Prüfbericht-Nr.: *Test report no.:*	**60364476 001**	**Auftrags-Nr.:** *Order no.:*	238136339	Seite 1 von 43 *Page 1 of 43*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	13-Mar-2020	
Auftraggeber: *Client:*	Zeroplus Technology Corporation 3F, No.121, Jian 8th Rd, Chung Ho District New Taipei City, 235, Taiwan			
Prüfgegenstand: *Test item:*	Brook PowerBay			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	ZPP0059			
Auftrags-Inhalt: *Order content:*	FCC Part 15C Test report			
Prüfgrundlage: *Test specification:*	FCC 47CFR Part 15: Subpart C Section 15.247 (FHSS)			

Wareneingangsdatum: *Date of sample receipt:*	06-Apr-2020
Prüfmuster-Nr.: *Test sample no:*	A002804914-003 A002804914-005
Prüfzeitraum: *Testing period:*	14-Apr-2020 ~ 22-Apr-2020
Ort der Prüfung: *Place of testing:*	EMC/RF Laboratory Taipei
Prüflaboratorium: *Testing laboratory:*	Taipei Testing Laboratories
Prüfergebnis*: *Test result*:*	Pass

überprüft von: *reviewed by:*		**genehmigt von** *authorized by:*	
Datum: 27-Apr-2020 *Date:*	Jack Chang	**Datum:** 27-Apr-2020 *Date:*	Ryan Chen
Stellung / *Position:*	Jack H.C. Chang Project Manager	**Stellung** / *Position:*	Ryan W.T. Chen Project Manager

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung:
Condition of the test item at delivery:

Prüfmuster vollständig und unbeschädigt
Test item complete and undamaged

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*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.
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.

V05

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT
RESULT: Passed

5.1.2 PEAK OUTPUT POWER
RESULT: Passed

5.1.3 20DB BANDWIDTH AND 99% 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

5.2.1 MAINS CONDUCTED EMISSIONS
RESULT: Passed

6.1.1 ELECTROMAGNETIC FIELDS
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 13
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT 13
4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE 13
4.5 TEST SETUP DIAGRAM 14
5. TEST RESULTS 16
5.1 TRANSMITTER REQUIREMENT & TEST SUITES 16
5.1.1 Antenna Requirement 16
5.1.2 Peak Output Power 17
5.1.3 20dB Bandwidth 19
5.1.4 Conducted spurious emissions and Frequency Band Edge measured in 100kHz Bandwidth 23
5.1.5 Spurious Emission 30
5.1.6 Frequency Separation 31
5.1.7 Number of hopping frequency 35
5.1.8 Time of Occupancy 38
5.2 MAINS EMISSIONS 41
5.2.1 Mains Conducted Emissions 41

6. SAFETY HUMAN EXPOSURE 42

6.1 RADIO FREQUENCY EXPOSURE COMPLIANCE 42

6.1.1 Electromagnetic Fields 42

7. LIST OF TABLES 43

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix P: Photo Documentation internal view
(File Name: 60364476 001, 60364477 001 Appendix P)

Appendix D: Test Result of Radiated Emissions
(File Name: 60364476 001 Appendix D)

Appendix X: Photographs of the Test Set-Up
(File Name: 60364476 001 Appendix X)

Test Specifications

The following standards were applied.

Table 1: Applied Standard and Test Levels

Radio
FCC CFR47 Part 15: Subpart C Section 15.247 FCC 47CFR Part 2: Subpart J Section 2.1093 ANSI C63.10:2013 FCC KDB Publication 447498 D01 v06

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

Taipei Testing Laboratories

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

2.2 Test Facility

Taipei Testing Laboratories

AC Mains Conduction:
11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)
FCC Registration No.: 180491
IC Canada Registration No.: 9465A

Conducted Test / Radiated Test:
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

TAF
Testing Laboratory
3567

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	2020/3/30	2021/3/29
Spectrum Analyzer	R&S	FSV40	101508	2020/3/16	2021/3/16
Pre-Amplifier	Agilent	8447D	2944A10772	2020/2/11	2021/2/10
Pre-Amplifier	EMCI	EMC051845SE	980633	2020/2/17	2021/2/16
Pre-Amplifier	EMCI	EMC184045SE	980657	2020/2/17	2021/2/16
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2020/2/14	2021/2/13
Horn Antenna	ETS-Lindgren	3117	00218930	2019/12/6	2020/12/5
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2020/4/10	2021/4/9
Loop Antenna	EMCI	LPA600	287	2020/1/9	2021/1/8
Test Software	Audix	e3	Ver. 9	N/A	N/A
Test Cable	HUBER+SUHNER	SUCOFLEX 104EA_9k~18G	800056/4EA	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 104_9k~18G	804680/4	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 104_9k~18G	MY37202/4	2020/3/25	2021/3/24
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	800897/2EA	2020/3/25	2021/3/25
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	800902/2EA	2020/3/25	2021/3/25
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA_1G~40G	801026/2EA	2020/3/25	2021/3/25
Power Meter	Anritsu	ML2495A	1901008	2020/4/6	2021/4/6
Power Sensor	Anritsu	MA2411B	1725269	2020/4/7	2021/4/7
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100797	2020/03/13	2021/03/13
Two-Line V-Network (for EUT)	Rohde & Schwarz	ENV216	101243	2019/06/23	2020/06/23
Two-Line V-Network	Rohde & Schwarz	ENV216	101262	2019/07/16	2020/07/16
Telecom ISN 4 Line	Fischer Custom Communications	FFCC-TLISN-T4-02-09	101168	2020/02/03	2021/02/03
Impedance Stabilization Network	TESEQ	ISN T800	51949	2020/02/25	2021/02/25
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	0357.8810.54-102102-HN	2019/07/25	2020/07/25
Test Software	Audix	e3	Ver. 9	N/A	N/A

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

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular schedule 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/RF Exposure(MPE), conducted	± 1.5 dB
RF power density, conducted	± 3 dB
spurious emissions, conducted	± 3 dB
all emissions, radiated	± 6 dB
Temperature	± 1 ºC
Humidity	± 5 %
DC and low frequency voltages	±3 %

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Brook PowerBay. It contains a Bluetooth compatible module enabling the user to communicate data through a Wireless interface.
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Table 4: Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	Brook PowerBay
Type Identification	ZPP0059
FCC ID	2ADKM0059

Table 5: Technical Specification of EUT

Technical Specification	Value
Operating Frequencies	2402~2480 MHz
Channel Spacing	1 MHz
Channel number	79
Operation Voltage	5 Vdc
Modulation	GFSK, π/4 DQPSK, 8 DPSK
Antenna gain	2.12dBi

Table 6: Frequency hopping information

Technical Specification	Description
Hopping Range	Hereby we declare that the maximum frequency of this device is: 2402-2480MHz. The product is contain Bluetooth v3.0 specification fully qualified software and Bluetooth v4.0 specification compliant hareware according to the chipset data sheet 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

Basic operation modes are:

A. Transmitting
   1. Low channel
   2. Middle channel
   3. High channel
B. Receiving
C. Standby
D. Normal

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

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

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

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	def.	def.	def.
2-DH5	def.	def.	def.
3-DH5	def.	def.	def.

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 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: A002804914-003
Radiation: A002804914-005

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

Test Software	BlueTest3

4.3 Special Accessories and Auxiliary Equipment

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

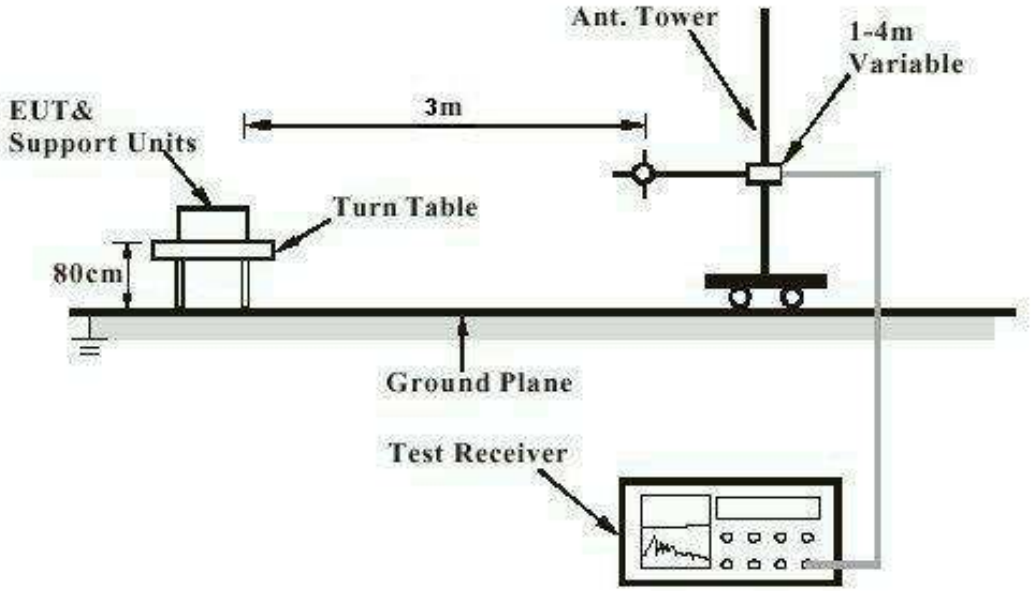
Description	Manufacturer	Model No.
Notebook for setup	HP	TPN-C135
Support unit	CSR	USB-SPI programmer
USB Cable(support unit)	Zeroplus	N/A

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. 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

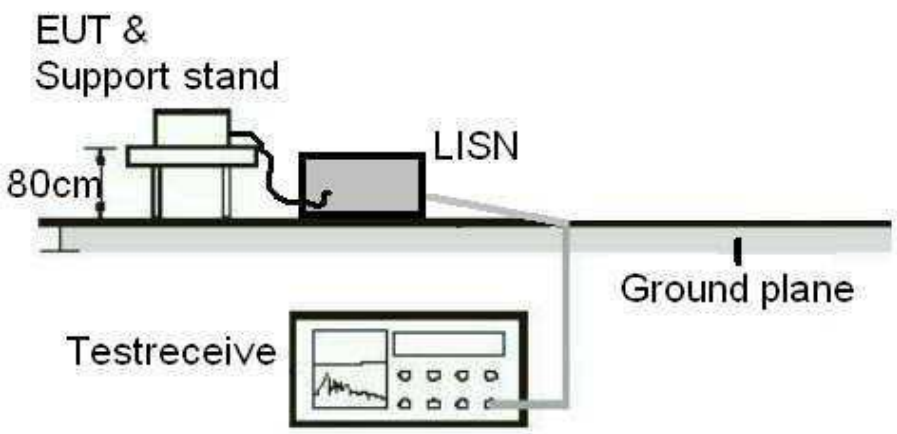
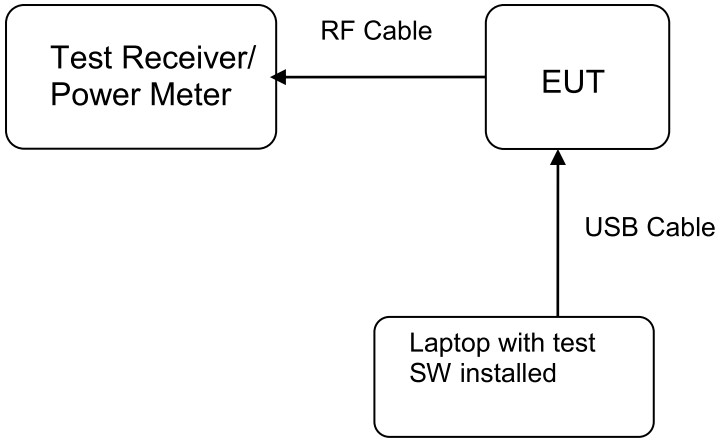


Diagram of Measurement Equipment Configuration for Conducted Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Passed**

Test standard : FCC Part 15.247(b)(4), Part 15.203

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 2.12dBi. The antenna is a multilayer ceramic antenna with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Refer to EUT photo for details.

5.1.2 Peak Output Power

RESULT: **Passed**

Test standard	:	FCC Part 15.247(b)(1)
Basic standard	:	ANSI C63.10:2013
Limit	:	125 mW
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 (MHz)	Output Power		Average Output Power	Limit
		(dBm)	(mW)	(mW)	(mW)
Low Channel	2402.0	6.17	4.140	3.899	125
Middle Channel	2441.0	6.32	4.285	4.093	125
High Channel	2480.0	6.15	4.121	3.981	125

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

Channel	Channel Frequency (MHz)	Output Power		Average Output Power	Limit
		(dBm)	(mW)	(mW)	(mW)
Low Channel	2402.0	4.44	2.780	1.581	125
Middle Channel	2441.0	4.95	3.126	1.845	125
High Channel	2480.0	5.19	3.304	2.056	125

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

Channel	Channel Frequency (MHz)	Output Power		Average Output Power	Limit
		(dBm)	(mW)	(mW)	(mW)
Low Channel	2402.0	4.84	3.048	1.585	125
Middle Channel	2441.0	5.36	3.436	1.849	125
High Channel	2480.0	5.46	3.516	2.061	125

5.1.3 20dB Bandwidth

RESULT: **Passed**

Test standard	:	FCC Part 15.247(a)(1)
Basic standard	:	ANSI C63.10:2013
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 11: Test result of 20dB Bandwidth 1-DH5

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Result
Low Channel	2402	932.07	Pass
Mid Channel	2441	935.06	Pass
High Channel	2480	935.10	Pass

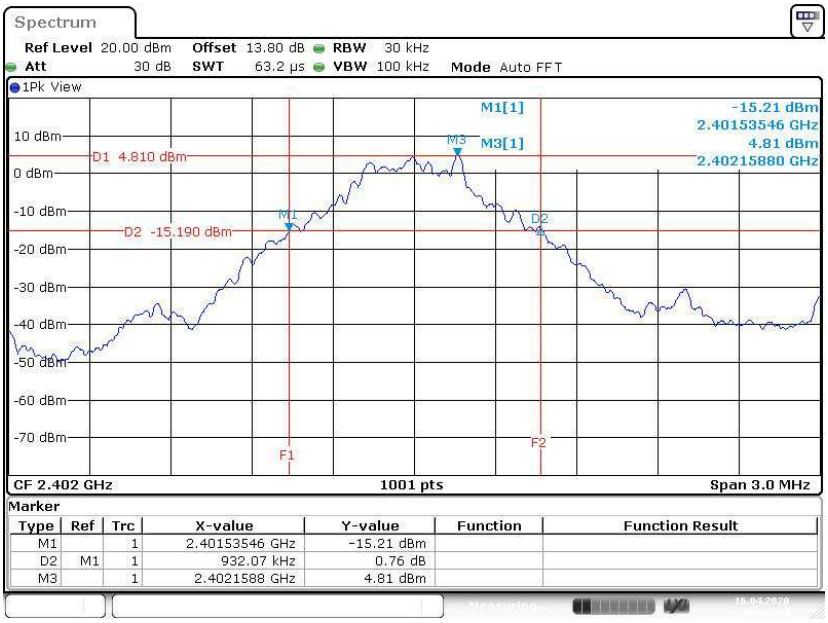
Table 12: Test result of 20dB Bandwidth 3-DH5

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Result
Low Channel	2402	1285.70	Pass
Mid Channel	2441	1255.70	Pass
High Channel	2480	1261.70	Pass

Note: For reporting purposes only.

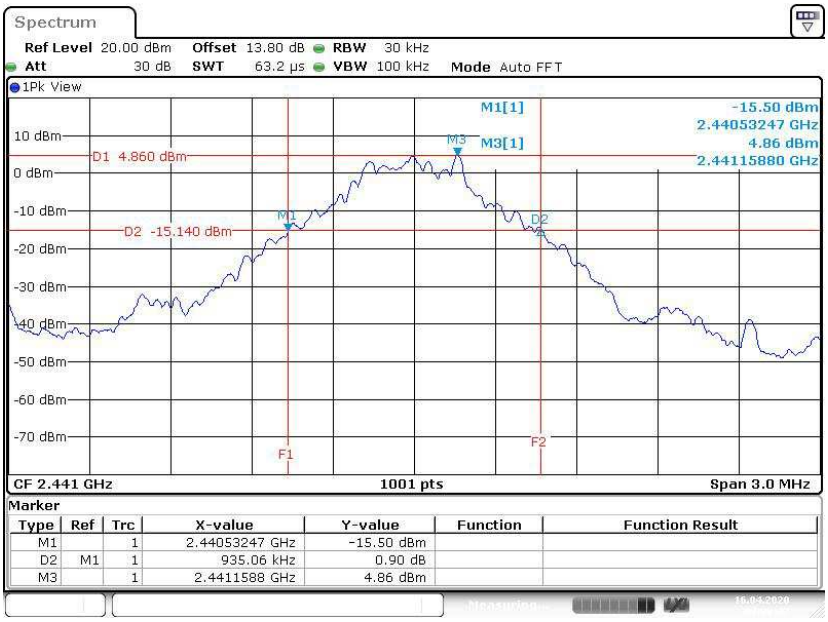
Test Plot of 20dB Bandwidth
1-DH5

Low Channel



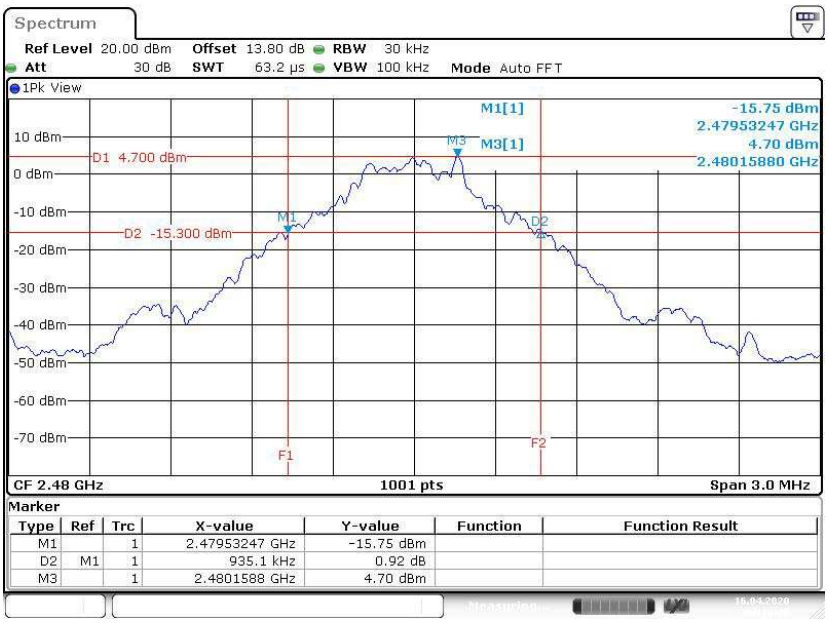
Date: 16.APR.2020 09:05:54

Middle Channel



Date: 16.APR.2020 09:08:47

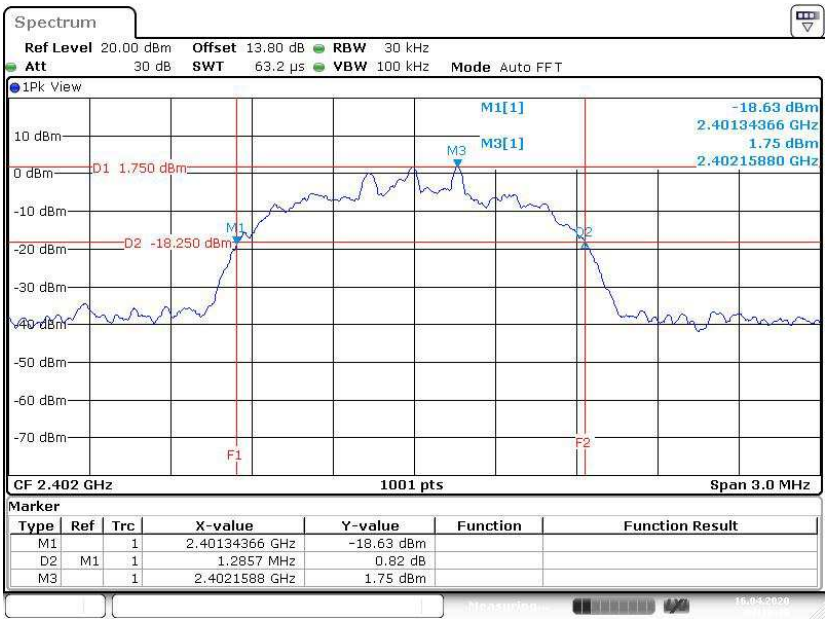
High Channel



Date: 16.APR.2020 09:12:26

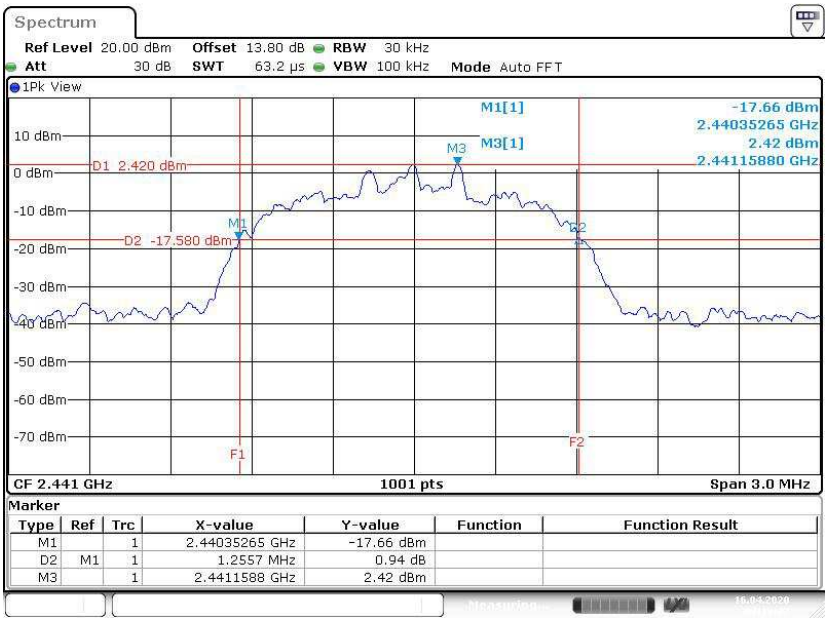
3-DH5

Low Channel



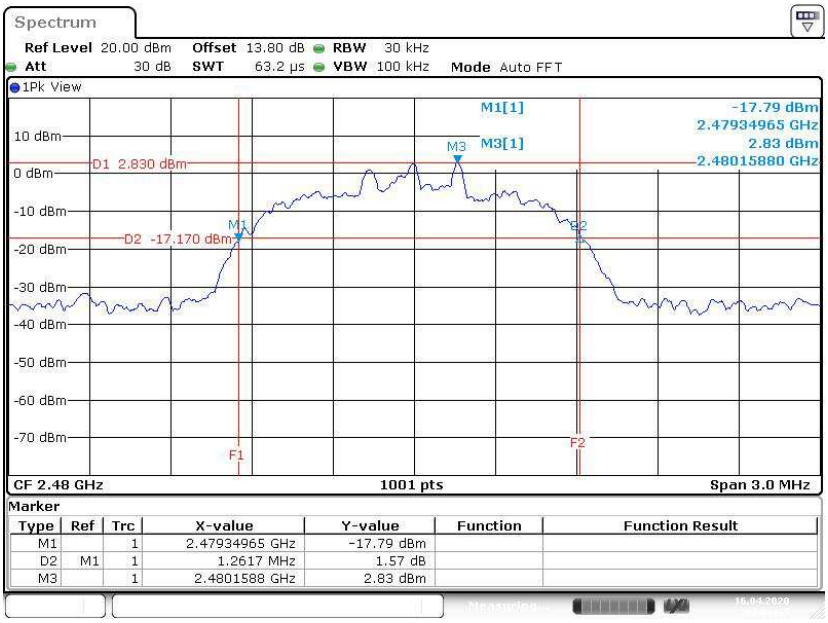
Date: 16.APR.2020 09:16:39

Middle Channel



Date: 16.APR.2020 09:19:27

High Channel



Date: 16.APR.2020 09:23:55

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

RESULT: **Passed**

Test standard	:	FCC part 15.247(d)
Basic standard	:	ANSI C63.10:2013
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

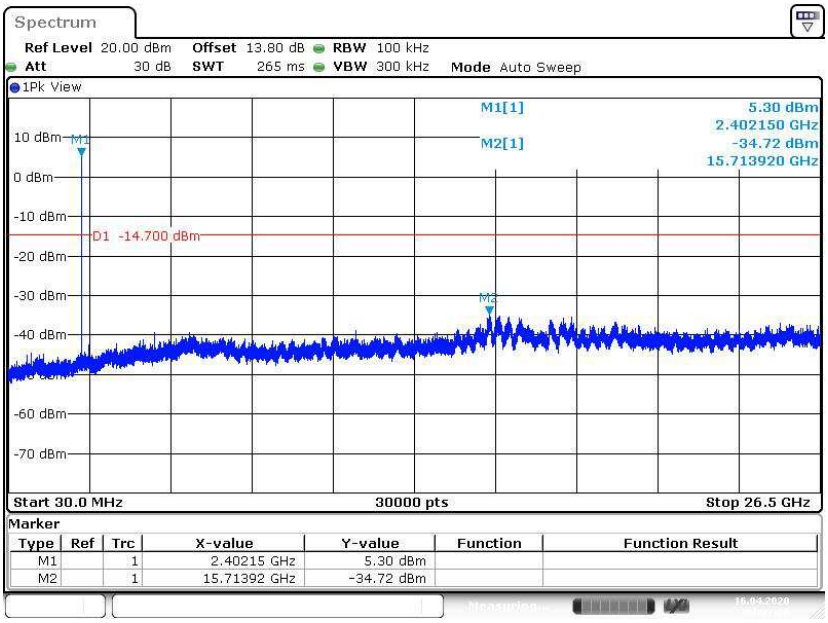
Test setup

Test Channel	:	Low/ Middle/ High for Conducted Spurious Emissions Low/ High 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 RF circuit and that there are no inductive components of significant size connected to the antenna port, 9kHz to 30MHz frequency range is not tested based on technical judgment.

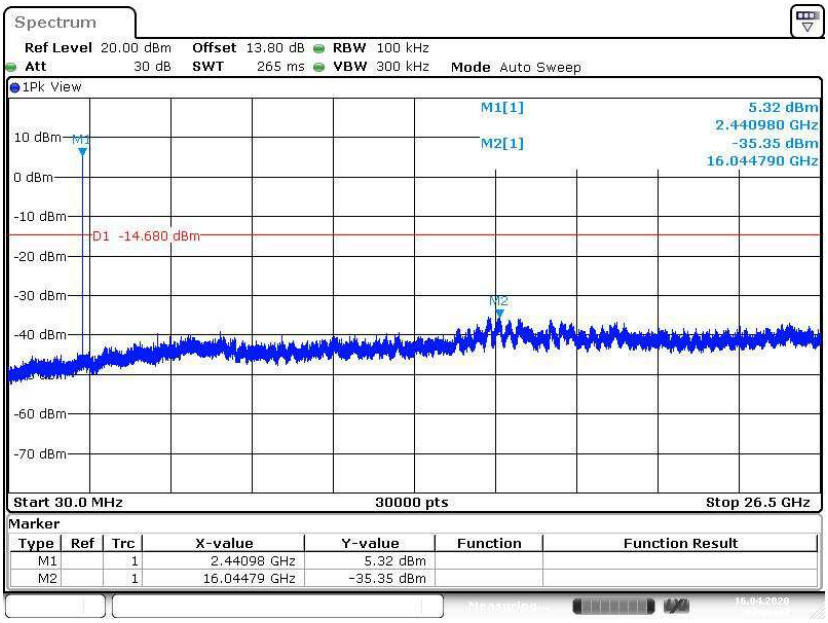
Test Plot 100kHz Conducted Emissions 1-DH5

Low Channel



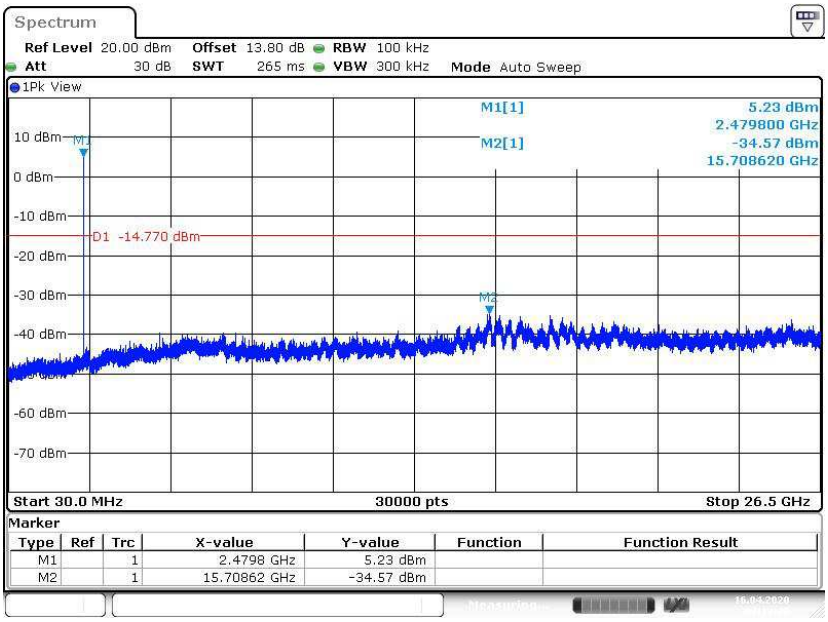
Date: 16.APR.2020 09:07:06

Middle Channel



Date: 16.APR.2020 09:09:43

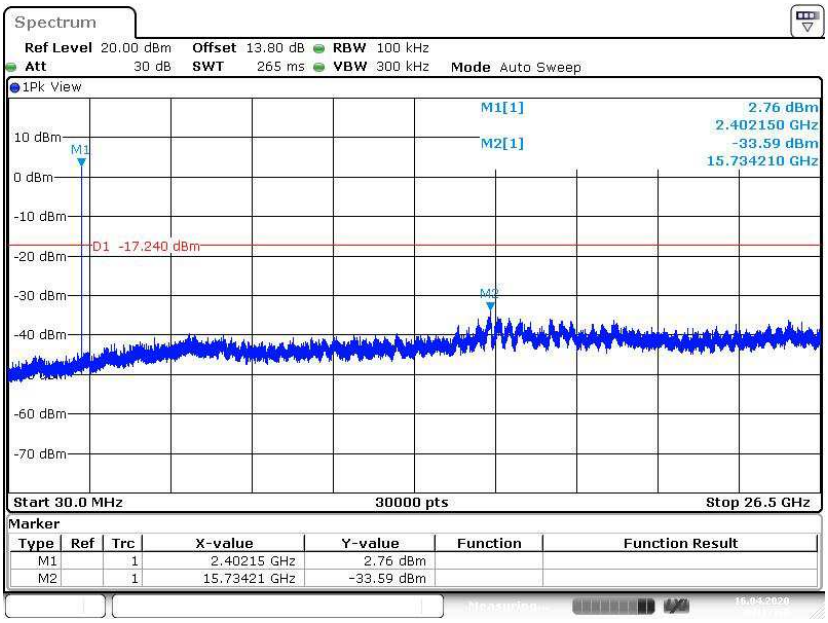
High Channel



Date: 16.APR.2020 09:13:26

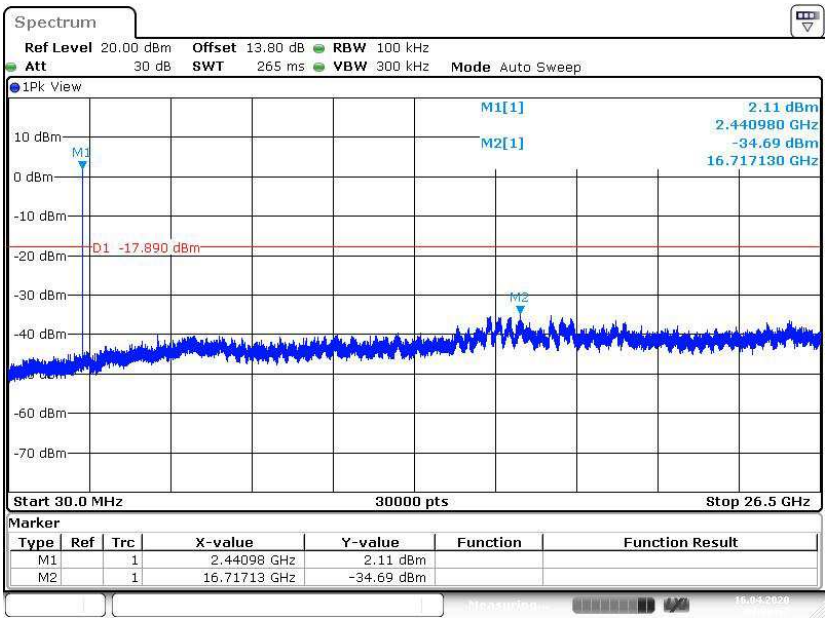
3-DH5

Low Channel



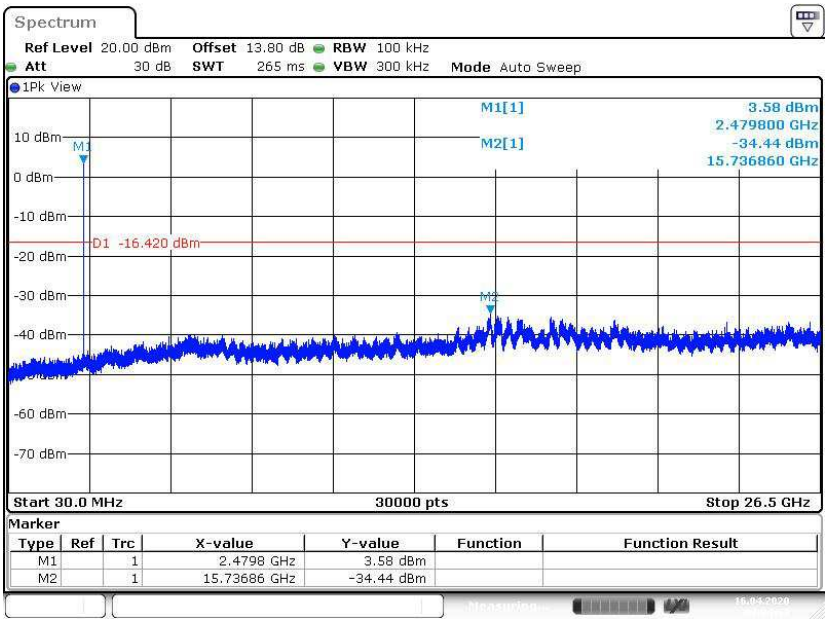
Date: 16.APR.2020 09:17:55

Middle Channel



Date: 16.APR.2020 09:20:52

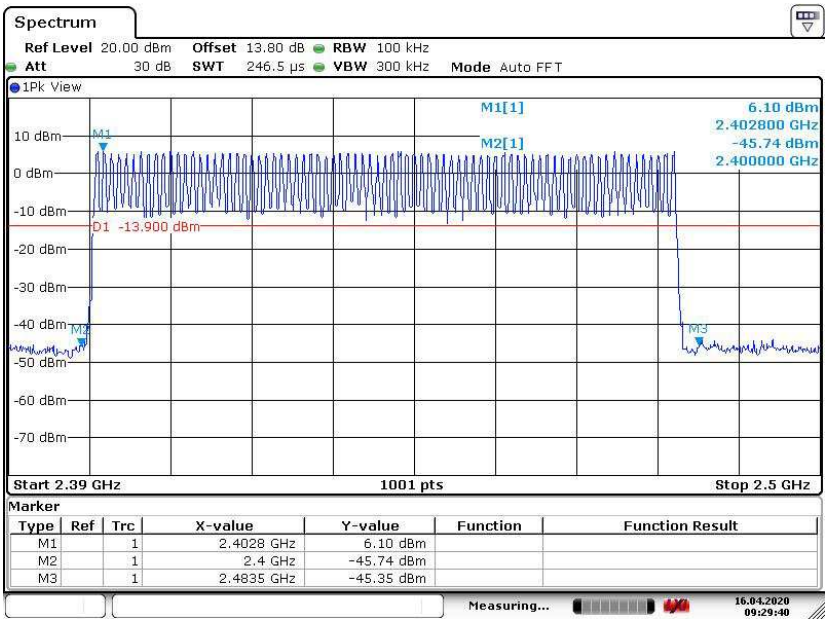
High Channel



Date: 16.APR.2020 09:24:53

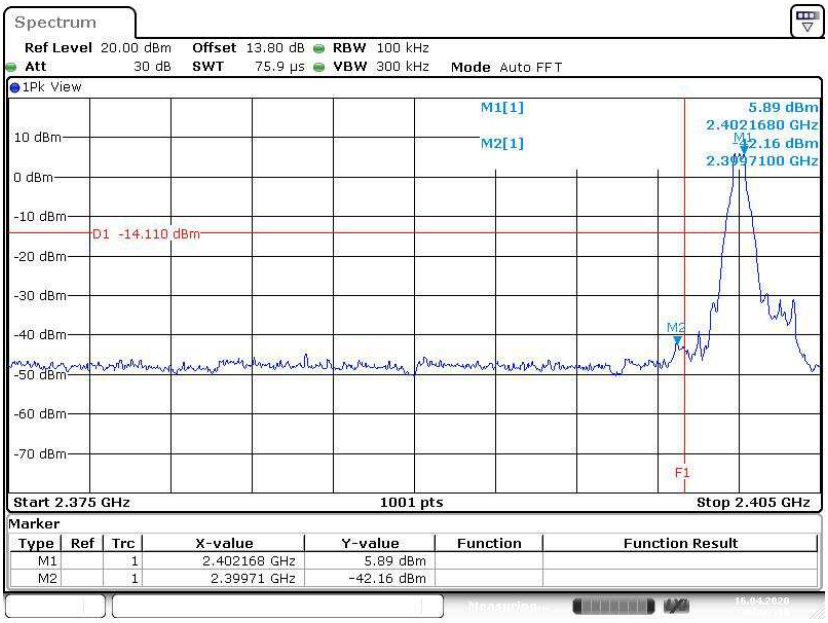
Test Plot 100kHz RBW of Band Edge 1-DH5

Hopping



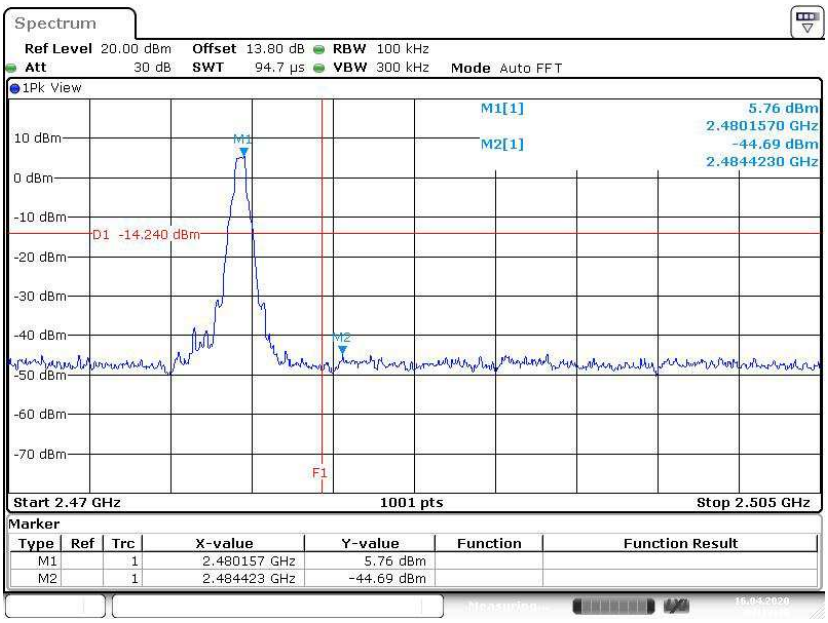
Date: 16.APR.2020 09:29:39

Low Channel



Date: 16.APR.2020 09:07:19

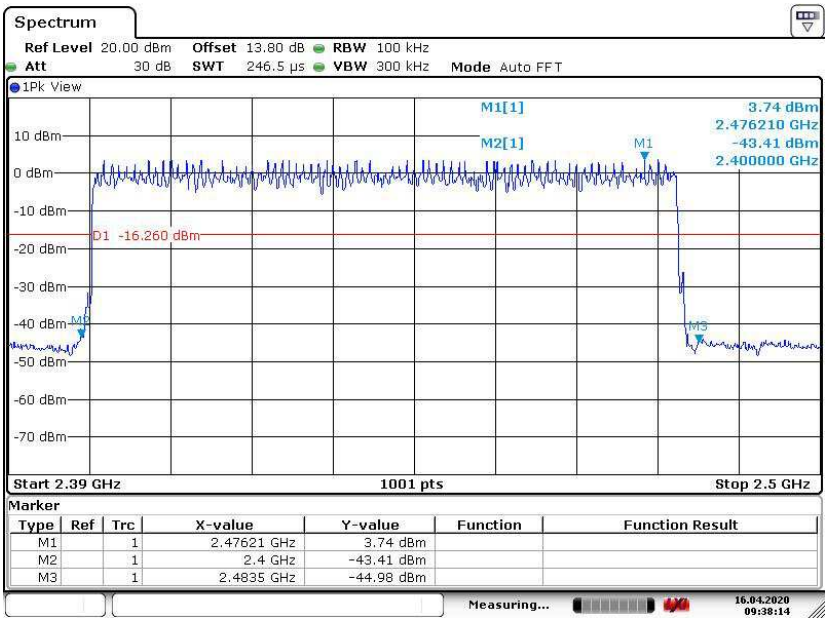
High Channel



Date: 16.APR.2020 09:13:38

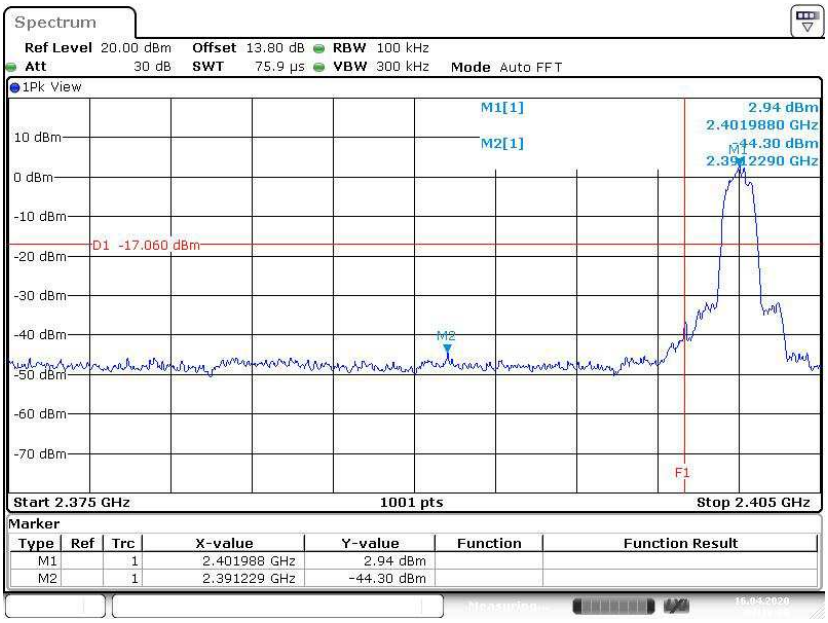
3-DH5

Hopping



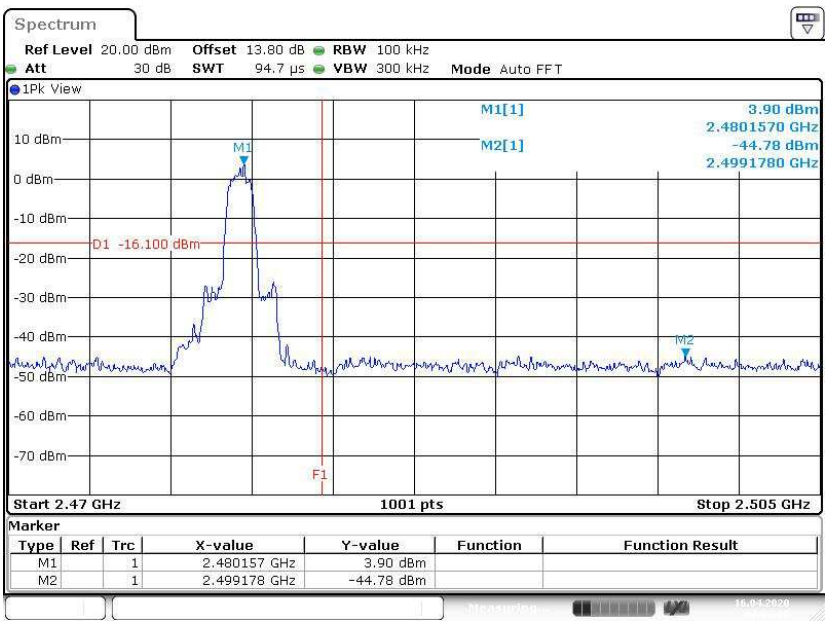
Date: 16.APR.2020 09:38:14

Low Channel



Date: 16.APR.2020 09:18:08

High Channel



Date: 16.APR.2020 09:25:06

5.1.5 Spurious Emission

RESULT: **Passed**

Test standard	:	FCC part 15.247(d), FCC 15.205, FCC 15.209
Basic standard	:	ANSI C63.10: 2013
Limits	:	Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must comply with the radiated emission limits specified in FCC 15.209(a). Emission radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in FCC15.247(d).
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	:	FCC part 15.247(a)(1)
Basic standard	:	ANSI C63.10:2013
Limits	:	≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater

Test setup

Test Channel	:	Hopping On
Operation mode	:	C
Ambient temperature	:	22-26°C
Relative humidity	:	50-65 %
Atmospheric pressure	:	100-103 kPa

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

Channel	Freq. (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (kHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	932.07	0.62138	Pass
39	2441	1.00	935.06	0.623373333	Pass
78	2480	1.00	935.10	0.6234	Pass

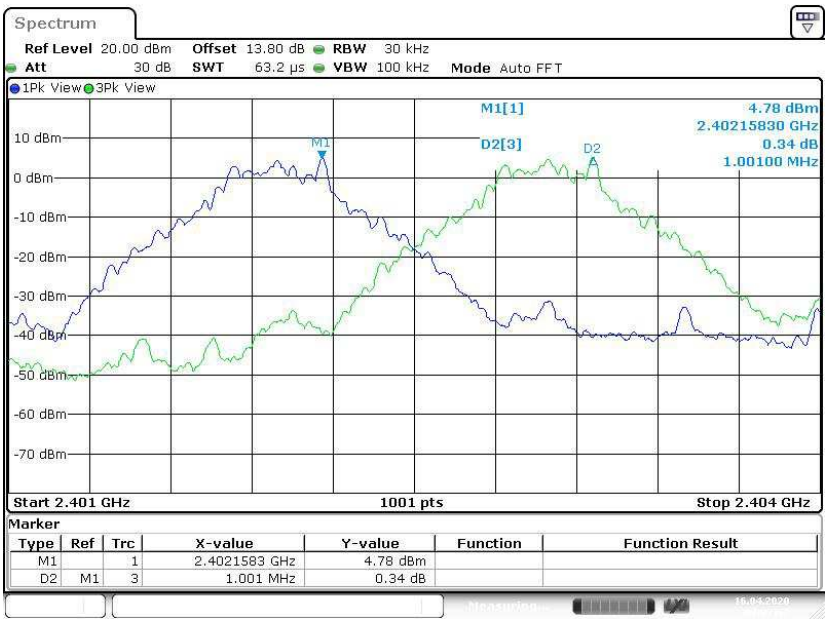
Table 14: Test result of Frequency Separation, 3-DH5

Channel	Freq. (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (kHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	1285.70	0.857133333	Pass
39	2441	1.00	1255.70	0.837133333	Pass
78	2480	1.00	1261.70	0.841133333	Pass

Test Plot of Frequency Separation

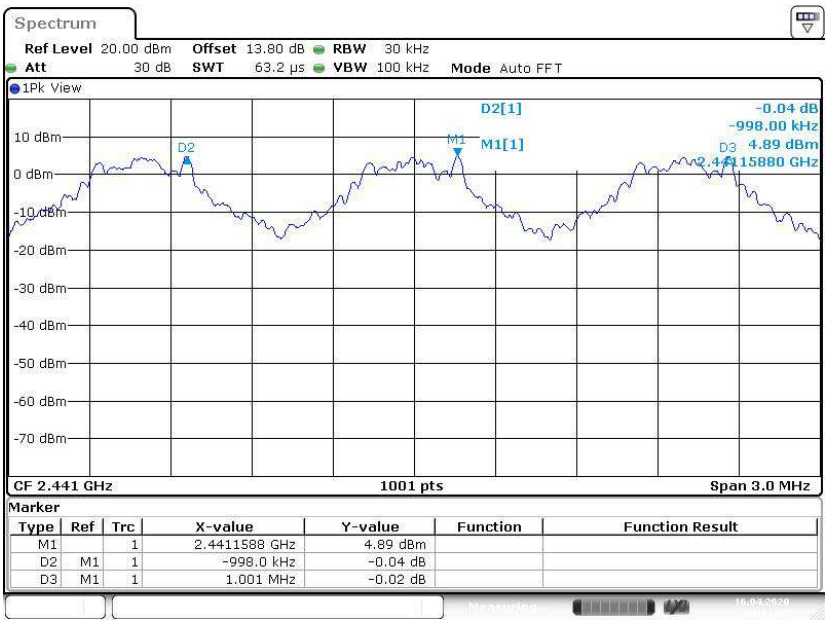
1-DH5

Low Channel



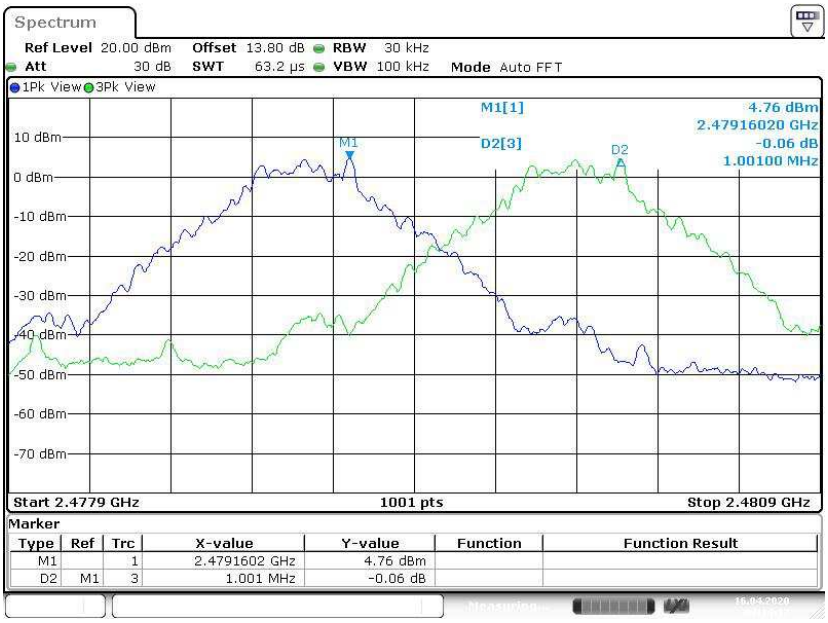
Date: 16.APR.2020 09:07:52

Middle Channel



Date: 16.APR.2020 09:11:22

High Channel



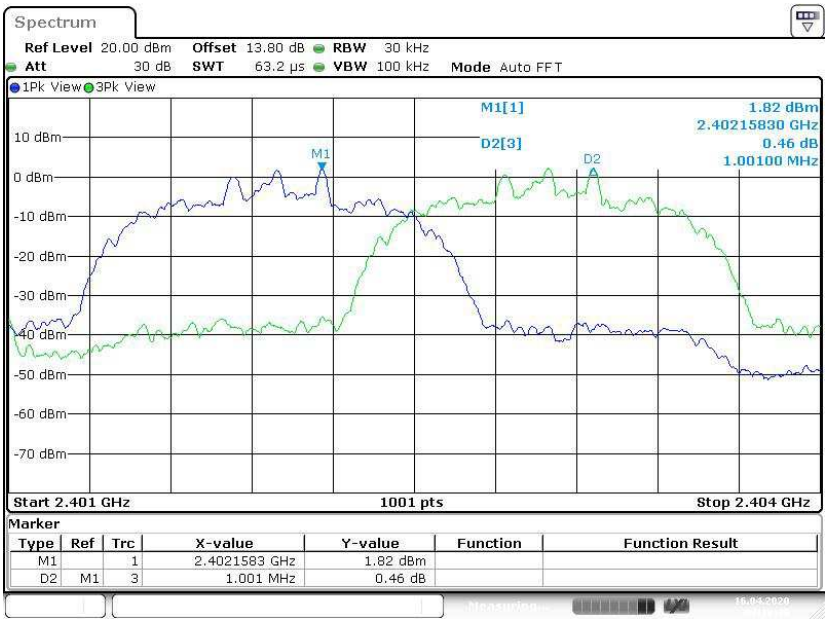
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4791602 GHz	4.76 dBm		
D2	M1	3	1.001 MHz	-0.06 dB		

Date: 16.APR.2020 09:14:16

3-DH5

Low Channel

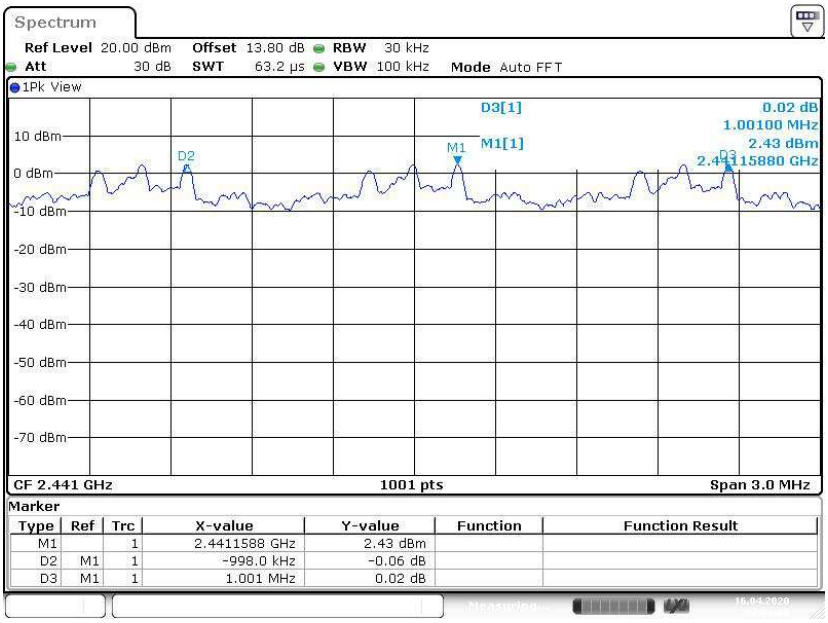


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4021583 GHz	1.82 dBm		
D2	M1	3	1.001 MHz	0.46 dB		

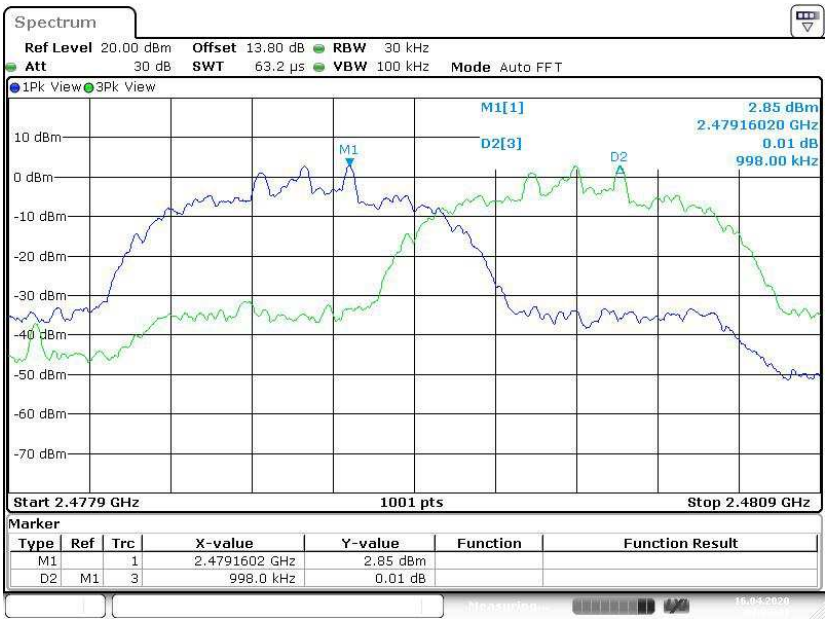
Date: 16.APR.2020 09:18:39

Middle Channel



Date: 16.APR.2020 09:23:08

High Channel



Date: 16.APR.2020 09:25:41

5.1.7 Number of hopping frequency

RESULT: **Passed**

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10:2013
Limits	:	≥ 15 non-overlapping channels
Kind of test site	:	Shield 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

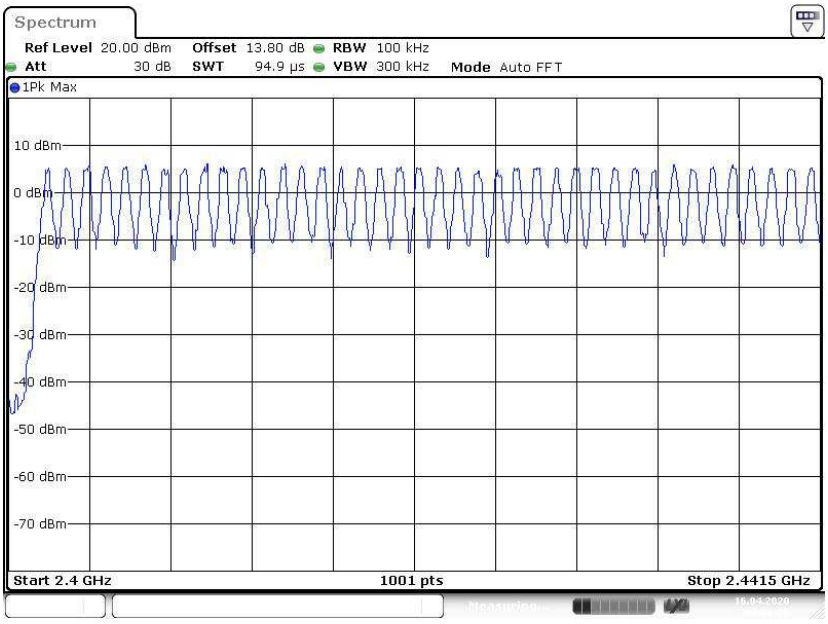
Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2402 to 2480MHz	79	≥15	Pass

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

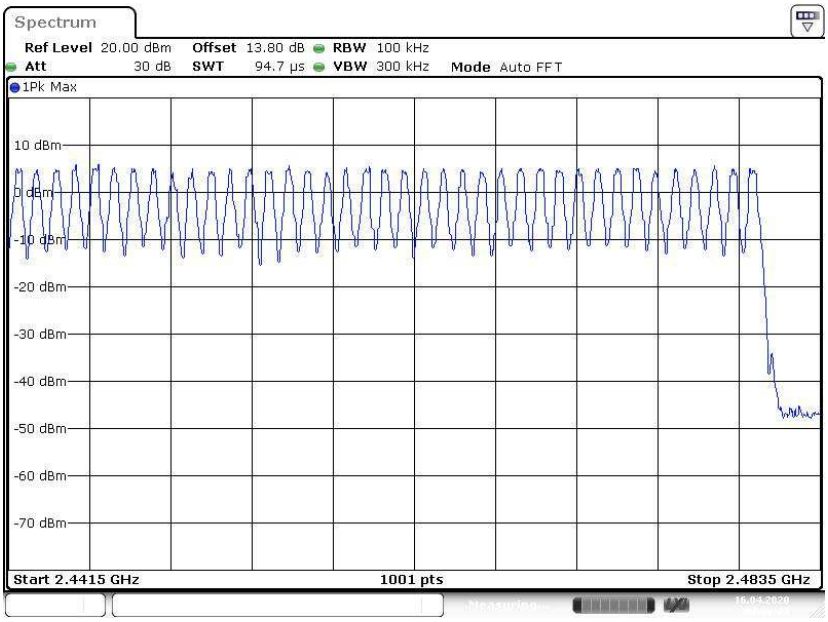
Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2402 to 2480MHz	79	≥15	Pass

Test Plot of Number of hopping frequencies

1-DH5

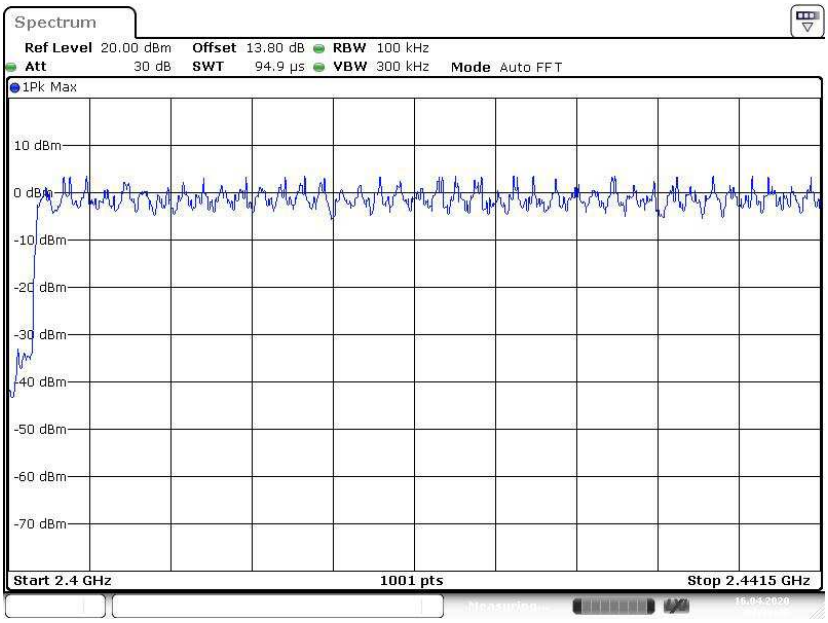


Date: 16.APR.2020 09:28:00

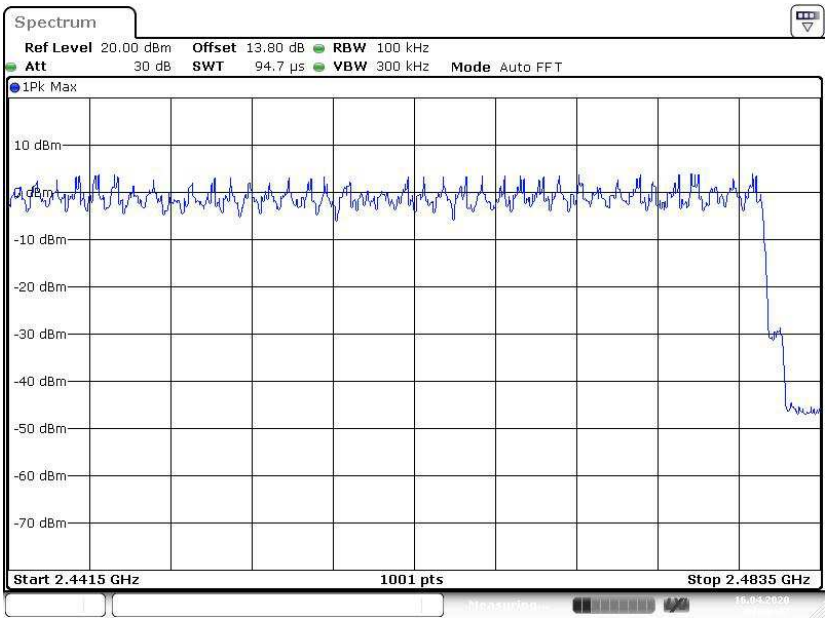


Date: 16.APR.2020 09:28:23

3-DH5



Date: 16.APR.2020 09:39:40



Date: 16.APR.2020 09:40:47

5.1.8 Time of Occupancy

RESULT: **Passed**

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10:2013
Limits	:	0.4s
Kind of test site	:	Conducted room

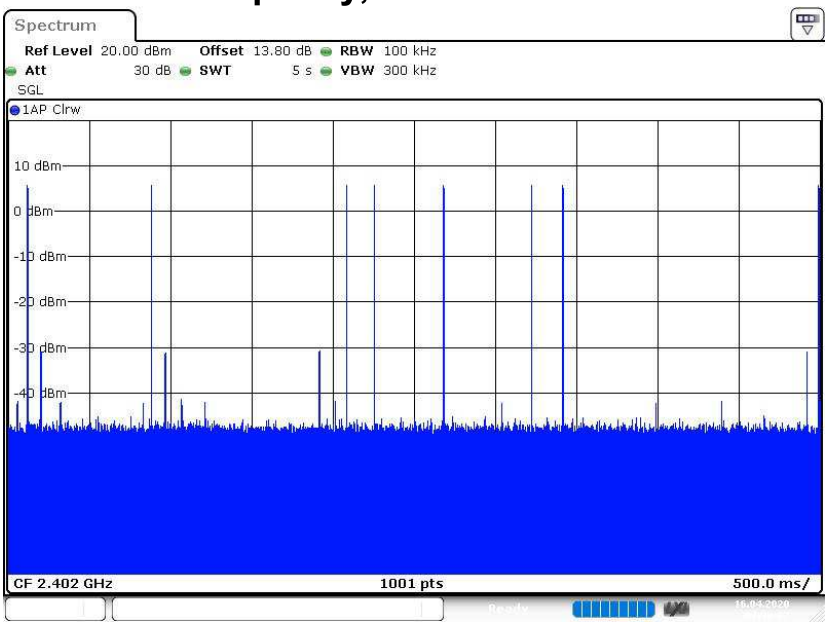
Test setup

Test Channel	:	Low
Operation Mode	:	A
Ambient temperature	:	20-24°C
Relative humidity	:	50-65%
Atmospheric pressure	:	100-103 kPa

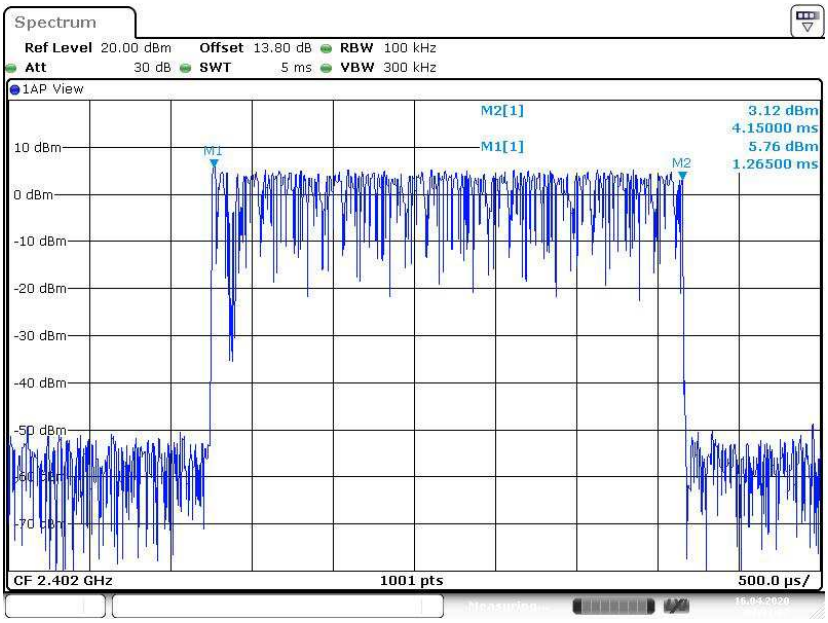
Table 17: Test result of Time of Occupancy

Mode	Number of Transmission in a 31.6 (79 Hopping*0.4)				Length of Transmission Time (msec)	Result (msec)	Limit (msec)
1DH5	9	(times / 5 sec) * 6.32 =	56.88	times	4.15	236.052	400
3DH5	9	(times / 5 sec) * 6.32 =	56.88	times	3.905	222.116	400

Test Plot of Time of Occupancy, 1-DH5

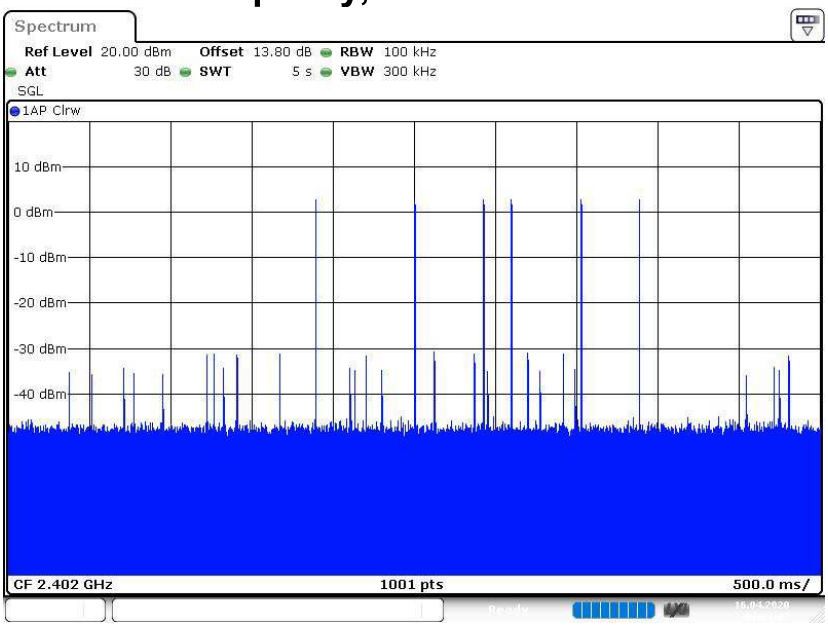


Date: 16.APR.2020 09:30:07

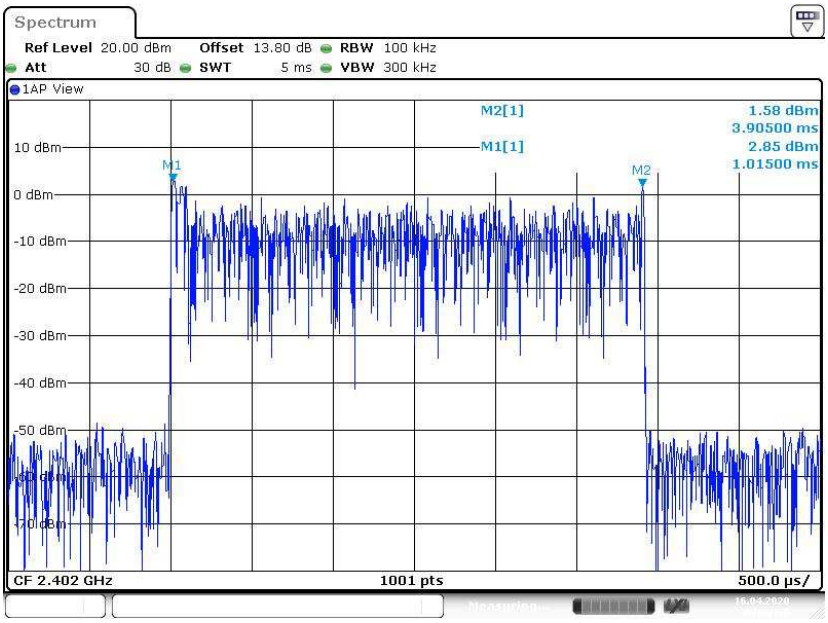


Date: 16.APR.2020 09:31:02

Test Plot of Time of Occupancy, 3-DH5



Date: 16.APR.2020 09:41:22



Date: 16.APR.2020 09:42:56

5.2 Mains Emissions

5.2.1 Mains Conducted Emissions

RESULT: **Passed**

Test standard	:	FCC Part 15.207 FCC Part 15.107
Limits	:	Mains Conducted emissions as defined in above standards
Kind of test site	:	Shielded Room

Test setup

Test Channel	:	Middle
Operation mode	:	A

Remark: For details refer to Appendix D.

6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT: **Passed**

Test standard : FCC KDB Publication 447498 D01 v06

FCC:
Therefore the maximum output power of the transmitter is 4.28mW < 10mW(Distance: 5 mm), hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile Portable RF Exposure.

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.....17
Table 9: Test result of Peak Output Power 2-DH5.....17
Table 10: Test result of Peak Output Power 3-DH5.....18
Table 11: Test result of 20dB Bandwidth 1-DH5.....19
Table 12: Test result of 20dB Bandwidth 3-DH5.....19
Table 13: Test result of Frequency Separation, 1-DH5.....31
Table 14: Test result of Frequency Separation, 3-DH5.....31
Table 15: Test result of Number of hopping frequency, 1-DH5.....35
Table 16: Test result of Number of hopping frequency, 3-DH5.....35
Table 17: Test result of Time of Occupancy.....38