Medtronic MiniMed

TEST REPORT FOR

GST3 Glucose Sensor Transmitter, MMT-7763A

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.247

Report No.: 95059-8

Date of issue: October 31, 2013

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Medtronic MiniMed
18000 Devonshire Street
Northridge, CA 91325-1219

Representative: Bob Vitti
Customer Reference Number: 4500091677

REPORT PREPARED BY:

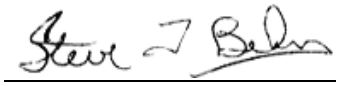
Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 95059

DATE OF EQUIPMENT RECEIPT: October 25, 2013
DATE(S) OF TESTING: October 25-27, 2013

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
22116 23rd Drive S.E., Suite A
Bothell, WA 98021-4413

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Bothell	US0081	SL2-IN-E-1145R	3082C-1	318736	A-0148

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.247

Description	Test Procedure/Method	Results
-6dB Occupied Bandwidth	FCC Part 15 Subpart C Section 15.247(a)(2) / FHSS – DA00-705 DTS – KDB 558074 ANSI C63.4	Pass
Maximum Power Output	FCC Part 15 Subpart C Section 15.247(b)(3) / FHSS – DA00-705 DTS – KDB 558074 ANSI C63.4	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C 15.247 (d) / FHSS – DA00-705 DTS – KDB 558074 ANSI C63.4	Pass
Power Spectral Density	FCC Part 15 Subpart C 15.247(e) / FHSS – DA00-705 DTS – KDB 558074 ANSI C63.4	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

GST3 Glucose Sensor Transmitter

Manuf: Medtronic MiniMed
Model: MMT-7763A
Serial: GT6001735M & GT6001844M

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

15.247(a)(2) 6dB Occupied Bandwidth

Test Conditions / Setup

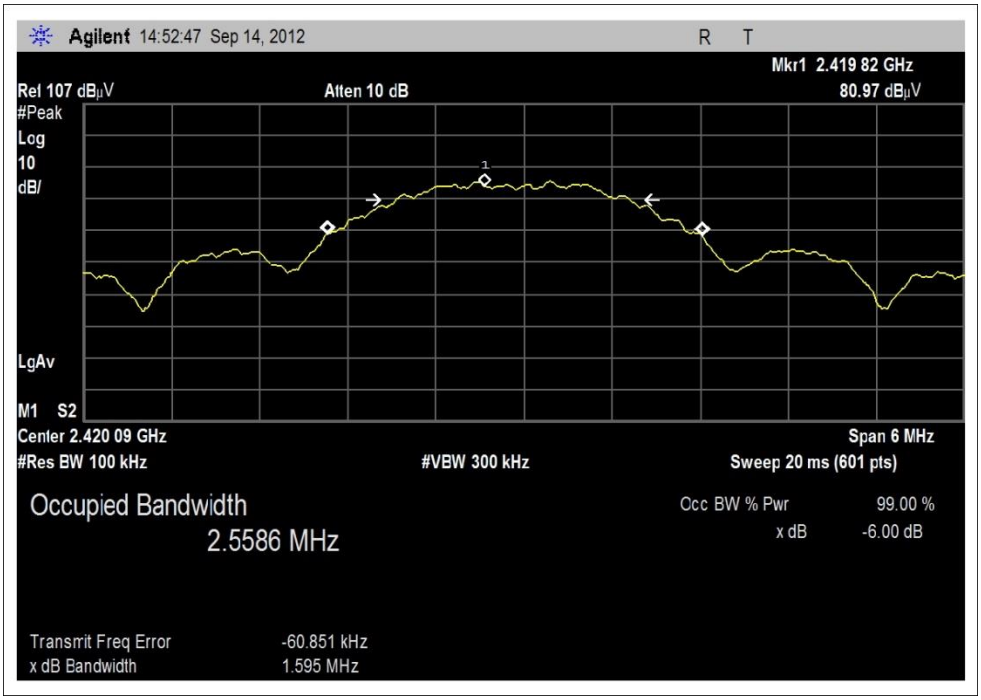
The minimum 6 dB bandwidth shall be at least 500 kHz for systems using digital modulation techniques in the 2400 - 2483.5MHz Band. The EUT's antenna is non-removable, thus the data will be gathered through radiated measurements. The EUT is located on top of a Styrofoam table, 80cm over the ground plane. Emissions investigated from three orthogonal axis of the equipment. Reported data represents the worst case of all orientations.
Temp: 21°C
Humidity: 37%
Pressure: 101.27kPa
Freq: 2400-2483.5MHz

Engineer Name: Steven Pittsford

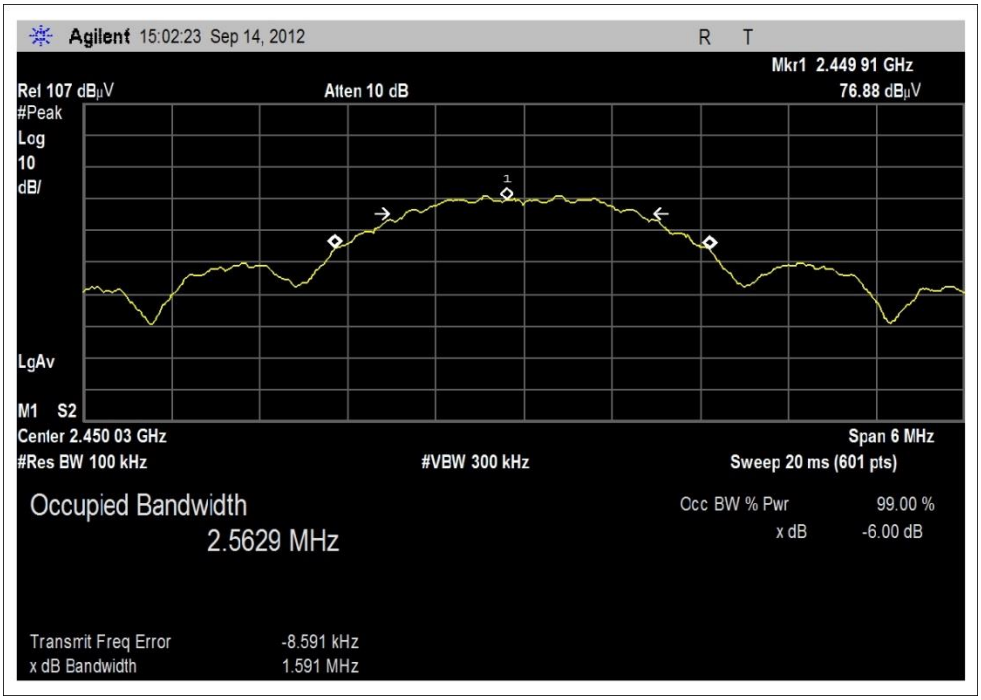
Test Equipment					
Asset #	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
AN01467	Horn Antenna-ANSI C63.5 Calibration	EMCO	3115	9/16/2013	9/16/2015
AN03209	Preamp	Agilent	83051A	3/5/2013	3/5/2015
ANP05546	Cable	Andrews	Heliax	3/27/2013	3/27/2015
ANP05547	Cable	Andrews	Heliax	9/7/2012	9/7/2014
AN02871	Spectrum Analyzer	Agilent	E4440A	4/11/2013	4/11/2015

Frequency (MHz)	6dB Bandwidth
2420	1.595MHz
2450	1.591MHz
2480	1.586MHz

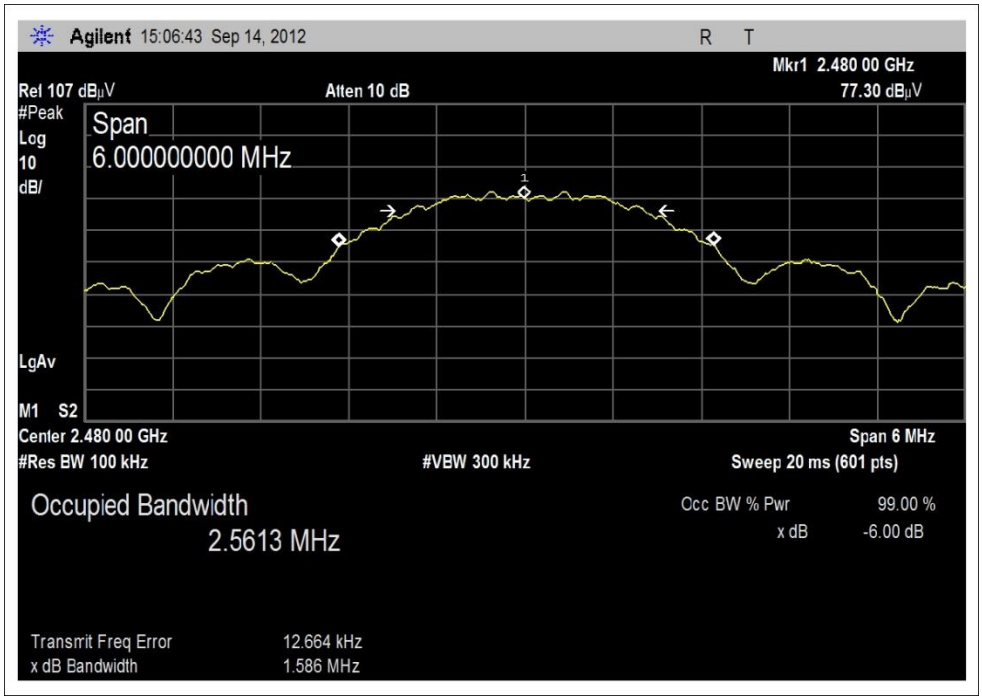
Test Data



Low



Middle

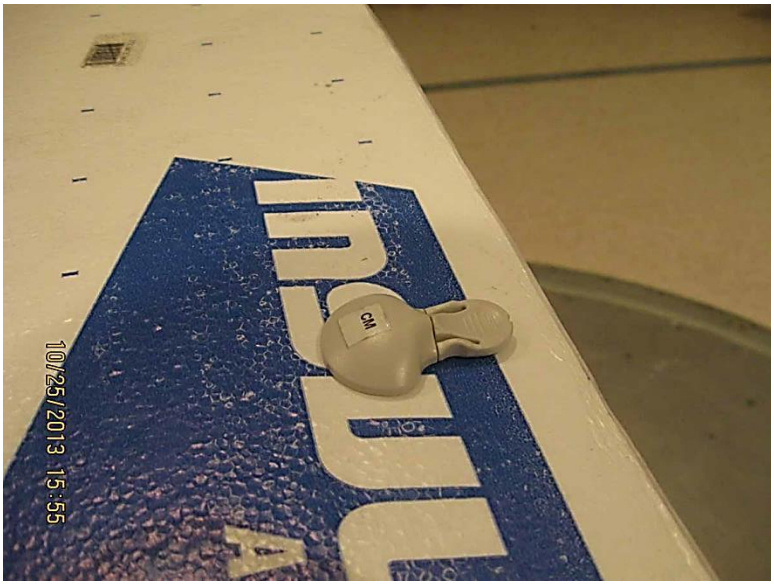


High

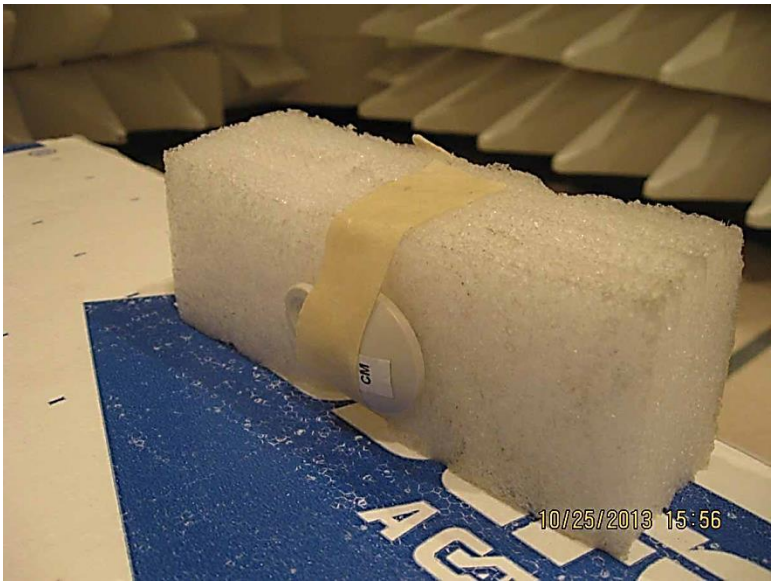
Note: The date referenced in the above plots is incorrect and should read October 26, 2013. The screen captures were taken at the time of testing and cannot be changed.

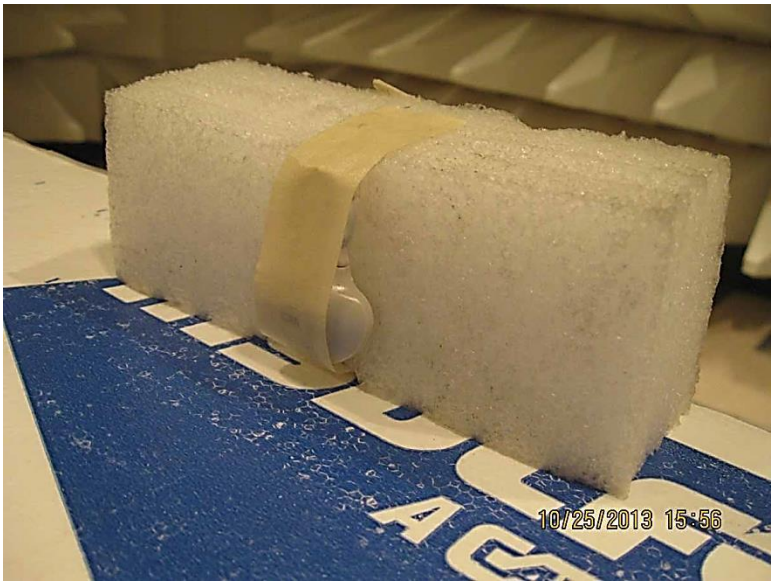
Test Setup Photos

Overall Test Setup



X Axis


10/25/2013 15:56


10/25/2013 15:56

15.247(b)(3) Maximum Output Power

Test Conditions / Setup

The EUT's antenna is non-removable, thus the data is gathered through radiated measurements. The formula shown below will be used to calculate the ERP. The EUT is located on top of a Styrofoam table, 80cm over the ground plane. The EUT will be tested on three orthogonal axes but only the worst case will be documented. The test will be performed using a new battery per FCC 15.31(e).
Temp: 21°C
Humidity: 40%
Pressure: 103.1 kPa
Freq: 2400-2483.5MHz

Engineer Name: Steven Pittsford

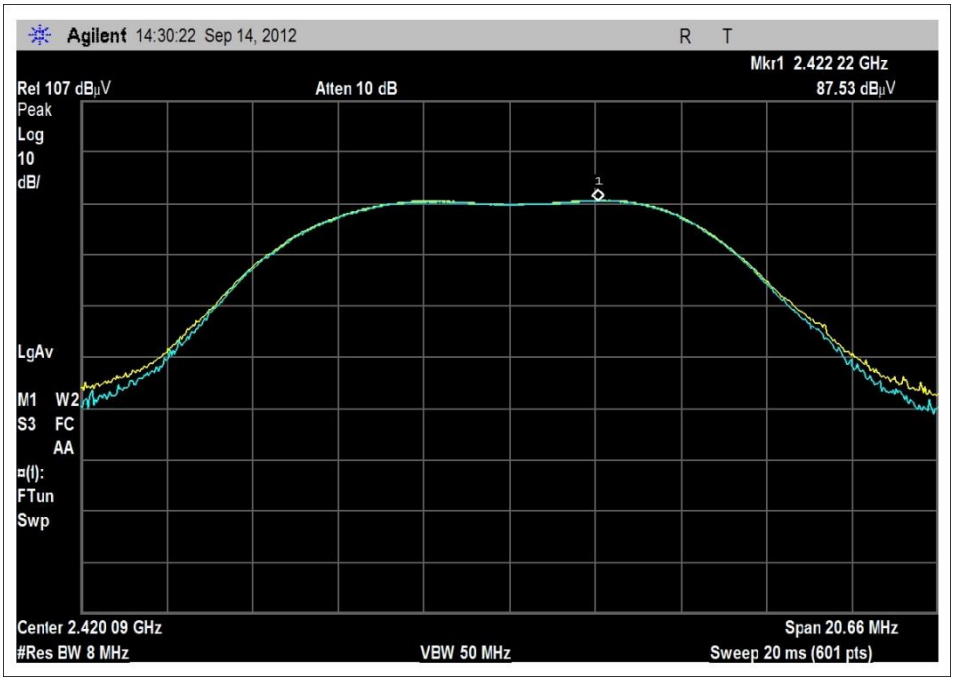
Test Equipment					
Asset #	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
AN01467	Horn Antenna-ANSI C63.5 Calibration	EMCO	3115	9/16/2013	9/16/2015
AN03209	Preamp	Agilent	83051A	3/5/2013	3/5/2015
ANP05546	Cable	Andrews	Heliax	3/27/2013	3/27/2015
ANP05547	Cable	Andrews	Heliax	9/7/2012	9/7/2014
AN02871	Spectrum Analyzer	Agilent	E4440A	4/11/2013	4/11/2015

P = (Ed)^2 / (30 * G)

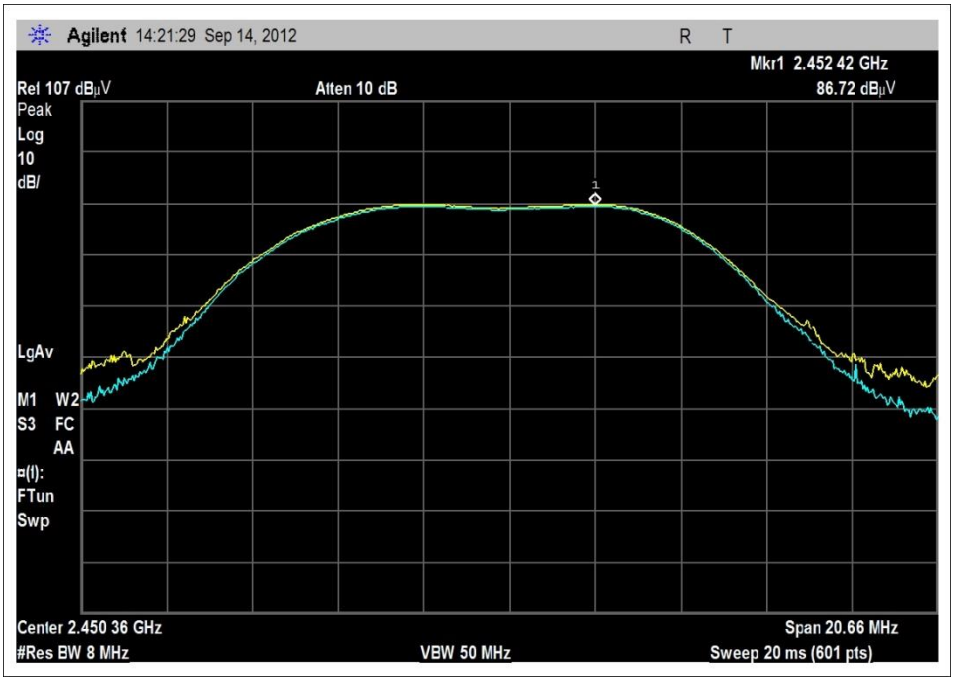
E = Field strength of the measurement converted to V/M
d = Measurement distance in meters
G = Numerical gain of the EUT's antenna relative to an isotropic radiator.
P = The power in watts for which we are solving

Frequency (MHz)	Spectrum Analyzer Measurement (dBuV)	Corrections due to cables, amplifiers, antennas and Bandwidth (dB)	Corrected Reading (dBuV)	Antenna Gain (dBi)	ERP (Watts)
2420	85.8	1.6	87.4	0.0	0.000165
2450	86.7	1.6	88.3	0.0	0.000203
2480	87.5	1.5	89.0	0.0	0.000238

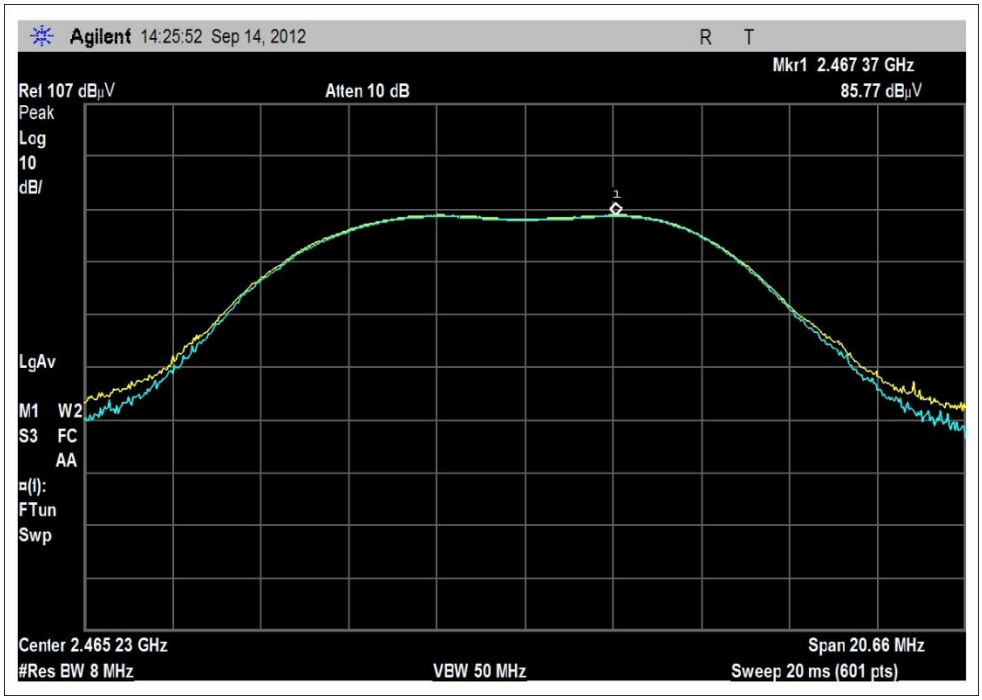
Test Data



Low



Middle



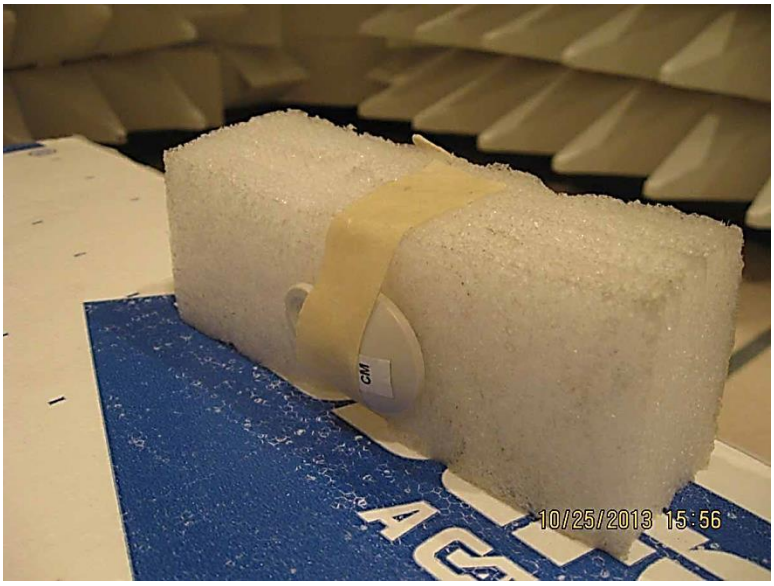
High

Note: The date referenced in the above plots is incorrect and should read October 26, 2013. The screen captures were taken at the time of testing and cannot be changed.

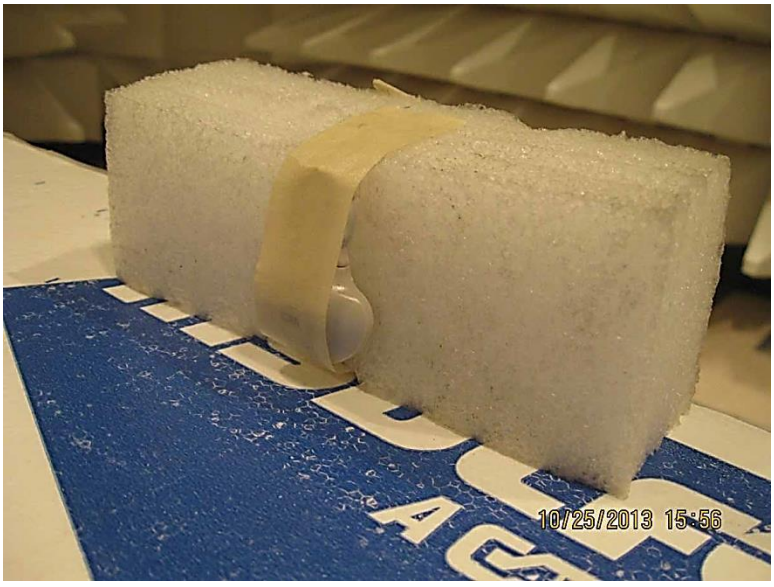
Test Setup Photos

Overall Test Setup

X Axis



Y Axis



Z Axis

15.247(d) Radiated Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Medtronic MiniMed**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **95059** Date: 10/26/2013
Test Type: **Maximized Emissions** Time: 14:34:15
Equipment: **GST3 Glucose Sensor Transmitter** Sequence#: 10
Manufacturer: Medtronic MiniMed Tested By: Steven Pittsford
Model: MMT-7763A
S/N: GT6001844M

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	9/16/2013	9/16/2015
T2	AN03209	Preamp	83051A	3/5/2013	3/5/2015
T3	ANP05546	Cable	Heliax	3/27/2013	3/27/2015
T4	ANP05547	Cable	Heliax	9/7/2012	9/7/2014
T5	AN02871	Spectrum Analyzer	E4440A	4/11/2013	4/11/2015
T6	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	12/18/2012	12/18/2014
T7	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	12/17/2012	12/17/2014
T8	AN02763-69	Waveguide	Multiple	6/7/2012	6/7/2014
T9	ANP05428	Cable	PE35591-60	6/8/2012	6/8/2014
	ANP05542	Cable	Heliax	8/14/2013	8/14/2015
T10	AN02308	Preamp	8447D	4/3/2012	4/3/2014
T11	AN01996	Biconilog Antenna	CBL6111C	3/2/2012	3/2/2014
T12	ANP05360	Cable	RG214	12/3/2012	12/3/2014
T13	ANP05541	Cable	Heliax	4/11/2012	4/11/2014
T14	AN00052	Loop Antenna	6502	5/16/2012	5/16/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
GST3 Glucose Sensor Transmitter*	Medtronic MiniMed	MMT-7763A	GT6001844M

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Temperature: 23°C
Pressure: 102.2kPa
Humidity: 46%
Frequency: 9k-25GHz

Vertical and Horizontal Polarizations investigated.
EUT is located on the top of the test table 80cm over the ground plane.
Emissions investigated from three orthogonal axis of the equipment.
Reported data represents the worst case of all orientations.
EUT is transmitting at Low, Mid and High Channels

Ext Attn: 0 dB

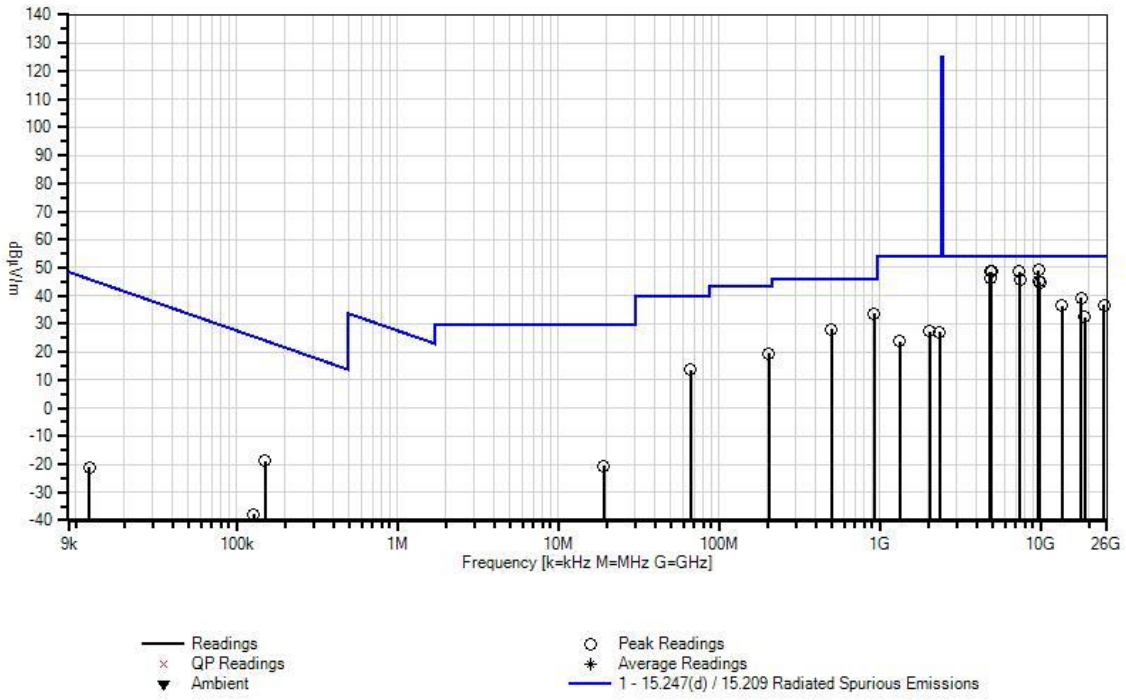
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9680.633M	31.2	+37.5 +0.0 +0.0 +0.0	-27.8 +0.0 +0.0 +0.0	+3.4 +0.0 +0.0	+4.8 +0.0 +0.0	+0.0 360	49.1	54.0	-4.9	V & H 102
2	7350.129M	32.4	+37.1 +0.0 +0.0 +0.0	-28.2 +0.0 +0.0 +0.0	+3.1 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0 360	48.7	54.0	-5.3	V & H 106
3	4960.850M	41.0	+32.5 +0.0 +0.0 +0.0	-30.8 +0.0 +0.0 +0.0	+2.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	48.6	54.0	-5.4	V & H 106
4	4959.150M	41.0	+32.5 +0.0 +0.0 +0.0	-30.8 +0.0 +0.0 +0.0	+2.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0 9	48.6	54.0	-5.4	V & H 106
5	4840.850M	41.5	+32.2 +0.0 +0.0 +0.0	-30.9 +0.0 +0.0 +0.0	+2.2 +0.0 +0.0	+3.5 +0.0 +0.0	+0.0 102	48.5	54.0	-5.5	V & H 102
6	4899.037M	39.0	+32.3 +0.0 +0.0 +0.0	-30.8 +0.0 +0.0 +0.0	+2.2 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	46.3	54.0	-7.7	V & H 106
7	4901.025M	38.8	+32.3 +0.0 +0.0 +0.0	-30.8 +0.0 +0.0 +0.0	+2.2 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	46.1	54.0	-7.9	V & H 106
8	7441.767M	28.6	+37.5 +0.0 +0.0 +0.0	-28.2 +0.0 +0.0 +0.0	+3.2 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	45.5	54.0	-8.5	V & H 106

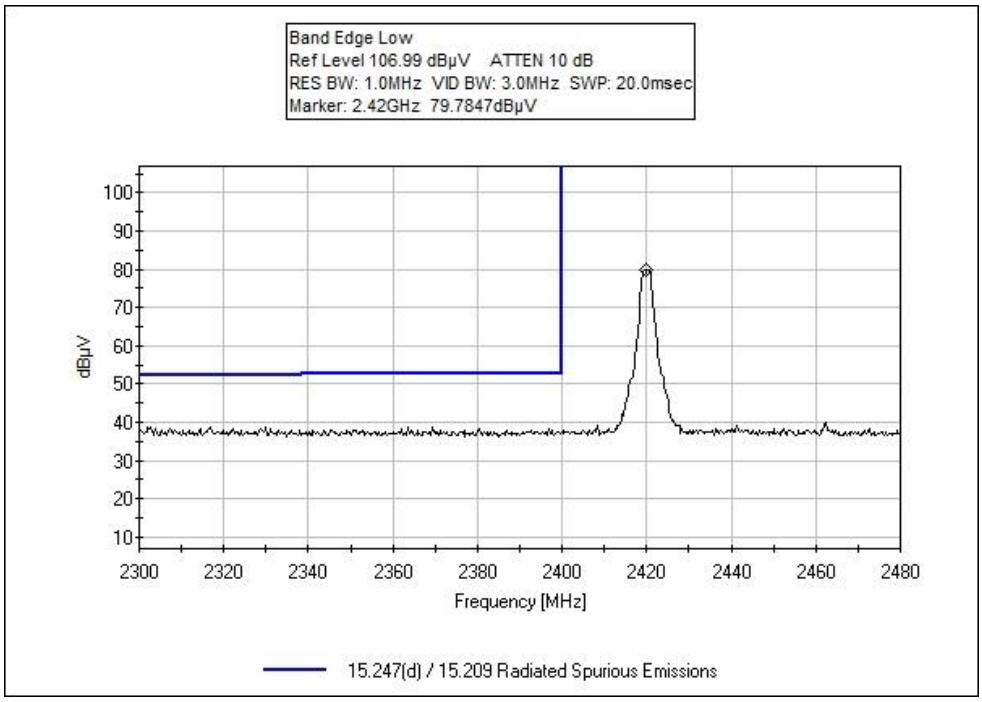
9	9800.258M	27.4	+37.4 +0.0 +0.0 +0.0	-27.8 +0.0 +0.0 +0.0	+3.2 +0.0 +0.0	+4.9 +0.0 +0.0	+0.0	45.1	54.0	-8.9	V & H 106
10	9922.300M	27.2	+37.3 +0.0 +0.0 +0.0	-27.9 +0.0 +0.0 +0.0	+3.1 +0.0 +0.0	+4.9 +0.0 +0.0	+0.0	44.6	54.0	-9.4	V & H 106
11	919.500M	34.4	+0.0 +0.0 +0.0 +1.1	+0.0 +0.0 -27.4 +0.0	+0.7 +0.0 +22.8	+0.0 +0.0 +2.1	+0.0	33.7	46.0	-12.3	V & H 102
12	17854.250 M	38.0	+0.0 +0.0 +0.0 +0.0	+0.0 -10.8 +0.0 +0.0	+5.1 +0.0 +0.0	+7.0 +0.0 +0.0	+0.0 360	39.3	54.0	-14.7	V & H 102
13	24874.756 M	42.6	+0.0 +0.0 +6.3 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0 -12.4 +0.0	+0.0 +0.2 +0.0	+0.0 360	36.7	54.0	-17.3	V & H 102
14	13652.586 M	41.6	+0.0 +0.0 +0.0 +0.0	+0.0 -15.0 +0.0 +0.0	+3.8 +0.0 +0.0	+6.0 +0.0 +0.0	+0.0 360	36.4	54.0	-17.6	V & H 102
15	501.400M	35.6	+0.0 +0.0 +0.0 +0.8	+0.0 +0.0 -28.2 +0.0	+0.5 +0.0 +18.0	+0.0 +0.0 +1.4	+0.0	28.1	46.0	-17.9	V & H 102
16	18868.856 M	38.7	+0.0 +0.0 +5.4 +0.0	+0.0 +0.0 +0.0 +0.0	+0.0 -13.4 +0.0	+0.0 +1.6 +0.0	+0.0 360	32.3	54.0	-21.7	V & H 102
17	204.600M	35.6	+0.0 +0.0 +0.0 +0.5	+0.0 +0.0 -27.3 +0.0	+0.3 +0.0 +9.4	+0.0 +0.0 +0.9	+0.0	19.4	43.5	-24.1	V & H 102
18	66.900M	35.0	+0.0 +0.0 +0.0 +0.3	+0.0 +0.0 -28.0 +0.0	+0.2 +0.0 +5.7	+0.0 +0.0 +0.5	+0.0	13.7	40.0	-26.3	V & H 102
19	2037.300M	26.0	+28.4 +0.0 +0.0 +0.0	-30.6 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0	+2.3 +0.0 +0.0	+0.0	27.4	54.0	-26.6	V & H 106
20	2366.500M	25.5	+28.0 +0.0 +0.0 +0.0	-30.4 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	26.9	54.0	-27.1	V & H 106
21	1327.000M	26.9	+24.5 +0.0 +0.0 +0.0	-30.7 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	23.8	54.0	-30.2	V & H 106

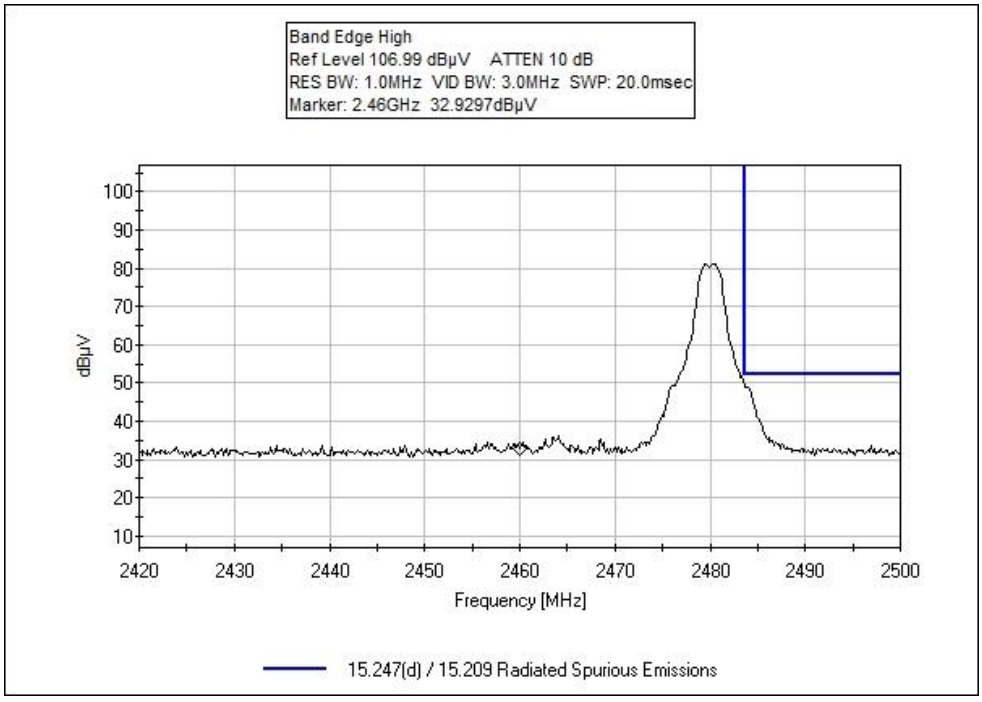
22	150.000k	51.7	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +9.5	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-80.0	-18.8	24.1	-42.9	V & H 102
23	19.224M	11.4	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +8.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	-20.6	29.5	-50.1	V & H 102
24	128.145k	32.7	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +9.5	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-80.0	-37.8	25.4	-63.2	V & H 102
25	12.102k	43.6	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +15.4	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-80.0	-21.0	45.9	-66.9	V & H 102

CKC Laboratories, Inc. Date: 10/26/2013 Time: 14:34:15 Medtronic MiniMed WO#: 95059
Test Distance: 3 Meters Sequence#: 10 V & H
Medtronic MiniMed GST3 Glucose Sensor Transmitter P/N: MMT-7763A



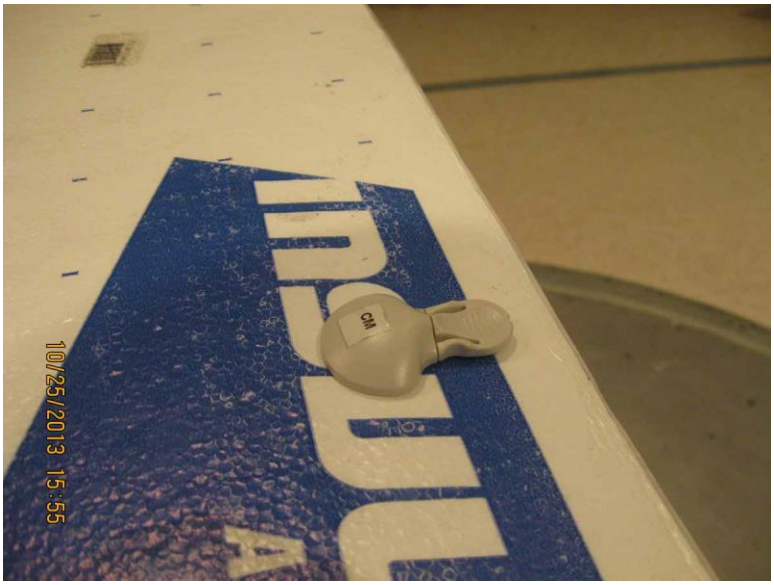
Bandedge


Band Edge Low
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.42GHz 79.7847dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2300
2320
2340
2360
2380
2400
2420
2440
2460
2480
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

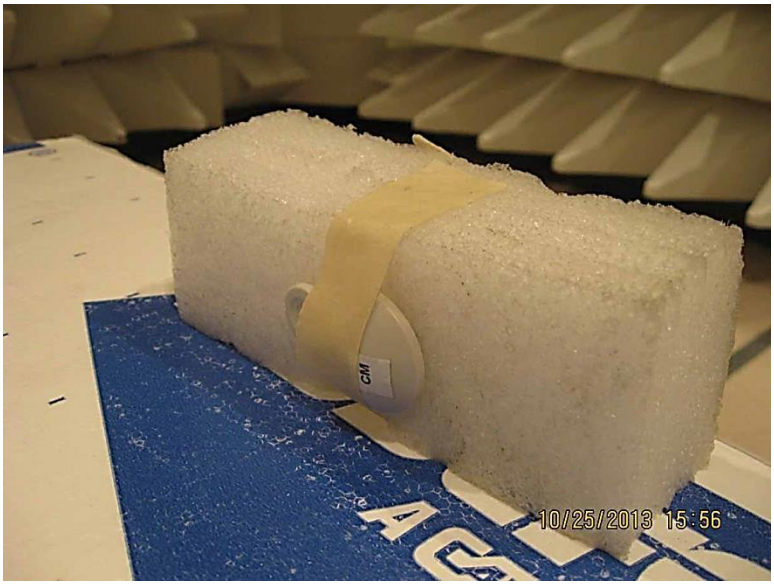

Band Edge High
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.46GHz 32.9297dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2420
2430
2440
2450
2460
2470
2480
2490
2500
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup Photos

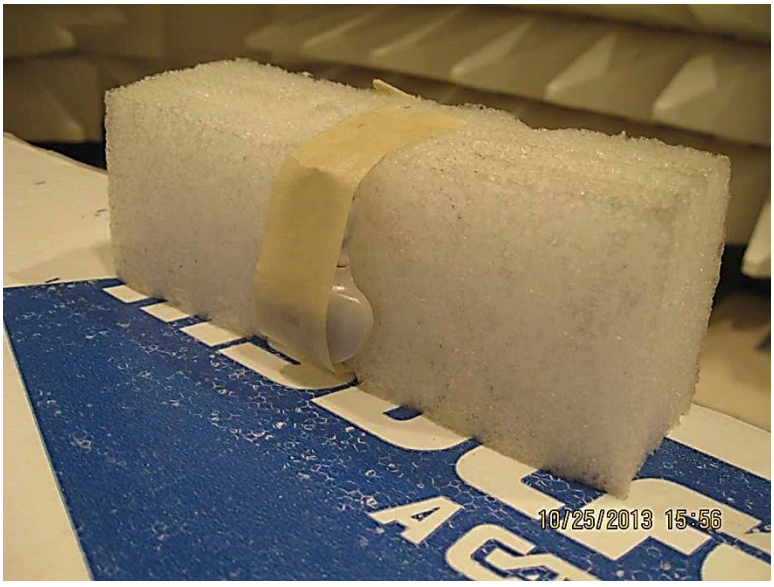
Overall Test Setup



X Axis



Y Axis



Z Axis

15.247(e) Power Spectral Density

Test Conditions / Setup

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. The EUT's antenna is non-removable, thus the data will be gathered through radiated measurements. The formula shown below will be used to calculate the Power Spectral Density. The EUT is located on top of a Styrofoam table, 80cm over the ground plane. The test will be performed using a new battery per FCC 15.31(e).

Temp: 21°C
Humidity: 38%
Pressure: 103.1kPa
Freq: 2400-2483.5MHz

Engineer Name: Steven Pittsford

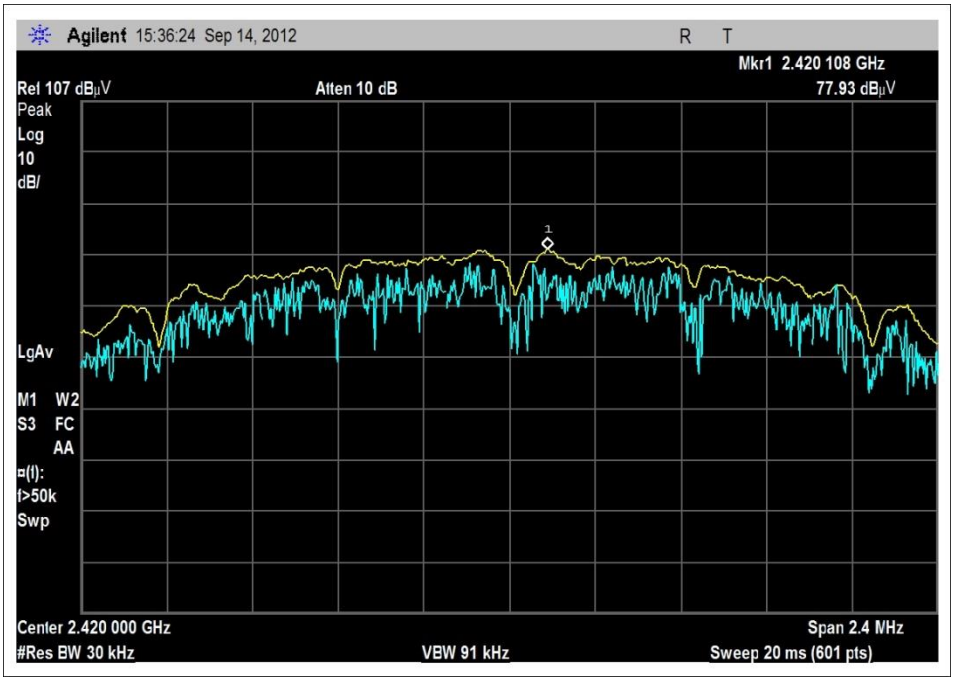
Test Equipment					
Asset #	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
AN01467	Horn Antenna-ANSI C63.5 Calibration	EMCO	3115	9/16/2013	9/16/2015
AN03209	Preamp	Agilent	83051A	3/5/2013	3/5/2015
ANP05546	Cable	Andrews	Heliax	3/27/2013	3/27/2015
ANP05547	Cable	Andrews	Heliax	9/7/2012	9/7/2014
AN02871	Spectrum Analyzer	Agilent	E4440A	4/11/2013	4/11/2015

P = (Ed)^2 / (30 * G)

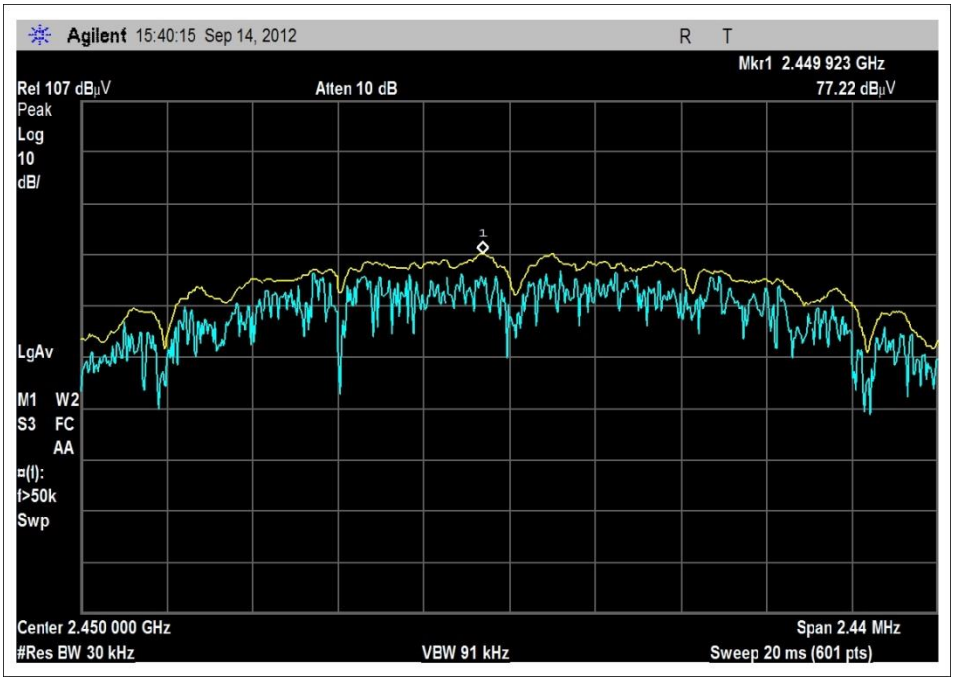
E = Field strength of the measurement converted to V/M
d = Measurement distance in meters
G = Numerical gain of the EUT's antenna relative to an isotropic radiator.
P = The power in watts for which we are solving

Frequency (MHz)	Spectrum Analyzer Measurement (dBuV)	Corrections due to cables, amplifiers, antennas and Bandwidth (dB)	Corrected Reading (dBuV)	Antenna Gain (dBi)	Spectral Density (Watts)	Spectral Density (dBm)
2420	77.9	1.5	79.4	0.0	$2.613*10^{-5}$	-15.829
2450	77.2	1.6	78.8	0.0	$2.276*10^{-5}$	-16.429
2480	75.8	1.6	77.4	0.0	$1.649*10^{-5}$	-17.829

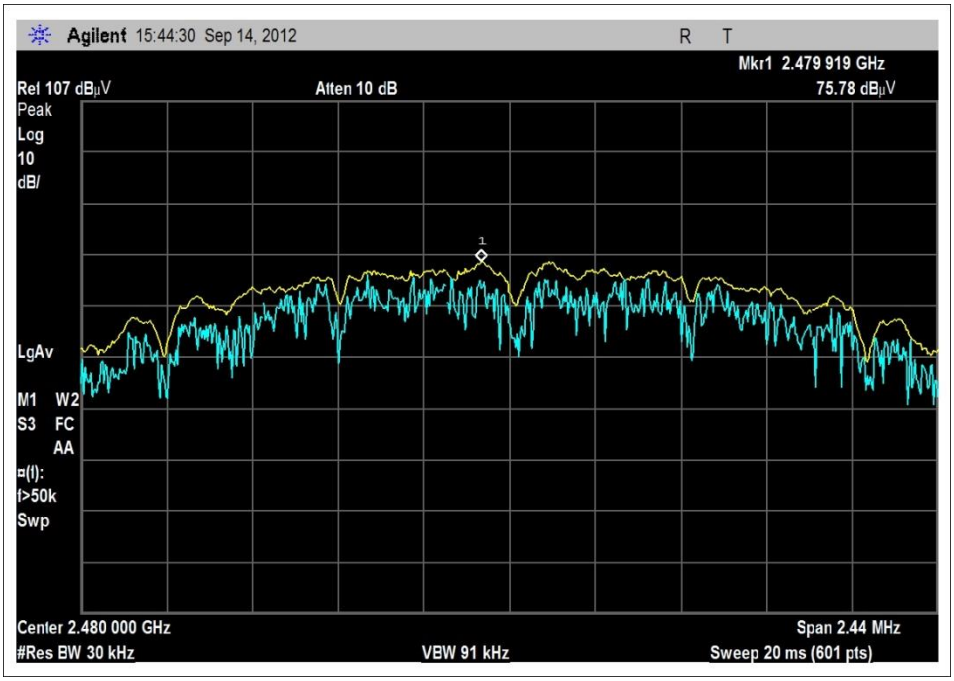
Test Data



Low



Middle

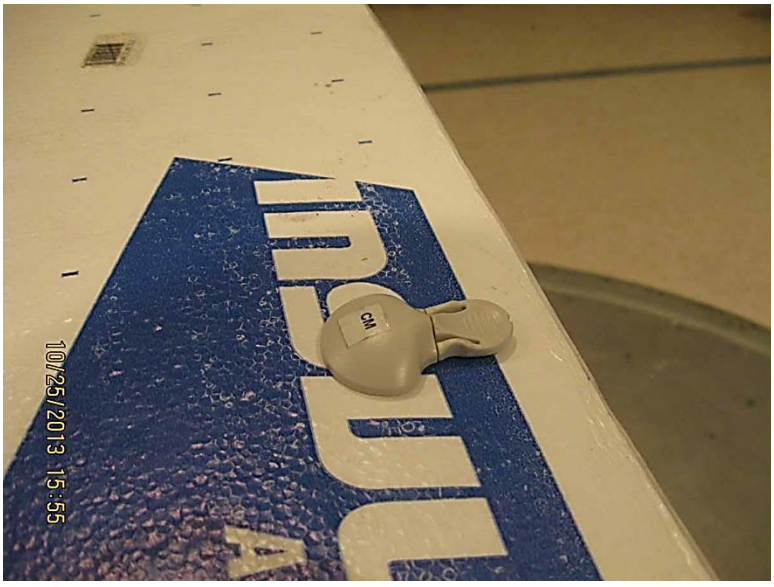


High

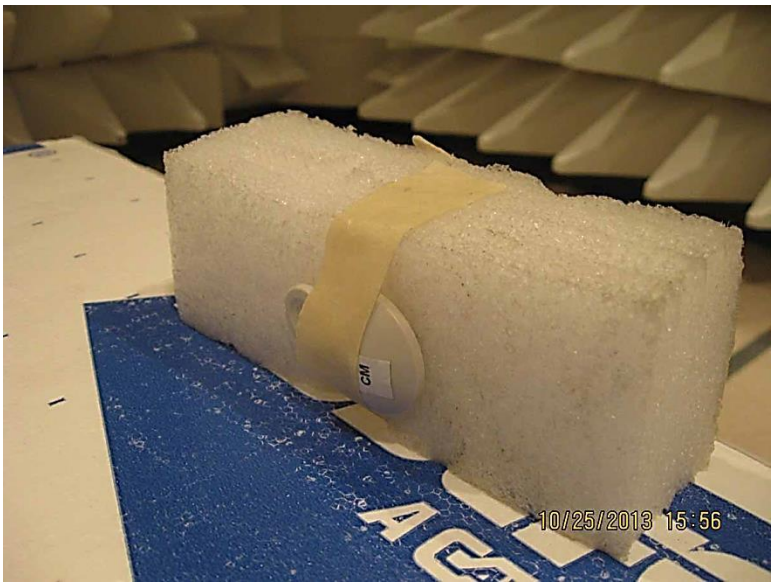
Note: The date referenced in the above plots is incorrect and should read October26, 2013. The screen captures were taken at the time of testing and cannot be changed.

Test Setup Photos

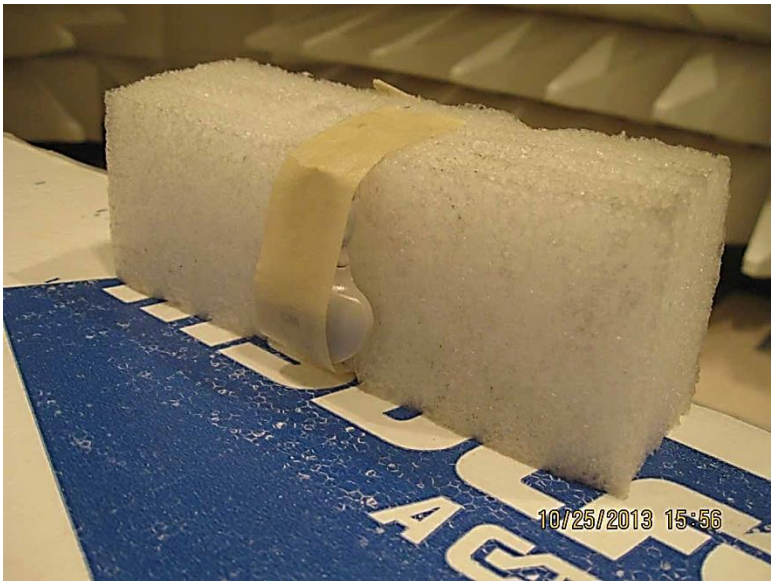
Overall Test Setup



X Axis



Y Axis



Z Axis

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

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 dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.