

Test Report No.: Prüfbericht-Nr.:	US21UPY0.003 Rev.:03 Part 3	Order No.: Auftrags-Nr.:	P00230106 234174290	Page 1 of 16 Seite 1 von 16
Client Reference No.: Kunden-Referenz-Nr.:	2229228	Order date: Auftragsdatum:	6/14/2021	
Client: Auftraggeber:	Satellite Tracking of People, LLC 5353 W Sam Houston Parkway N, Suite 190 Houston, Texas, 77041			
Test item: Prüfgegenstand:	BLUbase			
Identification/ Type No.: Bezeichnung / Typ-Nr.	BLUbase V1			
Order content: Auftrags-Inhalt:	Radio Compliance Test Report			
Test specification: Prüfgrundlage:	FCC 47 CFR Part 15.247:2021, RSS-247:2020			
Date of sample receipt: Wareneingangsdatum:	7/11/2021	See Test Setup Exhibit for Photos		
Test sample No.: Prüfmuster-Nr.:	24-010668, 24-010669			
Testing period: Prüfzeitraum:	7/14/2021- 8/5/2021			
Testing laboratory: Prüflaboratorium:	TUV Rheinland of North America 710 Resende Road, Building 199 Webster, NY 14580			
Test result*: Prüfergebnis*:	Pass			
tested by: Alexander Sowinski geprüft von:	authorized by: Richard Decker genehmigt von:			
Date: 7/28/2022 Datum:	Issue Date: 7/28/2022 Ausstellungsdatum:			
Position / Stellung:	Expert	Position / Stellung:	Expert	
Others / Sonstiges:				
Condition of the test item at delivery: Zustand des Prüfgegenstandes bei Anlieferung:		Test sample complete and undamaged		
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark. Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.				

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Remarks
Anmerkungen

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. <i>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i>
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3	Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. <i>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</i>
4	The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA.
5	Radio Compliance Test Report. The above product was found to be Compliant to the above test standard(s).

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Product description
Produktbeschreibung

1	Product details: <i>Produktdetails:</i>	BLUbase is our small, lightweight (RF) transceiver. Working in tandem with BLUband, BLUbase receives, enters, and leaves records from BLUband.
2	Dimensions / Weight: <i>Maße / Gewicht:</i>	11 cm x 11 cm x 3 cm / 0.16 kg
3	Operating elements: <i>Bedienelemente:</i>	AC Mains 100-240 VAC, 50/60Hz. Transmit bands 903-927 MHz.
4	Equipment / Accessories: <i>Ausstattung / Zubehör:</i>	None.
5	Used materials: <i>Verwendete Materialien:</i>	None.
6	Other: <i>Sonstiges:</i>	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
7	Test sample obtaining: <i>Prüfmusterbereitstellung:</i>	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

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Revisions

Date mm/dd/yy	Name	Page Number of Change	Describe Change
08/12/2021	Rev.:01	N/A	Original Document
12/09/2021	Rev.:02	All	Updated FCC ID, Operating Bands
07/28/2022	Rev.:03	All	Updated Operating Band

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1 General Information

1.1 Scope

This report is intended to document the status of conformance based on the results of testing performed on the BLUbase, Model Number: BLUbase V1, manufactured by Satellite Tracking of People, LLC. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components.

1.2 Purpose

Testing was performed to evaluate the Radio performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

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1.3 Summary of Test Results

Applicant:	Satellite Tracking of People, LLC 5353 W Sam Houston Parkway N, Suite 190 Houston, Texas, 77041	Tel:	713-354-9393	Contact:	Mark Kirincic
		Fax:	--	e-mail:	mkirincic@securustechnologies.com
Description:	BLUbase	Test Voltage/Freq.:	120VAC 60Hz		
Model Number:	BLUbase V1				
Serial Number:	24-010668, 24-010669	Test Engineer:	Alexander Sowinski		
Standards	Description	Severity Level or Limit		Criteria	Test Result
FCC 47 CFR Part 15.247:2021, RSS-247:2020 Radio Standard	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.	See Basic Sections Below		See Below	Complies
FCC 47 CFR Part 15.203, RSS-Gen (6.8)	Antenna Requirements	Per Standards		Report	Complies
FCC 47 CFR Part 15.247 (b.3), RSS-247 (5.4)	Transmitter Output Power	EIRP < 1 Watt (30 dBm)		Limit	Complies
FCC 47 CFR Part 15.247 (a.2), RSS-247 (5.2)	Occupied Bandwidth	6dB OBW > 500 kHz		Limit	Complies
FCC 47 CFR Part 15.247 (e), RSS-247 (5.2)	Power Spectral Density	PSD < 8dBm / 3kHz band		Limit	Complies
FCC 47 CFR Part 15.247 (d), RSS-247 (5.5)	Out of Band Emissions	< 20 dB / 100kHz band		Limit	Complies
FCC CFR 15.209, RSS-Gen (8.9)	Transmitter Spurious Emissions	Class B, 30 - 1000 MHz Class B, 1000 - 18000 MHz		Limit	Complies
FCC CFR 15.207, RSS-Gen (8.8)	AC Line Conducted Emissions	Class B, 150 kHz – 30 MHz		Limit	Complies

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1.4 AC Line Conducted Emissions

This test measures the electromagnetic levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other nearby electronic equipment.

1.4.1 Over View of Test

Results	Complies (as tested per this report)					Date	07/30/2021	
Standard	FCC CFR 15.207, RSS-Gen (8.8)							
Product Model	BLUbase V1				Serial#	24-010668		
Configuration	See test plan for details.							
Test Set-up	Tested in shielded room, EUT placed on table. See test plans for details.							
EUT Powered By	120VAC 60Hz	Temp	23°C	Humidity	59%	Pressure	994 mbar	
Frequency Range	150 kHz – 30 MHz							
Perf. Criteria	Class B (Below Limit)	Perf. Verification			Readings Under Limit for L1 & Neutral			
Mod. to EUT	None	Test Performed By			Alexander Sowinski			

1.4.2 Test Procedure

Conducted and emissions tests were performed using the procedures of FCC CFR 15.207, RSS-Gen (8.8) and/or ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration. Further conducted emission tests were performed per the procedures stated in the other emissions standards listed in this report.

The frequency range from 150 kHz – 30 MHz was investigated for conducted emissions.

Conducted Emissions measurements were performed in the shielded room using procedures specified in the test plan and standard.

1.4.3 Deviations

There were no deviations from the test methodology listed in the test plan for the conducted emission test.

1.4.4 Final Test

All final conducted emissions measurements were below (in compliance) the limits.

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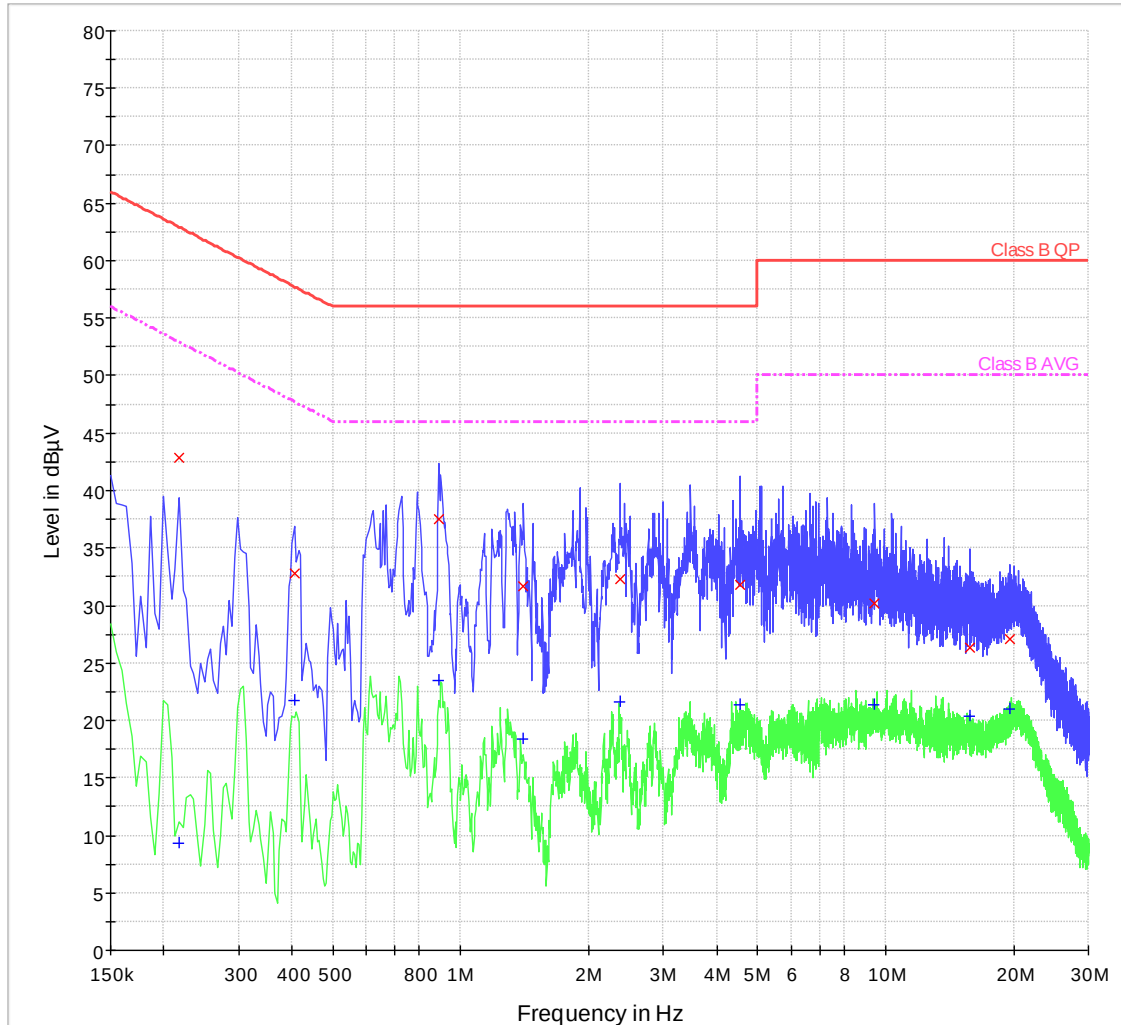
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1.4.5 Final Graphs

NOTES:

Conducted Emissions @ 120V/60Hz
Line



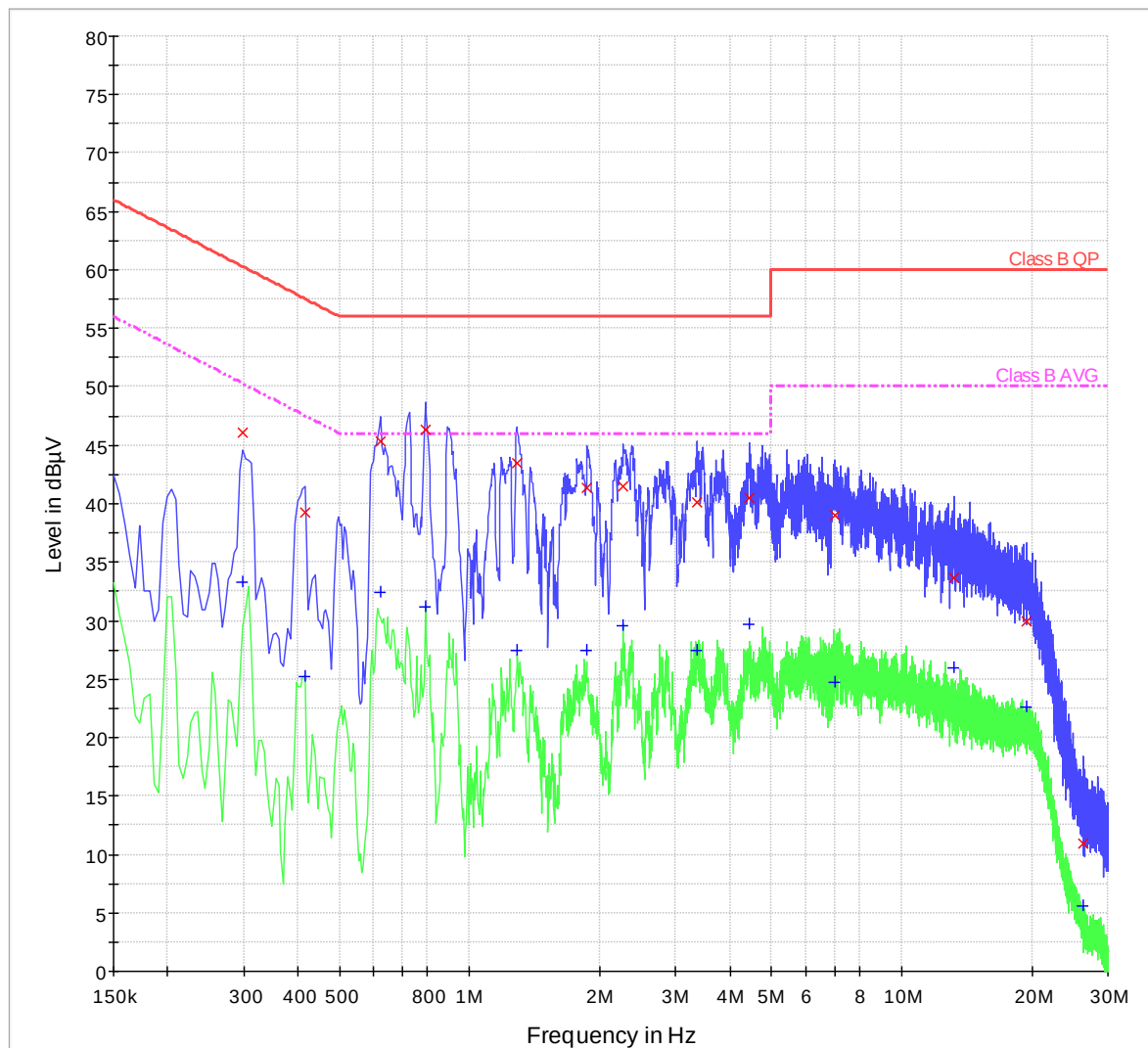
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NOTES:

**Conducted Emissions @ 120V/60Hz
Neutral**



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1.4.6 Final Tabulated Data at 120V/60Hz

Frequency MHz	QuasiPeak dBμV	Average dBμV	Line	Limit - QPK dBμV	Margin - QPK dB	Limit - AVG dBμV	Margin - AVG dB
0.2175	42.9	9.3	L1	62.9	-20.0	52.9	-43.6
0.2985	46.1	33.2	N	60.3	-14.2	50.3	-17.1
0.4065	32.8	21.7	L1	57.7	-24.9	47.7	-26.0
0.4155	39.3	25.2	N	57.5	-18.2	47.5	-22.3
0.6225	45.4	32.4	N	56.0	-10.6	46.0	-13.6
0.7890	46.4	31.2	N	56.0	-9.6	46.0	-14.8
0.8880	37.5	23.5	L1	56.0	-18.5	46.0	-22.5
1.2840	43.5	27.4	N	56.0	-12.5	46.0	-18.6
1.4055	31.6	18.4	L1	56.0	-24.4	46.0	-27.6
1.8735	41.4	27.5	N	56.0	-14.6	46.0	-18.5
2.2695	41.5	29.6	N	56.0	-14.5	46.0	-16.4
2.3775	32.3	21.6	L1	56.0	-23.7	46.0	-24.4
3.3540	40.1	27.5	N	56.0	-15.9	46.0	-18.5
4.4385	40.5	29.7	N	56.0	-15.5	46.0	-16.3
4.5375	31.8	21.4	L1	56.0	-24.2	46.0	-24.6
6.9990	39.0	24.7	N	60.0	-21.0	50.0	-25.3
9.4380	30.2	21.4	L1	60.0	-29.8	50.0	-28.6
13.1685	33.6	26.0	N	60.0	-26.4	50.0	-24.0
15.7515	26.4	20.4	L1	60.0	-33.6	50.0	-29.6
19.4010	30.0	22.6	N	60.0	-30.0	50.0	-27.4
19.6035	27.1	21.0	L1	60.0	-32.9	50.0	-29.0
26.3715	11.0	5.5	N	60.0	-49.0	50.0	-44.5

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Appendix A

2 Test Plan

This test report is intended to follow the test plan outlined herein unless otherwise stated. The test plan provides product information, reference standards, and testing details. The product information below came via client, product manual, product itself and or the internet. Test procedure information will reference standards or internal TUV Rheinland NA procedures.

2.1 General Information

Client	Satellite Tracking of People, LLC
Address 1	5353 W Sam Houston Parkway N, Suite 190
Address 2	Houston, Texas, 77041
Contact Person	Mark Kirincic
Telephone	713-354-9393
Fax	--
e-mail	mkirincic@securustechnologies.com

2.2 Model(s) Name

BLUbase V1

2.3 Type of Product

BLUbase

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2.4 Equipment Under Test (EUT) Description

BLUbase is our small, lightweight (RF) transceiver. Working in tandem with BLUband, BLUbase receives, enters, and leaves records from BLUband.

2.5 Wireless Information

EUT Specifications	
Environment:	Indoor
Operating Temperature Range °C:	-20°C - 50°C
Multiple Feeds:	No
LoRa/FSK FCC ID:	S5EBBE010321
LoRa/FSK IC ID:	9086A-BBE010321
Product Marketing Name (PMN):	BLUbase
Hardware Version Identification Number (HVIN):	BLUbase V1
Firmware Version Identification Number (FVIN):	1.0
RF Software Version:	1.0
Operating Modes:	LoRa, FSK
Transmitter Frequency Band:	903 - 927 MHz (LoRa/FSK)
Power @ Operating Channel (dBm):	+14 dBm (LoRa/FSK)
Antenna Type	Stamp metal embedded SMT
Antenna Gain (dBi)	+1.0 dBi (LoRa/FSK)
Modulation:	CSS, FSK, 64-QAM
Data Rate	LoRa CSS : 23.810 kbps FSK : 21.875 kbps
TX/RX Chain (s):	Single
Type of Equipment:	LoRa/FSK base station
*All EUT specifications are provided by the manufacturer or the TUV direct customer	
Note: Information supplied by the customer and can affect the validity of results	
Note: WiFi test results can be found in TUV Rheinland Report #US2179HM.002. The EUT does not contain the capability of simultaneous transmission, each transmitter was tested separately.	

2.6 Testing Preparation

Four units were provided by the client. One (24-010669) was used for radiated measurements, while the other (24-010668) was used for antenna port conducted measurements. The remaining units were spares.

2.7 General Product Information

Size	H	11 cm	W	11 cm	L	3 cm
Weight	0.16 kg		Fork-Lift Needed		No	
Notes						

2.8 Modifications

Custom software was used to place the device in assorted transmit modes for the purpose of testing. These settings would not be available to the end user.

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2.9 EUT Electrical Power Information

2.9.1 Electrical Power Type

☒	AC	☐	DC	☐	Batteries	☐	Host -
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2.9.2 Electrical Power Information

Name	Type	Voltage		Frequency	Current	Notes
		min	max			
AC Mains	AC	100	240	50-60 Hz	< 1 mA	
Notes						

2.10 EUT Modes of Operation during Testing

The EUT can be operated in two active modes. The EUT can be operated using a standard LoRa scheme or a basic FSK scheme for the purpose of transmitting data. The transmitters cannot be operated independently of each other.

2.11 EUT Clock/Oscillator Frequencies

Please specify the maximum clock frequency used in the product – 32.768 MHz

In the table below, please specify other clock frequencies and sensitive operating frequencies in the product.

Clock Frequencies & Sensitive Frequencies
32 MHz
32.768 MHz

2.12 Electrical Support Equipment

Type	Manufacturer	Model	Connected To
Laptop	Lenovo	T470	USB Serial Connection

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2.13 Non - Electrical Support Equipment

Item	Notes
Gas	None.
Water	None.
Air	None.

2.14 EUT Equipment/Cabling Information

EUT Port	Connected To	Location	Length	Shielded / Unshielded
None.				

2.15 EUT Configuration

Configuration	Description
Radiated	EUT is configured to transmit radiated at a desired channel
Conducted	EUT is configured to transmit along temporary SMA connection at a desired channel
Notes	All configurations are the same except as noted above

2.16 Block Diagram



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--- Ende des Prüfberichts / End of Test Report ---