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 74

TEST REPORT

Applicant	AEQ Broadcast International Inc.
Address	4121 SW 47th Avenue, Ste 1303
	Fort Lauderdale, FL 33314 USA
FCC ID	U47LIVE20TR
MODEL NUMBER	Live 20TR
PRODUCT DESCRIPTION	Low Power Auxiliary Broadcast Radio
DATE SAMPLE RECEIVED	February 27, 2007
DATE TESTED	March 15, 2007
Tested By	Joe Scoglio
Approved By	Mario de Aranzeta
REPORT NO.	487UT7TestReport.pdf
TEST RESULTS	☒ PASS ☐ FAIL

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.

ACCREDITED
Certificate # 0955-01

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ATTESTATION STATEMENT

Certificate # 0955-01

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made, under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669.

Authorized Signatory Name: Mario de Aranzeta

Signature: On file

Function: Engineer

Date: 5/25/2007

Tester name: Nam Nguyen

Date: 5/25/2007

REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.
Report Purpose	To demonstrate the DUT to comply with FCC Pt 74 and for a low power auxiliary broadcast radio
Applicable Rule Part(s)	Pt 74, Pt 15.209, ANSI C63.4: 2003, ANSI/TIA-603-C: 2004
Related Test Report	Digital Portion Verified

TEST ENVIRONMENT

Test Facilities	All required tests were performed by Timco Engineering Inc. that is located at 849 NW State Road 45 Newberry, FL 32669 Timco's test facilities accreditation is on file with regulatory agencies.
Test Conditions	Temperature: 26°C Relative Humidity: 50%

TEST SETUP

Deviation from the rules	There was no deviation from the test standards.
Modification to the DUT	No modification was made to the DUT.
Test Exercise (e.g. software description, test signal, etc.)	The DUT was placed in continuous transmit mode of operation based upon the applicant's instruction.
Accessories tested with	N/A. The DUT is a stand-alone device.
Cable(s)	Manufacturer supplied cables

DEVICE UNDER TEST INFORMATION

DUT Description	Low Power Auxiliary Broadcast Radio
FCC ID	U47LIVE20TR
Model Name	Live 20TR
Operating Frequency	161.625 – 161.725 MHz
Occupied Bandwidth	200 kHz
Emission Designators	F3E
Calculation of Designators	Bn = 2M + 2DK M=3000 Hz D=5000 Hz (Peak Deviation) K=1 Bn=2 (3000) + 2(5000) (1) = 16 kHz
Modulation(s)	FM
User Power Range & Control	There are NO user power controls
DC Voltages and Current into Final Amplifier	3.0V Battery Vce = 2.9 V Ice = 28 mA
Test Item	Pre-Production
Type of Equipment	Fixed and Mobile

TEST EQUIPMENT LIST

Device	Manu.	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
AC Voltmeter	HP	400FL	2213A14499	CAL 12/29/06	12/29/08
Analyzer Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Analyzer Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 9/5/05	9/5/07
Analyzer Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/05	4/13/07
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 11/28/05	11/28/07
Analyzer Open-Frame Tower Preamplifier	HP	8449B	3008A01075	CAL 8/8/05	8/8/07
Analyzer Open-Frame Tower Quasi-Peak Adapter	HP	85650A	2046A00305	CAL 8/8/05	8/8/07
Analyzer Open-Frame Tower RF Preselector	HP	85685A	3107A01282	CAL 2/6/06	2/6/08
Analyzer Open-Frame Tower Spectrum Analyzer	HP	8566B/85662A	2627A03154/2648A14276	CAL 8/8/05	8/8/07
Analyzer Silver Tower Quasi-Peak Adapter	HP	85650A	3303A01844	CAL 10/30/06	10/30/08
Analyzer Silver Tower RF Preselector	HP	85685A	2620A00294	CAL 3/6/07	3/6/09

[Continued]

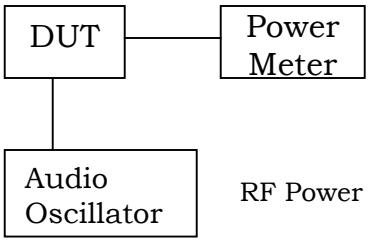
[Continued]

Device	Manu.	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Silver Tower Spectrum Analyzer	HP	8566B Opt 462	3552A22064 3638A08608	CAL 10/30/06	10/30/08
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/3/06	3/3/09
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153		Out for Repair and Char
Frequency Counter	HP	5385A	2730A03025	CAL 4/15/05	4/15/07
Hygro-Thermometer	Extech	445703	0602	CAL 8/1/05	8/1/07
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	CAL 12/1/06	12/1/08
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 12/16/05	12/16/07
Modulation Analyzer	HP	8901A	3435A06868	CAL 11/4/04	11/4/06
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 4/15/05	4/15/07
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 3/23/06	3/23/08

TEST PROCEDURE

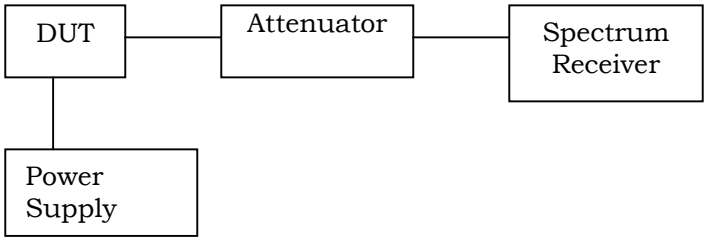
Power Line Conducted Interference
The procedure used was ANSI 63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RF Power Output
The RF power output was measured at the antenna feed point using a peak power meter. A 50-ohm, resistive wattmeter was connected to the RF output connector. With a nominal battery voltage, and the transmitter properly adjusted the RF output measures:



RF Power Output Test Setup

Spurious Emissions At Antenna Terminals (Conducted)
The carrier was modulated 100% using a Hz tone. The spectrum was scanned from 0.4 to at least 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. The measurements were made in accordance with standard ANSI/TIA-603-C: 2004



Radiation Interference
The test procedure used was ANSI/TIA-603-C: 2004 and ANSI C63.4-2003 using an Agilent spectrum receiver with preselector. 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.

Modulation Characteristic

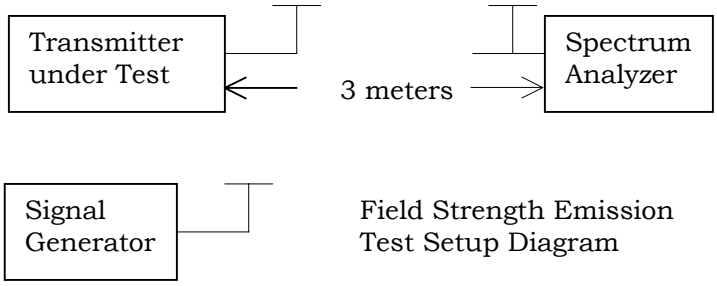
Audio frequency response
The audio frequency response was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Low Pass Filter
The audio low pass filter for voice-modulated equipment was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Input versus modulation
The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI/TIA 603-C: 2004. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

Frequency Stability
The frequency stability was measured per ANSI/TIA 603-C: 2004.

Field Strength of Spurious Emissions
The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA 603-C: 2004 using the substitution method.



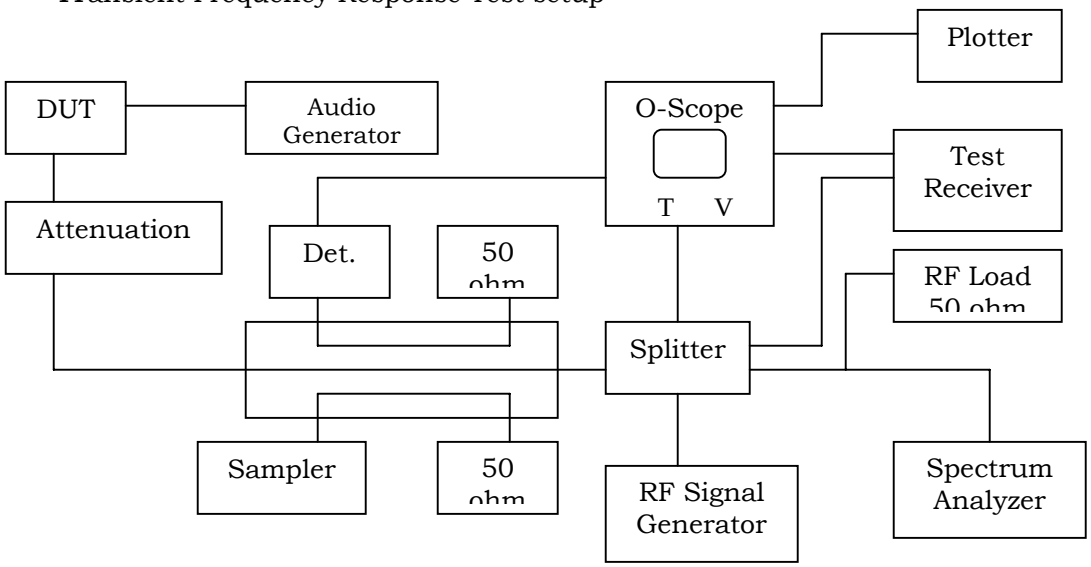
Field Strength Emission Test Setup Diagram

Transient Frequency Behavior

The test procedure was ANSI/TIA 603-C: 2004 Para 2.2.19.

- Using a variable attenuator. The transmitter level was set to 40 dB below the test receivers maximum input level,
- Then the transmitter was turned off.
- With the transmitter off the signal generator was set 20dB below the level of the transmitter in the above step, this level will be maintained with the signal generator through-out the test.
- Reduce the attenuation between the transmitter and the RF detector by 30 dB.
- With the levels set as above the transient frequency behavior was observed & recorded.

Transient Frequency Response Test setup



TEST RESULT

RF POWER OUTPUT

Rule Part No.: Part 2.1046(a), Part 74

Requirements: Part 2.1046

Test Data: Tested by the applicant

Frequency (MHz)	Power (Watts)	Power (dBm)
161	0.815	29.116

MODULATION CHARACTERISTICS

Rule Part No.: Part 2.1047(a)(b)

Test Requirements:

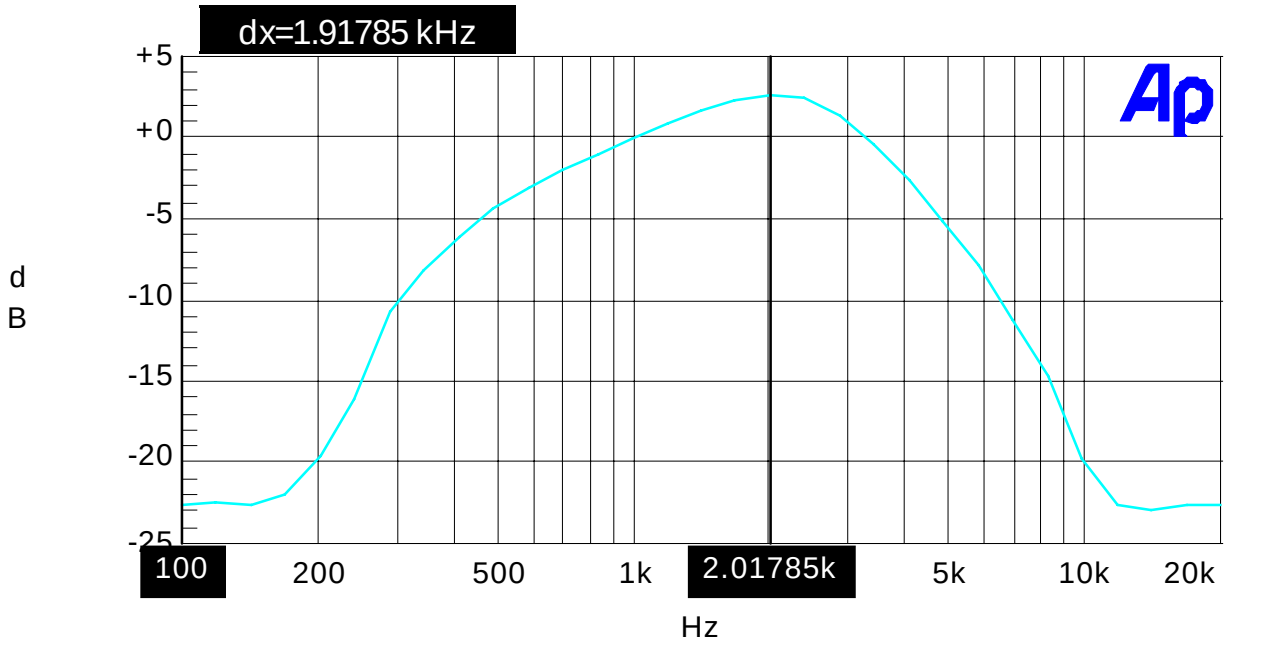
Audio frequency response

Voice modulated communication equipment

Audio low pass filter

Test Data:

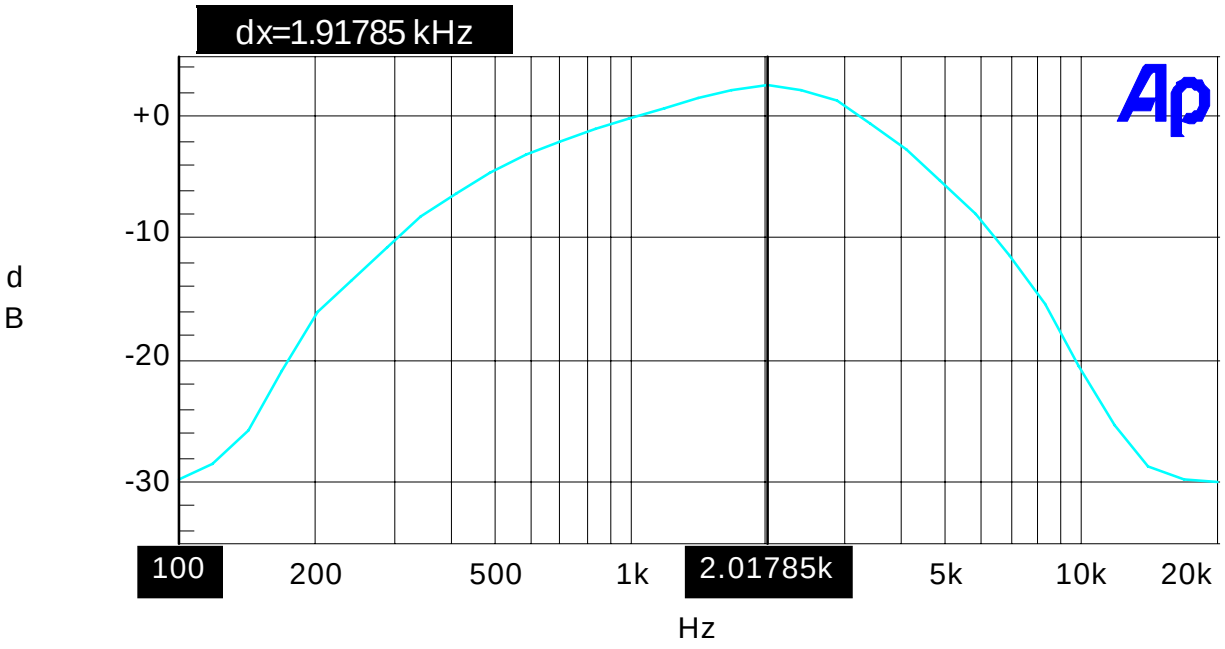
Plot(s) of Audio Frequency Response



Color	Line Style	Thick	Data	Axis	Cursor1
Cyan	Solid	1	Anlr.Level A!Normalize	Left	..

MaxFreq.at1

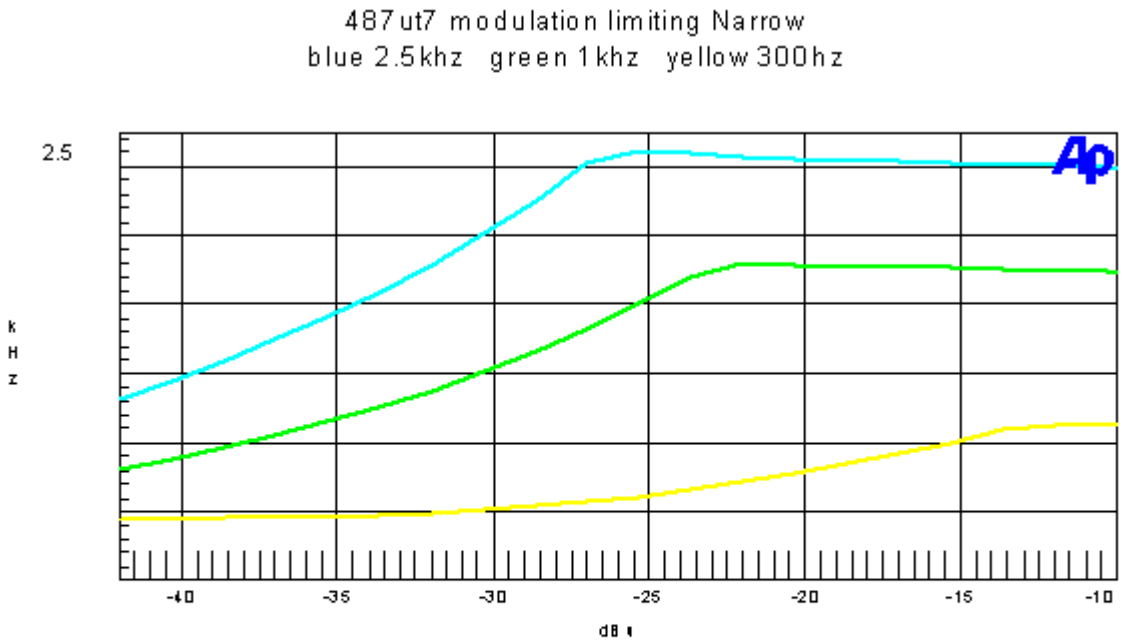
487ut7 audio freq response wide 04/10/07 15:26:59

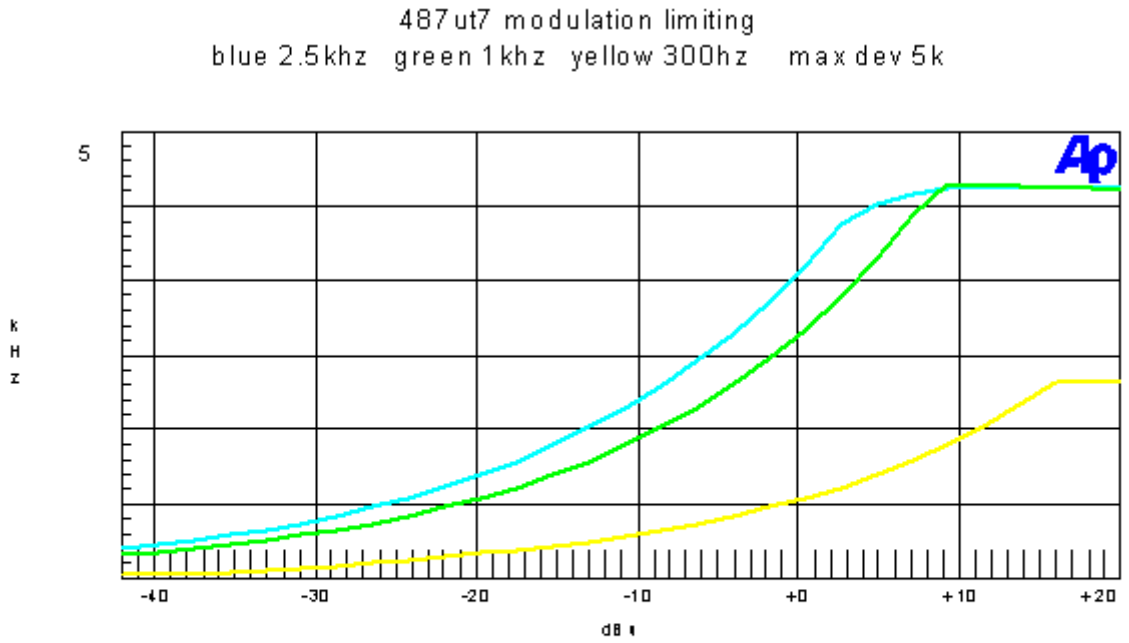


Color	Line Style	Thick	Data	Axis	Cursor1
Cyan	Solid	1	Anlr.Level A!Normalize	Left	..

MaxFreq.at1

Plot(s) of Voice Modulated Communication Equipment




487ut7 modulation limiting
blue 2.5khz green 1khz yellow 300hz max dev 5k
5
k
H
z
-40
-30
-20
-10
+0
+10
+20
dB

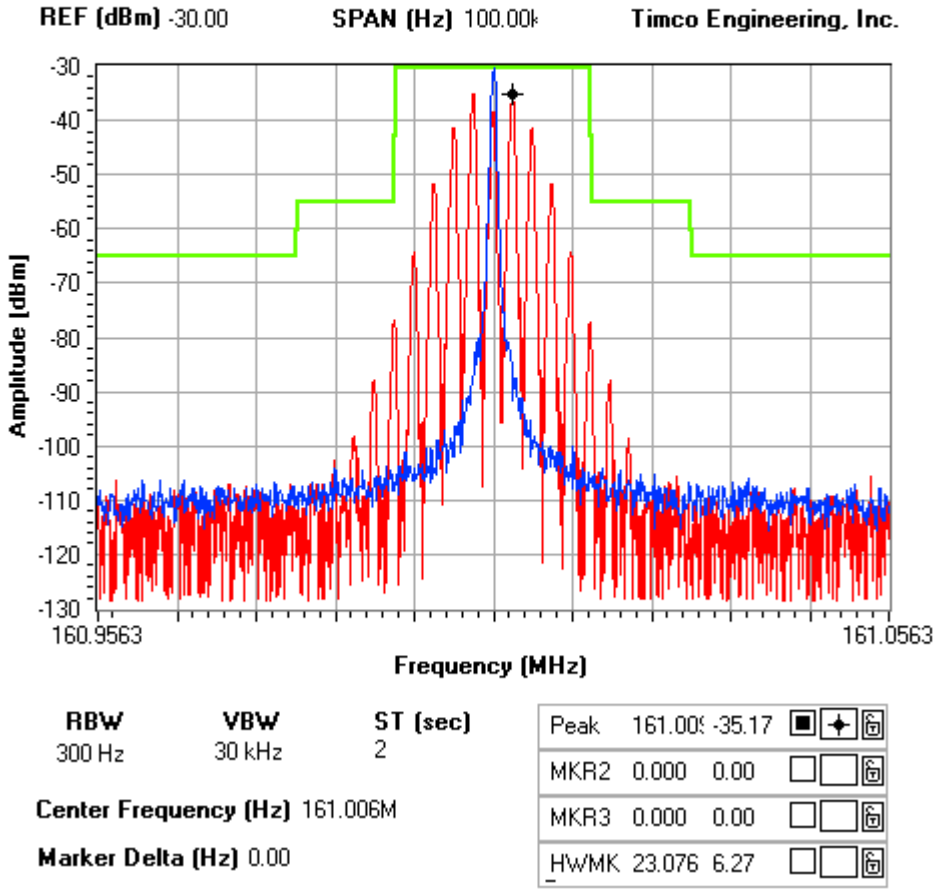
OCCUPIED BANDWIDTH

Rule Part No.: Pt 2.1049, Pt 74

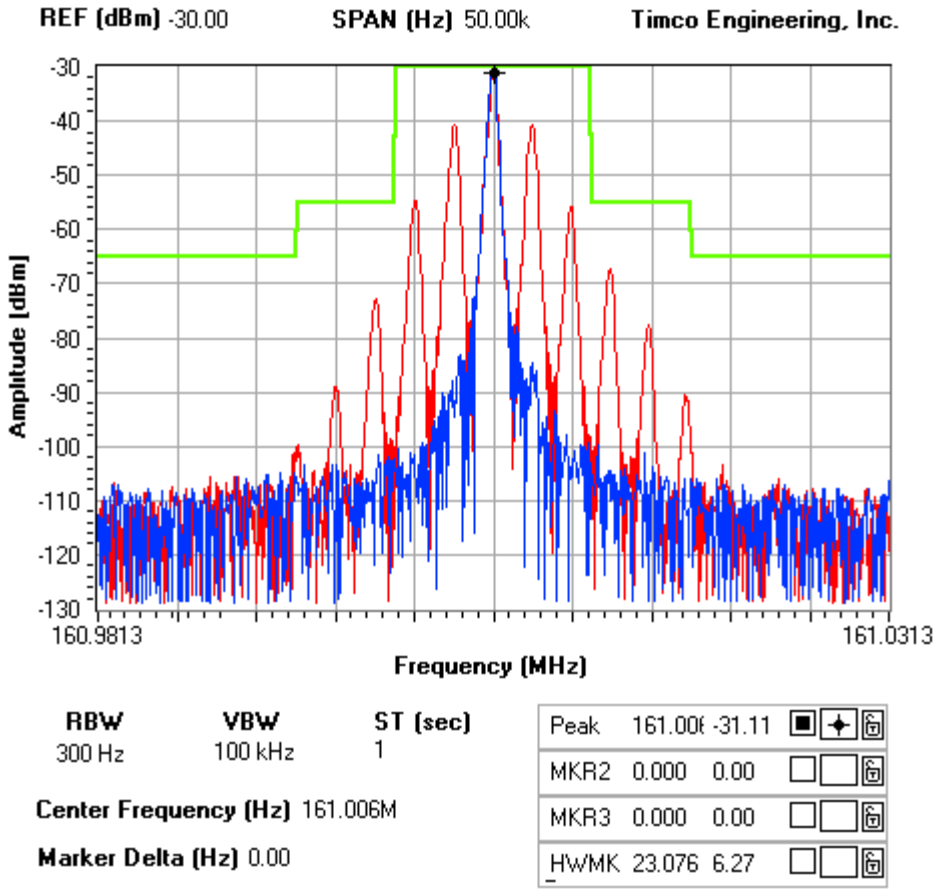
Test Requirements: Data in the plots show that on any frequency removed from the assigned frequency by more than 250% of the authorized bandwidth: At least 35 dB and beyond 250% 43 + 10log(P)dB.

Test Data:

NOTES:
487ut7 occupied bandwidth
wide



NOTES:
487ut7 occupied bandwidth Narrow



SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Rule Part No.: Part 2.1051(a)

Requirements: 43+10log(0.815)= 42 dB

TF	EF	Meter reading	dB below carrier
161	161	140.9	0
	322	71.9	69
	483	59.5	81.4
	644	49.8	91.1
	805	38.8	102.1
	966	26.4	114.5
	1127	23.9	117
	1288	19.7	121.2
	1449	17.4	123.5
	1610	17.3	123.6

FIELD STRENGH OF RADIATED SPURIOUS EMISSIONS

Rule Part No.: Part 2.1053 (a) (b)

Requirements: 43+10log(0.815)= 42 dB

Test Data:

Emission Frequency MHz	Ant. Polarity V/H	EUT Signal Reading	Signal Generator Reading	Corrected EUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	ERP (dBm)	dB Below Carrier (dBc)
161.00	V			29.12	0	0	29.12	0
322.00	V	33	81.00	-48.00	0	-0.95	-48.95	78.07
483.00	V	31.6	79.30	-47.70	0	-0.51	-48.21	77.33
644.00	H	28.5	80.80	-52.30	0	-0.59	-52.89	82.01
805.00	V	19.4	72.90	-53.50	0	-1.13	-54.63	83.75
966.00	H	10.3	72.70	-62.40	0	-1.18	-63.58	92.70

FREQUENCY STABILITY

Rule Parts. No.: Part 2.1055, Pt 74.861 (e) (4)

Requirements: Temperature range requirements: -30 to +50° C.
Voltage Variation ±0.0050% (±20 PPM)

Test Data: The Test data indicates the DUT meets the requirement.

Reference: 161.006107 MHz		
Temp	Frequency MHz	PPM
-30°C	161.006129	0.14
-20°C	161.006130	0.14
-10°C	161.006124	0.11
0°C	161.006117	0.06
10°C	161.006115	0.05
20°C	161.006108	0.01
30°C	161.006106	-0.01
40°C	161.006129	0.14
50°C	161.006137	0.19
25°C End Battery 85% Volt (11.1) = 9.4 Vdc	161.006107	0.00