



Compliance Testing, LLC

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Test Report

Prepared for: Honeywell International Inc.

Model: SD-720

Description: Satcom Transceiver

Serial Number: N/A

FCC ID: GB8SD-720A

To

FCC Part 87

Date of Issue: March 28, 2017

On the behalf of the applicant:

**Honeywell International Inc.
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Phoenix, AZ 85027**

Attention of:

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Project No: p1640023**

**Poona Saber
Project Test Engineer**

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All results of this test report relate only to the item(s) that were tested.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	August 4, 2016	Poona Saber	Original Document
2.0	August 9, 2016	Amanda Reed	Added FCC ID
3.0	March 17, 2017	Poona Saber	Changed the tables for conducted Spurious and updated Annex A
4.0	March 21, 2017	Poona Saber	Added model to page 5; Updated page 10 and page 17 and annex A base on page 10 new measurement

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ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted in the table below

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts: FCC Part 87.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Pressure (mbar)
24-25.3	24.1-32.2	956-962

EUT Description:

Model: SD-720

Description: Satcom Transceiver

Firmware: N/A

Software: N/A

Serial Number: N/A

Additional Information:

The EUT is an aircraft based satellite communication system.

EUT Operation during Tests

EUT was supplied 115VAC at 400Hz using an AC power supply. The device was controlled using a serial terminal and code provided by the manufacturer.

Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
2.1046, 87.131	Carrier Output Power (Conducted)	Pass	
2.1051, 87.139(i)(1)	Unwanted Emissions (Transmitter Conducted)	Pass	
2.1053	Field Strength of Spurious Radiation	Pass	
2.1049, 87.139(i)(3)	Emission Masks (Occupied Bandwidth)	Pass	
2.1047	Audio Low Pass Filter (Voice Input)	N/A	The EUT does not contain an audio input
2.1047	Audio Frequency Response	N/A	The EUT does not contain an audio input
2.1047	Modulation Limiting	N/A	The EUT does not contain an audio input
2.1055, 87.133(a)	Frequency Stability (Temperature Variation)	Pass	
2.1055, 87.133(a)	Frequency Stability (Voltage Variation)	Pass	

Carrier Output Power (Conducted)

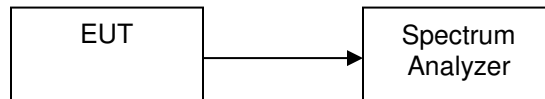
Engineer: Poona Saber

Test Date: 07/28/2016

Test Procedure

The Equipment Under Test (EUT) was connected directly to a spectrum analyzer with the RBW set to 1 MHz and the VBW set to 3 X RBW which set the RBW greater than the transmit signal ensuring there was no signal suppression while measuring a modulated signal. The peak readings were taken for each modulation type and the result was then compared to the limit.

Test Setup



BPSK P-600Hz Transmitter Peak Output Power

Tuned Frequency (MHz)	Measured Power (dBm)	Measured Power (W)	Limit (W)
1626.5	11.92	0.015	60
1643.5	12.91	0.019	60
1660.5	11.99	0.015	60

BPSK P-1200Hz Transmitter Peak Output Power

Tuned Frequency (MHz)	Measured Power (dBm)	Measured Power (W)	Limit (W)
1626.5	12.36	0.017	60
1643.5	11.99	0.015	60
1660.5	11.95	0.015	60

QPSK C-8400Hz Transmitter Peak Output Power

Tuned Frequency (MHz)	Measured Power (dBm)	Measured Power (W)	Limit (W)
1626.5	14.82	0.03	60
1643.5	15.05	0.03	60
1660.5	14.65	0.02	60

QPSK C-10500Hz Transmitter Peak Output Power

Tuned Frequency (MHz)	Measured Power (dBm)	Measured Power (W)	Limit (W)
1626.5	14.43	0.027	60
1643.5	14.38	0.027	60
1660.5	14.29	0.026	60

QPSK C-21000Hz Transmitter Peak Output Power

Tuned Frequency MHz	Measured Power dBm	Measured Power W	Limit W
1626.5	14.62	0.028	60
1643.5	14.71	0.029	60
1660.5	14.5	0.028	60

Conducted Spurious Emissions

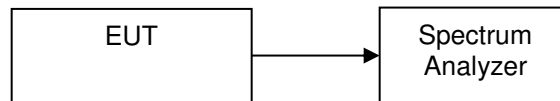
Engineer: Poona Saber

Test Date: 07/29/2016

Test Procedure

The EUT was connected directly to a spectrum analyzer to verify that the UUT met the requirements for spurious emissions. The RBW was set according to the requirements of 87139 (i)(1). The power was corrected for the measurement RBW bandwidth. The dBc limit, the DLNA rejection, and corrected power were summed together to determine the necessary dBm value of the EUT to provide a system rejection greater than the FCC limit. This necessary value was compared to the measured value to ensure compliance to the specification, which is expressed as the margin. A negative value indicates a passing result.

Test Setup



Test Plots: See Annex A Conducted Spurious Emissions

P-600Hz

Low Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	11.92	3.17	-51.47	-143.39	-135	-8.39
1026.5 - 1525	0.004	0.03	8.75	-135	80	11.92	3.17	-51.47	-143.39	-135	-8.39
1525 - 1559	0.004	0.03	8.75	-203	120	11.92	3.17	-78.16	-210.08	-203	-7.08
1559 - 1585	1	1	0.00	-155	111	11.92	11.92	-58.6	-181.52	-155	-26.52
1585 - 1605	1	1	0.00	-143	95	11.92	11.92	-58.6	-165.52	-143	-22.52
1605 - 1610	1	1	0.00	-117	62	11.92	11.92	-58.6	-132.52	-117	-15.52
1610 - 1610.6	1	1	0.00	-95	40	11.92	11.92	-58.6	-110.52	-95	-15.52
1610.6 - 1613.8	1	1	0.00	-50	40	11.92	XX	-58.6	-98.60	-50	-48.60
1613.8 - 1614	1	1	0.00	-95	40	11.92	11.92	-58.6	-110.52	-95	-15.52
1614 - 1620	0.004	0.03	8.75	-70	30	11.92	3.17	-63.25	-105.17	-70	-35.17
1620 - 1624.5	0.004	0.03	8.75	-70	20	11.92	3.17	-63.25	-95.17	-70	-25.17
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	11.92	3.17	-63.25	-85.17	-70	-15.17
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	11.92	3.17	-63.25	-76.47	-70	-6.47
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	11.92	3.17	-63.25	-76.47	-70	-6.47
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	11.92	XX	-72.73	-75.29	-19.5	-55.79
1670 - 1735	0.004	0.03	8.75	-60	0.8	11.92	3.17	-63.79	-76.51	-60	-16.51
1735 - 1865	0.004	0.03	8.75	-105	50	11.92	3.17	-63.79	-125.71	-105	-20.71
1865 - 2260.5	0.004	0.03	8.75	-105	20	11.92	3.17	-74.66	-106.58	-105	-1.58
2260.5 - 3250	0.004	0.03	8.75	-105	20	11.92	3.17	-74.66	-106.58	-105	-1.58
3250 - 3330	0.004	0.03	8.75	-105	50	11.92	3.17	-74.66	-136.58	-105	-31.58
3330 - 4000	0.004	0.03	8.75	-105	40	11.92	3.17	-74.66	-126.58	-105	-21.58
4000 - 12000	0.004	0.03	8.75	-105	50	11.92	3.17	-74.66	-136.58	-105	-31.58
12000 - 18000	0.004	0.03	8.75	-70	15	11.92	3.17	-74.66	-101.58	-70	-31.58



Mid Channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	12.91	4.16	-51.82	-144.73	-135	-9.73
1026.5 - 1525	0.004	0.03	8.75	-135	80	12.91	4.16	-51.82	-144.73	-135	-9.73
1525 - 1559	0.004	0.03	8.75	-203	120	12.91	4.16	-73.01	-205.92	-203	-2.92
1559 - 1585	1	1	0.00	-155	111	12.91	12.91	-63.83	-187.74	-155	-32.74
1585 - 1605	1	1	0.00	-143	95	12.91	12.91	-63.83	-171.74	-143	-28.74
1605 - 1610	1	1	0.00	-117	62	12.91	12.91	-63.83	-138.74	-117	-21.74
1610 - 1610.6	1	1	0.00	-95	40	12.91	12.91	-63.83	-116.74	-95	-21.74
1610.6 - 1613.8	1	1	0.00	-50	40	12.91	XX	-63.83	-103.83	-50	-53.83
1613.8 - 1614	1	1	0.00	-95	40	12.91	12.91	-63.83	-116.74	-95	-21.74
1614 - 1620	0.004	0.03	8.75	-70	30	12.91	4.16	-64.79	-107.70	-70	-37.70
1620 - 1624.5	0.004	0.03	8.75	-70	20	12.91	4.16	-64.79	-97.70	-70	-27.70
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	12.91	4.16	-64.79	-87.70	-70	-17.70
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	12.91	4.16	-64.79	-79.00	-70	-9.00
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	12.91	4.16	-64.79	-79.00	-70	-9.00
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	12.91	XX	-69.31	-71.87	-19.5	-52.37
1670 - 1735	0.004	0.03	8.75	-60	0.8	12.91	4.16	-49.83	-63.54	-60	-3.54
1735 - 1865	0.004	0.03	8.75	-105	50	12.91	4.16	-49.83	-112.74	-105	-7.74
1865 - 2260.5	0.004	0.03	8.75	-105	20	12.91	4.16	-76.28	-109.19	-105	-4.19
2260.5 - 3250	0.004	0.03	8.75	-105	20	12.91	4.16	-76.28	-109.19	-105	-4.19
3250 - 3330	0.004	0.03	8.75	-105	50	12.91	4.16	-76.28	-139.19	-105	-34.19
3330 - 4000	0.004	0.03	8.75	-105	40	12.91	4.16	-76.28	-129.19	-105	-24.19
4000 - 12000	0.004	0.03	8.75	-105	50	12.91	4.16	-76.28	-139.19	-105	-34.19
12000 - 18000	0.004	0.03	8.75	-70	15	12.91	4.16	-76.28	-104.19	-70	-34.19



High Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	11.99	3.24	-44.44	-136.43	-135	-1.43
1026.5 - 1525	0.004	0.03	8.75	-135	80	11.99	3.24	-44.44	-136.43	-135	-1.43
1525 - 1559	0.004	0.03	8.75	-203	120	11.99	3.24	-73.04	-205.03	-203	-2.03
1559 - 1585	1	1	0.00	-155	111	11.99	11.99	-63.81	-186.80	-155	-31.80
1585 - 1605	1	1	0.00	-143	95	11.99	11.99	-63.81	-170.80	-143	-27.80
1605 - 1610	1	1	0.00	-117	62	11.99	11.99	-63.81	-137.80	-117	-20.80
1610 - 1610.6	1	1	0.00	-95	40	11.99	11.99	-63.81	-115.80	-95	-20.80
1610.6 - 1613.8	1	1	0.00	-50	40	11.99	XX	-63.81	-103.81	-50	-53.81
1613.8 - 1614	1	1	0.00	-95	40	11.99	11.99	-63.81	-115.80	-95	-20.80
1614 - 1620	0.004	0.03	8.75	-70	30	11.99	3.24	-61.64	-103.63	-70	-33.63
1620 - 1624.5	0.004	0.03	8.75	-70	20	11.99	3.24	-61.64	-93.63	-70	-23.63
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	11.99	3.24	-61.64	-83.63	-70	-13.63
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	11.99	3.24	-61.64	-74.93	-70	-4.93
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	11.99	3.24	-61.64	-74.93	-70	-4.93
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	11.99	XX	-57.07	-59.63	-19.5	-40.13
1670 - 1735	0.004	0.03	8.75	-60	0.8	11.99	3.24	-53.22	-66.01	-60	-6.01
1735 - 1865	0.004	0.03	8.75	-105	50	11.99	3.24	-53.22	-115.21	-105	-10.21
1865 - 2260.5	0.004	0.03	8.75	-105	20	11.99	3.24	-73.86	-105.85	-105	-0.85
2260.5 - 3250	0.004	0.03	8.75	-105	20	11.99	3.24	-73.86	-105.85	-105	-0.85
3250 - 3330	0.004	0.03	8.75	-105	50	11.99	3.24	-53.22	-115.21	-105	-10.21
3330 - 4000	0.004	0.03	8.75	-105	40	11.99	3.24	-53.22	-105.21	-105	-0.21
4000 - 12000	0.004	0.03	8.75	-105	50	11.99	3.24	-53.22	-115.21	-105	-10.21
12000 - 18000	0.004	0.03	8.75	-70	15	11.99	3.24	-53.22	-80.21	-70	-10.21

P-1200Hz

Low Channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	12.36	3.61	-51.26	-143.62	-135	-8.62
1026.5 - 1525	0.004	0.03	8.75	-135	80	12.36	3.61	-51.26	-143.62	-135	-8.62
1525 - 1559	0.004	0.03	8.75	-203	120	12.36	3.61	-72.88	-205.24	-203	-2.24
1559 - 1585	1	1	0.00	-155	111	12.36	12.36	-58.09	-181.45	-155	-26.45
1585 - 1605	1	1	0.00	-143	95	12.36	12.36	-58.09	-165.45	-143	-22.45
1605 - 1610	1	1	0.00	-117	62	12.36	12.36	-58.09	-132.45	-117	-15.45
1610 - 1610.6	1	1	0.00	-95	40	12.36	12.36	-58.09	-110.45	-95	-15.45
1610.6 - 1613.8	1	1	0.00	-50	40	12.36	XX	-58.09	-98.09	-50	-48.09
1613.8 - 1614	1	1	0.00	-95	40	12.36	12.36	-58.09	-110.45	-95	-15.45
1614 - 1620	0.004	0.03	8.75	-70	30	12.36	3.61	-63.64	-106.00	-70	-36.00
1620 - 1624.5	0.004	0.03	8.75	-70	20	12.36	3.61	-63.64	-96.00	-70	-26.00
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	12.36	3.61	-63.64	-86.00	-70	-16.00
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	12.36	3.61	-63.64	-77.30	-70	-7.30
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	12.36	3.61	-63.64	-77.30	-70	-7.30
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	12.36	XX	-72.53	-75.09	-19.5	-55.59
1670 - 1735	0.004	0.03	8.75	-60	0.8	12.36	3.61	-48.02	-61.18	-60	-1.18
1735 - 1865	0.004	0.03	8.75	-105	50	12.36	3.61	-48.02	-110.38	-105	-5.38
1865 - 2260.5	0.004	0.03	8.75	-105	20	12.36	3.61	-76.13	-108.49	-105	-3.49
2260.5 - 3250	0.004	0.03	8.75	-105	20	12.36	3.61	-76.13	-108.49	-105	-3.49
3250 - 3330	0.004	0.03	8.75	-105	50	12.36	3.61	-76.13	-138.49	-105	-33.49
3330 - 4000	0.004	0.03	8.75	-105	40	12.36	3.61	-76.13	-128.49	-105	-23.49
4000 - 12000	0.004	0.03	8.75	-105	50	12.36	3.61	-48.02	-110.38	-105	-5.38
12000 - 18000	0.004	0.03	8.75	-70	15	12.36	3.61	-48.02	-75.38	-70	-5.38



Mid Channel					Data Input↓		Data Input↓		Limit (dBc)	Margin
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	
.010 - 1026.5	0.004	0.03	8.75	-135	80	11.99	3.24	-51.41	-143.40	-135
1026.5 - 1525	0.004	0.03	8.75	-135	80	11.99	3.24	-51.41	-143.40	-135
1525 - 1559	0.004	0.03	8.75	-203	120	11.99	3.24	-75.44	-207.43	-203
1559 - 1585	1	1	0.00	-155	111	11.99	11.99	-63.64	-186.63	-155
1585 - 1605	1	1	0.00	-143	95	11.99	11.99	-63.64	-170.63	-143
1605 - 1610	1	1	0.00	-117	62	11.99	11.99	-63.64	-137.63	-117
1610 - 1610.6	1	1	0.00	-95	40	11.99	11.99	-63.64	-115.63	-95
1610.6 - 1613.8	1	1	0.00	-50	40	11.99	XX	-63.64	-103.64	-50
1613.8 - 1614	1	1	0.00	-95	40	11.99	11.99	-63.64	-115.63	-95
1614 - 1620	0.004	0.03	8.75	-70	30	11.99	3.24	-64.32	-106.31	-70
1620 - 1624.5	0.004	0.03	8.75	-70	20	11.99	3.24	-64.32	-96.31	-70
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	11.99	3.24	-64.32	-86.31	-70
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	11.99	3.24	-64.32	-77.61	-70
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	11.99	3.24	-64.32	-77.61	-70
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	11.99	XX	-68.32	-70.88	-19.5
1670 - 1735	0.004	0.03	8.75	-60	0.8	11.99	3.24	-48.51	-61.30	-60
1735 - 1865	0.004	0.03	8.75	-105	50	11.99	3.24	-48.51	-110.50	-105
1865 - 2260.5	0.004	0.03	8.75	-105	20	11.99	3.24	-76.19	-108.18	-105
2260.5 - 3250	0.004	0.03	8.75	-105	20	11.99	3.24	-76.19	-108.18	-105
3250 - 3330	0.004	0.03	8.75	-105	50	11.99	3.24	-76.19	-138.18	-105
3330 - 4000	0.004	0.03	8.75	-105	40	11.99	3.24	-76.19	-128.18	-105
4000 - 12000	0.004	0.03	8.75	-105	50	11.99	3.24	-48.51	-110.50	-105
12000 - 18000	0.004	0.03	8.75	-70	15	11.99	3.24	-48.51	-75.5	-70



High Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.65	5.90	-44.5	-139.15	-135	-4.15
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.65	5.90	-44.5	-139.15	-135	-4.15
1525 - 1559	0.004	0.03	8.75	-203	120	14.65	5.90	-73.95	-208.60	-203	-5.60
1559 - 1585	1	1	0.00	-155	111	14.65	14.65	-63.17	-188.82	-155	-33.82
1585 - 1605	1	1	0.00	-143	95	14.65	14.65	-63.17	-172.82	-143	-29.82
1605 - 1610	1	1	0.00	-117	62	14.65	14.65	-63.17	-139.82	-117	-22.82
1610 - 1610.6	1	1	0.00	-95	40	14.65	14.65	-63.17	-117.82	-95	-22.82
1610.6 - 1613.8	1	1	0.00	-50	40	14.65	XX	-63.17	-103.17	-50	-53.17
1613.8 - 1614	1	1	0.00	-95	40	14.65	14.65	-63.17	-117.82	-95	-22.82
1614 - 1620	0.004	0.03	8.75	-70	30	14.65	5.90	-62.81	-107.46	-70	-37.46
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.65	5.90	-62.81	-97.46	-70	-27.46
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.65	5.90	-62.81	-87.46	-70	-17.46
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.65	5.90	-62.81	-78.76	-70	-8.76
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.65	5.90	-62.81	-78.76	-70	-8.76
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.65	XX	-56.38	-58.94	-19.5	-39.44
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.65	5.90	-48.24	-63.69	-60	-3.69
1735 - 1865	0.004	0.03	8.75	-105	50	14.65	5.90	-48.24	-112.89	-105	-7.89
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.65	5.90	-73.75	-108.40	-105	-3.40
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.65	5.90	-73.75	-108.40	-105	-3.40
3250 - 3330	0.004	0.03	8.75	-105	50	14.65	5.90	-73.75	-138.40	-105	-33.40
3330 - 4000	0.004	0.03	8.75	-105	40	14.65	5.90	-73.75	-128.40	-105	-23.40
4000 - 12000	0.004	0.03	8.75	-105	50	14.65	5.90	-48.24	-112.89	-105	-7.89
12000 - 18000	0.004	0.03	8.75	-70	15	14.65	5.90	-48.24	-77.89	-70	-7.89

C-8400Hz

Low channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.82	6.07	-42.08	-136.90	-135	-1.90
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.82	6.07	-42.08	-136.90	-135	-1.90
1525 - 1559	0.004	0.03	8.75	-203	120	14.82	6.07	-78.28	-213.10	-203	-10.10
1559 - 1585	1	1	0.00	-155	111	14.82	14.82	-57.99	-183.81	-155	-28.81
1585 - 1605	1	1	0.00	-143	95	14.82	14.82	-57.99	-167.81	-143	-24.81
1605 - 1610	1	1	0.00	-117	62	14.82	14.82	-57.99	-134.81	-117	-17.81
1610 - 1610.6	1	1	0.00	-95	40	14.82	14.82	-57.99	-112.81	-95	-17.81
1610.6 - 1613.8	1	1	0.00	-50	40	14.82	XX	-57.99	-97.99	-50	-47.99
1613.8 - 1614	1	1	0.00	-95	40	14.82	14.82	-57.99	-112.81	-95	-17.81
1614 - 1620	0.004	0.03	8.75	-70	30	14.82	6.07	-67.14	-111.96	-70	-41.96
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.82	6.07	-67.14	-101.96	-70	-31.96
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.82	6.07	-67.14	-91.96	-70	-21.96
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.82	6.07	-67.14	-83.26	-70	-13.26
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.82	6.07	-67.14	-83.26	-70	-13.26
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.82	XX	-73.5	-76.06	-19.5	-56.56
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.82	6.07	-52.47	-68.09	-60	-8.09
1735 - 1865	0.004	0.03	8.75	-105	50	14.82	6.07	-52.47	-117.29	-105	-12.29
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.82	6.07	-80.56	-115.38	-105	-10.38
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.82	6.07	-80.56	-115.38	-105	-10.38
3250 - 3330	0.004	0.03	8.75	-105	50	14.82	6.07	-80.56	-145.38	-105	-40.38
3330 - 4000	0.004	0.03	8.75	-105	40	14.82	6.07	-80.56	-135.38	-105	-30.38
4000 - 12000	0.004	0.03	8.75	-105	50	14.82	6.07	-52.47	-117.29	-105	-12.29
12000 - 18000	0.004	0.03	8.75	-70	15	14.82	6.07	-52.47	-82.29	-70	-12.29



Mid Channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	15.05	6.30	-51.57	-146.62	-135	-11.62
1026.5 - 1525	0.004	0.03	8.75	-135	80	15.05	6.30	-51.57	-146.62	-135	-11.62
1525 - 1559	0.004	0.03	8.75	-203	120	15.05	6.30	-78.4	-213.45	-203	-10.45
1559 - 1585	1	1	0.00	-155	111	15.05	15.05	-65.03	-191.08	-155	-36.08
1585 - 1605	1	1	0.00	-143	95	15.05	15.05	-65.03	-175.08	-143	-32.08
1605 - 1610	1	1	0.00	-117	62	15.05	15.05	-65.03	-142.08	-117	-25.08
1610 - 1610.6	1	1	0.00	-95	40	15.05	15.05	-65.03	-120.08	-95	-25.08
1610.6 - 1613.8	1	1	0.00	-50	40	15.05	XX	-65.03	-105.03	-50	-55.03
1613.8 - 1614	1	1	0.00	-95	40	15.05	15.05	-65.03	-120.08	-95	-25.08
1614 - 1620	0.004	0.03	8.75	-70	30	15.05	6.30	-61.09	-106.14	-70	-36.14
1620 - 1624.5	0.004	0.03	8.75	-70	20	15.05	6.30	-61.09	-96.14	-70	-26.14
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	15.05	6.30	-61.09	-86.14	-70	-16.14
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	15.05	6.30	-61.09	-77.44	-70	-7.44
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	15.05	6.30	-61.09	-77.44	-70	-7.44
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	15.05	XX	-69.36	-71.92	-19.5	-52.42
1670 - 1735	0.004	0.03	8.75	-60	0.8	15.05	6.30	-48.68	-64.53	-60	-4.53
1735 - 1865	0.004	0.03	8.75	-105	50	15.05	6.30	-48.68	-113.73	-105	-8.73
1865 - 2260.5	0.004	0.03	8.75	-105	20	15.05	6.30	-82.03	-117.08	-105	-12.08
2260.5 - 3250	0.004	0.03	8.75	-105	20	15.05	6.30	-82.03	-117.08	-105	-12.08
3250 - 3330	0.004	0.03	8.75	-105	50	15.05	6.30	-82.03	-147.08	-105	-42.08
3330 - 4000	0.004	0.03	8.75	-105	40	15.05	6.30	-82.03	-137.08	-105	-32.08
4000 - 12000	0.004	0.03	8.75	-105	50	15.05	6.30	-48.68	-113.73	-105	-8.73
12000 - 18000	0.004	0.03	8.75	-70	15	15.05	6.30	-48.68	-78.73	-70	-8.73



High Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.65	5.90	-43.3	-137.95	-135	-2.95
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.65	5.90	-43.3	-137.95	-135	-2.95
1525 - 1559	0.004	0.03	8.75	-203	120	14.65	5.90	-77.58	-212.23	-203	-9.23
1559 - 1585	1	1	0.00	-155	111	14.65	14.65	-62.66	-188.31	-155	-33.31
1585 - 1605	1	1	0.00	-143	95	14.65	14.65	-62.66	-172.31	-143	-29.31
1605 - 1610	1	1	0.00	-117	62	14.65	14.65	-62.66	-139.31	-117	-22.31
1610 - 1610.6	1	1	0.00	-95	40	14.65	14.65	-62.66	-117.31	-95	-22.31
1610.6 - 1613.8	1	1	0.00	-50	40	14.65	XX	-62.66	-102.66	-50	-52.66
1613.8 - 1614	1	1	0.00	-95	40	14.65	14.65	-62.66	-117.31	-95	-22.31
1614 - 1620	0.004	0.03	8.75	-70	30	14.65	5.90	-61.68	-106.33	-70	-36.33
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.65	5.90	-61.68	-96.33	-70	-26.33
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.65	5.90	-61.68	-86.33	-70	-16.33
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.65	5.90	-61.68	-77.63	-70	-7.63
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.65	5.90	-61.68	-77.63	-70	-7.63
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.65	XX	-56.31	-58.87	-19.5	-39.37
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.65	5.90	-58.21	-73.66	-60	-13.66
1735 - 1865	0.004	0.03	8.75	-105	50	14.65	5.90	-58.21	-122.86	-105	-17.86
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.65	5.90	-75.79	-110.44	-105	-5.44
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.65	5.90	-75.79	-110.44	-105	-5.44
3250 - 3330	0.004	0.03	8.75	-105	50	14.65	5.90	-58.21	-122.86	-105	-17.86
3330 - 4000	0.004	0.03	8.75	-105	40	14.65	5.90	-58.21	-112.86	-105	-7.86
4000 - 12000	0.004	0.03	8.75	-105	50	14.65	5.90	-58.21	-122.86	-105	-17.86
12000 - 18000	0.004	0.03	8.75	-70	15	14.65	5.90	-58.21	-87.86	-70	-17.86

P-10500Hz

Low Channel					Data Input↓		Data Input↓		Limit (dBc)	Margin
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.43	5.68	-51.31	-145.74	-135
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.43	5.68	-51.31	-145.74	-135
1525 - 1559	0.004	0.03	8.75	-203	120	14.43	5.68	-71.67	-206.10	-203
1559 - 1585	1	1	0.00	-155	111	14.43	14.43	-54.09	-179.52	-155
1585 - 1605	1	1	0.00	-143	95	14.43	14.43	-54.09	-163.52	-143
1605 - 1610	1	1	0.00	-117	62	14.43	14.43	-54.09	-130.52	-117
1610 - 1610.6	1	1	0.00	-95	40	14.43	14.43	-54.09	-108.52	-95
1610.6 - 1613.8	1	1	0.00	-50	40	14.43	XX	-54.09	-94.09	-50
1613.8 - 1614	1	1	0.00	-95	40	14.43	14.43	-54.09	-108.52	-95
1614 - 1620	0.004	0.03	8.75	-70	30	14.43	5.68	-66.36	-110.79	-70
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.43	5.68	-66.36	-100.79	-70
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.43	5.68	-66.36	-90.79	-70
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.43	5.68	-66.36	-82.09	-70
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.43	5.68	-66.36	-82.09	-70
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.43	XX	-75.61	-78.17	-19.5
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.43	5.68	-54.62	-69.85	-60
1735 - 1865	0.004	0.03	8.75	-105	50	14.43	5.68	-54.62	-119.05	-105
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.43	5.68	-73.53	-107.96	-105
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.43	5.68	-73.53	-107.96	-105
3250 - 3330	0.004	0.03	8.75	-105	50	14.43	5.68	-54.62	-119.05	-105
3330 - 4000	0.004	0.03	8.75	-105	40	14.43	5.68	-54.62	-109.05	-105
4000 - 12000	0.004	0.03	8.75	-105	50	14.43	5.68	-54.62	-119.05	-105
12000 - 18000	0.004	0.03	8.75	-70	15	14.43	5.68	-54.62	-84.05	-70



Mid Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.38	5.63	-51.55	-145.93	-135	-10.93
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.38	5.63	-51.55	-145.93	-135	-10.93
1525 - 1559	0.004	0.03	8.75	-203	120	14.38	5.63	-75.95	-210.33	-203	-7.33
1559 - 1585	1	1	0.00	-155	111	14.38	14.38	-64.93	-190.31	-155	-35.31
1585 - 1605	1	1	0.00	-143	95	14.38	14.38	-64.93	-174.31	-143	-31.31
1605 - 1610	1	1	0.00	-117	62	14.38	14.38	-64.93	-141.31	-117	-24.31
1610 - 1610.6	1	1	0.00	-95	40	14.38	14.38	-64.93	-119.31	-95	-24.31
1610.6 - 1613.8	1	1	0.00	-50	40	14.38	XX	-64.93	-104.93	-50	-54.93
1613.8 - 1614	1	1	0.00	-95	40	14.38	14.38	-64.93	-119.31	-95	-24.31
1614 - 1620	0.004	0.03	8.75	-70	30	14.38	5.63	-52.37	-96.75	-70	-26.75
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.38	5.63	-52.37	-86.75	-70	-16.75
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.38	5.63	-52.37	-76.75	-70	-6.75
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.38	5.63	-65.62	-81.30	-70	-11.30
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.38	5.63	-65.62	-81.30	-70	-11.30
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.38	XX	-70.52	-73.08	-19.5	-53.58
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.38	5.63	-51.98	-67.16	-60	-7.16
1735 - 1865	0.004	0.03	8.75	-105	50	14.38	5.63	-51.98	-116.36	-105	-11.36
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.38	5.63	-73.5	-107.88	-105	-2.88
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.38	5.63	-73.5	-107.88	-105	-2.88
3250 - 3330	0.004	0.03	8.75	-105	50	14.38	5.63	-51.98	-116.36	-105	-11.36
3330 - 4000	0.004	0.03	8.75	-105	40	14.38	5.63	-51.98	-106.36	-105	-1.36
4000 - 12000	0.004	0.03	8.75	-105	50	14.38	5.63	-51.98	-116.36	-105	-11.36
12000 - 18000	0.004	0.03	8.75	-70	15	14.38	5.63	-51.98	-81.36	-70	-11.36



High Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.5	5.75	-42.78	-137.28	-135	-2.28
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.5	5.75	-42.78	-137.28	-135	-2.28
1525 - 1559	0.004	0.03	8.75	-203	120	14.5	5.75	-77.14	-211.64	-203	-8.64
1559 - 1585	1	1	0.00	-155	111	14.5	14.50	-64.65	-190.15	-155	-35.15
1585 - 1605	1	1	0.00	-143	95	14.5	14.50	-64.65	-174.15	-143	-31.15
1605 - 1610	1	1	0.00	-117	62	14.5	14.50	-64.65	-141.15	-117	-24.15
1610 - 1610.6	1	1	0.00	-95	40	14.5	14.50	-64.65	-119.15	-95	-24.15
1610.6 - 1613.8	1	1	0.00	-50	40	14.5	XX	-64.65	-104.65	-50	-54.65
1613.8 - 1614	1	1	0.00	-95	40	14.5	14.50	-64.65	-119.15	-95	-24.15
1614 - 1620	0.004	0.03	8.75	-70	30	14.5	5.75	-62.6	-107.10	-70	-37.10
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.5	5.75	-62.6	-97.10	-70	-27.10
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.5	5.75	-62.6	-87.10	-70	-17.10
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.5	5.75	-62.6	-78.40	-70	-8.40
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.5	5.75	-62.6	-78.40	-70	-8.40
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.5	XX	-56.78	-59.34	-19.5	-39.84
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.5	5.75	-58.05	-73.35	-60	-13.35
1735 - 1865	0.004	0.03	8.75	-105	50	14.5	5.75	-58.05	-122.55	-105	-17.55
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.5	5.75	-76.21	-110.71	-105	-5.71
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.5	5.75	-76.21	-110.71	-105	-5.71
3250 - 3330	0.004	0.03	8.75	-105	50	14.5	5.75	-58.05	-122.55	-105	-17.55
3330 - 4000	0.004	0.03	8.75	-105	40	14.5	5.75	-58.05	-112.55	-105	-7.55
4000 - 12000	0.004	0.03	8.75	-105	50	14.5	5.75	-58.05	-122.55	-105	-17.55
12000 - 18000	0.004	0.03	8.75	-70	15	14.5	5.75	-58.05	-87.55	-70	-17.55

C-21000Hz

Low Channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.62	5.87	-51.59	-146.21	-135	-11.21
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.62	5.87	-51.59	-146.21	-135	-11.21
1525 - 1559	0.004	0.03	8.75	-203	120	14.62	5.87	-77.74	-212.36	-203	-9.36
1559 - 1585	1	1	0.00	-155	111	14.62	14.62	-53.76	-179.38	-155	-24.38
1585 - 1605	1	1	0.00	-143	95	14.62	14.62	-53.76	-163.38	-143	-20.38
1605 - 1610	1	1	0.00	-117	62	14.62	14.62	-53.76	-130.38	-117	-13.38
1610 - 1610.6	1	1	0.00	-95	40	14.62	14.62	-53.76	-108.38	-95	-13.38
1610.6 - 1613.8	1	1	0.00	-50	40	14.62	XX	-53.76	-93.76	-50	-43.76
1613.8 - 1614	1	1	0.00	-95	40	14.62	14.62	-53.76	-108.38	-95	-13.38
1614 - 1620	0.004	0.03	8.75	-70	30	14.62	5.87	-66.38	-111.00	-70	-41.00
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.62	5.87	-66.38	-101.00	-70	-31.00
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.62	5.87	-66.38	-91.00	-70	-21.00
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.62	5.87	-66.38	-82.30	-70	-12.30
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.62	5.87	-66.38	-82.30	-70	-12.30
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.62	XX	-75.27	-77.83	-19.5	-58.33
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.62	5.87	-54.18	-69.60	-60	-9.60
1735 - 1865	0.004	0.03	8.75	-105	50	14.62	5.87	-54.18	-118.80	-105	-13.80
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.62	5.87	-74.5	-109.12	-105	-4.12
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.62	5.87	-74.5	-109.12	-105	-4.12
3250 - 3330	0.004	0.03	8.75	-105	50	14.62	5.87	-54.18	-118.80	-105	-13.80
3330 - 4000	0.004	0.03	8.75	-105	40	14.62	5.87	-54.18	-108.80	-105	-3.80
4000 - 12000	0.004	0.03	8.75	-105	50	14.62	5.87	-54.18	-118.80	-105	-13.80
12000 - 18000	0.004	0.03	8.75	-70	15	14.62	5.87	-54.18	-83.8	-70	-13.80



Mid Channel						Data Input ↓		Data Input ↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	14.71	5.96	-51.6	-146.31	-135	-11.31
1026.5 - 1525	0.004	0.03	8.75	-135	80	14.71	5.96	-51.6	-146.31	-135	-11.31
1525 - 1559	0.004	0.03	8.75	-203	120	14.71	5.96	-79.56	-214.27	-203	-11.27
1559 - 1585	1	1	0.00	-155	111	14.71	14.71	-64.3	-190.01	-155	-35.01
1585 - 1605	1	1	0.00	-143	95	14.71	14.71	-64.3	-174.01	-143	-31.01
1605 - 1610	1	1	0.00	-117	62	14.71	14.71	-64.3	-141.01	-117	-24.01
1610 - 1610.6	1	1	0.00	-95	40	14.71	14.71	-64.3	-119.01	-95	-24.01
1610.6 - 1613.8	1	1	0.00	-50	40	14.71	XX	-64.3	-104.30	-50	-54.30
1613.8 - 1614	1	1	0.00	-95	40	14.71	14.71	-64.3	-119.01	-95	-24.01
1614 - 1620	0.004	0.03	8.75	-70	30	14.71	5.96	-62.22	-106.93	-70	-36.93
1620 - 1624.5	0.004	0.03	8.75	-70	20	14.71	5.96	-62.22	-96.93	-70	-26.93
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	14.71	5.96	-62.22	-86.93	-70	-16.93
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	14.71	5.96	-62.22	-78.23	-70	-8.23
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	14.71	5.96	-62.22	-78.23	-70	-8.23
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	14.71	XX	-70.18	-72.74	-19.5	-53.24
1670 - 1735	0.004	0.03	8.75	-60	0.8	14.71	5.96	-51.9	-67.41	-60	-7.41
1735 - 1865	0.004	0.03	8.75	-105	50	14.71	5.96	-51.9	-116.61	-105	-11.61
1865 - 2260.5	0.004	0.03	8.75	-105	20	14.71	5.96	-77.14	-111.85	-105	-6.85
2260.5 - 3250	0.004	0.03	8.75	-105	20	14.71	5.96	-77.14	-111.85	-105	-6.85
3250 - 3330	0.004	0.03	8.75	-105	50	14.71	5.96	-51.9	-116.61	-105	-11.61
3330 - 4000	0.004	0.03	8.75	-105	40	14.71	5.96	-51.9	-106.61	-105	-1.61
4000 - 12000	0.004	0.03	8.75	-105	50	14.71	5.96	-51.9	-116.61	-105	-11.61
12000 - 18000	0.004	0.03	8.75	-70	15	14.71	5.96	-51.9	-81.61	-70	-11.61



High Channel						Data Input↓		Data Input↓			
Freq. (MHz)	RBW	RBW Used	RBW Correction	Limit (dBc)	Filter Rejection	Measured carrier Power	Corrected Power	Absolute Measured Spurious (dBm)	Corrected spur. (dBc)	Limit (dBc)	Margin
.010 - 1026.5	0.004	0.03	8.75	-135	80	11.99	3.24	-44.43	-136.42	-135	-1.42
1026.5 - 1525	0.004	0.03	8.75	-135	80	11.99	3.24	-44.43	-136.42	-135	-1.42
1525 - 1559	0.004	0.03	8.75	-203	120	11.99	3.24	-79.54	-211.53	-203	-8.53
1559 - 1585	1	1	0.00	-155	111	11.99	11.99	-64.03	-187.02	-155	-32.02
1585 - 1605	1	1	0.00	-143	95	11.99	11.99	-64.03	-171.02	-143	-28.02
1605 - 1610	1	1	0.00	-117	62	11.99	11.99	-64.03	-138.02	-117	-21.02
1610 - 1610.6	1	1	0.00	-95	40	11.99	11.99	-64.03	-116.02	-95	-21.02
1610.6 - 1613.8	1	1	0.00	-50	40	11.99	XX	-64.03	-104.03	-50	-54.03
1613.8 - 1614	1	1	0.00	-95	40	11.99	11.99	-64.03	-116.02	-95	-21.02
1614 - 1620	0.004	0.03	8.75	-70	30	11.99	3.24	-62.21	-104.20	-70	-34.20
1620 - 1624.5	0.004	0.03	8.75	-70	20	11.99	3.24	-62.21	-94.20	-70	-24.20
1624.5 - 1625.5	0.004	0.03	8.75	-70	10	11.99	3.24	-62.21	-84.20	-70	-14.20
1625.5 - 1626.5	0.004	0.03	8.75	-70	1.3	11.99	3.24	-62.21	-75.50	-70	-5.50
1626.5 - 1660	0.004	0.03	8.75	-70	1.3	11.99	3.24	-62.21	-75.50	-70	-5.50
1660 - 1670	0.02	0.03	1.76	-19.5	0.8	11.99	XX	-57.82	-60.38	-19.5	-40.88
1670 - 1735	0.004	0.03	8.75	-60	0.8	11.99	3.24	-57.85	-70.64	-60	-10.64
1735 - 1865	0.004	0.03	8.75	-105	50	11.99	3.24	-57.85	-119.84	-105	-14.84
1865 - 2260.5	0.004	0.03	8.75	-105	20	11.99	3.24	-79.53	-111.52	-105	-6.52
2260.5 - 3250	0.004	0.03	8.75	-105	20	11.99	3.24	-79.53	-111.52	-105	-6.52
3250 - 3330	0.004	0.03	8.75	-105	50	11.99	3.24	-57.85	-119.84	-105	-14.84
3330 - 4000	0.004	0.03	8.75	-105	40	11.99	3.24	-57.85	-109.84	-105	-4.84
4000 - 12000	0.004	0.03	8.75	-105	50	11.99	3.24	-57.85	-119.84	-105	-14.84
12000 - 18000	0.004	0.03	8.75	-70	15	11.99	3.24	-57.85	-84.84	-70	-14.84

Field Strength of Spurious Radiation

Engineer: Poona Saber

Test Date: 08/02/2016

Test Procedure

- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth 100 kHz (<1 GHz), 1 MHz (> 1GHz).
 - 2) Video Bandwidth ≥ 3 times Resolution Bandwidth, or 30 kHz
 - 3) Sweep Speed ≤ 2000 Hz/second
 - 4) Detector Mode = Mean or Average Power

Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.

D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to $\pm$ the test bandwidth (see section 1.3.4.4).

E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.

G) Reconnect the equipment as illustrated.

H) Keep the spectrum analyzer adjusted as in step B).

I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

K) Repeat step J) with both antennas vertically polarized for each spurious frequency.

L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.

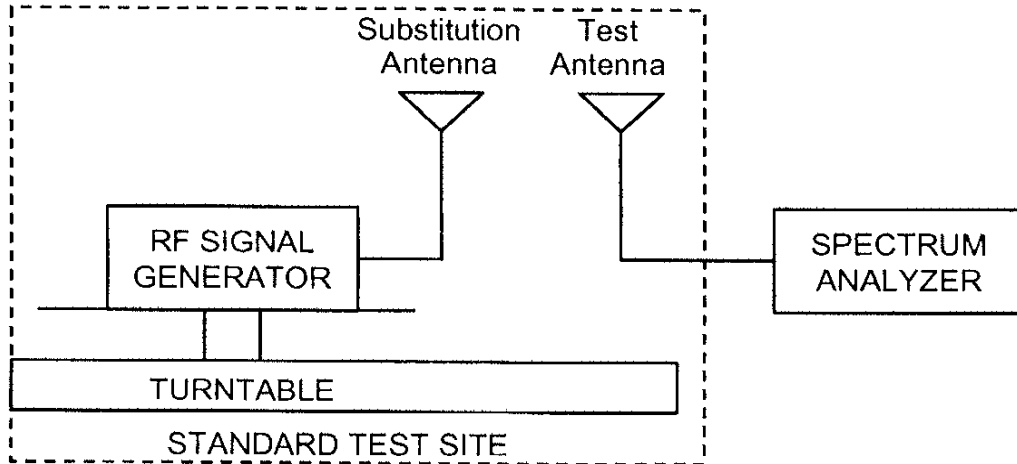
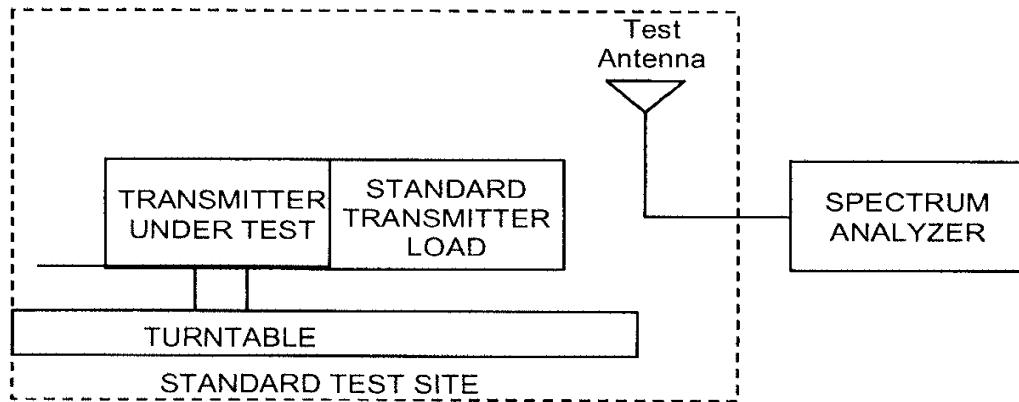
M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

$$\text{Radiated spurious emissions dB} = 10\log_{10}(\text{TX power in watts}/0.001) - \text{the levels in step I)}$$

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

See Annex B for test plots

Test Setup



Emission Masks (Occupied Bandwidth)

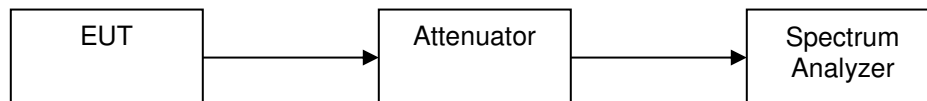
Engineer: Poona Saber

Test Date: 07/28/2016

Test Procedure

The EUT was connected directly to a spectrum analyzer to verify that the EUT meets the required emissions mask. A reference level plot is provided to verify that the peak power was established prior to testing the mask. The transmitter is digital modulation therefore no data input is required to measure the emission mask. The RBW was set as close as possible to 1% of the occupied bandwidth to ensure accurate readings.

Test Setup



See Annex C for test plots

Frequency Stability (Temperature Variation)

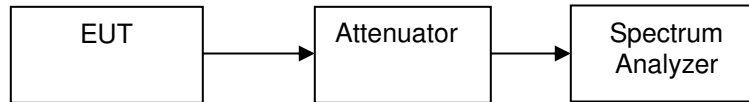
Engineer: Poona Saber

Test Date: 08/03/2016

Test Procedure

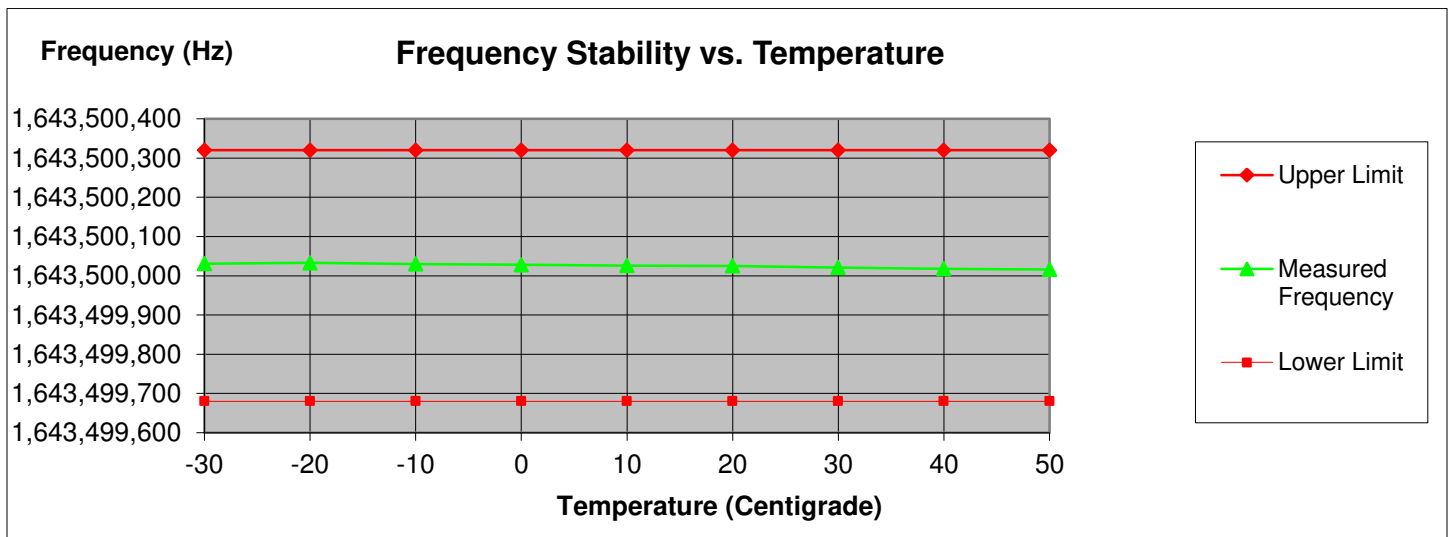
The EUT was placed in an environmental test chamber and the RF output was connected directly to a frequency counter. The temperature was varied from -30°C to 50°C in 10°C increments. After a sufficient time for temperature stabilization the RF output frequency was measured.

Test Setup



Measurement Results

Tuned Frequency (Hz)	Frequency Tolerance HZ	Upper Limit (Hz)	Lower Limit (Hz)	Temperature centigrade	Measured Frequency (Hz)	Upper Margin (Hz)	Lower Margin (Hz)
1,643,500,000	320.0	1643500320	1643499680	-30	1643500031	-289.000000	351.000000
		1643500320	1643499680	-20	1643500033	-287.000000	353.000000
		1643500320	1643499680	-10	1643500030	-290.000000	350.000000
		1643500320	1643499680	0	1643500028	-292.000000	348.000000
		1643500320	1643499680	10	1643500026	-294.000000	346.000000
		1643500320	1643499680	20	1643500025	-295.000000	345.000000
		1643500320	1643499680	30	1643500021	-299.000000	341.000000
		1643500320	1643499680	40	1643500018	-302.000000	338.000000
		1643500320	1643499680	50	1643500016	-304.000000	336.000000



Frequency Stability (Voltage Variation)

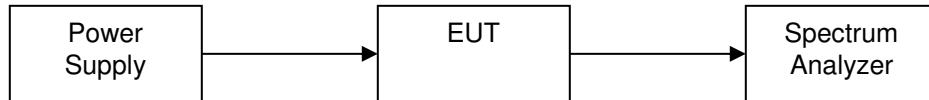
Engineer: Poona Saber

Test Date: 08/03/2016

Test Procedure

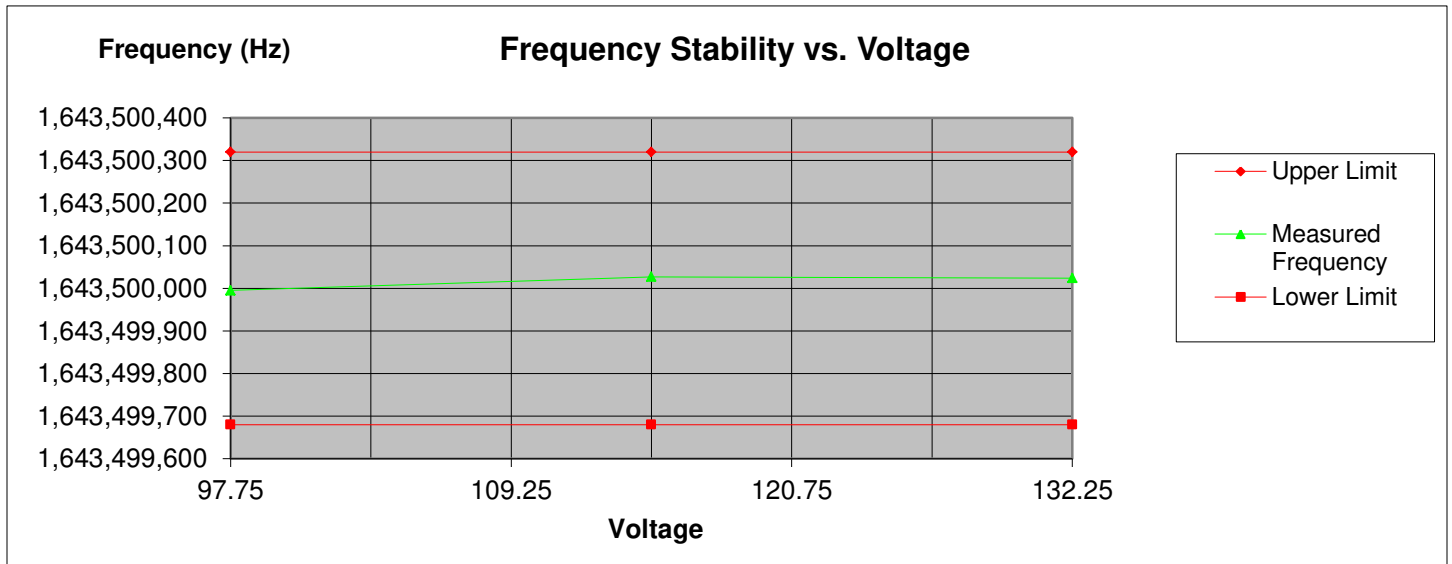
The EUT was placed in a temperature chamber at $20 \pm 5^\circ\text{C}$ and connected directly to a spectrum analyzer. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value and the RF output was measured. This was measured with both a 400 Hz 115 VAC supply and a variable DC voltage source.

Test Setup



Test Results

Tuned Frequency (Hz)	Frequency Tolerance Hz	Upper Limit (Hz)	Lower Limit (Hz)	Nominal Voltage	Voltage	Measured Frequency (Hz)	Upper Margin (Hz)	Lower Margin (Hz)
1,643,500,000	320.0	1643500320	1643499680	115.00	97.75	1643499995	-325	315
		1643500320	1643499680		115.00	1643500027	-293	347
		1643500320	1643499680		132.25	1643500024	-296	344



Necessary Bandwidth and Emission Bandwidth

Engineer: Poona Saber

Test Date: 08/04/2016

BPSK

Modulation = 21K0G1D

Necessary Bandwidth Calculation:

$$\begin{aligned}
 &\text{Signal States (S)} && 2 \\
 &= \\
 &\text{Data Rate (D)} && = 0.6 \\
 &\text{Constant Factor (K)} && = 17.5 \\
 &\text{Necessary Bandwidth (B}_N\text{), kHz} && = 2 * D * K / \text{LOG}_2(S)
 \end{aligned}$$

Modulation = 21K0G1D

Necessary Bandwidth Calculation:

$$\begin{aligned}
 &\text{Signal States (S)} && 2 \\
 &= \\
 &\text{Data Rate (D)} && = 1.2 \\
 &\text{Constant Factor (K)} && = 8.75 \\
 &\text{Necessary Bandwidth (B}_N\text{), kHz} && = 2 * D * K / \text{LOG}_2(S)
 \end{aligned}$$

QPSK

Modulation = 21K0G1W

Necessary Bandwidth Calculation:

$$\begin{aligned}
 &\text{Signal States (S)} && 4 \\
 &= \\
 &\text{Data Rate (D)} && = 4.2 \\
 &\text{Constant Factor (K)} && = 5 \\
 &\text{Necessary Bandwidth (B}_N\text{), kHz} && = 2 * D * K / \text{LOG}_2(S)
 \end{aligned}$$

Modulation = 21K0G1W

Necessary Bandwidth Calculation:

$$\begin{aligned}
 &\text{Signal States (S)} && 4 \\
 &= \\
 &\text{Data Rate (D)} && = 5.25 \\
 &\text{Constant Factor (K)} && = 4 \\
 &\text{Necessary Bandwidth (B}_N\text{), kHz} && = 2 * D * K / \text{LOG}_2(S)
 \end{aligned}$$

Modulation = 21K0G1W

Necessary Bandwidth Calculation:

$$\begin{aligned}
 &\text{Signal States (S)} && 4 \\
 &= \\
 &\text{Data Rate (D)} && = 10.5 \\
 &\text{Constant Factor (K)} && = 2 \\
 &\text{Necessary Bandwidth (B}_N\text{), kHz} && = 2 * D * K / \text{LOG}_2(S)
 \end{aligned}$$

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Horn Antenna	EMCO	3115	i00103	1/20/15	1/20/17
Bilog Antenna	Teseq	CBL 6111Dk	i00349	10/19/15	10/19/17
EMI Analyzer	Agilent	E7405A	i00379	2/11/16	2/11/17
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	11/26/13	11/26/16
Spectrum Analyzer	Agilent	E4407B	i00331	09/18/15	09/18/16
Preamplifier for 1-18GHz horn antenna	Miteq	AFS44 00101 400 23-10P-44	i00509	N/A	N/A
Temperature Test Chamber	Tenney	Tenney Jr	i00027	N/A	N/A
Hydra Data Bucket	fluke	2635A	I00343	5/4/16	5/4/17

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT