

EMISSION -- TEST REPORT

Test report file no. : 

Date of issue : May 18, 2001

Kind of equipment : MU-Wave Add-on Transmitter

Model : 02AZB590

Applicant : Mitutoyo Corporation

Manufacturer : Mitutoyo Corporation

Applicant address : 1-20-1, Sakato, Takatsu-ku, Kawasaki-shi,
Kanagawa-ken, 213-0012 Japan

Test result according to

the regulation(s) indicated

: 

at page 3

This test report with appendix consists of 22 pages. The test result only responds to the tested sample. It is not allowed to copy this report even partly without the written allowance of the test laboratory. The report must not be used to claim products endorsement by the accreditation body (A2LA, NEMKO and TUV P.S.) or any government agency.



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DIRECTORY

A) Documentation

Page

Directory	2
Test regulations	3
Test facilities	4
Environmental conditions, Power supply system utilized, Measurement uncertainty and Symbols definitions	5
Test conditions	6 - 11
Equipment under test	12
Test result	13 - 15
Summary	16
Configuration of equipment	17
Test - setups (Drawings and Photos)	18 - 19

B) Test data

Conducted emissions (Mains)	10/150/450 kHz - 30 MHz	N/A
Conducted emissions (Telecommunication)	150 kHz - 30 MHz	N/A
Radiated emissions	10/150 kHz - 30 MHz	N/A
Radiated emissions	30 MHz - 1000/2000 MHz	20
Spectral plots of the fundamental frequency	285.1MHz	21
Equivalent radiated emissions	1 GHz - 18 GHz	N/A
Harmonic currents		N/A
Voltage fluctuations and flicker		N/A

C) Appendix

Constructional data form (CDF) for EMC-testing	22
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N/A : Not Applicable

TEST REGULATIONS

The tests were performed according to following regulations :

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> o - EN 50081-1 :1992 o - EN 50081-2 :1993 o - EN 55011 :1998 o - EN 55011 :1998 / A1:1999 o - EN 55014-1 :1993 / A2:1999 o - EN 55022 :1998 o - EN 55022 :1994 / A2:1997 o - EN 60601-1-2 :1993 o - EN 61326 :1997 / A1:1998 o - EN 61000-3-2 :1995 / A14:2000 o - EN 61000-3-2 :1995 / A2:1998 <li style="padding-left: 20px;">- Harmonic current emission o - EN 61000-3-3 :1995 - Voltage fluctuations and flicker | <ul style="list-style-type: none"> o - Group 1 o - Class A o - Household appliances and similar o - Tools o - Semiconductor devices o - Class A o - Class A o - Class A o - Class B o - Class C | <ul style="list-style-type: none"> o - Group 2 o - Class B o - Class B o - Class B o - Class B o - Class B o - Class B o - Class B o - Class B o - Class D |
| <hr style="border-top: 1px dashed black;"/> | | |
| <ul style="list-style-type: none"> o - FCC Part 15 Subpart B <li style="padding-left: 20px;">Test Method : ANSI C63.4-1992 ● - FCC Part 15 Subpart B <li style="padding-left: 20px;">according to 15.231(e) o - FCC Part 18 Subpart C <li style="padding-left: 20px;">Test Method : FCC/OST MP-5 (1985) | <ul style="list-style-type: none"> o - Class A | <ul style="list-style-type: none"> o - Class B |
| <hr style="border-top: 1px dashed black;"/> | | |
| <ul style="list-style-type: none"> o - ICES-003 :1997 o - AS/NZS 2064 :1997 / A1:1997 o - AS/NZS 1044 :1995 / A1:1997 o - AS/NZS 3548 :1995 / A2:1997 | <ul style="list-style-type: none"> o - Class A o - Group 1 o - Class A o - Household appliances and similar o - Tools o - Semiconductor devices o - Class A | <ul style="list-style-type: none"> o - Class B o - Group 2 o - Class B o - Class B |
| <hr style="border-top: 1px dashed black;"/> | | |
| <ul style="list-style-type: none"> o - VCCI o - CISPR Pub. 11 :1997 o - CISPR Pub. 11 :1997 / A1:1999 o - CISPR Pub. 14-1 :1993 / A2:1998 o - CISPR Pub. 22 :1997 o - CISPR Pub. 22 :1993 / A2:1996 | <ul style="list-style-type: none"> o - Class A o - Group 1 o - Class A o - Household appliances and similar o - Tools o - Semiconductor devices o - Class A o - Class A | <ul style="list-style-type: none"> o - Class B o - Group 2 o - Class B o - Class B |

TEST FACILITIES

All measurement facilities are located in 1614, Mushihata, Omigawa-machi, Katori-gun, Chiba-ken, 289-0341 Japan.

Accredited by American Association for Laboratory Accreditation(A2LA) for the emission and immunity tests stated in the scope of the certificate under Certificate Number 1266-01.

Authorized by NEMKO for the emission and immunity tests stated in the scope of the authorization under Authorization Number ELA172.

Approved by the Ministry of Commerce in New Zealand under ENG 3/9 AJD.

Recognized by TUV Product Service for the emission and immunity tests stated in the scope of the certificate under Certificate No. JPN9803C.

Registered by Federal Communications Commission for CFR47 Part 15 and 18 under 31040/SIT 1300F2.

Registered by Voluntary Control Council For Interference by Information Technology Equipment(VCCI) under Registered Numbers R-188 and C-785 for No. 1 open site, C-187 for No. 1 shielded room, R-189 for No. 2 open site, C-188 for No. 2 shielded room, R-656 for No. 4 open site, C-613 for No. 4 shielded room, R-1227 and C-1290 for No.5 open site, and C-1291 for No.5 shielded room.

ENVIRONMENTAL CONDITIONS

Temperature	<u>---</u> °C	see test data
Humidity	<u>---</u> %	see test data
Atmospheric pressure	<u>---</u> hPa	see test data

POWER SUPPLY SYSTEM UTILIZED

Power supply system : DC 3V

MEASUREMENT UNCERTAINTY

The treatment of the measurement uncertainty shall be based on "Treatment of Uncertainty in EMC Measurement" by NAMAS NIS81.

The measurement result is : $y \text{ dB } \mu \text{ V} \pm U \text{ dB}$
for a level of confidence of approximately 95%, (k=2)

DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

- - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- - Blank box indicated that the listed condition, standard or equipment was not applicable for this Report.

TEST CONDITIONS

The measurement of **the conducted emissions (10/150/450 KHz - 30 MHz)** was performed in **the mains** at :

o - Test applicable

- | | |
|---|---|
| <ul style="list-style-type: none"> o - in a shielded enclosure.
 o - at a nonreflecting open site. | <ul style="list-style-type: none"> o - Shielded room No. 1 o - Shielded room No. 2 o - Shielded room No. 4 o - Shielded room No. 5 o - Open site No. 1 o - Open site No. 2 o - Open site No. 5 |
|---|---|

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESH2	Test Receiver	Rohde & Schwarz	RCH01	2000.10	2001.10
o - ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2000.12	2001.12
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2000.6	2001.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2000.4	2001.4
o - ESH2-Z5	AMN	Rohde & Schwarz	LSN01	2000.8	2001.8
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN02	2001.3	2002.3
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN03	2001.1	2002.1
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN06	2000.7	2001.7
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN07	2000.5	2001.5
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN08	2000.12	2001.12
o - ESH3-Z5	AMN	Rohde & Schwarz	LSN11	2000.5	2001.5
o - ESH3-Z6	AMN	Rohde & Schwarz	LSN09	2001.2	2002.2
o - ESH3-Z6	AMN	Rohde & Schwarz	LSN10	2001.2	2002.2
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2000.6	2001.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2000.6	2001.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2000.6	2001.6
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2000.9	2001.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2000.9	2001.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2000.9	2001.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2000.9	2001.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2000.4	2001.4
o - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2000.10	2001.10

All used test-instruments are calibrated at least once a year.

The measurement of the conducted emissions (150 KHz - 30 MHz) was performed in the Telecommunication ports at :

o - Test applicable

- o - in a shielded enclosure.
- o - at a nonreflecting open site.
- o - Shielded room No. 1
- o - Shielded room No. 2
- o - Shielded room No. 4
- o - Shielded room No. 5
- o - Open site No. 1
- o - Open site No. 2
- o - Open site No. 5

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESH2	Test Receiver	Rohde & Schwarz	RCH01	2000.10	2001.10
o - ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2000.12	2001.12
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2000.6	2001.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2000.4	2001.4
o - ENY22(50dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o - ENY22(60dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o - ENY22(80dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o - ENY41(50dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o - ENY41(60dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o - ENY41(80dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o - EZ-17	Current Probe	Rohde & Schwarz	CPRB01	2000.11	2001.11
o - Direct	CDN	EMC Kashima	DIU02	2000.4	2001.4
o - FTC101	Ferrite Tube	Luthi Elektronik	FT01	2000.4	2001.4
o - FTC101	Ferrite Tube	Luthi Elektronik	FT02	2000.4	2001.4
o - FTC101	Ferrite Tube	Luthi Elektronik	FT03	2000.4	2001.4
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2000.6	2001.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2000.6	2001.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2000.6	2001.6
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2000.9	2001.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2000.9	2001.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2000.9	2001.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2000.9	2001.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2000.4	2001.4
o - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2000.10	2001.10

All used test-instruments are calibrated at least once a year.

The measurement of the radiated emissions (10/150 KHz - 30 MHz) was performed at a nonreflecting open site and test distance of:

o - Test applicable

- | | |
|---------------------|---------------|
| o - Open site No. 1 | o - 3 meters |
| o - Open site No. 2 | o - 10 meters |
| o - Open site No. 5 | o - 30 meters |

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESH2	Test Receiver	Rohde & Schwarz	RCH01	2000.10	2001.10
o - ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2000.12	2001.12
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2000.6	2001.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2000.4	2001.4
o - HFH2-Z2	Loop Antenna	Rohde & Schwarz	LPA01	2001.2	2002.2
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2000.6	2001.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2000.6	2001.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2000.6	2001.6
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2000.9	2001.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2000.9	2001.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2000.9	2001.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2000.9	2001.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2000.4	2001.4
o - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2000.10	2001.10
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA01	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA02	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA03	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA06	2000.10	2001.10
o - SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2000.5	2001.5

All used test-instruments are calibrated at least once a year.

The measurement of **the radiated emissions (30 MHz - 1000/2000 MHz)** was performed in a horizontal and vertical polarization at a nonreflecting open site and test distance of:

● - Test applicable

- | | |
|---------------------|---------------|
| o - Open site No. 1 | ● - 3 meters |
| ● - Open site No. 2 | o - 10 meters |
| o - Open site No. 4 | o - 30 meters |
| o - Open site No. 5 | |

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESV	Test Receiver	Rohde & Schwarz	RCV01	2000.4	2001.4
● - ESVS10	Test Receiver	Rohde & Schwarz	RCV02	2001.1	2002.1
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2000.6	2001.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2000.4	2001.4
o - LPB-2520A	Biconi.-Logperi.	Antenna Research	BL01	2000.8	2001.8
● - LPB-2520A	Biconi.-Logperi.	Antenna Research	BL02	2000.8	2001.8
o - LPB-2520A	Biconi.-Logperi.	Antenna Research	BL03	2000.8	2001.8
o - LPB-2520A	Biconi.-Logperi.	Antenna Research	BL04	2000.9	2001.9
o - LPB-2520A	Biconi.-Logperi.	Antenna Research	BL05	2000.9	2001.9
o - 3115	Double Ridged Guide	EMCO	DRH01	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2000.6	2001.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2000.6	2001.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2000.6	2001.6
● - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
● - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
● - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2000.9	2001.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2000.9	2001.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2000.9	2001.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2000.9	2001.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2000.4	2001.4
● - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2000.10	2001.10
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA01	2000.5	2001.5
● - 8447D	Pre-Amplifier	Hewlett Packard	PRA02	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA03	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA06	2000.10	2001.10
● - SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2000.5	2001.5
o - 8449B	Pre-Amplifier	Hewlett Packard	PRA05	2000.11	2001.11
o - SUCOFLEX 104	Micro Wave cable	Hewlett Packard	MWC-0.5m	2000.11	2001.11
o - SUCOFLEX 104	Micro Wave cable	Hewlett Packard	MWC-5m	2000.11	2001.11
o - ESH3-Z6	AMN	Rohde & Schwarz	LSN09	2001.2	2002.2
o - ESH3-Z6	AMN	Rohde & Schwarz	LSN10	2001.2	2002.2

All used test-instruments are calibrated at least once a year.

The measurement of **the interference power (30 MHz - 300 MHz)** was performed by using the absorbing clamp on the mains or interface cables at :

o - Test applicable

- o - Open site No. 1
- o - Open site No. 2
- o - Open site No. 5
- o - Shielded room No. 4

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESV	Test Receiver	Rohde & Schwarz	RCV01	2000.4	2001.4
o - ESVS10	Test Receiver	Rohde & Schwarz	RCV02	2001.1	2002.1
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2000.6	2001.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2000.4	2001.4
o - MDS21	Absorbing Clamp	Rohde & Schwarz	CLP01	2000.8	2001.8
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2000.6	2001.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2000.6	2001.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2000.6	2001.6
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2000.9	2001.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2000.9	2001.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2000.9	2001.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2000.9	2001.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2000.9	2001.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2000.4	2001.4
o - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2000.10	2001.10
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA01	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA02	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA03	2000.5	2001.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA06	2000.10	2001.10
o - SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2000.5	2001.5

All used test-instruments are calibrated at least once a year.

The measurements of the harmonic currents and voltage fluctuations / flicker were performed in No. 4 shielded room.

o - Test applicable

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - PM3000A	Power Analyzer	Voltech	UPA01	2000.6	2001.6
o - SIB-30	Ref. Impedance	DENKENSEIKI	RIN01	2000.6	2001.6
o - RTI-N5kVA	Supply Source	DENKENSEIKI	CVC03	2000.6	2001.6

All used test-instruments are calibrated at least once a year.

EQUIPMENT UNDER TEST

Type of the EUT :

- - Production
- o - Pre-Production
- o - Prototype

Description of the EUT :

The EUT 02AZB590 is a low-power, pulsed, RF transmitter. This transmitter operates on a fixed frequency of 285.1325MHz and is powered by two 1.5 Volt batteries. It's frequency is factory set. It is identified as the Mitutoyo Corporatin MU-Wave Add-on Transmitter (FCC ID: J3E06MW-TALL). The EUT is designed specifically for use with the Mitutoyo Digimatic gauges which have digimatic data output. It is designed to operate in conjunction with the MU-Wave Receiver (FCC ID: J3E01MW-TALL). The system will be used for precision mesuring in a commercial or industrial environment.

Operation - mode of the EUT :

The equipment under test was operated during the measurement under following conditions :

- o - Standby
- o - Test program (H - Pattern)
- o - Test program (color bar)
- o - Test program (customer specific)
- - Continuous mode : Transmitting mode

TEST RESULT

The measurement data presented in this report reflects the worst case configuration.

Conducted emissions (Mains) 10/150/450 kHz - 30 MHz

☐ - Test applicable

The requirements are

☐ - MET

☐ - NOT MET

Min. limit margin :

Quasi-peak

_____ dB

at _____ MHz

Average

_____ dB

at _____ MHz

Remarks : _____

Conducted emissions (Telecommunication ports) 150 kHz - 30 MHz

☐ - Test applicable

The requirements are

☐ - MET

☐ - NOT MET

Min. limit margin :

Quasi-peak

_____ dB

at _____ MHz

Average

_____ dB

at _____ MHz

Remarks : _____

Radiated emissions 10/150 kHz - 30 MHz

☐ - Test applicable

The requirements are

☐ - MET

☐ - NOT MET

Min. limit margin

_____ dB

at _____ MHz

Remarks : _____

Radiated emissions [Fundamental frequency]

☒ - Test applicable

The requirements are

● - MET

○ - NOT MET

Min. limit margin

11 dB

at 285.12 MHz

Remarks : _____

Radiated emissions 30 MHz - 1000/2000 MHz

☒ - Test applicable

The requirements are

● - MET

○ - NOT MET

Min. limit margin

2.4 dB

at 253.46 MHz

Remarks : _____

Equivalent radiated emissions 1 GHz - 18 GHz

☐ - Test applicable

The requirements are

○ - MET

○ - NOT MET

Min. limit margin

_____ dB

at _____ MHz

Remarks : _____

note : The measuring receivers are in compliance with the requirements of CISPR 16.

Harmonic currents

☐ - Test applicable

The requirements are

☐ - MET

☐ - NOT MET

Remarks : _____

Voltage fluctuations and flicker

☐ - Test applicable

The requirements are

☐ - MET

☐ - NOT MET

relative voltage change characteristic : $d(t)$ = _____ ms

maximum relative voltage change : d_{max} = _____ %

relative steady-state voltage change : d_c = _____ %

short-term flicker indicator : P_{st} = _____

Remarks : _____

SUMMARY

GENERAL REMARKS :

FINAL JUDGMENT :

The requirements according to the technical regulations are

- - met
- - not met

The equipment under test does

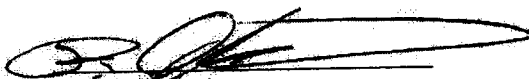
- - Fulfills the general approval requirements mentioned on page 3.
- - Does not fulfill the general approval requirements mentioned on page 3.

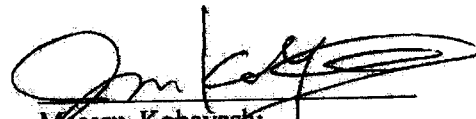
The engineers of EMC Kashima Corporation were not involved in modification for the tested sample.

Testing start date : March 23, 2001
Testing end date : March 23, 2001

EMC Kashima Corporation

Test engineer


Kenichi Suda
Director


Masaru Kobayashi
Managing Director

CONFIGURATION OF EQUIPMENT

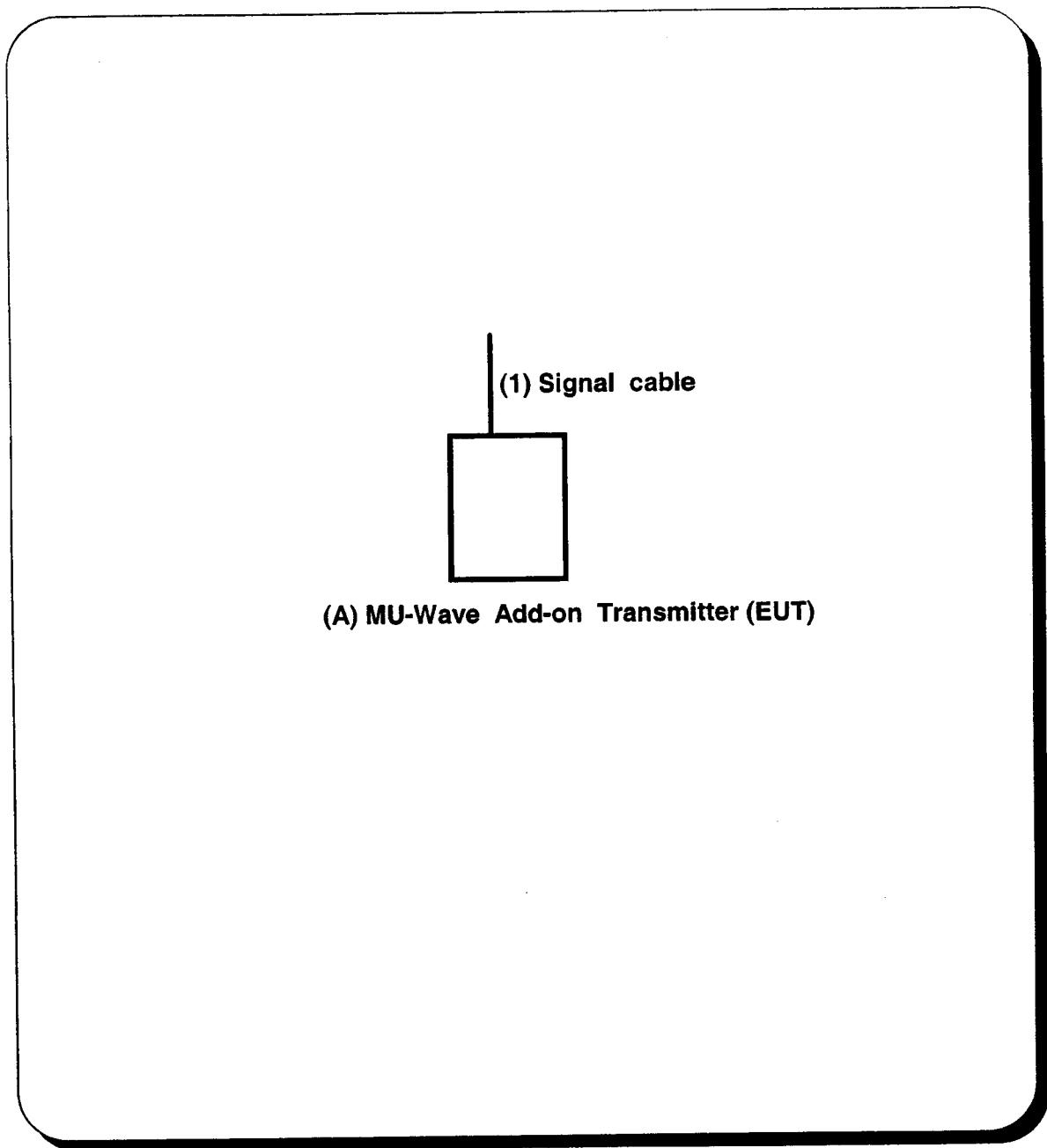
EUT and Peripherals :

Equipment name	Code	Model	Serial	Company	FCC ID
(A) MU-Wave Add-on Transmittet (EUT)	none	02AZB590	none	Mitutoyo	J3E06MW-TALL

Cable(s) used :

Cable name	Length	Shielded	Model	Remarks
(1) Signal cable	0.1 m	none	none	

TEST - SETUPS



No.2 Test Site

Radiated Emission Test

(30MHz - 2000MHz)

Company : Mitutoyo Corporation
 Equipment : MU-Wave Add-on Transmitter
 Model : 02AZB590
 Power : D3V
 Test Mode :
 Remarks : FCC ID : J3E06MW-TALL
 Regulation : FCC Part15B 15.231(e)
 Test Distance : 3 m
 Attenuator : 6 dB

Report No. : TR2-01639F
 Tested Date : 2001/03/23
 Temperature : 20°C
 Humidity : 42 %
 Atmos.Press. : 1015 hPa


 Engineer : Masaru Kobayashi

No.	Freq (MHz)	Horizontal			Vertical			Ant. Factor (dB/m)	Cable		Preamp Gain (dB)	Result		Limits (dBuV/m) 3 m	Margin	
		Read (dBuV)	T/T (degr)	A/M (cm)	Read (dBuV)	T/T (degr)	A/M (cm)		Loss (dB)			Hor (dBuV/m)	Ver		Hor (dB)	Ver
1	285.12	64.7	86	105	50.7	194	132	13.0	4.4	25.5	62.6	48.6	73.6	11.0	25.0	
2	95.04	36.7	45	194	30.0	173	100	9.5	2.5	26.4	28.3	21.6	53.6	25.3	32.0	
3	158.43	29.3	273	191	24.7	0	135	8.7	3.3	26.1	21.2	16.6	53.6	32.4	37.0	
4	190.08	31.7	56	159	24.0	153	100	9.6	3.6	25.9	25.0	17.3	53.6	28.6	36.3	
5	253.46	54.0	287	100	42.7	24	171	12.6	4.1	25.5	51.2	39.9	53.6	2.4	13.7	
6	316.82	40.5	91	100	-	-	-	13.8	4.7	25.6	39.4	-	53.6	14.2	-	
7	380.17	34.7	57	100	24.5	186	301	16.2	5.2	26.1	36.0	25.8	53.6	17.6	27.8	
8	475.20	30.0	56	190	23.7	141	236	17.6	5.9	26.8	32.7	26.4	53.6	20.9	27.2	
9	538.56	35.9	66	100	-	-	-	18.1	6.2	27.1	39.1	-	53.6	14.5	-	
10	570.24	37.5	236	156	26.3	273	378	18.3	6.4	27.1	41.1	29.9	53.6	12.5	23.7	
11	665.28	31.0	63	145	23.5	333	100	19.5	6.9	27.1	36.3	28.8	53.6	17.3	24.8	
12	855.37	26.7	56	174	23.3	102	100	21.0	8.0	26.6	35.1	31.7	53.6	18.5	21.9	
13	950.42	28.7	80	100	21.7	0	100	22.3	8.5	26.5	39.0	32.0	53.6	14.6	21.6	
14	982.09	29.7	250	100	-	-	-	23.0	8.7	26.4	41.0	-	53.6	12.6	-	
15	1140.50	37.0	32	129	-	-	-	24.4	9.5	34.6	42.3	-	53.6	11.3	-	
16	1298.89	36.0	24	116	-	-	-	25.3	10.4	35.6	42.1	-	53.6	11.5	-	

Result = Reading Level + Antenna Factor + Cable Loss - Preamp Gain + Attenuator + 20xLog(Test Distance / Standard Distance)
 Antenna Type : Biconical Logperiodic(30MHz-2GHz)