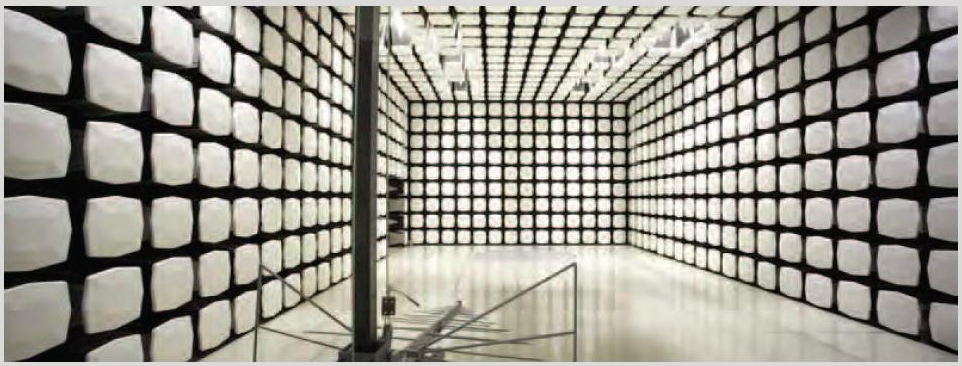
Medtronic, Inc.

MyCareLink Relay Home Communicator 24960

FCC 22H:2018
FCC 24E:2018
FCC 27L:2018

Cellular Radio

Report # MDTR0649



NVLAP LAB CODE: 200881-0

CERTIFICATE OF TEST

Last Date of Test: July 11, 2018
Medtronic, Inc.
Model: MyCareLink Relay Home Communicator 24960

Radio Equipment Testing

Standards

Specification	Method
FCC 22H:2018 FCC 24E:2018 FCC 27L:2018	ANSI C63.26:2015

Results

Method Clause	Test Description	Applied	Results	Comments
5.2.4.2	Conducted Output Power	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.6	Frequency Stability	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.4	Occupied Bandwidth Emission Mask	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.5	Out of Band Emissions - UMTS - CLR850	Yes	Pass	
5.5	Out of Band Emissions - UMTS - PCS1900	Yes	Pass	
5.5	Out of Band Emissions - UMTS - AWS1700	Yes	Pass	
5.7	Spurious Emissions at the Antenna Terminals	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.2.7	ERP of Fundamental - UMTS - CLR850	Yes	Pass	
5.2.7	EIRP of Fundamental - UMTS - PCS1900	Yes	Pass	
5.2.7	EIRP of Fundamental - UMTS - AWS1700	Yes	Pass	
5.2.4.2	Conducted Output Power	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.6	Frequency Stability	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.4	Occupied Bandwidth Emission Mask	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.5	Out of Band Emissions - LTE Band 2	Yes	Pass	
5.5	Out of Band Emissions - LTE Band 4	Yes	Pass	
5.5	Out of Band Emissions - LTE Band 5	Yes	Pass	
5.5	Out of Band Emissions - LTE Band 12	Yes	Pass	
5.7	Spurious Emissions at the Antenna Terminals	No	N/A	Testing covered under FCC ID: QIPELS61-US original Grant
5.2.7	ERP of Fundamental - LTE Band 2	Yes	Pass	
5.2.7	ERP of Fundamental - LTE Band 4	Yes	Pass	
5.2.7	ERP of Fundamental - LTE Band 5	Yes	Pass	
5.2.7	ERP of Fundamental - LTE Band 12	Yes	Pass	

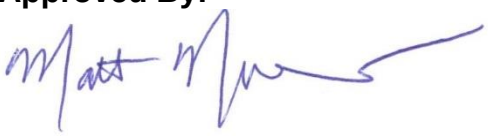
Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

CERTIFICATE OF TEST

Deviations From Test Standards

None

Approved By:



Matt Nuernberg, Operations Manager

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REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

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 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

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

Korea

MSIT / 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.

Israel

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

Hong Kong

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

Vietnam

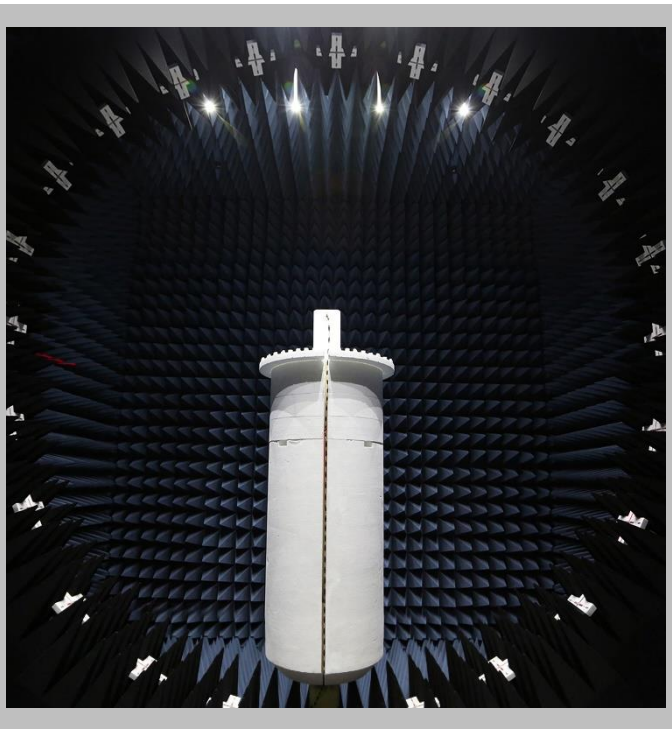
MIC – Recognized by MIC as a CAB for the acceptance of test data.

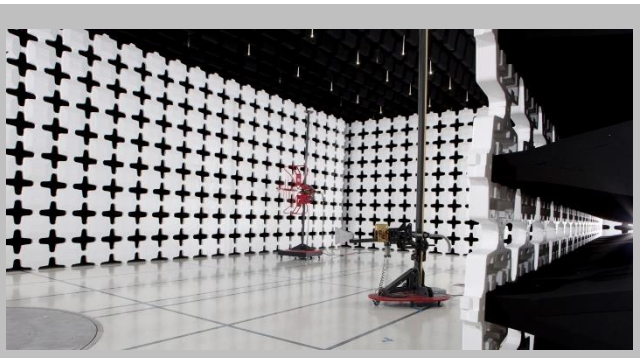
SCOPE

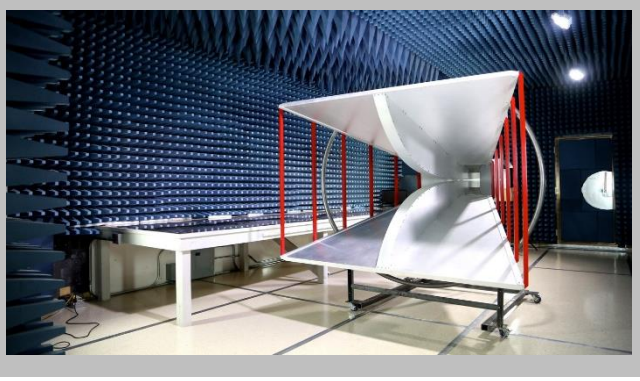
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157

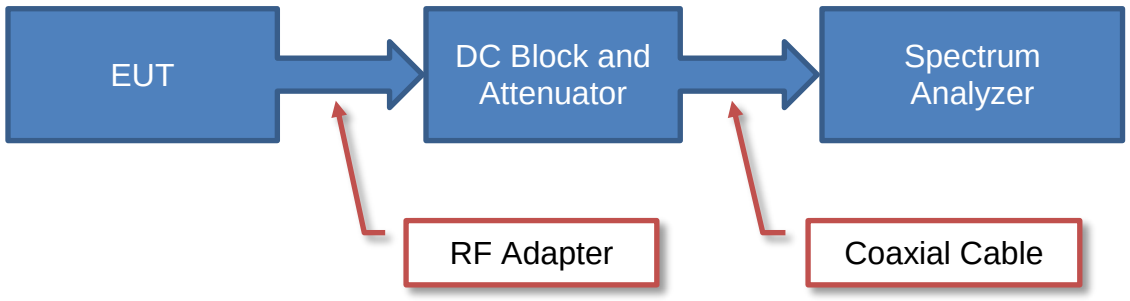




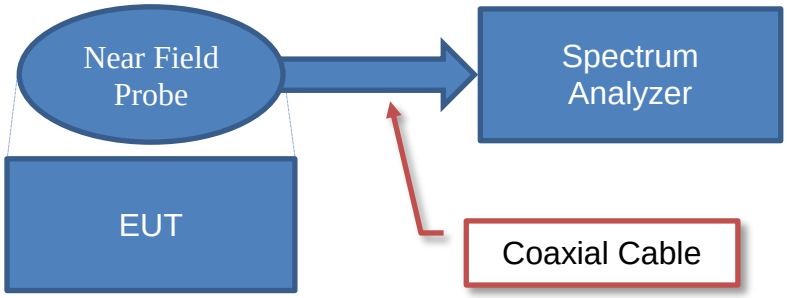


Test Setup Block Diagrams

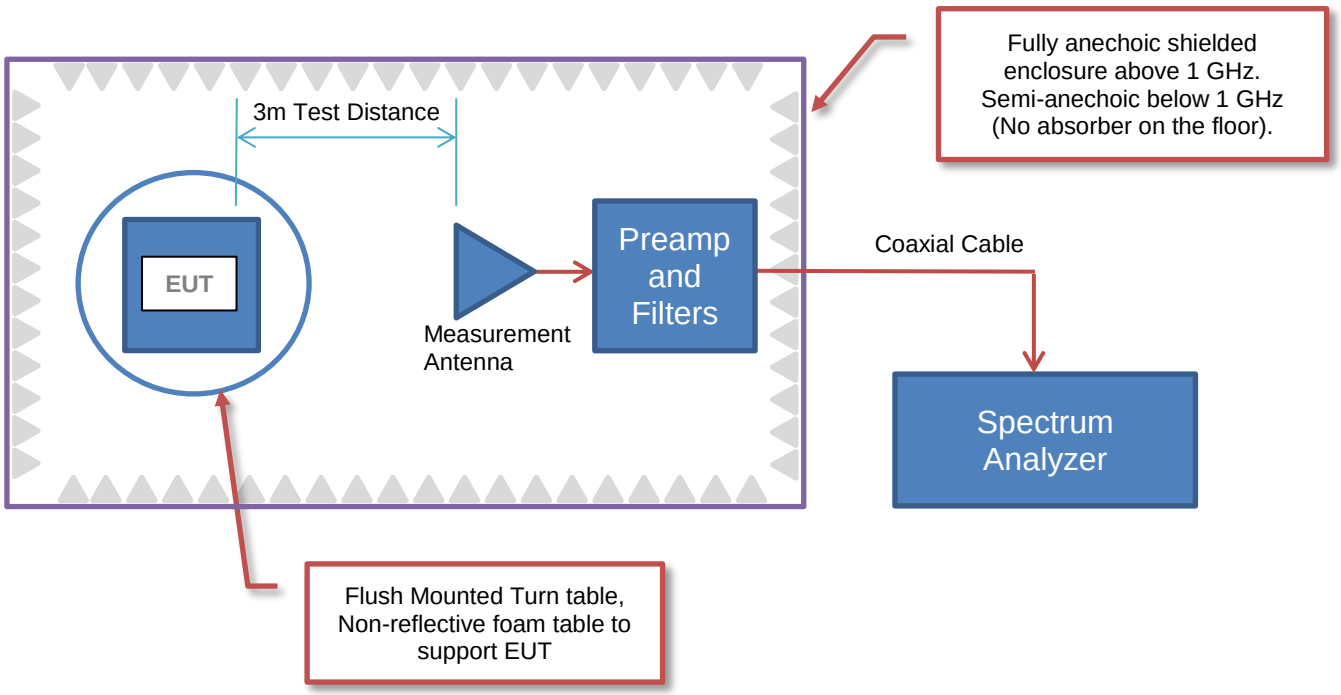
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic, Inc.
Address:	710 Medtronic Parkway
City, State, Zip:	Minneapolis, MN 55432
Test Requested By:	Taylor Dowden
Model:	MyCareLink Relay Home Communicator 24960
First Date of Test:	July 2, 2018
Last Date of Test:	July 11, 2018
Receipt Date of Samples:	June 25, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The MyCareLink Relay home communicator wirelessly transfers information between an implanted medical device and the Medtronic CareLink network. The wireless communication between the MyCareLink Relay and the Medtronic CareLink network is accomplished by means of a cellular radio. The four variations of the cellular radio support different combinations of 2G, 3G and 4G technologies.

Testing Objective:
To demonstrate compliance of the Cellular radio to FCC Part 22H, FCC Part 24E, and FCC Part 27L requirements. 3G and 4G band 5 data will also be used to support Australia and New Zealand radio compliance since AS/CA S042.4:2018 states that band 5 shall comply with the requirements of FCC Part 22H.

CONFIGURATIONS

Configuration MDTR0649- 2

Software/Firmware Running during test	
Description	**Version**
blulite_test-eng AOSP	1.10.588

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
MyCareLink Relay Home Communicator 24960	Medtronic, Inc.	24960	MEA9963DEM
Atech OEM Power Supply	Atech OEM	ADS012T-W050200	S1811003694

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Atech OEM Power Supply Cable	No	1.9 m	Yes	MyCareLink Relay Home Communicator 24960	Atech OEM Power Supply

MODIFICATIONS

element
2018-07-17

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/2/2018	ERP of Fundamental – UMTS – CLR850	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	7/2/2018	EIRP of Fundamental – UMTS – PCS1900	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	7/2/2018	EIRP of Fundamental – UMTS – AWS1700	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	7/3/2018	Out of Band Emissions – UMTS-CLR850	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	7/5/2018	Out of Band Emissions – UMTS – AWS1700	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	7/5/2018	Out of Band Emissions – UMTS – PCS1900	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	7/6/2018	Out of Band Emissions – LTE Band 2	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	7/9/2018	Out of Band Emissions – LTE Band 4	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	7/9/2018	Out of Band Emissions – LTE Band 5	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	7/10/2018	Out of Band Emissions – LTE Band 12	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
11	7/10/2018	ERP of Fundamental – LTE Band 5	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
12	7/10/2018	ERP of Fundamental – LTE Band 12	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
13	7/11/2018	ERP of Fundamental – LTE Band 2	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
14	7/11/2018	ERP of Fundamental – LTE Band 4	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

OUT OF BAND EMISSIONS - UMTS - CLR850

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 CLR-850 (3G Band 5) on Low, Mid, or High channel at 826.4, 836.4, or 846.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	9 GHz

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
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HGS	7-Aug-2017	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Generator - Signal	Rohde & Schwarz	SML03	TII	3-Apr-2018	36 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

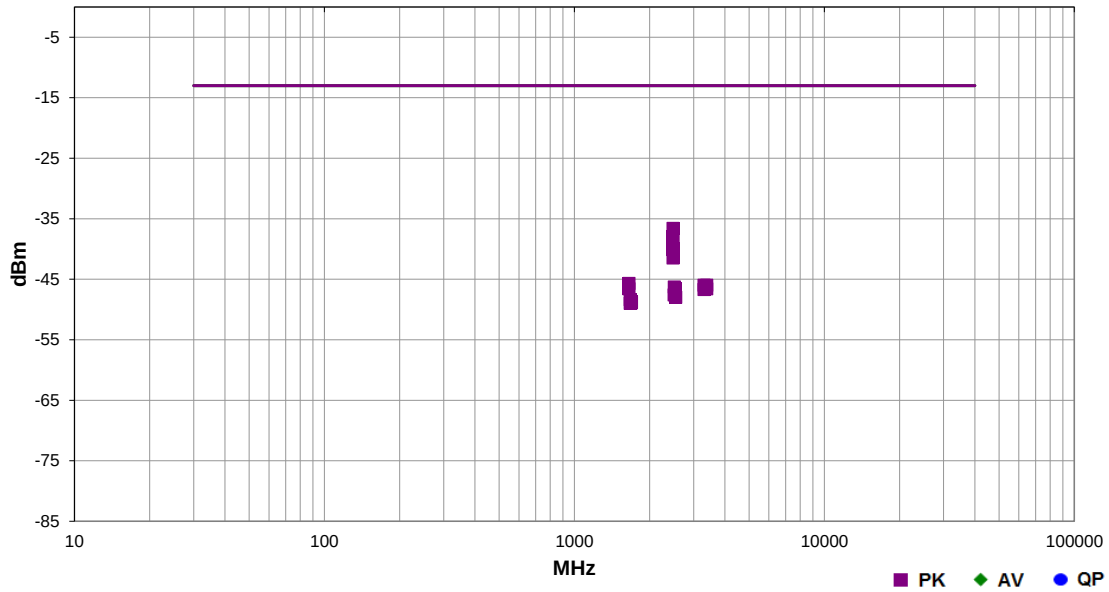
OUT OF BAND EMISSIONS - UMTS - CLR850

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	3-Jul-2018		
Project:	None	**Temperature:**	22.2 °C		
Job Site:	MN05	**Humidity:**	55.8% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1020 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 CLR-850 (3G Band 5) on Low, Mid, or High channel at 826.4, 836.4, or 846.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 22.917:2018	ANSI C63.26:2015

Run #	29	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2479.433	1.0	70.1	Horz	PK	2.20E-07	-36.6	-13.0	-23.6	EUT Horz, Low Ch
	2478.617	1.0	153.0	Vert	PK	1.59E-07	-38.0	-13.0	-25.0	EUT On Side, Low Ch
	2479.017	1.0	346.0	Horz	PK	1.59E-07	-38.0	-13.0	-25.0	EUT Vert, Low Ch
	2479.983	1.0	166.1	Vert	PK	1.00E-07	-40.0	-13.0	-27.0	EUT Horz, Low Ch
	2478.233	1.0	32.0	Vert	PK	9.82E-08	-40.1	-13.0	-27.1	EUT Vert, Low Ch
	2479.550	1.0	249.0	Horz	PK	7.11E-08	-41.5	-13.0	-28.5	EUT On Side, Low Ch
	1654.433	1.0	84.1	Horz	PK	2.70E-08	-45.7	-13.0	-32.7	EUT Horz, Low Ch
	3301.600	2.1	288.0	Vert	PK	2.52E-08	-46.0	-13.0	-33.0	EUT On Side, Low Ch
	3384.067	1.0	181.1	Horz	PK	2.52E-08	-46.0	-13.0	-33.0	EUT Horz, High Ch
	3349.967	2.6	188.1	Horz	PK	2.47E-08	-46.1	-13.0	-33.1	EUT Horz, Mid Ch
	2509.533	1.0	67.0	Horz	PK	2.36E-08	-46.3	-13.0	-33.3	EUT Horz, Mid Ch
	3343.567	1.0	307.9	Vert	PK	2.25E-08	-46.5	-13.0	-33.5	EUT On Side, Mid Ch
	1654.267	1.0	96.0	Vert	PK	2.20E-08	-46.6	-13.0	-33.6	EUT On Side, Low Ch
	2534.800	1.0	317.0	Horz	PK	2.20E-08	-46.6	-13.0	-33.6	EUT Horz, High Ch
	3382.467	1.0	184.1	Vert	PK	2.20E-08	-46.6	-13.0	-33.6	EUT On Side, High Ch
	3300.733	1.0	299.0	Horz	PK	2.15E-08	-46.7	-13.0	-33.7	EUT Horz, Low Ch
	2504.483	1.0	238.0	Vert	PK	1.75E-08	-47.6	-13.0	-34.6	EUT On Side, Mid Ch
	2542.550	1.0	118.0	Vert	PK	1.59E-08	-48.0	-13.0	-35.0	EUT On Side, High Ch
	1671.700	2.8	328.0	Vert	PK	1.45E-08	-48.4	-13.0	-35.4	EUT On Side, Mid Ch
	1692.650	1.0	350.0	Vert	PK	1.36E-08	-48.7	-13.0	-35.7	EUT On Side, High Ch
	1692.783	1.0	1.1	Horz	PK	1.29E-08	-48.9	-13.0	-35.9	EUT Horz, High Ch
	1671.417	1.0	281.0	Horz	PK	1.26E-08	-49.0	-13.0	-36.0	EUT Horz, Mid Ch

OUT OF BAND EMISSIONS - UMTS - PCS1900

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 PCS-1900 (3G Band 2) on Low, Mid, or High channel at 1852.4, 1880.0, or 1907.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	20 GHz

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
Filter - High Pass	Micro-Tronics	HPM50111	LFN	20-Sep-2017	12 mo
Filter - Band Reject	Wainwright Instruments	WTRCT10-1780-2200-22-40-40EEI	HHP	15-Feb-2018	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	12-Sep-2017	12 mo
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	12-Sep-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	13-Feb-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	20-Sep-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

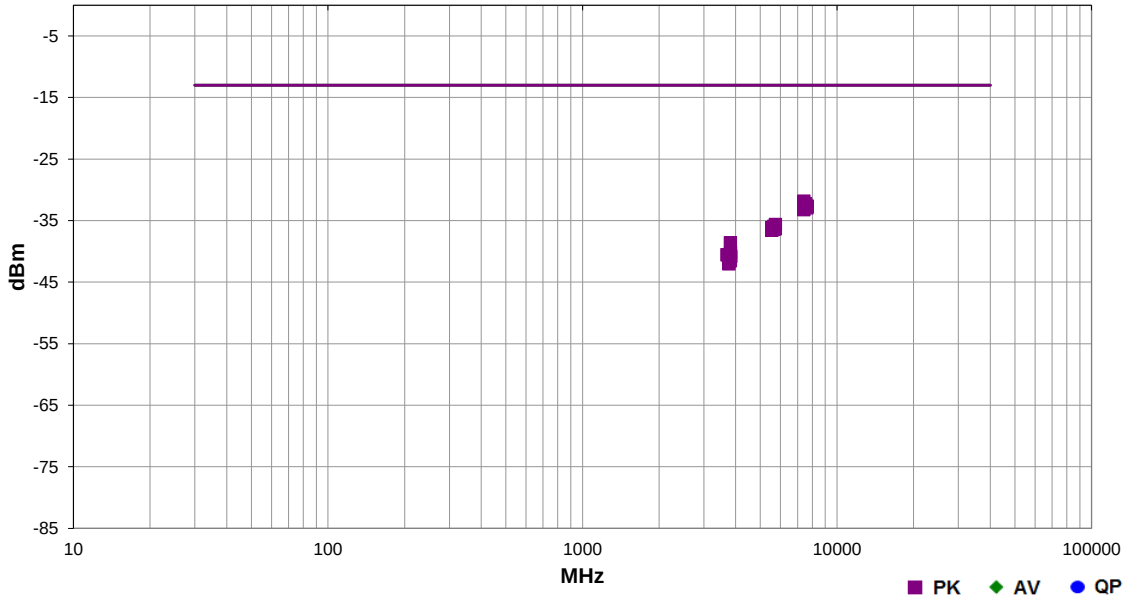
OUT OF BAND EMISSIONS - UMTS - PCS1900

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	5-Jul-2018		
Project:	None	**Temperature:**	21.4 °C		
Job Site:	MN05	**Humidity:**	56.6% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1030 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 PCS-1900 (3G Band 2) on Low, Mid, or High channel at 1852.4, 1880.0, or 1907.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 24.238:2018	ANSI C63.26:2015

Run #	54	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	7414.417	1.0	125.0	Horz	PK	6.56E-07	-31.8	-13.0	-18.8	EUT On Side, Low Ch
	7523.350	1.0	289.9	Horz	PK	5.99E-07	-32.2	-13.0	-19.2	EUT On Side, Mid Ch
	7632.133	1.0	37.1	Horz	PK	5.46E-07	-32.6	-13.0	-19.6	EUT On Side, High Ch
	7517.550	1.4	250.0	Vert	PK	5.46E-07	-32.6	-13.0	-19.6	EUT Horz, Mid Ch
	7626.200	1.0	151.0	Vert	PK	5.09E-07	-32.9	-13.0	-19.9	EUT Horz, High Ch
	7409.917	1.0	91.1	Vert	PK	4.75E-07	-33.2	-13.0	-20.2	EUT Horz, Low Ch
	5725.850	1.2	55.1	Vert	PK	2.74E-07	-35.6	-13.0	-22.6	EUT Horz, High Ch
	5643.683	1.0	310.0	Horz	PK	2.55E-07	-35.9	-13.0	-22.9	EUT On Side, Mid Ch
	5553.033	1.0	0.0	Horz	PK	2.44E-07	-36.1	-13.0	-23.1	EUT On Side, Low Ch
	5720.017	1.0	99.0	Horz	PK	2.33E-07	-36.3	-13.0	-23.3	EUT On Side, High Ch
	5637.467	1.8	163.1	Vert	PK	2.28E-07	-36.4	-13.0	-23.4	EUT Horz, Mid Ch
	5552.517	1.0	159.1	Vert	PK	2.22E-07	-36.5	-13.0	-23.5	EUT Horz, Low Ch
	3814.450	1.9	312.9	Horz	PK	1.37E-07	-38.6	-13.0	-25.6	EUT On Side, High Ch
	3817.867	1.0	222.0	Horz	PK	9.49E-08	-40.2	-13.0	-27.2	EUT Vert, High Ch
	3700.367	2.1	235.0	Horz	PK	8.85E-08	-40.5	-13.0	-27.5	EUT On Side, Low Ch
	3704.467	2.7	0.0	Vert	PK	8.85E-08	-40.5	-13.0	-27.5	EUT Horz, Low Ch
	3818.983	1.0	274.0	Vert	PK	8.46E-08	-40.7	-13.0	-27.7	EUT Horz, High Ch
	3818.200	1.0	337.9	Horz	PK	8.26E-08	-40.8	-13.0	-27.8	EUT Horz, High Ch
	3817.983	1.0	28.0	Vert	PK	8.26E-08	-40.8	-13.0	-27.8	EUT Vert, High Ch
	3813.217	1.0	268.9	Vert	PK	7.03E-08	-41.5	-13.0	-28.5	EUT On Side, High Ch
	3761.350	1.0	31.0	Vert	PK	7.03E-08	-41.5	-13.0	-28.5	EUT Horz, Mid Ch
	3762.950	1.0	11.1	Horz	PK	6.27E-08	-42.0	-13.0	-29.0	EUT On Side, Mid Ch

OUT OF BAND EMISSIONS - UMTS - AWS1700

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 AWS-1700 (3G Band 4) on Low, Mid, or High channel at 1712.4, 1735.4, or 1752.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	18 GHz

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
Filter - Band Reject	K&L Microwave	3TNF-1000/2000-N/N	HGT	7-Aug-2017	12 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	20-Sep-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	20-Sep-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

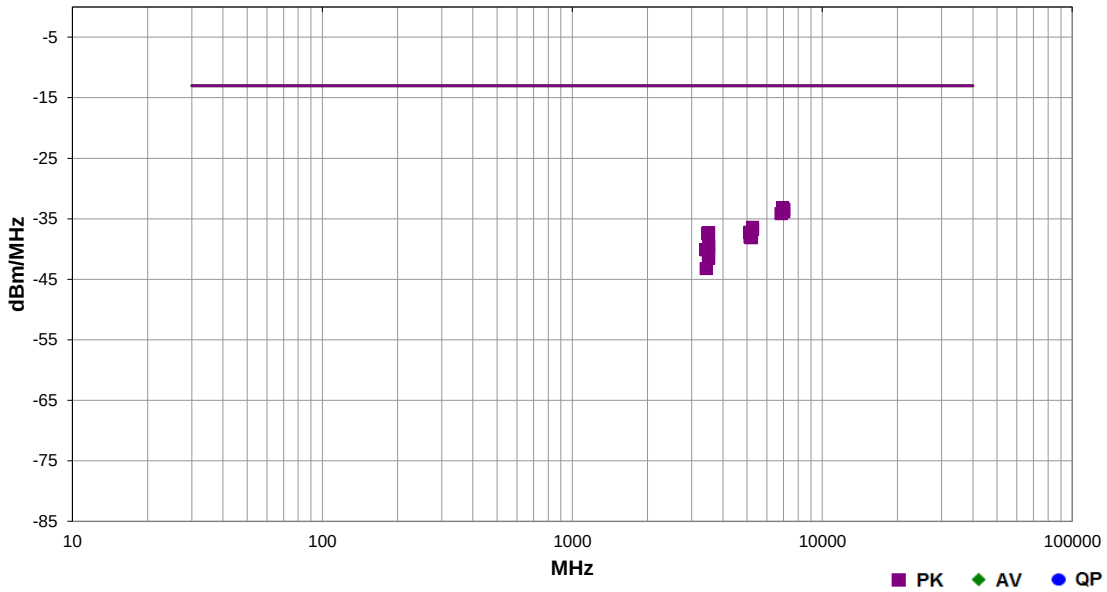
OUT OF BAND EMISSIONS - UMTS - AWS1700

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	5-Jul-2018		
Project:	None	**Temperature:**	21.5 °C		
Job Site:	MN05	**Humidity:**	57.8% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1029 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 AWS-1700 (3G Band 4) on Low, Mid, or High channel at 1712.4, 1735.4, or 1752.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 27.53:2018	ANSI C63.26:2015

Run #	41	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	6942.400	1.0	339.0	Horz	PK	4.75E-07	-33.2	-13.0	-20.2	EUT Vert, Mid Ch
	7009.867	1.9	307.0	Horz	PK	4.54E-07	-33.4	-13.0	-20.4	EUT Vert, High Ch
	7007.233	1.6	53.0	Vert	PK	4.14E-07	-33.8	-13.0	-20.8	EUT Horz, High Ch
	6942.850	2.6	84.1	Vert	PK	4.14E-07	-33.8	-13.0	-20.8	EUT Horz, Mid Ch
	6848.583	2.7	4.1	Vert	PK	3.86E-07	-34.1	-13.0	-21.1	EUT Horz, Low Ch
	6846.350	2.0	216.0	Horz	PK	3.86E-07	-34.1	-13.0	-21.1	EUT Vert, Low Ch
	5256.467	2.1	150.0	Horz	PK	2.28E-07	-36.4	-13.0	-23.4	EUT Vert, High Ch
	5260.217	1.0	31.0	Vert	PK	2.12E-07	-36.7	-13.0	-23.7	EUT Horz, High Ch
	5132.233	1.8	293.0	Horz	PK	1.89E-07	-37.2	-13.0	-24.2	EUT Vert, Low Ch
	3507.900	2.9	271.9	Vert	PK	1.85E-07	-37.3	-13.0	-24.3	EUT Horz, High Ch
	3472.067	1.9	234.0	Horz	PK	1.81E-07	-37.4	-13.0	-24.4	EUT Vert, Mid Ch
	5204.833	2.7	7.0	Horz	PK	1.81E-07	-37.4	-13.0	-24.4	EUT Vert, Mid Ch
	5134.117	1.0	178.1	Vert	PK	1.57E-07	-38.0	-13.0	-25.0	EUT Horz, Low Ch
	5203.950	1.7	14.0	Vert	PK	1.54E-07	-38.1	-13.0	-25.1	EUT Horz, Mid Ch
	3509.450	1.7	329.9	Horz	PK	1.14E-07	-39.4	-13.0	-26.4	EUT Vert, High Ch
	3507.300	1.0	342.0	Horz	PK	1.09E-07	-39.6	-13.0	-26.6	EUT On Side, High Ch
	3425.917	2.0	324.0	Horz	PK	9.71E-08	-40.1	-13.0	-27.1	EUT Vert, Low Ch
	3470.933	1.0	128.0	Vert	PK	9.71E-08	-40.1	-13.0	-27.1	EUT Horz, Mid Ch
	3503.450	2.3	318.0	Vert	PK	8.07E-08	-40.9	-13.0	-27.9	EUT On Side, High Ch
	3502.917	1.0	89.0	Vert	PK	7.71E-08	-41.1	-13.0	-28.1	EUT Vert, High Ch
	3507.383	1.0	279.9	Horz	PK	7.03E-08	-41.5	-13.0	-28.5	EUT Horz, High Ch
	3426.717	1.0	148.1	Vert	PK	4.75E-08	-43.2	-13.0	-30.2	EUT Horz, Low Ch

ERP OF FUNDAMENTAL - UMTS - CLR850

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 CLR-850 (3G Band 5) on Low, Mid, or High channel at 826.4, 836.4, or 846.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	849 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
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Dipole	EMCO	3121C-DB4	ADI	10-Feb-2016	36 mo
Generator - Signal	Rohde & Schwarz	SML03	TII	3-Apr-2018	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

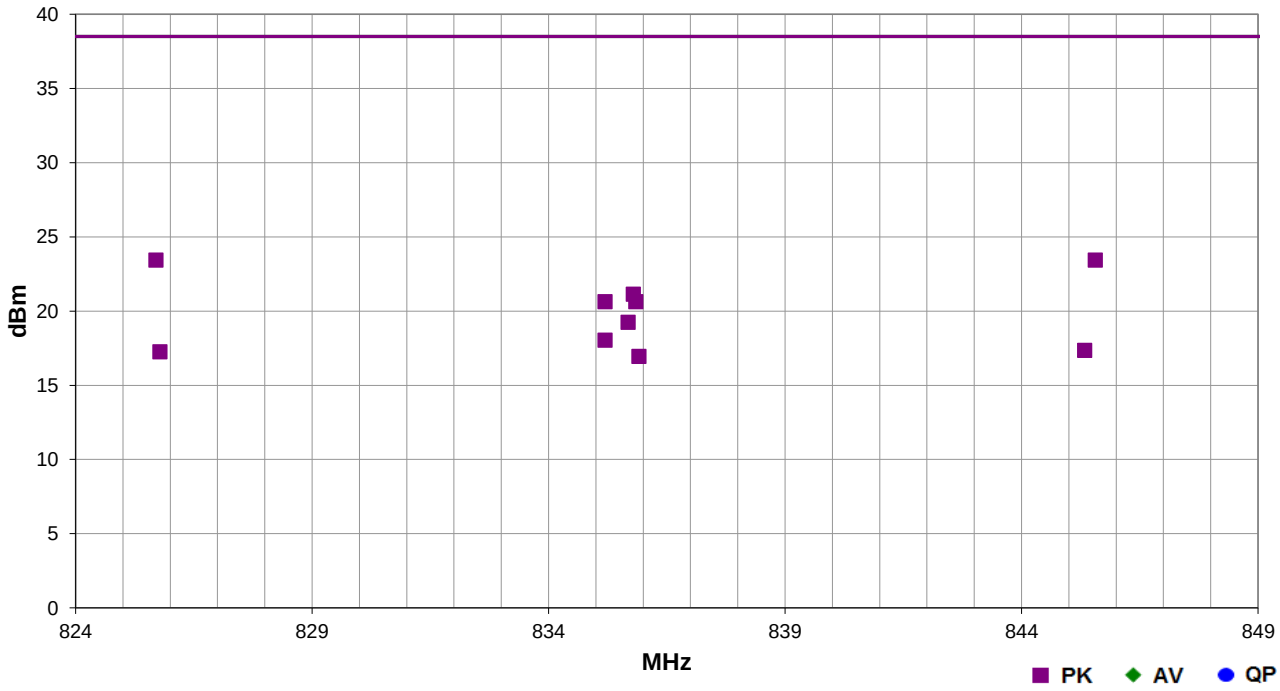
ERP OF FUNDAMENTAL - UMTS - CLR850

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	2-Jul-2018		
Project:	None	**Temperature:**	21.6 °C		
Job Site:	MN05	**Humidity:**	57.9% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1017 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 CLR-850 (3G Band 5) on Low, Mid, or High channel at 826.4, 836.4, or 846.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 22.913:2018	ANSI C63.26:2015

Run #	9	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	845.558	1.0	40.1	Horz	PK	2.21E-01	23.4	38.5	-15.1	EUT Vert, High Ch
	825.700	1.0	40.1	Horz	PK	2.20E-01	23.4	38.5	-15.1	EUT Vert, Low Ch
	835.792	1.0	42.0	Horz	PK	1.30E-01	21.1	38.5	-17.4	EUT Vert, Mid Ch
	835.842	1.0	342.0	Horz	PK	1.16E-01	20.6	38.5	-17.9	EUT Horz, Mid Ch
	835.192	1.0	43.0	Horz	PK	1.16E-01	20.6	38.5	-17.9	EUT On Side, Mid Ch
	835.683	1.4	147.0	Vert	PK	8.41E-02	19.3	38.5	-19.2	EUT On Side, Mid Ch
	835.192	1.5	301.9	Vert	PK	6.37E-02	18.0	38.5	-20.5	EUT Vert, Mid Ch
	845.333	1.3	147.0	Vert	PK	5.45E-02	17.4	38.5	-21.1	EUT On Side, High Ch
	825.783	1.0	167.1	Vert	PK	5.32E-02	17.3	38.5	-21.2	EUT On Side, Low Ch
	835.908	1.1	263.0	Vert	PK	4.95E-02	17.0	38.5	-21.6	EUT Horz, Mid Ch

EIRP OF FUNDAMENTAL - UMTS - PCS1900

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 PCS-1900 (3G Band 2) on Low, Mid, or High channel at 1852.4, 1880.0, or 1907.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1910 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
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	14-Nov-2016	24 mo
Generator - Signal	Rohde & Schwarz	SML03	TII	3-Apr-2018	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

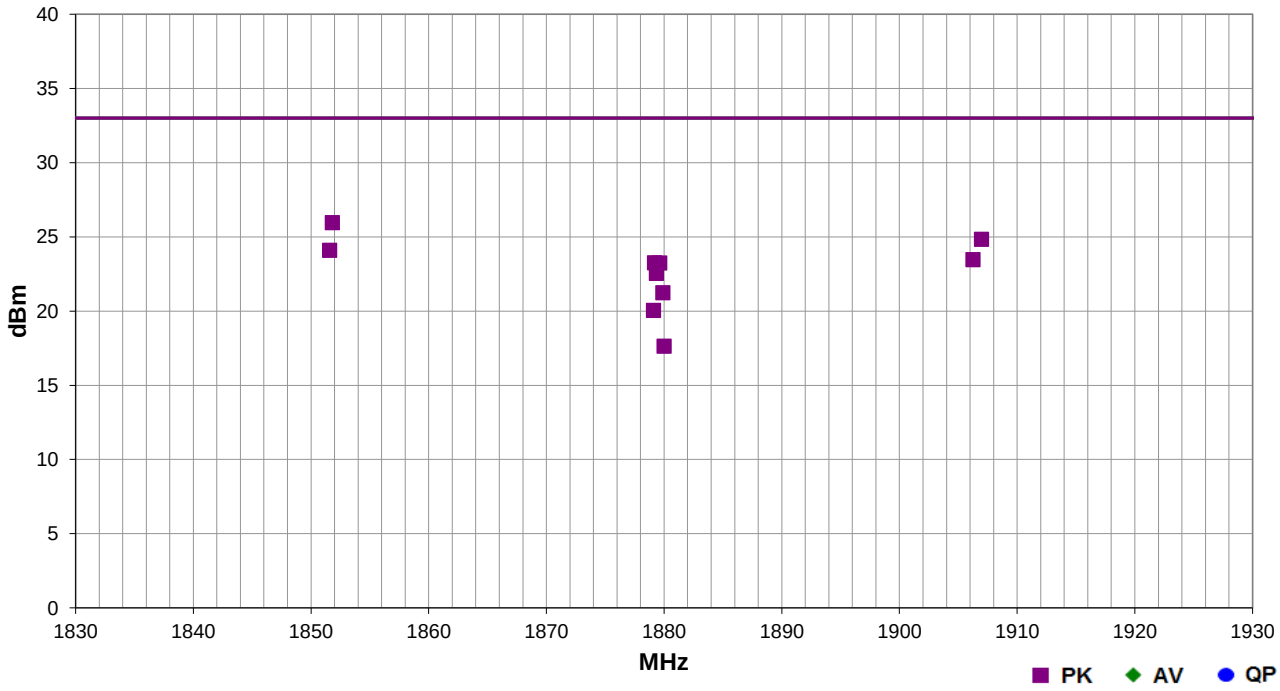
EIRP OF FUNDAMENTAL - UMTS - PCS1900

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	2-Jul-2018		
Project:	None	**Temperature:**	21.5 °C		
Job Site:	MN05	**Humidity:**	55.7% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1017 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 PCS-1900 (3G Band 2) on Low, Mid, or High channel at 1852.4, 1880.0, or 1907.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 24.232:2018	ANSI C63.26:2015

Run #	8	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1851.808	1.0	49.0	Horz	PK	3.94E-01	26.0	33.0	-7.0	EUT On Side, Low Ch
	1906.967	1.0	332.0	Vert	PK	3.05E-01	24.8	33.0	-8.2	EUT Horz, High Ch
	1851.575	1.0	337.9	Vert	PK	2.57E-01	24.1	33.0	-8.9	EUT Horz, Low Ch
	1906.242	1.0	40.1	Horz	PK	2.22E-01	23.5	33.0	-9.5	EUT On Side, High Ch
	1879.183	1.0	336.0	Vert	PK	2.11E-01	23.3	33.0	-9.8	EUT Horz, Mid Ch
	1879.625	1.0	54.0	Horz	PK	2.11E-01	23.2	33.0	-9.8	EUT On Side, Mid Ch
	1879.350	1.0	76.1	Vert	PK	1.79E-01	22.5	33.0	-10.5	EUT On Side, Mid Ch
	1879.892	1.0	184.1	Horz	PK	1.33E-01	21.2	33.0	-11.8	EUT Vert, Mid Ch
	1879.108	1.0	279.9	Horz	PK	1.01E-01	20.1	33.0	-13.0	EUT Horz, Mid Ch
	1880.008	1.0	76.1	Vert	PK	5.81E-02	17.6	33.0	-15.4	EUT Vert, Mid Ch

EIRP OF FUNDAMENTAL - UMTS - AWS1700

PSA-ESCI 2018.05.04

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

Tx WCDMA R99 AWS-1700 (3G Band 4) on Low, Mid, or High channel at 1712.4, 1735.4 or 1756.6 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1759 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
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	14-Nov-2016	24 mo
Generator - Signal	Rohde & Schwarz	SML03	TII	3-Apr-2018	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

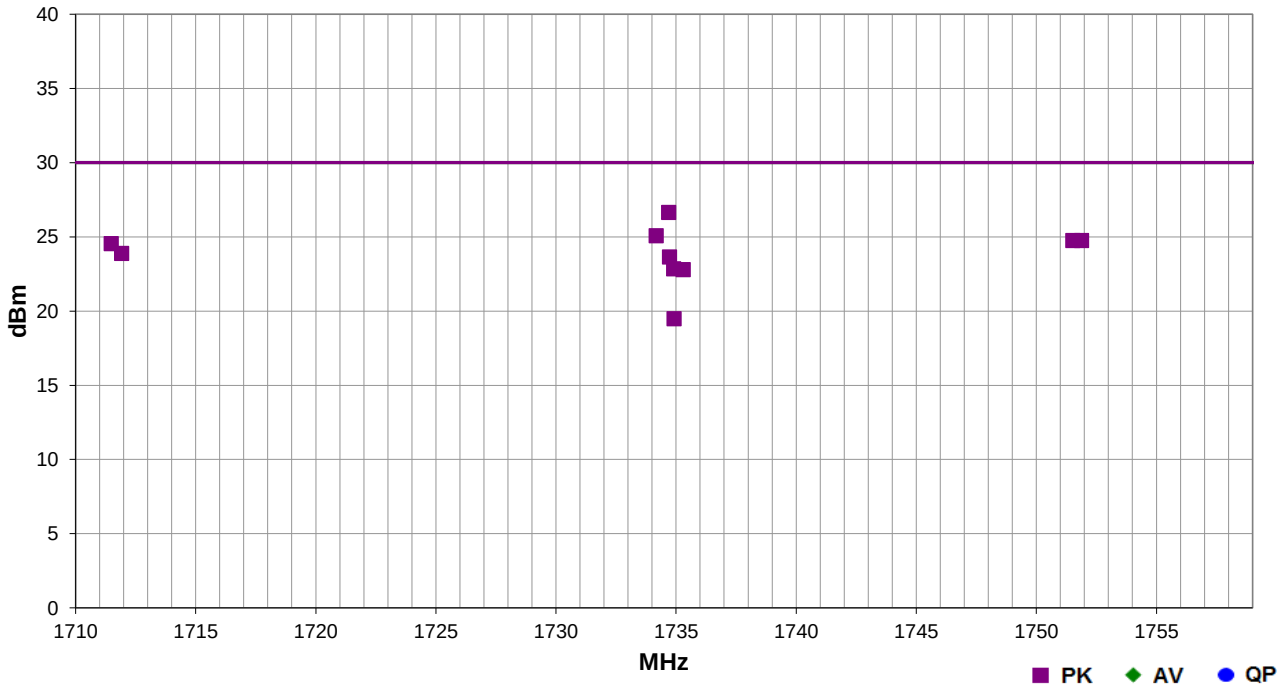
EIRP OF FUNDAMENTAL - UMTS - AWS1700

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	2-Jul-2018		
Project:	None	**Temperature:**	21.4 °C		
Job Site:	MN05	**Humidity:**	55.3% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1017 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 AWS-1700 (3G Band 4) on Low, Mid, or High channel at 1712.4, 1735.4 or 1756.6 MHz.				
Deviations:	None				
Comments:	-US				

Test Specifications	**Test Method**
FCC 27.50:2018	ANSI C63.26:2015

Run #	7	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1734.692	1.0	46.0	Horz	PK	4.62E-01	26.7	30.0	-3.4	EUT On Side, Mid Ch
	1734.175	1.0	130.1	Vert	PK	3.22E-01	25.1	30.0	-4.9	EUT Horz, Mid Ch
	1751.517	1.0	34.1	Horz	PK	2.99E-01	24.8	30.0	-5.2	EUT On Side, High Ch
	1751.883	1.0	350.0	Vert	PK	2.99E-01	24.8	30.0	-5.2	EUT Horz, High Ch
	1711.483	1.0	63.0	Horz	PK	2.85E-01	24.6	30.0	-5.5	EUT On Side, Low Ch
	1711.917	1.0	48.1	Vert	PK	2.44E-01	23.9	30.0	-6.1	EUT Horz, Low Ch
	1734.725	1.0	175.0	Horz	PK	2.32E-01	23.7	30.0	-6.4	EUT Horz, Mid Ch
	1734.900	1.0	137.1	Horz	PK	1.93E-01	22.9	30.0	-7.1	EUT Vert, Mid Ch
	1735.300	1.0	76.1	Vert	PK	1.90E-01	22.8	30.0	-7.2	EUT On Side, Mid Ch
	1734.917	1.0	353.0	Vert	PK	8.87E-02	19.5	30.0	-10.5	EUT Vert, Mid Ch

OUT OF BAND EMISSIONS - LTE BAND 2

PSA-ESCI 2018.05.04

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

Tx LTE Band 2 (PCS-1900) on Low, Mid, or High channel at 1850.7, 1880.0, or 1909.3 MHz using the modulations, bandwidths, and resource block configurations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	20 GHz

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
Filter - High Pass	Micro-Tronics	HPM50111	LFN	20-Sep-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	20-Sep-2017	12 mo
Filter - Band Reject	Wainwright Instruments	WTRCT10-1780-2200-22-40-40EEK	HHP	15-Feb-2018	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	13-Feb-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

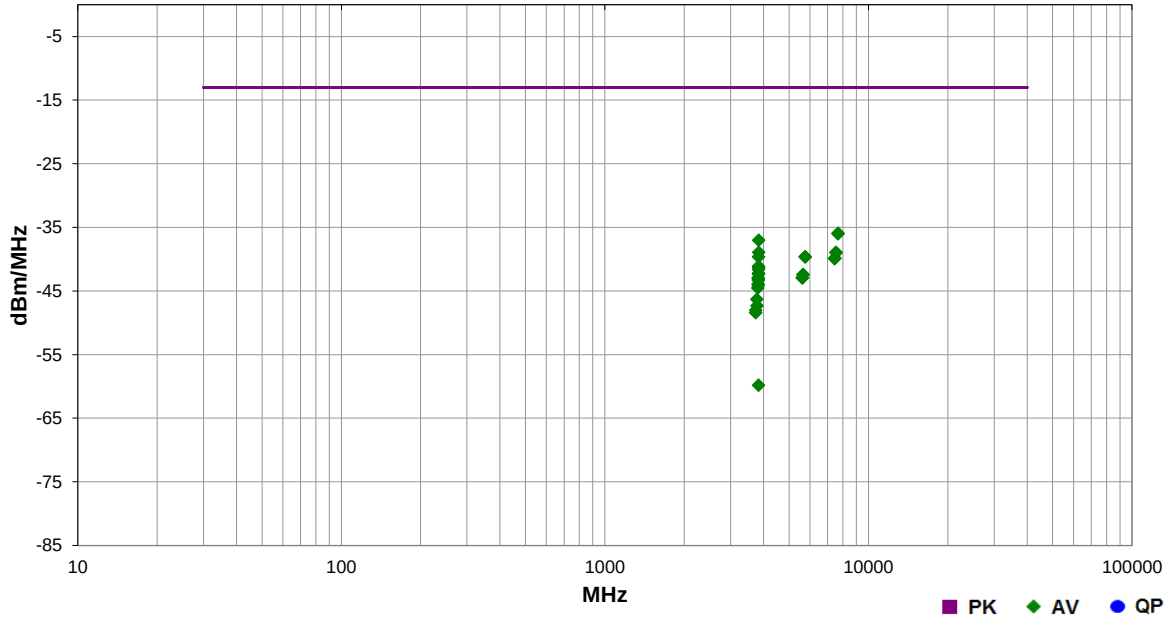
OUT OF BAND EMISSIONS - LTE BAND 2

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	6-Jul-2018		
Project:	None	**Temperature:**	21.8 °C		
Job Site:	MN05	**Humidity:**	52.8% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1035 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 2 (PCS-1900) on Low, Mid, or High channel at 1850.7, 1880.0, or 1909.3 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 24.238:2018	ANSI C63.26:2015

Run #	85	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	7672.800	1.0	193.0	Horz	AV	2.55E-07	-35.9	-13.0	-22.9	EUT On Side, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	7672.950	1.0	288.0	Vert	AV	2.50E-07	-36.0	-13.0	-23.0	EUT Vert, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3836.430	1.0	67.0	Horz	AV	1.98E-07	-37.0	-13.0	-24.0	EUT On Side, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3836.450	1.0	67.0	Horz	AV	1.28E-07	-38.9	-13.0	-25.9	EUT On Side, High Ch, 16-QAM, 20 MHz BW, 1 RB, Max RB Offset
	7536.250	1.0	2.0	Vert	AV	1.28E-07	-38.9	-13.0	-25.9	EUT Vert, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	7545.725	1.0	88.1	Horz	AV	1.25E-07	-39.0	-13.0	-26.0	EUT On Side, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3831.896	1.0	67.0	Horz	AV	1.09E-07	-39.6	-13.0	-26.6	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5754.450	2.9	223.0	Horz	AV	1.09E-07	-39.6	-13.0	-26.6	EUT On Side, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	5754.750	1.0	318.0	Vert	AV	1.09E-07	-39.6	-13.0	-26.6	EUT Vert, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	7465.650	1.0	101.1	Horz	AV	1.04E-07	-39.8	-13.0	-26.8	EUT On Side, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	7453.800	3.0	6.0	Vert	AV	1.02E-07	-39.9	-13.0	-26.9	EUT Vert, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3831.940	1.0	208.0	Vert	AV	7.71E-08	-41.1	-13.0	-28.1	EUT Vert, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3836.400	1.0	219.0	Vert	AV	7.36E-08	-41.3	-13.0	-28.3	EUT Vert, High Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3831.920	1.0	286.9	Horz	AV	6.87E-08	-41.6	-13.0	-28.6	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3831.900	1.0	27.0	Vert	AV	5.99E-08	-42.2	-13.0	-29.2	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3831.900	1.0	270.0	Vert	AV	5.85E-08	-42.3	-13.0	-29.3	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5657.550	1.5	347.9	Vert	AV	5.72E-08	-42.4	-13.0	-29.4	EUT Vert, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	5654.250	1.0	186.0	Horz	AV	5.72E-08	-42.4	-13.0	-29.4	EUT On Side, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3821.050	1.0	67.0	Horz	AV	5.09E-08	-42.9	-13.0	-29.9	EUT On Side, High Ch, QPSK, 3 MHz BW, 1 RB, Max RB Offset
	5606.700	1.0	351.0	Horz	AV	5.09E-08	-42.9	-13.0	-29.9	EUT On Side, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	5626.800	1.0	209.1	Vert	AV	5.09E-08	-42.9	-13.0	-29.9	EUT Vert, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3822.850	1.0	67.0	Horz	AV	4.87E-08	-43.1	-13.0	-30.1	EUT On Side, High Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	3827.400	1.0	67.0	Horz	AV	4.65E-08	-43.3	-13.0	-30.3	EUT On Side, High Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	3819.550	1.0	67.0	Horz	AV	4.05E-08	-43.9	-13.0	-30.9	EUT On Side, High Ch, QPSK, 1.4 MHz BW, 1 RB, Max RB Offset
	3821.300	1.0	67.0	Horz	AV	3.86E-08	-44.1	-13.0	-31.1	EUT On Side, High Ch, QPSK, 15 MHz BW, 75 RB
	3805.250	1.0	67.0	Horz	AV	3.52E-08	-44.5	-13.0	-31.5	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, No RB Offset
	3777.775	1.0	69.1	Horz	AV	2.33E-08	-46.3	-13.0	-33.3	EUT On Side, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3777.875	1.0	212.0	Vert	AV	1.85E-08	-47.3	-13.0	-34.3	EUT Vert, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3737.850	1.0	76.1	Horz	AV	1.57E-08	-48.0	-13.0	-35.0	EUT On Side, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3737.775	1.0	128.0	Vert	AV	1.44E-08	-48.4	-13.0	-35.4	EUT Vert, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3832.705	1.8	84.1	Horz	AV	1.04E-09	-59.8	-13.0	-46.8	EUT Vert, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset

OUT OF BAND EMISSIONS - LTE BAND 4

PSA-ESCI 2018.05.04

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

Tx LTE Band 4 (AWS-1700) on Low, Mid, or High channel at 1710.7, 1732.5, or 1754.3 MHz using the modulations, bandwidths, and resource block configuarations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	18 GHz

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
Filter - Band Reject	K&L Microwave	3TNF-1000/2000-N/N	HGT	7-Aug-2017	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	20-Sep-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	20-Sep-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

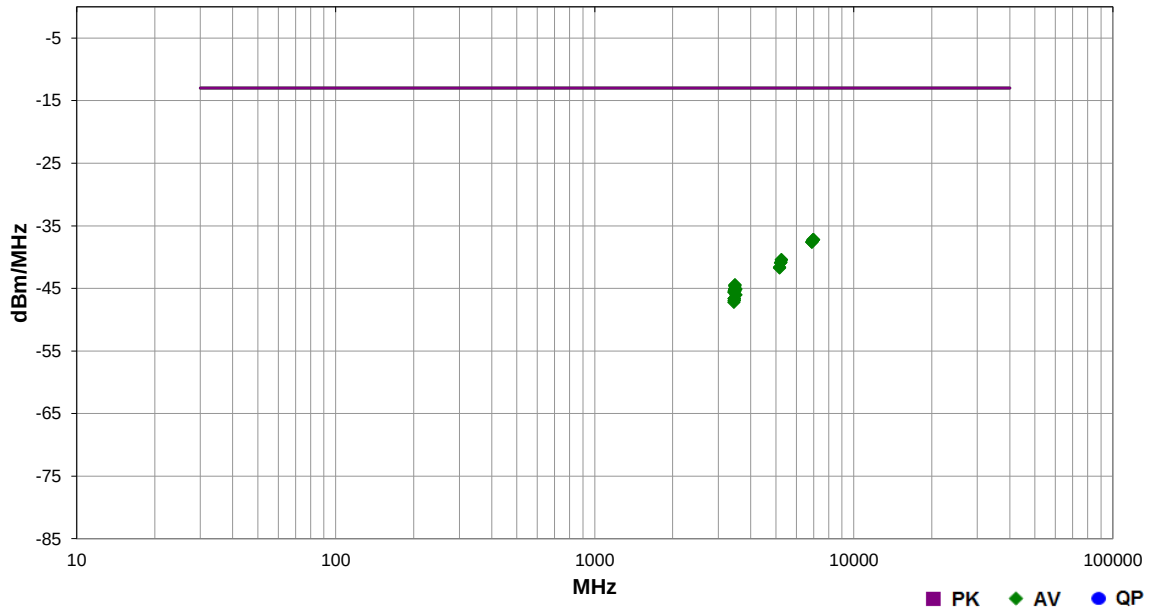
OUT OF BAND EMISSIONS - LTE BAND 4

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	9-Jul-2018		
Project:	None	**Temperature:**	21.7 °C		
Job Site:	MN05	**Humidity:**	54.9% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1022 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 4 (AWS-1700) on Low, Mid, or High channel at 1710.7, 1732.5, or 1754.3 MHz using the modulations, bandwidths, and resource block configuarations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 27.53:2018	ANSI C63.26:2015

Run #	108	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	6956.900	1.0	211.0	Vert	AV	1.89E-07	-37.2	-13.0	-24.2	EUT Horz, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	6999.350	1.0	354.0	Horz	AV	1.89E-07	-37.2	-13.0	-24.2	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	6999.500	1.0	329.9	Vert	AV	1.89E-07	-37.2	-13.0	-24.2	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	6930.800	1.9	27.0	Horz	AV	1.81E-07	-37.4	-13.0	-24.4	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	6896.750	3.1	307.9	Vert	AV	1.73E-07	-37.6	-13.0	-24.6	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	6896.750	1.0	360.0	Horz	AV	1.73E-07	-37.6	-13.0	-24.6	EUT On Side, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5262.450	2.1	246.9	Horz	AV	9.06E-08	-40.4	-13.0	-27.4	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5262.300	1.0	264.9	Vert	AV	9.06E-08	-40.4	-13.0	-27.4	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5238.450	3.1	321.0	Vert	AV	8.26E-08	-40.8	-13.0	-27.8	EUT Horz, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5217.600	1.0	53.0	Horz	AV	8.07E-08	-40.9	-13.0	-27.9	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5172.450	2.2	243.9	Horz	AV	6.87E-08	-41.6	-13.0	-28.6	EUT On Side, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	5172.600	1.0	253.9	Vert	AV	6.72E-08	-41.7	-13.0	-28.7	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3478.300	3.5	333.9	Vert	AV	3.61E-08	-44.4	-13.0	-31.4	EUT Horz, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3478.150	1.6	31.0	Horz	AV	3.52E-08	-44.5	-13.0	-31.5	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3473.850	1.6	31.0	Horz	AV	3.44E-08	-44.6	-13.0	-31.6	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	3482.850	1.6	31.0	Horz	AV	3.14E-08	-45.0	-13.0	-32.0	EUT On Side, Mid Ch, QPSK, 20 MHz BW, 1 RB, Max RB Offset
	3469.250	1.6	31.0	Horz	AV	3.07E-08	-45.1	-13.0	-32.1	EUT On Side, Mid Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	3508.300	1.0	50.0	Horz	AV	3.07E-08	-45.1	-13.0	-32.1	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3465.900	1.6	31.0	Horz	AV	2.93E-08	-45.3	-13.0	-32.3	EUT On Side, Mid Ch, QPSK, 1.4 MHz BW, 1 RB, Max RB Offset
	3467.450	1.6	31.0	Horz	AV	2.93E-08	-45.3	-13.0	-32.3	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, Max RB Offset
	3456.150	1.6	31.0	Horz	AV	2.86E-08	-45.4	-13.0	-32.4	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3478.300	1.6	31.0	Horz	AV	2.86E-08	-45.4	-13.0	-32.4	EUT On Side, Mid Ch, 16-QAM, 15 MHz BW, 1 RB, Max RB Offset

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	3465.750	1.6	31.0	Horz	AV	2.80E-08	-45.5	-13.0	-32.5	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 50 RB
	3448.300	1.0	47.1	Horz	AV	2.74E-08	-45.6	-13.0	-32.6	EUT On Side, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3508.450	1.0	220.1	Vert	AV	2.50E-08	-46.0	-13.0	-33.0	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset
	3456.150	1.0	78.0	Vert	AV	2.17E-08	-46.6	-13.0	-33.6	EUT Horz, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3456.150	1.0	272.9	Vert	AV	2.17E-08	-46.6	-13.0	-33.6	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3456.150	1.0	25.0	Horz	AV	2.17E-08	-46.6	-13.0	-33.6	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3456.300	1.5	279.0	Horz	AV	2.03E-08	-46.9	-13.0	-33.9	EUT Horz, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3456.300	3.2	99.0	Vert	AV	2.03E-08	-46.9	-13.0	-33.9	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3448.300	1.0	180.0	Vert	AV	1.89E-08	-47.2	-13.0	-34.2	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB Offset

OUT OF BAND EMISSIONS - LTE BAND 5

PSA-ESCI 2018.05.04

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

Tx LTE Band 5 (CLR-850) on Low, Mid, or High channel at 824.7, 836.5, or 848.3 MHz using the modulations, bandwidths, and resouce block conifgurations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	9 GHz

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
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HGS	7-Aug-2017	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	12 mo
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Antenna - Dipole	EMCO	3121C-DB4	ADI	10-Feb-2016	36 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

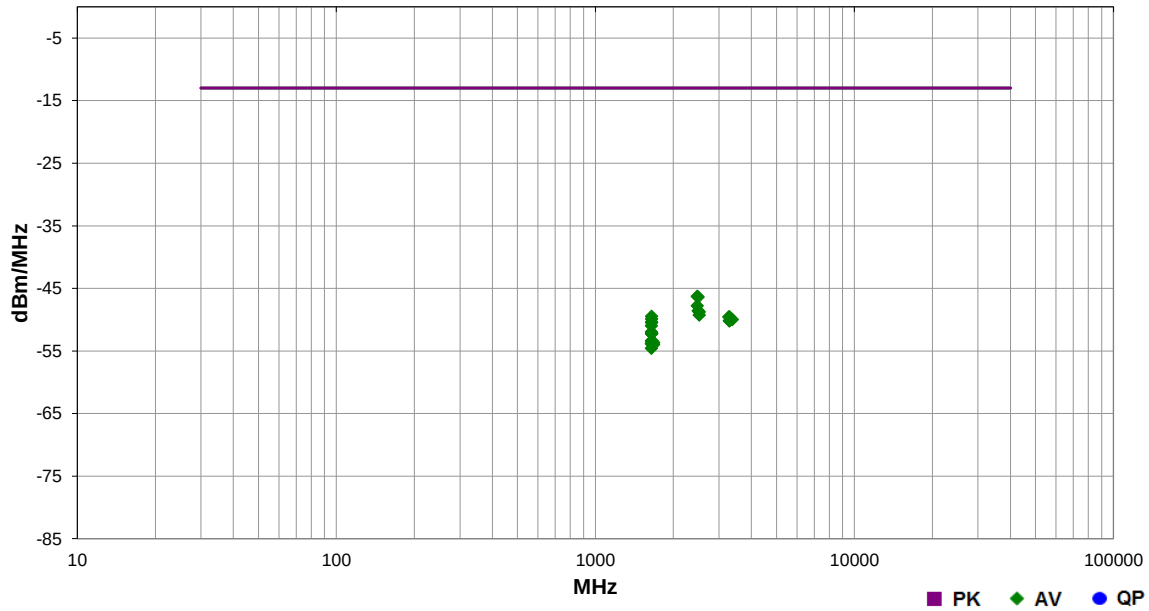
OUT OF BAND EMISSIONS - LTE BAND 5

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	9-Jul-2018		
Project:	None	**Temperature:**	22.7 °C		
Job Site:	MN05	**Humidity:**	59.2% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1023 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 5 (CLR-850) on Low, Mid, or High channel at 824.7, 836.5, or 848.3 MHz using the modulations, bandwidths, and resouce block conifgurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 22.917:2018	ANSI C63.26:2015

Run #	117	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts/MHz)	ERP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	2473.762	1.0	135.0	Horz	AV	2.36E-08	-46.3	-13.0	-33.3	EUT Vert, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	2496.219	1.0	137.1	Horz	AV	2.30E-08	-46.4	-13.0	-33.4	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	2473.820	1.0	48.1	Vert	AV	1.67E-08	-47.8	-13.0	-34.8	EUT On Side, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	2496.300	1.0	258.9	Vert	AV	1.39E-08	-48.6	-13.0	-35.6	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	2518.800	1.0	144.0	Horz	AV	1.32E-08	-48.8	-13.0	-35.8	EUT Vert, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	2518.800	1.0	1.1	Vert	AV	1.18E-08	-49.3	-13.0	-36.3	EUT On Side, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1649.180	1.0	69.3	Vert	AV	1.13E-08	-49.5	-13.0	-36.5	EUT On Side, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3276.150	1.0	67.0	Vert	AV	1.10E-08	-49.6	-13.0	-36.6	EUT On Side, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3298.350	1.1	33.1	Horz	AV	1.10E-08	-49.6	-13.0	-36.6	EUT Vert, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1648.730	1.0	69.2	Vert	AV	1.03E-08	-49.9	-13.0	-36.9	EUT On Side, Low Ch, QPSK, 5 MHz BW, 1 RB, No RB Offset
	3376.000	2.8	318.9	Vert	AV	1.00E-08	-50.0	-13.0	-37.0	EUT On Side, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3374.500	1.0	13.0	Horz	AV	1.00E-08	-50.0	-13.0	-37.0	EUT Vert, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3294.300	1.0	286.0	Horz	AV	9.59E-09	-50.2	-13.0	-37.2	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	3292.050	1.1	184.1	Vert	AV	9.59E-09	-50.2	-13.0	-37.2	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1649.200	1.0	69.3	Vert	AV	9.16E-09	-50.4	-13.0	-37.4	EUT On Side, Low Ch, 16-QAM, 10 MHz BW, 1 RB, No RB Offset
	1648.510	1.0	69.1	Vert	AV	8.95E-09	-50.5	-13.0	-37.5	EUT On Side, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	69.1	Vert	AV	7.98E-09	-51.0	-13.0	-38.0	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	127.1	Horz	AV	6.34E-09	-52.0	-13.0	-39.0	EUT Vert, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1651.950	1.0	69.1	Vert	AV	6.05E-09	-52.2	-13.0	-39.2	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, Max RB Offset
	1649.100	1.0	69.1	Vert	AV	5.92E-09	-52.3	-13.0	-39.3	EUT On Side, Low Ch, QPSK, 3 MHz BW, 15 RB
	1649.100	1.0	116.1	Horz	AV	5.92E-09	-52.3	-13.0	-39.3	EUT Vert, Low Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	176.0	Horz	AV	4.59E-09	-53.4	-13.0	-40.4	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts/MHz)	ERP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	1664.250	1.0	114.0	Horz	AV	4.49E-09	-53.5	-13.0	-40.5	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1679.150	1.0	32.0	Vert	AV	4.29E-09	-53.7	-13.0	-40.7	EUT On Side, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	161.0	Vert	AV	4.19E-09	-53.8	-13.0	-40.8	EUT Vert, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1664.100	1.0	204.0	Vert	AV	4.19E-09	-53.8	-13.0	-40.8	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	43.0	Horz	AV	4.09E-09	-53.9	-13.0	-40.9	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1679.150	1.0	186.0	Horz	AV	4.00E-09	-54.0	-13.0	-41.0	EUT Vert, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1646.850	1.0	274.0	Vert	AV	3.48E-09	-54.6	-13.0	-41.6	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset

OUT OF BAND EMISSIONS - LTE BAND 12

PSA-ESCI 2018.05.04

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

Tx LTE Band 12 (700 a) on Low, Mid, or High channel at 699.7, 707.5, 715.3 MHz using the modulations, bandwidths, and resource block configurations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	8 GHz

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
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HGS	7-Aug-2017	12 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50108	LFM	20-Sep-2017	12 mo
Attenuator	Fairview Microwave	SA18E-10	TYA	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

At an approved test site, the transmitter was place on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

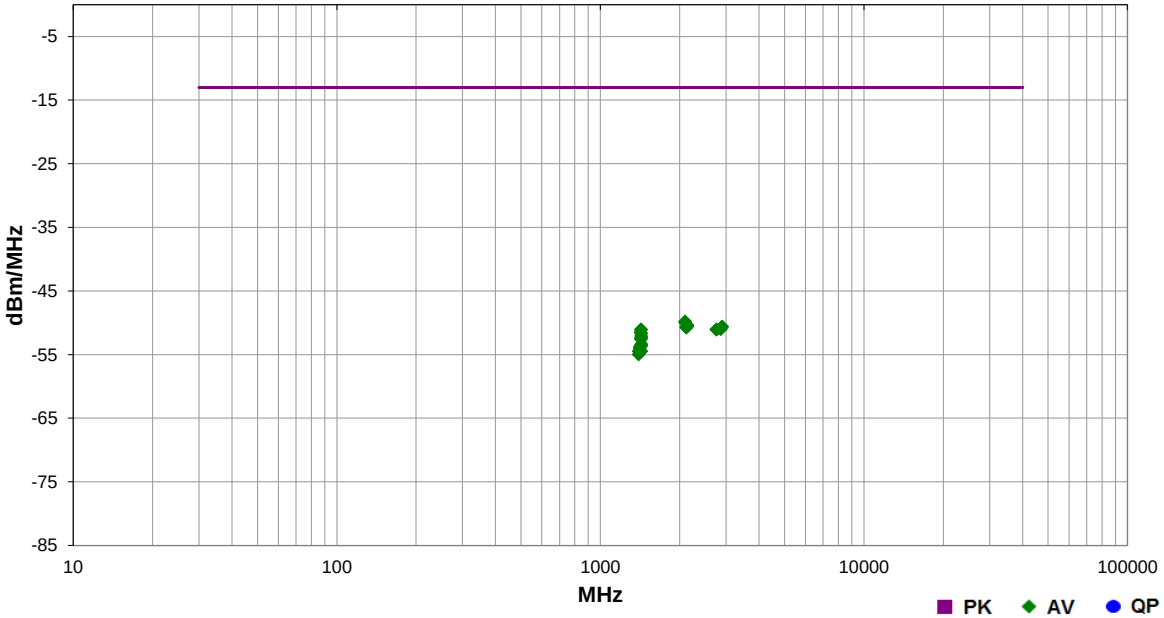
OUT OF BAND EMISSIONS - LTE BAND 12

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	10-Jul-2018		
Project:	None	**Temperature:**	21.7 °C		
Job Site:	MN05	**Humidity:**	52.8% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1025 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 12 (700 a) on Low, Mid, or High channel at 699.7, 707.5, 715.3 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 27.53:2018	ANSI C63.26:2015

Run #	126	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts/MHz)	ERP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	2097.750	1.0	347.0	Vert	AV	1.05E-08	-49.8	-13.0	-36.8	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2097.750	1.0	23.1	Horz	AV	1.00E-08	-50.0	-13.0	-37.0	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2139.750	1.0	19.1	Horz	AV	9.16E-09	-50.4	-13.0	-37.4	EUT Horz, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2139.750	1.0	344.9	Vert	AV	8.75E-09	-50.6	-13.0	-37.6	EUT On Side, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2897.700	1.0	195.1	Horz	AV	8.75E-09	-50.6	-13.0	-37.6	EUT Horz, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2895.600	1.0	325.0	Vert	AV	8.55E-09	-50.7	-13.0	-37.7	EUT On Side, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2118.750	1.2	27.0	Horz	AV	8.55E-09	-50.7	-13.0	-37.7	EUT Horz, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2118.750	1.0	314.0	Vert	AV	8.36E-09	-50.8	-13.0	-37.8	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2866.550	1.0	154.0	Horz	AV	7.98E-09	-51.0	-13.0	-38.0	EUT Horz, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2865.650	2.0	322.0	Vert	AV	7.98E-09	-51.0	-13.0	-38.0	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1426.580	1.0	33.2	Vert	AV	7.80E-09	-51.1	-13.0	-38.1	EUT On Side, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1428.060	1.0	33.2	Vert	AV	7.80E-09	-51.1	-13.0	-38.1	EUT On Side, High Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	2759.050	1.1	303.0	Vert	AV	7.80E-09	-51.1	-13.0	-38.1	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	2759.350	1.0	168.0	Horz	AV	7.80E-09	-51.1	-13.0	-38.1	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1422.690	1.0	33.1	Vert	AV	7.11E-09	-51.5	-13.0	-38.5	EUT On Side, High Ch, QPSK, 5 MHz BW, 1 RB, No RB Offset
	1431.300	1.0	33.1	Vert	AV	6.79E-09	-51.7	-13.0	-38.7	EUT On Side, High Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	1428.500	1.0	33.1	Vert	AV	6.19E-09	-52.1	-13.0	-39.1	EUT On Side, High Ch, QPSK, 5 MHz BW, Max RB
	1430.050	1.0	355.9	Vert	AV	5.92E-09	-52.3	-13.0	-39.3	EUT On Side, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1426.500	1.0	67.0	Horz	AV	5.65E-09	-52.5	-13.0	-39.5	EUT Horz, High Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1426.500	1.0	44.1	Vert	AV	5.52E-09	-52.6	-13.0	-39.6	EUT On Side, Mid Ch, 16-QAM, 3 MHz BW, 1 RB, No RB Offset

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts/MHz)	ERP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
	1430.200	1.0	274.0	Horz	AV	4.59E-09	-53.4	-13.0	-40.4	EUT Horz, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1430.050	1.0	293.0	Vert	AV	4.49E-09	-53.5	-13.0	-40.5	EUT Vert, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1430.050	1.0	23.1	Horz	AV	4.39E-09	-53.6	-13.0	-40.6	EUT On Side, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1430.050	1.0	53.0	Horz	AV	4.39E-09	-53.6	-13.0	-40.6	EUT Vert, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1413.050	1.0	33.1	Vert	AV	4.19E-09	-53.8	-13.0	-40.8	EUT On Side, High Ch, QPSK, 10 MHz BW, 1 RB, No RB Offset
	1412.500	1.0	342.0	Vert	AV	3.91E-09	-54.1	-13.0	-41.1	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1430.200	1.0	33.1	Vert	AV	3.56E-09	-54.5	-13.0	-41.5	EUT Horz, High Ch, QPSK, 5 MHz BW, 8 RB, Max RB Offset
	1398.350	1.0	6.0	Vert	AV	3.56E-09	-54.5	-13.0	-41.5	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1412.500	1.0	6.0	Horz	AV	3.48E-09	-54.6	-13.0	-41.6	EUT Horz, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset
	1398.500	1.0	52.1	Horz	AV	3.18E-09	-55.0	-13.0	-42.0	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No RB Offset

EIRP OF FUNDAMENTAL - LTE BAND 2

PSA-ESCI 2018.05.04

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

Tx LTE Band 2 (PCS-1900) on Low, Mid, or High channel at 1860.0, 1880.0, 1900.0 MHz using the modulations, bandwidths, and resource block configurations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1840 MHz	Stop Frequency	1920 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
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

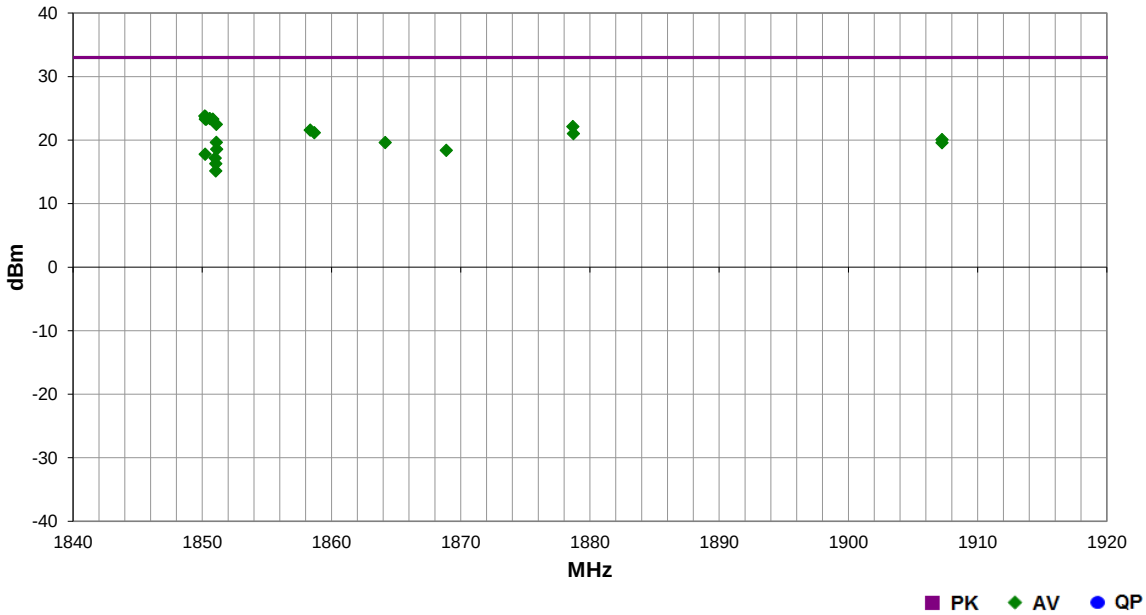
EIRP OF FUNDAMENTAL - LTE BAND 2

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	11-Jul-2018		
Project:	None	**Temperature:**	21.8 °C		
Job Site:	MN05	**Humidity:**	54.1% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1020 mbar	**Tested by:**	Kyle McMullan, Chris Patterson
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 2 (PCS-1900) on Low, Mid, or High channel at 1860.0, 1880.0, 1900.0 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 24.232:2018	ANSI C63.26:2015

Run #	137	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1850.195	1.0	246.9	Vert	AV	2.38E-01	23.8	33.0	-9.2	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1850.263	1.0	246.9	Vert	AV	2.33E-01	23.7	33.0	-9.3	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No offset RB
	1850.590	1.0	246.9	Vert	AV	2.17E-01	23.4	33.0	-9.6	EUT Horz, Low Ch, QPSK, 10 MHz BW, 1 RB, No offset RB
	1850.818	1.0	246.9	Vert	AV	2.12E-01	23.3	33.0	-9.7	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, No offset RB
	1850.315	1.0	246.9	Vert	AV	2.12E-01	23.3	33.0	-9.7	EUT Horz, Low Ch, QPSK, 5 MHz BW, 1 RB, No offset RB
	1850.240	1.0	246.9	Vert	AV	2.12E-01	23.3	33.0	-9.7	EUT Horz, Low Ch, 16-QAM, 3 MHz BW, 1 RB, No offset RB
	1851.085	1.0	103.0	Vert	AV	1.76E-01	22.5	33.0	-10.5	EUT Horz, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB
	1878.690	1.0	246.9	Vert	AV	1.62E-01	22.1	33.0	-10.9	EUT Horz, Mid Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1858.360	1.0	246.9	Vert	AV	1.43E-01	21.6	33.0	-11.4	EUT Horz, Low Ch, QPSK, 15 MHz BW, 75 RB
	1858.680	1.0	246.9	Vert	AV	1.31E-01	21.2	33.0	-11.8	EUT Horz, Low Ch, QPSK, 20 MHz BW, 100 RB
	1878.727	1.2	52.1	Horz	AV	1.26E-01	21.0	33.0	-12.0	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1907.250	1.0	250.9	Vert	AV	1.02E-01	20.1	33.0	-12.9	EUT Horz, High Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1851.085	1.0	257.0	Horz	AV	9.20E-02	19.6	33.0	-13.4	EUT On Side, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB
	1864.168	1.0	246.9	Vert	AV	9.14E-02	19.6	33.0	-13.4	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, Max RB offset
	1907.250	1.0	33.1	Horz	AV	9.04E-02	19.6	33.0	-13.4	EUT On Side, High Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1851.123	1.8	260.0	Vert	AV	7.18E-02	18.6	33.0	-14.4	EUT On Side, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB
	1868.893	1.0	246.9	Vert	AV	6.87E-02	18.4	33.0	-14.6	EUT Horz, Low Ch, QPSK, 20 MHz BW, 1 RB, Max RB offset
	1850.227	1.0	60.0	Horz	AV	5.96E-02	17.8	33.0	-15.3	EUT On Side, Low Ch, QPSK, 3 MHz BW, 1 RB, No offset RB
	1851.010	1.0	257.0	Horz	AV	5.19E-02	17.2	33.0	-15.9	EUT Vert, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB
	1851.055	1.0	134.1	Vert	AV	4.23E-02	16.3	33.0	-16.7	EUT Vert, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB
	1851.054	1.0	276.9	Horz	AV	3.27E-02	15.1	33.0	-17.9	EUT Horz, Low Ch, QPSK, 20 MHz BW, 1 RB, No offset RB

EIRP OF FUNDAMENTAL - LTE BAND 4

PSA-ESCI 2018.05.04

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

Tx LTE Band 4 (AWS-1700) on Low, Mid, or High channel at 1717.5, 1732.5, 1747.5 MHz using the modulations, bandwidths, and resource block configurations noted below.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1755 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
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

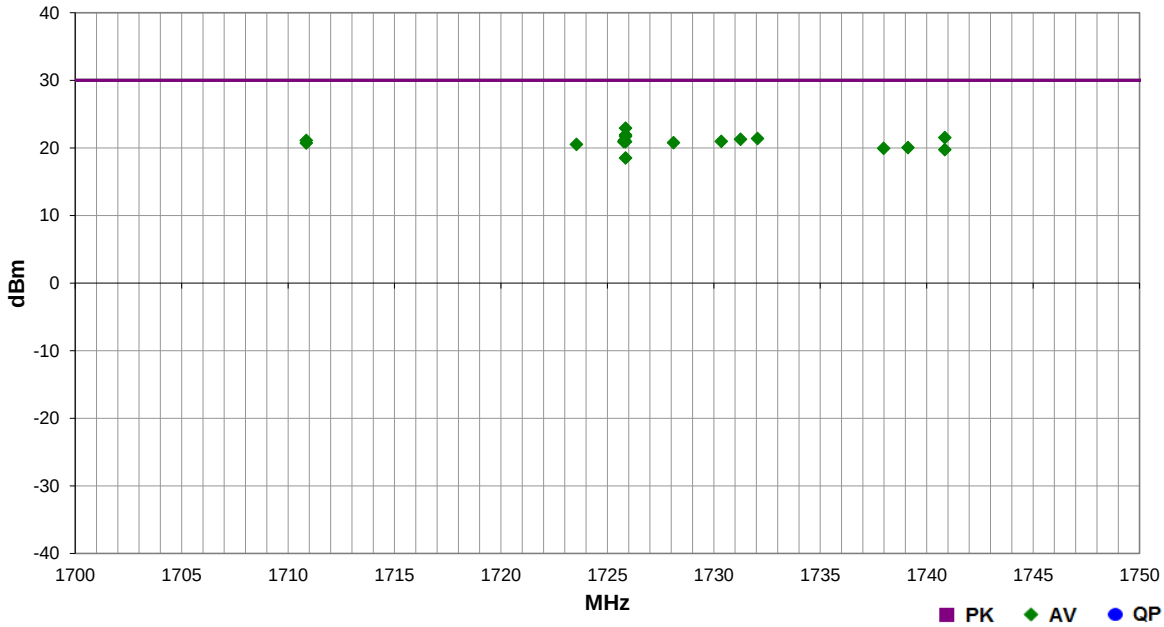
EIRP OF FUNDAMENTAL - LTE BAND 4

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	11-Jul-2018		
Project:	None	**Temperature:**	21.9 °C		
Job Site:	MN05	**Humidity:**	58.4% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1019 mbar	**Tested by:**	Kyle McMullan, Chris Patterson
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 4 (AWS-1700) on Low, Mid, or High channel at 1717.5, 1732.5, 1747.5 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 27.50:2018	ANSI C63.26:2015

Run #	138	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1725.855	1.0	25.0	Vert	AV	1.95E-01	22.9	30.0	-7.1	EUT Horz, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1725.855	1.0	56.0	Horz	AV	1.55E-01	21.9	30.0	-8.1	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1725.855	1.0	312.9	Horz	AV	1.48E-01	21.7	30.0	-8.3	EUT Horz, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1740.855	1.0	137.1	Vert	AV	1.42E-01	21.5	30.0	-8.5	EUT Horz, High Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1732.058	1.0	63.0	Horz	AV	1.37E-01	21.4	30.0	-8.6	EUT On Side, Mid Ch, QPSK, 1.4 MHz BW, 1 RB, No RB offset
	1731.258	1.0	63.0	Horz	AV	1.34E-01	21.3	30.0	-8.7	EUT On Side, Mid Ch, QPSK, 3 MHz BW, 1 RB, No RB offset
	1710.855	1.0	100.0	Vert	AV	1.29E-01	21.1	30.0	-8.9	EUT Horz, Low Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1725.803	1.0	73.1	Vert	AV	1.29E-01	21.1	30.0	-8.9	EUT Vert, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1730.353	1.0	63.0	Horz	AV	1.25E-01	21.0	30.0	-9.0	EUT On Side, Mid Ch, QPSK, 5 MHz BW, 1 RB, No RB offset
	1725.780	1.0	63.0	Horz	AV	1.23E-01	20.9	30.0	-9.1	EUT On Side, Mid Ch, 16-QAM, 15 MHz BW, 1 RB, No RB offset
	1725.855	1.0	57.0	Vert	AV	1.23E-01	20.9	30.0	-9.1	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1728.113	1.0	63.0	Horz	AV	1.19E-01	20.8	30.0	-9.2	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, No RB offset
	1710.855	1.0	84.1	Horz	AV	1.17E-01	20.7	30.0	-9.3	EUT On Side, Low Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1723.548	1.0	63.0	Horz	AV	1.12E-01	20.5	30.0	-9.5	EUT On Side, Mid Ch, QPSK, 20 MHz BW, 1 RB, No RB offset
	1739.123	1.0	63.0	Horz	AV	1.01E-01	20.0	30.0	-10.0	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 1 RB, Max RB offset
	1737.980	1.0	63.0	Horz	AV	9.84E-02	19.9	30.0	-10.1	EUT On Side, Mid Ch, QPSK, 15 MHz BW, 75 RB
	1740.855	1.0	67.0	Horz	AV	9.42E-02	19.7	30.0	-10.3	EUT On Side, High Ch, QPSK, 15 MHz BW, 1 RB, No RB offset
	1725.855	1.0	106.1	Horz	AV	7.10E-02	18.5	30.0	-11.5	EUT Vert, Mid Ch, QPSK, 15 MHz BW, 1 RB, No RB offset

ERP OF FUNDAMENTAL - LTE BAND 5

PSA-ESCI 2018.05.04

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

Tx LTE Band 5 (CLR-850) on Low, Mid, or High channel at 824.7, 836.5, 848.3 MHz using the modulations, bandwidths, and resou

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	823 MHz	Stop Frequency	850 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
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Antenna - Dipole	EMCO	3121C-DB4	ADI	10-Feb-2016	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

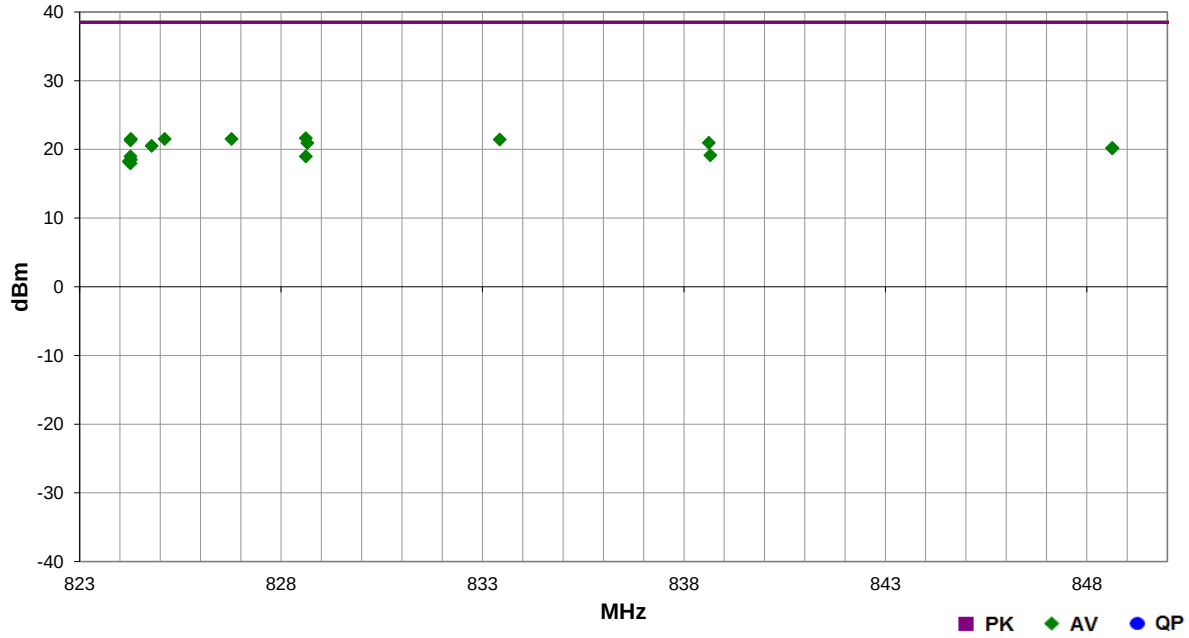
ERP OF FUNDAMENTAL - LTE BAND 5

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	10-Jul-2018		
Project:	None	**Temperature:**	21.5 °C		
Job Site:	MN05	**Humidity:**	55.5% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1023 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 5 (CLR-850) on Low, Mid, or High channel at 824.7, 836.5, 848.3 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 22.913:2018	ANSI C63.26:2015

Run #	133	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	828.615	1.0	351.9	Horz	AV	1.45E-01	21.6	38.5	-16.9	EUT Horz, Low Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	826.773	1.0	351.9	Horz	AV	1.42E-01	21.5	38.5	-17.0	EUT Horz, Low Ch, QPSK, 3 MHz BW, 1 RB, Max RB Offset
	825.113	1.0	351.9	Horz	AV	1.42E-01	21.5	38.5	-17.0	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, Max RB Offset
	824.273	1.0	352.0	Horz	AV	1.41E-01	21.5	38.5	-17.0	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	833.427	1.0	351.9	Horz	AV	1.39E-01	21.4	38.5	-17.1	EUT Horz, Low Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	824.265	1.0	358.9	Horz	AV	1.35E-01	21.3	38.5	-17.2	EUT On Side, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	838.620	1.0	358.0	Horz	AV	1.24E-01	21.0	38.5	-17.6	EUT Horz, Mid Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	828.655	1.0	351.9	Horz	AV	1.24E-01	20.9	38.5	-17.6	EUT Horz, Low Ch, 16-QAM, 5 MHz BW, 1 RB, Max RB Offset
	824.790	1.0	351.9	Horz	AV	1.12E-01	20.5	38.5	-18.0	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 6 RB
	848.629	1.0	348.9	Horz	AV	1.04E-01	20.2	38.5	-18.3	EUT Horz, High Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	848.642	1.1	100.0	Vert	AV	1.04E-01	20.2	38.5	-18.3	EUT On Side, High Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	838.658	1.1	100.0	Vert	AV	8.20E-02	19.1	38.5	-19.4	EUT On Side, Mid Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	828.615	1.1	103.0	Vert	AV	7.89E-02	19.0	38.5	-19.5	EUT On Side, Low Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	824.265	1.2	110.0	Vert	AV	7.85E-02	19.0	38.5	-19.6	EUT On Side, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	824.273	1.0	215.0	Horz	AV	7.08E-02	18.5	38.5	-20.0	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	824.220	1.2	56.0	Vert	AV	6.68E-02	18.3	38.5	-20.2	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	824.265	1.8	270.0	Vert	AV	6.24E-02	18.0	38.5	-20.6	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset

ERP OF FUNDAMENTAL - LTE BAND 12

PSA-ESCI 2018.05.04

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

Tx LTE Band 12 (700 a) on Low, Mid, or High channel at 699.7, 707.5, 715.3 MHz using the modulations, bandwidths, and resource

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0649 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	698 MHz	Stop Frequency	717 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
Cellular Base Station Simulator	Anritsu	MT8820C	AFK	NCR	0 mo
Generator - Signal	Agilent	N5183A	TIK	29-Sep-2017	36 mo
Antenna - Dipole	EMCO	3121C-DB4	ADI	10-Feb-2016	36 mo
Meter - Power	Agilent	N1913A	SQL	17-Jul-2017	12 mo
Power Sensor	Agilent	N8481A	SQN	17-Jul-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	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

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

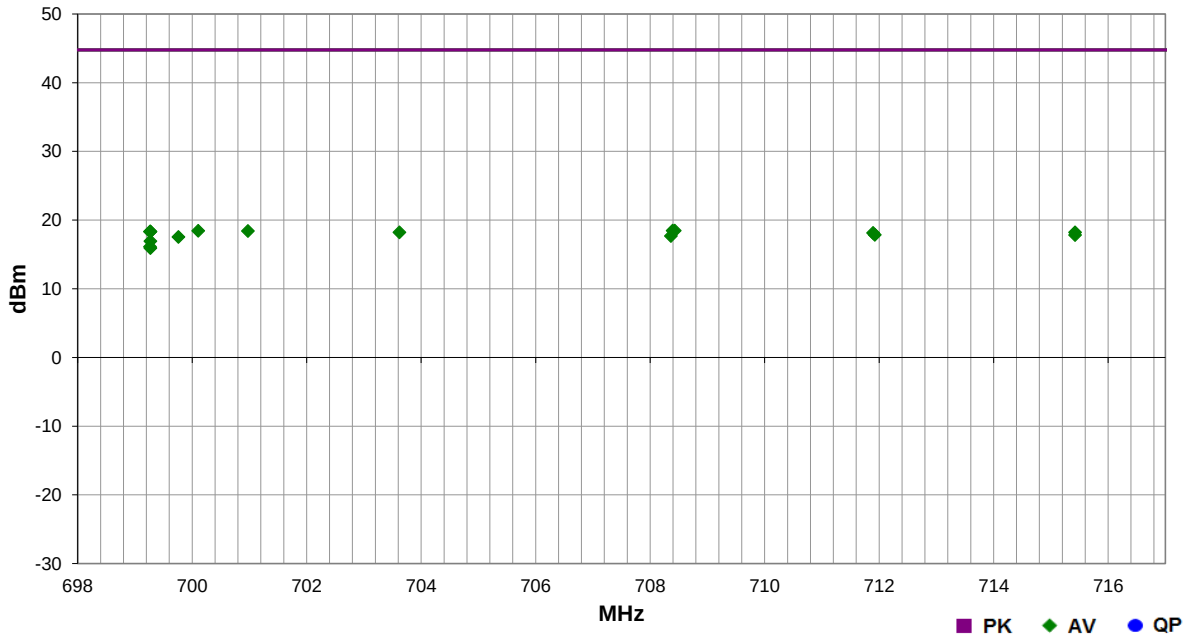
ERP OF FUNDAMENTAL - LTE BAND 12

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	MDTR0649	**Date:**	10-Jul-2018		
Project:	None	**Temperature:**	21.3 °C		
Job Site:	MN05	**Humidity:**	53.3% RH		
Serial Number:	MEA9963DEM	**Barometric Pres.:**	1026 mbar	**Tested by:**	Kyle McMullan
EUT:	MyCareLink Relay Home Communicator 24960				
Configuration:	2				
Customer:	Medtronic, Inc.				
Attendees:	Taylor Dowden				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx LTE Band 12 (700 a) on Low, Mid, or High channel at 699.7, 707.5, 715.3 MHz using the modulations, bandwidths, and resource block configurations noted below.				
Deviations:	None				
Comments:	-US. Data from Unilab report UL05420151102FCC/IC042-2 leveraged for determining worst-case modulation, bandwidth, and resource block configuration.				

Test Specifications	**Test Method**
FCC 27.50:2018	ANSI C63.26:2015

Run #	132	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	708.395	1.0	219.0	Horz	AV	7.01E-02	18.5	44.8	-26.3	EUT Vert, Low Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	708.432	1.0	322.9	Vert	AV	7.01E-02	18.5	44.8	-26.3	EUT On Side, Low Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	700.108	1.0	219.0	Horz	AV	6.95E-02	18.4	44.8	-26.4	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, 1 RB, Max RB Offset
	700.975	1.0	219.0	Horz	AV	6.93E-02	18.4	44.8	-26.4	EUT Vert, Low Ch, QPSK, 3 MHz BW, 1 RB, Max RB Offset
	699.273	1.0	219.0	Horz	AV	6.79E-02	18.3	44.8	-26.5	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	699.265	1.0	249.0	Vert	AV	6.79E-02	18.3	44.8	-26.5	EUT On Side, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	699.273	1.3	82.0	Vert	AV	6.79E-02	18.3	44.8	-26.5	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	703.622	1.0	219.0	Horz	AV	6.59E-02	18.2	44.8	-26.6	EUT Vert, Low Ch, QPSK, 5 MHz BW, 1 RB, Max RB Offset
	715.425	1.0	308.9	Vert	AV	6.61E-02	18.2	44.8	-26.6	EUT On Side, Low Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	711.895	1.7	328.0	Vert	AV	6.50E-02	18.1	44.8	-26.6	EUT On Side, Mid Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	711.925	1.0	210.1	Horz	AV	6.07E-02	17.8	44.8	-26.9	EUT Vert, Mid Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	715.425	1.0	103.0	Horz	AV	6.03E-02	17.8	44.8	-27.0	EUT Vert, High Ch, QPSK, 10 MHz BW, 1 RB, Max RB Offset
	708.365	1.0	219.0	Horz	AV	5.83E-02	17.7	44.8	-27.1	EUT Vert, Low Ch, 16-QAM, 10 MHz BW, 1 RB, Max RB Offset
	699.760	1.0	219.0	Horz	AV	5.65E-02	17.5	44.8	-27.3	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, Max RB
	699.273	1.0	150.0	Horz	AV	4.92E-02	16.9	44.8	-27.9	EUT Horz, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	699.265	1.0	347.9	Vert	AV	4.09E-02	16.1	44.8	-28.7	EUT Vert, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset
	699.273	1.2	343.0	Horz	AV	3.91E-02	15.9	44.8	-28.9	EUT On Side, Low Ch, QPSK, 1.4 MHz BW, 1 RB, No RB Offset