RadioShack Corporation

Application
For
Certification

2.4GHz Direct Sequence Spread Spectrum Cordless Phone

(FCC ID: AAO4303519)

WO# 0109396
WL/Ann Choy
October 26, 2001

FCC ID: AAO4303519

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
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LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

RadioShack Corporation - MODEL: 43-3519, 43-3519(XX)
FCC ID: AAO4303519

This report concerns (check one) Original Grant X Class II Change

Equipment Type: DSS-Part 15 Spread Spectrum Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes No X

If yes, defer until : date

Company Name agrees to notify the Commission by: date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [5-24-01 Edition] provision.

Report prepared by:

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Test Setup Photo	Radiated Emission for Handset	config photos.doc
Test Report	Maximum Output Power Plot	bmaxop.pdf, hmaxop.pdf
Test Report	6 dB Bandwidth Plot	b6dB.pdf, h6dB.pdf
Test Report	Maximum Power Density Plot	bpowden.pdf, hpowden.pdf
Test Report	Out Band Antenna Conducted Emission Plot	bobantcon.pdf, hobantcon.pdf
Test Setup Photo	Conducted Emission	config photos.doc
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual1.pdf, manual2.pdf
User Manual	FCC Information	FCC information.pdf
RF Exposure Info	RF Safety	RF exposure info.doc

EXHIBIT 1
SUMMARY OF TEST RESULTS

1.0 Summary of Test

RadioShack Corporation - MODEL: 43-3519, 43-3519(XX)
FCC ID: AAO4303519

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(d)	Pass
Out of Band Antenna Conducted Emission	15.247(c)	Pass
Radiated Emission in Restricted Bands	15.247(c)	Pass
AC Conducted Emission	15.207	Pass
Radiated Emission from Digital Part	15.109	Pass
Processing Gain Measurements	15.247(e)	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses a permanently attached antenna, which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

EXHIBIT 2
GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description1.1 Product Description

The 43-3519 is a 2.4GHz Direct Sequence Spread Spectrum Cordless Phone with Caller ID feature. It operates at frequency range of 2404.8 MHz to 2475.0 MHz with 40 Channels. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), seven function keys (Mute/Pgm, Mem, Redial/Pause, Delete, Flash, Up, Down). A Talk key is provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to page the handset unit.

The antennas used in base unit and handset are integral, and the test sample is a prototype.

The model 43-3519(XX) is the same as the model 43-3519 in hardware aspect. The difference in model number serves as marketing strategy.

The circuit description is saved with filename: descri.pdf

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

Theoretical processing gain: 10.8dB

Spread rate/data rate: 1.2Mbps

Chip/bit rate: 100kbps

2.2 Related Submittal(s) Grants1.2 Related Submittal(s) Grants

This is an application for Certification of a DSS-Part 15 Spread Spectrum Transceiver. The device is also subject to Part 68 Registration.

2.3 Test Methodology1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**2.0 **System Test Configuration**

3.1 Justification2.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions. The handset was powered by a fully charged battery.

For the measurements, the EUT is attached to a cardboard box if necessary and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). The handset is remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1MHz or greater for frequencies above 1000MHz. All emissions greater than 20 dBµV/m are recorded.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9kHz to 25GHz.

3.2 EUT Exercising Software2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

3.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

HARDWARE:

The unit was operated standalone. An AC adapter (provided with the unit) was used to power the device. Its description is listed below.

(1) AC adapter with two meter unshielded power cord permanently affixed.

CABLES:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated

OTHERS:

(1) A headset for telephone use with 1.2m unshielded cable permanently affixed.

3.4 Equipment Modification2.4 Equipment Modification

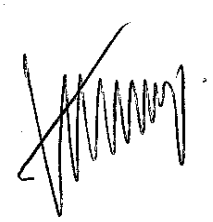
Any modifications installed previous to testing by RadioShack Corporation will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

Tommy Leung
Assistant Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for RadioShack Corporation



_____Signature

October 26, 2001 Date

EXHIBIT 4
MEASUREMENT RESULTS

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) :

[ ] The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

[×] The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for maximum RES BW and power was read directly in dBm. External attenuation and cable loss were compensated by adding to SA raw reading.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).

For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

(Base Unit) Antenna Gain = -2 dB			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2404.800	11.80	15.1
Middle Channel:	2439.000	13.49	22.3
High Channel:	2475.000	14.88	30.8

Cable loss : 1.0 dB External Attenuation : 0 dB

Cable loss, external attenuation: [ ] included in OFFSET function
[x] added to SA raw reading

Please refer to the attached plots for details:

Plot B1a: Low Channel Output Power
Plot B1b: Middle Channel Output Power
Plot B1c: High Channel Output Power

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) - Continued:

(Handset Unit) Maximum Antenna Gain = -2 dB			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2404.800	11.00	12.6
Middle Channel:	2439.000	10.38	10.9
High Channel:	2475.000	9.57	9.1

Cable loss : 1.0 dB External Attenuation : 0 dB

Cable loss, external attenuation: [ ] included in OFFSET function
[x] added to SA raw reading

Please refer to the attached plots for details:

Plot H1a: Low Channel Output Power
Plot H1b: Middle Channel Output Power
Plot H1c: High Channel output Power

For electronic filing, the above plots are saved with filename: bmaxop.pdf, hmaxop.pdf

For RF Safety, the information is saved with filename: RF exposure info.doc

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

(Base Unit)	
Frequency (MHz)	6 dB Bandwidth (kHz)
2475.000	1443

Refer to the following plots for 6 dB bandwidth sharp:

Plot B2a: Low Channel 6 dB RF Bandwidth
Plot B2b: Middle Channel 6 dB RF Bandwidth
Plot B2c: High Channel 6 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: b6dB.pdf

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Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2) - Continued:

(Handset Unit)	
Frequency (MHz)	6 dB Bandwidth (kHz)
2404.800	1450

Refer to the following plots for 6 dB bandwidth sharp:

Plot H2a: Low Channel 6 dB RF Bandwidth
Plot H2b: Middle Channel 6 dB RF Bandwidth
Plot H2c: High Channel 6 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: h6dB.pdf

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.3 Maximum Power Density Reading, FCC Rule 15.247(d) :

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

SWEEP TIME (SEC) = (Fstop, kHz - Fstart, kHz)/3kHz

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated by adding to the SA raw reading.

(Base Unit)	
Frequency (MHz)	Power Density (dBm)
2475.000	1.36

Frequency Span = 1500kHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 1.0 dB

Refer to the following plots for power density data :

Plot B3a: Low Channel 6 dB power density
Plot B3b: Middle Channel 6 dB power density
Plot B3c: High Channel 6 dB power density

For electronic filing, the above plots are saved with filename: bpowden.pdf

Company: RadioShack Corporation Date of Test: August 20, 2001
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Maximum Power Density Reading, FCC Rule 15.247(d) - Continued:

(Handset Unit)	
Frequency (MHz)	Power Density (dBm)
2439.000	-0.36

Frequency Span = 1500kHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 1.0 dB

Refer to the following plots for power density data :

Plot H3a: Low Channel 6 dB power density
Plot H3b: Middle Channel 6 dB power density
Plot H3c: High Channel 6 dB power density

For electronic filing, the above plots are saved with filename: hpowden.pdf

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4.4 Out of Band Conducted Emissions, FCC Rule 15.247(c):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the following plots for out of band conducted emissions data:

Plot B4a.1 - B4a.2: Low Channel Emissions
Plot B4b.1 - B4b.2: Middle Channel Emissions
Plot B4c.1 - B4c.2: High Channel Emissions
Plot B4d.1 - B4d.2: Modulation Products Emissions
Plot H4a.1 - H4a.2: Low Channel Emissions
Plot H4b.1 - H4b.2: Middle Channel Emissions
Plot H4c.1 - H4c.2: High Channel Emissions
Plot H4d.1 - H4d.2: Modulation Products Emissions

The plots showed the 2nd harmonic and modulation products at the band edges of 2400 MHz and 2483.5 MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 40 dB below the highest level of the desired power in the passband.

For electronic filing, the above plots are saved with filenames: bobantcon.pdf, hobantcon.pdf

Company: RadioShack Corporation Date of Test: August 20, 2001
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4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 26dB below carrier), FCC Rule 15.247(c):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required
[ ] See attached data sheet

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

4.7 Field Strength Calculation3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

FS = RR + LF

where FS = Field Strength in dBμV/m
RR = RA - AG in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV/m
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBμV/m

RR = 23.0 dBμV
LF = 9.0 dB

Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

4.8 Radiated Emission Configuration Photograph - Base Unit

Worst Case Radiated Emission
at
4878.000 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

4.9 Radiated Emission Data 3.3 Radiated Emission Data - Base Unit

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 5.9 dB

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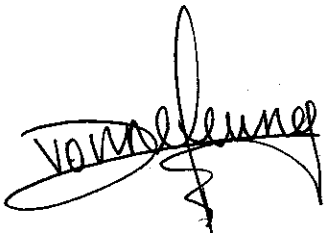
TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

October 26, 2001
Date

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519
Mode : TX-Channel 1

Table 1, Base Unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4809.600	44.6	34.0	34	44.6	54.0	-9.4

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519
Mode : TX-Channel 20

Table 2, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4878.000	48.1	34.0	34	48.1	54.0	-5.9
H	*7317.000	33.6	37.0	34	36.6	54.0	-17.4

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519
Mode : TX-Channel 40

Table 3, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4950.000	46.8	34.0	34	46.8	54.0	-7.2
H	*7425.000	35.0	37.0	34	38	54.0	-16.0

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

4.10 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission
at
4878.000 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

4.11 Radiated Emission Data 3.5Radiated Emission Data - Handset

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 12.2 dB

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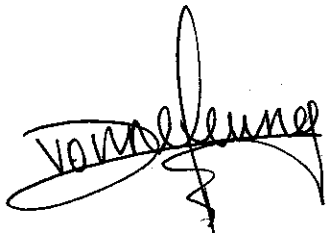
TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

October 26, 2001
Date

Company: RadioShack Corporation
Model: 43-3519
Mode : TX-Channel 1

Date of Test: August 20, 2001

Table 4, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4809.600	41.2	34.0	34	41.2	54.0	-12.8

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519
Mode : TX-Channel 20

Table 5, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4878.000	41.8	34.0	34	41.8	54.0	-12.2
H	*7317.000	34.2	37.0	34	37.2	54.0	-16.8

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation
Model: 43-3519
Mode : TX-Channel 40

Date of Test: August 20, 2001

Table 6, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
V	*4950.000	41.7	34.0	34	41.7	54.0	-12.3
H	*7425.000	33.9	37.0	34	36.9	54.0	-17.1

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector used for the emissions over 1000MHz and they were investigated to meet the corresponding peak limits stated in part 15.35(b).

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.12 AC Line Conducted Emission, FCC Rule 15.207:

[ ] Not required; battery operation only

[×] Test data attached

4.13 Line Conducted Configuration Photograph - Base3.6 Line Conducted Configuration Photograph - Base Unit

Worst Case Line-Conducted Configuration

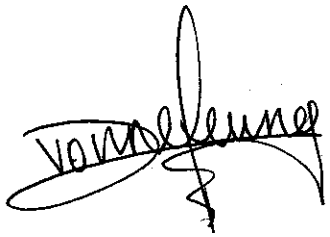
For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc

4.14 Line Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

October 26, 2001
Date

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.15 Radiated Emissions from Digital Section of Transceiver (Transmitter), FCC Ref: 15.109

[ ] Not required - No digital part

[×] Test results are attached

[ ] Included in the separated DOC report.

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

Table 7, Base

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
H	316.806	30.1	14.3	16	28.4	46.0	-17.6
H	326.410	29.5	14.6	16	28.1	46.0	-17.9
H	336.014	29.4	14.6	16	28.0	46.0	-18.0
H	432.007	27.9	16.3	16	28.2	46.0	-17.8
H	451.216	26.4	16.8	16	27.2	46.0	-18.8
H	480.022	27.8	17.3	16	29.1	46.0	-16.9

NOTES: 1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

Table 8, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Margin (dB)
H	316.806	29.7	14.3	16	28.0	46.0	-18.0
H	326.410	28.9	14.6	16	27.5	46.0	-18.5
H	336.014	29.2	14.6	16	27.8	46.0	-18.2
H	432.007	27.3	16.3	16	27.6	46.0	-18.4
H	451.216	26.6	16.8	16	27.4	46.0	-18.6
H	480.022	27.5	17.3	16	28.8	46.0	-17.2

NOTES:
1. Peak Detector used below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

Test Engineer: Yvonne Leung

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

4.16 Processing Gain Measurements, FCC Ref: 15.247(e)

The processing gain shall be determined from the ratio in dB of the signal to noise ratio with the system spreading code turned OFF, to the signal to noise ratio with the system spreading code turned ON, as measured at the demodulated output of the receiver. The processing gain shall be at least 10 dB for a direct sequence spread spectrum system.

X	Refer to attached test procedure and data sheets.
	Refer to circuit analysis and processing gain data provided by manufacturer

4.17 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Duty cycle = Maximum ON time in 100 msec/100

Duty cycle correction, dB = 20* log (DC)

	See attached spectrum analyzer chart (s) for transmitter timing
	See transmitter timing diagram provided by manufacturer
X	Not applicable, duty cycle was not used.

Test Setup Description:

The processing gain was measured using the CW jamming margin method described by FCC recommended test procedure, as described FCC-97-114.

All test equipment and the EUT were allowed to warm up for one hour prior to start of test to minimize drift over time. All test equipment had valid calibration. Calibration of carrier and interferer levels was performed several times during testing with no observed changes.

The measurements were performed at the mid center channel at 2439.0 MHz, over a range of 2438.2 - 2439.8 MHz. The measurements made across the center (+/-) 0.8 MHz should be used for calculation of Gp since that bandwidth represents the receiver passband.

The Processing Gain was measured using the CW jamming margin method. The test consists of stepping a signal generator in 50 kHz increments across the passband of the system. At each point, the generator level required to produce the recommended Bit Error Rate (BER) (set at BER=10^{-3}) is recorded. This level is the jamming level. The output power of the transmitting unit is measured at the same point. The Jammer to Signal (J/S) ratio is then calculated. Discard the worst 20% of the J/S data points. The lowest remaining J/S ratio is used to calculate the processing gain.

The maximum implementation loss a system can claim in calculating processing gain is 2 dB. The equation to calculate the processing gain (Gp) is the following:

$Gp = (S/N)_o + Mj + Lsys$

Where Lsys = System losses,
Mj = jamming margin (J/S) in dB,
$(S/N)_o$ = signal to noise ratio required for a DBPSK system with BER of 10^{-3} = 8.0 dB

Therefore, the Processing gain

Gp = 8.0 dB + Mj + 2 dB

Test Equipment:

Signal Generator, Model No. E4421B, Brand: Agilent
Spectrum Analyzer, Model No.: R3271, Band: Advantest

Explanation of Results:

The following notations are used on the spreadsheet data:

Pg: Power at Generator in dBm (as indicated by generator display)

Pj: Power of interfereer

Ps: Power of carrier at power meter test report (initial calibration)

J/S: Jammer to Signal ratio, Pj-Ps (dB) (calculated in spreadsheet)

Gp: Processing Gain = (S/N)o + Lsys + J/S:
Where Lsys = 2 dB (system loss);
Gp = 8.0 + 2 + J/S = 10 + J/S

All measurements inside the (+/-) 0.8 MHz passband of the receiver give Gp results that exceed the minimum required value of 10 dB. Elimination of the worst 20% measurements was therefore not needed in order to meet the requirements (see spreadsheet and plotted results).

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

Table 9, Base Unit was the transmitter

Processing Gain Measurement

Frequency (MHz)	Pg dBm	Pj dBm	Psa (handset) dBm	Ps (handset)	J/S dB	Gp dB
2438.200	-1.0	-30.0	-20.3	-37.3	7.3	17.3
2438.250	-1.3	-30.3	-20.3	-37.3	7.0	17.0
2438.300	-4.3	-33.3	-20.3	-37.3	4.0	14.0
2438.350	-3.8	-32.8	-20.3	-37.3	4.5	14.5
2438.400	-1.6	-30.6	-20.3	-37.3	6.7	16.7
2438.450	-2.1	-31.3	-20.3	-37.3	6.2	16.2
2438.500	-2.7	-31.7	-20.3	-37.3	5.6	15.6
2438.550	-4.6	-33.6	-20.3	-37.3	3.7	13.7
2438.600	-7.9	-36.9	-20.3	-37.3	0.4	10.4
2438.650	-6.2	-35.2	-20.3	-37.3	2.1	12.1
2438.700	-5.7	-34.7	-20.3	-37.3	2.6	12.6
2438.750	-6.4	-35.4	-20.3	-37.3	1.9	11.9
2438.800	-7.6	-36.6	-20.3	-37.3	0.7	10.7
2438.850	-7.0	-36.0	-20.3	-37.3	1.3	11.3
2438.900	-5.7	-34.7	-20.3	-37.3	2.6	12.6
2438.950	-4.9	-33.9	-20.3	-37.3	3.4	13.4
2439.000	3.8	-25.2	-20.3	-37.3	12.1	22.1
2439.050	3.5	-25.5	-20.3	-37.3	11.8	21.8
2439.100	3.7	-25.3	-20.3	-37.3	12.0	22.0
2439.150	1.0	-28.0	-20.3	-37.3	9.3	19.3
2439.200	-7.2	-36.2	-20.3	-37.3	1.1	11.1
2439.250	-5.6	-34.6	-20.3	-37.3	2.7	12.7
2439.300	-5.4	-34.4	-20.3	-37.3	2.9	12.9
2439.350	-5.9	-34.9	-20.3	-37.3	2.4	12.4
2439.400	-6.0	-35.0	-20.3	-37.3	2.3	12.3
2439.450	-6.2	-35.2	-20.3	-37.3	2.1	12.1
2439.500	-7.5	-36.5	-20.3	-37.3	0.8	10.8
2439.550	-5.8	-34.8	-20.3	-37.3	2.5	12.5
2439.600	-1.0	-30.0	-20.3	-37.3	7.3	17.3
2439.650	2.2	-26.8	-20.3	-37.3	10.5	20.5
2439.700	1.1	-27.9	-20.3	-37.3	9.4	19.4
2439.750	-1.0	-30.0	-20.3	-37.3	7.3	17.3
2439.800	-5.1	-34.1	-20.3	-37.3	3.2	13.2

Company: RadioShack Corporation Date of Test: August 20, 2001
Model: 43-3519

Table 10, Handset was the transmitter

Processing Gain Measurement

Frequency (MHz)	Pg dBm	Pj dBm	Psa (handset) dBm	Ps (handset)	J/S dB	Gp dB
2438.200	6.7	-22.3	-20.5	-37.5	15.2	25.2
2438.250	3.6	-25.4	-20.5	-37.5	12.1	22.1
2438.300	0.0	-29.0	-20.5	-37.5	8.5	18.5
2438.350	2.0	-27.0	-20.5	-37.5	10.5	20.5
2438.400	3.6	-25.4	-20.5	-37.5	12.1	22.1
2438.450	3.3	-25.7	-20.5	-37.5	11.8	21.8
2438.500	-0.2	-29.2	-20.5	-37.5	8.3	18.3
2438.550	-3.4	-32.4	-20.5	-37.5	5.1	15.1
2438.600	-3.0	-32.0	-20.5	-37.5	5.5	15.5
2438.650	-3.7	-32.7	-20.5	-37.5	4.8	14.8
2438.700	-1.2	-30.2	-20.5	-37.5	7.3	17.3
2438.750	-3.1	-32.1	-20.5	-37.5	5.4	15.4
2438.800	-2.0	-31.0	-20.5	-37.5	6.5	16.5
2438.850	-3.0	-32.0	-20.5	-37.5	5.5	15.5
2438.900	2.0	-27.0	-20.5	-37.5	10.5	20.5
2438.950	2.5	-26.5	-20.5	-37.5	11.0	21.0
2439.000	3.0	-26.0	-20.5	-37.5	11.5	21.5
2439.050	1.8	-27.2	-20.5	-37.5	10.3	20.3
2439.100	1.7	-27.3	-20.5	-37.5	10.2	20.2
2439.150	-1.2	-30.2	-20.5	-37.5	7.3	17.3
2439.200	-0.5	-29.5	-20.5	-37.5	8.0	18.0
2439.250	-2.1	-31.1	-20.5	-37.5	6.4	16.4
2439.300	-1.0	-30.0	-20.5	-37.5	7.5	17.5
2439.350	-2.5	-31.5	-20.5	-37.5	6.0	16.0
2439.400	-3.0	-32.0	-20.5	-37.5	5.5	15.5
2439.450	-2.0	-31.0	-20.5	-37.5	6.5	16.5
2439.500	-3.0	-32.0	-20.5	-37.5	5.5	15.5
2439.550	-3.6	-32.6	-20.5	-37.5	4.9	14.9
2439.600	-1.0	-30.0	-20.5	-37.5	7.5	17.5
2439.650	1.7	-27.3	-20.5	-37.5	10.2	20.2
2439.700	1.1	-27.9	-20.5	-37.5	9.6	19.6
2439.750	3.0	-26.0	-20.5	-37.5	11.5	21.5
2439.800	6.2	-22.8	-20.5	-37.5	14.7	24.7

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**6.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.doc

EXHIBIT 6
PRODUCT LABELLING

6.0 **Product Labelling**7.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf

EXHIBIT 7
TECHNICAL SPECIFICATIONS

7.0 **Technical Specifications** 8.0 **Technical Specifications**

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 8
INSTRUCTION MANUAL

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual1.pdf and manual2.pdf

Please note that the required FCC Information to the User is saved with filename: FCC information.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9
SECURITY CODE INFORMATION

9.0 Security code information

The 43-3519 has at least 256 discrete digital codes, and a fixed code is continuously varied among 1048576 discrete digital codes as each telephone is manufactured.