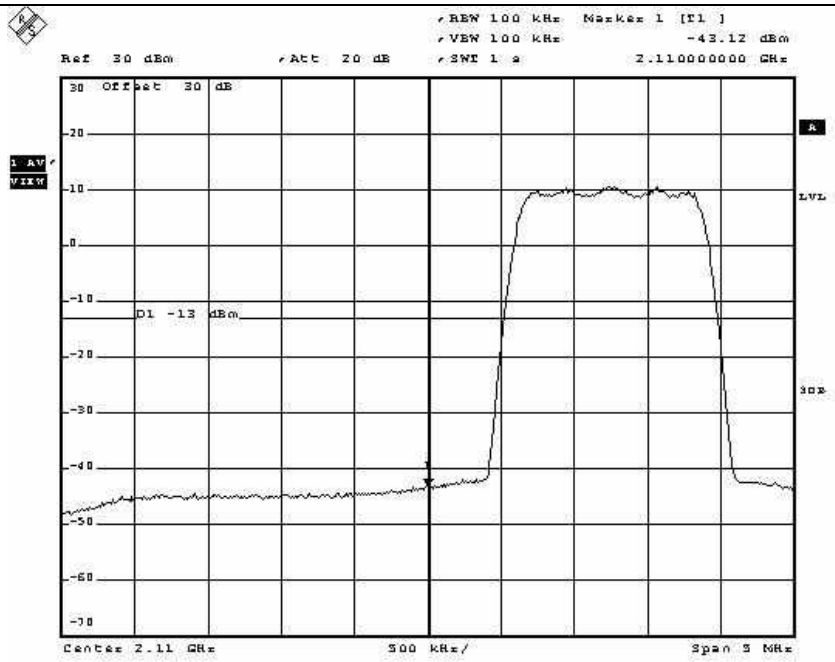
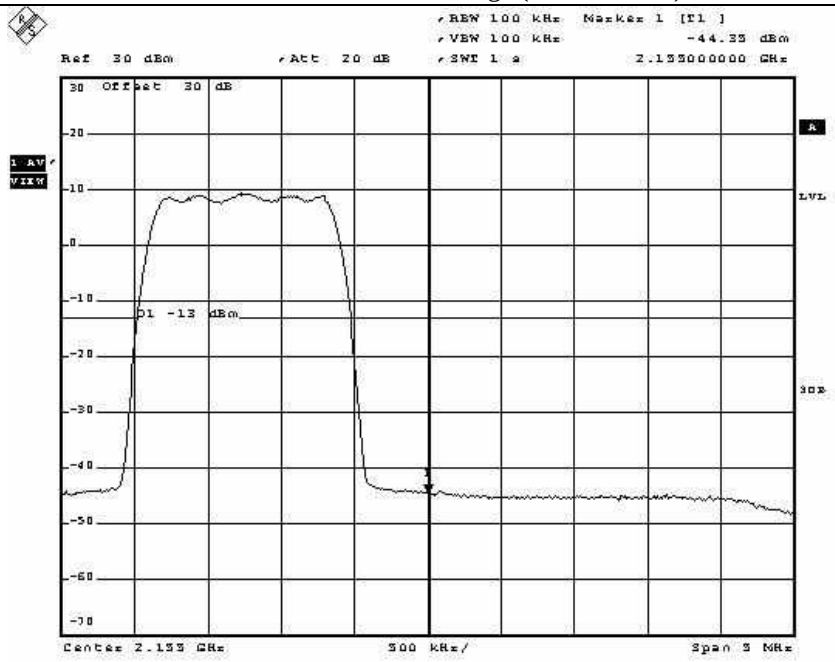


1xEVDO – Band Edge (Low Channel)



1xEVDO – Band Edge (High Channel)

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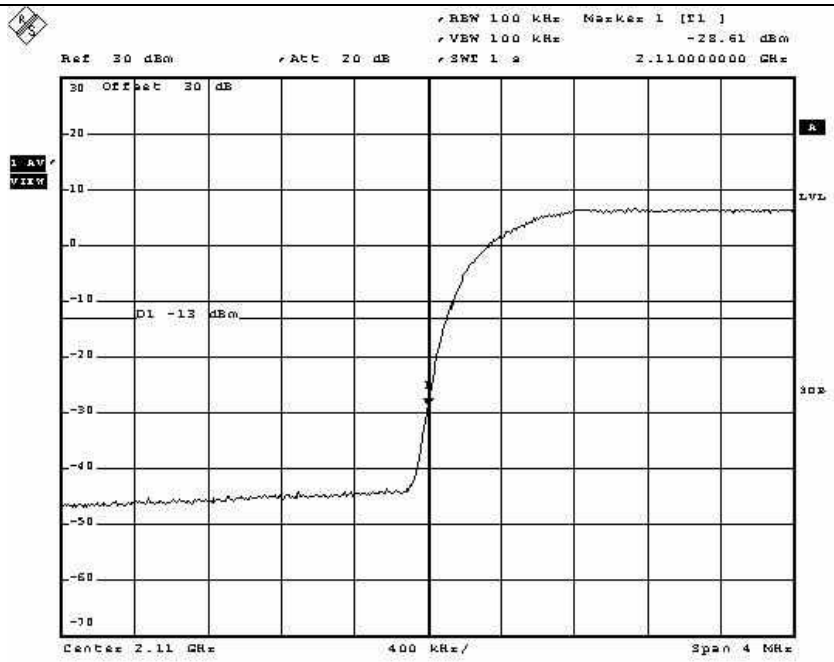
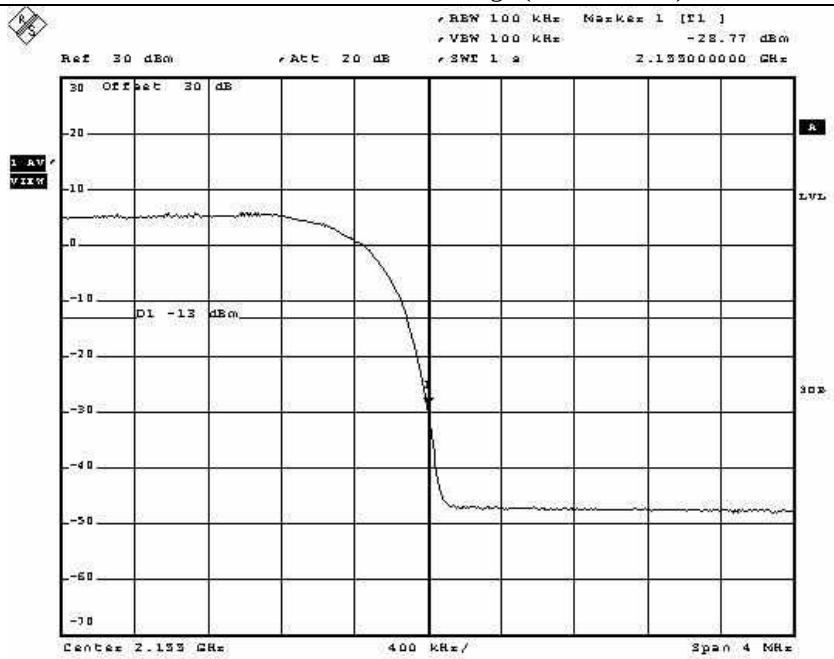


WCDMA – Band Edge (Low Channel)



WCDMA – Band Edge (High Channel)

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9. INTERMODULATION TEST

9.1 Operating environment

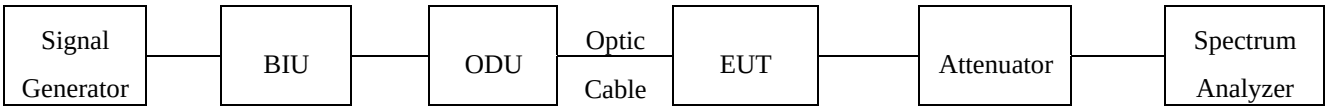
Temperature : 21.8 °C

Relative humidity : 47 %R.H.

9.2 Test set-up

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.

Two input signals are equal in level and were sent to the input of the EUT.



9.3 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.

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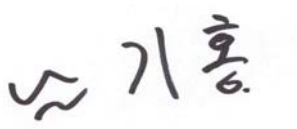
9.4 Test data for Part 24E and Part 27

-. Test Date : February 25~26, 2009

-. Test Result : Pass

Modulation	Channel	Measured
TDMA	Low	< -13 dBm
	High	< -13 dBm
GSM	Low	< -13 dBm
	High	< -13 dBm
EDGE	Low	< -13 dBm
	High	< -13 dBm
CDMA	Low	< -13 dBm
	High	< -13 dBm
1xEVDO	Low	< -13 dBm
	High	< -13 dBm
WCDMA	Low	< -13 dBm
	High	< -13 dBm

Remark: Intermodulation products must be attenuated below the rated power of the EUT at least 43 + 10log (Pw), equivalent to -13dBm. Please refer to test data hereinafter.



Tested by: Ki-Hong, Nam / Project Engineer

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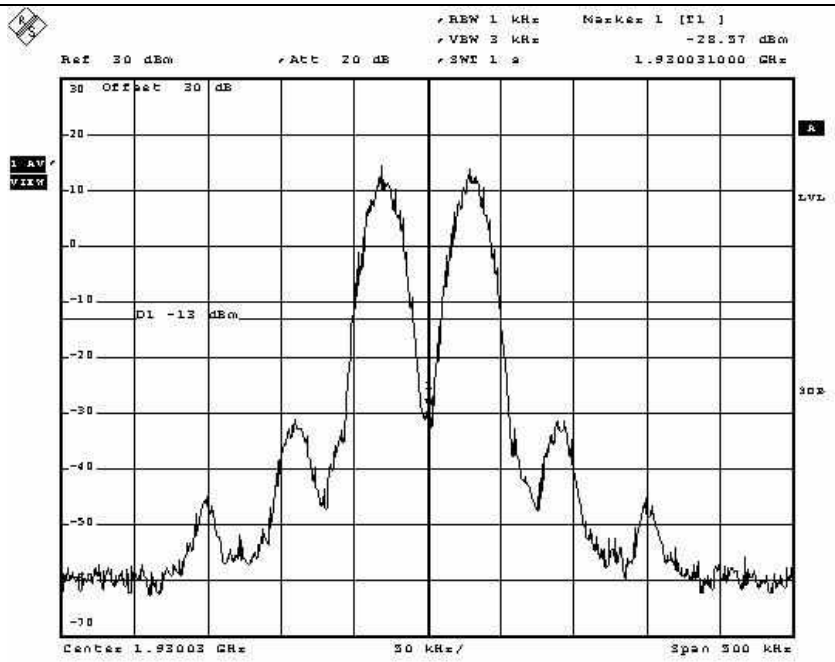
Operating Band: PCS Band



TDMA – Low Channel

TDMA – Low Channel

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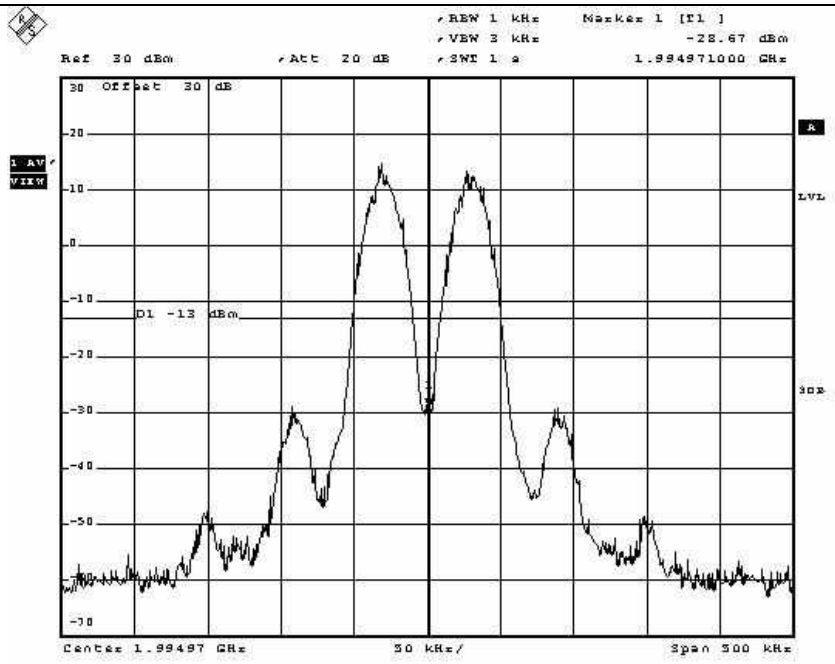
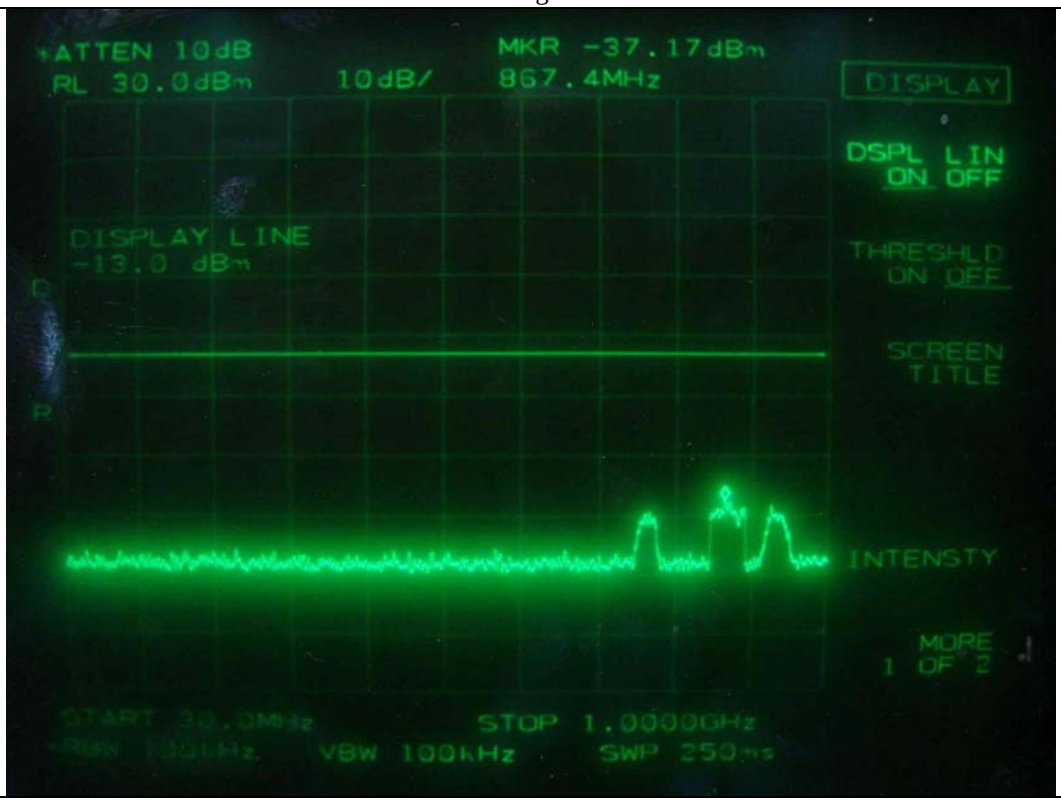


TDMA – High Channel



TDMA – High Channel

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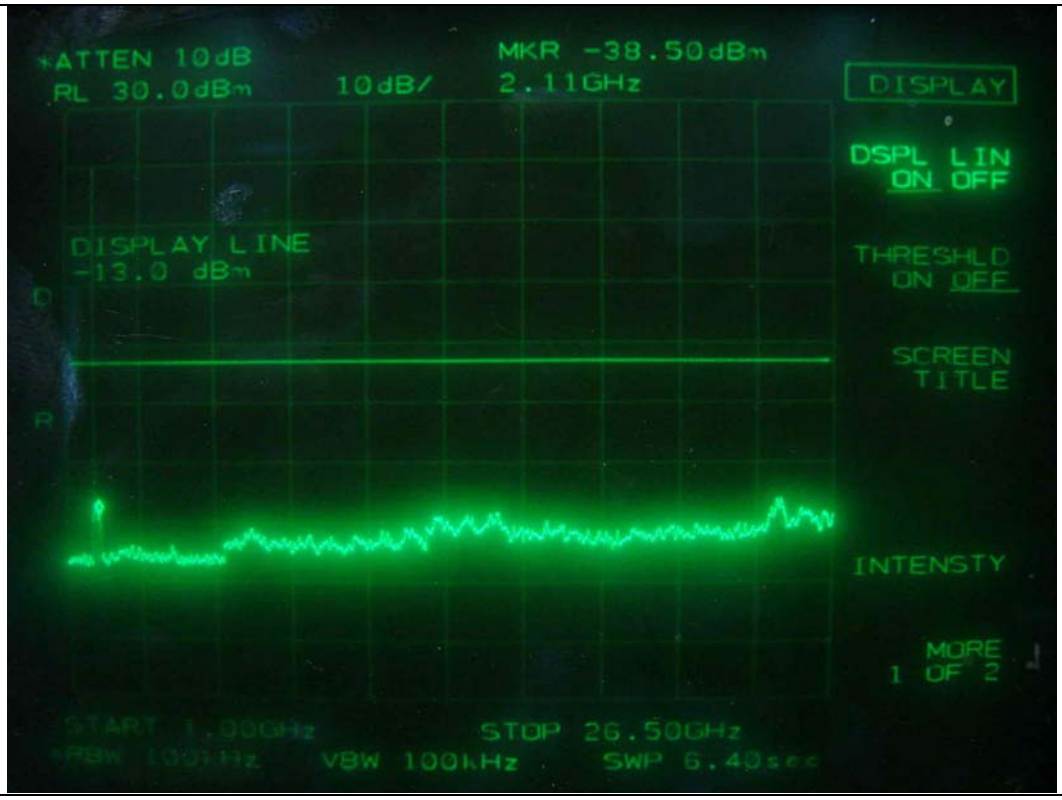

TDMA – High Channel

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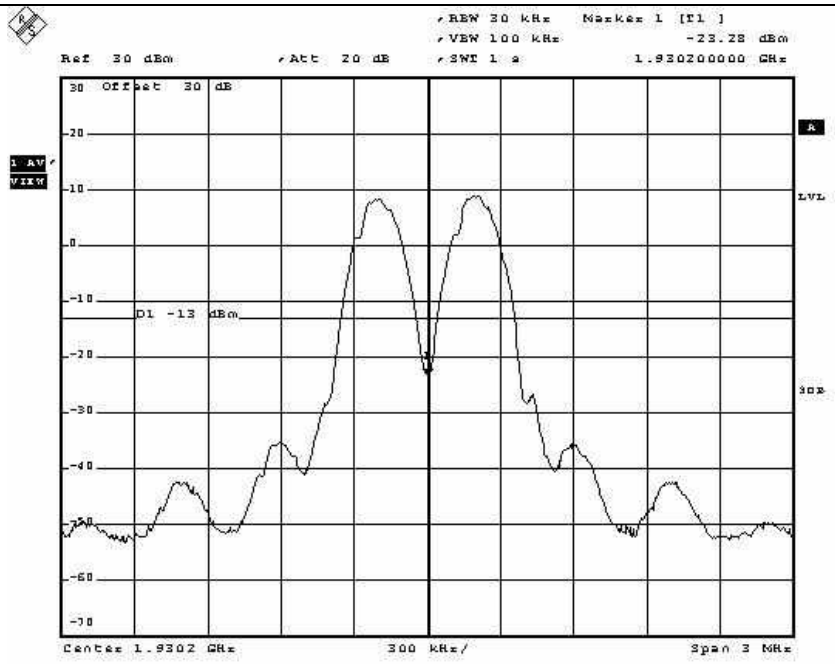

GSM – Low Channel

GSM – Low Channel

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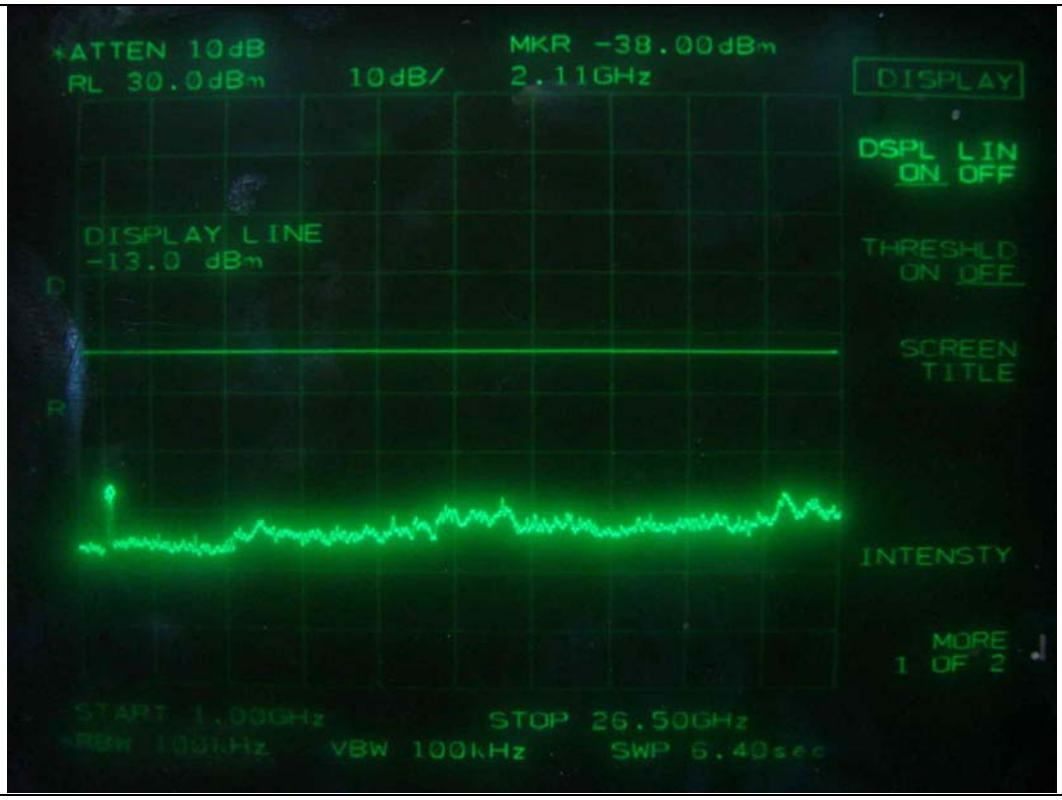

GSM – Low Channel

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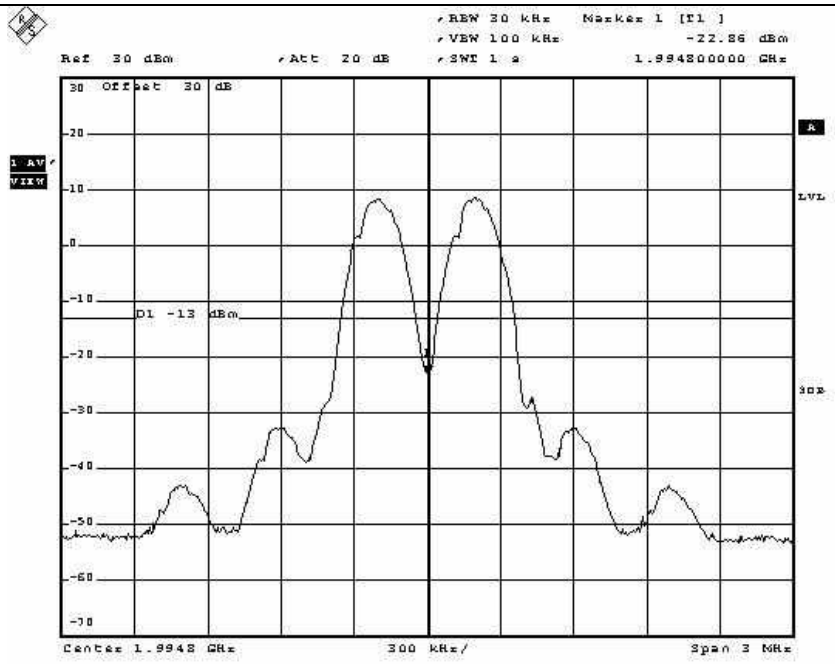

GSM – High Channel

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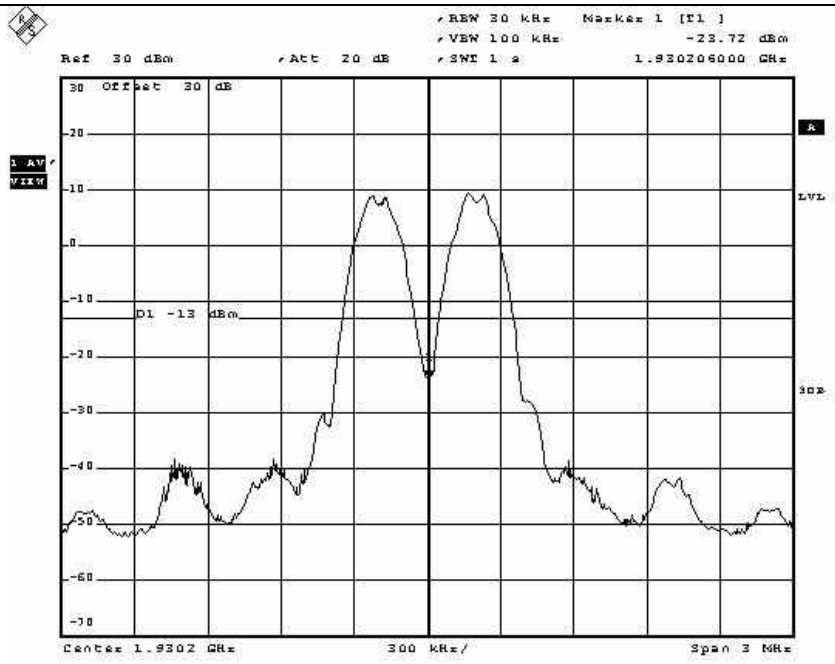
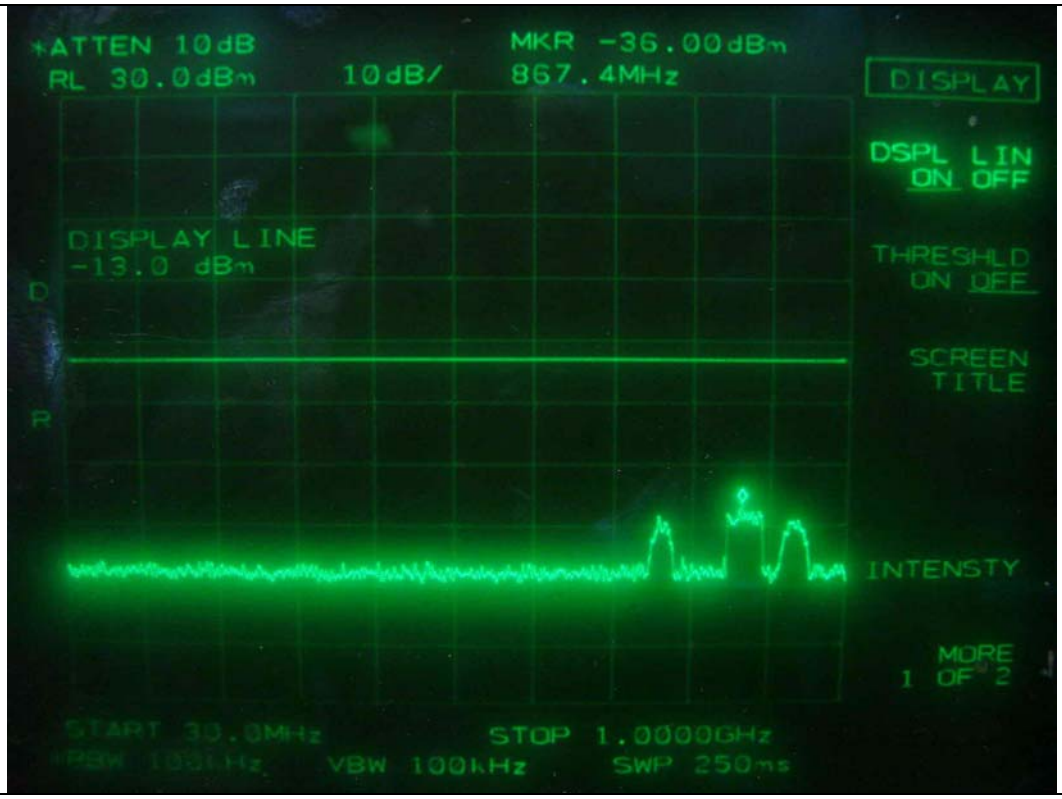


EDGE – Low Channel



EDGE – Low Channel

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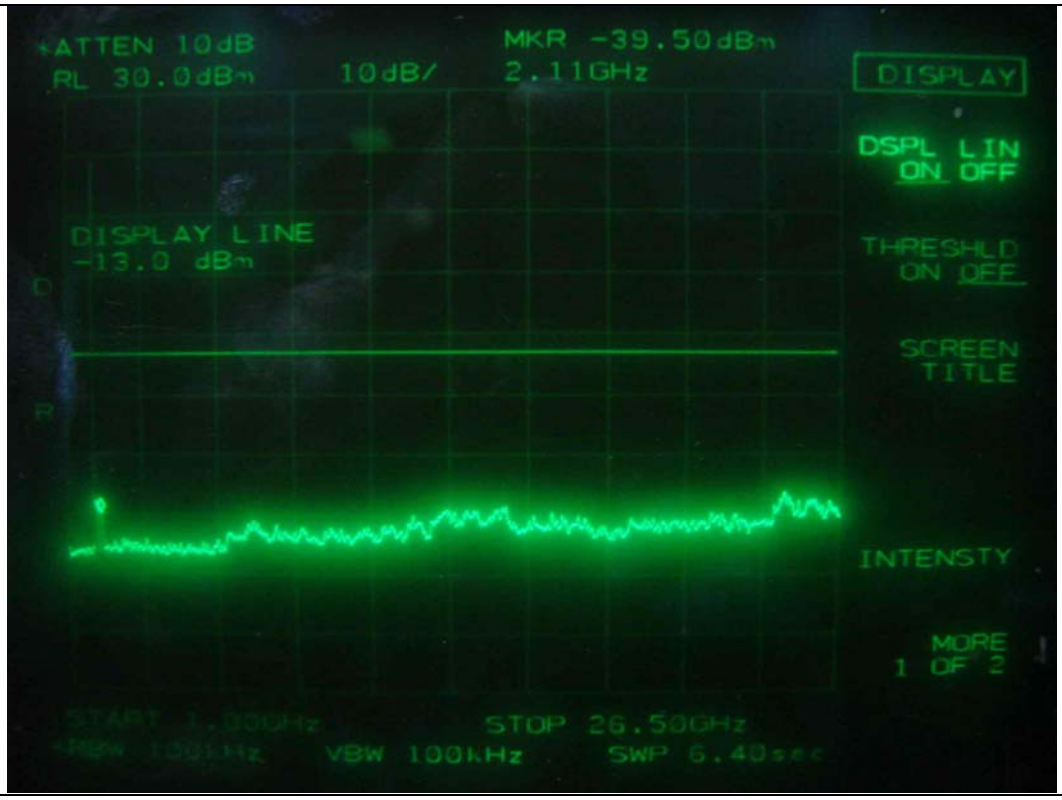

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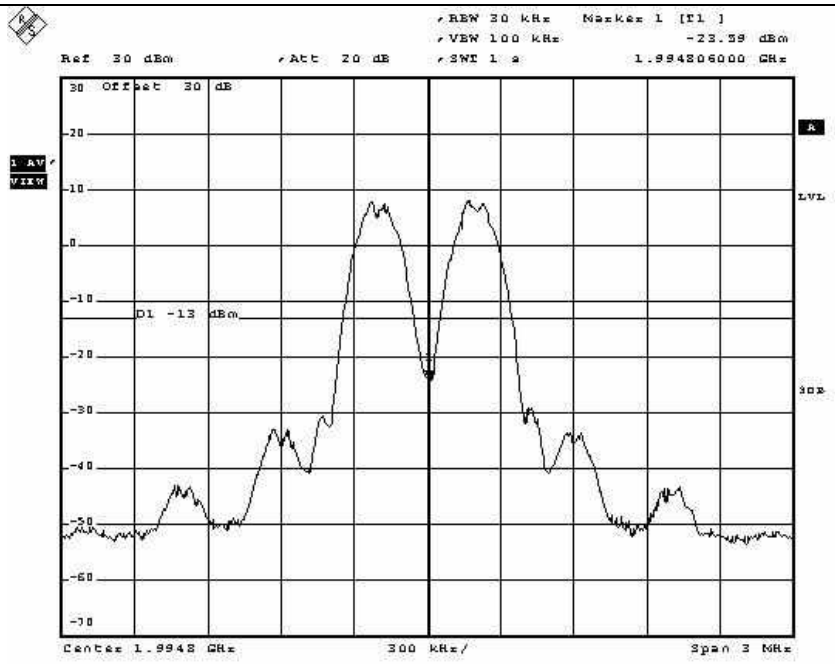
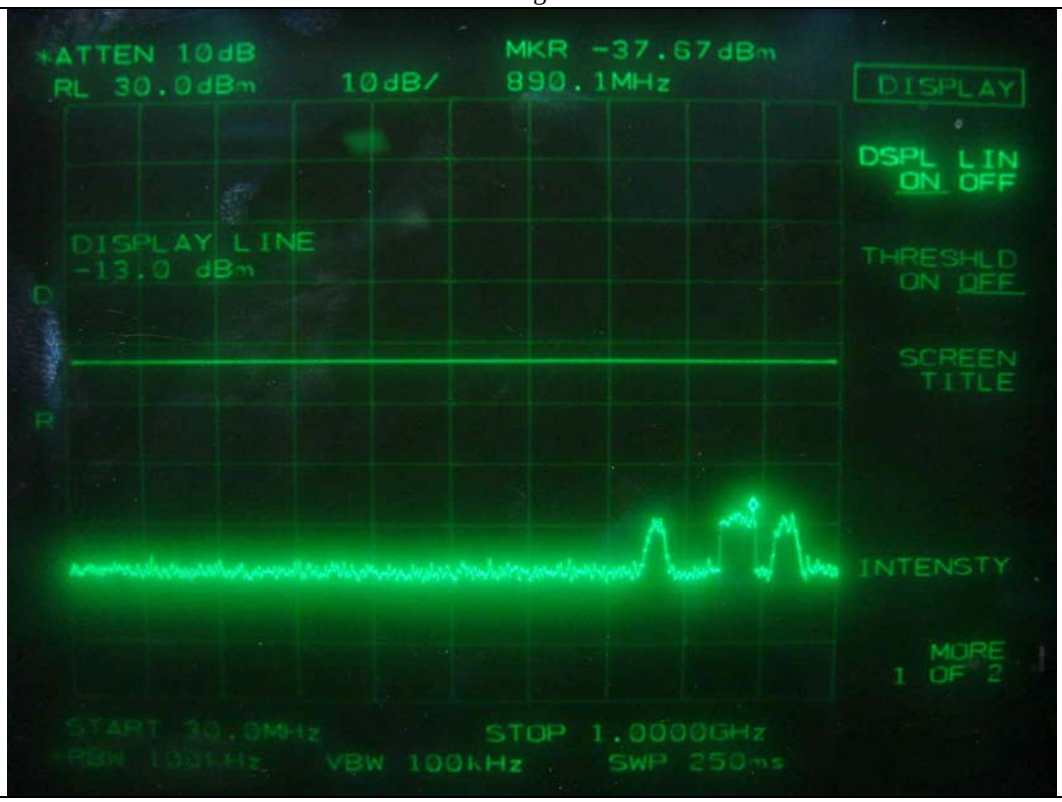


EDGE – High Channel



EDGE – High Channel

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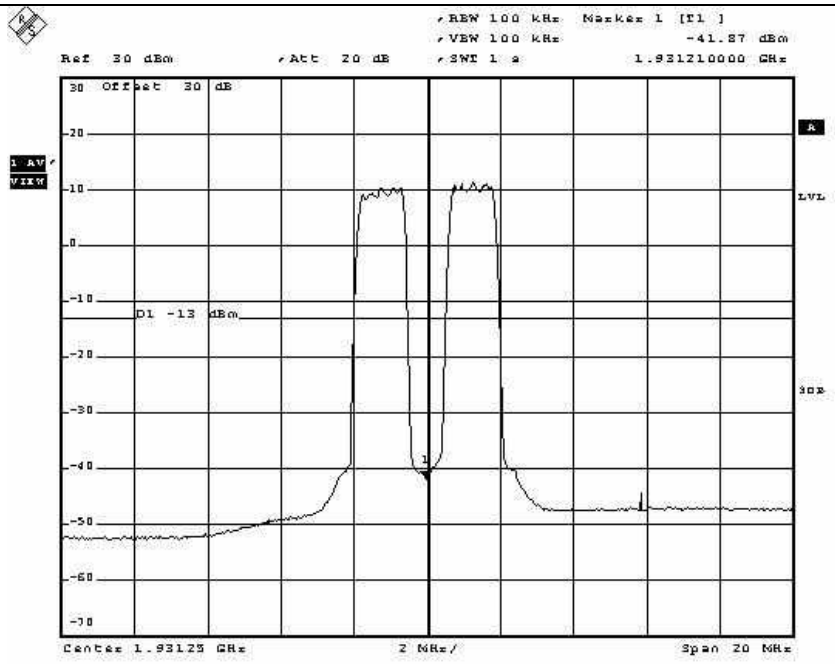
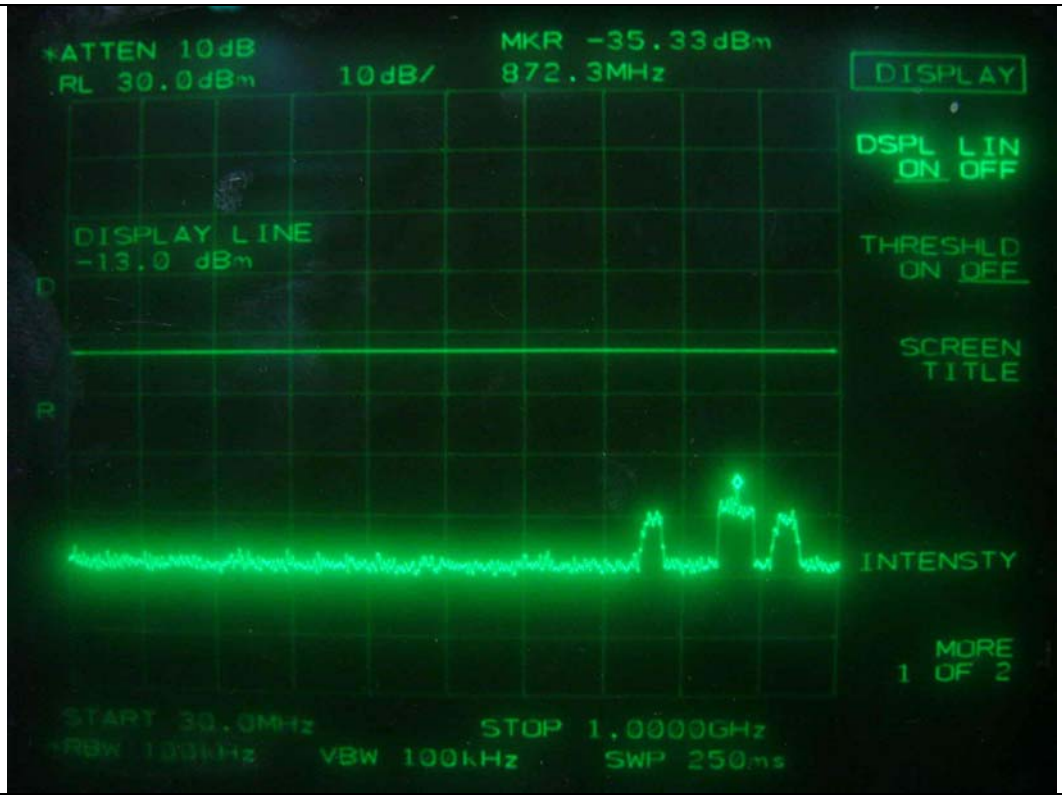


CDMA – Low Channel



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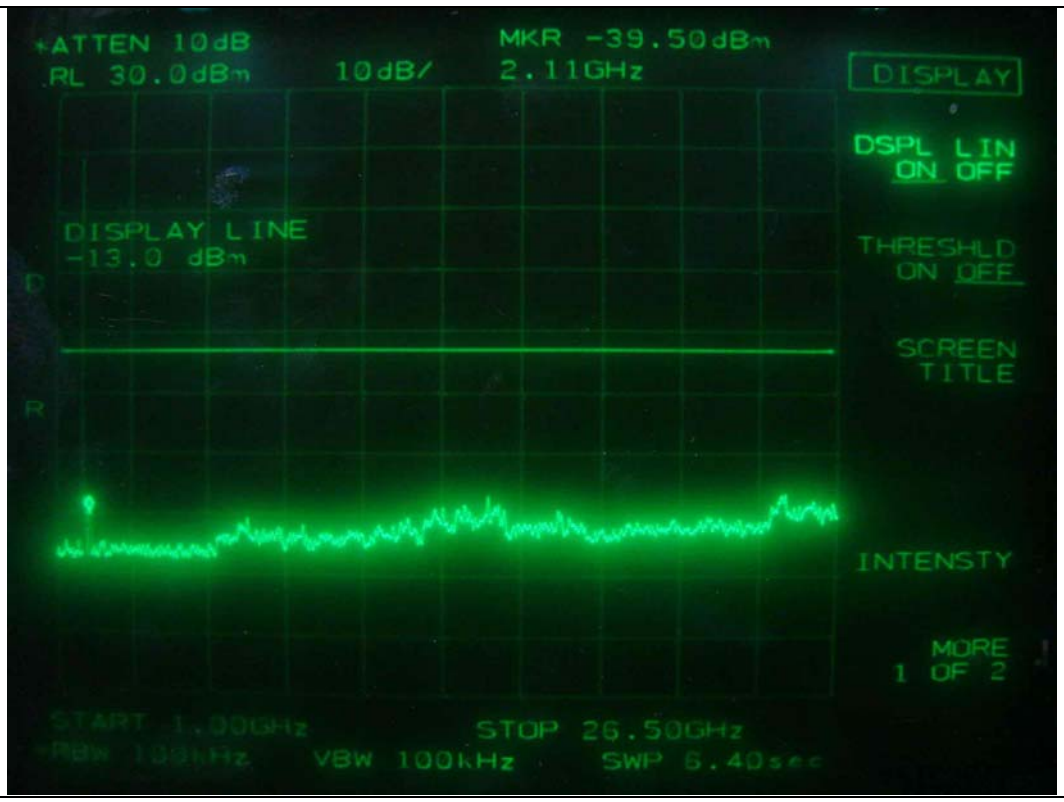

CDMA – Low Channel

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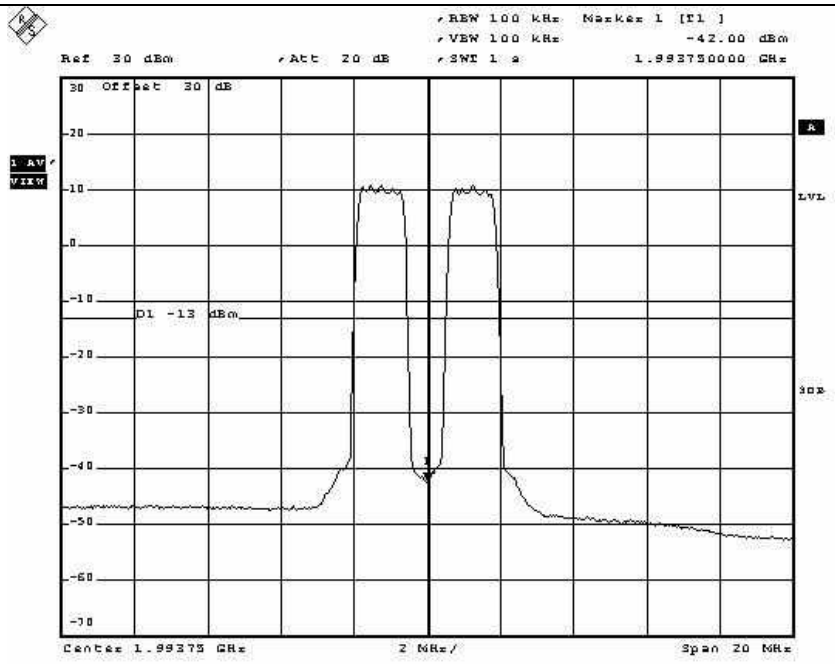
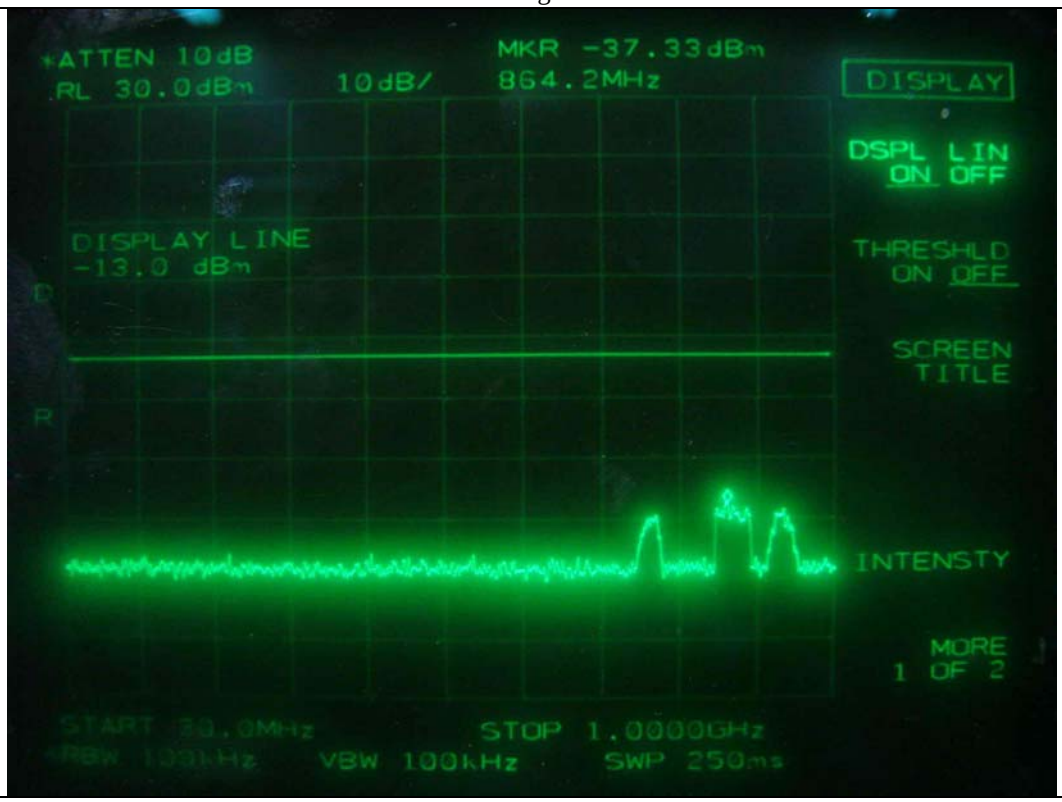


CDMA – High Channel



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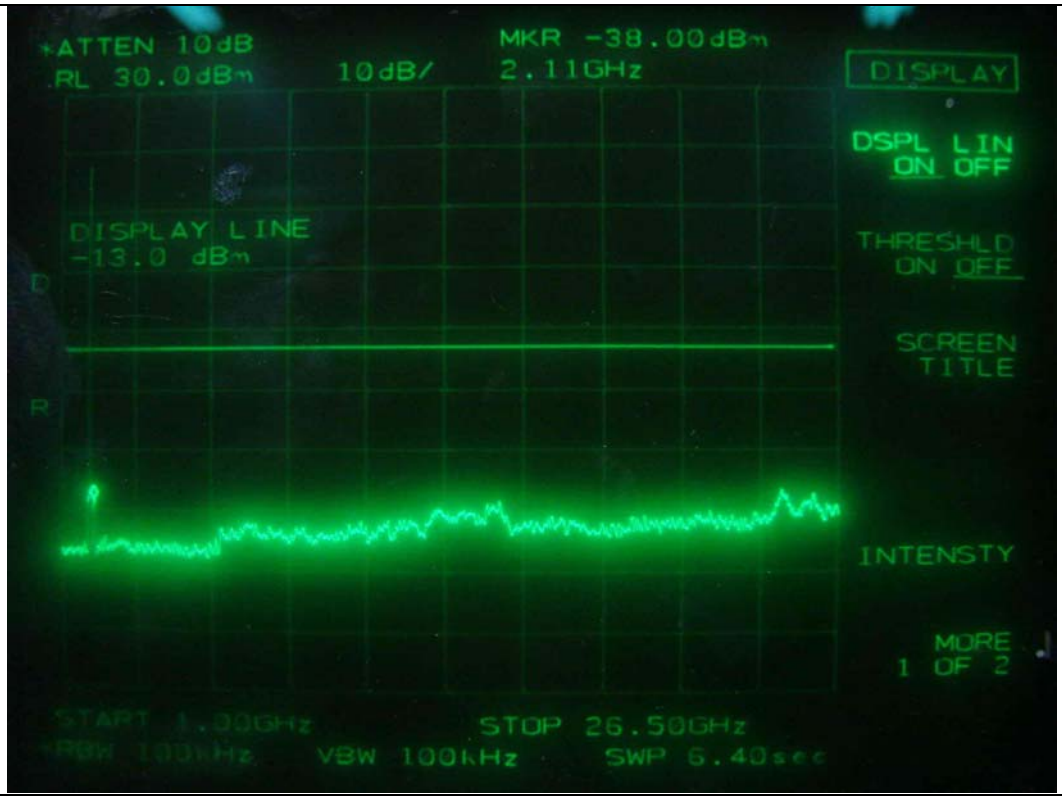

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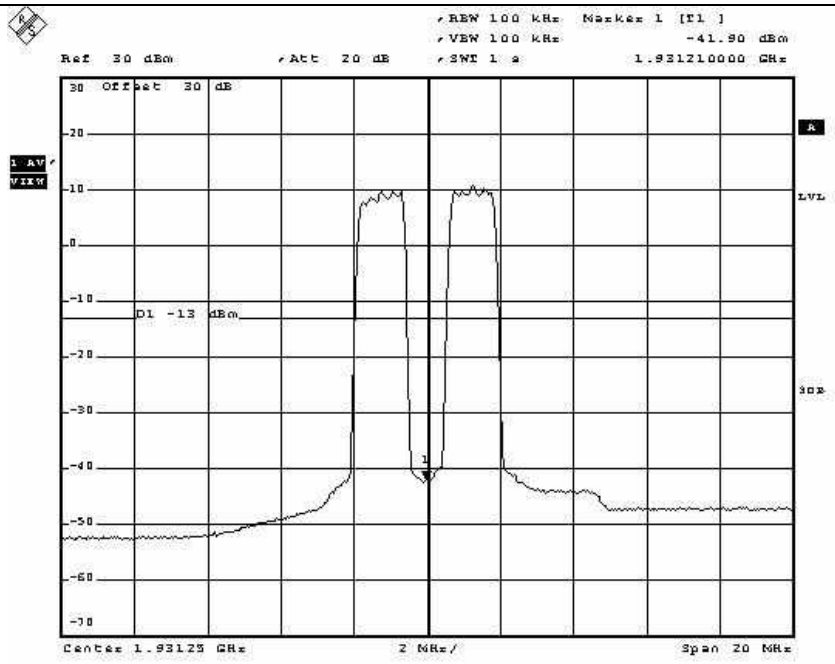
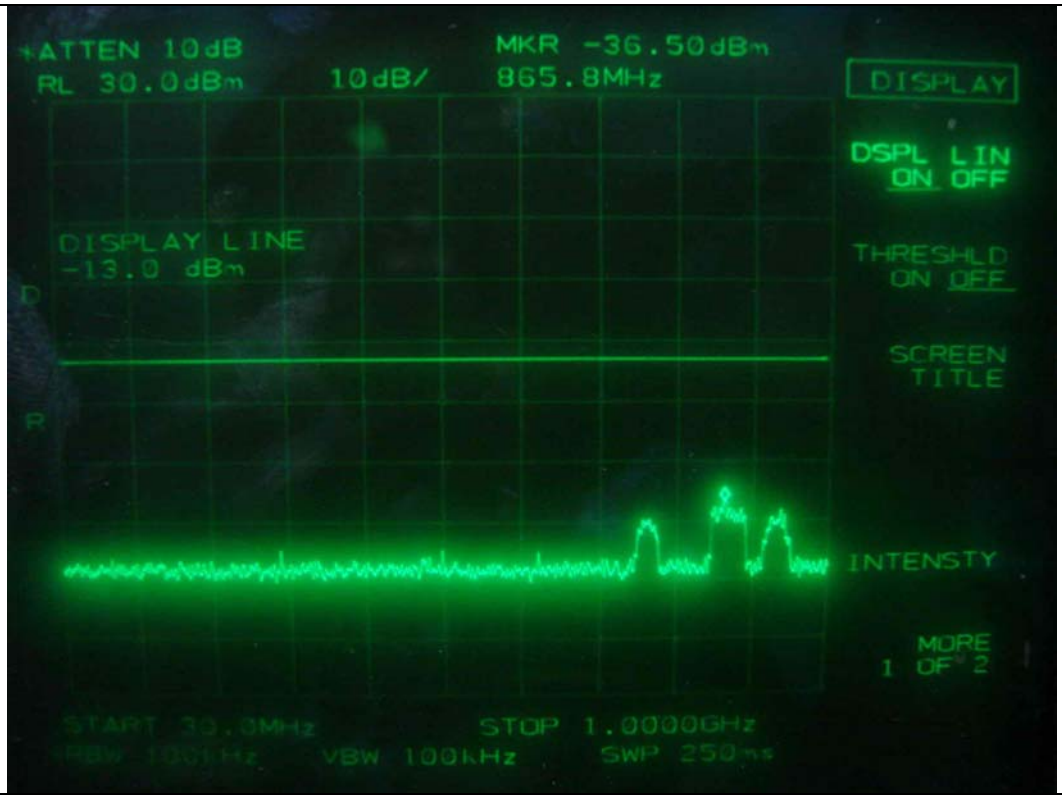


1xEVDO – Low Channel



1xEVDO – Low Channel

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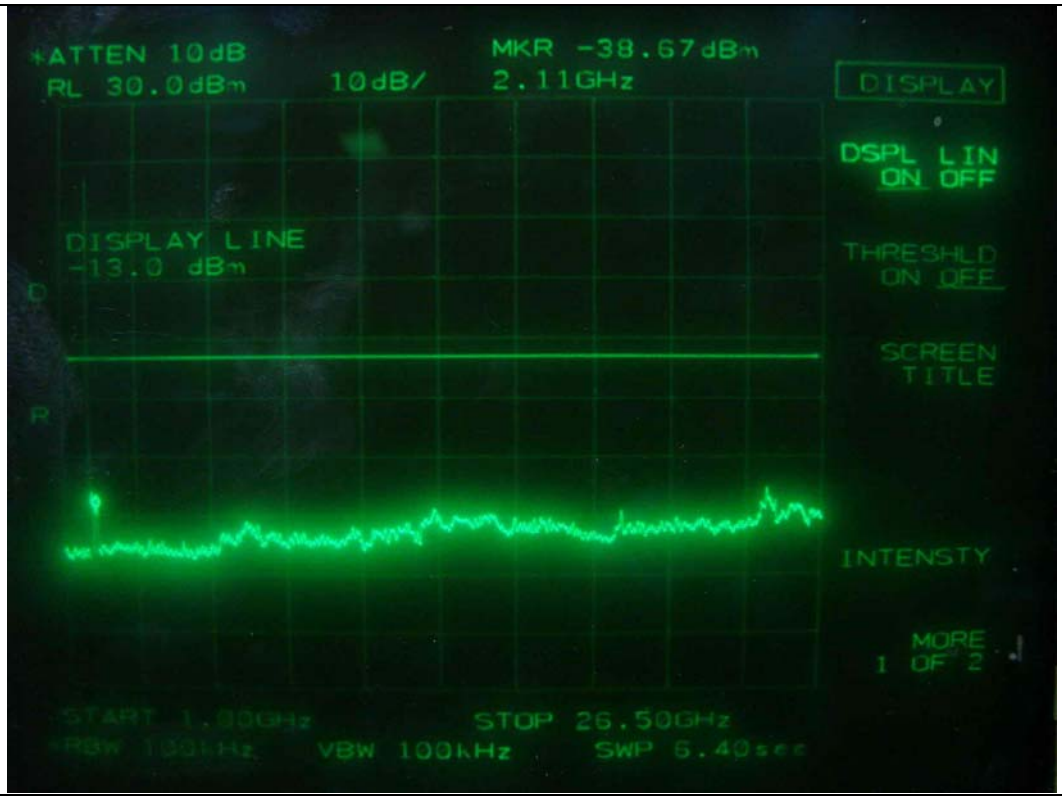

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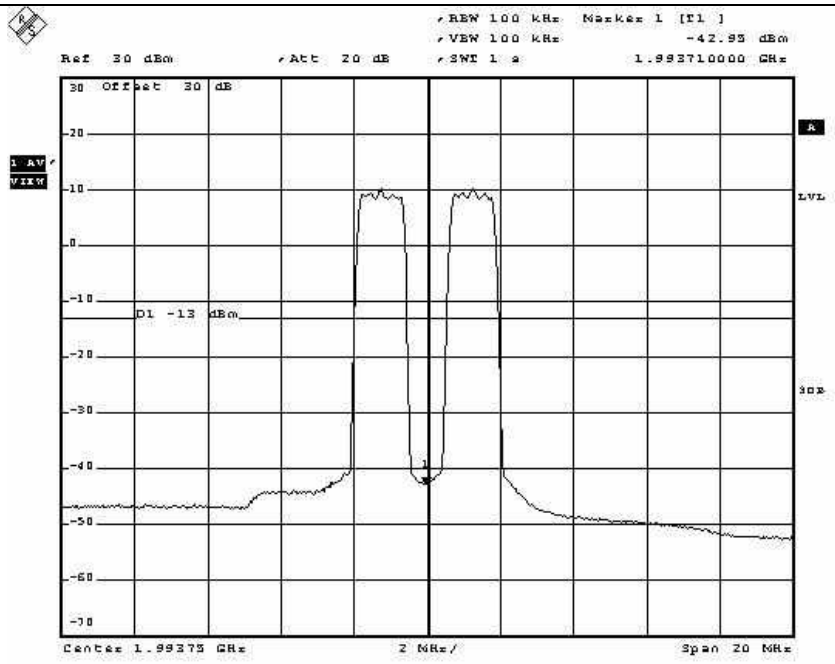
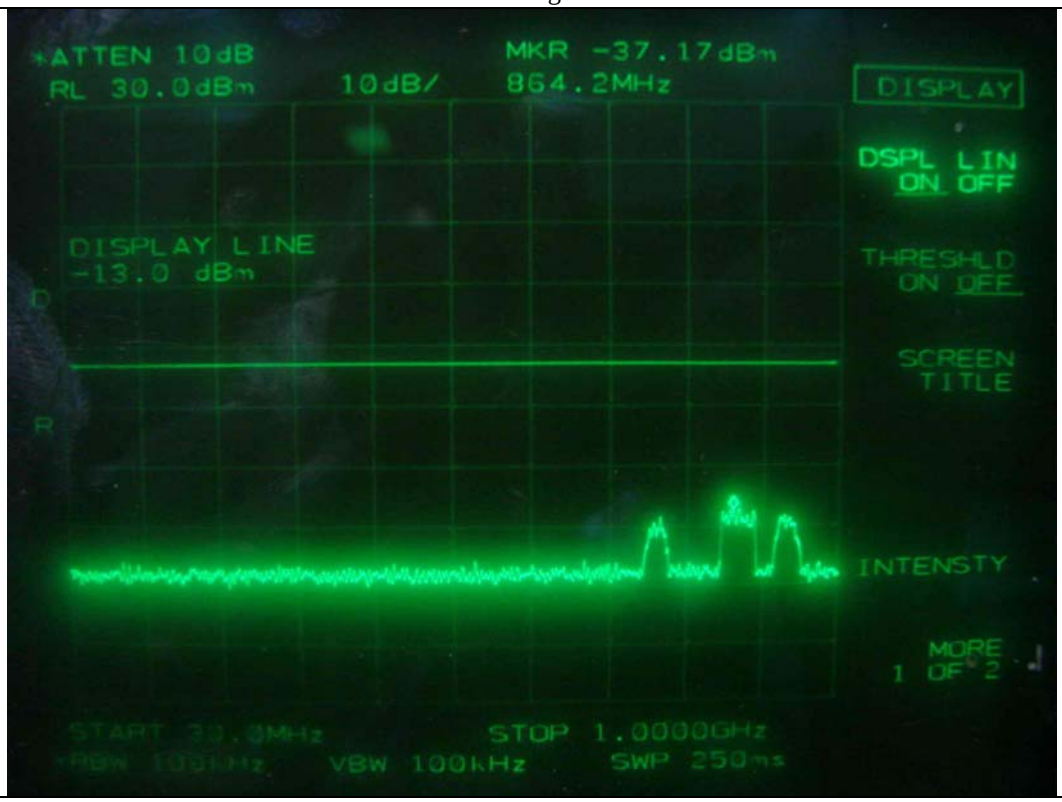


1xEVDO – High Channel



1xEVDO – High Channel

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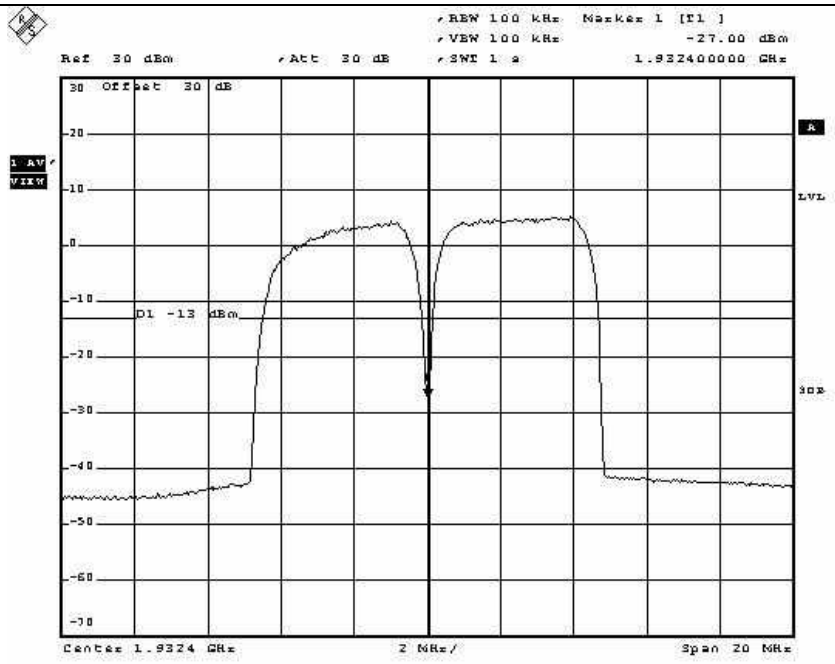

WCDMA – Low Channel

WCDMA – Low Channel

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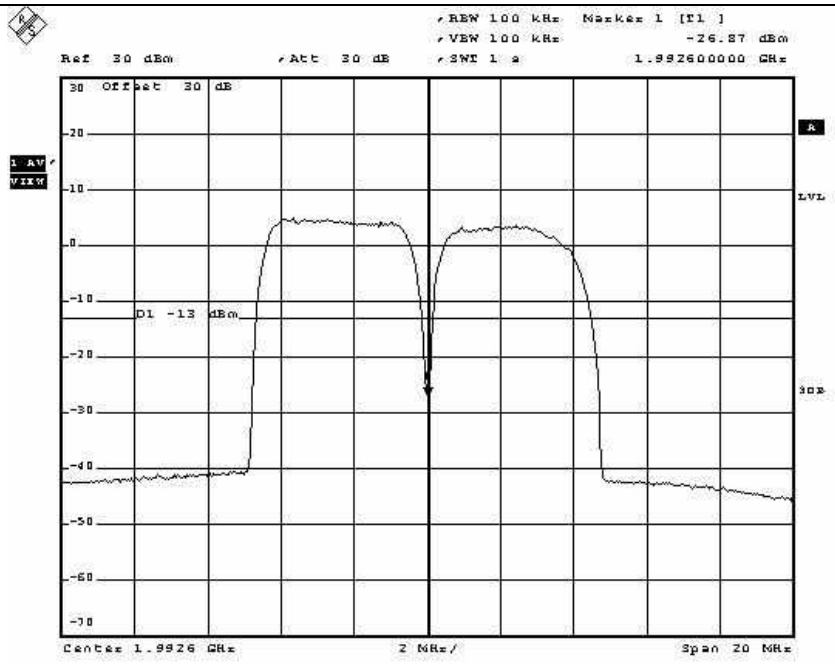

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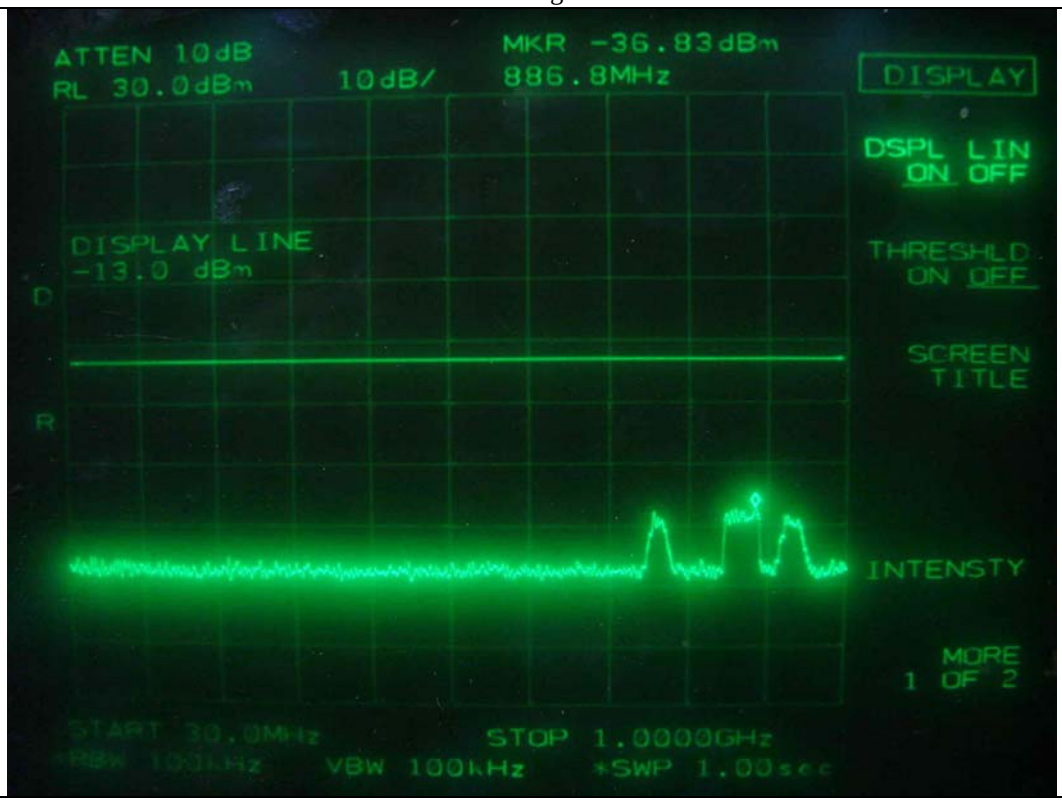

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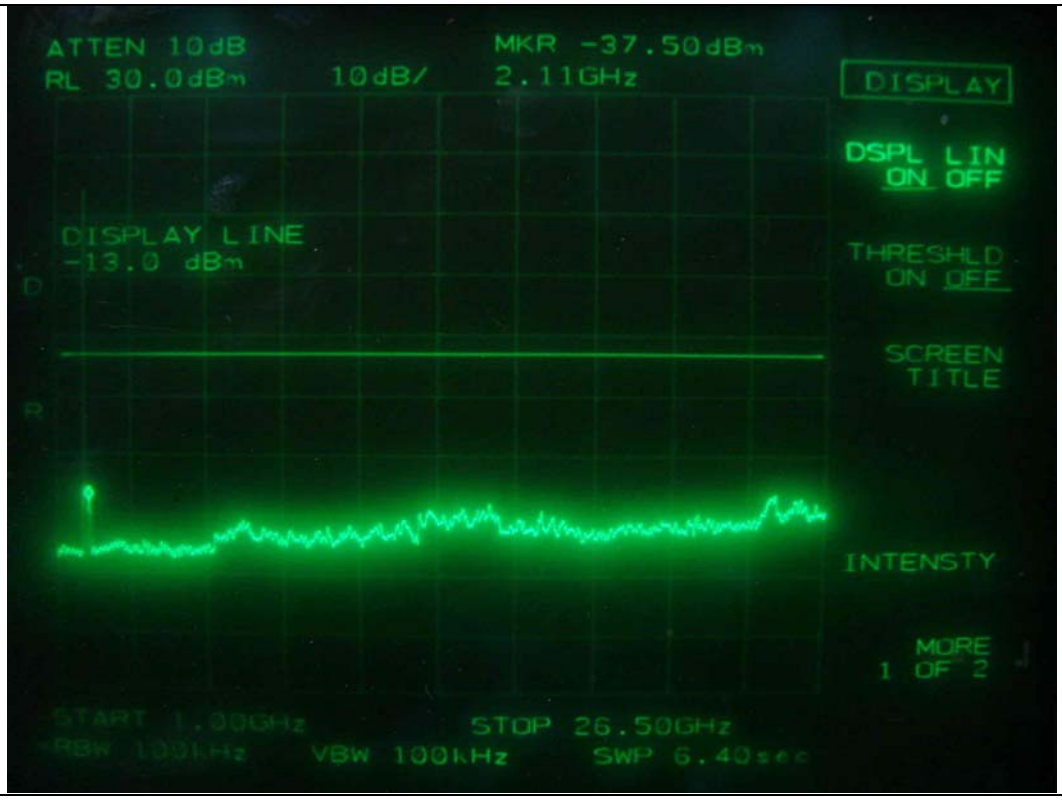

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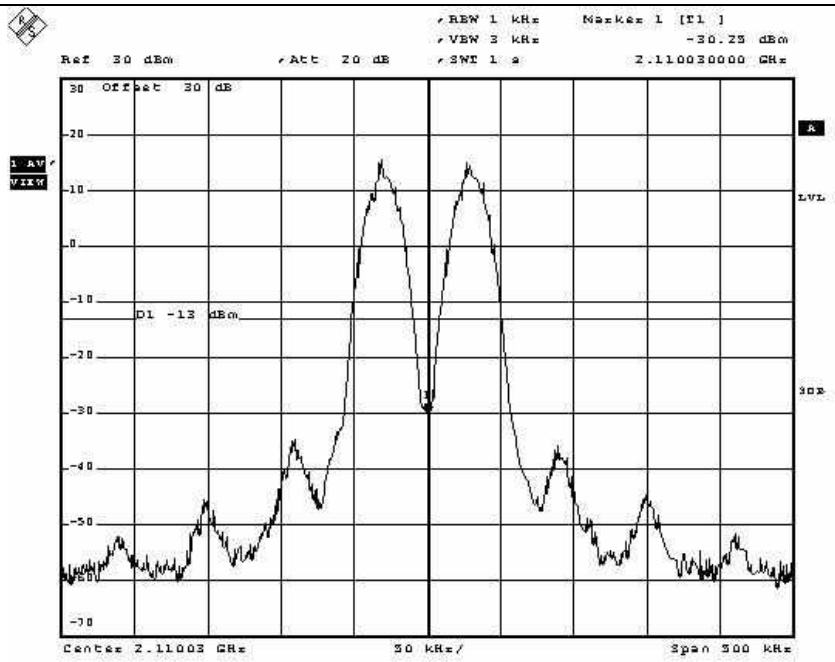
Operating band: AWS-1



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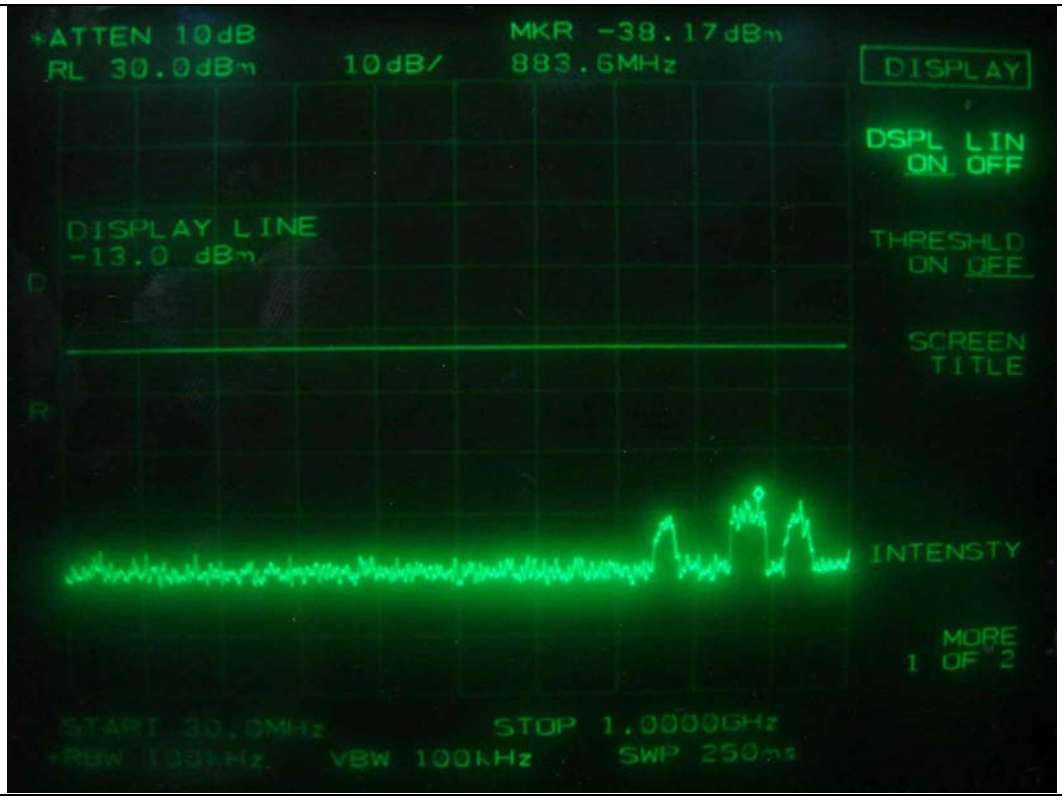

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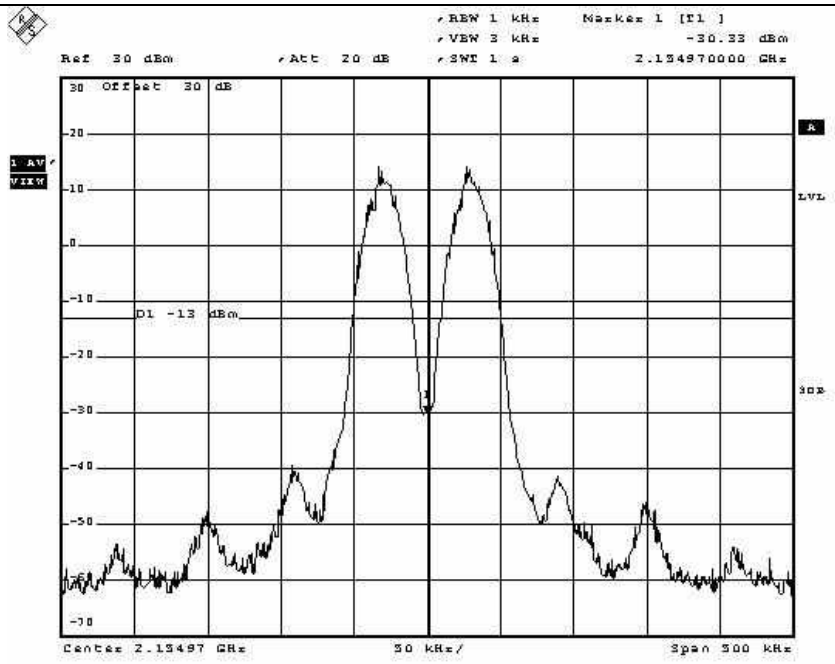

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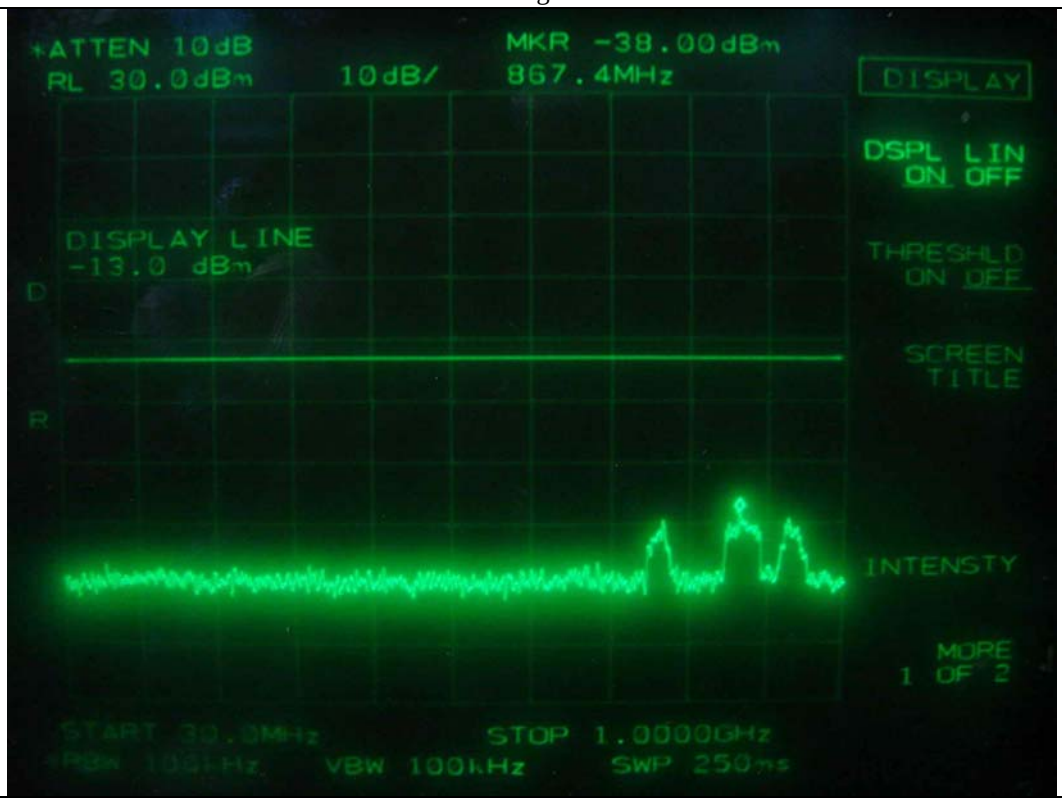

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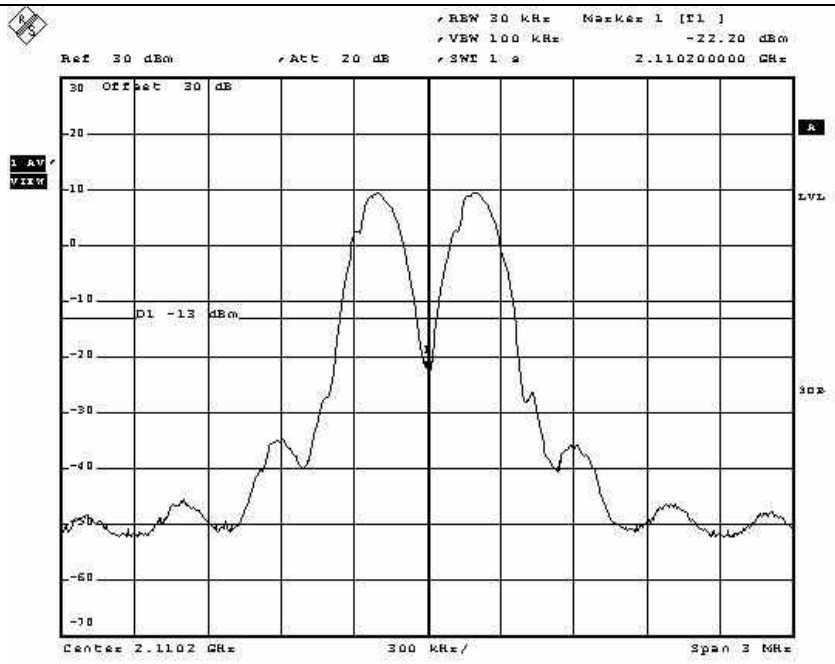

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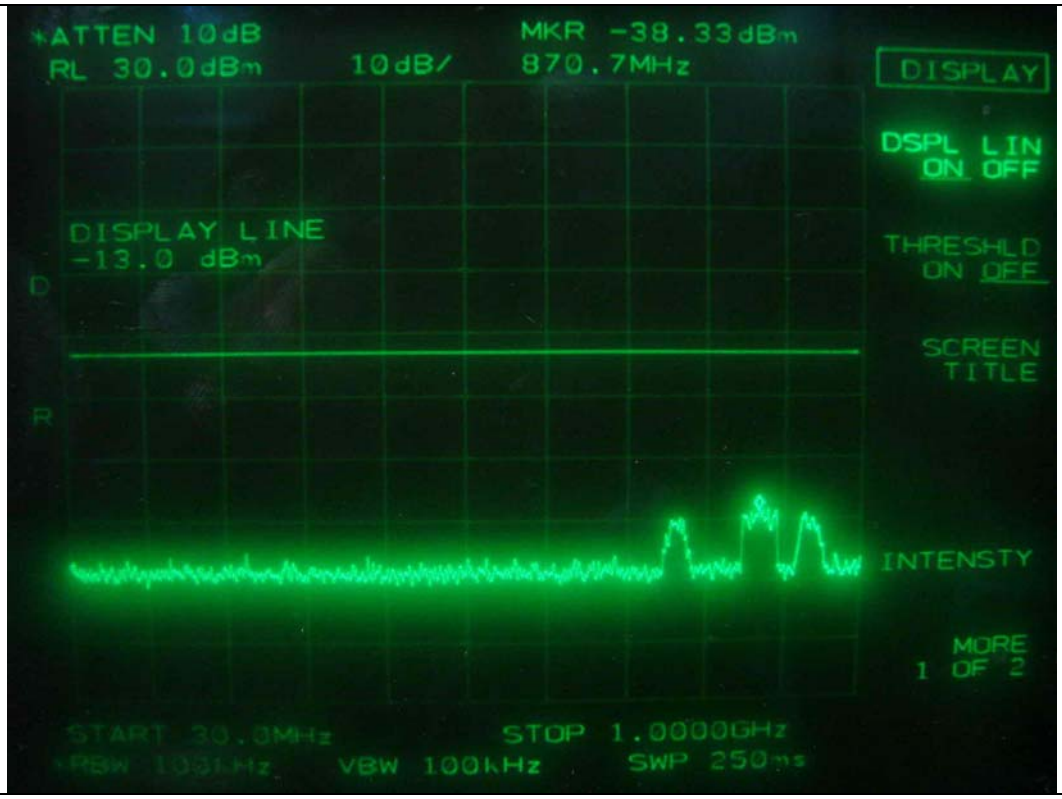

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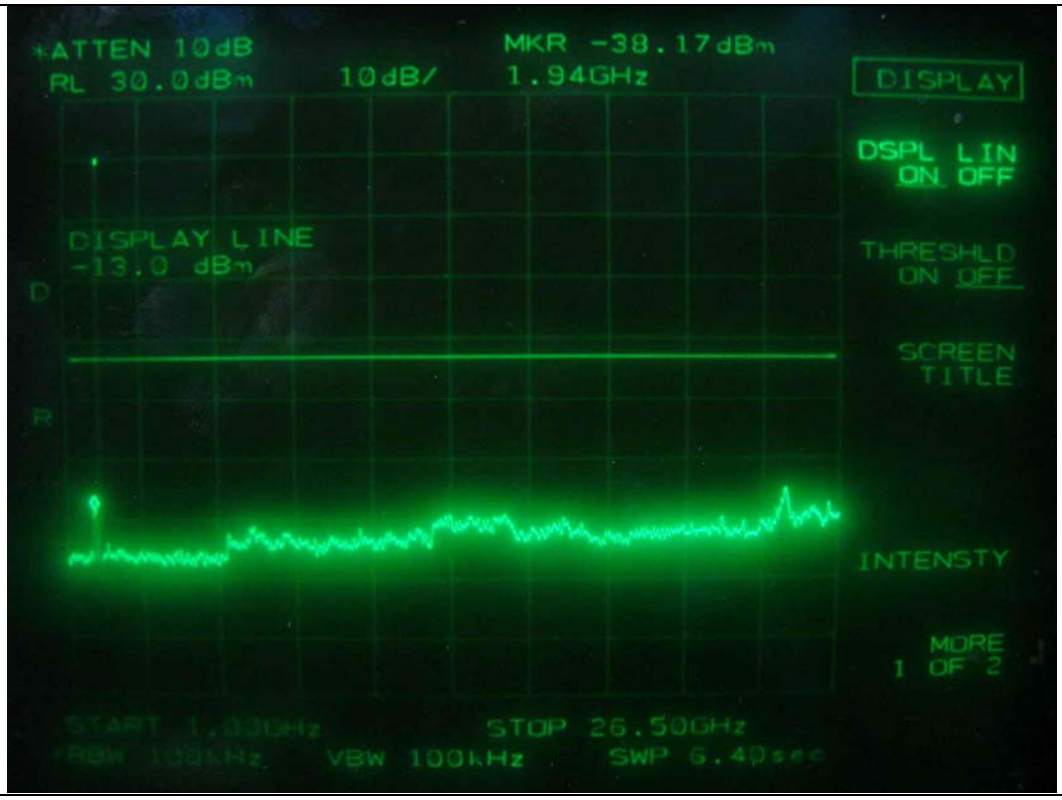

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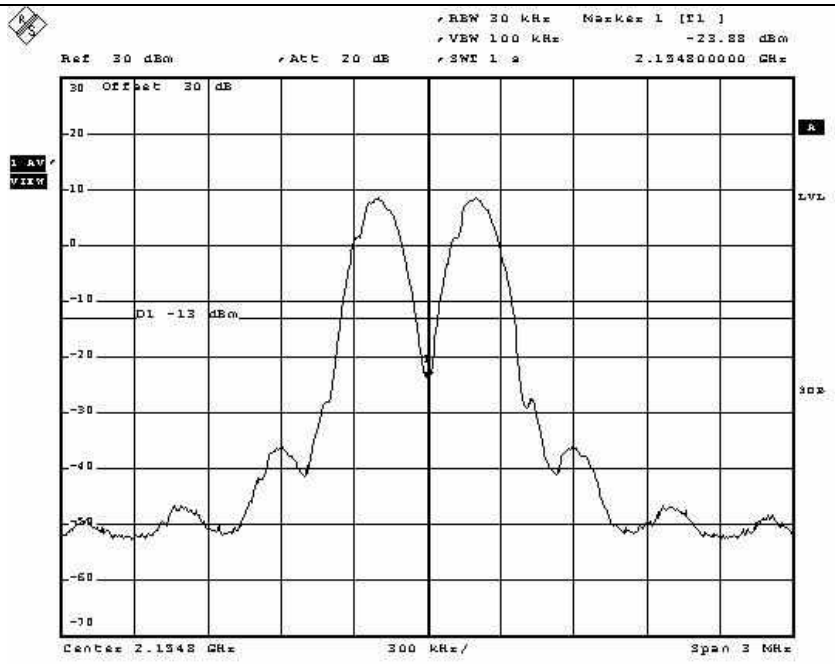

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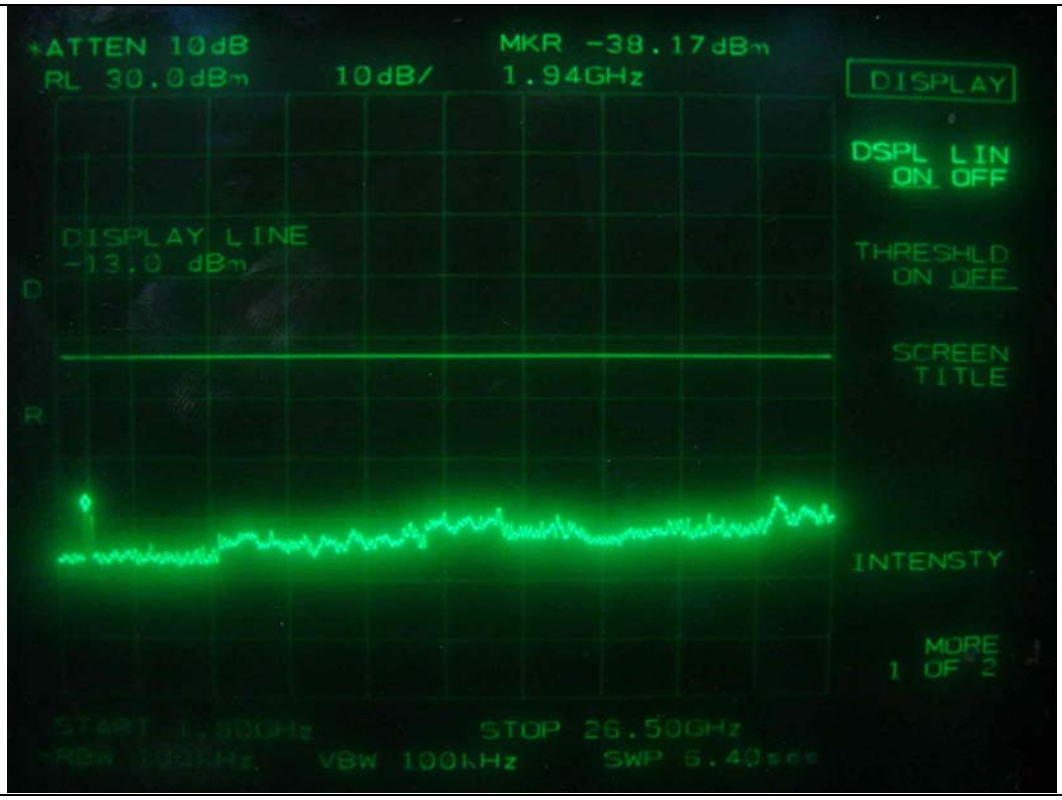

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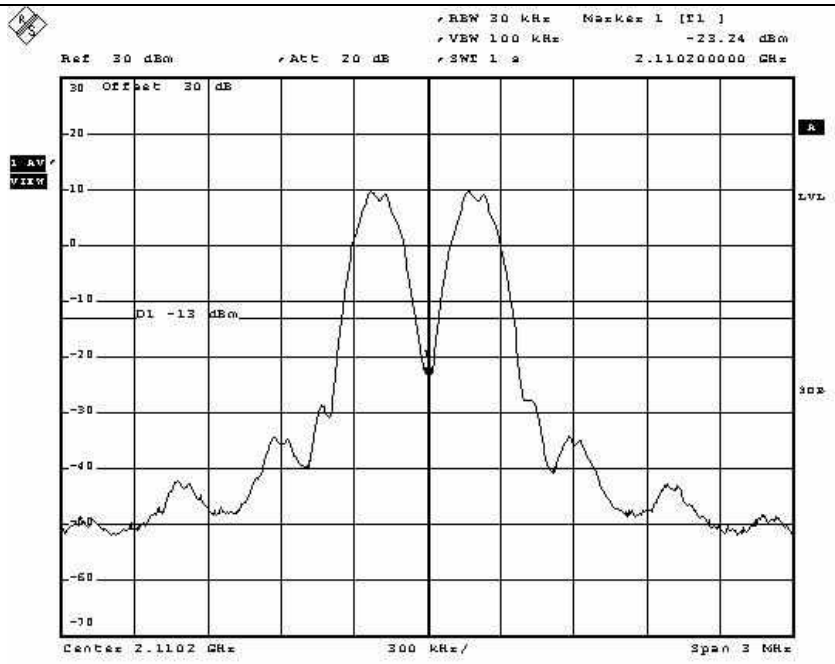
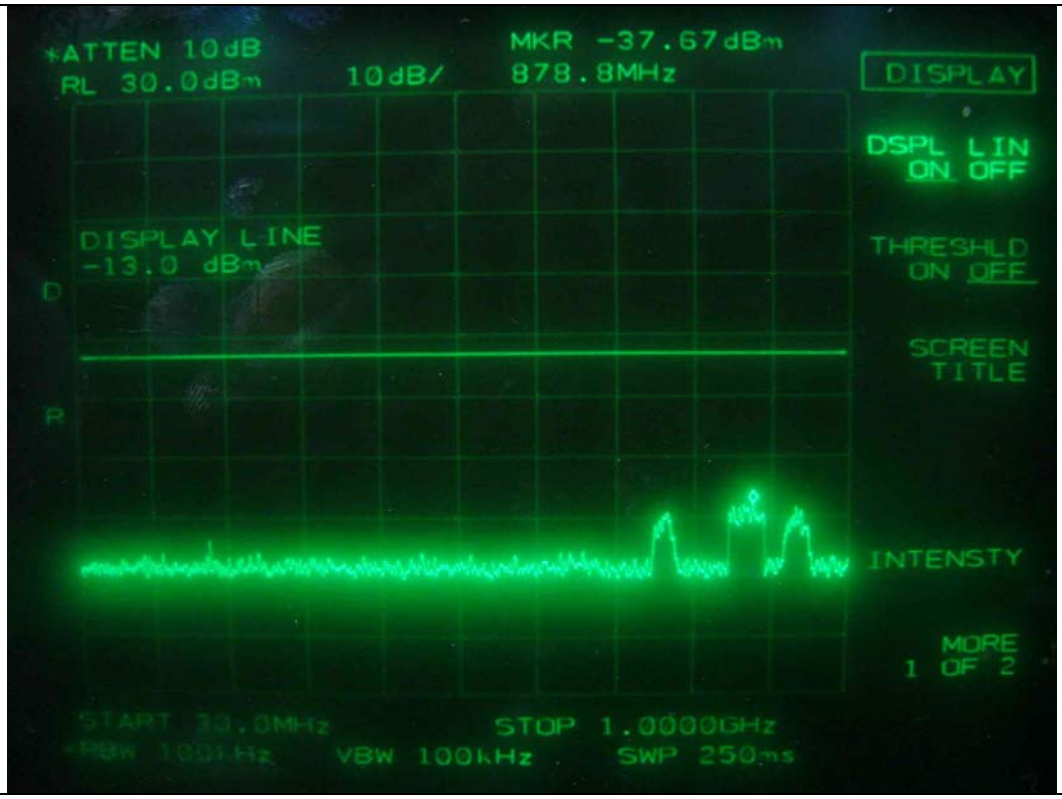


EDGE – Low Channel



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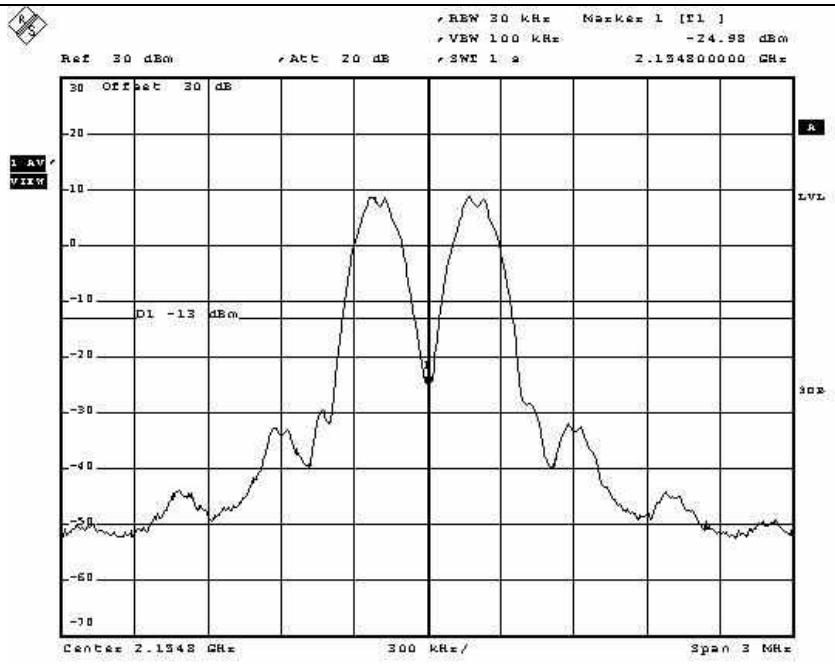

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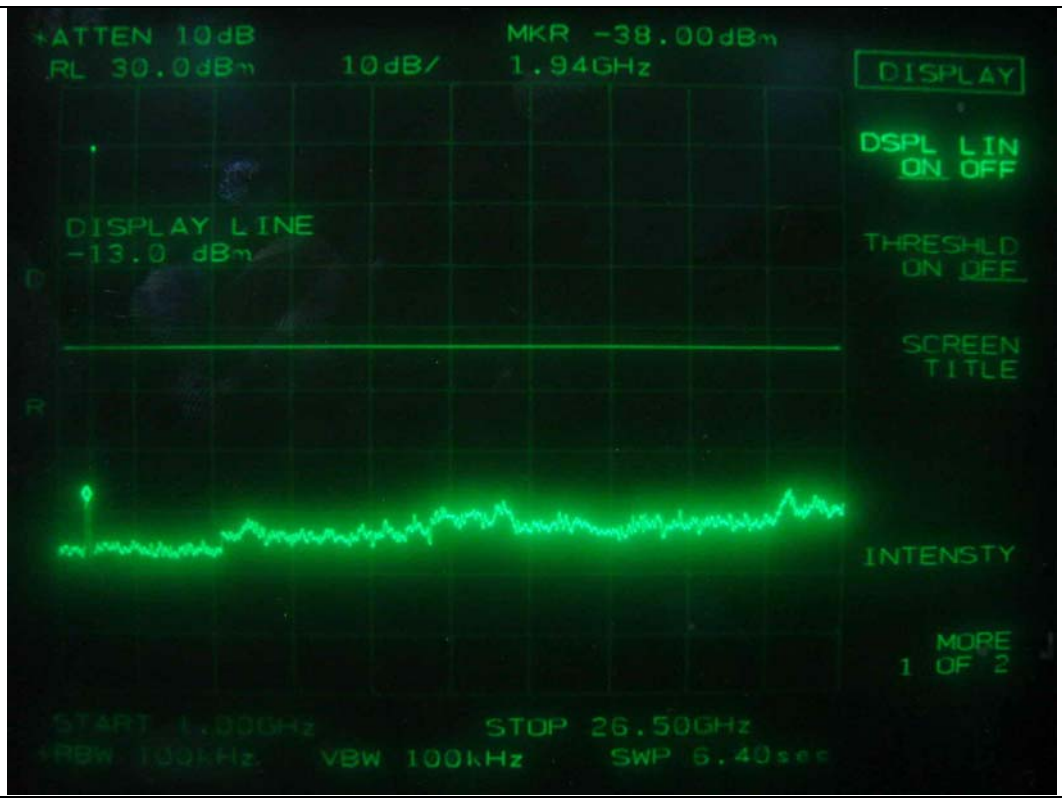

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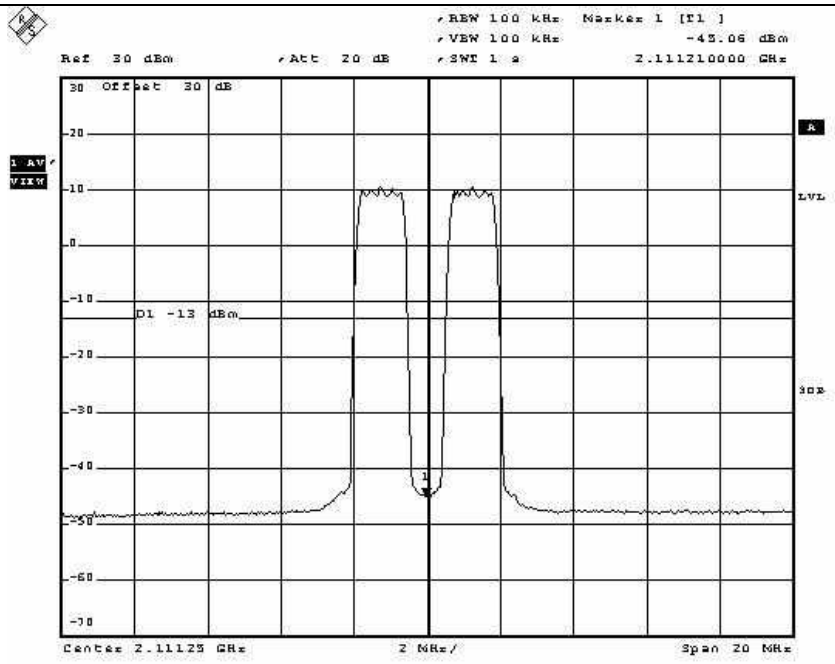
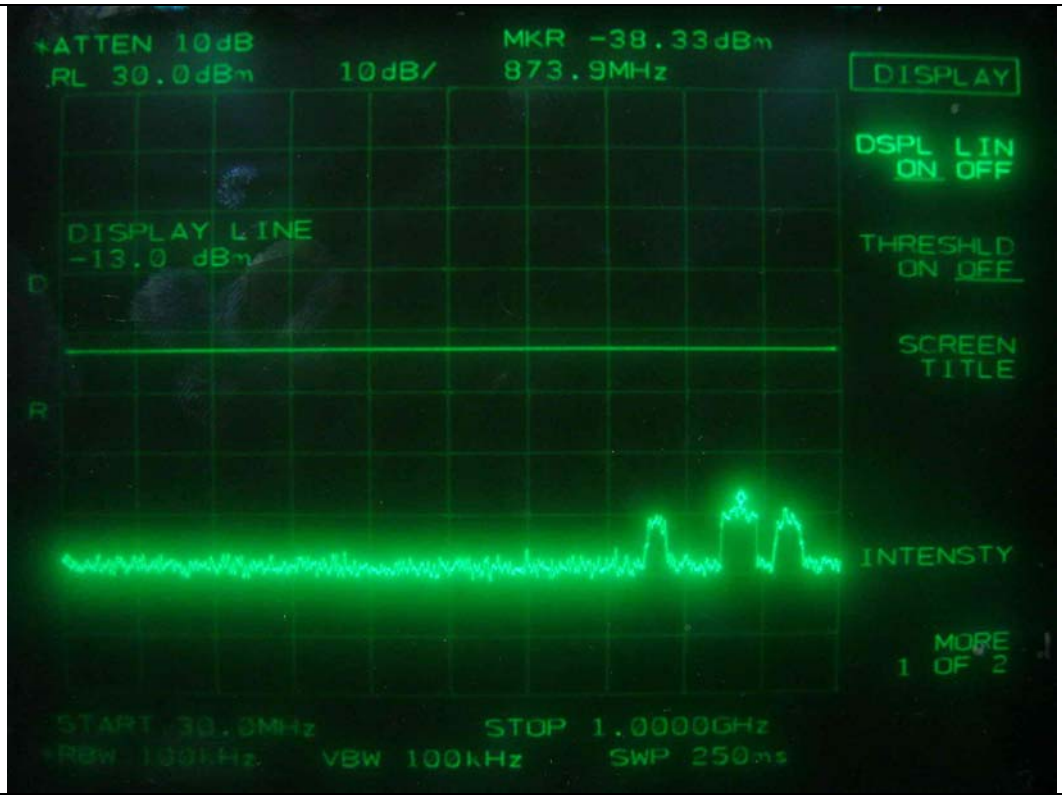


CDMA – Low Channel



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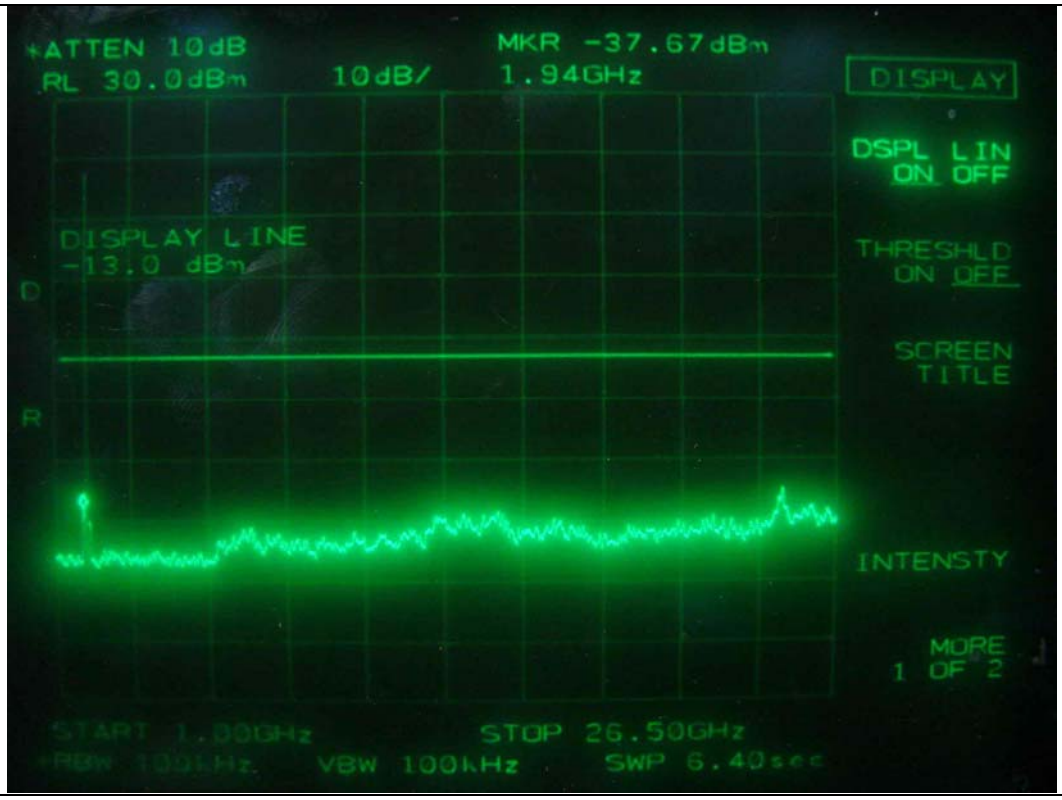

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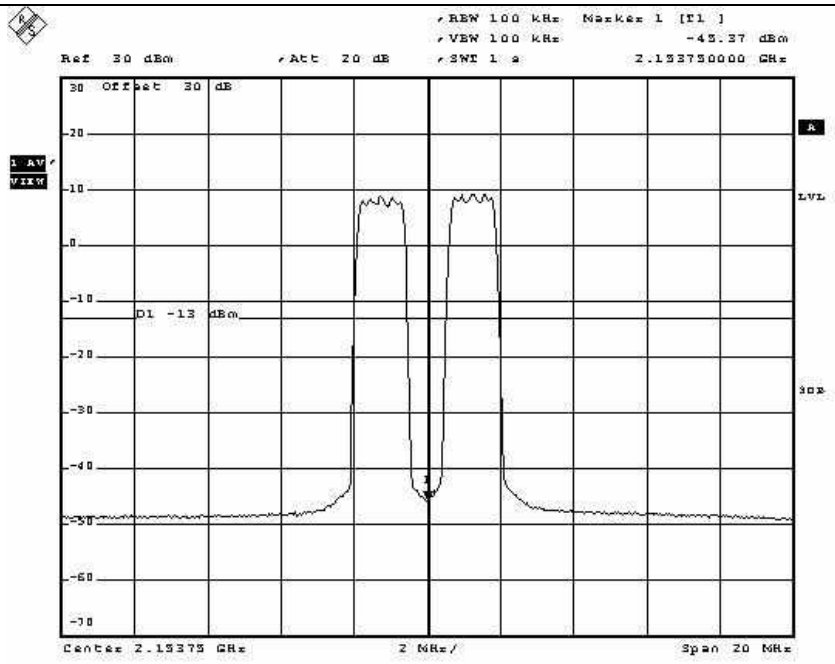

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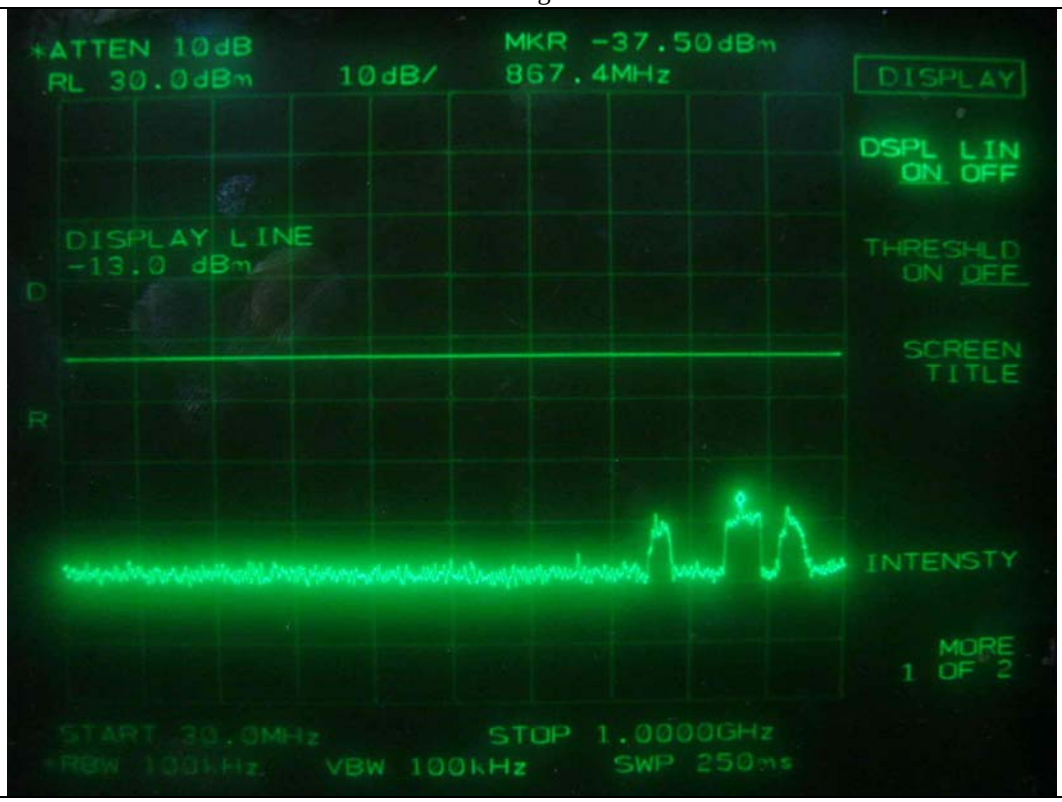

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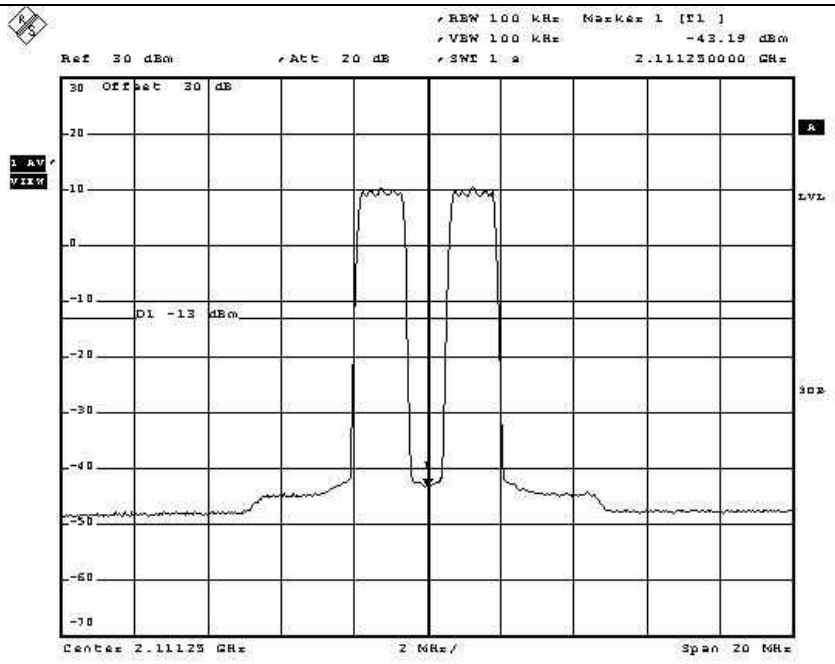
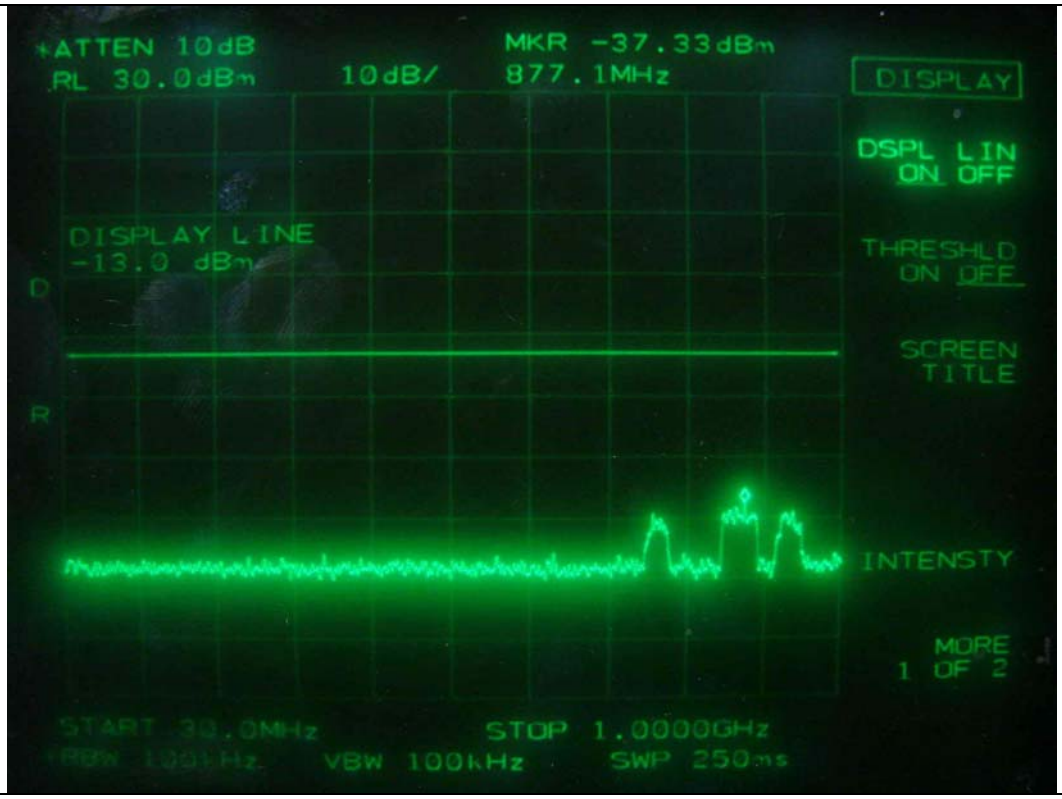


1xEVDO – Low Channel



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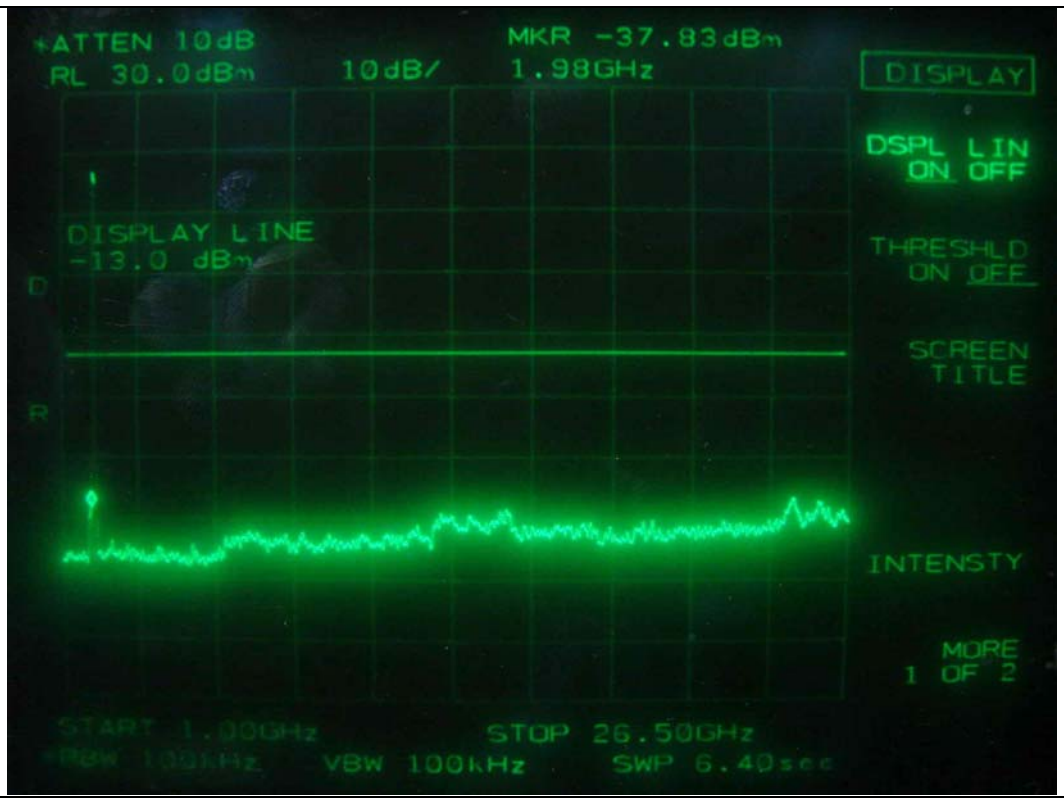

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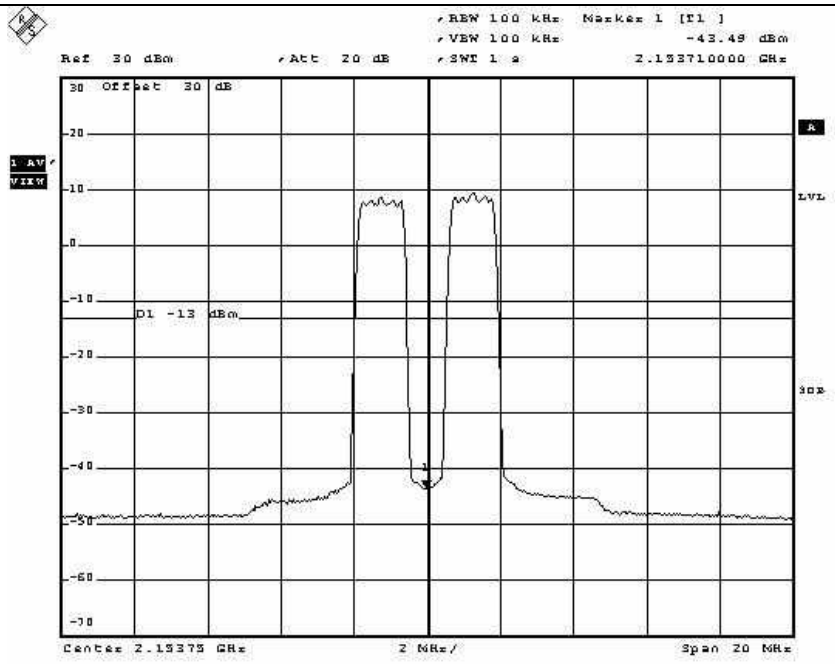

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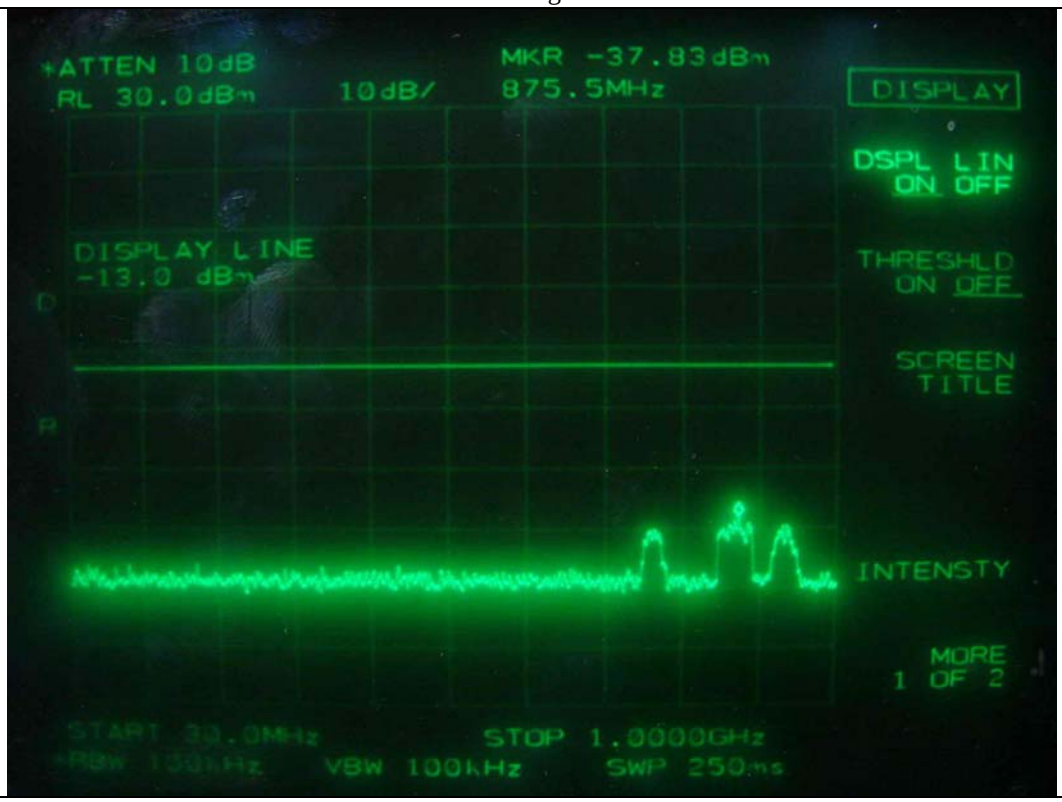

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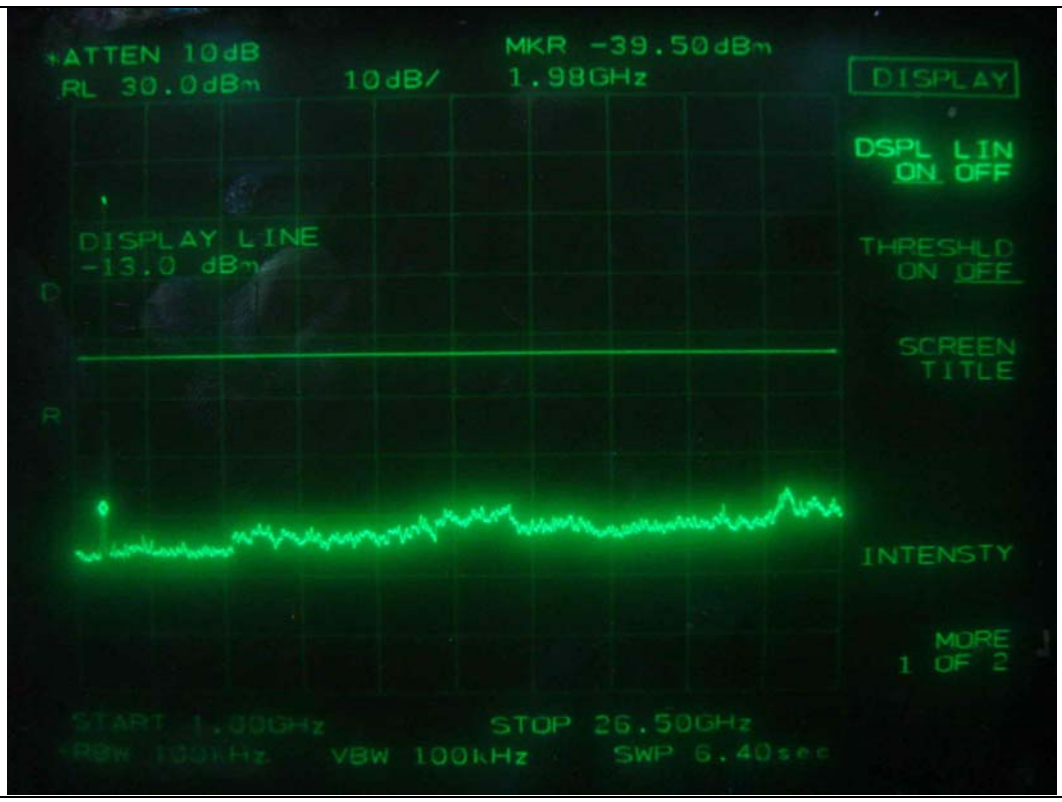

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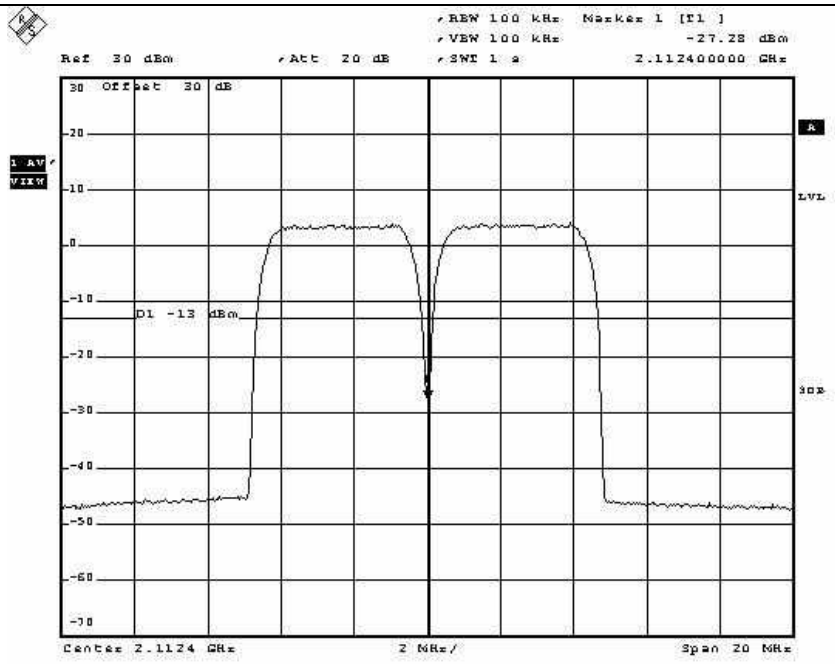

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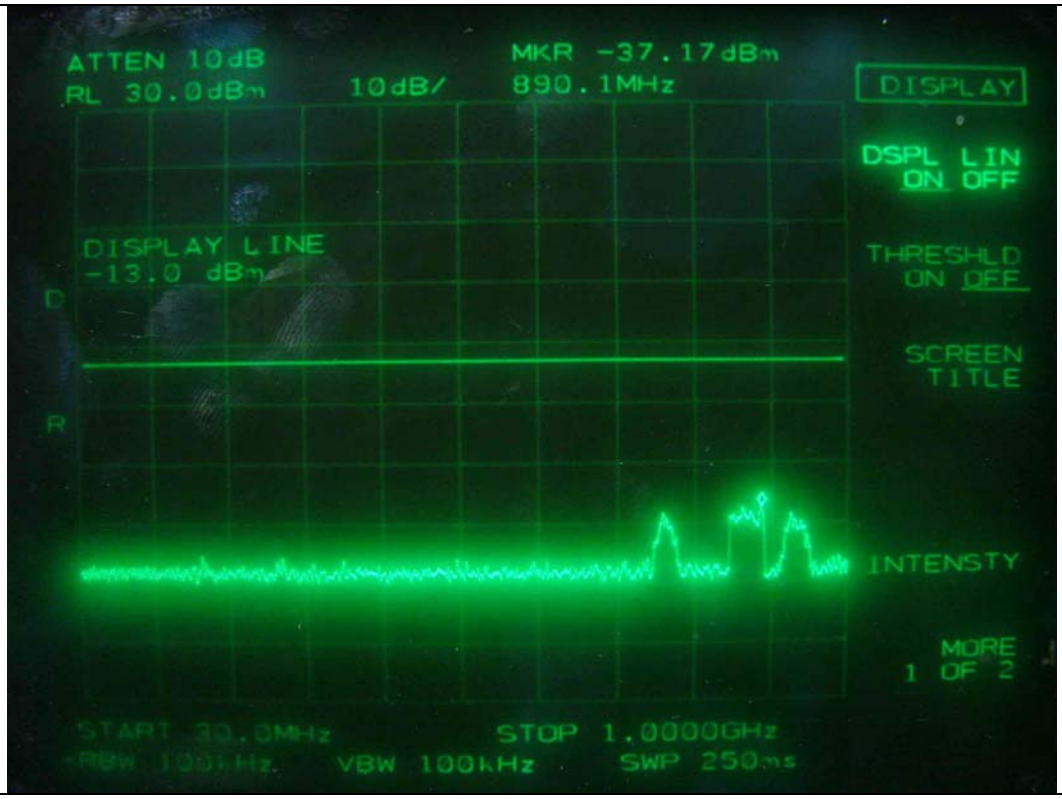

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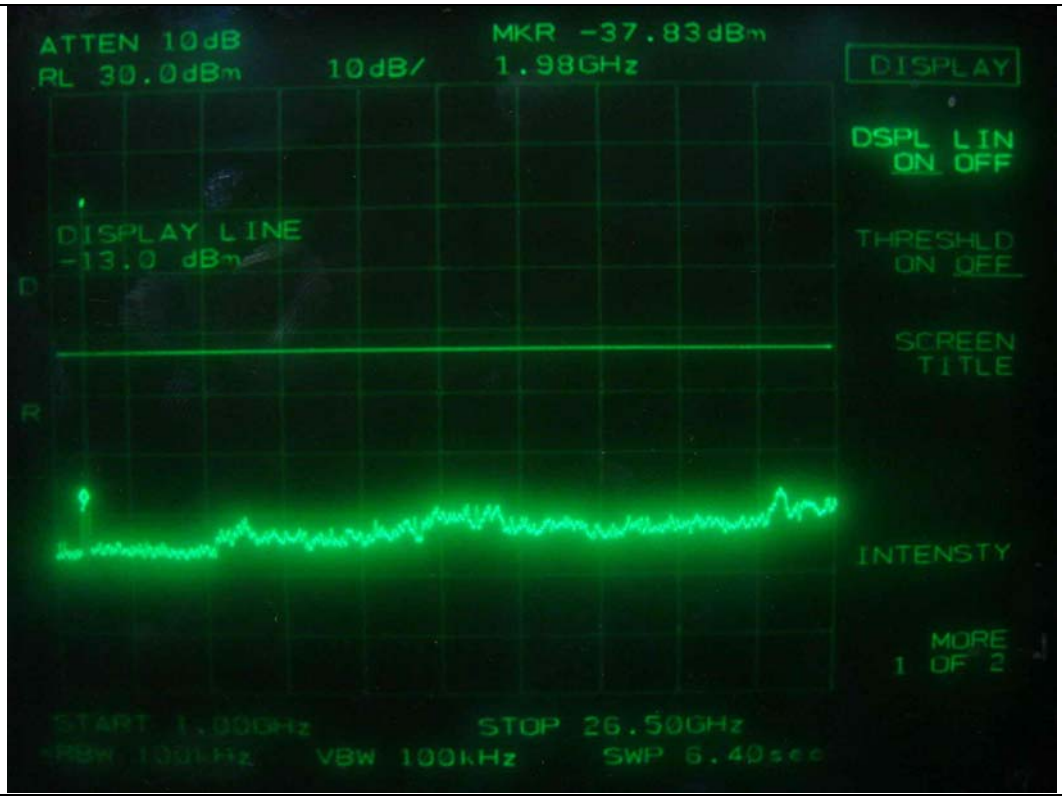

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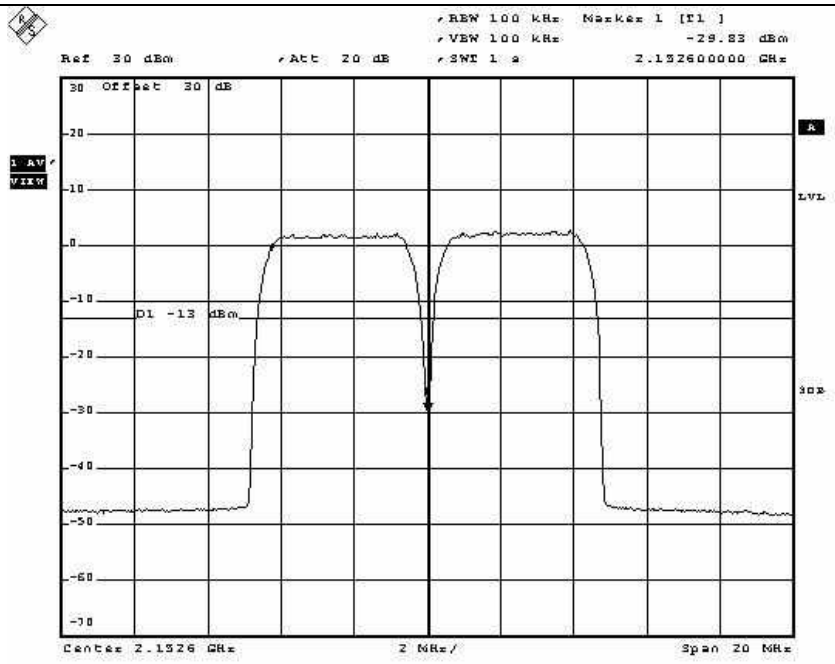

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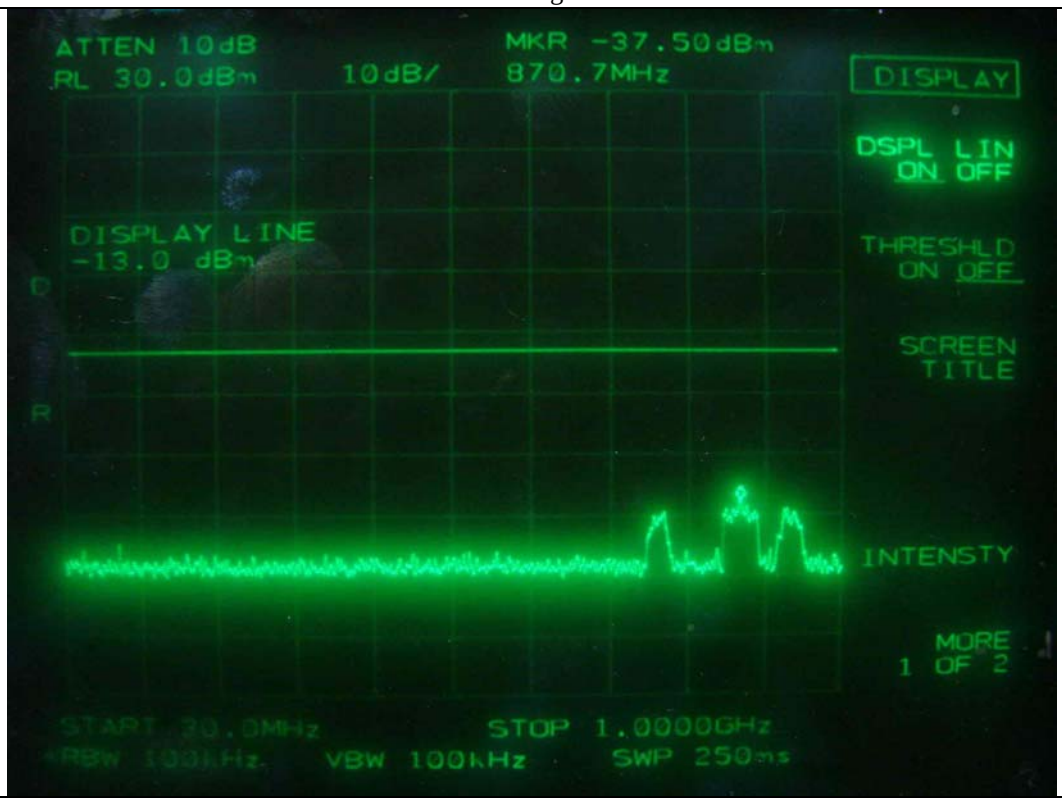

WCDMA – High Channel

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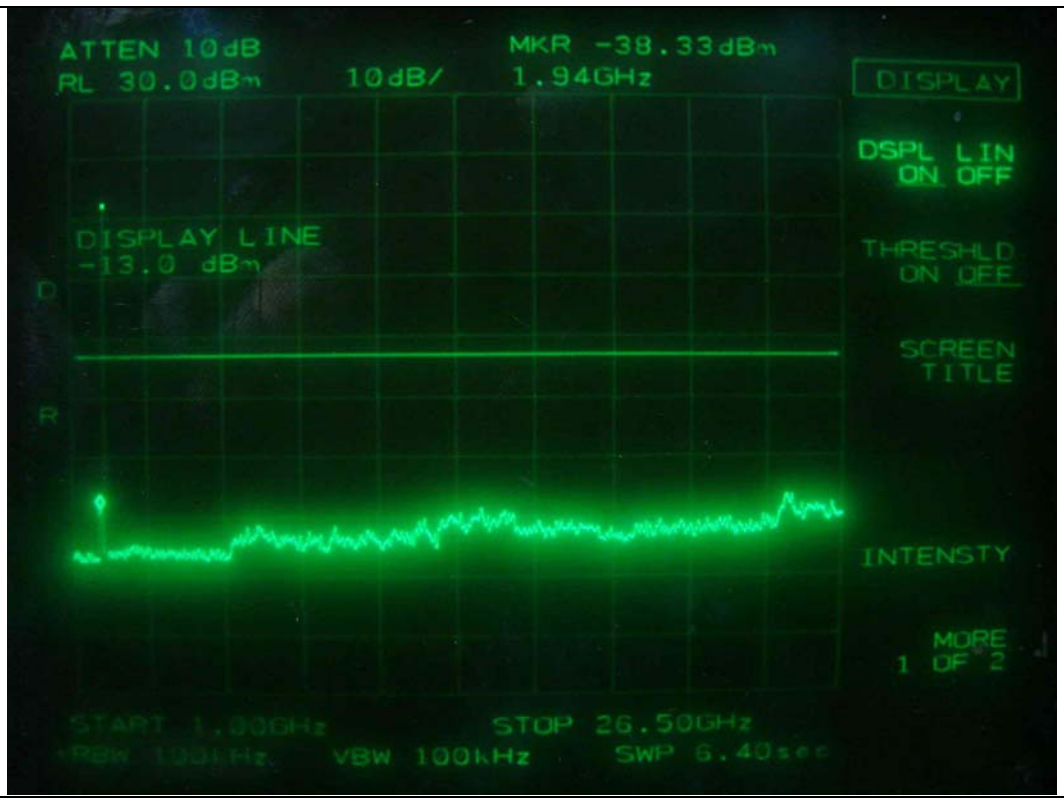
EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea.(TEL: +82-31-765-8289, FAX: +82-31-766-2904)



WCDMA – High Channel

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10. FIELD STRENGTH OF SPURIOUS RADIATION

10.1 Operating environment

Temperature : 12.8 °C
Relative humidity : 40 %R.H.

10.2 Test set-up

The radiated emissions measurements were on the 3 meters, open-field test site. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.
The frequency spectrum from 30 MHz to up to 10th harmonic of the fundamental frequency was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 and 4.0 meters in order to determine the maximum emission levels. The test was performed by placing the EUT on 3-orthogonal axis. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.
The maximum radiated emission was recorded and used as reference for the effective radiated power measurement. The EUT was then replaced by a tuned dipole antenna or Horn antenna and was oriented for vertical polarization and then the length was adjusted to correspond to the frequency of the transmitter. The substitution antenna was connected to a signal generator with a coaxial cable. The receiving antenna height was raised and lowered again through the specified range of height until maximum signal level is detected by the measuring receiver. The signal to the substitution antenna was adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the EUT radiated power measured, corrected for the change of input attenuation setting of the measuring receiver. The signal generator level was recorded and corrected by the power loss in the cable between the signal generator and substitution antenna and further corrected for the gain of the dipole antenna or horn antenna used relative to an ideal tuned dipole antenna. The measurement was repeated with the test antenna and the substitution antenna oriented for horizontal polarization. The measure of the effective radiated power is the larger of the two levels recorded.

10.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	ESVD	Rohde & Schwarz	EMI Test Receiver	838453/018	Nov. 06, 2008
■ -	8564E	Hewlett-Packard	Spectrum Analyzer	3650A00756	June 16, 2008
■ -	83051A	Agilent	Preamplifier	3950M00201	June 16, 2008
■ -	E4432B	Hewlett-Packard	Signal Generator	US38440950	June 16, 2008
■ -	83650L	Hewlett-Packard	Signal Generator	3844A00415	June 16, 2008
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D294	July 03, 2006(3Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	July 04, 2006(3Y)
■ -	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.

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10.4 Test data for radiated emission

10.4.1 Test result for Part 24E with AC 120V Power Supply

10.4.1.1 Modulated Input Signal: TDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.21 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.03	50.50	-11.33	10.02	H	4.12	-5.43	-	-
	51.83	-9.48		V		-3.58	-	-
Test Data for Middle Channel								
1 962.50	50.33	-11.17	10.16	H	4.06	-5.07	-	-
	51.50	-9.83		V		-3.73	-	-
Test Data for High Channel								
1 994.97	50.92	-10.83	10.30	H	4.01	-4.54	-	-
	51.83	-9.67		V		-3.38	-	-
100.10	26.00	-59.48	1.60	V	0.33	-58.21	-13.00	-45.21
110.40	24.50	-61.33	1.55	H	0.33	-59.45	-13.00	-46.45
262.20	22.10	-62.83	1.66	H	0.50	-60.67	-13.00	-47.67
858.10	23.20	-63.67	0.03	V	0.67	-62.97	-13.00	-49.97

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

HEAD OFFICE : #505 SK Apt. Factory 223-28, Sangdaewon1-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do 462-705 Korea (TEL: +82-31-746-8500, FAX: +82-31-746-8700)
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10.4.1.2 Modulated Input Signal: GSM

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.65 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.20	50.17	-11.66	10.03	H	4.12	-5.75	-	-
	51.17	-10.14		V		-4.23	-	-
Test Data for Middle Channel								
1 962.60	50.92	-10.58	10.16	H	4.06	-4.48	-	-
	51.83	-9.50		V		-3.40	-	-
Test Data for High Channel								
1 994.80	50.33	-11.42	10.30	H	4.01	-5.13	-	-
	51.50	-10.00		V		-3.71	-	-
100.10	26.50	-58.92	1.60	V	0.33	-57.65	-13.00	-44.65
110.40	24.20	-61.63	1.55	H	0.33	-60.41	-13.00	-47.41
262.20	22.00	-62.93	1.66	H	0.50	-61.77	-13.00	-48.77
858.10	23.70	-63.17	0.03	V	0.67	-63.81	-13.00	-50.81

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.1.3 Modulated Input Signal: EDGE

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.98 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.20	50.72	-11.11	10.03	H	4.12	-5.20	-	-
	51.33	-9.98		V		-4.07	-	-
Test Data for Middle Channel								
1 962.60	50.50	-11.00	10.16	H	4.06	-4.90	-	-
	51.50	-9.83		V		-3.73	-	-
Test Data for High Channel								
1 994.80	50.83	-10.92	10.30	H	4.01	-4.63	-	-
	51.25	-10.25		V		-3.96	-	-
100.10	26.17	-59.25	1.60	V	0.33	-57.98	-13.00	-44.98
110.40	24.70	-61.53	1.55	H	0.33	-60.31	-13.00	-47.31
262.20	22.50	-62.43	1.66	H	0.50	-61.27	-13.00	-48.27
858.10	23.50	-63.37	0.03	V	0.67	-64.01	-13.00	-51.01

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea.(TEL: +82-31-765-8289, FAX: +82-31-766-2904)

10.4.1.4 Modulated Input Signal: CDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.82 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 931.25	50.33	-11.50	10.03	H	4.12	-5.59	-	-
	51.67	-9.64		V		-3.73	-	-
Test Data for Middle Channel								
1 967.50	50.17	-11.33	10.18	H	4.06	-5.21	-	-
	51.33	-10.00		V		-3.88	-	-
Test Data for High Channel								
1 993.75	50.83	-10.92	10.29	H	4.01	-4.64	-	-
	51.92	-9.58		V		-3.30	-	-
100.10	26.33	-59.09	1.60	V	0.33	-57.82	-13.00	-44.82
110.40	24.40	-61.83	1.55	H	0.33	-60.61	-13.00	-47.61
262.20	22.20	-62.73	1.66	H	0.50	-61.57	-13.00	-48.57
858.10	23.50	-63.37	0.03	V	0.67	-64.01	-13.00	-51.01

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.1.5 Modulated Input Signal: 1xEVDO

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

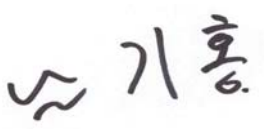
-. Measurement distance : 3 m

-. Result : PASSED BY –44.48 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 931.25	50.25	-11.58	10.03	H	4.12	-5.67	-	-
	51.50	-9.81		V		-3.90	-	-
Test Data for Middle Channel								
1 967.50	50.83	-10.67	10.18	H	4.06	-4.55	-	-
	51.83	-9.50		V		-3.38	-	-
Test Data for High Channel								
1 993.75	50.17	-11.58	10.29	H	4.01	-5.30	-	-
	51.33	-10.17		V		-3.89	-	-
100.10	26.67	-58.75	1.60	V	0.33	-57.48	-13.00	-44.48
110.40	24.00	-62.23	1.55	H	0.33	-61.01	-13.00	-48.01
262.20	22.70	-62.03	1.66	H	0.50	-60.87	-13.00	-47.87
858.10	23.00	-63.87	0.03	V	0.67	-64.51	-13.00	-51.51

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



Tested by: Ki-Hong, Nam / Project Engineer

HEAD OFFICE : #505 SK Apt. Factory 223-28, Sangdaewon1-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do 462-705 Korea (TEL: +82-31-746-8500, FAX: +82-31-746-8700)
EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea.(TEL: +82-31-765-8289, FAX: +82-31-766-2904)

10.4.1.6 Modulated Input Signal: WCDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.65 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 932.40	50.33	-11.50	10.03	H	4.12	-5.59	-	-
	51.67	-9.64		V		-3.73	-	-
Test Data for Middle Channel								
1 962.40	50.17	-11.33	10.16	H	4.06	-5.23	-	-
	51.33	-10.00		V		-3.90	-	-
Test Data for High Channel								
1 992.60	50.92	-10.83	10.29	H	4.01	-4.55	-	-
	52.00	-9.50		V		-3.22	-	-
100.10	26.50	-58.92	1.60	V	0.33	-57.65	-13.00	-44.65
110.40	24.30	-61.93	1.55	H	0.33	-60.71	-13.00	-47.71
262.20	22.50	-62.23	1.66	H	0.50	-61.07	-13.00	-48.07
858.10	23.30	-63.57	0.03	V	0.67	-64.21	-13.00	-51.21

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.2 Test Result for Part 24E with DC - 48 V Power Supply

10.4.2.1 Modulated Input Signal: TDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.82 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.03	50.50	-11.33	10.02	H	4.12	-5.43	-	-
	51.72	-9.59		V		-3.69	-	-
Test Data for Middle Channel								
1 962.50	50.33	-11.17	10.16	H	4.06	-5.07	-	-
	51.92	-9.41		V		-3.31	-	-
Test Data for High Channel								
1 994.97	50.00	-11.75	10.30	H	4.01	-5.46	-	-
	51.25	-10.25		V		-3.96	-	-
100.10	26.33	-59.09	1.60	V	0.33	-57.82	-13.00	-44.82
110.40	24.50	-61.73	1.55	H	0.33	-60.51	-13.00	-47.51
262.20	22.38	-62.35	1.66	H	0.50	-61.19	-13.00	-48.19
858.10	23.15	-63.72	0.03	V	0.67	-64.36	-13.00	-51.36

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.2.2 Modulated Input Signal: GSM

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.02 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.20	50.33	-11.50	10.03	H	4.12	-5.59	-	-
	51.25	-10.06		V		-4.15	-	-
Test Data for Middle Channel								
1 962.60	50.67	-10.83	10.16	H	4.06	-4.73	-	-
	51.83	-9.50		V		-3.40	-	-
Test Data for High Channel								
1 994.80	50.17	-11.58	10.30	H	4.01	-5.29	-	-
	51.33	-10.17		V		-3.88	-	-
100.10	26.13	-59.29	1.60	V	0.33	-58.02	-13.00	-45.02
110.40	24.40	-61.83	1.55	H	0.33	-60.61	-13.00	-47.61
262.20	22.62	-62.11	1.66	H	0.50	-60.95	-13.00	-47.95
858.10	23.00	-63.87	0.03	V	0.67	-64.51	-13.00	-51.51

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

HEAD OFFICE : #505 SK Apt. Factory 223-28, Sangdaewon1-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do 462-705 Korea (TEL: +82-31-746-8500, FAX: +82-31-746-8700)
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10.4.2.3 Modulated Input Signal: EDGE

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.65 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 930.20	50.83	-11.00	10.03	H	4.12	-5.09	-	-
	52.00	-9.31		V		-3.40	-	-
Test Data for Middle Channel								
1 962.60	50.33	-11.17	10.16	H	4.06	-5.07	-	-
	51.50	-9.83		V		-3.73	-	-
Test Data for High Channel								
1 994.80	50.25	-11.50	10.30	H	4.01	-5.21	-	-
	51.50	-10.00		V		-3.71	-	-
100.10	26.50	-58.92	1.60	V	0.33	-57.65	-13.00	-44.65
110.40	24.60	-61.63	1.55	H	0.33	-60.41	-13.00	-47.41
262.20	22.42	-62.31	1.66	H	0.50	-61.15	-13.00	-48.15
858.10	23.40	-63.47	0.03	V	0.67	-64.11	-13.00	-51.11

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

HEAD OFFICE : #505 SK Apt. Factory 223-28, Sangdaewon1-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do 462-705 Korea (TEL: +82-31-746-8500, FAX: +82-31-746-8700)
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10.4.2.4 Modulated Input Signal: CDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.05 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 931.25	50.33	-11.50	10.03	H	4.12	-5.59	-	-
	51.67	-9.64		V		-3.73	-	-
Test Data for Middle Channel								
1 967.50	50.25	-11.25	10.18	H	4.06	-5.13	-	-
	51.67	-9.66		V		-3.54	-	-
Test Data for High Channel								
1 993.75	50.83	-10.92	10.29	H	4.01	-4.64	-	-
	51.92	-9.58		V		-3.30	-	-
100.10	26.10	-59.32	1.60	V	0.33	-58.05	-13.00	-45.05
110.40	24.20	-62.03	1.55	H	0.33	-60.81	-13.00	-47.81
262.20	22.50	-62.23	1.66	H	0.50	-61.07	-13.00	-48.07
858.10	23.10	-63.77	0.03	V	0.67	-64.41	-13.00	-51.41

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.2.5 Modulated Input Signal: 1xEVDO

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

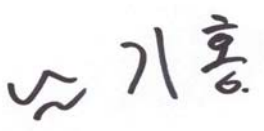
-. Measurement distance : 3 m

-. Result : PASSED BY –45.45 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 931.25	50.78	-11.05	10.03	H	4.12	-5.14	-	-
	51.98	-9.33		V		-3.42	-	-
Test Data for Middle Channel								
1 967.50	50.33	-11.17	10.18	H	4.06	-5.05	-	-
	51.50	-9.83		V		-3.71	-	-
Test Data for High Channel								
1 993.75	50.25	-11.50	10.29	H	4.01	-5.22	-	-
	51.83	-9.67		V		-3.39	-	-
100.10	26.50	-59.72	1.60	V	0.33	-58.45	-13.00	-45.45
110.40	24.50	-62.33	1.55	H	0.33	-61.11	-13.00	-48.11
262.20	22.17	-62.56	1.66	H	0.50	-61.40	-13.00	-48.40
858.10	23.50	-63.37	0.03	V	0.67	-64.01	-13.00	-51.01

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



Tested by: Ki-Hong, Nam / Project Engineer

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10.4.2.6 Modulated Input Signal: WCDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

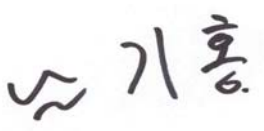
-. Measurement distance : 3 m

-. Result : PASSED BY –45.62 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
1 932.40	50.17	-11.66	10.03	H	4.12	-5.75	-	-
	51.33	-9.98		V		-4.07	-	-
Test Data for Middle Channel								
1 962.40	50.50	-11.00	10.16	H	4.06	-4.90	-	-
	51.92	-9.41		V		-3.31	-	-
Test Data for High Channel								
1 992.60	50.72	-11.03	10.29	H	4.01	-4.55	-	-
	51.85	-9.65		V		-3.22	-	-
100.10	26.33	-59.89	1.60	V	0.33	-58.62	-13.00	-45.62
110.40	24.30	-62.53	1.55	H	0.33	-61.31	-13.00	-48.31
262.20	22.67	-62.06	1.66	H	0.50	-60.90	-13.00	-47.90
858.10	23.10	-63.77	0.03	V	0.67	-64.41	-13.00	-51.41

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



Tested by: Ki-Hong, Nam / Project Engineer

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10.4.3 Test Result for Part 27 with AC 120 V Power Supply

10.4.3.1 Modulated Input Signal: TDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.04 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.03	48.33	-10.50	10.36	H	4.09	-4.23	-	-
	49.17	-8.83		V		-2.56	-	-
Test Data for Middle Channel								
2 132.50	48.50	-9.83	10.37	H	4.11	-3.57	-	-
	49.33	-8.50		V		-2.24	-	-
Test Data for High Channel								
2 154.97	48.25	-10.10	10.38	H	4.13	-3.85	-	-
	49.52	-8.38		V		-2.13	-	-
100.10	26.17	-59.31	1.60	V	0.33	-58.04	-13.00	-45.04
110.40	24.30	-61.53	1.55	H	0.33	-59.65	-13.00	-46.65
262.20	22.70	-62.23	1.66	H	0.50	-60.07	-13.00	-47.07
858.10	23.40	-63.47	0.03	V	0.67	-62.77	-13.00	-49.77

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.3.2 Modulated Input Signal: GSM

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

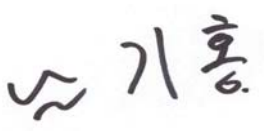
-. Measurement distance : 3 m

-. Result : PASSED BY –44.88 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.20	48.50	-10.33	10.36	H	4.12	-4.06	-	-
	49.50	-8.50		V		-2.23	-	-
Test Data for Middle Channel								
2 132.60	48.33	-10.00	10.37	H	4.06	-3.74	-	-
	49.67	-8.16		V		-1.90	-	-
Test Data for High Channel								
2 154.80	48.17	-10.18	10.38	H	4.01	-3.93	-	-
	49.50	-8.40		V		-2.15	-	-
100.10	26.33	-59.15	1.60	V	0.33	-57.88	-13.00	-44.88
110.40	24.50	-61.33	1.55	H	0.33	-60.11	-13.00	-47.11
262.20	22.83	-62.10	1.66	H	0.50	-60.94	-13.00	-47.94
858.10	23.67	-63.20	0.03	V	0.67	-63.84	-13.00	-50.84

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



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10.4.3.3 Modulated Input Signal: EDGE

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

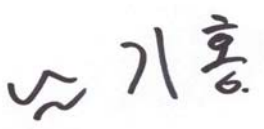
-. Measurement distance : 3 m

-. Result : PASSED BY –45.04 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.20	48.72	-10.11	10.36	H	4.09	-3.84	-	-
	49.67	-8.33		V		-2.06	-	-
Test Data for Middle Channel								
2 132.60	48.92	-9.41	10.37	H	4.11	-3.15	-	-
	50.00	-7.83		V		-1.57	-	-
Test Data for High Channel								
2 154.80	48.27	-10.08	10.38	H	4.13	-3.83	-	-
	49.33	-8.57		V		-2.32	-	-
100.10	26.17	-59.31	1.60	V	0.33	-58.04	-13.00	-45.04
110.40	24.25	-61.33	1.55	H	0.33	-60.11	-13.00	-47.11
262.20	22.78	-62.25	1.66	H	0.50	-61.09	-13.00	-48.09
858.10	23.48	-63.39	0.03	V	0.67	-64.03	-13.00	-51.03

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



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10.4.3.4 Modulated Input Signal: CDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.54 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 111.25	48.50	-10.33	10.36	H	4.10	-4.07	-	-
	49.83	-8.17		V		-1.91	-	-
Test Data for Middle Channel								
2 132.50	48.17	-10.16	10.37	H	4.11	-3.90	-	-
	49.78	-8.05		V		-1.79	-	-
Test Data for High Channel								
2 153.75	48.33	-10.02	10.38	H	4.13	-3.77	-	-
	49.17	-8.73		V		-2.48	-	-
100.10	26.67	-58.81	1.60	V	0.33	-57.54	-13.00	-44.54
110.40	24.50	-61.33	1.55	H	0.33	-60.11	-13.00	-47.11
262.20	22.83	-62.10	1.66	H	0.50	-60.94	-13.00	-47.94
858.10	23.71	-63.16	0.03	V	0.67	-63.80	-13.00	-50.80

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.3.5 Modulated Input Signal: 1xEVDO

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.69 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 111.25	48.33	-10.50	10.36	H	4.10	-4.24	-	-
	49.50	-8.50		V		-2.24	-	-
Test Data for Middle Channel								
2 132.50	48.52	-9.81	10.37	H	4.11	-3.55	-	-
	49.83	-8.00		V		-1.74	-	-
Test Data for High Channel								
2 153.75	48.72	-9.63	10.38	H	4.13	-3.38	-	-
	49.83	-80.70		V		-74.45	-	-
100.10	26.52	-58.96	1.60	V	0.33	-57.69	-13.00	-44.69
110.40	24.78	-61.05	1.55	H	0.33	-59.83	-13.00	-46.83
262.20	22.50	-62.53	1.66	H	0.50	-61.37	-13.00	-48.37
858.10	23.83	-63.04	0.03	V	0.67	-63.68	-13.00	-50.68

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.3.6 Modulated Input Signal: WCDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.88 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 112.40	48.25	-10.58	10.36	H	4.10	-4.32	-	-
	49.78	-8.22		V		-1.96	-	-
Test Data for Middle Channel								
2 136.90	48.33	-10.00	10.37	H	4.12	-3.75	-	-
	49.92	-7.91		V		-1.66	-	-
Test Data for High Channel								
2 152.60	48.67	-9.68	10.38	H	4.13	-3.43	-	-
	49.50	-8.40		V		-2.15	-	-
100.10	26.33	-59.15	1.60	V	0.33	-57.88	-13.00	-44.88
110.40	24.83	-61.00	1.55	H	0.33	-59.78	-13.00	-46.78
262.20	22.17	-62.86	1.66	H	0.50	-61.70	-13.00	-48.70
858.10	23.67	-63.20	0.03	V	0.67	-63.84	-13.00	-50.84

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4 Test Result for Part 27 with DC - 48 V Power Supply

10.4.4.1 Modulated Input Signal: TDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

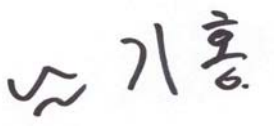
-. Measurement distance : 3 m

-. Result : PASSED BY –44.71dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.03	48.92	-9.91	10.36	H	4.09	-3.64	-	-
	49.83	-8.17		V		-1.90	-	-
Test Data for Middle Channel								
2 132.50	48.25	-10.08	10.37	H	4.11	-3.82	-	-
	49.67	-8.16		V		-1.90	-	-
Test Data for High Channel								
2 154.97	48.33	-10.02	10.38	H	4.13	-3.77	-	-
	49.78	-8.12		V		-1.87	-	-
100.10	26.50	-58.98	1.60	V	0.33	-57.71	-13.00	-44.71
110.40	24.92	-60.91	1.55	H	0.33	-59.69	-13.00	-46.69
262.20	22.33	-62.70	1.66	H	0.50	-61.54	-13.00	-48.54
858.10	23.29	-63.58	0.03	V	0.67	-64.22	-13.00	-51.22

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4.2 Modulated Input Signal: GSM

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.96 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.20	48.25	-10.58	10.36	H	4.09	-4.31	-	-
	49.50	-8.50		V		-2.23	-	-
Test Data for Middle Channel								
2 132.60	48.83	-9.50	10.37	H	4.11	-3.24	-	-
	49.98	-7.85		V		-1.59	-	-
Test Data for High Channel								
2 154.80	48.17	-10.18	10.38	H	4.13	-3.93	-	-
	49.72	-8.18		V		-1.93	-	-
100.10	26.25	-59.23	1.60	V	0.33	-57.96	-13.00	-44.96
110.40	24.78	-61.05	1.55	H	0.33	-59.83	-13.00	-46.83
262.20	22.50	-62.53	1.66	H	0.50	-61.37	-13.00	-48.37
858.10	23.67	-63.20	0.03	V	0.67	-63.84	-13.00	-50.84

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4.3 Modulated Input Signal: EDGE

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

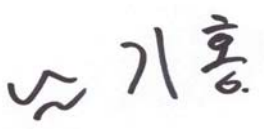
-. Measurement distance : 3 m

-. Result : PASSED BY –44.88 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 110.20	48.78	-10.05	10.36	H	4.09	-3.78	-	-
	49.91	-8.09		V		-1.82	-	-
Test Data for Middle Channel								
2 132.60	48.50	-9.83	10.37	H	4.11	-3.57	-	-
	49.67	-8.16		V		-1.90	-	-
Test Data for High Channel								
2 154.80	48.33	-10.02	10.38	H	4.13	-3.77	-	-
	49.50	-8.40		V		-2.15	-	-
100.10	26.33	-59.15	1.60	V	0.33	-57.88	-13.00	-44.88
110.40	24.91	-60.92	1.55	H	0.33	-59.70	-13.00	-46.70
262.20	22.78	-62.15	1.66	H	0.50	-60.99	-13.00	-47.99
858.10	23.50	-63.37	0.03	V	0.67	-64.01	-13.00	-51.01

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical



Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4.4 Modulated Input Signal: CDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.43 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 111.25	48.83	-10.00	10.36	H	4.10	-3.74	-	-
	49.78	-8.22		V		-1.96	-	-
Test Data for Middle Channel								
2 132.50	48.33	-10.00	10.37	H	4.11	-3.74	-	-
	49.50	-8.33		V		-2.07	-	-
Test Data for High Channel								
2 153.75	48.17	-10.18	10.38	H	4.13	-3.93	-	-
	49.92	-7.98		V		-1.73	-	-
100.10	26.78	-58.70	1.60	V	0.33	-57.43	-13.00	-44.43
110.40	24.50	-61.33	1.55	H	0.33	-60.11	-13.00	-47.11
262.20	22.50	-62.43	1.66	H	0.50	-61.27	-13.00	-48.27
858.10	23.48	-63.39	0.03	V	0.67	-64.03	-13.00	-51.03

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4.5 Modulated Input Signal: 1xEVDO

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.88 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 111.25	48.50	-10.33	10.36	H	4.10	-4.07	-	-
	49.67	-8.33		V		-2.07	-	-
Test Data for Middle Channel								
2 132.50	48.17	-10.16	10.37	H	4.11	-3.90	-	-
	49.83	-8.00		V		-1.74	-	-
Test Data for High Channel								
2 153.75	48.33	-10.02	10.38	H	4.13	-3.77	-	-
	49.83	-8.07		V		-1.82	-	-
100.10	26.33	-59.15	1.60	V	0.33	-57.88	-13.00	-44.88
110.40	24.17	-61.66	1.55	H	0.33	-60.44	-13.00	-47.44
262.20	22.83	-62.20	1.66	H	0.50	-61.04	-13.00	-48.04
858.10	23.72	-63.15	0.03	V	0.67	-63.79	-13.00	-50.79

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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10.4.4.6 Modulated Input Signal: WCDMA

-. Test Date : March 09, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 22 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.04 dB at 100.10 MHz

Frequency (MHz)	Spectrum Reading (dBμV)	Generator Reading (dBm)	Ant. Gain (dBi)	Ant. Pol. (H/V)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
Test Data for Low Channel								
2 112.40	48.33	-10.50	10.36	H	4.10	-4.24	-	-
	49.92	-8.08		V		-1.82	-	-
Test Data for Middle Channel								
2 136.90	48.33	-10.00	10.37	H	4.12	-3.75	-	-
	49.80	-8.03		V		-1.78	-	-
Test Data for High Channel								
2 152.60	48.17	-10.18	10.38	H	4.13	-3.93	-	-
	49.72	-8.18		V		-1.93	-	-
100.10	26.17	-59.31	1.60	V	0.33	-58.04	-13.00	-45.04
110.40	24.50	-61.33	1.55	H	0.33	-60.11	-13.00	-47.11
262.20	22.67	-62.26	1.66	H	0.50	-61.10	-13.00	-48.10
858.10	23.43	-63.44	0.03	V	0.67	-64.08	-13.00	-51.08

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Tested by: Ki-Hong, Nam / Project Engineer

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11. FREQUENCY STABILITY WITH TEMPERATURE VARIATION

11.1 Operating environment

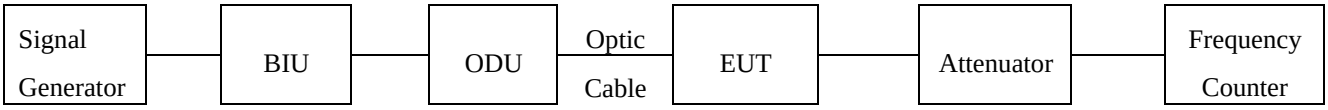
Temperature : 21.8 °C

Relative humidity : 47 %R.H.

11.2 Test set-up

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.

Turn EUT off and set chamber temperature to -30 °C and then allow sufficient time (approximately 20 to 30 minutes after chamber reach the assigned temperature) for EUT to stabilize. Turn ON EUT and measure the EUT operating frequency and then turn off the EUT after the measurement. The temperature in the chamber was raised 10 °C step from -30 °C to +50 °C. Repeat above method for frequency measurements every 10 °C step and then record all measured frequencies on each temperature step.



11.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	8564E	HP	Spectrum Analyzer	3650A00756	June 16, 2008
■ -	53152A	HP	Frequency Counter	US39270295	Dec. 05, 2008
■ -	RO-23	Samkun	Chamber	-	Aug. 12, 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.

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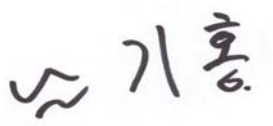
11.4 Test data

11.4.1 Test Result for Part 24E with AC 120 V Power Supply

-. Test Date : February 25~26, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	1 962 500 000	1 962 500 048	0.024 5	Within the Authorized Frequency block
-20		1 962 500 047	0.023 9	
-10		1 962 500 049	0.025 0	
0		1 962 500 047	0.023 9	
10		1 962 500 047	0.023 9	
20		1 962 500 049	0.025 0	
30		1 962 500 049	0.025 0	
40		1 962 500 050	0.025 5	
50		1 962 500 048	0.024 5	



Tested by: Ki-Hong, Nam / Project Engineer

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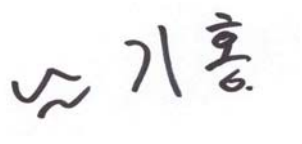
11.4.2 Test Result for Part 24E with DC - 48 V Power Supply

-. Test Date : February 25~26, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	1962500000	1 962 500 049	0.025 0	Within the Authorized Frequency block
-20		1 962 500 048	0.024 5	
-10		1 962 500 047	0.023 9	
0		1 962 500 048	0.024 5	
10		1 962 500 050	0.025 5	
20		1 962 500 048	0.024 5	
30		1 962 500 049	0.025 0	
40		1 962 500 047	0.023 9	
50		1 962 500 048	0.024 5	



Tested by: Ki-Hong, Nam / Project Engineer

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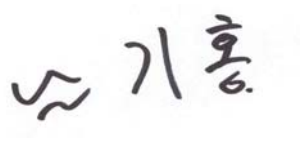
11.4.3 Test Result for Part 27 with AC 120 V Power Supply

-. Test Date : February 25~26, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	2 132 500 000	2 132 500 055	0.025 8	Within the Authorized Frequency block
-20		2 132 500 054	0.025 3	
-10		2 132 500 056	0.026 3	
0		2 132 500 056	0.026 3	
10		2 132 500 055	0.025 8	
20		2 132 500 056	0.026 3	
30		2 132 500 054	0.025 3	
40		2 132 500 055	0.025 8	
50		2 132 500 057	0.026 7	



Tested by: Ki-Hong, Nam / Project Engineer

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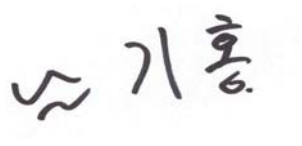
11.4.4 Test Result for Part 27 with DC - 48 V Power Supply

-. Test Date : February 25~26, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	2 132 500 000	2 132 500 056	0.026 3	Within the Authorized Frequency block
-20		2 132 500 055	0.025 8	
-10		2 132 500 056	0.026 3	
0		2 132 500 054	0.025 3	
10		2 132 500 054	0.025 3	
20		2 132 500 055	0.025 8	
30		2 132 500 056	0.026 3	
40		2 132 500 053	0.024 9	
50		2 132 500 055	0.025 8	



Tested by: Ki-Hong, Nam / Project Engineer

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12. FREQUENCY STABILITY WITH VOLTAGE VARIATION

12.1 Operating environment

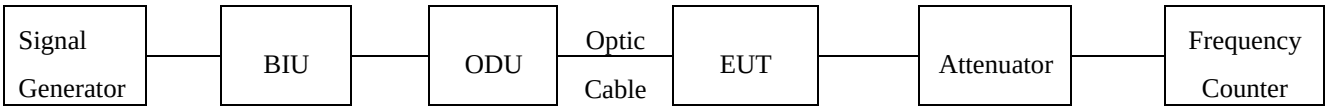
Temperature : 21.8 °C

Relative humidity : 47 %R.H.

12.2 Test set-up

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 RF output port of the EUT was connected to the input of the spectrum analyzer. The signal generator was set to center frequency for each band with an un-modulated signal. The voltage of EUT set to 115 % of the nominal value and then was reduced to 85% of nominal voltage. The output frequency was recorded at each step.



12.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	8564E	HP	Spectrum Analyzer	3650A00756	June 16, 2008
■ -	53152A	HP	Frequency Counter	US39270295	Dec. 05, 2008
■ -	2350A	HP	30 dB Attenuator Assembly	2350A03133	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.

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12.4 Test data

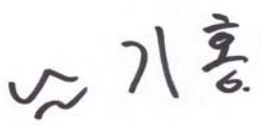
12.4.1 Test Result for Part 24E with AC 120 V Power Supply

-. Test Date : February 25~26, 2009

-. Rated Supply Voltage : 120 Vac

-. Result : PASSED

Voltage (Vac)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
138 (115 %)	1 962 500 000	1 962 500 048	0.024 5	Within the Authorized Frequency block
120 (100 %)		1 962 500 049	0.025 0	
102 (85 %)		1 962 500 048	0.024 5	



Tested by: Ki-Hong, Nam / Project Engineer

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12.4.2 Test Result for Part 24E with DC - 48 V Power Supply

-. Test Date : February 25~26, 2009

-. Rated Supply Voltage : 48 Vdc

-. Result : PASSED

Voltage (Vdc)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
- 55.2 (115 %)	1 962 500 000	1 962 500 047	0.023 9	Within the Authorized Frequency block
- 48 (100 %)		1 962 500 048	0.024 5	
- 40.8 (85 %)		1 962 500 047	0.023 9	

Tested by: Ki-Hong, Nam / Project Engineer

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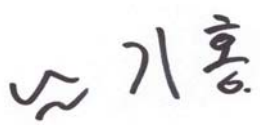
12.4.3 Test Result for Part 27 with AC 120 V Power Supply

-. Test Date : February 25~26, 2009

-. Rated Supply Voltage : 120 Vac

-. Result : PASSED

Voltage (Vac)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
138 (115 %)	2 132 500 000	2 132 500 055	0.025 8	Within the Authorized Frequency block
120 (100 %)		2 132 500 056	0.026 3	
102 (85 %)		2 132 500 055	0.025 8	



Tested by: Ki-Hong, Nam / Project Engineer

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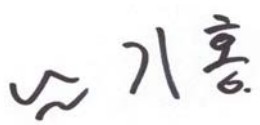
12.4.4 Test Result for Part 27 with DC – 48 V Power Supply

-. Test Date : February 25~26, 2009

-. Rated Supply Voltage : - 48 Vdc

-. Result : PASSED

Voltage (Vdc)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
- 55.2 (115 %)	2 132 500 000	2 132 500 054	0.025 3	Within the Authorized Frequency block
- 48 (100 %)		2 132 500 055	0.025 8	
- 40.8 (85 %)		2 132 500 057	0.026 7	



Tested by: Ki-Hong, Nam / Project Engineer

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