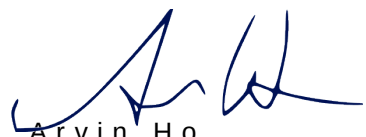


Prüfbericht-Nr.: <i>Test report no.:</i>	60369878 001	Auftrags-Nr.: <i>Order no.:</i>	238134487	Seite 1 von 42 Page 1 of 42
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2020.02.10	
Auftraggeber: <i>Client:</i>	C.O.B.O. S.P.A. VIA TITO SPERI 10 LENO (BS) CAP 25024, Italy			
Prüfgegenstand: <i>Test item:</i>	BT-ROUTER			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	1085034			
Auftrags-Inhalt: <i>Order content:</i>	NCC LP0002 Test report (BR/EDR)			
Prüfgrundlage: <i>Test specification:</i>	NCC Low-power Radio-frequency Devices Technical Regulations Section 3.10.1 LP0002(2018)			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2020.02.10			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A002797268-003 A002797268-004			
Prüfzeitraum: <i>Testing period:</i>	2020.03.25 - 2020.05.21			
Ort der Prüfung: <i>Place of testing:</i>	EMC/RF Laboratory Taipei			
Prüflaboratorium: <i>Testing laboratory:</i>	TUV Rheinland Taiwan Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
überprüft von: <i>reviewed by:</i>			genehmigt von: <i>authorized by:</i>	
Datum: 2020.05.22 <i>Date: (Report Date)</i>	Mars Y.J. Lin		Datum: 2020.05.22 <i>Date:</i>	Arvin Ho
Stellung / Position:	Project Engineer		Stellung / Position:	Vice General Manager
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet				
5 = poor N/T = not tested				
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. <i>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.</i>				

Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 2 von 42
Page 2 of 42

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Passed

5.1.2 PEAK OUTPUT POWER

RESULT: Passed

5.1.3 20dB BANDWIDTH

RESULT: Passed

5.1.4 CONDUCTED SPURIOUS EMISSIONS AND FREQUENCY BAND EDGE MEASURED IN 100kHz BANDWIDTH

RESULT: Passed

5.1.5 SPURIOUS EMISSION

RESULT: Passed

5.1.6 FREQUENCY SEPARATION

RESULT: Passed

5.1.7 NUMBER OF HOPPING FREQUENCY

RESULT: Passed

5.1.8 TIME OF OCCUPANCY

RESULT: Passed

Contents

1.	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS.....	5
1.2	DECISION RULE OF CONFORMITY.....	5
2.	TEST SITES	6
2.1	TEST LABORATORY	6
2.2	TEST FACILITY.....	6
2.3	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	7
2.4	TRACEABILITY	8
2.5	CALIBRATION	8
2.6	MEASUREMENT UNCERTAINTY	8
3.	GENERAL PRODUCT INFORMATION.....	9
3.1	PRODUCT FUNCTION AND INTENDED USE	9
3.2	SYSTEM DETAILS AND RATINGS.....	9
3.3	INDEPENDENT OPERATION MODES.....	11
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	11
3.5	SUBMITTED DOCUMENTS.....	11
4.	TEST SET-UP AND OPERATION MODES.....	12
4.1	PRINCIPLE OF CONFIGURATION SELECTION	12
4.2	TEST OPERATION AND TEST SOFTWARE.....	12
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	13
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	13
4.5	TEST SETUP DIAGRAM	13
5.	TEST RESULTS	15
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	15
5.1.1	Antenna Requirement	15
5.1.2	Peak Output Power	16
5.1.3	20dB Bandwidth	18
5.1.4	Conducted spurious emissions and Frequency Band Edge measured in 100kHz Bandwidth.....	22
5.1.5	Spurious Emission	29
5.1.6	Frequency Separation	30
5.1.7	Number of hopping frequency.....	32
5.1.8	Time of Occupancy	35
6.	PHOTOGRAPHS OF THE TEST SET-UP.....	38

7. LIST OF TABLES 42

8. LIST OF PHOTOGRAPHS..... 42

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix P: Photo Documentation

(File Name: 60369878 001 Appendix P)

Appendix D: Test Result of Radiated Emissions

(File Name: 60369878 001 Appendix D)

Test Specifications

The following standards were applied

Table 1: Applied Standard and Test Levels

Radio
NCC Low-power Radio-frequency Devices Technical Regulations LP0002(2018)(107 年 1 月 10 日) ANSI C63.10 (2013)

1.2 Decision Rule of conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard

2. Test Sites

2.1 Test Laboratory

TUV Rheinland Taiwan Ltd.

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

TUV Rheinland Taiwan Ltd.

No. 458-18, Sec 2, Fenliao., Linkou Dist.
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
IC Canada Registration No.: 25563

TAF Accredited NCC Test Lab. No.:3567

TAF ISO17025 Certification effective period: 6th-May-2019 to 05th-May-2022



Testing Laboratory
3567

Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 7 von 42
Page 7 of 42

2.3 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESR7	102109	2020/4/17	2021/4/16
Spectrum Analyzer	R&S	FSV40	101508	2020/3/16	2021/3/15
Pre-Amplifier	Agilent	8447D	2727A05146	2020/2/17	2021/2/16
Pre-Amplifier	EMCI	EMC051845SE	980635	2020/2/11	2021/2/10
Pre-Amplifier	EMCI	EMC184045SE	980656	2020/2/11	2021/2/10
Bilog Antenna	SCHWARZBECK	VULB-9168	00950	2020/1/20	2021/1/19
Horn Antenna	ETS-Lindgren	3117	00218929	2019/11/27	2020/11/26
Horn Antenna	SCHWARZBECK	BBHA 9170	00896	2020/1/17	2021/1/16
Loop Antenna	EMCI	LPA600	287	2019/12/20	2020/12/19
Test Software	Audix	e3	Ver. 9	N/A	N/A
Test Cable	HUBER+SUHNER	SUCOFLEX 104EA	800057/4EA	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 104	802244/4	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 104	MY37203/4	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA	800897/2EA	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA	800902/2EA	2020/3/25	2021/3/24

2.4 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.5 Calibration

requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.6 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements:

Table 3: Emission Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 0.1 ppm
RF power, conducted	± 1.5 dB
Adjacent channel power	± 3 dB
Radiated emission of transmitter, valid up to 26 GHz	± 6 dB
Radiated emission of receiver, valid up to 26 GHz	± 6 dB
Temperature	± 2 °C
Humidity	± 10 %

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a BT Router. It contains a Bluetooth compatible chip enabling the user to communicate data through a Wireless interface.
For details refer to the User Guide, Data Sheet and Block Diagram.

3.2 System Details and Ratings

Table 4: Basic Information of EUT

Item	EUT information
Kind of Equipment	BT-ROUTER
Type Designation	1085034
Brand Name	COBO

Table 5: Technical Specification of EUT

Technical Specification	Value
Operating Frequency	2402 MHz ~ 2480 MHz
Channel Spacing	1 MHz
Channel number	79
Operation Voltage	8 - 32Vdc
Modulation	GFSK, $\pi/4$ DQPSK, 8 DPSK
Antenna gain	1.77 dBi

Table 6: Frequency hopping information

Technical Specification	Description
Hopping Range	Hereby we declare that the maximum frequency of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V2.1+EDR for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04).
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73,07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56,69,62,71,64, 7,25,27,66,57,70,74,61,78,63,10,41,05,43,15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,
Receiver input bandwidth	The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings. Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

3.3 Independent Operation Modes

The basic operation modes are:

- A. Transmitting
- B. Receiving
- C. Hopping

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Block Diagram.

3.5 Submitted Documents

- Block Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Table 7: Table for Parameters of Test Software Setting

Mode	Channel Frequency		
	2402 MHz	2441 MHz	2480 MHz
1-DH5	15	15	15
2-DH5	15	15	15
3-DH5	15	15	15

4.2 Test Operation and Test Software

Setup for testing: Test samples are provided with a USB interface which makes it possible to control them through a test software installed on a notebook computer.

This software, Bluetooth RF test tool "Putty.exe" provided by manufacturer was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed in section 3.3 as appropriate.

The samples were used as follows:

Conducted: A002797268-004

Radiation: A002797268-003

Full test was applied on all test modes, but only worst case was shown.

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

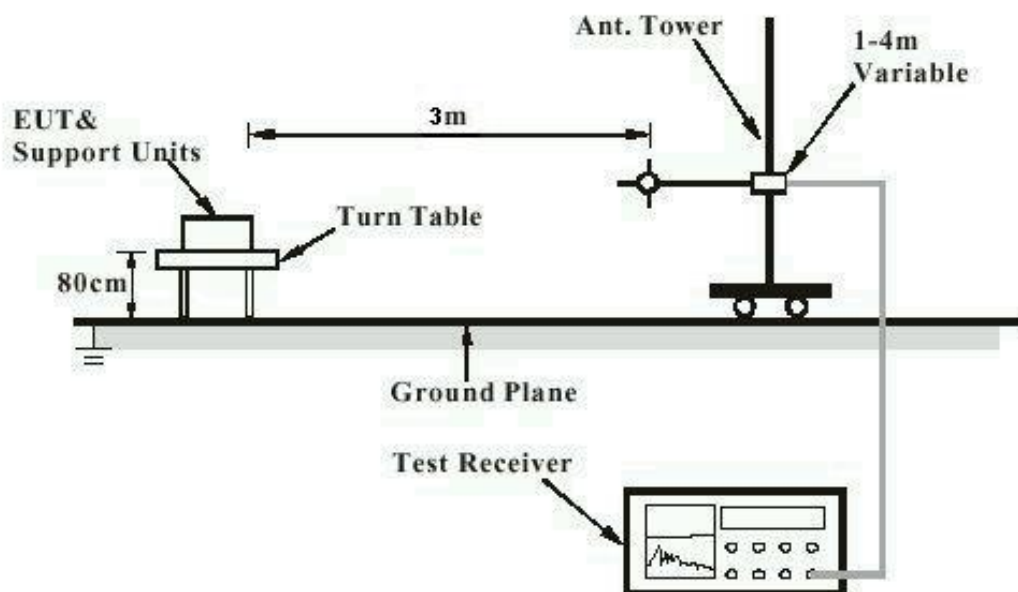
Description	Manufacturer	Model No.	Serial No.
Notebook(EMC-06)	Lenovo	TP00048A	PB-0F8B2

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested containing the noise suppression parts as in the Photo Appendix and the Test Setup Photos. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1 GHz are done with a table height of 1.5m

Diagram of Measurement Equipment Configuration for Mains Conduction Measurement

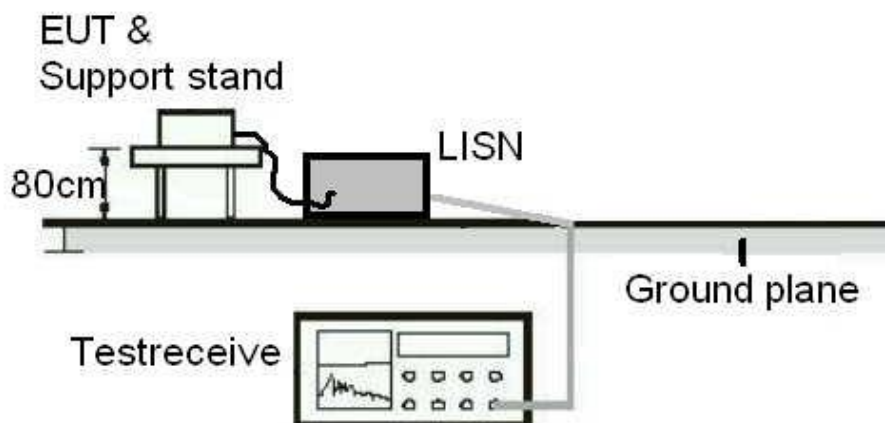
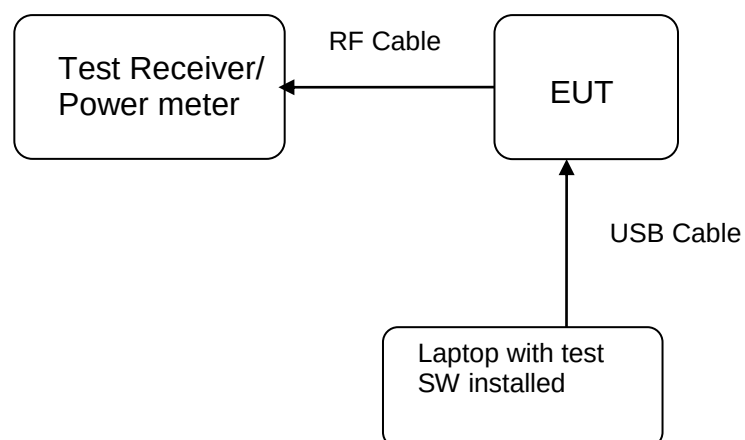


Diagram of Measurement Equipment Configuration for Conducted Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.3, 3.10.1.4

Requirement : The maximum conducted output power shall be reduced in equal quantity according to the total dBi of the antenna directional gain over 6 dBi.

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 1.77 dBi. The antenna is a chip antenna with no possibility of replacement with a non-approved antenna by the end-user.

The directional gain of this antenna does not exceed 6dBi, so the limit does not reduce.

The antenna specification shall not be subject to the requirement of Section 2.2.

Refer to EUT photo for details.

5.1.2 Peak Output Power

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.2 (1)(B)
Basic standard : ANSI C63.10 (2013)
LP0002(2018) Appendix II
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 22-26 °C
Relative humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

Table 8: Test result of Peak Output Power, 1-DH5

Channel	Channel Frequency	Peak Output Power		Limit
	(MHz)	(dBm)	(W)	(W)
Low Channel	2402	5.32	0.00340	0.125
Middle Channel	2441	5.56	0.00360	0.125
High Channel	2480	6.07	0.00405	0.125

Pmax: 4.0458 mW

Table 9: Test result of Peak Output Power, 2-DH5

Channel	Channel Frequency	Peak Output Power		Limit
	(MHz)	(dBm)	(W)	(W)
Low Channel	2402	5.70	0.00372	0.125
Middle Channel	2441	5.98	0.00396	0.125
High Channel	2480	6.39	0.00436	0.125

Pmax: 4.3551 mW

Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 17 von 42
Page 17 of 42

Table 10: Test result of Peak Output Power, 3-DH5

Channel	Channel Frequency	Peak Output Power		Limit
	(MHz)	(dBm)	(W)	(W)
Low Channel	2402	6.15	0.00412	0.125
Middle Channel	2441	6.49	0.00446	0.125
High Channel	2480	6.84	0.00483	0.125

Pmax: 4.8306 mW

5.1.3 20dB Bandwidth

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.6 (1)(A)
Basic standard : ANSI C63.10 (2013)
LP0002(2018) Appendix II
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A

Ambient temperature : 22-26°C
Relative humidity : 50-65%
Atmospheric pressure : 100-103kPa

Table 11: Test result of 20dB Bandwidth, 1-DH5

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Result
Low Channel	2402	872.13	Pass
Mid Channel	2441	884.12	Pass
High Channel	2480	911.10	Pass

Table 12: Test result of 20dB Bandwidth, 3-DH5

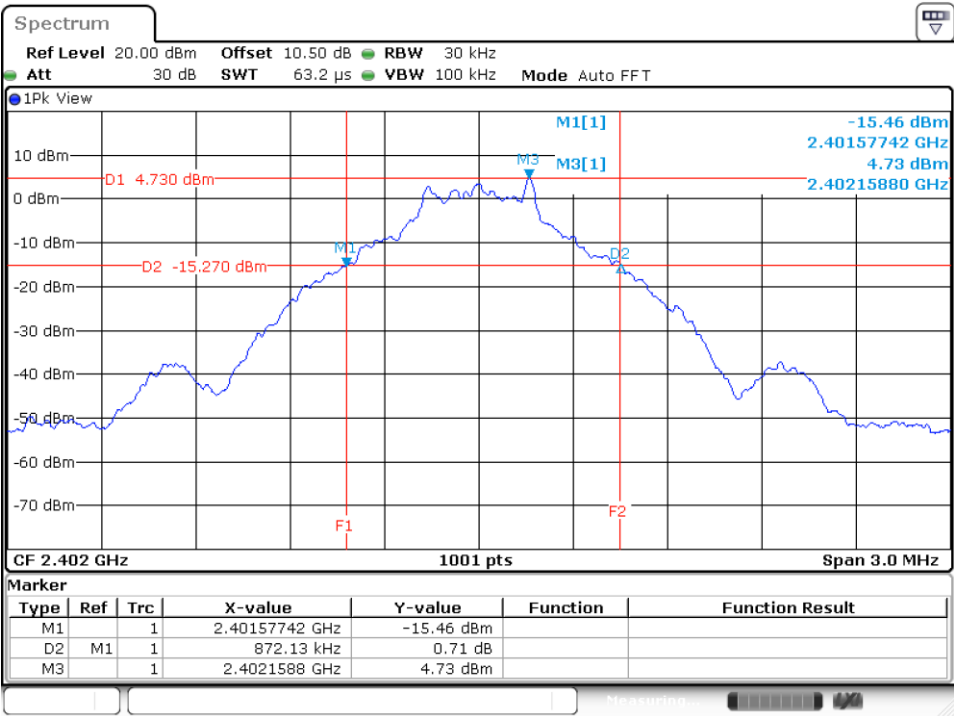
Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Result
Low Channel	2402	1291.70	Pass
Mid Channel	2441	1285.70	Pass
High Channel	2480	1270.70	Pass

Note: Limit is for Channel Separation of 1 MHz and a power limit of 125 mW.

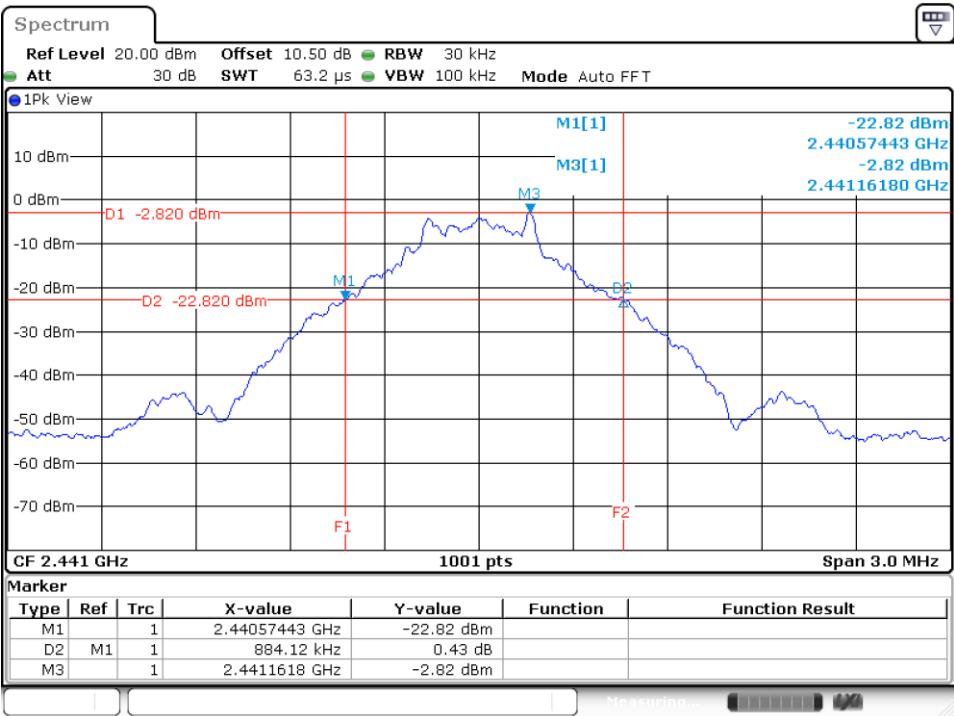
If the carrier separation frequency of a Bluetooth Device is set at 1 MHz due to the firmware setting and the Bluetooth Standard, then for power <125 mW the limit for the 20 dB Bandwidth, becomes $1 \text{ MHz} / 0.66666 = 1.5 \text{ MHz}$.

Test Plot of 20dB Bandwidth, 1-DH5

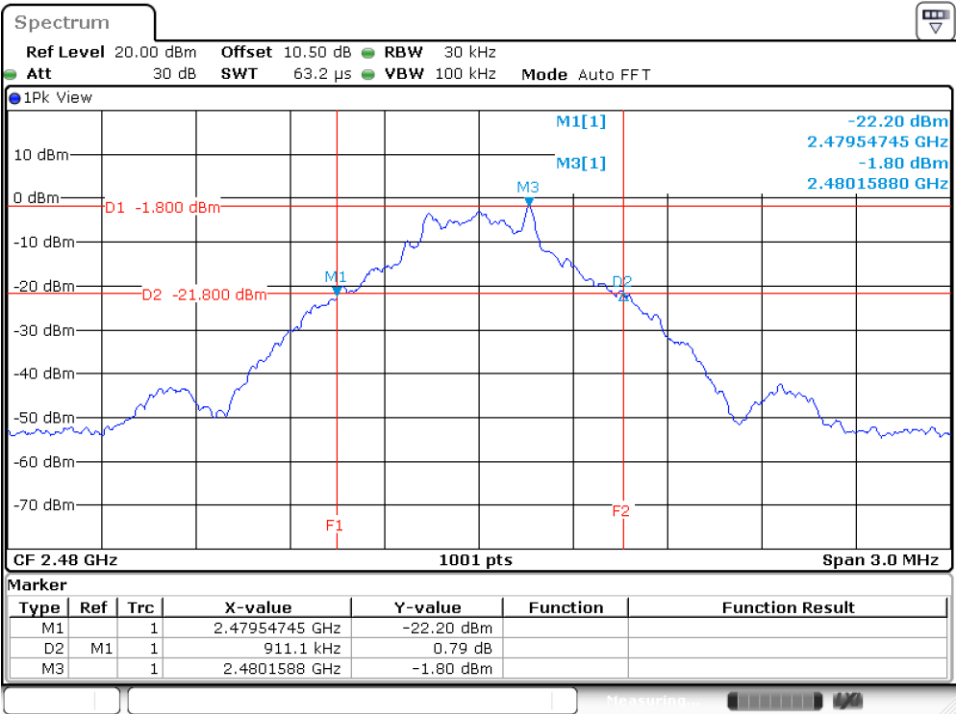
Low Channel



Middle Channel



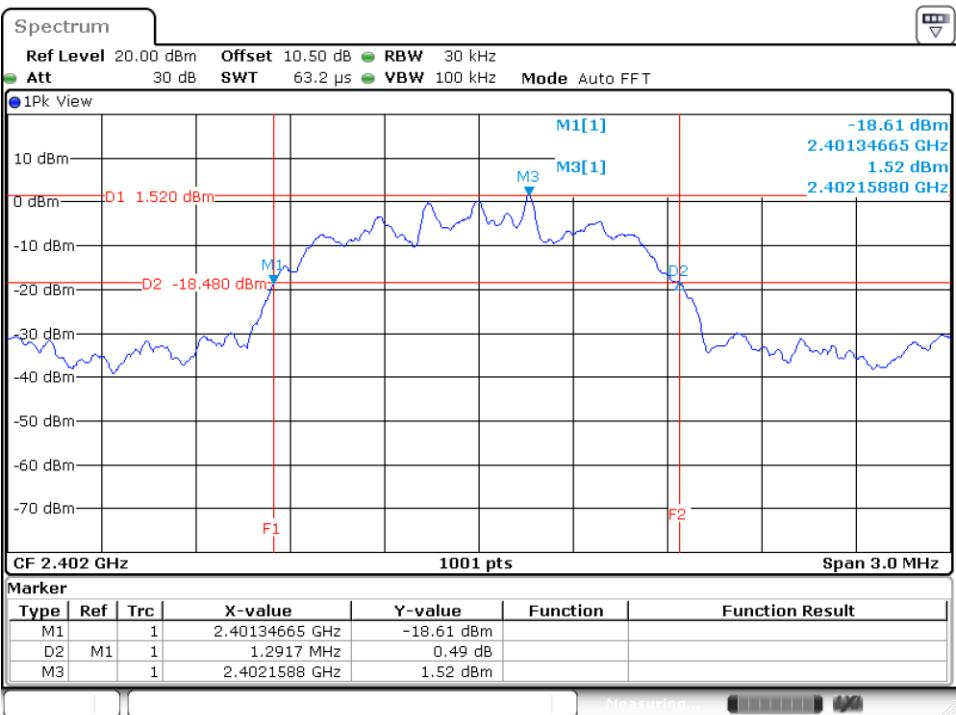
High Channel



Date: 19.MAY.2020 12:58:05

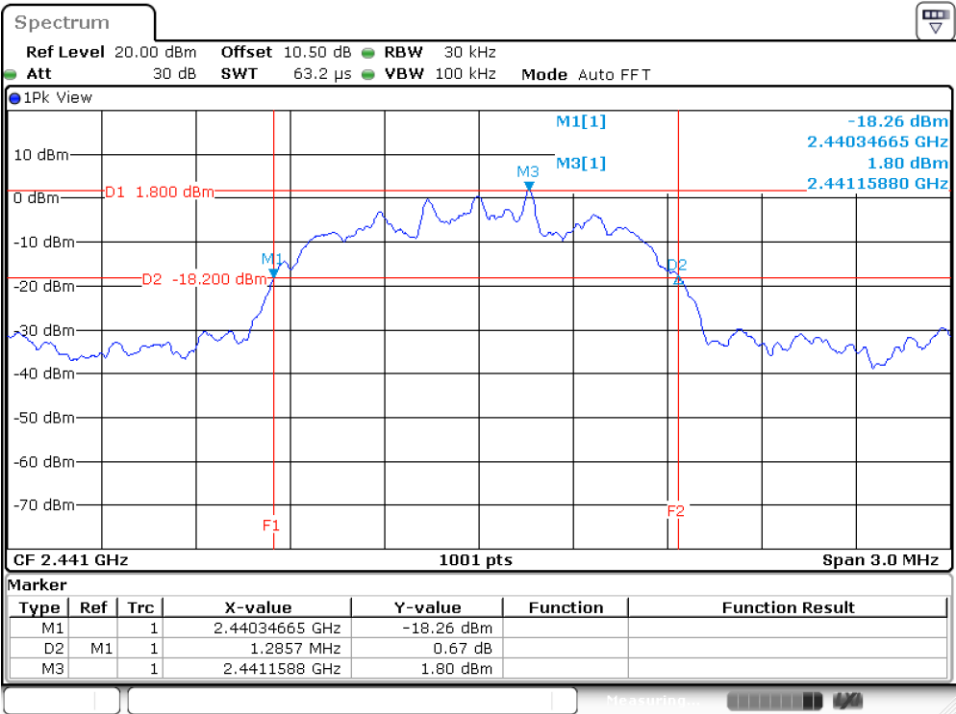
Test Plot of 20dB Bandwidth, 3-DH5

Low Channel



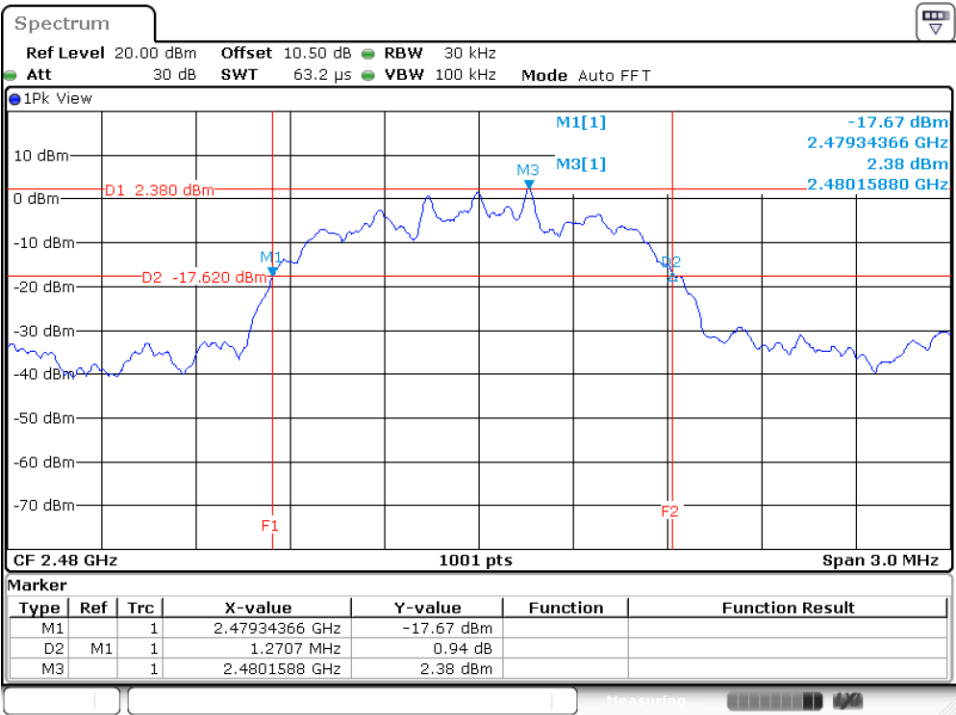
Date: 12.MAY.2020 13:09:33

Middle Channel



Date: 12.MAY.2020 13:14:38

High Channel



Date: 12.MAY.2020 13:21:46

5.1.4 Conducted spurious emissions and Frequency Band Edge measured in 100kHz Bandwidth

RESULT:

Passed

Test standard	:	LP0002(2018): 3.10.1.5
Basic standard	:	ANSI C63.10 (2013)
		LP0002(2018) Appendix II
Limit	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power)
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/ Middle/ High for Conducted Spurious Emissions
		Low/ High/ Hopping on for Frequency Band Edge
Operation Mode	:	A
Ambient temperature	:	22-26°C
Relative humidity	:	50-65%
Atmospheric pressure	:	100-103 kPa

All emissions are more than 20dB below fundamental, details refer to following test plot, and compliance is achieved as well.

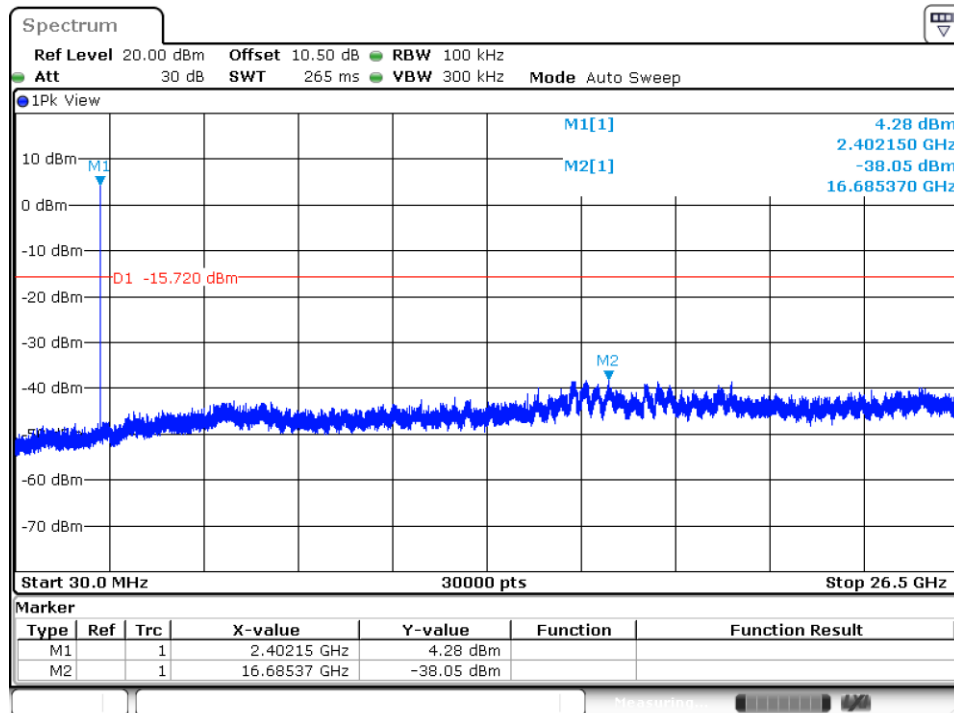
Due to the small size of the product and that there are no inductive components of significant size, 9kHz to 30MHz frequency range is not tested based on technical judgment.

Prüfbericht - Nr.: 60369878 001
Test Report No.

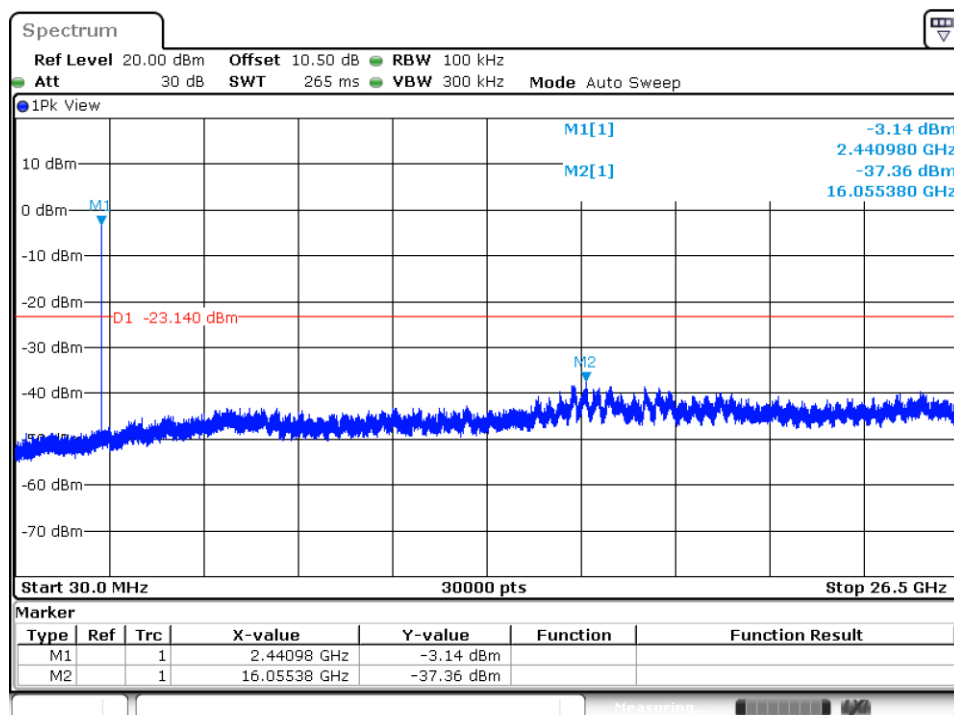
Seite 23 von 42
Page 23 of 42

Test Plot of 100kHz Conducted Emissions, 1-DH5

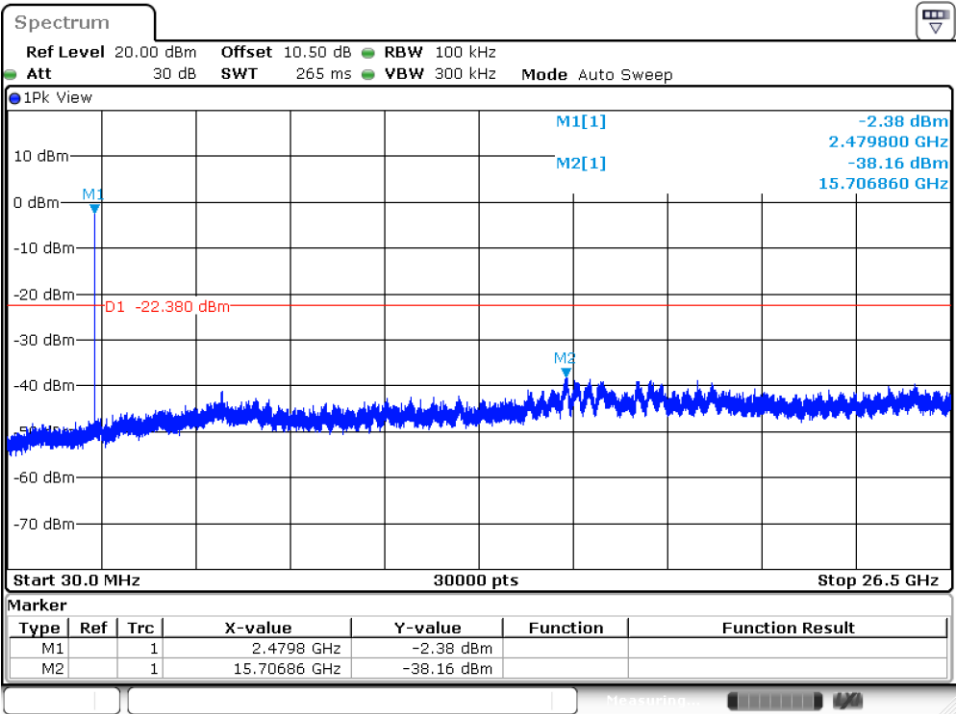
Low Channel



Middle Channel



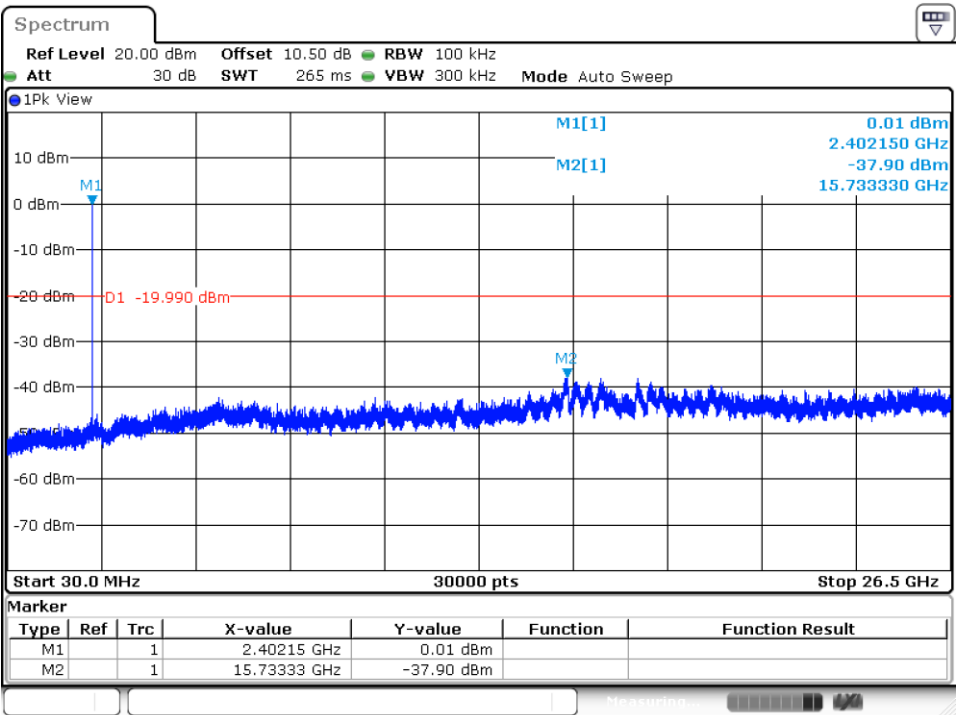
High Channel



Date: 19.MAY.2020 12:59:07

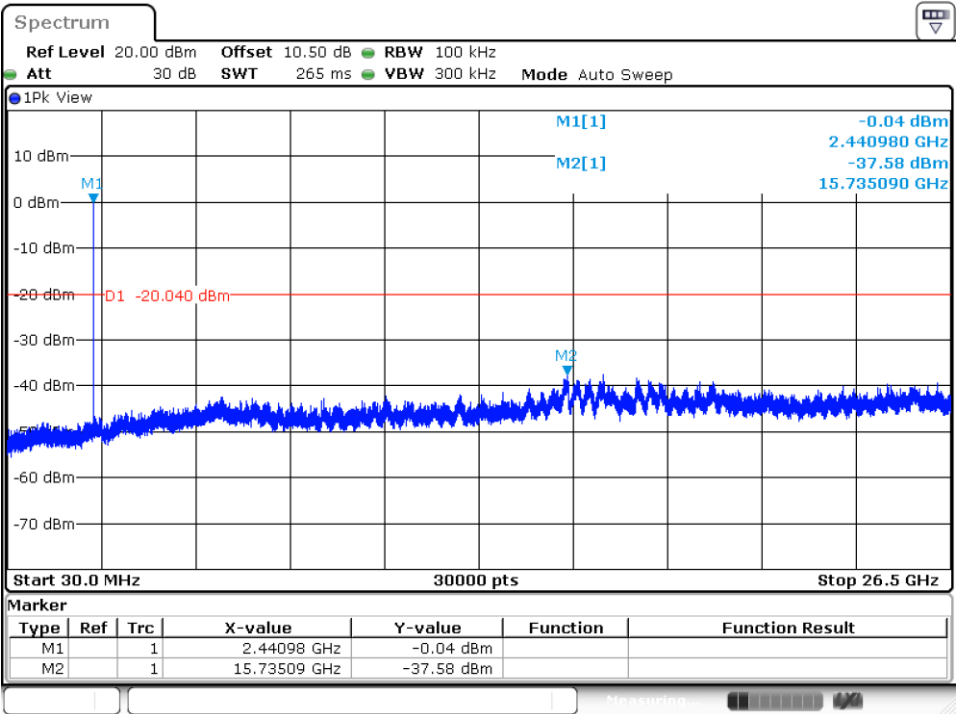
Test Plot of 100kHz Conducted Emissions, 3-DH5

Low Channel



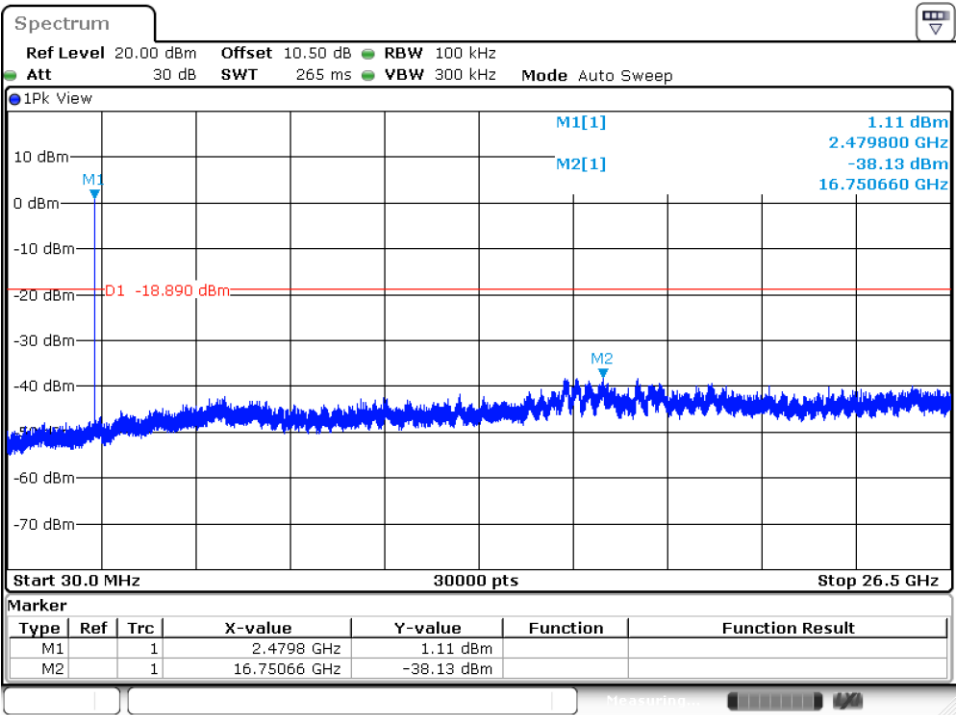
Date: 12.MAY.2020 13:11:07

Middle Channel



Date: 12.MAY.2020 13:16:10

High Channel



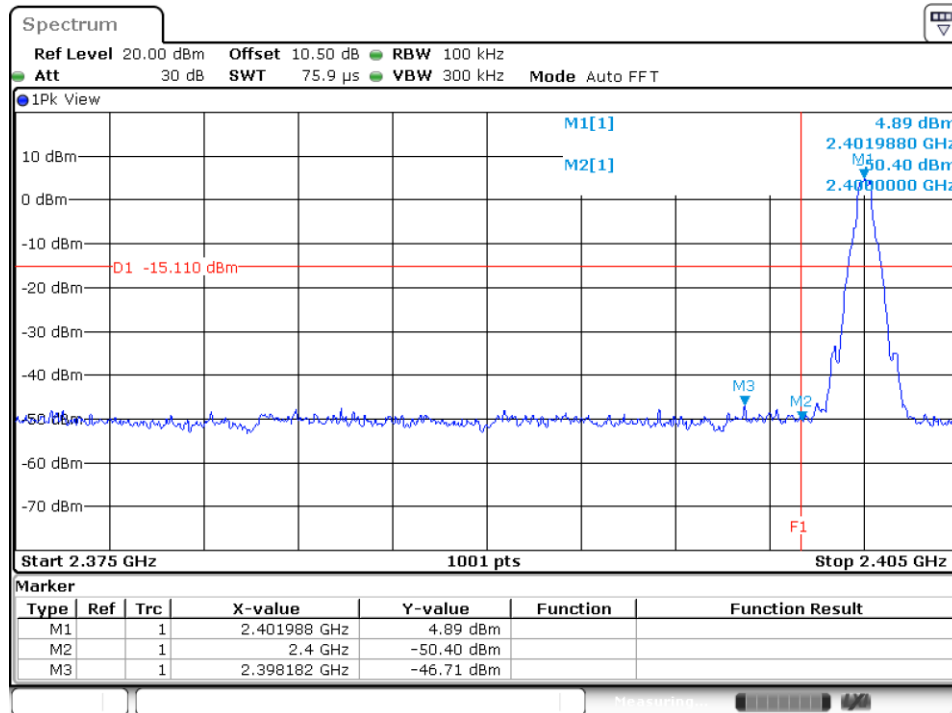
Date: 12.MAY.2020 13:23:21

Prüfbericht - Nr.: 60369878 001
Test Report No.

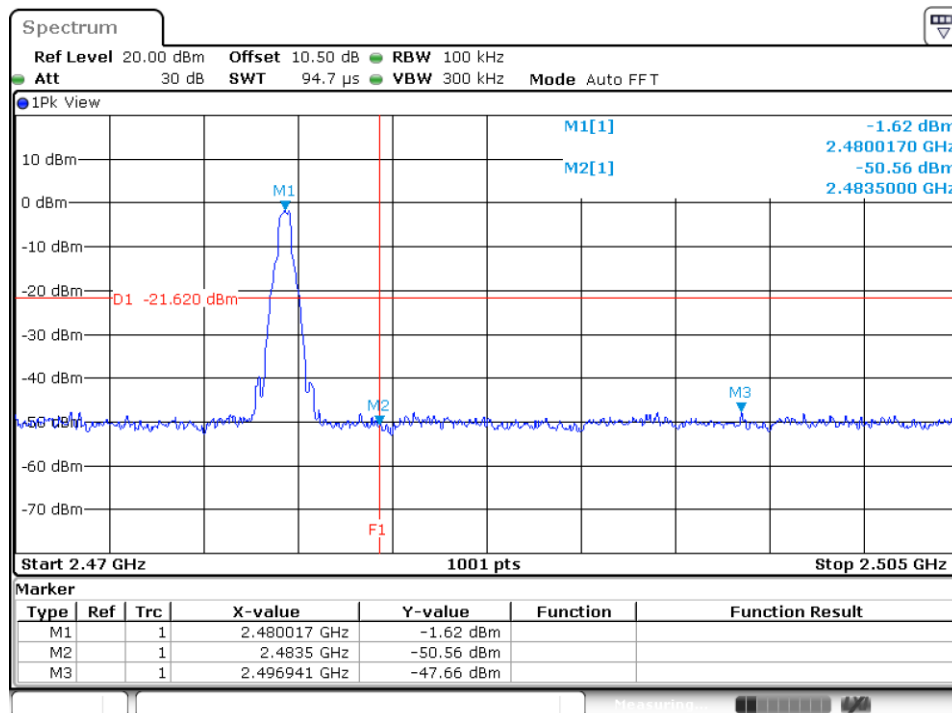
Seite 26 von 42
Page 26 of 42

Test Plot of 100kHz Bandwidth of Frequency Band Edge, 1-DH5

Low Channel



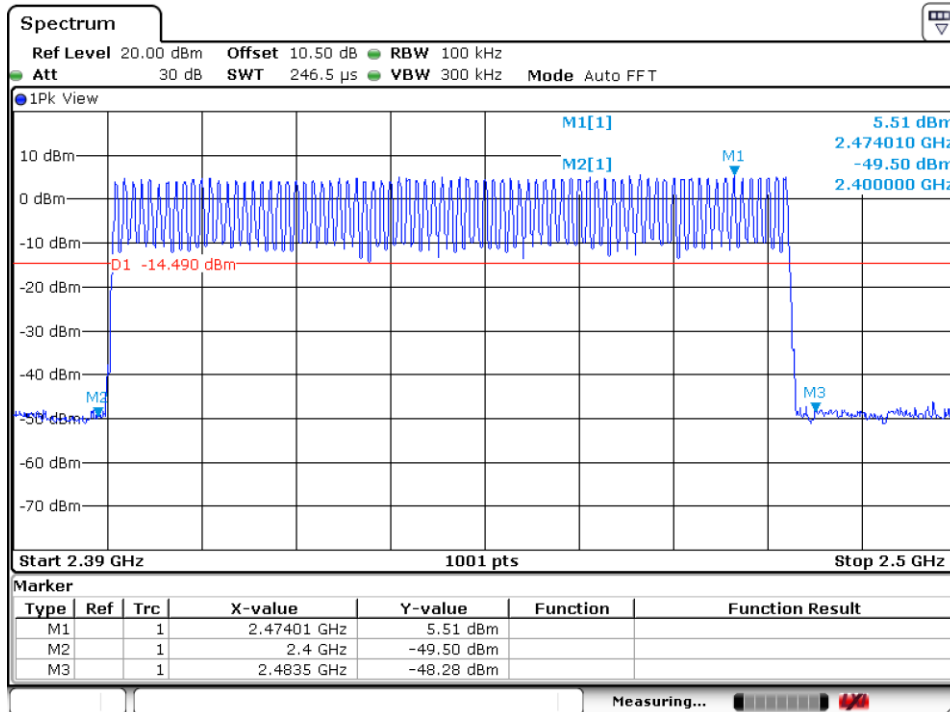
High Channel



Prüfbericht - Nr.: 60369878 001
Test Report No.

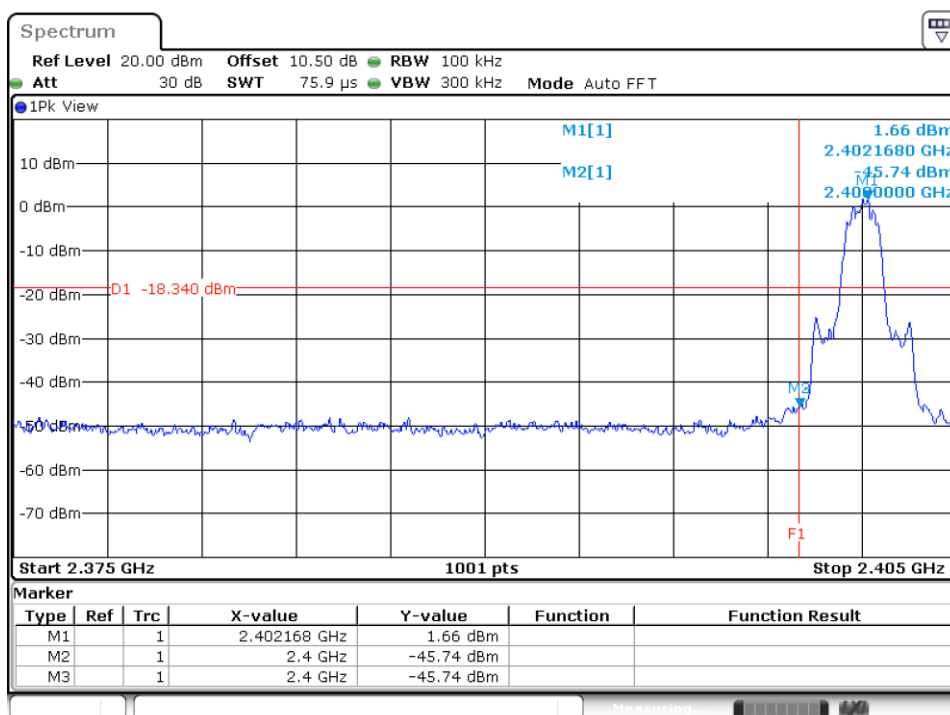
Seite 27 von 42
Page 27 of 42

Hopping ON



Date: 12.MAY.2020 13:00:14

Test Plot of 100kHz Bandwidth of Frequency Band Edge, 3-DH5 Low Channel

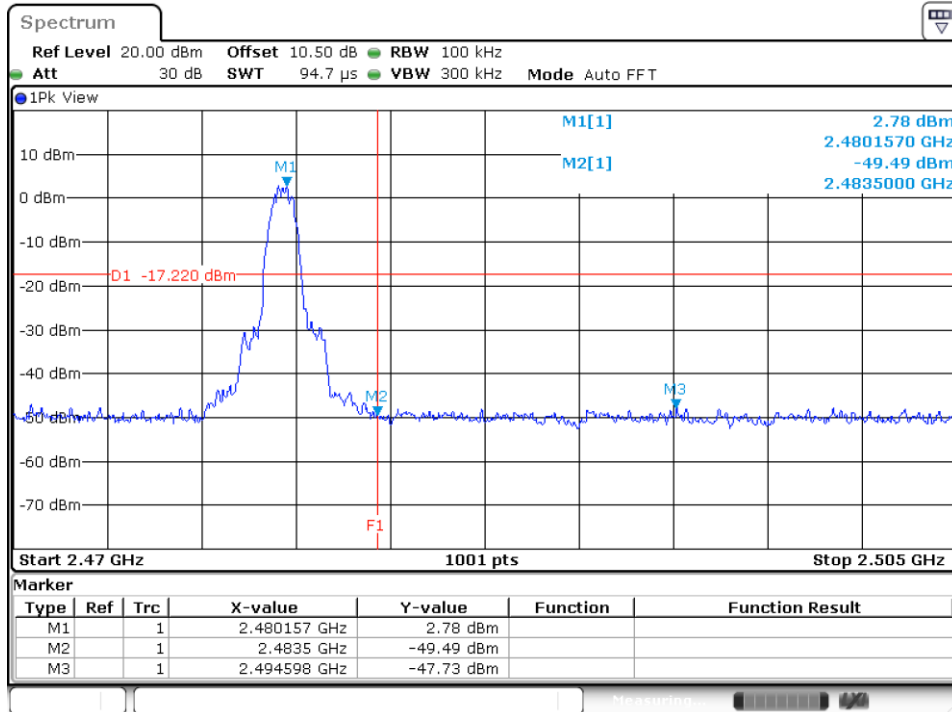


Date: 12.MAY.2020 13:11:39

Prüfbericht - Nr.: 60369878 001
Test Report No.

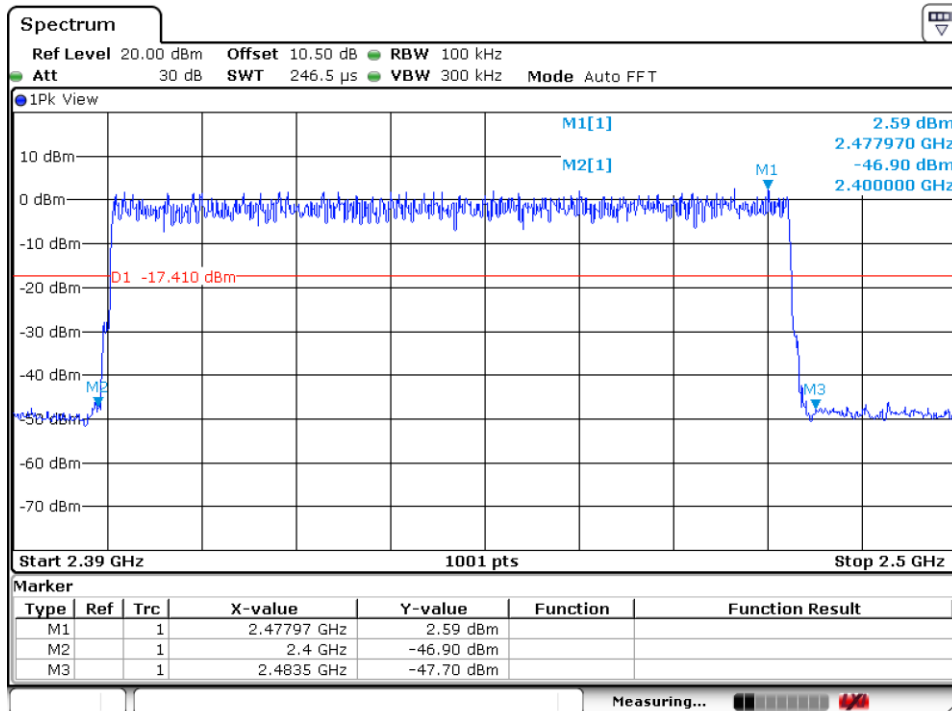
Seite 28 von 42
Page 28 of 42

High Channel



Date: 12.MAY.2020 13:23:57

Hopping ON



Date: 12.MAY.2020 13:08:25

Prüfbericht - Nr.: 60369878 001

Test Report No.

Seite 29 von 42

Page 29 of 42

5.1.5 Spurious Emission

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.5, (2)
Basic standard : ANSI C63.10 (2013)
Limits : Radiated emissions which fall in the restricted bands,
as defined in LP0002(2018): 2.7 , must comply with the
radiated emission limits specified in LP0002(2018): 2.8

Emission radiated outside the specified frequency
bands must comply with the radiated emission limits
specified in LP0002(2018): 2.8

Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A, B
Ambient temperature : 22-26°C
Relative humidity : 50-65%
Atmospheric pressure : 100-103 kPa

Remark: Testing was carried out within frequency range 9kHz to the tenth harmonic. For details refer to Appendix D. The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

5.1.6 Frequency Separation

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.6 (1)(A)
Basic standard : ANSI C63.10 (2013)
Limit : LP0002(2018) Appendix II
Kind of test site : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater
Kind of test site : Shielded room

Test setup

Test Channel : Hopping On
Operation Mode : C
Ambient temperature : $22\text{-}26^{\circ}\text{C}$
Relative humidity : $50\text{-}65\%$
Atmospheric pressure : $100\text{-}103\text{ kPa}$

Table 13: Test result of Frequency Separation, 1-DH5

Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
Record Channel	2441	-	$\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth	Pass
Record Channel adj 1	2440	-1.001		
Record Channel adj 2	2442	1.011		

Table 14: Test result of Frequency Separation, 3-DH5

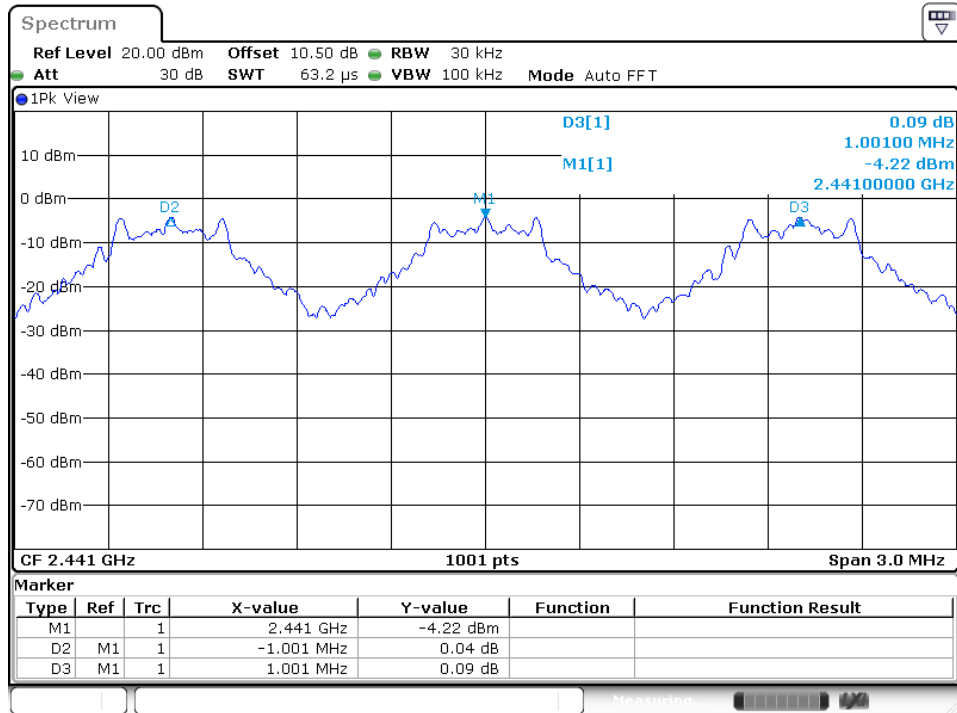
Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
Record Channel	2441	-	$\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth	Pass
Record Channel adj 1	2440	-1.001		
Record Channel adj 2	2442	1.001		

Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 31 von 42
Page 31 of 42

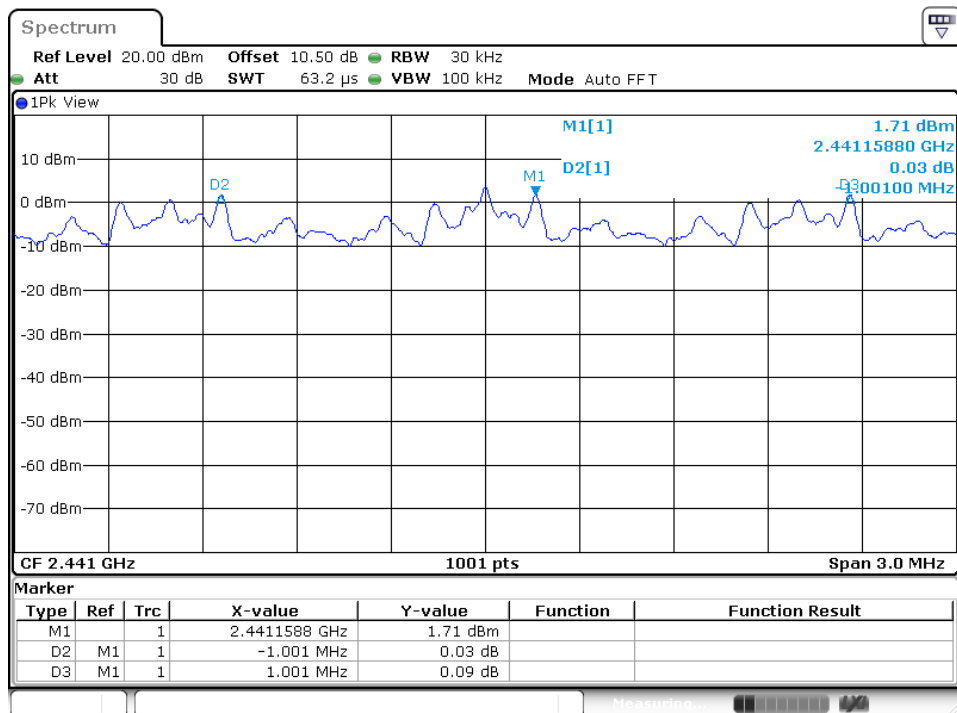
Test Plot of Frequency Separation, 1-DH5

Middel Channel



Test Plot of Frequency Separation, 3-DH5

Middel Channel



Prüfbericht - Nr.: 60369878 001

Test Report No.

Seite 32 von 42

Page 32 of 42

5.1.7 Number of hopping frequency

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.6 (1)(A)(a)
Basic standard : ANSI C63.10 (2013)
Kind of test site : LP0002(2018) Appendix II
Shielded room

Test setup

Test Channel : Hopping On
Operation Mode : C

Ambient temperature : 22-26°C
Relative humidity : 50-65%
Atmospheric pressure : 100-103 kPa

Table 15: Test result of Number of hopping frequency, 1-DH5

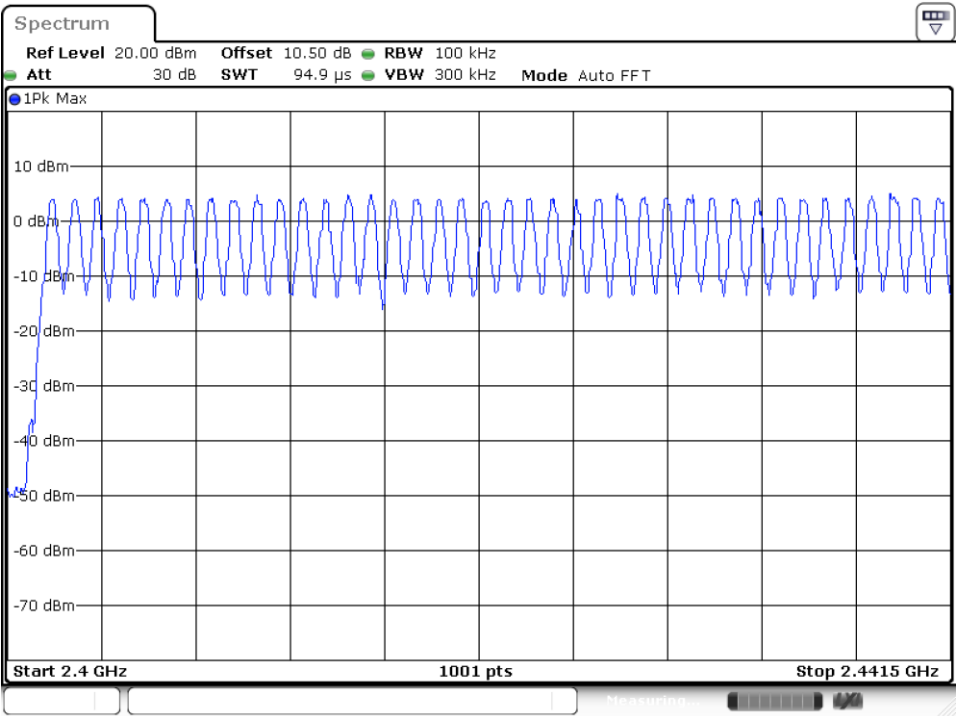
Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
<u>2400</u> to <u>2483.5</u> MHz	79	≥15	Pass

Table 16: Test result of Number of hopping frequency, 3-DH5

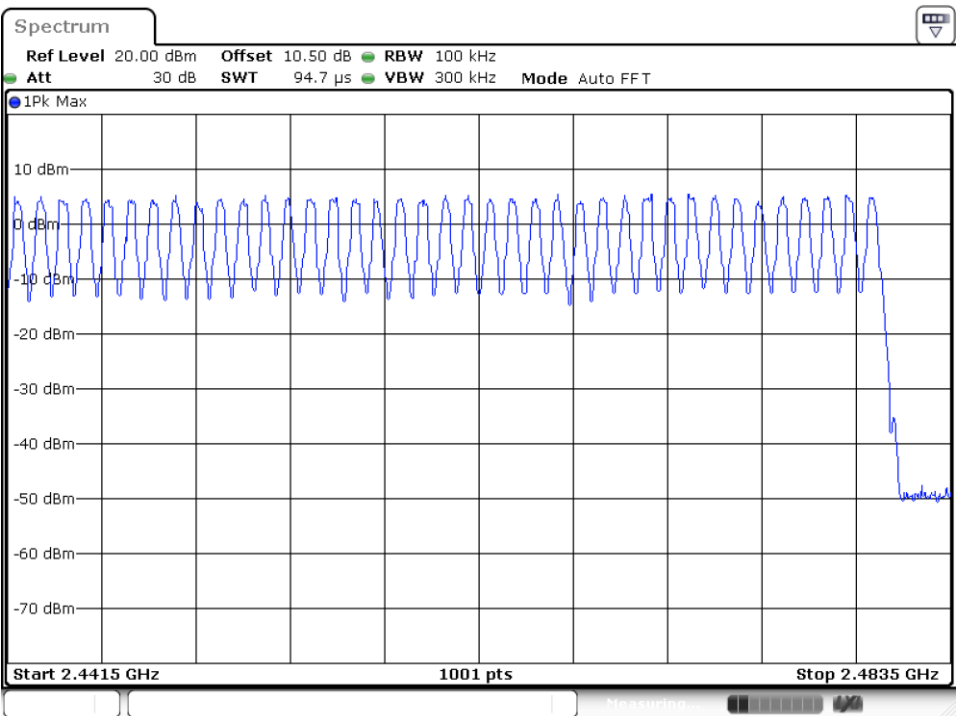
Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
<u>2400</u> to <u>2483.5</u> MHz	79	≥15	Pass

Test Plot of Number of hopping frequencies, 1-DH5

Middle Channel



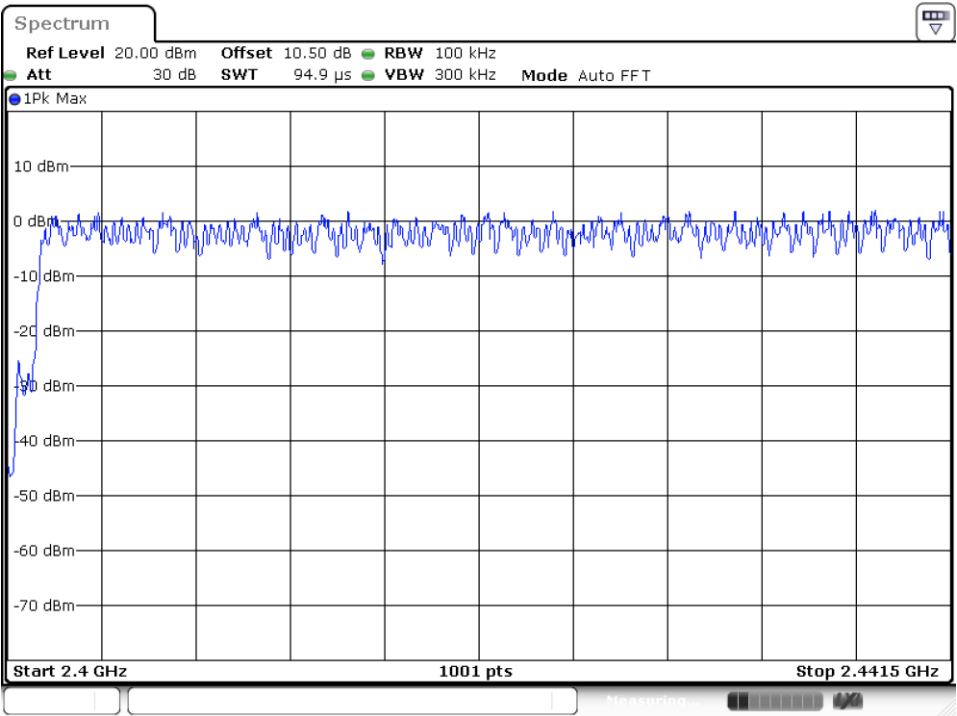
Date: 12.MAY.2020 12:58:55



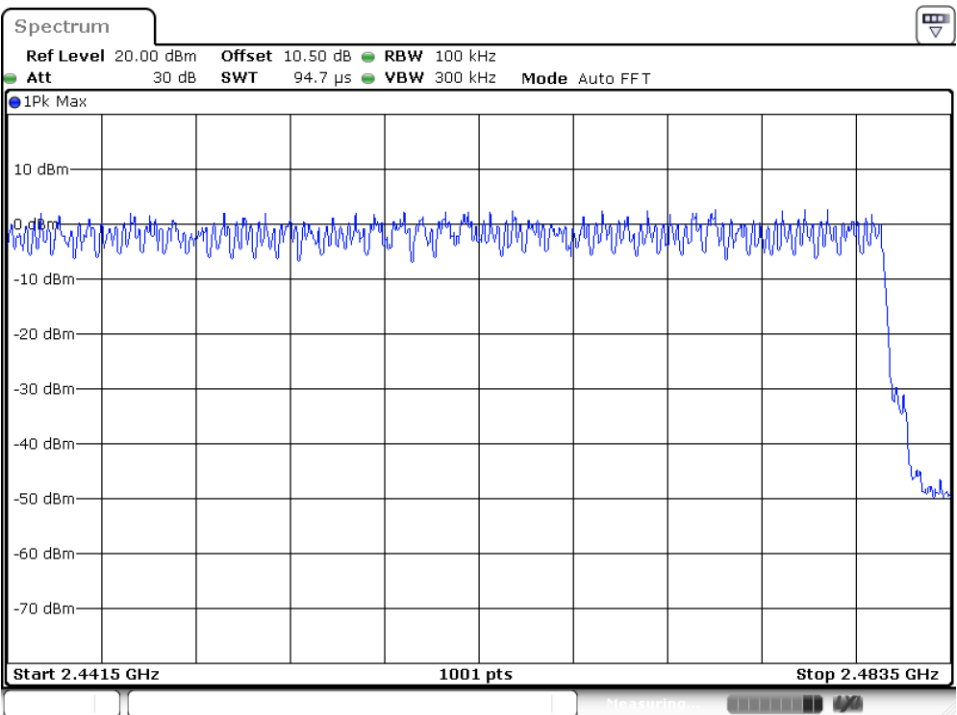
Date: 12.MAY.2020 12:59:11

Test Plot of Number of hopping frequencies, 3-DH5

Middle Channel



Date: 12.MAY.2020 13:06:33



Date: 12.MAY.2020 13:07:01

Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 35 von 42
Page 35 of 42

5.1.8 Time of Occupancy

RESULT:

Passed

Test standard : LP0002(2018): 3.10.1.6 (1)(A)(a)
Basic standard : ANSI C63.10 (2013)
LP0002(2018) Appendix II
Limits : 400ms
Kind of test site : Shield room

Test setup

Test Channel : Middle
Operation Mode : A

Ambient temperature : 22-26°C
Relative humidity : 50-65%
Atmospheric pressure : 100-103 kPa

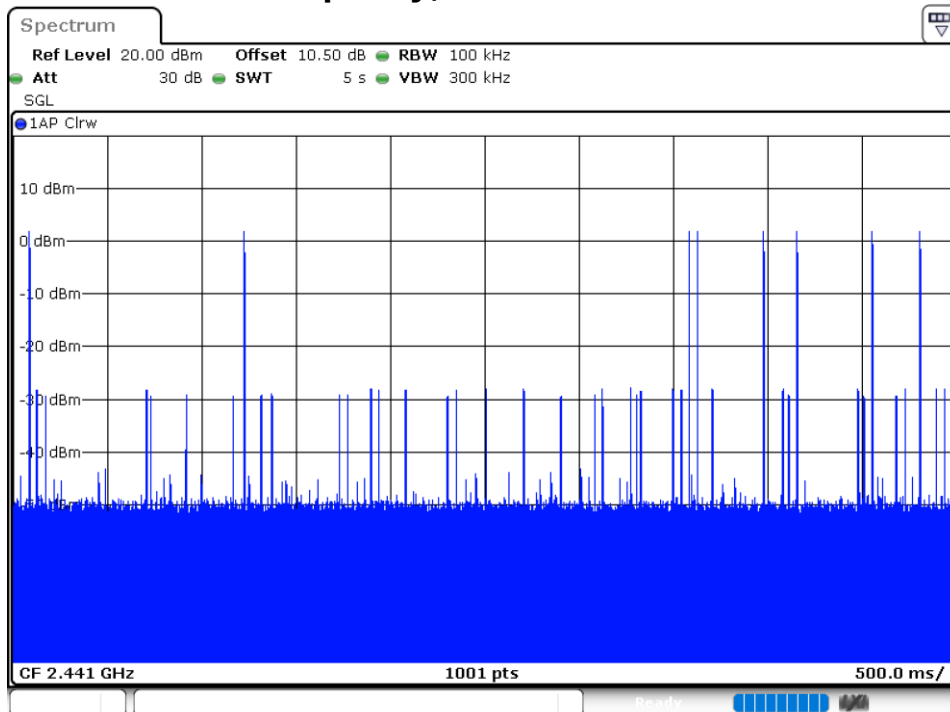
Table 17: Test result of Time of Occupancy

Package Mode	Average Hopping Channel	Package Transfer Time (ms)	Sweep Time (s)	Dwell Time (ms)	Limit (ms)	Result
1-DH5	15.00	2.93	5.00	277.29	400	Pass
3-DH5	9.00	2.92	5.00	166.09	400	Pass

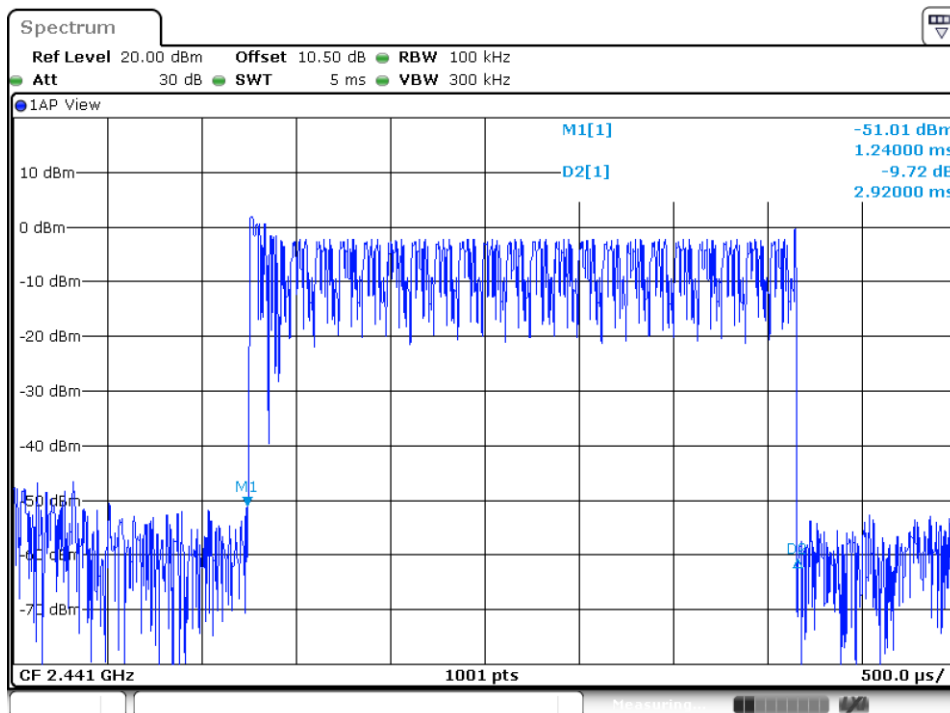
Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 36 von 42
Page 36 of 42

Test Plot of Time of Occupancy, 1-DH5

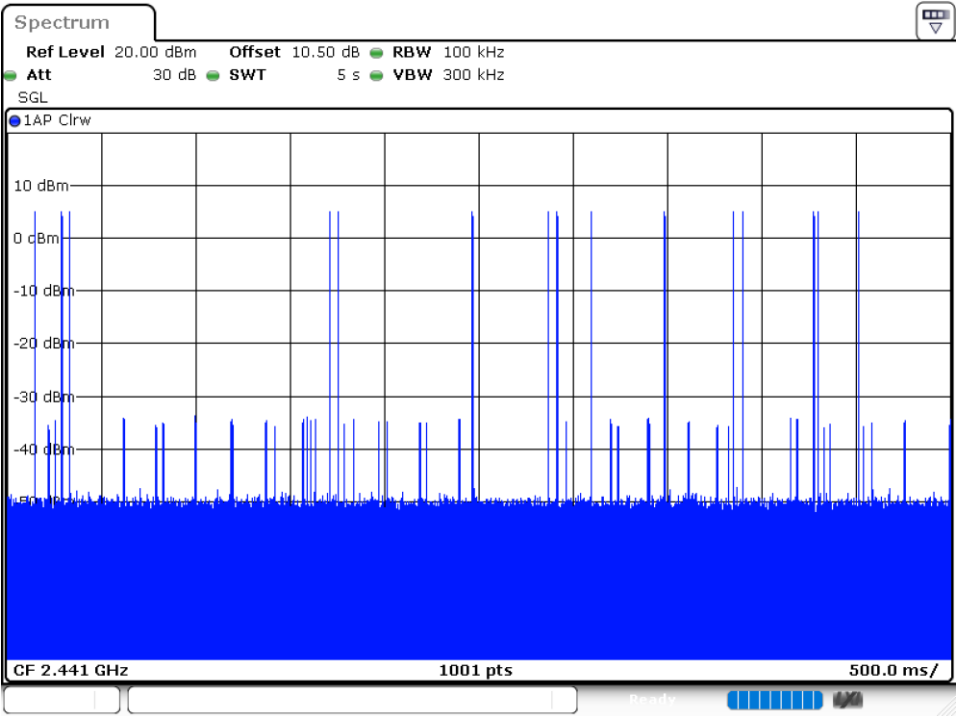


Date: 12.MAY.2020 13:04:28

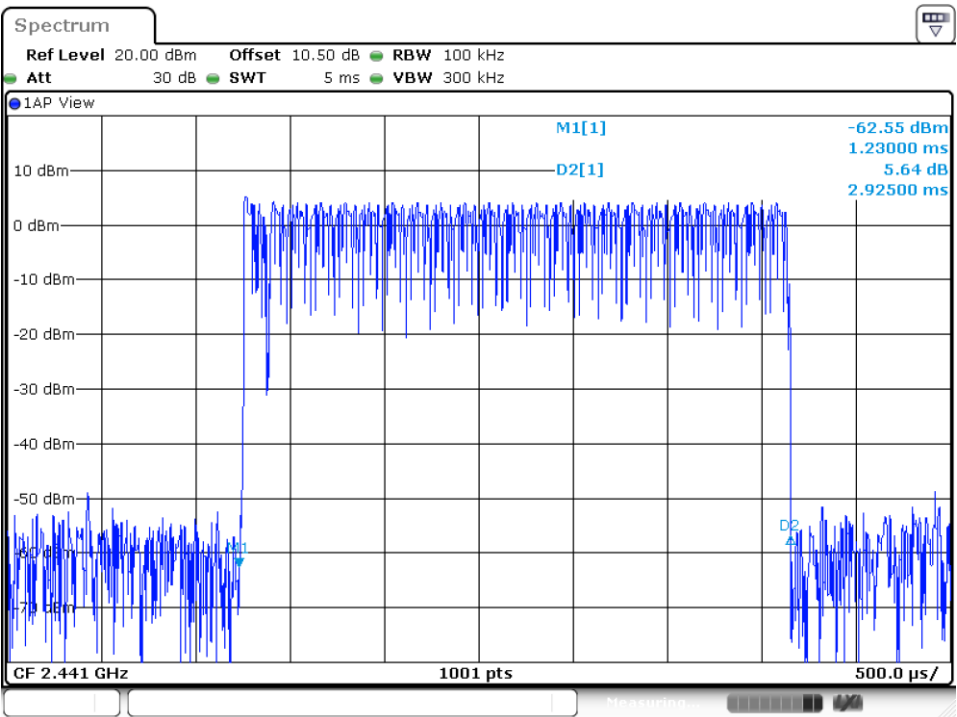


Date: 12.MAY.2020 13:04:50

Test Plot of Time of Occupancy, 3-DH5



Date: 12.MAY.2020 13:02:04



Date: 12.MAY.2020 13:02:20

6. Photographs of the Test Set-Up

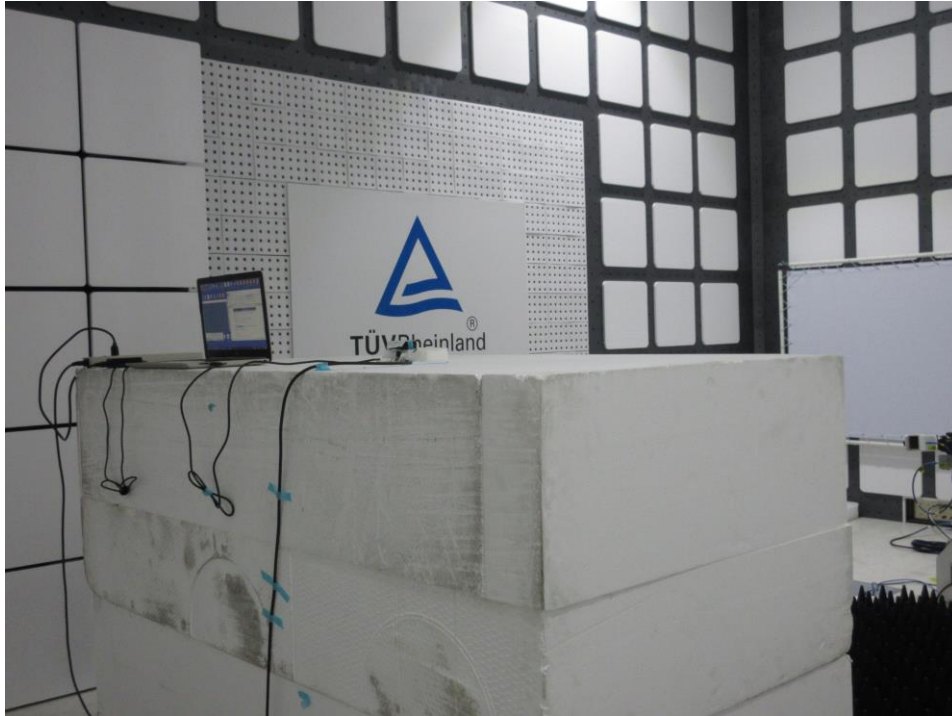
Photograph 1: Set-up for Spurious Emissions (Front View 1)



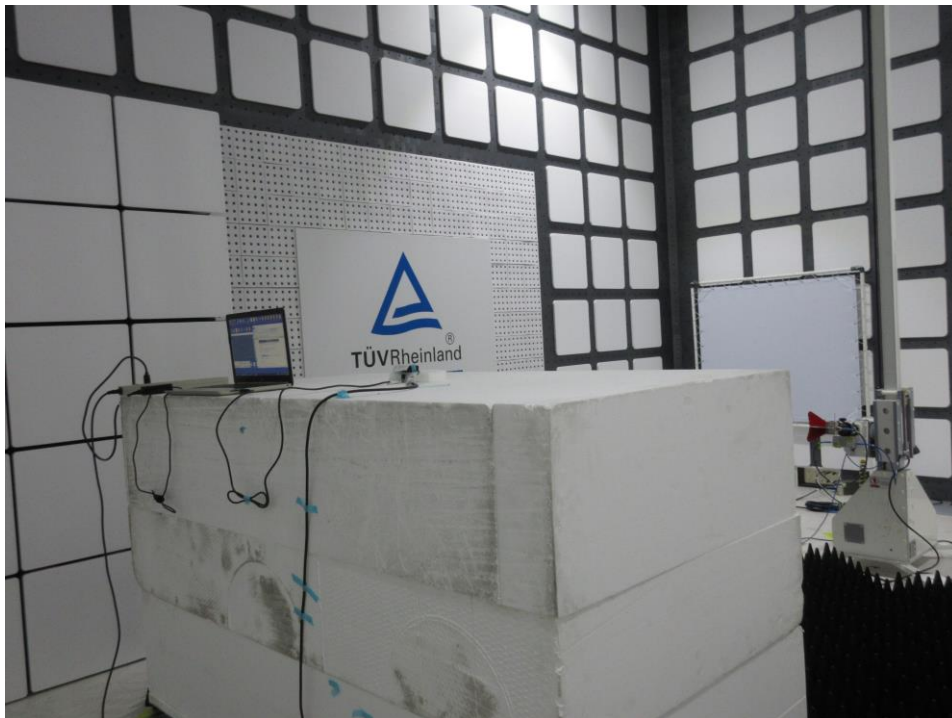
Photograph 2: Set-up for Spurious Emissions (Front View 2)



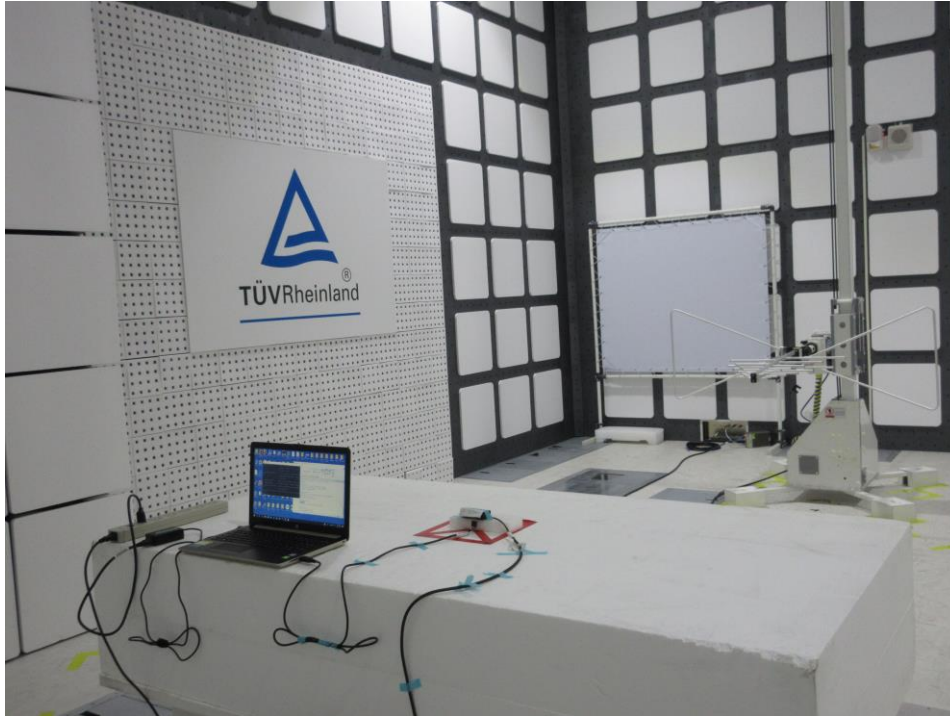
Photograph 3: Set-up for Spurious Emissions (Back View 1)



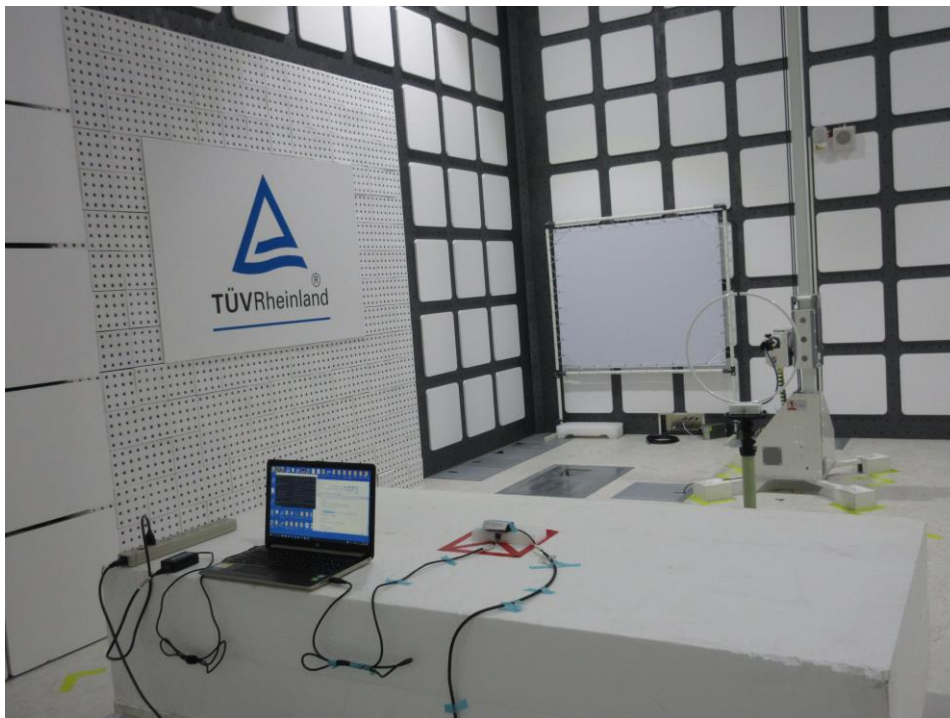
Photograph 4: Set-up for Spurious Emissions (Back View 2)



Photograph 5: Set-up for Spurious Emissions (Back View 3)



Photograph 6: Set-up for Spurious Emissions (Back View 4)



Prüfbericht - Nr.: 60369878 001
Test Report No.

Seite 41 von 42
Page 41 of 42

Photograph 7: Set-up for Conducted testing (View 1)



Photograph 8: Set-up for Conducted testing (View 2)



7. List of Tables

Table 1: Applied Standard and Test Levels	5
Table 2: List of Test and Measurement Equipment	7
Table 3: Emission Measurement Uncertainty.....	8
Table 4: Basic Information of EUT	9
Table 5: Technical Specification of EUT	9
Table 6: Frequency hopping information	10
Table 7: Table for Parameters of Test Software Setting	12
Table 8: Test result of Peak Output Power, 1-DH5.....	16
Table 9: Test result of Peak Output Power, 2-DH5.....	16
Table 10: Test result of Peak Output Power, 3-DH5.....	17
Table 11: Test result of 20dB Bandwidth, 1-DH5.....	18
Table 12: Test result of 20dB Bandwidth, 3-DH5.....	18
Table 13: Test result of Frequency Separation, 1-DH5.....	30
Table 14: Test result of Frequency Separation, 3-DH5.....	30
Table 15: Test result of Number of hopping frequency, 1-DH5.....	32
Table 16: Test result of Number of hopping frequency, 3-DH5.....	32
Table 17: Test result of Time of Occupancy.....	35

8. List of Photographs

Photograph 1: Set-up for Spurious Emissions (Front View 1).....	38
Photograph 2: Set-up for Spurious Emissions (Front View 2).....	38
Photograph 3: Set-up for Spurious Emissions (Back View 1)	39
Photograph 4: Set-up for Spurious Emissions (Back View 2)	39
Photograph 5: Set-up for Spurious Emissions (Back View 3)	40
Photograph 6: Set-up for Spurious Emissions (Back View 4)	40
Photograph 7: Set-up for Conducted testing (View 1).....	41
Photograph 8: Set-up for Conducted testing (View 2).....	41