Applicant	:	**INC TECH**. 302-207#, SAMIK APT, MYUNGIKDONG, KANGDONG-GU, SEOUL, Korea 134-070
Manufacturer	:	**INC TECH.** 302-207#, SAMIK APT, MYUNGIKDONG, KANGDONG-GU, SEOUL, Korea 134-070
Test Item	:	**CATV Converter**
FCC ID		**QRUVIEWMAXPRO**
Model No.	:	**VIEWMAX PRO**
Test Specification	:	ANSI C 63.4:1992 FCC Part 15 Class B
Tested Date	:	October 24 - 25, 2002
Issued Date	:	October 29, 2002
Test Result	:	**Passed**

Tested by :

K.T.LEE

Name Signature

Reviewed by :

C.H.AHN

Name Signature

Other Aspects :

Abbreviations : OK, Pass = passed , Fail = failed , N/A = not applicable

This test result only responds to the tested sample.
It is not allowed to copy this report even partly without the allowance of the test laboratory.
This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S.Government.

NVLAP®

NVLAP LAB CODE 200559-0

TEST SUMMARY

The data collected shows that the **INC TECH. (Model NO.: VIEWMAX PRO) CATV converter** complies with §15.107 and §15.109 of the FCC Rules.
The highest emission observed, with a minimum margin to the specifications, was at 8.383MHz for conducted emissions with a margin of 5.7dB, and at 61.53MHz for radiated emissions (Pol.: Vertical, EUT Angle : 108degree , ANT. Height : 100cm)with a margin of 3.9dB.

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report accdg. to NIS 81 / 5 1994.".

5.1 CONDUCTED EMISSIONS
RESULT : Pass

5.2 RADIATED EMISSIONS
RESULT : Pass

5.3 ANTENNA CONDUCTED POWER EMISSIONS
RESULT : Pass

5.4 OUTPUT CONDUCTED LEVEL EMISSIONS
RESULT : Pass

5.5 ANTENNA TRANSFER SWITCH EMISSIONS
RESULT : Pass

Contents

1. General Remarks

This Report describes the emission characteristics of the tested product.

If the product will be used with additional equipment other than those mentioned in this report or if the tested product will be used against the manufacture's specifications, the compliance with the relevant standards for the system has to be ensured.

2. Test Facility

2.1 Test Laboratory

Quality control in the testing laboratory is implemented as per ISO/IEC 17025, which is the "General requirements for the competents of calibration and testing laboratory".

This laboratory is accredited by NVLAP for NVLAP Lab. Code : 200559-0.

DIGITAL EMC CO., LTD.
Address : 683-3, Yubang-Dong, Yongin-Si, Kunggi-Do, Korea. 449-080
http://www.digitalemc.com
E-mail : demc@unitel.co.kr
Tel: +82-31-321-2664 Fax: +82-31-321-1664

2.2 Measurement Instruments

Refer to each item.

3. General Product Information

QRUVIEWMAXPRO	
Kind of Equipment	: CATV converter
FCC ID	: QRUVIEWMAXPRO
Model Number	: VIEWMAX PRO
Serial No.	: N/A
RF INPUT/OUTPUT	: Input Bandwidth :54MHz~800MHz RF Impedance: 75Ω Tuner(s)/RF Modulator(s) :SAMSUNG(TCMN0682PA13E) RF Frequency :60MHz~72MHz RF output Channels :Ch3 or Ch4(by controlled PIN NO.2(CH))
Audio/Video	: List of Each OSC or X-tal Freq(≥1MHz) :12.0MHz Video signal:EIA Standard NTSC Color Audio signal:BTSC Stereo
Power	: Power Requirement:AC120V/60Hz Power Consumption : 400W max
Mechanical	:A/V Cables : Unshielded Power Cord : Unshielded Chassis Type :Metal Dimension(W*H*D) : 298*204*64 Weight : 1.3kg
Tested Power Supply	: 1 phase 120Vac 60Hz
Applicant	: INC TECH.
Manufacturer	: INC TECH.
Date of Receipt of Sample	: 2002-10-23

4. Test Set-up and operation modes

4.1 Principle of Configuration Selection

Emission : The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation modes

The controls of the EUT are set to obtain a picture of normal brightness, contrast, and color saturation. This is obtained with the following luminance values:

Black part of the test pattern 2 cd/m^2

Magenta part of the test pattern 30 cd/ m^2

White part of the test pattern 80 cd/ m^2

The standard picture is a pattern consisting of vertical color bars in accordance with CCIR Recommendation 471, 100/0/75/0.

4.3 Support Equipment Used

TYPE	MANUFACTURER	MODEL NO.	SERIAL NO.	Cable
Video Monitor	Hitron System Inc.	CVN0954	M2040008	1.8m power cable(non-shield) 1.6m A/V cable(non-shield)
Pattern generator	LEADER	408NPS	3447660	RF cable (shield)

NOTE

- See "photographs" for actual system test setup

5. Test Results EMISSION

5.1 Conducted Emissions

RESULT : Pass

5.1.1 Measurement Procedure

In the range of 0.45㎒ to 30㎒ the Conducted Emission was measured in accordance with ANSI C 63.4:1992. The test set-up was made according to ANSI C 63.4:1992. A 1m. x 1.5m. wooden table 80cm. high is placed 40cm. away from the vertical wall and 1.5m away from the side wall of the shielded room. Kyoritsu Model KNW-407 and KNW-242(10㎑-30㎒) 50Ω/50uH Line-Impedance Stabilization Networks(LISNs) are bonded to the shielded room. The EUT is powered from the KNW-242 LISN and the support equipment is powered from the KNW-407 LISN. By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission. For further description of the configuration refer to the picture of the test set-up.

5.1.2 List of Test and Measurement Instruments

Conducted Emission				
Name of Instrument	**Model No**	**Serial No**	**Manufacturer**	**Next Cal. Date**
Spectrum Analyzer	E4411B	US41062735	Agilent Technologies	2003.04
RFI/Field intensity Meter	KNW-2402	4N-170-3	Kyoritsu Electrical Works	2003.07
LISN	KNW-407	8-317-8	Kyoritsu Electrical Works	2003.06
LISN	KNW-242	8-654-15	Kyoritsu Electrical Works	2003.06

5.1.3 Conducted Test Data

1) Test Data: October 25, 2002 Humidity: 45 %
Temperature: 20 ℃ Barometric: 990 mbar

2) Measurement uncertainty (95%,Confidence level, k=2) : +2.2dB / -2.21dB

3) Result

Frequency (㎒)	LISN Pol.	Q,P. Reading [dB㎶]	A.V Reading [dB㎶]	Final Result [dB㎶]	Q.P. Limit [dB㎶]	Margin [dB]
0.518	N	34.4	-	34.6	48	13.4
8.383	**N**	**41.4**	**-**	**42.3**	**48**	**5.7**
10.291	N	41.8	-	42.3	48	5.7
12.330	N	34.2	-	34.9	48	13.1
17.560	N	25.0	-	26.2	48	21.8
0.534	L1	35.9	-	36.1	48	11.9
8.367	L1	40.5	-	41.1	48	6.9
10.292	L1	41.3	-	41.7	48	6.3
12.434	L1	35.3	-	35.8	48	12.2
17.435	L1	32.2	-	33.1	48	14.9

Table 1: Conducted Test Data

NOTES:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. L1 = Phase; N = Neutral
3. See "APPENDIX 1 Conducted measurement Graph"
4. Margin = Q.P. Limit – Q.P. Result
5. Measurement Data's kept in DIGITAL EMC.
6. Result = Cable loss + insertion loss + Reading value
7. If the amplitude measured in the quasi-peak mode is at least 6dB higher than the amplitude measured in the average mode, the level measured in the quasi-peak mode may be reduced by 13dB before comparing it to the limit.

5.2 Electromagnetic Radiation Disturbance

RESULT : Pass

5.2.1 Measurement Procedure

In the range of 30㎒ to 1㎓ the Electric Field strength was measured in accordance with ANSI C 63.4:1992. The test set-up was made according to ANSI C 63.4:1992.

On open test site, which allows a 3m-distance measurement. The EUT was placed in the center of a wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization (high:1-4m). The turntable has been fully rotated. The highest radiation of the equipment has been recorded. By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission. For further description of the configuration refer to the picture of the test set-up.

5.2.2 List of Test and Measurement Instruments

Radiated Emission (OATS)				
Name of Instrument	**Model No**	**Serial No**	**Manufacturer**	**Next Cal. Date**
RFI/Field intensity Meter	KNM-504D	4N-161-4	Kyoritsu Electrical Work	2003.07
Frequency Converter	KCV-604C	4-230-3	Kyoritsu Electrical Work	2003.07
Spectrum Analyzer	E4404B	US41061134	Agilent	2003.04
BICONICAL ANT.	VHA9103	VHA91031946	SCHWARZBECK	2004.10
LOG-PERIODIC ANT.	UHALP9108-A1	1098	SCHWARZBECK	2004.10
Amplifier (25dB)	8447D	2944A10144	Agilent	2003.04
Position Controller	5902T2	14173	TOKIN	N/A
DRIVER	5902T2	14174	TOKIN	N/A
SWITCH	MP59B	6100097292	ANRITSU	N/A
Radiated Emission (ANECHOIC CHAMBER-PRE TESTING)				
Spectrum Analyzer	E4404B	US41061134	Agilent	2003.04
Amplifier (25dB)	8447D	2443A03690	Agilent	2003.04
BILOG ANTENNA	CBL6112B	2737	SCHAFFNER	2003.01
CONTROLLER	5900	N/A	TOKIN	N/A

5.2.3 Radiated Test Data

1) Test Data: October 24, 2002 Humidity: 39 %
Temperature: 16 ℃ Barometric: 990 mbar

2) Measurement uncertainty(95%, Confidence level, k=2) : +3.42dB / -4.14dB

3) Result

Frequency [㎒]	ANT Pol.	Reading [B] [dB㎶]	T.F [A] [dB(1/m)]	Results [A+B] [dB㎶/m]	Limits [dB㎶/m]	Margin [dB]
44.55	H	43.50	14.25	29.25	40.0	10.8
97.90	H	48.50	-15.95	32.55	43.5	11.0
122.15	H	46.50	-12.43	34.07	43.5	9.4
127.00	H	46.49	-11.61	34.88	43.5	8.6
131.85	H	44.49	-10.94	33.55	43.5	10.0
136.70	H	44.50	-10.44	34.06	43.5	9.4
44.55	V	44.00	-14.25	29.75	40.0	10.3
61.53	**V**	**55.00**	**-15.95**	**36.12**	**40.0**	**3.9**
73.65	V	52.00	-12.43	32.13	40.0	7.9
97.90	V	53.50	-11.61	37.55	43.5	6.0
110.03	V	50.01	-10.94	36.21	43.5	7.3
856.93	V	31.99	1.76	33.75	46.0	12.3

- No values due to local oscillator less than 20dB for the limit was measured during radiated disturbance.

Table 2 : Radiated Test Data

NOTES:

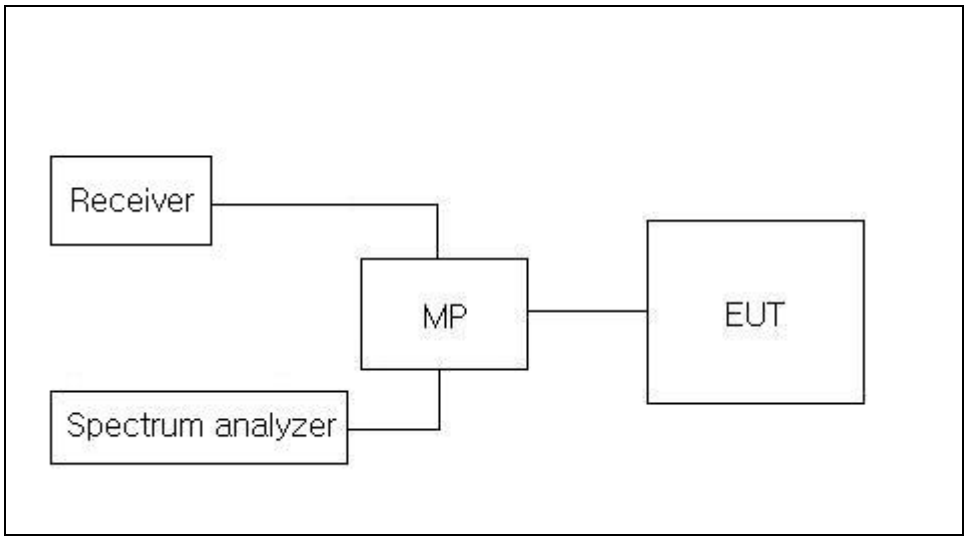
1. All modes of operation were investigated and the worst-case emissions are reported.
2. H = Horizontal; V = Vertical
3. Margin = Limit – Result
4. T.F. : Correction Factors(Cable loss + Antenna factor) – AMP Gain
5. Measurement Data's kept in DIGITAL EMC
6. Sample calculation ;
   At Frequency : 61.53MHz
   Result = Reading + T.F.=55.00 + (-15.95) = 36.12[dB㎶/m]

5.3 Antenna-Conducted Power Measurements

RESULT : Pass

5.3.1 Measurement Procedure

Power on the receive antenna terminals was to be determined by measurement of the voltage Present at these terminals. Antenna-conducted power measurements was performed with the EUT antenna terminals connected directly to measuring instrument (RFI/Field intensity Meter & Frequency Converter) using a impedance-Matching network to connect the measurement Instrument to the antenna terminals of the EUT. Losses in decibels in impedance-matching network used was added to the measured values in dBuV. With the receiver tuned to one of the number of frequency and voltage present at the antenna input terminals over the frequency range specified in the individual equipment requirements, The measurements was repeated with the receiver tuned to another frequency until the number of frequencies had been successively measured. Power in the receive antenna terminals in the ratio of V^2 /R, where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument.



Note) *MP: Matching pad + RF Switch

5.3.2 List of Test and Measurement Instruments

Antenna-Conducted Power Emission				
Name of Instrument	**Model No**	**Serial No**	**Manufacturer**	**Next Cal. Date**
RFI/Field intensity Meter	KNM-504D	4N-161-4	Kyoritsu Electrical Work	2003.07
Frequency Converter	KCV-604C	4-230-3	Kyoritsu Electrical Work	2003.07
Spectrum Analyzer	E4404B	US41061134	Agilent	2003.04
SWITCH	MP59B	6100097292	ANRITSU	N/A
Matching PAD	932A	53932	Eiden Co.,Ltd.	2003.08

5.3.3 Antenna-Conducted Power Test Data

1) Test Data: October 25, 2002 Humidity: 65 %
Temperature: 23 ℃ Barometric: 991 mbar

2) Result

Frequency [㎒]	**harmonic**	**Reading** [dB㎶]	**Result** [dB㎶]	**Limit** [dB㎶]	**Margin** [dB]
54	1	"There was no found any emission during the above test"			
	2				
400	1	"There was no found any emission during the above test"			
	2				
800	1	"There was no found any emission during the above test"			
	2				

Table 3 : Antenna Conducted power Emissions Test Data

NOTES:

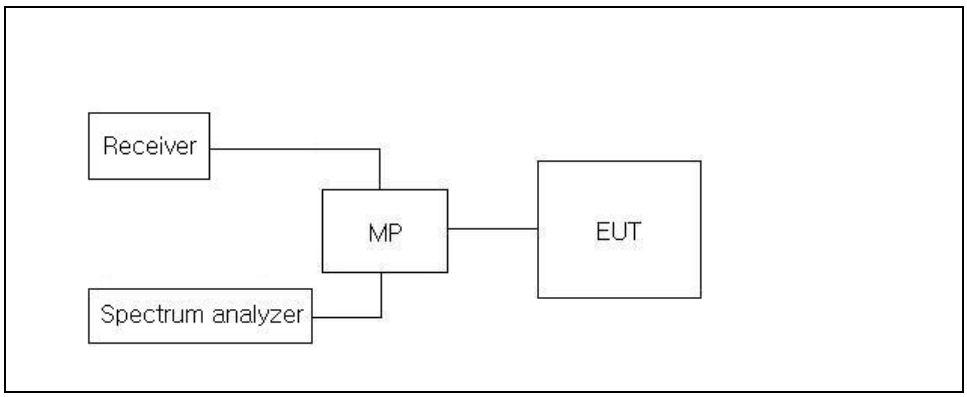
1. All modes of operation were investigated and the worst-case emissions are reported.
2. Margin = Limit – Result
3. Measurements using CISPR Quasi-peak mode. The limits is 2.0 nW from 30MHz to 960MHz.
4. Measurement Data's kept in DIGITAL EMC.

5.4 .Output-Conducted Level Measurements

RESULT : Pass

5.4.1 Measurement Procedure

The output signal level was the maximum voltage level present at the output terminal of EUT On a particular frequency during normal use. Measurement was made of the levels of the aural carrier, visual carrier and all spurious emissions. Measurement was made by direct connection to the measuring instrument (RFI/Field intensity Meter & Frequency Converter) with Proper impedance matching between the measuring instrument and the EUT. Losses in decibels in impedance-matching network used was added to the measured values in dBuV. The cable was supported between the EUT and the measuring instrument in a straight horizontal line so it had at least 75cm clearance from any conducting surface. The EUT was provided with a typical signal consistent with normal operation. For each channel on which the EUT operated the level the video carrier, audio carrier, the spurious emissions over the Frequency range measured and recorded.



Note) *MP: Matching pad + RF Switch

5.4.2 List of Test and Measurement Instruments

Output-Conducted Level Emission				
Name of Instrument	**Model No**	**Serial No**	**Manufacturer**	**Next Cal. Date**
RFI/Field intensity Meter	KNM-504D	4N-161-4	Kyoritsu Electrical Work	2003.07
Frequency Converter	KCV-604C	4-230-3	Kyoritsu Electrical Work	2003.07
Spectrum Analyzer	E4404B	US41061134	Agilent	2003.04
SWITCH	MP59B	6100097292	ANRITSU	N/A
Matching PAD	932A	53932	Eiden Co.,Ltd.	2003.08

5.4.3 Output-Conducted Level Test Data

1) Test Data: October 25, 2002 Humidity: 65 %
Temperature: 23 ℃ Barometric: 991 mbar

2) Result

Channel	Frequency [㎒]	Result [dB㎶]	Limit [dB㎶]	Margin [dB]
3	56.75	49.0	56.5	7.5
	61.25	63.3	69.5	5.2
	65.75	48.2	56.5	8.3
4	62.75	48.4	56.5	8.1
	67.25	63.5	69.5	6.0
	71.75	47.3	56.5	9.2

Table 4 : Output-Conducted Level Emissions Test Data

NOTES:

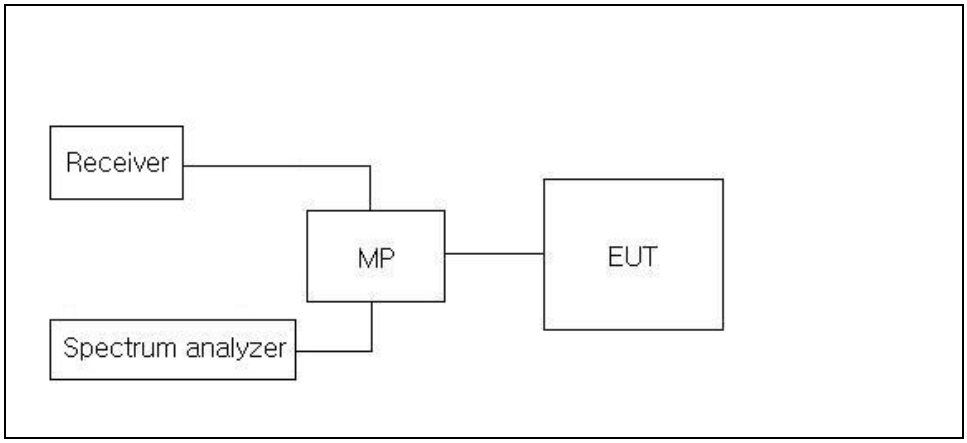
1. All modes of operation were investigated and the worst-case emissions are reported.
2. Test Mode - Tuned to broadcasting frequency
3. Margin = Limit – Result
4. Result = Cable loss + Matching Pad loss + Reading value
5. Measurements using CISPR Quasi-peak mode. The limit is 346.4 times the square root of (R) for the video signal and 77.5 times the square root of (R) for the audio signal.
6. Measurement Data’s kept in DIGITAL EMC

5.5 Antenna Transfer Switch Measurements

RESULT : Pass

5.5.1 Measurement Procedure

Isolation was measured for all positions of an antenna transfer switch on all output channels of The EUT. TV interface device transfer switch is isolation is the difference the levels of a signal Going into one antenna input port of the switch and that of the same signal coming out of Another antenna terminal of the transfer switch. The isolation of an antenna transfer switch Equipped with coaxial connectors was performed by measuring the maximum voltage of the Visual carrier. Using an impedace-matching device,thelength of coaxial cable was connected between the antenna terminal of the switch and the measuring instrument (RFI/Field intensity Meter & Frequency Converter). The measuring instrument was tuned to the output channel of the EUT in peak mode and the voltage levels was measured and recorded.



Note) *MP: Matching pad + RF Switch

5.5.2 List of Test and Measurement Instruments

Antenna Transfer Switch Emission				
Name of Instrument	**Model No**	**Serial No**	**Manufacturer**	**Next Cal. Date**
RFI/Field intensity Meter	KNM-504D	4N-161-4	Kyoritsu Electrical Work	2003.07
Frequency Converter	KCV-604C	4-230-3	Kyoritsu Electrical Work	2003.07
Spectrum Analyzer	E4404B	US41061134	Agilent	2003.04
SWITCH	MP59B	6100097292	ANRITSU	N/A
Matching PAD	932A	53932	Eiden Co.,Ltd.	2003.08

5.5.3 Antenna Transfer Switch Test Data

1) Test Data: October 25, 2002 Humidity: 65 %
Temperature: 23 ℃ Barometric: 991 mbar

2) Result

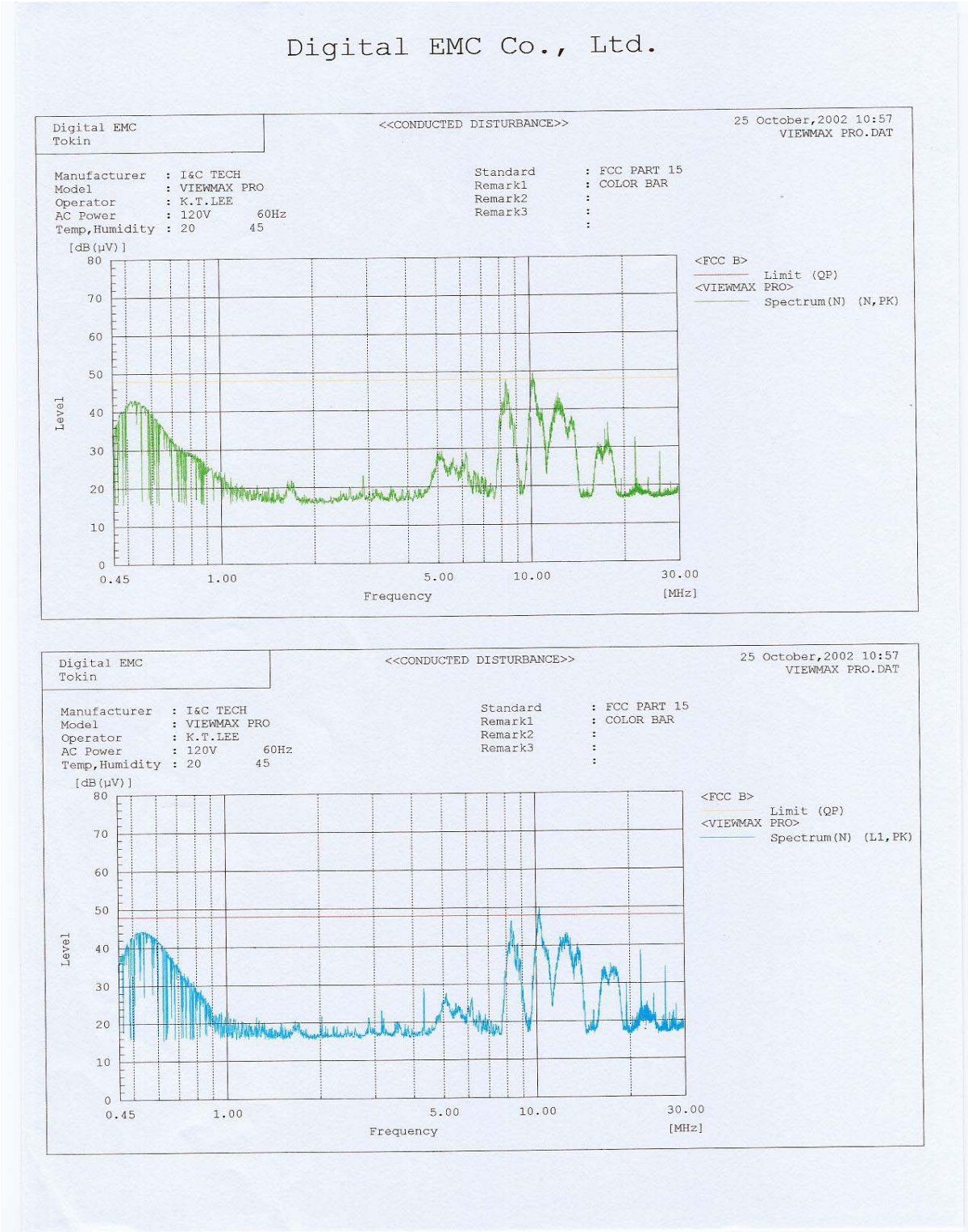
Channel	Frequency [㎒]	Reading [dBμV]	Result [dBμV]	Limit [dBμV]	Margin [dB]
3	"There was no found any emission during the above test"				
4	"There was no found any emission during the above test"				

Table 5 : Antenna Transfer Switch Emissions Test Data

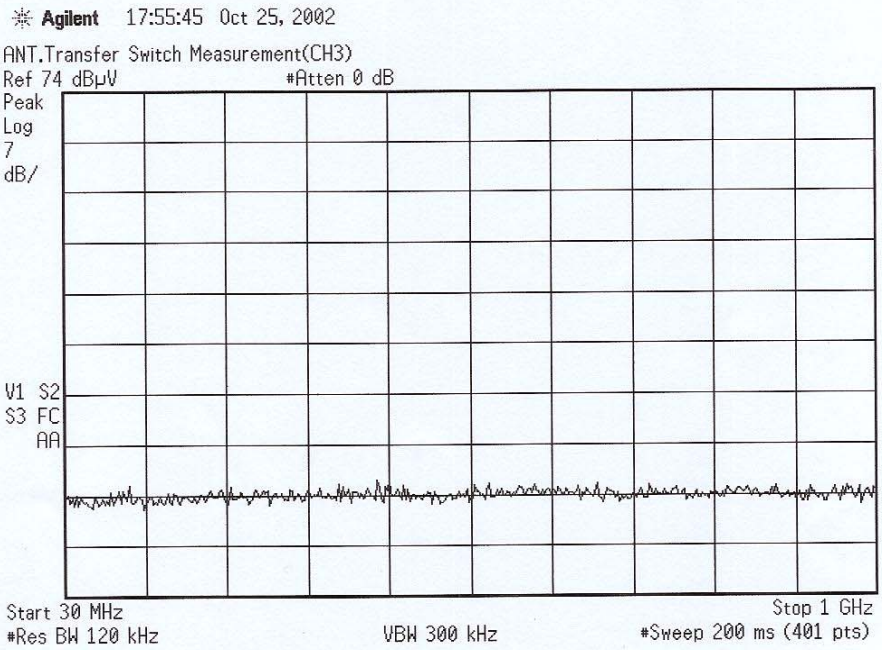
NOTES:

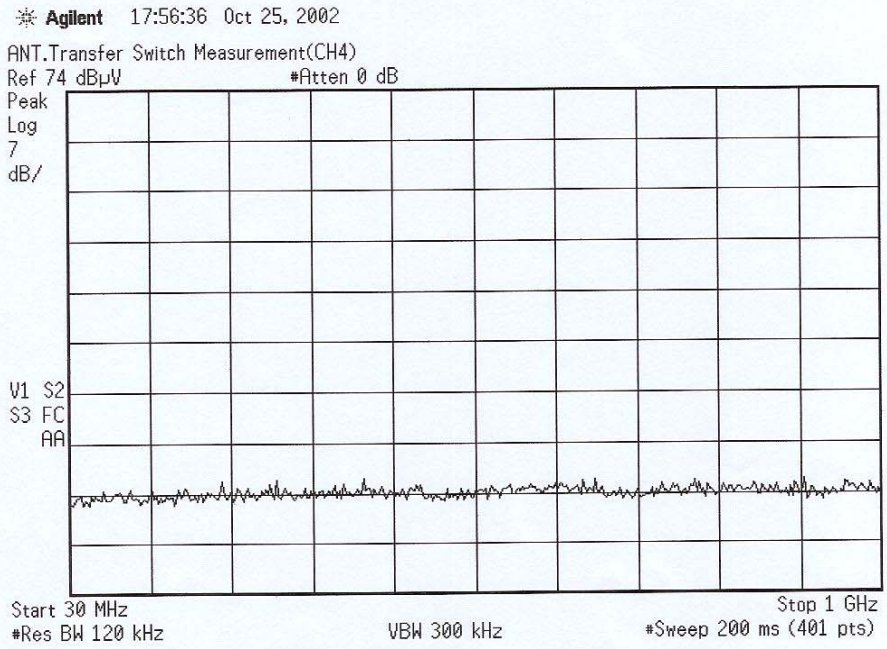
1. All modes of operation were investigated and the worst-case emissions are reported.
2. Test Mode - Tuned to broadcasting frequency
3. Margin = Limit – Result
4. Measurements using in peak mode. The limits is 0.346 times the square root of (R)
5. Measurement Data's kept in DIGITAL EMC

APPENDIX 1 **CONDUCTED MEASUREMENT GRAPH**



APPENDIX 2 ANT. TRANSFER SWITCH MEASUREMENT GRAPH





APPENDIX 3 **OUTPUT CONDUCTED LEVEL MEASUREMENT GRAPH**