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: REPORT PREPARED BY:

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San Francisco, CA 94105 5046 Sierra Pines Drive
Mariposa, CA 95338

REPRESENTATIVE: Steven Neresian Project Number: 96114

Customer Reference Number: CKC07

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.

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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.

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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

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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
Т3	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	Automatic Labs	Link2	(none)
device*			

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.

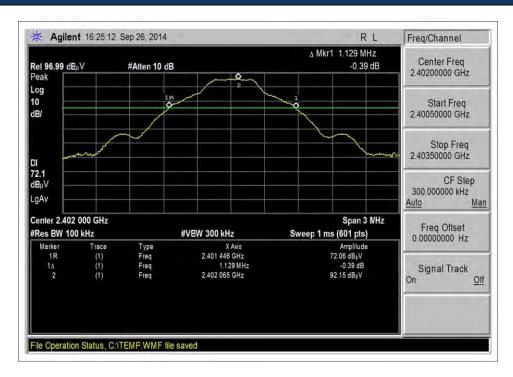
RF output power: +2dBm.

Site D

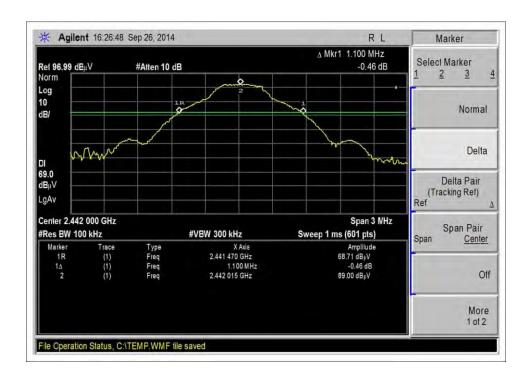
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Test Data

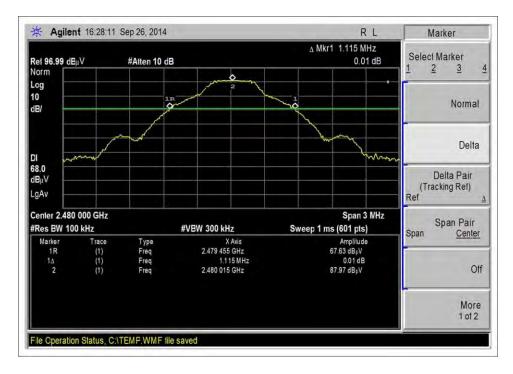


Low, GFSK



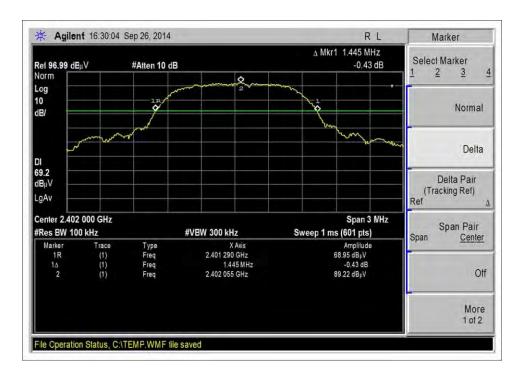


Middle, GFSK

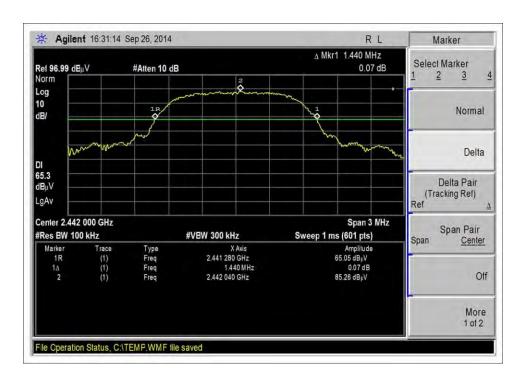


High, GFSK



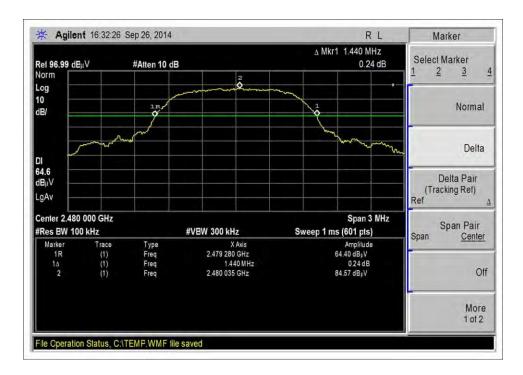


Low, 4DPSK



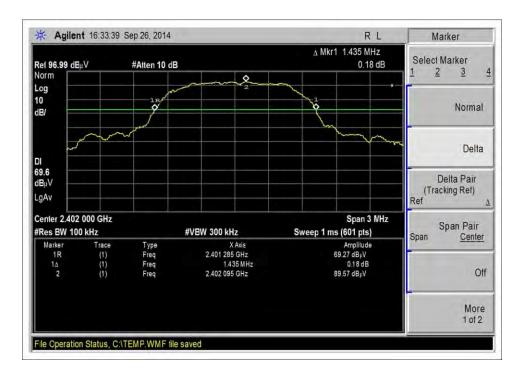
Middle, 4DPSK



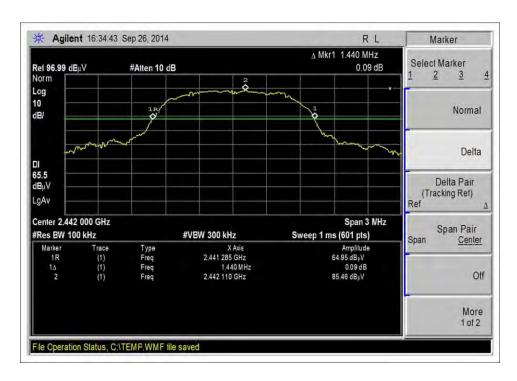


High, 4DPSK



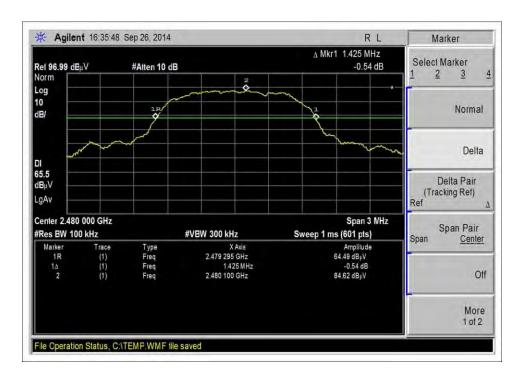


Low, 8DPSK



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:

1	F				
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
Т3	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	Automatic Labs	Link2	(none)
device*			

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.

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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:

	1				
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
Т3	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		9/11/2014	9/11/2016
		Adjustment			

Equipment Under Test (* = EUT):

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

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

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

Ext Attn: 0 dB

	rement Data:	Re	eading list	ted by ma	ırgin		T_{ϵ}	est Distanc	e: 3 Meters	!	
#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec Spec	Margin	Polar
,,,	1109	rung	T5	12	15		2150	Con	Брес	111415111	1 0141
	MHz	$dB\mu V$	dB	dB	dB	dB	Table	$dB\mu V/m$	$dB\mu V/m$	dB	Ant
1	2479.800M	55.7	+0.0	+6.5	+3.4	+25.5	+0.0	91.1	94.0	-2.9	Horiz
			+0.0						High, 4 DF	PSK	
									2Mbps, X	axis	
2	2442.258M	54.6	+0.0	+6.5	+3.3	+25.4	+0.0	89.8	94.0	-4.2	Horiz
			+0.0						Middle, 4	DPSK	
									2Mbps, Z		
	2441.992M	53.5	+0.0	+6.5	+3.3	+25.4	+0.0	88.7	94.0	-5.3	Horiz
1	Ave		+0.0						Middle, 4		
									2Mbps, Y		
	2402.000M	53.4	+0.0	+6.5	+3.2	+25.4	+0.0	88.5	94.0	-5.5	Vert
	Ave		+0.0						Low, 8 DP		
									3Mbps, Y		
	2442.000M	53.2	+0.0	+6.5	+3.3	+25.4	+0.0	88.4	94.0	-5.6	Horiz
1	Ave		+0.0						Middle, 8		
	2402 00014	52.2		16.5	+2.0	125.4		00.2	3Mbps, X		3.7 4
	2402.000M	53.2	$+0.0 \\ +0.0$	+6.5	+3.2	+25.4	+0.0	88.3	94.0	-5.7	Vert
1	Ave		+0.0						Low, 4 DP		
7	2480.000M	52.8	+0.0	+6.5	+3.4	+25.5	+0.0	88.2	2Mbps, Y 94.0	-5.8	Vert
	Ave	32.8	+0.0	±0.5	⊤3.4	±23.3	+0.0	00.2	94.0 High, 8 DI		VEIL
1	AVC		10.0						3Mbps, Y		
8	2442.000M	53.0	+0.0	+6.5	+3.3	+25.4	+0.0	88.2	94.0	-5.8	Horiz
	Ave	33.0	+0.0	10.5	13.3	123.4	10.0	00.2	Middle, 8		110112
	1110		. 0.0						3Mbps, Y		
9	2480.000M	52.7	+0.0	+6.5	+3.4	+25.5	+0.0	88.1	94.0	-5.9	Horiz
	Ave	C = . /	+0.0	0.0	٠.,	-0.0	0.0	00.1	High, 8 DF		
									3Mbps, X		
10	2480.000M	52.6	+0.0	+6.5	+3.4	+25.5	+0.0	88.0	94.0	-6.0	Vert
	Ave		+0.0						High, 4 DF		
									2Mbps, Y		
11	2480.000M	52.0	+0.0	+6.5	+3.4	+25.5	+0.0	87.4	94.0	-6.6	Vert
	Ave		+0.0						High, 4 DF	PSK	
									2Mbps, Z	axis	



12 2480.000M	51.6	+0.0	+6.5	+3.4	+25.5	+0.0	87.0	94.0 -7.0	Horiz
Ave	31.0	+0.0 +0.0	+6.3	±3.4	+23.3	+0.0	87.0	94.0 -7.0 High, 8 DPSK	попи
Ave		10.0						3Mbps, Y axis	
13 2480.000M	51.2	+0.0	+6.5	+3.4	+25.5	+0.0	86.6	94.0 -7.4	Vert
Ave	31.2	+0.0	10.5	13.4	123.3	10.0	00.0	High, 8 DPSK	VCIT
7110		10.0						3Mbps, Z axis	
14 2402.033M	50.9	+0.0	+6.5	+3.2	+25.4	+0.0	86.0	94.0 -8.0	Horiz
Ave	30.9	+0.0	10.5	13.2	123.4	10.0	80.0	Low, 8 DPSK	110112
7110		10.0						3Mbps, Z axis	
15 2442.000M	59.8	+0.0	+6.5	+3.3	+25.4	+0.0	72.0	94.0 -22.0	Vert
Ave	37.0	-23.0	10.5	13.3	123.4	10.0	72.0	Middle, GFSK	VCIT
7110		23.0						1Mbps, Y axis	
16 2402.000M	59.6	+0.0	+6.5	+3.2	+25.4	+0.0	71.7	94.0 -22.3	Horiz
Ave	39.0	-23.0	10.5	13.2	123.4	10.0	/1./	Low, GFSK 1Mbps,	110112
7110		23.0						Y axis	
17 2402.000M	58.5	+0.0	+6.5	+3.2	+25.4	+0.0	70.6	94.0 -23.4	Vert
Ave	36.3	-23.0	10.5	13.2	123.4	10.0	70.0	Low, GFSK 1Mbps,	VCIT
Ave		-23.0						Z axis	
18 2402.000M	58.4	+0.0	+6.5	+3.2	+25.4	+0.0	70.5	94.0 -23.5	Vert
Ave	30.4	-23.0	10.5	13.2	123.4	10.0	70.5	Low, GFSK 1Mbps,	VCIT
Ave		-23.0						Y axis	
19 2442.000M	57.8	+0.0	+6.5	+3.3	+25.4	+0.0	70.0	94.0 -24.0	Vert
Ave	37.0	-23.0	10.5	13.3	123.4	10.0	70.0	Middle, GFSK	VEIL
Ave		-23.0						1Mbps, Z axis	
20 2402.000M	57.9	+0.0	+6.5	+3.2	+25.4	+0.0	70.0	94.0 -24.0	Horiz
Ave	31.9	-23.0	10.5	13.2	123.4	10.0	70.0	Low, GFSK 1Mbps,	110112
Ave		-23.0						X axis	
21 2442.000M	57.3	+0.0	+6.5	+3.3	+25.4	+0.0	69.5	94.0 -24.5	Horiz
Ave	31.3	-23.0	10.5	13.3	123.4	10.0	07.5	Middle, GFSK	110112
7100		23.0						1Mbps, Y axis	
22 2402.017M	56.6	+0.0	+6.5	+3.2	+25.4	+0.0	68.7	94.0 -25.3	Horiz
Ave	20.0	-23.0		.5.2	23.1	. 0.0	00.7	Low, GFSK 1Mbps,	HOHE
								Z axis	
23 2480.000M	56.2	+0.0	+6.5	+3.4	+25.5	+0.0	68.6	94.0 -25.4	Horiz
Ave	00.2	-23.0	0.0	2	20.0	0.0	00.0	High, GFSK	110112
								1Mbps, X axis	
24 2442.008M	56.4	+0.0	+6.5	+3.3	+25.4	+0.0	68.6	94.0 -25.4	Horiz
Ave		-23.0						Middle, GFSK	
								1Mbps, X axis	
25 2402.000M	56.3	+0.0	+6.5	+3.2	+25.4	+0.0	68.4	94.0 -25.6	Horiz
Ave		-23.0				- • •		Low, 8 DPSK	
								3Mbps, Y axis	
26 2442.000M	55.7	+0.0	+6.5	+3.3	+25.4	+0.0	67.9	94.0 -26.1	Horiz
Ave		-23.0						Middle, 4 DPSK	
								2Mbps, X axis	
27 2480.000M	55.2	+0.0	+6.5	+3.4	+25.5	+0.0	67.6	94.0 -26.4	Vert
Ave		-23.0	-	-				High, GFSK	-
								1Mbps, Z axis	
28 2442.050M	55.4	+0.0	+6.5	+3.3	+25.4	+0.0	67.6	94.0 -26.4	Vert
Ave		-23.0						Middle, 8 DPSK	
								3Mbps, Y axis	
L								<u> </u>	



20	2402.00014	55.3		1.6.5	12.2	125.4	١٨٨	(7.4	04.0	тт .
	2402.000M	55.3	+0.0	+6.5	+3.2	+25.4	+0.0	67.4	94.0 -26.6	Horiz
4	Ave		-23.0						Low, 4 DPSK	
20	2400 00014	540	100	165	12.4	125.5	100	(7.2	2Mbps, Y axis	II
	2480.000M	54.9	+0.0	+6.5	+3.4	+25.5	+0.0	67.3	94.0 -26.7	Horiz
4	Ave		-23.0						High, GFSK	
	2400 00014	57.5		16.5	12.4	125.5		02.0	1Mbps, Y axis	
^	2480.000M	57.5	+0.0	+6.5	+3.4	+25.5	+0.0	92.9	94.0 -1.1	Horiz
			+0.0						High, 8 DPSK	
	2400 00014	57.2	100	165	12.4	125.5	100	02.7	3Mbps, X axis	TT
	2480.000M	57.3	+0.0	+6.5	+3.4	+25.5	+0.0	92.7	94.0 -1.3	Horiz
			+0.0						High, GFSK	
	2400 00014	56.0		16.5	12.4	125.5		01.6	1Mbps, X axis	TT .
^	2480.000M	56.2	+0.0	+6.5	+3.4	+25.5	+0.0	91.6	94.0 -2.4	Horiz
			+0.0						High, 8 DPSK	
	2400 0001 5	7.6.0	. 0. 0	165	. 2 . 4	. 25.5	. 0. 0	01.4	3Mbps, Y axis	
^	2480.000M	56.0	+0.0	+6.5	+3.4	+25.5	+0.0	91.4	94.0 -2.6	Horiz
			+0.0						High, GFSK	
	2400 0001 5	55.0	. 0. 0	165	. 2 . 4	. 25. 5	. 0. 0	00.7	1Mbps, Y axis	TT '
^	2480.000M	55.3	+0.0	+6.5	+3.4	+25.5	+0.0	90.7	94.0 -3.3	Horiz
			+0.0						High, 4 DPSK	
	2400 075) 5	52.2	. 0. 0		. 2. 4	. 2.5. 5	. 0. 0	00.5	2Mbps, Y axis	
^	2480.075M	53.3	+0.0	+6.5	+3.4	+25.5	+0.0	88.7	94.0 -5.3	Horiz
			+0.0						High, GFSK	
			0.0					00.6	1Mbps, Z axis	
^	2480.033M	53.2	+0.0	+6.5	+3.4	+25.5	+0.0	88.6	94.0 -5.4	Horiz
			+0.0						High, 8 DPSK	
	2.470.0753.6	50.7	. 0. 0	165	. 2 . 4	. 25. 5	. 0. 0	00.1	3Mbps, Z axis	TT '
^	2479.975M	52.7	+0.0	+6.5	+3.4	+25.5	+0.0	88.1	94.0 -5.9	Horiz
			+0.0						High, 4 DPSK	
20	2442 0003 6	55.0	. 0. 0	165	. 2 2	105.4	. 0. 0	(7.0	2Mbps, Z axis	X 7 .
	2442.000M	55.0	+0.0	+6.5	+3.3	+25.4	+0.0	67.2	94.0 -26.8	Vert
4	Ave		-23.0						Middle, 4 DPSK	
40	2402 0001 5	540	. 0. 0	165		105.4	. 0. 0	67.0	2Mbps, Y axis	
	2402.000M	54.9	+0.0	+6.5	+3.2	+25.4	+0.0	67.0	94.0 -27.0	Horiz
4	Ave		-23.0						Low, 4 DPSK	
4.1	2402 00014	540		16.5	. 2 2	125.4		(7.0	2Mbps, X axis	X 7
	2402.000M	54.9	+0.0	+6.5	+3.2	+25.4	+0.0	67.0	94.0 -27.0	Vert
4	Ave		-23.0						Low, 8 DPSK	
42	2402.00034	<i>510</i>	100	165	12.2	125.4	100	(()	3Mbps, Z axis	1 7 a ::4
	2402.000M	54.8	+0.0	+6.5	+3.2	+25.4	+0.0	66.9	94.0 -27.1	Vert
1 4	Ave		-23.0						Low, 4 DPSK	
^	2402.00014	50.0	ΙΟ Ο	165	12.2	125.4	+0.0	04.0	2Mbps, Z axis	Vont
	2402.000M	59.8	+0.0	+6.5	+3.2	+25.4	+0.0	94.9	94.0 +0.9	Vert
			+0.0						Low, 8 DPSK	
^	2402.0003.4	50.2	100	16.5	12.2	125.4	100	04.2	3Mbps, Z axis	Vant
	2402.000M	59.2	+0.0	+6.5	+3.2	+25.4	+0.0	94.3	94.0 +0.3	Vert
			+0.0						Low, 4 DPSK	
	2402.00034	50.1	100	165	12.2	125.4	100	04.2	2Mbps, Z axis	1 7 a ::4
	2402.000M	59.1	+0.0	+6.5	+3.2	+25.4	+0.0	94.2	94.0 +0.2	Vert
			+0.0						Low, GFSK 1Mbps,	
									Z axis	



^ 2402.000M	59.0	+0.0	+6.5	+3.2	+25.4	+0.0	94.1	94.0 +0.1	Vert
		+0.0						Low, GFSK 1Mbps,	
								Y axis	
^ 2402.000M	58.1	+0.0	+6.5	+3.2	+25.4	+0.0	93.2	94.0 -0.8	Vert
		+0.0						Low, 8 DPSK	
								3Mbps, Y axis	
^ 2402.000M	57.6	+0.0	+6.5	+3.2	+25.4	+0.0	92.7	94.0 -1.3	Vert
		+0.0						Low, 4 DPSK	
								2Mbps, Y axis	
^ 2402.008M	55.7	+0.0	+6.5	+3.2	+25.4	+0.0	90.8	94.0 -3.2	Vert
		+0.0						Low, 8 DPSK	
								3Mbps, X axis	
^ 2401.992M	55.2	+0.0	+6.5	+3.2	+25.4	+0.0	90.3	94.0 -3.7	Vert
		+0.0						Low, 4 DPSK	
								2Mbps, X axis	
^ 2402.000M	54.8	+0.0	+6.5	+3.2	+25.4	+0.0	89.9	94.0 -4.1	Vert
	•	+0.0	***					Low, GFSK 1Mbps,	
								X axis	
52 2479.908M	54.2	+0.0	+6.5	+3.4	+25.5	+0.0	66.6	94.0 -27.4	Vert
Ave	51.2	-23.0	. 0.2		20.0	. 0.0	00.0	High, GFSK	, 611
12,0								1Mbps, Y axis	
^ 2480.000M	56.6	+0.0	+6.5	+3.4	+25.5	+0.0	92.0	94.0 -2.0	Vert
2400.000W1	30.0	+0.0	10.5	13.4	123.3	10.0	72.0	High, 4 DPSK	VCIT
		10.0						2Mbps, Z axis	
^ 2480.000M	56.5	+0.0	+6.5	+3.4	+25.5	+0.0	91.9	94.0 -2.1	Vert
2460.000WI	30.3	+0.0	±0.5	⊤3.4	+23.3	+0.0	91.9	High, 8 DPSK	vert
		10.0						3Mbps, Y axis	
^ 2480.000M	5(2	+0.0	+6.5	+3.4	+25.5	100	01.7		Mont
^ 2480.000M	56.3		+6.3	+3.4	+23.3	+0.0	91.7	94.0 -2.3	Vert
		+0.0						High, GFSK	
A 2400 00014	56.0		165	. 2 . 4	. 25.5	. 0. 0	01.7	1Mbps, Z axis	3.7
^ 2480.000M	56.3	+0.0	+6.5	+3.4	+25.5	+0.0	91.7	94.0 -2.3	Vert
		+0.0						High, 4 DPSK	
								2Mbps, Y axis	
^ 2480.000M	56.1	+0.0	+6.5	+3.4	+25.5	+0.0	91.5	94.0 -2.5	Vert
		+0.0						High, 8 DPSK	
								3Mbps, Z axis	
^ 2479.908M	55.9	+0.0	+6.5	+3.4	+25.5	+0.0	91.3	94.0 -2.7	Vert
		+0.0						High, GFSK	
								1Mbps, Y axis	
^ 2479.933M	54.7	+0.0	+6.5	+3.4	+25.5	+0.0	90.1	94.0 -3.9	Vert
		+0.0						High, 4 DPSK	
								2Mbps, X axis	
^ 2479.967M	54.6	+0.0	+6.5	+3.4	+25.5	+0.0	90.0	94.0 -4.0	Vert
		+0.0						High, 8 DPSK	
								3Mbps, X axis	
^ 2480.000M	54.2	+0.0	+6.5	+3.4	+25.5	+0.0	89.6	94.0 -4.4	Vert
		+0.0						High, GFSK	
								1Mbps, X axis	
62 2442.000M	54.3	+0.0	+6.5	+3.3	+25.4	+0.0	66.5	94.0 -27.5	Vert
Ave		-23.0						Middle, 8 DPSK	
								3Mbps, Z axis	
								r-, — w	



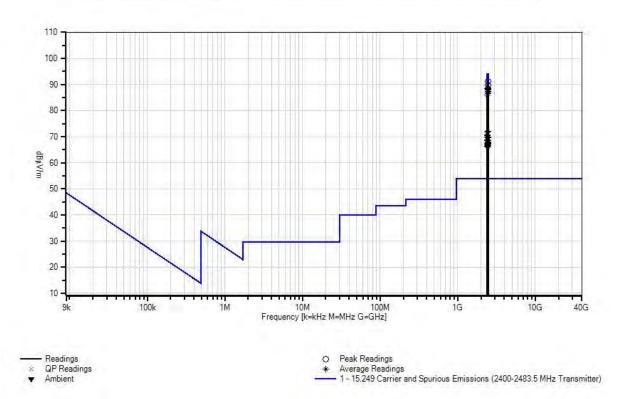
(2 2402 000)4	512	+0.0	16.5	12.2	125.4	100	66.4	04.0 27.6	Hamin
63 2402.000M Ave	54.3	+0.0 -23.0	+6.5	+3.2	+25.4	+0.0	66.4	94.0 -27.6 Low, 8 DPSK	Horiz
Ave		-23.0						3Mbps, X axis	
^ 2402.000M	60.3	+0.0	+6.5	+3.2	+25.4	+0.0	95.4	94.0 +1.4	Horiz
2402.000lvI	00.3	+0.0	±0.5	⊤3. ∠	±23.4	+0.0	93.4	Low, GFSK 1Mbps,	попи
		10.0						Y axis	
^ 2402.000M	60.3	+0.0	+6.5	+3.2	+25.4	+0.0	95.4	94.0 +1.4	Horiz
2402.000lVI	00.3	+0.0 +0.0	+0.3	∓3. ∠	±23.4	+0.0	93.4	1.4 Low, 8 DPSK	попи
		10.0						3Mbps, Y axis	
^ 2402.000M	59.7	+0.0	+6.5	+3.2	+25.4	+0.0	94.8	94.0 +0.8	Horiz
2402.000IVI	39.1	+0.0	10.5	13.2	123.4	10.0	24.0	Low, 4 DPSK	110112
		10.0						2Mbps, Y axis	
^ 2402.000M	58.9	+0.0	+6.5	+3.2	+25.4	+0.0	94.0	94.0 +0.0	Horiz
2402.000IVI	30.9	+0.0	±0.5	⊤3. ∠	±23.4	+0.0	94.0	Low, 4 DPSK	попи
		10.0						2Mbps, X axis	
^ 2402.000M	58.9	+0.0	+6.5	+3.2	+25.4	+0.0	94.0	94.0 +0.0	Horiz
2402.000lvI	30.9	+0.0	±0.5	⊤3. ∠	±23.4	+0.0	94.0	Low, 8 DPSK	попи
		10.0						3Mbps, X axis	
^ 2402.000M	58.8	+0.0	+6.5	+3.2	+25.4	+0.0	93.9	94.0 -0.1	Horiz
2402.000lvI	30.0	+0.0	±0.5	⊤3. ∠	±23.4	+0.0	93.9	Low, GFSK 1Mbps,	попи
		10.0						X axis	
^ 2402.017M	57.3	+0.0	+6.5	+3.2	+25.4	+0.0	92.4	94.0 -1.6	Horiz
2402.017WI	37.3	+0.0 +0.0	+0.3	∓3. ∠	±23.4	+0.0	92.4		попи
		±0.0						Low, GFSK 1Mbps, Z axis	
A 2402 022M	5.(1	+0.0	16.5	+3.2	+25.4	+0.0	01.2		Hanin
^ 2402.033M	56.1	$+0.0 \\ +0.0$	+6.5	+3.2	+23.4	+0.0	91.2	94.0 -2.8 Low, 8 DPSK	Horiz
		±0.0						3Mbps, Z axis	
^ 2402.008M	55.9	+0.0	+6.5	+3.2	+25.4	+0.0	91.0	94.0 -3.0	Horiz
2402.008101	33.9	+0.0 +0.0	+0.3	∓3. ∠	±23.4	+0.0	91.0	Low, 4 DPSK	попи
		10.0						2Mbps, Z axis	
73 2442.000M	53.9	+0.0	+6.5	+3.3	+25.4	+0.0	66.1	94.0 -27.9	Horiz
Ave	33.9	-23.0	10.5	13.3	123.4	10.0	00.1	Middle, 8 DPSK	110112
Avc		-23.0						3Mbps, Y axis	
^ 2442.000M	58.9	+0.0	+6.5	+3.3	+25.4	+0.0	94.1	94.0 +0.1	Horiz
2442.000WI	36.9	+0.0	±0.3	⊤3.3	±23.4	±0.0	94.1	Middle, 4 DPSK	попи
		10.0						2Mbps, X axis	
^ 2442.000M	58.6	+0.0	+6.5	+3.3	+25.4	+0.0	93.8	94.0 -0.2	Horiz
2442.000W	50.0	+0.0	10.3	13.3	123.4	10.0	23.0	Middle, 8 DPSK	11011Z
		.0.0						3Mbps, Y axis	
^ 2442.000M	58.0	+0.0	+6.5	+3.3	+25.4	+0.0	93.2	94.0 -0.8	Horiz
2442.000W	30.0	+0.0	10.3	13.3	123.4	10.0	93.4	Middle, GFSK	110112
		+ 0.0						1Mbps, Y axis	
^ 2442.000M	57.8	+0.0	+6.5	+3.3	+25.4	+0.0	93.0	94.0 -1.0	Horiz
2 11 2.0001VI	51.0	+0.0	10.5	13.3	143.4	10.0	93.0	Middle, 8 DPSK	110112
		10.0						3Mbps, X axis	
^ 2442.000M	57.8	+0.0	+6.5	+3.3	+25.4	+0.0	93.0	94.0 -1.0	Horiz
2 11 2.0001VI	51.0	+0.0	10.5	13.3	143.4	10.0	93.0	Middle, 8 DPSK	110112
		10.0						3Mbps, Y axis	
^ 2441.992M	57.7	+0.0	+6.5	+3.3	+25.4	+0.0	92.9	94.0 -1.1	Horiz
4441.772IVI	31.1	+0.0	10.3	13.3	123.4	10.0	ラム. ラ	Middle, 4 DPSK	110112
		10.0						2Mbps, Y axis	
								21v10ps, 1 axis	



^	2442.008M	57.3	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	92.5	94.0 -1.5 Middle, GFSK	Horiz
			0.0						1Mbps, X axis	
^	2442.000M	55.7	+0.0	+6.5	+3.3	+25.4	+0.0	90.9	94.0 -3.1	Horiz
			+0.0						Middle, GFSK	
									1Mbps, Z axis	
^	2442.033M	55.6	+0.0	+6.5	+3.3	+25.4	+0.0	90.8	94.0 -3.2	Horiz
			+0.0						Middle, 8 DPSK	
									3Mbps, Z axis	
83	2442.000M	53.9	+0.0	+6.5	+3.3	+25.4	+0.0	66.1	94.0 -27.9	Vert
	Ave		-23.0						Middle, 4 DPSK	
									2Mbps, Z axis	
^	2442.000M	60.4	+0.0	+6.5	+3.3	+25.4	+0.0	95.6	94.0 +1.6	Vert
			+0.0						Middle, GFSK	
	2442.05014	50.6		16.5	+2.2	125.4		04.0	1Mbps, Y axis	3.7
^	2442.050M	59.6	+0.0 +0.0	+6.5	+3.3	+25.4	+0.0	94.8	94.0 +0.8	Vert
			+0.0						Middle, 8 DPSK 3Mbps, Y axis	
^	2442.000M	59.3	+0.0	+6.5	+3.3	+25.4	+0.0	94.5	94.0 +0.5	Vert
	2442.000M	39.3	+0.0	±0.5	⊤3.3	±23.4	+0.0	94.3	Middle, 4 DPSK	VEIT
			10.0						2Mbps, Y axis	
^	2442.000M	58.9	+0.0	+6.5	+3.3	+25.4	+0.0	94.1	94.0 +0.1	Vert
	2112.000141	30.7	+0.0	. 0.5	. 5.5	. 23.1	. 0.0	7 1.1	Middle, 8 DPSK	V 011
			0.0						3Mbps, Z axis	
^	2442.000M	58.5	+0.0	+6.5	+3.3	+25.4	+0.0	93.7	94.0 -0.3	Vert
			+0.0						Middle, GFSK	
									1Mbps, Z axis	
^	2442.000M	58.4	+0.0	+6.5	+3.3	+25.4	+0.0	93.6	94.0 -0.4	Vert
			+0.0						Middle, 4 DPSK	
									2Mbps, Z axis	
^	2441.975M	55.6	+0.0	+6.5	+3.3	+25.4	+0.0	90.8	94.0 -3.2	Vert
			+0.0						Middle, 8 DPSK	
									3Mbps, X axis	
^	2441.992M	55.3	+0.0	+6.5	+3.3	+25.4	+0.0	90.5	94.0 -3.5	Vert
			+0.0						Middle, 4 DPSK	
	2442 0003 5	540				. 25. 1		00.1	2Mbps, X axis	X 7 .
^	2442.000M	54.9	+0.0	+6.5	+3.3	+25.4	+0.0	90.1	94.0 -3.9	Vert
			+0.0						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





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: Use Work Order #: 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Work Order #: 96114 Date: 9/24/2014

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-	6/5/2013	6/5/2015
			3000/T10000-		
			O/O		
T6	AN00787	Preamp	83017A	5/31/2013	5/31/2015
T7	ANP06544	Cable	32026-29094K-	11/20/2013	11/20/2015
			29094K-36TC		
	AN01413	Horn Antenna-ANSI	84125-80008	11/9/2012	11/9/2014
		C63.5 (dB/m)			
	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):

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

Support Devices:

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

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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

Attn: U aB										
rement Data:			ted by ma				est Distanc	e: 3 Meters		
Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
		T5	T6	T7						
MHz	$dB\mu V$	dB	dB	dB	dB	Table	$dB\mu V/m$	$dB\mu V/m$	dB	Ant
12009.350	27.4	+0.0	+15.4	+8.4	+36.2	+0.0	49.9	54.0	-4.1	Vert
M		+0.0	-39.0	+1.5						
								Low 4 DPS	SK X	
9767.747M	30.5	+0.0	+13.6	+7.5	+35.7	+0.0	49.9	54.0	-4.1	Vert
		+0.2	-39.0	+1.4				Middle GF	SK Y	
9608.502M	31.0	+0.0	+13.5	+7.4	+35.5	+0.0	49.8	54.0	-4.2	Vert
		+0.0	-39.0	+1.4				Low GFSk	ΚZ	
9920.437M	30.0	+0.0	+13.7	+7.6	+35.9	+0.0	49.7	54.0	-4.3	Horiz
		+0.1	-39.0	+1.4				High GFSI	ΧX	
9608.530M	30.8	+0.0	+13.5	+7.4	+35.5	+0.0	49.6	54.0	-4.4	Vert
		+0.0	-39.0	+1.4				Low 4 DPS	SK Y	
12400.495	25.9	+0.0	+15.7	+8.5	+36.2	+0.0	49.6	54.0	-4.4	Vert
M		+0.4	-38.6	+1.5						
								High 4 DP	SK Z	
12009.373	27.0	+0.0	+15.4	+8.4	+36.2	+0.0	49.5	54.0	-4.5	Vert
M		+0.0	-39.0	+1.5						
								Low GFSk	Υ	
12210.607	26.3	+0.0	+15.6	+8.4	+36.2	+0.0	49.4	54.0	-4.6	Vert
M		+0.2	-38.8	+1.5						
								Middle GF	SK X	
7205.367M	36.5	+0.0	+11.2	+5.9	+33.3	+0.0	49.1	54.0	-4.9	Vert
		+0.2	-39.2	+1.2				Low GFSk	Υ	
12009.540	26.5	+0.0	+15.4	+8.4	+36.2	+0.0	49.0	54.0	-5.0	Vert
M		+0.0	-39.0	+1.5						
								Low GFSk	ΧX	
9607.547M	30.0	+0.0	+13.5	+7.4	+35.5	+0.0	48.8	54.0	-5.2	Horiz
		+0.0	-39.0	+1.4				Low GFSk	ΧΥ	
9768.548M	29.4	+0.0	+13.6	+7.5	+35.7	+0.0	48.8	54.0	-5.2	Vert
		+0.2	-39.0	+1.4				Middle GF	SK X	
9767.463M	29.2	+0.0	+13.6	+7.5	+35.7	+0.0	48.6	54.0	-5.4	Vert
		+0.2	-39.0	+1.4				Middle GF	SK Z	
	Freq MHz 12009.350 M 9767.747M 9608.502M 9920.437M 9608.530M 12400.495 M 12009.373 M 12210.607 M 7205.367M 12009.540 M 9607.547M	rement Data: Reference Freq Rdng MHz dBμV 12009.350 27.4 9767.747M 30.5 9608.502M 31.0 9920.437M 30.0 9608.530M 30.8 12400.495 25.9 M 27.0 12210.607 26.3 M 7205.367M 36.5 12009.540 26.5 M 9607.547M 30.0 9768.548M 29.4	Frement Data: Reading lis Freq Rdng T1 T5 MHz dBμV dB 12009.350 27.4 +0.0 9767.747M 30.5 +0.0 9608.502M 31.0 +0.0 9920.437M 30.0 +0.0 9608.530M 30.8 +0.0 +0.0 +0.0 +0.0 12400.495 25.9 +0.0 M +0.4 +0.0 12009.373 27.0 +0.0 M +0.2 +0.0 7205.367M 36.5 +0.0 +0.2 +0.2 +0.0 9607.547M 30.0 +0.0 9768.548M 29.4 +0.0 9767.463M 29.2 +0.0	Reading listed by marker Preq Reading T1 T2 T5 T6 MHz dBμV dB dB 12009.350 27.4 +0.0 +15.4 M +0.0 -39.0 9767.747M 30.5 +0.0 +13.6 +0.2 -39.0 9608.502M 31.0 +0.0 +13.5 +0.0 -39.0 9920.437M 30.0 +0.0 +13.7 +0.1 -39.0 9608.530M 30.8 +0.0 +13.5 +0.0 -39.0 12400.495 25.9 +0.0 +15.7 M +0.4 -38.6 12009.373 27.0 +0.0 +15.4 +0.0 -39.0 12210.607 26.3 +0.0 +15.6 M +0.2 -38.8 7205.367M 36.5 +0.0 +15.4 +0.2 -39.0 9607.547M 30.0 +0.0	Reading listed by margin. Freq Rdng T1 T2 T3 MHz dBμV dB dB dB 12009.350 27.4 +0.0 +15.4 +8.4 M +0.0 -39.0 +1.5 9767.747M 30.5 +0.0 +13.6 +7.5 +0.2 -39.0 +1.4 9608.502M 31.0 +0.0 +13.5 +7.4 +0.0 -39.0 +1.4 9920.437M 30.0 +0.0 +13.7 +7.6 +0.1 -39.0 +1.4 9608.530M 30.8 +0.0 +13.5 +7.4 +0.0 -39.0 +1.4 12400.495 25.9 +0.0 +15.7 +8.5 M +0.4 -38.6 +1.5 12209.373 27.0 +0.0 +15.4 +8.4 M +0.0 -39.0 +1.5 7205.367M 36.5 +0.0 +15.6 +8.4<	Freq Rdng Reading listed by margin. Freq Rdng T1 T2 T3 T4 MHz dBμV dB dB dB dB 12009.350 27.4 +0.0 +15.4 +8.4 +36.2 9767.747M 30.5 +0.0 +13.6 +7.5 +35.7 +0.2 -39.0 +1.4 +35.5 +0.0 -39.0 +1.4 9920.437M 30.0 +0.0 +13.5 +7.4 +35.5 +0.1 -39.0 +1.4 +35.9 9608.530M 30.8 +0.0 +13.5 +7.4 +35.5 +0.0 -39.0 +1.4 +35.5 12400.495 25.9 +0.0 +15.7 +8.5 +36.2 M +0.4 -38.6 +1.5 +36.2 12210.607 26.3 +0.0 +15.4 +8.4 +36.2 7205.367M 36.5 +0.0 +15.4 +8.4 +36.2 <td>$\begin{array}{c ccccccccccccccccccccccccccccccccccc$</td> <td>rement Data: Reading listed by margin. Test Distance Freq Rdng T1 T2 T3 T4 Dist Corr MHz dBµV dB dB dB dB dB Table dBµV/m 12009.350 27.4 +0.0 +15.4 +8.4 +36.2 +0.0 49.9 9767.747M 30.5 +0.0 +13.6 +7.5 +35.7 +0.0 49.9 9608.502M 31.0 +0.0 +13.5 +7.4 +35.5 +0.0 49.8 9920.437M 30.0 +0.0 +13.7 +7.6 +35.9 +0.0 49.7 9608.530M 30.8 +0.0 +13.5 +7.4 +35.5 +0.0 49.6 12400.495 25.9 +0.0 +13.5 +7.4 +35.5 +0.0 49.6 12210.607 26.3 +0.0 +15.7 +8.5 +36.2 +0.0 49.5 12210.607 26.3 +0.0</td> <td>rement Data: Reading listed by margin. Test To To</td> <td>rement Data: Relng RI T2 T3 T4 Distance: 3 Meters Freq Rdng T1 T2 T3 T4 Dist Corr Spec Margin MHz dBµ dB dB dB dB Table dBµV/m dA 4.1 C DBYS C 4.1 C C A 4.1 C C A 4.1 A 4.2 4.2 A 4.2 A 4.2 A 4.2 4.2 A 4.2 A <</td>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	rement Data: Reading listed by margin. Test Distance Freq Rdng T1 T2 T3 T4 Dist Corr MHz dBµV dB dB dB dB dB Table dBµV/m 12009.350 27.4 +0.0 +15.4 +8.4 +36.2 +0.0 49.9 9767.747M 30.5 +0.0 +13.6 +7.5 +35.7 +0.0 49.9 9608.502M 31.0 +0.0 +13.5 +7.4 +35.5 +0.0 49.8 9920.437M 30.0 +0.0 +13.7 +7.6 +35.9 +0.0 49.7 9608.530M 30.8 +0.0 +13.5 +7.4 +35.5 +0.0 49.6 12400.495 25.9 +0.0 +13.5 +7.4 +35.5 +0.0 49.6 12210.607 26.3 +0.0 +15.7 +8.5 +36.2 +0.0 49.5 12210.607 26.3 +0.0	rement Data: Reading listed by margin. Test To	rement Data: Relng RI T2 T3 T4 Distance: 3 Meters Freq Rdng T1 T2 T3 T4 Dist Corr Spec Margin MHz dBµ dB dB dB dB Table dBµV/m dA 4.1 C DBYS C 4.1 C C A 4.1 C C A 4.1 A 4.2 4.2 A 4.2 A 4.2 A 4.2 4.2 A 4.2 A <



14	12210.669	25.2	+0.0	+15.6	+8.4	+36.2	+0.0	48.3	54.0	-5.7	Vert
	M		+0.2	-38.8	+1.5						
									Middle GFS	SK Z	
15	4803.855M	43.0	+0.0	+9.2	+4.7	+30.1	+0.0	48.3	54.0	-5.7	Vert
			+0.1	-39.7	+0.9				Low 4 DPS	ΚX	
16	12009.785	25.7	+0.0	+15.4	+8.4	+36.2	+0.0	48.2	54.0	-5.8	Horiz
	M		+0.0	-39.0	+1.5						
									Low 4 DPS	ΚX	
17	14650.981	18.5	+0.0	+17.4	+9.9	+38.7	+0.0	48.1			Horiz
- ,	M	10.0	+0.2	-38.3	+1.7	50.,	0.0	.0.1	0	0.5	110112
	Ave		·	00.0					Middle GFS	K Y	
	12010.465	25.5	+0.0	+15.4	+8.4	+36.2	+0.0	48.0			Horiz
10	M	23.3	+0.0	-39.0	+1.5	130.2	10.0	70.0	34.0	-0.0	110112
	IVI		10.0	-39.0	11.5				Low 8 DPS	ΚV	
10	7325.762M	34.9	+0.0	+11.4	+5.9	+33.6	+0.0	48.0			Vert
19	/323./02IVI	34.9				133.0	10.0	46.0			VEIL
20	7439.805M	34.5	+0.2	-39.2 +11.6	+1.2	+33.8	+0.0	47.9	Middle GFS	-6.1	Vert
20	/439.803M	34.3				+33.8	+0.0	47.9			vert
	10000 415	24.0	+0.1	-39.3	+1.2	.262	. 0. 0	45.0	High GFSK		** .
21	12209.415	24.8	+0.0	+15.6	+8.4	+36.2	+0.0	47.9	54.0	-6.1	Vert
	M		+0.2	-38.8	+1.5				16111 4 B	2011	
									Middle 4 Dl		
22	7439.275M	34.4	+0.0	+11.6	+6.0	+33.8	+0.0	47.8		-6.2	Horiz
			+0.1	-39.3	+1.2				High GFSK		
23	4804.273M	42.4	+0.0	+9.2	+4.7	+30.1	+0.0	47.7	54.0	-6.3	Horiz
			+0.1	-39.7	+0.9				Low 8 DPS	ΚY	
24	14651.003	18.1	+0.0	+17.4	+9.9	+38.7	+0.0	47.7	54.0	-6.3	Vert
	M		+0.2	-38.3	+1.7						
	Ave								Middle GFS	SK Y	
	7326.620M	34.4	+0.0	+11.4	+5.9	+33.6	+0.0	47.5		-6.5	Horiz
			+0.2	-39.2	+1.2				Middle 4 Dl		
26	14881.225	17.4	+0.0	+17.7	+10.1	+38.5	+0.0	47.4			Vert
	M	17	+0.3	-38.3	+1.7	50.6	0.0	.,	0	0.0	, 010
	Ave		0.0	00.0					High GFSK	Y	
	14881.225	28.5	+0.0	+17.7	+10.1	+38.5	+0.0	58.5			Vert
	M	20.3	+0.3	-38.3	+1.7	. 30.3	0.0	30.3	57.0	٠٦.٥	V C1 l
	171		10.5	-50.5	1./				High GFSK	V	
20	7440.403M	34.0	+0.0	+11.6	+6.0	+33.8	+0.0	47.4		-6.6	Цотіл
	/440.403IVI	34.0		-39.3		±33.8	±0.0		34.0 High GFSK		Horiz
20	14650 001	17.0				1207	100				IIa::'-
29	14650.981	17.8	+0.0	+17.4	+9.9	+38./	+0.0	47.4	54.0	-6.6	Horiz
	M		+0.2	-38.3	+1.7				Milit OF	117 7	
	Ave	20.0				. 20 =	. 0 . 0		Middle GFS		
_ ^	14650.981	29.8	+0.0	+17.4	+9.9	+38.7	+0.0	59.4	54.0	+5.4	Horiz
	M		+0.2	-38.3	+1.7						
									Middle GFS		
^	14650.981	27.9	+0.0	+17.4	+9.9	+38.7	+0.0	57.5	54.0	+3.5	Horiz
	M		+0.2	-38.3	+1.7						
									Middle GFS		
32	7439.835M	33.9	+0.0	+11.6	+6.0	+33.8	+0.0	47.3	54.0	-6.7	Vert
			+0.1	-39.3	+1.2				High 4 DPS	K Y	
33	7325.855M	34.2	+0.0	+11.4	+5.9	+33.6	+0.0	47.3	54.0	-6.7	Vert
			+0.2	-39.2	+1.2				Middle 4 Dl		
										-	



34	7325.860M	34.1	+0.0	+11.4	+5.9	+33.6	+0.0	47.2		Horiz
			+0.2	-39.2	+1.2				Middle 8 DPSK Y	
35	7440.705M	33.7	+0.0	+11.6	+6.0	+33.8	+0.0	47.1	54.0 -6.9	Horiz
			+0.1	-39.3	+1.2				High 8 DPSK Y	
36	7440.215M	33.6	+0.0	+11.6	+6.0	+33.8	+0.0	47.0	54.0 -7.0	Vert
			+0.1	-39.3	+1.2				High 8 DPSK Y	
37	7325.500M	33.9	+0.0	+11.4	+5.9	+33.6	+0.0	47.0	54.0 -7.0	Vert
			+0.2	-39.2	+1.2				Middle 8 DPSK Y	
38	12209.547	23.9	+0.0	+15.6	+8.4	+36.2	+0.0	47.0	54.0 -7.0	Horiz
	M		+0.2	-38.8	+1.5					
									Middle GFSK X	
39	7439.630M	33.5	+0.0	+11.6	+6.0	+33.8	+0.0	46.9	54.0 -7.1	Horiz
			+0.1	-39.3	+1.2				High 8 DPSK Z	
40	14650.981	17.3	+0.0	+17.4	+9.9	+38.7	+0.0	46.9	54.0 -7.1	Vert
	M	17.0	+0.2	-38.3	+1.7	50.7	0.0	.0.,	7.1	, 010
	Ave		٠	00.0					Middle GFSK Z	
	14651.003	29.4	+0.0	+17.4	+9.9	+38.7	+0.0	59.0	54.0 +5.0	Vert
	M	27.1	+0.2	-38.3	+1.7	. 30.7	. 0.0	37.0	31.0	V 01 t
	141		. 0.2	30.3	. 1.7				Middle GFSK Y	
^	14650.981	26.9	+0.0	+17.4	+9.9	+38.7	+0.0	56.5	54.0 +2.5	Vert
	M	20.7	+0.2	-38.3	+1.7	130.7	10.0	30.3	34.0 12.3	VCIT
	1 V1		10.2	-30.3	11.7				Middle GFSK Z	
12	7326.500M	33.8	+0.0	+11.4	+5.9	+33.6	+0.0	46.9	54.0 -7.1	Vert
43	/320.300WI	33.8	+0.0			+33.0	+0.0	40.9		vert
4.4	7.420.6651.4	22.5		-39.2	+1.2	122.0		16.0	Middle 8 DPSK X	3.7 4
44	7439.665M	33.5	+0.0	+11.6	+6.0	+33.8	+0.0	46.9	54.0 -7.1	Vert
4.5	7206 5401 5	242	+0.1	-39.3	+1.2	. 22.2	. 0. 0	16.0	High 8 DPSK Z	T 7
45	7206.540M	34.3	+0.0	+11.2	+5.9	+33.3	+0.0	46.9	54.0 -7.1	Vert
1.5			+0.2	-39.2	+1.2	22.0		1.50	Low 4 DPSK Y	
46	7440.030M	33.5	+0.0	+11.6	+6.0	+33.8	+0.0	46.9	54.0 -7.1	Horiz
			+0.1	-39.3	+1.2				High 8 DPSK X	
47	7206.125M	34.2	+0.0	+11.2	+5.9	+33.3	+0.0	46.8	54.0 -7.2	Vert
			+0.2	-39.2	+1.2				Low 8 DPSK Y	
48	7325.630M	33.7	+0.0	+11.4	+5.9	+33.6	+0.0	46.8	54.0 -7.2	Horiz
			+0.2	-39.2	+1.2				Middle 4 DPSK X	
49	7440.195M	33.4	+0.0	+11.6	+6.0	+33.8	+0.0	46.8	54.0 -7.2	Vert
			+0.1	-39.3	+1.2				High 8 DPSK X	
50	4803.750M	41.4	+0.0	+9.2	+4.7	+30.1	+0.0	46.7	54.0 -7.3	Vert
			+0.1	-39.7	+0.9				Low 4 DPSK Z	
51	7439.565M	33.3	+0.0	+11.6	+6.0	+33.8	+0.0	46.7	54.0 -7.3	Horiz
			+0.1	-39.3	+1.2				High 4 DPSK Y	
52	7204.985M	34.1	+0.0	+11.2	+5.9	+33.3	+0.0	46.7	54.0 -7.3	Horiz
			+0.2	-39.2	+1.2				Low 8 DPSK Z	
53	4803.910M	41.4	+0.0	+9.2	+4.7	+30.1	+0.0	46.7	54.0 -7.3	Vert
			+0.1	-39.7	+0.9			,	Low 8 DPSK Z	
54	4804.485M	41.4	+0.0	+9.2	+4.7	+30.1	+0.0	46.7	54.0 -7.3	Horiz
		11.1	+0.1	-39.7	+0.9	50.1	0.0	10.7	Low 4 DPSK Y	110112
55	7327.140M	33.5	+0.0	+11.4	+5.9	+33.6	+0.0	46.6	54.0 -7.4	Vert
	, 321.1701 v 1	55.5	+0.0	-39.2	+1.2	. 55.0	0.0	40.0	Middle 4 DPSK Z	V C1 t
56	7205.607M	34.0	+0.0	+11.2	+5.9	+33.3	+0.0	46.6	54.0 -7.4	Horiz
30	/ 203.00 / IVI	34.0	+0.0	-39.2	+3.9	133.3	10.0	40.0	Low GFSK Z	110112
57	7206 02214	240				±22.2	±0.0	16.6		Vant
3/	7206.022M	34.0	+0.0	+11.2	+5.9	+33.3	+0.0	46.6	54.0 -7.4	Vert
			+0.2	-39.2	+1.2				Low GFSK Z	



58	7327.310M	33.5	+0.0	+11.4	+5.9	+33.6	+0.0	46.6		Horiz
			+0.2	-39.2	+1.2				Middle 8 DPSK Z	
59	4884.075M	40.8	+0.0	+9.3	+4.8	+30.3	+0.0	46.6		Vert
			+0.2	-39.7	+0.9				Middle 8 DPSK Z	
60	7206.457M	33.9	+0.0	+11.2	+5.9	+33.3	+0.0	46.5	54.0 -7.5	Vert
			+0.2	-39.2	+1.2				Low GFSK X	
61	7206.275M	33.9	+0.0	+11.2	+5.9	+33.3	+0.0	46.5	54.0 -7.5	Horiz
			+0.2	-39.2	+1.2				Low 4 DPSK Z	
62	7206.175M	33.9	+0.0	+11.2	+5.9	+33.3	+0.0	46.5	54.0 -7.5	Horiz
			+0.2	-39.2	+1.2				Low GFSK X	
63	7207.335M	33.9	+0.0	+11.2	+5.9	+33.3	+0.0	46.5	54.0 -7.5	Vert
			+0.2	-39.2	+1.2				Low 4 DPSK Z	
64	7327.390M	33.3	+0.0	+11.4	+5.9	+33.6	+0.0	46.4	54.0 -7.6	Horiz
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		+0.2	-39.2	+1.2				Middle 8 DPSK X	
65	7440.757M	33.0	+0.0	+11.6	+6.0	+33.8	+0.0	46.4		Vert
	, , . ,	22.0	+0.1	-39.3	+1.2	22.0	0.0		High GFSK X	, 610
66	7326.600M	33.2	+0.0	+11.4	+5.9	+33.6	+0.0	46.3		Vert
00	7320.000111	33.2	+0.2	-39.2	+1.2	. 55.0	. 0.0	10.5	Middle 8 DPSK Z	VOIT
67	7439.755M	32.9	+0.0	+11.6	+6.0	+33.8	+0.0	46.3		Vert
07	7737.733IVI	32.7	+0.1	-39.3	+1.2	133.0	10.0	40.5	High 4 DPSK X	VCIT
68	7326.395M	33.2	+0.1	+11.4	+5.9	+33.6	+0.0	46.3		Horiz
00	7320.3931VI	33.2	+0.2	-39.2	+1.2	133.0	10.0	40.3	Middle GFSK X	110112
60	7325.730M	33.2	+0.0	+11.4	+5.9	+33.6	+0.0	46.3	54.0 -7.7	Horiz
09	/323./30IVI	33.2	+0.0	-39.2	+3.9	±33.0	±0.0	40.3	Middle GFSK Y	ПОПЕ
70	7225 200M	22.2				+33.6	ΙΛ.Λ	46.3		II.ami-
/0	7325.209M	33.2	+0.0 +0.2	+11.4	+5.9	+33.0	+0.0	40.3	54.0 -7.7	Horiz
71	7207 17014	22.6		-39.2	+1.2	122.2	ΙΛ.Λ	16.2	Middle GFSK Z	V 74
/1	7206.170M	33.6	+0.0	+11.2	+5.9	+33.3	+0.0	46.2	54.0 -7.8	Vert
70	7226 02014	22.1	+0.2	-39.2	+1.2	+22.6		16.0	Low 8 DPSK X	
12	7326.830M	33.1	+0.0	+11.4	+5.9	+33.6	+0.0	46.2	54.0 -7.8	Horiz
		22.0	+0.2	-39.2	+1.2	22.0		1	Middle 4 DPSK Z	
73	7439.135M	32.8	+0.0	+11.6	+6.0	+33.8	+0.0	46.2	54.0 -7.8	Horiz
			+0.1	-39.3	+1.2				High 4 DPSK X	
74	4803.792M	40.9	+0.0	+9.2	+4.7	+30.1	+0.0	46.2	54.0 -7.8	Horiz
			+0.1	-39.7	+0.9				Low 4 DPSK Z	
75	7205.850M	33.5	+0.0	+11.2	+5.9	+33.3	+0.0	46.1	54.0 -7.9	Horiz
			+0.2	-39.2	+1.2				Low GFSK Y	
76	7439.580M	32.7	+0.0	+11.6	+6.0	+33.8	+0.0	46.1		Horiz
			+0.1	-39.3	+1.2				High 4 DPSK Z	
77	7440.490M	32.6	+0.0	+11.6	+6.0	+33.8	+0.0	46.0	54.0 -8.0	Horiz
			+0.1	-39.3	+1.2				High GFSK Y	
78	7324.767M	32.8	+0.0	+11.4	+5.9	+33.6	+0.0	45.9	54.0 -8.1	Vert
			+0.2	-39.2	+1.2				Middle 4 DPSK X	
79	4804.265M	40.6	+0.0	+9.2	+4.7	+30.1	+0.0	45.9	54.0 -8.1	Vert
			+0.1	-39.7	+0.9				Low 8 DPSK X	
80	7206.775M	33.2	+0.0	+11.2	+5.9	+33.3	+0.0	45.8	54.0 -8.2	Vert
			+0.2	-39.2	+1.2				Low 8 DPSK Z	
81	4884.485M	39.9	+0.0	+9.3	+4.8	+30.3	+0.0	45.7	54.0 -8.3	Vert
			+0.2	-39.7	+0.9				Middle 8 DPSK X	
82	7206.920M	33.0	+0.0	+11.2	+5.9	+33.3	+0.0	45.6	54.0 -8.4	Horiz
			+0.2	-39.2	+1.2				Low 8 DPSK X	
83	7206.047M	32.8	+0.0	+11.2	+5.9	+33.3	+0.0	45.4	54.0 -8.6	Horiz
	· · ·		+0.2	-39.2	+1.2				Low 8 DPSK Y	



84	4803.580M	40.1	+0.0	+9.2	+4.7	+30.1	+0.0	45.4		Horiz
0.5	7226 2271 6	22.2	+0.1	-39.7	+0.9	122.6	. 0. 0	45.4	Low GFSK Y	X 7 .
85	7326.327M	32.3	+0.0	+11.4	+5.9	+33.6	+0.0	45.4	54.0 -8.6	Vert
0.6	5 441 4203 f	22.0	+0.2	-39.2	+1.2	. 22.0	. 0. 0	15.1	Middle GFSK X	T.7 .
86	7441.430M	32.0	+0.0	+11.6	+6.0	+33.8	+0.0	45.4	54.0 -8.6	Vert
			+0.1	-39.3	+1.2				High 4 DPSK Z	
87	4884.365M	39.4	+0.0	+9.3	+4.8	+30.3	+0.0	45.2	54.0 -8.8	Horiz
			+0.2	-39.7	+0.9				Middle 4 DPSK Y	
88	4884.090M	39.3	+0.0	+9.3	+4.8	+30.3	+0.0	45.1	54.0 -8.9	Vert
			+0.2	-39.7	+0.9				Middle 4 DPSK Z	
89	7440.021M	31.7	+0.0	+11.6	+6.0	+33.8	+0.0	45.1	54.0 -8.9	Vert
			+0.1	-39.3	+1.2				High GFSK Z	
90	4804.125M	39.8	+0.0	+9.2	+4.7	+30.1	+0.0	45.1	54.0 -8.9	Horiz
			+0.1	-39.7	+0.9				Low 8 DPSK Z	
91	4803.775M	39.8	+0.0	+9.2	+4.7	+30.1	+0.0	45.1	54.0 -8.9	Vert
			+0.1	-39.7	+0.9				Low GFSK Z	
92	7206.685M	32.4	+0.0	+11.2	+5.9	+33.3	+0.0	45.0	54.0 -9.0	Horiz
			+0.2	-39.2	+1.2				Low 4 DPSK Y	
93	4884.658M	39.2	+0.0	+9.3	+4.8	+30.3	+0.0	45.0	54.0 -9.0	Vert
			+0.2	-39.7	+0.9				Middle 4 DPSK X	
94	4804.457M	39.7	+0.0	+9.2	+4.7	+30.1	+0.0	45.0	54.0 -9.0	Vert
			+0.1	-39.7	+0.9				Low GFSK X	
95	7207.800M	32.3	+0.0	+11.2	+5.9	+33.3	+0.0	44.9	54.0 -9.1	Horiz
			+0.2	-39.2	+1.2				Low 4 DPSK X	
96	4883.650M	38.9	+0.0	+9.3	+4.8	+30.3	+0.0	44.7	54.0 -9.3	Horiz
			+0.2	-39.7	+0.9				Middle 8 DPSK Y	
97	4884.390M	38.8	+0.0	+9.3	+4.8	+30.3	+0.0	44.6	54.0 -9.4	Horiz
			+0.2	-39.7	+0.9				Middle 8 DPSK Z	
98	4884.272M	38.8	+0.0	+9.3	+4.8	+30.3	+0.0	44.6	54.0 -9.4	Horiz
			+0.2	-39.7	+0.9				Middle GFSK Y	
99	4803.585M	39.3	+0.0	+9.2	+4.7	+30.1	+0.0	44.6	54.0 -9.4	Horiz
			+0.1	-39.7	+0.9				Low 8 DPSK X	
100	4960.435M	38.6	+0.0	+9.4	+4.8	+30.4	+0.0	44.5	54.0 -9.5	Vert
			+0.1	-39.7	+0.9				High 8 DPSK X	
101	4960.235M	38.5	+0.0	+9.4	+4.8	+30.4	+0.0	44.4	54.0 -9.6	Vert
			+0.1	-39.7	+0.9				High 8 DPSK Z	
102	4803.940M	39.0	+0.0	+9.2	+4.7	+30.1	+0.0	44.3	54.0 -9.7	Vert
			+0.1	-39.7	+0.9				Low 4 DPSK Y	
103	7326.486M	31.2	+0.0	+11.4	+5.9	+33.6	+0.0	44.3	54.0 -9.7	Vert
			+0.2	-39.2	+1.2				Middle GFSK Z	
104	4803.663M	38.7	+0.0	+9.2	+4.7	+30.1	+0.0	44.0	54.0 -10.0	Horiz
			+0.1	-39.7	+0.9				Low GFSK X	
105	4883.615M	38.1	+0.0	+9.3	+4.8	+30.3	+0.0	43.9	54.0 -10.1	Vert
			+0.2	-39.7	+0.9				Middle 8 DPSK Y	
106	4884.325M	38.0	+0.0	+9.3	+4.8	+30.3	+0.0	43.8	54.0 -10.2	Vert
	-		+0.2	-39.7	+0.9				Middle 4 DPSK Y	
107	7206.060M	31.1	+0.0	+11.2	+5.9	+33.3	+0.0	43.7	54.0 -10.3	Vert
			+0.2	-39.2	+1.2				Low 4 DPSK X	
108	4960.750M	37.6	+0.0	+9.4	+4.8	+30.4	+0.0	43.5	54.0 -10.5	Vert
100	.,00.,00141	57.0	+0.1	-39.7	+0.9	. 50.1	. 0.0	13.3	High 4 DPSK X	, 010
109	9608.510M	24.6	+0.0	+13.5	+7.4	+35.5	+0.0	43.4	54.0 -10.6	Horiz
	Ave		+0.0	-39.0	+1.4	20.0	0.0		Low 4 DPSK Y	110112
				27.0	. 1. 1				2011 1 21 011 1	



110 4959.265M	37.5	+0.0	+9.4	+4.8	+30.4	+0.0	43.4		Vert
		+0.1	-39.7	+0.9				High 8 DPSK Y	
111 4884.173M	37.6	+0.0	+9.3	+4.8	+30.3	+0.0	43.4	54.0 -10.6	Vert
		+0.2	-39.7	+0.9				Middle GFSK Y	
112 9920.195M	23.6	+0.0	+13.7	+7.6	+35.9	+0.0	43.3	54.0 -10.7	Vert
Ave		+0.1	-39.0	+1.4				High 8 DPSK X	
^ 9920.195M	32.2	+0.0	+13.7	+7.6	+35.9	+0.0	51.9	54.0 -2.1	Vert
		+0.1	-39.0	+1.4				High 8 DPSK X	
^ 9920.246M	29.4	+0.0	+13.7	+7.6	+35.9	+0.0	49.1	54.0 -4.9	Vert
		+0.1	-39.0	+1.4				High GFSK Z	
115 4959.335M	37.3	+0.0	+9.4	+4.8	+30.4	+0.0	43.2	54.0 -10.8	Horiz
		+0.1	-39.7	+0.9				High 8 DPSK Y	
116 4803.740M	37.8	+0.0	+9.2	+4.7	+30.1	+0.0	43.1	54.0 -10.9	Vert
		+0.1	-39.7	+0.9				Low GFSK Y	
117 4959.580M	37.2	+0.0	+9.4	+4.8	+30.4	+0.0	43.1	54.0 -10.9	Vert
		+0.1	-39.7	+0.9				High 4 DPSK Y	
118 4884.155M	37.2	+0.0	+9.3	+4.8	+30.3	+0.0	43.0	54.0 -11.0	Horiz
110 100 1110011	57.2	+0.2	-39.7	+0.9	50.5	0.0		Middle 8 DPSK X	110112
119 4803.830M	37.6	+0.0	+9.2	+4.7	+30.1	+0.0	42.9	54.0 -11.1	Horiz
117 1003.030141	37.0	+0.1	-39.7	+0.9	. 50.1	. 0.0	12.9	Low GFSK Z	TIOTIZ
120 9768.767M	23.3	+0.0	+13.6	+7.5	+35.7	+0.0	42.7		Vert
Ave	25.5	+0.2	-39.0	+1.4	133.1	10.0	72.7	Middle 4 DPSK X	VOIT
^ 9768.767M	33.7	+0.0	+13.6	+7.5	+35.7	+0.0	53.1	54.0 -0.9	Vert
7700.7071 v 1	33.1	+0.2	-39.0	+1.4	133.1	10.0	33.1	Middle 4 DPSK X	VCIT
122 4803.865M	37.3	+0.2	+9.2	+4.7	+30.1	+0.0	42.6	54.0 -11.4	Vert
122 4003.003101	37.3	+0.0	-39.7	+4.7 +0.9	⊤30.1	±0.0	42.0	Low 8 DPSK Y	Veit
123 9607.370M	23.8	+0.1	+13.5	+7.4	+35.5	+0.0	42.6		Vert
	23.8				+33.3	+0.0	42.0		vert
Ave ^ 9607.370M	24.2	+0.0	-39.0	+1.4	125.5	ΙΛΛ	52.1	Low 4 DPSK X	T I4
7 9007.370IVI	34.3	+0.0	+13.5	+7.4	+35.5	+0.0	53.1	54.0 -0.9	Vert
107 4002 (00) 4	26.0	+0.0	-39.0	+1.4	+20.2		10.6	Low 4 DPSK X	
125 4883.690M	36.8	+0.0	+9.3	+4.8	+30.3	+0.0	42.6	54.0 -11.4	Horiz
106 0010 01016	22.0	+0.2	-39.7	+0.9	. 2.7.0	. 0. 0	10.5	Middle 4 DPSK X	
126 9919.810M	22.8	+0.0	+13.7	+7.6	+35.9	+0.0	42.5	54.0 -11.5	Horiz
Ave		+0.1	-39.0	+1.4				High 8 DPSK Y	
^ 9919.810M	33.4	+0.0	+13.7	+7.6	+35.9	+0.0	53.1	54.0 -0.9	Horiz
		+0.1	-39.0	+1.4				High 8 DPSK Y	
^ 9919.805M	30.1	+0.0	+13.7	+7.6	+35.9	+0.0	49.8	54.0 -4.2	Horiz
		+0.1	-39.0	+1.4				High GFSK Z	
129 4884.247M	36.7	+0.0	+9.3	+4.8	+30.3	+0.0	42.5	54.0 -11.5	Horiz
		+0.2	-39.7	+0.9				Middle GFSK X	
130 4884.242M	36.5	+0.0	+9.3	+4.8	+30.3	+0.0	42.3	54.0 -11.7	Vert
		+0.2	-39.7	+0.9				Middle GFSK X	
131 4883.839M	36.5	+0.0	+9.3	+4.8	+30.3	+0.0	42.3	54.0 -11.7	Vert
		+0.2	-39.7	+0.9				Middle GFSK Z	
132 4959.570M	36.3	+0.0	+9.4	+4.8	+30.4	+0.0	42.2	54.0 -11.8	Horiz
		+0.1	-39.7	+0.9				High 8 DPSK Z	
133 4883.980M	36.4	+0.0	+9.3	+4.8	+30.3	+0.0	42.2	54.0 -11.8	Horiz
		+0.2	-39.7	+0.9				Middle 4 DPSK Z	
134 9608.670M	23.4	+0.0	+13.5	+7.4	+35.5	+0.0	42.2	54.0 -11.8	Vert
Ave		+0.0	-39.0	+1.4				Low 8 DPSK X	
135 4960.290M	35.9	+0.0	+9.4	+4.8	+30.4	+0.0	41.8	54.0 -12.2	Vert
		+0.1	-39.7	+0.9				High GFSK X	
L									



136 9920.535M	22.1	+0.0	+13.7	+7.6	+35.9	+0.0	41.8	54.0 -12.2	Vert
Ave		+0.1	-39.0	+1.4				High 4 DPSK X	
^ 9920.535M	34.7	+0.0	+13.7	+7.6	+35.9	+0.0	54.4	54.0 +0.4	Vert
		+0.1	-39.0	+1.4				High 4 DPSK X	
138 9608.580M	23.0	+0.0	+13.5	+7.4	+35.5	+0.0	41.8	54.0 -12.2	Horiz
Ave		+0.0	-39.0	+1.4				Low 4 DPSK X	
^ 9608.510M	33.2	+0.0	+13.5	+7.4	+35.5	+0.0	52.0	54.0 -2.0	Horiz
		+0.0	-39.0	+1.4				Low 4 DPSK Y	
^ 9608.580M	32.1	+0.0	+13.5	+7.4	+35.5	+0.0	50.9	54.0 -3.1	Horiz
		+0.0	-39.0	+1.4				Low 4 DPSK X	
141 4803.617M	36.5	+0.0	+9.2	+4.7	+30.1	+0.0	41.8	54.0 -12.2	Horiz
		+0.1	-39.7	+0.9				Low 4 DPSK X	
142 4959.160M	35.8	+0.0	+9.4	+4.8	+30.4	+0.0	41.7	54.0 -12.3	Horiz
		+0.1	-39.7	+0.9				High 8 DPSK X	
143 9920.840M	22.0	+0.0	+13.7	+7.6	+35.9	+0.0	41.7	54.0 -12.3	Horiz
Ave		+0.1	-39.0	+1.4				High 4 DPSK Y	
144 4960.030M	35.7	+0.0	+9.4	+4.8	+30.4	+0.0	41.6	54.0 -12.4	Horiz
111 1500.050111	50.7	+0.1	-39.7	+0.9	50	0.0		High 4 DPSK Y	110112
145 9768.325M	22.2	+0.0	+13.6	+7.5	+35.7	+0.0	41.6	54.0 -12.4	Horiz
Ave	22.2	+0.2	-39.0	+1.4	. 33.7	. 0.0	11.0	Middle 8 DPSK Z	HOHE
146 4959.625M	35.6	+0.0	+9.4	+4.8	+30.4	+0.0	41.5	54.0 -12.5	Horiz
140 4737.023101	33.0	+0.1	-39.7	+0.9	130.4	10.0	71.5	High 4 DPSK X	HOHZ
147 9920.660M	21.7	+0.0	+13.7	+7.6	+35.9	+0.0	41.4	54.0 -12.6	Horiz
Ave	21.7	+0.0	-39.0	+1.4	133.7	10.0	71.7	High 4 DPSK X	110112
^ 9920.660M	31.6	+0.1	+13.7	+7.6	+35.9	+0.0	51.3	54.0 -2.7	Horiz
9920.000101	31.0	+0.0	-39.0	+1.4	±33.9	±0.0	31.3	High 4 DPSK X	ПОПЕ
149 4883.418M	35.5	+0.1	+9.3	+4.8	+30.3	+0.0	41.3	54.0 -12.7	Horiz
149 4883.4181	33.3	+0.0			+30.3	+0.0	41.3		понг
150 07(7.515M	21.0		-39.7	+0.9	+35.7	+0.0	41.3	Middle GFSK Z	Hamin
150 9767.515M	21.9	+0.0	+13.6	+7.5	+33.7	+0.0	41.3	54.0 -12.7	Horiz
Ave	21.0	+0.2	-39.0	+1.4	125.7		41.0	Middle 8 DPSK Y	тт .
151 9768.755M	21.8	+0.0	+13.6	+7.5	+35.7	+0.0	41.2	54.0 -12.8	Horiz
Ave	240	+0.2	-39.0	+1.4	. 25.7	. 0. 0	52.4	Middle 4 DPSK Y	
^ 9768.755M	34.0	+0.0	+13.6	+7.5	+35.7	+0.0	53.4	54.0 -0.6	Horiz
150 0505 0005	• • • •	+0.2	-39.0	+1.4				Middle 4 DPSK Y	
153 9767.660M	21.8	+0.0	+13.6	+7.5	+35.7	+0.0	41.2	54.0 -12.8	Horiz
Ave		+0.2	-39.0	+1.4				Middle 4 DPSK X	
^ 9767.660M	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 4 DPSK X	
155 4959.667M	35.2	+0.0	+9.4	+4.8	+30.4	+0.0	41.1	54.0 -12.9	Horiz
		+0.1	-39.7	+0.9				High GFSK Y	
156 4960.100M	35.1	+0.0	+9.4	+4.8	+30.4	+0.0	41.0	54.0 -13.0	Horiz
		+0.1	-39.7	+0.9				High 4 DPSK Z	
157 4960.054M	35.1	+0.0	+9.4	+4.8	+30.4	+0.0	41.0	54.0 -13.0	Vert
		+0.1	-39.7	+0.9				High GFSK Z	
158 4960.087M	35.1	+0.0	+9.4	+4.8	+30.4	+0.0	41.0	54.0 -13.0	Horiz
		+0.1	-39.7	+0.9				High GFSK X	
159 9767.245M	21.5	+0.0	+13.6	+7.5	+35.7	+0.0	40.9	54.0 -13.1	Vert
Ave		+0.2	-39.0	+1.4				Middle 8 DPSK X	
160 9919.495M	21.1	+0.0	+13.7	+7.6	+35.9	+0.0	40.8	54.0 -13.2	Horiz
Ave		+0.1	-39.0	+1.4				High 8 DPSK X	
^ 9919.495M	33.0	+0.0	+13.7	+7.6	+35.9	+0.0	52.7	54.0 -1.3	Horiz
		+0.1	-39.0	+1.4				High 8 DPSK X	
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	9919.925M	20.9	+0.0	+13.7	+7.6	+35.9	+0.0	40.6		Vert
	Ave		+0.1	-39.0	+1.4				High 8 DPSK Y	
^	9919.925M	32.4	+0.0	+13.7	+7.6	+35.9	+0.0	52.1		Vert
			+0.1	-39.0	+1.4				High 8 DPSK Y	
	9608.760M	21.6	+0.0	+13.5	+7.4	+35.5	+0.0	40.4		Vert
	Ave		+0.0	-39.0	+1.4				Low 4 DPSK Z	
	9608.270M	21.6	+0.0	+13.5	+7.4	+35.5	+0.0	40.4		Vert
	Ave		+0.0	-39.0	+1.4				Low 8 DPSK Y	
	9607.593M	21.5	+0.0	+13.5	+7.4	+35.5	+0.0	40.3		Vert
	Ave		+0.0	-39.0	+1.4				Low GFSK X	
^	9607.593M	32.7	+0.0	+13.5	+7.4	+35.5	+0.0	51.5		Vert
			+0.0	-39.0	+1.4				Low GFSK X	
	9608.255M	21.3	+0.0	+13.5	+7.4	+35.5	+0.0	40.1		Vert
	Ave		+0.0	-39.0	+1.4				Low 8 DPSK Z	
^	9608.270M	34.4	+0.0	+13.5	+7.4	+35.5	+0.0	53.2		Vert
			+0.0	-39.0	+1.4				Low 8 DPSK Y	
^	9608.255M	33.1	+0.0	+13.5	+7.4	+35.5	+0.0	51.9		Vert
			+0.0	-39.0	+1.4				Low 8 DPSK Z	
	9608.205M	21.2	+0.0	+13.5	+7.4	+35.5	+0.0	40.0		Horiz
	Ave		+0.0	-39.0	+1.4				Low 8 DPSK X	
172	12399.440	16.3	+0.0	+15.7	+8.5	+36.2	+0.0	40.0	54.0 -14.0	Vert
	. M		+0.4	-38.6	+1.5				II' 1 CECT II	
	Ave								High GFSK X	
173	12010.753	17.5	+0.0	+15.4	+8.4	+36.2	+0.0	40.0	54.0 -14.0	Vert
	M		+0.0	-39.0	+1.5				I OFOLG	
	Ave					2 (2			Low GFSK Z	
^	12010.753	28.7	+0.0	+15.4	+8.4	+36.2	+0.0	51.2	54.0 -2.8	Vert
	M		+0.0	-39.0	+1.5				I OFOLG	
155	2012 2021	20.1	. 0. 0	. 10.5		.25.0	. 0. 0	20.0	Low GFSK Z	
	9919.200M	20.1	+0.0	+13.7	+7.6	+35.9	+0.0	39.8		Horiz
	Ave	22.0	+0.1	-39.0	+1.4	.25.0	. 0. 0	50.7	High 8 DPSK Z	
	9919.200M	33.0	+0.0	+13.7	+7.6	+35.9	+0.0	52.7		Horiz
1.55	12400 (10	161	+0.1	-39.0	+1.4	.262	. 0. 0	20.0	High 8 DPSK Z	T.T
177	12400.610	16.1	+0.0	+15.7	+8.5	+36.2	+0.0	39.8	54.0 -14.2	Vert
	M		+0.4	-38.6	+1.5				Hi-1 CEGU V	
	Ave	20.0		.15.7	10.7	126.2		52.5	High GFSK Y	T 7
	12400.585	28.8	+0.0	+15.7	+8.5	+36.2	+0.0	52.5	54.0 -1.5	Vert
	M		+0.4	-38.6	+1.5				High A DDCV V	
^	12400 (10	27.6	100	115.7	+ O F	126.2	100	<i>E</i> 1 2	High 4 DPSK X	17 a4
	12400.010	27.6	+0.0	+15.7	+8.5	+36.2	+0.0	51.3	54.0 -2.7	Vert
	M		+0.4	-38.6	+1.5				High GESV V	
100	4050 225M	22.0	±0.0	±0.4	±1 O	±20 4		20.7	High GFSK Y	Vont
180	4959.325M	33.8	+0.0 +0.1	+9.4 -39.7	+4.8	+30.4	+0.0	39.7	54.0 -14.3 High 4 DPSK Z	Vert
101	4959.560M	22.7		+9.4	+0.9	+30.4		39.6		Vont
101	4737.300M	33.7	+0.0 +0.1		+4.8 +0.9	±30.4	+0.0	39.0	54.0 -14.4 High GFSK Y	Vert
102	9608.400M	20.8	+0.1	-39.7 +13.5	+7.4	+35.5	+0.0	39.6	54.0 -14.4	Horiz
		20.8	+0.0 +0.0			⊤ 33.3	±0.0	39.0	54.0 -14.4 Low 8 DPSK Z	пони
	Ave 0609 400M	22.7		-39.0	+1.4	⊥25 F		£1 £		II.oi.
	9608.400M	32.7	+0.0	+13.5	+7.4 +1.4	+35.5	+0.0	51.5	54.0 -2.5	Horiz
Ī			+0.0	-39.0	+1.4	. 2 5 5	0.0	20.5	Low 8 DPSK Z	
10/	0.767 0.00 M	20.1	+ 10 10					7)11 =	511) 115	1/
	9767.880M Ave	20.1	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0	39.5	54.0 -14.5 Middle 8 DPSK Z	Vert



^ 9767.880M	32.7	+0.0	+13.6	+7.5	+35.7	+0.0	52.1	54.0 -1.9	Vert
9707.000WI	32.1	+0.2	-39.0	+1.4	133.1	10.0	32.1	Middle 8 DPSK Z	VCIT
186 9920.805M	19.6	+0.0	+13.7	+7.6	+35.9	+0.0	39.3		Horiz
Ave	-,,,	+0.1	-39.0	+1.4				High 4 DPSK Z	
^ 9920.840M	34.3	+0.0	+13.7	+7.6	+35.9	+0.0	54.0		Horiz
		+0.1	-39.0	+1.4				High 4 DPSK Y	
^ 9920.805M	32.3	+0.0	+13.7	+7.6	+35.9	+0.0	52.0	54.0 -2.0	Horiz
		+0.1	-39.0	+1.4				High 4 DPSK Z	
189 9920.415M	19.5	+0.0	+13.7	+7.6	+35.9	+0.0	39.2	54.0 -14.8	Vert
Ave		+0.1	-39.0	+1.4				High 8 DPSK Z	
^ 9920.415M	32.3	+0.0	+13.7	+7.6	+35.9	+0.0	52.0		Vert
		+0.1	-39.0	+1.4				High 8 DPSK Z	
^ 9920.475M	26.9	+0.0	+13.7	+7.6	+35.9	+0.0	46.6		Vert
		+0.1	-39.0	+1.4				High 4 DPSK Z	
192 9919.820M	19.3	+0.0	+13.7	+7.6	+35.9	+0.0	39.0		Vert
Ave		+0.1	-39.0	+1.4	27.0			High GFSK X	
^ 9919.820M	31.3	+0.0	+13.7	+7.6	+35.9	+0.0	51.0		Vert
A 0010 0073 f	26.0	+0.1	-39.0	+1.4	.25.0	. 0. 0	16.6	High GFSK X	T 7 .
^ 9919.805M	26.9	+0.0	+13.7	+7.6	+35.9	+0.0	46.6		Vert
105 0600 250M	20.2	+0.1	-39.0	+1.4	+35.5	+0.0	39.0	High GFSK Y	Horiz
195 9608.258M	20.2	+0.0 +0.0	+13.5 -39.0	+7.4 +1.4	+33.3	+0.0	39.0	54.0 -15.0 Low 4 DPSK Z	Horiz
Ave ^ 9608.205M	33.3	+0.0	+13.5	+7.4	+35.5	+0.0	52.1		Horiz
9008.203WI	33.3	+0.0	-39.0	+1.4	133.3	10.0	32.1	Low 8 DPSK X	110112
^ 9608.258M	32.1	+0.0	+13.5	+7.4	+35.5	+0.0	50.9		Horiz
9008.236W	32.1	+0.0	-39.0	+1.4	133.3	10.0	30.9	Low 4 DPSK Z	110112
198 9609.160M	20.2	+0.0	+13.5	+7.4	+35.5	+0.0	39.0		Horiz
Ave	20.2	+0.0	-39.0	+1.4	. 55.5	. 0.0	37.0	Low 8 DPSK Y	110112
^ 9609.160M	32.6	+0.0	+13.5	+7.4	+35.5	+0.0	51.4	54.0 -2.6	Horiz
		+0.0	-39.0	+1.4				Low 8 DPSK Y	
200 12209.154	15.8	+0.0	+15.6	+8.4	+36.2	+0.0	38.9	54.0 -15.1	Horiz
M		+0.2	-38.8	+1.5					
Ave								Middle GFSK Z	
^ 12209.154	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 GFSK Z	
202 9768.315M	19.5	+0.0	+13.6	+7.5	+35.7	+0.0	38.9		Horiz
Ave		+0.2	-39.0	+1.4				Middle GFSK Y	
203 12009.515	16.3	+0.0	+15.4	+8.4	+36.2	+0.0	38.8	54.0 -15.2	Horiz
M		+0.0	-39.0	+1.5				I CECK 7	
Ave	15.6	100	115.6	10.4	1262	10.0	20.7	Low GFSK Z	T 7 '
204 12210.917	15.6	+0.0	+15.6	+8.4 +1.5	+36.2	+0.0	38.7	54.0 -15.3	Vert
M Ave		+0.2	-38.8	+1.5				Middle GFSK Y	
205 9769.185M	19.3	+0.0	+13.6	+7.5	+35.7	+0.0	38.7	54.0 -15.3	Horiz
Ave	17.5	+0.2	-39.0	+1.4	1 33.1	10.0	50.1	Middle 8 DPSK X	110112
^ 9769.185M	33.6	+0.0	+13.6	+7.5	+35.7	+0.0	53.0	54.0 -1.0	Horiz
7,07.103141	55.0	+0.2	-39.0	+1.4	. 55.1	0.0	23.0	Middle 8 DPSK X	110112
207 12400.265	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5	54.0 -15.5	Vert
M	- 1.0	+0.4	-38.6	+1.5	20.2	0.0	20.0	20 10.0	. 510
Ave								High 8 DPSK Y	



^ 12400.265	30.2		+15.7		+36.2	+0.0	53.9	54.0	-0.1	Vert
M		+0.4	-38.6	+1.5						
								High 8 DPS		
^ 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		
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				II: 1 0 DD		
Ave	20.5	. 0. 0	. 1 5 5	. 0. 5	.262	. 0. 0	52.4	High 8 DPS		**
^ 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				II: 1 0 DD0	717.77	
12200 440	27.2	. 0. 0	.15.7	.0.5	1262	. 0. 0	50.0	High 8 DPS		1 7.
^ 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 CECK	v	
212 12200 000	140	+0.0	115.7	10.5	1262	+0.0	20.5	High GFSK		TT'
213 12399.080 M	14.8	+0.0 +0.4	+15.7	+8.5	+36.2	+0.0	38.5	54.0	-15.5	Horiz
Ave		+0.4	-38.6	+1.5				High 9 DDG	SV 7	
^ 12399.080	29.4	+0.0	+15.7	+8.5	+36.2	+0.0	53.1	High 8 DPS 54.0		Horiz
M	29.4	+0.0	-38.6	+1.5	⊤30.2	+0.0	33.1	34.0	-0.9	попи
IVI		10.4	-36.0	1.3				High 8 DPS	SK 7	
215 12400.228	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5		-15.5	Horiz
M	17.0	+0.4	-38.6	+1.5	130.2	10.0	30.3	54.0	-13.3	110112
Ave		. 0. 1	30.0	. 1.5				High GFSK	Υ	
^ 12400.228	27.9	+0.0	+15.7	+8.5	+36.2	+0.0	51.6			Horiz
M	21.7	+0.4	-38.6	+1.5	. 30.2	. 0.0	31.0	51.0	2.1	HOHE
112		٠	20.0	1.0				High GFSK	Υ	
217 12398.880	14.8	+0.0	+15.7	+8.5	+36.2	+0.0	38.5			Horiz
M	,,	+0.4	-38.6	+1.5						
Ave								High GFSK	ΣZ	
^ 12398.880	27.3	+0.0	+15.7	+8.5	+36.2	+0.0	51.0			Horiz
M		+0.4	-38.6	+1.5						
								High GFSK	\mathbf{Z}	
219 4958.805M	32.4	+0.0	+9.4	+4.8	+30.4	+0.0	38.4		-15.6	Horiz
		+0.2	-39.7	+0.9				High GFSK	\mathbf{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 DPS	SK Y	
^ 12400.590	28.7			+8.5	+36.2	+0.0	52.4	54.0	-1.6	Horiz
M		+0.4	-38.6	+1.5						
								High 8 DPS		
^ 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		
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 DPS		
^ 12400.790	29.3	+0.0	+15.7		+36.2	+0.0	53.0	54.0	-1.0	Vert
M		+0.4	-38.6	+1.5				TT: 1 0 =		
								High 8 DPS	SK X	



225 12400,000											1
Ave		14.6				+36.2	+0.0	38.3	54.0	-15.7	Vert
226 12399,970			+0.4	-38.6	+1.5						
M											
Ave		14.6				+36.2	+0.0	38.3	54.0	-15.7	Horiz
227 9767.495M			+0.4	-38.6	+1.5				II. 1 0 DDG		
Ave											
228 12399,895											Horiz
March						2					
Ave		14.5				+36.2	+0.0	38.2	54.0	-15.8	Horiz
Name			+0.4	-38.6	+1.5				II. 1 4 DDG	17.37	
M		20.1	100	+15.7	10.5	1262	100				IIi.
High 8 DPSK X		29.1				+36.2	+0.0	52.8	54.0	-1.2	Horiz
230 12398,735	IVI		+0.4	-38.6	+1.5				High 0 DDC	νv	
March High 4 DPSK Y Ave High 4 DPSK Y	220 12200 725	115	ΙΛ.Λ	+15.7	10.5	126.2	ΙΛΛ				Mont
Ave		14.5				+30.2	+0.0	38.2	34.0	-13.8	vert
12398.735			±0.4	-38.0	+1.3				High 4 DDS	VV	
M		28.7	+0.0	+15.7	±9.5	+36.2	+0.0				Vert
High 4 DPSK Y Horiz High 4 DPSK Y		26.7				⊤30.2	+0.0	32.4	34.0	-1.0	Vert
Ave	IVI		10.4	-36.0	11.3				High 4 DPS	ΚV	
Mark	232 12401 265	1/1/5	+0.0	+15.7	+8.5	+36.2	+0.0				Horiz
Ave		14.5				130.2	10.0	36.2	34.0	-13.6	110112
^ 12401.265			10.4	-30.0	11.5				High 4 DPS	ΚΥ	
M		27.6	+0.0	+15.7	+8.5	+36.2	+0.0				Horiz
High 4 DPSK Y High 4 DPSK Y High 4 DPSK Z High 4 DPSK X High 4 DPSK		27.0				130.2	10.0	31.3	54.0	2.7	110112
Ave	171		10.4	30.0	1.5				High 4 DPS	ΚΥ	
Maye	234 12399 860	14 5	+0.0	+15.7	+8.5	+36.2	+0.0	38.2	54.0	-15.8	Horiz
Ave		11.5				. 30.2	. 0.0	30.2	31.0	13.0	TIOTIZ
^ 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 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 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 Middle 8 DPSK Z ^ 9768.315M 31.5 +0.0 +13.6 +7.5 +35.7 +0.0 50.9 54.0 -0.8 Horiz Middle GFSK Y +0.2 -39.0 +1.4 Middle GFSK Y Middle GFSK Y ^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.1 Horiz Middle GFSK Z -0.2 -39.0 +1.4 Middle GFSK Z Middle GFSK			٠	20.0	1.0				High 4 DPS	ΚZ	
M		29.9	+0.0	+15.7	+8.5	+36.2	+0.0				Horiz
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 Middle GFSK Z ^ 9768.325M 33.8 +0.0 +13.6 +7.5 +35.7 +0.0 53.2 54.0 -0.8 Horiz 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 Middle GFSK Y ^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.1 Horiz Middle GFSK Y ^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.4 Horiz 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 -3									High 4 DPS	ΚZ	
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 - 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.4 Horiz - 40.2 -39.0 +1.4 Middle GFSK Z Middle GFSK Z 241 12210.160 14.9 +0.0 +15.6 +8.4 +36.2 +0.0 <td>^ 12399.895</td> <td>27.3</td> <td>+0.0</td> <td>+15.7</td> <td>+8.5</td> <td>+36.2</td> <td>+0.0</td> <td>51.0</td> <td></td> <td></td> <td>Horiz</td>	^ 12399.895	27.3	+0.0	+15.7	+8.5	+36.2	+0.0	51.0			Horiz
237 9768.248M			+0.4								
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 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 Middle GFSK Y ^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.4 Horiz 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 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 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 Middle 8 DPSK X 243 12210.045 14.9 +0.0 +15.6 +8.4 +36.2									High 4 DPS	ΚX	
^ 9768.325M 33.8 +0.0 +13.6 +7.5 +35.7 +0.0 53.2 54.0 -0.8 Horiz ^ 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 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 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 -38.8 +1.5 -38.8	237 9768.248M	18.6	+0.0	+13.6	+7.5	+35.7	+0.0	38.0	54.0	-16.0	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	Ave		+0.2	-39.0	+1.4				Middle GFS		
^ 9768.315M 31.5 +0.0 +13.6 +7.5 +35.7 +0.0 50.9 54.0 -3.1 Horiz Middle GFSK Y ^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.4 Horiz 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 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 -3.5 Vert M +0.2 -38.8 +1.5 Middle 8 DPSK X	^ 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 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			+0.2	-39.0	+1.4				Middle 8 DI	PSK Z	
^ 9768.248M 31.2 +0.0 +13.6 +7.5 +35.7 +0.0 50.6 54.0 -3.4 Horiz 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 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	^ 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 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			+0.2	-39.0	+1.4				Middle GFS	K Y	
241 12210.160	^ 9768.248M	31.2	+0.0	+13.6	+7.5	+35.7	+0.0	50.6	54.0	-3.4	Horiz
M +0.2 -38.8 +1.5 Ave			+0.2	-39.0	+1.4				Middle GFS	K Z	
Ave Middle 8 DPSK X ^ 12210.160		14.9	+0.0	+15.6	+8.4	+36.2	+0.0	38.0	54.0	-16.0	Vert
^ 12210.160			+0.2	-38.8	+1.5						
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										PSK X	
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		27.4				+36.2	+0.0	50.5	54.0	-3.5	Vert
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	M		+0.2	-38.8	+1.5						
M +0.2 -38.8 +1.5											
		14.9				+36.2	+0.0	38.0	54.0	-16.0	Vert
Ave Middle 8 DPSK Y			+0.2	-38.8	+1.5						
	Ave								Middle 8 DI	PSK Y	



^	12210.045	29.3		+15.6	+8.4	+36.2	+0.0	52.4	54.0	-1.6	Vert
	M		+0.2	-38.8	+1.5						
									Middle 8 D		
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 D	PSK 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 D	PSK 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 D		
^	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 D		
^	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 GFS		
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 D		
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 D		
^	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 D		
253	12210.325	14.7	+0.0	+15.6		+36.2	+0.0	37.8	54.0	-16.2	Horiz
	M		+0.2	-38.8	+1.5				M: 111 0 D	DOLL 17	
	Ave	10.1	. 0. 0	. 10.7		. 2.7.0	. 0. 0	27.0	Middle 8 D		***
	9919.435M	18.1	+0.0	+13.7	+7.6	+35.9	+0.0	37.8	54.0	-16.2	Vert
	Ave	21.0	+0.1	-39.0	+1.4	.25.0	. 0. 0	50.7	High 4 DPS		X7 .
	9919.435M	31.0	+0.0	+13.7	+7.6	+35.9	+0.0	50.7		-3.3	Vert
256	0.607.0071.6	10.0		-39.0	+1.4	. 25.5	. 0. 0		High 4 DPS		
	9607.987M	19.0	+0.0	+13.5	+7.4	+35.5	+0.0	37.8		-16.2	Horiz
	Ave	21.5		-39.0	+1.4	. 2.5. 5	. 0. 0		Low GFSK		
	9607.987M	31.7	+0.0	+13.5	+7.4	+35.5	+0.0	50.5			Horiz
	0.605.0501.6	20.6	+0.0	-39.0	+1.4	. 2.5. 5	. 0. 0	10.1	Low GFSK		** '
_ ^	9607.950M	30.6	+0.0	+13.5	+7.4	+35.5	+0.0	49.4			Horiz
2.50	12200 760	14.6	+0.0	-39.0	+1.4	1262	10.0	27.7	Low GFSK		17 .
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				MC131 4 D	DOLL 37	
	Ave	20.2	10.0	117.6	10.4	1262	10.0	7.1 A	Middle 4 D		17.
_ ^	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 D	DCL V	
261	12210.067	14.6	10.0	+15.6	+0.4	126.2	+0.0	27.7	Middle 4 D		Vont
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				Middle 4 D	DCV V	
^	Ave	20.0	100	115 (+ O - A	126.2	100	52.0	Middle 4 D		17.2.4
	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 CEG	CV V	
L									Middle GFS) N	



^	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		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	27.2	+0.2	-38.8	+1.5	. 50.2	. 0.0	32.3	51.0	HOHZ
	141		. 0.2	50.0	. 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	29.0	+0.2	-38.8	+1.5	130.2	10.0	32.1	34.0 -1.9	110112
	1 V1		10.2	-30.0	11.5				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
	12210.390 M	29.0	+0.0	-38.8	+8.4 +1.5	+30.2	+0.0	32.1	34.0 -1.9	попх
	1 V1		+0.∠	-30.0	⊤1.3				Middle 4 DPSK X	
270	0020 06214	17.9	+0.0	+13.7	+7.6	+35.9	+0.0	37.6		Horiz
	9920.963M	17.9				+33.9	+0.0	3/.6		Horiz
	Ave	21.5	+0.1	-39.0	+1.4	125.0		<i>5</i> 1.2	High GFSK Y	
	9920.963M	31.5	+0.0	+13.7	+7.6	+35.9	+0.0	51.2	54.0 -2.8	Horiz
272	0.000	10.1	+0.1	-39.0	+1.4	. 2.5.5	. 0. 0	27.5	High GFSK Y	**
	9767.115M	18.1	+0.0	+13.6	+7.5	+35.7	+0.0	37.5		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	
	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	_5.5	+0.0	-39.0	+1.5			.,.0	2 0.2	. •••
	± <u>±</u>			27.0	1.0				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	10.0	+0.2	-39.0	+1.4	. 55.1	0.0	J1. 4	Middle GFSK X	110112
	9767.515M	34.1	+0.0	+13.6	+7.5	+35.7	+0.0	53.5	54.0 -0.5	Horiz
	9101.313WI	34.1	+0.0	-39.0	+1.4	133.1	+0.0	55.5	Middle 8 DPSK Y	110112
	9767.495M	33.1	+0.2			±25 7	+0.0	52.5		Цотіл
	7/0/.493WI	33.1		+13.6	+7.5 +1.4	+35.7	±0.0	32.3		Horiz
			+0.2	-39.0	+1.4				Middle 4 DPSK Z	

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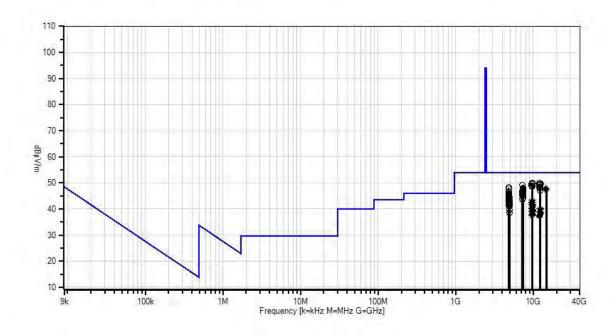


^	9767.507M	30.8	+0.0 +0.2	+13.6 -39.0	+7.5 +1.4	+35.7	+0.0		54.0 -3.8 Middle GFSK X	Horiz
285	12009.435	1/8	+0.2	+15.4	+8.4	±26.2	+0.0			Horiz
203	M	14.0	+0.0	-39.0	+1.5	130.2	10.0	37.3	34.0 -10.7	110112
	Ave		10.0	-39.0	11.3				Low 8 DPSK Z	
	12009.435	29.1	+0.0	+15.4	+8.4	+36.2	+0.0	51.6		Horiz
	M	27.1	+0.0	-39.0	+1.5	130.2	10.0	31.0	34.0 2.4	HOHZ
	111		. 0.0	57.0	1.0				Low 8 DPSK Z	
^	12009.515	28.4	+0.0	+15.4	+8.4	+36.2	+0.0	50.9		Horiz
	M		+0.0	-39.0	+1.5					
									Low GFSK Z	
288	12008.805	14.8	+0.0	+15.4	+8.4	+36.2	+0.0	37.3	54.0 -16.7	Vert
	M		+0.0	-39.0	+1.5					
	Ave								Low 4 DPSK Z	
^	12008.805	29.4	+0.0	+15.4	+8.4	+36.2	+0.0	51.9	54.0 -2.1	Vert
	M		+0.0	-39.0	+1.5					
									Low 4 DPSK Z	
290	12010.057	14.8	+0.0		+8.4	+36.2	+0.0	37.3	54.0 -16.7	Horiz
	M		+0.0	-39.0	+1.5					
	Ave								Low 4 DPSK Y	
291	9608.703M	18.5	+0.0	+13.5	+7.4	+35.5	+0.0	37.3		Vert
	Ave			-39.0	+1.4				Low GFSK Y	
^	9608.670M	34.4	+0.0	+13.5	+7.4	+35.5	+0.0	53.2		Vert
				-39.0	+1.4				Low 8 DPSK X	
^	9608.760M	33.9	+0.0	+13.5	+7.4	+35.5	+0.0	52.7		Vert
				-39.0	+1.4				Low 4 DPSK Z	
^	9608.703M	31.9	+0.0		+7.4	+35.5	+0.0			Vert
20.5	12010 242	145		-39.0	+1.4	.262	. 0. 0		Low GFSK Y	** .
295	12010.243	14.7	+0.0	+15.4	+8.4	+36.2	+0.0	37.2	54.0 -16.8	Horiz
	M		+0.0	-39.0	+1.5				I 4 DDCV 7	
	Ave 12010.243	28.5	+0.0	+15.4	+8.4	126.2	+0.0	<i>5</i> 1.0	Low 4 DPSK Z 54.0 -3.0	II a mi —
, ,	12010.243 M	28.5	+0.0 +0.0	+13.4 -39.0	+8.4 +1.5	+30.2	+0.0	31.0	34.0 -3.0	Horiz
	IVI		+0.0	-39.0	⊤1.3				Low 4 DPSK Z	
207	12010.385	14.7	±0.0	+15.4	+8.4	+36.2	+0.0			Vert
291	M	14.7		-39.0	+1.5	130.2	10.0	31.2	34.0 -10.8	VEIL
									Low 8 DPSK Z	
^	12010 385	28 4	+0.0	+15 4	+8 4	+36.2	+0 0	50 9	Low 8 DPSK Z 54.0 -3.1	Vert
	M		+0.0	-39.0	+1.5	20.2	0.0	20.7	5 5.1	. 010
	•								Low 8 DPSK Z	
299	12010.070	14.6	+0.0	+15.4	+8.4	+36.2	+0.0	37.1	54.0 -16.9	Horiz
	M		+0.0	-39.0	+1.5					
	Ave								Low 8 DPSK X	
^	12010.057	29.0	+0.0	+15.4	+8.4	+36.2	+0.0	51.5	54.0 -2.5	Horiz
	M		+0.0	-39.0	+1.5					
									Low 4 DPSK Y	
^	12010.070	28.1	+0.0	+15.4	+8.4	+36.2	+0.0	50.6	54.0 -3.4	Horiz
	M		+0.0	-39.0	+1.5					
									Low 8 DPSK X	
^	12009.987	25.1	+0.0	+15.4	+8.4	+36.2	+0.0	47.6	54.0 -6.4	Horiz
	M		+0.0	-39.0	+1.5					
									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 DPS	K 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 DPS	SK X	

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





O 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-	6/5/2013	6/5/2015
			3000/T10000-		
			O/O		
	AN00787	Preamp	83017A	5/31/2013	5/31/2015
	ANP06544	Cable	32026-29094K-	11/20/2013	11/20/2015
			29094K-36TC		
	AN01413	Horn Antenna-ANSI	84125-80008	11/9/2012	11/9/2014
		C63.5 (dB/m)			
	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		
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	Automatic Labs	Link2	(none)
device*			

Support Devices:

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

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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

Measu	rement Data:	Re	eading list	ted by ma	argin.		Те	est Distance	e: 3 Meters		
#	Freq	Rdng	T1 T5	T2	Т3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	$dB\mu V$	dB	dB	dB	dB	Table	$dB\mu V/m \\$	$dB\mu V/m \\$	dB	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

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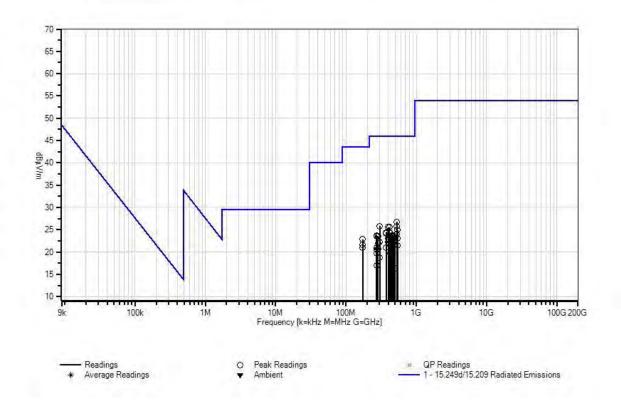


15	272.053M	33.6	+1.8 +1.7	-26.5	+12.9	+0.2	+0.0	23.7	46.0	-22.3	Vert
16	472.509M	28.9	+2.4 +2.3	-27.7	+17.4	+0.4	+0.0	23.7	46.0	-22.3	Horiz
17	443.872M	29.3	+2.4 +2.3	-27.6	+16.9	+0.4	+0.0	23.7	46.0	-22.3	Vert
18	286.369M	33.2	+2.3 +1.8 +1.7	-26.5	+13.1	+0.3	+0.0	23.6	46.0	-22.4	Horiz
19	272.045M	33.5	+1.8	-26.5	+12.9	+0.2	+0.0	23.6	46.0	-22.4	Horiz
20	171.822M	35.2	+1.7	-26.8	+9.5	+0.2	+0.0	20.9	43.5	-22.6	Vert
21	472.513M	28.6	+1.3 +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 +2.2 +2.1	-27.2	+16.1	+0.3	+0.0	23.1	46.0	-22.9	Horiz
24	544.113M	26.5	+2.1 +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	+2.4 +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 +2.4 +2.3	-27.6	+16.9	+0.4	+0.0	22.7	46.0	-23.3	Horiz
28	472.510M	27.9	+2.3 +2.4 +2.3	-27.7	+17.4	+0.4	+0.0	22.7	46.0	-23.3	Horiz
29	443.880M	28.2	+2.3 +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 +2.4 +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	+2.2 +2.4 +2.3	-27.6	+16.9	+0.4	+0.0	21.7	46.0	-24.3	Horiz
39	544.103M	25.0	+2.5 +2.6 +2.5	-27.9	+18.9	+0.4	+0.0	21.5	46.0	-24.5	Horiz
40	372.284M	28.2	+2.3 +2.1 +2.0	-27.0	+15.4	+0.3	+0.0	21.0	46.0	-25.0	Horiz
			12.0								



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-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	Automatic Labs	Link2	(none)
device*			

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. T

he 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,

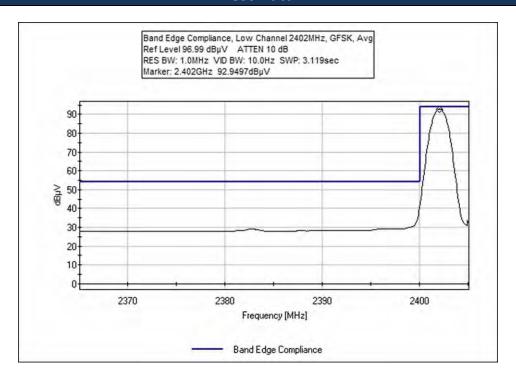
VBW=10Hz for average. RF output power: +2dBm.

Site D

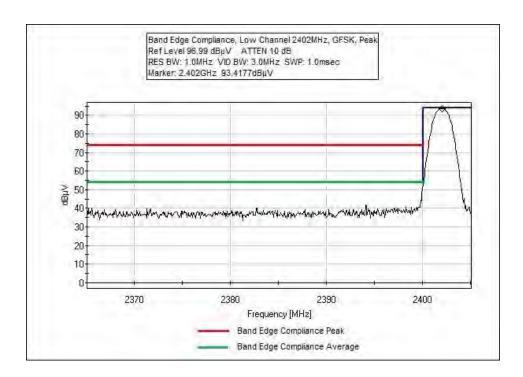
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Test Data

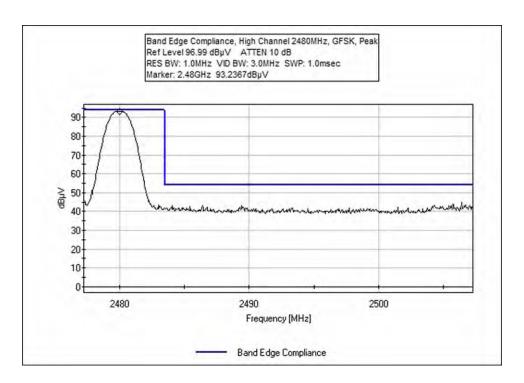


Low Channel, GFSK - Average



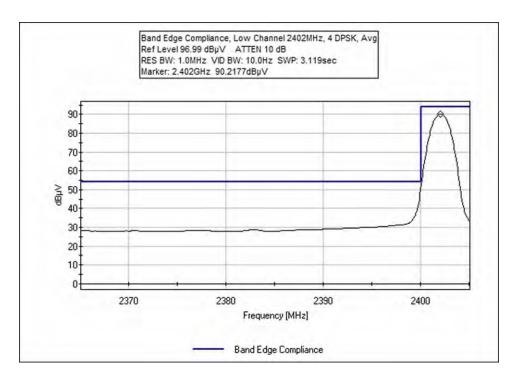
Low Channel, GFSK - Peak



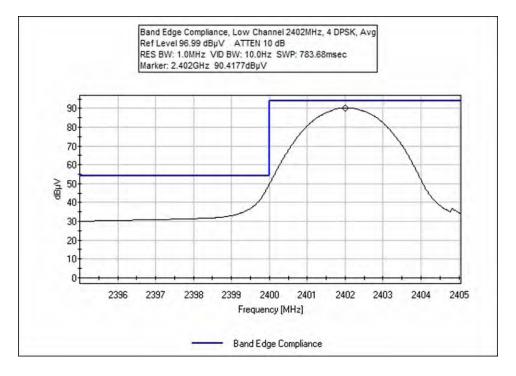


High Channel, GFSK - Peak



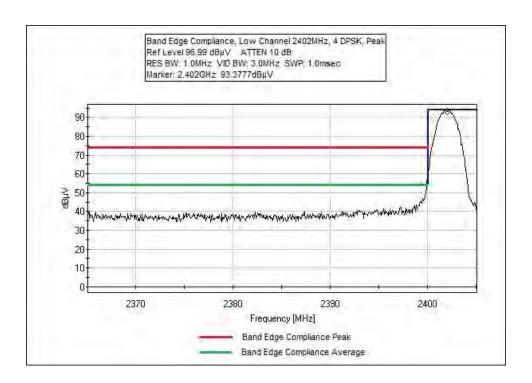


Low Channel, 4DPSK – Average 1

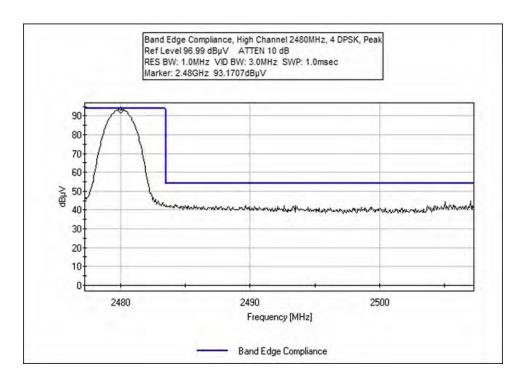


Low Channel, 4DPSK – Average 2



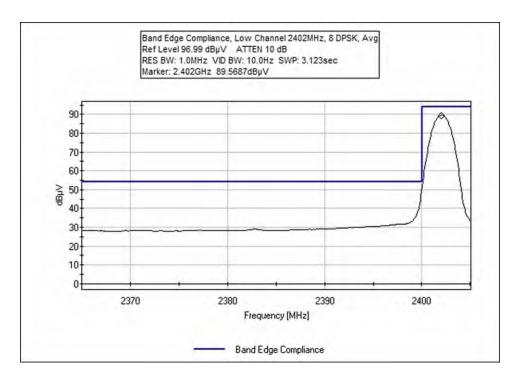


Low Channel, 4DPSK-Peak

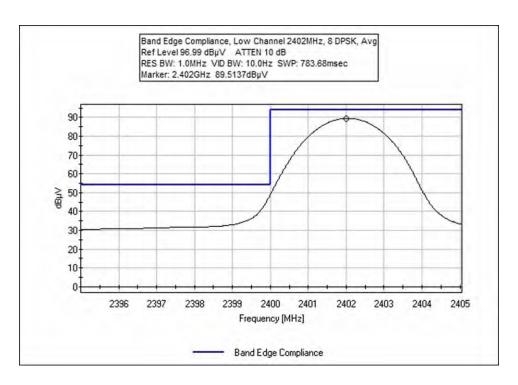


High Channel, 4DPSK-Peak



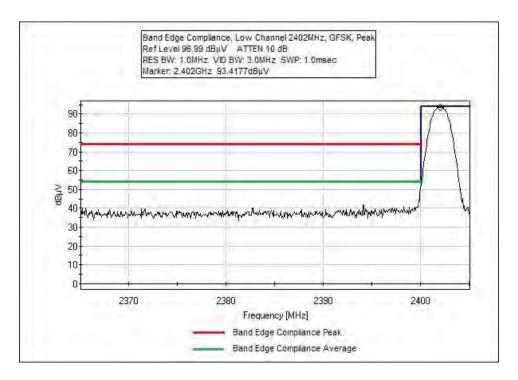


Low Channel, 8DPSK – Average 1

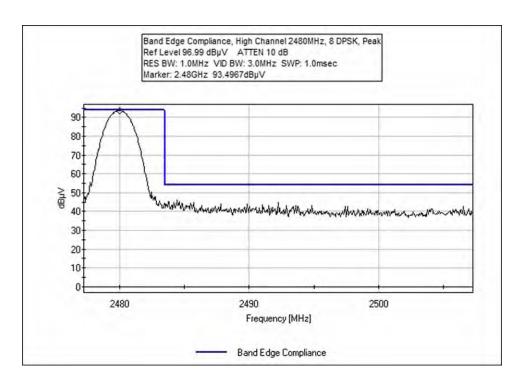


Low Channel, 8DPSK – Average 2





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 $dB\mu V/m$, the spectrum analyzer reading in $dB\mu V$ was corrected by using the following formula. This reading was then compared to the applicable specification limit.

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	CARADIE CALCIUATIONS				
SAMPLE CALCULATIONS					
	Meter reading	(dBμV)			
+	Antenna Factor	(dB)			
+	Cable Loss	(dB)			
-	Distance Correction	(dB)			
-	Preamplifier Gain	(dB)			
=	Corrected Reading	(dBµV/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 ("A") 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.

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