SIEMENS

Information and Communications

RX SPURIOUS EMISSION

Test of: SIEMENS CT56, SN:001002000031406

Date(s) of Test: 07/26/02
07/26/02

Lab:

Siemens
Information and
Communication Mobile LLC
16745 West Bernardo Drive
Suite 400
San Diego, CA 92127

Tested by: Milton de Leon

Checked by: Peter Nevermann 07/26/02

Peter Nevermann

1 INTRODUCTION

THIS DOCUMENT SHOWS THE PERFORMANCE OF CT56 SIEMENS MOBILE PHONE, REGARDING TO SPURIOUS EMISSION ON RX FREQUENCIES DURING OPERATION AT GSM850 BAND.

2 TEST SET UP

2.1 Equipment Description

1. FSEM 30 – Spectrum Analyzer 20Khz to 26.5Ghz RODE&SCHWARTZ	Serial No. 100024 Calibration Report No. 85639
2. 8652A – Power Meter Giga-tronics	Serial No. 8650929 Calibration Report No. 85605
3. 80420A – Power Sensor Giga-tronics	Serial No. 1834334 Calibration Report No. 85606
4. CMU-200 – Radio Communication Tester RODE&SCWARTZ	Serial No. 100432 Calibration Report No. 85612
5. 85902A – Burst Carrier Trigger Agilent	Serial No. 3308A01293 Calibration Certificate No. N/A

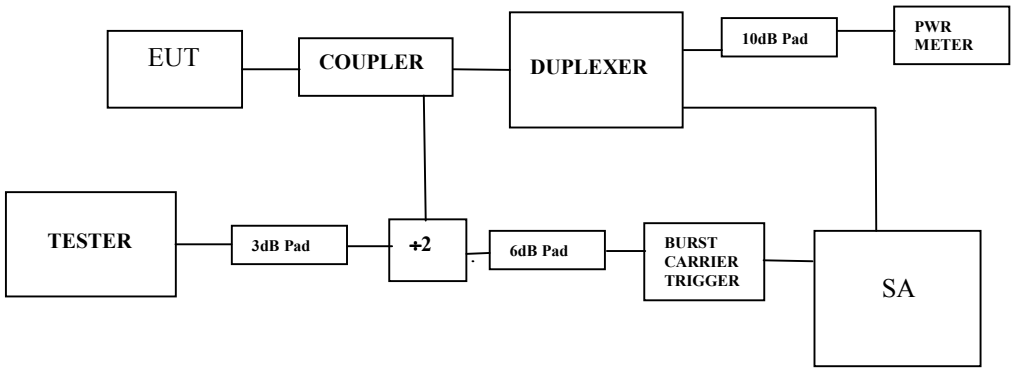
2.2 Accessories

1. 4226-20 – Directional Coupler 0.5 to 18Ghz Narda Microwave
2. WD-00003 – Duplexer Filter Lorch Microwave
3. 6B5W – 5Watts 10 dB Attenuator INMET
4. 15542 – Power Splitter Mini-Circuits
5. MCL BW-S3W2 3dB Attenuator
6. MCL BW-S3W2 6dB Attenuator
7. Coaxial Adapters (several)
8. Coaxial Cables (several)

2.3 Equipment Under Test

CT56 Siemens Mobile Phone	Serial No. 001002000031406 (labeled: 20)
FCC ID	PWX-CT56

2.4 Test Set –up Block Diagram



3 TEST DESCRIPTION

3.1 Equipment settings

CMU200 – Communication Tester	GSM850 Signaling Mode/Default settings RF Attenuation = according total set-up losses
FSEM – Spectrum Analyzer	Frequency: 869 Mhz to 894 Mhz RBW: 30 kHz (Manual) VBW: 30 kHz (Manual) Sweep: Auto selected (70ms) Detector: Sample Trace: Averaging over 200 cycles Trigger: pulsed, gated to transmit pulse Offset: according total set-up losses
8652A Power Meter	Sensor Set-up: Burst Average Power Offset: according total set-up losses

3.2 Test procedure

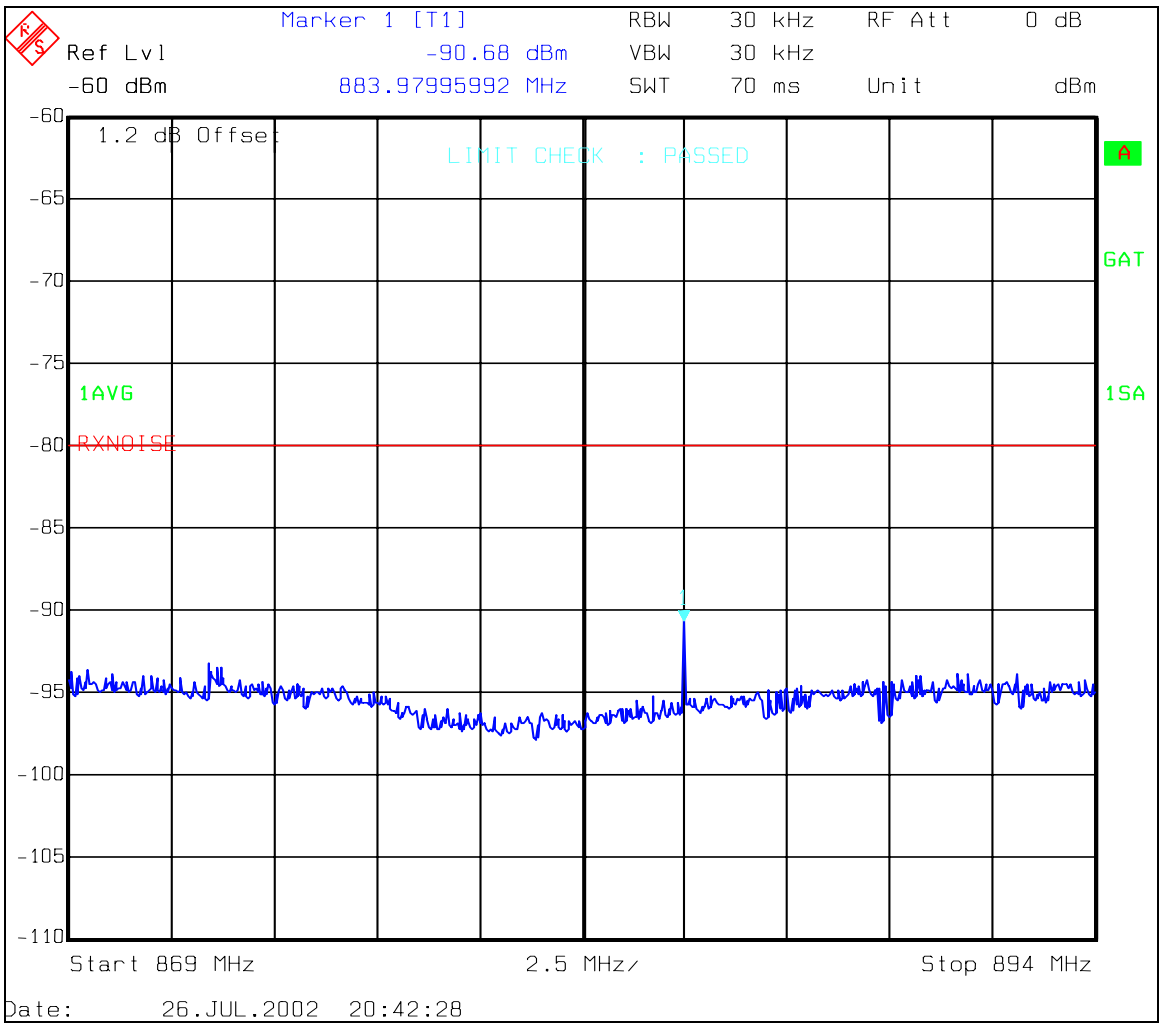
- Use the CMU200 as a base station and the MMI to establish a call with the EUT.
- Set the EUT power level to PLC=5 (Unit operates approximately at +31.0 dBm at this power level)
- Set the Tx channel No. to 128 (824.20 Mhz)
- Measure the Spurious emission at RX Band with the Spectrum Analyzer
- Repeat the procedure for TX channel No. 190 (836.60 Mhz) and 251 (848.80 Mhz)

3.3 Specification

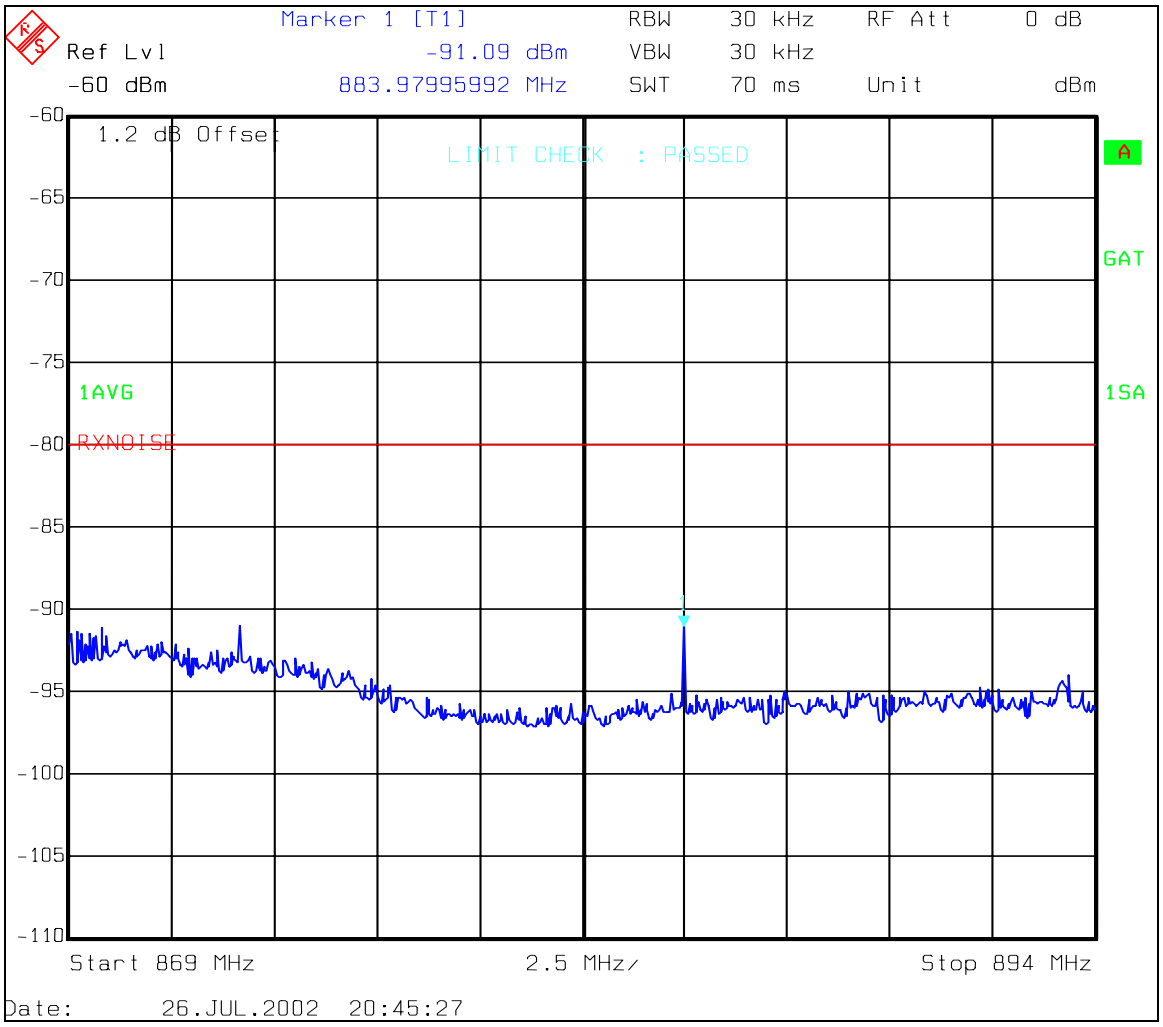
- The power level of any emissions at the receive band, measure with 30Khz RBW, shall not exceed -80dBm.

4 Test Results

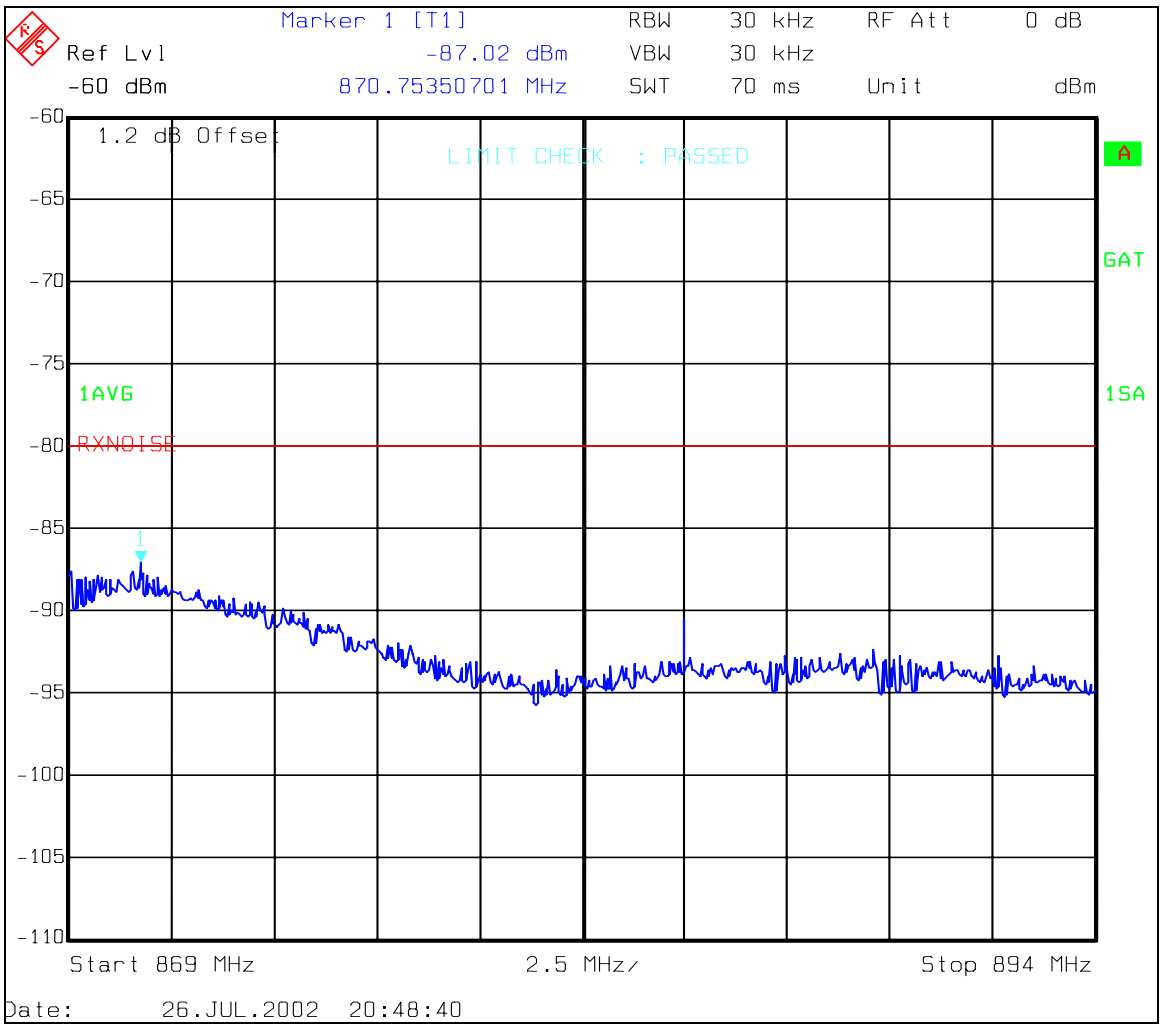
4.1 Spurious emission at TX Channel 128 (824.20 MHz)



4.2 Spurious emission at TX Channel 190 (836.60 MHz)



4.3 Spurious emission at TX Channel 251 (848.80MHz)



5 APPENDICES

5.1 Certificate reports

MICRO PRECISION CALIBRATION INC.
9235 Activity Road, Suite 107, San Diego, CA 92126
Ph. (858) 547-0217 Fax (858) 547-0241

Calibration Report

Customer SIEMENS ICM SAN DIEGO, CA, 92127

Account:28651

Instrument: BB2118 RADIO COMMUNICATION TESTER

Mfg:**ROHDE & SCHWARZ**	Model:**CMU 200**	Serial #:**100432**
Size:	Resltn:NA	Report Date:**11/26/01**

Job Number:**D17466**	P.O.:**41S1301000**	Report #: **85612**
Cust Ctrl:**201742**	Dept:**PA**	Location:**NA**

Work Performed:**Inspected and calibrated.** page 1 of 1

Parts Replaced:**None**

Received Condition:**In tolerance** Returned Condition:**In tolerance**

Function Tested	Readings Before	Readings After	Tolerance
	ALL PARAMETERS TESTED FOUND TO BE WITHIN		
	MANUFACTURER'S SPECIFICATIONS.		

Services provided conform to ANSI/NCSL Z540-1-1994 (Formerly Mil-Std 45662A).
All work performed complies with MPC Quality System QM 540-94, Rev 1c.

Std Ctrl #	Standards Used	Due Date	Traceability Ref	Model
L1056	RECEIVER, MEASURI 8902A	030502	2453T594801	8902A
L1497	MODULE, SENSOR 11722A	032702	2453X040101	11722A
J6551	GENERATOR, SIGNAL 83640A	062202	2453W813201	83640A
J6552	ANALYZER, SPECTRU 8592L	062202	2453X189401	8592L

Environmental:74F 50% RH Test Date:112601

Uncertainty of test:Accuracy Ratio > 4:1 Cycle:12

Cal Procedure:MANUFACTURER Due Date:112602

Technician:SCOTT STANCO Quality Approval: QC 20

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Calibration Report

MICRO PRECISION CALIBRATION INC.
9235 Activity Road, Suite 107, San Diego, CA 92126
Ph. (858) 547-0217 Fax (858) 547-0241

Customer: SIEMENS ICM SAN DIEGO CA 92127

Account:28651

Instrument: BB2112 POWER METER

Mfg:GIGATRONICS	Model:8652A	Serial #:8650929
Size:	Resltn:NA	Report Date:11/26/01

Job Number:D17466	P.O.:41S1301000	Report #: 85605
Cust Ctrl:201788	Dept:PA	Location:NA

Work Performed:Inspected and calibrated. page 1 of

Parts Replaced:None

Received Condition:In tolerance Returned Condition:In tolerance

Function Tested	Readings Before	Readings After	Tolerance
	ALL PARAMETERS TESTED FOUND TO BE WITHIN		
	MANUFACTURER'S SPECIFICATIONS.		

Services provided conform to ANSI/NCSL Z540-1-1994 (Formerly Mil-Std 45662A).
All work performed complies with MPC Quality System QM 540-94, Rev 1c.

Std Ctrl #	Standards Used	Due Date	Traceability Ref	Model
X5200	METER, POWER 432A	050702		432A
BA6129	THERMISTOR MOUNT 478A	051802		478A
T5173	MULTIMETER, DIGIT 3458A	052902	2453X107101	3458A

Environmental:73F 42% RH Test Date:112601

Uncertainty of test:Accuracy Ratio > 4:1 Cycle:12

Cal Procedure:MANUFACTURER Due Date:112602

Technician:SCOTT STANCO Quality Approval: QC 20

Rev 3 03/00

Calibration Report

MICRO PRECISION CALIBRATION INC.
9235 Activity Road, Suite 107, San Diego, CA 92126
Ph. (858) 547-0217 Fax (858) 547-0241

Customer SIEMENS ICM SAN DIEGO, CA, 92127

Account:28651

Instrument: BB2142 SPECTRUM ANALYZER

Mfg:ROHDE & SCHWARZ	Model:FSEM 30	Serial #:100024
Size:	Resltn:NA	Report Date:11/27/01

Job Number:D17466	P.O.:41S1301000	Report #: 85639
Cust Ctrl:201430	Dept:TDMA	Location:NA

Work Performed:Inspected and calibrated. page 1 of

Parts Replaced:None

Received Condition:In tolerance Returned Condition:In tolerance

Function Tested	Readings Before	Readings After	Tolerance
	ALL PARAMETERS TESTED FOUND TO BE WITHIN		
	MANUFACTURER'S SPECIFICATIONS.		

Services provided conform to ANSI/NCSL Z540-1-1994 (Formerly Mil-Std 45662A)
All work performed complies with MPC Quality System QM 540-94, Rev 1c.

Std Ctrl #	Standards Used	Due Date	Traceability Ref	Model
J6551	GENERATOR, SIGNAL 83640A	062202	2453W813201	83640A
L8600	GENERATOR, SIGNAL 8657A	020502	BA8401/031501	8657A
BA8401	TIME & FREQUENCY 58503A	031502	GPS INTRINSIC	58503A
L9709	SENSOR, POWER 8485A	040902	2453X050202	8485A

Environmental:75F 43% RH Test Date:112701

Uncertainty of test:Accuracy Ratio > 4:1 Cycle:12

Cal Procedure:MANUFACTURER Due Date:112702

Technician:CHAD INNISS Quality Approval:_____

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Calibration Report

MICRO PRECISION CALIBRATION INC.
9235 Activity Road, Suite 107, San Diego, CA 92126
Ph. (858) 547-0217 Fax (858) 547-0241

Customer SIEMENS ICM SAN DIEGO, CA, 92127

Account:28651

Instrument: BB2113 POWER SENSOR

Mfg:GIGATRONICS	Model:80420A	Serial #:1834334
Size:	Resltn:NA	Report Date:11/26/01

Job Number:D17466	P.O.:41S1301000	Report #: 85606
Cust Ctrl:NONE	Dept:PA	Location:NA

Work Performed:Inspected and calibrated. page 1 of

Parts Replaced:None

Received Condition:In tolerance Returned Condition:In tolerance

Function Tested	Readings Before	Readings After	Tolerance
	ALL PARAMETERS TESTED FOUND TO BE WITHIN		
	MANUFACTURER'S SPECIFICATIONS.		

Services provided conform to ANSI/NCSL Z540-1-1994 (Formerly Mil-Std 45662A).
All work performed complies with MPC Quality System QM 540-94, Rev 1c.

Std Ctrl #	Standards Used	Due Date	Traceability Ref	Model
J6551	GENERATOR, SIGNAL 83640A	062202	2453W813201	83640A
L4500	SENSOR, POWER 8481A	031702	2451F551701	8481A
L9708	SPLITTER, POWER 11667A	010302	242850,245416	11667A
T8988	METER, POWER 438A	010402	2453W215301	438A

Environmental:73F 42% RH Test Date:112601

Uncertainty of test:Accuracy Ratio > 4:1 Cycle:12

Cal Procedure:MANUFACTURER Due Date:112602

Technician:SCOTT STANCO Quality Approval: QC 20

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5.2 FCC Acceptance

Final Agreement of FCC to SIEMENS Proposal for Noise in RX Measurement Procedure from 09/20/2001 by Frank Coperich

Subj: Fwd: Part 22.917(f) Test Method Question
Date: 9/20/2001 3:15:22 PM Central Daylight Time
From: FCOPERIC@fcc.gov (Frank Coperich)
To: SBerger822@aol.com

File:Part.zip (60598 bytes) DL Time (42666 bps): < 1 minute

This test procedure is acceptable.

Received: from gatekeeper2.fcc.gov
([165.135.0.253])
by fcc.gov; Thu, 20 Sep 2001 07:16:39 -0400
Received: by gatekeeper2.fcc.gov; id HAA03743; Thu, 20 Sep 2001 07:16:37
-0400 (EDT)
From: <SBerger822@aol.com>
Received: from unknown(64.12.136.7) by gatekeeper2.fcc.gov via smap (V5.5)
id xma003727; Thu, 20 Sep 01 07:16:17 -0400
Received: from SBerger822@aol.com
by imo-m04.mx.aol.com (mail_out_v31_r1.7.) id 2.16e.129b4ac (4068)
for <fcoperic@fcc.gov>; Thu, 20 Sep 2001 07:16:11 -0400 (EDT)
Message-ID: <16e.129b4ac.28db29fa@aol.com>
Date: Thu, 20 Sep 2001 07:16:10 EDT
Subject: Part 22.917(f) Test Method Question
To: fcoperic@fcc.gov
X-Mailer: AOL 6.0 for Windows US sub 10536
Mime-Version: 1.0
Content-Type: multipart/mixed; boundary="=_B3E92F04.5130F84A"

Frank,

It was good talking to you yesterday. I appreciate your help in resolving this question regarding the correct test method for Part 22.917(f). My client must make a design decision tomorrow and after that it will be very difficult and expensive for them to change the design. Therefore, assuring that they correctly understand this test is important to them.

Attached is a memo giving a detailed description of the test method being used implementing the averaging, per our conversation yesterday. Test results from this product are included that show a little over 3 dB of margin using this test method.

I will look forward to your reply. If you want to discuss this further please feel free to call me at 512-864-3365.

Best Regards,

Stephen Berger

Test Method described in Part.zip:

"Based on this rational, we would ask if you agree that the correct measurement settings for the 22.917(f) test are as follows:

1. Limit Line = -80 dBm
2. Detector = Sample
3. Trace = Averaging over time for 200 cycles
4. Sweep Time = Auto selected (approx. 140 ms)
5. Trigger = pulsed, gated to transmit pulse
6. Bandwidths, RBW = 30 kHz, VBW = 30 kHz or greater
7. Transmit Channels (Frequencies) = Measure at low, mid and high channels."