849 NW STATE ROAD 45
NEWBERRY, FL 32669 USA
PH: 888.472.2424 OR 352.472.5500
FAX: 352.472.2030
EMAIL: TEI@TIMCOENGR.COM
HTTP://WWW.TIMCOENGR.COM

FCC PART 15.247

AND INDUSTRY CANADA RSS-210

TEST REPORT

APPLICANT	SYN-TECH SYSTEMS, INC.
	100 FOUR POINTS WAY
	TALLAHASSEE, FLORIDA 32305
TEL	850-878-2558
FCC ID	NR3-032B0500
MODEL NUMBER	032B0500
PRODUCT DESCRIPTION	BLUETOOTH TRUCK CRADLE
DATE SAMPLE RECEIVED	JUNE 30, 2006
DATE TESTED	SEPTEMBER 8, 2006
TESTED BY	JOSEPH SCOGLIO
APPROVED BY	MARIO DE ARANZETA
TIMCO REPORT NO.	1385UT6TestReport
TEST RESULTS	☒ PASS ☐ FAIL

TABLE OF CONTENTS

LETTER OF INTRODUCTION

September 8, 2006

Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: SYN-TECH SYSTEMS, INC.

FCC ID: NR3-032B0500

To Whom It May Concern:

The attached application is for a mobile device that employs a Bluetooth transceiver.

The unit employs an internal antenna.

Should you have any questions or require any further information with regards to this, please feel free to contact me.

Sincerely,

Mario R. de Aranzeta C.E.T.
Engineer

MRD/sh
Encl.

EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
Biconnical Antenna	Eaton	94455-1	1057	CAL 12/12/05	12/12/07
Biconnical Antenna	Eaton	94455-1	1096	CAL 10/11/06	10/11/08
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 9/5/05	9/5/07
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/05	4/13/07
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 4/28/05	4/28/07
Log-Periodic Antenna	Eaton	96005	1243	CAL 12/14/05	12/14/07

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

BANDWIDTH 20 dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW) = 1 MHz and the video bandwidth (VBW) = 3 MHz and the span set as shown on plot.

POWER OUTPUT: The device under test has an integral antenna and the power was measured radiated.

ANTENNA CONDUCTED EMISSIONS: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

RADIATION INTERFERENCE: The test procedure used was ANSI C63.4-2003 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

ENVIRONMENTAL: The environmental conditions in the laboratory were 25 ˚C and 50 % relative humidity

POWER LINE CONDUCTED INTERFERENCE

RULES PART NO.: 15.107(a), RSS-310 8.3.1

REQUIREMENTS:	**QUASI-PEAK**	**AVERAGE**
0.15 – 0.5 MHz	66-56 dBuV	56-46 dBuV
0.5 – 5.0	56	46
5.0 – 30.0	60	50

TEST PROCEDURE: ANSI C63.4-2003. The spectrum was scanned from .15 to 30 MHz.

TEST DATA: Not applicable this device.

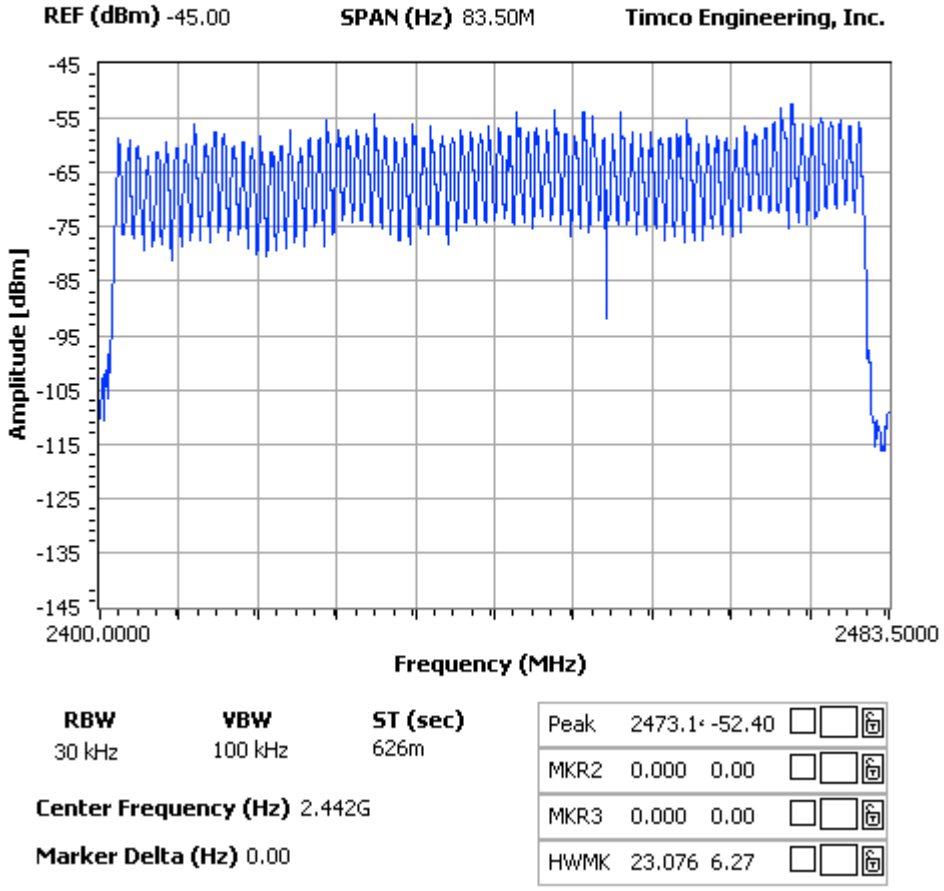
NUMBER OF HOPPING CHANNELS

RULES PART NO.: 15.247(a)(1), RSS-210 Annex 8

REQUIREMENTS: The number of hops is 79 hops, the requirement in the 2400 – 2483.5 MHz band is a minimum of 75 hops.

NUMBER OF HOPPING CHANNELS

NOTES:
1385ut6 Hopping mode



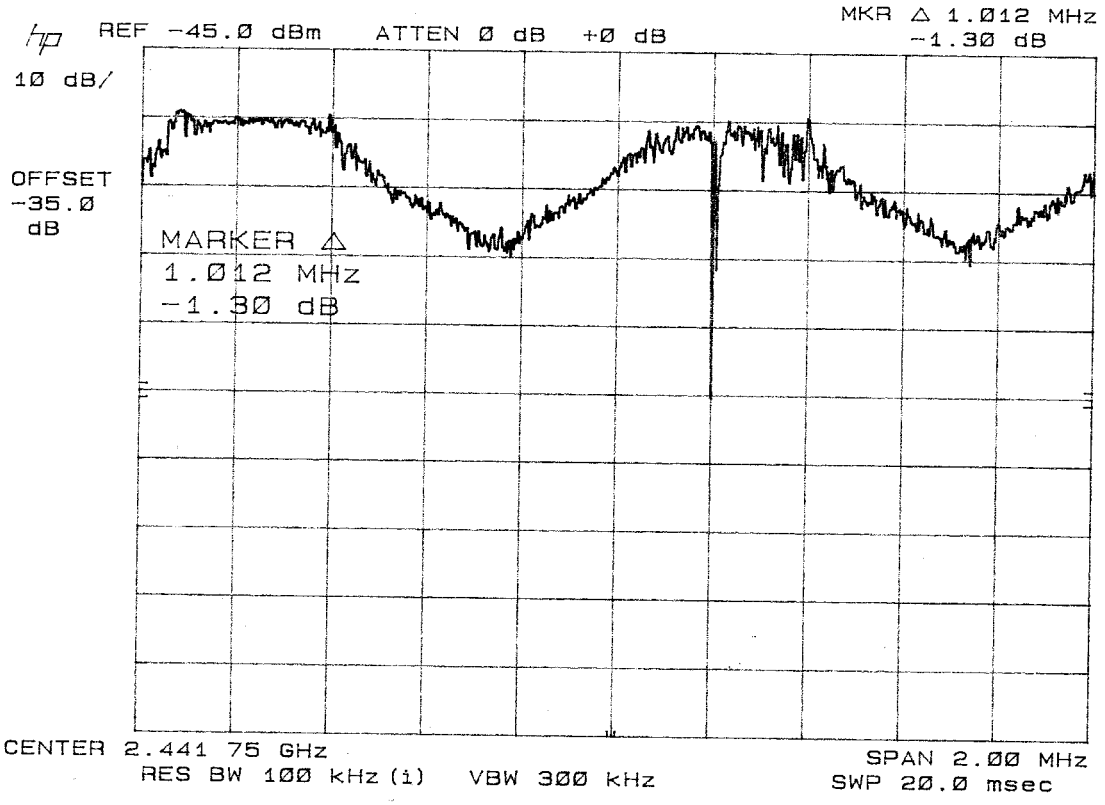
CHANNEL SEPARATION

RULES PART NO.: 15.247(a)(1), RSS-210 Annex 8

REQUIREMENTS:

The channel separation is 1 MHz

CHANNEL/CARRIER SPACING



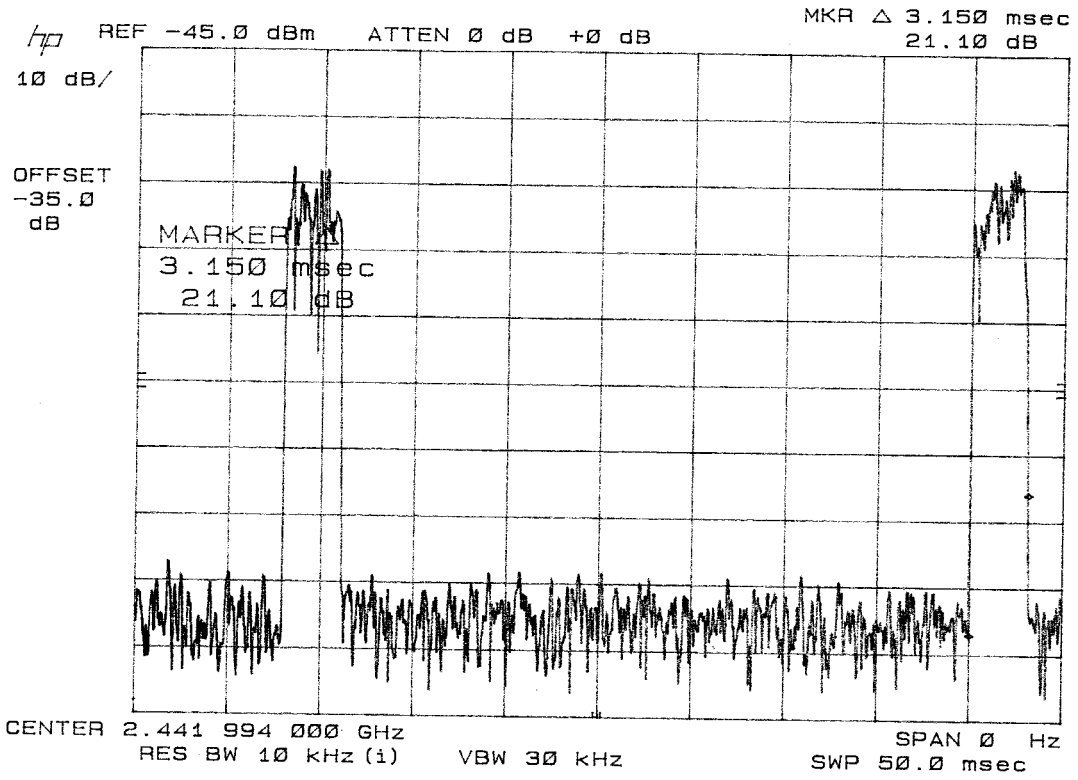
DWELL TIME OF A HOPPING CHANNEL

RULES PART NO.: 15.247(a)(1)(i), RSS-210 ANNEX 8

REQUIREMENTS: This timing is hardcoded in the BT protocol and is outlined in the theory of operation.

Packet type	Burst duration us	Dwell time ms
DH1	.43	137.65
DH3	1.68	270.75
DH5	3.15	335.3

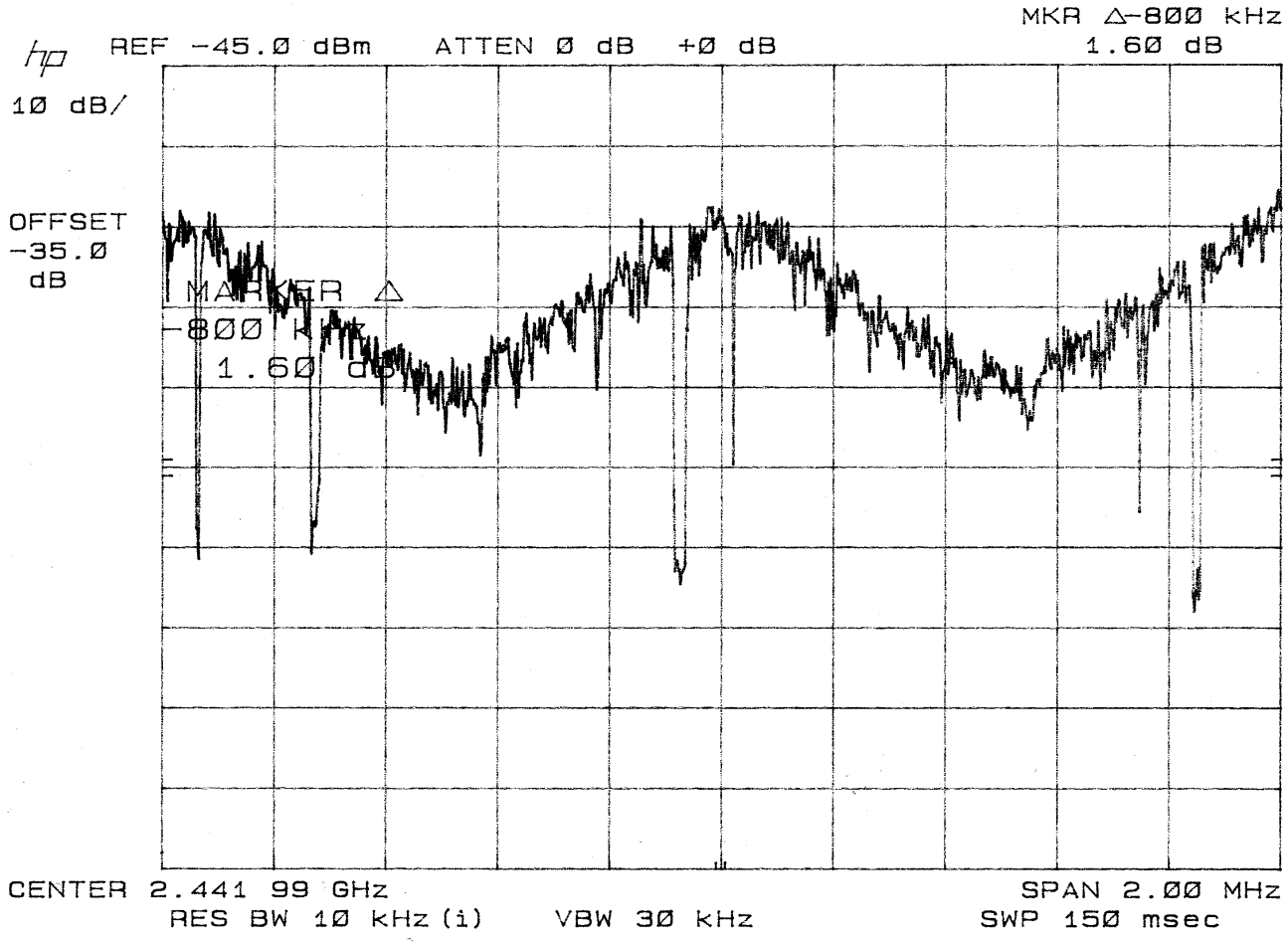
A worst case plot is presented (max time).



20 dB BANDWIDTH

RULE PART NO.: 15.247(a)(1)(iii), RSS-210 ANNEX 8

REQUIREMENTS: The 20 dB bandwidth measured was 1 MHz.



Three places in the band were measured and the worst case presented above.

POWER OUTPUT

RULE PART NO.: 15.247(b)(1), RSS-210 ANNEX 8

REQUIREMENTS: 1.0 Watt or +30 dBm

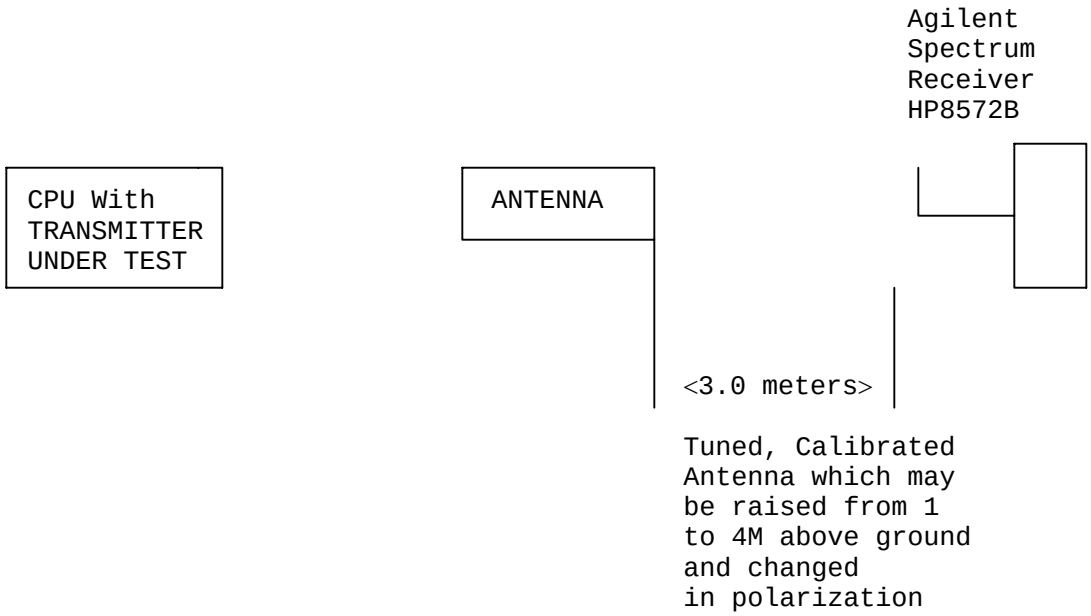
MEASUREMENT:

2402 MHz	0.57 mW or 0.00057 Watts EIRP
2442 MHz	0.80 mW or 0.00080 Watts EIRP
2480 MHz	0.51 mW or 0.00051 Watts EIRP

Method: 15.247(c)

The device under test has an integral antenna and the power was measured radiated.

The test procedure used was ANSI C63.4-2003 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.



FIELD STRENGTH OF SPURIOUS EMISSIONS

RULES PART NO.: 15.247(c), 15.205 &15.209(b), RSS-210 ANNEX 8

REQUIREMENTS:

FIELD STRENGTH of Fundamental: 902-928MHz 2.4-2.4835GHz 127.38dBuV/m @3m	FIELD STRENGTH of Harmonics 127.37dBuV/m 54 dBuV/m @3m	S15.209 30 - 88 MHz 40 dBuV/m @3m 88 -216 MHz 43.5 216 -960 MHz 46 ABOVE 960 MHz 54dBuV/m

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20 dB below the level of the fundamental or to the general radiated emission limits of 15.209, whichever is the lesser attenuation.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m.

TEST DATA: Above 1 GHz and to the tenth harmonic

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
2,402.0	4,804.00 R	14.0	H	4.90	34.34	53.24	0.76
2,402.0	4,804.00 R	14.2	V	4.90	34.34	53.44	0.56
2,402.0	7,206.00	6.4	V	5.72	36.15	48.27	24.54
2,402.0	7,206.00	7.2	H	5.72	36.15	49.07	23.74
2,402.0	9,608.00	7.7	H	6.78	37.53	52.01	20.80
2,402.0	9,608.00	9.0	V	6.78	37.53	53.31	19.50
2,442.0	4,884.00 R	13.6	H	4.94	34.41	52.95	1.05
2,442.0	4,884.00 R	14.0	V	4.94	34.41	53.35	0.65
2,442.0	9,768.00	7.4	H	6.83	37.72	51.95	22.30
2,442.0	9,768.00	8.4	V	6.83	37.72	52.95	21.30
2,480.0	4,960.00 R	13.2	V	4.98	34.47	52.65	1.35
2,480.0	4,960.00 R	13.4	H	4.98	34.47	52.85	1.15
2,480.0	9,920.00	7.8	V	6.88	37.90	52.58	19.70
2,480.0	9,920.00	8.1	H	6.88	37.90	52.88	19.40

Emissions in the above table are peak.
Emissions attenuated more than 20 dB below the limits were not reported.

FIELD STRENGTH OF SPURIOUS EMISSIONS (CONTINUED)

RULE PART NO. 15.247(c), 15.205 &15.209(b), RSS-210 ANNEX 8

REQUIREMENTS:

FIELD STRENGTH of Fundamental:	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz 40 dBuV/m @3m
902-928MHz		88 -216 MHz 43.5
2.4-2.4835GHz	127.37dBuV/m	216 -960 MHz 46
127.38dBuV/m @3m	54 dBuV/m @3m	ABOVE 960 MHz 54dBuV/m

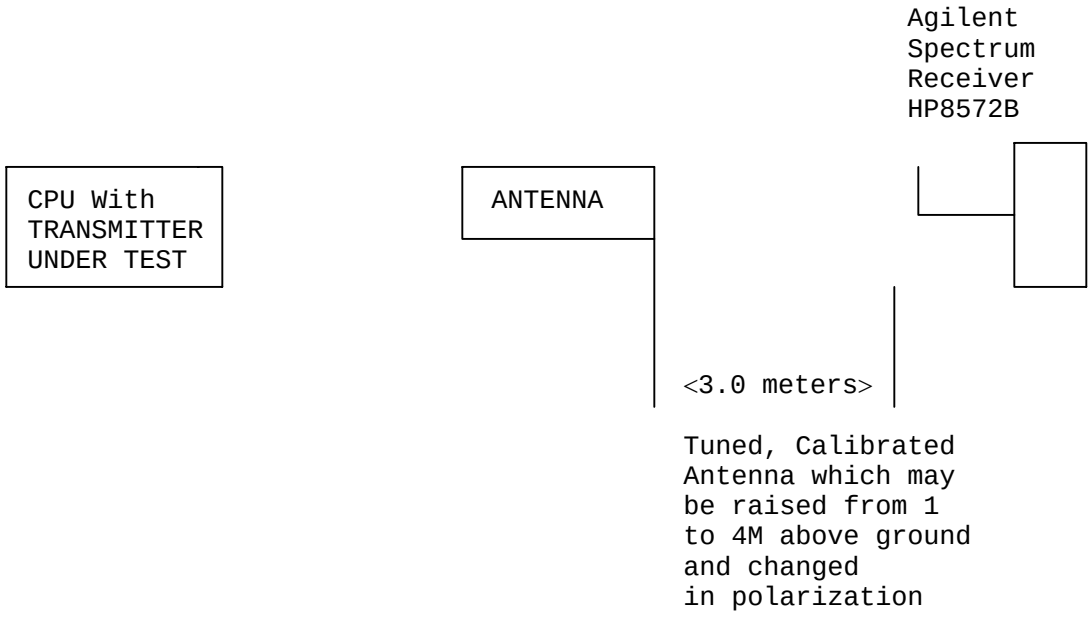
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20 dB below the level of the fundamental or to the general radiated emission limits of 15.209, whichever is the lesser attenuation.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m.

TEST DATA: from 30 MHz to 1 GHz

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
48.50	5.3	H	0.49	11.20	16.99	23.01
48.50	9.6	V	0.49	10.80	20.89	19.11
57.70	13.6	H	0.53	11.15	25.28	14.72
57.70	17.6	V	0.53	11.64	29.77	10.23
67.60	11.2	V	0.56	8.41	20.17	19.83
67.60	15.2	H	0.56	9.32	25.08	14.92
75.00	31.6	H	0.58	7.00	39.18	0.82
75.00	31.8	V	0.58	6.80	39.18	0.82
77.20	13.6	H	0.59	6.82	21.01	18.99
77.20	16.5	V	0.59	6.76	23.85	16.15
82.80	11.8	H	0.61	6.94	19.35	20.65
82.80	12.3	V	0.61	7.32	20.23	19.77
150.00	19.9	V	0.70	14.20	34.80	8.70
150.00	21.3	H	0.70	14.40	36.40	7.10
225.00	29.1	V	0.95	11.20	41.25	4.75
225.00	32.5	H	0.95	11.50	44.95	1.05
300.00	10.1	V	1.10	14.40	25.60	20.40
300.00	12.4	H	1.10	14.40	27.90	18.10
375.00	13.7	V	1.18	15.20	30.08	15.93
375.00	18.6	H	1.18	15.30	35.08	10.93
450.00	11.0	V	1.25	16.60	28.85	17.15
450.00	11.1	H	1.25	16.90	29.25	16.75
600.00	8.3	H	1.60	19.10	29.00	17.00
600.00	11.0	V	1.60	18.60	31.20	14.80

METHOD OF MEASURING RADIATED SPURIOUS EMISSIONS



Equipment placed 80cm above ground on a rotatable platform.

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-2003 & the FCC/OET Guidance on Measurements of Frequency Hoppping Systems. Measurements were made at the open area test site of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.

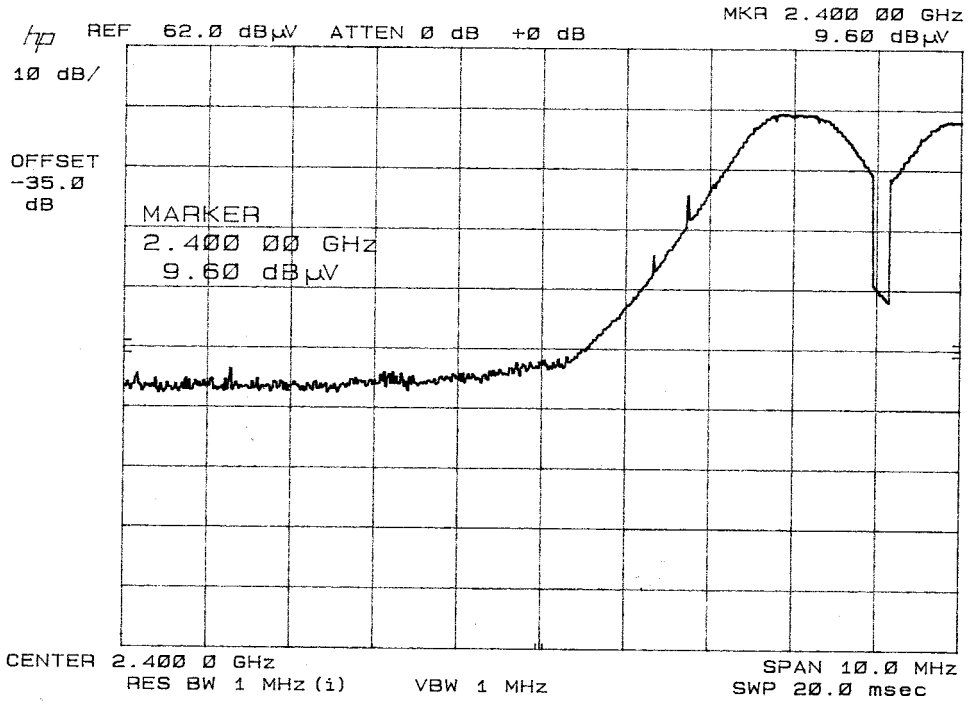
RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

RULE PART NO.: 15.205, RSS-210 ANNEX 8

REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

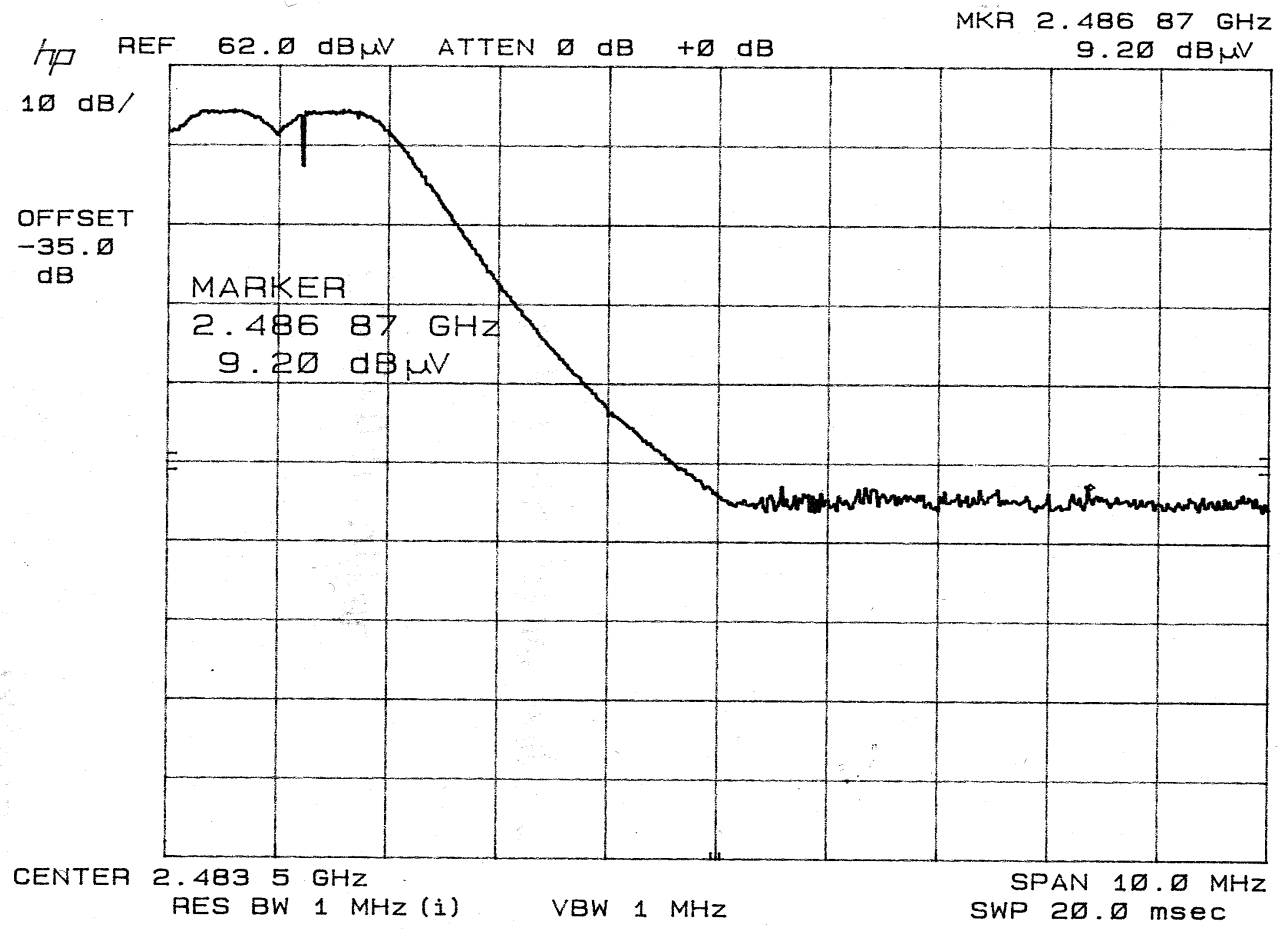
TEST PROCEDURE: An in band field strength measurement of the fundamental Emission using the RBW and detector function required by C63.4-2003 and FCC Rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

Lower Bandedge



Peak is 20 dBc at the band edge
No emissions fall into the adjacent restricted band beginning at 2390 MHz.

Upper bandedge with restricted band (peak value)



Radiated Peak

Peak field strength is 92.28 dBuV/m at 2480 MHz (carrier).
The emission is 50 dB down at the bandedge.
92.28- 50 = 42.28 this is less than the 54 dBuV/m limit