Report On

Limited Radio Testing of the
SRT Marine Technology Ltd
Carbon TRS-418-0003/TR-418-0001 (Type 3)
In accordance with IEC 62320-2: AIS AtoN Type 3 Stations
(Receiver Tests)

COMMERCIAL-IN-CONFIDENCE

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Document 75917597 Report 10 Issue 3

March 2013

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DATED 06 March 2013

This report has been up-issued to Issue 3 to included revised test results for spurious response rejection, typographical errors corrected and clarification provided.

Product Service

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SECTION 1

REPORT SUMMARY

Radio Testing of the
SRT Marine Technology Ltd Carbon TRS-418-0003/TR-418-0001
In accordance with IEC 62320-2: AIS AtoN Type 3 Stations
(Receiver Tests)

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Radio Testing of the SRT Marine Technology Ltd Carbon TRS-418-0003/TR-418-0001 to the requirements of IEC 62320-2: AIS AtoN Type 3 Stations (Receiver Tests).

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	SRT Marine Technology Ltd
Model Number(s)	Carbon
Serial Number(s)	P216FTU021 – TUV TSR Reference 0033
Number of Samples Tested	1
Test Specification/Issue/Date	IEC 62320-2 (2008)
Incoming Release Date	Declaration of Build Status 12 October 2012
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	POR003047 22 March 2012
Start of Test	08 January 2013
Finish of Test	21 January 2013
Name of Engineer(s)	R Henley S Bennett B Airs M Russell

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with IEC 62320-2 is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
RX1				
2.6	7.1.2.1	Sensitivity	Pass	
2.7	7.1.2.2	Error Behaviour at High Input Levels	Pass	
2.8	7.1.2.3	Co-channel Rejection	Pass	
2.9	7.1.2.4	Adjacent Channel Selectivity	Pass	
2.10	7.1.2.5	Spurious Response Rejection	Pass	
2.11	7.1.2.6	Intermodulation Response Rejection	Pass	
2.12	7.1.2.7	Blocking or Desensitisation	Pass	
2.13	7.1.3.1	Spurious Emissions from the Receiver	Pass	
RX2				
2.6	7.1.2.1	Sensitivity	Pass	
2.7	7.1.2.2	Error Behaviour at High Input Levels	Pass	
2.8	7.1.2.3	Co-channel Rejection	Pass	
2.9	7.1.2.4	Adjacent Channel Selectivity	Pass	
2.10	7.1.2.5	Spurious Response Rejection	Pass	
2.11	7.1.2.6	Intermodulation Response Rejection	Pass	
2.12	7.1.2.7	Blocking or Desensitisation	Pass	
2.13	7.1.3.1	Spurious Emissions from the Receiver	Pass	

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1.3 DECLARATION OF BUILD STATUS

Manufacturer	SRT Marine Ltd
Country of origin	United Kingdom
UK Agent	SRT Marine Ltd
Technical Description	AtoN (Aids to Navigation)
Model No	TRS & TR
Part No	418-0003 & 418-0001
Serial No	Sample 1- P216-FTU-20, Sample 2- P216-FTU-21, Sample 3- P216-FTU-30.
Drawing Number	418-0003 & 418-0001
Build Status	Mod 11 (supplied)
Software Issue	080200.00.09.11
IC ID	7075A-4180003
FCC ID	UYW-418-0003
Signature	
	Richard McMahon
Date	12th October 2012

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a SRT Marine Technology Ltd Carbon TRS-418-0003/TR-418-0001 as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.

Equipment Under Test

1.5 DEVIATIONS FROM THE STANDARD

No deviations from the application test standard or test plan were made during testing,

1.6 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

Product Service

SECTION 2

TEST DETAILS

Radio Testing of the
SRT Marine Technology Ltd Carbon TRS-418-0003/TR-418-0001
In accordance with IEC 62320-2: AIS AtoN Type 3 Stations (Receiver Tests)

Product Service

2.1 SENSITIVITY

2.1.1 Specification Reference

IEC 62320-2, Clause 7.1.2.1

2.1.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.1.3 Date of Test

8 January 2013, 9 January 2013 & 14 January 2013

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Environmental Conditions

Ambient Temperature	22.1 - 22.8°C
Relative Humidity	21.1 - 42.1%

2.1.6 Test Results

The signal level at the input of the receiver shall be set to -107 dBm for a type 3 device and -97 dBm for a type 2 device.

RX1

Test Signal Number 4

Test Conditions		Offset (Hz)	Sensitivity (%)	
			156.025 MHz	162.025 MHz
T_{nom}(22.2°C)	V_{nom}(12 V DC)		0.5	0.5
		500	0.5	0.5
		-500	0.5	0.5
T_{min}(-25.0°C)	V_{min}(9.6 V DC)		0.5	
		500	0.5	
		-500	0.5	
T_{max}(+55.0°C)	V_{max}(31.2 V DC)		0.5	
		500	0.5	
		-500	0.5	

Limit Clause 7.1.2.1.3

Maximum PER of 20%.

RX2

Test Signal Number 4

Test Conditions		Offset (Hz)	Sensitivity (%)	
			156.025 MHz	162.025 MHz
T_{nom}(22.2°C)	V_{nom}(12 V DC)		0.5	0.5
		500	0.5	0.5
		-500	0.5	0.5
T_{min}(-25.0°C)	V_{min}(9.6 V DC)		0.5	
		500	0.5	
		-500	0.5	
T_{max}(+55.0°C)	V_{max}(31.2 V DC)		0.5	
		500	0.5	
		-500	0.5	

Limit Clause 7.1.2.1.3

Maximum PER of 20%.

2.2 ERROR BEHAVIOUR AT HIGH INPUT LEVELS

2.2.1 Specification Reference

IEC 62320-2, Clause 7.1.2.2

2.2.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.2.3 Date of Test

9 January 2013

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Environmental Conditions

Ambient Temperature	22.3 - 22.7°C
Relative Humidity	30.9 - 37.7%

2.2.6 Test Results

RX1

Test Signal Number 4

Test Conditions		Input Signal (dBm)	PER (%)	
			156.025 MHz	162.025 MHz
T_{nom}(22.3°C)	V_{nom}(12 V DC)	*	0.5	0.5
		-77	0.5	0.5
		-7	0.5	0.5

* The level of the wanted signal is 100 dB above the maximum wanted sensitivity.

Limit Clause 7.1.2.2.3

The PER shall not exceed 2% when the level of the input signal is -77 dBm.
The PER shall not exceed 10% when the level of the input signal is -7 dBm.

Product Service

RX2

Test Signal Number 4

Test Conditions		Input Signal (dBm)	PER (%)	
			156.025 MHz	162.025 MHz
T_{nom}(22.3°C)	V_{nom}(12 V DC)	*	0.5	0.5
		-77	0.5	0.5
		-7	0.5	0.5

* The level of the wanted signal is 100 dB above the maximum wanted sensitivity.

Limit Clause 7.1.2.2.3

The PER shall not exceed 2% when the level of the input signal is -77 dBm.
The PER shall not exceed 10% when the level of the input signal is -7 dBm.

Product Service

2.3 CO-CHANNEL REJECTION

2.3.1 Specification Reference

IEC 62320-2, Clause 7.1.2.3

2.3.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.3.3 Date of Test

21 January 2013

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Environmental Conditions

Ambient Temperature	21.8 - 22.2°C
Relative Humidity	20.3 - 20.6%

2.3.6 Test Results

The level of the wanted signal from generator A shall be adjusted to -101 dBm for a Type 3 device and to -101 dBm for a Type 2 device.

The level of the unwanted signal from generator B shall be adjusted to -111 dBm for a Type 3 device and -117 dBm for a Type 2 device.

RX1

12 V DC Supply

Test Signal Number 4

Test Conditions		Offset (Hz)	Co-channel Rejection (%)	
			156.025 MHz	162.025 MHz
T_{nom}(21.8°C)	V_{nom}(12 V DC)		0.5	0.5
		1000	0.5	0.5
		-1000	0.5	0.5

Please add to list of test equipment which was borrowed from customer: Manufacturer: Sine Qua Non Model: PMG1 Serial Number: 010101-066 Calibration Status: Output Monitored.

Limit Clause 7.1.2.3.3

The PER shall not exceed 20%.

RX2

12 V DC Supply

Test Signal Number 4

Test Conditions		Offset (Hz)	Co-channel Rejection (%)	
			156.025 MHz	162.025 MHz
T_{nom}(22.2°C)	V_{nom}(12 V DC)		0.6	1.0
		1000	1.0	0.5
		-1000	0.5	0.5

Please add to list of test equipment which was borrowed from customer: Manufacturer: Sine Qua Non Model: PMG1 Serial Number: 010101-066 Calibration Status: Output Monitored.

Limit Clause 7.1.2.3.3

The PER shall not exceed 20%.

2.4 ADJACENT CHANNEL SELECTIVITY

2.4.1 Specification Reference

IEC 62320-2, Clause 7.1.2.4

2.4.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.4.3 Date of Test

9 January 2013

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Environmental Conditions

Ambient Temperature	21.6 - 22.9°C
Relative Humidity	31.0 - 35.5%

2.4.6 Test Results

The level of the wanted signal from generator A shall be adjusted to -101 dBm for a Type 3 device and to -101 dBm for a Type 2 device.

The level of the unwanted signal from generator B shall be adjusted to -31 dBm for a Type 3 device and -41 dBm for a Type 2 device.

RX1

Test Signal Number 4

Test Conditions		Offset (kHz)	Adjacent Channel Selectivity (%)	
			156.025 MHz	162.025 MHz
T_{nom}(21.6°C)	V_{nom}(12 V DC)	25	1.0	1.0
		-25	1.0	0.5

Limit Clause 7.1.2.4.3

The PER shall not exceed 20%.

RX2

Test Signal Number 4

Test Conditions		Offset (kHz)	Adjacent Channel Selectivity (%)	
			156.025 MHz	162.025 MHz
T_{nom}(21.6°C)	V_{nom}(12 V DC)	25	0.5	0.5
		-25	2.0	0.5

Limit Clause 7.1.2.4.3

The PER shall not exceed 20%.

2.5 SPURIOUS RESPONSE REJECTION

2.5.1 Specification Reference

IEC 62320-2, Clause 7.1.2.5

2.5.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.5.3 Date of Test

16 January 2013, 17 January 2013 & 04 March 2013

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Environmental Conditions

Ambient Temperature	22.4 - 24.9°C
Relative Humidity	20.2 - 24.7%

2.5.6 Test Results

The level of the wanted signal from generator A shall be adjusted to -101 dBm for a Type 3 device and to -91 dBm for a Type 2 device.

Signal generator B shall be switched on, and the level of the unwanted signal set to -31 dBm.

RX1

12 V DC Supply

Test Signal Number 3

162.000 MHz*

*Manufacturer's specified receiver frequencies did not include 161,975 MHz. 162,000 MHz was used as an alternative.

Spurious Response Frequency (MHz)	PER (%)
-	-

No responses were detected.

The manufacturer declared the following infomation in order to calculate the limited frequency range:

IF_1 = 19.655MHz
IF_2 = 0.455MHz

Switching Range = 6MHz
F_{LO} is low side, RF – IF_1, where RF is 156.025MHZ to 162.025MHz

LFR_{LO} = 113.26MHz
LFR_{HI} = 165.48MHz

The frequencies where a reduction in SINAD of 3dB or more were detected as follows from the limited frequency search:

152.175MHz, 153.145MHz, 153.230MHz, 154.055MHz, 156.455MHz, 157.365MHz, 157.615MHz, 158.445MHz, 161.090MHz, 162.825MHz.

The following specific frequencies of interest were calculated for RF = 162.000MHz:

F_{LO} = 162.000MHz – 19.655MHz = 142.345MHz.

265.035MHz, 304.345MHz, 407.380MHz, 446.690MHz, 549.725MHz, 589.035MHz

Limit Clause 7.1.2.5.8

At any frequency separated from the specified frequency of the receiver by 50 kHz or more, the PER shall not exceed 20%.

RX2

12 V DC Supply

Test Signal Number 3

162.000 MHz*

*Manufacturer's specified receiver frequencies did not include 161,975 MHz. 162,000 MHz was used as an alternative.

Spurious Response Frequency (MHz)	PER (%)
-	-

No responses were detected.

The manufacturer declared the following infomation in order to calculate the limited frequency range:

IF_1 = 29.255MHz
IF_2 = 0.455MHz
Switching Range = 6MHz
F_{LO} is high side, RF – IF_1, where RF is 156.025MHZ to 162.025MHz

LFR_{LO} = 152.57MHz
LFR_{HI} = 223.99MHz

The frequencies where a reduction in SINAD of 3dB or more were detected as follows from the limited frequency search:

157.615MHz, 161.255MHz, 162.745MHz, 162.910MHz.

The following specific frequencies of interest were calculated for RF = 162.000MHz:

F_{LO} = 162.000MHz + 29.255MHz = 191.255MHz.

353.255MHz, 411.765MHz, 544.510MHz, 603.020MHz, 735.765MHz, 794.275MHz

Limit Clause 7.1.2.5.8

At any frequency separated from the specified frequency of the receiver by 50 kHz or more, the PER shall not exceed 20%.

Product Service

2.6 INTERMODULATION RESPONSE REJECTION

2.6.1 Specification Reference

IEC 62320-2, Clause 7.1.2.6

2.6.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.6.3 Date of Test

10 January 2013

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Environmental Conditions

Ambient Temperature	22.1°C
Relative Humidity	31.0 - 31.9%

2.6.6 Test Results

The level of the wanted signal from generator A shall be adjusted to -101 dBm for a Type 3 device and to -91 dBm for a Type 2 device.

The signal level from generators B and C shall be set for -36 dBm at the receiver input.

RX1

Test Signal Number 3

Test Conditions		Offset (kHz)	Intermodulation Response Rejection (%)		
			156.025 MHz	162.025 MHz	162.025 MHz
T_{nom}(22.1°C)	V_{nom}(12 V DC)	500/1000	0.1	N/A	0.1
		-500/-1000	0.1	N/A	0.1

Limit Clause 7.1.2.6.3

The PER shall not exceed 20%.

RX2

Test Signal Number 3

Test Conditions		Offset (kHz)	Intermodulation Response Rejection (%)		
			156.025 MHz	162.025 MHz	162.025 MHz
T_{nom}(22.1°C)	V_{nom}(12 V DC)	500/1000	0.1	N/A	0.1
		-500/-1000	0.1	N/A	0.1

Limit Clause 7.1.2.6.3

The PER shall not exceed 20%.

2.7 BLOCKING OR DESENSITISATION

2.7.1 Specification Reference

IEC 62320-2, Clause 7.1.2.7

2.7.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.7.3 Date of Test

10 January 2013

2.7.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.5 Environmental Conditions

Ambient Temperature	21.8°C
Relative Humidity	30.7%

2.7.6 Test Results

The level of the wanted signal from generator A shall be adjusted to -101 dBm for a Type 3 device and to -91 dBm for a Type 2 device.

The RF signal level for signal generator B (unwanted signal) shall be adjusted to – 23 dBm when the frequency setting is less than ±5 MHz with respect to the frequency setting of RF signal generator A. For frequency settings of signal generator B that are equal to or greater than ±5 MHz with respect to the frequency setting of generator A, the RF signal level shall be adjusted to −15 dBm. This applies to Type 3 receivers only.

Product Service

RX1

12 V DC Supply

Test Signal Number 3

Frequency of Unwanted Signal	Blocking Level (%)	
	156.025 MHz	162.025 MHz
Nominal +10MHz	0.1	0.1
+5MHz	0.1	0.1
+2MHz	0.1	0.1
+1MHz	0.1	0.1
+500 kHz	0.1	0.1
-500 kHz	0.1	0.1
-1MHz	0.2	0.1
-2MHz	0.1	0.2
-5MHz	0.1	0.1
-10MHz	0.1	0.1

Limit Clause 7.1.2.7.3

The PER shall not exceed 20%.

RX2

12 V DC Supply

Test Signal Number 3

Frequency of Unwanted Signal	Blocking Level (%)	
	156.025 MHz	162.025 MHz
Nominal +10MHz	0.1	0.1
+5MHz	0.1	0,1
+2MHz	0.1	0.1
+1MHz	0.1	0.1
+500 kHz	0.1	0.1
-500 kHz	0.1	0,1
-1MHz	0.2	0.1
-2MHz	0.1	0.2
-5MHz	0.1	0.1
-10MHz	0.1	0.1

Limit Clause 7.1.2.7.3

The PER shall not exceed 20%.

2.8 SPURIOUS EMISSIONS FROM THE RECEIVER

2.8.1 Specification Reference

IEC 62320-2, Clause 7.1.3.1

2.8.2 Equipment Under Test and Modification State

Carbon S/N: P216FTU021 – TUV TSR Reference 0033 - Modification State 0

2.8.3 Date of Test

14 January 2013

2.8.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.5 Environmental Conditions

Ambient Temperature	21.4°C
Relative Humidity	25.4 - 25.8%

2.8.6 Test Results

RX1

Receiver operating

12 V DC Supply

Frequency (MHz)	Emission result (dBm)
-	-

No emissions were detected within a 6 dB of the limit.

Limit Clause 7.1.3.1.3

Frequency range	9 kHz to 1 GHz	1 GHz to 4 GHz
Limit	-57.0 dBm	-47.0 dBm

RX2

Receiver operating

12 V DC Supply

Frequency (MHz)	Emission result (dBm)
-	-

No emissions were detected within a 6 dB of the limit.

Limit Clause 7.1.3.1.3

Frequency range	9 kHz to 1 GHz	1 GHz to 4 GHz
Limit	-57.0 dBm	-47.0 dBm

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - Sensitivity					
Multimeter	White Gold	WG022	190	12	30-Oct-2013
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
0V - 10V to TTL Logic Level Shifter	TUV SUD Product Service	Logic Level Shifter	4032	-	O/P Mon
Section 2.2 - Error Behaviour at High Input Levels					
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
0V - 10V to TTL Logic Level Shifter	TUV SUD Product Service	Logic Level Shifter	4032	-	O/P Mon
Section 2.3- Co Channel Rejection					
Signal Generator	Rohde & Schwarz	SMG	42	12	12-Sep-2013
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	23-Jul-2013
Multimeter	Iso-tech	IDM101	2424	12	10-Sep-2013
Oscilloscope	Lecroy	9370	2832	12	25-Oct-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Function Generator	Thurlby Thandar Instruments	TG2000	3334	-	TU
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
Combiner/Splitter	Weinschel	1506A	3877	12	19-Mar-2013
1 Metre N Type Cable	Rhophase	NPS-1601A-1000-NPS	4104	12	1-Jun-2013
Section 2.4 - Adjacent Channel Selectivity					
Signal Generator	Rohde & Schwarz	SMG	42	12	12-Sep-2013
Multimeter	White Gold	WG022	190	12	30-Oct-2013
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
Combiner/Splitter	Weinschel	1506A	3877	12	19-Mar-2013
0V - 10V to TTL Logic Level Shifter	TUV SUD Product Service	Logic Level Shifter	4032	-	O/P Mon

Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.5 - Spurious Response Rejection					
Signal Generator	Rohde & Schwarz	SMG	42	12	12-Sep-2013
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Multimeter	Iso-tech	IDM101	2424	12	10-Sep-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Combiner/Splitter	Weinschel	1506A	3877	12	19-Mar-2013
1 Metre N Type Cable	Rhophase	NPS-1601A-1000-NPS	4104	12	1-Jun-2013
Section 2.6 - Intermodulation Response Rejection					
Signal Generator	Rohde & Schwarz	SMG	42	12	12-Sep-2013
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Signal Generator, 9kHz - 3GHz	Rohde & Schwarz	SMA 100A	3504	12	24-Aug-2013
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
'N' - 'N' RF Cable (1m)	Rhophase	NPS-1803-1000-NPS	3700	12	12-Jan-2013
0V - 10V to TTL Logic Level Shifter	TUV SUD Product Service	Logic Level Shifter	4032	-	O/P Mon
2 Metre N Type Cable	Rhophase	NPS-1601A-2000-NPS	4110	12	1-Jun-2013
Section 2.7 - Blocking or Desensitisation					
Signal Generator	Rohde & Schwarz	SMG	42	12	12-Sep-2013
Multimeter	White Gold	WG022	190	12	30-Oct-2013
Power Supply Unit	Farnell	D302T	609	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Signal Generator	Rohde & Schwarz	SMY 01	1109	12	20-Dec-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Programmable Modulation Waveform Generator	Sine Qua Non	PMG1	3291	-	TU
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
'N' - 'N' RF Cable (1m)	Rhophase	NPS-1803-1000-NPS	3700	12	12-Jan-2013
Combiner/Splitter	Weinschel	1506A	3877	12	19-Mar-2013
0V - 10V to TTL Logic Level Shifter	TUV SUD Product Service	Logic Level Shifter	4032	-	O/P Mon

Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.8 - Spurious Emissions from the Receiver					
Multimeter	White Gold	WG022	190	12	30-Oct-2013
DC Power Supply	Hewlett Packard	6269B	326	-	TU
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Spectrum Analyser	Hewlett Packard	E4407B	1154	12	17-Jul-2013
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	19-Jan-2013
High Pass Filter	Mini-Circuits	NHP-300	1640	12	15-Aug-2013
Multimeter	Iso-tech	IDM101	2424	12	10-Sep-2013
Hygrometer	Rotronic	I-1000	2891	12	21-May-2013
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	27-Jun-2013
Hygrometer	Rotronic	I-1000	3220	12	13-Jun-2013
Attenuator (20dB, 150W)	Narda	769-20	3367	12	28-May-2013
Attenuator (30dB, 150W)	Narda	769-30	3369	12	28-May-2013
Signal Generator: 10MHz to 20GHz	Rohde & Schwarz	SMR20	3475	12	20-Dec-2012
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	9-May-2013
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	31-Aug-2013
'N' - 'N' RF Cable (1m)	Rhophase	NPS-1803-1000-NPS	3701	12	12-Jan-2013
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2013
1 Metre N Type Cable	Rhophase	NPS-1601A-1000-NPS	4102	12	1-Jun-2013

TU – Traceability Unscheduled
O/P MON – Output Monitored with Calibrated Equipment

Product Service

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Frequency Error	± 11 Hz
Carrier Power	± 0.45 dB
Modulation Spectrum Slotted Transmission	± 2.0 dB
Transmitter Output Power Versus Time Function (FATDMA and RATDMA)	± 2.0 dB
Transmitter Test Sequence and Modulation Accuracy	± 2.0 dB
Sensitivity	±1.406 dB
Spurious Response Rejection	± 3.61 dB
Blocking or Desensitisation	± 3.22 dB
Spurious Emissions from the Receiver	± 2.0 dB
Spurious Emissions from the Transmitter	± 2.0 dB
Co-channel Rejection	±3.22 dB
Adjacent Channel Selectivity	±3.22 dB
Intermodulation Response Rejection	±3.22 dB
Error Behaviour at High Input Levels	±1.406 dB

Product Service

SECTION 4

PHOTOGRAPHS

Product Service

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

Front View

Rear View

Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Product Service

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).