Report No. 107139-03 (FCC ID: PWX-S46)



6 FREQUENCY STABILITY, Part 2, Paragraph 2.1055

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

See test setup photos for test setup.



6.1 FREQUENCY STABILITY, Part 2, Paragraph 2.1055

The measurements were performed at the following test location :

□ - Test not applicable

Lab Open Area

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
437B	572	Power Meter	Hewlett Packard	312U19308	04/02
836640B	791	Signal Generator	Hewlett Packard	3844A00726	03/02
8566B	744	Spectrum Analyzer	Hewlett Packard	2618A02913	05/02
AA-190-	787	Cable	United Microwave		*
06.00.0					
11691D	6447	Directional Coupler	Hewlett Packard		*
778D	502	Directional Coupler	Hewlett Packard	1144A07633	*
47-10-34	764	Attentuator 10 dB	Weinschel	BF4000	N/A
CMU200		Universal Radio Comm. Tester	Rohde & Schwarz	Siemens #	03/02
				201618	
34401A	776	Volt Meter	Hewlett Pakcard	US36086974	11/02
T30RC	6225	Temperature Chamber	Tenney	27244-02	04/02
Remarks:	(*) Verified	internally.			
inciliains.	() vermeu	i ii il o i i iaiiy.			

Test Report # 50-107/3 7 Test Area: Test Method FCC Part 2.1055(D)(2) Date: 31	OCT 2001 IUV
EUT POWER: ☐ 230 Vac/5	
EUT Description: FCC TD: PWX S4	
NOTES: 2 band 3 mode Mobile	Relative Humidity: 70

7507 (5) (5)	FREQUERER		COMPLIE		
TEST LEVEL	 	DURATION	YES I	Remark	· ·
Voc					
3.6	-72	10 MIN		TOMA 800 CO F	SE VOL 128 2.6VIE
			-4	MID CHANNEL 836.	40 Mitz
4.8	-62	10MIN	V	TDMA 800 @ Hig	LVOLTAGE 4.8VDC
			<i>\</i>	_ 0	
3.6	- 80	10MIN		TOMA 1900 (2 Lo.	- Voltace 3.6VOC
				MIN ChAUNEL 190	9.92 nu
4.8	- 92	10MN		TOMA 1900@ Hg	L Voltace 4: 2000
7:0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Ĭ
3.6	-63	10min		GSM 1900(0)	ou VILTAGE 3 BVDC
				MID CHANGE 1820	M#2
408	-60	10 M.N		MID CHANNEL 1820 GSM 1900 @ Ha	ch Voltage A. EVDC
780				·	7
		<u> </u>			
				· · · · · · · · · · · · · · · · · · ·	
		<u> </u>		······································	2>

Tested By: DE FERNARO (N

5b

Test Report #: \$C-107139 Test Area: TR-2			\/
Test Method FCC PART 2.1055(a) Date: 31 OCT 2001		IU	V
EUT POWER:		PRODUCT SE	
EUT Model = "546"	Temperature	24	,c
EUT Description: FCC ID: PWX S46	Air Pressure:	100.3	kPa
NOTES: 2 BAND, 3 Mode Mobile Phone	Relative Humidity:_	51	9
TDMA 800, MID-CHANNEL 836	49 MHZ	1045	

TEST	LEVEL	FREQUERROR	TEMP	СОМ	PLIES	
VDC	DURATION	1+3	°C	YES	NO	REMARKS
4.1	30Min	-60	25	·/		From Tomo NomiNAL
4.1	30MIN	-92	-30	V		ON FROM Cold Start
4.1	1 MIN	-77	-30	V		
4.1	IMIN	-91	-30	V		
4.1	IMIN	- 87	-30			
4.1	IMIN	-86	-30	V	,	
4.1	IMIN	-86	- 30			
4.1	IMIN	-87	-30			
4.1	ima	-89	r-30			
4.1	1 Min	-90	-30	V		
4.1	IMIN	-92	-30	\		
4.1	30M.N	-42	-20			ONFROM COLD START
4.1	IMIN	-100	-20			
4.1	IMIN	-91	-20	_/_	<u></u>	
4.1	1 MiN	-45	-20			
4.1	1 Min	-85	-20			
4.1	1 Min	-91	-20			
4.1	1 Min	-92	<u>~20</u>	~		
A-1	1 Min	-77	-20			
4.1	1 M.N	-81	-20	<u> </u>	·	
A.l	IMIN	-84	-20	<i>i</i>		
		_				
<u> </u>	<u> </u>					

Tested By: AVE GENARDIN

FREQUENCY STABILITY								
Test Report # SC-107139 Test Area: TR-2 Test Method FCC PART 2.1055(a) Date: 31 OCT 2001 PRODUCT SERVICE EUT POWER: 1230 Vac/50 Hz 120 Vac/60 Hz EUT Description: FCC ID: PWX SA6 NOTES: 2BAND, 3 Mode Mobile Phone Relative Humidity: 51 % TDMA 800, Mid-Channel 836.49 MHz 245								
TEST LEVEL FREGERER TEMP COMPLIES								
VDC DURATION 743 OC YES NO REMAN	**************************************							
4:1 50/1/10	Start							
4.1 1 min -91 - 10								
4.1 1 MIN -84 -10 V								
4.i /min -88 -10								
4.1 1MIN -77 -10	· · · · · · · · · · · · · · · · · · ·							
4.1 /m.w -80 -10 V								
4.1 1 Min -62 -10								
4.1 1m. N -65 -10 V								
4.1 1 Min -68 -10 V								
A.1 /MIN -70 -10								
4.1 30MIN - 90 0 V ON FROM COLD	StART							
4.1 IMIN -73 0								
4.1 1 min -74 0 V								
1.1 / MUV -75 0								
A.1 1 min - 76 0								
4.1 1 min -77 0								
4.1 IMIN -77 0 V								
4.1 /MIN -78 0 V	-							
7:1								
4.1 /MIN -79 0 V A. [BDMIN -67 +10 V DN FROM Cold &	HAST							

Tested By: DAVE SEPUARDIN

Test Report # SC-107139	Test Area: TR-2			\/
Test Method FCC PART 2.1055(a)	Date: 31 0072001		PRODUCT SE	V
	EUT POWER:		#object of	
EUT Model = "346"	☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☐ Other: 4./ VOC	Temperature	24	,c
EUT Description: FCC ID:	WX 546	Air Pressure:	100.3	kPa
NOTES 2 BAND 3 Mode		Relative Humidity:_	51	
TDMA 800 N	MID-CHANNEL 836	.49 MHZ	30F5	_

LEVEL	FREQERPOR	TEMO	СОМЕ	PLIES	
		°C	YES	NO	REMARKS
35 Min	-67	10	V		ON FROM COLD STORT
		10			
1 min	-69	10		·	
•		10			
1 mir	-70	10			
1mw	-69	10			
		10			
MIN	-68	10			
IMIN	-69	10	V	·	
1 min	-69	10	V		
: 1	-66	20	V		DN FROM 20°C SOAK
imin	- 68	20			:
1	امہ	30			
imin	-75	20			
1 min	-76	30			
		20	·/		
min	-79	20			
IMIN	-80	20	V	<u>.</u>	
Imin	-57	20	V		
imin	-57	20	1/	·	
30MW		30			ON FROM 30°C SOAK
	DURATION JOHIN JOHIN	DURATION HZ 30MIN -67 17MIN -69 17MIN -69 17MIN -69 17MIN -68 17MIN -69 17MIN -69 17MIN -69 17MIN -69 17MIN -69 17MIN -68 17MIN -68 17MIN -68 17MIN -76 17MIN -75 17MIN -76 17MIN -77 17MIN -79 17MIN -80 17MIN -57	DURATION Hz °C 30 Min -67 10 1 min -69 10 1 min -69 10 1 min -69 10 1 min -68 10 1 min -68 10 1 min -69 10 1 min -75 20 1 min -75 20 1 min -76 20 1 min -76 20 1 min -79 20 1 min -79 20 1 min -79 20 1 min -57 20 1 min	DURATION HZ °C' YES 30 Min - 67 10 V 1 min - 69 10 V 1 min - 69 10 V 1 min - 69 10 V 1 min - 68 10 V 1 min - 68 10 V 1 min - 69 10 V 1 min - 69 10 V 20 min - 66 20 V 1 min - 75 20 V 1 min - 76 20 V 1 min - 77 20 V 1 min - 79 20 V 1 min - 80 20 V 1 min - 57 20 V	DURATION H3 °C' YES NO 30 Min - 67 10 V 1 MIN - 69 10 V 1 MIN - 69 10 V 1 MIN - 69 10 V 1 MIN - 68 10 V 1 MIN - 68 10 V 1 MIN - 69 10 V 1 MIN - 69 10 V 1 MIN - 69 10 V 20 MIN - 66 20 V 1 MIN - 75 20 V 1 MIN - 76 30 V 1 MIN - 77 30 V 1 MIN - 80 30 V 1 MIN - 80 30 V 1 MIN - 57 20 V

Tested By: Printed

Test Report # 5C-107139	Test Area: TR-2			\/
Test Method FCC PART 2.1055(a)	Date: 31 0072001		PRODUCT SE	V
	EUT POWER:		WALLES OF THE PARTY OF THE PART	
EUT Model #: "\$46"	☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☐ Other: 4./ VOC	Temperature	24	,c
EUT Description: FCC ID: F	WX 546	Air Pressure:	100.3	kPa
NOTES: 2 BAND, 3 Mode	Mobile Phone	Relative Humidity:_	51	%
TDMA 800. 1	MID-CHANNEL 836	.49 MHZ	4:45	

LEVEL	FREQERER	TEMP	СОМ	PLIES	
DURATION	Hz	ان د	YES	NO	REMARKS
30MIN	-68	30	1		ON FROM 30°C PONK
IMIN	-64	-30			
IMIN	-61	30	レ	· 	
iMIN	-57	30	<i>'</i>		
ININ	-52	30	V		
IMIN	-48	30	V		
IMIN	-41	30	<u></u>		
1 Min	-59	_30			
1 min	-57	30	1		
IMIN	-54	30	~		
30Min	-35	40	V		ON FROM 40'C SOAK
ININ	-47	40	<u></u>		:
IMIN	-41	40			
1 Min	- 33	40			
MIN	-3	40	1	<u> </u>	
1 MIN	-43	40	V		
IMIN	-31	40			
1 Min	- 19	AU	~		
imin	-35	40	V	<u>, </u>	
IMIN	-53	40	V		
30MIN	-58	50	V		ON FROM 50°C BOAK
	30MIN IMIN IMIN	30MIN -6B 1MIN -61 1MIN -61 1MIN -57 1MIN -52 1MIN -48 1MIN -41 1MIN -59 1MIN -57 1MIN -57 1MIN -57 1MIN -35 1MIN -41 1MIN -31 1MIN -31 1MIN -31 1MIN -31 1MIN -35 1MIN -35	DURATION H3 OC 30 30 1 MIN -61 30 1 MIN -57 30 1 MIN -57 30 1 MIN -41 30 1 MIN -57 30 1 MIN -35 40 1 MIN -41 40 1 MIN -41 40 1 MIN -31 40 1 MIN -35 40 1 MIN -53 40	30MIN - 68 30 V IMIN - 61 30 V IMIN - 61 30 V IMIN - 57 30 V IMIN - 52 30 V IMIN - 48 30 V IMIN - 59 30 V IMIN - 57 30 V IMIN - 57 30 V IMIN - 57 30 V IMIN - 57 40 V IMIN - 31 40 V IMIN - 35 40 V	30MIN - 68 30 IMIN - 61 30 IMIN - 57 30 IMIN - 52 30 IMIN - 48 30 IMIN - 41 30 IMIN - 57 40 IMIN - 33 40 IMIN - 31 40 IMIN - 35 40 IMIN - 31 40 IMIN - 31 40 IMIN - 35 40 IMIN - 31 40 IMIN - 31 40

Tested By: Printed

Lave Binachir

Test Report	Test Report # <u>SC-/07/39</u> Test Area: <u>TR-2</u> Test Method <u>FCC PART 2.1055/a</u>) Date: <u>3/0C7200/</u> EUT POWER:									
EUT Model	'34	6"	230 1	Vac/50 H: er: <u>4 - /</u>	Z V 0	120 Vac/60 Hz	Temperature	24 .0		
EUT Descrip	otion: FC	CID:	PWX	546	<u> </u>		Air Pressure:	100,3 kPa		
NOTES:	BAND	3 MO	e Moh	ile 1	Phos	ve	Relative Humidity:	51 %		
	DMA	800,	Mid-	Cha	NNE	L 336	.49 MHZ	345		
	LEVEL	FREQUERROR	TEMP	СОМР	LIES					
	DURATION	1 /73	1 20	YES	NO		REMARK	122.72		
4.1	30Min	l	50	V	<u></u>	ON FLOM	50°C Sw	sk		
4.1	IMIN		50							
4.i	IMW	-35	50							
4.1	1 M (1)	-49	50							
4.1	1 m 10	-41	50			!				
4.1	(MIN)	-61	50							
4.1	(MI)	-59	50							
4.1	IMIN	-56	50							
4.1	1 Min	-54	570							
4.1	IMIN	-54	50	V						
}										
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Tested By:	7	7350)	Marial			7	2013			
resteptly.	i refu	Printed	MEYUV			-2	Sign	ature		

Test Report # 51-107139 Test	t Area: TR-2			\/
Test Method FOC PART 2.1055/a) Date	e: 30 00 T 2001		PRODUCT SE	V
	POWER:		WASSELL SE	MATE.
EUT Model = 1546"	230 Vac/50 Hz ☐ 120 Vac/60 Hz Other: <u>4 · (VQC</u>	Temperature	24	°C
EUT Description: FCC. ID & PWX S	746	Air Pressure:	100.8	kPa
NOTES: 2 BANG, 3 mode Mot	bile Phone	Relative Humidity:_	47%	
TOMA 1900, mid		MH-2	104	

TEST	LEVEL	FREGERECK	TEMP	COMP	PLIE\$	
VAC	DURATION	#7	ے د	YES	NO	, Remarks
4.1	13CMIN		25	<i>\</i>	•	Joon Temp Nement
4.1	JO MIN	-102	-30	'		ON FROM COLD START
4.1	1 min	- 97	-30	<u> </u>	·, <u> </u>	
4.1	1 Min	-97	-30			
4.1	1 Min	-97	-30			
4.1	MIN	-100	-30	V		
4.1	IMIN	-103	-30	_/_	,	
4.1	1 Min	-107	-30		,	
4.1	1 M.M	-108	-30			
4.1	· · · · · · · · · · · · · · · · · · ·		020	·/		
4.1	IMIN	~117	-30	V		
4-1	30 MIN	-127	-20	/	,	DNFROM COLD START
A.1	+ MIN	-130	-20	V		
4.1	LAIN	-125	-20			
A.I	IMIN	-/31	-20			
4.1	IMIN	- 108	-20		,	
4.1	1 Kus	-117	-20			
4.(IMIN	•	-20	١		
4.((MI)		-20			
A.1	Ihin	i i	-20	<u> </u>		
4.1	inu	-90	-20	<u> </u>		
4.1	30MIN	-144	-10	/		ON FROM COLD START

Tested By: Printed

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Test Report # 50-107139	Test Area: TR-2			\/
Test Method FCC PART 2.1055/2)	Date: 30 00 7 2001		PRODUCT SE	PVICE
	_ EUT POWER:		WAR THE STATE OF T	MAICE
EUT Model #:	☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☐ Other: ☐ (VDC	Temperature	24	,c
EUT Description: FCCZD #		Air Pressure:	100.8	kPa
NOTES: 2 BANG, 3 mode	Mibile PHONE	Relative Humidity:	47%	%
	n. d-chariNFL 1879. 98	P MÆ>	7.1	

TEST	LEVEL	FREQUEREN	TEMO	СОМ	PLIES	
va:	DURATION		20	YES	NO	REMARKS
4.1	30 MM	-144	-10	V		ONFROM COLD STURT
4.1	Imin	-108	-10			
4.1	IMIN	-138	-10			
4-1	Imin	-91	-10			
4.1	MIN	-103	-10			
4.1	1 min	-112	-10		- ,	
4.1	1 Min	-116	-10			
4.1	1 min	-124	-10			
4.1	IMIN	-130	-10			
4.1	IMIN	-/33	-10		<u></u>	
4.1	30MW	-132	0			ON FROM COLD START
4.1	IMIN	-138	Q			·
4.1	IMIN	- 89	0			
4-1	inin	-91	0_	ر ن		
4.1	LAND	-92	0		<i>.</i>	
4.1	IMW	-91	0	_i_		
4.1	Imen	-93	0	ر _		
À.1	IMIN	-97	0			
A.1	IMIN	-97	2			
4.1	1 HUN	-100	0	رز		

Tested By: TANK SFIENDED Printed

63

Test Report #: 51-107139	Test Area: TR-2			\/
Test Method FOC PART 2. 1055 (a)	Dale: 30 0072001		1 0	V
	EUT POWER:		PRODUCT SE	RVICE
EUT Model = 1546"	☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☐ Other: 4 · (V) ⊂	Temperature	24	³C
EUT Description: FCC Z D & P		Air Pressure:	100.8	kPa
NOTES: 2 BANK, 3 mode	Mobile Phone	Relative Humidity:	47%	%
TOMA 1900 .>	n.d-ChANNEL 1879.98	N#2	3,4	

TEST	LEVEL	FREGERER	TEMP	COME	PLIES	
V.X.	DURATION	('	اح م	YES	_ NO	REMARKS
4.1	30Min		10			ON FROM COLD START
4.(1 men	-120	10			
4.1	IMIN	-120	10		··	
4.1	1 Min	-125	10			
4.1	Mer	-128	10			
4.1	1 New	-127	10	<u></u>		
A.1	Min	-130	10			
4.1	1 Mes	-134	10			
4.1	(M.v	-135	10		··	
4.1	IMIN	-135	10			
4.1	-30mn	-100	20	_رز	·	on from starta 20°C
4.1	1 min	-107	20	<u></u>		
41	Mil	-114	مد			
4:1	(M.N	-/21	20			
41	Min	-i26	20	<u></u>		
A.1	Med	-127	20			
4.1	Med	- 81	බ 0	اسر		
4.1	(M.D	-81	200		-	
4.1	1 Med	-83	20			
4.1	IMIN	-84	20			
					-	

Tested By: JAUK SERNARDIN

Test Report # 50-107139	Test Area: TR-2			\/
Test Method FOC PART 2: 10.55 (a)	Date: 30 00 7 2001		PRODUCT SE	PVICE
	EUT POWER:		Cather Cather	WAICE.
EUT Model #	☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☐ Other: _ <i>A</i> • [VD <: _	Temperature	24	,C
EUT Description: FCC.ZD & PV		Air Pressure:	100.8	kPa
NOTES: 2 BANG, 3 mode	Mbile Phone	Relative Humidity:_	47%	%
	2.d-ChANNEL 1879.98	M+2		

TEST		FREQERADO	TEMP		PLIES	
V.X.	DURATION	#7	اح م	YES	NO	REMARKS
4.(30 MIN	-1.36	30	V		
4.1	Min	-128	30	/		
41	Min	-127	30			
4.1	Men	-/22	30			
4.1	i Win	-104	30	1		
4-1	1 Men	- 94	30			
4.1	Mie	- 89	-30			
4.1	1 Min	-81	30			
4.1	i M.c	- 75	30	الممسا		
4.1	iMen	-62	30			
4.1	30 Min	-77	40			
4.1	MiN	-79	40			
A-1	(M.N	-60	40		_	
A-1	1 Min	- 74	AU			
4.1	1 M-N	-65	40	_/		
A.I	1 M.P	-88	40	1		
4.1	i M.N	-66	40	سر		
4.1	(M.N	-47	40	/		
A.1	IM.D	-78	40			
4.1	1 phs	65	40	V		
			-			
		-				

Tested by: | Printed

65

					-2		TII	\/
Test Method	OFOC PART	-2.1055/a) Date:	30 00	72001		PRODUCT SE	RVICE
		 	EUT	POWER:	D 120 V 150 L I		with the said	
EUT Model	= 154	6"		ther: <u> </u>	☐ 120 Vac/60 Hz VDC	Temperature	24	,c
EUT Descri	ption: FC	CID:	Air Pressure:	100.8	kPa			
NOTES:	2 BANG	3 mode	2 716b	ile Phone	2	Relative Humidity:_	47%	%
					EL 1879.98			-
							· · · · · · · · · · · · · · · · · · ·	
TEST V.AC	DURATEW	FREQUERROR HO	I EMP	YES	=5 NO	Remarks		
4.(-67	50					
4.(IMIN		50					
A.	IMIN		50	· /				
4.(/ McN	-78	50					
Ĥ-(_	1 McN	- 63	50					
4.1	1 Mar	- 89	50					
A1	(Mid	-31	50					
4.1	My	-63	50					
4.1	inin	-48	50					
4.1	IMIN	-38	50					
	<u> </u>							
			<u></u> -					
	<u> </u>							
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Tested By:	AVE	SEEN.	IDED IN	, -		all Janes		
		Printed				Signa	iui e	

Test Report #: SC-107/37 Test Method FCC (ART 2.1055/4)	Test Area: <u>TR-2</u> Date: <u>290072001</u>	TÜV
EUT Model = 115461	EUT POWER: ☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☑ Other: <u>Vac 4.1</u>	Temperature 24 °C
EUT Description: FCC ID: PWX NOTES: 2 BAND, 3 Mede M.	546	Air Pressure: 10 Ci - a kPa Relative Humidity: 49 %
65911 1900 Mid-1	MARUEL 1228 MKZ	

TEST	EVEL	FREQERER	TEMP	СОМ	PLIES	
VIJĆ	LLE STIEN	12	ے ت	YES	NO	REMARKS
4.1	30mm	-60 m 3	25	✓		ABOM TEMP NORMAL
4.1	30 KIN	-7.2	-30	/		UN FACE COLL START
4.1	1111.2	-74	-30	V		
A. (111111	-73	-30	V		
4.1	1 MIN	- <i>73</i>	-30	<i>\</i>		
4.[iMIN	-74	-3O	/		
4.1	imiN	-74	-30	V		
4.1	1 min	-73	-30	V		
4.1	IMIN	- 76	- 30			
4.1	imin	-75	-30	V		
A. (ilmin	-76	-30	,		
4.1	IMIN	74	-30	\ <u>\</u>		`.
1.1	BUMIN	-77	-20	✓		ONFREM COLD STRET
4.1	1m/r	-30	-20	~		
4.1	MIN	-73	- Q U	~		
4.1	ININ	-80	ر دړ.			
4.1	(IVIIN	-80	-30			
4.1	/ Min	-78	-,كِن	✓		
A. (IMIN	-80	-20	V		
A: 1	16410	-72	-,20	V		
4:((min	-73	- ين		,	
4.1	MIN	-74	-20	اسسا		
4.(30 MIN	-78	-10	/		ON FROM COLD Stret
			•			

Tested By: AVE Frinted

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	1 11	.QULI1	01 017	\DIL				
		107/39						TUV
Test Method	FCC PAP	7.10556	Date:	29	200	2001	-	PRODUCT SERVICE
			EUT PC			120 Vac/60 Hz	5	Constitution of the second
EUT Model	= "546	:	T Othe	vad50 r er: <u>4</u> ,	1 VOC	120 Vac/60 HZ	Temperature	
EUT Descrip	ation: <u>FCC</u>	ID: P	WX84	6			Air Pressure: 100	9 · 8kPa
NOTES: <u>강</u>	BONG	, 3 mode	2 mabile	PHO	ie_		Relative Humidity:	<u> 99 </u>
		00 mi				o myz		
TEST	LEVEL	FREQUERROR	TEMP	СОМ	PLIES			
۷۵۷	DIRPTION		oc_	YES	NO		REMARKS	
4.1	BUMIN	-78	-10	1		CX Fron (ald start	affect I minite
4. (/MIN		-10	1				
4.1	imin	į.	-10	1				
4.	inco	- 7-7	-10	<i>i</i> /				
4.1	1	- 77	- 10	1				
4.1	IMIN	-72	-10	1			W-10	
4.1	IMIN	- 77	-10	i/				
4.1	/min	-72	-10	V				
4.1	imin	-80	-10					
4.1	1 MIN	- 78	-10	ر ا				
4.1	SC MIN	-77	0	<u></u>		ONFROMO	old Start	after the kinite
4.1	IMIN	- 61	0					
4.1	1 pace	-20	<u></u> 2					
4.1	IMIN	-77	0					
4.1	imen	-74	\mathcal{O}	<u></u>	,			
4.1	1 min	-71	0					
4.1	/MIN	-79	\mathcal{O}					
4.1	/min	-76	\mathcal{O}	V				
4.1	IMIN	-77	\circ	<u></u>				
4.1	(Min	-75	Ô	1	•			

Tested By: AUB FRANCO N

Test Report # \$20- 107/39 Test Method FCO FOOT 2.1055(a)	Test Area: 7R-2 Date: 290072001		TU	<u> </u>
EUT Model #	EUT POWER: ☐ 230 Vac/50 Hz ☐ 120 Vac/60 Hz ☑ Other:	Temperature	J4	°C
EUT Description: FCC ID; DW		Air Pressure:		kPa
NOTES: 2BONG, 3 mode;	Chart L 1880 mys	Relative Humidity.	9./	

TEST	LEVEL	FREQUERROR	TEMP	СОМ	PLIES	
Vác	DESTINA	Hz	٥	YES	NO	REMARKS
4.1	3Crup	-77	+10	V		UN FROM COLD START WELLMATE
4.1	IMIN	-71	+10			·
4.1	/min	-72	T10	1/		
4.1	IMIN	-76	7/0	V		
All	CHUN	-75	+14	~		
4.1	1 Jun	-76	+10			
4.1	Min	- 73	+10	<u> </u>		
4.1	(MIN	-77	+10			
41	LININ	-72	410	V	<u> </u>	
4.1	men	- 74	+10	<u> </u>		
4.1	30MW	-78	+20	V		ON FRANCOLD STROTAGLOG (MONTE
4.1	MIN	-66	+30	/		
4.1	IMICH	-73	+20			
4.1	Min	-71	+20			
4.1	IHIN	-71	+20		-	
4.	MIN	- 77	+20		- 	
4:1	Imin	-77	+20	سيا		
4.1	1/410	-70	+20	اسما		
4.1	CMIN	-69	+20			
4.1	1,412	≠ 72	+20			
		· · · · · · · · · · · · · · · · · · ·				1. 00

Tested By: THE BERNARO (N

69

Test Report # 50- 107/39	Test Area: 1R-2		TI	11/
Test Method FCO PART 2:1055(a)	Date: 290072001		PRODUCT	SERVICE
	EUT POWER:		W. Sandana	
EUT Model =	□ 230 Vac/50 Hz □ 120 Vac/60 Hz ☑ Other: <u>4,1,0</u> c	Temperature	24	,c
EUT Description: FCC ZD: PW		Air Pressure:	00.8	kPa
NOTES: 2 Band, 3 mode	MALL PHONE	Relative Humidity:	49	%
68m 1900, mid	- Chark L 1880 mHz			

TEST	LEVEL	FREQUERRIC	TEMP	СОМЕ	PLIES	
VAC	DESTRU		٥٥	YES	NO	REMARKS
4.1	BUMIN		+30		<i></i>	ON from off after BLAK (# +30°C
4.1	1 thin	-62	+30	1		
4.1	1 mil	-67	+30			
4.1	(prin	:- We	+3U			
4.1	(hick	-105	+30			
4.1	1/n in	-67	4.30	س		
4.1	1 Mcn	-66	t30	~		
4.1	1 Min	- 63	+30	~		
4.1	Lour	-61	+30			
4.1	Min	-62	+30	<u></u>		
4.1	30MN	-63	+40			OF FOOM OF AFTER JOAK (0 +40°C
4-1	inco	-54	+40		,	
4-0	iner	-62	+40			
4.0	/MeN	-60	+40		-	
4.1	Mun	-66	14 0			
4.1	IMIN	-60	+40			
4.1	lpus	-63	+40	<i>\</i>		
4.1	inen	-63	+40	V		
4.1	ipu	- 59	+40	V		
14		-64	+-10	-	-	
					- ,	

Tested By: DUE SENAROLN
Printed

EUT Model : EUT Descrip	FCO PAR FCO PAR "SAG WOON FCC BONG M 190	Temperature 24 °C Air Pressure: 100.8 kPa Relative Humidity: 49 %					
		FREQERMAN		СОМ		1	
	EVEL DIOTEN		o C	YES	NO	-	REMARKS
	30 NW	r-	+50			EN FROM	off After Souke 50°C
.4:(1 hin	Į i	+50	-			
4.1	IM.N		+50				
4.1	Mix	-56	T-50	~			
4.1	1 Min	-56	+50	-			
_4:1	الم، ١١ ١	-57	+40	-			
4.1	1 mil	-57	tsv	-			
4.1	1 Min	-68,	1 50	١			
4.1	1 min		せらひ	1			
4.1	IMIN	-60	t50				
							
	<u> </u>						
			*				
					-		
	·						

Report No. 107139-03 (FCC ID: PWX-S46)



7 FIELD STRENGTH OF SPURIOUS RADIATION and SIGNAL SUBSTITUTION, FCC Part 2, Paragraph 2.1053; Part 22, Paragraph 22.917(b)(2); Part 24, Paragraph 24.238(a)

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

See test setup photos for test setup.

For Radiated Spurious measurements the procedure was as follows:

 For each mode and for the High, mid and low of each mode of operation the phone was set up and the peak value of the fundamental was measured

2. This value was then compared to the expected value to validate the phone was

operating at its peak power output.

3. Then all spurious emissions were measured and any found to be within 20dB of the limit, signal substitution was performed. Since all emissions measured in peak mode were below the -13dB limit any measurements meant to factor in the burst nature of the TDMA signal were not implemented. Please note however, the burst rate was factored into the conducted spurious measurements included in this report as it was needed for FCC Part 22.917(f) compliance. This was included as appendix A.



7.1 FIELD STRENGTH OF SPURIOUS RADIATION and SIGNAL SUBSTITUTION, FCC Part 2, Paragraph 2.1053; Part 22, Paragraph 22.917(b)(2); Part 24, Paragraph 24.238(a)

The measurements were performed at the following test location :

□ - Test not applicable

Roof Test Site, 3 meters

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
3146	244	LPA	EMCO	1063	02/02
AA-190-	733	Coax Cable	United Microwave		N/A
30.00.0					
3115	453	Horn Antenna	EMCO	9412-4364	10/02
AMF-5D-	719	Amplifier	Miteq	54960	N/A
010180-35-					
109					
AA-190-	657	Coax Cable	United Microwave		N/A
06.00.0					
8566B	823	Spectrum Analyzer	Hewlett Packard	2332A02751	08/02
8445B	809	Pre-Selector	Hewlett Packard	1442A01127	N/A
	6685	Coax Cable	United Microwave		N/A
3115	798	Horn Antenna	EMCO	9908-5927	03/02
Remarks:					
Romano.					



7.2 Field Strength Calculation

If a preamplifier was used during the Radiated Emission Testing, it is required that the amplifier gain must be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna, cable used and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic measurement, these considerations are automatically presented as a part of the print out. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit was modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply the CMRL, which is the actual field strength present at the antenna. The quantity can be derived in the following manner:

Corrected Meter Reading Limit (CMRL) = SAR + AF + CL - AG - DC

Where, SAR = Spectrum Analyzer Reading

AF = Antenna Factor

CL = Cable Loss

AG = Amplifier Gain (if any)

DC = Distance Correction (if any)

Assume the following situation: A meter reading of 29.4 dBuV was obtained from a Class A computing device measured at 83 MHz. Assume an antenna factor of 9.2 dB, a cable loss of 1.4 dB and amplifier gain of 20.0 dB at 83 MHz. The final field strength would be determined as follows:

$$CMRL = 29.4 \, dBuV + 9.2dB = 1.4 \, dB - 20 \, dB/M - 0.0 \, dB$$

CMRL = 20.0 dBuV/M

This result is well below the FCC and CSA Class A limit of 29.5 dbuV/m at 83 MHz.

For the manual mode of measurement, a table of corrected meter reading limit was used to permit immediate comparison of the meter reading to determine if the measure emission amplitude exceeded the specification limit at that specific frequency.

REPORT No: SC107139

TESTER:

Dave Bernardin

SPEC:

FCC Part 22 para 22.917(b)(2)

Part 2. Para. 2.1053

CUSTOMER: Siemens

NAB

TEST DIST:

3 Meters

E U T:

*\$46" FCC ID PWX \$46

TEST SITE:

Roof

EUT MODE: TDMA 800

BICONICAL:

N/A

DATE:

OCT 24,2001

LOG.

244

NOTES:

With Hands-Free Headset Model UHF-P35

OTHER:

453

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

 he	to	1	•	

					, , ,							v.beta	1a	-	, ,	
FREQ (MHz)	VERT (dBa			ONTAL Suv) av	CF (dB/m)		LEVEL n(d)) øv	SPEC (dE pk	LIMIT 3m) av		RGIN B) av	EUT Rotation	Antenna Height	Notes	dBuV/m PK	dBuV/m AVG
824.04	99.62				25.0	27.3								Fundamental Low	124.6	
1648.08	63.7	43	59.1	38.1	-7.0	-40.7	-61.4	-13.0	-13.0	-27.7	-48.4	0	1		56.7	36.0
2472.12	54.7	34.6	52	37.1	-0.1	-42.7	-60.3	-13.0	-13.0	-29.7	-47.3	278	1		54.6	37.0
3296.16	48.5	31.7	48.3	32	4.6	-44.3	-60.8	-13.0	-13.0	-31.3	-47.8	301	1	AVG @ Noise Level	53.1	36.6
4120.2	44.2		52		5.3	-40.1		-13.0		-27.1		0	1	Noise	57.3	5.3
4944.24					6.4							163	1	Noise	6.4	
5768.28					11.6									Noise	11.6	
6592.32	Ì				14.0									Noise	14.0	
7416.36					15.3					i				Noise	15.3	
8240.4					16.6									Noise	16.6	
836.49	100.5				25.0	28.1					<u> </u>	291	1.2	Fundamental Mid	125.5	
1672.98	56.6	40.3	5 3.6	37	-6.6	-47.3	-63.6	-13.0	-13.0	-34.3	-50.6		1		50.0	33.7
2509.47	5 6.3	38.9	54.1	36	0.1	-41.0	-58.4	-13.0	-13.0	28	-45.4	2	1		56.4	39.0
3345.96	52.4	35	52.1	36.2	4.7	-40.3	-56.5	-13.0	-13.0	-27.3	-43.5		1		57.1	40.9
4182.45	58	34.4	56.3	37.9	5.0	-34.4	-54.5	-13.0	-13.0	-21.4	-41.5	1	1		63.0	42.9
5018.94	45		44		7.0	-45.4		-13.0		-32.4	ļ	148	1	AVG @ Noise Level	52.0	7.0
5855.43					11.7									Noise	11.7	
6691.92					14.1							ł		Noise	14.1	
7528.41					15.6									Noise	15.6	
8364.9	I				16.5									Naise	16.5	
848.97	100.2		95.5		25.3	28.1						10	1	Fundamental High	125.5	
1697.94	61.9	43	55.9	41.4	-6.2	-41.6	-60.5	-13.0	-13.0	-28.6	-47.5	60	1		55.7	36.8
2546.91	51	36.3	52.5	35.3	0.4	-44.5	-60.7	-13.0	-13.0	-31.5	-47.7	4	1		52.9	36.7
3395.88	5 5	37.7	54.1	37.4	4.8	-37.6	-54.9	-13.0	-13.0	-24.6	-41.9	0	1		59.8	42.5
4244.85	50	33.2	48.8	32.9	4.6	-42.7	-59.5	-13.0	-13.0	-29.7	-46.5	0	1		54.6	37.8
5093.82	45.5		43.6		7.6	-44.2		-13.0		-31.2				AVG @ Noise Level	53.1	7.6
5942.79					11.8									Noise	11.8	
6791.76				I	14.3									Noise	14.3	
7640.73					15.8									Noise Noise	15.8	
8489.7					16.4									Noise	16.4	

REPORT No: SC107139

TESTER:

SPEC:

FCC Part 24 para 24.238(a)

Part 2, Para 2. 1053

CUSTOMER: Siemens

Dave Bernardin

TEST DIST:

3 Meters

EUT:

"\$46" FCC ID PWX \$46

TEST SITE:

Roof

EUT MODE: TDMA 1900

BICONICAL:

N/A

DATE:

OCT 24,2001

LOG:

244

NOTES:

With Hands-Free Headset Model UHF-P35

OTHER:

457

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

					,					,		v.beta1	a			
FREQ (MHz)	VERT (dB pk		HORIZONTA pk	AL (dBuv) av	CF (dB/m)		LEVEL m(d)) av	SPEC (df pk	LIMIT Bm) av		RGIN B) av	EUT Rotation	Antenna Height	Notes	dBuV/m PK	dBuV/m AVG
1850.04	95.4		88.5	į	32.0	32.1	[391	1	Fundamental Low	127.4	
3700.08	55.4	35.6	57.5	36	5.4	-32.4	-53.9	-13.0	-13.0	-19.4		15	1		62.9	41.4
5550.12	53.7	38.8	52.9	38	11.3	-30.3	-45.2	-13.0	-13.0	-17.3	-32.2	123	1		65.0	50.1
7400.16				<u> </u>	15.3									Noise Level	15.3	
9250.2	47.2		45.9	l	17.9	-30.2		-13.0		-17.2		178	1	AVG Noise Level	65.1	17.9
11100.24	46		47.3		22.3	-25.7		-13.0		-12.7	ĺ	228	1	AVG Noise Level	69.6	22.3
12950.28					21.1									Noise Level	21.1	
14800.32					23.9									Noise Level	23.9	
16650.36					27.7									Noise Level	27.7	
							<u> </u>		-							-
1879.98	95		91.6		32.2	31.9					 	390	1	Fundamental Mid	127.2	·····
3759.96	58.6	39.2	58.7	37.6	5.5	-31.1	-50.6	-13.0	-13.0	-18.1	-37.6	65	1.1		64.2	44.7
5639.94	50.2	33	50.8	35	11.4	-33.1	-48.9	-13.0	-13,0	-20.1	-35.9	206	1.1		62.2	46.4
7519.92					15.5									Noise Level	15.5	
9399.9				1	17.5									Noise Level	17.5	
11279.88					22.2									Noise Level	22,2	
13159.86					22.1				1	1	1 -			Noise Level	22.1	
15039.84					24.4									Noise Level	24.4	
16919.82					29.6						ļ			Noise Level	29.6	
				1						-					<u> </u>	
1909.92	94.3		89.8		32.4	31.4						390	1	Fundamental High	126.7	
3819.84	64.8	44.6	57.9	40.2	5.6	-24.9	-45.1	-13.0	-13.0	-11.9	-32.1	60	1		70.4	50.2
5729.76	49.8		49]	11.5	-33.9		-13.0		-20.9	[200	1	AVG Noise level	61.3	11.5
7639.68		l			15.8									Noise Level	15.8	
9549.6				1	17.5									Noise Level	17.5	
11459.52	Ì				22.1									Noise Level	22.1	
13369.44	l		1	1	23.4									Noise Level	23.4	
15279.36	<u> </u>			1	24.6									Noise Level	24.6	
17189.28					31.0								_	Noise Level	31.0	

REPORT No: SC107139

TESTER:

Dave Bernardin

SPEC:

FCC Part 24 para 24.238(a)

Part 2. Para 2.1053

CUSTOMER: Siemens

RAB

TEST DIST:

3 Meters

EUT:

"S46" FCC ID PWX S46

TEST SITE:

Roof

EUT MODE: GSM 1900

BICONICAL:

DATE:

OCT 24,2001

N/A

LOG:

244

NOTES:

With Hands-Free Headset Model UHF-P35

OTHER:

453

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG

below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG

CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

										_		v.beta1	la			
FREQ (MHz)	VER1 (dB pk		HORIZON1 pk	TAL (dBuv) av	CF (dB/m)		LEVEL m(d)) av		LIMIT Bm) av	MAF (d		EUT Rotation	Antenna Height	Notes	dBuV/m PK	dBuV/m AVG
1850.2	95.9	1	91.7		32.2	32.8						65	1.9	Fundamental Low	128.1	
3700.4	56	33.6	58	34.5	5.4	-31.9	-55.4	-13.0	-13.0	-18.9	-42.4	90	1		63.4	39.9
5550.6	57.5	35.5	59.9	35.6	11.3	-24.1	-48.4	-13.0	-13.0	-11.1	-35.4	50	1		71.2	46.9
7400.8	56.9	34.8	55.9	34.4	15.3	-23.1	-45.2	-13.0	-13.0	-10.1	-32.2	65	1		72.2	50.1
9251	51.6	34.1	49.3	34.5	17.9	-25.8	-42.9	-13.0	-13.0	-12.8	-29.9	68	1		69.5	52.4
11101.2	46.9	33.2	46.9	33.2	22.3	-26.1	-39.8	-13.0	-13.0	-13. 1	-26.8	82	1		69.2	55.5
12951.4					21.1									Noise Level	21.1	
14801.6					23.9									Noise Level	23.9	
16651.8					27.7									Noise Level	27.7	
4050	05.7	ļ	90.8		20.0	22.5		ļ	ļ			 		Francisco de la Colonia	420.0	ļ
1880	95.7	25.4		25.7	32.3	32.8	51.4	42.0	42.0	-15.8	-41.1			Fundamental Mid	128.0	44.0
3760	57.7	35.1	61 56.3	35.7 34.4	5.5 11.4	-28.8 -27.6	-54.1	-13.0	-13.0 -13.0	-15.6		90	1		66.5	41.2
5640 7520	54.8	34.3		34.4			-49.5	-13.0	-13.0		-36.5		1	A140 (A14)	67.7	45.8
	47.9		49.5		15.5	-30.2	<u> </u>	-13.0		-17.2	<u> </u>	135	1	AVG at Noise level	65.0	15.5
9400	49.2	ļ	47.2		17.5	-28.5	-	-13.0		-15.5	-	26	1	AVG at Noise level	66.7	17.5
11280	48.2		48		22.2	-24.9		-13.0	ļ	-11.9	ļ	8		AVG at Noise level	70.4	22.2
13160		├		-	22.1			 	 	<u> </u>	<u> </u>	<u> </u>		Noise Level	22.1	
15040		-		ļ	24.4		.			-		ļ		Noise Level	24.4	
16920			-		29.6				-			<u> </u>		Noise Level	29.6	
	·	<u> </u>									 					
1909.8	94.6		91.1		32.5	31.8				1				Fundamental High	127.1	
3819.6	52.7	33.9	57.8	34.4	5.6	-31.9	-55.3	-13.0	-13.0	-18.9	-42.3	0	1.2		63.4	40.0
5729.4	47.7	31.4	48.1	32	11.5	-35.6	-51.7	-13.0	-13.0	-22.6	-38.7	124	1.1		59.6	43.5
7639.2	51.4	33.3	53.6	34.7	15.8	-25.8	-44.7	-13.0	-13.0		-31.7	338	1.3		69.4	50.5
9549	53.1	34.9	51.9	35	17.5	-24.7	-42.8	-13.0	-13.0	-11.7	-29.8	132	1.2		70.6	52.5
11458.8	47.6		49.2		22.1	-23.9		-13.0		-10.9		57	1	AVG at Noise level	71.3	22.1
13368.6			<u> </u>		23.4		1							Noise Level	23.4	—
15278.4	1				24.6			l –		T				Noise Level	24.6	
17188.2			1		31.0			1		1				Noise Level	31.0	1

10-26-2001 SAB

	target	Horn	cable	Signal	Total	Spec	Margin
Frequency	level	Gain	loss	Generator	(EIRP)		
mHz	₫BmV	dBi	dΒ	dBm	dBm	dBm	dBm
3700.4	58.0	7.9	7.1	-39.9	-39.1	-13	-26.1
5550.6	57.5	8.9	8.9	-30.2	-30.2	-13	-17.2
7400.8	42.0	9.5	10.3	-30	-30.8	-13	-17.8
9251	51.1	11	11.9	-28.2	-29.1	-13	-16.1
11101.2	41.0	10.9	13.2	-26.2	-28.5	-13	-15.5
3760	45.8	7.9	7.1	-24	-23.2	-13	-10.2
5640	42.8	8.8	9.0	-24.3	-24.5	-13	-11.5
7520	42.0	9.5	10.4	-25.5	-26.4	-13	-13.4
9400	51.1	10.6	12.0	-26	-27.4	-13	-14.4
11280	41.0	10.8	13.2	-24.0	-26.4	-13	-13.4
3819.6	45.8	7.8	7.3	-26	-25.5	-13	-12.5
5729.4	42.8	8.8	9.4	-31	-31.6	-13	-18.6
7639.2	42.0	9.8	10.5	-27.5	-28.2	-13	-15.2
9549	51.1	10.1	12.0	-24	-25.9	-13	-12.9
11458.8	41.0	11	13.4	-21.5	-23.9	-13	-10.9

GSM 1900 Low Band #6706 Hp 8350B Swept Signal Generator Transmit: #798 Model 3115 Horn



ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, *Part 2, Paragraphs 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055; Part 22, Paragraphs 22.913; 22.917(b)(2); and Part 24, Paragraphs 24.232(b); 24.238(a) and (b).*

■ - Performed

The Equipment Under Test

- - Fulfills the requirements of CFR 47, Part 2, Paragraphs 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055; Part 22, Paragraphs 22.913; 22.917(b)(2); and Part 24, Paragraphs 24.232(b); 24.238(a) and (b)
- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:

David & Brenarden

Dave Bernardin (EMC Senior Engineer)

Report No. 107139-03 (FCC ID: PWX-S46)



Appendix A

Additional Data RX Spurious Emission (FCC Part 22, Paragraph 22.917(f))

Evans, Judy

From:

Fleury, Chip

Sent:

Friday, November 02, 2001 9:12 AM

To:

Evans, Judy

Subject:

FW: Your question / TDMA

----Original Message----

From: FCOPERIC@fcc.gov [mailto:FCOPERIC@fcc.gov]

Sent: Friday, September 14, 2001 5:57 AM

To: cfleury@tuvglobal.com Cc: Raymond Laforge

Subject: Your question / TDMA

Sorry for the delay in response.

First, regarding the general measurement of (out of band) spurious emissions, the correct measurement RBW setting is 30 kHz per Section 22.917(h). When a lesser value of RBW is used, the attenuation requirement is adjusted by the ratio of the required RBW to the actual RBW. For example, if 300 Hz is used, then the attenuation requirement is increased by 10Log(30k/300) = 20 dB.

Regarding the measurement for emissions under Section 22.917(f), your second proposed method is preferred since the entire 869 - 896 MHz frequency band can be displayed.

From: <cfleury@tuvam.com>
To: <rlaforge@fcc.gov>
Date: 9/5/01 4:19PM

Hello Mr. LaForge:

I have very little experience with TDMA and I need to ask a question about testing and reviewing a report. The device is a handset tested to part 22. In Part 22.917 (f) and (h)(ii), I have the following questions.

1. I have noted in previous reports that the FCC has allowed limited bandwidths down to 1kHz and 300Hz for testing spurious emission. The procedure calls for 30kHz. Which is correct? Since this is a TDMA only the suppression circuityry is used withou a duplexer and the procedure for testing becomes significant. I have stated below two options are either of these correct or is some other method better. Thanks...

TDMA-cell phone in "base frequency range": title 47 part 22.917(f). The question is caused by the fact we do not have AMPS in our cell phone and so another kind of emission suppression circuitry is used without duplexer.

Because in 22.917(f) and (ii) is stated a limit of

- 1) -80 dBm for
- 2) mean power
- 3) of any emission appearing in the base station frequency range and a resolution bandwidth of
- 4) 30 kHz for any emission more than 45 kHz removed from carrier

we are using the following settings on our spectrum analyzer:

(First Method)

- 1) Limit line = -80 dBm
- 2) averaging versus time: 100 times
 - zero frequency span mode,

Ala

- sample detector,
- minimum sweep time 100 ms and
- free run
- 3) each frequency between 869 MHz to 894 MHz in steps of 30 kHz
- 4) resolution bandwidth = 30 kHz, video bandwidth = 30 kHz.

which is similar to GSM 11.10 = ETSI EN 300 607-1 V8.1.1 (200-10), 13.4.4.2 b

or

(Second method, because have no gated measurements as for GSM):

- 1) Limit line = -80 dBm
- 2) averaging versus time: 100 times
 - sample detector,
 - automatic selected sweep time (approx. 85 ms) and
 - free run
- 3) 869 MHz to 894 MHz (span = 25 MHz)
- 4) resolution bandwidth = 30 kHz, video bandwidth = 100 kHz.

Measurement are planned to be done at three different transmitter frequencies: low, mid and high channels.

Because the number of involved transmit and receive time slots are not specified we ask hereby for clarification, whether these spectrum analyzer settings are in accordance to the FCC requirements.

Thanks for your help.

CHIP



RX SPURIOUS EMISSION

Test of: SIEMENS S46, FCC ID PWX-S46

Date(s) of Test: 10/18/01 10/19/01

Lab:

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

Tested by:

Milton de Leor

Checked by:

Datar Mayarmann

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1 INTRODUCTION

THIS DOCUMENT SHOWS THE PERFORMANCE OF S46 SIEMENS MOBILE PHONE, REGARDING TO SPURIOUS EMISSION ON RX FREQUENCIES DURING TDMA OPERATION AT CELLULAR BAND.

2 TEST SET UP

2.1 Equipment Description

1.	FSP7 – Spectrum Analyzer 9Khz to 7Ghz	Serial No. 100175
	RODE&SCHWARTZ	Calibration Certificate No. 20-70452
2.	8652A – Power Meter	Serial No. 8650929
	Giga-tronics	Calibration Ref. No. 29864/ 441274
3.	80420A – Power Sensor	Serial No. 1834334
	Giga-tronics	Calibration Ref. No. 29864/ 441274
4.	CMU-200 – Radio Communication Tester	Serial No. 100432
	RODE&SCWARTZ	Calibration Certificate No. 20-74539
5.	85902A – Burst Carrier Trigger	Serial No. 3308A01293
	Agilent	Calibration Certificate No. N/A
6.	66319D – Mobile Communication DC Source	Serial No. US40180455
	Agilent	Calibration Certificate No. N/A

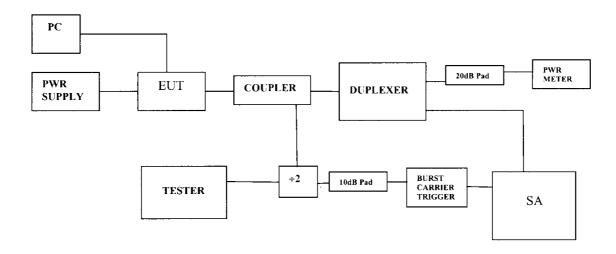
2.2 Accessories

1.	1538RA-20 – Directional Coupler 0.5 to 2Ghz	
	Narda Microwave	
2.	WD-00003 – Duplexer Filter	
	Lorch Microwave	
3.	6B5W – 5Watts 20 dB Attenuator	
	INMET	
4.	47-10 – 2 Watts 10 dB Attenuator	
	Weinschel	
5.	64671 – Power Splitter	
	INMET	
6.	Coaxial Adapters (several)	
7.	Coaxial Cables (several)	
8.	Test Software Morpheus Version 3.90	

2.3 Equipment Under Test

S46 Siemens Mobile Phone	Serial No. 07104 IMEI: 00499951094951
S46 Siemens Mobile Phone	Serial No. 07035 IMEI: 00499951094796

2.4 Test Set -up Block Diagram



3 TEST DESCRIPTION

3.1 Equipment settings

66319D - Power Supply	Nominal Operational Voltage
	Imax=3.0A
CMU200 – Communication Tester	IS136800 Signaling Mode/Default settings
	RF Attenuation = according total set-up losses
FSP7 – Spectrum Analyzer	Frequency: 869 Mhz to 894 Mhz
-	RBW: 30 KHz (Manual)
	VBW: 30 KHz (Manual)
	Sweep: Auto selected (140ms)
	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: Pulse Average Power
	Duty Cycle=33.3%
	Offset: according total set-up losses

3.2 Test procedure

3.2.1 Using software tool Morpheus 3.90 (Unit 07104 used)

- Using the CMU200 as a base station and Morpheus 3.90 as test software, establish a call with the EUT.
- Set the EUT power level to MAC=2 (Unit operates at +25.9 dBm at this power level)
- Set the Tx channel No. to 991 (824.04 Mhz)
- Measure the Spurious emission at RX Band with the Spectrum Analyzer
- Repeat the procedure for TX channel No. 384 (836.52 Mhz) and 799 (848.97 Mhz)

3.2.2 Using normal call software (Unit 07035 used)

- Using the CMU200 as a base station and the MMI to establish a call with the EUT.
- Set the EUT power level to MAC=2 (Unit operates at +26.0 dBm at this power level)
- Set the Tx channel No. to 991 (824.04 Mhz)
- Measure the Spurious emission at RX Band with the Spectrum Analyzer
- Repeat the procedure for TX channel No. 384 (836.52 Mhz) and 799 (848.97 Mhz)

3.3 Specification

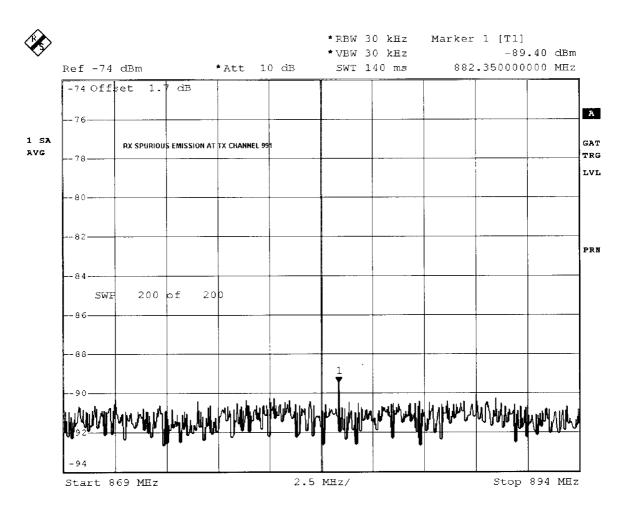
- The power level of any emissions at the receive band, measure with 30Khz RBW, shall not exceed -80dBm.



4 Test Results

4.1 Unit SN 07104

4.1.1 Spurious emission at TX Channel 991(824.04 MHz)

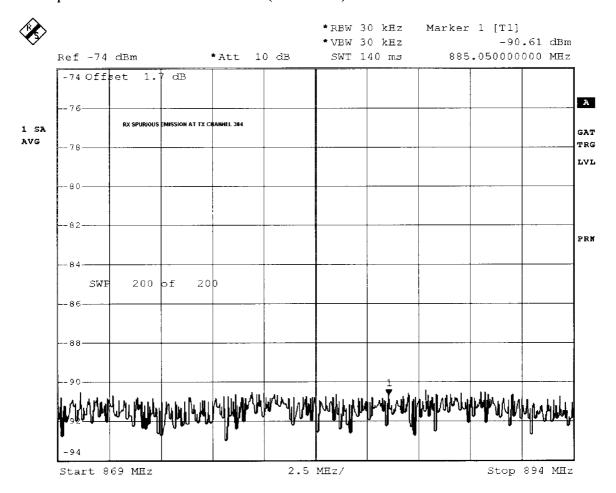


Date:

18.OCT.2001 11:43:38

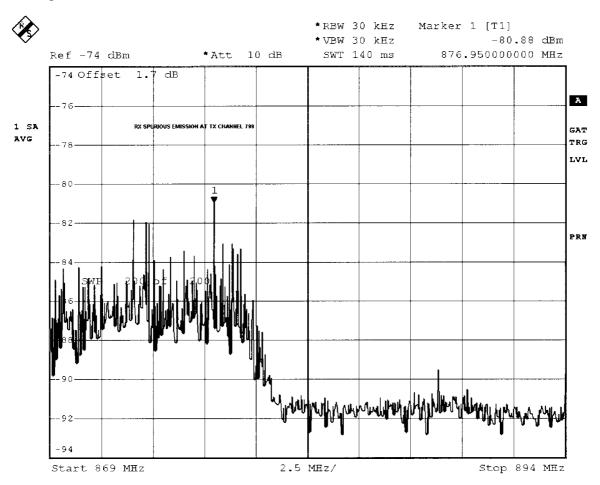
Confidential Page 6 10/19/01

4.1.2 Spurious emission at TX Channel 384 (836.52 MHz)



Date: 18.OCT.2001 11:37:56

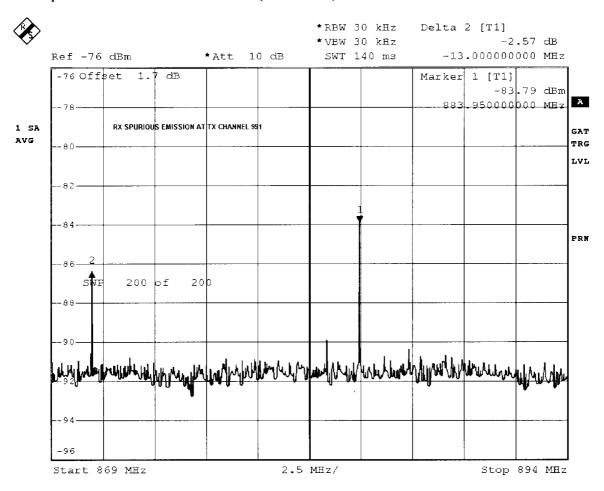
4.1.3 Spurious emission at TX Channel 799 (848.97MHz)



Date: 18.OCT.2001 11:15:18

4.2 Unit SN 07035

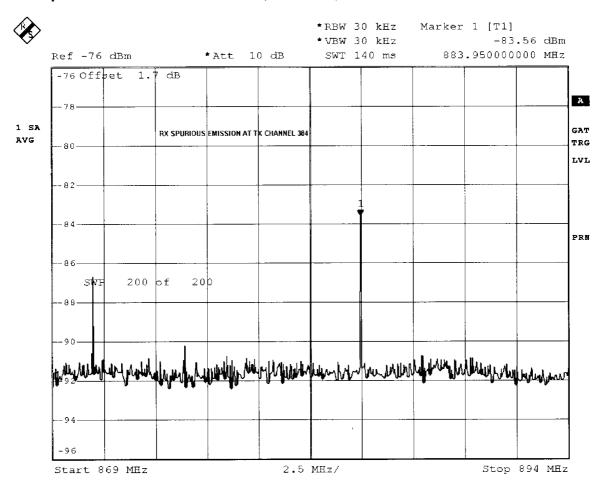
4.2.1 Spurious emission at TX Channel 991(824.04 MHz)



Date: 19.OCT.2001 14:53:56

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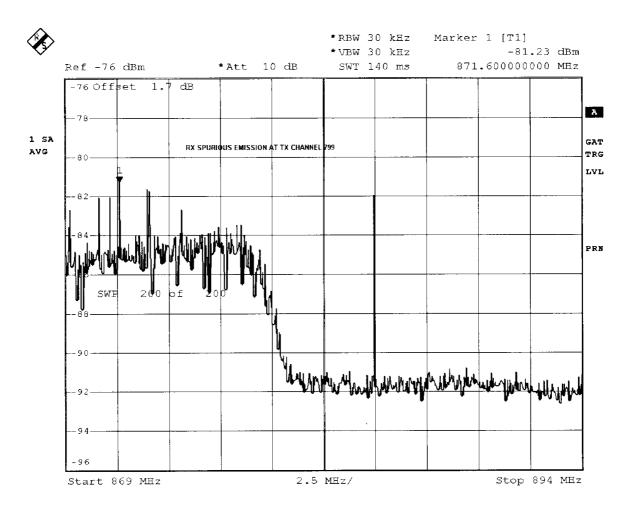
4.1.2 Spurious emission at TX Channel 384 (836.52 MHz)



Date:

19.OCT.2001 14:49:11

4.1.3 Spurious emission at TX Channel 799 (848.97MHz)



Date:

19.OCT.2001 14:33:32



Dieser Kalibrierschein dokumentiert, daß der ge-

nannte Gegenstand nach festgelegten Vorgaben

geprüft urnd gemessen wurde. Die Meßwerte lagen im Regel all mit einer Wahrscheinlichkeit von annähernd 95 % im zugeordneten Werteintervall

Die Kalib rierung erfolgte mit Meßmitteln und Nor-

malen, d ie direkt oder indirekt durch Ableitung mittels armerkannter Kalibriertechniken rückgeführt

sind auf Normale der PTB/DKD oder anderer

nationale /internationaler Standards zur Darstellung der physikalischen Einheiten in Überein-

stimmung mit dem Internationalen Einheiten-

system (SI). Wenn keine Normale existieren, erfolgt di e Rückführung auf Bezugsnormale der

Grundsätze und Verfahren der Kalibrierung ent-

sprechen IEC/ISO 17025. Das Bestätigungssystem

Das ange=wandte Qualitätsmanagement-System ist

Dieser Kalibrierschein darf nur vollständig und unveränd ert weiterverbreitet werden. Kalibrierscheine Ohne Signifizierungen sind ungültig. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer

This calFbration certificate documents, that the

named Ttem is tested and measured against

Measure ment results are located usually in the corresponding interval with a probability

Calibration is performed with test equipment and standard standard directly or indirectly traceable by means of appr=oved calibration techniques to the PTB/DK or other national/international standards,

which re-alize the physical units of measurement

according to the International System of Units (SI). In all cases where no national standards are available __ measurements are referenced to

Principle and methods of calibration correspond

with IEC ~ ISO 17025. The metrological confirmation

system For the measuring equipment used is in complian ce with DIN ISO 10012-1. The applied quality system is certified to DIN EN ISO 9001. This cali ration certificate may not be reproduced

other than in full. Calibration certificates without

The user is obliged to have the item recalibrated

of approx. 95 % (coverage factor k = 2).

standard -s of the R&S laboratories.

signatures s are not valid.

at appropriate intervals.

zertifizier nach DIN EN ISO 9001.

verwendeten Meßmittel entspricht

(Enweiter \leftarrow e Meßunsicherheit mit k = 2)

Messgerätebau GmbH

Kalibrierschein

Calibration Certificate

Nummaer

R&S-Lab coratorien.

DINISO -10012-1.

verantwo atlich.

defined s pecifications.

für die

20-74539

Numbe-r

Gegenstand

Item

UNIVERSAL RADIO COMMUNICATION

TESTER

Hersteller

Manufacturer

ROHDE & SCHWARZ

Тур Type **CMU200**

Material Nr.

Material No.

1100.0008K02

Serial Nr. Serial No.

100432

Auftraggeber

Customer

Bestellung Nr.

Order No.

Ort u. Datum d. Kalibrierung

Place and date of calibration

Umfang der Kalibrierung Scope of calibration

Memmingen, 2001-05-15

Standard Calibration

Eingangsprüfung Performance on receipt

Kalibrierergebnis Result of calibration

Measurement results within

specifications

Umfang des Kalibrierscheins

Extent of the certificate

2 pages incl. this

ROHDE&SCHWARZ

RefNo. 20-74539

2001-05-15

Laborieitung Head of laboratory Bearbeiter

Person responsible

2001-05-16

Ausstellungsdatum

Date of issue

Rampp

Type Item

Page

CMU200

UNIVERSAL RADIO COMMUNICATION

TESTER

2/2

Serial No. Material No. Cal. Date

100432 1100.0008K02 2001-05-15

Calibration Certificate No.

ROHDE& SCHWARZ

Messgerätebau GmbH, Memmingen

20-74539

Kalibrieranweisung

1100.0008.01-T-03.00

Calibration instruction

Umgebungstemperatur

Ambient temperature

(23⁺⁷₋₃) °C

Eingar gsdatum

Date of receipt

Relative Luftfeuchte

20%-60%

Relative humidity

Verwendete Gebrauchsnormale

Working Standards used

Gegenstand	Тур	Serial Nr.	Kalibrierschein Nr.	Kalibr. bis
Item	Туре	Serial No.	Certificate No.	Cal. due
Power Splitter 0 - 18 GHz	1870A	4383	99890	2002-03-31
Signal Analyzer	FSIQ7	834767/003	111967	2002-12-31
Coupler 0,05 1 GHz	NA3020A	39996	119233	2002-03-31
Coupler 0,05 1 GHz	NA3022	77472	119234	2002-03-31
Power Sensor 50 Ohm	NRV-Z4	834165/012	99665	2002-03-31
Power Sensor 50 Ohm	NRV-Z4	834165/037	100977	2002-04-30
Power Sensor 50 Ohm	NRV-Z4	834165/036	100976	2002-04-30
Power Sensor 50 Ohm	NRV-Z4	834165/039	100978	2002-04-30
Power Sensor 50 Ohm	NRV-Z4	834165/013	99666	2002-03-31
Power Sensor 50 Ohm	NRV-Z4	834165/009	99664	2002-03-31
Thermal Power Sensor 50 Ohm	NRV-Z51	834151/006	100969	2002-04-30
Thermal Power Sensor 50 Ohm	NRV-Z51	834151/005	100970	2002-04-30
Thermal Power Sensor 50 Ohm	NRV-Z51	834151/027	100971	2002-04-30
Dual Channel Power Meter	NRVD	834501/010	100973	2002-04-30
Dual Channel Power Meter	NRVD	834501/009	100974	2002-04-30
Dual Channel Power Meter	NRVD	834501/006	100972	2002-04-30
Dual Channel Power Meter	NRVD	834501/003	99771	2002-03-31
Dual Channel Power Meter	NRVD	834501/002	99770	2002-03-31
Signal Generator 5 kHz - 3 GHz	SME03	834617/015	100979	2003-04-30
Signal Generator 5 kHz - 3 GHz	SME03	834191/038	99472	2003-03-31
Vector Signal Generator	SMIQ03B	834855/040	121258	2004-04-30
Audio Analyzer	UPL	833465/007	119240	2004-03-31
RMS Peak Voltmeter	URE3	833674/002	121256	2003-04-30

Anmerkungen

Notes

Installed Options are included in calibration. Depending on installed options, numbers of pages of the record are not consecutive.

Giga tronics

Giga-tronics Incorporated 4650 Norris Canyon Road San Ramon, CA 94583 Tel: 925/328-4650 Fax: 925/328-4700

CERTIFICATE OF CALIBRATION

To Whom It May Concern:

MODEL:	8652A	SERIAL NO: 8	3650929		
REFERE	ICE/S.O. NO: 298	64/ 441274			
CALIBRA	TION TEMPERATURE	(CELSIUS): 22	HUMIDITY (%): <u>45</u>	
CAL DAT	re: <u>Olmara</u> 9 date pl	ACED IN SERVICE:	* DUFE	DATE:	*
*The di	ne date may be est ecommended cal int	ablished (by the custerval to the 'DATE I	stomer) by PLACED IN S	adding ERVICE'.	
GIGA-T	RONICS RECOMMENDED	CAL INTERVAL IS 1	A MONTHES		
CALIBR	ATION TECHNICIAN S	TAMP: 29			
LOCATI	ON NUMBER(S):	62011			
EQUIPM	ENT TRACEABILITY I	JIST REQUIRED:NO	YES (S	EE ATTACHED	LIST
its pu whose tracea (NIST) consta techni is mai	blished specificat accuracies have be ble to the Nationa, and have been dents or have been done. The environm	ed certifies that the cions and has been compared at plant of Institute of Standarived from accepted derived from ratio to the compared in which this is operating specification.	alibrated uned intervadards and Talues of ype of self	sing standar ls and are echnology natural phys -calibration as calibrate	rds sical n ed
Copies up to	of data are on fi one year after cal	le and are available ibration.	e for an ad	lditional cha	arge
Tom Kr	the Maurice of Camer, Director of	Quality Assurance QUF08007 08/02/99		01-MAY-29 (Date Sign	



Calibration Documents



Dieser Kalibrierschein dokumentiert, daß der ge-

nannte Gegenstand nach festgelegten Vorgaben

geprüft und gemessen wurde. Die Meßwerte lagen

im Regelfall mit einer Wahrscheinlichkeit von annähernd 95 % im zugeordneten Werteintervall

Die Kalibrierung erfolgte mit Meßmitteln und Nor-

malen, die direkt oder indirekt durch Ableitung

mittels an erkannter Kalibriertechniken rückgeführt

sind auf Normale der PTB/DKD oder anderer

nationaler/internationaler Standards zur Darstel-

lung der physikalischen Einheiten in Überein-

system (SI). Wenn keine Normale existieren, erfolgt die Rückführung auf Bezugsnormale der

Grundsätze und Verfahren der Kalibrierung ent-

sprechen I EC/ISO17025. Das Bestätigungssystem

Das angewandte Qualitätsmanagement-System ist

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Kalibrierscheine olime Signifizierungen sind ungültig. Für die Einhaltung einer angemessenen Frist zur Wiederhollung der Kalibrierung ist der Benutzer

This calibration certificate documents, that the

named item is tested and measured against

Measurement results are located usually in

the corresponding interval with a probability

Calibration is performed with test equipment and standards directly or indirectly traceable by means of approved calibration techniques to the PTB/DKD or other national/international standards,

which rear lize the physical units of measurement

according to the International System of Units (SI). In all cases where no national standards are

Principles and methods of calibration correspond

with IEC/ JSO 17025. The metrological confirmation

system tor the measuring equipment used is in compliance with DIN ISO 10012-1. The applied quality system is certified to DIN EN ISO 9001. This calib ration certificate may not be reproduced

other thar in full. Calibration certificates without

The user is obliged to have the item recalibrated

measurements are referenced to

of approx. 95 % (coverage factor k = 2).

standards of the R&S laboratories.

signatures are not valid.

at appropriate intervals.

zertifiziert nach DIN EN ISO 9001.

mit dem Internationalen Einheiten-

verwendeten Meßmittel entspricht

(Erweitertæ Meßunsicherheit mit k = 2).

Messgerätebau GmbH

20-70452

Number:

Nummer

R&S-Laboratorien.

DIN ISO 1 0012-1.

verantwor tlich.

defined specifications.

für die

Gegenstand

Kalibrierschein

Calibration Certifi Cate

Item

SPECTRUMANALYZER 9KHZ TO 7GHZ -140..+30DBM:RBW 10HZ TO 10MHZ

TFT COLOURDISPLAY;

Hersteller

Manufacturer

Typ

Туре

Material Nr. Material No.

Serial Nr.

Serial No.

Auftraggeber Customer

ROHDE & SCHWARZ

FSP7

1093.4495K07

100175

Bestellung Nr.

Order No.

Ort u. Datum d. Kalibrierung

Place and date of calibration

Umfang der Kalibrierung Scope of calibration

Eingangsprüfung Performance on receipt

Kalibrierergebnis

Result of calibration

Measurement results within specifications

Memmingen, 2001-O4-02

Standard Calibration

Umfang des Kalibrierscheins

Extent of the certificate

2 pages incl. this

ROHDE&SCHWARZ 20-70452

RefNo.

2001-04-02

Laborleitung

Bearbeiter . Person responsible

Ausstellungsdatum Date of issue

Head of laboratory

Olgun

Page 1/2

2001-04-02

Postfæch 1652 D-87686 Memmingen

Riedbachstraße 58 D- - 87700 Memmingen

Type Item

FSP7

SPECTRUMANALYZER 9KHZ TO 7GHZ

-140..+30DBM;RBW 10HZ TO 10MHZ

Page

2/2

Serial No. Material No. Cal. Date

100175 1093.4495K07 2001-04-02

Calibration Certificate No.

Messgerätebau GmbH, Memming

20-70452

Kalibrieranweisung

1093.4495.01-PB-01.06

Calibration instruction

Umgebungstemperatur Ambient temperature

(23⁺⁷₋₃) °C

Eingangsdatum Date of receipt

Relative Luftfeuchte

20%-60%

Relative humidity

Verwendete Gebrauchsnormale

Working Standards used

Gegenstand	Typ	Serial Nr.	Kalibriersche in Nr. Certificate No.	Kalibr. bis
Item	Type	Serial No.		Cal. due
Power Splitter 0 - 18 GHz Power Sensor 50 Ohm Power Sensor 50 Ohm Dual Channel Power Meter HW RSF MP337 Signal Generator	11667A	23050	105244	2001-07-31
	NRV-Z4	825038/023	105348	2003-07-31
	NRV-Z5	825039/009	105354	2003-07-31
	NRVD	849708/003	105337	2003-07-31
	RSF-337	503808001	105513	2001-07-31
	SMHU	825041/012	105480	2003-07-31

Anmerkungen

Installed Options are included in calibration. Depending on installed options, numbers of pages of the record are not consecutive

Giga·tronics

Giga-tronics Incorporated 4650 Norris Canyon Road San Ramon, CA 94583 Tel: 925/328-4650 Fax: 925/328-4700

CERTIFICATE OF CALIBRATION

its published specifications and has been calibrated using standards whose accuracies have been compared at planned intervals and are traceable to the National Institute of Standards and Technology (NIST), and have been derived from accepted values of natural physical constants or have been derived from ratio type of self-calibration technique. The environment in which this instrument was calibrated is maintained within the operating specifications of the instrument and of the standards.

Copies of data are on file and are available for an additional charge up to one year after calibration.

Tom Kramer, Director of Quality Assurance
QUE08007 08/02/99

01-MAY-25 (Date Signed)

A18