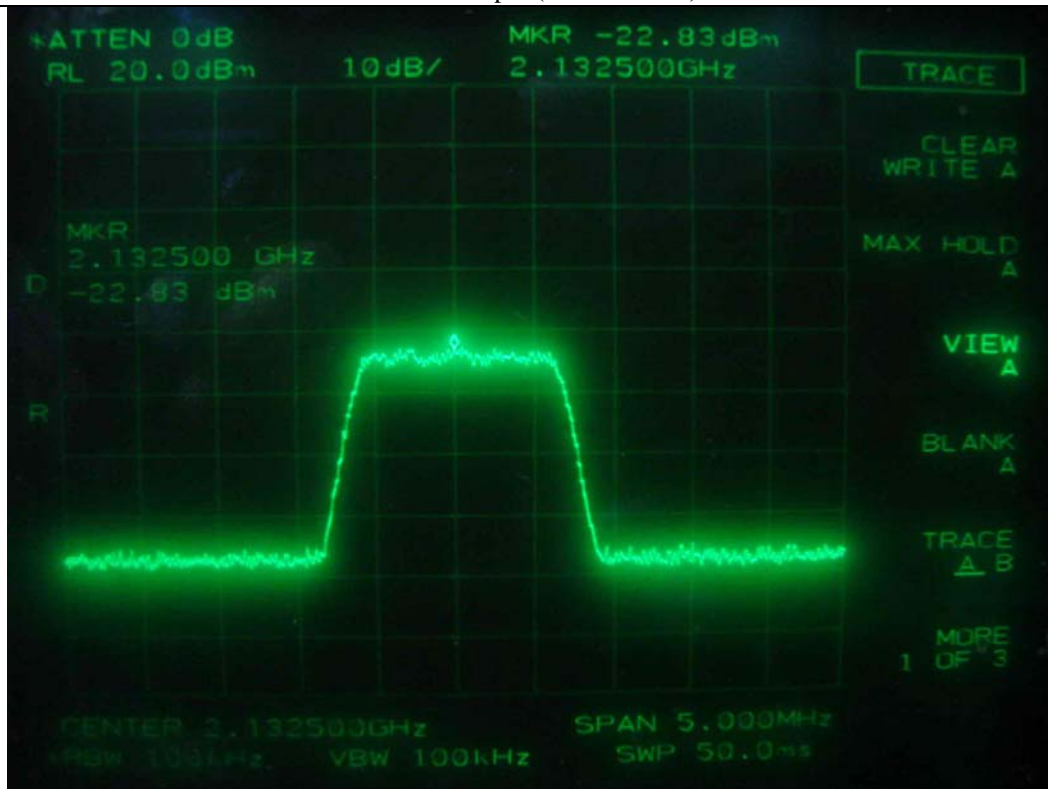
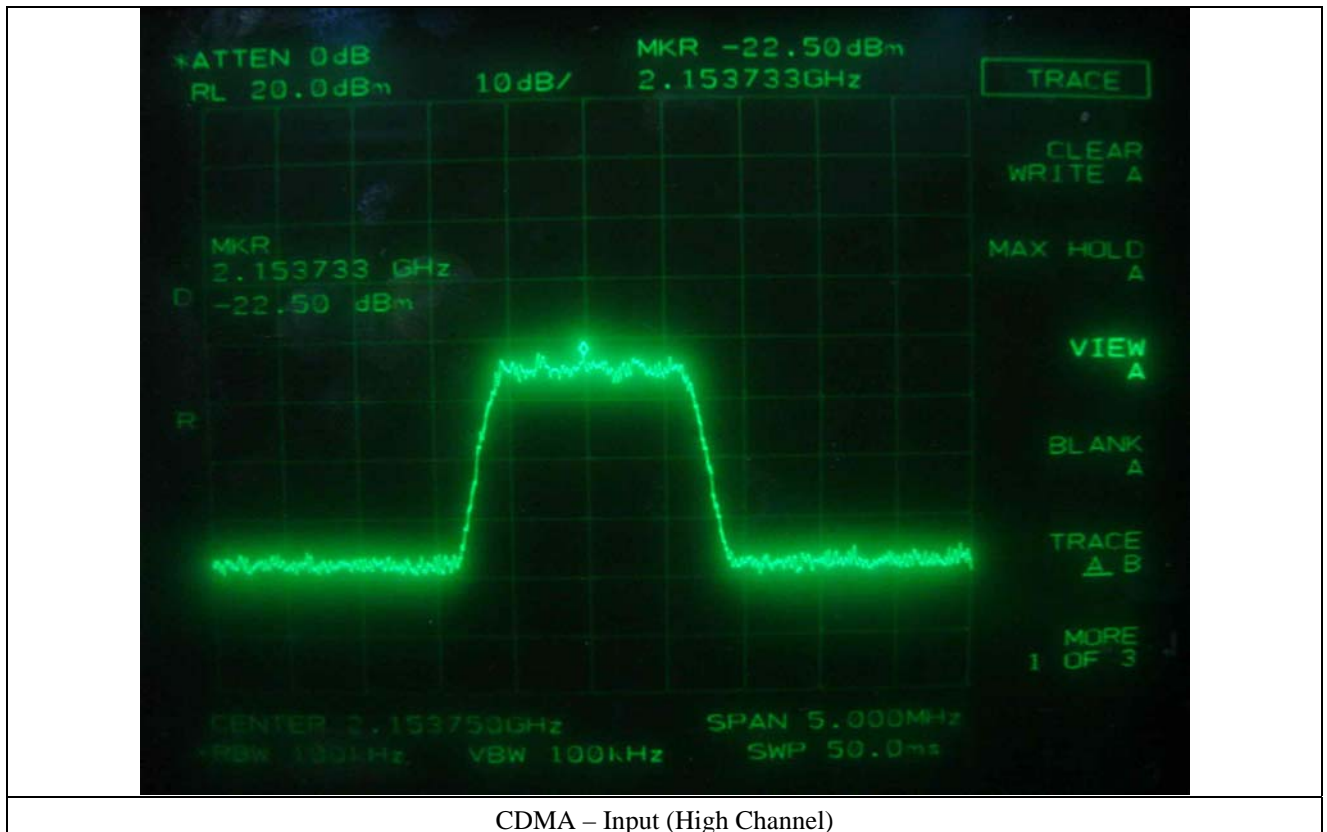
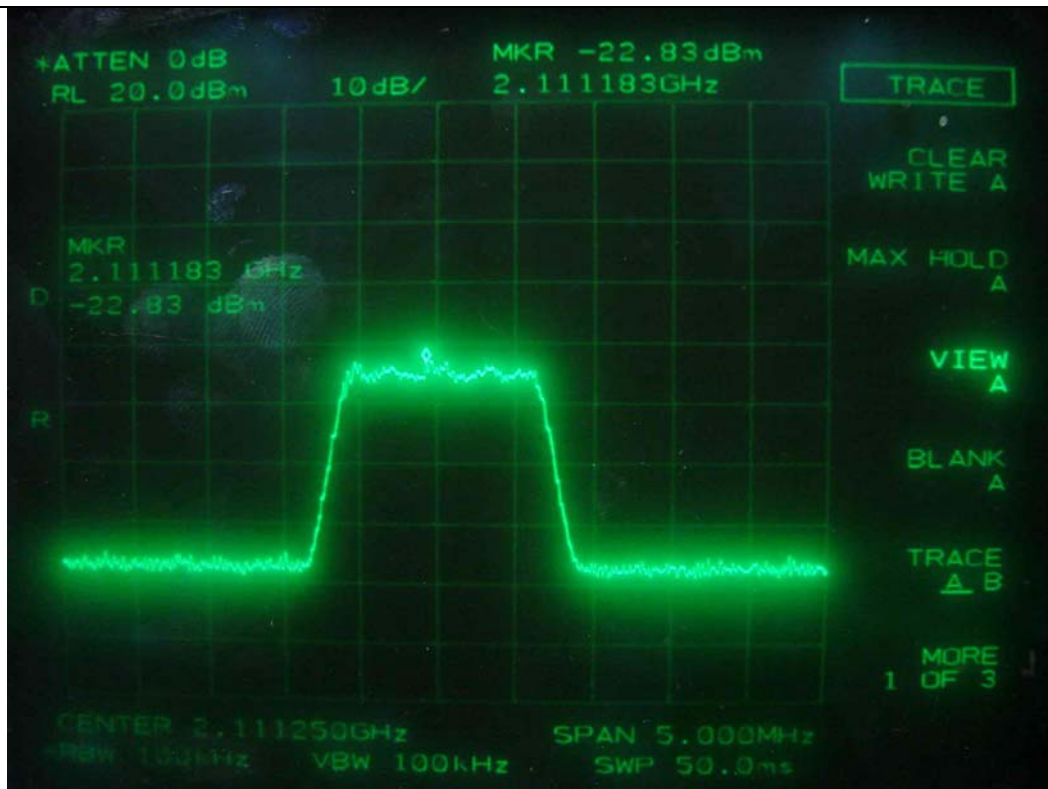


CDMA – Input (Low Channel)

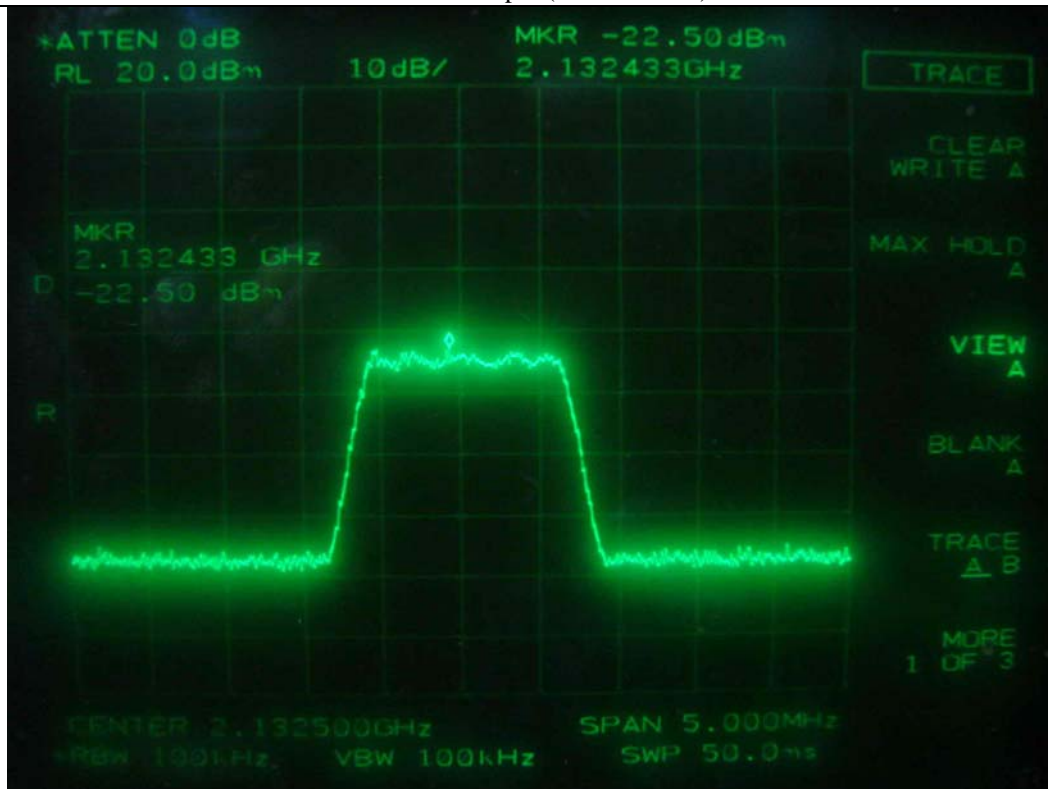


CDMA – Input (Middle Channel)

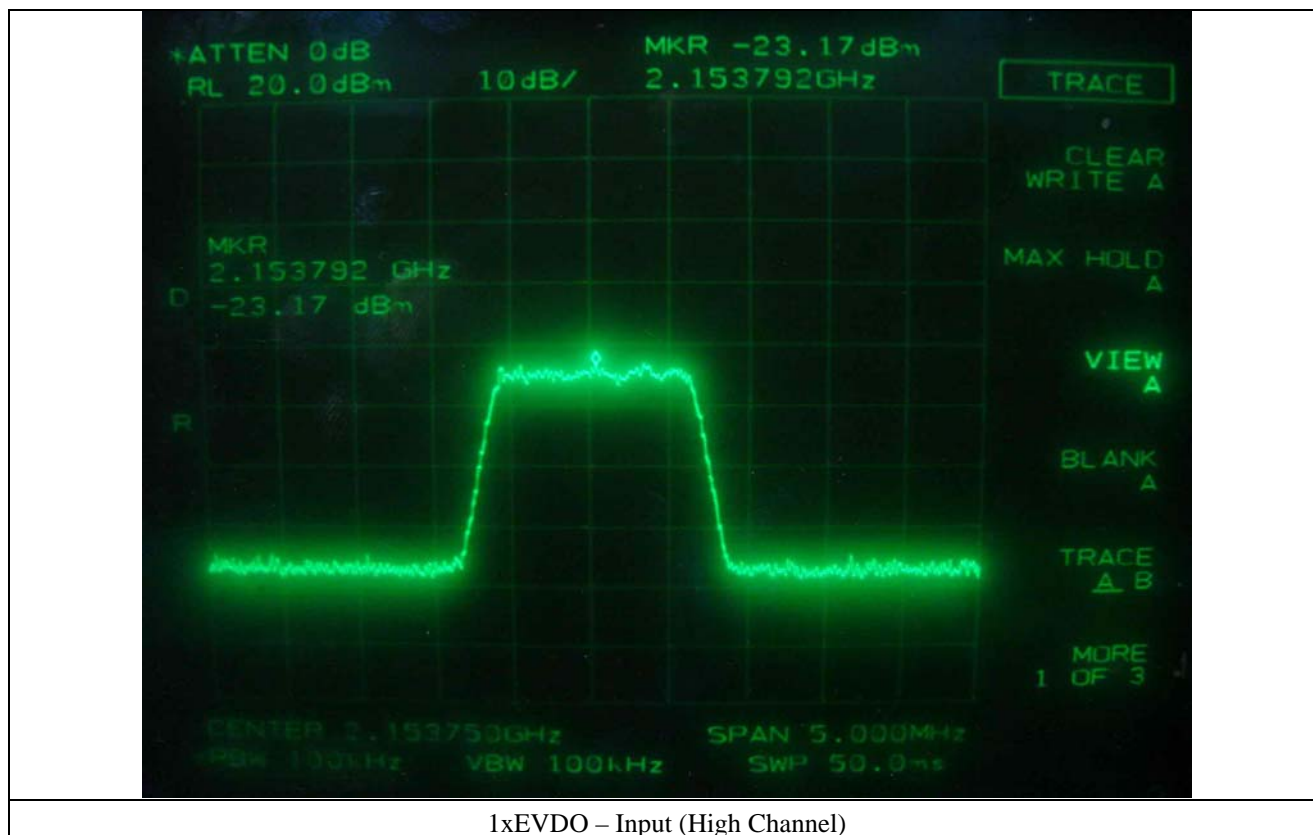




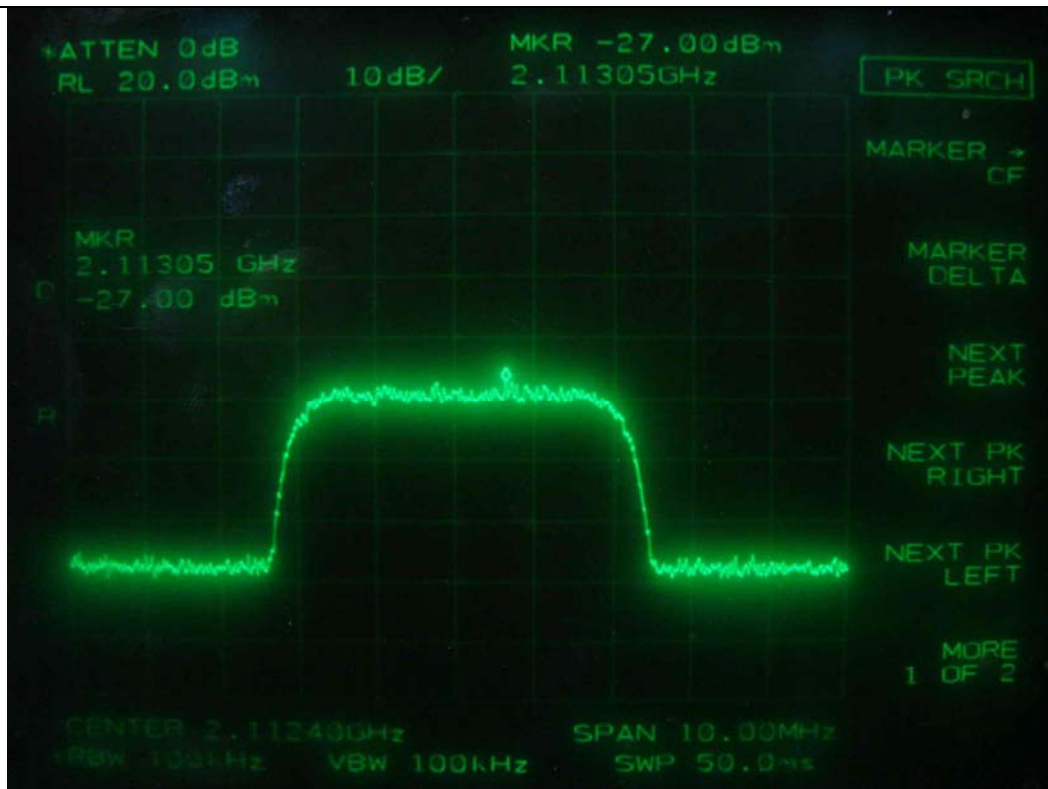
1xEVDO – Input (Low Channel)



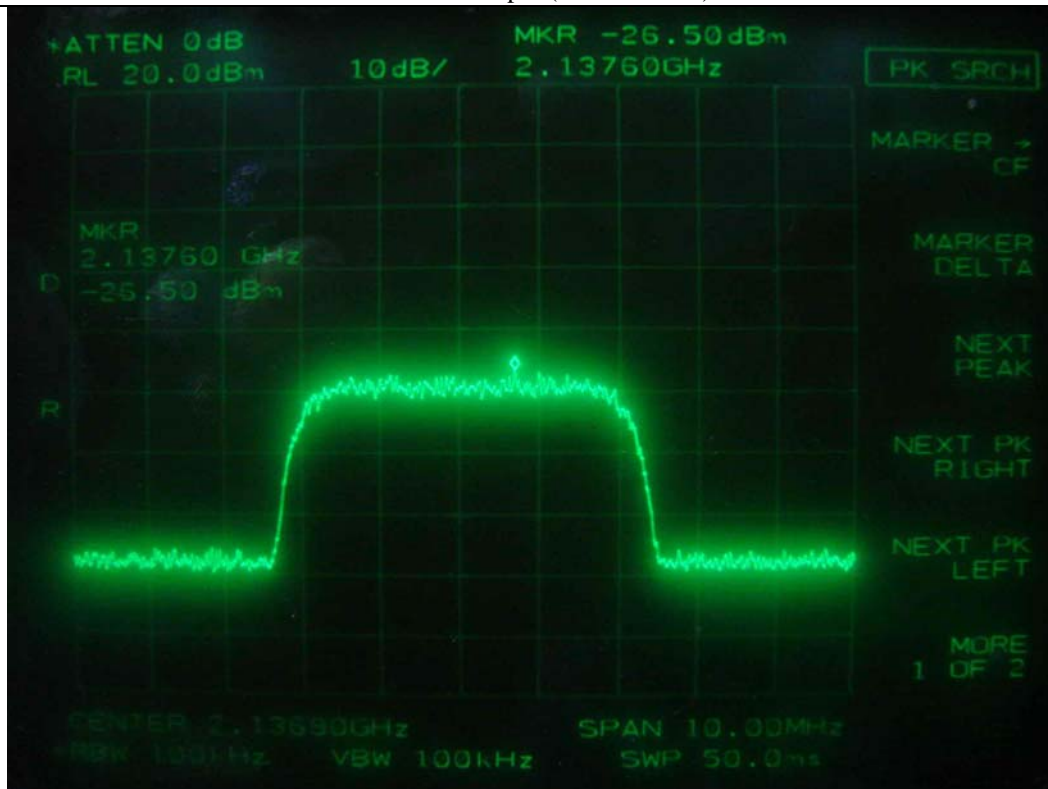
1xEVDO – Input (Middle Channel)



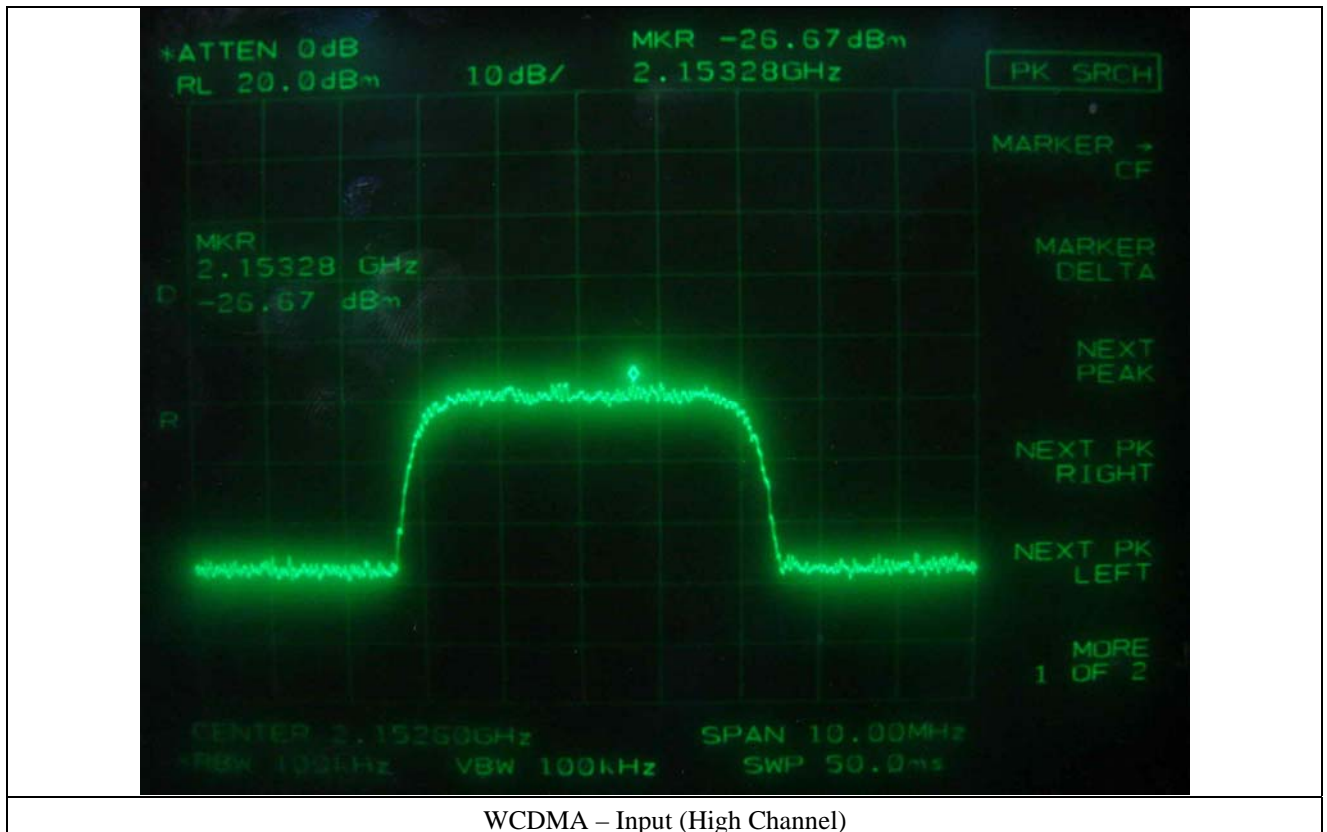




WCDMA – Input (Low Channel)



WCDMA – Input (Middle Channel)



## 7. SPURIOUS EMISSION AT ANTENNA TERMINAL

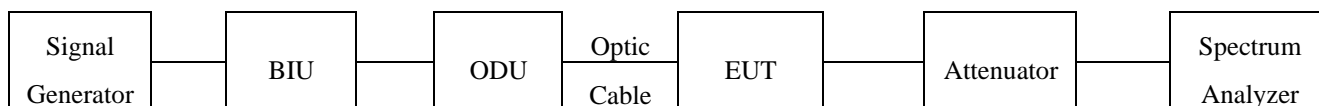
### 7.1 Operating environment

Temperature : 21.8 °C  
Relative humidity : 47 %R.H.

### 7.2 Test set-up for conducted measurement

The RF signal from the signal generator(s) was injected to BIU (BTS Interface Unit) and then output signal from the BIU was injected to the input of ODU (Optic Distribution Unit) by coaxial cable and then the output port of the ODU was connected to the input of the EUT by optic cable. The amplified RF signal at the output of the EUT was connected to the 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.



### 7.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	8564E	HP	Spectrum Analyzer	3650A00756	June 16, 2008
■ -	E4432B	HP	Signal Generator	US38440950	June 16, 2008
■ -	SMJ100A	R/S	Vecter Signal Generator	100698	June 16, 2008
□ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 11, 2008

All test equipment used is calibrated on a regular basis.

## 7.4 Test data

### 7.4.1 Test Result for Part 24E

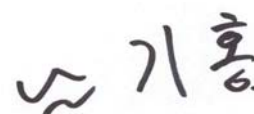
- . Test Date : February 25~26, 2009  
-. Frequency range : 30 MHz ~ 20 GHz  
-. Result : PASSED BY -13.83 dB at low channel of GSM Mode

Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
TDMA	Low	867.40	-37.50	0.50	-37.00	-13.00	-24.00
		2 110.00	-29.17	0.84	-28.33		-15.33
	Middle	867.40	-36.67	0.50	-36.17		-23.17
		2 110.00	-27.83	0.84	-26.99		-13.99
	High	862.60	-37.67	0.50	-37.17		-24.17
		2 110.00	-28.83	0.84	-27.99		-14.99
GSM	Low	882.00	-37.50	0.50	-37.00	-13.00	-24.00
		2 110.00	-27.67	0.84	-26.83		-13.83
	Middle	867.40	-36.83	0.50	-36.33		-23.33
		2 110.00	-29.83	0.84	-28.99		-15.99
	High	867.40	-37.50	0.50	-37.00		-24.00
		2 110.00	-28.83	0.84	-27.99		-14.99
EDGE	Low	865.80	-37.50	0.50	-37.00	-13.00	-24.00
		2 110.00	-28.50	0.84	-27.66		-14.66
	Middle	870.70	-37.17	0.50	-36.67		-23.67
		2 110.00	-28.50	0.84	-27.66		-14.66
	High	867.40	-37.17	0.50	-36.67		-23.67
		2 110.00	-29.17	0.84	-28.33		-15.33
CDMA	Low	867.40	-34.33	0.50	-33.83	-13.00	-20.83
		2 110.00	-28.83	0.84	-27.99		-14.99
	Middle	861.00	-37.17	0.50	-36.67		-23.67
		2 110.00	-28.67	0.84	-27.83		-14.83
	High	864.20	-37.33	0.50	-36.83		-23.83
		2 110.00	-29.50	0.84	-28.66		-15.66

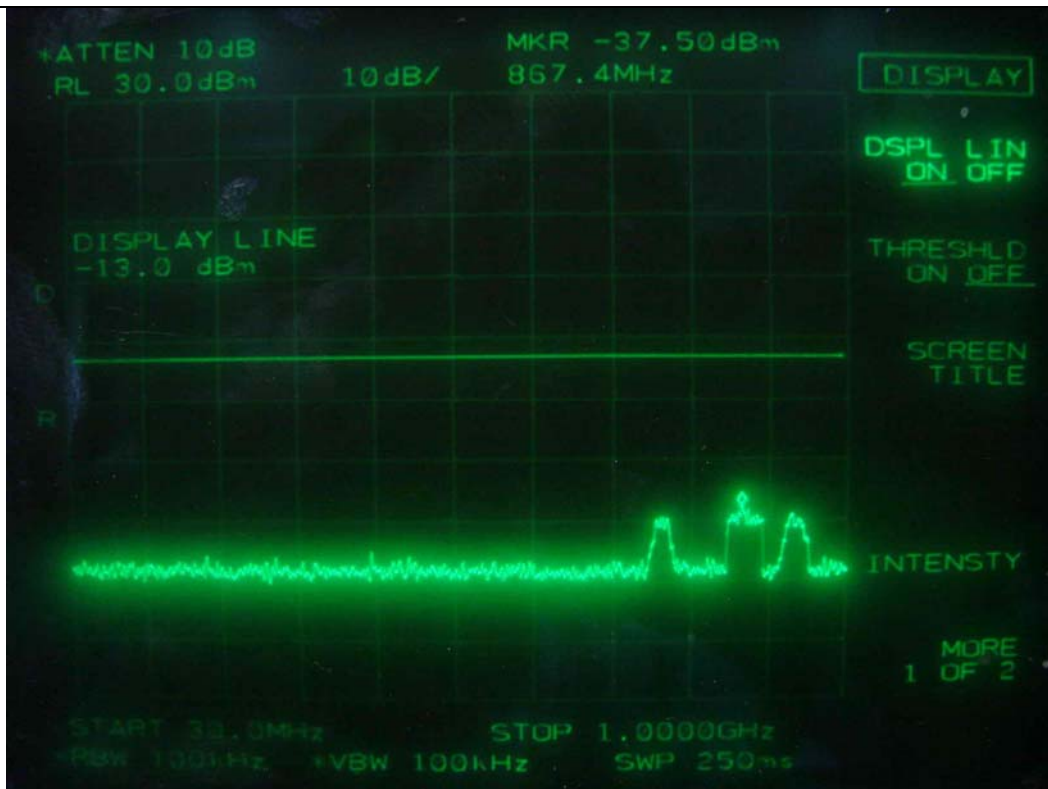


Modulation	Harmonic Frequency (MHz)	Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
1xEVDO	Low	860.00	-37.67	0.50	-37.17	-24.17
		2 110.00	-28.83	0.84	-27.99	-14.99
	Middle	864.20	-37.33	0.50	-36.83	-23.83
		2 110.00	-29.17	0.84	-28.33	-15.33
	High	865.80	-37.70	0.50	-37.20	-24.20
		2 110.00	-27.83	0.84	-26.99	-13.99
WCDMA	Low	873.90	-36.17	0.50	-35.67	-22.67
		2 110.00	-28.83	0.84	-27.99	-14.99
	Middle	883.60	-36.83	0.50	-36.33	-23.33
		2 110.00	-28.67	0.84	-27.83	-14.83
	High	873.90	-37.17	0.50	-36.67	-23.67
		2 110.00	-28.83	0.84	-27.99	-14.99

According to Part 24E, out of band emission shall be attenuated by  $43 + 10 \log (P)$  dBc, equates to -13.0 dBm.



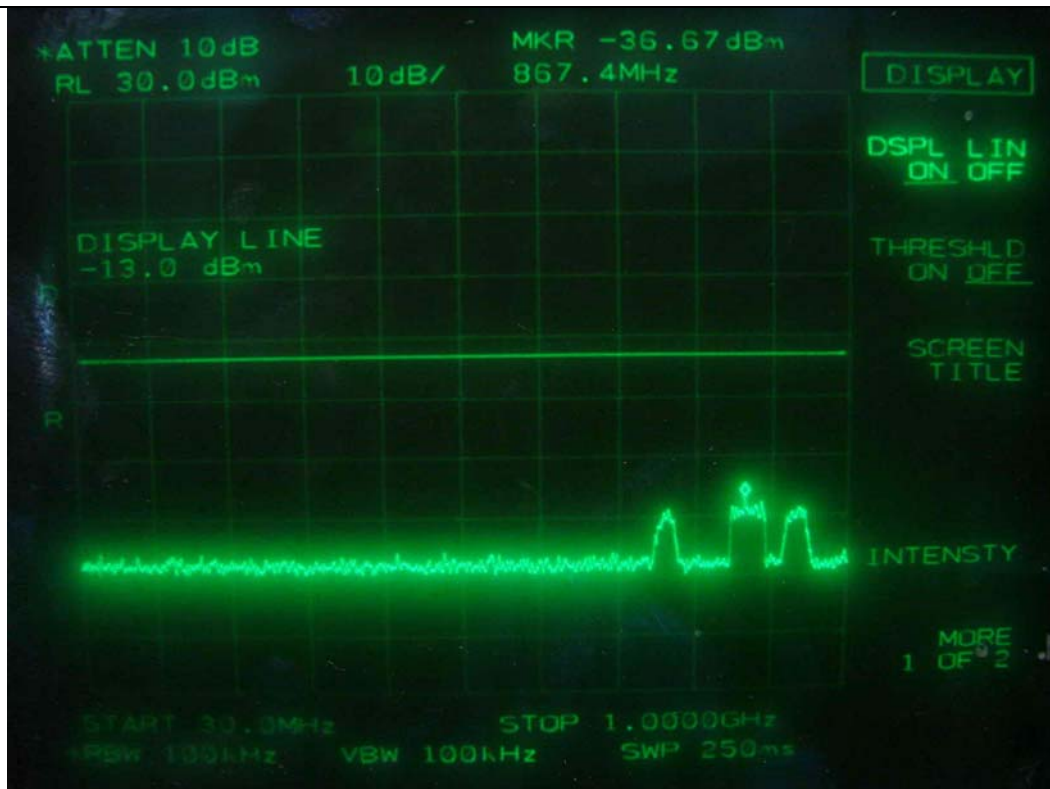
Tested by: Ki-Hong, Nam / Project Engineer



TDMA - Low Channel



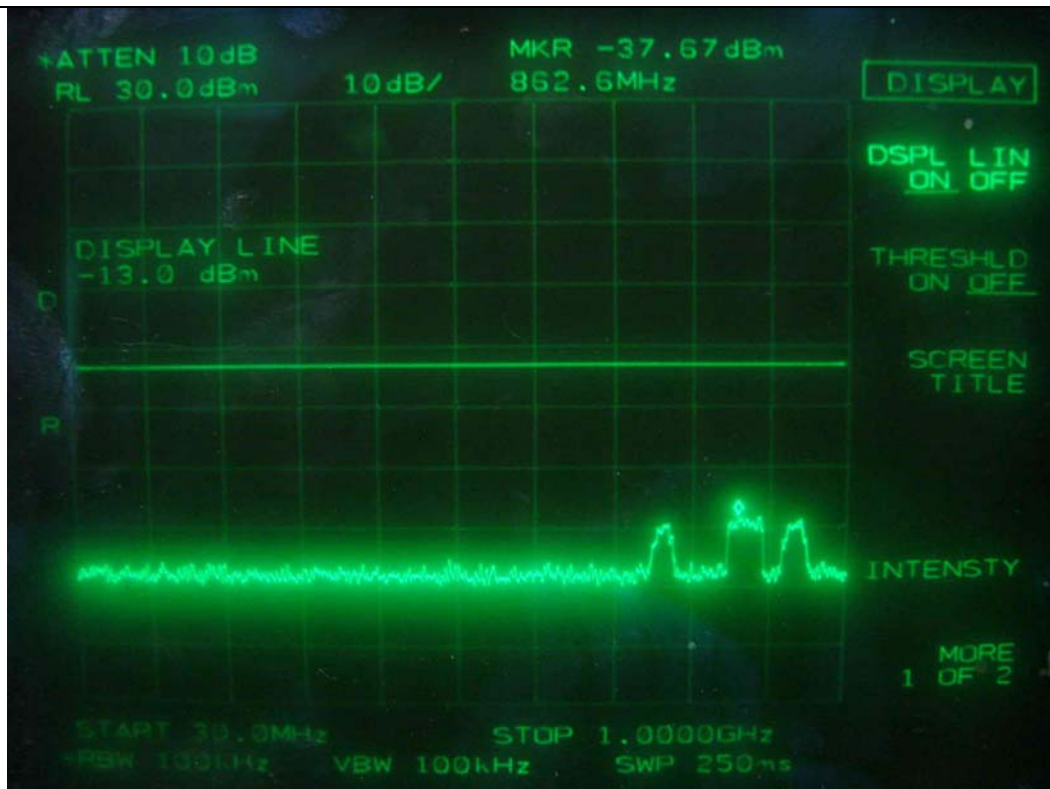
TDMA - Low Channel



TDMA – Middle Channel



TDMA – Middle Channel

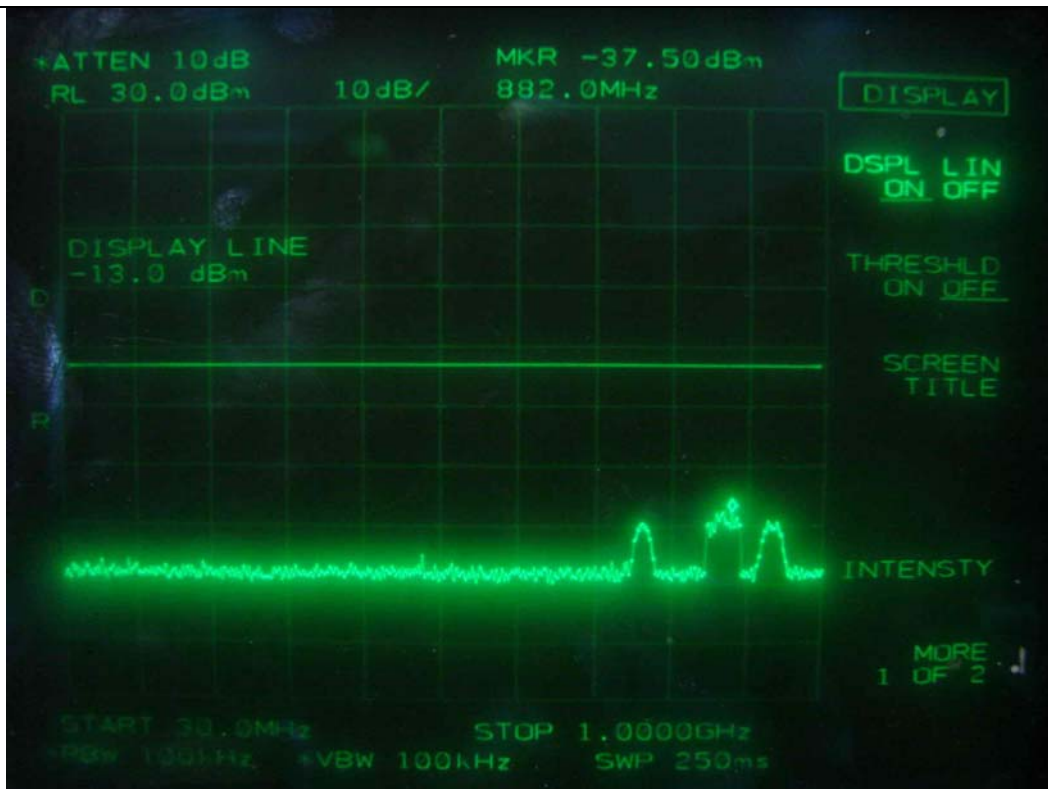


TDMA – High Channel

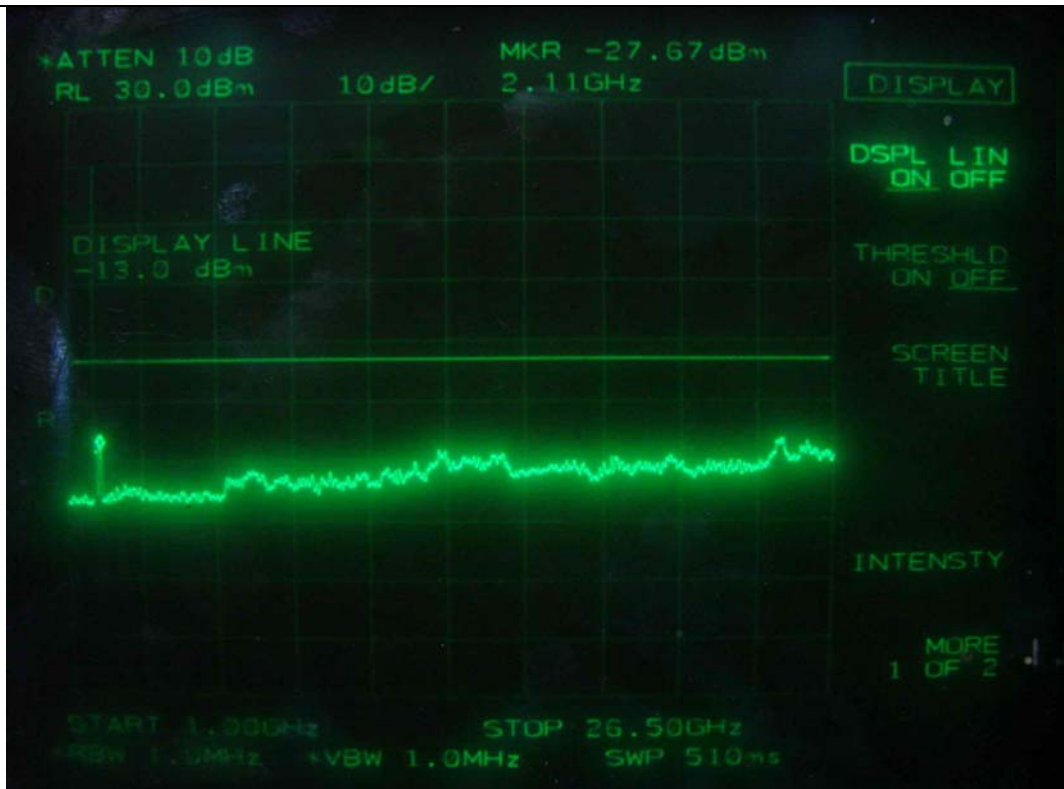


TDMA – High Channel





GSM - Low Channel



GSM - Low Channel





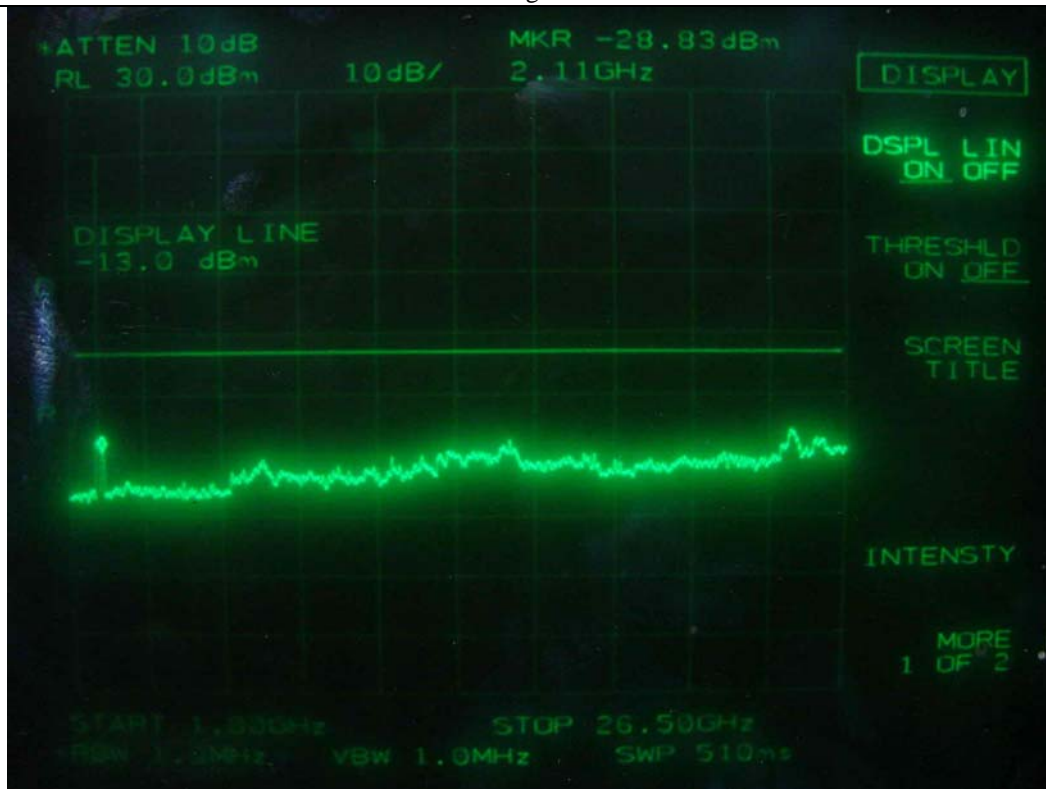
GSM – Middle Channel



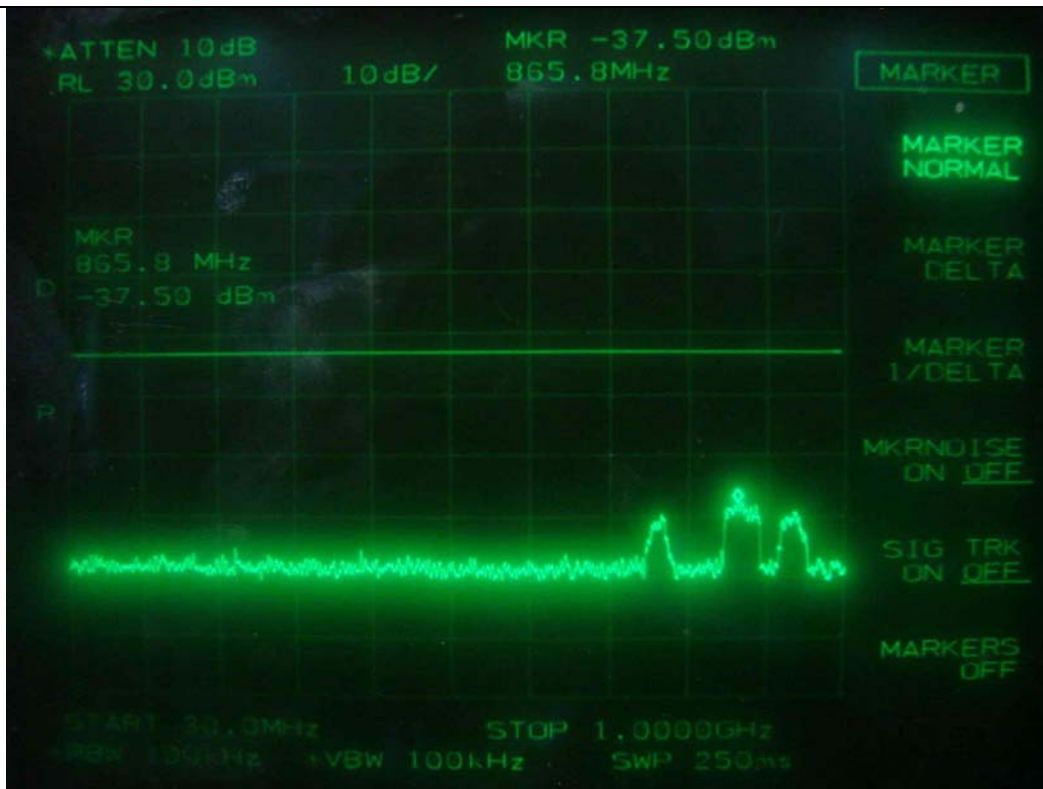
GSM – Middle Channel



GSM – High Channel



GSM – High Channel

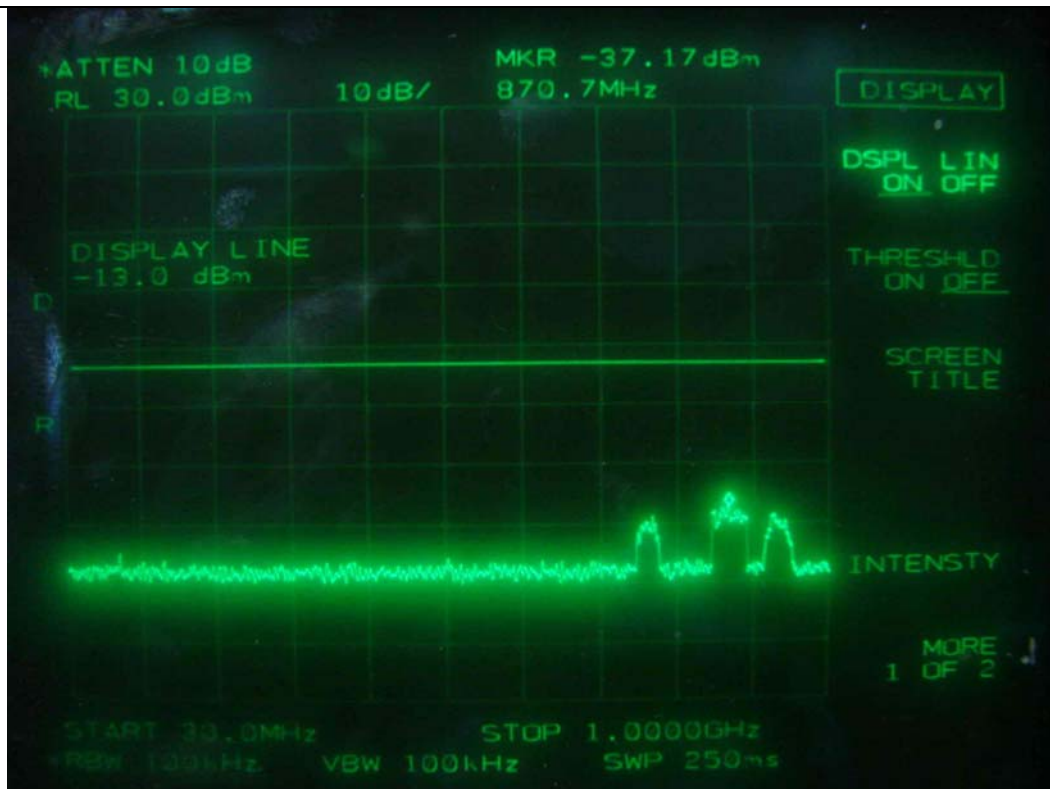


EDGE – Low Channel



EDGE – Low Channel





EDGE – Middle Channel



EDGE – Middle Channel

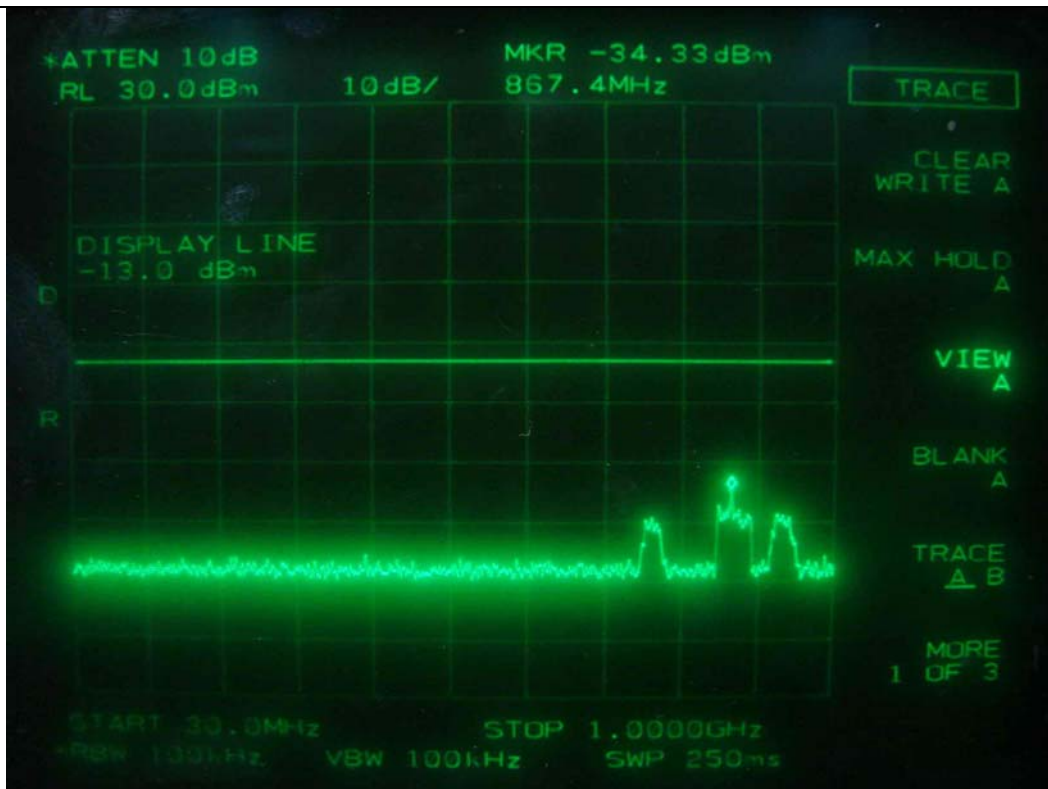


EDGE – High Channel



EDGE – High Channel

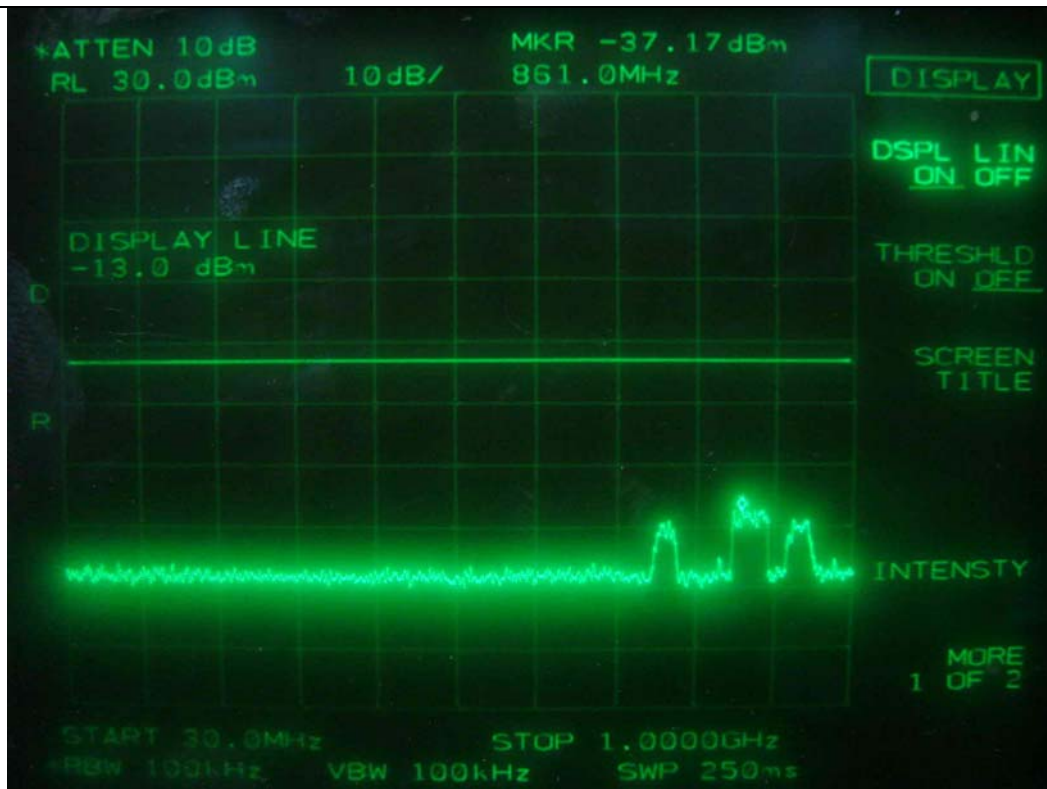




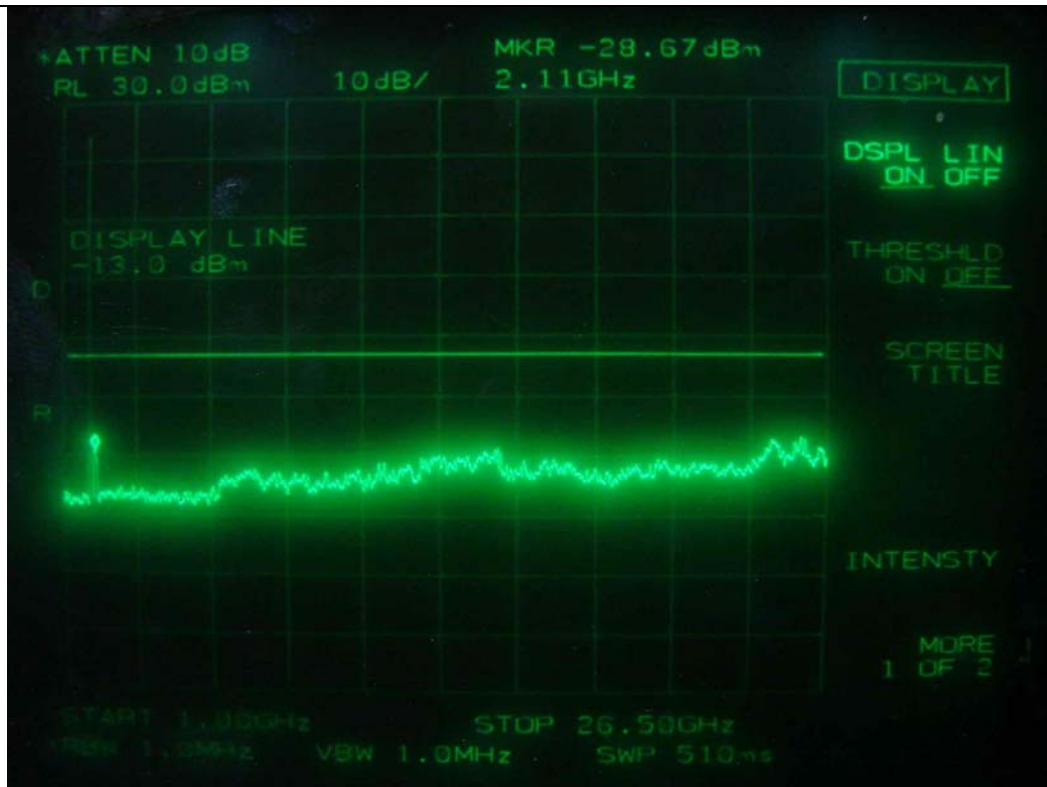
CDMA – Low Channel



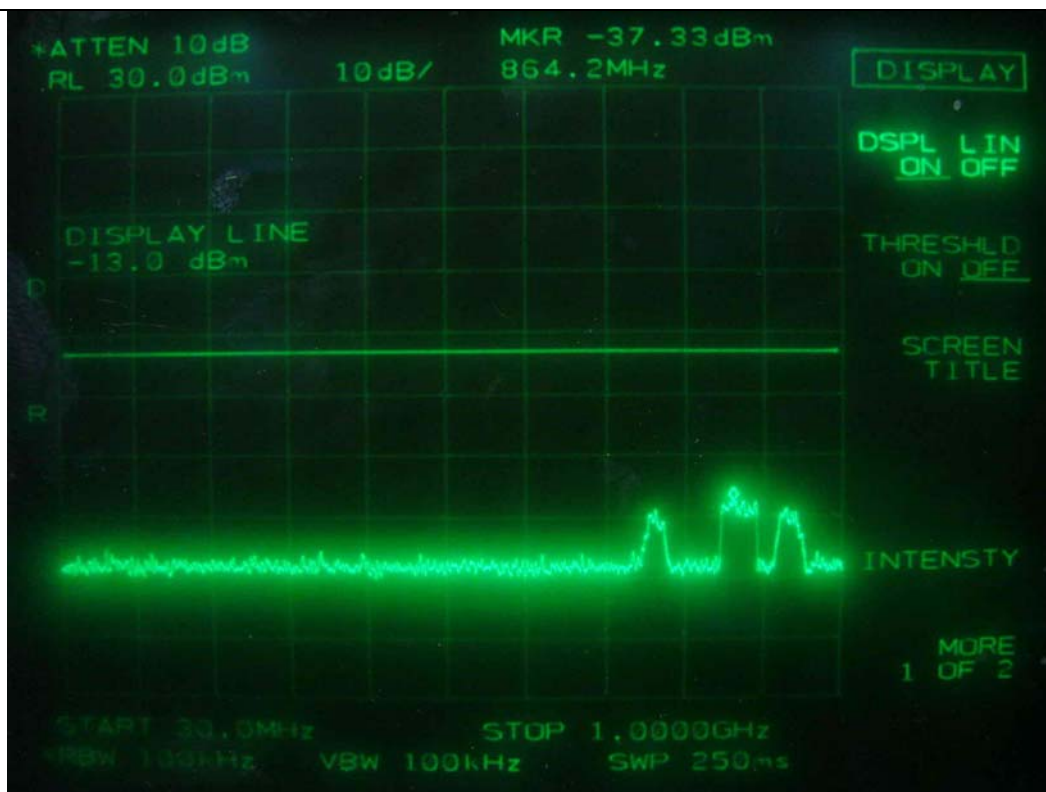
CDMA – Low Channel



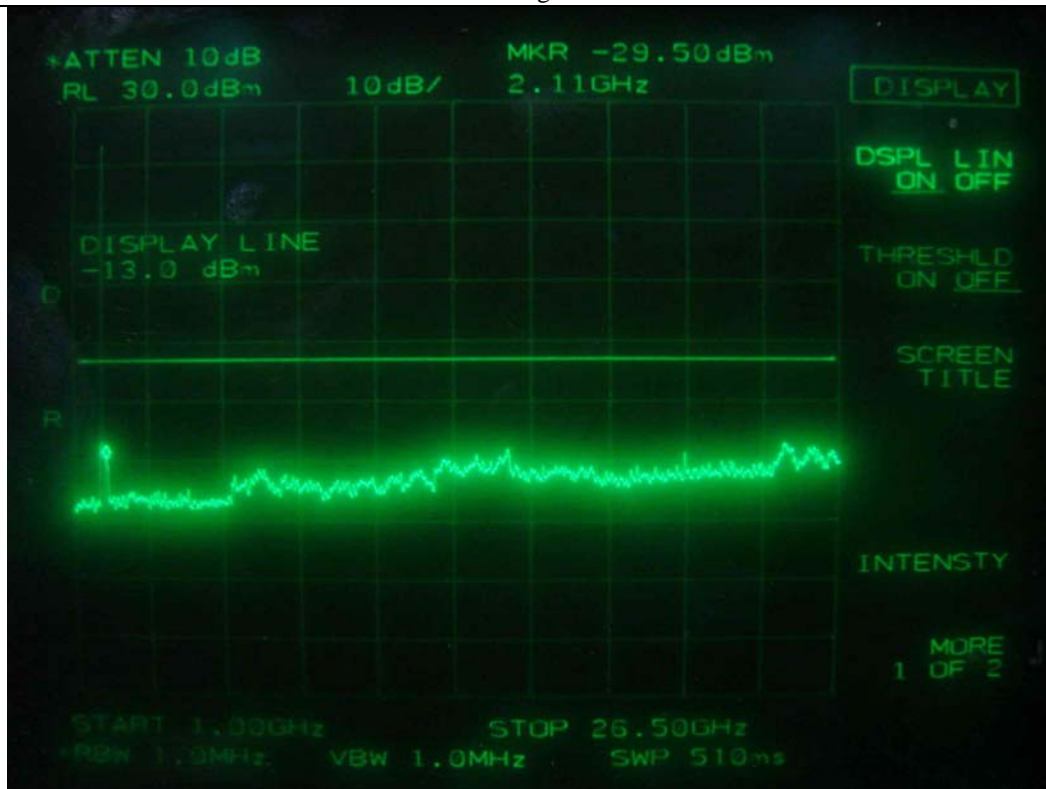
CDMA – Middle Channel



CDMA – Middle Channel

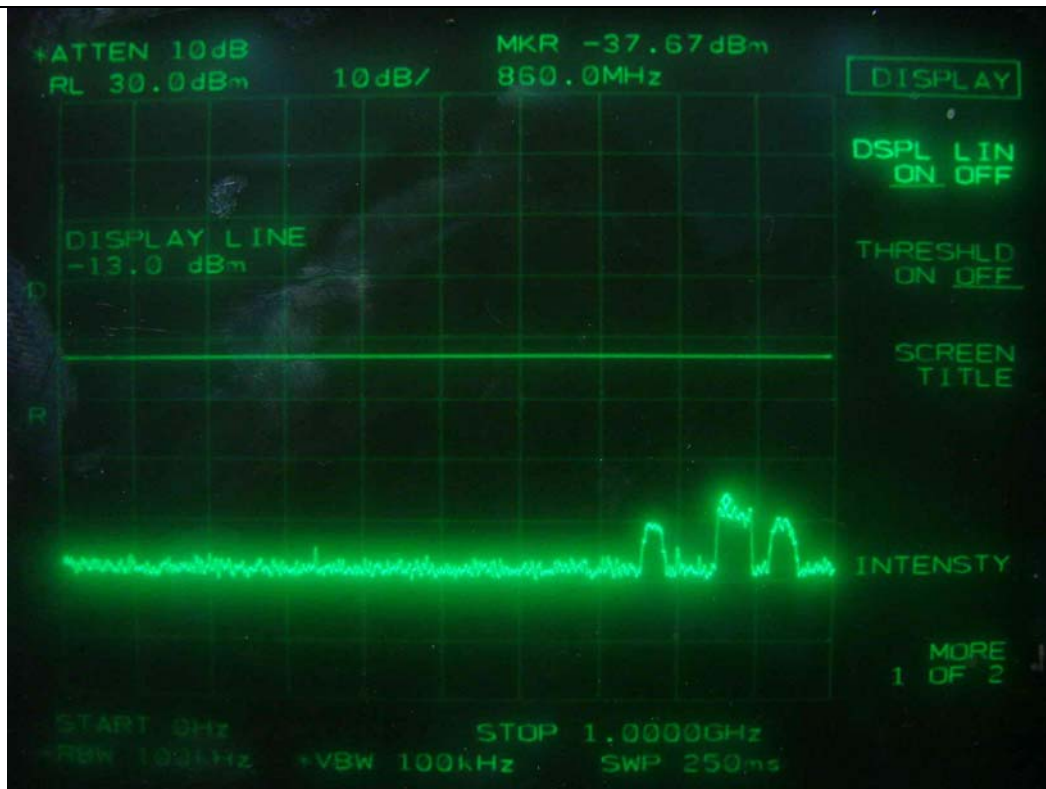


CDMA – High Channel

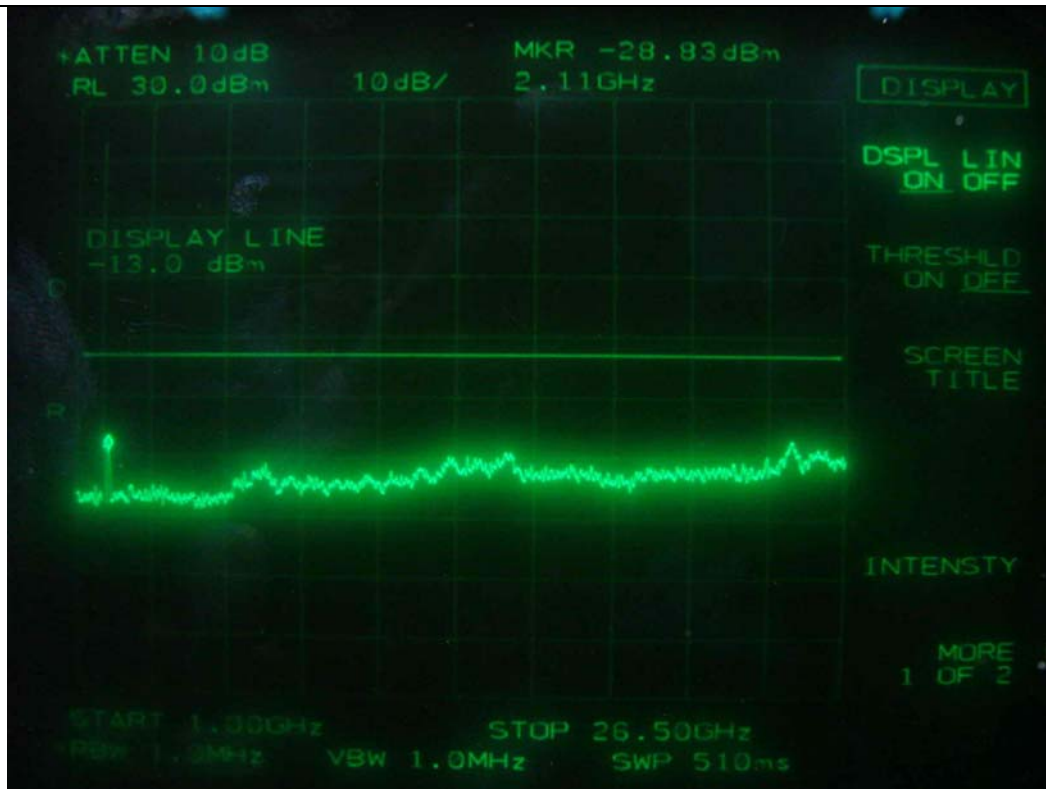


CDMA – High Channel





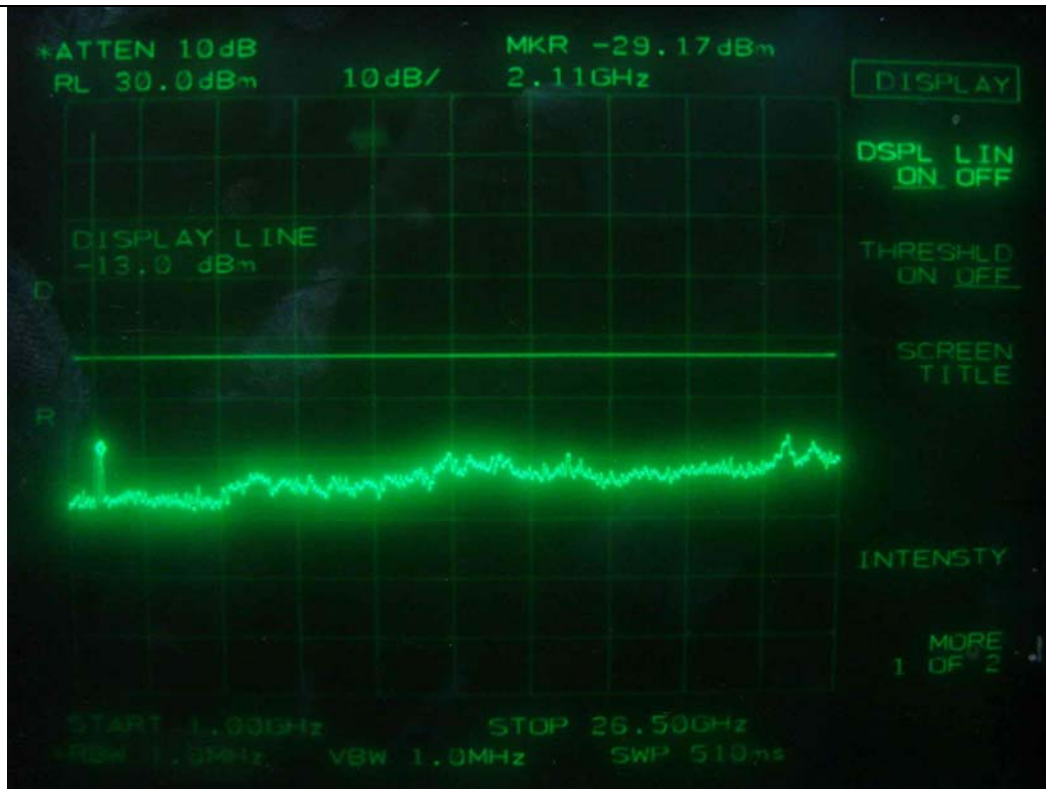
1xEVDO - Low Channel



1xEVDO - Low Channel

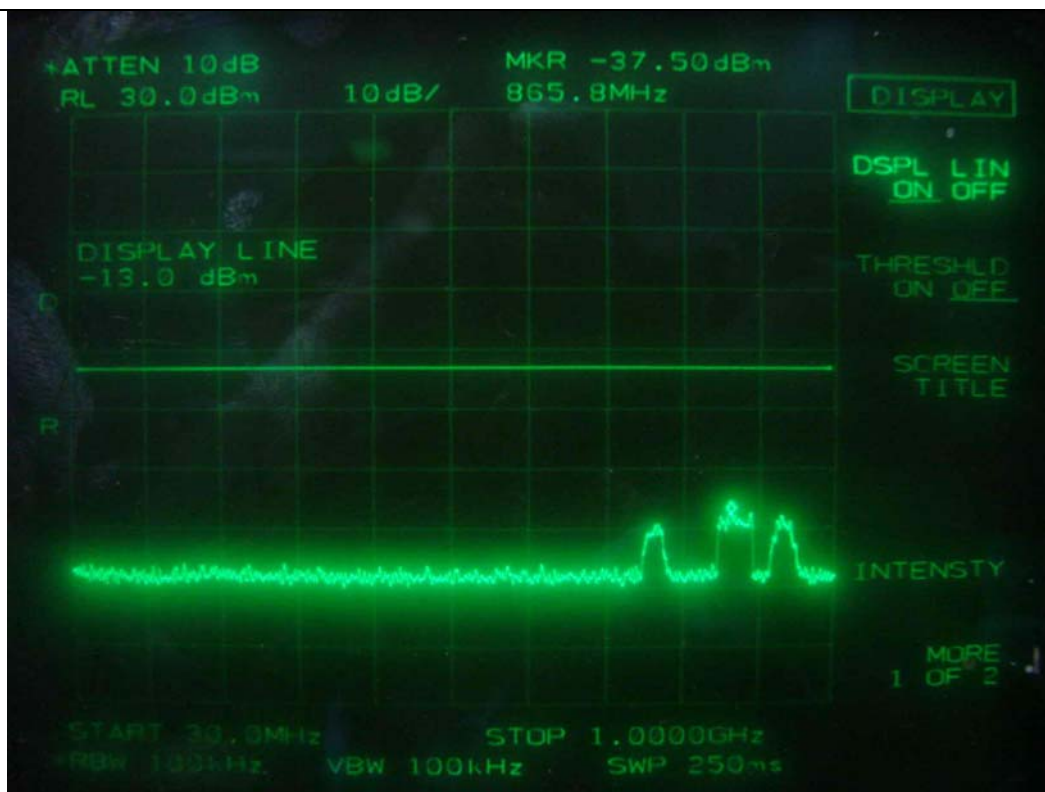


1xEVDO – Middle Channel



1xEVDO – Middle Channel

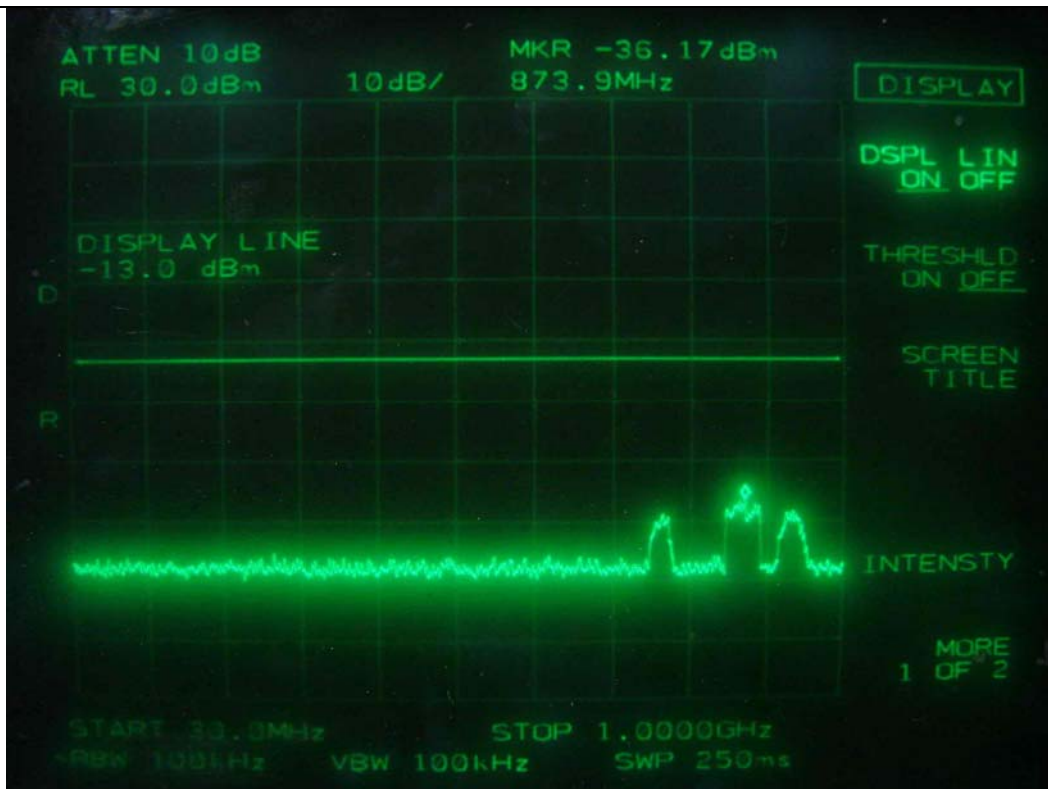




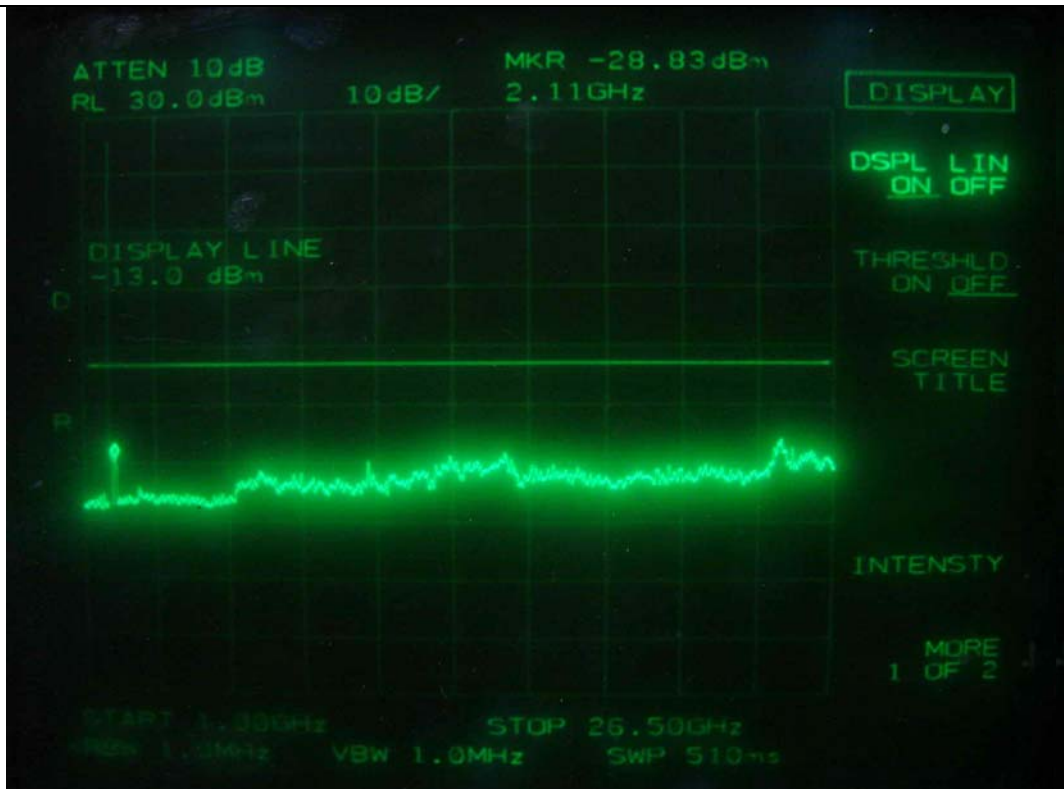
1xEVDO – High Channel



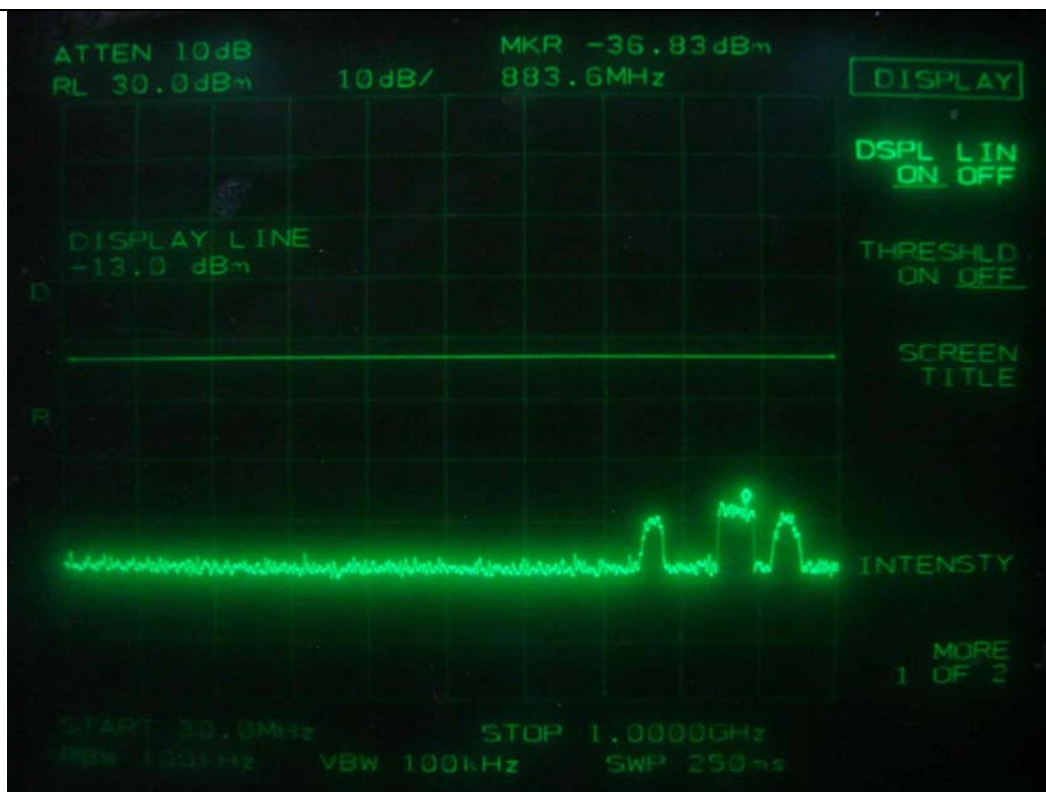
1xEVDO – High Channel



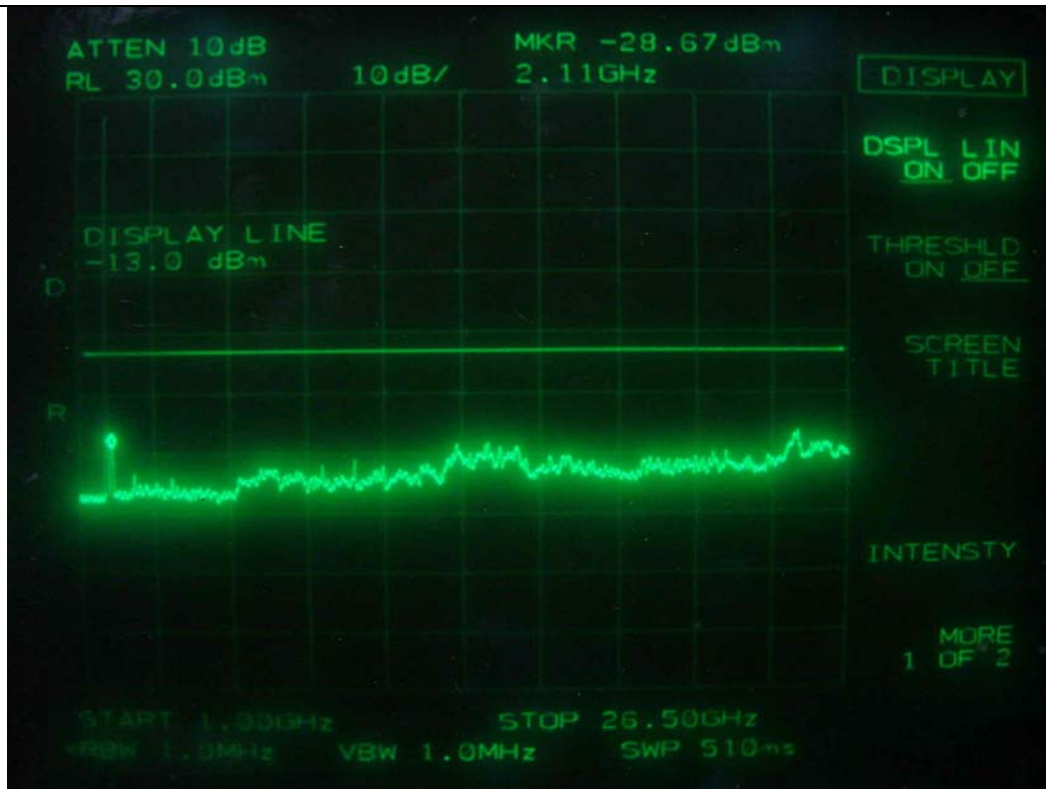
WCDMA – Low Channel



WCDMA – Low Channel

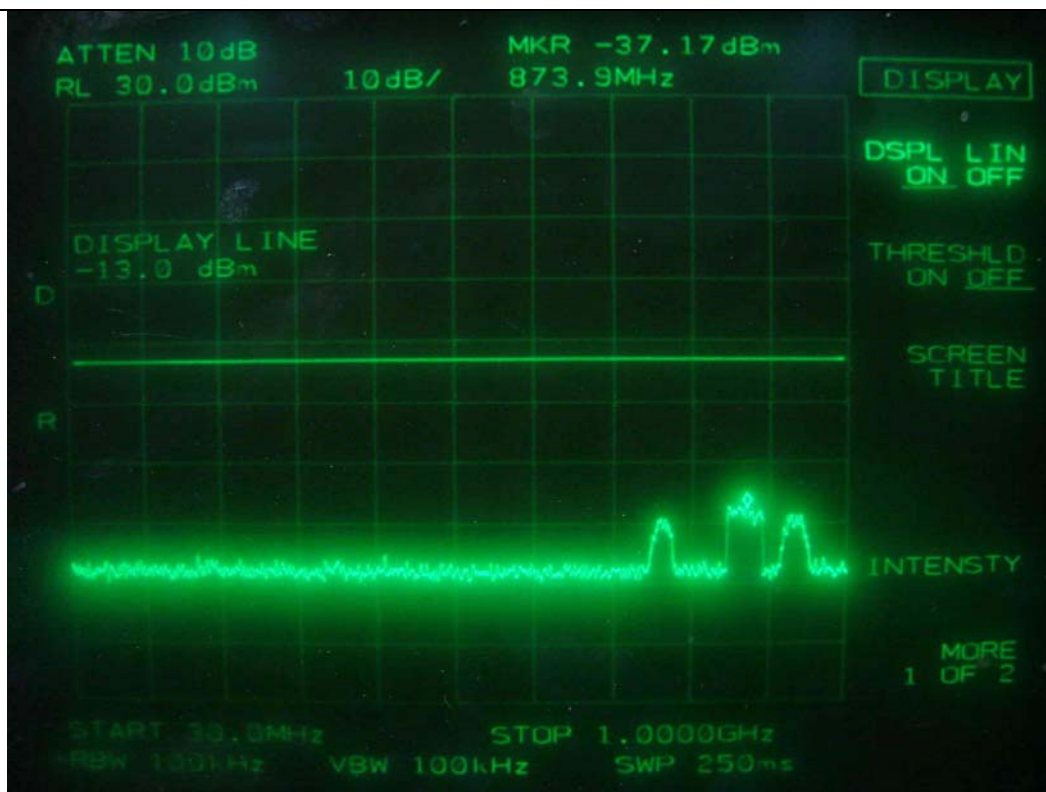


WCDMA – Middle Channel

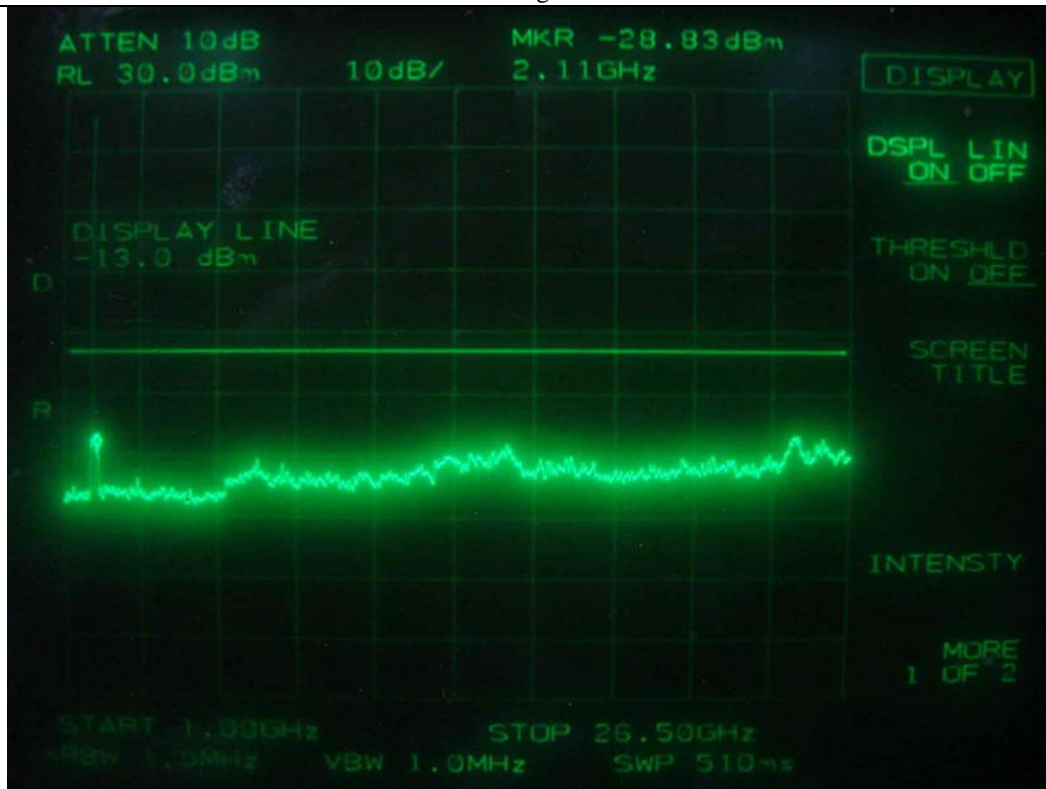


WCDMA – Middle Channel





TDMA – High Channel



TDMA – High Channel

#### 7.4.2 Test Result for Part 27

-. Test Date : February 25~26, 2009

-. Frequency range : 30 MHz ~ 20 GHz


-. Result : PASSED BY -14.83 dB at middle channel of 1xEVDO Mode

Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
TDMA	Low	875.50	-38.17	0.50	-37.67	-13.00	-24.67
		1 940.00	-29.33	0.84	-28.49		-15.49
	Middle	865.80	-38.83	0.50	-38.33		-25.33
		1 980.00	-29.00	0.84	-28.16		-15.16
	High	862.60	-38.67	0.50	-38.17		-25.17
		1 940.00	-29.17	0.84	-28.33		-15.33
GSM	Low	873.90	-40.00	0.50	-39.50	-13.00	-26.50
		1 940.00	-29.33	0.84	-28.49		-15.49
	Middle	862.60	-40.50	0.50	-40.00		-27.00
		1 940.00	-30.00	0.84	-29.16		-16.16
	High	867.40	-40.00	0.50	-39.50		-26.50
		1 940.00	-30.17	0.84	-29.33		-16.33
EDGE	Low	883.60	-38.67	0.50	-38.17	-13.00	-25.17
		1 890.00	-30.33	0.84	-29.49		-16.49
	Middle	872.30	-37.50	0.50	-37.00		-24.00
		1 940.00	-29.17	0.84	-28.33		-15.33
	High	867.40	-38.50	0.50	-38.00		-25.00
		1 940.00	-29.33	0.84	-28.49		-15.49
CDMA	Low	862.60	-38.00	0.50	-37.50	-13.00	-24.50
		1 890.00	-29.33	0.84	-28.49		-15.49
	Middle	851.30	-37.67	0.50	-37.17		-24.17
		1 890.00	-30.67	0.84	-29.83		-16.83
	High	869.10	-38.17	0.50	-37.67		-24.67
		1 940.00	-29.50	0.84	-28.66		-15.66



Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
1xEVDO	Low	867.40	-37.67	0.50	-37.17	-13.00	-24.17
		1 940.00	-29.17	0.84	-28.33		-15.33
	Middle	872.30	-37.17	0.50	-36.67		-23.67
		1 940.00	-28.67	0.84	-27.83		-14.83
	High	875.50	-37.33	0.50	-36.83		-23.83
		1 940.00	-29.67	0.84	-28.83		-15.83
WCDMA	Low	867.40	-38.33	0.50	-37.83	-13.00	-24.83
		1 940.00	-29.17	0.84	-28.33		-15.33
	Middle	867.40	-37.33	0.50	-36.83		-23.83
		1 940.00	-29.00	0.84	-28.16		-15.16
	High	869.10	-37.67	0.50	-37.17		-24.17
		1 940.00	-29.83	0.84	-28.99		-15.99

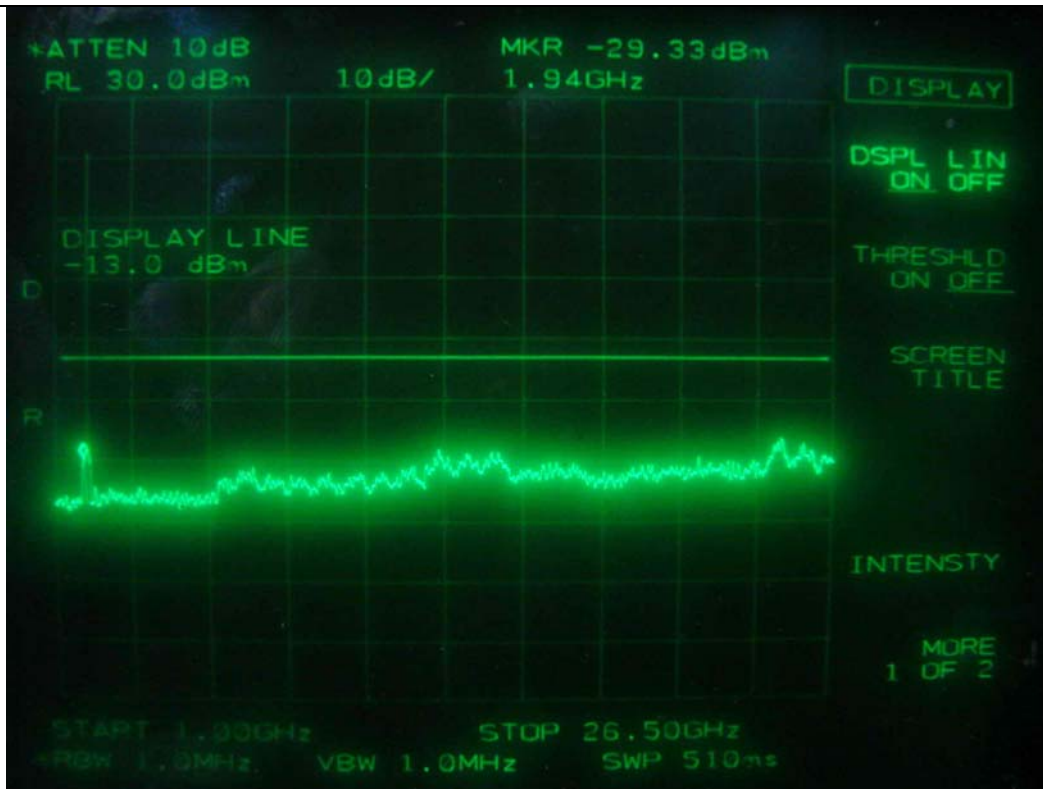
According to Part 27, out of band emission shall be attenuated by  $43 + 10 \log (P)$  dBc, equates to -13.0 dBm.



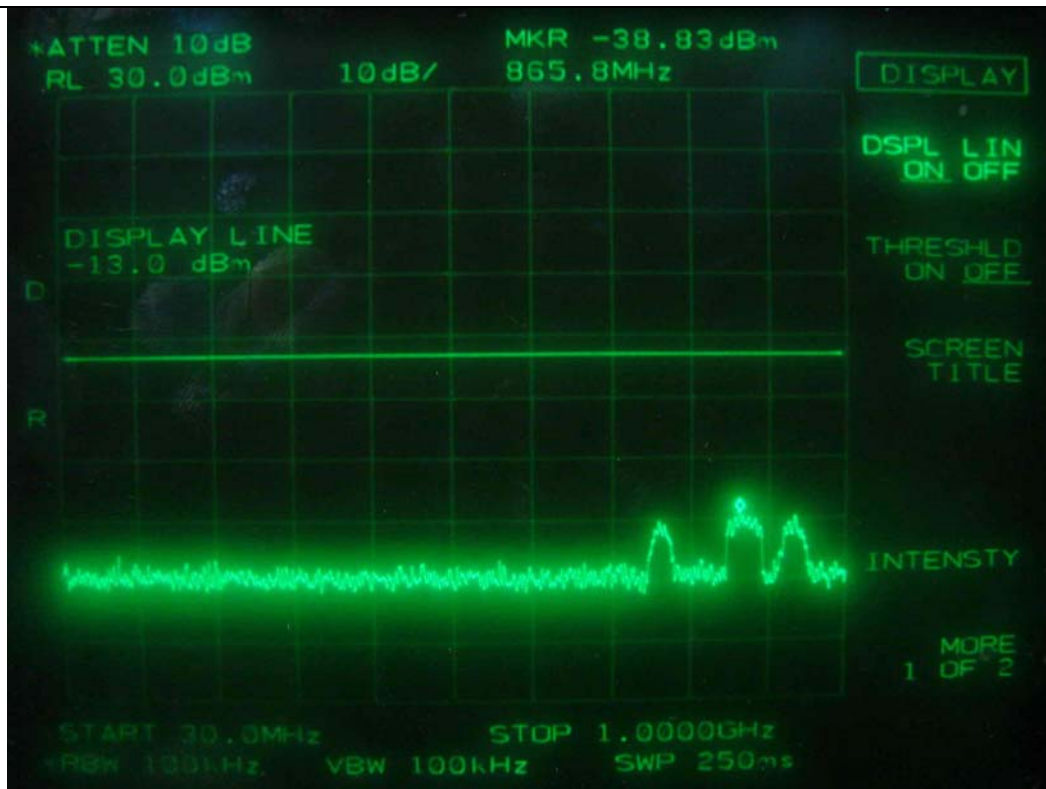
Tested by: Ki-Hong, Nam / Project Engineer



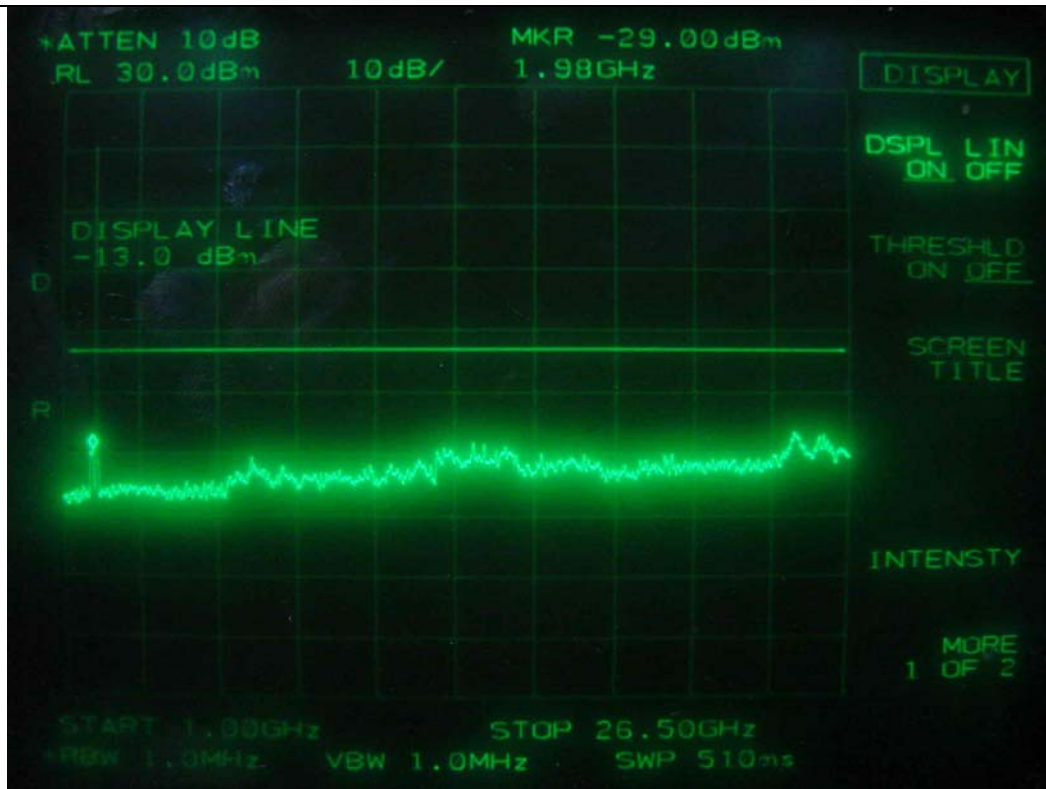
TDMA - Low Channel



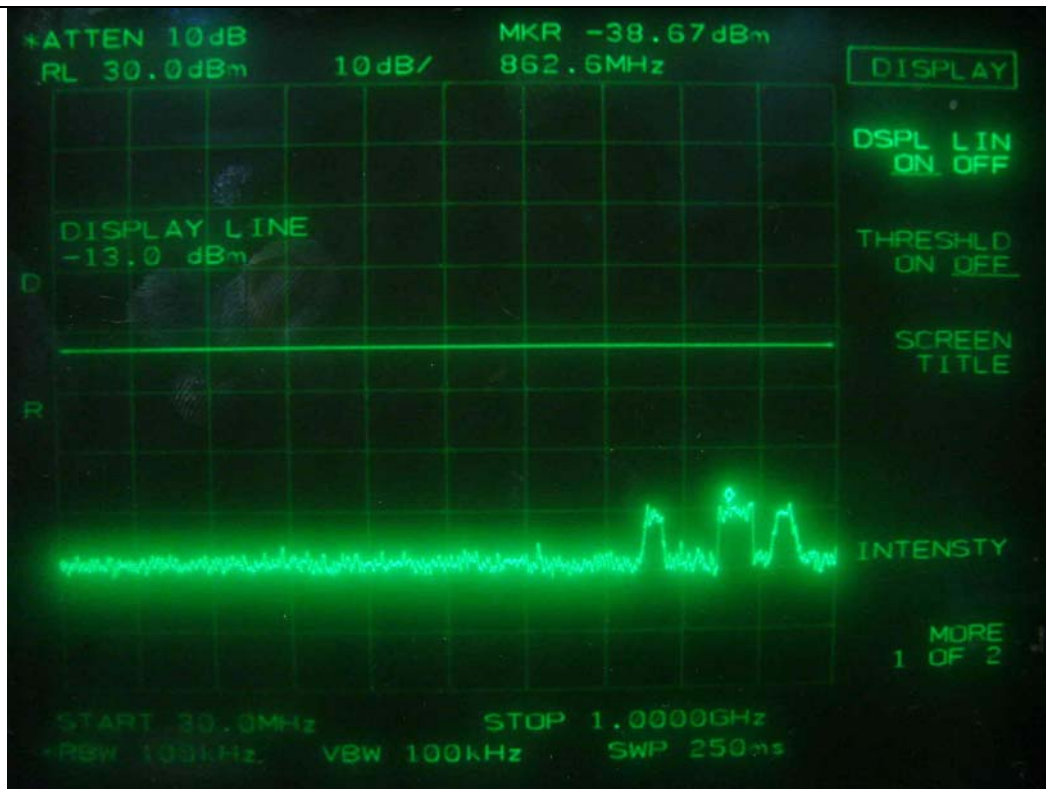
TDMA - Low Channel



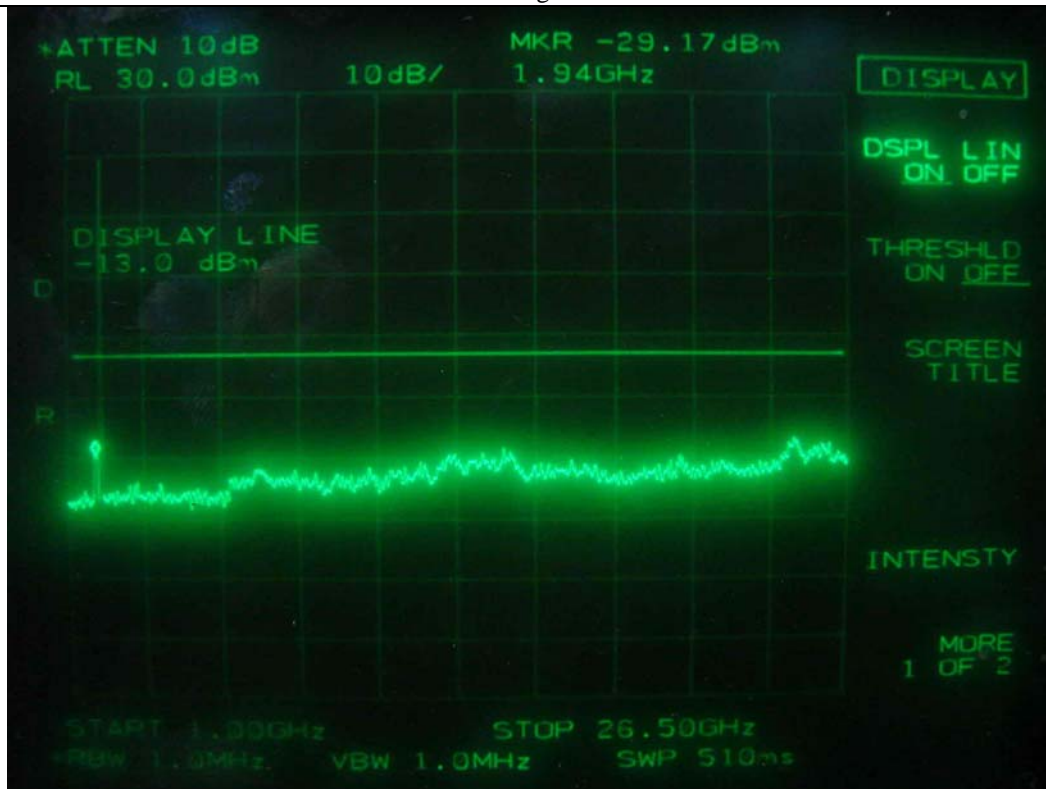
TDMA - Middle Channel



TDMA - Middle Channel

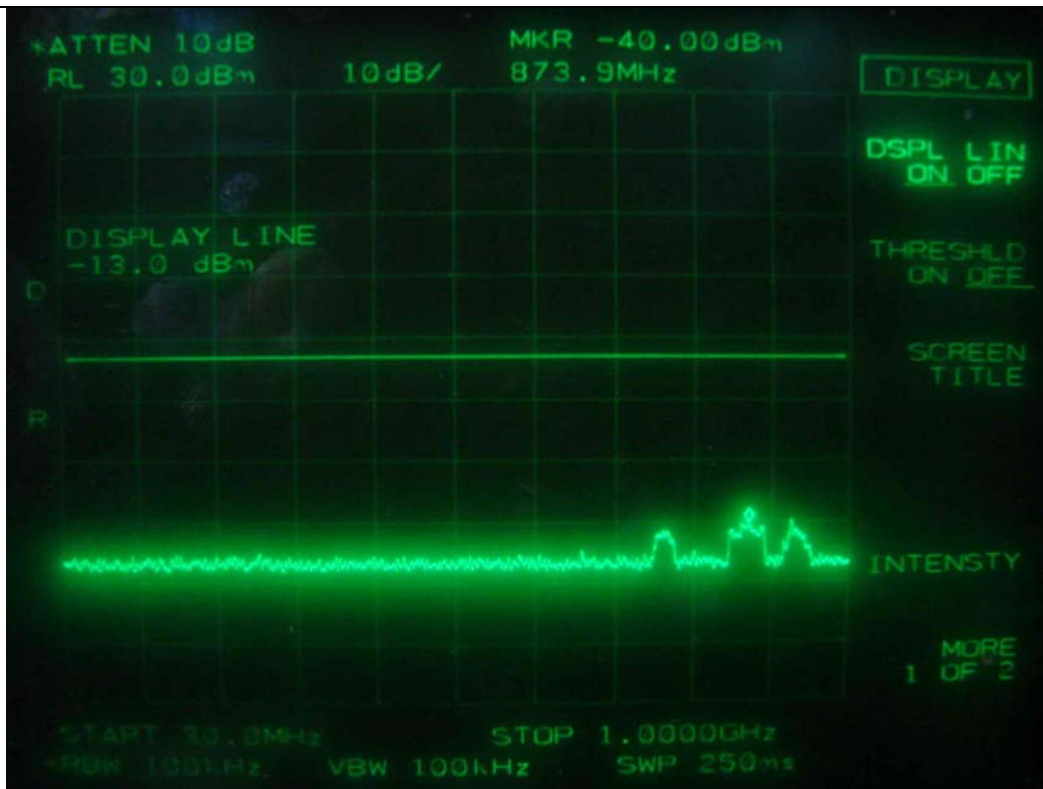


TDMA – High Channel

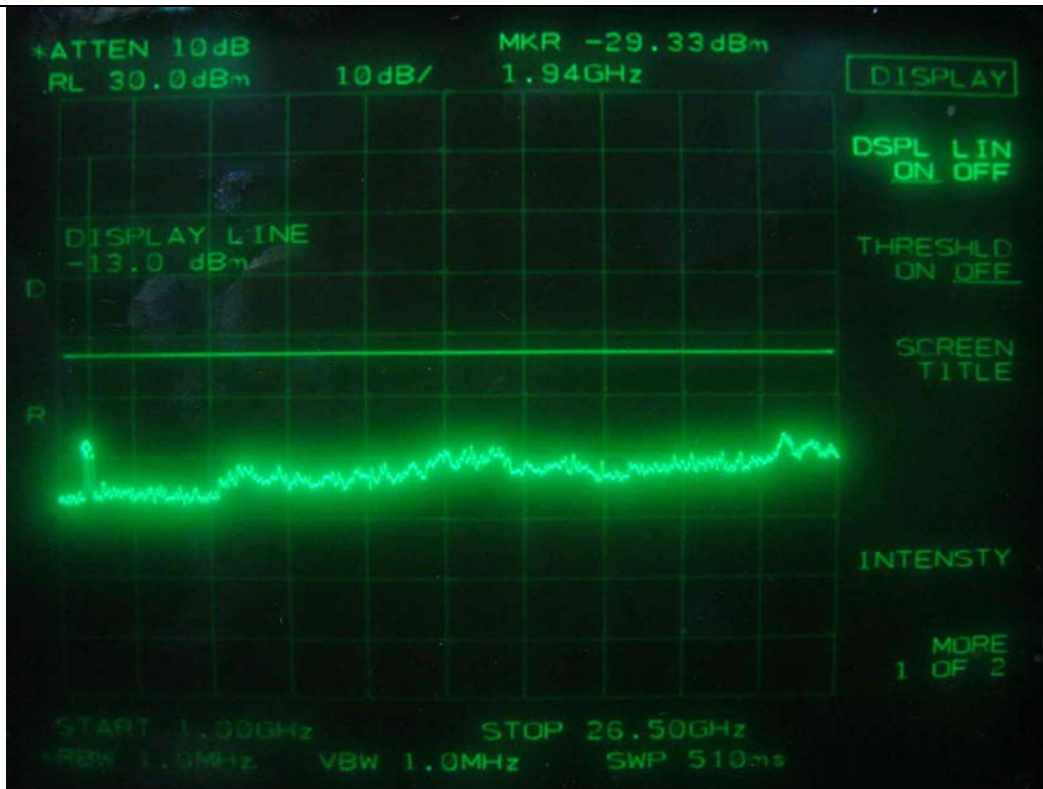


TDMA – High Channel

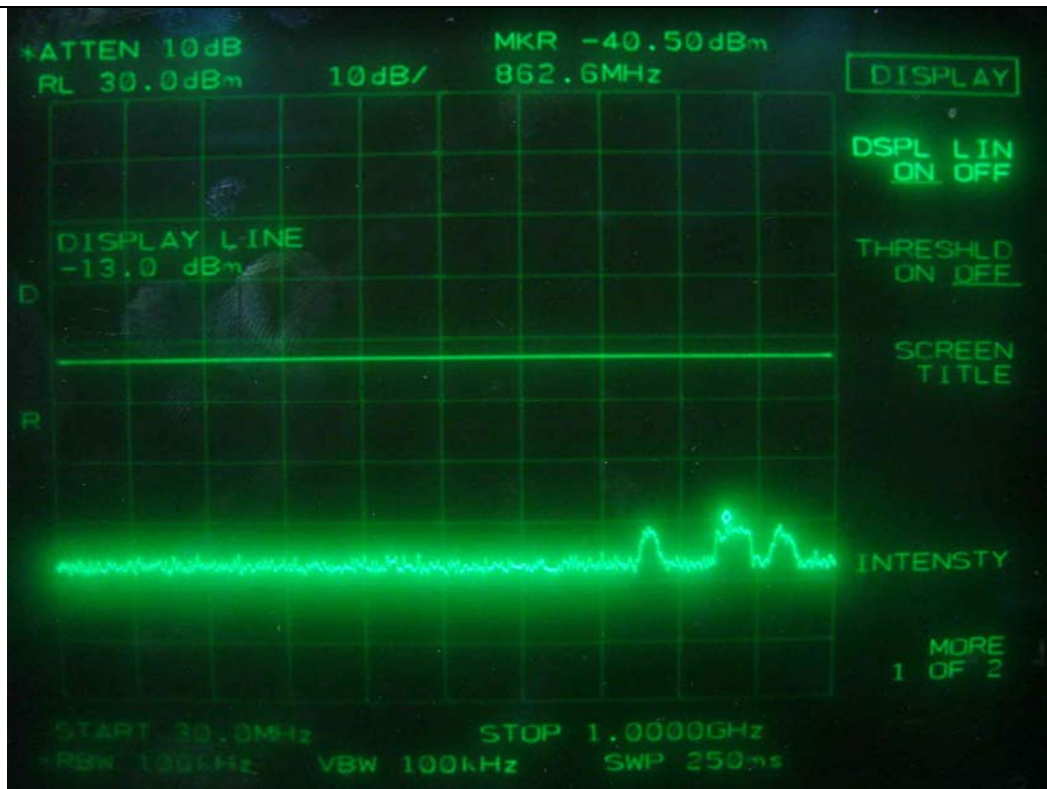




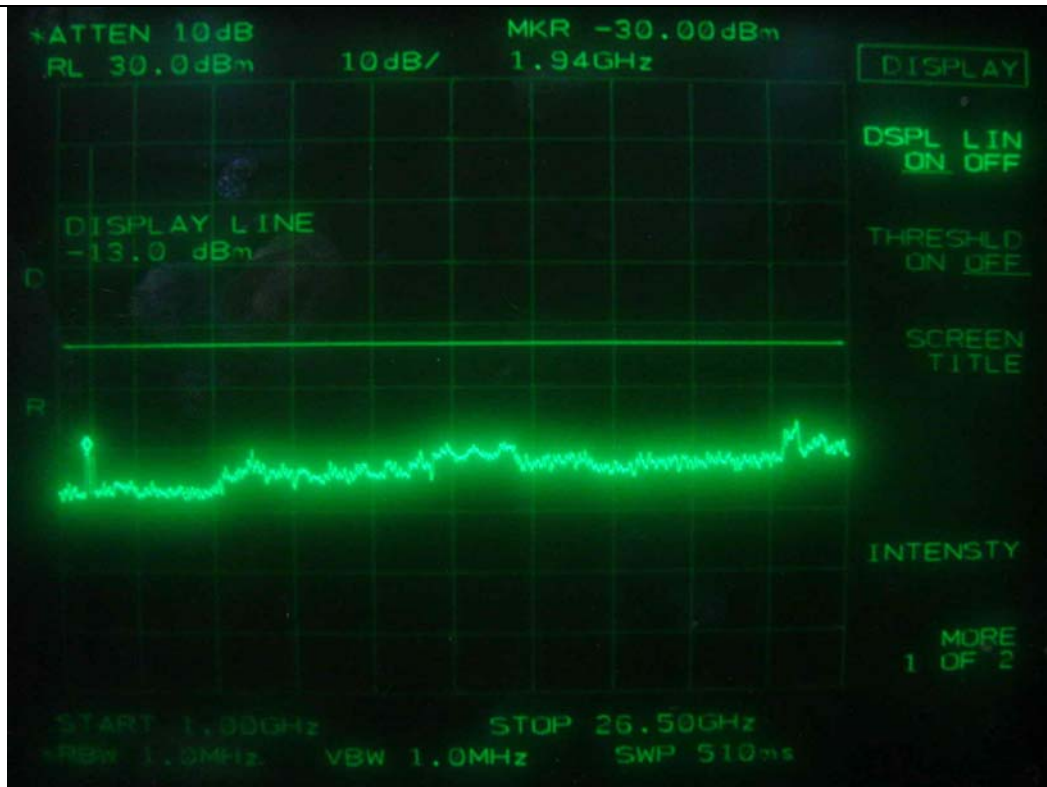
GSM - Low Channel



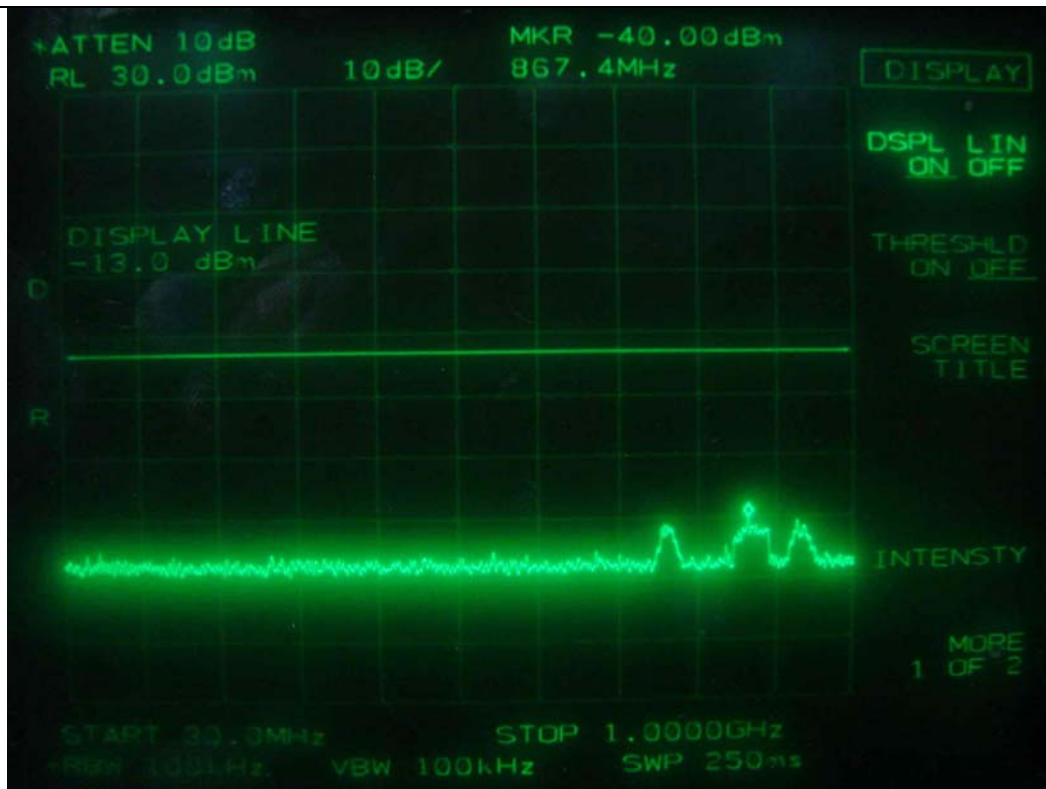
GSM - Low Channel



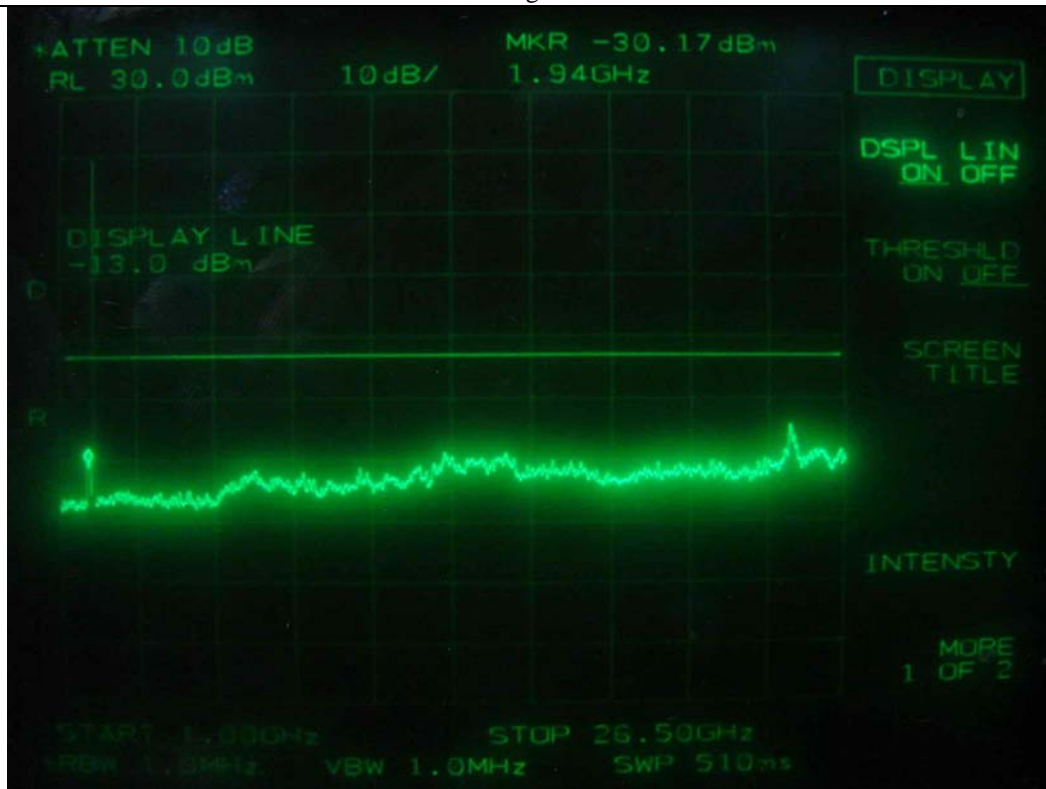
GSM – Middle Channel



GSM – Middle Channel

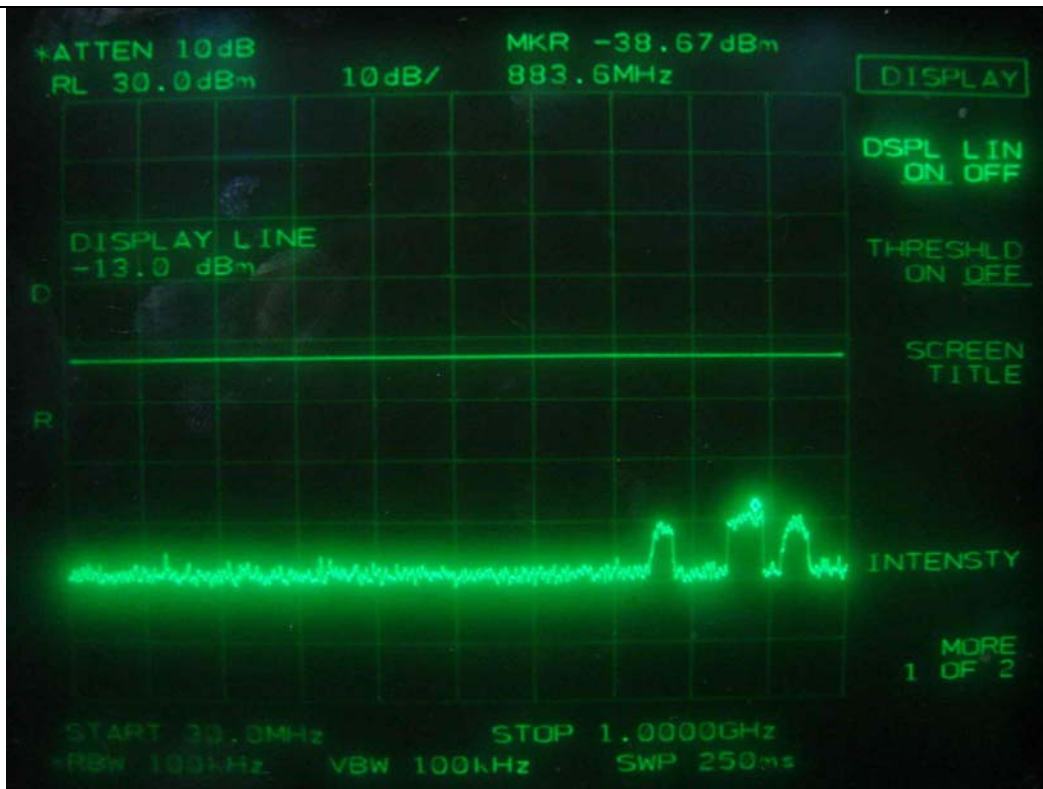


GSM – High Channel

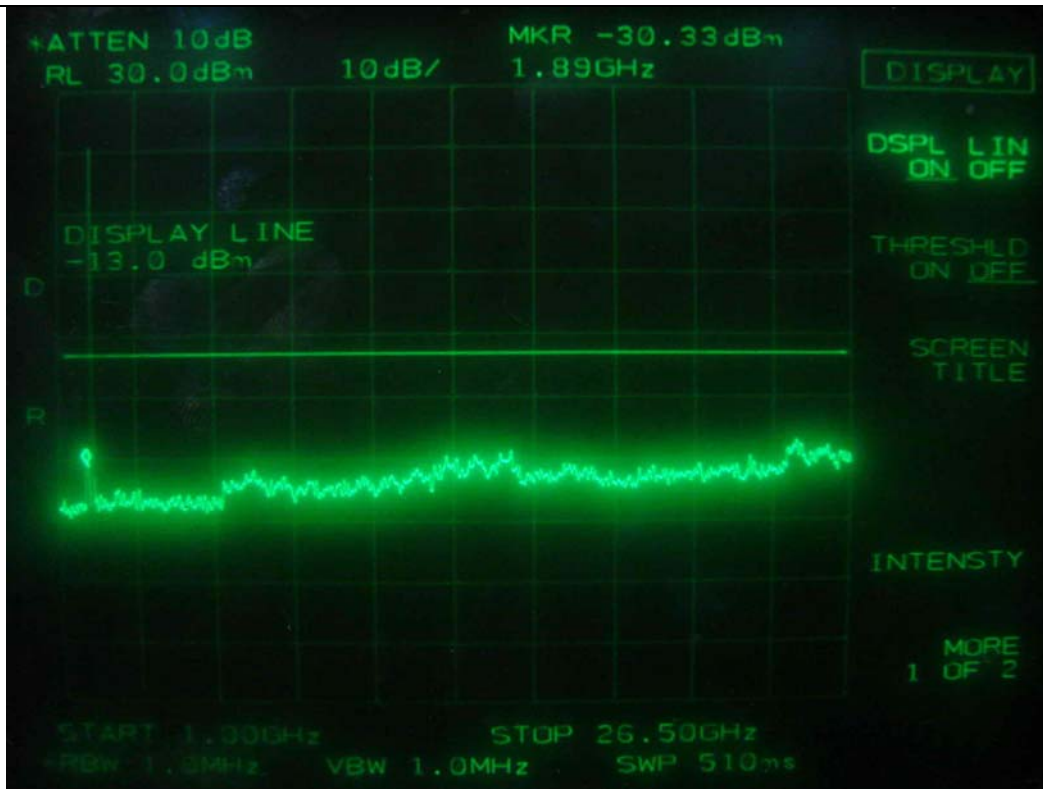


GSM – High Channel



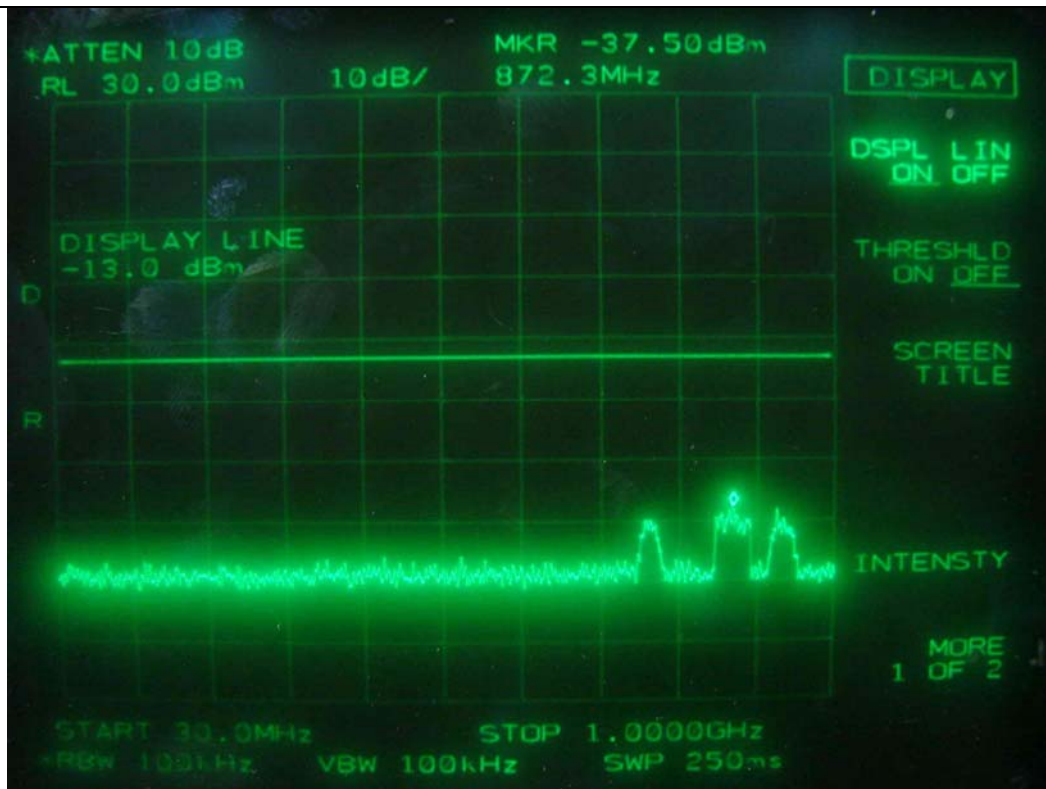


EDGE - Low Channel

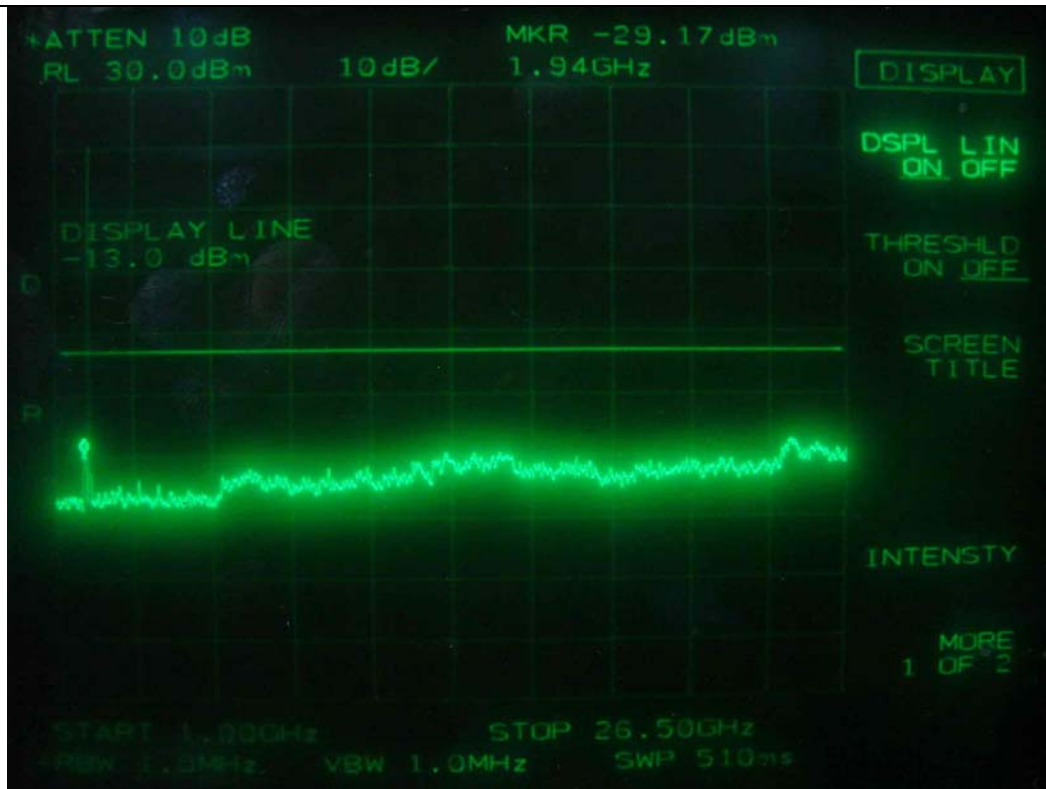


EDGE - Low Channel





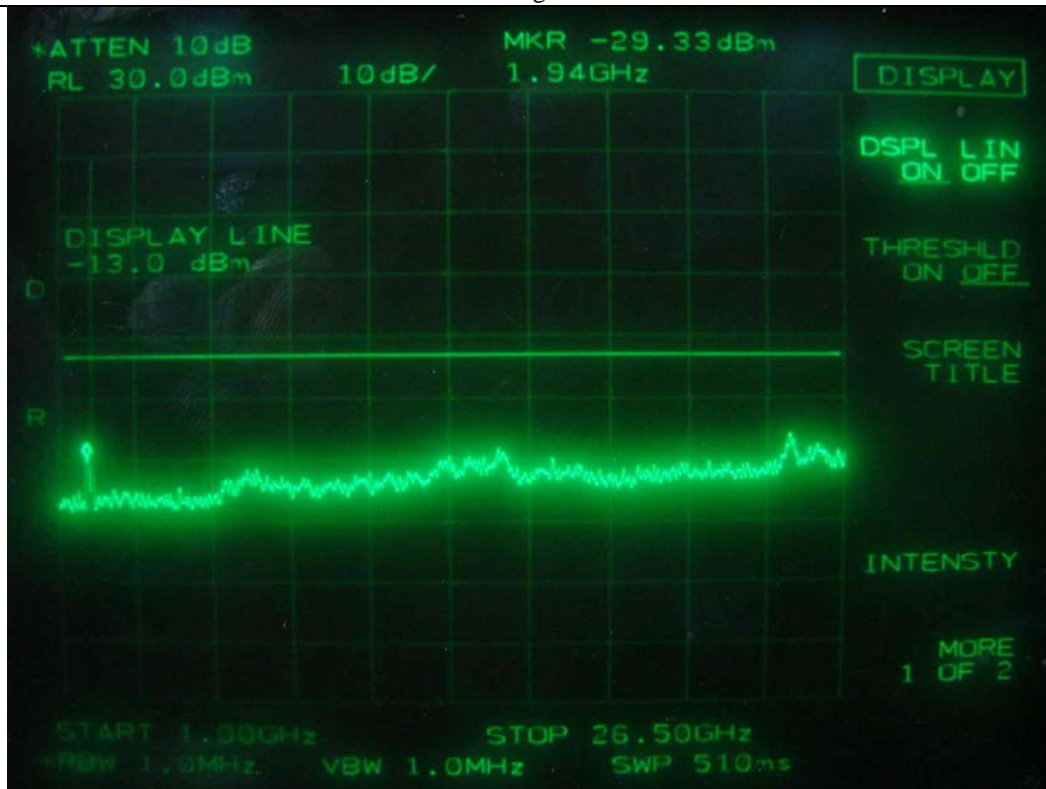
EDGE – Middle Channel



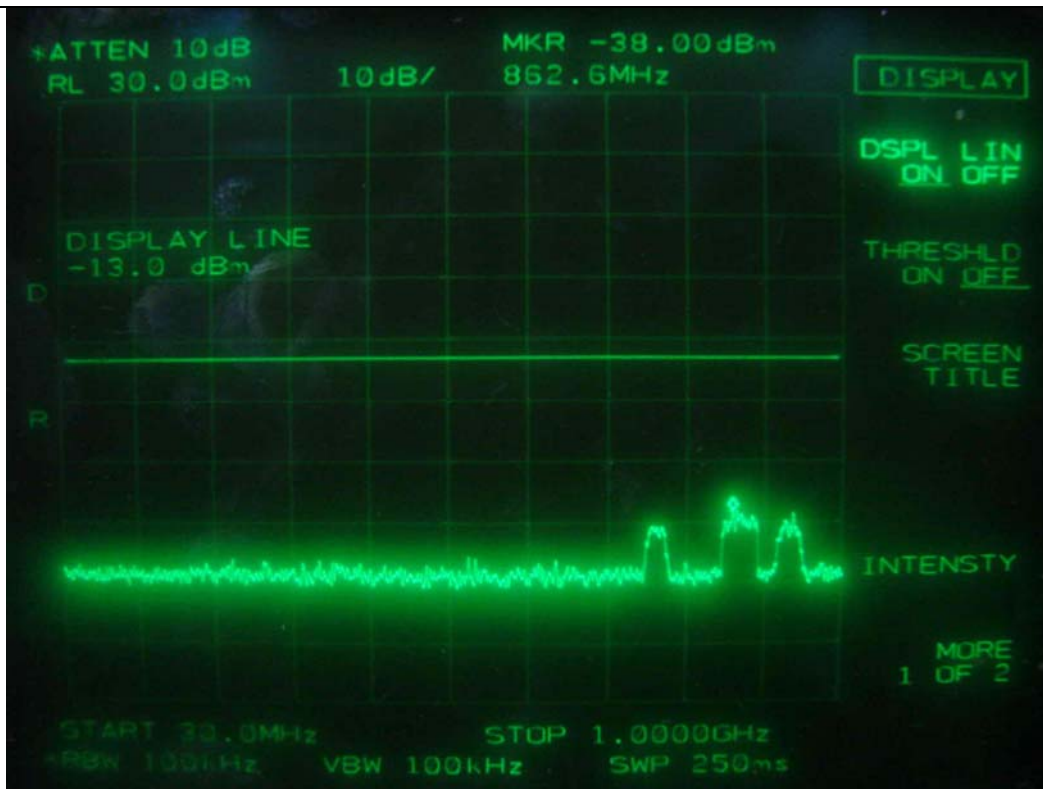
EDGE – Middle Channel



EDGE – High Channel



EDGE – High Channel



CDMA - Low Channel

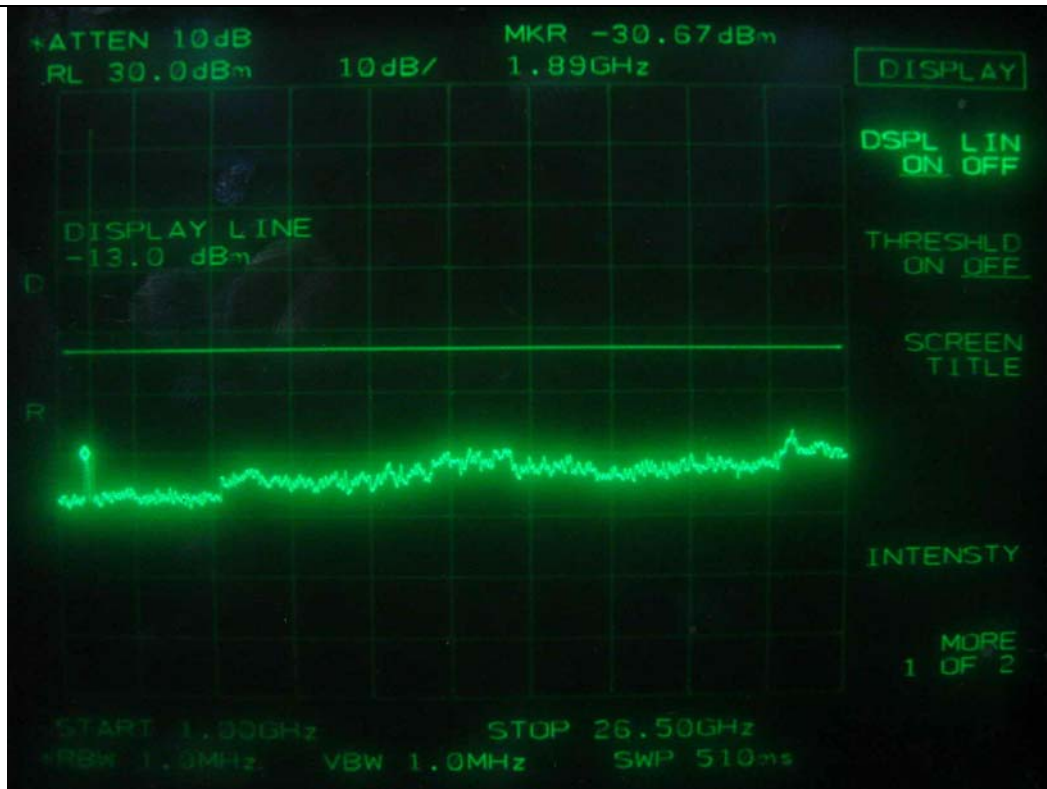


CDMA - Low Channel





CDMA – Middle Channel

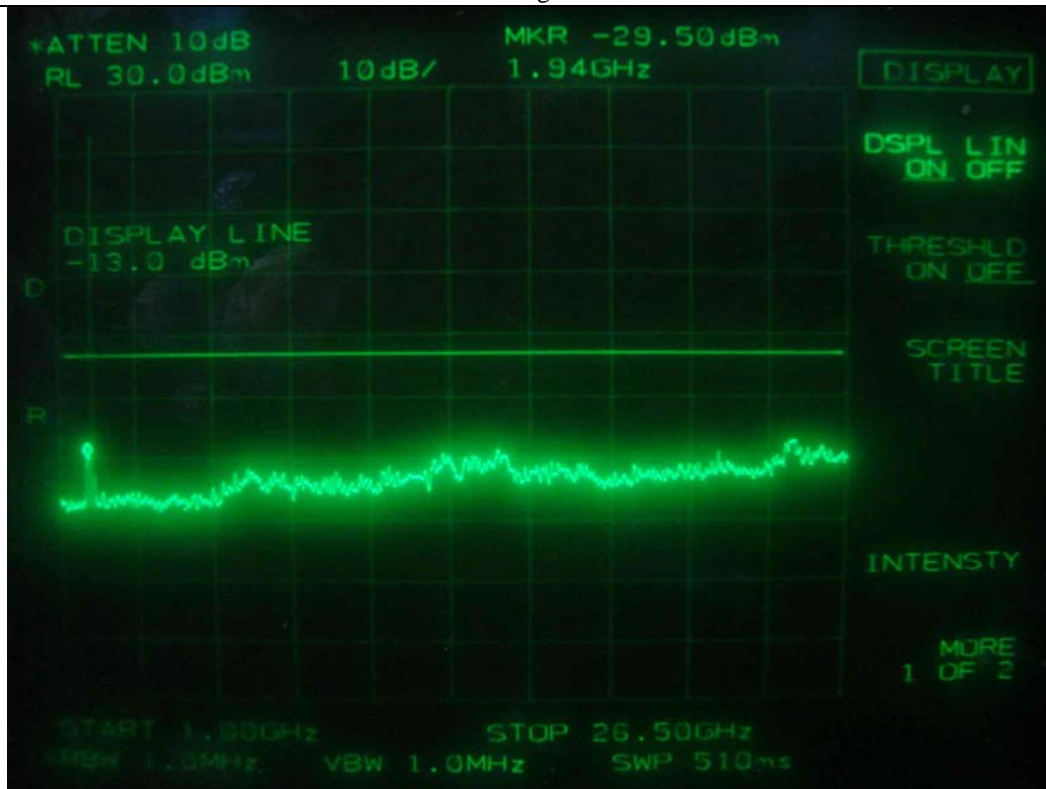


CDMA – Middle Channel

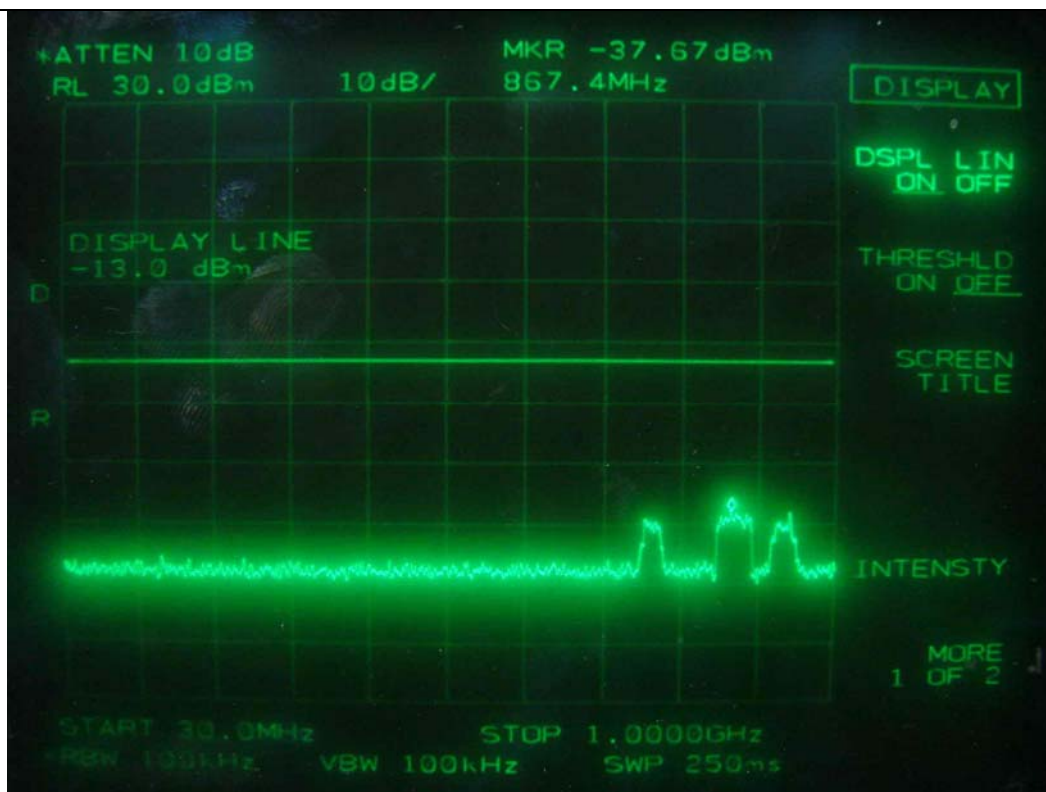




CDMA – High Channel



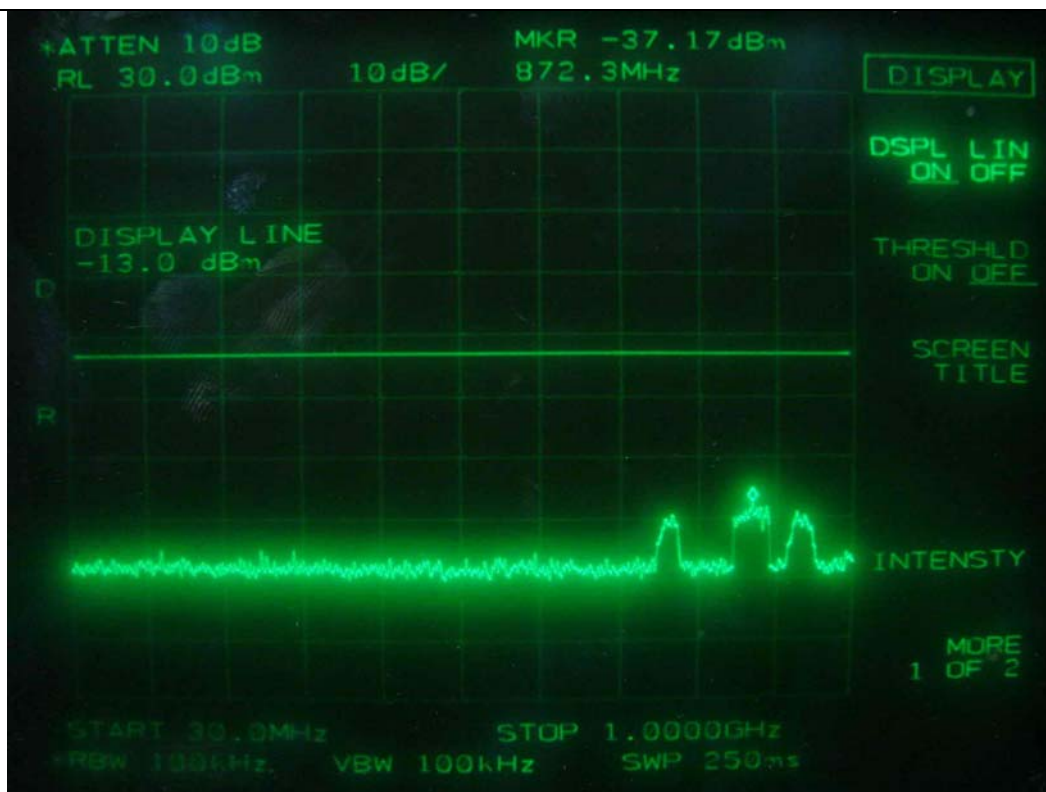
CDMA – High Channel



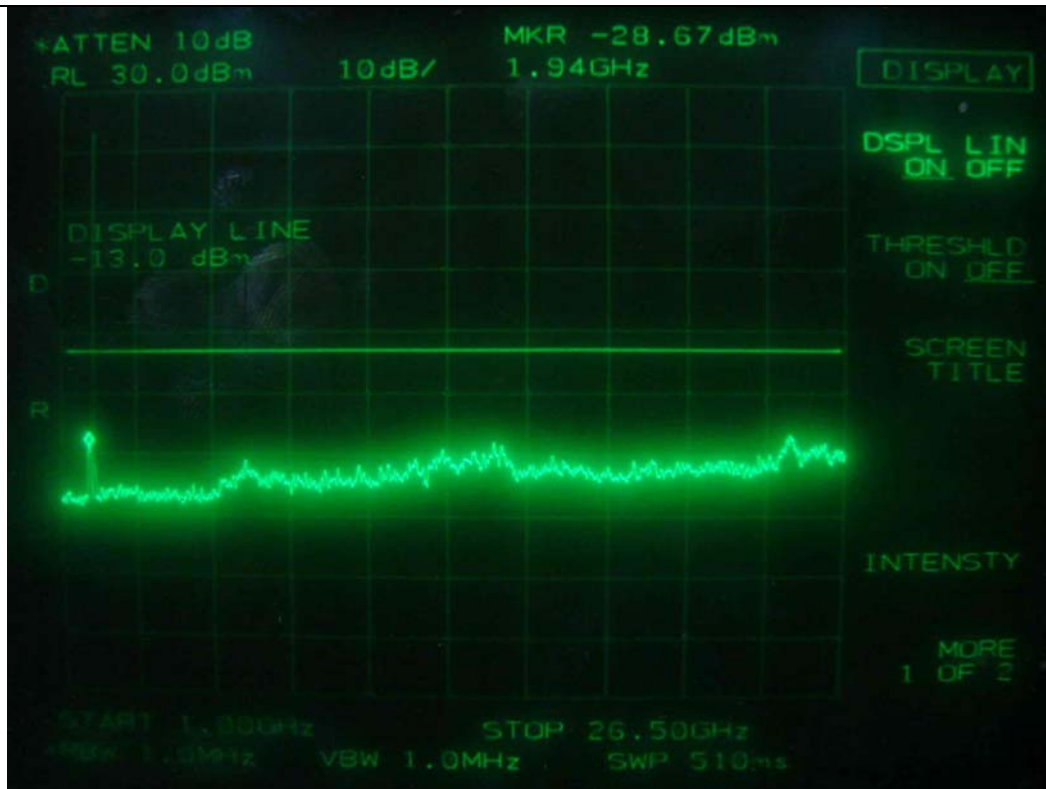
1xEVDO - Low Channel



1xEVDO - Low Channel

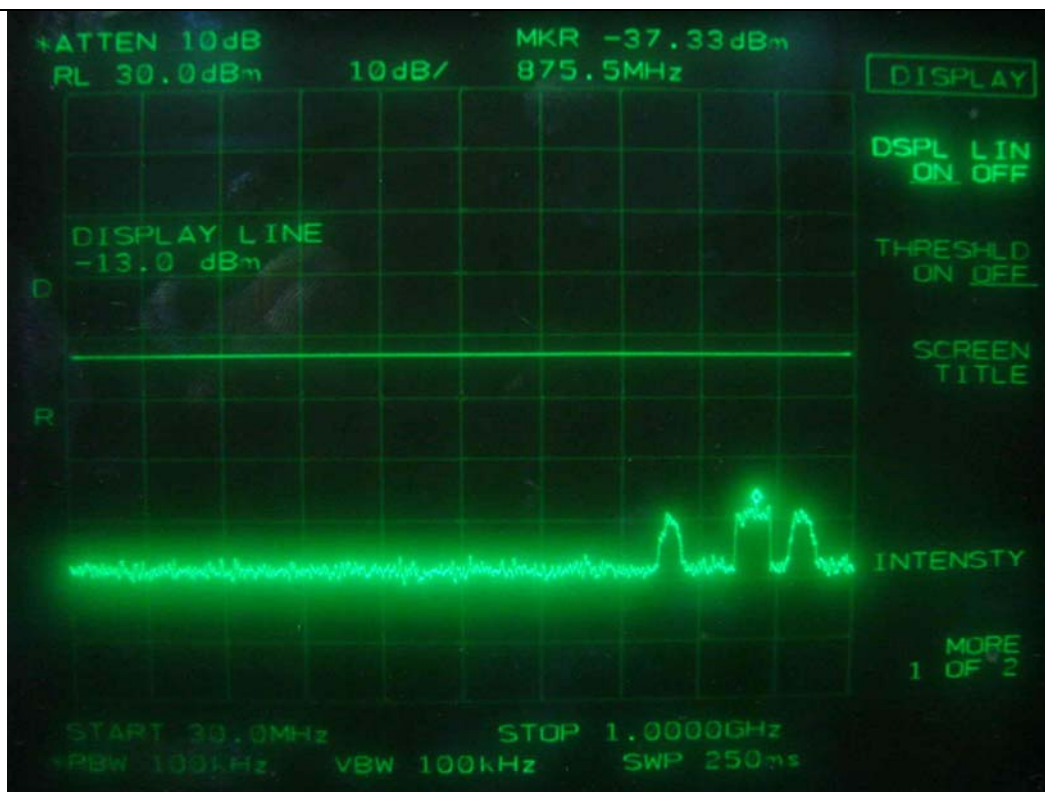


1xEVDO – Middle Channel

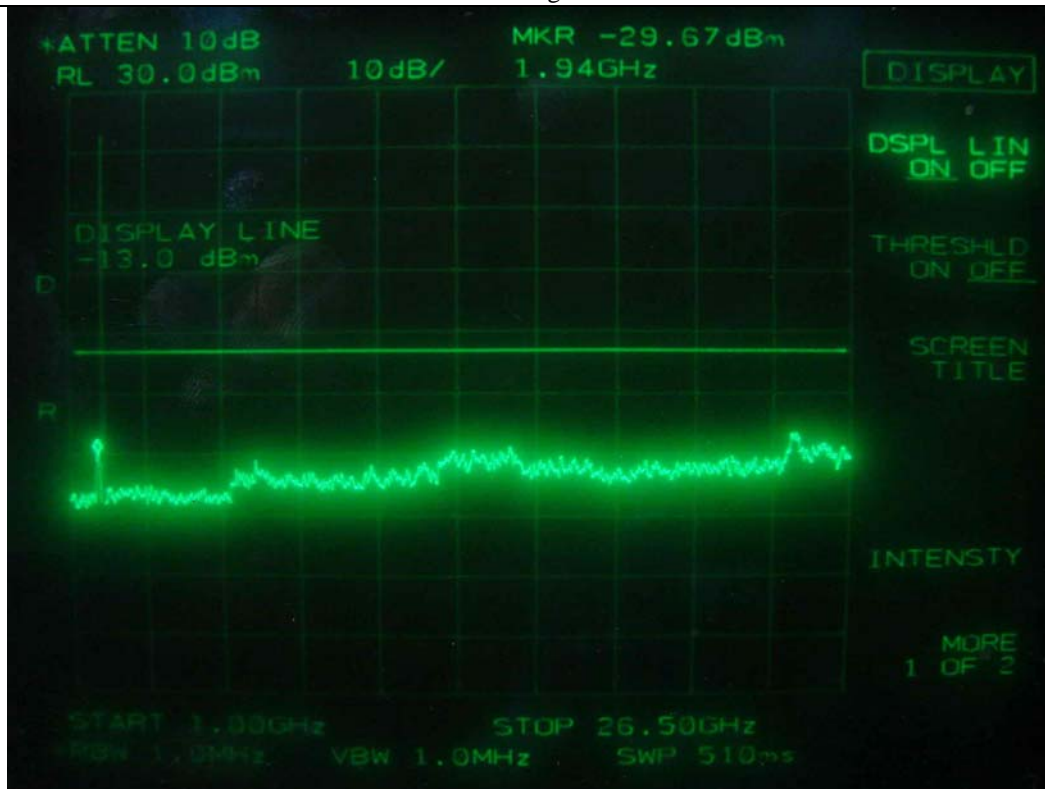


1xEVDO – Middle Channel





1xEVDO – High Channel

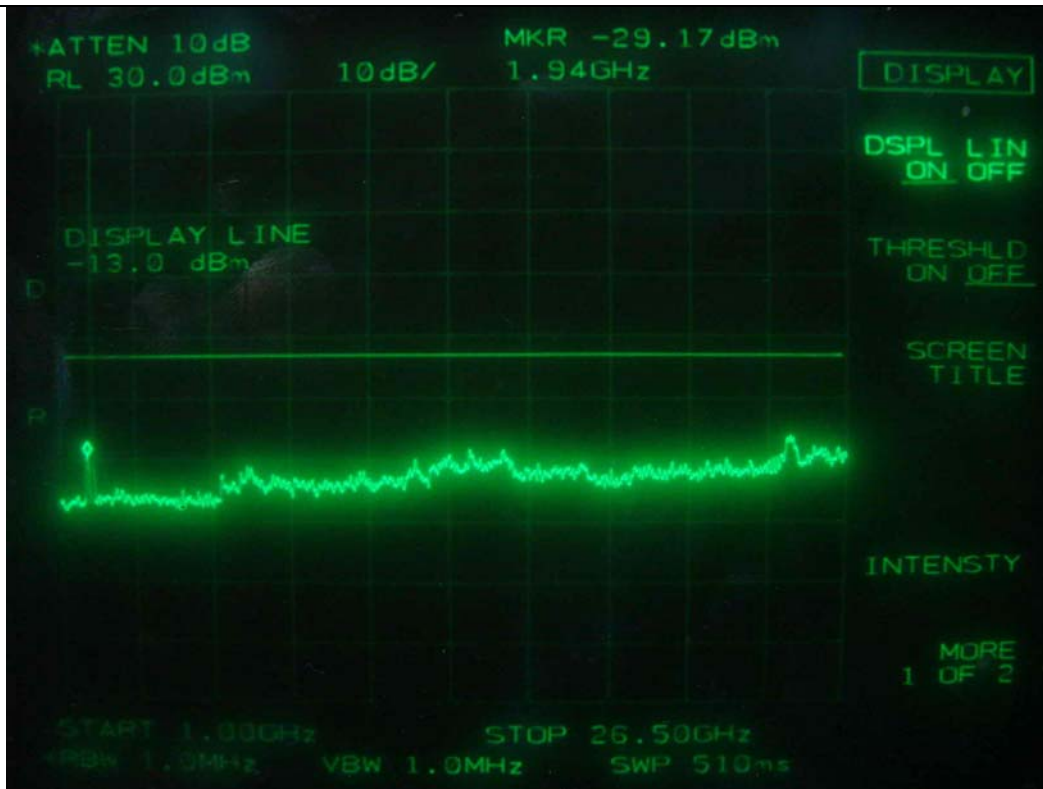


1xEVDO – High Channel

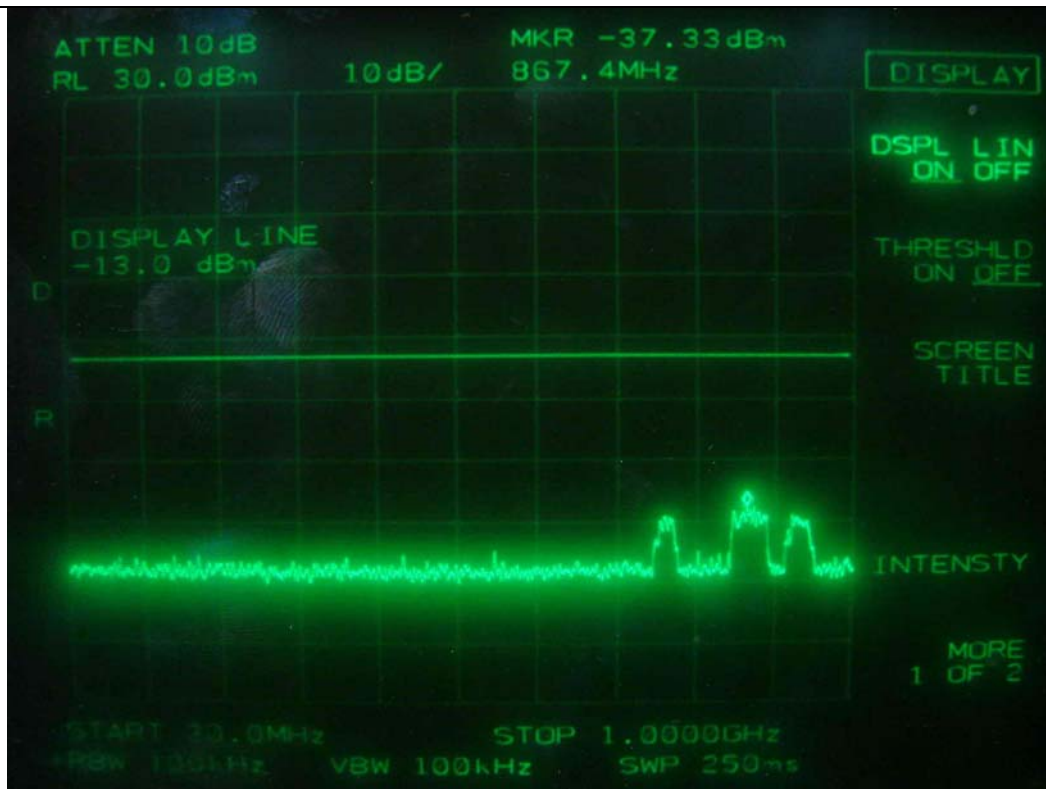




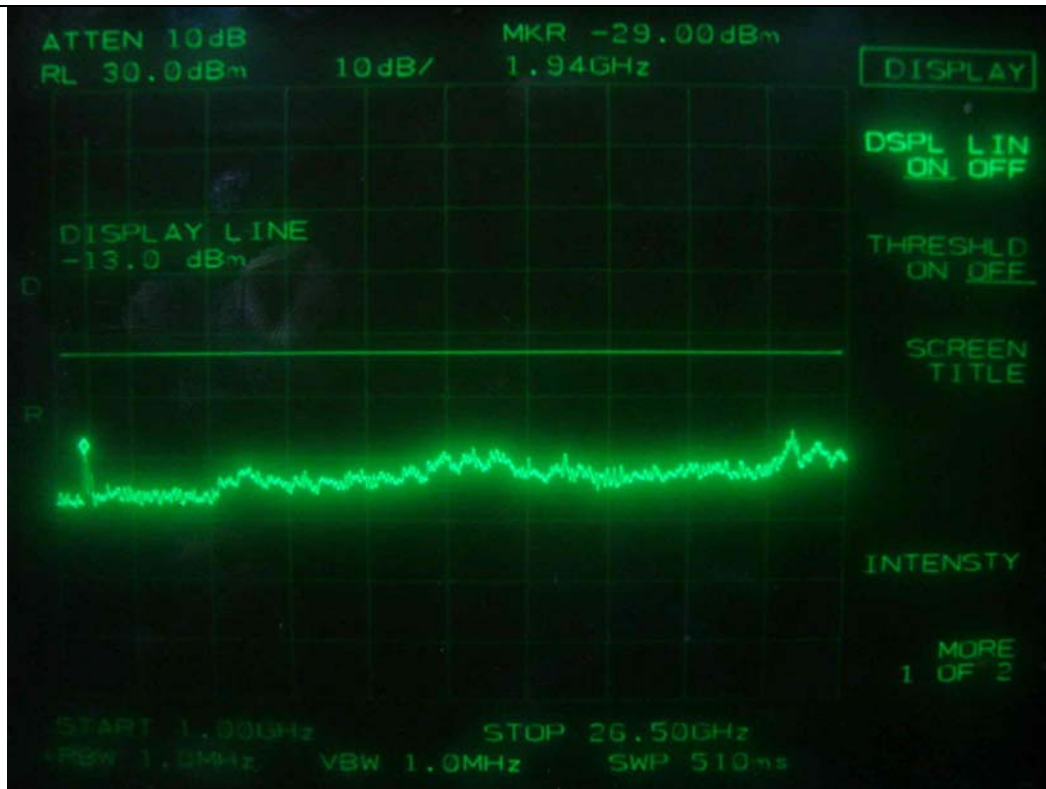
WCDMA – Low Channel



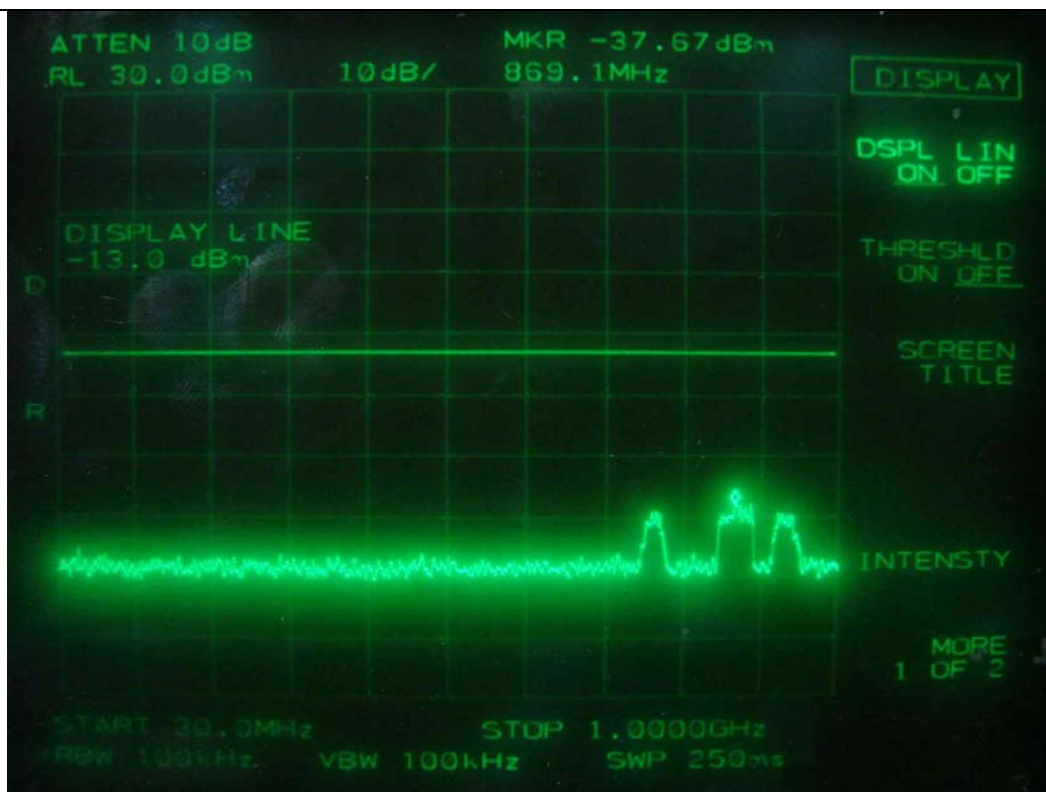
WCDMA – Low Channel



WCDMA – Middle Channel



WCDMA – Middle Channel



WCDMA – High Channel



WCDMA – High Channel



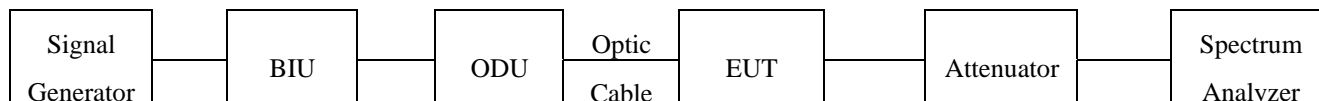
## 8. SPURIOUS EMISSION AT ANTENNA TERMINAL AT BLOCK EDGES $\pm 1$ MHz

### 8.1 Operating environment

Temperature : 21.8 °C  
Relative humidity : 47 %R.H.

### 8.2 Test set-up for conducted measurement

The RF signal from the signal generator(s) was injected to BIU (BTS Interface Unit) and then output signal from the BIU was injected to the input of ODU (Optic Distribution Unit) by coaxial cable and then the output port of the ODU was connected to the input of the EUT by optic cable. The amplified RF signal at the output of the EUT was connected to the spectrum analyzer. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable modulation.



### 8.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - 8564E	HP	Spectrum Analyzer	3650A00756	June 16, 2008
■ - E4432B	HP	Signal Generator	US38440950	June 16, 2008
■ - SMJ100A	R/S	Vecter Signal Generator	100698	June 16, 2008
■ - FSP	R/S	Spectrum Analyzer	100017	Mar. 11, 2008

All test equipment used is calibrated on a regular basis.

## 8.4 Test data

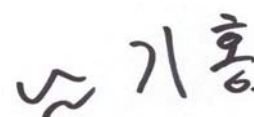
### 8.4.1 Test Result for Part 24E

-. Test Date : February 25~26, 2009

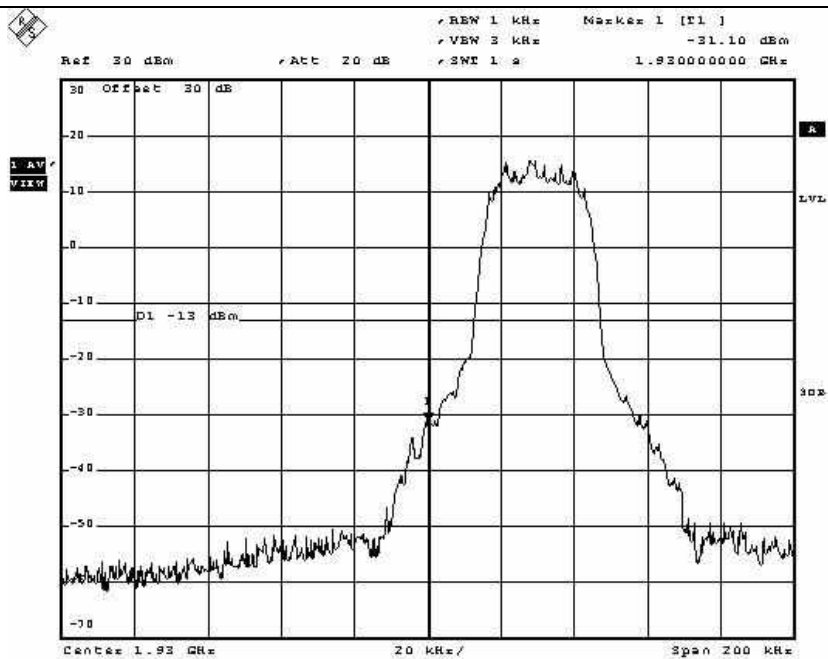
-. Result : PASSED BY -14.52 dB at high channel of WCDMA Mode

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
TDMA	Low	1 930.00	-31.10	-13.00
	High	1 995.00	-33.33	
GSM	Low	1 929.98	-34.61	
	High	1 950.28	-33.38	
EDGE	Low	1 929.96	-37.12	-13.00
	High	1 995.02	-35.49	
CDMA	Low	1 930.00	-42.18	
	High	1 995.00	-43.97	
1xEVDO	Low	1 930.00	-42.77	-13.00
	High	1 995.00	-43.40	
WCDMA	Low	1 930.00	-28.22	
	High	1 995.00	-27.52	

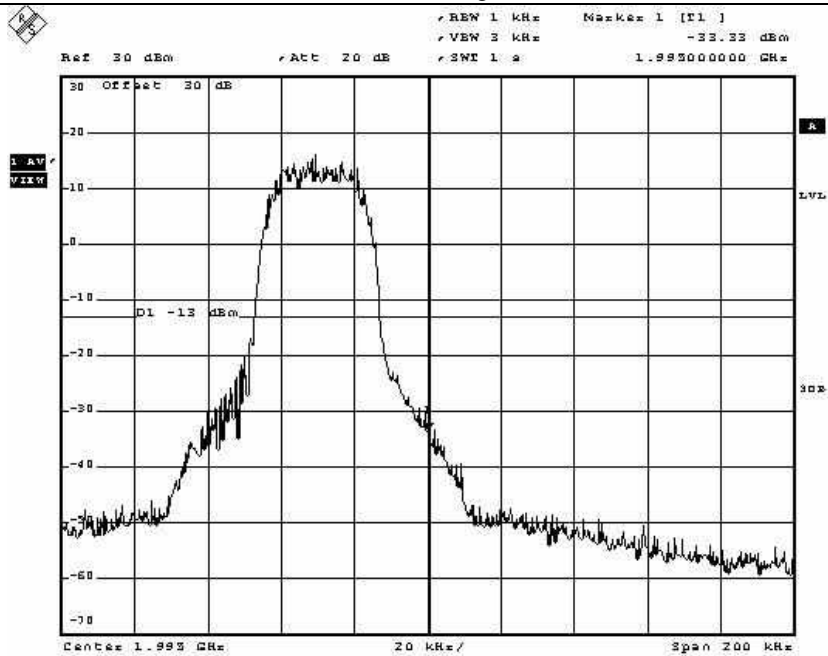
According to Part 24E, out of band emission shall be attenuated by  $43 + 10 \log (P)$  dBc, equates to -13.0dBm.



Tested by: Ki-Hong, Nam / Project Engineer

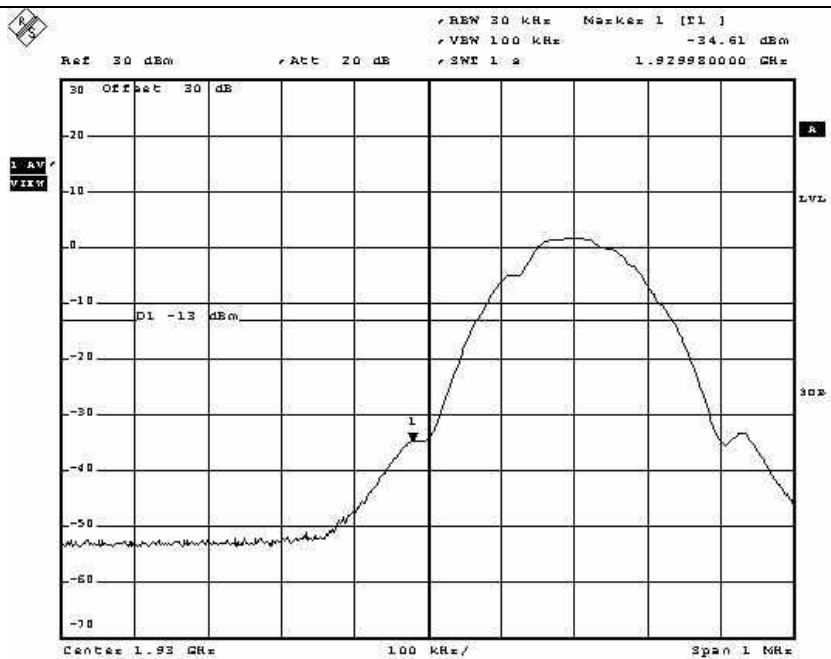


TDMA – Band Edge (Low Channel)

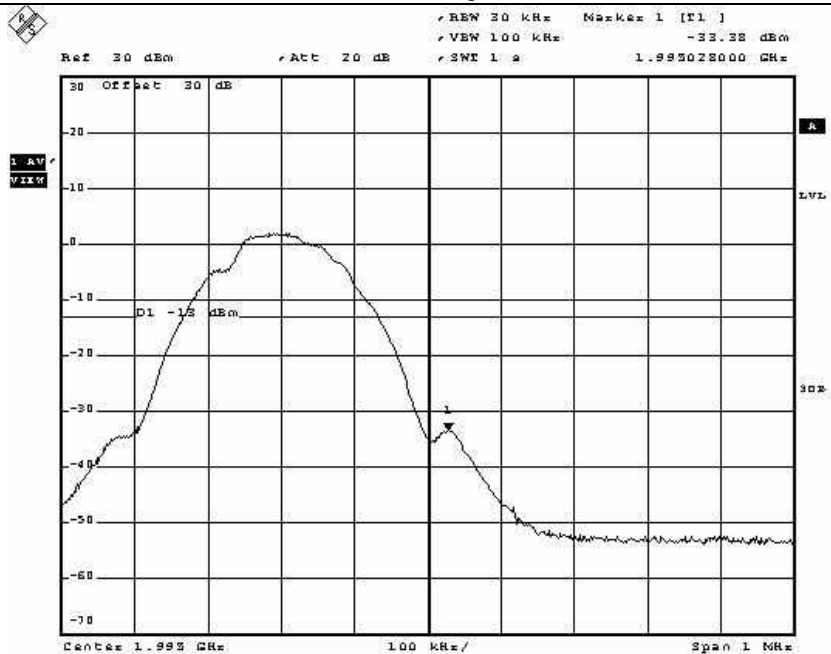


TDMA – Band Edge (High Channel)

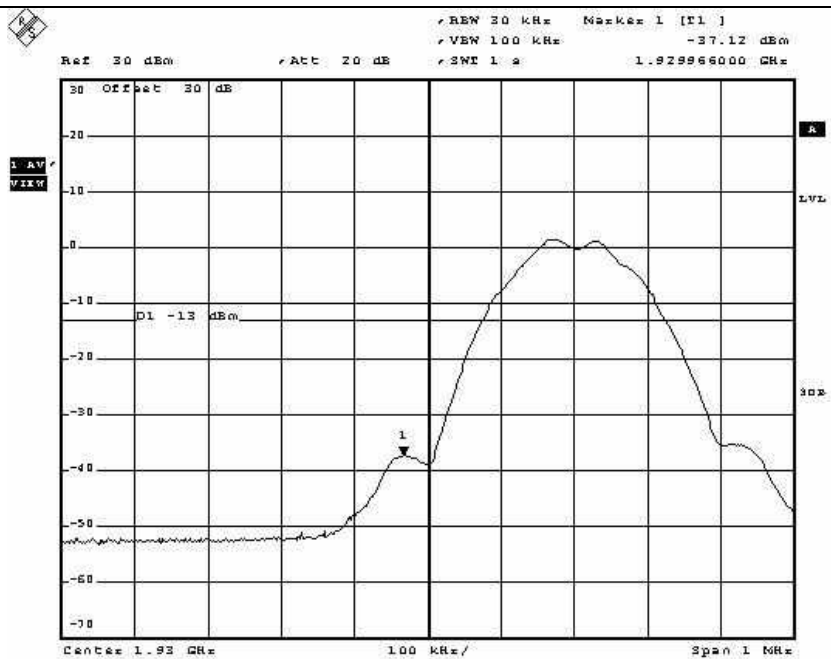




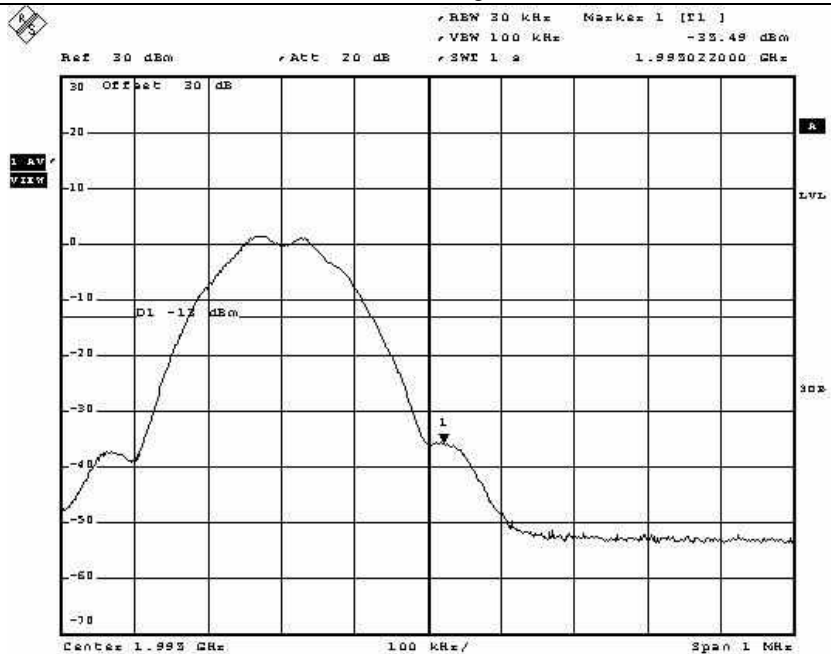
GSM – Band Edge (Low Channel)



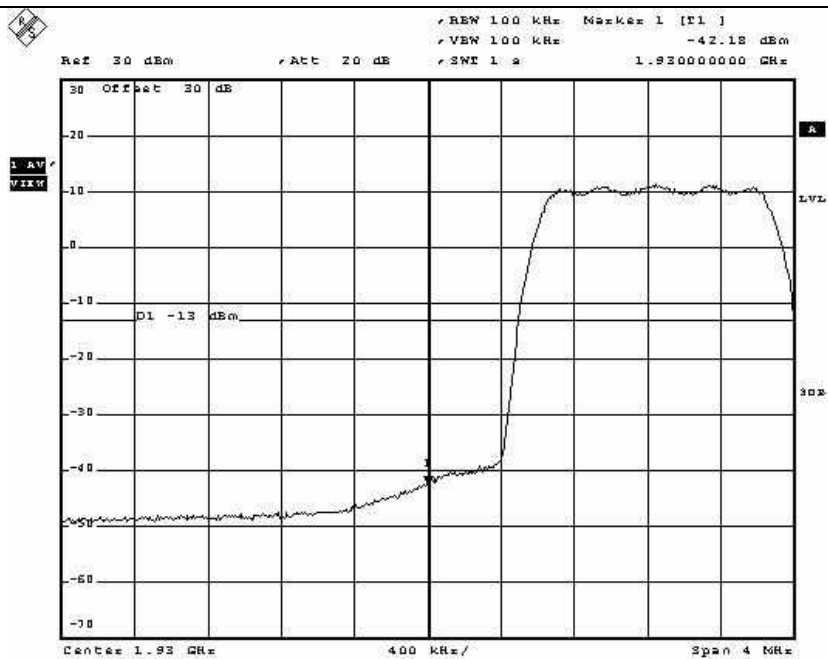
GSM – Band Edge (High Channel)



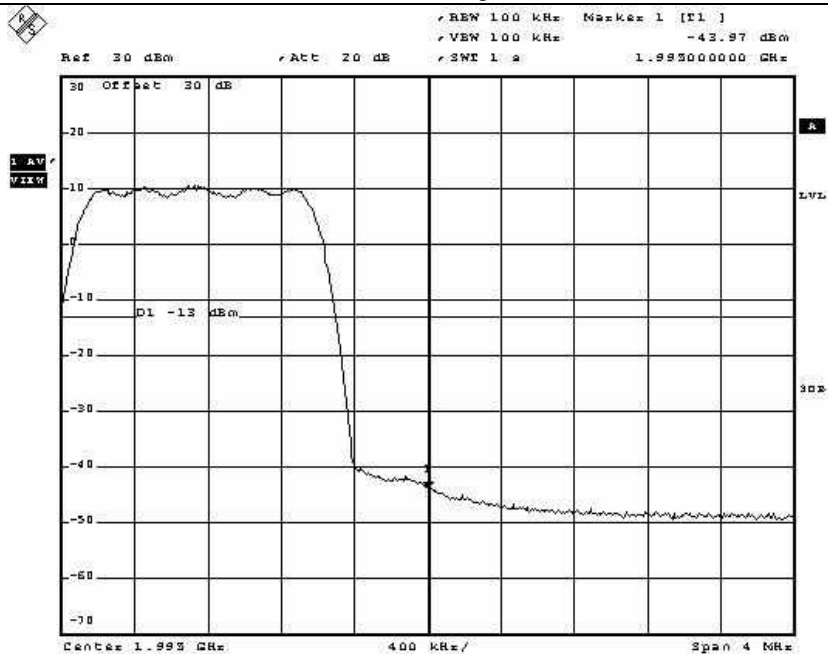
EDGE – Band Edge (Low Channel)



EDGE – Band Edge (High Channel)

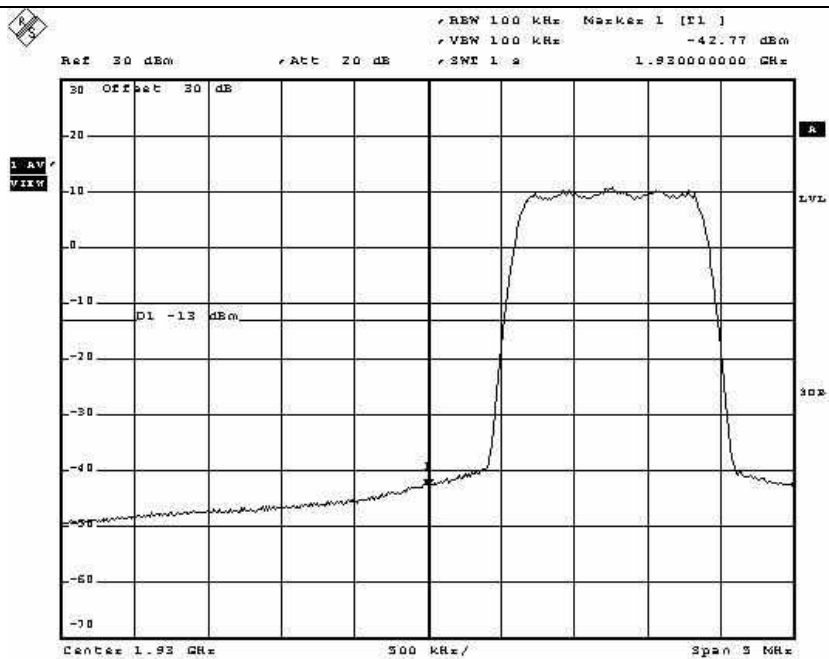


#### CDMA – Band Edge (Low Channel)

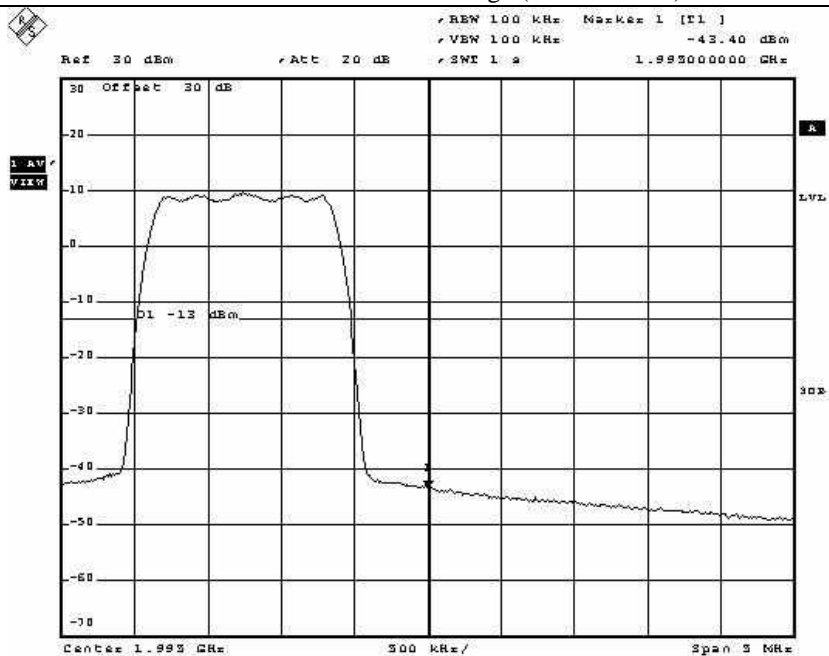


#### CDMA – Band Edge (High Channel)

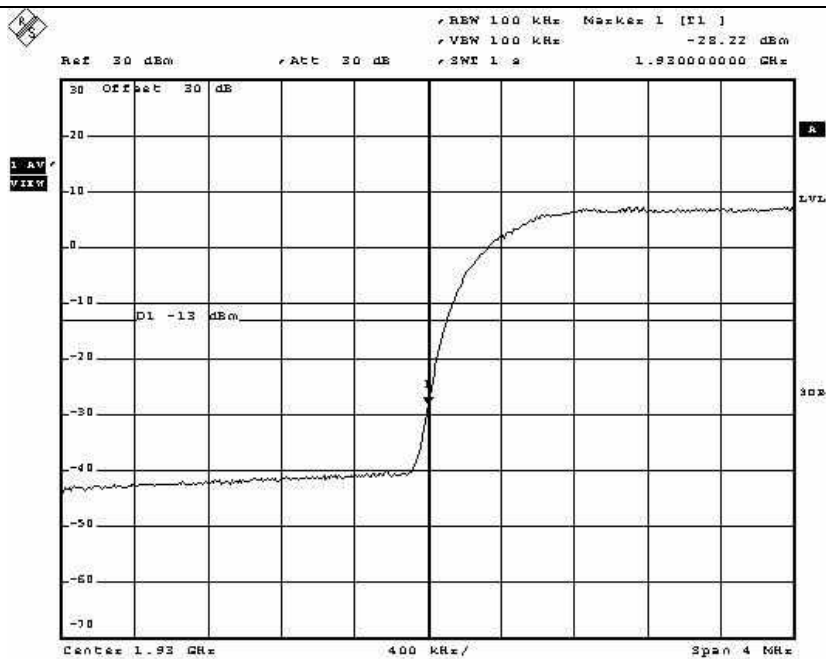




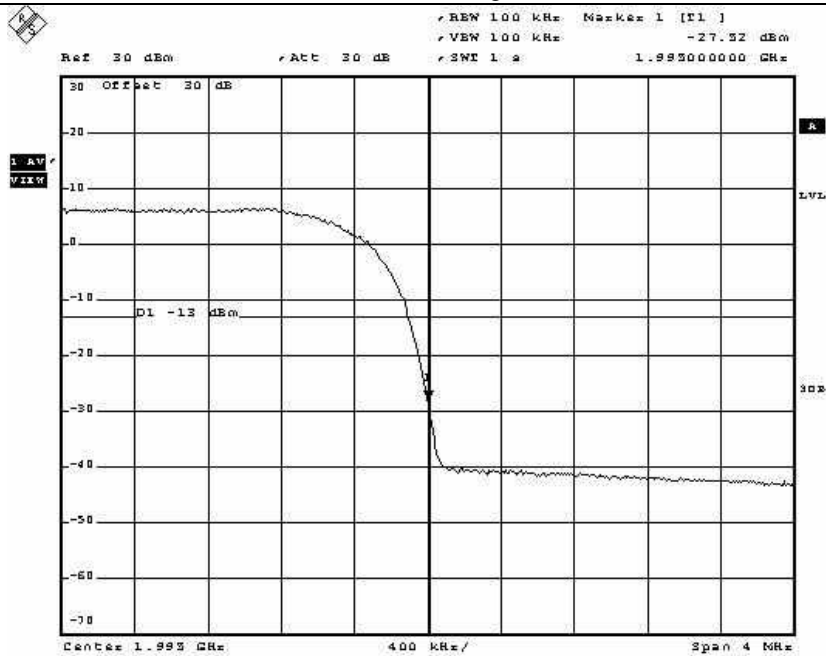
1xEVDO – Band Edge (Low Channel)



1xEVDO – Band Edge (High Channel)



WCDMA – Band Edge (Low Channel)



WCDMA – Band Edge (High Channel)

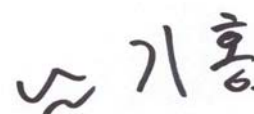
#### 8.4.2 Test Result for Part 27

-. Test Date : February 25~26, 2009

-. Result : PASSED BY -15.61 dB at low channel of WCDMA Mode

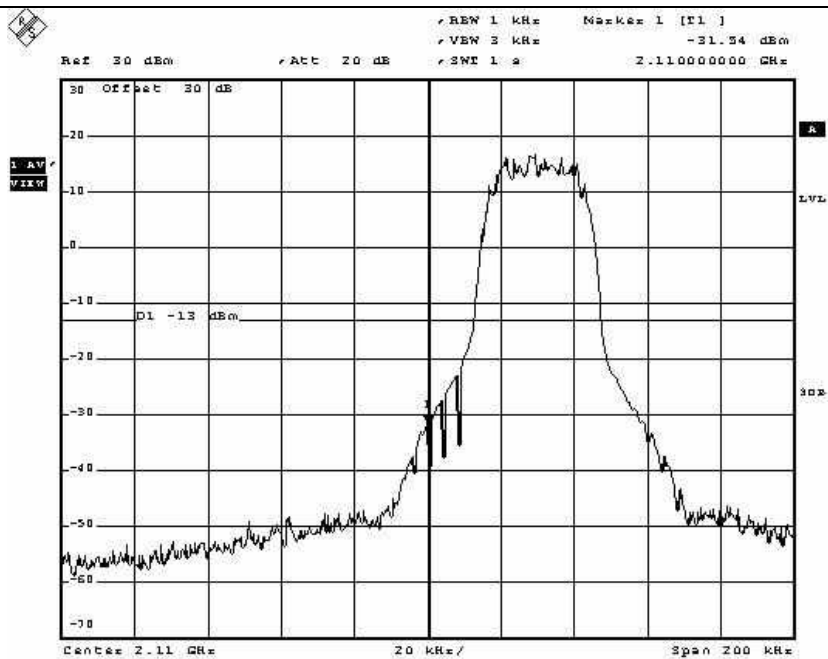
Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
TDMA	Low	2 110.00	-31.54	-13.00
	High	2 155.00	-33.65	
GSM	Low	2 109.98	-33.37	
	High	2 155.02	-33.12	
EDGE	Low	2 109.96	-35.62	-13.00
	High	2 155.01	-34.68	
CDMA	Low	2 110.00	-45.88	
	High	2 155.00	-46.83	
1xEVDO	Low	2 110.00	-43.12	-13.00
	High	2 155.00	-44.35	
WCDMA	Low	2 110.00	-28.61	
	High	2 155.00	-28.77	

According to Part 27, out of band emission shall be attenuated by  $43 + 10 \log (P)$  dBc, equates to -13.0dBm.

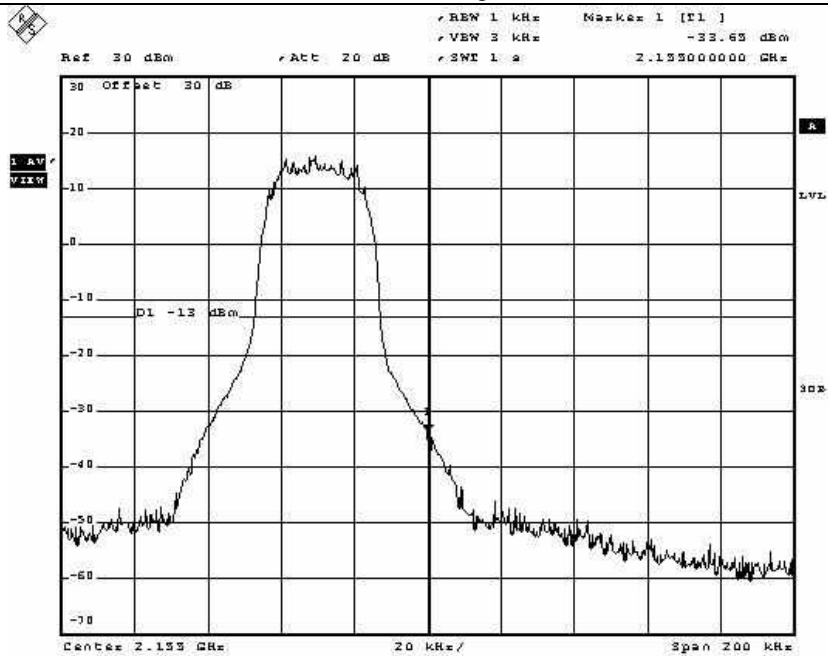


Tested by: Ki-Hong, Nam / Project Engineer

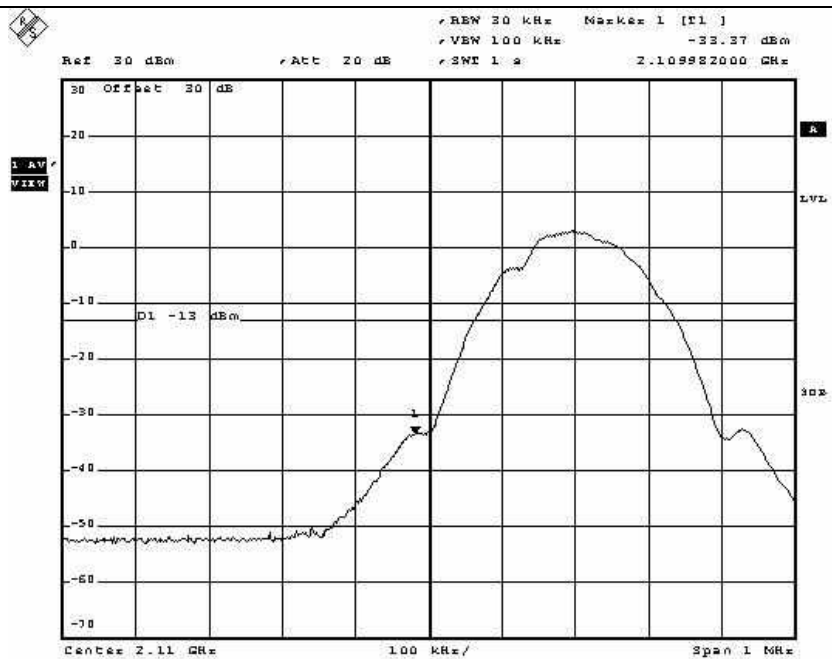




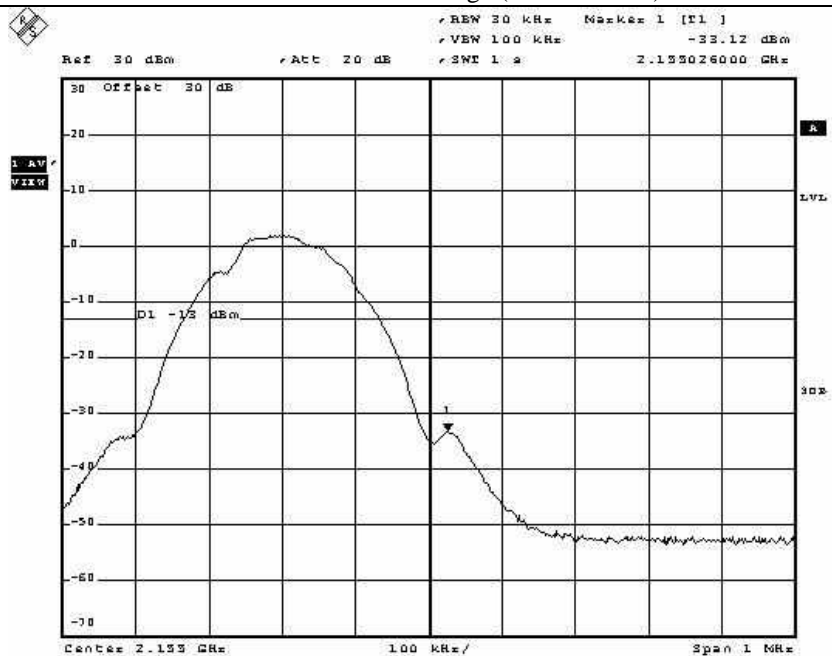
TDMA – Band Edge (Low Channel)



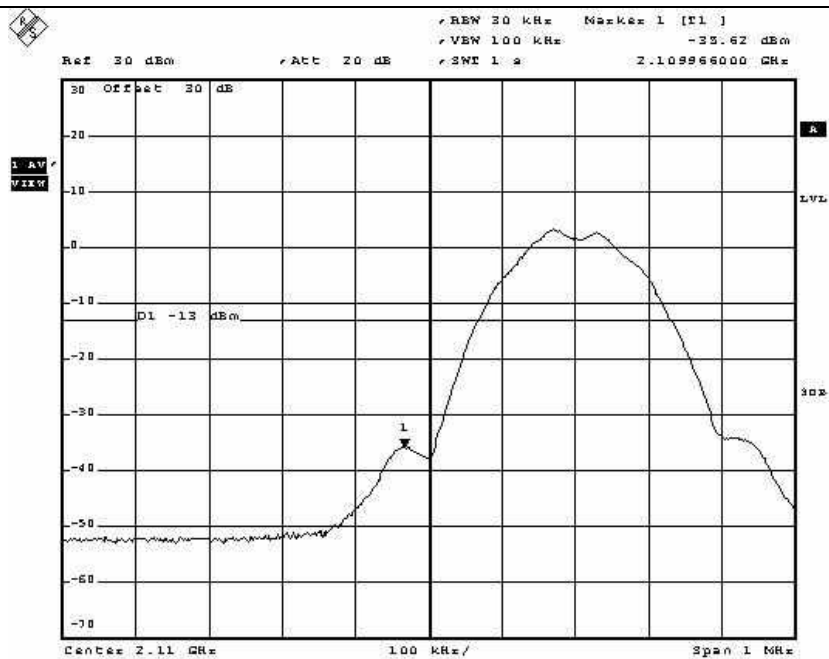
TDMA – Band Edge (High Channel)



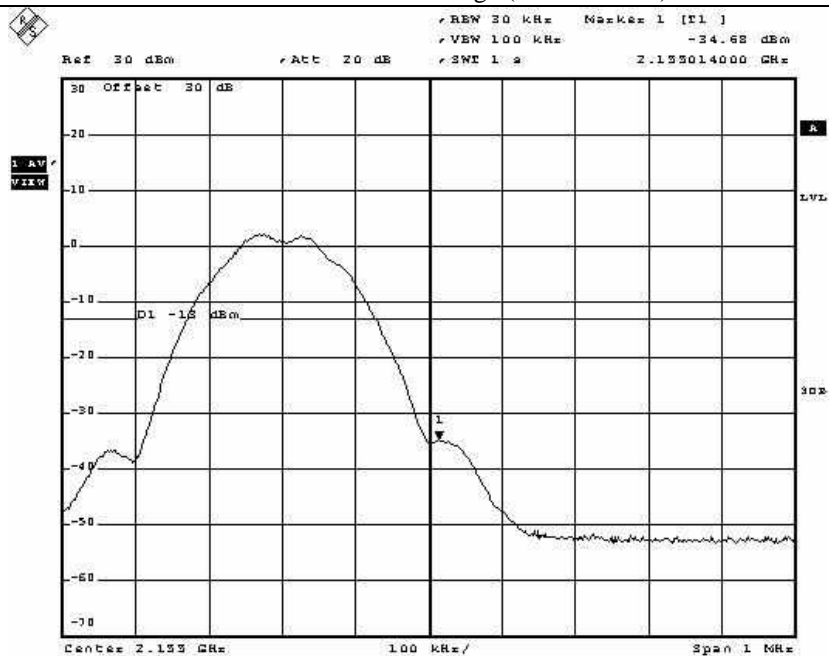
GSM – Band Edge (Low Channel)



GSM – Band Edge (High Channel)

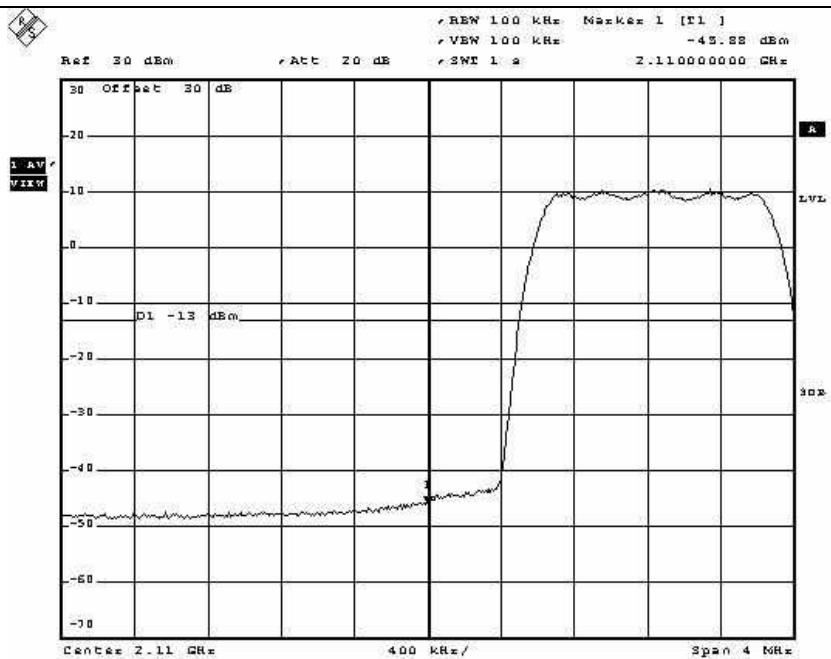


EDGE – Band Edge (Low Channel)

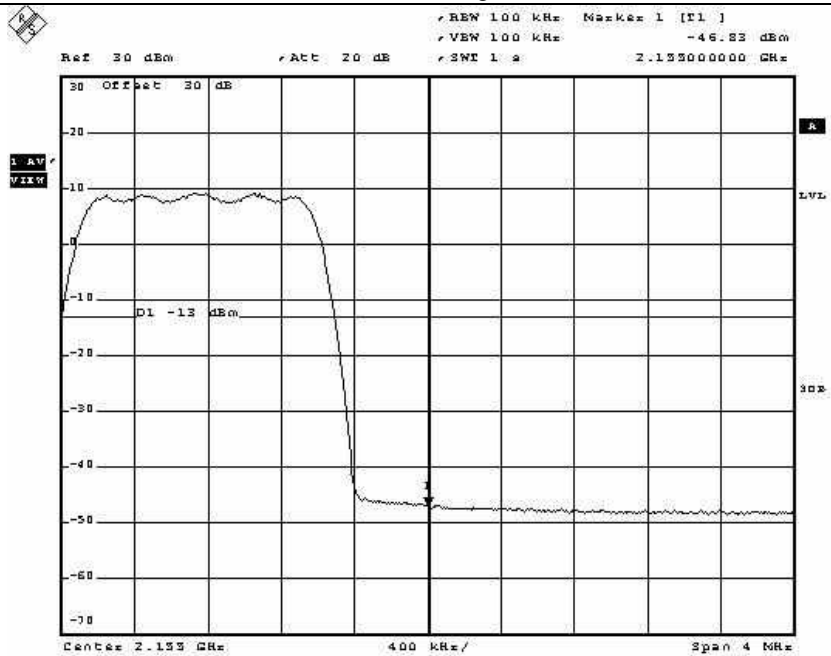


EDGE – Band Edge (High Channel)





CDMA – Band Edge (Low Channel)



CDMA – Band Edge (High Channel)