ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR PCS LICENSED TRANSMITTER

Test Report No.	**: E093R-032**
AGR No.	**: A092A-147**
Applicant	**: SOLiD Technologies, Inc.**
Address	**: 18th Floor, KINS Tower, 25-1 Jeongja-Dong, Bundang-Gu, Seongnam-Si, Gyeonggi-Do 463-811, Korea**
Manufacturer	**: SOLiD Technologies, Inc.**
Address	**: 18th Floor, KINS Tower, 25-1 Jeongja-Dong, Bundang-Gu, Seongnam-Si, Gyeonggi-Do 463-811, Korea**
Type of Equipment	**: RDU MODULE(800PS)**
FCC ID.	**: W6U800PS**
Model Name	**: RDU 800PS**
Serial number	**: N/A**
Total page of Report	**: 56 pages (including this page)**
Date of Incoming	**: February 20, 2009**
Date of issue	**: March 13, 2009**

SUMMARY

The equipment complies with the regulation; **FCC Part 90 Subpart I.**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Prepared by:
Young-Min, Choi / Asst. Chief Engineer
EMC/RF Center
ONETECH Corp.

Reviewed by:
Y. K. Kwon / Managing Director
EMC/RF Center
ONETECH Corp.

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1. VERIFICATION OF COMPLIANCE

APPLICANT	: SOLiD Technologies, Inc.
ADDRESS	: 18th Floor, KINS Tower, 25-1 Jeongja-Dong, Bundang-Gu, Seongnam-Si, Gyeonggi-Do 463-811, Korea
CONTACT PERSON	: Mr. Kangyeob, Bae / Director
TELEPHONE NO	: +82-31-784-8585
FCC ID	: W6U800PS
MODEL NAME	: RDU 800PS
SERIAL NUMBER	: N/A
DATE	: March 13, 2009

EQUIPMENT CLASS	PCB - PCS Licensed Transmitter
EQUIPMENT DESCRIPTION	RDU MODULE(800PS)
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.4: 2003, EIA/TAI-603B
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	PART 90 Subpart I
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER(S) OPEN AREA TEST SITE

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
2.1046(a), 90.205	RF Power Output at Antenna Terminals	Met the Limit / PASS
2.1047	Modulation Characteristics	PASS (See Note 1)
2.1049, 90.210	Occupied Bandwidth, Bandwidth Limitation	Met the Limit / PASS
2.1049	Band Edge	Met the Limit / PASS
2.1051, 90.210	Spurious Emissions at Antenna Terminals	Met the Limit / PASS
2.1053, 90.210	Field strength of Spurious Radiation	Met the Limit / PASS
2.1055, 90.213	Frequency Stability with Temperature variation	Met the requirement / PASS
2.1055, 90.213	Frequency stability with primary voltage variation	Met the requirement / PASS
2.1093	RF Exposure	See Note 2

Note1: The Equipment under Test (EUT) is a repeater which reproduces the modulated input signal, so the EUT meets the requirement.

Note2: End Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance, because the applicant does not provide an antenna for sale with the EUT.

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original Grant

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in section 2.1.

2.5 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. Description details of test facilities were submitted to the Commission on August 21, 2008. (Registration Number: 340658)

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3. GENERAL INFORMATION

3.1 Product Description

The SOLiD Technologies, Inc., Model RDU 800PS (referred to as the EUT in this report) is a RDU MODULE(800PS) that shall be plugged in ROU (Remote Optic Unit). The ROU can be equipped with up to 3 RDUs (Remote Drive Unit), a RPSU (Remote Power Supply Unit), a RCPU (Remote Central Processor Unit), a R-Optic (Remote Optic), a SIU (System Interface Unit) and a Multiplexer. The System, SMDR-NH124 consists of ROU, BIU (BTS Interface Unit), ODU (Optic Distribution Unit), and OEU (Optic Expansion Unit). Except for ROU, the RF output ports of other units are connected to coaxial cable each other. ROU receives TX optical signals from ODU or OEU and converts them into RF signals. The converted RF signals are amplified through High Power Amp in a corresponding RDU, combined with multiplexer module and then radiated to the antenna port.

When receiving RX signals through the antenna port, this unit filters out-of-band signals in a corresponding RDU and sends the results to Remote Optic Module to make electronic-optical conversion of them. After converted, the signals are sent to an upper device of ODU or OEU. ROU can be equipped with up to three RDUs (Remote Drive Unit) and the module is composed of maximal Dual Band, but this report only covers RDU 800PS, FCC ID: W6U800PS and other modules shall be issued with other test report number. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	RDU MODULE(800PS)
LIST OF EACH OSC. or CRY. FREQ.(FREQ.>=1 MHz)	14.74 MHz
EMISSION DESIGNATOR	GXW(iDEN)
OPERATING FREQUENCY	851 MHz ~ 869 MHz
RF OUTPUT POWER	23 dBm
CHANNEL SEPARATION	GXW(25 kHz)
DC VOLTAGE & CURRENT INTO FINAL AMPLIFIER	DC 27 V, 1 A
ELECTRICAL RATING	AC 120 V, 0.97 A
OPERATING TEMPERATURE	-10 °C ~ 50 °C

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

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3.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	FCC ID	Description	Connected to
RDU 800PS	SOLiD Technologies, Inc.	W6U800PS	RDU MODULE(800PS) (EUT)	-
SMJ100A	Rohde & Schwarz	N/A	Vector Signal Generator	EUT
SMDR-NH124	SOLiD Technologies, Inc.	N/A	ODU (Optic Distribution Unit)	EUT
SMDR-NH124	SOLiD Technologies, Inc.	N/A	BIU (BTS Interface Unit)	EUT
105-10ST	Dong Yang	N/A	DC Power Supply	EUT

3.4 Mode of operation during the test

The EUT was received signal form signal generator and then each modulation, iDEN and SMR was configured for maximum signal gain and bandwidth. The EUT was operated in a manner representative of the typical usage of the equipment. During all testing, system components were manipulated within the confines of typical usage to maximize each emission. The applicant does not supply antenna(s) with the system, so the dummy loads were connected to the RF output ports on the EUT for radiated spurious emission testing.

4. EUT MODIFICATIONS

-. None

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5. RF POWER OUTPUT at ANTENNA TERMINAL

5.1 Operating environment

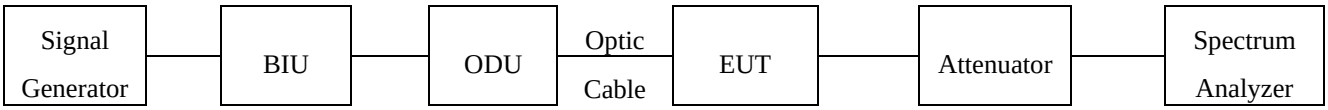
Temperature : 22 °C

Relative humidity : 47 %R.H.

5.2 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 power meter or spectrum analyzer. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable modulation.

RF output power was measured by channel power measurement function of the spectrum analyzer.



5.3 Test equipment used

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

All test equipment used is calibrated on a regular basis.

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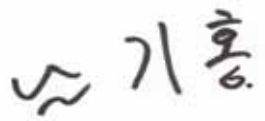
5.4 Test data

-. Test Date : March 09, 2009

-. Test Result : Pass

Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
iDEN	Low	851.025 0	-18.80	23.00	0.199 526	100.00
	Middle	860.000 0	-18.80	23.00		
	High	868.975 0	-18.70	23.00		
SMR	Low	851.012 5	-18.80	23.00	0.199 526	
	Middle	860.000 0	-18.80	23.00		
	High	868.987 5	-18.70	23.00		



Tested by: Ki-Hong, Nam / Project Engineer

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6. OCCUPIED BANDWIDTH

6.1 Operating environment

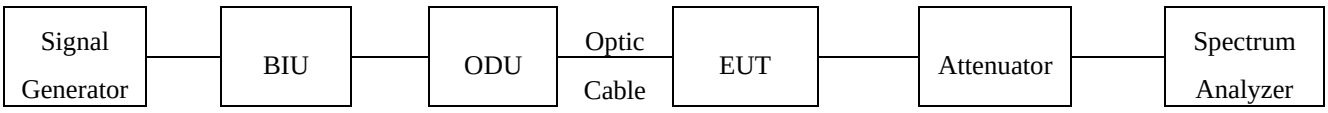
Temperature : 22 °C

Relative humidity : 47 %R.H.

6.2 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 power meter or spectrum analyzer. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable modulation.

For the testing, the RBW was set to 1 % to 3 % of the -26 dB bandwidth. The VBW is set to 3 times the RBW and sweep time is coupled.



6.3 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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6.4 Test data

-. Test Date : March 09, 2009

-. Test Result : Pass

Modulation	Channel	26 dB Bandwidth (kHz)	99 % Occupied Bandwidth (kHz)
iDEN	Low	21.25	18.42
	Middle	21.25	18.33
	High	21.25	18.33
SMR	Low	14.67	12.42
	Middle	14.67	12.42
	High	14.67	12.50

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

Tested by: Ki-Hong, Nam / Project Engineer

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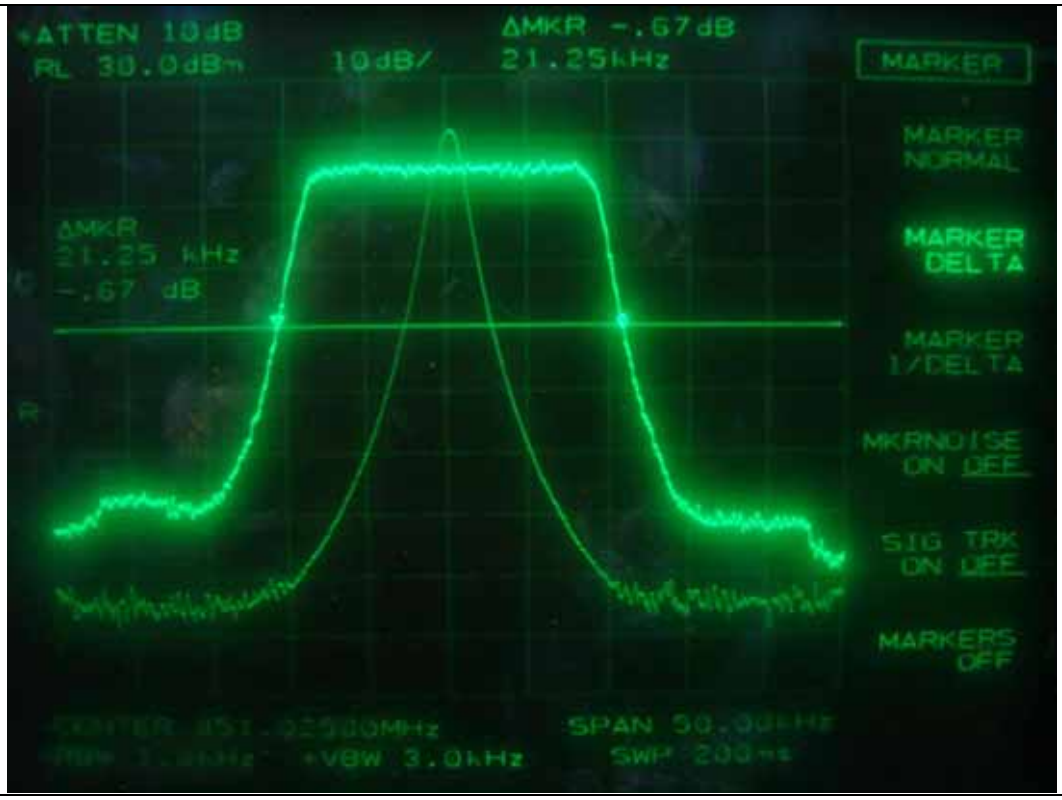
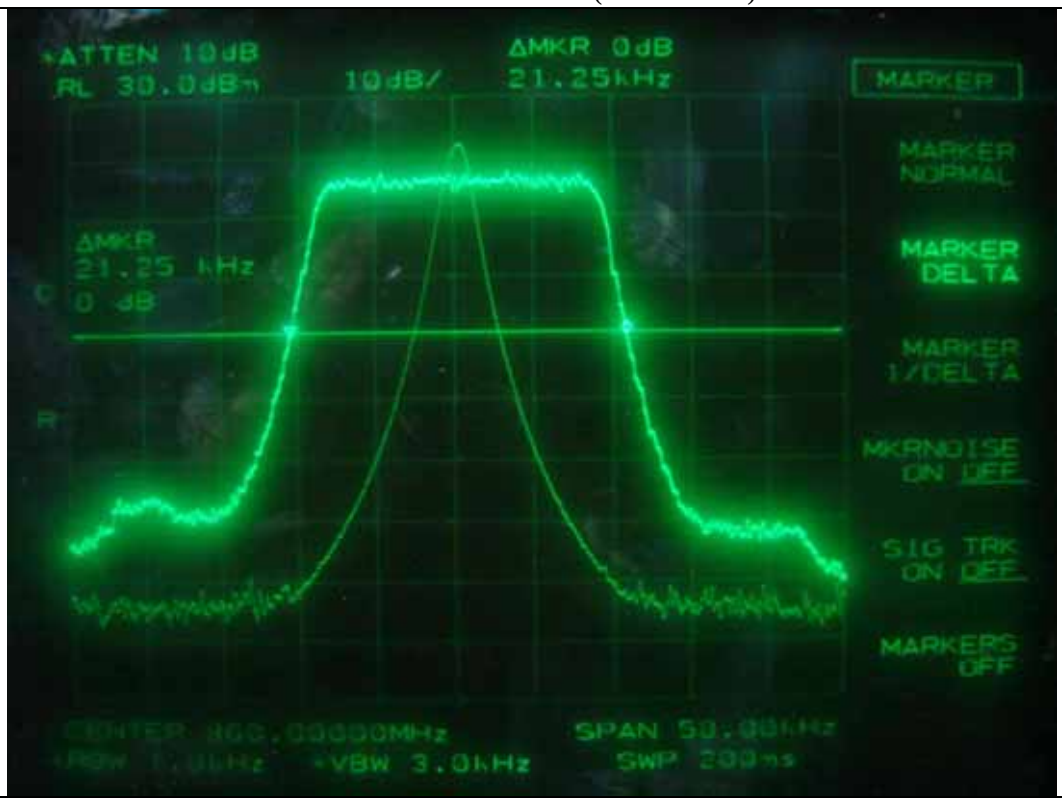


iDEN – 26 dB Bandwidth (Low Channel)



iDEN – 26 dB Bandwidth (Middle Channel)

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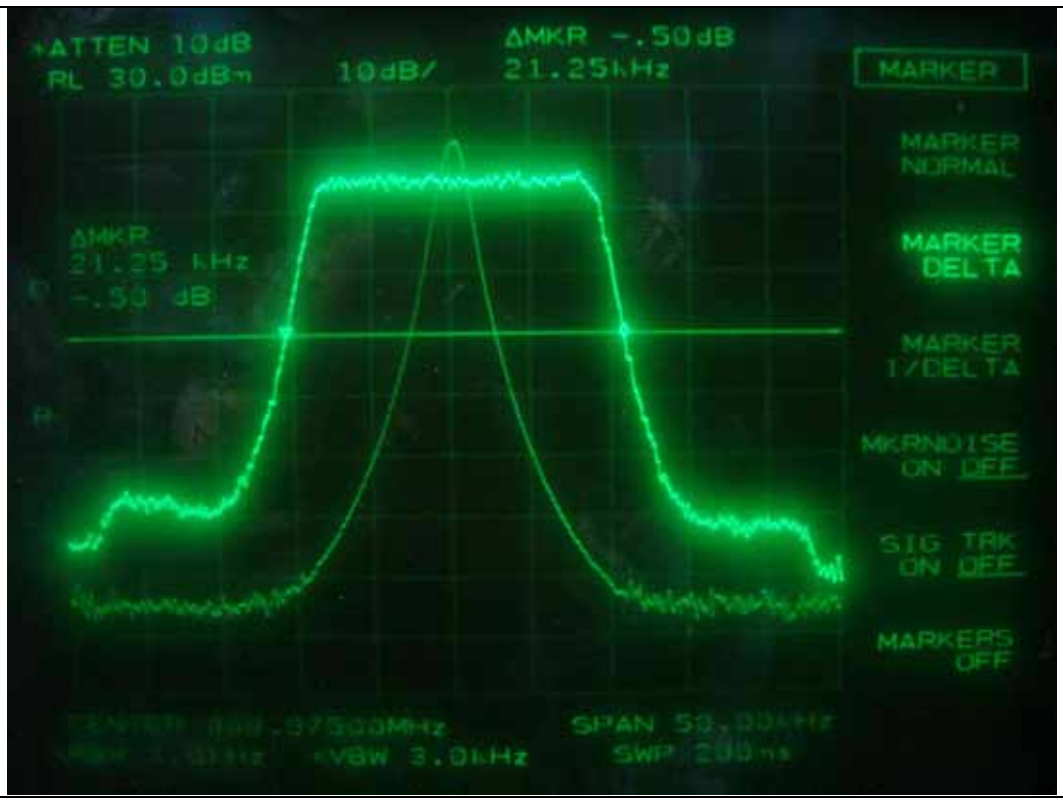

iDEN – 26 dB Bandwidth (High Channel)

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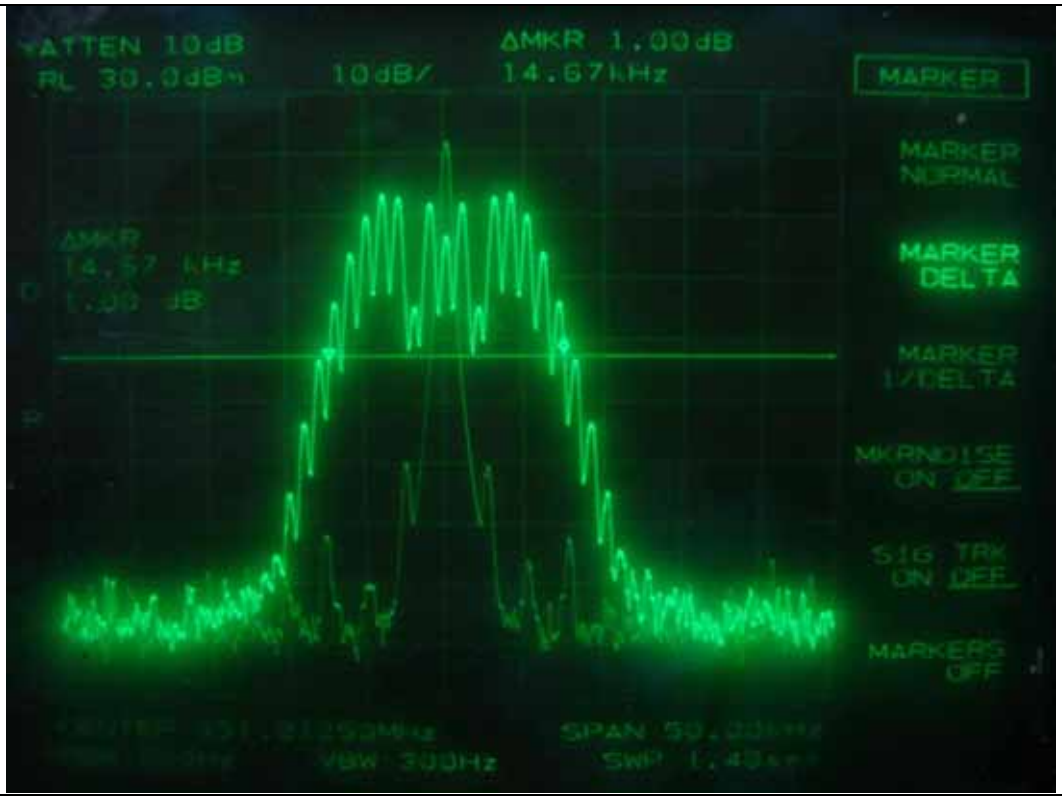
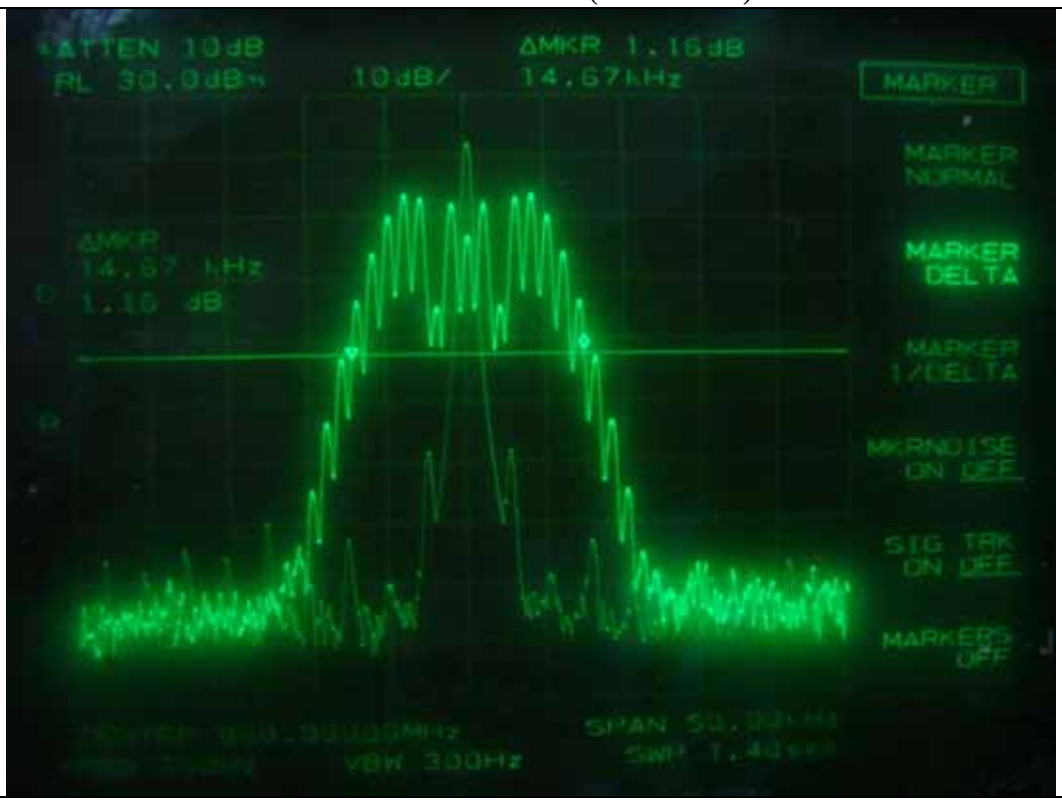


SMR – 26 dB Bandwidth (Low Channel)



SMR – 26 dB Bandwidth (Middle Channel)

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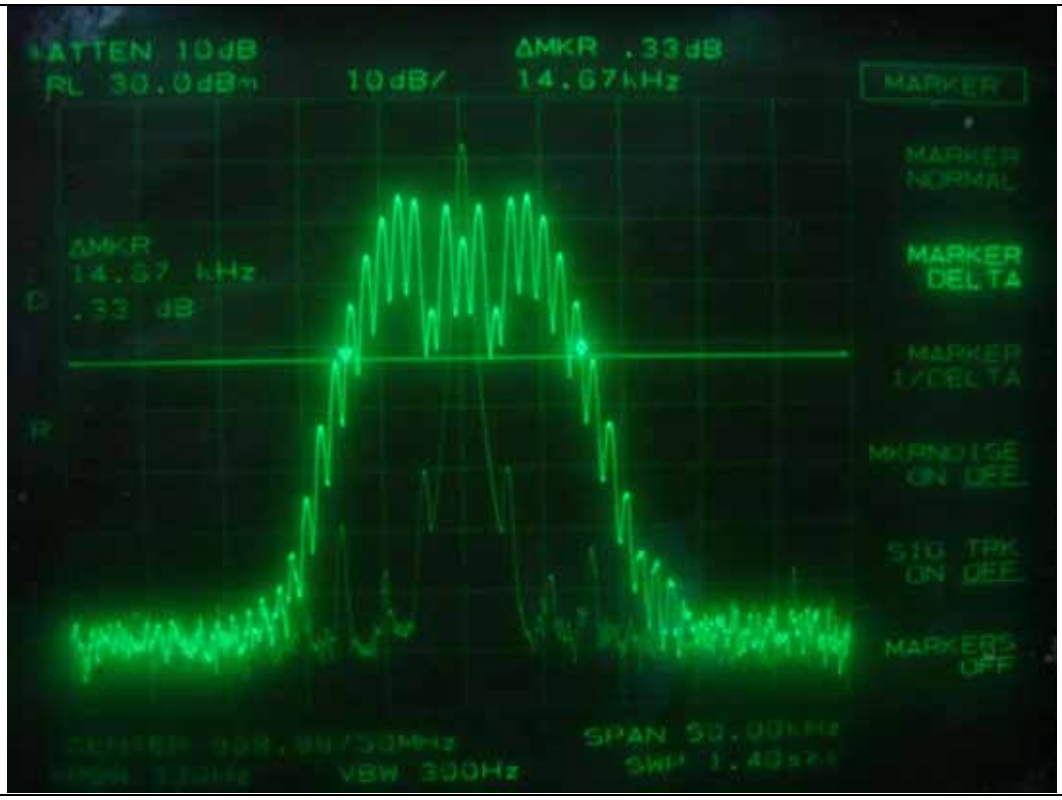

SMR – 26 dB Bandwidth (High Channel)

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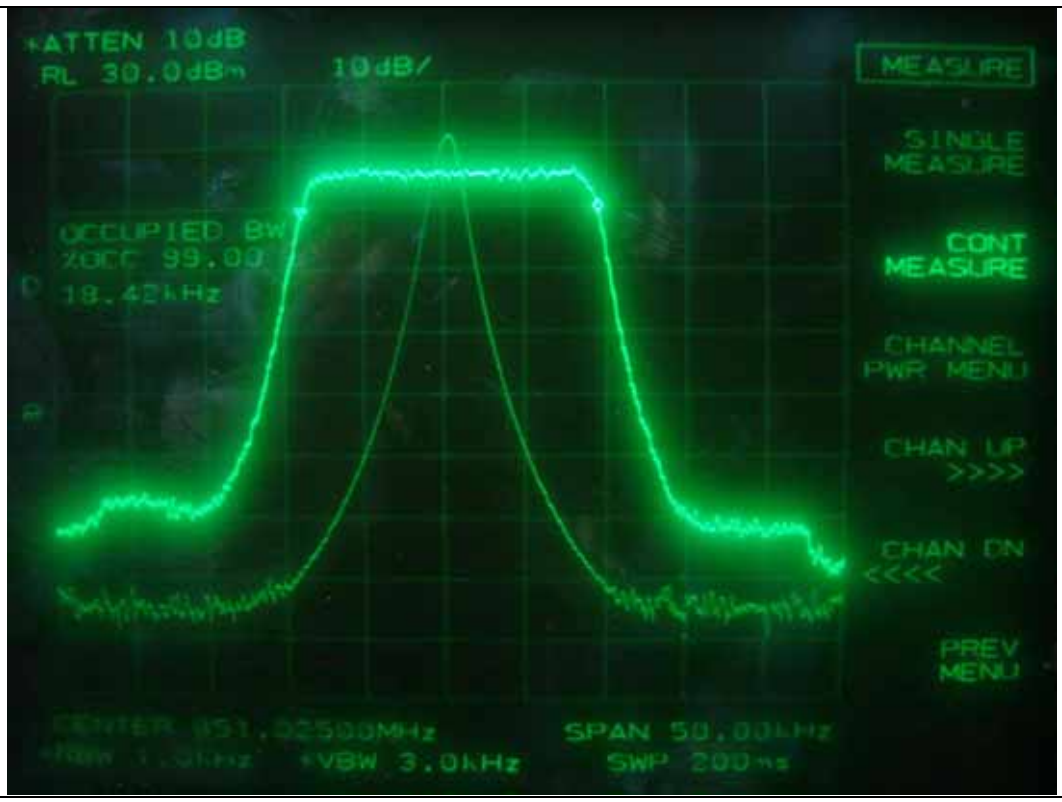
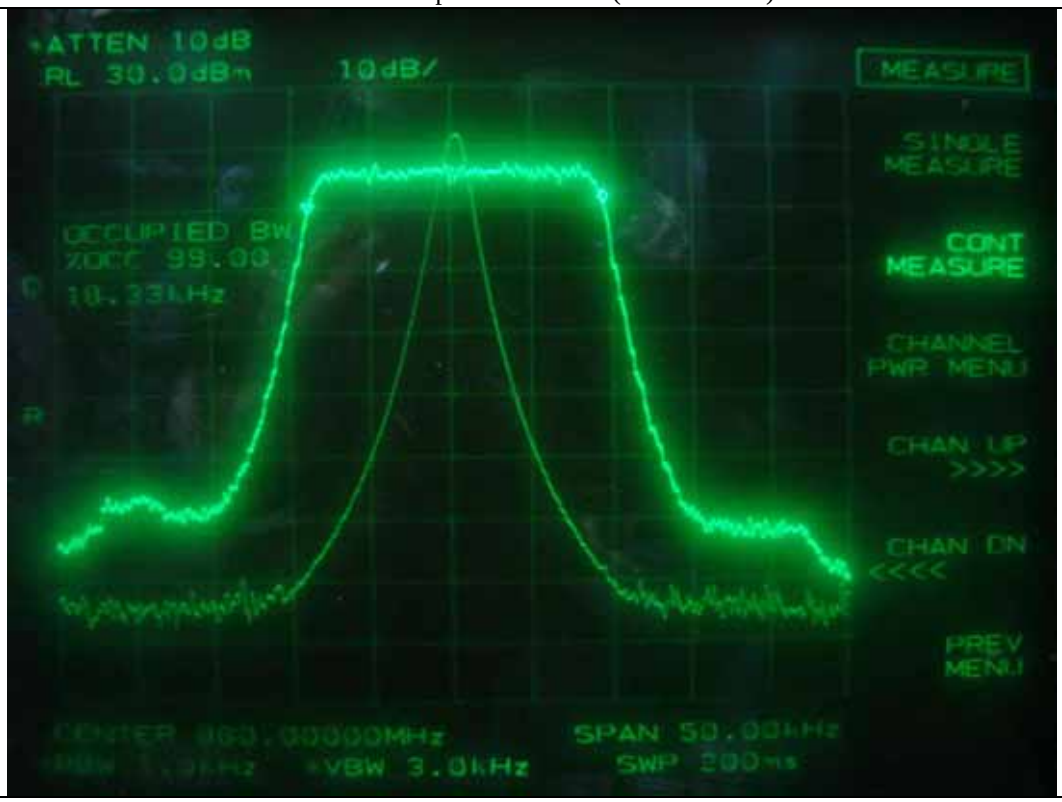


iDEN – Occupied Bandwidth (Low Channel)



iDEN – Occupied Bandwidth (Middle Channel)

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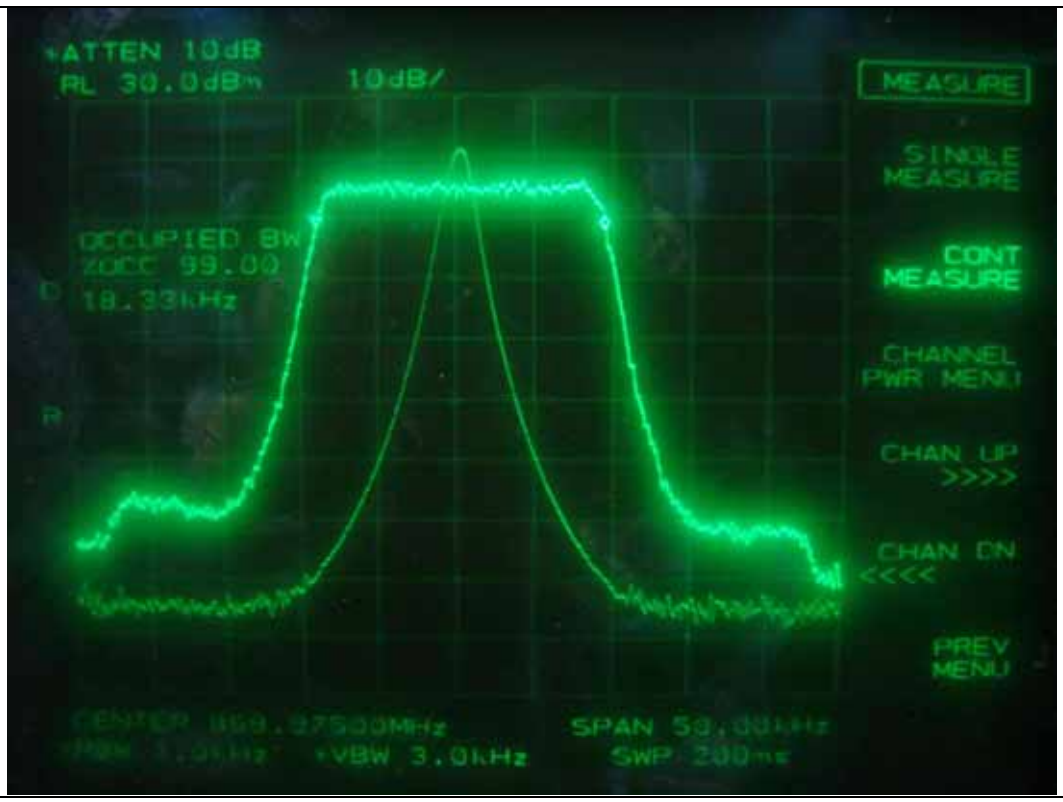

iDEN – Occupied Bandwidth (High Channel)

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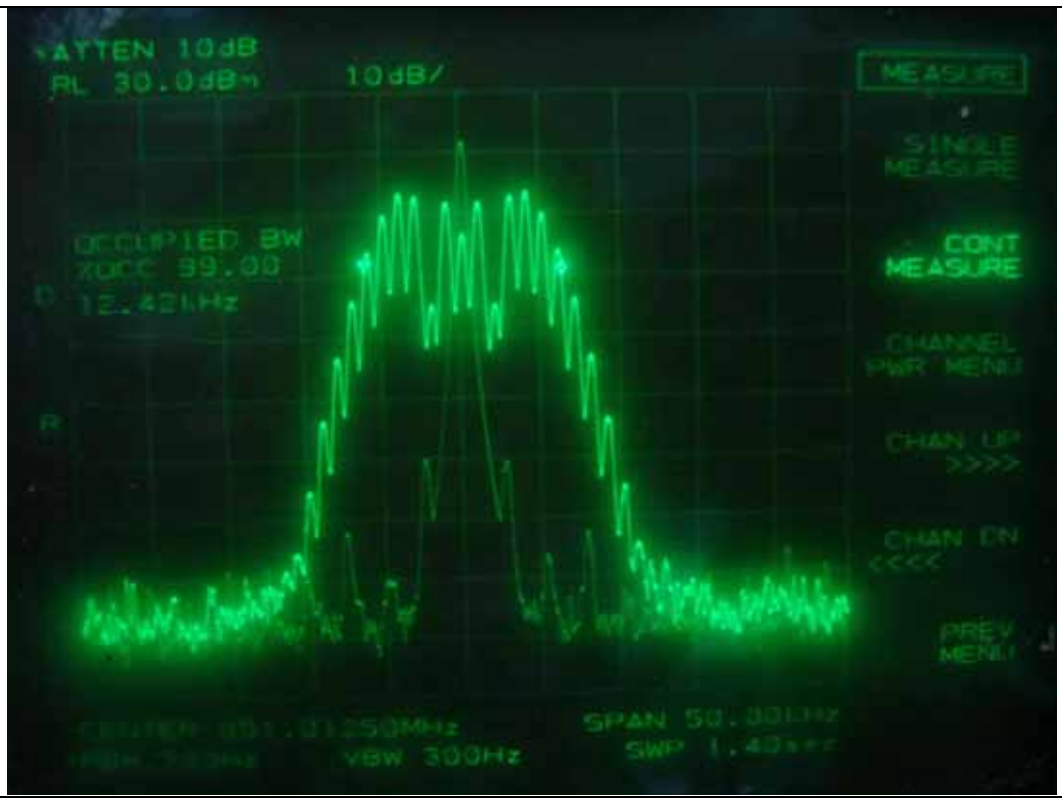
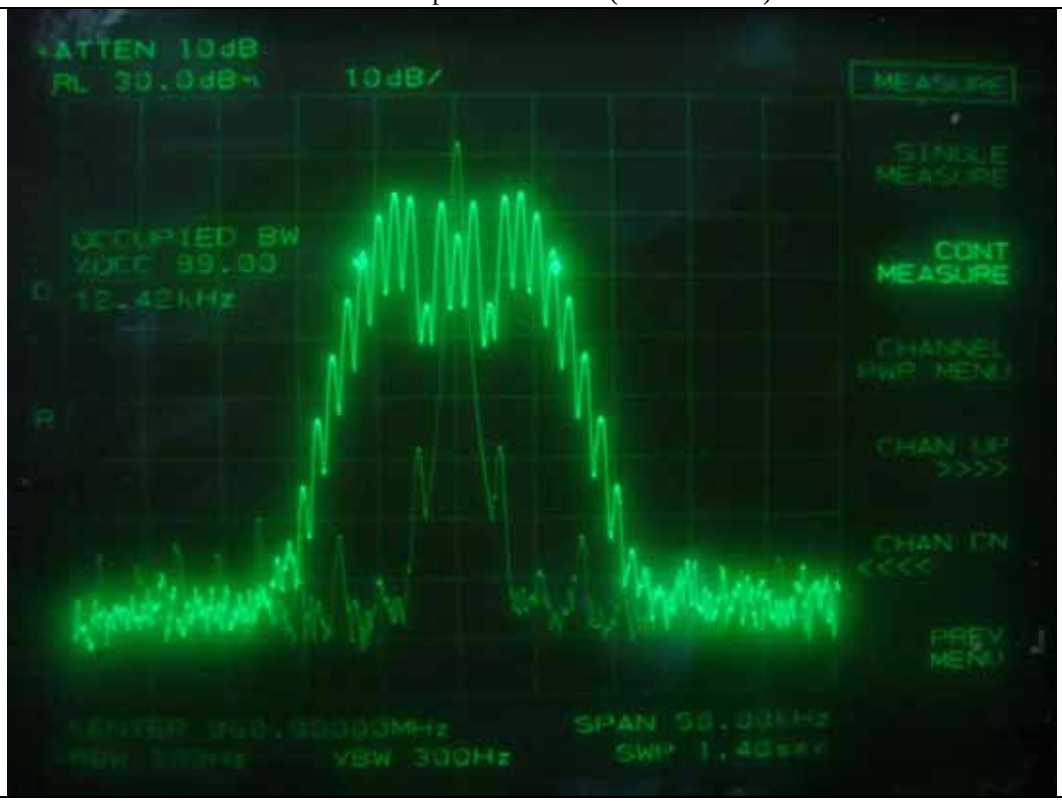


SMR – Occupied Bandwidth (Low Channel)



SMR – Occupied Bandwidth (Middle Channel)

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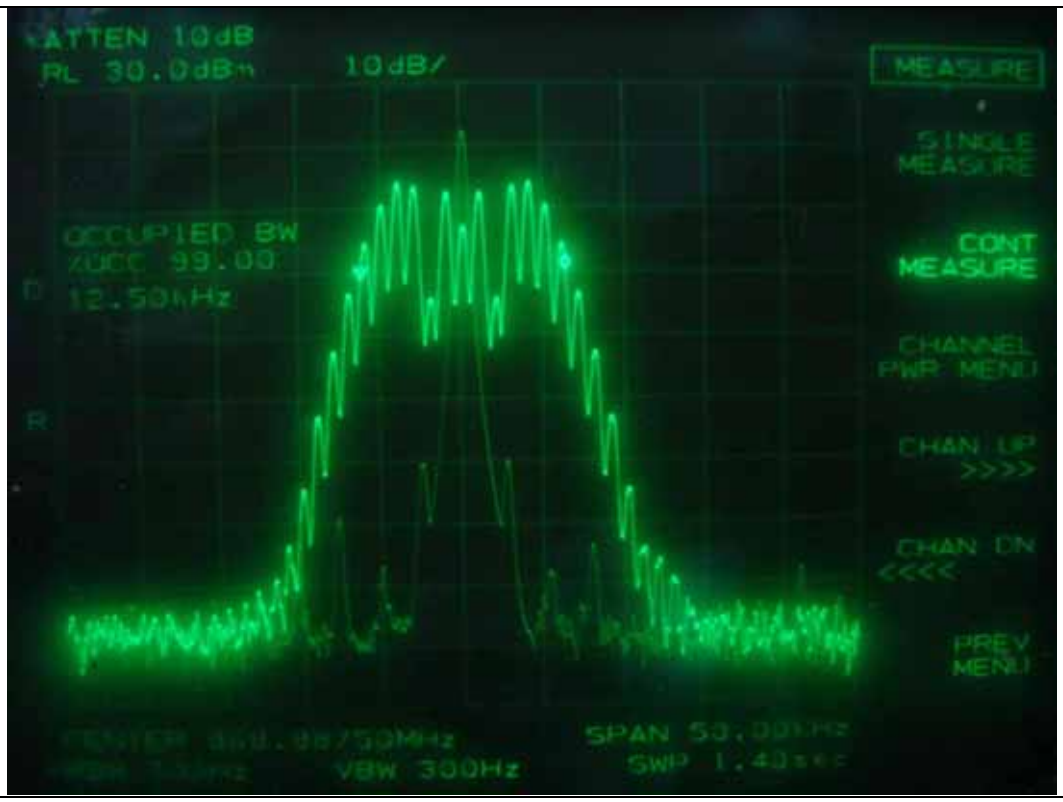

SMR – Occupied Bandwidth (High Channel)

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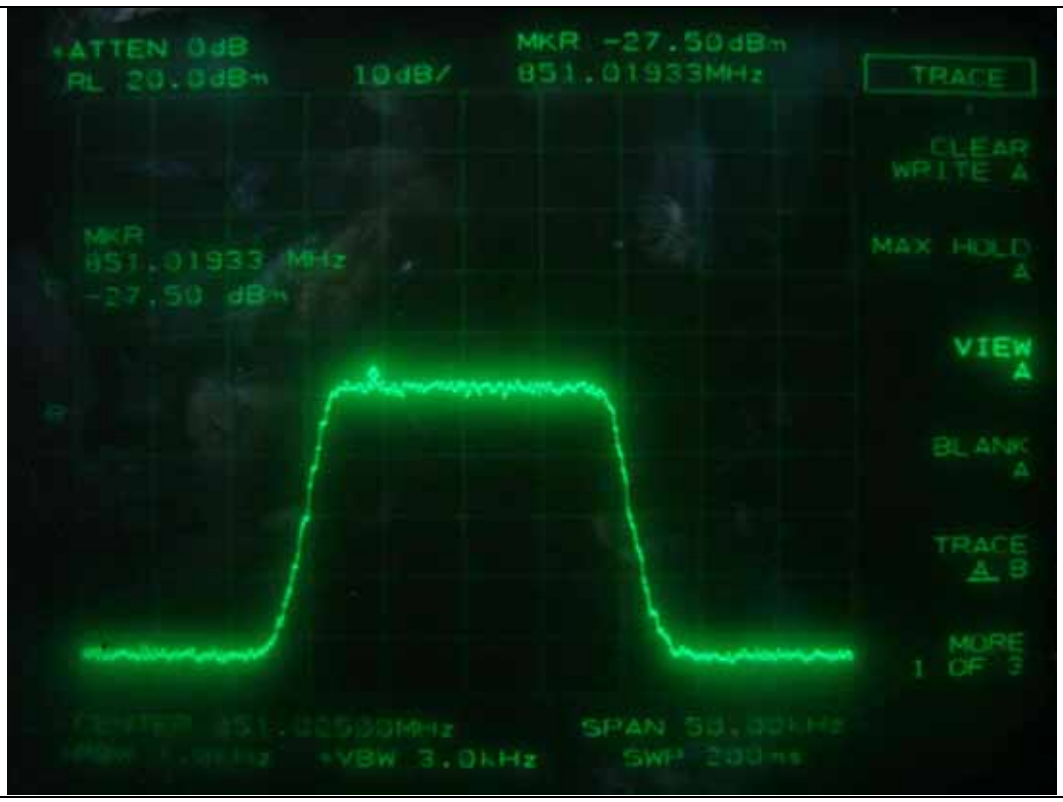
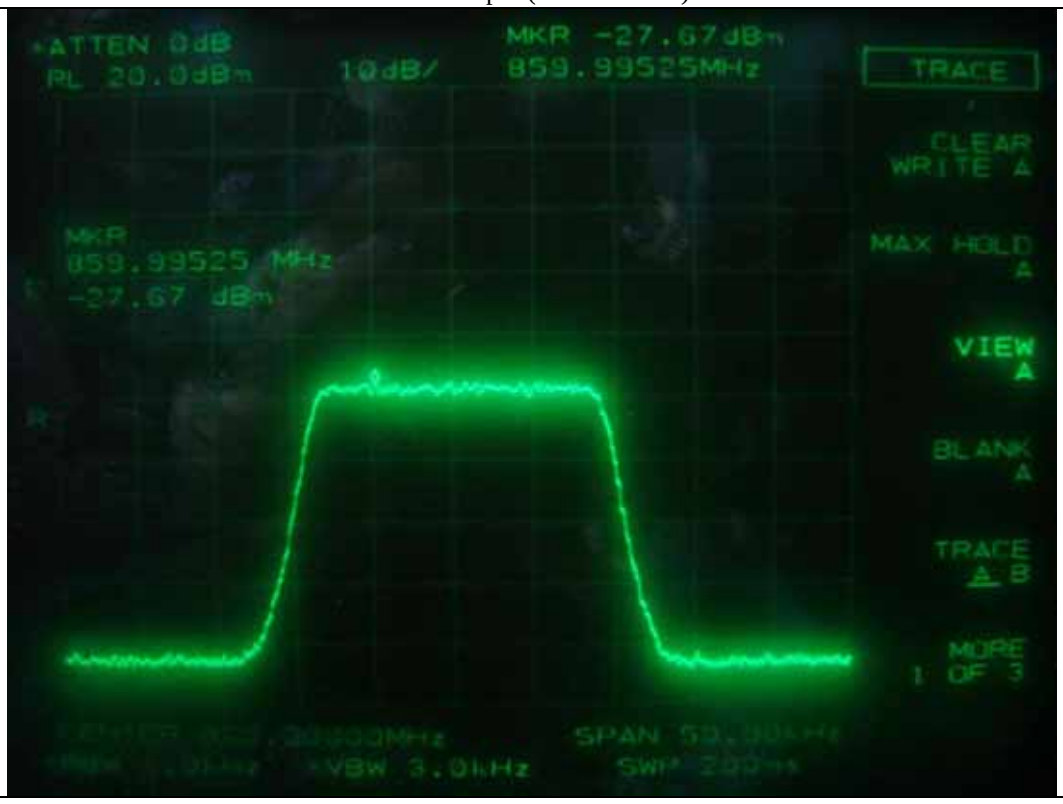


iDEN – Input (Low Channel)



iDEN – Input (Middle Channel)

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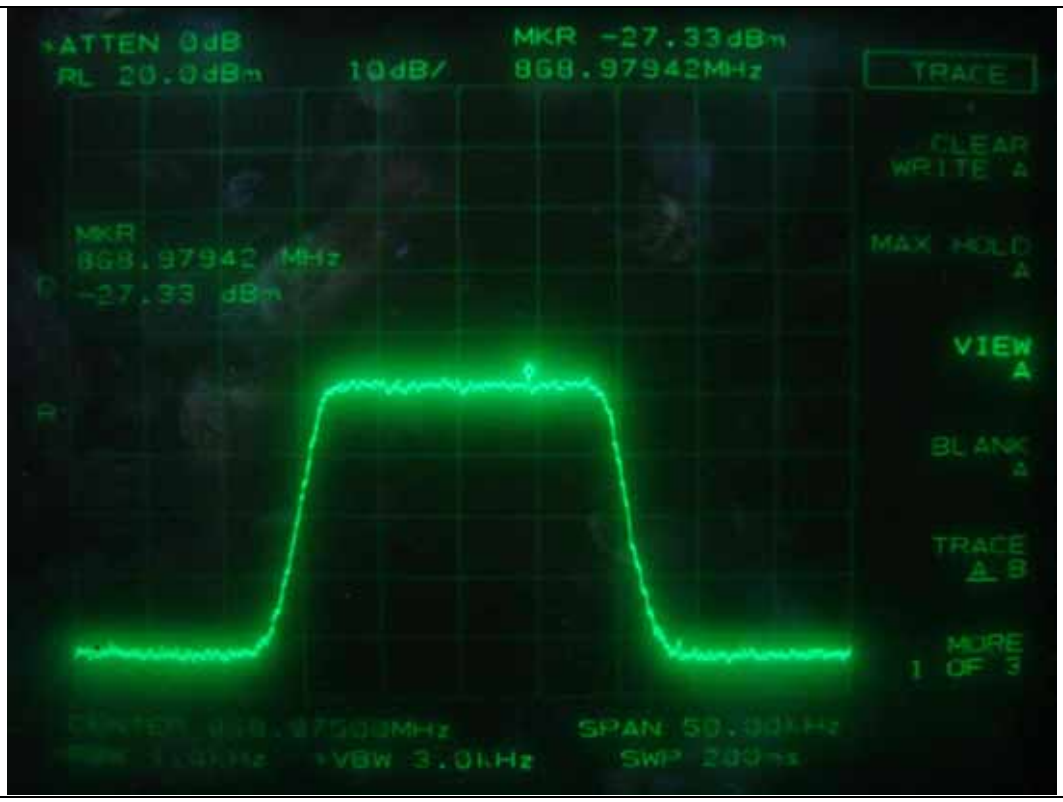

iDEN – Input (High Channel)

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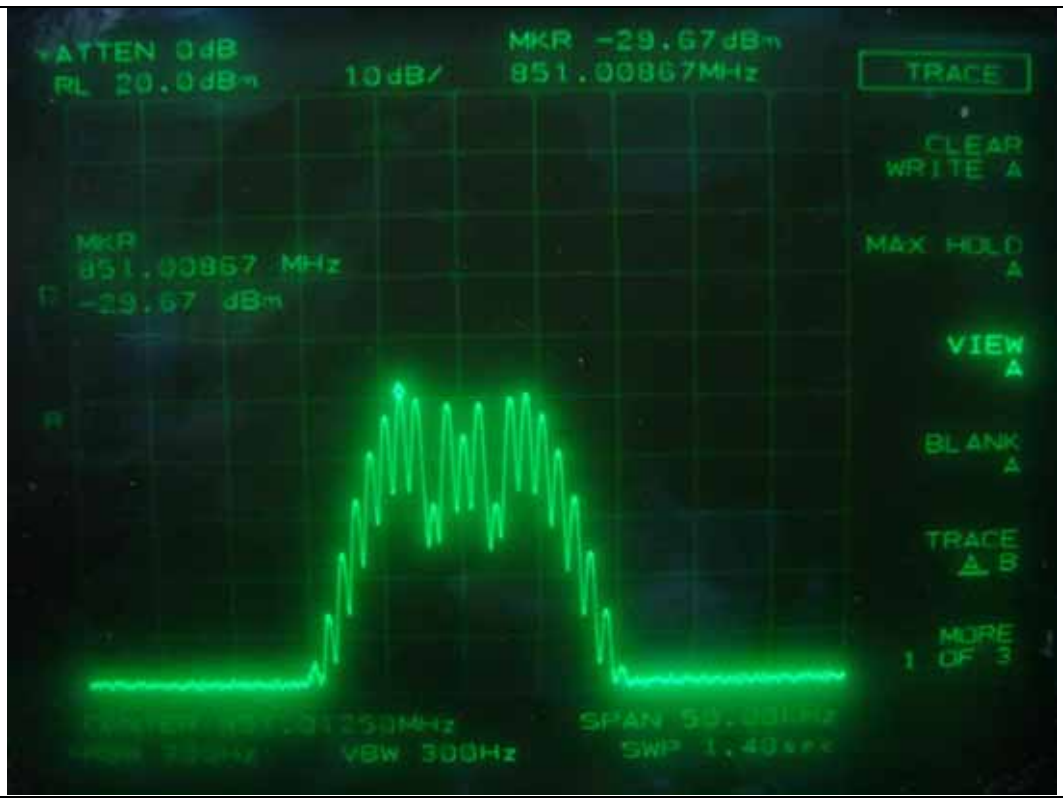
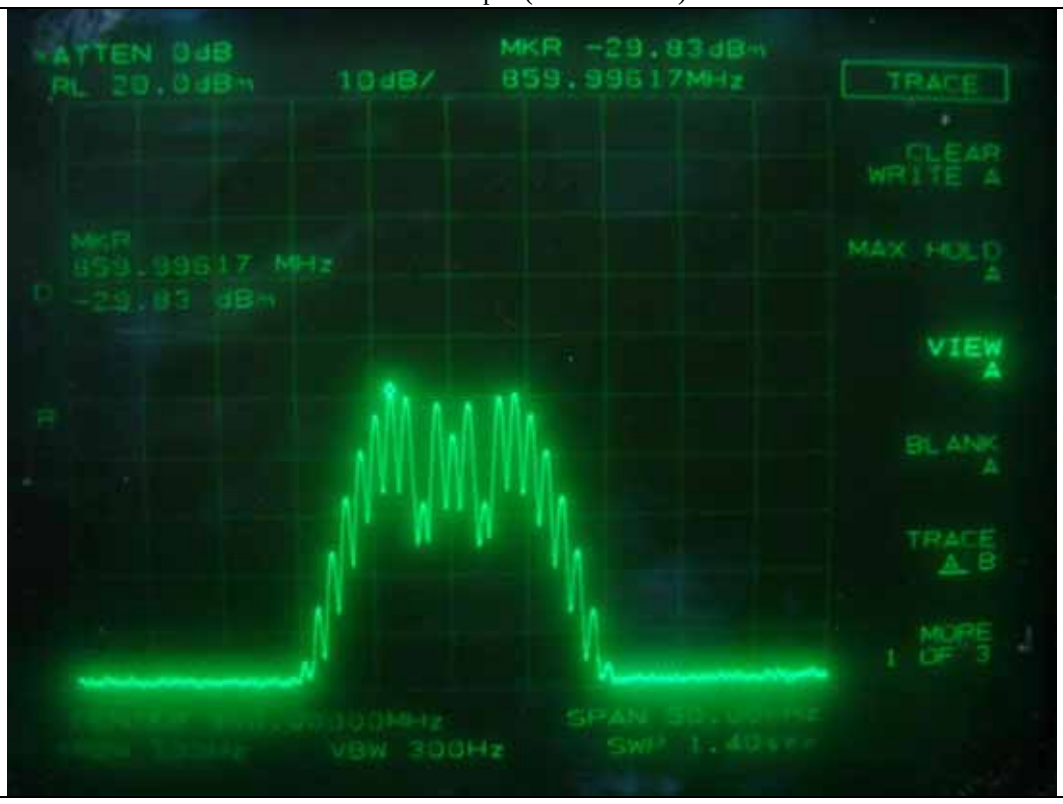
EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)



SMR – Input (Low Channel)



SMR – Input (Middle Channel)

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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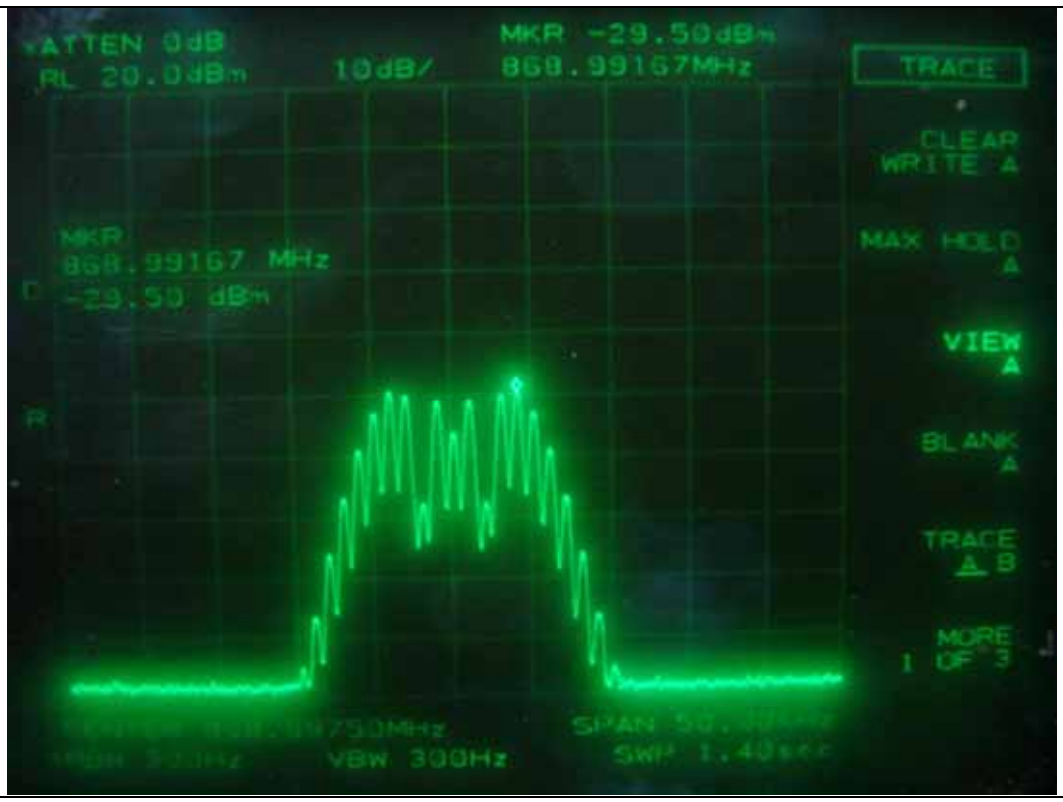

SMR – Input (High Channel)

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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)

7. SPURIOUS EMISSION AT ANTENNA TERMINAL

7.1 Operating environment

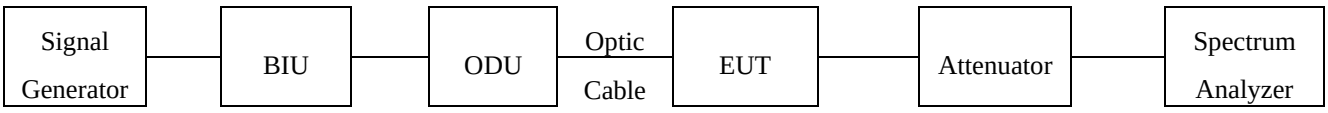
Temperature : 22 °C

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.

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7.4 Test data

-. Test Date : March 09, 2009

-. Frequency range : 30 MHz ~ 20 GHz

-. Result : PASSED BY –15.16 dB at low channel of iDEN Mode

Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
iDEN	Low	932.10	-47.17	0.50	-46.67	-13.00	-33.67
		2 060.00	-29.00	0.84	-28.16		-15.16
	Middle	940.20	-47.83	0.50	-47.33		-34.33
		2 110.00	-29.17	0.84	-28.33		-15.33
	High	938.60	-47.33	0.50	-46.83		-33.83
		2 060.00	-29.33	0.84	-28.49		-15.49
SMR	Low	953.10	-45.50	0.50	-45.00	-13.00	-32.00
		2 060.00	-30.00	0.84	-29.16		-16.16
	Middle	941.80	-46.33	0.50	-45.83		-32.83
		2 110.00	-29.67	0.84	-28.83		-15.83
	High	953.10	-47.17	0.50	-46.67		-33.67
		2 110.00	-29.17	0.84	-28.33		-15.33

According to Part 90I, 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

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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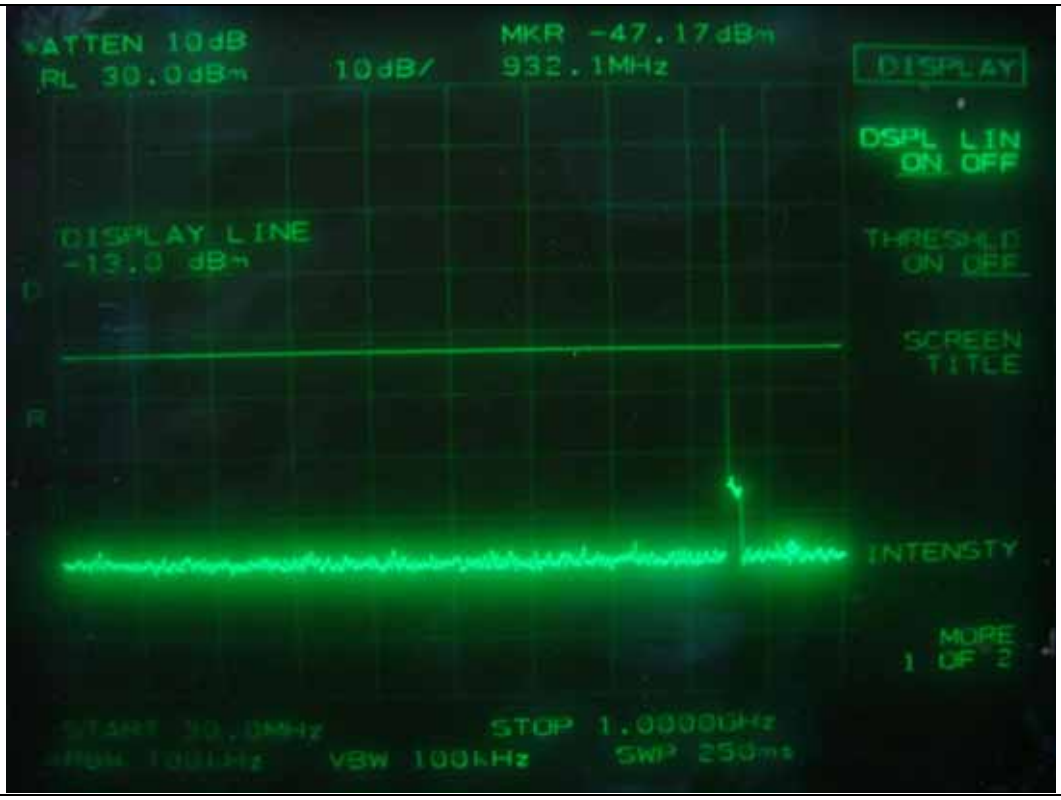

iDEN – Low Channel

iDEN – Low Channel

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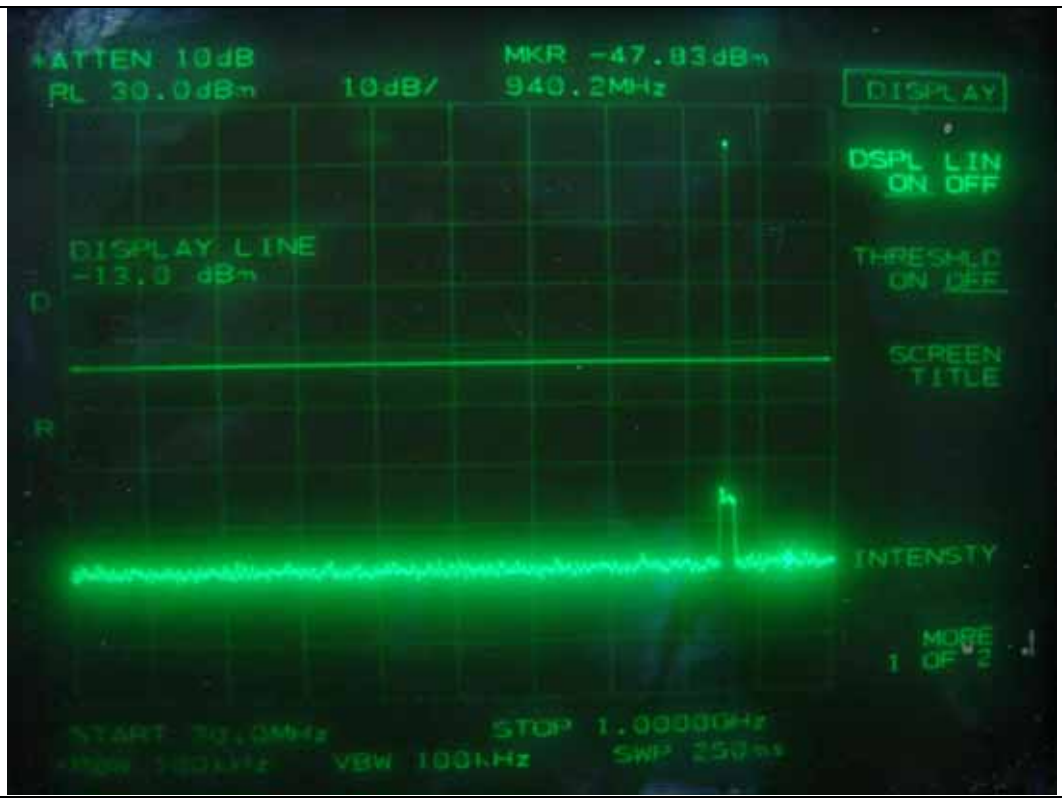
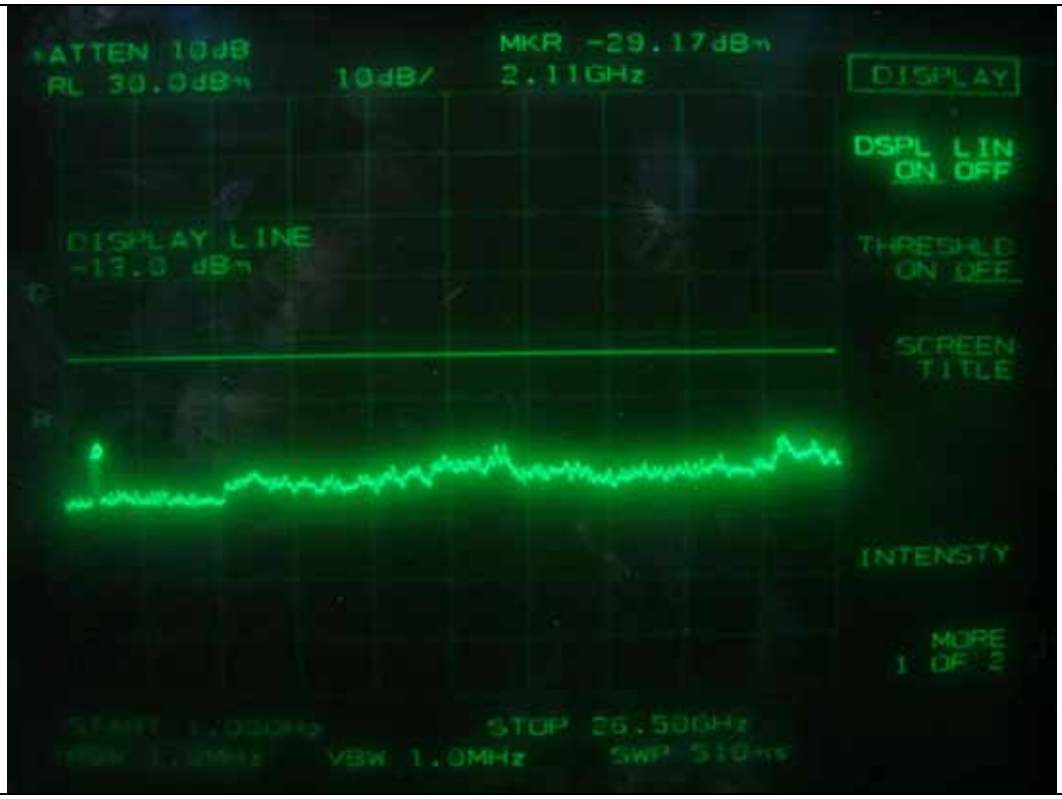


iDEN – Middle Channel



iDEN – Middle Channel

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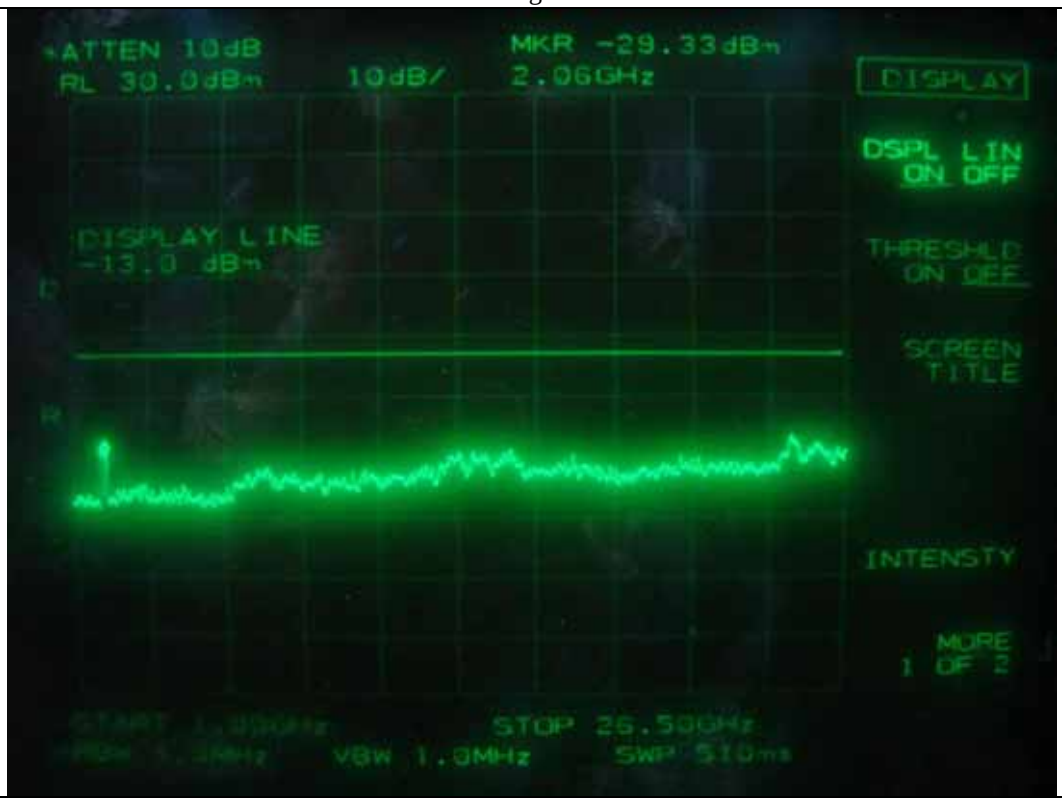
iDEN – High Channel



iDEN – High Channel

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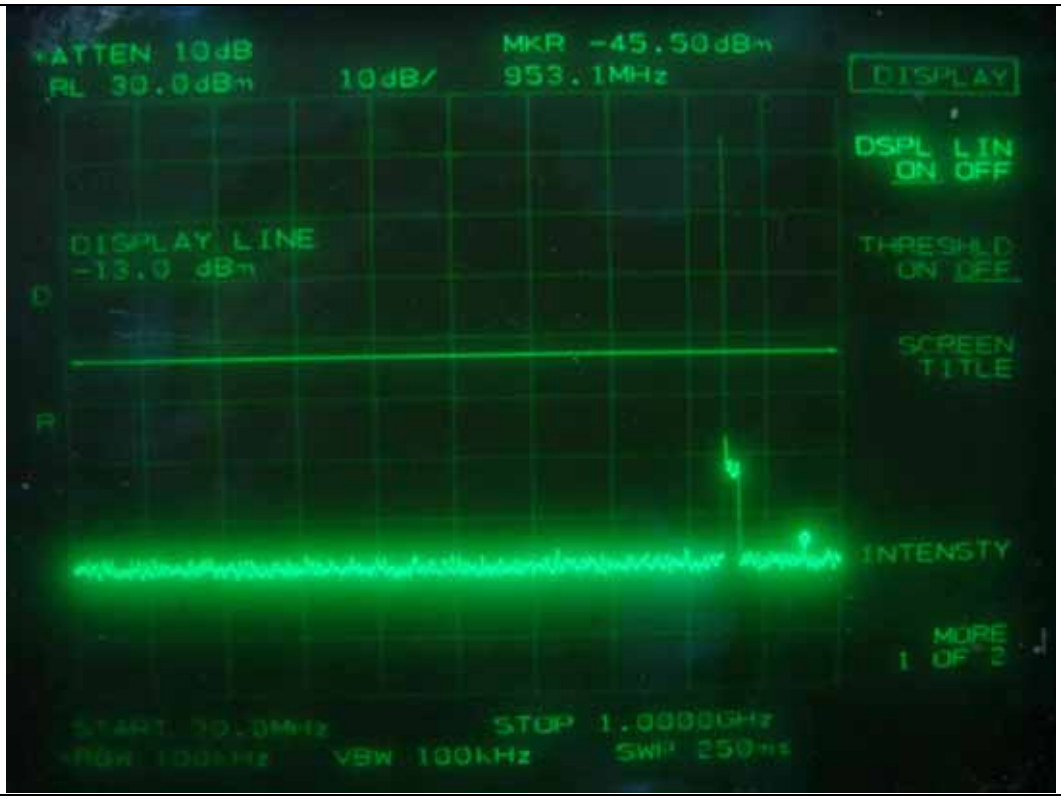
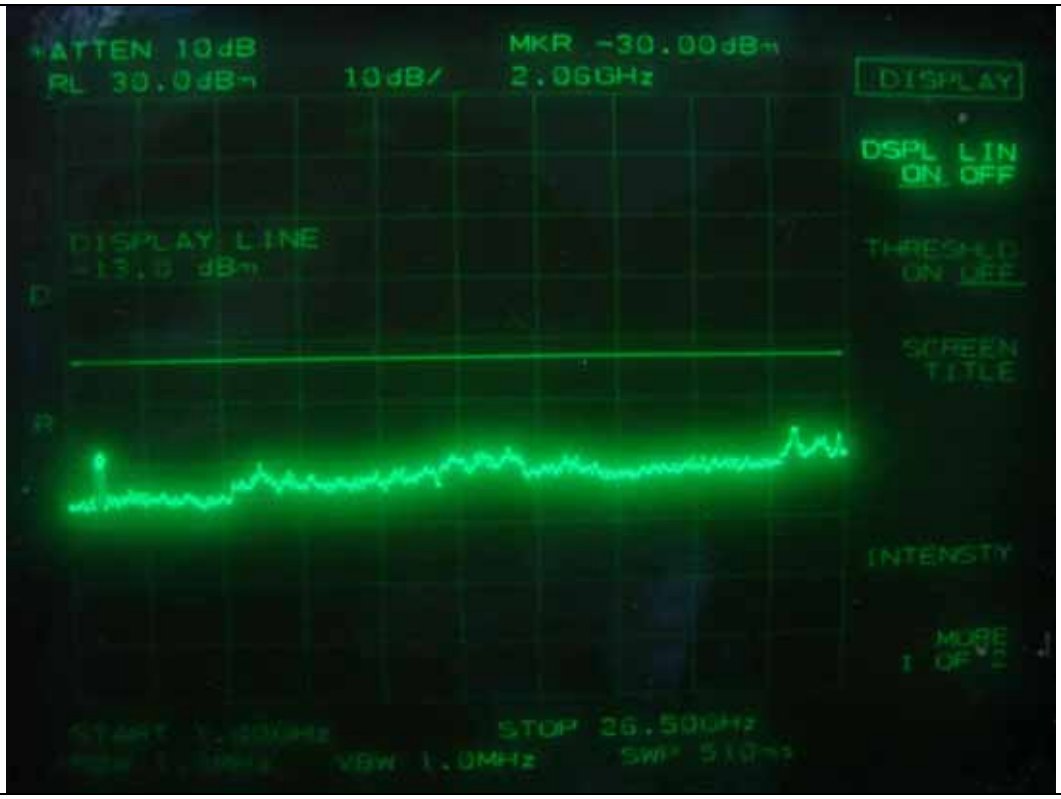


SMR – Low Channel



SMR – Low Channel

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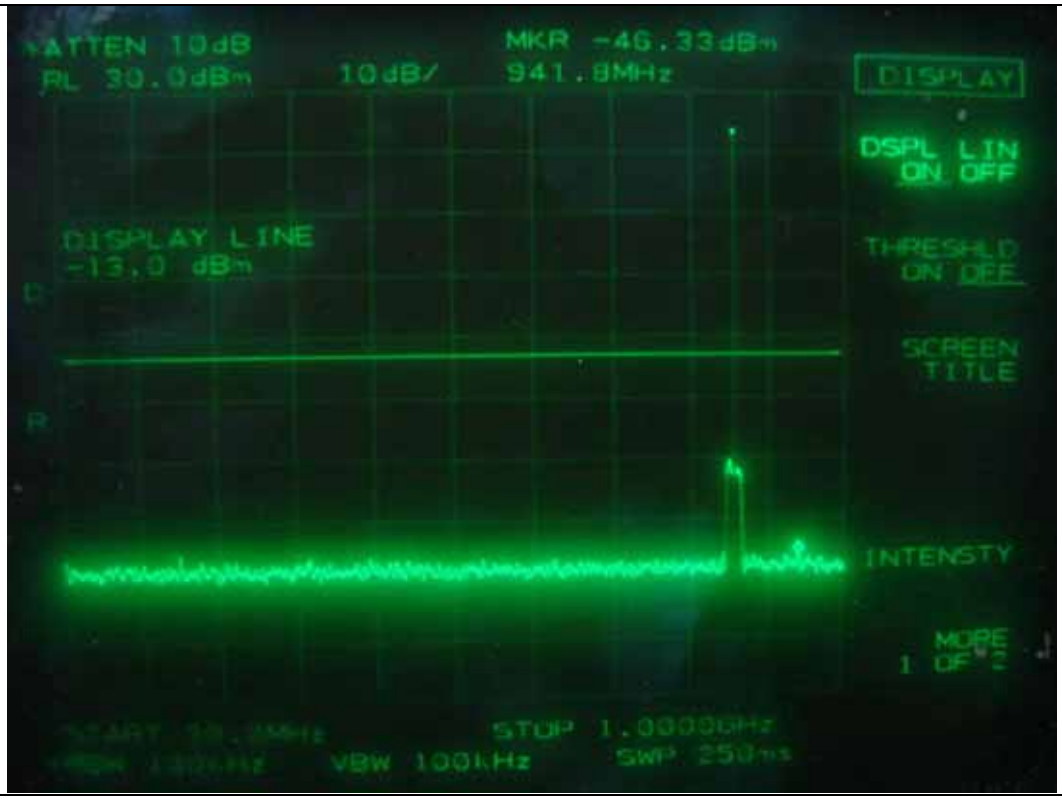
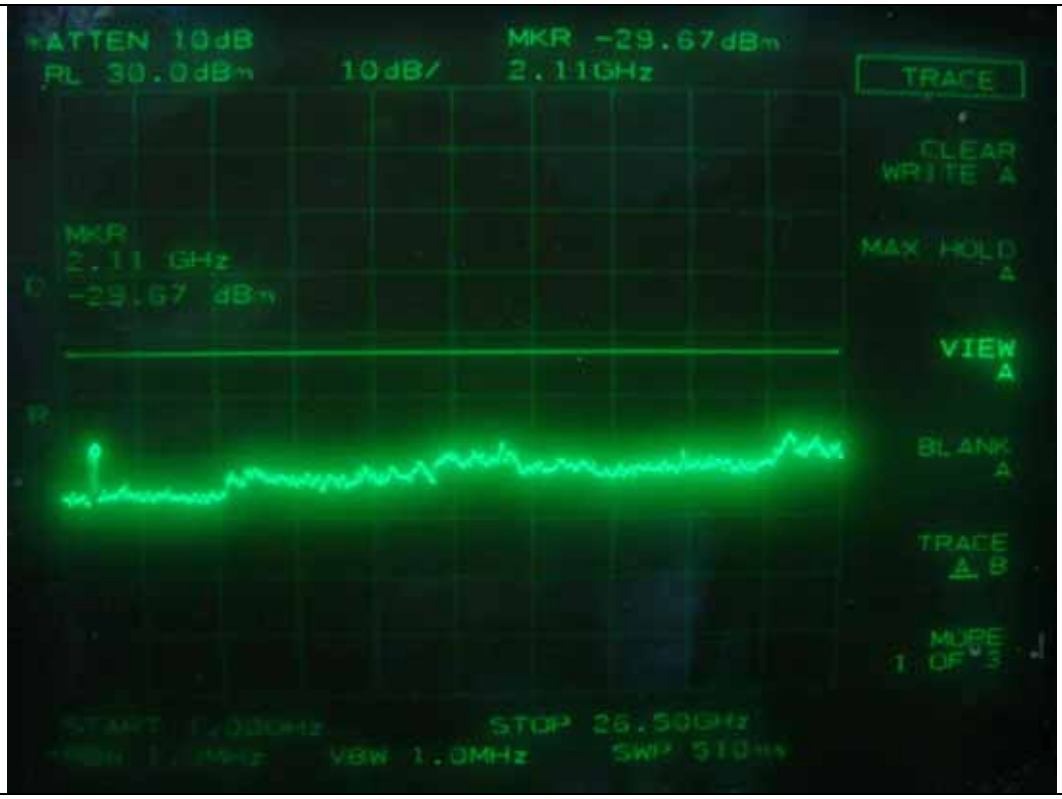


SMR – Middle Channel



SMR – Middle 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)

SMR – High Channel

SMR – 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)

8. SPURIOUS EMISSION AT ANTENNA TERMINAL AT BLOCK EDGES ± 1 MHZ

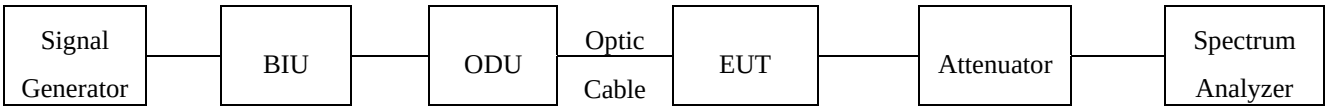
8.1 Operating environment

Temperature : 22 °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.
■ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 15, 2008
■ -	E4432B	HP	Signal Generator	US38440950	June 16, 2008

All test equipment used is calibrated on a regular basis.

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8.4 Test data

-. Test Date : March 09, 2009

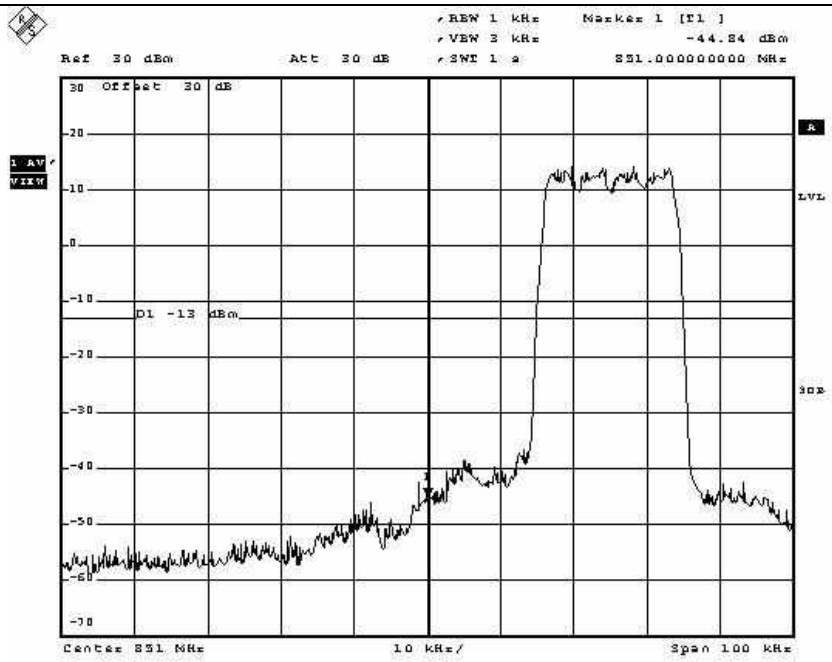
-. Result : PASSED BY –31.84 dB at low channel of iDEN Mode

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)
iDEN	Low	851.00	-44.84	-13.00
	High	869.00	-50.38	
SMR	Low	851.00	-56.94	
	High	869.00	-56.78	

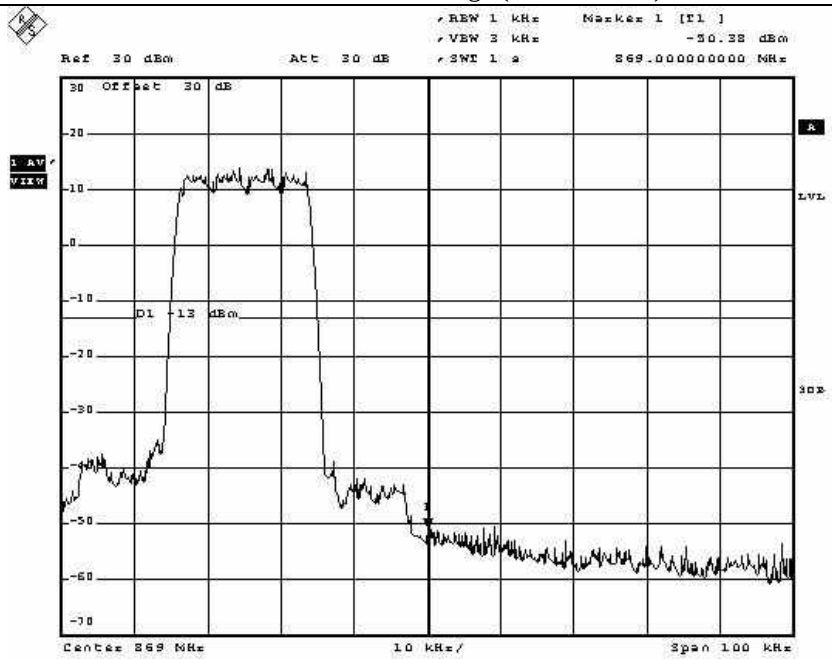
According to Part 90I, out of band emission shall be attenuated by 43 + 10 log (P) dBc, equates to -13.0dBm.

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)



iDEN – Band Edge (Low Channel)



iDEN – Band Edge (High Channel)

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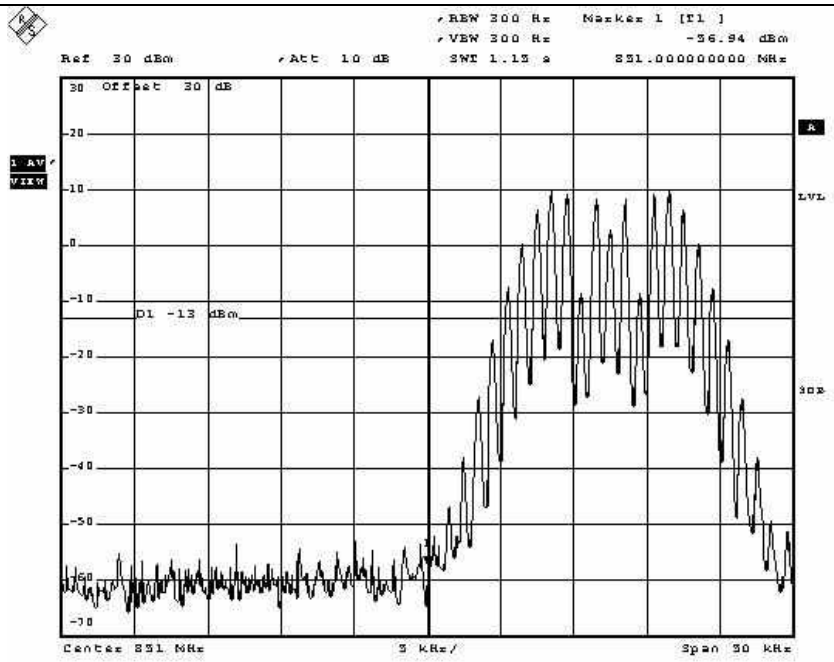
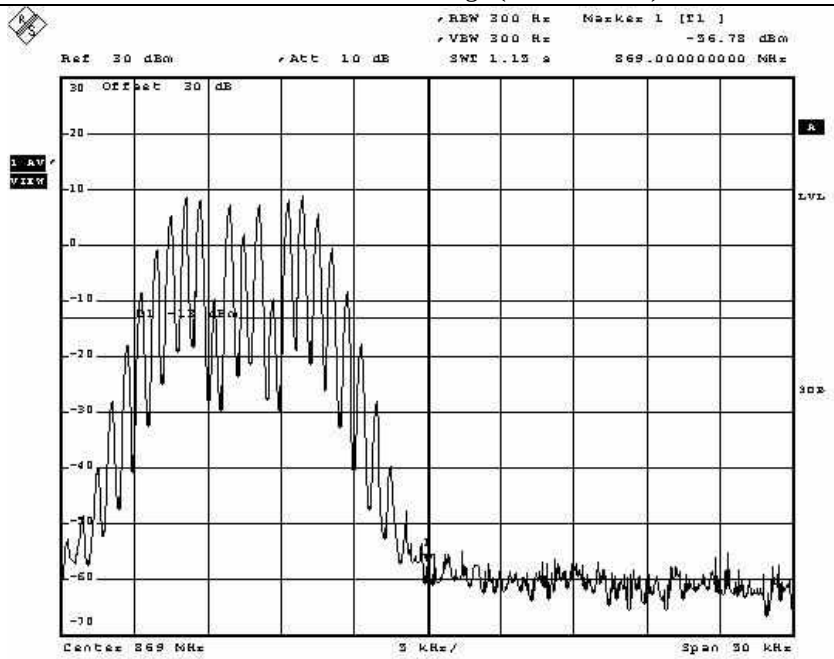


SMR – Band Edge (Low Channel)



SMR – Band Edge (High Channel)

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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9. INTERMODULATION TEST

9.1 Operating environment

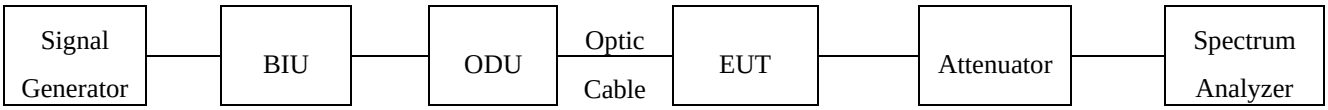
Temperature : 22 °C

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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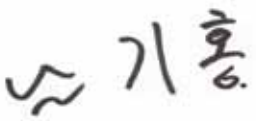
9.4 Test data

-. Test Date : March 09, 2009

-. Test Result : Pass

Modulation	Channel	Measured
iDEN	Low	< -13 dBm
	High	< -13 dBm
SMR	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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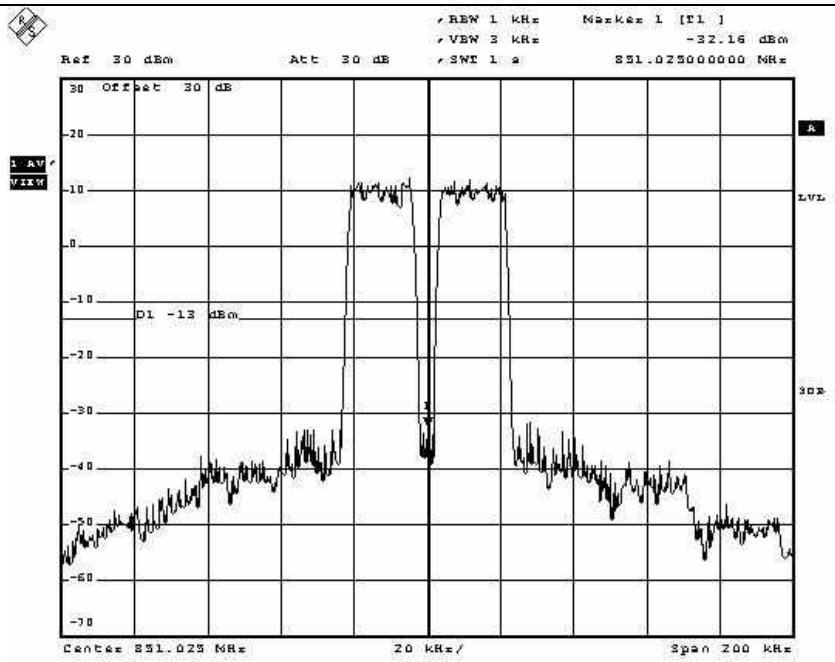
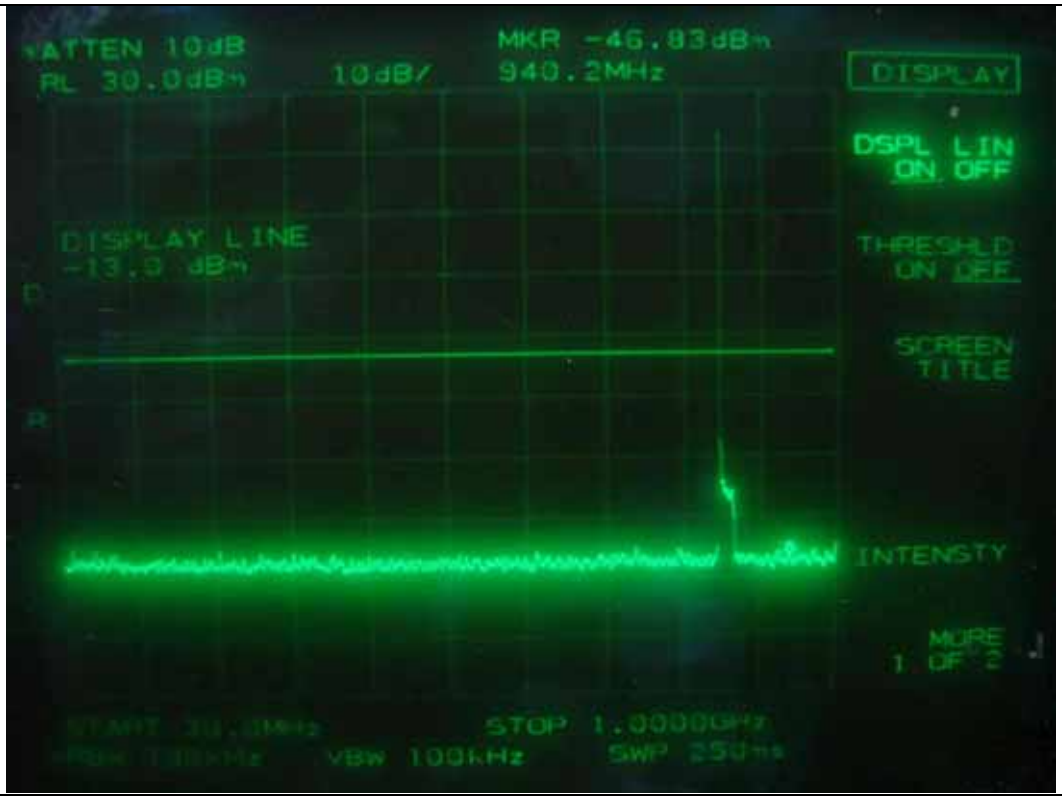


iDEN – Low Channel



iDEN – Low Channel

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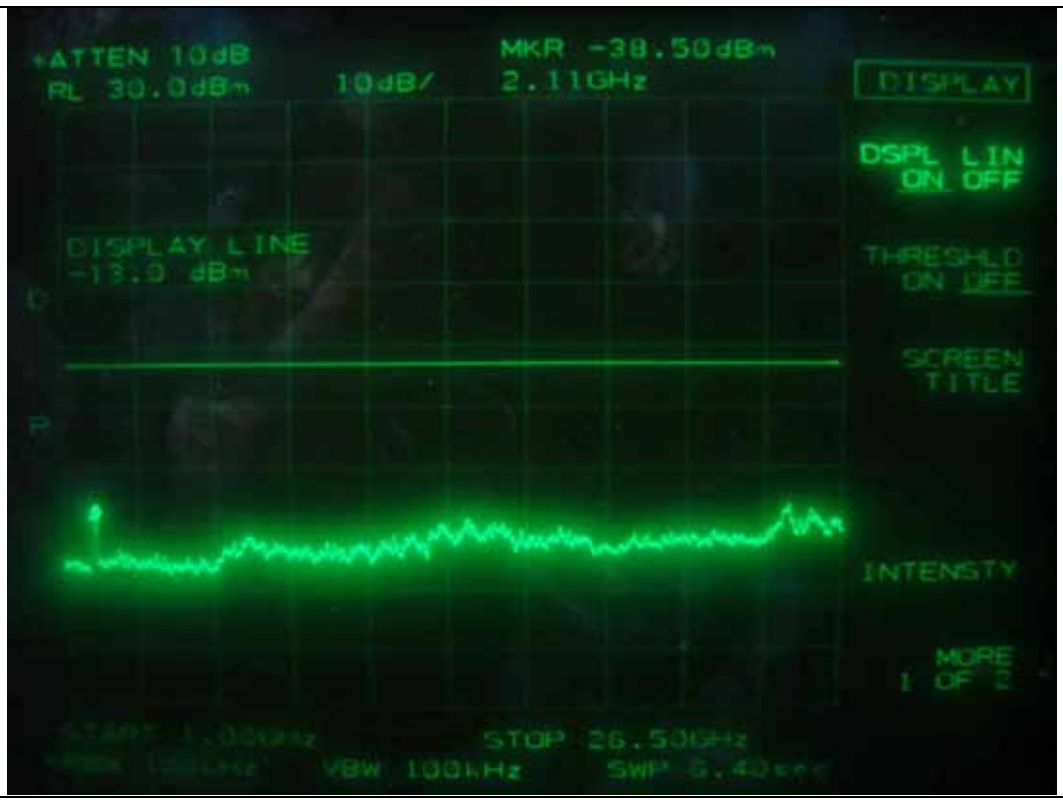

iDEN – Low Channel

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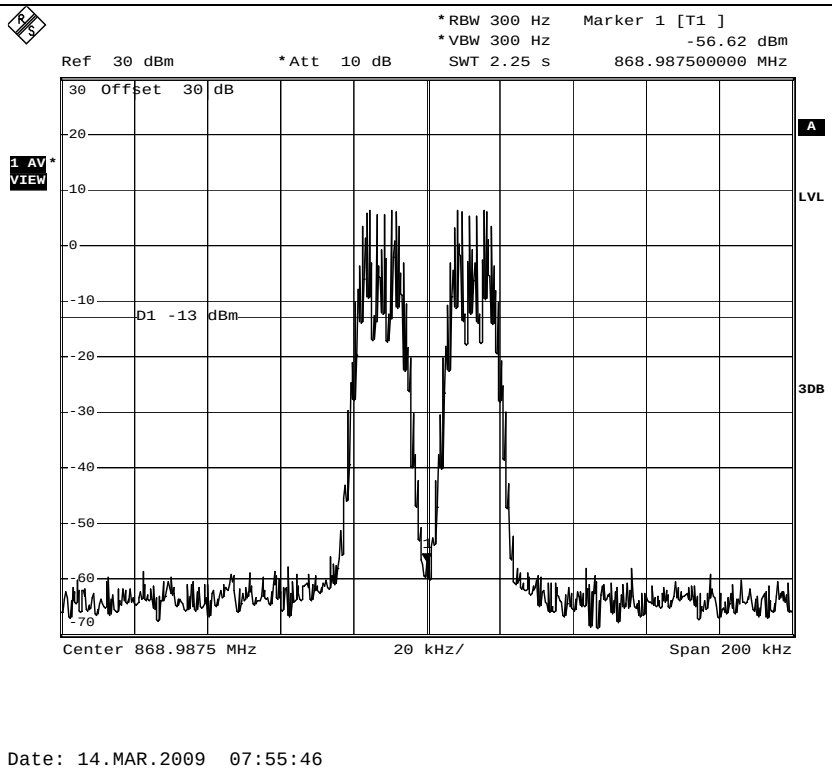
EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)



iDEN – High Channel

iDEN – High Channel

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iDEN – High Channel

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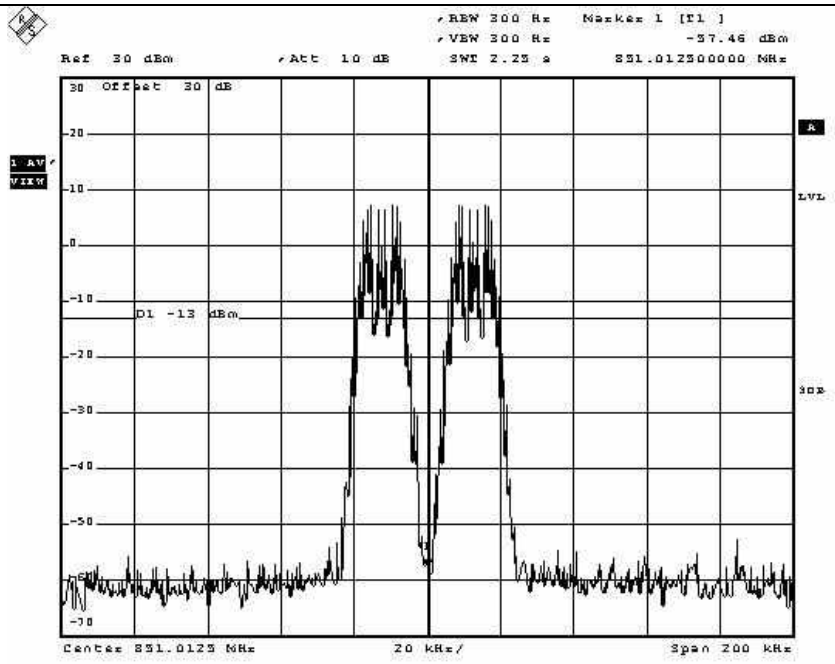
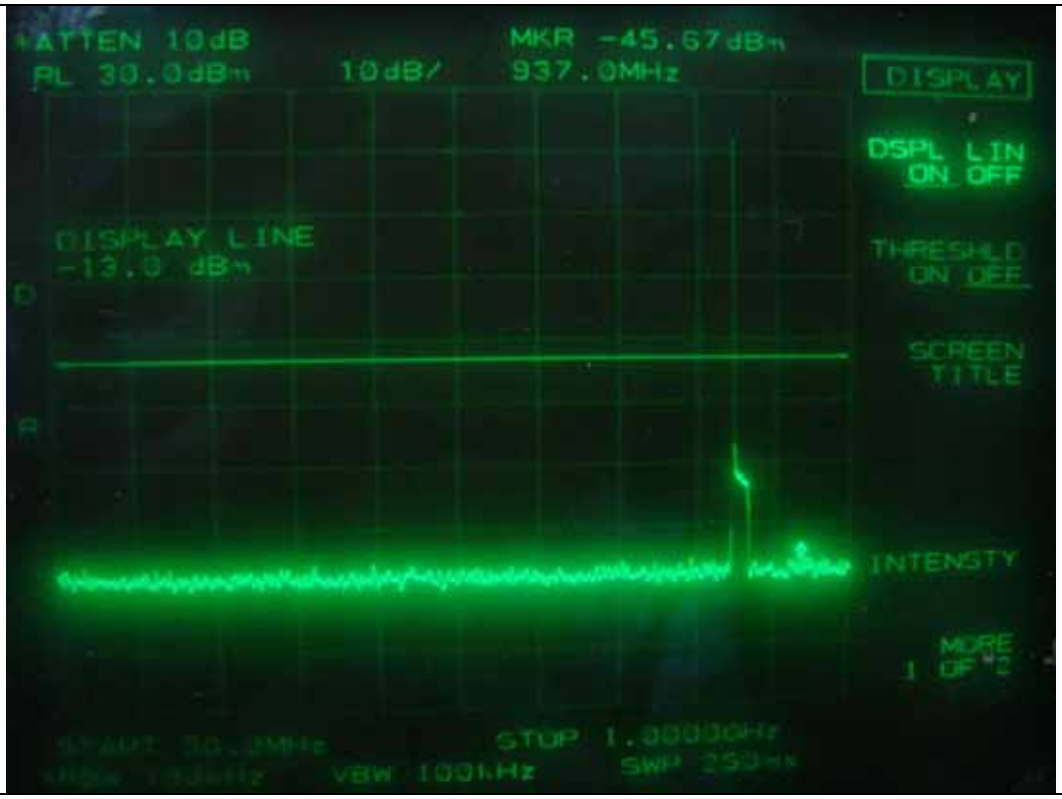


SMR – Low Channel



SMR – Low Channel

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SMR – Low Channel

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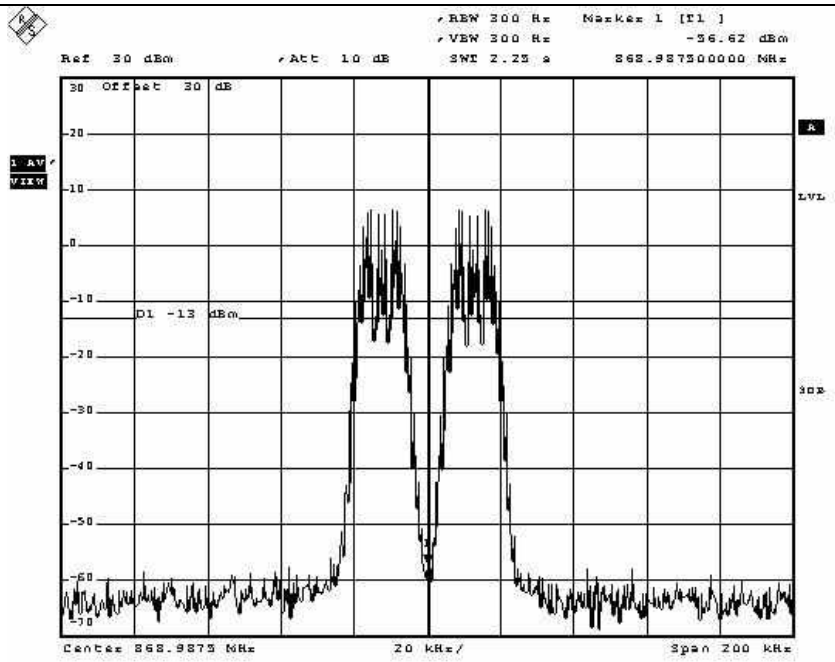
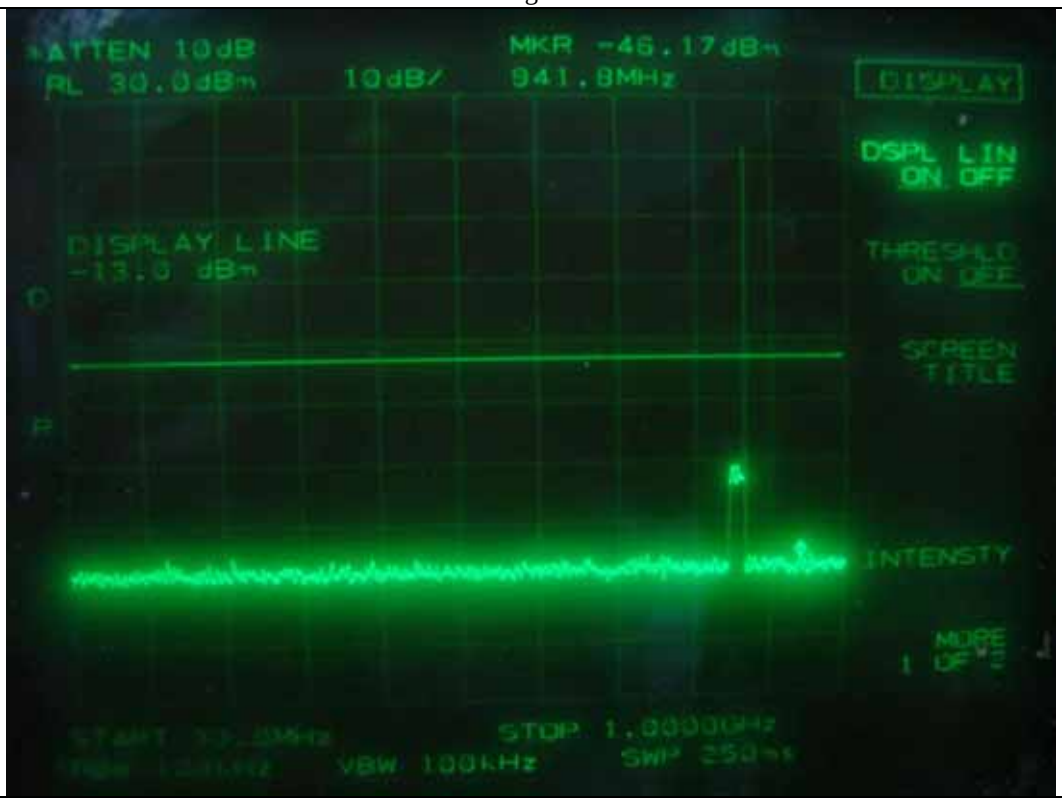


SMR – High Channel



SMR – High Channel

SMR – High Channel

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10. FIELD STRENGTH OF SPURIOUS RADIATION

10.1 Operating environment

Temperature : 12 °C
Relative humidity : 38 %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 Modulated Input Signal: iDEN (AC 120 V)

-. Test Date : March 10, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.71 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								
851.025 0	61.83	-4.05	0.07	H	1.59	-5.57	-	-
	62.33	-2.52		V		-4.04	-	-
Test Data for Middle Channel								
860.000 0	61.50	-4.17	0.01	H	1.60	-5.76	-	-
	62.16	-2.67		V		-4.26	-	-
Test Data for High Channel								
868.975 0	61.33	-4.25	-0.18	H	1.62	-6.05	-	-
	62.00	-2.64		V		-4.44	-	-
100.100 0	26.50	-58.98	1.60	V	0.33	-57.71	-13.00	-44.71
110.400 0	24.83	-61.00	1.55	H	0.33	-59.12	-13.00	-46.12
262.200 0	22.72	-62.21	1.66	H	0.50	-60.05	-13.00	-47.05
858.100 0	23.33	-63.54	0.03	V	0.67	-62.84	-13.00	-49.84

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)

10.4.2 Modulated Input Signal: SMR (AC 120 V)

-. Test Date : March 10, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

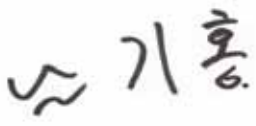
-. Measurement distance : 3 m

-. 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								
851.012 5	61.50	-4.38	0.07	H	1.59	-5.90	-	-
	62.33	-2.52		V		-4.04	-	-
Test Data for Middle Channel								
860.000 0	61.67	-4.00	0.01	H	1.60	-5.59	-	-
	62.42	-2.41		V		-4.00	-	-
Test Data for High Channel								
868.987 5	61.78	-3.80	-0.18	H	1.62	-5.60	-	-
	62.50	-2.14		V		-3.94	-	-
100.100 0	26.78	-58.70	1.60	V	0.33	-57.43	-13.00	-44.43
110.400 0	24.67	-61.16	1.55	H	0.33	-59.28	-13.00	-46.28
262.200 0	22.50	-62.43	1.66	H	0.50	-60.27	-13.00	-47.27
858.100 0	23.83	-63.04	0.03	V	0.67	-62.34	-13.00	-49.34

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 Modulated Input Signal: iDEN (DC - 48 V)

-. Test Date : March 10, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –45.04dB 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								
851.025 0	61.67	-4.21	0.07	H	1.59	-5.73	-	-
	62.17	-2.68		V		-4.20	-	-
Test Data for Middle Channel								
860.000 0	61.33	-4.34	0.01	H	1.60	-5.93	-	-
	62.05	-2.78		V		-4.37	-	-
Test Data for High Channel								
868.975 0	61.42	-4.16	-0.18	H	1.62	-5.96	-	-
	62.20	-2.44		V		-4.24	-	-
100.100 0	26.17	-59.31	1.60	V	0.33	-58.04	-13.00	-45.04
110.400 0	24.92	-60.91	1.55	H	0.33	-59.69	-13.00	-46.69
262.200 0	22.39	-62.54	1.66	H	0.50	-61.38	-13.00	-48.38
858.100 0	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)

10.4.4 Modulated Input Signal: SMR (DC - 48 V)

-. Test Date : March 10, 2009

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 1 GHz ~ 20 GHz

-. Measurement distance : 3 m

-. Result : PASSED BY –44.71 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								
851.012 5	61.72	-4.16	0.07	H	1.59	-5.68	-	-
	62.50	-2.35		V		-3.87	-	-
Test Data for Middle Channel								
860.000 0	61.42	-4.25	0.01	H	1.60	-5.84	-	-
	62.33	-2.50		V		-4.09	-	-
Test Data for High Channel								
868.987 5	61.83	-3.75	-0.18	H	1.62	-5.55	-	-
	62.67	-1.07		V		-2.87	-	-
100.100 0	26.50	-58.98	1.60	V	0.33	-57.71	-13.00	-44.71
110.400 0	24.72	-61.11	1.55	H	0.33	-59.89	-13.00	-46.89
262.200 0	22.91	-62.02	1.66	H	0.50	-60.86	-13.00	-47.86
858.100 0	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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11. FREQUENCY STABILITY WITH TEMPERATURE VARIATION

11.1 Operating environment

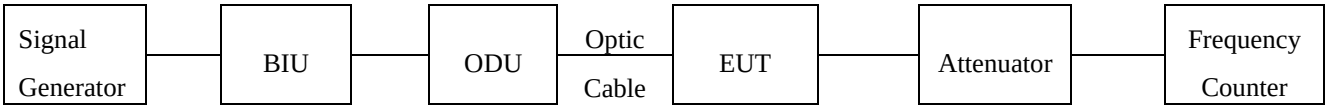
Temperature : 22 °C

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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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)

11.4 Test data

11.4.1 Test Result with AC 120 V Power Supply

-. Test Date : March 09, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	860 000 000	860 000 025	0.029 1	Within the Authorized Frequency block
-20		860 000 027	0.031 4	
-10		860 000 027	0.031 4	
0		860 000 026	0.030 2	
10		860 000 025	0.029 1	
20		860 000 025	0.029 1	
30		860 000 027	0.031 4	
40		860 000 026	0.030 2	
50		860 000 027	0.031 4	

Tested by: Ki-Hong, Nam / Project Engineer

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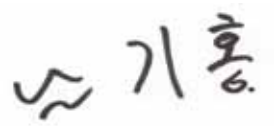
11.4.2 Test Result with DC - 48 V Power Supply

-. Test Date : March 09, 2009

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	860 000 000	860 000 025	0.029 1	Within the Authorized Frequency block
-20		860 000 026	0.030 2	
-10		860 000 026	0.030 2	
0		860 000 027	0.031 4	
10		860 000 025	0.029 1	
20		860 000 027	0.031 4	
30		860 000 025	0.029 1	
40		860 000 026	0.030 2	
50		860 000 026	0.030 2	



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)

12. FREQUENCY STABILITY WITH VOLTAGE VARIATION

12.1 Operating environment

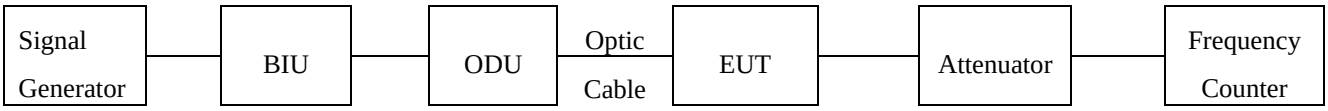
Temperature : 22 °C

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 with AC 120 V Power Supply V

-. Test Date : March 09, 2009

-. Rated Supply Voltage : 120 Vac

-. Result : PASSED

Voltage (Vac)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
138 (115 %)	860 000 000	860 000 027	0.031 4	Within the Authorized Frequency block
120 (100 %)		860 000 025	0.029 1	
102 (85 %)		860 000 025	0.029 1	

Tested by: Ki-Hong, Nam / Project Engineer

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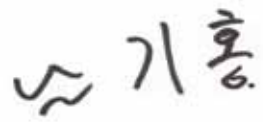
12.4.2 Test Result with DC - 48 V Power Supply V

-. Test Date : March 09, 2009

-. Rated Supply Voltage : 48 Vdc

-. Result : PASSED

Voltage (Vdc)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
- 55.2 (115 %)	860 000 000	860 000 026	0.030 2	Within the Authorized Frequency block
- 48 (100 %)		860 000 027	0.031 4	
- 40.8 (85 %)		860 000 027	0.031 4	



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