MEASUREMENT CONDITIONS

Temperature: 23.8 °C	Humidity: 43.2 %	Pressure: 100.1 kPa

MEASUREMENT EQUIPMENT

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M 523	Reference power meter	162	24 March 2022	1/111-172-20	RF Power
M 534	Reference power meter	161	24 March 2022	1/111-173-20	RF Power
RG4-14	Signal generator	22	12 October 2021	22-20	RF Power
G4-161m	Signal generator	282	12 October 2021	23-20	RF Power
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
P6-31A	Measuring horn antenna	35864	23 September 2021	2368-43	Gain
P6-32	Measuring horn antenna	115671	23 September 2021	2369-43	Gain

MEASUREMENT RESULTS

Distance between tested and generating antenna 1.0 m.

Table 1

Frequency, GHz	90	115	140
Power density of electromagnetic field, W/m^2	0.283	0.344	0.312
Maximum level of measured power, dBm	-14.1	-14,6	-17.1
Gain, dBi	21.9	22.7	22.4
Expanded uncertainty, dB	2.0	2.2	2.2
Antenna Factor, dB/m	47.4	48,7	50,8

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 _____

This measurement report issued in duplicate and sent to:
1. Sporton International Inc.
2. Calibration Laboratory of Microwave Measuring Equipment
Duplication of Measurement report (complete or partial) must be authorized by the laboratory.

Calibration Laboratory of Microwave Measuring Equipment of MWMLab

ISO 17025
ACCREDITED LABORATORY

Calibration certificate

Accreditation certificate No. **№ BY/112 5.0065** **of** **09.01.2015**

Certificate number **40-21** **Date when calibrated** **06.07.2021** **Page** 1 **of** 2

Item calibrated **Antenna QWH-GPRR00 # QWH-GPRR00-01**

Customer Sporton International Inc.

Method of calibration GOST 20271.1, MK KL 8.2-16

All measurements are traceable to the SI units which are realized by national measurement standards of NMI and state standards of RF. Gain measurements above 178 GHz are to confirm operation functionality and traceable only to MWMLab standards and OML. 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 / Technical manager **Date of issue** **06.07.2021**

MWM Lab. BSUIR, 6, P.Brovki str., Minsk, 220013, Belarus *Phone/Fax: +375 17 293-84-96/E-mail: info@mwmlab.com*

Calibration Certificate

Certificate number **40-21**

Calibration is performed by using

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M 523	Reference power meter	162	24 March 2022	1/111-172-20	RF Power
M 514	Reference power meter	165	24 March 2022	1/111-176-20	RF Power
RG4-14	Signal generator	22	12 October 2021	22-20	RF Power
02	Frequency multiplier	02	11 January 2023	05-21	RF Power
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
P6-32	Measuring horn antenna	115671	23 September 2021	2369-43	Gain

Calibration conditions

Temperature: 23.8 ºC.
Humidity: 43.2 %.
Pressure: 100.1 kPa.

Calibration results are given in the measurement report # 40-21

#	Parameter	Specifications required	Specifications tested and measured
1	Frequency range	140 – 220 GHz	Corresponds
2	Antenna Gain	22.5* dBi	Corresponds (Table 1)
3	Antenna Factor	52.5 dB/m	Corresponds (Table 1)

* – Expanded uncertainty of measurements 2.2 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 / Engineer

MWM Lab. BSUIR, 6, P.Brovki str., Minsk, 220013, Belarus *Phone/Fax: +375 17 293-84-96/E-mail: info@mwmlab.com*

Calibration Laboratory of
Microwave Measuring Equipment
Accreditation certificate
No. BY/112 5.0065
Address: 6, P. Brovki str., Minsk
220013, Belarus
Phone/Fax: +375 17 2938496

Technical Manager

July 6, 2021

MEASUREMENT REPORT # 40-21

July 6, 2021

Customer:	Sporton International Inc.
Item calibrated:	**Antenna QWH-GPRR00 # QWH-GPRR00-01**
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	21.06.2021
Date of calibration:	From 21.06.2021 to 06.07.2021

MEASUREMENT CONDITIONS

Temperature: 23.8 °C	Humidity: 43.2 %	Pressure: 100.1 kPa

MEASUREMENT EQUIPMENT

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M 523	Reference power meter	162	24 March 2022	1/111-172-20	RF Power
M 514	Reference power meter	165	24 March 2022	1/111-176-20	RF Power
RG4-14	Signal generator	22	12 October 2021	22-20	RF Power
02	Frequency multiplier	02	11 January 2023	05-21	RF Power
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
P6-32	Measuring horn antenna	115671	23 September 2021	2369-43	Gain

MEASUREMENT RESULTS

Distance between tested and generating antenna 1.0 m (140 GHz) and 0.5 m (180, 220 GHz).

Table 1

Frequency, GHz	140	180	220
Power density of electromagnetic field, W/m^2	0.311	1.04	1.53
Maximum level of measured power, dBm	-17.5	-13.6	-13.6
Gain, dBi	21.9	22.7	22.9
Expanded uncertainty, dB	2.2	2.2	2.2
Antenna Factor, dB/m	51.3	52.6	54.2

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 _____

This measurement report issued in duplicate and sent to:
1. Sporton International Inc.
2. Calibration Laboratory of Microwave Measuring Equipment
Duplication of Measurement report (complete or partial) must be authorized by the laboratory.

Appendix C. Test Lab Accreditation Scope

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

January 25, 2022

National Communications Commission
No. 143, Yan-Ping S. Rd,
Taipei, 100
Taiwan

Attention: Jhih-Chang Shieh

Re: Accreditation of Sporton International Inc. Wensan Laboratory
Designation Number: TW3786
Test Firm Registration #: 654629

Dear Sir or Madam:

We have been notified by National Communications Commission that Sporton International Inc. Wensan Laboratory has been accredited as a testing laboratory.

At this time Sporton International Inc. Wensan Laboratory is hereby recognized to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification of the Commission's Rules.

This recognition will expire upon expiration of the accreditation or notification of withdrawal of recognition.

Any questions about this recognition should be submitted as an inquiry to the FCC Knowledge Database at www.fcc.gov/kdb.

Sincerely,

Jihad Hermes
Electronics Engineer

Filing Options
Grantee Registration
Modify Grantee Information
Reply to Grantee Name Change Correspondence
Test Firm Accrediting Body Login
Return to 159 / Pay for a Grantee registration

Reports
Pending Application Status
Authorization Search
Grantee Search
Pending Grantee Search
TCB Search
Test Firms
Test Firm Accrediting Bodies
Equipment Class/Rule Part List

Miscellaneous
Get FRN
Knowledge Database
Hearing Aid Compatibility Status Reporting
Measurement Procedures

OET Accredited Test firm scope List

Test Firm: **Sporton International Inc. Wensan Laboratory**

Scope	FCC Rule Parts	Maximum Assessed Frequency in Mhz	Status	Expiration Date	Recognition Date
Intentional Radiators	FCC Part 15 Subpart C	280000.00	Approved	11-18-2023	01-25-2022
U-NII without DFS Intentional Radiators	FCC Part 15, Subpart E	40000.00	Approved	11-18-2023	01-25-2022
U-NII with DFS Intentional Radiators	FCC Part 15, Subpart E	40000.00	Approved	11-18-2023	01-25-2022
UWB Intentional Radiators	FCC Part 15, Subpart F	280000.00	Approved	11-18-2023	01-25-2022
Commercial Mobile Services	Part 22 (cellular), Part 24, Part 25 (below 3 GHz), Part 27	40000.00	Approved	11-18-2023	01-25-2022
General Mobile Radio Services	Part 22 (non-cellular), Part 90 (below 3 GHz), Part 95 (below 3 GHz), Part 97 (below 3 GHz),Part 101 (below 3 GHz)	40000.00	Approved	11-18-2023	01-25-2022
Citizens Broadband Radio Services	Part 96	40000.00	Approved	11-18-2023	01-25-2022
Microwave and Millimeter Bands Radio Services	Part 25 (above 3 GHz), Part 30, Part 74, Part 90 (above 3 GHz), Part 95 (above 3 GHz), Part 97 (above 3 GHz) Part 101	280000.00	Approved	11-18-2023	01-25-2022
RF Exposure		6000.00	Approved	11-18-2023	01-25-2022
Hearing Aid Compatibility	Part 20	40000.00	Approved	11-18-2023	01-25-2022

Federal Communications Commission
45 L Street NE
Washington, DC 20554
More FCC Contact Information...

Phone: 888-CALL-FCC (225-5322)
TTY: 888-TELL-FCC (835-5322)
Fax: 202-418-0232
E-mail: fccinfo@fcc.gov

———THE END———