

6 dB Single Channel Bandwidth

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DNB Job Number:	86022		Date:	10 Oct 2017	Conformance		
Customer:	Orbit Irrigat	ion Products Inc.			Standard		
Model Number:	HT25			FCC Part 15			
Description:	BLE Transr	nitter	Clause				
	Test Proced	ure	15.247(a,2)				
		Environmental C	Conditions				
Ambient Tempera	Relative Hur	nidity	Baron	netric Pressure			
21 °C 25 %					101.2 kPa		
EUT performed within the requirements of the applicable standard [X] Yes [] No Les Payne							

6 dB Bandwidth

ANSI C63.10-2013 Clause 11.8.1

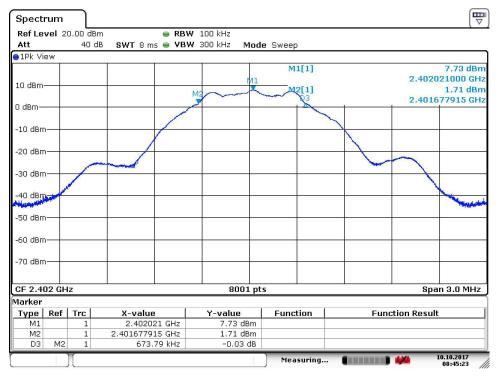
The steps are as follows:

- Set RBW = 100 kHz a)
- Set the VBW \geq [3 x RBW] b) * per ANSI C63.10-2013 clause 6.9.2
 - Set the span to 2 to 5 times the OBW
- Detector = peak c)
- d) Trace mode = max hold
- Sweep = auto couple e)
- f) Allow trace to stabilize
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.
- Submit this plot(s). h)



6 dB Single Channel Bandwidth

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DNB Job Number:	86022			Date:		10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Pro	ducts Inc.				Standard	
Model Number:	HT25						FCC Part 15	
Description:	BLE Transr	mitter		Clause				
	1 Mbps (Ba	sic data		15.247(a,2)				
	Environmental Conditions							
Ambient Temp	erature		Relative Hur	nidity		Baron	netric Pressure	
26 °C			30 %			10	01.35 kPa	
EUT performed within	es Payne							
Channel	Chl Freq (M	MHz) 6dB BW (kHz) Limit			Pass/Fail			
Low	2402		673.790)	>	500 kHz	Pass	

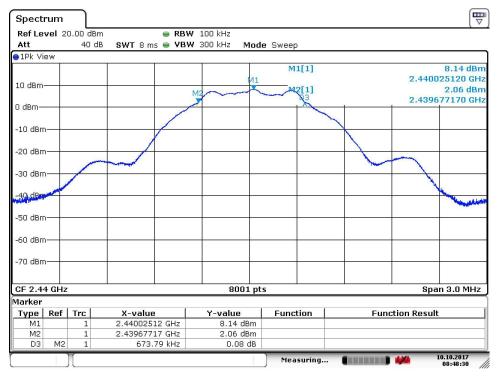


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6 dB Single Channel Bandwidth

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DNB Job Number:	86022			Date:		10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Pro	ducts Inc.				Standard	
Model Number:	HT25						FCC Part 15	
Description:	BLE Transr	mitter		Clause				
	1 Mbps (Ba	sic data		15.247(a,2)				
	Environmental Conditions							
Ambient Temp	erature		Relative Hur	nidity		Baron	netric Pressure	
26 °C			30 %			10	01.35 kPa	
EUT performed within	es Payne							
Channel	Chl Freq (M	MHz) 6dB BW (kHz) Limit			Pass/Fail			
Middle	2440		673.790)	>	500 kHz	Pass	

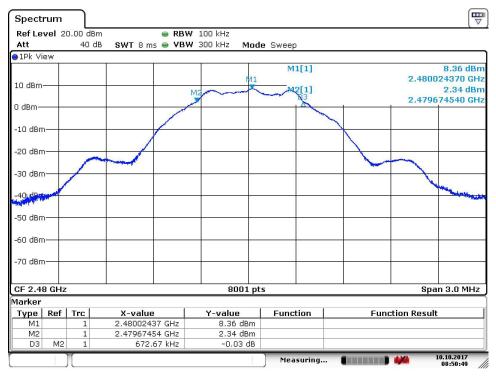


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6 dB Single Channel Bandwidth

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DNB Job Number:	86022			Date:		10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Pro	ducts Inc.				Standard	
Model Number:	HT25						FCC Part 15	
Description:	BLE Transr	mitter		Clause				
	1 Mbps (Ba	sic data		15.247(a,2)				
	Environmental Conditions							
Ambient Temp	erature		Relative Hur	nidity		Baron	netric Pressure	
26 °C			30 %			10	01.35 kPa	
EUT performed within	es Payne							
Channel	Chl Freq (M	MHz) 6dB BW (kHz) Limit			Pass/Fail			
High	2480		672.670)	>	500 kHz	Pass	

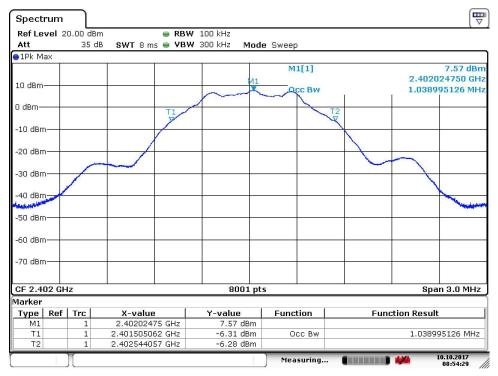


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99% Occupied Bandwidth

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DNB Job Number:	86022		Date:	10 Oct 2017	Conformance			
Customer:	Orbit Irriga	tion Products Inc.			Standard			
Model Number:	HT25			RSS-Gen				
Description:	BLE Transr	mitter		Clause				
	1 Mbps (Ba	sic data rate)	Section 6.6					
Ambient Temper	ature	Relative Hur	midity	Baron	arometric Pressure			
26 °C		30 %		1	01.35 kPa			
EUT performed within t	EUT performed within the requirements of the applicable standard [X] Yes [] No CL Payne							
Channel Chl Freq (MHz)					99% BW (MHz)			
Low	2402		1.0)38995126				

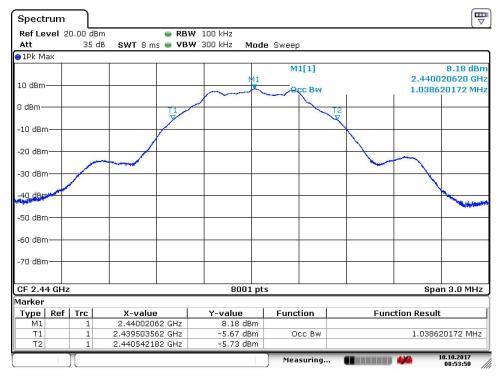


Date: 10.0CT.2017 08:54:29



99% Occupied Bandwidth

DNB Job Number:	86022		Date:	10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Products Inc.			Standard	
Model Number:	HT25				RSS-Gen	
Description:	BLE Transr	mitter		Clause		
	1 Mbps (Ba	sic data rate)	Section 6.6			
Ambient Tempera	ature	Relative Hur	midity	metric Pressure		
26 °C		30 %		101.35 kPa		
EUT performed within the	CL Payne					
Channel Chl Freq			MHz)	99%	6 BW (MHz)	
Middle 2440				1.	038620172	

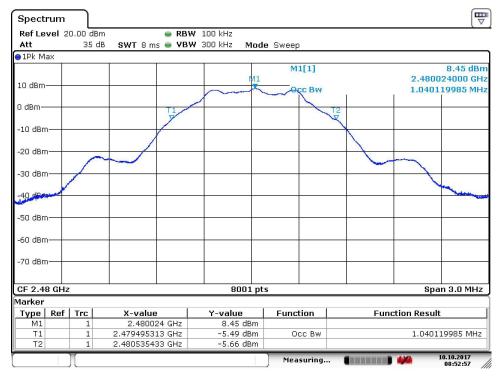


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99% Occupied Bandwidth

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DNB Job Number:	86022		Date:	10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Products Inc.			Standard	
Model Number:	HT25				RSS-Gen	
Description:	BLE Transr	mitter		Clause		
	1 Mbps (Ba	sic data rate)	Section 6.6			
Ambient Temper	ature	Relative Hur	midity	Baro	metric Pressure	
26 °C		30 %		101.35 kPa		
EUT performed within t	CL Payne					
Channel Chl Freq			MHz)	99%	% BW (MHz)	
High 2480				1.	.040119985	



Date: 10.0CT.2017 08:52:57

15.247 (a,2,b3) Maximum Peak Output Power (Conducted)

Test Procedure: ANSI C63.10-2013

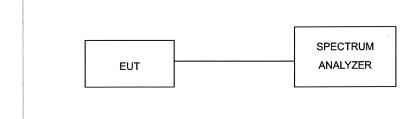
Peak Output Power

Per clause 11.9.1.1 RBW ≥ DTS Bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement.

- a) Set the RBW ≥ DTS bandwidth
- b) Set the VBW \geq [3 x RBW]
- c) Set span \geq [3 x RBW]
- d) Sweep time = auto couple
- e) Detector = peak
- f) Trace mode = max hold
- g) Allow trace to fully stabilize
- h) Use peak marker function to determine the peak amplitude
- i) Submit plots

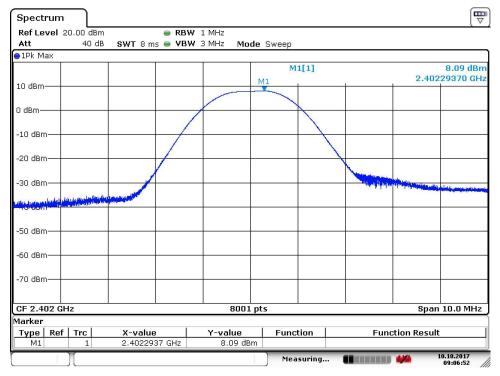
Test Set Up:





Peak Output Power (Cond)

				-	- I	• •	· · · /		
DNB Job Nu	mber: 8	6022		Date:	10 Oct 2		formance		
Customer:	C	rbit Irrigation	Products Inc.			51	tandard		
Model Numb	er: F	IT25		FC	C Part 15				
Description:	В	LE Transmitte	er		Clause				
	L	ow Channel -	1 Mbps (Basic	18	5.247(b)				
Environmental Conditions									
Ambie	ent Temperatu	re	Relative	Humidity	E	Barometric Pre	netric Pressure		
	26 °C		30	%		101.35 kP	01.35 kPa		
EUT perform	EUT performed within the requirements of the applicable standard [X] Yes [] No Les Payne								
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)			Delta (mW)	Pass/Fail			
2402	8.09	30.00	-21.91	6.442	1000	-993.558	Pass		

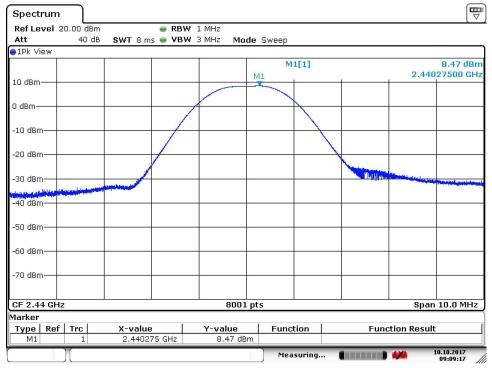


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Peak Output Power (Cond)

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DNB Job Nu	mber: 8	6022		Date:	10 Oct 2		Conformance		
Customer:	C	rbit Irrigation	Products Inc.			5	tandard		
Model Numb	er: H	IT25				FC	C Part 15		
Description:	В	LE Transmitte	er				Clause		
	N	1iddle Channe	1	5.247(b)					
	Environmental Conditions								
Ambie	ent Temperatu	re	Relative I	Humidity	[Barometric Pr	netric Pressure		
	26 °C		30	%		101.35 kF)1.35 kPa		
EUT perform	ned within the	requirements o	of the applicable	e standard [X	K] Yes [] No	CL Payne			
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)			Limit (mW)	Delta (mW)	Pass/Fail		
2440	8.47	30.00	-21.53	7.031	1000	-992.969	Pass		

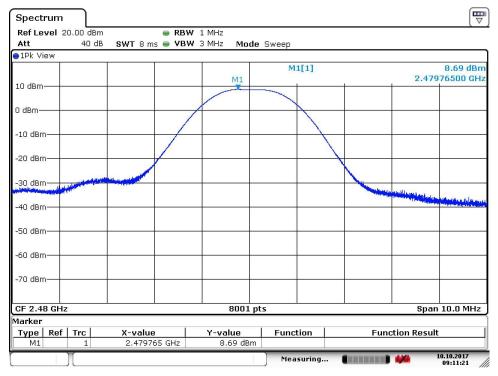


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Peak Output Power (Cond)

					•		<u> </u>	
DNB Job Nu	mber: 8	36022		Date:	10 Oct 2	.017 C	Conformance	
Customer:	C	Orbit Irrigat	ion Products Inc.				Standard	
Model Numb	er: F	HT25	ı	FCC Part 15				
Description:		Clause						
	F	High Chann	el - 1 Mbps (Basic		15.247(b)			
Ambie	ent Temperatu	ıre	Relative	Humidity	I	Barometric I	netric Pressure	
	26 °C		30	1%		101.35	01.35 kPa	
EUT perform	CL Payr	ne						
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)		Meas Peak Pwr (mW)	Limit (mW)	Delta (mW)	Pass/Fail	
2480	8.69	30.00	-21.31	7.396	1000	-992.604	Pass	



Date: 10.0CT.2017 09:11:21

15.247 (a,2,d) Conducted Band Edge and Out of Band Emissions

Test Procedure: ANSI C63.10-2013

Band-edge Compliance of RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation

RBW 1% of the span VBW RBW Sweep = auto Detector function = peak Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section. Submit this plot.

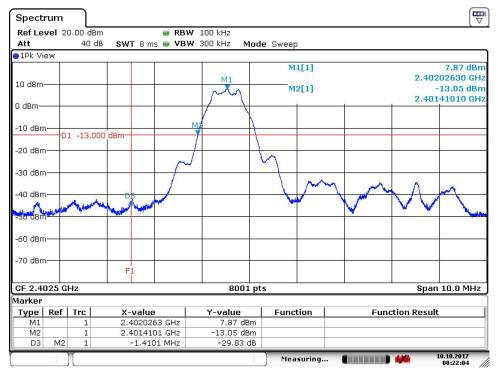
Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit. Submit this plot.

Test Set Up: Same as 15.247 (a,2) 6dB Emission Bandwidth



Band Edge Measurements

DNB Job Number:	86022			Date:		10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Pro	ducts Inc.				Standard	
Model Number:	HT25						FCC Part 15	
Description:	BLE Transr	nitter		Clause				
	1 Mbps (Ba	sic data		15.247(a,2,d)				
Ambient Temperature Relative Humidity Bard					Baron	netric Pressure		
26 °C			30 %		101.35 kPa			
EUT performed within	n the requireme	nts of th	ne applicable sta	andard	[X] Ye	es []No C	L Payne	
3					Freq	5 (5)		
Limit	Lower (MI	Hz)	Upper (MI	Hz)	Delta (MHz)		Pass/Fail	
2400	2401.4101	00				1.410	Pass	

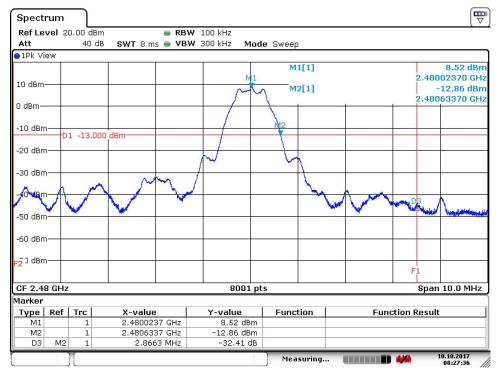


Date: 10.0CT.2017 08:22:05



Band Edge Measurements

					Barra Bago ividadar orriorito			
DNB Job Number:	86022			Date:		10 Oct 2017	Conformance	
Customer:	Orbit Irriga	tion Pro	ducts Inc.				Standard	
Model Number:	HT25						FCC Part 15	
Description:	BLE Transr	nitter					Clause	
	1 Mbps (Ba	sic data		15.247(a,2,d)				
Ambient Temperature Relative Humidity E					Baron	ometric Pressure		
26 °C			30 %		101.35 kPa			
EUT performed within	n the requireme	nts of th	ne applicable sta	andard	[X] Ye	es []No C	L Payne	
Condu	cted Band Edge	Measu	rement			Freq	0 (5 !)	
Limit	Lower (MI	Hz)	Upper (MI	Hz)	Delta (MHz)		Pass/Fail	
2483.5			2480.6337	700		2.866	Pass	



Date: 10.0CT.2017 08:27:36



Conducted Spurious

DNB Job Number:	86022 Date:		10 Oct 2017	Conformance Standard		
Customer:	Orbit Irriga	Orbit Irrigation Products Inc.				
Model Number:	HT25	HT25				
Description:	BLE Transr	BLE Transmitter			Clause 15.247(a,2,d)	
	Test Proced	Test Procedure				
Ambient Temperature Relative Humidity Barom				netric Pressure		
26 °C		30 %		101.35 kPa		
EUT performed within the requirements of the applicable standard [X] Yes [] No Les Payne						

Test Procedure: ANSI C63.10-2013

15.247 (a,2,d) Spurious RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz VBW RBW Sweep = auto

Detector function = peak

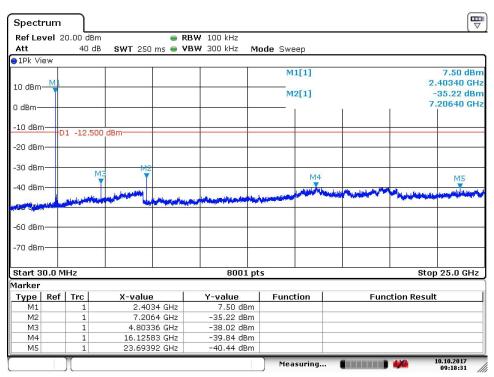
Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. Submit these plots.



Conducted Spurious

				0 0 1 10 0 0 0 0 0		<u> </u>		
DNB Job Number:	86022		Date:	10 Oct 2017 C		Conformance Standard		
Customer:	Orbit Irriga	Orbit Irrigation Products Inc.						
Model Number:	HT25	HT25						
Description:	BLE Transi	BLE Transmitter				Clause		
	Low Chann	el - 1 Mbps (Basic d	lata rate)		15.247(a,2,d)			
Ambient Tempera	ature	Relative I	Humidity	[3aron	metric Pressure		
26 °C		30 %		10	101.35 kPa			
EUT performed within the requirements of the applicable standard [X] Yes [] No CL Payne						L Payne		
Peak Output Power	Reading (dBm)		-20dBc	-20dBc (dBm)		Pass/Fall		
8.09 dBm		7.50		5		Pass		

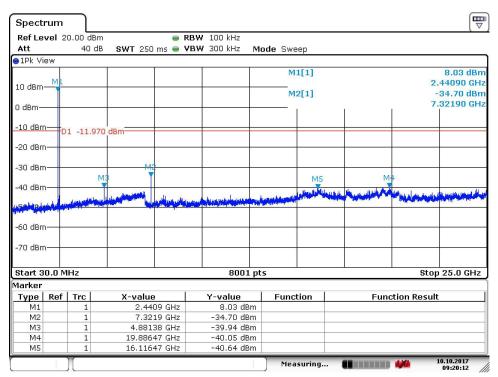


Date: 10.0CT.2017 09:18:30



Conducted Spurious

						ı
DNB Job Number:	86022	86022 Date: 10 Oct 2017		2017	Conformance Standard	
Customer:	Orbit Irriga	Orbit Irrigation Products Inc.				
Model Number:	HT25	HT25				
Description:	BLE Transi	BLE Transmitter				Clause
	Middle Channel - 1 Mbps (Basic data rate)					15.247(a,2,d)
Ambient Temper	ature	Relative Humidity Barom		metric Pressure		
26 °C		30 %		101.35 kPa		
EUT performed within the requirements of the applicable standard [X] Yes [] No CL Payne						L Payne
Peak Output Power	Reading (dBm)		-20dBc (dBm)			Pass/Fall
8.47 dBm		8.03		-11.97		Pass

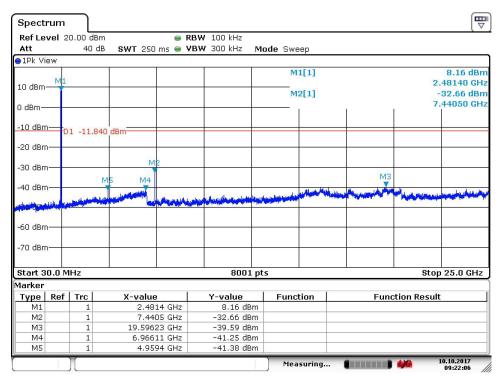


Date: 10.0CT.2017 09:20:12



Conducted Spurious

DNB Job Number:	86022		Date:	10 Oct 2	2017	Conformance Standard
Customer:	Orbit Irriga	Orbit Irrigation Products Inc.				
Model Number:	HT25	HT25				
Description:	BLE Transr	BLE Transmitter				Clause
	High Chanr	nel - 1 Mbps (Basic o	c data rate) 15.247(a,2,d)			
Ambient Temper	ature	Relative Humidity Barom		netric Pressure		
26 °C		30 %		10	101.35 kPa	
EUT performed within the requirements of the applicable standard [X] Yes [] No CL					L Payne	
Peak Output Power	Reading (dBm)		-20dBc (dBm)			Pass/Fall
8.69 dBm	8.16		-11.84			Pass



Date: 10.0CT.2017 09:22:06

15.247(a,2,e): Power spectral density(PSD).

Test Procedure: ANSI C63.10-2013

Clause 11.10.2 Method PKPSD (peak PSD)

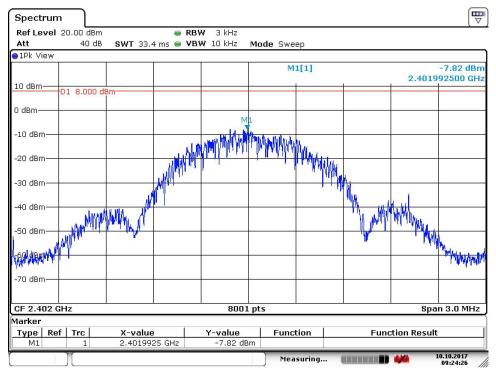
The following procedure shall be used if the maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- a) Set analyzer center frequency to DTS channel center frequency
- b) Set the span to 1.5 times the DTS bandwidth
- c) Set the RBW to 3 kHz \leq RBW \leq 100 kHz
- d) Set the VBW \geq [3 x RBW]
- e) Detector = peak
- f) Sweep time = auto couple
- g) Trace mode = max hold
- h) Allow trace to fully stabilize
- i) Use the peak marker function to determine the maximum amplitude level within the RBW
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat
- k) Submit plots



Power Spectral Density

DNB Job Number	86022		Date:	10 Oct 2017	Conformance Standard		
Customer:	Orbit Irriga	Orbit Irrigation Products Inc.					
Model Number:	HT25				FCC Part 15		
Description:	BLE Transi	BLE Transmitter					
	Low Chann	Low Channel - 1 Mbps (Basic data rate)					
Environmental Conditions							
Ambient T	Ambient Temperature Relative Humidity Barom						
26	°C	%	101.35 kPa				
EUT performed within the requirements of the applicable standard [X] Yes [] No CL Payne							
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail		
Low	2402	-7.82	8.0	-15.82	Pass		

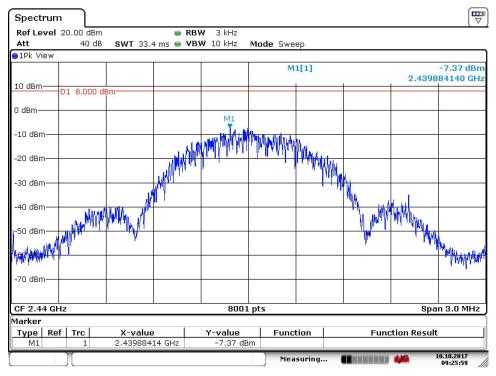


Date: 10.0CT.2017 09:24:26



Power Spectral Density

				•	•		
DNB Job Number	: 86022	86022 Date:			Conformance		
Customer:	Orbit Irriga	tion Products Inc.			Standard		
Model Number:	HT25				FCC Part 15		
Description:	BLE Transi	mitter			Clause		
	Middle Cha	annel - 1 Mbps (Bas		15.247(d)			
	Environmental Conditions						
Ambient T	Ambient Temperature Relative Humidity Barome						
26	26 °C 30 % 10						
EUT performed w	es []No CLI	Payne					
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail		
Middle	2440	-7.37	8.0	-15.37	Pass		

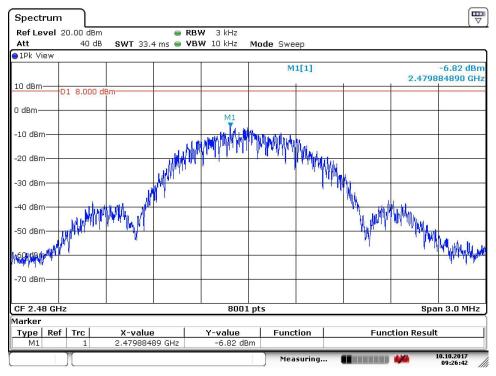


Date: 10.0CT.2017 09:25:59



Power Spectral Density

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DNB Job Number	86022		10 Oct 2017	Conformance			
Customer:	Orbit Irriga	tion Products Inc.			Standard		
Model Number:	HT25				FCC Part 15		
Description:	BLE Transi	mitter			Clause 15.247(d)		
	High Chan	High Channel - 1 Mbps (Basic data rate)					
	Environmental Conditions						
Ambient T	Baromet	netric Pressure					
26	26 °C 30 % 10						
EUT performed w	es []No CLF	Payne					
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail		
High	2480	-6.82	8.0	-14.82	Pass		



Date: 10.0CT.2017 09:26:42

2.1033 (b) (7) Equipment Photographs

Supplied separately for confidentiality

End of Report UT86022A-001