

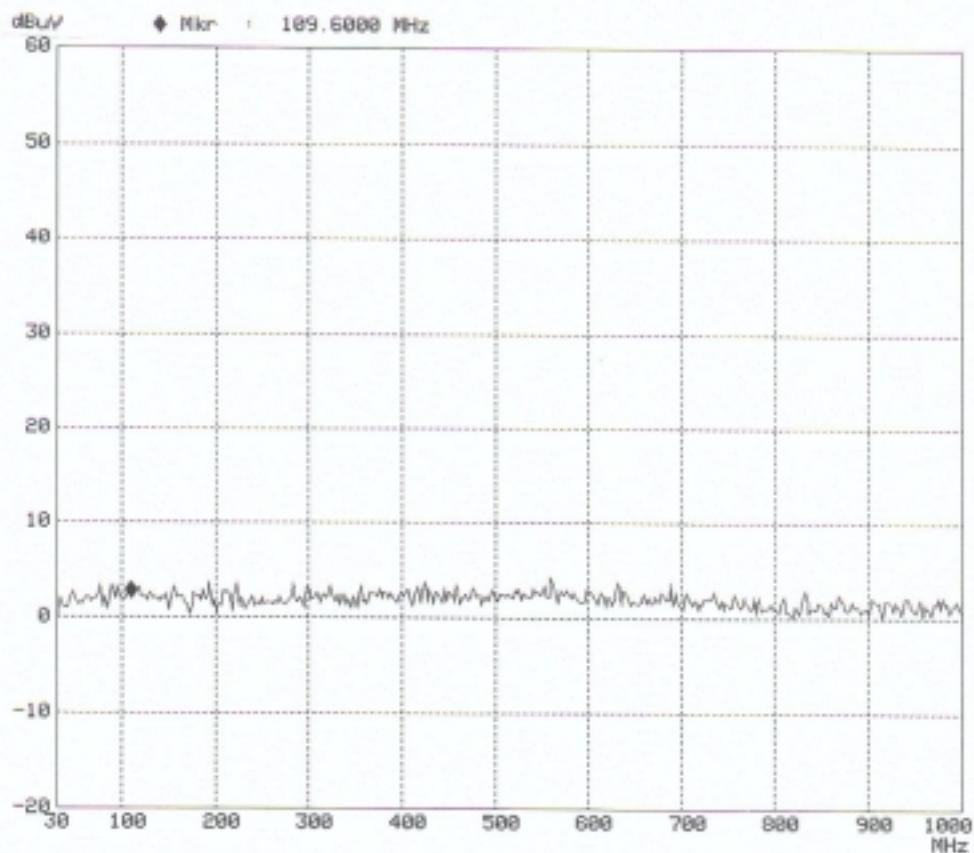
PLOTS OF EMISSIONS

- **Antenna Transfer Switch Measurement(Channel 3, Antenna)**

Scan Settings (1 Range)
|----- Frequencies -----||----- Receiver Settings -----|
Start Stop Step IP BW Detector M-Time Atten Preamp
30M 1000M 200k 120k PK 20ms 10dBILN OFF

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

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



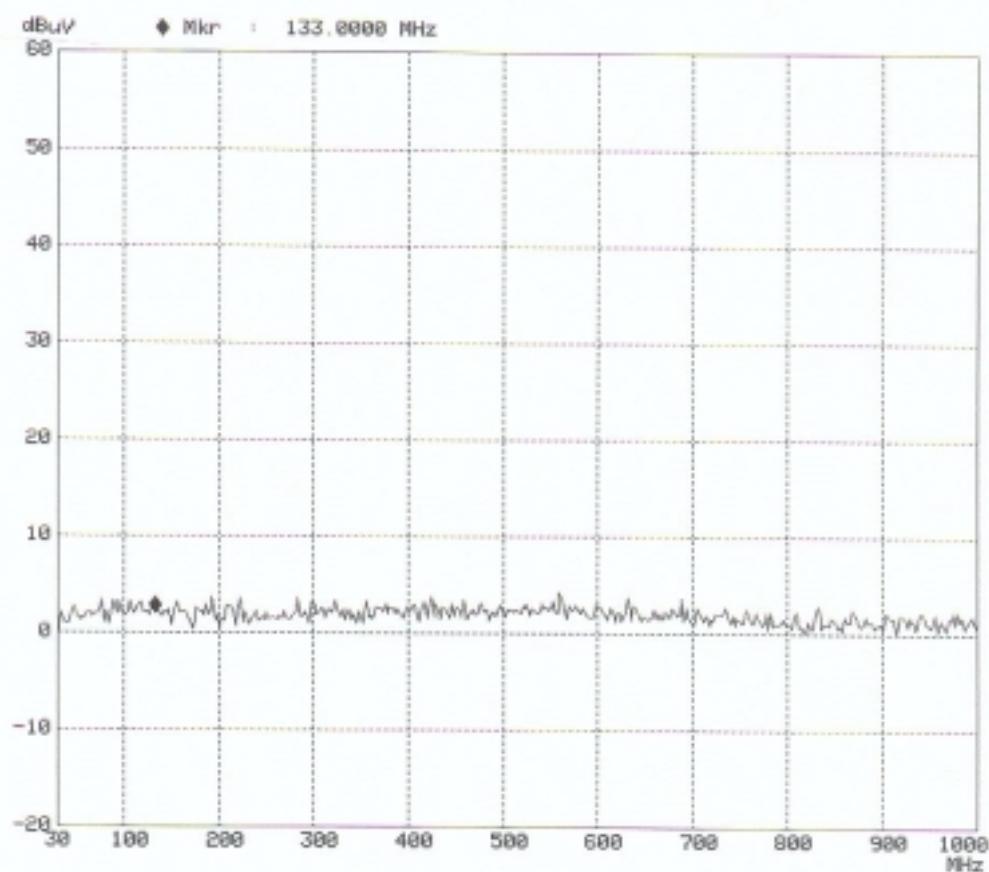
PLOTS OF EMISSIONS

- **Antenna Transfer Switch Measurement(Channel 3, 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 10dBLLN OFF

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

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



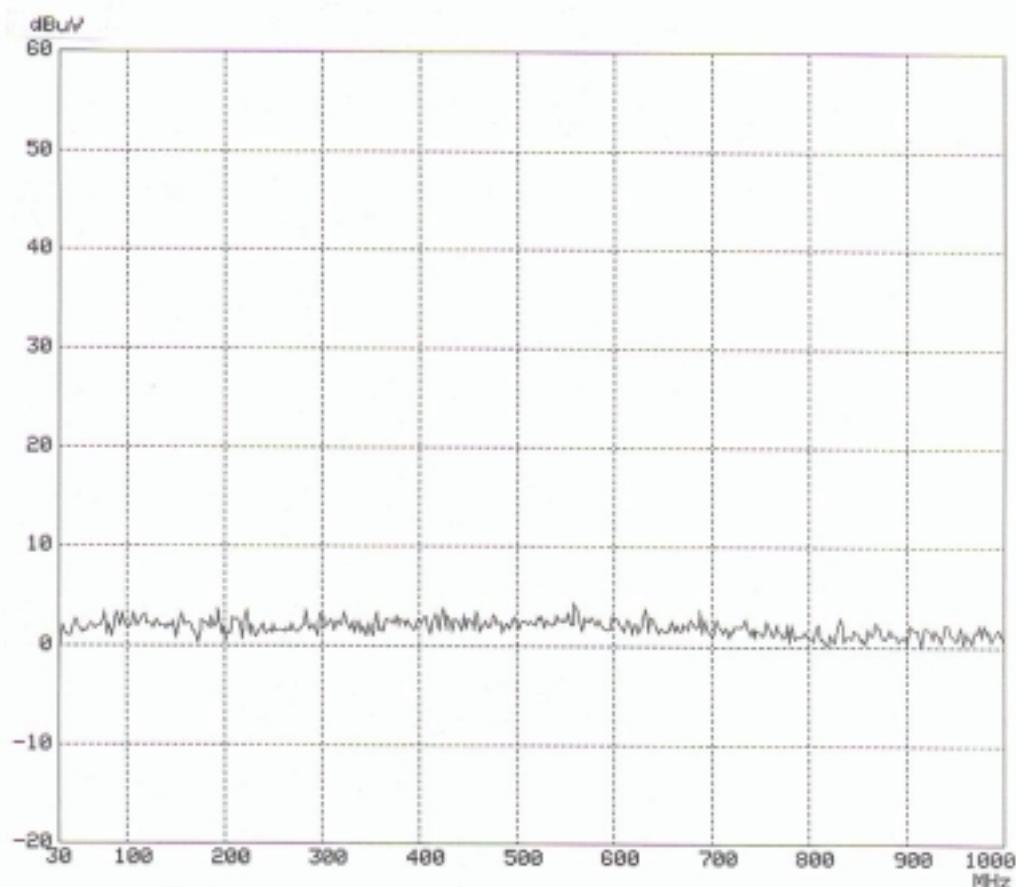
PLOTS OF EMISSIONS

- **Antenna Transfer Switch Measurement(Channel 4, Antenna)**

Scan Settings (1 Range)
|----- Frequencies -----| |----- Receiver Settings -----|
Start Stop Step IF BW Detector M-Time Atten Preamp
30M 1000M 200k 120k PK 20ms 10dBBLN OFF

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

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



PLOTS OF EMISSIONS

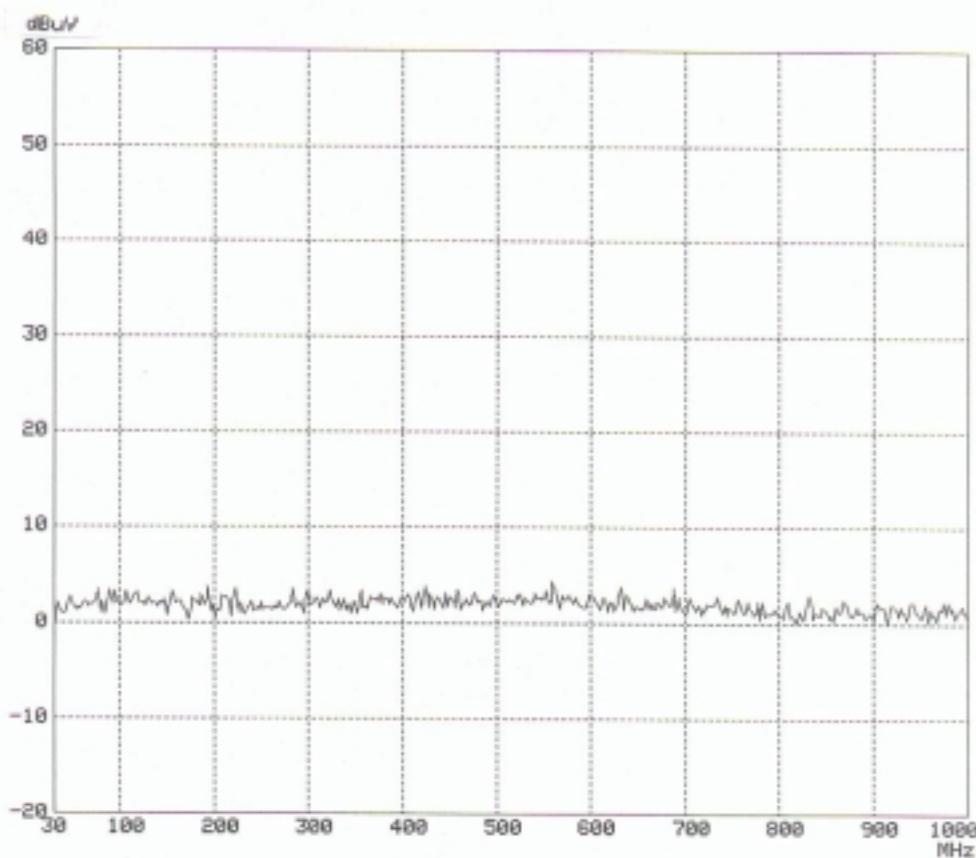
- Antenna Transfer Switch Measurement(Channel 4, SAT Receiver)

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Scan Settings (1 Range)
|----- Frequencies -----| |----- Receiver Settings -----|
Start      Stop      Step      IF BW  Detector  M-Time  Atten  Preamp
30M       1000M    200k     120k   PK        20ms   10dBILN OFF
Transducer No. Start      Stop      Name
7          30M      1000M    10

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

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SAMPLE CALCULATIONS

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

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

EX. 1.

@20.3 MHz

Class B limit = 250 μV = 48.0 dB μV Reading = 40.8 dB μV (calibrated level)

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

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

7.2 dB below limit**EX. 2.**

@57.7 MHz

Class B limit = 100 $\mu\text{V}/\text{m}$ = 40.0 dB $\mu\text{V}/\text{m}$ Reading = 19.1 dB μV (calibrated level)

Antenna factor + Cable Loss = 10.12 dB

$$\text{Total} = 29.22 \text{ dB } \mu\text{V}/\text{m}$$

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

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

$$\text{Total} = 26.6 \text{ dB } \mu\text{V}$$

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

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 ri=0.3 Antenna VRC rR=0.1(Bi)0.4(Lp) Uncertainty Limits 20Log(1+/-ri rR)	U-Shaped	+ 0.25 / - 0.26
System Repeatability	Std.deviation	± 0.05
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.77
Expended 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 ri=0.3 LISN vrc rg=0.1 Uncertainty Limits 20Log(1+/-ri rR)	U-Shaped	± 0.26
System Repeatability		
Repeatability of EUT		
Combined Standard Uncertainty		
Expended Uncertainty U		

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	Asorbing Clamp	R & S	MDS21	2001.01
13	High Voltage Probe	R & S	ESH2-Z3	2001.02
14	Signal Generater	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.**

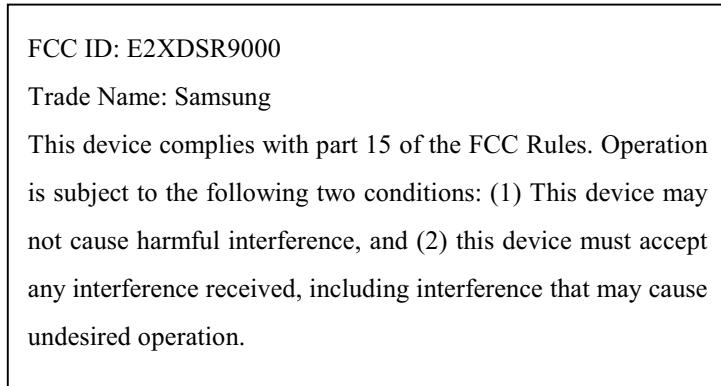
FCC ID : **E2XDSR9000, Digital Satellite Receiver.** complies with § 15.107 ,15.109, 15.111 and 15.115 of the FCC Rules.

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 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

