Appendix III
Test Report Cover Sheet/Performance Test Data

MODEL NUMBER: UM EXCAL-PP

MANUFACTURER: Sensormatic Electronics Corp.

TESTED TO RADIO STANDARD SPECIFICATION NO.: RSS 210

OPEN AREA TEST SITE INDUSTRY CANADA NUMBER: IC 3506

FREQUENCY RANGE (or fixed frequency): 58 kHz

R.F. POWER IN WATTS: n/a

FIELD STRENGTH (at what distance): 29 dBuV/m @ 300 m

OCCUPIED BANDWIDTH (99% BW): 4 kHz

TYPE OF MODULATION: pulse

EMISSION DESIGNATOR (TRC-43): 4K00P0N

TRANSMITTER SPURIOUS (worst case): -6 dBuV/m@300m

RECEIVER SPURIOUS (worst case): see transmitter

ATTESTATION:

DECLARATION OF COMPLIANCE: I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned department standard(s), and that the radio apparatus identified in this application has been subject to all the applicable test conditions specified in the departmental standards and all of the requirements of the standard have been met.

Signature:

D.J. Umbdenstock

Date: October 3,2002

NAME AND TITLE (Please print or Type):

Donald J. Umbdenstock

Senior Principal Engineer, Compliance Engineering

Note: This form must be completed and provided with the submission.

COMPANY   Sensormatic Electronics Corp.

6600 Congress Ave
Boca Raton, Florida

PRODUCT TESTED   UM EXCAL-PP
FCC ID: BVCUMEXCAL
IC: 3506A-UMEXCAL

FCC RULES   15.207, 15.209

IC SPECIFICATIONS   RSS 210

TEST DATE   September 18 – October 3, 2002

SUBMITTED BY   Donald J. Umbdenstock

INDEX

I.   Summary of Results

47 CFR 15.207	CONDUCTED EMISSIONS	COMPLIES
47 CFR 15.209	RADIATED EMISSIONS	COMPLIES
RSS 210: 5.9.1	OCCUPIED BANDWIDTH	PROVIDED

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 and the radiated emissions Open Area Test
Site are located at Sensormatic Electronics Corporation Headquarters at 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, and Industry Canada per file number IC 3506.

1.3 Test System Description.

The system consists of an electronics unit (power pack) that houses the transmitter, receiver, alarm and data processing circuitry. The antenna is contained in a plastic enclosure in the shape of a sword sheath. It consists of a multi-turn loop antenna wound on a permeable core.

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

15.203. The antenna is an external antenna unique to the system requirements. It is connected to the power pack by means of a cable that is permanently attached to the antenna. The other end of the cable is fitted with a connector pinned specific to our application making it unique, therefore the antenna 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 5 meters. Propagation loss was determined by extrapolating the results to 300 meters as per 15.31(f)(2), using the square of the inverse linear distance extrapolation as indicated in the rules.

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 and horizontal 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 pair.

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.　　Occupied Bandwidth

RSS 210:5.9.1. The 20 dB bandwidth measurements for this product are presented in Section VII "Data", Part C, Occupied Bandwidth. A bandwidth requirement was not specified for 58 kHz products, so the default 20 dB bandwidth was measured. The HP 8591EM spectrum analyzer cannot measure a bandwidth over 1.8 kHz in quasi-peak detection mode, so the bandwidth was measured in peak detection mode, providing a worst case occupied bandwidth.

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 C contains occupied bandwidth data.

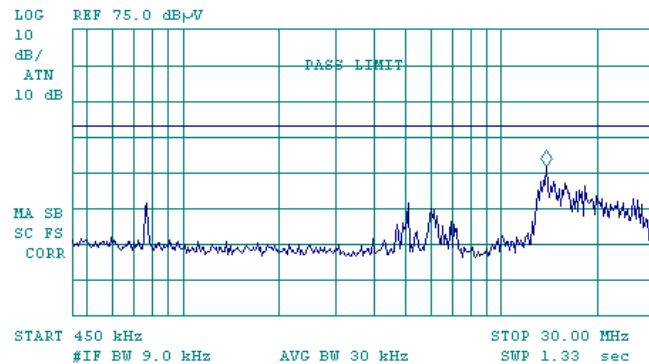### Part A   Conducted Emissions

Project Name	Conducted Emissions FCC Class B Limit	Filename	MaxCalibur_CondEMI_FCC_Delta LF_9-18.02.doc
EUT Name	MaxCalibur	Serial Number	
Engineer	Project Engineer	Phone Number	
Date of Test	09/18/2002 11:56:50 AM	Test Name	Conducted Emission
Reg. Technician	Stephen Krizmanich	Reviewed By	Don Umbdenstock

Comments	Line In: 120vac 60hz

Signal List

Signal	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	FCC Limits QP/AVE (dBuV)	Comments
1	13.84	36.5	31.9	15.8	60/50	Complies
2	18.17	30.2	26.9	10.5	60/50	Complies
3	.770	26.9	25.4	24.7	56/46	Complies
4	5.11	28.3	24.1	8.4	60/50	Complies
5	6.10	26.0	20.2	10.3	60/50	Complies
6	4.80	17.2	11.1	2.7	56/46	Complies

11:56:51 SEP 18, 2002
MaxCalibur FCC Class B Delta LF L1

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.84 MHz
36.59 dBµV

LOG
10
dB/
ATN
10 dB
REF 75.0 dBµV

PASS LIMIT

MA SB
SC FS
CORR

START 450 kHz
#IF BW 9.0 kHz   AVG BW 30 kHz
STOP 30.00 MHz
SWP 1.33 sec

12:06:05 SEP 18, 2002
MaxCalibur FCC Class B Delta LF L2

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.69 MHz
34.60 dBµV

LOG
10
dB/
ATN
10 dB
REF 75.0 dBµV

PASS LIMIT

MA SB
SC FS
CORR

START 450 kHz
#IF BW 9.0 kHz   AVG BW 30 kHz
STOP 30.00 MHz
SWP 1.33 sec
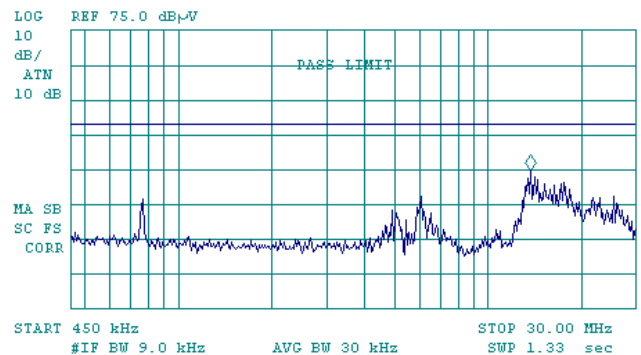
Part B   Radiated Emissions

Project Name	Radiated Emissions		Filename	
EUT Name	Maxcalibur		Serial Number	Prototype
Engineer	Richard Herring		Phone Number	
Date of Test	Oct 3, 2002		Test Name	Radiated Emission
Reg. Staff	Don Umbdenstock			

Comments	1. Average detector specified; peak detector and associated calculations to arrive at average detector measurement used per previous FCC instructions. Calculations to convert to average detection provide "DCCF" below. 20 log (pulse duration/period) = 20 log (1.6 / 11.1). 2. Square law extrapolation used. 3. Measurement distance 10 meters

Freq kHz	S.A. dB	Det	BW	Ant Fact dBuV	DCCF dB	DCF dB	Actual dBuV/m	Limit dBuV/m
58(pwr-15%)	29							
58(pwr+15%)	29							
58	29	pk	9kHz	62.5	-16.8	-59	15.7	32.3/300
116	-6	pk	9kHz	56.6	-16.8	-59	-25.2	26.3/300
174	-6	pk	9kHz	53.1	-16.8	-59	-28.7	22.8/300
232	nf	pk	9kHz	51.9	-16.8	-59	nf	20.3/300
290	nf	pk	9kHz	50.6	-16.8	-59	nf	18.4/300
348	nf	pk	9kHz	48.7	-16.8	-59	nf	16.8/300
406	nf	pk	9kHz	47.1	-16.8	-59	nf	15.4/300
464	nf	pk	9kHz	45.7	-16.8	-59	nf	14.3/300
522	amb	pk	9kHz	44.6	-16.8	-19	ambient	33.3/30
580	amb	pk	9kHz	43.5	-16.8	-19	ambient	32.3/30

SA:	Spectrum Analyzer
Det	Detector
BW	Band Width
Ant Fact	Antenna Factor
DCCF	Duty Cycle Correction Factor
DCF	Distance Correction Factor: 40 log (10/300); 40 log (10/30)
Actual	Level = SA + Ant Fact + DCCF + DCF. Cable factors are negligible at these frequencies.
Limit	20 log (limit values, uV)

Part C   Occupied Bandwidth

Project Name	BandWidth Measurement Industry Canada	Filename	
EUT Name	Maxcalibur	Serial Number	
Engineer	Richard Herring	Phone Number	
Date of Test	October 2, 2002	Test Name	BandWidth Measurement
Reg. Staff	Don Umbdenstock		

Comments	Line Input: 120VAC 60Hz

Test conditions		Modulation Bandwidth (kHz)		
		Low Cut-Off Freq	Nominal Freq	High Cut-Off Freq
		-20 dB	58 kHz	+20 dB
T_{nom} 25°C	V_{nom} 120 V	56 kHz	58.12 kHz	60 kHz

Bandwidth set to 200 Hz
Transmitter set to power level reported on previous page.


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14:33:39 SEP 16, 2002
MaxCalibur BandWidth 25C

                            ACTV DET: PEAK
                            MEAS DET: PEAK QP AVG
                                  MKR -4.35 kHz
                                      -30.19 dB

LOG    REF 102.0 dBµV
10
dB/
  ATN
10 dB

MA SB
SC FS
  CORR

CENTER 58.12 kHz                      SPAN 20.00 kHz
    #IF BW 200 Hz       AVG BW 300 Hz    SWP 5.14  sec
```