

Medtronic Inc. Interstim Model 3537 (PTM)

Report #: MDTR0153



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC - (888) 364-2378 - www.nwemc.com

California – Minnesota – Oregon – New York – Washington



Certificate of Test Last Date of Test: April 9, 2012 Medtronic Inc. Model: Interstim Model 3537 (PTM)

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Channel Spacing	FCC 15.247:2012	ANSI C63.10:2009	Pass
Dwell Time	FCC 15.247:2012	ANSI C63.10:2009	Pass
Number of Hopping Frequencies	FCC 15.247:2012	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2012	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2012	ANSI C63.10:2009	Pass
Band Edge - Hopping Mode	FCC 15.247:2012	ANSI C63.10:2009	Pass
Spurious Conducted Emissions	FCC 15.247:2012	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2012	ANSI C63.10:2009	Pass
Duty Cycle	FCC 15.247:2012	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2012	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager



NVLAP Lab Code: 200881-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc. 9349 W Broadway Ave. Brooklyn Park, MN 55445

Phone: (763) 425-2281

Fax: (763) 424-3469

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834E-1).

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.



Revision Number	Description	Date	Page Number
00	None		



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025. The scope includes radio, ITE, and medical standards from around the world. See: <u>http://www.nwemc.com/accreditations/</u>

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.





Oregon Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs SU01-SU07 14128 339 th Ave. SE Sultan, WA 98294 (360) 793-8675		
VCCI						
C-1071, R-1025, G-84, C-2687, T-1658, R-2318	R-1943, G-85, C-2766, T-1659, G-548		R-3125, G-86, G-141, C-3464, T-1634	R-871, G-83, C-3265, T-1511		
Industry Canada						
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1		









Product Description

Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic Inc.
Address:	710 Medtronic Parkway, LS250
City, State, Zip:	Fridley, MN 55432
Test Requested By:	Paul Wood
Model:	Interstim Model 3537 (PTM)
First Date of Test:	April 09, 2012
Last Date of Test:	April 09, 2012
Receipt Date of Samples:	April 09, 2012
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

Bluetooth radio installed in Interstim medical device.

Testing Objective:

To demonstrate compliance to FCC 15.247 requirements.



Configurations

Configuration 1 MDTR0153

Software/Firmware Running during test					
Description	Version				
ptm_ptm3_emi_emc_app_bt_telm_1_2.hex	2.0				

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Interstim PTM3	Medtronic Inc.	3537	NLD001577N		

Peripherals in test setup boundary						
Description	Manufacturer	Model/Part Number	Serial Number			
Laptop	Dell	Precision M4400	6356184841			
Laptop Supply	Dell	DA130PE1-00	CN-OJU012-48661-9CS-2ZK1-A03			

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
SMA to L Coax	Yes	0.3m	No	Interstim PTM3	Measurement Cable	
AC Power	No	1.94m	No	Laptop Supply	AC Power	
DC Power	No	1.76m	Yes	Laptop	Laptop Supply	
USB to PTM	No	2.46m	No	Laptop	Interstim PTM3	
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.						

Configuration 2 MDTR0153

Software/Firmware Running during test				
Description	Version			
ptm_ptm3_emi_emc_app_bt_telm_1_2.hex	2.0			

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Interstim PTM3	Medtronic Inc.	3537	NLD001577N		



Modifications

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
		Spurious	Tested as	No EMI suppression	EUT remained at
1	4/9/2012	Radiated	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
		Power	Tested as	No EMI suppression	EUT remained at
2	4/9/2012	Spectral	delivered to	devices were added or	Northwest EMC
		Density	Test Station.	modified during this test.	following the test.
		Output	Tested as	No EMI suppression	EUT remained at
3	4/9/2012	Duipui Dowor	delivered to	devices were added or	Northwest EMC
		FOWEI	Test Station.	modified during this test.	following the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
4	4/9/2012	Bandwidth	delivered to	devices were added or	Northwest EMC
		Danuwiutin	Test Station.	modified during this test.	following the test.
		Band Edge -	Tested as	No EMI suppression	EUT remained at
5	4/9/2012	Hopping	delivered to	devices were added or	Northwest EMC
		Mode	Test Station.	modified during this test.	following the test.
		Band Edge	Tested as	No EMI suppression	EUT remained at
6	4/9/2012	Compliance	delivered to	devices were added or	Northwest EMC
		Compliance	Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
7	4/9/2012	Conducted	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
			Tested as	No EMI suppression	EUT remained at
8	4/9/2012	Duty Cycle	delivered to	devices were added or	Northwest EMC
			Test Station.	modified during this test.	following the test.
		Channel	Tested as	No EMI suppression	EUT remained at
9	4/9/2012	Spacing	delivered to	devices were added or	Northwest EMC
		opacing	Test Station.	modified during this test.	following the test.
			Tested as	No EMI suppression	EUT remained at
10	4/9/2012	Dwell Time	delivered to	devices were added or	Northwest EMC
			Test Station.	modified during this test.	following the test.
		Number of	Tested as	No EMI suppression	Scheduled testing
11	4/9/2012	Hopping	delivered to	devices were added or	was completed
		Frequencies	Test Station.	modified during this test.	was completed.

ENC

Channel Spacing

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Frequency Accuracy: +0.12/-0.01) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.



XMit 2012.04.06
PsaTx 2012.01.25

EUT:	Interstim Model 3537 (PT	M)			Work Order:	MDTR0153	
Serial Number:	NLD001577N				Date:	04/09/12	
Customer:	Medtronic Inc.				Temperature	22.83°C	
Attendees:	Paul Wood				Humidity	17%	
Project:	None				Barometric Pres.	1019.5	
Tested by:	Trevor Buls			Power: Battery	Job Site:	MN05	
TEST SPECIFICATIO	DNS			Test Method			
FCC 15.247:2012				ANSI C63.10:2009			
COMMENTS							
Payload size was se	et to 1024. Tx/Rx Mode: P	RBS9.					
DEVIATIONS FROM	TEST STANDARD						
None							
Configuration #	1	Signature	J	revor Buls			
					Value	Limit	Result
Hopping Mode					1.0 MHz	≥ 1 MHz	Pass



Channel Spacing





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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

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TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.



EUT: Interstim Model 3537 (PTM)		Work Order:	MDTR0153
Serial Number: NLD001577N		Date:	04/09/12
Customer: Medtronic Inc.		Temperature:	22.83°C
Attendees: Paul Wood		Humidity:	17%
Project: None		Barometric Pres.:	1019.5
Tested by: Trevor Buls	Power: Battery	Job Site:	MN05
TEST SPECIFICATIONS	Test Method		
FCC 15.247:2012	ANSI C63.10:2009		

Payload size was set to DH5: 339, 2DH5, 3DH5: 986. Tx/Rx Mode: PRBS9. Limit is based on a time domain of 0.4 Seconds * Number of Hopping Channels (79) = 31.6 sec. Scale factor is based on 12.64 sec window * 2.5 = 31.6 sec.

DEVIATIONS FROM TEST STANDARD

None									
Configuration #	1	Signature	Trevor	Bul	2				
			Pulse Width	Number of	Worst Case	Scale	On Time (mS)	Limit	
			(mS)	Pulses	High Time (mS)	Factor	During 31.6 S	(mS)	Result
DH5, GFSK									
	Low Channel		2.889	1	N/A	N/A	2.889	400	Pass
	Low Channel		2.889	50	144.45	2.5	361.125	400	Pass
	Mid Channel		2.892	1	N/A	N/A	2.892	400	Pass
	Mid Channel		2.892	47	135.924	2.5	339.81	400	Pass
	High Channel		2.889	1	N/A	N/A	2.889	400	Pass
	High Channel		2.889	52	150.228	2.5	375.57	400	Pass
2DH5, 4-DQPSK									
	Low Channel		2.892	1	N/A	N/A	2.892	400	Pass
	Low Channel		2.892	51	147.492	2.5	368.73	400	Pass
	Mid Channel		2.895	1	N/A	N/A	2.895	400	Pass
	Mid Channel		2.895	47	136.065	2.5	340.1625	400	Pass
	High Channel		2.892	1	N/A	N/A	2.892	400	Pass
	High Channel		2.892	45	130.14	2.5	325.35	400	Pass
3DH5, 8-DPSK									
	Low Channel		2.803	1	N/A	N/A	2.803	400	Pass
	Low Channel		2.803	46	128.938	2.5	322.345	400	Pass
	Mid Channel		2.803	1	N/A	N/A	2.803	400	Pass
	Mid Channel		2.803	48	134.544	2.5	336.36	400	Pass
	High Channel		2.803	1	N/A	N/A	2.803	400	Pass
	High Channel		2.803	52	145.756	2.5	364.39	400	Pass



			DH5,	, GFSK, Low Ch	annel		
	Pulse Width	Number of	Worst Case	Scale	On Time (mS)	Limit	
Г	2 889	Pulses	High Time (mS)	Factor	During 31.6 S	(mS) 400	Result
	2.009			IN/A	2.003	400	1 435
業	Agilent 01:3	32:38 Apr 1,	2012			RT	
North	west EMC, I	lnc		_		Δ	Mkr1 2.889 m
Ref -	1 <u>9 dBm</u>		#Atten 10 dl	B			0.97 dB
#Peak							
End							
J dRZ							
dD7							
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#LgAv	′						
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53 V	S						
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Cente Doo B	ग 2.402 00 NI 200 LU⊸	0 GHZ		บอน วด เม-		Sucon E 06	
Kes D	พ่วยข KHZ		•	FVDW 30 KHZ		_Sweep 2.00	4 ms (Z000 pts)

















Dwell Time



















Dwell Time













Dwell Time







Number of Hopping Frequencies

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

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TEST DESCRIPTION

The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.



NORTHWEST Number of Hopping Frequencies

EUT:	Interstim Model 3537 (PT	M)			Work Order:	MDTR0153	
Serial Number:	NLD001577N				Date:	04/09/12	
Customer:	Medtronic Inc.				Temperature:	22.83°C	
Attendees:	Paul Wood				Humidity:	17%	
Project:	None				Barometric Pres.:	1019.5	
Tested by:	Trevor Buls		Power	Battery	Job Site:	MN05	
TEST SPECIFICATI	ONS			Test Method			
FCC 15.247:2012				ANSI C63.10:2009			
COMMENTS							
Payload size was so	et to 1024. Tx/Rx Mode: P	RBS9.					
DEVIATIONS FROM	I TEST STANDARD						
None							
Configuration #	1	Signature	Trevor	Buls			
					Number of		
					Channels	Limit	Result
Hopping Mode					79	≥ 15	Pass



Number of Hopping Frequencies



ENC

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

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TEST DESCRIPTION

The 20 dB occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting in a no hop mode at its maximum data rate for each of the three different modulations available.





EUT	Tulntoratim Madal 2527 (P	TRA)			Work Orda	MDTD0152			
Sorial Numbo	NI D001577N				Date	. WDTR0155			
Senar Numbe	Medizenie Inc				Tomporature	Tomporatura: 22 92°C			
Attendeer	r: Medtronic inc.				Temperature	22.03 C			
Attendees	Attendees, Fail Wood				Humidit	1170			
Project None				Barometric Pres					
TESTED D	y: Trevor Buis		Power:	Battery	JOD SITE	IIINU5			
TEST SPECIFICA	TIONS								
FCC 15.247:2012				ANSI C63.10:2009					
COMMENTS									
Payload size was	set to 1024. Tx/Rx Mode: I	PRBS9.							
DEVIATIONS FRO	OM TEST STANDARD								
None									
			_	00					
Configuration #	1		1-1-1-1	13 11 2					
		Signature 🧹							
					Malaa	1 1 14	Dentil		
					Value	Limit	Result		
DH5, GFSK	Law Channel				020 749 141-	. 4 5 Mile	Deee		
	Low Channel				920.7 10 KHZ	< 1.5 IVITZ	Pass		
	Mid Channel				928.512 KHZ	< 1.5 MHZ	Pass		
	High Channel				927.258 KHZ	< 1.5 MHZ	Pass		
2DH5, 4-DQPSK							_		
	Low Channel				1.331 MHz	< 1.5 MHz	Pass		
	Mid Channel				1.317 MHz	< 1.5 MHz	Pass		
	High Channel				1.32 MHz	< 1.5 MHz	Pass		
3DH5, 8-DPSK									
	Low Channel				1.318 MHz	< 1.5 MHz	Pass		
	Mid Channel				1.304 MHz	< 1.5 MHz	Pass		
	High Channel				1.312 MHz	< 1.5 MHz	Pass		
	-								



#LgAv

M1 S2

#Res BW 13 kHz

Center 2.440 000 0 GHz

Transmit Freq Error

Occupied Bandwidth

Occupied Bandwidth

1.2236 MHz

10.733 kHz

928.512 kHz

Occupied Bandwidth

Span 2 MHz

99.90 % -20.00 dB

Sweep 11.33 ms (2000 pts)

x dB

Occ BW % Pwr



#VBW 43 kHz



99.90 %



Center 2.402 000 0 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.798 ms (2000 pts) Occupied Bandwidth Occ BW % Pwr -20.00 dB 1.3757 MHz x dB **Transmit Freq Error** 10.020 kHz

Occupied Bandwidth 1.331 MHz



Occupied Bandwidth







Occupied Bandwidth

3DH5, 8-DPSK, Low Channel Limit Result Value 1.318 MHz < 1.5 MHz Pass Agilent 01:16:32 Mar 31, 2012 Т 瘚. R Northwest EMC, Inc Ref 5 dBm #Peak #Atten 10 dB Log 5 dB/ March Offst 21.9 dB \rightarrow ÷ ٥ #LgAv M1 S2 Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.798 ms (2000 pts) Occupied Bandwidth Occ BW % Pwr 99.90 % x dB -20.00 dB 1.3741 MHz 9.165 kHz **Transmit Freq Error Occupied Bandwidth** 1.318 MHz 3DH5, 8-DPSK, Mid Channel





Occupied Bandwidth





Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Conducted Power: +/- 0.41) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting in a no hop mode at its maximum data rate for each of the three different modulations available.





ELIT. Interation Medial 2527 (DTM)		Work Orden	MDTD04E2			
Control New York (Control State Stat		Work Order:	WID1R0155			
Serial Number: NLD013/7N		Temperature: 02.82%C				
Customer: Medironic Inc.	Customer Medironic inc.					
Attendees: Paul Wood	Humidity:	17%				
Project: None	Barometric Pres.:	1019.5				
Tested by: Trevor Buls Po	ower: Battery	Job Site:	MN05			
TEST SPECIFICATIONS	Test Method					
FCC 15.247:2012	ANSI C63.10:2009					
COMMENTS						
Payload size was set to 1024. Tx/Rx Mode: PRBS9.						
-						
DEVIATIONS FROM TEST STANDARD						
None						
	- 0					
Configuration # 1	- Bull					
Signature Inerro	or a mar					
		Value	Limit	Result		
DH5, GFSK						
Low Channel		2.442 mW	< 125 mW	Pass		
Mid Channel		2.747 mW	< 125 mW	Pass		
High Channel		2.79 mW	< 125 mW	Pass		
2DH5, 4-DQPSK						
Low Channel		1.826 mW	< 125 mW	Pass		
Mid Channel		1.92 mW	< 125 mW	Pass		
High Channel		1.927 mW	< 125 mW	Pass		
3DH5, 8-DPSK						
Low Channel		1.916 mW	< 125 mW	Pass		
Mid Channel		2.045 mW	< 125 mW	Pass		
High Channel		2.06 mW	< 125 mW	Pass		
········		2.00 1111		. 1.00		



Output Power









Output Power








Output Power









Output Power









Output Power





ENC

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Amplitude Accuracy: +/- 0.49) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The channels closest to the band edges were selected. The spectrum was scanned across each band edge.

The EUT was transmitting at its maximum data rate using all three types of modulations available in Bluetooth EDR.





EUT	Interstim Model 3537 (PT	ſM)			Work Order:	MDTR0153	
Serial Number	r: NLD001577N				Date:	04/09/12	
Customer	: Medtronic Inc.				Temperature:	22.83°C	
Attendees	: Paul Wood				Humidity:	17%	
Project	t: None				Barometric Pres.:	1019.5	
Tested by	r: Trevor Buls		Power:	Battery	Job Site:	MN05	
TEST SPECIFICAT	TIONS			Test Method			
FCC 15.247:2012				ANSI C63.10:2009			
COMMENTS							
Payload size was	set to 1024. Tx/Rx Mode: P	PRBS9.					
DEVIATIONS FRO	MIESISIANDARD						
None		1					
Configuration #	1		T	BUD			
configuration #		Signature	Monor	ous			
		olghatare	0.000				
					Value	Limit	Result
DH5, GFSK							
	Low Channel				-51.25 dBc	≤ -20 dBc	Pass
	High Channel				-58.01 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK							
	Low Channel				-49.38 dBc	≤ -20 dBc	Pass
	High Channel				-57.8 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK							
	Low Channel				-50.3 dBc	≤ -20 dBc	Pass
	High Channel				-58.16 dBc	≤ -20 dBc	Pass



















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Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Amplitude Accuracy: +/- 0.49) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 5 MHz below the band edge to 5 MHz above the band edge.





EUT	Interstim Model 3537 (PT	ΓM)			Work Order:	MDTR0153	
Serial Number	r: NLD001577N				Date:	04/09/12	
Customer	: Medtronic Inc.				Temperature:	22.83°C	
Attendees	: Paul Wood				Humidity:	17%	
Project	t: None				Barometric Pres.:	1019.5	
Tested by	r: Trevor Buls		Power:	Battery	Job Site:	MN05	
TEST SPECIFICAT	TIONS			Test Method			
FCC 15.247:2012				ANSI C63.10:2009			
COMMENTS							
Payload size was	set to 255. Tx/Rx Mode: PF	RBS9.					
DEVIATIONS FRO	MIESISIANDARD						
None							
Configuration #	1		T	BUD			
configuration #		Signature	Monor	- Dulp			
		olghatare	0.001				
					Value	Limit	Result
DH5, GFSK							
	Low Channel				-50.54 dBc	≤ -20 dBc	Pass
	High Channel				-59.99 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK							
	Low Channel				-53.09 dBc	≤ -20 dBc	Pass
	High Channel				-54 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK							
	Low Channel				-53.15 dBc	≤ -20 dBc	Pass
	High Channel				-53.05 dBc	≤ -20 dBc	Pass











2DH5, 4-DQPSK, High Channel Value Limit Result -54 dBc ≤ -20 dBc Pass Agilent 04:22:57 Mar 31, 2012 R ⋇ Т Northwest EMC, Inc ▲ Mkr1 7.547 MHz Ref 5 dBm #Peak #Atten 10 dB -53.99 dB ¢ Log 10 dB/ AAA ав/ Offst 21.9 dB WY #VAvg V1 S2 S3 FC Month and march march march . n I £(f): f>50k Swp Center 2.483 500 GHz #Res BW 100 kHz Span 10 MHz #VBW 300 kHz Sweep 1.066 ms (1000 pts)









Spurious Conducted Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

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TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.



Spurious Conducted Emissions

EUT: Interstim Model 3537 (PTM) Work Order: MOTR0153 Sorial Number NLD00157N Date: G400912 Customer: Mestronic Inc. Temperature: 22.83°C°C Attendes: Faul Wood Burometric Press; 1013.5 Project: None Burometric Press; 1013.5 EVESTIME Mode: Prove Buils Power Battery EVESTIME Mode: Prove State Mode: Press Burometric Press; 1013.5 FORDER STATURS Fail Method Cit S.427.201 ANSI C63.10.2009 Sold Name Fail Method Sold Name Frequency Range Value Low Channel 30 MH2 - 125 GH2 Mid Channel 30 MH2 - 125 GH2								
Serial Number: INL0061577N Date: Id409412 Customet: Medronic Inc. Temperature: 22837C°C Attendess: Paul Wood Humidity: 17%. Project: None Barometric Pres: 1019.3 Tested by: Invorve Buls Power: Battery Tested by: Invorve Buls Test Method Tested by: Invorve Buls Test Method Test SPECIFICATIONS Test Method Scientific Status Test Status <th>EU</th> <th>T: Interstim Model 3537 (P</th> <th>'TM)</th> <th></th> <th>Work Order:</th> <th>MDTR0153</th> <th></th>	EU	T: Interstim Model 3537 (P	'TM)		Work Order:	MDTR0153		
Custome: Importance Importanc	Serial Numbe	er: NLD001577N			Date:	04/09/12		
Attendees: Pail Wood Humidity: Trike Barometic Proj. Tested by: Triver Buts Power: Batomy: Tested by: Triver Buts Tested by: Triver Buts Tested by: Test Method Test Method <td< th=""><th>Custome</th><th>r: Medtronic Inc.</th><th></th><th></th><th>Temperature</th><th>22.83°C°C</th><th></th></td<>	Custome	r: Medtronic Inc.			Temperature	22.83°C°C		
Project; None Barometric Pres; [1019.5 Test depCif CATIONS Test Method FEST SPECIFICATIONS Test Method COMMENTS ARI Cestinod 2004 ARI Cestinod COMMENTS ARI Cestinod Payload size was set to 1024. Tx/Rx Mode: PRBS9. Second Second Frequency Range Value Low Channel 12.5 GHz Low Channel 12.5 GHz High Channel	Attendee	s: Paul Wood			Humidity	17%		
Tested by: [Trevor Buis Power: [Battry Job Site: [MN05 EST SPECIFICATIONS Test Method	Projec	t: None			Barometric Pres.	1019.5		
Test SPECIFICATIONS Test Method ANSI C63 10:2009 ANSI C63 10:2009 COMMENTS Payload size was set to 1024. Tx/Rx Mode: PRBS9. Septiant Test STANDARD Signature Previous Standard Signature Previous Standard Signature Signature Value Limit Result Configuration # 1 Signature Signature Prequency Range Value Limit Result Unit Colspan="2">Configuration # 1 Signature Signature Pass Diff. Colspan="2">Configuration # 12 GHz -42.14 dbc \$-20 dbc Pass Mid Channel 12 GHz -42.14 dbc \$-20 dbc Pass Mid Channel 12 GHz -42.14 dbc \$-20 dbc Pass Mid Channel 12 GHz	Tested by	y: Trevor Buls		Power: Battery	Job Site:	MN05		
ECG 15.247:2012 ANSI C63.10:2009 COMMENTS Payload size was set to 1024. Tx/Rx Mode: PRBS9. DEVIATIONS FROM TEST STANDARD Signature Signature Configuration # 1 Signature Signature Frequency Range Value Low Channel Low Channel 20 Add to Pass Add Channel Mid Channel 20 Add to Pass Add Bd to Pass Add Channel High Channel 2.2 GHz 4.2 14 dBc 2.0 dBc Pass Add Channel Low Channel 2.2 GHz 4.42.14 dBc 4.20 dBc Pass Add Channel High Channel 2.2 GHz 4.44.88 dBc 2.00 dBc Pass Add Bc 2.00 dBc Pass Add Bc 2.00 dBc Pass Add Bc 2.00 dBc Pass Add Bc 2.00 dBc Pass Ad	TEST SPECIFICA	TIONS		Test Method				
COMMENTS Payload size was set to 1024. Tx/Rx Mode: PRBS9. DEVIATIONS FROM TEST STANDARD Septimized and the second sec	FCC 15.247:2012			ANSI C63.10:2009				
ConMERTS Payload size was set to 1024. Tx/Rx Mode: PRBS9. DEVIATIONS FROM TEST STANDARD Signature Frequency Range Value Limit Result DH5, GFSK Configuration # 1 Signature Frequency Range Value Limit Result Low Channel 12.5 GHz 42.14 dBc 5.20 dBc Pass Low Channel 12.5 GHz 42.14 dBc 5.20 dBc Pass Mid Channel 12.5 GHz 25.5 dBc 5.20 dBc Pass Pass Mid Channel 12.5 GHz 25.5 GHz 43.5 dBc 5.20 dBc Pass High Channel 12.5 GHz 25.5 GHz 43.8 dBc 5.20 dBc Pass Low Channel 12.5 GHz 25.5 GHz 43.8 dBc 5.20 dBc Pass High Channel 12.5 GHz 25.5 GHz 43.8 dBc 5.20 dBc Pass								
Payload size was set to 1024. Tx/Rx Mode: PRBS9.	COMMENTS							
DetVIATIONS FROM TEST STANDARD None Total Signature Total Signature Signature Signature Signature Signature DH5, GFSK Value Limit Reguency Range Value Limit Result DH5, GFSK - 42.14 dBc S - 20 dBc Pass Mid Channel Low Channel 2.5 GHz - 2.5 GHz - 42.14 dBc S - 20 dBc Pass Pass Mid Channel 12.5 GHz - 2.5 GHz - 42.14 dBc S - 20 dBc Pass DH5, 4-DQPSK Colspan= 2.5 GHz - 2.5 GHz - 43.86 dBc - 20 dBc <td co<="" th=""><th>Payload size was</th><th>set to 1024. Tx/Rx Mode:</th><th>PRBS9.</th><th></th><th></th><th></th><th></th></td>	<th>Payload size was</th> <th>set to 1024. Tx/Rx Mode:</th> <th>PRBS9.</th> <th></th> <th></th> <th></th> <th></th>	Payload size was	set to 1024. Tx/Rx Mode:	PRBS9.				
DeViATIONS FROM TEST STANDARD Configuration # 1 Trequency Rage Value Limit Result DEVIATIONS FROM TEST STANDARD Frequency Rage Value Limit Result DEVICE Colspan="2">Configuration # DEVICE Colspan="2">Value Limit Result Configuration # DEVICE Colspan="2">Value Limit Result Configuration # Value Limit Result DEVISION Channel 0 Low Channel 12.5 GHz -42.14 dBc -20 dBc Pass High Channel Mid Channel 12.5 GHz -44.68 dBc -20 dBc Pass High Channel Low Channel 12.5 GHz -43.66 dBc -20 dBc Pass High Channel Low Channel 12.5 GHz -43.66 dBc -20 dBc Pass High Channel -20 dBc -2								
None 1 Signature Frequency Range Value Limit Result DH5, GFSK	DEVIATIONS FRO	OM TEST STANDARD						
Configuration # 1 Jury Burge Jury Burge Frequency Rage Value Linkt Result DH5, GFSK -42.14 dBc \$ -20 dBc Pass	None							
Connguration # 1 Signature Frequency Range Value Limit Result DH5, GFSK - 20 MHz - 12.5 GHz -42.14 dBc 5-20 dBc Pass Low Channel 30 MHz - 12.5 GHz -42.14 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -52.5 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -53.6 dBc 5-20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.6 dBc 5-20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.0 GBc 5-20 dBc Pass High Channel 12.5 GHz - 25 GHz -43.86 dBc 5-20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.86 dBc 5-20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.26 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -43.26 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -43.26 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz			T	- 01.				
Frequency Range Value Limit Result DH5, GFSK 30 MHz - 12.5 GHz -42.14 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -52.5 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -53.66 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -43.6 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.6 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.8 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -53.06 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.8 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.80 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 12.5 GHz -43.80 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -49.16 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 12.5 GHz -40.16 dBc ≤ -20 dBc Pass	Configuration #	1	Signature	woor Duls				
Range Value Limit Result DH5, GFSK				Frequency				
DH5, GFSK -42.14 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -62.53 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -62.53 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -64.68 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -53.6 dBc \$ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.0 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -63.0 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.8 dB dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.8 dB dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -47.95 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -47.95 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -47.95 dBc \$ -20 dBc Pass <th></th> <th></th> <th></th> <th>Range</th> <th>Value</th> <th>Limit</th> <th>Result</th>				Range	Value	Limit	Result	
Low Channel 30 MHz - 12.5 GHz -42.14 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -52.6 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -44.68 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.68 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.5 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.68 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.80 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.80 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.80 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.80 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -47.07 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -47.07 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.26 dBc \$ -20 dBc	DH5, GFSK							
Low Channel 12.5 GHz - 25 GHz -52.53 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -44.68 dBc 5-20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -53.6 dBc 5-20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.5 dBc 5-20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.5 dBc 5-20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.0 GBc 5-20 dBc Pass ZDH5, 4-DQPSK -50.0 Channel 12.5 GHz - 25 GHz -43.20 dBc 5-20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.80 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.80 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -47.07 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -47.07 dBc 5-20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.26 dBc 5-20 dBc Pass Mid Channel 30 MHz - 12.5 GHz <td></td> <td>Low Channel</td> <td></td> <td>30 MHz - 12.5 GHz</td> <td>-42.14 dBc</td> <td>≤ -20 dBc</td> <td>Pass</td>		Low Channel		30 MHz - 12.5 GHz	-42.14 dBc	≤ -20 dBc	Pass	
Mid Channel 30 MHz - 12.5 GHz -44.68 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -53.6 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.6 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.6 dBc \$ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.05 dBc \$ -20 dBc Pass ZDH5, 4-DQPSK -43.86 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.86 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.86 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.89 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -47.07 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc \$ -20 dBc Pass Ubt, 8-DPSK High Channel 30 MHz - 12.5 GHz -43.26 dBc \$ -20 dBc Pass Wid Channel 12.5 GHz - 25 GHz -43.26 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.26		Low Channel		12.5 GHz - 25 GHz	-52.53 dBc	≤ -20 dBc	Pass	
Mid Channel 12.5 GHz. 25 GHz -53.6 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.5 dBc \$ -20 dBc Pass High Channel 12.5 GHz. 25 GHz -53.0 dBc \$ -20 dBc Pass 2DH5, 4-DQPSK -53.6 dBc \$ -20 dBc Pass Low Channel 12.5 GHz. 25 GHz -43.80 dBc \$ -20 dBc Pass Low Channel 12.5 GHz. 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz. 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz. 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz. 25 GHz -47.07 dBc \$ -20 dBc Pass High Channel 30 MHz. 12.5 GHz -47.07 dBc \$ -20 dBc Pass High Channel 30 MHz. 12.5 GHz -47.07 dBc \$ -20 dBc Pass JDH5, 8-DPSK JDK -47.07 dBc \$ -20 dBc Pass Mid Channel 30 MHz. 12.5 GHz -43.26 dBc \$ -20 dBc Pass JDH5, 8-DPSK JDK JDK S -20 dBc Pass S -20 dB		Mid Channel		30 MHz - 12.5 GHz	-44.68 dBc	≤ -20 dBc	Pass	
High Channel 30 MHz 12.5 GHz -43.5 dBc \$ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -53.05 dBc \$ -20 dBc Pass 2DH5, 4-DQPSK -50.06 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.6 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.89 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.89 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.95 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.95 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc \$ -20 dBc Pass JDH5, 8-DPSK U -47.07 dBc \$ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.26 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -50.27 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -60.27 dBc \$ -20 dBc <t< td=""><td></td><td>Mid Channel</td><td></td><td>12.5 GHz - 25 GHz</td><td>-53.6 dBc</td><td>≤ -20 dBc</td><td>Pass</td></t<>		Mid Channel		12.5 GHz - 25 GHz	-53.6 dBc	≤ -20 dBc	Pass	
High Channel 12.5 GHz - 25 GHz -53.05 dBc ≤ -20 dBc Pass 2DH5, 4-DQPSK 0 MHz - 12.5 GHz -43.86 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -43.86 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.89 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.89 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc ≤ -20 dBc Pass JDH5, 8-DPSK -50 Mz -43.26 dBc ≤ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -60.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -60.27 dBc<		High Channel		30 MHz - 12.5 GHz	-43.5 dBc	≤ -20 dBc	Pass	
2DH5, 4-DQPSK -43.86 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz -45.25 GHz -49.23 dBc ≤ -20 dBc Pass Mid Channel 30 MHz 12.5 GHz -43.89 dBc ≤ -20 dBc Pass Mid Channel 30 MHz 12.5 GHz -43.89 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz -25 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 12.5 GHz -25 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 30 MHz 12.5 GHz -49.16 dBc ≤ -20 dBc Pass JDH5, 8-DPSK -49.16 dBc ≤ -20 dBc Pass Pass<		High Channel		12.5 GHz - 25 GHz	-53.05 dBc	≤ -20 dBc	Pass	
Low Channel 30 MHz · 12.5 GHz -43.86 dBc \$ -20 dBc Pass Low Channel 12.5 GHz · 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 30 MHz · 12.5 GHz -43.86 dBc \$ -20 dBc Pass Mid Channel 30 MHz · 12.5 GHz -43.89 dBc \$ -20 dBc Pass High Channel 30 MHz · 12.5 GHz -47.95 dBc \$ -20 dBc Pass High Channel 30 MHz · 12.5 GHz -47.07 dBc \$ -20 dBc Pass JDH5, 8-DPSK -49.16 dBc \$ -20 dBc Pass Low Channel 12.5 GHz · 25 GHz -49.16 dBc \$ -20 dBc Pass Mid Channel 30 MHz · 12.5 GHz -43.26 dBc \$ -20 dBc Pass JDH5, a-DPSK -40.07 dBc \$ -20 dBc Pass Pass Mid Channel 30 MHz · 12.5 GHz -43.26 dBc \$ -20 dBc Pass Mid Channel 30 MHz · 12.5 GHz -50.27 dBc \$ -20 dBc Pass Mid Channel 30 MHz · 12.5 GHz -43.28 dBc \$ -20 dBc Pass	2DH5, 4-DQPSK							
Low Channel 12.5 GHz - 25 GHz -49.23 dBc \$ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.89 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -47.95 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.97 dBc \$ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc \$ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -47.07 dBc \$ -20 dBc Pass DH5, 8-DPSK -47.07 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.26 dBc \$ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.26 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -60.27 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -60.27 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -60.27 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -60.27 dBc \$ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -60.27 dBc \$ -20 dBc		Low Channel		30 MHz - 12.5 GHz	-43.86 dBc	≤ -20 dBc	Pass	
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Mid Channel 12.5 GHz - 25 GHz -47.95 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -47.07 dBc ≤ -20 dBc Pass 3DH5, 8-DPSK -47.07 dBc ≤ -20 dBc Pass Low Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -40.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -50.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -50.27 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.28 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -40.97 dBc ≤ -20		Mid Channel		30 MHz - 12.5 GHz	-43.89 dBc	≤ -20 dBc	Pass	
High Channel 30 MHz - 12.5 GHz -47.07 dBc ≤ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -49.16 dBc ≤ -20 dBc Pass 3DH5, 8-DPSK - <td< td=""><td></td><td>Mid Channel</td><td></td><td>12.5 GHz - 25 GHz</td><td>-47.95 dBc</td><td>≤ -20 dBc</td><td>Pass</td></td<>		Mid Channel		12.5 GHz - 25 GHz	-47.95 dBc	≤ -20 dBc	Pass	
High Channel 12.5 GHz -49.16 dBc ≤ -20 dBc Pass 3DH5, 8-DPSK -49.16 dBc ≤ -20 dBc Pass Low Channel 0 MHz - 12.5 GHz -49.16 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -49.16 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -40.21 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -40.27 dBc ≤ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -40.21 dBc ≤ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -40.27 dBc ≤ -20 dBc Pass High Channel 12.5 GHz - 25 GHz -40.28 dBc ≤ -20 dBc Pass		High Channel		30 MHz - 12 5 GHz	-47 07 dBc	< -20 dBc	Pass	
Build Build <t< td=""><td></td><td>High Channel</td><td></td><td>12.5 GHz - 25 GHz</td><td>-49.16 dBc</td><td>≤ -20 dBc</td><td>Pass</td></t<>		High Channel		12.5 GHz - 25 GHz	-49.16 dBc	≤ -20 dBc	Pass	
Low Channel 30 MHz - 12.5 GHz -43.26 dBc ≤ -20 dBc Pass Low Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -44.81 dBc ≤ -20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -44.81 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.28 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.28 dBc ≤ -20 dBc Pass	3DH5, 8-DPSK							
Low Channel 12.5 GHz 25 GHz -50.27 dBc \$<20 dBc Pass Mid Channel 30 MHz - 12.5 GHz -44.81 dBc \$<20 dBc		Low Channel		30 MHz - 12.5 GHz	-43.26 dBc	≤ -20 dBc	Pass	
Mid Channel 30 MHz - 12.5 GHz -44.81 dBc ≤ -20 dBc Pass Mid Channel 12.5 GHz - 25 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.28 dBc ≤ -20 dBc Pass High Channel 30 MHz - 12.5 GHz -43.28 dBc ≤ -20 dBc Pass		Low Channel		12.5 GHz - 25 GHz	-50.27 dBc	≤ -20 dBc	Pass	
Mid Channel 12.5 GHz 25 GHz -50.27 dBc ≤ -20 dBc Pass High Channel 30 MHz 12.5 GHz -43.28 dBc ≤ -20 dBc Pass High Channel 12 5 GHz -60.27 dBc ≤ -20 dBc Pass		Mid Channel		30 MHz - 12.5 GHz	-44.81 dBc	≤ -20 dBc	Pass	
High Channel 12 5 GHz 12.5 GHz - 43.28 dBc ≤ -20 dBc Pass		Mid Channel		12.5 GHz - 25 GHz	-50.27 dBc	≤ -20 dBc	Pass	
High Channel $125 \text{ CHz} - 55 \text{ CHz}$ $40.0 \text{ dDa} < 20 \text{ dDa}$		High Channel		30 MHz - 12 5 GHz	-43 28 dBc	< -20 dBc	Pass	
-//A MA //B/' S - // //B/' W/W/		High Channel		12 5 GHz - 25 GHz	-43.20 dBc	< -20 dBc	Dase	























































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Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Conducted Power: +/- 0.41) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the lowest, middle, and maximum data rate for each modulation type available. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 106 \div 3 \times 103 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."





EU	IT: Interstim Model 3537 (PTM)						Work Order:	MDTR0153	
Serial Number	er: NLD001577N						Date:	04/09/12	
Custome	er: Medtronic Inc.						Temperature:	22.83°C	
Attendee	es: Paul Wood						Humidity:	17%	
Projec	ct: None						Barometric Pres.:	1019.5	
Tested b	by: Trevor Buls			Power: Battery			Job Site:	MN05	
TEST SPECIFICA	ATIONS			Test Method					
FCC 15.247:2012	2			ANSI C63.10:2009					
COMMENTS									
Payload size was	s set to 1024. Tx/Rx Mode: PRE	3\$9.							
DEVIATIONS FR	OM TEST STANDARD								
None									
Configuration #	1	Signature	Tree	or Buls					
					Value	(dBm / Hz) To	Value	Limit	
					(dBm / Hz)	(dBm / 3 kHz)	(dBm / 3 kHz)	(dBm / 3 kHz)	Result
DH5, GFSK					· · · ·				
	Low Channel				-53.755	34.8	-18.955	8	Pass
	Mid Channel				-53.317	34.8	-18.517	8	Pass
	High Channel				-53.219	34.8	-18.419	8	Pass
2DH5 4-DOPSK									
ZDI10, 4 DGI OK									
2010, 4 001 010	Low Channel				-59.002	34.8	-24.202	8	Pass
2010, 4 DQI OK	Low Channel Mid Channel				-59.002 -59.021	34.8 34.8	-24.202 -24.221	8	Pass Pass
2010, 4 DQI OK	Low Channel Mid Channel High Channel				-59.002 -59.021 -59.027	34.8 34.8 34.8	-24.202 -24.221 -24.227	8 8 8	Pass Pass Pass
3DH5, 8-DPSK	Low Channel Mid Channel High Channel				-59.002 -59.021 -59.027	34.8 34.8 34.8	-24.202 -24.221 -24.227	8 8 8	Pass Pass Pass
3DH5, 8-DPSK	Low Channel Mid Channel High Channel Low Channel				-59.002 -59.021 -59.027 -59.944	34.8 34.8 34.8 34.8	-24.202 -24.221 -24.227 -25.144	8 8 8 8	Pass Pass Pass Pass
3DH5, 8-DPSK	Low Channel Mid Channel High Channel Low Channel Mid Channel				-59.002 -59.021 -59.027 -59.944 -59.898	34.8 34.8 34.8 34.8 34.8 34.8	-24.202 -24.221 -24.227 -25.144 -25.098	8 8 8 8 8 8	Pass Pass Pass Pass Pass Pass
3DH5, 8-DPSK	Low Channel Mid Channel High Channel Low Channel Mid Channel High Channel				-59.002 -59.021 -59.027 -59.944 -59.898 -60.004	34.8 34.8 34.8 34.8 34.8 34.8 34.8	-24.202 -24.221 -24.227 -25.144 -25.098 -25.204	8 8 8 8 8 8	Pass Pass Pass Pass Pass Pass Pass



f>50k





Swp Center 2.439 997 5 GHz Span 300 kHz #Res BW 3 kHz _______#VBW 10 kHz ______#Sweep 100 s (601 pts)









Power Spectral Density

XMit 2012.04.06 PsaTx 2012.01.25





#PAvg









Power Spectral Density

XMit 2012.04.06 PsaTx 2012.01.25





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	12
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Frequency Accuracy: +0.12/- 0.01) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

For transmitters which are not operated at a continuous transmission of 100% duty cycle, a duty cycle correction must be measured and calculated to add to the data taken in other tests in this report.

The observed duty cycle is expressed in terms of a percentage and is calculated as:

Duty Cycle = (Tx on / (Tx on + Tx off))

The observed duty cycle was measured for each available modulation and data rate



EUT	Interstim Model 3537 (P	TM)					Work Order:	MDTR0153	
Serial Numbe	r: NLD001577N						Date:	04/09/12	
Custome	r: Medtronic Inc.						Temperature:	22.83°C°C	
Attendees	s: Paul Wood						Humidity:	17%	
Projec	t: None						Barometric Pres.:	1019.5	
Tested by	y: Trevor Buls		Power:	Battery			Job Site:	MN05	
TEST SPECIFICA	TIONS			Test Method					
FCC 15.247:2012				ANSI C63.10:2009					
COMMENTS									
Payload size was	set to 1024. Tx/Rx Mode:	PRBS9.							
DEVIATIONS FRO	DM TEST STANDARD								
None									
Configuration #	1	Signature	Trevor	Buls	-				
		• •		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
DH5, GFSK									
	Low Channel			2.888 mS	3.749 mS	1	77%	N/A	N/A
	Low Channel					5		N/A	N/A
	Mid Channel			2.882 mS	3.749 mS	1	76.9%	N/A	N/A
	Mid Channel					5		N/A	N/A
	High Channel			2.888 mS	3.749 mS	1	77%	N/A	N/A
	High Channel					5		N/A	N/A
2DH5, 4-DQPSK	Low Chappel			2 000 mS	2 740 mS	4	770/	NI/A	NI/A
	Low Channel			2.000 1113	3.7491113	5	1170	N/A	N/A
	Mid Channel			2 888 mS	3 740 mS	1	77%	N/A	N/A
	Mid Channel			2.000 110	3.743 110	5	1170	N/A	N/A
	High Channel			2.888 mS	3.749 mS	1	77%	N/A	N/A
	High Channel					5		N/A	N/A
3DH5, 8-DPSK	3								i i i
	Low Channel			2.894 mS	3.749 mS	1	77.2%	N/A	N/A
	Low Channel					5		N/A	N/A
	Mid Channel			2.894 mS	3.749 mS	1	77.2%	N/A	N/A
	Mid Channel					5		N/A	N/A
	High Channel			2.894 mS	3.755 mS	1	77.1%	N/A	N/A
	High Channel					5		N/A	N/A



Duty Cycle



			DH5	, GFSK, L	ow Channel					
		Pulse Width	Period	Numbe Puls	er of es	Value (%)	Limit	R	esult	
				5		、 /	N/A		N/A	
*	Agilent 00:25	5:45 Mar 31,	2012				RT			
Northw Ref 9	vest EMC, In dBm	nc I	#Atten 10 d	В						
#Peak										
Log 5			······					مسما		
dB7										
21.9										
αB										
#LgAv										
W1 52										
\$3 VS										
£ (f):										
FTun										
Contra	- 2 402 000								Span A	
Res Bl	W 1 MHz	- onz		#VBW 30	∣ kHz		_Sweep 16	.92 ms	(1000 pt:	12 6)_



Duty Cycle



			DH	5 GESK Mid C	hannel			
			Dirk	Number of	Value			
		Pulse Width	Period	Pulses	(%)	Limit	Result	
				5		N/A	N/A	
*	Agilent 00:3	3 : 51 Mar 31	,2012			RT		
Nort	hwest EMC, I	nc						
Ref	9 dBm		#Atten 10 c	IB				
#Pea	ak							
Log				,				
J dR Z	,							
0ffs	;+							
21.9	9							
dB		 						
سا س								
#Lgh	HV							
ដ1	\$2							
\$3	ŇS .							
£ (f)):							
FTu	n							
Cen	ter 2.440 00	0 GHz					Span 0	Ηz
Res	BM 1 MHz			#VRM 30 k⊦	IZ		92 ms (1000 p	ts)_



Duty Cycle



			DUIS					
			DH5	, GFSK, High (Value			
	Pula	o Width	Period	Pulsos	(%)	Limit	Posult	
			renou	5	(78)	N/A	N/A	
🔆 Aaila	ent 00:42:01	Mar 31, 3	2012			RT		
Northwest	t EMC. Inc							
Ref 9 dB	m	#	Atten 10 d	IR				
#Peak								
Log								
5		ر						
dB/								
Offst 📙								
21.9								
dB 📙		┼┼┟──		<u> </u>				
				┼──┼				
#LgAv 📙								
14 00								
				<u> </u>				
53 VS								
c (f)·								
ETun								
r i un								
	400.000.00							
Center 2.	.480 000 GH: MU_	Z				0	5pan 0 F	Z
Res BW 1	MHZ			#VRM 30 KF	Z	Эмеер 16.9	2 ms (1000 pts)




2DH5. 4-DQPSK. Low Channel																
						- ,	Nu	imber o	f \	/alue						
			Pulse	Width	P	eriod		Pulses		(%)		Limit		Re	sult	
								5				N/A		Ν	I/A	
*	Aç	jilent 00:	50:14	Mar 31	, 201	.2						RT				
Nor	thwe	st EMC,	Inc													
Ref	6 d	Bm			#Att	:en 10 d	¦₿									
#re	ак															
5	4			<u></u>				Ő			<u>М</u>				8	
dB7	/	- All II All All All All All	CAN TANK AND		North Martin	an also also also also also also also also		one of the	arthur ann an Ann	^	-ALAN	***********	*****		1 ······	****
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21.9	9															
dB										+			+			
										+			+			
#1.01	۵ I															
#L9																
W1	s2									11			11			
\$3	VS															
£ (f): [
FTu	in															
6		0 100 0														
Cen	iter	2.402 0	00 GHz								~	10			Span 0	HZ
Res	ΒM	1 MHZ					₩VBŀ	130 k	HZ		S	weep 16	.92 r	ns (1000 pi	ts)_





Number of Value Pulse Width Period Pulses (%) Limit Result Mumber of Value 5 N/A N/A Ref 6 dBm #Atten 10 dB #Peak Implementation Implementation <thimplementation<< th=""></thimplementation<<>
Pulse Width Period Pulses (%) Limit Result 5 N/A N/A N/A N/A N/A Image: Agilent 00:58:31 Mar 31, 2012 R T T Northwest EMC, Inc #Atten 10 dB #Peak Image: Agilent 00:58:31 Imag
5 N/A N/A Control (0):58:31 Mar 31, 2012 R T Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak Implementation Implementation 5 Implementation Implementation 5 Implementation Implementation 6 Implementation Implementation 6 Implementation Implementation 5 Implementation Implementation Implementation 6 Implementation Implementation Implementation Implementation 6 Implementation Implementation Implementation Implementation Implementation 6 Implementation Implementation Implementation Implementation Implementation 6 Implementation Implementation Implementation Implementation Implementation Implementation 6 Implementation Implementation Implementation Implementation Implementation Implementation 10 10 10 10
** Agilent 00:58:31 Mar 31, 2012 R T Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak Image: Contract of the standard of the
Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak Log 5 tartantantantantantantantantantantantantant
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dB/ 0ffst 21.9 dB
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Center 2.440 000 GHz Span 0 Hz
Res BW 1 MHz #VBW 30 kHz Sweep 16.92 ms (1000 pts)





						2DH5	4-00	DSK Hi	nh Channel							
		Number of Valu				alue										
_			Pulse	Width	F	Period	F	Pulses	(%)		Limit		Res	sult	
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			3DH5	, 8-DPSK, Lo	w Channel					
				Number	of V	alue				
	P	ulse Width	Period	Pulses	((%)	Limit		Result	
				5			N/A		N/A	
🔆 🔆 🔺	gilent 01:16:0)0 Mar 31	1,2012				R T			
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			3DH5,	8-DPSK, High	Channel			
	Pulco	Width	Pariod	Number of	value	Limit		Pocult
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Ref 6	dBm	#ŕ	Atten 10 di	8				
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Spurious Radiated Emissions

Stop Frequency 25 GHz

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting Ch 0, 38, 78, DH5, Payload size 341, 2DH5, 3DH5 Payload size 986, PRBS9 (See comments)

POWER SETTINGS INVESTIGATED Battery

CONFIGURATIONS INVESTIGATED

MDTR0153 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Low Pass Filter	Micro-Tronics	LPM50004	HGK	7/9/2010	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HGQ	7/9/2010	24 mo
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	7/1/2011	12 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2/6/2012	12 mo
		18-26GHz Standard Gain			
MN05 Cables	N/A	Horn Cable	EVD	2/6/2012	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	7/1/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/1/2011	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/1/2011	12 mo
		Double Ridge Guide Horn			
MN05 Cables	ESM Cable Corp.	Cables	MNI	10/18/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/24/2012	12 mo
Antenna X-Wing Bilog 30MHZ-	Teseq	CBL 6141B	AYD	12/19/2011	12 mo
2GHz					
Spectrum Analyzer	Agilent	E4446A	AAT	3/2/2012	12 mo

MEASUREMENT BANDWIDTHS

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

MEASUREMENT UNCERTAINTY

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) (Radiated Power via Substitution: +0.69, -0.68) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.



Spurious Radiated Emissions



Freq	Amplitude	Factor	Antenna Height	Azimuth	Duty Cycle Correction Factor	External Attenuation	Polarity/ Transducer Type	Detector	Distance Adjustment	Adjusted	Spec. Limit	Compared to Spec.		
(MHz)	(dBuV)	(dB)	(meters)	(degrees)	(dB)	(dB)			(dB)	(dBuV/m)	(dBuV/m)	(dB)		
													Comments	
7205.445	49.4	11.6	1.1	145.0	0.0	0.0	Vert	PK	0.0	61.0	74.0	-13.0	Ch 0, DH5, EUT on Side	
2488.408	43.2	-3.4	3.1	200.0	0.0	20.0	Vert	PK	0.0	59.8	74.0	-14.2	Ch 78, 2DH5, EUT on Side	
2488.067	42.7	-3.4	3.4	37.0	0.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	Ch 78, 3DH5, EUT on Side	
7205.578	47.3	11.6	1.0	84.0	0.0	0.0	Horz	PK	0.0	58.9	74.0	-15.1	Ch 0, DH5, EUT Horizontal	
2386.867	42.4	-3.7	1.0	195.0	0.0	20.0	Horz	PK	0.0	58.7	74.0	-15.3	Ch 0, 2DH5, EUT on Side	
7206.620	47.0	11.6	1.0	50.0	0.0	0.0	Horz	PK	0.0	58.6	74.0	-15.4	Ch 0, DH5, EUT on Side	
2484.758	42.0	-3.5	1.7	73.0	0.0	20.0	Horz	PK	0.0	58.5	74.0	-15.5	Ch 78, 2DH5, EUT on Side	
2486.600	41.9	-3.5	2.1	94.0	0.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	Ch 78, DH5, EUT on Side	
7205.620	46.8	11.6	1.3	342.0	0.0	0.0	Horz	PK	0.0	58.4	74.0	-15.6	Ch 0, DH5, EUT Vertical	
2487.117	41.8	-3.5	1.0	239.0	0.0	20.0	Horz	PK	0.0	58.3	74.0	-15.7	Ch 78, 3DH5, EUT on Side	
7320.367	46.2	12.1	1.1	79.0	0.0	0.0	Horz	PK	0.0	58.3	74.0	-15.7	Ch 38, DH5, EUT on Side	
7206.245	46.7	11.6	1.1	227.0	0.0	0.0	Vert	PK	0.0	58.3	74.0	-15.7	Ch 0, DH5, EUT Horizontal	
2388.933	42.0	-3.7	1.0	220.0	0.0	20.0	Vert	PK	0.0	58.3	74.0	-15.7	Ch 0, DH5, EUT on Side	
7320.699	46.1	12.1	1.1	75.0	0.0	0.0	Vert	PK	0.0	58.2	74.0	-15.8	Ch 38, DH5, EUT on Side	
2389.050	41.8	-3.7	1.3	272.0	0.0	20.0	Horz	PK	0.0	58.1	74.0	-15.9	Ch 0, DH5, EUT on Side	
2389.283	41.8	-3.7	3.6	164.0	0.0	20.0	Horz	PK	0.0	58.1	74.0	-15.9	Ch 0, 3DH5, EUT on Side	
2485.433	41.5	-3.5	1.0	333.0	0.0	20.0	Vert	PK	0.0	58.0	74.0	-16.0	Ch 78, DH5, EUT on Side	
7206.603	46.4	11.6	1.0	11.0	0.0	0.0	Vert	PK	0.0	58.0	74.0	-16.0	Ch 0, DH5, EUT Vertical	
2388.300	41.7	-3.7	3.3	18.0	0.0	20.0	Vert	PK	0.0	58.0	74.0	-16.0	Ch 0, 2DH5, EUT on Side	
7439.576	45.3	12.6	1.0	119.0	0.0	0.0	Horz	PK	0.0	57.9	74.0	-16.1	Ch 78, DH5, EUT on Side	
2387.842	41.5	-3.7	1.5	210.0	0.0	20.0	Vert	PK	0.0	57.8	74.0	-16.2	Ch 0, 3DH5, EUT on Side	
4960.271	52.1	5.0	1.0	21.0	0.0	0.0	Vert	PK	0.0	57.1	74.0	-16.9	Ch 78, DH5, EUT on Side	

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4879.954	52.1	4.7	1.3	21.0	0.0	0.0	Vert	PK	0.0	56.8	74.0	-17.2	Ch 38, DH5, EUT on Side
7439.586	43.7	12.6	1.0	139.0	0.0	0.0	Vert	PK	0.0	56.3	74.0	-17.7	Ch 78, DH5, EUT on Side
4803.799	51.9	4.4	1.1	184.0	0.0	0.0	Horz	PK	0.0	56.3	74.0	-17.7	Ch 0, DH5, EUT Horizontal
4960.121	49.5 49.5	5.0 4.4	1.0	22.0	0.0	0.0	Vert	PK	0.0	54.5 53.9	74.0 74.0	-19.5	Ch / 8, 3DH5, EUT on Side
7205.653	42.2	11.6	1.3	124.0	0.0	0.0	Vert	PK	0.0	53.8	74.0	-20.1	Ch 0, 2DH5, EUT on Side
4960.029	48.7	5.0	1.0	187.0	0.0	0.0	Vert	PK	0.0	53.7	74.0	-20.3	Ch 78, 2DH5, EUT on Side
7440.160	40.3	12.6	1.0	90.0	0.0	0.0	Horz	PK	0.0	52.9	74.0	-21.1	Ch 78, 2DH5, EUT on Side
7319.920	40.6	12.1	2.6	71.0	0.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	Ch 38, 2DH5, EUT on Side
7205.870	41.1	11.6	1.0	75.0 81.0	0.0	0.0	Horz	PK	0.0	52.7 52.6	74.0 74.0	-21.3	Ch 0, 3DH5, EUT Horizonta
7320 174	40.0	12.0	1.0	42.0	0.0	0.0	Vert	PK	0.0	52.6	74.0	-21.4	Ch 38 3DH5 EUT on Side
7205.312	41.0	11.6	1.9	230.0	0.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Ch 0, 2DH5, EUT on Side
7441.528	39.8	12.6	1.0	16.0	0.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	Ch 78, 3DH5, EUT on Side
7206.053	45.5	11.6	1.1	145.0	24.7	0.0	Vert	AV	0.0	32.4	54.0	-21.6	Ch 0, DH5, EUT on Side
7206.337	40.6	11.6	1.0	173.0	0.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	Ch 0, 3DH5, EUT Horizonta
/321.467	39.9	12.1	1.1	74.0	0.0	0.0	Horz	PK	0.0	52.0	74.0	-22.0	Ch 38, 3DH5, EUT on Side
7318 300	46.9	5.0 12.1	1.0	208.0	0.0	0.0	H012	PK	0.0	51.9	74.0	-22.1	Ch 38 2DH5 EUT on Side
7440.686	38.9	12.6	1.0	62.0	0.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	Ch 78, 2DH5, EUT on Side
4959.788	46.5	5.0	1.0	62.0	0.0	0.0	Horz	PK	0.0	51.5	74.0	-22.5	Ch 78, 2DH5, EUT on Side
4880.104	45.8	4.7	1.1	232.0	0.0	0.0	Horz	PK	0.0	50.5	74.0	-23.5	Ch 38, DH5, EUT on Side
4803.599	45.7	4.4	1.0	66.0	0.0	0.0	Horz	PK	0.0	50.1	74.0	-23.9	Ch 0, DH5, EUT on Side
4960.021	44.3	5.0	1.2	272.0	0.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Ch 78, 3DH5, EUT on Side
7206.045	42.1	11.6	1.0	84.0	24.7	0.0	Horz	AV	0.0	29.0	54.0	-25.0	Ch 0, DH5, EUT Horizontal
4803 907	42.1	4.4	1.3	342.0	24.7	0.0	Vert	PK	0.0	29.0 48.9	54.0 74.0	-25.0	Ch 0 DH5 EUT Horizontal
7206.062	42.0	11.6	1.0	50.0	24.7	0.0	Horz	AV	0.0	28.9	54.0	-25.1	Ch 0, DH5, EUT on Side
7206.037	41.9	11.6	1.1	227.0	24.7	0.0	Vert	AV	0.0	28.8	54.0	-25.2	Ch 0, DH5, EUT Horizontal
7320.049	41.1	12.1	1.1	75.0	24.7	0.0	Vert	AV	0.0	28.5	54.0	-25.5	Ch 38, DH5, EUT on Side
7319.975	40.9	12.1	1.1	79.0	24.7	0.0	Horz	AV	0.0	28.3	54.0	-25.7	Ch 38, DH5, EUT on Side
4960.021	48.0	5.0	1.0	21.0	24.7	0.0	Vert	AV	0.0	28.3	54.0	-25.7	Ch 78, DH5, EUT on Side
9608.152 7205.027	57.6 41.0	-9.6	1.0	101.0	0.0	0.0	Vert	PK	0.0	48.0	74.0 54.0	-26.0	Ch 0, DH5, EUT on Side
4880.063	41.0	47	1.0	21.0	24.7	0.0	Vert	AV AV	0.0	27.9	54.0 54.0	-26.1	Ch 38 DH5 ELIT on Side
7440.068	39.8	12.6	1.0	119.0	24.7	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 78, DH5, EUT on Side
4804.091	47.8	4.4	1.1	184.0	24.7	0.0	Horz	AV	0.0	27.5	54.0	-26.5	Ch 0, DH5, EUT Horizontal
7439.970	38.1	12.6	1.0	139.0	24.7	0.0	Vert	AV	0.0	26.0	54.0	-28.0	Ch 78, DH5, EUT on Side
4804.032	45.5	4.4	1.3	117.0	24.7	0.0	Vert	AV	0.0	25.2	54.0	-28.8	Ch 0, DH5, EUT on Side
9608.402	54.2	-9.6	1.2	130.0	0.0	0.0	Horz	PK	0.0	44.6	74.0	-29.4	Ch 0, DH5, EUT on Side
9920.257	52.5	-8.7	1.2	106.0	0.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	Ch 78, DH5, EUT on Side
2486 083	31.4	-0.7	1.3	92.0 239.0	24.7	20.0	Horz		0.0	43.3	74.0 54.0	-30.7	Ch 78 3DH5 EUT on Side
2483.892	31.4	-3.5	2.1	94.0	24.7	20.0	Horz	AV	0.0	23.2	54.0	-30.8	Ch 78, DH5, EUT on Side
2487.908	31.3	-3.4	3.1	200.0	24.7	20.0	Vert	AV	0.0	23.2	54.0	-30.8	Ch 78, 2DH5, EUT on Side
2487.825	31.3	-3.4	3.5	37.0	24.7	20.0	Vert	AV	0.0	23.2	54.0	-30.8	Ch 78, 3DH5, EUT on Side
2486.608	31.3	-3.5	1.7	73.0	24.7	20.0	Horz	AV	0.0	23.1	54.0	-30.9	Ch 78, 2DH5, EUT on Side
2485.783	31.3	-3.5	1.0	333.0	24.7	20.0	Vert	AV	0.0	23.1	54.0	-30.9	Ch 78, DH5, EUT on Side
2385 267	42.7	5.0 -3.7	1.0	187.0	24.7 24.7	20.0	Horz	AV AV	0.0	23.0	54.0 54.0	-31.0	Ch 0 2DH5, EUT on Side
4959.971	42.5	5.0	1.0	22.0	24.7	0.0	Vert	AV	0.0	22.8	54.0	-31.2	Ch 78, 3DH5, EUT on Side
9759.625	51.9	-9.2	1.2	124.0	0.0	0.0	Horz	PK	0.0	42.7	74.0	-31.3	Ch 38, DH5, EUT on Side
2385.425	31.1	-3.7	1.3	272.0	24.7	20.0	Horz	AV	0.0	22.7	54.0	-31.3	Ch 0, DH5, EUT on Side
2385.608	31.1	-3.7	1.0	220.0	24.7	20.0	Vert	AV	0.0	22.7	54.0	-31.3	Ch 0, DH5, EUT on Side
2385.742	31.1	-3.7	3.3	18.0	24.7	20.0	Vert	AV	0.0	22.7	54.0	-31.3	Ch 0, 2DH5, EUT on Side
2385.950	31.1	-3.7	3.0	210.0	24.7	20.0	H012	AV AV	0.0	22.7	54.0 54.0	-31.3	Ch 0, 3DH5, EUT on Side
9760.425	51.6	-9.2	1.2	126.0	0.0	0.0	Vert	PK	0.0	42.4	74.0	-31.6	Ch 38, DH5, EUT on Side
4960.021	41.9	5.0	1.0	268.0	24.7	0.0	Horz	AV	0.0	22.2	54.0	-31.8	Ch 78, DH5, EUT on Side
4804.007	41.0	4.4	1.0	66.0	24.7	0.0	Horz	AV	0.0	20.7	54.0	-33.3	Ch 0, DH5, EUT on Side
4880.004	40.5	4.7	1.1	232.0	24.7	0.0	Horz	AV	0.0	20.5	54.0	-33.5	Ch 38, DH5, EUT on Side
4959.988	39.9	5.0	1.0	62.0	24.7	0.0	Horz	AV	0.0	20.2	54.0	-33.8	Ch 78, 2DH5, EUT on Side
7206.262	31.9	11.6	1.3	124.0	24.7	0.0	Vert	AV	0.0	18.8	54.0	-35.2	Ch U, 2DH5, EUT on Side
4804 049	38.8	4.4	1.0	339.0	24.7	0.0	Vert	AV	0.0	18.5	54.0	-35.5	Ch 0 DH5 FUT Horizontal
7206.078	31.6	11.6	1.0	75.0	24.7	0.0	Horz	AV	0.0	18.5	54.0	-35.5	Ch 0, 3DH5, EUT Horizonta
7205.937	31.4	11.6	1.0	173.0	24.7	0.0	Vert	AV	0.0	18.3	54.0	-35.7	Ch 0, 3DH5, EUT Horizonta
7440.043	30.3	12.6	1.0	90.0	24.7	0.0	Horz	AV	0.0	18.2	54.0	-35.8	Ch 78, 2DH5, EUT on Side
7320.124	30.7	12.1	1.0	42.0	24.7	0.0	Vert	AV	0.0	18.1	54.0	-35.9	Ch 38, 3DH5, EUT on Side
7319.884	30.5	12.1	1.1	74.0	24.7	0.0	Horz	AV	0.0	17.9	54.0	-36.1	Ch 38, 3DH5, EUT on Side
1200.970 9607 827	30.9 52 1	0.FT	1.9	∠30.0 101.0	24.1 24.7	0.0	Vert	AV AV	0.0	17.8 17.8	54.U 54.0	-36.2	Ch 0 DH5 EUT on Side
4959 996	37.4	-9.0 5.0	1.0	272.0	24.7 24.7	0.0	Horz	AV	0.0	17.0	54.0 54.0	-36.2	Ch 78, 3DH5, FUT on Side
7440.295	29.6	12.6	1.0	16.0	24.7	0.0	Vert	AV	0.0	17.5	54.0	-36.5	Ch 78, 3DH5, EUT on Side
7439.995	29.3	12.6	1.0	62.0	24.7	0.0	Vert	AV	0.0	17.2	54.0	-36.8	Ch 78, 2DH5, EUT on Side
7320.240	29.8	12.1	1.0	345.0	24.7	0.0	Vert	AV	0.0	17.2	54.0	-36.8	Ch 38, 2DH5, EUT on Side
7320.600	29.4	12.1	2.6	71.0	24.7	0.0	Horz	AV	0.0	16.8	54.0	-37.2	Ch 38, 2DH5, EUT on Side
9607.927	47.0	-9.6	1.2	130.0	24.7	0.0	Horz	AV	0.0	12.7	54.0	-41.3	Ch 0, DH5, EUT on Side
9920.040 9910 065	40.0 42 0	-ö./ _8 7	1.2	100.0 92.0	24.1 24.7	0.0		AV AV	0.0	12.2	54.0 54.0	-41.8 -42.5	Ch 78 DH5 EUT on Side
9760.000	43.7	-9.2	1.2	126.0	24.7	0.0	Vert	AV	0.0	9.8	54.0	-44.2	Ch 38, DH5, EUT on Side
9760.100	43.5	-9.2	1.2	124.0	24.7	0.0	Horz	AV	0.0	9.6	54.0	-44.4	Ch 38, DH5, EUT on Side