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Network Approvals Test Report

Author: Frank Li

Network Attachment Test Report

For 38GHz Cross-Pol Terminal Station
Including

90 -7164 -01	38GHz Cross-Pol RT (M/A-Com Radio)
3CC10329 ACxx	NT (2 x Ethernet)
3CC10329 AExx	NT (2 x Ethernet + 2 x T1)
3CC12568AAAA	IGAU

Tested in 7390 LMDS Release 2.2B

Tested to FCC Part 101, Subpart C

Test Dated: 6th May 2001 ~ 26th June 2001

APPROVALS

Vito Scaringi

Manager, Network & Regional Compliance Group

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MANDATORY REVIEWERS

The following people or an authorized delegate must review this document:

- 1) Manager: Network and Regional Compliance.

INTERESTED PARTIES

The following people must be notified of the final review of this document but are not required to attend the review;

- 1) Director of Product Integrity
- 2) All Approvals Groups' staff

ABSTRACT

This document provides the test procedure and test report used to fulfill the requirements of the Network Approvals Group personnel and the product designers to **38GHZ CROSS-POL TERMINAL STATION** during Network Approvals testing.

The test data contained in this report is evidence of compliance to specified Network standards for the units described herein.

GLOSSARY

AMD	ATM Modulator Demodulator, ATM modem cards in 7390 base station.
ANSA	Alcatel Networks SA (Alcatel France)
ANSI	American National Standards Institute
ANT	ATM Network Termination, OC3/STM-1 interface card in 7390 base station
BS	Base Station. The Centre office unit, it is the combination of DBS and RBS.
CTR	Common Technical Regulation
DBS	Digital Base Station. The indoor unit of 7390 base station, it is a combination of chassis, TNT, ANT, AMD, IBS etc.
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standard Institute
FCC	Federal Communications Commission
EN	European Standard
EUT	<i>Equipment Under Test</i>
IBS	Intermediate frequency Base Station, IF turner card in 7390 base station
IC	Industry Canada (formerly DOC)
IEC	International Electrotechnical Commission
ITU	International Telecommunications Union
ITU-R	International Telecommunications Union, Radiocommunication standardization sector
ITU-T	International Telecommunications Union, Telecommunication standardization sector
LMDS	Local multipoint Distribution System
LT	<i>Local Terminal. Windows NT based 7390 LMDS management software.</i>
NT	Network Terminal. It is the indoor customer unit, which provides wireline connection to outside network.
OTU	Outdoor Transmitter Unit, It is the radio transmitter module of RBS in the 7390 base station.
ORU	Outdoor Receiver Unit, It is the radio receiver module of RBS in the 7390 base station
PSU	<i>Power Supply Unit. It is a DC to DC converter/distributor.</i>

PTS	Problem Tracking System. A centralized problem tracking database system used by Newbridge to manage the problems found in the field as well as within Newbridge (Design, PI, AppEng, etc.).
RBS	Radio Base Station. It is the radio transmit/receive portion of the 7390 base station. It consists of OTU and ORU in cross-pol solution.
RT	Radio Terminal. The radio transceiver unit installed at customer side.
TNT	TDM Network Termination, TDM T1/E1 interface card in 7390 base station.
TS	Terminal Station, ----the customer premise unit. It is the combination of NT and RT.

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1 INTRODUCTION

1.1 Purpose

This document provides a test report on Network Approvals for **38GHZ CROSS-POL TERMINAL STATION** (39.300~40.000/39.000~39.300 GHz) according to applicable technical requirements in FCC part 101.

1.2 Scope

This document shall be used to demonstrate compliance for **38GHZ CROSS-POL TERMINAL STATION** to the test requirements contained in applicable FCC standards. This report is to show compliance for the 39.300 ~ 40.000 / 39.000 ~ 39.300 GHz band only.

1.3 Deviations from the Test Plan

None

2 EQUIPMENT UNDER TEST (EUT)

2.1 Equipment Description

The Alcatel 7390 LMDS is a multiservice broadband wireless access solution. It connects Base Station and Terminal Station via wireless links. And both sides connect to outside network via wired link.

The system consists of TDM QPSK Downlinks and TDMA D-QPSK Uplinks.

The Terminal Station consists of NT, IGAU and RT.

NT is the indoor customer unit, which provides wireline connection to outside network. It, on the network side, connects to an external RT via IGAU. And on the customer side it connects to various types of interfaces depending on the type of NT.



The difference among NTs is the type of daughter board (such as T1, E1) plugged into the motherboard. The motherboard provides basic Ethernet ports at wireline customer side and wireless connection to Base Station via IGAU and RT.

9900 NCA 001, 9900 NGA 001 and 9900 NCE 001 2 x Eth 10bT 2x G703: E1 for NCA001 and NGA001 T1 for NCE001	9900 NCA 002 2 x Eth 10bT G703 X21	9900 NCD 001 2 x Eth 10bT
9900 NCB 001, 9900 NGB 001 2 x Eth 10bT 4 x ISDN/2B1Q 60V	9900 NGA 004 2 x Eth 10bT 2 x G703	

IGAU is Inline Gain Amplifier Unit, which amplifies Uplink IF signal and feeds it into RT.

RT is the outdoor Radio Terminal unit, which typically mounted near the roof of a building at a fixed position.

The RT is developed/provided by an OEM supplier. The OEM supplier for the RT that has been tested and mentioned within this report is:

M/A-COM Communication and Sensor Products
(Tyco Electronics Corp.)
1011 Pawtucket Blvd., Lowell, MA, USA

2.2 EUT Configuration

Model Number	Name and Description	S/N	EUT Software
3CC10329AEAA	7390 NT (2 Ethernet + 2 T1)	CU004709323	V2_B2_07
3CC10329ACAA	7390 NT (2 Ethernet)	CU002307805	V2_B2_07
3CC12568AAAA	IGAU	BS0044U0ZMV	N/A
90-7164-01	38 GHz RT (M/A-COM)	B0020170219	N/A
90-7164-01	38 GHz RT (M/A-COM)	00430170167	N/A

2.3 EUT Accessories

Part Number	Name	Brief Descriptions	Quantity
N/A	Bias Tee	Feed DC in RBS	3
N/A	IF cable	SMA, 6 feet	5
N/A	50ohm load		2
N/A	RJ45 cable	5 meter	1
N/A	RS 422 cable	Radio activation control , 5 meters	1
N/A	Waveguide to coaxial adapter	WR-28 to k type coaxial	1

N/A	Waveguide attenuator	WR-28, 20 dB	1
N/A	RF cable	V type connector cable, up to 50GHz, 6 feet	1

2.4 EUT Setup

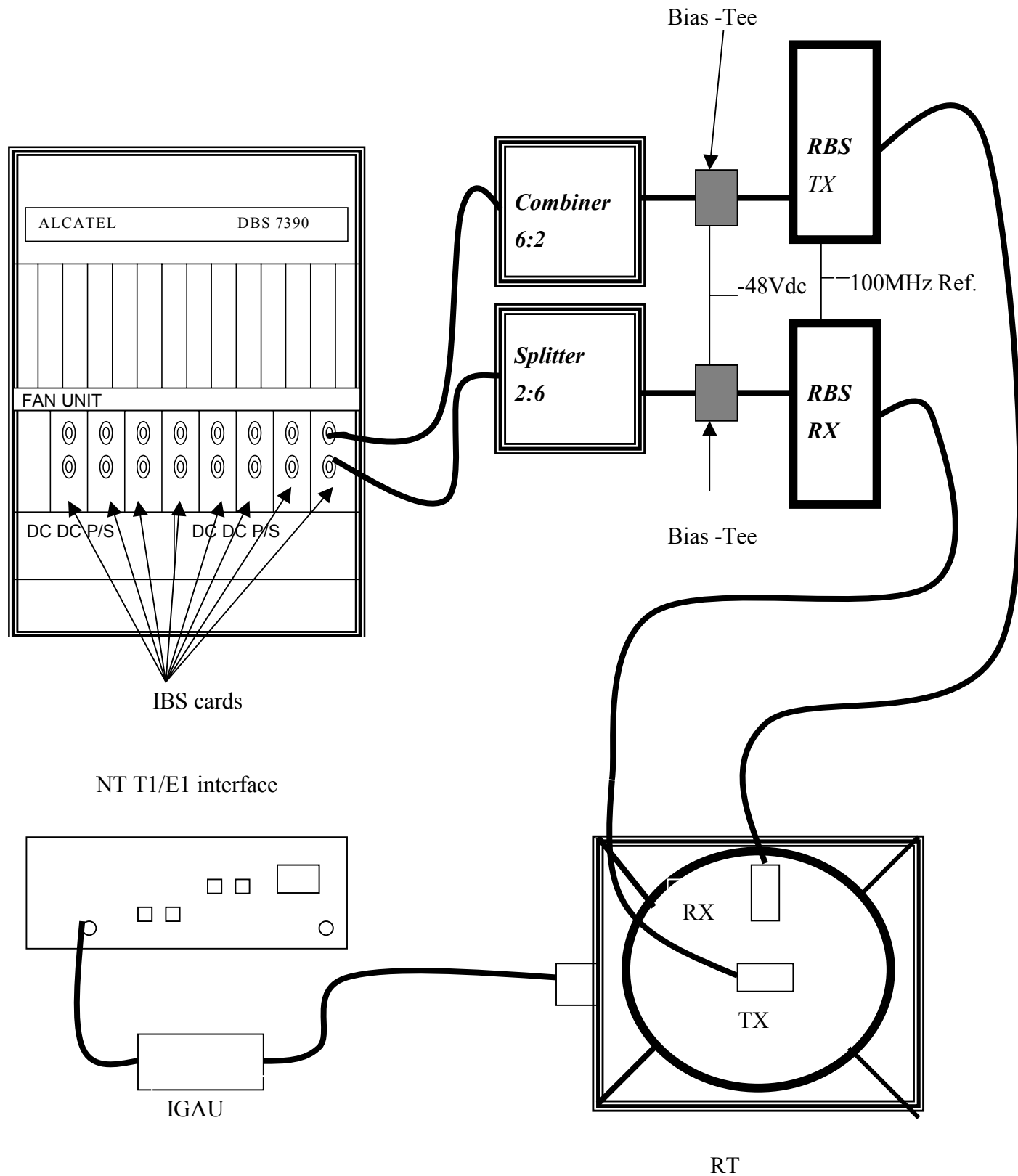


Figure 1 7390 LMDS Cross-Pol TS setup ---- General

2.5 EUT Data Path

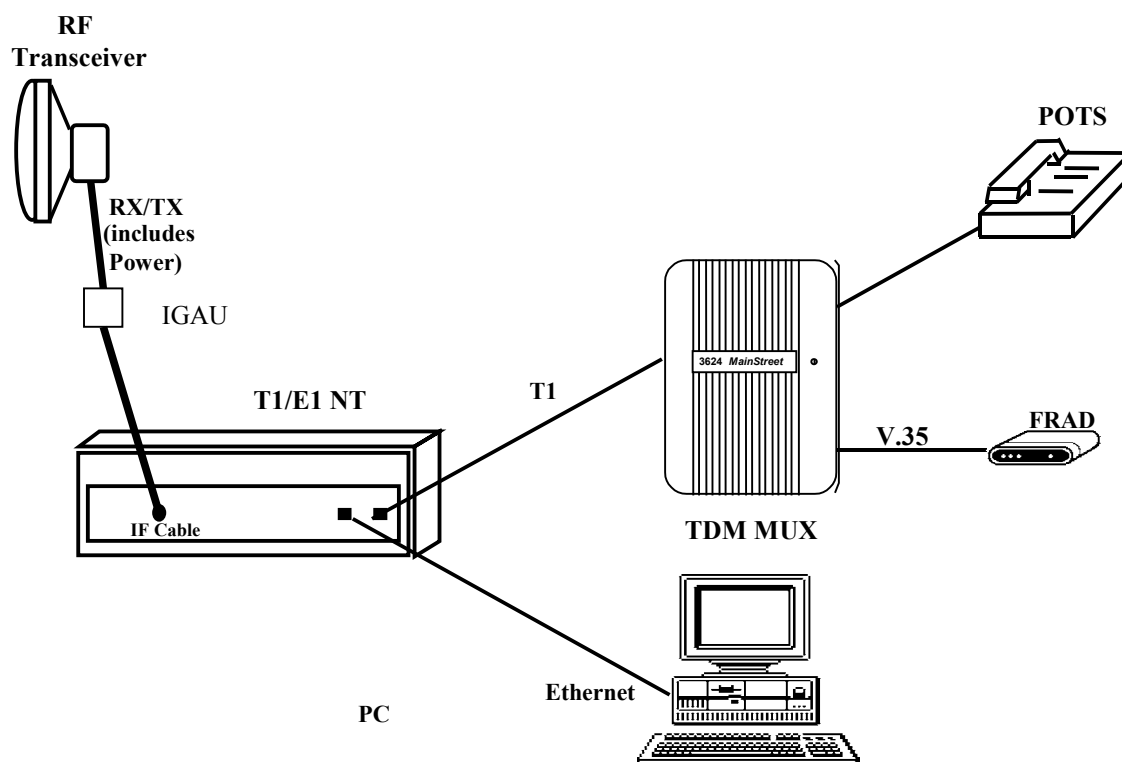


Figure 2 7390 LMDS TS Data Path

2.6 EUT modifications

No changes required for compliance or to achieve compliance to FCC part 101.

3 NETWORK COMPLIANCE SUMMARY

This report has been read and approved by the following departments responsible for its implementation. All changes made to the EUT for compliance must be escalated via the PTS. The EUT mentioned in this report meets the requirements of standards indicated below.

Basic Standard	Compliance
FCC Part 101, Subpart C	Yes

Declaration of Compliance

“ This equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations. To the best of my knowledge, these tests were performed using measurement procedures consistent with industry or Commission standards and demonstrate that the equipment complies with the appropriate standards. . Each unit manufactured, imported or marketed, as defined in the Commission’s regulations, will conform to the sample(s) tested within the variations that can be expected due to quantity production and testing on a statistical basis. I further certify that the necessary measurements were made by Alcatel Canada Inc., 600 March Road, Kanata, Ontario, K2K2E6 and Nemko Canada Inc., 3325 River Road RR#5, Ottawa, Ontario, K1V 1H2 ”

Standard	Measurement Type	Method/ Limit	Pass/Fail Criteria
FCC Part 101 & FCC Part 2	Output Power	Section 2.1046 / Section 101.113	Pass
	Spectrum Mask (Occupied Bandwidth)	Section 2.1049 / Section 101.111(a)(2)(ii)	Pass
	Radiated Spurious	Section 2.1053 & 2.1057 / Section 101.111(a)(2)(ii)	Pass
	Conducted Spurious	Section 2.1051 & 2.1057 / Section 101.111(a)(2)(ii)	Pass
	Frequency Stability	Section 2.1055 / Section 101.107	Pass

Regulatory Compliance Requirements

Test Engineer: Frank Li
Network / Wireless Approvals Specialist

Date: July 24th, 2001

Contact Address: 600 March Road
Kanata, Ontario, Canada, K2K 2E6

Reviewer: Vito Scaringi
Manager, Network and Regional Compliance Group

Date: July 24th, 2001

Contact Address: 600 March Road
Kanata, Ontario, Canada, K2K 2E6

4 TEST DATA

Standards: **FCC Part 101(10-1-98 Edition):** Fixed Microwave Services
 Subpart C: Technical Standards

4.1 RF Output Power

Limit: + 55dBW (Maximum EIRP)
Measured Value: $17.6 \text{ dBm} + 35 \text{ dBi} = 14.6 \text{ dBW}$
Criteria: **Pass**

4.1.1 Test Procedure

The RF output power was adjusted to have each carrier set at approximately +17 dBm.
All power measurements were taken in normal operation (modulated).

Note:

- a). The system provides RT antennas with maximum gain as 35 dBi.
- b). The diplexer is used to separate the Upstream and Downstream IF signals from the +28Vdc. The splitter is used to separate the Upstream path to maintain a closed loop system with the BS at the IF level. Without a closed loop, the Upstream is not able to transmit. The Bias-Tee is used to combine the external +28Vdc and the modulated IF upstream signal to the radio (RT). By increasing the variable attenuator, the BS will detect a weaker signal, which will return a message to the NT via the downstream to increase the power level of the upstream.

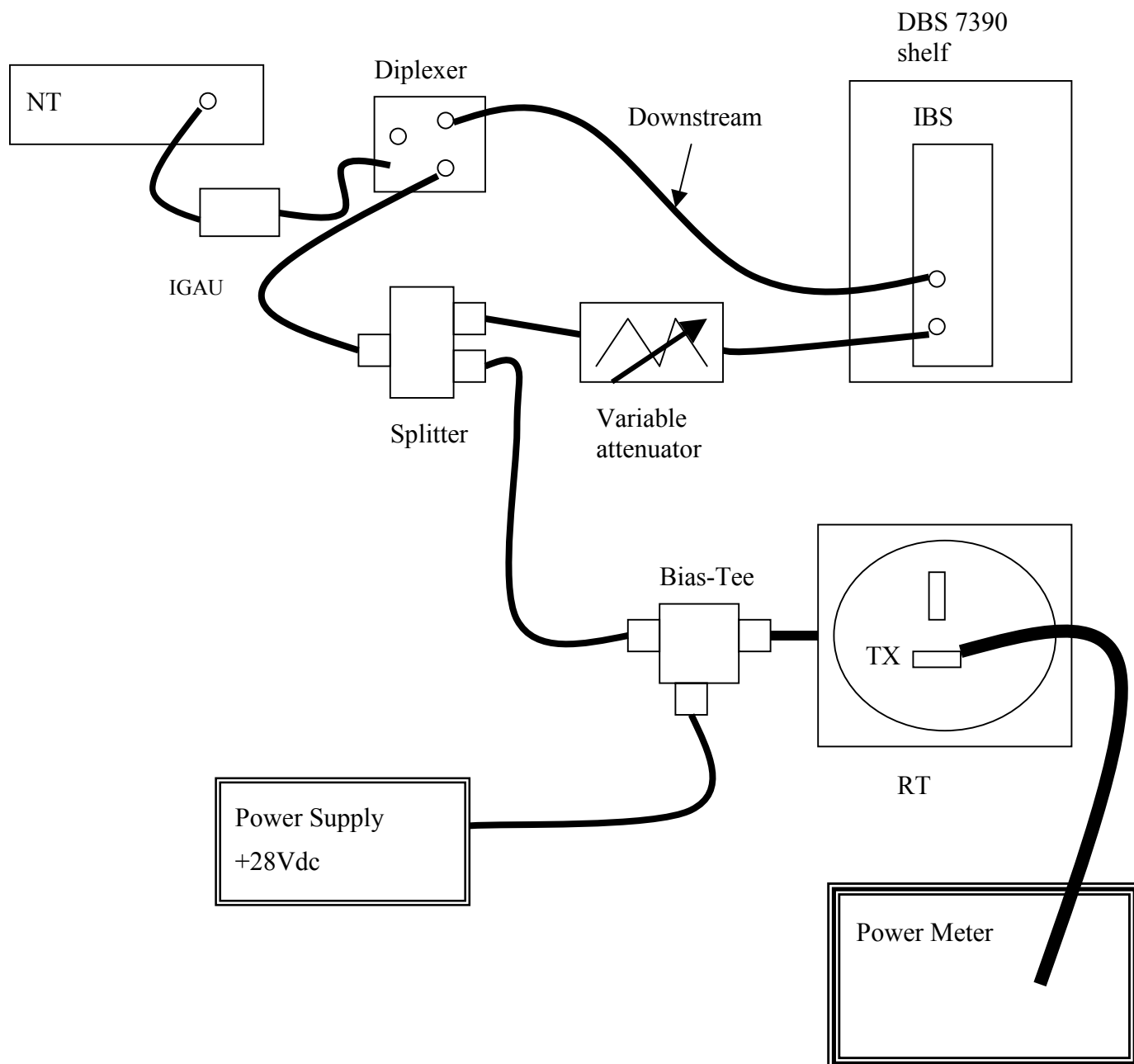


Figure – 3 RF Power Output Test Setup

(1) Calibrate power meter to the proper frequency of transmission.

- (2) Turn on the RT and adjust the variable attenuator on the upstream IF path to achieve a $\geq +17\text{dBm}$ at the antenna port. Add the appropriate fixed attenuator to avoid damage to the power meter
- (3) Measure output power at the low and high end of the band of operation of the RT. Measure the attenuator and compensate with an offset.

4.1.2 Test Condition

Temperature	22 °C
Relative Humidity	65 %
Atmospheric Pressure	101 k Pa
Test Location	Product Integrity Laboratory Alcatel Canada Inc 600 March Road, Kanata, Ontario, K2K 2E6
Test Engineer	Frank Li Network / Wireless Approvals Specialist

4.1.3 Test Equipment

Instrument	Mfr./Model / S/N	Calibration
Power Meter	HP EP4419B Tool #: 8067	Last: 2000/12/03 Due: 2001/12/03
Power Sensor	HP 8487A Tool #: 10419	Last: 2000/09/26 Due: 2001/09/26

4.1.4 Test Data

Unit under Test	Frequency Band (MHz)	Maximum Power Level
TS TX M/A-Com Transceiver	39000 to 39300	17.6dBm(-12.4 dBW) maximum (3.5 MHz carriers) 17.6dBm (-12.4 dBW) maximum (7 MHz carrier)

4.2 Spectrum Mask

Limit:	See Mask Template in test data.
Measured Value:	See Test Data
Criteria:	Pass

4.2.1 Test Procedure

The measurements were done with one NT and one RT communicating with the BaseStation to control the output power level. The upstream was attenuated at the IF level, where the BaseStation then provided a command to the NT via the downstream to increase or decrease the output power level for the upstream. The carrier was adjusted at the RF output to approximately +17dBm.

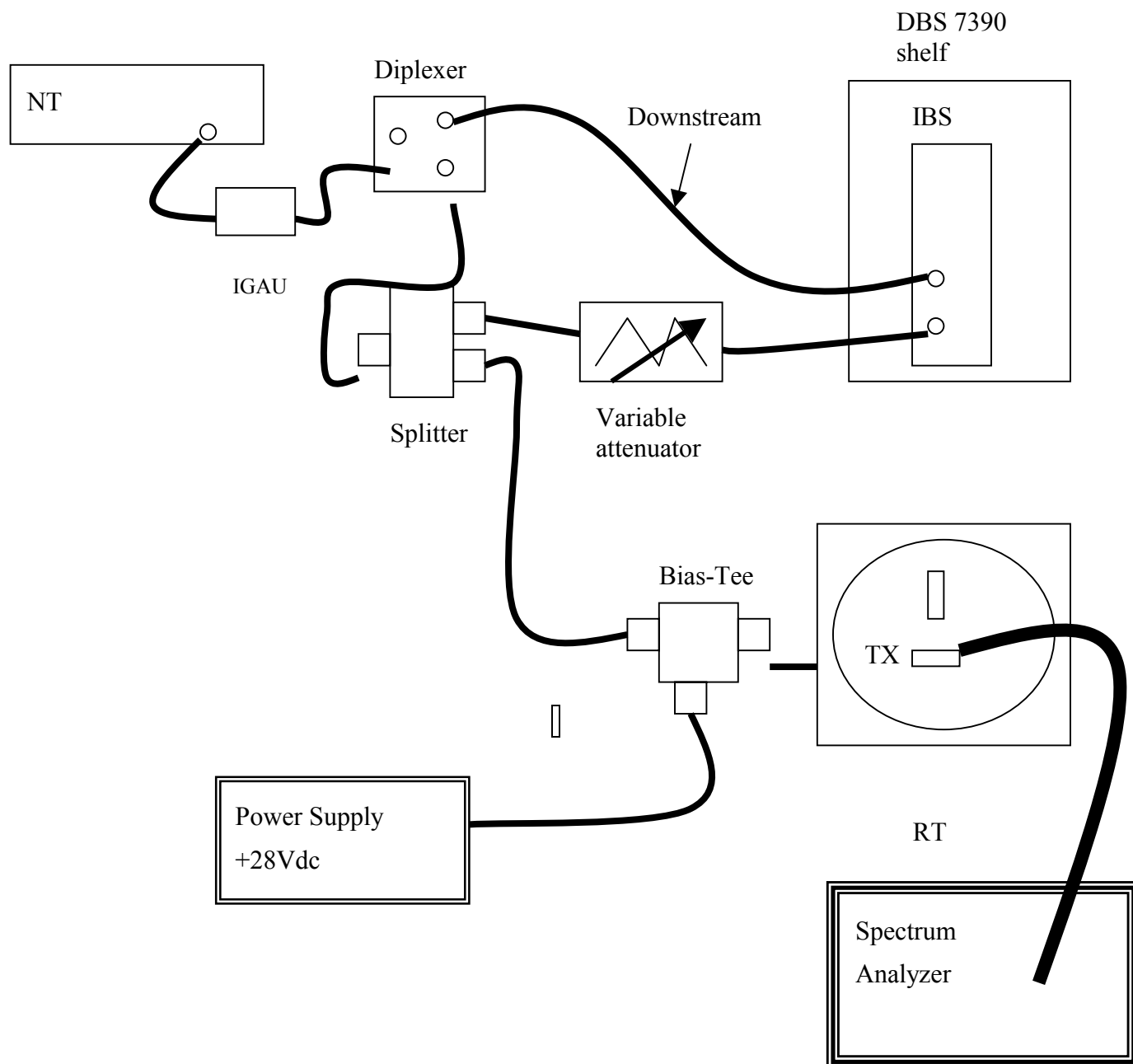


Figure – 4 Spectrum Mask measurement setup

(1) Set the settings of a spectrum analyzer as follows:

Center frequency	Set center frequency at the middle of channel or carrier to get the best test result.
Sweeping time	Automatic

Resolution bandwidth	1 MHz
Video bandwidth	$\geq$ 300 kHz (video averaging of display is allowed)
Y scale	10 dB/Div

(2) Connect spectrum analyzer at the antenna port and record the spectrum shape. Perform measurements at the edge of the frequency block near the higher end of the assigned band. Repeat measurements at the lower end of the assigned band or to the lowest frequency the transmitter can operate at.

(3) Overlay the FCC mask and verify that it does not exceed the limits.

4.2.2 Test Condition

Temperature	22 °C
Relative Humidity	65 %
Atmospheric Pressure	101 k Pa
Test Location	Product Integrity Laboratory Alcatel Canada Inc 600 March Road, Kanata, Ontario, K2K 2E6
Test Engineer	Frank Li Network / Wireless Approvals Specialist

4.2.3 Test Equipment

Instrument	Mfr./Model / S/N	Calibration
Spectrum Analyzer	HP 8564E Tool # 9169	Last: 2000/08/24 Due: 2001/08/24

4.2.4 Test Data

Transmission Frequency Range: 39,000 to 39,300 MHz.

The center frequency of 7 MHz carrier will be 3.5 MHz away from the edge of the authorized frequency block, which is 50 MHz at 38MHz band.

For 3.5 MHz carrier, the center frequency of carrier will be 1.75 MHz away from the edge of the authorized frequency block.

To demonstrate the system performance meets the technical standard requirement, by engineering judgement, test is performed separately at two different 50MHz authorized blocks, which locate at lower end and upper end of the designed band 39,000 to 39,300 MHz.

See Appendix A for test plots.

Note:

The insertion loss of waveguide attenuator and RF coaxial cable at 39 MHz band are 28.04 dB, and have been set as offset in spectrum analyzer.

4.3 Conducted Spurious

Limit: -13 dBm / 4 kHz

Measured Value: See Test Data

Criteria: **Pass**

4.3.1 Test Procedure

The conducted spurious are measured at the antenna port of the RT in normal operation.

System configuration is the same as in Spectrum Mask test.

Measured emissions at the frequencies, which are outside the occupied bandwidth up to 200GHz.



Figure – 5 Conducted Spurious measurement setup

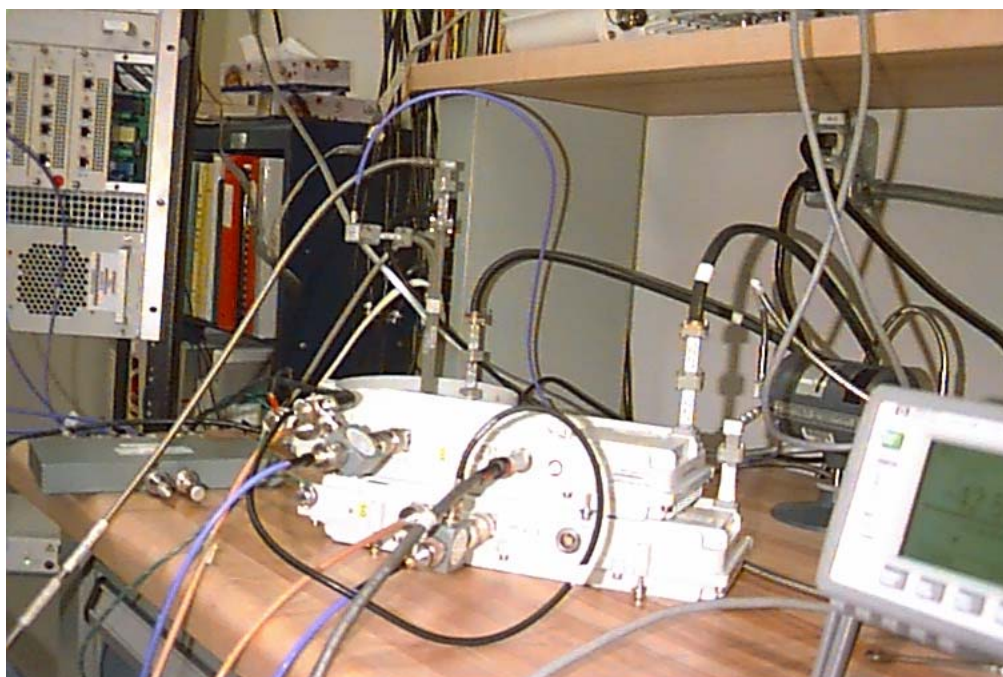
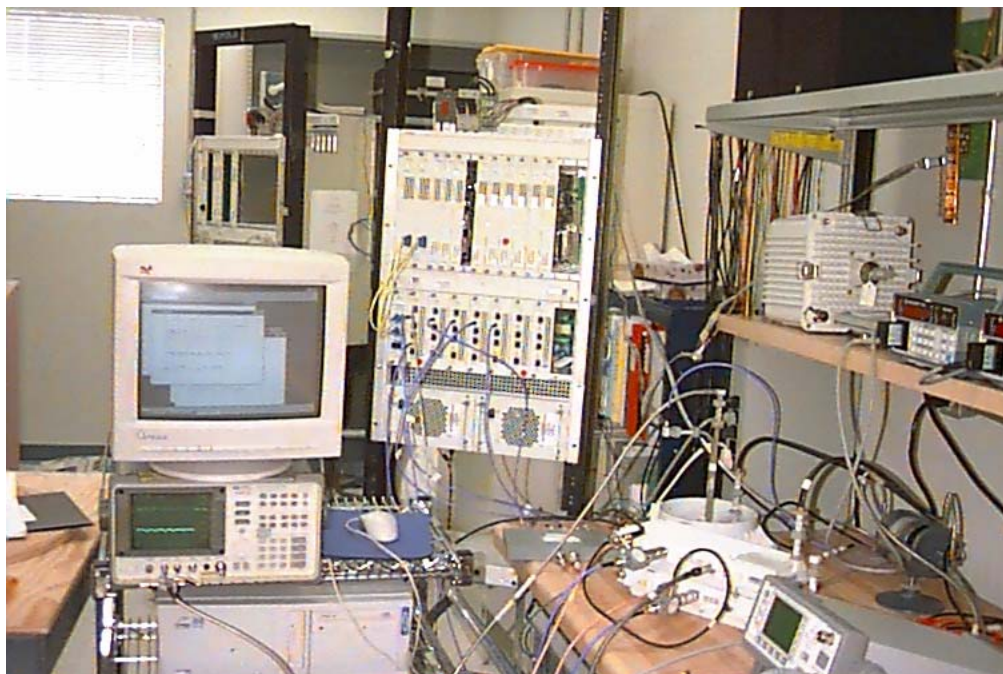


Figure – 6 Conducted Spurious Setup at Nemko Canada Inc. Laboratories

4.3.2 Test Condition

Temperature 22 °C
Relative Humidity 65 %
Atmospheric Pressure 101 k Pa
Test Location Nemko Canada Inc.
3325 River Road , Ottawa, Ontario K1V 1H2
Test Engineer Glen Westwell

4.3.3 Test Equipment

Cal Cycle	Equipment	Manufacturer	Model	Serial No.	Last Cal.	Next Cal.
3 Year	Mixer/Antenna 40-60Ghz	Olsen – OML	M19HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer /Antenna 60-90Ghz	Olsen – OML	M12HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer / Antenna 90-140Ghz	Olsen – OML	M08HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer / Antenna 140-220Ghz	Olsen – OML	M05HWA (H.P.)		Mar. 15/00	Mar. 15/03
1 Year	Spectrum Analyzer	Hewlett Packard	8564E	3846A014 07	May 31/00	Nov. 30/01

4.3.4 Test Data

Test was performed from 30 MHz to 200 GHz.

See Appendix B for test plots.

Note:

The insertion loss of waveguide attenuator and RF coaxial cable has been set as offset in spectrum analyzer.

4.4 Radiated Emissions

Limit: -13 dBm / 4 kHz

Measured Value: See Test Data

Criteria: **Pass**

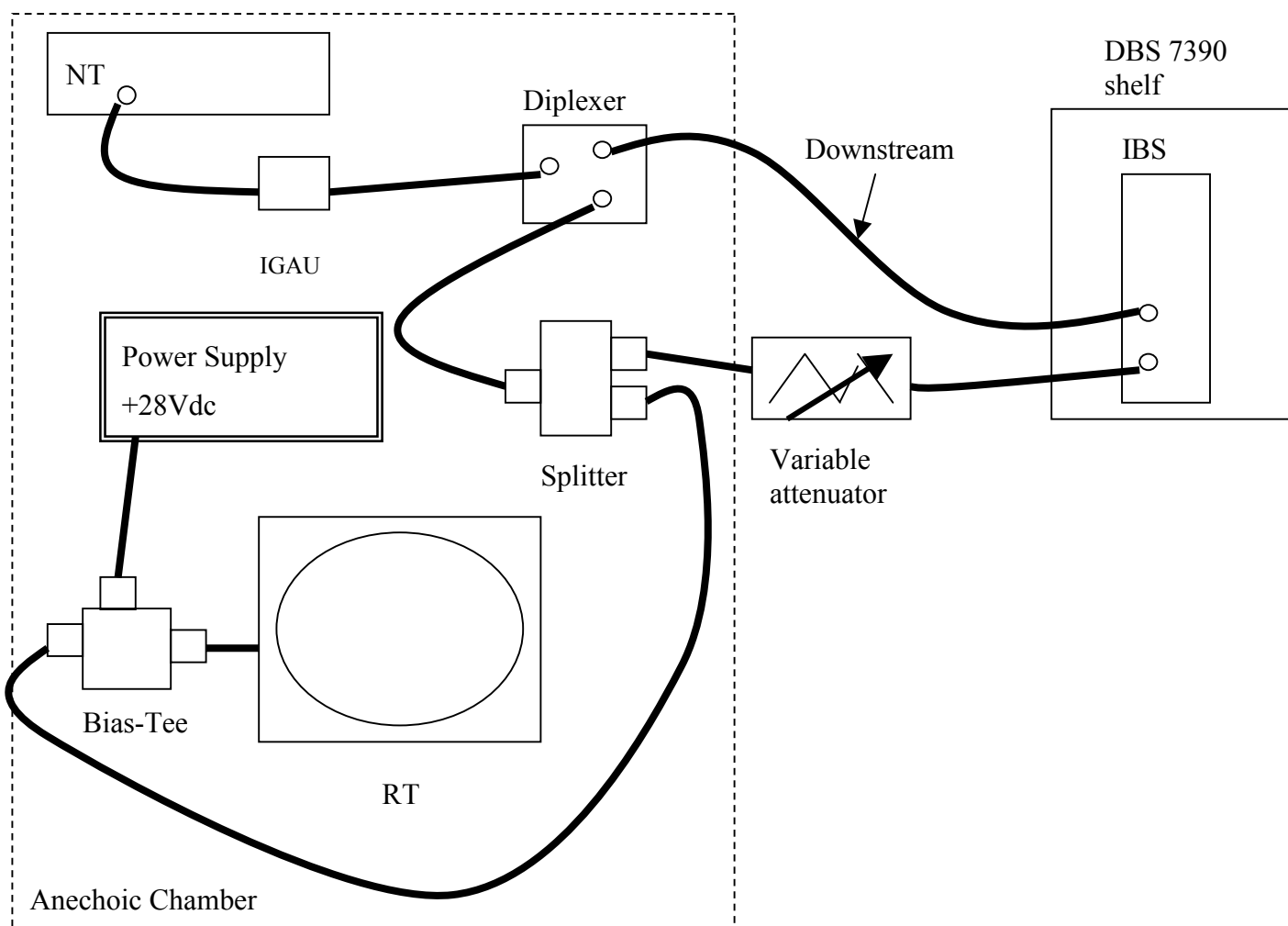
4.4.1 Test Procedure

The measurements were done with one NT and the RT was adjusted at the RF output to approximately $\geq +17$ dBm at the antenna port.

The reference level was measured with the vertical polarized antenna that had a gain of 36dBi. Once the reference level was defined, the final measurements were taken with the RT port terminated with a 50 Ω load.

All radiated spurious measurements were taken in semi-anechoic room at a distance of 3, 1 or 0.3 meters in the vertical and horizontal polarization.

The system was setup in maximum configuration as indicated below.



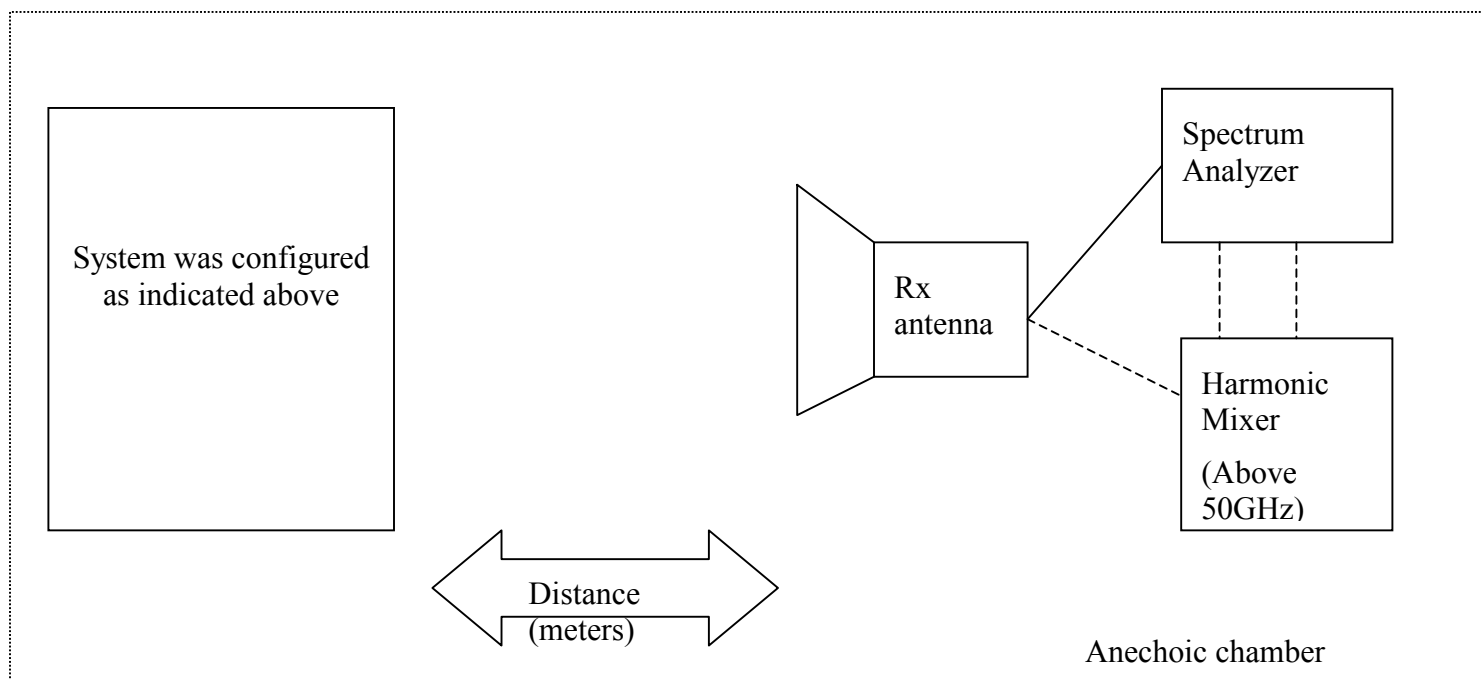
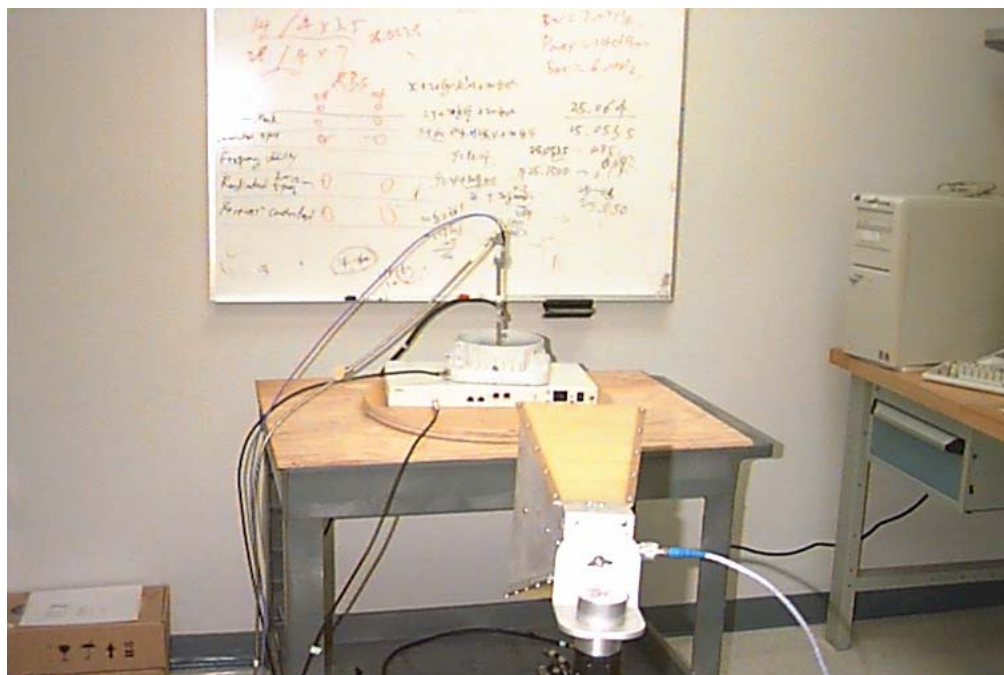


Figure -7 Radiated Spurious measurement setup



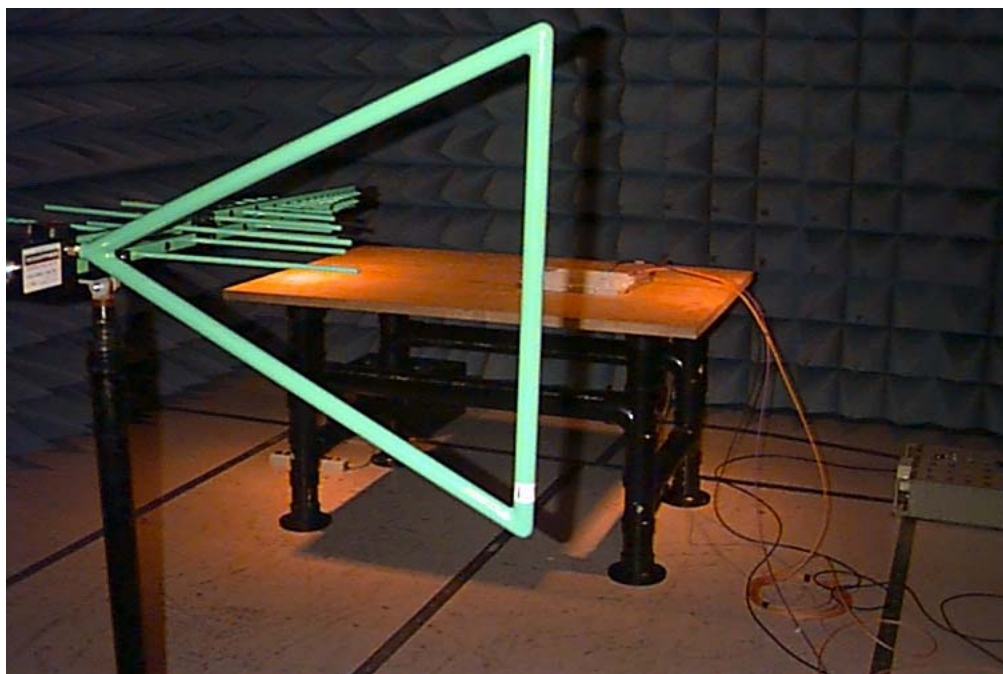


Figure – 8 Radiated Spurious Setup in Nemko Canada Inc. Laboratories

4.4.2 Test Condition

Temperature	22 °C
Relative Humidity	65 %
Atmospheric Pressure	101 k Pa
Test Location	Nemko Canada Inc. 3325 River Road , Ottawa, Ontario K1V 1H2
Test Engineer	Glen Westwell

4.4.3 Test Equipment

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
--------------	-----------	--------------	-------	--------	-----------	-----------

1 Year	Spectrum Analyzer	Hewlett Packard	8564E	3846A01407	May 31/00	Nov. 30/01
1 Year	Horn Antenna	EMCO #1	3115	3132	Dec. 11/00	Dec. 11/01
1 Year	Log Periodic Antenna 1	EMCO	LPA-25	1141	Aug. 3/00	Aug. 3/01
3 Year	Diplexer	Olsen - OML	DPL.26 (H.P.)		Mar. 15/00	Mar 15/03
3 Year	Mixer/Antenna 40-60Ghz	Olsen – OML	M19HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer /Antenna 60-90Ghz	Olsen – OML	M12HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer / Antenna 90-140Ghz	Olsen – OML	M08HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Mixer / Antenna 140-220Ghz	Olsen – OML	M05HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 Year	Bilog Antenna	Shaftner	CBL6112 B	2651	Jan. 6/00	Jan. 6/03

NA: Not Applicable

NCR: No Cal Required

COU: CAL On Use

4.4.4 Test Data

The spurious emissions were verified from 30MHz to 200 GHz and were below the specification Limit.

Calculation:

For power of -13 dBm, the Electric field at far field is:

$$E_{v/m} = (30 P_t G_t)^{0.5} / R$$

Where: Pt: -13 dBm = 50 μ W

Gt: Numeric gain of Transmitting Antenna, which is 50ohm load in this case. G t = 1 when frequency > 1 GHz and G t = 1.64 when frequency < 1 GHz

R: distance between transmitter and receiver.

Then, the limit -13 dBm is equivalent to:

$E_{v/m} = 84.4 \text{ dB}\mu\text{V /m}$ @3 meter below 1 GHz

$E_{v/m} = 82.2 \text{ dB}\mu\text{V /m}$ @3 meter above 1 GHz

$E_{v/m} = 91.8 \text{ dB}\mu\text{V /m}$ @1 meter above 1 GHz

$E_{v/m} = 102.3 \text{ dB}\mu\text{V /m}$ @0.3 meter above 1 GHz

Due to the reading result in spectrum analyzer is dB μ V, so the actual test result is:

$$E = V_{\text{dB } v} + Af$$

Where:

$V_{\text{dB } v}$: reading result

Af: antenna factor, which varies with frequency

E shall be less than the limit of Electric field $E_{v/m}$ calculated above.

See Appendix C for test plots.

4.5 Frequency Stability

Limit: +/- 10 ppm

Measured Value: less than +/- 1 ppm

Criteria: **Pass**

4.5.1 Test Procedure

For the frequency stability measurements, an external source was used to provide an IF CW to the radio unit. Only the RT was placed in the temperature chamber during this specific test. The NT will usually be in a temperature-controlled environment, but can operate within a range of -10C to +55C.

The NT was not in the setup due to the software will not support in sending a CW to the RT. Also the transmitter will not operate if the system, including the BaseStation, is not receiving traffic from the downstream forming a closed loop.

An algorithm has been designed that will correct the frequency when the system is operating in a closed loop; upstream and downstream fully functional (synchronized). This algorithm has been designed to achieve the ± 10 ppm limits. The tests were done without the closed loop, therefore the algorithm does not come into play and is considered the worst case for the RT.

All measurements were taken according to the method mentioned in the FCC Part 2, where a reading was taken at every 10° C intervals and the supply voltage was varied to the range of +23.8Vdc to +32.2Vdc.

Note: The TS operates on AC, but an external supply was used to vary the DC source to the RT, due to the NT changes the secondary source (DC) very little when the primary (AC) is varied. Therefore the DC supply was varied to show that the frequency is not affected by voltage fluctuation.

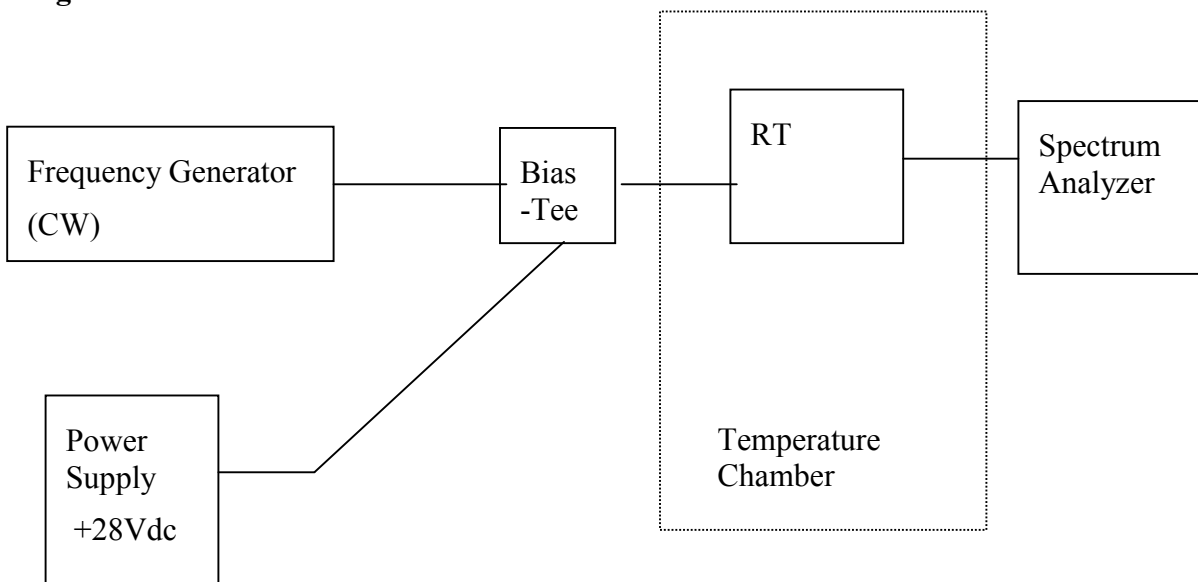


Figure – 9 Frequency Stability measurement setup

4.5.2 Test Condition

Temperature	22 °C
Relative Humidity	65 %
Atmospheric Pressure	101 k Pa
Test Location	Product Integrity Laboratory Alcatel Canada Inc 600 March Road, Kanata, Ontario, K2K 2E6
Test Engineer	Frank Li Network / Wireless Approvals Specialist

4.5.3 Test Equipment

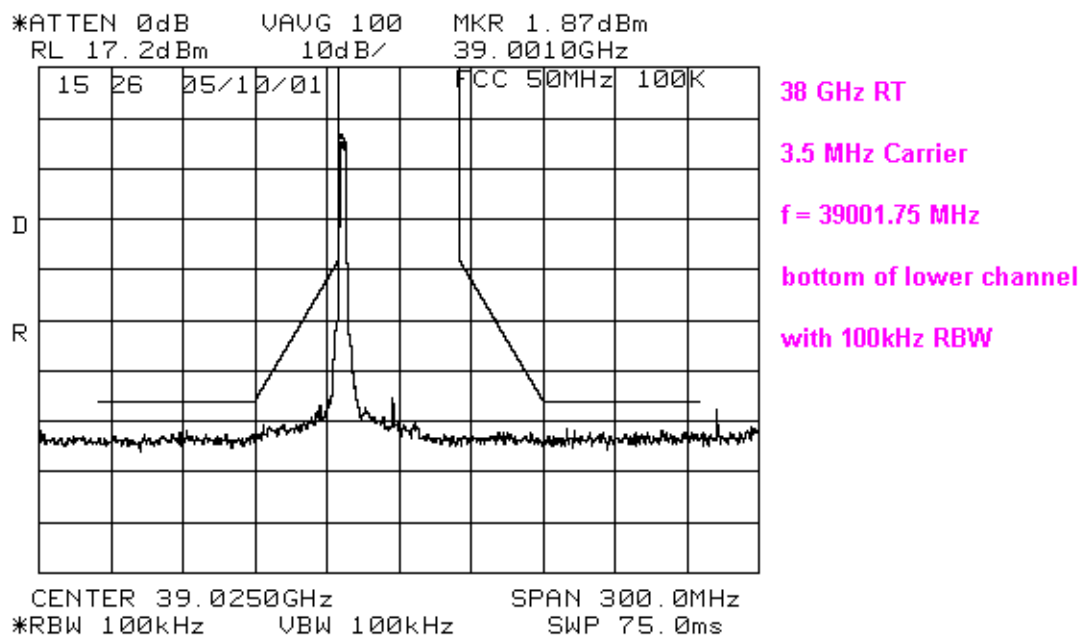
Instrument	Mfr./Model / S/N	Calibration
Spectrum Analyzer	HP 8564E Tool # 9169	Last: 2000/08/24 Due: 2001/08/24
Frequency Generator	HP 83640B S/N # 3844A 00761	Last: 2001/01/19 Due: 2002/01/19
Temperature Chamber	Tool # 7263	Last: 2000/09/07 Due: 2002/03/07

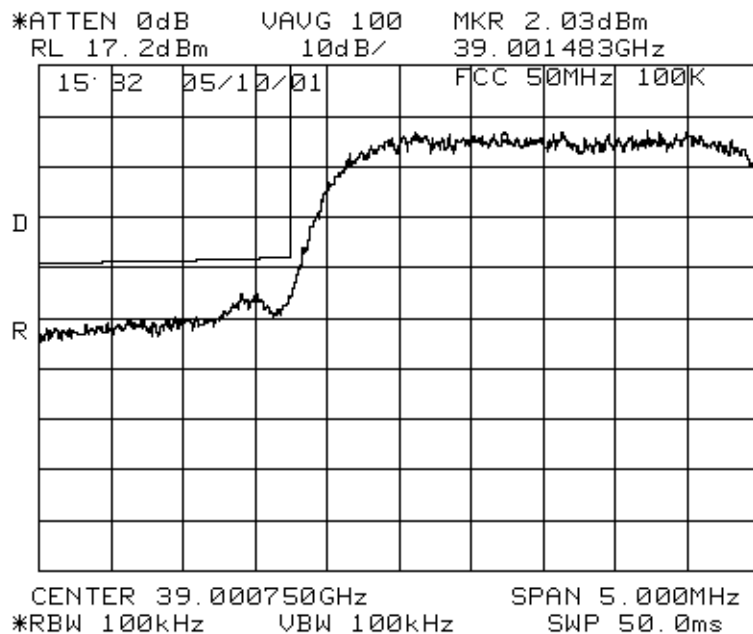
4.5.4 Test Data

Nominal DC Supply Voltage to Radio is –48Vdc				
Note: An external supply was used to vary the DC source from 15V to 38V.				
Temperature (°C)	Frequency (kHz)	Measured Frequency (kHz)		Tolerance
	Supply voltage			Limit (+/-10ppm)
	23.8 VDC	28 VDC	32.2 VDC	
-30	39 149 983.8	39 149 983.8	39 149 984.0	<1ppm
-20	39 149 978.7	39 149 978.7	39 149.978.7	<1ppm
-10	39 149 993.2	39 149 993.0	39 149 993.2	<1ppm
0	39 150 012.8	39 150 013.0	39 150 012.8	<1ppm
10	39 150 023.0	39 150 023.0	39 150 023.0	<1ppm
20	39 150 036.6	39 150 036.6	39 150 036.6	<1ppm
30	39 150 045.2	39 150 045.2	39 150 045.2	<1ppm
40	39 150 051.0	39 150 051.0	39 150 051.0	<1ppm
50	39 150 057.6	39 150 057.6	39 150 057.6	<1ppm

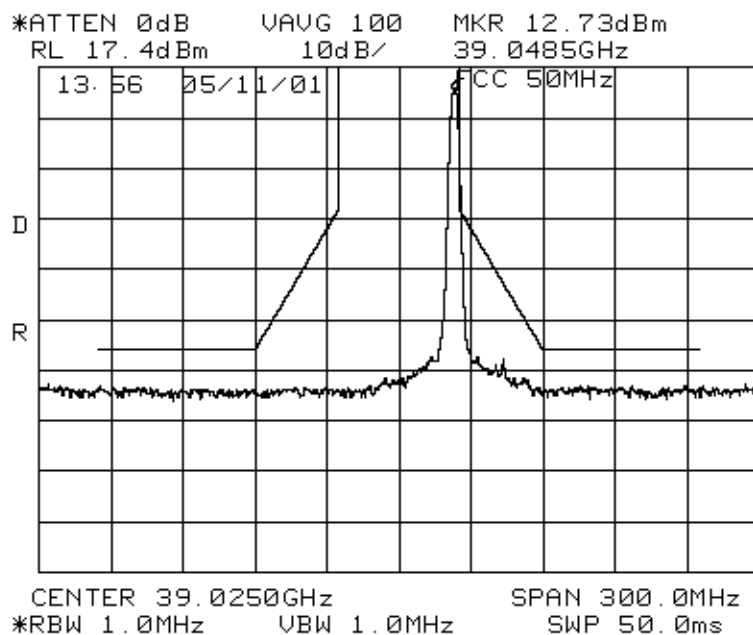
APPENDIX A: TEST RESULT OF SPECTRAL MASK

A – 1: Lower Block (39,000 ~ 39,050 MHz)

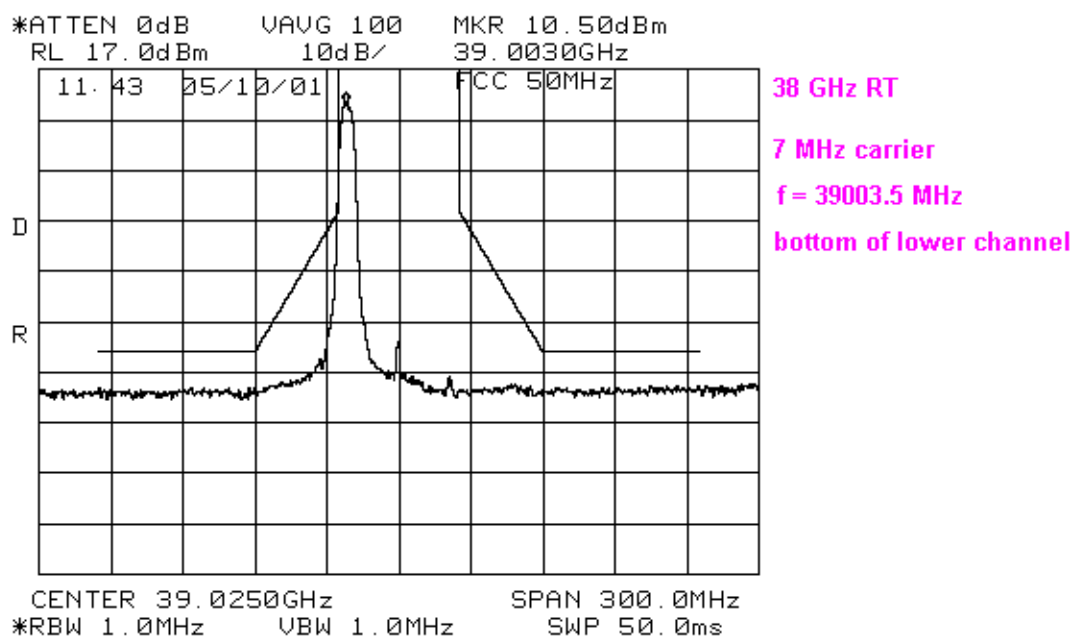
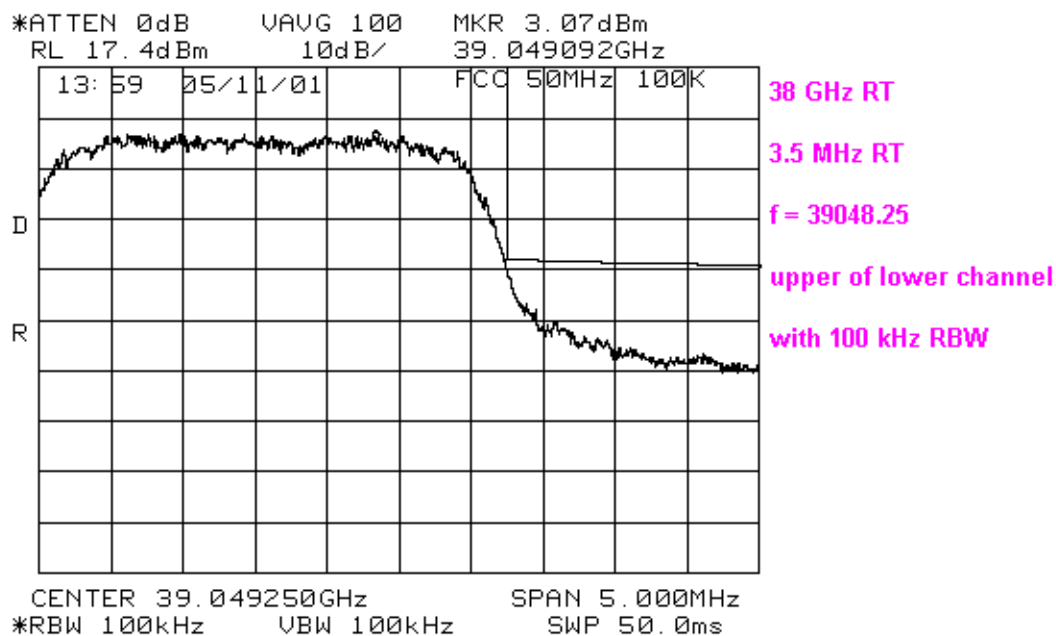


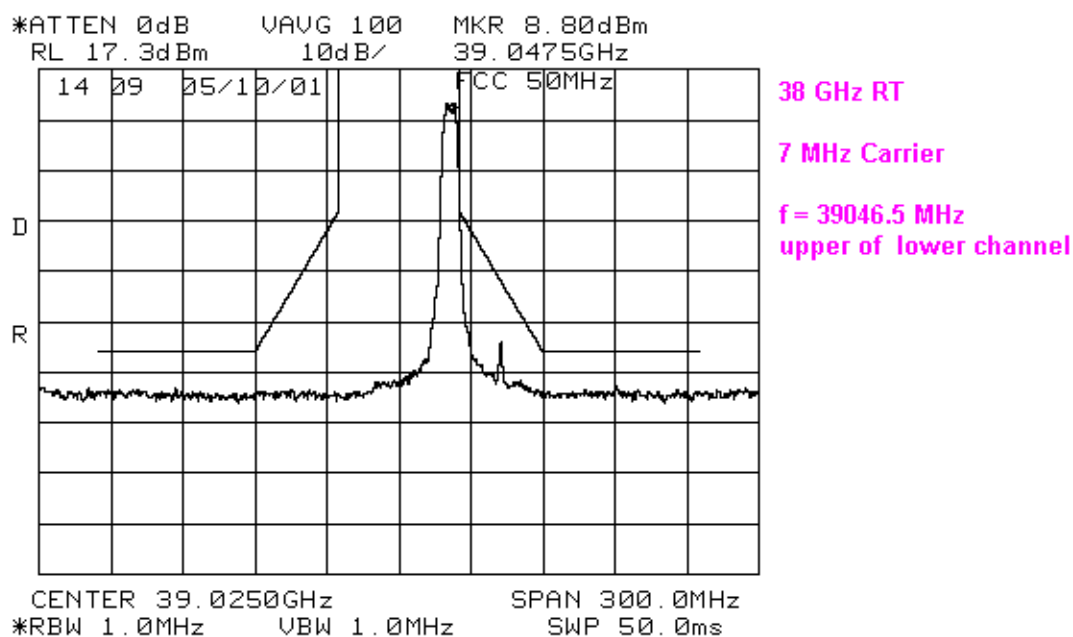
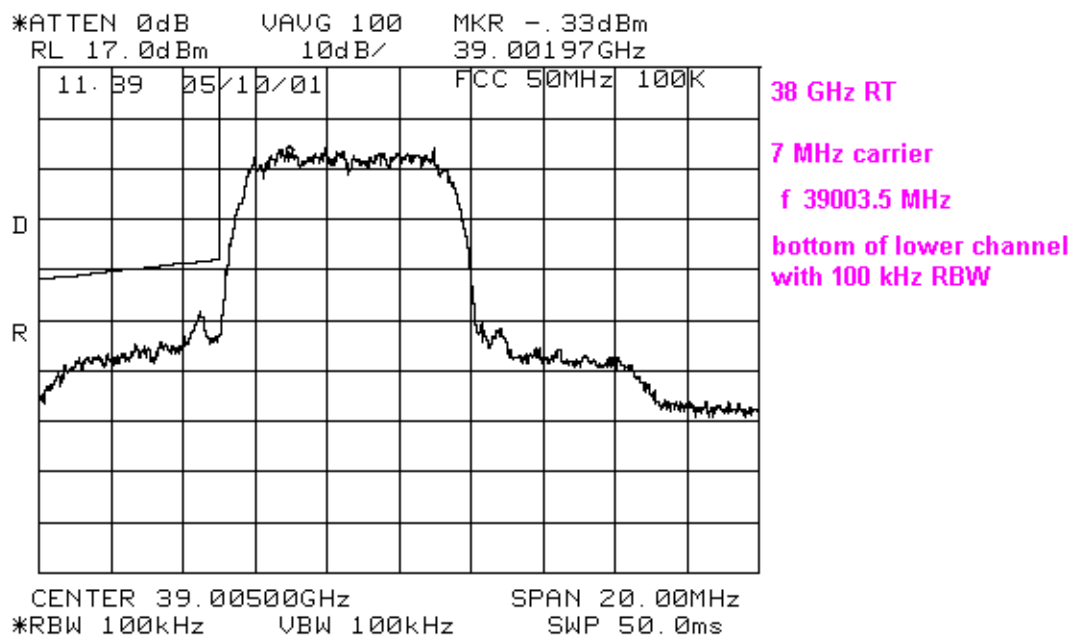


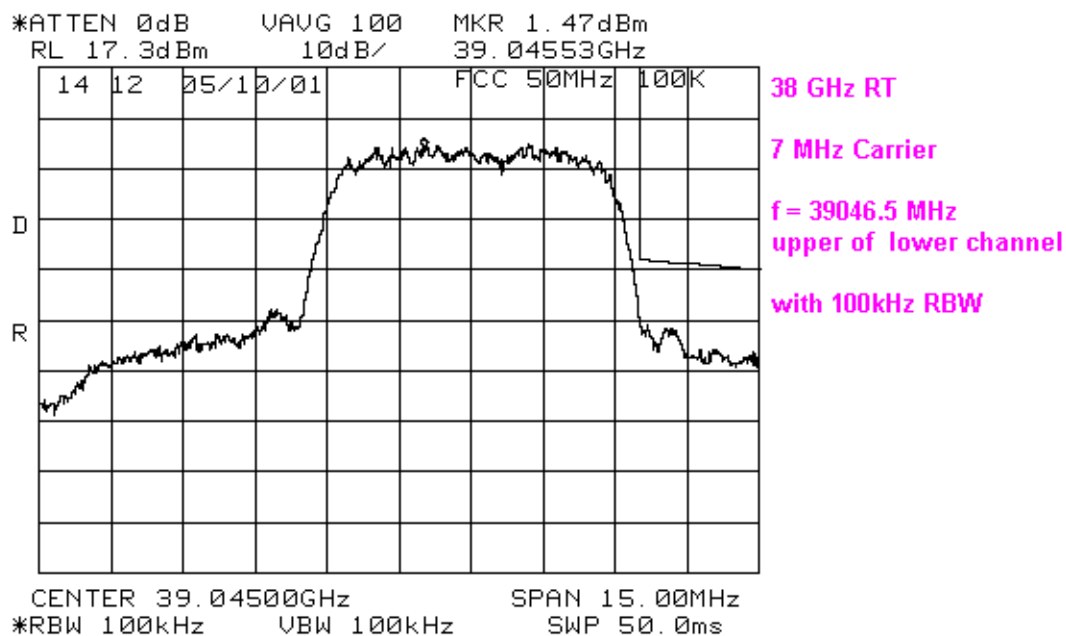
38 GHz RT
3.5 MHz Carrier
 $f = 39001.75$ MHz
bottom of lower channel
with 100kHz RBW



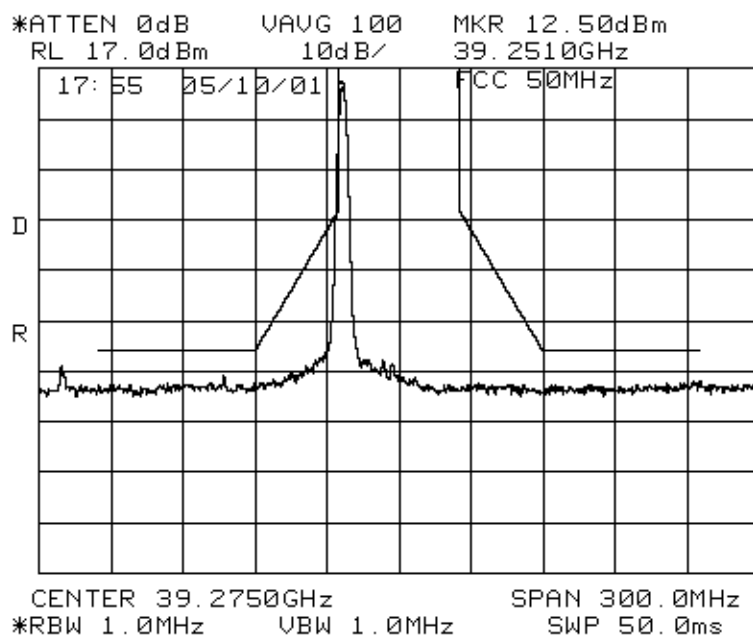
38 GHz RT
3.5 MHz RT
 $f = 39048.25$
upper of lower channel



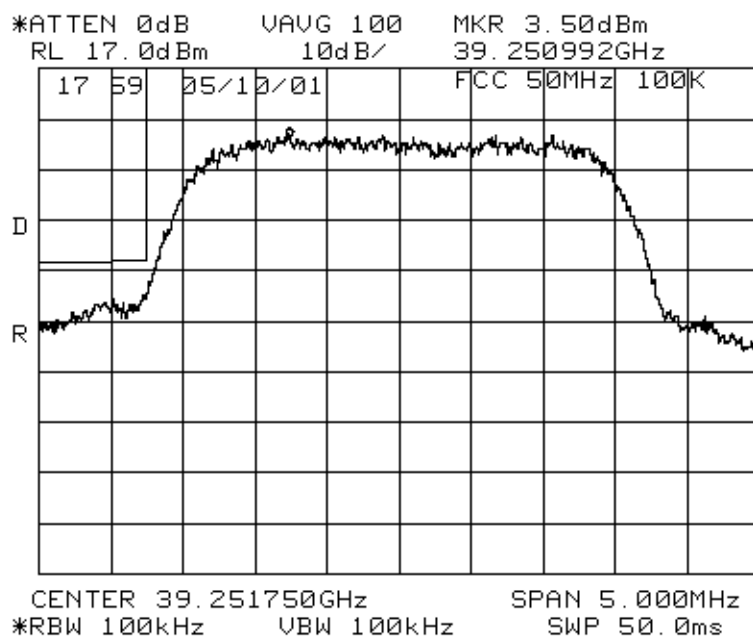




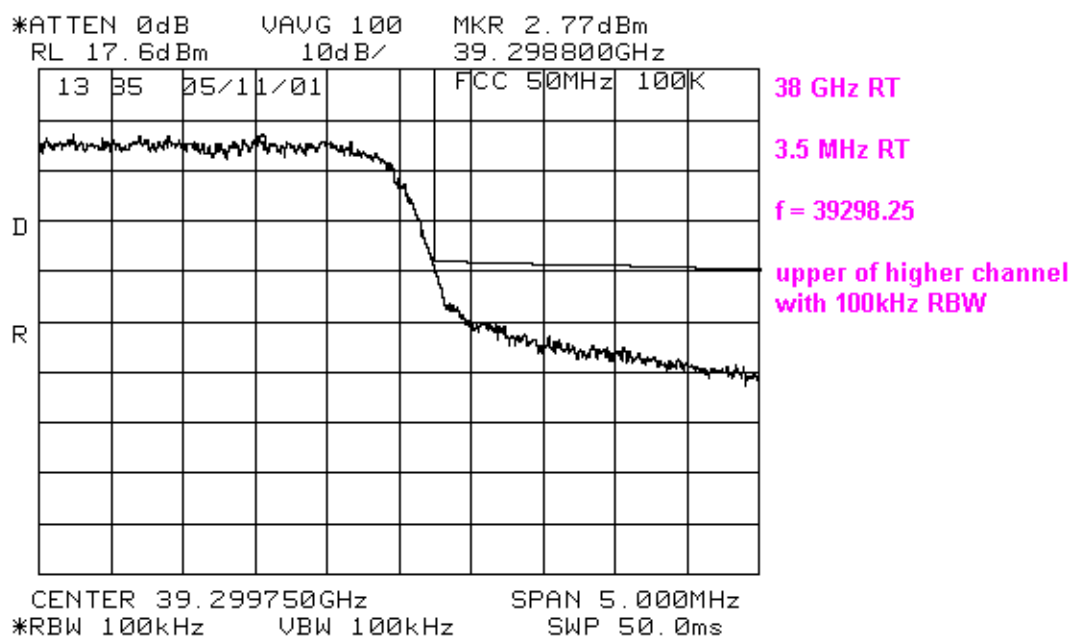
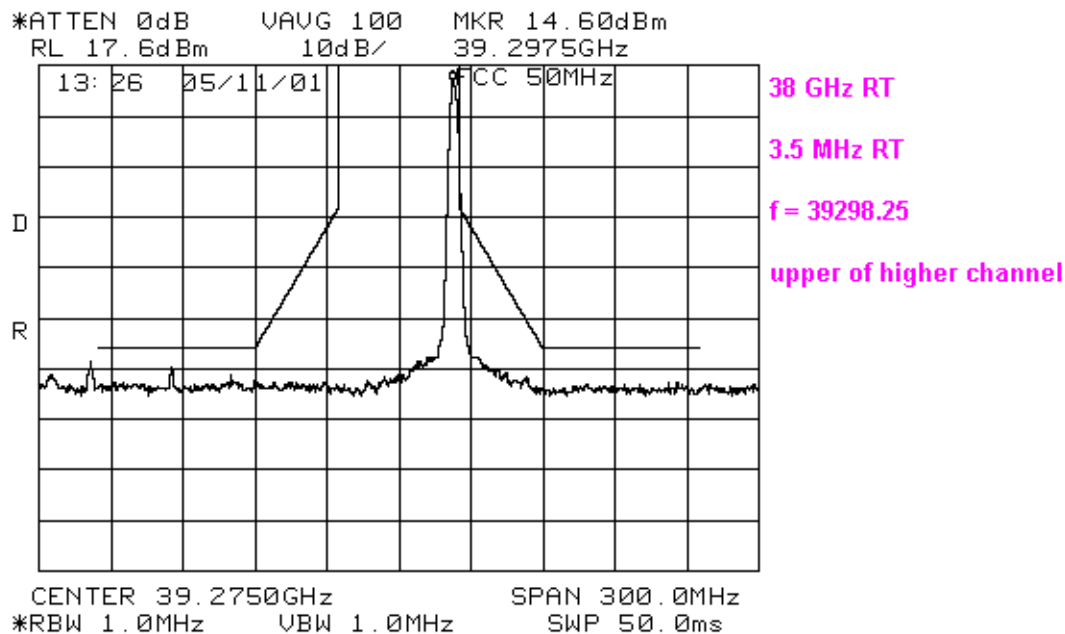
A – 2: Higher Block (39,250 ~ 39,300 MHz)

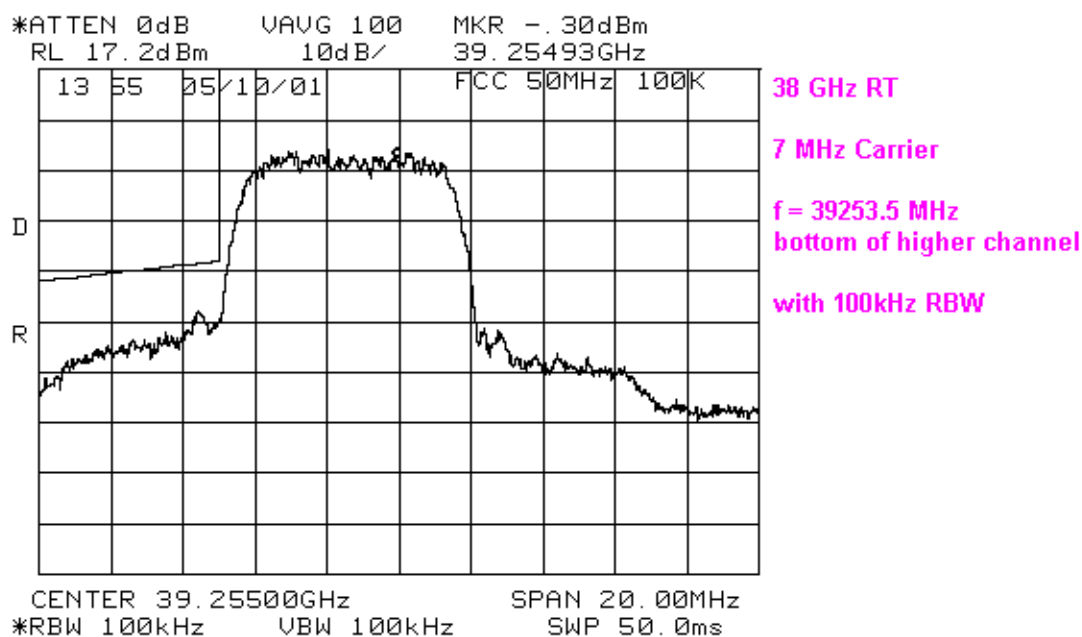
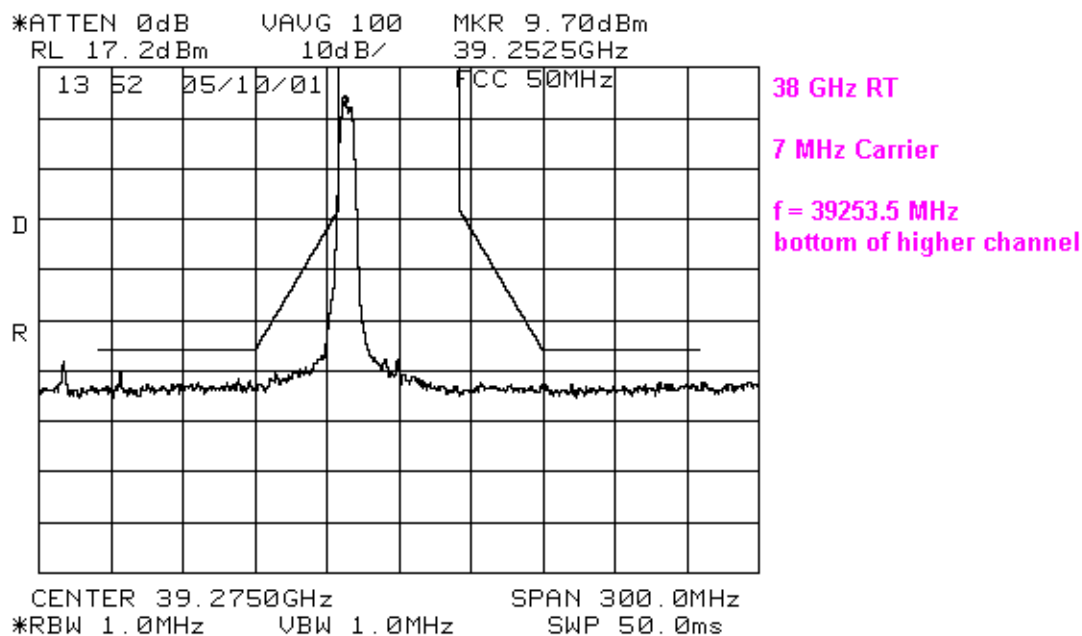


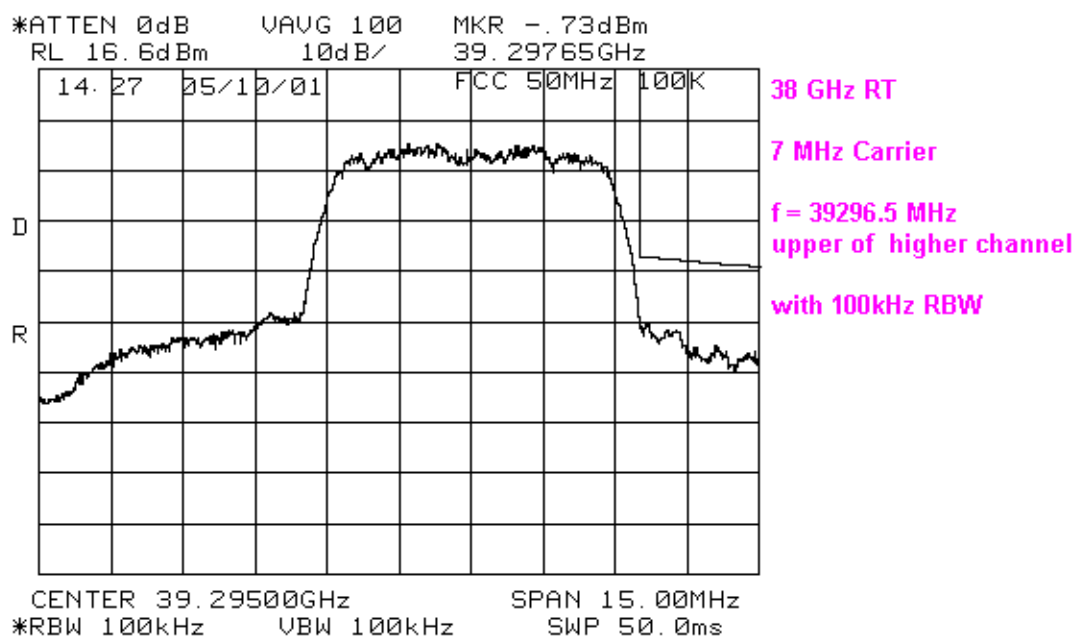
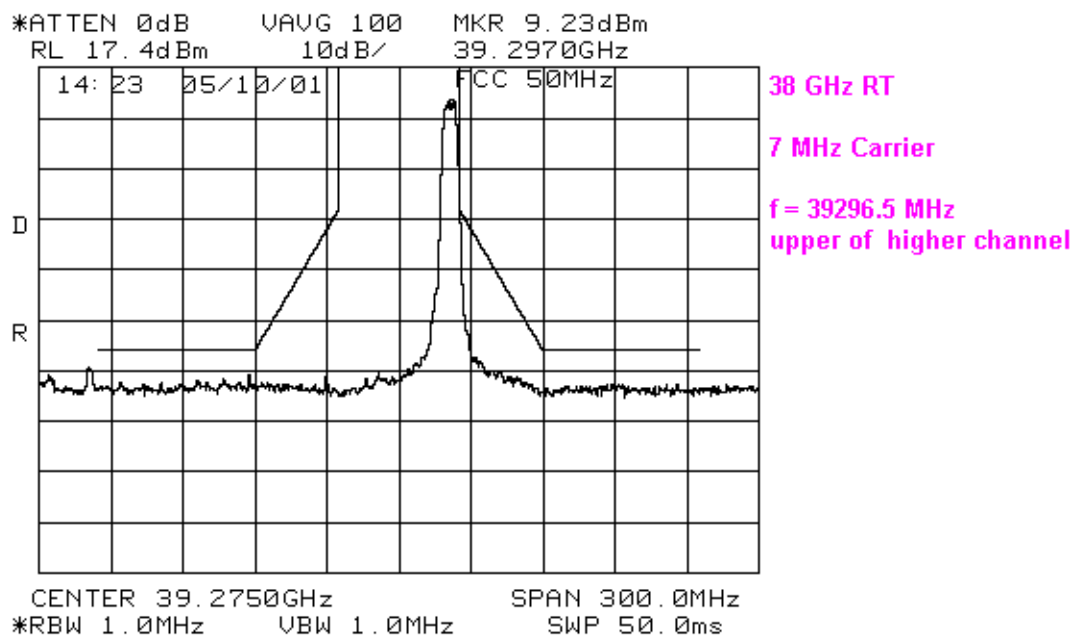
38 GHz RT
3.5 MHz Carrier
f = 39251.75 MHz
bottom of higher channel



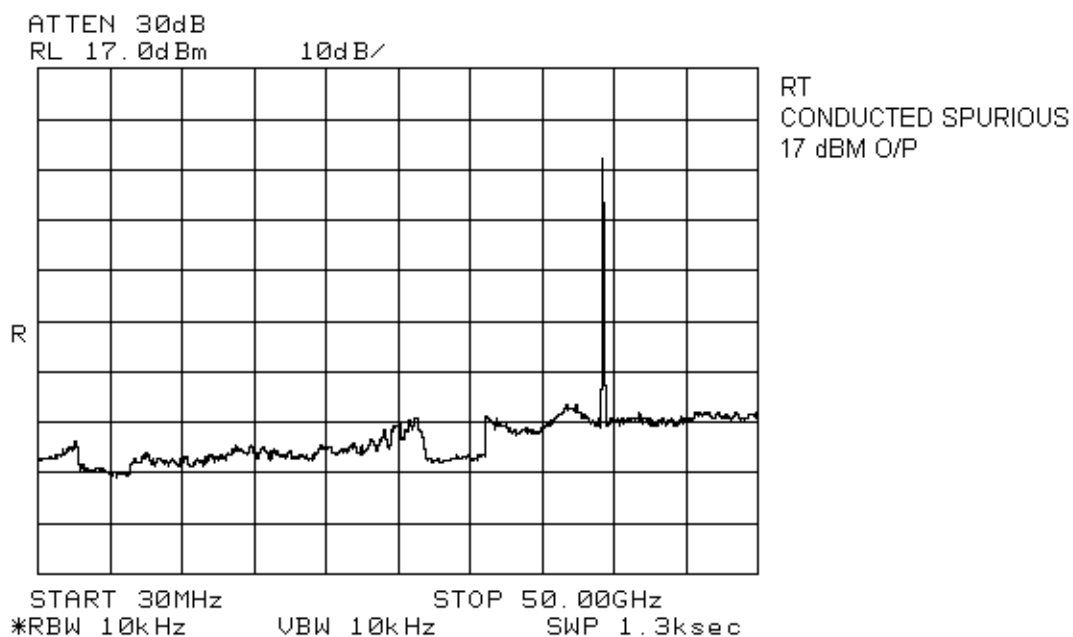
38 GHz RT
3.5 MHz Carrier
f = 39251.75 MHz
bottom of higher channel



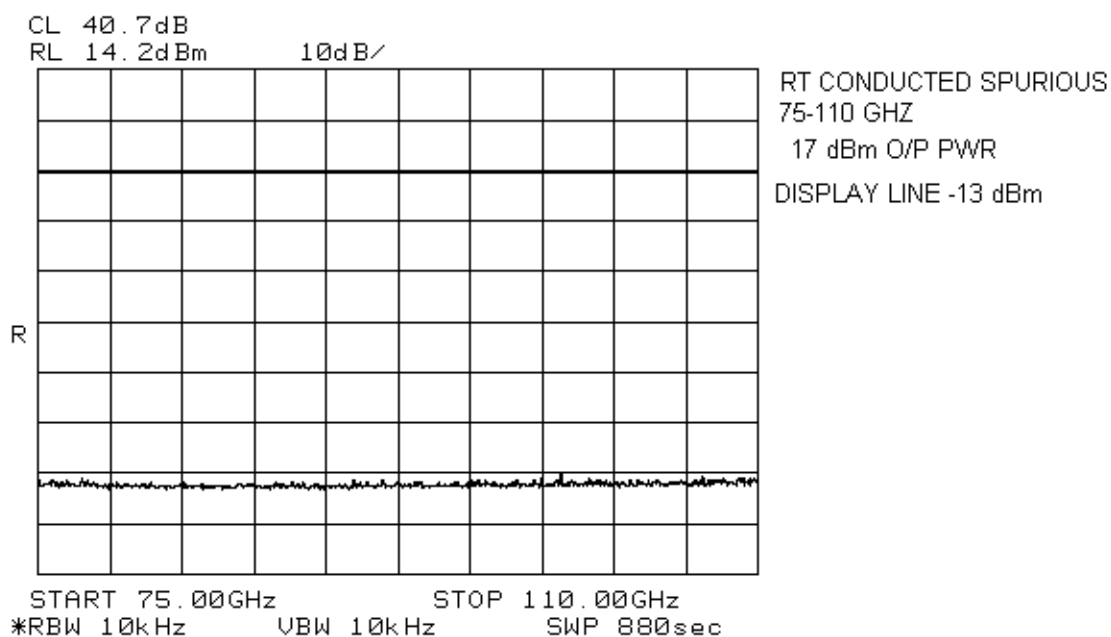
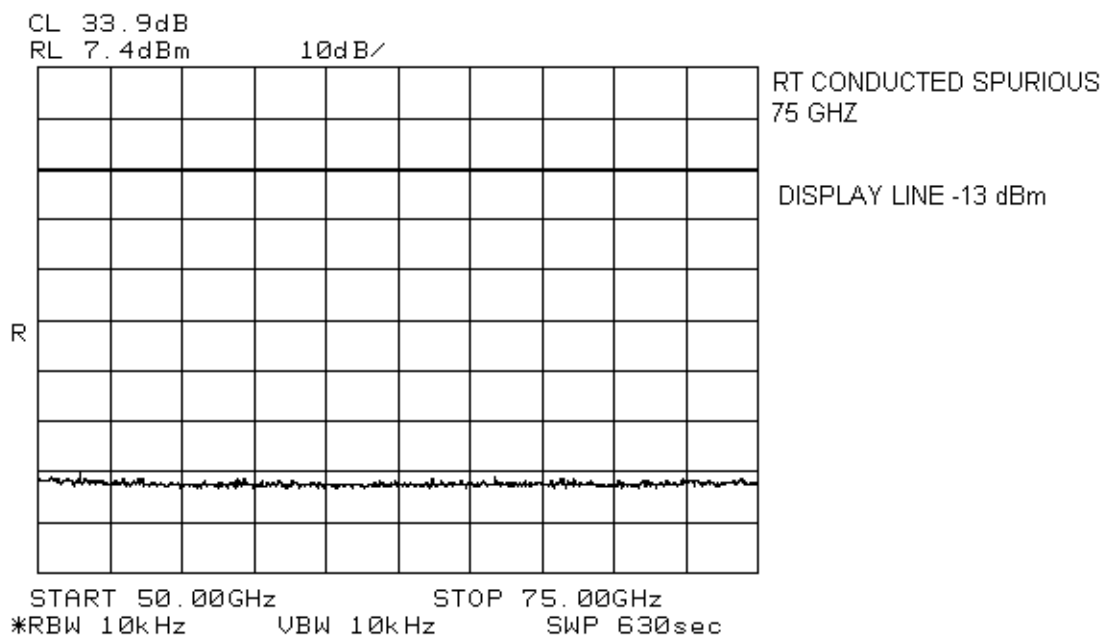


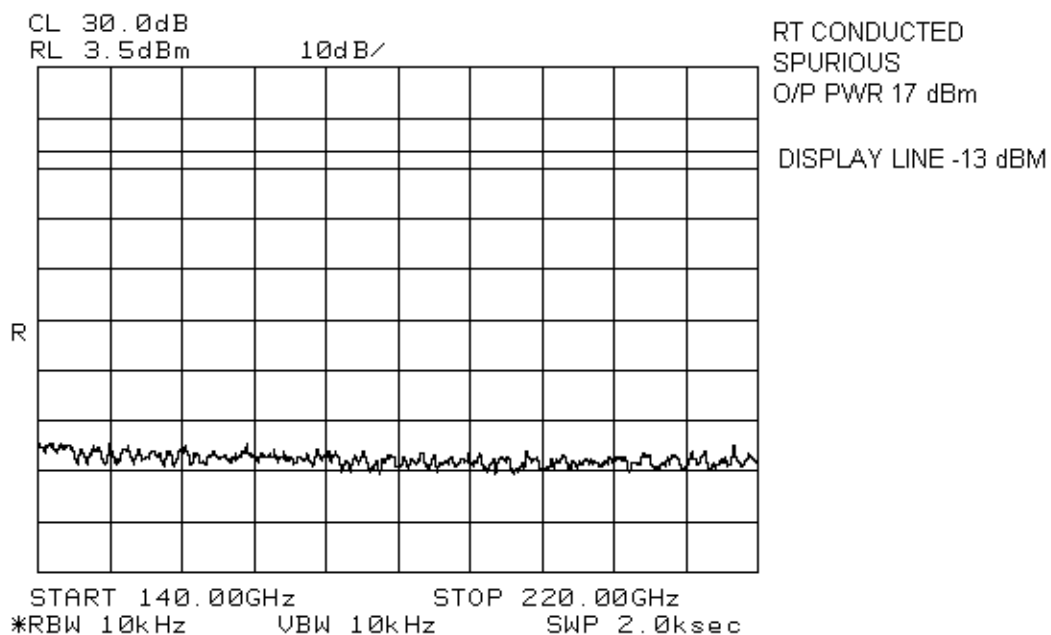
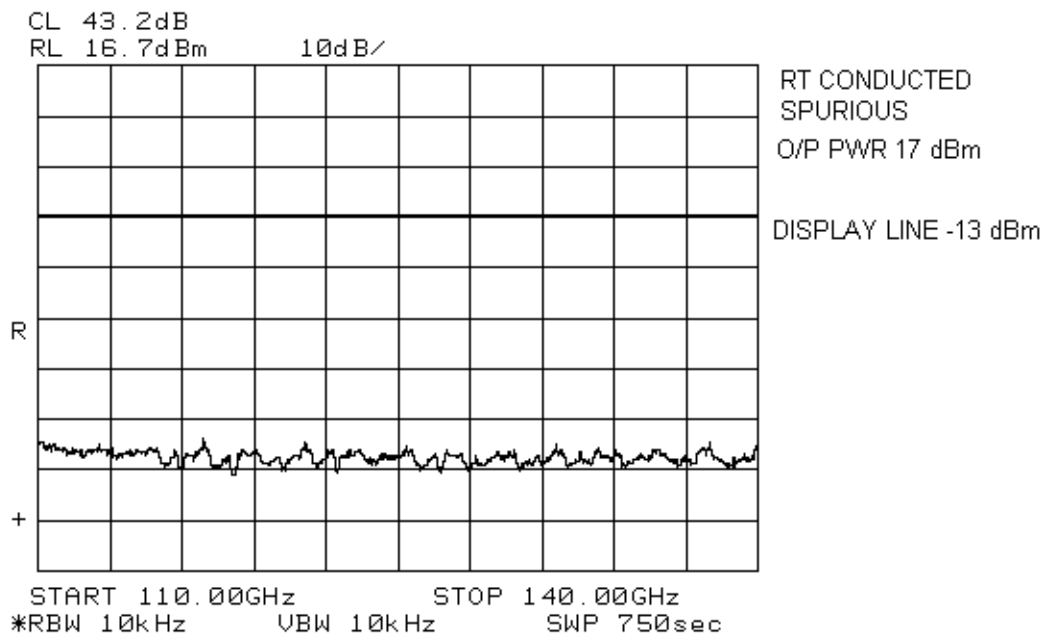


APPENDIX B: TEST RESULT OF CONDUCTED SPURIOUS

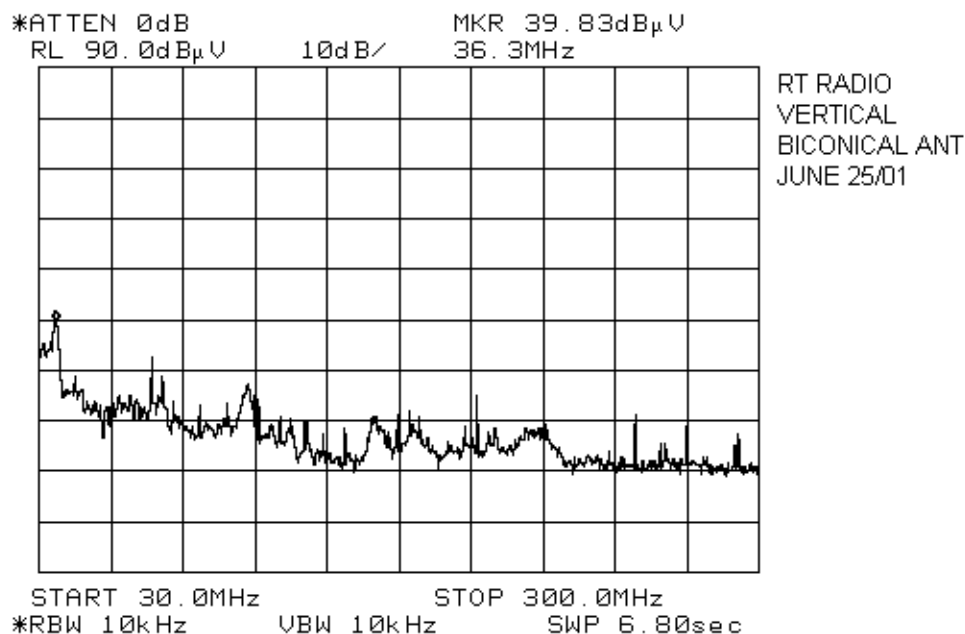


Note: The signal in the spectrum is the operating carrier





APPENDIX C: TEST RESULT OF RADIATED EMISSIONS



3 Meter Below 1GHz

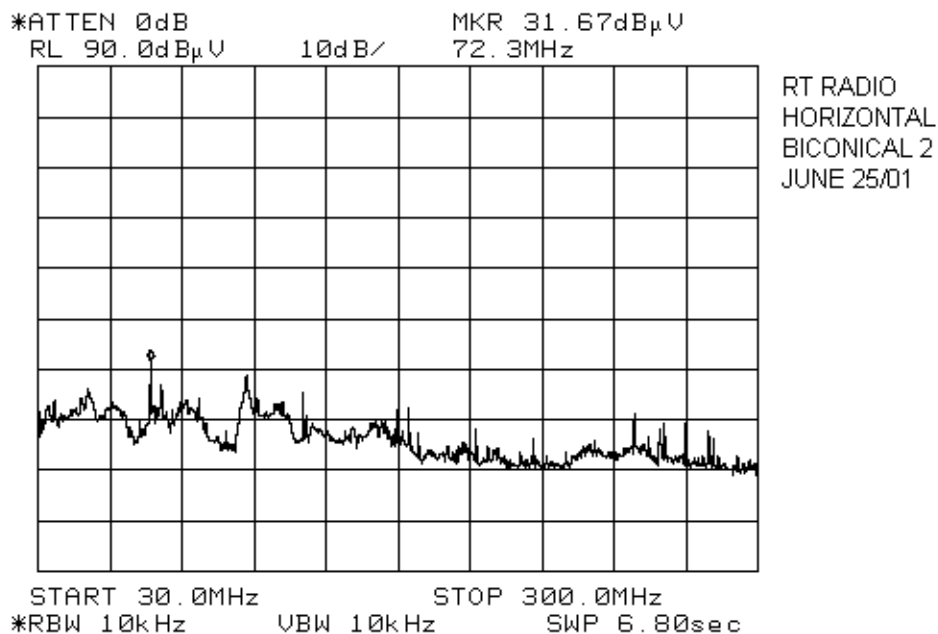
Limit = 84.4 dBμV

RBW Correction Factor = 4dB

Peak Emission = 39.8 dBμV

Af = 12.1

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
39.8	12.1	-4	51.9	84.4	32.5



3 Meter Below 1GHz

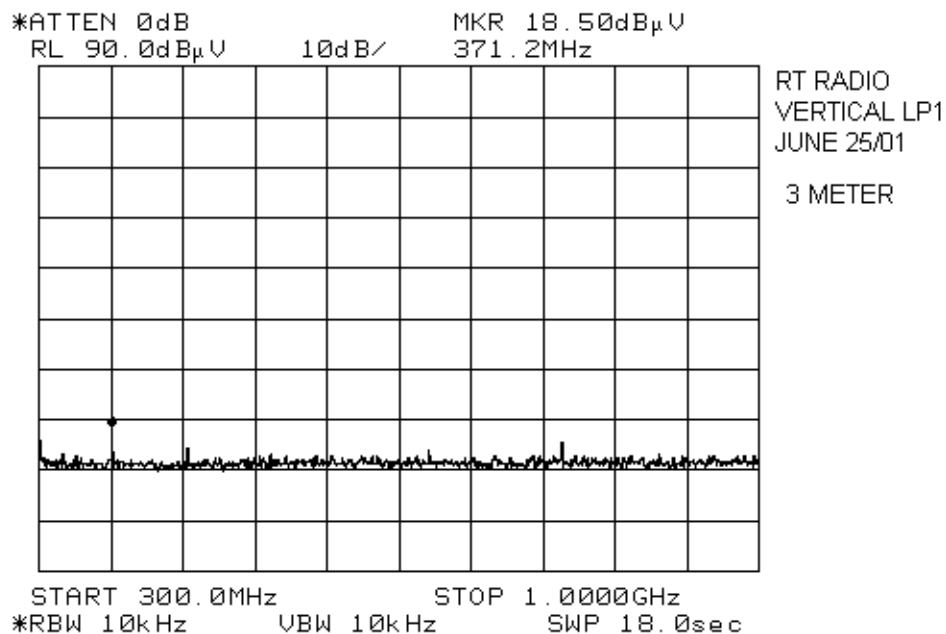
Limit = 84.4 dBμV

RBW Correction Factor = 4dB

Peak Emission = 31.7 dBμV

Af = 8.4

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
31.7	8.4	-4	36.1	84.4	48.3



3 Meter Below 1GHz

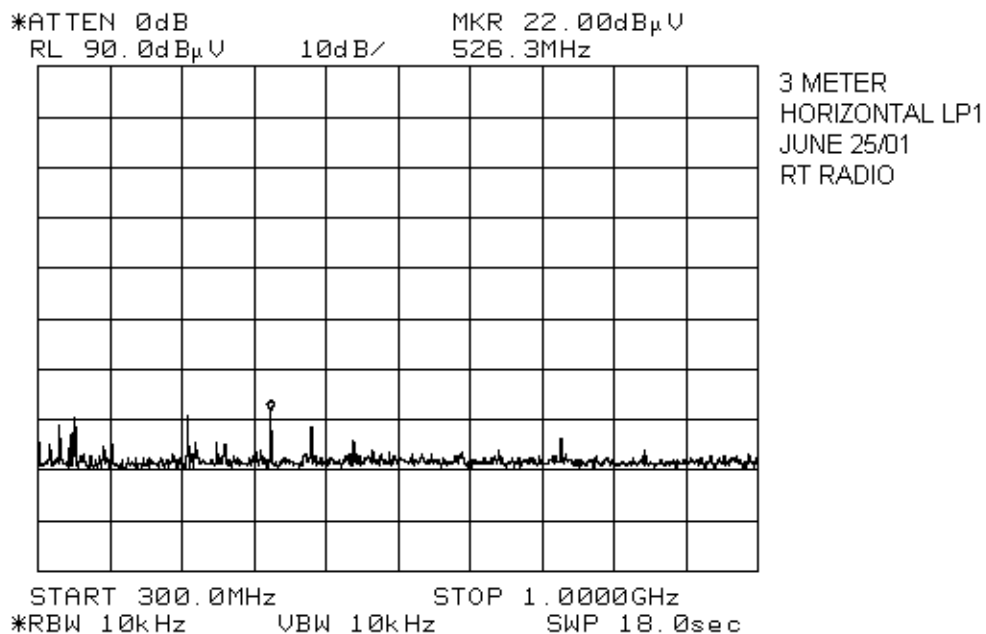
Limit = 84.4 dBμV

RBW Correction Factor = 4dB

Peak Emission = 31.7 dBμV

Af = 8.4

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
18.5	15.6	-4	34.1	84.4	50.3



3 Meter Below 1GHz

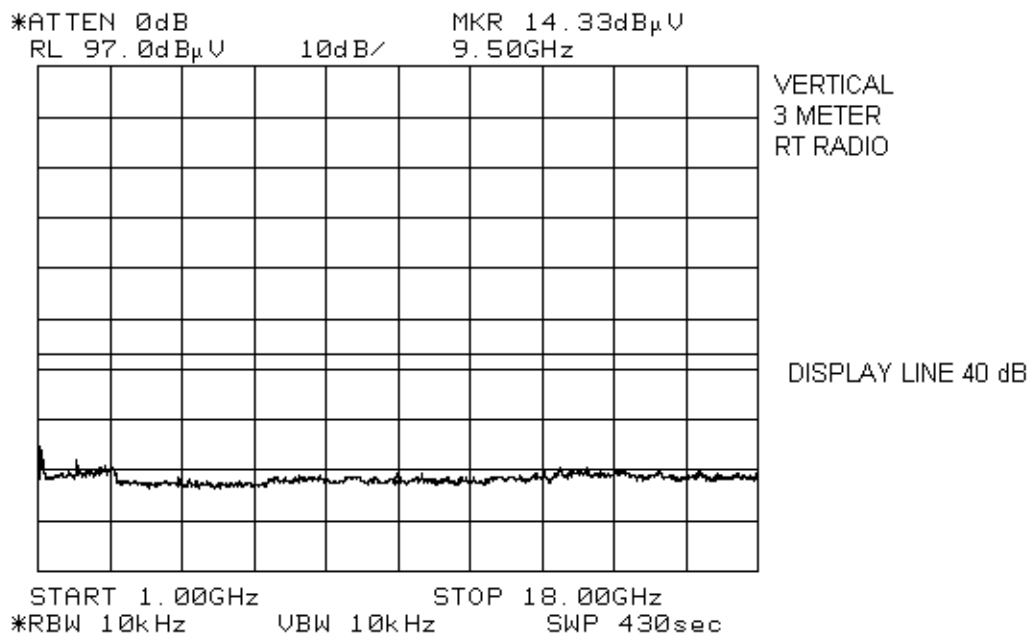
Limit = 84.4 dBμV

RBW Correction Factor = 4dB

Peak Emission = 22.0 dBμV

Af = 18.9

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
22.0	18.9	-4	40.9	84.4	43.5



3 Meter Above 1GHz

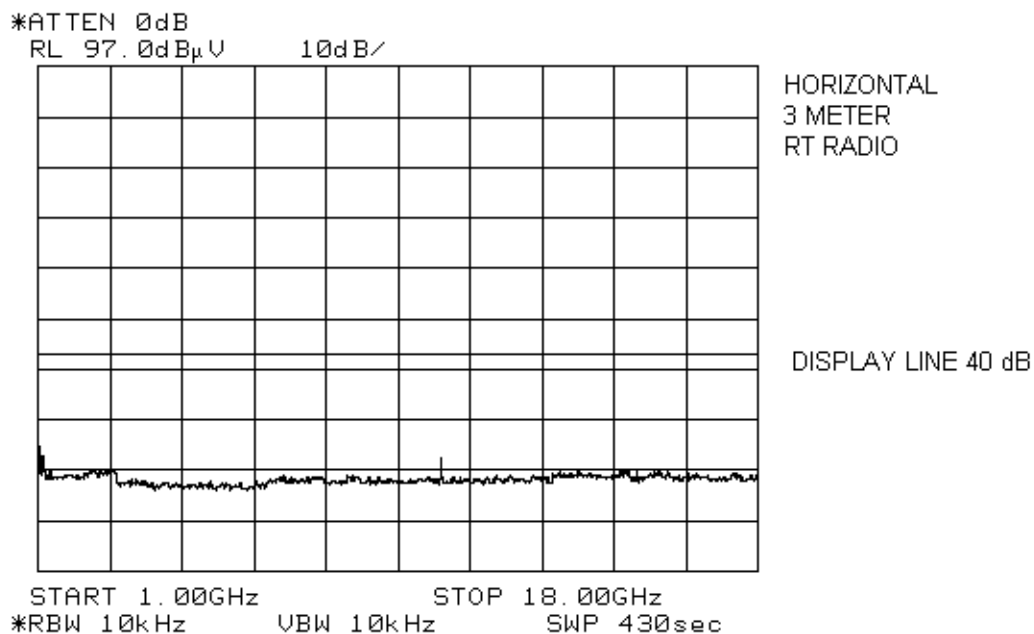
Limit = 82.2 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 14.3 dB μ V

Af = 44.6 Maximum

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
14.3	44.6	-4	54.9	82.2	27.3



3 Meter Above 1GHz

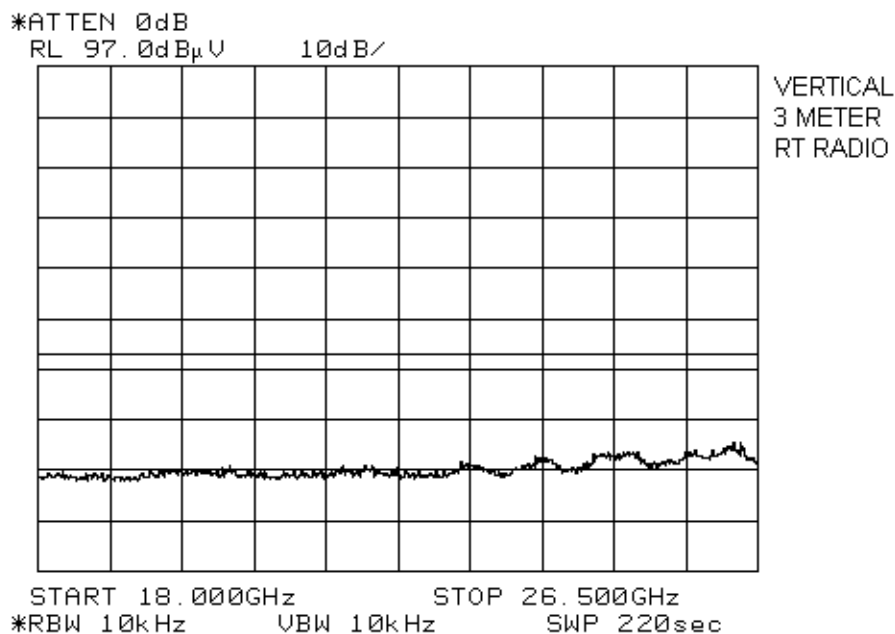
Limit = 82.2 dBμV

RBW Correction Factor = 4dB

Peak Emission = 14.3 dBμV

Af = 44.6 Maximum

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
14.3	44.6	-4	54.9	82.2	27.3



3 Meter Above 1GHz

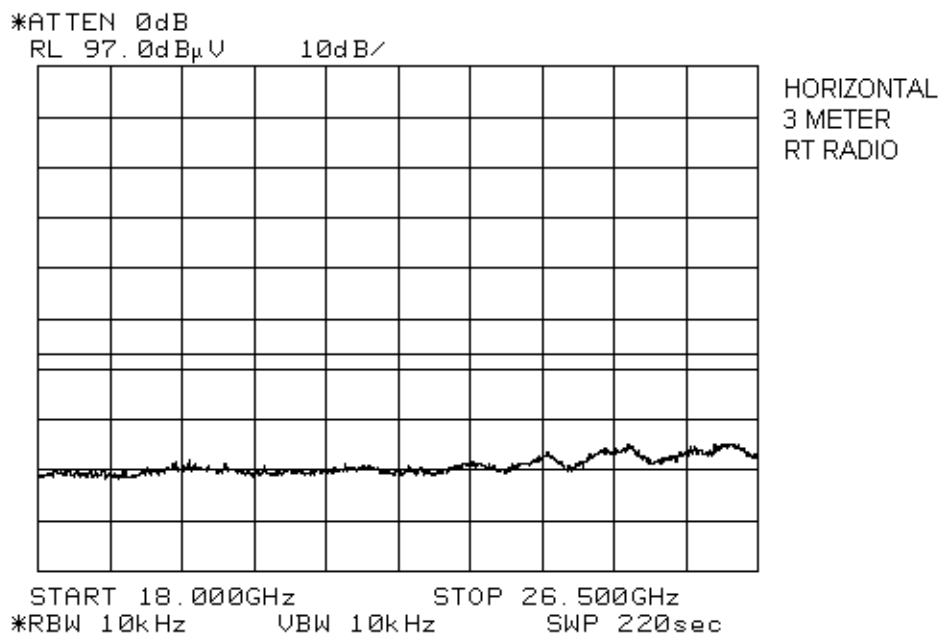
Limit = 82.2 dBμV

RBW Correction Factor = 4dB

Peak Emission = 14.0 dBμV

Af = 40.7 Maximum

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
14.0	40.7	-4	50.7	82.2	31.5



3 Meter Above 1GHz

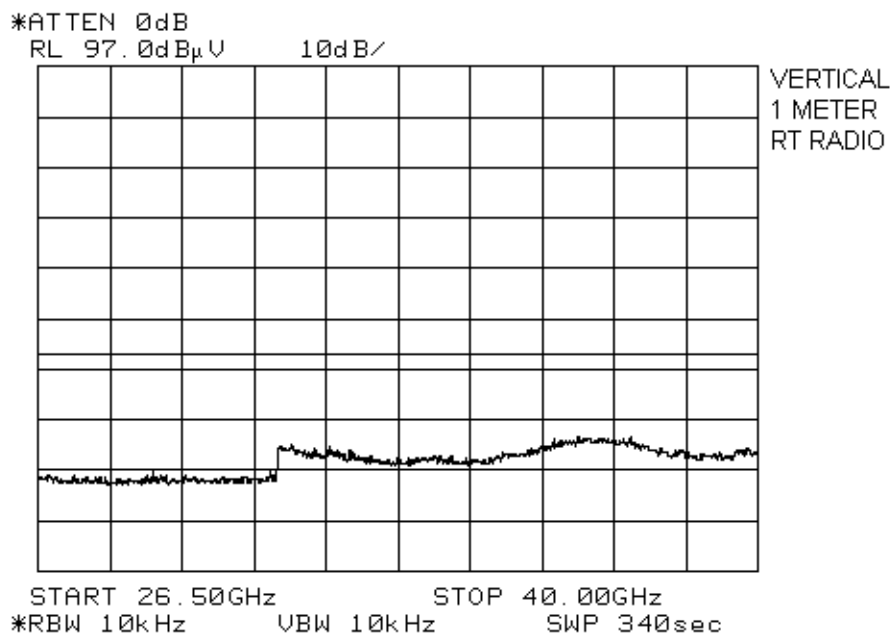
Limit = 82.2 dBμV

RBW Correction Factor = 4dB

Peak Emission = 14.0 dBμV

Af = 40.7 Maximum

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
14.0	40.7	-4	50.7	82.2	31.5



1 Meter Above 1GHz

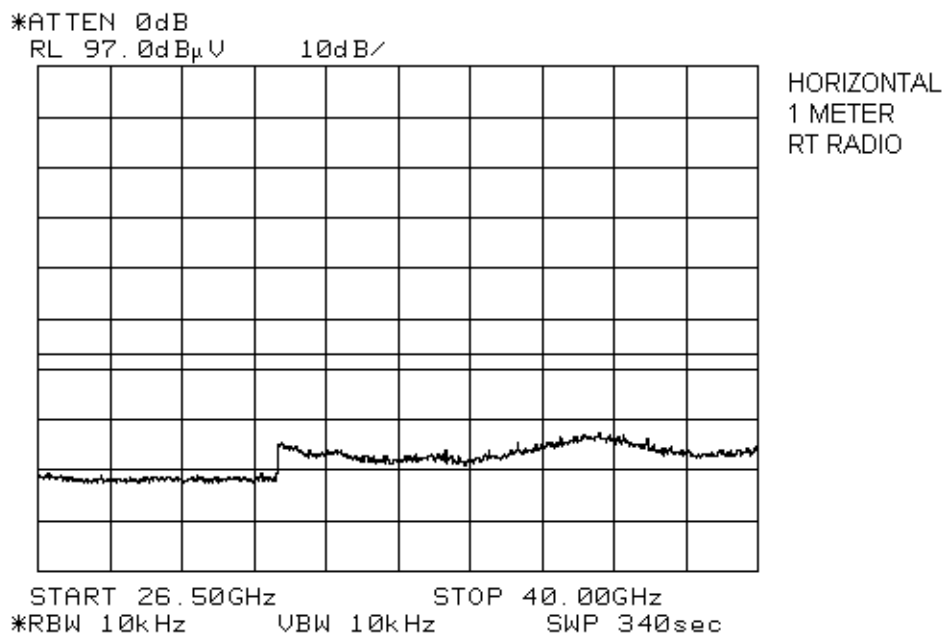
Limit = 91.8 dBμV

RBW Correction Factor = 4dB

Peak Emission = 13.0 dBμV

Af = 44.2 Maximum

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
13.0	44.2	-4	53.2	91.8	38.6



1 Meter Above 1GHz

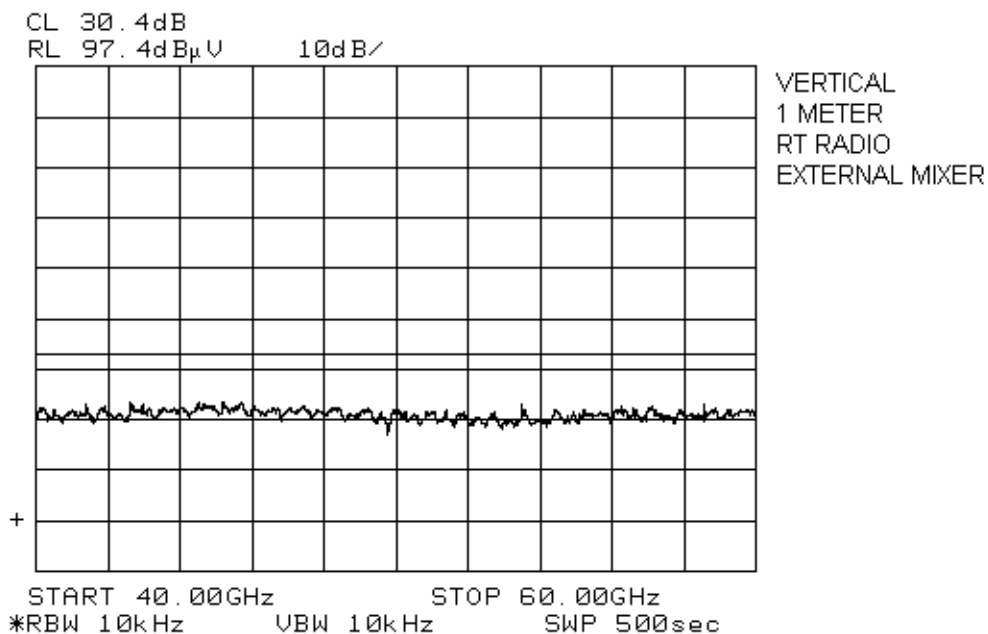
Limit = 91.8 dBμV

RBW Correction Factor = 4dB

Peak Emission = 13.0 dBμV

Af = 44.2

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
13.0	44.2	-4	53.2	91.8	38.6



1 Meter Above 1GHz

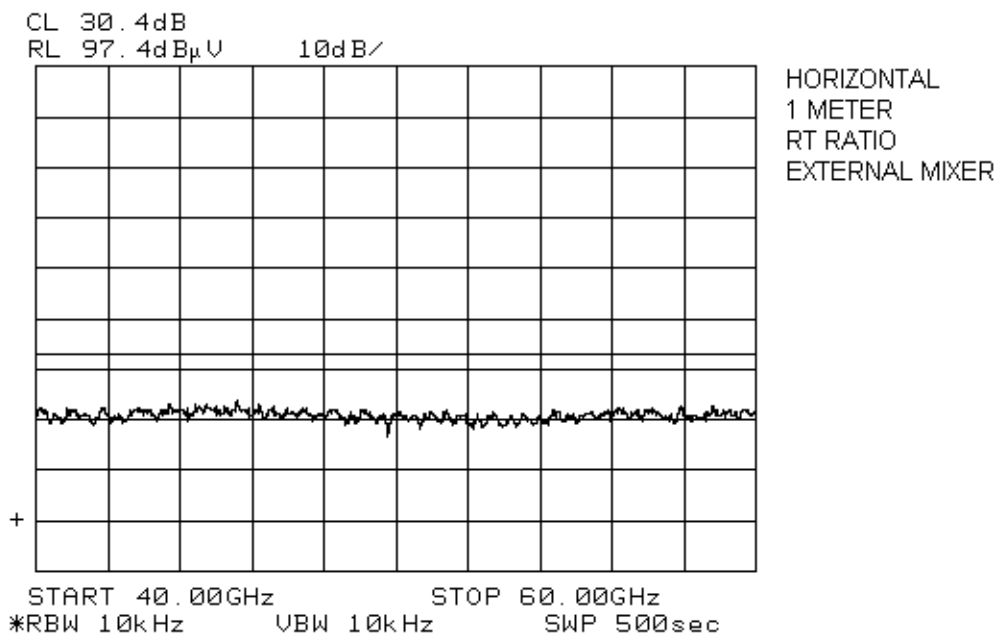
Limit = 91.8 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 30.0 dB μ V

Af = 40.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
30.0	40.6	-4	66.6	91.8	25.2



1 Meter Above 1GHz

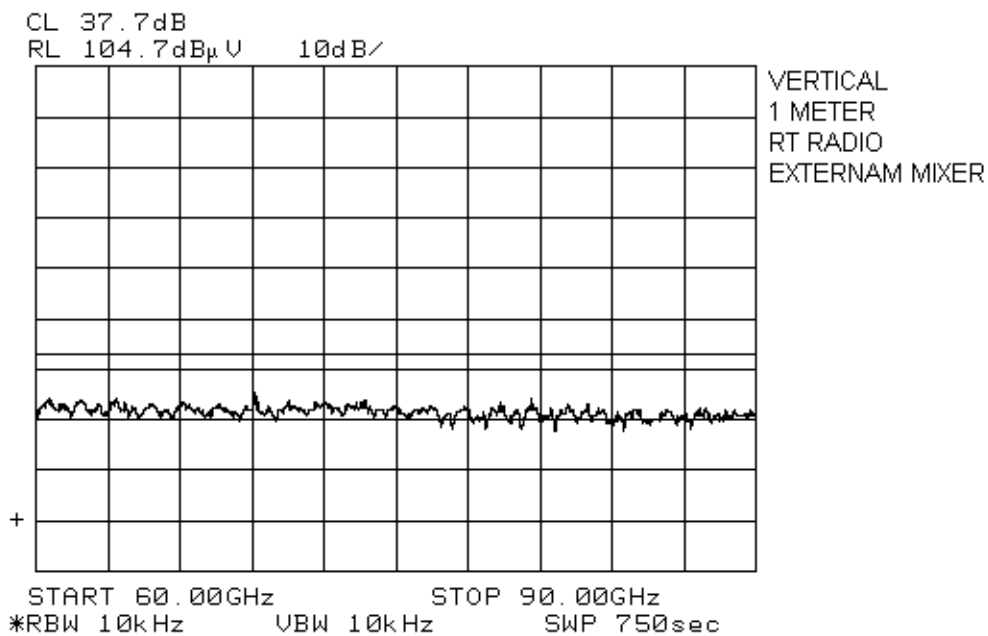
Limit = 91.8 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 30.0 dB μ V

Af = 40.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
30.0	40.6	-4	66.6	91.8	25.2



1 Meter Above 1GHz

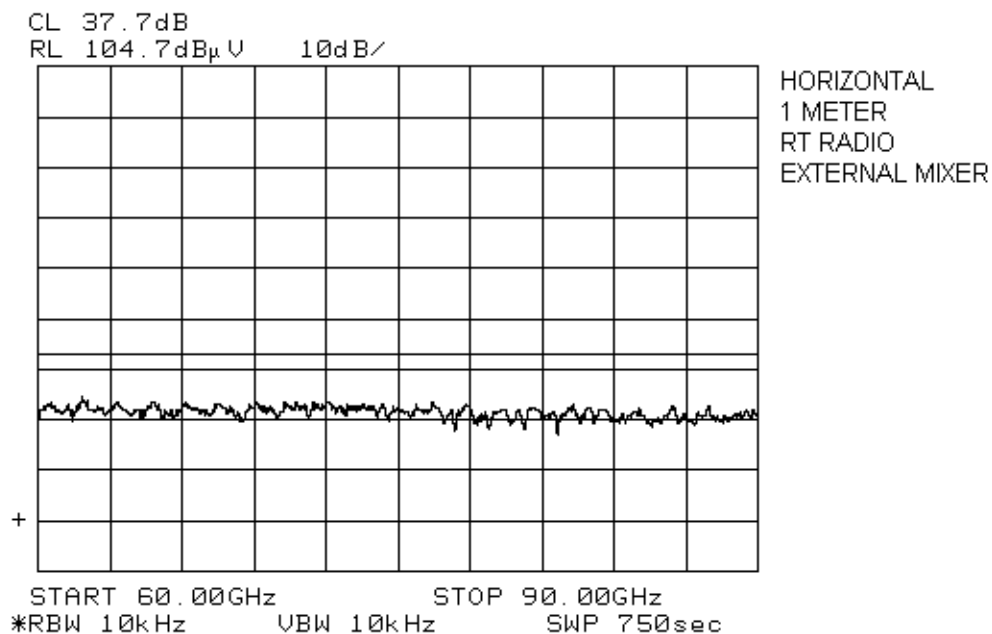
Limit = 91.8 dBμV

RBW Correction Factor = 4dB

Peak Emission = 30.0 dBμV

Af = 44.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
30.0	44.6	-4	70.6	91.8	21.2



1 Meter Above 1GHz

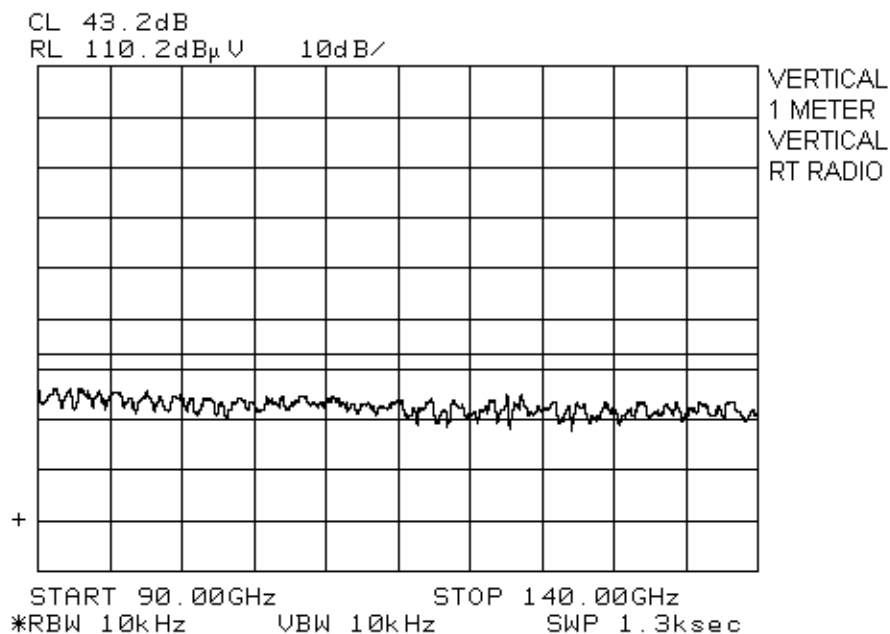
Limit = 91.8 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 30.0 dB μ V

Af = 44.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
30.0	44.6	-4	70.6	91.8	21.2



1 Meter Above 1GHz

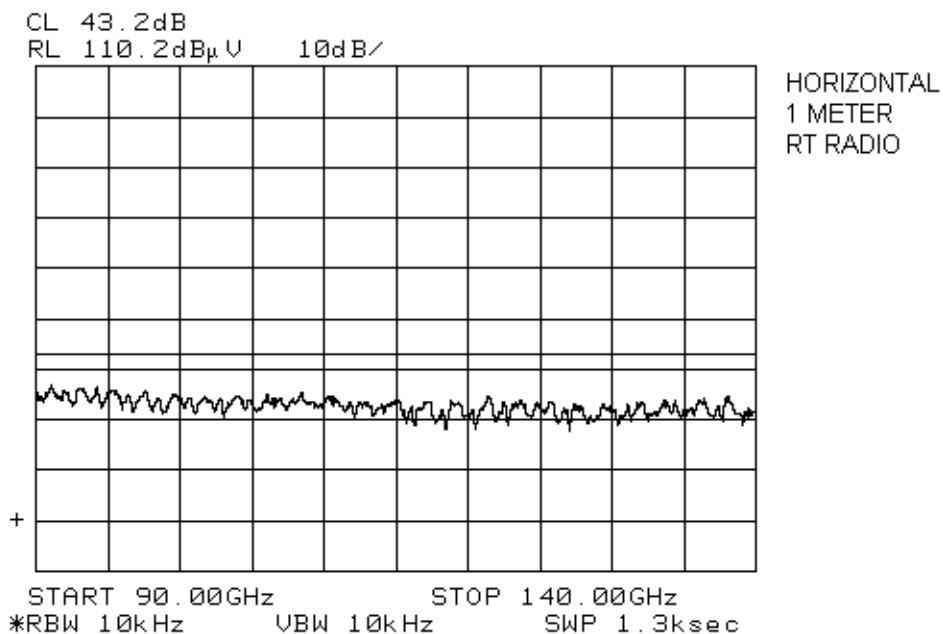
Limit = 91.8 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 45.0 dB μ V

Af = 48.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
45.0	48.6	-4	89.6	91.8	2.2



1 Meter Above 1GHz

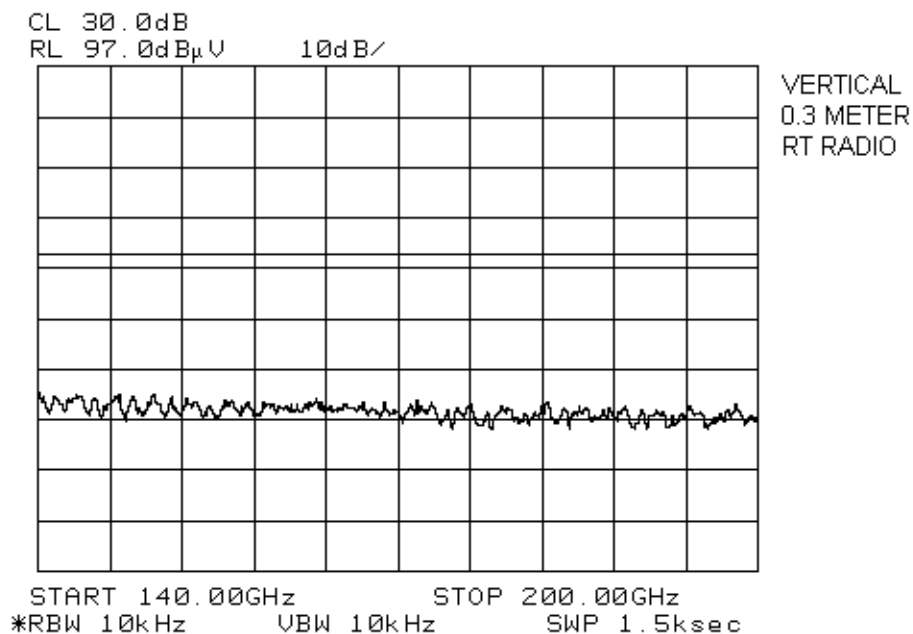
Limit = 91.8 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 45.0 dB μ V

Af = 48.6

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
45.0	48.6	-4	89.2	91.8	2.2



0.3 Meter Above 1GHz

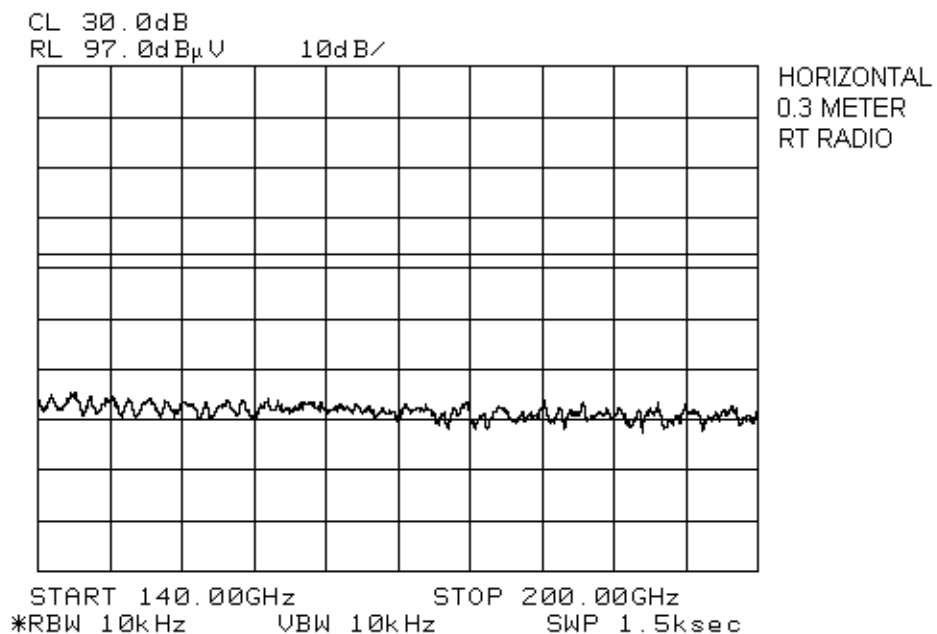
Limit = 102.3 dB μ V

RBW Correction Factor = 4dB

Peak Emission = 30.0 dB μ V

Af = 52.0

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dB μ V	Margin (dB)
30.0	52.0	-4	78.0	102.3	24.3



0.3 Meter Above 1GHz

Limit = 102.3 dBμV

RBW Correction Factor = 4dB

Peak Emission = 30.0 dBμV

Af = 52.0

Peak Emissions Level					
Reading	Af	RBW Corr.	Result	Limit dBμV	Margin (dB)
30.0	52.0	-4	78.0	102.3	24.3

REFERENCES

- [1] Alcatel internal document AQP0001, Regulatory Approvals Overview, D. Moncion.
(Formally HQP0009)
- [2] Alcatel internal document, GTN0039, EMC Test Report Template
- [3] Alcatel Internal document, GQP 0001 Document Template.
- [4] Alcatel Internal document, GTP 0004 Network Interface Compliance Test Plan Template.

- [5] Alcatel Internal document, GTN 0379 Detailed list of Network Interface Conformance Standards.
- [7] Alcatel Internal Document, GTN 0380 Network Approvals Test Report Template
- [8] FCC, 47 CFR Part101 Fixed Microwave Services, edition 10-1-00
- [9] FCC, 47 CFR Part 2 Frequency Allocation and Radio Treaty Matters: General Rules and Regulations, edition 10-1-99
- [10] Industry Canada, RSS-191 Issue: 1 (Provisional Feb.5, 2000)
(Local Multipoint Communication Systems in 28GHz Band; Point to Point and Point to Multipoint Broadband Communication Systems in the 24 GHz and 38 GHz Bands)
- [11] Telecordia GR -1089 Electromagnetic Compatibility and Electrical Safety
Generic Criteria for Network Telecommunications Equipment.

HISTORY

This document was created from the document template GQP0001, version 12.1.1.

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Draft 1.0	2001.07.24	Frank Li	Creation
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