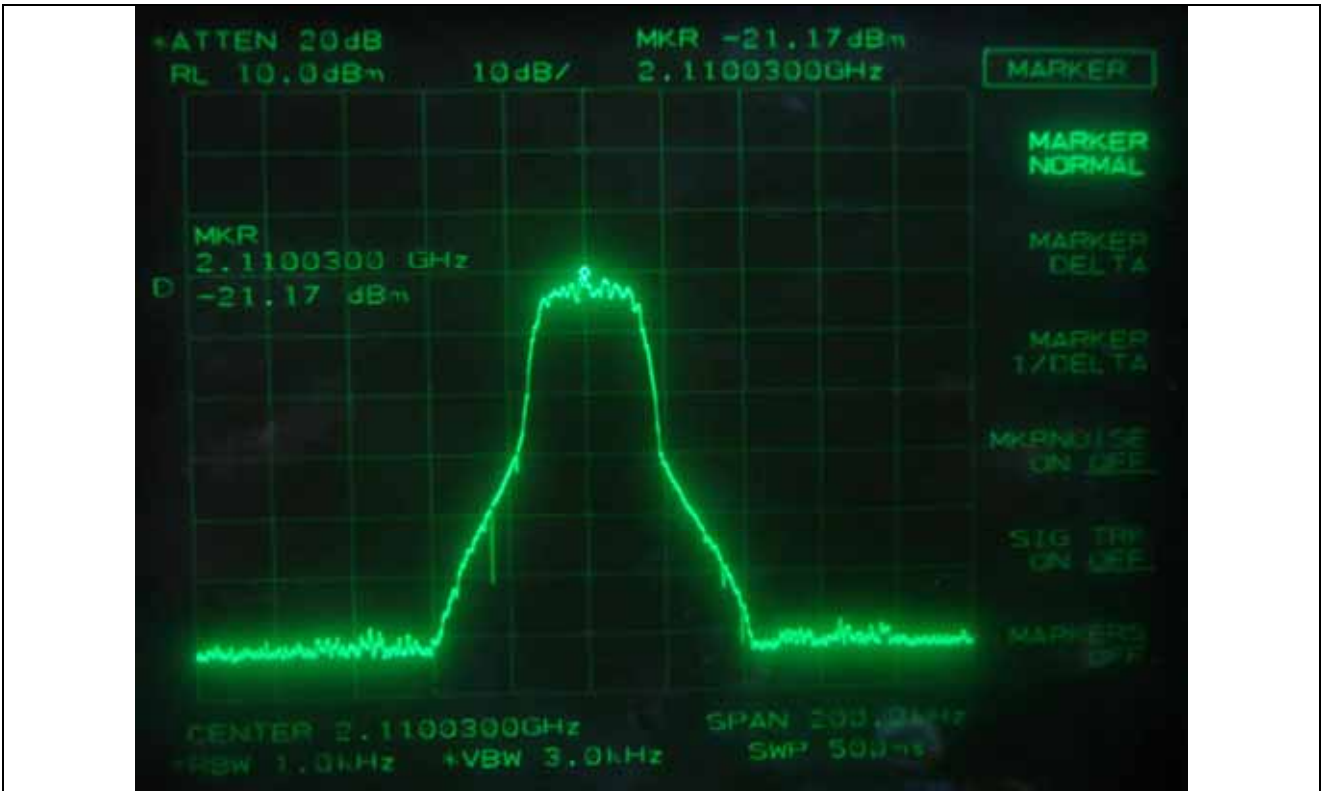


WCDMA – 99 % Occupied Bandwidth (Low Channel)

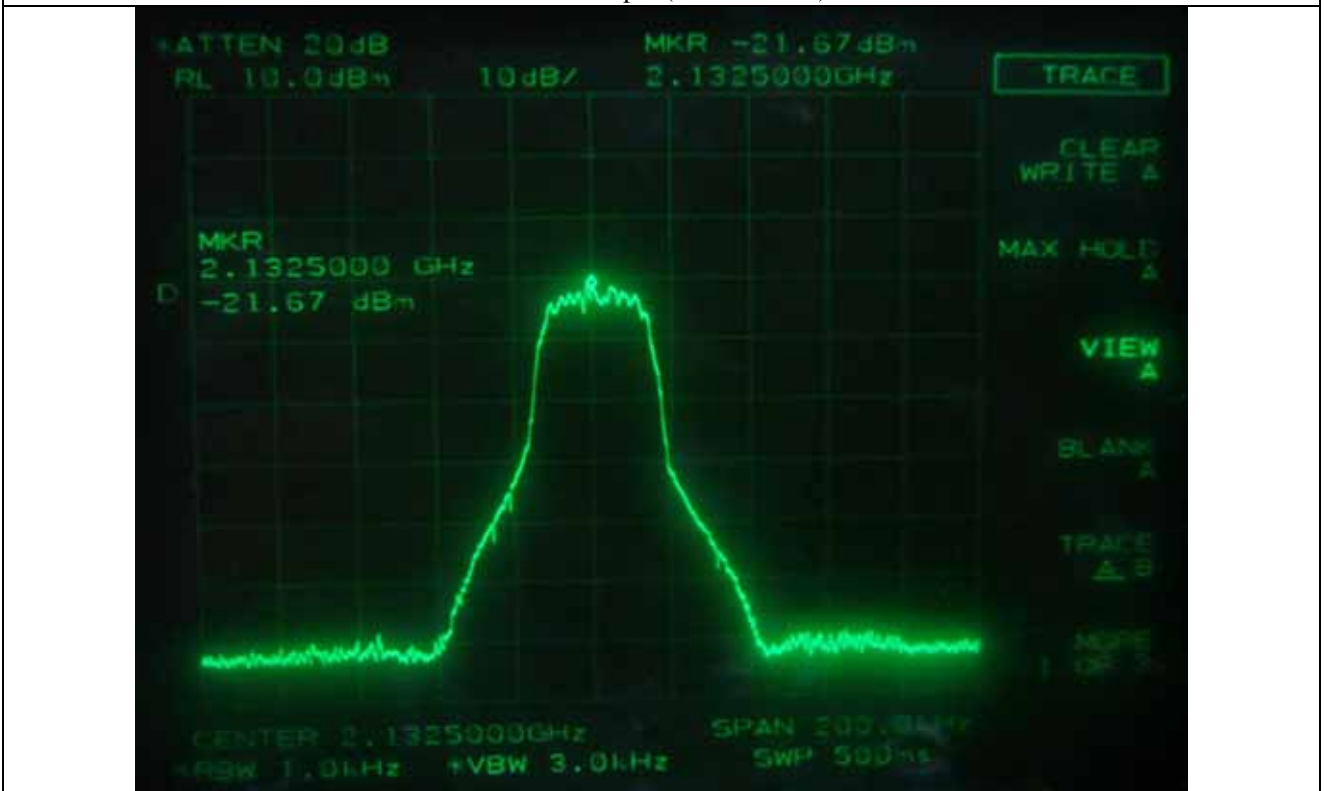


WCDMA – 99 % Occupied Bandwidth (Middle Channel)

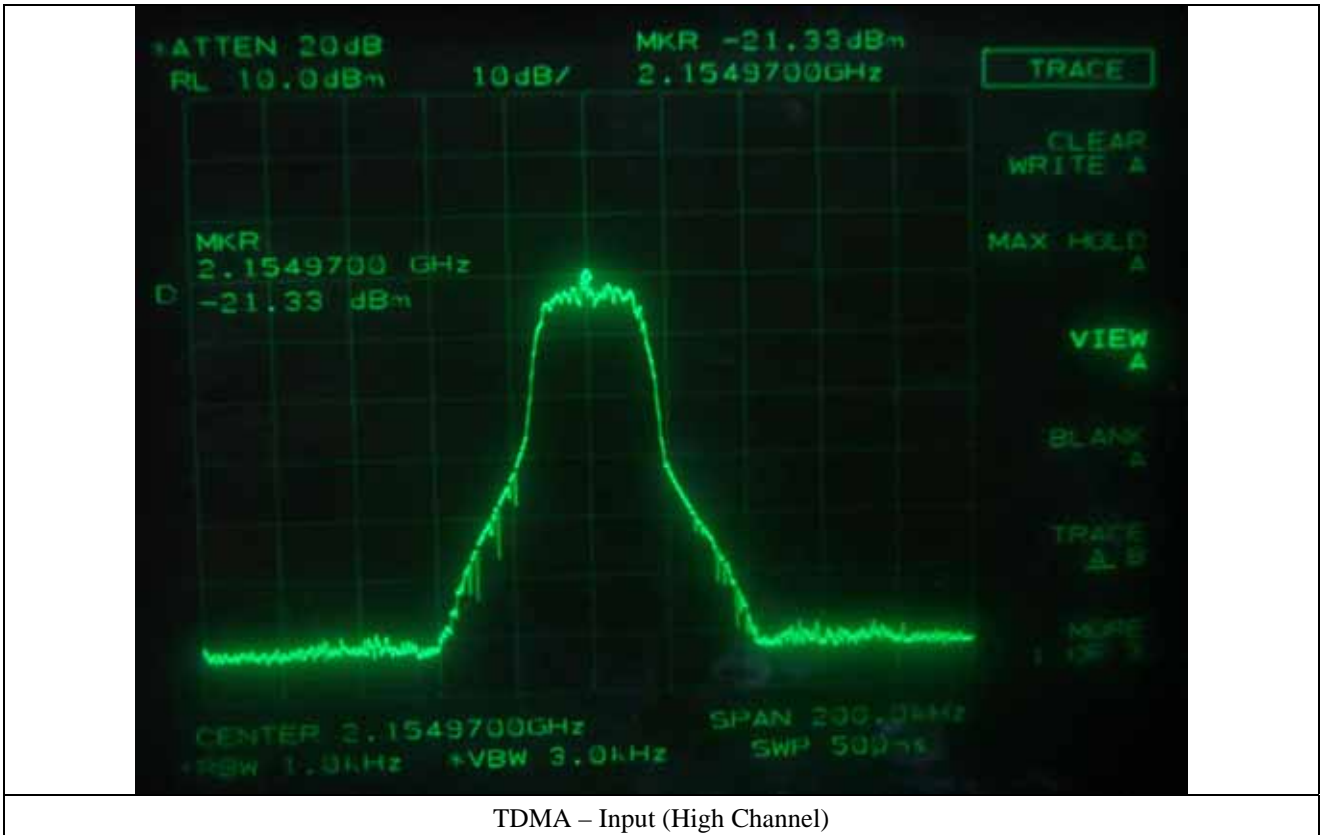


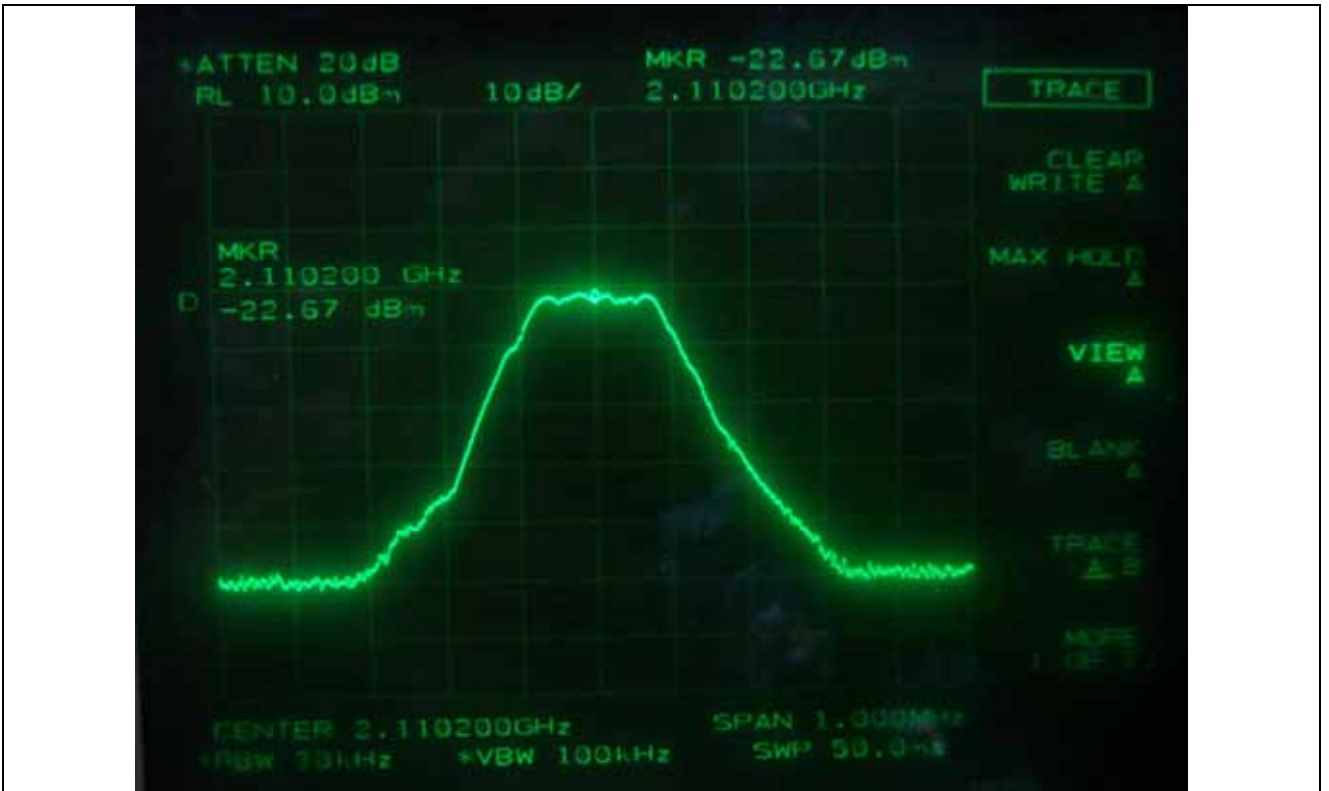


TDMA – Input (Low Channel)

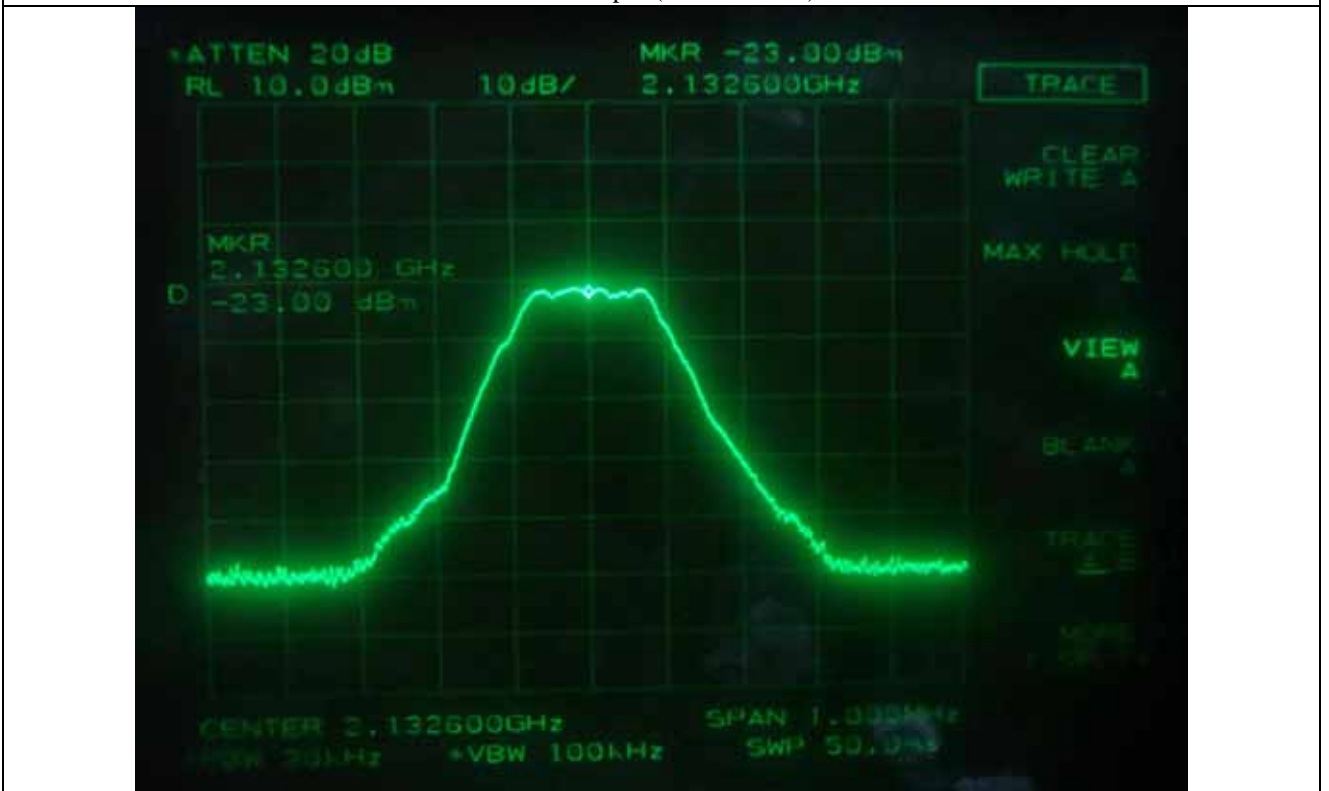


TDMA – Input (Middle Channel)

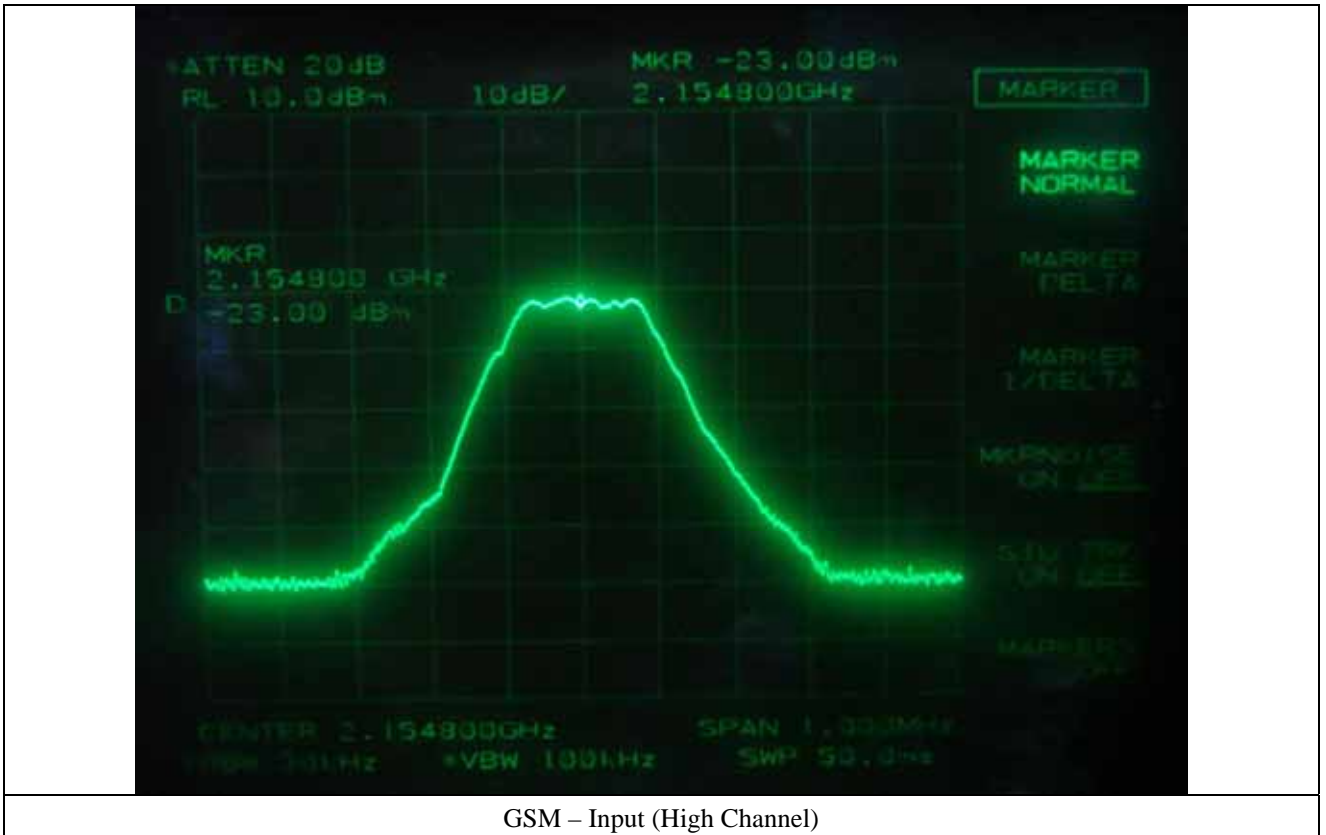




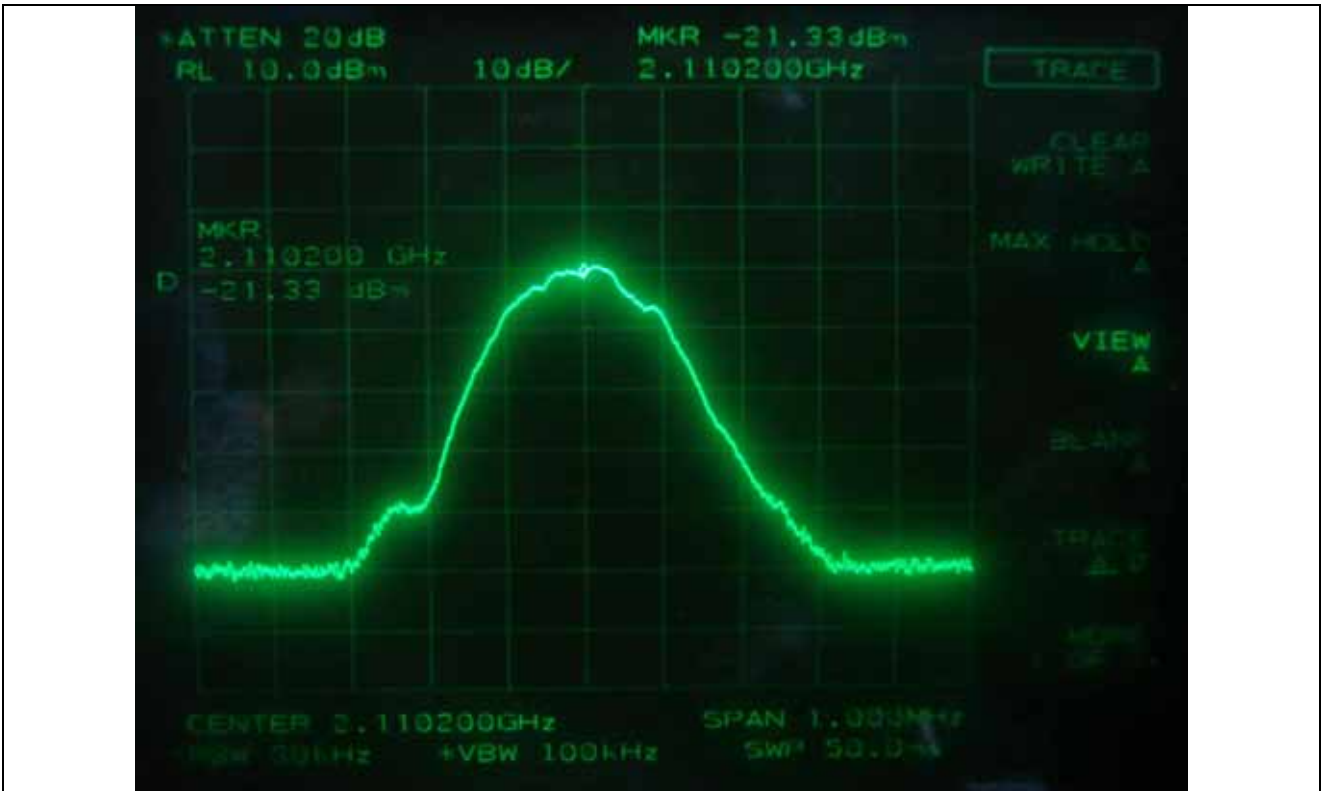
GSM – Input (Low Channel)



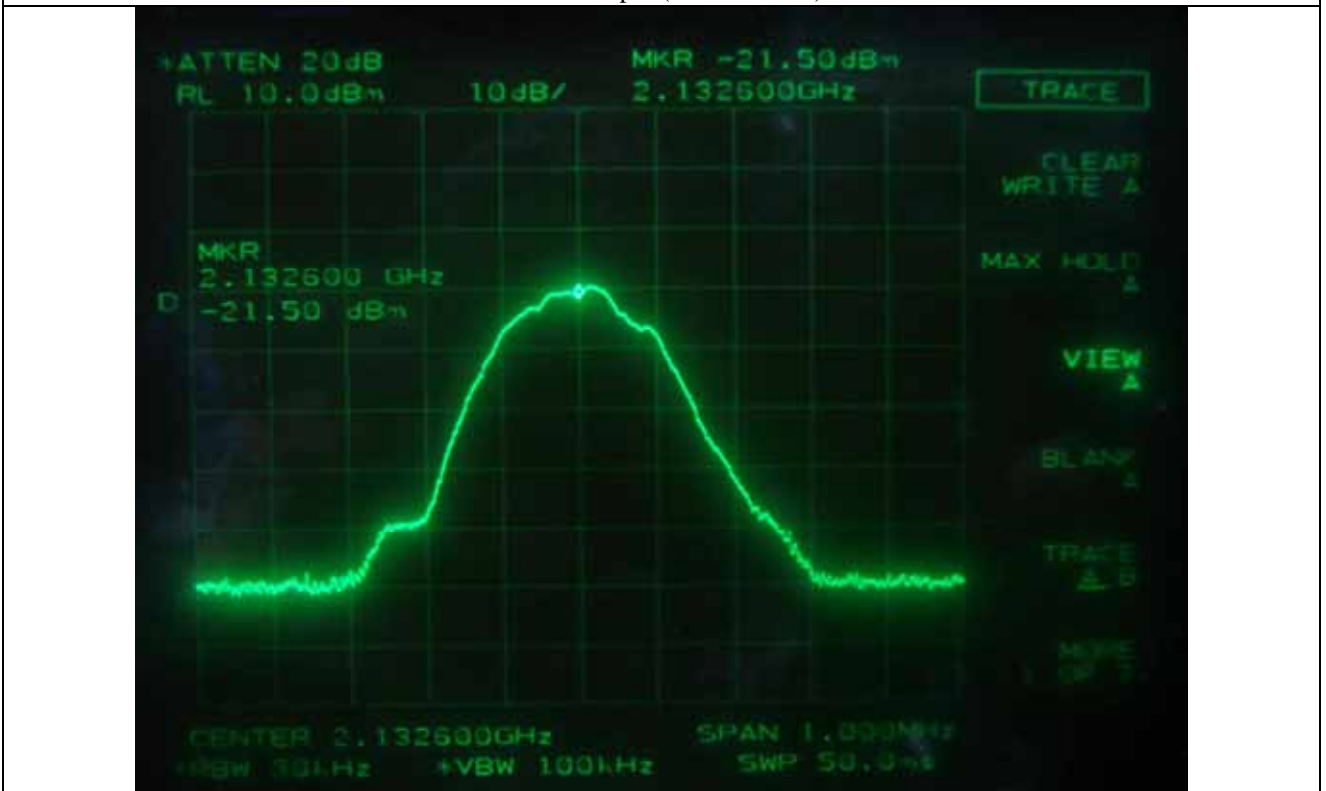
GSM – Input (Middle Channel)



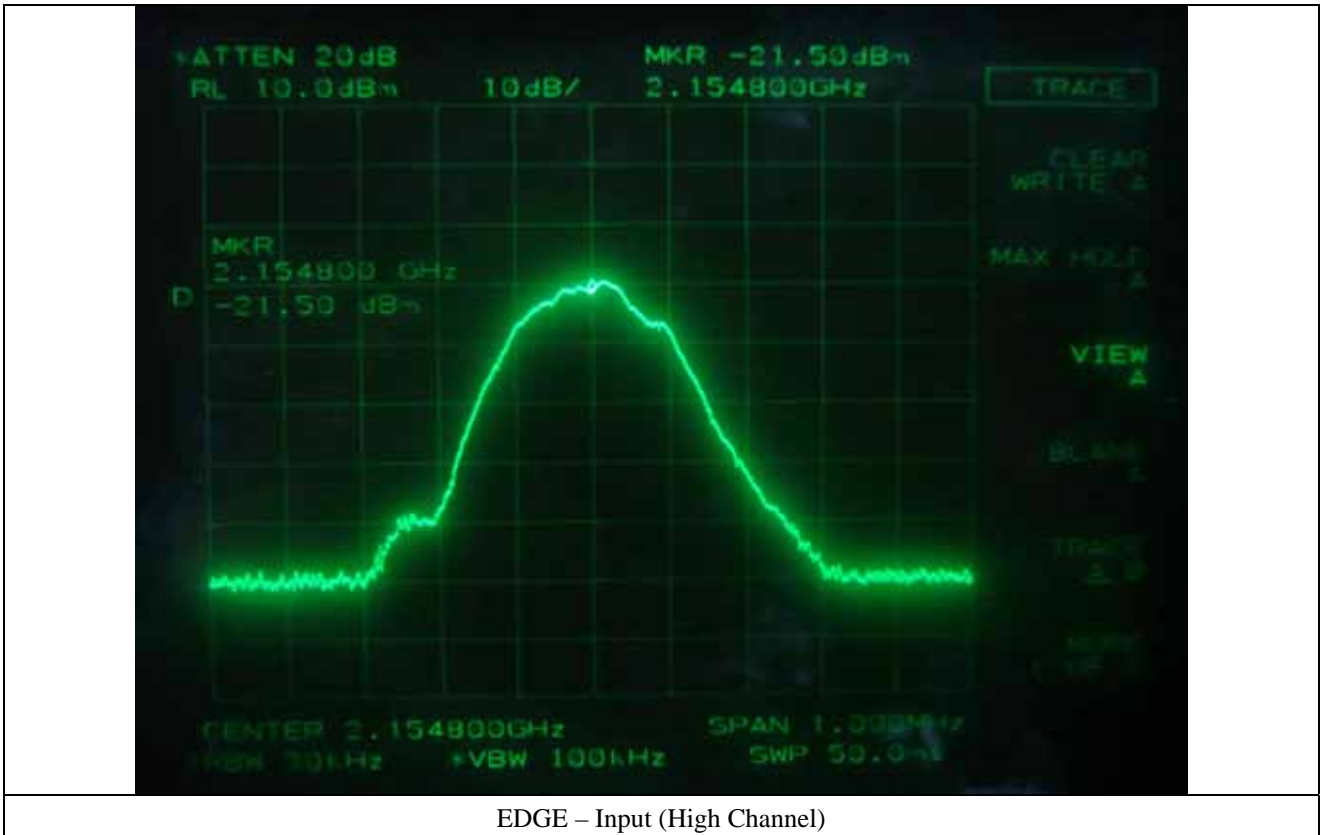
GSM – Input (High Channel)

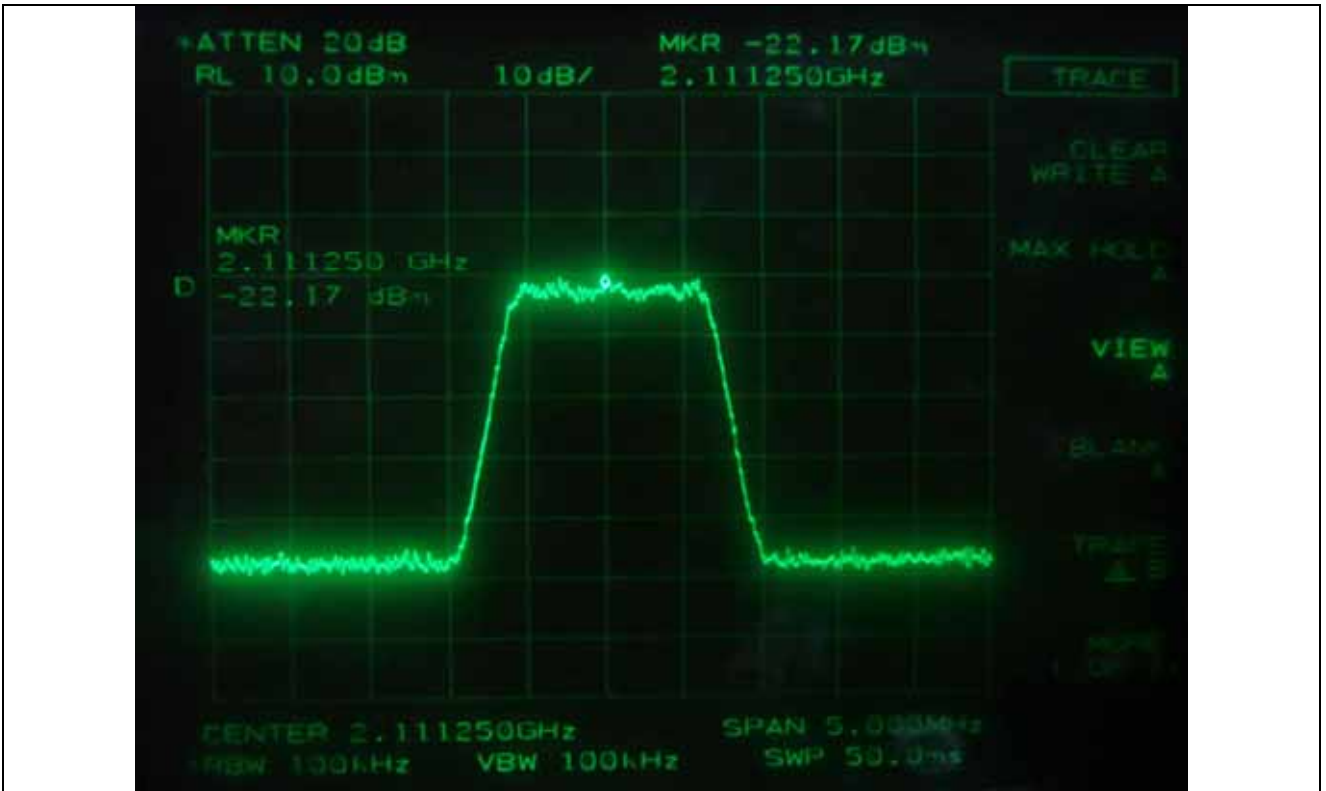


EDGE – Input (Low Channel)

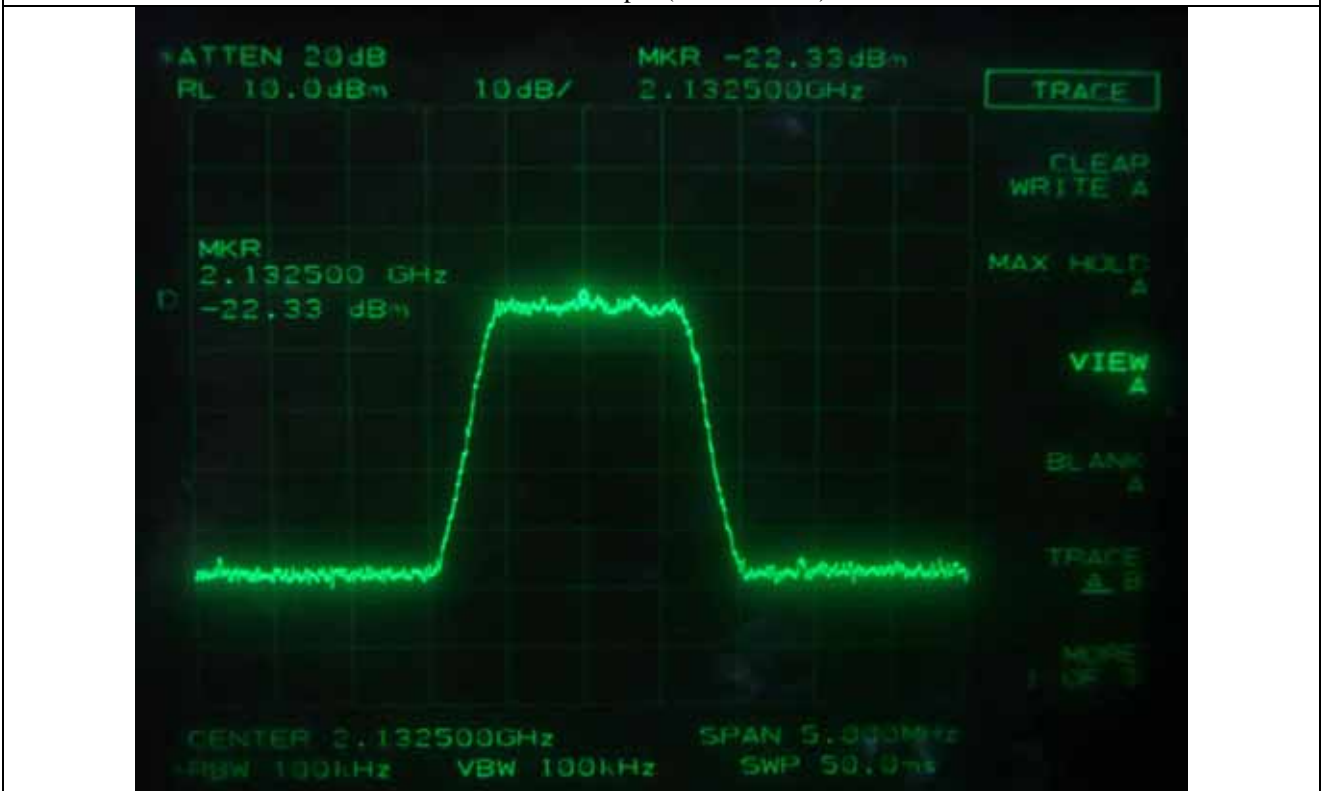


EDGE – Input (Middle Channel)

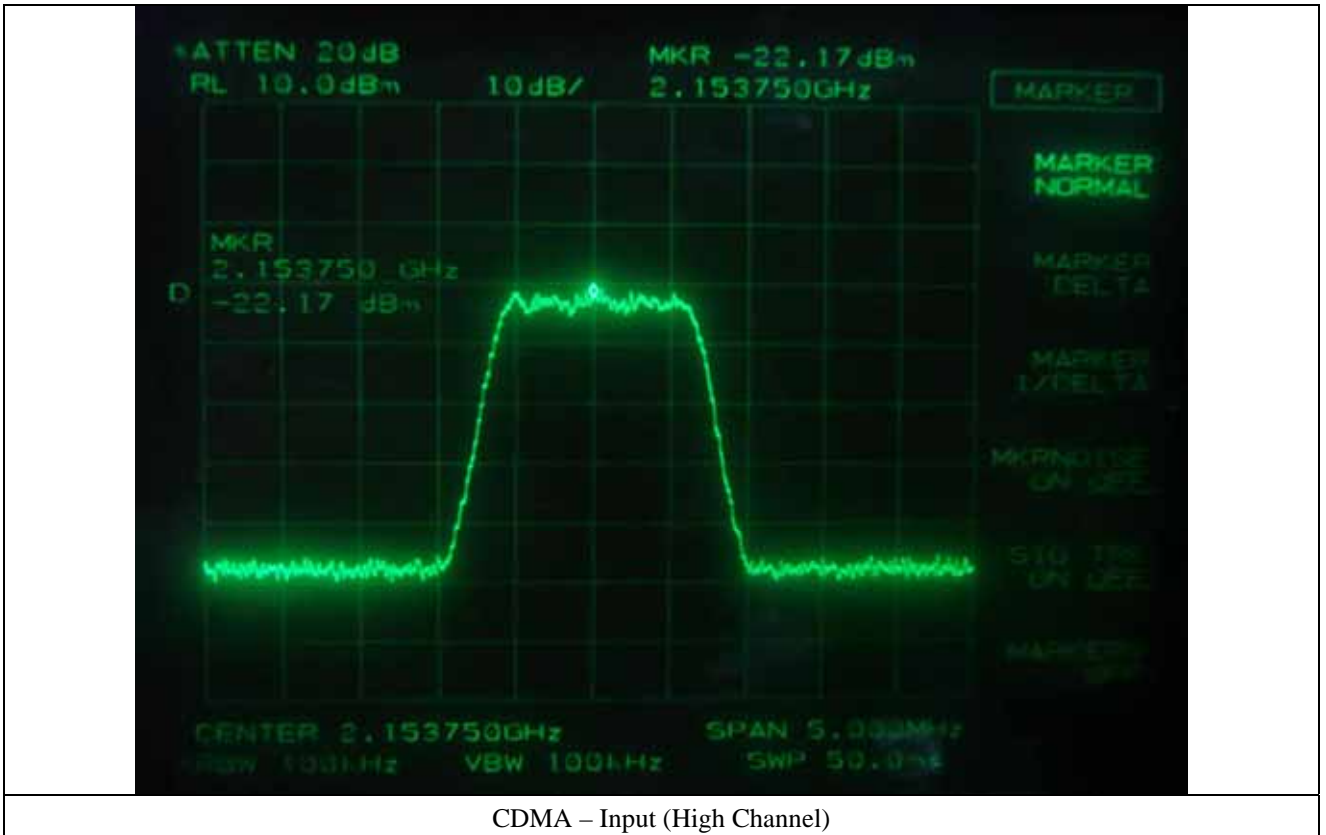


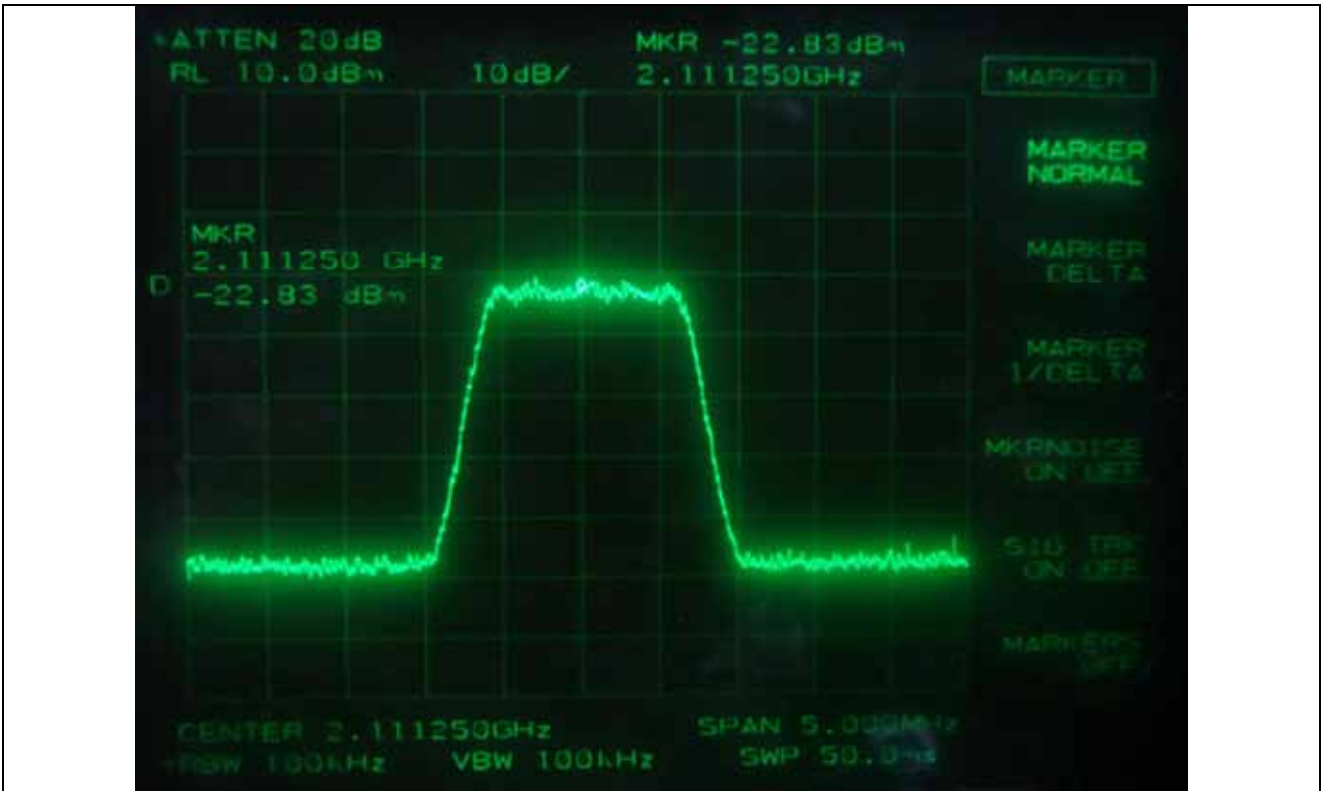


CDMA – Input (Low Channel)

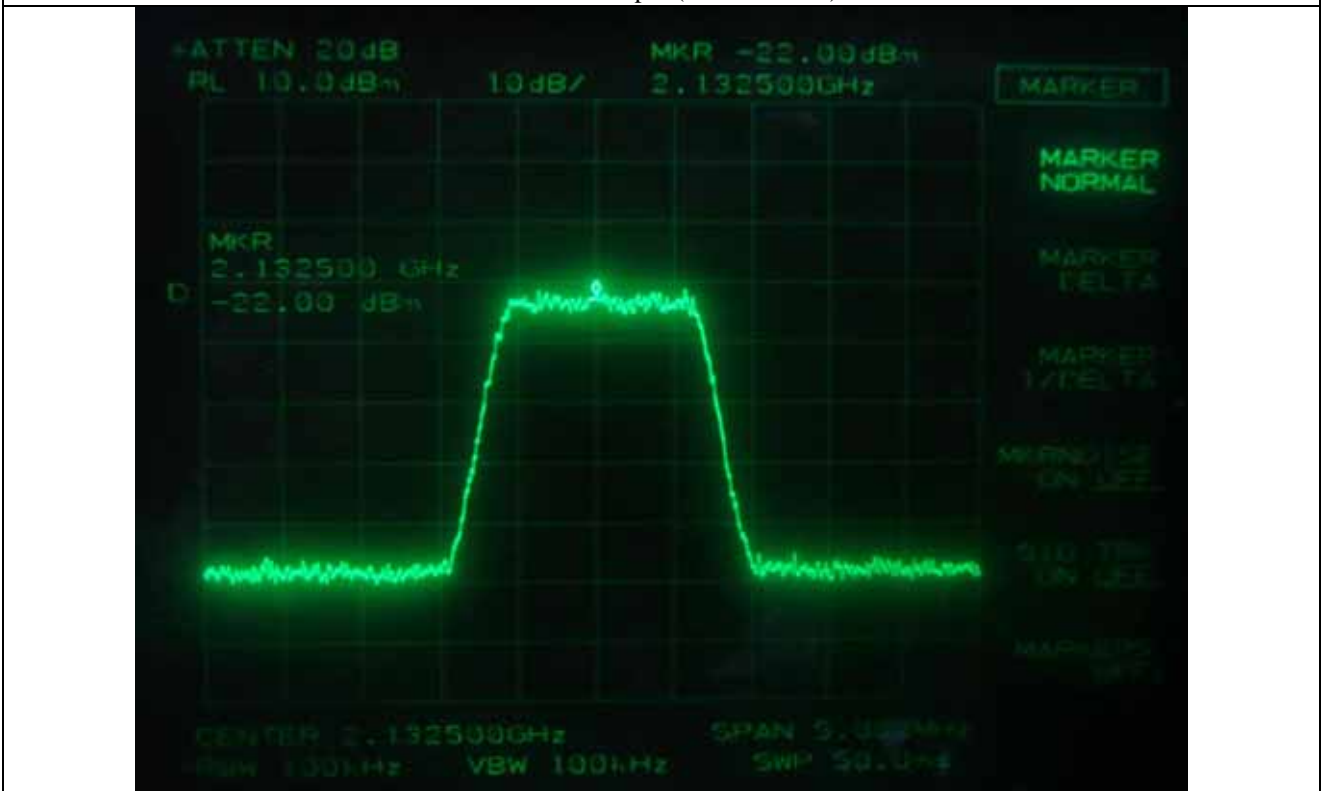


CDMA – Input (Middle Channel)

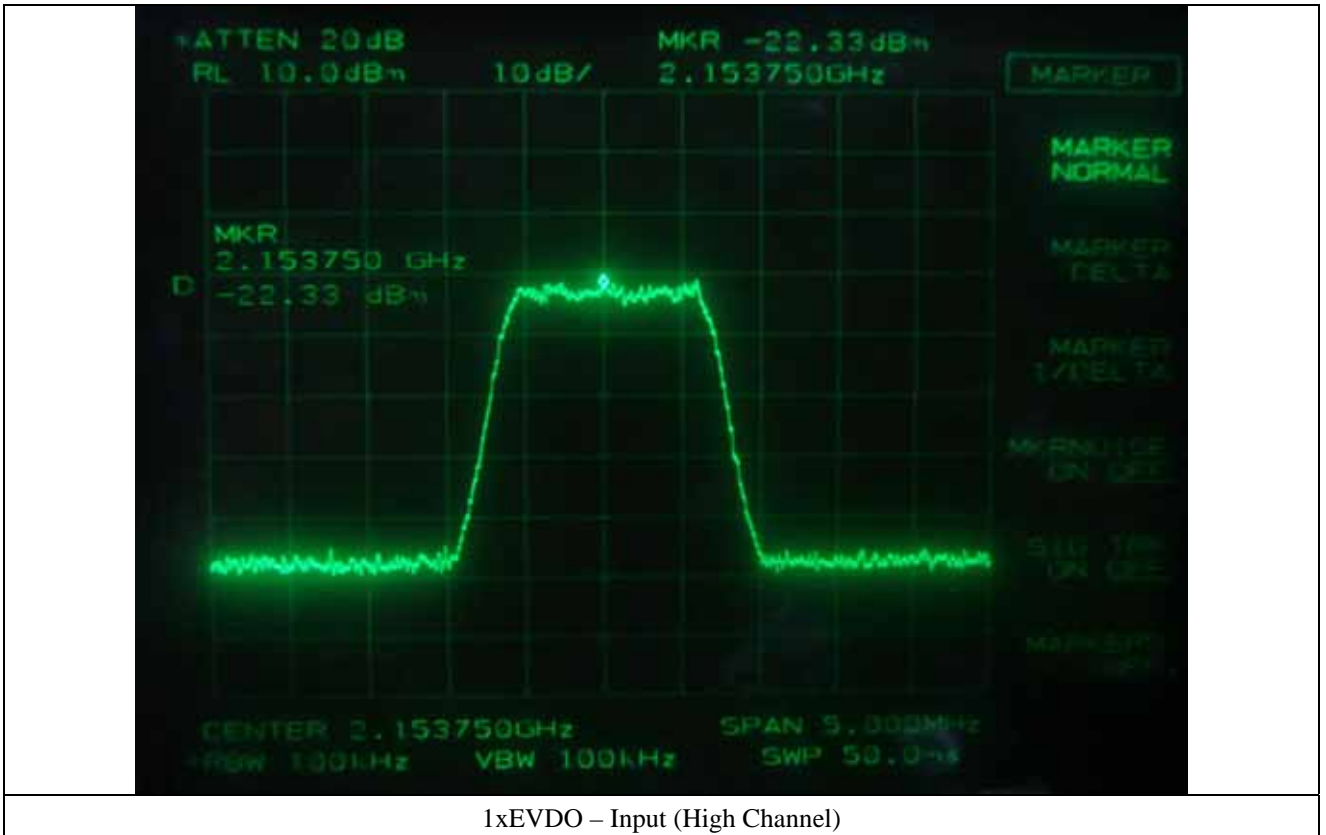


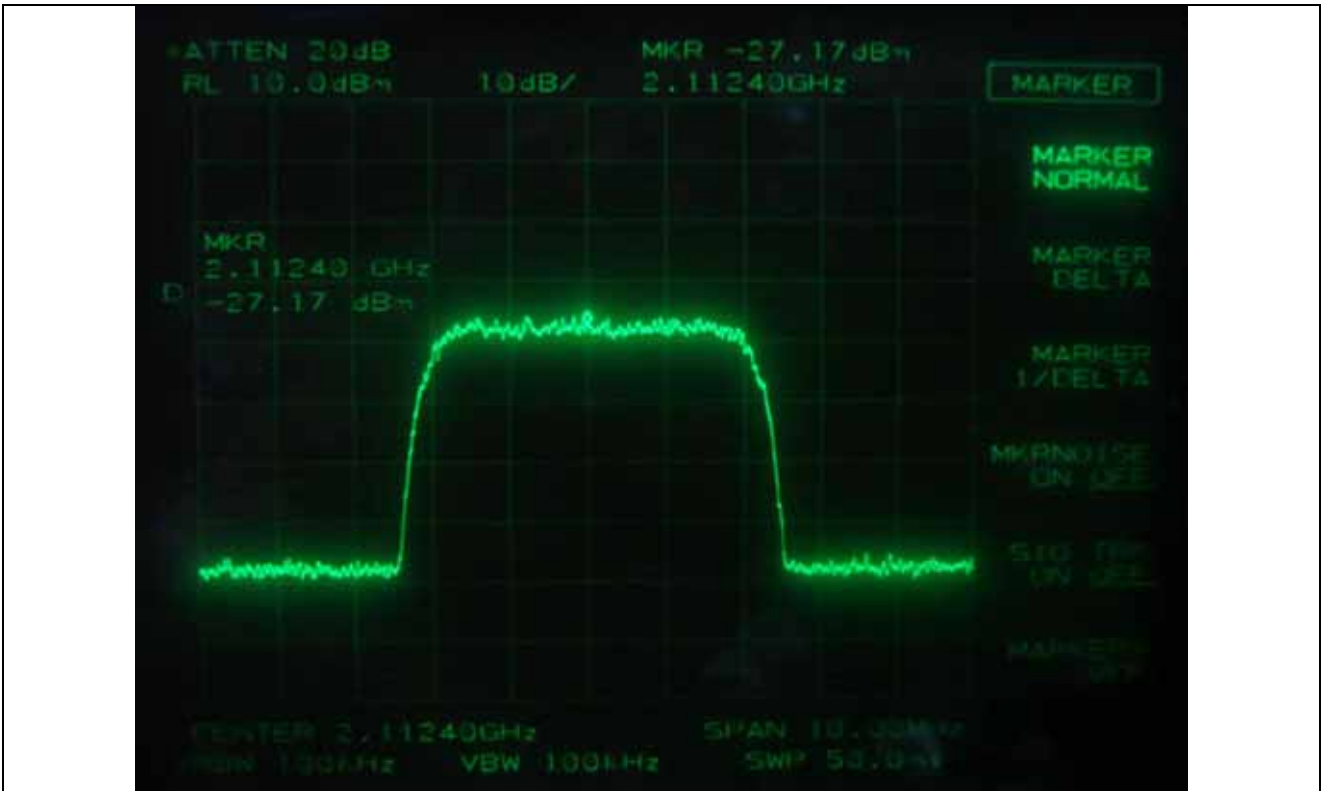


1xEVDO – Input (Low Channel)

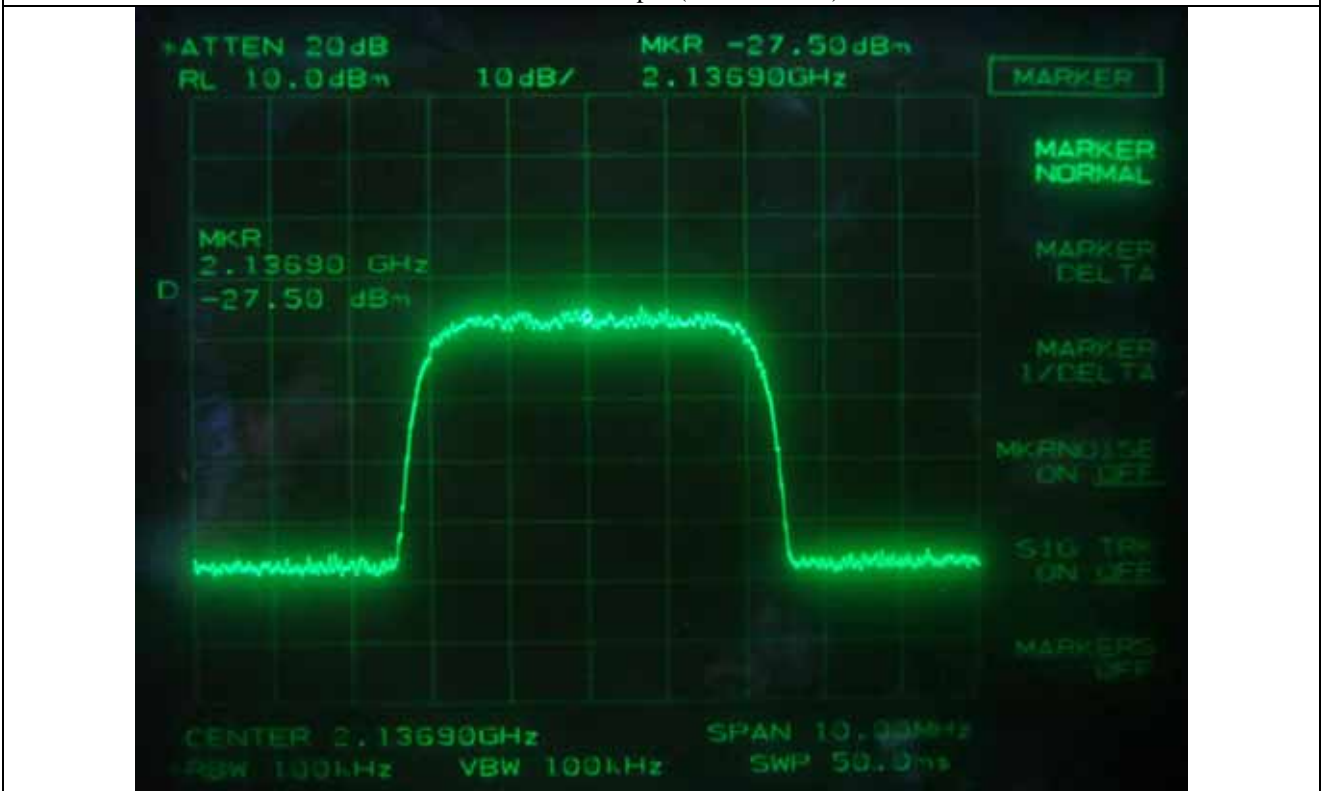


1xEVDO – Input (Middle Channel)





WCDMA – Input (Low Channel)



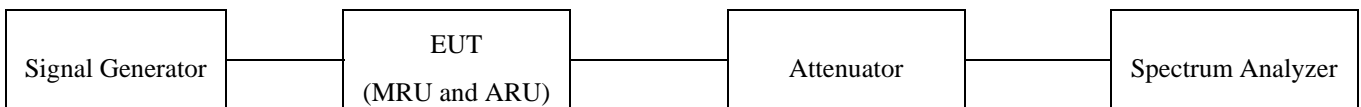
WCDMA – Input (Middle Channel)

7. SPURIOUS EMISSION AT ANTENNA TERMINAL

7.1 Test set-up for conducted measurement

The RF signal from the signal generator(s) was injected to the EUT and the amplified RF signal at the output of the EUT was connected to the power meter or spectrum analyzer. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable modulation.

The resolution bandwidth and video bandwidth of the spectrum analyzer was set at 1 MHz and sufficient scans were taken to show any out of band emissions up to 20 GHz.



7.2 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	8564E	HP	Spectrum Analyzer	3650A00756	Jun. 10, 2010 (1Y)
■ -	E4432B	HP	Signal Generator	US38440950	Jun. 10, 2010 (1Y)
■ -	SMJ100A	R/S	Signal Generator	101038	Feb. 01, 2011 (1Y)
■ -	AMU200A	R/S	Baseband signal generator and fading simulator	100360	Aug. 28, 2010 (1Y)
■ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 15, 2011 (1Y)

All test equipment used is calibrated on a regular basis.

7.3 Test data

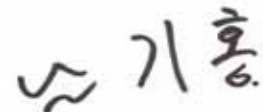
7.3.1 Test Result for Part 22 H (850C)

- . Test Date : April 15 ~ 18, 2011
- . Temperature : 24 °C
- . Relative humidity : 48 % R.H.
- . Frequency range : 30 MHz ~ 15 GHz
- . Result : PASSED BY -15.34 dB at CDMA Mode

Modulation	Harmonic Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)	
TDMA	Low	473.00	-46.50	0.50	-46.00	-13.00	-33.00
		7 440.00	-32.00	3.33	-28.67		-15.67
	Middle	476.20	-46.50	0.50	-46.00		-33.00
		7 300.00	-32.00	3.33	-28.67		-15.67
	High	463.30	-45.50	0.50	-45.00		-32.00
		7 370.00	-32.50	3.33	-29.17		-16.17
GSM	Low	490.80	-46.50	0.50	-46.00	-13.00	-33.00
		7 670.00	-33.17	3.33	-29.84		-16.84
	Middle	503.70	-46.17	0.50	-45.67		-32.67
		7 530.00	-33.83	3.33	-30.50		-17.50
	High	521.50	-46.33	0.50	-45.83		-32.83
		7 350.00	-32.50	3.33	-29.17		-16.17
EDGE	Low	468.10	-46.00	0.50	-45.50	-13.00	-32.50
		7 320.00	-32.50	3.33	-29.17		-16.17
	Middle	489.10	-45.83	0.50	-45.33		-32.33
		7 460.00	-32.50	3.33	-29.17		-16.17
	High	505.30	-46.00	0.50	-45.50		-32.50
		7 530.00	-32.00	3.33	-28.67		-15.67
CDMA	Low	515.00	-46.50	0.50	-46.00	-13.00	-33.00
		7 370.00	-32.33	3.33	-29.00		-16.00
	Middle	519.90	-46.67	0.50	-46.17		-33.17
		7 490.00	-32.33	3.33	-29.00		-16.00
	High	484.30	-46.50	0.50	-46.00		-33.00
		7 510.00	-31.67	3.33	-28.34		-15.34

Modulation	Harmonic Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)	
1xEVDO	Low	494.00	-46.17	0.50	-45.67	-13.00	-32.67
		7630.00	-32.00	3.33	-28.67		-15.67
	Middle	429.30	-45.33	0.50	-44.83		-31.83
		7280.00	-32.33	3.33	-29.00		-16.00
	High	448.70	-46.17	0.50	-45.67		-32.67
		7460.00	-32.33	3.33	-29.00		-16.00
WCDMA	Low	484.30	-46.17	0.50	-45.67	-13.00	-32.67
		7390.00	-32.33	3.33	-29.00		-16.00
	Middle	448.70	-45.83	0.50	-45.33		-32.33
		7420.00	-32.50	3.33	-29.17		-16.17
	High	526.30	-45.83	0.50	-45.33		-32.33
		7650.00	-32.17	3.33	-28.84		-15.84
Other frequencies up to 15 GHz have margin more than 20 dB.							

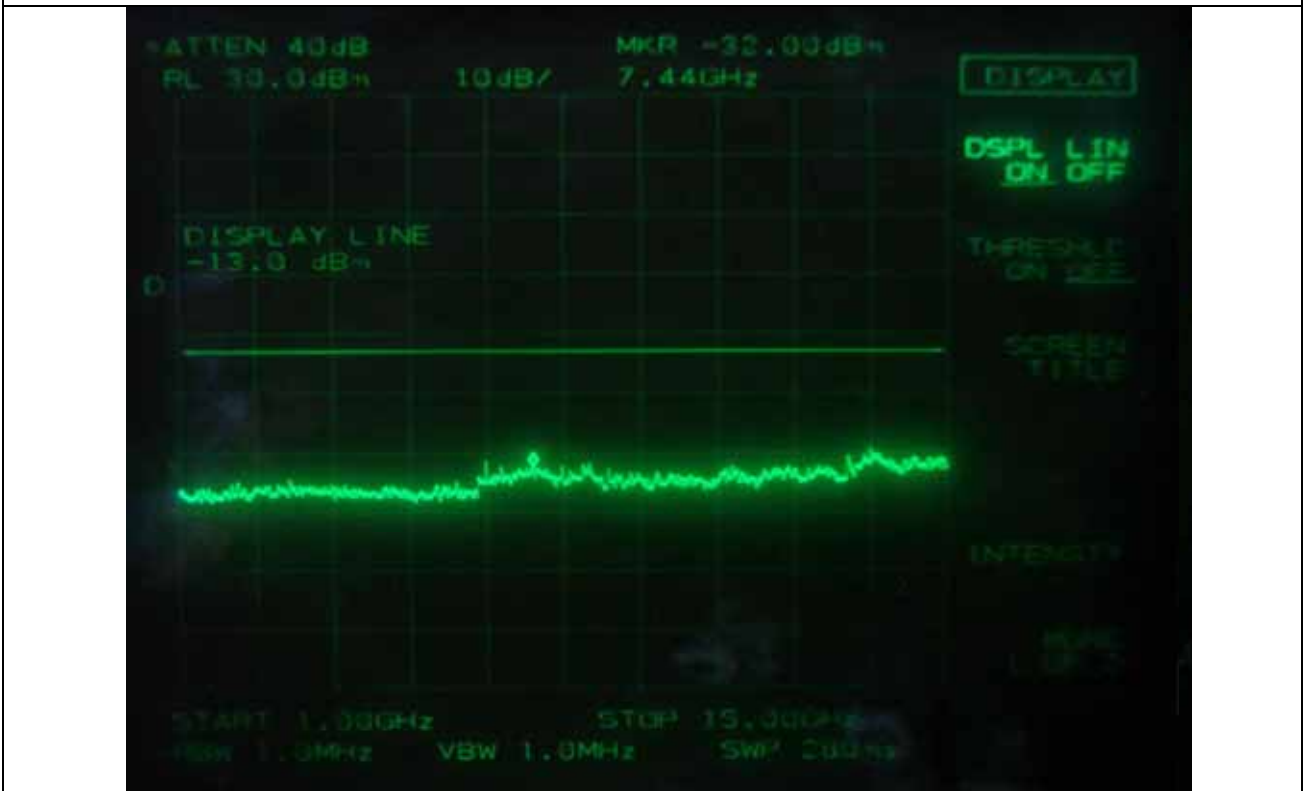
According to Part 22H, out of band emission shall be attenuated by $43 + 10 \log (P)$ dBc, equates to -13.0 dBm.



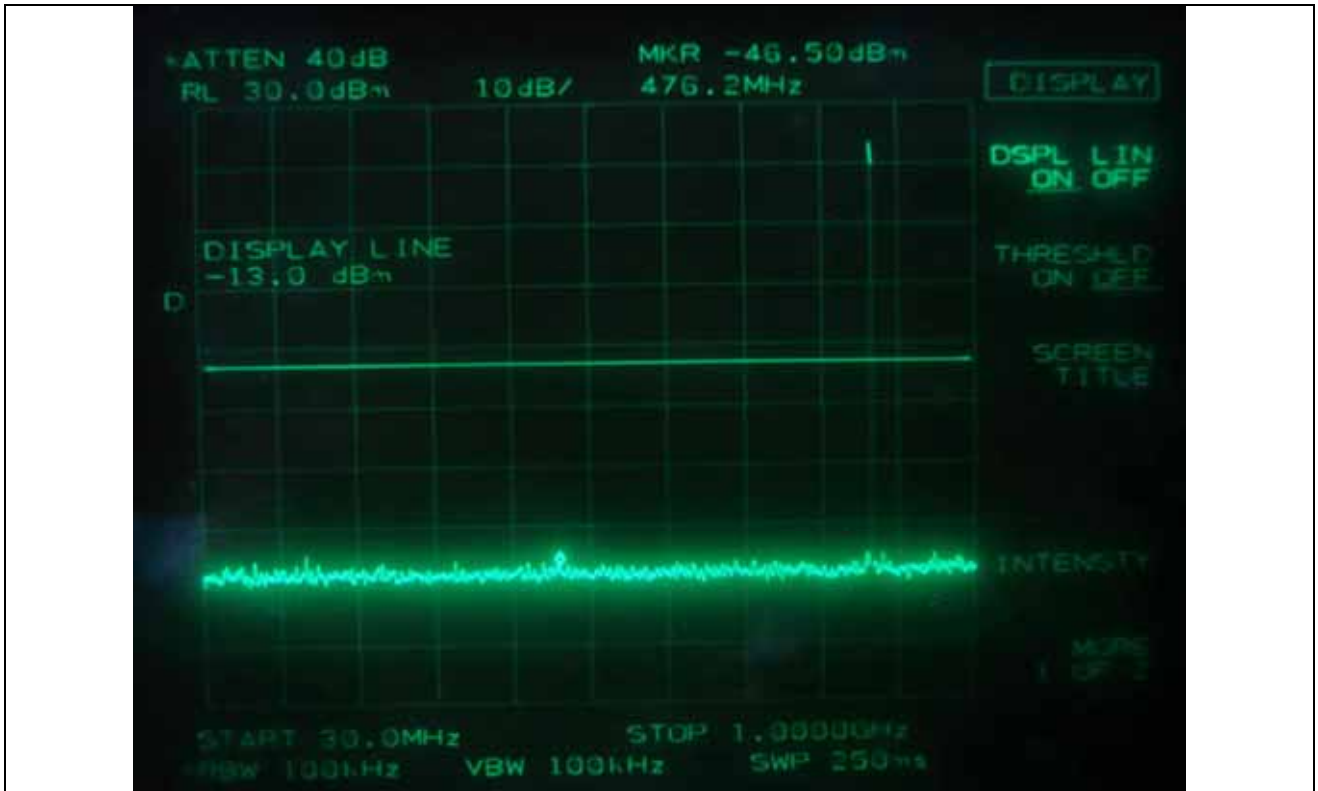
Tested by: Ki-Hong, Nam / Senior Engineer



TDMA – Low Channel



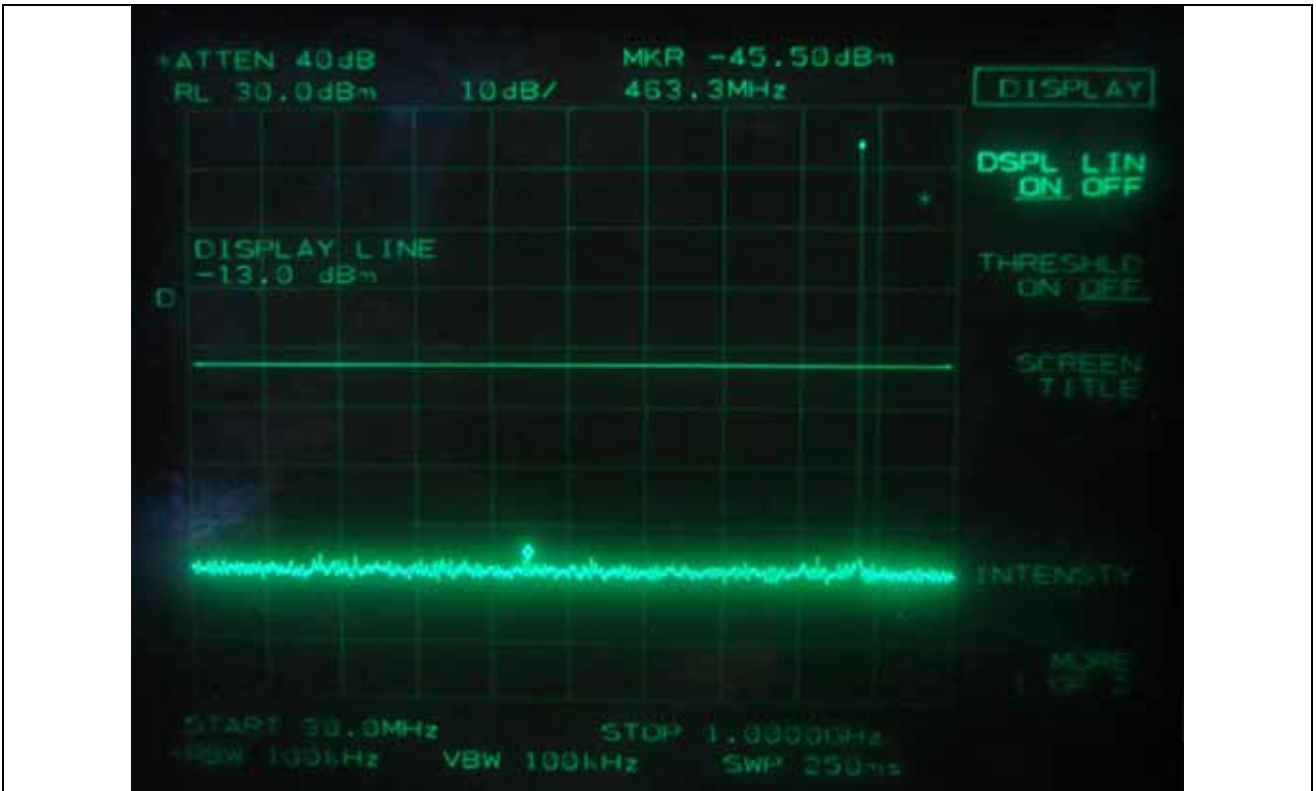
TDMA – Low Channel



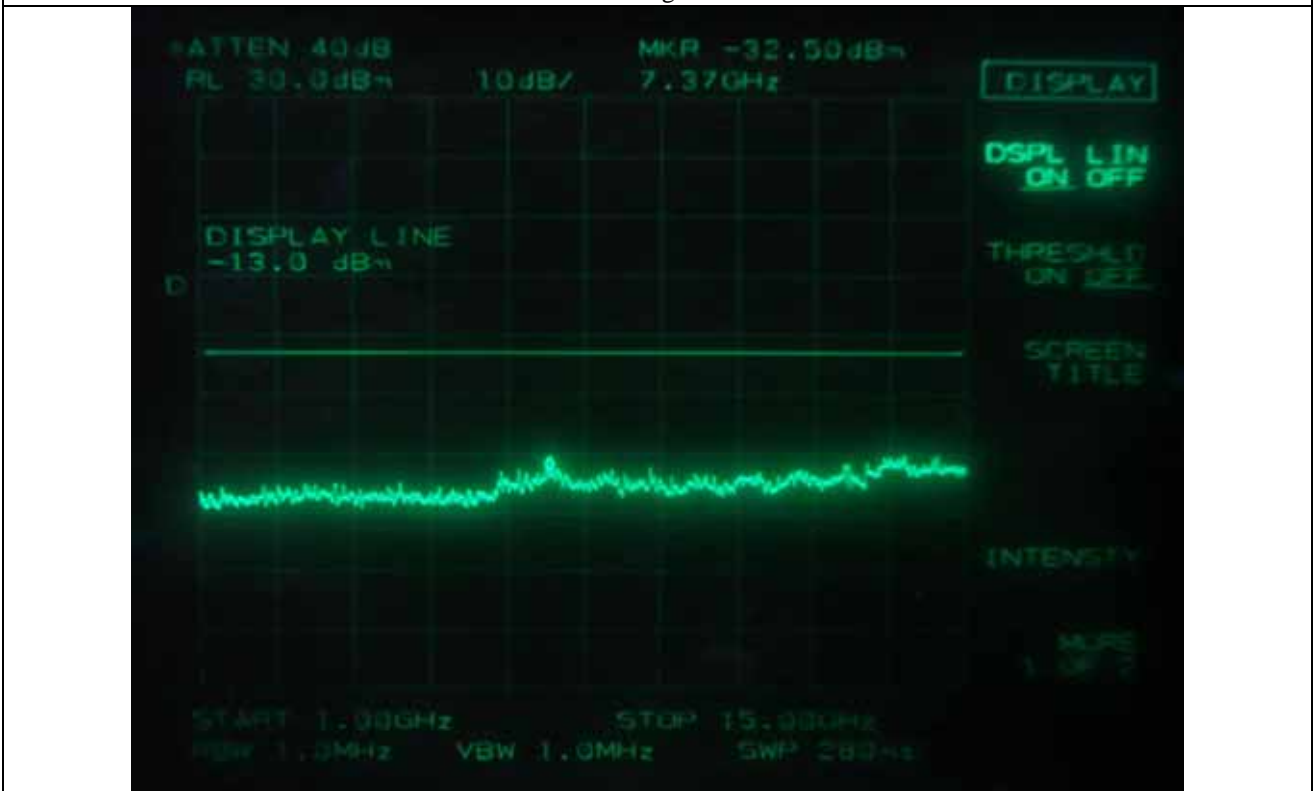
TDMA – Middle Channel



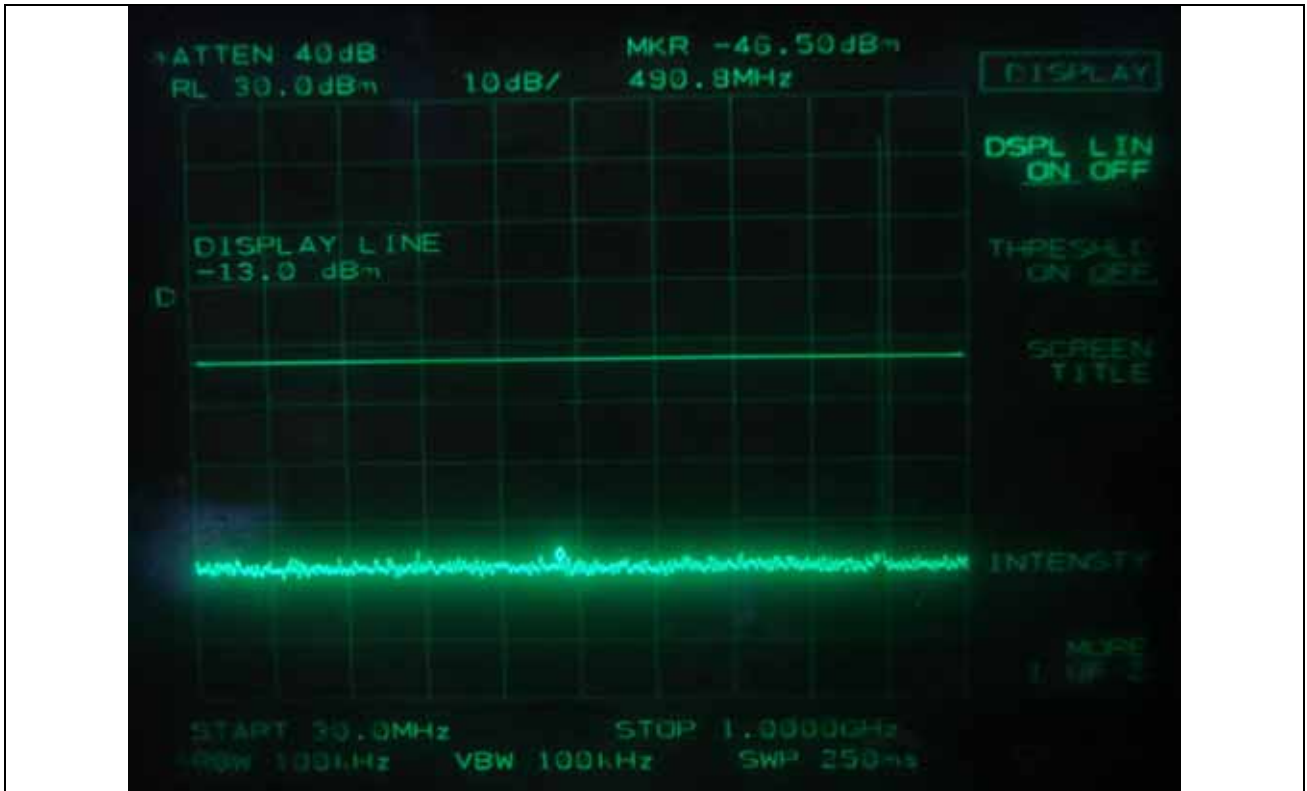
TDMA – Middle Channel



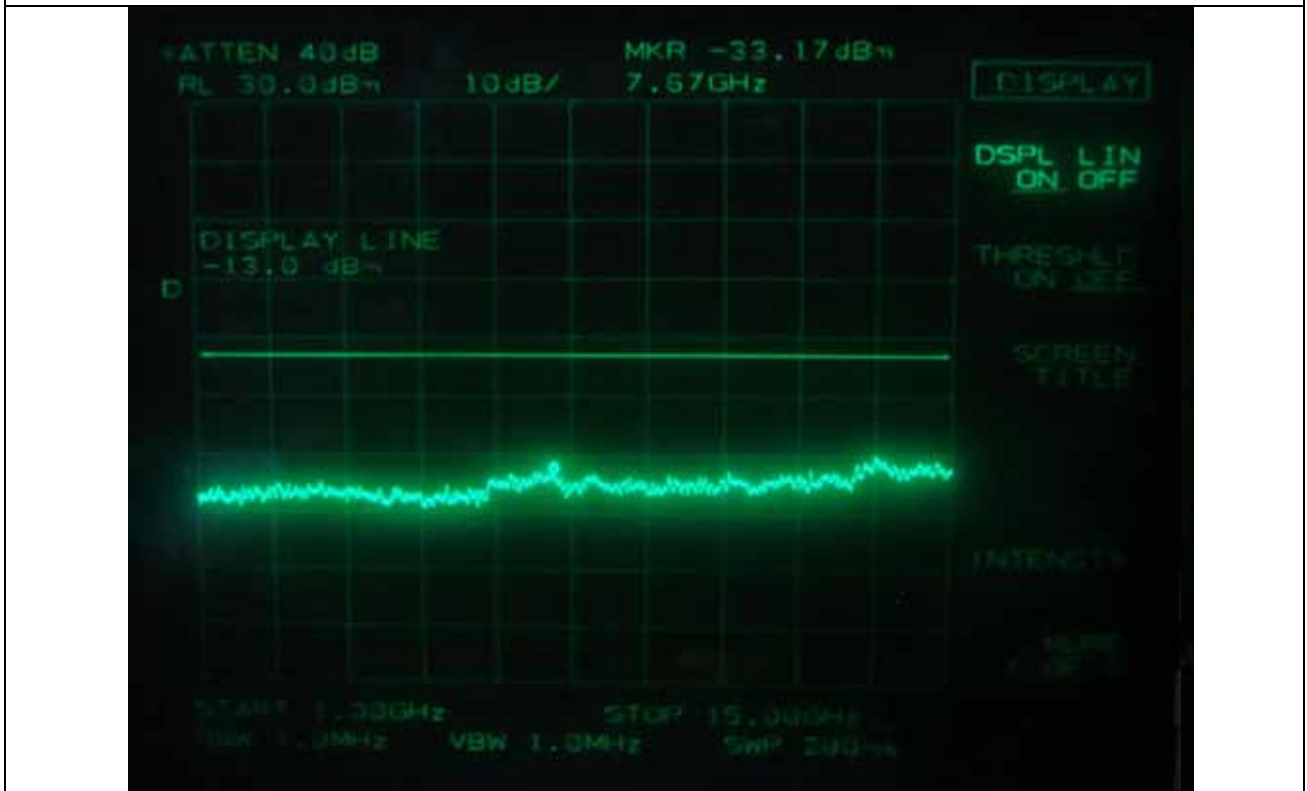
TDMA – High Channel



TDMA – High Channel



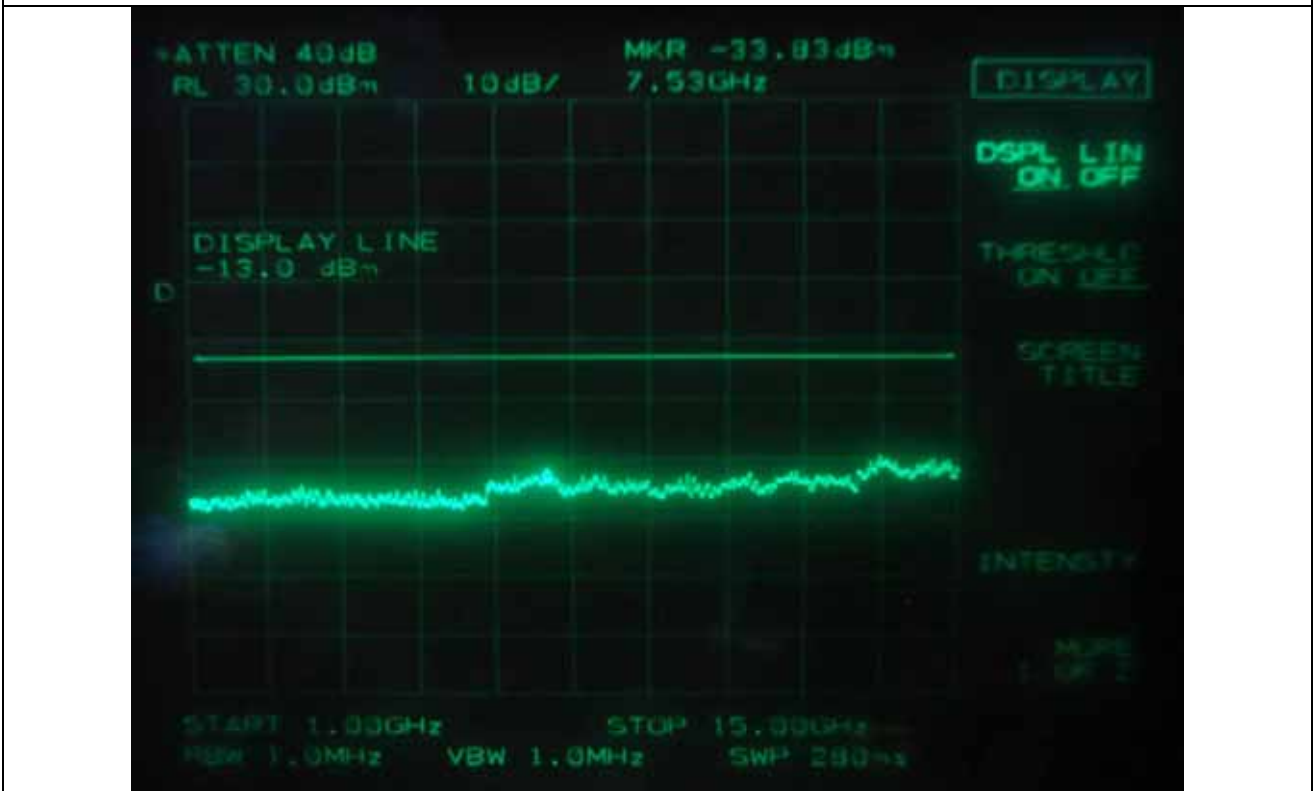
GSM - Low Channel



GSM - Low Channel



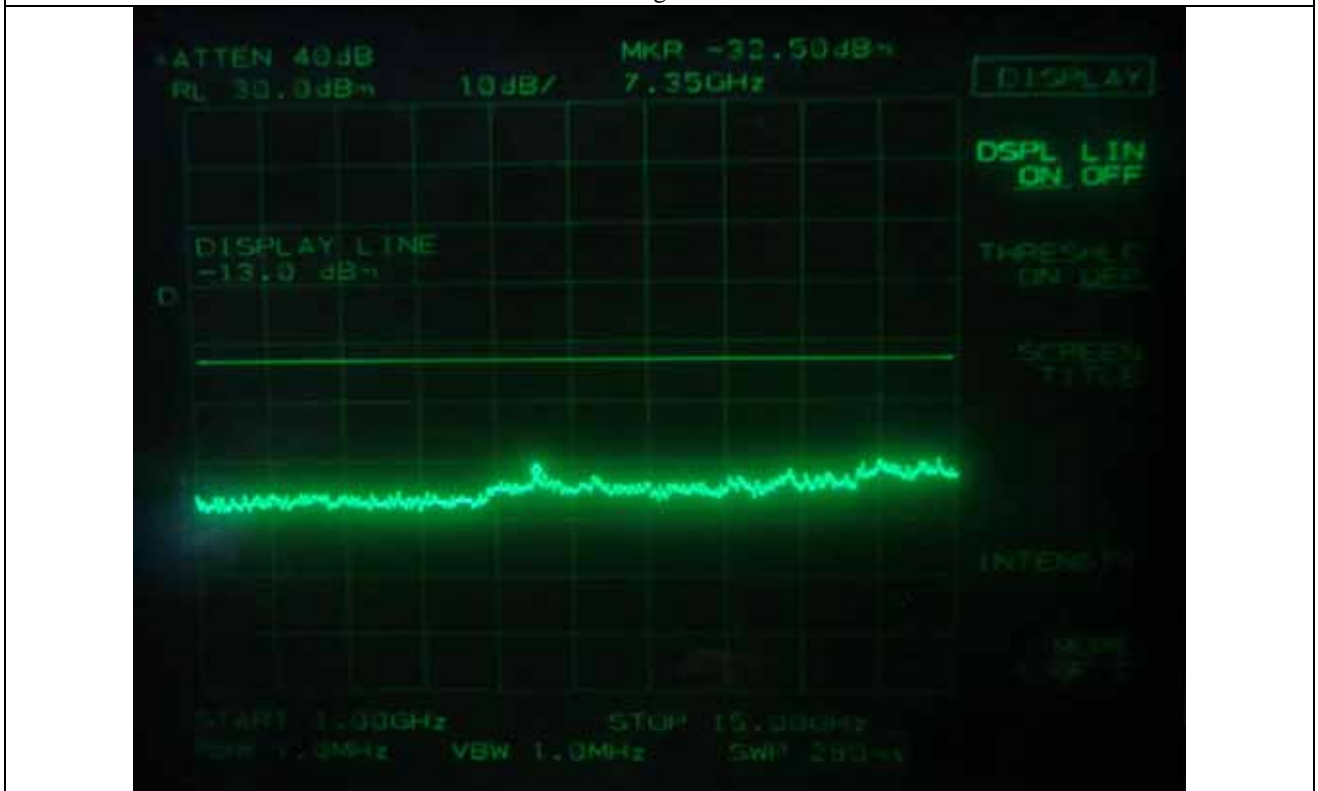
GSM – Middle Channel



GSM – Middle Channel



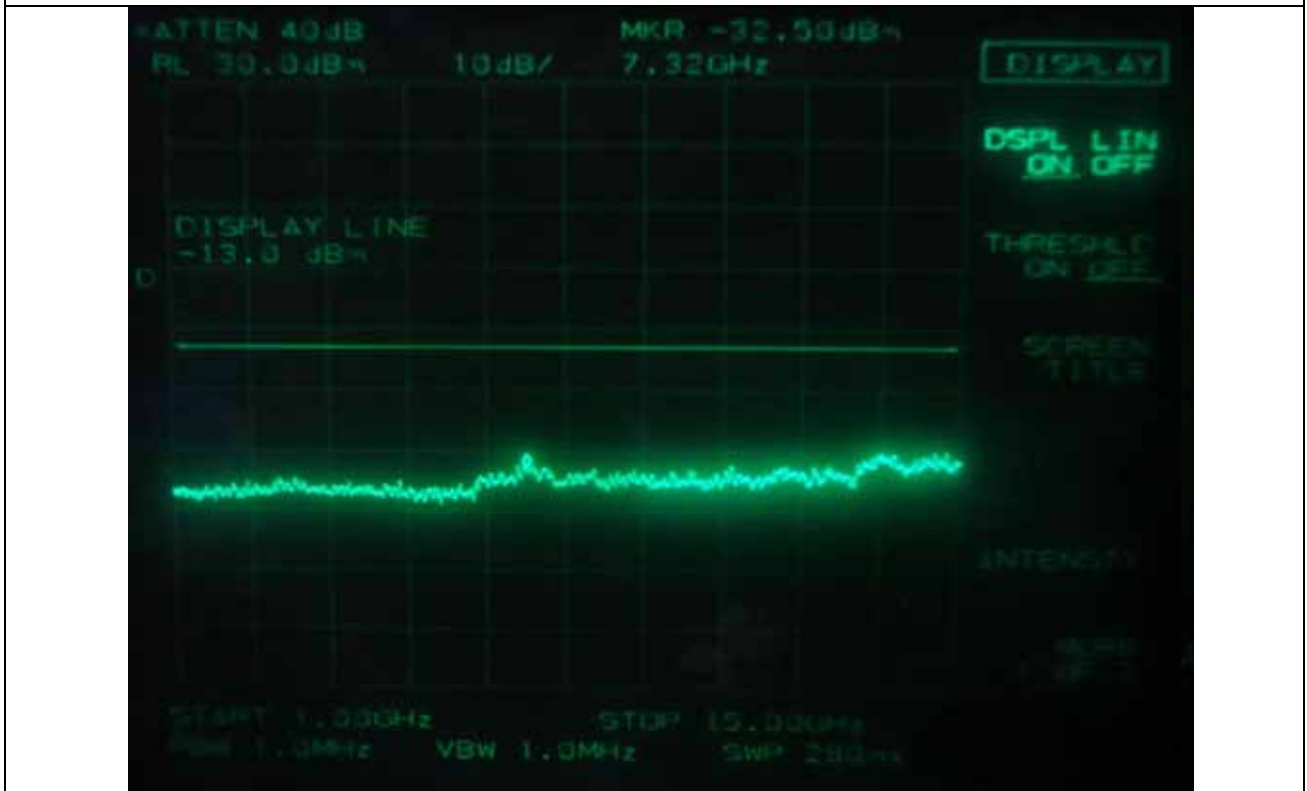
GSM – High Channel



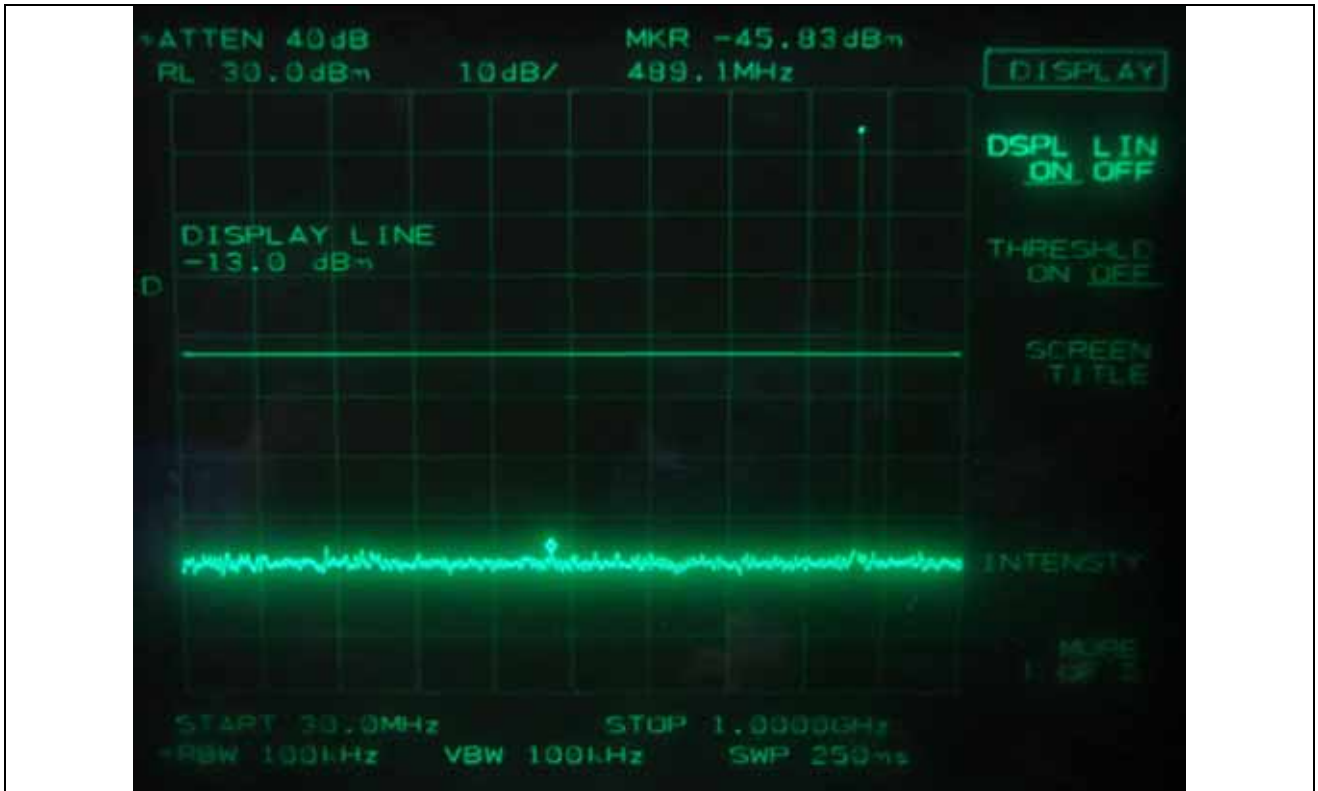
GSM – High Channel



EDGE – Low Channel



EDGE – Low Channel



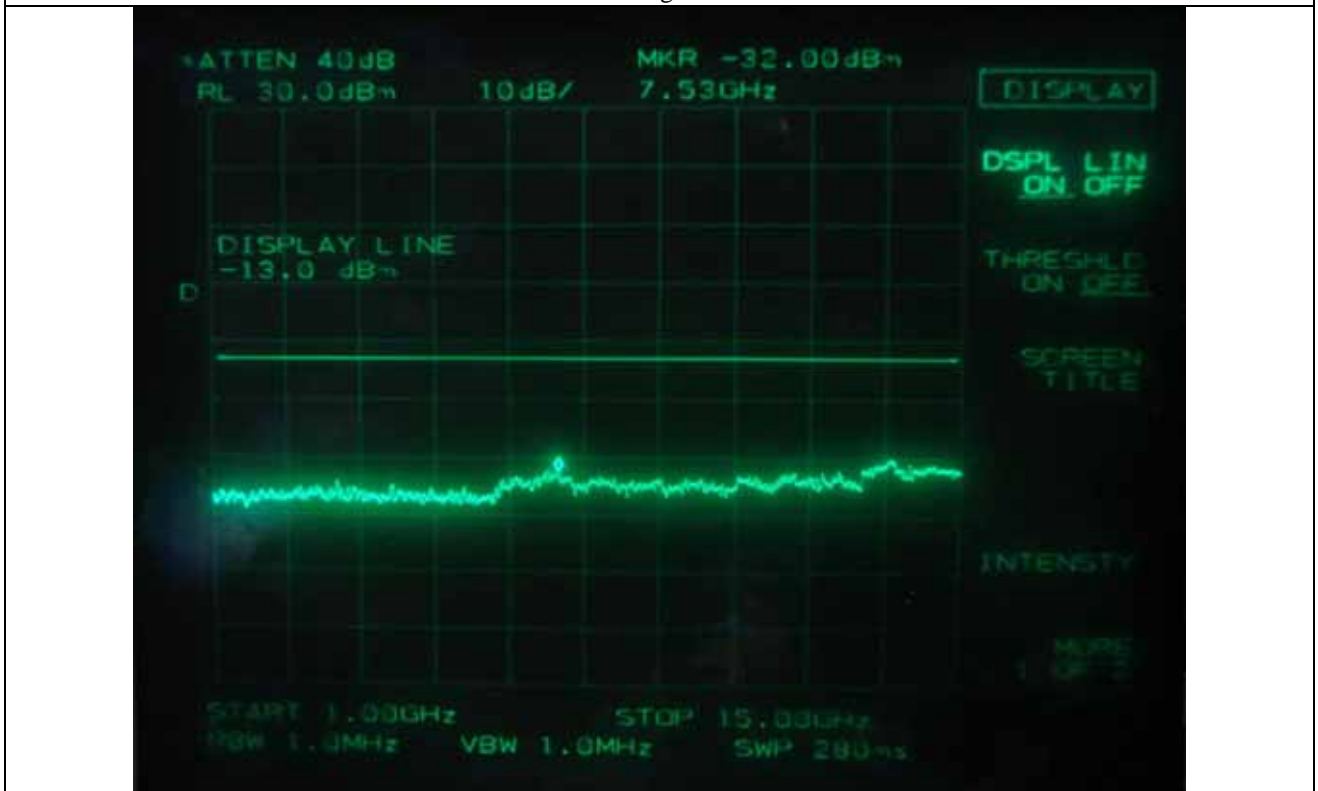
EDGE – Middle Channel



EDGE – Middle Channel



EDGE – High Channel



EDGE – High Channel



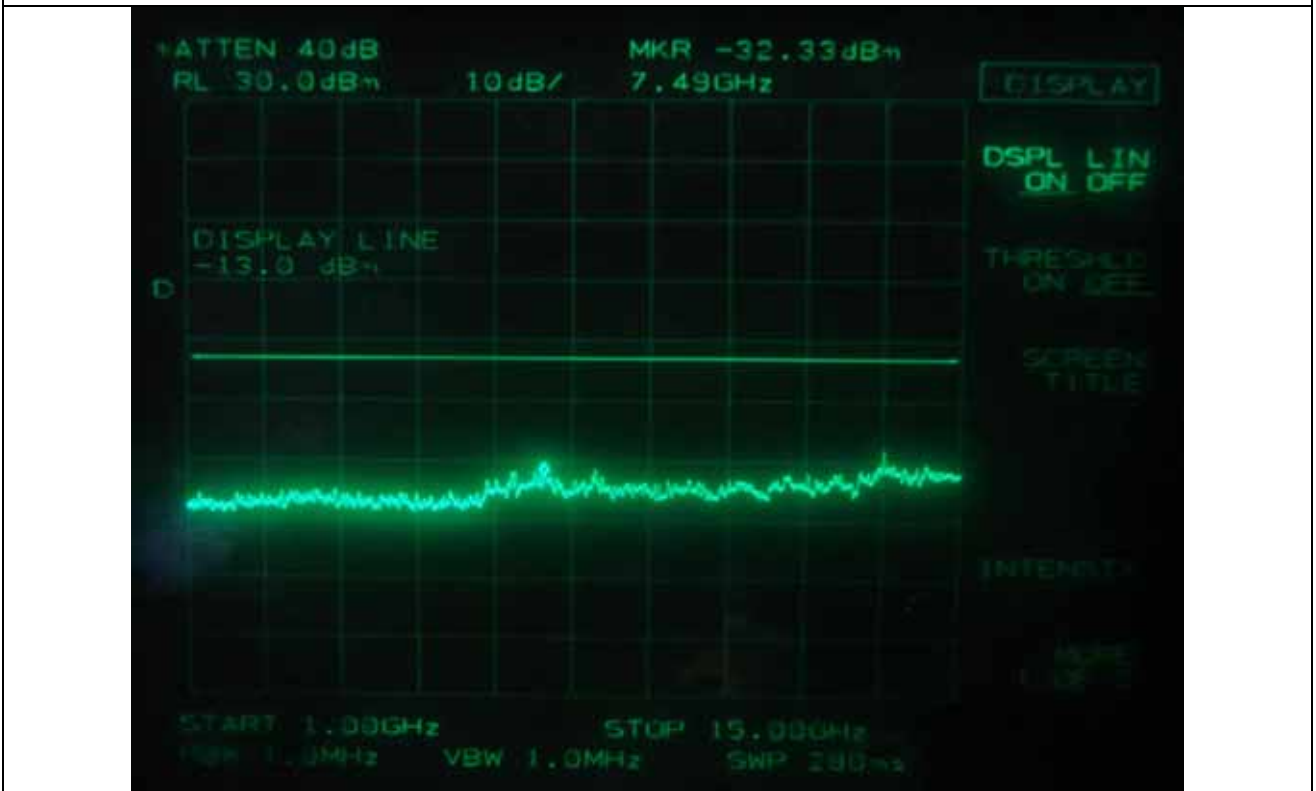
CDMA – Low Channel



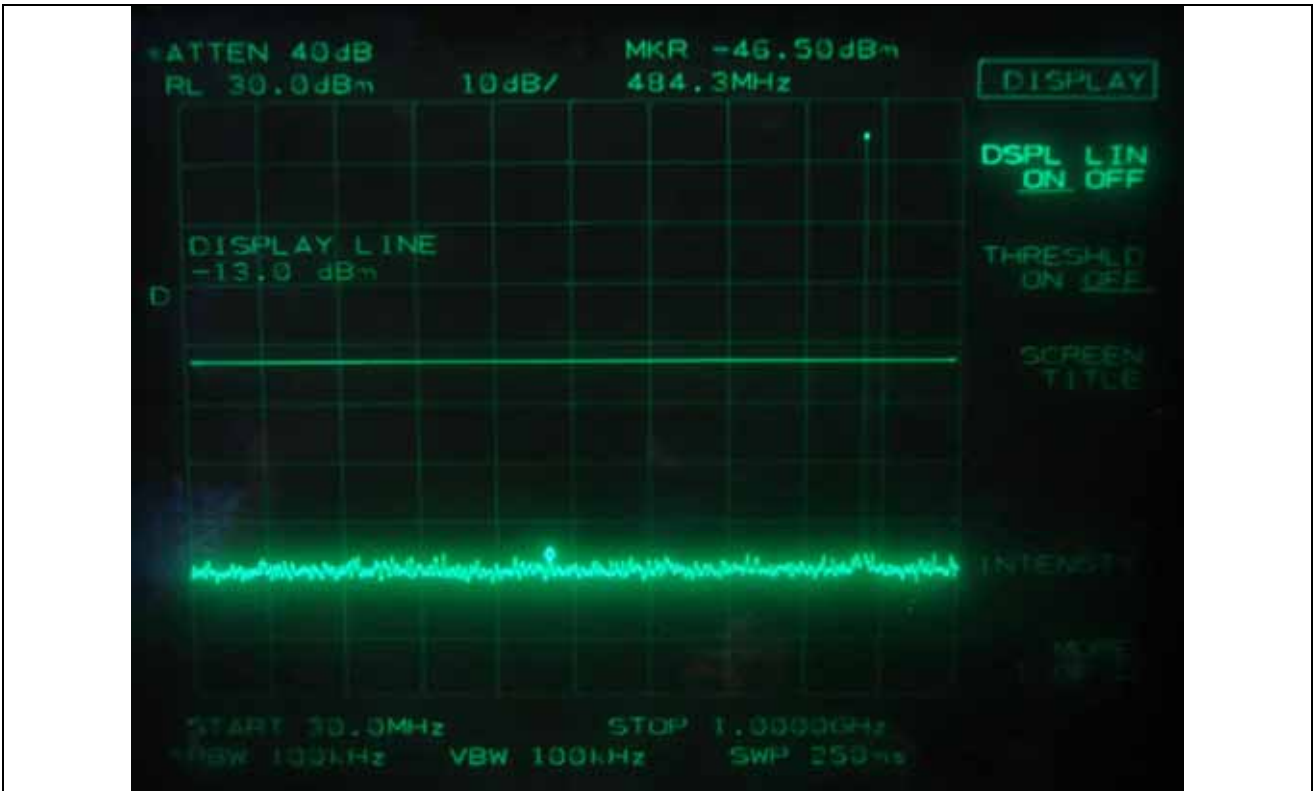
CDMA – Low Channel



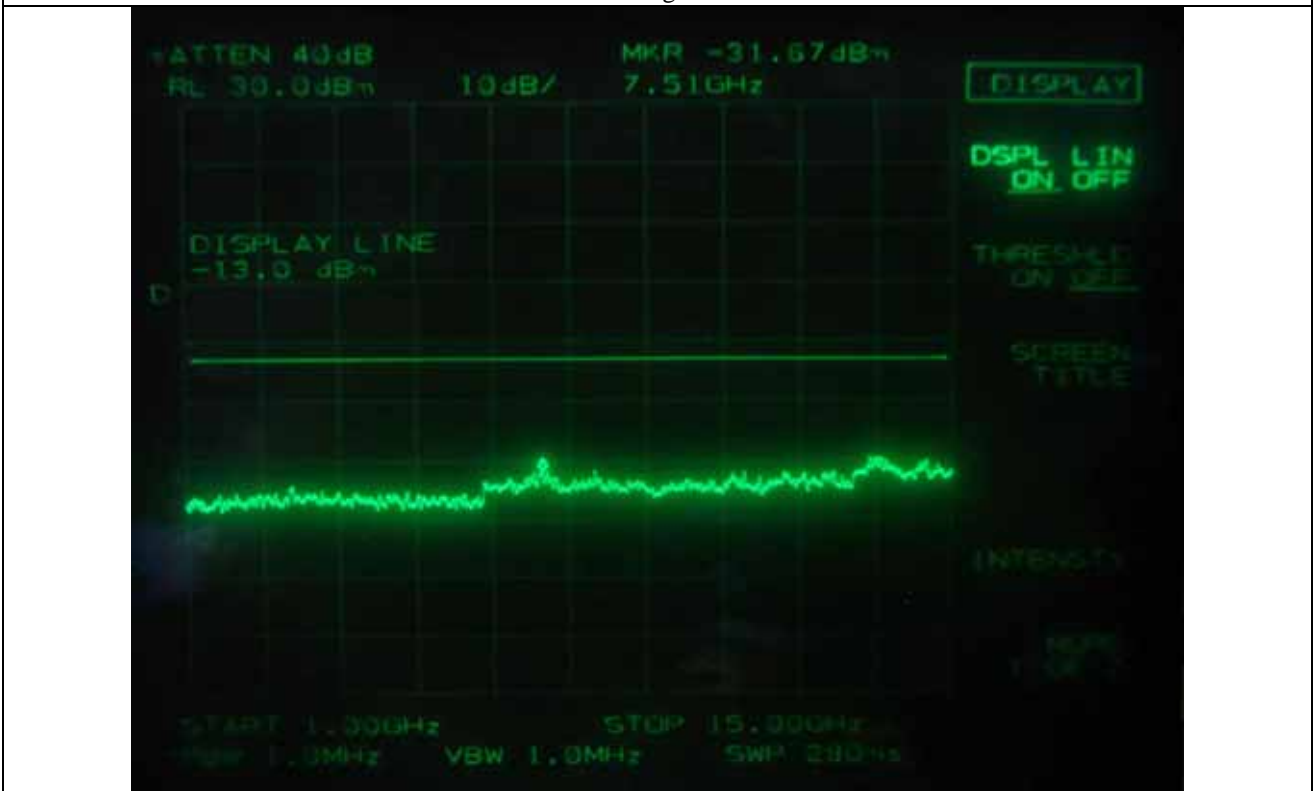
CDMA - Middle Channel



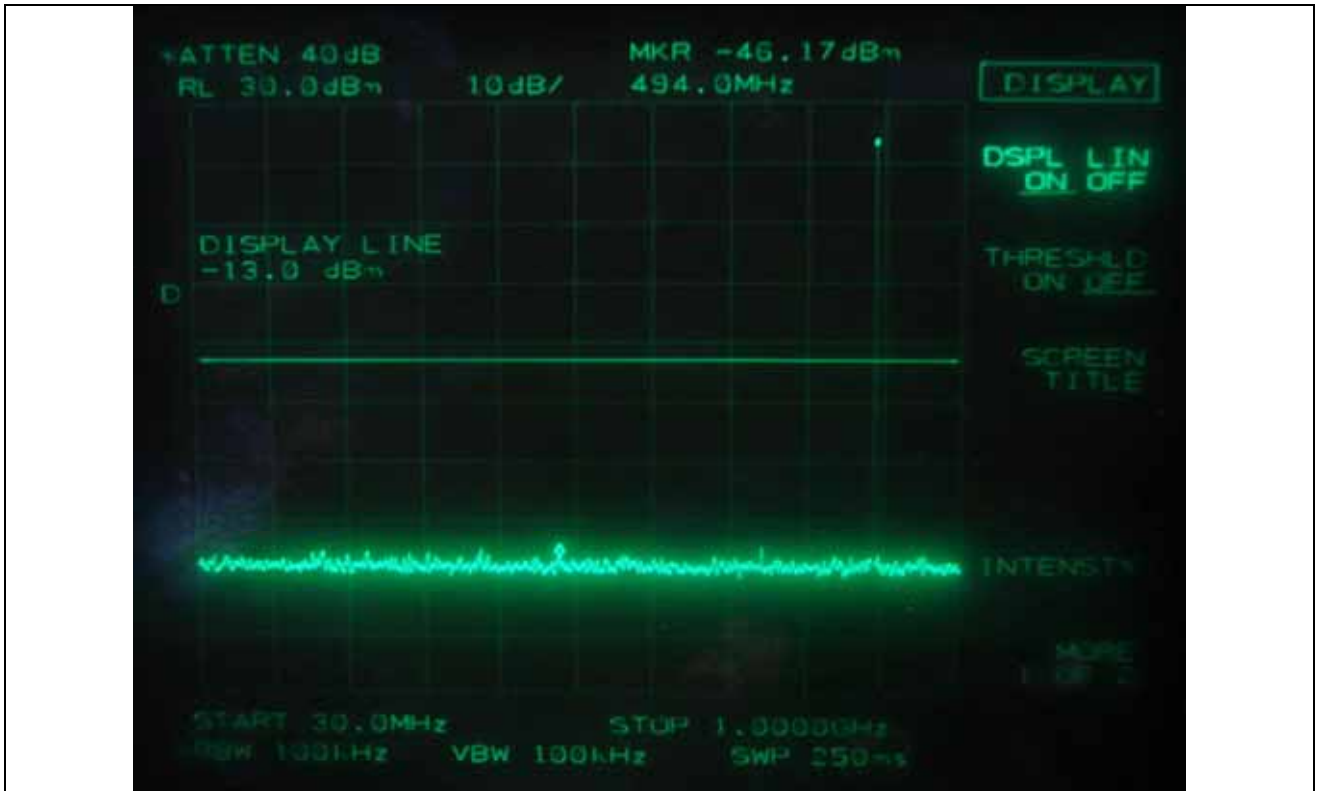
CDMA - Middle Channel



CDMA – High Channel



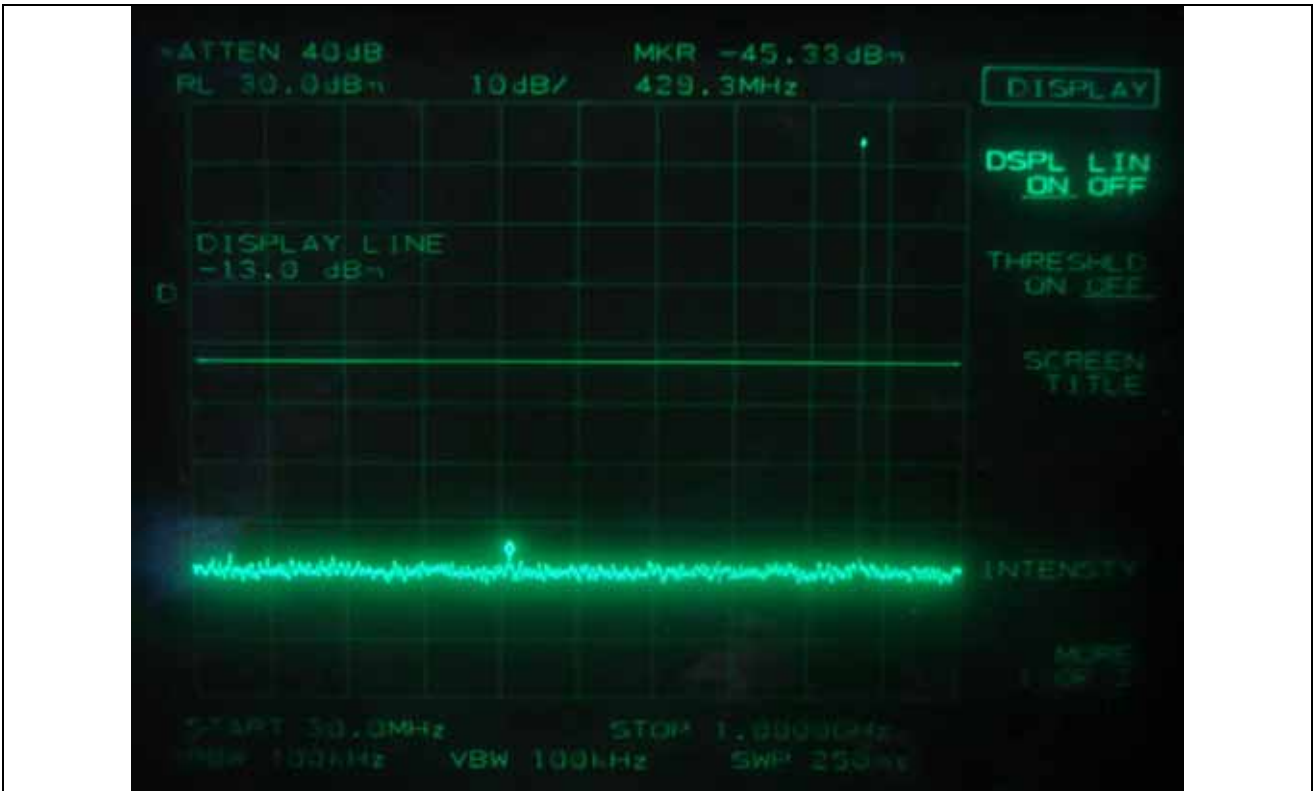
CDMA – High Channel



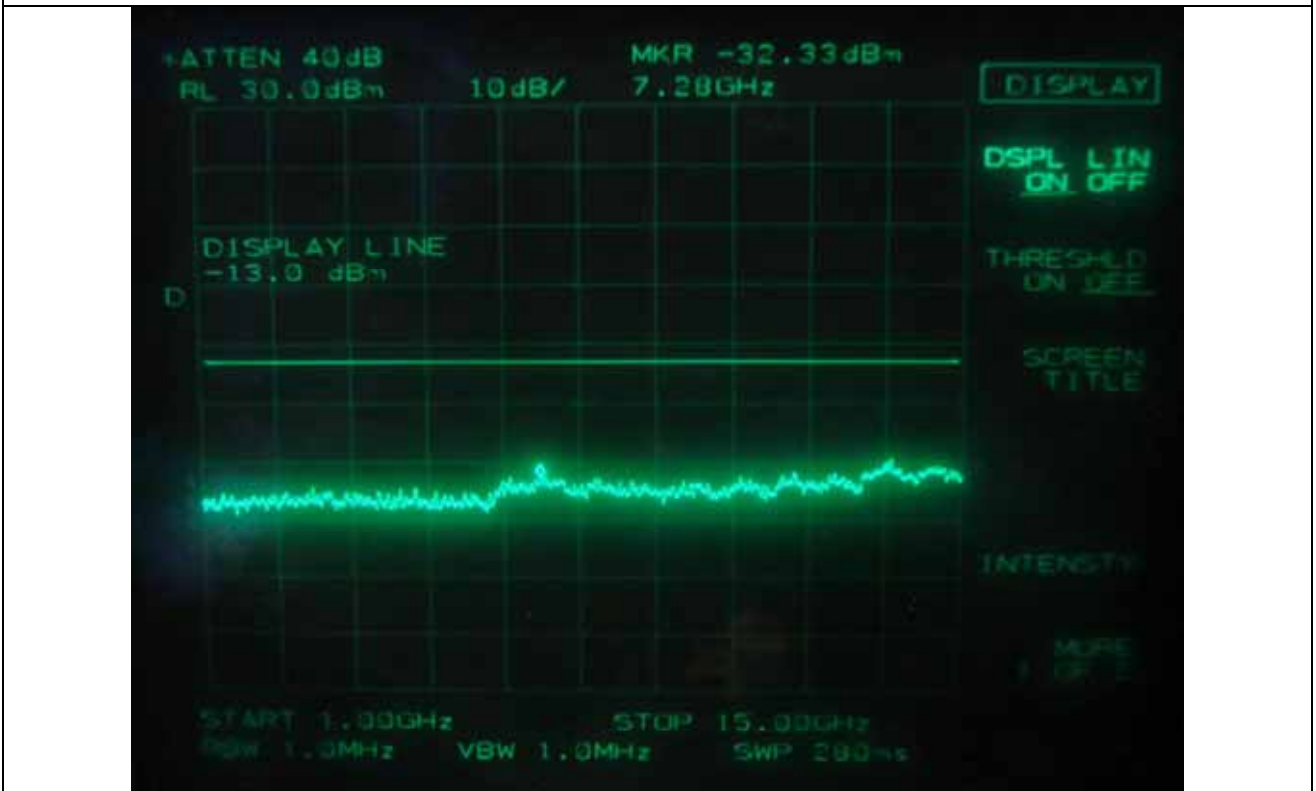
1xEVDO - Low Channel



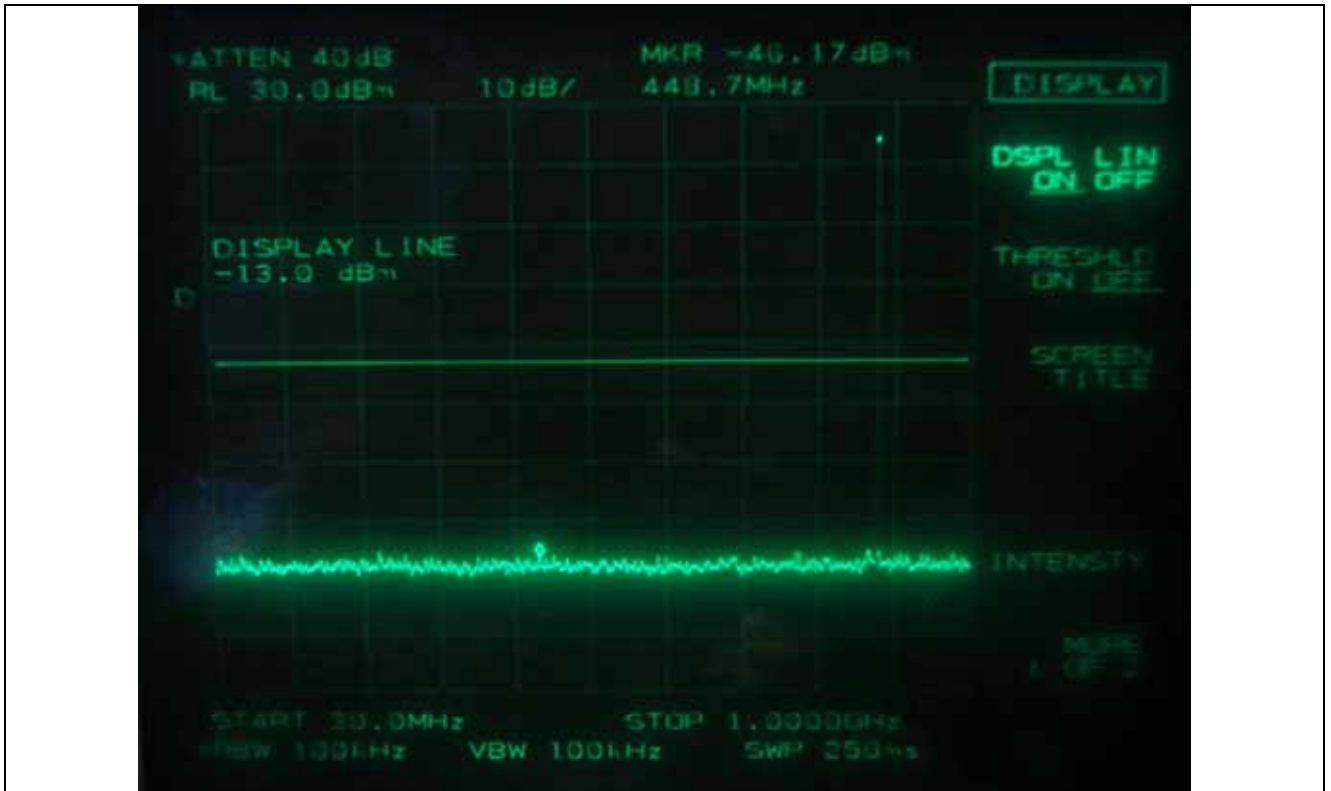
1xEVDO - Low Channel



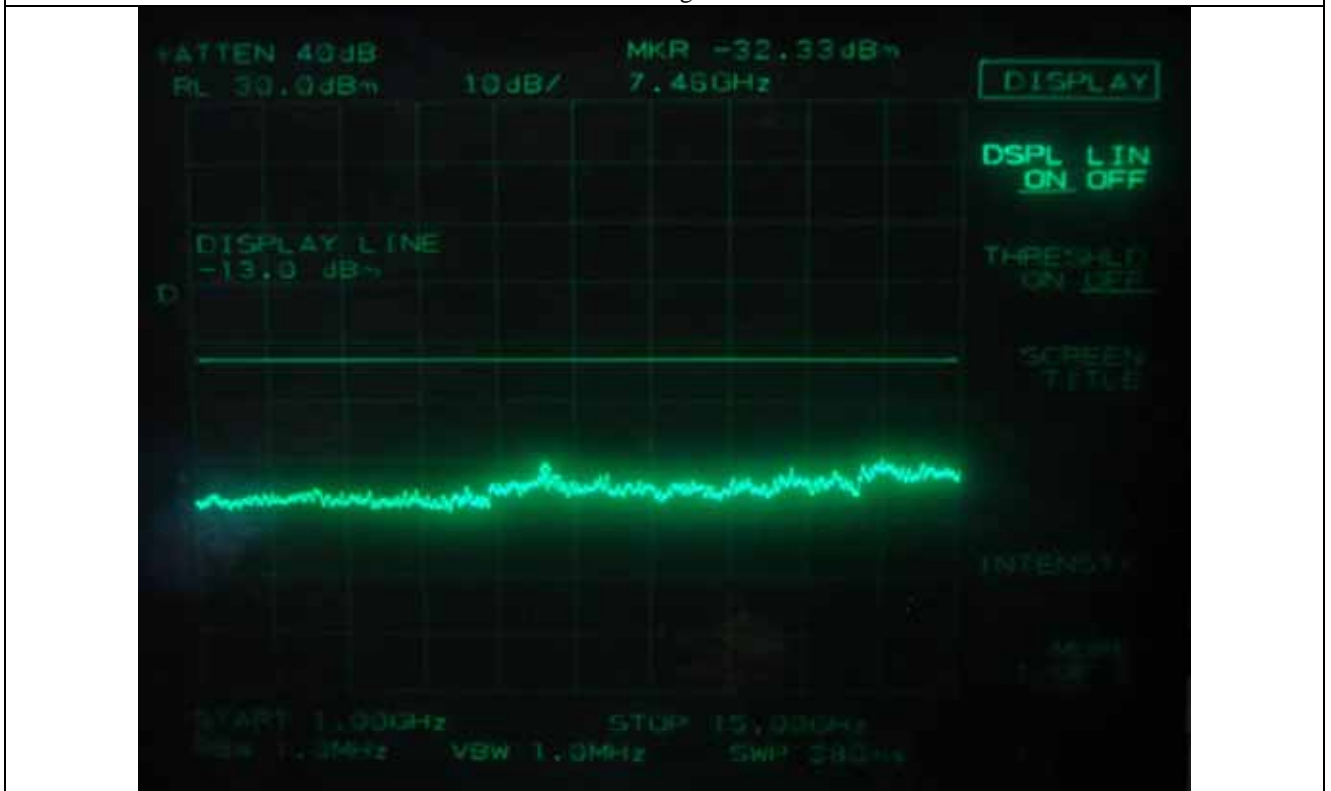
1xEVDO – Middle Channel



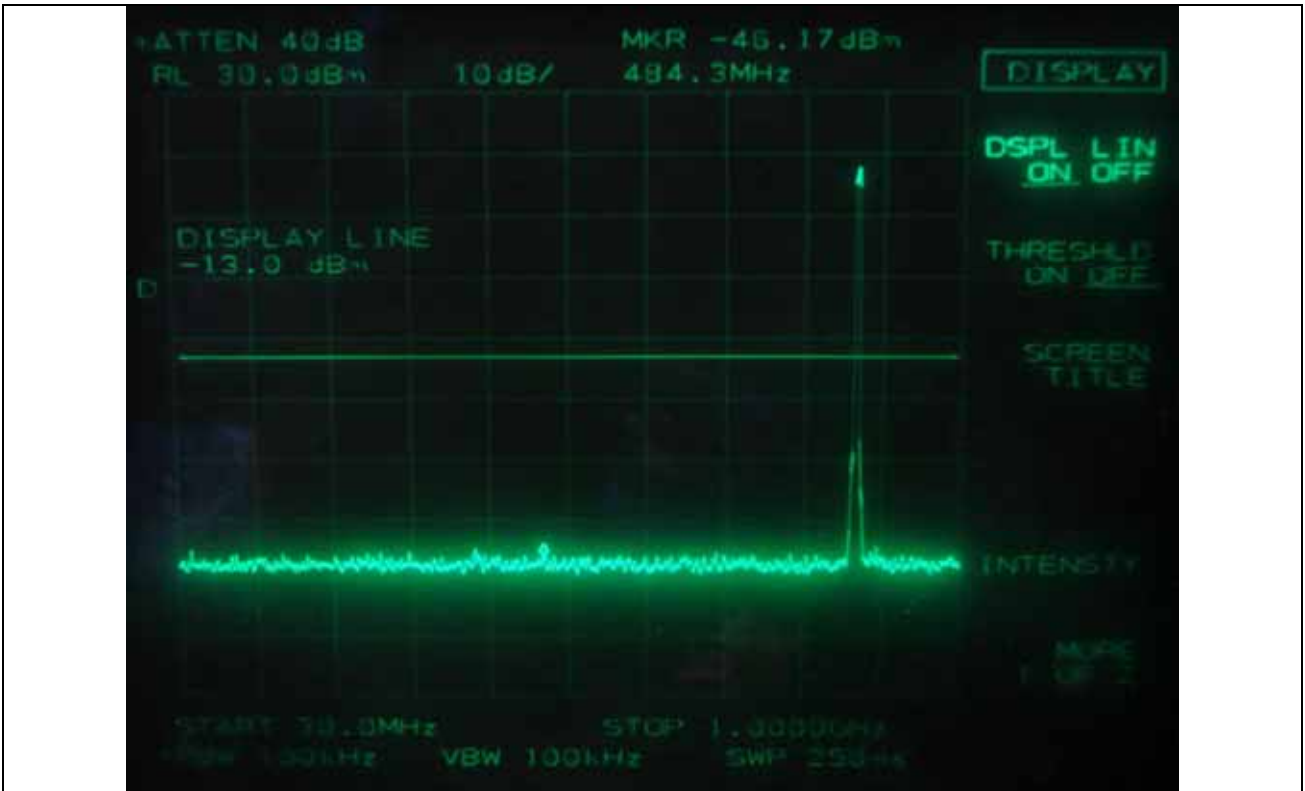
1xEVDO – Middle Channel



1xEVDO – High Channel



1xEVDO – High Channel



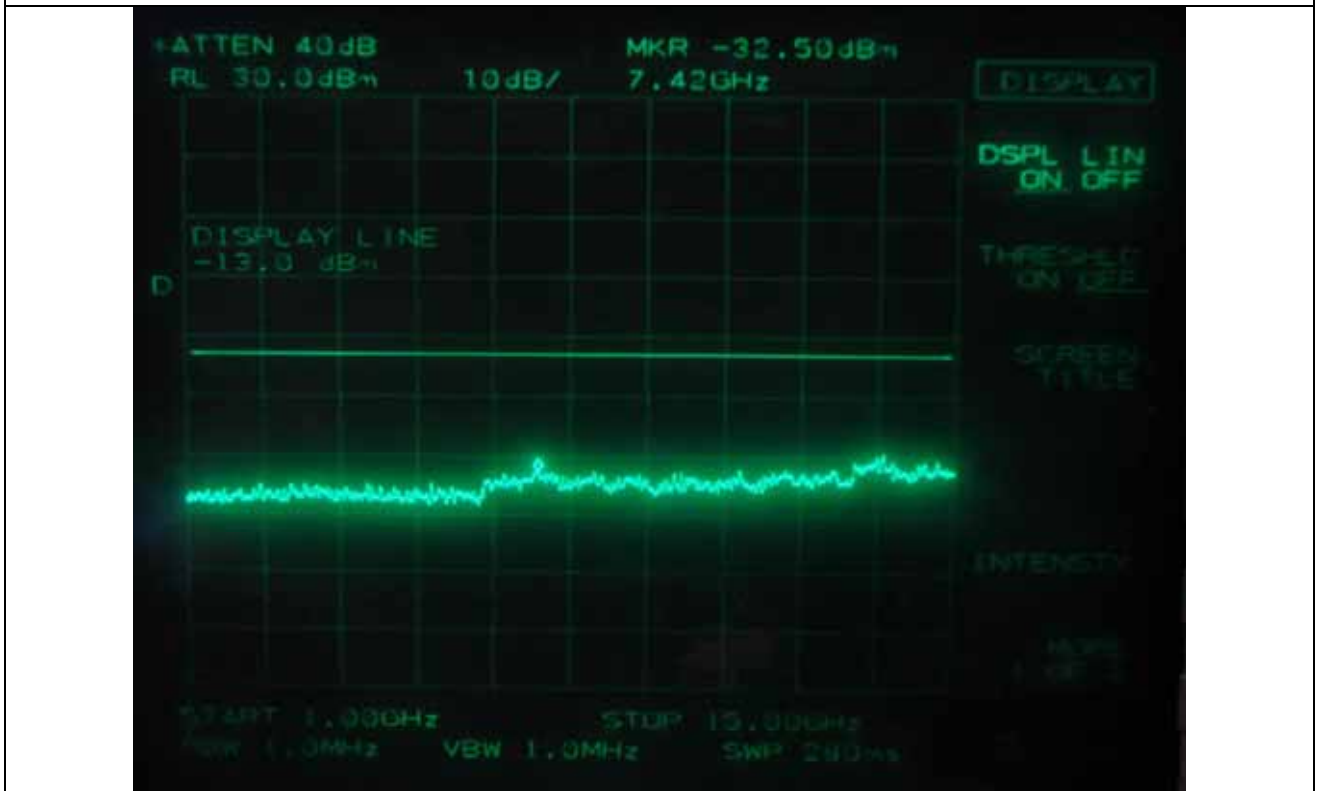
WCDMA – Low Channel



WCDMA – Low Channel



WCDMA – Middle Channel



WCDMA – Middle Channel



WCDMA – High Channel



WCDMA – High Channel

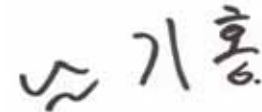
7.3.2 Test Result for Part 24 E (1900P)

- . Test Date : April 19 ~ 20, 2011
- . Temperature : 24 °C
- . Relative humidity : 48 % R.H.
- . Frequency range : 30 MHz ~ 15 GHz
- . Result : PASSED BY -15.17 dB at 1xEVDO Mode

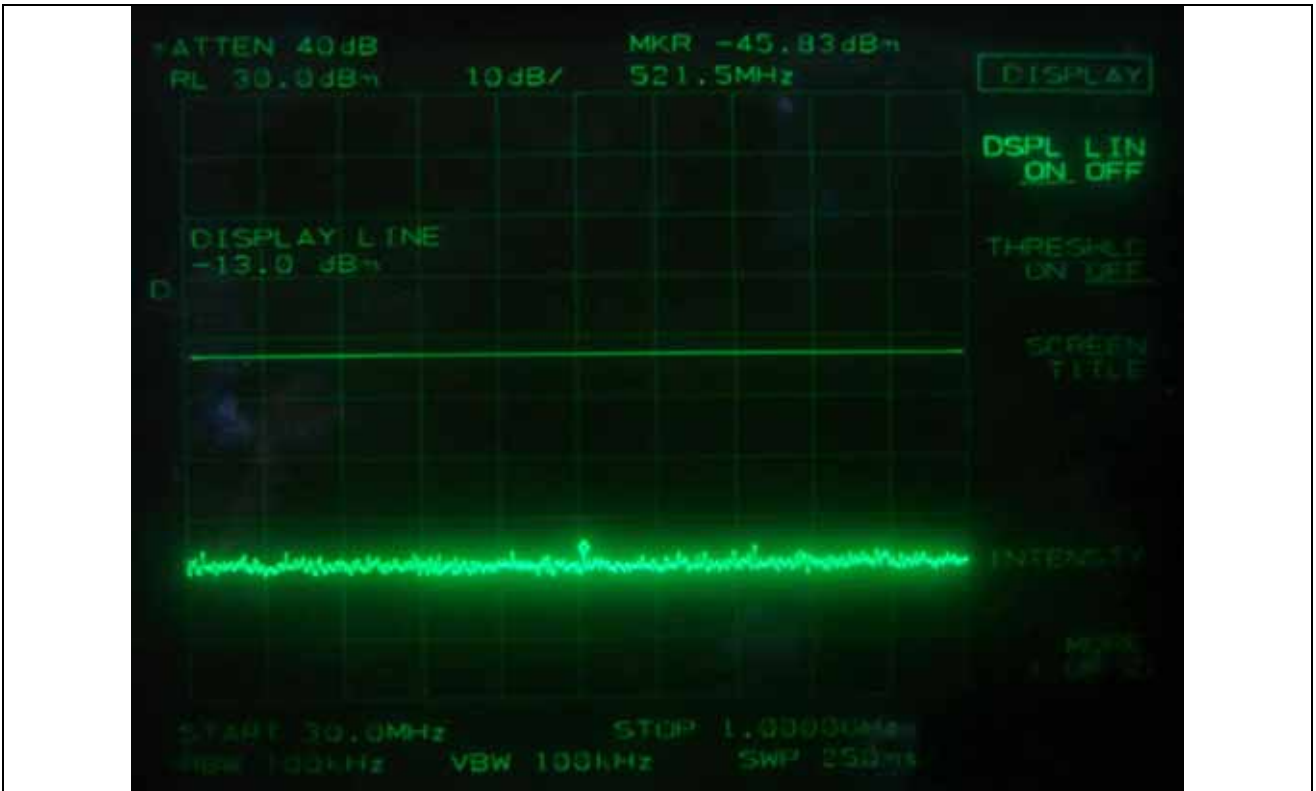
Modulation	Harmonic Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)	
TDMA	Low	558.70	-45.50	0.50	-45.00	-13.00	-32.00
		7 330.00	-32.00	3.33	-28.67		-15.67
	Middle	521.50	-45.83	0.50	-45.33		-32.33
		7 550.00	-32.17	3.33	-28.84		-15.84
	High	450.30	-46.00	0.50	-45.50		-32.50
		7 290.00	-32.00	3.33	-28.67		-15.67
GSM	Low	519.90	-45.50	0.50	-45.00	-13.00	-32.00
		7 460.00	-32.33	3.33	-29.00		-16.00
	Middle	529.60	-44.83	0.50	-44.33		-31.33
		7 330.00	-32.83	3.33	-29.50		-16.50
	High	523.10	-45.83	0.50	-45.33		-32.33
		7 210.00	-32.33	3.33	-29.00		-16.00
EDGE	Low	549.00	-45.50	0.50	-45.00	-13.00	-32.00
		7 500.00	-32.83	3.33	-29.50		-16.50
	Middle	531.20	-45.67	0.50	-45.17		-32.17
		7 420.00	-32.33	3.33	-29.00		-16.00
	High	523.10	-45.83	0.50	-45.33		-32.33
		7 460.00	-32.33	3.33	-29.00		-16.00
CDMA	Low	540.90	-46.50	0.50	-46.00	-13.00	-33.00
		7 420.00	-32.83	3.33	-29.50		-16.50
	Middle	511.80	-45.67	0.50	-45.17		-32.17
		7 330.00	-32.50	3.33	-29.17		-16.17
	High	500.50	-45.83	0.50	-45.33		-32.33
		7 380.00	-32.67	3.33	-29.34		-16.34

Modulation	Harmonic Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)	
1xEVDO	Low	519.90	-46.33	0.50	-45.83	-13.00	-32.83
		7550.00	-32.33	3.33	-29.00		-16.00
	Middle	536.00	-45.67	0.50	-45.17		-32.17
		7330.00	-31.50	3.33	-28.17		-15.17
	High	549.00	-46.33	0.50	-45.83		-32.83
		7290.00	-32.33	3.33	-29.00		-16.00
WCDMA	Low	539.30	-45.50	0.50	-45.00	-13.00	-32.00
		7590.00	-32.17	3.33	-28.84		-15.84
	Middle	599.10	-45.67	0.50	-45.17		-32.17
		7460.00	-32.33	3.33	-29.00		-16.00
	High	534.40	-46.50	0.50	-46.00		-33.00
		7330.00	-32.33	3.33	-29.00		-16.00
Other frequencies up to 15 GHz have margin more than 20 dB.							

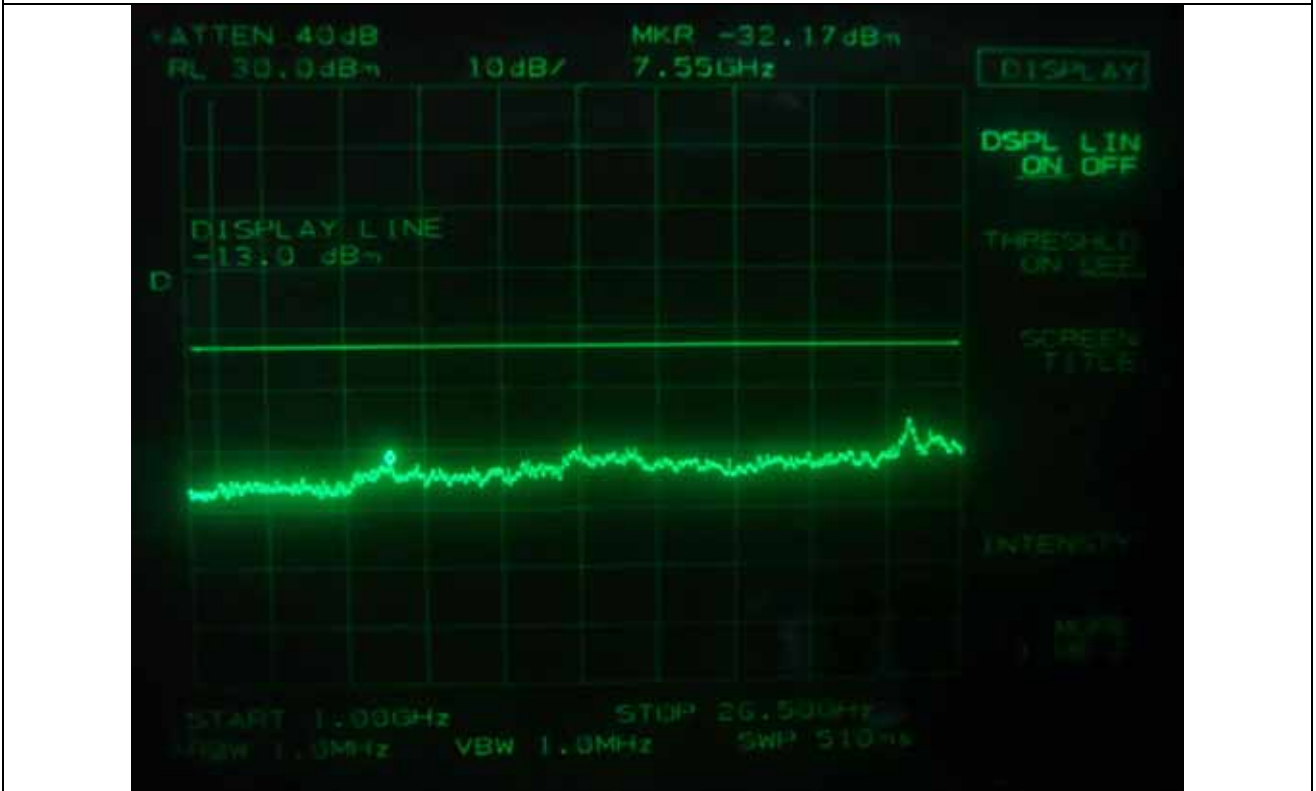
According to Part 22H, out of band emission shall be attenuated by $43 + 10 \log (P)$ dBc, equates to -13.0 dBm.



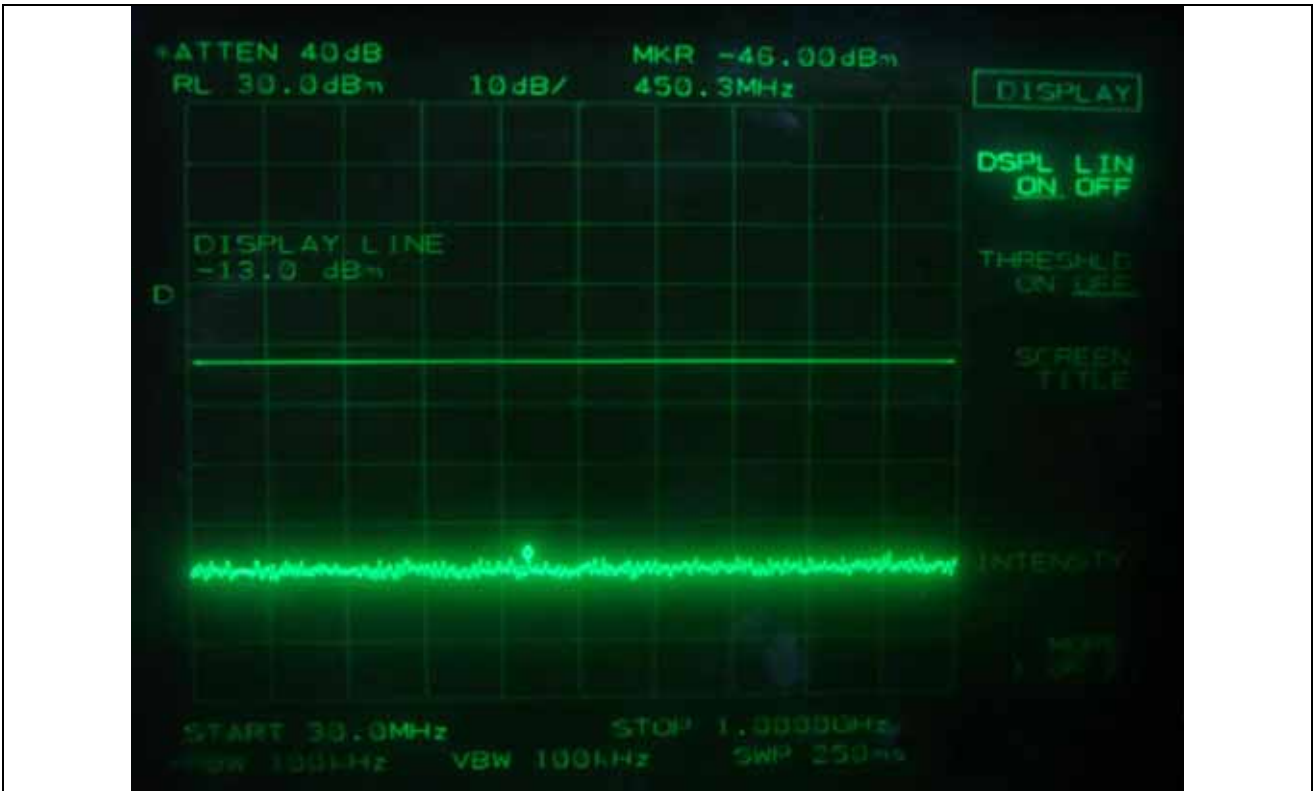
Tested by: Ki-Hong, Nam / Senior Engineer



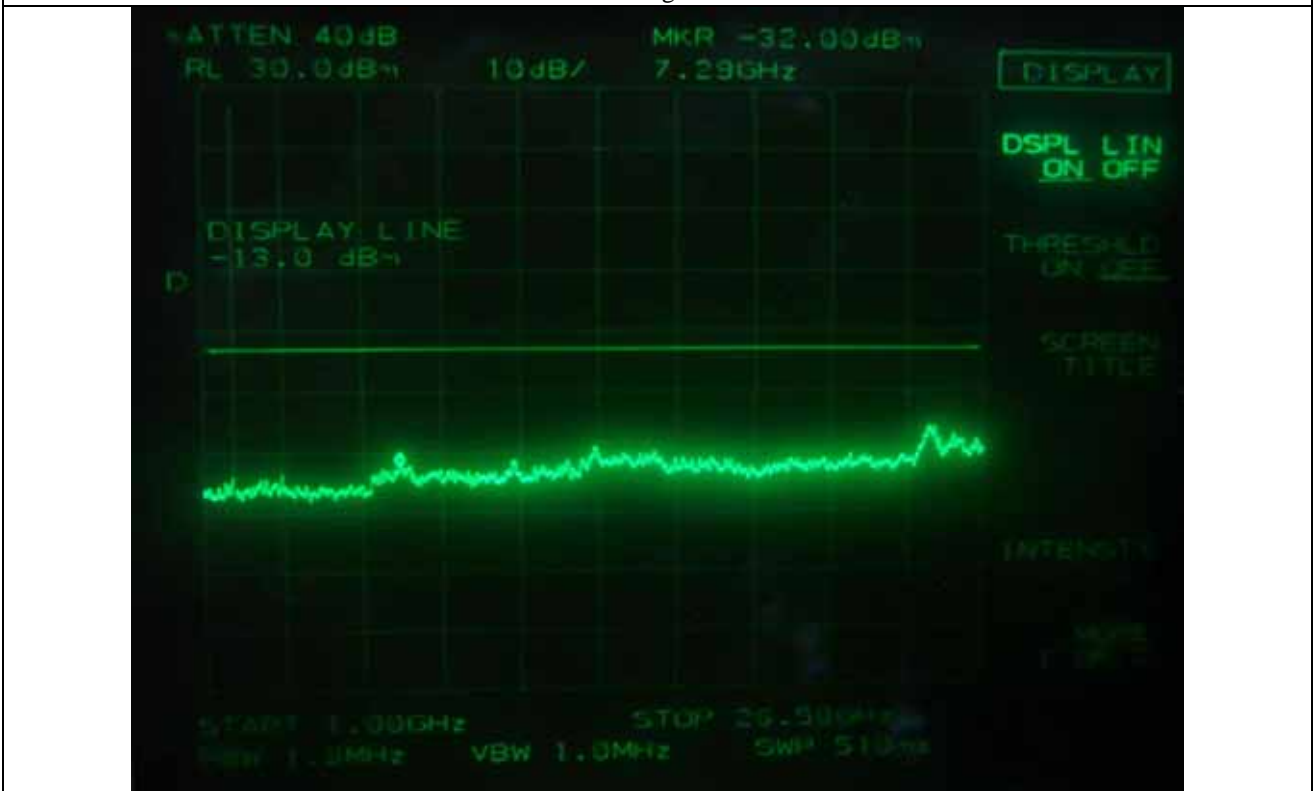
TDMA – Middle Channel



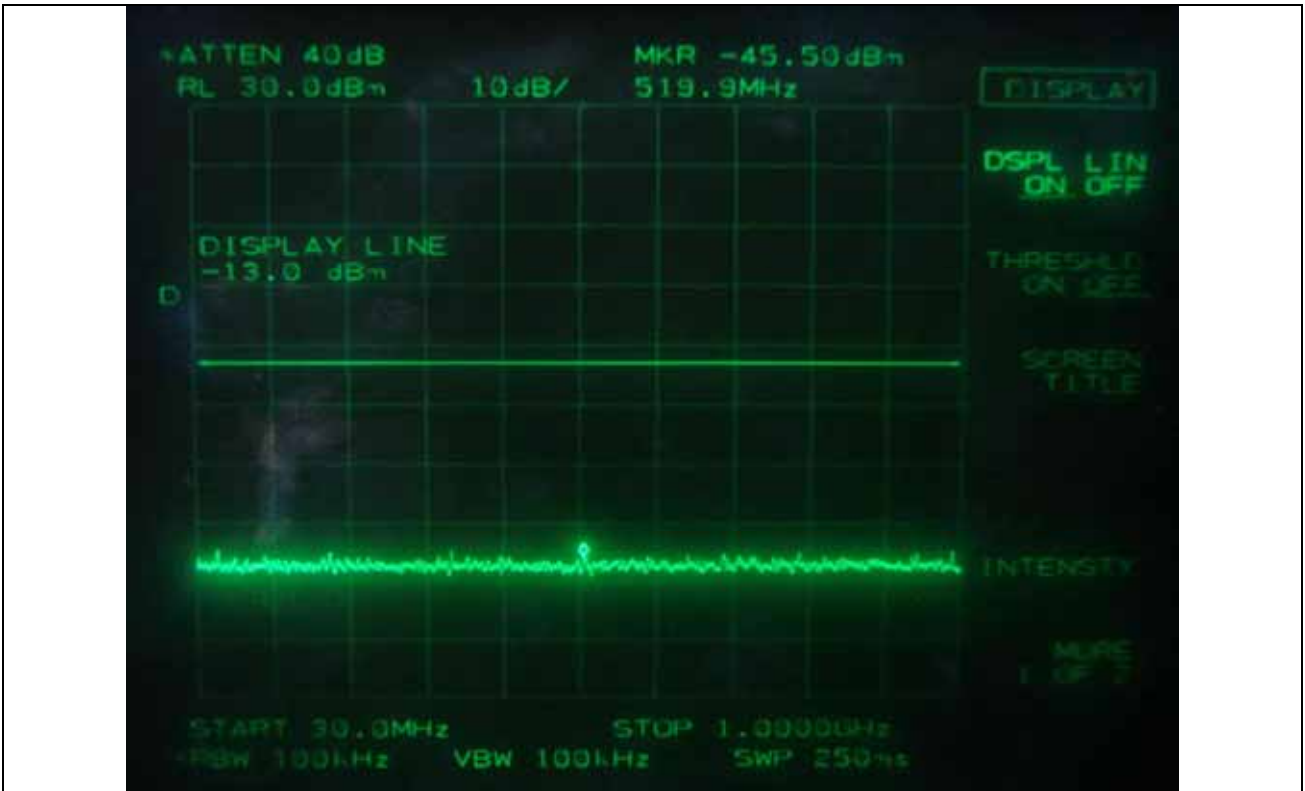
TDMA – Middle Channel



TDMA – High Channel



TDMA – High Channel



GSM – Low Channel



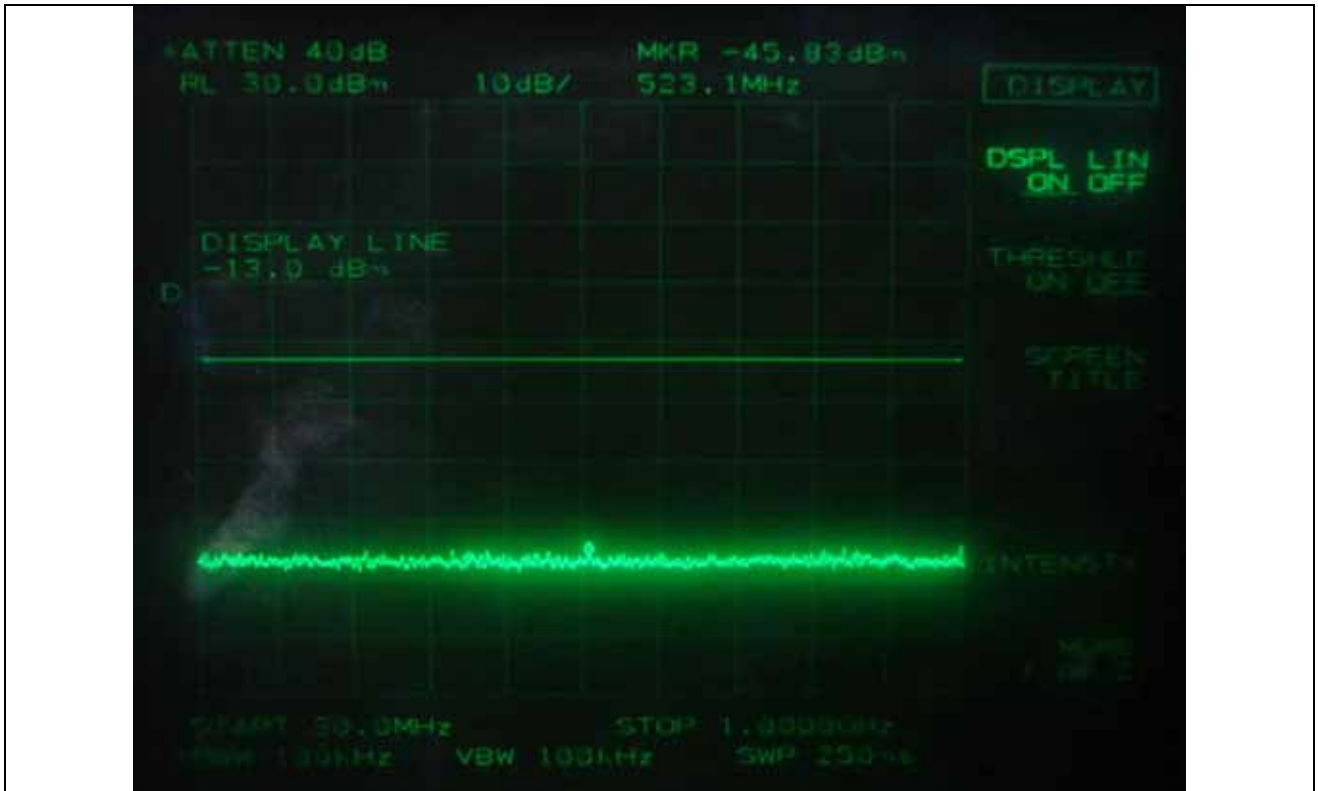
GSM – Low Channel



GSM – Middle Channel



GSM – Middle Channel



GSM – High Channel



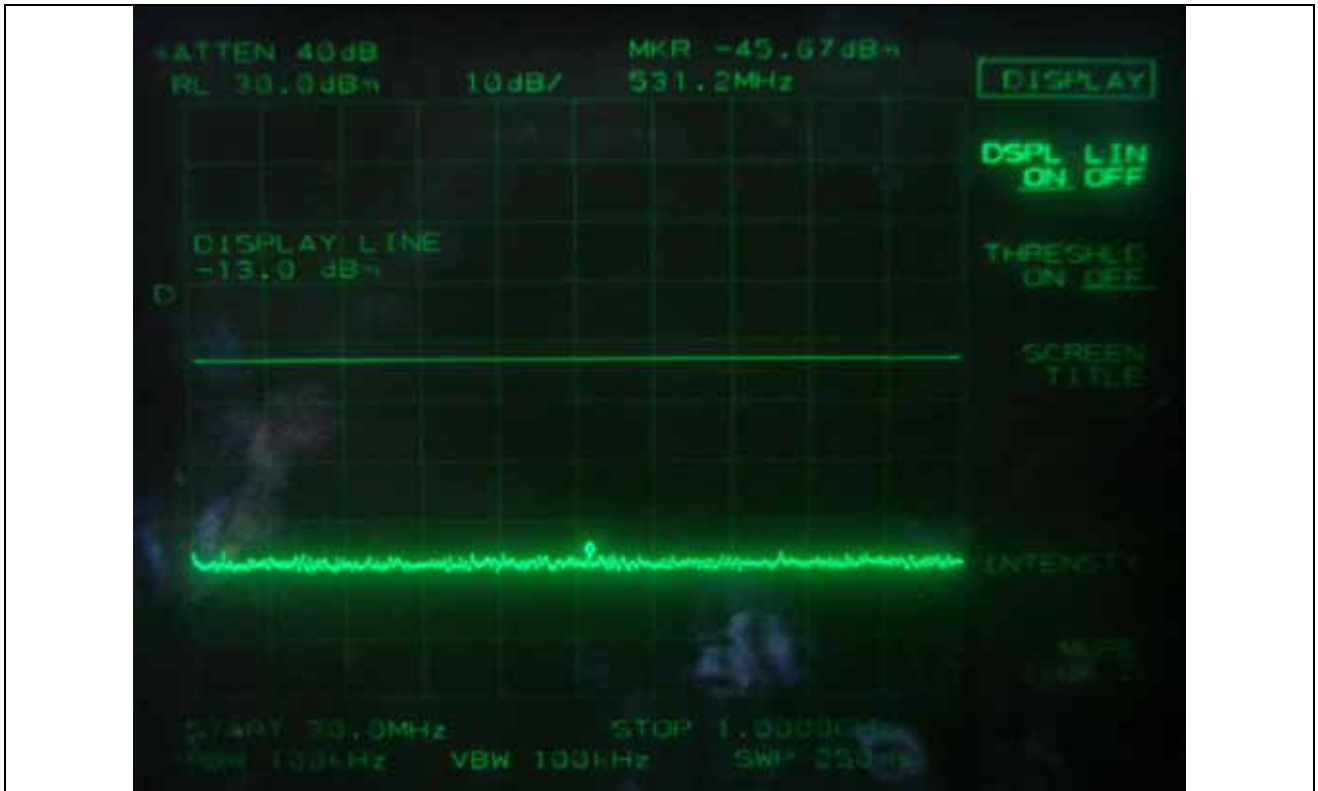
GSM – High Channel



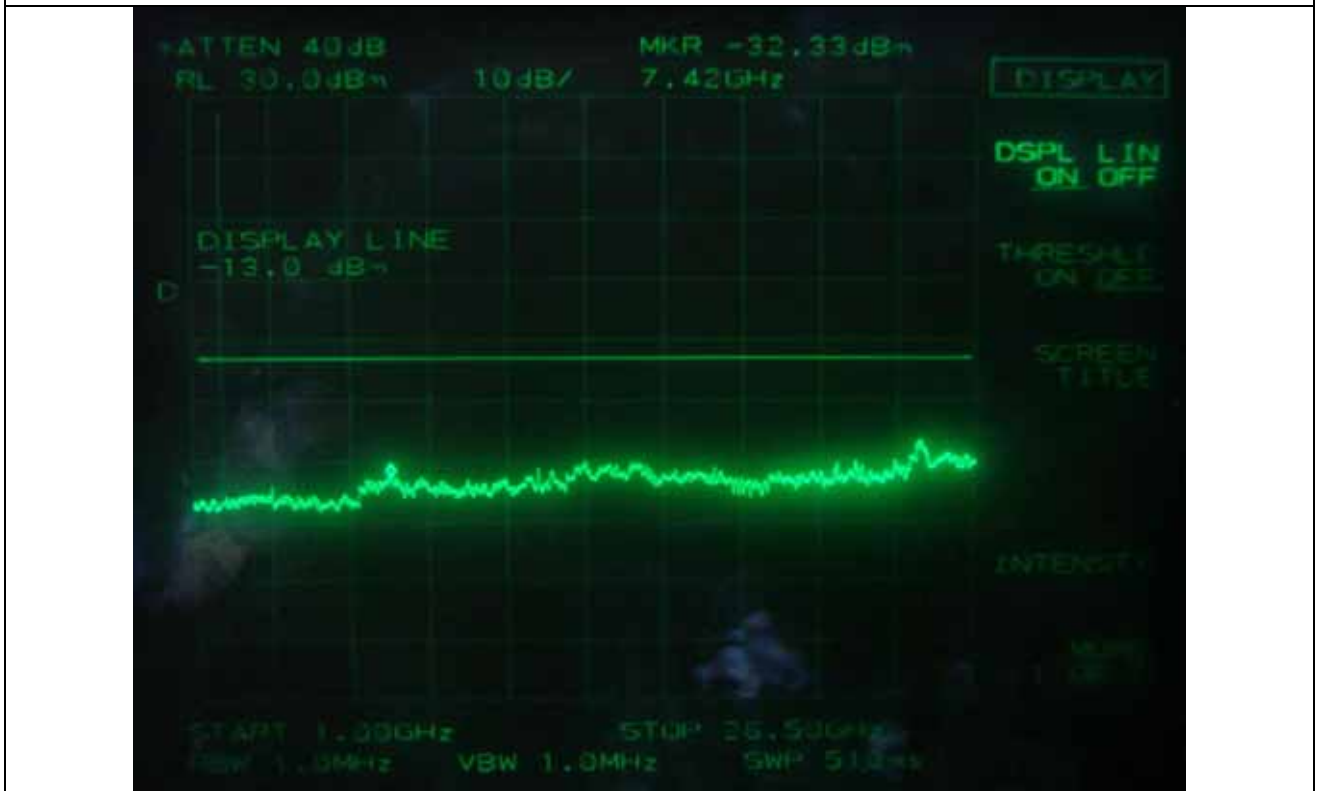
EDGE – Low Channel



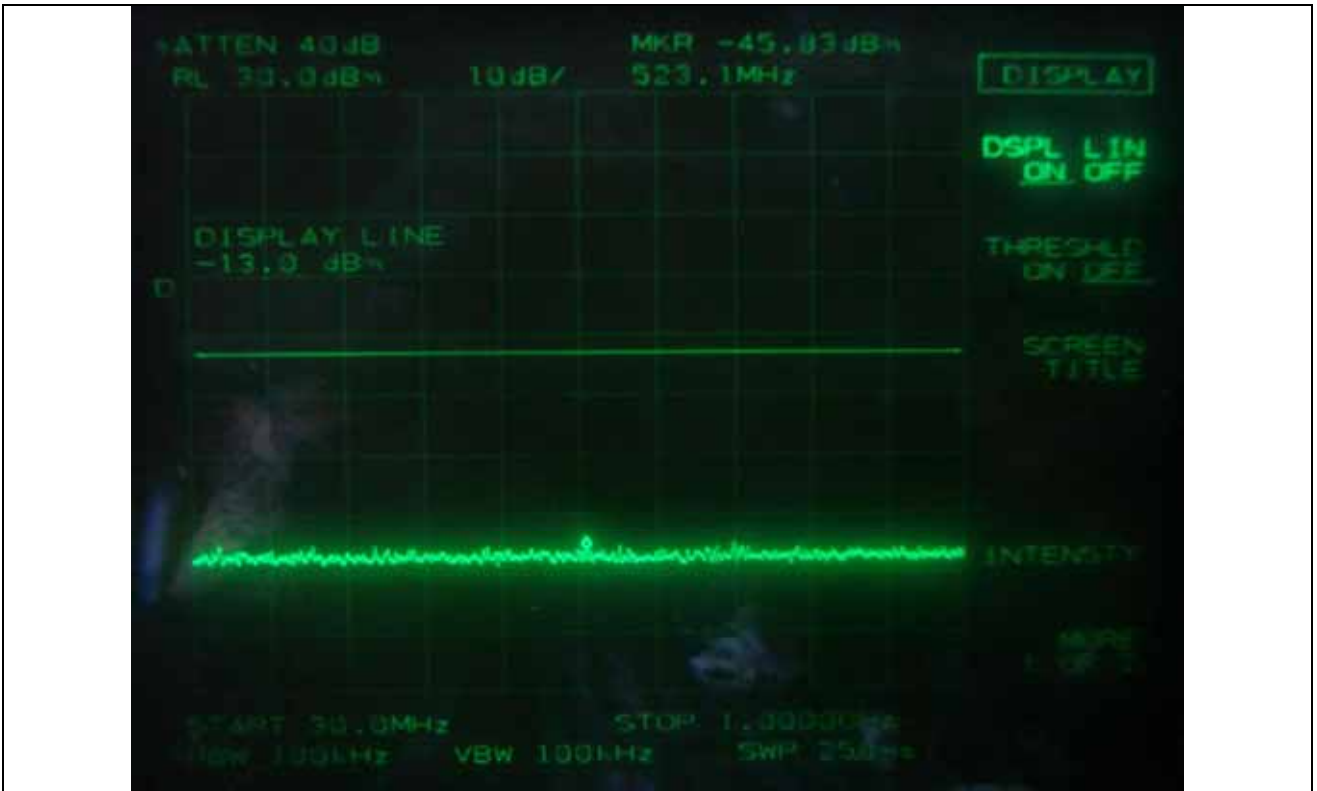
EDGE – Low Channel



EDGE – Middle Channel



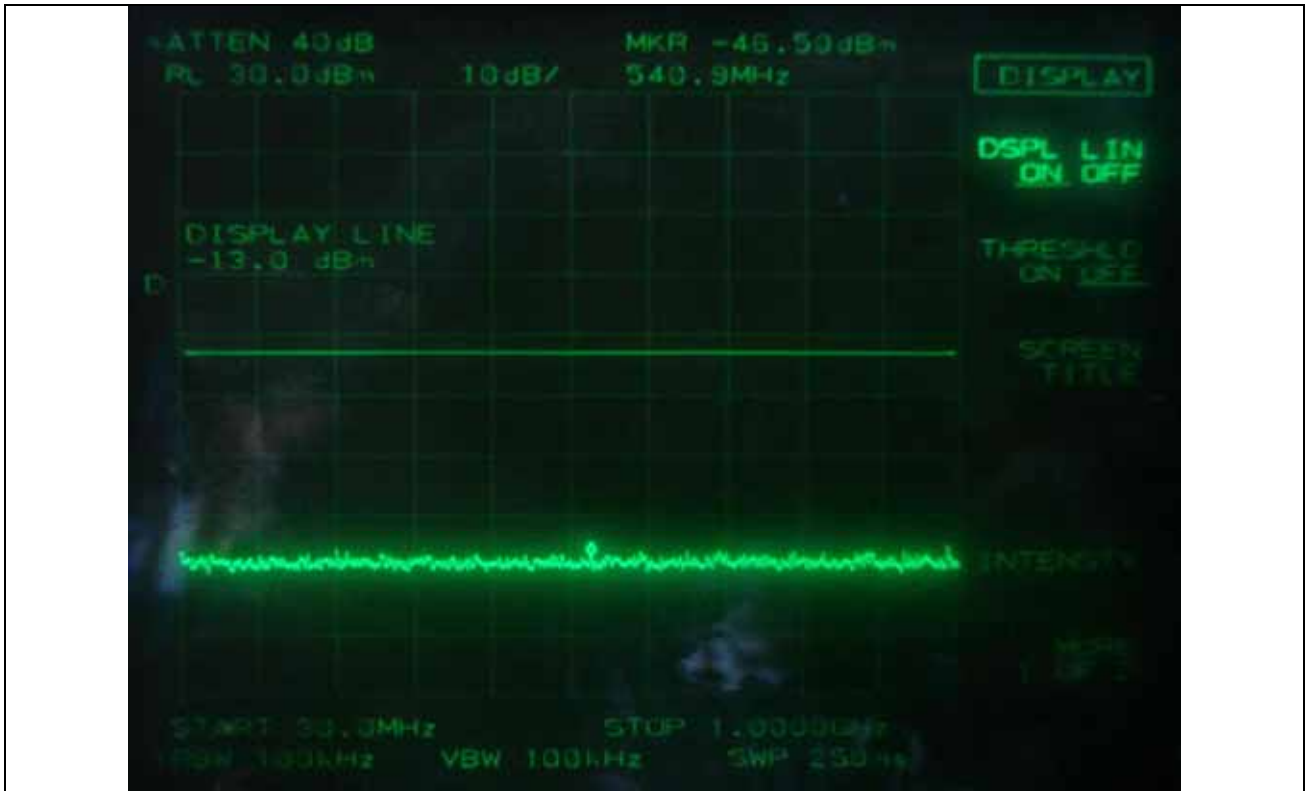
EDGE – Middle Channel



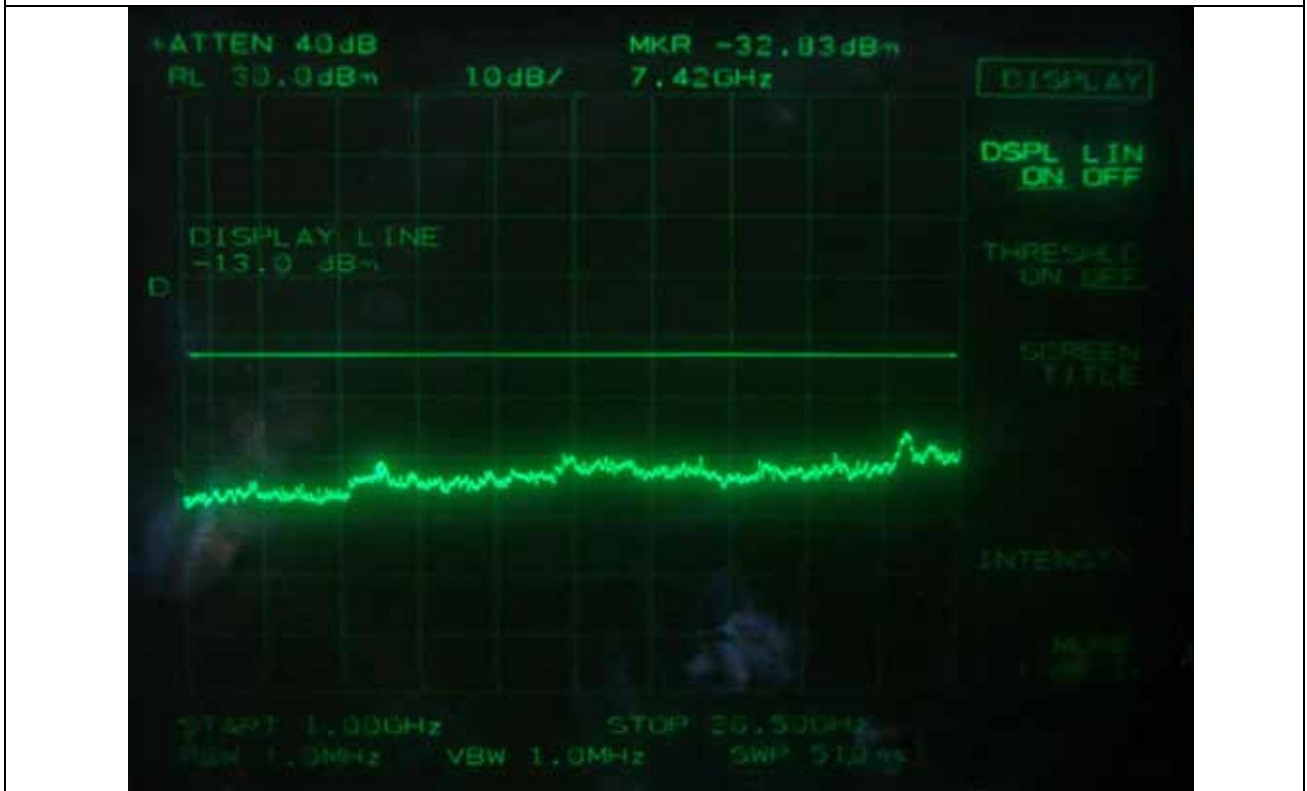
EDGE – High Channel



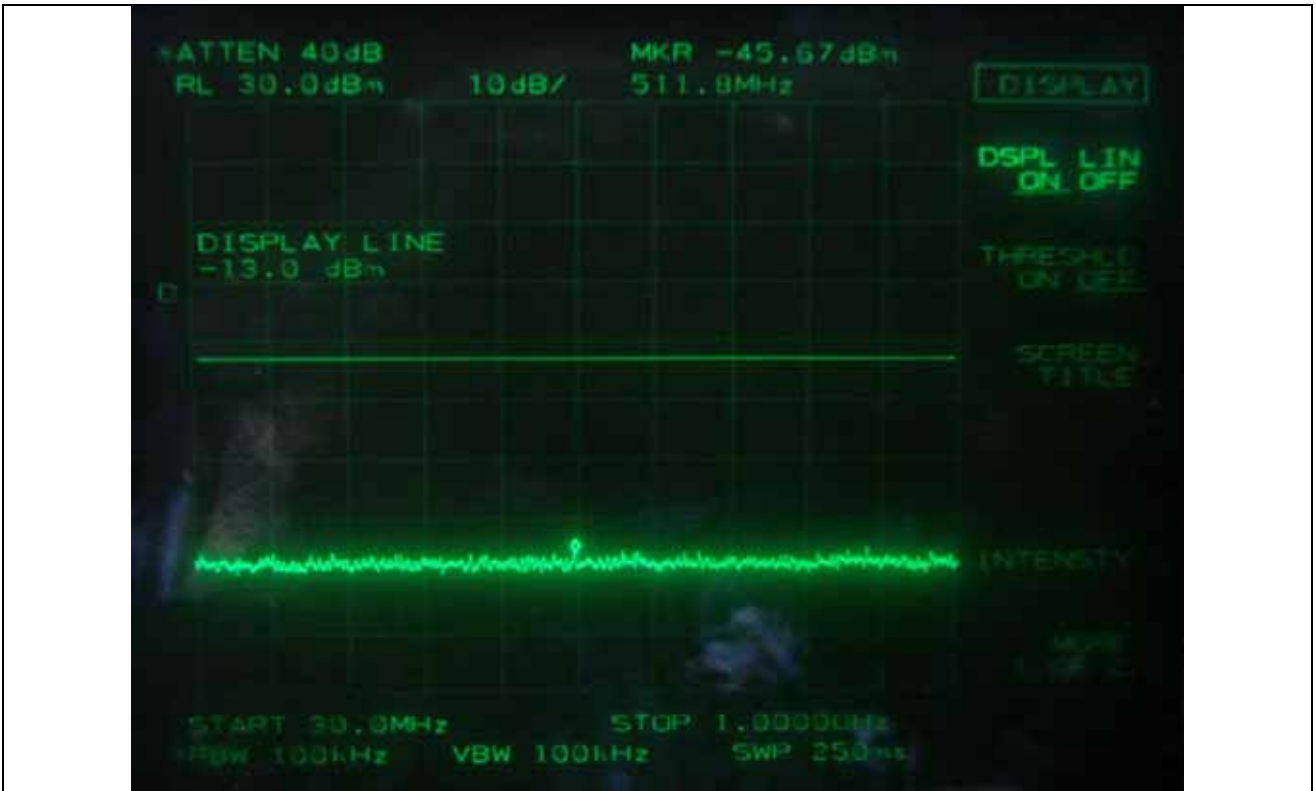
EDGE – High Channel



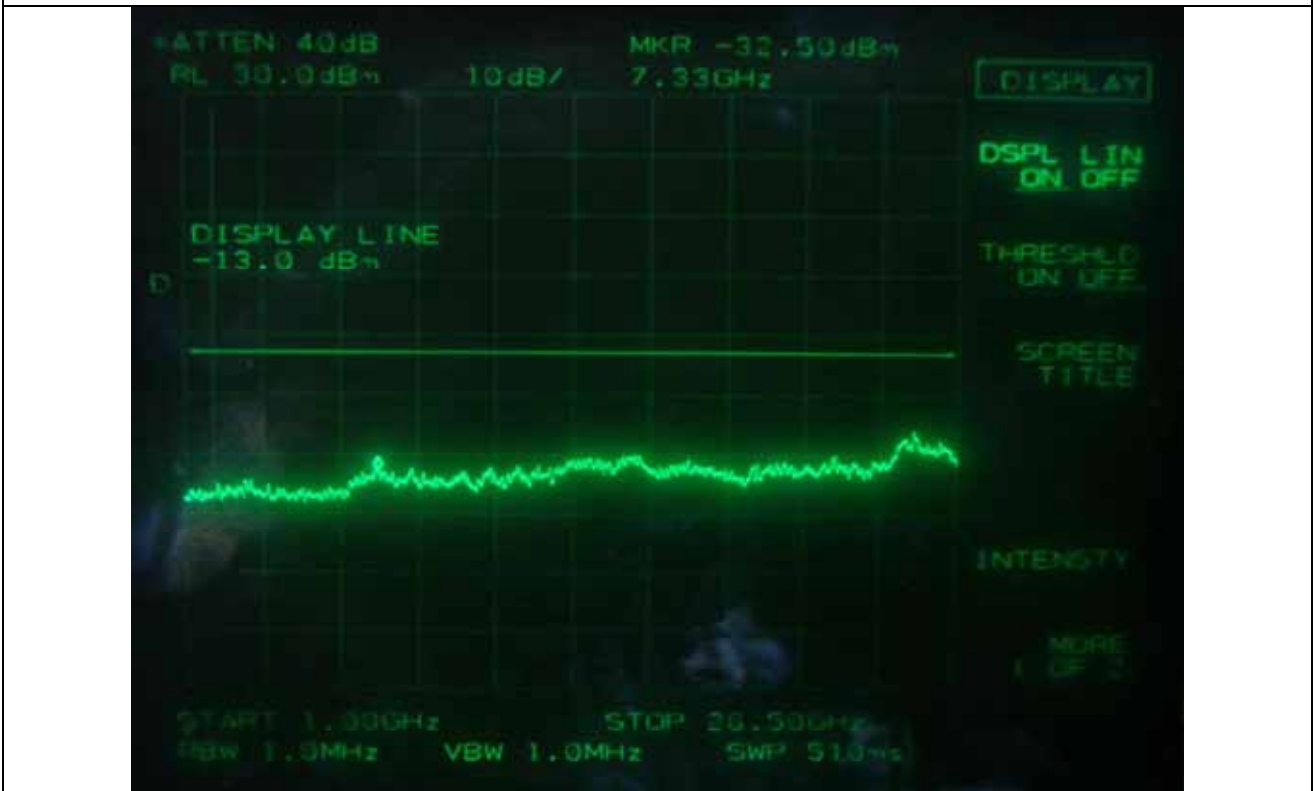
CDMA - Low Channel



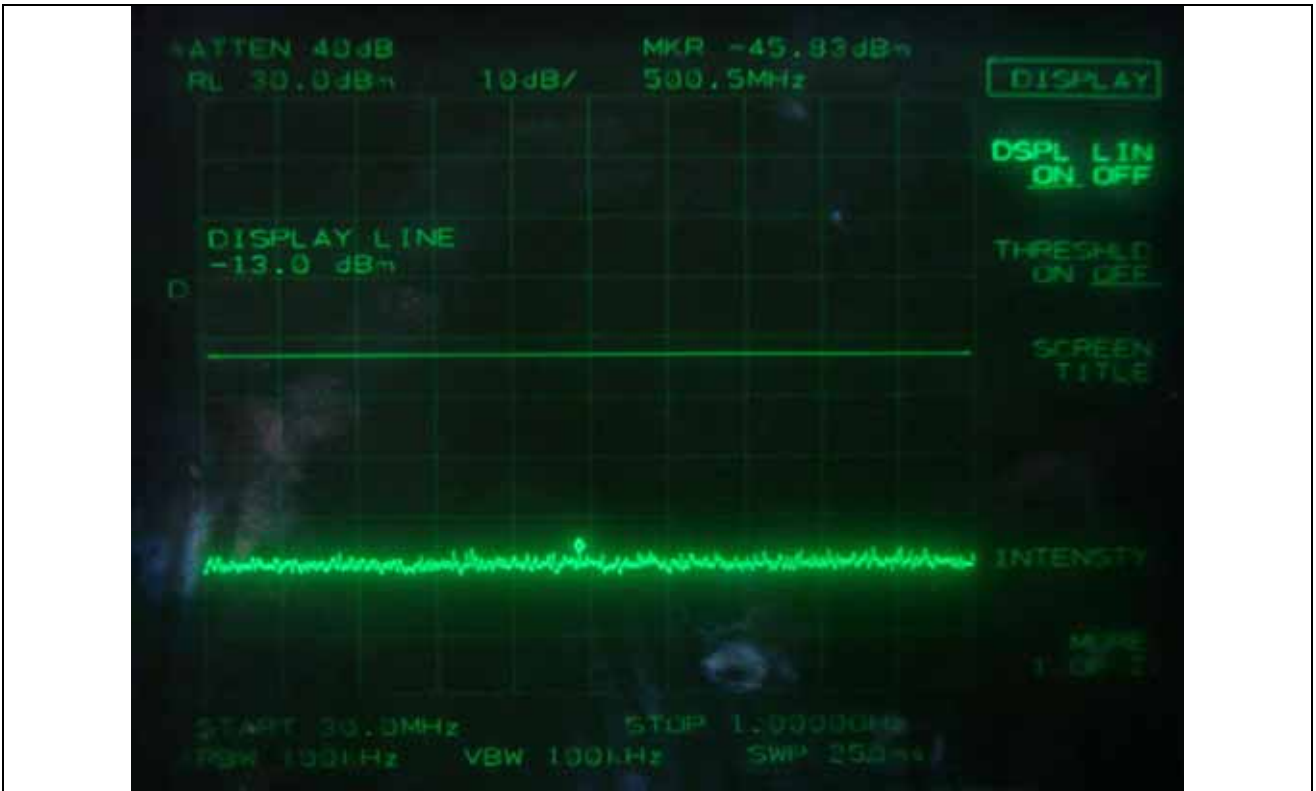
CDMA - Low Channel



CDMA – Middle Channel



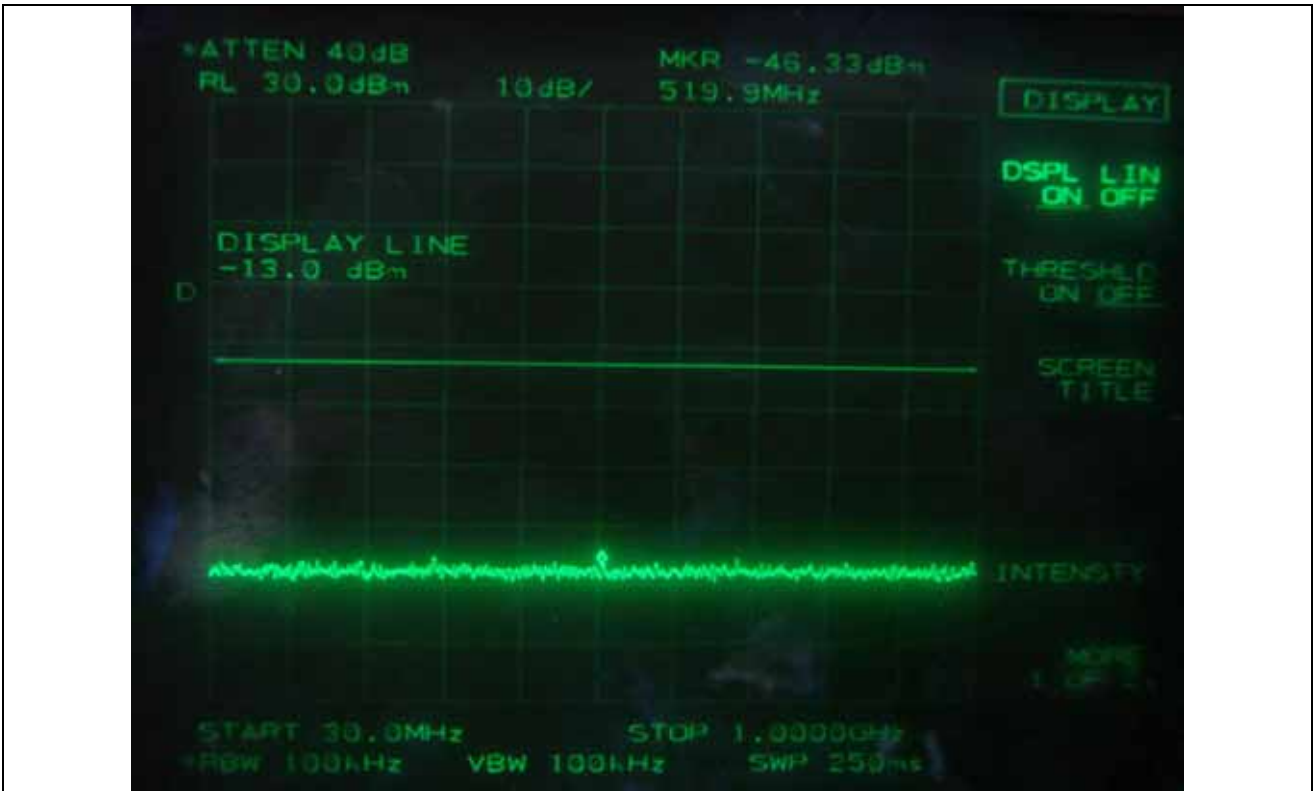
CDMA – Middle Channel



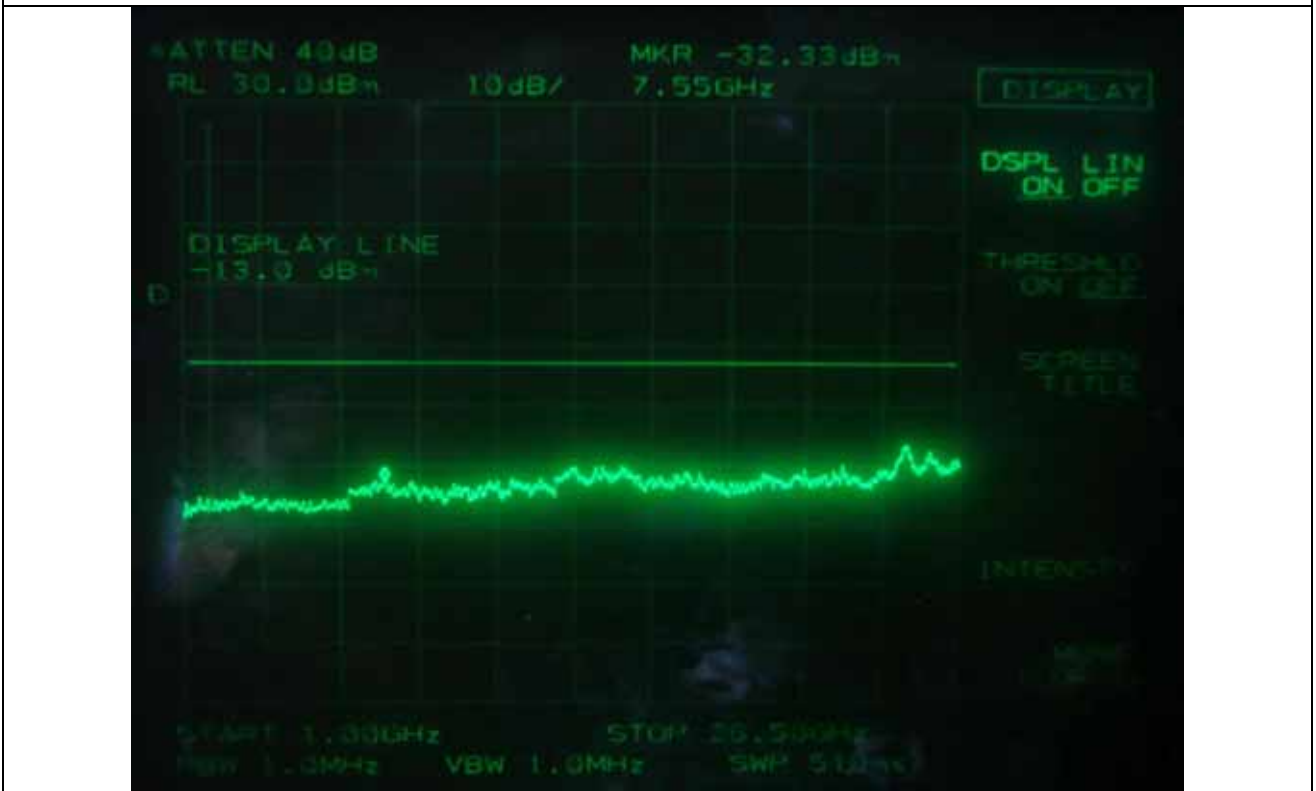
CDMA – High Channel



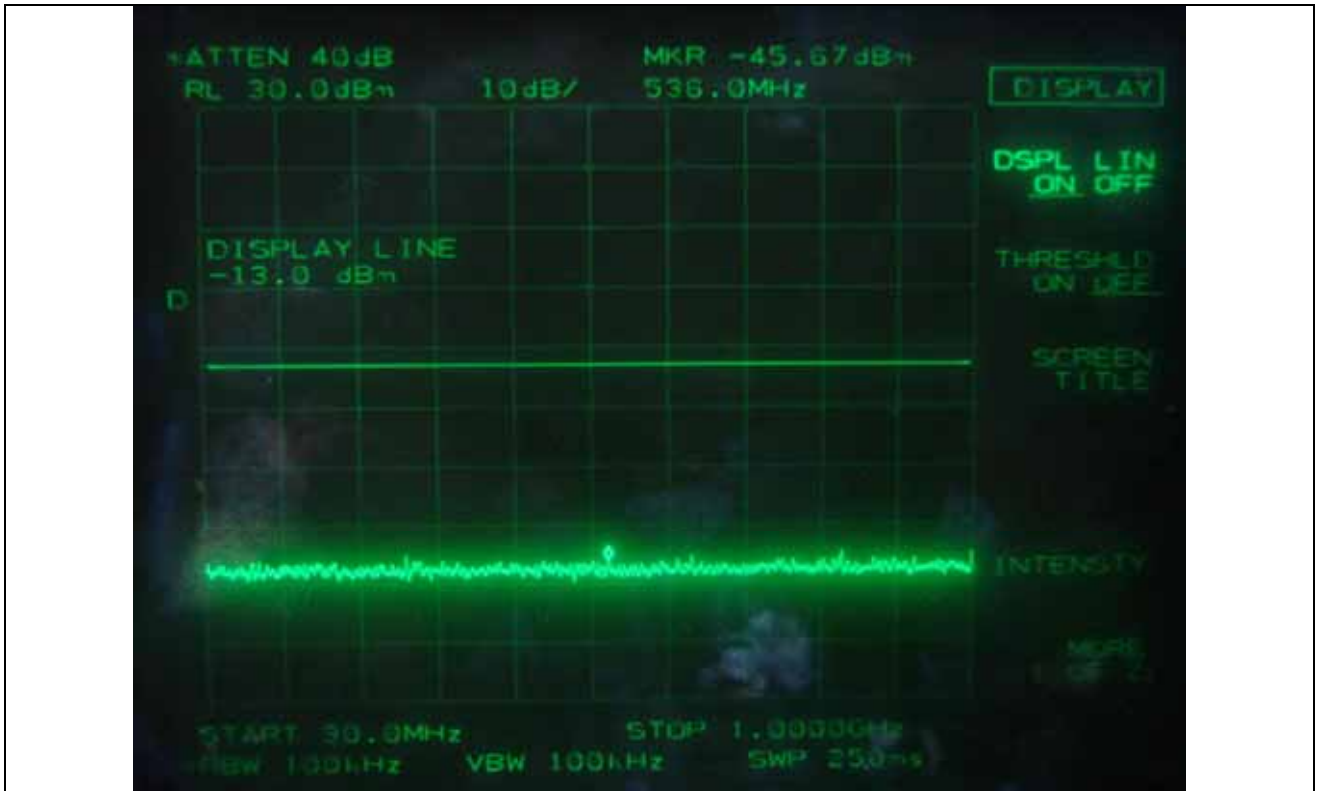
CDMA – High Channel



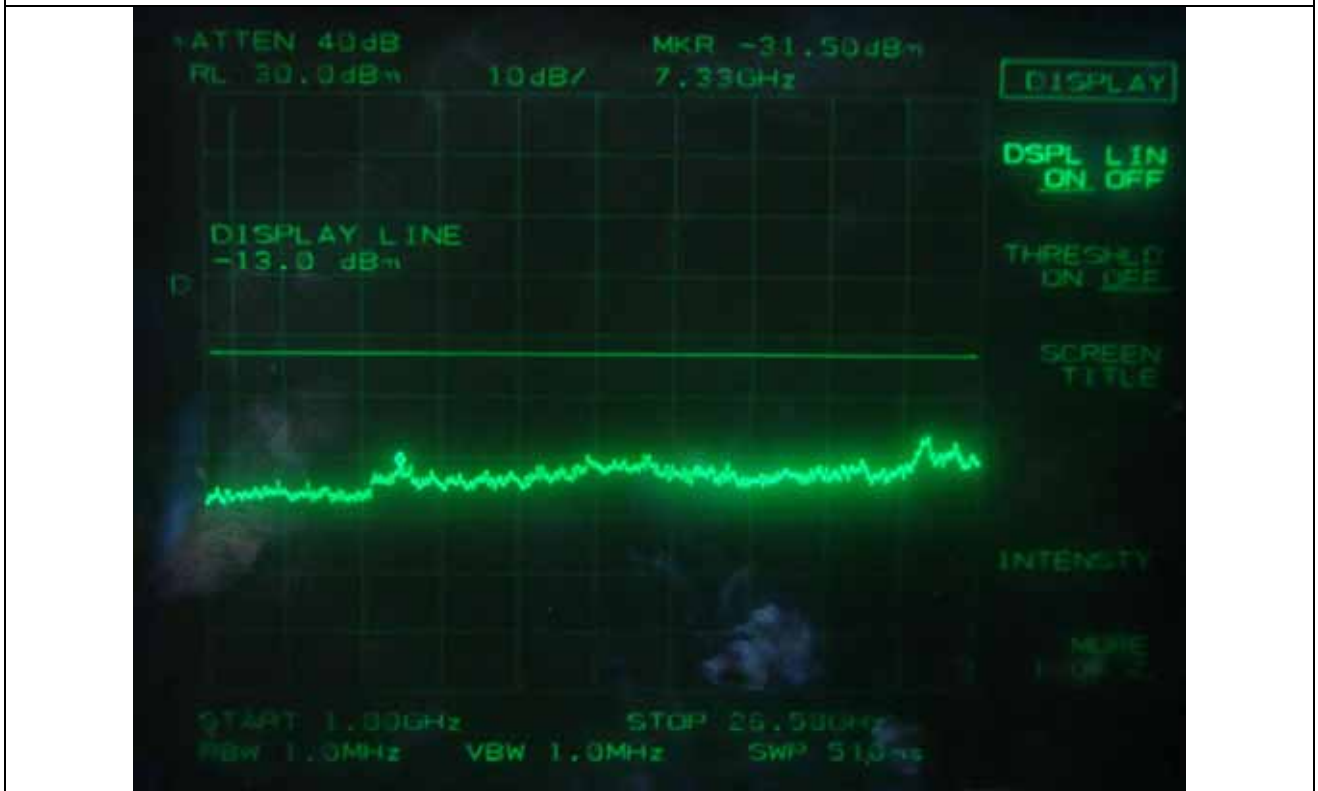
1xEVDO - Low Channel



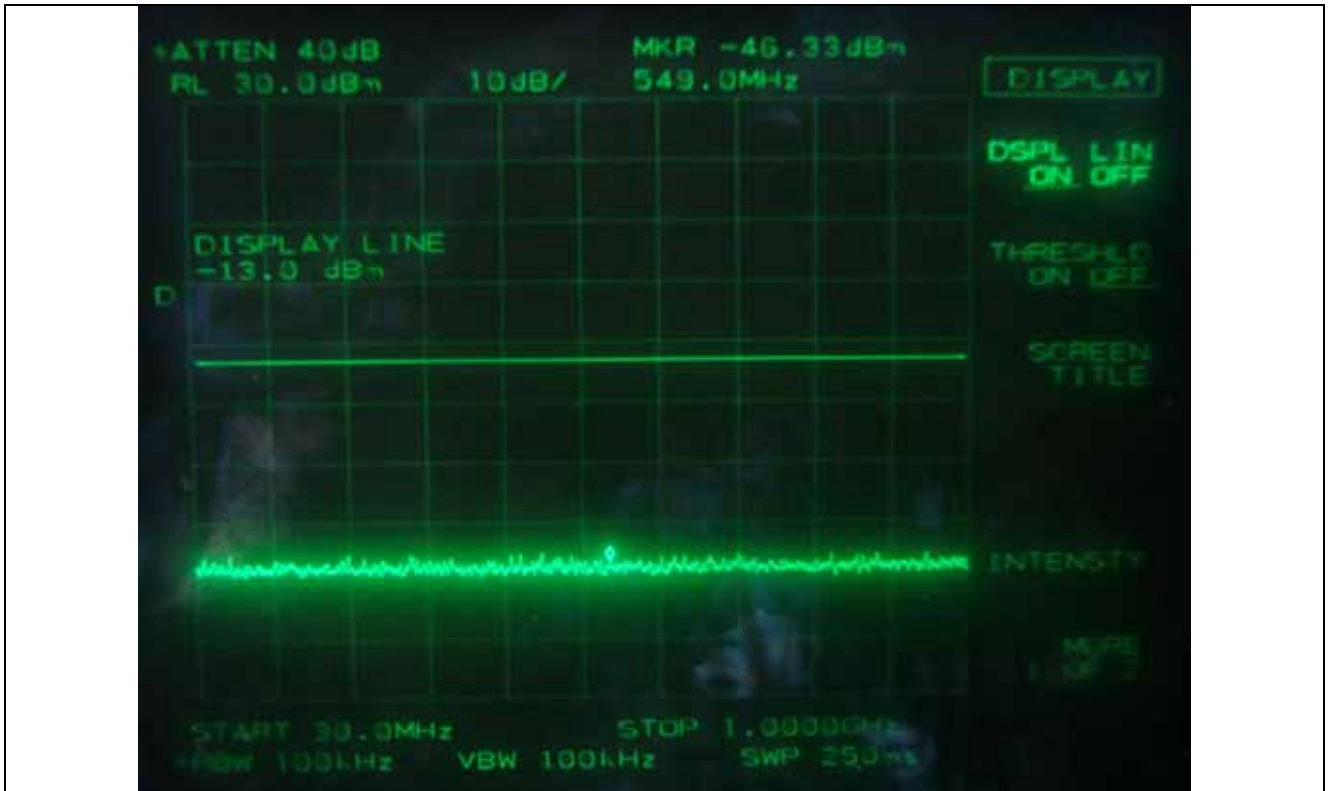
1xEVDO - Low Channel



1xEVDO – Middle Channel



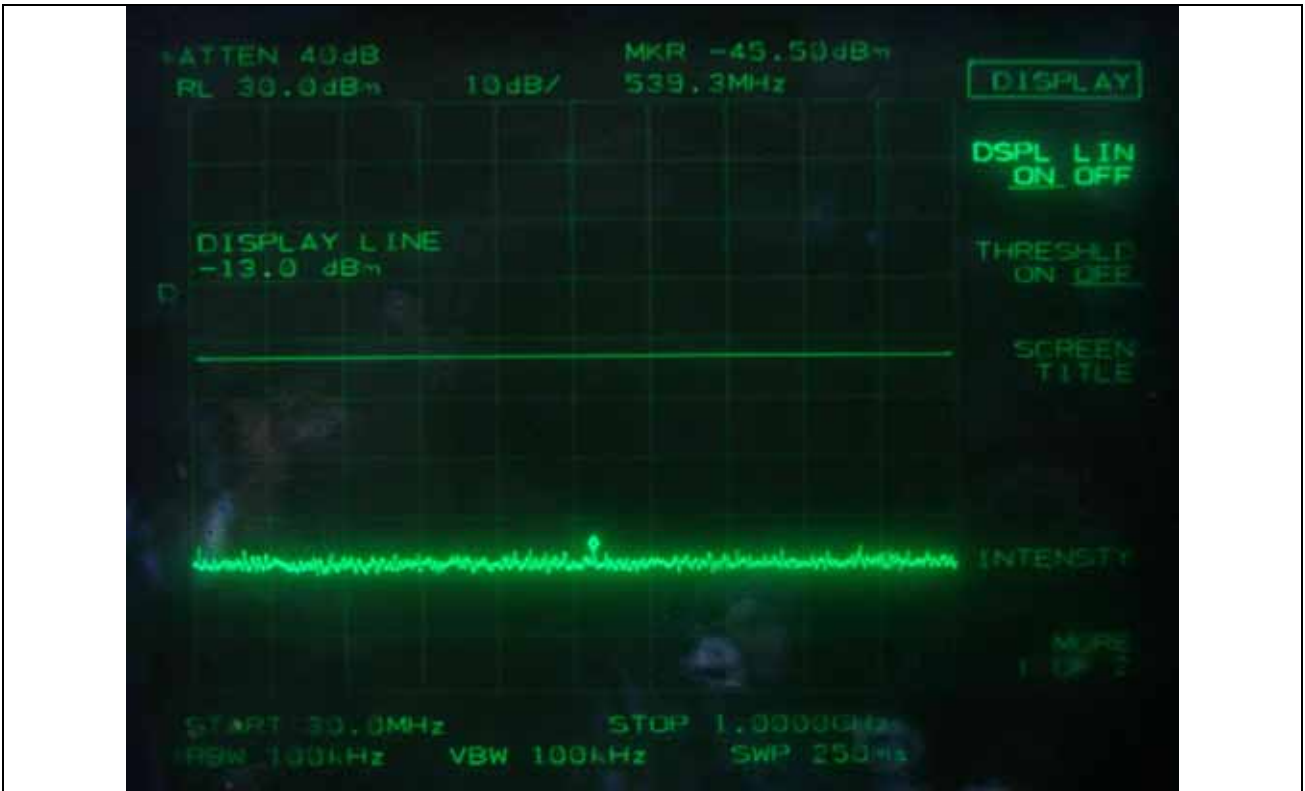
1xEVDO – Middle Channel



1xEVDO – High Channel



1xEVDO – High Channel



WCDMA - Low Channel



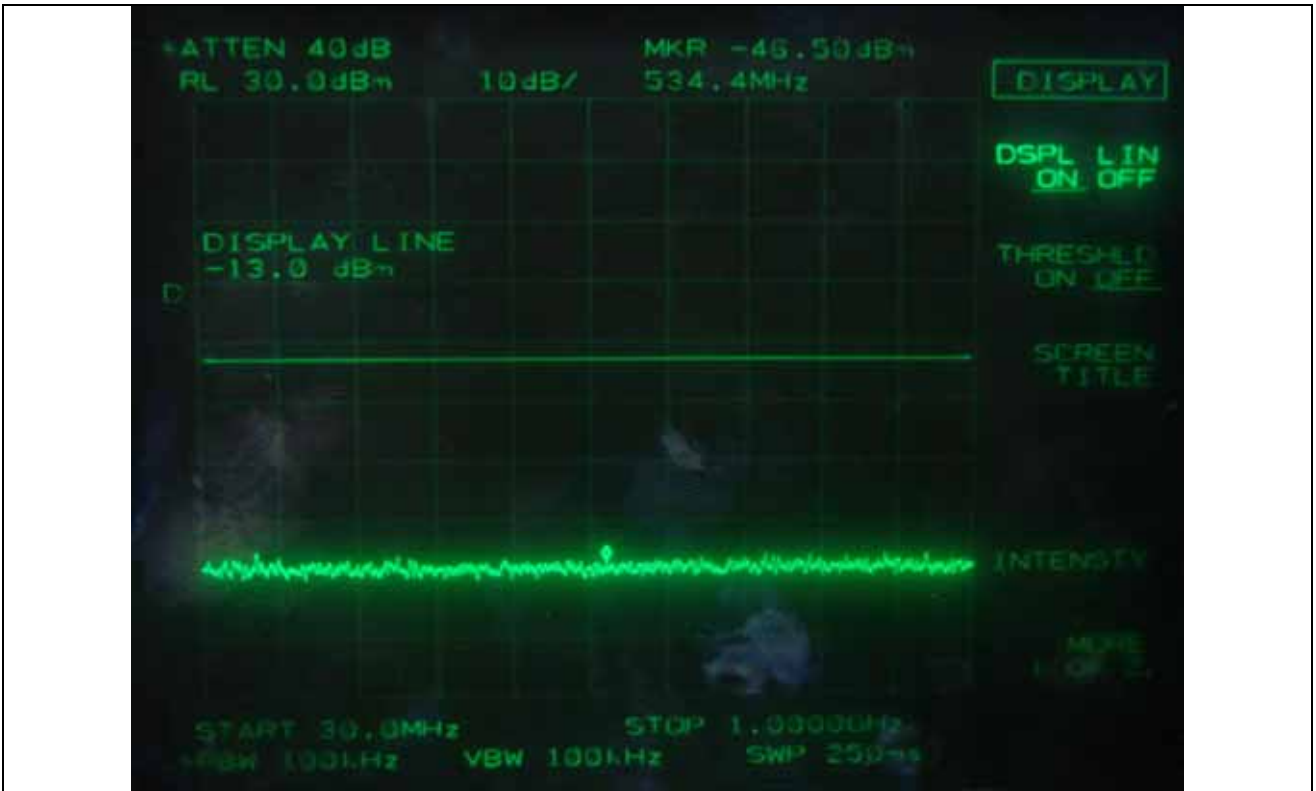
WCDMA - Low Channel



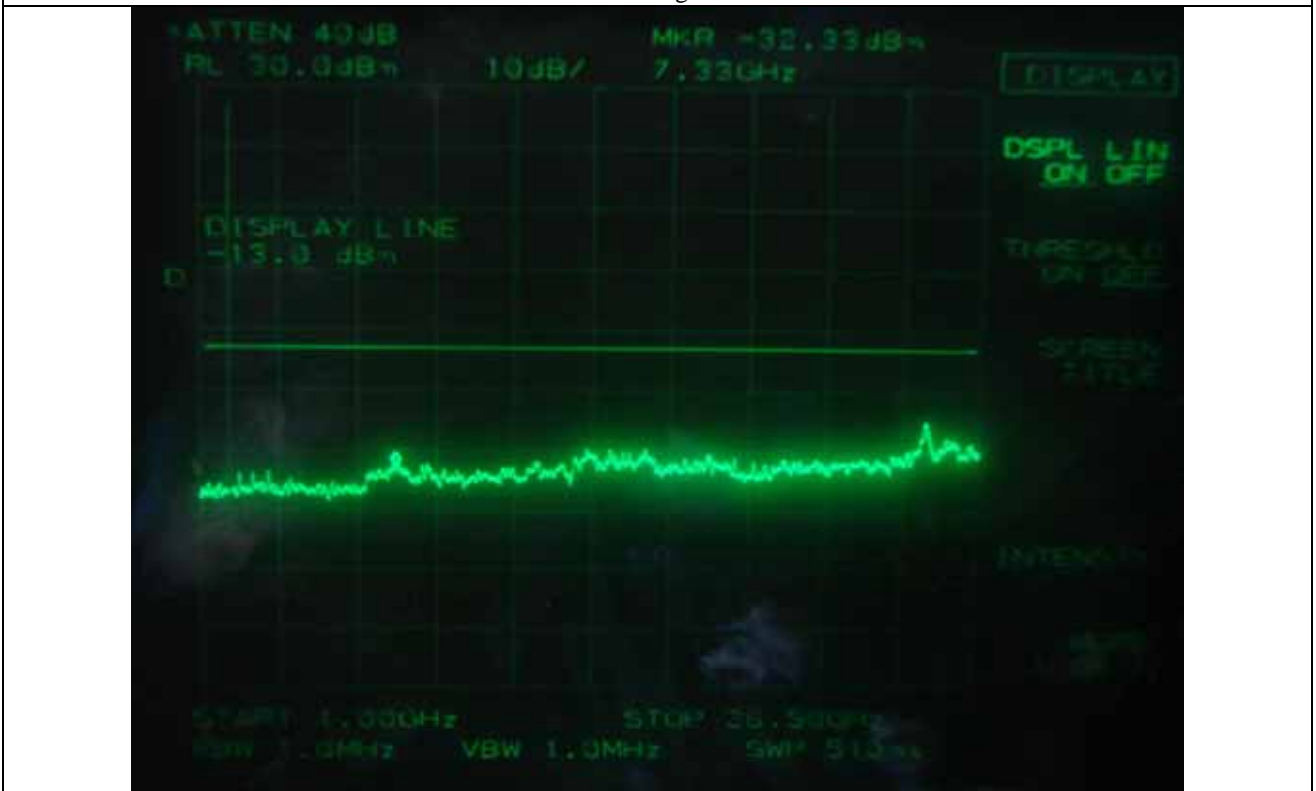
WCDMA – Middle Channel



WCDMA – Middle Channel



WCDMA – High Channel



WCDMA – High Channel

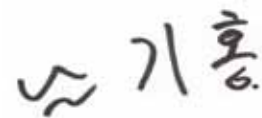
7.3.3 Test Result Part 27 C (700LTE)

7.3.3.1 Test Result for §27.53 (c)(1)

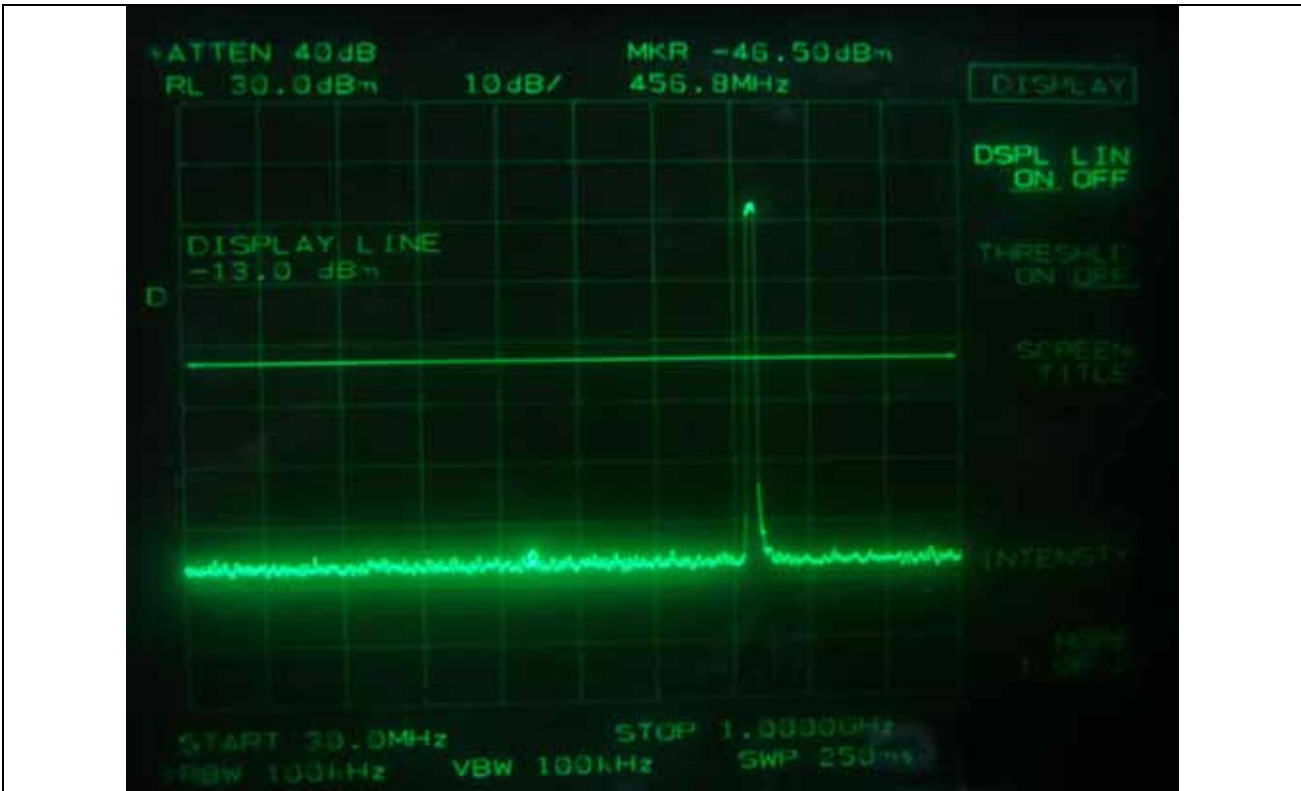
- . Test Date : April 11 ~ 12, 2011
- . Temperature : 24 °C
- . Relative humidity : 50 % R.H.
- . Frequency range : 30 MHz ~ 15 GHz
- . Result : PASSED BY -15.67 dB at 16QAM Mode

Channel	Modulation	Measured Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Low	QPSK	456.800	-46.50	0.50	-46.00	-13.00	-33.00
		7 440.000	-32.50	3.33	-29.17		-16.17
	16QAM	464.900	-47.00	0.50	-46.50		-33.50
		7 580.000	-32.83	3.33	-29.50		-16.50
	64QAM	476.200	-46.50	0.50	-46.00		-33.00
		7 490.000	-32.83	3.33	-29.50		-16.50
Middle	QPSK	479.400	-45.83	0.50	-45.33	-13.00	-32.33
		7 580.000	-32.50	3.33	-29.17		-16.17
	16QAM	474.600	-47.00	0.50	-46.50		-33.50
		7 490.000	-32.00	3.33	-28.67		-15.67
	64QAM	481.100	-46.83	0.50	-46.33		-33.33
		7 320.000	-32.67	3.33	-29.34		-16.34
High	QPSK	463.300	-47.00	0.50	-46.50	-13.00	-33.50
		7 440.000	-32.17	3.33	-28.84		-15.84
	16QAM	474.600	-46.67	0.50	-46.17		-33.17
		7 440.000	-32.33	3.33	-29.00		-16.00
	64QAM	468.100	-45.83	0.50	-45.33		-32.33
		7 490.000	-32.83	3.33	-29.50		-16.50
Other frequencies up to 15 GHz have margin more than 20 dB.							

From CFR 27.53(c)(1): On any frequency outside the 746 MHz ~ 758 MHz band, the power of any emission shall be attenuated out side the band below the transmitter power (P) by at least $43 + 10\log(P)$ dB, resulting in a limit of -13 dBm.



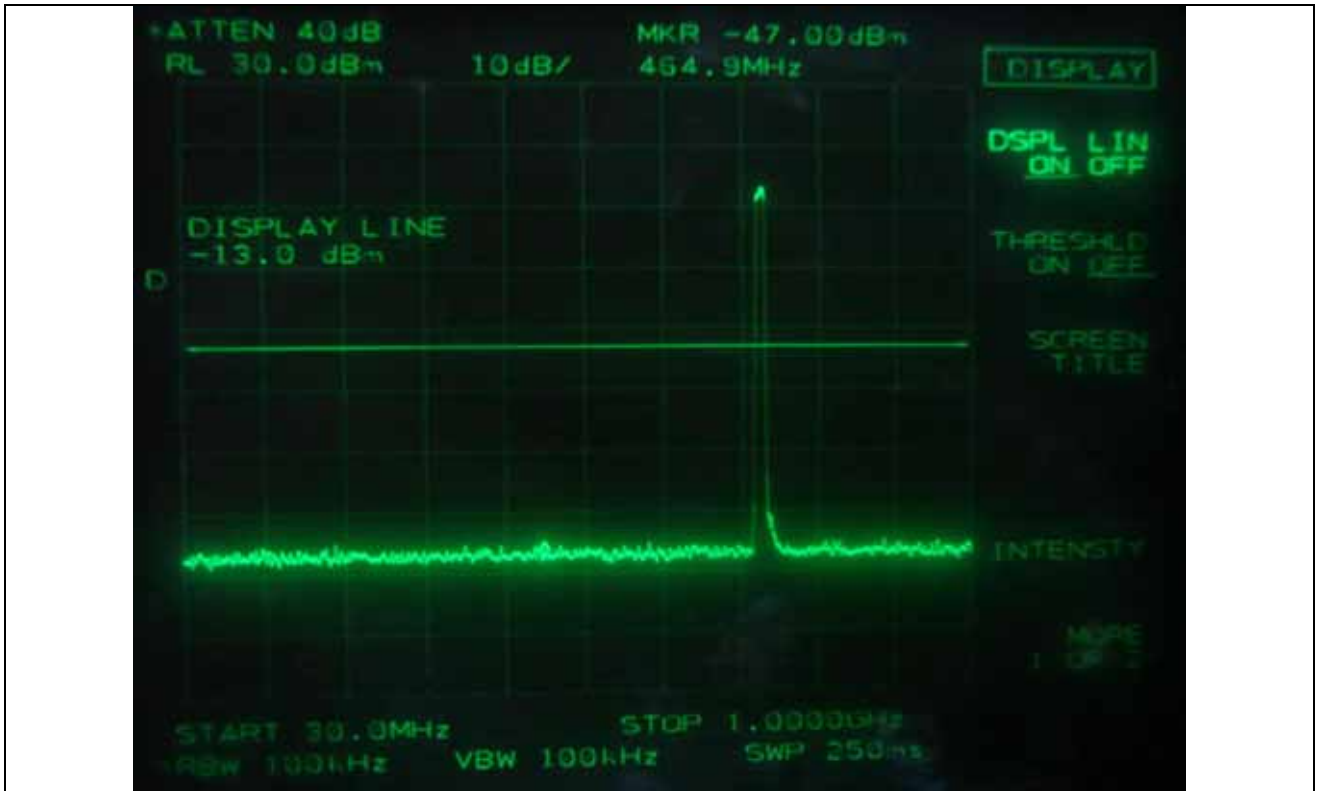
Tested by: Ki-Hong, Nam / Senior Engineer



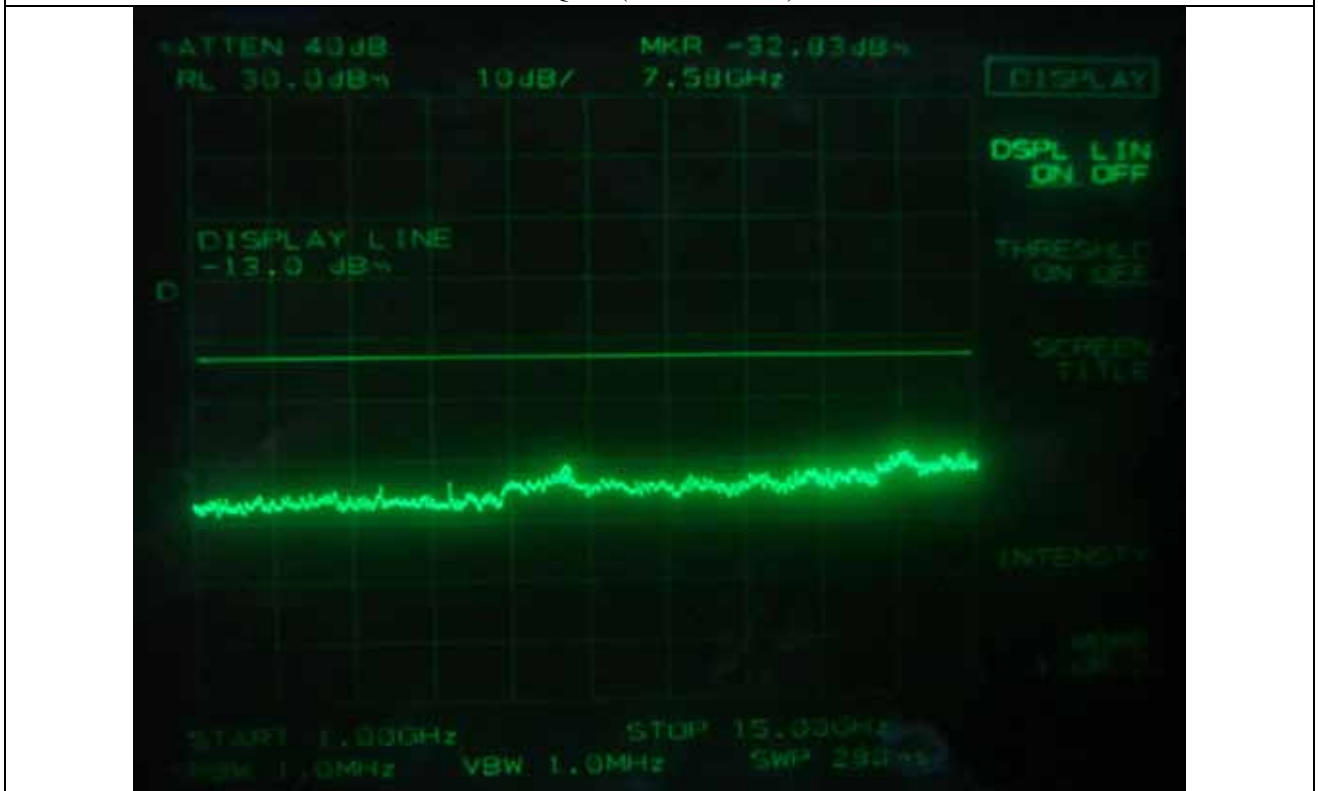
QPSK (Low channel 1)



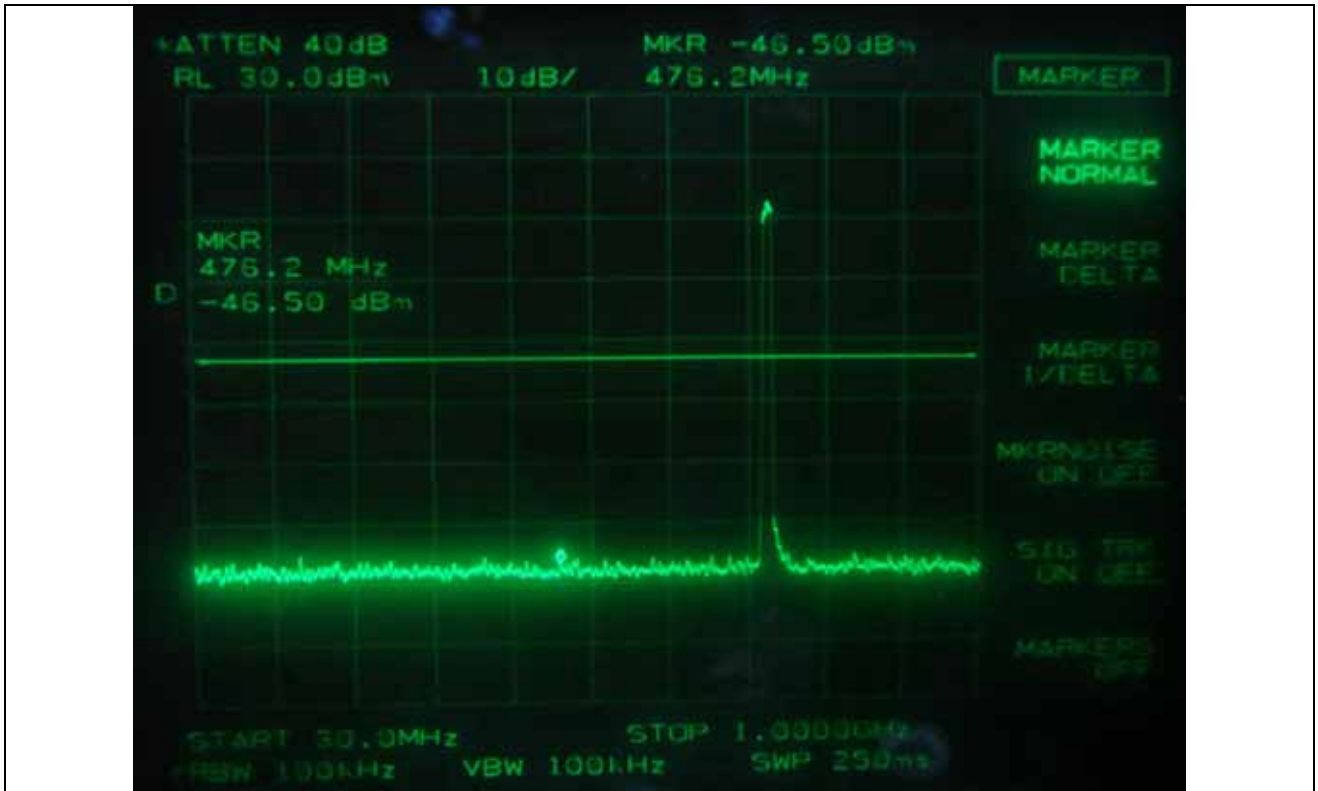
QPSK (Low channel 2)



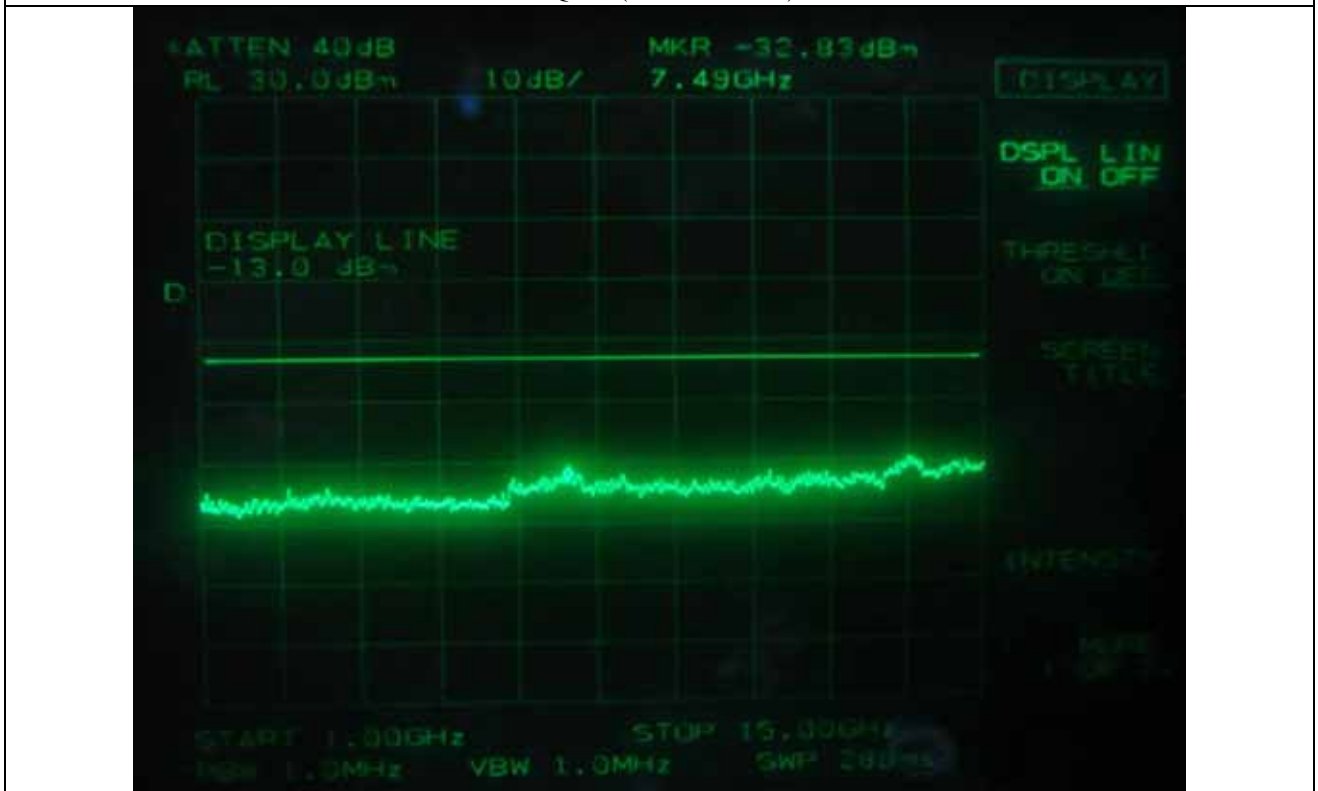
16QAM (Low channel 1)



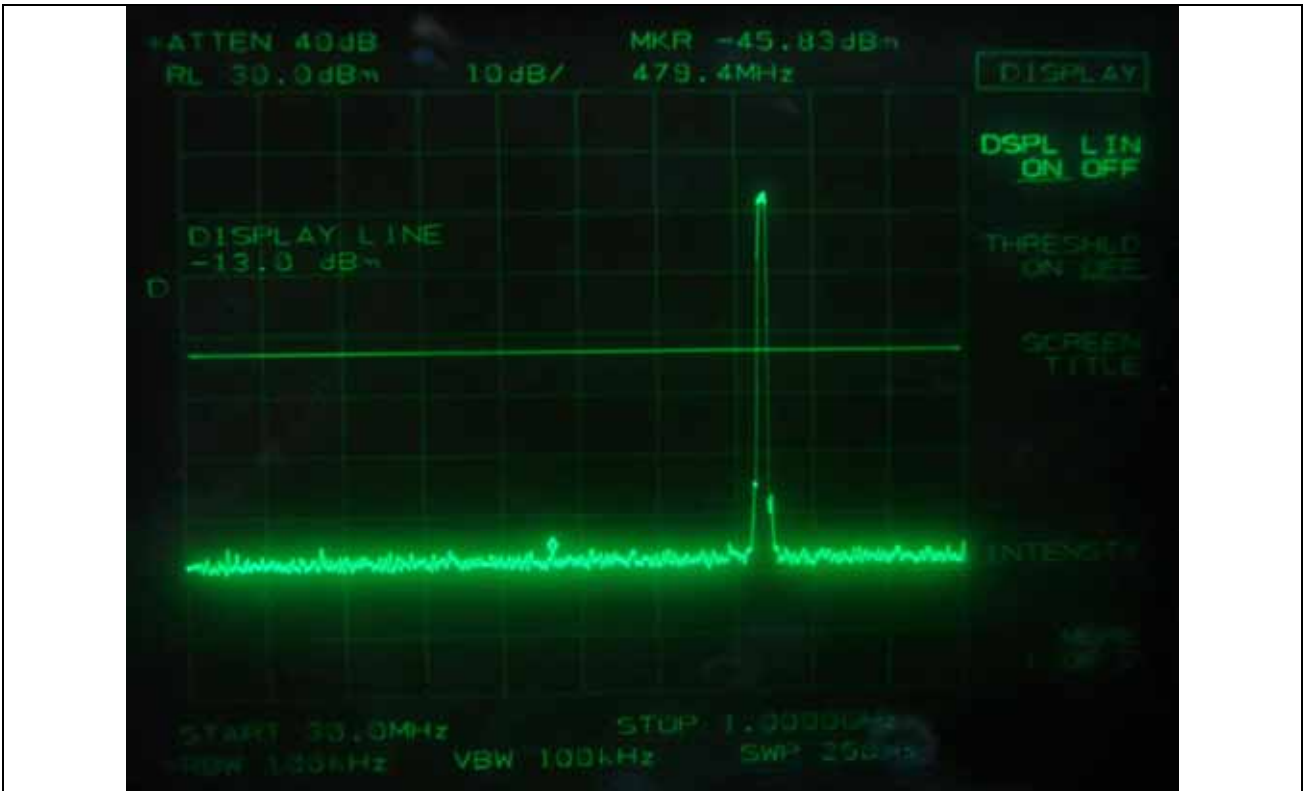
16QAM (Low channel 2)



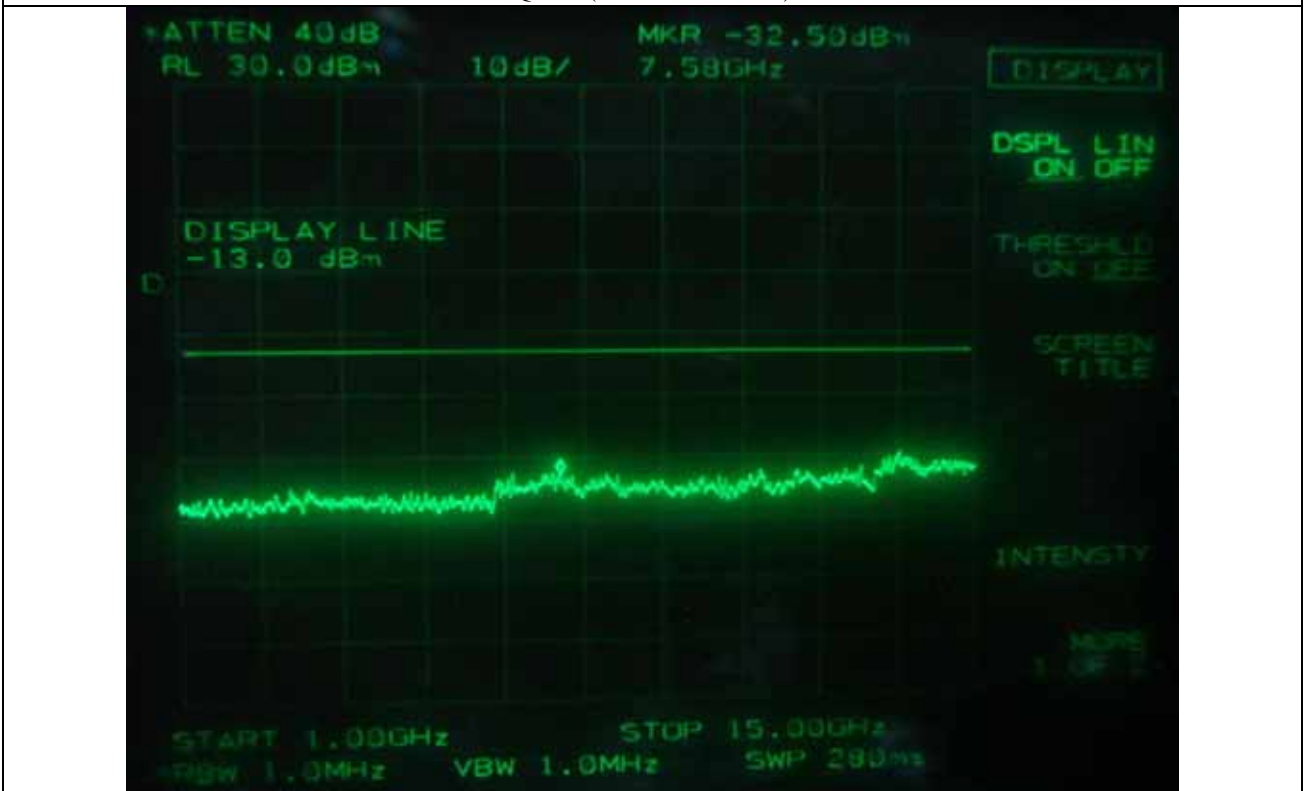
64QAM (Low channel 1)



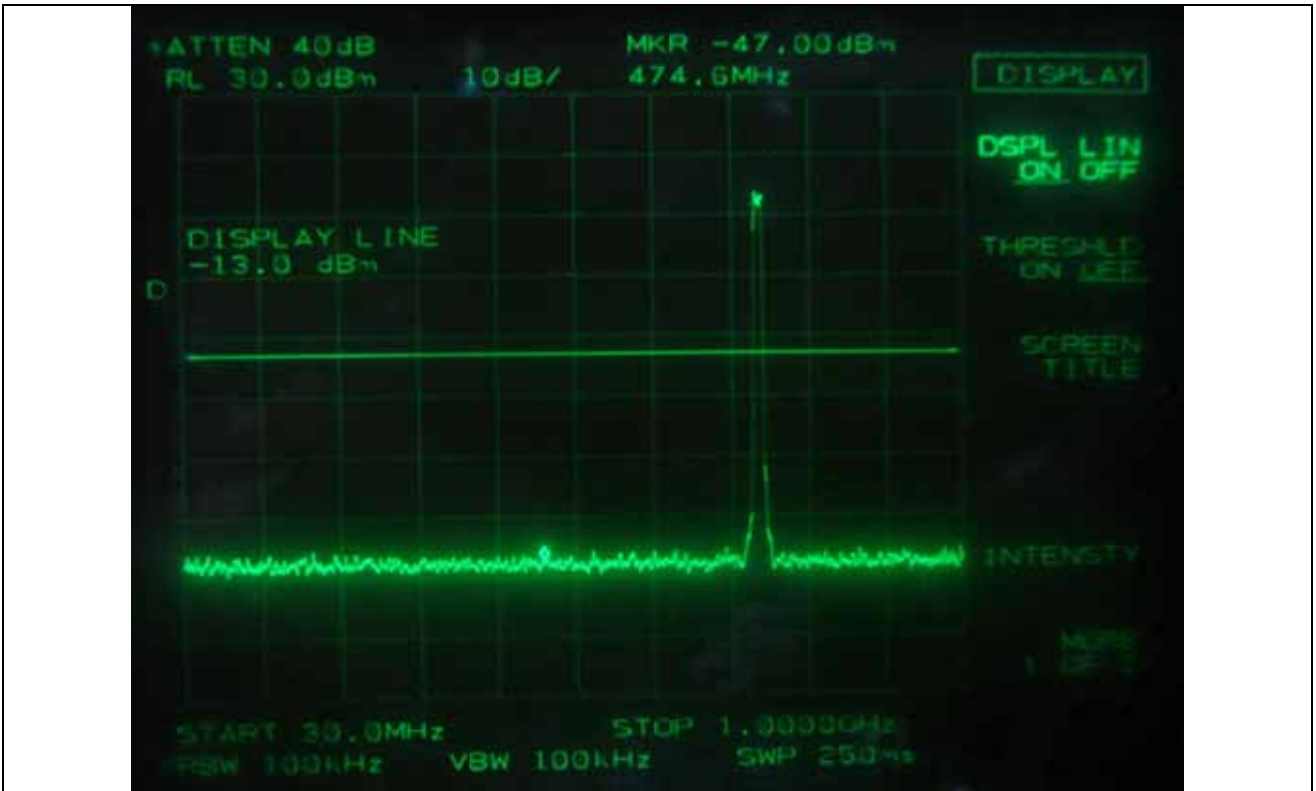
64QAM (Low channel 2)



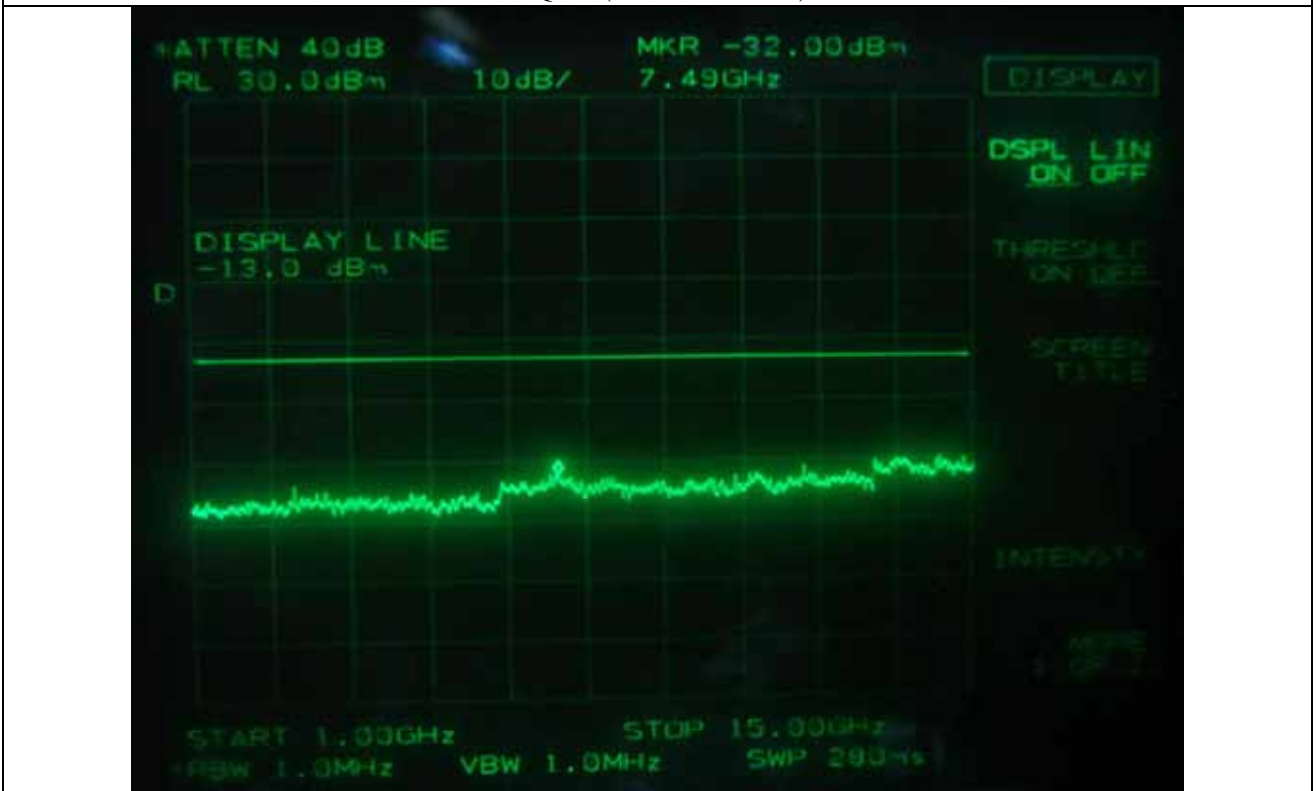
QPSK (Middle channel 1)



QPSK (Middle channel 2)



16QAM (Middle channel 1)



16QAM (Middle channel 2)