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APPLICANT: TEMIC TELEFUNKEN MICROELECTRONIC GMBH

FCC ID: MYT3X6898A

TEST REPORT CONTAINING:

EXHIBIT ATTACHMENTS:

APPLICANT: TEMIC TELEFUNKEN MICROELECTRONIC GMBH
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TEST EQUIPMENT LIST

1._X_Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/ preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter HP 8565OA, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02, S/N 3008A00372 Cal. 10/17/99
2._X_Biconnical Antenna: Eaton Model 94455-1, S/N 1057
3._X_Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
4._X_Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180, 1-18 GHz, S/N 2319 Cal. 4/27/99
5.___Horn 40-60GHz: ATM Part #19-443-6R
6.___Line Impedance Stabilization Network: Electro-Metrics Model ANS-25/2, S/N 2604 Cal. 2/9/00
7.___Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
8.___Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
9.___Peak Power Meter: HP Model 8900C, S/N 2131A00545 Cal 7/19/99
10._X_Open Area Test Site #1-3meters Cal. 12/22/99
11.___Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
12.___Signal Generator: HP 8614A, S/N 2015A07428 Cal. 5/29/99
13.___Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N 9706-1211 Cal. 6/23/97
14.___Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153 Cal. 11/24/99
15.___AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
16.___Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
17.___Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
18.___Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz. The ambient temperature of the UUT was 81oF with a humidity of 60%.

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FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz)	METER READING + ACF = FS
33	20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-1992 10.1.7 MEASUREMENT PROCEDURES: The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The UUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings were converted to average readings based on the duration of "ON" time.

Measurements were made by TIMCO ENGINEERING INC. at the registered open field test site located at 849 N.W. State Road 45, Newberry, Fl 32669.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

RULES:2.1033(b)(4) CIRCUIT DESCRIPTION

This RF transmitter works with a battery voltage of 3V. A single lithium battery of type CR2032 will be used. The microcomputer (I001) monitors the transmitter keypad buttons and generates the corresponding data word when a button is pressed. To meet high security requirements, the data word is encoded using an 64 bit encryption algorithm. The transmitter identification data is stored in a non-volatile memory (EEPROM) I003. The data word is sent to the final transmitter (a stage of IC002) in a serial pulse form, Manchester encoded. The pulse train switches the RF power amplifier on and off. The RF emission is independent of the data content of the switched carrier which has a duty cycle of 0.5 during the pulse trains without considering the breaks between two subsequent pulse trains of an actuation. The transmitter antenna is realized in the form of a magnetic loop. The transmission freqeuncy of 315 MHz is generated by a quartz stabilized PLL oscillator which is also part of IC002.

ANTENNA & GROUND: This unit uses the PCB inductor as the antenna. There is no provision for an external antenna.

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NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.231

REQUIREMENTS:

Fundamental Frequency MHz	Field Strength of Fundamental dBuV	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
40.66 to 40.70	67.04	47.04
70 to 130	61.94	41.94
130 to 174	61.94 to 71.48	41.94 to 51.48
174 to 260	71.48	51.48
260 to 470	71.48 to 81.94	51.48 to 61.94
470 and above	81.94	61.94

THE LIMIT FOR AVERAGE FIELD STRENGTH dBuV/m FOR THE FUNDAMENTAL FREQUENCY= 75.62 dBuV/m dBuV/m. NO FUNDAMENTAL IS ALLOWED IN THE RESTRICTED BANDS.

THE LIMIT FOR AVERAGE FIELD STRENGTH dBuV/m FOR THE HARMONICS AND SPURIOUS FREQUENCIES = 55.62 dBuV/m dBuV/m. SPURIOUS IN THE RESTRICTED BANDS MUST BE LESS THAN 54dBuV/m OR 15.209.

TEST DATA:

EMISSION FREQ. MHz	METER READING @ 3m dBuV	COAX LOSS dB	ACF dB	PEAK FIELD STRNGTH dBuV/m	AVERAGE FIELD STRNGTH dBuV/m	MARGIN dB	ANT.
315.00	65.20	1.40	15.16	81.76	74.82	0.79	H
630.00	31.10	1.60	20.76	53.46	46.52	9.10	V
945.00	12.50	2.90	24.26	39.66	32.72	22.90	V
1260.00	8.30	1.00	25.04	34.34	27.40	28.22	V
1575.00R	10.20	1.00	26.30	37.50	30.56	23.44	V
1890.00	8.90	1.01	27.56	37.47	30.54	25.08	V

SAMPLE CALCULATION OF LIMIT @ 303 MHz:
(470 - 260)Mhz = 210 MHz
(12500 - 3750)uV/m = 8750 uV/m
8750uV/m/210MHz = 41.67 uV/m/MHz
(303-260)MHz = 43 MHz
43 MHz * 41.67 uV/m/MHz = 1791.81 uV/m
(1791.81 + 3750)uV/m = 5541.81 uV/m limit @ 303 MHz
The transmitter ceases transmitting when the button is released.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY:_____ DATE TESTED: JULY 13, 2000

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CALCULATION OF DUTY CYCLE:

The period of the pulse train is determined by observing it on an oscilloscope or a spectrum analyzer with zero(0) frequency span. A plot is then made of the pulse train with a sweep time of 100milliseconds. This sweep determines the duration of the pulse train, which in this case is 780. This sweep allows the determination of the number of and type of pulses, i.e. long & short. Plots are then made showing the duration of each type of pulse and its duration. From the 100millisecond Plot the number of a given type of pulse is then multiplied by the duration of that type pulse. This allows the calculation of the amount of time the UUT is on within 100milliseconds. If the pulse train is longer than 100milliseconds then this number is multiplied by 100 to determine the percentage ON TIME. If the pulse train is less than 100milliseconds the total on-time is divided by the length of the pulse train and then multiplied by 100 to determine the percentage ON TIME. In this case there were 34 pulses 17.68milliseconds long and 108pulses 28.08milliseconds long for a total of 100 milliseconds on time within either the 100milliseconds or the pulse train. The average field strength is determined by multiplying the peak field strength by the percent on time. In this case the percentage ON time was 45 percent.

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NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.231(C)

REQUIREMENTS: The bandwidth of the emission shall be no wider than .25% of the center frequency for devices operating between 70 and 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

315.00 MHz * .0025 = .7875 MHz
.7875 MHz/2 = +/- 393.75

THE GRAPH IN EXHIBIT 10 REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the plot in Exhibit 10 was generated.

TEST RESULTS: The unit meets the FCC requirements.

PERFORMED BY: DATE: JULY 13, 2000