# Mesting the Future LABORATORIES, INC.

# Panasonic Avionics Corp.

**TEST REPORT FOR** 

Bluetooth Radio Model: Laird BT-850

**Tested to The Following Standards:** 

FCC Part 15 Subpart C Section 15.247 (FHSS 2400-2483.5 MHz)

Report No.: 103959-9

Date of issue: January 14, 2021





Test Certificate # 803.01

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 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:

Panasonic Avionics Corp.

26200 Enterprise Way

CKC Laboratories, Inc.

Lake Forrest, CA 92630

5046 Sierra Pines Drive

Mariposa, CA 95338

Representative: Steve Dang Project Number: 103959

DATE OF EQUIPMENT RECEIPT:December 16, 2020DATE(S) OF TESTING:December 16-17, 2020

## **Report Authorization**

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, 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	5.03.19

# **Site Registration & Accreditation Information**

Location	*NIST CB #	FCC	Canada	Japan
Canyon Park, Bothell, WA	US0103	US1024	3082C	A-0136
Brea, CA	US0103	US1024	3082D	A-0136
Fremont, CA	US0103	US1024	3082B	A-0136
Mariposa, CA	US0103	US1024	3082A	A-0136

<sup>\*</sup>CKC's list of NIST designated countries can be found at: https://standards.gov/cabs/designations.html



#### **SUMMARY OF RESULTS**

### Standard / Specification: FCC Part 15 Subpart C - 15.247 (FHSS 2.4GHz)

Test Procedure	Description	Modifications	Results
15.247(a)(1)	Occupied Bandwidth	NA	NP
15.247(a)(1)	Carrier Separation	NA	NP
15.247(a)(1)(iii)	Number of Hopping Channels	NA	NP
15.247(a)(1)(iii)	Average Time of Occupancy	NA	NP
15.247(b)(1)	Output Power	NA	Pass
15.247(d)	RF Conducted Emissions & Band Edge	NA	NP
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted Emissions	NA	NP

NA = Not Applicable

NP = CKC laboratories was not contracted to perform test.

#### ISO/IEC 17025 Decision Rule

The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

# **Modifications During Testing**

This list is a summary of the 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.

# **Conditions During Testing**

This list is a summary of the conditions noted to the equipment during testing.

#### **Summary of Conditions**

Note PCII of a single modular approved radio, Original FCCID: U6YBT850 with new antennas and cable. Power setting: Specific Power Table index 0

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# **EQUIPMENT UNDER TEST (EUT)**

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

#### **Configuration 1**

#### **Equipment Tested:**

Device	Manufacturer	Model #	S/N
Bluetooth Radio	Panasonic Avionics Corp.	Laird BT-850	NA

#### Support Equipment:

Device	Manufacturer	Model #	S/N
Laptop	Dell	Inspiron 15	PA004933
Development board	Laird	DVK-BT850-1.0	PA004933

#### **General Product Information:**

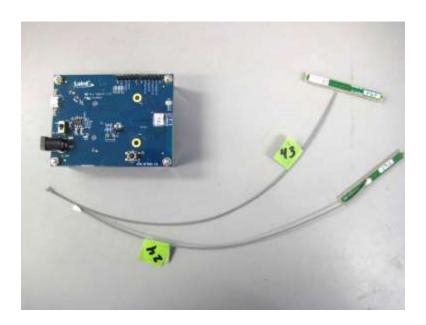
Product Information	Manufacturer-Provided Details
Equipment Type:	Radio Module
Type of Wideband System:	FHSS
Operating Frequency Range:	2402-2480MHz
Number of Hopping Channels:	78
Receiver Bandwidth and Synchronization:	The manufacturer declares the receiver input bandwidth matches the transmit channel bandwidth and shifts frequencies in synchronization with the transmitter.
Modulation Type(s):	GFSK, π/4 DQPSK, 8DPSK
Maximum Duty Cycle:	98%
Number of TX Chains:	1
Antenna Type(s) and Gain:	Ant: PCB trace, R8U2FJ8436Z, ant gain +3.0dBi, paired with Cable 43 Ant: PCB trace, R8U5FJ8946Z, ant gain -1.2dBi, paired with Cable 24
Beamforming Type:	NA
Antenna Connection Type:	Integral (External connector provided to facilitate testing)
Nominal Input Voltage:	3.3 V DC
Firmware / Software used for Test:	Firmware PN: BT850-ST-PA-01-CT

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# **EUT and Accessory Photo(s)**





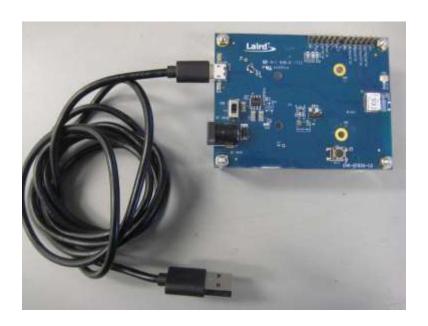
Antenna



# Support Equipment Photo(s)



Laptop

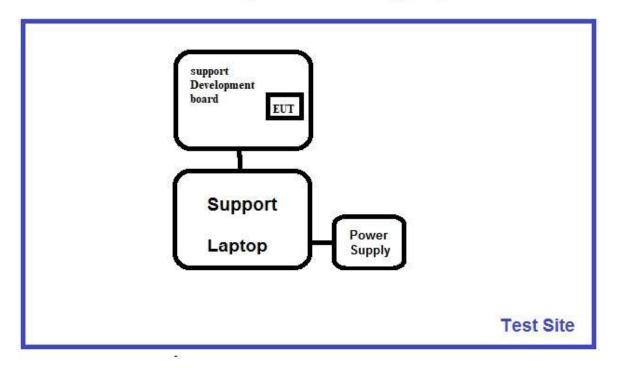


**Development Board** 



# **Block Diagram of Test Setup(s)**

# **Test Setup Block Diagram**





# FCC Part 15 Subpart C

# 15.247(b)(1) Output Power

	Test Setup/Conditions			
Test Location:	Brea Lab D	Test Engineer:	E. Wong	
Test Method:	ANSI C63.10 (2013)	Test Date(s):	12/16/2020	
Configuration:	1			
Test Setup:	The single modulator appromeasured at antenna port. 2402Mhz, 2441MHz, 2480I	·	test bench conducted measurement	
Power setting: Specific Power Table index 0				

Environmental Conditions			
Temperature (ºC)	20	Relative Humidity (%):	23

	Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due	
02869	Spectrum Analyzer	Agilent	E4440A	8/3/2020	8/3/2021	
03430	Attenuator	Aeroflex/Weinschel	75A-10-12	12/20/2019	12/20/2021	
07243	Cable	H&S	32022-29094K- 29094K-24TC	5/29/2020	5/29/2022	

	Test Data Summary - RF Conducted Measurement					
	dBm Conducted/36dl dBm Conducted/27dl					
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Measured (dBm)	Limit (dBm)	Results	
2402	GFSK	PCB Trace *	-0.95	≤ 30	Pass	
2441	GFSK	PCB Trace *	-0.51	≤ 30	Pass	
2480	GFSK	PCB Trace *	-0.93	≤ 30	Pass	
2402	π/4 DQPSK	PCB Trace *	0.87	≤ 30	Pass	
2441	π/4 DQPSK	PCB Trace *	1.24	≤ 30	Pass	
2480	π/4 DQPSK	PCB Trace *	0.63	≤ 30	Pass	
2402	8DPSK	PCB Trace *	1.24	≤ 30	Pass	
2441	8DPSK	PCB Trace *	1.58	≤ 30	Pass	
2480	8DPSK	PCB Trace *	0.98	≤ 30	Pass	

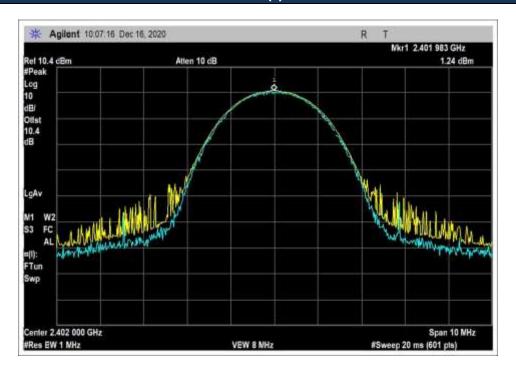
Modulation Equivalent to DH5, 2DH5, 3DH5. Original grant FHSS 78 channels

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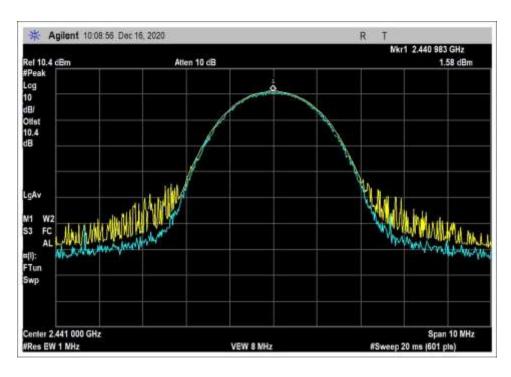
<sup>\*</sup> antennas listed in equipment general product information



#### Plot(s)

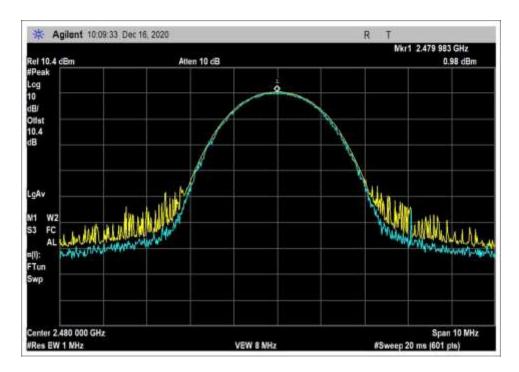


DPSK\_2402MHz, Low Channel



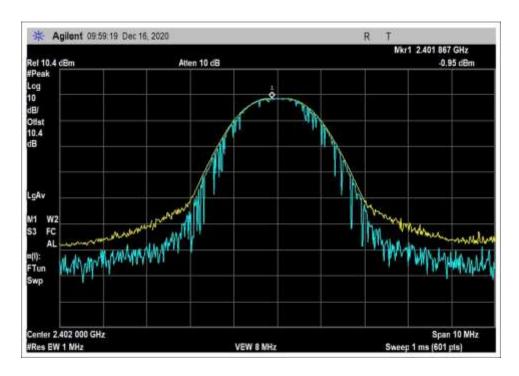
DPSK\_2441MHz, Middle Channel



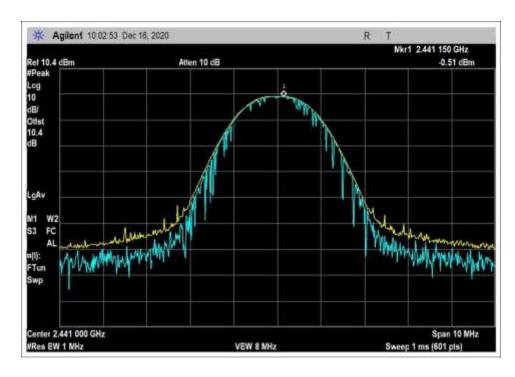


DPSK\_2480MHz, High Channel



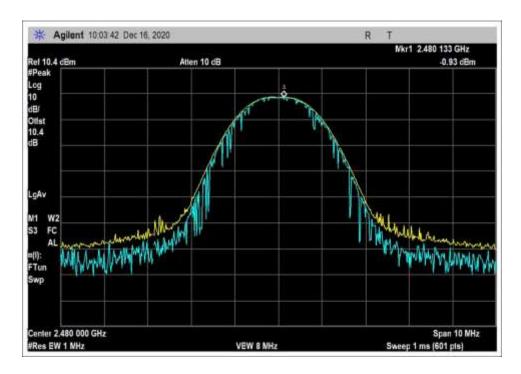


GFSK\_2402MHz, Low Channel



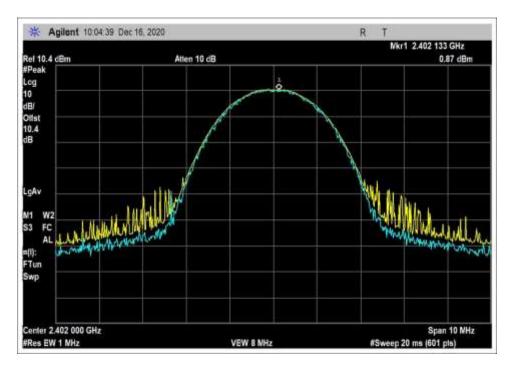
GFSK\_2441MHz, Middle Channel



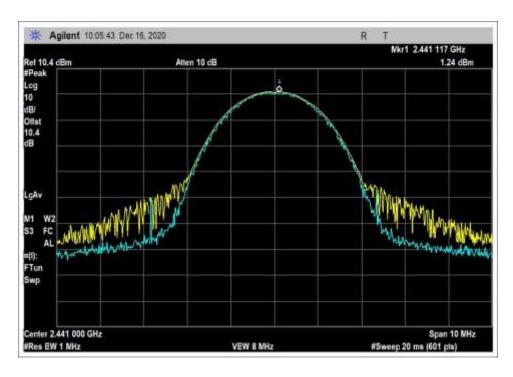


GFSK\_2480MHz, High Channel



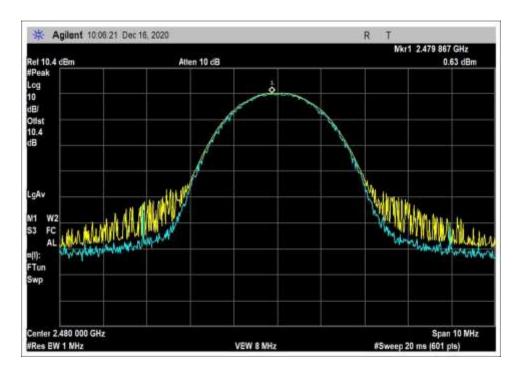


QPSK\_2402MHz, Low Channel



QPSK\_2441MHz, Middle Channel





QPSK\_2480MHz, High Channel



# Test Setup / Conditions / Data





## 15.247(d) Radiated Emissions & Band Edge

**Test Setup / Conditions / Data** 

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA • 714 993 6112

Customer: Panasonic Avionics Corp.

Specification: 15.247(d) / 15.209 Radiated Spurious Emissions

Work Order #: 103959 Date: 12/16/2020
Test Type: Radiated Scan Time: 18:26:49
Tested By: E. Wong Sequence#: 2

Software: EMITest 5.03.19

**Equipment Tested:** 

Device Manufacturer Model # S/N
Configuration 1

Support Equipment:

Device	Manufacturer	Model #	S/N	
Configuration 1				

#### Test Conditions / Notes:

The EUT is installed on support development board and placed on Styrofoam block, connected to a support laptop for configuration purposes.

Evaluation of PCII with new antenna. Worst case emission evaluation based on original certification.

2402MHz, 2441MHz, 2480MHz

Bluetooth: GFSK, Pi /4 DQPSK, 8DPSK

Ant 1: R8U2FJ8436Z, ant gain: +3.0dBi, paired with Cable 43

Frequency range of measurement = 1 - 12 GHz. 1000 MHz-12000 MHz; RBW=1MHz,VBW=3 MHz

Test environment conditions:

Temperature:22.3°C Relative Humidity:21%

Atmospheric Pressure: 100kPa

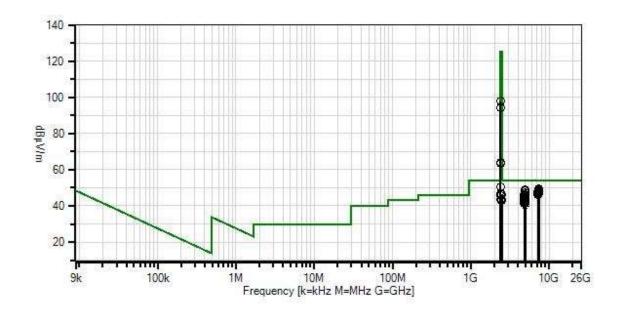
Site D

ANSI ANSI C63.10-2013

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Panasonic Avionics Corp. WO#: 103959 Sequence#: 2 Date: 12/16/2020 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Horiz



ReadingsQP Readings

▼ Ambient

1 - 15.247(d) / 15.209 Radiated Spurious Emissions

O Peak Readings

Average Readings Software Version: 5.03.19

#### Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/3/2020	8/3/2021
T2	AN01646	Horn Antenna	3115	3/17/2020	3/17/2022
T3	ANP07656	Cable	32022-29094K-	7/30/2020	7/30/2022
			29094K-24TC		
T4	AN00787	Preamp	83017A	5/31/2019	5/31/2021
T5	ANP07138	Cable	ANDL1-	3/4/2019	3/4/2021
			PNMNM-60		
Т6	ANP04382	Cable	LDF-50	5/15/2020	5/15/2022



Measu	rement Data:	<u> </u>				Test Distance: 3 Meters					
#	Freq	Rdng	T1 T5	T2 T6	Т3	T4	Dist.	Corr	Spec 1	Margin	Polar
	MHz	dΒμV	dB	dB	dB	dB	Table	dBµV/m	$dB\mu V/m$	dB	Ant
1	7439.567M	32.8	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	49.3	54.0 Ant1_2480M FSK_X	-4.7 /IHz_G	Horiz
2	7440.430M	32.7	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	49.2	54.0 Ant1_2480M PSK_X	-4.8 /IHz_Q	Horiz
3	7440.100M	32.6	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	49.1	54.0 Ant1_2480M DPSK_Z	-4.9 1Hz_8	Horiz
4	4959.750M	40.0	+0.0 +5.9	+33.8 +8.6	+0.7	-39.9	+0.0	49.1	54.0 Ant1_2480M FSK_X	-4.9 1Hz_G	Horiz
5	7439.830M	32.4	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.9	54.0 Ant1_2480M FSK_Y		Vert
6	7440.100M	32.3	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.8	54.0 Ant1_2480M DPSK_Y	-5.2 MHz_8	Horiz
7	7440.400M	32.3	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.8	54.0 Ant1_2480M PSK_Z	-5.2 MHz_Q	Horiz
8	7439.830M	32.3	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.8	54.0 Ant1_2480M FSK_Y	-5.2 MHz_G	Horiz
9	7440.100M	32.2	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.7	54.0 Ant1_2480M DPSK_Y	-5.3 MHz_8	Vert
	7323.000M	32.6	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.6	54.0 Ant1_2441M PSK_Z	-5.4 MHz_Q	Vert
11	7440.400M	32.0	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.5	54.0 Ant1_2480M DPSK_X	-5.5 MHz_8	Vert
12	7440.430M	32.0	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.5	54.0 Ant1_2480M PSK_X	-5.5 MHz_Q	Vert
13	7323.000M	32.4	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.4	54.0 Ant1_2441M DPSK_X	-5.6 MHz_8	Vert
	7440.430M	31.9	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.4	54.0 Ant1_2480M FSK_Z		Horiz
	4960.230M	39.3	+0.0 +5.9	+33.8 +8.6	+0.7	-39.9	+0.0	48.4	54.0 Ant1_2480M DPSK_X		Horiz
16	7323.000M	32.4	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.4	54.0 Ant1_2441M DPSK_Y	-5.6 1Hz_8	Vert



17	7322.950M	32.3	+0.0	+36.9	+0.8	-40.3	+0.0	48.3	54.0 -5.7	Horiz
			+7.5	+11.1					Ant1_2441MHz_8	
									DPSK_Z	
18	7323.000M	32.3	+0.0	+36.9	+0.8	-40.3	+0.0	48.3	54.0 -5.7	Horiz
			+7.5	+11.1					Ant1_2441MHz_G	
									FSK_X	
19	7440.500M	31.8	+0.0	+37.3	+0.8	-40.4	+0.0	48.3	54.0 -5.7	Vert
1	,	01.0	+7.6	+11.2			. 0.0	.0.0	Ant1_2480MHz_Q	. 010
			. ,						PSK_Z	
20	7323.000M	32.2	+0.0	+36.9	+0.8	-40.3	+0.0	48.2	54.0 -5.8	Horiz
20	7323.000WI	32.2	+7.5	+11.1	10.0	40.5	10.0	40.2	Ant1_2441MHz_Q	HOHZ
			17.5	111.1					PSK_Y	
21	7420 92014	21.7	+ O O	. 27.2	.0.0	40.4	.00	40.2		<b>X</b> /4
21	7439.830M	31.7	+0.0	+37.3	+0.8	-40.4	+0.0	48.2	54.0 -5.8	Vert
			+7.6	+11.2					Ant1_2480MHz_G	
									FSK_Z	
22	4960.330M	39.1	+0.0	+33.8	+0.7	-39.9	+0.0	48.2	54.0 -5.8	Vert
			+5.9	+8.6					Ant1_2480MHz_Q	
									PSK_Y	
23	7322.950M	32.2	+0.0	+36.9	+0.8	-40.3	+0.0	48.2	54.0 -5.8	Horiz
			+7.5	+11.1					Ant1_2441MHz_8	
									DPSK_Y	
24	7440.400M	31.6	+0.0	+37.3	+0.8	-40.4	+0.0	48.1	54.0 -5.9	Horiz
			+7.6	+11.2					Ant1_2480MHz_8	
									DPSK_X	
25	7440.500M	31.5	+0.0	+37.3	+0.8	-40.4	+0.0	48.0	54.0 -6.0	Horiz
23	7 1 10.500111	31.3	+7.6	+11.2	10.0	10.1	10.0	10.0	Ant1_2480MHz_Q	HOHE
			17.0	111.2					PSK_Y	
26	7439.450M	31.5	+0.0	+37.3	+0.8	-40.4	+0.0	48.0	54.0 -6.0	Vert
20	7439.430WI	31.3	+0.0 +7.6	+37.3	+0.6	-40.4	+0.0	46.0		vert
			+7.0	+11.2					Ant1_2480MHz_G	
27	7222 00014	22.0	. 0. 0	.260	. 0. 0	40.2	. 0. 0	40.0	FSK_X	X7 .
27	7322.800M	32.0	+0.0	+36.9	+0.8	-40.3	+0.0	48.0	54.0 -6.0	Vert
			+7.5	+11.1					Ant1_2441MHz_G	
									FSK_Z	
28	7323.000M	32.0	+0.0	+36.9	+0.8	-40.3	+0.0	48.0	54.0 -6.0	Vert
			+7.5	+11.1					Ant1_2441MHz_G	
									FSK_X	
29	7323.000M	31.9	+0.0	+36.9	+0.8	-40.3	+0.0	47.9	54.0 -6.1	Horiz
			+7.5	+11.1					Ant1_2441MHz_Q	
									PSK_Z	
30	7323.000M	31.7	+0.0	+36.9	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Horiz
			+7.5	+11.1					Ant1_2441MHz_8	
									DPSK_X	
31	7322.950M	31.7	+0.0	+36.9	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Vert
	. 222.2001.1	21.7	+7.5	+11.1	. 3.0	.0.5	. 0.0	.,.,	Ant1_2441MHz_8	
			. , .5						DPSK Z	
32	7205.730M	32.1	+0.0	+36.6	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Vert
] 32	1205.130W	5∠.1	+0.0 +7.5	+30.0	±0.6	<del>-4</del> 0.5	±0.0	+/./	Ant1_2402MHz_Q	v CI t
			±1.5	±11.U					PSK_Z	
22	7205 00014	20.1	.0.0	1266	.0.0	40.2	.0.0	47.7		<b>V</b> I4
33	7205.000M	32.1	+0.0	+36.6	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Vert
			+7.5	+11.0					Ant1_2402MHz_G	
									FSK_X	



34 7323,000M   31.7											
PSK Y   S4.0   -6.3   Horiz   Horiz	34	7323.000M	31.7	+0.0	+36.9	+0.8	-40.3	+0.0	47.7		Vert
35 7323.000M   31.7				+7.5	+11.1					Ant1_2441MHz_Q	
1.7.5										PSK_Y	
Second   31.7   +0.0   +36.9   +0.8   -40.3   +0.0   47.7   54.0   -6.3   Horiz   Anti_2441MHz_G   FSK_Z	35	7323.000M	31.7	+0.0	+36.9	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Horiz
Second   31.7   +0.0   +36.9   +0.8   -40.3   +0.0   47.7   54.0   -6.3   Horiz   Anti_2441MHz_G   FSK_Z				+7.5	+11.1					Ant1 2441MHz Q	
36 7322.800M   31.7											
1.1	36	7322.800M	31.7	+0.0	+36.9	+0.8	-40 3	+0.0	47 7		Horiz
Second   S		7322.000111	31.7			10.0	10.5	10.0	.,.,		TIOTIE
37 7323.000M   31.6				17.0							
17.5   11.1	37	7323 000M	31.6	±0.0	<b>⊥</b> 36 0	±0.8	-40.3	±0.0	17.6		Vert
Second   S	37	7323.000W	31.0			10.0	-40.5	10.0	77.0		VCIT
38 7205.630M   32.0				+1.5	+11.1						
Heat	20	7205 (20)4	22.0	. 0. 0	.26.6	. 0. 0	40.2	. 0. 0	47.6		TT
FSK_Z   FSK_X   F7.5   F11.0   FSK_X   FSK_X   FSK_X   F7.5   F11.0   FSK_X   FSK_X   FSK_X   F7.5   F11.0   FSK_Z   FSK_X   F7.5   F	38	/205.630M	32.0			+0.8	-40.3	+0.0	47.6		Horiz
39 7205.600M   31.9				+7.5	+11.0						
Heat											
SEK_X	39	7205.600M	31.9			+0.8	-40.3	+0.0	47.5		Horiz
40   7206.300M   31.9   +0.0   +36.6   +0.8   -40.3   +0.0   47.5   54.0   -6.5   Horiz   Anti 2402MHz_8   DPSK_Z     41   4959.670M   38.3   +0.0   +33.8   +0.7   -39.9   +0.0   47.4   54.0   -6.6   Vert   Anti 2480MHz_G   FSK_Y     42   7205.770M   31.8   +0.0   +36.6   +0.8   -40.3   +0.0   47.4   54.0   -6.6   Horiz   Anti 2420MHz_Q   PSK_X     43   7206.300M   31.7   +0.0   +36.6   +0.8   -40.3   +0.0   47.3   54.0   -6.7   Vert   Anti 2402MHz_8   DPSK_Y     44   7205.730M   31.7   +0.0   +36.6   +0.8   -40.3   +0.0   47.3   54.0   -6.7   Vert   Anti 2402MHz_8   DPSK_X     45   7205.730M   31.7   +0.0   +36.6   +0.8   -40.3   +0.0   47.3   54.0   -6.7   Vert   Anti 2402MHz_8   DPSK_X     46   7205.730M   31.6   +0.0   +36.6   +0.8   -40.3   +0.0   47.3   54.0   -6.7   Horiz   Anti 2402MHz_9   PSK_Z     47   7440.500M   30.7   +0.0   +37.3   +0.8   -40.3   +0.0   47.2   54.0   -6.8   Vert   Anti 2402MHz_Q   PSK_Y     48   7205.730M   31.6   +0.0   +36.6   +0.8   -40.3   +0.0   47.2   54.0   -6.8   Vert   Anti 2402MHz_Q   PSK_Y     49   7440.100M   30.6   +0.0   +36.6   +0.8   -40.3   +0.0   47.2   54.0   -6.8   Vert   Anti 2480MHz_Q   PSK_Y     49   7440.100M   30.6   +0.0   +37.3   +0.8   -40.4   +0.0   47.2   54.0   -6.8   Vert   Anti 2480MHz_B   PSK_Y     49   7440.100M   30.6   +0.0   +37.3   +0.8   -40.4   +0.0   47.1   54.0   -6.9   Vert   Anti 2480MHz_B   DPSK_Z     50   7205.730M   31.5   +0.0   +36.6   +0.8   -40.3   +0.0   47.1   54.0   -6.9   Vert   Anti 2480MHz_B   DPSK_Z   State   PSK_Z   State   S				+7.5	+11.0						
Heat											
A1 4959.670M   38.3	40	7206.300M	31.9	+0.0	+36.6	+0.8	-40.3	+0.0	47.5	54.0 -6.5	Horiz
41 4959.670M   38.3				+7.5	+11.0					Ant1_2402MHz_8	
+5.9										DPSK_Z	
+5.9	41	4959.670M	38.3	+0.0	+33.8	+0.7	-39.9	+0.0	47.4	54.0 -6.6	Vert
SEK_Y   FSK_Y   FSK_X   FSK_											
42 7205.770M   31.8											
+7.5	42	7205 770M	31.8	+0.0	+36.6	+0.8	-40 3	+0.0	47.4		Horiz
PSK_X	12	7203.770111	31.0			10.0	10.5	10.0	17.1		HOHE
43 7206.300M   31.7				17.0	111.0					_	
Heat	13	7206 300M	31.7	±0.0	<b>⊥</b> 36.6	±0.8	40.3	±0.0	17.3		Vort
DPSK_Y	43	7200.300IVI	31.7			+0.0	<del>-4</del> 0.5	+0.0	47.3		V CI t
44 7205.730M         31.7         +0.0         +36.6         +0.8         -40.3         +0.0         47.3         54.0         -6.7         Vert Ant1_2402MHz_8 DPSK_X           45 7205.730M         31.7         +0.0         +36.6         +0.8         -40.3         +0.0         47.3         54.0         -6.7         Horiz Ant1_2402MHz_Q PSK_Z           46 7205.730M         31.6         +0.0         +36.6         +0.8         -40.3         +0.0         47.2         54.0         -6.8         Horiz Ant1_2402MHz_G FSK_Y           47 7440.500M         30.7         +0.0         +37.3         +0.8         -40.4         +0.0         47.2         54.0         -6.8         Vert Ant1_2480MHz_Q PSK_Y           48 7205.730M         31.6         +0.0         +36.6         +0.8         -40.3         +0.0         47.2         54.0         -6.8         Vert Ant1_2480MHz_Q FSK_Y           49 7440.100M         30.6         +0.0         +37.3         +0.8         -40.3         +0.0         47.1         54.0         -6.8         Vert Ant1_2480MHz_B DPSK_Z           50 7205.730M         31.5         +0.0         +36.6         +0.8         -40.3         +0.0         47.1         54.0         -6.9         Vert Ant1_2480MHz_B DPSK_Z     <				+1.5	+11.0						
+7.5	4.4	7205 720M	21.7	+ O O	1266	.0.0	40.2	.00	47.2		<b>X</b> 74
DPSK_X	44	/205./30M	31./			+0.8	-40.3	+0.0	47.3		vert
45 7205.730M       31.7       +0.0       +36.6       +0.8       -40.3       +0.0       47.3       54.0       -6.7       Horiz         46 7205.730M       31.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Horiz         47 7440.500M       30.7       +0.0       +37.3       +0.8       -40.4       +0.0       47.2       54.0       -6.8       Vert         +7.6       +11.2       8       -40.4       +0.0       47.2       54.0       -6.8       Vert         48 7205.730M       31.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Vert         47 7440.100M       30.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Vert         Ant1_2402MHz_G       FSK_Y         49 7440.100M       30.6       +0.0       +37.3       +0.8       -40.4       +0.0       47.1       54.0       -6.9       Vert         +7.6       +11.2       40.8       -40.4       +0.0       47.1       54.0       -6.9       Vert         -50 7205.730M       31.5       +				+7.5	+11.0						
+7.5											
PSK_Z	45	7205.730M	31.7			+0.8	-40.3	+0.0	47.3		Horiz
46       7205.730M       31.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Horiz Ant1_2402MHz_G FSK_Y         47       7440.500M       30.7       +0.0       +37.3       +0.8       -40.4       +0.0       47.2       54.0       -6.8       Vert Ant1_2480MHz_Q PSK_Y         48       7205.730M       31.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Vert Ant1_2402MHz_G FSK_Y         49       7440.100M       30.6       +0.0       +37.3       +0.8       -40.4       +0.0       47.1       54.0       -6.9       Vert Ant1_2480MHz_8 DPSK_Z         50       7205.730M       31.5       +0.0       +36.6       +0.8       -40.3       +0.0       47.1       54.0       -6.9       Horiz Ant1_2402MHz_Q				+7.5	+11.0					_	
+7.5 +11.0  Ant1_2402MHz_G FSK_Y  47 7440.500M 30.7 +0.0 +37.3 +0.8 -40.4 +0.0 47.2 54.0 -6.8 Vert +7.6 +11.2 PSK_Y  48 7205.730M 31.6 +0.0 +36.6 +0.8 -40.3 +0.0 47.2 54.0 -6.8 Vert +7.5 +11.0 FSK_Y  49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert +7.6 +11.2 PSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 FSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 FSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0											
FSK_Y  47 7440.500M 30.7 +0.0 +37.3 +0.8 -40.4 +0.0 47.2 54.0 -6.8 Vert	46	7205.730M	31.6	+0.0	+36.6	+0.8	-40.3	+0.0	47.2		Horiz
47 7440.500M       30.7       +0.0       +37.3       +0.8       -40.4       +0.0       47.2       54.0       -6.8       Vert Ant1_2480MHz_Q PSK_Y         48 7205.730M       31.6       +0.0       +36.6       +0.8       -40.3       +0.0       47.2       54.0       -6.8       Vert Ant1_2402MHz_G FSK_Y         49 7440.100M       30.6       +0.0       +37.3       +0.8       -40.4       +0.0       47.1       54.0       -6.9       Vert Ant1_2480MHz_8 DPSK_Z         50 7205.730M       31.5       +0.0       +36.6       +0.8       -40.3       +0.0       47.1       54.0       -6.9       Horiz Ant1_2402MHz_Q				+7.5	+11.0					Ant1_2402MHz_G	
+7.6 +11.2 Ant1_2480MHz_Q PSK_Y  48 7205.730M 31.6 +0.0 +36.6 +0.8 -40.3 +0.0 47.2 54.0 -6.8 Vert Ant1_2402MHz_G FSK_Y  49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert Ant1_2480MHz_8 DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q										FSK_Y	
+7.6 +11.2 Ant1_2480MHz_Q PSK_Y  48 7205.730M 31.6 +0.0 +36.6 +0.8 -40.3 +0.0 47.2 54.0 -6.8 Vert Ant1_2402MHz_G FSK_Y  49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert Ant1_2480MHz_8 DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q	47	7440.500M	30.7	+0.0	+37.3	+0.8	-40.4	+0.0	47.2	54.0 -6.8	Vert
PSK_Y  48 7205.730M 31.6 +0.0 +36.6 +0.8 -40.3 +0.0 47.2 54.0 -6.8 Vert											
48 7205.730M 31.6 +0.0 +36.6 +0.8 -40.3 +0.0 47.2 54.0 -6.8 Vert +7.5 +11.0											
+7.5 +11.0  Ant1_2402MHz_G FSK_Y  49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert +7.6 +11.2 Ant1_2480MHz_8 DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q	48	7205.730M	31.6	+0.0	+36.6	+0.8	-40.3	+0.0+	47.2	_	Vert
FSK_Y  49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert	.		22.0			. 0.0		. 0.0			
49 7440.100M 30.6 +0.0 +37.3 +0.8 -40.4 +0.0 47.1 54.0 -6.9 Vert +7.6 +11.2 Ant1_2480MHz_8 DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q				. ,	. 11.0						
+7.6 +11.2 Ant1_2480MHz_8 DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q	10	7440 100M	30.6	±0 0	<b>⊥37 3</b>	<u></u> ተሀ ል	-40.4	±0.0	/7 1		Vort
DPSK_Z  50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q	+7	, <del></del> 0.1001 <b>V</b> 1	50.0			FU.0	-+0.4	10.0	7/.1		V CI l
50 7205.730M 31.5 +0.0 +36.6 +0.8 -40.3 +0.0 47.1 54.0 -6.9 Horiz +7.5 +11.0 Ant1_2402MHz_Q				±7.0	⊤11.∠						
+7.5 +11.0 Ant1_2402MHz_Q	50	7205 72014	21 5	ΙΟ Ο	126.6	LO 0	40.2	+O O	47.1		IIo:-
	30	/205./30M	31.3			+0.8	-40.3	+0.0	4/.1		HOIIZ
PSK_Y				+1.5	+11.0						
										PSK_Y	



51	7323.000M	31.0	+0.0	+36.9	+0.8	-40.3	+0.0	47.0	54.0 -7.0	Vert
			+7.5	+11.1					Ant1_2441MHz_Q	
									PSK_X	
52	7206.300M	31.4	+0.0	+36.6	+0.8	-40.3	+0.0	47.0	54.0 -7.0	Horiz
			+7.5	+11.0					Ant1_2402MHz_8	
									DPSK_Y	
53	7205.770M	31.3	+0.0	+36.6	+0.8	-40.3	+0.0	46.9	54.0 -7.1	Vert
			+7.5	+11.0					Ant1_2402MHz_Q	
<i>5</i> 4	7206 2001 4	21.2	. 0. 0	.26.6	. 0. 0	40.2	. 0. 0	46.0	PSK_X	<b>T.7</b> ,
54	7206.300M	31.3	+0.0	+36.6 +11.0	+0.8	-40.3	+0.0	46.9	54.0 -7.1	Vert
			+7.5	+11.0					Ant1_2402MHz_8	
- 55	7205 720M	21.2	+0.0	126.6	+0.8	-40.3	+0.0	46.9	DPSK_Z 54.0 -7.1	Vert
33	7205.730M	31.3	+0.0 +7.5	+36.6 +11.0	+0.8	-40.3	+0.0	40.9	Ant1_2402MHz_Q	vert
			+1.5	+11.0					PSK_Y	
56	7323.000M	30.9	+0.0	+36.9	+0.8	-40.3	+0.0	46.9	54.0 -7.1	Horiz
30	7323.000WI	30.9	+7.5	+30.9	+0.6	-40.5	+0.0	40.9	Ant1_2441MHz_G	HOHZ
			17.5	111.1					FSK_Y	
57	7205.730M	31.2	+0.0	+36.6	+0.8	-40.3	+0.0	46.8	54.0 -7.2	Horiz
37	7203.730W	31.2	+7.5	+11.0	10.0	40.5	10.0	40.0	Ant1_2402MHz_8	HOHZ
			17.5	111.0					DPSK_X	
58	2390.000M	48.2	+0.0	+28.3	+0.5	-39.8	+0.0	46.8	54.0 -7.2	Vert
	2370.000111	10.2	+4.0	+5.6	10.5	37.0	10.0	10.0	Ant1_2402MHz_G	, 611
									FSK_Y_Bandedge_	
									L	
59	2483.500M	47.8	+0.0	+28.2	+0.5	-39.9	+0.0	46.4	54.0 -7.6	Vert
			+4.1	+5.7					Ant1_2480MHz_8	
									DPSK_Y_Bandedg	
									e_H	
60	4804.200M	37.9	+0.0	+33.5	+0.7	-40.0	+0.0	46.4	54.0 -7.6	Vert
			+5.8	+8.5					Ant1_2402MHz_8	
									DPSK_Y	
61	4960.070M	37.1	+0.0	+33.8	+0.7	-39.9	+0.0	46.2	54.0 -7.8	Horiz
			+5.9	+8.6					Ant1_2480MHz_8	
									DPSK_Z	
62	7205.520M	30.6	+0.0	+36.6	+0.8	-40.3	+0.0	46.2	54.0 -7.8	Vert
			+7.5	+11.0					Ant1_2402MHz_G	
									FSK_Z	
63	4882.000M	36.8	+0.0	+33.7	+0.7	-39.9	+0.0	45.8	54.0 -8.2	Vert
			+5.9	+8.6					Ant1_2441MHz_8	
	40.60.0703.4	26.4	.0.0	. 22.0	.07	20.0	.0.0	45.5	DPSK_Y	<b>X7</b> .
64	4960.070M	36.4	+0.0	+33.8	+0.7	-39.9	+0.0	45.5	54.0 -8.5	Vert
			+5.9	+8.6					Ant1_2480MHz_8 DPSK_Y	
65	2390.000M	46.8	10.0	+28.3	+0.5	-39.8	+0.0	45.4	54.0 -8.6	Vert
03	2390.000IVI	40.8	$+0.0 \\ +4.0$	+28.3 +5.6	+0.5	-39.8	+0.0	43.4	54.0 -8.6 Ant1_2402MHz_8	vert
			+4.0	+3.0					DPSK_Y_Bandedg	
									e L	
66	4882.000M	36.2	+0.0	+33.7	+0.7	-39.9	+0.0	45.2	54.0 -8.8	Vert
	-1002.000IVI	30.2	+5.9	+33.7	10.7	-33.3	10.0	73.∠	Ant1_2441MHz_G	v CI t
			13.7	10.0					FSK_Y	
									1 217_1	



						• • •				
67	4960.230M	36.1	+0.0	+33.8	+0.7	-39.9	+0.0	45.2	54.0 -8.8	Horiz
			+5.9	+8.6					Ant1_2480MHz_Q	
	400000000	264			0.7	40.0	0.0	44.0	PSK_Z	** .
68	4803.930M	36.4	+0.0	+33.5	+0.7	-40.0	+0.0	44.9	54.0 -9.1	Horiz
			+5.8	+8.5					Ant1_2402MHz_Q	
									PSK_Z	
69	4803.930M	36.4	+0.0	+33.5	+0.7	-40.0	+0.0	44.9	54.0 -9.1	Horiz
			+5.8	+8.5					Ant1_2402MHz_8	
									DPSK_X	
70	4960.270M	35.7	+0.0	+33.8	+0.7	-39.9	+0.0	44.8	54.0 -9.2	Horiz
			+5.9	+8.6					Ant1_2480MHz_Q	
									PSK_X	
71	4882.000M	35.6	+0.0	+33.7	+0.7	-39.9	+0.0	44.6	54.0 -9.4	Vert
			+5.9	+8.6					Ant1_2441MHz_Q	
									PSK_Y	
72	4803.930M	35.8	+0.0	+33.5	+0.7	-40.0	+0.0	44.3	54.0 -9.7	Vert
			+5.8	+8.5					Ant1_2402MHz_Q	
									PSK_Y	
73	4959.670M	35.2	+0.0	+33.8	+0.7	-39.9	+0.0	44.3	54.0 -9.7	Vert
			+5.9	+8.6					Ant1_2480MHz_G	
									FSK_Z	
74	4960.070M	35.0	+0.0	+33.8	+0.7	-39.9	+0.0	44.1	54.0 -9.9	Horiz
			+5.9	+8.6					Ant1_2480MHz_8	
									DPSK_Y	
75	4881.800M	35.0	+0.0	+33.7	+0.7	-39.9	+0.0	44.0	54.0 -10.0	Horiz
			+5.9	+8.6					Ant1_2441MHz_G	
									FSK_Z	
76	4803.670M	35.5	+0.0	+33.5	+0.7	-40.0	+0.0	44.0	54.0 -10.0	Vert
			+5.8	+8.5					Ant1_2402MHz_Q	
									PSK_X	
77	4959.633M	34.8	+0.0	+33.8	+0.7	-39.9	+0.0	43.9	54.0 -10.1	Vert
			+5.9	+8.6					Ant1_2480MHz_G	
									FSK_X	
78	4804.200M	35.3	+0.0	+33.5	+0.7	-40.0	+0.0	43.8	54.0 -10.2	Horiz
			+5.8	+8.5					Ant1_2402MHz_8	
									DPSK_Z	
79	4960.330M	34.7	+0.0	+33.8	+0.7	-39.9	+0.0	43.8	54.0 -10.2	Horiz
			+5.9	+8.6					Ant1_2480MHz_Q	
									PSK_Y	
80	4803.870M	35.2	+0.0	+33.5	+0.7	-40.0	+0.0	43.7	54.0 -10.3	Vert
			+5.8	+8.5					Ant1_2402MHz_G	
									FSK_Y	
81	4881.800M	34.6	+0.0	+33.7	+0.7	-39.9	+0.0	43.6	54.0 -10.4	Vert
			+5.9	+8.6					Ant1_2441MHz_G	
									FSK_Z	
82	4960.230M	34.5	+0.0	+33.8	+0.7	-39.9	+0.0	43.6	54.0 -10.4	Vert
			+5.9	+8.6					Ant1_2480MHz_8	
									DPSK_X	
83	2390.000M	44.9	+0.0	+28.3	+0.5	-39.8	+0.0	43.5	54.0 -10.5	Vert
			+4.0	+5.6					Ant1_2402MHz_Q	
1									PSK_Y_Bandedge_	
									L	
	-					_				



	100000000									
84	4803.930M	34.8	+0.0	+33.5	+0.7	-40.0	+0.0	43.3	54.0 -10.7	Vert
			+5.8	+8.5					Ant1_2402MHz_Q	
									PSK_Z	
85	4960.270M	34.2	+0.0	+33.8	+0.7	-39.9	+0.0	43.3	54.0 -10.7	Vert
			+5.9	+8.6					Ant1_2480MHz_Q	
									PSK_X	
86	2483.500M	44.7	+0.0	+28.2	+0.5	-39.9	+0.0	43.3	54.0 -10.7	Vert
			+4.1	+5.7					Ant1_2480MHz_G	
									FSK_Y_Bandedge_	
									Н	
87	4882.000M	34.2	+0.0	+33.7	+0.7	-39.9	+0.0	43.2	54.0 -10.8	Vert
			+5.9	+8.6					Ant1_2441MHz_Q	
									PSK_X	
88	4803.730M	34.7	+0.0	+33.5	+0.7	-40.0	+0.0	43.2	54.0 -10.8	Horiz
			+5.8	+8.5					Ant1_2402MHz_G	
									FSK_X	
89	2483.500M	44.5	+0.0	+28.2	+0.5	-39.9	+0.0	43.1	54.0 -10.9	Horiz
			+4.1	+5.7					Ant1_2480MHz_Q	
									PSK_Y_Bandedge_	
									Н	
90	4803.830M	34.6	+0.0	+33.5	+0.7	-40.0	+0.0	43.1	54.0 -10.9	Horiz
			+5.8	+8.5					Ant1_2402MHz_G	
									FSK_Z	
91	4960.330M	33.8	+0.0	+33.8	+0.7	-39.9	+0.0	42.9	54.0 -11.1	Vert
			+5.9	+8.6					Ant1_2480MHz_Q	
									PSK_Z	
92	4882.000M	33.9	+0.0	+33.7	+0.7	-39.9	+0.0	42.9	54.0 -11.1	Vert
			+5.9	+8.6					Ant1_2441MHz_Q	
									PSK_Z	
93	4803.930M	34.4	+0.0	+33.5	+0.7	-40.0	+0.0	42.9	54.0 -11.1	Vert
			+5.8	+8.5				,	Ant1_2402MHz_8	
									DPSK_X	
94	4882.000M	33.8	+0.0	+33.7	+0.7	-39.9	+0.0	42.8	54.0 -11.2	Vert
, ,	1002.000111	55.0	+5.9	+8.6	10.7	57.7	10.0	12.0	Ant1 2441MHz 8	, 010
			10.9	10.0					DPSK_X	
95	4881.950M	33.7	+0.0	+33.7	+0.7	-39.9	+0.0	42.7	54.0 -11.3	Vert
	1001.750141	55.1	+5.9	+8.6	10.7	37.7	10.0	12.7	Ant1_2441MHz_8	, 011
			13.7	10.0					DPSK_Z	
96	4803.930M	34.1	+0.0	+33.5	+0.7	-40.0	+0.0	42.6	54.0 -11.4	Horiz
	1005.750111	J- <b>T.</b> 1	+5.8	+8.5	10.7	<del>-0.0</del>	10.0	72.0	Ant1_2402MHz_Q	110112
			13.0	10.5					PSK_Y	
07	4803.650M	34.0	+0.0	+33.5	+0.7	-40.0	+0.0	42.5	54.0 -11.5	Vert
] "	IMPCO.COOL	J+.U	+5.8	+33.3	±0.7	<del>-4</del> 0.0	+0.0	42.3	Ant1_2402MHz_G	v CI t
			±3.0	±0.J					FSK Z	
08	4803.970M	33.8	±0.0	+33.5	+0.7	-40.0	+0.0	42.3	54.0 -11.7	Horiz
90	+0U3.7/UIVI	33.0	+0.0 +5.8		+∪./	-40.0	+0.0	42.3		110112
			+3.0	+8.5					Ant1_2402MHz_Q	
00	1902 222NA	22.6	ι Ο Ο	122 5	10.7	40.0	+0.0	42.1	PSK_X	Vont
99	4803.333M	33.6	+0.0	+33.5	+0.7	-40.0	+0.0	42.1	54.0 -11.9	Vert
			+5.8	+8.5					Ant1_2402MHz_G	
									FSK_X	



100	4960.070M	32.9	+0.0 +5.9	+33.8 +8.6	+0.7	-39.9	+0.0	42.0	54.0 -12.0 Ant1_2480MHz_8 DPSK_Z	Vert
101	4804.200M	33.5	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	42.0	54.0 -12.0 Ant1_2402MHz_8 DPSK_Y	Horiz
102	4882.000M	33.0	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.0	54.0 -12.0 Ant1_2441MHz_G FSK_X	Vert
103	4803.870M	33.1	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	41.6	54.0 -12.4 Ant1_2402MHz_G FSK_Y	Horiz
104	4804.200M	32.9	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	41.4	54.0 -12.6 Ant1_2402MHz_8 DPSK_Z	Vert
105	2399.970M	65.0	+0.0 +4.0	+28.3 +5.6	+0.5	-39.8	+0.0	63.6	76.3 -12.7 Ant1_2402MHz_Q PSK_Y_Bandedge_ L -20dBc	Vert
	4882.000M Ave	32.1	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	41.1	54.0 -12.9 Ant1_2441MHz_8 DPSK_X	Horiz
107	4881.950M Ave	31.7	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	40.7	54.0 -13.3 Ant1_2441MHz_8 DPSK_Z	Horiz
	4881.950M	40.8	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	49.8	54.0 -4.2 Ant1_2441MHz_8 DPSK_Z	Horiz
	4882.000M	40.2	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	49.2	54.0 -4.8 Ant1_2441MHz_8 DPSK_X	Horiz
^	4882.000M	39.3	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	48.3	54.0 -5.7 Ant1_2441MHz_Q PSK_X	Horiz
۸	4882.000M	39.1	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	48.1	54.0 -5.9 Ant1_2441MHz_Q PSK_Z	Horiz
^	4882.000M	34.0	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	43.0	54.0 -11.0 Ant1_2441MHz_G FSK_X	Horiz
^	4881.950M	33.9	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.9	54.0 -11.1 Ant1_2441MHz_8 DPSK_Y	Horiz
^	4882.000M	33.8	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.8	54.0 -11.2 Ant1_2441MHz_G FSK_Y	Horiz
^	4882.000M	33.2	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.2	54.0 -11.8 Ant1_2441MHz_Q PSK_Y	Horiz



116	2400.000M	65.2	+0.0	+28.3	+0.5	-39.8	+0.0	63.8	77.9	-14.1	Vert
			+4.0	+5.6					Ant1_2402	MHz_8	
									DPSK_Y_I	Bandedg	
									e_L -20dB	2	
117	4959.633M	30.4	+0.0	+33.8	+0.7	-39.9	+0.0	39.5	54.0	-14.5	Horiz
A	Ave		+5.9	+8.6					Ant1_2480	MHz_G	
									FSK_X		
٨	4959.600M	37.0	+0.0	+33.8	+0.7	-39.9	+0.0	46.1	54.0	-7.9	Horiz
			+5.9	+8.6					Ant1_2480	MHz_G	
									FSK_Z		
٨	4959.670M	34.6	+0.0	+33.8	+0.7	-39.9	+0.0	43.7	54.0	-10.3	Horiz
			+5.9	+8.6					Ant1_2480	MHz_G	
									FSK_Y		
120	2400.000M	52.1	+0.0	+28.3	+0.5	-39.8	+0.0	50.7	76.3	-25.6	Vert
			+4.0	+5.6					Ant1_2402	MHz_G	
									FSK_Y_Ba	andedge_	
									L -20dBc		
121	2402.000M	99.3	+0.0	+28.3	+0.5	-39.8	+0.0	97.9	125.2	-27.3	Vert
			+4.0	+5.6					Ant1_2402	MHz_8	
									DPSK_Y_I	Bandedg	
									e_Fundame	ental	
122	2401.970M	95.6	+0.0	+28.3	+0.5	-39.8	+0.0	94.2	125.2	-31.0	Vert
			+4.0	+5.6					Ant1_2402	MHz_Q	
									PSK_Y_Ba	andedge_	
									Fundamelta	al	



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA • 714 993 6112

Customer: Panasonic Avionics Corp.

Specification: 15.247(d) / 15.209 Radiated Spurious Emissions

 Work Order #:
 103959
 Date: 12/17/2020

 Test Type:
 Radiated Scan
 Time: 11:44:13

Tested By: E. Wong Sequence#: 3 Software: EMITest 5.03.19

2011/1010

**Equipment Tested:** 

Device	Manufacturer	Model #	S/N	
Configuration 1				

Support Equipment:

Device	Manufacturer	Model #	S/N	
Configuration 1				

#### Test Conditions / Notes:

The EUT is installed on support development board and placed on Styrofoam block, connected to a support laptop for configuration purposes.

Evaluation of PCII with new antenna. Worst case emission evaluation based on original certification and pre-scan.

2402MHz, 2441MHz, 2480MHz

Bluetooth: GFSK, Pi /4 DQPSK, 8DPSK

Ant 2: R8U5FJ8946Z, ant gain: -1.2dBi, paired with Cable 24

Frequency range of measurement = 1 - 12 GHz. 1000 MHz-12000 MHz; RBW=1MHz, VBW=3 MHz

Test environment conditions:

Temperature:22.3°C Relative Humidity: 21% Atmospheric Pressure:100kPa

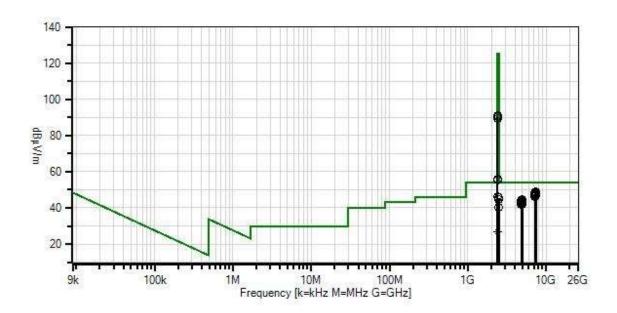
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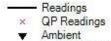
ANSI ANSI C63.10-2013

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Panasonic Avionics Corp. WO#: 103959 Sequence#: 3 Date: 12/17/2020 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert





- 1 - 15.247(d) / 15.209 Radiated Spurious Emissions

O Peak Readings \* Average Readings

Average Readings Software Version: 5.03.19

#### Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/3/2020	8/3/2021
T2	AN01646	Horn Antenna	3115	3/17/2020	3/17/2022
T3	ANP07656	Cable	32022-29094K-	7/30/2020	7/30/2022
			29094K-24TC		
T4	AN00787	Preamp	83017A	5/31/2019	5/31/2021
T5	ANP07138	Cable	ANDL1-	3/4/2019	3/4/2021
			PNMNM-60		
Т6	ANP04382	Cable	LDF-50	5/15/2020	5/15/2022



Measu	rement Data:	Re	eading lis	ted by ma	argin.		Te	est Distanc	e: 3 Meters		
#	Freq	Rdng	T1 T5	T2 T6	Т3	T4	Dist.	Corr	Spec 1	Margin	Polar
	MHz	dΒμV	dB	dB	dB	dB	Table	dBµV/m	$dB\mu V/m$	dB	Ant
1	7323.000M	33.0	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	49.0	54.0 Ant2_2441M PSK_Y	-5.0	Vert
2	7323.000M	32.9	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.9	54.0 Ant2_2441M FSK_Z	-5.1 IHz_G	Horiz
3	7440.000M	32.3	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.8	54.0 Ant2_2480M DPSK_Y	-5.2 1Hz_8	Horiz
4	7323.000M	32.8	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.8	54.0 Ant2_2441M DPSK_X	-5.2 IHz_8	Vert
	7323.000M	32.7	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.7	54.0 Ant2_2441M DPSK_Y		Horiz
6	7439.600M	32.1	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.6	54.0 Ant2_2480M PSK_Y	-5.4 IHz_Q	Vert
7	7439.600M	32.0	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.5	54.0 Ant2_2480M DPSK_X	-5.5 MHz_8	Vert
8	7323.000M	32.4	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.4	54.0 Ant2_2441M FSK_Y	-5.6 IHz_G	Horiz
9	7323.000M	32.4	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.4	54.0 Ant2_2441M FSK_X	-5.6 IHz_G	Vert
10	7323.000M	32.4	+0.0 +7.5	+36.9 +11.1	+0.8	-40.3	+0.0	48.4	54.0 Ant2_2441M FSK_Y	-5.6 IHz_G	Vert
11	7440.000M	31.8	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.3	54.0 Ant2_2480M DPSK_Z	-5.7 IHz_8	Vert
12	7205.600M	32.7	+0.0 +7.5	+36.6 +11.0	+0.8	-40.3	+0.0	48.3	54.0 Ant2_2402M PSK_Z	-5.7 IHz_Q	Horiz
	7440.000M	31.8	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.3	54.0 Ant2_2480M DPSK_Y	-5.7 1Hz_8	Vert
	7206.230M	32.6	+0.0 +7.5	+36.6 +11.0	+0.8	-40.3	+0.0	48.2	54.0 Ant2_2402M FSK_Z		Vert
	7439.700M	31.7	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.2	54.0 Ant2_2480M PSK_X		Horiz
16	7439.600M	31.7	+0.0 +7.6	+37.3 +11.2	+0.8	-40.4	+0.0	48.2	54.0 Ant2_2480M PSK_Z	-5.8 1Hz_Q	Horiz



17	7205.900M	32.5	+0.0	+36.6	+0.8	-40.3	+0.0	48.1	54.0 -5.9	Horiz
			+7.5	+11.0					Ant2_2402MHz_8	
									DPSK_Z	
18	7440.100M	31.6	+0.0	+37.3	+0.8	-40.4	+0.0	48.1	54.0 -5.9	Horiz
			+7.6	+11.2					Ant2_2480MHz_G	
									FSK_X	
19	7439.700M	31.6	+0.0	+37.3	+0.8	-40.4	+0.0	48.1	54.0 -5.9	Vert
			+7.6	+11.2					Ant2_2480MHz_Q	
									PSK_X	
20	7323.000M	32.1	+0.0	+36.9	+0.8	-40.3	+0.0	48.1	54.0 -5.9	Vert
			+7.5	+11.1					Ant2_2441MHz_Q	
									PSK_X	
21	7439.600M	31.6	+0.0	+37.3	+0.8	-40.4	+0.0	48.1	54.0 -5.9	Vert
			+7.6	+11.2					Ant2_2480MHz_Q	
									PSK_Z	
22	7440.000M	31.5	+0.0	+37.3	+0.8	-40.4	+0.0	48.0	54.0 -6.0	Horiz
			+7.6	+11.2					Ant2_2480MHz_8	
									DPSK_Z	
23	7323.000M	32.0	+0.0	+36.9	+0.8	-40.3	+0.0	48.0	54.0 -6.0	Horiz
			+7.5	+11.1					Ant2_2441MHz_Q	
									PSK_Z	
24	7205.900M	32.4	+0.0	+36.6	+0.8	-40.3	+0.0	48.0	54.0 -6.0	Vert
			+7.5	+11.0					Ant2_2402MHz_8	
									DPSK_Y	
25	7439.600M	31.4	+0.0	+37.3	+0.8	-40.4	+0.0	47.9	54.0 -6.1	Horiz
			+7.6	+11.2					Ant2_2480MHz_Q	
									PSK_Y	
26	7439.600M	31.4	+0.0	+37.3	+0.8	-40.4	+0.0	47.9	54.0 -6.1	Horiz
			+7.6	+11.2					Ant2_2480MHz_8	
									DPSK_X	
27	7205.600M	32.3	+0.0	+36.6	+0.8	-40.3	+0.0	47.9	54.0 -6.1	Horiz
			+7.5	+11.0					Ant2_2402MHz_8	
									DPSK_X	
28	7439.600M	31.3	+0.0	+37.3	+0.8	-40.4	+0.0	47.8	54.0 -6.2	Vert
			+7.6	+11.2					Ant2_2480MHz_G	
									FSK_Y	
29	7323.000M	31.8	+0.0	+36.9	+0.8	-40.3	+0.0	47.8	54.0 -6.2	Horiz
	-	-		+11.1					Ant2_2441MHz_Q	
									PSK_X	
30	7439.600M	31.3	+0.0	+37.3	+0.8	-40.4	+0.0	47.8	54.0 -6.2	Vert
			+7.6	+11.2					Ant2_2480MHz_G	
									FSK_Z	
31	7440.100M	31.2	+0.0	+37.3	+0.8	-40.4	+0.0	47.7	54.0 -6.3	Vert
			+7.6	+11.2		~			Ant2_2480MHz_G	
									FSK_X	
32	7323.000M	31.7	+0.0	+36.9	+0.8	-40.3	+0.0	47.7	54.0 -6.3	Horiz
52			+7.5	+11.1			. 0.0	,	Ant2_2441MHz_Q	
			,						PSK_Y	
33	7323.000M	31.6	+0.0	+36.9	+0.8	-40.3	+0.0	47.6	54.0 -6.4	Vert
	. 222.3001.1	21.0	+7.5	+11.1	. 3.0	.0.5	. 0.0	.,.0	Ant2_2441MHz_Q	. 510
			. 7.5						PSK_Z	
									- ~	



-										
34	7205.600M	32.0	+0.0	+36.6	+0.8	-40.3	+0.0	47.6	54.0 -6.4	Horiz
			+7.5	+11.0					Ant2_2402MHz_Q	
									PSK_Y	
35	7206.200M	31.9	+0.0	+36.6	+0.8	-40.3	+0.0	47.5	54.0 -6.5	Horiz
			+7.5	+11.0					Ant2_2402MHz_G	
									FSK_Y	
36	7206.400M	31.9	+0.0	+36.6	+0.8	-40.3	+0.0	47.5	54.0 -6.5	Vert
			+7.5	+11.0					Ant2_2402MHz_G	
									FSK_Y	
37	7205.900M	31.9	+0.0	+36.6	+0.8	-40.3	+0.0	47.5	54.0 -6.5	Horiz
			+7.5	+11.0					Ant2_2402MHz_8	
									DPSK_Y	
38	7205.600M	31.9	+0.0	+36.6	+0.8	-40.3	+0.0	47.5	54.0 -6.5	Vert
			+7.5	+11.0					Ant2_2402MHz_Q	
									PSK_Y	
39	7323.000M	31.4	+0.0	+36.9	+0.8	-40.3	+0.0	47.4	54.0 -6.6	Vert
			+7.5	+11.1					Ant2_2441MHz_8	
									DPSK_Y	
40	7323.000M	31.4	+0.0	+36.9	+0.8	-40.3	+0.0	47.4	54.0 -6.6	Vert
			+7.5	+11.1					Ant2_2441MHz_8	
									DPSK_Z	
41	7323.000M	31.4	+0.0	+36.9	+0.8	-40.3	+0.0	47.4	54.0 -6.6	Vert
			+7.5	+11.1					Ant2_2441MHz_G	
									FSK_Z	
42	7205.600M	31.8	+0.0	+36.6	+0.8	-40.3	+0.0	47.4	54.0 -6.6	Vert
			+7.5	+11.0					Ant2_2402MHz_Q	
									PSK_Z	
43	7439.600M	30.8	+0.0	+37.3	+0.8	-40.4	+0.0	47.3	54.0 -6.7	Horiz
			+7.6	+11.2					Ant2_2480MHz_G	
									FSK_Y	
44	7323.000M	31.2	+0.0	+36.9	+0.8	-40.3	+0.0	47.2	54.0 -6.8	Horiz
			+7.5	+11.1					Ant2_2441MHz_8	
									DPSK_X	
45	7206.400M	31.6	+0.0	+36.6	+0.8	-40.3	+0.0	47.2	54.0 -6.8	Horiz
			+7.5	+11.0					Ant2_2402MHz_Q	
									PSK_X	
46	7206.600M	31.6	+0.0	+36.6	+0.8	-40.3	+0.0	47.2	54.0 -6.8	Vert
			+7.5	+11.0					Ant2_2402MHz_G	
									FSK_X	
47	7323.000M	31.1	+0.0	+36.9	+0.8	-40.3	+0.0	47.1	54.0 -6.9	Horiz
			+7.5	+11.1					Ant2_2441MHz_G	
									FSK_X	
48	7205.600M	31.5	+0.0	+36.6	+0.8	-40.3	+0.0	47.1	54.0 -6.9	Vert
			+7.5	+11.0					Ant2_2402MHz_8	
									DPSK_X	
49	7439.600M	30.6	+0.0	+37.3	+0.8	-40.4	+0.0	47.1	54.0 -6.9	Horiz
			+7.6	+11.2					Ant2_2480MHz_G	
									FSK_Z	
50	7323.000M	31.0	+0.0	+36.9	+0.8	-40.3	+0.0	47.0	54.0 -7.0	Horiz
			+7.5	+11.1					Ant2_2441MHz_8	
									DPSK_Z	



S1 7205.500M											
S2 7205.900M   31.3	51	7205.500M	31.4			+0.8	-40.3	+0.0	47.0	Ant2_2402MHz_Q	Vert
17.5											
S3 7206.230M   31.3   +0.0   +36.6   +0.8   -40.3   +0.0   46.9   54.0   -7.1   Horiz   Ant2_2402MHz_G   FSK_Z    54 7206.600M   30.8   +0.0   +36.6   +0.8   -40.3   +0.0   46.4   54.0   -7.6   Horiz   Ant2_2402MHz_G   FSK_X    55 2400.000M   47.7   +0.0   +28.3   +0.5   -39.8   +0.0   46.3   54.0   -7.7   Vert   Ant2_2402MHz_G   FSK_X    55 2400.000M   47.7   +0.0   +28.3   +0.5   -39.9   +0.0   45.4   54.0   -8.6   Vert   Ant2_2402MHz_G   FSK_X    56 2483.500M   46.8   +0.0   +28.2   +0.5   -39.9   +0.0   45.4   54.0   -8.6   Vert   Ant2_2402MHz_G   FSK_Y_Bandedge   H   -1.2   -1	52	7205.900M	31.3	+0.0	+36.6	+0.8	-40.3	+0.0	46.9	54.0 -7.1	Vert
S3 7206.230M   31.3   +0.0   +36.6   +0.8   -40.3   +0.0   46.9   54.0   -7.1   Horiz   Ant2_2402MHz_G   FSK_Z    54 7206.600M   30.8   +0.0   +36.6   +0.8   -40.3   +0.0   46.4   54.0   -7.6   Horiz   Ant2_2402MHz_G   FSK_X    55 2400.000M   47.7   +0.0   +28.3   +0.5   -39.8   +0.0   46.3   54.0   -7.7   Vert   Ant2_2402MHz_G   FSK_X    55 2400.000M   47.7   +0.0   +28.3   +0.5   -39.9   +0.0   45.4   54.0   -8.6   Vert   Ant2_2402MHz_G   FSK_X    56 2483.500M   46.8   +0.0   +28.2   +0.5   -39.9   +0.0   45.4   54.0   -8.6   Vert   Ant2_2402MHz_G   FSK_Y_Bandedge   H   -1.2   -1				+7.5	+11.0					Ant2 2402MHz 8	
S3 7206.230M   31.3											
1.0	52	7206 220M	21.2	ι Ο Ο	126.6	ι Ο Θ	40.2	ι Ο Ο	46.0		Horiz
S4 7206.600M   30.8   +0.0   +36.6   +0.8   -40.3   +0.0   46.4     54.0   -7.6   Horiz   Ant_2_2402MHz_G   FSK_X	33	7200.230WI	31.3			+0.6	-40.3	+0.0	40.9		HOHZ
S4 7206.600M   30.8   +0.0   +36.6   +0.8   -40.3   +0.0   46.4   54.0   -7.6   Horiz   Anti2 2402MHz   G   FSK   X				+7.5	+11.0						
17.5   11.0   Ant2 2402MHz G   FSK_X										_	
S5 2400.000M	54	7206.600M	30.8	+0.0	+36.6	+0.8	-40.3	+0.0	46.4	54.0 -7.6	Horiz
S5 2400.000M				+7.5	+11.0					Ant2 2402MHz G	
S5 2400.000M											
Head	55	2400 000M	17.7	+0.0	128.3	10.5	30.8	100	16.3		Vort
FSK_Y_Bandedge_L-20dB	33	2400.000WI	47.7			+0.5	-37.0	+0.0	40.5		VEIL
L -20dBc   L -20dBc   S483.500M   46.8				+4.0	+5.6						
S6 2483.500M											
Harmonian   Harm										L -20dBc	
Harmonian   Harm	56	2483.500M	46.8	+0.0	+28.2	+0.5	-39.9	+0.0	45.4	54.0 -8.6	Vert
DPSK_Y_Bandedge_H											
S7 2483.500M   46.2					13.7						
57 2483.500M											
Harmonia   Harmonia											
PSK_Y_bandedge_H   PSK_Y_bandedge_H	57	2483.500M	46.2			+0.5	-39.9	+0.0	44.8		Vert
H   S8   4959.730M   35.6   +0.0   +33.8   +0.7   -39.9   +0.0   44.7   54.0   -9.3   Vert				+4.1	+5.7					Ant2_2480MHz_Q	
H   S8   4959.730M   35.6   +0.0   +33.8   +0.7   -39.9   +0.0   44.7   54.0   -9.3   Vert										PSK Y bandedge	
58         4959.730M         35.6         +0.0         +33.8         +0.7         -39.9         +0.0         44.7         54.0         -9.3         Vert Ant2_2480MHz_G FSK_Y           59         4960.000M         35.4         +0.0         +33.8         +0.7         -39.9         +0.0         44.5         54.0         -9.5         Vert Ant2_2480MHz_8 DPSK_Y           60         4960.070M         35.2         +0.0         +33.8         +0.7         -39.9         +0.0         44.3         54.0         -9.7         Horiz Ant2_2480MHz_G FSK_X           61         4804.130M         35.6         +0.0         +33.5         +0.7         -40.0         +0.0         44.1         54.0         -9.9         Horiz Ant2_2402MHz_G FSK_X           62         4959.730M         34.9         +0.0         +33.8         +0.7         -39.9         +0.0         44.0         54.0         -10.0         Horiz Ant2_2480MHz_Q PSK_Y           63         4803.730M         35.5         +0.0         +33.5         +0.7         -40.0         +0.0         44.0         54.0         -10.0         Vert Ant2_2480MHz_Q PSK_Y           64         4959.730M         34.8         +0.0         +33.8         +0.7         -39.9         +0.0											
+5.9	58	4959 730M	35.6	±0.0	<b>⊥33 8</b>	<b>⊥</b> 0.7	-30 0	±0.0	11.7		Vert
FSK_Y   FSK_X   FSK_	30	7/3/1/30IVI	33.0			10.7	-37.7	10.0	77./		VCIT
59         4960.000M         35.4         +0.0         +33.8         +0.7         -39.9         +0.0         44.5         54.0         -9.5         Vert Ant2_2480MHz_8 DPSK_Y           60         4960.070M         35.2         +0.0         +33.8         +0.7         -39.9         +0.0         44.3         54.0         -9.7         Horiz Ant2_2480MHz_G FSK_X           61         4804.130M         35.6         +0.0         +33.5         +0.7         -40.0         +0.0         44.1         54.0         -9.9         Horiz Ant2_2402MHz_G FSK_Y           62         4959.730M         34.9         +0.0         +33.8         +0.7         -39.9         +0.0         44.0         54.0         -10.0         Horiz Ant2_2480MHz_G FSK_Y           63         4803.730M         35.5         +0.0         +33.5         +0.7         -40.0         +0.0         44.0         54.0         -10.0         Horiz Ant2_2480MHz_G FSK_Y           64         4959.730M         34.8         +0.0         +33.8         +0.7         -39.9         +0.0         43.9         54.0         -10.1         Vert Ant2_2480MHz_G FSK_Y           65         4960.070M         34.7         +0.0         +33.8         +0.7         -39.9         +0				+3.7	+6.0						
Head											
DPSK_Y	59	4960.000M	35.4			+0.7	-39.9	+0.0	44.5		Vert
60 4960.070M 35.2 +0.0 +33.8 +0.7 -39.9 +0.0 44.3 54.0 -9.7 Horiz				+5.9	+8.6					Ant2_2480MHz_8	
60 4960.070M 35.2 +0.0 +33.8 +0.7 -39.9 +0.0 44.3 54.0 -9.7 Horiz										DPSK_Y	
+5.9 +8.6 Ant2_2480MHz_G FSK_X  61 4804.130M 35.6 +0.0 +33.5 +0.7 -40.0 +0.0 44.1 54.0 -9.9 Horiz +5.8 +8.5	60	4960 070M	35.2	+0.0	+33.8	+0.7	-39 9	+0.0	44 3		Horiz
FSK_X  61 4804.130M 35.6 +0.0 +33.5 +0.7 -40.0 +0.0 44.1 54.0 -9.9 Horiz		.,00,0,01,1	20.2				0,,,	. 0.0			110112
61 4804.130M 35.6 +0.0 +33.5 +0.7 -40.0 +0.0 44.1 54.0 -9.9 Horiz				±3.9	+0.0						
+5.8 +8.5		10011000									
FSK_Y  62 4959.730M 34.9 +0.0 +33.8 +0.7 -39.9 +0.0 44.0 54.0 -10.0 Horiz	61	4804.130M	35.6			+0.7	-40.0	+0.0	44.1		Horiz
62 4959.730M 34.9 +0.0 +33.8 +0.7 -39.9 +0.0 44.0 54.0 -10.0 Horiz				+5.8	+8.5					Ant2_2402MHz_G	
62 4959.730M 34.9 +0.0 +33.8 +0.7 -39.9 +0.0 44.0 54.0 -10.0 Horiz										FSK_Y	
+5.9 +8.6 Ant2_2480MHz_Q PSK_Y  63 4803.730M 35.5 +0.0 +33.5 +0.7 -40.0 +0.0 44.0 54.0 -10.0 Vert Ant2_2402MHz_Q PSK_Y  64 4959.730M 34.8 +0.0 +33.8 +0.7 -39.9 +0.0 43.9 54.0 -10.1 Vert Ant2_2480MHz_Q PSK_Y  65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X	62	4959.730M	34 9	+0.0	+33 8	+0.7	-39 9	+0.0	44 0		Horiz
PSK_Y	02	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5 1.7				27.7	. 0.0			110112
63 4803.730M 35.5 +0.0 +33.5 +0.7 -40.0 +0.0 44.0 54.0 -10.0 Vert				<b>⊤</b> J.7	±0.0						
+5.8 +8.5 Ant2_2402MHz_Q PSK_Y  64 4959.730M 34.8 +0.0 +33.8 +0.7 -39.9 +0.0 43.9 54.0 -10.1 Vert Ant2_2480MHz_Q PSK_Y  65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X		1000 5000 5	25.5		26.7		40.0	0.0	4		**
PSK_Y  64 4959.730M 34.8 +0.0 +33.8 +0.7 -39.9 +0.0 43.9 54.0 -10.1 Vert	63	4803.730M	35.5			+0.7	-40.0	+0.0	44.0		Vert
64 4959.730M 34.8 +0.0 +33.8 +0.7 -39.9 +0.0 43.9 54.0 -10.1 Vert				+5.8	+8.5					Ant2_2402MHz_Q	
+5.9 +8.6 Ant2_2480MHz_Q PSK_Y  65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 S4.0 -10.2 Vert Ant2_2480MHz_G										PSK_Y	
+5.9 +8.6 Ant2_2480MHz_Q PSK_Y  65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert Ant2_2480MHz_G FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G	64	4959.730M	34.8	+0.0	+33.8	+0.7	-39.9	+0.0	43.9	54.0 -10.1	Vert
PSK_Y  65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G											
65 4960.070M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G FSK_X 66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G					. 5.0					_	
+5.9 +8.6 Ant2_2480MHz_G FSK_X 66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G		1060 07014	247	100	122.0	.07	20.0	100	42.0		17
FSK_X  66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G	65	4960.070M	34./			+0./	-39.9	+0.0	43.8		vert
66 4959.730M 34.7 +0.0 +33.8 +0.7 -39.9 +0.0 43.8 54.0 -10.2 Vert +5.9 +8.6 Ant2_2480MHz_G				+5.9	+8.6						
+5.9 +8.6 Ant2_2480MHz_G										FSK_X	
+5.9 +8.6 Ant2_2480MHz_G	66	4959.730M	34.7	+0.0	+33.8	+0.7	-39.9	+0.0	43.8	54.0 -10.2	Vert
						- * *					
15K_L					. 5.0						
										1 DIX_L	



	4002 5203 5	25.2	. 0. 0	. 22. 5	. 0.7	40.0	. 0. 0	42.0	740 102	<b>X</b> 7 ·
67	4803.730M	35.3	+0.0	+33.5	+0.7	-40.0	+0.0	43.8	54.0 -10.2	Vert
			+5.8	+8.5					Ant2_2402MHz_8	
	4004 0703 4	25.2	.0.0	. 22. 5	. 0.7	40.0	.0.0	42.0	DPSK_X	<b>X</b> 7 ·
68	4804.270M	35.3	+0.0	+33.5	+0.7	-40.0	+0.0	43.8	54.0 -10.2	Vert
			+5.8	+8.5					Ant2_2402MHz_G	
	10.50.0003.5			20.0		200	0.0		FSK_Y	** .
69	4960.000M	34.6	+0.0	+33.8	+0.7	-39.9	+0.0	43.7	54.0 -10.3	Horiz
			+5.9	+8.6					Ant2_2480MHz_8	
<b>5</b> 0	1050 5003 5	24.5	0.0	22.0	0.5	20.0	0.0	10.5	DPSK_Z	**
70	4959.730M	34.6	+0.0	+33.8	+0.7	-39.9	+0.0	43.7	54.0 -10.3	Vert
			+5.9	+8.6					Ant2_2480MHz_8	
						• • •			DPSK_X	
71	4960.000M	34.6	+0.0	+33.8	+0.7	-39.9	+0.0	43.7	54.0 -10.3	Horiz
			+5.9	+8.6					Ant2_2480MHz_8	
	1005 00	<u> </u>			~ =	20.5	<u> </u>		DPSK_Y	** :
72	4882.000M	34.6	+0.0	+33.7	+0.7	-39.9	+0.0	43.6	54.0 -10.4	Horiz
			+5.9	+8.6					Ant2_2441MHz_Q	
	1000 5703 5	25.1	6.0	26.7		40.0	0.0	45.5	PSK_Z	**
73	4803.670M	35.1	+0.0	+33.5	+0.7	-40.0	+0.0	43.6	54.0 -10.4	Vert
			+5.8	+8.5					Ant2_2402MHz_Q	
									PSK_X	
74	4959.730M	34.5	+0.0	+33.8	+0.7	-39.9	+0.0	43.6	54.0 -10.4	Vert
			+5.9	+8.6					Ant2_2480MHz_Q	
									PSK_Z	
75	4959.730M	34.4	+0.0	+33.8	+0.7	-39.9	+0.0	43.5	54.0 -10.5	Horiz
			+5.9	+8.6					Ant2_2480MHz_Q	
									PSK_Z	
76	4803.930M	35.0	+0.0	+33.5	+0.7	-40.0	+0.0	43.5	54.0 -10.5	Horiz
			+5.8	+8.5					Ant2_2402MHz_8	
									DPSK_Y	
77	4882.000M	34.5	+0.0	+33.7	+0.7	-39.9	+0.0	43.5	54.0 -10.5	Vert
			+5.9	+8.6					Ant2_2441MHz_G	
<u> </u>									FSK_Y	
78	4804.170M	34.9	+0.0	+33.5	+0.7	-40.0	+0.0	43.4	54.0 -10.6	Horiz
			+5.8	+8.5					Ant2_2402MHz_G	
									FSK_Z	
79	4959.730M	34.3	+0.0	+33.8	+0.7	-39.9	+0.0	43.4	54.0 -10.6	Horiz
			+5.9	+8.6					Ant2_2480MHz_8	
									DPSK_X	
80	4803.730M	34.9	+0.0	+33.5	+0.7	-40.0	+0.0	43.4	54.0 -10.6	Horiz
			+5.8	+8.5					Ant2_2402MHz_Q	
									PSK_Z	
81	4804.400M	34.9	+0.0	+33.5	+0.7	-40.0	+0.0	43.4	54.0 -10.6	Horiz
			+5.8	+8.5					Ant2_2402MHz_G	
									FSK_X	
82	4803.730M	34.8	+0.0	+33.5	+0.7	-40.0	+0.0	43.3	54.0 -10.7	Vert
			+5.8	+8.5					Ant2_2402MHz_Q	
									PSK_Z	
83	4803.730M	34.8	+0.0	+33.5	+0.7	-40.0	+0.0	43.3	54.0 -10.7	Horiz
			+5.8	+8.5					Ant2_2402MHz_8	
									DPSK_X	
-							•			



						•••				
84	4959.830M	34.2	+0.0	+33.8	+0.7	-39.9	+0.0	43.3	54.0 -10.7	Horiz
			+5.9	+8.6					Ant2_2480MHz_Q	
0.5	4002 0001 5	242	0.0	22.5	0.7	20.0	0.0	10.0	PSK_X	¥7 .
85	4882.000M	34.2	+0.0	+33.7	+0.7	-39.9	+0.0	43.2	54.0 -10.8	Vert
			+5.9	+8.6					Ant2_2441MHz_8	
0.6	4004 40014	247	. 0. 0	. 22. 5	. 0. 7	40.0	. 0. 0	42.2	DPSK_Z	X7 .
86	4804.400M	34.7	+0.0	+33.5	+0.7	-40.0	+0.0	43.2	54.0 -10.8	Vert
			+5.8	+8.5					Ant2_2402MHz_G	
97	4882.000M	34.2	+0.0	+33.7	+0.7	-39.9	+0.0	43.2	FSK_X 54.0 -10.8	Vert
07	4002.000M	34.2	+5.9	+33.7	+0.7	-39.9	+0.0	43.2	Ant2_2441MHz_Q	vert
			<b>⊤</b> 3.9	⊤0.0					PSK_Y	
88	4882.000M	34.1	+0.0	+33.7	+0.7	-39.9	+0.0	43.1	54.0 -10.9	Horiz
00	4002.000W	34.1	+5.9	+8.6	+0.7	-39.9	+0.0	43.1	Ant2_2441MHz_Q	HOHZ
			13.7	10.0					PSK_Y	
89	4803.930M	34.6	+0.0	+33.5	+0.7	-40.0	+0.0	43.1	54.0 -10.9	Vert
0)	1003.730111	31.0	+5.8	+8.5	10.7	10.0	10.0	13.1	Ant2_2402MHz_8	VOIT
				. 0.0					DPSK_Z	
90	4959.830M	34.0	+0.0	+33.8	+0.7	-39.9	+0.0	43.1	54.0 -10.9	Vert
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2	+5.9	+8.6		0,,,	. 0.0	.0.1	Ant2_2480MHz_Q	, 610
									PSK_X	
91	4959.730M	34.0	+0.0	+33.8	+0.7	-39.9	+0.0	43.1	54.0 -10.9	Horiz
			+5.9	+8.6					Ant2_2480MHz_G	
									FSK_Z	
92	4882.000M	34.0	+0.0	+33.7	+0.7	-39.9	+0.0	43.0	54.0 -11.0	Vert
			+5.9	+8.6					Ant2_2441MHz_Q	
									PSK_X	
93	4804.170M	34.5	+0.0	+33.5	+0.7	-40.0	+0.0	43.0	54.0 -11.0	Vert
			+5.8	+8.5					Ant2_2402MHz_G	
									FSK_Z	
94	4960.000M	33.9	+0.0	+33.8	+0.7	-39.9	+0.0	43.0	54.0 -11.0	Vert
			+5.9	+8.6					Ant2_2480MHz_8	
									DPSK_Z	
95	4882.000M	34.0	+0.0	+33.7	+0.7	-39.9	+0.0	43.0	54.0 -11.0	Vert
			+5.9	+8.6					Ant2_2441MHz_8	
									DPSK_Y	
96	4959.730M	33.8	+0.0	+33.8	+0.7	-39.9	+0.0	42.9	54.0 -11.1	Horiz
			+5.9	+8.6					Ant2_2480MHz_G	
07	4002.0003.4	22.0	.00	. 22 7	.07	20.0	.0.0	42.0	FSK_Y	TT. *
97	4882.000M	33.9	+0.0	+33.7	+0.7	-39.9	+0.0	42.9	54.0 -11.1	Horiz
			+5.9	+8.6					Ant2_2441MHz_Q	
00	4902 02014	24.4	10.0	122 5	10.7	-40.0	ι Ο Ο	42.0	PSK_X	V
98	4803.930M	34.4	$+0.0 \\ +5.8$	+33.5 +8.5	+0.7	-40.0	+0.0	42.9	54.0 -11.1 Ant2_2402MHz_8	Vert
			+3.8	+8.3					DPSK Y	
00	4882.000M	33.9	+0.0	+33.7	+0.7	-39.9	+0.0	42.9	54.0 -11.1	Vert
99	4002.UUUWI	33.9	+0.0 +5.9	+33.7	+∪./	-39.9	+0.0	<b>4</b> ∠.7	34.0 -11.1 Ant2_2441MHz_G	v ert
			FJ.7	±0.0					FSK_Z	
100	4882.000M	33.8	+0.0	+33.7	+0.7	-39.9	+0.0	42.8	54.0 -11.2	Horiz
100	1002.0001	22.0	+5.9	+8.6	10.7	37.7	10.0	72.0	Ant2_2441MHz_G	110112
			10.7	10.0					FSK_Z	
									1 DIX_L	



101	4882.000M	33.6	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.6	54.0 -11.4 Ant2_2441MHz_8 DPSK_Y	Horiz
102	4882.000M	33.6	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.6	54.0 -11.4 Ant2_2441MHz_G FSK_X	Vert
103	4803.730M	34.0	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	42.5	54.0 -11.5 Ant2_2402MHz_Q PSK_Y	Horiz
104	4882.000M	33.4	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.4	54.0 -11.6 Ant2_2441MHz_8 DPSK_X	Horiz
105	4882.000M	33.4	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.4	54.0 -11.6 Ant2_2441MHz_G FSK_Y	Horiz
	4882.000M	33.3	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.3	54.0 -11.7 Ant2_2441MHz_G FSK_X	Horiz
107	4882.000M	33.2	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.2	54.0 -11.8 Ant2_2441MHz_Q PSK_Z	Vert
108	4803.930M	33.6	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	42.1	54.0 -11.9 Ant2_2402MHz_8 DPSK_Z	Horiz
109	4804.270M	33.5	+0.0 +5.8	+33.5 +8.5	+0.7	-40.0	+0.0	42.0	54.0 -12.0 Ant2_2402MHz_Q PSK_X	Horiz
110	4882.000M	33.0	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	42.0	54.0 -12.0 Ant2_2441MHz_8 DPSK_X	Vert
111	4882.000M	32.9	+0.0 +5.9	+33.7 +8.6	+0.7	-39.9	+0.0	41.9	54.0 -12.1 Ant2_2441MHz_8 DPSK_Z	Horiz
112	2483.500M	41.4	+0.0 +4.1	+28.2 +5.7	+0.5	-39.9	+0.0	40.0	54.0 -14.0 Ant2_2480MHz_G FSK_Y_bandedge_ H	Vert
113	2400.000M	56.7	+0.0 +4.0	+28.3 +5.6	+0.5	-39.8	+0.0	55.3	70.4 -15.1 Ant2_2402MHz_Q PSK_Y_Bandedge_ L20dBc	Vert
114	2400.000M	57.1	+0.0 +4.0	+28.3 +5.6	+0.5	-39.8	+0.0	55.7	70.8 -15.1 Ant2_2402MHz_8 DPSK_Y_Bandedg e_L -20dBc	Vert



44-	2200 0001 7	20.0	0.6	20.2	0.5	20.6	0.0	2	<b>7</b> 40	25.4	** . 1
	2390.000M	28.0	+0.0	+28.3	+0.5	-39.8	+0.0	26.6	54.0	-27.4	Vert
	Ave		+4.0	+5.6					Ant2_2402M	IHz_8	
									DPSK_Y_Ba	andedg	
									e_L		
٨	2390.000M	52.9	+0.0	+28.3	+0.5	-39.8	+0.0	51.5	54.0	-2.5	Vert
			+4.0	+5.6					Ant2_2402M	IHz 8	
									DPSK_Y_Ba		
									e_L	macas	
^	2390.000M	51.1	+0.0	+28.3	+0.5	-39.8	+0.0	49.7	54.0	-4.3	Vert
	2390.000WI	31.1			+0.5	-39.0	+0.0	49.7			Vert
			+4.0	+5.6					Ant2_2402M	_ \	
									PSK_Y_Ban	dedge_	
									L		
^	2390.000M	47.0	+0.0	+28.3	+0.5	-39.8	+0.0	45.6	54.0	-8.4	Vert
			+4.0	+5.6					Ant2_2402M	IHz_G	
									FSK_Y_Ban	dedge_	
									L	0 _	
119	2402.000M	92.2	+0.0	+28.3	+0.5	-39.8	+0.0	90.8	125.2	-34.4	Vert
			+4.0	+5.6					Ant2_2402M	IHz 8	
									DPSK_Y_fu		
									ntal	iiduiiic	
120	2401.930M	91.8	+0.0	+28.3	+0.5	-39.8	+0.0	90.4	125.2	-34.8	Vert
120	2401.730M	71.0			+0.5	-39.0	+0.0	<i>7</i> 0.4			v el t
			+4.0	+5.6					Ant2_2402M		
									PSK_Y_Fund	dament	
									al		
121	2402.200M	90.8	+0.0	+28.3	+0.5	-39.8	+0.0	89.4	125.2	-35.8	Vert
			+4.0	+5.6					Ant2_2402M	IHz_G	
									FSK_Y		
									_fundamenta	1	



	Band Edge Summary							
Antenna 1	Antenna 1 Operating Mode: Single Channel (Low and High)							
Frequency (MHz)	Modulation	Ant. Type	Field Strength (dBuV/m @3m)	Limit (dBuV/m @3m)	Results			
2390.0	GFSK	PCB Trace *	46.8	<54	Pass			
2400.0	GFSK	PCB Trace *	50.7	<76.3	Pass			
2483.5	GFSK	PCB Trace *	43.3	<54	Pass			
2390.0	π/4 QPSK	PCB Trace *	43.5	<54	Pass			
2400.0	π4 QPSK	PCB Trace *	63.6	<74.2	Pass			
2483.5	π/4 QPSK	PCB Trace *	43.1	<54	Pass			
2390.0	8DPSK	PCB Trace *	45.4	<54	Pass			
2400.0	8DPSK	PCB Trace *	63.8	<77.9	Pass			
2483.5	8DPSK	PCB Trace *	46.4	<54	Pass			

<sup>\*</sup> antennas listed in equipment general product information.

Antenna 2					
Frequency (MHz)	Modulation	Ant. Type	Field Strength (dBuV/m @3m)	Limit (dBuV/m @3m)	Results
2390.0	GFSK	PCB Trace *	45.6	<54	Pass
2400.0	GFSK	PCB Trace *	46.3	< 69.4	Pass
2483.5	GFSK	PCB Trace *	40.0	<54	Pass
2390.0	π4 QPSK	PCB Trace *	49.7	<54	Pass
2400.0	π4 QPSK	PCB Trace *	55.3	<70.4	Pass
2483.5	π4 QPSK	PCB Trace *	44.8	<54	Pass
2390.0	8DPSK	PCB Trace *	51.5	<54	Pass
2400.0	8DPSK	PCB Trace *	55.7	<70.8	Pass
2483.5	8DPSK	PCB Trace *	54.5	<54	Pass

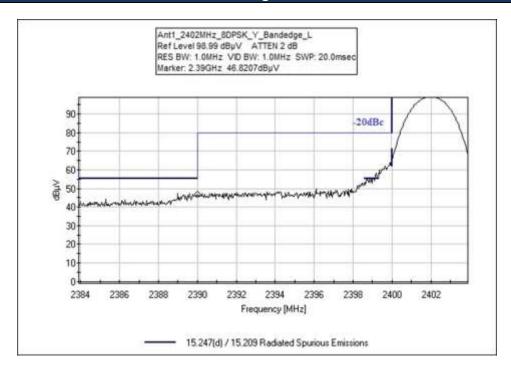
<sup>\*</sup> antennas listed in equipment general product information.

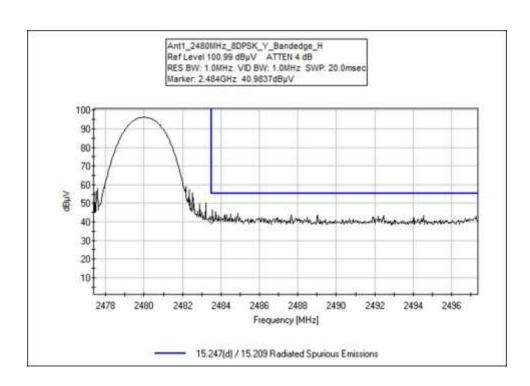
Band Edge Summary							
Operating Mo	Operating Mode: Hopping						
Frequency (MHz)	Modulation	Ant. Type	Field Strength (dBuV/m @3m)	Limit (dBuV/m @3m)	Results		
2390.0	NA	NA	NA	<54	NA*		
2400.0	NA	NA	NA	<	NA*		
2483.5	NA	NA	NA	<54	NA*		

<sup>\*</sup>Not Applicable, original grant tested at higher power level, passed with good margin in Hopping mode.

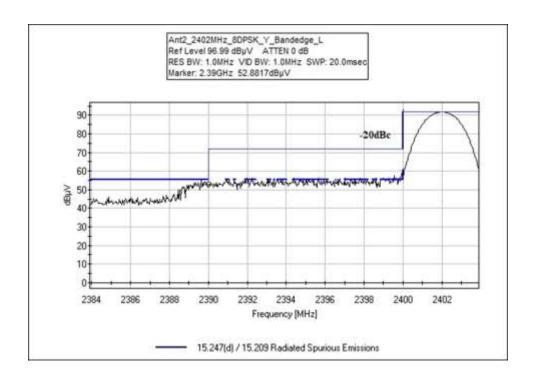


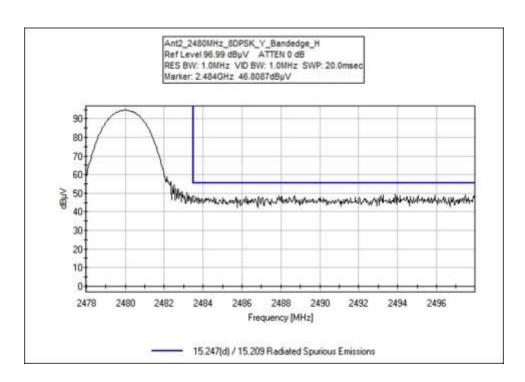
### **Band Edge Plots**



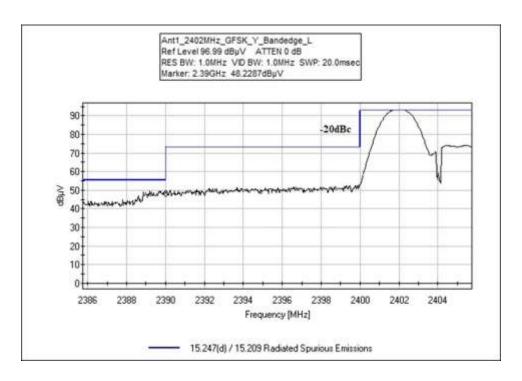


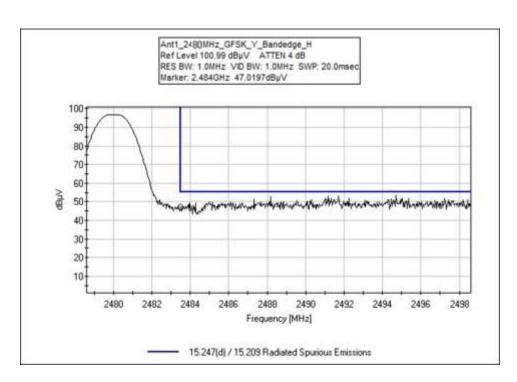




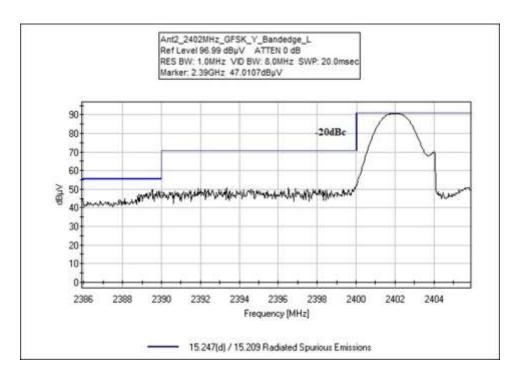


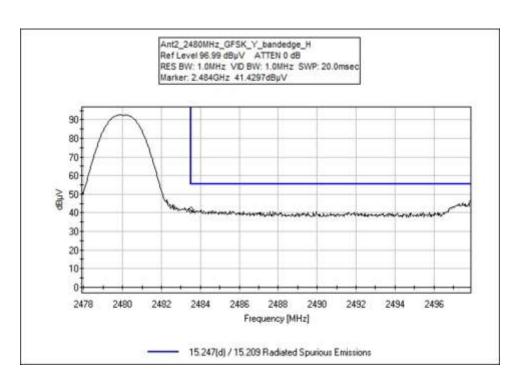




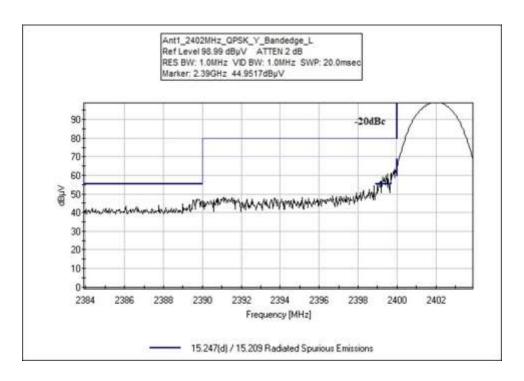


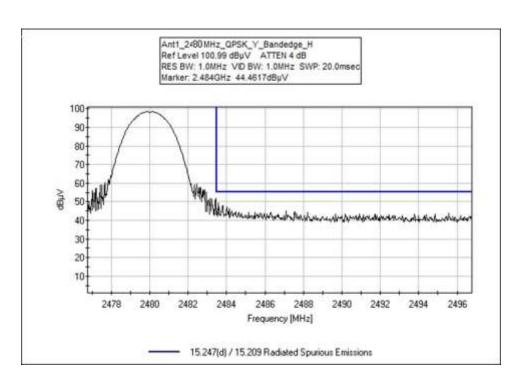




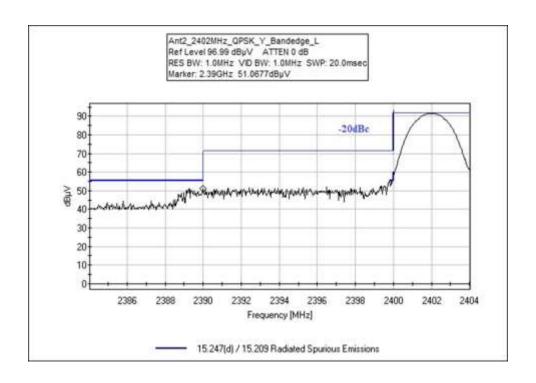


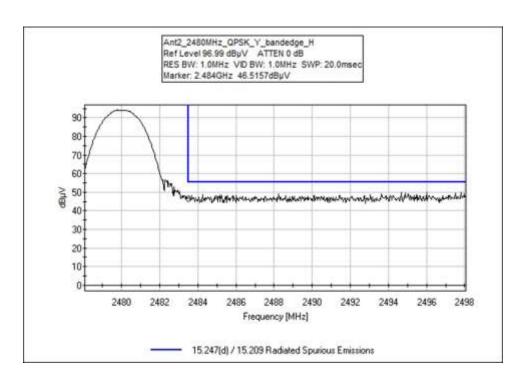














# Test Setup Photo(s)



General Test Setup





Below 1GHz



Below 1GHz





Above 1GHz



Above 1GHz





X Axis



Y Axis





Z Axis



# SUPPLEMENTAL INFORMATION

## **Measurement Uncertainty**

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

Uncertainties reported are worst case for all CKC Laboratories' sites and 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. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

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

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#### **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 caret ("^") 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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