



MEDTRONIC MINIMED INC. TEST REPORT

FOR THE

PERSONAL PUMP COMMUNICATOR, MMT-3150

FCC PART 15 SUBPART C SECTION 15.209

COMPLIANCE

DATE OF ISSUE: JANUARY 31, 2002

PREPARED FOR:

Medtronic MiniMed Inc.
18000 Devonshire Street
Northridge, Ca 91325

P.O. No.: 43994
W.O. No.: 78257

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

Date of test: January 21-29, 2002

Report No.: FC02-019

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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: January 21-29, 2002

DATE OF RECEIPT: January 21-29, 2002

PURPOSE OF TEST: To demonstrate the compliance of the Personal Pump Communicator (PPC), MMT-3150 with the requirements for FCC Part 15 Subpart C Section 15.209 devices.

TEST METHOD: ANSI C63.4 (1992)

MANUFACTURER: Medtronic MiniMed Inc.
18000 Devonshire Street
Northridge, Ca 91325

REPRESENTATIVE: Varaz Shahmirian

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the Medtronic MiniMed Inc. Personal Pump Communicator (PPC), MMT-3150 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart C Section 15.209
- ANSI C63.4 (1992) method

Canada

- RSS-210 using:
- FCC Part 15 Subpart C Section 15.209
- Industry of Canada File No. IC 3082-D

CONDITIONS FOR COMPLIANCE

No modifications or special conditions were applicable.

APPROVALS

QUALITY ASSURANCE:



Dennis Ward, Quality Manager



Chuck Kendall, EMC/Lab Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

PPC

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. The pump/PPC and IGMS/PPC product lines were tested simultaneously during emissions testing only.

Pump

EUT is an insulin pump which is in communication with the Personal Communicator (PPC). Both devices are battery operated. The laptop is controlling RF section of the pump through the PPC. The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003.

The Pump/PPC is a separate product from the IGMS/Glucose Sensor/PPC. These product lines were tested simultaneously strictly for logistics reasons, and does not imply any dependency between the two products.

15.203 Antenna Requirements

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

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.

15.31(e) Voltage Variations

Not applicable to this device because it is battery powered.

15.31(m) Number Of Channels

This device operates on a single channel.

15.33(a) Frequency Ranges Tested

15.209 Radiated Emissions: 9 kHz – 1000 MHz

EUT Operating Frequency

The EUT was operating at 131 kHz. The actual readings show this to be higher due to the modulation scheme and the particular data stream, but they are all within the limit and the specified bandwidth.

Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST

Insulin Pump

Manuf: MiniMed
 Model: MMT-2007C
 Serial: 20101, 20103 & 20104
 FCC ID: Pending

PPC for MMT-2007C

Manuf: MiniMed
 Model: MMT-3150
 Serial: 200005, 200007 & 200011
 FCC ID: Pending

PPC for IGMS

Manuf: MiniMed
 Model: MMT-3150
 Serial: 200008, 200009 & 200010
 FCC ID: Pending

IGMS

Manuf: MiniMed
 Model: MMT-7710
 Serial: 007, 008 & 009
 FCC ID: Pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop Computer

Manuf: Micron
 Model: NBK001371-00
 Serial: 1459617-0030
 FCC ID: GBQM700PC

Glucose Sensor

Manuf: MiniMed
 Model: NA
 Serial: NA
 FCC ID: Pending

Laptop Computer

Manuf: NEC
 Model: PC-6220-A1803-R
 Serial: F72502795
 FCC ID: AD3P55

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the Personal Pump Communicator (PPC), MMT-3150. 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: Fundamental Emission Levels									
FREQUENCY Hz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	15.31 dB					
0.131	92.3	10.01	-25.4	-80.0		-3.0	25.2	-28.2	V-1
0.133	85.5	10.1	-25.5	-80.0		-9.9	25.1	-35.0	V-3
0.133	85.5	10.1	-25.5	-80.0		-9.9	25.1	-35.0	V-2
0.133	85.4	10.1	-25.5	-80.0		-10.0	25.1	-35.1	V-3
0.133	89.9	10.1	-25.4	-80.0		-5.4	25.2	-30.6	V-1
0.133	87.8	10.1	-25.5	-80.0		-7.6	25.1	-32.7	V-1

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Section 15.209
 Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
 V = Vertical Polarization
 1 = Set 1
 2 = Set 2
 3 = Set 3

COMMENTS: EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGMS is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: Fundamental. PPC tested in 3 orthogonal positions. Test Distance used is 3 meters. Test distance correction factor 40dB/decade used in accordance with 15.31. Testing was performed on three identical sets.

Table 2: Six Highest Radiated Emission Levels: 9 kHz - 30 MHz

FREQUENCY Hz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	15.31 dB	Cable dB					
0.657	16.9	10.2	-20.0	0.1		7.2	31.2	-24.0	V-2
0.658	20.0	10.2	-20.0	0.1		10.3	31.2	-20.9	H-1
0.917	14.5	10.1	-20.0	0.2		4.8	28.3	-23.5	V-2
0.921	14.1	10.1	-20.0	0.2		4.4	28.3	-23.9	V-1
0.924	15.0	10.1	-20.0	0.2		5.3	28.3	-23.0	V-3
1.185	11.8	10.2	-20.0	0.2		2.2	26.1	-23.9	V-1

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Section 15.209
 Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
 V = Vertical Polarization
 1 = Set 1
 2 = Set 2
 3 = Set 3

COMMENTS: EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 9kHz - 30MHz. Test Distance correction factor 40dB/decade used in accordance with 15.31. Testing was performed on three identical sets.

Table 3: Six Highest Radiated Emission Levels: 30-1000 MHz

FREQUENCY Hz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB					
108.808	50.0	13.3	-27.1	2.1		38.3	43.5	-5.2	V-2
110.590	48.4	13.4	-27.1	2.1		36.8	43.5	-6.7	V-1
111.118	51.6	13.5	-27.1	2.1		40.1	43.5	-3.4	V-2
114.670	48.5	13.8	-27.0	2.1		37.4	43.5	-6.1	V-3
115.720	49.4	13.9	-27.0	2.1		38.4	43.5	-5.1	V-3
194.550	42.2	17.6	-26.7	2.8		35.9	43.5	-7.6	H-1

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
1 = Set 1
2 = Set 2
3 = Set 3

COMMENTS: EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 30-1000 MHz. Testing was performed on three identical sets.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 2.94 dB 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 cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected. The interval between different pieces of equipment was approximately 10 centimeters. All excessive interconnecting cable was bundled.

The radiated and conducted emissions data of the Personal Pump Communicator (PPC), MMT-3150, 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. All EUTs were tested in three orthogonal orientations.

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 dB μ V/m, the spectrum analyzer reading in dB μ V 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	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

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 Personal Pump Communicator (PPC), MMT-3150. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, 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

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 Personal Pump Communicator (PPC), MMT-3150.

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 radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 88 MHz was scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the biconical antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. 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, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Closeup

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

Test equipment used for radiated emissions 9kHz – 30Mhz

<i>Equipment</i>	<i>Mfg.</i>	<i>Model #</i>	<i>Serial #</i>	<i>Asset #</i>	<i>Cal Date</i>	<i>Cal Due</i>
3/10m & LISN Cable	Andrews	Hardline	N/A	N/A	11/19/01	11/19/02
Antenna, Loop	EMCO	6502	1074	00226	5/31/2001	5/31/02
Power Supply, DC	HP	6205C	2228A01775	00762	5/31/2001	5/31/02
Preamp	HP	8447D	1937A02604	00099	03/29/01	3/29/02
Spectrum Analyzer	HP	8564E	3623A00539	01406	12/12/01	12/12/02
QPA	HP	85650A	2043A00202	02430	11/21/01	11/21/02
S/A Display	HP	85662A	2816A15964	P00708	11/21/01	11/21/02
S/A RF Section	HP	8567A	2727A00473	P00709	11/21/01	11/21/02

Test equipment used for radiated emissions testing 30-1000 MHz

<i>Equipment</i>	<i>Mfg.</i>	<i>Model #</i>	<i>Serial #</i>	<i>Asset #</i>	<i>Cal Date</i>	<i>Cal Due</i>
3/10m & LISN Cable	Andrews	Hardline	N/A	N/A	11/19/01	11/19/02
Antenna, Bicon	A&H	SAS-200/542	156	00225	12/06/01	12/6/02
Antenna, Log	A&H	SAS-200/510	154	01330	05/07/01	5/7/02
Power Supply, DC	HP	6205C	2228A01775	00762	5/31/2001	5/31/02
Preamp	HP	8447D	1937A02604	00099	03/29/01	3/29/02
QPA	HP	85650A	2043A00202	02430	11/21/01	11/21/02
S/A Display	HP	85662A	2816A15964	P00708	11/21/01	11/21/02
S/A RF Section	HP	8567A	2727A00473	P00709	11/21/01	11/21/02

APPENDIX C

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362
 Customer: **MiniMed Inc.**
 Specification: **FCC 15.209**
 Work Order #: **78257** Date: 1/24/02
 Test Type: **Radiated Scan** Time: 16:07:35
 Equipment: **PPC for IGMS** Sequence#: 3
 Manufacturer: MiniMed Tested By: Randal Clark
 Model: MMT-3150
 S/N: 200011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Insulin Pump	MiniMed	MMT-2007C	20103
PPC for 2007C*	MiniMed	MMT-3150	200011
PPC for IGMS	MiniMed	MMT-3150	200008
IGMS	MiniMed	MMT-7710	009

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	Micron	NBK001371-00	1459617-0030
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: Fundamental. PPC tested in 3 orthogonal positions. Test Distance used is 3 meters. Test distance correction factor 40dB/decade used in accordance with 15.31.

Transducer Legend:

T1=Loop 1074	T2=Amp - S/N 1937A02604
T3=15.31 40dB/Dec Correction	

Measurement Data:

#	Freq Hz	Rdng dB μ V	Reading listed by margin.			Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T1 dB	T2 dB	T3 dB					
1	131.270k	92.3	+10.1	-25.4	-80.0	+0.0	-3.0	25.2	-28.2	Vert
2	131.270k	89.9	+10.1	-25.4	-80.0	+0.0	-5.4	25.2	-30.6	Vert
3	133.270k	87.8	+10.1	-25.5	-80.0	+0.0	-7.6	25.1	-32.7	Vert
4	133.280k	85.4	+10.1	-25.5	-80.0	+0.0	-10.0	25.1	-35.1	Vert
5	131.270k	78.5	+10.1	-25.4	-80.0	+0.0	-16.8	25.2	-42.0	Vert
6	131.580k	78.0	+10.1	-25.4	-80.0	+0.0	-17.3	25.2	-42.5	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/24/2002

Test Type: **Radiated Scan**

Time: 15:17:09

Equipment: **PPC for IGMS**

Sequence#: 30

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-3150

S/N: 200007

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
PPC for 2007C*	MiniMed	MMT-3150	200007
PPC for IGMS	MiniMed	MMT-3150	200009
IGMS	MiniMed	MMT-7710	008
Insulin Pump	MiniMed	MMT-2007C	20101

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Laptop Computer	Micron	NBK001371-00	1459617-0030
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: Fundamental. Test Distance used is 3 meters. Test Distance correction factor 40dB/decade used.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq Hz	Rdng dB μ V	Reading listed by margin.				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			Amp dB	Loop dB	Cable dB	15.31 dB					
1	133.270k	85.5	-25.5	+10.1	+0.0	-80.0	+0.0	-9.9	25.1	-35.0	Vert
2	133.270k	85.5	-25.5	+10.1	+0.0	-80.0	+0.0	-9.9	25.1	-35.0	Vert
3	131.280k	79.3	-25.4	+10.1	+0.0	-80.0	+0.0	-16.0	25.2	-41.2	Vert
4	131.280k	78.2	-25.4	+10.1	+0.0	-80.0	+0.0	-17.1	25.2	-42.3	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**
 Specification: **FCC 15.209**
 Work Order #: **78257** Date: 01/24/2002
 Test Type: **Radiated Scan** Time: 14:21:06
 Equipment: **PPC for IGMS** Sequence#: 42
 Manufacturer: MiniMed Tested By: Randal Clark
 Model: MMT-3150
 S/N: 200010

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
IGMS	MiniMed	MMT-7710	007
Insulin Pump	MiniMed	MMT-2007C	20104
PPC for IGMS*	MiniMed	MMT-3150	200010
PPC for 2007C	MiniMed	MMT-3150	200005

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Glucose Sensor	MiniMed		Not Serialized
Laptop Computer	Micron	NBK001371-00	1459617-0030

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: Fundamental. Test Distance correction factor 40dB/decade used in accordance with 15.31.

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

#	Freq Hz	Rdng dBµV	Loop		Cable		Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			dB	Amp dB	dB	dB					
1	133.270k	85.4	+10.1	+0.0	-80.0	+0.0	-10.0	25.1	-35.1	Vert	
2	133.380k	58.9	+10.1	+0.0	-80.0	+0.0	-11.0	25.1	-36.1	Vert	
3	133.280k	80.1	+10.1	+0.0	-80.0	+0.0	-15.3	25.1	-40.4	Horiz	
4	133.260k	74.1	+10.1	+0.0	-80.0	+0.0	-21.3	25.1	-46.4	Vert	
5	133.380k	42.8	+10.1	+0.0	-80.0	+0.0	-27.1	25.1	-52.2	Horiz	

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/22/2002

Test Type: **Radiated Scan**

Time: 14:33:57

Equipment: **PPC for IGMS**

Sequence#: 13

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-2007C

S/N: 20103

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
IGMS	MiniMed	MMT-7710	009
Insulin Pump*	MiniMed	MMT-2007C	20103
PPC for 2007C	MiniMed	MMT-3150	200011
PPC for IGMS	MiniMed	MMT-3150	200008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Laptop Computer	Micron	NBK001371-00	1459617-0030
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 9kHz - 30MHz. Test Distance correction factor 40dB/decade used in accordance with 15.31.

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq Hz	Rdng dB μ V	Loop Cable 15.31			Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	dB	dB					
1	658.102k	20.0	+10.2	+0.1	-20.0	+0.0	10.3	31.2	-20.9	Horiz
2	1.185M	11.8	+10.2	+0.2	-20.0	+0.0	2.2	26.1	-23.9	Vert
3	921.320k	14.1	+10.1	+0.2	-20.0	+0.0	4.4	28.3	-23.9	Vert
4	1.185M	9.2	+10.2	+0.2	-20.0	+0.0	-0.4	26.1	-26.5	Horiz
5	1.448M	7.2	+10.2	+0.2	-20.0	+0.0	-2.4	24.3	-26.7	Horiz
6	921.342k	10.7	+10.1	+0.2	-20.0	+0.0	1.0	28.3	-27.3	Horiz
7	526.490k	15.0	+10.1	+0.1	-20.0	+0.0	5.2	33.2	-28.0	Vert

8	658.135k	12.3	+10.2	+0.1	-20.0	+0.0	2.6	31.2	-28.6	Vert
9	263.260k	21.3	+10.0	+0.1	-60.0	+0.0	-28.6	19.2	-47.8	Vert
10	394.905k	17.7	+10.1	+0.1	-60.0	+0.0	-32.1	15.7	-47.8	Vert
11	263.234k	21.2	+10.0	+0.1	-60.0	+0.0	-28.7	19.2	-47.9	Horiz
12	135.226k	25.5	+10.0	+0.0	-60.0	+0.0	-24.5	25.0	-49.5	Vert
13	394.854k	15.5	+10.1	+0.1	-60.0	+0.0	-34.3	15.7	-50.0	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**
 Specification: **FCC 15.209**
 Work Order #: **78257** Date: 01/24/2002
 Test Type: **Radiated Scan** Time: 09:43:44
 Equipment: **PPC for IGMS** Sequence#: 25
 Manufacturer: MiniMed Tested By: Randal Clark
 Model: MMT-3150
 S/N: 200007

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
PPC for 2007C*	MiniMed	MMT-3150	200007
PPC for IGMS	MiniMed	MMT-3150	200009
IGMS	MiniMed	MMT-7710	008
Insulin Pump	MiniMed	MMT-2007C	20101

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Laptop Computer	Micron	NBK001371-00	1459617-0030
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 9kHz - 30MHz. Test Distance correction factor 40dB/decade used in accordance with 15.31.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq Hz	Rdng dBµV	Loop Cable 15.31			Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			dB	dB	dB					
1	916.850k	14.5	+10.1	+0.2	-20.0	+0.0	4.8	28.3	-23.5	Vert
2	656.500k	16.9	+10.2	+0.1	-20.0	+0.0	7.2	31.2	-24.0	Vert
3	1.179M	10.1	+10.2	+0.2	-20.0	+0.0	0.5	26.1	-25.6	Vert
4	1.443M	8.2	+10.2	+0.2	-20.0	+0.0	-1.4	24.4	-25.8	Horiz
5	1.442M	7.8	+10.2	+0.2	-20.0	+0.0	-1.8	24.4	-26.2	Vert
6	655.300k	14.1	+10.2	+0.1	-20.0	+0.0	4.4	31.3	-26.9	Horiz
7	918.950k	9.5	+10.1	+0.2	-20.0	+0.0	-0.2	28.3	-28.5	Horiz

8	392.780k	19.3	+10.1	+0.1	-60.0	+0.0	-30.5	15.7	-46.2	Horiz
9	135.000k	28.1	+10.0	+0.0	-60.0	+0.0	-21.9	25.0	-46.9	Vert
10	392.850k	18.5	+10.1	+0.1	-60.0	+0.0	-31.3	15.7	-47.0	Vert
11	135.000k	27.4	+10.0	+0.0	-60.0	+0.0	-22.6	25.0	-47.6	Horiz
12	261.550k	21.1	+10.0	+0.1	-60.0	+0.0	-28.8	19.2	-48.0	Horiz
13	393.450k	16.9	+10.1	+0.1	-60.0	+0.0	-32.9	15.7	-48.6	Vert
14	262.000k	20.1	+10.0	+0.1	-60.0	+0.0	-29.8	19.2	-49.0	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/24/2002

Test Type: **Radiated Scan**

Time: 17:44:25

Equipment: **PPC for IGMS**

Sequence#: 41

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-7710

S/N: 007

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
IGMS*	MiniMed	MMT-7710	007
Insulin Pump	MiniMed	MMT-2007C	20104
PPC for IGMS	MiniMed	MMT-3150	200010
PPC for 2007C	MiniMed	MMT-3150	200005

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Glucose Sensor	MiniMed		Not Serialized
Laptop Computer	Micron	NBK001371-00	1459617-0030

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 9kHz - 30MHz. Test Distance correction factor 40dB/decade used in accordance with 15.31.

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq Hz	Rdng dB μ V	Loop Cable 15.31			Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	dB	dB					
1	923.880k	15.0	+10.1	+0.2	-20.0	+0.0	5.3	28.3	-23.0	Vert
2	1.188M	8.9	+10.2	+0.2	-20.0	+0.0	-0.7	26.1	-26.8	Vert
3	1.452M	7.0	+10.2	+0.2	-20.0	+0.0	-2.6	24.3	-26.9	Vert
4	1.188M	8.2	+10.2	+0.2	-20.0	+0.0	-1.4	26.1	-27.5	Vert
5	657.780k	13.2	+10.2	+0.1	-20.0	+0.0	3.5	31.2	-27.7	Horiz
6	1.184M	7.7	+10.2	+0.2	-20.0	+0.0	-1.9	26.1	-28.0	Horiz
7	660.980k	12.8	+10.2	+0.1	-20.0	+0.0	3.1	31.2	-28.1	Vert

8	921.640k	9.8	+10.1	+0.2	-20.0	+0.0	0.1	28.3	-28.2	Horiz
9	1.447M	3.4	+10.2	+0.2	-20.0	+0.0	-6.2	24.3	-30.5	Horiz
10	264.230k	21.7	+10.0	+0.1	-60.0	+0.0	-28.2	19.2	-47.4	Vert
11	395.100k	17.2	+10.1	+0.1	-60.0	+0.0	-32.6	15.7	-48.3	Vert
12	394.940k	15.7	+10.1	+0.1	-60.0	+0.0	-34.1	15.7	-49.8	Horiz
13	263.200k	18.7	+10.0	+0.1	-60.0	+0.0	-31.2	19.2	-50.4	Horiz
14	135.983k	8.2	+10.0	+0.0	-60.0	+0.0	-41.8	24.9	-66.7	Vert
15	137.400k	7.0	+10.0	+0.0	-60.0	+0.0	-43.0	24.8	-67.8	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/23/2002

Test Type: **Radiated Scan**

Time: 10:49:40

Equipment: **PPC for IGMS**

Sequence#: 15

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-2007C

S/N: 20103

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
IGMS	MiniMed	MMT-7710	009
Insulin Pump*	MiniMed	MMT-2007C	20103
PPC for 2007C	MiniMed	MMT-3150	200011
PPC for IGMS	MiniMed	MMT-3150	200008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Laptop Computer	Micron	NBK001371-00	1459617-0030
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 30-1000MHz. Test Distance correction factor 40dB/decade used in accordance with 15.31.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq Hz	Rdng dB μ V	Amp				Cable		Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	dB	dB	dB	dB	dB					
1	110.590M	48.4	-27.1	+13.4	+0.0	+2.1	+0.0	36.8	43.5	-6.7	Vert		
2	194.550M	42.2	-26.7	+17.6	+0.0	+2.8	+0.0	35.9	43.5	-7.6	Horiz		
3	184.390M	42.5	-26.8	+16.8	+0.0	+2.7	+0.0	35.2	43.5	-8.3	Horiz		
4	180.570M	41.4	-26.8	+16.4	+0.0	+2.7	+0.0	33.7	43.5	-9.8	Horiz		
5	109.430M	45.2	-27.1	+13.3	+0.0	+2.1	+0.0	33.5	43.5	-10.0	Horiz		
6	180.440M	40.8	-26.8	+16.4	+0.0	+2.7	+0.0	33.1	43.5	-10.4	Horiz		
7	166.230M	42.6	-26.8	+14.4	+0.0	+2.5	+0.0	32.7	43.5	-10.8	Horiz		

8	173.140M	39.2	-26.8	+15.8	+0.0	+2.6	+0.0	30.8	43.5	-12.7	Horiz
9	201.990M	33.5	-26.7	+17.9	+0.0	+2.9	+0.0	27.6	43.5	-15.9	Horiz
10	179.640M	34.8	-26.8	+16.4	+0.0	+2.7	+0.0	27.1	43.5	-16.4	Horiz
11	130.413M	37.3	-27.0	+14.0	+0.0	+2.2	+0.0	26.5	43.5	-17.0	Horiz
12	126.858M	36.8	-27.0	+14.2	+0.0	+2.2	+0.0	26.2	43.5	-17.3	Horiz
13	123.518M	36.5	-27.0	+14.3	+0.0	+2.2	+0.0	26.0	43.5	-17.5	Horiz
14	129.243M	36.8	-27.0	+14.0	+0.0	+2.2	+0.0	26.0	43.5	-17.5	Horiz
15	127.998M	36.6	-27.0	+14.1	+0.0	+2.2	+0.0	25.9	43.5	-17.6	Horiz
16	131.608M	36.5	-26.9	+13.9	+0.0	+2.3	+0.0	25.8	43.5	-17.7	Horiz
17	124.413M	35.8	-27.0	+14.4	+0.0	+2.2	+0.0	25.4	43.5	-18.1	Horiz
18	121.438M	35.1	-27.0	+14.3	+0.0	+2.2	+0.0	24.6	43.5	-18.9	Horiz
19	121.618M	34.3	-27.0	+14.3	+0.0	+2.2	+0.0	23.8	43.5	-19.7	Horiz
20	86.628M	35.7	-27.1	+8.5	+0.0	+1.8	+0.0	18.9	40.0	-21.1	Horiz

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Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/23/2002

Test Type: **Radiated Scan**

Time: 16:56:15

Equipment: **PPC for IGMS**

Sequence#: 22

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-3150

S/N: 200007

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
PPC for 2007C*	MiniMed	MMT-3150	200007
PPC for IGMS	MiniMed	MMT-3150	200009
IGMS	MiniMed	MMT-7710	008
Insulin Pump	MiniMed	MMT-2007C	20101

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Laptop Computer	Micron	NBK001371-00	1459617-0030
Glucose Sensor	MiniMed		Not Serialized

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 30-1000MHz.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq Hz	Rdng dB μ V	Amp				Cable		Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	Bicon dB	Log 1 dB		dB						
1	111.118M	51.6	-27.1	+13.5	+0.0	+2.1	+0.0	+0.0	40.1	43.5	-3.4	Vert	
2	108.808M	50.0	-27.1	+13.3	+0.0	+2.1	+0.0	+0.0	38.3	43.5	-5.2	Vert	
3	110.112M	45.3	-27.1	+13.4	+0.0	+2.1	+0.0	+0.0	33.7	43.5	-9.8	Horiz	
4	109.158M	44.9	-27.1	+13.3	+0.0	+2.1	+0.0	+0.0	33.2	43.5	-10.3	Vert	
5	202.089M	38.8	-26.7	+17.9	+0.0	+2.9	+0.0	+0.0	32.9	43.5	-10.6	Horiz	
6	194.550M	38.8	-26.7	+17.6	+0.0	+2.8	+0.0	+0.0	32.5	43.5	-11.0	Horiz	
7	155.022M	40.9	-26.8	+13.1	+0.0	+2.4	+0.0	+0.0	29.6	43.5	-13.9	Horiz	

8	111.013M QP	40.9	-27.1	+13.5	+0.0	+2.1	+0.0	29.4	43.5	-14.1	Vert
9	173.266M	36.8	-26.8	+15.8	+0.0	+2.6	+0.0	28.4	43.5	-15.1	Horiz
10	110.441M QP	39.5	-27.1	+13.4	+0.0	+2.1	+0.0	27.9	43.5	-15.6	Horiz
^	110.393M	44.6	-27.1	+13.4	+0.0	+2.1	+0.0	33.0	43.5	-10.5	Horiz
^	110.411M	44.6	-27.1	+13.4	+0.0	+2.1	+0.0	33.0	43.5	-10.5	Horiz
13	110.362M QP	38.8	-27.1	+13.4	+0.0	+2.1	+0.0	27.2	43.5	-16.3	Horiz
14	137.943M	38.0	-26.9	+13.4	+0.0	+2.3	+0.0	26.8	43.5	-16.7	Horiz
15	138.010M	38.0	-26.9	+13.4	+0.0	+2.3	+0.0	26.8	43.5	-16.7	Horiz
16	109.270M QP	38.3	-27.1	+13.3	+0.0	+2.1	+0.0	26.6	43.5	-16.9	Horiz
^	109.270M	43.7	-27.1	+13.3	+0.0	+2.1	+0.0	32.0	43.5	-11.5	Horiz
18	111.135M QP	37.7	-27.0	+13.6	+0.0	+2.1	+0.0	26.4	43.5	-17.1	Horiz
^	111.135M	43.7	-27.1	+13.5	+0.0	+2.1	+0.0	32.2	43.5	-11.3	Horiz
20	123.520M QP	36.4	-27.0	+14.3	+0.0	+2.2	+0.0	25.9	43.5	-17.6	Horiz
^	123.498M	40.1	-27.0	+14.3	+0.0	+2.2	+0.0	29.6	43.5	-13.9	Horiz
22	131.456M	36.3	-26.9	+13.9	+0.0	+2.3	+0.0	25.6	43.5	-17.9	Horiz
23	86.244M	39.0	-27.1	+8.4	+0.0	+1.8	+0.0	22.1	40.0	-17.9	Horiz
24	155.216M QP	35.7	-26.8	+13.1	+0.0	+2.4	+0.0	24.4	43.5	-19.1	Horiz
25	180.441M QP	31.9	-26.8	+16.4	+0.0	+2.7	+0.0	24.2	43.5	-19.3	Horiz
^	180.440M	33.9	-26.8	+16.4	+0.0	+2.7	+0.0	26.2	43.5	-17.3	Horiz
27	131.679M QP	34.8	-26.9	+13.8	+0.0	+2.3	+0.0	24.0	43.5	-19.5	Horiz
28	174.400M	31.8	-26.8	+16.0	+0.0	+2.6	+0.0	23.6	43.5	-19.9	Horiz
29	121.654M	33.9	-27.0	+14.3	+0.0	+2.2	+0.0	23.4	43.5	-20.1	Horiz
30	121.592M	33.9	-27.0	+14.3	+0.0	+2.2	+0.0	23.4	43.5	-20.1	Horiz
									Without transmitters on.		

31	134.452M	34.2	-26.9	+13.6	+0.0	+2.3	+0.0	23.2	43.5	-20.3	Horiz
	QP										
^	134.510M	40.1	-26.9	+13.6	+0.0	+2.3	+0.0	29.1	43.5	-14.4	Horiz
33	173.145M	31.0	-26.8	+15.8	+0.0	+2.6	+0.0	22.6	43.5	-20.9	Horiz
	QP										
34	126.827M	32.6	-27.0	+14.2	+0.0	+2.2	+0.0	22.0	43.5	-21.5	Horiz
	QP										
^	126.884M	39.4	-27.0	+14.2	+0.0	+2.2	+0.0	28.8	43.5	-14.7	Horiz
36	178.389M	29.5	-26.8	+16.3	+0.0	+2.6	+0.0	21.6	43.5	-21.9	Horiz
	QP										
^	178.390M	32.9	-26.8	+16.3	+0.0	+2.6	+0.0	25.0	43.5	-18.5	Horiz
38	121.414M	28.3	-27.0	+14.3	+0.0	+2.2	+0.0	17.8	43.5	-25.7	Horiz
	QP										
^	121.494M	41.8	-27.0	+14.3	+0.0	+2.2	+0.0	31.3	43.5	-12.2	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **MiniMed Inc.**

Specification: **FCC 15.209**

Work Order #: **78257**

Date: 01/24/2002

Test Type: **Maximized Emissions**

Time: 17:29:10

Equipment: **PPC for IGMS**

Sequence#: 48

Manufacturer: MiniMed

Tested By: Randal Clark

Model: MMT-3150

S/N: 200010

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
IGMS	MiniMed	MMT-7710	007
Insulin Pump	MiniMed	MMT-2007C	20104
PPC for IGMS*	MiniMed	MMT-3150	200010
PPC for 2007C	MiniMed	MMT-3150	200005

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	NEC	PC-6220-A1803-R	F72502795
Glucose Sensor	MiniMed		Not Serialized
Laptop Computer	Micron	NBK001371-00	1459617-0030

Test Conditions / Notes:

EUT is a personal communicator (PPC) tested in two configurations: a glucose monitor (IGM) and a PPC, and an insulin pump and PPC. Each PPC is controlled by a laptop computer using a fiber optic connection. All devices are battery operated. IGMS set: The PPC and IGM are located six inches apart with the PPC mounted in a test jig. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021101-001. The IGM is running software version 9021102-001. Insulin Pump set: The PPC and pump are located six inches apart and are mounted in a test jig simulating normal usage. The test software running on the laptop is entitled 131kHz EMI/EMC Diagnostic Test Software version 9021084-001. The PPC is running software version 9021083-001. The insulin pump is running software version 9021055-003. Frequency Range Tested: 30-1000 MHz.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq Hz	Rdng dB μ V	Amp				Cable					
			dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant	
1	115.720M	49.4	-27.0	+13.9	+0.0	+2.1	+0.0	38.4	43.5	-5.1	Vert	
2	114.670M	48.5	-27.0	+13.8	+0.0	+2.1	+0.0	37.4	43.5	-6.1	Vert	
3	117.620M	46.4	-27.0	+14.0	+0.0	+2.1	+0.0	35.5	43.5	-8.0	Vert	
4	110.426M	43.5	-27.1	+13.4	+0.0	+2.1	+0.0	31.9	43.5	-11.6	Horiz	
5	109.418M	42.1	-27.1	+13.3	+0.0	+2.1	+0.0	30.4	43.5	-13.1	Horiz	
6	185.394M	36.0	-26.8	+16.8	+0.0	+2.7	+0.0	28.7	43.5	-14.8	Horiz	

7	185.990M	34.2	-26.8	+16.9	+0.0	+2.7	+0.0	27.0	43.5	-16.5	Horiz
8	177.970M	32.1	-26.8	+16.3	+0.0	+2.6	+0.0	24.2	43.5	-19.3	Horiz
9	178.580M	30.9	-26.8	+16.3	+0.0	+2.6	+0.0	23.0	43.5	-20.5	Horiz
10	181.695M	30.5	-26.8	+16.5	+0.0	+2.7	+0.0	22.9	43.5	-20.6	Horiz