

# Certificate of Compliance

**Certificate No:** 6212019A-E91220-1

**Manufacturer:** OML, Inc.

**Model/Part No:** M12HWD

**Serial/ID No:** E91220-1

**Description:** WR-12 Harmonic Mixer

**Date of Test:** July 29, 2019

**Temperature:** (23 +/- 5) deg C

**Humidity:** 20 to 65% RH

**Procedure:**

This certifies that the above product was tested in compliance with OML specifications using applicable OML's procedures.

**As Received :** Physical Condition: Fair  
Within Tolerance: Yes

**As Shipped:** At the completion of the test, the product **COMPLIED** with the performance capability.

**Remarks:** Functional Verification Service

**Traceability Information:** Traceability is to national standards administered by U.S. NIST, NRC Canada, Euromet members (NPL, PTB, BNM, etc.) or other recognized standards laboratories. Some measurements are traceable to natural physical constants, consensus standards or ratio type measurements. Supporting documentation relative to traceability is available for review by appointment.

In the absence of power standards above 110 GHz, power measurements and conversion loss measurements above 110 GHz are to confirm operation functionality and traceable only to OML.

This certificate shall not be reproduced, except in full, without the written approval of OML.

  
\_\_\_\_\_  
Mitzi Chow, Material Manager

08/01/2019

\_\_\_\_\_  
Date

**OML** Inc.

300 Digital Drive, Morgan Hill, CA 95037 USA Tel. (408) 779 2698 Fax (408) 778 0491

**Model M12HWD**

**Ser No. E91220-1**

7/29/2019

**Conversion Loss Test Data**

Frequency (GHz)	Conversion Loss (dB)
60.00	30.78
60.60	30.98
61.20	30.97
61.80	31.67
62.40	32.53
63.00	33.08
63.60	33.14
64.20	33.24
64.80	33.72
65.40	34.43
66.00	34.99
66.60	34.79
67.20	35.06
67.80	36.12
68.40	37.06
69.00	37.54
69.60	38.32

Frequency (GHz)	Conversion Loss (dB)
70.20	40.38
70.80	39.81
71.40	40.67
72.00	42.48
72.60	44.48
73.20	45.11
73.80	45.47
74.40	44.30
75.00	43.17
75.60	42.34
76.20	39.15
76.80	37.56
77.40	36.70
78.00	38.92
78.60	41.75
79.20	38.92
79.80	39.08

Frequency (GHz)	Conversion Loss (dB)
80.40	37.83
81.00	36.63
81.60	33.92
82.20	33.61
82.80	33.35
83.40	35.29
84.00	35.87
84.60	36.55
85.20	39.74
85.80	35.34
86.40	33.10
87.00	32.57
87.60	32.49
88.20	32.46
88.80	32.71
89.40	33.18
90.00	33.73

**OML INC.**

Traceability only available ≤ 110 GHz

6212019A

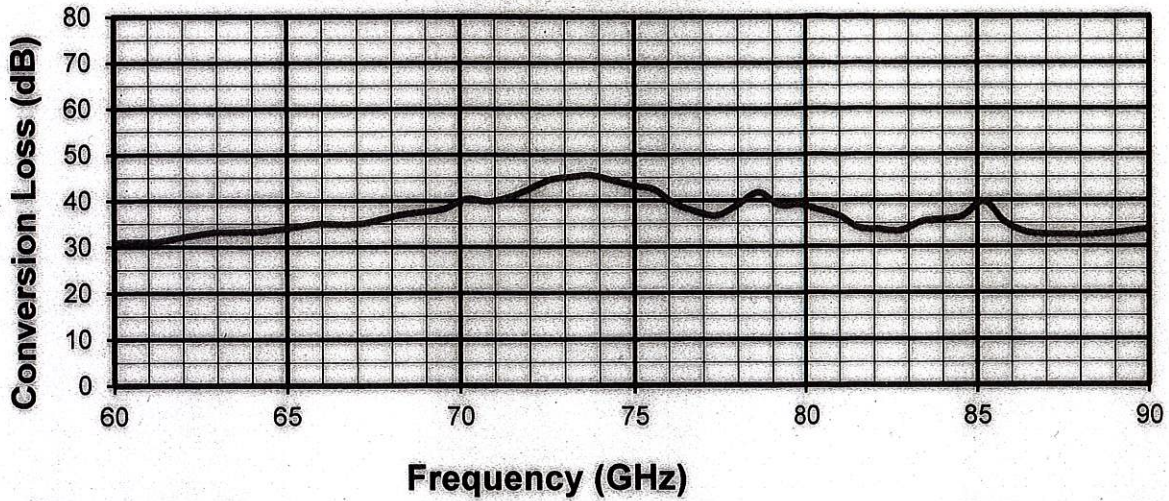
Morgan Hill, CA 95037

**Model M12HWD**

**Ser No. E91220-1**

7/29/2019

**Conversion Loss Test Data**



Optimized for R&S FSU FSQ: R.F. = -30 dBm, L.O. = (RF+IF)/6 @ 15 dBm, I.F. = 404.4 MHz, Bias = 0.53 mA

**OML** INC.

6212019A

Morgan Hill, CA 95037

# Certificate of Compliance

**Certificate No:** 6212019B-F91220-1

**Manufacturer:** OML, Inc.

**Model/Part No:** M08HWD

**Serial/ID No:** F91220-1

**Description:** WR-08 Harmonic Mixer

**Date of Test:** July 29, 2019

**Temperature:** (23 +/- 5) deg C

**Humidity:** 20 to 65% RH

**Procedure:**

This certifies that the above product was tested in compliance with OML specifications using applicable OML's procedures.

**As Received :** Physical Condition: Fair  
Within Tolerance: Yes

**As Shipped:** At the completion of the test, the product COMPLIED with the performance capability.

**Remarks:** Functional Verification Service

**Traceability Information:** Traceability is to national standards administered by U.S. NIST, NRC Canada, Euromet members (NPL, PTB, BNM, etc.) or other recognized standards laboratories. Some measurements are traceable to natural physical constants, consensus standards or ratio type measurements. Supporting documentation relative to traceability is available for review by appointment.

In the absence of power standards above 110 GHz, power measurements and conversion loss measurements above 110 GHz are to confirm operation functionality and traceable only to OML.

This certificate shall not be reproduced, except in full, without the written approval of OML.

  
\_\_\_\_\_  
Mitzi Chow, Material Manager

08/01/2019

\_\_\_\_\_  
Date

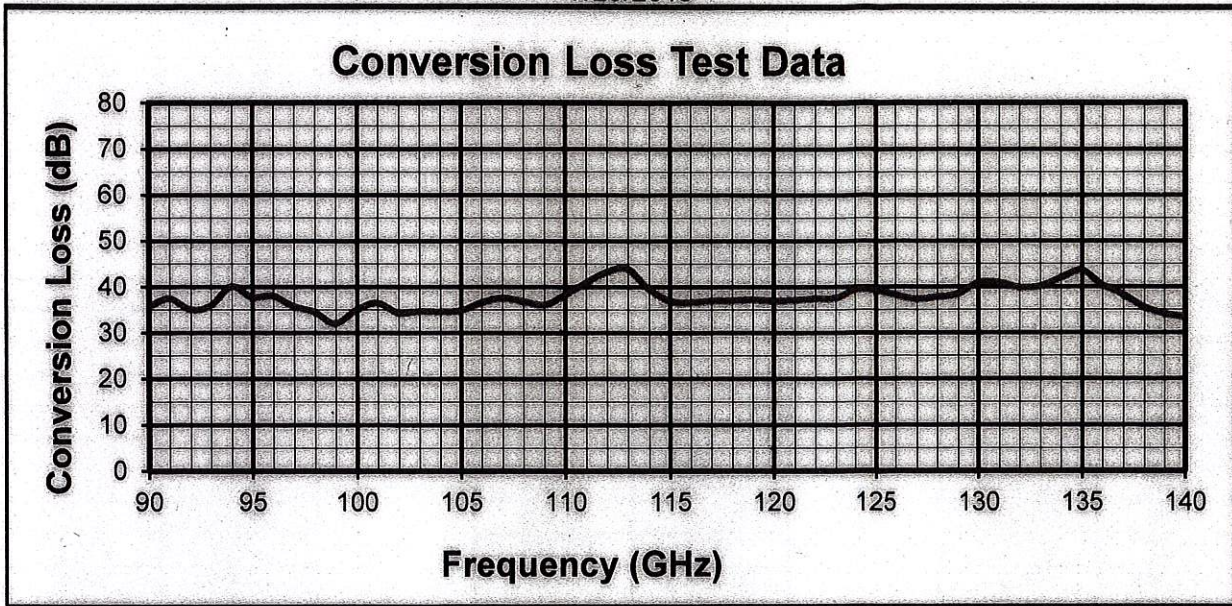
**OML** Inc.

300 Digital Drive, Morgan Hill, CA 95037 USA Tel. (408) 779 2698 Fax (408) 778 0491

**Model M08HWD**

**Ser No. F91220-1**

7/29/2019



Optimized for R&S FSU FSQ: R.F. = -30 dBm, L.O. = (RF+IF)/10 @ 15 dBm, I.F. = 404.4 MHz, Bias = 5.10 mA

**OML** INC.

6212019B

Morgan Hill, CA 95037

**Model M08HWD**

**Ser No. F91220-1**

7/29/2019

**Conversion Loss Test Data**

Frequency (GHz)	Conversion Loss (dB)
90.00	35.57
91.00	37.36
92.00	34.94
93.00	35.78
94.00	39.89
95.00	37.61
96.00	37.89
97.00	35.64
98.00	34.41
99.00	31.94
100.00	34.91
101.00	36.38
102.00	34.23
103.00	34.58
104.00	34.45
105.00	34.78
106.00	36.51

Frequency (GHz)	Conversion Loss (dB)
107.00	37.50
108.00	36.80
109.00	36.00
110.00	38.11
111.00	40.75
112.00	43.14
113.00	43.87
114.00	39.49
115.00	36.95
116.00	36.54
117.00	36.94
118.00	37.03
119.00	37.18
120.00	36.95
121.00	37.04
122.00	37.41
123.00	37.53

Frequency (GHz)	Conversion Loss (dB)
124.00	39.29
125.00	39.24
126.00	38.17
127.00	37.30
128.00	37.75
129.00	38.37
130.00	40.80
131.00	40.91
132.00	39.80
133.00	40.09
134.00	41.90
135.00	43.54
136.00	40.37
137.00	38.28
138.00	35.56
139.00	34.10
140.00	33.43

**OML INC.**

Traceability only available  $\leq$  110 GHz

6212019B

Morgan Hill, CA 95037

# Certificate of Compliance

**Certificate No:** 6212019C-G91220-1

**Manufacturer:** OML, Inc.

**Model/Part No:** M05HWD

**Serial/ID No:** G91220-1

**Description:** WR-05 Harmonic Mixer

**Date of Test:** July 29, 2019

**Temperature:** (23 +/- 5) deg C

**Humidity:** 20 to 65% RH

**Procedure:**

This certifies that the above product was tested in compliance with OML specifications using applicable OML's procedures.

**As Received :** Physical Condition: Fair  
Within Tolerance: Yes


**As Shipped:** At the completion of the test, the product **COMPLIED** with the performance capability.

**Remarks:** Functional Verification Service

**Traceability Information:** Traceability is to national standards administered by U.S. NIST, NRC Canada, Euromet members (NPL, PTB, BNM, etc.) or other recognized standards laboratories. Some measurements are traceable to natural physical constants, consensus standards or ratio type measurements. Supporting documentation relative to traceability is available for review by appointment.

In the absence of power standards above 110 GHz, power measurements and conversion loss measurements above 110 GHz are to confirm operation functionality and traceable only to OML.

This certificate shall not be reproduced, except in full, without the written approval of OML.

  
\_\_\_\_\_  
Mitzi Chow, Material Manager

08/01/2019

\_\_\_\_\_  
Date

**OML** Inc.

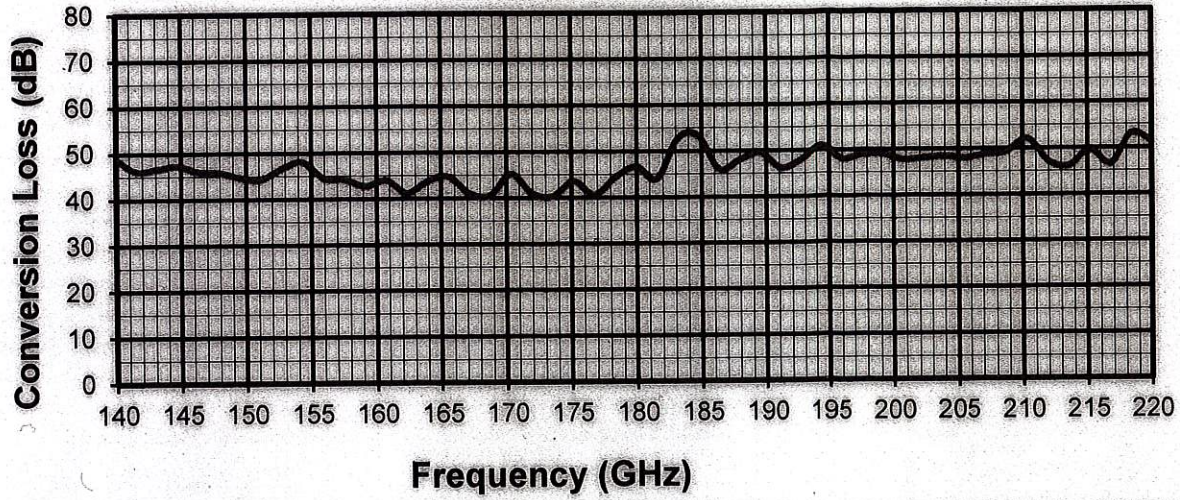
\_\_\_\_\_  
300 Digital Drive, Morgan Hill, CA 95037 USA Tel. (408) 779 2698 Fax (408) 778 0491

Model M05HWD

Ser No. G91220-1

7/29/2019

### Conversion Loss Test Data



Optimized for R&S FSU FSQ: R.F. = -30 dBm, L.O. = (RF+IF)/18 @ 15 dBm, I.F. = 404.4 MHz, Bias = 0.03 mA

**OML** INC.

6212019C

Morgan Hill, CA 95037



Model M05HWD

Ser No. G91220-1

7/29/2019

### Conversion Loss Test Data

Frequency (GHz)	Conversion Loss (dB)
140.00	48.64
141.60	45.91
143.20	46.45
144.80	47.10
146.40	45.76
148.00	45.58
149.60	44.47
151.20	44.12
152.80	46.49
154.40	47.83
156.00	44.27
157.60	43.98
159.20	42.52
160.80	43.79
162.40	40.98
164.00	43.52
165.60	44.49

Frequency (GHz)	Conversion Loss (dB)
167.20	40.86
168.80	40.37
170.40	45.03
172.00	40.78
173.60	40.08
175.20	43.38
176.80	40.38
178.40	44.18
180.00	46.52
181.60	43.80
183.20	52.62
184.80	53.04
186.40	45.87
188.00	47.87
189.60	49.37
191.20	46.00
192.80	47.98

Frequency (GHz)	Conversion Loss (dB)
194.40	50.81
196.00	47.87
197.60	48.71
199.20	48.79
200.80	47.62
202.40	47.95
204.00	48.24
205.60	47.80
207.20	48.66
208.80	49.22
210.40	51.93
212.00	47.07
213.60	46.03
215.20	49.50
216.80	46.45
218.40	52.92
220.00	51.40

**OML** INC.

Traceability only available  $\leq$  110 GHz

6212019C

Morgan Hill, CA 95037

# Certificate of Compliance

**Certificate No:** 6212019D-110317-1

**Manufacturer:** OML, Inc.

**Model/Part No:** M19HWD

**Serial/ID No:** 110317-1

**Description:** WR-19 Harmonic Mixer

**Date of Test:** July 29, 2019

**Temperature:** (23 +/- 5) deg C

**Humidity:** 20 to 65% RH

**Procedure:**

This certifies that the above product was tested in compliance with OML specifications using applicable OML's procedures.

**As Received :** Physical Condition: Fair  
Within Tolerance: Yes

**As Shipped:** At the completion of the test, the product **COMPLIED** with the performance capability.

**Remarks:** Functional Verification Service

**Traceability Information:** Traceability is to national standards administered by U.S. NIST, NRC Canada, Euromet members (NPL, PTB, BNM, etc.) or other recognized standards laboratories. Some measurements are traceable to natural physical constants, consensus standards or ratio type measurements. Supporting documentation relative to traceability is available for review by appointment.

In the absence of power standards above 110 GHz, power measurements and conversion loss measurements above 110 GHz are to confirm operation functionality and traceable only to OML.

This certificate shall not be reproduced, except in full, without the written approval of OML.

  
\_\_\_\_\_  
Mitzi Chow, Material Manager

08/01/2019

\_\_\_\_\_  
Date

**OML** Inc.

300 Digital Drive, Morgan Hill, CA 95037 USA Tel. (408) 779 2698 Fax (408) 778 0491

**Model M19HWD**

**Ser No. 110317-1**

7/29/2019

**Conversion Loss Test Data**

Frequency (GHz)	Conversion Loss (dB)
40.00	28.24
40.40	29.16
40.80	28.26
41.20	29.32
41.60	29.50
42.00	30.31
42.40	31.85
42.80	31.75
43.20	29.19
43.60	31.23
44.00	28.38
44.40	29.75
44.80	26.91
45.20	26.16
45.60	24.60
46.00	25.63
46.40	25.97

Frequency (GHz)	Conversion Loss (dB)
46.80	25.71
47.20	28.71
47.60	28.60
48.00	28.36
48.40	29.46
48.80	31.20
49.20	29.12
49.60	30.74
50.00	27.68
50.40	30.01
50.80	29.60
51.20	26.34
51.60	26.92
52.00	29.09
52.40	25.90
52.80	26.70
53.20	27.15

Frequency (GHz)	Conversion Loss (dB)
53.60	26.90
54.00	26.66
54.40	26.39
54.80	27.73
55.20	26.74
55.60	25.71
56.00	26.34
56.40	27.78
56.80	26.05
57.20	27.56
57.60	26.77
58.00	27.95
58.40	27.09
58.80	26.56
59.20	29.88
59.60	28.04
60.00	29.33

**OML INC.**

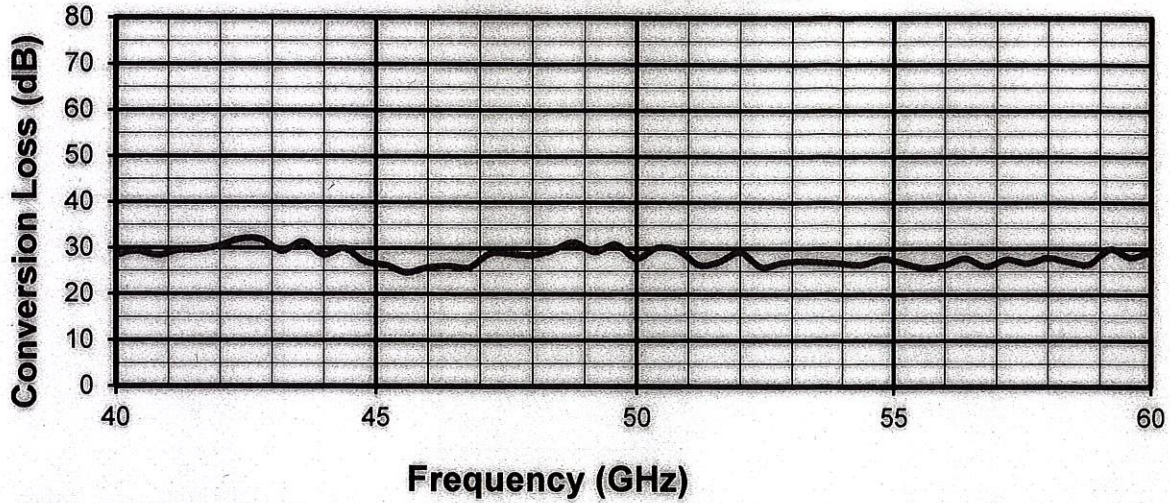
Traceability only available  $\leq$  110 GHz

6212019D

Morgan Hill, CA 95037

Model M19HWD  
Ser No. 110317-1  
7/29/2019

### Conversion Loss Test Data



Optimized for R&S FSU FSQ: R.F. = -30 dBm, L.O. = (RF+IF)/4 @ 15 dBm, I.F. = 404.4 MHz, Bias = 0.00 mA

**OML** INC.

6212019D

Morgan Hill, CA 95037

ORIGIN ID: SNSA (650) 949-8041  
ELEANOR SOLOMONA  
RADAR SYSTEMS TECHNOLOGY  
1671 DELL AVE/NUVE  
SUITE 100  
CAMPBELL, CA 95008 US  
SIGN: ELEANOR SOLOMONA

SHIP DATE: 02AUG19  
ACTWGT: 4.00 LB  
CAD: 1968792/JNET 4160  
DIMS: 17x13x5 IN  
BILL RECIPIENT  
NO EEI 30.36

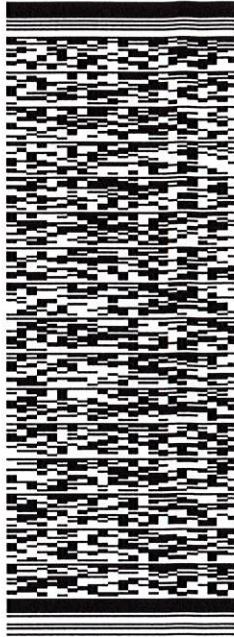
TO MR NENAD GALIC  
NEMKO CANADA, INC.  
303 RIVER ROAD

OTTAWA ON K1V1H2  
(613) 737-9680  
INV/ PO

REF: RMA/PO 71330 - INV/0051953  
DEPT:

(CA)

567J3/E9E7/05A2



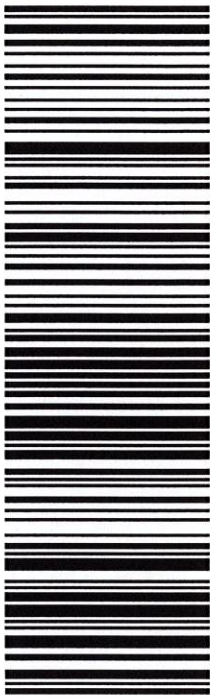
J192019062402uv

TRK# 7759 0868 9699  
0430

INTL \*\* 2DAY \*\*  
AM

S5 YOWWA

K1V 1H2  
ON-CA YOW



After printing this label:

**CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH**

1. Fold the printed page along the horizontal line.
2. Place label in shipping pouch and affix it to your shipment.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

**LEGAL TERMS AND CONDITIONS OF FEDEX SHIPPING DEFINITIONS.** On this Air Waybill, "we", "our", "us", and "FedEx" refer to Federal Express Corporation, its subsidiaries and branches and their respective employees, agents, and independent contractors. The terms "you" and "your" refer to the shipper, its employees, principals and agents. If your shipment originates outside the United States, your contract of carriage is with the FedEx subsidiary, branch or independent contractor who originally accepts the shipment from you. The term "package" means any container or envelope that is accepted by us for delivery, including any such items tendered by you utilizing our automated systems, meters, manifests or waybills. The term "shipment" means all packages which are tendered to and accepted by us on a single Air Waybill. **AIR CARRIAGE NOTICE:** For any international shipments by air, the Warsaw Convention, as amended, may be applicable. The Warsaw Convention, as amended, will then govern and in most cases limit FedEx's liability for loss, delay of, or damage to your shipment. The Warsaw Convention, as amended, limits FedEx's liability. For example in the U.S. liability is limited to \$9.07 per pound (20\$ per kilogram), unless a higher value for carriage is declared as described below and you pay any applicable supplementary charges. The interpretation and operation of the Warsaw Convention's liability limits may vary in each country. There are no specific stopping places which are agreed to and FedEx reserves the right to route the shipment in any way FedEx deems appropriate. **ROAD TRANSPORT NOTICE:** Shipments transported solely by road to or from a country which is a party to the Warsaw Convention or the Contract for the International Carriage of Goods by Road (the "CMR") are subject to the terms and conditions of the CMR, notwithstanding any other provision of this Air Waybill to the contrary. For those shipments transported solely by road, if a conflict arises between the provisions of the CMR and this Air Waybill, the terms of the CMR shall prevail. **LIMITATION OF LIABILITY.** If not governed by the Warsaw Convention, the CMR, or other international treaties, laws, or government regulations, orders, or requirements, FedEx's maximum liability for damage, loss, delay, shortage, mis-delivery, non-delivery, misinformation or failure to provide information in connection with shipments of cash, currency or other prohibited items or in instances beyond our control, such as acts of God, perils of the air, weather conditions, mechanical delays, acts of public enemies, war, strike, civil commotion, or acts or omissions of public authorities (including customs and health officials) with actual or apparent authority. **NO WARRANTY.** We make no warranties, express or implied. **CLAIMS FOR LOSS, DAMAGE OR DELAY.** ALL CLAIMS MUST BE MADE IN WRITING AND WITHIN STRICT TIME LIMITS. SEE OUR TARIFF, APPLICABLE FEDEX SERVICE GUIDE, OR STANDARD CONDITIONS OF CARRIAGE FOR DETAILS. The Warsaw Convention provides specific written claims procedures for damage, delay or non-delivery of your shipment. Moreover, the interpretation and operation of the Warsaw Convention's claims provisions may vary in each country. Refer to the Convention to determine the claims period for your shipment. The right to damages against us shall be extinguished unless an action is brought within two years, as set forth in the Convention. FedEx is not obligated to act on any claim until all transportation charges have been paid. The claim amount may not be deducted from the transportation charges. If the recipient accepts the shipment without noting any damage on the delivery record, FedEx will assume the shipment was delivered in good condition. In order for us to consider a claim for damage, the contents, original shipping carton and packing must be made available to us for inspection. **MANDATORY LAW.** Insofar as any provision contained or referred to in this Air Waybill may be contrary to any applicable international treaties, laws, government regulations, orders or requirements such provisions shall remain in effect as a part of our agreement to the extent that it is not overridden. The invalidity or unenforceability of any provisions shall not affect any other part of this Air Waybill. Unless otherwise indicated, **FEDERAL EXPRESS CORPORATION, 2005 Corporate Avenue, Memphis, TN 38132, USA,** is the first carrier of this shipment. Email address located at [www.fedex.com](http://www.fedex.com).