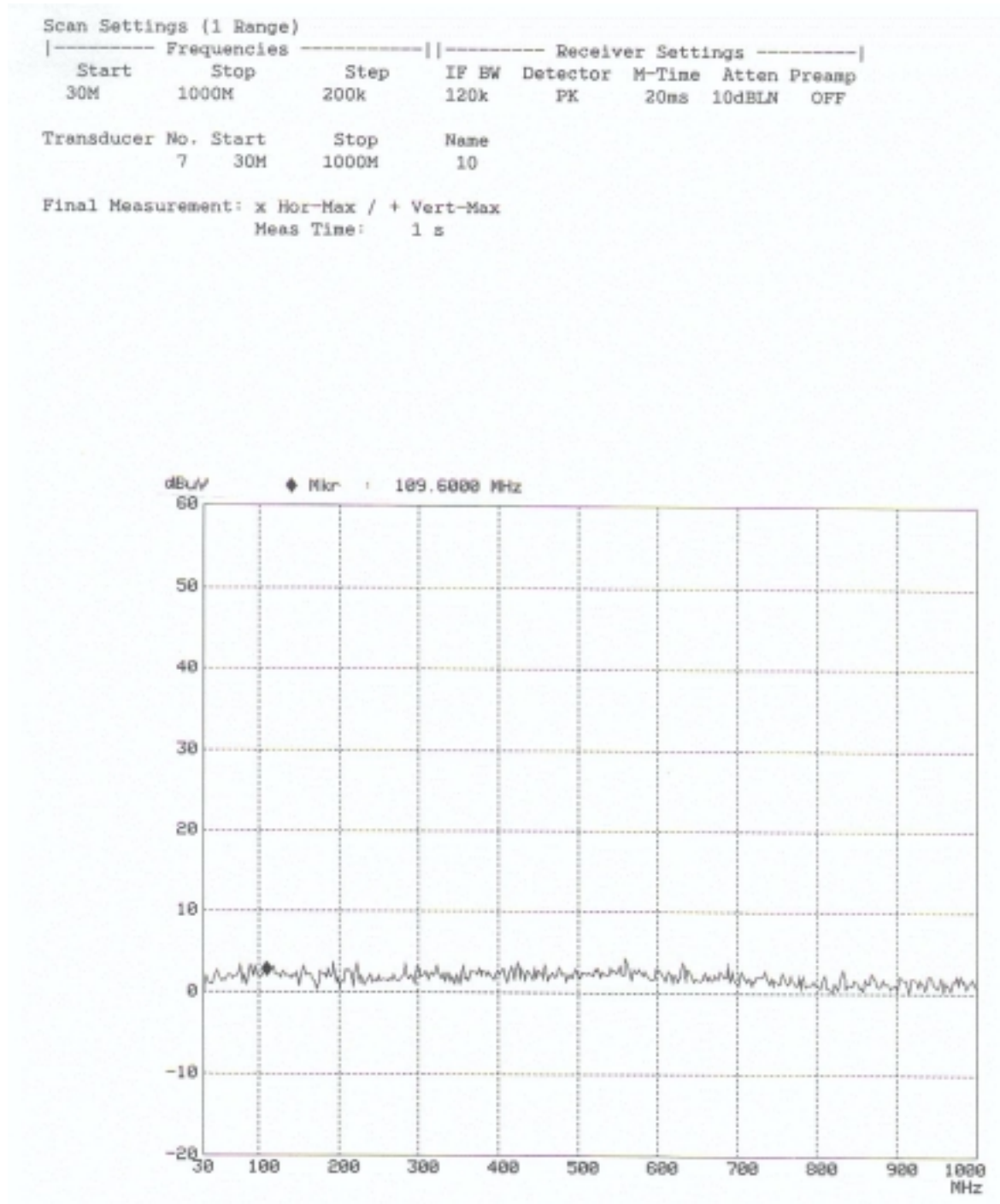


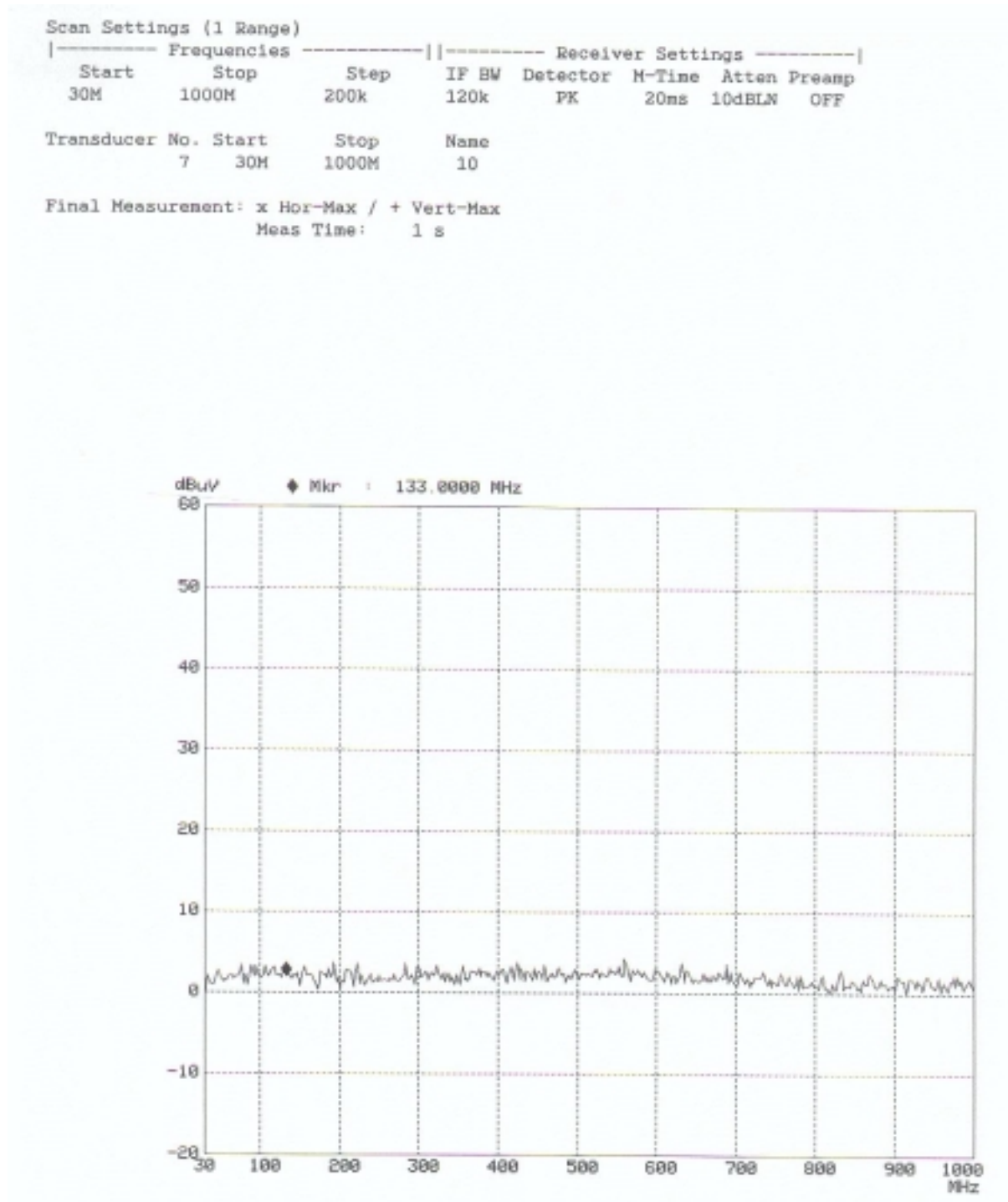
PLOTS OF EMISSIONS

- Antenna Transfer Switch Measurement(Channel 3, Antenna)



PLOTS OF EMISSIONS

- Antenna Transfer Switch Measurement(Channel 3, SAT Receiver)



PLOTS OF EMISSIONS

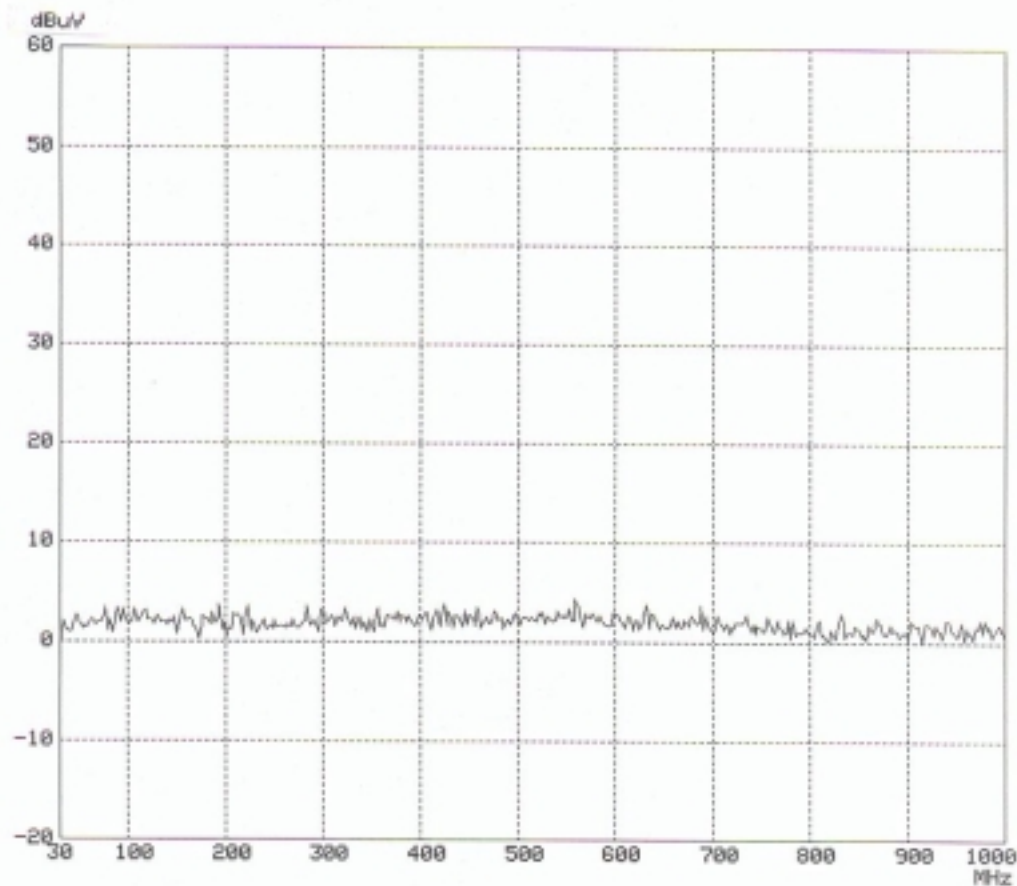
- Antenna Transfer Switch Measurement(Channel 4, Antenna)

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	1000M	200k	120k	PK	20ms	10dB LN	OFF

Transducer No.	Start	Stop	Name
7	30M	1000M	10

Final Measurement: x Hor-Max / + Vert-Max
Meas Time: 1 s



PLOTS OF EMISSIONS

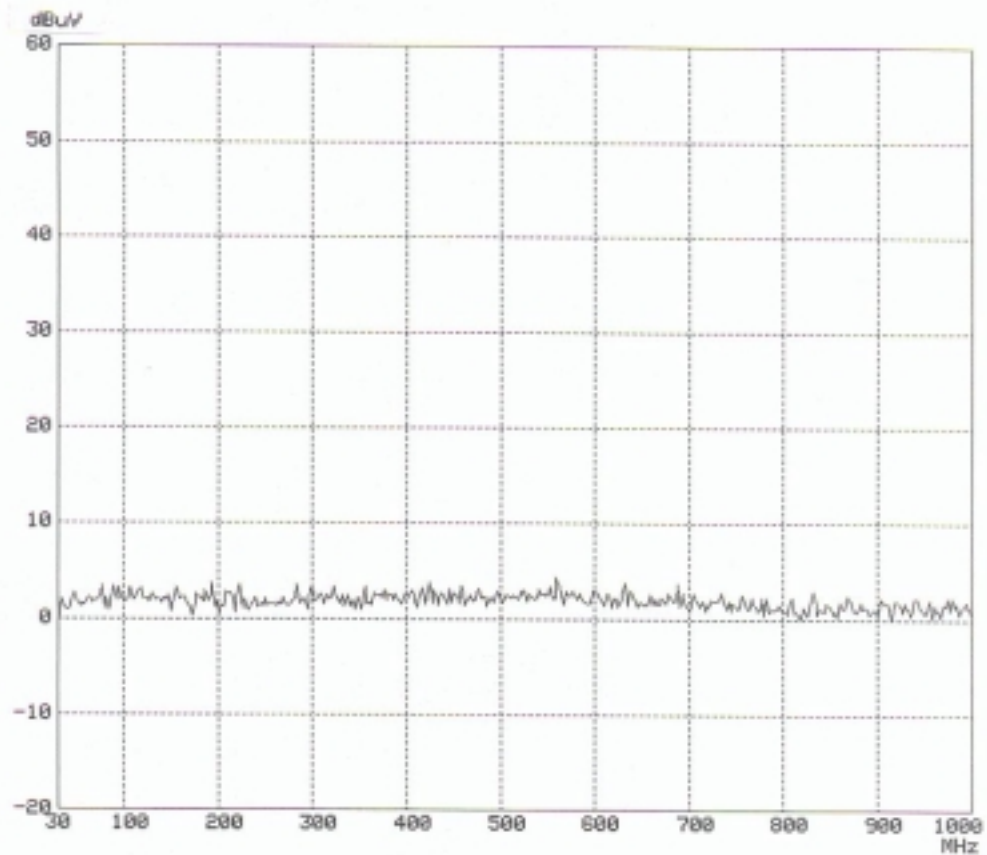
- Antenna Transfer Switch Measurement(Channel 4, SAT Receiver)

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	1000M	200k	120k	PK	20ms	10dB LN	OFF

Transducer No.	Start	Stop	Name
7	30M	1000M	10

Final Measurement: x Hor-Max / + Vert-Max
Meas Time: 1 s



SAMPLE CALCULATIONS

$$\text{dB } \mu V = 20 \log_{10} (\mu V/m)$$

$$\mu V = 10^{(\text{dB } \mu V/20)}$$

EX. 1.

@20.3 MHz

Class B limit = 250 μV = 48.0 dB μV

Reading = 40.8 dB μV (calibrated level)

$$10^{(40.8/20)} = 109.64 \mu V$$

$$\text{Margin} = 48.0 - 40.8 = 7.2$$

7.2 dB below limit

EX. 2.

@57.7 MHz

Class B limit = 100 $\mu V/m$ = 40.0 dB $\mu V/m$

Reading = 19.1 dB μV (calibrated level)

Antenna factor + Cable Loss = 10.12 dB

Total = 29.22 dB $\mu V/m$

$$\text{Margin} = 40.0 - 29.22 = 10.78$$

10.78 dB below the limit

EX. 3.

@98.20 MHz

Class B limit = 2 nW = 50.0 dB μV

Reading = 19.1 dB μV (calibrated level)

Impedance matching Network Loss = 7.5 dB

Total = 26.6 dB μV

$$\text{Margin} = 50.0 - 26.6 = 23.4$$

23.4 dB below the limit

ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95%

1. Radiation Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Antenna Factor	Normal (k=2)	± 0.5
Cable Loss	Normal (k=2)	± 0.04
Receiver Specification	Rectangular	± 2.0
Antenna directivity	Rectangular	± 1.0
Antenna Factor variation with Height		
Antenna Phase Center Variation		
Antenna Factor Frequency Interpolation		
Measurement Distance Variation		
Site Imperfections	Rectangular	± 2.0
Mismatch:Receiver VRC $r_i=0.3$ Antenna VRC $r_R=0.1(B_i)0.4(L_p)$ Uncertainty Limits $20\log(1+/-r_i r_R)$	U-Shaped	$+ 0.25 / - 0.26$
System Repeatability	Std.deviation	± 0.05
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.77
Expanded Uncertainty U	Normal (k=2)	± 3.5

2. Conducted Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Receiver Specification	Normal (k=2)	± 2.0
LISN coupling spec.	Normal (k=2)	± 0.4
Cable and input attenuator cal.	Rectangular	± 0.4
Mismatch:Receiver VRC $r_i=0.3$ LISN vrc $r_g=0.1$ Uncertainty Limits $20\log(1+/-r_i r_R)$	U-Shaped	± 0.26
System Repeatability	Std.deviation	± 0.68
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.18
Expanded Uncertainty U	Normal (k=2)	± 2.4

TEST EQUIPMENT

No.	Instrument	Manufacturer	Model	Calibration Date
1	*Test Receiver	R & S	ESCS 30	2001.01
2	*Test Receiver	PMM	PMM9000	2000.04
3	*Amplifier	HP	8447F	2000.08
4	*Amplifier	HP	8447F	2000.08
5	Spectrum Analyzer	Advantest	R4136	2000.12
6	*Logbicon Super Antenna	Schwarzbeck	VULB9166	2001.01
7	Log-Periodic Antenna	R & S	HL025	2001.01
8	Dipole Antenna	R & S	VHA9103	2001.01
9	Dipole Antenna	R & S	UHA9105	2001.01
10	Biconical Antenna	Schwarzbeck	VHA9103	2001.01
11	Biconical Log Antenna	ARA	LPB-2520/A	2001.01
12	Absorbing Clamp	R & S	MDS21	2001.01
13	High Voltage Probe	R & S	ESH2-Z3	2001.02
14	Signal Generator	R & S	SMP02	2001.01
15	*Matching Pad	R & S	RAM358.5414.0 2	2000.05
16	LISN	R & S	ESH3-Z5	2001.02
17	LISN	PMM	L3-9103	2000.04
18	*Position Controller	EM Eng.	N/A	N/A
19	*Turn Table	EM Eng.	N/A	N/A
20	*Antenna Mast	EM Eng.	N/A	N/A
21	*Anechoic Chamber	EM Eng.	N/A	N/A
22	*Shielded Room	EM Eng.	N/A	N/A

*) Test equipment used during the test

RECOMMENDATION/CONCLUSION

The data collected shows that the **Samsung Electro-Mechanics Co., Ltd.**

FCC ID : **E2XDSR9000, Digital Satellite Receiver.** complies with § 15.107 ,15.109, 15.111 and 15.115 of the FCC Rules.

The highest emission observed was at **9.72 MHz** for conducted emissions with a margin of **12.0 dB**, at **898.15 MHz** for radiated emissions with a margin of **2.6 dB**, at **30 MHz** for antenna-conducted power measurements with a margin of **16.7dB** and at **67.23MHz** for output-conducted level measurements with a margin of **3.3dB**.

APPENDIX A – SAMPLE LABEL

Labelling Requirements

The sample label shown shall be *permanently affixed* at a conspicuous location on the device and be readily visible to the user at the time of purchase.

FCC ID: E2XDSR9000

Trade Name: Samsung

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

● FCC ID Location of EUT



APPENDIX B – CIRCUIT DIAGRAM

APPENDIX C – TEST PHOTOGRAPHS

The **Conducted Test Picture** and **Radiated Test Picture** and **Antenna-Conducted Power Picture** **Output-conducted Level Measurement** show the worst-case configuration and cable placement.

- **Conducted Test Picture**



- **Radiated Test Picture**



- **Antenna-conducted Power Picture**



- **Output-conducted Level Measurement Picture**



- **Antenna Transfer Switch Measurement Picture**

