

Exhibit: Field Strength of Fundamental

FCC ID: PLF-ESCAN2

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Modulation - CW

Modulation

Antennas Investigated:

Whip

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

Battery

Frequency Range Investigated

Start Frequency	418 MHz	Stop Frequency	418 MHz
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Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	Unknown
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Description

The system was tested using special software developed to test all functions of the device during the test.

Equipment Modifications

The following modifications were made for the product to achieve FCC compliance:

- R82 was changed to a value of 15K ohms.

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	Enalasys	eScan2 Lx	30100
EUT	Enalasys	eScan2 Rx	092002
EUT	Enalasys	eScan2 Sx	20202
Antenna	Linx Technologies	ANT-418-CW-QW	N/A

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial	Yes	1.15	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	03/19/2002	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	03/19/2002	12 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	12/03/2001	12 mo
Antenna, Biconilog	EMCO	3141	AXE	12/31/2001	12 mo
Oscilloscope	Tektronix	TDS 3052	TOF	07/24/2002	12 mo

Test Description

Requirement: The field strength of the fundamental (transmit) shall meet the limits as defined in 47 CFR 15.231(e). If average emission measurements are employed, the provisions in 15.35 for averaging pulsed emissions and for limiting peak emissions apply.

Configuration: The EUT was configured for continuous operation at its single transmit frequency of 418 MHz.

The field strength of the transmit frequency was maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT in 3 orthogonal planes (per ANSI C63.4:1992).

Since average emission measurements were employed, a duty cycle correction factor per 15.35(c) was utilized:

Duty Cycle = On time/100 milliseconds (or the period, whichever is less)

Where "On time" = $N_1L_1 + N_2L_2 + \dots$

Where N_1 is the number of type 1 pulses, L_1 is length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc.

Therefore, Duty Cycle = $(N_1L_1 + N_2L_2 + \dots)/100\text{mS}$ or T , whichever is less. Where T is the period of the pulse train.

The measured values for the EUT's pulse train are as follows:

Period = 100 mSec

Pulsewidth of Pulse-1 = 200uS

Pulsewidth of Pulse-2 = 400 uS

Pulsewidth of Pulse-3 = 600 uS

Number of Pulse-1 = 25

Number of Pulse-2 = 5

Number of Pulse-3 = 4

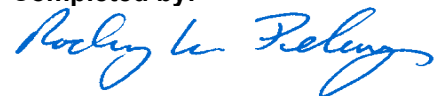
Duty Cycle = $20 \log [(25)(200\text{uS}) + (5)(400\text{uS}) + (4)(600\text{uS}) / 100\text{mS}] = -20.5 \text{ dB}$

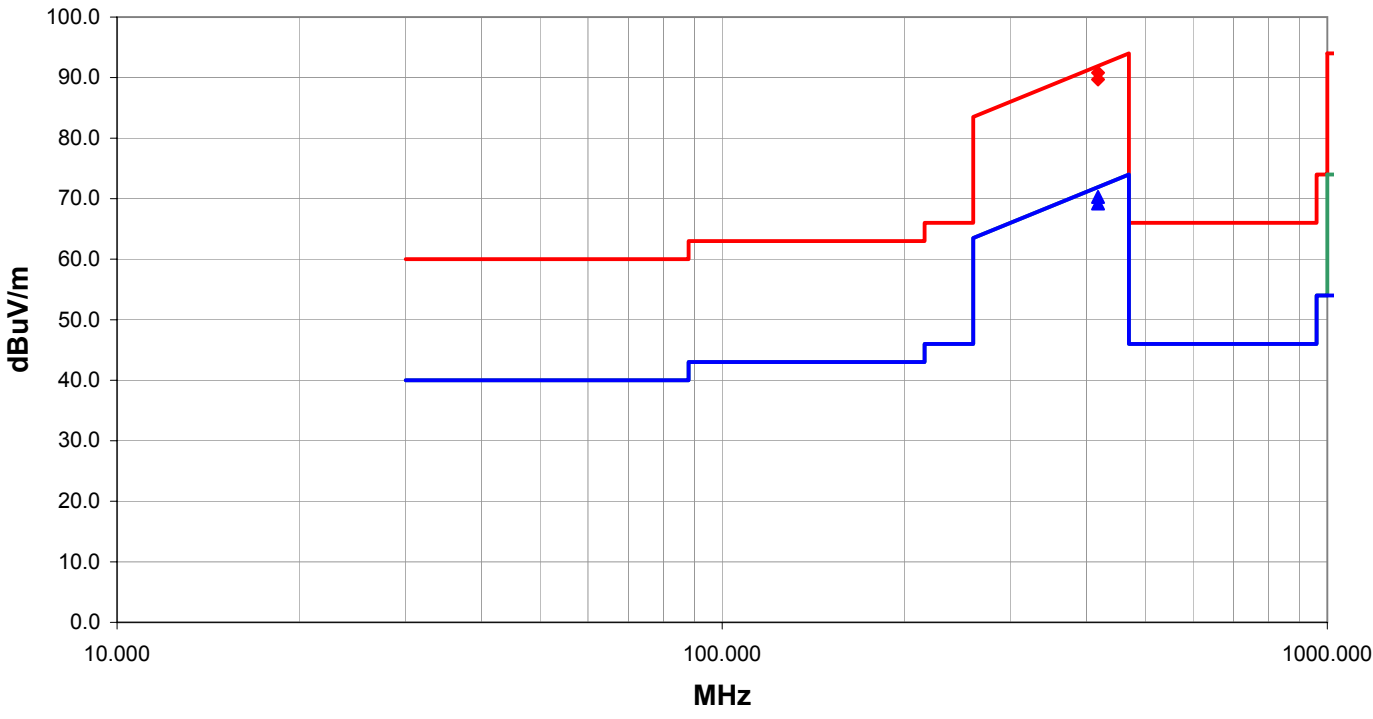
The duty cycle correction factor of -20.5 dB was added to the peak readings to mathematically derive the average levels. Peak measurements were made with a resolution bandwidth of 120kHz and a video bandwidth of 300kHz.

Bandwidths Used for Measurements

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
<i>Measurements were made using the bandwidths and detectors specified. No video filter was used.</i>			

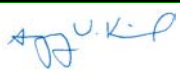
Completed by:



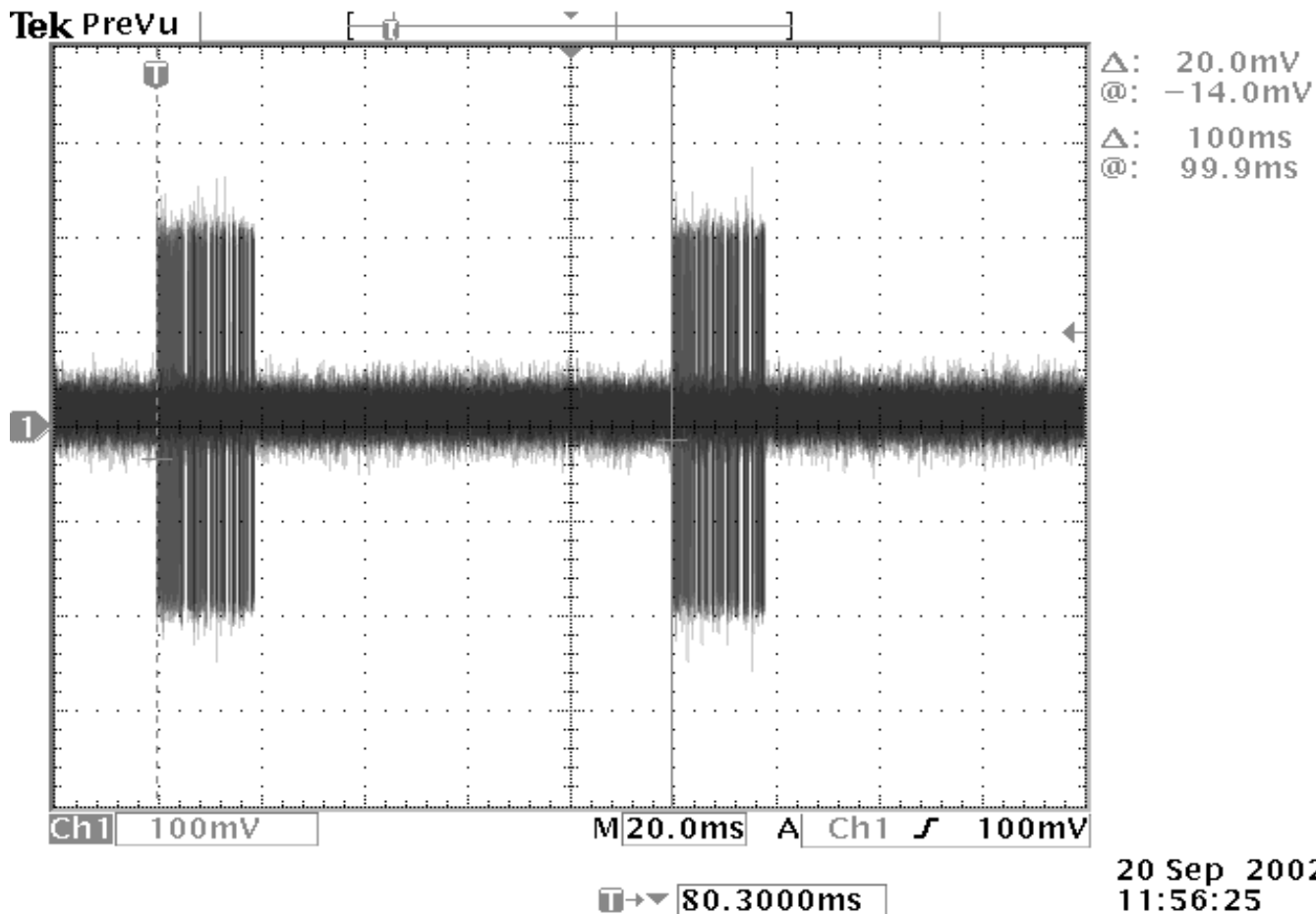
NORTHWEST EMC										REV df3.00 08/20/2002			
Field Strength of Fundamental													
EUT: eScan2 Sx					Work Order: ENAL0003								
Serial Number: 20202					Date: 9/20/02 11:09								
Customer: Enalasys					Temperature: 73								
Attendees: none					Humidity: 39%								
Cust. Ref. No.:					Barometric Pressure: 30.15								
Tested by: Rod Peloquin					Power: Battery					Job Site: EV01			
TEST SPECIFICATIONS													
Specification: FCC Part 15.231(e)										Year: 2001			
Method: ANSI C63.4										Year: 1992			
SAMPLE CALCULATIONS													
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation													
Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator													
COMMENTS													
eScan2 Sx, eScan2 Rx, and eScan2 Lx were scanned. eScan2 Sx produced the highest field strength of fundamental.													
EUT OPERATING MODES													
CW Mode - no modulation													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
RESULTS													
										Test Distance (m)		Run #	
Evaluation										3		6	
Other										 _____ Tested By:			
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	
418.001	82.4	-11.6	303.0	1.3	20.5	20.0	V-Bilog	AV	0.0	70.3	71.9	-1.6	
418.001	81.3	-11.6	280.0	1.0	20.5	20.0	H-Bilog	AV	0.0	69.2	71.9	-2.7	
418.001	82.4	-11.6	303.0	1.3	0.0	20.0	V-Bilog	PK	0.0	90.8	91.9	-1.1	
418.001	81.3	-11.6	280.0	1.0	0.0	20.0	H-Bilog	PK	0.0	89.7	91.9	-2.2	

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EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

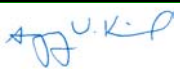
EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasy		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Job Site: EV01	
Tested by: Greg Kiemel		Power: Battery	
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{ms}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 \cdot \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Period	
Pass		100ms	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Period			

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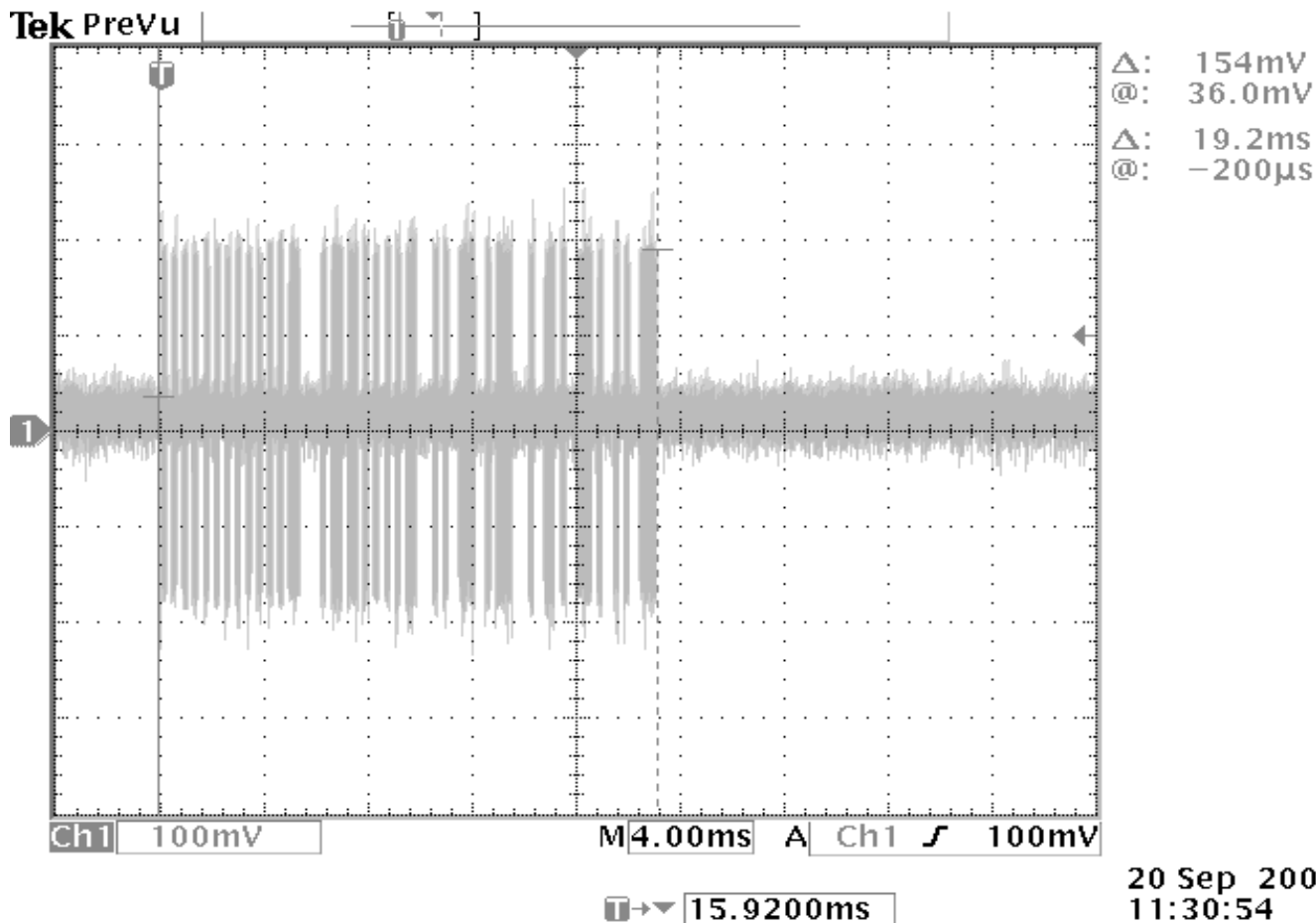
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EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

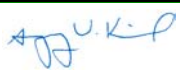
EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasy		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Job Site: EV01	
Tested by: Greg Kiemel		Power: Battery	
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{mS}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 * \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Single Transmission	
Pass		19.2 mS	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Single Transmission			

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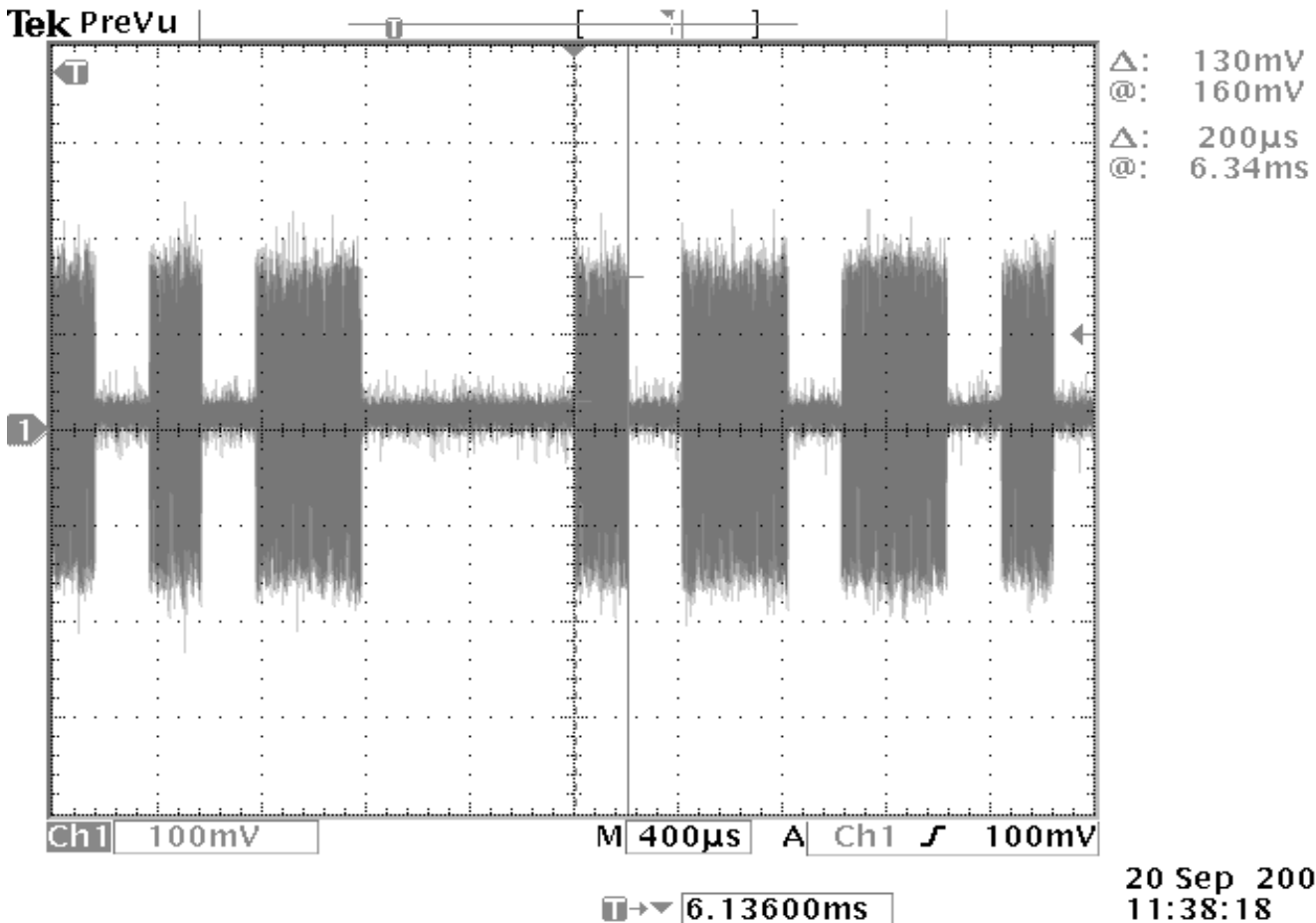
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EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

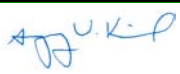
EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasy		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Power: Battery	
Job Site: EV01			
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{mS}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 * \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Length of Type 1 Pulse	
Pass		200uS	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Length of Type 1 Pulse			

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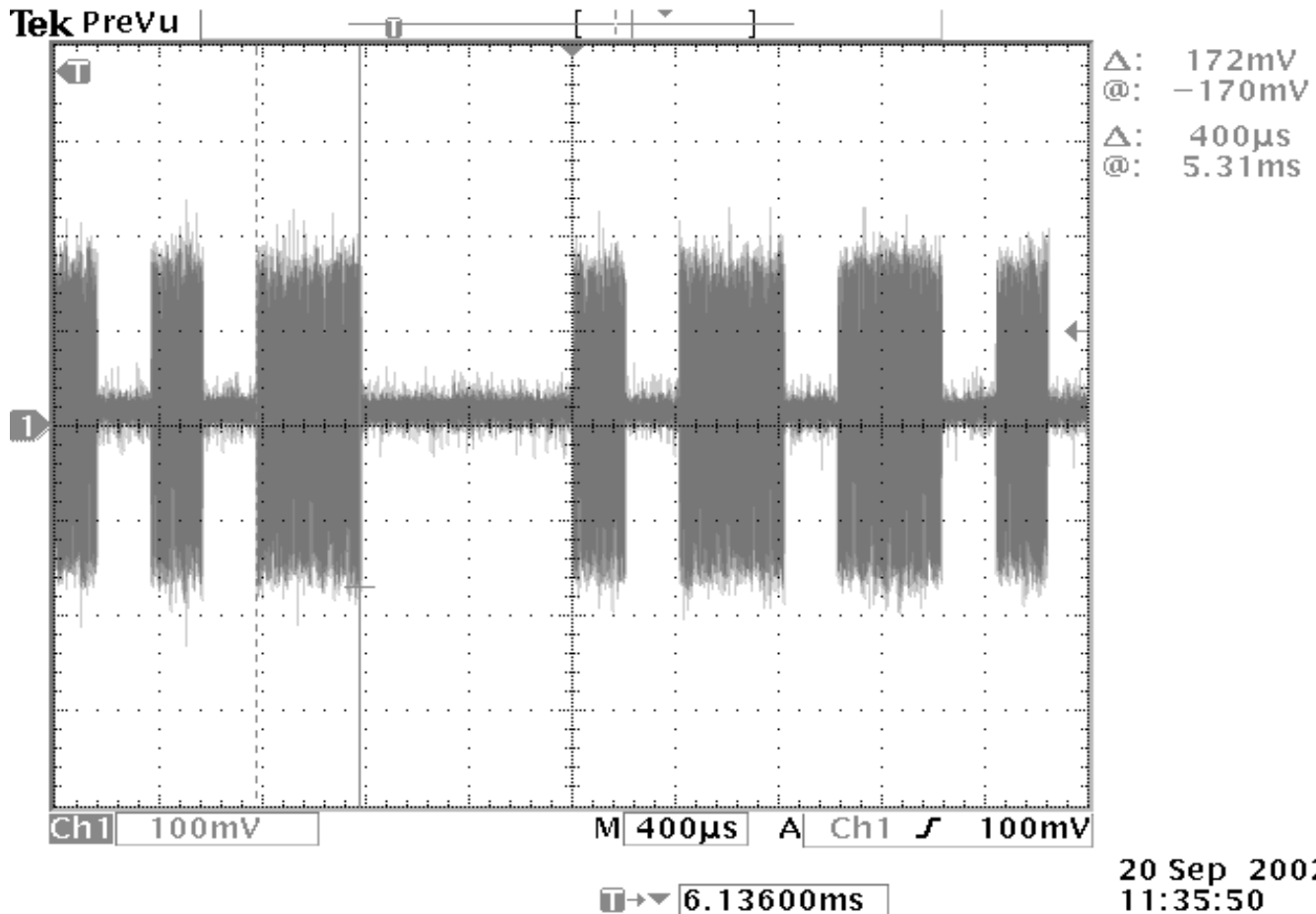
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EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

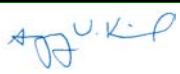
EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasys		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Job Site: EV01	
Tested by: Greg Kiemel		Power: Battery	
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{mS}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 \cdot \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Length of Type 2 Pulse	
Pass		400uS	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Length of Type 2 Pulse			

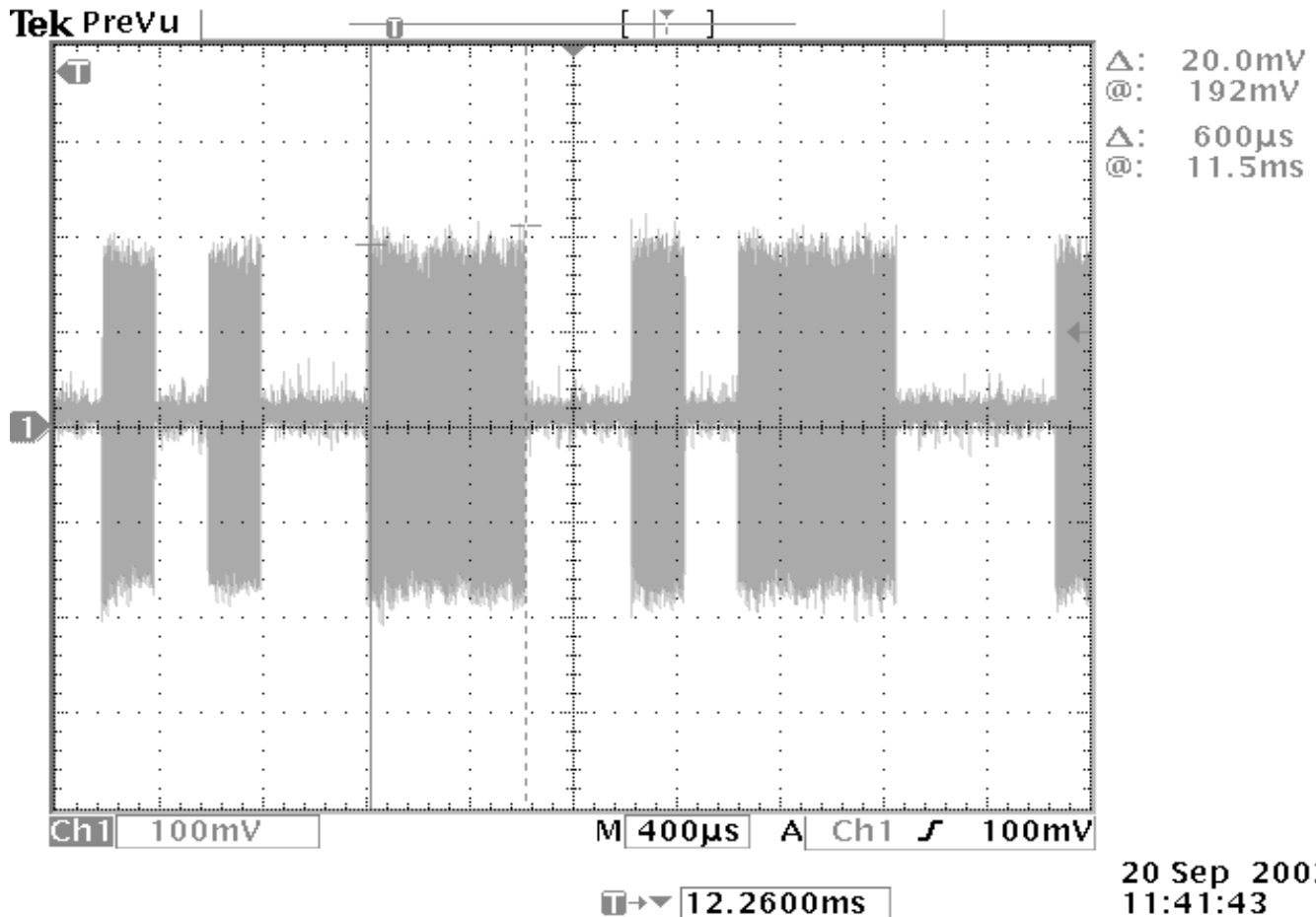
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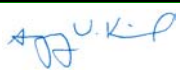
EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

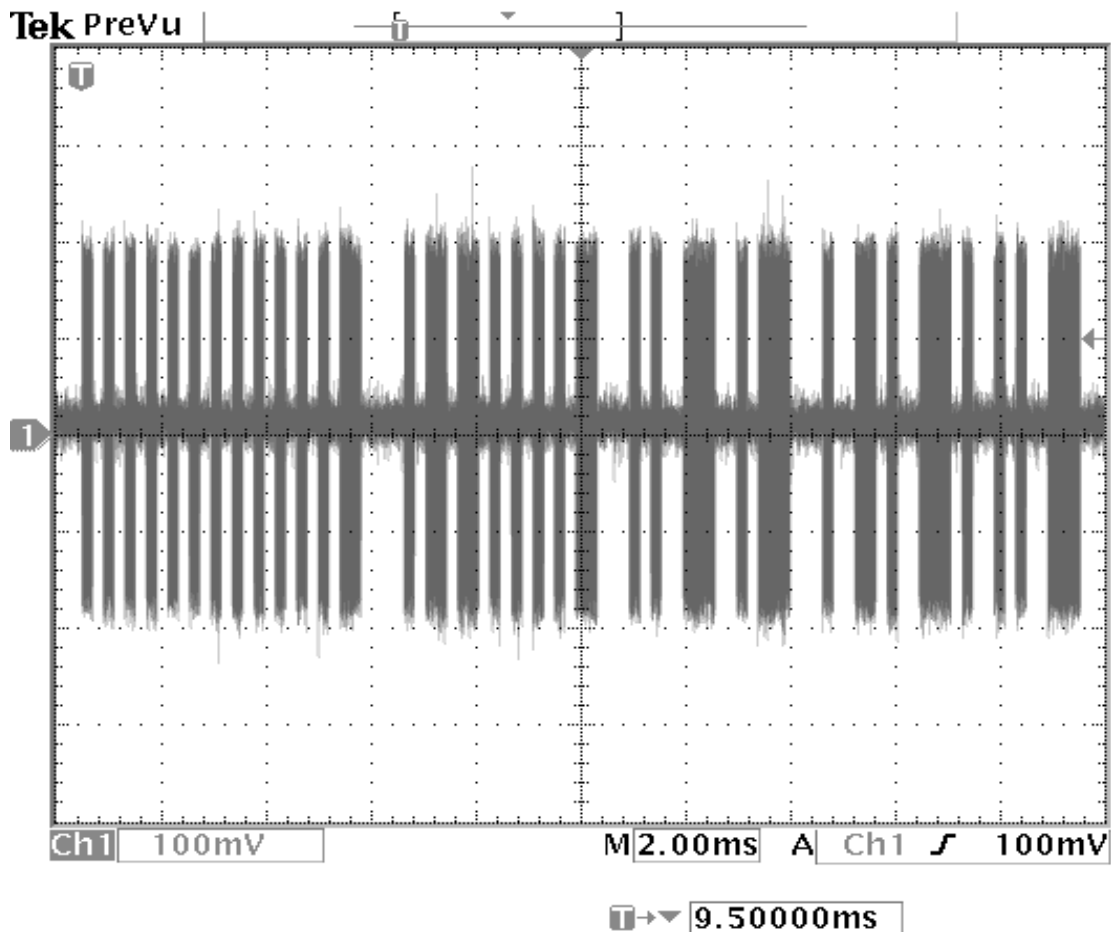
EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasys		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Job Site: EV01	
Tested by: Greg Kiemel		Power: Battery	
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{mS}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 * \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Length of Type 3 Pulse	
Pass		600uS	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Length of Type 3 Pulse			

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NORTHWEST

EMC**Duty Cycle Correction Factor**Rev BETA
01/30/01

EUT: eScan2 SX		Work Order: ENAL0003	
Serial Number: 20202		Date: 09/20/02	
Customer: Enalasy		Temperature: 73	
Attendees: Art Chace		Humidity: 40%	
Customer Ref. No.: N/A		Job Site: EV01	
Tested by: Greg Kiemel		Power: Battery	
TEST SPECIFICATIONS			
Specification: 47 CFR 15.231(e) & 15.35(c)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Duty Cycle = $(N_1 L_1 + N_2 L_2 + \dots) / 100\text{mS}$ or T, whichever is less. Where T is the period of the pulse train, N_1 is the number of type 1 pulses, L_1 is the length of type 1 pulses, N_2 is the number of type 2 pulses, L_2 is the length of type 2 pulses, etc. Duty Cycle Correction Factor = $20 * \log(\text{Duty Cycle})$			
COMMENTS			
EUT OPERATING MODES			
Modulated carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The duty cycle correction factor is added to the peak radiated emissions measurements to mathematically derive the average levels.			
RESULTS		Number of Pulses	
Pass		$N_1 = 25, N_2 = 5, N_3 = 4$	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Number of Pulses			

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11:44:26