

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

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	2/10/2015	15
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Meter - Multimeter	Fluke	117/EFSP	MLR	5/27/2015	36
Power Supply - DC	Agilent	U8002A	TPZ	NCR	0

#### **TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

- -Resolution Bandwidth of 1 MHz
- -RMS Detector
- -Trace average 100 traces in power averaging mode

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).

A duty cycle correction factor was added to the measurement using the results of the formula of 10\*LOG(1/D) where D is the duty cycle.

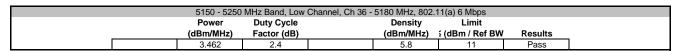
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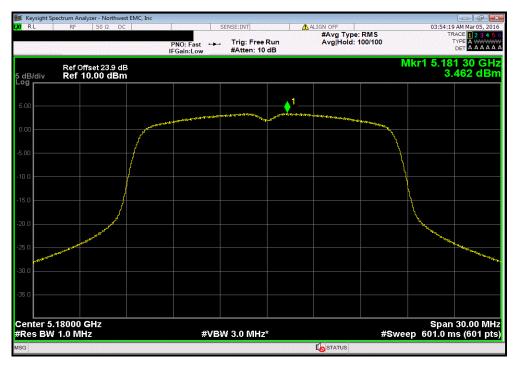


	T							
	X Series					Work Order:		
Serial Number							03/07/16	
	ZOLL Medical Corp.					Temperature:		
Attendees						Humidity:		
Project			D: .	15.100		Barometric Pres.:		
	Jared Ison		Power:			Job Site:	[MN08	
TEST SPECIFICAT	IONS			Test Method				
FCC 15.407:2016			,	ANSI C63.10:2013				
0011151150								
COMMENTS								
None								
DEVIATIONS EDO	M TEST STANDARD							
None	III TEST STANDARD							
None								
Configuration #	2		$\leq$					
oomigaranon #	-	Signature						
		Gignature		Power	Duty Cycle	Density	Limit	
				(dBm/MHz)	Factor (dB)	(dBm/MHz)	≤ (dBm / Ref BW)	Results
5150 - 5250 MHz B	and			(====	()	(==:::::::::	_ (====	
	Low Channel, Ch 36 - 5180	0 MHz						
	802.11(a) 6 N			3.462	2.4	5.8	11	Pass
	802.11(a) 36			-2.701	7.1	4.4	11	Pass
	802.11(a) 54			-5.546	8.4	2.8	11	Pass
	802.11(n) MC			3.006	2.5	5.5	11	Pass
	802.11(n) MC			-6.8	8.7	1.9	11	Pass
	High Channel, Ch 48 - 5240	IO MHz						
	802.11(a) 6 N			3.132	2.4	5.5	11	Pass
	802.11(a) 36	Mbps		-3.109	7.1	4	11	Pass
	802.11(a) 54	Mbps		-5.669	8.4	2.7	11	Pass
	802.11(n) MC	CS0		2.772	2.5	5.2	11	Pass
	802.11(n) MC	CS7		-6.869	8.7	1.8	11	Pass
5250 - 5350 MHz B								
	Low Channel, Ch 52 - 5260							
	802.11(a) 6 N			3.498	2.3	5.8	11	Pass
	802.11(a) 36			-2.919	7.1	4.2	11	Pass
	802.11(a) 54			-5.478	8.4	2.9	11	Pass
	802.11(n) MC			2.804	2.5	5.3	11	Pass
	802.11(n) MC			-6.856	8.7	1.8	11	Pass
	High Channel, Ch 64 - 5320			0.004	0.0	0.0	44	D
	802.11(a) 6 N			3.824	2.3	6.2	11	Pass
	802.11(a) 36			-2.833 -5.707	7.1 8.4	4.2 2.7	11 11	Pass Pass
	802.11(a) 54   802.11(n) MC			-5.707 2.678	8.4 2.5	2. <i>1</i> 5.1	11	Pass
	802.11(n) MC			-7.161	8.7	1.5	11	Pass
5470 - 5725 MHz B				-7.101	0.7	1.5	11	1 000
0 0 0120 WII IZ D	Low Channel, Ch 100 - 550	00 MHz						
	802.11(a) 6 M			2.808	2.3	5.2	11	Pass
	802.11(a) 36			-3.237	7.1	3.8	11	Pass
	802.11(a) 54			-5.665	8.4	2.7	11	Pass
	802.11(n) MC			2.495	2.5	5	11	Pass
	802.11(n) MC			-7.378	8.7	1.3	11	Pass
	Mid Channel, Ch 120 - 560							
	802.11(a) 6 N	Mbps		3.032	2.3	5.4	11	Pass
	802.11(a) 36	Mbps		-2.948	7.1	4.1	11	Pass
	802.11(a) 54			-6.12	8.4	2.3	11	Pass
	802.11(n) MC			2.385	2.5	4.9	11	Pass
	802.11(n) MC			-7.356	8.7	1.3	11	Pass
	High Channel, Ch 140 - 570							
	802.11(a) 6 M			2.906	2.3	5.2	11	Pass
	802.11(a) 36			-3.528	7.1	3.5	11	Pass
	802.11(a) 54			-6.015	8.4	2.4	11	Pass
	802.11(n) MC			2.437	2.5	4.9	11	Pass
	802.11(n) MC	CS7		-7.276	8.7	1.4	11	Pass

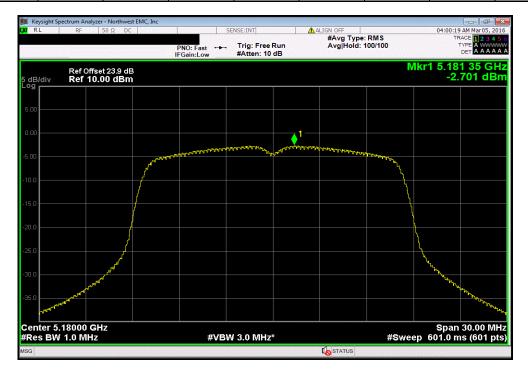
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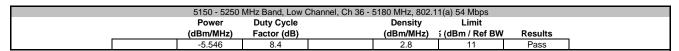


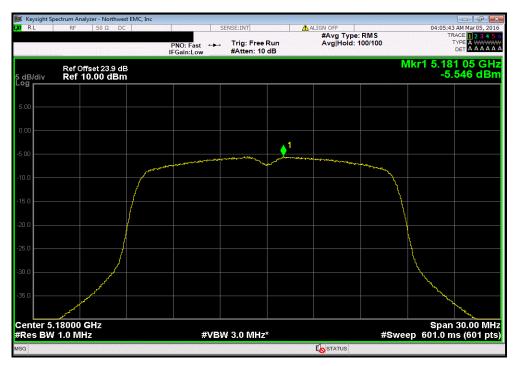
	5150 - 5250	MHz Band, Low (	Channel, Ch 36 - 5	5180 MHz, 802.1	1(a) 36 Mbps	
	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-2.701	7.1		4.4	11	Pass



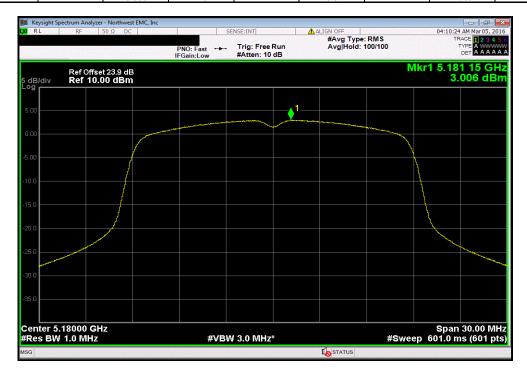
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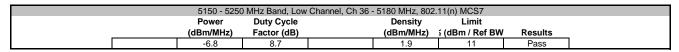


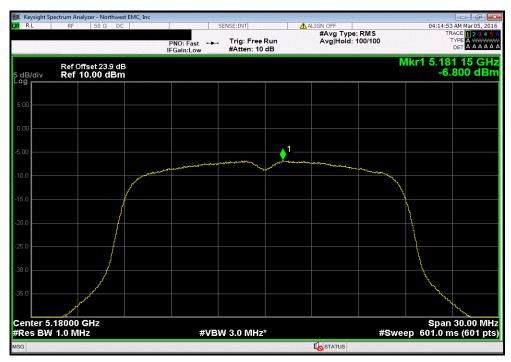
	5150 - 5250	MHz Band, Low	Channel, Ch 36 -	· 5180 MHz, 802.	11(n) MCS0	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
ĺ	3.006	2.5		5.5	11	Pass



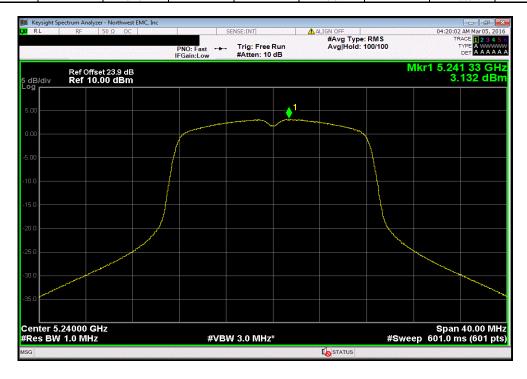
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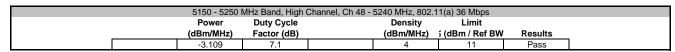


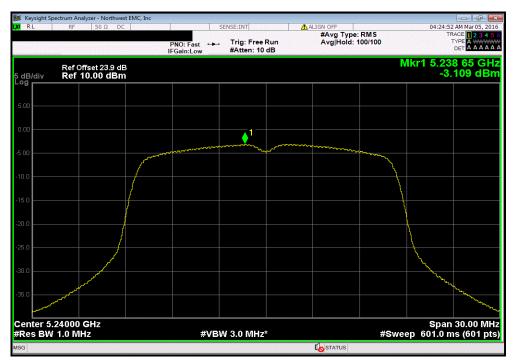
	5150 - 5250	MHz Band, High	Channel, Ch 48 -	5240 MHz, 802.	11(a) 6 Mbps	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
1	3.132	2.4		5.5	11	Pass



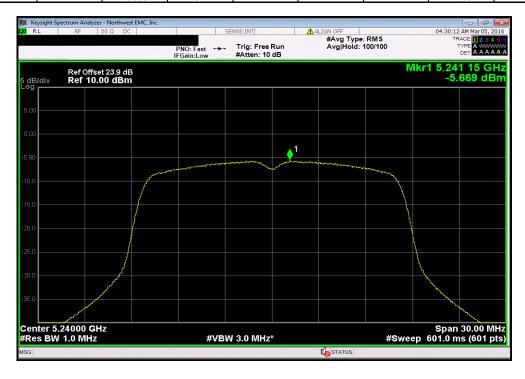
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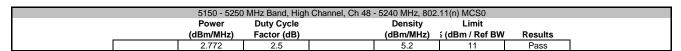


	5150 - 5250	MHz Band, High (	Channel, Ch 48 -	5240 MHz, 802.1	1(a) 54 Mbps	
	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
i	-5.669	8.4		2.7	11	Pass



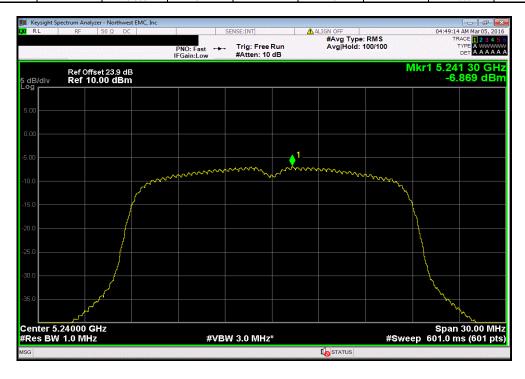
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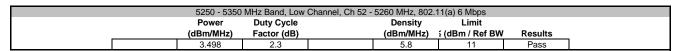


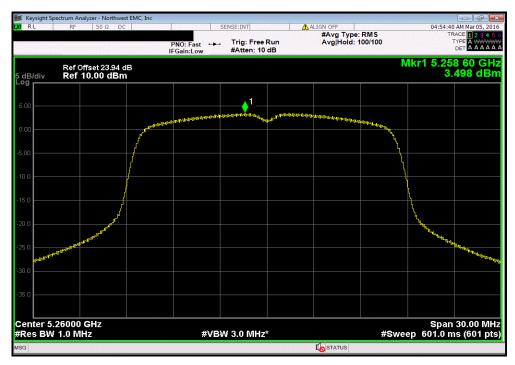
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	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-6.869	8.7		1.8	11	Pass



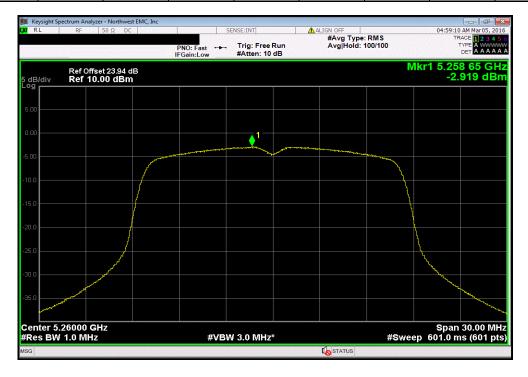
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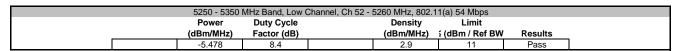


	5250 - 5350	MHz Band, Low (	Channel, Ch 52 - 5	5260 MHz, 802.1	1(a) 36 Mbps	
	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-2.919	7.1		4.2	11	Pass



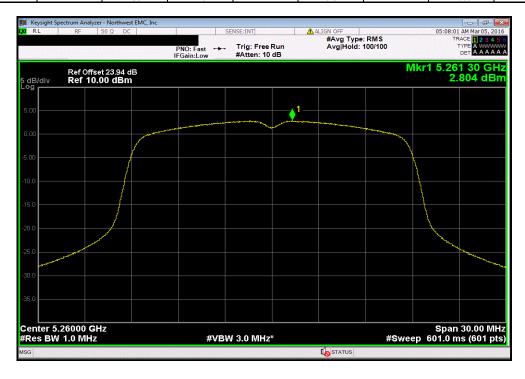
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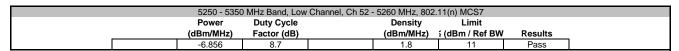


	5250 - 5350	MHz Band, Low	Channel, Ch 52 -	5260 MHz, 802.	11(n) MCS0	
	Power	<b>Duty Cycle</b>		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
l l	2.804	2.5		5.3	11	Pass



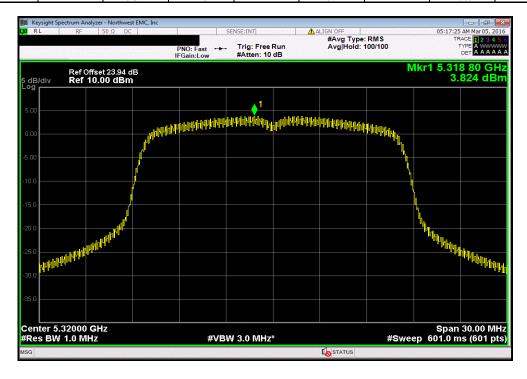
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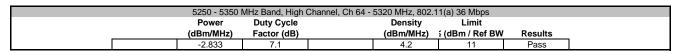


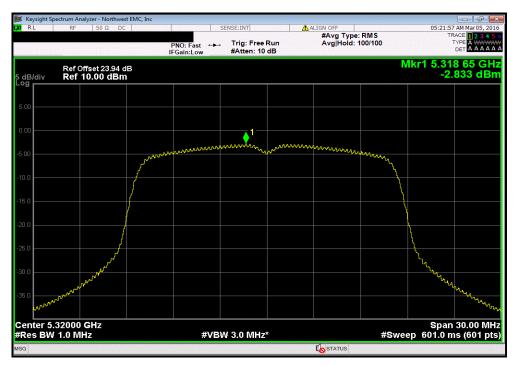
	5250 - 5350	MHz Band, High	Channel, Ch 64 -	5320 MHz, 802.	11(a) 6 Mbps	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
1	3.824	2.3		6.2	11	Pass



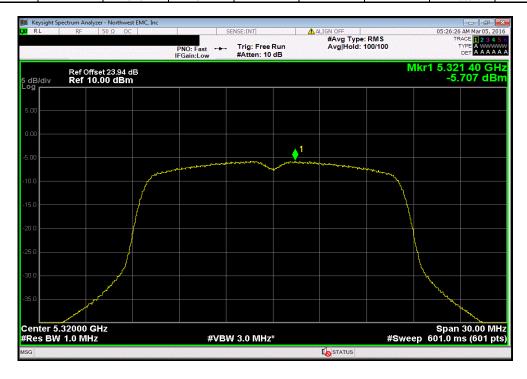
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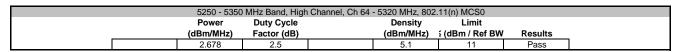


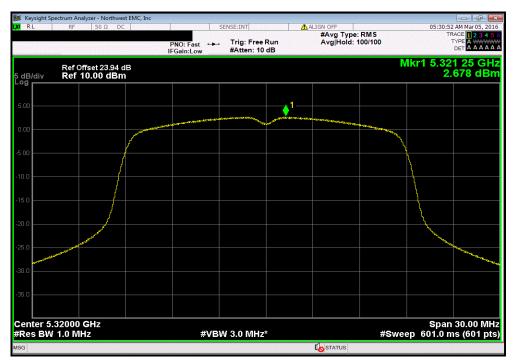
	5250 - 5350	MHz Band, High (	Channel, Ch 64 -	5320 MHz, 802.1	1(a) 54 Mbps	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-5.707	8.4		2.7	11	Pass



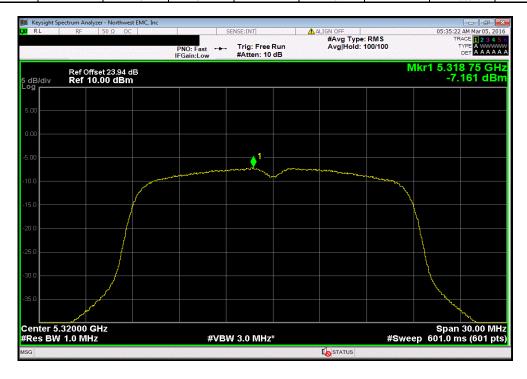
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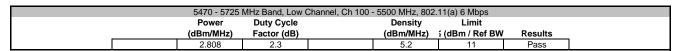


	5250 - 5350	MHz Band, High	Channel, Ch 64	- 5320 MHz, 802	.11(n) MCS7	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
i T	-7.161	8.7		1.5	11	Pass



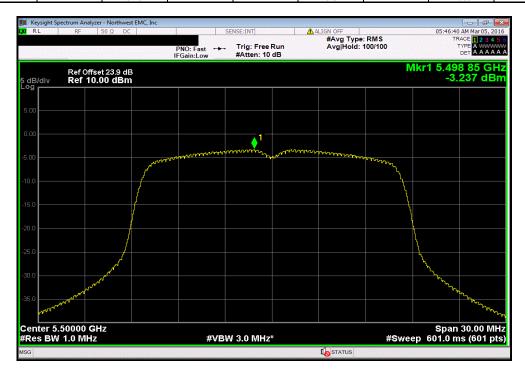
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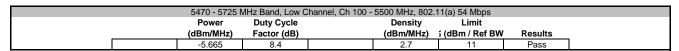


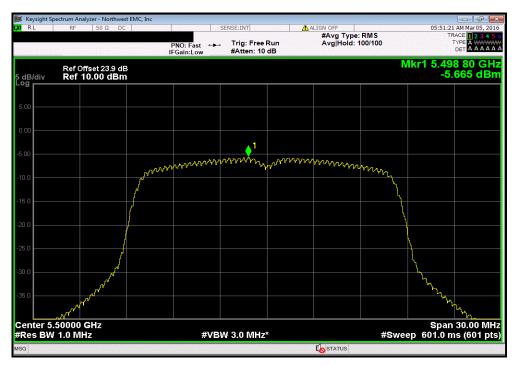
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	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-3.237	7.1		3.8	11	Pass



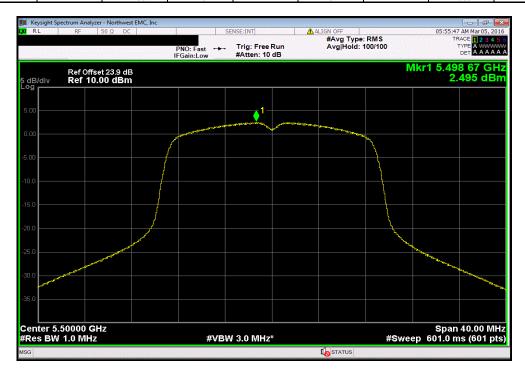
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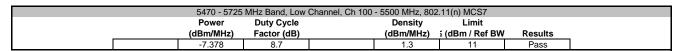


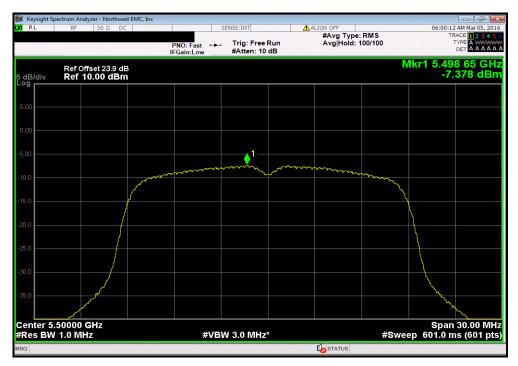
	5470 - 5725	MHz Band, Low	Channel, Ch 100	- 5500 MHz, 802	.11(n) MCS0	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
1	2.495	2.5		5	11	Pass



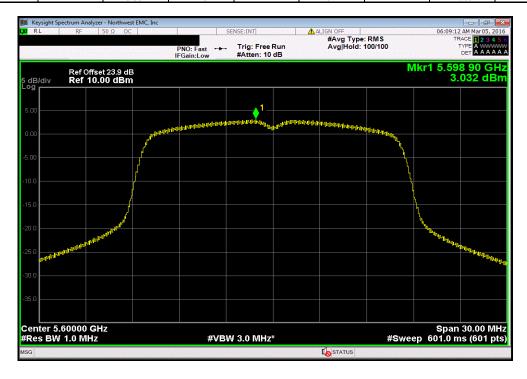
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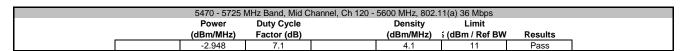


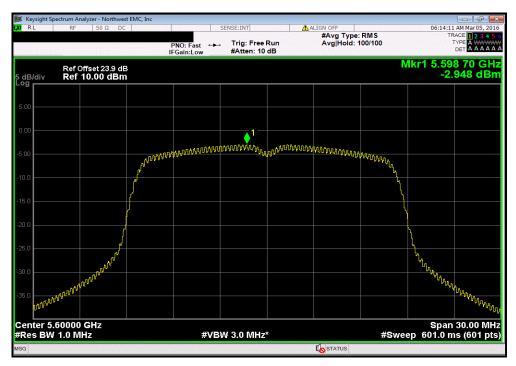
	5470 - 5725	MHz Band, Mid C	Channel, Ch 120 -	5600 MHz, 802.	11(a) 6 Mbps	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	3.032	2.3		5.4	11	Pass



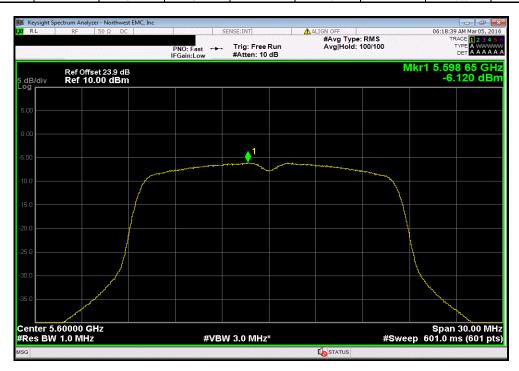
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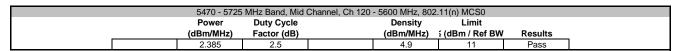


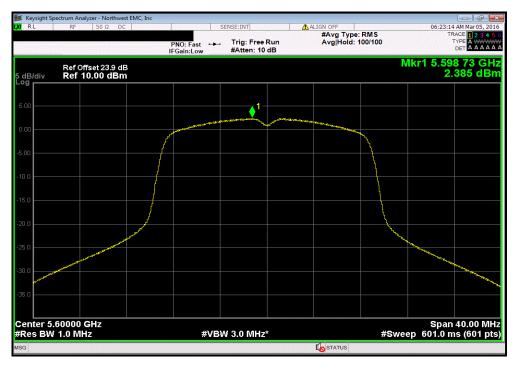
		5470 - 5725 1	MHz Band, Mid C	hannel, Ch 120 - 5	600 MHz, 802.1	1(a) 54 Mbps	
		Power	Duty Cycle		Density	Limit	
_		(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
i [	<u> </u>	-6.12	8.4		2.3	11	Pass



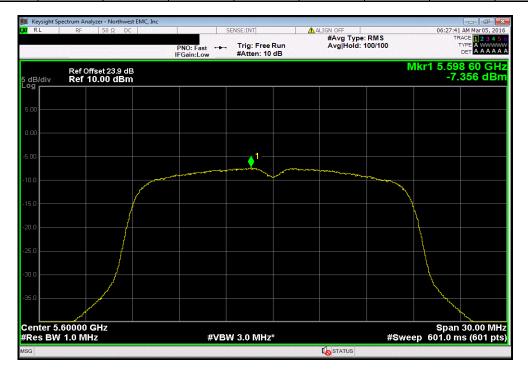
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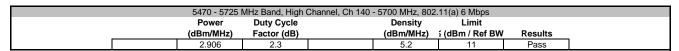


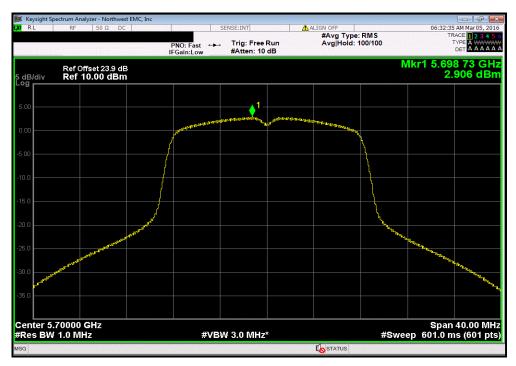
	5470 - 5725	MHz Band, Mid (	Channel, Ch 120	- 5600 MHz, 802	.11(n) MCS7	
	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-7.356	8.7		1.3	11	Pass



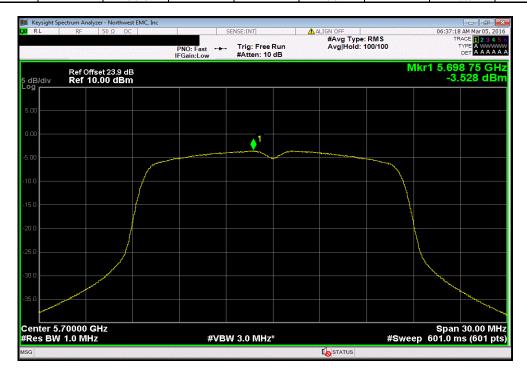
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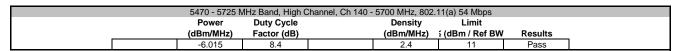


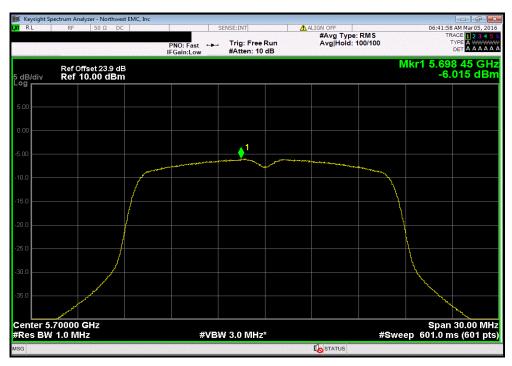
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	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-3.528	7.1		3.5	11	Pass



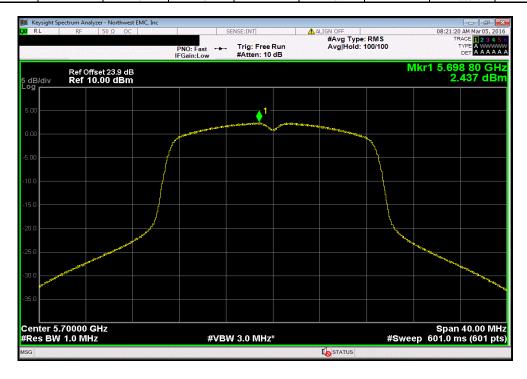
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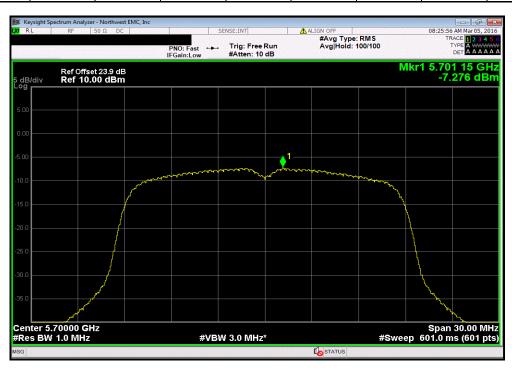
	5470 - 5725	MHz Band, High	Channel, Ch 140	- 5700 MHz, 802	2.11(n) MCS0	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
i T	2.437	2.5		4.9	11	Pass



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5470 - 5725	MHz Band, High	Channel, Ch 140	- 5700 MHz, 802	2.11(n) MCS7	
Power	<b>Duty Cycle</b>		Density	Limit	
(dBm/MHz)	Factor (dB)		(dBm/MHz)	€ (dBm / Ref BW	Results
-7.276	8.7		1.4	11	Pass



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

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Meter - Multimeter	Fluke	117/EFSP	MLR	5/27/2015	36
Power Supply - DC	Agilent	U8002A	TPZ	NCR	0
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12

#### **TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

- -Resolution Bandwidth of 510 kHz
- -RMS Detector
- -Trace average 100 traces in power averaging mode

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in the reference bandwidth after 100 sweeps of power averaging (not video averaging).

A duty cycle correction factor was added to the measurement using the results of the formula of 10\*LOG(1/D) where D is the duty cycle.

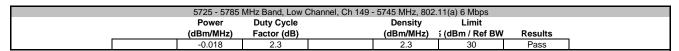
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	: X Series					Work Order:		
Serial Number			•	•	•		03/07/16	•
	: ZOLL Medical Corp.					Temperature:		
Attendees						Humidity:		
Project						Barometric Pres.:		
	: Jared Ison		Power: 1			Job Site:	MN08	
TEST SPECIFICAT	TIONS			Test Method				
FCC 15.407:2016			A	NSI C63.10:2013				
COMMENTS								
None								
DEVIATIONS FRO	M TEST STANDARD							
None								
Configuration #	2							
		Signature						
				Power (dBm/MHz)	Duty Cycle Factor (dB)	Density (dBm/MHz)	Limit ≤ (dBm / Ref BW)	Results
5725 - 5785 MHz B	and				. ,	· · ·		
	Low Channel, Ch 149 - 574	15 MHz						
	802.11(a) 6 M			-0.018	2.3	2.3	30	Pass
	802.11(a) 36 I			-5.545	7.1	1.5	30	Pass
	802.11(a) 54 I			-8.751	8.4	-0.4	30	Pass
	802.11(n) MC			-0.429	2.5	2	30	Pass
	802.11(n) MC			-9.885	8.7	-1.2	30	Pass
	Mid Channel, Ch 157 - 578							_
	802.11(a) 6 M			-0.054	2.4	2.3	30	Pass
	802.11(a) 36 I			-6.085	7.1	1	30	Pass
	802.11(a) 54 I			-8.502	8.4	-0.1	30	Pass
	802.11(n) MC			-0.325	2.5	2.1	30	Pass
	802.11(n) MC			-9.742	8.7	-1.1	30	Pass
	High Channel, Ch 165 - 582			0.407	2.2	2.5	20	Dana
	802.11(a) 6 M			0.197 -5.784	2.3 7.1	2.5 1.3	30 30	Pass Pass
	802.11(a) 36 I 802.11(a) 54 I			-8.452	8.4	-0.1	30	Pass
								Pass
	902 11/n\ MC	20						
	802.11(n) MC 802.11(n) MC			-0.137 -9.626	2.5 8.7	2.3 -1	30 30	Pass

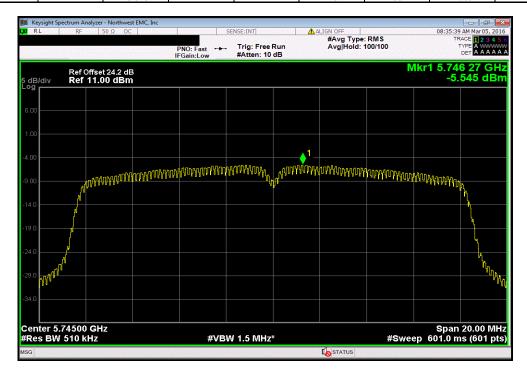
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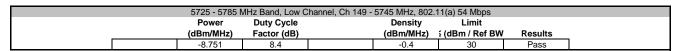


	5725 - 5785 N	ИHz Band, Low C	hannel, Ch 149 - 5	5745 MHz, 802.	11(a) 36 Mbps	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-5.545	7.1		1.5	30	Pass



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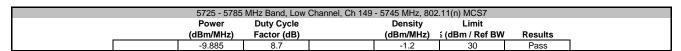


	5725 - 5785	MHz Band, Low	Channel, Ch 149	- 5745 MHz, 802	.11(n) MCS0	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
l í	-0.429	2.5		2	30	Pass



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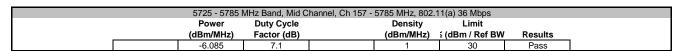


	5725 - 5785	MHz Band, Mid C	Channel, Ch 157 -	5785 MHz, 802.	11(a) 6 Mbps	
	Power	Duty Cycle		Density	Limit	
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
l	-0.054	2.4		2.3	30	Pass



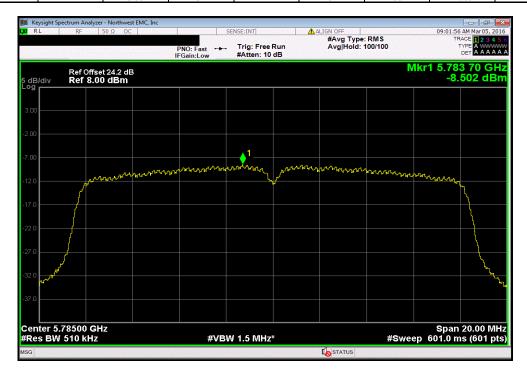
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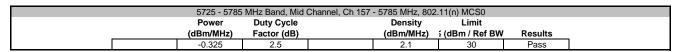


		5725 - 5785 N	MHz Band, Mid C	hannel, Ch 157 - 5	785 MHz, 802.	1(a) 54 Mbps	
		Power	Duty Cycle		Density	Limit	
_		(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
l l	<u> </u>	-8.502	8.4		-0.1	30	Pass



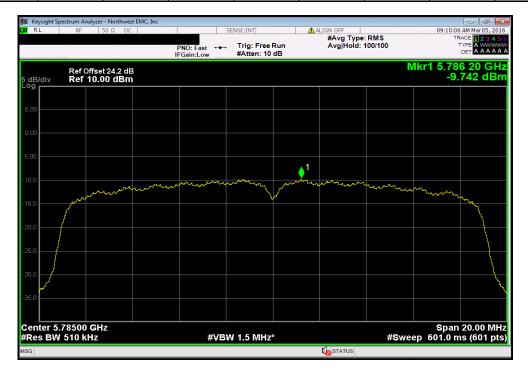
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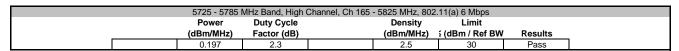


	5725 - 5785	MHz Band, Mid	Channel, Ch 157	- 5785 MHz, 802	.11(n) MCS7	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-9.742	8.7		-1.1	30	Pass



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	5725 - 5785 N	1Hz Band, High C	Channel, Ch 165 -	5825 MHz, 802.	11(a) 36 Mbps	
	Power	<b>Duty Cycle</b>		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
i	-5.784	7.1		1.3	30	Pass



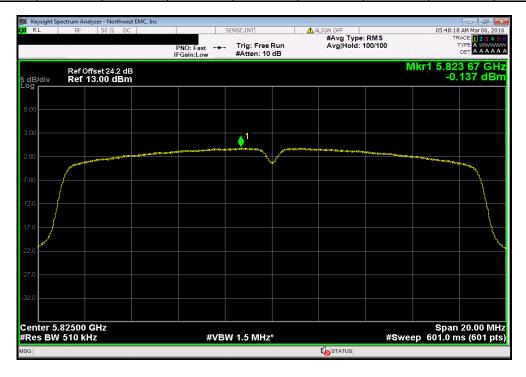
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	5725 - 5785 N	MHz Band, High C	Channel, Ch 165 -	5825 MHz, 802.	11(a) 54 Mbps		
	Power	<b>Duty Cycle</b>		Density	Limit		
_	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results	_
	-8.452	8.4		-0.1	30	Pass	



	5725 - 5785	MHz Band, High	Channel, Ch 165	- 5825 MHz, 802	2.11(n) MCS0	
	Power	Duty Cycle		Density	Limit	
	(dBm/MHz)	Factor (dB)		(dBm/MHz)	(dBm / Ref BW	Results
	-0.137	2.5		2.3	30	Pass



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5725 - 5785	MHz Band, High	Channel, Ch 165 - 582	25 MHz, 802	.11(n) MCS7	
Power	<b>Duty Cycle</b>		Density	Limit	
(dBm/MHz)	Factor (dB)	(d	IBm/MHz)	(dBm / Ref BW	Results
-9.626	8.7		-1	30	Pass



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