SC300 @ 800 MHz CDMA BTS FRAME

TEST REPORT EXHIBIT

Index

MOTOROLA

Network Systems Group
CDMA Systems Division

FCC ID: IHET5AP1

SECTION A

SUMMARY OF RF MEASUREMENTS

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET5AP1

Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC300 @ 800MHz

Radiated Data			*Substituted Power*				*Spec*	*Result*
TX Channel	**Spurious Frequency (MHz)**	**Antenna Polarity**	**Measured Radiated Field Strength (dBuV/M)**	**Measured Radiated Field Strength (dBm)** (Note 1)	**TX Antenna Terminal Voltage (dBm)** (Note 2)	**EDRP (dBm)** (Note 3)	**FCC Part 22 MAX LIMIT (dBm)**	**Pass/ Fail**
777	**2680.1**	**V**	**55.8**	**-39.42**	**-48.02**	**-42.37**	**- 13**	**Pass**

Notes:

1. Converting dBuV/M to dBm at 3 meters
   (dBuV/M) +9.542-104.77dB=dBm
   Converting dBuV/M to dBm at 10 meters
   (dBuV/M) +20 -104.77dB=dBm
2. The same horn antenna and measurement system was used for EUT scan and during substitution method. After maximizing the receive antenna and adjusting signal generator power level to measure the same emission level with the spectrum analyzer as with the EUT. Signal generator output level was recorded for each of the spurious frequencies. Test cable was then disconnected from the transmit horn and was connected to the input of the S/A measuring the voltage at the terminals of the antenna.
3. This value was obtained by converting the Equivalent Isotropic Radiated Power (EIRP) to ideal half-wave dipole reference power - (Equivalent Di-Pole Radiated Power - EDRP) per (TIA-603, 2.2.12.2(i)(m)

Radiated Engineer

1/26/01
Date

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET5AP1**

Summary of Conducted RF Measurements

SC300 @ 800MHz

FCC Part 22 at 40 dBm output (Max power)

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBµV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
1013	2609.767	87.79	- 19.21	-13

Engineer: _____ 1/26/01
Date

MOTOROLA

Network Systems Group
CDMA Systems Division

FCC ID: IHET5AP1

SECTION B

MODULATION CHARACTERISTICS

MOTOROLA

Network Systems Group
CDMA Systems Division

SECTION B **FCC ID: IHET5AP1**

MODULATION CHARACTERISTICS

Maximum Power

Channel 1013
869.70 MHz
Maximum Power

IHET5AP1
SC300 @800 MHz
CDMA BTS

Mon Oct 30 2000

Waveform Quality (CDMA FWD Link, 9600/14400bps)

Results

ρ (Waveform Quality Factor)	0.99176	
τ (Time Alignment Error)	4.78	µs
	6	chip
Carrier Frequency Error	0.5	Hz
Carrier Feedthrough	-30.08	dBc
Magnitude Error	6.78	% rms
Phase Error	3.62	deg. rms
Error Vector Magnitude	9.24	% rms
PN Offset	0	
Ext. Trigger Delay	0.000	chip

PASS

Parameters

Frequency	:	869.700000 MHz
Reference Level	:	52.0 dBm
Attenuator	:	40.0 dB

OK...

Channel 777
893.31 MHz
Maximum Power

IHET5AP1
SC300 @800 MHz
CDMA BTS

Mon Oct 30 2000

Waveform Quality (CDMA FWD Link, 9600/14400bps)

Results

ρ (Waveform Quality Factor)	:	0.99213	
τ (Time Alignment Error)	:	4.75	µs
	:	6	chip
Carrier Frequency Error	:	0.5	Hz
Carrier Feedthrough	:	-36.98	dBc
Magnitude Error	:	6.61	% rms
Phase Error	:	3.50	deg. rms
Error Vector Magnitude	:	8.99	% rms
PN Offset	:	0	
Ext. Trigger Delay	:	0.000	chip

Parameters

PASS

Frequency	:	893.310000 MHz
Reference Level	:	52.0 dBm
Attenuator	:	40.0 dB

OK...

MOTOROLA

Network Systems Group
CDMA Systems Division

SECTION B **FCC ID: IHET5AP1**

MODULATION CHARACTERISTICS

Minimum Power

Channel 1013
869.70 MHz
Minimum Power

IHET5AP1
SC300 @800 MHz
CDMA BTS

Mon Oct 30 2000

Waveform Quality (CDMA FWD Link, 9600/14400bps)

Results

ρ (Waveform Quality Factor)	:	0.98610	
τ (Time Alignment Error)	:	4.83	µs
	:	6	chip
Carrier Frequency Error	:	-0.1	Hz
Carrier Feedthrough	:	-21.99	dBc
Magnitude Error	:	8.73	% rms
Phase Error	:	4.69	deg. rms
Error Vector Magnitude	:	11.87	% rms
PN Offset	:	0	
Ext. Trigger Delay	:	0.000	chip

PASS

Parameters

Frequency	:	869.700000 MHz
Reference Level	:	35.0 dBm
Attenuator	:	20.0 dB

OK...

Channel 777
893.31 MHz
Minimum Power

IHET5AP1
SC300 @800 MHz
CDMA BTS

Mon Oct 30 2000

Waveform Quality (CDMA FWD Link, 9600/14400bps)

Results

ρ (Waveform Quality Factor)	0.99202	
τ (Time Alignment Error)	4.76	µs
	6	chip
Carrier Frequency Error	0.9	Hz
Carrier Feedthrough	-36.58	dBc
Magnitude Error	6.63	% rms
Phase Error	3.52	deg. rms
Error Vector Magnitude	9.03	% rms
PN Offset	0	
Ext. Trigger Delay	0.000	chip

PASS

Parameters

Frequency	:	893.310000 MHz
Reference Level	:	52.0 dBm
Attenuator	:	40.0 dB

OK...

MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET5AP1

SECTION C

Spurious & Harmonic Emissions Radiated

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET5AP1

Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC300 @ 800MHz

Radiated Data			*Substituted Power*				*Spec*	*Result*
TX Channel	**Spurious Frequency (MHz)**	**Antenna Polarity**	**Measured Radiated Field Strength (dBuV/M)**	**Measured Radiated Field Strength (dBm)** (Note 1)	**TX Antenna Terminal Voltage (dBm)** (Note 2)	**EDRP (dBm)** (Note 3)	**FCC Part 22 MAX LIMIT (dBm)**	**Pass/ Fail**
777	**2680.1**	**V**	**55.8**	**-39.42**	**-48.02**	**-42.37**	**- 13**	**Pass**
777	**4465.112**	**H**	**38.9**	**-56.33**	**-76.3**	**-69.15**	**- 13**	**Pass**
1013	**2609.65**	**V**	**48.4**	**-46.83**	**-56.6**	**-51.05**	**- 13**	**Pass**
1013	**3477.435**	**H**	**45.4**	**-49.83**	**-54.9**	**-48.95**	**- 13**	**Pass**

Notes:

1. Converting dBuV/M to dBm at 3 meters
   (dBuV/M) +9.542-104.77dB=dBm
   Converting dBuV/M to dBm at 10 meters
   (dBuV/M) +20 -104.77dB=dBm
2. The same horn antenna and measurement system was used for EUT scan and during substitution method. After maximizing the receive antenna and adjusting signal generator power level to measure the same emission level with the spectrum analyzer as with the EUT. Signal generator output level was recorded for each of the spurious frequencies. Test cable was then disconnected from the transmit horn and was connected to the input of the S/A measuring the voltage at the terminals of the antenna.
3. This value was obtained by converting the Equivalent Isotropic Radiated Power (EIRP) to ideal half-wave dipole reference power - (Equivalent Di-Pole Radiated Power - EDRP) per (TIA-603, 2.2.12.2(i)(m)

Radiated Engineer Date 1/26/01

MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET5AP1

SECTION D

Spurious & Harmonic Emissions Conducted

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET5AP1**

Conducted RF Measurements

SC300 @ 800MHz

FCC Part 22 at 40 dBm output (Max power)

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBμV/meter)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
777	2679.58	86.69	- 20.31	-13
1013	2609.767	87.79	- 19.21	-13

FCC Max. Limit Per 47 CFR:

" =Transmitted Power ($10 \log_{10} (P_{watt})$) - ($43 + 10 \log_{10} (P_{watt})$)dBW

" =$10 \log_{10} (P_{watt})$ - ($43 + 10 \log_{10} (P_{watt})$)dBW

" =-43 dBW

" =-13 dBm

Conversion from dBuV to dBm: dBuV-107 = dBm

Engineer: _____ 1/26/01
Date

MOTOROLA

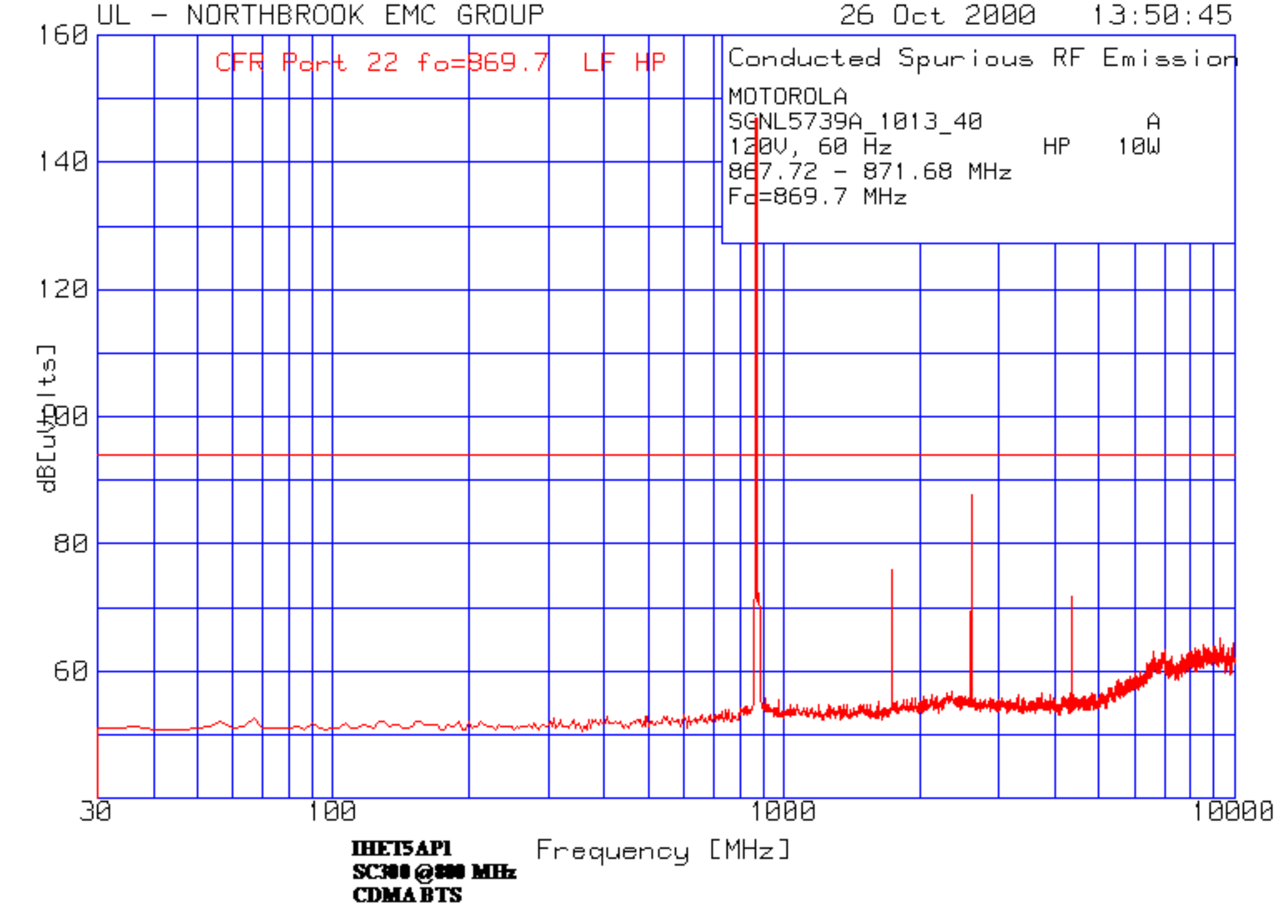
Network Systems Group
CDMA Systems Division

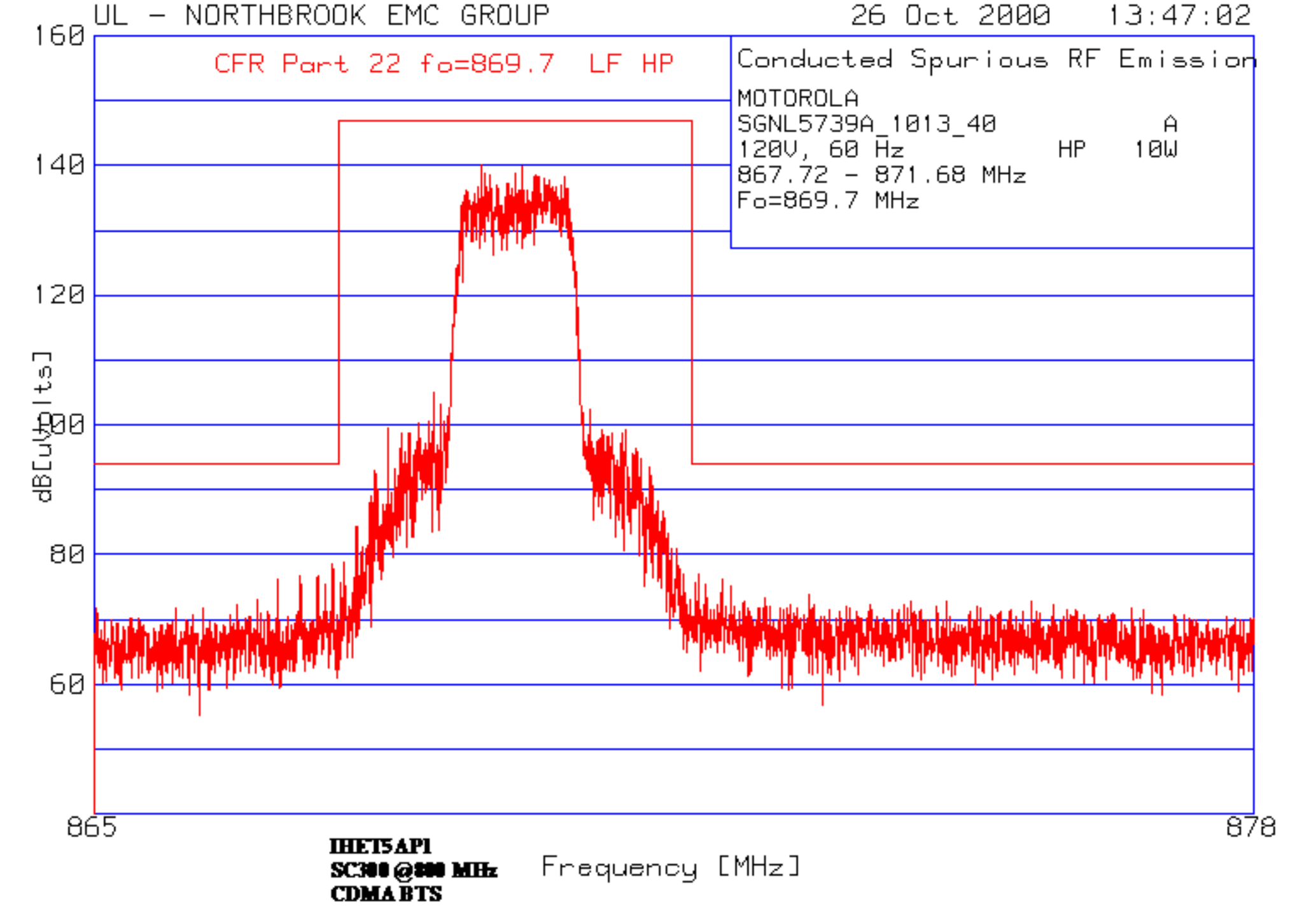
SECTION D **FCC ID: IHET5AP1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Maximum Power


UL - NORTHBROOK EMC GROUP
26 Oct 2000 13:50:45
CFR Part 22 fo=869.7 LF HP
Conducted Spurious RF Emission
MOTOROLA
SGNL5739A_1013_40 A
120V, 60 Hz HP 10W
867.72 - 871.68 MHz
Fc=869.7 MHz
160
140
120
100
80
60
dB[uVolts]
30
100
1000
10000
Frequency [MHz]
IHET5AP1
SC300 @800 MHz
CDMA BTS


UL – NORTHBROOK EMC GROUP
26 Oct 2000 13:47:02
CFR Part 22 fo=869.7 LF HP
Conducted Spurious RF Emission
MOTOROLA
SGNL5739A_1013_40 A
120V, 60 Hz HP 10W
867.72 - 871.68 MHz
Fo=869.7 MHz
160
140
120
100
80
60
dB[uVolts]
865
878
IHET5AP1
SC300 @800 MHz
CDMA BTS
Frequency [MHz]

MOTOROLA

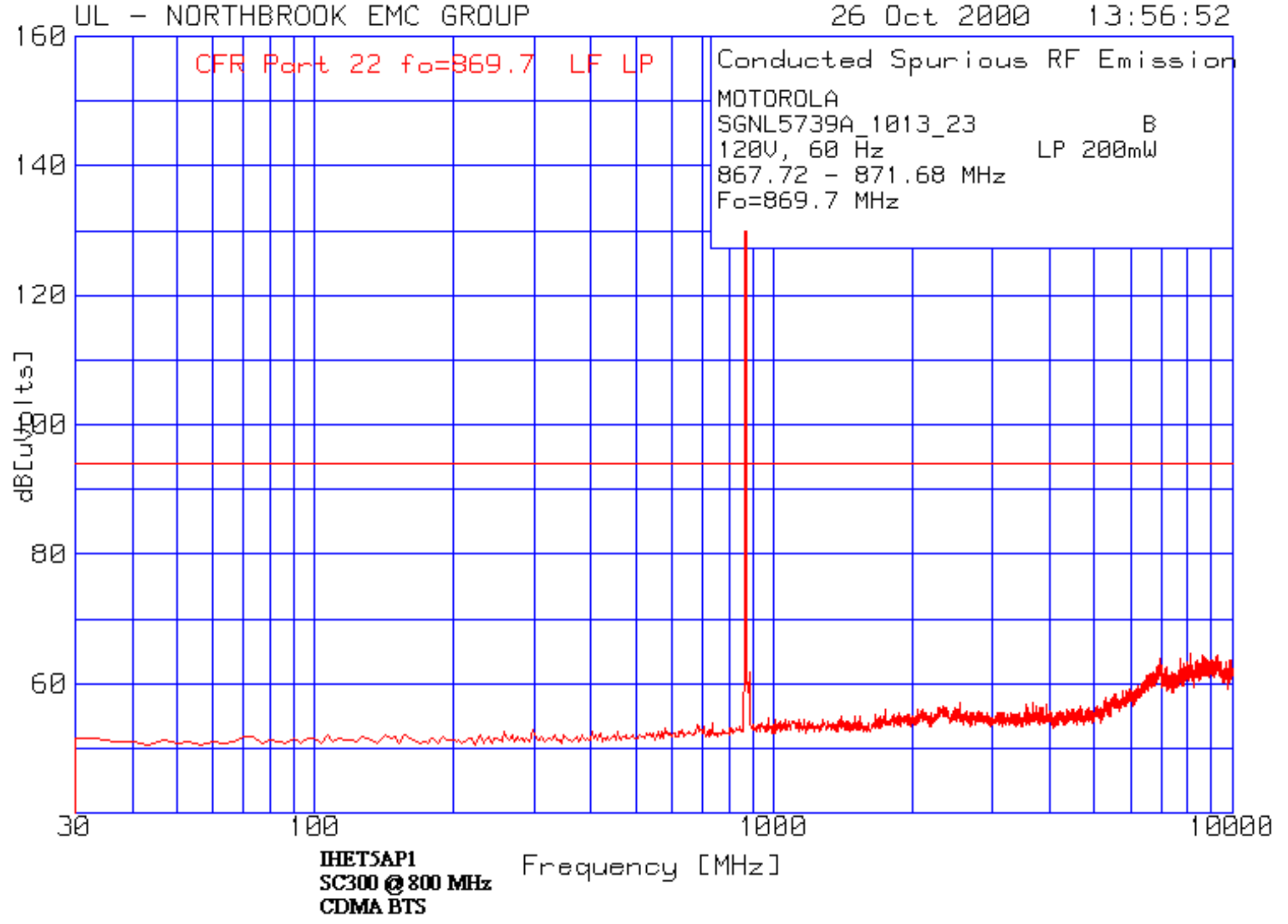
Network Systems Group
CDMA Systems Division

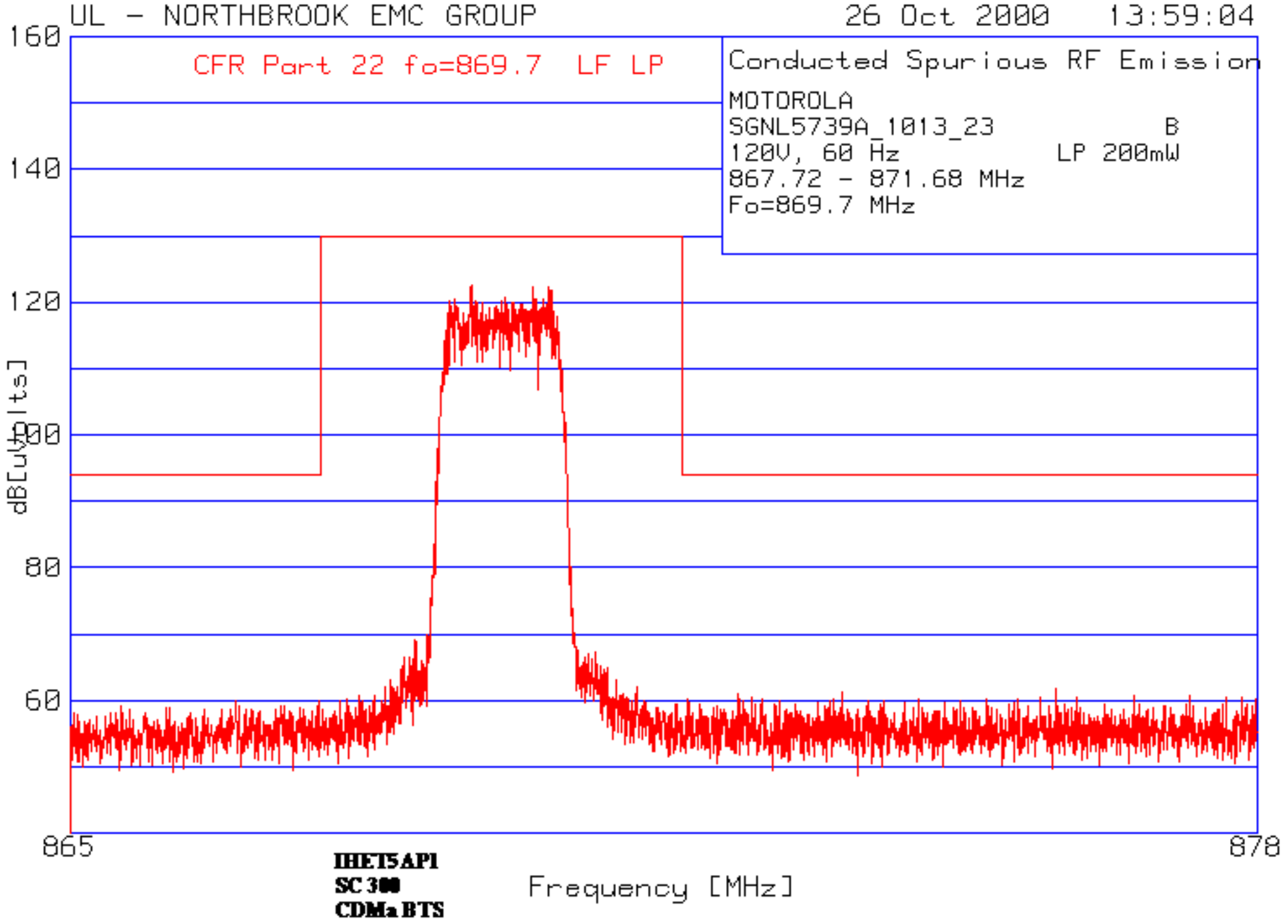
SECTION D **FCC ID: IHET5AP1**

SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Minimum Power


UL – NORTHBROOK EMC GROUP
26 Oct 2000 13:56:52
CFR Part 22 fo=869.7 LF LP
Conducted Spurious RF Emission
MOTOROLA
SGNL5739A_1013_23 B
120V, 60 Hz LP 200mW
867.72 - 871.68 MHz
Fo=869.7 MHz
160
140
120
100
80
60
dB[uVolts]
30
100
1000
10000
Frequency [MHz]
IHETSAP1
SC300 @ 800 MHz
CDMA BTS


UL - NORTHBROOK EMC GROUP
26 Oct 2000 13:59:04
CFR Part 22 fo=869.7 LF LP
Conducted Spurious RF Emission
MOTOROLA
SGNL5739A_1013_23 B
120V, 60 Hz LP 200mW
867.72 - 871.68 MHz
Fo=869.7 MHz
160
140
120
100
80
60
dB[uVolts]
865
878
Frequency [MHz]
IHET5API
SC 300
CDMa BTS