

PAGE NO.

6 of 57.

STANDARD TEST CONDITIONS
and
ENGINEERING PRACTICES

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst case measurements.

PAGE NO. 7 of 57.

NAME OF TEST: Carrier Output Power (Conducted)

SPECIFICATION: 47 CFR 2.1046(a)

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the unmodulated output power was measured by means of an R. F. Power Meter.
2. Measurement accuracy is $\pm 3\%$.

MEASUREMENT RESULTS, CONDUCTED

	NOMINAL, MHz	CHANNEL	R. F. POWER, WATTS	
			Lo	Hi
AMPS MODE	824.040	991	0.003	0.263
	836.400	380	0.003	0.354
	848.970	799	0.003	0.295
CDMA MODE	825.290	995	0.0006	0.251
	836.400	380	0.0006	0.281
	847.720	795	0.0006	0.223

MEASURED VALUES, RADIATED

TUNED MHz	EMISSION MHz	LEVEL dBuV/m	@ m	C.F. dB	CALC dBuV/m	@ m	EIRP dBm		ERP dBm	ERP Watts
AMPS LOW										
824.04	824.038	73.2	3	30.7	103.9	3	8.7	P	6.55	0.00450
836.40	836.398	74.4	3	30.7	105.1	3	9.9	P	7.75	0.00575
848.97	848.973	74.4	3	30.7	105.2	3	9.9	P	7.75	0.00575
AMPS HIGH										
824.04	824.040	93.4	3	30.7	124.1	3	28.9	P	26.75	0.460
836.40	836.400	94.6	3	30.7	125.3	3	30.0	P	27.85	0.580
848.97	848.943	94.5	3	30.7	125.3	3	30.0	P	27.85	0.580
CDMA LOW										
824.04	824.040	43.6	3	30.7	74.2	3	-21.0	P	-23.15	0.0046
836.40	836.400	44.3	3	30.7	75.5	3	-20.2	P	-22.35	0.0055
848.97	848.830	43.7	3	30.7	74.4	3	-20.8	P	-22.95	0.0048
CDMA HIGH										
824.04	824.040	93.8	3	30.7	124.5	3	29.3	P	27.15	0.520
836.40	834.400	94.2	3	30.7	124.9	3	29.7	P	27.55	0.555
848.97	848.850	93.7	3	30.7	124.4	3	29.2	P	27.05	0.500

Morton Flom P. Eng.

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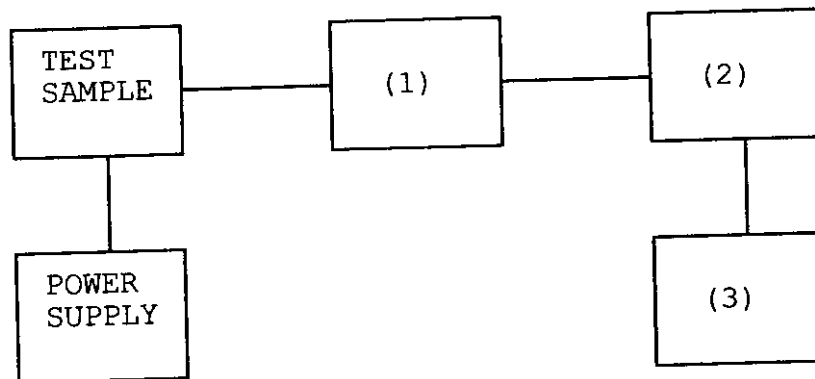
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PAGE NO.

8 of 57.

TRANSMITTER POWER CONDUCTED MEASUREMENTS

TEST 1: R. F. POWER OUTPUT
 TEST 2: FREQUENCY STABILITY



Asset	Description	s/n
(1)	<u>COAXIAL ATTENUATOR</u>	
—	i00122 Narda 766-10	7802
—	i00123 Narda 766-10	7802A
—	i00069 Bird 8329 (30 dB)	1006
<u>x</u>	i00113 Sierra 661A-3D	1059
(2)	<u>POWER METERS</u>	
—	i00014 HP 435A	1733A05836
<u>x</u>	i00039 HP 436A	2709A26776
<u>x</u>	i00020 HP 8901A POWER MODE	2105A01087
(3)	<u>FREQUENCY COUNTER</u>	
—	i00042 HP 5383A	1628A00959
<u>x</u>	i00019 HP 5334B	2704A00347
<u>x</u>	i00020 HP 8901A FREQUENCY MODE	2105A01087

PAGE NO. 9 of 57.
NAME OF TEST: Audio Frequency Response
SPECIFICATION: 47 CFR 2.1047(a)
GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
TEST EQUIPMENT: As per previous page

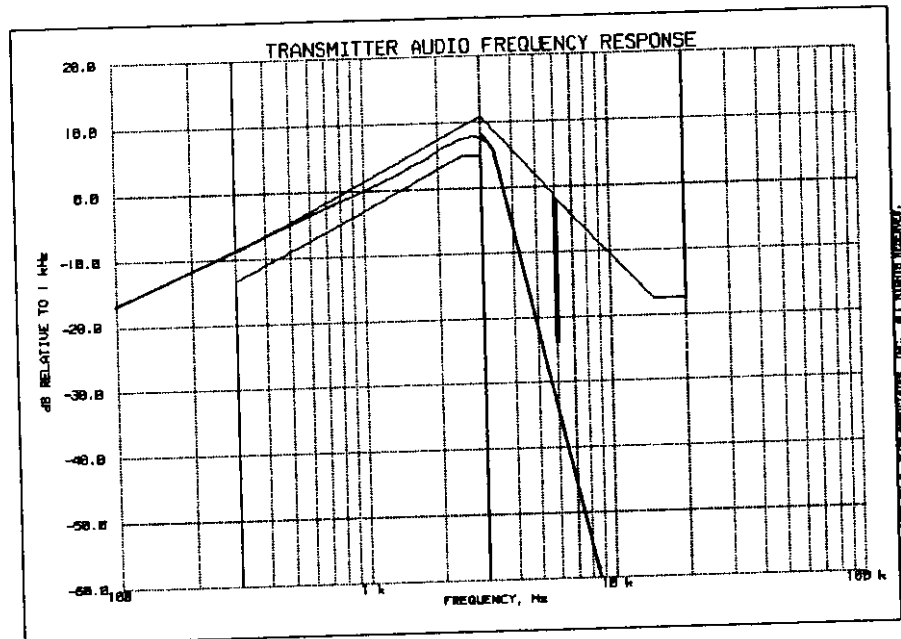
MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page.
2. The audio signal generator was connected to the audio input circuit/microphone of the EUT.
3. The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.
4. With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 100 Hz to 50 kHz.
5. The response in dB relative to 1 kHz was then measured, using the HP 8901A Modulation Analyzer.
6. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

10 of 57.

NAME OF TEST: Audio Frequency Response
g98b0012: 1998-Nov-11 Wed 11:16:00
STATE: 0:General



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PAGE NO. 11 of 57.
NAME OF TEST: Audio Low Pass Filter (Voice Input)
SPECIFICATION: 47 CFR 2.1047(a)
GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

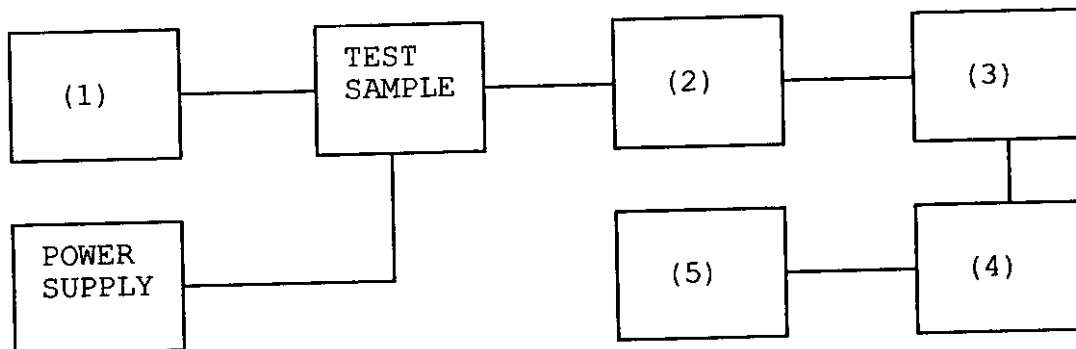
1. The EUT and test equipment were set up such that the audio input was connected at the input to the modulation limiter, and the modulated stage.
2. The audio output was connected at the output to the modulated stage.
3. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

12 of 57.

TRANSMITTER TEST SET-UP

TEST A. MODULATION CAPABILITY/DISTORTION
 TEST B. AUDIO FREQUENCY RESPONSE
 TEST C. HUM AND NOISE LEVEL
 TEST D. RESPONSE OF LOW PASS FILTER
 TEST E. MODULATION LIMITING



Asset Description

s/n

(1) LINE IMPEDANCE STABILIZATION NETWORK

i00010	HP 204D	1105A04683
<u>x</u>	i00017 HP 8903A	2216A01753
<u>x</u>	i00118 HP 33120A	US36002064

(2) COAXIAL ATTENUATOR

i00122	NARDA 766-10	7802
i00123	NARDA 766-10	7802A
<u>x</u>	i00113 SIERRA 661A-3D	1059
i00069	BIRD 8329 (30 dB)	10066

(3) MODULATION ANALYZER

<u>x</u>	i00020 HP 8901A	2105A01087
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(4) AUDIO ANALYZER

<u>x</u>	i00017 HP 8903A	2216A01753
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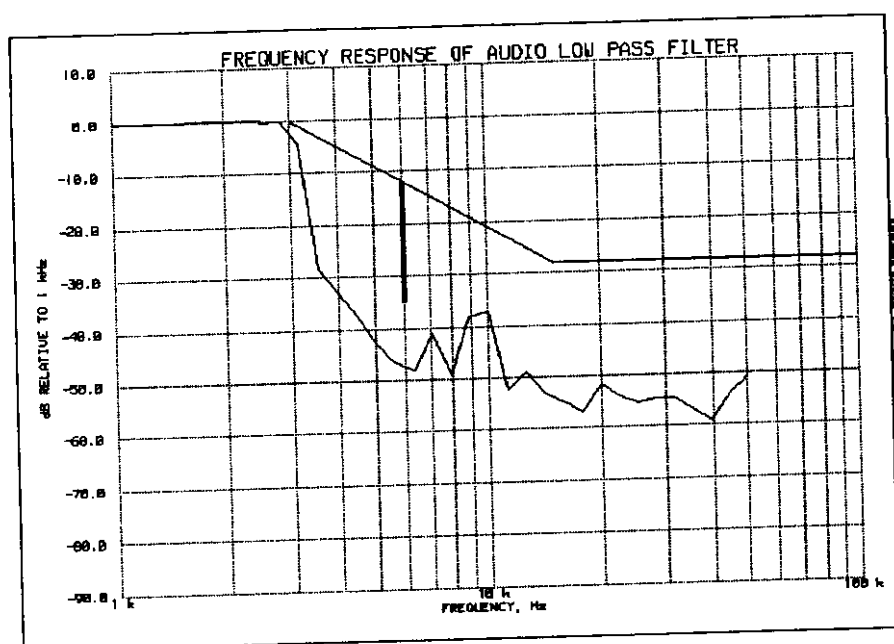
(5) SCOPE

i00058	HP 1741A	2215A09356
i00071	Tektronix 935	1935-B011343

PAGE NO.

13 of 57.

NAME OF TEST: Audio Low Pass Filter (Voice Input)
g98b0011: 1998-Nov-11 Wed 11:12:00
STATE: 0:General



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PAGE NO. 14 of 57.
NAME OF TEST: Modulation Limiting
SPECIFICATION: 47 CFR 2.1047(b)
GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The audio signal generator was connected to the audio input circuit/microphone of the EUT as for Frequency Response of the Audio Modulating Circuit.
2. The modulation response was measured for each of three tones (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.
3. The audio input level was varied from 30% modulation (± 3.6 kHz deviation) to at least 20 dB higher than the saturation point.
4. Measurements were performed for both negative and positive modulation and the respective results were recorded.
5. MEASUREMENT RESULTS ATTACHED FOR:

COMPANDER ON:

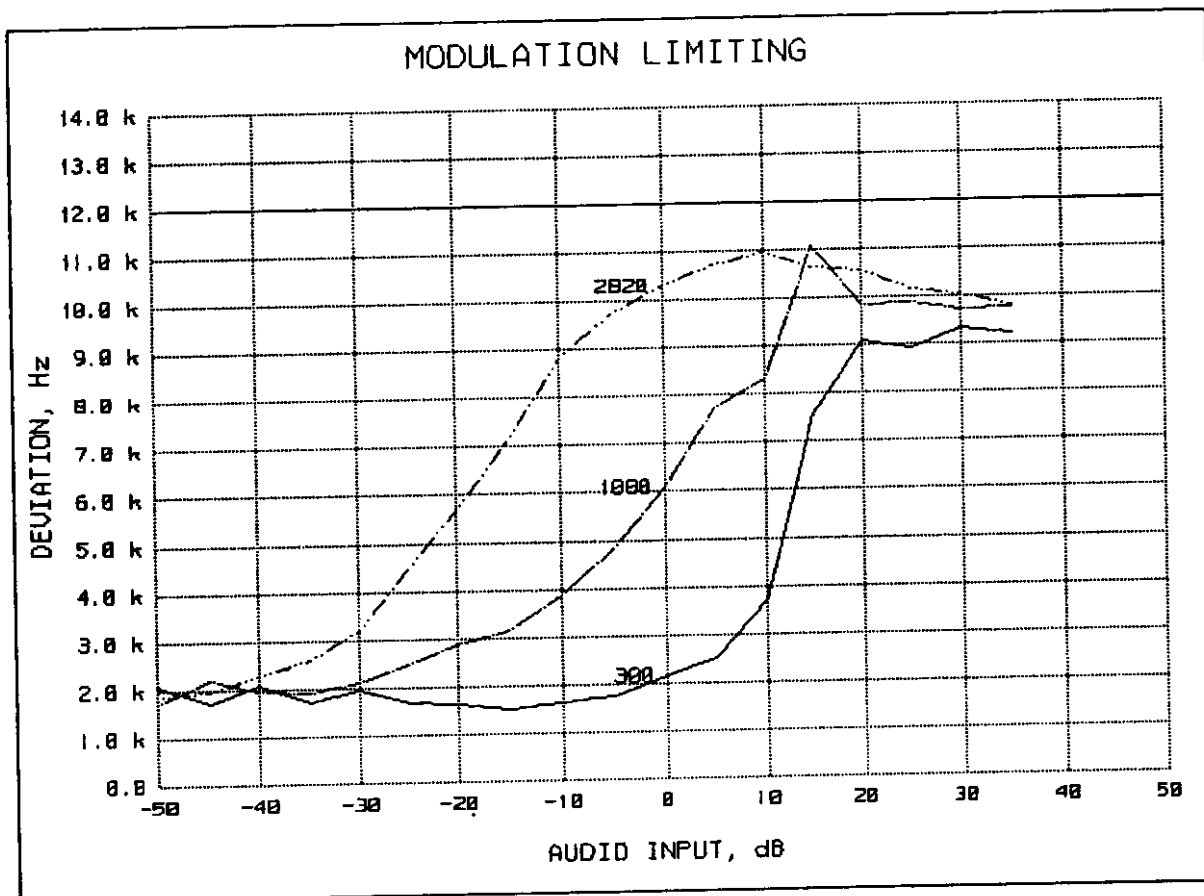
x VOICE

x VOICE + SAT

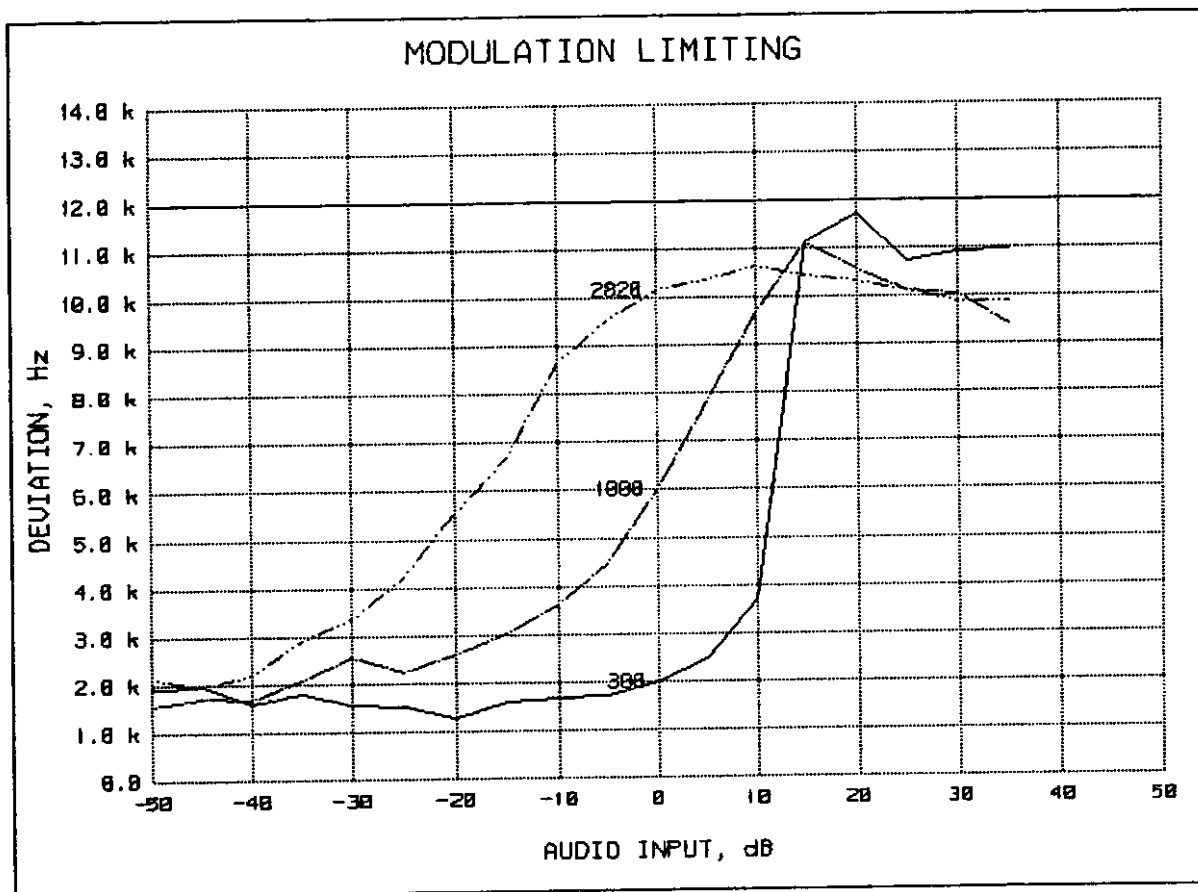
MODULATION LIMITING

NOKIA, 5180

1998-NOV-11, 11:25



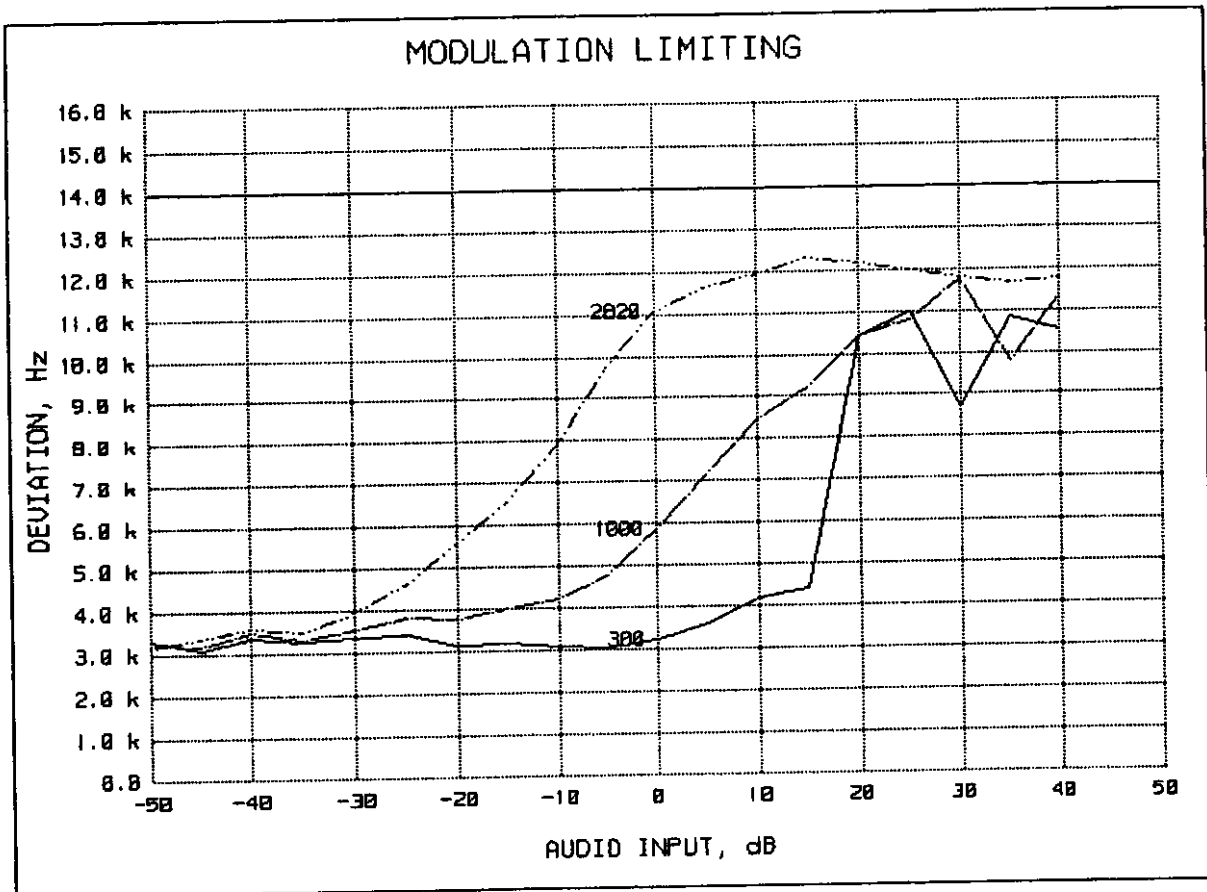
COMMENT	= VOICE ONLY
REFERENCE DEVIATION, kHz	= 6
REFERENCE MODULATION, Hz	= 1000
PEAKS	= POSITIVE
AUDIO AMPLITUDE, mV	= 94.21



COMMENT	= VOICE ONLY
REFERENCE DEVIATION, kHz	= 6
REFERENCE MODULATION, Hz	= 1000
PEAKS	= NEGATIVE
AUDIO AMPLITUDE, mV	= 94.21

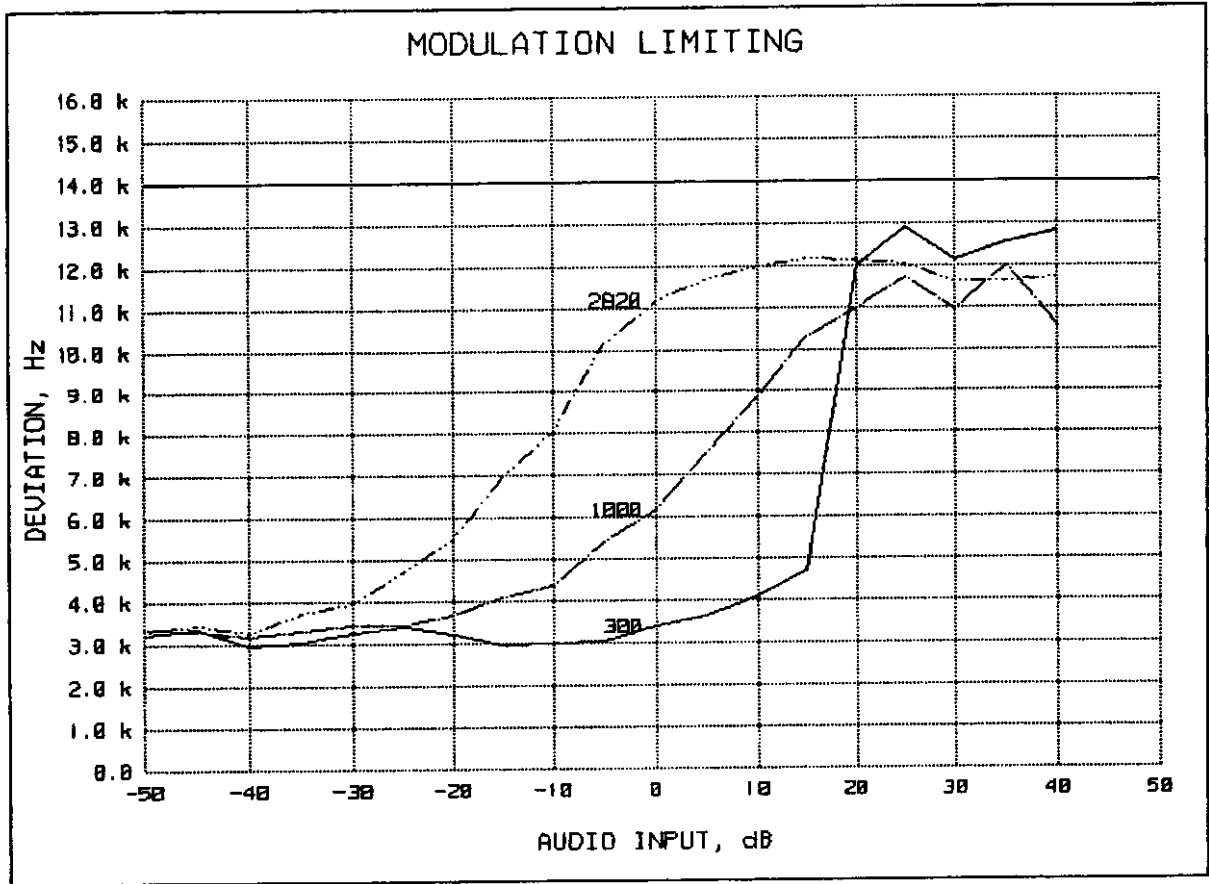
PAGE 17 of 57.
 MODULATION LIMITING
 NOKIA, 5180
 1998-NOV-11, 11:37

FCC ID: GMLNSD-1GX



COMMENT	= VOICE + SAT
REFERENCE DEVIATION, kHz	= 6
REFERENCE MODULATION, Hz	= 1000
PEAKS	= POSITIVE
AUDIO AMPLITUDE, mV	= 43.56

PAGE 18 of 57.
MODULATION LIMITING
NOKIA, 5180
1998-NOV-11, 11:37



COMMENT	= VOICE + SAT
REFERENCE DEVIATION, kHz	= 6
REFERENCE MODULATION, Hz	= 1000
PEAKS	= NEGATIVE
AUDIO AMPLITUDE, mV	= 49.44

PAGE NO. 19 of 57.
NAME OF TEST: Measurement Of Maximum Deviation
SPECIFICATION:

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST EQUIPMENT: As per attached page

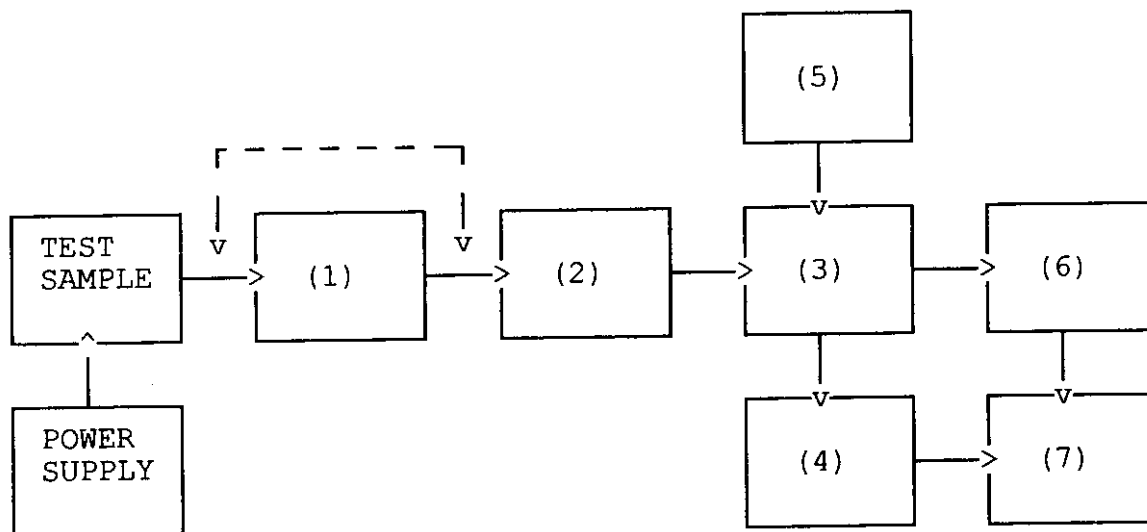
MEASUREMENT PROCEDURE

1. The presentation of tones was obtained by attaching the HP 8903A Oscilloscope to the Modulation Output of the HP 8901 Modulation Analyzer.
2. The EUT was modulated by an HP 8903 Audio Analyzer and/or internally generated signals.
3. Oscilligraphic presentations and maximum deviation measurements were recorded for the various configurations.
4. MEASUREMENT RESULTS: ATTACHED SUMMARY FOR DEVIATION
5. MEASUREMENT RESULTS: ATTACHED PLOTS FOR TONES

PAGE NO.

20 of 57.

Measurement Of Maximum Deviation



Asset	Description	s/n
(1)	<u>AUDIO OSCILLATOR/GENERATOR</u>	
	i00010 HP 204D	1105A04683
<u>x</u>	i00017 HP 8903A	2216A01753
(2)	<u>COAXIAL ATTENUATOR</u>	
<u>x</u>	i00122 Narda 766-10	7802
<u>x</u>	i00123 Narda 766-10	7802A
<u> </u>	i00113 Sierra 661A-3D	1059
(3)	<u>FILTERS; NOTCH, HP, LP, BP</u>	
<u>x</u>	i00126 Eagle TNF-1	100-250
<u>x</u>	i00125 Eagle TNF-1	50-60
<u>x</u>	i00124 Eagle TNF-1	250-850
(4)	<u>SPECTRUM ANALYZER</u>	
<u>x</u>	i00048 HP 8566B	2511A01467
<u> </u>	i00029	HP 8563E 3213A00104
(5)	<u>SCOPE</u>	
<u>x</u>	i00030 HP 54502A	2927A00209

PAGE NO. 21 of 57.

MEASUREMENT SUMMARY: Measurement Of Maximum Deviation

MODULATION	DEVIATION, kHz
(a) Voice	10.8
(b) Wideband Data	7.8
(c) SAT	2.2
(d) ST	8.2
(e) SAT + VOICE	N/A
(f) SAT + DTMF	N/A
(g) CDMA	N/A
(h) TDMA	N/A
(i) NAMPS VOICE	N/A
(j) NAMPS DSAT	N/A
(k) NAMPS ST	N/A
(l) NAMPS VOICE	N/A

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PAGE NO. 22 of 57.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
SPECIFICATION: 47 CFR 2.1049(c) (1)
GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.
2. For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ± 2.5 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.
5. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

23 of 57.

MEASUREMENT SUMMARY: Emission Masks (Occupied Bandwidth)

MODULATION	MEASURED DEVIATION ±kHz (HP 8901A)	LIMIT ±kHz	B/W @-26 dB PLOTS, kHz
NONE	0.0	0.0	0.0
VOICE	10.8	12.0	-26
WIDEBAND DATA	7.8	8.0	-24
SAT + VOICE	N/A	N/A	-27
SAT + DTMF	N/A	N/A	-20
CDMA	N/A	N/A	-19
TDMA	N/A	N/A	N/A
NAMPS	N/A	N/A	N/A

FOR ALL OCCUPIED BANDWIDTH PLOTS:

- | | | |
|----|----------------------|------------------|
| 1. | 0 dB REFERENCE LEVEL | = TOP |
| 2. | HORIZONTAL | = AS INDICATED |
| 3. | VERTICAL | = AS INDICATED |
| 4. | I.F. BANDWIDTH | = AS INDICATED |
| 5. | VIDEO BANDWIDTH | = OFF |
| 6. | POWER OUTPUT | = AS PER PAGE 2. |
| 7. | WORST CHANNEL | = 380 |
| 8. | WORST CASE | = VOICE + SAT |

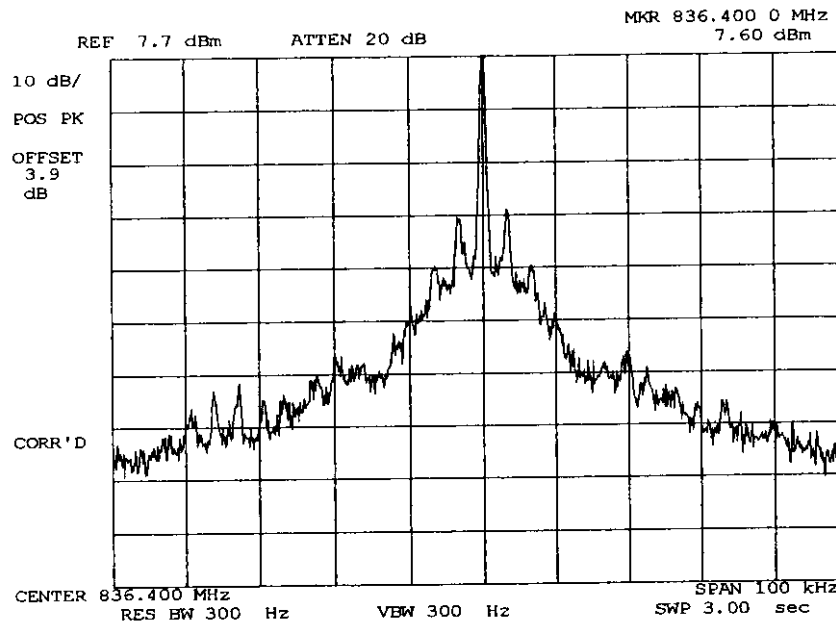
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PAGE NO.

24 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0052: 1998-Nov-11 Wed 11:59:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
NONE

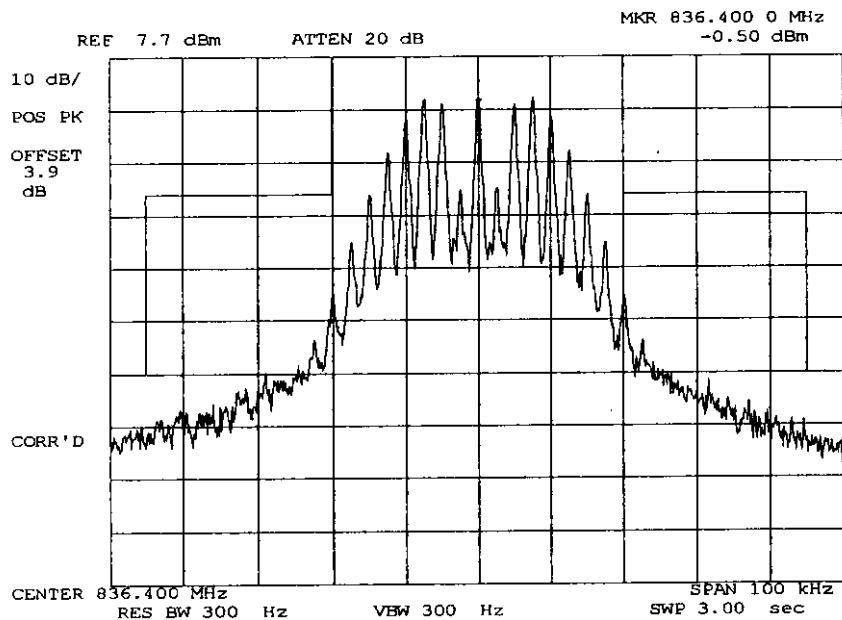
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PAGE NO.

25 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0057: 1998-Nov-11 Wed 12:35:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
VOICE: 2500 Hz SINE WAVE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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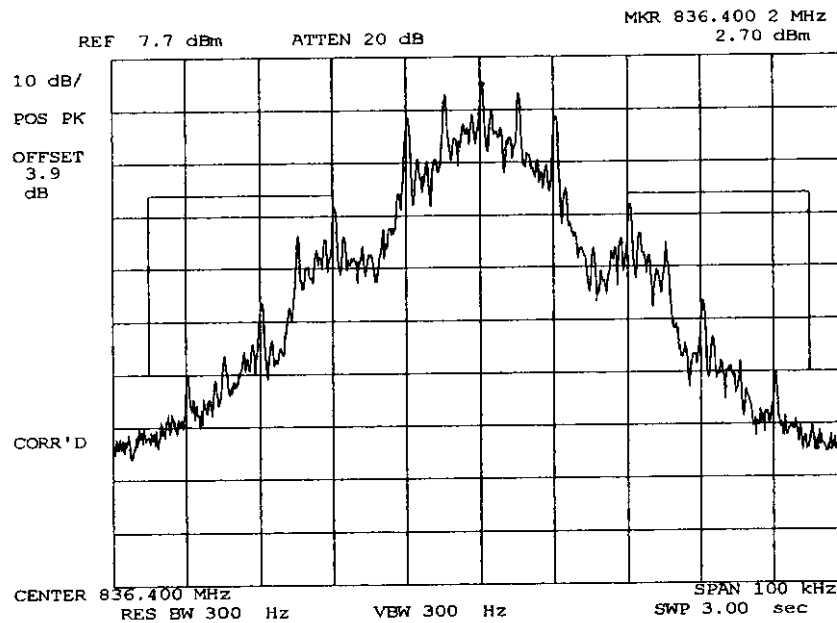
Am. Thrush P. Eng.

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PAGE NO.

26 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0060: 1998-Nov-11 Wed 13:26:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
WBD
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

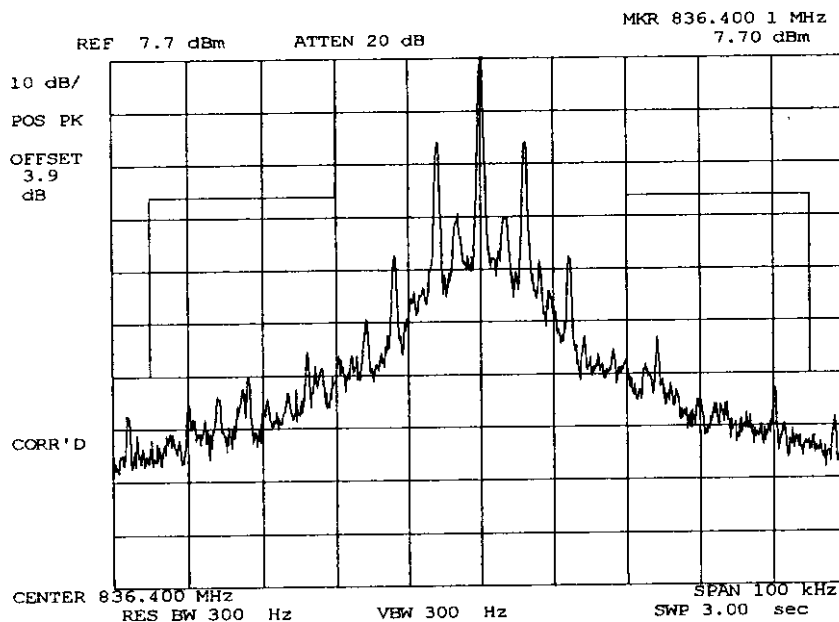
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PAGE NO.

27 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0065: 1998-Nov-11 Wed 13:35:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
SAT
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

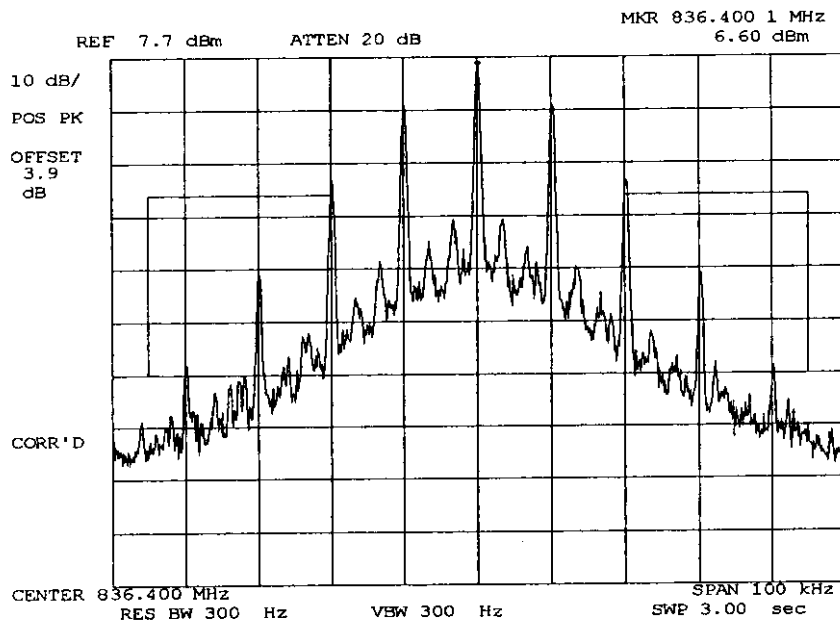
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PAGE NO.

28 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0063: 1998-Nov-11 Wed 13:32:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
ST
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

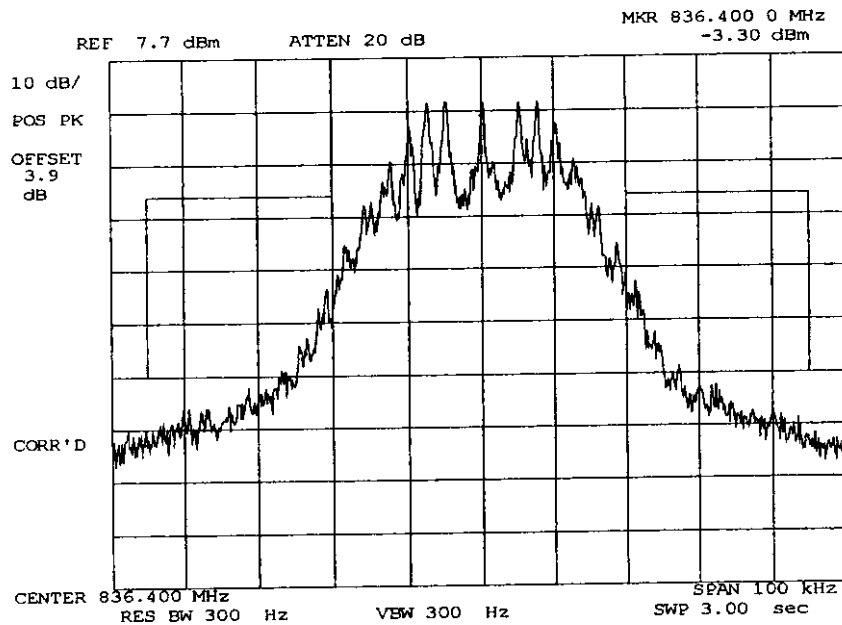
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PAGE NO.

29 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0059: 1998-Nov-11 Wed 13:23:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
SAT+VOICE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

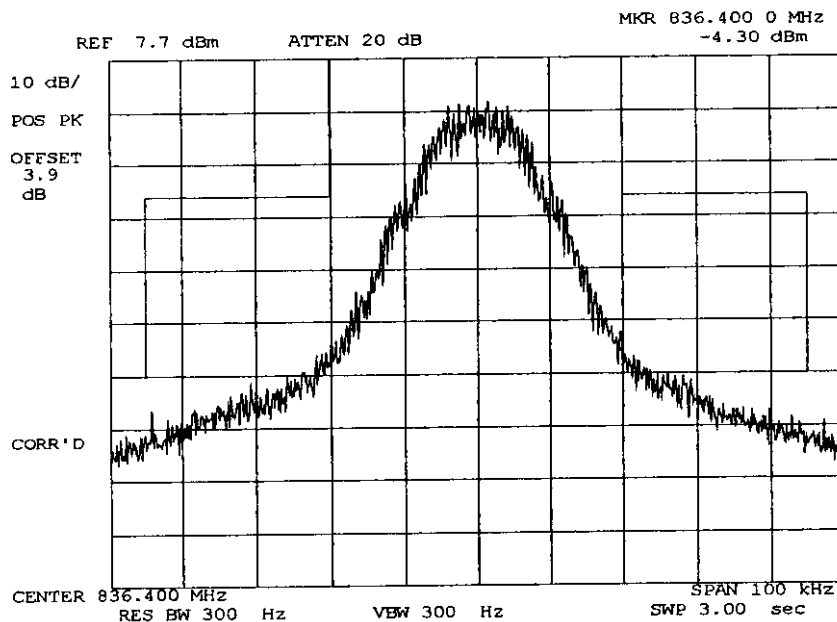
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PAGE NO.

30 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0067: 1998-Nov-11 Wed 13:43:00
STATE: 1:Low Power



POWER:
MODULATION:

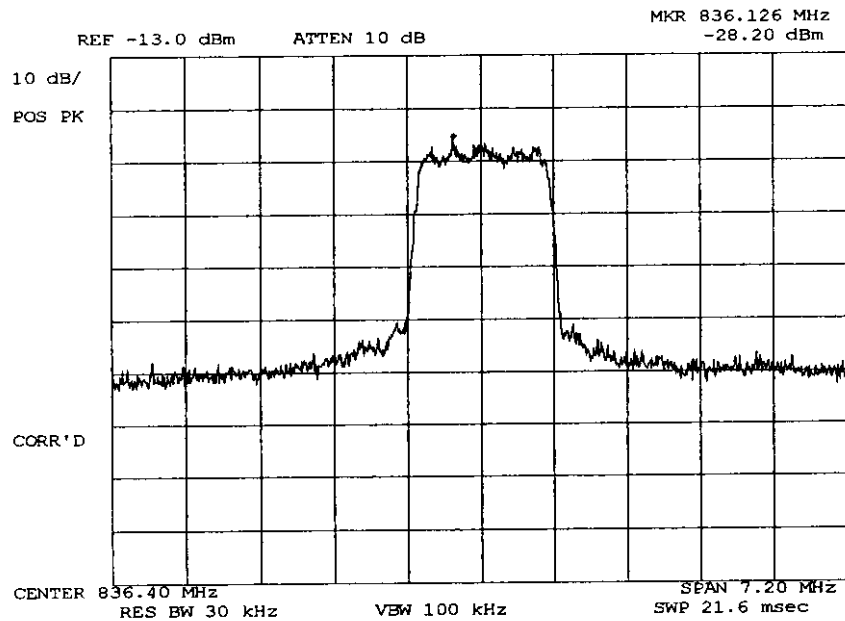
LOW
SAT+DTMF
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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31 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0055: 1998-Nov-11 Wed 12:23:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
CDMA

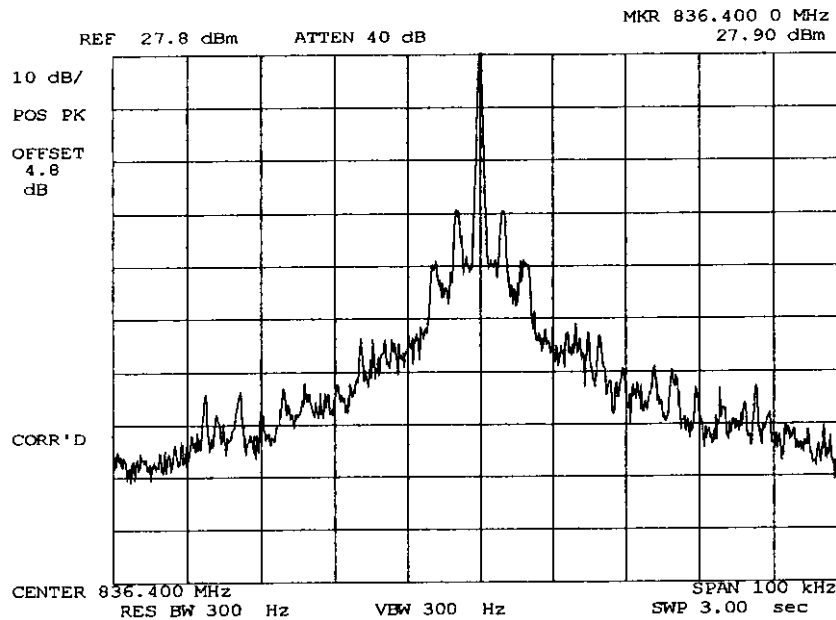
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PAGE NO.

32 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0051: 1998-Nov-11 Wed 11:56:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
NONE

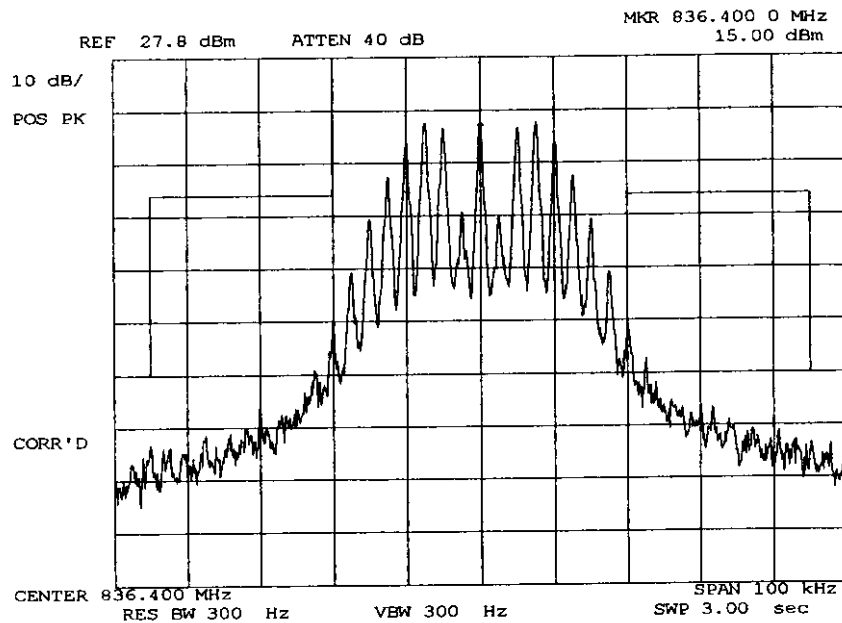
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PAGE NO.

33 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0056: 1998-Nov-11 Wed 12:34:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
VOICE: 2500 Hz SINE WAVE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

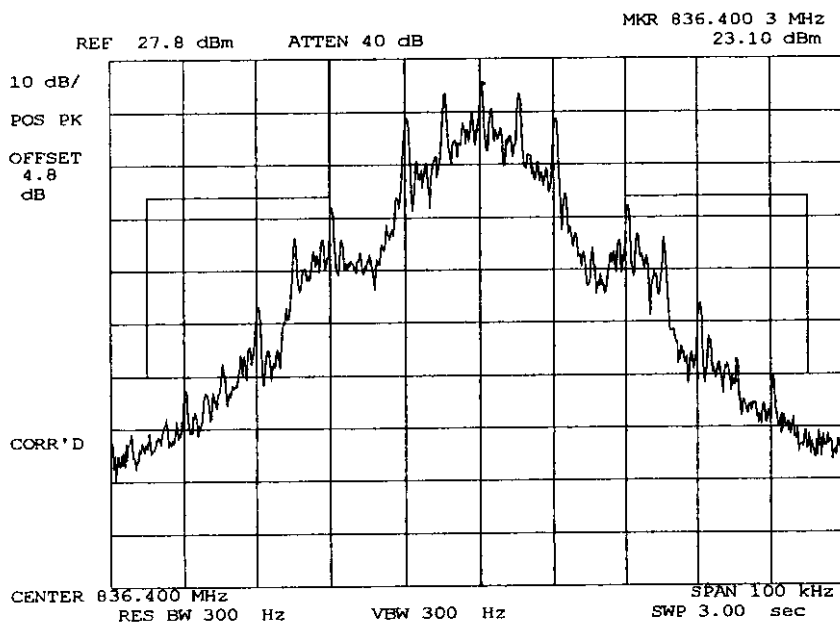
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PAGE NO.

34 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0061: 1998-Nov-11 Wed 13:28:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
WBD
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

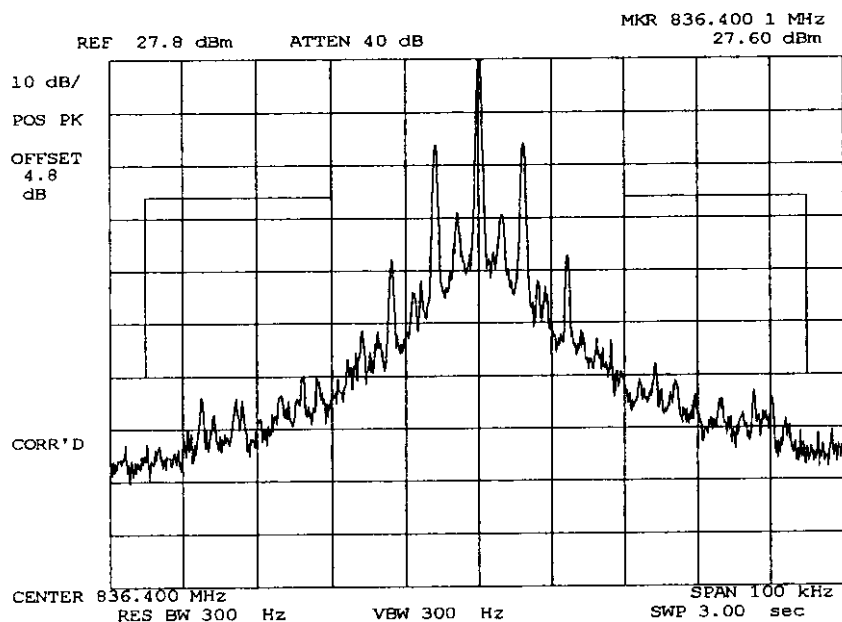
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PAGE NO.

35 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0064: 1998-Nov-11 Wed 13:34:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
SAT
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

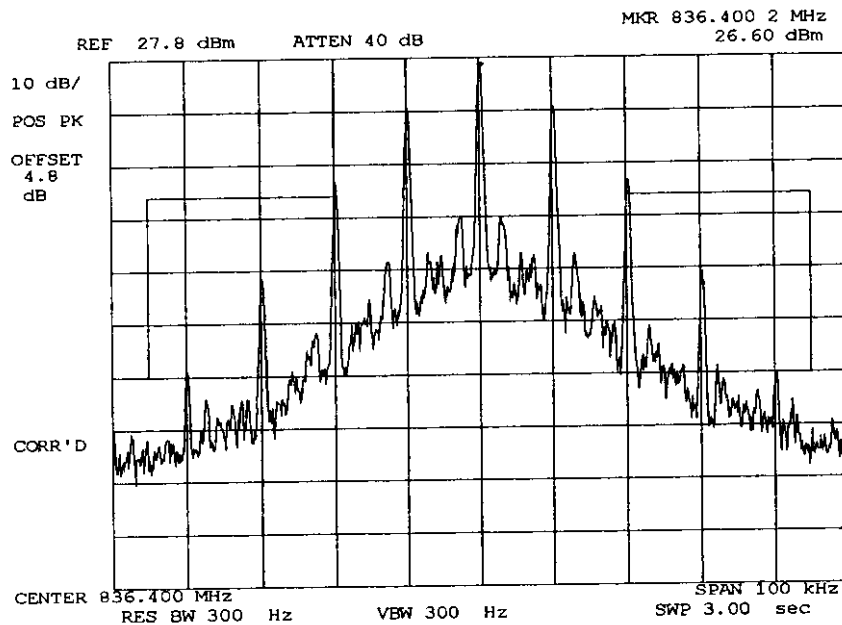
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PAGE NO.

36 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0062: 1998-Nov-11 Wed 13:31:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
ST
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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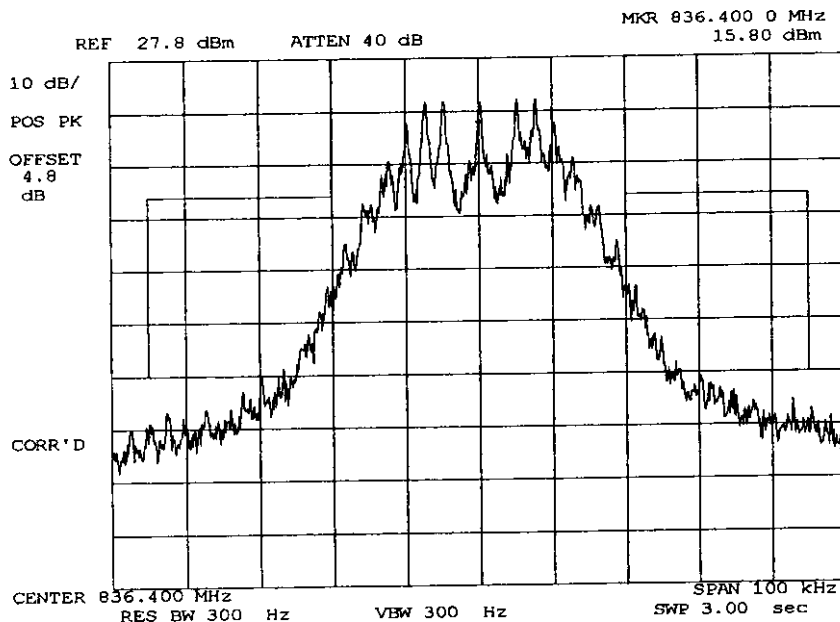
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PAGE NO.

37 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0058: 1998-Nov-11 Wed 13:22:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
SAT+VOICE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

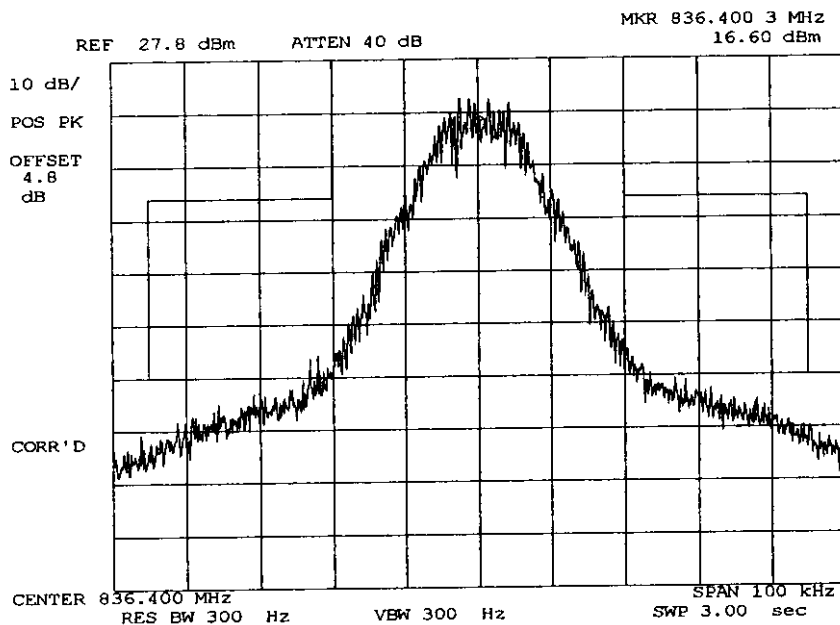
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PAGE NO.

38 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0109: 1998-Nov-11 Wed 13:41:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
SAT+DTMF
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

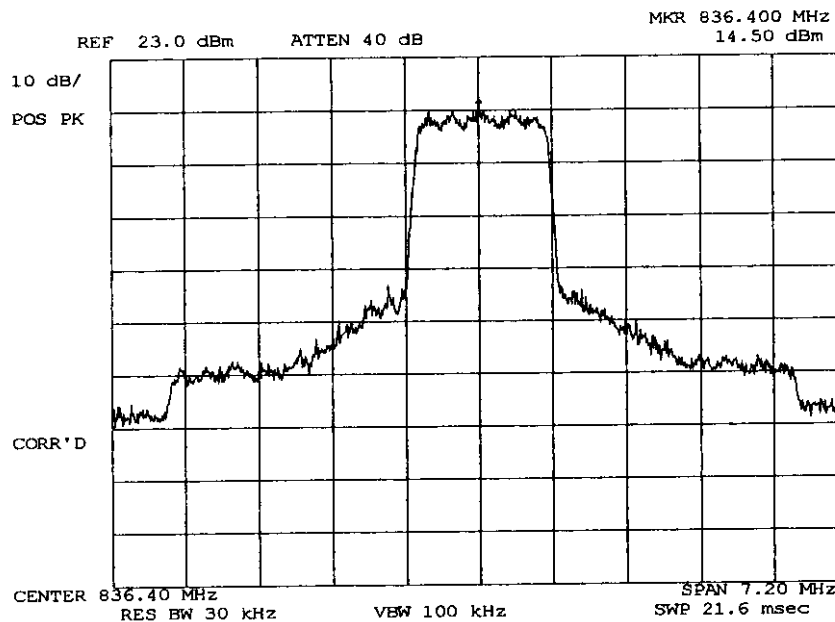
SUPERVISED BY:

M. Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO.

39 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0053: 1998-Nov-11 Wed 12:18:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
CDMA

SUPERVISED BY:

Morton Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO. 40 of 57.

NAME OF TEST: Emission Requirements -
Worst Case Modulation & Wideband Data

SPECIFICATION: 47 CFR 22.917

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT was connected to a coaxial attenuator and then to a spectrum analyzer. The unmodulated carrier was set for 0 dB reference level.
2. A notch filter was introduced to reduce or eliminate any spectrum analyzer internally generated spurious for measurements of the harmonics and the carrier level.
3. Spectrum analyzer bandwidth was set to section 22.917(h) as applicable.
4. Measurements were made on channels 380, 799 and 991. The equipment was first modulated for the Worst Case Modulation, then for Wideband Data (F8W, F1D).
5. All other spurious emissions over the range of 0 the beyond the 10th harmonic (10 GHz) were 20 dB or more below the limit
6. The data presented here is for the Worst Case.
7. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

41 of 57.

MEASUREMENT SUMMARY:Emission Requirements -
Worst Case Modulation

WORST CASE MODULATION

= VOICE + _SAT

EMISSION, MHz/HARM.	LIMIT, dBc	SPURIOUS EMISSIONS, dBc	
		Lo	Hi
F ₀ + (F ₀ + 20 kHz) to F ₀ + 45 kHz	≤-26	≤-57	≤-58
F ₀ + (F ₀ + 45 kHz) to F ₀ + 90 kHz	≤-45 (≤-13 dBm)	≤-72	≤-74
2 nd to 10 th	≤-51 (≤-13 dBm)	≤-72	≤-68

MEASUREMENT RESULTS

= ATTACHED OFFSET PLOTS

EMISSION IN THE RECEIVER CRITICAL BAND

EMISSION, MHz/HARM.	LIMIT, dBm	SPURIOUS EMISSIONS, dBm	
		Lo	Hi
869 to 894	≤-80	≤-87	≤-86

MEASUREMENT RESULTS

= ATTACHED PLOTS

SUPERVISED BY:

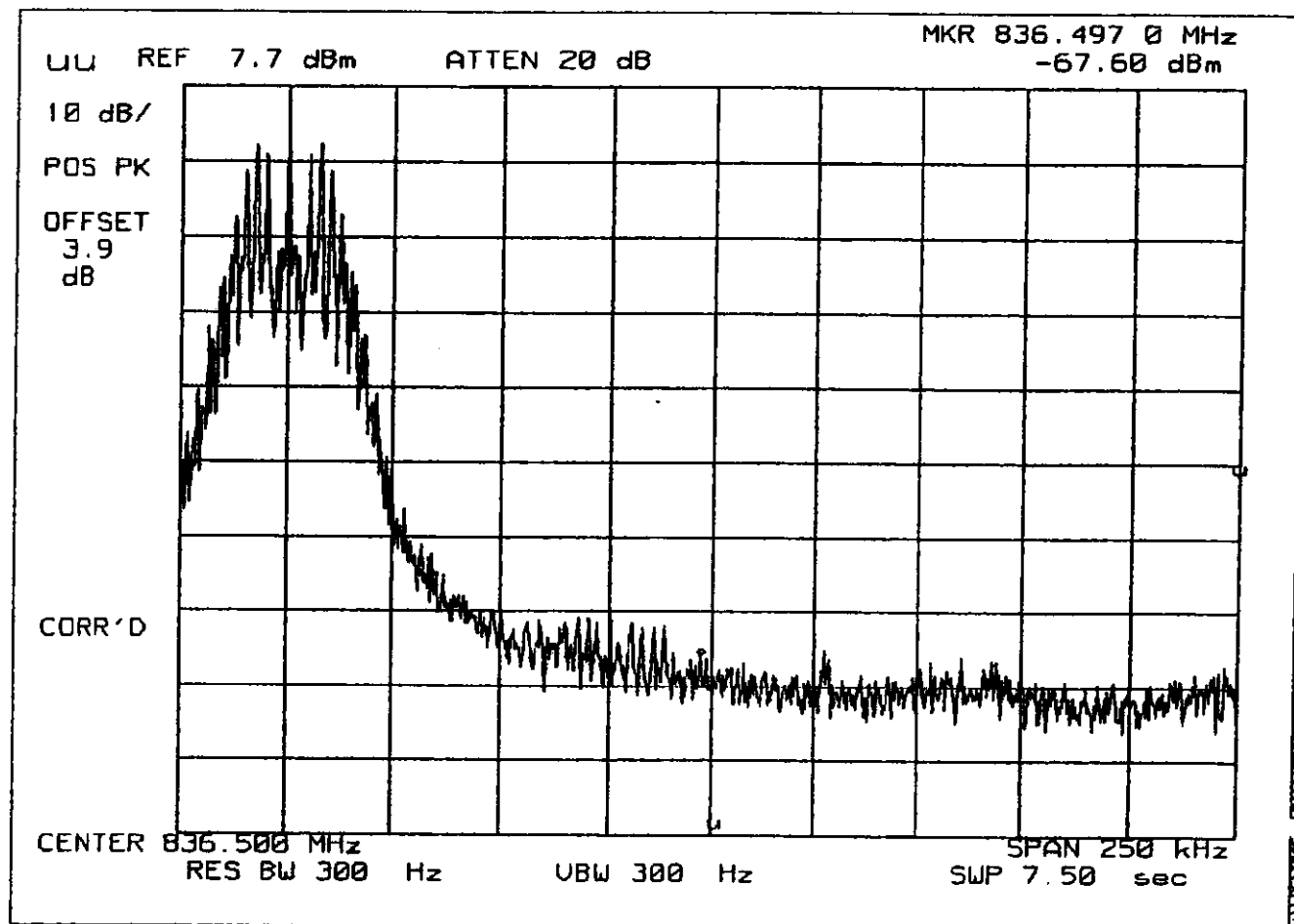


Morton Flom, P. Eng.

PAGE 42 of 57.
SPECTRUM ANALYZER PRESENTATION
NOKIA, 5180
1998-NOV-11, 13:52, WED

FCC ID: GMLNSD-1GX

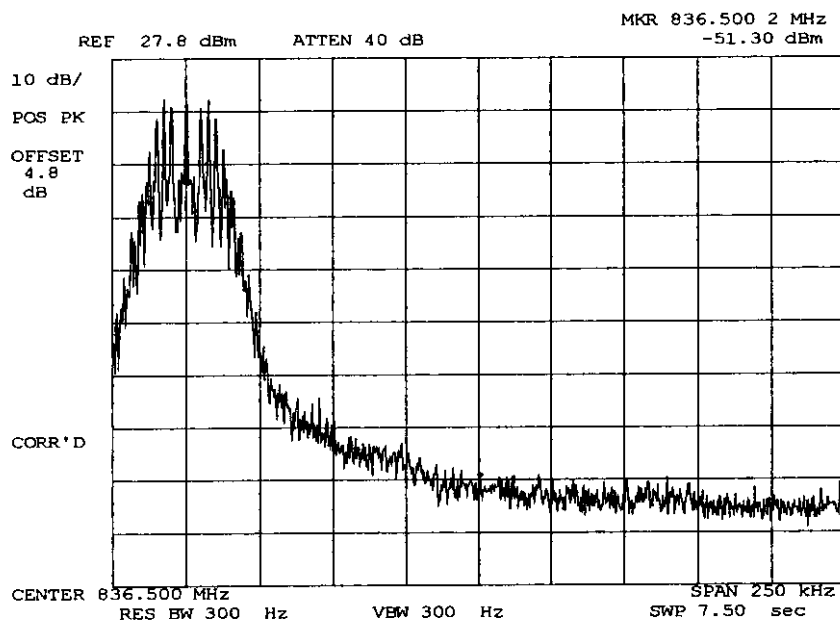
POWER: LOW
MODULATION: SAT+VOICE
REMARK: OFFSET OCCUPIED BANDWIDTH



PAGE NO.

43 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0071: 1998-Nov-11 Wed 13:55:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
SAT+VOICE
OFFSET OCCUPIED BANDWIDTH

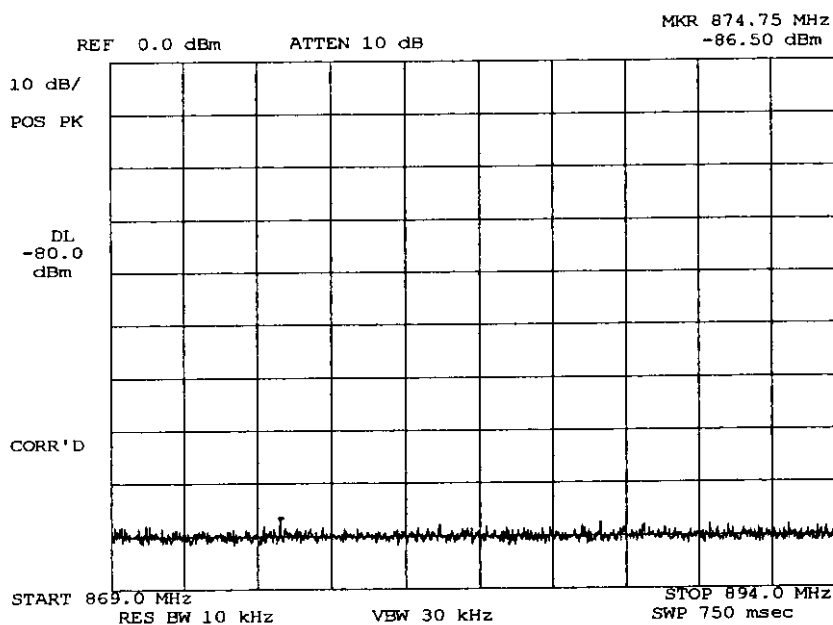
SUPERVISED BY:

M. Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO.

44 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0073: 1998-Nov-11 Wed 14:01:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
ANY
TX SPURS IN RX CRITICAL
BAND

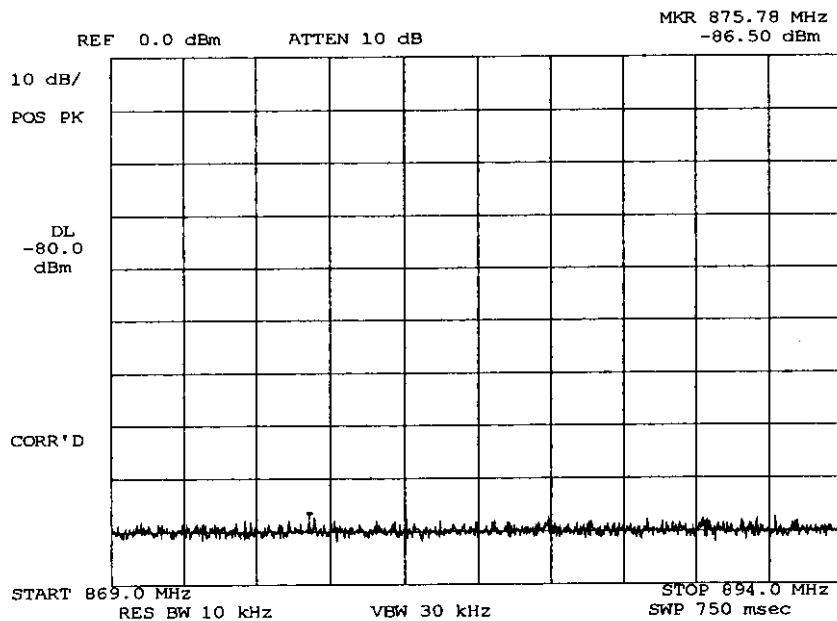
SUPERVISED BY:

M. Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO.

45 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0072: 1998-Nov-11 Wed 14:00:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
ANY
TX SPURS IN RX CRITICAL
BAND

SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO.

46 of 57.

MEASUREMENT SUMMARY: Emission Requirements -
Wideband Data (F9D, 10 kb/s)

EMISSION, MHz/HARM.	LIMIT, dBc	SPURIOUS EMISSIONS, dBc	
		Lo	Hi
F ₀ + (F ₀ + 20 kHz) to F ₀ + 45 kHz	≤-26	≤-37	≤-38
F ₀ + (F ₀ + 45 kHz) to F ₀ + 90 kHz	≤-45	≤-68	≤-70
F ₀ + (F ₀ + 90 kHz) to 2 nd Harmonic	≤-60 (≤-13 dBm)	≤-66	≤-63
2 nd to 10 th	≤-51 (≤-13 dBm)	≤-72	≤-68

MEASUREMENT RESULTS

= ATTACHED OFFSET PLOTS

EMISSION IN THE RECEIVER CRITICAL BAND

EMISSION, MHz/HARM.	LIMIT, dBm	SPURIOUS EMISSIONS, dBm	
		Lo	Hi
869 to 894	≤-80	≤-87	≤-86

MEASUREMENT RESULTS

= ATTACHED PLOTS

SUPERVISED BY:

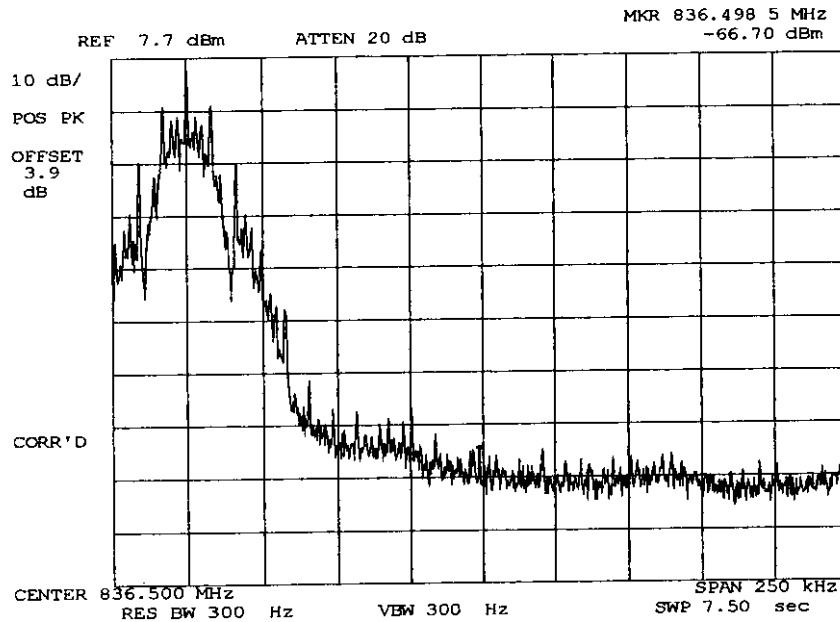


Morton Flom, P. Eng.

PAGE NO.

47 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0075: 1998-Nov-11 Wed 14:06:00
STATE: 1:Low Power



POWER:
MODULATION:

LOW
WBD
OFFSET OCCUPIED BANDWIDTH

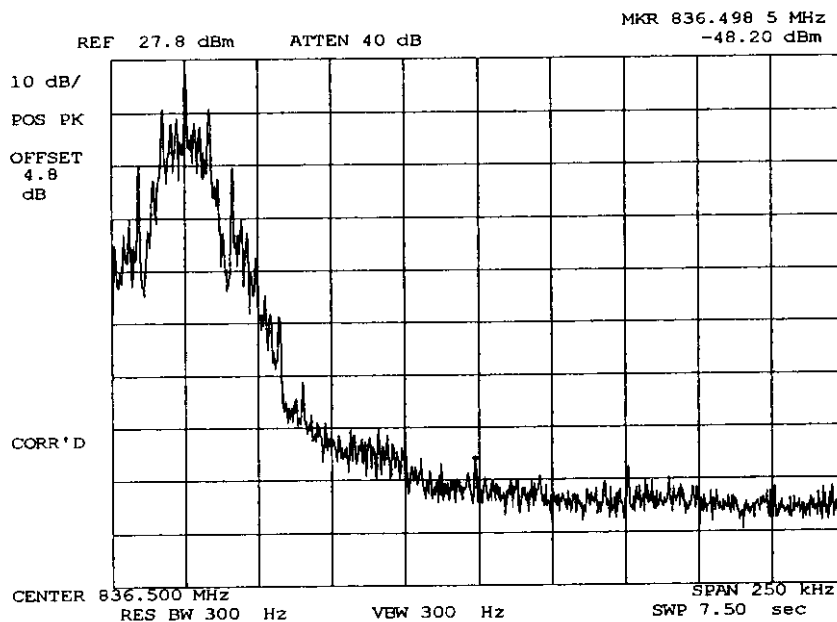
SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO.

48 of 57.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98b0074: 1998-Nov-11 Wed 14:04:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
WBD
OFFSET OCCUPIED BANDWIDTH

SUPERVISED BY:

M. J. Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO. 51 of 57.

NAME OF TEST: Spurious Emissions at Antenna Terminals

SPECIFICATION: 47 CFR 2.1051, 22.917

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a coaxial attenuator and then to a Spectrum Analyzer.
2. A notch filter was introduced to reduce or eliminate spurious emission which could be generated internally in the spectrum analyzer.
3. Measurements were made over the range from 45 kHz to 10 GHz for the worst case modulation so both the highest and lowest R.F. power settings.
4. All other emissions were 20 dB or more below the limit.
5. Spectrum analyzer bandwidth was set to section 22.917(h) as applicable.
6. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

52 of 57.

NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
 g98b0082: 1998-Nov-11 Wed 14:27:00
 STATE: 1: Low Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
836.400000	1672.823000	-55.9	-63.6	-42.9
836.400000	2508.967000	-71.8	-79.5	-58.8
836.400000	3346.018000	-71.9	-79.6	-58.9
836.400000	4182.078000	-72.4	-80.1	-59.4
836.400000	5018.563000	-71.1	-78.8	-58.1
836.400000	5854.510000	-65.2	-72.9	-52.2
836.400000	6690.878000	-66.5	-74.2	-53.5
836.400000	7527.104000	-65.5	-73.2	-52.5
836.400000	8363.501000	-66.7	-74.4	-53.7
836.400000	9200.820000	-66.1	-73.8	-53.1
836.400000	10037.135000	-65.6	-73.3	-52.6
836.400000	10872.990000	-65.2	-72.9	-52.2
836.400000	11709.669000	-66.3	-74	-53.3
836.400000	12545.736000	-60.4	-68.1	-47.4

PAGE NO.

53 of 57.

NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
 g98b0085: 1998-Nov-11 Wed 14:37:00
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
836.400000	1672.795000	-50.2	-73.2	-37.2
836.400000	2509.026000	-54.4	-77.4	-41.4
836.400000	3345.767000	-55.9	-78.9	-42.9
836.400000	4181.579000	-54.6	-77.6	-41.6
836.400000	5018.720000	-55.6	-78.6	-42.6
836.400000	5854.546000	-50	-73	-37
836.400000	6691.458000	-49.9	-72.9	-36.9
836.400000	7527.209000	-50.2	-73.2	-37.2
836.400000	8364.009000	-50.2	-73.2	-37.2
836.400000	9200.040000	-50.2	-73.2	-37.2
836.400000	10036.745000	-50.3	-73.3	-37.3
836.400000	10872.833000	-49.7	-72.7	-36.7
836.400000	11709.853000	-49.5	-72.5	-36.5
836.400000	12545.708000	-44.5	-67.5	-31.5

PAGE NO. 54 of 57.
NAME OF TEST: Frequency Stability (Temperature Variation)
SPECIFICATION: 47 CFR 2.1055(a)(1)
GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
TEST CONDITIONS: As Indicated
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

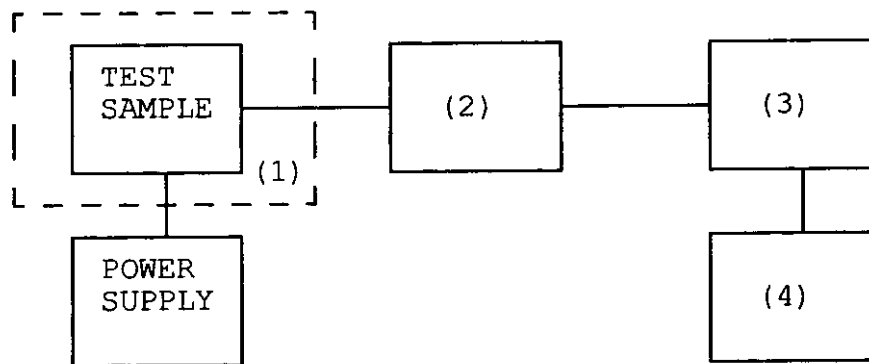
1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

55 of 57.

TRANSMITTER TEST SET-UP

TEST A. OPERATIONAL STABILITY
 TEST B. CARRIER FREQUENCY STABILITY
 TEST C. OPERATIONAL PERFORMANCE STABILITY
 TEST D. HUMIDITY
 TEST E. VIBRATION
 TEST F. ENVIRONMENTAL TEMPERATURE
 TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
 TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION

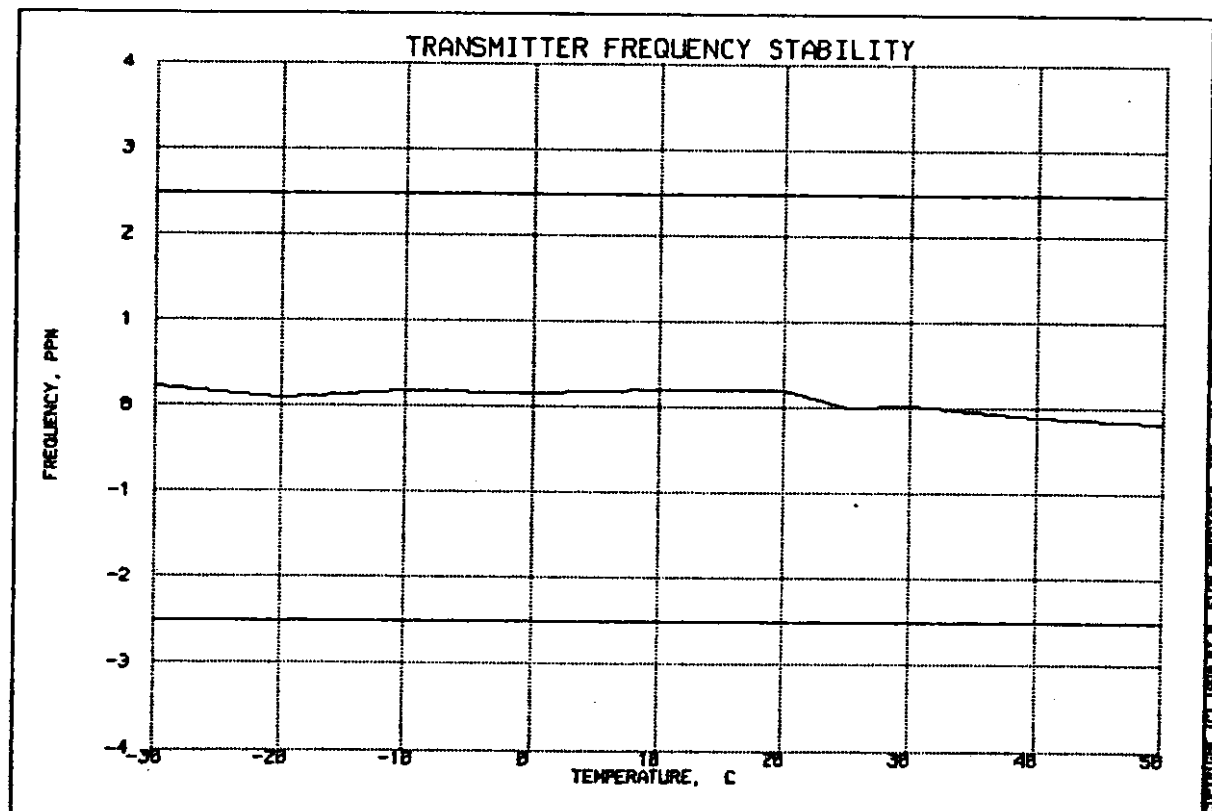


Asset	Description	s/n
(1)	<u>TEMPERATURE, HUMIDITY, VIBRATION</u>	
<u>x</u>	i00027 Tenny Temp. Chamber	9083-765-234
<u> </u>	i00 Weber Humidity Chamber	
<u> </u>	i00 L.A.B. RVH 18-100	
(2)	<u>COAXIAL ATTENUATOR</u>	
<u>x</u>	i00122 NARDA 766-10	7802
<u> </u>	i00123 NARDA 766-10	7802A
<u> </u>	i00113 SIERRA 661A-3D	1059
<u> </u>	i00069 BIRD 8329 (30 dB)	10066
(3)	<u>R.F. POWER</u>	
<u> </u>	i00014 HP 435A POWER METER	1733A05839
<u>x</u>	i00039 HP 436A POWER METER	2709A26776
<u>x</u>	i00020 HP 8901A POWER MODE	2105A01087
(4)	<u>FREQUENCY COUNTER</u>	
<u> </u>	i00042 HP 5383A	1628A00959
<u> </u>	i00019 HP 5334B	2704A00347
<u>x</u>	i00020 HP 8901A	2105A01087

TRANSMITTER FREQUENCY STABILITY

NOKIA, 180

11 NOV 1998, 16:27



FREQUENCY OF CARRIER, MHz = 836.39983

LIMIT, ppm = 2.5

LIMIT, Hz = 2091

PAGE NO. 57 of 57.

NAME OF TEST: Frequency Stability (Voltage Variation)

SPECIFICATION: 47 CFR 2.1055 (b) (1)

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

RESULTS: Frequency Stability (Voltage Variation)
g98b0050: 1998-Nov-11 Wed 11:48:35
STATE: 0:General

LIMIT, ppm = 2.5
LIMIT, Hz = 2091
BATTERY END POINT (Voltage) = 3.3

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	3.31	836.399970	-30	-0.04
100	3.9	836.400000	0	0.00
115	4.48	836.399990	-10	-0.01
85	3.3	836.399950	-50	-0.06



SUPERVISED BY:

Morton Flom, P. Eng.

NOKIA MOBILE PHONES, INC.

FCC ID: GMLNSD-1GX

REFERENCE: S.A.R. TEST RESULTS

SEE "CONFIDENTIALITY" ENVELOPE FOR FULL S.A.R. REPORT
(METHODOLOGY ONLY)



NOKIA MOBILE PHONES INC.
9605 Scranton Road
Suite 150
San Diego, CA 92121
Tel. (619) 587 5500

07 January, 1999

Federal Communications Commission,
Authorisation & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD 21046

Attention: Equipment Authorisation Branch

We hereby certify that the transceiver FCC ID:GMLNSD-1GX complies with ANSI/IEEE C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz.

Compliance was determined by testing appropriate parameters according to standard.

NOKIA MOBILE PHONES INC.

A handwritten signature in black ink, appearing to read 'Jari Niemelä', is positioned above the printed name.

Jari Niemelä
Product Project Manager, Product Development, San Diego

NOKIA MOBILE PHONES INC.
9605 Scranton Road
Suite 150
San Diego, CA 92121
Tel. (619) 587 5500

Federal Communications Commission,
Authorisation & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD 21046

Attention: Equipment Authorisation Branch

Addendum to the SAR report of 5180

Output power levels of Nokia 5180 are measured in production as well as in all testing cases at the external antenna connector and are set to be within the limits of the attached tuning document.

In the attached SAR TEST REPORT only the AMPS-mode is measured. In 800MHz CDMA mode the SAR values are much lower due to the 1.0dB lower output power. In another product Nokia 6185 (FCCID: GMLNSD-3AX) the measured max. SAR values were 1.53mW/g in AMPS mode ($P_o=25.5\text{dBm}$) and 1.07mW/g in CDMA mode ($P_o=24.0\text{dBm}$). Nokia 5180 is basically the same phone as 6185 but without 1900MHz CDMA mode and 5180 is also thicker lowering the SAR values further.

NOKIA MOBILE PHONES INC.



Jari Niemelä
Product Project Manager, Product Development, San Diego

5.5 Results of SAR for 1g.

Appendix: 10

The plots in Appendix 10 are a graphical representation of the SAR values over the whole area being scanned.

Appendix 10, page 4 (nr:4), has sketch of the phone added on the plot for clarifying the position of the phone with respect to the measured SAR values.

The size of the area being scanned is sufficiently large to ensure that all possible regions of peak SAR are measured. This is indicated by the fact that the position of peak SAR is in the measured area, and the value of SAR reduces asymptotically in the x- and y- directions as the probe is moved towards the border of the measured area.

Analog mode AMPS

meas nr:	Phone position	Frequency MHz / channel	Power [dBm]	SAR (1g) [mW/g]
1	90°	824.0 / 991	25.1	0.92
2	90°	836.0 / 383	25.2	1.28
3	90°	849.0 / 799	25.5	1.09
FCC ID: GMLNSD-1GX MEASURED: 17.12.1998 / NMP		FCC limit		1.60 [mW/g] (ANSI/IEEE)

Jari Talle

TESTIMONIAL
AND
STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY THAT:

1. THAT the application was prepared either by, or under the direct supervision of, the undersigned.
2. THAT the technical data supplied with the application was taken under my direction and supervision.
3. THAT the data was obtained on representative units, randomly selected.
4. THAT, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

CERTIFYING ENGINEER:



Morton Flom, P. Eng.

STATEMENT OF QUALIFICATIONS

EDUCATION:

1. B. ENG. in ENGINEERING PHYSICS, 1949, McGill University, Montreal, Canada.
2. Post Graduate Studies, McGill University & Sir George Williams University, Montreal.

PROFESSIONAL AFFILIATIONS:

1. ARIZONA SOCIETY OF PROFESSIONAL ENGINEERS (NSPE), #026 031 821.
2. ORDER OF ENGINEERS (QUEBEC) 1949. #4534.
3. ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOPHYSICISTS & GEOLOGISTS OF ALBERTA #5916.
4. REGISTERED ENGINEERING CONSULTANT - GOVERNMENT OF CANADA, DEPARTMENT OF COMMUNICATIONS. Radio Equipment Approvals.
5. IEEE, Lifetime Member No. 0417204 (member since 1947).

EXPERIENCE:

1. Research/Development/Senior Project Engineer, R.C.A. LIMITED (4 years).
2. Owner/Chief Engineer of Electronics. Design/Manufacturing & Cable TV Companies (10 years).
3. CONSULTING ENGINEER (over 25 years).


MORTON FLOM, P. Eng.



NOKIA MOBILE PHONES INC.
9605 Scranton Road
Suite 150
San Diego, CA 92121
Tel. (619) 587 5500

07 January, 1999

Federal Communications Commission,
Authorisation & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD 21046

Attention: Equipment Authorisation Branch

We hereby certify that the transceiver FCC ID:GMLNSD-1GX complies with ANSI/IEEE C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz.

Compliance was determined by testing appropriate parameters according to standard.

NOKIA MOBILE PHONES INC.

A handwritten signature in black ink, appearing to read 'Jari Niemelä', is written over the printed name.

Jari Niemelä
Product Project Manager, Product Development, San Diego

NOKIA MOBILE PHONES INC.

9605 Scranton Road
Suite 150
San Diego, CA 92121
Tel. (619) 587 5500

Federal Communications Commission,
Authorisation & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD 21046

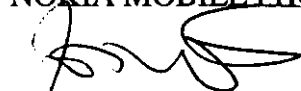
Attention: Equipment Authorisation Branch

Addendum to the SAR report of 5180

Output power levels of Nokia 5180 are measured in production as well as in all testing cases at the external antenna connector and are set to be within the limits of the attached tuning document.

In the attached SAR TEST REPORT only the AMPS-mode is measured. In 800MHz CDMA mode the SAR values are much lower due to the 1.0dB lower output power. In another product Nokia 6185 (FCCID: GMLNSD-3AX) the measured max. SAR values were 1.53mW/g in AMPS mode ($P_o=25.5\text{dBm}$) and 1.07mW/g in CDMA mode ($P_o=24.0\text{dBm}$). Nokia 5180 is basically the same phone as 6185 but without 1900MHz CDMA mode and 5180 is also thicker lowering the SAR values further.

NOKIA MOBILE PHONES INC.



Jari Niemelä
Product Project Manager, Product Development, San Diego



NOKIA MOBILE PHONES INC.

9605 Scranton Road

Suite 150

San Diego, CA 92121

Tel. (619) 587 5500

22 December 1998

Federal Communications Commission,

Authorisation & Evaluation Division,

7435 Oakland Mills Road,

Columbia, MD 21046

Attention: Equipment Authorisation Branch

PER: 47 CFR 22.919

RE: FCC ID: GMLNSD-1GX

The Electronic Serial Number (ESN) for each transceiver is unique.

The ESN host component is permanently attached to a main circuit board of the mobile transmitter and the integrity of the unit's operating software is not alterable. The ESN is isolated from fraudulent contact and tampering.

- ☐ The host component does not contain other information, it is not removable and its electrical connections are not accessible.
- ☒ The host component does contain other information, and the ESN information is encoded using:
 - ☒ (1) Multiplication or division by a polynomial.
 - ☐ (2) Cyclic coding.
 - ☐ (3) The spreading of ESN bits over various non-sequential memory locations.

The ESN is factory set and is not alterable, transferable, removable, or otherwise able to be manipulated. Cellular mobile equipment is designed such that any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by the manufacturer will render the mobile transmitter inoperative.

NOKIA MOBILE PHONES INC.



Jari Niemelä

Product Project Manager, Product Development, San Diego



NOKIA MOBILE PHONES INC.
9605 Scranton Road
Suite 150
San Diego, CA 92121
Tel. (619) 587 5500

22 December 1998

Federal Communications Commission,
Authorisation & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD 21046

Attention: Equipment Authorisation Branch

We hereby certify that the tranceiver FCC ID: GMLNSD-1GX complies with OET Bulletin No. 53 as referenced in Section 22.915 of the Commission's rules and with TIA/EIA/IS-95-A Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System.

Compliance was determined by testing appropriate parameters according to standards. Extensive field testing has been performed in several locations in the USA to verify the compatibility against different systems.

NOKIA MOBILE PHONES INC.

A handwritten signature in black ink, appearing to read 'Jari Niemelä', is positioned above the printed name.

Jari Niemelä
Product Project Manager, Product Development, San Diego



December 21, 1998

Confidential

0201294 UF4 17 SANTRA SINGLE CELL

v08 23.9.1998

1422881	CHIPRES 1W OR22 J	1218	1.0
	R 316 B		
1430144	CHIPRES JUMPER OR0	0603	1.0
	R 720 T		
1430690	CHIPRES JUMPER OR0	0402	12.0
	R 116 B 129 T 131 B 133 B 134 B 202 B 222 T 322 T 323 T 513 T		
	R 719 T 721 T		
1430695	CHIPRES OW06 6R8 J	0402	1.0
	R 704 T		
1430700	CHIPRES OW06 10R J	0402	5.0
	R 302 B 501 T 502 T 508 T 621 T		
1430710	CHIPRES OW06 22R J	0402	1.0
	R 221 T		
1430718	CHIPRES OW06 47R J	0402	8.0
	R 147 T 148 T 149 B 150 B 209 T 210 T 214 T 619 T		
1430720	CHIPRES OW06 56R J	0402	2.0
	R 533 T 536 B		
1430722	CHIPRES OW06 68R J	0402	1.0
	R 701 T		
1430726	CHIPRES OW06 100R J	0402	6.0
	R 104 T 120 B 521 B 525 B 542 B 605 B		
1430740	CHIPRES OW06 330R J	0402	5.0
	R 211 T 507 B 530 T 535 T 614 B		
1430742	CHIPRES OW06 390R J	0402	1.0
	R 527 B		
1430744	CHIPRES OW06 470R J	0402	4.0
	R 144 T 145 T 146 T 539 T		
1430748	CHIPRES OW06 680R J	0402	1.0
	R 612 B		
1430754	CHIPRES OW06 1K0 J	0402	11.0
	R 102 T 111 B 113 B 115 T 119 B 216 T 217 B 512 T 522 B 534 B		
	R 602 T		
1430756	CHIPRES OW06 1K2 J	0402	1.0
	R 640 B		
1430762	CHIPRES OW06 2K2 J	0402	13.0
	R 110 B 132 B 142 B 206 T 207 T 208 T 511 B 523 B 540 B 546 T		
	R 606 B 708 B 709 B		
1430764	CHIPRES OW06 3K3 J	0402	5.0
	R 201 T 526 B 529 B 537 T 711 T		
1430770	CHIPRES OW06 4K7 J	0402	3.0
	R 107 B 121 B 545 T		
1430778	CHIPRES OW06 10K J	0402	17.0
	R 101 T 106 B 117 T 123 B 126 T 127 T 310 T 315 T 321 B 325 T		
	R 326 B 327 B 503 T 509 B 528 T 613 B 624 B		
1430784	CHIPRES OW06 15K J	0402	1.0
	R 622 B		
1430786	CHIPRES OW06 18K J	0402	2.0
	R 112 T 707 B		
1430788	CHIPRES OW06 22K J	0402	2.0
	R 218 T 531 T		
1430792	CHIPRES OW06 33K J	0402	2.0
	R 601 B 610 B		
1430796	CHIPRES OW06 47K J	0402	11.0
	R 103 T 114 B 124 B 204 T 205 T 213 B 215 T 304 T 306 B 314 T		
	R 532 B		
1430804	CHIPRES OW06 100K J	0402	9.0
	R 203 T 313 B 317 T 318 B 328 T 504 T 515 B 607 B 620 T		
1430812	CHIPRES OW06 220K J	0402	3.0
	R 105 B 212 B 219 B		

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December 21, 1998

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1430826	CHIPRES	OW06	680K	J	0402	1.0
	R	305	T			
1430830	CHIPRES	OW06	1M0	J	0402	3.0
	R	309	B 311 B 312 B			
1430832	CHIPRES	OW06	2K7	J	0402	1.0
	R	706	T			
1430853	CHIPRES	OW06	2M2	J	0402	1.0
	R	303	T			
1620031	RES NETWORK	OW06	2X1K0	J	0404	2.0
	R	122	B 139 B			
1620101	RES NETWORK	OW06	2X470R	J	0404	1.0
	R	514	T			
1820024	NTC RES	OW2	47K	J B=4050+-3%	0805	1.0
	R	611	T			
1825005	CHIP VARISTOR	VWM14V	VC30V		0805	1.0
	R	308	B			
2310003	CHIPCAP	X5R	470N	K 16V	0805	9.0
	C	202	T 203 T 206 T 223 T 228 T 235 T 308 B 312 B 333 T			
2312296	CHIPCAP	Y5V	10U	Z 16V	1210	5.0
	C	230	T 248 T 610 T 659 T 663 T			
2312401	CHIPCAP	X5R	1U0	K 10V	0805	14.0
	C	229	T 305 B 306 T 310 B 311 B 314 T 315 T 316 T 319 B 320 T			
	C	322	T 325 B 328 T 335 B			
2320131	CHIPCAP	X7R	33N	K 16V	0603	24.0
	C	106	T 107 B 108 T 109 B 112 T 115 T 120 T 123 B 201 T 204 T			
	C	207	T 208 T 209 T 210 T 211 B 213 T 214 B 222 T 224 T 227 T			
	C	323	B 334 T 529 B 621 B			
2320520	CHIPCAP	NP0	2P2	C 50V	0402	2.0
	C	309	T 515 B			
2320524	CHIPCAP	NP0	3P3	C 50V	0402	1.0
	C	703	T			
2320532	CHIPCAP	NP0	6P8	C 50V	0402	3.0
	C	511	B 581 B 672 T			
2320534	CHIPCAP	NP0	8P2	C 50V	0402	2.0
	C	570	T 576 T			
2320536	CHIPCAP	NP0	10P	J 50V	0402	2.0
	C	508	T 577 T			
2320538	CHIPCAP	NP0	12P	J 50V	0402	1.0
	C	682	T			
2320540	CHIPCAP	NP0	15P	J 50V	0402	3.0
	C	553	B 559 B 572 T			
2320544	CHIPCAP	NP0	22P	J 50V	0402	16.0
	C	122	T 124 T 125 B 302 T 307 T 313 B 531 T 556 B 601 B 634 B			
	C	635	B 676 T 721 B 730 B 733 B 746 B			
2320546	CHIPCAP	NP0	27P	J 50V	0402	1.0
	C	502	T			
2320548	CHIPCAP	NP0	33P	J 50V	0402	3.0
	C	301	T 519 B 544 T			
2320550	CHIPCAP	NP0	39P	J 50V	0402	1.0
	C	516	B			
2320552	CHIPCAP	NP0	47P	J 50V	0402	20.0
	C	514	B 533 T 555 B 642 T 643 T 645 T 646 T 647 T 649 T 657 T			
	C	660	T 674 T 688 T 704 B 705 B 710 B 725 B 727 B 735 B 737 B			
2320560	CHIPCAP	NP0	100P	J 50V	0402	10.0
	C	103	T 231 T 232 T 238 T 505 B 518 B 545 B 552 T 638 T 651 T			
2320562	CHIPCAP	NP0	120P	J 50V	0402	2.0
	C	652	T 667 T			
2320568	CHIPCAP	X7R	220P	J 50V	0402	1.0
	C	119	T			
2320572	CHIPCAP	X7R	330P	J 50V	0402	1.0
	C	668	T			
2320576	CHIPCAP	X7R	470P	J 50V	0402	3.0
	C	239	T 522 B 534 B			

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2320584	CHIPCAP X7R 1N0 J 50V	0402	43.0
	C 111 T 130 T 234 T 237 T 324 B 337 T 501 B 507 T 520 T 535 B		
	C 536 T 539 T 540 T 541 T 557 B 562 T 579 T 607 B 611 B 616 T		
	C 620 B 625 B 628 T 636 T 641 T 644 B 648 B 650 B 654 T 655 T		
	C 658 T 678 B 701 B 708 T 713 T 715 B 717 B 724 B 726 T 731 B		
	C 734 B 738 T 740 T		
2320586	CHIPCAP X7R 1N2 J 50V	0402	3.0
	C 743 T 753 B 754 B		
2320590	CHIPCAP X7R 1N8 J 50V	0402	1.0
	C 661 T		
2320604	CHIPCAP NP0 18P J 50V	0402	7.0
	C 218 T 219 T 233 B 236 T 245 T 741 T 742 T		
2320618	CHIPCAP X7R 4N7 J 25V	0402	8.0
	C 216 B 217 B 550 B 564 B 574 B 722 B 723 B 736 B		
2320620	CHIPCAP X7R 10N J 16V	0402	9.0
	C 110 B 121 B 131 T 567 B 640 T 694 B 732 B 744 T 745 T		
2320764	CHIPCAP X7R 6N8 K 25V	0402	2.0
	C 215 T 528 B		
2320778	CHIPCAP X7R 10N K 16V	0402	13.0
	C 101 T 102 T 104 B 105 B 113 T 114 T 116 B 117 B 118 B 129 T		
	C 132 T 338 B 624 B		
2320779	CHIPCAP X7R 100N K 16V	0603	9.0
	C 220 T 221 T 242 T 246 T 317 B 318 B 329 T 336 B 549 B		
2420015	CHIPCAP PPS 47N J 16V	1206	1.0
	C 583 T		
2610003	CHIPTCAP 10U M 10V	3.2X1.6X1.6	5.0
	C 321 T 504 T 525 T 551 T 584 T		
2610005	CHIPTCAP 10U M 16V	3.5X2.8X1.9	1.0
	C 304 T		
2610100	CHIPTCAP 1U M 10V	2.0X1.3X1.2	6.0
	C 326 T 327 T 330 T 331 T 332 T 566 T		
2610200	CHIPTCAP 2U2 M 6V3	2.0X1.3X1.2	8.0
	C 205 T 225 T 226 T 526 B 527 B 547 B 561 T 568 B		
2611668	CHIPTCAP 4U7 M 10V	3.2X1.6X1.6	1.0
	C 303 T		
3203705	FERRITE BEAD 0.015R 42R/100M	0805	2.0
	L 301 B 302 B		
3203709	FERRITE BEAD 0.5R 120R/100M	0402	4.0
	L 201 T 502 B 503 B 504 T		
3640059	CHIP COIL 56N J Q8/100MHZ	0603	2.0
	L 609 T 610 T		
3641601	CHIP COIL 150NH G Q35/100MHZ	0805	1.0
	L 720 T		
3641622	CHIP COIL 220N J Q30/100MHZ	0805	2.0
	L 703 T 709 T		
3643067	CHIP COIL 100UH J Q15/796KHZ	1008	1.0
	L 702 T		
3645157	CHIP COIL 100N K Q12/100MHZ	0603	4.0
	L 607 B 608 B 705 B 713 B		
3645163	CHIP COIL 22N K Q12/100MHZ	0603	1.0
	L 617 T		
3645185	CHIP COIL 10N J Q12/100MHZ	0603	2.0
	L 505 B 619 B		
3645201	CHIP COIL 56NH J Q38/200MHZ	0603	1.0
	L 718 B		
3645203	CHIP COIL 180NH K Q15/25MHZ	0603	1.0
	L 701 B		
3645213	CHIP COIL 22N J Q38/250MHZ	0603	3.0
	L 605 B 612 B 704 B		
3645217	CHIP COIL 15N J Q35/250MHZ	0603	2.0
	L 506 B 508 B		
3645219	CHIP COIL 10N J Q31/250MHZ	0603	1.0
	L 509 T		



December 21, 1998

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3645221	CHIP COIL 27N J Q40/250MHZ	0603	2.0
	L 707 B 717 B		
364M192	CHIP COIL 6N8 K Q27/250MHZ	0603	1.0
	L 618 T		
364M201	USE CODE 3645227		2.0
	L 714 T 716 T		
364W043	USE CODE 3645225		1.0
	L 706 T		
4110008	SCH DI HSMS2825 8V 1A/1US SOT143		1.0
	V 601 B		
4110026	CAP.DI 1SV229 15/6PF 2/10V SOD323		1.0
	V 505 B		
4110027	CAP.DI1SV239 4.3/1.8PF2/10VSOD323		1.0
	V 501 T		
4110067	SCH DI MBR0520L 20V 0.5A SOD123		1.0
	V 302 B		
4113651	TVS DI QUAD 6V ESDA6V1SC5 SOT23-5		2.0
	V 401 T 403 T		
411J052	CAP.DI HVU355 4/1V 3.3/6.4PF URP		1.0
	V 504 T		
411J300	PINDIX2 BAR63-05W 50V 3GHZ SOT323		1.0
	V 605 B		
411J361	SCHDIX2 RB425D VF<0.34V@10MA SC59		1.0
	V 703 T		
411X011	DI 1SS371 30V 0.1A 1PF R<0R9 SSC		1.0
	V 503 B		
4210052	TR DTC114EE N RB=RBE=10K EM3		1.0
	V 509 T		
4210066	TR BFR93AW N 12V 35MA 5GHZ SOT323		2.0
	V 506 B 508 T		
4210100	TR BC848W N 30V 0.1A100MHZ SOT323		1.0
	V 507 T		
4210102	TR BC858W P 30V 100MA 200MWSOT323		1.0
	V 301 T		
4211391	MFET P FDC6323L SWITCH 3-8V TSOP6		1.0
	V 602 T		
421J011	TRX2+RX4 N 50V 0.1A RX=10K SOT363		2.0
	V 701 T 702 T		
421J012	TRX2+RX4 UMC3N N&P 50V 0.05A UM5		2.0
	N 304 B 603 T		
4340126	TC7S00F 1XNAND 2INPUT CMOS SSO5		1.0
	D 105 B		
4340247	MC33765 REG 2.8V TSSOP16		1.0
	N 303 T		
4340295	FLASH 1MX16 120NS 2.7V UBGA		1.0
	D 103 T		
4340335	TK11228AM REG2.8V+-80MV180MA SSO6		1.0
	N 305 B		
4340499	SRAM 256KX8 100N 2.7-3.3V STSOP32		1.0
	D 102 B		
4340527	EEPROM 32KX8 2.7-5.5V CHIP		1.0
	D 104 T		
434L099	MB15S70 PLL SYNTH 300MHZ 3V SSOP8		1.0
	N 502 B		
434M018	LMX2330L 2XSYNT2.5G/510MHZ SSOP20		1.0
	N 501 B		
435X062	VCO 990-1030MHZ 2.8V 20MA CDMA		1.0
	G 503 T		
4370165	CHAPS CHARGER CONTROL SO16		1.0
	N 301 T		
437C010	CDMA RECEIVER IF IC RIF TQFP32		1.0
	N 702 B		
437C011	CDMA TRANSMITTER IF IC TIF TQFP32		1.0

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N	604 B	
437C013	VOYAGER CDMA RF-IC 800MHZ QSOP28	1.0
N	703 B	
437L119	CCONT 2F DCT3 BB POWER ASIC UBGA	1.0
N	302 T	
437L178	CAFE_D ASIC FOR CDMA TQFP100	1.0
D	201 T	
437L216	MAD4_V2 ROM2 F721855 C10 TQFP176	1.0
D	101 B	
437L217	ODYSSEY_3 RF ASIC CDMA QSOP24	1.0
N	602 T	
437X035	SHARK2 PW AMP 824-849MHZ SSOP16	1.0
N	605 T	
4510003	SMCRYSTAL 32.768KHZ +-20PPM 8X3.8	1.0
B	301 T	
4510091	SAW FILT 836.5+-12.5MHZ 4X4	2.0
Z	603 T 606 T	
4510119	ISOLATOR 836.5+-12.5MHZ 13DB 7X7	1.0
Z	605 T	
4510121	SAW FILT 881.5+-12.5MHZ/3.5DB 4X4	1.0
Z	705 B	
4510211	SAW FILT 128.1+-0.615MHZ 19.2X6.7	1.0
Z	704 B	
451H143	DUPL 824-849/869-894MHZ 9.5X7.5	1.0
Z	701 T	
451X105	VCTCXO 19.2MHZ+-1.5PPM 2.8V	1.0
G	501 T	
451X116	XTAL FILTER 128.55MHZ+-15KHZ AMPS	1.0
Z	702 T	
4550019	CER.FILT 450+-14KHZ 12X7.5	1.0
Z	706 T	
5429007	SM COAX CONN M SW 50R 0.4-2GHZ	1.0
X	702 B	
5460021	SM CONN 2X14M SPRING P1.0 PCB/PCB	1.0
X	402 T	
5469061	SM SYSTEM CONN 6AF+3DC+MIC+JACK	1.0
X	401 B	
5469069	SM BATT CONN 2POL SPR P3.5 100V2A	2.0
X	403 B 404 B	
9517031	PA SHIELD ASSY DMC01501 HD983	1.0
A	605 T	
9517032	VCO SHIELD ASSY DMC01502 HD983	1.0
A	500 T	
9854235	PCB UF4 123.25X41.0X1.0 M8 4/PA	1.0

The amount of the parts is 470.

The amount of the parts on the top site (T) : 262,
on the bottom site (B) : 207,
on unspecified site (X) : 1.