

Frequency (GHz)	Equipments				Total Fact (dB/m)	Total Fact for EIRP (dB)
	Horn Ant. (Swarzbeck)		Cable (Hub+shuner)			
	Model:	AH-1840	Model:	SUCOFLEX 102		
	S/N:	101100	S/N:	MY3375/2(3m)		
	Calibration data	Antenna Fact(dB/m)	Cable loss (dB)			
Antenna Fact(dB/m)						
18	37.9	37.90	5.36	43.26	51.48	
18.5	37.8	37.80	5.4	43.20	51.42	
19	38.2	38.20	5.48	43.68	51.90	
19.5	38.6	38.60	5.57	44.17	52.39	
20	38.6	38.60	5.63	44.23	52.45	
20.5	39.4	39.40	5.7	45.10	53.32	
21	38	38.00	5.75	43.75	51.97	
21.5	38.2	38.20	5.85	44.05	52.27	
22	37.7	37.70	5.92	43.62	51.84	
22.5	37.4	37.40	5.98	43.38	51.60	
23	37	37.00	6.08	43.08	51.30	
23.5	37.7	37.70	6.14	43.84	52.06	
24	37	37.00	6.22	43.22	51.44	
24.5	37.4	37.40	6.28	43.68	51.90	
25	37.9	37.90	6.36	44.26	52.48	
25.5	38.3	38.30	6.43	44.73	52.95	
26	38.6	38.60	6.47	45.07	53.29	
26.5	38.3	38.30	6.56	44.86	53.08	
27	38.3	38.30	6.63	44.93	53.15	
27.5	38.2	38.20	6.64	44.84	53.06	
28	38.5	38.50	6.75	45.25	53.47	
28.5	39.4	39.40	6.89	46.29	54.51	
29	38.6	38.60	6.94	45.54	53.76	
29.5	38.8	38.80	6.93	45.73	53.95	
30	39.2	39.20	6.98	46.18	54.40	
30.5	38.7	38.70	7.08	45.78	54.00	
31	38.9	38.90	7.17	46.07	54.29	
31.5	38.5	38.50	7.13	45.63	53.85	
32	38.7	38.70	7.29	45.99	54.21	
32.5	38.5	38.50	7.38	45.88	54.10	
33	38.5	38.50	7.4	45.90	54.12	
33.5	39.3	39.30	7.4	46.70	54.92	
34	39.4	39.40	7.48	46.88	55.10	
34.5	39.9	39.90	7.61	47.51	55.73	
35	41.3	41.30	7.62	48.92	57.14	
35.5	41.9	41.90	7.7	49.60	57.82	
36	41.3	41.30	7.76	49.06	57.28	
36.5	40.7	40.70	7.77	48.47	56.69	
37	40.4	40.40	7.73	48.13	56.35	
37.5	41.1	41.10	7.93	49.03	57.25	
38	41.6	41.60	8.02	49.62	57.84	
38.5	41.7	41.70	7.96	49.66	57.88	
39	41.6	41.60	8.2	49.80	58.02	
39.5	42	42.00	8.14	50.14	58.36	
40	43.1	43.10	8.15	51.25	59.47	

Frequency (GHz)	Equipments				Total Fact	Total Fact for EIRP
	Horn Ant. (Quinstar)		Cable (Hub+shuner)			
	Model:	QWH-QPRR00	Model:	WCBA- WC3824M.24M3	Total Fact	Total Fact for EIRP
	S/N:		S/N:			
	Calibration data	Antenna Fact(dB/m)	Cable loss (dB)			(2m)
	Antenna Gain(dBi)				(dB/m)	(dB)
33	22	38.58	14.75	53.33	61.55	
36.4	22.25	39.18	15.46	54.64	62.86	
39.8	22.4	39.81	16.56	56.37	64.59	
43.2	22.5	40.42	17.58	58.00	66.22	
46.6	22.5	41.08	18.06	59.14	67.36	
50	22.4	41.79	19	60.79	69.01	



Calibration certificate

ISO 17025

ACCREDITED LABORATORY



Accreditation certificate No. № BY/112 02.5.0.0065 of 09.01.2015

Certificate number 14-19 Date when calibrated 04/04/2019 Page 1 of 2

Item calibrated Preamplifier EMC335045SE # 980639
50GHz Cable (WCBA-WC3824M.24M1+ WCBA-WC3824M.24M3)
Description of measurement standard / measuring instrument / identification

Customer DEKRA Testing and Certification Co.,
Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Name of the customer, address

Method of calibration GOST 20271.1, MK KL 5.3-16
Name of the method / identification

All measurements are traceable to the SI units which are realized by national measurement standards of NMI and state standards of Ukraine. This certificate shall not be reproduced, except in full. Any publication extracts from the calibration certificate requires written permission of the issuing calibration laboratory of microwave measuring equipment.

Authorising
signature



M. Svirid/ Technical manager Date of issue 04/04/2019
Name and position

Calibration Certificate

Certificate number **14-19**

Page **2** of **2**

Calibration is performed by using

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
R2-120	Scalar network analyzer 37.5 to 53.57 GHz	3/161590	06 July 2019	19-18	Gain
D3-37	Attenuator 37.5 to 53.57 GHz	2	08 December 2020	291	Attenuation Attenuation

Calibration conditions

Temperature 22.0 °C.

Humidity 41.0 %.

Pressure 100.2 kPa.

Calibration results are given in the Measuring report # 14-19.

1	Frequency range	33 – 50 GHz	Corresponds
2	Gain	45* dB	Corresponds (Table 1)
3	RF cable attenuation, dB	< -20	Corresponds (Table 1)

* – Expanded uncertainty of measurements 2.0 dB.

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of k=2 for a normal distribution.

Signature of the person who has performed calibration

M. Kasperovich/ Engineer

Name and function

**Calibration Laboratory of
Microwave Measuring Equipment**

Accreditation certificate

No. BY/112 02.5.0.0065

Address: 6, P. Brovki str., Minsk

220027, Belarus

Phone/Fax: +375 17 2938496



Technical Manager

M. Svirid

April 04, 2019

MEASURING REPORT # 14-19

April 04, 2019

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Preamplifier EMC335045SE # 980639 50GHz Cable (WCBA-WC3824M.24M1+ WCBA- WC3824M.24M3)
Method of calibration:	GOST 20271.1, MK KL 5.3-16
Number of samples:	One
Delivery date of the sample:	03/28/2019
Date of calibration:	From 03/28/2019 to 04/04/2019

MEASURING CONDITIONS

Temperature: 22.0 °C	Humidity: 41.0 %	Pressure: 100.2 kPa
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MEASURING EQUIPMENT

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
R2-120	Scalar network analyzer 37.5 to 53.57 GHz	3/161590	06 July 2019	19-18	Gain Attenuation
D3-37	Attenuator 37.5 to 53.57 GHz	2	08 December 2020	291	Attenuation

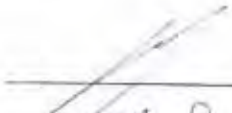
MEASURING RESULTS

Table I

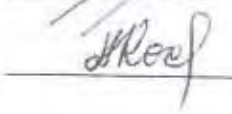
Frequency, GHz	Gain, dB	RF cable attenuation, dB	Expanded uncertainty, dB
40	45.1	-22.4	2.0
41	47.0	-22.4	2.0
42	47.3	-22.6	2.0
43	46.3	-22.8	2.0
44	46.9	-23.6	2.0
45	46.8	-23.6	2.0
46	46.1	-24.0	2.0
47	45.7	-24.5	2.0
48	45.6	-24.3	2.0
49	45.2	-24.9	2.0
50	45.0	-25.1	2.0

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of $k=2$ for a normal distribution.

Engineer


 M. Kasperovich

Quality Manager

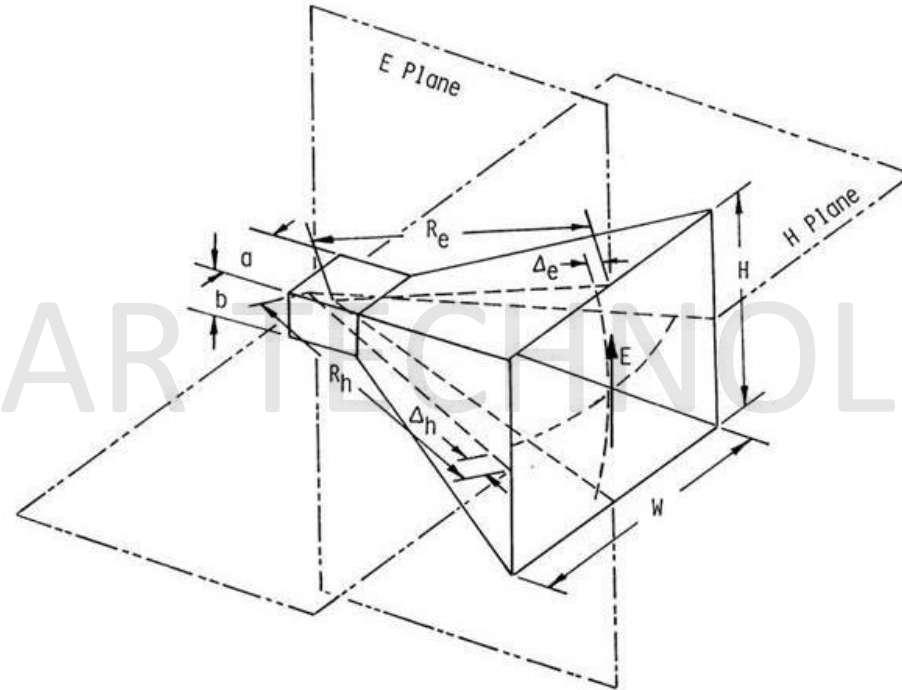

 A. Kostrikin

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2. Calibration Laboratory of Microwave Measuring Equipment

Duplication of Measuring report (complete or partial) must be authorized by the laboratory.

Definition of Plane



QUINSTAR TECHNOLOGY INC.

Q-band QWH

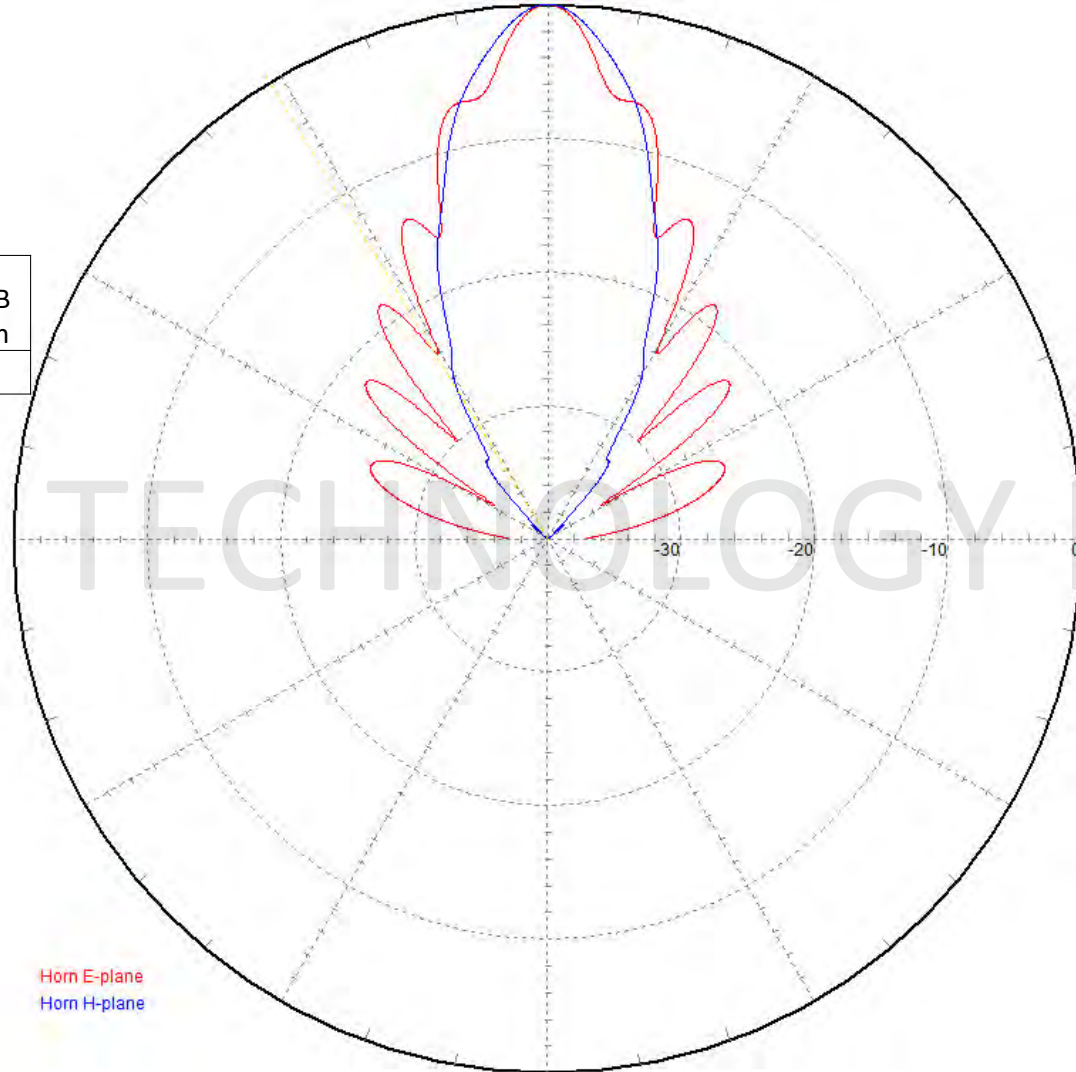
At 42 GHz

Directivity: 22.6 dB

Frequency (GHz)	Directivity (dB)	E-plan 3 dB beamwidth	H-plan 3 dB beamwidth
42	22.6	9.8	13.2

Pattern Data	
Horn E-plane	
Main beam angle = 0.0°	
3 dB beamwidth = 9.9°	
Value at 0.0° = 0.0 dB	
Offset = 0 dB	
Horn H-plane	
Main beam angle = 0.0°	
3 dB beamwidth = 13.2°	
Value at 0.0° = 0.0 dB	
Offset = 0 dB	

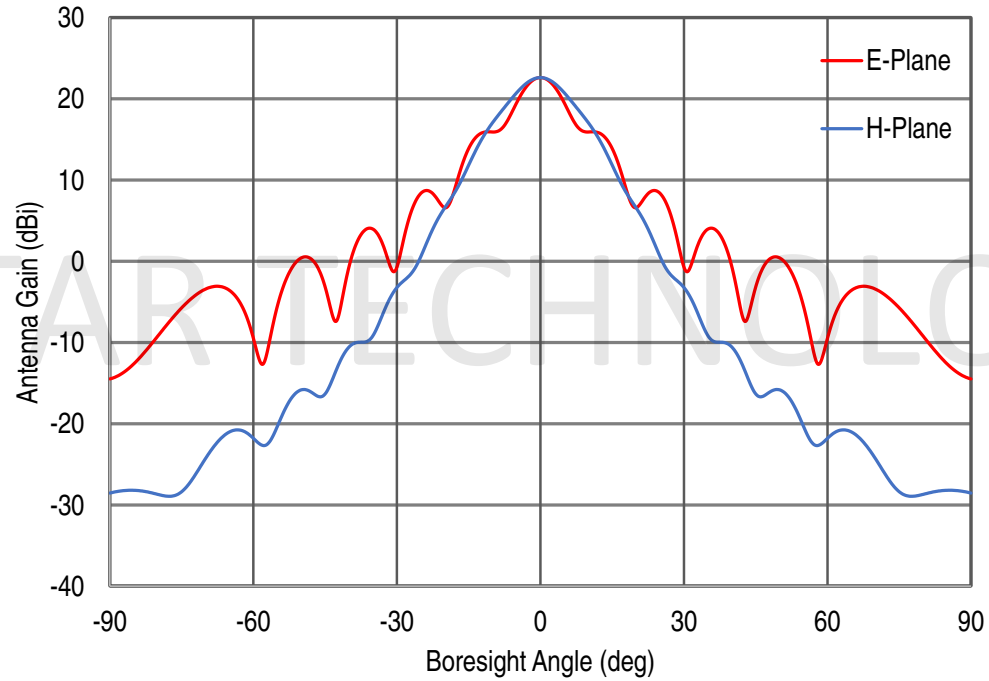
Directivity (dB)	22.6
E-plane phase center (cm)	7.487
H-plane phase center (cm)	8.575



Horn E-plane
Horn H-plane

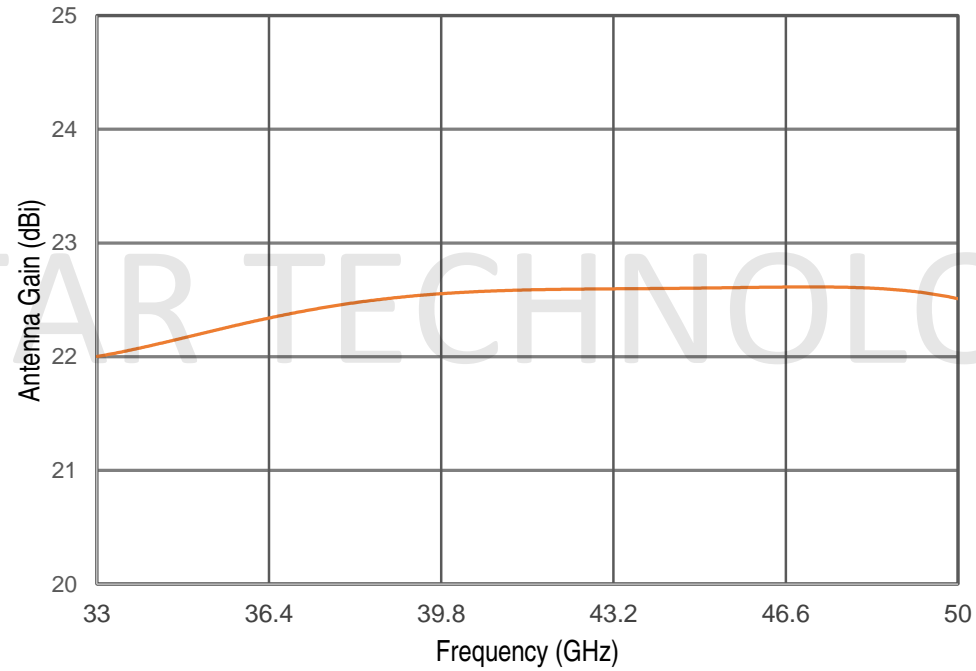
Q-band QWH
At 42GHz
Directivity: 22.6 dB

QWH-QPRR0
Radiation Pattern at 42 GHz



Q-band QWH
At 42GHz
Directivity: 22.6 dB

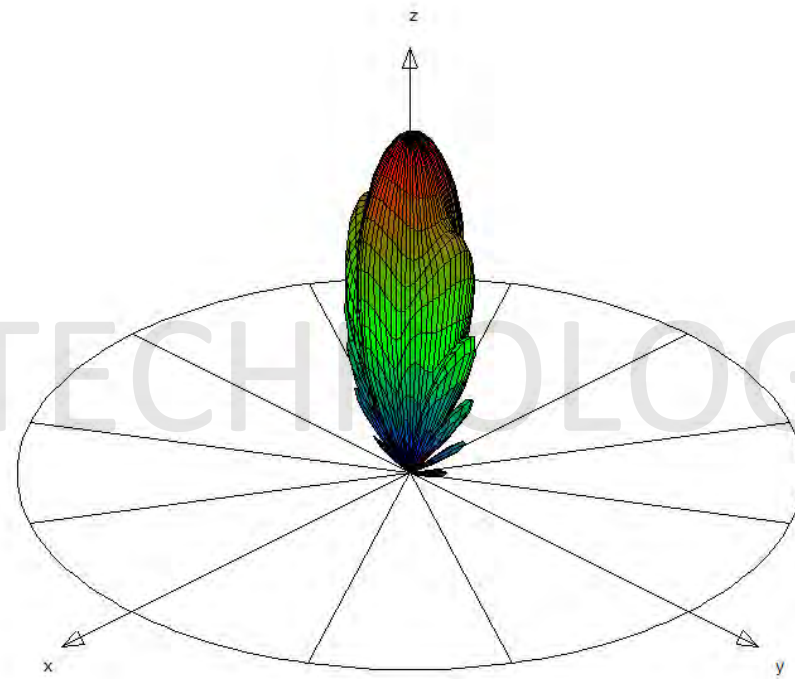
QWH-QPRR0
Antenna Gain



Q-band QWH

At 42GHz


Directivity: 22.6 dB



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Technical Manager


M. Svirid

October 03, 2017

MEASURING REPORT # 51-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 156 # US54250119 (power supply # 1517)
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 568	164
2	Wattmeter M 546	163
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-186	5
5	Signal generator G4-161	3
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805

MEASURING RESULTS

SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Table 1

RF frequency, GHz	50	60	75
RF input power, dBm	-15.0	-15.0	-15.0
LO frequency, MHz	4 133	4 967	6 217
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
IF measured level, dBm	-9.63	-7.95	-9.09
Conversion loss, dB	-5.4	-7.1	-5.9
Expanded uncertainty, dB	1.4	1.4	1.4

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 52-17
 October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Antenna RCH015-SAX156
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 568	164
2	Wattmeter M 546	163
3	Signal generator G4-161	3
4	Signal generator G4-186	5
5	Voltmeter V7-34	0067787
6	Frequency meter RCH3-72	931200
7	Horn antenna P6-134	14002

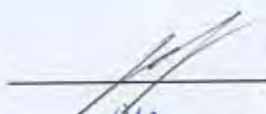
MEASURING RESULTS

Distance between antennas 0.60 m.

Table 1

Frequency, GHz	50	60	75
Input power, mW	8.5	8.5	8.5
Power density of electromagnetic field, W/m ²	0.365	0.480	0.680
Maximum level of measured power, μW	103	114	120
Gain, dB	19.9	20.8	21.4
Antenna factor, dB/m	44.3	45.0	46.3
Expanded uncertainty, dB	2.0	2.0	2.0

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 53-17
 October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 156 # US54250119 (power supply # 1517) + Antenna RCH015
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 568	164
2	Wattmeter M 546	163
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-186	5
5	Signal generator G4-161	3
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805
9	Horn antenna P6-134	14002

MEASURING RESULTS

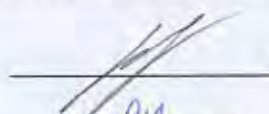
SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Distance between antennas 0.60 m.

Table 1

RF frequency, GHz	50	60	75
Power density of electromagnetic field, W/m ²	0.106	0.127	0.161
LO frequency, MHz	4 133	4 967	6 217
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
Power received by antenna, dBm	-15.27	-15.24	-15.45
IF measured level, dBm	-9.86	-8.22	-9.64
Conversion loss, dB	-5.4	-7.0	-5.8
Expanded uncertainty, dB	2.6	2.6	2.6

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 54-17

October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 092 # US53250010 (power supply # 1604)
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 546	163
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-186	5
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805

MEASURING RESULTS

SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Table 1

RF frequency, GHz	75	95	110
RF input power, dBm	-15.0	-15.0	-15.0
LO frequency, MHz	6 217	7 922	9 133
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
IF measured level, dBm	-10.18	-9.23	-10.49
Conversion loss, dB	-4.8	-5.8	-4.5
Expanded uncertainty, dB	1.4	1.5	1.5

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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220013, Belarus

Phone/Fax: +375 17 2938496



Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 55-17

October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Antenna RCH010-SAX092
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 546	163
3	Signal generator G4-186	5
4	Signal generator RG4-14	22
5	Voltmeter V7-34	0067787
6	Frequency meter RCH3-72	931200
7	Horn antenna P6-31A	35864


MEASURING RESULTS

Distance between antennas 0.50 m.


Table 1

Frequency, GHz	75	95	110
Input power, mW	5.0	5.0	5.0
Power density of electromagnetic field, W/m ²	0.499	0.792	0.940
Maximum level of measured power, μW	58.7	79.0	72.8
Gain, dB	19.7	21.0	21.2
Antenna factor, dB/m	48.1	48.8	49.9
Expanded uncertainty, dB	2.0	2.2	2.2

Engineer

 M. Kasperovich

Quality Manager

 A. Kostrikin

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 220013, Belarus
 Phone/Fax: +375 17 2938496



Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 56-17

October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 092 # US53250010 (power supply # 1604) + Antenna RCH010-SAX092
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 546	163
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-186	5
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805
9	Horn antenna P6-31A	35864

MEASURING RESULTS

SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Distance between antennas 0.50 m.

Table 1

RF frequency, GHz	75	95	110
Power density of electromagnetic field, W/m ²	0.255	0.294	0.376
LO frequency, MHz	4 133	4 967	6 217
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
Power received by antenna, dBm	-15.36	-15.33	-15.41
IF measured level, dBm	-10.59	-9.57	-10.80
Conversion loss, dB	-4.8	-5.8	-4.6
Expanded uncertainty, dB	2.6	2.9	2.9

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

This Measuring report issued in duplicate and sent to:

1. DEKRA Testing and Certification Co., Ltd.

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan

2. Calibration Laboratory of Microwave Measuring Equipment

Duplication of Measuring report (complete or partial) must be authorized by the laboratory.

**Calibration Laboratory of
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 Accreditation certificate
 No. BY/112 02.5.0.0065
 Address: 6, P. Brovki str., Minsk
 220013, Belarus
 Phone/Fax: +375 17 2938496



Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 57-17
 October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 091 # US53250004 (power supply # 1604)
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 523	162
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-161	282
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805

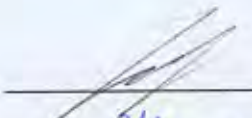
MEASURING RESULTS

SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.


Table 1

RF frequency, GHz	90	120	140
RF input power, dBm	-15.0	-15.0	-15.0
LO frequency, MHz	7 467	9 967	11 633
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
IF measured level, dBm	-10.53	-10.12	-10.32
Conversion loss, dB	-4.5	-4.9	-4.7
Expanded uncertainty, dB	1.5	1.5	1.6

Engineer

 M. Kasperovich

Quality Manager

 A. Kostrikin

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Technical Manager


M. Svirid

October 03, 2017

MEASURING REPORT # 58-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Antenna RCH06-SAX091
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 523	162
3	Signal generator G4-161	282
4	Signal generator RG4-14	22
5	Voltmeter V7-34	0067787
6	Frequency meter RCH3-72	931200
7	Horn antenna P6-31A	35864
8	Horn antenna P6-32	115671

MEASURING RESULTS

Distance between antennas 0.50 m.

Table 1

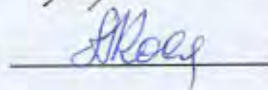
Frequency, GHz	90	120	140
Input power, mW	5.0	5.0	5.0
Power density of electromagnetic field, W/m ²	0.707	1.113	1.614
Maximum level of measured power, μW	43.3	70.0	75.9
Gain, dB	18.4	20.6	21.1
Antenna factor, dB/m	50.9	50.8	52.1
Expanded uncertainty, dB	2.2	2.5	2.5

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 59-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 091 # US53250004 (power supply # 1604) + Antenna RCH006-SAX091
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 534	161
2	Wattmeter M 523	162
3	Spectrum analyzer E4407B	MY45110807
4	Signal generator G4-161	282
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805
9	Horn antenna P6-31A	35864
10	Horn antenna P6-32	115671

MEASURING RESULTS

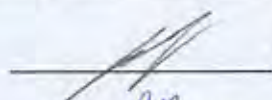
SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Distance between antennas 0.50 m.

Table 1

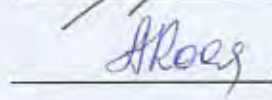
RF frequency, GHz	90	120	140
Power density of electromagnetic field, W/m ²	0.621	0.519	0.624
LO frequency, MHz	7 467	9 967	11 633
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
Power received by antenna, dBm	-14.86	-15.16	-15.28
IF measured level, dBm	-10.34	-10.29	-10.57
Conversion loss, dB	-4.5	-4.9	-4.7
Expanded uncertainty, dB	2.9	3.1	3.2

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Accreditation certificate
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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 60-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 090 # US53250004 (power supply # 1604)
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 514	165
2	Wattmeter M 523	162
3	Spectrum analyzer E4407B	MY45110807
4	Frequency multiplier	02
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805

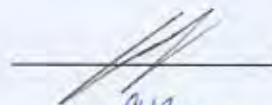
MEASURING RESULTS

SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Table 1

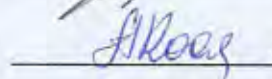
RF frequency, GHz	140	180	220
RF input power, dBm	-15.0	-15.0	-15.0
LO frequency, MHz	5 817	7 483	9 150
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
IF measured level, dBm	-13.33	-11.25	-12.92
Conversion loss, dB	-1.7	-3.8	-2.1
Expanded uncertainty, dB	1.6	1.8	2.1

Engineer



M. Kasperovich

Quality Manager



A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 61-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Antenna RCH05-SAX090
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 514	165
2	Wattmeter M 523	162
3	Frequency multiplier	02
4	Signal generator RG4-14	22
5	Voltmeter V7-34	0067787
6	Frequency meter RCH3-72	931200
7	Horn antenna P6-32	115671

MEASURING RESULTS

Distance between antennas 0.50 m.

Table 1

Frequency, GHz	140	180	220
Input power, mW	5.0	2.0	2.0
Power density of electromagnetic field, W/m ²	1.614	1.044	1.525
Maximum level of measured power, μW	56.9	32.1	36.8
Gain, dB	19.8	21.4	22.1
Antenna factor, dB/m	53.3	53.9	55.0
Expanded uncertainty, dB	2.4	2.5	2.7

Engineer  M. Kasperovich

Quality Manager  A. Kostrikin

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Technical Manager

M. Svirid

October 03, 2017

MEASURING REPORT # 62-17
October 03, 2017

Customer:	DEKRA Testing and Certification Co., Ltd. No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan
Item calibrated:	Spectrum Analyzer Extension Module SAX 090 # US53250004 (power supply # 1604) + Antenna RCH05-SAX090
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	09/04/2017
Date of calibration:	From 09/04/2017 to 10/03/2017

MEASURING CONDITIONS

Temperature: 22.2 °C	Humidity: 41.0 %	Pressure: 99.9 kPa
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MEASURING EQUIPMENT

#	Measuring equipment	Serial number
1	Wattmeter M 514	165
2	Wattmeter M 523	162
3	Spectrum analyzer E4407B	MY45110807
4	Frequency multiplier	02
5	Signal generator RG4-14	22
6	Voltmeter V7-34	0067787
7	Frequency meter RCH3-72	931200
8	Signal generator MG3694C	133805
9	Horn antenna P6-32	115671

MEASURING RESULTS

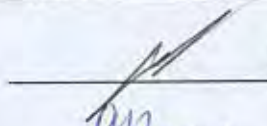
SSB conversion loss RF to IF port for an LO input power of 10 dBm in Standard LO Frequency operation. IF power measured from "IF Output" port with IF frequency fixed at 400 MHz.

Distance between antennas 0.50 m.


Table 1

RF frequency, GHz	140	180	220
Power density of electromagnetic field, W/m ²	0.854	1.014	1.268
LO frequency, MHz	5 817	7 483	9 150
LO input power, dBm	10.0	10.0	10.0
IF frequency, MHz	400.0		
Power received by antenna, dBm	-15.21	-15.06	-15.14
IF measured level, dBm	-13.50	-11.32	-13.02
Conversion loss, dB	-1.7	-3.7	-2.1
Expanded uncertainty, dB	3.1	3.3	3.5

Engineer

 M. Kasperovich

Quality Manager

 A. Kostrikin

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