AHD
EMC Laboratory
92723 M-152, Dowagiac, MI 49047 USA
Phone: (616) 424-7014
www.ahde.com

EXHIBIT E: REPORT OF MEASUREMENTS [2.1033(B6)]

Test Report for FCC ID: CB2DONHL3

FCC Part 2.1031, Part 15 Subpart C(15.231)

Report #0100436F
Issued 08/08/01

TRANSMITTER MODEL CB2DONHL3 OF HOMELINK® III SERIES

Prepared for: Mr. David Blaker
Johnson Controls Interiors, LLC
One Prince Center
Holland, MI 49423

Test Date(s): June 28-29, 2001

data recorded by

Ted Chaffee, NCE
Test Engineer, AHD

witnessed by

Craig Harder

This report prepared by:

Ted Chaffee, NCE
Technical Manager/Test Engineer, AHD

TABLE OF CONTENTS

Statements Concerning this Report

Test Traceability:
The calibration of all measuring and test equipment and the measured data using this equipment are traceable to the National Institute for Standards and Technology (NIST).

Limitations on results:
The test results contained in this report relate only to the Item(s) tested. Any electrical or mechanical modification made to the test item subsequent to the test date shall invalidate the data presented in this report. Any electrical or mechanical modification made to the test item subsequent to this test date shall require an evaluation to verify continued compliance.

Limitations on copying:
This report shall not be reproduced, except in full, without the written approval of AHD.

Limitations of the report:
This report shall not be used to claim product endorsement by NVLAP, FCC, or any agency of the US Government.

Statement of Test Results Uncertainty: Following the guidelines of NAMAS publication NIS81 and NIST Technical Note 1297, the Measurement Uncertainty at a 95% confidence level is determined to be: ±3.6 dB

Manufacturer/Applicant [2.1033(b1)]

The manufacturer and applicant:

JOHNSON CONTROLS INTERIORS, LLC.
One Prince Center
Holland, Michigan 49423

Measurement/Test Site Facility & Equipment

Test Site [2.948, 2.1033(b6)]

The AHD test facility is centered on 9 acres of rural property near Sister Lakes, Michigan. The mailing address is 92723 M-152, Dowagiac, Michigan 49047. This test facility is NVLAP accredited (LabCode 200129-0). It has been fully described in a report filed with the FCC and Industry Canada. The original report filed with the FCC is, dated November 5, 1996, was accepted by the FCC in a letter dated January 15, 1997 and reconfirmed July 14, 2000, (31040/SIT 1300F2). The original report filed with Industry Canada, dated August 11, 1998, was accepted via a letter dated September 1, 1998, (file:IC3161).

Measurement Equipment Used [2.947(d), 15.31(b)]

Equipment	Model	S/N	Last Cal Date	Calibration Interval
HP EMI Receiver system	HP 8546A			
RF Filter Section	HP-85460A	3448A00283	24-Aug-00	12 month
RF Receiver Section	HP-85462A	3625A00342	24-Aug-00	12 month
EMCO BiconiLog Antenna	3142	1077	28-Jul-00	12 months
Double Ridged Horn	ONO91202-2	A00329	17-Apr-01	12 months
(3-M) Type 129FF Ultra Flex LowLoss	RG58/U	9910-12	08-Jun-01	6 months
(3-M) LMR-400 Ultra Flex	LMR400	9812-11	08-Jun-01	6 months
(10-M) Amelco 50ohm Coax	RG213/U	9903-10ab	08-Jun-01	6 months
50ohm Coax	RG223/U	9802302	11-Jun-01	12 months

Measurement Environment

The tests were performed with the equipment under test, and measurement equipment inside the all-weather enclosure. Ambient temperature was 22deg.C., the relative humidity 40%.

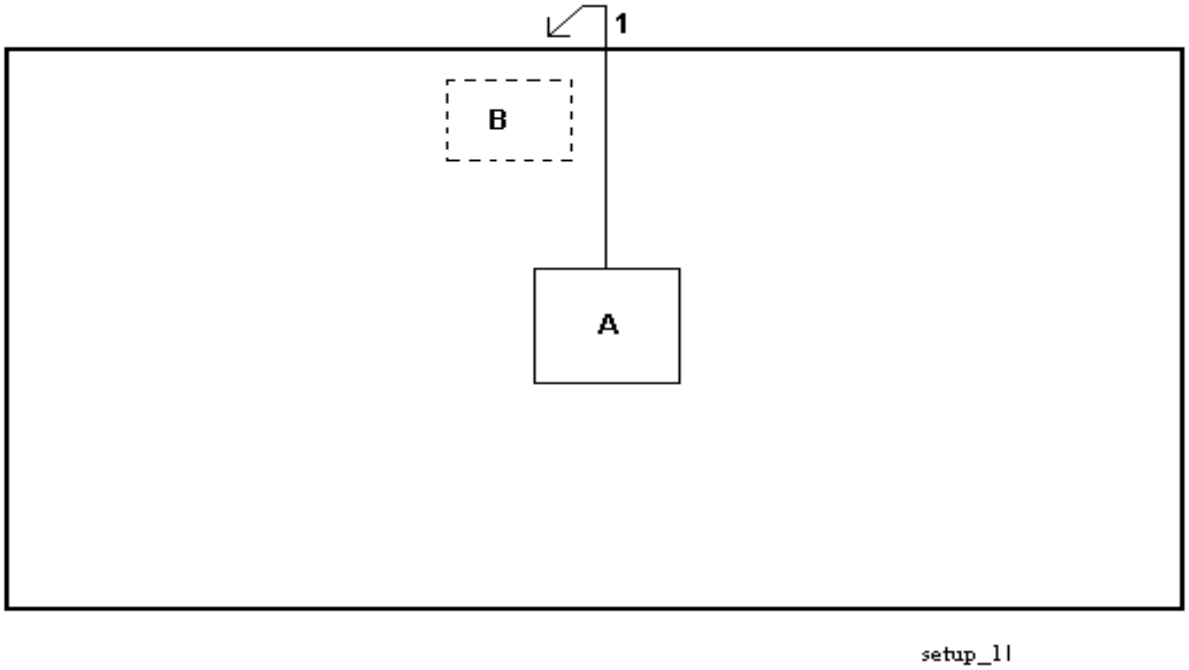
Tested Configuration /Setup: [2.1033(b8)]

Support Equipment & Cabling

Setup Diagram Legend	Description	Model	Serial No. / Part No.	EMC Consideration
A	[EUT] Universal Garage Door Opener	[JCI] CB2DONHL3	3S00252	FCC ID: CB2DONHL3
B	12V DC Power Supply	[Trygon] DL40-1	7968152	Located on the turntable base below the EUT table.
1	Power Supply Cable Harness	--	--	1.5 meters, Unshielded, 2-lead lightly twisted cable harness.

Setup Diagram

Note: Setup photographs are located in Attached Electronic File, Exhibit E.



BASIC EUT SETUP
(Legend designation is above)

Summary of Results:

1. This test series evaluated the Equipment Under Test to FCC Part 15, SubPart C.
2. The system tested is compliant to the requirement of CFR 47, FCC Part 15, SubPart C for periodic operation in the allowed frequency bands above 70MHz, (Part 15.231).
3. The equipment under test was received on June 28, 2001 and this test series commenced on June 28, 2001.
4. The line conducted emission testing does not apply to this product. The device is powered from a 12 volt automobile source.
5. The frequencies selected for final evaluation include 288MHz, 310MHz, and 418MHz. This is in accordance with 47 CFR 15.31(m). The 310MHz was selected as a mid-range frequency because it is the predominant frequency used in controlling garage doors. Past correspondence with the FCC regarding the selection of frequencies and test setup suggest this judgment as appropriate.
6. Occupied Band Width of the transmitted signal, at the 20dB point, nearest the limit was measured to be 458KHz. This measurement occurred with the EUT transmitting at 288MHz with a pulse modulation of 30% duty cycle. This measurement is within the allowed 720KHz bandwidth. The greatest value of occupied bandwidth was measured to be 600KHz. This measurement occurred with the EUT transmitting at 418MHz with a pulse modulation of 30% duty cycle. This measurement is within the allowed 1045KHz bandwidth.
7. The preliminary scan for spurious emissions conducted in a shielded room indicated low level spurious signals.
8. The digital spurious emissions, nearest the limit, occurred at 387.8MHz. The quasi-peak level was measured to be 16.9dBuV/m which is29.1dB below the FCC Class B limit.
9. The field strength level of the fundamental was measured for 288MHz, 310MHz, and 418MHz. The evaluation showed the emission nearest the limit occurred while operating at 310MHz with 500Hz pulsed modulation at a 50% duty cycle. The EUT was positioned on the ‘side’ and the receive antenna oriented in the horizontal polarization. This signal was measured to be 0.9dB below the limit of 75.3dBuV/m (5833uV/m).
10. The evaluation of the field strength levels of the harmonics showed the emission nearest the limit occurred while operating at 288MHz with 500Hz pulsed modulation at 30% duty cycle. The EUT was positioned on the ‘side’; and the receive antenna oriented in the vertical polarization. This signal, at 576MHz, was measured to be 12.3dB below the limit of 53.8dBuV/m (490uV/m). 930MHz, the third harmonic of 310MHz, fell in a nearby ambient which measured 10.2dB below the limit of 55.3dBuV/m (583uV/m).
11. The average value of the coarse tune pulses over a 100mSec time, nearest the limit, occurred at 310MHz. The average measurement was determined to be 2622uV/m which is 6.9dB below the limit of 5,833uV/m..
12. The average value of the fine tune pulses over a 100mSec time, nearest the limit, occurred at 310MHz. The average measurement was determined to be 1009uV/m which is 15.2dB below the limit of 5,833uV/m.

Changes made to achieve compliance

1. NONE

Standards Applied to Test: [2.1033(b6)]

ANSI C63.4 - 1992, Appendix I
CFR47 FCC Part 2, Part 15, SubPart C, 15.231 Intentional Radiator; SubPart B, Digital Device

Test Methodology: [2.1033(b6)]

The pictures in this report, showing test setups, indicate the agreed upon configuration of testing for this product-type.

For the testing, the EUT was installed in the automotive rearview mirror for which it has been designed. The system was placed at the center of the table 80cm above the ground plane pursuant to ANSI C63.4 for stand-alone equipment. The 12volt supply harness was routed to the edge of the long side of the table then down to the power supply located on the turntable base.

The line conducted emission testing was not performed on this product. In its final configuration the product is powered from an automobile 12 volt system only.

Radiated

The system was placed upon a 1 x 1.5 meter non-metallic table 80cm above the open field site ground plane in the prescribed setup per ANSI C63.4, Figure 9(c).

The table sits upon a remote controlled turntable. The receiving antenna, located at the appropriate standards distance of 3 or 10 meters from the table center, is also remote controlled.

The principle settings of the EMI Receiver for radiated testing include:

IF Bandwidth:	120KHz for frequencies less than 1GHz.
	1 MHz for frequencies greater than 1GHz.
Detector Function:	Peak Mode
	The Average levels were determined mathematically based upon the duty cycle of the pulsed modulation of the transmitted signal.

At frequencies up to 1000MHz a BiconiLog broadband antenna was used for measurements.

At frequencies above 1000MHz a double-ridge Horn broadband antenna was used for measurements.

During the evaluation the EUT was transmitting continuously.

The turntable was rotated 360 degrees and the receiving antenna height varied from 1 to 4 meters to search out the highest emissions.

Preliminary tests were done at 288MHz, 310MHz, 340MHz, 365MHz, 390MHz, and 418MHz. The final measurements were made at a low band frequency (288MHz), a mid band frequency (310MHz), and a high band frequency (418MHz) pursuant to the requirements of 47CFR 15.31(m). At each frequency the EUT was placed in three orthogonal positions. At each position the 500Hz pulse modulation was adjusted to a 30%, 50%, and 80% duty cycle. At each duty cycle, measurements were taken with the receive antenna in vertical and horizontal positions.

The unit was evaluated up to the tenth harmonic of the fundamental as an intentional radiator, and up to 1000MHz as a digital device.

The orthogonal positions of EUT are:

Flat Side End

FORMULAS AND SAMPLE CALCULATIONS:

THE HP8546A EMI Receiver has stored in memory the antenna and coax correction factors used in this test. The resultant Field Strength (FS) in dBuV/m presented by the HP8546A is the summation in decibels (dB) of the Received Level (RF), the Antenna Correction Factor (AF), and the Cable Loss Factor (CF).

Formula 1: FS(dBuV/m) = RF(dBuV) + AF(dB/m) +CF(dB)

The resultant Field Strength measurement is recorded using the peak hold detector of the HP8546A.

This recorded peak level is further corrected, by calculation, to an average level by a factor determined by the duty cycle of the pulsed modulation. The duty cycle factor is determined as outlined in Appendix I4 of the standard ANSI C63.4:1992.

Formula 2: Average Level(uV/m) = [Peak Level(uV/m)] x [duty cycle factor].

Formula 2a: Average Level(dBuV/m) = Peak Level)dBuV/m) + duty cycle factor(dB).

The duty cycle factor to apply is determined for the duty cycles of 30%, 50% and 80% as follows.

For 30% (0.30): duty cycle factor(dB) = 20*Log(0.3) = -10.46
For 50% (0.50): duty cycle factor(dB) = 20*Log(0.5) = -6.02
For 80% (0.80): duty cycle factor(dB) = 20*Log(0.8) = -1.94

As an example:

A measured peak level of 50% duty cycle pulse modulated signal is 500uV/m.
Calculated to dBuV/m is 20*Log(500) = 53.98dBuV/m Peak level.
Applying the duty cycle factor: Avg. Level(dBuV/m) = 53.98 - 6.02dB = 47.96dBuV/m.

Calculation of FCC limits Part 15.231

For the frequency range 260MHz - 470MHz, the limit is a linear interpolation between 3750uV/m and 12500uV/m where the limit at 260MHz is 3750uV/m and the limit at 470MHz is 12500uV/m.

A formula to calculate the limit is established with a ratio linearly equating the frequency range to the limit range.

$(F_0 - F_L) / (F_H - F_L) = (L_0 - L_L) / (L_H - L_L)$

where F_0 and L_0 represent the frequency in question and its limit
where F_L and L_L represent the lower frequency (260MHz) and its limit (3750uV/m).
Where F_H and L_H represent the higher frequency (470MHz) and its limit (12500uV/m).

The calculations for the frequencies included in the application are:

288MHz (288 - 260) / (470 - 260) = (L_0 - 3750) / (12500 - 3750)
(28 / 210) * (8750) = L_0 - 3750
L_0 = 1166.7 + 3750
L_0 = 4916.7 uV/m is LIMIT at 288MHz

310MHz (310 - 260) / (470 - 260) = (L_0 - 3750) / (12500 - 3750)
(50 / 210) * (8750) = L_0 - 3750
L_0 = 2083.3 + 3750
L_0 = 5833.3 uV/m is LIMIT at 310MHz

418MHz (418 - 260) / (470 - 260) = (L_0 - 3750) / (12500 - 3750)
(158 / 210) * (8750) = L_0 - 3750
L_0 = 6583.3 + 3750
L_0 = 10333.3 uV/m is LIMIT at 418MHz

The limit in dB terms is calculated as the result of 20 times the log of the uV/m limit.

288MHz dB limit is 20 * LOG(4916.7 uV/m) = 73.8 dBuV/m

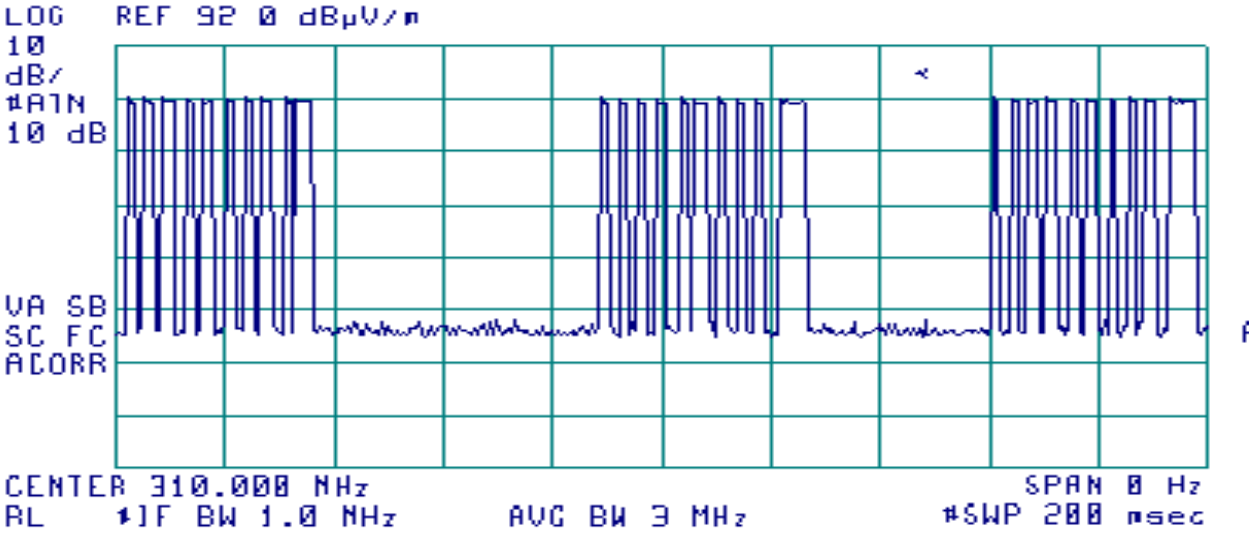
310MHz dB limit is 20 * LOG(5833.3 uV/m) = 75.3 dBuV/m

418MHz dB limit is 20 * LOG(10333.3 uV/m) = 80.3 dBuV/m

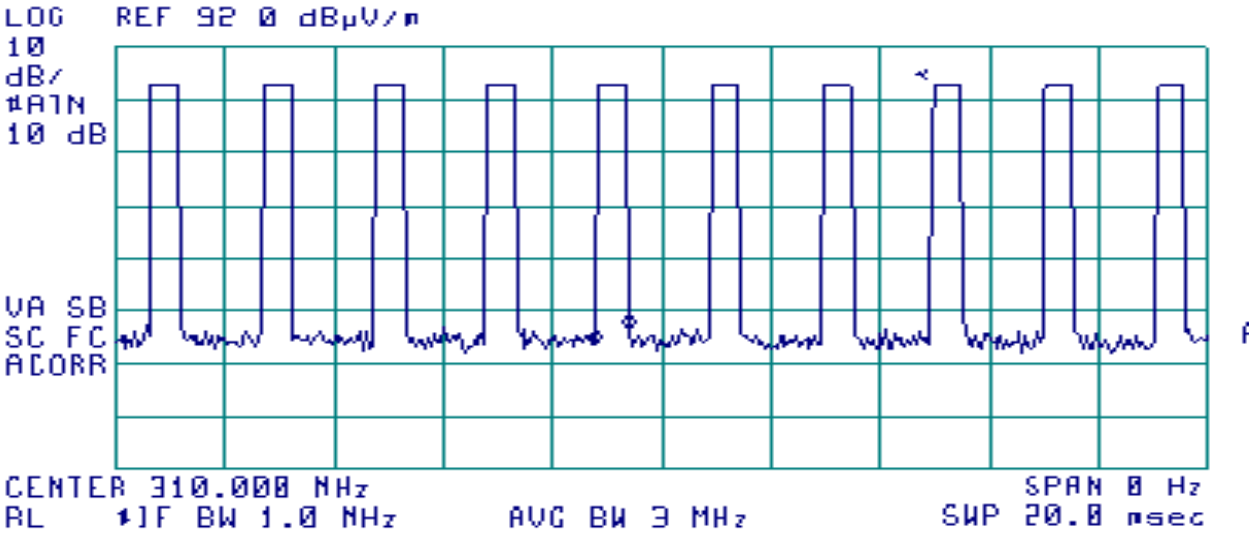
Test Data [2.1033(b6)]

Modulation Characteristics

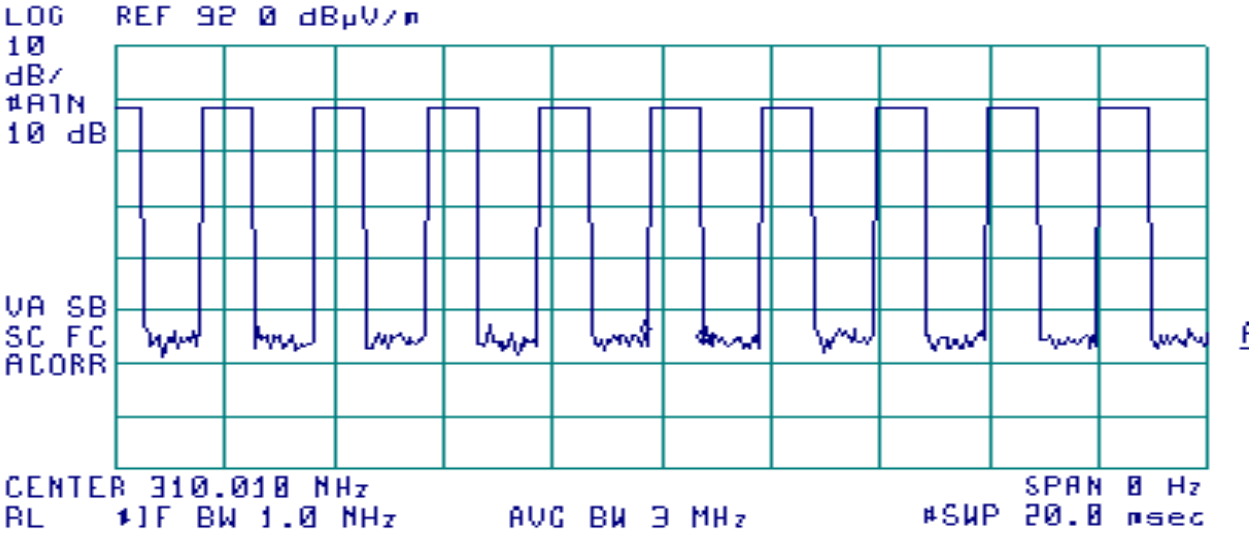
Typical encoding at 310MHz: Consisting of pulses of differing duty cycles.



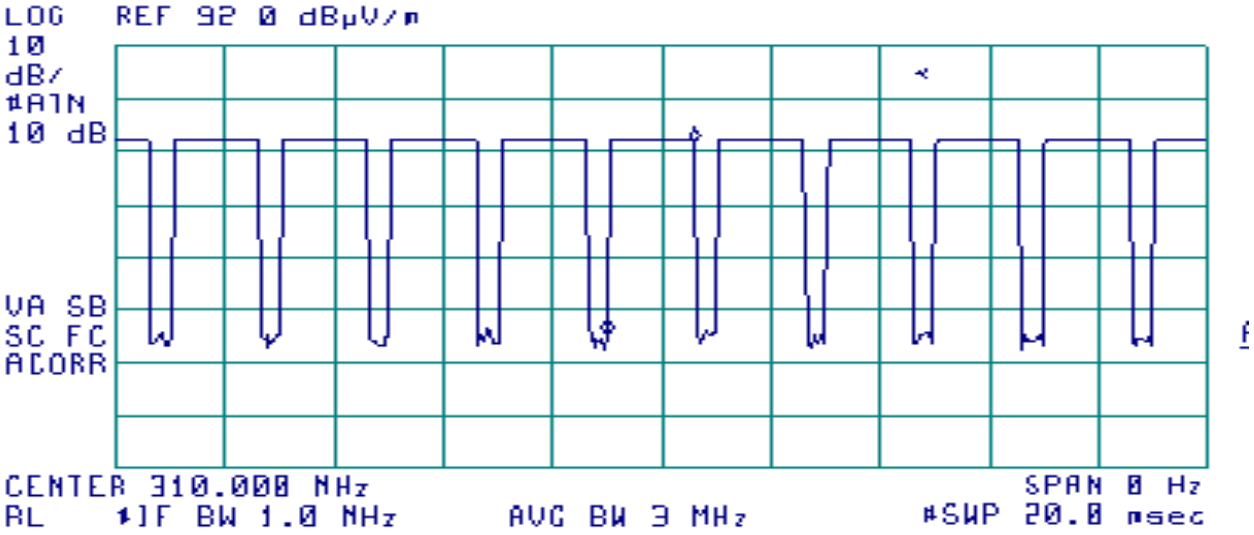
310MHz, 500Hz Modulation, 30% duty cycle



310MHz, 500Hz Modulation, 50% duty cycle



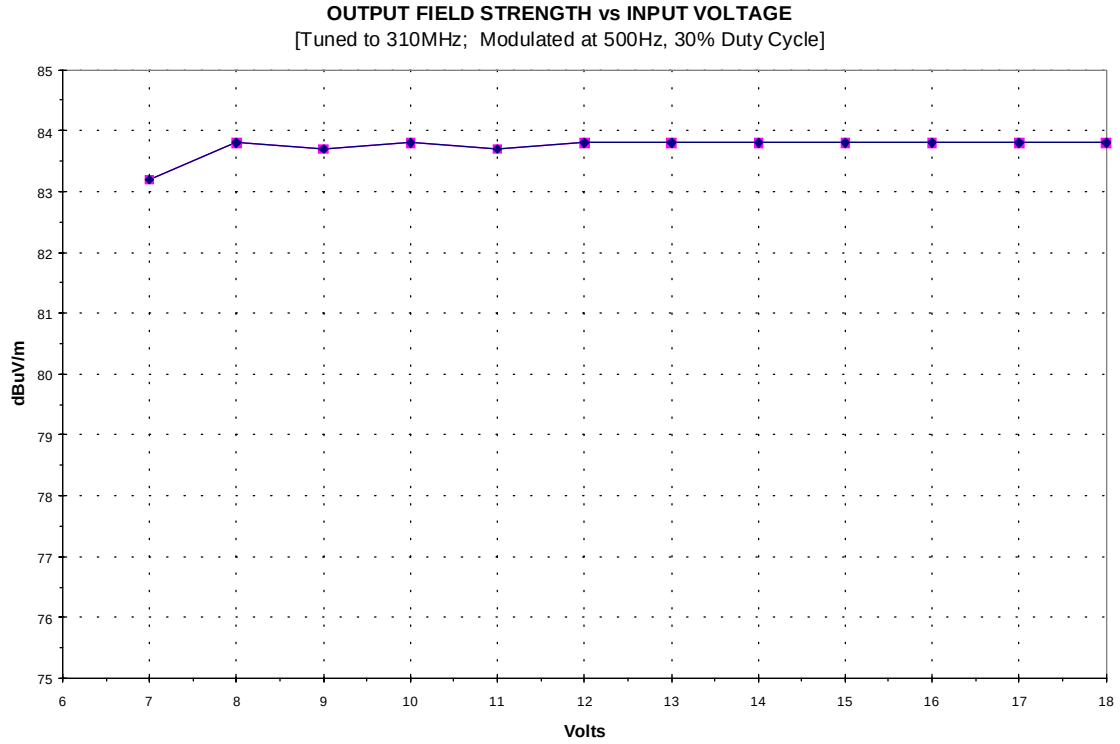
310MHz, 500Hz Modulation, 80% duty cycle



Relative Emission Level vs. Supply Voltage [15.31(e)]

The relative emission level as the supply voltage varied is presented in the charts below.

TX OUTPUT vs. Voltage LEVEL DUT= CB2DONHL3, 310MHz, 30%duty cycle	
Volt In	TX OutPut Pk dBuV/m
6	NoOperation
7	83.2
8	83.8
9	83.7
10	83.8
11	83.7
12	83.8
13	83.8
14	83.8
15	83.8
16	83.8
17	83.8
18	83.8



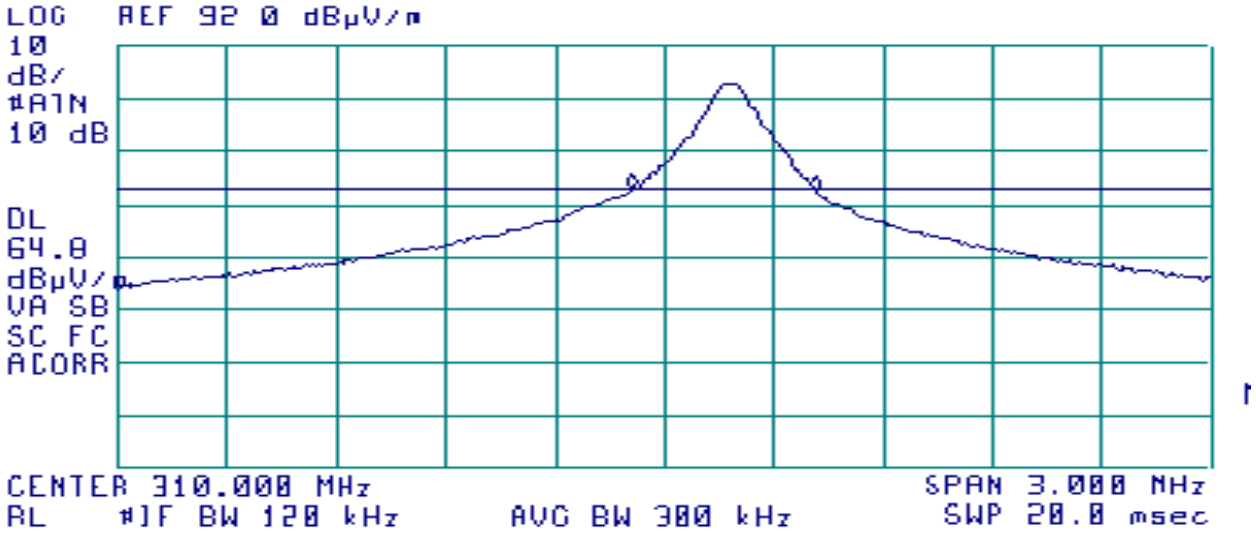
Occupied Bandwidth [15.231(c)]

The maximum allowed 20dB bandwidth is determined pursuant to 15.23(c). For fundamental signals between 70MHz and 900MHz the bandwidth allowed is 0.25% of the fundamental.

Formula 2: Allowed bandwidth = [Fundamental] x [.0025]

Fundamental (MHz)	Duty Cycle	Measured 20dB Bandwidth	LIMIT Fundamental * .0025
288	30%	458 KHz	720 KHz
"	50%	443 KHz	720 KHz
"	80%	458 KHz	720 KHz
310	30%	503 KHz	775 KHz
"	50%	473 KHz	775 KHz
"	80%	465 KHz	775 KHz
418	30%	600 KHz	1045 KHz
"	50%	510 KHz	1045 KHz
"	80%	510 KHz	1045 KHz

This chart shows a typical measured bandwidth signal.



Restricted Bands: [15.205]

The following frequency bands are restricted. Only spurious emissions are permitted at levels limited by 15.209:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.25
0.490-0.510	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

LIMIT @ 3meter: [15.209(a)]

30-88MHz	100uV/m	40dBuV/m
88-216MHz	150uV/m	43.5dBuV/m
216-960MHz	200uV/m	46dBuV/m
above 960MHz	500uV/m	54dBuV/m

Verification of no capability to tune within the Restricted Bands.

The unit is designed capable of tuning from 288MHz to 420MHz except that the Homelink® III firmware prevents the possibility of tuning to the restricted regions of 322-335.4MHz, 399.9-410Mhz, and the region 304-307MHz.

An exercise which attempted to train the units into these restricted bands demonstrated how well the firmware functioned. The unit could not be trained any closer than 1MHz to the restricted bands of 15.205 and no closer than 500KHz outside the band 304-307MHz.

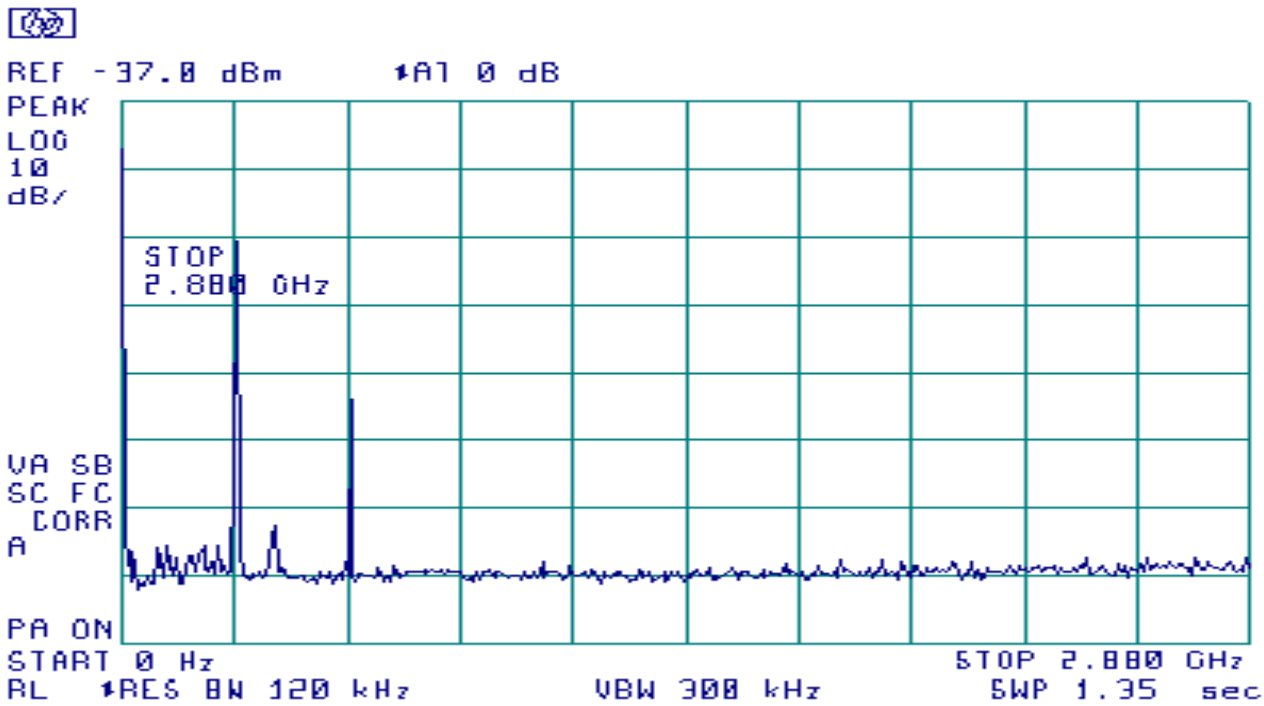
The spurious emissions observed in the restricted bands did not exceed the allowed limits for the restricted bands.

Radiated Field Strength Measurements: [15.231(b), 15.205]

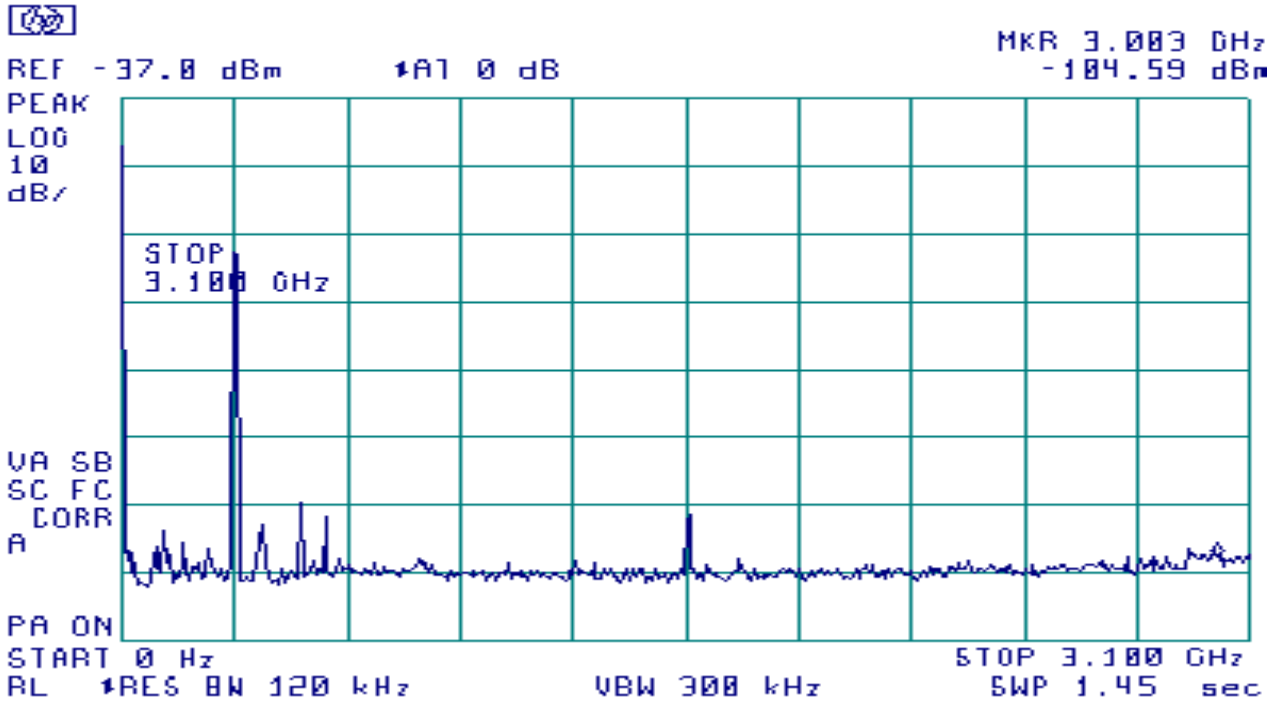
A scan of the CB2DONHL3 was made in a shielded room to study the emission profile of the EUT. These scans indicate there are low level spurious emissions from the unit other than the fundamental and its associated harmonics. These signals were measured at the 3-meter open area test site.

The first series of charts show the spectrum pattern of the EUT emissions. The levels indicated are not calibrated levels. Following the charts is a table of the measured levels at the 3-meter OATS.

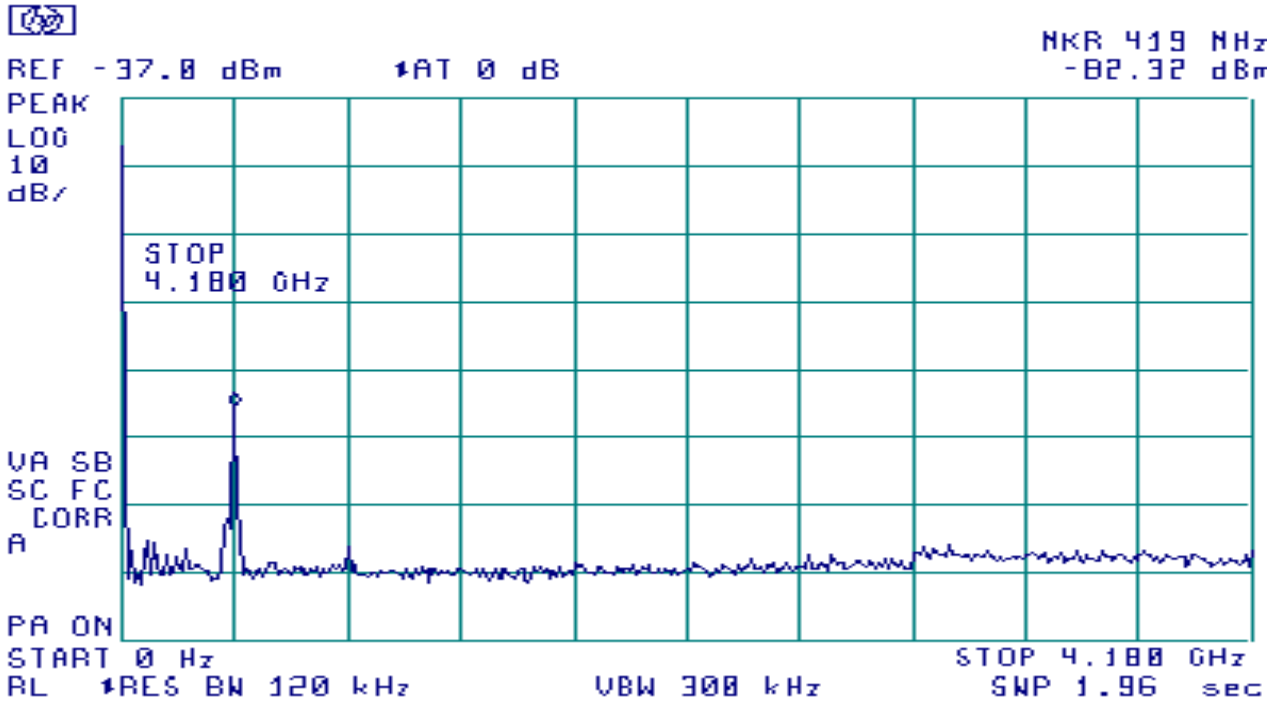
EUT trained to 288MHz operation



EUT trained to 310MHz operation

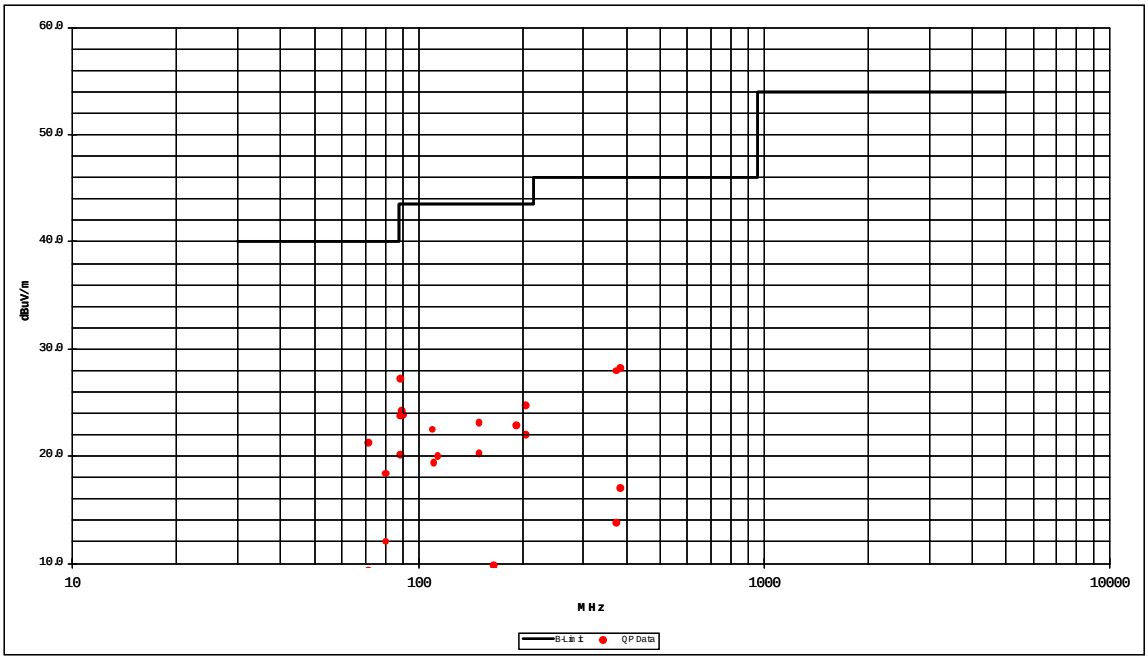


EUT trained to 418MHz operation.



Radiated Field Strength Measurements

Graph of Quasi-Peak Measurements



Tabulated Quasi-Peak Measurements.

Frequency MHz	Polarity	Quasi Peak Measurement dBuV/m	FCC Class B Limit dBuV/m	Margin dB		Included Cable + Antenna Factors dB/m
81.00	V	18.3**	40.0	-21.7		7.68
89.50	H	27.1**	43.5	-16.4		8.16
114.09	V	19.9**	43.5	-23.6		9.01
166.01	V	9.7**	43.5	-33.8		9.74
193.99	V	13.1**	43.5	-30.4		12.00
375.89	H	13.7**	46.0	-32.3		17.29
387.83	H	16.9	46.0	-29.1		17.59

The frequencies for measurements were determined by the suspect list generated from the shielded room prescan.
**These suspect signal levels were measured to be at or below the background noise and ambient.

Field Strength Measurements of Fundamental : [15.231(b)]

MEASUREMENT PROCEDURE:

1. The EUT was trained to one of the three test frequencies.
2. The EUT was trained to one of the three test duty cycles.
3. The EUT was setup to one of the three orthogonal positions.
4. Steps 1-3 were repeated to cover all positions, duty cycles, and frequencies.

DUT Tuned to transmit at 288MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
288	side	H	81.2	30%	-10.46	70.7	73.8	**3.1**	14.7
"	"	"	77.4	50%	-6.02	71.4	73.8	**2.4**	"
"	"	"	71.2	80%	-1.94	69.3	73.8	**4.5**	"

DUT Tuned to transmit at 310MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
310	side	H	84.7	30%	-10.46	74.2	75.3	**1.1**	15.1
"	"	"	80.4	50%	-6.02	74.4	75.3	**0.9**	"
"	"	"	74.6	80%	-1.94	72.7	75.3	**2.6**	"

DUT Tuned to transmit at 418MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
418	end	V	86.8	30%	-10.46	76.3	80.3	**4.0**	18.3
"	-	"	83.2	50%	-6.02	77.2	80.3	**3.1**	"
"	-	"	77.3	80%	-1.94	75.4	80.3	**4.9**	"

Field Strength Measurements of Harmonics: [15.231(b), 15.205]

DUT Tuned to transmit at 288MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
576	side	V	52.0	30%	-10.46	41.5	53.8	**12.3**	21.4
"	"	"	44.9	50%	-6.02	38.9	53.8	**14.9**	"
"	"	"	36.6	80%	-1.94	34.7	53.8	**19.1**	"
864	end	V	34 in ambient	30%	-10.46	<23.5	53.8	**>30.3**	25.3
"	-	"	34 in ambient	50%	-6.02	<28.0	53.8	**>25.8**	"
"	-	"	32 in ambient	80%	-1.94	<30.1	53.8	**>23.7**	"
1152	side	H	38 noise floor	30%	-10.46	<27.5	54.0	**>26.5**	28.7
"	-	"	38 noise floor	50%	-6.02	<32.0	54.0	**>22.0**	"
"	-	"	38 noise floor	80%	-1.94	<36.1	54.0	**>17.9**	"
1440	side	V	45.5	30%	-10.46	35.0	54.0	**19.0**	29.4
"	"	"	44.3	50%	-6.02	38.3	54.0	**15.7**	"
"	end	H	42.6	80%	-1.94	40.7	54.0	**13.3**	"
1728	side	V	41.3	30%	-10.46	30.8	54.0	**23.2**	30.3
"	"	"	41.1	50%	-6.02	35.1	54.0	**18.9**	"
"	"	"	39.5	80%	-1.94	37.6	54.0	**16.4**	"
2016	end	H	40.3	30%	-10.46	29.8	54.0	**24.2**	31.2
"	"	"	40.2	50%	-6.02	34.2	54.0	**19.8**	"
"	-	"	41 noise floor	80%	-1.94	<39.1	54.0	**>14.9**	"
2304	-	V	41 noise floor	30%	-10.46	<30.5	54.0	**>23.5**	32.3
	-	"	41 noise floor	50%	-6.02	<35.0	54.0	**>19.0**	
"	-	"	41 noise floor	80%	-1.94	<39.1	54.0	**>14.9**	"
2592	-	V	41 noise floor	30%	-10.46	<30.5	54.0	**>23.5**	33.1
"	-	"	41 noise floor	50%	-6.02	<35.0	54.0	**>19.0**	"
"	-	"	41 noise floor	80%	-1.94	<39.1	54.0	**>14.9**	"
2880	-	V	42 noise floor	30%	-10.46	<31.5	54.0	**>22.5**	33.3
"	-	"	42 noise floor	50%	-6.02	<36.0	54.0	**>18.0**	"
"	-	"	42 noise floor	80%	-1.94	<40.1	54.0	**>13.9**	"

DUT Tuned to transmit at 310MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
620	end	V	52.8	30%	-10.46	42.3	55.3	**13.0**	22.1
"	"	"	42.4	50%	-6.02	36.4	55.3	**18.9**	"
"	"	"	33.5	80%	-1.94	31.6	55.3	**23.7**	"
930	end	V	34.6	30%	-10.46	24.1	55.3	**31.2**	25.8
"	"	"	28.3 in ambient	50%	-6.02	<22.3	55.3	**>33.0**	"
"	"	"	47 in ambient	80%	-1.94	<45.1	55.3	**>10.2**	"
1240	side	V	42.2	30%	-10.46	31.7	54.0	**22.3**	29.0
"	end	H	38.2	50%	-6.02	32.2	54.0	**21.8**	"
"	side	V	38.7	80%	-1.94	36.8	54.0	**17.2**	"
1550	side	V	46.2	30%	-10.46	35.7	54.0	**18.3**	29.7
"	"	"	45.0	50%	-6.02	39.0	54.0	**15.0**	"
"	"	"	43.2	80%	-1.94	41.3	54.0	**12.7**	"
1860	side	V	40.6	30%	-10.46	30.1	55.3	**25.2**	30.7
"	-	"	40 noise floor	50%	-6.02	<34.0	55.3	**>21.3**	"
"	-	"	41 noise floor	80%	-1.94	<39.0	55.3	**>16.3**	"
2170	side	V	41.4	30%	-10.46	30.9	55.3	**24.4**	31.8
"	-	"	41 noise floor	50%	-6.02	<35.0	55.3	**>20.3**	"
"	-	"	41 noise floor	80%	-1.94	<39.0	55.3	**>16.3**	"
2480	-	V	41 noise floor	30%	-10.46	<30.5	55.3	**>24.8**	32.9
	-		41 noise floor	50%	-6.02	<35.0	55.3	**>20.3**	
"	-	"	41 noise floor	80%	-1.94	<39.0	55.3	**>16.3**	"
2790	-	V	41 noise floor	30%	-10.46	<31.5	54.0	**>22.5**	33.2
"	-	"	41 noise floor	50%	-6.02	<36.0	54.0	**>18.0**	"
"	-	"	41 noise floor	80%	-1.94	<40.0	54.0	**>14.0**	"
3100	-	V	41 noise floor	30%	-10.46	<31.5	54.0	**>22.5**	33.7
"	-	"	41 noise floor	50%	-6.02	<36.0	54.0	**>18.0**	"
"	-	"	41 noise floor	80%	-1.94	<40.0	54.0	**>14.0**	"

DUT Tuned to transmit at 418MHz

Freq. MHz	DUT position	Ant. Pol.	Corrected Data Peak Detector dBuV/m	Duty Cycle %	Duty Cycle Factor dB	Calculated Average Level dBuV/m	FCC Limit dBuV/m	Margin dB	Cable +Ant. Factor dB+dB/m
836	side	V	53.4	30%	-10.46	42.9	60.3	**17.4**	25.0
"	"	"	46.7	50%	-6.02	40.7	60.3	**19.6**	"
"	"	"	38.0	80%	-1.94	36.1	60.3	**24.2**	"
1254	side	V	48.6	30%	-10.46	38.1	54.0	**15.9**	29.0
"	"	"	43.1	50%	-6.02	37.1	54.0	**16.9**	"
"	"	"	41.5	80%	-1.94	39.6	54.0	**14.4**	"
1672	side	V	46.9	30%	-10.46	36.4	54.0	**17.6**	30.1
"	"	"	43.0	50%	-6.02	37.0	54.0	**17.0**	"
"	end	V	41.5	80%	-1.94	39.6	54.0	**14.4**	"
2090	end	H	47.5	30%	-10.46	37.0	60.3	**23.3**	31.5
"	"	"	43.6	50%	-6.02	37.6	60.3	**22.7**	"
"	flat	"	42.4	80%	-1.94	40.5	60.3	**19.8**	"
2508	side	V	41 noise floor	30%	-10.46	<30.5	60.3	>**29.8**	33.0
"	-	"	41 noise floor	50%	-6.02	<35.0	60.3	>**25.3**	"
"	-	"	41 noise floor	80%	-1.94	<39.1	60.3	>**21.2**	"
2926	-	V	42 noise floor	30%	-10.46	<31.5	60.3	>**28.8**	33.3
"	-	"	42 noise floor	50%	-6.02	<36.0	60.3	>**24.3**	"
"	-	"	42 noise floor	80%	-1.94	<40.1	60.3	>**20.2**	"
3344	-	V	42 noise floor	30%	-10.46	<31.5	60.3	>**28.8**	34.4
	-		42 noise floor	50%	-6.02	<36.0	60.3	>**24.3**	
"	-	"	42 noise floor	80%	-1.94	<40.1	60.3	>**20.2**	"
3762	-	V	42 noise floor	30%	-10.46	<31.5	54.0	>**22.5**	34.8
"	-	"	42 noise floor	50%	-6.02	<36.0	54.0	>**18.0**	"
"	-	"	42 noise floor	80%	-1.94	<40.1	54.0	>**13.9**	"
4180	-	V	42 noise floor	30%	-10.46	<31.5	54.0	>**22.5**	35.0
"	-	"	42 noise floor	50%	-6.02	<36.0	54.0	>**18.0**	"
"	-	"	42 noise floor	80%	-1.94	<40.1	54.0	>**13.9**	"

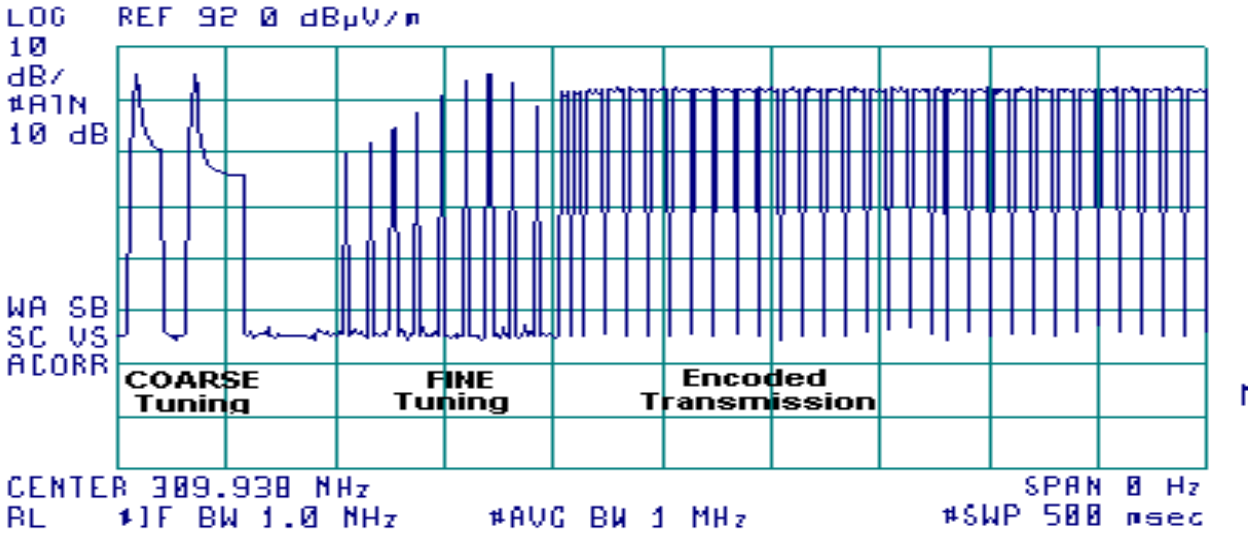
Calculation of Field Strength of Tuning Pulses: [15.231(b)], 15.31(c)]

The tuning pulses are generated each time the CB2DONHL3 is activated.

The tuning pulse sequence is: During the first 100mSec of activation two pulses of a 'coarse' tune. During the second 100mSec of activation are nine pulses of a 'fine' tune. At approximately 200mSec after activation the encoded transmission begins.

The signal levels of the tuning pulses were maximized by maximizing the signal levels of the pulse modulated transmission. The antenna height and turntable azimuth for maximum emission levels were adjusted while measuring the field strength of the pulse modulated transmissions.

A typical tuning pulse sequence is presented in this figure below.



To determine level of the tuning pulses for comparison to the limits, the following procedure was used.

MEASUREMENT PROCEDURE:

1. The EUT was trained to each of the three test frequencies at 30% duty cycle of the 500Hz modulating pulse.
2. The HP8456A EMI Receiver was adjusted to a fundamental frequency and set at 0Hz span, with 1MHz IF Bandwidth.
3. The trigger level was adjusted to capture the pulses of interest.
4. The EUT was activated and a single trace recorded on the Receiver in order to capture the tuning pulses.
5. The captured trace was digitally stored. The stored data points (400 data points for a full screen trace) were then used in calculations to determine the levels of the pulses.

CALCULATION OF THE FIELD STRENGTH OF THE TUNING PULSES.[15.35(c)]

Pursuant to 47 CFR 15.35(c), the field strength is determined by averaging over ONE complete pulse train up to 100mSec, including blanking intervals.

1. First was determined the number of data points captured which represented 100mSec span of time. There are 400 data points stored for one complete trace. The scan rate of the HP8546A receiver was set to capture the tuning pulses.

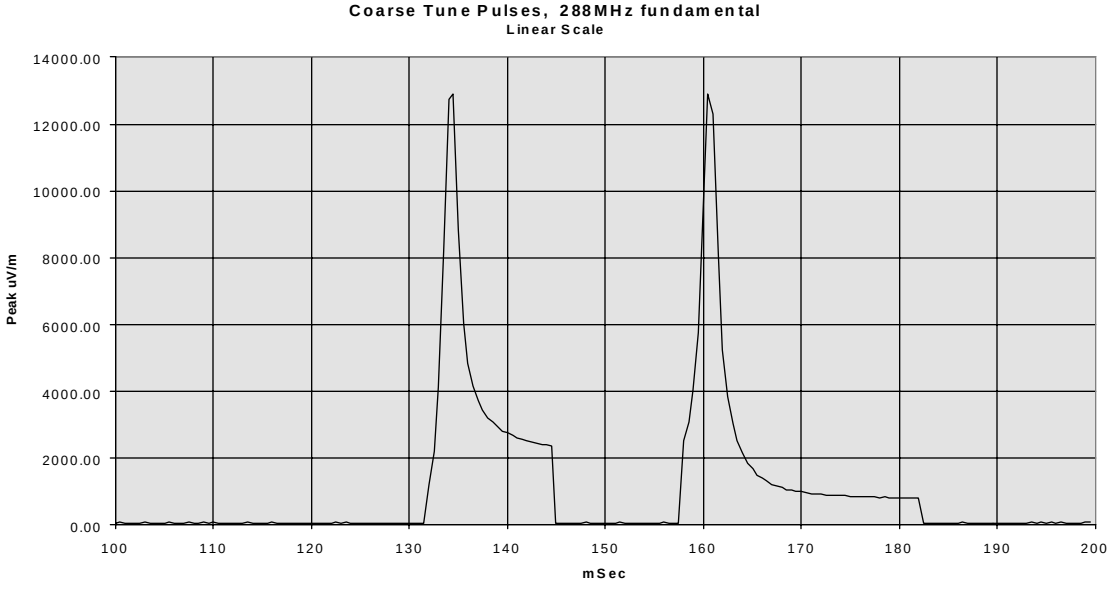
   Therefore: Number of data points per 100mSec
   = 100mSec * (400pts/scan) / (No. of mSec/scan).
   Example: If the scan rate is set at 200mSec, then the number of data points per 100mSec is 100mSec * (400pts / 200mSec) = 200 pts.

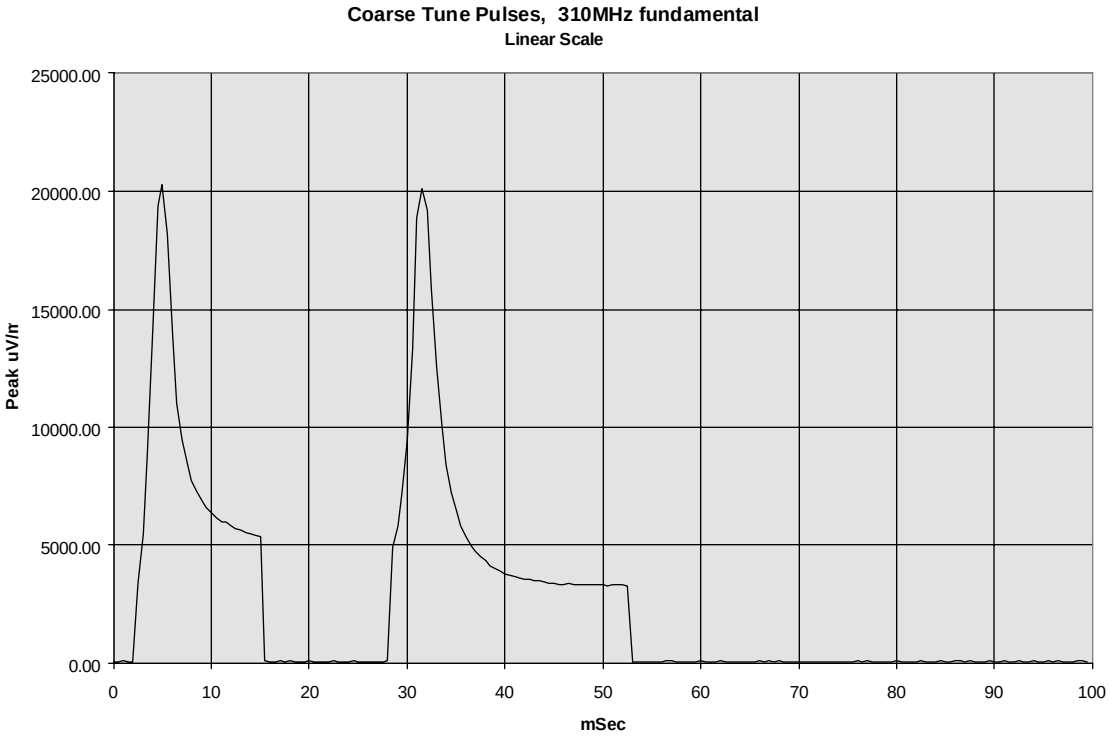
2. The AVERAGE field strength level (uV/m) within the 100mSec is then determined by dividing SUM of the levels (uV/m) of all data points by the number of data points.

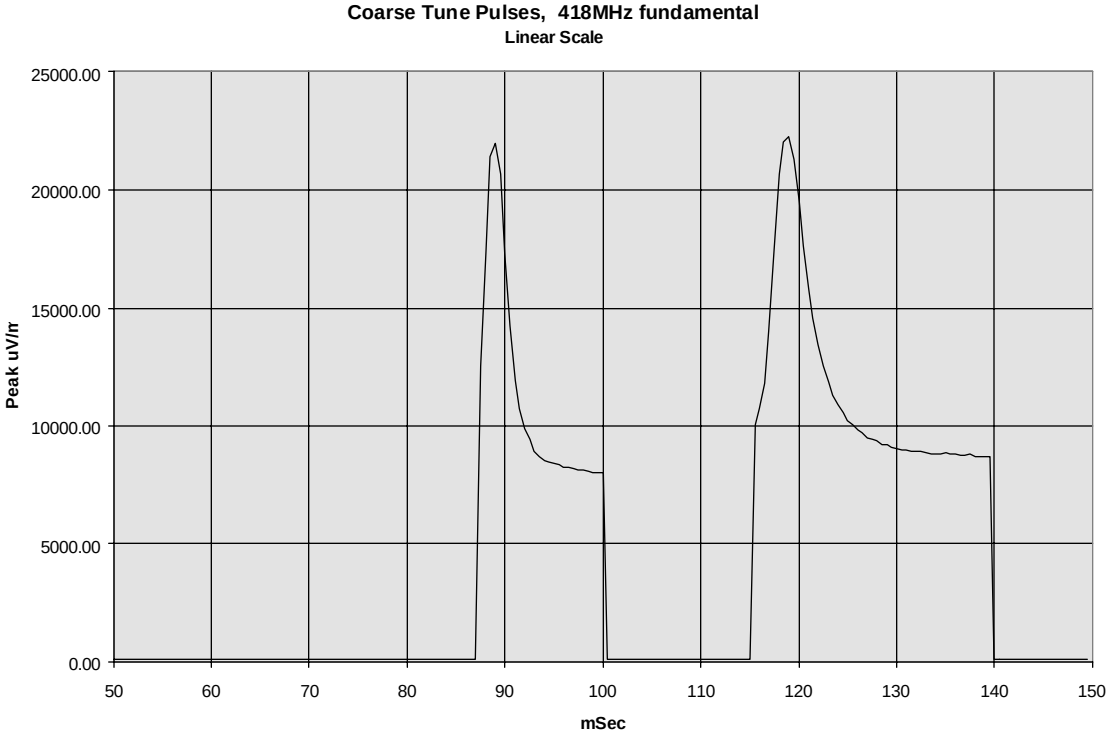
   Formula 3: Average Field Intensity

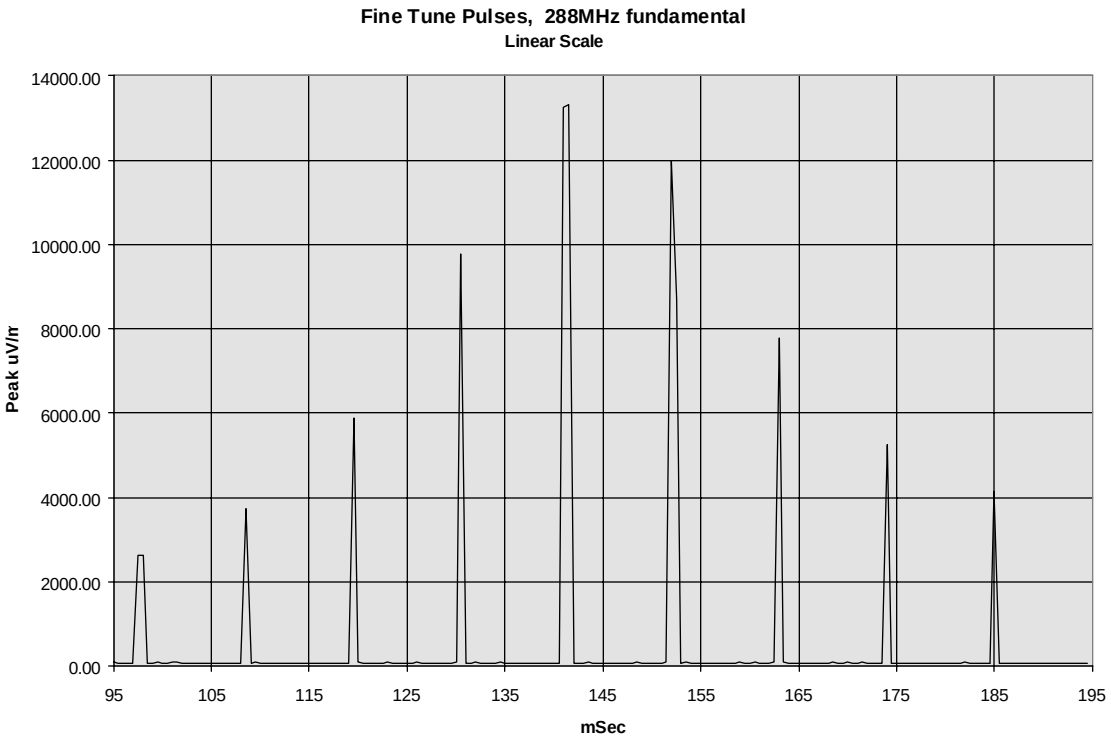
$$\text{Avg. F.I.} = \frac{\sum_{n=1}^{\text{no. of data pts}} (\text{Level}_n)\text{uV/m}}{\text{(number of data points)}}$$

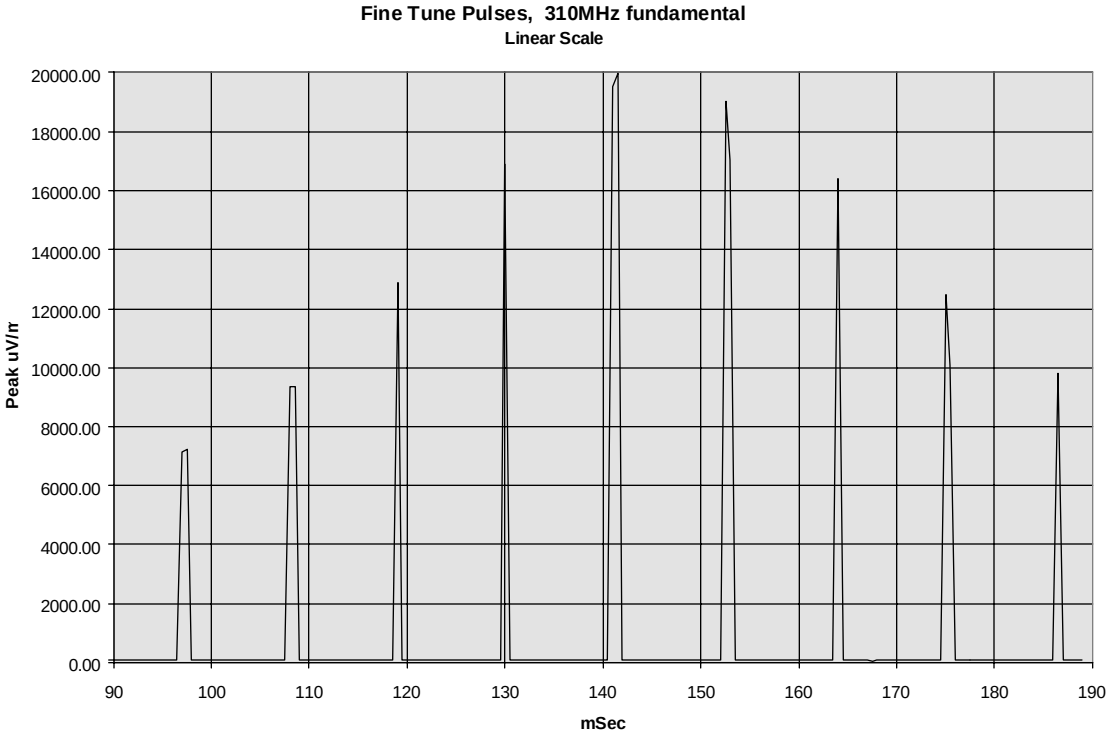
The charts that follow are the reproduction of the coarse tune pulse traces using number of data points representing 100mSec sweep time from the screen display of the HP8546A EMI receiver.

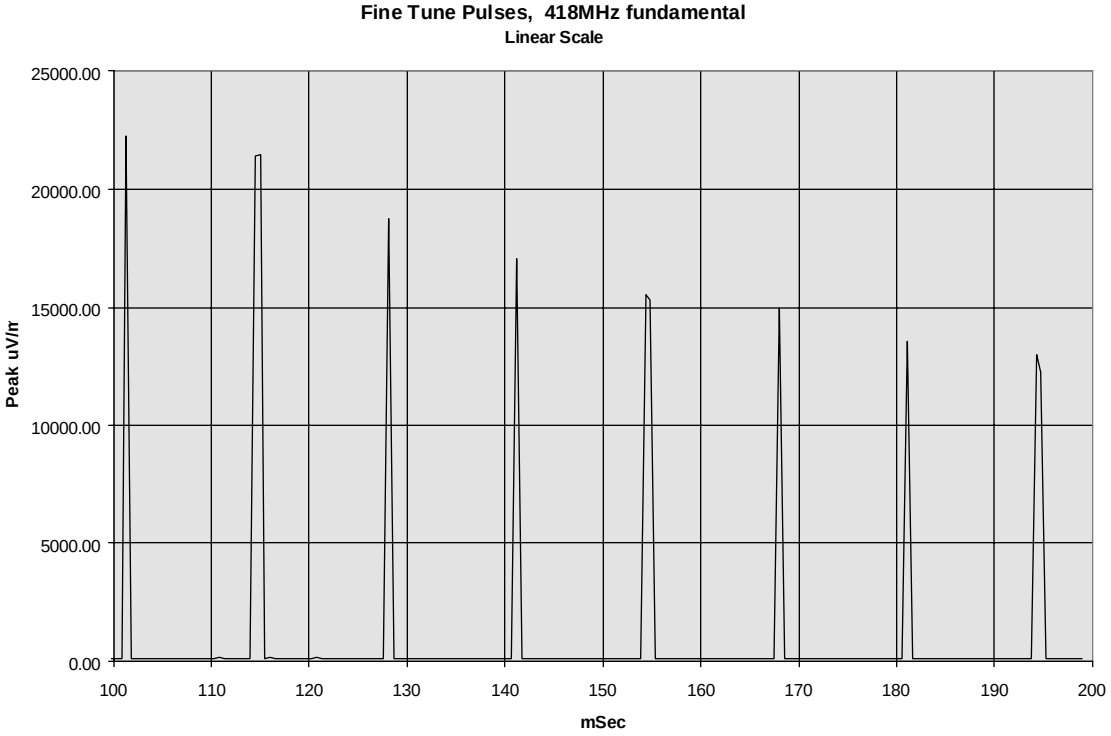



Coarse Tune Pulses, 310MHz fundamental
Linear Scale
Peak uV/m
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
0
10
20
30
40
50
60
70
80
90
100
mSec


Coarse Tune Pulses, 418MHz fundamental
Linear Scale
Peak uV/m
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
50
60
70
80
90
100
110
120
130
140
150
mSec


Fine Tune Pulses, 288MHz fundamental
Linear Scale
Peak uV/m
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
95
105
115
125
135
145
155
165
175
185
195
mSec


Fine Tune Pulses, 310MHz fundamental
Linear Scale
Peak uV/m
20000.00
18000.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
90
100
110
120
130
140
150
160
170
180
190
mSec



The raw data used in calculating the average field intensity of the tuning pulses are presented in the Appendix of this test report.

COARSE TUNE PULSES, Calculated average over 100mSec

TX Freq. (MHz)	SUM of the levels of all data points in 100mSec span (uV/m)	Number of Data points in 100mSec span N	Average SUM/N (uV/m)	LIMIT (uV/m)	MARGIN (dB)
288	230,682	200	1153	4917	**12.6**
310	524,392	200	2622	5833	**6.9**
418	867,005	200	4335	10333	**7.5**

FINE TUNE PULSES, Calculated average over 100mSec

TX Freq. (MHz)	SUM of the levels of all data points in 100mSec span (uV/m)	Number of Data points in 100mSec span N	Average SUM/N (uV/m)	LIMIT (uV/m)	MARGIN (dB)
288	102,509	200	513	4917	**19.6**
310	201,811	200	1009	5833	**15.2**
418	207,129	190	1090	10333	**19.5**

APPENDIX: Tune Pulses - Data Details

COARSE TUNE Pulse; Fundamental Frequency = 288MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	100	68.87	125	68.47	150	79.07	175	868.96
2	100.5	81.19	125.5	67.38	150.5	61.45	175.5	861.99
3	101	75.51	126	68.63	151	71.61	176	857.04
4	101.5	72.03	126.5	68.31	151.5	84.92	176.5	855.07
5	102	67.53	127	71.04	152	71.61	177	846.25
6	102.5	73.11	127.5	70.88	152.5	71.45	177.5	843.33
7	103	88.61	128	70.47	153	68.08	178	834.64
8	103.5	75.08	128.5	75.08	153.5	67.22	178.5	841.40
9	104	77.89	129	74.64	154	67.92	179	827.94
10	104.5	71.04	129.5	73.71	154.5	68.87	179.5	823.19
11	105	75.68	130	70.47	155	67.53	180	829.85
12	105.5	83.85	130.5	72.03	155.5	70.71	180.5	827.94
13	106	73.88	131	73.88	156	87.20	181	827.94
14	106.5	72.78	131.5	61.45	156.5	72.78	181.5	836.57
15	107	64.05	132	1220.39	157	74.30	182	827.94
16	107.5	90.47	132.5	2220.75	157.5	61.09	182.5	74.30
17	108	74.30	133	4125.72	158	2535.13	183	70.31
18	108.5	69.90	133.5	8212.97	158.5	3083.19	183.5	70.71
19	109	84.92	134	12749.70	159	4027.17	184	69.34
20	109.5	63.31	134.5	12882.50	159.5	5767.66	184.5	73.45
21	110	79.71	135	8851.16	160	9828.79	185	72.78
22	110.5	66.15	135.5	6053.41	160.5	12882.50	185.5	71.61
23	111	69.02	136	4830.59	161	12316.86	186	63.31
24	111.5	67.53	136.5	4159.11	161.5	8118.95	186.5	79.89
25	112	68.08	137	3732.50	162	5248.07	187	69.34
26	112.5	65.39	137.5	3455.41	162.5	3854.78	187.5	72.03
27	113	71.29	138	3217.36	163	3044.39	188	71.45
28	113.5	93.11	138.5	3076.10	163.5	2535.13	188.5	66.99
29	114	72.61	139	2954.61	164	2155.26	189	69.18
30	114.5	69.58	139.5	2828.13	164.5	1857.80	189.5	71.45
31	115	74.30	140	2766.94	165	1673.02	190	75.68
32	115.5	69.74	140.5	2703.96	165.5	1511.82	190.5	71.45
33	116	81.66	141	2630.27	166	1423.97	191	67.38
34	116.5	67.92	141.5	2582.26	166.5	1327.39	191.5	77.54
35	117	66.68	142	2535.13	167	1230.27	192	70.15
36	117.5	66.99	142.5	2500.35	167.5	1176.25	192.5	65.92
37	118	76.74	143	2443.43	168	1141.56	193	75.68
38	118.5	71.45	143.5	2418.24	168.5	1076.47	193.5	86.50
39	119	69.34	144	2423.82	169	1050.75	194	69.18
40	119.5	72.61	144.5	2360.48	169.5	1004.62	194.5	79.52
41	120	72.03	145	65.77	170	1004.62	195	67.53
42	120.5	68.31	145.5	65.61	170.5	972.75	195.5	85.80
43	121	70.15	146	78.61	171	939.72	196	75.25
44	121.5	63.31	146.5	74.64	171.5	924.70	196.5	79.71
45	122	67.76	147	69.18	172	915.17	197	65.39
46	122.5	85.31	147.5	67.38	172.5	907.82	197.5	67.38
47	123	78.34	148	79.25	173	883.08	198	72.44
48	123.5	81.66	148.5	72.78	173.5	875.99	198.5	71.45
49	124	70.31	149	65.77	174	886.14	199	81.47
50	124.5	75.51	149.5	71.86	174.5	880.04	199.5	83.85

COARSE TUNE Pulse; Fundamental Frequency = 310MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	0	79.52	25	68.31	50	3338.11	75	72.36
2	0.5	72.36	25.5	72.78	50.5	3296.10	75.5	79.52
3	1	83.85	26	73.11	51	3311.31	76	83.37
4	1.5	76.21	26.5	78.07	51.5	3318.94	76.5	74.90
5	2	80.45	27	76.38	52	3311.31	77	95.28
6	2.5	3400.17	27.5	77.62	52.5	3284.73	77.5	77.27
7	3	5470.16	28	84.92	53	79.34	78	74.56
8	3.5	8881.78	28.5	4926.06	53.5	69.58	78.5	69.42
9	4	14012.00	29	5834.45	54	76.03	79	76.38
10	4.5	19386.53	29.5	7252.70	54.5	79.16	79.5	72.78
11	5	20253.50	30	9517.00	55	74.30	80	83.56
12	5.5	18176.07	30.5	13319.87	55.5	71.37	80.5	76.38
13	6	13899.53	31	18858.19	56	77.62	81	72.78
14	6.5	11015.39	31.5	20090.93	56.5	84.43	81.5	76.82
15	7	9473.27	32	19186.69	57	81.85	82	73.96
16	7.5	8462.53	32.5	15867.19	57.5	80.63	82.5	87.20
17	8	7762.47	33	12516.99	58	78.52	83	73.37
18	8.5	7269.42	33.5	10034.60	58.5	76.38	83.5	68.16
19	9	6886.52	34	8413.95	59	73.54	84	70.63
20	9.5	6599.33	34.5	7252.70	59.5	76.21	84.5	82.51
21	10	6375.29	35	6441.69	60	83.56	85	81.10
22	10.5	6173.05	35.5	5821.03	60.5	79.52	85.5	68.16
23	11	5963.48	36	5370.32	61	71.78	86	84.24
24	11.5	5963.48	36.5	4988.84	61.5	71.20	86.5	85.80
25	12	5834.45	37	4715.20	62	83.56	87	75.34
26	12.5	5727.96	37.5	4534.19	62.5	73.71	87.5	83.37
27	13	5623.41	38	4325.14	63	75.51	88	72.95
28	13.5	5514.42	38.5	4111.50	63.5	77.45	88.5	79.16
29	14	5489.09	39	3999.45	64	77.62	89	73.37
30	14.5	5445.03	39.5	3903.91	64.5	74.90	89.5	86.30
31	15	5357.97	40	3788.79	65	74.90	90	74.73
32	15.5	93.43	40.5	3715.35	65.5	74.90	90.5	74.73
33	16	71.04	41	3655.95	66	106.54	91	82.89
34	16.5	70.47	41.5	3626.60	66.5	72.36	91.5	78.70
35	17	91.94	42	3548.13	67	85.61	92	79.80
36	17.5	69.42	42.5	3539.97	67.5	78.25	92.5	82.22
37	18	85.61	43	3511.56	68	82.51	93	69.82
38	18.5	79.16	43.5	3475.36	68.5	68.71	93.5	78.25
39	19	77.62	44	3427.68	69	67.07	94	82.70
40	19.5	79.16	44.5	3411.93	69.5	76.21	94.5	74.30
41	20	82.22	45	3392.34	70	73.54	95	79.52
42	20.5	73.54	45.5	3357.38	70.5	76.82	95.5	86.50
43	21	72.19	46	3357.38	71	76.21	96	66.53
44	21.5	73.71	46.5	3372.87	71.5	76.03	96.5	84.24
45	22	75.51	47	3338.11	72	71.37	97	74.30
46	22.5	82.70	47.5	3338.11	72.5	76.38	97.5	73.11
47	23	74.90	48	3311.31	73	70.63	98	70.79
48	23.5	76.65	48.5	3330.43	73.5	80.82	98.5	87.00
49	24	67.38	49	3318.94	74	80.63	99	83.85
50	24.5	90.89	49.5	3311.31	74.5	79.34	99.5	80.82

COARSE TUNE Pulse; Fundamental Frequency = 418MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	50	103.51	75	112.59	100	8026.02	125	10244.72
2	50.5	107.28	75.5	117.08	100.5	101.04	125.5	10034.60
3	51	109.02	76	114.95	101	108.77	126	9817.48
4	51.5	107.03	76.5	110.28	101.5	113.24	126.5	9693.93
5	52	103.75	77	118.03	102	126.91	127	9473.27
6	52.5	113.50	77.5	110.28	102.5	114.68	127.5	9418.90
7	53	127.35	78	106.78	103	122.60	128	9397.23
8	53.5	127.64	78.5	96.05	103.5	117.08	128.5	9225.71
9	54	117.35	79	109.40	104	111.69	129	9193.90
10	54.5	119.67	79.5	107.89	104.5	127.35	129.5	9078.21
11	55	103.16	80	105.68	105	138.52	130	9057.33
12	55.5	124.59	80.5	103.99	105.5	119.67	130.5	9005.34
13	56	127.35	81	106.78	106	127.35	131	8984.63
14	56.5	109.02	81.5	111.17	106.5	105.20	131.5	8933.05
15	57	132.28	82	106.05	107	118.71	132	8912.51
16	57.5	115.21	82.5	118.03	107.5	119.26	132.5	8912.51
17	58	122.89	83	110.54	108	114.68	133	8861.35
18	58.5	121.20	83.5	108.77	108.5	115.88	133.5	8840.97
19	59	108.77	84	97.61	109	114.68	134	8810.49
20	59.5	119.26	84.5	102.68	109.5	126.33	134.5	8840.97
21	60	106.78	85	108.77	110	125.89	135	8881.78
22	60.5	123.88	85.5	111.43	110.5	109.02	135.5	8810.49
23	61	118.30	86	122.89	111	118.99	136	8790.23
24	61.5	104.35	86.5	109.40	111.5	103.75	136.5	8770.01
25	62	112.59	87	99.43	112	107.65	137	8739.77
26	62.5	113.50	87.5	12531.41	112.5	113.24	137.5	8790.23
27	63	107.28	88	17418.07	113	117.08	138	8719.67
28	63.5	126.62	88.5	21404.25	113.5	130.32	138.5	8719.67
29	64	110.54	89	22003.92	114	124.31	139	8699.61
30	64.5	107.89	89.5	20653.80	114.5	120.64	139.5	8699.61
31	65	112.33	90	17358.01	115	114.29	140	123.88
32	65.5	103.99	90.5	14206.92	115.5	10034.60	140.5	97.39
33	66	114.68	91	11939.88	116	10702.86	141	108.14
34	66.5	120.92	91.5	10702.86	116.5	11789.63	141.5	108.14
35	67	122.60	92	9896.92	117	14028.14	142	120.23
36	67.5	120.64	92.5	9418.90	117.5	17418.07	142.5	97.61
37	68	111.69	93	8912.51	118	20653.80	143	109.90
38	68.5	130.32	93.5	8699.61	118.5	22054.64	143.5	102.45
39	69	106.41	94	8531.00	119	22233.10	144	104.83
40	69.5	111.17	94.5	8491.80	119.5	21305.91	144.5	114.29
41	70	113.24	95	8423.64	120	19498.45	145	120.64
42	70.5	108.14	95.5	8375.29	120.5	17599.49	145.5	116.14
43	71	104.59	96	8222.43	121	15830.70	146	97.39
44	71.5	129.27	96.5	8222.43	121.5	14554.59	146.5	110.54
45	72	97.84	97	8175.23	122	13474.11	147	128.68
46	72.5	128.68	97.5	8156.43	122.5	12531.41	147.5	113.89
47	73	114.95	98	8109.61	123	11871.35	148	109.02
48	73.5	120.23	98.5	8090.96	123.5	11324.00	148.5	109.40
49	74	114.16	99	8044.52	124	10876.77	149	112.33
50	74.5	107.03	99.5	8044.52	124.5	10580.35	149.5	119.26

FINE TUNE Pulses; Fundamental Frequency = 288MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	95	81.66	120	83.66	145	68.08	170	81.85
2	95.5	69.18	120.5	69.74	145.5	72.78	170.5	70.31
3	96	75.25	121	73.11	146	71.29	171	75.68
4	96.5	72.19	121.5	68.87	146.5	71.61	171.5	83.85
5	97	73.88	122	68.08	147	67.92	172	61.87
6	97.5	2639.37	122.5	75.08	147.5	63.31	172.5	69.74
7	98	2630.27	123	82.79	148	70.47	173	69.34
8	98.5	69.34	123.5	62.73	148.5	80.82	173.5	67.22
9	99	66.99	124	65.77	149	70.88	174	5248.07
10	99.5	79.71	124.5	76.74	149.5	72.78	174.5	78.34
11	100	65.24	125	70.71	150	64.86	175	67.22
12	100.5	75.08	125.5	69.90	150.5	73.28	175.5	64.19
13	101	86.00	126	80.35	151	68.63	176	73.71
14	101.5	85.11	126.5	63.17	151.5	80.82	176.5	77.54
15	102	65.77	127	76.74	152	11994.99	177	71.86
16	102.5	71.86	127.5	67.22	152.5	8689.60	177.5	70.47
17	103	69.90	128	68.63	153	69.90	178	71.86
18	103.5	73.28	128.5	71.04	153.5	79.71	178.5	68.47
19	104	73.11	129	73.71	154	73.11	179	66.30
20	104.5	72.44	129.5	75.25	154.5	64.57	179.5	70.47
21	105	73.45	130	80.54	155	70.47	180	67.38
22	105.5	64.57	130.5	9772.37	155.5	59.63	180.5	63.53
23	106	73.71	131	63.83	156	65.24	181	71.29
24	106.5	77.54	131.5	72.61	156.5	64.19	181.5	62.09
25	107	68.08	132	80.17	157	65.77	182	79.52
26	107.5	65.77	132.5	62.23	157.5	72.03	182.5	75.08
27	108	75.68	133	68.87	158	70.15	183	66.15
28	108.5	3732.50	133.5	70.71	158.5	66.15	183.5	67.38
29	109	62.09	134	67.53	159	79.52	184	76.12
30	109.5	91.62	134.5	81.00	159.5	68.87	184.5	75.86
31	110	71.04	135	75.68	160	67.92	185	4135.23
32	110.5	75.25	135.5	76.91	160.5	89.74	185.5	77.36
33	111	73.28	136	63.02	161	65.39	186	76.74
34	111.5	75.68	136.5	69.02	161.5	65.09	186.5	77.09
35	112	74.90	137	66.15	162	61.87	187	75.51
36	112.5	68.63	137.5	71.04	162.5	99.08	187.5	71.29
37	113	68.31	138	66.83	163	7771.41	188	72.61
38	113.5	73.28	138.5	65.24	163.5	79.71	188.5	67.38
39	114	73.11	139	77.71	164	73.88	189	67.76
40	114.5	70.31	139.5	69.02	164.5	74.47	189.5	63.68
41	115	74.64	140	71.86	165	73.11	190	67.53
42	115.5	77.54	140.5	68.31	165.5	72.03	190.5	73.45
43	116	60.74	141	13243.42	166	68.63	191	73.88
44	116.5	68.47	141.5	13304.54	166.5	68.08	191.5	63.68
45	117	61.24	142	74.47	167	63.31	192	72.44
46	117.5	69.02	142.5	77.54	167.5	74.47	192.5	73.11
47	118	65.39	143	69.02	168	61.45	193	71.86
48	118.5	73.88	143.5	80.35	168.5	79.89	193.5	74.05
49	119	69.74	144	64.05	169	70.71	194	67.22
50	119.5	5881.66	144.5	75.68	169.5	69.34	194.5	74.05

FINE TUNE Pulses; Fundamental Frequency = 310MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	89.5	73.54	114.5	80.45	139.5	72.95	164.5	76.65
2	90	88.00	115	77.00	140	79.34	165	69.58
3	90.5	70.63	115.5	83.56	140.5	84.43	165.5	77.00
4	91	77.45	116	86.80	141	19543.39	166	93.65
5	91.5	70.47	116.5	74.90	141.5	19975.61	166.5	71.04
6	92	72.36	117	73.54	142	85.61	167	74.13
7	92.5	78.07	117.5	69.02	142.5	75.77	167.5	64.79
8	93	80.45	118	85.41	143	87.00	168	89.02
9	93.5	75.34	118.5	69.98	143.5	79.52	168.5	79.52
10	94	71.20	119	12897.34	144	74.30	169	83.85
11	94.5	71.61	119.5	75.51	144.5	89.74	169.5	69.98
12	95	73.71	120	81.47	145	78.52	170	93.43
13	95.5	74.30	120.5	78.25	145.5	72.19	170.5	68.47
14	96	67.07	121	77.45	146	72.95	171	76.03
15	96.5	73.96	121.5	77.45	146.5	68.16	171.5	94.62
16	97	7153.19	122	78.70	147	87.20	172	77.89
17	97.5	7227.70	122.5	73.96	147.5	69.58	172.5	74.73
18	98	105.68	123	83.85	148	79.16	173	74.90
19	98.5	84.24	123.5	77.62	148.5	67.76	173.5	77.45
20	99	87.20	124	76.21	149	76.38	174	74.13
21	99.5	76.38	124.5	93.86	149.5	81.10	174.5	104.35
22	100	77.27	125	82.70	150	75.34	175	12488.20
23	100.5	84.92	125.5	79.98	150.5	79.34	175.5	10057.73
24	101	73.11	126	72.95	151	77.89	176	75.77
25	101.5	78.52	126.5	73.54	151.5	77.27	176.5	86.30
26	102	95.72	127	88.31	152	76.38	177	71.20
27	102.5	75.08	127.5	87.00	152.5	19032.68	177.5	71.04
28	103	77.27	128	83.56	153	17021.59	178	84.72
29	103.5	76.21	128.5	69.42	153.5	82.89	178.5	82.04
30	104	80.45	129	85.80	154	83.56	179	79.34
31	104.5	78.25	129.5	72.78	154.5	72.53	179.5	74.13
32	105	82.89	130	16923.88	155	77.27	180	77.27
33	105.5	79.34	130.5	85.61	155.5	73.54	180.5	80.82
34	106	79.80	131	74.73	156	97.27	181	78.07
35	106.5	81.10	131.5	77.89	156.5	73.71	181.5	75.34
36	107	73.11	132	74.90	157	72.36	182	76.38
37	107.5	75.51	132.5	73.54	157.5	71.61	182.5	78.07
38	108	9343.29	133	78.52	158	72.36	183	75.34
39	108.5	9375.62	133.5	73.71	158.5	89.43	183.5	77.00
40	109	94.19	134	73.11	159	74.13	184	81.47
41	109.5	76.38	134.5	100.81	159.5	73.37	184.5	71.78
42	110	73.54	135	77.45	160	82.51	185	88.51
43	110.5	79.16	135.5	79.80	160.5	76.65	185.5	73.37
44	111	77.89	136	80.82	161	89.23	186	73.37
45	111.5	70.63	136.5	77.27	161.5	86.10	186.5	9783.63
46	112	87.20	137	80.63	162	67.61	187	78.52
47	112.5	76.82	137.5	92.90	162.5	81.10	187.5	81.28
48	113	71.94	138	65.61	163	85.61	188	77.45
49	113.5	72.36	138.5	70.47	163.5	79.80	188.5	80.63
50	114	71.61	139	76.03	164	16387.02	189	78.25

FINE TUNE Pulses; Fundamental Frequency = 418MHz

	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m	mSec	Level uV/m
1	99.75	117.08	126	125.60	152.25	139.64	178.5	128.68
2	100.275	122.89	126.525	123.88	152.775	116.82	179.025	122.60
3	100.8	128.38	127.05	111.43	153.3	123.59	179.55	114.29
4	101.325	22233.10	127.575	115.21	153.825	109.90	180.075	116.82
5	101.85	125.60	128.1	18728.37	154.35	15541.75	180.6	125.60
6	102.375	132.74	128.625	108.52	154.875	15328.51	181.125	13583.13
7	102.9	123.31	129.15	123.31	155.4	119.95	181.65	138.84
8	103.425	106.78	129.675	112.07	155.925	111.17	182.175	117.08
9	103.95	117.35	130.2	107.89	156.45	115.21	182.7	117.35
10	104.475	118.30	130.725	121.20	156.975	119.67	183.225	115.48
11	105	116.14	131.25	133.35	157.5	113.24	183.75	134.43
12	105.525	122.18	131.775	120.23	158.025	119.26	184.275	123.31
13	106.05	122.18	132.3	122.18	158.55	116.41	184.8	109.40
14	106.575	108.52	132.825	116.14	159.075	121.62	185.325	110.79
15	107.1	105.44	133.35	115.21	159.6	109.02	185.85	129.27
16	107.625	133.81	133.875	123.59	160.125	121.20	186.375	118.71
17	108.15	118.99	134.4	123.59	160.65	120.92	186.9	122.89
18	108.675	120.92	134.925	134.12	161.175	139.64	187.425	128.68
19	109.2	125.60	135.45	104.59	161.7	132.74	187.95	108.77
20	109.725	137.72	135.975	113.24	162.225	120.92	188.475	114.16
21	110.25	119.67	136.5	122.60	162.75	133.35	189	128.97
22	110.775	143.05	137.025	118.71	163.275	120.23	189.525	122.89
23	111.3	107.03	137.55	120.64	163.8	134.12	190.05	119.26
24	111.825	111.17	138.075	115.88	164.325	124.59	190.575	112.59
25	112.35	138.52	138.6	133.35	164.85	114.16	191.1	131.83
26	112.875	117.08	139.125	130.32	165.375	124.88	191.625	130.02
27	113.4	118.03	139.65	112.98	165.9	122.89	192.15	120.64
28	113.925	126.33	140.175	107.28	166.425	112.59	192.675	131.98
29	114.45	21404.25	140.7	107.28	166.95	121.90	193.2	115.48
30	114.975	21478.30	141.225	17041.19	167.475	135.52	193.725	122.60
31	115.5	130.77	141.75	131.37	168	14962.36	194.25	13001.70
32	116.025	146.22	142.275	117.35	168.525	126.62	194.775	12232.07
33	116.55	108.14	142.8	126.91	169.05	120.92	195.3	113.50
34	117.075	126.62	143.325	118.30	169.575	107.28	195.825	121.20
35	117.6	102.09	143.85	114.29	170.1	127.35	196.35	121.90
36	118.125	130.32	144.375	127.35	170.625	114.16	196.875	110.54
37	118.65	104.83	144.9	114.95	171.15	115.21	197.4	123.59
38	119.175	119.67	145.425	108.52	171.675	122.60	197.925	104.59
39	119.7	105.44	145.95	134.90	172.2	116.41	198.45	123.31
40	120.225	126.91	146.475	109.90	172.725	109.02	198.975	106.41
41	120.75	141.58	147	106.41	173.25	114.95	199.5	120.64
42	121.275	118.99	147.525	127.64	173.775	130.32	200.025	117.76
43	121.8	115.48	148.05	137.09	174.3	99.20	200.55	109.65
44	122.325	121.90	148.575	126.62	174.825	121.62	201.075	126.33
45	122.85	114.16	149.1	113.50	175.35	115.88	201.6	110.54
46	123.375	104.83	149.625	106.41	175.875	131.37	202.125	111.69
47	123.9	131.37	150.15	122.60	176.4	129.27	202.65	118.03
48	124.425	122.89	150.675	120.92	176.925	122.89	203.175	107.03
49	124.95	136.62	151.2	127.64	177.45	118.30	203.7	113.50
50	125.475	131.37	151.725	121.20	177.975	114.29	204.225	116.14