

Matsushita Electric Corporation of America

Product Safety & Compliance Division

Panasonic Quasar Technics

1 Panasonic Way, 4B-8

Secaucus, NJ 07094

Fax: (201) 392-4564

e-mail: MullenR@panasonic.com

Richard Mullen

Manager

Tel: (201) 348-7758

April 9, 1999
KM499-U007B,
KM499-U008B?

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD. 21046

Attn.: Greg Czumak, Electronics Engineer / FCC Application Processing Branch

Subject: Supplement to Original Application for Certification of 900/2400MHz
Panasonic Spread Spectrum Cordless Telephone System, Model KX-TG210 Series
Base Unit: FCC ID: ACJ96NKX-TG210A / 731 Confirmation Number EA93309
Handset Unit: FCC ID: ACJ96NKX-TG210C / 731 Confirmation Number EA93242

Dear Ms. Elliott:

This is in response to your email message dated April 5, 1999 with correspondence reference number 7031 and 731 Confirmation Number EA93242 for the subject handset unit regarding request for additional test data.

The sample used to generate the first provided set of test data is no longer available. Our factory generated additional test data on another representative sample. The additional measurements were performed on base unit and handset with: (1) occupied bandwidth RBW at 100 kHz and VBW at 1 kHz; (2) peak power output; and (3) transmitter power density RBW at 3 kHz and VBW at 10 kHz with sweep set at 500 seconds.

Regarding processing gain, this device uses analog modulation for baseband signal and does not convert voice signal to digital signal. The analog voice signal is modulated to a FM signal and processed to produce a spread spectrum signal. Since the processed signal is analog and not digital, this unit does not have BER. Instead, it uses SINAD, which means a distortion of analog signal. Since C/N of the 2nd IF signal, which is input to FM de-modulator at SINAD = 12 dB is 3 dB, this device uses (S/N)_o = 3dB. Comparing with digital baseband system, this analog device's (S/N)_o is much lower.

Attached, find additional base unit and handset unit test data performed on April 6, 1999. I trust this is sufficient answer to your comments. Should you have any additional comments, please contact the undersigned. Thank you for your attention in this matter.

Sincerely yours,


Richard Mullen
Project Manager

cc: Errol Chang / FCC Application Processing Branch
Ken Nawata / KME-KM4

Please scan
into TEST REPORT
EXHIBIT 2
EA 93242
Thanks! Greg

Mullen, Richard

From: oetech@fccsun07w.fcc.gov
Sent: Monday, April 05, 1999 3:01 PM
To: mullenr@panasonic.com

To: Richard Mullen, Matsushita Electric Corporation of America
From: Greg Czumak
gczumak@fcc.gov
FCC Application Processing Branch

Re: FCC ID ACJ96NKX-TG210C
Applicant: Matsushita Electric Industrial Co Ltd
Correspondence Reference Number: 7031
731 Confirmation Number: EA93242
Date of Original E-Mail: 04/05/1999

} HANDSET UNIT
KH499-4008

1. The RBW used to measure the output power was too narrow, compared to the bandwidth of the emission, for an accurate reading. Please remeasure with either a wider RBW or a peak power meter.
2. The sweep time used to measure PSD was too fast relative to the span. Please remeasure the PSD using settings as described in the Public Notice on Test Procedures for direct sequence transmitters.
3. What is the theoretical processing gain (Gp) of the EUT? Please justify the (S/N)_o level of 3 dB used to calculate Gp, as this is a very low value. What BER is recommended, which results in the chosen value for (S/N)_o?

The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 60 days of the original e-mail date may result in application dismissal pursuant to Section 2.917 (c) and forfeiture of the filing fee pursuant to section 1.1108.

DO NOT reply to this e-mail by using the Reply button. In order for your response to be processed expeditiously, you must upload your response via the Internet at www.fcc.gov, Electronic Filing, OET Equipment Authorization Electronic Filing. If the response is submitted through Add Attachments, in order to expedite processing, a message which informs the processing staff that a new exhibit has been submitted must also be submitted via Submit Correspondence. Also, please note that partial responses increase processing time and should not be submitted.

Any questions about the content of this correspondence should be directed to the e-mail address listed below the name of the sender.

KM499-4008B
FCC ID: A0396NKR-TG210C

KM4-99-KX-TG210R/PART15-2

APPENDIX

TEST REPORT

FOR

MODEL NO. : KX-TG210 (Handset)

DATE : APRIL 6, 1999

NOTE

APPLICABLE TESTS REQUIRED IN SUBPART-C OF
PART 15 WERE PERFORMED IN ACCORDANCE
WITH THE TEST PROCEDURE HEREIN.

for BY : F. Nishikawa
Y. KODAMA
MANAGER OF
ENGINEERING SECTION

Kyushu Matsushita Electric Co.,Ltd. 4th Division

PROJECT NO.: KM4-99-KX-TG210R/PART15-2

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PRODUCT: 900MHz Spread Spectrum Cordless Telephone Handset

FCC IDENTIFIER : ACJ96NKX-TG210 C

MODEL : KX-TG210 (Handset)

ENGINEERING ANALYSIS AND EVALUATION

The model KX-TG210 (Handset) is the base station of a 2.4GHz/900MHz Spread Spectrum Cordless Telephone, and the operating frequency band is as shown below.

Handset:

Receiving Frequency: 2402.08 MHz ~ 2481.44 MHz

Transmitting Frequency: 909.64 MHz ~ 920.80MHz

This system provides with a digital security coding of one million combinations of phone's selectable system.

This device was tested the following items, and the summary is as shown below.

<u>TEST ITEM</u>	<u>CLAUSE</u>	<u>LIMIT</u>	<u>RESULT</u>	<u>PASSED</u>
Occupied Bandwidth	15.247(a)(2)	More than 500kHz	1229MHz	<u>X</u>
		Less than		
Peak Power Output	15.247(b)	1 W	0.057 W	<u>X</u>
Transmitter Power Density	15.247(d)	Less than	-2.234 dBm	<u>X</u>
		+8 dBm		

INSTRUMENT USED FOR CONFIRMATION TESTS

<u>INSTRUMENT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>
Signal Generator	HEWLETT PACKERD	ESG-D3000A
Spectrum Analyzer	ADVANTEST	R3265A
Plotter	ADVANTEST	R9833
Audio Analyzer	HEWLETT PACKERD	8903B
Four Ports Junction PAD	ANRITSU	MA1612
50-Ohm Terminator	HEWLETT PACKERD	908A

Kyushu Matsushita Electric Co., Ltd. 4th Division

PROJECT NO.: KM4-99-KX-TG210R/PART15-2PAGE : 3 of 8PRODUCT: 900MHz Spread Spectrum Cordless Telephone (Handset)FCC IDENTIFIER : ACJ96NKX-TG210 CMODEL : KX-TG210 (Handset)TESTED BY : Hidenao Hamada DATE : April 6, 1999FCC PART 15.247(a)(2). Occupied Bandwidth:TEST CONDITIONS :

Standard Temperature and Humidity

Standard Test Voltage

RULE LIMIT :

The minimum bandwidth shall be at least 500kHz.

METHOD OF MEASUREMENT :

The spectrum analyzer is set as follows :

RBW : 100kHz

VBW : 1kHz

Span : >RBW

LOG dB/div. : 2dB

Sweep : Auto

Number of channels tested :

Testing Range	Number of Channels Tested	Channel Location in Band
1 MHz or less	1	Middle
1 to 10 MHz	2	Top and Bottom
More than 10 MHz	3	Top, Middle, Bottom

Kyushu Matsushita Electric Co., Ltd. 4th Division

PROJECT NO.: KM4-99-KX-TG210R/PART15-2PAGE : 4 of 8PRODUCT: 900MHz Spread Spectrum Cordless Telephone (Handset)FCC IDENTIFIER : ACJ96NKX-TG210MODEL : KX-TG210 (Handset)TESTED BY : Hide nao Hamada DATE : April 6, 1999FCC PART 15.247(b). Peak Power Output:TEST CONDITIONS :

Standard Temperature and Humidity

Standard Test Voltage

RULE LIMIT :

The maximum peak power output shall not exceed 1 watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

METHOD OF MEASUREMENT :

If the antenna is detachable, a peak power meter is used to measure the power output with the transmitter operating into a 50 ohm load.

The RBW of the spectrum analyzer shall be set to a value greater than the measured 6 dB occupied bandwidth of the E.U.T.

Number of channels tested :

Testing Range	Number of Channels Tested	Channel Location in Band
1 MHz or less	1	Middle
1 to 10 MHz	2	Top and Bottom
More than 10 MHz	3	Top, Middle, Bottom

Kyushu Matsushita Electric Co.,Ltd. 4th Division

PROJECT NO.: KM4-99-KX-TG210R/PART15-2

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PRODUCT: 2.4GHz Spread Spectrum Cordless Telephone (Handset)

FCC IDENTIFIER : ACJ96NKX-TG210 C

MODEL : KX-TG210 (Handset)

TESTED BY : Hidenao Hamada DATE : April 6, 1999

FCC PART 15.247(d), Transmitter Power Density:TEST CONDITIONS :

Standard Temperature and Humidity

Standard Test Voltage

RULE LIMIT :

The transmitted power density averaged over any 1 second interval shall not be greater than +8 dBm in any 3 kHz bandwidth.

METHOD OF MEASUREMENT :

The spectrum analyzer is set as follows :

RBW : 3 kHz

VBW : >3 kHz

Span : => measured 6 dB bandwidth

Sweep : 500 sec

LOG dB/div. : 2 dB

NOTE : For devices with spectrum line spacing $\leq$ 3 kHz, the RBW of the analyzer is reduced until the spectral lines are resolved. The measurement data is normalized to 3 kHz by summing the power of all the individual spectral lines within a 3 kHz band in linear power units.

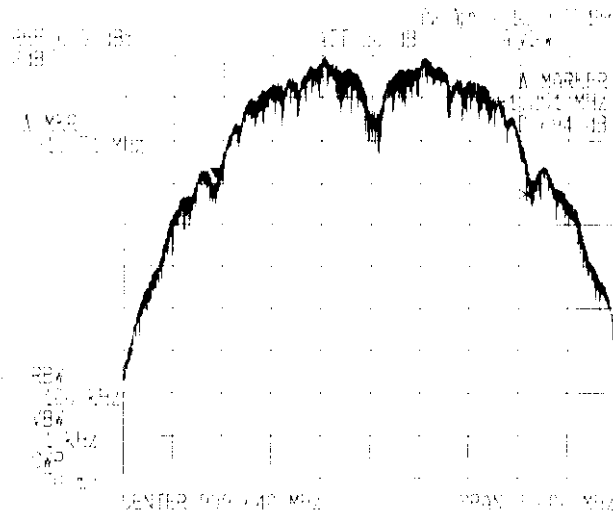
Number of channels tested :

Testing Range	Number of Channels Tested	Channel Location in Band
1 MHz or less	1	Middle
1 to 10 MHz	2	Top and Bottom
More than 10 MHz	3	Top, Middle, Bottom

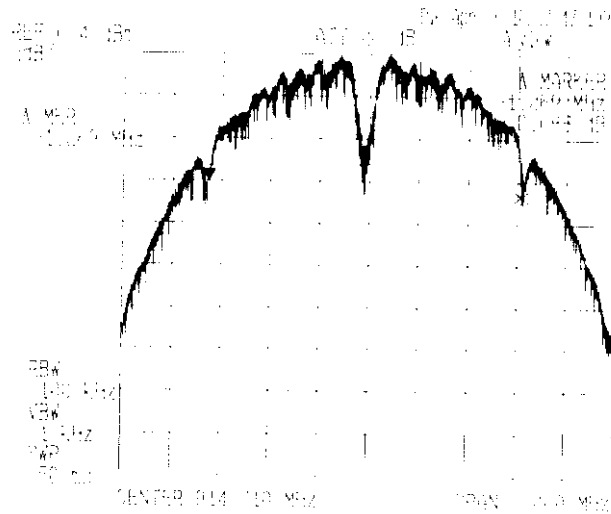
Occupied Bandwidth (Handset)

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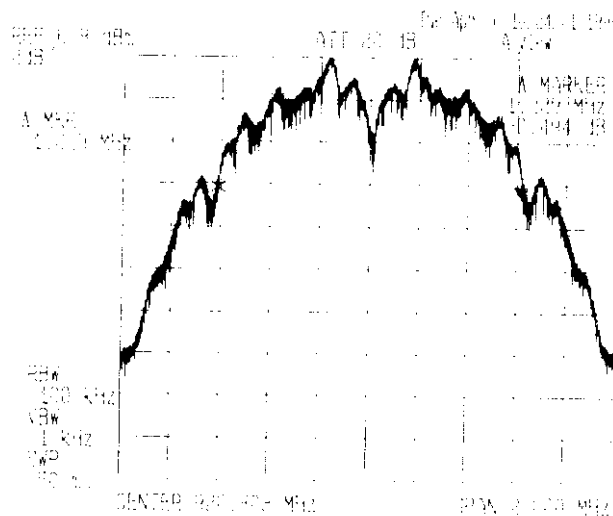
Low Channel



Middle Channel



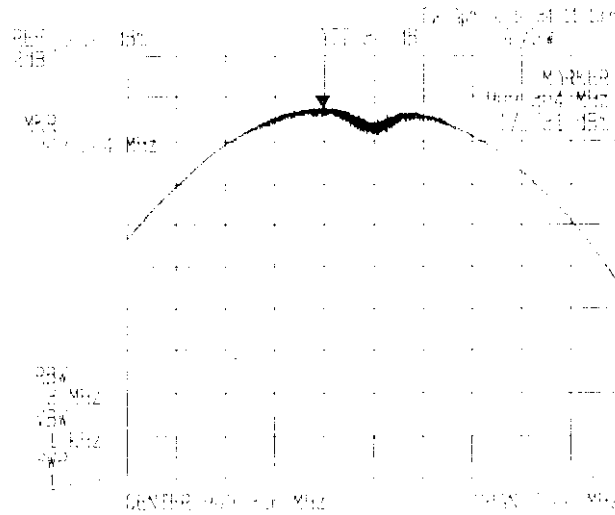
High Channel



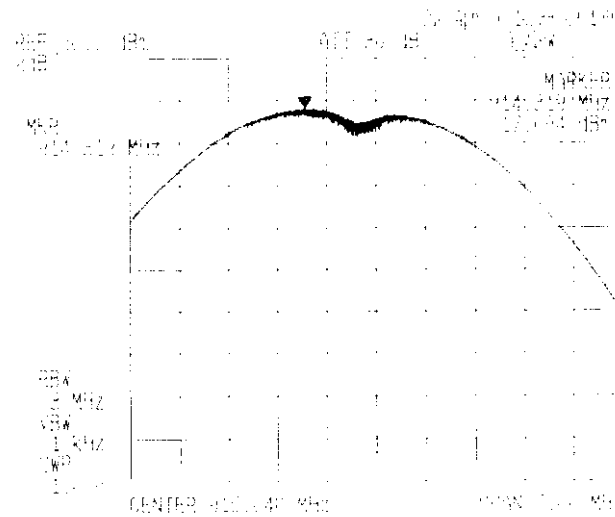
Peak Power Output (Handset)

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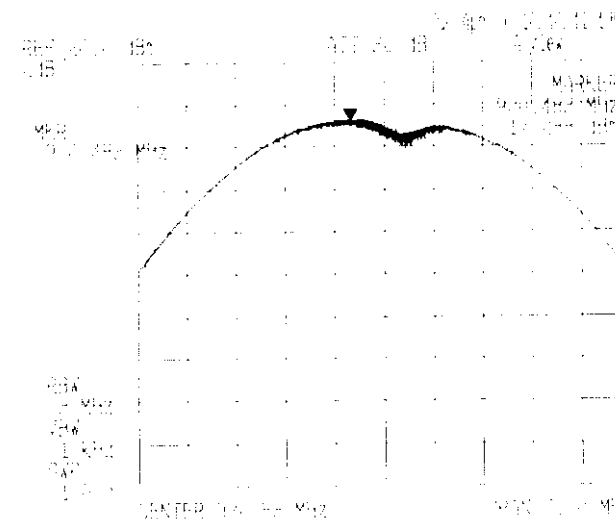
Low Channel



Middle Channel



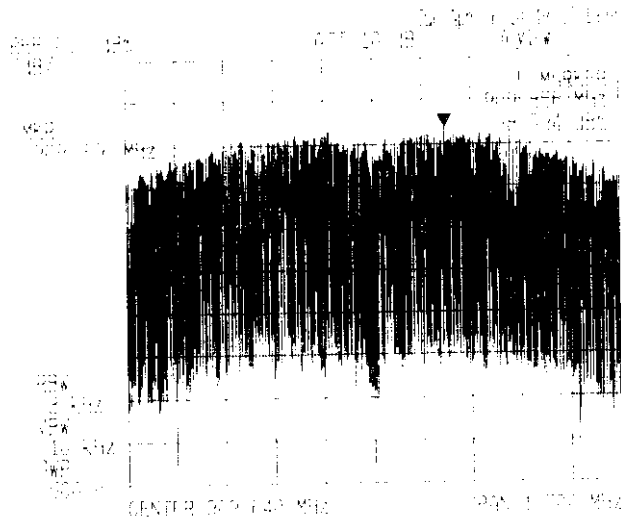
High Channel



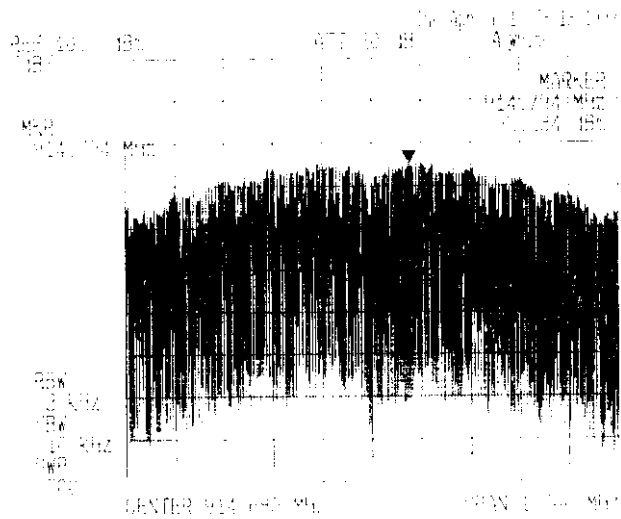
Transmitter Power Density (Handset)

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Low Channel



Middle Channel



High Channel

