



Test Report



Report Number	ESTR0411-011			
Applicant	Company Name	LG Electronics Inc.		
	Address	459-9, Kasan-dong, Keumchun-ku, Seoul 153-023, Korea		
	Telephone	82-31-789-4246		
Product	Product Name	Tri-Mode Dual Band Cellular/PCS Phone (AMPS/CDMA)		
	Model No.	LG-MX4170, LG-BX4170	Manufacturer	LG Electronics Inc.
	Serial No.	NONE	Country of origin	Korea
	Date of Receipt	2004-11-16	Date of Issue	2004-11-26
Testing Lab.	ESTECH. Co., Ltd			
Standard	FCC PART 22H and 24E			
Tested by	S.R. Kim/ Engineer	(Signature) 		
Approved by	Jay Kim/ Engineering Manager	(Signature) 		
* Note - This test report is not permitted to copy partly without our permission - This test result is dependent on only equipment to be used - This test result based on a single evaluation of one sample of the above mentioned				



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1. INSTRUCTION

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and tested in accordance with the measurement procedures as indicated in this report ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab., assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name: ESTECH Co. Ltd.

Head Office: 3 rd Fl., Chungdam Bldg., 119-1, Chungdam-dong Kangnam-gu , Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab. : 58-1, Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1, Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea



2. Description of EUT

2.1 Summary of Equipment Under Test

◆ **FCC ID :** BEJBX4170

◆ **Freq. Range :** - **In CDMA mode**

Tx : 824.70 ~ 848.31 MHz

Rx : 869.70 ~ 893.31 MHz

- **In AMPS mode**

Tx : 824.04 ~ 848.97 MHz

Rx : 869.04 ~ 893.97 MHz

- **In PCS Mode**

Tx : 1851.25 ~ 1908.75MHz

Rx : 1931.25 ~ 1988.75MHz

◆ **Power Rating :** 3.7VDC

◆ **EUT Type :** Tri-Mode Dual Band Cellular/PCS Phone(AMPS/CDMA)

◆ **Date of Test :** 2004.11.16 – 2004.11.26

◆ **Modulation(s) :**

CDMA(PCS/DCN)-FM



3. DESCRIPTION OF TEST

3.1 RF Power Output

- The EUT was placed on a wooden turn table 3 meters from the receive antenna. The receive antenna height and turn table rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1MHz, A Horn antenna (or Dipole antenna) was substituted in place of the EUT. This Horn antenna (or Dipole antenna) was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For reading 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

3.2 Modulation Characteristics

3.2.1. Transmitter Audio Frequency Response

The frequency response of the audio modulating circuit over the frequency range 100 – 5000Hz is measured.

The audio signal generator is connected to the audio input circuit/microphone of the EUT. The audio signal input is adjusted to obtain 50% modulation at 1kHz and this point is taken as the 0dB reference. With the input held constant and below the limit at all frequencies, the audio signal generator is varied from 100 to 50kHz.

3.2.2. Audio Low Pass Filter Frequency Response

The response in dB relative to 1kHz is measured using the HP8901 a Modulation Analyzer. For the frequency response of the audio low-pass filter, the audio input is connected at the input to the modulation limiter and the modulated stage. The audio output is connected at the output of the modulated stage. The corresponding plots are shown herein.

3.3.3. Modulation Limiting

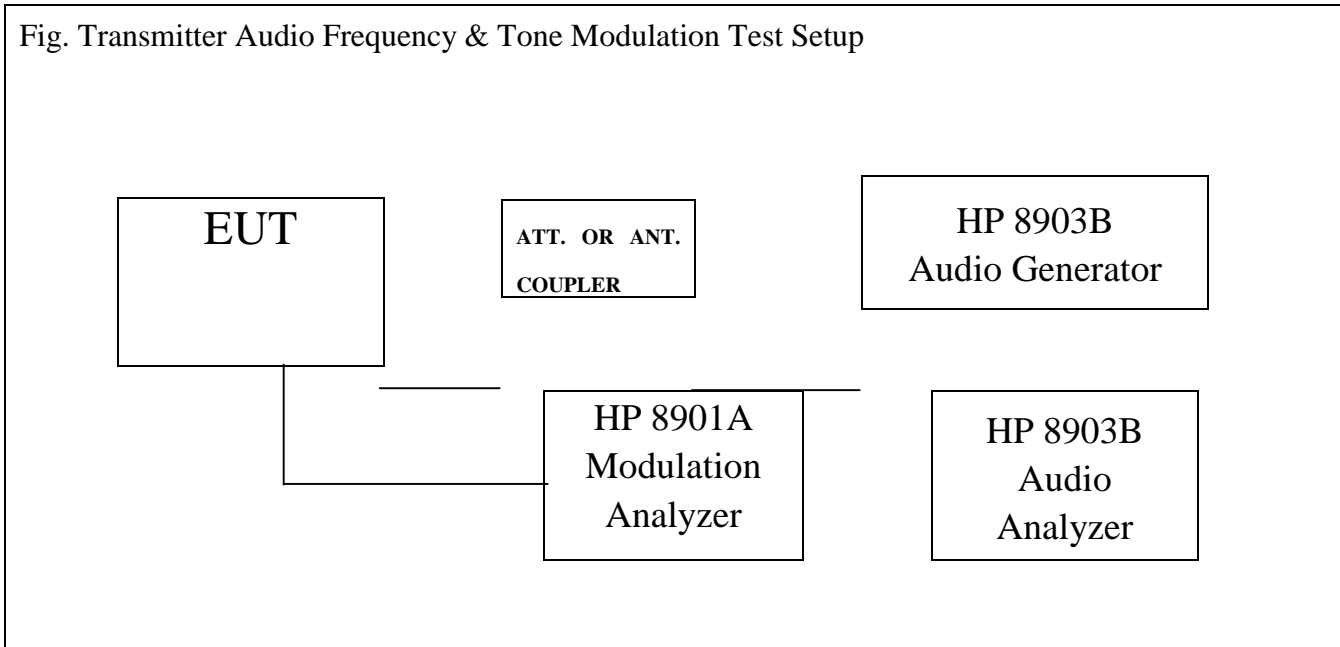
The audio signal generator is connected to the audio input circuit/microphone of the EUT. The modulation response is measured for each of the three modulating frequencies (300Hz, 1000Hz, and 3000Hz), and the input voltage is varied from 30% modulation (± 3.6 kHz deviation) to at least 20dB higher than the saturation point.

Measurements of modulation and the plots are attached herein. Measurements were performed for ST, SAT, and wide-band data modulations. The corresponding results are shown herein.



3. DESCRIPTION OF TEST (CONTINUED)

Fig. Transmitter Audio Frequency & Tone Modulation Test Setup



3.3 Occupied Bandwidth Emission Limits

- On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power(P) by at least $43 + 10\log(P)$ dB.
- Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1MHz or greater. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26dB below the transmitter power.
- When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

3.4 Occupied Bandwidth

The audio signal generator is adjusted to 1kHz. The output level is set to ± 6 kHz deviation. With the level constant, the frequency is set to 2500Hz. Then the audio signal level is increased by 16dB. The occupied bandwidth data is obtained for the SAT(Supervisory Audio Tone), ST(Signaling Tone), WBD(Wideband data)and DTMF(Dual Tone Multi Frequencies).



3. DESCRIPTION OF TEST (CONTINUED)

The results are shown on the attached graphs.

Specified Limits:

- a. On any frequency removed from the assigned carrier frequency by more than 20kHz, up to and including 45kHz, the sideband is at least 26dB below the carrier.
- b. On any frequency removed from the assigned carrier frequency by more than 45kHz, up to and including 90kHz, the sideband is at least 45dB below the carrier.
- c. On any frequency removed from the assigned carrier frequency by more than 90kHz, up to the first multiple of the carrier frequency, the sideband is at least 60dB below the carrier or $40 + \log_{10}(\text{mean power output in Watts})\text{dB}$, whichever is the smaller attenuation.

3.5 Spurious and Harmonic Emission at Antenna Terminal

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to 10GHz. The transmitter is modulated with a 2500Hz tone at a level of 16dB greater than that required to provide 50% modulation.

At the input terminals of the spectrum analyzer, an isolator (RF circulator with one port terminated with 50ohms) and an 870MHz to 890MHz band pass filter is connected between the test transceiver (for conducted tests) or the receive antenna (for radiated tests) and the analyzer. The rejection of the band pass filter to signals in the 825 – 845MHz range is adequate to limit the transmit energy from the test transceiver which appears to a level which will allow the analyzer to measure signals less than -80dBm. Calibration of the test receiver is performed in the 870 – 890MHz range to insure accuracy to allow variation in the band pass filter insertion loss to be calibrated.

3.6 Radiation Spurious and Harmonic Emissions

Radiation and harmonic emission are measured outdoors at our 3 meters test range. The equipment under test is placed on a wooden turntable 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

3.7 Frequency stability (Temperature Variation)

The frequency stability of the transmitter is measured by:

- a) **Temperature:** The temperature is varied from -30°C to +60°C using an environmental chamber.
- b) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the voltage normally at the



3. DESCRIPTION OF TEST (CONTINUED)

input to the device or at the power supply terminals if cables are not normally supplied.

- ※ The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 2.5 ppm of the center frequency.

Time Period and Procedure

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (22°C to 25°C to provide a reference.)
2. The equipment is subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight “soak” at -30°C (usually 14 – 16hours), the equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within a three minute interval after applying power to the transmitter.
4. Frequency measurements are made at 10°C interval up to room temperature. At least a period of one and one half hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency measurements are at 10 intervals starting -30°C up to +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.



4. TEST DATA

4.1 EFFECTIVE RADIATED POWER OUTPUT (E.R.P.)

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP	8563E
Signal Generator	HP	83731B
Power Meter	HP	EPM-442A
Pre Amplifier	SONOMA INSTRUMENT	310 N
Log-bicon Antenna	SCHWARZBECK	VULB 9160
Dipole Antenna	Schmid & Partner Engineering	D835V2

*TEST RESULT

- EUT Description: Tri-mode Dual-Band Cellular/PCS Phone (AMPS/CDMA)

AMPS

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)	Peak Power ERP(dBm)
Low Ch.	991	824.04	26.64	23.79
Mid Ch.	383	836.49	26.78	25.00
High Ch.	799	848.97	26.80	26.08



4. TEST DATA (CONTINUED)

FREQ. (MHz)	SA Reading (dBuV)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain (dBd)	CL (dB)	SG Reading	E.R.P.		
824.04	95.83	-9.98	1.0	33.77	23.79	38.5	V
836.49	97.14	-10.00	1.0	36.00	25.00	38.5	V
848.97	97.86	-10.02	1.0	37.10	26.08	38.5	V

CDMA

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)	Peak Power ERP(dBm)
Low Ch.	1013	824.70	23.88	23.05
Mid Ch.	363	835.89	23.94	23.69
High Ch.	777	848.31	23.98	23.83

FREQ. (MHz)	SA Reading (dBuV)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain (dBd)	CL (dB)	SG Reading	E.R.P.		
824.70	94.60	-9.98	1.0	33.03	23.05	38.5	V
835.89	96.50	-10.00	1.0	34.69	23.69	38.5	V
848.31	96.70	-10.02	1.0	34.85	23.83	38.5	V



4. TEST DATA(CONTINUED)

4.2 EQUIVALENT ISOTROPIC RADIATED POWER (E.I.R.P.)

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP	8563E
Signal Generator	HP	83731B
Power Meter	HP	EPM-442A
Pre Amplifier	SONOMA INSTRUMENT	310 N
Log-bicon Antenna	SCHWARZBECK	VULB 9160
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Horn Antenna	EMCO	3115

*TEST RESULT

- EUT Description: Tri-mode Dual-Band Analog/PCS Phone (AMPS/CDMA)

PCS

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)	Peak Power EIRP(dBm)
Low Ch.	25	1851.25	23.92	23.54
Mid Ch.	600	1880.00	23.90	23.46
High Ch.	1175	1908.75	23.97	23.89



4. TEST DATA (CONTINUED)

FREQ. (MHz)	SA Reading (dBuV)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain (dBi)	CL (dB)	SG Reading	E.I.R.P.		
1851.25	87.02	10.40	1.2	14.34	23.54	33.0	V
1880.00	87.36	10.40	1.2	14.26	23.46	33.0	V
1908.75	87.94	10.45	1.2	14.64	23.89	33.0	V



4. TEST DATA (CONTINUED)

4.3 FIELD STRENGTH OF SPURIOUS RADIATION

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP	8563E
Signal Generator	HP	83731B
Power Meter	HP	EPM-442A
Pre Amplifier	SONOMA INSTRUMENT	310 N
Log-bicon Antenna	SCHWARZBECK	VULB 9160
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Horn Antenna	EMCO	3115

b) MEASUREMENT PROCEDURE

- The EUT was placed on a wooden turn table 3 meters from the receive antenna. The receive antenna height and turn table rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1MHz. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For reading 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

- Measurement Channel

.AMPS: ch991, 383, 799

.CDMA: ch1013, 363, 777

.PCS: ch25, 600, 1175



4. TEST DATA (CONTINUED)

- AMPS (CH 991)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1648.08	87.65	7.63	1.2	-33.01	-26.58	-13.0	V
2472.12	80.78	8.35	1.3	-34.45	-27.40	-13.0	H
3296.16	86.63	10.63	1.5	-27.79	-18.66	-13.0	V
4120.20	68.42	10.45	1.5	-47.41	-38.46	-13.0	V

- AMPS(CH 383)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1672.98	91.73	7.73	1.2	-28.97	-22.44	-13.0	V
2509.47	88.99	8.45	1.3	-25.95	-18.80	-13.0	H
3345.96	89.52	10.63	1.5	-25.38	-16.25	-13.0	V
4182.45	71.54	10.55	1.5	-41.39	-32.34	-13.0	V



4. TEST DATA (CONTINUED)

- AMPS(CH 799)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1697.94	93.12	7.98	1.2	-25.82	-19.04	-13.0	V
2546.91	73.26	8.45	1.3	-44.16	-37.01	-13.0	H
3395.88	83.16	10.81	1.5	-29.31	-20.00	-13.0	V
4244.85	70.00	10.55	1.5	-43.56	-34.51	-13.0	V



4. TEST DATA (CONTINUED)

- CDMA (CH 1013)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1649.40	90.03	7.63	1.2	-29.85	-23.42	-13.0	V
2474.10	79.62	8.35	1.3	-37.83	-30.78	-13.0	H
3298.80	79.34	10.63	1.5	-33.89	-24.76	-13.0	V
4123.50	63.45	10.45	1.5	-49.46	-40.51	-13.0	V

- CDMA (CH 363)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1671.78	92.00	7.73	1.2	-28.73	-22.20	-13.0	V
2507.67	79.02	8.45	1.3	-37.94	-30.79	-13.0	H
3343.56	85.45	10.63	1.5	-27.50	-18.57	-13.0	V
4179.45	66.28	10.55	1.5	-43.83	-34.78	-13.0	V



4. TEST DATA (CONTINUED)

- CDMA (CH 777)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBd)	CL (dB)	SG Reading	E.R.P.		
1696.62	84.96	7.98	1.2	-35.60	-28.82	-13.0	V
2544.93	70.16	8.45	1.3	-48.09	-40.94	-13.0	H
3393.24	76.85	10.81	1.5	-39.04	-29.73	-13.0	V
4241.55	64.90	10.55	1.5	-50.19	-41.14	-13.0	V



4. TEST DATA (CONTINUED)

- PCS (CH25)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBi)	CL (dB)	SG Reading	E.I.R.P.		
3702.50	78.02	12.69	1.5	-31.66	-20.17	-13.0	V
5553.75	92.56	13.15	1.6	-26.58	-15.03	-13.0	V
7405.00	83.42	11.01	1.6	-29.71	-20.30	-13.0	V
9256.25	74.95	11.66	1.7	-45.85	-31.89	-13.0	V
11107.5	65.31	11.66	1.7	-52.72	-42.76	-13.0	V

- PCS (CH600)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBi)	CL (dB)	SG Reading	E.I.R.P.		
3760.00	90.36	12.75	1.5	-28.70	-17.45	-13.0	V
5640.00	93.38	13.15	1.6	-27.05	-15.50	-13.0	V
7520.00	85.82	11.24	1.6	-27.15	-17.51	-13.0	V
9400.00	76.21	11.59	1.7	-33.94	-24.05	-13.0	V
11280.0	66.07	11.80	1.7	-53.21	-43.11	-13.0	V



4. TEST DATA (CONTINUED)

- PCS (CH1175)

FREQ. (MHz)	SA Reading (dBuV/m)	Correction Factor (dB)		Peak Value (dBm)		Limit (dBm)	POL (H/V)
		Antenna gain(dBi)	CL (dB)	SG Reading	E.I.R.P.		
3817.45	90.21	12.75	1.5	-28.38	-17.13	-13.0	V
5726.20	92.73	13.18	1.6	-26.34	-14.76	-13.0	V
7634.95	80.23	11.46	1.6	-32.23	-22.37	-13.0	V
9543.70	76.23	11.66	1.7	-44.08	-34.12	-13.0	V
11452.5	66.07	12.09	1.7	-51.38	-40.99	-13.0	V



4. TEST DATA (CONTINUED)

4.4 SPURIOUS EMISSION AT ANTENNA TERMINAL

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP, Agilent	8563E, E4402B
Attenuator	JFW.	50FH-010-5

b) MEASUREMENT PROCEDURE

- The EUT's RF output connector (made solely for the purpose of the test) is connected to the spectrum analyzer, and set as close as possible to the bottom of the block edge and one set as close as possible to the top of the block edge. Set the RES BW to 1% of the emission bandwidth to show compliance with the -13dBm limit, in the 1MHz bands immediately outside and adjacent to the top and bottom edges of the frequency block.

For the Out-of -Band measurements a 1MHz RES BW was used to scan from 15MHz to 10 x fo the fundamental carrier for all frequency block. A display line was placed at -13dBm to show compliance for spurious, and harmonics.

22.917(f): Mobile emission in base frequency range. The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitter operated must be attenuated to a level not to exceed -80dBm at the transmit antenna connector.

*TEST RESULT

- EUT Description: Tri-mode Dual-Band Analog/PCS Phone (AMPS/CDMA)

AMPS(Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.04	991	-19.00	-13	6.00
836.49	383	-21.67	-13	8.67
848.97.	799	-17.00	-13	4.00



4. TEST DATA (CONTINUED)

CDMA(Spurious Emission: Block Edge)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.70	1013	-18.18	-13	5.18
848.31	777	-14.92	-13	1.92

CDMA (Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.70	1013	-22.67	-13	9.67
835.89	363	-25.17	-13	12.17
848.31	777	-21.00	-13	8.00

PCS (Spurious Emission: Block Edge)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
1851.25	25	-28.55	-13	15.55
1908.75	1175	-26.97	-13	13.97

PCS (Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
1851.25	25	-33.00	-13	20.00
1880.00	600	-31.17	-13	18.17
1908.75	1175	-23.33	-13	10.33



4. TEST DATA (CONTINUED)

4.5 FREQUENCY STABILITY

4.5.1 AMPS

OPERATING FREQUENCY: _____ 836,490,000 _____ Hz

CHANNEL: _____ 383 _____

REFERENCE VOLTAGE: _____ 3.7 _____ VDC

DEVIATION LIMIT: ±0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)	
100 %	3.7	+20°C (Ref)	836,490,004	0.000000	
100 %		-30	836,489,933	0.000008	
100 %		-20	836,489,937	0.000008	
100 %		-10	836,489,922	0.000011	
100 %		0	836,489,940	0.000008	
100 %		+10	836,489,923	0.000010	
100 %		+20	836,490,004	0.000000	
100 %		+25	836,489,942	0.000007	
100 %		+30	836,489,920	0.000010	
100 %		+40	836,489,952	0.000006	
100 %		+50	836,489,944	0.000007	
100 %		+60	836,489,925	0.000009	
85 %		3.15	+20	836,489,989	0.000002
115 %		4.26	+20	836,489,995	0.000001
BATT. ENDPOINT	2.97	+20	836,489,992	0.000001	



4. TEST DATA (CONTINUED)

4.5.2 CDMA

OPERATING FREQUENCY: 835,890,000 Hz

CHANNEL: 363

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ±0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)	
100 %	3.7	+20 °C (Ref)	836,490,007	0.000000	
100 %		-30	836,489,963	0.000005	
100 %		-20	836,489,960	0.000006	
100 %		-10	836,489,973	0.000004	
100 %		0	836,489,968	0.000005	
100 %		+10	836,489,972	0.000004	
100 %		+20	836,490,007	0.000000	
100 %		+25	836,489,983	0.000003	
100 %		+30	836,489,978	0.000003	
100 %		+40	836,489,970	0.000004	
100 %		+50	836,489,958	0.000006	
100 %		+60	836,489,985	0.000003	
85 %		3.15	+20	836,489,995	0.000001
115 %		4.26	+20	836,489,998	0.000001
BATT. ENDPOINT	2.93	+20	836,489,997	0.000001	



4. TEST DATA (CONTINUED)

4.5.3 PCS

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ±0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)	
100 %	3.7	+20°C (Ref)	1,880,000,010	0.000000	
100 %		-30	1,880,000,032	-0.000001	
100 %		-20	1,879,999,975	0.000002	
100 %		-10	1,879,999,958	0.000003	
100 %		0	1,879,999,950	0.000003	
100 %		+10	1,879,999,949	0.000003	
100 %		+20	1,880,000,010	0.000000	
100 %		+25	1,880,000,053	-0.000002	
100 %		+30	1,879,999,982	0.000001	
100 %		+40	1,879,999,947	0.000003	
100 %		+50	1,879,999,932	0.000004	
100 %		+60	1,879,999,951	0.000003	
85 %		3.15	+20	1,879,999,973	0.000002
115 %		4.26	+20	1,879,999,982	0.000001
BATT. ENDPOINT	2.90	+20	1,879,999,971	0.000002	



4. TEST DATA (CONTINUED)

4.6 OCCUPIED BANDWIDTH

* MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	Agilent	E4402B
Audio Signal Generator	HP	8903B
Attenuator	JFW.	50FH-010-5
Dual Directional Coupler	HP	778D
CDMA Mobile Station Test Set	HP	8924C
DC POWER SUPPLY	INTERACT	AK-3010

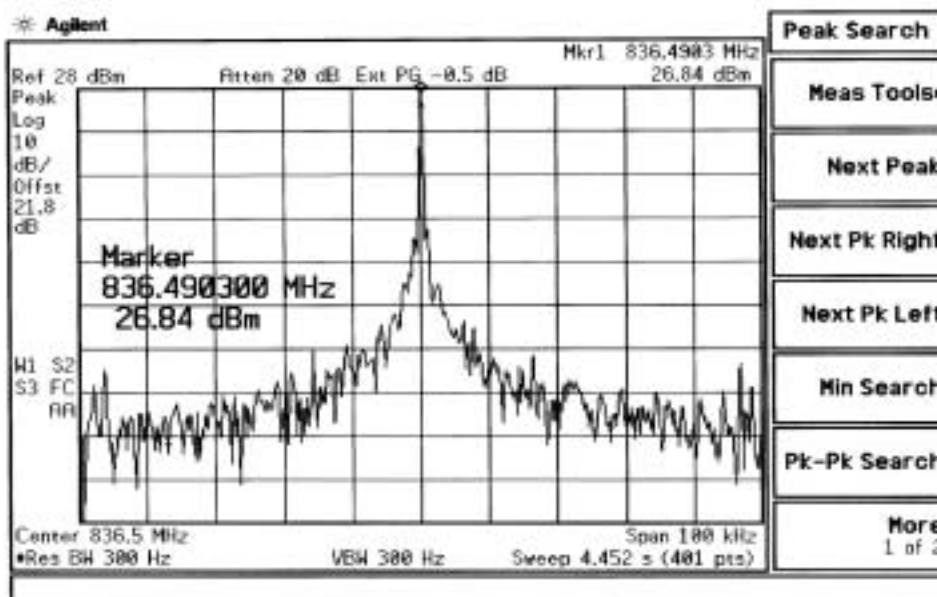
4.6.1. Un-modulated Signal

- INSTRUMENT SETTING

RBW & VBW = 300Hz

Limit: N/A

Test Result:





4. TEST DATA (CONTINUED)

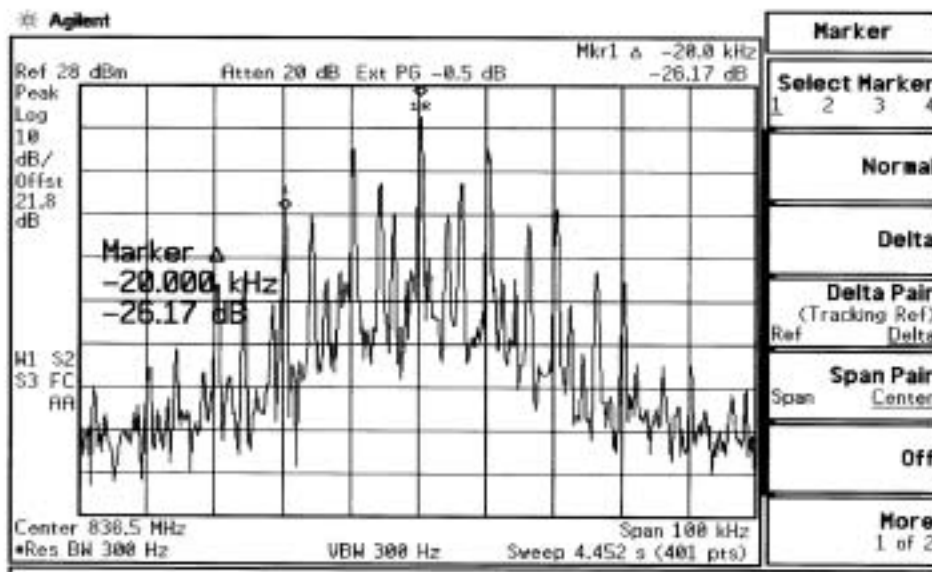
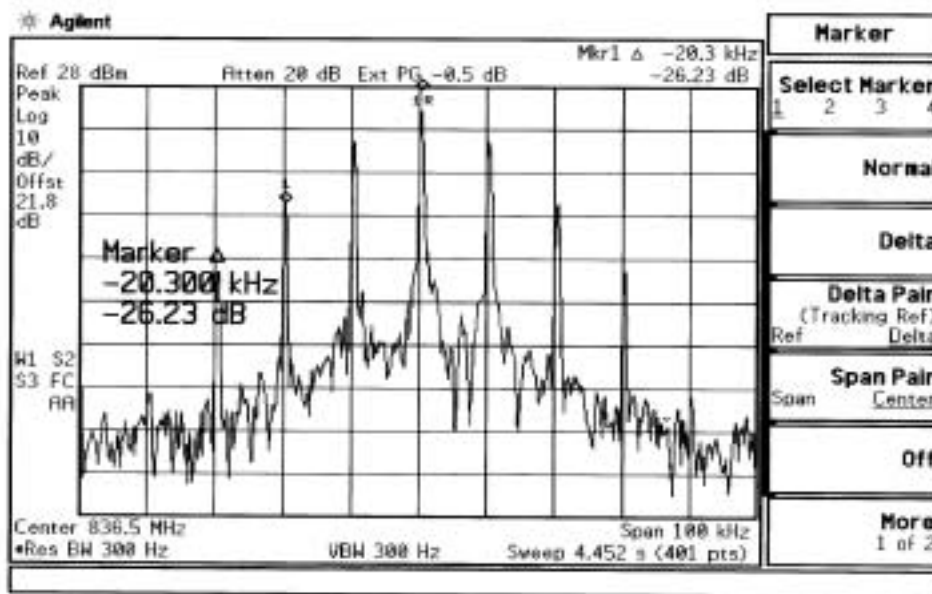
4.6.2. Signaling Tone (ST) & ST+SAT

- INSTRUMENT SETTING

RBW & VBW = 300Hz

Test Result:

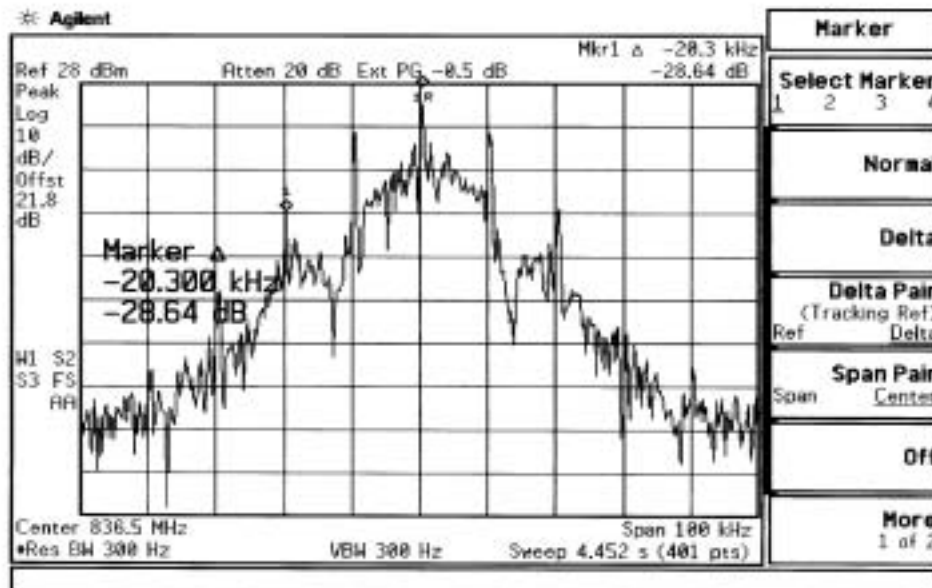
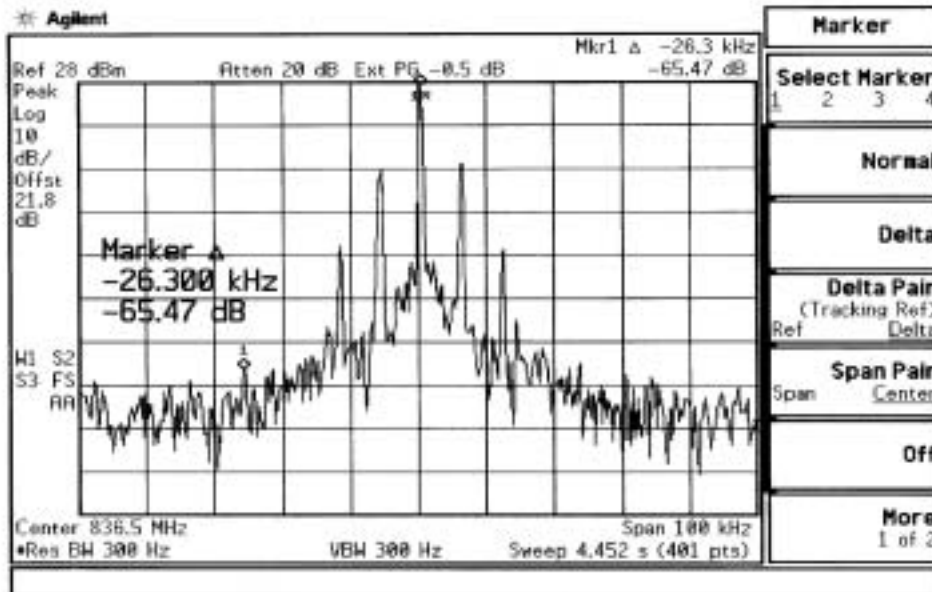
ST & ST+SAT





4. TEST DATA (CONTINUED)

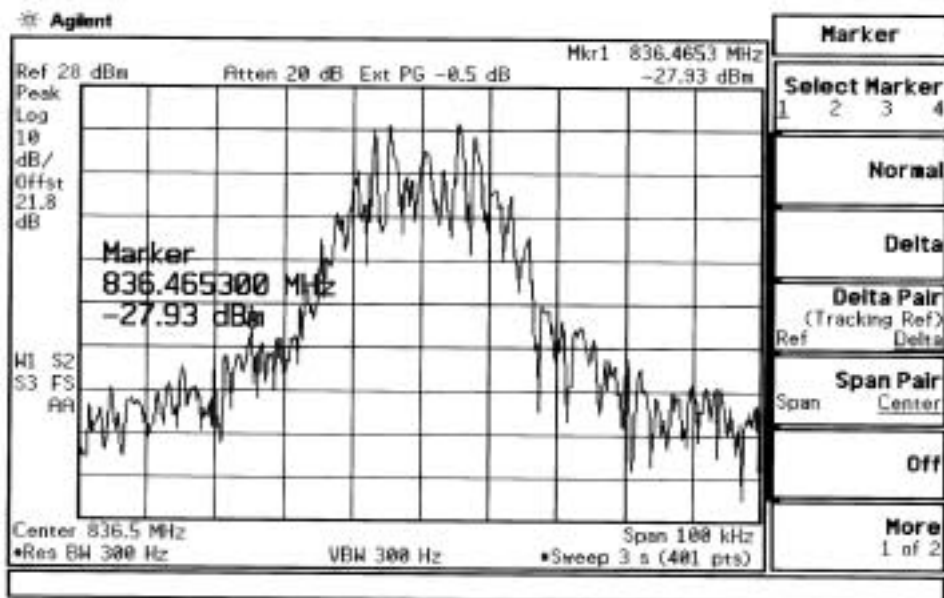
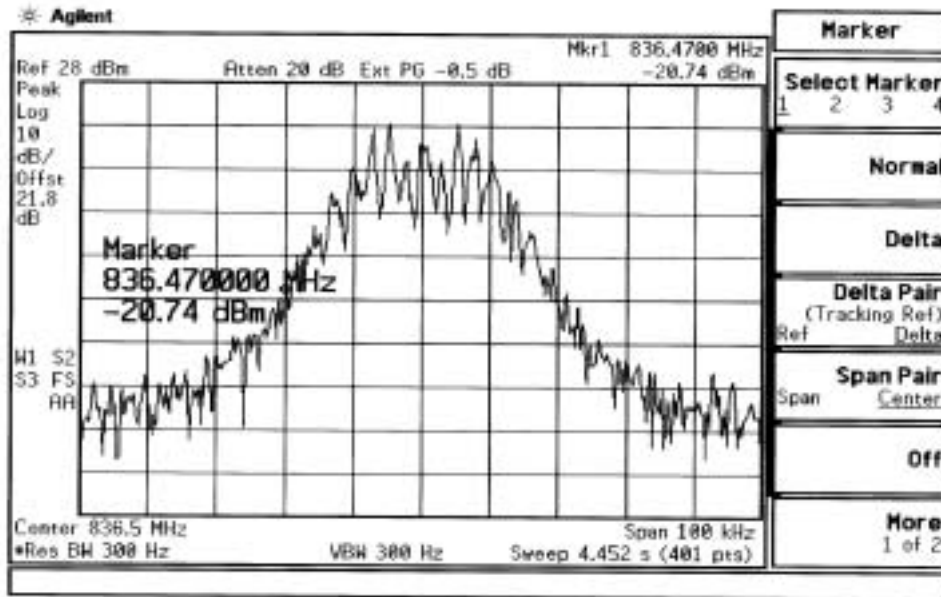
4.6.3. SAT (Supervisory Audio Tone) & Wide Band Data (WBD)





4. TEST DATA (CONTINUED)

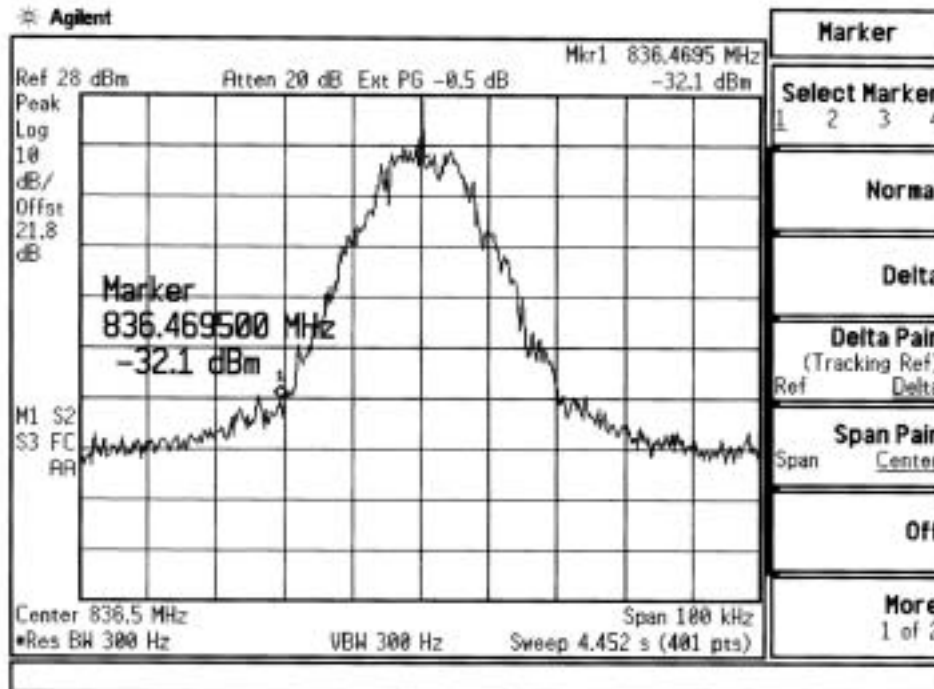
4.6.4. Voice + SAT & Voice





4. TEST DATA (CONTINUED)

4.6.5. DTMF + SAT

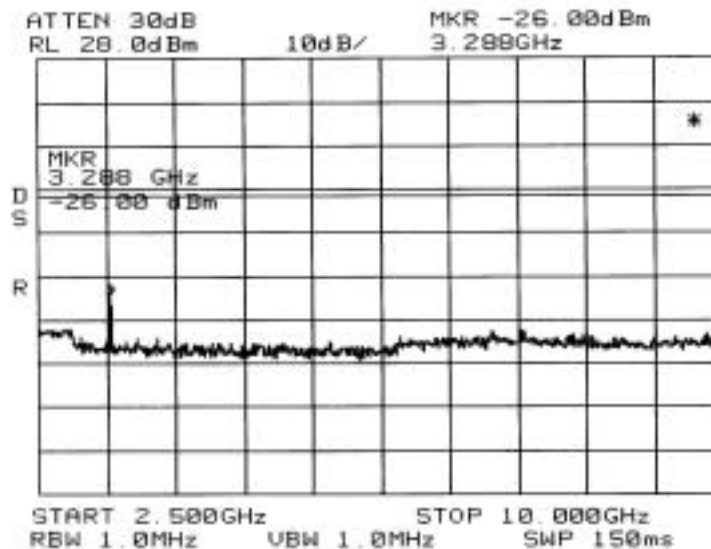
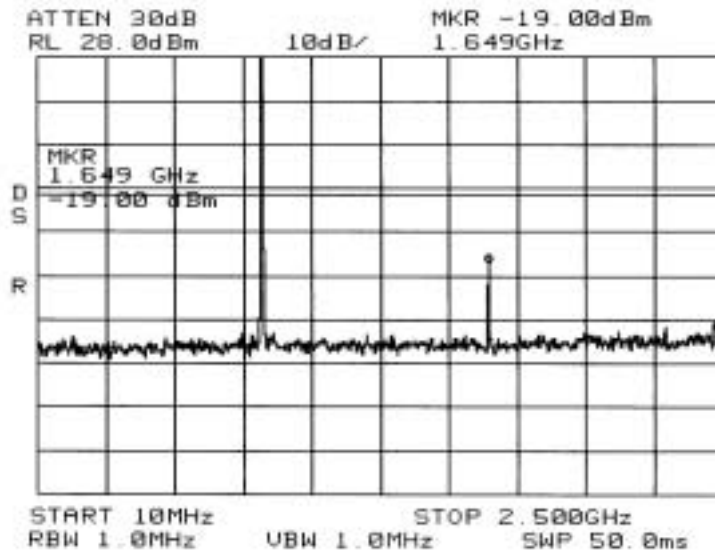




5. TEST PLOTS

5.1.1 PLOTS OF EMISSION (AMPS): OUT OF BAND

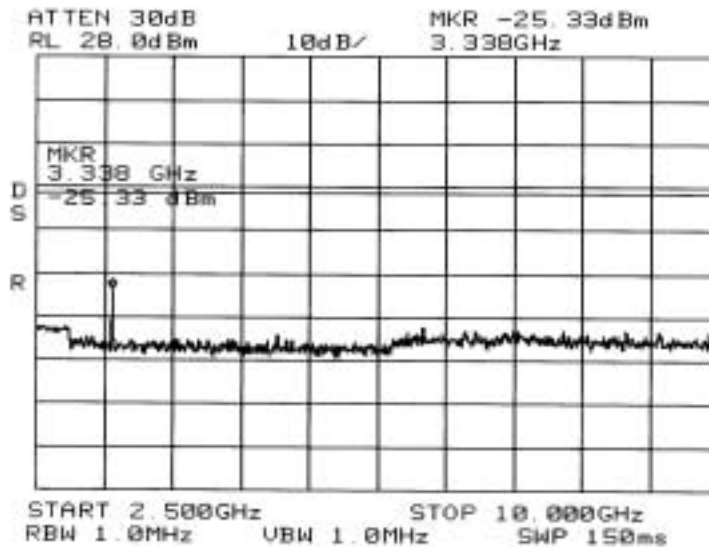
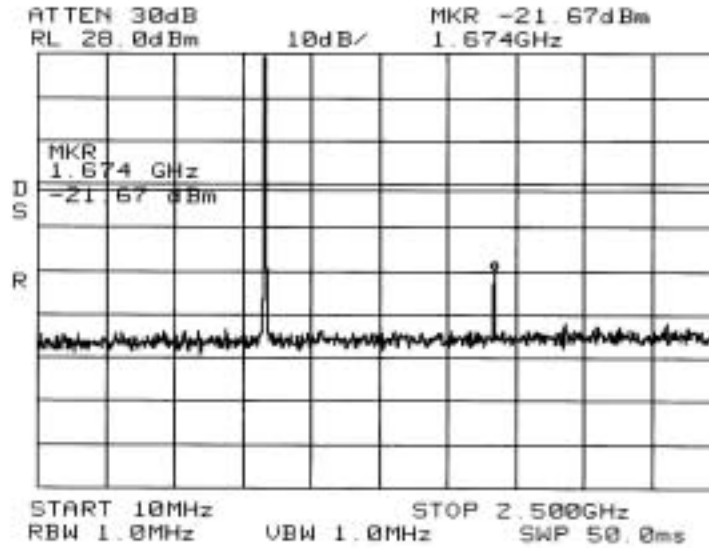
- Ch 991





5. TEST PLOTS (CONTINUED)

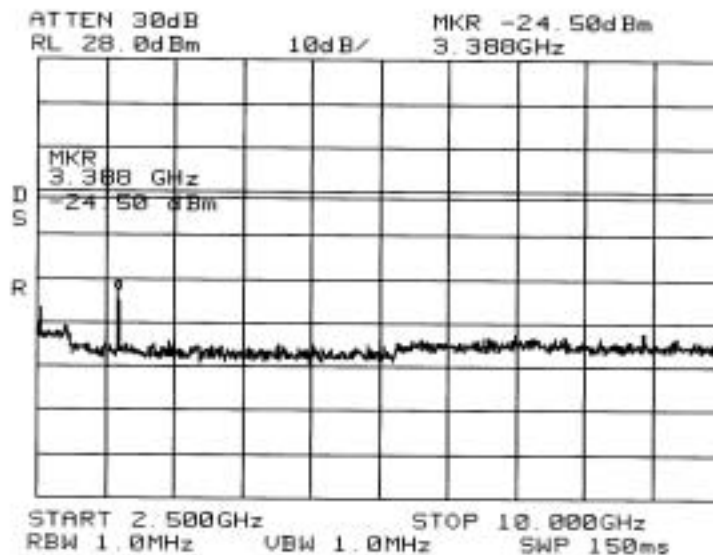
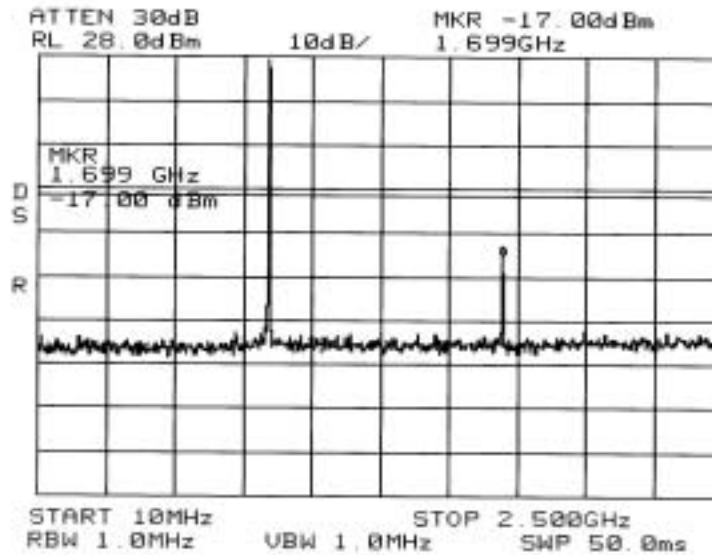
- Ch 383





5. TEST PLOTS (CONTINUED)

- Ch 799

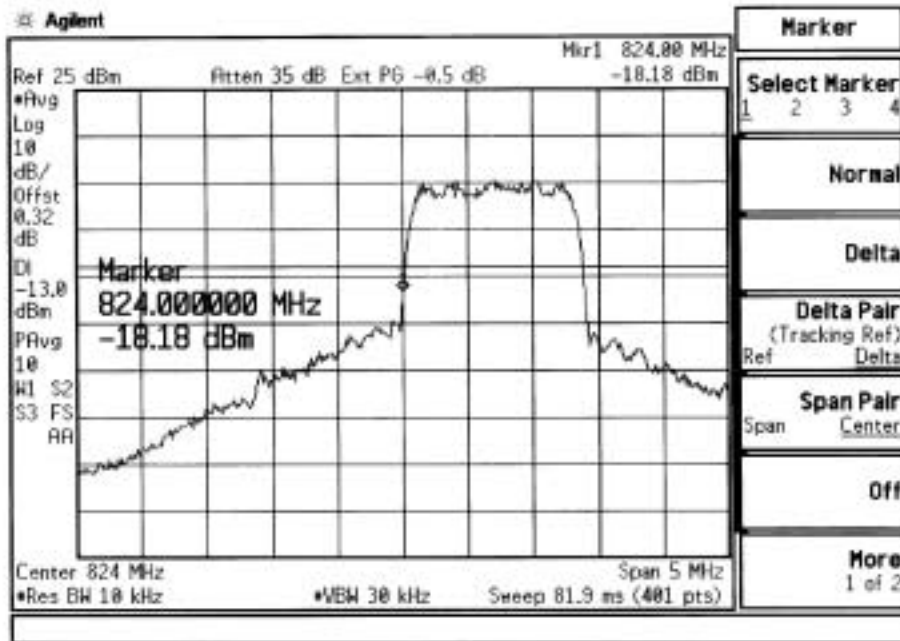




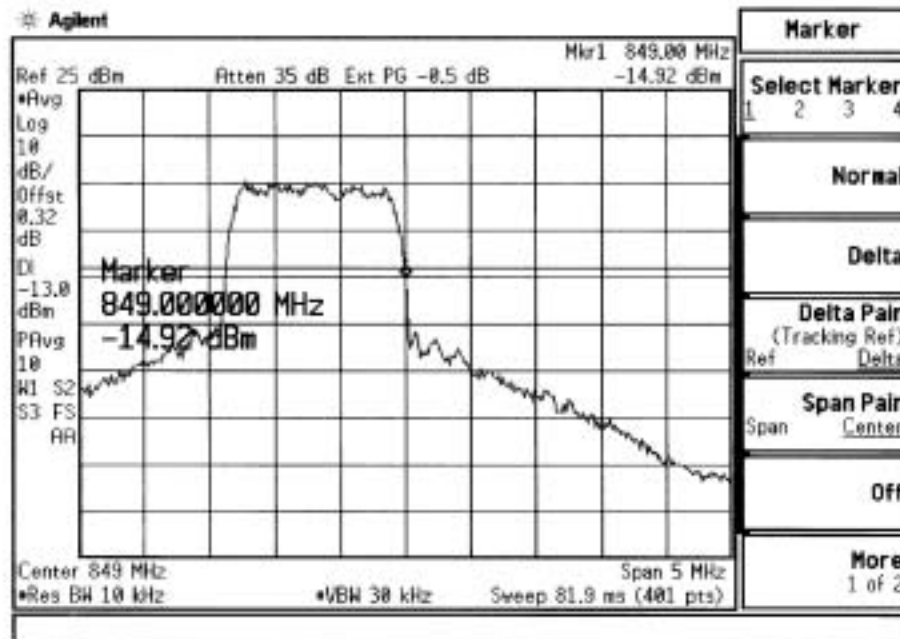
5. TEST PLOTS (CONTINUED)

5.1.2-1 PLOTS OF EMISSION (CDMA): BAND EDGE

- Ch 1013



- Ch 777

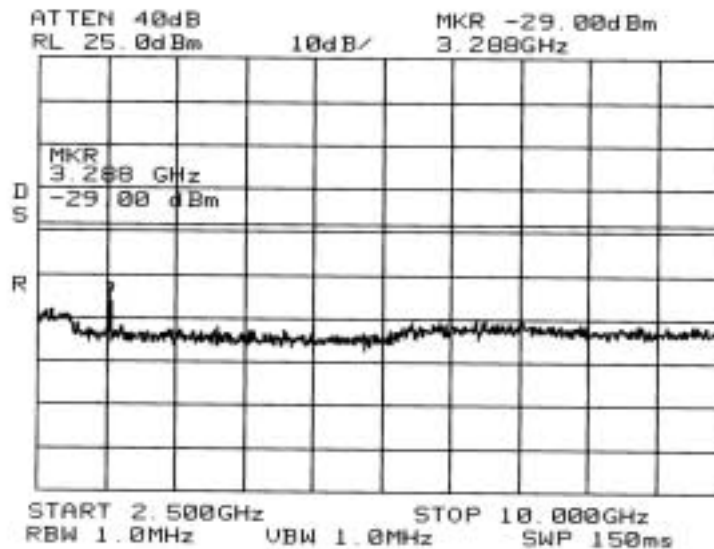
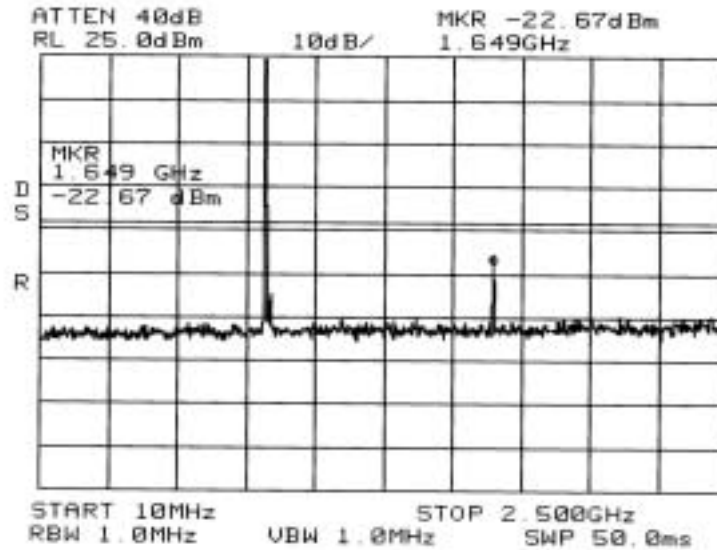




5. TEST PLOTS (CONTINUED)

5.1.2-2 PLOTS OF EMISSION (CDMA): OUT OF BAND

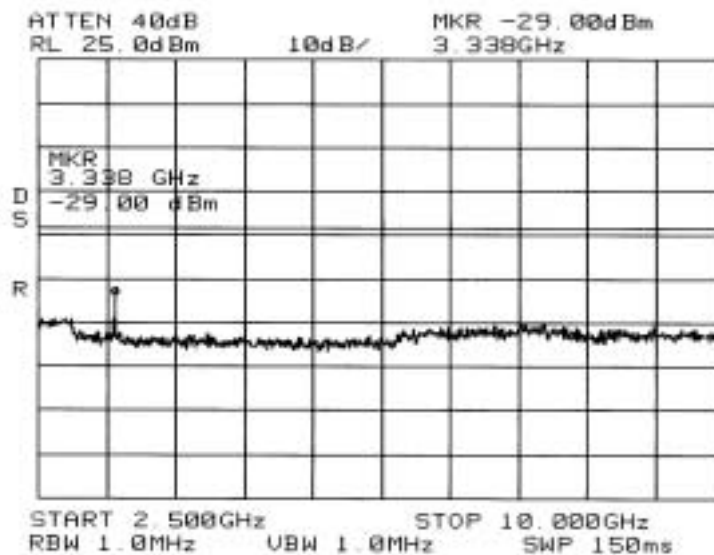
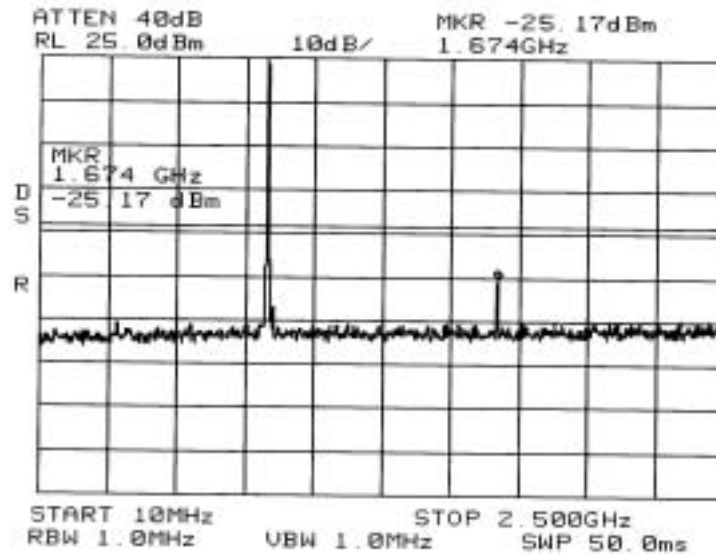
- Ch 1013





5. TEST PLOTS (CONTINUED)

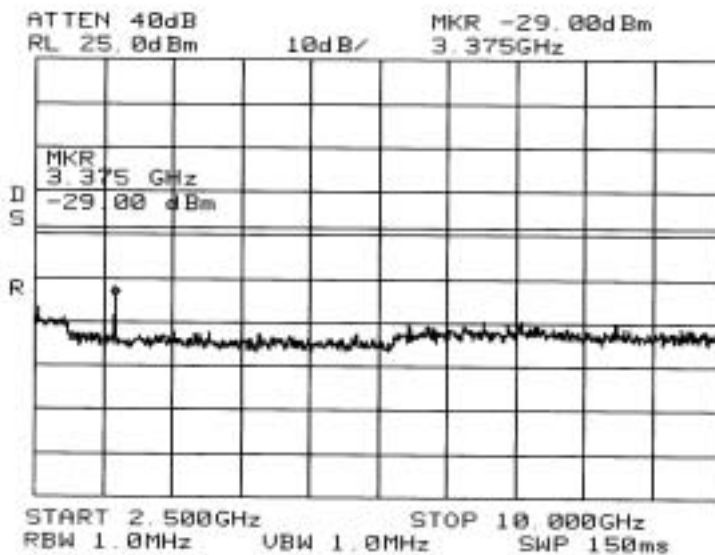
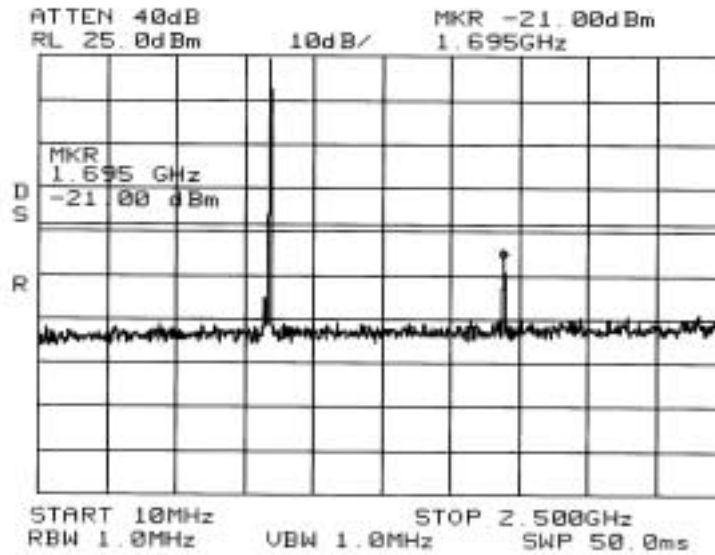
- Ch 363





5. TEST PLOTS (CONTINUED)

- Ch 777

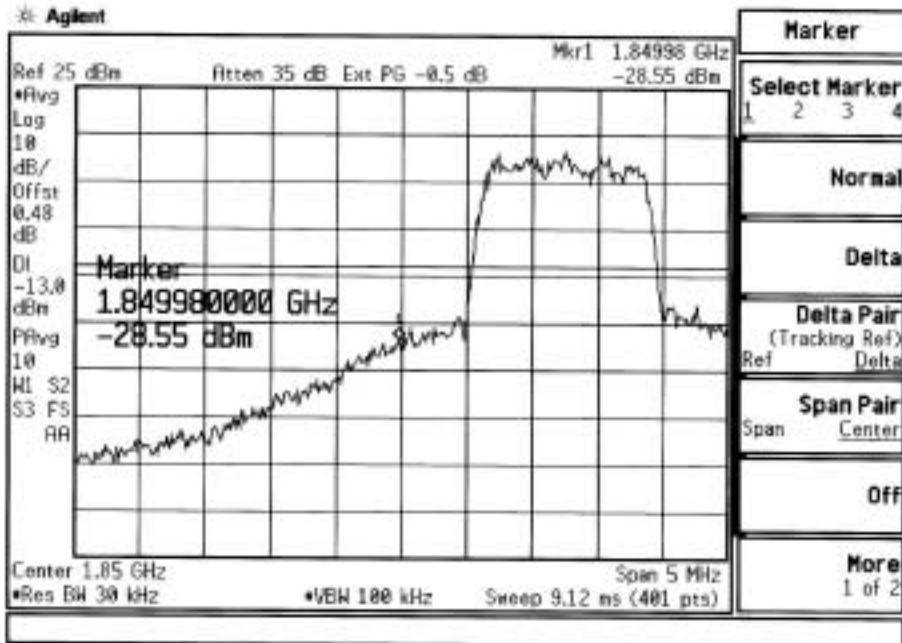




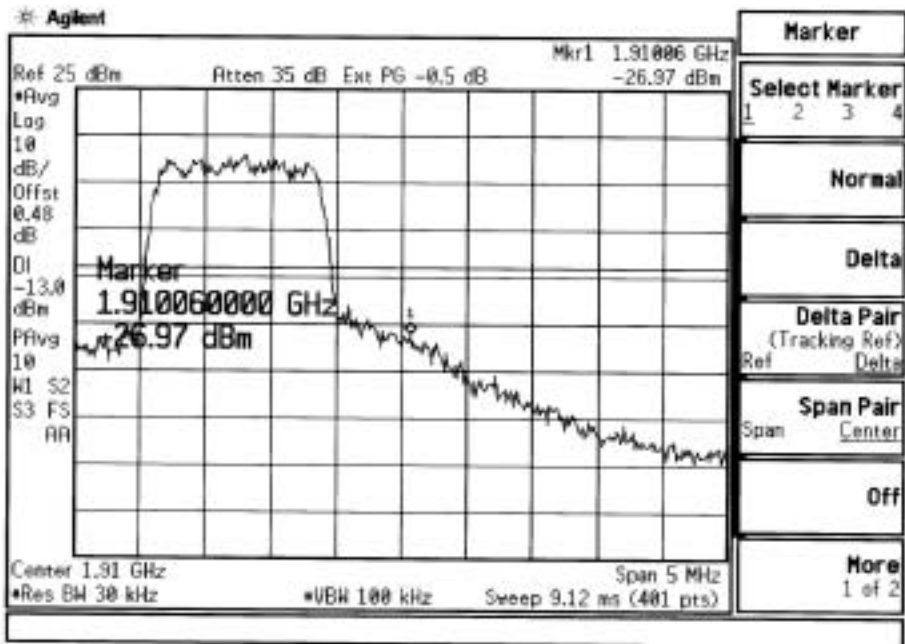
5. TEST PLOTS (CONTINUED)

5.1.3-1 PLOTS OF EMISSION (PCS): BAND EDGE

- Ch 25



- Ch 1175

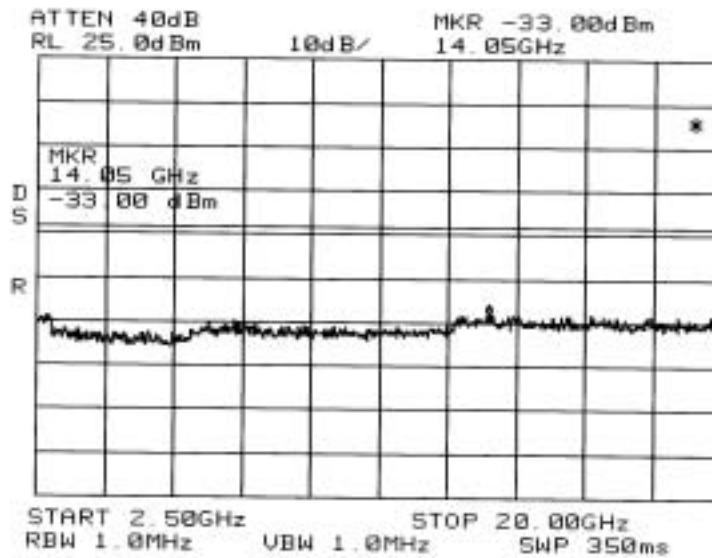
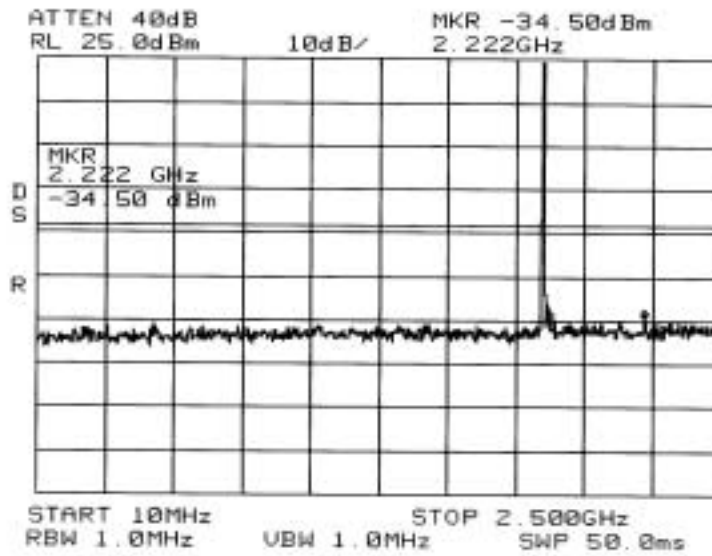




5. TEST PLOTS (CONTINUED)

5.1.3-2 PLOTS OF EMISSION (PCS CDMA): OUT OF BAND

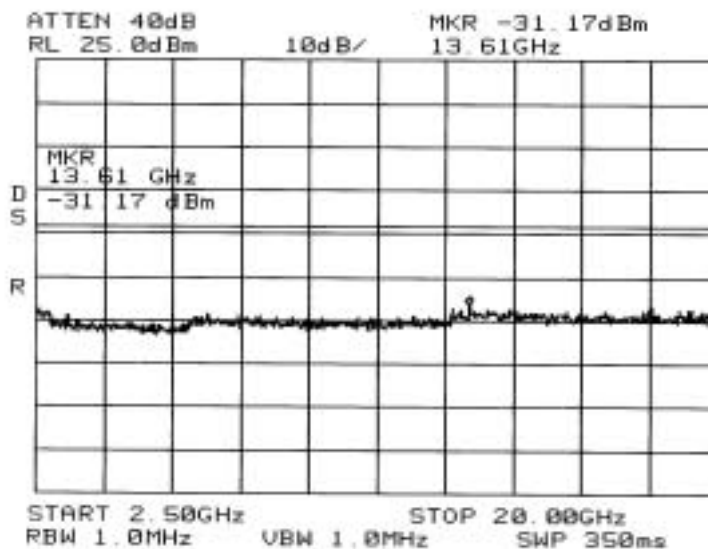
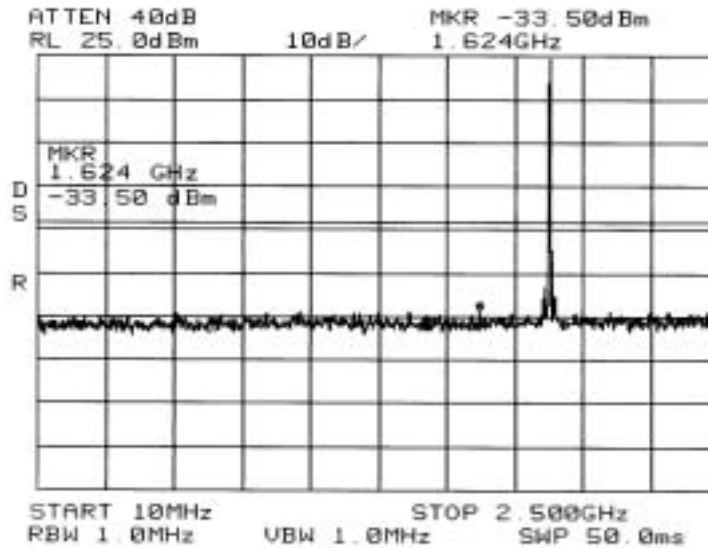
- Ch 25





5. TEST PLOTS (CONTINUED)

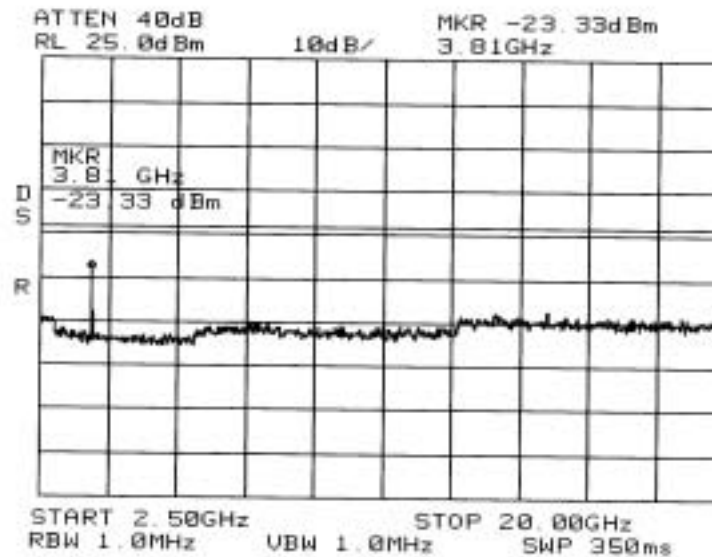
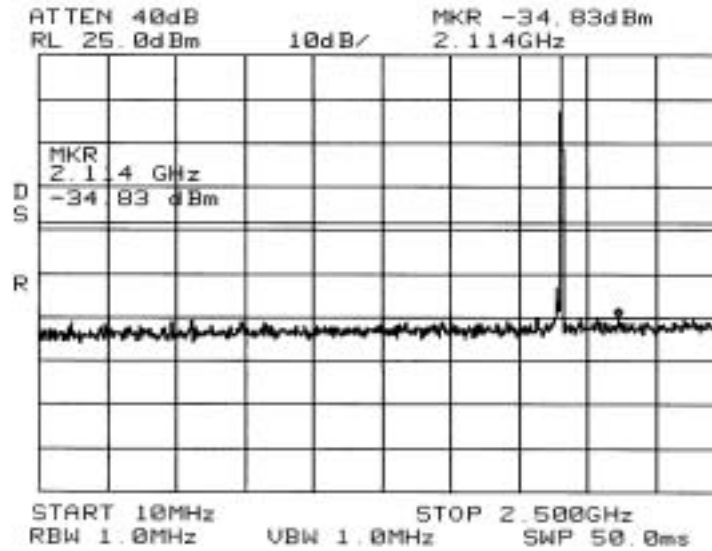
- Ch 600





5. TEST PLOTS (CONTINUED)

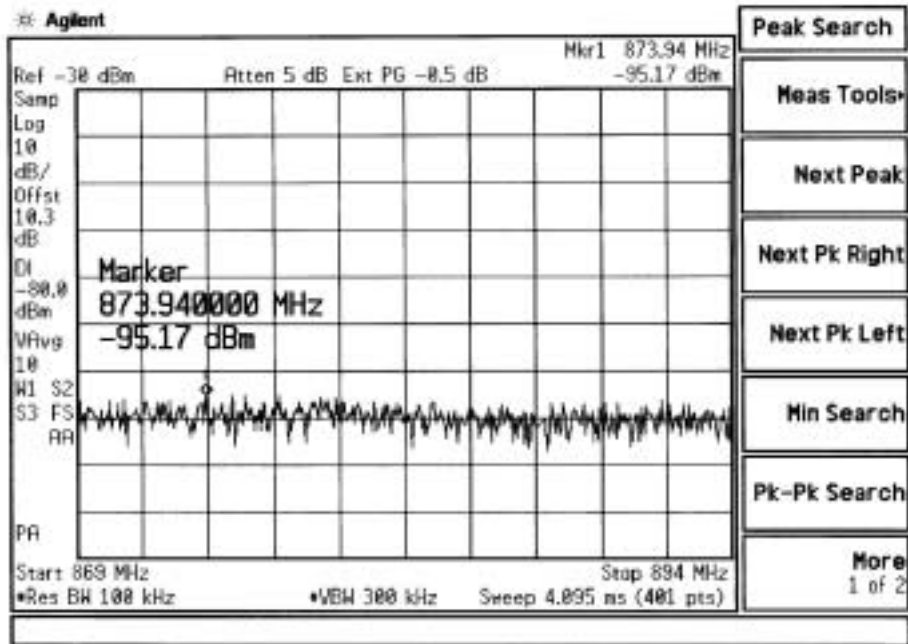
- Ch 1175





5. TEST PLOTS (CONTINUED)

5.2 MOBILE EMISSION IN BASE FREQUENCY RANGE

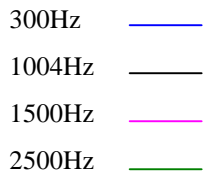
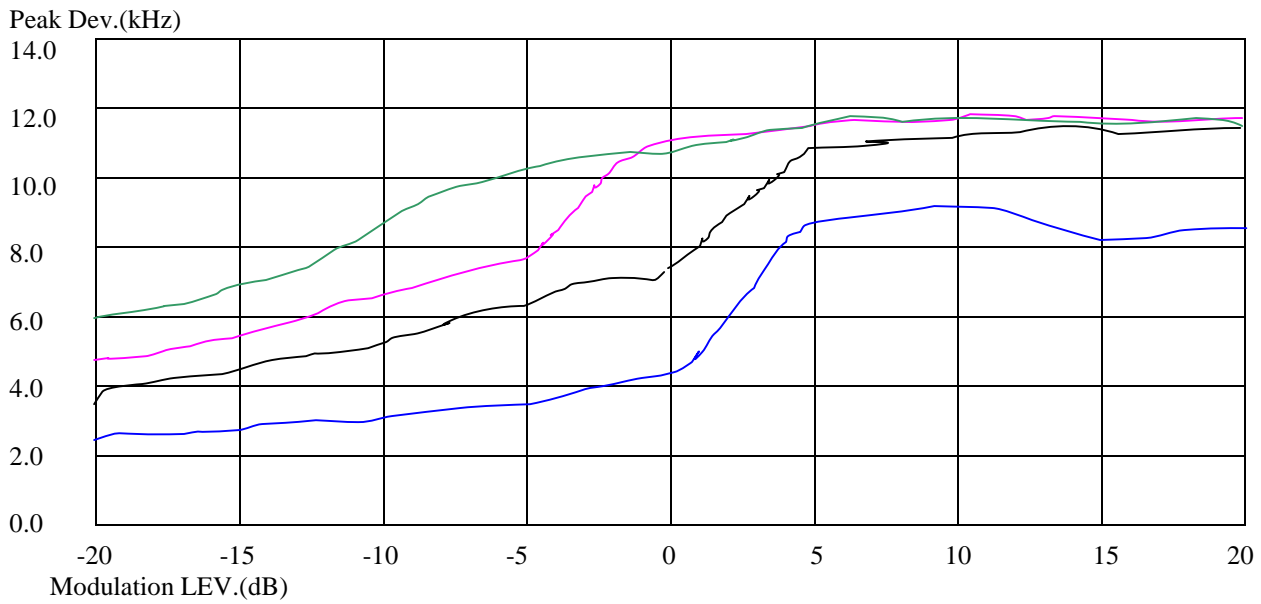




5. TEST PLOTS (CONTINUED)

5.3 MODULATION CHARACTERISTICS

5.3.1 Modulation Limit

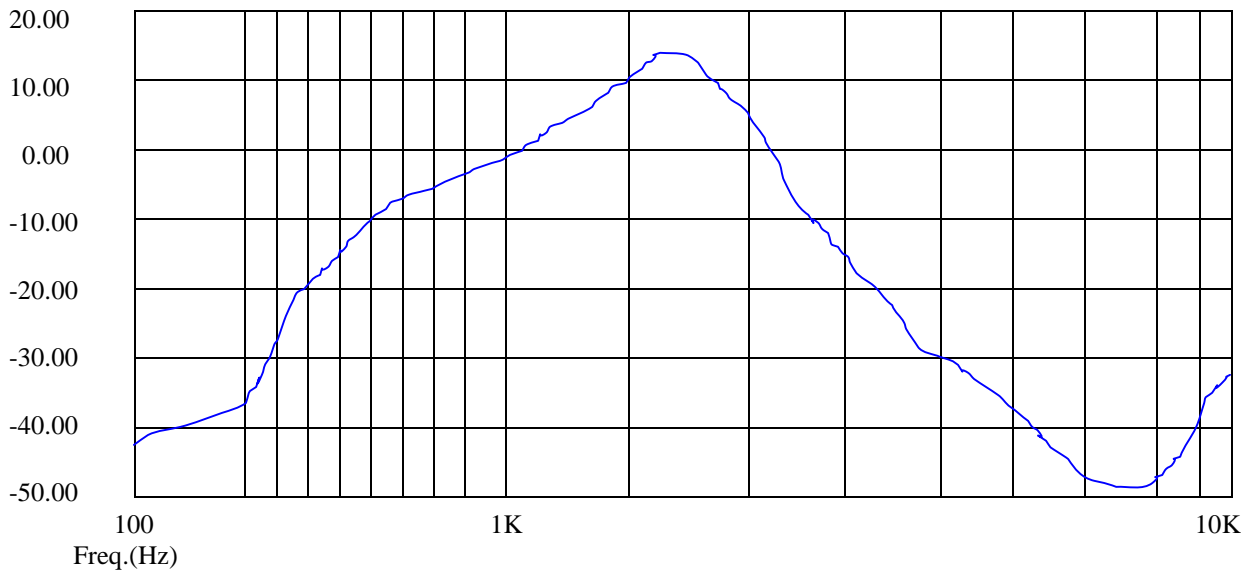




5. TEST PLOTS (CONTINUED)

5.3.2 Audio Response

LEV(dB)





5. TEST PLOTS (CONTINUED)

5.3.3 Audio Low Pass Filter Response

LEV(dB)

