

SC300 @ 1.9 GHz CDMA BTS FRAME

TEST REPORT EXHIBIT

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MOTOROLA

*Network Systems Group
CDMA Systems Division*

FCC ID: IHET6AQ2

SECTION A

SUMMARY OF RF MEASUREMENTS

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6AQ2

Summary of Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC300 @ 1.9 GHz

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 24 MAX LIMIT (dBm)	Pass/Fail
1175	1988.71	H	58.8	-36.35	-35.43	-30.38	-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

3/22/01

Date

APPLICANT: MOTOROLA

TRANSCIVER TYPE: IHET6AQ2

Summary of Conducted RF Measurements

SC300 @ 1.9 GHz

FCC Part 24 at 40 dBm output (Max power)

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBμV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
25	13696.207	87.39	-19.61	-13

Engineer:



3/27/01
Date



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SECTION B

MODULATION CHARACTERISTICS



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SECTION B

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MODULATION CHARACTERISTICS

Maximum Power

Wed Mar 7 2001 15:08

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

Results

ρ (Waveform Quality Factor) :	0.98994	
τ (Time Alignment Error) :	4.78	μs
	6	chip
Carrier Frequency Error :	0.1	Hz
Carrier Feedthrough :	-24.35	dBc
Magnitude Error :	7.21	% rms
Phase Error :	6.32	deg. rms
Error Vector Magnitude :	13.09	% rms
PN Offset :	0	
Ext. Trigger Delay :	0.000	chip

Parameters

Frequency	:	1.988750000 GHz
Reference Level	:	52.2 dBm
Attenuator	:	40.0 dB

PASS

OK...

Wed Mar 7 2001 12:31

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

Results

ρ (Waveform Quality Factor) :	0.99223	
τ (Time Alignment Error) :	4.95	μs
	6	chip
Carrier Frequency Error :	-0.3	Hz
Carrier Feedthrough :	-38.48	dBc
Magnitude Error :	6.09	% rms
Phase Error :	7.79	deg. rms
Error Vector Magnitude :	14.79	% rms
PN Offset :	0	
Ext. Trigger Delay :	0.000	chip

Parameters

PASS

Frequency	:	1.931250000 GHz
Reference Level	:	52.2 dBm
Attenuator	:	40.0 dB



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SECTION B

FCC ID: IHET6AQ2

MODULATION CHARACTERISTICS

Minimum Power

Channel 1175
1988.75 MHz
Minimum Power

IHET6AQ2
SC300 @ 1.9 GHz
CDMA BTS

Wed Mar 7 2001 15:03

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

Results

ρ (Waveform Quality Factor) :	0.99096	
τ (Time Alignment Error) :	4.72	μs
	6	chip
Carrier Frequency Error :	-0.9	Hz
Carrier Feedthrough :	-25.50	dBc
Magnitude Error :	6.88	% rms
Phase Error :	4.79	deg. rms
Error Vector Magnitude :	10.78	% rms
PN Offset :	0	
Ext. Trigger Delay :	0.000	chip

Parameters

PASS

Frequency	:	1.988750000 GHz
Reference Level	:	35.0 dBm
Attenuator	:	20.0 dB

OK...

Wed Mar 7 2001 14:58

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

Results

ρ (Waveform Quality Factor) :	0.99347	
τ (Time Alignment Error) :	4.92	μs
	6	chip
Carrier Frequency Error :	-0.3	Hz
Carrier Feedthrough :	-39.69	dBc
Magnitude Error :	6.01	% rms
Phase Error :	4.12	deg. rms
Error Vector Magnitude :	9.35	% rms
PN Offset :	0	
Ext. Trigger Delay :	0.000	chip

Parameters

Frequency	:	1.931250000 GHz
Reference Level	:	35.0 dBm
Attenuator	:	20.0 dB

PASS

OK...



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FCC ID: IHET6AQ2

SECTION C

Spurious & Harmonic Emissions Radiated

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6AQ2

Radiated RF Measurements

Worst Case Radiated RF Spur Levels for SC300 @ 1.9GHz

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 24 MAX LIMIT (dBm)	Pass/Fail
25	1931.38	H	51.08	-44.15	-42.7	-37.65	-13	Pass
25	3862.51	V	50.33	-44.90	-44.64	-39.09	-13	Pass
1175	1988.71	H	58.88	-36.35	-35.43	-30.38	-13	Pass
1175	1988.81	V	53.57	-41.66	-39.88	-34.83	-13	Pass

Notes:

1. Converting dBuV/M to dBm at 3 meters
 $(\text{dBuV/M}) + 9.542 - 104.77 \text{ dB} = \text{dBm}$
 Converting dBuV/M to dBm at 10 meters
 $(\text{dBuV/M}) + 20 - 104.77 \text{ dB} = \text{dBm}$
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

3/22/01
 Date



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SECTION D

Spurious & Harmonic Emissions Conducted

APPLICANT: MOTOROLA

TRANSCIVER TYPE: IHET6AQ2

Conducted RF Measurements

SC300 @ 1.9 GHz

FCC Part 24 at 40 dBm output (Max power)

CHANNEL	FREQUENCY (MHz)	SPUR LEVEL MEASURED (dBμV)	SPUR LEVEL MEASURED (dBm)	FCC MAX LIMIT dBm
25	13696.207	87.39	-19.61	-13
1175	13852.004	86.2	-20.8	-13

FCC Max. Limit Per 47 CFR:

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

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

" =-43 dBW

" =-13 dBm

Conversion from dBuV to dBm:

$\text{dBuV} - 107 = \text{dBm}$

Engineer:  3/27/01
Date



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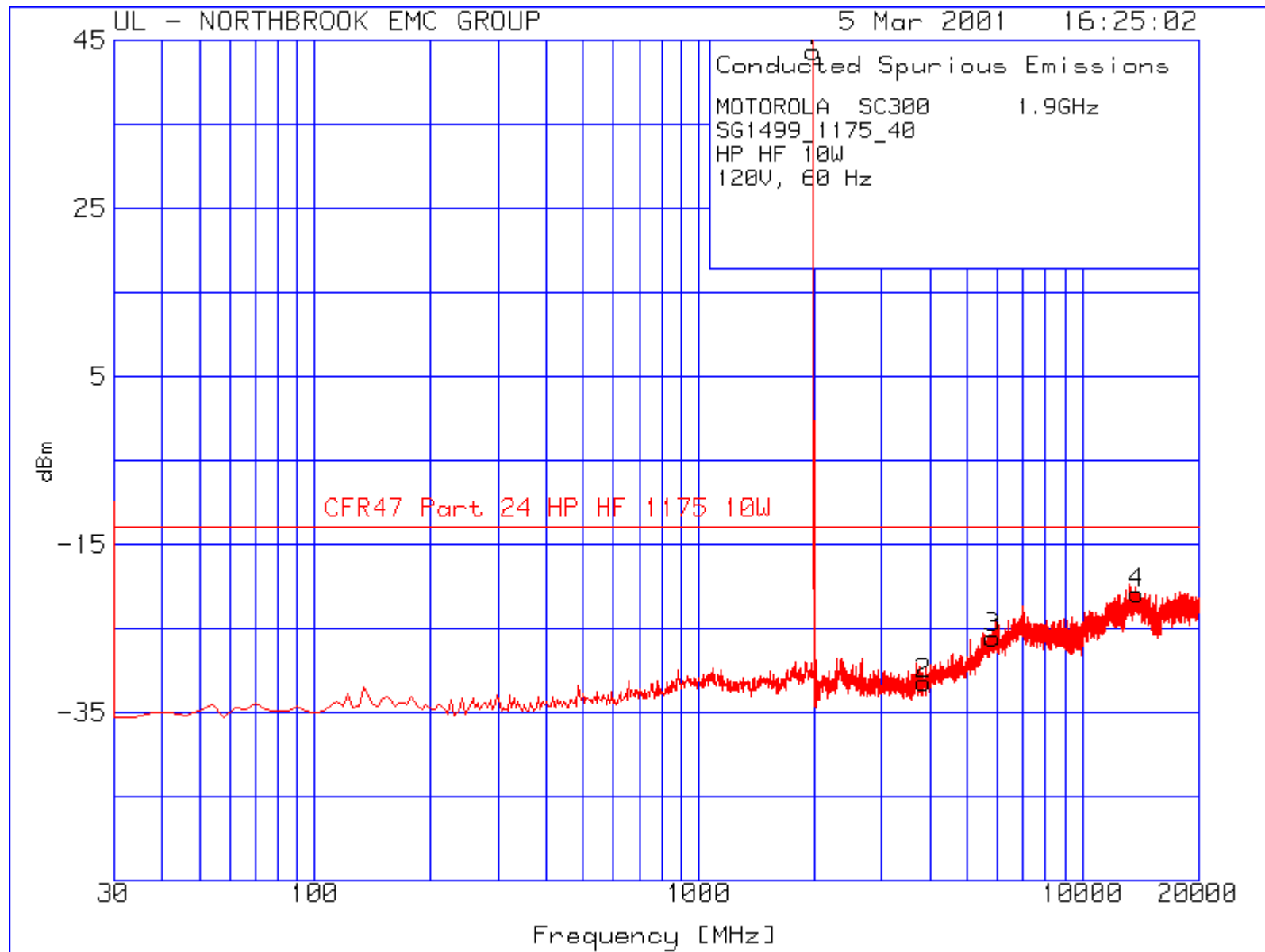
SECTION D

FCC ID: IHET6AQ2

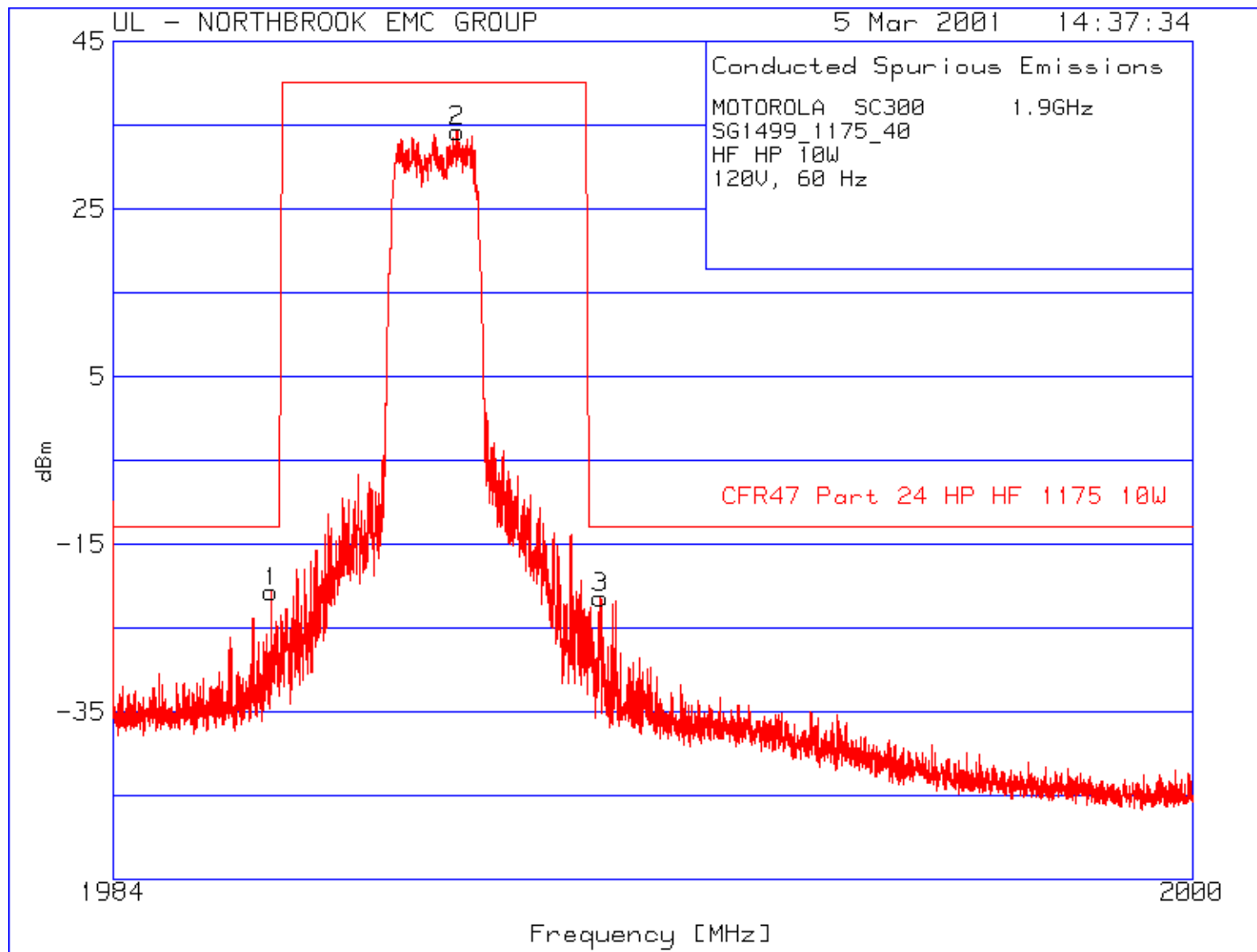
SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1175

Maximum Power



IHET6AQ2
SC300 @ 1.9GHz
CDMA BTS



**IHET6AQ2
SC300 @ 1.9GHz
CDMA BTS**



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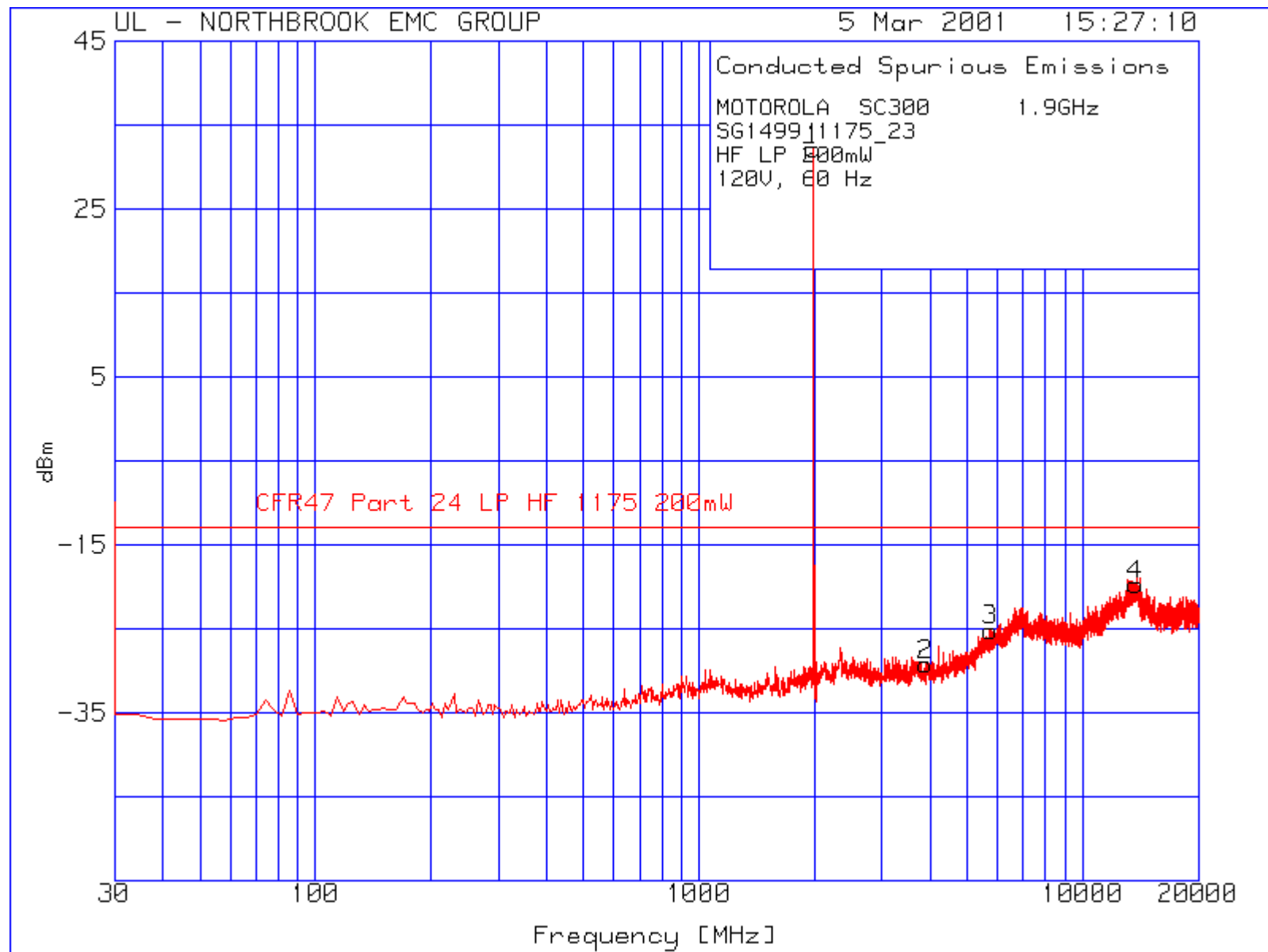
SECTION D

FCC ID: IHET6AQ2

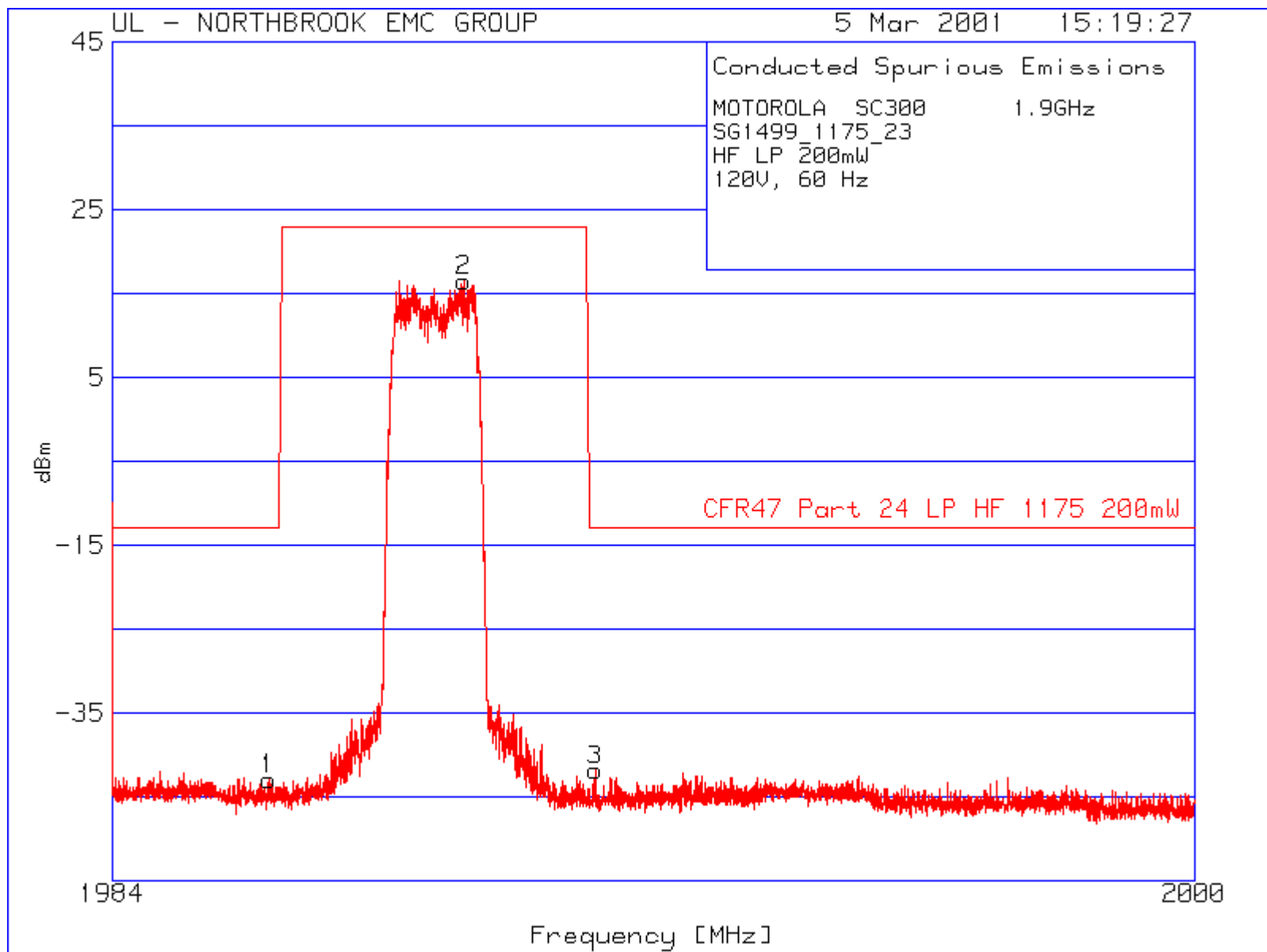
SPURIOUS & HARMONIC EMISSIONS CONDUCTED

CDMA Transmitter Channel 1175

Minimum Power



IHET6AQ2
SC300 @ 1.9GHz
CDMA BTS



IHET6AQ2
SC300 @ 1.9GHz
CDMA BTS