SC4812ETL @ 800 MHz CDMA BTS FRAME

TEST REPORT EXHIBIT

Index

MOTOROLA

Network Systems Group
CDMA Systems Division

FCC ID: IHET5AP2

SECTION A

SUMMARY OF RF MEASUREMENTS

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET5AP2

Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812ETL @ 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	**1786.844**	**H**	**45.4**	**-49.828**	**-58.3**	**-53.35**	**- 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 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)

12/17/00

Radiated Engineer Date

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET5AP2**

Summary of Conducted RF Measurements

SC4812ETL @ 800MHz

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBµV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
777	2679.58	92.23	-14.77	-13

Engineer: _____ 12/17/00

Date

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SECTION B

MODULATION CHARACTERISTICS

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SECTION B **FCC ID: IHET5AP2**

MODULATION CHARACTERISTICS

Maximum Power

Channel 1013
869.70 MHz
Maximum Power

IHET5AP2
SC4812ETL @ 800 MHz
CDMA BTS Frame

Fri Oct 27 2000 17:02

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

Results

ρ (Waveform Quality Factor)	0.98320	
τ (Time Alignment Error)	0.92	µs
	1	chip
Carrier Frequency Error	-1.8	Hz
Carrier Feedthrough	-33.13	dBc
Magnitude Error	9.28	% rms
Phase Error	5.42	deg. rms
Error Vector Magnitude	13.16	% rms
PN Offset	0	
Ext. Trigger Delay	0.000	chip

Parameters

PASS

Frequency	869.700000 MHz
Reference Level	57.0 dBm
Attenuator	40.0 dB

OK...

Channel 777
893.31 MHz
Maximum Power

IHET5AP2
SC4812ETL @ 800 MHz
CDMA BTS Frame

Fri Oct 27 2000 16:52

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

Results

ρ (Waveform Quality Factor)	:	0.98219	
τ (Time Alignment Error)	:	0.87	µs
	:	1	chip
Carrier Frequency Error	:	-2.4	Hz
Carrier Feedthrough	:	-33.77	dBc
Magnitude Error	:	9.51	% rms
Phase Error	:	5.95	deg. rms
Error Vector Magnitude	:	13.97	% rms
PN Offset	:	0	
Ext. Trigger Delay	:	0.000	chip

Parameters

PASS

Frequency	:	893.310000 MHz
Reference Level	:	57.0 dBm
Attenuator	:	40.0 dB

OK...

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SECTION B **FCC ID: IHET5AP2**

MODULATION CHARACTERISTICS

Minimum Power

Channel 1013
869.70 MHz
Minimum Power

IHET5AP2
SC4812ETL @ 800 MHz
CDMA BTS Frame

Fri Oct 27 2000 16:58

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

Results

ρ (Waveform Quality Factor)	:	0.98321	
τ (Time Alignment Error)	:	0.92	µs
	:	1	chip
Carrier Frequency Error	:	-2.6	Hz
Carrier Feedthrough	:	-33.64	dBc
Magnitude Error	:	9.24	% rms
Phase Error	:	5.54	deg. rms
Error Vector Magnitude	:	13.27	% rms
PN Offset	:	0	
Ext. Trigger Delay	:	0.000	chip

Parameters

PASS

Frequency	:	869.700000 MHz
Reference Level	:	34.0 dBm
Attenuator	:	20.0 dB

OK...

Channel 777
893.31 MHz
Minimum Power

IHET5AP2
SC4812ETL @ 800 MHz
CDMA BTS Frame

Fri Oct 27 2000 16:55

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

Results

ρ (Waveform Quality Factor)	:	0.98284	
τ (Time Alignment Error)	:	0.87	µs
	:	1	chip
Carrier Frequency Error	:	0.3	Hz
Carrier Feedthrough	:	-39.36	dBc
Magnitude Error	:	9.32	% rms
Phase Error	:	5.43	deg. rms
Error Vector Magnitude	:	13.20	% rms
PN Offset	:	0	
Ext. Trigger Delay	:	0.000	chip

Parameters

PASS

Frequency	:	893.310000 MHz
Reference Level	:	34.0 dBm
Attenuator	:	20.0 dB

OK...

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FCC ID: IHET5AP2

SECTION C

SPURIOUS & HARMONIC EMISSIONS RADIATED

APPLICANT: MOTOROLA TRANSCEIVER TYPE: IHET5AP2

Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC4812ETL @ 800 MHz

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	**1786.844**	**H**	**45.4**	**-49.828**	**-58.3**	**-53.35**	**- 13**	**Pass**
777	**2680.217**	**V**	**33.7**	**-61.528**	**-70.9**	**-65.25**	**- 13**	**Pass**
1013	**1739.55**	**H**	**40.2**	**-55.028**	**-64.2**	**59.35**	**- 13**	**Pass**
1013	**1739.353**	**V**	**29.1**	**-66.128**	**-76.2**	**-71.35**	**- 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 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 12/17/00 Date

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SECTION D

SPURIOUS & HARMONIC

EMISSIONS CONDUCTED

NOTE: The plots for conducted spurious and harmonic emissions are measured in peak mode. The higher (than 46.0 dBm) levels measured in peak mode are expected, due to typical CDMA peak to average performance. The average power level was set to 46.0 dBm using an HP438A power meter.

APPLICANT: MOTOROLA **TRANSCEIVER TYPE: IHET5AP2**

Conducted RF Measurements

SC4812ETL @ 800MHz

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBµV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
777	2679.58	92.23	-14.77	-13
1013	2609.767	91.61	-15.39	-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

dBuV-107 = dBm

Engineer: _____ 12/17/00

Date

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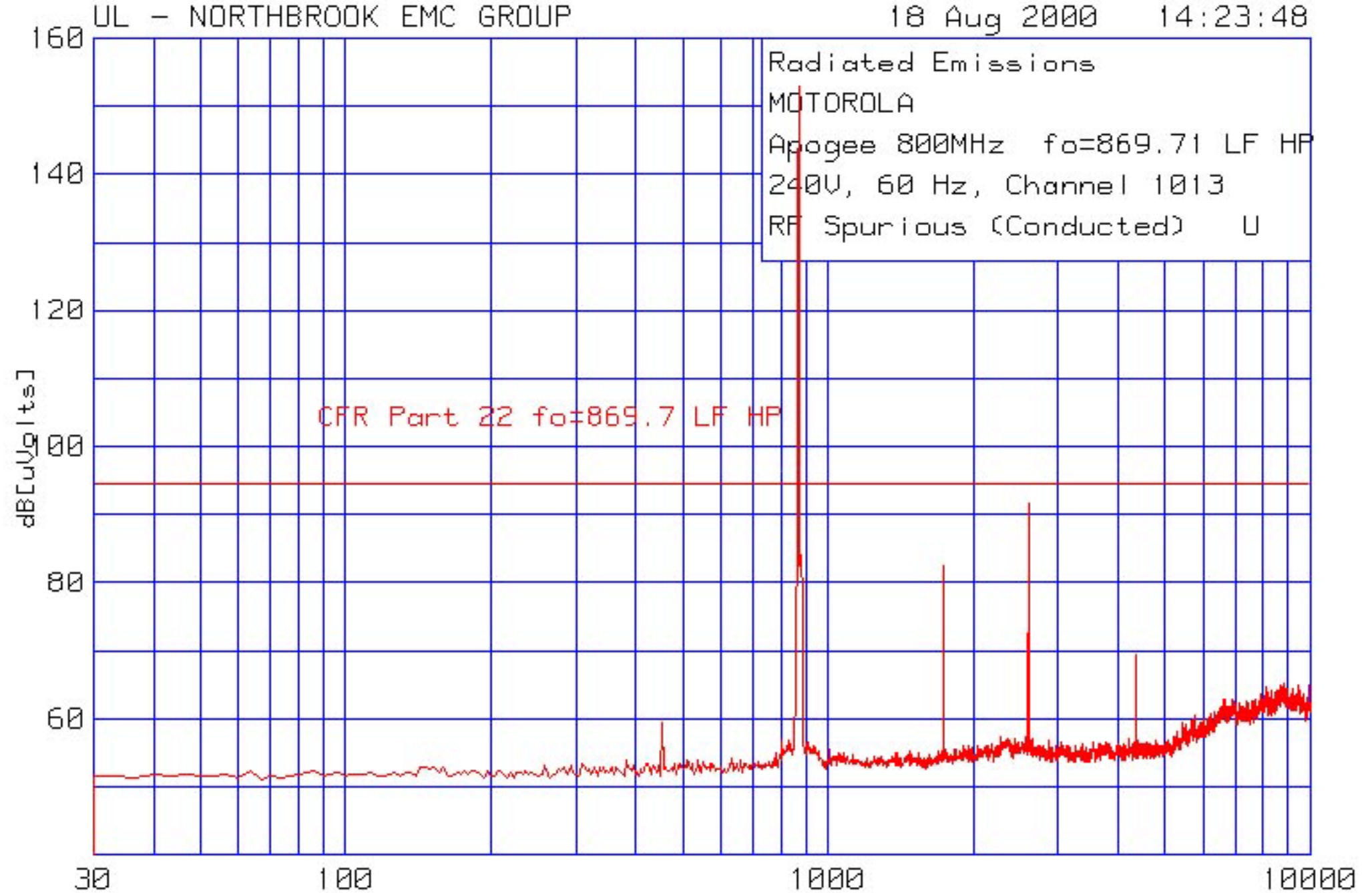
SECTION D **FCC ID: IHET5AP2**

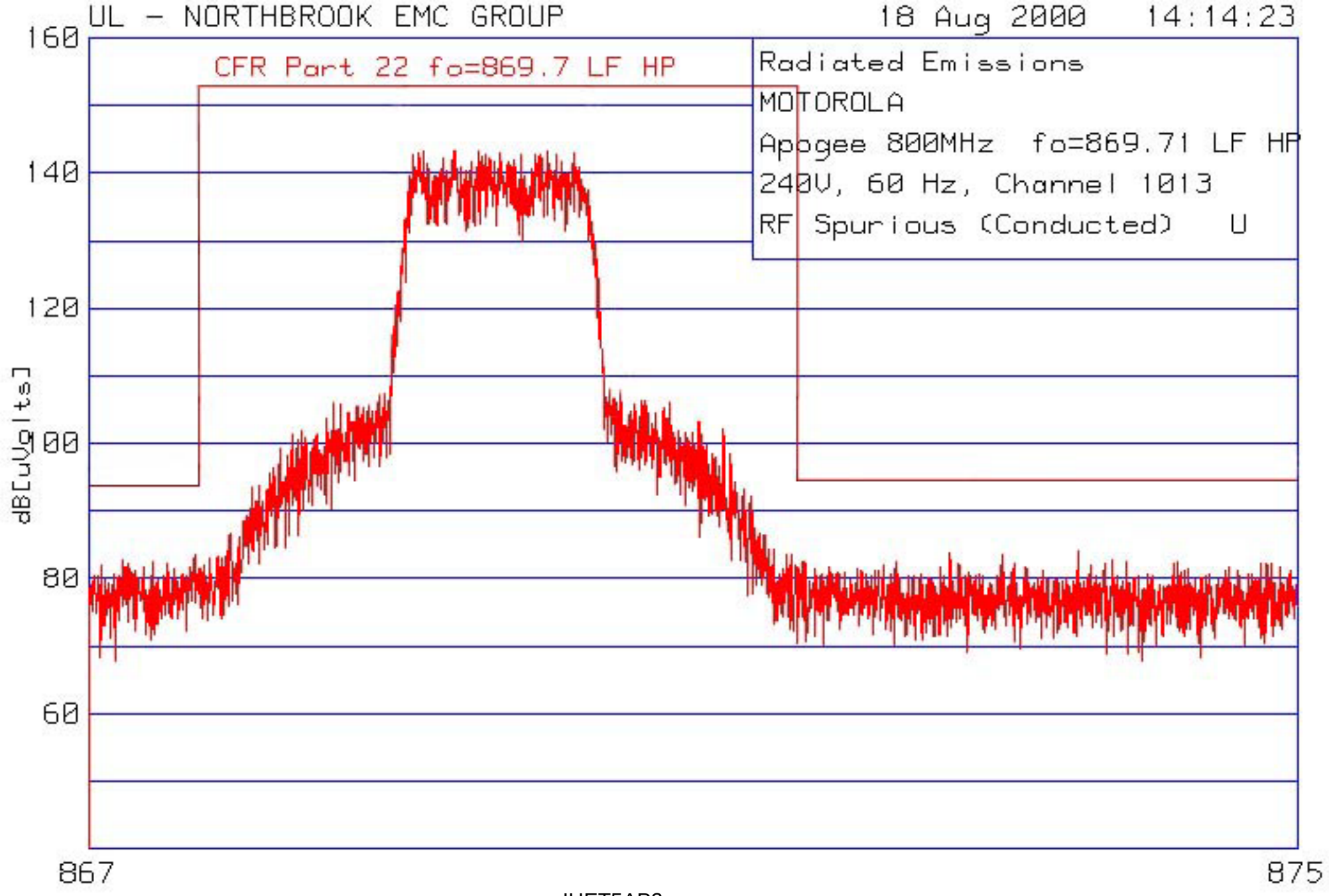
SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Maximum Power



IHET5AP2
SC4812ETL @ 800MHz
CDMA BTS



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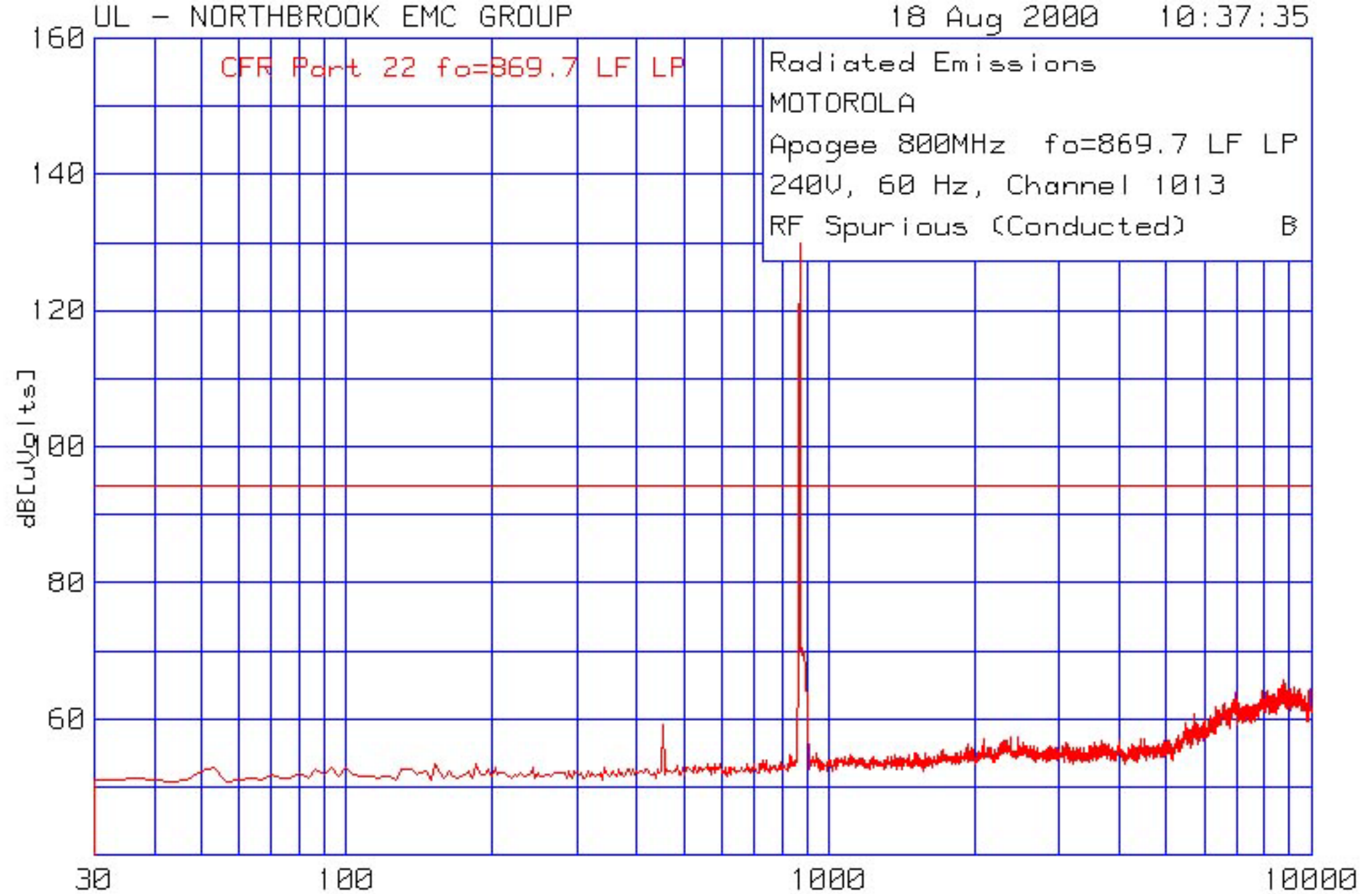
SECTION D **FCC ID: IHET5AP2**

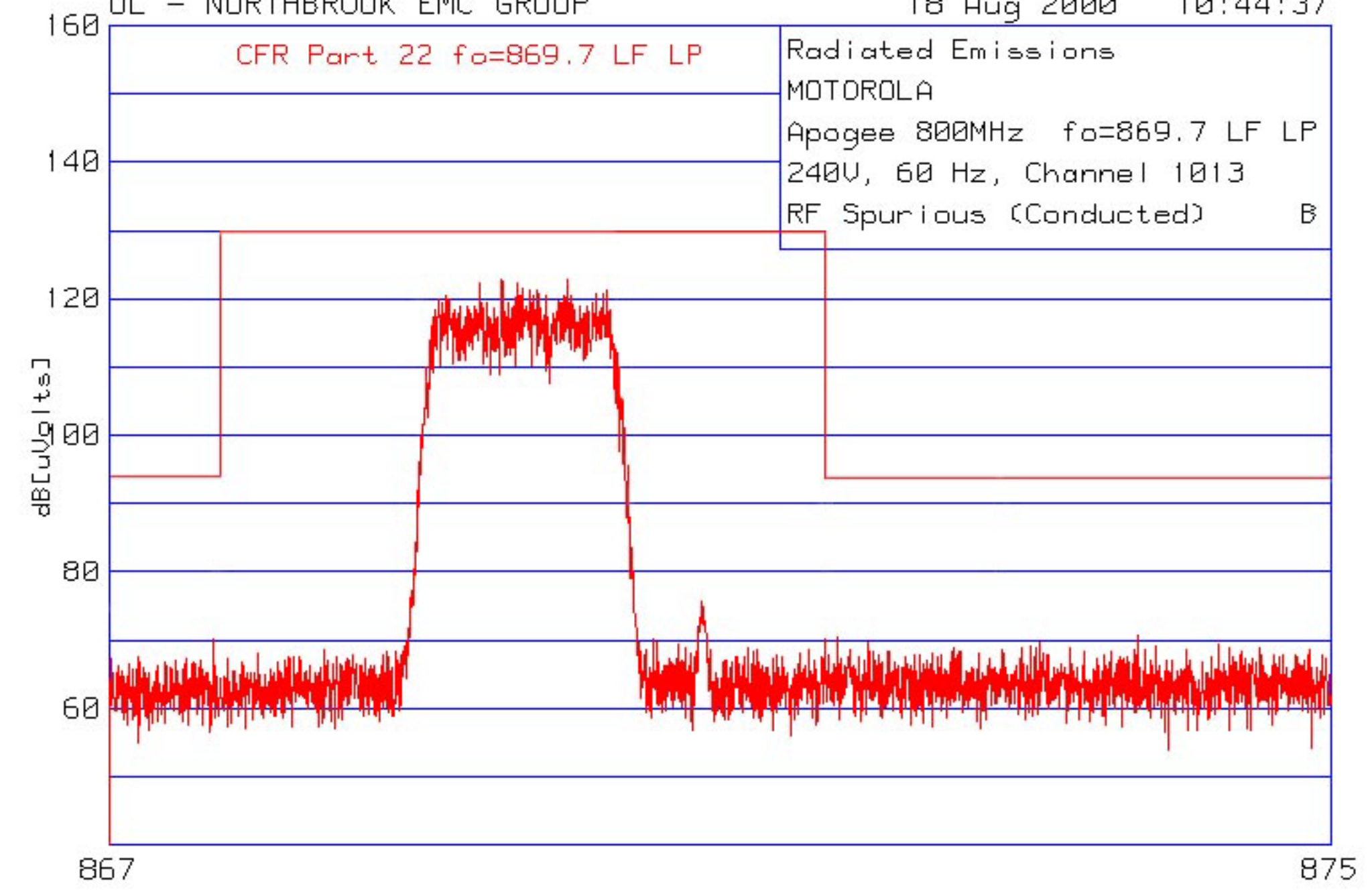
SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1013

Minimum Power



IHET5AP2
SC4812ETL @ 800MHz
CDMA BTS



IHET5AP2
SC4812ETL @ 800MHz
CDMA BTS