Annex to Test Report DocNo.: 75938097-04

Product Service

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August 3, 2017

Nr. / *No.* TR-486871-90134-12 (Edition 1)

Applicant:	Siemens AG
Type of equipment:	WLAN Access Point
Type designation:	MSN65-W1-M12-E2
Order No.:	---
Test standards:	FCC Code of Federal Regulations, CFR 47, Part 15, Sections 15.107 (Class B) Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 6 (Information Technology Equipment (ITE) - Limits and methods of measurement), Sections 5(a)(i) and 5(b)(i), Class B [only conducted emission has been tested]

Note:

The test data of this report is related only to the individual item which has been tested. This report shall not be reproduced except in full extent without the written approval of the testing laboratory.

Bundesnetzagentur

BNetzA-CAB-16/21-15

Table of Contents

1 Description of the Equipment Under Test (EUT)

General data of EUT	
Type designation[1]:	MSN65-W1-M12-E2
Parts[2]:	Access Point
Serial number(s):	not serialised
Manufacturer:	Siemens AG
Type of equipment:	WLAN Access Point
Version:	HW: 1 / SW: 6.1
FCC ID:	LYHMSN65V1
Industry Canada ID:	267AA-MSN65V1
Additional parts/accessories:	---

Technical data of EUT	
Type of power supply:	DC supply
Specifications for power supply:	nominal voltage: 24 V

[1] Type designation of the system if EUT consists of more than one part.
[2] Type designations of the parts of the system, if applicable.

2 Administrative Data

Application details	
Applicant (full address):	Siemens AG 76181 Karlsruhe, Germany
Contact person:	Dr. Malgorzata JANSON
Order number:	---
Receipt of EUT:	Oct. 14, 2016
Date(s) of test:	July 26, 2017
Note(s):	---

Report details	
Report number:	TR-486871-90134-12
Edition:	1
Issue date:	August 03, 2017

3 Identification of the Test Laboratory

Details of the Test Laboratory	
Company name:	TÜV SÜD Product Service GmbH
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory accreditation:	DAkkS Registration No. D-PL-11321-11-01
Laboratory recognition:	Registration No. BNetzA-CAB-16/21-15
Industry Canada test site registration:	3050A-2
Contact person:	Mr. Markus Biberger Phone: +49 9421 5522-0 Fax: +49 9421 5522-99

4 Summary

Summary of test results
The tested sample complies with the requirements set forth in the **Code of Federal Regulations CFR 47, Part 15, Sections 15.107 (Class B)** of the Federal Communication Commission (FCC) and partly the **Interference-Causing Equipment Standard ICES-003 Issue 6 (Information Technology Equipment (ITE) - Limits and methods of measurement), Sections 5(a)(i) and 5(b)(i), Class B [only conducted emission has been tested]** of Industry Canada (IC).

Datum / *Date*	Geprüft von / *Tested by*	Freigabe durch / *Checked by*
August 03, 2017	Matthias Stumpe Responsible for testing	Matthias Schmid Reviewer

Prüfergebnis / *Test Result*

☒ **Erfüllt / *Passed***

☐ **Nicht erfüllt / *Not passed***

5 Operation Mode and Configuration of EUT

Operation Mode(s)
EUT operating as WLAN Accesspoint in 2.4 GHz Band

Configuration(s) of EUT
One PC/Notebook connected to EUT on WLAN Interface. Second PC/Notebook is connected to EUT on LAN interface. Second PC/Notebook continuously sends ping-command to firstPC/Notebook.

List of ports and cables				
Port	*Description*	*Classification*[3]	*Cable type*	*Cable length*
1	DC power supply	dc power	Unshielded	
2	LAN Interface -1-	signal/control port	Shielded (STP)	5 m
3	LAN Interface -2-	signal/control port	Shielded (STP)	5 m

List of devices connected to EUT				
Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	Power Supply	NGSM 32/10	192.0810.31	Rohe & Schwarz
2	PC/Notebook	Probook 4520s	2CE0511D19	hp

List of support devices				
Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
3	Power Supply	NGSM 32/10	192.0810.31	Rohe & Schwarz
4	PC/Notebook	Probook 4520s	2CE0511D19	hp

[3] Ports shall be classified as ac power, dc power or signal/control port

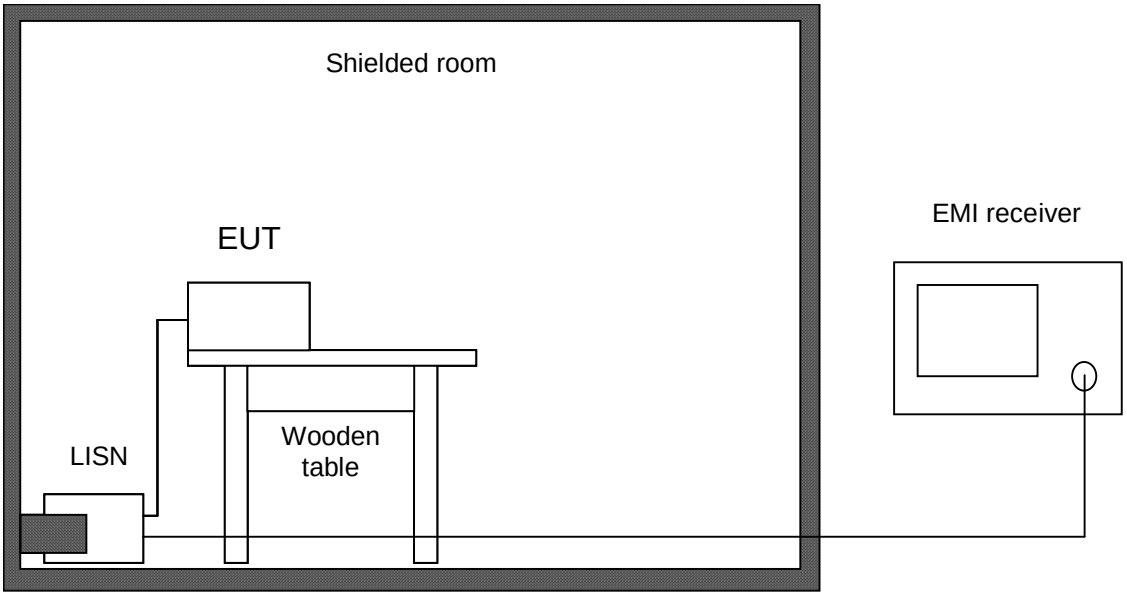
6 Measurement Procedures

6.1 Conducted AC Powerline Emission

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, section 15.107 (Class B) IC ICES-003 Issue 6, section 5(a)(i), Class B
Guide:	ANSI C63.4 / CISPR 22

Conducted emission tests in the frequency range 150 kHz to 30 MHz are performed using Line Impedance Stabilization Networks (LISNs). To simplify testing with quasi-peak and average detector the following procedure is used:

First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with detector set to peak using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average limit are retested with detector set to quasi-peak.
If average limit is kept with quasi-peak levels no additional scan with average detector is necessary. In cases of emission levels between quasi-peak and average limit an additional scan with detector set to average is performed.



Test instruments used:

	Type	*Designation*	*Inv.-no.*	*Serial No. or ID*	*Manufacturer*
☒	Test receiver	ESHS 10	1028	860043/016	Rohde & Schwarz
☒	V-network	ESH 3-Z5	1059	894785/005	Rohde & Schwarz
☐	V-network	ESH 3-Z5	1218	830952/025	Rohde & Schwarz
☐	Artificial mains network	ESH 2-Z5	1536	842966/004	Rohde & Schwarz
☒	Microwave cable	FB293C1080005050	2157	72110-02	Rosenberger Micro-Coax
☐	Coax cable	RG214 N/N 5m	1188	---	Senton
☒	Shielded room	No. 1	1451	---	Albatross
☐	Shielded room	No. 4	1454	3FD 100 544	Euroshield
☒	Measurement Software	EMC32_K1 V9.26.01	2230	100281	Rohde & Schwarz

7 Photographs Taken During Testing

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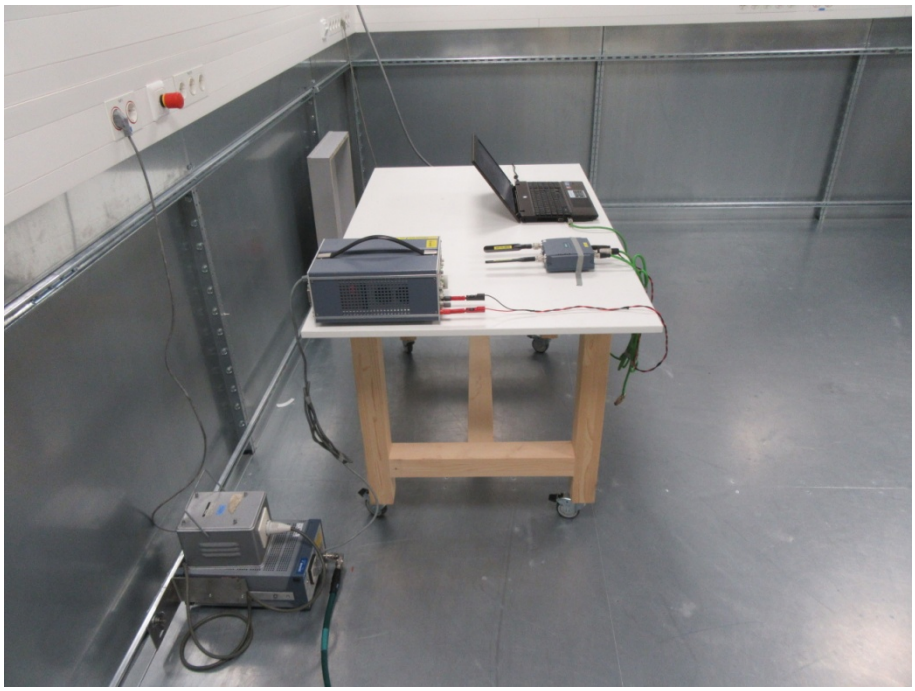
Test setup for conducted AC powerline emission measurement



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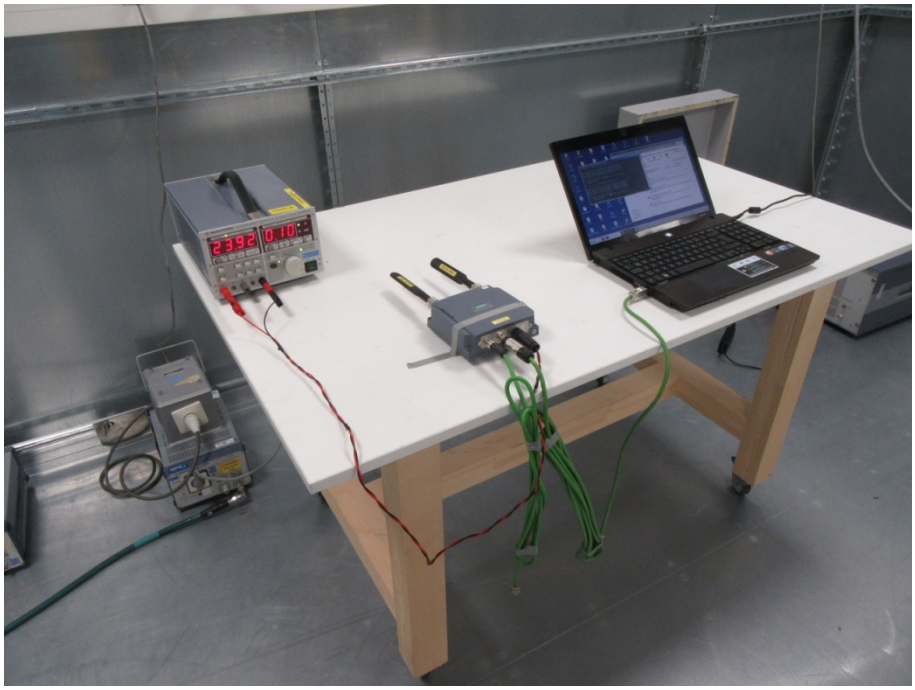
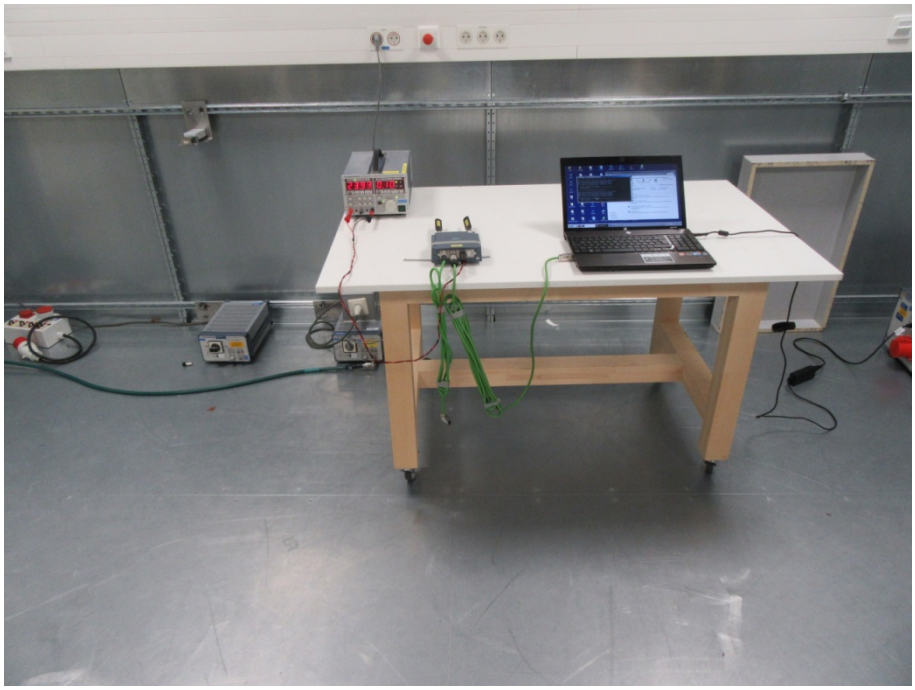
Test setup for conducted AC powerline emission measurement - continued -





8 Test Results

FCC CFR 47 Part 15 (Class B)			
Section(s)	*Test*	*Page*	*Result*
15.107	Conducted AC powerline emission 150 kHz to 30 MHz	14	Test passed
15.109	Radiated emission 30 MHz to 1 GHz	---	Not performed

IC ICES-003 Issue 6 (Class B)			
Section(s)	*Test*	*Page*	*Result*
5	Power line conducted emissions 150 kHz to 30 MHz	14	Test passed
5	Radiated emissions 30 MHz to 1 GHz	---	Not performed

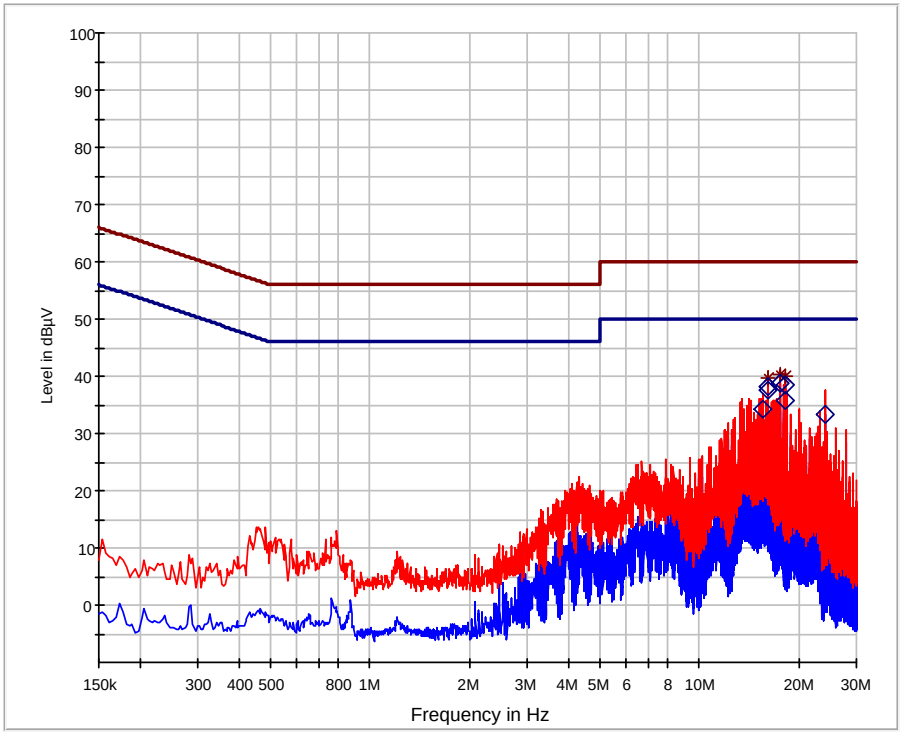
8.1 Conducted Powerline Emission Measurement 150 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, section 15.107 (Class B) IC ICES-003 Issue 6, section 5(a)(i), Class B		
Guide:	ANSI C63.4 / CISPR 22		
Limit:	Frequency of Emission (MHz)	Conducted Limit (dBµV)	
		Quasi-peak	Average
	0.15 - 0.5 0.5 - 5 5 - 30	66 to 56 56 60	56 to 46 46 50
Measurement procedure:	Conducted AC Powerline Emission (6.1)		

Comment:	---
Date of test:	July 14, 2017
Test site:	Shielded room, cabin no. 4

Test Result:	Test passed

Tested on:	L1

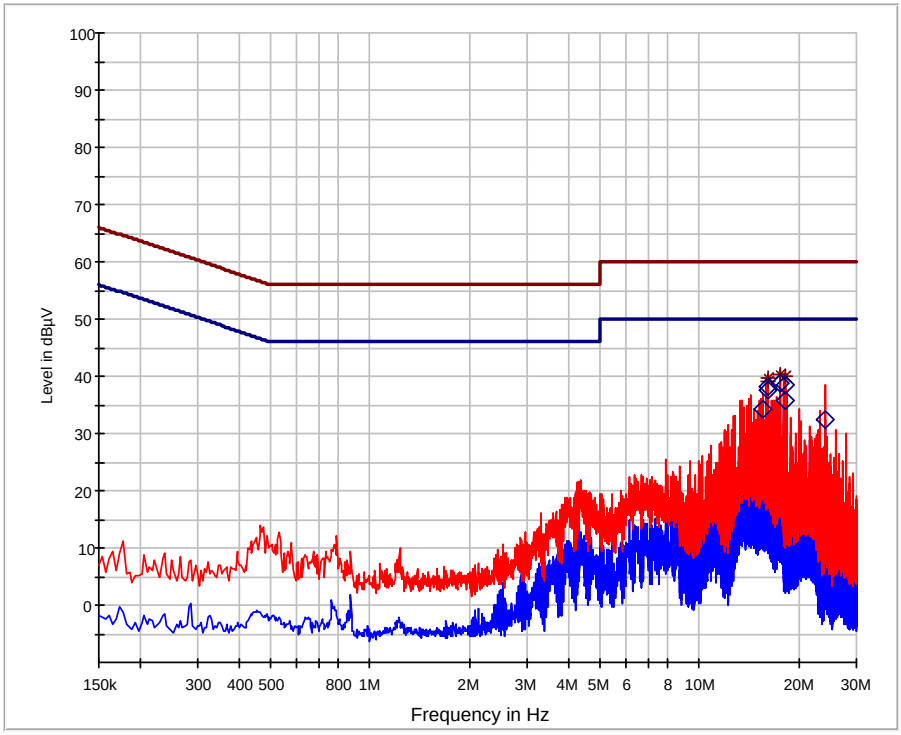


Preview Result 2-AVG
FCC 15.207 AV
Preview Result 1-PK+
Final_Result QPK
FCC 15.207 QP
Final_Result AVG

Final Results:

Frequency MHz	*QuasiPeak dBµV*	*Average dBµV*	*Limit dBµV*	*Margin dB*
15,618000	0,00	34,18	50,00	15,82
16,166000	0,00	37,57	50,00	12,43
16,226000	39,69	0,00	60,00	20,31
16,226000	0,00	38,23	50,00	11,77
17,694000	0,00	38,79	50,00	11,21
17,694000	40,39	0,00	60,00	19,61
18,242000	0,00	38,52	50,00	11,48
18,242000	40,03	0,00	60,00	19,97
18,302000	0,00	35,84	50,00	14,16
23,998000	0,00	33,22	50,00	16,78

Tested on:	N



Preview Result 2-AVG
FCC 15.207 AV
Preview Result 1-PK+
Final_Result QPK
FCC 15.207 QP
Final_Result AVG

Final Results:

Frequency MHz	*QuasiPeak dBµV*	*Average dBµV*	*Limit dBµV*	*Margin dB*
15,618000	0,00	34,21	50,00	15,79
16,166000	0,00	37,59	50,00	12,41
16,166000	39,08	0,00	60,00	20,92
16,226000	0,00	38,24	50,00	11,76
16,226000	39,68	0,00	60,00	20,32
17,694000	0,00	38,76	50,00	11,24
17,694000	40,37	0,00	60,00	19,63
18,242000	0,00	38,47	50,00	11,53
18,242000	39,97	0,00	60,00	20,03
18,302000	0,00	35,79	50,00	14,21
23,998000	0,00	32,30	50,00	17,70

9 Referenced Regulations

All tests were performed with reference to the following regulations and standards:

☐	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC)	October 1, 2014
☒	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	October 1, 2014
☒	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	June 13, 2014 (published on June 20, 2014)
☐	ANSI C63.10	American national Standard of Procedures for Compilance Testing of Unlicensed Wireless Devices	June 27, 2013 (published on September 13, 2013)
☐	RSS-Gen	Radio Standards Specification RSS-Gen Issue 4 containing General Requirements for Compilance of Radio Apparatus, published by Industry Canada	November 2014
☐	RSS-210	Radio Standards Specification RSS-210 Issue 9 for Licence-Exempt Radio Apparatus: Category I Equipment, published by Industry Canada	August 2016
☐	RSS-310	Radio Standards Specification RSS-310 Issue 3 for Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category II Equipment, published by Industry Canada	December 2010
☐	RSS-102	Radio Standards Specification RSS-102 Issue 5: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), published by Industry Canada	March 2015
☒	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 6: Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement, published by Industry Canada	January 2016
☒	CISPR 22	Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, “Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement”	1997
☒	CAN/CSA CISPR 22-10	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (Adopted IEC CISPR 22:2008, sixth edition, 2008-09)	2010

TRC-43	Designation of Emissions, Class of Station and Nature of Service, published by Industry Canada	November 2012

10 Test Equipment List with Calibration Data

Type	*Inv.-No.*	*Type Designation*	*Serial Number*	*Manufacturer*	*Calibration Organization*	*Last Calibration*	*Next Calibration*
EMI test receiver	1863	ESCI3	100008	Rohde & Schwarz	Rohde & Schwarz	10/2016	10/2017
V-network	1059	ESH3-Z5	894785/005	Rohde & Schwarz	Rohde & Schwarz	10/2016	10/2019

Note 1: No calibration required.
Note 2: Not calibrated separately but with the whole test system when recording calibration data.
Note 3: No calibration required. Devices are checked before use.
Note 4: No calibration required. Devices are checked by calibrated equipment during test.

11 Revision History

Revision History			
Edition	*Date*	*Issued by*	*Modifications*
1	Aug.03, 2017	M. Stumpe	First Edition