EMI TEST REPORT

FCC EVALUATION REPORT FOR CERIFICATION

KOREA Standard Technology

Test report No.: KST-FCC0512

Applicant's Name	**:**	**SUNGJIN NEOTECH Co.,Ltd.**
Applicant's Address	**:**	**106, Suntechcity B/D, 513-15 Sangdaewon-Dong, Jungwon-Gu, Seongnam City, Kyonggi-Do, Korea**
Manufacturer's Name	**:**	**SUNGJIN NEOTECH Co.,Ltd.**
Manufacturer's Address	**:**	**106, Suntechcity B/D, 513-15 Sangdaewon-Dong, Jungwon-Gu, Seongnam City, Kyonggi-Do, Korea**

EUT's:

FCC ID	**:**	**SWMMV176**
Product Name	**:**	**LCD MONITOR & TV**
Model Number(s)	**:**	**MV176**
Product Options	**:**	**N/A**
Category	**:**	**FCC Part 15 subpart B Class B Computing Digital Device**

Supplementary Information

The device bearing the brand name and FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with measurement procedures specified in ANSI C63.4-2000.

I attest to the accuracy of data and all measurements reported herein were performed by or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Test Date : March 31, 2005. **Issued Date : April 4 , 2005**

Tested by: **Approved by:**

Jung, Suck-Jin **Lee, Weon-Woo**

Contents

1. Description of Device

1) Kind of equipment:	LCD MONITOR & TV
2) FCC ID:	SWMMV176
3) Model Name:	MV176
4) Serial No.:	53HYSN76H130245
5) Type of Sample Tested:	Pre-production
6) High Frequency Used:	27.000MHz / 24.576MHz 12.000MHz
7) Adapter	Model name : LSE0107A1240 Manufacturer : LI SHIN INTERNATIONAL ENTERPRISE CORP. Serial no : A30507003463
9) Power :	INPUT: 100-240 V, 50/60 Hz, 1.0 A OUTPUT: 12.0 V, 3.33 A
9) Tested Power supply:	1phase AC120 V, 60 Hz
12) Date of Manufacture:	March , 2005
13) Manufacture:	SUNGJIN NEOTECH Co.,Ltd.
14) Description of Operating:	Scroll All “H” Character Resolution 1024*768 Vertical Frequency: 75Hz & TV Tuner mode
15) Dates of Test:	March 31, 2005
16) Place of Tests:	Korea Standard Technology EMC site
17) Test Report No:	KST-FCC0512

2. Test Facility

The open field test site and conducted measurement facility are used for these testing, where are located following address and drawing. This site was fully described in a report dated November 14, 2002, that was submitted to the FCC.

Korea Standard Technology (KOSTEC Co., Ltd)

Head office & Test Lab ;

:180-254, Annyung-Ri, Taean-Yup, Hwasung-shi, Kyunggi-do, Korea

Telephone Number : 82-31-222-4251
Facsimile Number: 82-31-222-4252

MIC(Ministry of Information and Communication) Number: **KR0041**

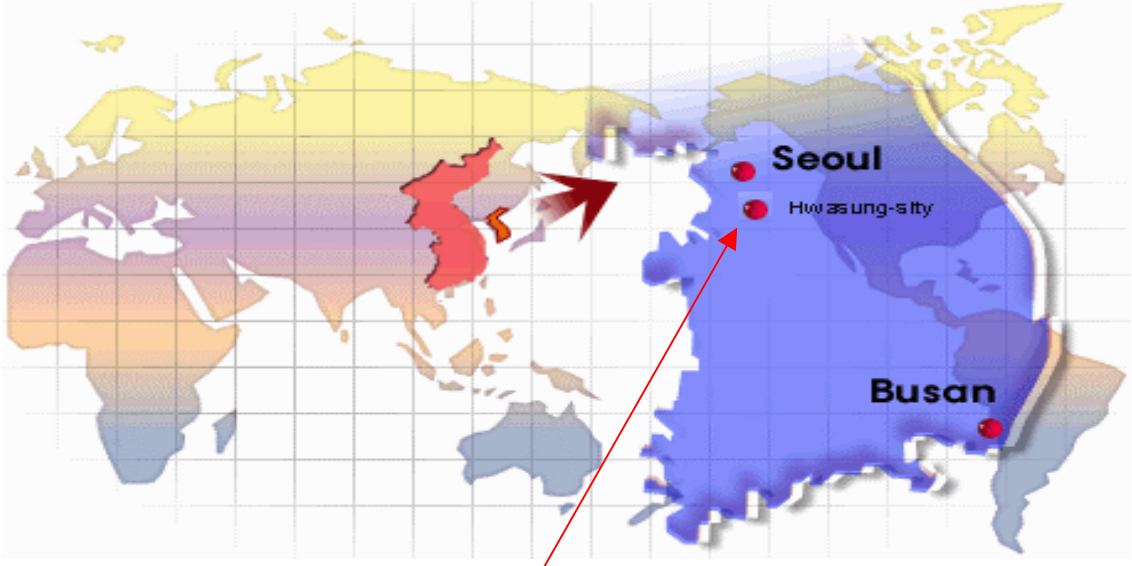
FCC Filing Number. : **525762**

VCCI Membership Number : **2005**

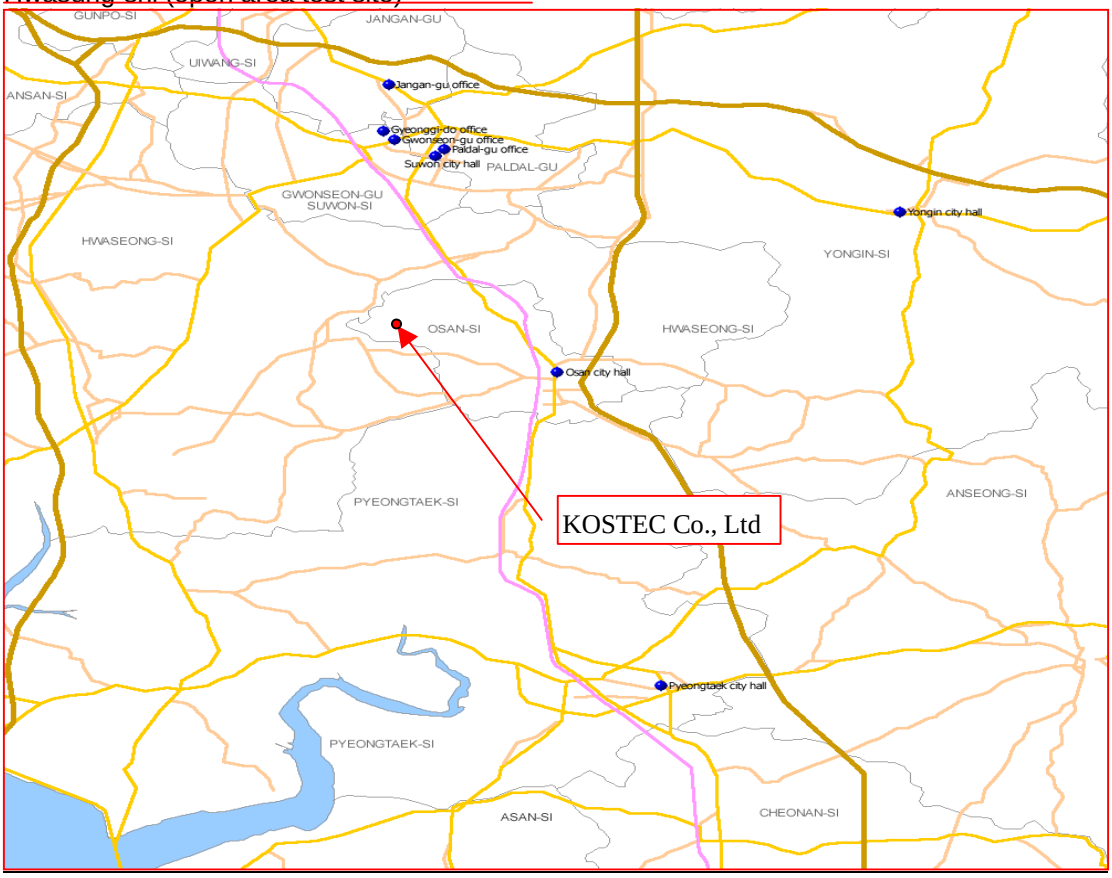
VCCI Registration Number : **R-1657 / C-1763**

3. Route Map of Measurement Facility

Korea



Hwasung-shi (open area test site)



4. Test System Configuration

Operation Environment

Ambient	Temperature (℃)	Humidity (%)	Pressure (hPa)
10 m Open Area site	18	35	1018
Shielded room:	20	36	1017

Test site
These testing were performed following locations ;

Shielded room : Conducted Emission,

10 m Open Area Site: Radiated Emission

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, Cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability.
Based on NIS 80, 81, The measurement uncertainty level with a 95% confidence level were applied.

sample calculation

Conducted emission

The field strength is calculated by adding the LISN factor, cable loss from the measured reading.
The sample calculation is as follows:

FS = MR + LF + CL
MR = Meter Reading
LF = LISN Factor
CL = Cable Loss

If MR is 30 dB, LISN Factor 1 dB, CL 1 dB
The result (MR) is
30 + 1 + 1 = 32 dBuV

5. Description of E.U.T.

Product Description

Manufactured By:	SUNGJIN NEOTECH Co.,Ltd.
Address:	106, Suntechcity B/D, 513-15 Sangdaewon-Dong, Jungwon-Gu, Seongnam City, Kyonggi-Do, Korea
Model:	MV176
Serial Number:	53HYSN76H130245

Configuration of EUT

Description	Manufacturer	Model/Part #	Serial Number
LCD Panel	BoEhydis	HT17E13-100	HT17E13-100
AD Board	SUNGJIN NEOTECH Co.,Ltd.	MV152/MV176TV	VM0019
Inverter Board	P.I.S. CORP	AT-0150X7	05-03-02-C
OSD Board	SUNGJIN NEOTECH Co.,Ltd.	MV176/512	KMT4020010
Remote Control	Megavision Co.,Ltd.	None	None
Ac/dc adapter	LI SHIN INTERNATIONAL ENTERPRISE CORP.	LSE0107A1240	A30507003463

EUT Used cables

Cable Type	Shield	Length (m)	Ferrite	Connector	Connection Point 1	Connection Point 2
POWER	Yes	1.2	-	DC INLET	Ac/dc adapter	Main power source
VGA In	Yes	1.5	yes	D-sub	EUT	PC
Audio(IN)	Yes	1.5	-	Jack	EUT	PC
Audio(OUT)	Yes	0.5	-	Jack	EUT	Speaker
PS/2	Yes	1.2	Y	Din	PC	Keyboard
PS/2	Yes	1.5	-	Din	PC	Mouse
Parallel	Yes	1.5	Y	D-sub	PC	Printer

Operating conditions

The operating mode/system were as follows in details:

Operating: . After Connected from personal computer to E.U.T by RGB cable(D-sub 15 pin). And then use to “H” pattern program for data transmission and continuously ‘H’ pattern displayed on the LCD Monitor. And TV Tuner mode.

7. TEST RESULTS

7.1 Conducted emission

Measurement procedure

Mains
The measurements were performed in a shielded room. EUT was placed on a non-metallic table height of 0.4 m above the reference ground plane. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane.
Each EUT power lead, except ground (safety) lead, were individually connected through a LISN to input power source.
Both lines of power cord, hot and neutral, were measured.

Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date	Used
Test receiver	ESPI3	100109	R&S	2006.3.10	●
L.I.S.N.	ESH2-Z5	100044	R&S	2005.4.23	●
	ESH2-Z5	100147	R&S	2005.4.23	●

Measurement uncertainty

Conducted Emission measurement : ± 2.4 (K=2)

Test data

< Without Ground >

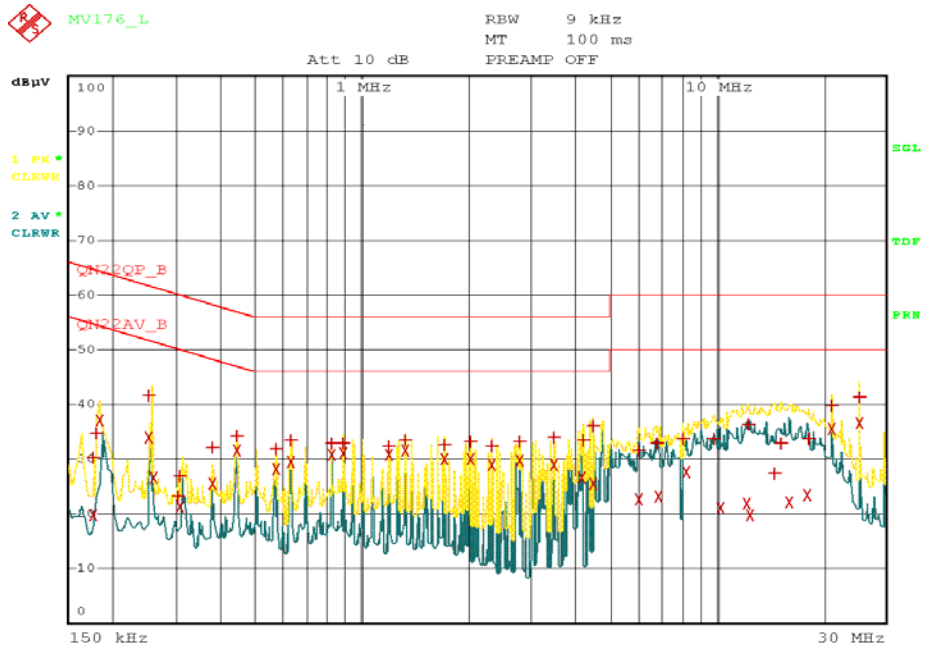
FREQ. (MHz)	LEVEL(dBμV)		LINE Pol	Loss (dB)	LIMIT(dBμV)		MARGIN(dB)	
	QP	AV			QP	AV	QP	AV
0.178	30.31	19.87	L	0.29	64.58	54.58	34.56	35.00
0.318	34.16	25.97	N	0.29	59.76	49.76	25.89	24.08
2.018	33.68	31.98	N	0.57	56.00	46.00	22.89	14.59
4.542	37.59	31.72	N	0.68	56.00	46.00	19.09	14.96
7.190	34.35	30.26	N	1.20	60.00	50.00	26.85	20.94
10.230	35.32	29.81	N	1.33	60.00	50.00	26.01	21.52
21.122	39.74	35.53	L	1.83	60.00	50.00	22.09	16.30

* Level = test receiver reading value
* Loss = LISN insertion Loss + Cable Loss

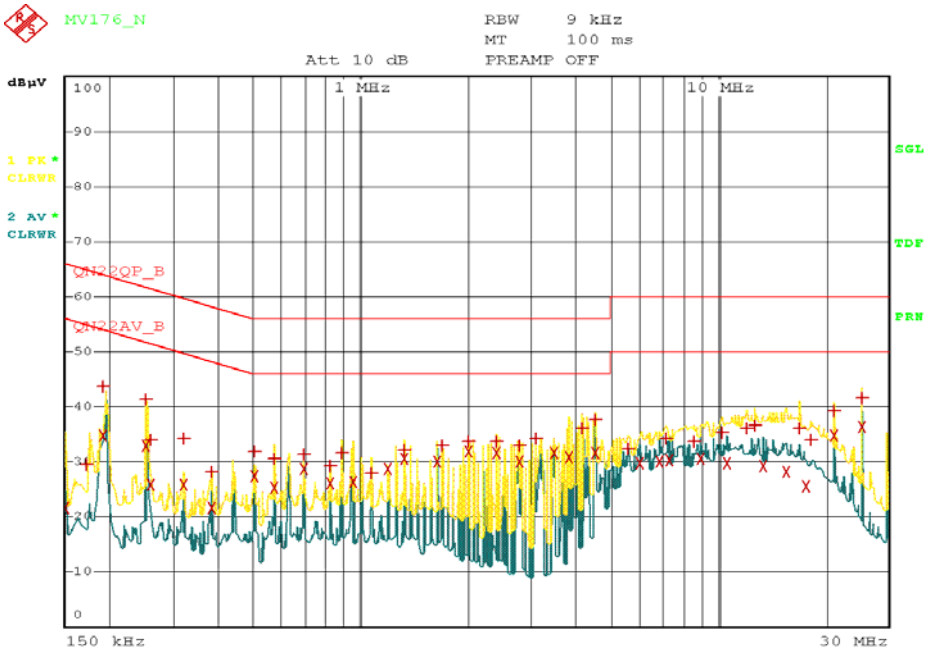
Conducted emission test graph

< Without Ground >

Line. Live



Line. Neutral



Test data

< With Ground >

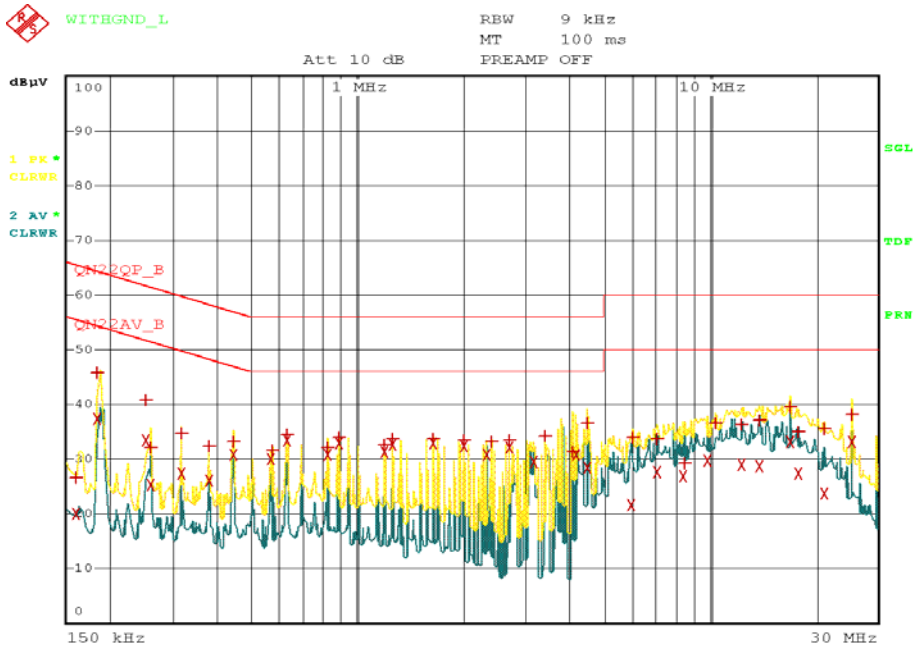
FREQ.	LEVEL(dBμV)		LINE	Loss	LIMIT(dBμV)		MARGIN(dBμV)	
(MHz)	QP	AV	Pol	(dB)	QP	AV	QP	AV
0.190	48.46	4.20	N	0.29	64.04	54.04	15.87	50.13
0.314	34.69	27.39	L	0.29	59.86	49.86	25.46	22.76
0.630	34.59	33.40	L	0.90	56.00	46.00	22.31	13.50
4.478	36.71	28.47	L	0.68	56.00	46.00	19.97	18.21
13.870	37.06	28.65	L	1.61	60.00	50.00	24.55	22.96
16.898	39.44	33.21	L	1.77	60.00	50.00	22.33	18.56
25.342	36.96	32.91	N	2.32	60.00	50.00	25.36	19.41

* Level = test receiver reading value
* Loss = LISN insertion Loss + Cable Loss

Conducted emission test graph

< With Ground >

Line. Live



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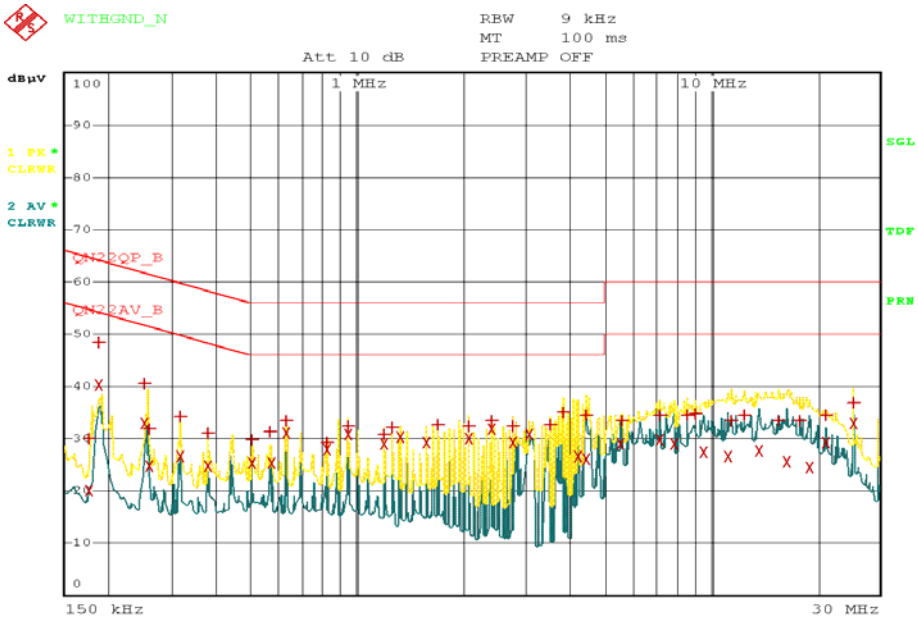
Line. Neutral



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7.2 Radiated Emission

Measurement procedure

A pretest was performed at 3 m distances in a semi-anechoic chamber for searching correct frequency.
The final test was done at a 10 m open area test site with a quasi-peak detector.
EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.
Cables connected to EUT were fixed to cause maximum emission.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.
The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date
Test receiver	ESCS30	100111	R&S	2006.3.17
Ultra broadband antenna	HL562	100075	R&S	2006.3.16
Matching network	RAM	358.5414.02	R&S	-
Antenna Mast	AT14	none	Daeil EMC	-
Turn Table	TT15	none	Daeil EMC	-
10m Open area site	none	none	KOSTEC Lab	-
chamber(3 m)	none	none	FRANCONIA	-

Measurement uncertainty

Radiated Emission measurement :

30-300 MHz +3.96 dB / -4.04 dB

300-1000 MHz +3.04 dB / -3.00 dB

Test data : Other Frequency (“H” pattern scroll) – PC Mode

Freq (MHz)	Reading (dBuV/m)	P (H/V)	H (m)	A (.)	Antenna (dB)	Cable Loss (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
53.99	21.93	V	1.50	45	5.53	2.94	30.40	40.0	9.60
135.01	19.30	H	1.60	320	8.30	4.10	31.70	43.5	11.80
189.01	17.99	V	2.00	180	7.22	4.69	29.90	43.5	13.60
243.01	10.03	H	2.30	120	9.22	5.35	24.60	46.0	21.40
283.48	13.18	V	1.80	240	10.46	6.26	29.90	46.0	16.10
300.00	4.60	H	2.30	320	11.00	6.50	22.10	46.0	23.90
431.99	6.86	V	1.70	45	14.13	7.71	28.70	46.0	17.30
563.18	3.28	H	2.10	180	16.46	9.16	28.90	46.0	17.10

Reading = Test receiver reading / P= antenna Polarization / H=antenna Height
A=turn table Angle / Antenna = antenna factor / Cable loss = used cable loss
Result = reading + antenna + loss / Margin = Limit - result
* Receiving Antenna Mode: Horizontal, Vertical / * Test site: 3m Open area site

Disturbance radiation due to local oscillator (TV tuner mode)

Channel	Frequency (MHz)	Reading (dBuV)	Pol (H/V)	Total Loss (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
2 (55.25MHz)	101.0			12.8		43.5	
	202.0	9.6	V	12.5	22.1	43.5	21.4
	303.0	1.2	V	17.6	18.8	46.0	27.2
	404.0	0.5	V	21.0	21.5	46.0	24.5
	505.0			23.4		46.0	
	606.0			26.4		46.0	
	707.0			28.5		46.0	
	808.0			30.5		46.0	
	909.0			32.7		46.0	
4 (67.25MHz)	108.5	9.3	H	12.9	22.2	43.5	21.3
	217.0			13.0		46.0	
	325.5			18.5		46.0	
	434.0					46.0	
	542.5			25.0		46.0	
	651.0			27.5		46.0	
	759.5			29.8		46.0	
	868.0			31.5		46.0	
	976.5			33.7		54.0	
6 (83.25MHz)	129.0			12.9		43.5	
	258.0	3.7	H	15.7	19.4	46.0	26.6
	387.0			20.5		46.0	
	516.0			24.0		46.0	
	645.0			27.2		46.0	
	774.0					46.0	
	903.0			32.6		46.0	
7 (175.25MHz)	221.0	24.1	V	13.2	37.3	46.0	8.7
	442.0					46.0	
	663.0			27.9		46.0	
	884.0			32		46.0	
10 (193.25MHz)	239.0	15.6	V	14.3	29.9	46.0	16.1
	478.0			22.9		46.0	
	717.0					46.0	
	956.0					46.0	
13 (211.25MHz)	257.0	2.7	H	15.7	28.4	46.0	17.6
	514.0	1.9	V	23.9	25.8	46.0	20.2
	771.0					46.0	
14	517.0	3.1	H	24.1	27.2	46.0	18.8
19	547.0	4.2	V	25.2	29.4	46.0	16.6
28	601.0	11.4	H	26.3	37.7	46.0	8.3
36	649.0	13.2	V	27.4	40.6	46.0	5.4
44	697.0	5.6	V	28.3	33.9	46.0	12.1
53	751.0	7.8	H	29.8	37.6	46.0	8.4
61	799.0	5.1	H	30.4	35.5	46.0	10.5
69	847.0	2.3	H	31.1	33.4	46.0	12.6