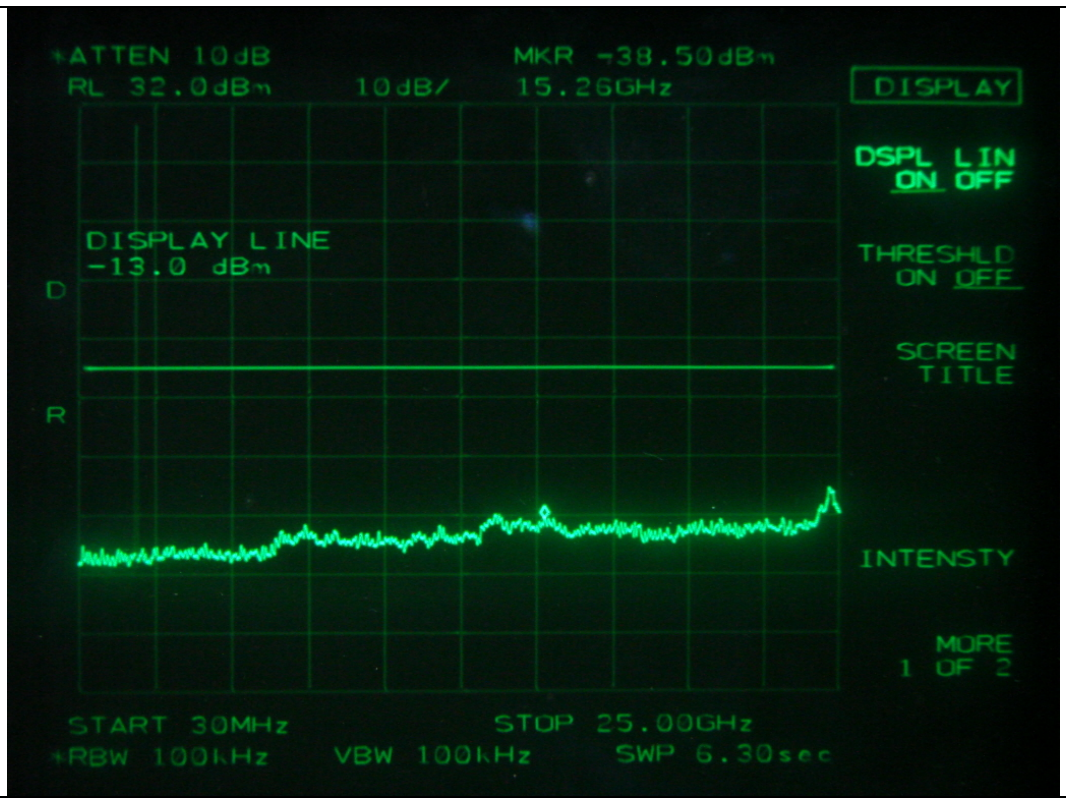
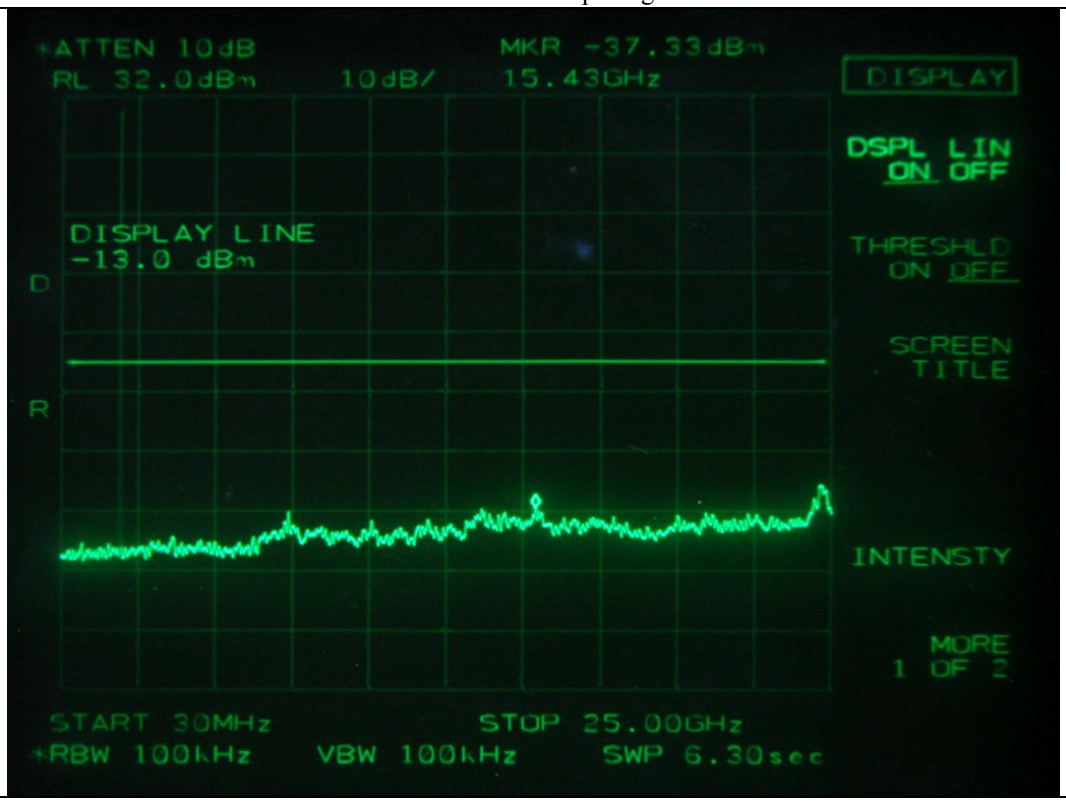
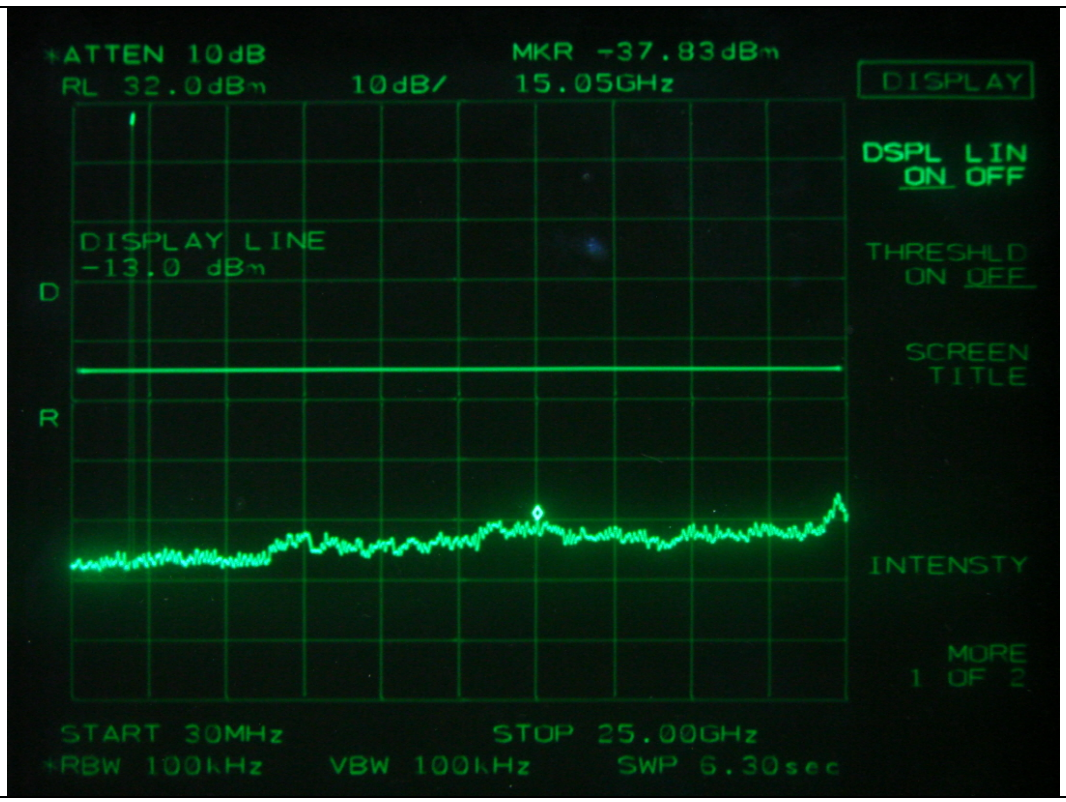


Low Channel – 3 input signals

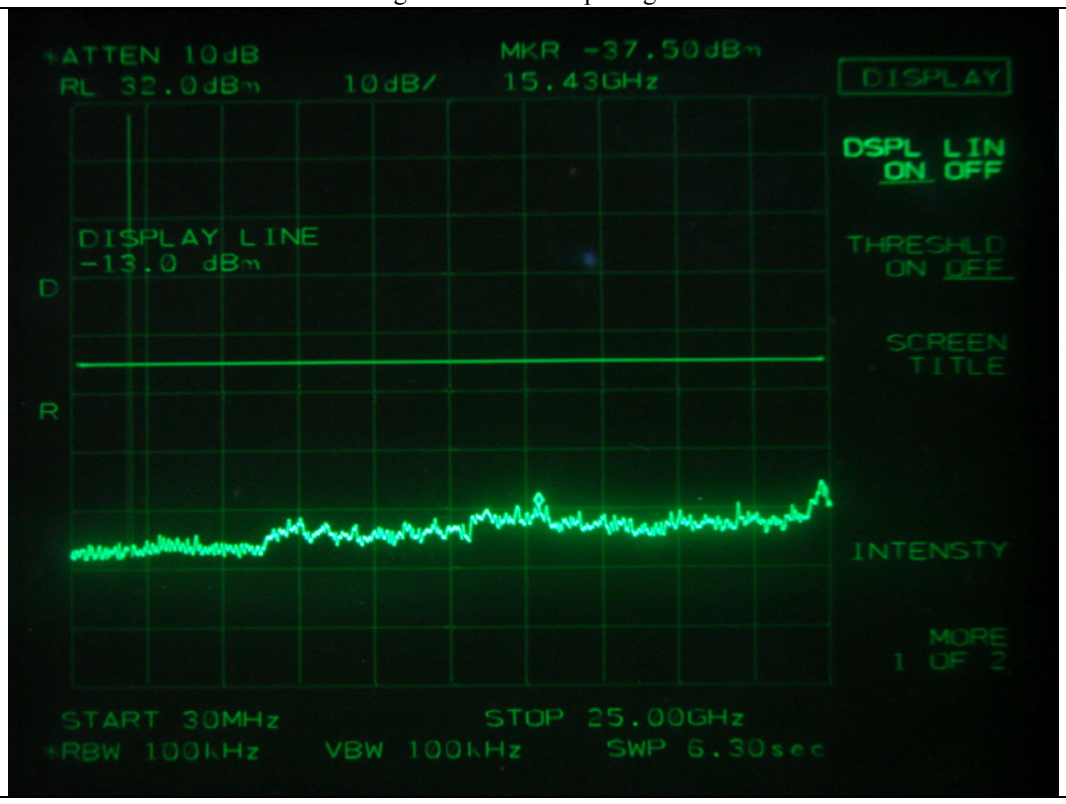


High Channel – 1 input signal

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)



High Channel – 2 input signals



High Channel – 3 input signals

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)

9.5 Test Result for Part 27

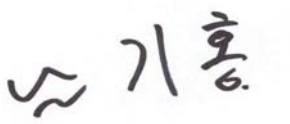
9.5.1 Test Result for peak power

-. Test Date : May 31, 2012

-. Test Result : PASSED

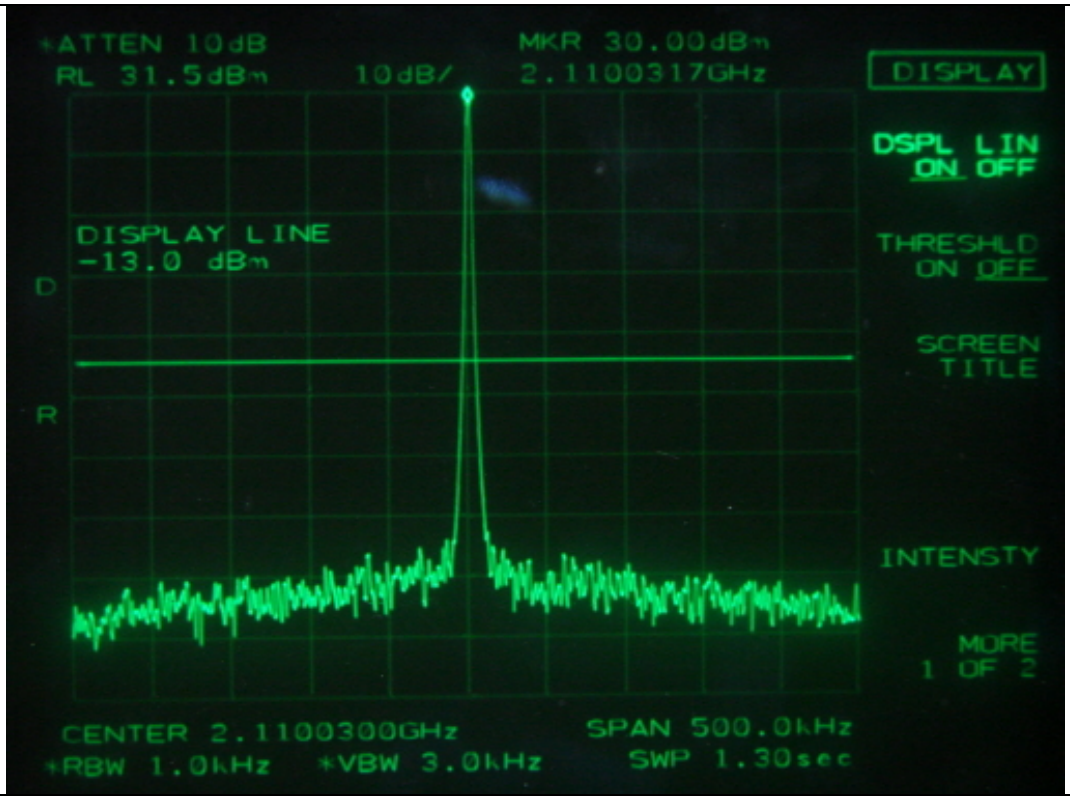
-. Modulation : No-Modulation

Frequency (MHz)	Number of Input Channel	Input Power (dBm)	Output Power (dBm)
2 110.030	1	-14.90	30.00
2 110.030 & 2 110.06	2	-14.80	30.00
2 110.030 & 2 110.06 & 2 110.09	3	-14.90	30.00
2 154.970	1	-14.70	30.00
2 154.970 & 2 154.940	2	-14.80	30.00
2 154.970 & 2 154.940 & 2 154.910	3	-14.80	30.00

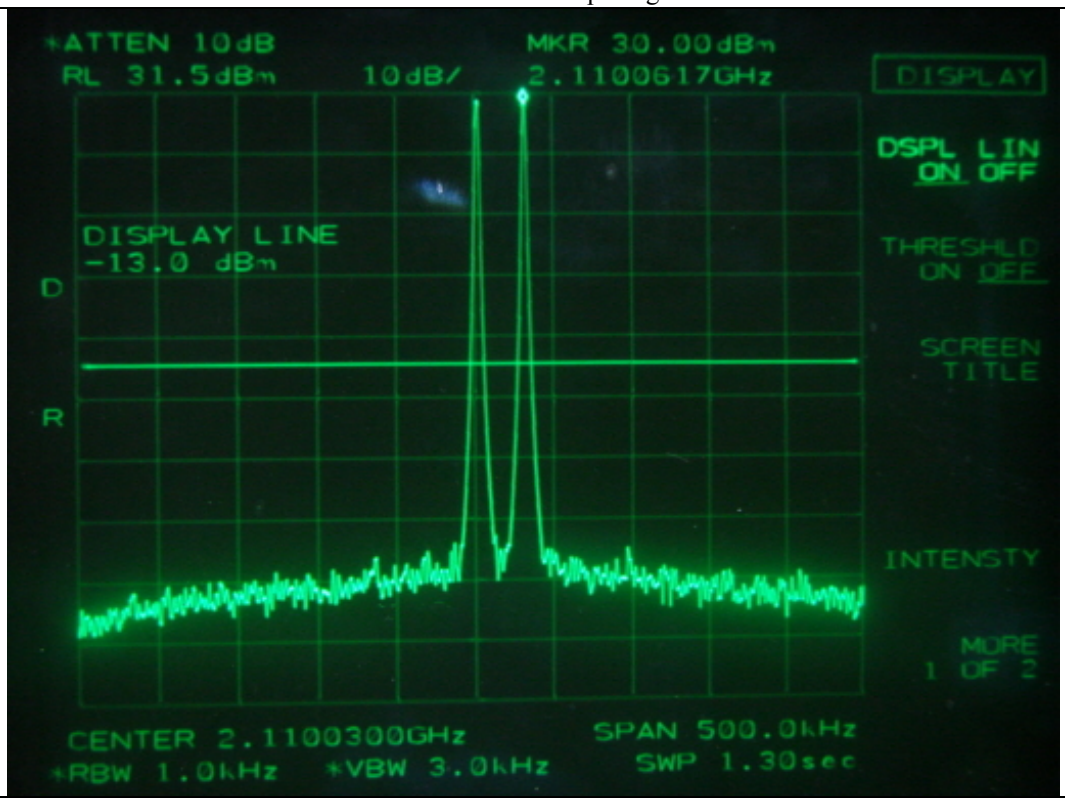


Tested by: Ki-Hong, Nam / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)



Low Channel – 1 input signal



Low Channel – 2 input signals

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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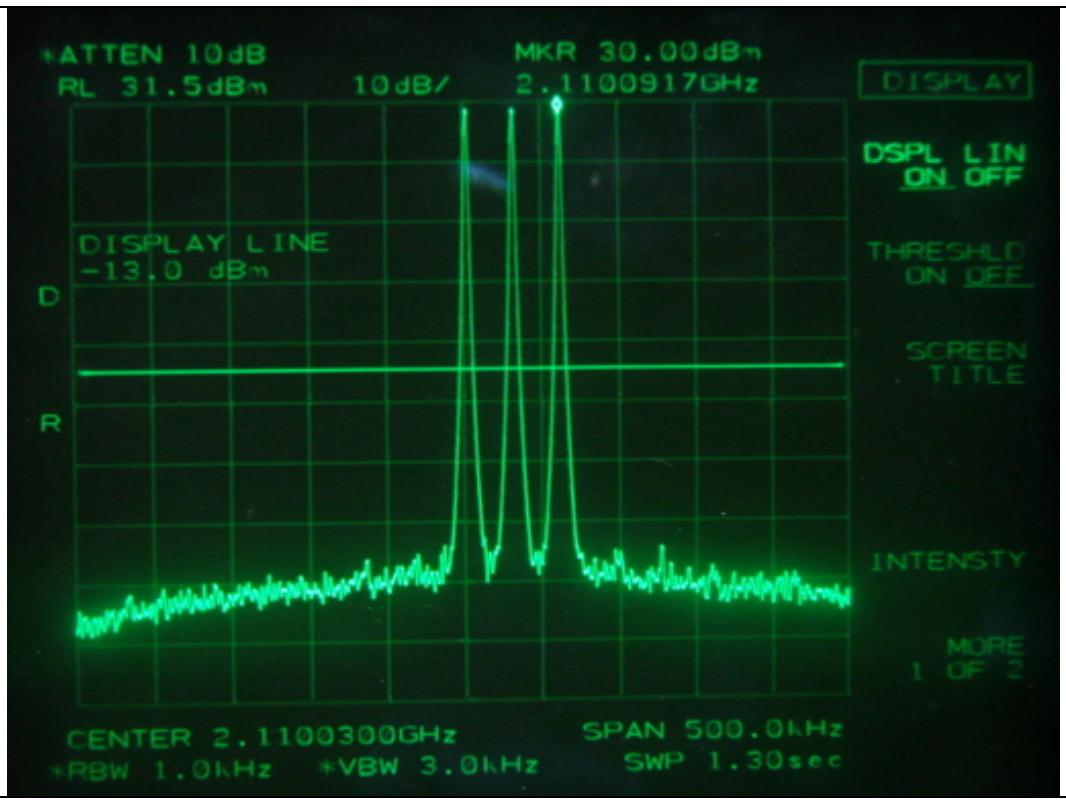
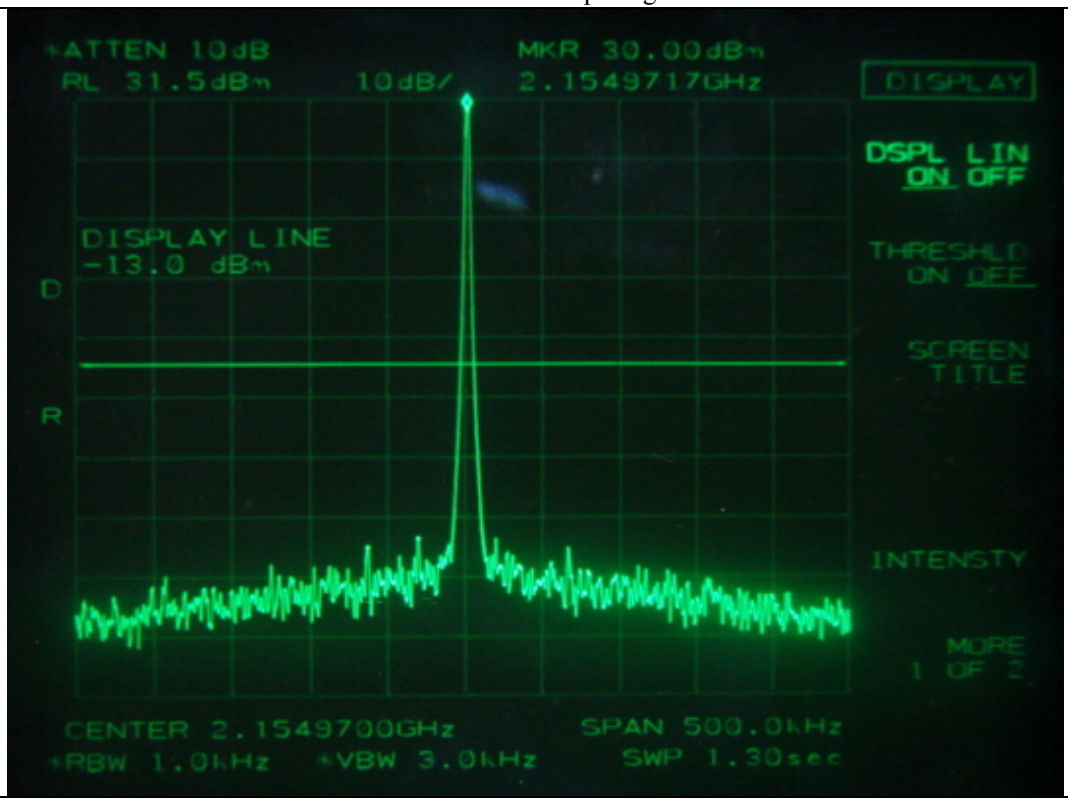
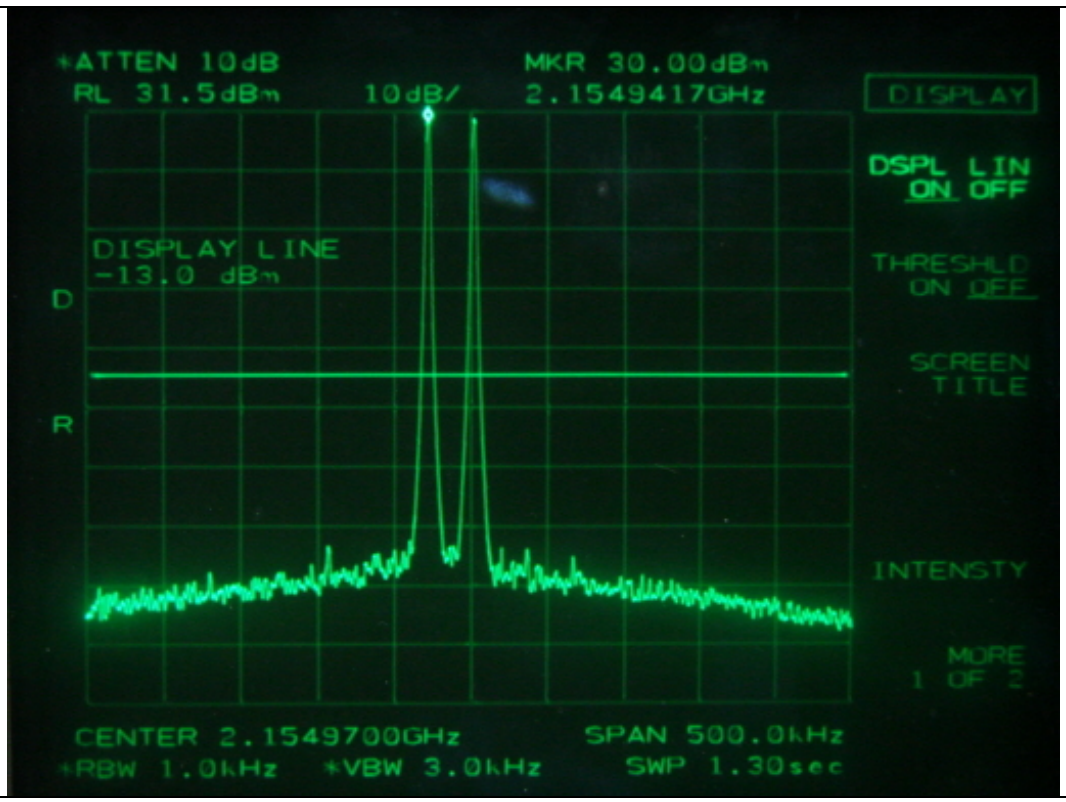


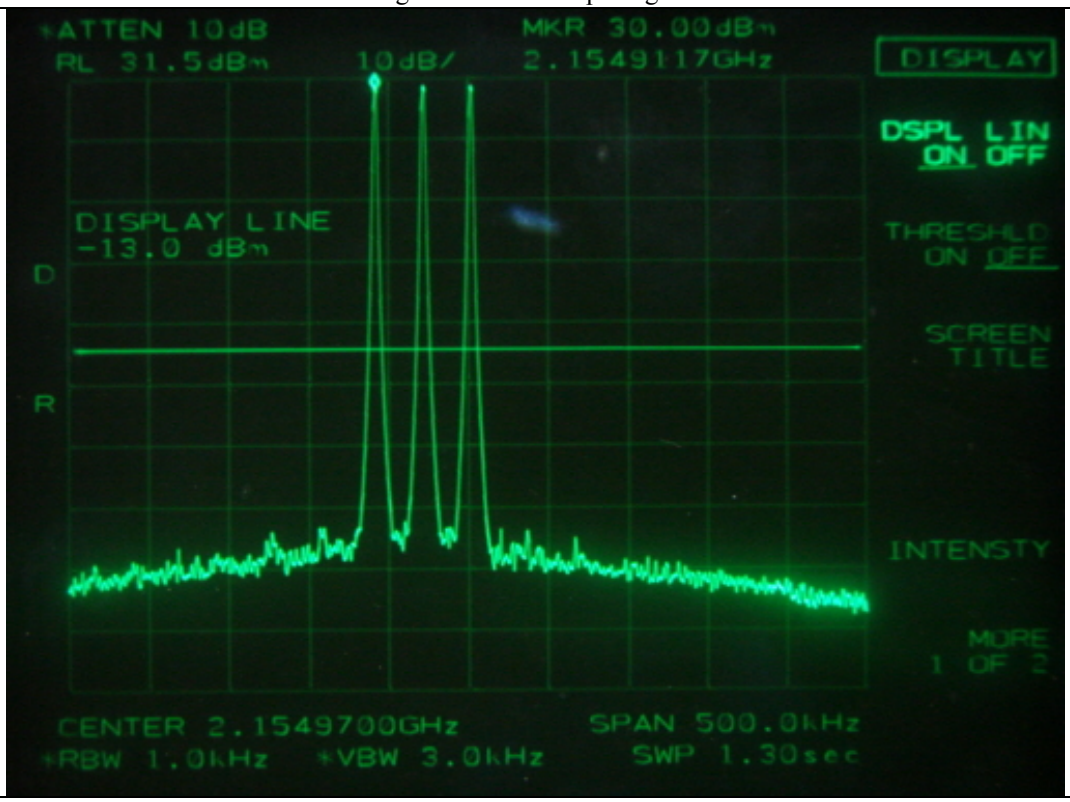
Low Channel – 3 input signals



High Channel – 1 input signal



High Channel – 2 input signals



High Channel – 3 input signals

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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9.5.2 Test Result for Spurious emission

-. Test Date : May 31, 2012

-. Test Result : PASSED

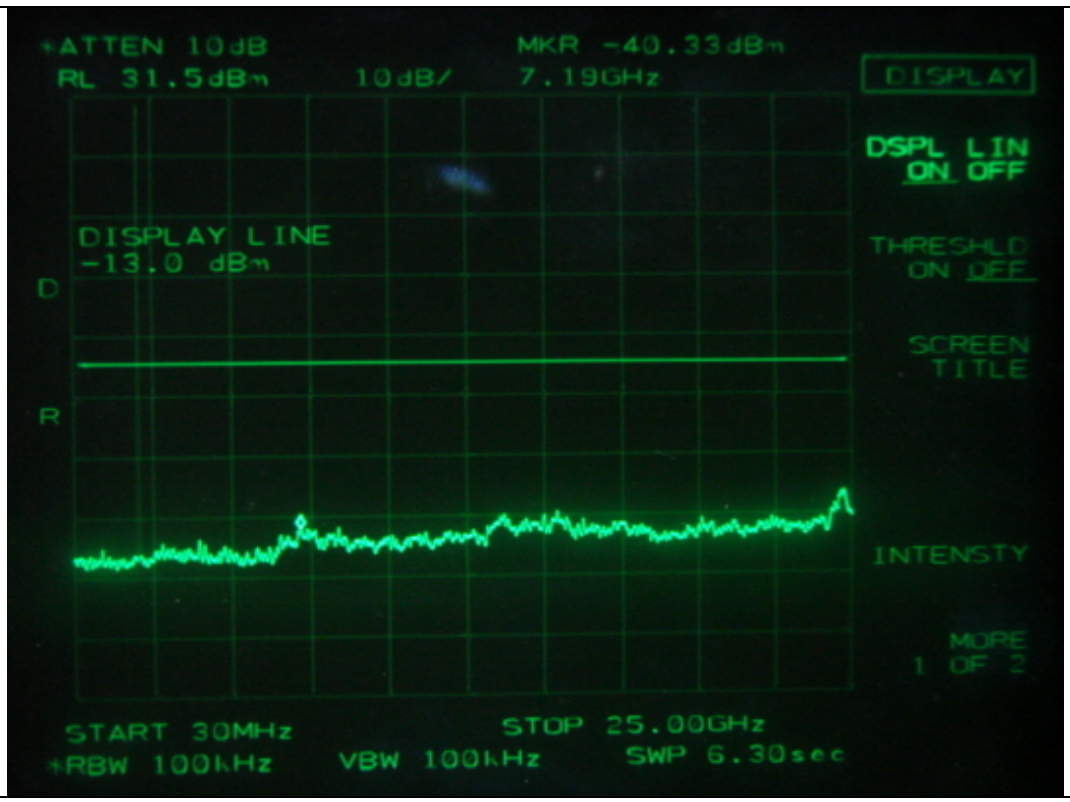
-. Modulation : No-Modulation

Frequency (MHz)	Number of Input Channel	Measured Value	Result
2 110.030	1	< -13 dBm	Pass
2 110.030 & 2 110.06	2		
2 110.030 & 2 110.06 & 2 110.09	3		
2 154.970	1	< -13 dBm	Pass
2 154.970 & 2 154.940	2		
2 154.970 & 2 154.940 & 2 154.910	3		

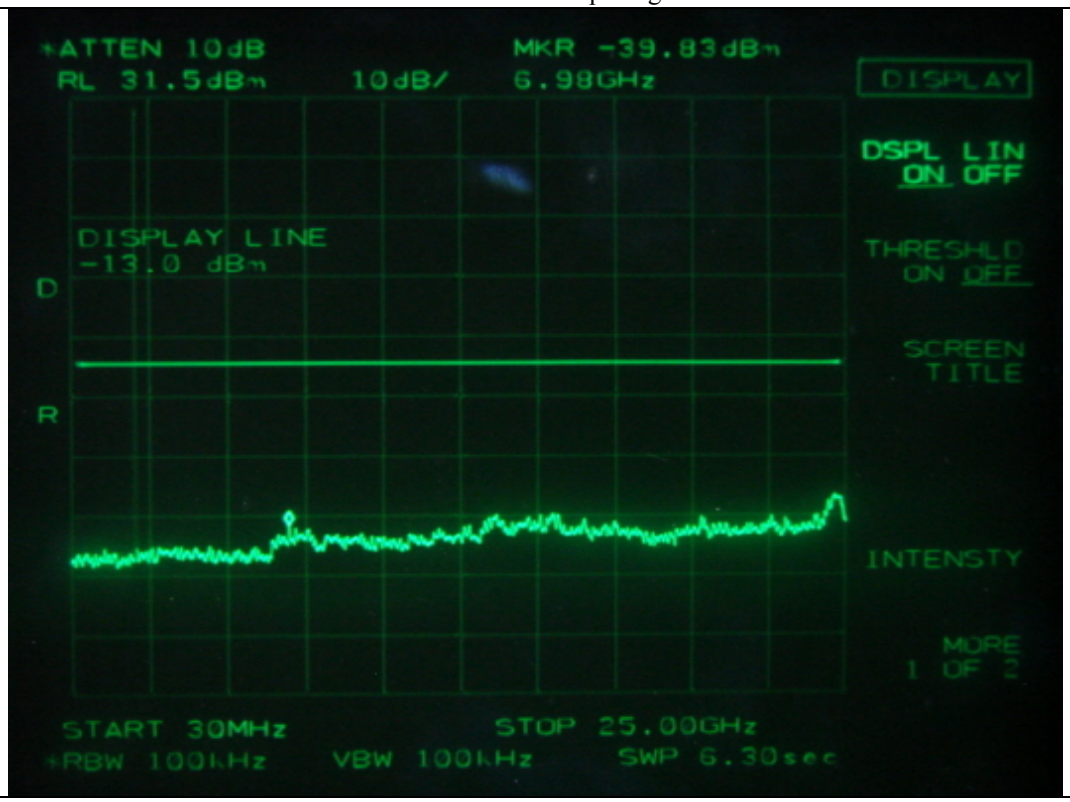
Remark: Intermodulation products must be attenuated below the rated power of the EUT at least 43 + 10log (Pw), equivalent to -13 dBm. Please refer to test data hereinafter.

Tested by: Ki-Hong, Nam / Senior Engineer

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)

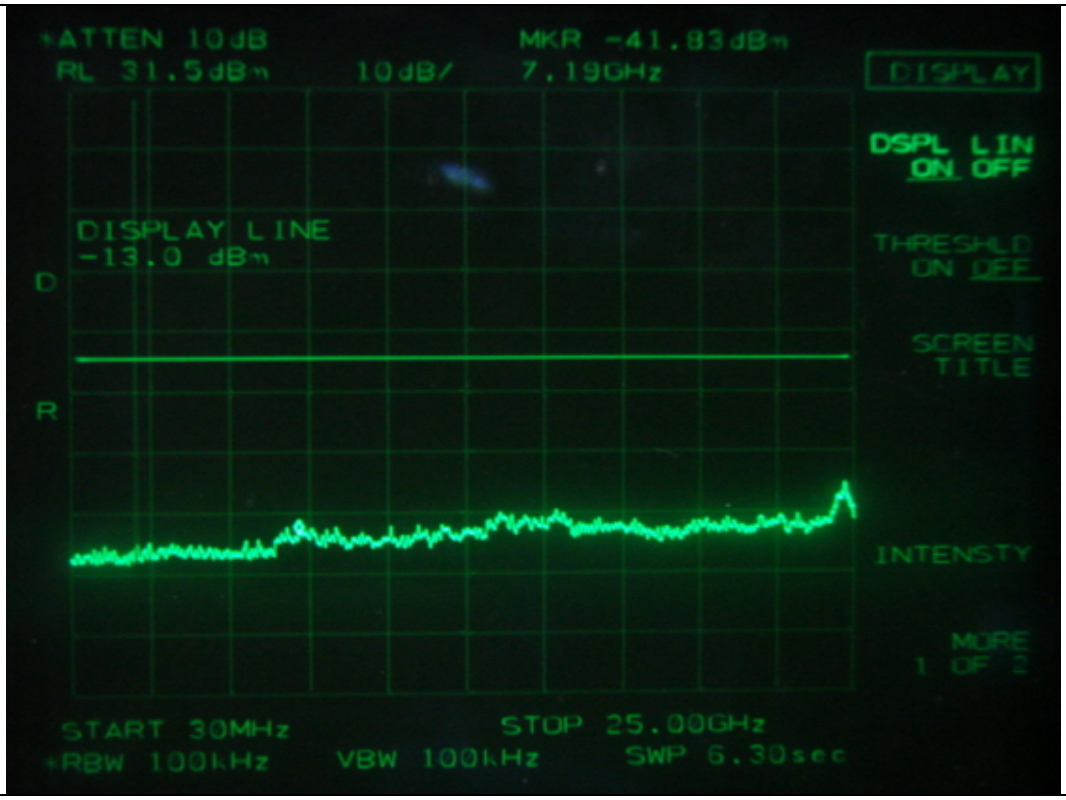


Low Channel – 1 input signal

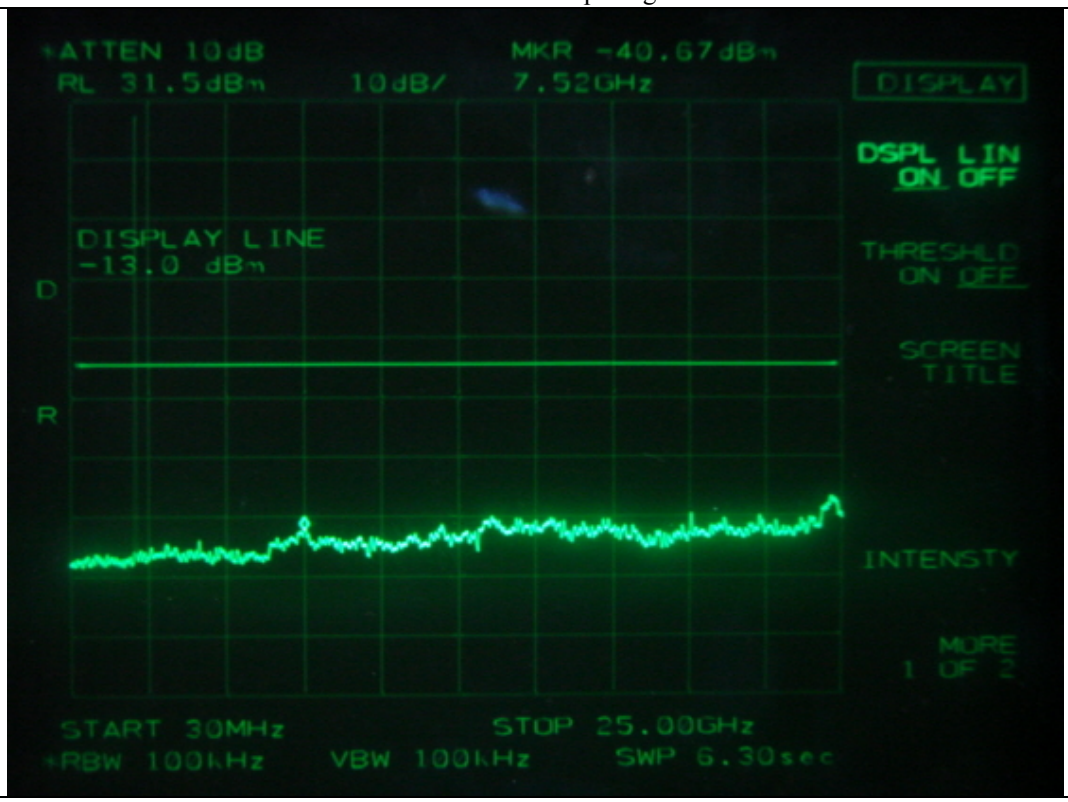


Low Channel – 2 input signals

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)

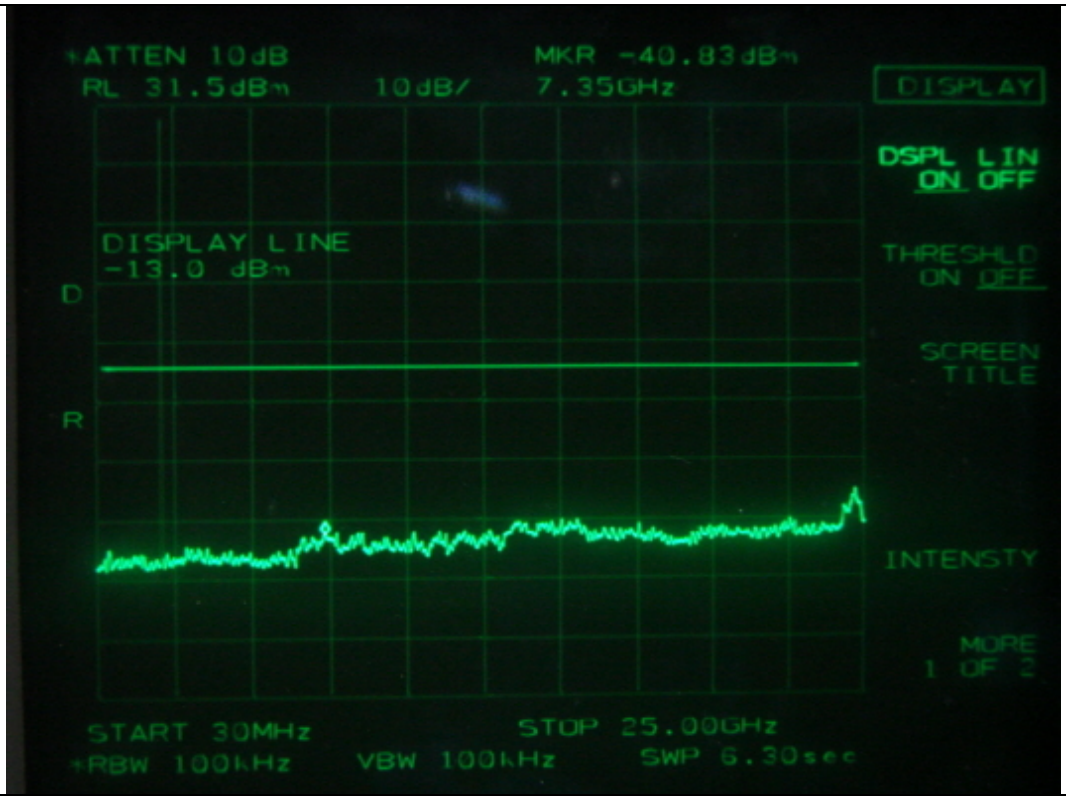


Low Channel – 3 input signals

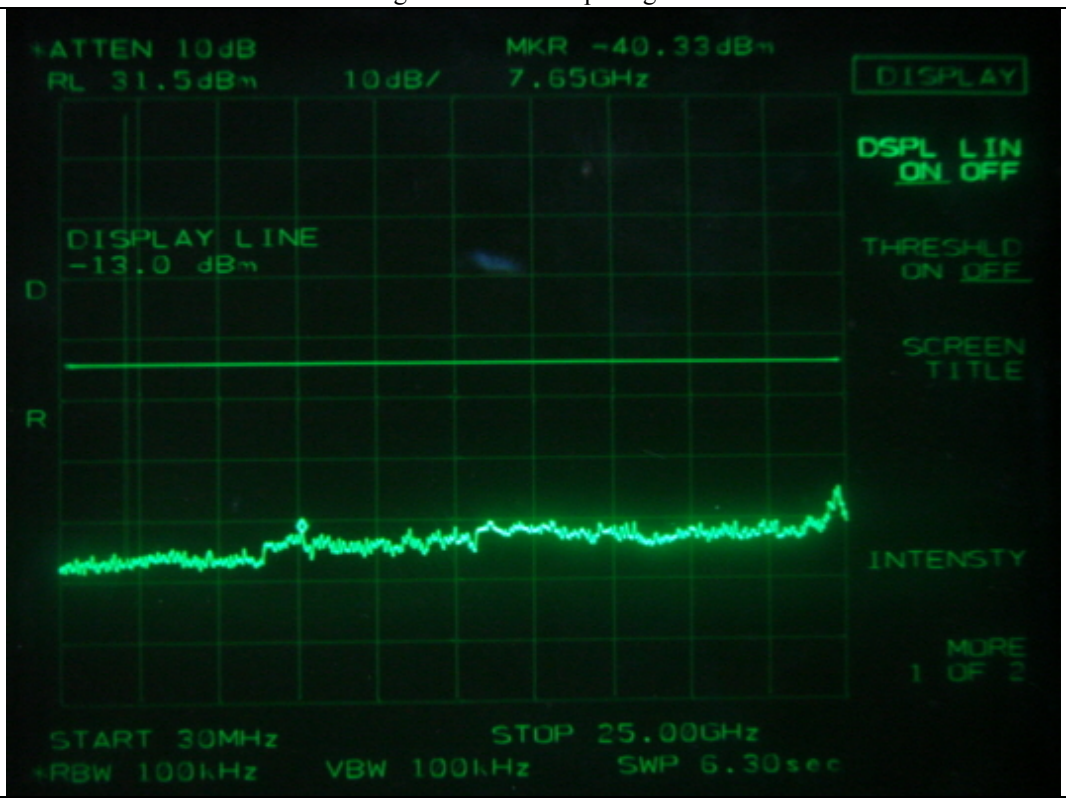


High Channel – 1 input signal

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)



High Channel – 2 input signals



High Channel – 3 input signals

10. FIELD STRENGTH OF SPURIOUS RADIATION

10.1 Operating environment

Temperature : 28.0 °C
Relative humidity : 45 %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.
☐ -	8564E	Hewlett-Packard	Spectrum Analyzer	3650A00756	Jun. 10, 2011 (1Y)
■ -	83051A	Agilent	Preamplifier	3950M00201	Jun. 11, 2011 (1Y)
☐ -	E4432B	Hewlett-Packard	Signal Generator	US38440950	Jun. 10, 2011 (1Y)
☐ -	83650L	Hewlett-Packard	Signal Generator	3844A00415	Jun. 10, 2011 (1Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D294	Aug. 23, 2011 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 23, 2011 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Aug. 23, 2011 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Aug. 23, 2011 (2Y)
■ -	SMJ100A	R/S	Signal Generator	101038	Feb. 01, 2012 (1Y)
☐ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 16, 2011 (1Y)
■ -	FSV30	R/S	Spectrum Analyzer	101372	Aug. 29, 2011 (1Y)

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)

10.4 Test data for radiated emission

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

-. Test Date : June 04, 2012

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 30 MHz ~ 25 GHz

-. Measurement distance : 3 m

-. Result : PASSED

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	48.50	-13.33	10.02	H	4.12	-7.43	-	-
	50.83	-10.48		V		-4.58	-	-
Test Data for Middle Channel								
1 962.50	48.33	-13.17	10.16	H	4.06	-7.07	-	-
	50.50	-10.83		V		-4.73	-	-
Test Data for High Channel								
1 994.97	48.67	-13.08	10.30	H	4.01	-6.79	-	-
	51.00	-10.50		V		-4.21	-	-
100.10	26.33	-59.15	1.22	V	0.50	-58.43	-13.00	-45.43
110.40	24.83	-61.00	1.53	H	1.50	-57.97	-13.00	-44.97
262.20	22.50	-62.43	2.57	H	1.83	-58.03	-13.00	-45.03
858.10	23.17	-63.70	2.92	V	2.17	-58.61	-13.00	-45.61

Tabulated test data for Restricted Band

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

Tested by: Ki-Hong, Nam / Project Engineer

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

-. Test Date : June 04, 2012

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 30 MHz ~ 25 GHz

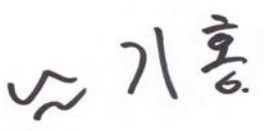
-. Measurement distance : 3 m

-. Result : PASSED

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	48.33	-13.50	10.02	H	4.12	-7.60	-	-
	50.50	-10.81		V		-4.91	-	-
Test Data for Middle Channel								
1 962.50	48.50	-13.00	10.16	H	4.06	-6.90	-	-
	50.67	-10.66		V		-4.56	-	-
Test Data for High Channel								
1 994.97	48.33	-13.42	10.30	H	4.01	-7.13	-	-
	51.33	-10.17		V		-3.88	-	-
100.10	26.50	-58.98	1.22	V	0.50	-58.26	-13.00	-45.26
110.40	25.00	-60.83	1.53	H	1.50	-57.80	-13.00	-44.80
262.20	22.33	-62.60	2.57	H	1.83	-58.20	-13.00	-45.20
858.10	23.67	-63.20	2.92	V	2.17	-58.11	-13.00	-45.11

Tabulated test data for Restricted Band

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



Tested by: Ki-Hong, Nam / Project Engineer

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

-. Test Date : June 04, 2012

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 30 MHz ~ 25 GHz

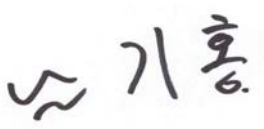
-. Measurement distance : 3 m

-. Result : PASSED

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	56.80	-12.00	10.36	H	4.09	-5.73	-	-
	59.50	-10.50		V		-4.23	-	-
Test Data for Middle Channel								
2 132.50	56.67	-12.17	10.37	H	4.11	-5.91	-	-
	59.33	-10.83		V		-4.57	-	-
Test Data for High Channel								
2 154.97	57.00	-11.96	10.38	H	4.13	-5.71	-	-
	59.83	-10.67		V		-4.42	-	-
100.10	26.33	-59.15	1.22	V	0.50	-58.43	-13.00	-45.43
110.40	24.83	-61.00	1.53	H	1.50	-57.97	-13.00	-44.97
262.20	22.50	-62.43	2.57	H	1.83	-58.03	-13.00	-45.03
858.10	23.00	-63.87	2.92	V	2.17	-58.78	-13.00	-45.78

Tabulated test data for Restricted Band

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



Tested by: Ki-Hong, Nam / Project Engineer

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

-. Test Date : June 04, 2012

-. Resolution bandwidth : 1 MHz

-. Video bandwidth : 1 MHz

-. Frequency range : 30 GHz ~ 25 GHz

-. Measurement distance : 3 m

-. Result : PASSED

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	56.67	-12.13	10.36	H	4.09	-5.86	-	-
	59.33	-10.67		V		-4.40	-	-
Test Data for Middle Channel								
2 132.50	56.50	-12.34	10.37	H	4.11	-6.08	-	-
	59.00	-11.16		V		-4.90	-	-
Test Data for High Channel								
2 154.97	57.17	-11.79	10.38	H	4.13	-5.54	-	-
	60.00	-10.50		V		-4.25	-	-
100.10	26.50	-58.98	1.22	V	0.50	-58.26	-13.00	-45.26
110.40	25.00	-60.83	1.53	H	1.50	-57.80	-13.00	-44.80
262.20	22.67	-62.26	2.57	H	1.83	-57.86	-13.00	-44.86
858.10	22.50	-64.37	2.92	V	2.17	-59.28	-13.00	-46.28

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)

11. FREQUENCY STABILITY WITH TEMPERATURE VARIATION

11.1 Operating environment

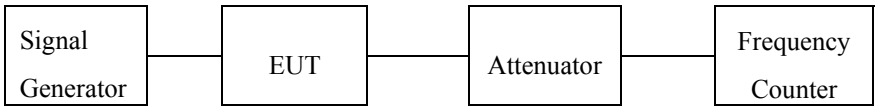
Temperature : 24.0 °C

Relative humidity : 52 %R.H.

11.2 Test set-up

The RF signal from the signal generator(s) was injected to the EUT by cable. The amplified RF signal at the output of the EUT was connected to the Frequency Counter. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable unmodulation.

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.
☐ -	E4432B	HP	Signal Generator	US38440950	June 10, 2011 (1Y)
■ -	SMJ100A	R/S	Signal Generator	101038	Feb. 01, 2012 (1Y)
☐ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 15, 2011 (1Y)
☐ -	8564E	HP	Spectrum Analyzer	3650A00756	Jun. 10, 2011 (1Y)
☐ -	FSV30	R/S	Spectrum Analyzer	101372	Aug. 29, 2011 (1Y)
■ -	53152A	R/S	CW Microwave Frequency Counter	US39270295	Dec. 30, 2011 (1Y)
■ -	67-30-43	Aeroflex Weinschel	Power Attenuator	CA5760	Nov. 30, 2011 (1Y)
■ -	SSE-43CI-A	Samkun Tech	Chamber	060712	Jun. 11, 2011 (1Y)

All test equipment used is calibrated on a regular basis.

HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)
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)

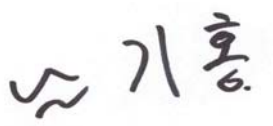
11.4 Test data

11.4.1 Test Result for Part 24E

-. Test Date : May 31~June 01, 2012

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	1 962 500 000	1 962 500 002	0.001 0	Within the Authorized Frequency block
-20		1 962 500 000	0.000 0	
-10		1 962 500 002	0.001 0	
0		1 962 500 001	0.000 5	
10		1 962 500 001	0.000 5	
20		1 962 500 001	0.000 5	
30		1 962 500 000	0.000 0	
40		1 962 500 002	0.001 0	
50		1 962 500 001	0.000 5	



Tested by: Ki-Hong, Nam / Project Engineer

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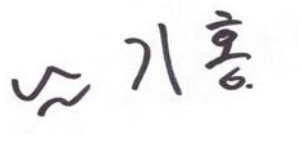
11.4.2 Test Result for Part 27

-. Test Date : May 31~June 01, 2012

-. Result : PASSED

Temperature (˚C)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
-30	2 132 500 000	2 132 500 001	0.000 5	Within the Authorized Frequency block
-20		2 132 500 000	0.000 0	
-10		2 132 500 002	0.000 9	
0		2 132 500 001	0.000 5	
10		2 132 500 001	0.000 5	
20		2 132 500 000	0.000 0	
30		2 132 500 002	0.000 9	
40		2 132 500 000	0.000 0	
50		2 132 500 001	0.000 5	



Tested by: Ki-Hong, Nam / Project Engineer

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12. FREQUENCY STABILITY WITH VOLTAGE VARIATION

12.1 Operating environment

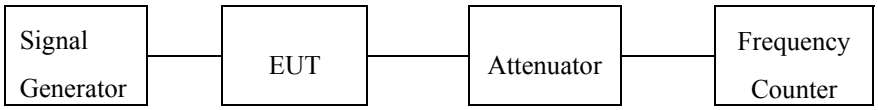
Temperature : 24.0 °C

Relative humidity : 52 %R.H.

12.2 Test set-up

The RF signal from the signal generator(s) was injected to the EUT by cable. The amplified RF signal at the output of the EUT was connected to the Frequency Counter. The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable unmodulation.

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.
☐ -	E4432B	HP	Signal Generator	US38440950	June 10, 2011 (1Y)
■ -	SMJ100A	R/S	Signal Generator	101038	Feb. 01, 2012 (1Y)
☐ -	FSP	R/S	Spectrum Analyzer	100017	Mar. 15, 2011 (1Y)
☐ -	8564E	HP	Spectrum Analyzer	3650A00756	Jun. 10, 2011 (1Y)
☐ -	FSV30	R/S	Spectrum Analyzer	101372	Aug. 29, 2011 (1Y)
■ -	53152A	R/S	CW Microwave Frequency Counter	US39270295	Dec. 30, 2011 (1Y)
■ -	DH-60	Dea Kwang Elec.	Slidacs	N/A	Sep 03, 2011 (1Y)
■ -	PAS60-12	KIKUSUI ELECTRONICS CORP.	DC Power Supply	JD001957	Apr. 05, 2012 (1Y)
■ -	67-30-43	Aeroflex Weinschel	Power Attenuator	CA5760	Nov. 30, 2011 (1Y)

All test equipment used is calibrated on a regular basis.

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12.4 Test data

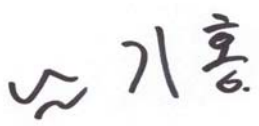
12.4.1 Test Result for Part 24E with AC 120 V Power Supply

-. Test Date : May 31~June 01, 2012

-. Rated Supply Voltage : 120 Vac

-. Result : PASSED

Voltage (Vac)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
138 (115 %)	1 962 500 000	1 962 500 000	0.000 0	Within the Authorized Frequency block
120 (100 %)		1 962 500 001	0.000 5	
102 (85 %)		1 962 500 001	0.000 5	



Tested by: Ki-Hong, Nam / Project Engineer

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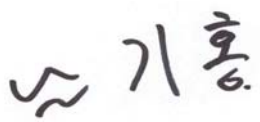
12.4.2 Test Result for Part 24E with DC - 48 V Power Supply

-. Test Date : May 31~June 01, 2012

-. Rated Supply Voltage : - 48 Vdc

-. Result : PASSED

Voltage (Vdc)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
- 40.8 (115 %)	1 962 500 000	1 962 500 000	0.000 0	Within the Authorized Frequency block
- 48 (100 %)		1 962 500 002	0.001 0	
- 55.2 (85 %)		1 962 500 001	0.000 5	



Tested by: Ki-Hong, Nam / Project Engineer

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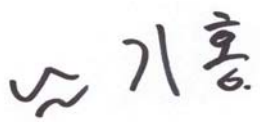
12.4.3 Test Result for Part 27 with AC 120 V Power Supply

-. Test Date : May 31~June 01, 2012

-. Rated Supply Voltage : 120 Vac

-. Result : PASSED

Voltage (Vac)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
138 (115 %)	2 132 500 000	2 132 500 000	0.000 0	Within the Authorized Frequency block
120 (100 %)		2 132 500 000	0.000 0	
102 (85 %)		2 132 500 001	0.000 5	



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 : May 31~June 01, 2012

-. Rated Supply Voltage : - 48 Vdc

-. Result : PASSED

Voltage (Vdc)	Input Freq. (Hz)	Measured Freq. (Hz)	Result (PPM)	Limit
- 40.8 (115 %)	2 132 500 000	2 132 500 002	0.000 9	Within the Authorized Frequency block
- 48 (100 %)		2 132 500 001	0.000 5	
- 55.2 (85 %)		2 132 500 001	0.000 5	

Tested by: Ki-Hong, Nam / Project Engineer

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Appendix. MAXIMUM PERMISSIBLE EXPOSURE

1. RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm² for the frequency range above 1500 MHz.

The electric field generated for a 1 mW/cm² exposure is calculated as follows:

$E = \sqrt{(30 * P * G)} / d$, and $S = E^2 / Z = E^2 / 377$, because 1 mW/cm² = 10 W/m²

Where

S = Power density in mW/cm², Z = Impedance of free space, 377 Ω

E = Electric filed strength in V/m, G = Numeric antenna gain, and d = distance in meter

Combing equations and rearranging the terms to express the distance as a function of the remaining variable

$d = \sqrt{(30 * P * G) / (377 * S)}$

Changing to units of mW and cm, using P (mW) = P (W) / 1 000, d (cm) = 100 * d (m)

$d = 0.282 * \sqrt{(P * G) / S}$

Where

d = distance in cm, P = Power in mW, G = Numeric antenna gain, and S = Power density in mW/cm²

2. Calculated MPE Safe Distance

According to above equation, the following result was obtained and antenna gain is not fixed value. Please see below note.

Peak Output Power		Antenna Gain		Safe Distance	Power Density (mW/cm²)	FCC Limit
(dBm)	(mW)	Log	Linear	(cm)	@ 20 cm Separation	(mW/cm²)
30.0	1 000	2.0	1.58	11.23	0.32	1.0

According to above table, safe distance, $D = 0.282 * \sqrt{(1\ 000 * 1.58)} = 11.223$cm.

For getting power density at 20 cm separation in above table, following formula was used.

$S = P * G / (4\pi * R^2) = 1\ 000 * 1.58 / (4 * 3.14 * 20\text{^}2) = 0.32$

Where:

S = Power Density,
P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),
G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna

Note: 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.

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