

# ROGERS LABS, INC.

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Phone / Fax (913) 837-3214

May 2, 2001

Federal Communications Commission  
Equipment Approval Services  
P.O. Box 35815  
Pittsburgh, PA 15251-3315

Applicant: INTERMEC TECHNOLOGIES CORPORATION  
6001 36th Avenue West  
Everett, WA 98203-9280  
Phone: (505) 856-8054

RE: Response for reference number 19005.

Equipment: FCC ID: HN21555-2450  
FCC Rules: Part 2 and 15.247

Gentlemen:

Attached please find our response to your request for information regarding the Intermec Technology submittal application for grant of certification for HN21555-2450, EA100016. A copy of the request is included here for reference.

From: Joe Dichoso [SMTP:JDICHOSO@fcc.gov]  
Sent: Tuesday, May 01, 2001 9:30 AM  
To: rogers@micoks.net  
Subject: Re: EA100016 Awaiting Reply for Technical Information

Scot,

I sent the following e-mail. Use reference number 19005 with your reply.

- 1) The grant will list the center frequency of the lowest channel to the center frequency of the highest channel. 2402-2480.
- 2) Supply a sample of pseudorandom sequence.  
Provide few samples.
- 3) Provide the updated manual with the proper RF safety separation distance.
- 4) The revised SAR report does not list the conducted output powers.  
Please revise accordingly.

Grant Condition: This transmitter operates in a specific hand-held RF tag reader. The device has been tested for SAR compliance for typical hand-held use and must be operated in a person's hands with a separation distance of 5 cm or more from the body of users and bystanders (except for hands and wrists) to satisfy RF exposure compliance. Users must be informed of the operating requirements for satisfying RF exposure

FCC Response letter for request number 19005.

compliance. The highest reported SAR values are Body: 1.36 W/kg; Hands: 1.82 W/kg.

#### RESPONSE

1. We will accept the frequency of operation for the grant of 2402-2480 MHz. Please change the 731 form to reflect this frequency band.
2. A sample of the hopping sequence is provided below.

#### ***Pseudo Random Hop Sequence***

The hopping sequence of the RF source is controlled by the Digital boards ASIC (U5). The code used to generate the hopping sequence is derived from the IEEE 802.11 standard. Specifically, the frequency conforms to the following formula:

$$F(i)=[b(i)+x]\text{mod}(79)+2$$

Where  $b(i)$  is defined in Table 42 of the IEEE 802.11 specification,  $x$  is set 1 of the hopping pattern number, and  $F(i)$  is the channel number for the  $i^{\text{th}}$  frequency, of Set 1 of the hopping patterns for North America.

The frequency to channel conversion is contained in Table 38 of the IEEE 802.11 standard.

When power is initially applied to the handheld reader, a random number is generated in the digital board ASIC which determines the starting point of the hop sequence. As RF power is applied the handheld reader will follow the hop sequence. When a command is complete and RF is turned off, the hop sequence position is maintained. When a new command is initiated, and RF is turned back on, the Handheld reader starts the hop sequence where it left off the last time RF was on. Therefore, the transmitter will use each frequency channel equally, on the average. Since the hop sequence starting channel is determined by a random number generated at initial power up, the transmitter cannot coordinate its hopping with any other transmitter.

Shown below are 5 samples of hop frequencies generated from the above frequency hop formula, with 5 different starting positions.

Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
$i = 0$	$i = 17$	$i = 56$	$i = 77$	$i = 4$
$x = 0$	$x = 9$	$x = 66$	$x = 75$	$x = 27$
Frequencies [MHz]	Frequencies [MHz]	Frequencies [MHz]	Frequencies [MHz]	Frequencies [MHz]
2402	2437	2422	2436	2437
2425	2409	2454	2428	2472
2464	2442	2439	2444	2445
2410	2413	2445	2402	2421
2445	2429	2431	2425	2476
2418	2422	2437	2464	2448
2473	2447	2404	2410	2411
2449	2404	2473	2445	2426
2421	2465	2406	2418	2458
2463	2480	2474	2473	2409
2478	2432	2456	2449	2451
2431	2414	2438	2421	2402
2461	2448	2429	2463	2413
2424	2421	2469	2478	2455

2454	2445	2417	2431	2427
2465	2477	2444	2461	2460
2428	2418	2424	2424	2431
2479	2479	2442	2454	2447
2433	2407	2413	2465	2440
2404	2415	2433	2428	2465
2420	2471	2440	2479	2422
2413	2438	2427	2433	2404
2438	2423	2419	2404	2419
2474	2436	2435	2420	2450
2456	2425	2468	2413	2432
2471	2468	2412	2438	2466
2423	2452	2451	2474	2439
2405	2406	2476	2456	2463
2439	2443	2432	2471	2416
2412	2402	2405	2423	2436
2436	2420	2460	2405	2418
2468	2469	2436	2439	2425
2409	2410	2408	2412	2433
2470	2456	2450	2436	2410
2477	2431	2465	2468	2456
2406	2405	2418	2409	2441
2462	2475	2448	2470	2454
2429	2450	2411	2477	2443
2414	2424	2441	2406	2407
2427	2444	2452	2462	2470
2416	2476	2415	2429	2424
2459	2461	2466	2414	2461
2443	2467	2420	2427	2420
2476	2453	2470	2416	2438
2434	2459	2407	2459	2408
2472	2426	2479	2443	2428
2411	2416	2425	2476	2474
2460	2428	2461	2434	2449
2480	2417	2443	2472	2423
2447	2478	2458	2411	2414
2422	2460	2410	2460	2468
2475	2451	2471	2480	2442
2466	2412	2426	2447	2462
2441	2439	2478	2422	2415
2415	2466	2423	2475	2479
2435	2446	2455	2466	2406
2467	2464	2475	2441	2471
2452	2435	2457	2415	2477
2458	2455	2464	2435	2444
2444	2462	2472	2467	2434
2450	2449	2449	2452	2446
2417	2441	2416	2458	2435
2407	2457	2480	2444	2417

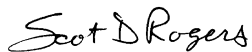
2419	2414	2414	2450	2478
2408	2437	2403	2417	2469
2469	2476	2446	2407	2430
2451	2422	2430	2419	2457
2442	2457	2463	2408	2405
2403	2430	2421	2469	2464
2430	2406	2459	2451	2403
2457	2461	2477	2442	2453
2437	2433	2447	2403	2473
2455	2475	2467	2430	2480
2426	2411	2434	2457	2467
2446	2443	2409	2437	2459
2453	2473	2462	2455	2475
2440	2436	2453	2426	2432
2432	2466	2428	2446	2455
2448	2477	2402	2453	2415

3. An updated owner's operator's manual has been uploaded to your web site under the file of 1555\_gsg.pdf.
4. A revised SAR report listing the conducted output power, in the report, has been uploaded to your web site under the file name 1555-2450 SAR Report Revision 2.PDF.

Should you require any further information, please contact the undersigned.

Thank you for your consideration in this matter.

Sincerely,



Scot Rogers  
Rogers Labs, Inc.  
Enclosures