EMI – TEST REPORT

- FCC Part 15.407, 5470-5725 MHz -

Type / Model Name	:	WLAN n-module MPCIE-R1-ABGN-U3
Product Description	:	Module for industrial WLAN applications 2.4 / 5 GHz
Applicant	:	Siemens AG, Industrial Automation Division
Address	:	Gleiwitzer Strasse 555
		90475 NUERNBERG, GERMANY
Manufacturer	:	Siemens AG, Sensors & Communication
Address	:	Oestliche Rheinbrueckenstrasse 50
		76187 KARLSRUHE, GERMANY
Licence holder	:	Siemens AG, Industrial Automation Division
Address	:	Gleiwitzer Strasse 555
		90475 NUERNBERG, GERMANY

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

Test Report No. : T40580-01-03HS	26. April 2016 Date of issue

Deutsche Akkreditierungsstelle
D-PL-12030-01-01
D-PL-12030-01-02

CSA Group Bayern GmbH
Ohmstrasse 1-4 · 94342 STRASSKIRCHEN · GERMANY
Tel.: +49(0)9424-94810 · Fax: +49(0)9424-9481440

Contents

1 TEST STANDARDS 3

2 EQUIPMENT UNDER TEST 4

3 TEST RESULT SUMMARY 9

4 TEST ENVIRONMENT 11

4.1 Address of the test laboratory 11
4.2 Environmental conditions 11
4.3 Statement of the measurement uncertainty 11
4.1 Measurement protocol for FCC and IC 12

5 TEST CONDITIONS AND RESULTS 13

5.1 AC power line conducted emissions 13
5.2 EBW and OBW 13
5.3 Maximum conducted output power 13
5.4 Maximum power spectral density 14
5.5 Defacto limit 14
5.6 Undesirable emissions 14
5.7 Frequency stability 15
5.8 Antenna application 15

6 USED TEST EQUIPMENT AND ACCESSORIES 16

ATTACHMENT A as separate supplement

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (September 2015)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September 2015)

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.212	Modular transmitters

FCC Rules and Regulations Part 15, Subpart E – Unlicensed National Information Infrastructure Devices (December 2015)

Part 15, Subpart E, Section 15.407	Operation within the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, 5.47 - 5.725 GHz and 5.725 - 5.85 GHz

ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
ETSI TR 100 028 V1.3.1: 2001-03	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2
KDB 789033 D02 v01r01	Guidance for compliance Testing of U-NII devices, January 8, 2016.
KDB 662911 D01 v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band, October 31, 2013

2 EQUIPMENT UNDER TEST

2.1 Photo documentation of the EUT – Detailed photos see ATTACHMENT A

2.2 General remarks:

The EUT is fully tested and approved according the "old Rules". This test report shall show the further compliance to the "new Rules" under the premise that no operating parameter of the EUT are changed (No change in output power, no additional channel, no additional channel in the TDWR). Therefore, no additional re-measured under the "new rules". The measurement values stay the same as under the "old Rules" and are already documented with the test report T35222-06-04HS by Mikes testing partners.

2.3 Equipment category

WLAN - AP

2.4 Short description of the equipment under test (EUT)

The EUT is a WLAN module. The EUT may be access point or client. The WLAN module is compatible with 802.11h, and 802.11n standard. It supports the 5 GHz frequency band. It supports MIMO at 3 Antenna ports which is 3T3R, but without beam forming. The firmware does not support the ad-hoc modes.

Number of tested samples: 1
Serial number: will be inserted when the photos are taken!
Firmware version: v05.02.00, 27.10.2015

EUT configuration:
(The CDF filled by the applicant can be viewed at the test laboratory.)

2.5 Variants of the EUT

There are no variants.

2.6 Operation frequency and channel plan

The operating frequency is 5470 MHz to 5725 MHz.

Channel plan WLAN Standard 802.11h/n, HT20:

Channel	Frequency (MHz)
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700

Note: The red marked channels are not supported by the firmware.
Note: The blue marked frequencies are determined for final testing.

HT40 mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100up	5510	104down	5510
108up	5550	112down	5550
116up	5590	120down	5590
124up	5630	128down	5630
132up	5670	136down	5670

Note: The red marked channels are not supported by the firmware.
Note: The blue marked frequencies are determined for final testing.

2.7 Transmit operating modes

The module use OFDM modulation and is capable to provide following data rates:
- 802.11h 54, 48, 36, 24, 18, 12, 9, 6 Mbps
- 802.11n HT20, MCS 0 - 23
- 802.11n HT40, MCS 0 - 23

HT20

MCS parameters for mandatory 20 MHz, NSS = 1, NES = 1

MCS Index	Modulation	*R*	$N_{BPSCS(iSS)}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI (see NOTE)
0	BPSK	1/2	1	52	4	52	26	6.5	7.2
1	QPSK	1/2	2	52	4	104	52	13.0	14.4
2	QPSK	3/4	2	52	4	104	78	19.5	21.7
3	16-QAM	1/2	4	52	4	208	104	26.0	28.9
4	16-QAM	3/4	4	52	4	208	156	39.0	43.3
5	64-QAM	2/3	6	52	4	312	208	52.0	57.8
6	64-QAM	3/4	6	52	4	312	234	58.5	65.0
7	64-QAM	5/6	6	52	4	312	260	65.0	72.2
NOTE—Support of 400 ns GI is optional on transmit and receive.									

MCS parameters for optional 20 MHz, *NSS* = 2, *NES* = 1, EQM

MCS Index	Modulation	*R*	$N_{BPSCS(iSS)}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI (see NOTE)
8	BPSK	1/2	1	52	4	104	52	13.0	14.4
9	QPSK	1/2	2	52	4	208	104	26.0	28.9
10	QPSK	3/4	2	52	4	208	156	39.0	43.3
11	16-QAM	1/2	4	52	4	416	208	52.0	57.8
12	16-QAM	3/4	4	52	4	416	312	78.0	86.7
13	64-QAM	2/3	6	52	4	624	416	104.0	115.6
14	64-QAM	3/4	6	52	4	624	468	117.0	130.0
15	64-QAM	5/6	6	52	4	624	520	130.0	144.4
NOTE—The 400 ns GI rate values are rounded to 1 decimal place.									

MCS parameters for optional 20 MHz, NSS = 3, NES = 1, EQM

MCS Index	Modulation	R	$N_{BPSCS(iSS)}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
16	BPSK	1/2	1	52	4	156	78	19.5	21.7
17	QPSK	1/2	2	52	4	312	156	39.0	43.3
18	QPSK	3/4	2	52	4	312	234	58.5	65.0
19	16-QAM	1/2	4	52	4	624	312	78.0	86.7
20	16-QAM	3/4	4	52	4	624	468	117.0	130.0
21	64-QAM	2/3	6	52	4	936	624	156.0	173.3
22	64-QAM	3/4	6	52	4	936	702	175.5	195.0
23	64-QAM	5/6	6	52	4	936	780	195.0	216.7

HT40

MCS parameters for optional 40 MHz, NSS = 1, NES = 1

MCS Index	Modulation	R	$N_{BPSCS(iSS)}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
0	BPSK	1/2	1	108	6	108	54	13.5	15.0
1	QPSK	1/2	2	108	6	216	108	27.0	30.0
2	QPSK	3/4	2	108	6	216	162	40.5	45.0
3	16-QAM	1/2	4	108	6	432	216	54.0	60.0
4	16-QAM	3/4	4	108	6	432	324	81.0	90.0
5	64-QAM	2/3	6	108	6	648	432	108.0	120.0
6	64-QAM	3/4	6	108	6	648	486	121.5	135.0
7	64-QAM	5/6	6	108	6	648	540	135.0	150.0

MCS parameters for optional 40 MHz, NSS = 2, NES = 1, EQM

MCS Index	Modulation	R	$N_{BPSCS(iSS)}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
8	BPSK	1/2	1	108	6	216	108	27.0	30.0
9	QPSK	1/2	2	108	6	432	216	54.0	60.0
10	QPSK	3/4	2	108	6	432	324	81.0	90.0
11	16-QAM	1/2	4	108	6	864	432	108.0	120.0
12	16-QAM	3/4	4	108	6	864	648	162.0	180.0
13	64-QAM	2/3	6	108	6	1296	864	216.0	240.0
14	64-QAM	3/4	6	108	6	1296	972	243.0	270.0
15	64-QAM	5/6	6	108	6	1296	1080	270.0	300.0

MCS parameters for optional 40 MHz, NSS = 3, EQM

MCS Index	Modulation	R	$N_{BPSCS}(i_{SS})$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	N_{ES}	Data rate (Mb/s)	
									800 ns GI	400 ns GI
16	BPSK	1/2	1	108	6	324	162	1	40.5	45.0
17	QPSK	1/2	2	108	6	648	324	1	81.0	90.0
18	QPSK	3/4	2	108	6	648	486	1	121.5	135.0
19	16-QAM	1/2	4	108	6	1296	648	1	162.0	180.0
20	16-QAM	3/4	4	108	6	1296	972	1	243.0	270.0
21	64-QAM	2/3	6	108	6	1944	1296	2	324.0	360.0
22	64-QAM	3/4	6	108	6	1944	1458	2	364.5	405.0
23	64-QAM	5/6	6	108	6	1944	1620	2	405.0	450.0

Symbol	Explanation
N_{SS}	Number of spatial streams
R	Coding rate
N_{BPSC}	Number of coded bits per single carrier (total across spatial streams)
$N_{BPSCS}(i_{SS})$	Number of coded bits per single carrier for each spatial stream, $i_{SS} = 1,...,N_{SS}$
N_{SD}	Number of complex data numbers per spatial stream per OFDM symbol
N_{SP}	Number of pilot values per OFDM symbol
N_{CBPS}	Number of coded bits per OFDM symbol
N_{DBPS}	Number of data bits per OFDM symbol
N_{ES}	Number of BCC encoders for the DATA field
N_{TBPS}	Total bits per subcarrier

2.8 Antenna

Antennas intended for use are classified into 3 gain groups:

- Antenna gain group 1: Antennas 0 to 6 dBi
- Antenna gain group 2: Antennas 6 to 9 dBi
- Antenna gain group 3: Antennas 9 to 14 dBi

Number	Manufacturer Number	Characteristic	Model number	Connector	Frequency (GHz)	Gain 5GHz (dBi)	Cable loss (dB)	effective Gain 5 GHz (dBi)	Group
1	6GK5793-8DK00-0AA0	Directed	**ANT 793-8DK**	2x N-female	5 GHz	23	8.8	14.2	9-14 dBi
2	6GK5793-8DJ00-0AA0	Directed	**ANT 793-8DJ**	2x N-female	5 GHz	18	4.4	13.6	9-14 dBi
3	ANT793-8DL	Directed	**ANT793-8DL**	2x N-female	2.4 + 5 GHz	14	0	14	9-14 dBi
4	6GK5793-8DP00-0AA0	Directed	**ANT793-8DP**	N-female	5 GHz	13.5	0	13.5	9-14 dBi
5	6GK5795-6DC00-0AA0	Wide angle	**ANT 795-6DC**	N-female	2.4 + 5 GHz	9	0	9	6-9 dBi
6	6GK5793-6DG00-0AA0	Wide angle	**ANT793-6DG**	2x N-female	5 GHz	9	0	9	6-9 dBi
7	6GK5795-6MN10-0AA6	Omni	**ANT 795-6MN**	N-female	2.4 + 5 GHz	8	0	8	6-9 dBi
8	ANT795-6MP	Omni	**ANT795-6MP**	N-female	2.4 + 5 GHz	7	0	7	6-9 dBi
9	ANT896-6MM	Omni	**ANT896-6MM**	???	2.4 + 5 GHz	7	0	7	6-9 dBi
10	6GK5 793-4MN00-0AA6	Omni	**ANT 793-4MN**	N-female	5 GHz	6	0	6	0-6 dBi
11	6GK5795-4MD00-0AA3	Omni	**ANT795-4MD**	N-male	2.4 + 5 GHz	5	0	5	0-6 dBi
12	6GK5795-4MC00-0AA3	Omni	**ANT795-4MC**	N-male	2.4 + 5 GHz	5	0	5	0-6 dBi
13	6GK5795-4MA00-0AA3	Omni	**ANT 795-4MA**	R-SMA male	2.4 + 5 GHz	5	0	5	0-6 dBi
14	6GK5793-6MN00-0AA6	Omni	**ANT 793-6MN**	N-female	5 GHz	5	0	5	0-6 dBi
15	ANT795-4MX	Omni	**ANT795-4MX**	N-male	2.4 + 5 GHz	2	0	2	0-6 dBi
16	6XV1875-2D	Omni	**IWLAN Rcoax 1/2"**	N-female	5 GHz	0	0	0	0-6 dBi

Note: The directed antenna number 2 may be used only with minimum 5 m antenna cable,
Type 6XV 1875-5CH50 with cable loss 4.4 dB at 5.7 GHz.
The directed antenna number 1 may be used only with minimum 10 m antenna cable,
Type 6XV 1875-5CN10 with cable loss 8.8 dB at 5.7 GHz.

2.1 Power supply system utilised

Power supply voltage, V_{nom} : 100 - 120 VAC

2.2 Peripheral devices and interface cables

The following peripheral devices and interface cables are connected during the measurements:

- LAN cable, 3m Model : CAT5
- Power supply cable, 1m Model : Self-made
- C-Plug-Adaptor for test mode control Model : Self-made

2.3 Determination of worst case conditions for final measurement

The EUT may be access point or client. The WLAN module is compatible with 802.11h and 802.11n standard. It supports the 5 GHz frequency bands. The EUT have to be professionally installed to ensure the right power setting in combination with one of the listed antennas.
The tests are carried out in the following frequency band:

5470 - 5725 MHz

Preliminary tests are performed to find the worst-case mode from all possible combinations between available modulations and data rates. The maximum output power depends on used data rate. The EUT is controlled for several tests with special test software used for testing only where continuous signals are needed. For the tests a max possible duty cycle (x) is set.
Following channels and test modes are selected for the final test as listed below:

WLAN	Available channel	Tested channels	Power setting	Modulation	Modulation type	Data rate
802.11h	100 to 140	100, 116, 140	P11, P17, P20	OFDM	BPSK	6 Mbps
802.11n; HT20	52 to 64	100, 116, 140	P11, P17, P20	OFDM	BPSK	MCS8 (BW=20 MHz)
802.11n; HT40	100up to 132up	100up, 108up, 132up	P11, P17, P20	OFDM	BPSK	MCS16 (BW=40 MHz)

- TX continuous mode, 802.11h
- TX continuous mode, 802.11n

2.3.1 Test jig

The used test jig is an end product (RAPn) and provides the necessary power supply and control signals to operate the WLAN module for testing. The test jig is DC power supplied with a view to the planned industrial application. The test ports are connected via UFL-RSMA-Pigtail, which is used also in the end application.

2.3.2 Test software

Test software is used to set TX continuous in device service mode. Power, channel and modulation (data rate) setting is done via network interface which is available for professional settings.

3 TEST RESULT SUMMARY

UNII device using the operating band 5470 MHz - 5725 MHz:

FCC Rule Part (new rules)	FCC Rule Part (old rules)	Description	Result
15.407(b)(6)	15.207(a)	AC power line conducted emissions	Not tested
15.407(a)(5)	15.407(a)	EBW 26 dB	Not tested
15.407(a)(2)	15.407(a)	Maximum conducted output power	Not tested
15.407(a)(2)	15.407(a)	Maximum conducted PSD	Not tested
15.407(b)(2)	15.407(b)	Undesirable emissions	Not tested
15.407(b)(7)	15.205(a)	Emissions in restricted bands	Not tested
15.407(a)	15.407(a)	Antenna requirement	Not tested
15.407(g)	15.407(g)	Frequency stability	Not tested

RSS Rule Part (new rules)	RSS Rule Part (old rules)	Description	Result
RSS-Gen, 8.8	RSS Gen, 7.2.4.	AC power line conducted emissions	Not tested
RSS247, 6.2.3(1)	RSS210, A9.2	Maximum conducted output power	Not tested
RSS247, 6.2.3(2)	RSS210, A9.2	Unwanted emission, radiated	Not tested
RSS-Gen, 8.9	RSS-Gen, 7.2.2	Unwanted emissions in restricted bands	Not tested
RSS247, 6.2.3(1)	RSS210, A9.2	Maximum power spectral density	Not tested
RSS-Gen, 6.10	RSS-Gen, 4.5	Pulsed operation	Not tested
RSS-Gen, 6.6	RSS-Gen, 7.1.2	Antenna requirement	Not tested
RSS-Gen, 6.11	RSS-Gen, 7.2.6	Transmitter frequency stability	Not tested
RSS-Gen, 6.6	RSS210, A9.2	99 % Bandwidth	Not tested
RSS 102, 2.5.2	RSS 102, 2.5.2	MPE	Not tested

The mentioned new RSS Rule Parts in the above table are related to:
RSS Gen, Issue 4, November 2014
RSS 247, Issue 1, May 2015
RSS 102, Issue 4, March 2015

The mentioned old RSS Rule Parts in the above table are related to:
RSS Gen, Issue 3, December 2010
RSS 210, Issue 8, December 2010
RSS 102, Issue 4, March 2010

3.1 Final assessment

The equipment under test fulfills the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample	:	acc. to storage records
Testing commenced on	:	31 March 2016
Testing concluded on	:	31 March 2016

Checked by:

Klaus Gegenfurtner
I confirm the correctness and Integrity of this document
2016.04.27 07:42:22 +02'00'

Klaus Gegenfurtner
Teamleader Radio

Tested by:

Hermann Smetana
I am the author of this document
2016.04.26 14:59:46 +02'00'

Hermann Smetana
Radio Team

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 °C
Humidity:	30-60 %
Atmospheric pressure:	86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. The true value is located in the corresponding interval with a probability of 95 % The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement uncertainty table	
Measurement output power, conducted	±1.5 dB
Measurement PSD, conducted	±1.5 dB
Measurement spurious emissions, conducted	±3.0 dB
Measurement spurious emissions, radiated	±6.0 dB
Measurement frequency	±1 x 10^{-6}

4.1 Measurement protocol for FCC and IC

4.1.1 General information

4.1.1.1 Test methodology

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

The open area test site is a listed under the Canadian Test-Sites File-No:

IC 3009A-1

In compliance with RSS 247 testing for RSS compliance may be achieved by following the procedures set out in ANSI C63.10 and applying the CISPR 22 limits.

4.1.1.2 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left without termination. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.1.1.3 Details of test procedures

The test methods used comply with CISPR Publication 22, EN 55022 - " Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.10 - "American national standard of procedures for compliance testing of unlicensed wireless devices". In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.10 and applying the CISPR 22 limits.

5 TEST CONDITIONS AND RESULTS

5.1 AC power line conducted emissions

For test instruments and accessories used see section 6 Part **A 4**.

5.1.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.2 EBW and OBW

For test instruments and accessories used see section 6 Part **MB**.

5.2.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.3 Maximum conducted output power

For test instruments and accessories used see section 6 Part **CPC 3**.

5.3.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.4 Maximum power spectral density

For test instruments and accessories used see section 6 Part **CPC 3**.

5.4.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.5 Defacto limit

For test instruments and accessories used see section 6 Part **CPC 3**.

5.5.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.6 Undesirable emissions

For test instruments and accessories used see section 6 Part **SER 1, SER 2 and SER 3**.

5.6.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.7 Frequency stability

For test instruments and accessories used see section 6 Part **MB**.

5.7.1 Description of the test location

Test location: NONE

Remarks: This measurement is already documented in the test report T35222-06-04HS.

5.8 Antenna application

5.8.1 Applicable standard

According to FCC Part 15C, Section 15.203:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit that broken antennas can be replaced by the user, but the use of a standard antenna jack is prohibited.

The EUT use the listed antennas for MIMO technique. The equipment connector is subject to the end product.

Remarks: This measurement is already documented in the test report T35222-06-04HS.

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
-	-	-	-	-	-	-