

EMC EMISSION - TEST REPORT UNITED STATES STANDARD 47 CFR PART 2, SUBPART J¹

Test Report File No.	:	9553-06	Date of Issue:	22 November 1999	
Model / Serial No.	<u>:</u>	10-52675-10 / 1	9999128		
Product Type	<u>:</u>	TUTT ²			
Applicant	:	QUALCOMM,	INC.		
Manufacturer	:	QUALCOMM,	INC.		
License holder	<u>:</u>	QUALCOMM,	INC.		
Address	:	5775 Morehou	ıse Drive, L-300D		
	<u>:</u>	San Diego, CA	A 92064		
Test Result	:	■ Positive	□ Negative		
Test Project Number Reference(s)	:	9553-06			
Total pages - Test Report	:	8			
¹ Paragraph 2.1053					

NOTE: All test equipment used during testing is calibrated and traceable to NIST.

TÜV Product Service reports apply only to the specific sample tested under stated test conditions. It is the manufacturer's responsibility

to assure the continued compliance of production units of this model. TÜV Product Service, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service, Inc. issued reports.

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TÜV Product Service, Inc. and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

² With AMPS modem made by Standard Communication.



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EMISSIONS TEST REGULATIONS:

The emissions tests were performed according to the	e following regulations:	
□ - EN 50081-1 / 1991		
□ - EN 55011 / 1991 □ - EN 55014 / 1993	 □ - Group 1 □ - Class A □ - Household appliances and □ - Portable tools □ - Semiconductor devices 	□ - Group 2 □ - Class B similar
□ - EN 55022 / 1987	□ - Class A	□ - Class B
□ - EN 55022 / 1998	□ - Class A	□ - Class B
□ - VCCI	□ - Class A ITE	□ - Class B ITE
■ - 47 CFR Part 2, Subpart J		
■ - 2.1053		
□ - AS/NZS 3548: 1995	□ - Class A	□ - Class B
□ - CISPR 11 (1990)	□ - Group 1 □ - Class A	□ - Group 2 □ - Class B
□ - CISPR 22 (1998)	□ - Class A	□ - Class B



Environmental Conditions In The Laboratory:

<u>Actual</u>

Temperature: : 23 °C
Relative Humidity: : 50 %
Atmospheric Pressure: : 100.0 kPa

Power Supply Utilized:

Power supply system : 12 Vdc

Symbol Definitions:

■ - Applicable

□ - Not Applicable



Emissions Test Conditions: Field Strength of Spurious Radiation, Part 2, Paragraph 2.1053

The measurements were tested at the following test location :

□ - Test not applicable

- - Roof (Small Open Area Test Site) (Calibration Due Date: 28 May 2000)
- □ Canyon #1 (10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego (Calibration Due Date: 03 September 2000)
- □ Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego (Calibration Due Date: 20 May 2000)

Testing was performed at a test distance of :

- - 3 meters
- □ 10 meters
- □ 30 meters

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
AMF-3D-010180-35-10P	752	Preamplifier	Miteq	614344	05/99*
FF6549-1	777	Cellular Band Filter	Sage	004	N/A
AA-190-06.00.0	728	Cables	United Microwave		10/99**
AA-190-30.00.0	732	Cables	United Microwave		10/99**
3115	453	Double Ridge Guide Antenna	EMCO	9412-4364	10/01
8566B	720/721	Spectrum Analyzer & Display	Hewlett Packard	2115F0084	03/00
				2	

Remarks: One year calibration cycle for all test equipment.

(*) Preamplifier verification date. (**) Cable verification date.

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364



Equipment Under Test (EUT) Test Operation Mode - Emissions Tests:

The equipment under test was opera	ated under the following conditions during emissions testing.
□ - Standby	
□ - Test Program (H - Pattern)	
□ - Test Program (Color Bar)	
□ - Test Program (Customer Specified)	
□ - Practice Operation	
□ - Normal Operating Mode	
■ - SAT+ST mode, transmit power 1.2	W
Configuration of the equipment und	er test:
□ - See Constructional Data Form in A	ppendix B - Page B2
■ - See Product Information Form(s) in	Appendix B - Page B2
The following peripheral devices an	d interface cables were connected during the testing:
-	Type :
O -	Type:
	Type :
o -	Type :
	Type :
o	Type :
o	Туре :
O	Type :
□ - unshielded power cable	
□ - unshielded cables	
□ - shielded cables	MPS.No.:
☐ - customer specific cables	
o -	
П	



Emissions Test Results:

Spurious Radiation, Part 2, Paragraph 2.1053									
	■ - PASS □ - FAIL □ - NOT APPLICABLE								
Minimum limit ma	rgin		0.2 dB	at	1648.08 MHz				
Maximum limit ex	ceeding		dB	at	MHz				
Remarks:									



GENERAL REMARKS:

NOTE: All photographs are representative of setup for maximum emissions.

SUMMARY:

All tests according to the regulations cited on page 3 were

- Performed
- □ Not Performed

The Equipment Under Test

- - Fulfills the general approval requirements cited on page 3.
- □ **Does not** fulfill the general approval requirements cited on page 3.

Statement of Measurement Uncertainty

The data and results referenced in this document are true and accurate. The measurement uncertainty is calculated to be ± 2 dB for conducted emissions and ± 4 dB for radiated emissions.

Equipment Received Date: 18 November 1999

Testing Start Date: 18 November 1999

Testing End Date: 18 November 1999

- TÜV PRODUCT SERVICE, INC. -

Mary washington

Responsible Engineer: Responsible Engineer:

Mary Washington

Jim Owen (EMC Engineer) (EMC Engineer)



Technical Documentation

Test Data Sheets

and

See photograph(s) for test setup.



REPORT No:

S9553

TESTED BY: Jim Owen

SPEC:

FCC Part 2, Section 2.1053

CUSTOMER: Qualcomm, Inc.

TEST DIST:

3 Meters

E U T:TUTT with AMPS modern made by Standard Communication TEST SITE: 3

MODEL 10-52675-10

EUT MODE: SAT+ST mode, transmit power 1.2W

BICONICAL: N/A

DATE:

18-Nov-99

LOG:

244

NOTES:

RBW and VBW = 100 kHz below 1 GHz.

OTHER:

453

RBW and VBW = 1 MHz above 1 GHz.

FREQ (MHz)		VEDTICAL	Juggirgur	<u> </u>	T		,					v.beta
824.04 102.3 94.7 25.2 127.5 90 2 1648.08 53.9 24.6 30.3 84.2 84.4 -0.2 76 1.5 3296.16 29.1 30.1 37.4 67.5 84.4 -21.9 139 1.5 4120.2 12.3 13.8 40.8 54.6 84.4 -29.8 21 1.5 4944.24 12.1 9.6 40.1 52.2 84.4 -32.2 1.5 5768.28 11.9 13.6 43.5 57.1 84.4 -27.3 305 2.5 6592.32 14.7 12.9 44.1 58.8 84.4 -25.6 74 1.5 7416.36 16.7 10.2 44.8 61.5 84.4 -25.1 122 1.5 836.4 103.2 92.6 25.2 128.4 128.4 90 2 836.4 103.2 92.6 25.2 128.4 128.4 90 <th>FREQ</th> <th colspan="2"></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>[장 _</th> <th>± ≥</th>	FREQ										[장 _	± ≥
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3395.88 30.6 29.9 40.4 71.0 84.4 -13.4 4244.85 13.9 14.3 39.9 54.2 84.4 -30.2 0 3 5093.82 14.4 9.5 42.3 56.7 84.4 -27.7 300 2.5 5942.79 15.7 12.5 44.3 60.0 84.4 -24.4 300 2.5 6791.76 16.1 13 44.4 60.5 84.4 -23.9 81 2.2 7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2	2546.91	34.1	29.1	35.2							75	1.0
4244.85 13.9 14.3 39.9 54.2 84.4 -30.2 0 3 5093.82 14.4 9.5 42.3 56.7 84.4 -27.7 300 2.5 5942.79 15.7 12.5 44.3 60.0 84.4 -24.4 300 2.5 6791.76 16.1 13 44.4 60.5 84.4 -23.9 81 2.2 7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2	3395.88	30.6	29.9	40.4	71.0					-		
5093.82 14.4 9.5 42.3 56.7 84.4 -27.7 300 2.5 5942.79 15.7 12.5 44.3 60.0 84.4 -24.4 300 2.5 6791.76 16.1 13 44.4 60.5 84.4 -23.9 81 2.2 7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2	4244.85	13.9	14.3	39.9						-	<u></u>	-3
5942.79 15.7 12.5 44.3 60.0 84.4 -24.4 300 2.5 6791.76 16.1 13 44.4 60.5 84.4 -23.9 81 2.2 7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2	5093.82	14.4	9.5	42.3	56.7		84.4					_
6791.76 16.1 13 44.4 60.5 84.4 -23.9 81 2.2 7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2	5942.79	15.7	12.5	44.3				-				
7640.73 13.8 9.9 47.2 61.0 84.4 -23.4 129 2		16.1	13	44.4	60.5							
9490.7 12.4 10.0 10.0	7640.73	13.8	9.9	47.2		\dashv						
	8489.7	12.1	10.9	46.3		$\neg \uparrow$		+				
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Page TD2 of TD2



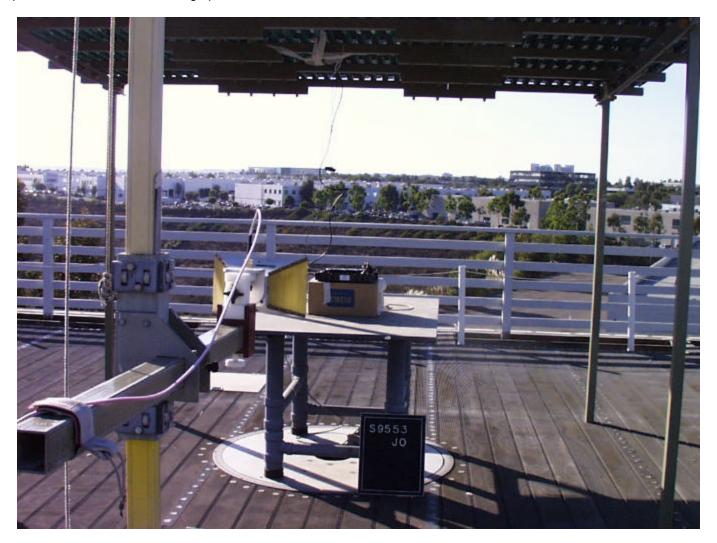
Appendix A

Test Setups (Photographs)

 $\label{eq:NOTE:all-photographs} \textbf{NOTE:} \ \textbf{All photographs} \ \textbf{are representative of setup for maximum emissions}.$



Photograph of Test Setup: Spurious Radiation, Part 2, Paragraph 2.1053





Photograph of Test Setup: Spurious Radiation, Part 2, Paragraph 2.1053





Appendix B

Product Information Form(s)



PRODUCT DESCRIPTION												
NAME, MODEL, SERIAL # OF EUT:				TUTT with AMPS modem made by Standard Communication, Model								
			10-52675-10, S/N 19999128									
DESCRIPTION OF EUT:			The Terrestrial Untethered Trailer TRACS (TUTT) is part of a trialer									
			tra	acking ar	nd monito	ring s	system.	lt is d	esigned	to co	ommunicate over	
			the TUTT cellular network for data transmission at very low duty cycle.									
			(Components of EUT								
Description		Model Num	ber			Se	rial Num	ber	FCC ID Number			
AMPS modem		CMM 8600				214	4-001409	946		APV0896		
OPERATING MODE(S):					•			•			
,				I/O	CABLES							
CONNECTION	AMPS	Analog		GPS rev	veiving		Power	and o	digital			
	Cellula	ar Antenn		antenna	1		control		Ū			
SHIELD	Coaxia	al		Coaxial			None					
CONNECTORS	TNC			TNC			12-pin	Deut	sch			
							connec					
TERMINATION TYPE	Femal	e		Female								
LENGTH	6'			6'			6'					
REMOVABLE	Yes			Yes			Yes					
	III			POWE	R CORD	S	u .					
UNIT:												
MANUFACTURER:												
SHIELDED:												
LENGTH:												
_	П			POWER	INTERFA	CE						
FREQUENCY/AC/DC	VOLTA	GE:		2 Vdc								
PHASES/CURRENT:				amps								
		0:			R FREQU	ENCI	ES					
FREQUENCY			T LOCATION			DESCRIPTION OF USE						
			200/(11014									
				POWE	R SUPPI	Y						
DESCRIPTION	MAN	IUFACTUREF							SWITCHING/LINEAR FREQ.			
							021111112111					
			Р	OWER L	INE FILT	ERS						
MANUFACTURE	R	MODE			QT	1			LOCATION	ON (ON EUT	
						-						
CRITICAL EMI COMPONENTS												
DESCRIPTION	_		# OR VAL				LOC	CATI	ON ON EUT			
	1333	IUFACTUREF	\dashv								<u> </u>	
DESCRIPTION OF EI	VCLOSI	JRE:					II.					
INTERFACING AND/OR SIMULATORS PERIPHERAL EQUIPMENT:												
DESCRIPTION MANUFAC					MOD					FCC ID		
BLOCK DIAGRAM:	BLOCK DIAGRAM:								I			
		ı										



Appendix C

Change History

Not Applicable



Appendix D

Supplemental Information

Not Applicable