

Automatic Labs

TEST REPORT FOR

**OBD-II to Bluetooth Bridge Device
Model: Link2**

Tested To The Following Standards:

**FCC Part 15 Subpart C Section(s)
15.249**

Report No.: 96114-4

Date of issue: October 2, 2014



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

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

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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REPORT PREPARED BY:

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REPRESENTATIVE: Steven Neresian
Customer Reference Number: CKC07

Project Number: 96114

DATE OF EQUIPMENT RECEIPT:

September 11, 2014

DATE(S) OF TESTING:

September 11 - 29, 2014

Report Authorization

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



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

Test Facility Information



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

TEST LOCATION(S):
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Brea D	US0060	SL2-IN-E-1146R	3082D-2	100638	A-0147

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Test Procedure/Method	Description	Modifications*	Results
15.215	20dB Occupied Bandwidth	NA	Pass
15.31(e)	Voltage Variation	NA	Pass
15.249(a)	Field Strength of Fundamental	NA	Pass
15.249(a)	Field Strength of Harmonics	NA	Pass
15.249(d)	Field Strength of Spurious Emissions and Band Edge	NA	Pass

NA = Not applicable.

Modifications*/Conditions During Testing

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

Summary of Conditions
No modifications were made during testing.

***Modifications listed above must be incorporated into all production units.**

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

OBD-II to Bluetooth Bridge Device

Manuf: Automatic Labs

Model: Link2

Serial: None

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

DC Power Supply

Manuf: Xantrex

Model: XTS 30-2X

Serial: 58738

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) CFR 47 Section 15 Subpart C requirements for Intentional Radiators.

15.215 20dB Occupied Bandwidth

Test Data

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**
 Specification: **15.215 Occupied Bandwidth**
 Work Order #: **96114** Date: 9/26/2014
 Test Type: **Maximized Emissions**
 Equipment: **OBD-II to Bluetooth bridge device**
 Manufacturer: Automatic Labs Tested By: S. Yamamoto
 Model: Link2
 S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T2	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
T3	ANP06360	Cable	L1-PNMNM-48	7/29/2014	7/29/2016
T4	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

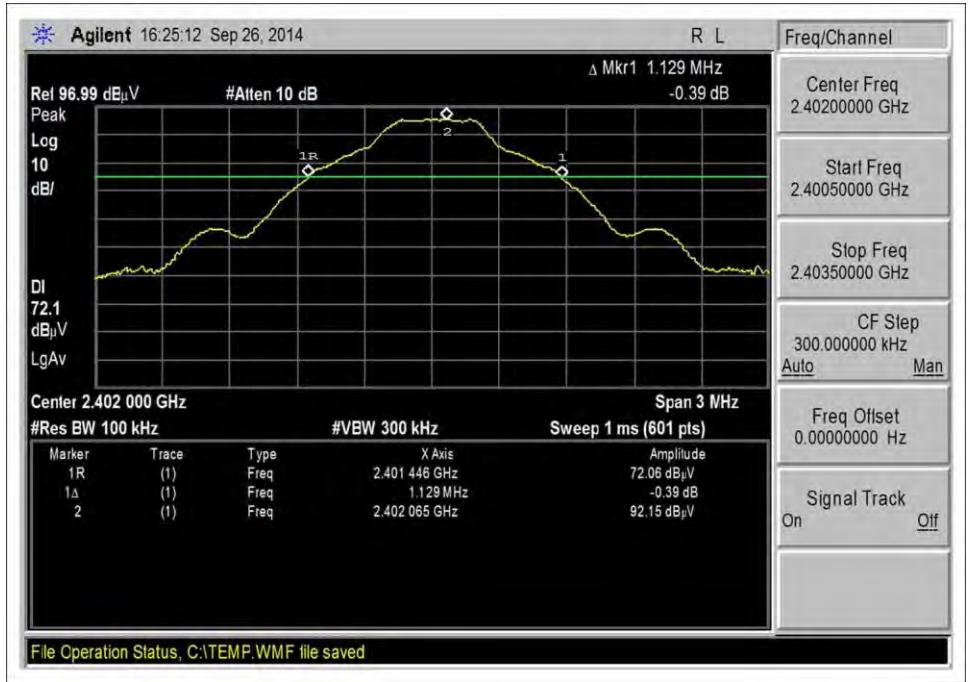
Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.
 The EUT is connected to a remotely located DC power supply.
 The DC supply is providing 12.0 VDC to the EUT.
 The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz.
 Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.

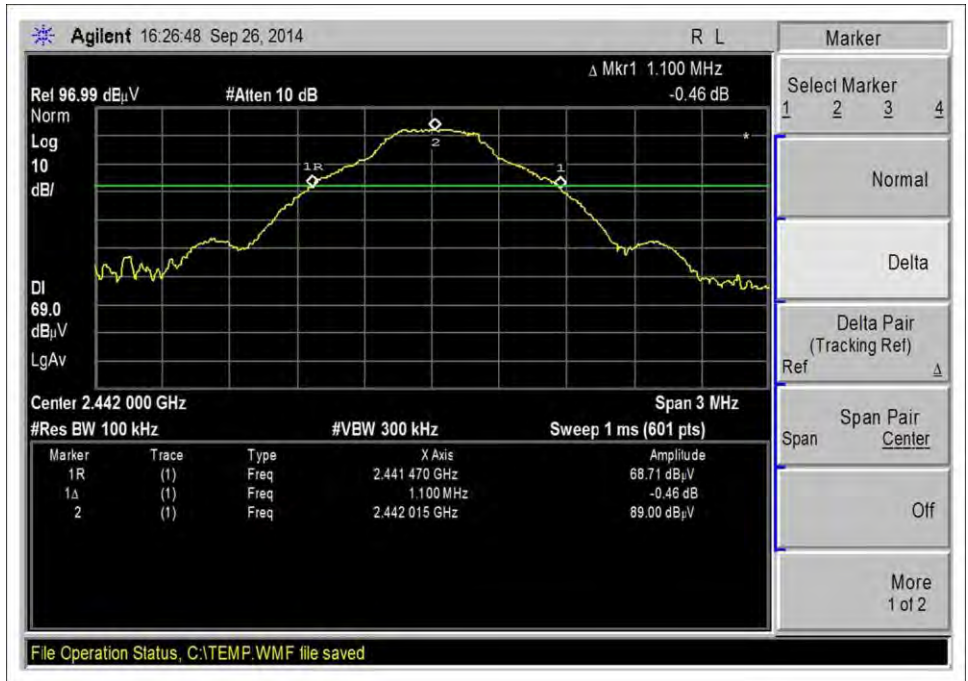
Temperature: 29°C
 Relative Humidity: 45%
 Pressure: 100kPa

Frequency range of data sheet 2400MHz to 2483.5MHz. RBW=100kHz, VBW=300kHz.
 RF output power: +2dBm.
 Site D

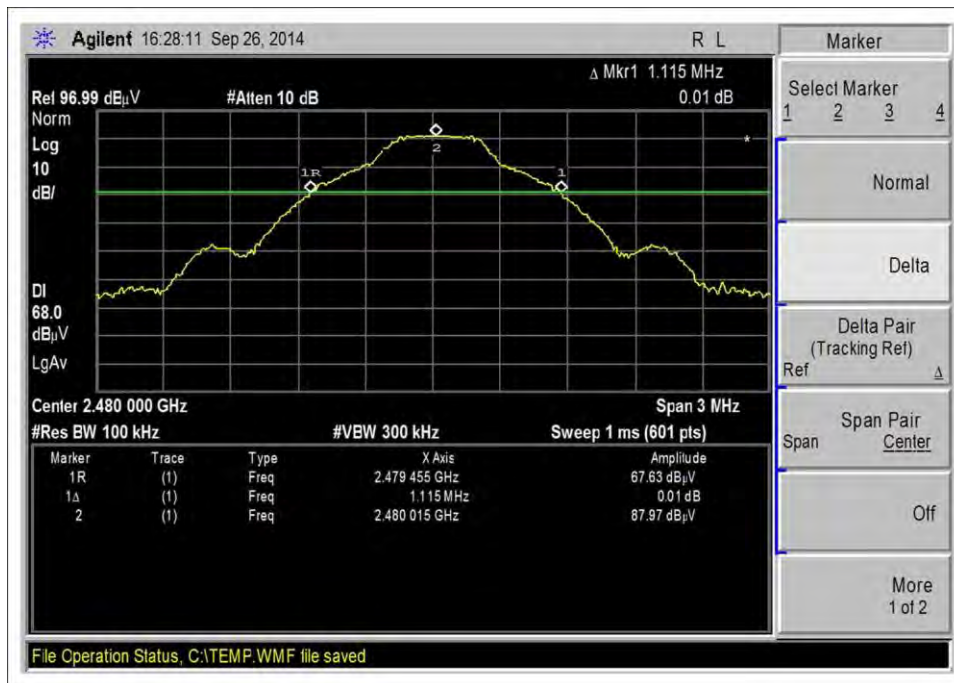
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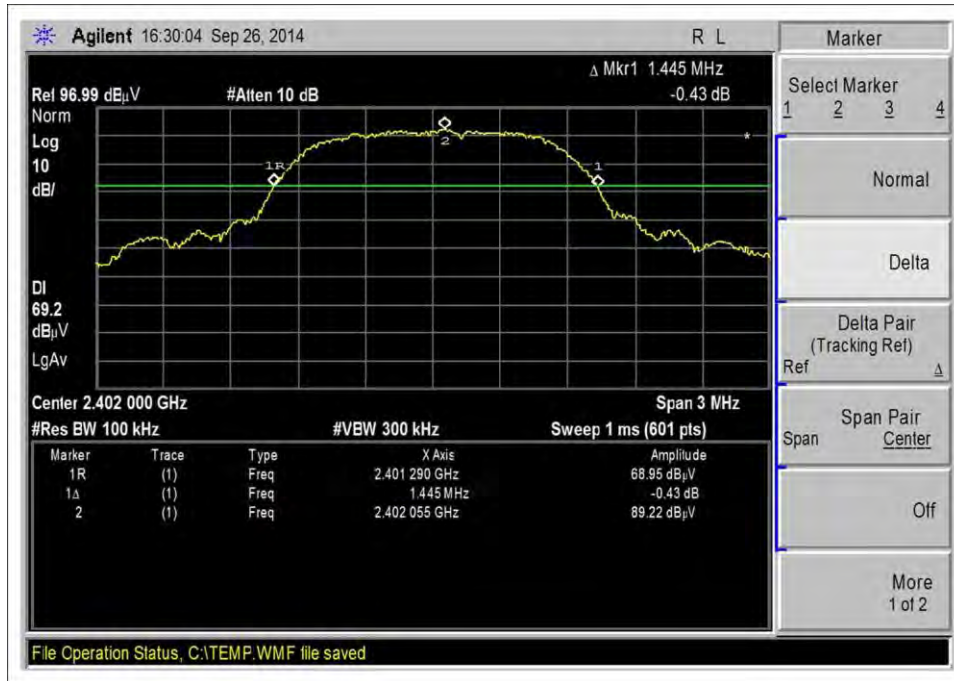
Low, GFSK



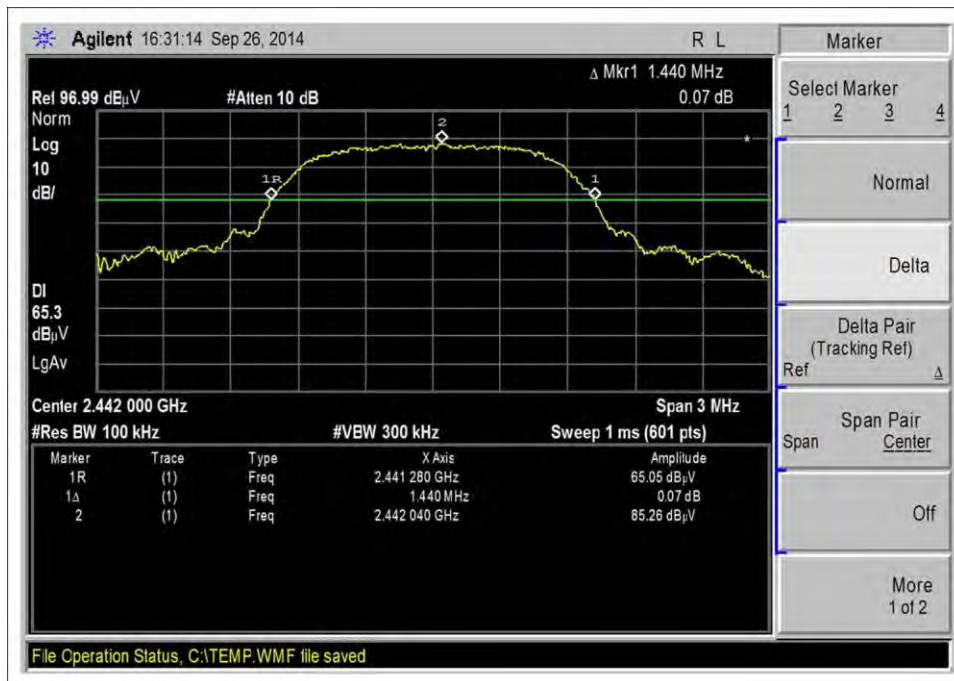
Middle, GFSK



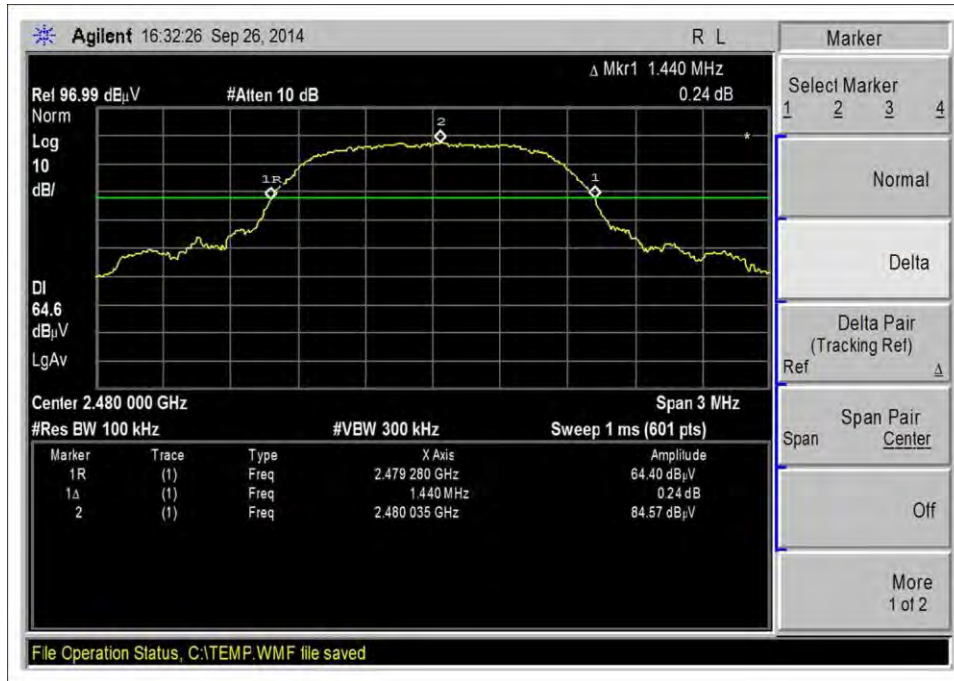
High, GFSK



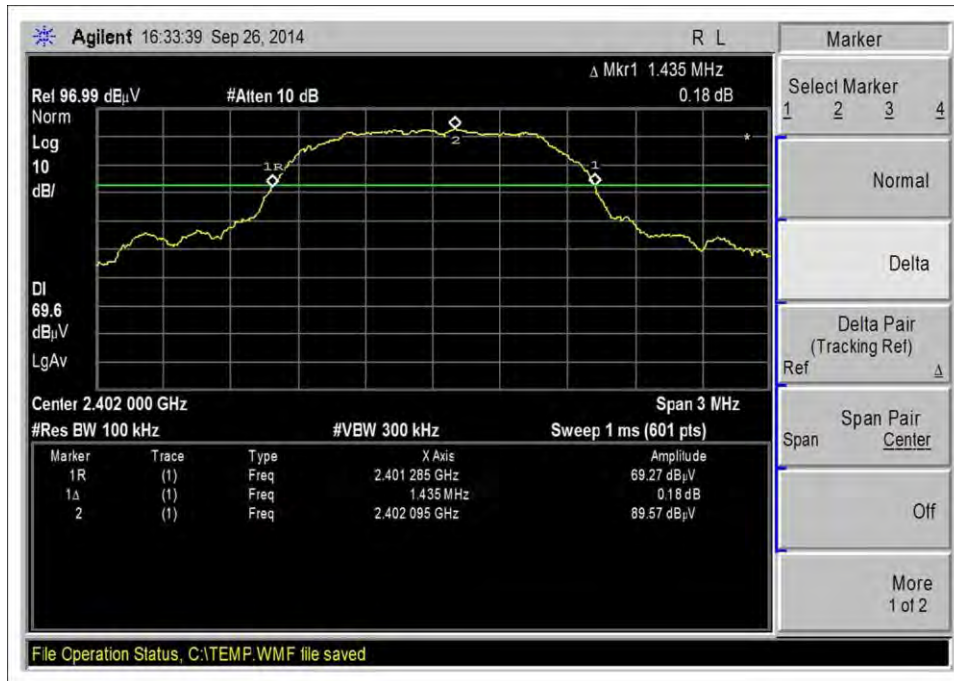
Low, 4DPSK



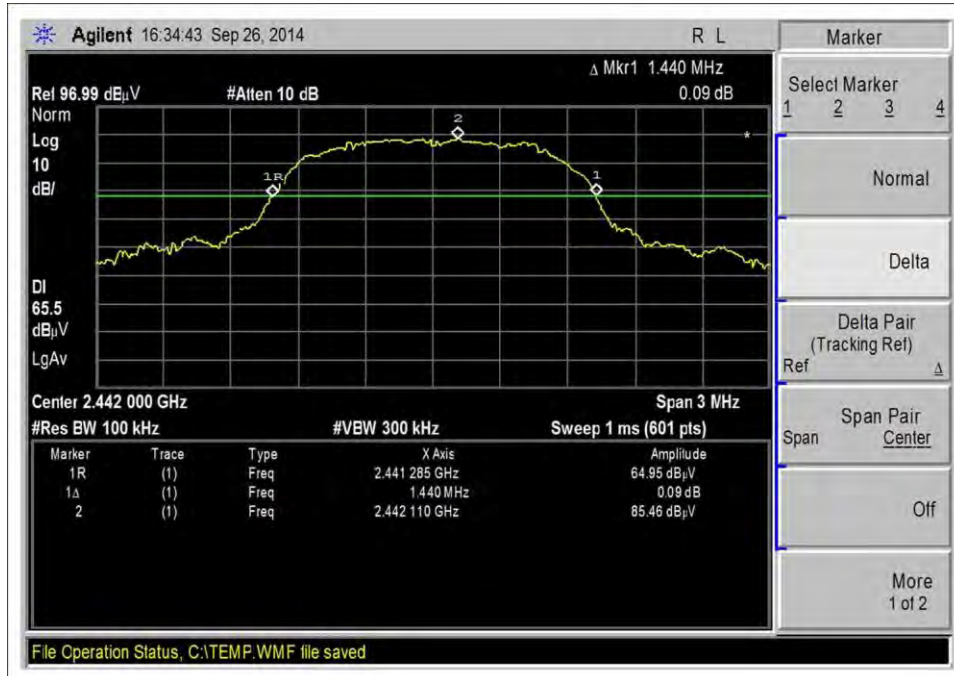
Middle, 4DPSK



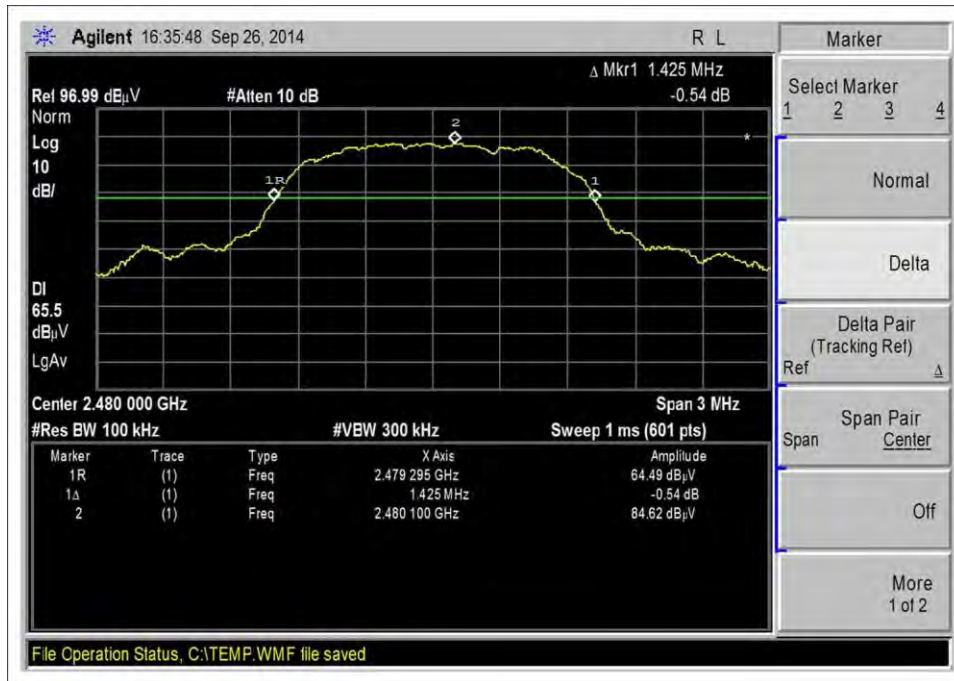
High, 4DPSK



Low, 8DPSK



Middle, 8DPSK



High, 8DPSK

Test Setup Photo



Overall Test Setup

15.31(e) Voltage Variation

Test Data

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**
 Specification: **15.31(e) Voltage Variation on Power**
 Work Order #: **96114** Date: 9/25/2014
 Test Type: **Maximized Emissions**
 Equipment: **OBD-II to Bluetooth bridge device**
 Manufacturer: Automatic Labs Tested By: S. Yamamoto
 Model: Link2
 S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T2	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
T3	ANP06360	Cable	L1-PNMNM-48	7/29/2014	7/29/2016
T4	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.
 The EUT is connected to a remotely located DC power supply. The DC supply is providing 12.0 VDC to the EUT.
 The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz.
 Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.

Temperature: 29°C
 Relative Humidity: 45%
 Pressure: 100kPa.

Frequency range of data sheet 2400MHz to 2483.5MHz. RBW=VBW=1MHz.
 RF output power: +2dBm. Site D.

15.31(e) Compliance: The supply voltage was varied between 85% and 115% of the nominal rated voltage of 12.0VDC. No change in the fundamental signal level was observed.

Test Setup Photo



Overall Test Setup

15.249(a) Field Strength of Fundamental

Test Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**

Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**

Work Order #: **96114** Date: 9/11/2014

Test Type: **Maximized Emissions** Time: 17:18:03

Equipment: **OBD-II to Bluetooth bridge device** Sequence#: 1

Manufacturer: Automatic Labs Tested By: S. Yamamoto

Model: Link2

S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T2	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
T3	ANP06360	Cable	L1-PNMNM-48	7/29/2014	7/29/2016
T4	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016
T5	AN	Test Data Adjustment		9/11/2014	9/11/2016

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.

The EUT is connected to a remotely located DC power supply. The DC supply is providing 12.0 VDC to the EUT. The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz. Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.

Data sheet contains the measurement of the fundamental amplitude of the EUT. The EUT is transmitting continuously. Emission levels reported in this data are representative of worst case emissions.

Temperature: 29°C
 Relative Humidity: 45%
 Pressure: 100kPa.

Frequency range of data sheet 2400MHz to 2483.5MHz. RBW=VBW=1MHz.

RF output power: +2dBm. Data was maximized with EUT in each of three axis systems (X, Y, Z). Site D.

Manufacturer maximum duty cycle declaration: When transmitting at full throughput, we generate a train of 350us transmission bursts spaced never less than 1.25ms apart, but more typically 12.4ms.

At most we only transmit up to 20 packets per 100ms. In any given 100ms window we captured, our maximum duty cycle is 1/14. Duty Cycle Correction Factor Calculation: DCCF (dB) = 20 Log (dwell time/100 ms) = 20 Log (0.007/0.1) = -23.1 dB

15.249(a) Field Strength of Fundamental Test Summary					
Frequency (MHz)/ Channel	Maximum Emission Orientation (X,Y,Z)	Maximum Emission Amplitude Measured Average/Peak (mV/m)	Field Strength of Fundamental Limit Average (mV/m)	Field Strength of Fundamental Limit Peak (mV/m)	Result (Pass/Fail)
2402/Low	Y	3.8/58.9	50	500	Pass
2442/Middle	Y	4.0/60.3	50	500	Pass
2480/High	X	2.7/43.2	50	500	Pass

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	2479.800M	55.7	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.1	94.0 High, 4 DPSK 2Mbps, X axis	-2.9	Horiz
2	2442.258M	54.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	89.8	94.0 Middle, 4 DPSK 2Mbps, Z axis	-4.2	Horiz
3	2441.992M Ave	53.5	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	88.7	94.0 Middle, 4 DPSK 2Mbps, Y axis	-5.3	Horiz
4	2402.000M Ave	53.4	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	88.5	94.0 Low, 8 DPSK 3Mbps, Y axis	-5.5	Vert
5	2442.000M Ave	53.2	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	88.4	94.0 Middle, 8 DPSK 3Mbps, X axis	-5.6	Horiz
6	2402.000M Ave	53.2	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	88.3	94.0 Low, 4 DPSK 2Mbps, Y axis	-5.7	Vert
7	2480.000M Ave	52.8	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.2	94.0 High, 8 DPSK 3Mbps, Y axis	-5.8	Vert
8	2442.000M Ave	53.0	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	88.2	94.0 Middle, 8 DPSK 3Mbps, Y axis	-5.8	Horiz
9	2480.000M Ave	52.7	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.1	94.0 High, 8 DPSK 3Mbps, X axis	-5.9	Horiz
10	2480.000M Ave	52.6	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.0	94.0 High, 4 DPSK 2Mbps, Y axis	-6.0	Vert
11	2480.000M Ave	52.0	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	87.4	94.0 High, 4 DPSK 2Mbps, Z axis	-6.6	Vert

12	2480.000M Ave	51.6	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	87.0	94.0	-7.0	Horiz
									High, 8 DPSK 3Mbps, Y axis		
13	2480.000M Ave	51.2	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	86.6	94.0	-7.4	Vert
									High, 8 DPSK 3Mbps, Z axis		
14	2402.033M Ave	50.9	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	86.0	94.0	-8.0	Horiz
									Low, 8 DPSK 3Mbps, Z axis		
15	2442.000M Ave	59.8	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	72.0	94.0	-22.0	Vert
									Middle, GFSK 1Mbps, Y axis		
16	2402.000M Ave	59.6	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	71.7	94.0	-22.3	Horiz
									Low, GFSK 1Mbps, Y axis		
17	2402.000M Ave	58.5	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	70.6	94.0	-23.4	Vert
									Low, GFSK 1Mbps, Z axis		
18	2402.000M Ave	58.4	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	70.5	94.0	-23.5	Vert
									Low, GFSK 1Mbps, Y axis		
19	2442.000M Ave	57.8	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	70.0	94.0	-24.0	Vert
									Middle, GFSK 1Mbps, Z axis		
20	2402.000M Ave	57.9	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	70.0	94.0	-24.0	Horiz
									Low, GFSK 1Mbps, X axis		
21	2442.000M Ave	57.3	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	69.5	94.0	-24.5	Horiz
									Middle, GFSK 1Mbps, Y axis		
22	2402.017M Ave	56.6	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	68.7	94.0	-25.3	Horiz
									Low, GFSK 1Mbps, Z axis		
23	2480.000M Ave	56.2	+0.0 -23.0	+6.5	+3.4	+25.5	+0.0	68.6	94.0	-25.4	Horiz
									High, GFSK 1Mbps, X axis		
24	2442.008M Ave	56.4	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	68.6	94.0	-25.4	Horiz
									Middle, GFSK 1Mbps, X axis		
25	2402.000M Ave	56.3	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	68.4	94.0	-25.6	Horiz
									Low, 8 DPSK 3Mbps, Y axis		
26	2442.000M Ave	55.7	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	67.9	94.0	-26.1	Horiz
									Middle, 4 DPSK 2Mbps, X axis		
27	2480.000M Ave	55.2	+0.0 -23.0	+6.5	+3.4	+25.5	+0.0	67.6	94.0	-26.4	Vert
									High, GFSK 1Mbps, Z axis		
28	2442.050M Ave	55.4	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	67.6	94.0	-26.4	Vert
									Middle, 8 DPSK 3Mbps, Y axis		

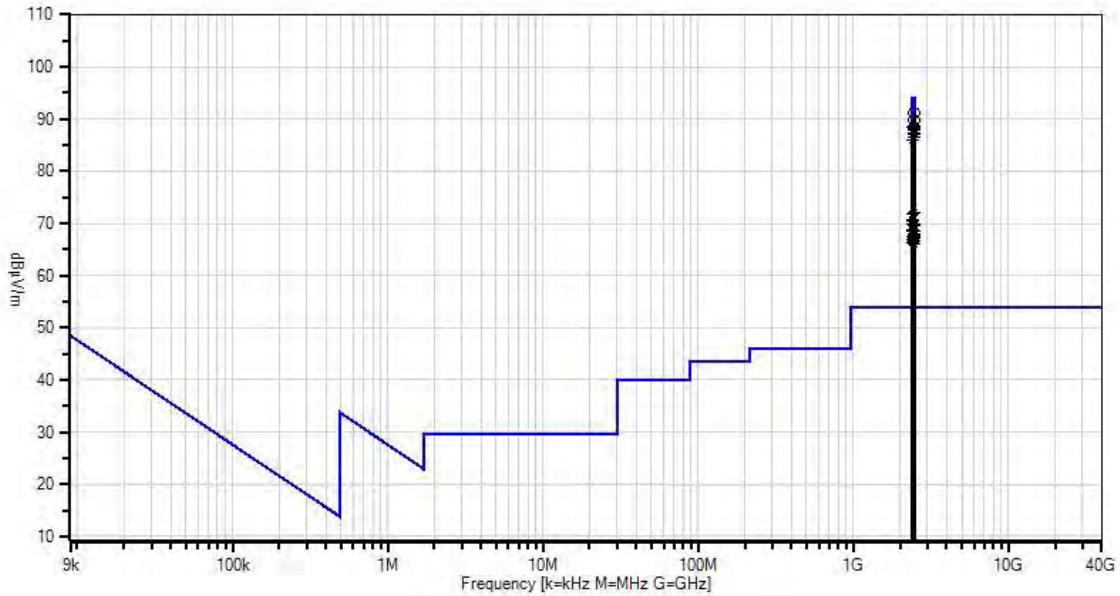
29	2402.000M Ave	55.3	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	67.4	94.0	-26.6	Horiz
									Low, 4 DPSK 2Mbps, Y axis		
30	2480.000M Ave	54.9	+0.0 -23.0	+6.5	+3.4	+25.5	+0.0	67.3	94.0	-26.7	Horiz
									High, GFSK 1Mbps, Y axis		
^	2480.000M	57.5	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	92.9	94.0	-1.1	Horiz
									High, 8 DPSK 3Mbps, X axis		
^	2480.000M	57.3	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	92.7	94.0	-1.3	Horiz
									High, GFSK 1Mbps, X axis		
^	2480.000M	56.2	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.6	94.0	-2.4	Horiz
									High, 8 DPSK 3Mbps, Y axis		
^	2480.000M	56.0	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.4	94.0	-2.6	Horiz
									High, GFSK 1Mbps, Y axis		
^	2480.000M	55.3	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	90.7	94.0	-3.3	Horiz
									High, 4 DPSK 2Mbps, Y axis		
^	2480.075M	53.3	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.7	94.0	-5.3	Horiz
									High, GFSK 1Mbps, Z axis		
^	2480.033M	53.2	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.6	94.0	-5.4	Horiz
									High, 8 DPSK 3Mbps, Z axis		
^	2479.975M	52.7	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	88.1	94.0	-5.9	Horiz
									High, 4 DPSK 2Mbps, Z axis		
39	2442.000M Ave	55.0	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	67.2	94.0	-26.8	Vert
									Middle, 4 DPSK 2Mbps, Y axis		
40	2402.000M Ave	54.9	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	67.0	94.0	-27.0	Horiz
									Low, 4 DPSK 2Mbps, X axis		
41	2402.000M Ave	54.9	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	67.0	94.0	-27.0	Vert
									Low, 8 DPSK 3Mbps, Z axis		
42	2402.000M Ave	54.8	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	66.9	94.0	-27.1	Vert
									Low, 4 DPSK 2Mbps, Z axis		
^	2402.000M	59.8	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.9	94.0	+0.9	Vert
									Low, 8 DPSK 3Mbps, Z axis		
^	2402.000M	59.2	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.3	94.0	+0.3	Vert
									Low, 4 DPSK 2Mbps, Z axis		
^	2402.000M	59.1	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.2	94.0	+0.2	Vert
									Low, GFSK 1Mbps, Z axis		

^ 2402.000M	59.0	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.1	94.0	+0.1	Vert
								Low, GFSK 1Mbps, Y axis		
^ 2402.000M	58.1	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	93.2	94.0	-0.8	Vert
								Low, 8 DPSK 3Mbps, Y axis		
^ 2402.000M	57.6	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	92.7	94.0	-1.3	Vert
								Low, 4 DPSK 2Mbps, Y axis		
^ 2402.008M	55.7	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	90.8	94.0	-3.2	Vert
								Low, 8 DPSK 3Mbps, X axis		
^ 2401.992M	55.2	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	90.3	94.0	-3.7	Vert
								Low, 4 DPSK 2Mbps, X axis		
^ 2402.000M	54.8	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	89.9	94.0	-4.1	Vert
								Low, GFSK 1Mbps, X axis		
52 2479.908M Ave	54.2	+0.0 -23.0	+6.5	+3.4	+25.5	+0.0	66.6	94.0	-27.4	Vert
								High, GFSK 1Mbps, Y axis		
^ 2480.000M	56.6	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	92.0	94.0	-2.0	Vert
								High, 4 DPSK 2Mbps, Z axis		
^ 2480.000M	56.5	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.9	94.0	-2.1	Vert
								High, 8 DPSK 3Mbps, Y axis		
^ 2480.000M	56.3	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.7	94.0	-2.3	Vert
								High, GFSK 1Mbps, Z axis		
^ 2480.000M	56.3	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.7	94.0	-2.3	Vert
								High, 4 DPSK 2Mbps, Y axis		
^ 2480.000M	56.1	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.5	94.0	-2.5	Vert
								High, 8 DPSK 3Mbps, Z axis		
^ 2479.908M	55.9	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	91.3	94.0	-2.7	Vert
								High, GFSK 1Mbps, Y axis		
^ 2479.933M	54.7	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	90.1	94.0	-3.9	Vert
								High, 4 DPSK 2Mbps, X axis		
^ 2479.967M	54.6	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	90.0	94.0	-4.0	Vert
								High, 8 DPSK 3Mbps, X axis		
^ 2480.000M	54.2	+0.0 +0.0	+6.5	+3.4	+25.5	+0.0	89.6	94.0	-4.4	Vert
								High, GFSK 1Mbps, X axis		
62 2442.000M Ave	54.3	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	66.5	94.0	-27.5	Vert
								Middle, 8 DPSK 3Mbps, Z axis		

63	2402.000M Ave	54.3	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	66.4	94.0	-27.6	Horiz
									Low, 8 DPSK 3Mbps, X axis		
^	2402.000M	60.3	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	95.4	94.0	+1.4	Horiz
									Low, GFSK 1Mbps, Y axis		
^	2402.000M	60.3	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	95.4	94.0	+1.4	Horiz
									Low, 8 DPSK 3Mbps, Y axis		
^	2402.000M	59.7	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.8	94.0	+0.8	Horiz
									Low, 4 DPSK 2Mbps, Y axis		
^	2402.000M	58.9	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.0	94.0	+0.0	Horiz
									Low, 4 DPSK 2Mbps, X axis		
^	2402.000M	58.9	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	94.0	94.0	+0.0	Horiz
									Low, 8 DPSK 3Mbps, X axis		
^	2402.000M	58.8	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	93.9	94.0	-0.1	Horiz
									Low, GFSK 1Mbps, X axis		
^	2402.017M	57.3	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	92.4	94.0	-1.6	Horiz
									Low, GFSK 1Mbps, Z axis		
^	2402.033M	56.1	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	91.2	94.0	-2.8	Horiz
									Low, 8 DPSK 3Mbps, Z axis		
^	2402.008M	55.9	+0.0 +0.0	+6.5	+3.2	+25.4	+0.0	91.0	94.0	-3.0	Horiz
									Low, 4 DPSK 2Mbps, Z axis		
73	2442.000M Ave	53.9	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	66.1	94.0	-27.9	Horiz
									Middle, 8 DPSK 3Mbps, Y axis		
^	2442.000M	58.9	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	94.1	94.0	+0.1	Horiz
									Middle, 4 DPSK 2Mbps, X axis		
^	2442.000M	58.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.8	94.0	-0.2	Horiz
									Middle, 8 DPSK 3Mbps, Y axis		
^	2442.000M	58.0	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.2	94.0	-0.8	Horiz
									Middle, GFSK 1Mbps, Y axis		
^	2442.000M	57.8	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.0	94.0	-1.0	Horiz
									Middle, 8 DPSK 3Mbps, X axis		
^	2442.000M	57.8	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.0	94.0	-1.0	Horiz
									Middle, 8 DPSK 3Mbps, Y axis		
^	2441.992M	57.7	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	92.9	94.0	-1.1	Horiz
									Middle, 4 DPSK 2Mbps, Y axis		

^	2442.008M	57.3	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	92.5	94.0	-1.5	Horiz
									Middle, GFSK 1Mbps, X axis		
^	2442.000M	55.7	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	90.9	94.0	-3.1	Horiz
									Middle, GFSK 1Mbps, Z axis		
^	2442.033M	55.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	90.8	94.0	-3.2	Horiz
									Middle, 8 DPSK 3Mbps, Z axis		
83	2442.000M Ave	53.9	+0.0 -23.0	+6.5	+3.3	+25.4	+0.0	66.1	94.0	-27.9	Vert
									Middle, 4 DPSK 2Mbps, Z axis		
^	2442.000M	60.4	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	95.6	94.0	+1.6	Vert
									Middle, GFSK 1Mbps, Y axis		
^	2442.050M	59.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	94.8	94.0	+0.8	Vert
									Middle, 8 DPSK 3Mbps, Y axis		
^	2442.000M	59.3	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	94.5	94.0	+0.5	Vert
									Middle, 4 DPSK 2Mbps, Y axis		
^	2442.000M	58.9	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	94.1	94.0	+0.1	Vert
									Middle, 8 DPSK 3Mbps, Z axis		
^	2442.000M	58.5	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.7	94.0	-0.3	Vert
									Middle, GFSK 1Mbps, Z axis		
^	2442.000M	58.4	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	93.6	94.0	-0.4	Vert
									Middle, 4 DPSK 2Mbps, Z axis		
^	2441.975M	55.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	90.8	94.0	-3.2	Vert
									Middle, 8 DPSK 3Mbps, X axis		
^	2441.992M	55.3	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	90.5	94.0	-3.5	Vert
									Middle, 4 DPSK 2Mbps, X axis		
^	2442.000M	54.9	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	90.1	94.0	-3.9	Vert
									Middle, GFSK 1Mbps, X axis		

CKC Laboratories, Inc Date: 9/11/2014 Time: 17:18:03 Automatic Labs WO#: 96114
 Test Distance: 3 Meters Sequence#: 1



— Readings
 × QP Readings
 ▼ Ambient

○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Setup Photo



Overall Test Setup

15.249(a) Field Strength of Harmonics

Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **96114** Date: 9/24/2014
 Test Type: **Maximized Emissions** Time: 19:09:17
 Equipment: **OBD-II to Bluetooth bridge device** Sequence#: 2
 Manufacturer: Automatic Labs Tested By: S. Yamamoto
 Model: Link2
 S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T2	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
T3	ANP06360	Cable	L1-PNMNM-48	7/29/2014	7/29/2016
T4	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016
T5	AN03385	High Pass Filter	11SH10-3000/T10000-O/O	6/5/2013	6/5/2015
T6	AN00787	Preamp	83017A	5/31/2013	5/31/2015
T7	ANP06544	Cable	32026-29094K-29094K-36TC	11/20/2013	11/20/2015
	AN01413	Horn Antenna-ANSI C63.5 (dB/m)	84125-80008	11/9/2012	11/9/2014
	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.
 The EUT is connected to a remotely located DC power supply. The DC supply is providing 12.0 VDC to the EUT.
 The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz.
 Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.
 Data sheet contains the harmonic amplitude measurements of the fundamental of the EUT.
 Emission levels reported in this data are representative of worst case emissions.

Temperature: 31°C
 Relative Humidity: 40%
 Pressure: 100kPa

Frequency range of data sheet 4800MHz to 25000MHz. RBW=VBW=1MHz. RF output power: +2dBm. Data was maximized with EUT in each of three axis systems (X, Y, Z). Site D.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	12009.350 M	27.4	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	49.9	54.0	-4.1	Vert
Low 4 DPSK X											
2	9767.747M	30.5	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	49.9	54.0	-4.1	Vert
Middle GFSK Y											
3	9608.502M	31.0	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	49.8	54.0	-4.2	Vert
Low GFSK Z											
4	9920.437M	30.0	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	49.7	54.0	-4.3	Horiz
High GFSK X											
5	9608.530M	30.8	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	49.6	54.0	-4.4	Vert
Low 4 DPSK Y											
6	12400.495 M	25.9	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2	+0.0	49.6	54.0	-4.4	Vert
High 4 DPSK Z											
7	12009.373 M	27.0	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	49.5	54.0	-4.5	Vert
Low GFSK Y											
8	12210.607 M	26.3	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	49.4	54.0	-4.6	Vert
Middle GFSK X											
9	7205.367M	36.5	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	49.1	54.0	-4.9	Vert
Low GFSK Y											
10	12009.540 M	26.5	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	49.0	54.0	-5.0	Vert
Low GFSK X											
11	9607.547M	30.0	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	48.8	54.0	-5.2	Horiz
Low GFSK Y											
12	9768.548M	29.4	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	48.8	54.0	-5.2	Vert
Middle GFSK X											
13	9767.463M	29.2	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	48.6	54.0	-5.4	Vert
Middle GFSK Z											

14	12210.669 M	25.2	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	48.3	54.0	-5.7	Vert
Middle GFSK Z											
15	4803.855M	43.0	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	48.3	54.0	-5.7	Vert
Low 4 DPSK X											
16	12009.785 M	25.7	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	48.2	54.0	-5.8	Horiz
Low 4 DPSK X											
17	14650.981 M Ave	18.5	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	48.1	54.0	-5.9	Horiz
Middle GFSK Y											
18	12010.465 M	25.5	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	48.0	54.0	-6.0	Horiz
Low 8 DPSK Y											
19	7325.762M	34.9	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	48.0	54.0	-6.0	Vert
Middle GFSK Y											
20	7439.805M	34.5	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.9	54.0	-6.1	Vert
High GFSK Y											
21	12209.415 M	24.8	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	47.9	54.0	-6.1	Vert
Middle 4 DPSK Z											
22	7439.275M	34.4	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.8	54.0	-6.2	Horiz
High GFSK Z											
23	4804.273M	42.4	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	47.7	54.0	-6.3	Horiz
Low 8 DPSK Y											
24	14651.003 M Ave	18.1	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	47.7	54.0	-6.3	Vert
Middle GFSK Y											
25	7326.620M	34.4	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	47.5	54.0	-6.5	Horiz
Middle 4 DPSK Y											
26	14881.225 M Ave	17.4	+0.0 +0.3	+17.7 -38.3	+10.1 +1.7	+38.5	+0.0	47.4	54.0	-6.6	Vert
High GFSK Y											
^	14881.225 M	28.5	+0.0 +0.3	+17.7 -38.3	+10.1 +1.7	+38.5	+0.0	58.5	54.0	+4.5	Vert
High GFSK Y											
28	7440.403M	34.0	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.4	54.0	-6.6	Horiz
High GFSK X											
29	14650.981 M Ave	17.8	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	47.4	54.0	-6.6	Horiz
Middle GFSK Z											
^	14650.981 M	29.8	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	59.4	54.0	+5.4	Horiz
Middle GFSK Z											
^	14650.981 M	27.9	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	57.5	54.0	+3.5	Horiz
Middle GFSK Y											
32	7439.835M	33.9	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.3	54.0	-6.7	Vert
High 4 DPSK Y											
33	7325.855M	34.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	47.3	54.0	-6.7	Vert
Middle 4 DPSK Y											

34	7325.860M	34.1	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	47.2	54.0	-6.8	Horiz
									Middle 8 DPSK Y		
35	7440.705M	33.7	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.1	54.0	-6.9	Horiz
									High 8 DPSK Y		
36	7440.215M	33.6	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	47.0	54.0	-7.0	Vert
									High 8 DPSK Y		
37	7325.500M	33.9	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	47.0	54.0	-7.0	Vert
									Middle 8 DPSK Y		
38	12209.547 M	23.9	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	47.0	54.0	-7.0	Horiz
									Middle GFSK X		
39	7439.630M	33.5	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.9	54.0	-7.1	Horiz
									High 8 DPSK Z		
40	14650.981 M Ave	17.3	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	46.9	54.0	-7.1	Vert
									Middle GFSK Z		
^	14651.003 M	29.4	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	59.0	54.0	+5.0	Vert
									Middle GFSK Y		
^	14650.981 M	26.9	+0.0 +0.2	+17.4 -38.3	+9.9 +1.7	+38.7	+0.0	56.5	54.0	+2.5	Vert
									Middle GFSK Z		
43	7326.500M	33.8	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.9	54.0	-7.1	Vert
									Middle 8 DPSK X		
44	7439.665M	33.5	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.9	54.0	-7.1	Vert
									High 8 DPSK Z		
45	7206.540M	34.3	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.9	54.0	-7.1	Vert
									Low 4 DPSK Y		
46	7440.030M	33.5	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.9	54.0	-7.1	Horiz
									High 8 DPSK X		
47	7206.125M	34.2	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.8	54.0	-7.2	Vert
									Low 8 DPSK Y		
48	7325.630M	33.7	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.8	54.0	-7.2	Horiz
									Middle 4 DPSK X		
49	7440.195M	33.4	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.8	54.0	-7.2	Vert
									High 8 DPSK X		
50	4803.750M	41.4	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	46.7	54.0	-7.3	Vert
									Low 4 DPSK Z		
51	7439.565M	33.3	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.7	54.0	-7.3	Horiz
									High 4 DPSK Y		
52	7204.985M	34.1	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.7	54.0	-7.3	Horiz
									Low 8 DPSK Z		
53	4803.910M	41.4	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	46.7	54.0	-7.3	Vert
									Low 8 DPSK Z		
54	4804.485M	41.4	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	46.7	54.0	-7.3	Horiz
									Low 4 DPSK Y		
55	7327.140M	33.5	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.6	54.0	-7.4	Vert
									Middle 4 DPSK Z		
56	7205.607M	34.0	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.6	54.0	-7.4	Horiz
									Low GFSK Z		
57	7206.022M	34.0	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.6	54.0	-7.4	Vert
									Low GFSK Z		

58	7327.310M	33.5	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.6	54.0 Middle 8 DPSK Z	-7.4	Horiz
59	4884.075M	40.8	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	46.6	54.0 Middle 8 DPSK Z	-7.4	Vert
60	7206.457M	33.9	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.5	54.0 Low GFSK X	-7.5	Vert
61	7206.275M	33.9	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.5	54.0 Low 4 DPSK Z	-7.5	Horiz
62	7206.175M	33.9	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.5	54.0 Low GFSK X	-7.5	Horiz
63	7207.335M	33.9	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.5	54.0 Low 4 DPSK Z	-7.5	Vert
64	7327.390M	33.3	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.4	54.0 Middle 8 DPSK X	-7.6	Horiz
65	7440.757M	33.0	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.4	54.0 High GFSK X	-7.6	Vert
66	7326.600M	33.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.3	54.0 Middle 8 DPSK Z	-7.7	Vert
67	7439.755M	32.9	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.3	54.0 High 4 DPSK X	-7.7	Vert
68	7326.395M	33.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.3	54.0 Middle GFSK X	-7.7	Horiz
69	7325.730M	33.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.3	54.0 Middle GFSK Y	-7.7	Horiz
70	7325.209M	33.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.3	54.0 Middle GFSK Z	-7.7	Horiz
71	7206.170M	33.6	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.2	54.0 Low 8 DPSK X	-7.8	Vert
72	7326.830M	33.1	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	46.2	54.0 Middle 4 DPSK Z	-7.8	Horiz
73	7439.135M	32.8	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.2	54.0 High 4 DPSK X	-7.8	Horiz
74	4803.792M	40.9	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	46.2	54.0 Low 4 DPSK Z	-7.8	Horiz
75	7205.850M	33.5	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	46.1	54.0 Low GFSK Y	-7.9	Horiz
76	7439.580M	32.7	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.1	54.0 High 4 DPSK Z	-7.9	Horiz
77	7440.490M	32.6	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	46.0	54.0 High GFSK Y	-8.0	Horiz
78	7324.767M	32.8	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	45.9	54.0 Middle 4 DPSK X	-8.1	Vert
79	4804.265M	40.6	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	45.9	54.0 Low 8 DPSK X	-8.1	Vert
80	7206.775M	33.2	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	45.8	54.0 Low 8 DPSK Z	-8.2	Vert
81	4884.485M	39.9	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	45.7	54.0 Middle 8 DPSK X	-8.3	Vert
82	7206.920M	33.0	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	45.6	54.0 Low 8 DPSK X	-8.4	Horiz
83	7206.047M	32.8	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	45.4	54.0 Low 8 DPSK Y	-8.6	Horiz

84	4803.580M	40.1	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	45.4	54.0 Low GFSK Y	-8.6	Horiz
85	7326.327M	32.3	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	45.4	54.0 Middle GFSK X	-8.6	Vert
86	7441.430M	32.0	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	45.4	54.0 High 4 DPSK Z	-8.6	Vert
87	4884.365M	39.4	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	45.2	54.0 Middle 4 DPSK Y	-8.8	Horiz
88	4884.090M	39.3	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	45.1	54.0 Middle 4 DPSK Z	-8.9	Vert
89	7440.021M	31.7	+0.0 +0.1	+11.6 -39.3	+6.0 +1.2	+33.8	+0.0	45.1	54.0 High GFSK Z	-8.9	Vert
90	4804.125M	39.8	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	45.1	54.0 Low 8 DPSK Z	-8.9	Horiz
91	4803.775M	39.8	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	45.1	54.0 Low GFSK Z	-8.9	Vert
92	7206.685M	32.4	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	45.0	54.0 Low 4 DPSK Y	-9.0	Horiz
93	4884.658M	39.2	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	45.0	54.0 Middle 4 DPSK X	-9.0	Vert
94	4804.457M	39.7	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	45.0	54.0 Low GFSK X	-9.0	Vert
95	7207.800M	32.3	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	44.9	54.0 Low 4 DPSK X	-9.1	Horiz
96	4883.650M	38.9	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	44.7	54.0 Middle 8 DPSK Y	-9.3	Horiz
97	4884.390M	38.8	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	44.6	54.0 Middle 8 DPSK Z	-9.4	Horiz
98	4884.272M	38.8	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	44.6	54.0 Middle GFSK Y	-9.4	Horiz
99	4803.585M	39.3	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	44.6	54.0 Low 8 DPSK X	-9.4	Horiz
100	4960.435M	38.6	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	44.5	54.0 High 8 DPSK X	-9.5	Vert
101	4960.235M	38.5	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	44.4	54.0 High 8 DPSK Z	-9.6	Vert
102	4803.940M	39.0	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	44.3	54.0 Low 4 DPSK Y	-9.7	Vert
103	7326.486M	31.2	+0.0 +0.2	+11.4 -39.2	+5.9 +1.2	+33.6	+0.0	44.3	54.0 Middle GFSK Z	-9.7	Vert
104	4803.663M	38.7	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	44.0	54.0 Low GFSK X	-10.0	Horiz
105	4883.615M	38.1	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	43.9	54.0 Middle 8 DPSK Y	-10.1	Vert
106	4884.325M	38.0	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	43.8	54.0 Middle 4 DPSK Y	-10.2	Vert
107	7206.060M	31.1	+0.0 +0.2	+11.2 -39.2	+5.9 +1.2	+33.3	+0.0	43.7	54.0 Low 4 DPSK X	-10.3	Vert
108	4960.750M	37.6	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	43.5	54.0 High 4 DPSK X	-10.5	Vert
109	9608.510M Ave	24.6	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	43.4	54.0 Low 4 DPSK Y	-10.6	Horiz

110	4959.265M	37.5	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	43.4	54.0 High 8 DPSK Y	-10.6	Vert
111	4884.173M	37.6	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	43.4	54.0 Middle GFSK Y	-10.6	Vert
112	9920.195M Ave	23.6	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	43.3	54.0 High 8 DPSK X	-10.7	Vert
^	9920.195M	32.2	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	51.9	54.0 High 8 DPSK X	-2.1	Vert
^	9920.246M	29.4	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	49.1	54.0 High GFSK Z	-4.9	Vert
115	4959.335M	37.3	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	43.2	54.0 High 8 DPSK Y	-10.8	Horiz
116	4803.740M	37.8	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	43.1	54.0 Low GFSK Y	-10.9	Vert
117	4959.580M	37.2	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	43.1	54.0 High 4 DPSK Y	-10.9	Vert
118	4884.155M	37.2	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	43.0	54.0 Middle 8 DPSK X	-11.0	Horiz
119	4803.830M	37.6	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	42.9	54.0 Low GFSK Z	-11.1	Horiz
120	9768.767M Ave	23.3	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	42.7	54.0 Middle 4 DPSK X	-11.3	Vert
^	9768.767M	33.7	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	53.1	54.0 Middle 4 DPSK X	-0.9	Vert
122	4803.865M	37.3	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1	+0.0	42.6	54.0 Low 8 DPSK Y	-11.4	Vert
123	9607.370M Ave	23.8	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	42.6	54.0 Low 4 DPSK X	-11.4	Vert
^	9607.370M	34.3	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	53.1	54.0 Low 4 DPSK X	-0.9	Vert
125	4883.690M	36.8	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	42.6	54.0 Middle 4 DPSK X	-11.4	Horiz
126	9919.810M Ave	22.8	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	42.5	54.0 High 8 DPSK Y	-11.5	Horiz
^	9919.810M	33.4	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	53.1	54.0 High 8 DPSK Y	-0.9	Horiz
^	9919.805M	30.1	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	49.8	54.0 High GFSK Z	-4.2	Horiz
129	4884.247M	36.7	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	42.5	54.0 Middle GFSK X	-11.5	Horiz
130	4884.242M	36.5	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	42.3	54.0 Middle GFSK X	-11.7	Vert
131	4883.839M	36.5	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	42.3	54.0 Middle GFSK Z	-11.7	Vert
132	4959.570M	36.3	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	42.2	54.0 High 8 DPSK Z	-11.8	Horiz
133	4883.980M	36.4	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3	+0.0	42.2	54.0 Middle 4 DPSK Z	-11.8	Horiz
134	9608.670M Ave	23.4	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	42.2	54.0 Low 8 DPSK X	-11.8	Vert
135	4960.290M	35.9	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4	+0.0	41.8	54.0 High GFSK X	-12.2	Vert

136	9920.535M Ave	22.1	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	41.8	54.0 High 4 DPSK X	-12.2	Vert
^	9920.535M	34.7	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	54.4	54.0 High 4 DPSK X	+0.4	Vert
138	9608.580M Ave	23.0	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	41.8	54.0 Low 4 DPSK X	-12.2	Horiz
^	9608.510M	33.2	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	52.0	54.0 Low 4 DPSK Y	-2.0	Horiz
^	9608.580M	32.1	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	50.9	54.0 Low 4 DPSK X	-3.1	Horiz
141	4803.617M	36.5	+0.0 +0.1	+9.2 -39.7	+4.7 +0.9	+30.1 +0.0	+0.0	41.8	54.0 Low 4 DPSK X	-12.2	Horiz
142	4959.160M	35.8	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.7	54.0 High 8 DPSK X	-12.3	Horiz
143	9920.840M Ave	22.0	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	41.7	54.0 High 4 DPSK Y	-12.3	Horiz
144	4960.030M	35.7	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.6	54.0 High 4 DPSK Y	-12.4	Horiz
145	9768.325M Ave	22.2	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	41.6	54.0 Middle 8 DPSK Z	-12.4	Horiz
146	4959.625M	35.6	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.5	54.0 High 4 DPSK X	-12.5	Horiz
147	9920.660M Ave	21.7	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	41.4	54.0 High 4 DPSK X	-12.6	Horiz
^	9920.660M	31.6	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	51.3	54.0 High 4 DPSK X	-2.7	Horiz
149	4883.418M	35.5	+0.0 +0.2	+9.3 -39.7	+4.8 +0.9	+30.3 +0.0	+0.0	41.3	54.0 Middle GFSK Z	-12.7	Horiz
150	9767.515M Ave	21.9	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	41.3	54.0 Middle 8 DPSK Y	-12.7	Horiz
151	9768.755M Ave	21.8	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	41.2	54.0 Middle 4 DPSK Y	-12.8	Horiz
^	9768.755M	34.0	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	53.4	54.0 Middle 4 DPSK Y	-0.6	Horiz
153	9767.660M Ave	21.8	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	41.2	54.0 Middle 4 DPSK X	-12.8	Horiz
^	9767.660M	33.8	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	53.2	54.0 Middle 4 DPSK X	-0.8	Horiz
155	4959.667M	35.2	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.1	54.0 High GFSK Y	-12.9	Horiz
156	4960.100M	35.1	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.0	54.0 High 4 DPSK Z	-13.0	Horiz
157	4960.054M	35.1	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.0	54.0 High GFSK Z	-13.0	Vert
158	4960.087M	35.1	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	41.0	54.0 High GFSK X	-13.0	Horiz
159	9767.245M Ave	21.5	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	40.9	54.0 Middle 8 DPSK X	-13.1	Vert
160	9919.495M Ave	21.1	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	40.8	54.0 High 8 DPSK X	-13.2	Horiz
^	9919.495M	33.0	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	52.7	54.0 High 8 DPSK X	-1.3	Horiz

162	9919.925M Ave	20.9	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	40.6	54.0 High 8 DPSK Y	-13.4	Vert
^	9919.925M	32.4	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	52.1	54.0 High 8 DPSK Y	-1.9	Vert
164	9608.760M Ave	21.6	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	40.4	54.0 Low 4 DPSK Z	-13.6	Vert
165	9608.270M Ave	21.6	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	40.4	54.0 Low 8 DPSK Y	-13.6	Vert
166	9607.593M Ave	21.5	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	40.3	54.0 Low GFSK X	-13.7	Vert
^	9607.593M	32.7	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	51.5	54.0 Low GFSK X	-2.5	Vert
168	9608.255M Ave	21.3	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	40.1	54.0 Low 8 DPSK Z	-13.9	Vert
^	9608.270M	34.4	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	53.2	54.0 Low 8 DPSK Y	-0.8	Vert
^	9608.255M	33.1	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	51.9	54.0 Low 8 DPSK Z	-2.1	Vert
171	9608.205M Ave	21.2	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	40.0	54.0 Low 8 DPSK X	-14.0	Horiz
172	12399.440 M Ave	16.3	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2 +0.0	+0.0	40.0	54.0 High GFSK X	-14.0	Vert
173	12010.753 M Ave	17.5	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2 +0.0	+0.0	40.0	54.0 Low GFSK Z	-14.0	Vert
^	12010.753 M	28.7	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2 +0.0	+0.0	51.2	54.0 Low GFSK Z	-2.8	Vert
175	9919.200M Ave	20.1	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	39.8	54.0 High 8 DPSK Z	-14.2	Horiz
^	9919.200M	33.0	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9 +0.0	+0.0	52.7	54.0 High 8 DPSK Z	-1.3	Horiz
177	12400.610 M Ave	16.1	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2 +0.0	+0.0	39.8	54.0 High GFSK Y	-14.2	Vert
^	12400.585 M	28.8	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2 +0.0	+0.0	52.5	54.0 High 4 DPSK X	-1.5	Vert
^	12400.610 M	27.6	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2 +0.0	+0.0	51.3	54.0 High GFSK Y	-2.7	Vert
180	4959.325M	33.8	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	39.7	54.0 High 4 DPSK Z	-14.3	Vert
181	4959.560M	33.7	+0.0 +0.1	+9.4 -39.7	+4.8 +0.9	+30.4 +0.0	+0.0	39.6	54.0 High GFSK Y	-14.4	Vert
182	9608.400M Ave	20.8	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	39.6	54.0 Low 8 DPSK Z	-14.4	Horiz
^	9608.400M	32.7	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5 +0.0	+0.0	51.5	54.0 Low 8 DPSK Z	-2.5	Horiz
184	9767.880M Ave	20.1	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7 +0.0	+0.0	39.5	54.0 Middle 8 DPSK Z	-14.5	Vert

^ 9767.880M	32.7	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	52.1	54.0	-1.9	Vert
								Middle 8 DPSK Z		
186 9920.805M Ave	19.6	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	39.3	54.0	-14.7	Horiz
								High 4 DPSK Z		
^ 9920.840M	34.3	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	54.0	54.0	+0.0	Horiz
								High 4 DPSK Y		
^ 9920.805M	32.3	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	52.0	54.0	-2.0	Horiz
								High 4 DPSK Z		
189 9920.415M Ave	19.5	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	39.2	54.0	-14.8	Vert
								High 8 DPSK Z		
^ 9920.415M	32.3	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	52.0	54.0	-2.0	Vert
								High 8 DPSK Z		
^ 9920.475M	26.9	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	46.6	54.0	-7.4	Vert
								High 4 DPSK Z		
192 9919.820M Ave	19.3	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	39.0	54.0	-15.0	Vert
								High GFSK X		
^ 9919.820M	31.3	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	51.0	54.0	-3.0	Vert
								High GFSK X		
^ 9919.805M	26.9	+0.0 +0.1	+13.7 -39.0	+7.6 +1.4	+35.9	+0.0	46.6	54.0	-7.4	Vert
								High GFSK Y		
195 9608.258M Ave	20.2	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	39.0	54.0	-15.0	Horiz
								Low 4 DPSK Z		
^ 9608.205M	33.3	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	52.1	54.0	-1.9	Horiz
								Low 8 DPSK X		
^ 9608.258M	32.1	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	50.9	54.0	-3.1	Horiz
								Low 4 DPSK Z		
198 9609.160M Ave	20.2	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	39.0	54.0	-15.0	Horiz
								Low 8 DPSK Y		
^ 9609.160M	32.6	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	51.4	54.0	-2.6	Horiz
								Low 8 DPSK Y		
200 12209.154 M Ave	15.8	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	38.9	54.0	-15.1	Horiz
								Middle GFSK Z		
^ 12209.154 M	29.2	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	52.3	54.0	-1.7	Horiz
								Middle GFSK Z		
202 9768.315M Ave	19.5	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	38.9	54.0	-15.1	Horiz
								Middle GFSK Y		
203 12009.515 M Ave	16.3	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	38.8	54.0	-15.2	Horiz
								Low GFSK Z		
204 12210.917 M Ave	15.6	+0.0 +0.2	+15.6 -38.8	+8.4 +1.5	+36.2	+0.0	38.7	54.0	-15.3	Vert
								Middle GFSK Y		
205 9769.185M Ave	19.3	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	38.7	54.0	-15.3	Horiz
								Middle 8 DPSK X		
^ 9769.185M	33.6	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	53.0	54.0	-1.0	Horiz
								Middle 8 DPSK X		
207 12400.265 M Ave	14.8	+0.0 +0.4	+15.7 -38.6	+8.5 +1.5	+36.2	+0.0	38.5	54.0	-15.5	Vert
								High 8 DPSK Y		

^	12400.265	30.2	+0.0	+15.7	+8.5	+36.2	+0.0	53.9	54.0	-0.1	Vert
	M		+0.4	-38.6	+1.5						
											High 8 DPSK Y
^	12400.225	26.2	+0.0	+15.7	+8.5	+36.2	+0.0	49.9	54.0	-4.1	Vert
	M		+0.4	-38.6	+1.5						
											High GFSK Z
210	12399.385	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5	54.0	-15.5	Vert
	M		+0.4	-38.6	+1.5						
	Ave										High 8 DPSK Z
^	12399.385	29.7	+0.0	+15.7	+8.5	+36.2	+0.0	53.4	54.0	-0.6	Vert
	M		+0.4	-38.6	+1.5						
											High 8 DPSK Z
^	12399.440	27.2	+0.0	+15.7	+8.5	+36.2	+0.0	50.9	54.0	-3.1	Vert
	M		+0.4	-38.6	+1.5						
											High GFSK X
213	12399.080	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5	54.0	-15.5	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 8 DPSK Z
^	12399.080	29.4	+0.0	+15.7	+8.5	+36.2	+0.0	53.1	54.0	-0.9	Horiz
	M		+0.4	-38.6	+1.5						
											High 8 DPSK Z
215	12400.228	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5	54.0	-15.5	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High GFSK Y
^	12400.228	27.9	+0.0	+15.7	+8.5	+36.2	+0.0	51.6	54.0	-2.4	Horiz
	M		+0.4	-38.6	+1.5						
											High GFSK Y
217	12398.880	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5	54.0	-15.5	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High GFSK Z
^	12398.880	27.3	+0.0	+15.7	+8.5	+36.2	+0.0	51.0	54.0	-3.0	Horiz
	M		+0.4	-38.6	+1.5						
											High GFSK Z
219	4958.805M	32.4	+0.0	+9.4	+4.8	+30.4	+0.0	38.4	54.0	-15.6	Horiz
			+0.2	-39.7	+0.9						
											High GFSK Z
220	12400.590	14.6	+0.0	+15.7	+8.5	+36.2	+0.0	38.3	54.0	-15.7	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 8 DPSK Y
^	12400.590	28.7	+0.0	+15.7	+8.5	+36.2	+0.0	52.4	54.0	-1.6	Horiz
	M		+0.4	-38.6	+1.5						
											High 8 DPSK Y
^	12400.655	23.9	+0.0	+15.7	+8.5	+36.2	+0.0	47.6	54.0	-6.4	Horiz
	M		+0.4	-38.6	+1.5						
											High GFSK X
223	12400.790	14.6	+0.0	+15.7	+8.5	+36.2	+0.0	38.3	54.0	-15.7	Vert
	M		+0.4	-38.6	+1.5						
	Ave										High 8 DPSK X
^	12400.790	29.3	+0.0	+15.7	+8.5	+36.2	+0.0	53.0	54.0	-1.0	Vert
	M		+0.4	-38.6	+1.5						
											High 8 DPSK X

225	12400.000	14.6	+0.0	+15.7	+8.5	+36.2	+0.0	38.3	54.0	-15.7	Vert
	M		+0.4	-38.6	+1.5						
	Ave										High 4 DPSK X
226	12399.970	14.6	+0.0	+15.7	+8.5	+36.2	+0.0	38.3	54.0	-15.7	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 8 DPSK X
227	9767.495M	18.9	+0.0	+13.6	+7.5	+35.7	+0.0	38.3	54.0	-15.7	Horiz
	Ave		+0.2	-39.0	+1.4						Middle 4 DPSK Z
228	12399.895	14.5	+0.0	+15.7	+8.5	+36.2	+0.0	38.2	54.0	-15.8	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 4 DPSK X
^	12399.970	29.1	+0.0	+15.7	+8.5	+36.2	+0.0	52.8	54.0	-1.2	Horiz
	M		+0.4	-38.6	+1.5						
											High 8 DPSK X
230	12398.735	14.5	+0.0	+15.7	+8.5	+36.2	+0.0	38.2	54.0	-15.8	Vert
	M		+0.4	-38.6	+1.5						
	Ave										High 4 DPSK Y
^	12398.735	28.7	+0.0	+15.7	+8.5	+36.2	+0.0	52.4	54.0	-1.6	Vert
	M		+0.4	-38.6	+1.5						
											High 4 DPSK Y
232	12401.265	14.5	+0.0	+15.7	+8.5	+36.2	+0.0	38.2	54.0	-15.8	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 4 DPSK Y
^	12401.265	27.6	+0.0	+15.7	+8.5	+36.2	+0.0	51.3	54.0	-2.7	Horiz
	M		+0.4	-38.6	+1.5						
											High 4 DPSK Y
234	12399.860	14.5	+0.0	+15.7	+8.5	+36.2	+0.0	38.2	54.0	-15.8	Horiz
	M		+0.4	-38.6	+1.5						
	Ave										High 4 DPSK Z
^	12399.860	29.9	+0.0	+15.7	+8.5	+36.2	+0.0	53.6	54.0	-0.4	Horiz
	M		+0.4	-38.6	+1.5						
											High 4 DPSK Z
^	12399.895	27.3	+0.0	+15.7	+8.5	+36.2	+0.0	51.0	54.0	-3.0	Horiz
	M		+0.4	-38.6	+1.5						
											High 4 DPSK X
237	9768.248M	18.6	+0.0	+13.6	+7.5	+35.7	+0.0	38.0	54.0	-16.0	Horiz
	Ave		+0.2	-39.0	+1.4						Middle GFSK Z
^	9768.325M	33.8	+0.0	+13.6	+7.5	+35.7	+0.0	53.2	54.0	-0.8	Horiz
			+0.2	-39.0	+1.4						Middle 8 DPSK Z
^	9768.315M	31.5	+0.0	+13.6	+7.5	+35.7	+0.0	50.9	54.0	-3.1	Horiz
			+0.2	-39.0	+1.4						Middle GFSK Y
^	9768.248M	31.2	+0.0	+13.6	+7.5	+35.7	+0.0	50.6	54.0	-3.4	Horiz
			+0.2	-39.0	+1.4						Middle GFSK Z
241	12210.160	14.9	+0.0	+15.6	+8.4	+36.2	+0.0	38.0	54.0	-16.0	Vert
	M		+0.2	-38.8	+1.5						
	Ave										Middle 8 DPSK X
^	12210.160	27.4	+0.0	+15.6	+8.4	+36.2	+0.0	50.5	54.0	-3.5	Vert
	M		+0.2	-38.8	+1.5						
											Middle 8 DPSK X
243	12210.045	14.9	+0.0	+15.6	+8.4	+36.2	+0.0	38.0	54.0	-16.0	Vert
	M		+0.2	-38.8	+1.5						
	Ave										Middle 8 DPSK Y

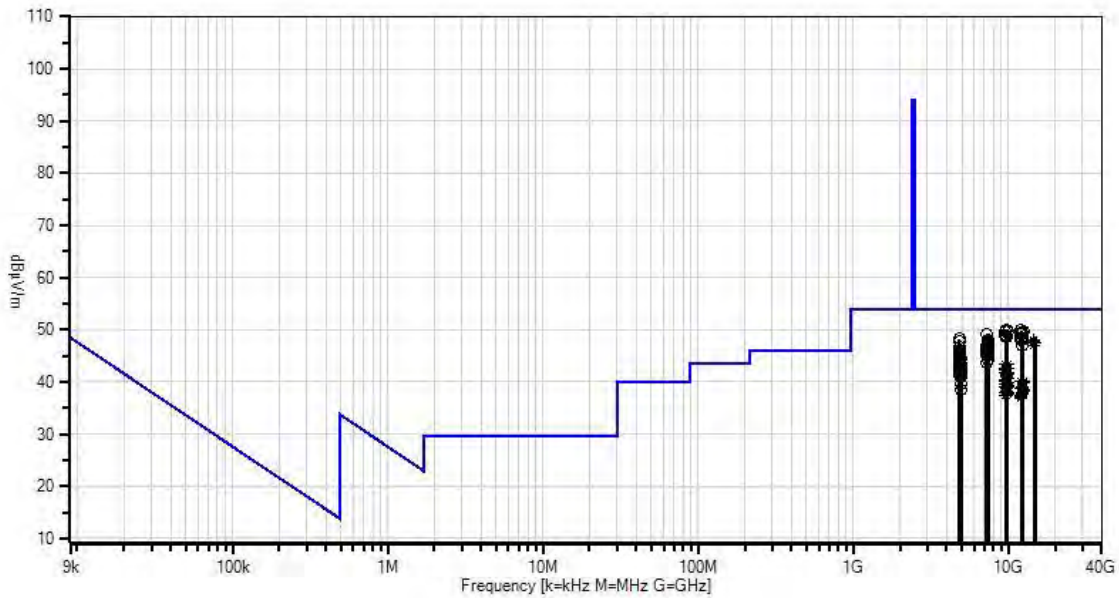
^	12210.045	29.3	+0.0	+15.6	+8.4	+36.2	+0.0	52.4	54.0	-1.6	Vert
	M		+0.2	-38.8	+1.5						
									Middle 8 DPSK Y		
245	12208.835	14.8	+0.0	+15.6	+8.4	+36.2	+0.0	37.9	54.0	-16.1	Vert
	M		+0.2	-38.8	+1.5						
	Ave								Middle 8 DPSK Z		
^	12208.835	29.5	+0.0	+15.6	+8.4	+36.2	+0.0	52.6	54.0	-1.4	Vert
	M		+0.2	-38.8	+1.5						
									Middle 8 DPSK Z		
247	12210.070	14.8	+0.0	+15.6	+8.4	+36.2	+0.0	37.9	54.0	-16.1	Horiz
	M		+0.2	-38.8	+1.5						
	Ave								Middle 8 DPSK Z		
^	12210.070	29.8	+0.0	+15.6	+8.4	+36.2	+0.0	52.9	54.0	-1.1	Horiz
	M		+0.2	-38.8	+1.5						
									Middle 8 DPSK Z		
^	12209.987	26.6	+0.0	+15.6	+8.4	+36.2	+0.0	49.7	54.0	-4.3	Horiz
	M		+0.2	-38.8	+1.5						
									Middle GFSK Y		
250	12210.450	14.8	+0.0	+15.6	+8.4	+36.2	+0.0	37.9	54.0	-16.1	Horiz
	M		+0.2	-38.8	+1.5						
	Ave								Middle 4 DPSK Y		
251	12209.005	14.7	+0.0	+15.6	+8.4	+36.2	+0.0	37.8	54.0	-16.2	Horiz
	M		+0.2	-38.8	+1.5						
	Ave								Middle 8 DPSK X		
^	12209.005	29.5	+0.0	+15.6	+8.4	+36.2	+0.0	52.6	54.0	-1.4	Horiz
	M		+0.2	-38.8	+1.5						
									Middle 8 DPSK X		
253	12210.325	14.7	+0.0	+15.6	+8.4	+36.2	+0.0	37.8	54.0	-16.2	Horiz
	M		+0.2	-38.8	+1.5						
	Ave								Middle 8 DPSK Y		
254	9919.435M	18.1	+0.0	+13.7	+7.6	+35.9	+0.0	37.8	54.0	-16.2	Vert
	Ave		+0.1	-39.0	+1.4				High 4 DPSK Y		
^	9919.435M	31.0	+0.0	+13.7	+7.6	+35.9	+0.0	50.7	54.0	-3.3	Vert
			+0.1	-39.0	+1.4				High 4 DPSK Y		
256	9607.987M	19.0	+0.0	+13.5	+7.4	+35.5	+0.0	37.8	54.0	-16.2	Horiz
	Ave		+0.0	-39.0	+1.4				Low GFSK X		
^	9607.987M	31.7	+0.0	+13.5	+7.4	+35.5	+0.0	50.5	54.0	-3.5	Horiz
			+0.0	-39.0	+1.4				Low GFSK X		
^	9607.950M	30.6	+0.0	+13.5	+7.4	+35.5	+0.0	49.4	54.0	-4.6	Horiz
			+0.0	-39.0	+1.4				Low GFSK Z		
259	12209.760	14.6	+0.0	+15.6	+8.4	+36.2	+0.0	37.7	54.0	-16.3	Vert
	M		+0.2	-38.8	+1.5						
	Ave								Middle 4 DPSK Y		
^	12209.760	28.3	+0.0	+15.6	+8.4	+36.2	+0.0	51.4	54.0	-2.6	Vert
	M		+0.2	-38.8	+1.5						
									Middle 4 DPSK Y		
261	12210.967	14.6	+0.0	+15.6	+8.4	+36.2	+0.0	37.7	54.0	-16.3	Vert
	M		+0.2	-38.8	+1.5						
	Ave								Middle 4 DPSK X		
^	12210.917	28.9	+0.0	+15.6	+8.4	+36.2	+0.0	52.0	54.0	-2.0	Vert
	M		+0.2	-38.8	+1.5						
									Middle GFSK Y		

^	12210.967	27.6	+0.0	+15.6	+8.4	+36.2	+0.0	50.7	54.0	-3.3	Vert
	M		+0.2	-38.8	+1.5						
											Middle 4 DPSK X
264	12210.530	14.6	+0.0	+15.6	+8.4	+36.2	+0.0	37.7	54.0	-16.3	Horiz
	M		+0.2	-38.8	+1.5						
	Ave										Middle 4 DPSK Z
^	12210.530	27.3	+0.0	+15.6	+8.4	+36.2	+0.0	50.4	54.0	-3.6	Horiz
	M		+0.2	-38.8	+1.5						
											Middle 4 DPSK Z
266	12210.390	14.5	+0.0	+15.6	+8.4	+36.2	+0.0	37.6	54.0	-16.4	Horiz
	M		+0.2	-38.8	+1.5						
	Ave										Middle 4 DPSK X
^	12210.450	29.2	+0.0	+15.6	+8.4	+36.2	+0.0	52.3	54.0	-1.7	Horiz
	M		+0.2	-38.8	+1.5						
											Middle 4 DPSK Y
^	12210.325	29.0	+0.0	+15.6	+8.4	+36.2	+0.0	52.1	54.0	-1.9	Horiz
	M		+0.2	-38.8	+1.5						
											Middle 8 DPSK Y
^	12210.390	29.0	+0.0	+15.6	+8.4	+36.2	+0.0	52.1	54.0	-1.9	Horiz
	M		+0.2	-38.8	+1.5						
											Middle 4 DPSK X
270	9920.963M	17.9	+0.0	+13.7	+7.6	+35.9	+0.0	37.6	54.0	-16.4	Horiz
	Ave		+0.1	-39.0	+1.4						
											High GFSK Y
^	9920.963M	31.5	+0.0	+13.7	+7.6	+35.9	+0.0	51.2	54.0	-2.8	Horiz
			+0.1	-39.0	+1.4						
											High GFSK Y
272	9767.115M	18.1	+0.0	+13.6	+7.5	+35.7	+0.0	37.5	54.0	-16.5	Vert
	Ave		+0.2	-39.0	+1.4						
											Middle 8 DPSK Y
^	9767.115M	32.8	+0.0	+13.6	+7.5	+35.7	+0.0	52.2	54.0	-1.8	Vert
			+0.2	-39.0	+1.4						
											Middle 8 DPSK Y
274	9767.260M	18.0	+0.0	+13.6	+7.5	+35.7	+0.0	37.4	54.0	-16.6	Vert
	Ave		+0.2	-39.0	+1.4						
											Middle 4 DPSK Y
^	9767.245M	33.6	+0.0	+13.6	+7.5	+35.7	+0.0	53.0	54.0	-1.0	Vert
			+0.2	-39.0	+1.4						
											Middle 8 DPSK X
^	9767.260M	31.9	+0.0	+13.6	+7.5	+35.7	+0.0	51.3	54.0	-2.7	Vert
			+0.2	-39.0	+1.4						
											Middle 4 DPSK Y
^	9767.330M	30.3	+0.0	+13.6	+7.5	+35.7	+0.0	49.7	54.0	-4.3	Vert
			+0.2	-39.0	+1.4						
											Middle 4 DPSK Z
278	12010.610	14.9	+0.0	+15.4	+8.4	+36.2	+0.0	37.4	54.0	-16.6	Vert
	M		+0.0	-39.0	+1.5						
	Ave										Low 8 DPSK Y
^	12010.610	29.9	+0.0	+15.4	+8.4	+36.2	+0.0	52.4	54.0	-1.6	Vert
	M		+0.0	-39.0	+1.5						
											Low 8 DPSK Y
^	12010.540	25.3	+0.0	+15.4	+8.4	+36.2	+0.0	47.8	54.0	-6.2	Vert
	M		+0.0	-39.0	+1.5						
											Low 4 DPSK Y
281	9767.507M	18.0	+0.0	+13.6	+7.5	+35.7	+0.0	37.4	54.0	-16.6	Horiz
	Ave		+0.2	-39.0	+1.4						
											Middle GFSK X
^	9767.515M	34.1	+0.0	+13.6	+7.5	+35.7	+0.0	53.5	54.0	-0.5	Horiz
			+0.2	-39.0	+1.4						
											Middle 8 DPSK Y
^	9767.495M	33.1	+0.0	+13.6	+7.5	+35.7	+0.0	52.5	54.0	-1.5	Horiz
			+0.2	-39.0	+1.4						
											Middle 4 DPSK Z

^	9767.507M	30.8	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	50.2	54.0	-3.8	Horiz
									Middle	GFSK X	
285	12009.435 M	14.8	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.3	54.0	-16.7	Horiz
	Ave								Low 8	DPSK Z	
^	12009.435 M	29.1	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	51.6	54.0	-2.4	Horiz
									Low 8	DPSK Z	
^	12009.515 M	28.4	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	50.9	54.0	-3.1	Horiz
									Low	GFSK Z	
288	12008.805 M	14.8	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.3	54.0	-16.7	Vert
	Ave								Low 4	DPSK Z	
^	12008.805 M	29.4	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	51.9	54.0	-2.1	Vert
									Low 4	DPSK Z	
290	12010.057 M	14.8	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.3	54.0	-16.7	Horiz
	Ave								Low 4	DPSK Y	
291	9608.703M Ave	18.5	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	37.3	54.0	-16.7	Vert
									Low	GFSK Y	
^	9608.670M	34.4	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	53.2	54.0	-0.8	Vert
									Low 8	DPSK X	
^	9608.760M	33.9	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	52.7	54.0	-1.3	Vert
									Low 4	DPSK Z	
^	9608.703M	31.9	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+35.5	+0.0	50.7	54.0	-3.3	Vert
									Low	GFSK Y	
295	12010.243 M	14.7	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.2	54.0	-16.8	Horiz
	Ave								Low 4	DPSK Z	
^	12010.243 M	28.5	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	51.0	54.0	-3.0	Horiz
									Low 4	DPSK Z	
297	12010.385 M	14.7	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.2	54.0	-16.8	Vert
	Ave								Low 8	DPSK Z	
^	12010.385 M	28.4	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	50.9	54.0	-3.1	Vert
									Low 8	DPSK Z	
299	12010.070 M	14.6	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	37.1	54.0	-16.9	Horiz
	Ave								Low 8	DPSK X	
^	12010.057 M	29.0	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	51.5	54.0	-2.5	Horiz
									Low 4	DPSK Y	
^	12010.070 M	28.1	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	50.6	54.0	-3.4	Horiz
									Low 8	DPSK X	
^	12009.987 M	25.1	+0.0 +0.0	+15.4 -39.0	+8.4 +1.5	+36.2	+0.0	47.6	54.0	-6.4	Horiz
									Low	GFSK X	

303	12010.055	14.4	+0.0	+15.4	+8.4	+36.2	+0.0	36.9	54.0	-17.1	Vert
	M		+0.0	-39.0	+1.5						
	Ave								Low 8 DPSK X		
^	12010.055	28.0	+0.0	+15.4	+8.4	+36.2	+0.0	50.5	54.0	-3.5	Vert
	M		+0.0	-39.0	+1.5						
									Low 8 DPSK X		

CKC Laboratories, Inc Date: 9/24/2014 Time: 19:09:17 Automatic Labs WO#: 96114
 Test Distance: 3 Meters Sequence#: 2



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Setup Photo



Overall Test Setup

15.249(d) Field Strength of Spurious Emissions and Band Edge

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**
 Specification: **15.249d/15.209 Radiated Emissions**
 Work Order #: **96114** Date: 9/29/2014
 Test Type: **Maximized Emissions** Time: 13:15:11
 Equipment: **OBD-II to Bluetooth bridge device** Sequence#: 2
 Manufacturer: Automatic Labs Tested By: S. Yamamoto
 Model: Link2
 S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00314	Loop Antenna	6502	7/2/2014	7/2/2016
	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T1	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
	ANP06360	Cable	L1-PNMNM-48	7/29/2014	7/29/2016
	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016
	AN03385	High Pass Filter	11SH10-3000/T10000-O/O	6/5/2013	6/5/2015
	AN00787	Preamp	83017A	5/31/2013	5/31/2015
	ANP06544	Cable	32026-29094K-29094K-36TC	11/20/2013	11/20/2015
	AN01413	Horn Antenna-ANSI C63.5 (dB/m)	84125-80008	11/9/2012	11/9/2014
	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015
T2	AN00010	Preamp	8447D	3/12/2014	3/12/2016
T3	AN00851	Biconilog Antenna	CBL6111C	4/30/2014	4/30/2016
T4	ANP05555	Cable	RG223/U	5/7/2014	5/7/2016
T5	ANP05569	Cable	RG-214/U	5/7/2014	5/7/2016

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.
 The EUT is connected to a remotely located DC power supply.
 The DC supply is providing 12.0 VDC to the EUT.
 The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz.
 Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.
 Data sheet contains spurious emission measurements of the EUT.
 Emission levels reported in this data are representative of worst case emissions.

Temperature: 29°C
 Relative Humidity: 42%
 Pressure: 100kPa

Frequency range scanned and maximized for this data sheet, 0.009MHz to 25000MHz. 9kHz-150kHz, RBW=VBW=200Hz. 150kHz-30MHz, RBW=VBW=9kHz. 30MHz-1000MHz, RBW=VBW=120kHz. 1000MHz-25000MHz, RBW=VBW=1MHz. RF output power: +2dBm.

Data was maximized with EUT in each of three axis systems (X, Y, Z).
 Site D

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

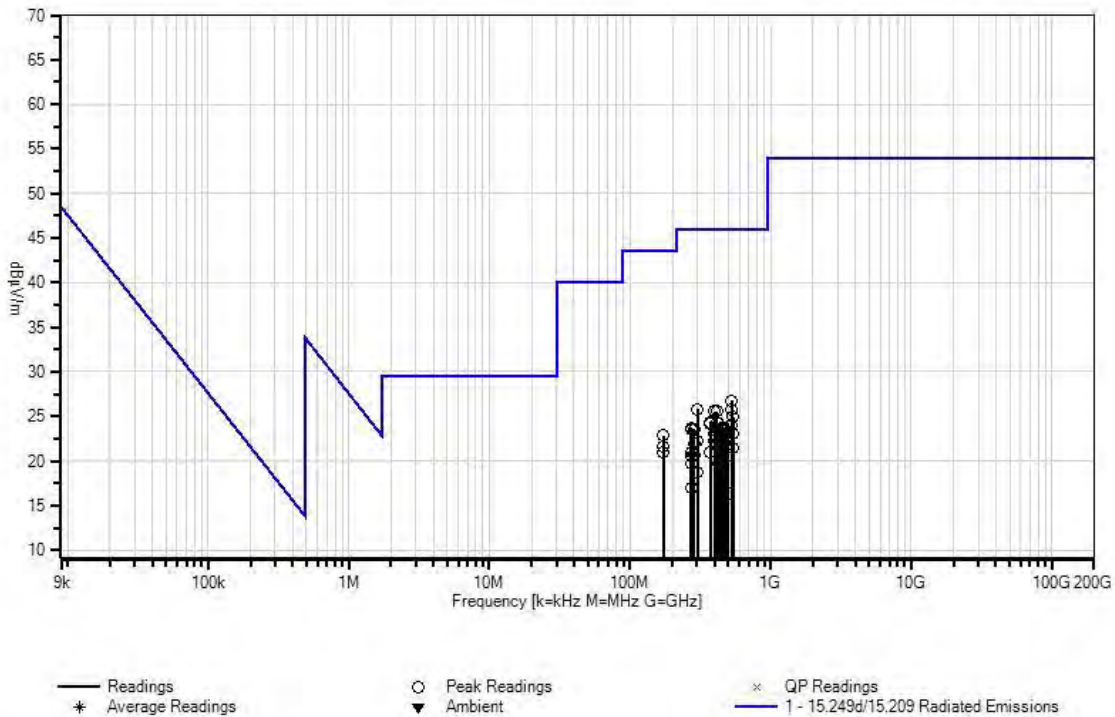
Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	529.786M	30.6	+2.6 +2.5	-27.9	+18.5	+0.4	+0.0	26.7	46.0	-19.3	Vert
2	529.785M	29.7	+2.6 +2.5	-27.9	+18.5	+0.4	+0.0	25.8	46.0	-20.2	Vert
3	300.686M	35.0	+1.9 +1.8	-26.5	+13.3	+0.3	+0.0	25.8	46.0	-20.2	Horiz
4	415.238M	31.7	+2.3 +2.2	-27.3	+16.4	+0.3	+0.0	25.6	46.0	-20.4	Vert
5	400.920M	32.0	+2.2 +2.1	-27.2	+16.1	+0.3	+0.0	25.5	46.0	-20.5	Horiz
6	171.821M	37.1	+1.5 +1.3	-26.8	+9.5	+0.2	+0.0	22.8	43.5	-20.7	Vert
7	544.106M	28.4	+2.6 +2.5	-27.9	+18.9	+0.4	+0.0	24.9	46.0	-21.1	Horiz
8	372.282M	31.6	+2.1 +2.0	-27.0	+15.4	+0.3	+0.0	24.4	46.0	-21.6	Horiz
9	415.236M	30.5	+2.3 +2.2	-27.3	+16.4	+0.3	+0.0	24.4	46.0	-21.6	Vert
10	372.280M	31.3	+2.1 +2.0	-27.0	+15.4	+0.3	+0.0	24.1	46.0	-21.9	Horiz
11	429.551M	30.0	+2.3 +2.2	-27.4	+16.6	+0.4	+0.0	24.1	46.0	-21.9	Vert
12	171.821M	35.9	+1.5 +1.3	-26.8	+9.5	+0.2	+0.0	21.6	43.5	-21.9	Vert
13	529.785M	27.9	+2.6 +2.5	-27.9	+18.5	+0.4	+0.0	24.0	46.0	-22.0	Vert
14	458.194M	29.2	+2.4 +2.3	-27.6	+17.1	+0.4	+0.0	23.8	46.0	-22.2	Vert

15	272.053M	33.6	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	23.7	46.0	-22.3	Vert
16	472.509M	28.9	+2.4 +2.3	-27.7	+17.4	+0.4	+0.0	23.7	46.0	-22.3	Horiz
17	443.872M	29.3	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	23.7	46.0	-22.3	Vert
18	286.369M	33.2	+1.8 +1.7	-26.5	+13.1	+0.3	+0.0	23.6	46.0	-22.4	Horiz
19	272.045M	33.5	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	23.6	46.0	-22.4	Horiz
20	171.822M	35.2	+1.5 +1.3	-26.8	+9.5	+0.2	+0.0	20.9	43.5	-22.6	Vert
21	472.513M	28.6	+2.4 +2.3	-27.7	+17.4	+0.4	+0.0	23.4	46.0	-22.6	Horiz
22	429.553M	29.2	+2.3 +2.2	-27.4	+16.6	+0.4	+0.0	23.3	46.0	-22.7	Vert
23	400.917M	29.6	+2.2 +2.1	-27.2	+16.1	+0.3	+0.0	23.1	46.0	-22.9	Horiz
24	544.113M	26.5	+2.6 +2.5	-27.9	+18.9	+0.4	+0.0	23.0	46.0	-23.0	Horiz
25	501.151M	27.6	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	22.9	46.0	-23.1	Vert
26	501.148M	27.4	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	22.7	46.0	-23.3	Vert
27	443.877M	28.3	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	22.7	46.0	-23.3	Horiz
28	472.510M	27.9	+2.4 +2.3	-27.7	+17.4	+0.4	+0.0	22.7	46.0	-23.3	Horiz
29	443.880M	28.2	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	22.6	46.0	-23.4	Horiz
30	501.149M	27.2	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	22.5	46.0	-23.5	Horiz
31	458.195M	27.8	+2.4 +2.3	-27.6	+17.1	+0.4	+0.0	22.4	46.0	-23.6	Vert
32	501.149M	27.1	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	22.4	46.0	-23.6	Horiz
33	300.692M	31.4	+1.9 +1.8	-26.5	+13.3	+0.3	+0.0	22.2	46.0	-23.8	Horiz
34	400.922M	28.7	+2.2 +2.1	-27.2	+16.1	+0.3	+0.0	22.2	46.0	-23.8	Horiz
35	286.379M	31.6	+1.8 +1.7	-26.5	+13.1	+0.3	+0.0	22.0	46.0	-24.0	Horiz
36	458.194M	27.2	+2.4 +2.3	-27.6	+17.1	+0.4	+0.0	21.8	46.0	-24.2	Vert
37	415.237M	27.9	+2.3 +2.2	-27.3	+16.4	+0.3	+0.0	21.8	46.0	-24.2	Vert
38	443.875M	27.3	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	21.7	46.0	-24.3	Horiz
39	544.103M	25.0	+2.6 +2.5	-27.9	+18.9	+0.4	+0.0	21.5	46.0	-24.5	Horiz
40	372.284M	28.2	+2.1 +2.0	-27.0	+15.4	+0.3	+0.0	21.0	46.0	-25.0	Horiz

41	272.059M	30.9	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	21.0	46.0	-25.0	Horiz
42	443.875M	26.3	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	20.7	46.0	-25.3	Vert
43	501.149M	25.3	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	20.6	46.0	-25.4	Vert
44	286.368M	30.2	+1.8 +1.7	-26.5	+13.1	+0.3	+0.0	20.6	46.0	-25.4	Horiz
45	272.052M	30.4	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	20.5	46.0	-25.5	Vert
46	272.051M	29.6	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	19.7	46.0	-26.3	Vert
47	429.556M	25.6	+2.3 +2.2	-27.4	+16.6	+0.4	+0.0	19.7	46.0	-26.3	Vert
48	300.691M	28.0	+1.9 +1.8	-26.5	+13.3	+0.3	+0.0	18.8	46.0	-27.2	Horiz
49	443.875M	24.2	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	18.6	46.0	-27.4	Vert
50	272.047M	26.9	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	17.0	46.0	-29.0	Horiz
51	501.145M	21.0	+2.5 +2.4	-27.8	+17.8	+0.4	+0.0	16.3	46.0	-29.7	Horiz

CKC Laboratories, Inc Date: 9/29/2014 Time: 13:15:11 Automatic Labs WO#: 96114
 Test Distance: 3 Meters Sequence#: 2



Band Edge

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • (714) 993-6112

Customer: **Automatic Labs**
 Specification: **Band Edge Compliance**
 Work Order #: **96114** Date: 9/25/2014
 Test Type: **Maximized Emissions**
 Equipment: **OBD-II to Bluetooth bridge device**
 Manufacturer: Automatic Labs Tested By: S. Yamamoto
 Model: Link2
 S/N: (none)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	7/10/2014	7/10/2015
T2	ANP04382	Cable	LDF-50	7/30/2014	7/30/2016
T3	ANP06360	Cable	L1-PNMMN-48	7/29/2014	7/29/2016
T4	AN01646	Horn Antenna	3115	3/18/2014	3/18/2016

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
OBD-II to Bluetooth bridge device*	Automatic Labs	Link2	(none)

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Xantrex	XTS 30-2X	58738

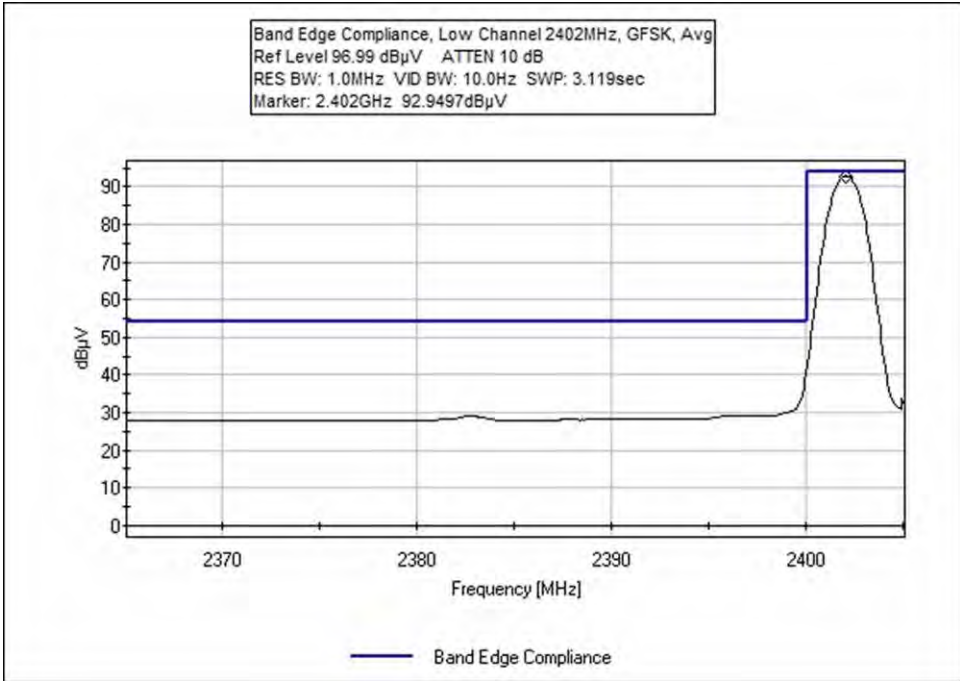
Test Conditions / Notes:

The equipment under test (EUT) is stand alone on the Styrofoam table top.
 The EUT is connected to a remotely located DC power supply. The DC supply is providing 12.0 VDC to the EUT.
 The EUT low, middle and high channels (and data sheet test frequencies) are 2402MHz, 2442MHz, and 2480MHz. Modulation types are GFSK 1Mbps, 4 DPSK 2Mbps, and 8 DPSK 3Mbps.

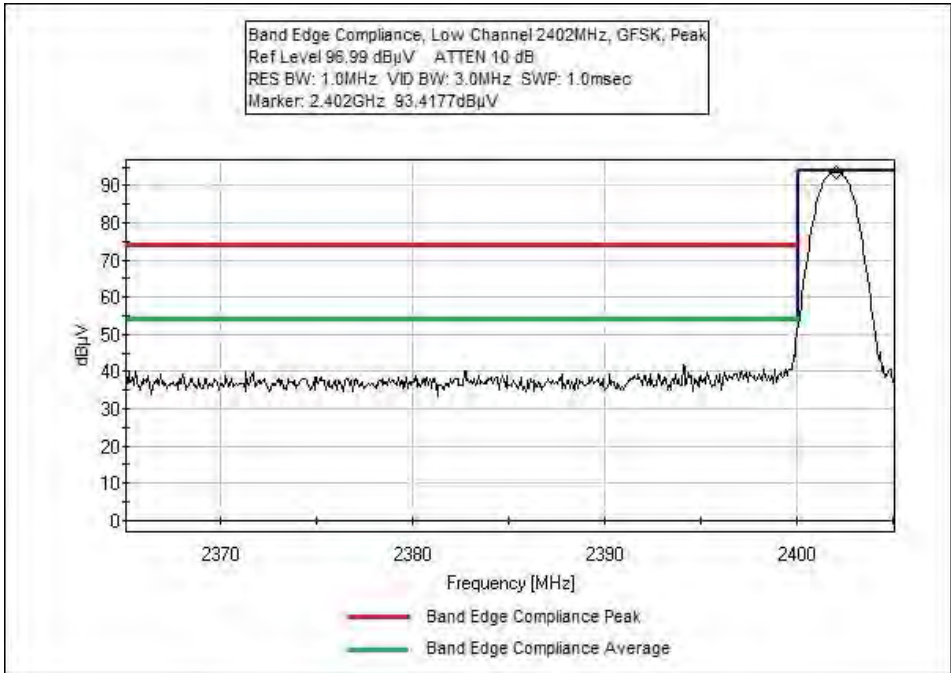
Temperature: 29°C
 Relative Humidity: 45%
 Pressure: 100kPa

Frequency range of data sheet 2400MHz to 2483.5MHz. RBW=1MHz, VBW=3MHz for peak. RBW=1MHz, VBW=10Hz for average.
 RF output power: +2dBm.
 Site D

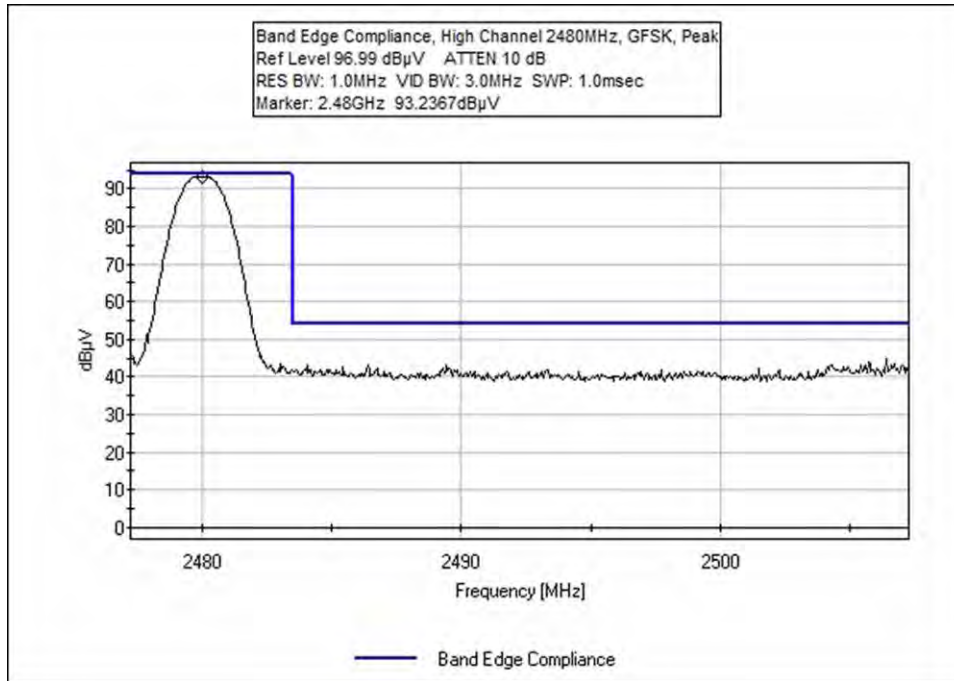
Test Data



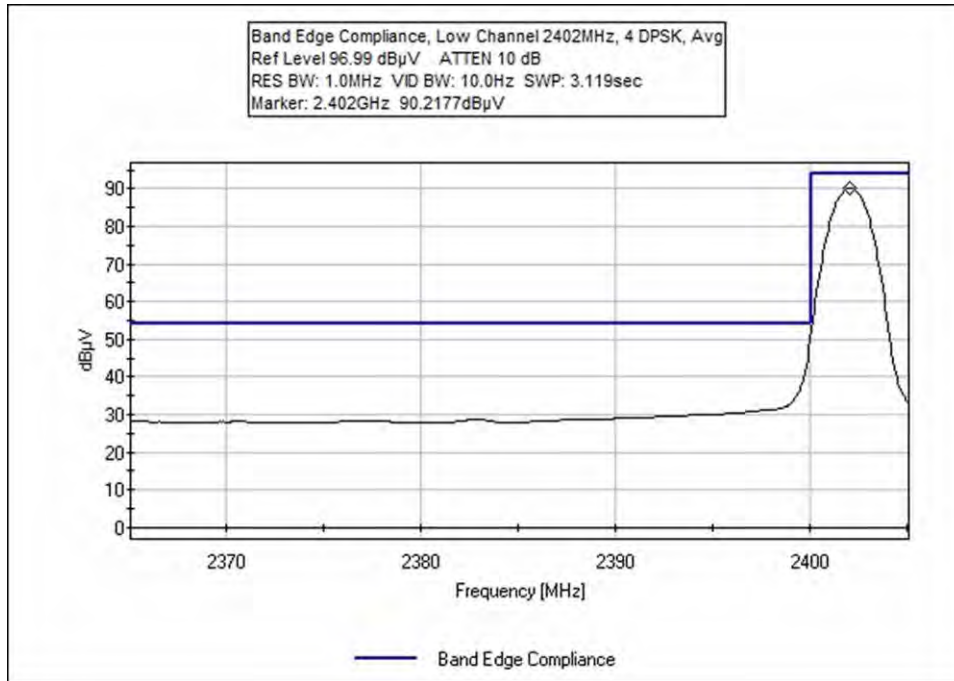
Low Channel, GFSK - Average



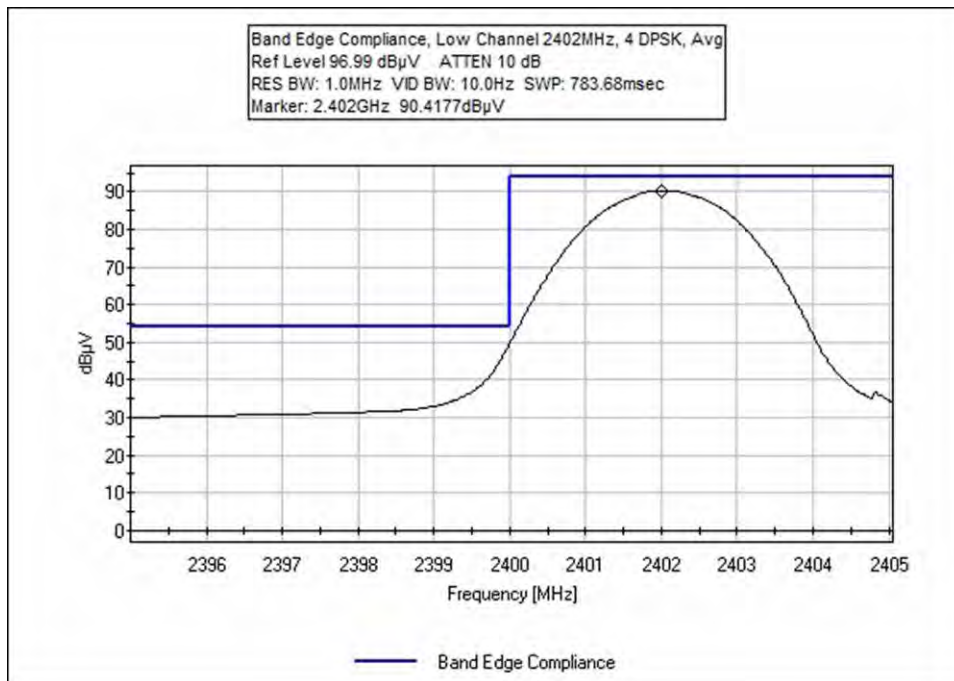
Low Channel, GFSK - Peak



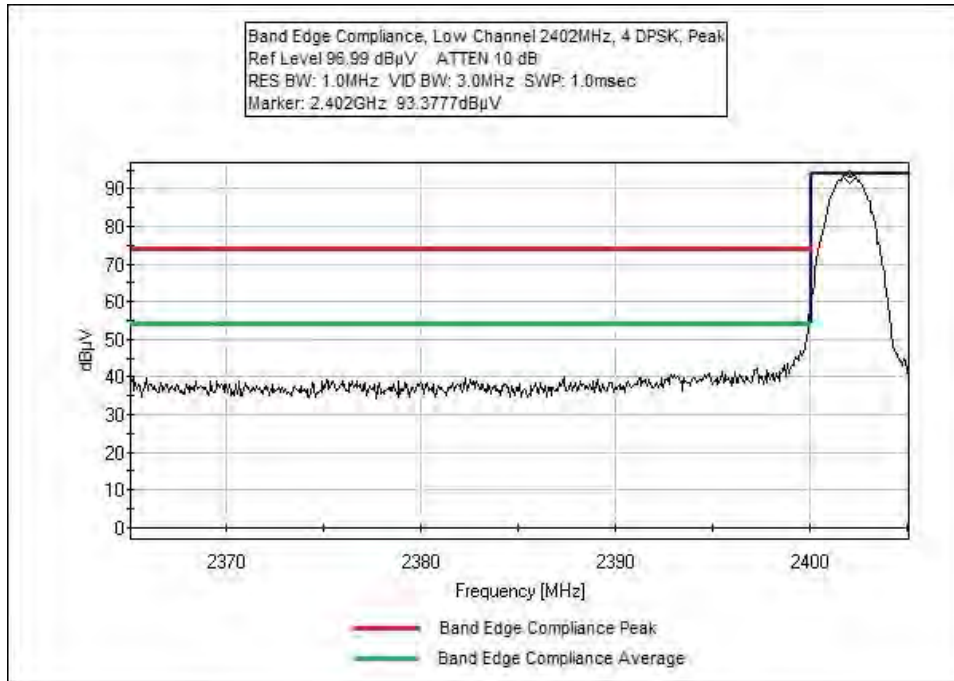
High Channel, GFSK - Peak



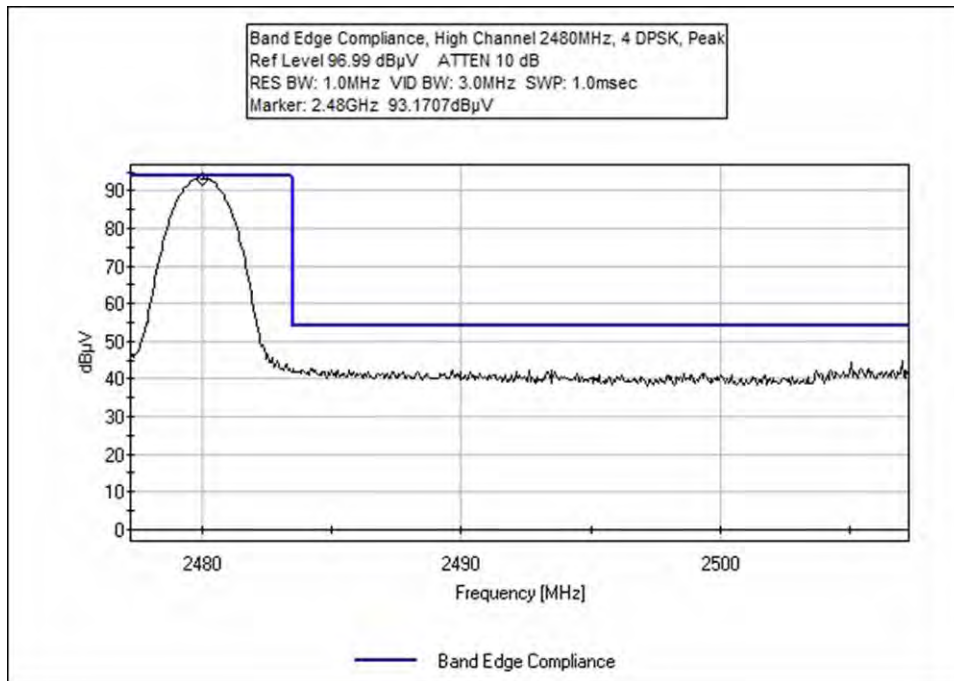
Low Channel, 4DPSK – Average 1



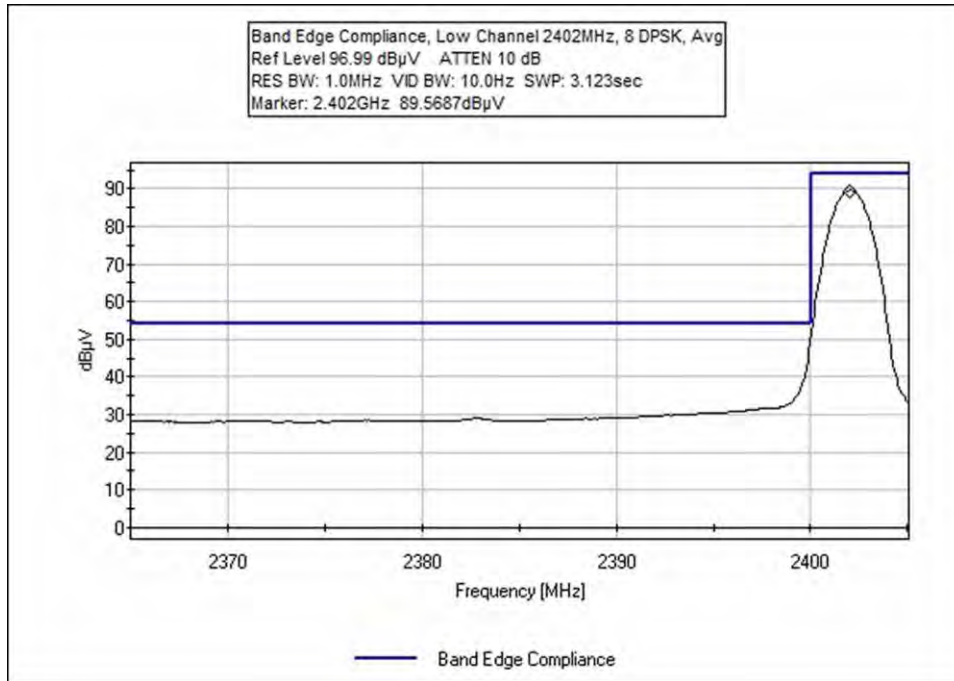
Low Channel, 4DPSK – Average 2



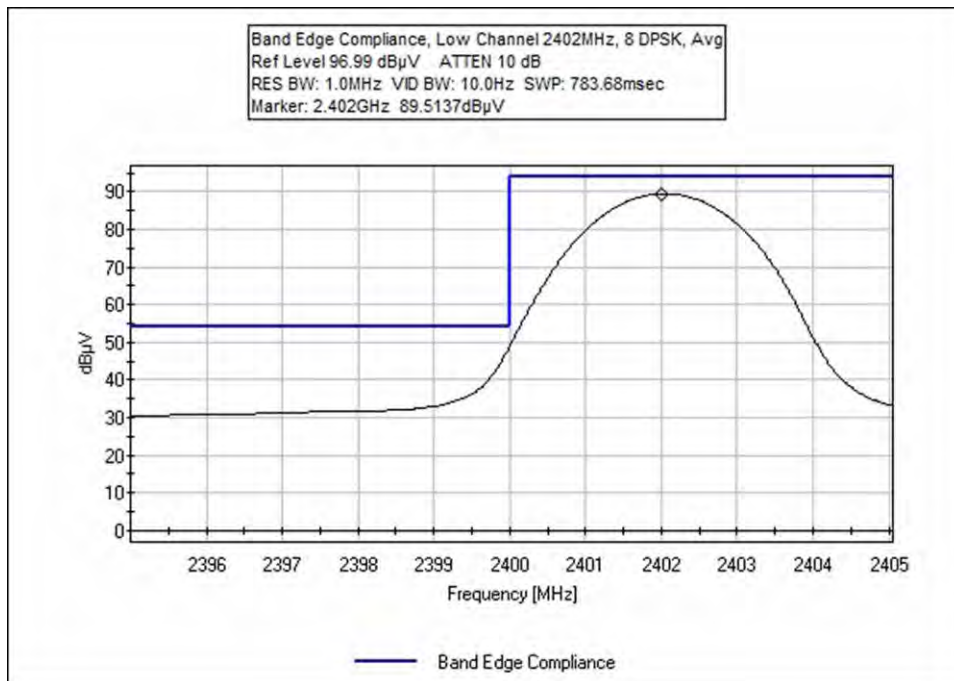
Low Channel, 4DPSK-Peak



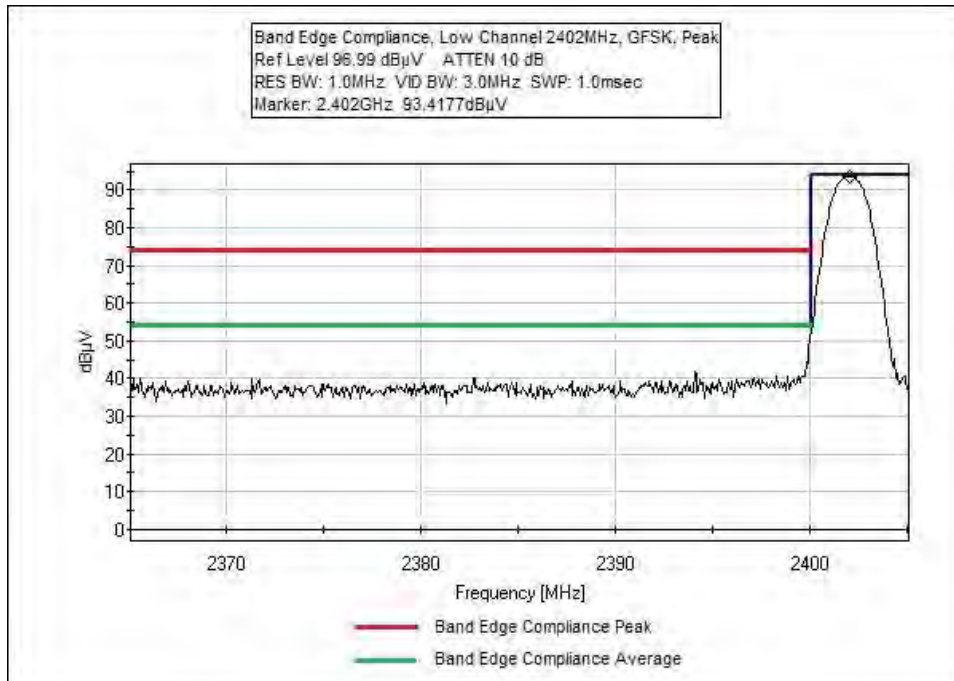
High Channel, 4DPSK-Peak



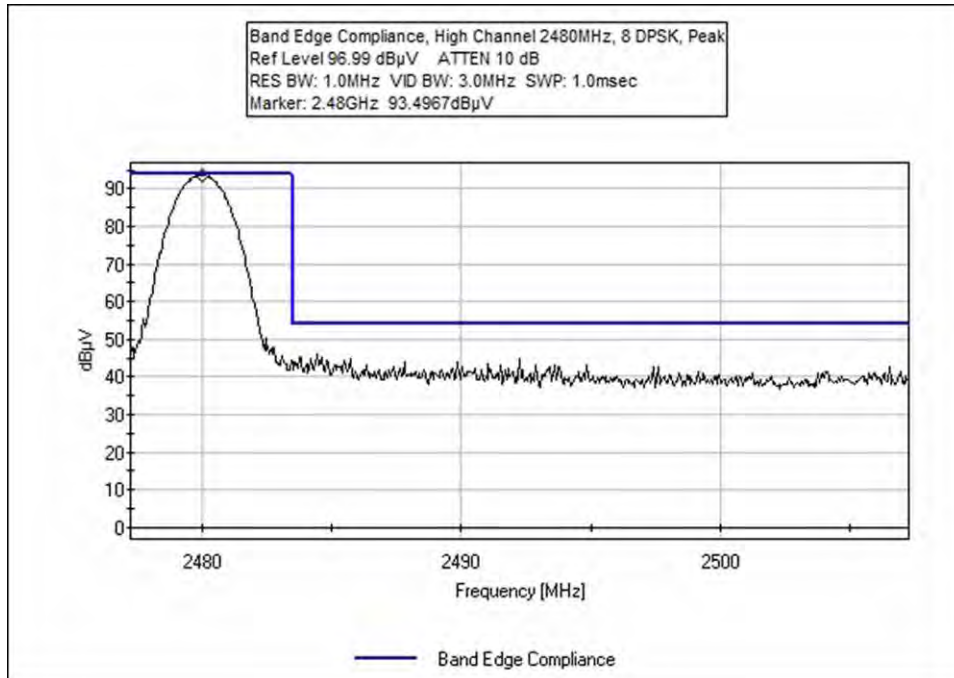
Low Channel, 8DPSK – Average 1



Low Channel, 8DPSK – Average 2



Low Channel, 8DPSK-Peak



High Channel, 8DPSK - Peak

Test Setup Photo



Overall Test Setup

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

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

Emissions Test Details

TESTING PARAMETERS

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

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

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

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBμV/m, the spectrum analyzer reading in dBμV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

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

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

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

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

Peak

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

Quasi-Peak

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

Average

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