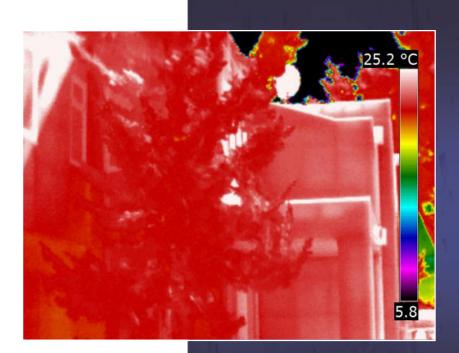


# Advanced Test Equipment Rentals - www.atecorp.com 800-404-ATEC (2832)



## Thermal Image Moisture Report



#### **Report Prepared For:**

XXX XXX

XXX XXX

XXX XXX

#### **Report Prepared By:**

Justin Barrett Kumar

LVL 1 Infrared Thermographer

NZ Moisture Testing

PO Box 97528, S.A.M.C

P 0800 NZ Moisture

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E info@nzmoisturetesting.co.nz

www.nzmoisturetesting.co.nz

### **Moisture Inspection Equipment Used**



FLIR T360 Infrared Camera-The primary tool used here at NZ Moisture Testing to locate and provide razor sharp images of thermal anomalies in your home. An infrared camera is a non- contact device that detects infrared energy and converts it into an electronic signal, which is then processed to produce a thermal image. The camera model that our thermographers use is designed and manufactured by FLIR systems, the worldwide leaders in thermal imaging technology. The FLIR T360 camera is an invaluable tool for

professional thermographers in identifying thermal anomalies in your home.

#### **Imaging Performance**

Thermal sensitivity	<0.06°C at 30°C
Detector type- Focal plane array (FPA)	Uncooled microbolometer 320x240pixels
Spectral range	7.5 to 13µm
Display	Built in touch screen 3.5" colour LCD
Image modes	Thermal/Visual/Thermal Fusion
Lens	25° Germanium lens

<sup>\*</sup>For a complete specifications list please visit our website www.nzmoisturetesting.co.nz



**Trotec T650 Moisture Meter-** The apparatus that we use here is a dielectric moisture indicator with which moisture and its distribution can be located quickly and non-destructively. The measurement range of this instrument is between 0-200 digits and the penetration depth is 20mm-40mm depending on the density of the building material that we are inspecting. This measurement instrument has been built in accordance with state of the art technology and fulfils the requirements of the relevant European and national directives.

#### The following indicators can be used for moisture orientation

Display (digits)	Building Material Moisture Range
< 40 digits	Dry material
40 digits – 80 digits	Damp material
> 80 digits	Wet / saturated material

<sup>\*</sup>The measured values are only to be interpreted as indicators (dry, damp, wet).



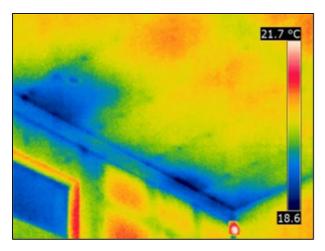
#### **TROTEC T250 Thermohydrometer-**

This measurement tool unites the function of an electronic thermohydrometer and a laser pyrometer. The T250 provides data relating to the environmental conditions at the time of inspection. This data includes temperature and relative humidity readings and can also be used to calculate dewpoint temperature. Dewpoint temperature is the temperature at which air is saturated with water vapour. On reaching or dropping below this temperature, for example on a cold window surface, condensation forms. This measurement instrument has been built in accordance with state

of the art technology and fulfils the requirements of the relevant European and national directives.

### **Thermal Image Interpretation**

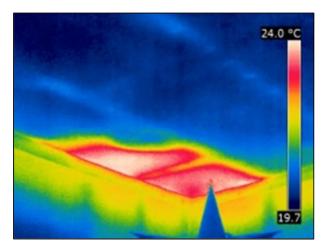
Thermography is a technology that allows us to see variations in thermal energy or heat. Infrared technology uses the part of the light spectrum that is invisible to the human eye, the science of obtaining and analysing this thermal data is performed with IR cameras. The IR camera is able to convert invisible infrared radiation into a visible image. The infrared camera used in the inspection of this building is sensitive to the slightest variations in infrared radiation and able to detect thermal variations quickly and non-invasively. The IR camera does not indicate the presence of moisture only the thermal variation present. Moisture readings are taken using a non-invasive moisture meter which is used in conjunction with the IR camera to detect anomalies in your home.



This image shows the corner of a room including part of the wall and ceiling, there is a difference and inconsistent distribution in temperature which would indicate the presence of a thermal anomaly.

When moisture readings were taken in this area, they were significantly higher in the colder "blue" areas (up to 120 digits).

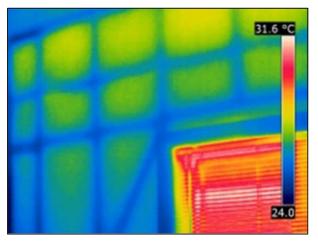
This is an example of a serious problem of moisture intrusion and an area of concern. A recommendation for further investigation would be expressed in this instance normally a form of invasive testing will be required.



This image was taken at midday and is of a ceiling in a main living room in a home. There is a clear thermal variation with areas of the ceiling reading up to  $24^{\circ}$ C.

This thermal anomaly is an example of missing insulation in the ceiling. The areas with a higher temperature show where there is no insulation. This thermal image indicates that the air in the roof cavity was warmer than the ambient room temperature.

This thermal image will be reversed if taken at night when the roof cavity temperature will be lower than the rooms.



This image shows the IR cameras ability to show the internal framework of a building.

We can see the temperature is consistent and even throughout the wall.

This is considered a normal and even temperature distribution and would indicate that there are no thermal anomalies. Once moisture readings have been taken in this area will confirm there are no moisture issues present.

\*(All images examples only not the subject house).



Report Date 1/03/2011

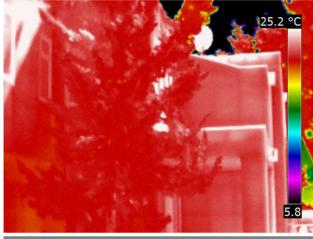
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



#### Image and Object Parameters

,		Toxt Commonte		
Camera Model	FLIR T360_ Western	Temperature	21 degrees	
Image Date	23/03/2011 10:44:23 a.m	Humidity	61 %	
Image Name	IR 3548 House description.jpg			
Emissivity	0.95			
Reflected apparent temperature	20.0 °C			
Object Distance	1.0 m			

Text Comments

### Description

House description - Four bedroom, two storey dwelling. Plaster construction with a tile roof and aluminium joinery. House inspected at 9am in clear sunny conditions. Contact person: xxx xxx



Report Date 1/03/2011

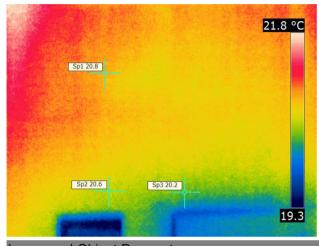
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



1.0 m

### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	17 digits
Image Date	23/03/2011 8:46:28 a.m.	Sp2	21 digits
Image Name	IR 3388 Entryway.jpg	Sp3	27 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		

**Text Comments** 

### Description

**Object Distance** 

Entryway - No thermal variations detected in this area. All moisture readings around doorway below 40 digits at time of inspection.



Report Date 1/03/2011

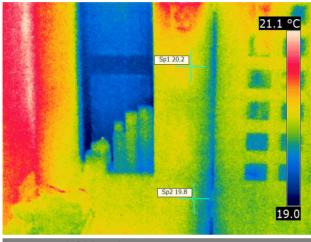
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_Western	Sp1	22 digits
Image Date	23/03/2011 8:46:50 a.m.	Sp2	26 digits

Image Name IR 3390 Entryway.jpg

Emissivity 0.95

Reflected apparent 20.0 °C temperature

Object Distance 1.0 m

#### Description

Entryway - Low moisture readings taken around doorway near floor. All moisture readings below 40 digits at time of inspection.



Report Date 1/03/2011

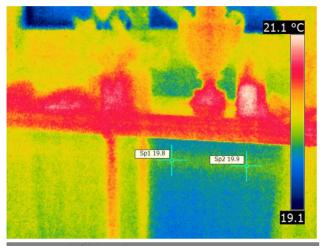
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	23 digits
Image Date	23/03/2011 8:47:13 a.m.	Sp2	27 digits

Image Name IR 3392 Entryway.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Entryway - Low moisture readings below 40 digits detected in this area below window. Small cracks noted in wall in this area and also areas above doorway.



Report Date 1/03/2011

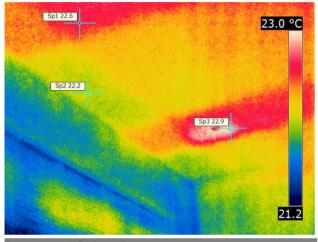
Company NZ Moisture Testing Ltd Customer Private Address

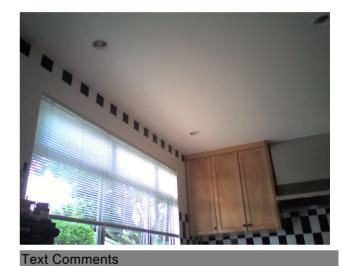
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	7 digits
Image Date	23/03/2011 8:52:00 a.m.	Sp2	15 digits
Image Name	IR 3394 Kitchen.jpg	Sp3	11 digits
Emissivity	0.95		

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

### Description

Kitchen - Walls in kitchen tiled to ceiling, moisture readings unable to be taken from tiled areas. Areas of thermal variation in ceiling may be due to missing or damaged insulation. Moisture readings below 40 digits in this area at time of inspection.



Report Date 1/03/2011

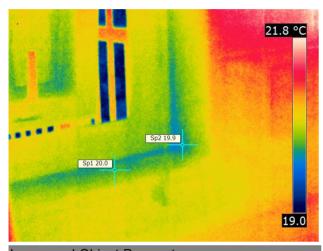
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	32 digits
Image Date	23/03/2011 8:52:53 a.m.	Sp2	65 digits

**Text Comments** 

Image Name IR 3398 Kitchen.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Kitchen - Areas of previous water damage detected in corner of window frame. Mould located in this area. Moisture readings above 40 digits at time of inspection.



Report Date 1/03/2011

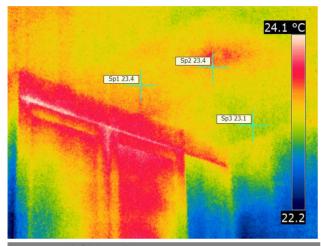
Company NZ Moisture Testing Ltd Customer Private Address

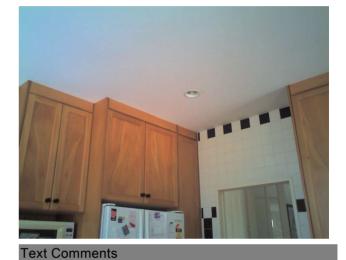
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	8 digits
Image Date	23/03/2011 8:53:11 a.m.	Sp2	17 digits
Image Name	IR 3400 Kitchen.jpg	Sp3	15 digits
Emissivity	0.95		

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

### Description

Kitchen - Areas of minor thermal variation in ceiling may be due to missing or damaged insulation. All moisture readings below 40 digits in this area of kitchen at time of inspection.



Report Date 1/03/2011

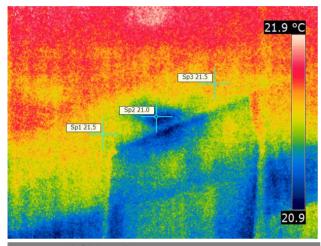
Company NZ Moisture Testing Ltd Customer Private Address

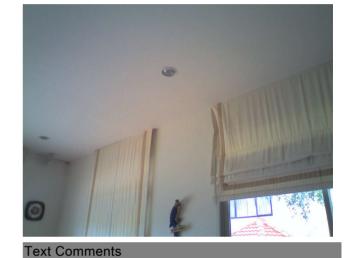
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	7 digits
Image Date	23/03/2011 8:57:29 a.m.	Sp2	15 digits
Image Name	IR 3402 Living room 1.jpg	Sp3	14 digits
Emissivity	0.05		

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Living room 1 - Minor thermal variation detected in areas of ceiling in this living room. No elevated moisture readings were detected in this area at time of inspection. All moisture readings below 40 digits in this area.



Report Date 1/03/2011

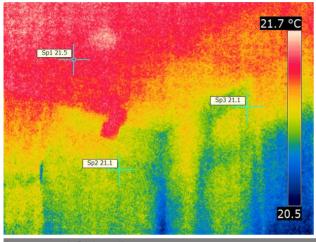
Company NZ Moisture Testing Ltd Customer Private Address

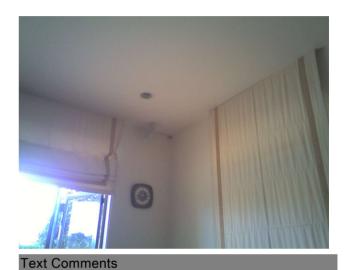
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_Western	Sp1	17 digits
Image Date	23/03/2011 8:58:05 a.m.	Sp2	25 digits
Image Name	IR 3404 Living room 1.jpg	Sp3	41 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Living room 1 - Small cracks noted in wall from top corners of window frames to ceiling above most windows. Moisture readings slightly above 40 digits in these areas on lintels consistent throughout house.



Report Date 1/03/2011

Company NZ Moisture Testing Ltd Customer Private Address

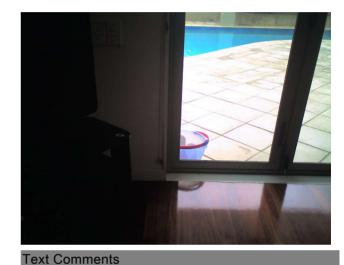
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	37 digits
Image Date	23/03/2011 8:59:29 a.m.	Sp2	45 digits
Image Name	IR 3410 Living room 1.jpg	Sp3	57 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Living room 1 - Moisture readings above 40 digits detected in areas near floor to side of doorway. No thermal variation detected in this area at time of inspection.



Report Date 1/03/2011

Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	43 digits
Image Date	23/03/2011 9:18:40 a.m.	Sp2	23 digits

Image Name IR 3430 Dining room.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Dining room - Small cracks noted in wall from top corners of window frames to ceiling above most windows. Moisture readings above 40 digits in these areas on lintels consistent throughout house. No thermal variance detected in this area.



Report Date 1/03/2011

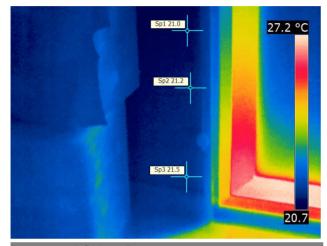
Company NZ Moisture Testing Ltd Customer Private Address

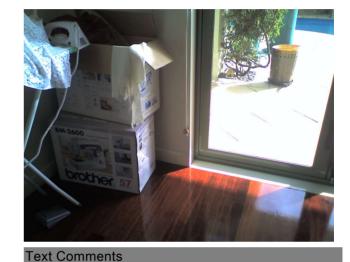
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	25 digits	
Image Date	23/03/2011 9:23:48 a.m.	Sp2	46 digits	
Image Name	IR 3432 Dining room.jpg	Sp3	52 digits	
Emissivity	0.95			
Reflected apparent temperature	20.0 °C			
Object Distance	1.0 m			

### Description

Dining room - Moisture readings above 40 digits detected in areas near floor to side of doorway. No thermal variation detected in this area at time of inspection.



Report Date 1/03/2011

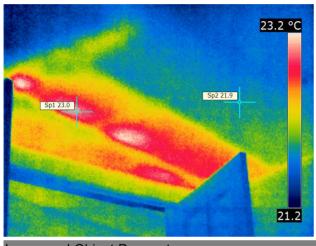
**Private Address** Company NZ Moisture Testing Ltd Customer

PO Box 97528, Manukau Site Address Address XXX XXX

City Auckland

Thermographer Justin Kumar **Contact Person** XXX XXX

ID:2010NZ13N005



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	17 digits
Image Date	23/03/2011 9:06:30 a.m.	Sp2	18 digits

**Text Comments** 

Image Name IR 3412 Living room 2.jpg

**Emissivity** 0.95 Reflected apparent 20.0 °C temperature

**Object Distance** 1.0 m

#### Description

Living room 2 - Areas of minor thermal variation in ceiling may be due to missing or damaged insulation. All moisture readings below 40 digits in this area of living room at time of inspection.



Report Date 1/03/2011

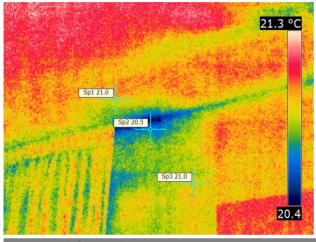
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



**Text Comments** 

### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	25 digits
Image Date	23/03/2011 9:07:12 a.m.	Sp2	31 digits
Image Name	IR 3416 Living room 2.jpg	Sp3	27 digits
Emissivity	0.05		

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

### Description

Living room 2 - Minor thermal variation detected in area near corner of ceiling above window in this room. Moisture readings slightly higher in this area, still below 40 digits at time of inspection.



Report Date 1/03/2011

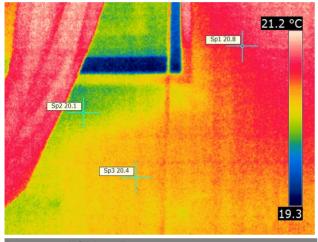
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

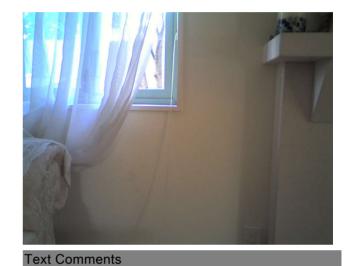
City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



1.0 m



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	22 digits	
Image Date	23/03/2011 9:14:36 a.m.	Sp2	49 digits	
Image Name	IR 3424 Living room 2.jpg	Sp3	24 digits	
Emissivity	0.95			
Reflected apparent temperature	20.0 °C			

### Description

**Object Distance** 

Living room 2 - Moisture readings above 40 digits detected in this area of living room below window frame. Patches of mould present on wall below window. Minor thermal variations detected in this area at time of inspection.



Report Date 1/03/2011

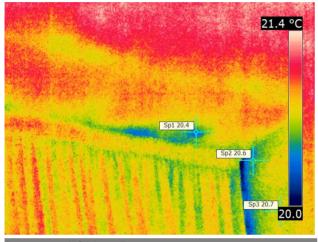
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	29 digits
Image Date	23/03/2011 9:07:33 a.m.	Sp2	33 digits
Image Name	IR 3420 Living room 2.jpg	Sp3	25 digits
Emissivity	0.95		

**Text Comments** 

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Living room 2 - Minor thermal variations detected in areas near corner of ceiling above window in this room. Moisture readings slightly higher in this area, below 40 digits at time of inspection.



Report Date 1/03/2011

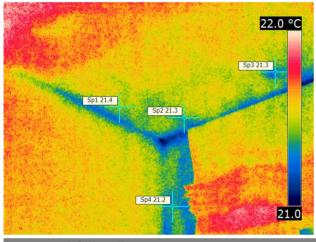
Company NZ Moisture Testing Ltd Customer Private Address

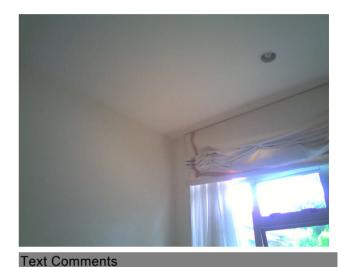
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	S	p1	14 digits
Image Date	23/03/2011 9:33:40 a.m.	S	p2	17 digits
Image Name	IR 3448 Office.jpg	S	р3	18 digits
Emissivity	0.95	S	p4	38 digits
Reflected apparent temperature	20.0 °C			

temperature

Object Distance 1.0 m

### Description

Office - Minor thermal variation detected in areas of ceiling in this room. No elevated moisture readings were detected in this area at time of inspection.



Report Date 1/03/2011

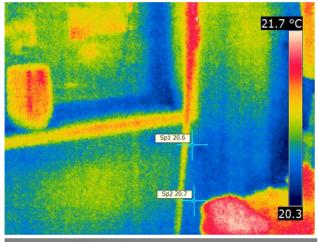
**Private Address** Company NZ Moisture Testing Ltd Customer

PO Box 97528, Manukau Site Address Address XXX XXX

City Auckland

Thermographer Justin Kumar **Contact Person** XXX XXX

ID:2010NZ13N005



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	34 digits
Image Date	23/03/2011 9:33:57 a.m.	Sp2	28 digits

Image Name IR 3450 Office.jpg

**Emissivity** 0.95 Reflected apparent 20.0 °C temperature

**Object Distance** 1.0 m

#### Description

Office - Moisture readings above 40 digits detected below right hand corner of this window in office. Minor crack located in this area. Moisture readings below 40 digits in this area at time of inspection.

**Text Comments** 



Report Date 1/03/2011

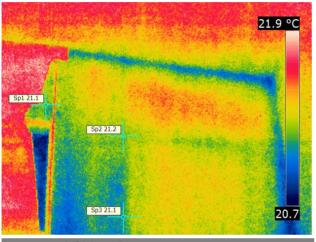
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	46 digits	
Image Date	23/03/2011 9:34:18 a.m.	Sp2	21 digits	
Image Name	IR 3452 Office.jpg	Sp3	22 digits	
Emissivity	0.95			
Reflected apparent temperature	20.0 °C			
Object Distance	1.0 m			

#### Description

Office - Small cracks noted in wall from top corners of window frame to ceiling above window. Moisture readings slightly above 40 digits in these areas on lintels consistent throughout house. Minor thermal variation detected in areas of this wall.



Report Date 1/03/2011

Company NZ Moisture Testing Ltd Customer Private Address

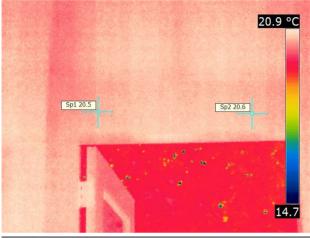
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

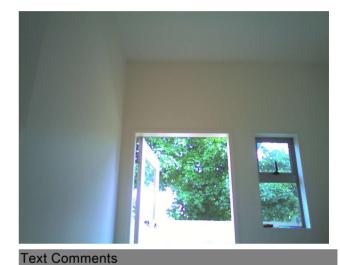
Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005

FLIR T360\_ Western 23/03/2011 9:39:22 a.m.



### Image and Object Parameters



Sp1	36 digits
Sn2	33 digits

Image Name IR 3456 Laundry.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Camera Model

Image Date

Object Distance 1.0 m

#### Description

Laundry - Highest moisture readings in this laundry attained from areas of wall above this doorway. All moisture readings in this area below 40 digits at time of inspection. No thermal variation present in this area.



Report Date 1/03/2011

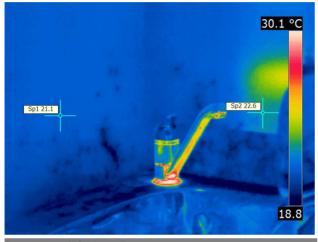
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	29 digits
Image Date	23/03/2011 9:40:49 a.m.	Sp2	30 digits

Image Name IR 3462 Laundry.jpg

Emissivity 0.95

Reflected apparent 20.0 °C temperature

Object Distance 1.0 m

#### Description

Laundry - Moisture readings on wall around sink area below 40 digits. Laundry in use at time of inspection.



Report Date 1/03/2011

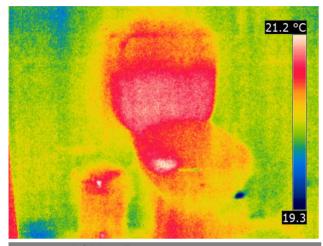
Company NZ Moisture Testing Ltd Customer **Private Address** 

Site Address Address PO Box 97528, Manukau XXX XXX

City Auckland

Thermographer Justin Kumar Contact Person XXX XXX

ID:2010NZ13N005





**Text Comments** 

Image and Object Parameters

FLIR T360\_ Western Image Date 23/03/2011 9:44:52 a.m.

Image Name IR 3468 Bathroom

(downstairs).jpg

**Emissivity** 0.95

20.0 °C Reflected apparent

temperature

Camera Model

**Object Distance** 1.0 m

#### Description

Bathroom (downstairs) - Walls in bathroom tiled from floor to ceiling, moisture readings unable to be taken from tiled areas. Areas of ceiling and window frames indicated low moisture readings below 40 digits at time of inspection.



Report Date 1/03/2011

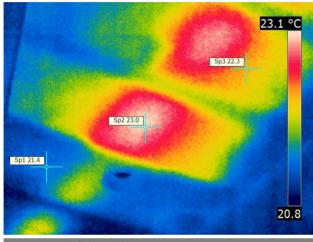
Company NZ Moisture Testing Ltd Customer Private Address

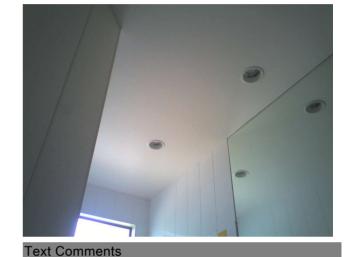
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	13 digits
Image Date	23/03/2011 9:45:17 a.m.	Sp2	9 digits
Image Name	IR 3470 Bathroom (downstairs).jpg	Sp3	11 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Bathroom - All moisture reading taken in this area below 40 digits at time of inspection. Thermal variances in areas of ceiling may be due to missing insulation. No elevated moisture readings in this bathroom.



Report Date 1/03/2011

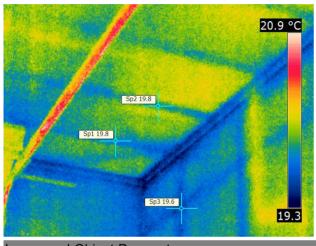
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	17 digits
Image Date	23/03/2011 9:26:52 a.m.	Sp2	16 digits
Image Name	IR 3436 Garage.jpg	Sp3	22 digits
Emissivity	0.95		

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Garage - Even temperature distribution shown in this area with no areas of thermal variations. All moisture readings below 40 digits in this area at time of inspection.



Report Date 1/03/2011

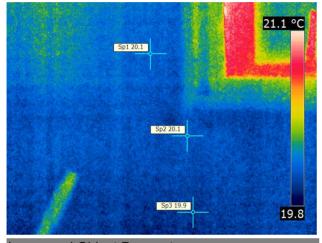
Company NZ Moisture Testing Ltd Customer Private Address

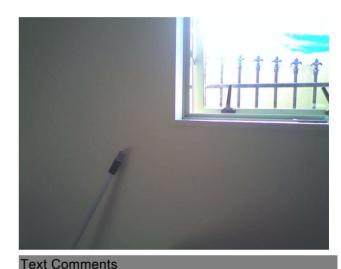
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

,				
Camera Model	FLIR T360_ Western	Sp1	27 digits	
Image Date	23/03/2011 9:27:12 a.m.	Sp2	47 digits	
Image Name	IR 3438 Garage.jpg	Sp3	39 digits	
Emissivity	0.95			
Reflected apparent temperature	20.0 °C			
Object Distance	1.0 m			

#### Description

Garage - Slightly elevated moisture readings detected below left hand corner of this window. Small cracks in wall and bubbles below paint noted in this area. No thermal variation detected at time of inspection.



Report Date 1/03/2011

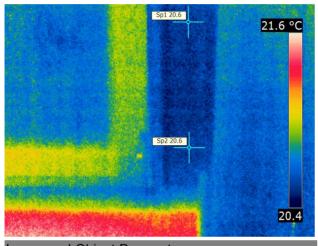
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	37 digits
Image Date	23/03/2011 9:27:38 a.m.	Sp2	45 digits

Image Name IR 3440 Garage.jpg
Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Garage - Moisture readings slightly above 40 digits detected in areas near floor to right hand side of doorway. No thermal variation detected in this area at time of inspection.



Report Date 1/03/2011

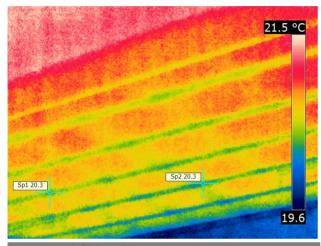
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	18 digits
Image Date	23/03/2011 9:28:15 a.m.	Sp2	14 digits

Image Name IR 3444 Garage.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Garage - Thermal image displays even temperature distribution in areas of ceiling in garage. All moisture readings below 40 digits in this area at time of inspection.



Report Date 1/03/2011

Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

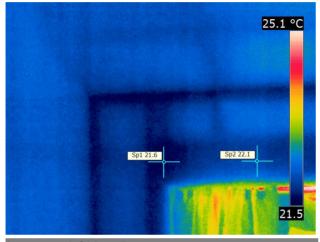
City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

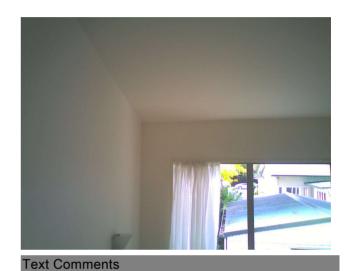
ID:2010NZ13N005

FLIR T360\_ Western

23/03/2011 10:33:01 a.m.



### Image and Object Parameters



Sp1	41 digits
Sp3	43 digits

Image Name IR 3538 Stairway.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Camera Model

Image Date

Object Distance 1.0 m

#### Description

Stairway - Moisture readings slightly elevated on areas of window lintel consistent with other areas of the house.



Report Date 1/03/2011

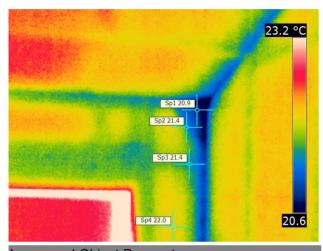
Company NZ Moisture Testing Ltd Customer Private Address

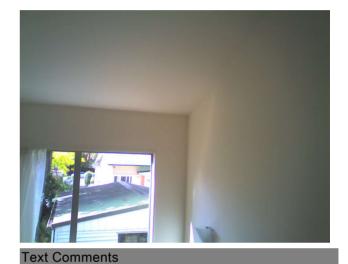
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	145 digits
Image Date	23/03/2011 10:33:14 a.m.	Sp2	130 digits
Image Name	IR 3540 Stairway.jpg	Sp3	61 digits
Emissivity	0.95	Sp4	30 digits
Reflected apparent	20.0 °C		

temperature

Object Distance 1.0 m

#### Description

Stairway - Excessive moisture readings detected in areas of thermal variation in corner of ceiling. Further investigation recommended in this area.



Report Date 1/03/2011

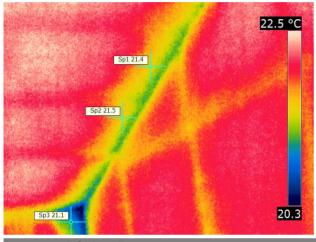
**Private Address** Company NZ Moisture Testing Ltd Customer

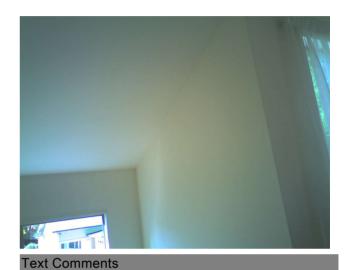
Site Address Address PO Box 97528, Manukau XXX XXX

City Auckland

Thermographer Justin Kumar **Contact Person** XXX XXX

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	75 digits
Image Date	23/03/2011 10:33:30 a.m.	Sp2	78 digits
Image Name	IR 3542 Stairway.jpg	Sp3	142 digits
Emissivity	0.95		
Reflected apparent	20.0 °C		

temperature

**Object Distance** 1.0 m

#### Description

Stairway - Excessive moisture readings detected in areas of thermal variation in Sp3 near corner of ceiling. Moisture readings also high in areas of ceiling near Sp1 and Sp2. Further investigation recommended in this area.



Report Date 1/03/2011

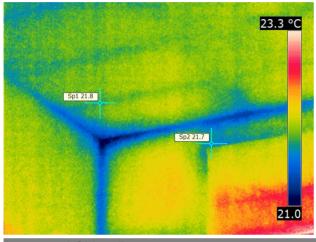
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	17 digits
Image Date	23/03/2011 10:25:33 a.m.	Sp2	45 digits

**Text Comments** 

Image Name IR 3524 Living room

(upstairs).jpg

Emissivity 0.95
Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Living room (upstairs) - Slightly elevated moisture readings detected in areas above window lintel at time of inspection. Consistent with other rooms in the house. Internal walls and ceiling below 25 digits in this area.



Report Date 1/03/2011

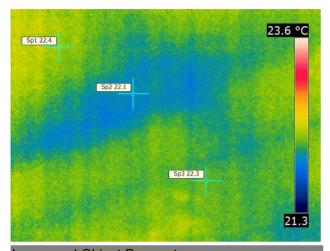
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	17 digits
Image Date	23/03/2011 10:28:52 a.m.	Sp2	18 digits
Image Name	IR 3528 Living room (upstairs).jpg	Sp3	14 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Living room (upstairs) - Areas of minor thermal variation detected in ceiling in this living room. No elevated moisture readings in this area at time of inspection.



Report Date 1/03/2011

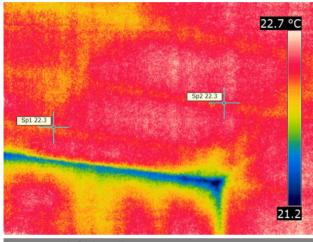
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	14 digits
Image Date	23/03/2011 10:30:52 a.m.	Sp2	19 digits
Image Name	IR 3530 Bathroom (upstairs).jpg		
Emissivity	0.95		

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Bathroom (upstairs) - Walls in bathroom tiled from floor to ceiling, moisture readings unable to be taken from tiled areas. Areas of ceiling and window frames indicated low moisture readings below 40 digits at time of inspection.



Report Date 1/03/2011

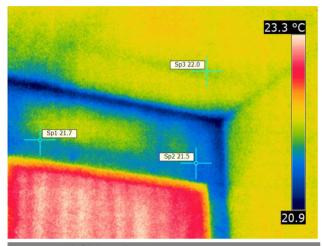
Company NZ Moisture Testing Ltd Customer Private Address

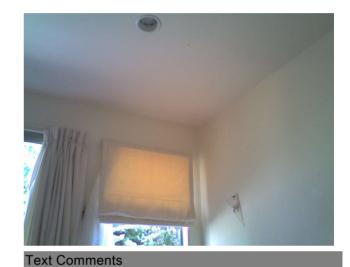
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	33 digits
Image Date	23/03/2011 10:02:09 a.m.	Sp2	34 digits
Image Name	IR 3494 Bedroom 1.jpg	Sp3	13 digits
Emissivity	0.95		
Reflected apparent	20.0 °C		

temperature

Object Distance 1.0 m

### Description

Bedroom 1 - No elevated moisture readings detected in this area. All moisture readings below 40 digits in this bedroom at time of inspection.



Report Date 1/03/2011

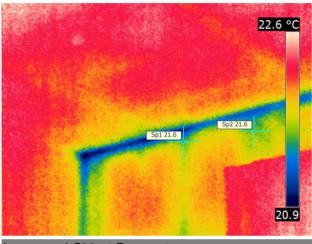
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	26 digits
Image Date	23/03/2011 10:02:35 a.m.	Sp2	36 digits

Image Name IR 3498 Bedroom 1.jpg

Emissivity 0.95

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

#### Description

Bedroom 1 - Minor thermal variation detected in area near Sp2 above window lintel. Minor cracks from corner of window to ceiling in this room. All moisture readings taken below 40 digits at time of inspection.



Report Date 1/03/2011

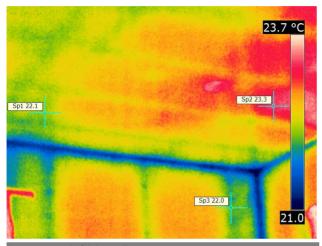
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

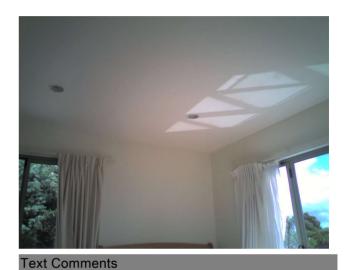
City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



1.0 m



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	11 digits
Image Date	23/03/2011 10:06:50 a.m.	Sp2	13 digits
Image Name	IR 3504 Bedroom 2.jpg	Sp3	27 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		

## Description

**Object Distance** 

Bedroom 2 - Minor thermal variations detected in areas of ceiling may be due to missing insulation. Minor cracks from corner of window to ceiling in this room. All moisture readings taken in this room below 40 digits at time of inspection.



Report Date 1/03/2011

Company NZ Moisture Testing Ltd Customer Private Address

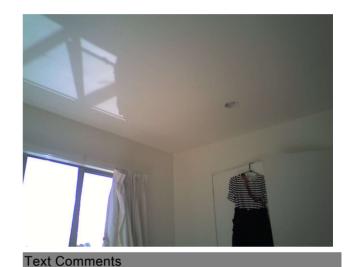
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	34 digits
Image Date	23/03/2011 10:07:22 a.m.	Sp2	12 digits
Image Name	IR 3508 Bedroom 2.jpg	Sp3	25 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Bedroom 2 - Even temperature distribution shown in this area with no areas of thermal variations. All moisture readings below 40 digits in this area at time of inspection.



Report Date 1/03/2011

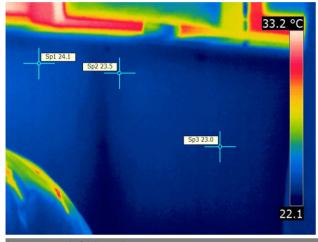
Company NZ Moisture Testing Ltd Customer Private Address

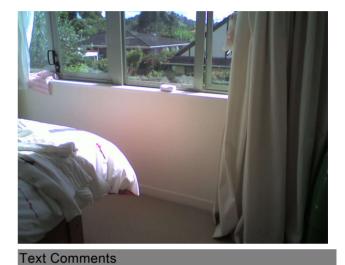
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	24 digits
Image Date	23/03/2011 10:07:39 a.m.	Sp2	33 digits
Image Name	IR 3510 Bedroom 2.jpg	Sp3	21 digits
Emissivity	0.95		

Reflected apparent 20.0 °C

temperature

Object Distance 1.0 m

## Description

Bedroom 2 - Moisture readings slightly higher in areas below window frame in this bedroom. All moisture readings taken in this area below 40 digits at time of inspection. No thermal variation detected.



Report Date 1/03/2011

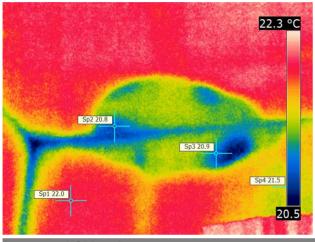
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

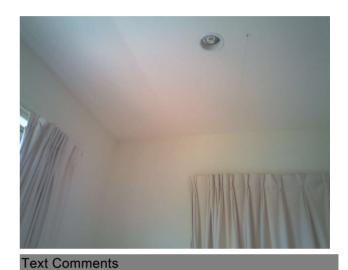
City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005



1.0 m



### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	24 digits
Image Date	23/03/2011 10:15:34 a.m.	Sp2	145 digits
Image Name	IR 3514 Bedroom 3.jpg	Sp3	158 digits
Emissivity	0.95	Sp4	45 digits
Reflected apparent temperature	20.0 °C		

### Description

**Object Distance** 

Bedroom 3 - Thermal variation detected in this bedroom near corner of ceiling and wall. Significantly higher moisture readings in thermal variation confirms moisture intrusion to bedroom. Further investigation is recommended in this area.





Report Date 1/03/2011

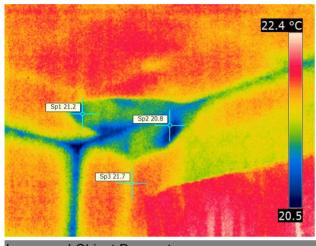
Company NZ Moisture Testing Ltd Customer Private Address

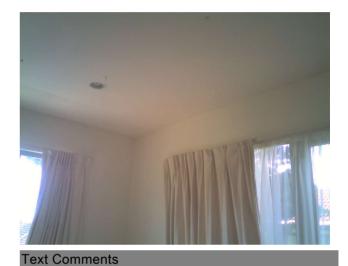
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





## Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	145 digits
Image Date	23/03/2011 10:17:33 a.m.	Sp2	159 digits
Image Name	IR 3516 Bedroom 3.jpg	Sp3	27 digits
Emissivity	0.95		
Reflected apparent	20.0 °C		

temperature

Object Distance 1.0 m

#### Description

Bedroom 3 - Thermal variation detected in this bedroom near corner of ceiling and wall. Significantly higher moisture readings in thermal variation confirms moisture intrusion to bedroom. Further investigation is recommended in this area.



Report Date 1/03/2011

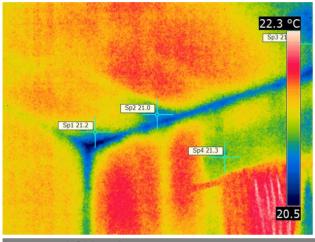
Company NZ Moisture Testing Ltd Customer Private Address

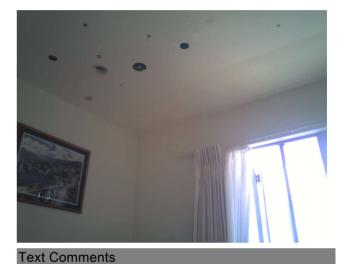
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	21 digits
Image Date	23/03/2011 10:19:55 a.m.	Sp2	22 digits
Image Name	IR 3520 Bedroom 3.jpg	Sp3	23 digits
Emissivity	0.95	Sp4	44 digits
Reflected apparent	20.0 °C		

Reflected apparent 20

temperature

Object Distance 1.0 m

### Description

Bedroom 3 - Thermal variations detected in ceiling in this area. No elevated moisture readings detected in this area at time of inspection. Moisture readings on lintel consistent with other rooms.



Report Date 1/03/2011

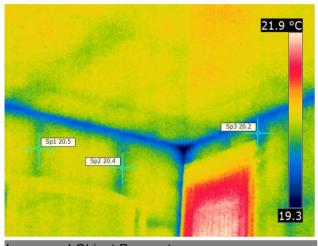
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





## Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	22 digits
Image Date	23/03/2011 9:50:15 a.m.	Sp2	23 digits
Image Name	IR 3474 Master bedroom.jpg	Sp3	33 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

## Description

Master bedroom - Even temperature distribution shown in this area with no areas of thermal variation. All moisture readings below 40 digits in this area at time of inspection.



Report Date 1/03/2011

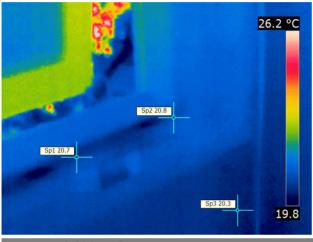
Company NZ Moisture Testing Ltd Customer Private Address

Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	29 digits
Image Date	23/03/2011 9:54:38 a.m.	Sp2	42 digits
Image Name	IR 3480 Master bedroom.jpg	Sp3	20 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Master bedroom - Areas of previous water damage detected in corner of window frame. Mould located in this area. Moisture readings slightly above 40 digits in this area at time of inspection.



Report Date 1/03/2011

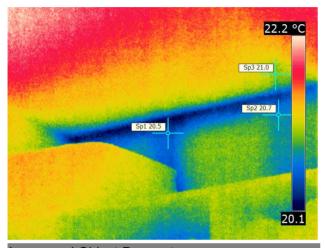
Company NZ Moisture Testing Ltd Customer Private Address

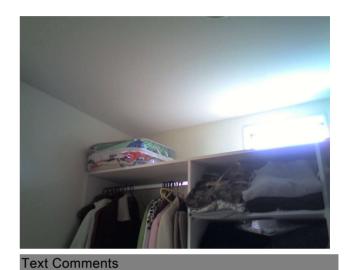
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005





### Image and Object Parameters

Camera Model	FLIR T360_ Western	Sp1	23 digits
Image Date	23/03/2011 9:55:51 a.m.	Sp2	26 digits
Image Name	IR 3484 Master bedroom (wardrobe).jpg	Sp3	19 digits
Emissivity	0.95		
Reflected apparent temperature	20.0 °C		
Object Distance	1.0 m		

### Description

Master bedroom (wardrobe) - Low moisture readings detected in this area at time of inspection. No elevated moisture readings.



Report Date 1/03/2011

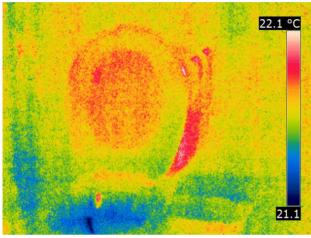
Company NZ Moisture Testing Ltd Customer Private Address

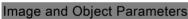
Address PO Box 97528, Manukau Site Address xxx xxx

City Auckland

Thermographer Justin Kumar Contact Person xxx xxx

ID:2010NZ13N005







**Text Comments** 

Camera Model	FLIR T360_ Western
Image Date	23/03/2011 9:57:22 a.m.
Image Name	IR 3490 Master bedroom (ensuite).jpg
Emissivity	0.95
Reflected apparent temperature	20.0 °C
Object Distance	1.0 m

### Description

Master bedroom (ensuite) - Walls in ensuite tiled from floor to ceiling, moisture readings unable to be taken from tiled areas. Areas of ceiling and window frames indicated low moisture readings below 40 digits at time of inspection.

#### TERMS AND CONDITIONS

- Interpretation: "You" or "Your" or "Customer" means the person or company that engages Us to undertake the Services; "We" or "Our" or "Us" means NZ Moisture Testing Limited (CN 2490739); "Services" means [Thermal imaging or moisture meter readings], "including" and similar words do not imply limitation.
- 2 Acknowledgement: The Customer acknowledges that:
  - Our reports do not determine if a home is or is not a 'leaky home'. Our reports are not a 'weather-tightness' report, as invasive testing would need to be carried through the exterior cladding into the building's framework to get conclusive results.
  - (b) A non-invasive moisture reading is not a conclusive indication that moisture is present or not present.
  - (c) (d)
  - Both invasive and non-invasive testing does not detect dry rot.

    The outcome of the inspection can be influenced by a variety of factors including hidden metals or chemical preservatives, weather conditions and the depth at which any moisture may be present at.

    Because any thermal imaging or non-invasive moisture reading is only a 'snapshot' at a particular point in time, all inspections
  - (e) and reports are valid for the day of inspection only, due to various conditions outside of our control after the day of inspection.
  - (f) A thermal imaging camera does not "see through" walls and it does not detect moisture. The infrared camera detects infrared radiation only.
  - (g) We do not give advice about:
    - Any methods, materials or costs for the repair of any Investigative Issue;
    - The suitability of a building for any specialised use; The market value or marketability of a building; and (ii)
    - (iii)
    - The advisability or inadvisability of the sale or purchase of a building. (iv)
  - (h) There is no guarantee or warranty given or representation made by that the Services will detect any and all moisture or that the readings and/or images obtained are an accurate reflection of the amount of moisture present.
  - Best practice would be for the Customer to undertake invasive inspections of the subject building

#### 3 **Payment**

- All payments are to be made by the Customer to Us (including for disbursement costs): (a)

  - within ten (10) days following the date of invoice unless otherwise agreed by Us; in cleared funds and in full without any deduction or withholding whatsoever of any kind (whether by set-off or (ii) counterclaim or otherwise); and
  - by such method as directed by Us.
- Goods and Services Tax and any and all other taxes and duties that may be applicable in relation to the Services shall be paid (b) by You to Us with our fees and at the time of supply.
- (c) If the Customer defaults in payment of any amount due to Us, without prejudice to any of Our other rights and remedies, the Customer must pay to Us interest on the unpaid amount at the rate of 1.5% per month (or part thereof) computed on a daily basis from the date on which such amount should have been paid until the date of actual payment (including after any judgment), compounding monthly.
- The Customer shall pay Us all costs, expenses and charges that are incurred by Us in enforcing or attempting to enforce any (d) of our rights against the Customer including all debt collection and legal expenses (on a solicitor and client basis).

#### Services and our Report: Our Report: 4

- is prepared following an above ground infra-red/moisture inspection of only the interior areas of the building that we have been instructed to inspect ("Subject Area"). We will not inspect and the "Subject Area" will not include:

  (i) The external cladding, external building envelope, exterior structures or roofing of any building;

  (ii) Any interior area where we do not have direct access or a clear line of sight including any areas covered by
  - - anything (including furniture and cupboards); and any area that can not be reached with a hand held moisture meter without the use of any equipment; and
  - Areas that were not accessible at the time of our investigation;
- (b) Identifies potential thermal temperature and/or moisture anomalies within the Subject Area at the time of our inspection only, could detect the possibility of leaks, or possible moisture and heat loss ("Investigative Issues") and provides an opinion on the presence or absence of the Investigative Issues in the Subject Area; and
- Is a preliminary non-invasive investigation for potential Investigative Issues. If any potential Investigative Issue is detected, we (c) will not do anything further until such further action is requested in writing to Us by the Customer, which additional services will be for by the Customer.
- Limits of Report: Any report or document we prepare: 5
  - is only for the benefit of the Customer. Those documents cannot be relied upon by any other person or party;
  - (b)
  - is not a structural survey. We do not uncover, dismantle or undertake any internal inspection of any building; is not designed or intended to identify potential problems or issues within the Subject Area other than the Investigative Issues (c) and, without limitation, will not:
    - Identify the presence or absence of dry rot or any hazardous substance including mould, toxins, cancer causing materials, noise or other contaminants;
    - Identify the presence or absence of any pests including wood damaging organisms, rodents or insects;
    - (iii) Determine the effectiveness of any equipment, utility, component or system installed to control leaks, moisture, heat loss, dry rot or hazardous substances;
    - (iv) Determine the durability or future condition of any equipment, utility, component or system; and
    - Determine compliance or non-compliance with any statutory or regulatory requirement, code, bylaw, ordinance or (v) other restriction.
- 6 What we will not do: The Customer acknowledges and agrees that We will not:
  - Enter any area or perform any procedure that will or may damage any part of a building or be dangerous to any of our (a) employees, contractors or any other person;
  - Disturb or move any insulation, panels, furniture, personal items, equipment, vegetation or other items or materials that (b) obstruct access or visibility to the thermal inspection; and
  - Operate any equipment, utility, component or system that is shut down, inoperable or that does not respond to normal (c) operating controls

#### 7 **Exclusion of Liability:**

- Neither Us nor our employees or contractors shall be liable to the Customer, the Customer's agents or employees or any other (a) person for any direct, indirect, incidental or consequential damage or loss of any nature howsoever caused (whether based on tort (including negligence), contract or otherwise) including, but not limited to, loss of profits, loss of opportunity, damage to equipment or property (including any costs or loss relating to any invasive inspection) or any other claim whatsoever arising directly or indirectly or in any way attributable to the performance or non-performance of the Services.
- The Consumer Guarantees Act 1993 ("Act") will not apply where the Customer is engaging Us to provide the Services for business purposes. If the Customer is a consumer under the Act, to the extent that the customer's rights under the Act have (b) not been excluded above, nothing in these terms and conditions will affect the rights of the customer under the Act.
- (c) The customer relies upon its own knowledge, skill and judgment in relation to the particular use or suitability of our report for the customer's purpose; and
- All warranties, descriptions representations or conditions implied by any Act, Regulation or otherwise are expressly excluded to (d) the fullest extent permitted by law.
- If, for any reason, we are found liable to the Customer or any other person in connection with the Services and we are unable (e) to rely on the exclusions of liability set out in these terms and conditions, our liability shall in all cases be:
  - Only be to the Customer and not to any third party; (i)
  - (ii) For direct losses of the Customer only and not any third party and not for any loss of profits or any indirect or consequential losses of any nature;
  - (iii) Limited to only that portion of the damage or loss directly caused or contributed to by Us or our employees or agents;
  - (iv) Limited to the price paid or payable by the Customer for the Services.

- No claim for damage or loss arising directly or indirectly in connection with the Services shall be brought more than two (2) months after completion of the Services. At that time the Customer shall be deemed to have waived and abandoned any and all claims against Us and Our agents or employees and shall not be entitled not be entitled to bring any claim against Us and (f) Our agents or employees.
- (h)
- Our agents or employees.

  (g) Our directors, employees and agents are not contracting with, or assuming any duties of care to, the Customer and have no liability to the Customer whatsoever and howsoever arising.

  Clauses (a) to (g) of this clause 7 are promises that confer and are intended to confer a benefit on Our employees and agents and accordingly the provisions of the Contracts (Privity) Act 1982 apply to each of them.

  Guarantee: Where the Customer is a company, a trust, or an incorporated or unincorporated entity then the person who engages us to provide the Services on behalf of that entity personally guarantees to Us, as a principal obligor and not as a surety, the due and punctual payment to Us of all moneys unpaid by the Customer to Us. 8