TEST NUMBER - 218-04

TEST REPORT TO

INDUSTRY CANADA RSS 210 SECTION 6.2.2(o) AS AMMENDED
FEDERAL COMMUNICATIONS COMMISSION CFR47 PART15.247

Low Power License-Exempt Radiocommunication Devices
FH Spread Spectrum Intentional Radiators
Transceiver, receiver DOC

for

SupplyNet Communications L.L.C.
1000 E. State Parkway Unit F
Schaumburg, Illinois 60173
847-882-0060

of

Supplynet FHSS 905-917 MHz Module

RFOS

FCC ID: R8U1000

on

5/27/2004

Tested by

Andrew Mertinooke

Reviewed by

Clifton P. Brick

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TEST DESCRIPTION

1. TEST OBJECTIVE

To test the Supplynet FHSS 900MHz RFOS to RSS 210 / Part 15 Subpart C Rules and write a report.

2. E.U.T. DESCRIPTION

GENERAL

The Supplynet FHSS 900MHz RFOS is a Frequency Hopping system designed for use in the 902-928 MHz band. The modules will be professionally installed by Supplynet personnel and used to relay information on available supplies in storage tanks. The device employs 25 hopping channels and hops based on a pseudorandom list of frequencies. Each frequency is used equally on average and the list repeats every 10 seconds.

SERIAL NUMBERS:

Production Prototype

Compliance Worldwide, Inc. – 357 Main Street – Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

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TEST RESULTS AND CONCLUSIONS

PRODUCT TESTED - Supplynet FHSS 900MHz

MODEL NUMBER – RFOS

ANALYSIS AND CONCLUSIONS

Requirement	FCC Ref	IC Ref (RSS210)	Result
Max Output Power	15.247(b)(2)	6.2.2 (o)(iv)	Pass
20dB Bandwidth	15.247(a)(1)	6.2.2 (o)(iv)	Pass
Number of Hopping Channels	15.247(d)	6.2.2 (o)(iv)	Pass
Hopping Channel Spacing	15.247(a)(1)		Pass
Channel Dwell Time	15.247(a)(1)		Pass
Antenna Conducted Spurious	15.247(c)	6.2.2 (e1)	Pass
Radiated in Restricted Bands	15.207(c), 15.209(c)	6.3 and Table 2	Pass
Radiated Emissions from Unintentional Radiator portion	15.109	5.17, IC ES-003	Pass
AC Mains Conducted Emissions	15.207	6.6	Pass
Antenna Requirement	15.203	5.5	Pass
RF Exposure	15.247(b)(4)	15	Pass

Based upon the radiated and conducted measurements we find that this equipment is within the limits of the IC Rules RSS 210 / FCC Rules Part 15 Subpart C. All results are based on a test of one sample, and represent other production units, only in as much as a sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

NOTES (Special conditions unique to this test)

See page 56.

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TEST PROCEDURES

1. TEST EQUIPMENT

A. HP 8546A (9 kHz - 6.5 GHz) EMI Receiver w/ RF Filter Section, S/N 3704A00323 / 3650A00360. Calibration Date 1-16-2004, calibrated annually.

B. HP 8593E (9 kHz - 26.5 GHz) Spectrum Analyzer, S/N 3829A03887. Calibration Date 11-21-2004, calibrated annually.

B. Com-Power Biconilog Antenna, Model AC220, S/N 25509. Calibration Date 7-17-2003, calibrated annually.

C. Electro-Metrics Double Ridged Guide Antenna, Model EM-6961, S/N 6337. Calibration Date: 6-24-2003, calibrated annually.

D. HP 1 - 26.5 GHz Preamplifier, Model 08449B, S/N 3008A01323. Calibration Date: 1-7-2004, calibrated annually.

E. EMCO LISN, Model EM 3825/2, S/N 9109-1860. Calibration Date: 3-10-2004, calibrated annually.

2. FREQUENCY RANGE TO BE SCANNED.

A. Radiated Test from 30 MHz to 40 GHz (or the 10^{th} harmonic of the highest frequency whichever is lower).

B. Conducted Test from 150 kHz to 30 MHz.

3. TEST PROCEDURES.

Radiated test procedure:

The EUT, associated cables and peripheral devices are placed on the supporting table and any support equipment is placed off the site. The EUT is turned on and any necessary operating or test software installed and allowed to warm up. The EUT is pre-scanned in our ferrite tile lined chamber where it is rotated 360 degrees and examined in both horizontal and vertical polarization, all emission frequencies are identified and recorded. The EUT is then moved to the OATS and the frequency band from 30 MHz to 40 GHz is scanned, all frequencies identified in the chamber are investigated, as well as harmonic frequencies of the EUT. When an emission is found the emission is maximized by varying the bundle position of the connecting cables, the antenna height, the antenna polarization (vertical and horizontal) and the table orientation (360 degrees). The maximum reading is recorded and the next signal is searched for.

Conducted test procedure:

The power line of the EUT is connected to the LISN (Line Impedance Stabilization Network). A measurement of the emissions are made from the power line for both phase and neutral on the analyzer in the frequency range from 150 kHz to 30 MHz. The maximum readings are recorded for each phase.

All measurements are made according to the procedures defined in: "ANSI C63.4-1992 Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz, American National Standard for (ISBN 1-55937-215-5).

RSS 210 TEST LIMITS

1. RSS 210 Section 6.2.2, Table 3 Radiation Limits (Quasi-Peak):
   FCC Part 15.209, 15.235, 15.249 Radiation Limits (Quasi-Peak):

250mW for systems employing at least 25 hopping channels.

In any 100 kHz bandwidth outside the operating frequency bands, the unwanted emission spectral density shall be either at least 20 dB below the in band spectral density, or shall not exceed the levels specified in RSS-210 Table 3, whichever is less stringent.

The radiated emission limit is 54 dBuV/m at 3 meters using an average detector for any emission that falls into a restricted band.

1. RSS 210 Section 6.6a Conduction Limits:
   FCC Part 15.207 Conduction Limits:

Frequency MHz	Quasi-Peak Limit dBµV	Average Limit dBµV
0.150 - 0.500	66 to 56	56 to 46
0.500 - 5.0	56	46
5.0 - 30.0	60	50

TEST FACILITY DESCRIPTION

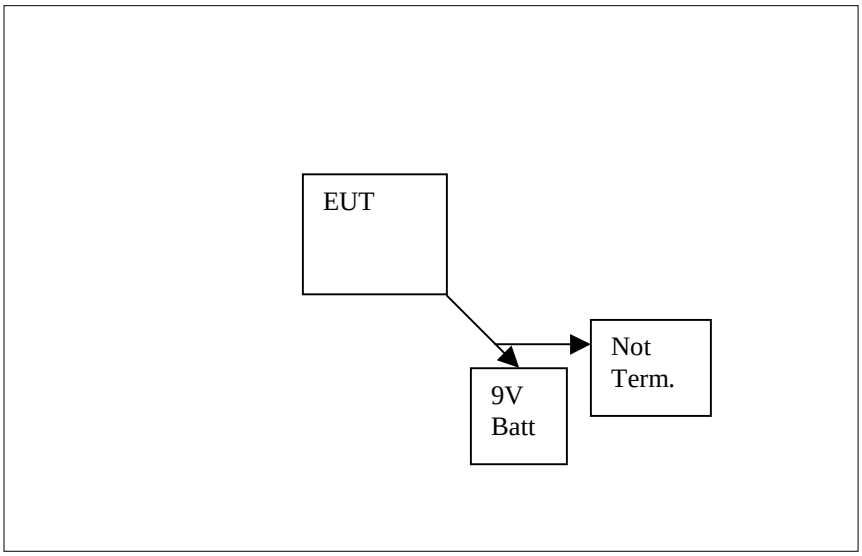
Compliance Worldwide is located on 357 Main Street in Sandown, New Hampshire. The conducted and radiated test sites, located at C.W. are used for Federal Communications Commission (FCC) testing and Industry Canada Testing. A site description is on file with the FCC in Columbia, MD USA. Site information is also on file with Industry Canada, anyone wishing to review this Test Facility Description is referred to file number **IC 3023**. This is currently on file at Industry Canada, 1241 Clyde Avenue, Ottawa, ON K2C 1Y3.

The radiated site is a 3/10 meter indoor site with an enclosure for the product and a basement for the personnel, support equipment and test equipment.

The conducted site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical metal wall required by EN 55022.

Both sites are designed to test products or systems 1.5 meter x 1.0 meter, floor standing or table top.

TEST SET UP
AND
PERIPHERAL CONNECTION INFORMATION



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PLEASE NOTE - EUT (equipment under test) is Supplynet FHSS 900MHz .

The cables directly connected to this equipment are listed below. Please see below for a complete list of FCC ID's etc. on the supporting equipment.

Connection Descriptions

1. _Power/Data ribbon cable_____
(description)

__EUT_____
(from device)

__Battery/power supply/not terminated on data lines_____
(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED ____

2. __N/A_____
(description)

_____
(from device)

_____
(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED ____

3. _N/A_____
(description)

_____
(from device)

_____
(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED ____

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DETERMINATION OF AVERAGE FACTOR

Total Duration of 1 cycle:	100ms
Total On-Time in 1 cycle:	60ms
On-Time divided by cycle:	60ms/100ms = 0.6
Average Factor:	20log(0.6) = **-4.4dB**

FCC and IC maximum allowed average factor is –20dB.

See the next pages for supporting data.

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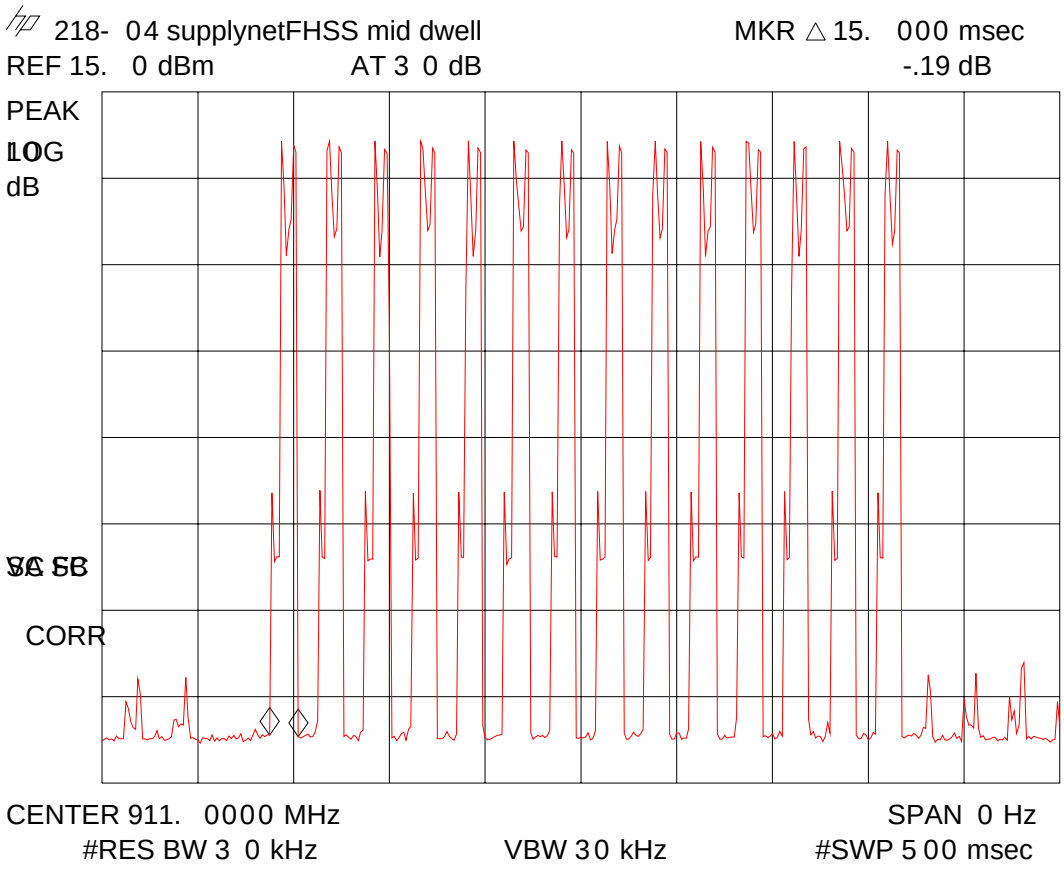
DETERMINATION OF AVERAGE FACTOR



Plot shows 50mS/Div, time of transmission is 15mS, worst case 100mS window would include 4 transmissions, or 60mS.

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MAXIMUM OUTPUT POWER RESULTS

Frequency Range:	902-928 MHz.
Measurement Distance:	Conducted
Bandwidth:	100 kHz
Detector Functions:	Peak
Video Filter:	100 kHz

PLEASE SEE NEXT PAGE FOR TEST DATA

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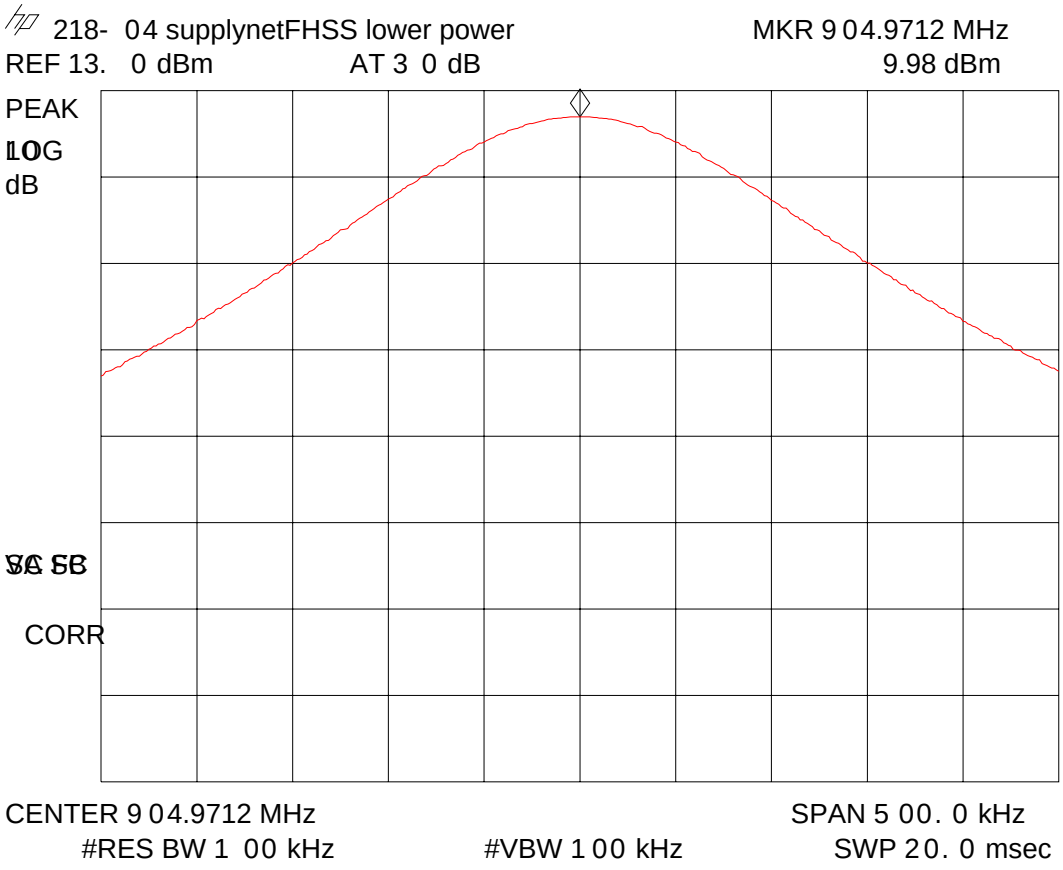
MAXIMUM OUTPUT POWER LOWEST CHANNEL DATA



Freq (MHz)	Peak Amp (dBuV/m)	Limit (dBm)	Margin (dB)
904.97	+9.98	+24.0	-14.02

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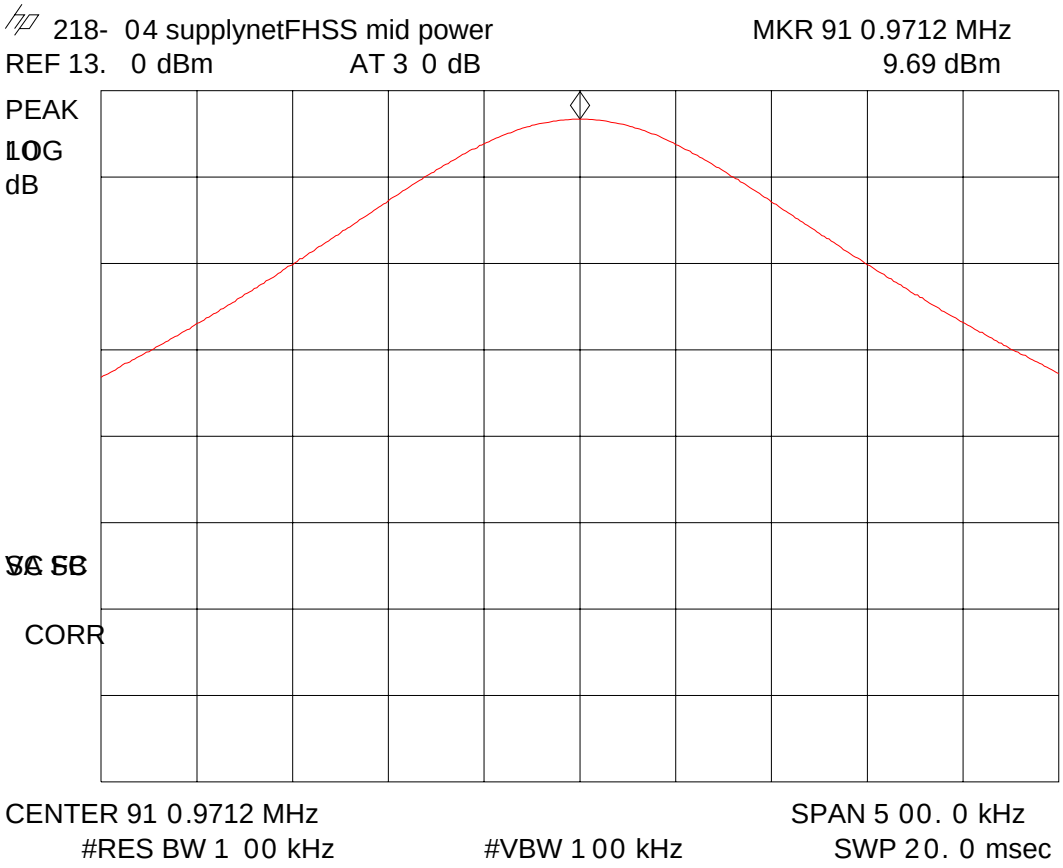
MAXIMUM OUTPUT POWER MID CHANNEL DATA



Freq (MHz)	Peak Amp (dBuV/m)	Limit (dBm)	Margin (dB)
910.97	+9.69	+24.0	-14.31

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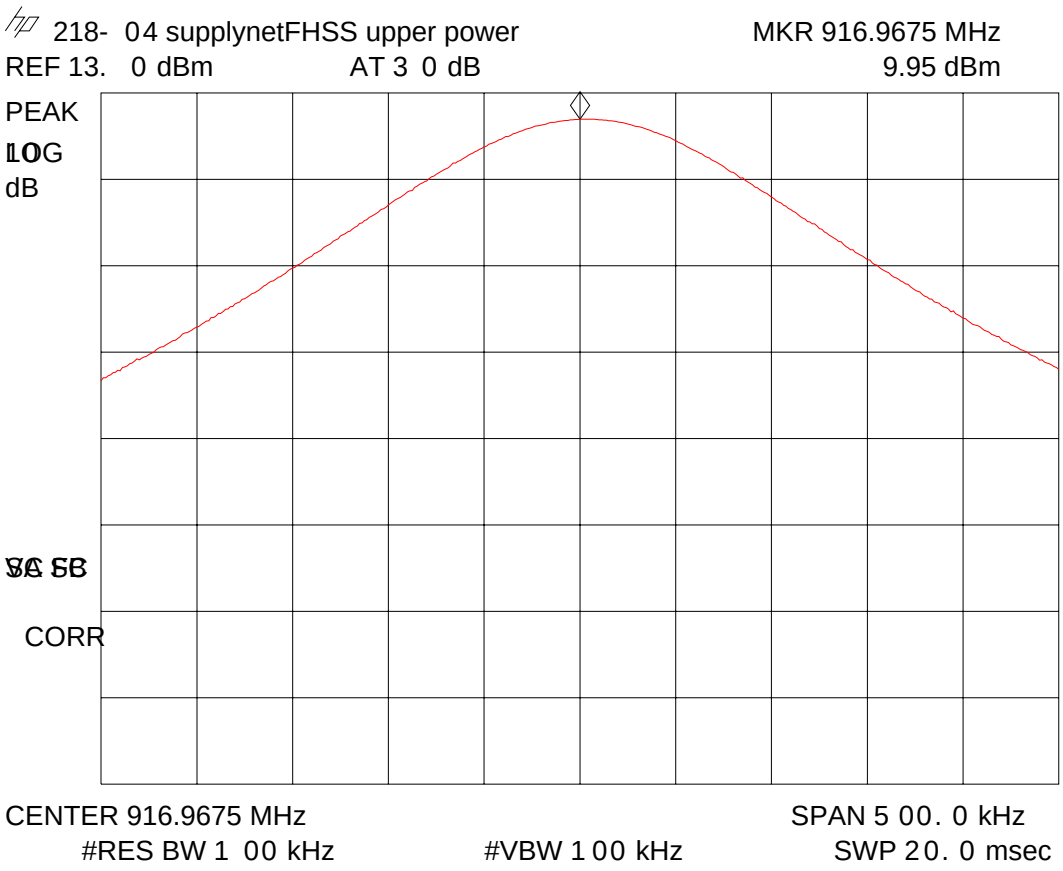
MAXIMUM OUTPUT POWER HIGHEST CHANNEL DATA



Freq (MHz)	Peak Amp (dBuV/m)	Limit (dBm)	Margin (dB)
916.97	+9.95	+24.0	-14.05

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20 dB OCCUPIED BW RESULTS

Frequency Range:	902-928 MHz
Measurement Distance:	Conducted
Bandwidth:	30 kHz
Detector Functions:	Peak
Video Filter:	30 kHz

PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA

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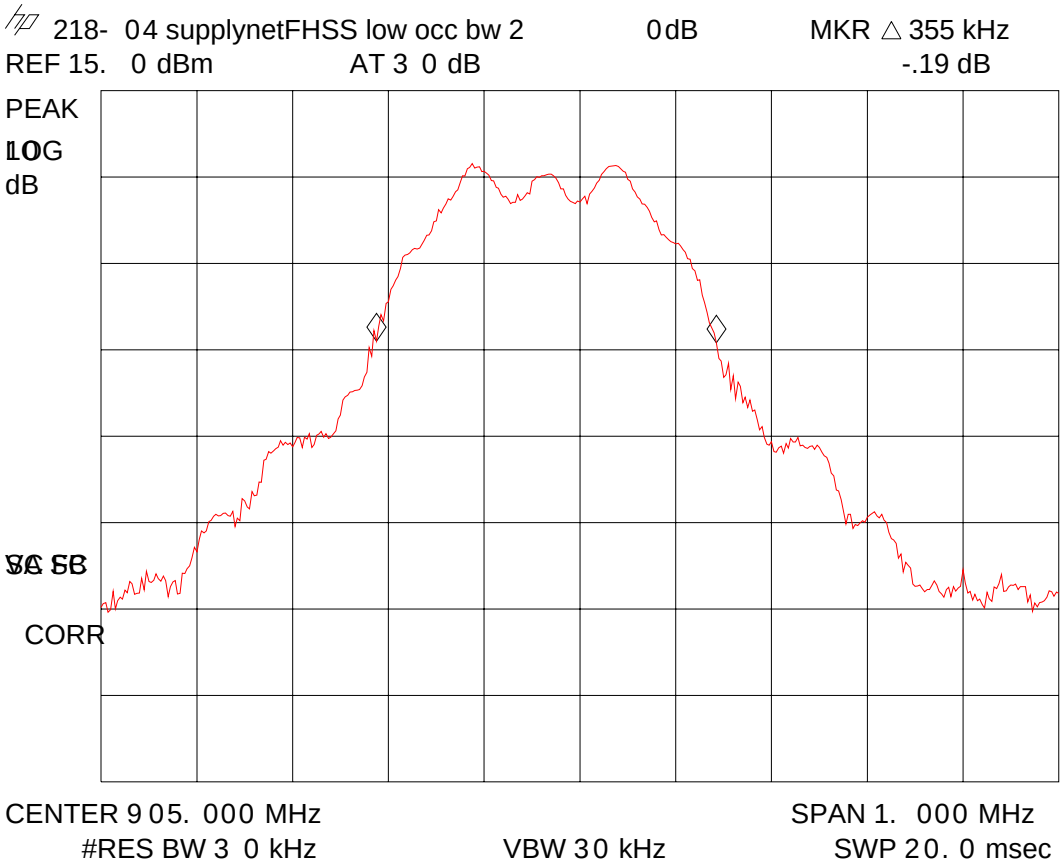
OCCUPIED BW LOWEST CHANNEL RESULTS



Freq (MHz)	Occupied Bandwidth (kHz)
905.0	355

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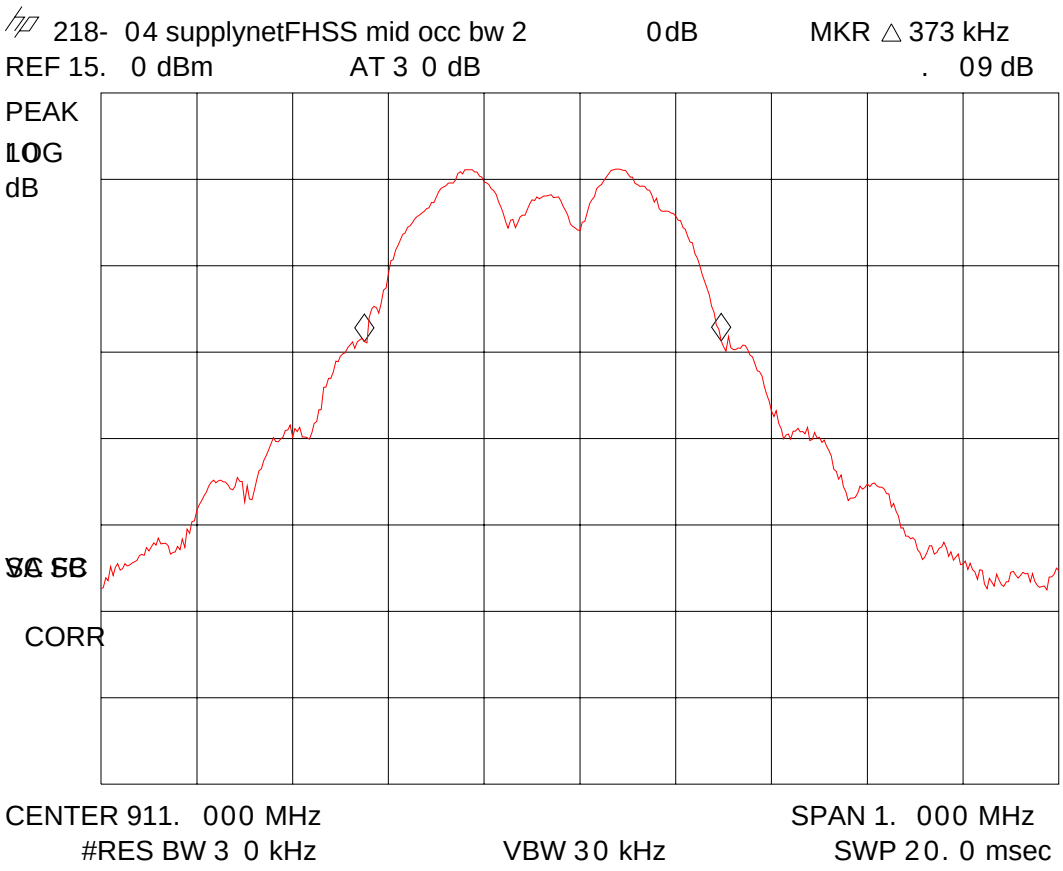
OCCUPIED BW MID CHANNEL RESULTS



Freq (MHz)	Occupied Bandwidth (kHz)
911.0	373

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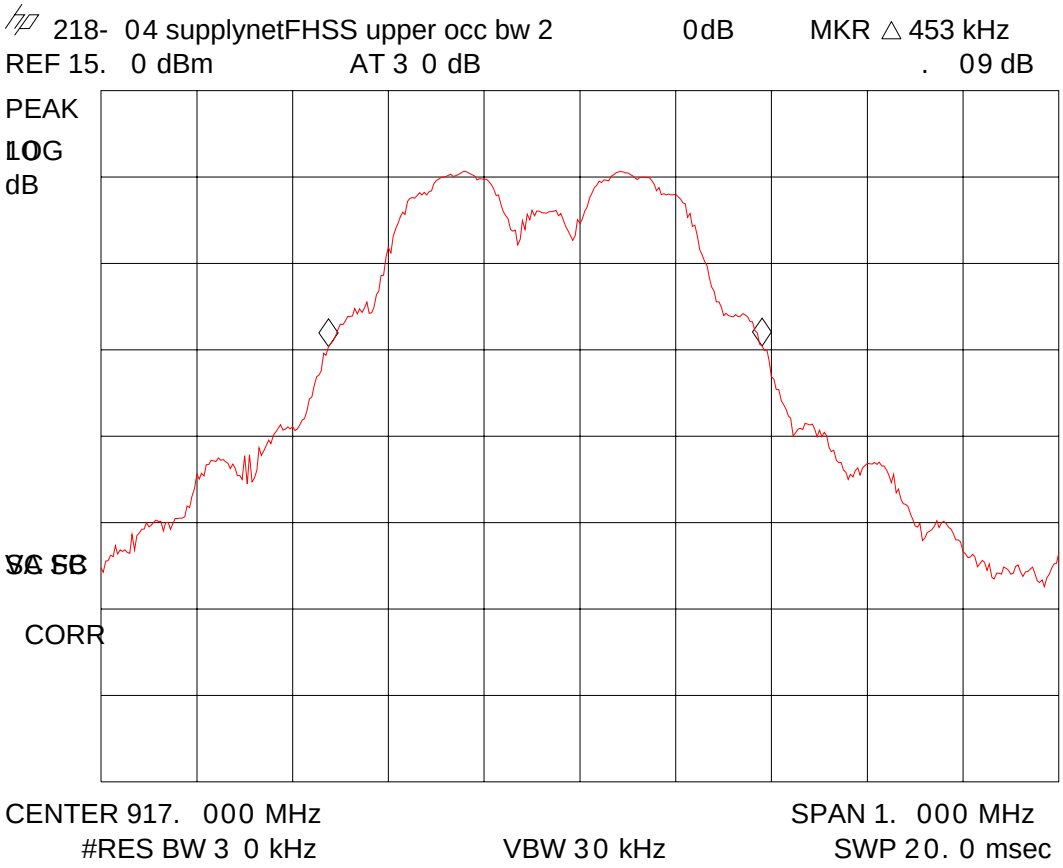
OCCUPIED BW HIGHEST CHANNEL RESULTS



Freq (MHz)	Occupied Bandwidth (kHz)
917.0	453

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NUMBER OF HOP CHANNELS TEST RESULTS

Frequency Range:	902-928 MHz.
Measurement Distance:	Conducted
Bandwidth:	30 kHz
Detector Functions:	Peak
Video Filter:	30 kHz

PLEASE SEE NEXT PAGE FOR TEST DATA

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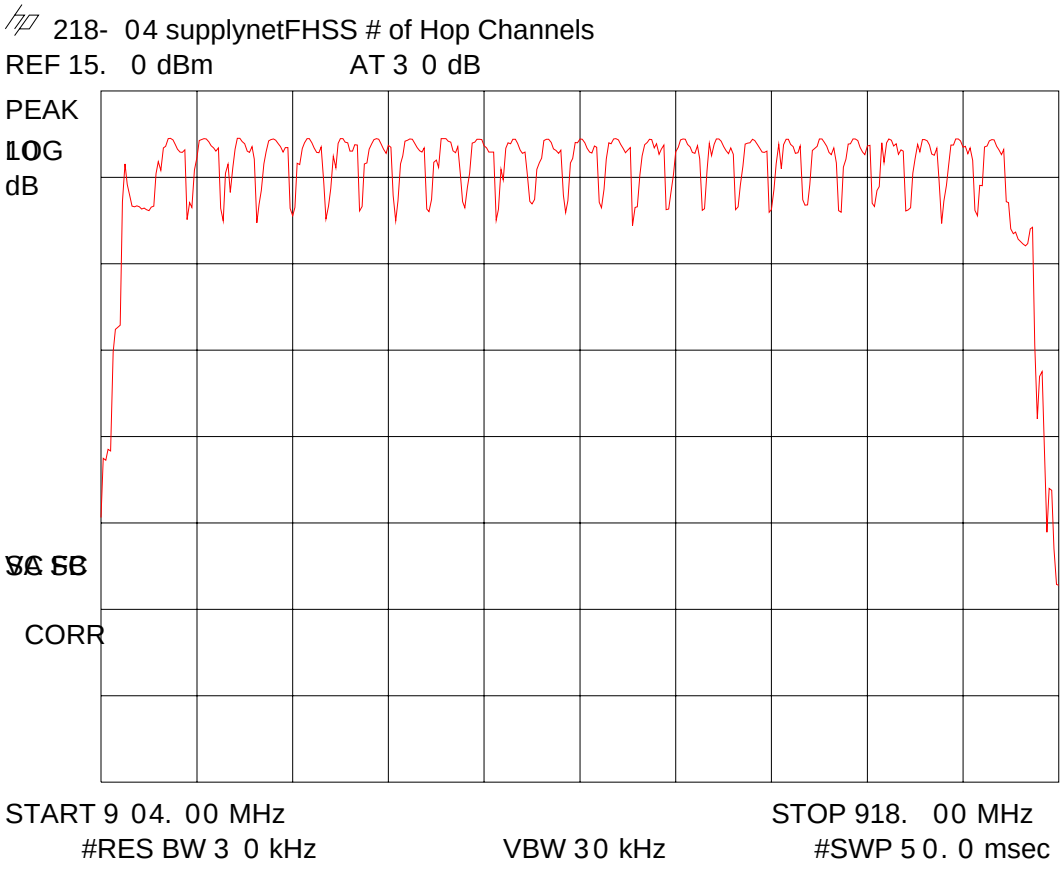
NUMBER OF HOP CHANNELS TEST RESULTS



Number of Hopping Channels
25

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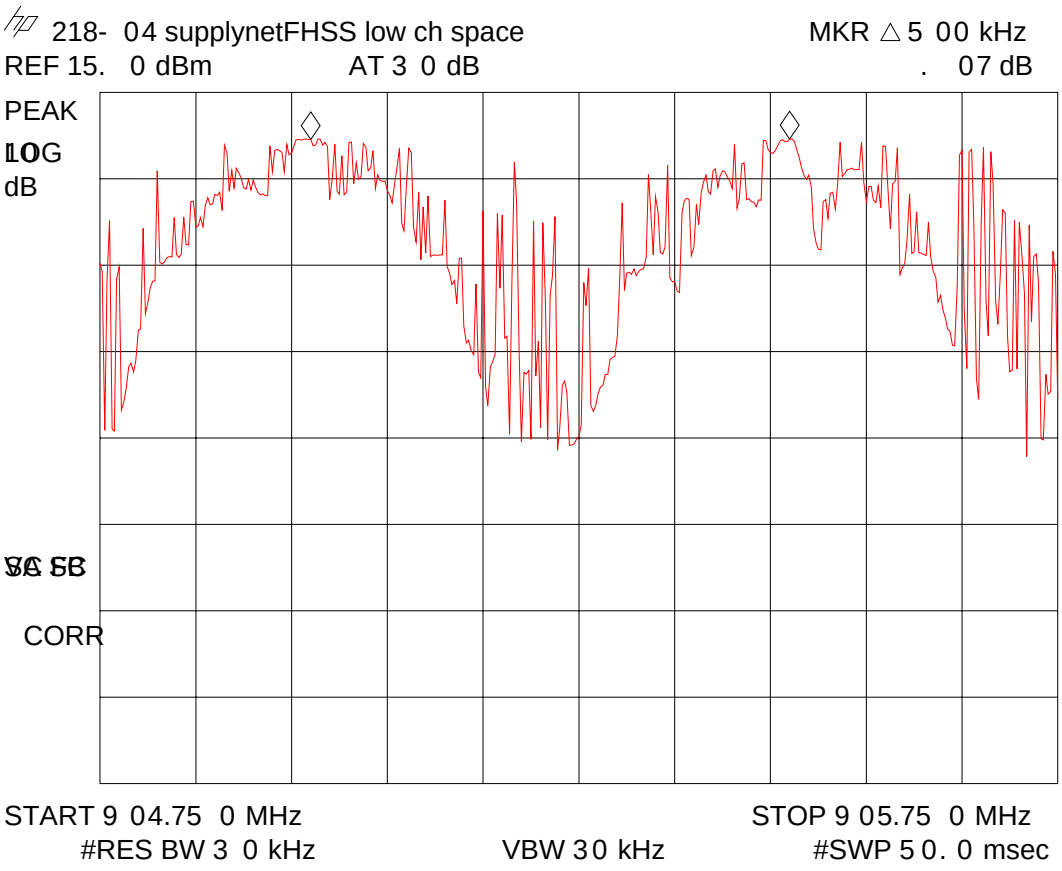
CHANNEL SPACING TEST RESULTS

Frequency Range:	902-928 MHz.
Measurement Distance:	Conducted
Bandwidth:	30 kHz
Detector Functions:	Peak
Video Filter:	30 kHz

PLEASE SEE NEXT PAGE FOR TEST DATA

CHANNEL SPACING LOW EDGE TEST RESULTS



Low End Channel Spacing (kHz)
500

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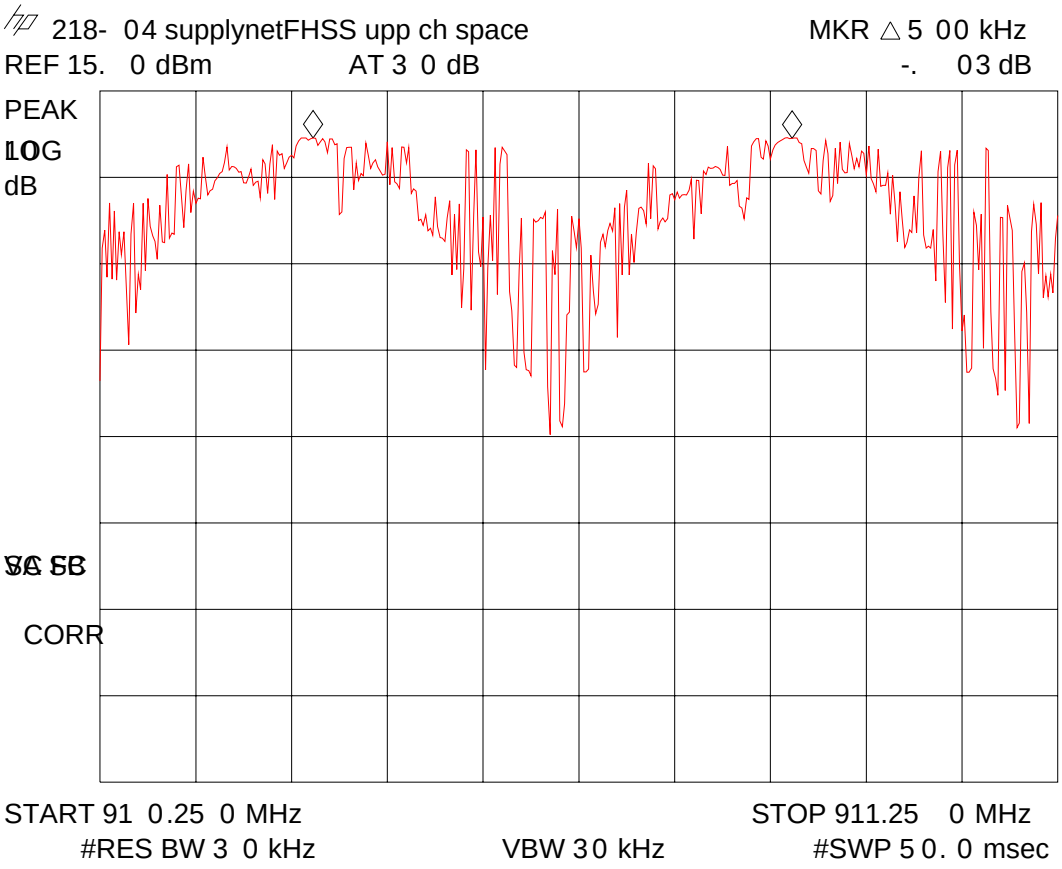
CHANNEL SPACING MIDDLE TEST RESULTS



Mid band Channel Spacing (kHz)
500

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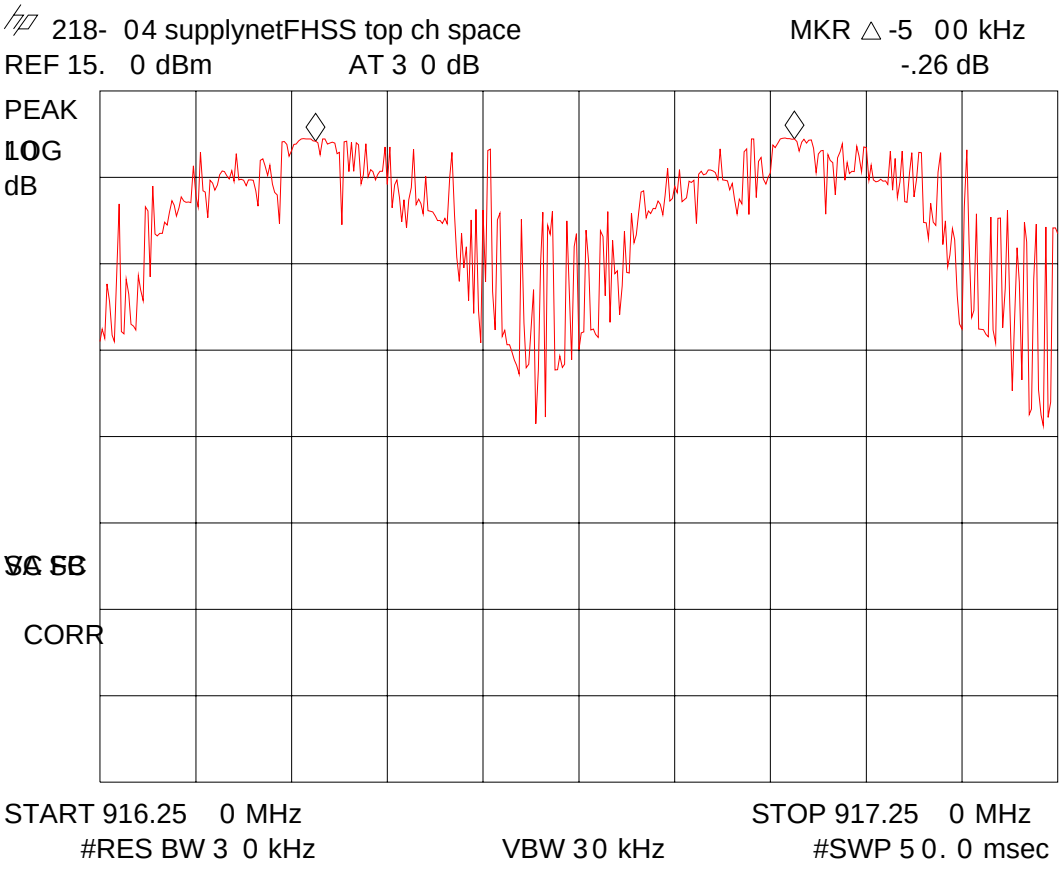
CHANNEL SPACING HIGH EDGE TEST RESULTS



High End Channel Spacing (kHz)
500

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CHANNEL DWELL TIME TEST RESULTS

Frequency Range:	902-928 MHz.
Measurement Distance:	Conducted
Bandwidth:	100 kHz
Detector Functions:	Peak
Video Filter:	100 kHz

The device by design dwells for less than 400mS per channel, as it hops 25 channels every 10 seconds and is momentarily off while the frequency changes. See the next pages for measured data.

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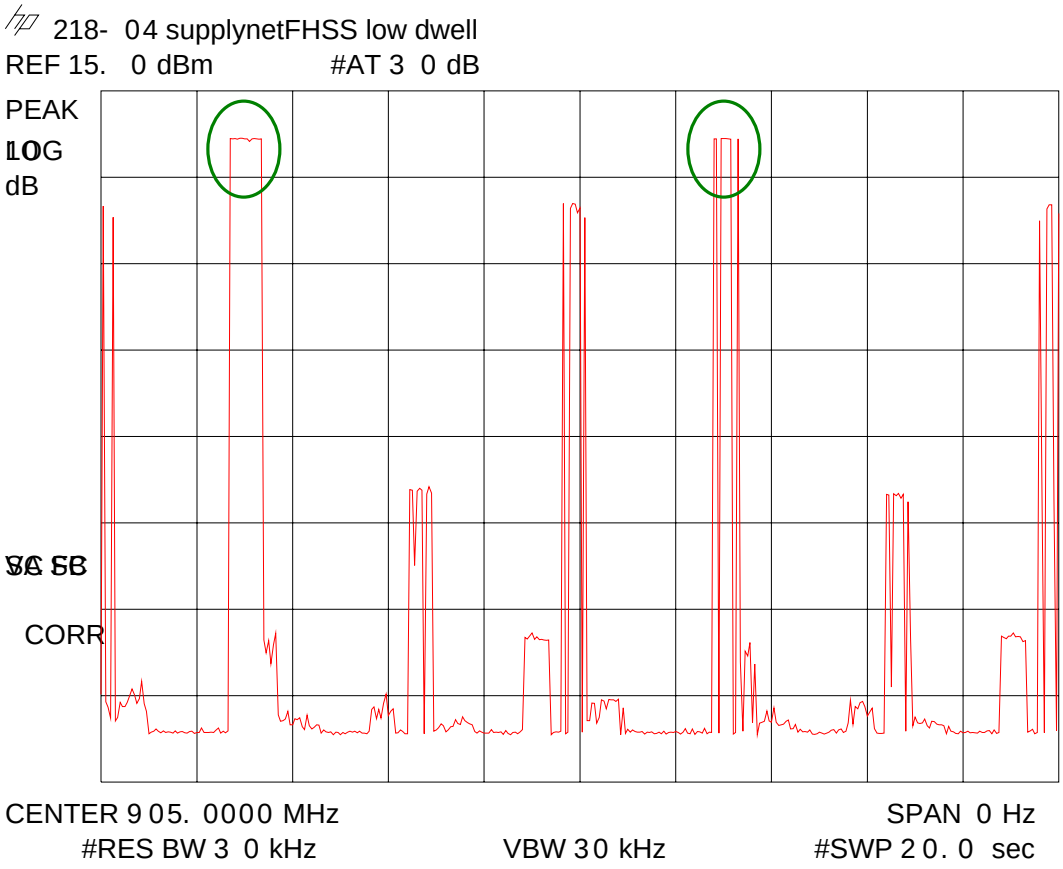
CHANNEL DWELL TIME TEST RESULTS



Plot shows lowest channel occupied 1 times every 10 seconds, or 2 times in 20 seconds.

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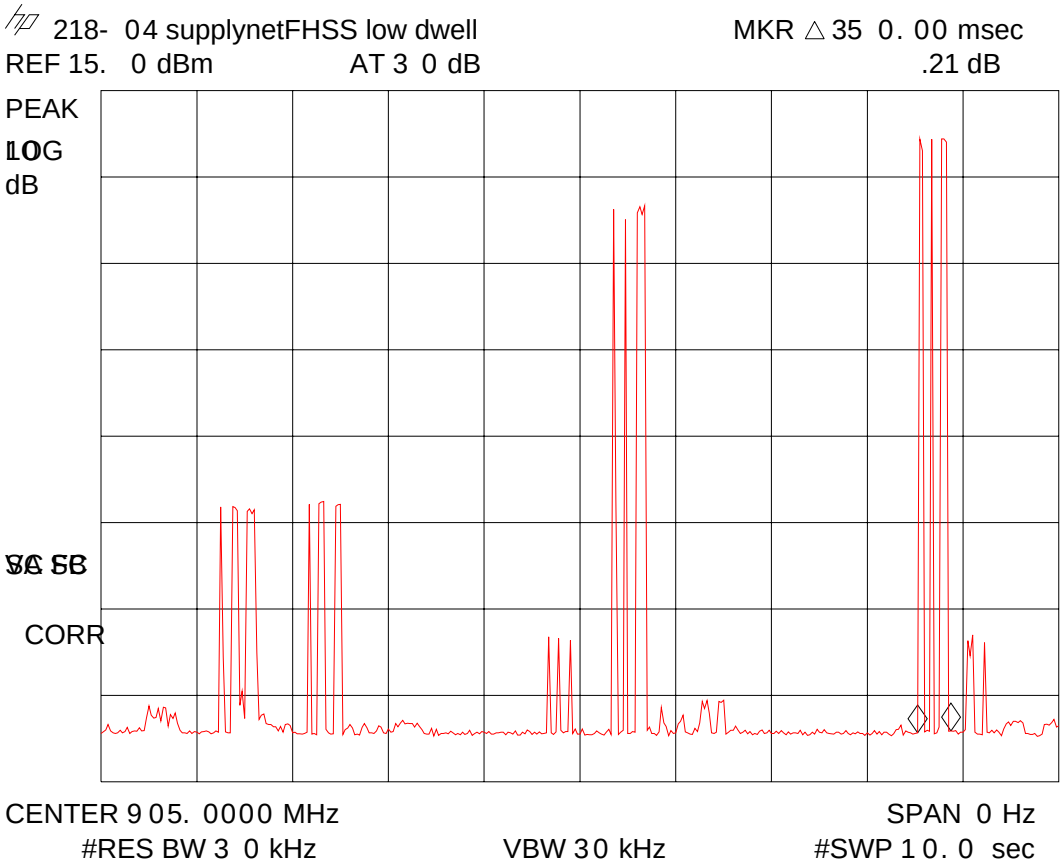
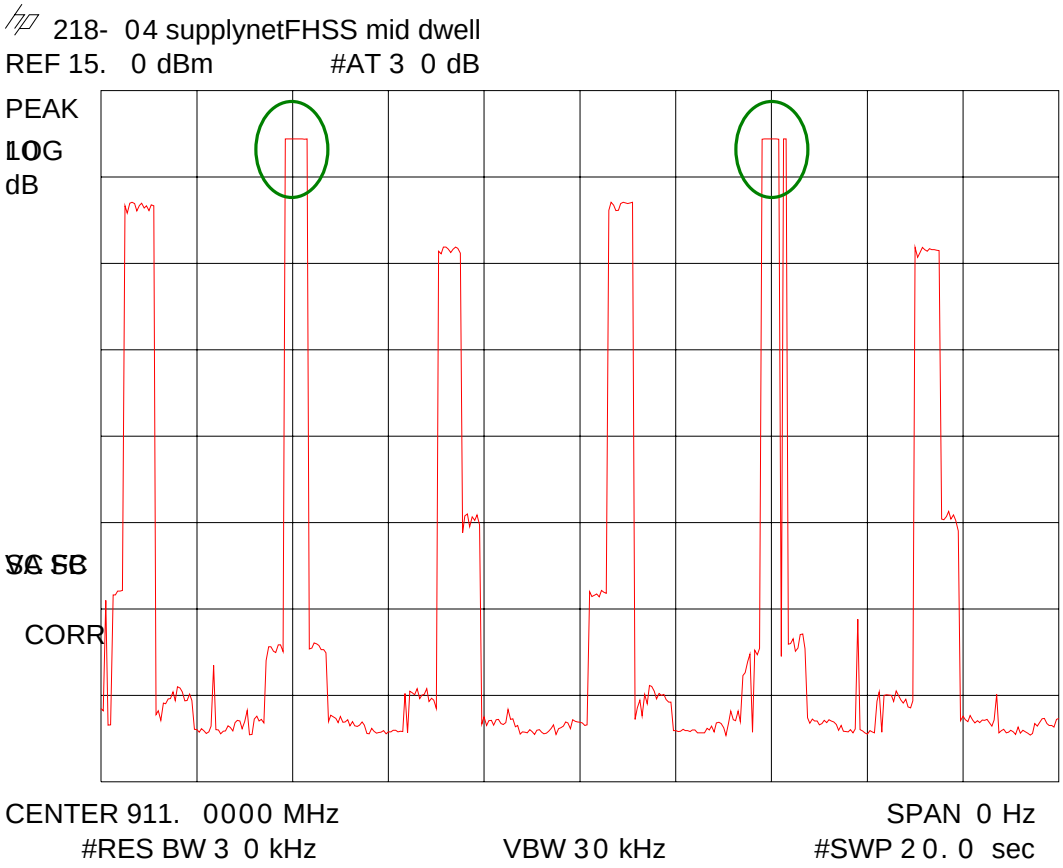
CHANNEL DWELL TIME TEST RESULTS



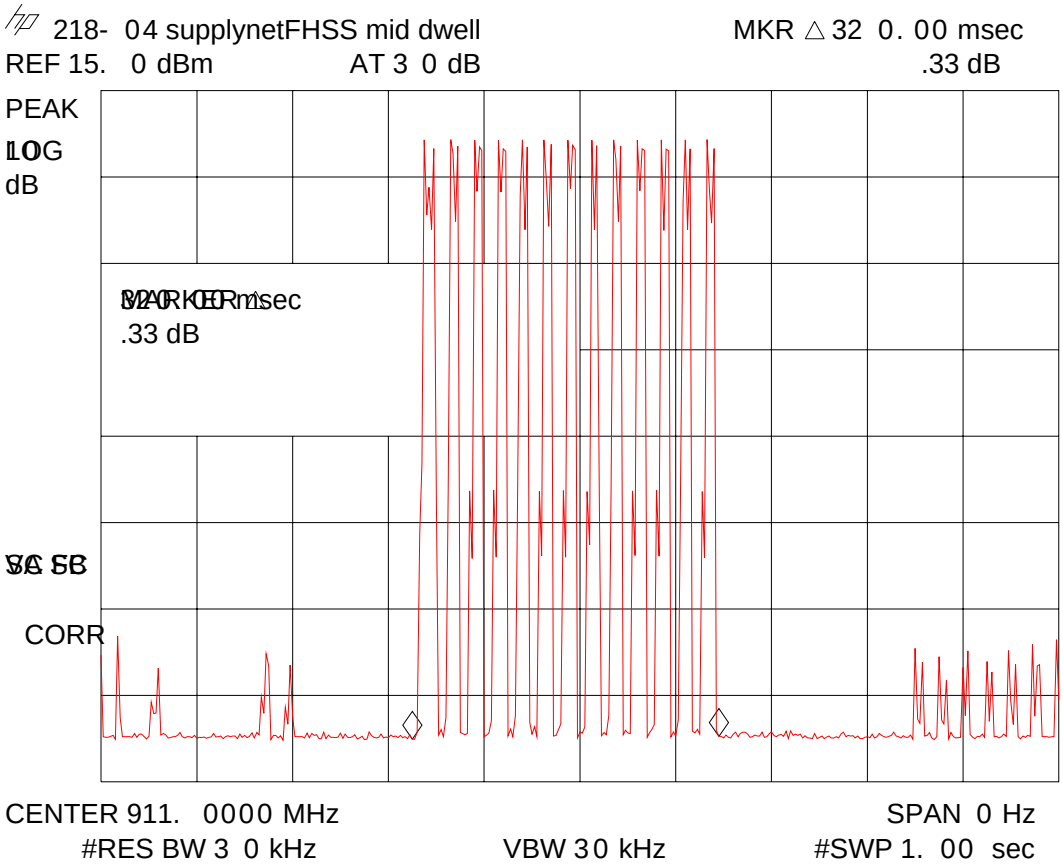
Plot shows lowest channel occupied for 350 mS.
Limit is 0.4 seconds per 10 seconds.

CHANNEL DWELL TIME TEST RESULTS



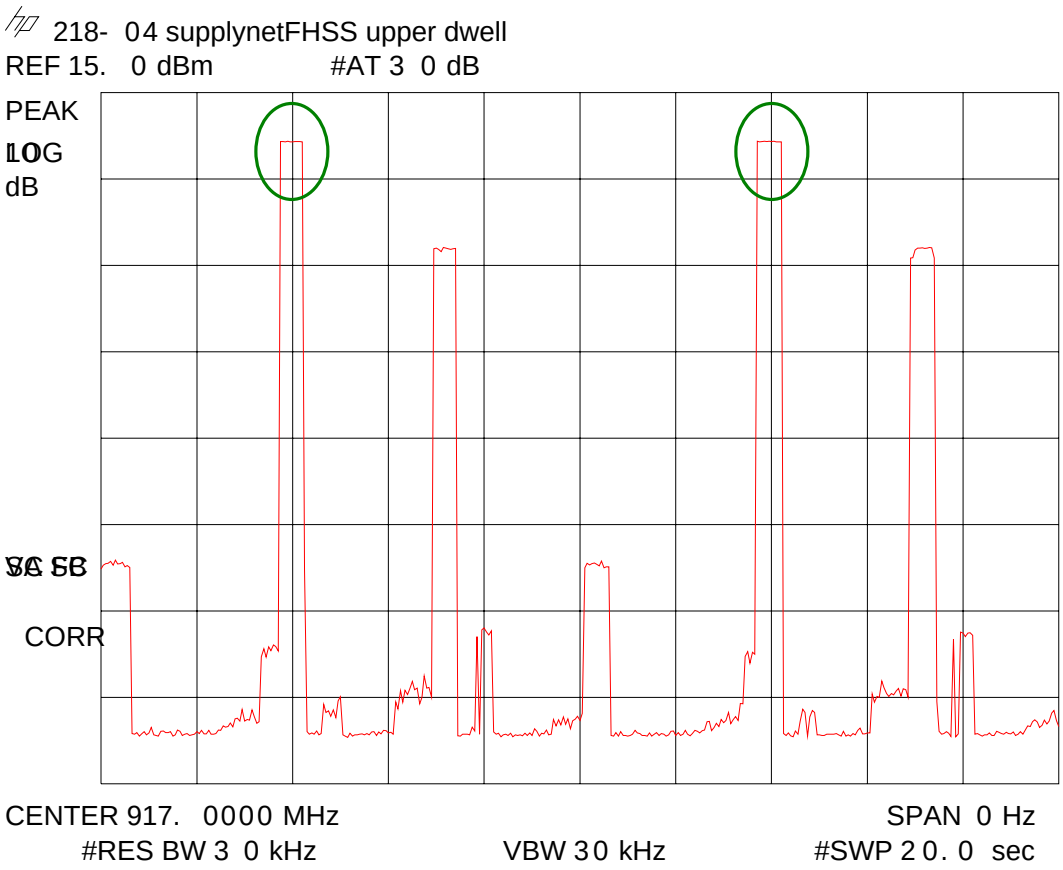
Plot shows mid channel occupied 1 times every 10 seconds, or 2 times in 20 seconds.

CHANNEL DWELL TIME TEST RESULTS



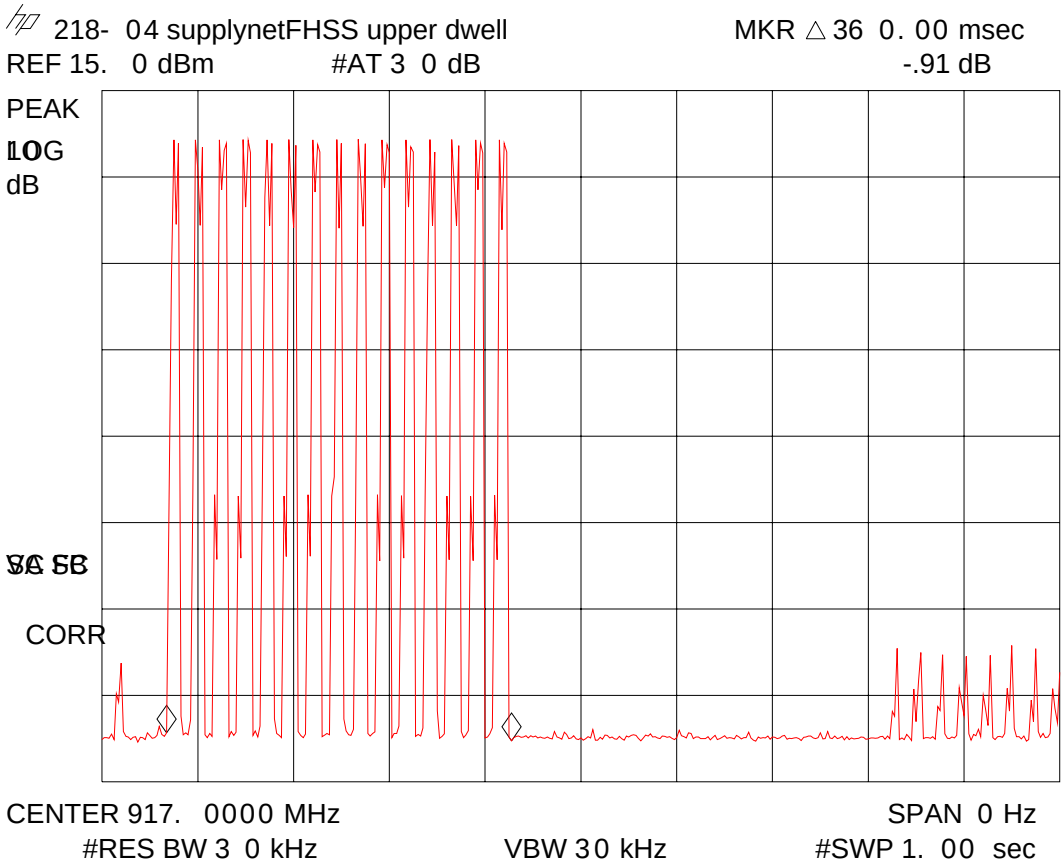
Plot shows mid channel occupied for 320 mS.
Limit is 0.4 seconds per 10 seconds.

CHANNEL DWELL TIME TEST RESULTS



Plot shows highest channel occupied 1 times every 10 seconds, or 2 times in 20 seconds.

CHANNEL DWELL TIME TEST RESULTS



Plot shows upper channel occupied for 350 mS.
Limit is 0.4 seconds per 10 seconds.

ANTENNA CONDUCTED TEST RESULTS

Frequency Range:	30 – 9,300 MHz.
Measurement Distance:	Conducted
Bandwidth:	100 kHz
Detector Functions:	Peak
Video Filter:	100 kHz

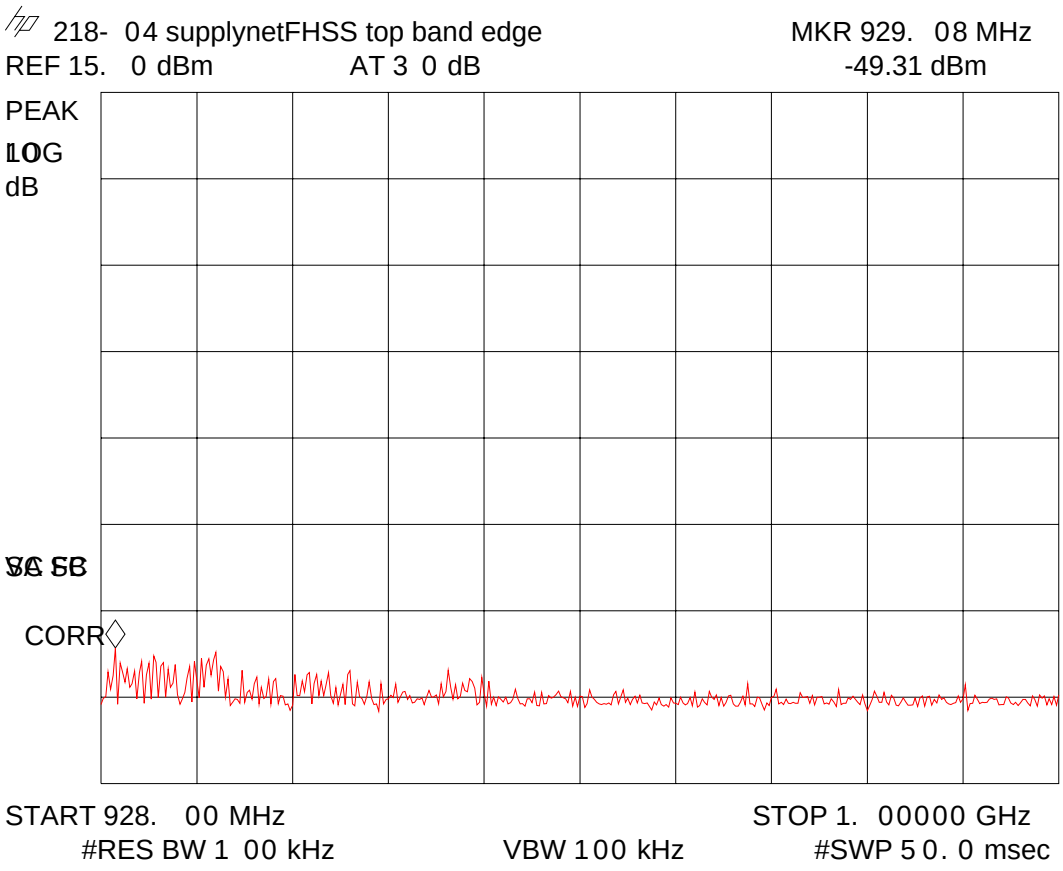
PLEASE SEE NEXT PAGE FOR TEST DATA

All out of band signals found to be greater than 20 dB below the in band worst case level of desired power.

Worst Case Out of Band 100kHz bandwidth found:

Channel	Freq (MHz)	Peak Amp (dBm)	Limit (dBm)	Pk-Avg Margin (dB)
upper	1840	-18.16	-10.2	-7.96

ANTENNA CONDUCTED TEST RESULTS



Plot shows the upper band edge, measured with the device in normal operation mode. The device was also examined with it locked on the highest channel, normal operation was found to be worst case.

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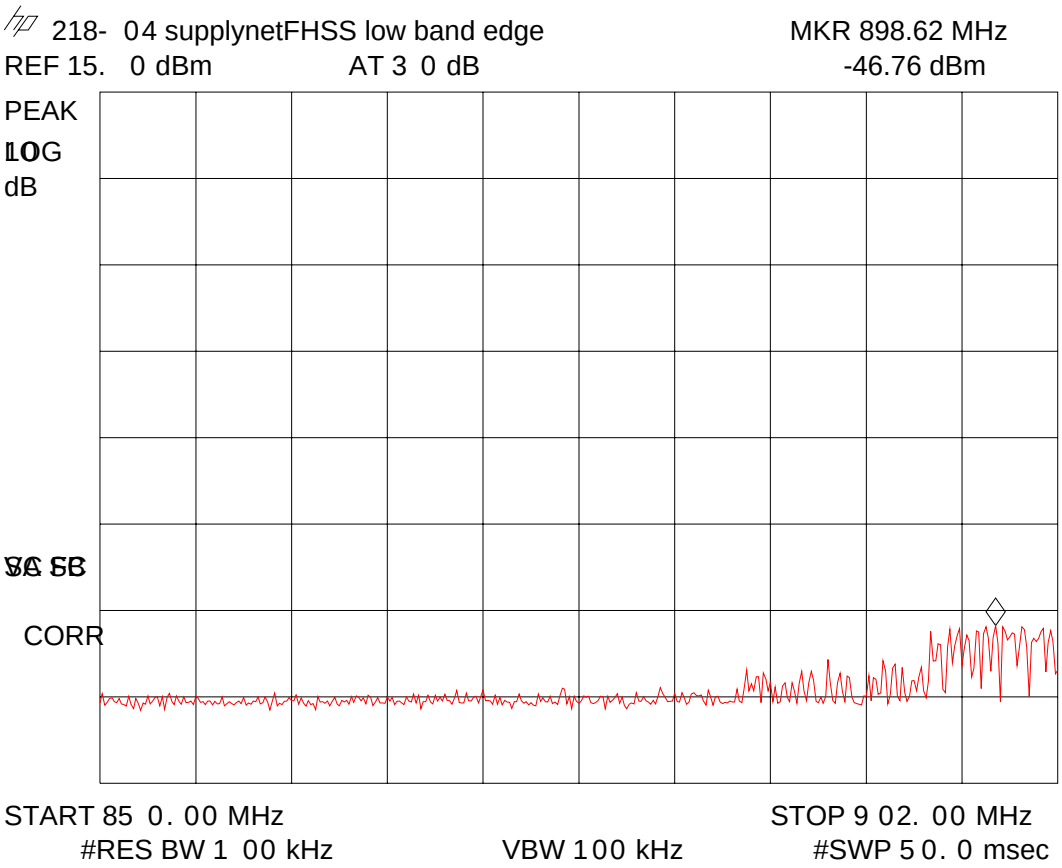
ANTENNA CONDUCTED TEST RESULTS



Plot shows the lower band edge, measured with the device in normal operation mode. The device was also examined with it locked on the lowest channel, normal operation was found to be worst case.

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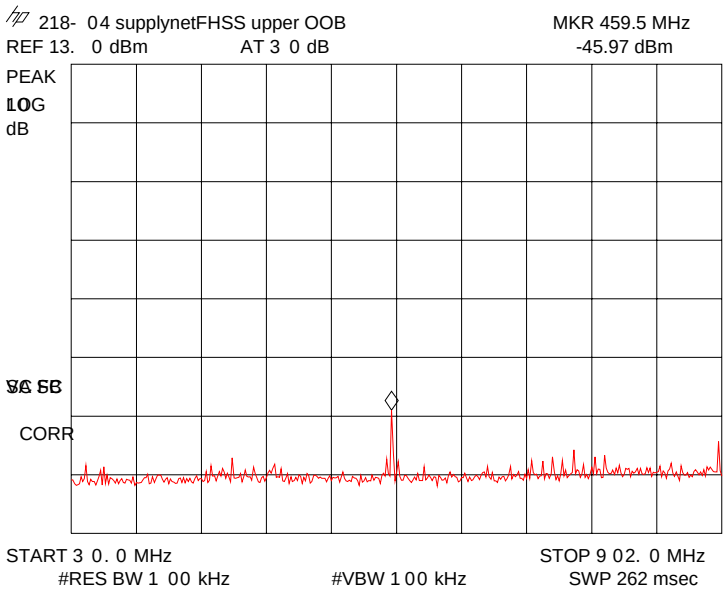
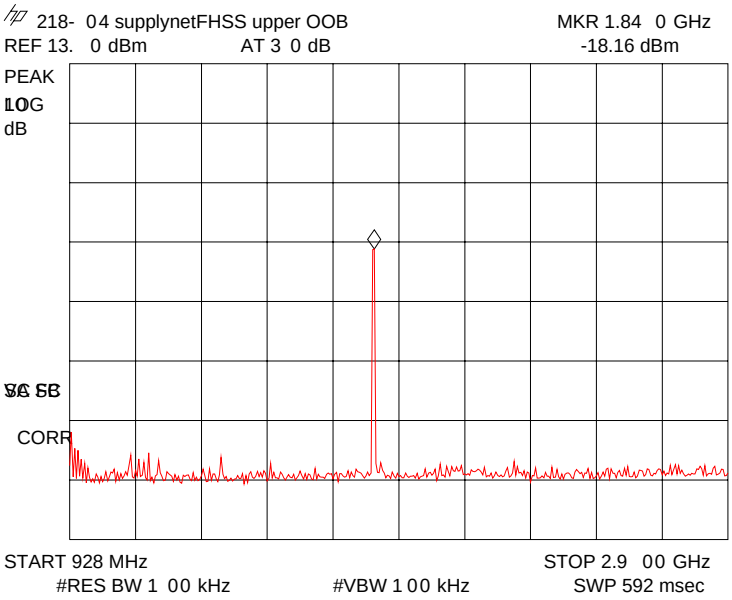
ANTENNA CONDUCTED TEST RESULTS





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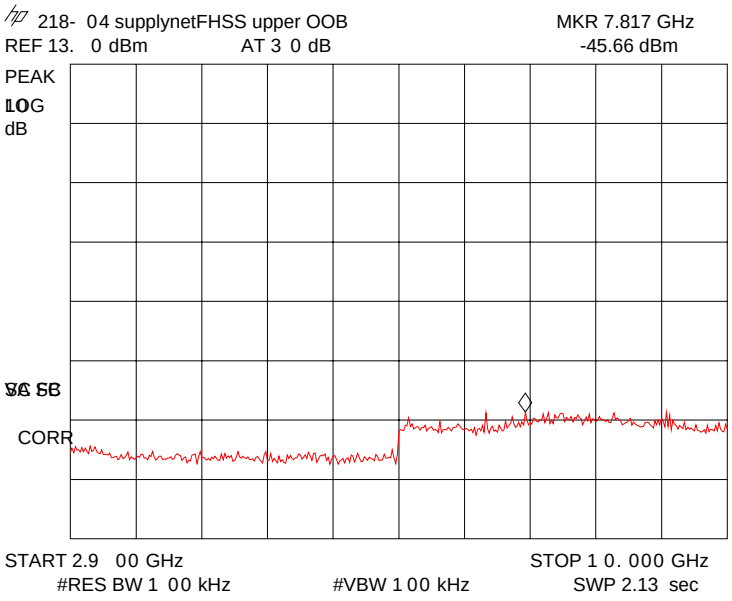

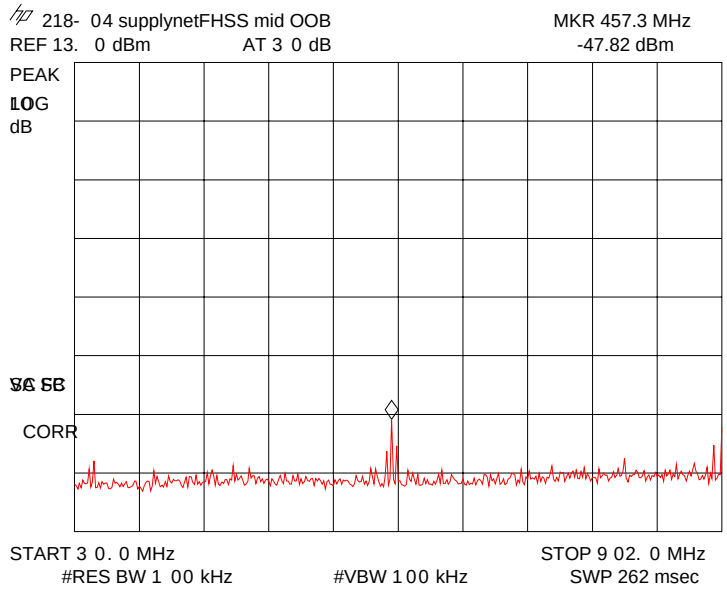

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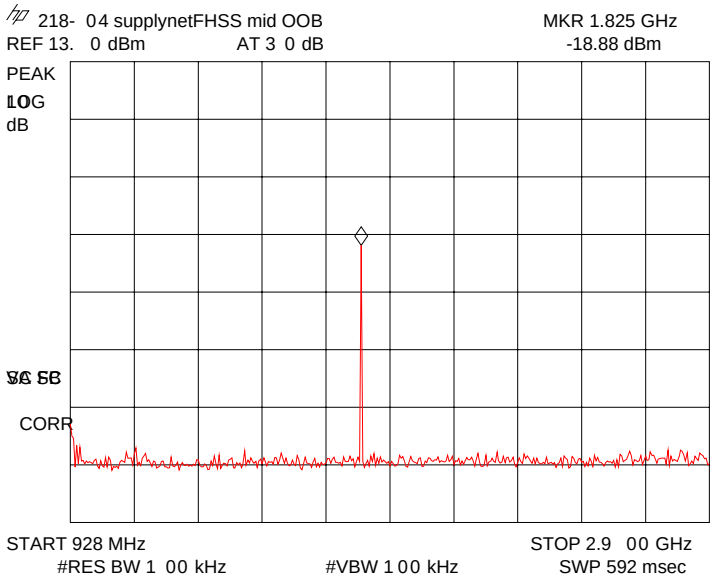
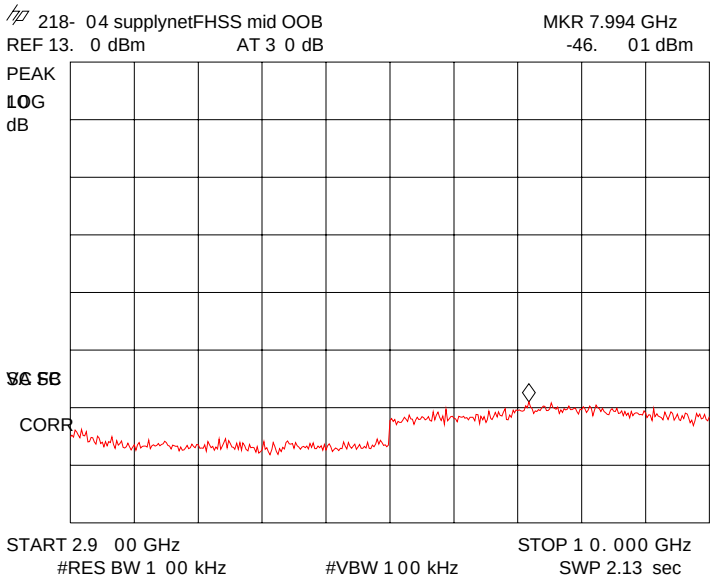
ANTENNA CONDUCTED TEST RESULTS





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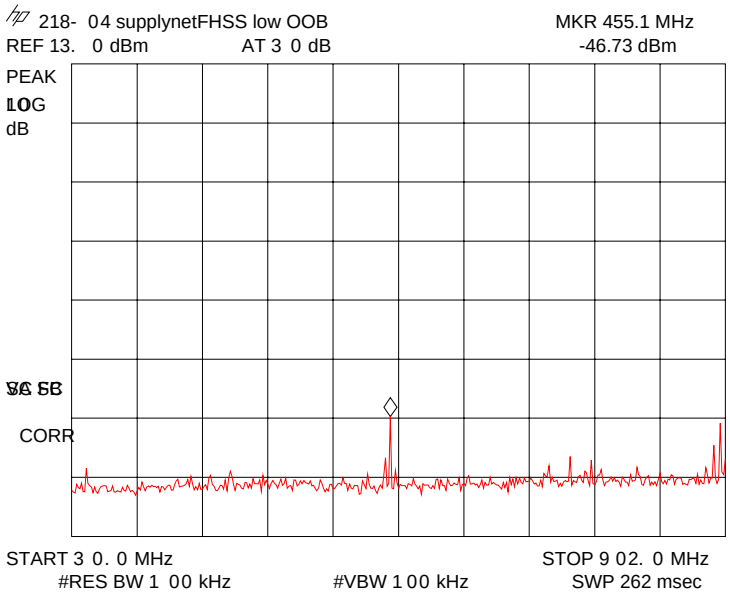
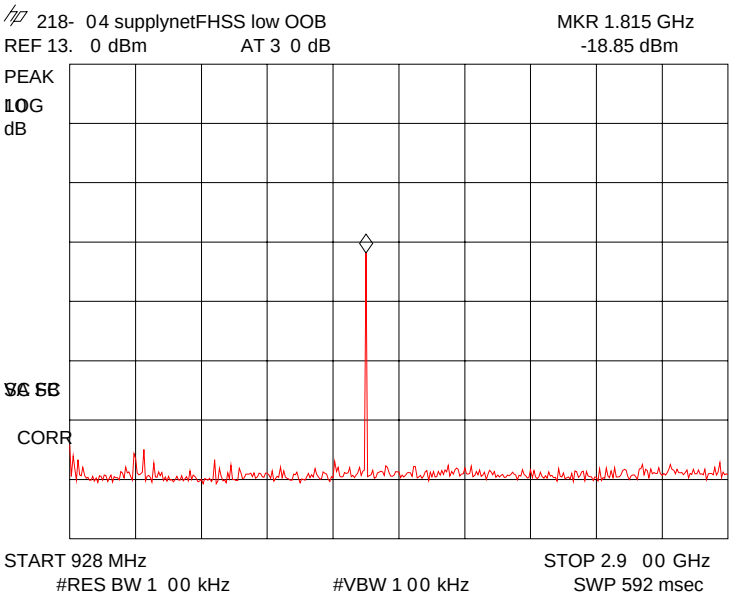
ANTENNA CONDUCTED TEST RESULTS





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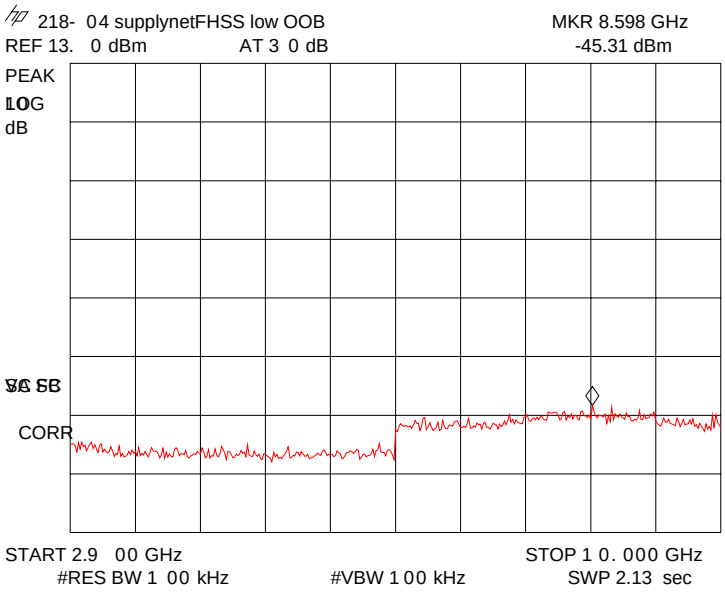
ANTENNA CONDUCTED TEST RESULTS



TEST NUMBER - 218-04

RADIATED TEST RESULTS

Frequency Range:	30 – 10 GHz.
Measurement Distance:	3.0 Meters.
Bandwidth:	120 kHz, Per ANSI C63.4-1992.*
Detector Functions:	Peak, Quasi Peak, Average
Video Filter:	300 kHz
Table Height:	0.8 meters
Antenna Height Variation:	1 - 4 Meters.

Horizontal and Vertical Polarization Measurements Taken.

*Measurement Bandwidth is 1 MHz above 1 GHz

Data includes Restricted bands, digital component and receiver component.

PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA

Radiated Restricted Band Data

Data using Maxrad MEXC902SM antenna.

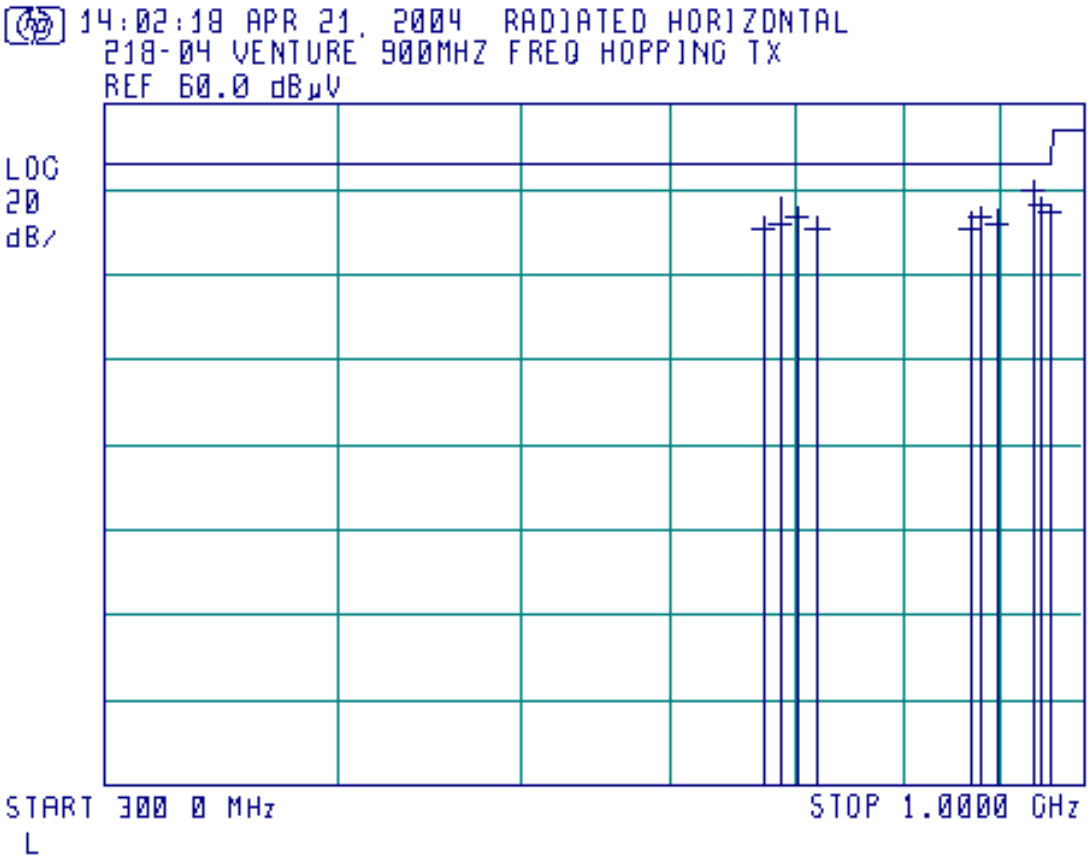
Channel	Freq (MHz)	Polarization (H/V)	Peak Amp (dBuV)	Avg Amp (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)
lowest	2714.91	No spurious harmonic emissions were found at OATS within 25 dB of the FCC/IC limits in restricted bands.				
lowest	3619.88					
lowest	4524.85					
lowest	5429.82					
lowest	8144.73					
lowest	9049.7					
Mid	2732.91					
Mid	3643.88					
Mid	4554.85					
Mid	7287.76					
Mid	8198.73					
Mid	9109.7					
Highest	2750.91					
Highest	3667.88					
Highest	4584.85					
Highest	7335.76					
Highest	8252.73					
Highest	9169.7					

Data using Nearson C161AM-925R antenna.

Channel	Freq (MHz)	Polarization (H/V)	Peak Amp (dBuV)	Avg Amp (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)
lowest	2714.91	No spurious harmonic emissions were found at OATS within 25 dB of the FCC/IC limits in restricted bands.				
lowest	3619.88					
lowest	4524.85					
lowest	5429.82					
lowest	8144.73					
lowest	9049.7					
Mid	2732.91					
Mid	3643.88					
Mid	4554.85					
Mid	7287.76					
Mid	8198.73					
Mid	9109.7					
Highest	2750.91					
Highest	3667.88					
Highest	4584.85					
Highest	7335.76					
Highest	8252.73					
Highest	9169.7					

TEST NUMBER - 218-04

Radiated Horizontal Data Log Plot



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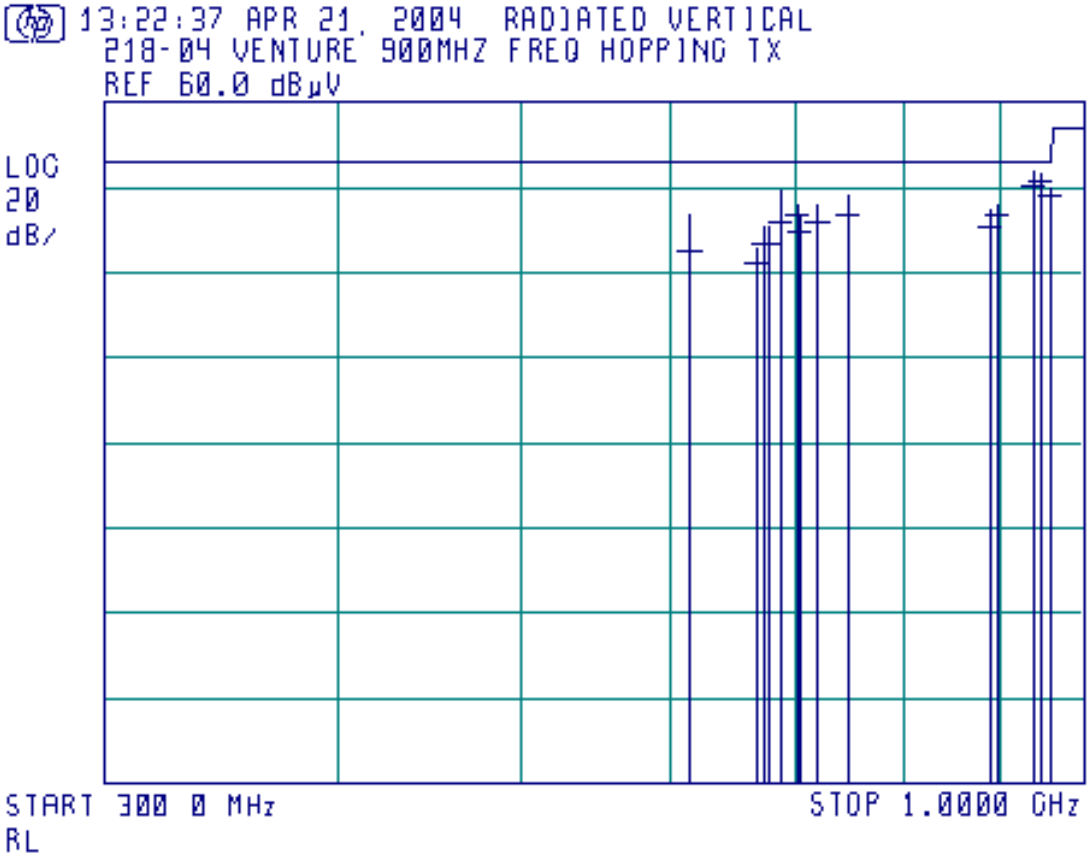
TEST NUMBER - 218-04

Radiated Horizontal Tabular Data

Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP Limit (dBuV)	QP Margin (dB)
673.585013	33.50	30.62	46.00	-15.38
687.842813	38.71	32.25	46.00	-13.75
702.222150	36.13	33.56	46.00	-12.44
719.857538	33.82	30.68	46.00	-15.32
867.242150	34.49	31.70	46.00	-14.30
877.223100	36.10	33.53	46.00	-12.47
897.230100	35.06	32.29	46.00	-13.71
937.227200	42.45	40.22	46.00	-5.78
947.210106	38.77	36.75	46.00	-9.25
957.223094	36.88	34.82	46.00	-11.18

TEST NUMBER - 218-04

Radiated Vertical Data Log Plot



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TEST NUMBER - 218-04

Radiated Vertical Tabular Data

Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP Limit (dBuV)	QP Margin (dB)
616.244888	34.11	25.28	46.00	-20.72
667.231988	26.40	22.26	46.00	-23.74
673.487438	30.71	27.27	46.00	-18.73
677.352500	30.56	26.49	46.00	-19.51
687.856163	39.51	32.13	46.00	-13.87
702.222150	36.20	33.79	46.00	-12.21
705.593063	33.64	30.31	46.00	-15.69
719.720138	35.95	32.52	46.00	-13.48
745.229698	38.24	34.05	46.00	-11.95
887.211275	34.64	31.14	46.00	-14.86
897.230100	36.35	33.76	46.00	-12.24
937.227200	44.02	40.63	46.00	-5.37
947.210106	42.91	41.39	46.00	-4.61
957.223094	40.03	38.23	46.00	-7.77

TEST NUMBER - 218-04

AC CONDUCTED TEST RESULTS

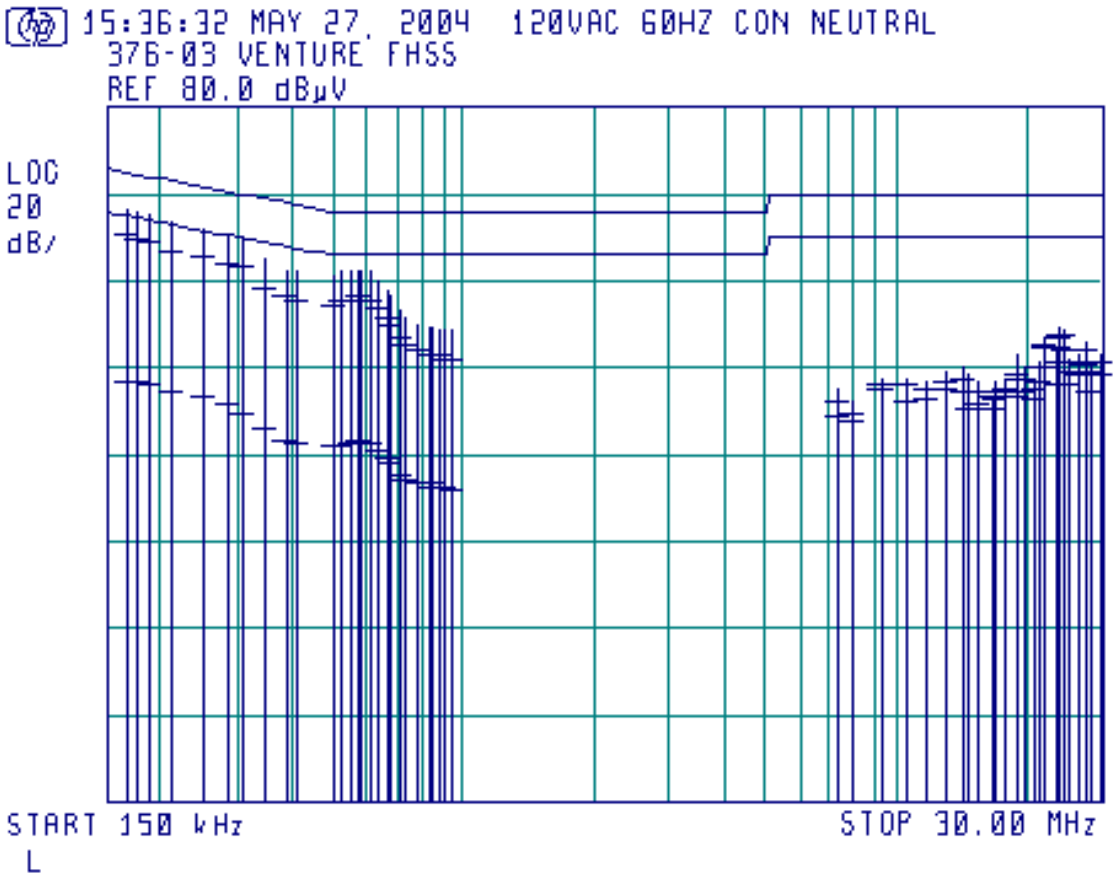
Frequency Range:	150 kHz to 30.0 MHz.
Bandwidth:	9 kHz per ANSI C63.4-1992.
Detector Functions:	Peak, Quasi-Peak, Average
Table Height:	0.8 meters
Video Bandwidth:	30 kHz.

Phase and Neutral Measurements Taken.

PLEASE SEE NEXT PAGE FOR CONDUCTED TEST DATA

TEST NUMBER - 218-04

Conducted 120V 60Hz Neutral Data Log Plot



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TEST NUMBER - 218-04

Conducted 120V 60Hz Neutral Tabular Data

Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	QP Limit (dBuV)	Avg Limit (dBuV)	QP Margin (dB)	Avg Margin (dB)
0.167951	56.80	50.35	17.29	65.12	55.12	-14.77	-37.83
0.176919	56.31	49.85	16.87	64.69	54.69	-14.84	-37.82
0.189320	55.49	49.13	16.14	64.08	54.08	-14.95	-37.94
0.212088	54.24	47.79	14.69	63.19	53.19	-15.40	-38.50
0.251231	52.21	45.78	13.80	61.75	51.75	-15.97	-37.95
0.287725	50.78	44.41	11.33	60.64	50.64	-16.23	-39.31
0.311655	49.69	43.34	10.32	59.94	49.94	-16.60	-39.62
0.350289	45.31	38.81	5.98	59.02	49.02	-20.21	-43.04
0.392713	42.96	36.61	3.82	58.01	48.01	-21.40	-44.19
0.414003	42.13	35.77	2.83	57.61	47.61	-21.84	-44.78
0.503209	41.55	35.22	2.30	56.00	46.00	-20.78	-43.70
0.524659	41.92	35.56	2.67	56.00	46.00	-20.44	-43.33
0.554381	42.48	36.19	3.24	56.00	46.00	-19.81	-42.76
0.576426	42.79	36.47	3.54	56.00	46.00	-19.53	-42.46
0.577701	42.76	36.47	3.53	56.00	46.00	-19.53	-42.47
0.609343	42.43	36.24	3.29	56.00	46.00	-19.76	-42.71
0.640601	40.84	34.65	1.76	56.00	46.00	-21.35	-44.24
0.671719	38.12	31.93	-0.20	56.00	46.00	-24.07	-46.20
0.684299	36.77	30.64	-1.47	56.00	46.00	-25.36	-47.47
0.717419	33.61	27.47	-4.17	56.00	46.00	-28.53	-50.17
0.736279	32.08	25.99	-5.36	56.00	46.00	-30.01	-51.36
0.783309	30.11	24.05	-6.36	56.00	46.00	-31.95	-52.36
0.846713	29.57	23.44	-6.64	56.00	46.00	-32.56	-52.64
0.847901	29.58	23.44	-6.62	56.00	46.00	-32.56	-52.62
0.887016	29.22	23.21	-7.08	56.00	46.00	-32.79	-53.08
0.912864	29.09	23.01	-7.30	56.00	46.00	-32.99	-53.30
0.947211	28.61	22.62	-7.55	56.00	46.00	-33.38	-53.55
7.374110	15.22	12.47	9.54	60.00	50.00	-47.53	-40.46
7.987368	12.63	10.44	8.75	60.00	50.00	-49.56	-41.25
9.216290	17.68	15.92	16.50	60.00	50.00	-44.08	-33.50
10.445313	17.99	16.03	12.53	60.00	50.00	-43.97	-37.47
11.673201	16.81	15.34	13.22	60.00	50.00	-44.66	-36.78
12.903054	19.24	17.02	15.82	60.00	50.00	-42.98	-34.18
12.904368	19.21	17.35	15.72	60.00	50.00	-42.65	-34.28
14.133223	20.09	17.99	14.98	60.00	50.00	-42.01	-35.02
14.133633	19.88	17.95	15.03	60.00	50.00	-42.05	-34.97
14.557751	18.71	15.19	10.53	60.00	50.00	-44.81	-39.47
15.359583	17.55	15.02	11.54	60.00	50.00	-44.98	-38.46
16.588640	14.31	14.26	10.85	60.00	50.00	-45.74	-39.15
16.801610	16.80	14.43	12.98	60.00	50.00	-45.57	-37.02

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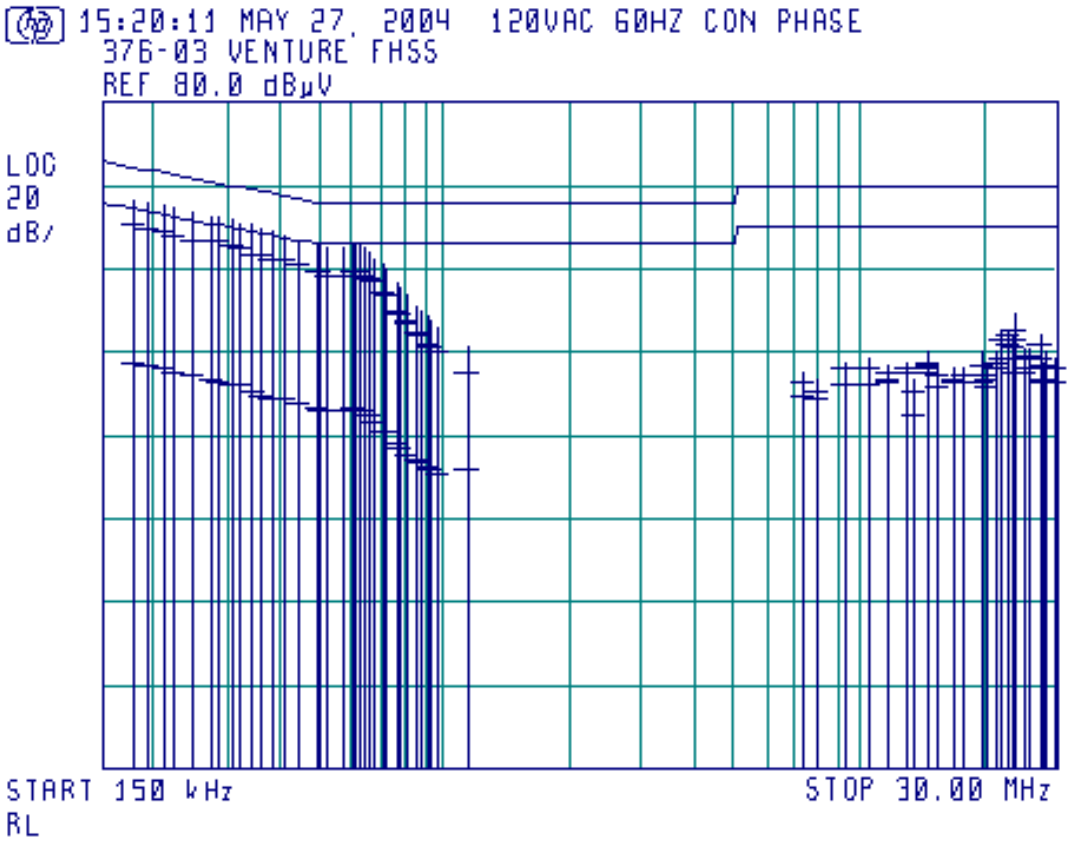
Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	QP Limit (dBuV)	Avg Limit (dBuV)	QP Margin (dB)	Avg Margin (dB)
17.819453	17.04	15.74	13.71	60.00	50.00	-44.26	-36.29
17.819720	17.43	15.65	14.34	60.00	50.00	-44.35	-35.66
19.046419	21.22	18.34	14.35	60.00	50.00	-41.66	-35.65
19.047423	23.08	19.05	14.53	60.00	50.00	-40.95	-35.47
19.663166	20.32	18.28	14.44	60.00	50.00	-41.72	-35.56
20.890290	17.94	15.51	13.11	60.00	50.00	-44.49	-36.89
21.507026	21.83	20.09	17.25	60.00	50.00	-39.91	-32.75
22.119793	26.99	24.84	19.99	60.00	50.00	-35.16	-30.01
22.120469	27.10	26.12	19.98	60.00	50.00	-33.88	-30.02
23.350876	24.76	21.94	16.06	60.00	50.00	-38.06	-33.94
23.963236	29.39	27.54	24.80	60.00	50.00	-32.46	-25.20
23.963880	29.23	28.24	24.86	60.00	50.00	-31.76	-25.14
24.578983	29.18	28.04	24.30	60.00	50.00	-31.96	-25.70
25.192693	22.26	19.23	16.60	60.00	50.00	-40.77	-33.40
26.420990	23.29	21.73	18.46	60.00	50.00	-38.27	-31.54
27.035030	25.98	24.56	21.60	60.00	50.00	-35.44	-28.40
27.036651	26.27	24.53	21.00	60.00	50.00	-35.47	-29.00
28.000599	21.52	19.00	14.53	60.00	50.00	-41.00	-35.47
28.001091	21.32	19.09	14.46	60.00	50.00	-40.91	-35.54
28.001360	21.45	19.18	14.53	60.00	50.00	-40.82	-35.47
29.493503	23.36	21.86	18.88	60.00	50.00	-38.14	-31.12

TEST NUMBER - 218-04

Conducted 120V 60Hz Phase Data Log Plot



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TEST NUMBER - 218-04

Conducted 120V 60Hz Phase Tabular Data

Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	QP Limit (dBuV)	Avg Limit (dBuV)	QP Margin (dB)	Avg Margin (dB)
0.178530	57.20	50.72	17.64	64.61	54.61	-13.89	-36.97
0.194420	56.47	49.93	17.00	63.87	53.87	-13.94	-36.87
0.211506	55.53	49.08	16.04	63.21	53.21	-14.13	-37.17
0.225696	54.86	48.48	15.37	62.67	52.67	-14.19	-37.30
0.248660	53.98	47.47	14.80	61.83	51.83	-14.36	-37.03
0.277344	53.19	46.81	13.79	60.96	50.96	-14.15	-37.17
0.289345	53.07	46.59	13.57	60.60	50.60	-14.01	-37.03
0.312513	52.37	45.90	12.86	59.92	49.92	-14.02	-37.06
0.323531	51.88	45.43	12.40	59.65	49.65	-14.22	-37.25
0.346374	50.47	44.01	11.28	59.11	49.11	-15.10	-37.83
0.363648	49.99	43.53	10.52	58.70	48.70	-15.17	-38.18
0.388281	49.39	42.97	9.62	58.11	48.11	-15.14	-38.49
0.413819	48.37	41.94	8.97	57.61	47.61	-15.67	-38.64
0.446384	47.51	41.09	8.14	57.00	47.00	-15.91	-38.86
0.499091	45.94	39.63	6.67	56.02	46.02	-16.39	-39.35
0.505796	45.81	39.44	6.41	56.00	46.00	-16.56	-39.59
0.520675	45.53	39.13	6.17	56.00	46.00	-16.87	-39.83
0.574050	45.60	39.34	6.37	56.00	46.00	-16.66	-39.63
0.604141	45.85	39.56	6.68	56.00	46.00	-16.44	-39.32
0.612006	45.91	39.65	6.68	56.00	46.00	-16.35	-39.32
0.613450	45.91	39.65	6.68	56.00	46.00	-16.35	-39.32
0.626433	45.70	39.49	6.49	56.00	46.00	-16.51	-39.51
0.646808	45.21	38.90	5.94	56.00	46.00	-17.10	-40.06
0.664715	44.36	38.12	5.17	56.00	46.00	-17.88	-40.83
0.681103	43.30	37.15	4.21	56.00	46.00	-18.85	-41.79
0.715371	40.99	34.79	1.93	56.00	46.00	-21.21	-44.07
0.724984	40.19	34.10	1.25	56.00	46.00	-21.90	-44.75
0.778600	36.48	30.42	-1.64	56.00	46.00	-25.58	-47.64
0.790458	35.73	29.65	-2.28	56.00	46.00	-26.35	-48.28
0.815864	34.20	28.12	-3.57	56.00	46.00	-27.88	-49.57
0.823878	33.71	27.69	-3.92	56.00	46.00	-28.31	-49.92
0.868911	31.28	25.26	-5.75	56.00	46.00	-30.74	-51.75
0.885866	30.50	24.40	-6.29	56.00	46.00	-31.60	-52.29
0.917284	28.79	22.76	-7.26	56.00	46.00	-33.24	-53.26
0.929960	28.40	22.19	-7.57	56.00	46.00	-33.81	-53.57
0.973466	26.49	20.34	-8.56	56.00	46.00	-35.66	-54.56
1.143895	22.21	15.64	-8.04	56.00	46.00	-40.36	-54.04
7.373165	15.66	13.12	10.24	60.00	50.00	-46.88	-39.76
7.988734	13.90	11.02	9.38	60.00	50.00	-48.98	-40.62
9.215746	18.11	16.20	12.45	60.00	50.00	-43.80	-37.55

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Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	Avg Amp (dBuV)	QP Limit (dBuV)	Avg Limit (dBuV)	QP Margin (dB)	Avg Margin (dB)
10.444260	18.71	16.03	12.25	60.00	50.00	-43.97	-37.75
11.674713	17.21	15.77	13.71	60.00	50.00	-44.23	-36.29
11.675164	17.14	15.61	13.00	60.00	50.00	-44.39	-37.00
12.904990	18.26	16.54	15.29	60.00	50.00	-43.46	-34.71
13.518620	14.31	11.16	5.77	60.00	50.00	-48.84	-44.23
14.563750	20.25	17.78	16.11	60.00	50.00	-42.22	-33.89
14.564096	19.96	17.65	15.96	60.00	50.00	-42.35	-34.04
14.564545	20.18	17.47	15.57	60.00	50.00	-42.53	-34.43
15.359859	17.30	14.91	11.60	60.00	50.00	-45.09	-38.40
15.362236	18.11	14.86	11.73	60.00	50.00	-45.14	-38.27
16.802445	16.41	14.30	12.87	60.00	50.00	-45.70	-37.13
16.803265	16.61	14.42	13.25	60.00	50.00	-45.58	-36.75
17.818096	16.04	15.04	13.63	60.00	50.00	-44.96	-36.37
17.820618	16.52	14.71	13.34	60.00	50.00	-45.29	-36.66
19.662779	19.92	17.46	13.22	60.00	50.00	-42.54	-36.78
20.276656	17.51	14.82	11.77	60.00	50.00	-45.18	-38.23
20.278091	17.23	14.41	11.43	60.00	50.00	-45.59	-38.57
21.505628	20.08	18.31	16.49	60.00	50.00	-41.69	-33.51
22.120105	25.66	23.52	18.61	60.00	50.00	-36.48	-31.39
22.734503	25.81	24.41	22.84	60.00	50.00	-35.59	-27.16
23.349341	24.22	21.63	15.95	60.00	50.00	-38.37	-34.05
23.962928	27.59	25.85	23.27	60.00	50.00	-34.15	-26.73
23.964374	29.55	26.09	23.18	60.00	50.00	-33.91	-26.82
25.192040	21.39	18.80	15.59	60.00	50.00	-41.20	-34.41
25.192261	20.83	18.85	15.56	60.00	50.00	-41.15	-34.44
25.807150	21.44	19.30	16.21	60.00	50.00	-40.70	-33.79
27.035971	24.15	22.29	18.70	60.00	50.00	-37.71	-31.30
27.036209	24.25	22.44	18.98	60.00	50.00	-37.56	-31.02
27.650863	18.12	16.39	13.85	60.00	50.00	-43.61	-36.15
28.001589	20.30	17.17	13.44	60.00	50.00	-42.83	-36.56
29.495746	18.48	16.13	13.49	60.00	50.00	-43.87	-36.51

RF EXPOSURE

Per CFR47 Part15.247(b)(4) and Part1.1307(b)(1), equipment shall be operated in such a way as to not expose the public to RF energy levels in excess of FCC guidelines.

Limits for Exposure (MPE) From FCC OET Bulletin 65 Edition 97-01.

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

Prediction of MPE (Maximum Permitted Exposure)

Equation from Page 18 of OET65.

$S = PG/4\pi R^2$

Where:
S= power density
P= power input to the antenna
G= power gain of the antenna (Numeric relative to isotropic radiator)
R= distance to the center of radiation of the antenna

Antenna Model Numbers, Worst Case Gain used in calculation.
MEXC902SM, ¼ wave, Manufactured by Maxrad, Gain 2.2(dBi)
C161AM-925R, ½ wave loaded, Manufactured by Nearson, Gain 2.5(dBi)

Peak input to the antenna (mW): 10

Antenna Numeric Gain: 1.334

Prediction distance from antenna center (cm): 20

S at the prediction distance (mW/cm^2): 0.003

Limit for general/uncontrolled exposure(mW/cm^2): 0.6 at 900MHz

CONCLUSION:

This device was found to have a predicted power density below the FCC guidelines limits for uncontrolled/general population exposure.

NOTES AND COMMENTS

(Special conditions unique to this test)

Output power and frequency were examined with a power supply at 6V and 14V DC input with no degradation/change in performance of the EUT with respect to compliance. Testing was conducted with fresh alkaline 9V batteries.

NOTE FROM 15.247 of FCC RULES

Note: Spread spectrum systems are sharing these bands on a noninterference basis with systems supporting critical Government requirements that have been allocated the usage of these bands, secondary only to ISM equipment operated under the provisions of Part 18 of this Chapter. Many of these Government systems are airborne radiolocation systems that emit a high EIRP which can cause interference to other users. Also, investigations of the effect of spread spectrum interference to U. S. Government operations in the 902-928 MHz band may require a future decrease in the power limits allowed for spread spectrum operation.

RSS-210 Section 15

For systems that do not employ low gain integral antennas (e.g. spread spectrum systems of section 6.2.2(o)), a notice in the **user manual** is required, as follows or equivalent:

"The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb"