CKC LABORATORIES, INC.
Testing the Future
5473A Clouds Rest • Mariposa, CA 95338 • 209-966-5640

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ACCREDITED
EMC/SAFETY

GTCO CALCOMP ADDENDUM TO FC01-018

FOR THE

MENUPAD

FCC PART 15 SUBPART B SECTION 15.109 CLASS B &
FCC PART 15 SUBPART C SECTIONS 15.209 AND 15.249

COMPLIANCE

DATE OF ISSUE: MAY 2, 2001

PREPARED FOR:

GTCO CalComp
14555 N. 82nd Street
Scottsdale, AZ 85260

P.O. No.: JD10684
W.O. No.: 75747

PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: February 1-14, 2001
& May 1, 2001

Report No.: FC01-018A

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CKC Laboratories, Inc. has received Certificates of Accreditation from the following agencies:
A2LA (USA); DATech (Germany); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).
CKC Laboratories, Inc has received test site Registration Acceptance from the following agencies:
FCC (USA); VCCI (Japan); and Industry Canada.
CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:
ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST:	February 1-14 and May 1, 2001
DATE OF RECEIPT:	February 1, 2001
PURPOSE OF TEST:	To demonstrate the compliance of the MenuPad with the requirements for FCC Part 15 Subpart B Section 15.109 Class B, FCC Part 15 Subpart C Sections 15.209 and 15.249 devices. This addendum is to add 9 kHz- 30 MHz test data in order to show compliance to FCC Section 15.33.
TEST METHOD:	ANSI C63.4 1992
MANUFACTURER:	GTCO CalComp 14555 N. 82nd Street Scottsdale, AZ 85260
REPRESENTATIVE:	Ken Jacobson
TEST LOCATION:	CKC Laboratories, Inc. 22105 Wilson River Hwy Tillamook, OR 97141

SUMMARY OF RESULTS

As received, the GTCO CalComp MenuPad was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart B Class B Section 15.109
- FCC Part 15 Subpart C Sections 15.209 and 15.249
- ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

Test Overview

Section	Test Type	Results
15.33	Frequency Ranges	Pass
15.35	Bandwidth Settings	Pass
15.203	Antenna Requirements	Pass
15.205	Restricted Band	Pass
15.215(c)	Additional Provisions to the General Radiated Emissions Limitations (Bandwidth)	Pass
15.249(a)	Field Strength of Fundamental Frequency	Pass
15.249(c)/15.209	Field Strength of Radiated Spurious Emissions	Pass

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:

Dennis Ward, Quality Manager

TEST PERSONNEL:

Mike Wilkinson, Test Engineer

Pat Andre, Corp. Technical Advisor/
EMC Consultant

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

Portable Menu Pad Digitizer (also known as PowerPad).

EQUIPMENT UNDER TEST

MenuPad
Manuf: GTCO CalComp
Model: MenuPad
Serial: None
FCC ID: ECPMENUPAD

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

MODE OF OPERATION

The EUT was set up to continuously transmit data. This data can be monitored via a computer connected to the junction box.

15.33 FREQUENCY RANGE TESTED

15.249(a)(c) Radiated Emissions:	9 kHz – 10 GHz
15.109/15.209 Radiated Emissions:	9 kHz – 5 GHz

EUT OPERATING FREQUENCY

The fundamental is 916 MHz, operating in the 902-928 MHz range.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the MenuPad. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: 15.249(a) Field Strength of Fundamental Frequency - Transmitter

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Ant dB	Amp dB	Cable dB	Dist dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
916.516	83.2	23.4	-27.6	7.5		86.5	94.0	-7.5	H-1
916.516	79.9	23.4	-27.6	7.5		83.2	94.0	-10.8	H-2
916.516	78.2	23.4	-27.6	7.5		81.5	94.0	-12.5	V-2
916.516	77.9	23.4	-27.6	7.5		81.2	94.0	-12.8	H-3
916.516	76.4	23.4	-27.6	7.5		79.7	94.0	-14.3	V-1
916.516	76.0	23.4	-27.6	7.5		79.3	94.0	-14.7	V-3

Test Method: ANSI C63.4 1992
Spec Limit: Section 15.249(a)
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
1 = EUT in Face Down Orthogonal
2 = EUT in Face Up Orthogonal
3 = EUT in Vertical Orthogonal

COMMENTS: EUT is transmitting continuously at 916 MHz with modulation. EUT was measured in 3 orthogonal planes as noted for each reading. The temperature was 70°F and the humidity was 40%. EUT is battery operated.

Table 2: 15.209/15.249(c) Six Highest Spurious Radiated Emission Levels - Transmitter									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Ant dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
1833.021	46.0	27.2	-42.0	6.4	10.0	47.6	54.0	-6.4	V-1
1833.028	45.3	27.2	-42.0	6.4	10.0	46.9	54.0	-7.1	V-2
1833.030	45.2	27.2	-42.0	6.4	10.0	46.8	54.0	-7.2	V-3
1833.030	45.2	27.2	-42.0	6.4	10.0	46.8	54.0	-7.2	H-2
1833.030	45.0	27.2	-42.0	6.4	10.0	46.6	54.0	-7.4	H-3
5499.390	27.2	33.9	-39.0	16.2	10.0	48.3	54.0	-5.7	V-1

Test Method: ANSI C63.4 1992
Spec Limit: FCC Section 15.209/15.249(c)
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
1 = EUT in Face Down Orthogonal
2 = EUT in Face Up Orthogonal
3 = EUT in Vertical Orthogonal

COMMENTS: Data in this table is comprised from several test data sheets. See Appendix C for individual test conditions.

Table 3: 15.10915.209/ Six Highest Radiated Emission Levels - Receiver

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Ant dB	Amp dB	Cable dB	Dist dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
0.800	36.1	10.8	0.0	0.6		47.5	69.6	-22.1	N
244.800	32.9	12.1	-26.5	3.9		22.4	46.0	-23.6	V
580.500	30.4	19.3	-27.9	6.1		27.9	46.0	-18.1	V
808.000	29.3	21.9	-27.7	7.2		30.7	46.0	-15.3	V
918.100	23.5	23.4	-27.6	7.5		26.8	46.0	-19.2	H
1832.400	36.5	27.2	-42.0	5.3		27.0	54.0	-27.0	V

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Section 15.109/15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization

COMMENTS: Data in this table is comprised from several test data sheets. See Appendix C for individual test conditions.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4dB measurement uncertainty.

EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The radiated emissions data of the MenuPad was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS

	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

A typical data sheet will display the following in column format:

#	Freq	Rdng	Amp-A	LogC	Cbl-2	Cable	Corr	Spec	Margin	Polar
			Mag L	Horn	Bilog		1.5G	26.5		

means reading number.
Freq is the frequency in MHz of the obtained reading.
Rdng is the reading obtained on the spectrum analyzer in dBµV.
26.5, Pre-Amp is the preamplifier factor or gain in dB.
Mag L is the magnetic loop antenna factor in dB.
Bilog is the bilog antenna factor in dB.
Horn is the horn antenna factor in dB.
Cbl-2, Cable is the cable loss in dB of the coaxial cable on the OATS.
1.5G is the cable loss in dB of the high frequency coaxial cable on the OATS.
Corr is the corrected reading in dBµV/m (field strength).
Spec is the specification limit (dB) stated in the FCC regulations.
Margin is the closeness to the specified limit in dB; + is over and - is under the limit.
Polar is the polarity of the antenna with respect to earth.
LogC is the log periodic antenna factor in dB.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data for the MenuPad. For testing below 30 MHz the magnetic loop antenna was used. For radiated measurements from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dBµV, and a vertical scale of 10 dB per division.

FCC SECTION 15.35:
TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	10 GHz	1 MHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the MenuPad.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the host PC was powered up and operating in its defined FCC test mode. For testing below 30 MHz the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

TRANSMITTER CHARACTERISTICS

15.203 Antenna Requirements

Antenna Type: Integral
Connection to EUT: Integral, non-removable

The antenna is an integral part of the EUT and is NON-Removable; therefore the EUT complies with Section 15.203 of the FCC rules.

15.205 Restricted Bands

Operating frequency: 916 MHz.

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules.

Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

15.215 Additional Provisions to the General Radiated Emission Limitations

The fundamental frequency was kept within the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. Refer to Appendix B for the test equipment used and Appendix C for the occupied bandwidth plot(s).

15.249(a) Power Output

The maximum field strength of the fundamental was measured to be 86.5 dBµV/m when measured at a test distance of three meters. This measurement was made with the EUT's integral antenna, as there is no provision for connecting an external antenna.

APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	
CRT was displaying:	**X-Y Data**
Power Supply Manufacturer:	**N/A**
Power Supply Part Number:	**N/A**
AC Line Filter Manufacturer:	**N/A**
AC Line Filter Part Number:	**N/A**
Line voltage used during testing:	**N/A**

I/O PORTS	
Type	#
None	

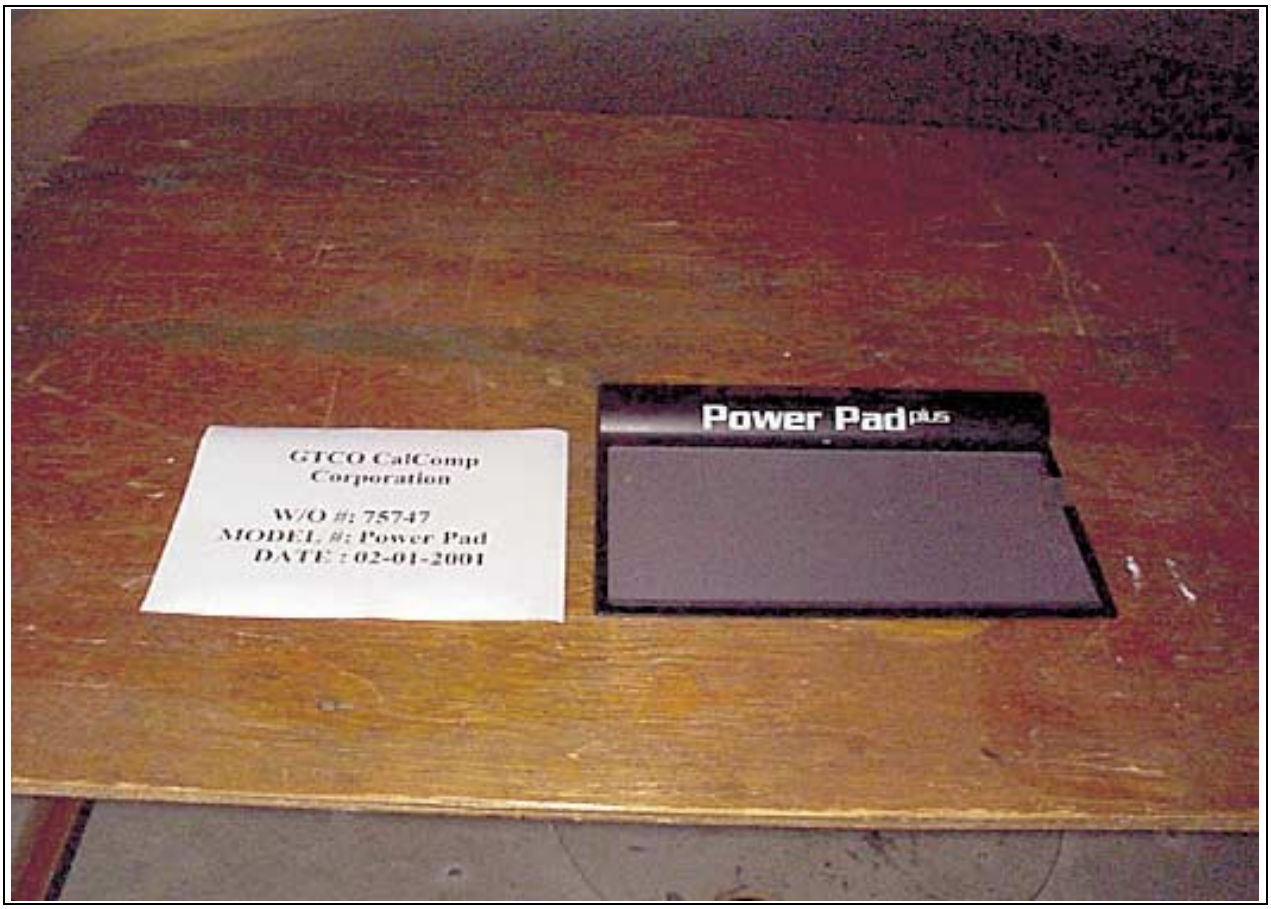
CRYSTAL OSCILLATORS	
Type	Freq In MHz
None	

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
Main Board	35-902518 Rev 04 (Dom.), Rev 00 (Int.)	3.81	2	Inside

CABLE INFORMATION

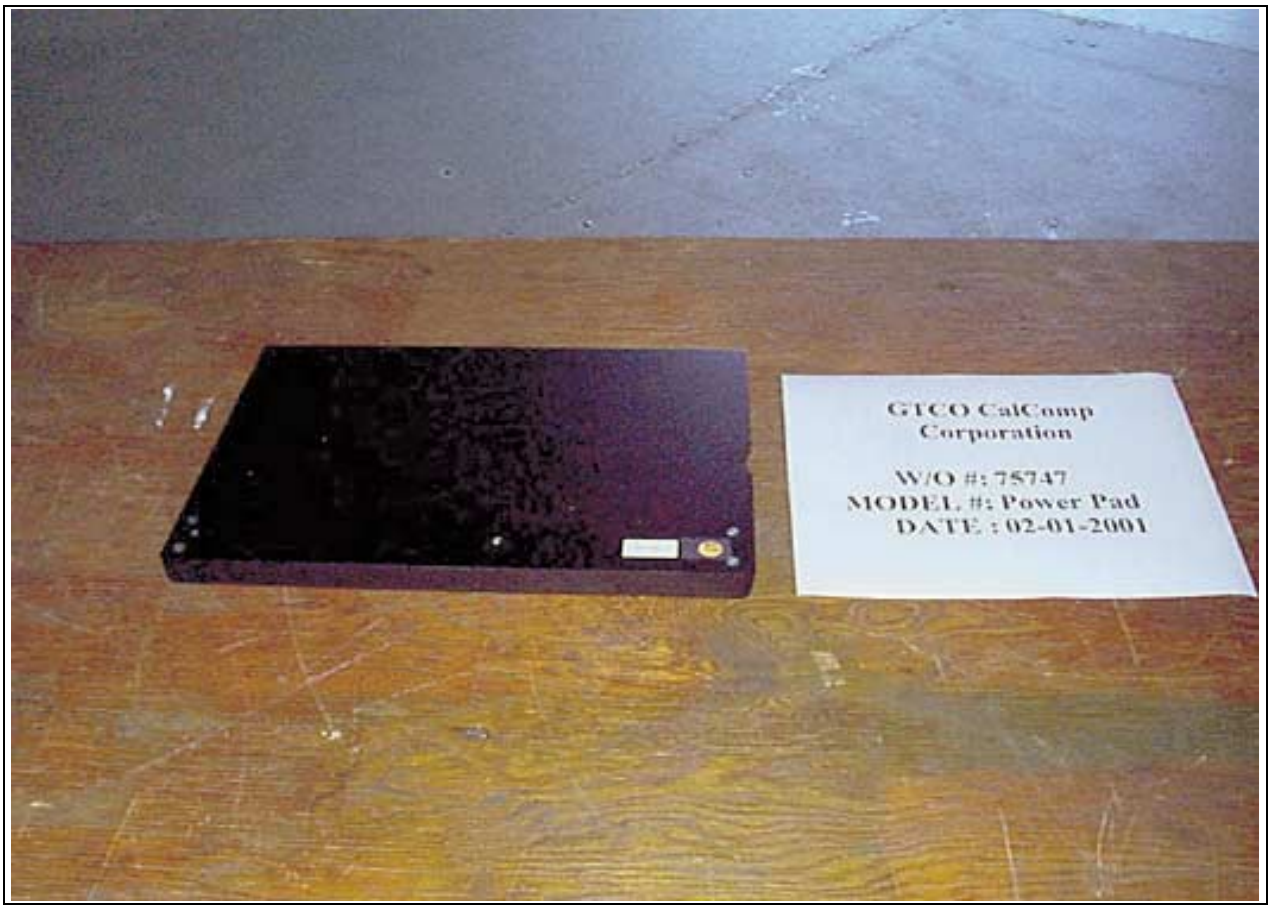
Cable #:	None	Cable(s) of this type:	
Cable Type:		Shield Type:	
Construction:		Length In Meters:	
Connected To End (1):		Connected To End (2):	
Connector At End (1):		Connector At End (2):	
Shield Grounded At (1):		Shield Grounded At (2):	
Part Number:		Number of Conductors:	
Notes and/or description:			

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View, Face Up Orthogonal

PHOTOGRAPH SHOWING RADIATED EMISSIONS

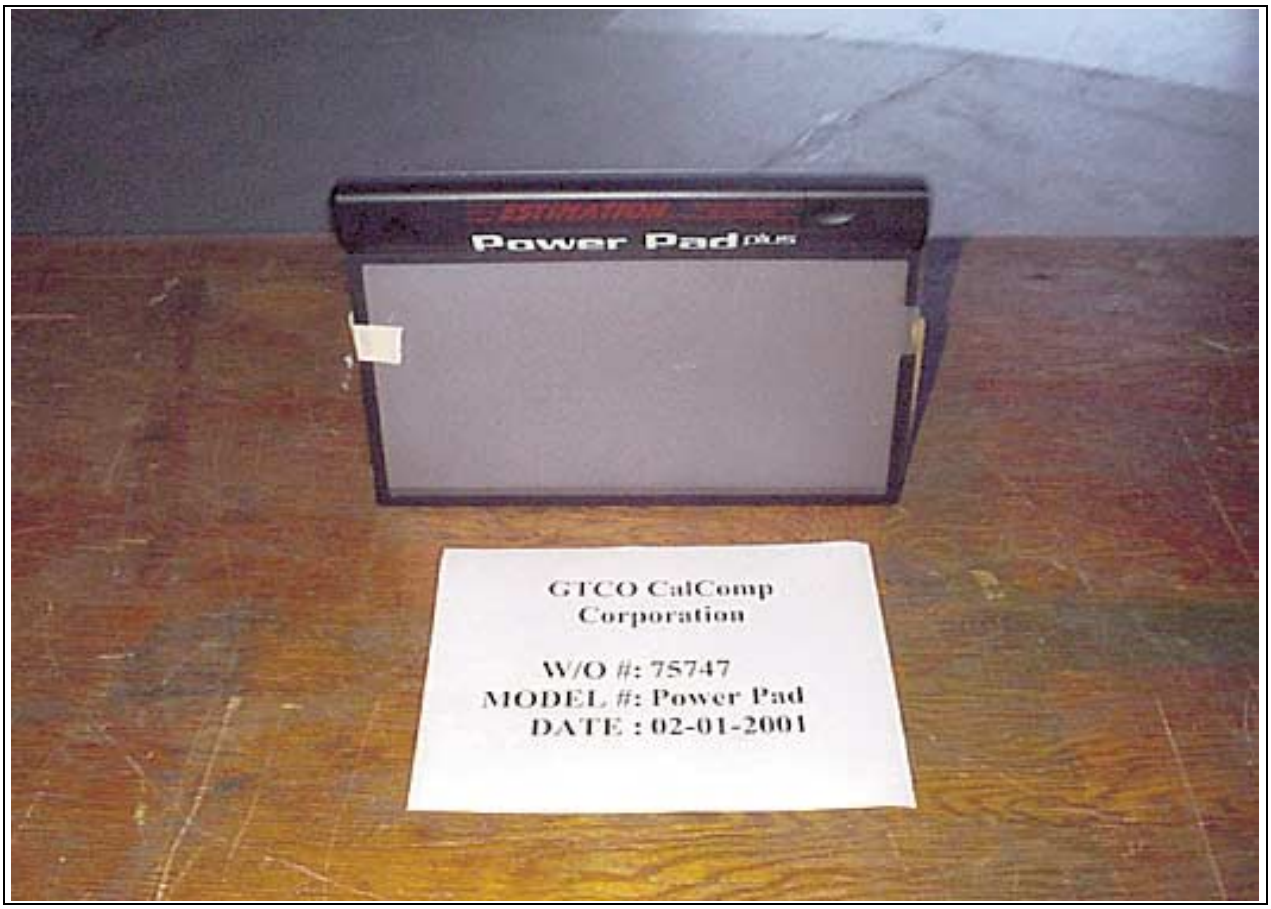


Radiated Emissions - Front View, Face Down Orthogonal

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Back View, Face Up Orthogonal

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions – Front View, Vertical Orthogonal

APPENDIX B

TEST EQUIPMENT LIST

Bandwidth and Band Edge - Transmitter

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM EMC Analyzer	3624A00159	09/21/2000	09/21/2001	2111

Radiated Spurious Emissions - Transmitter

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM EMC Analyzer	3624A00159	09/21/2000	09/21/2001	2111
HP 8447D Amplifier	2727A05392	02/14/2000	02/14/2001	10
EMCO 3115 1-18 GHz Horn Antenna	9006-3413	05/02/2000	05/02/2001	327
HP 83017A Amplifier 26GHz	0000009002	01/18/2001	01/18/2002	2114
AH Systems SAS200/510 Log Antenna	463	01/12/2001	01/12/2002	1
AH Systems 200/540 Bicon Antenna	359	01/12/2001	01/12/2002	46
HP 8574A EMI Receiver	3010A01076	07/25/2000	07/25/2001	42
EMCO 6502 Mag Loop Antenna	2156	01/16/2001	01/16/2002	52

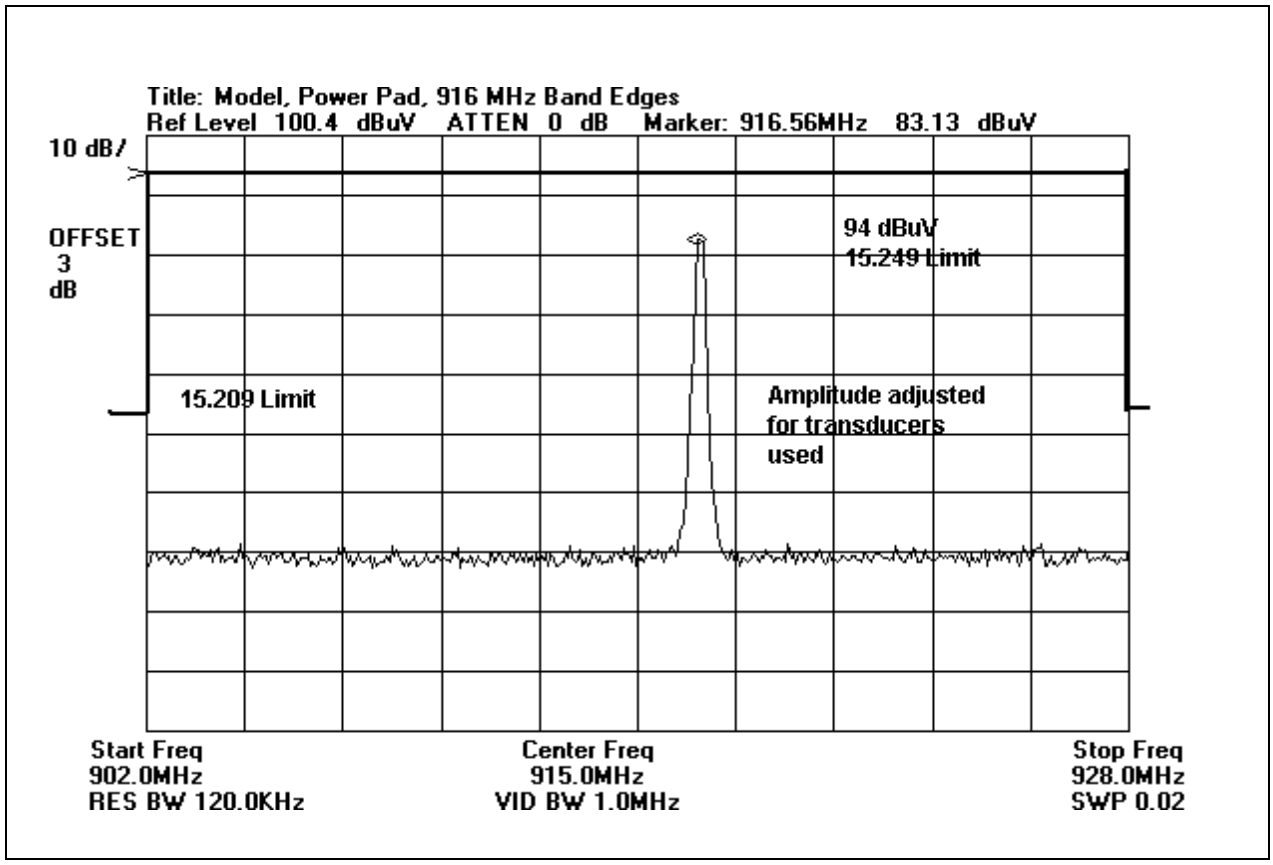
Radiated Spurious Emissions -Receiver

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM EMC Analyzer	3624A00159	09/21/2000	09/21/2001	2111
HP 8447D Amplifier	2727A05392	09/26/2000	09/26/2001	10
Chase CBL6111C Bilog Antenna	2455	06/17/2000	06/17/2001	1992
HP 83017A Amplifier 26GHz	0000009002	01/18/2001	01/18/2002	2114
EMCO 3115 1-18 GHz Horn Antenna	9006-3413	05/02/2000	05/02/2001	327
HP 8574A EMI Receiver	3010A01076	07/25/2000	07/25/2001	42
EMCO 6502 Mag Loop Antenna	2156	01/16/2001	01/16/2002	52

APPENDIX C

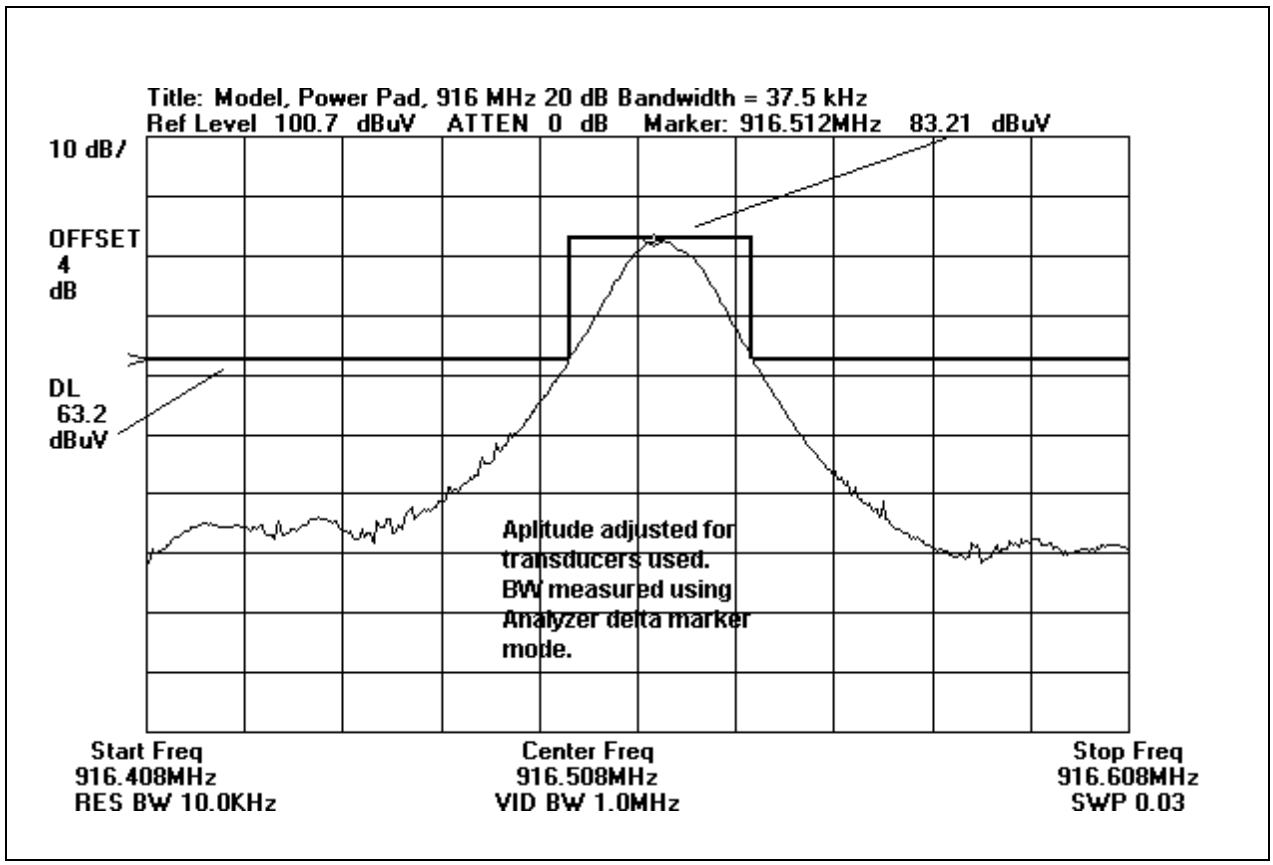
MEASUREMENT DATA SHEETS

15.215(c) BAND EDGE PLOT



Band Edge Plot

15.215(c) OCCUPIED BANDWIDTH PLOT – 916 MHz



Occupied Bandwidth Plot

Test Location: CKC Laboratories, Inc. • 22105 Wilson River Hwy • Tillamook, Or 97141 • 503 842-5577

Customer: **GTCO CalComp Corporation**
Specification: **FCC15.209**
Work Order #: **75747** Date: 05/01/2001
Test Type: **Maximized Emissions** Time: 11:53:12
Equipment: **Power Pad** Sequence#: 40
Manufacturer: GTCO CalComp Tested By: Mike Wilkinson
Model: Power Pad
S/N: none

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Pad*	GTCO CalComp	Power Pad	none

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is transmitting continuously at 916 MHz with modulation. EUT was measured in the horizontal plane. The temperature was 67°F and the humidity was 47%. Frequency range investigated was 9 kHz to 30 MHz. EUT is battery operated. All readings are ambient readings.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag L dB	Cable dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	800.000k	33.4	+10.8	+0.6			+0.0	44.8	69.6	-24.8	None
2	1.750M	28.5	+10.7	+0.7			+0.0	39.9	70.0	-30.1	None
3	21.250M	26.8	+10.1	+1.4			+0.0	38.3	70.0	-31.7	None
4	3.950M	23.5	+10.6	+0.8			+0.0	34.9	70.0	-35.1	None
5	9.000M	21.4	+11.0	+1.1			+0.0	33.5	70.0	-36.5	None
6	370.000k	39.8	+10.8	+0.5			+0.0	51.1	96.2	-45.1	None
7	207.510k	44.7	+10.9	+0.4			+0.0	56.0	101.3	-45.3	None
8	113.330k	38.5	+11.2	+0.3			+0.0	50.0	106.5	-56.5	None
9	21.530k	47.6	+15.1	+0.3			+0.0	63.0	120.9	-57.9	None
10	55.000k	32.2	+12.8	+0.3			+0.0	45.3	112.8	-67.5	None

Test Location: CKC Laboratories, Inc. • 22105 Wilson River Hwy • Tillamook, OR 97141 • 800 500-4EMC

Customer: **GTCO CalComp Corporation**
Specification: **FCC15.249**
Work Order #: **75747** Date: 02/01/2001
Test Type: **Maximized Emissions** Time: 16:54:37
Equipment: **Power Pad** Sequence#: 6
Manufacturer: GTCO CalComp Tested By: Mike Wilkinson
Model: Power Pad
S/N: none

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Pad*	GTCO CalComp	Power Pad	none

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is transmitting continuously at 916 MHz with modulation. EUT was measured in 3 orthogonal planes as noted for each reading. The temperature was 70°F and the humidity was 40%. Frequency range investigated was 30 MHz to 10 GHz. EUT is battery operated. No emissions were found in the restricted bands per 15.209.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Cbl-2 Cable dB	Cable 1.5 G dB	Horn Log C dB	Amp-A 26.5 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5499.390M	27.2	+10.5	+4.7	+33.9	+0.0	+10.0	48.3	54.0	-5.7	Vert
			+0.0	+1.0	+0.0	-39.0			Face Down Position		
2	1833.021M	46.0	+5.1	+0.6	+27.2	+0.0	+10.0	47.6	54.0	-6.4	Vert
			+0.0	+0.7	+0.0	-42.0			Face Down Position		
3	1833.028M	45.3	+5.1	+0.6	+27.2	+0.0	+10.0	46.9	54.0	-7.1	Vert
			+0.0	+0.7	+0.0	-42.0			Face Up Position		
4	1833.030M	45.2	+5.1	+0.6	+27.2	+0.0	+10.0	46.8	54.0	-7.2	Vert
			+0.0	+0.7	+0.0	-42.0			Vertical Position		
5	1833.030M	45.2	+5.1	+0.6	+27.2	+0.0	+10.0	46.8	54.0	-7.2	Horiz
			+0.0	+0.7	+0.0	-42.0			Face Down Position		
6	1833.030M	45.0	+5.1	+0.6	+27.2	+0.0	+10.0	46.6	54.0	-7.4	Horiz
			+0.0	+0.7	+0.0	-42.0			Vertical Position		
7	916.516M	83.2	+0.0	+0.0	+0.0	-27.6	+0.0	86.5	94.0	-7.5	Horiz
			+7.5	+0.0	+23.4	+0.0			Fundamental, Face Down Position		
8	6416.090M	27.5	+11.4	+1.6	+33.7	+0.0	+10.0	46.0	54.0	-8.0	Vert
			+0.0	+0.7	+0.0	-38.9			Face Down Position		
9	4582.490M	28.2	+9.5	+3.0	+32.3	+0.0	+10.0	43.6	54.0	-10.4	Vert
			+0.0	+0.6	+0.0	-40.0			Face Down Position		
10	916.516M	79.9	+0.0	+0.0	+0.0	-27.6	+0.0	83.2	94.0	-10.8	Horiz
			+7.5	+0.0	+23.4	+0.0			Fundamental, Face Up position		
11	916.516M	78.2	+0.0	+0.0	+0.0	-27.6	+0.0	81.5	94.0	-12.5	Vert
			+7.5	+0.0	+23.4	+0.0			Fundamental, Face Up position		

12	916.516M	77.9	+0.0 +7.5	+0.0 +0.0	+0.0 +23.4	-27.6 +0.0	+0.0	81.2	94.0 Fundamental, Vertical Position	-12.8	Horiz
13	1833.045M	39.4	+5.1 +0.0	+0.6 +0.7	+27.2 +0.0	+0.0 -42.0	+10.0	41.0	54.0 Face Up Position	-13.0	Horiz
14	916.516M	76.4	+0.0 +7.5	+0.0 +0.0	+0.0 +23.4	-27.6 +0.0	+0.0	79.7	94.0 Fundamental, Face Down Position	-14.3	Vert
15	916.516M	76.0	+0.0 +7.5	+0.0 +0.0	+0.0 +23.4	-27.6 +0.0	+0.0	79.3	94.0 Fundamental, Vertical Position	-14.7	Vert
16	3665.990M	26.3	+8.1 +0.0	+1.5 +0.4	+31.4 +0.0	+0.0 -39.0	+10.0	38.7	54.0 Face Down Position	-15.3	Vert
17	2749.490M	30.1	+6.6 +0.0	+0.9 +0.3	+29.2 +0.0	+0.0 -41.0	+10.0	36.1	54.0 Face Down Position	-17.9	Vert

Test Location: CKC Laboratories, Inc. • 22105 Wilson River Hwy • Tillamook, Or 97141 • 503 842-5577

Customer: **GTCO CalComp Corporation**
Specification: **FCC15.209**
Work Order #: **75747** Date: 05/01/2001
Test Type: **Maximized Emissions** Time: 11:57:48
Equipment: **Power Pad** Sequence#: 41
Manufacturer: GTCO CalComp Tested By: Mike Wilkinson
Model: Power Pad
S/N: none

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Pad*	GTCO CalComp	Power Pad	none

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is in receive only mode at 916 MHz. EUT was measured in the horizontal plane. The temperature was 67°F and the humidity was 47%. Frequency range investigated was 9 kHz to 30 MHz. EUT is battery operated. All readings are ambient readings.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Mag L dB	Cable dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	800.000k	36.1	+10.8	+0.6			+0.0	47.5	69.6	-22.1	None
2	9.000M	24.9	+11.0	+1.1			+0.0	37.0	70.0	-33.0	None
3	1.750M	25.6	+10.7	+0.7			+0.0	37.0	70.0	-33.0	None
4	3.950M	23.7	+10.6	+0.8			+0.0	35.1	70.0	-34.9	None
5	21.250M	23.3	+10.1	+1.4			+0.0	34.8	70.0	-35.2	None
6	207.060k	44.9	+10.9	+0.4			+0.0	56.2	101.3	-45.1	None
7	370.000k	36.2	+10.8	+0.5			+0.0	47.5	96.2	-48.7	None
8	55.720k	45.5	+12.8	+0.3			+0.0	58.6	112.7	-54.1	None
9	21.530k	47.2	+15.1	+0.3			+0.0	62.6	120.9	-58.3	None
10	112.500k	29.6	+11.2	+0.3			+0.0	41.1	106.6	-65.5	None

Test Location: CKC Laboratories, Inc. • 22105 Wilson River Hwy • Tillamook, OR 97141 • 800 500-4EMC

Customer: **GTCO CalComp Corporation**
Specification: **FCC 15.109**
Work Order #: **75747** Date: 02/14/2001
Test Type: **Maximized Emissions** Time: 16:55:19
Equipment: **Power Pad** Sequence#: 23
Manufacturer: GTCO CalComp Tested By: Mike Wilkinson
Model: Power Pad
S/N: none

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Pad*	GTCO CalComp	Power Pad	none

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

EUT is in receive only mode at 916 MHz. The temperature was 70°F and the humidity was 40%. EUT is battery operated. Frequency range investigated was 30 MHz to 5 GHz.

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	26.5 Bilog dB	Horn Cable dB	Amp-A Cable dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	808.000M	29.3	+0.0 +21.9	+0.0 +0.0	-27.7 +0.0	+7.2	+0.0	30.7	46.0	-15.3	Vert
2	580.500M	30.4	+0.0 +19.3	+0.0 +0.0	-27.9 +0.0	+6.1	+0.0	27.9	46.0	-18.1	Vert
3	918.100M	23.5	+0.0 +23.4	+0.0 +0.0	-27.6 +0.0	+7.5	+0.0	26.8	46.0	-19.2	Horiz
4	244.800M	32.9	+0.0 +12.1	+0.0 +0.0	-26.5 +0.0	+3.9	+0.0	22.4	46.0	-23.6	Vert
5	1832.400M	36.5	-42.0 +0.0	+27.2 +0.4	+0.0 +4.9	+0.0	+0.0	27.0	54.0	27.0	Vert
6	227.600M	28.4	+0.0 +10.9	+0.0 +0.0	-26.5 +0.0	+3.9	+0.0	16.7	46.0	-29.3	Vert