## **Test Report Prepared By:**

Electronics Test Centre MPB Technologies Inc. Unit 100 302 Legget Drive Kanata Ontario K2K 1Y5

MPBT Report No.: M34R2197(2459) Rev-1 Customer No.: PO#209

Report for

FCC Part 1 Subpart I (1996) FCC Part 15 Subpart B (1996) FCC Part 22 Subpart H (1996) FCC PART 2.1043 Changes in Certified Equipment (1998)

For Mobile Transmitter Amplifiers for T.D.M.A. Cellular Radio-Telephone Service

Testing of the:

**BST300** Cellular Booster

Addendum: 1.9 GHz PCS Passive Bypass Circuitry Modification

Test Personnel: S. Drysdale, D. Zanette

Prepared for:

Mobile Communications Technologies INC. 360 Industrial Parkway South, Unit #1 Aurora, ON L4G 3V7

Client Acceptance

Authorized Signatory

February 2, 2001 M34R2459 Rev-1

> Dan Zanette Lab Supervisor Electromagnetic Services

Electromagnetics Division Authorized Signatory

MPB Technologies Inc. N33R2459 Rev-1









Report No.: M34R2459 Rev-1

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1.9 GHz PCS PASSIVE BY\_PASS CIRCUITRY **APPENDIX F:** 

CHARACTERIZATION DATA PLOTS and

PHOTOGRAPHS.

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## **1.0 INTRODUCTION**

## 1.1 SCOPE

The purpose of this report is to present the findings and results of compliance testing performed in accordance with FCC Part(s) 1, 15, 22 (1996).

## 1.2 APPLICANT

This test report has been prepared for MCT Inc.

## 1.3 APPLICABILITY

All test procedures, limits, and results defined in this document apply to the, which shall be referred to herein as the Equipment Under Test (EUT).

The results contained in this report relate only to the item(s) tested.

This report does not imply product endorsement by NVLAP or the Canadian or US governments.

If multiple units, the test samples provided for testing were intended for use together.

#### 1.4 TEST SAMPLE DESCRIPTION

Product	Part Number	Serial Number	Power Requirements	Peripheral Equipment
(T.D.M.A.) BST300 Cellular Booster with 1.9 GHz PCS Passive By- pass Circuitry Modification	BST 300 (Sample BST300)	ACB10642	12 VDC	Signal Generator  Spectrum Analyzer  Cellular Phone

Tx Gain (dB): 22.0 Measured at: 849 MHz

Tx Maximum Power Output (dBm): 33.7 = 2.5 Watts

Band of operation Tx: 824-849 MHz

Measured at: 836.5 MHz Rx Gain (dB): 19.0 Measured at: 869MHz

Band of operation Rx: 869 – 894 MHz

1.9 GHz PCS Passive By-pass circuitry (Gain 0 dB)

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#### 1.5 **GENERAL TEST CONDITIONS AND ASSUMPTIONS**

The EUT was setup and exercised using the configurations, modes of operation and arrangements defined in this report only. All inputs and outputs to and from other equipment associated with the EUT were adequately simulated.

Where relevant, the EUT was only tested using the monitoring methods and test criteria defined in this report.

All testing, unless otherwise noted, was performed under the following environmental conditions:

17 to 23 °C Temperature: 45 to 75 % Humidity: Barometric Pressure: 68 to 106 kPa

#### **SCOPE OF TESTING** 1.6

Tests were performed in accordance with FCC Parts 1,15,22 (1996).

#### 1.6.1 VARIATIONS IN TEST METHODS

There were no variations from the test procedures outlined above.

## 1.6.2 TEST SAMPLE MODIFICATIONS

No test sample modifications were made

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## **2.0 TEST CONCLUSION**

The EUT was subjected to the following tests. Compliance status is assessed as PASS. FAIL, or MARGINAL PASS

The following table summarizes the test results and details the tests performed in terms of the specification and class or level applied, the unique test sample identification, and the EUT modification state, the mode of operation, and configuration.

Test Case	Test Type	Specification	Class/ Level	Criteria	Test Sample	Config	Engineering / Qualification	Result
2.1	AC Port Conducted Emissions	FCC Part 15, (Subpart B)	В	NA	Sample #642	Test	Qualification	PASS
2.2	Radiated Emissions (Field Strength Spurious)	FCC Part 15, (Subpart B)	В	NA	Sample #642	Test	Qualification	PASS
2.3	ERP	FCC Part 22 (Subpart H)	NA	NA	Sample #642	Test	Qualification	PASS
2.4	Emission Mask (OCC BW)	FCC Part 22 (Subpart H)	NA	NA	Sample #642	Test	Qualification	PASS
2.5	Emission Mask  (Out of band/Spurious)	FCC Part 22 (Subpart H)	NA	NA	Sample #642	Test	Qualification	PASS
2.6	МРЕ	FCC Part 1.1310	В	NA	Sample #642	Test	Qualification	PASS
Appe ndix: F	1.9GHz PCS By Pass Characterization	FCC 2.1043	NA	NA	Sample #642	Test	Qualification	Data

## STATEMENT OF COMPLIANCE

The client equipment referred to in this report was found to comply with the requirements of FCC regulations as summarized above.

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#### **ABBREVIATIONS**

CE - Conducted Emissions N/T - Not Tested
E-Field - Electric Field N/A - Not Applicable
H-Field - Magnetic Field RE - Radiated Emissions

## MEASUREMENT UNCERTAINTY

The following measurement uncertainty with 95% confidence level was calculated using the methods defined in NAMAS document NIS81: May 1994.

#### For Radiated E-Field Emissions

Frequency  $= \pm 1x10^{-3} \text{ MHz}$ Amplitude  $= \pm 4.01 \text{ dB}$ 

## For Conducted Emissions

Frequency =  $\pm 1 \times 10^{-3}$  MHz Amplitude =  $\pm 3.25$  dB

## TEST SET UP

The photographs in Appendix D show the set up with maximized emission levels for each test.

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## 2.1 EMISSIONS – AC PORT CONDUCTED

Test Summary		
Test Lab: MPB Technologies Inc. Ottawa	Product: BST300 Cellular Booster	
Test Personnel: S. Drysdale		
Test Date: February 7, 2000		

Test Description		
Objectives/Criteria	Specifications	
The Conducted E-Field emissions proliferated by a system or sub-system shall not exceed the limits for the specifications as stated.  Emission levels should meet the requirements with a margin of 6 dB.	FCC PART 15: 1996 Frequency Class A* Class B*  .45 - 1.705 MHz 60 48  1.705 - 30 MHz 69.5 48	
The EUT was tested against <u>Class B</u> limits.	*All limits are for Quasi-peak detection in dB $\mu V$ . The detector bandwidth is 9 kHz.	

Test Result: PASS	
Comments: Refer to Test Report Data sheets for more detail.	

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#### 2.2 **DIGITAL EMISSIONS, RADIATED**

## FIELD STRENGTH SPURIOUS

Test Summary		
Test Lab: MPB Technologies Inc. Ottawa	Product: BST300 Cellular Booster	
Test Personnel: S. Drysdale		
Test Date: March 2, 2000		

Test Description			
Objectives/Criteria	Specifications		
The Radiated E-Field emissions proliferated by	FCC Part 15: 1996		
a system or sub-system, measured at a distance	Frequency Class A* Class B*		
of 3m from the EUT, shall not exceed the limits for the specifications as stated.	30 – 88 MHz 49.5 40.0		
Emission levels should meet the	88 – 216 MHz 54.0 43.5		
requirements with a margin of 6dB.	216 – 960 MHz 56.9 46.0		
The EUT was tested against Class B	> 960 MHz 60.0 54.0		
requirements	*All limits are @ 3m and are in $dB\mu V/m$ .		

## **Test Result: PASS**

No spurious or digital emissions were detected. Refer to Test Report Data sheets for more detail.

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# 2.3 EFFECTIVE RADIATED POWER (ERP) LIMIT

Test Summary		
Test Lab: MPB Technologies Inc. Ottawa	Product: BST300 Cellular Booster	
Test Personnel: S. Drysdale		
Test Date: January 31, 2000		

Test Description		
Objectives/Criteria	Specifications	
The ERP proliferated by a system or subsystem shall not exceed the limits for the specifications as stated.	FCC PART 22: 1996, Subpart H Section 22.913	
1	Limit = 7 Watts	
	Limit = 38.5 dBm	
	Max Power = 33.7 dBm / 2.5 Watts	

Test Result: PASS	
Comments: Refer to Test Report Data sheets for more detail.	

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## 2.4 EMISSION LIMITATIONS FOR CELLULAR - OCCUPIED BANDWIDTH

Test Summary		
Test Lab: MPB Technologies Inc. Ottawa Product: BST300 Cellular Booster		
Test Personnel: S. Drysdale		
Test Date: February 21, 2000		

Test Description		
Objectives/Criteria	Specifications	
For an F3E/F3D emission mask, the mean power of emissions must be attenuated below that specified in mask (b), or mask (c). Measurement bandwidths are to be 300 Hz for any frequency removed from the carrier less then 45 kHz and 30 kHz for all else. For equipment which does not perform modulation and only amplifies the RF signal, pass/fail criteria shall be based on the following:	FCC PART 22: 1996, Subpart H Section 22.917(b)/(c)  Mask (b)  (fc - 45 kHz) to (fc - 20 kHz), 26 dB  (fc + 20 kHz) to (fc + 45 kHz), 26 dB  0 to (fc - 45 kHz), 60 or 43 + 10logP dB  (fc + 45 kHz) to (2 x fc), 60 or 43 + 10logP dB	
a) The 20 dB bandwidth of the modulated carrier shall be the same (input signal vs. output signal).	Mask (c) (f <sub>c</sub> - 20 kHz) to (f <sub>c</sub> - 12 kHz), 117log(f <sub>d</sub> /12)dB (f <sub>c</sub> + 12 kHz) to (f <sub>c</sub> + 20 kHz), 117log(f <sub>d</sub> /12) dB	
b) The difference of the amplitudes between the input signal and the output signal shall remain consistent (+/- 0.5 dB), for the 20 dB bandwidth of the modulated carrier.	0 to (fc - 20 kHz), 100log(fd/12) or 60 or 43 + 10logP dB  (fc + 20 kHz) to (2 x fc), 100log(fd/12) or 60 or 43+10logP dB	
	Note: dB refers to attenuation from the mean power of the unmodulated carrier.	
	f <sub>c</sub> refers to frequency of the carrier	
	$f_d$ refers to displacement frequency from the carrier in kHz	
	P refers to the mean power of unmodulated carrier wave.	

Test Result: PASS
Comments:
Refer to Test Report Data sheets for more detail.

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#### 2.5 EMISSION LIMITATIONS FOR CELLULAR - OUT OF BAND

Test Summary				
Test Lab: MPB Technologies Inc. Ottawa	Product: BST300 Cellular Booster			
Test Personnel: S. Drysdale				
Test Date: February 21, 2000				

Test Descri	ption
Objectives/Criteria	Specifications
On any frequency twice or more then twice the fundamental frequency, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier by a minimum of 60 or 43+10logP dB.	FCC PART 22: 1996, Subpart H Section 22.917(e)  f <sub>c</sub> - 10xf <sub>c</sub> 43+10logP dB  Note: dB refers to attenuation from the mean power of the unmodulated carrier. f <sub>c</sub> refers to frequency of the carrier f <sub>d</sub> refers to displacement frequency from the carrier in kHz  P refers to the mean power of the unmodulated carrier wave.

Test Result: PASS

Comments: P <= 2.5W, Therefore 43 + LogP dB is 47dB. 47 dB down from unmodulated carrier is the limit for that frequency range of the mask.

Refer to Test Report Data sheets for more detail.

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## 2.6 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Test Summary			
Test Lab: MPB Technologies Inc. Ottawa	Product: BST300 Cellular Booster		
Test Personnel: D. Zanette			
Test Date: February 4, 2000			

Test Descrip	tion
Objectives/Criteria	Specifications
For devices to be operated more then 20 cm from the users body, the equipment shall not exceed that listed in the table based on an averaging time of 30 minutes and that the limit is for the general population/uncontrolled exposure.	Power Density Requirements,FCC Part 1.1310  Frequency mW/cm <sup>2</sup> 0.3 - 1.34 (100) 1.24 - 30 (180/f <sup>2</sup> ) 30-300 0.2 300-1500 f/1500 1500-10000 1
	1500-10000 1

## Test Result: PASS

#### Comments:

Limit distance is at 8.8 inches from antenna. Statement to be incorporated shall read as follows:

The glass mount antenna must be mounted in a location that will provide a minimum of 12 inches separation between it and vehicle occupants in order to meet the MPE (Maximum Permissible Exposure) limit and requirements in accordance with FCC CFR 47 Part 1.1301.

The maximum permissible power output limit is at 8.8 inches from the antenna, this is equivalent to  $0.557 \, \text{mW/cm}^2$ . Max Output measured at 824 MHz was  $0.194 \, \text{mW/cm}^2$  at 12 inches. Refer to Test Report Data sheets for more detail.

All measurements were performed while the EUT was transmitting a CW signal which is deemed to be worst case.

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## **3.0 TEST FACILITY**

## 3.1 LOCATION

The EUT was tested for Electromagnetic Compatibility at the Electronics Test Centre, located in Kanata, Ontario, Canada.

## 3.2 GROUNDING PLANE

The EUT was located on a wooden table 80 cm above the ground plane. The EUT was grounded according to the Clients specifications.

## 3.3 POWER

AC power was supplied via a CORCOM RFI feed through, 60-Ampere wall mounted filter. Bonding to hydro ground is via one inch grounding braid straps.

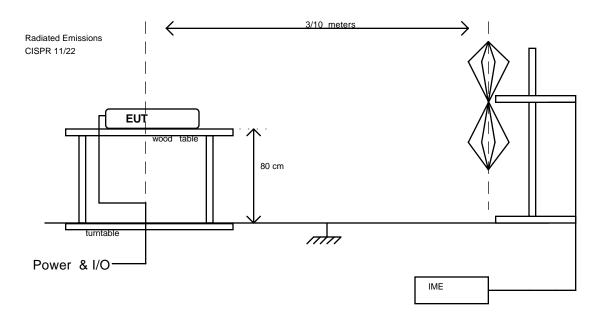
## 3.4 EMISSIONS PROFILE

Conducted electromagnetic emission profiles were generated throughout the tests and are included in the Test Report Data sheets.

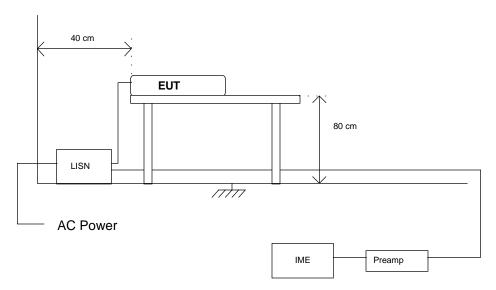
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## 3.5 TEST CONFIGURATION

The following diagrams illustrate the configuration of the EUT test and measurement equipment used for CISPR Radiated and Conducted Emissions Testing.



Conducted Emissions CISPR 11 / 22



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## **4.0 TEST EQUIPMENT**

The following equipment was utilized for this procedure. All measurement devices are calibrated annually, traceable to NIST. Please refer to Appendix C for calibration data.

#### 4.1 RADIATED EMISSIONS

- a) Spectrum Analyzer
- b) Receiver with CISPR Quasi-peak Adapter
- c) Power Isolation Transformers
- d) Biconilog antenna (25 MHz to 2 GHz)
- e) Antenna mast positioner, and controller
- f) Flush-mounted turntable, and controller

## 4.2 CONDUCTED EMISSIONS

- a) Spectrum Analyzer
- b) Line Impedance Stabilization Network, 50 μH
- c) CISPR Quasi-peak Adapter
- d) Power Isolation Transformer
- e) Personal Computer and EMI/EMC Software

#### 4.3 EMI SPECTRUM ANALYZER AND RECEIVER

## 4.3.1 Spectrum Analyzer

## Range 1 of 2

Start Frequency	0.15 MHz
Stop Frequency	30 MHz

Transducer LISN per CISPR 16

Quasi-Peak Bandwidth9 kHzSpectrum Analyzer BW10 kHzVideo Bandwidth100 kHzReference Level100 dBµV

## Range 2 of 2

Start Frequency	30 MHz
Stop Frequency	1000 MHz

Transducer Biconilog Antenna

Quasi-Peak Bandwidth 120 kHz
Spectrum Analyzer BW 120 kHz
Video Bandwidth 1 MHz
Reference Level 100 dBµV

## 4.3.2 Receiver

Transducer Biconilog Antenna

Quasi-Peak Bandwidth120 kHzMeasurement Window20 dBμV

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## Appendix A

# **CLIENT SAMPLE DESCRIPTION**

		New ✓		Repeat	
MPBT Personnel	Date		Project/Work Ord	der	
S. Drysdale	Feb 15, 2	000	M34R2197		

Contact	Tom Vagenas	M.C.T. INC.
		360 Industrial Parkway South, Unit #1
Company	M.C.T. INC.	Aurora, ON
		L4G 3V7
Client Code	M34	
		Phone: 416-726-3444 Fax: 905-726-4233

Product Application		Product Category	Product Type
Commercial ✓		Cellular	TDMA Amplifier
Product Name/Part No.	BST3	00 Cellular Booster	
Serial Number	ACB1	10642	
Power Requirements:	DC, 1	2 VDC	
AC/DC, Current			
<b>Operational Frequency</b>	NA		
Typical Installation	DC C	ar with adapter or with supplied	AC/DC converter.
Instructions or			
Configuration			
Ground EUT	No		
# Interconnecting Leads	2		
Modulation Type	N/A (	Amp boosts incoming signal, for	test purposes TDMA was used)
Peripheral Equipment	Signa	l Generator/Cell Phone	
Cables	FME	type Cable 50 ohm.	
<b>Functional or Self-Test</b>	EUT i	is ready on power up.	
Duration			
Brief Functional	The E	CUT is for boosting cellular sign	als in areas of weak reception.
Description			
Other Remarks	Modi	fied with 1.9 GHz Passive By Pa	ss Circuitry

Prepared By:	Title:	Date:
S. Drysdale/	EMC Technologist	February 15, 2000
D.Zanette		

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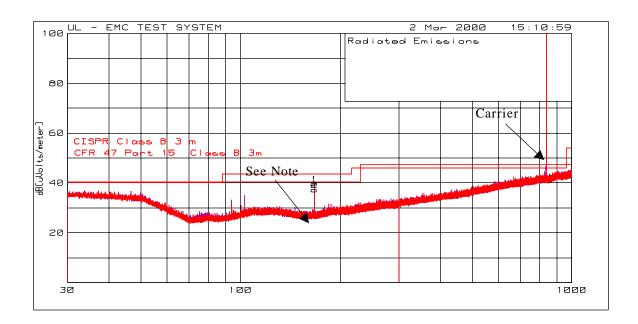
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# Appendix B

# TEST REPORT DATA SHEETS and PLOTS

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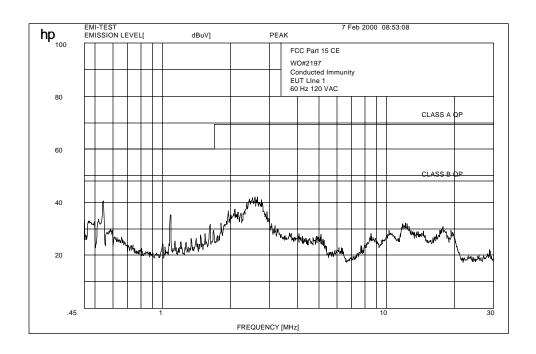
TEST REPORT DATA  MPBT No.: M342197  TEST DESCRIPTION: RADIATED EMISSIONS CLASS B  CISPR 22, FCC PART 15 SUBPART B  TEST ENGINEER: S. DRYSDALE  OTHER: TEMP.: 21 C HUMIDITY: 35 %  DETAILS/DEVIATIONS: QUASI-PEAK LIMITS	Test Date: M TEST CRITE QUAL:  ENG.: INTERNAL:		INIT
CISPR 22, FCC PART 15 SUBPART B  TEST ENGINEER: S. DRYSDALE  OTHER: TEMP.: 21 C HUMIDITY: 35 %	QUAL: V ENG.: INTERNAL:		INIT
TEST ENGINEER: S. DRYSDALE  OTHER: TEMP.: 21 C HUMIDITY: 35 %	ENG.: INTERNAL:	FAIL	INIT
OTHER: FEMP.: 21 C HUMIDITY: 35 %	-	FAIL	INIT
ΓΕΜΡ.: 21 C HUMIDITY: 35 %	PASS	FAIL	INIT
DETAILS/DEVIATIONS: QUASI-PEAK LIMITS	PASS	FAIL	INIT
			1
30 MHz - 88 MHz, 40 dBμV/m	~		S.D.
88 MHz -216 MHz, 43.5 dBμV/m	~		S.D.
216 MHz – 960 MHz, 46.0 dBμV/m	~		S.D.
> 960 MHz, 54.0 dBμV/m	~		S.D.
CUSTOMER: M.C.T. INC.			<u> </u>
2	88 MHz -216 MHz, 43.5 dBμV/m 216 MHz – 960 MHz, 46.0 dBμV/m > 960 MHz, 54.0 dBμV/m	38 MHz -216 MHz, 43.5 dBμV/m 216 MHz - 960 MHz, 46.0 dBμV/m > 960 MHz, 54.0 dBμV/m	38 MHz - 216 MHz, 43.5 dBμV/m 216 MHz - 960 MHz, 46.0 dBμV/m 3960 MHz, 54.0 dBμV/m 3960 MHz, 54.0 dBμV/m



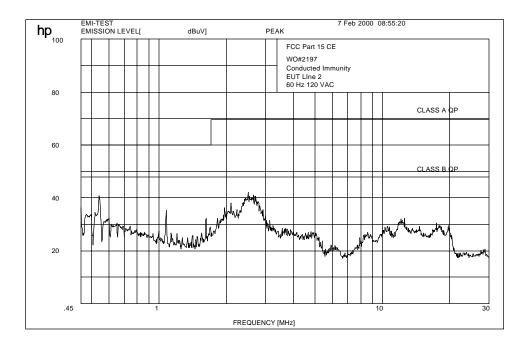
NOTE: This emission was below noise floor when a ferrite bead was applied to output of the signal generator outside of the shielded room.

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	TEST REPORT DATA					
Customer No 1129	MPBT No.: M342197	Test	st Date: February 7, 2000			
TEST COMP./PART:	TEST DESCRIPTION : CONDUCTED EMISSIONS CLASS B		ST CRITERIA:			
MIL-SPECS./STDS.:	FCC PART 15 SUBPART B QUAL ENG.			UAL ✓ NG.:		
FACILITY: MPB TECHNOLOGIES INC.	TEST ENGINEER: S. DRYSDALE INTERNAL:					
QA PERSONNEL:	OTHER: TEMP.: 21 C HUMIDITY: 45 %	DACC EAR DUT				
TEST PROCEDURES	DETAILS/DEVIATIONS: QUASI-PEAK LIMITS		PASS	FAIL	INIT	
FCC PART 15	Quasi-Peak 450 kHz - 30 MHz, 48 dBµV		<b>✓</b>		S.D.	
CLASS B						
	Note: If the Quasi-Peak reading exceeds 48 dBµV,					
an average measurement is performed. If the Quasi-Peak measurement is more then 6dB higher then the average						
measurement is more then 6dB higher then the average measurement, the Quasi-Peak measurement is reduced by						
		у				
	13 dB.					
MDDT, C DOVEDAGE	CUSTOMED: M.C.T. INC	1	OF 6			
MPBT: S. DRYSDALE	CUSTOMER: M.C.T. INC.	I	OF 6			



Line 1



Line 2

The EUT complies with conducted emission requirements.

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TEST REPORT DATA								
Customer No: 1129	MPBT No.: M34R2197 Test			Test Date: January 31, 2000				
TEST COMP./PART: SAMPLE 642	TEST DESCRIPTION: E.R.P LIMIT		TEST CRITERIA:					
MIL-SPECS./STDS.:	FCC PART 22, SUBPART H SECTION	]	QUAL ✓ ENG.:					
FACILITY: <b>MPB</b>	TEST ENGINEER: S. DRYSDALE		INTERNAL:					
TECHNOLOGIES INC.  QA PERSONNEL:	OTHER:							
QA FERSONNEL.	TEMP.: 21 C HUMIDIT	Y: 35 %						
TEST PROCEDURES	DETAILS/DEVIATIONS		P.	ASS	FAIL	INIT		
	The ERP proliferated by a system or not	sub-system shall						
	exceed the limits for the specification	ons as stated.						
7Watts						S.D.		
The maximum power output(s) measured shall be within + 2dB to 0dB of the manufacturer's rating(s) of RF  Power output.				1		S.D.		
MDDT GD								
MPBT: S.D.	CUSTOMER: M.C.T. INC.		2 OF	6				

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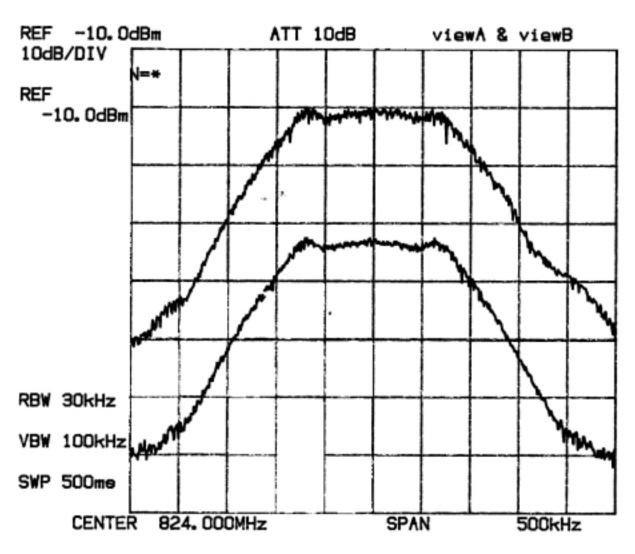
February 09, 2001

0 1 "010						
Sample #642						
	Signal Gen	Spec A	Losses*	Calculated	Gain	
Frequency	RF Out (dBm)	Reading	(dB)	Out (dBm)	(dB)	
		(dBm)				
824	10	-18.8	52.3	33.5	23.5	
836.5	10	-18.6	52.3	33.7	23.7	
849	10	-20.3	52.3	32	22	
869	-13	-46.3	52.3	6	19	
881.5	-13	-44.6	52.3	7.7	20.7	
894	-13	-45.2	52.3	7.1	20.1	
Note: *Losses Include Cable1 (0.9), Cable2 (0.9), Coupler (50),						
Cable3 (0.5)						
= 52.3						
Signal Gen RF	Out taken at 1dB	compress	ion point		·	

The EUT complies with maximum power output requirements.

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	TEST REPORT DATA					
Customer No: 1129	<u> </u>		st Date: Feb 1, 2000			
TEST COMP./PART: SAMPLE 642	TEST DESCRIPTION: EMISSION LIMITATIONS FOR CELLULAR – OCCUPIED BANDWIDTH	TEST CRITERIA:				
MIL-SPECS./STDS.:	FCC PART 22 SUBPART H, SECTION 22.917	QUAL: ✓ ENG.:				
FACILITY: MPB TECHNOLOGIES INC.	TEST ENGINEER: S. DRYSDALE	INTERNAL:				
QA PERSONNEL:	OTHER: TEMP.: 21 C HUMIDITY: 20 %					
TEST PROCEDURES	DETAILS/DEVIATIONS		PASS	FAIL	INIT	
	The EUT must meet the specifications of either (b) or (c)	)				
Mask (b)	(f <sub>c</sub> - 45 kHz) to (f <sub>c</sub> - 20 kHz), 26 dB					
	$(f_c + 20 \text{ kHz})$ to $(f_c + 45 \text{ kHz})$ , 26 dB					
	0 to $(f_c - 45 \text{ kHz})$ , 60 or $43 + 10 \text{logP dB}$					
	$(f_c + 45 \text{ kHz}) \text{ to } (2 \text{ x } f_c), 60 \text{ or } 43 + 10 \text{logP dB}$					
Mask (c)	(f <sub>c</sub> - 20 kHz) to (f <sub>c</sub> - 12 kHz), 117log(f <sub>d</sub> /12)dB					
	$(f_c + 12 \text{ kHz})$ to $(f_c + 20 \text{ kHz})$ , $117\log(f_d/12) \text{ dB}$					
	0 to (f <sub>c</sub> - 20 kHz), 100log(f <sub>d</sub> /12) <u>or</u> 60 <u>or</u> 43 + 10logP dB					
	$(f_c + 20 \text{ kHz})$ to $(2 \text{ x } f_c)$ , $100 \log (f_d/12) \text{ or } 60 \text{ or } 43 + 10 \log (f_d/12)$	P				
	Note: dB refers to attenuation from the mean power of	er of				
	the unmodulated carrier					
	ΩR					
	For equipment which does not perform modulation and on	ıly				
	amplifies the RF signal, pass/fail criteria shall be based on	the				
	following:					
	a) The 20 dB bandwidth of the modulated carrier shall be same (input signal vs. output signal).	the	<b>√</b>		S.D.	
	b) The difference of the amplitudes between the input sign and the output signal shall remain consistent (+/- 0.5 dB), the 20 dB bandwidth of the modulated carrier.		<b>✓</b>		S.D.	
MPBT: S. DRYSDALE	CUSTOMER: M.C.T. INC.					



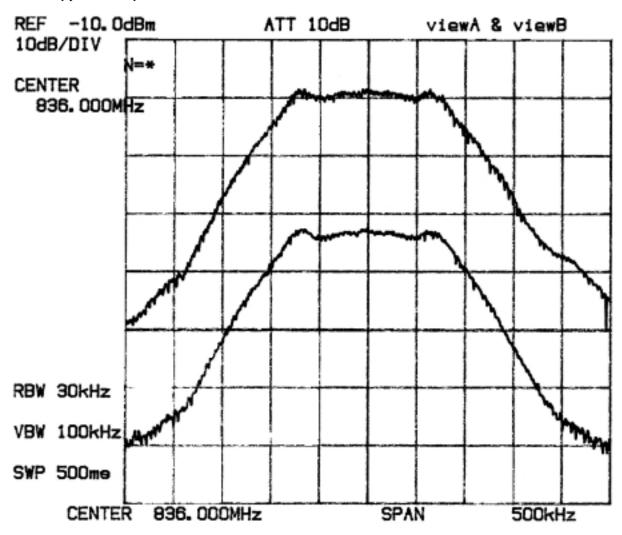
TDMA @ 824 / Sig IN vs. Sig OUT

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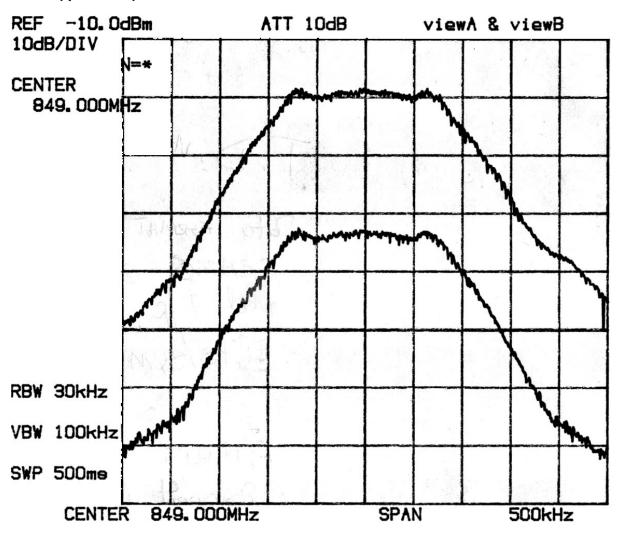
TDMA @ 836 / Sig IN vs. Sig OUT

MPB Technologies Inc.

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TDMA @ 849 / Sig IN vs. Sig OUT

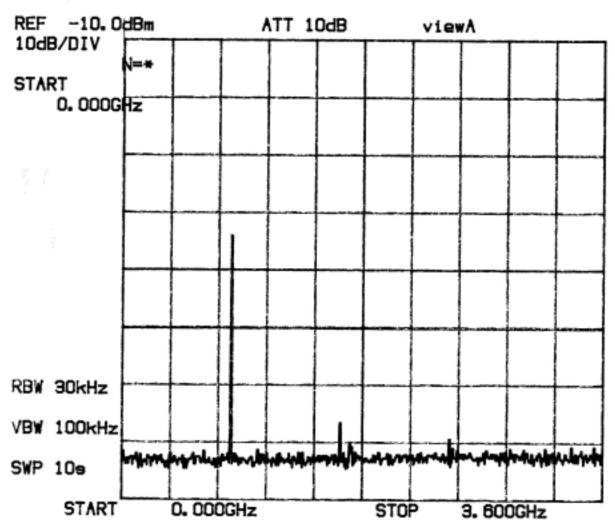
The EUT complies with emission limitations for cellular (out of band).

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TEST REPORT DATA							
				Date: January 31, 2000			
TEST COMP./PART: SAMPLE 642	TEST DESCRIPTION: EMISSION LIMITATIONS FOR CELLULAR – SPURIOUS	TEST CRITERIA:					
MIL-SPECS./STDS.:	FCC PART 22 SUBPART H, SECTION 22.917	QUAL: ✓ ENG.:					
FACILITY: MPB TECHNOLOGIES INC.	TEST ENGINEER: S. DRYSDALE	INTERNAL:					
QA PERSONNEL:	OTHER: TEMP.: 21 C HUMIDITY: 20 %						
TEST PROCEDURES	DETAILS/DEVIATIONS	PASS	FAIL	INIT			
	Attenuated from Mean Power Output by at least	<b>✓</b>		S.D.			
	60 <b>or</b> 43+10logP dB.						
	2 <sup>nd</sup> Harmonic	<b>✓</b>		S.D.			
	3 <sup>rd</sup> Harmonic	✓		S.D.			
	4 <sup>th</sup> Harmonic			S.D.			
5 <sup>th</sup> Harmonic 6 <sup>th</sup> Harmonic 7 <sup>th</sup> Harmonic				S.D.			
				S.D.			
				S.D.			
	8 <sup>th</sup> Harmonic 9 <sup>th</sup> Harmonic	<b>√</b>		S.D.			
	9 <sup>th</sup> Harmonic	<b>✓</b>		S.D.			
	10 Harmonic			S.D.			
MPBT: S. DRYSDALE	CUSTOMER: M.C.T. INC.	4 OF 6					



824 MHz - TDMA 0-3.6 Spurious (Without AMP)