



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL:(822)549-0485 FAX:(822)549-0487
http://www.estech.co.kr

Test Report

Report Number	ESTR0409-009			
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	Telematics Terminal		
	Model No.	LT-N050GP	Manufacturer	LG Electronics Inc.
	Serial No.	NONE	Country of origin	Korea
	Date of Receipt	2004-09-22	Date of Test	2004-09-15 ~2004-9-21
Testing Lab.	ESTECH. Co., Ltd			
Standard	FCC PART 22 and 24			
Tested by	S.R. Kim/ Engineer (Signature) 			
Approved by	Jay Kim/ Manager Engineer (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				



TABLE OF CONTENTS

ATTACHMENT: TEST RESULT CERTIFICATION.....	1
1. INTRODUCTION.....	3
2. DESCRIPTION OF EUT.....	4
3. DESCRIPTION OF TEST.....	5
4. TEST DATA	
4.1 RF POWER OUTPUT (E.R.P.).....	9
4.2 FIELD STRENGTH OF SPURIOUS RADIATION.....	11
4.3 SPURIOUS EMISSION AT ANTENNA TERMINAL.....	18
4.4 FREQUENCY STABILITY.....	20
4.5 OCCUPIED BANDWIDTH.....	22
4.5.1. Un-modulated Signal.....	22
4.5.2. Signaling Tone(ST) & Supervisory Audio Tone(SAT).....	23
4.5.3. Wide Band Data(WBD).....	25
4.5.4. Wide Band Data(WBD).....	27
5. TEST PLOTS	
5.1 PLOTS OF EMISSIONS.....	28
5.2 MOBILE EMISSION IN BASE FREQUENCY RANGE.....	39
5.3 MODULATION CHARACTERISTICS.....	40
5.3.1. Modulation Limit.....	40
5.3.2. Audio Frequency Response.....	41
5.3.3. Audio Low Pass Filter Response.....	42



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

1. INSTROCTION

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 : BEJLT-N050GP

◆ Freq. Range : - In CELL mode

Rx : 869.820 ~ 893.190 MHz

Tx : 824.820 ~ 848.190 MHz

- In AMPS mode

Rx : 869.64 ~ 893.37 MHz

Tx : 824.64 ~ 848.37 MHz

- In PCS Mode

Rx : 1931.250 ~ 1988.750MHz

Tx : 1851.250 ~ 1908.750MHz

- In GPS Mode

Rx : 1575.42MHz

◆ Power Rating : 12VDC(9 ~ 16VDC)

◆ EUT Type : Tri-mode Quad Band AMPS/PCS/DCN/GPS Phone System

◆ Modulation(s) :

CDMA(PCS/DCN)-FM, GPS



3. DESCRIPTION OF TEST

3.1 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 Audio Low Pass Filter Frequency Response

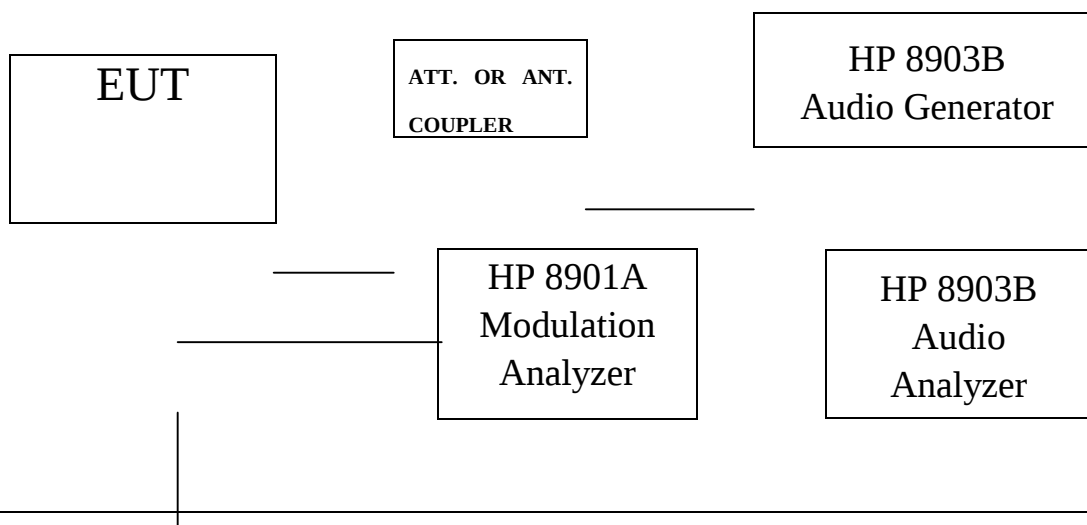
The response in dB relative to 1kHz is measured using the HP8901 a Modulation Analyzer. For the frequency response of the audio low-pass filter, the audio input is connected at the input to the modulation limiter and the modulated stage. The audio output is connected at the output of the modulated stage.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

3.3 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.

Fig. Transmitter Audio Frequency & Tone Modulation Test Setup





3. DESCRIPTION OF TEST (CONTINUED)

3.4 Occupied Bandwidth Emission Limits

- (a) 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.
- (b) 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.
- (c) 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.
- (d) 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.

3.5 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).

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.

3.6 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



3. DESCRIPTION OF TEST (CONTINUED)

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.

3.7 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.

3.8 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 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 $\pm 2.5\text{ppm}$ 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



3. DESCRIPTION OF TEST (CONTINUED)

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 $+50^{\circ}\text{C}$ 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 RF POWER OUTPUT

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP	8563E
Power Meter	HP	EPM-442A
Attenuator	INMET CORP.	6N25W-10

*TEST RESULT

- EUT Description: Tri-mode Quad Band AMPS/PCS/DCN/GPS Phone System

AMPS

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)
Low Ch.	1011	824.64	34.46
Mid Ch.	383	836.49	34.82
High Ch.	779	848.37	34.69



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

4. TEST DATA (CONTINUED)

CDMA

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)
Low Ch.	1017	824.82	23.85
Mid Ch.	383	836.49	23.42
High Ch.	772	848.19	23.96

PCS

	Ch. No.	Freq. (MHz)	Peak Power Meter(dBm)
Low Ch.	25	1851.25	23.50
Mid Ch.	600	1880	23.72
High Ch.	1175	1908.75	23.93



4. TEST DATA

4.2 FIELD STRENGTH OF SPURIOUS RADIATION

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Receiver	Rohde & Schwarz	ESVS10
Pre Amplifier	SONOMA INSTRUMENT	310 N
Log-bicon Antenna	SCHWARZBECK	VULB 9160
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Spectrum Analyzer	ADVANTEST	R33261B

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: ch1011, 383, 779

.CDMA: ch1017, 383, 772

.PCS: ch25, 600, 1175



4. TEST DATA (CONTINUED)

- AMPS(CH 1011)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1649.28	24.78	-25.4	66.00	65.38	82.2	V
2473.92	27.59	-23.4	49.67	53.89	82.2	H
3298.56	27.82	-23.4	46.67	51.12	82.2	V
4123.20	29.87	-21.7	50.67	58.87	82.2	H
4947.84	31.48	-21.7	47.50	87.31	82.2	H

- AMPS(CH 383)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1649.28	24.78	-25.4	66.00	65.38	82.2	V
2473.92	27.59	-23.4	49.67	53.89	82.2	H
3298.56	27.82	-23.4	46.67	51.12	82.2	V
4123.20	29.87	-21.7	50.67	58.87	82.2	H
4947.84	31.48	-21.7	47.50	87.31	82.2	H



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL:(822)549-0485 FAX:(822)549-0487
<http://www.estech.co.kr>

4. TEST DATA

- AMPS(CH 779)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1696.74	24.70	-25.4	62.00	61.30	82.2	V
2545.11	27.66	-23.4	55.00	59.29	82.2	H
3393.48	27.88	-23.4	51.50	56.01	82.2	V
4241.85	30.06	-21.7	51.33	59.72	82.2	H
5090.22	31.61	-21.7	45.83	55.77	82.2	H



4. TEST DATA

- CDMA (CH 1017)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1649.64	24.78	-25.4	59.95	59.33	82.2	V
2474.46	27.59	-23.4	70.67	74.89	82.2	V
3299.28	27.82	-23.4	60.83	65.27	82.2	V
4124.1	29.87	-21.7	53.00	61.21	82.2	H
4948.92	31.48	-21.7	68.40	78.21	82.2	V

- CDMA (CH 383)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1672.98	27.74	-25.4	59.00	58.34	82.2	V
2509.47	27.60	-23.4	61.33	65.56	82.2	V
3345.96	27.85	-23.4	50.33	54.81	82.2	V
4182.45	29.96	-21.7	55.00	63.29	82.2	V
5018.94	31.56	-21.7	49.67	59.56	82.2	V



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

4. TEST DATA(CONTINUED)

- CDMA (CH 772)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
1696.38	24.70	-25.4	58.00	57.30	82.2	V
2544.57	27.66	-23.4	61.50	65.79	82.2	V
3392.76	27.88	-23.4	52.33	56.84	82.2	H
4240.95	30.06	-21.7	42.00	50.39	82.2	V
5089.14	31.61	-21.7	41.00	50.94	82.2	V



4. TEST DATA

- PCS (CH25)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
3702.5	28.90	-21.7	66.00	73.23	82.2	V
5553.75	31.96	-20.4	64.00	75.60	82.2	V
7405	36.58	-19.2	55.33	72.71	82.2	V
9256.25	37.85	-18.2	53.17	72.84	82.2	H
11107.5	39.46	-17.0	47.17	69.59	82.2	V

- PCS (CH600)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
3760	29.00	-21.7	64.33	71.66	82.2	H
5640	32.10	-20.4	61.00	72.74	82.2	H
7520	36.46	-19.2	61.00	78.26	82.2	V
9400	38.09	-18.2	53.00	72.91	82.2	V
11280	39.35	-17.0	52.00	74.31	82.2	V



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

4. TEST DATA(CONTINUED)

- PCS (CH1175)

FREQ. (MHz)	Correction Factor (dB)		Peak Value (dBuV/m)		Limit (dBuV/m)	POL (H/V)
	Antenna Factor	Amp + CL	Reading	Result		
3817.45	29.12	-21.7	63.33	70.78	82.2	H
5726.2	32.26	-20.4	60.50	72.40	82.2	H
7634.95	36.42	-19.2	60.00	77.22	82.2	V
9543.7	37.97	-18.2	54.80	74.59	82.2	V
11452.45	39.24	-17.0	54.33	76.53	82.2	V



4. TEST DATA(CONTINUED)

4.3 SPURIOUS EMISSION AT ANTENNA TERMINAL

a) MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP, Agilent	8563E, E4402B
Audio Signal Generator	HP	8903B
Attenuator	INMET CORP.	6N25W-10

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 $10 \times f_0$ 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 Quad Band AMPS/PCS/DCN/GPS Phone System

AMPS(Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.64	1011	-21.83	-13	18.83
836.49	383	-22.50	-13	19.50
848.37.	779	-22.83	-13	19.83



4. TEST DATA(CONTINUED)

CELLULAR CDMA(Spurious Emission: Block Edge)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.82	1017	-24.60	-13	11.60
848.19	772	-26.34	-13	13.34

CELLULAR CDMA (Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
824.82	1011	-33.00	-13	20.00
836.49	383	-32.67	-13	19.67
848.19	779	-33.83	-13	20.83

PCS CDMA(Spurious Emission: Block Edge)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
1851.25	25	-21.85	-13	8.85
1908.75	1175	-23.00	-13	10.00

PCS CDMA (Spurious Emission: Out of Band)

Freq. (MHz)	Channel	Measurement Value(dBm)	Limit(dBm)	Margin(dB)
1851.25	25	-30.67	-13	17.67
1880	600	-31.00	-13	18.00
1908.75	1175	-31.50	-13	18.50



4. TEST DATA

4.4.1 FREQUENCY STABILITY (AMPS)

OPERATING FREQUENCY: 836,490,000 Hz

CHANNEL: 383

REFERENCE VOLTAGE: 12.0 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)
100 %	12.0	+20 °C (Ref)	836,490,005	0.000000
100 %		-30	836,489,927	0.000009
100 %		-20	836,489,912	0.000010
100 %		-10	836,489,899	0.000013
100 %		0	836,489,926	0.000009
100 %		+10	836,489,903	0.000012
100 %		+20	836,490,005	0.000000
100 %		+25	836,489,930	0.000009
100 %		+30	836,489,913	0.000011
100 %		+40	836,489,945	0.000007
100 %		+50	836,489,939	0.000008
100 %		+60	836,489,923	0.000010
85 %	10.2	+20	836,489,988	0.000002
115 %	13.8	+20	836,489,994	0.000001
DC Power ENDPOINT	8.5 ~ 9.0	+20	836,489,991	0.000002



4. TEST DATA

4.4.2 FREQUENCY STABILITY (CELLULAR CDMA)

OPERATING FREQUENCY: 836,490,000 Hz

CHANNEL: 383

REFERENCE VOLTAGE: 12.0 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)
100 %	12.0	+20 °C (Ref)	836,490,008	0.000000
100 %		-30	836,489,973	0.000004
100 %		-20	836,489,961	0.000006
100 %		-10	836,489,993	0.000002
100 %		0	836,489,988	0.000002
100 %		+10	836,489,977	0.000004
100 %		+20	836,490,008	0.000000
100 %		+25	836,489,982	0.000003
100 %		+30	836,489,976	0.000004
100 %		+40	836,489,990	0.000002
100 %		+50	836,489,938	0.000008
100 %		+60	836,489,995	0.000002
85 %	10.2	+20	836,489,991	0.000002
115 %	13.8	+20	836,489,999	0.000001
DC Power ENDPOINT	8.5 ~ 9.0	+20	836,489,996	0.000001



4. TEST DATA

4.4.3 FREQUENCY STABILITY (PCS CDMA)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

REFERENCE VOLTAGE: 12.0 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5ppm

VOLTAGE (%)	POWER (VDC)	TEMP. (°C)	FREQ. (Hz)	Deviation (%)
100 %	12.0	+20°C (Ref)	1,880,000,011	0.000000
100 %		-30	1,880,000,041	-0.000002
100 %		-20	1,879,999,965	0.000002
100 %		-10	1,879,999,955	0.000003
100 %		0	1,879,999,952	0.000003
100 %		+10	1,879,999,948	0.000003
100 %		+20	1,880,000,011	0.000000
100 %		+25	1,880,000,050	-0.000002
100 %		+30	1,879,999,942	0.000004
100 %		+40	1,880,000,058	-0.000003
100 %		+50	1,879,999,936	0.000004
100 %		+60	1,879,999,940	0.000004
85 %	10.2	+20	1,879,999,973	0.000002
115 %	13.8	+20	1,879,999,965	0.000002
DC Power ENDPOINT	8.5 ~ 9.0	+20	1,879,999,961	0.000003



4. TEST DATA(CONTINUED)

4.5 OCCUPIED BANDWIDTH

* MEASUREMENT INSTRUMENTS

EQUIPMENT	MANUFACTURE	MODEL NO.
Spectrum Analyzer	HP, Agilent	8563E, E4402B
Audio Signal Generator	HP	8903B
Attenuator	INMET CORP.	6N25W-10

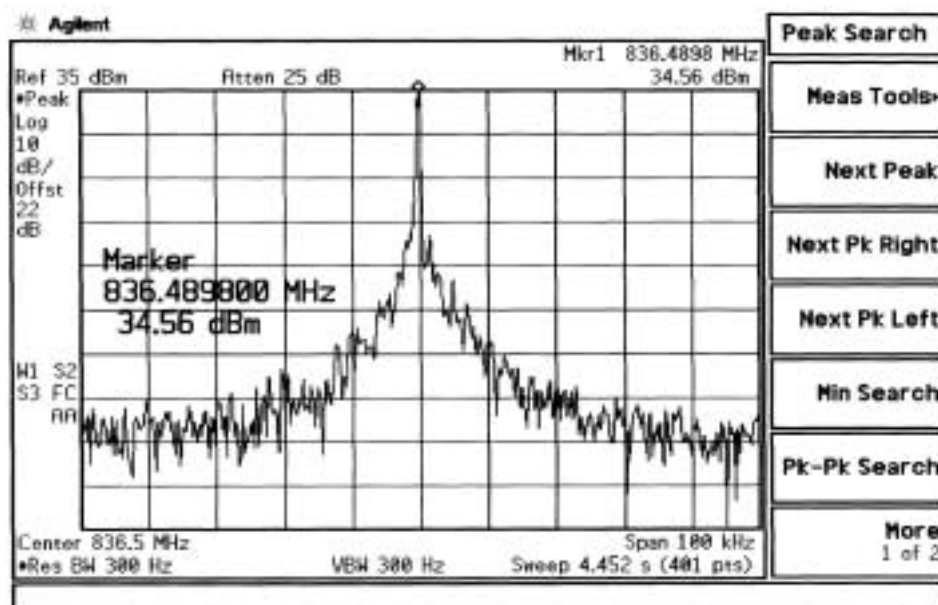
4.5.1. Un-modulated Signal

- INSTRUMENT SETTING

RBW & VBW = 300Hz

Limit: N/A

Test Result:





4. TEST DATA

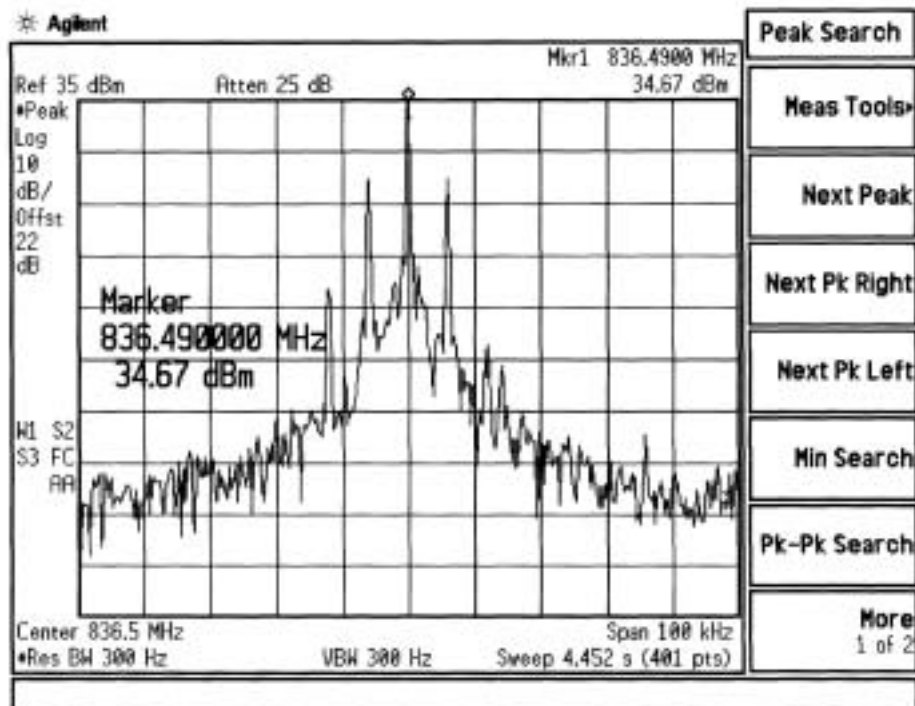
4.5.2. Signaling Tone(ST) & Supervisory Audio Tone(SAT)

- INSTRUMENT SETTING

RBW & VBW = 300Hz

Test Result:

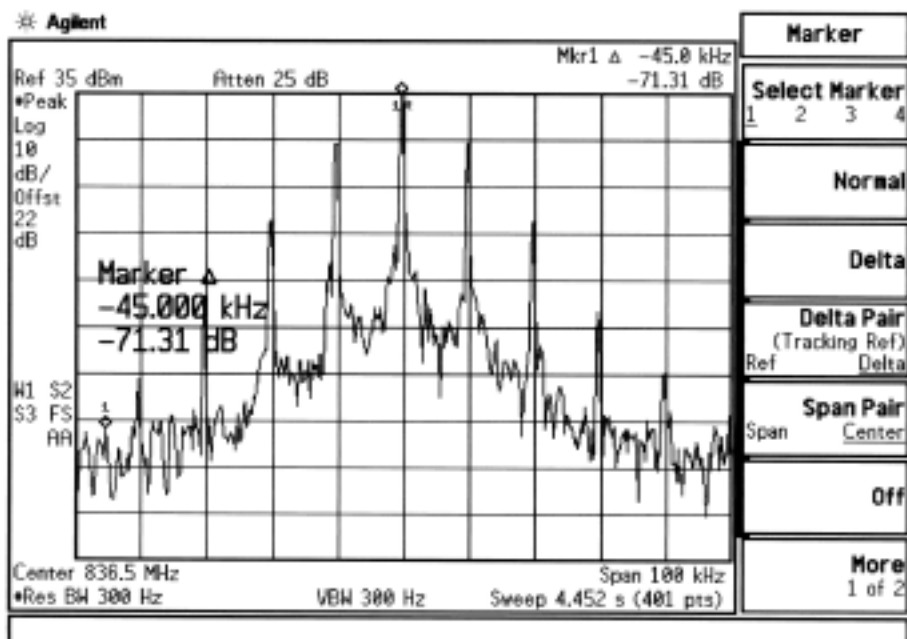
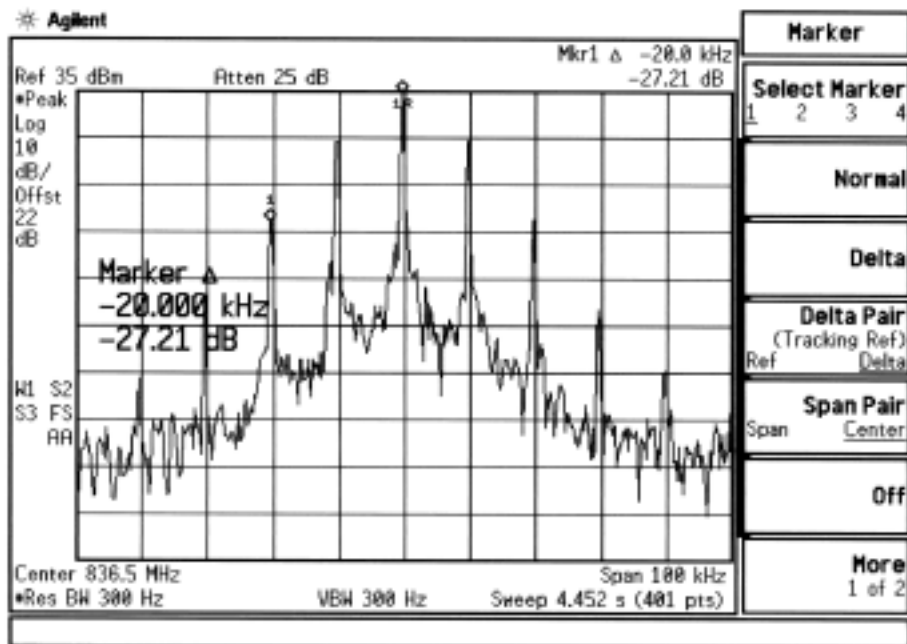
SAT(Supervisory Audio Tone)





4. TEST DATA

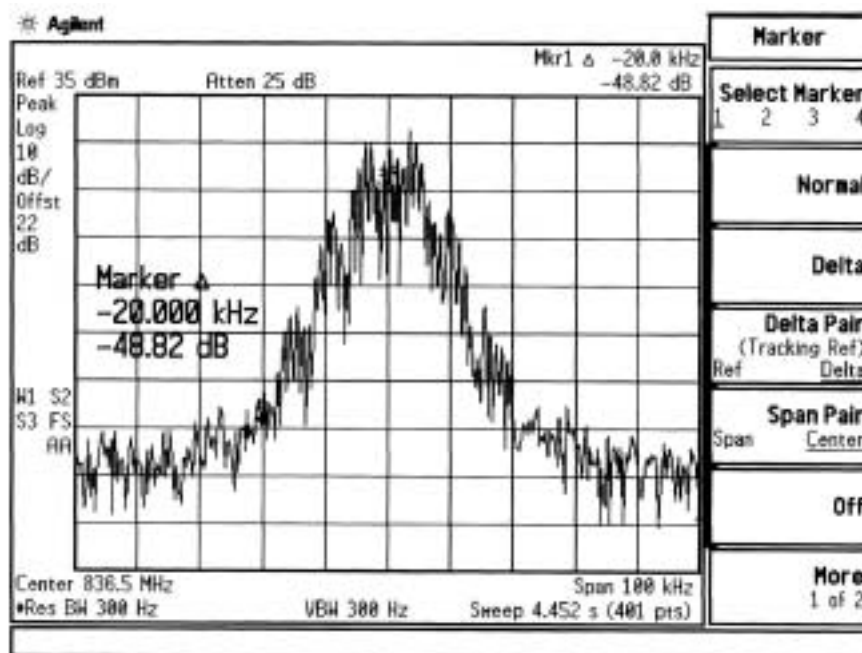
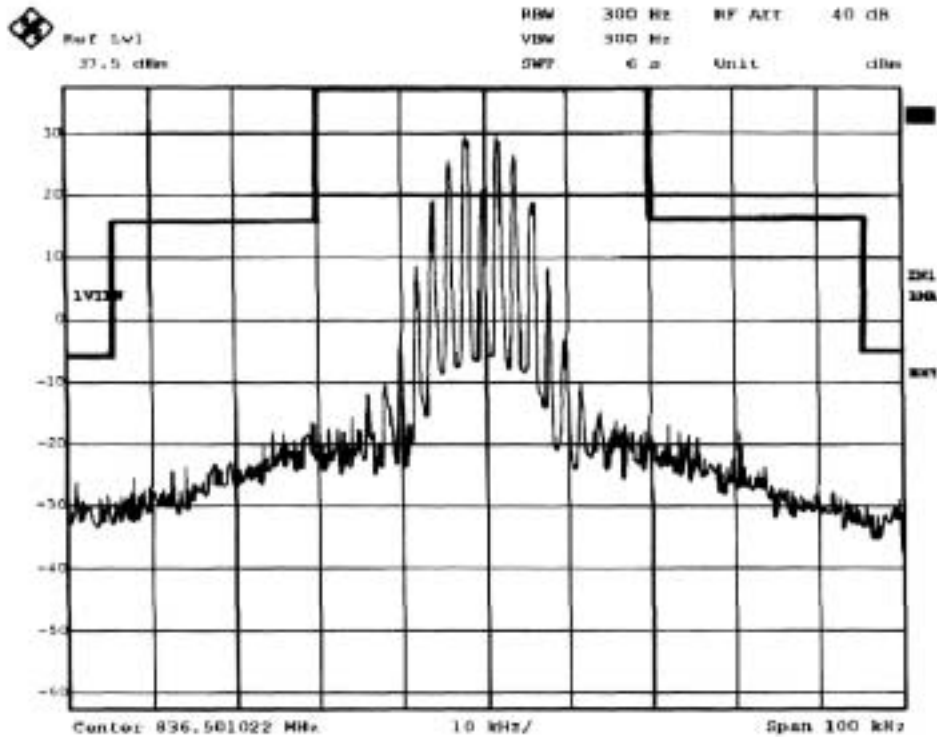
ST(Signaling Tone)





4. TEST DATA

4.5.3. Voice & Voice + SAT





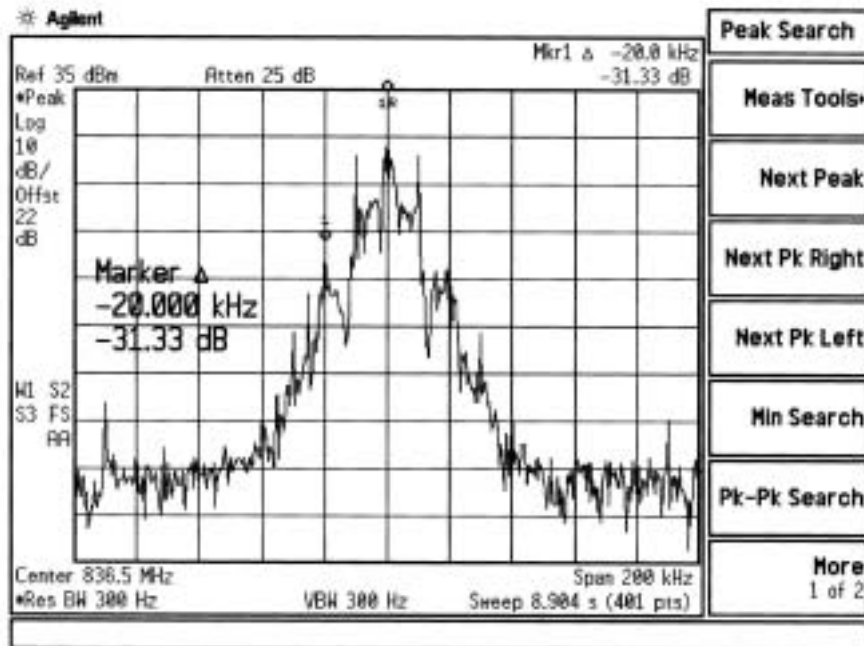
ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory

TEL: (822) 549-0485 FAX: (822) 549-0487
http://www.estech.co.kr

4. TEST DATA

4.5.4. Wide Band Data(WBD)

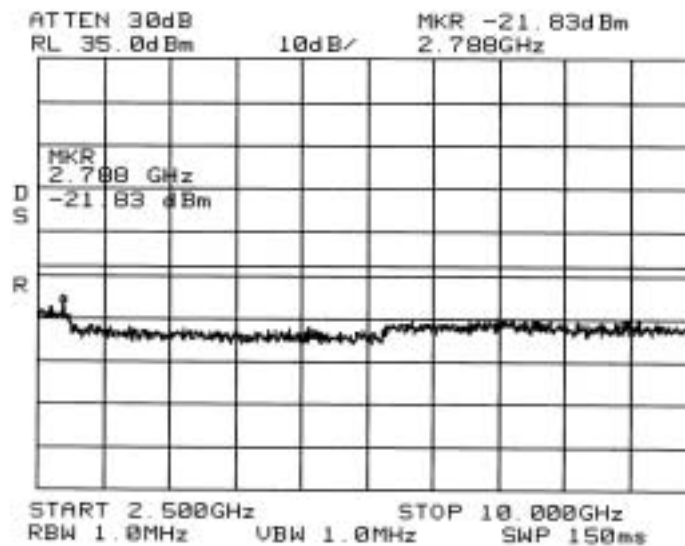
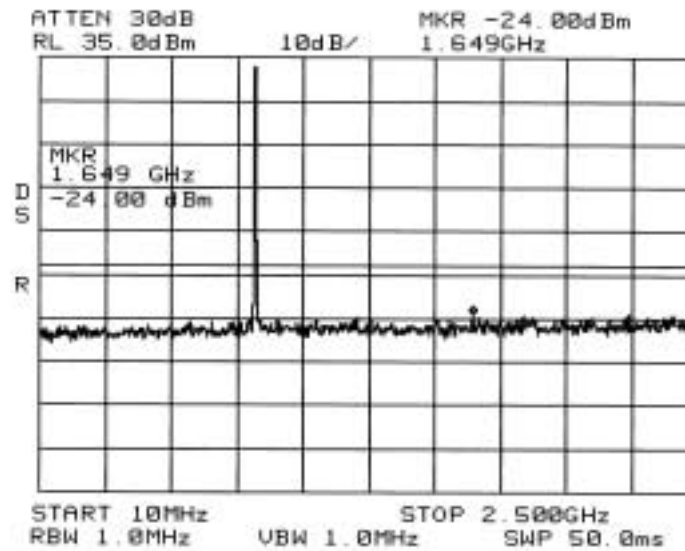




5. TEST PLOTS

5.1.1 PLOTS OF EMISSION (AMPS): OUT OF BAND

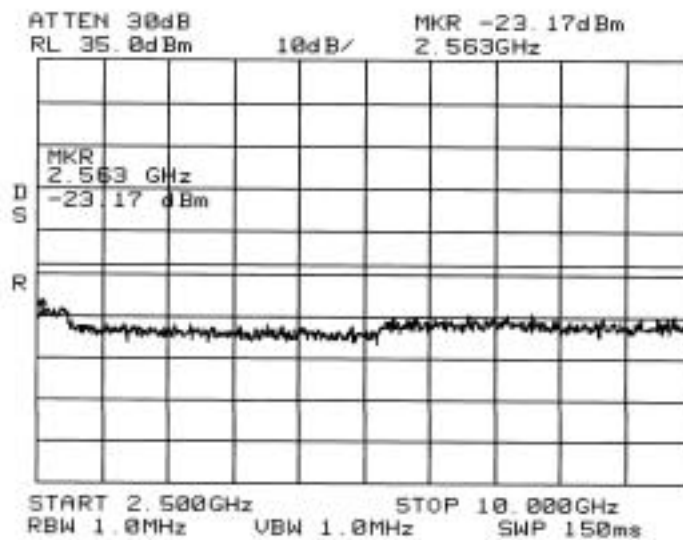
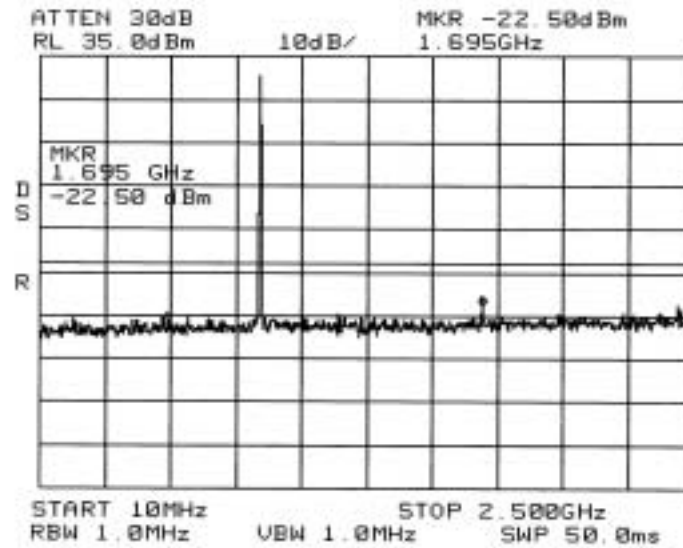
- Ch 1011





5. TEST PLOTS (CONTINUED)

- Ch 383



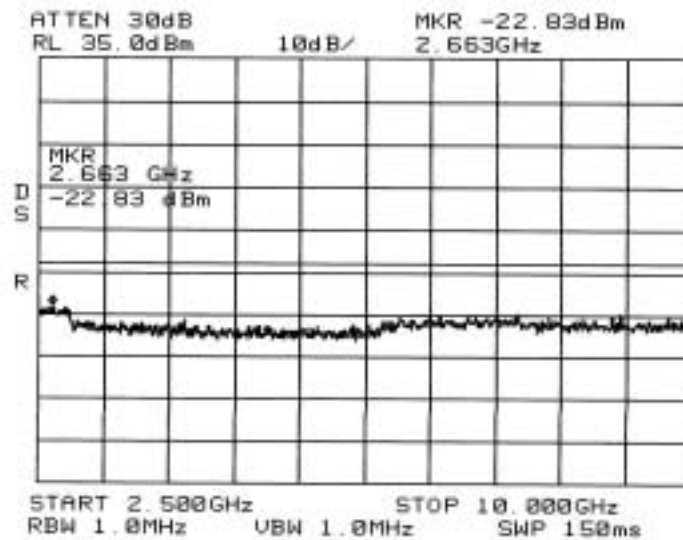
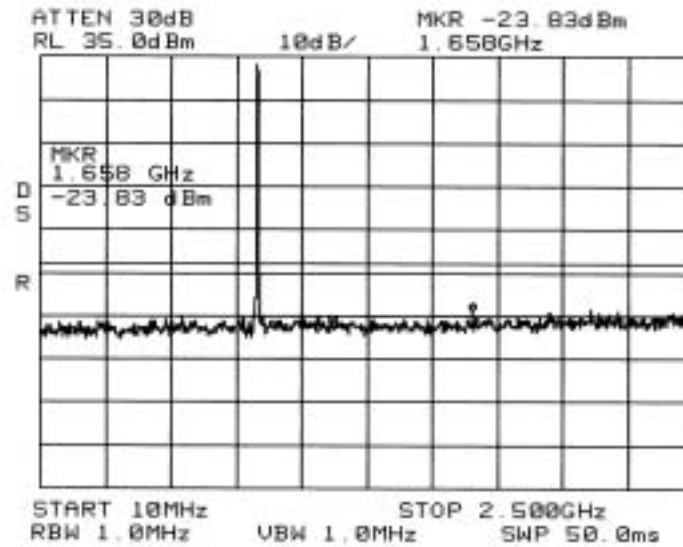


ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
http://www.estech.co.kr

5. TEST PLOTS (CONTINUED)

- Ch 779

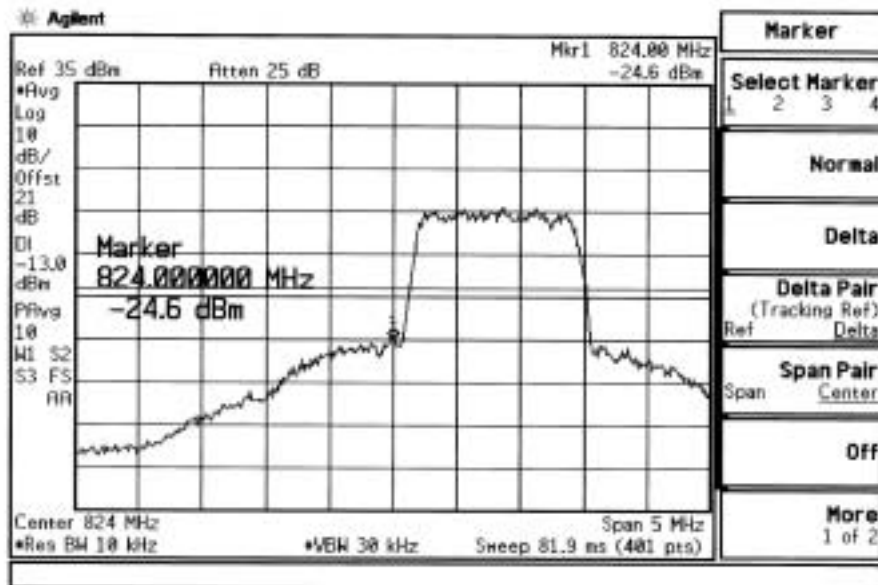




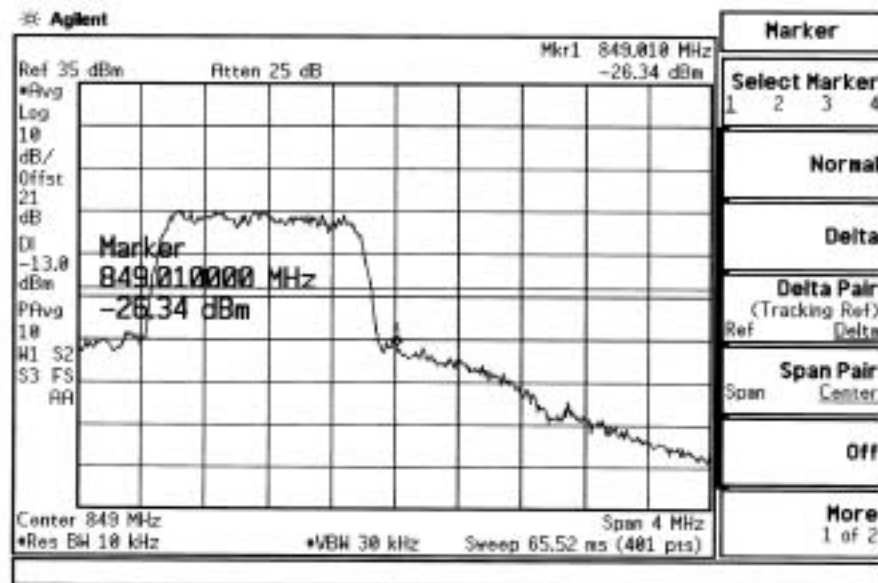
5. TEST PLOTS

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

- Ch 1017



- Ch 772

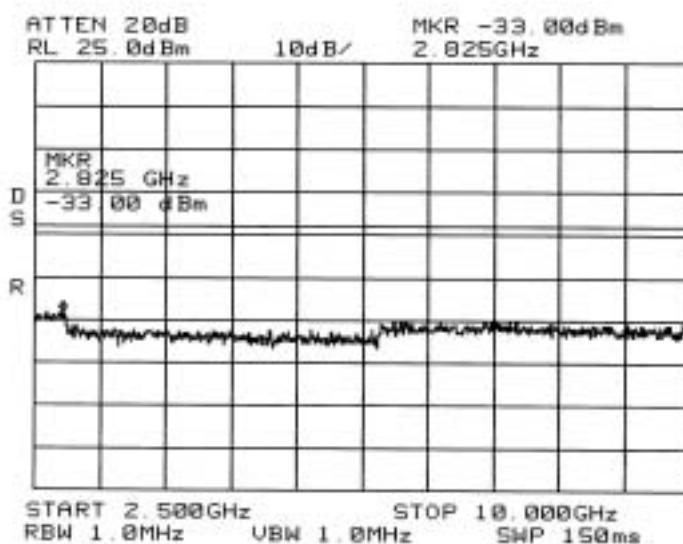
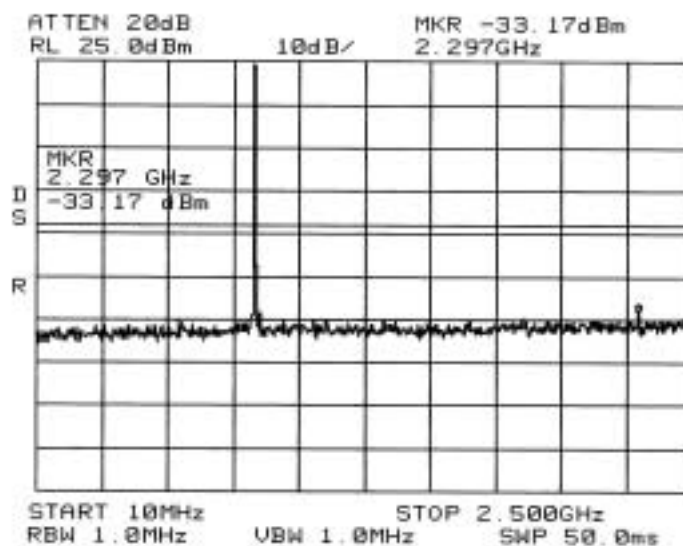




5. TEST PLOTS (CONTINUED)

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

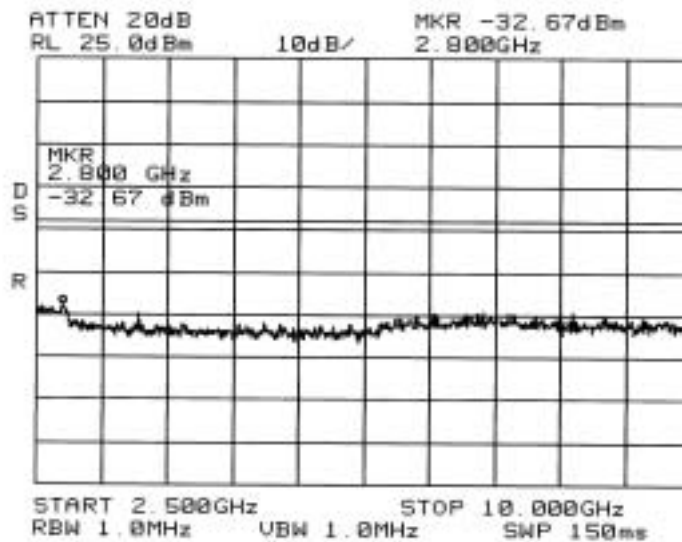
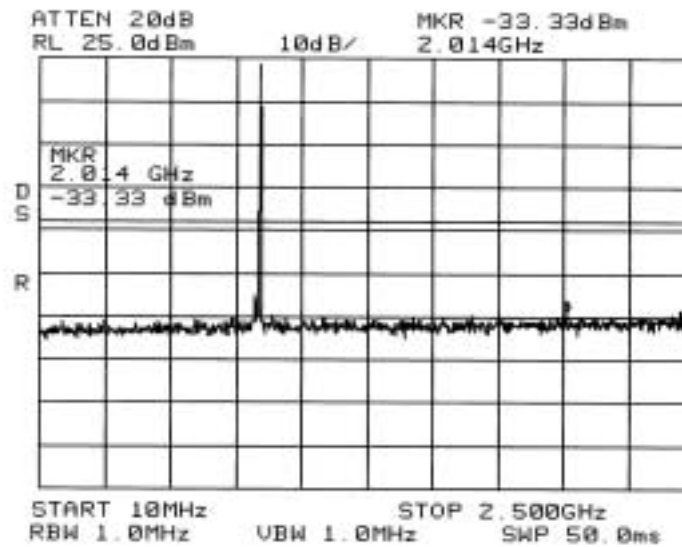
- Ch 1017





5. TEST PLOTS (CONTINUED)

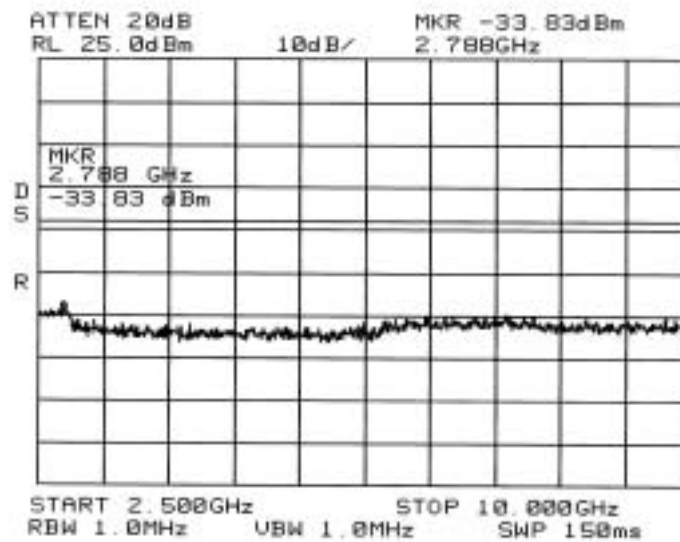
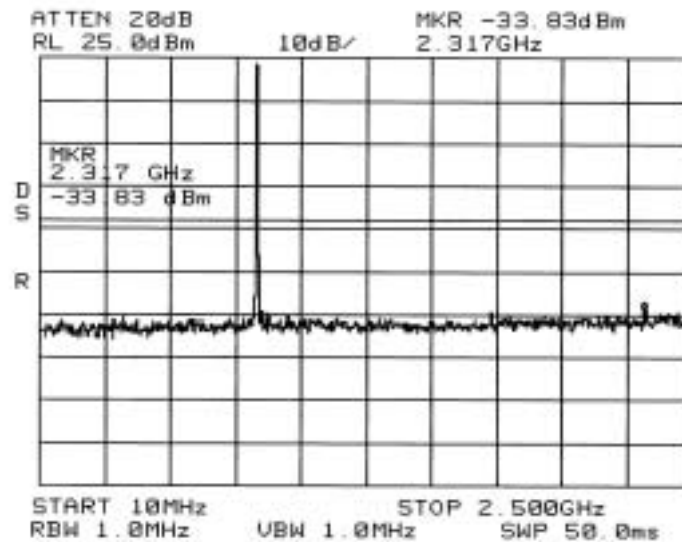
- Ch 383





5. TEST PLOTS (CONTINUED)

- Ch 772

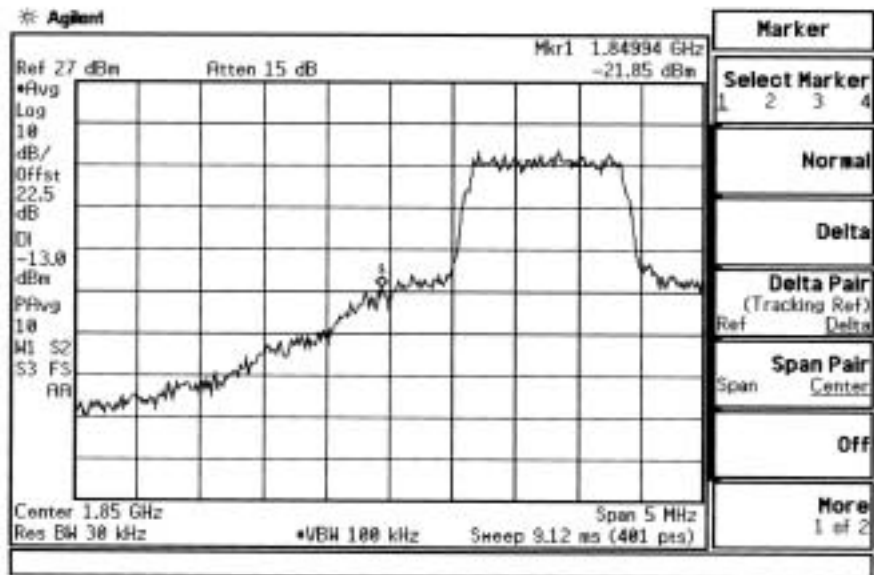




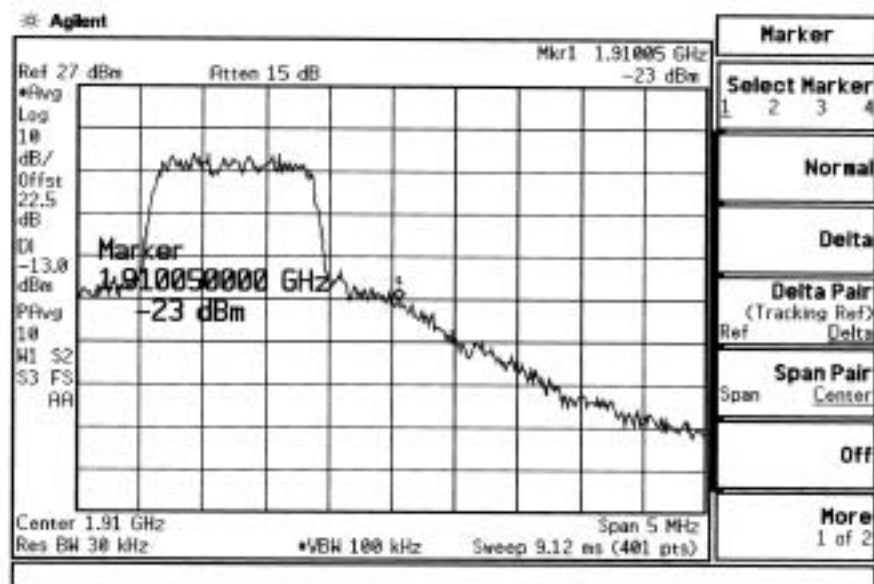
5. TEST PLOTS

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

- Ch 25



- Ch 1175

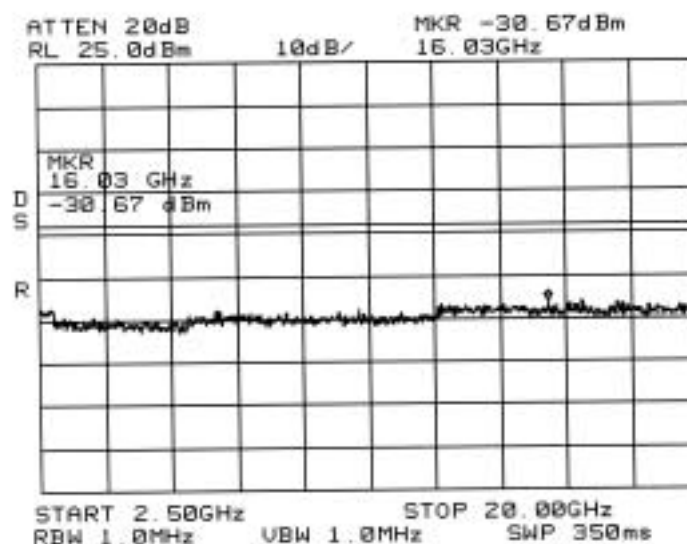
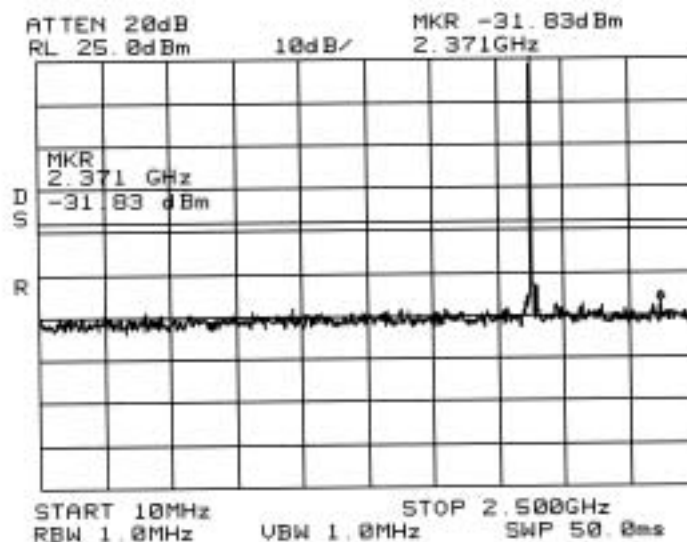




5. TEST PLOTS (CONTINUED)

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

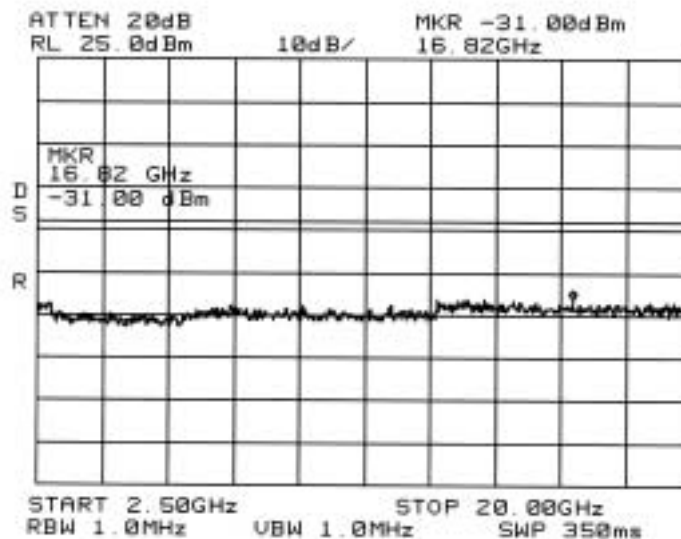
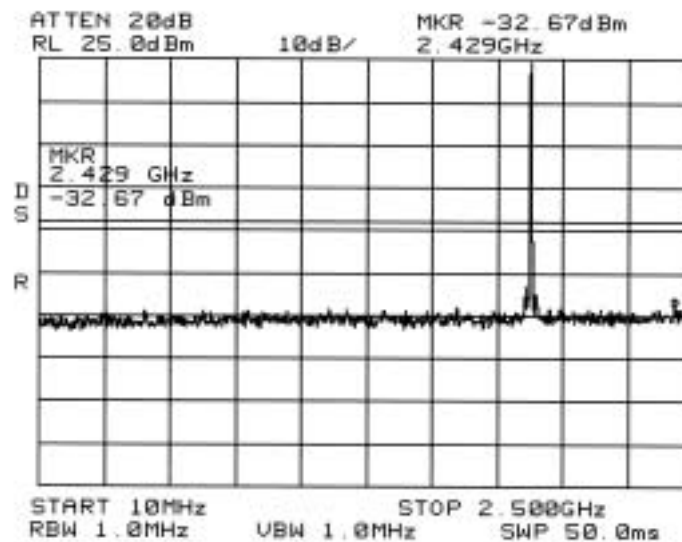
- Ch 25





5. TEST PLOTS (CONTINUED)

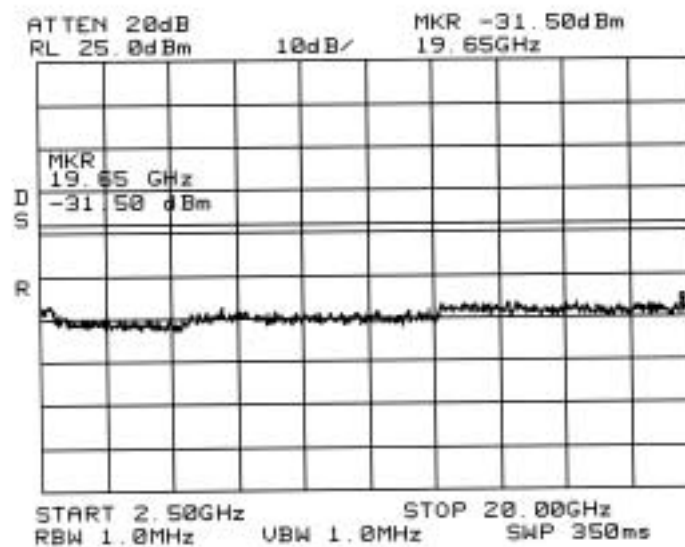
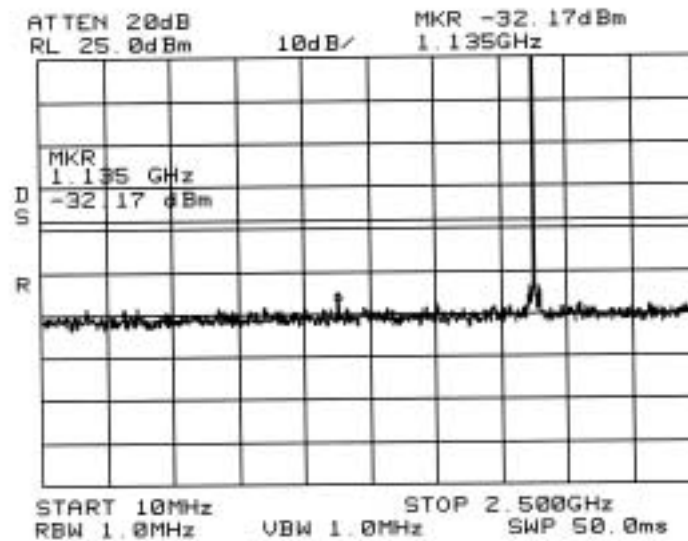
- Ch 600





5. TEST PLOTS (CONTINUED)

- Ch 1175





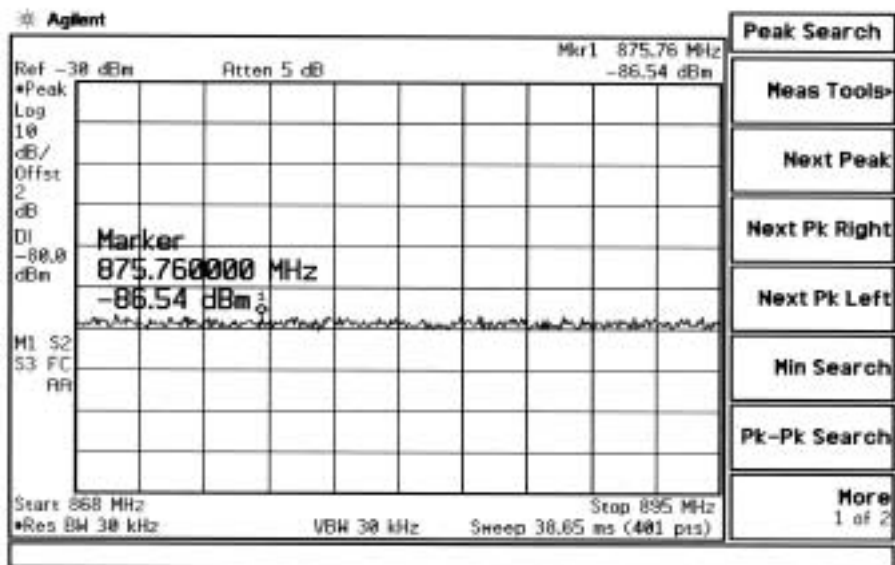
ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory

TEL: (822) 549-0485 FAX: (822) 549-0487
http://www.estech.co.kr

5. TEST PLOTS (CONTINUED)

5.2 MOBILE EMISSION IN BASE FREQUENCY RANGE

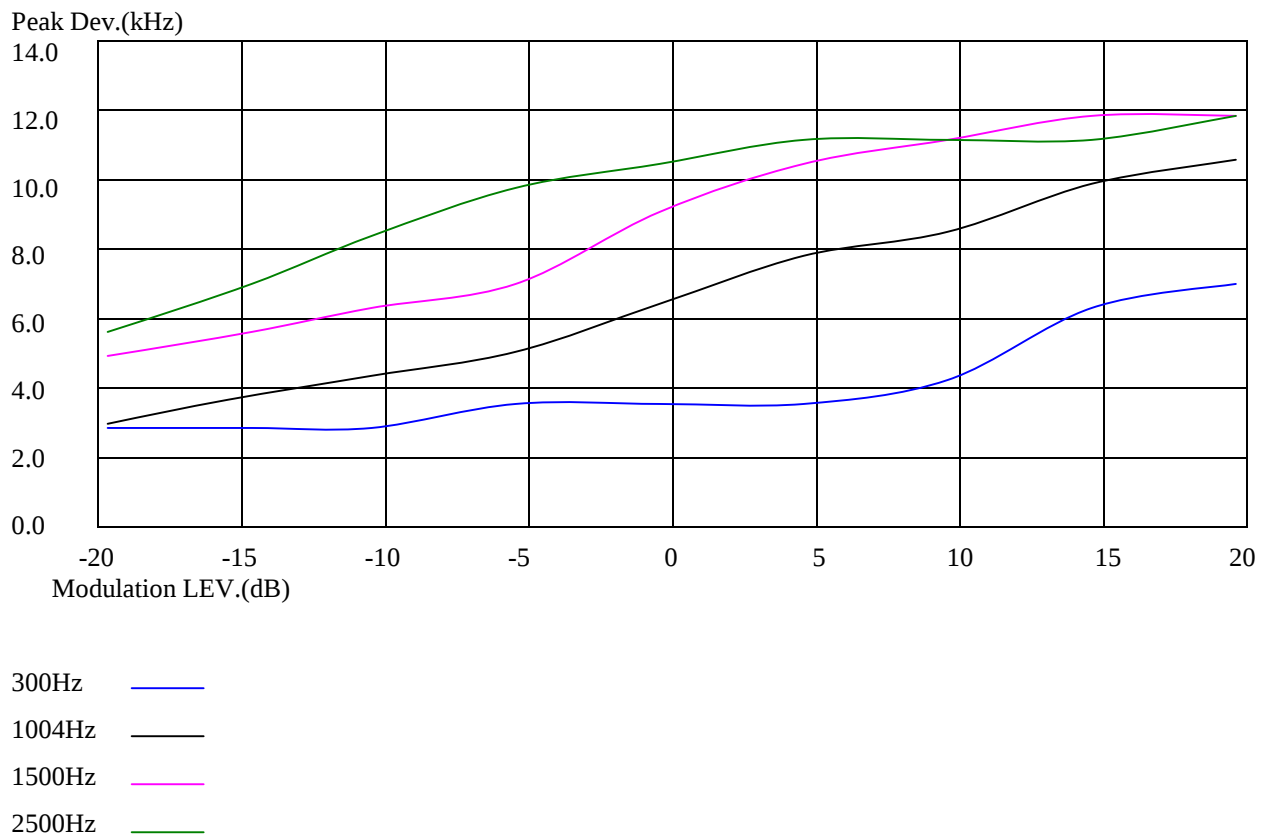




5. TEST PLOTS (CONTINUED)

5.3 MODULATION CHARACTERISTICS

5.3.1 Modulation Limit





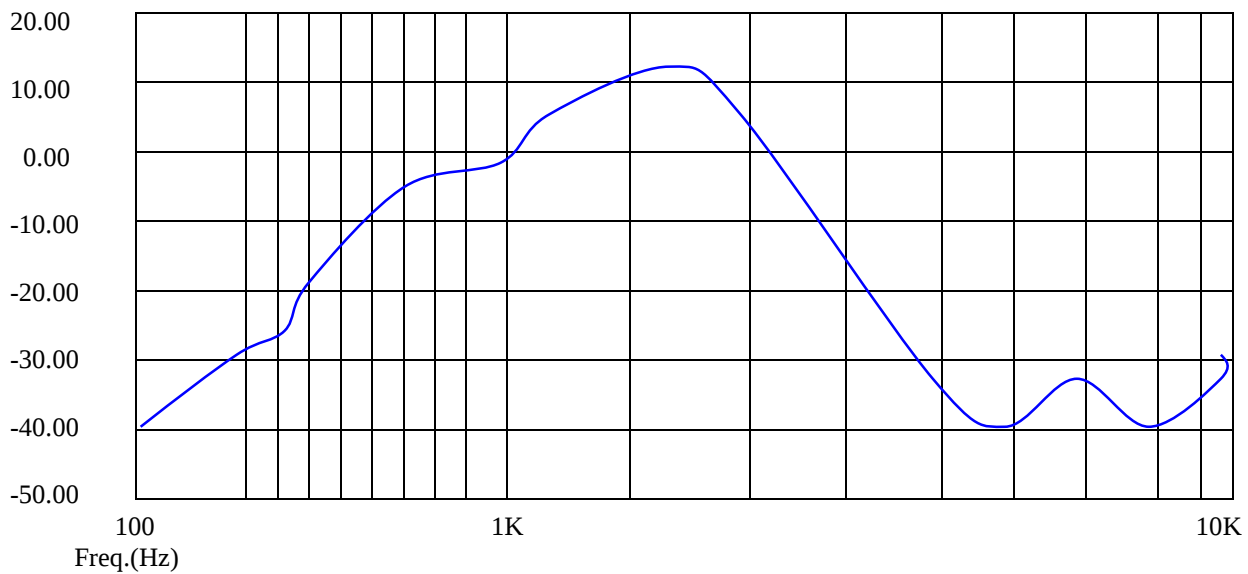
ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

5. TEST PLOTS (CONTINUED)

5.3.2 Audio Response

LEV(dB)





ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul

Testing and Certification Laboratory
TEL: (822) 549-0485 FAX: (822) 549-0487
<http://www.estech.co.kr>

5. TEST PLOTS (CONTINUED)

5.3.3 Audio Low Pass Filter Response

LEV(dB)

