

Payrange

Blukey Module FCC 15.207:2016 FCC 15.247:2016 Bluetooth Low Energy Radio

Report # PAYR0003.1



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST



Last Date of Test: March 10, 2016 Payrange Model: Blukey Module

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.247:2016	ANSI 603.10.2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.2.2.4	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

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.

REVISION HISTORY



Revision Number		Description	Date	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 Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

MSIP / 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: <u>http://www.nwemc.com/accreditations/</u> http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

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

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

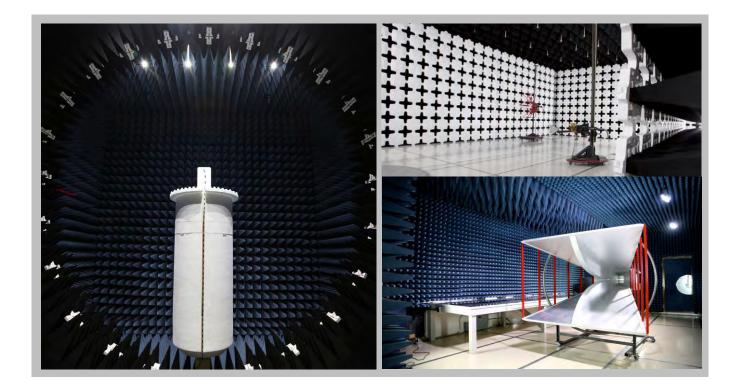
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

FACILITIES





California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600	
		NV	'LAP			
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	
Industry Canada						
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1	
		BS	MI			
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R	
		VC	CI			
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	



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Payrange
Address:	700 NE Multnomah Street Suite 1400
City, State, Zip:	Portland, OR 97232
Test Requested By:	Mike Mitchell
Model:	Blukey Module
First Date of Test:	March 09, 2016
Last Date of Test:	March 10, 2016
Receipt Date of Samples:	March 09, 2016
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Blukey Module is a mPCIE card for wireless payment over Bluetooth 4.0 Low Energy. It can be used in any general computer with mPCIE

Testing Objective:

To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.





Configuration PAYR0003-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth Low Energy Payment Controller	Payrange	Bluekey Module	1

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
BK Module Programmer	Payrange	None	PDX1		

Remote Equipment Outside of Test Setup Boundary					
Description Manufacturer Model/Part Number Serial Number					
Laptop	Sony	SVE141L11L	2755608330002108		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB	Yes	1.2m	No	BK Module Programmer	Laptop

Configuration PAYR0003-2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth Low Energy Payment Controller	Payrange	Bluekey Module	2

Peripherals in test setup boundary						
Description	scription Manufacturer Model/Part Number Serial Number					
DC Power Supply	Topward Electric Instruments Co. Inc	TPS-2000	946425			

Cables	Cables											
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2							
DC Power	No	4.5m	No	DC Power Supply	Bluetooth Low Energy Payment Controller							
AC Power	No	1.8m	No	AC Mains	DC Power Supply							

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
		Band Edge	Tested as	No EMI suppression	EUT remained at
1	3/9/2016 Band Ed Compliar		delivered to	devices were added or	Northwest EMC
		Compliance	Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
2	3/9/2016	Conducted	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
			Tested as	No EMI suppression	EUT remained at
3	3/9/2016	Duty Cycle	delivered to	devices were added or	Northwest EMC
			Test Station.	modified during this test.	following the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
4	3/9/2016	Bandwidth	delivered to	devices were added or	Northwest EMC
	Bandy		Test Station.	modified during this test.	following the test.
		Output	Tested as No EMI suppression		EUT remained at
5	3/9/2016	Power	delivered to	devices were added or	Northwest EMC
		FOWEI	Test Station.	modified during this test.	following the test.
		Power	Tested as	No EMI suppression	EUT remained at
6	3/9/2016	Spectral	delivered to	devices were added or	Northwest EMC
		Density	Test Station.	modified during this test.	following the test.
		Powerline	Tested as	No EMI suppression	EUT remained at
7	3/10/2016	Conducted	delivered to	devices were added or	Northwest EMC
	Emissions		Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	Scheduled testing
8	3/10/2016	Radiated	delivered to	devices were added or	was completed.
		Emissions	Test Station.	modified during this test.	was completed.



TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10-2013.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4407B	AAU	1/12/2015	1/12/2017
LISN	Solar Electronics	9252-50-R-24-BNC	LIP	1/27/2015	1/27/2017
Cable - Conducted Cable Assembly	Northwest EMC	EVG, HHD, RKA	EVGA	5/12/2015	5/12/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

PAYR0003-2

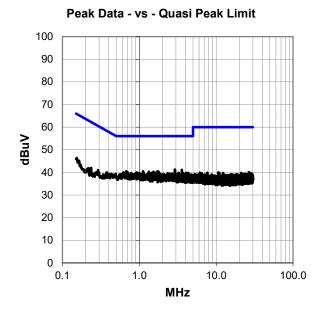
MODES INVESTIGATED

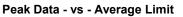
Continuous BTLE Tx, high channel, GFSK, 2480MHz. Continuous BTLE Tx, low channel, GFSK, 2402MHz. Continuous BTLE Tx, mid channel, GFSK, 2442MHz.

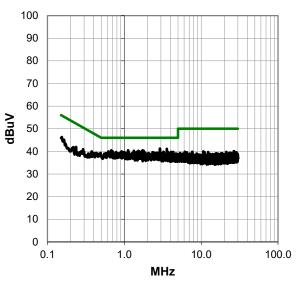


EUT:	Blukey Module	e				Work Order:	PAYR0003
Serial Number:	2	0				Date:	03/10/2016
Customer:	Payrange					Temperature:	22.3°C
Attendees:	Mike Mitchell					Relative Humidity:	43.2%
Customer Project:	None					Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzone	е				Job Site:	EV07
Power:	3VDC					Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS						
Specification:				Ν	/lethod:		
FCC 15.207:2016				A	NSI C63.10:	2013	
TEST PARAME	TERS						
Run #: 1		Line:	High Line		Ad	d. Ext. Attenuation (dE	3): 0
COMMENTS							
Measure the 120VA	C/60Hz input to	o the linea	r DC supply.				
EUT OPERATIN							
Continuous BTLE T	x, low channel,	GFSK, 24	02MHz.				
DEVIATIONS F	ROM TEST S	STAND	ARD				

None









RESULTS - Run #1

	Peak Data - vs - Quasi Peak Limit						Peak Data - vs - Average Limit						
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
2.907	21.0	20.2	41.2	56.0	-14.8	2.907	21.0	20.2	41.2	46.0	-4.8		
3.575	20.9	20.2	41.1	56.0	-14.9	3.575	20.9	20.2	41.1	46.0	-4.9		
0.676	20.5	20.0	40.5	56.0	-15.5	0.676	20.5	20.0	40.5	46.0	-5.5		
1.120	20.4	20.1	40.5	56.0	-15.5	1.120	20.4	20.1	40.5	46.0	-5.5		
1.736	20.4	20.1	40.5	56.0	-15.5	1.736	20.4	20.1	40.5	46.0	-5.5		
1.329	20.2	20.1	40.3	56.0	-15.7	1.329	20.2	20.1	40.3	46.0	-5.7		
1.527	20.2	20.1	40.3	56.0	-15.7	1.527	20.2	20.1	40.3	46.0	-5.7		
1.702	20.2	20.1	40.3	56.0	-15.7	1.702	20.2	20.1	40.3	46.0	-5.7		
1.792	20.1	20.1	40.2	56.0	-15.8	1.792	20.1	20.1	40.2	46.0	-5.8		
0.919	19.9	20.1	40.0	56.0	-16.0	0.919	19.9	20.1	40.0	46.0	-6.0		
1.571	19.8	20.1	39.9	56.0	-16.1	1.571	19.8	20.1	39.9	46.0	-6.1		
3.239	19.6	20.2	39.8	56.0	-16.2	3.239	19.6	20.2	39.8	46.0	-6.2		
1.452	19.7	20.1	39.8	56.0	-16.2	1.452	19.7	20.1	39.8	46.0	-6.2		
1.721	19.7	20.1	39.8	56.0	-16.2	1.721	19.7	20.1	39.8	46.0	-6.2		
3.247	19.5	20.2	39.7	56.0	-16.3	3.247	19.5	20.2	39.7	46.0	-6.3		
3.687	19.5	20.2	39.7	56.0	-16.3	3.687	19.5	20.2	39.7	46.0	-6.3		
4.064	19.5	20.2	39.7	56.0	-16.3	4.064	19.5	20.2	39.7	46.0	-6.3		
4.328	19.5	20.2	39.7	56.0	-16.3	4.328	19.5	20.2	39.7	46.0	-6.3		
2.344	19.5	20.2	39.7	56.0	-16.3	2.344	19.5	20.2	39.7	46.0	-6.3		
3.638	19.4	20.2	39.6	56.0	-16.4	3.638	19.4	20.2	39.6	46.0	-6.4		
3.739	19.4	20.2	39.6	56.0	-16.4	3.739	19.4	20.2	39.6	46.0	-6.4		
2.665	19.2	20.2	39.4	56.0	-16.6	2.665	19.2	20.2	39.4	46.0	-6.6		
3.161	19.2	20.2	39.4	56.0	-16.6	3.161	19.2	20.2	39.4	46.0	-6.6		
2.079	19.1	20.1	39.2	56.0	-16.8	2.079	19.1	20.1	39.2	46.0	-6.8		
4.690	18.9	20.2	39.1	56.0	-16.9	4.690	18.9	20.2	39.1	46.0	-6.9		
4.362	18.7	20.2	38.9	56.0	-17.1	4.362	18.7	20.2	38.9	46.0	-7.1		

CONCLUSION

Pass

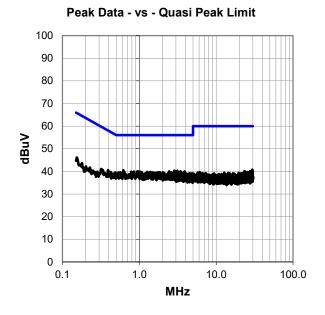
Can Shy

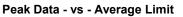
Tested By

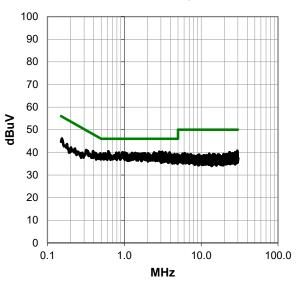


EUT:	Blukey Modu	le			Work Order:	PAYR0003
Serial Number:	2				Date:	03/10/2016
Customer:	Payrange				Temperature:	22.3°C
Attendees:	Mike Mitchell				Relative Humidity:	43.2%
Customer Project:	None				Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzor	ne			Job Site:	EV07
Power:	3VDC				Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS					
Specification:				Method:		
FCC 15.207:2016				ANSI C63.1	0:2013	
TEST PARAME	TERS					
Run #: 2		Line:	Neutral		Add. Ext. Attenuation (dE	3): 0
COMMENTS						
Measure the 120VA	C/60Hz input t	to the linea	r DC supply.			
EUT OPERATIN						
Continuous BTLE T	x, low channel	, GFSK, 24	02MHz.			
DEVIATIONS F	ROM TEST	STAND	ARD			

None









RESULTS - Run #2

	Peak Da	ita - vs - C	Quasi Peal	< Limit		Peak Data - vs - Average Limit						
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	
0.620	20.5	20.0	40.5	56.0	-15.5	0.620	20.5	20.0	40.5	46.0	-5.5	
2.851	20.1	20.2	40.3	56.0	-15.7	2.851	20.1	20.2	40.3	46.0	-5.7	
3.123	20.0	20.2	40.2	56.0	-15.8	3.123	20.0	20.2	40.2	46.0	-5.8	
2.941	19.9	20.2	40.1	56.0	-15.9	2.941	19.9	20.2	40.1	46.0	-5.9	
0.941	19.9	20.1	40.0	56.0	-16.0	0.941	19.9	20.1	40.0	46.0	-6.0	
2.452	19.8	20.2	40.0	56.0	-16.0	2.452	19.8	20.2	40.0	46.0	-6.0	
3.444	19.8	20.2	40.0	56.0	-16.0	3.444	19.8	20.2	40.0	46.0	-6.0	
3.870	19.8	20.2	40.0	56.0	-16.0	3.870	19.8	20.2	40.0	46.0	-6.0	
0.851	19.9	20.0	39.9	56.0	-16.1	0.851	19.9	20.0	39.9	46.0	-6.1	
0.784	19.9	20.0	39.9	56.0	-16.1	0.784	19.9	20.0	39.9	46.0	-6.1	
1.034	19.8	20.1	39.9	56.0	-16.1	1.034	19.8	20.1	39.9	46.0	-6.1	
1.262	19.7	20.1	39.8	56.0	-16.2	1.262	19.7	20.1	39.8	46.0	-6.2	
1.844	19.5	20.1	39.6	56.0	-16.4	1.844	19.5	20.1	39.6	46.0	-6.4	
2.038	19.5	20.1	39.6	56.0	-16.4	2.038	19.5	20.1	39.6	46.0	-6.4	
2.586	19.3	20.2	39.5	56.0	-16.5	2.586	19.3	20.2	39.5	46.0	-6.5	
2.642	19.3	20.2	39.5	56.0	-16.5	2.642	19.3	20.2	39.5	46.0	-6.5	
3.220	19.3	20.2	39.5	56.0	-16.5	3.220	19.3	20.2	39.5	46.0	-6.5	
4.489	19.0	20.2	39.2	56.0	-16.8	4.489	19.0	20.2	39.2	46.0	-6.8	
4.847	18.9	20.2	39.1	56.0	-16.9	4.847	18.9	20.2	39.1	46.0	-6.9	
3.273	18.9	20.2	39.1	56.0	-16.9	3.273	18.9	20.2	39.1	46.0	-6.9	
3.601	18.9	20.2	39.1	56.0	-16.9	3.601	18.9	20.2	39.1	46.0	-6.9	
3.948	18.9	20.2	39.1	56.0	-16.9	3.948	18.9	20.2	39.1	46.0	-6.9	
4.131	18.8	20.2	39.0	56.0	-17.0	4.131	18.8	20.2	39.0	46.0	-7.0	
4.899	18.7	20.3	39.0	56.0	-17.0	4.899	18.7	20.3	39.0	46.0	-7.0	
4.623	18.6	20.2	38.8	56.0	-17.2	4.623	18.6	20.2	38.8	46.0	-7.2	
4.746	18.5	20.2	38.7	56.0	-17.3	4.746	18.5	20.2	38.7	46.0	-7.3	

CONCLUSION

Pass

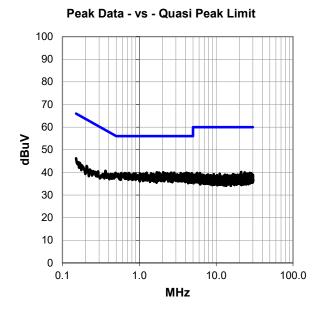
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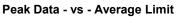
Tested By

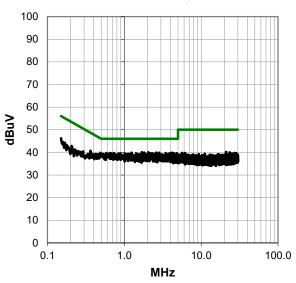


EUT:	Blukey Modu	le			Work Order:	PAYR0003
Serial Number:	2				Date:	03/10/2016
Customer:	Payrange				Temperature:	22.3°C
Attendees:	Mike Mitchell				Relative Humidity:	43.2%
Customer Project:	None				Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzor	ne			Job Site:	EV07
Power:	3VDC				Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS					
Specification:				Method:		
FCC 15.207:2016				ANSI C63.10:	2013	
TEST PARAME	TERS					
Run #: 3		Line:	Neutral	Ad	ld. Ext. Attenuation (dE	3): 0
COMMENTS						
Measure the 120VA	C/60Hz input t	to the linea	r DC supply.			
EUT OPERATIN						
Continuous BTLE T	x, mid channel	l, GFSK, 24	142MHz.			
DEVIATIONS F	ROM TEST	STAND	ARD			

None









RESULTS - Run #3

	Peak Data - vs - Quasi Peak Limit						Peak Data - vs - Average Limit						
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
1.691	20.0	20.1	40.1	56.0	-15.9	1.691	20.0	20.1	40.1	46.0	-5.9		
2.045	20.0	20.1	40.1	56.0	-15.9	2.045	20.0	20.1	40.1	46.0	-5.9		
1.243	19.8	20.1	39.9	56.0	-16.1	1.243	19.8	20.1	39.9	46.0	-6.1		
1.810	19.8	20.1	39.9	56.0	-16.1	1.810	19.8	20.1	39.9	46.0	-6.1		
2.605	19.7	20.2	39.9	56.0	-16.1	2.605	19.7	20.2	39.9	46.0	-6.1		
2.840	19.6	20.2	39.8	56.0	-16.2	2.840	19.6	20.2	39.8	46.0	-6.2		
4.153	19.6	20.2	39.8	56.0	-16.2	4.153	19.6	20.2	39.8	46.0	-6.2		
3.463	19.5	20.2	39.7	56.0	-16.3	3.463	19.5	20.2	39.7	46.0	-6.3		
4.041	19.5	20.2	39.7	56.0	-16.3	4.041	19.5	20.2	39.7	46.0	-6.3		
4.802	19.4	20.2	39.6	56.0	-16.4	4.802	19.4	20.2	39.6	46.0	-6.4		
2.172	19.5	20.1	39.6	56.0	-16.4	2.172	19.5	20.1	39.6	46.0	-6.4		
1.426	19.5	20.1	39.6	56.0	-16.4	1.426	19.5	20.1	39.6	46.0	-6.4		
3.944	19.4	20.2	39.6	56.0	-16.4	3.944	19.4	20.2	39.6	46.0	-6.4		
4.392	19.4	20.2	39.6	56.0	-16.4	4.392	19.4	20.2	39.6	46.0	-6.4		
1.019	19.4	20.1	39.5	56.0	-16.5	1.019	19.4	20.1	39.5	46.0	-6.5		
2.463	19.1	20.2	39.3	56.0	-16.7	2.463	19.1	20.2	39.3	46.0	-6.7		
3.720	19.1	20.2	39.3	56.0	-16.7	3.720	19.1	20.2	39.3	46.0	-6.7		
4.892	19.0	20.3	39.3	56.0	-16.7	4.892	19.0	20.3	39.3	46.0	-6.7		
1.620	19.0	20.1	39.1	56.0	-16.9	1.620	19.0	20.1	39.1	46.0	-6.9		
4.496	18.7	20.2	38.9	56.0	-17.1	4.496	18.7	20.2	38.9	46.0	-7.1		
4.996	18.5	20.3	38.8	56.0	-17.2	4.996	18.5	20.3	38.8	46.0	-7.2		
0.363	20.7	20.0	40.7	58.7	-18.0	0.363	20.7	20.0	40.7	48.7	-8.0		
0.150	26.0	20.2	46.2	66.0	-19.8	0.150	26.0	20.2	46.2	56.0	-9.8		
21.162	19.1	21.0	40.1	60.0	-19.9	21.162	19.1	21.0	40.1	50.0	-9.9		
23.535	18.7	21.2	39.9	60.0	-20.1	23.535	18.7	21.2	39.9	50.0	-10.1		
5.657	19.4	20.3	39.7	60.0	-20.3	5.657	19.4	20.3	39.7	50.0	-10.3		

CONCLUSION

Pass

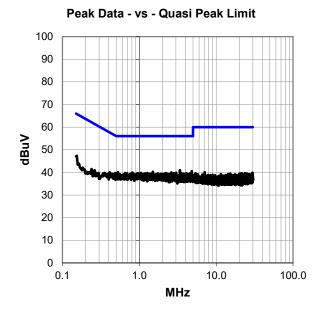
Jul

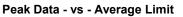
Tested By

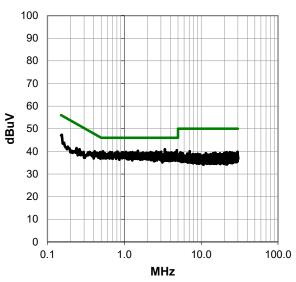


EUT:	Blukey Module		Work Order:	PAYR0003
Serial Number:	2		Date:	03/10/2016
Customer:	Payrange		Temperature:	22.3°C
Attendees:	Mike Mitchell		Relative Humidity:	43.2%
Customer Project:	None		Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzone		Job Site:	EV07
Power:	3VDC		Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS			
Specification:		Method:		
FCC 15.207:2016		ANSI C63.10:2	.013	
TEST PARAME	TERS			
Run #: 4	Line: High Line	Add	I. Ext. Attenuation (dB): 0
COMMENTS				
Measure the 120VA	C/60Hz input to the linear DC supply.			
Continuous BTLE T	x, mid channel, GFSK, 2442MHz.			
DEVIATIONS F	ROM TEST STANDARD			

None









RESULTS - Run #4

	Peak Da	ata - vs - C	Quasi Peal	< Limit			Peak D	ata - vs -	Average L	imit	
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.370	20.8	20.2	41.0	56.0	-15.0	3.370	20.8	20.2	41.0	46.0	-5.0
4.806	20.3	20.2	40.5	56.0	-15.5	4.806	20.3	20.2	40.5	46.0	-5.5
1.504	20.2	20.1	40.3	56.0	-15.7	1.504	20.2	20.1	40.3	46.0	-5.7
0.527	20.1	20.0	40.1	56.0	-15.9	0.527	20.1	20.0	40.1	46.0	-5.9
2.612	19.8	20.2	40.0	56.0	-16.0	2.612	19.8	20.2	40.0	46.0	-6.0
0.814	19.9	20.0	39.9	56.0	-16.1	0.814	19.9	20.0	39.9	46.0	-6.1
3.019	19.7	20.2	39.9	56.0	-16.1	3.019	19.7	20.2	39.9	46.0	-6.1
1.053	19.7	20.1	39.8	56.0	-16.2	1.053	19.7	20.1	39.8	46.0	-6.2
2.206	19.6	20.1	39.7	56.0	-16.3	2.206	19.6	20.1	39.7	46.0	-6.3
1.284	19.6	20.1	39.7	56.0	-16.3	1.284	19.6	20.1	39.7	46.0	-6.3
4.575	19.4	20.2	39.6	56.0	-16.4	4.575	19.4	20.2	39.6	46.0	-6.4
1.202	19.5	20.1	39.6	56.0	-16.4	1.202	19.5	20.1	39.6	46.0	-6.4
2.814	19.4	20.2	39.6	56.0	-16.4	2.814	19.4	20.2	39.6	46.0	-6.4
3.523	19.4	20.2	39.6	56.0	-16.4	3.523	19.4	20.2	39.6	46.0	-6.4
4.097	19.4	20.2	39.6	56.0	-16.4	4.097	19.4	20.2	39.6	46.0	-6.4
1.747	19.4	20.1	39.5	56.0	-16.5	1.747	19.4	20.1	39.5	46.0	-6.5
2.295	19.3	20.2	39.5	56.0	-16.5	2.295	19.3	20.2	39.5	46.0	-6.5
3.672	19.2	20.2	39.4	56.0	-16.6	3.672	19.2	20.2	39.4	46.0	-6.6
3.810	19.1	20.2	39.3	56.0	-16.7	3.810	19.1	20.2	39.3	46.0	-6.7
2.471	19.0	20.2	39.2	56.0	-16.8	2.471	19.0	20.2	39.2	46.0	-6.8
4.250	19.0	20.2	39.2	56.0	-16.8	4.250	19.0	20.2	39.2	46.0	-6.8
3.713	18.9	20.2	39.1	56.0	-16.9	3.713	18.9	20.2	39.1	46.0	-6.9
3.862	18.9	20.2	39.1	56.0	-16.9	3.862	18.9	20.2	39.1	46.0	-6.9
0.411	20.1	20.0	40.1	57.6	-17.5	0.411	20.1	20.0	40.1	47.6	-7.5
0.154	27.2	20.2	47.4	65.8	-18.4	0.154	27.2	20.2	47.4	55.8	-8.4
7.104	19.6	20.4	40.0	60.0	-20.0	7.104	19.6	20.4	40.0	50.0	-10.0

CONCLUSION

Pass

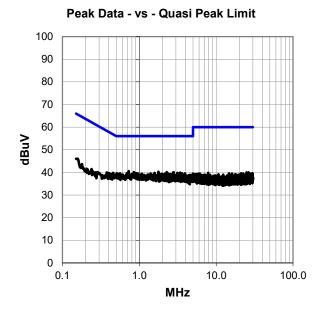
Con Sig

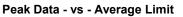
Tested By

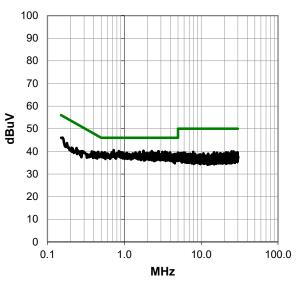


EUT:	Blukey Module		Work Order:	PAYR0003
Serial Number:	2		Date:	03/10/2016
Customer:	Payrange		Temperature:	22.3°C
Attendees:	Mike Mitchell		Relative Humidity:	43.2%
Customer Project:	None		Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzone		Job Site:	EV07
Power:	3VDC		Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS			
Specification:		Method:		
FCC 15.207:2016		ANSI C63.10:2	.013	
TEST PARAME	TERS			
Run #: 5	Line: High Line	Add	I. Ext. Attenuation (dB): 0
COMMENTS				
Measure the 120VA	C/60Hz input to the linear DC supply.			
EUT OPERATIN	IG MODES			
Continuous BTLE T	x, high channel, GFSK, 2480MHz.			
DEVIATIONS F	ROM TEST STANDARD			

None









RESULTS - Run #5

	Peak Da	ita - vs - C	Quasi Peal	< Limit		Peak Data - vs - Average Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
0.728	20.6	20.0	40.6	56.0	-15.4	0.728	20.6	20.0	40.6	46.0	-5.4		
1.773	20.2	20.1	40.3	56.0	-15.7	1.773	20.2	20.1	40.3	46.0	-5.7		
2.273	20.0	20.2	40.2	56.0	-15.8	2.273	20.0	20.2	40.2	46.0	-5.8		
0.848	20.1	20.0	40.1	56.0	-15.9	0.848	20.1	20.0	40.1	46.0	-5.9		
2.784	19.9	20.2	40.1	56.0	-15.9	2.784	19.9	20.2	40.1	46.0	-5.9		
3.400	19.7	20.2	39.9	56.0	-16.1	3.400	19.7	20.2	39.9	46.0	-6.1		
1.579	19.7	20.1	39.8	56.0	-16.2	1.579	19.7	20.1	39.8	46.0	-6.2		
3.123	19.5	20.2	39.7	56.0	-16.3	3.123	19.5	20.2	39.7	46.0	-6.3		
3.582	19.4	20.2	39.6	56.0	-16.4	3.582	19.4	20.2	39.6	46.0	-6.4		
3.940	19.3	20.2	39.5	56.0	-16.5	3.940	19.3	20.2	39.5	46.0	-6.5		
2.168	19.3	20.1	39.4	56.0	-16.6	2.168	19.3	20.1	39.4	46.0	-6.6		
3.870	19.2	20.2	39.4	56.0	-16.6	3.870	19.2	20.2	39.4	46.0	-6.6		
1.948	19.2	20.1	39.3	56.0	-16.7	1.948	19.2	20.1	39.3	46.0	-6.7		
2.456	19.0	20.2	39.2	56.0	-16.8	2.456	19.0	20.2	39.2	46.0	-6.8		
2.568	19.0	20.2	39.2	56.0	-16.8	2.568	19.0	20.2	39.2	46.0	-6.8		
4.888	18.7	20.3	39.0	56.0	-17.0	4.888	18.7	20.3	39.0	46.0	-7.0		
4.504	18.6	20.2	38.8	56.0	-17.2	4.504	18.6	20.2	38.8	46.0	-7.2		
0.157	25.9	20.2	46.1	65.6	-19.5	0.157	25.9	20.2	46.1	55.6	-9.5		
26.441	18.6	21.4	40.0	60.0	-20.0	26.441	18.6	21.4	40.0	50.0	-10.0		
24.926	18.6	21.3	39.9	60.0	-20.1	24.926	18.6	21.3	39.9	50.0	-10.1		
25.613	18.5	21.3	39.8	60.0	-20.2	25.613	18.5	21.3	39.8	50.0	-10.2		
7.880	19.3	20.4	39.7	60.0	-20.3	7.880	19.3	20.4	39.7	50.0	-10.3		
21.169	18.5	21.0	39.5	60.0	-20.5	21.169	18.5	21.0	39.5	50.0	-10.5		
14.711	18.8	20.7	39.5	60.0	-20.5	14.711	18.8	20.7	39.5	50.0	-10.5		
29.769	17.9	21.6	39.5	60.0	-20.5	29.769	17.9	21.6	39.5	50.0	-10.5		
5.011	19.2	20.3	39.5	60.0	-20.5	5.011	19.2	20.3	39.5	50.0	-10.5		

CONCLUSION

Pass

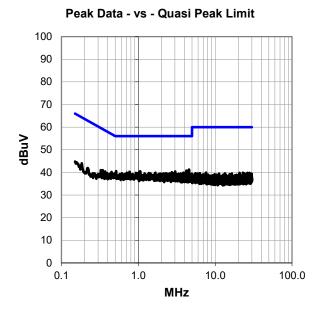
Con Sing

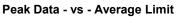
Tested By

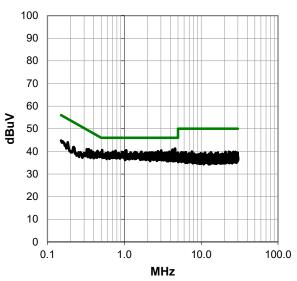


EUT:	Blukey Modu	le			Work Order:	PAYR0003
Serial Number:	2				Date:	03/10/2016
Customer:	Payrange				Temperature:	22.3°C
Attendees:	Mike Mitchell				Relative Humidity:	43.2%
Customer Project:	None				Bar. Pressure:	1007.7 mb
Tested By:	Cole Ghizzor	ne			Job Site:	EV07
Power:	3VDC				Configuration:	PAYR0003-2
TEST SPECIFIC	CATIONS					
Specification:				Method:		
FCC 15.207:2016				ANSI C63.10:	2013	
TEST PARAME	TERS					
Run #: 6		Line:	Neutral	Ad	d. Ext. Attenuation (dE	3): 0
COMMENTS						
Measure the 120VA	C/60Hz input t	to the linea	r DC supply.			
EUT OPERATIN						
Continuous BTLE T	x, high channe	el, GFSK, 2	480MHz.			
DEVIATIONS F	ROM TEST	STAND	ARD			

None









RESULTS - Run #6

	Peak Da	ta - vs - G	Quasi Peal	< Limit		Peak Data - vs - Average Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
4.567	21.0	20.2	41.2	56.0	-14.8	4.567	21.0	20.2	41.2	46.0	-4.8		
4.220	20.6	20.2	40.8	56.0	-15.2	4.220	20.6	20.2	40.8	46.0	-5.2		
0.516	20.6	20.0	40.6	56.0	-15.4	0.516	20.6	20.0	40.6	46.0	-5.4		
1.045	20.3	20.1	40.4	56.0	-15.6	1.045	20.3	20.1	40.4	46.0	-5.6		
1.064	20.3	20.1	40.4	56.0	-15.6	1.064	20.3	20.1	40.4	46.0	-5.6		
3.019	20.2	20.2	40.4	56.0	-15.6	3.019	20.2	20.2	40.4	46.0	-5.6		
0.766	20.3	20.0	40.3	56.0	-15.7	0.766	20.3	20.0	40.3	46.0	-5.7		
2.739	19.9	20.2	40.1	56.0	-15.9	2.739	19.9	20.2	40.1	46.0	-5.9		
1.668	19.8	20.1	39.9	56.0	-16.1	1.668	19.8	20.1	39.9	46.0	-6.1		
3.877	19.7	20.2	39.9	56.0	-16.1	3.877	19.7	20.2	39.9	46.0	-6.1		
1.374	19.6	20.1	39.7	56.0	-16.3	1.374	19.6	20.1	39.7	46.0	-6.3		
2.284	19.4	20.2	39.6	56.0	-16.4	2.284	19.4	20.2	39.6	46.0	-6.4		
2.139	19.4	20.1	39.5	56.0	-16.5	2.139	19.4	20.1	39.5	46.0	-6.5		
2.538	19.3	20.2	39.5	56.0	-16.5	2.538	19.3	20.2	39.5	46.0	-6.5		
3.582	19.3	20.2	39.5	56.0	-16.5	3.582	19.3	20.2	39.5	46.0	-6.5		
3.090	19.2	20.2	39.4	56.0	-16.6	3.090	19.2	20.2	39.4	46.0	-6.6		
3.347	19.2	20.2	39.4	56.0	-16.6	3.347	19.2	20.2	39.4	46.0	-6.6		
4.978	19.1	20.3	39.4	56.0	-16.6	4.978	19.1	20.3	39.4	46.0	-6.6		
4.120	19.0	20.2	39.2	56.0	-16.8	4.120	19.0	20.2	39.2	46.0	-6.8		
3.549	18.9	20.2	39.1	56.0	-16.9	3.549	18.9	20.2	39.1	46.0	-6.9		
3.720	18.9	20.2	39.1	56.0	-16.9	3.720	18.9	20.2	39.1	46.0	-6.9		
3.754	18.7	20.2	38.9	56.0	-17.1	3.754	18.7	20.2	38.9	46.0	-7.1		
0.370	20.4	20.0	40.4	58.5	-18.1	0.370	20.4	20.0	40.4	48.5	-8.1		
0.344	21.0	20.0	41.0	59.1	-18.1	0.344	21.0	20.0	41.0	49.1	-8.1		
0.325	21.0	20.0	41.0	59.6	-18.6	0.325	21.0	20.0	41.0	49.6	-8.6		
7.593	19.5	20.4	39.9	60.0	-20.1	7.593	19.5	20.4	39.9	50.0	-10.1		

CONCLUSION

Pass

Cik

Tested By



SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Low channel, 2402MHz, GFSK modulation Mid channel, 2442MHz, GFSK modulation High channel, 2480MHz, GFSK modulation

POWER SETTINGS INVESTIGATED

3VDC

CONFIGURATIONS INVESTIGATED

PAYR0003 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 26500 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
Cable	ESM Cable Corp.	KMKM-72	EVY	11/4/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	11/4/2015	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	4/16/2015	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	12 mo
Cable	None	Standard Gain Horns Cable	EVF	4/20/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	4/20/2015	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	3/31/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	4/16/2015	12 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/13/2014	12 mo
Attenuator	Coaxicom	3910-20	AXZ	5/24/2015	24 mo
Cable	N/A	Bilog Cables	EVA	1/29/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/29/2016	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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 highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity. The average measurements were adjusted to account for the duty cycle using the temethods descrbed in ANSI C63.10:2013, Section 11.12.2.5.2. The Duty Cycle correction factor was calculated as follows: DC Correction=10*LOG(0.634), DC Correction = 1.98dB



SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2015.07.01 EmiR5 2015.11.06

• QP

PK AV

PAYR0003 Work Order: Date: 03/10/16 Cri Project: None Temperature: 20.6 °C M Job Site: EV01 2 Humidity: Barometric Pres.: 43.9% RH 1007.7 mbar Tested by: Cole Ghizzone Serial Number: EUT: Blukey Module Configuration: Customer: Payrange Attendees: Mike Mitchell EUT Power: 3VDC Continuous BTLE Tx, reference the data comments for channel, frequency and modulation. Operating Mode: None Deviations: See data comments for EUT orientation Comments: Test Specifications FCC 15.247:2016 **Test Method** ANSI C63.10:2013 Run # 12 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80 70 60 è 50 **m//ngp** Г * Ţ 4 : 30 20 10 0 10 100 1000 10000 100000 MHz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	Duty Cycle Correction (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7326.400	35.8	14.3	2.7	95.0	3.0	2.0	Vert	AV	0.0	52.1	54.0	-1.9	Mid channel, 2442MHz, GFSK modulation EUT Vert
7439.333	33.8	14.6	1.0	262.0	3.0	2.0	Horz	AV	0.0	50.4	54.0	-3.6	High channel, 2480MHz, GFSK modulation EUT Horz
7439.250	33.3	14.6	1.0	70.0	3.0	2.0	Vert	AV	0.0	49.9	54.0	-4.1	High channel, 2480MHz, GFSK modulation EUT Vert
7439.392	33.0	14.6	1.0	32.0	3.0	2.0	Vert	AV	0.0	49.6	54.0	-4.4	High channel, 2480MHz, GFSK modulation EUT On Side
7326.500	33.0	14.3	1.0	296.0	3.0	2.0	Horz	AV	0.0	49.3	54.0	-4.7	Mid channel, 2442MHz, GFSK modulation EUT Horz
7439.408	32.3	14.6	1.0	27.0	3.0	2.0	Horz	AV	0.0	48.9	54.0	-5.1	High channel, 2480MHz, GFSK modulation EUT Vert
7439.358	32.2	14.6	2.2	325.0	3.0	2.0	Horz	AV	0.0	48.8	54.0	-5.2	High channel, 2480MHz, GFSK modulation EUT On Side
4959.825	38.3	7.8	1.0	265.0	3.0	2.0	Horz	AV	0.0	48.0	54.0	-6.0	High channel, 2480MHz, GFSK modulation EUT Horz
7439.242	31.4	14.6	1.0	27.0	3.0	2.0	Vert	AV	0.0	48.0	54.0	-6.0	High channel, 2480MHz, GFSK modulation EUT Horz
4959.750	32.8	7.8	1.0	354.0	3.0	2.0	Vert	AV	0.0	42.5	54.0	-11.5	High channel, 2480MHz, GFSK modulation EUT Vert
4803.950	33.0	7.5	1.0	322.0	3.0	2.0	Horz	AV	0.0	42.5	54.0	-11.5	Low channel, 2402MHz, GFSK modulation EUT Horz
4803.817	33.0	7.5	1.0	77.0	3.0	2.0	Vert	AV	0.0	42.5	54.0	-11.5	Low channel, 2402MHz, GFSK modulation EUT Vert
4883.925	31.2	7.7	1.0	270.0	3.0	2.0	Horz	AV	0.0	40.9	54.0	-13.1	Mid channel, 2442MHz, GFSK modulation EUT Horz
7326.600	43.7	14.3	2.7	95.0	3.0	0.0	Vert	PK	0.0	58.0	74.0	-16.0	Mid channel, 2442MHz, GFSK modulation EUT Vert
7440,408	42.0	14.6	1.0	262.0	3.0	0.0	Horz	PK	0.0	56.6	74.0	-17.4	High channel, 2480MHz, GFSK modulation EUT Horz
7440.650	41.9	14.6	1.0	32.0	3.0	0.0	Vert	PK	0.0	56.5	74.0	-17.5	High channel, 2480MHz, GFSK modulation EUT On Side
7327.000	42.1	14.3	1.0	296.0	3.0	0.0	Horz	PK	0.0	56.4	74.0	-17.6	Mid channel, 2442MHz, GFSK modulation EUT Horz
7439.233	41.8	14.6	1.0	70.0	3.0	0.0	Vert	PK	0.0	56.4	74.0	-17.6	High channel, 2480MHz, GFSK modulation EUT Vert
4883.967	28.6	7.7	1.0	11.0	3.0	2.0	Vert	AV	0.0	38.3	54.0	-15.7	Mid channel, 2442MHz, GFSK modulation EUT Vert
7439,150	41.4	14.6	2.2	325.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	High channel, 2480MHz, GFSK modulation EUT On Side
7439.258	41.4	14.6	1.0	27.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	High channel, 2480MHz, GFSK modulation EUT Vert
7440.367	40.8	14.6	1.0	27.0	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	High channel, 2480MHz, GFSK modulation EUT Horz
19215.740	34.1	0.7	1.6	212.0	3.0	2.0	Vert	AV	0.0	36.8	54.0	-17.2	Low channel, 2402MHz, GFSK modulation EUT Vert
19213.870	34.1	0.7	1.6	240.0	3.0	2.0	Horz	AV	0.0	36.8	54.0	-17.2	Low channel, 2402MHz, GFSK modulation EUT Horz
12398.750	32.8	1.9	1.0	268.0	3.0	2.0	Horz	AV	0.0	36.7	54.0	-17.3	High channel, 2480MHz, GFSK modulation EUT Horz
12398.780	32.2	1.9	1.0	243.0	3.0	2.0	Vert	AV	0.0	36.1	54.0	-17.9	High channel, 2480MHz, GFSK modulation EUT Vert
12210.890	32.1	1.2	3.1	270.0	3.0	2.0	Horz	AV	0.0	35.3	54.0	-18.7	Mid channel, 2442MHz, GFSK modulation EUT Horz
4959.292	44.8	7.8	1.0	265.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	High channel, 2480MHz, GFSK modulation EUT Horz
12208.750	29.0	1.2	2.0	234.0	3.0	2.0	Vert	AV	0.0	32.2	54.0	-21.8	Mid channel, 2442MHz, GFSK modulation EUT Vert
4959.842	41.4	7.8	1.0	354.0	3.0	0.0	Vert	PK	0.0	49.2	74.0	-24.8	High channel, 2480MHz, GFSK modulation EUT Vert
4803.250	41.4	7.5	1.0	322.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	Low channel, 2402MHz, GFSK modulation EUT Horz
4803.475	41.3	7.5	1.0	77.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	Low channel, 2402MHz, GFSK modulation EUT Vert
12008.870	27.7	0.1	1.0	360.0	3.0	2.0	Horz	AV	0.0	29.8	54.0	-24.2	Low channel, 2402MHz, GFSK modulation EUT Horz
4884.158	39.8	7.7	1.0	270.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Mid channel, 2442MHz, GFSK modulation EUT Horz
12007.840	27.3	0.1	1.0	86.0	3.0	2.0	Vert	AV	0.0	29.4	54.0	-24.6	Low channel, 2402MHz, GFSK modulation EUT Vert
4883.767	38.4	7.7	1.0	11.0	3.0	0.0	Vert	PK	0.0	46.1	74.0	-27.9	Mid channel, 2442MHz, GFSK modulation EUT Vert
19215.990	44.9	0.7	1.6	240.0	3.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	Low channel, 2402MHz, GFSK modulation EUT Horz
19216.200	44.4	0.7	1.6	212.0	3.0	0.0	Vert	PK	0.0	45.1	74.0	-28.9	Low channel, 2402MHz, GFSK modulation EUT Vert

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	Duty Cycle Correction (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12398.370	42.3	1.9	1.0	268.0	3.0	0.0	Horz	PK	0.0	44.2	74.0	-29.8	High channel, 2480MHz, GFSK modulation EUT Horz
12398.530	42.2	1.9	1.0	243.0	3.0	0.0	Vert	PK	0.0	44.1	74.0	-29.9	High channel, 2480MHz, GFSK modulation EUT Vert
12211.280	41.5	1.2	3.1	270.0	3.0	0.0	Horz	PK	0.0	42.7	74.0	-31.3	Mid channel, 2442MHz, GFSK modulation EUT Horz
12208.880	39.2	1.2	2.0	234.0	3.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Mid channel, 2442MHz, GFSK modulation EUT Vert
12007.680	37.7	0.1	1.0	360.0	3.0	0.0	Horz	PK	0.0	37.8	74.0	-36.2	Low channel, 2402MHz, GFSK modulation EUT Horz
12012.480	37.6	0.1	1.0	86.0	3.0	0.0	Vert	PK	0.0	37.7	74.0	-36.3	Low channel, 2402MHz, GFSK modulation EUT Vert



SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2015.07.01

EmiR5 2015.11.06

PAYR0003 Date: Work Order: 03/10/16 in Project: None Temperature: 20.6 °C 1mg Job Site: EV01 Humidity: 43.9% RH Serial Number: Barometric Pres.: 1007.7 mbar Tested by: Cole Ghizzone 2 EUT: Blukey Module Configuration: Customer: Payrange Attendees: Mike Mitchell EUT Power: 3VDC Continuous BTLE Tx, reference the data comments for channel, frequency and modulation. **Operating Mode** None Deviations See data comments for EUT orientation Comments Test Specifications **Test Method** FCC 15.247:2016 ANSI C63.10:2013 Run # 14 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80 70 60 50 ** dBuV/m 40 30 20 10 0 PK AV QP MHz 1000 Polarity/ Externa Transduce Duty Cycle Compared to Spec. Туре Freq tenna Heig Azimuth Fest Dista nuatio Detecto Corn Spec. Limi (dBuV/m) Facto Adjusted (dBuV/m) (dBuV) . (dB) (MHz) (dB) (meters) (degrees) (meters) (dB) (dB) Comments -2.5 -2.5 High channel, 2480MHz, GFSK modulation EUT On Side 2483.513 30.7 109.0 20.0 50.2 54.0 -3.8 1.0 3.0 Vert A١ 2.0 1.0 1.0 1.0 50.0 2484.670 30.5 76.0 3.0 20.0 Horz AV 2.0 54.0 -4.0 High channel, 2480MHz, GFSK modulation EUT On Side 54.0 54.0 54.0 54.0 54.0 2484.750 30.4 30.4 -2.5 -2.7 -2.5 -2.7 -2.7 -2.7 -2.7 -2.5 -2.7 -2.5 -2.5 96.0 261.0 3.0 3.0 20.0 20.0 Horz Vert AV AV 2.0 2.0 49.9 49.9 -4.1 -4.1 High channel, 2480MHz, GFSK modulation EUT Vert High channel, 2480MHz, GFSK modulation EUT Vert 2483.543 30.5 30.3 2.5 3.7 0.0 225.0 3.0 3.0 20.0 20.0 Horz Vert AV AV 2.0 2.0 49.8 49.8 -4.2 -4.2 Low channel, 2402MHz, GFSK modulation EUT On Side High channel, 2480MHz, GFSK modulation EUT Horz 2388.523 2484.330 30.3 30.4 42.0 2.0 2.0 0.0 54.0 54.0 74.0 -4.2 -4.3 -14.7 High channel, 2480MHz, GFSK modulation EUT Horz Low channel, 2400MHz, GFSK modulation EUT On Side Low channel, 2402MHz, GFSK modulation EUT On Side 2483.833 1.0 1.0 104.0 3.0 3.0 20.0 Horz Vert AV AV PK PK PK PK PK 49.8 49.7 2389.220 360.0 20.0 2389.100 2.5 0.0 3.0 20.0 Horz 59.3 1.0 1.0 1.0 1.0 1.0 2484.160 2389.893 41.8 41.8 109.0 360.0 3.0 20.0 20.0 Vert 0.0 59.3 59.1 74.0 74.0 -14.7 -14.9 High channel, 2480MHz, GFSK modulation EUT On Side Low channel, 2402MHz, GFSK modulation EUT On Side

Vert

Horz

Horz

Vert

Vert

Horz

0.0

0.0

0.0

0.0

0.0

PK PK

59.1

59.0

59.0

58.9

58.8

20.0

20.0

20.0

20.0

20.0

74.0 74.0 74.0

74.0 74.0

-14.9

-15.0

-15.0

-15.1 -15.2

3.0

3.0 3.0

3.0

3.0

3.0

96.0

104.0

261.0

225.0

76.0

41.6 41.5

41.5

41.4 41.3

-2.5

-2.5 -2.5

1.0

3.7 1.0

2484 240

2484.483

2483.503

2484.613 2483.823

High channel, 2480MHz, GFSK modulation EUT Vert High channel, 2480MHz, GFSK modulation EUT Horz

High channel, 2480MHz, GFSK modulation EUT Vert

High channel, 2480MHz, GFSK modulation EUT Horz High channel, 2480MHz, GFSK modulation EUT On Side



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

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.



EUT: Blukey Module						Work Order:	PAYR0003	
Serial Number: 1							03/09/16	
Customer: Payrange						Temperature:	23.3°C	
Attendees: Mike Mitchell, Chris Vondracheck						Humidity:	40%	
Project: None					E	Barometric Pres.:	1014.8	
Tested by: Cole Ghizzone, Rod Peloquin		Power: 3.3V				Job Site:	EV06	
TEST SPECIFICATIONS			t Method					
FCC 15.247:2016		ANS	SI C63.10:2013					
COMMENTS								
None								
DEVIATIONS FROM TEST STANDARD		2013	20					
	Signature	Porting to F.	Peling					
None		5	V		Number of	Value	Limit	
None Configuration # 1		5	Pulse Width	Period	Number of Pulses	(%)	(%)	Results
None Configuration # 1 BLE/GFSK Low Channel, 2402 MHz		5	Pulse Width 396.5 us	625.1 us		(%) 63.4	(%) N/A	N/A
None Configuration # 1 BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Low Channel, 2402 MHz		5	Pulse Width 396.5 us N/A	625.1 us N/A		(%) 63.4 N/A	(%) N/A N/A	N/A N/A
None Configuration # 1 SLE/GFSK Low Channel, 2402 MHz SLE/GFSK Low Channel, 2402 MHz LE/GFSK Mid Channel, 2442 MHz		5	Pulse Width 396.5 us N/A 396.5 us	625.1 us N/A 625.1 us		(%) 63.4 N/A 63.4	(%) N/A N/A N/A	N/A N/A N/A
None Configuration # 1 BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Mid Channel, 2442 MHz BLE/GFSK Mid Channel, 2442 MHz		5	Pulse Width 396.5 us N/A 396.5 us N/A	625.1 us N/A 625.1 us N/A		(%) 63.4 N/A 63.4 N/A	(%) N/A N/A N/A N/A	N/A N/A N/A N/A
None Configuration # 1 BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Mid Channel, 2442 MHz		5	Pulse Width 396.5 us N/A 396.5 us	625.1 us N/A 625.1 us		(%) 63.4 N/A 63.4	(%) N/A N/A N/A	N/A N/A N/A



			K Low Channel, 2 Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	396.5 us	625.1 us	1	63.4	N/A	N/A
Keysight Spectrum A	Analyzer - Northwest EMC, Inc					
LXI RL RF			SE:INT	ALIGN OFF		05:43:16 AM Mar 10, 2016
			Trig Delay-1.000 m Trig: Video	s #Avg Ty	pe: Log-Pwr	TRACE 1 2 3 4 5 6
			#Atten: 10 dB			TYPE WWWWWWW DET P P P P P P
						Mkr3 998.7 µs
5 dB/div Ref	f Offset 22.14 dB f 9.00 dBm					-5.66 dBm
Log						
4.00					7	
-1.00	<u>_</u>		3			
-6.00	Y		Y			
-11.0			f			
-16.0						
-21.0						
						TRIG LVL
-26.0						
-31.0		<u>↓</u>				
-36.0		Ť.				
Center 2.4020	00000 CH2				<u> </u>	Span 0 Hz
Res BW 1.0 M		#VBW	30 kHz		Sweep 2	2.000 ms (8192 pts)
MKR MODE TRC SCL	L X	Y	FUNCTION	FUNCTION WIDTH	FUNCT	FION VALUE
1 N 1 t	373.6 µs	s -5.69 dE	m			
2 N 1 t 3 N 1 t		s <u>-35.56 dB</u> s <u>-5.66 dB</u>	im Im			
4	030.7 µ.					
5						E
7						
8						
10						
<pre>11</pre>			m			
				STATUS		
MSG						

		BLE/GFS	K Low Channel, 2	2402 MHZ		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

RL RF 50 Ω AC	SENSE:INT	ALIGN OFF	05:43:50 AM Mar 10, 201
	PNO: Fast ↔→ Trig: Video IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 12345 TYPE WWWW DET PPPPP
Ref Offset 22.14 dB dB/div Ref 9.00 dBm			
.0			
.0			
.0			
			TRIG L
.0			
.0			
.0			
enter 2.402000000 GHz			Span 0 H
es BW 1.0 MHz	#VBW 30 kHz	Sweep	2.813 ms (8192 pt

		BLE/GF		Channel	, 2442					
				mber of		Value	Limit	t		
	Pulse Width	Period	Р	ulses		(%)	(%)		Results	-
	396.5 us	625.1 us		1		63.4	N/A		N/A	
Keysight Spectrum Analyze		9	ENSE:INT			ALIGN OFF		05:	45:25 AM Mar 10,	2016
			Trig D	elay-1.000	ms	#Avg Typ	e: Log-Pwr		TRACE 1 2 3 TYPE WWW DET P P P	4 5 6
		PNO: Fast +++ FGain:Low	Trig: V #Atten	: 10 dB					DET P P P	PPP
Ref Offe	et 22.14 dB							M	(r3 998.7	μs
5 dB/div Ref 9.0									-5.56 dl	Bm
4.00										
					_		1			
-1.00	() ()			<mark>(</mark> 3−						
-6.00										
-11.0										
-16.0				Í						
-21.0									TO	
-26.0										
-31.0		<u> </u> 2								
-36.0										
Center 2.4420000	00 GHz								Span 0) Hz
Res BW 1.0 MHz		#VB\	V 30 kl	z			Swee	ep 2.000	ms (8192	pts)
MKR MODE TRC SCL	x	Y		FUNCTION	FUN	CTION WIDTH		FUNCTION VA	LUE	<u>^</u>
1 N 1 t 2 N 1 t	<u>373.6 µs</u> 770.1 µs	-5.57	dBm dBm							
3 N 1 t	998.7 µs	-5.56	dBm							
5										E
6 7										
8										
10										
			m							+
						STATUS				
MSG						1				
MSG					2442	MH ₇				
MSG		BLE/GF			, 2442					
MSG	Dules Width		Nu	nber of	, 2442	Value	Limit	t	Desults	
MSG	Pulse Width	Period	Nu	mber of ulses	, 2442	Value (%)	(%)	: 	Results	-
MSG	Pulse Width		Nu	nber of	, 2442	Value			Results N/A	7
	N/A	Period	Nu	mber of ulses	, 2442	Value (%)	(%)		N/A	×
i Keysight Spectrum Analyz	N/A	Period N/A	Nu	mber of ulses		Value (%) N/A	(%)			, 2016

LX/RL RF 50Ω AC	S	ENSE:INT	ALIGN OFF	05:45:36 AM Mar 10, 2016
	PNO: Fast ↔ IFGain:Low	Trig: Video #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 123456 TYPE WWWWWW DET PPPPP
Ref Offset 22.14 dB 5 dB/div Ref 9.00 dBm				
4.00			~~	~
-1.00				
-6.00				
-11.0				
-16.0				
-21.0				
-26.0				TRIG LVL
-31.0				
-36.0				
Center 2.442000000 GHz Res BW 1.0 MHz	#VBV	V 30 kHz	Swe	Span 0 Hz ep 2.813 ms (8192 pts)
MSG			STATUS	



			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	396.3 us	624.8 us	1	63.4	N/A	N/A
📜 Keysight Spectrum Analyz	er - Northwest EMC, Inc					
LXI RL RF	50 Ω AC	SENS		ALIGN OFF		05:51:37 AM Mar 10, 2016
			rig Delay-1.000 ms rig: Video	s #Avg Type	Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P P P P P
			Atten: 10 dB			DETPPPP
Def Offe	et 22.14 dB					Mkr3 998.4 µs
5 dB/div Ref 9.0	00 dBm					-5.70 dBm
Log						
4.00	/				(-1
-1.00			3			
-6.00	Y		Y			
-11.0						
-16.0						
-21.0						
-26.0						TRIG LVL
-31.0		¢2				
-36.0			Í			
Center 2.4800000	00 GHz					Span 0 Hz
Res BW 1.0 MHz		#VBW 3	0 kHz		Sweep 2	.000 ms (8192 pts)
MKR MODE TRC SCL	x	Y	FUNCTION	FUNCTION WIDTH	FUNCT	ION VALUE
1 N 1 t	373.6 µs 769.9 µs	-5.23 dBr -35.68 dBr	m			
2 N 1 t 3 N 1 t	998.4 µs	-55.68 dBr	n			
4 5						
6						
7						
9						
10						Ţ.
			m			· · ·
MSG				STATUS		

			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

RL RF 50 Ω AC	5	ENSE:INT	ALIGN OFF		05:51:46 AM Mar 10, 201
	PNO: Fast +++ IFGain:Low	Trig: Video #Atten: 10 dB	#Avg Type	e: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET PPPP
Ref Offset 22.14 dB dB/div Ref 9.00 dBm					
.00					
.00					
6.0					
.0					
					TRIG L
6.0					
.0					
6.0					
enter 2.480000000 GHz					Span 0 H 2.812 ms (8192 pt
es BW 1.0 MHz	#VB\	N 30 kHz		Sweep	2.812 ms (8192 pt



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

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

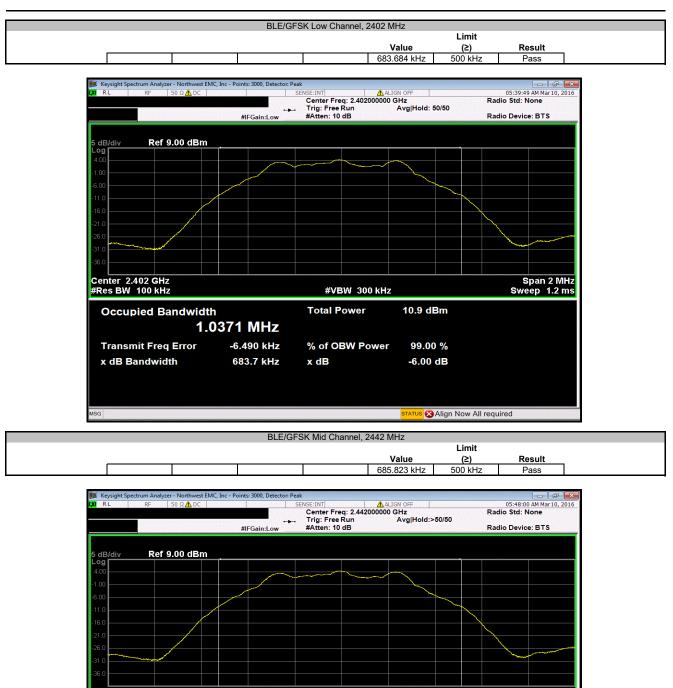
The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.9% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time.

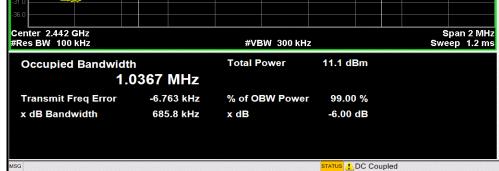
The EUT was set to the channels and modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer.



EUT: Blukey Module	Work Order: PAYR0003	
Serial Number: 1	Date: 03/09/16	
Customer: Payrange	Temperature: 23.3°C	
Attendees: Mike Mitchell, Chris Vondracheck	Humidity: 40%	
Project: None	Barometric Pres.: 1014.8	
Tested by: Cole Ghizzone, Rod Peloquin Power	: 3.3VDC Job Site: EV06	
TEST SPECIFICATIONS	Test Method	
FCC 15.247:2016	ANSI C63.10:2013	
COMMENTS	•	
None		
DEVIATIONS FROM TEST STANDARD		
None		
101	PI	
Configuration # 1 Rocky to	seerings	
Signature		
	Limit	
	Value (≥) Res	ult
BLE/GFSK Low Channel, 2402 MHz	683.684 kHz 500 kHz Pa	ŝS
BLE/GFSK Mid Channel, 2442 MHz	685.823 kHz 500 kHz Pa	ŝS
BLE/GFSK High Channel, 2480 MHz	694.301 kHz 500 kHz Pa	ŝS











OUTPUT POWER



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

TEST EQUIPMENT

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. 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 peak transmit power the DTS bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method found in ANSI C63.10:2013 Section 11.10.2 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio..

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER



EUT: Blukey Module	Work Order:		
Serial Number: 1	Date:	03/09/16	
Customer: Payrange	Temperature:	23.3°C	
Attendees: Mike Mitchell, Chris Vondracheck	Humidity:	40%	
Project: None	Barometric Pres.:	1014.8	
Tested by: Cole Ghizzone, Rod Peloguin Power: 3.3VDC	Job Site:	EV06	
TEST SPECIFICATIONS Test Method			
FCC 15.247:2016 ANSI C63.10:2013			
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration # 1 Rocky to Peling			
		Limit	
	Value	(<)	Result
BLE/GFSK Low Channel, 2402 MHz	2.917 mW	1 W	Pass
BLE/GFSK Mid Channel, 2442 MHz	3.014 mW	1 W	Pass
BLE/GFSK High Channel, 2480 MHz	3.068 mW	1 W	Pass

OUTPUT POWER





OUTPUT POWER



		SK High Channel,		Limit	
			Value	(<)	Result
			3.068 mW	1 Ŵ	Pass
🗾 Keysight Spectrum Analyzer - Northwest EMC, In	ıc				
X RL RF 50Ω AC		SENSE:INT	ALIGN OFF	_	05:53:12 AM Mar 10, 2016
	PNO: Fast +++	Trig: Free Run #Atten: 10 dB	#Avg Type: L Avg Hold: 10	.og-Pwr 0/100	TRACE 1 2 3 4 5 TYPE MWWWW DET PPPPP
Ref Offset 22.14 dB 5 dB/div Ref 15.00 mW				Mkr1	2.479 676 GHz 3.0683 mW
4.74 mW		_ <mark>1</mark>			
1.50 mW					
474 µ₩					
150 μW					
47.4 μW					
15.0 µW					
15.0 µw					
4.74 μW					
4./4 µ%					
1.50 µVV					
474 nW					
Center 2.480000 GHz					Span 3.500 MHz
#Res BW 2.0 MHz	#VBW	/ 6.0 MHz		#Sween f	Span 3.500 MHz 6.40 ms (1000 pts



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

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

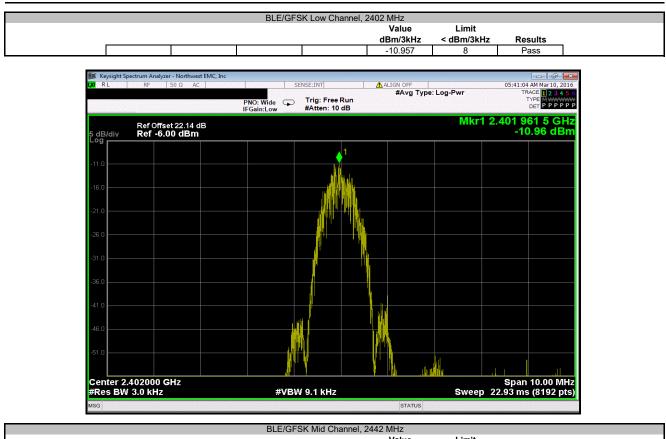
A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum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

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

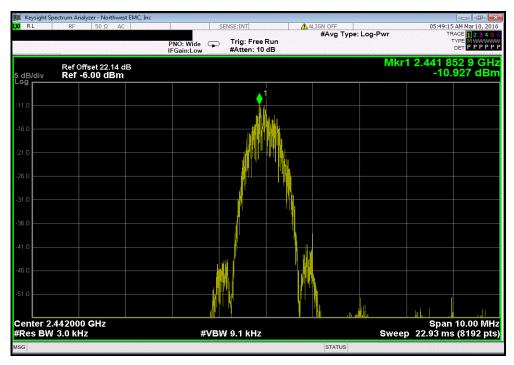


EUT:	Blukey Module	Work Order:	PAYR0003	
Serial Number:	1	Date:	03/09/16	
Customer:	Payrange	Temperature:	23.3°C	
Attendees:	Mike Mitchell, Chris Vondracheck	Humidity:	40%	
Project:	None	Barometric Pres.:	1014.8	
Tested by:	Cole Ghizzone, Rod Peloquin Power: 3.3VDC	Job Site:	EV06	
TEST SPECIFICATI	DNS Test Method			
FCC 15.247:2016	ANSI C63.10:2013			
COMMENTS				
None				
DEVIATIONS FROM	TEST STANDARD			
None				
Configuration #	1 Rocky Le Relenge			
	· · · ·	Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK Low Cha	nnel, 2402 MHz	-10.957	8	Pass
BLE/GFSK Mid Char	nel, 2442 MHz	-10.927	8	Pass
BLE/GFSK High Cha	nnel, 2480 MHz	-10.675	8	Pass

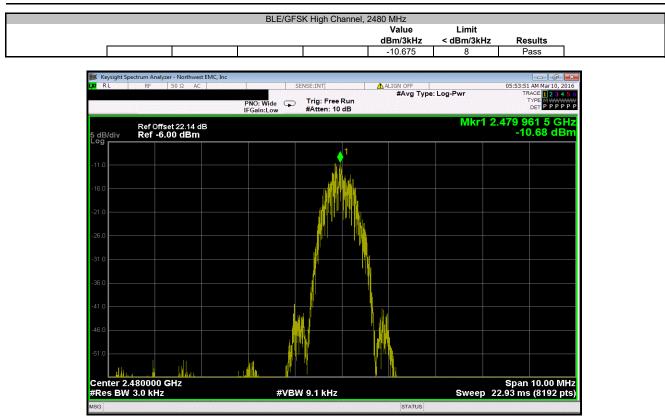




		Value	Limit	
		dBm/3kHz	< dBm/3kHz	Results
		-10.927	8	Pass







BAND EDGE COMPLIANCE



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

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE



EUT: Blukey Module		Work Order:	PAYR0003	
Serial Number: 1		Date:	03/09/16	
Customer: Payrange		Temperature:	23.3°C	
Attendees: Mike Mitchell, Chris Vondracheck		Humidity:	40%	
Project: None		Barometric Pres.:	1014.8	
Tested by: Cole Ghizzone, Rod Peloquin	Power: 3.3VDC	Job Site:	EV06	
TEST SPECIFICATIONS	Test Method			
FCC 15.247:2016	ANSI C63.10:2013			
COMMENTS				
None				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration # 1 Rock	y he Relings			
Signature	C			
		Value	Limit	
		(dBc)	≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz		-49.19	-20	Pass
BLE/GESK High Channel, 2480 MHz		-53.54	-20	Pass

High Channel, 24

BAND EDGE COMPLIANCE





		Value	Limit	
		(dBc)	≤ (dBc)	Result
		-53.54	-20	Pass





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

					Interval
Description	Manufacturer	Model	ID	Last Cal.	(mo)
Attenuator	S.M. Electronics	SA18N-06/SM4032	REE	10/1/2015	12
Generator - Signal	Keysight	N5182B	TFU	NCR	0
Power Sensor	Gigatronics	80701A	SPL	5/25/2015	12
Meter - Power	Gigatronics	8651A	SPM	5/25/2015	12
Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator	S.M. Electronics	SA26B-20	AWU	NCR	0
Block - DC	Fairview Microwave	SD3379	AMQ	6/18/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2/13/2016	12

TEST DESCRIPTION

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



	Blukey Module					er: PAYR0003		
Serial Number:						Date: 03/09/16		
Customer:						Temperature: 23.3°C		
	Mike Mitchell, Chris Vondracheck					y: 40%		
Project:				-	Barometric Pre			
	Cole Ghizzone, Rod Peloquin		Power:	3.3VDC	Job S	e: EV06		
EST SPECIFICATION	ONS			Test Method				
CC 15.247:2016				ANSI C63.10:2013				
COMMENTS								
lone								
EVIATIONS FROM	TEST STANDARD							
lone								
			101	PP				
Configuration #	1		Rocky te	Relings				
onfiguration #	1	Signature	Rocky le	Peling				
Configuration #	1	Signature	Rocky te	V	Max Value	Limit		
Configuration #	1	Signature	Rocky Le	Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
-	1	Signature	Porting le	Frequency			Result N/A	
BLE/GFSK Low Char		Signature	Pooling te	Frequency Range	(dBc)	≤ (dBc)		
BLE/GFSK Low Char BLE/GFSK Low Char	nnel, 2402 MHz	Signature	Rocky te	Frequency Range Fundamental 30 MHz - 12.5 GHz	(dBc) N/A -49.01	≤ (dBc) N/A -20	N/A Pass	
LE/GFSK Low Char	nnel, 2402 MHz nnel, 2402 MHz	Signature	Rocky Le	Frequency Range Fundamental	(dBc) N/A	≤ (dBc) N/A	N/A	
LE/GFSK Low Chai LE/GFSK Low Chai LE/GFSK Low Chai LE/GFSK Low Chai	nnel, 2402 MHz nnel, 2402 MHz nnel, 2442 MHz	Signature	Rocky Le	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	(dBc) N/A -49.01 -42.65 N/A	≤ (dBc) N/A -20 -20 N/A	N/A Pass Pass N/A	
LE/GFSK Low Chai LE/GFSK Low Chai LE/GFSK Low Chai LE/GFSK Mid Char LE/GFSK Mid Char	nnel, 2402 MHz Innel, 2402 MHz nnel, 2442 MHz nnel, 2442 MHz	Signature	Rody le	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	(dBc) N/A -49.01 -42.65 N/A -47.14	≤ (dBc) N/A -20 -20 N/A -20	N/A Pass Pass N/A Pass	
LE/GFSK Low Char LE/GFSK Low Char LE/GFSK Low Char LE/GFSK Mid Char LE/GFSK Mid Char LE/GFSK Mid Char	nnel, 2402 MHz Innel, 2402 MHz nnel, 2442 MHz nnel, 2442 MHz nnel, 2442 MHz	Signature	Rocky Le	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz rundamental 30 MHz - 12.5 GHz 12.5 GHz 12.5 GHz 12.5 GHz 12.5 GHz 20 MHz - 25 GHz 12.5 GHz 12.5 GHz 25.5 GHz	(dBc) N/A -49.01 -42.65 N/A -47.14 -42.3	≤ (dBc) N/A -20 -20 N/A -20 -20 -20	N/A Pass Pass N/A Pass Pass	
LE/GFSK Low Chai LE/GFSK Low Chai LE/GFSK Low Chai	nnel, 2402 MHz nnel, 2402 MHz nnel, 2442 MHz nnel, 2442 MHz nnel, 2442 MHz annel, 2480 MHz	Signature	Rocky Le	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	(dBc) N/A -49.01 -42.65 N/A -47.14	≤ (dBc) N/A -20 -20 N/A -20	N/A Pass Pass N/A Pass	



	BLE/GFS	K Low Channel, 2	402 MHz		
Frequency		,	Max Value	Limit	
Range			(dBc)	≤ (dBc)	Result
Fundamental			N/A	N/A	N/A
Keysight Spectrum Analyzer - Northwest EMC, Inc IM RL RF 50 Ω AC		NSE:INT	ALIGN OFF		05:41:27 AM Mar10, 2016
	SE		#Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 6
	PNO: Wide	Trig: Free Run #Atten: 10 dB			TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
	II Guill.200			Mkr1 2.4	01 988 71 GHz
Ref Offset 22.14 dB 10 dB/div Ref 10.00 dBm					4.30 dBm
		1			
0.00					
0.00					
-10.0					
-20.0					
-30.0					
-40.0					
-50.0					
-50.0					
-60.0					
-70.0					
-80.0					
Center 2.4020000 GHz			I.		Span 1.000 MHz
#Res BW 100 kHz	#VBW	300 kHz		Sweep 1.	.092 ms (8192 pts)
MSG			STATUS		
Frequency	BLE/GFS	K Low Channel, 2	402 MHz Max Value	Limit	
Range			(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GH	-		-49.01	-20	Pass

RL	Spectrum Analy RF	50 Ω			S	ENSE:INT	A	ALIGN OFF		05:41:4	48 AM Mar 10, 201
ĸ	N	1 20 32	AC	PNO: Fast IFGain:Low		Trig: Free R #Atten: 10 d	un	#Avg Type	: Log-Pwr		TRACE 1 2 3 4 5 TYPE MWWW DET P P P P F
dB/div	Ref Off Ref 10	set 22.14).00 dB	dB m							Mkr1 7.2 -4	206 6 GF 4.71 dB
.00											
).0											
o.o											
0.0											
0.0							+ 1				
0.0											
	والمتحديد والمحدوق			وليدانعين التجبيه أمجلهم	<u>al an</u>		يفع في الله وي المعالمية			فبيعاقد الباطية	المشابلي الموجم ويعاد
).0											
0.0											
											10.500
art 0.0 Res BV)30 GHz V 100 kH:	z		#	VBV	V 300 kHz			Swe	Stop ep 40.96 m	12.500 GH
G								STATUS			

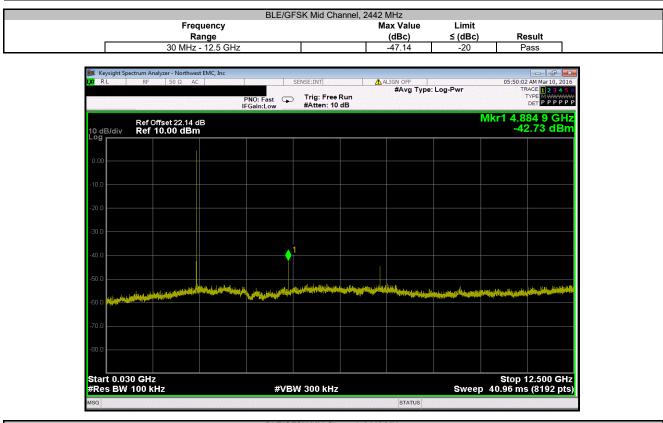


RE S0 m AC SENSE:INT ALIGN OFF 05:42:09 AM MR PNO: Fast IFGain:Low Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr #Avg Type: Log-Pwr Tree D Tree D Ref Offset 22:14 dB Mkr1 24:945 1 38:35 10 dB/div Ref 10.00 dBm -38:35 0.00 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0 -30:0		BLE/GFSK	Low Channel, 2402 MHz		
12.5 GHz -42.65 -20 Pass Image: Start 12.500 GHz Ref Offset 22.14 dB Image: Start 12.500 GHz	Freq	quency	Max Value	Limit	
Keyzight Spectrum Analyzer - Northwest EMC, Inc 000000000000000000000000000000000000	Ra	ange	(dBc)	≤ (dBc)	Result
PNO: Fast Trig: Free Run #Atten: 10 dB #Auton OFF 05:42:09 AM m PNO: Fast Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trace II Type II Ref Offset 22.14 dB Mkr1 24.945 1	12.5 GH:	Hz - 25 GHz	-42.65	-20	Pass
PNO: Fast Trig: Free Run #Atten: 10 dB #Auton OFF 05:42:09 AM m PNO: Fast Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trace II Type II Ref Offset 22.14 dB Mkr1 24.945 1					
PNO: Fast Trig: Free Run #Atten: 10 dB #Auton OFF 05:42:09 AM m PNO: Fast Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trace II Type II Ref Offset 22.14 dB Mkr1 24.945 1	Keysight Spectrum Analyzer - Northwes	est EMC, Inc			
PNO: Fast Trig: Free Run Trig: Free Run Ref Offset 22.14 dB Mkr1 24.945 1 0.00 Ref 10.00 dBm -38.35 0.00 Image: Start 12.500 GHz Image: Start 12.500 GHz Start 12.500 GHz #VEW 300 KHz Steep 25.00 #Res BW 100 kHz #VEW 300 kHz Steep 25.00					05:42:09 AM Mar 10, 2016
Ref Offset 22.14 dB Mkr1 24.945 1 10 dB/div Ref 10.00 dBm -38.35 0.00 -30.0 -30.0 -30.0 -00 -30.0 -30.0 -30.0 -30.0 -00 -30.0 -30.0 -30.0 -30.0 -30.0 -00 -30.0 -30.0 -30.0 -30.0 -30.0 -30.0 -00 -30.0 <				/pe: Log-Pwr	TRACE 1 2 3 4 5 6
0.00 Ref 10.00 dBm -38.35 0.00			Atten: 10 dB		
0.00 Ref 10.00 dBm -38.35 0.00	D-608-+60044	-12		Mkr1	24.945 1 GHz
Log	dB/div Ref 10.00 dBm	ab n			-38.35 dBm
10.0	3				
10.0					
200	0				
200					
-30.0	0				
-30.0					
40.0 40.0 <td< td=""><td>0</td><td></td><td></td><td></td><td></td></td<>	0				
40.0 40.0 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
-500 -500					
-500 -500					
-50.0 -50.0 -7	0				المحاولة المتحر والمطر والمسالة
Bit International Internatinternatine International International International Internation	the second standard	A CONTRACTOR OF THE OWNER OF THE	البالالالموارية المارية المارية وموارك المراجع	and the second	A CONTRACTOR
.70.0			to the latter of the		
.70.0					
•80.0]				
•80.0					
Start 12.500 GHz Stop 25.00 #Res BW 100 kHz #VBW 300 kHz Sweep 40.96 ms (81%)					
Start 12.500 GHz Stop 25.00 #Res BW 100 kHz #VBW 300 kHz Sweep 40.96 ms (81%)					
#Res BW 100 kHz #VBW 300 kHz Sweep 40.96 ms (81					
#Res BW 100 kHz #VBW 300 kHz Sweep 40.96 ms (81					
#Res BW 100 kHz #VBW 300 kHz Sweep 40.96 ms (81	art 12.500 GHz			L	Stop 25.000 GHz
MSG		#VBW 3	00 kHz	Sweep 40	.96 ms (8192 pts)
			STATUS		
BLE/GFSK Mid Channel, 2442 MHz		BLE/GFSK	Mid Channel, 2442 MHz		
Frequency Max Value Limit	Freq			Limit	
Range (dBc) ≤ (dBc) Result				< (dBa)	Pocult

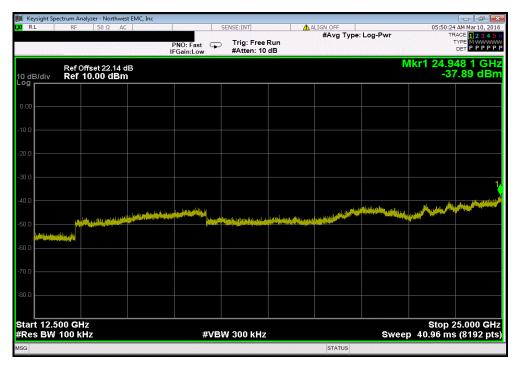
BLE/GFSK Mid Channel, 2442 MHz							
	Frequency			Max Value	Limit		
	Range			(dBc)	≤ (dBc)	Result	
	Fundamental			N/A	N/A	N/A	

RL RF 50 Ω AC	SENSE:INT	ALIGN OFF	05:49:40 AM Mar 10, 201
	PNO: Wide Trig: Free Rur IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE MWWW DET P P P P P
Ref Offset 22.14 dB		Mkr1	2.441 988 22 GH 4.41 dBi
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enter 2.4420000 GHz			Span 1.000 Mi p 1.092 ms (8192 pi
tes BW 100 kHz	#VBW 300 kHz	Swee	p 1.092 ms (8192 pt





BLE/GFSK Mid Channel, 2442 MHz						
Frequency	Max Value	Limit				
Range	(dBc)	≤ (dBc)	Result			
12.5 GHz - 25 GHz	-42.3	-20	Pass			





Range (dBc) ≤ (dBc) Result Fundamental N/A N/A N/A N/A	Frequer		hannel, 2480 MHz Max Value	Limit	
Fundamental N/A N/A N/A N/A Regignt Spectrum Analyzer - Northwet EMC, Inc SENSE:INT Allon OFF 05:54:15 AM Mar 10, 2016 Ref SD 0: Ac SENSE:INT Allon OFF 05:54:15 AM Mar 10, 2016 PNO: Wide Trig: Free Run IFGain.Low Trig: Free Run #Atten: 10 dB Mkr1 2:479 988 95 GHz Od BUdity Ref Offset 22:14 dB Mkr1 2:479 988 95 GHz 4.45 dBm Og Mixing Type: Log-Pwr Trid:					Result
Keyight Spectrum Analyzer - Northweit EMC, Inc SENSE:INT ALION OFF OS54:15 AM Part 10, 2010 RL RF 50 Ω AC Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trid:					
DY RE SP 2 SENSE:NT ALLING OFF 05:54:15 M Mar 10, 20.45 PN0: Wild Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trace Type: Log-Pwr Trace Type: Log-Pwr Trace Type: Log-Pwr 10:44:5 Mkr1 2.479 988 95 GHz 4.45 dBm 10:dB/div Ref 00ffset 22.14 dB Mkr1 2.479 988 95 GHz 4.45 dBm 4.45 dBm 0:00 0 <th></th> <th></th> <th></th> <th></th> <th></th>					
NRL RF 50 Q AC SENSEINT ALIGN OFF 05:54:15 M Mart 10, 2016 PN0: Wide IFGain:Low Trig: Free Run #Atten: 10 dB Trig: Free Run #Atten: 10 dB #Kr1 2.479 988 95 GHz 4.45 dBm 10 dB/div Ref 00ffset 22.14 dB Mkr1 2.479 988 95 GHz 4.45 dBm 4.45 dBm 0.00 Image: Sense International Content of the sense I	Warright Coastron Applease Northwest CMC	7 Tes -			
PRO: Wide IFGain:Low Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Trid: T			ALIGN OFF		05:54:15 AM Mar 10, 201
Ref Offset 22.14 dB Mkr1 2.479 988 95 GHz 0.00 4.45 dBm 0.00 1 0			#Avg Type	: Log-Pwr	TRACE 1 2 3 4 5
Ref Offset 22.14 dB Mkr1 2.479 988 95 GHz 10 dB/div Ref 10.00 dBm 4.45 dBm 000 1 1 1 100 1 1 1 1 100 1 1 1 1 100 1 1 1 1 100 1 1 1 1 100 1 1 1 1 1 100 1 1 1 1 1 1 100 1 <td></td> <td></td> <td>e Run 0 dB</td> <td></td> <td>DET PPPP</td>			e Run 0 dB		DET PPPP
0.00 4.45 dBm 0.00 4.45 dBm 0.00 4.45 dBm 1.00 4.45 dBm <td< td=""><td></td><td>ii Gam. Eow</td><td></td><td>Mkr1.27</td><td></td></td<>		ii Gam. Eow		Mkr1.27	
Log 0.00 100 100 200 300 400 400 400 400 400 400 4	Ref Offset 22.14 dB			MINI 1 2	4 45 dBr
0.00 10.0			N 4		
100 200 300 400 400 400 400 400 400 4					
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-40.0 -40.0 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
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-50 0 -60 0 -60 0 -70 0 -7					
-60 0 -70.0 -7	-40.0				
-60 0 -70.0 -7					
-70.0 -80.0 -80.0 Center 2.4800000 GHz #Res BW 100 kHz Sweep 1.092 ms (8192 pts)	-50.0				
-70.0 -80.0 -80.0 Center 2.4800000 GHz #Res BW 100 kHz Sweep 1.092 ms (8192 pts)					
•80.0 Center 2.4800000 GHz Span 1.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)	-60.0				
•80.0 Center 2.4800000 GHz Span 1.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)					
Center 2.4800000 GHz Span 1.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)	-70.0				
Center 2.4800000 GHz Span 1.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)					
#Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)	-80.0				
#Res BW 100 kHz #VBW 300 kHz Sweep 1.092 ms (8192 pts)					
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		#VBW 300 kH	7	Sween 1	092 ms (8192 nt
and all all all all all all all all all al			() ()		ione ine forez br
			STATUS		

Frequency	 Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-44.76	-20	Pass

RL	rum Analyzer - Nor RF 50 Ω			S	ENSE:INT		LIGN OFF		05:54:3	8 AM Mar 10, 201
	10 100 10		PNO: Fast IFGain:Low		Trig: Free R #Atten: 10 d	tun	#Avg Type:	Log-Pwr	т	RACE 12345 TYPE MWWW DET PPPP
0 dB/div og	Ref Offset 22. Ref 10.00 d	14 dB Bm							Mkr1 4.9 -4	59 5 GH 0.31 dBr
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art 0.030 Res BW 1			#	/VBV	V 300 kHz			Swee	stop p 40.96 m	12.500 GH s (8192 pt
3							STATUS			



Frequ		SK High Channel,	Max Value	Limit	
Rar			(dBc)	≤ (dBc)	Result
12.5 GHz			-42	-20	Pass
12.3 6112	- 25 6112		-42	-20	1 835
📜 Keysight Spectrum Analyzer - Northwest I	MC. Inc				
Χ/ RL RF 50 Ω AC		SENSE:INT	ALIGN OFF		05:55:08 AM Mar 10, 201
	PNO: Fast	Trig: Free Run #Atten: 10 dB	#Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 TYPE M WWWW DET P P P P P
Ref Offset 22.14 dB				M	kr1 24.943 5 GH
10 dB/div Ref 10.00 dBm			1		-37.55 dBr
0.00					
-10.0					
-20.0					
-30.0					
-30.0					
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	والمراجع والمتأمون ومتكول والمحالية والمعالمة المرود والمتعادين	and an an and the calls of all the light		and the state of the second second	and when the property when the
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alityte og alle te gegene					
-60.0					
-70.0					
-80.0					
Start 12.500 GHz					Stop 25.000 GH
#Res BW 100 kHz	#VB	N 300 kHz		Sweep	40.96 ms (8192 pts