FCC Test Report

Test report no.: EMC_958FCC15.247_2005_WLAN_138

FCC Part 15.247 for DSSS systems / CANADA RSS-210

EUT Tablet PC	**Model: iX104C2**
With WLAN	**Model: 2915ABG**
With GSM module	**Model: MC75**

FCC ID: Q2GIX104-138
IC: 4596A-IX104WBG

Deutscher Akkreditierungs Rat DAR

TTI-P-G 081/94-A0

Accredited according to **ISO/IEC 17025**

Bluetooth

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed # 101450

IC recognized # 3925

***CETECOM* Inc.**

411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.

Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com

CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

Table of Contents

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

TEST REPORT PREPARED BY:
EMC Engineer: Harpreet Sidhu

1.2 Testing laboratory

CETECOM Inc.
411 Dixon Landing Road, Milpitas, CA-95035, USA
Phone: +1 408 586 6200 Fax: +1 408 586 6299
E-mail: lothar.schmidt@cetecomusa.com
Internet: www.cetecom.com

1.3 Details of applicant

Name	**:**	**Xplore Technologies**
Street	**:**	**14000 Summit Road, Suite 900**
City / Zip Code	**:**	**Austin, TX 78728**
Country	**:**	**USA**
Contact	**:**	**Douglas L. Fowler**
Telephone	**:**	**+1 512 336 7797**
Tele-fax	**:**	**+1 512 336 7791**
e-mail	**:**	**dfowler@xploretech.com**

1.4 Application details

Date of receipt test item	:	2005-06-15
Date of test	:	2005-06-15 to 2005-06-21

1.5 Test item

Manufacturer	:	Applicant
Marketing Name	:	iX104C2
Model No.	:	iX104C2
Description	:	Tablet PC with 802.11b/g WLAN & GSM modules
FCC-ID	:	Q2GIX104-138
IC ID	:	4596A-IX104WBG
Additional information		
Frequency	:	824.2MHz – 848.8MHz for GSM 850 (not covered under this report) 1850.2MHz – 1909.8MHz for PCS 1900 (not covered under this report) 2412MHz – 2462MHz for WLAN (covered under this report)
Type of modulation	:	DSSS / OFDM (orthogonal frequency division multiplexing)
Number of channels	:	11
Power supply	:	via host Tablet PC
Output power	:	251.19mW conducted peak power
Extreme temp. Tolerance	:	0^{o}C to +70^{o}C

1.6 Test standards: FCC Part 15 §15.247 / CANADA RSS-210 issue 5 2001 with amendments 1: 2002, 2: 2003, 3: 2004

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

The Tablet PC (model# iX104C2) carries pre-certified WLAN mini PCI card with FCC ID: PD9WM3B2915ABG

This test report covers full radiated testing as per FCC 15.247 on Tablet PC with WLAN. All conducted measurements are covered under *test report# INTEL-040412F*

EUT is tested in both "b" & "g" modes at 1,6,11 & 54Mbps. Test report shows only worst-case test results.

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests Performed	
Final Verdict: (Only “passed” if all single measurements are “passed”)	**Passed**

Technical responsibility for area of testing:

Date	Section	Name	Signature
2005-07-01	EMC & Radio	Lothar Schmidt (Manager)	

Responsible for test report and project leader:

Date	Section	Name	Signature
2005-07-01	EMC & Radio	Harpreet Sidhu (EMC Engineer)	

2.2 Test report

TEST REPORT

Test report no.: EMC_958FCC15.247_2005_WLAN_138

FCC Part 15.247 for DSSS systems / CANADA RSS-210

TEST REPORT REFERENCE

MAXIMUM PEAK OUTPUT POWER (RADIATED) § 15.247 (b) (1)

EIRP:

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2412	2437	2462
T_{nom}(23)°C	V_{nom}	21.69	21.77	21.59
Measurement uncertainty		±0.5dBm		

ANALYZER SETTINGS: RBW=VBW=10MHz

LIMIT SUBCLAUSE § 15.247 (b) (1)

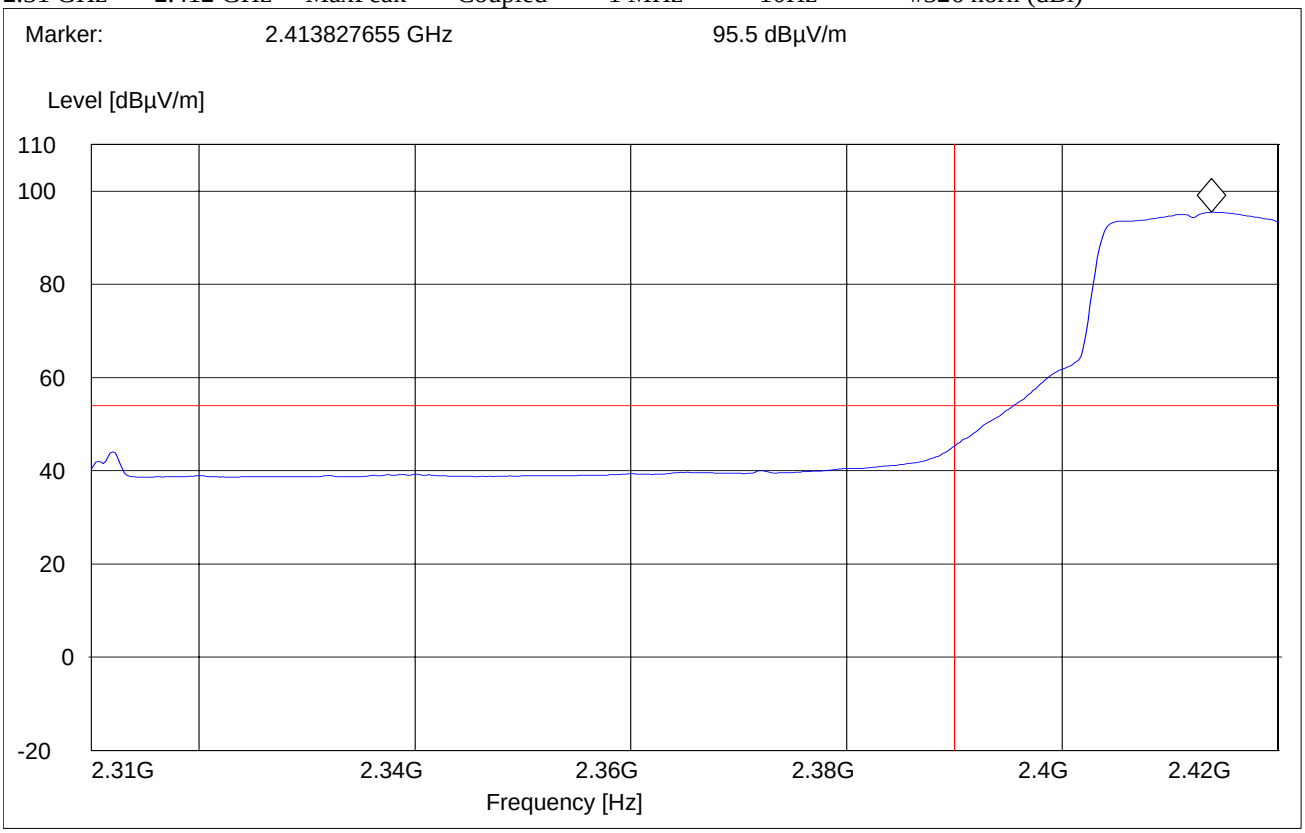
Frequency range	RF power output
2400-2483.5 MHz	30dBm on Conducted

BAND EDGE COMPLIANCE §15.247 (c)

Low frequency section (spurious in the restricted band 2310 – 2390 MHz) (Average measurement @ 6Mbps)

Operating condition : Tx at 2412MHz
SWEEP TABLE : "FCC15.247 LBE_AVG"
Limit Line : 54dBµV

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

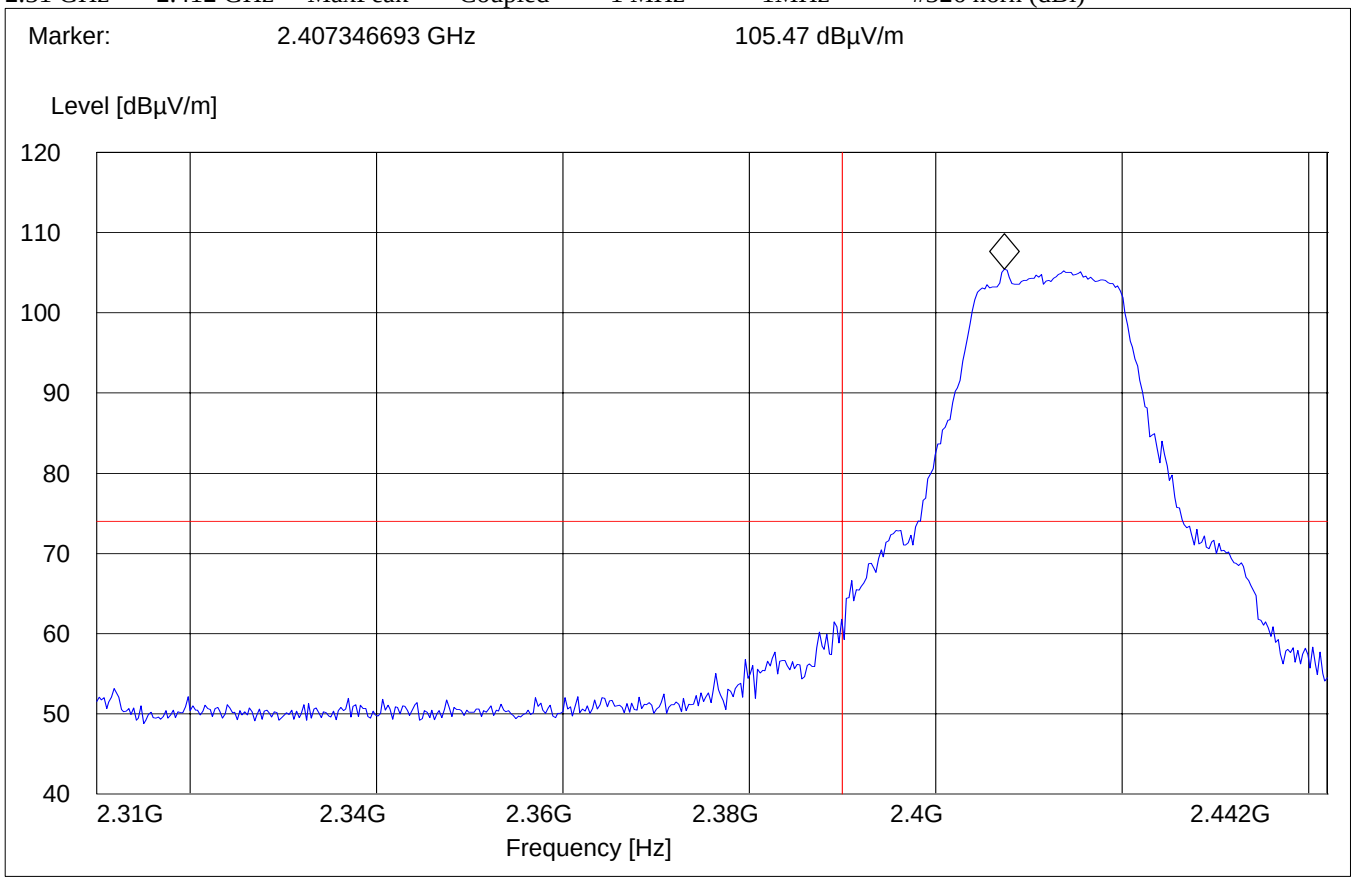


BAND EDGE COMPLIANCE §15.247 (c)

Low frequency section (spurious in the restricted band 2310 – 2390 MHz) (Peak measurement @ 54Mbps)

Operating condition : Tx at 2412MHz
SWEEP TABLE : "FCC15.247 LBE_Pk"
Limit Line : 74dBµV

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)

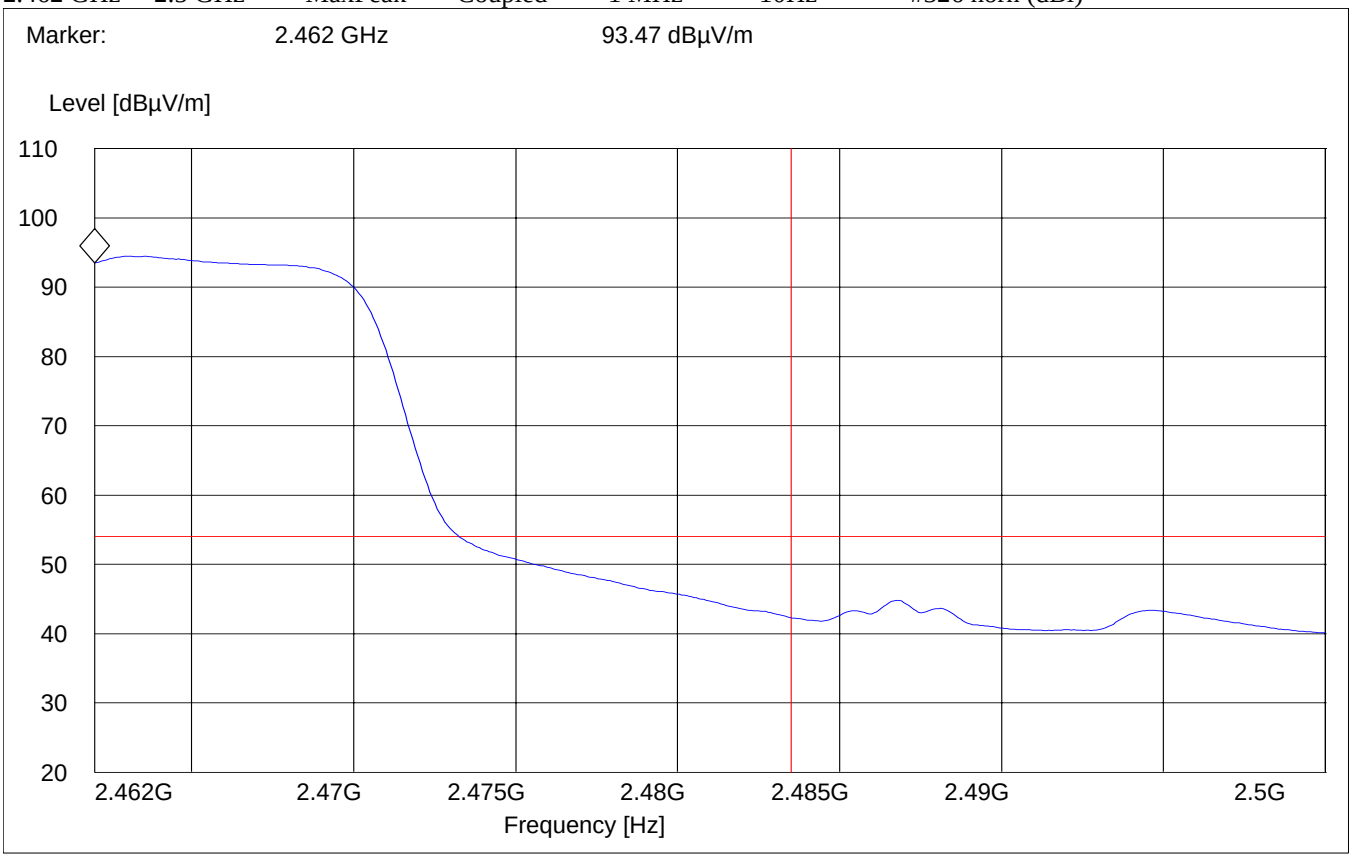


BAND EDGE COMPLIANCE §15.247 (c)

High frequency section (spurious in the restricted band 2483.5 – 2500 MHz) (Average measurement @ 6Mbps)

Operating condition : Tx at 2462MHz
SWEEP TABLE : "FCC15.247 HBE_AVG"
Limit Line : 54dBµV

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
2.462 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

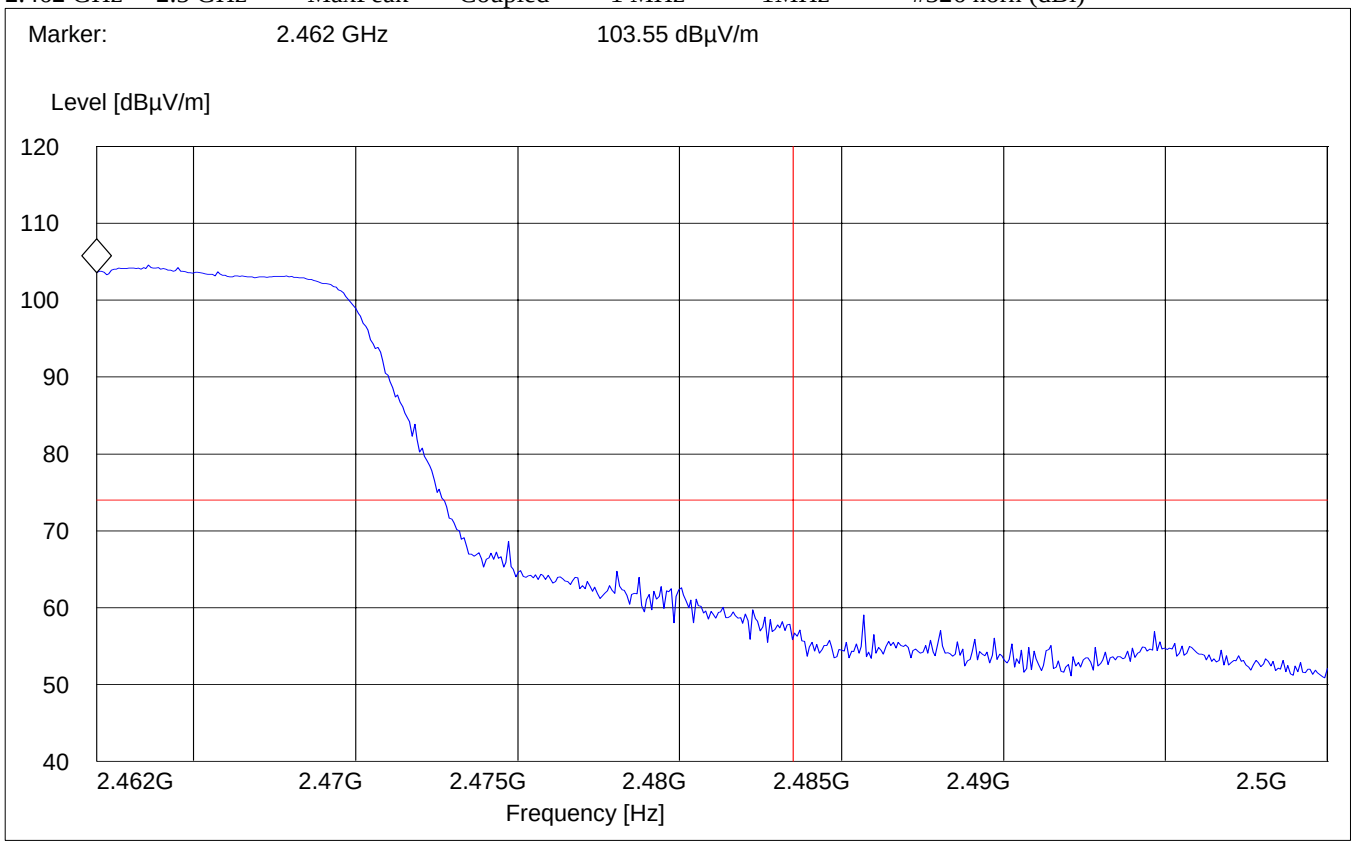


BAND EDGE COMPLIANCE §15.247 (c)

High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
(Peak measurement @ 54Mbps)

Operating condition : Tx at 2462MHz
SWEEP TABLE : "FCC15.247 HBE_PK"
Limit Line : 74dBµV

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
2.462 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



EMISSION LIMITATIONS **§ 15.247 (c) (1)**
Transmitter (Radiated)

LIMITS

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions, which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

NOTE:
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode unless specified with the plots.

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)

Transmit at Lowest channel Frequency 2412MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
See plots			

Transmit at Middle channel Frequency 2437MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
See plots			

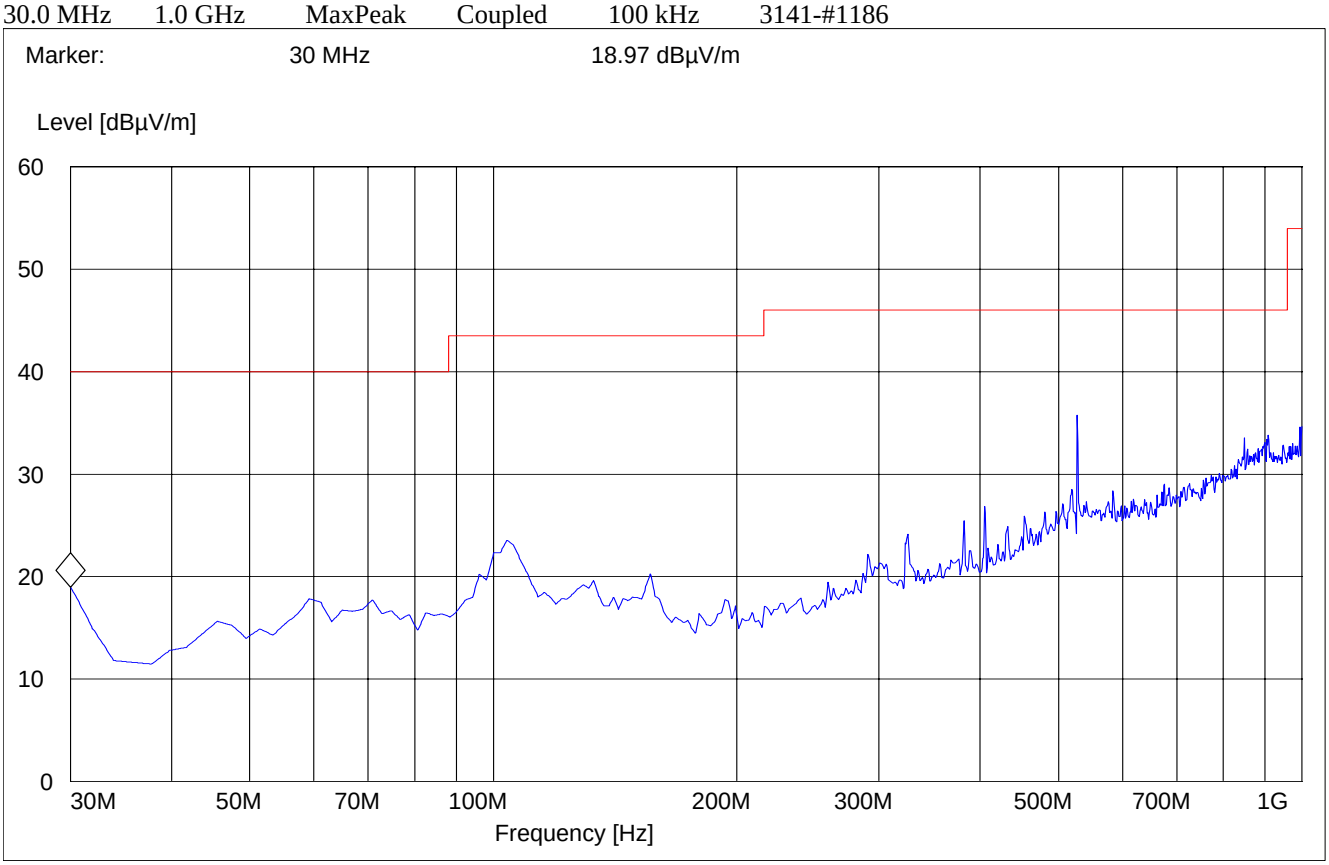
Transmit at Highest channel Frequency 2462MHz			
Frequency (MHz)	Level (dBµV/m)		
	Peak	Quasi-Peak	Average
See plots			

EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Lowest Channel (2412MHz): 30MHz – 1GHz
@ 54Mbps

Note: This plot is valid for low, mid, high channels (worst-case plot)

SWEEP TABLE: "Spuri hi 30-1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW VBW	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)

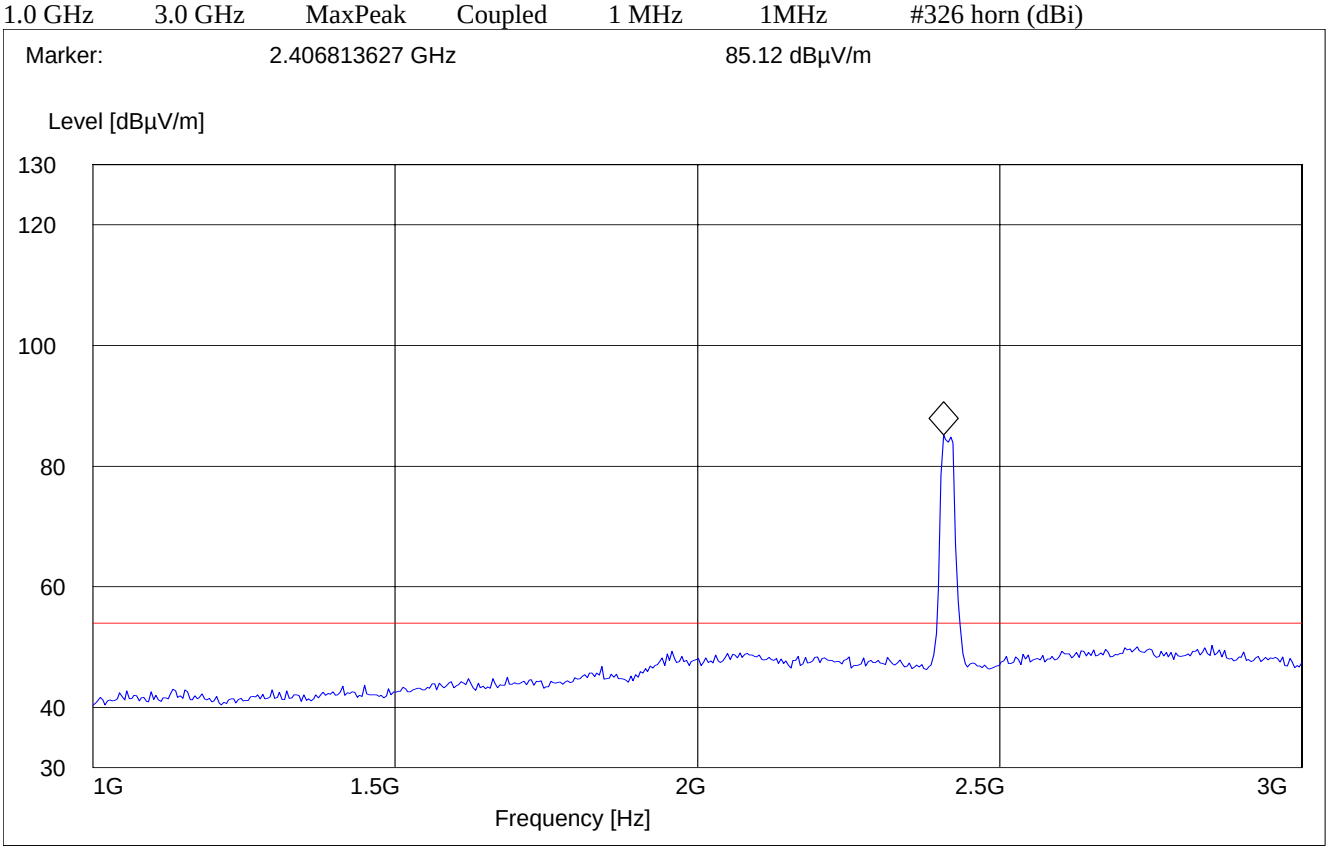
Lowest Channel (2412MHz): 1GHz – 3GHz

@ 54Mbps

Note: The peak above the limit line is the carrier freq.

SWEEP TABLE: "Spuri hi 1-3G"

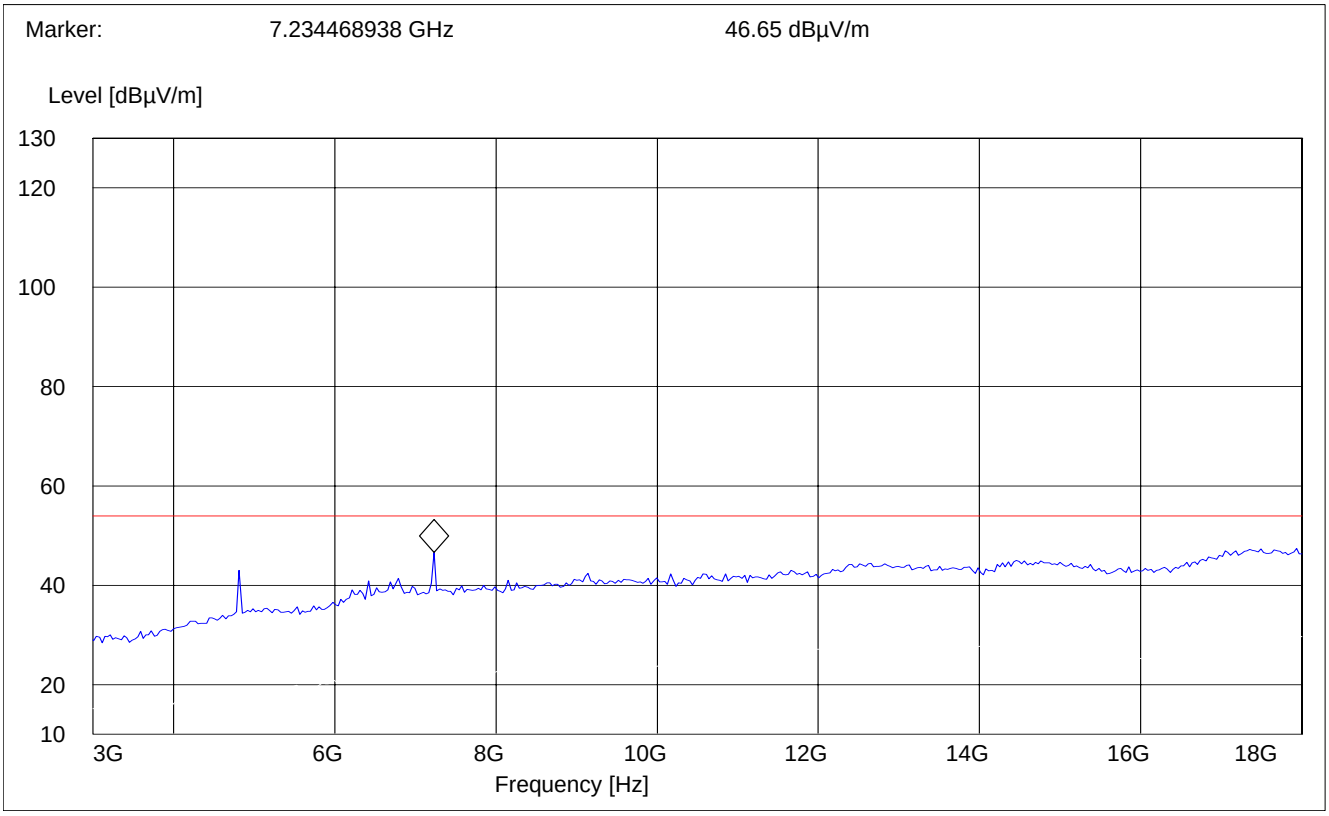
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Lowest Channel (2412MHz): 3GHz – 18GHz
@ 54Mbps

SWEEP TABLE: "Spuri hi 3-18G"

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)

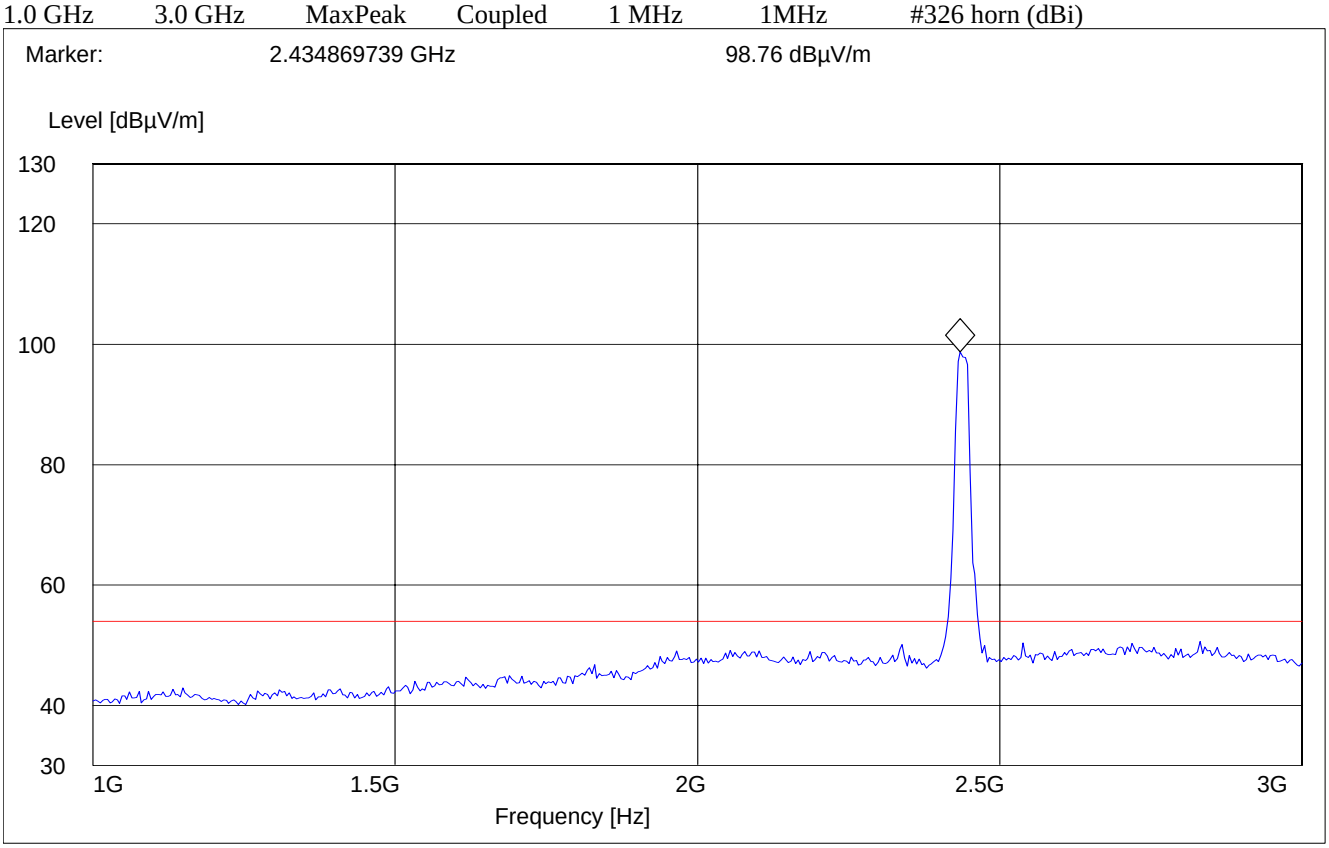


EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Mid Channel (2437MHz): 1GHz – 3GHz
@ 54Mbps

Note: The peak above the limit line is the carrier freq.

SWEEP TABLE: "Spuri hi 1-3G"

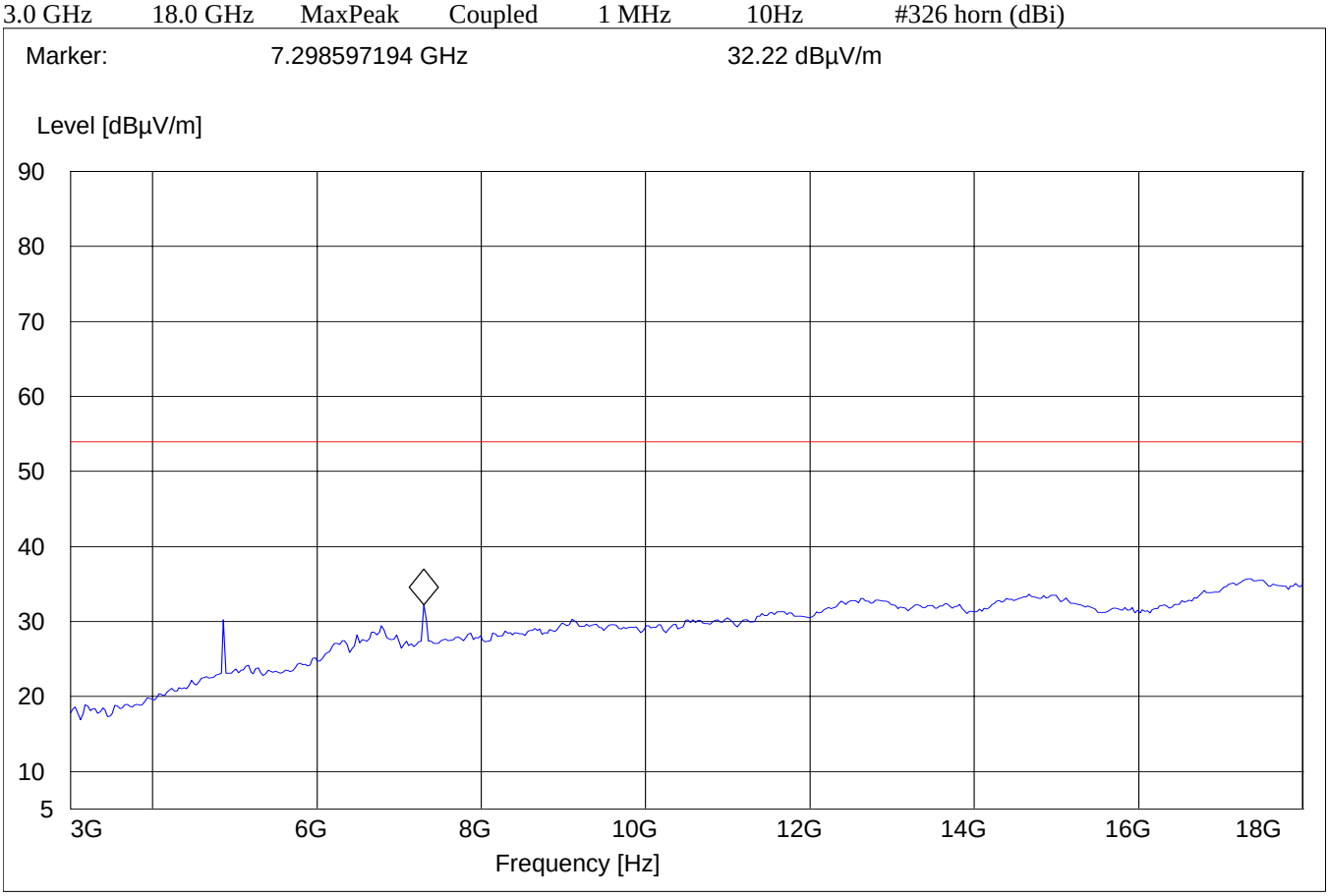
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Mid Channel (2437MHz): 3GHz – 18GHz
@ 54Mbps (Average measurement)

SWEEP TABLE: "Spuri hi 3-18G"

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

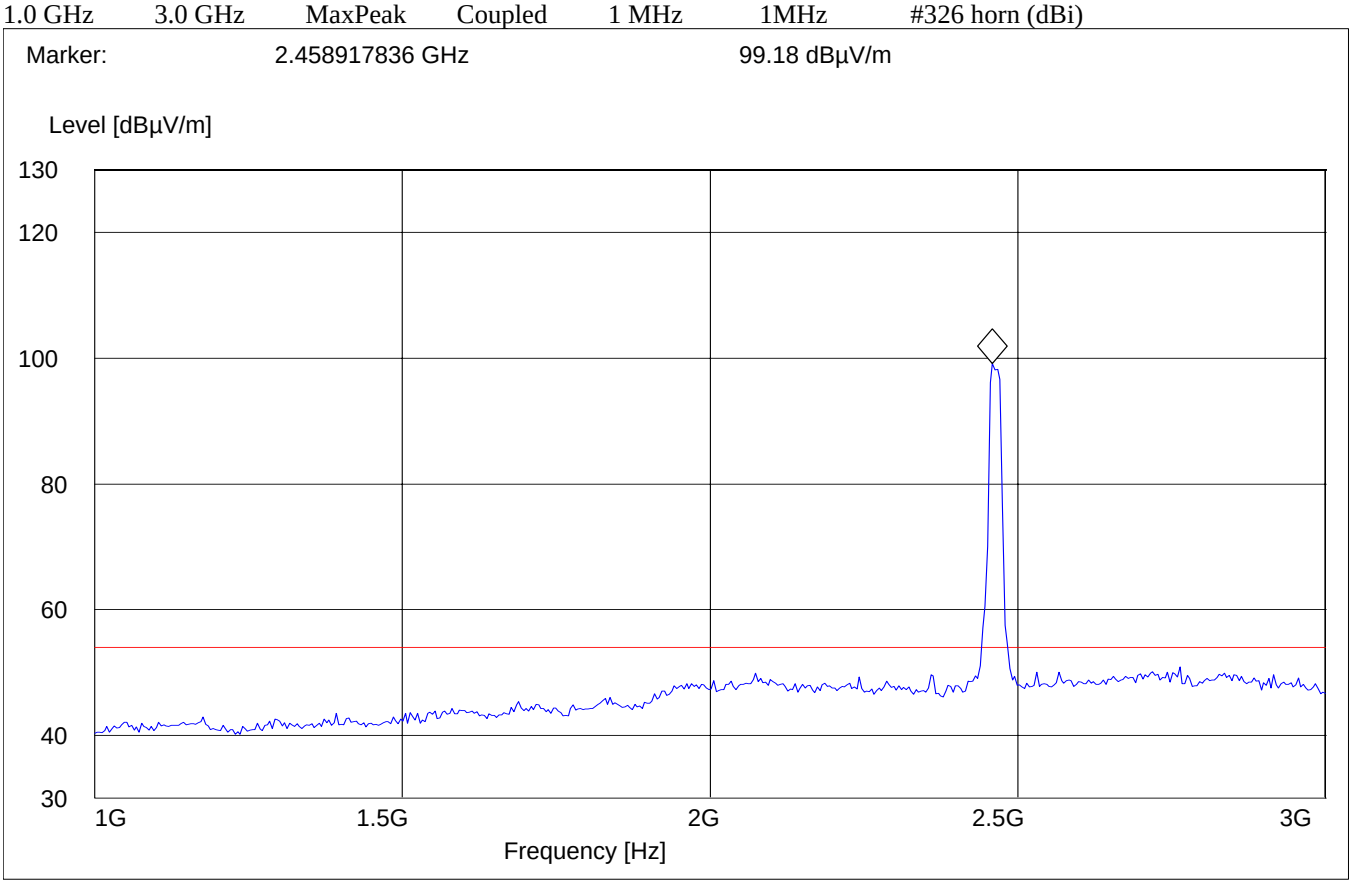


EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Highest Channel (2462MHz): 1GHz – 3GHz
@ 54Mbps

Note: The peak above the limit line is the carrier freq.

SWEEP TABLE: "Spuri hi 1-3G"

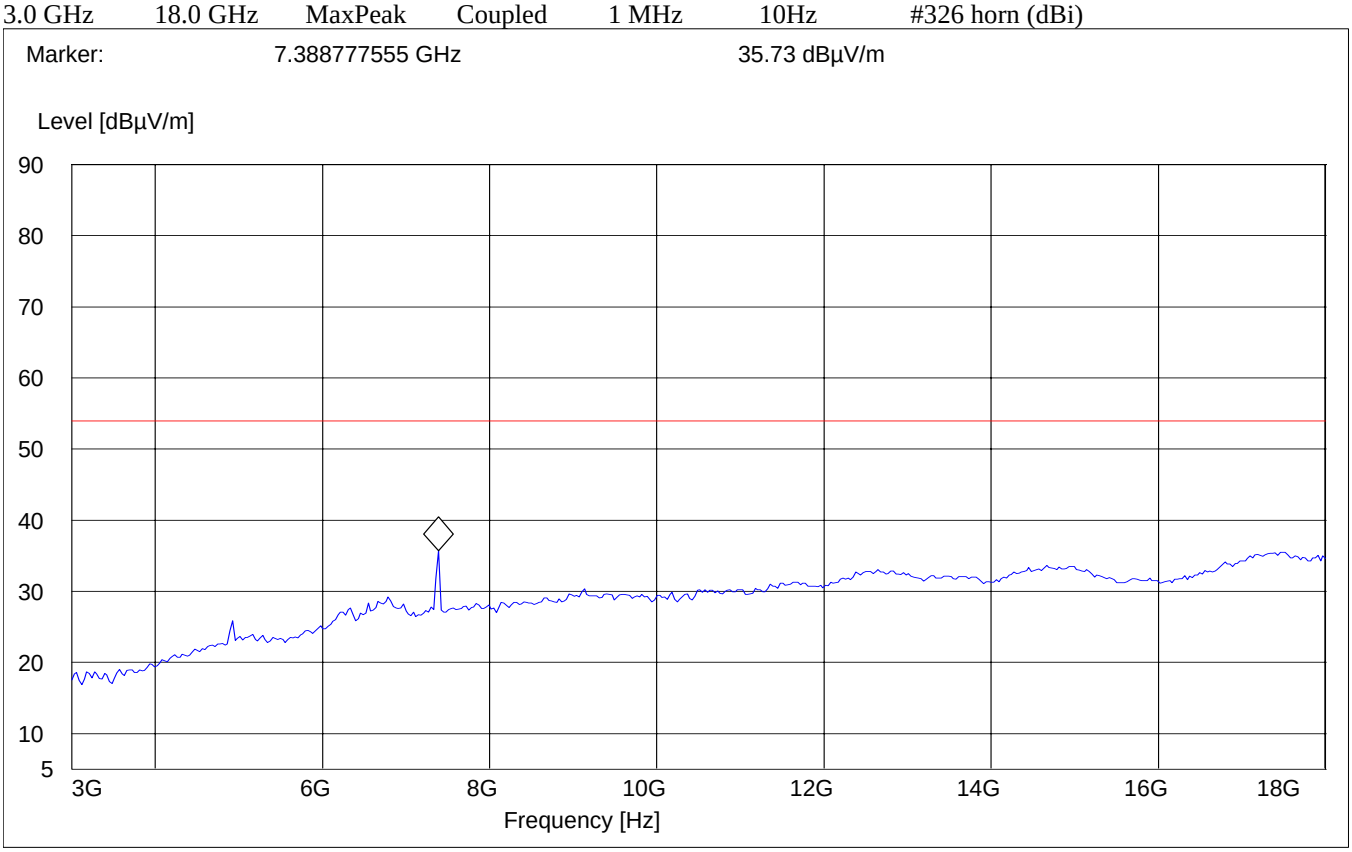
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)
Highest Channel (2462MHz): 3GHz – 18GHz
@ 54Mbps
Average measurement

SWEEP TABLE: "Spuri hi 3-18G"

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c) (1)

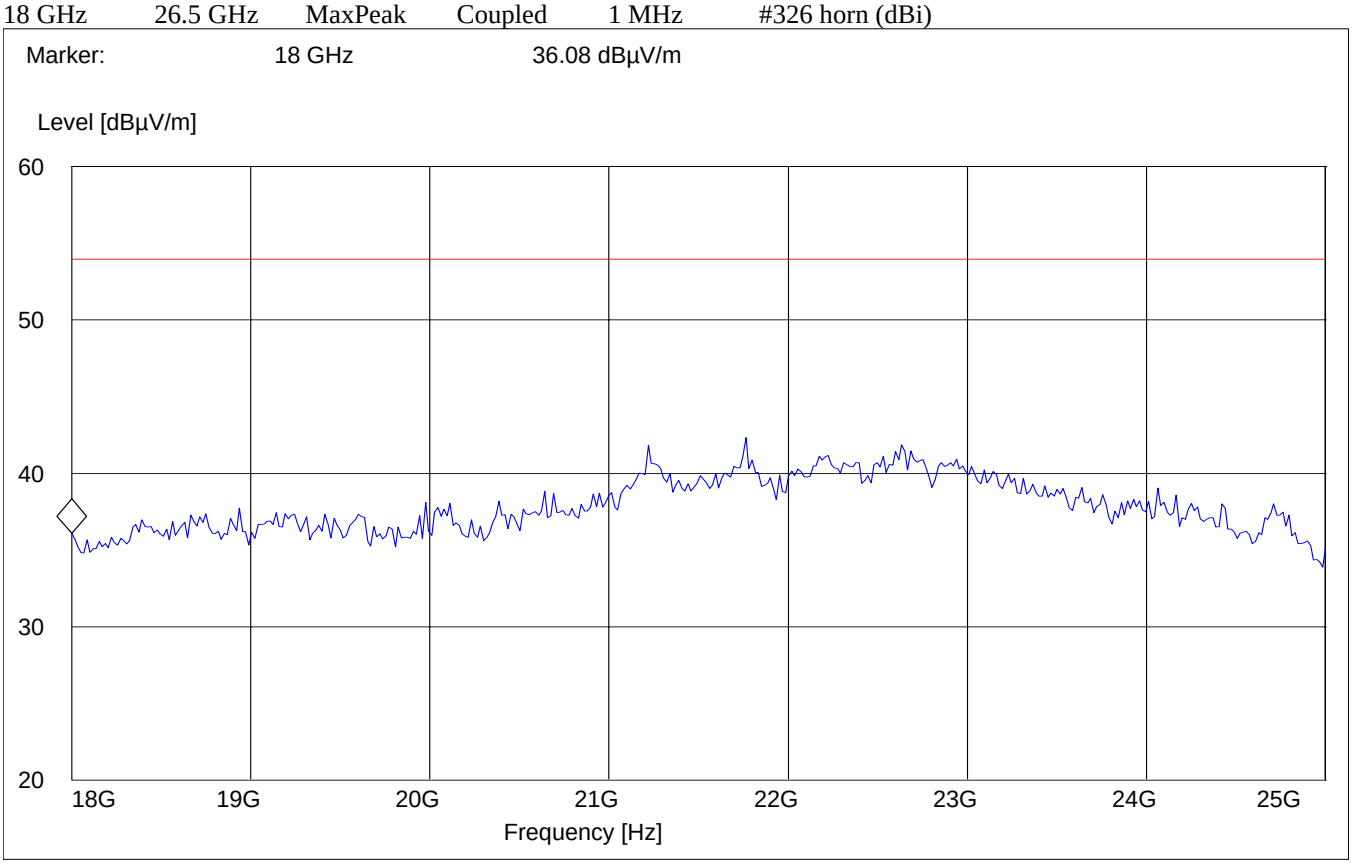
18GHz – 26.5GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)

@ 54Mbps

SWEEP TABLE: "Spuri hi 18-26.5G"

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
18 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



CONDUCTED EMISSIONS § 15.107/207

Measured with AC/DC power adapter

SWEEP TABLE: "55022 cond"

Short Description: EN 55022 for 150KHz-30MHz

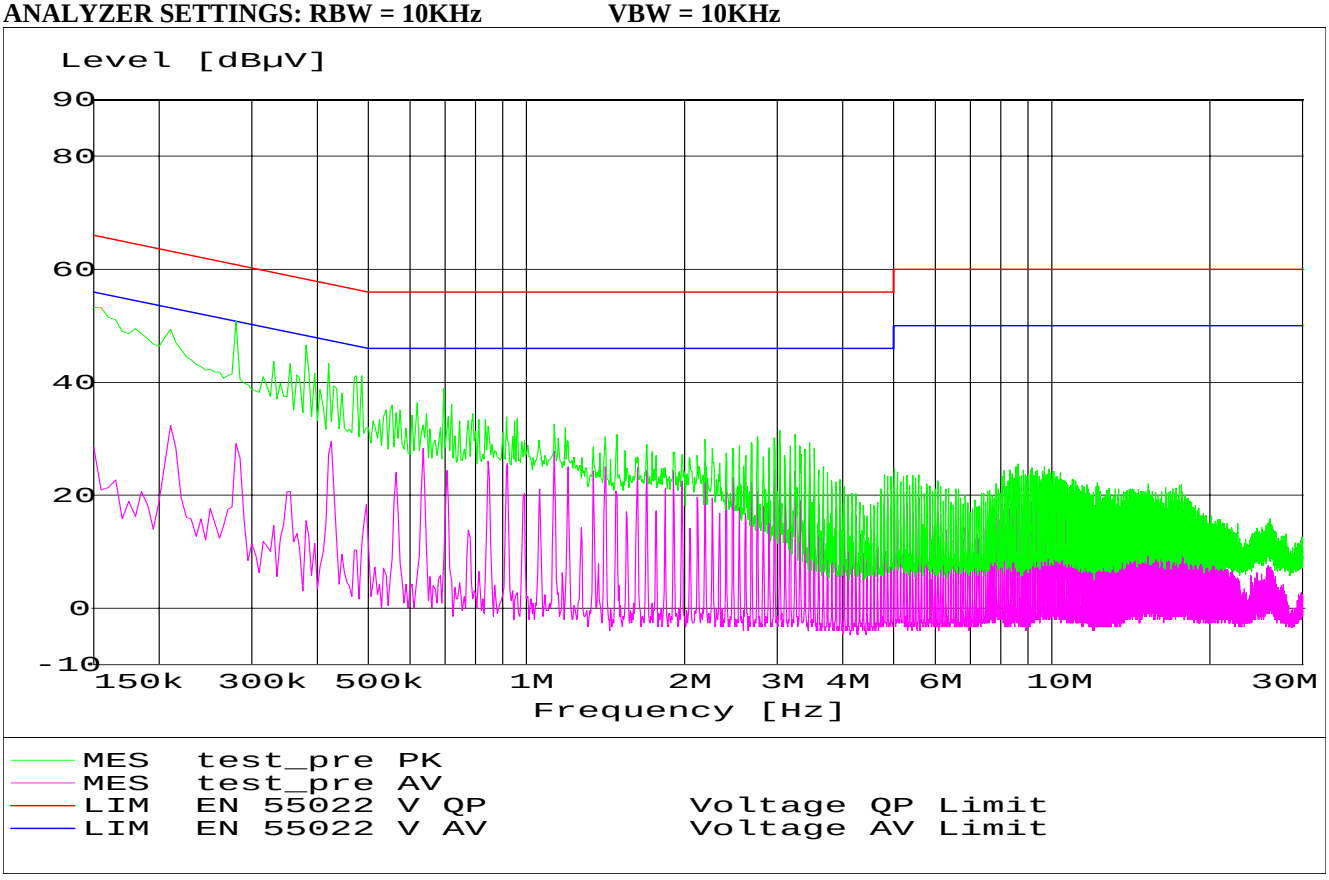
Start Frequency	Stop Frequency	Detector	Meas Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	MaxPeak	Coupled	10 kHz	None

Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)

Limit

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz



RECEIVER SPURIOUS RADIATION § 15.209

Limits

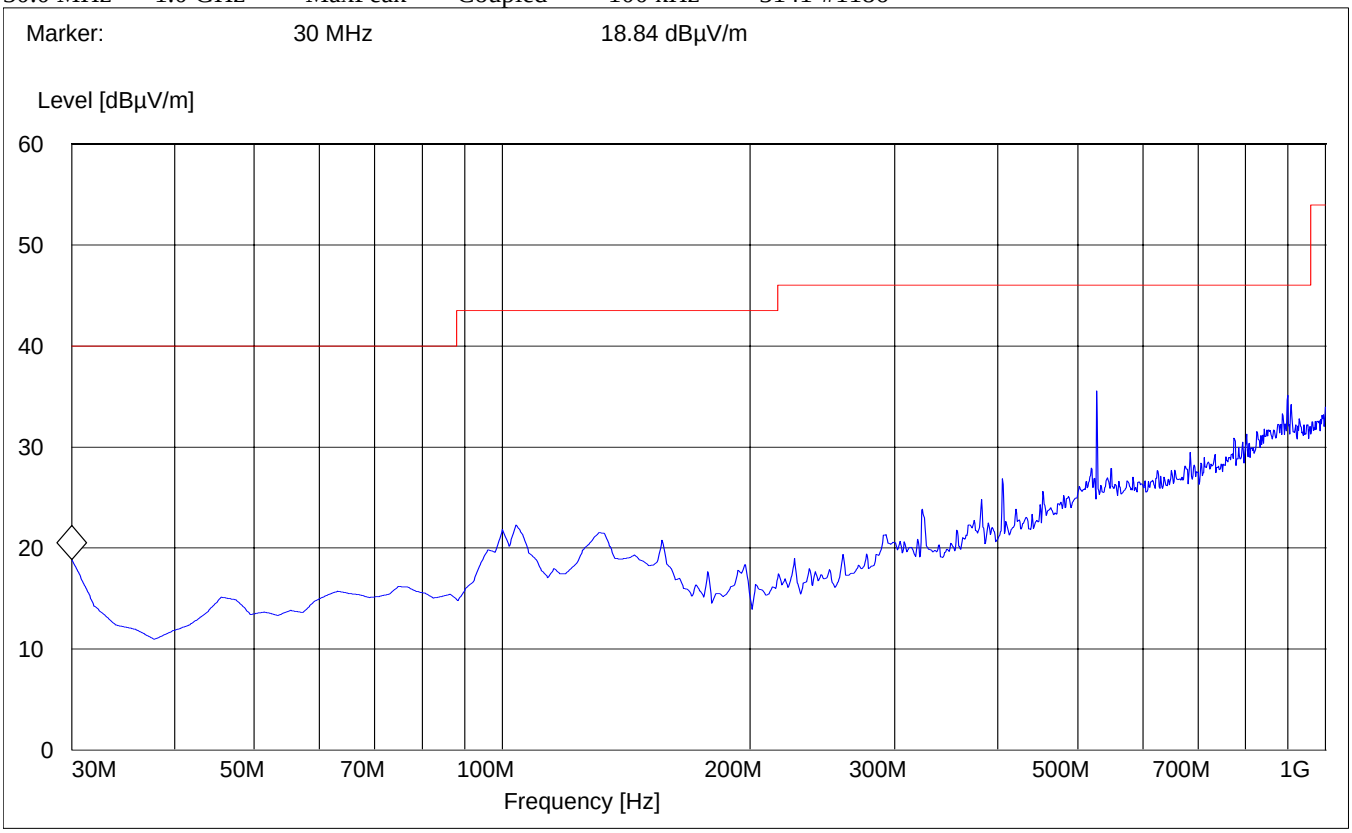
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

NOTE:
The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 26.5 GHz very short cable connections to the antenna was used to minimize the noise level.

RECEIVER SPURIOUS RADIATION § 15.209
30MHz – 1GHz

SWEEP TABLE: " Spuri hi 30-1G"

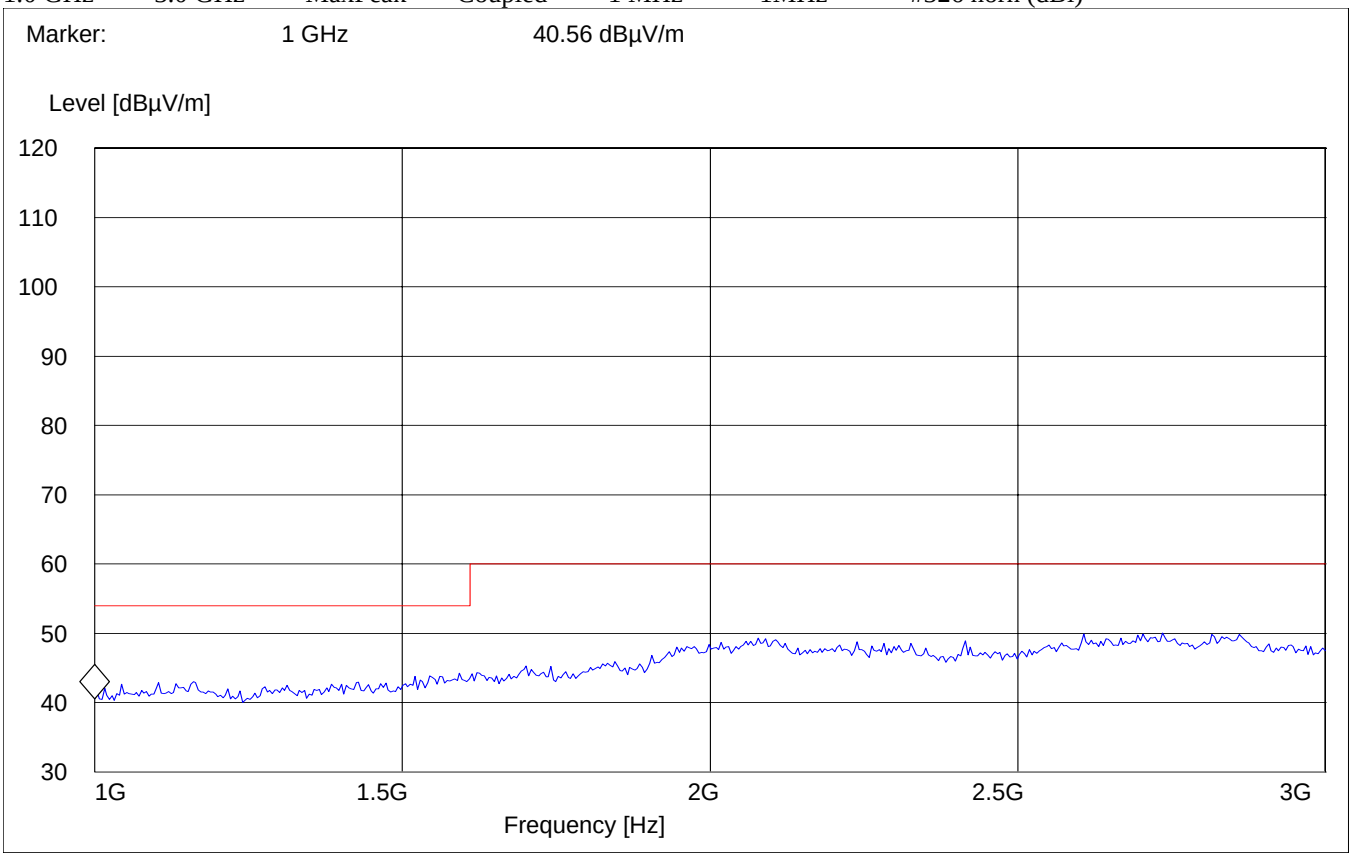
Start Frequency	Stop Frequency	Detector	Meas. Time	RBW VBW	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186



RECEIVER SPURIOUS RADIATION § 15.209
1GHz – 3GHz

SWEEP TABLE: "Spuri hi 1-3G"

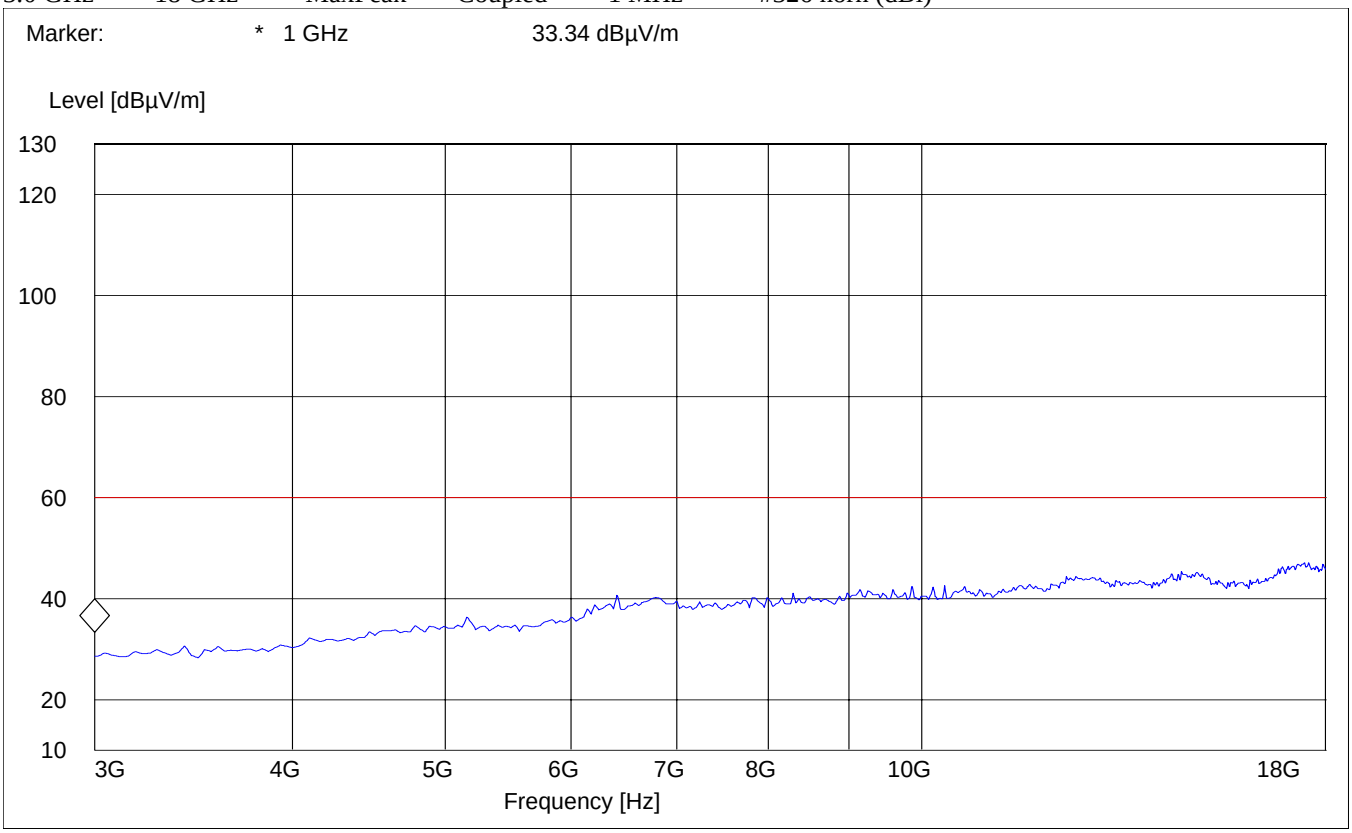
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



RECEIVER SPURIOUS RADIATION § 15.209
3GHz – 18GHz

SWEEP TABLE: "Spuri hi 3-18G"

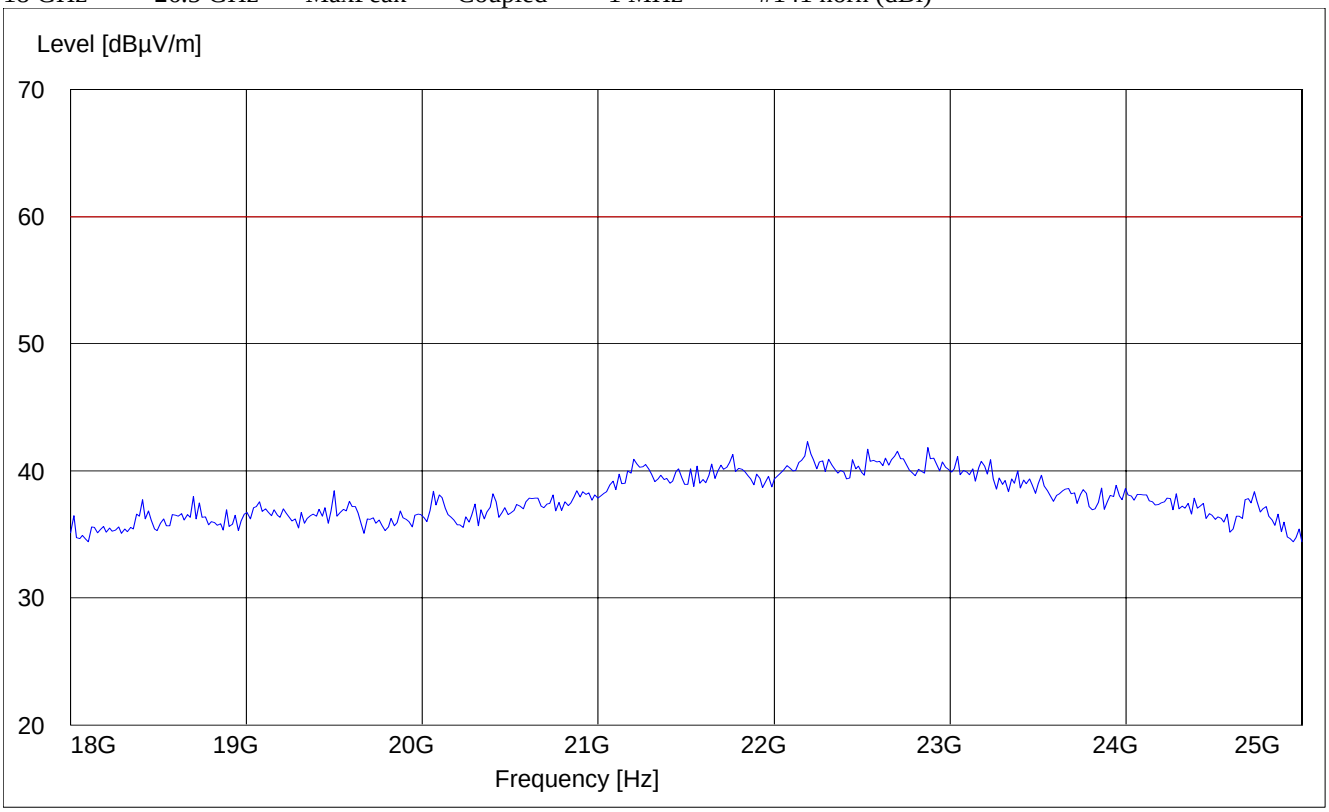
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
3.0 GHz	18 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



RECEIVER SPURIOUS RADIATION § 15.209
18GHz – 26.5GHz

SWEEP TABLE: "Spuri hi 18-26.5G"

Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
18 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#141 horn (dBi)



TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal. Due
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2006
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	826880/010	May 2006
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2006
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2006
05	Biconilog Antenna	3141	EMCO	0005-1186	May 2006
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	May 2006
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	May 2006
08	Power Splitter	11667B	Hewlett Packard	645348	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	n/a
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2006
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2006
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2006
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2006

BLOCK DIAGRAMS
Radiated Testing