COMPANY	Sensormatic Electronics Corp. 951 Yamato Road Boca Raton, Florida
PRODUCT TESTED	UltraMax eMax II FCC ID: BVCUMEMAX2
FCC RULES	15.207, 15.209
TEST DATE	August 22, September 24, 2001
SUBMITTED BY	Donald J. Umbdenstock

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I. Summary of Results

47 CFR 15.207	CONDUCTED EMISSIONS	COMPLIES
47 CFR 15.209	RADIATED EMISSIONS	COMPLIES

II. General Information

1.1 Test Methodology

Both conducted and radiated emissions testing were performed according to the procedures in ANSI C63.4-1992, and the requirements of 15.31, 15.33, 15.35, 15.207, and 15.209. Radiated emissions measurements below 30 MHz were performed at a distance of 10 meters and the results extrapolated to the distance specified per 15.31 and 15.209.

1.2 Test Facility

Measurements per 15.207 and 15.209 were performed at Sensormatic Electronics Corporation.

The shielded room conducted emissions measurement facility is located at Sensormatic Electronics Corporation Headquarters at 951 Yamato Road, Boca Raton, Florida, 33431. The radiated emissions Open Area Test Site is located at Sensormatic Electronics Corporation manufacturing location, 6600 Congress Avenue, Boca Raton, Florida 33487. These sites have been found acceptable by and are on file with the FCC per FCC Registration Number 90925.

1.3 Test System Description.

The system consists of a transmit antenna pedestal that also houses the transmitter and receiver circuitry and a receive antenna pedestal. The pedestal antennas are loop antennas. The receive antenna also comes in the form of a ferrite core antenna.

The product tested was a pre-production unit built to production drawings.

15.203. The antenna is contained internally and is permanently attached, thus it is compliant with the requirements of this clause.

III. Conducted Emissions

15.207. Conducted emissions data are presented in Section VII "Data", Part A, Conducted Emissions. The product demonstrated compliance with the requirements. The product was tested at 120 V, 60 Hz.

IV. Radiated Emissions

15.209. Radiated emissions data for this product are presented in Section VII "Data", Part B, Radiated Emissions. The product demonstrated compliance with the requirements. Radiated emissions measurements were performed at 10 and 20 meters. Propagation loss was determined measuring the emissions at 10 and 20 meters and extrapolating the results to 300 meters as per 15.31(f)(2).

Maximum radiation was determined by first assessing symmetry while applying incremental rotation of the product. The product exhibited quadrant symmetry. Measurements were taken at radials of 22.5° throughout one quadrant; the measurement antenna was rotated for maximum pickup about the vertical axis of the measurement antenna at each radial. The maximum emission was determined to be with the measurement loop antenna in the vertical polarization, parallel to the plane of the transmit antenna.

The product was tested at input voltages to the transformer ranging from 102 – 138 V, 60 Hz with no significant change in transmitter output. See Section VII, Part B.

V. (This section intentionally left blank)

VI. LIST OF MEASURING EQUIPMENT

The equipment used for determining compliance of the Ultra Post system with the requirements of 15.207 and 15.209 is marked with an "X" in the first column of the table below.

	Model	Description	Vendor	Serial #
X	ALP -70	Loop Antenna	Electro Metrics	163
	3110B	Biconnical Antenna	Electro Metrics	1017
	3146	Log Periodic Antenna	EMCO	3909
	3825/2	Line Imp Stable Network	EMCO	1562
X	3816/2NM	Line Imp Stable Network	EMCO	9703 1064
	6060B	Frequency Generator	Giga-tronics	5850202
	FM2000	Isotropic Field Monitor	Amplifier Research	15171
	FP2000	Isotropic Field Probe	Amplifier Research	15214
	888	Leveler	Amplifier Research	14998
	75A220	Low Band Amplifier	Amplifier Research	15208
	10W1000A	High Band Amplifier	Amplifier Research	15138
	PEFT Junior	EFT Generator	Haefely Trench	083 180-16
	PEFT Junior	Capacitive Cable Clamp	Haefely Trench	083-078-31
	NSG435	ESD Simulator	Schaffner	1197
	NSG431	ESD Simulator	Schaffner	1267
X	HP8591EM	EMC Analyzer	Hewlett - Packard	3520A00190
		Power Source	Pacific Instruments	
	F-2031	EM Injection Clamp	Fischer Cust. Comm.	30
	FCC-801-M3-16	Coupling Decoupling Nwk	Fischer Cust. Comm.	58
	FCC-801-M3-16	Coupling Decoupling Nwk	Fischer Cust. Comm.	59
	F-33-1	RF Current Probe	Fischer Cust. Comm.	304
	EM 7600	Transient Limiter	Electro-Metrics	187
	Roberts Ant	Tunable Dipole Set	Compliance Design	003282
	Roberts Ant	Tunable Dipole Set	Compliance Design	003283
	HP8594E	Spectrum Analyzer	Hewlett Packard	3246A00300
X	HP8447F Opt 64	Dual Preamplifier	Hewlett Packard	2805A03473

VII. Data

Part A contains conducted emissions data; Part B contains magnetic field radiated emissions data.

Part A **Conducted Emissions**

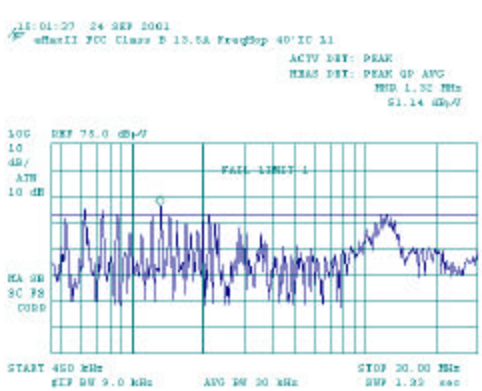
Project Name	Conducted Emissions FCC Class B Limit	Filename	EMaxII_CondEMI_FCC_9-24-01.doc
EUT Name	e-Max II	Serial Number	Prototype
Engineer	Guillermo Padulla	Phone Number	
Date of Test	09/24/2001 3:01:36 PM	Test Name	Conducted Emission
Reg. Technician	Stephen Krizmanich	Reviewer	Don Umbdenstock

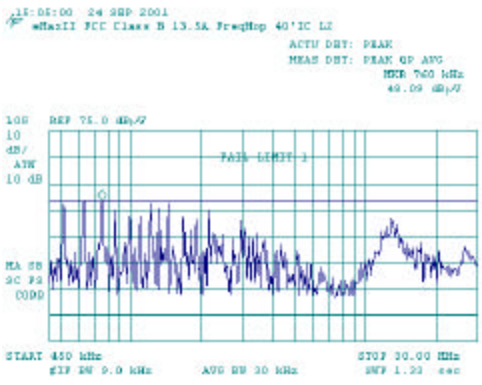
Comments	Line In: 120vac 60hz. No Ferrites. 40' of interconnect cable fig. 8 on floor between pedestals. Short Communication cable in place. New Oscillator EMC60S5B-16.348Mhz. **NOTE 1. Intentional Radiators Only: See FCC Part 15; Sect15.207; pp. 15-703** If the level of the emission measured using quasi-peak instrumentation is 6dB or more higher than the level of the same emission measured with instrumentation having an average detector and 9khz minimum bandwidth, that emission is considered broadband and the level obtained with the quasi-peak detector may be reduced by 13dB for comparison to the limit.

Signal List

Signal	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	QP BB Val (dBuV)[1].	QP Limit (dBuV)	Comments
1	1.444835	51.65	49.17	21.88	36	48.00	complies
2	1.329100	51.40	48.91	21.79	36	48.00	complies
3	0.637000	50.20	47.81	24.02	35	48.00	complies
4	1.561870	50.28	47.34	20.04	34	48.00	complies
5	0.755120	50.20	47.28	23.67	34	48.00	complies
6	1.212890	49.24	46.45	19.16	33	48.00	complies

Figure 1. L1 Full Range





Part B **Radiated Emissions**

Project Name	Radiated Emissions	Filename	EMaxII_amended_8-22-01.doc
EUT Name	e-Max II	Serial Number	Prototype
Engineer	Guillermo Padulla	Phone Number	
Date of Test	8/22/01	Test Name	Radiated Emission
Reg. Technician	Stephen Krizmanich	Reviewer	Don Umbdenstock

Comments	Average detector specified; peak detector demonstrated ample margin. Additional calculations to convert to average detection would show even greater margin and thus was deemed unnecessary.

Freq kHz	S.A. (Ave) dBuV	S.A. (Peak) dBuV	BW	Ant Fact dB	DCF dB	Actual dBuV/m	Limit dBuV/m
58/10		34.5					
58/20		17.3					
58/30							
58(pwr-15%)		33.5					
58(pwr+15%)		35.5					
58		34.5	9kHz	62.5	-71.1	25.9	32.3/300
116		nf	9kHz	56.6	-71.1	nf	26.3/300
174		5.4	9kHz	53.1	-71.1	-12.6	22.8/300
232		nf	9kHz	51.9	-71.1	nf	20.3/300
290		nf	9kHz	50.6	-71.1	nf	18.4/300
348		nf	9kHz	48.7	-71.1	nf	16.8/300
406		nf	9kHz	47.1	-71.1	nf	15.4/300
464		nf	9kHz	45.7	-71.1	nf	14.3/300
522		nf	9kHz	44.6	-23	nf	33.3/30
580		ambient	9kHz	43.5	-23	ambient	32.3/30

Part 3 Calculation of Distance Correction Factor

Dist_Corr_Factor = 20 log(Test Dist / 300)P = 20 P log (Test Dist / 300)

Where P is the roll-off exponent . P is found as follows:

P = (Level(at Distance 1) - Level(at Distance 2)) / 20 log (Distance 2 / Distance 1)

P = -2.4084

DCF(300) = 71.14991

DCF(30) = 22.98196