RADIO PERFORMANCE TEST REPORT

Test Report No.	**: OT-205-RWD-005**
AGR No.	**: A201A-205R**
Applicant	**: openit Inc.**
Address	**: 6F HumanTeco, 57, Achasan17gil, Seongdong-gu, Seoul 04799, Republic of Korea**
Manufacturer	**: openit Inc.**
Address	**: 6F HumanTeco, 57, Achasan17gil, Seongdong-gu, Seoul 04799, Republic of Korea**
Type of Equipment	**: Healthcare IoT Gateway**
FCC ID.	**: 2AVY3BT5UW100**
Model Name	**: HealthUp OG-BT5UW100**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 90 pages (including this page)**
Date of Incoming	**: February 07, 2020**
Date of issue	**: May 06, 2020**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART C Section 15.247***

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by: Ha-Ram Lee / Manager, ONETECH Corp.

Approved by: Jae-Ho Lee / General Manager, ONETECH Corp.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

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ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-204-RWD-040	April 07, 2020	Initial Issue	All
1	OT-205-RWD-005	May 06, 2020	Revised the maximum peak output power	3.1 Product Description

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1. VERIFICATION OF COMPLIANCE

Applicant : openit Inc.
Address : 6F HumanTeco, 57, Achasan17gil, Seongdong-gu, Seoul 04799, Republic of Korea
Contact Person : MIN-YOUNG KIM / CEO
Telephone No. : +82-1566-5911
FCC ID : 2AVY3BT5UW100
Model Name : HealthUp OG-BT5UW100
Brand Name : Healthup
Serial Number : N/A
Date : May 06, 2020

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
KIND OF EQUIPMENT	Healthcare IoT Gateway
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247 (a) (2)	Minimum 6 dB Bandwidth	Met the Limit / PASS
15.247 (b) (3)	Maximum Peak Conducted Output Power	Met the Limit / PASS
15.247 (d)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.247 (d)	Radiated Emission which fall in the Restricted Band	Met the Limit / PASS
15.247 (e)	Peak Power Spectral Density	Met the Limit / PASS
15.209	Radiated Emission Limits	Met the Limit / PASS
15.207	Conducted Limits	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-4112/ C-14617/ G-10666 / T-1842

-. Lab Accreditation:

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

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3. GENERAL INFORMATION

3.1 Product Description

The openit Inc., Model HealthUp OG-BT5UW100 (referred to as the EUT in this report) is a Healthcare IoT Gateway. The product specification described herein was obtained from product data sheet or user's manual.

Device Type	Healthcare IoT Gateway		
Operating Frequency	Bluetooth LE	2 402 MHz ~ 2 480 MHz	
	WLAN 2.4 GHz	2 412 MHz ~ 2 462 MHz [802.11b/g/n(HT20)/n(HT40)]	
RF Output Power	Bluetooth LE	1 Mbps	-2.22 dBm
		2 Mbps	-2.23 dBm
		Coded (125 kHz)	-2.24 dBm
		Coded (500 kHz)	-2.24 dBm
	WLAN 2.4 GHz	802.11b	23.95 dBm
		802.11g	22.36 dBm
		802.11n(HT20)	22.29 dBm
		802.11n(HT40)	21.71 dBm
Number of Channel	Bluetooth LE	40 Channels	
	WLAN 2.4 GHz	11 Channels	
Modulation Type	Bluetooth LE	GFSK	
	WLAN 2.4 GHz	DSSS Modulation(DBPSK/DQPSK/CCK) OFDM Modulation(BPSK/QPSK/16QAM/64QAM)	
Antenna Type	Bluetooth LE	PCB Antenna	
	WLAN 2.4 GHz		
Antenna Gain	Bluetooth LE	-0.28 dBi	
	WLAN 2.4 GHz	0.48 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	40 MHz		
Rated Supply Voltage	DC 5.0 V		

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

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5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	N/A	-
R-TONE Board	N/A	N/A	-

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
HP Probook	HP	Notebook PC	EUT
PPP009C	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	AC Adapter	

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set at 2 402 MHz, 2 440 MHz, and 2 480 MHz to get a maximum emission levels from the EUT. The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis, but the worst data was recorded in this report.

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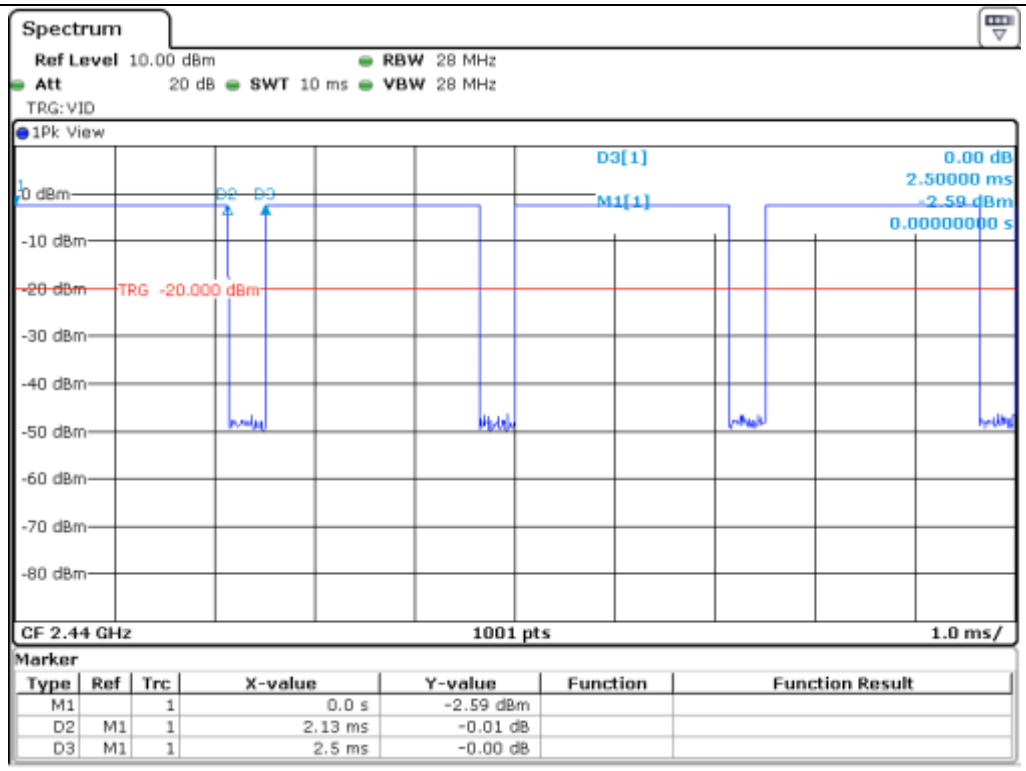
-. Duty Cycle [Bluetooth LE (1 Mbps)]

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Bluetooth LE (1 Mbps)	2.13	0.37	85.20	0.70

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

-. Test Plot



Bluetooth LE (1 Mbps)

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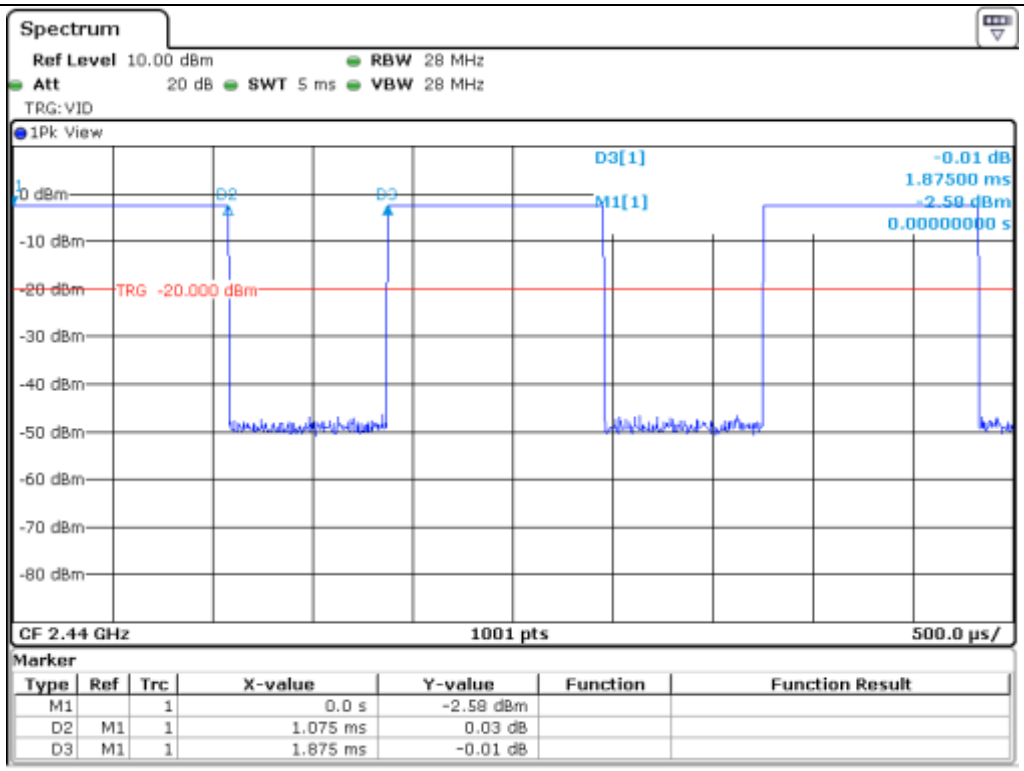
-. Duty Cycle [Bluetooth LE (2 Mbps)]

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Bluetooth LE (2 Mbps)	1.075	0.8	57.33	2.42

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

-. Test Plot



Bluetooth LE (2 Mbps)

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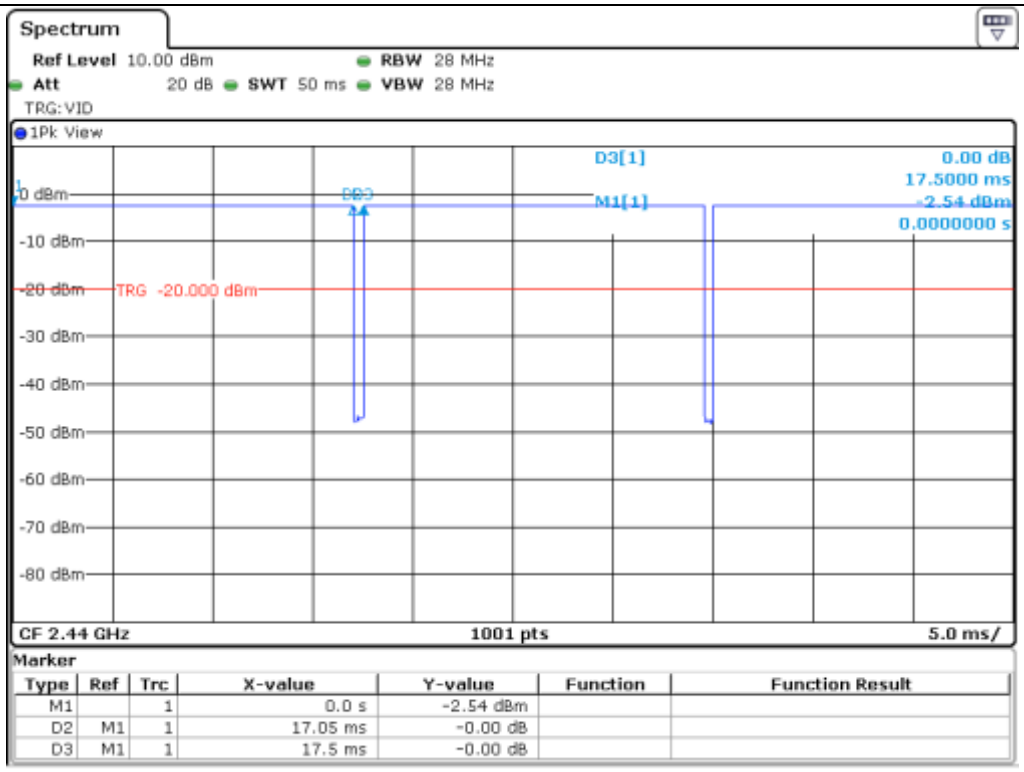
-. Duty Cycle [Bluetooth LE Coded (125 kHz)]

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Bluetooth LE Coded (125 kHz)	17.05	0.45	97.43	0.11

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

-. Test Plot



Bluetooth LE Coded (125 kHz)

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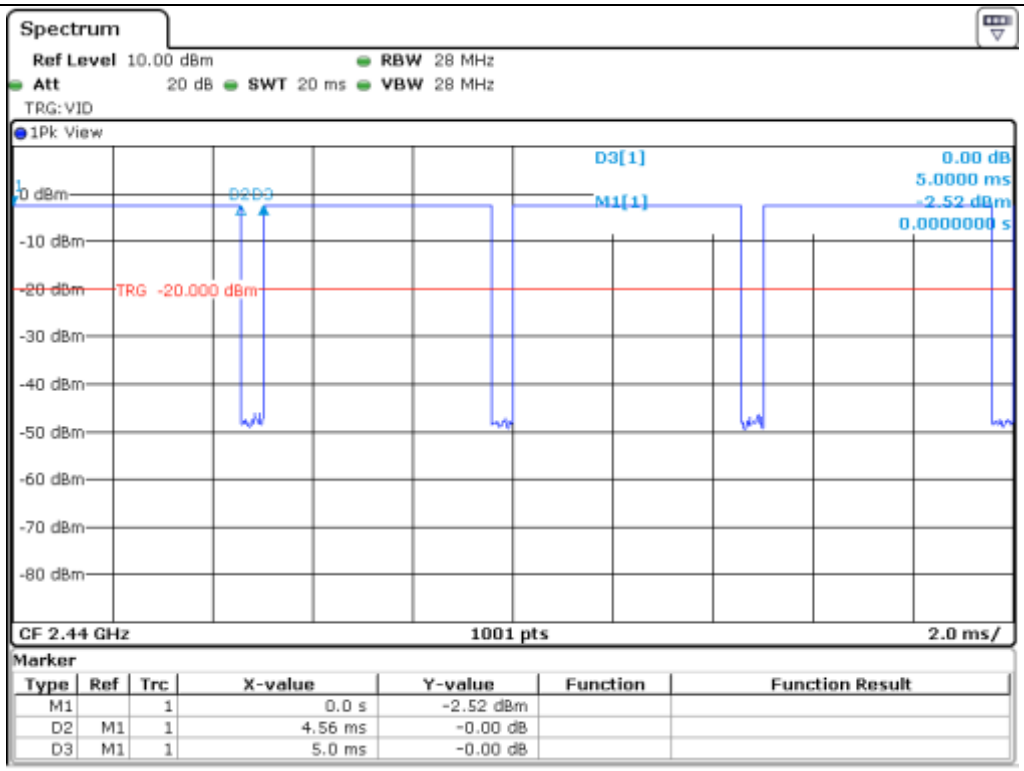
-. Duty Cycle [Bluetooth LE Coded (500 kHz)]

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Bluetooth LE Coded (500 kHz)	4.56	0.44	91.20	0.40

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

-. Test Plot



Bluetooth LE Coded (500 kHz)

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5.4 Configuration of Test System

Line Conducted Test: The EUT was tested in the Transmitting mode. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter open area test site.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The antenna of the EUT is a PCB Antenna on the main board in the EUT, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

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7. MIMIMUM 6 dB BANDWIDTH

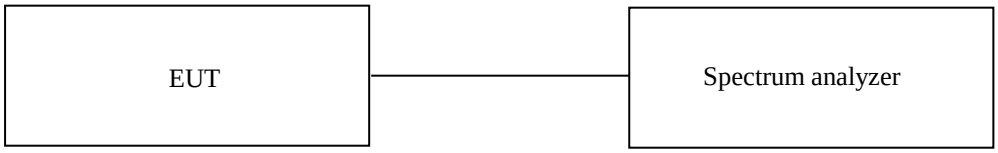
7.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % R.H.

7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



7.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	Mar. 11, 2019 (1Y)

All test equipment used is calibrated on a regular basis.

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7.4 Test data

7.4.1 Test data for 1 Mbps

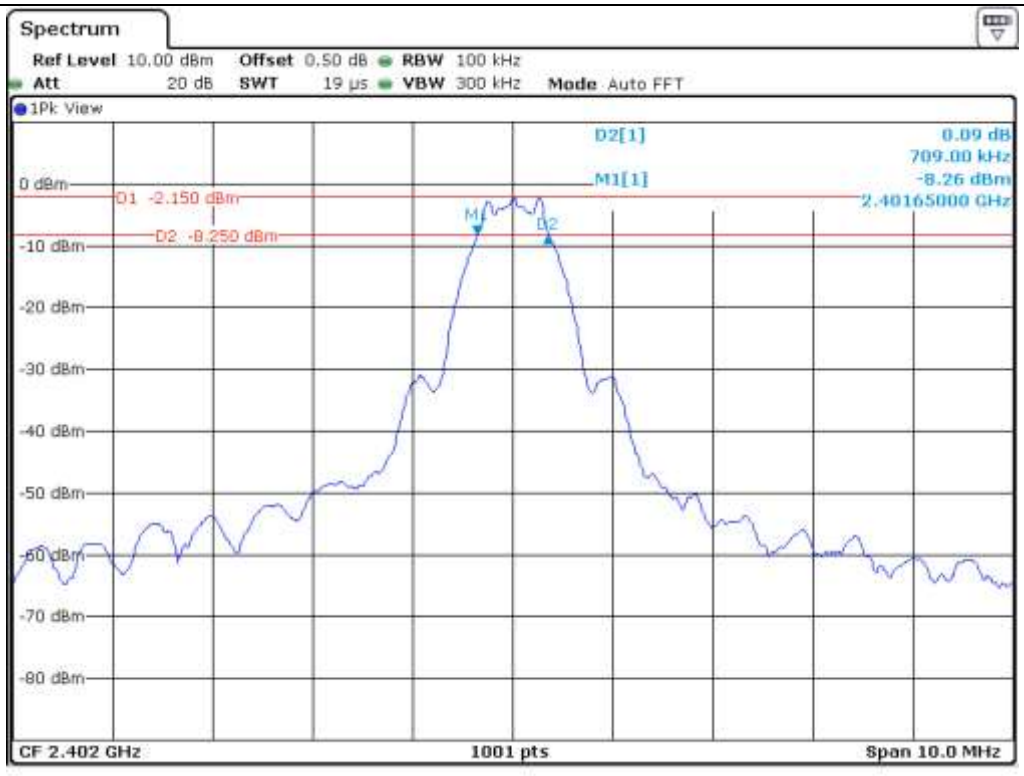
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

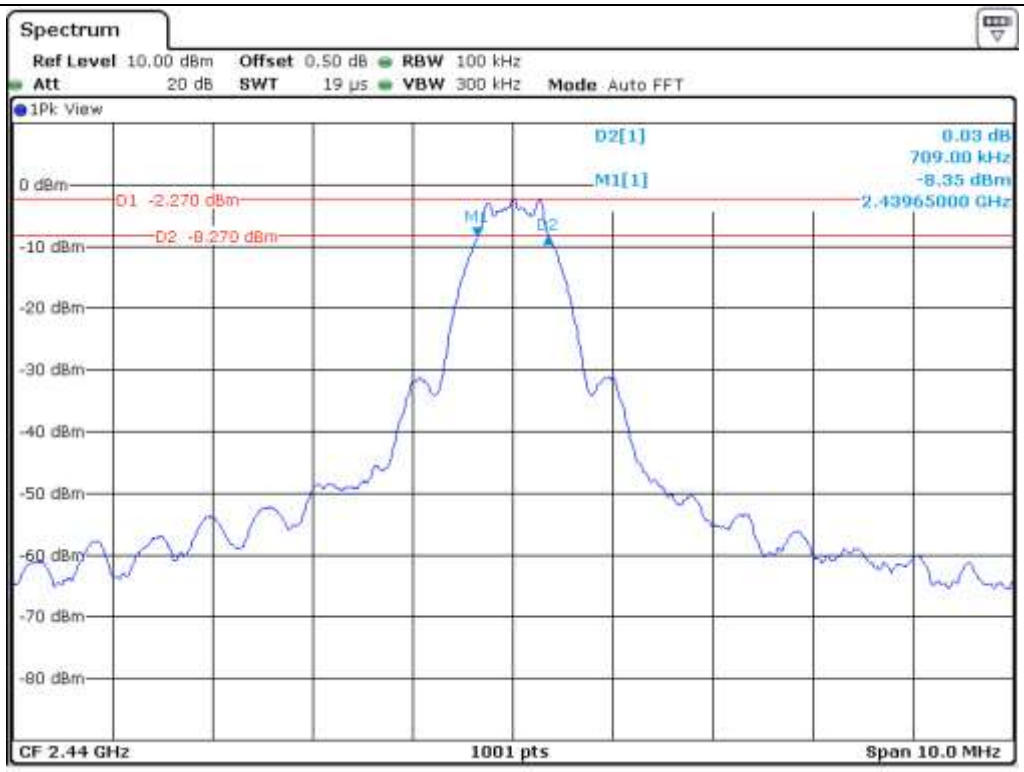
CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	709.0	500.0	209.0
Middle	2 440.00	709.0	500.0	209.0
High	2 480.00	709.0	500.0	209.0

Remark. Margin = Measured Value – Limit

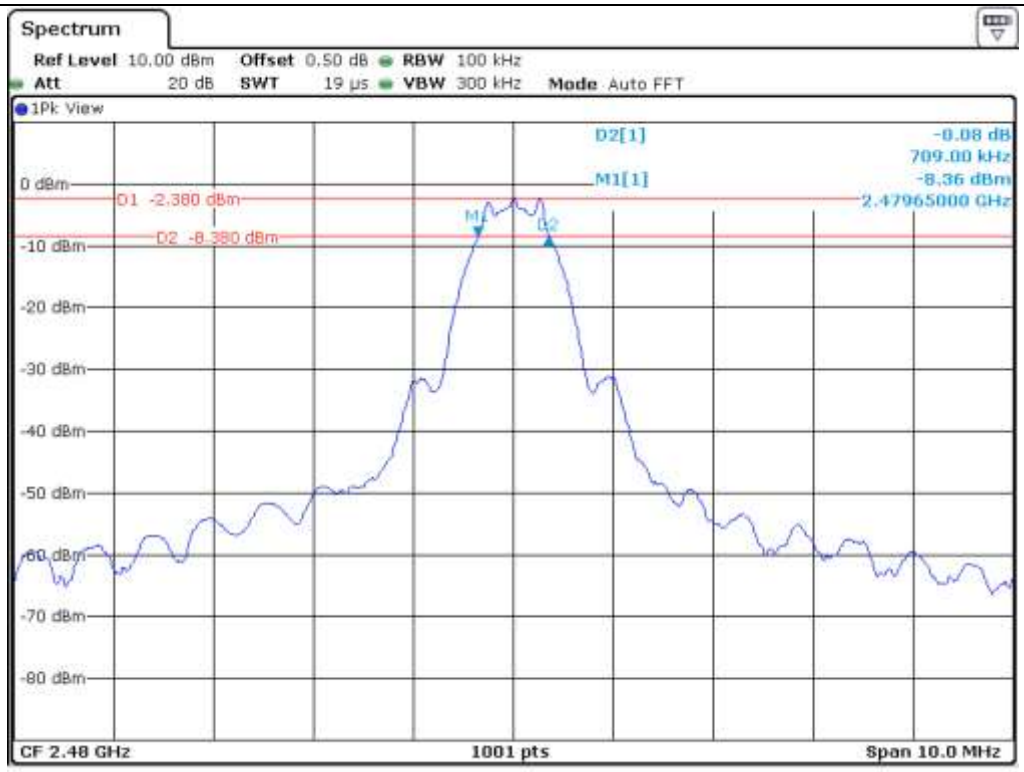
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

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7.4.2 Test data for 2 Mbps

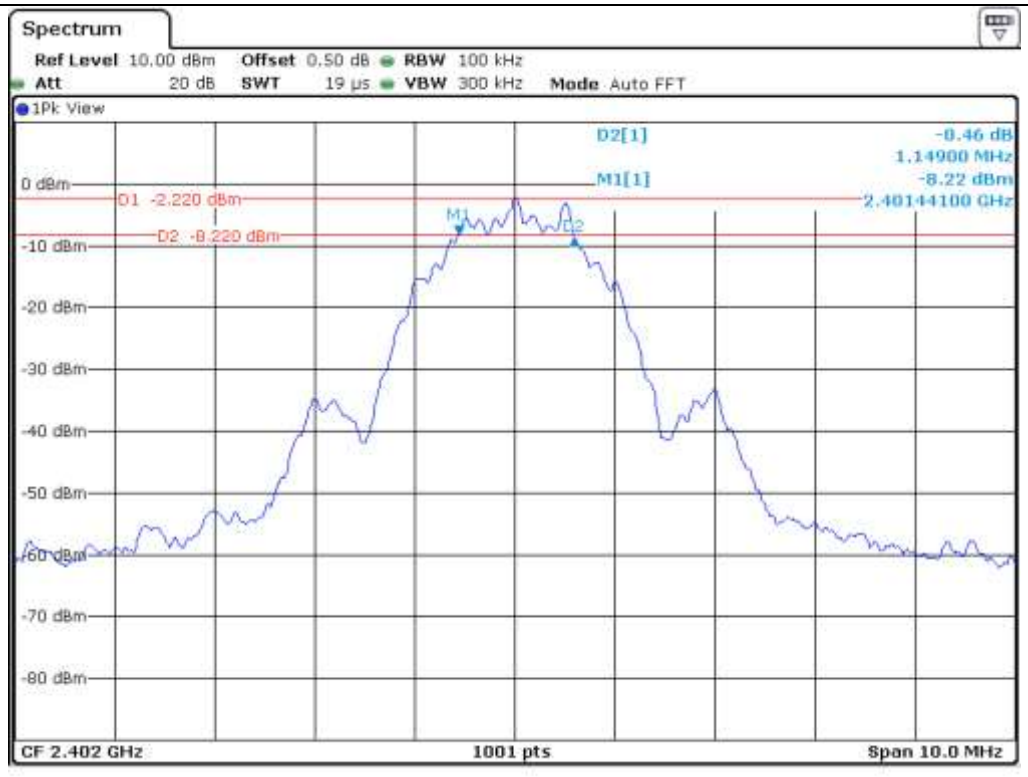
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

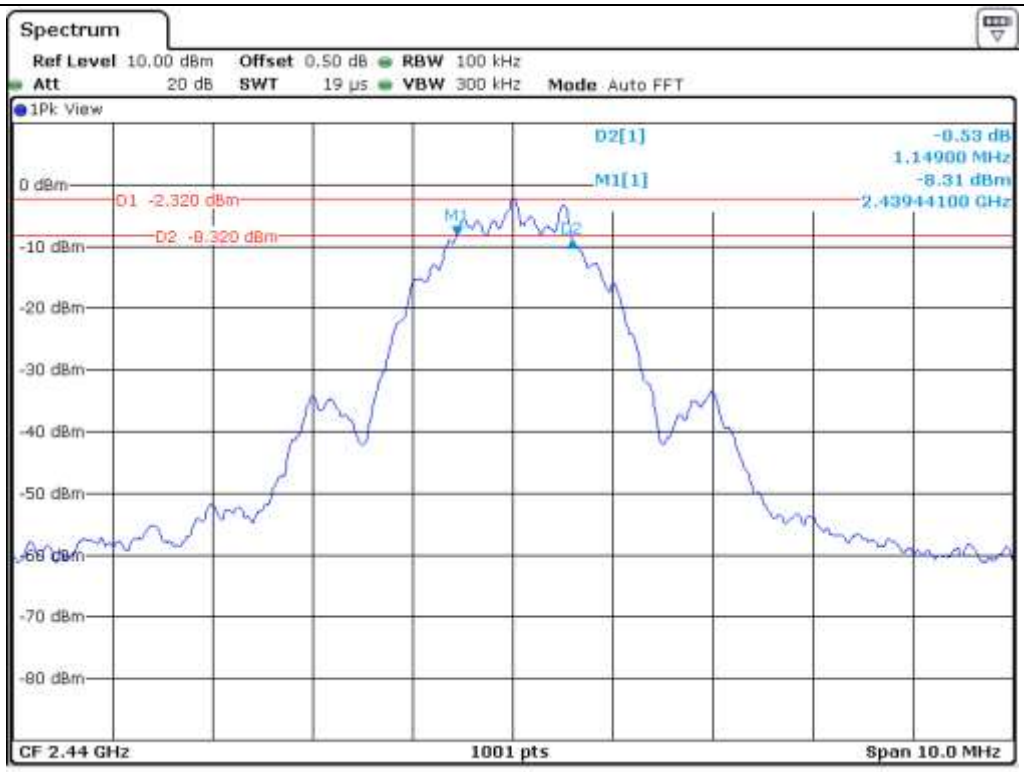
CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	1 149.0	500.0	649.0
Middle	2 440.00	1 149.0	500.0	649.0
High	2 480.00	1 149.0	500.0	649.0

Remark. Margin = Measured Value – Limit

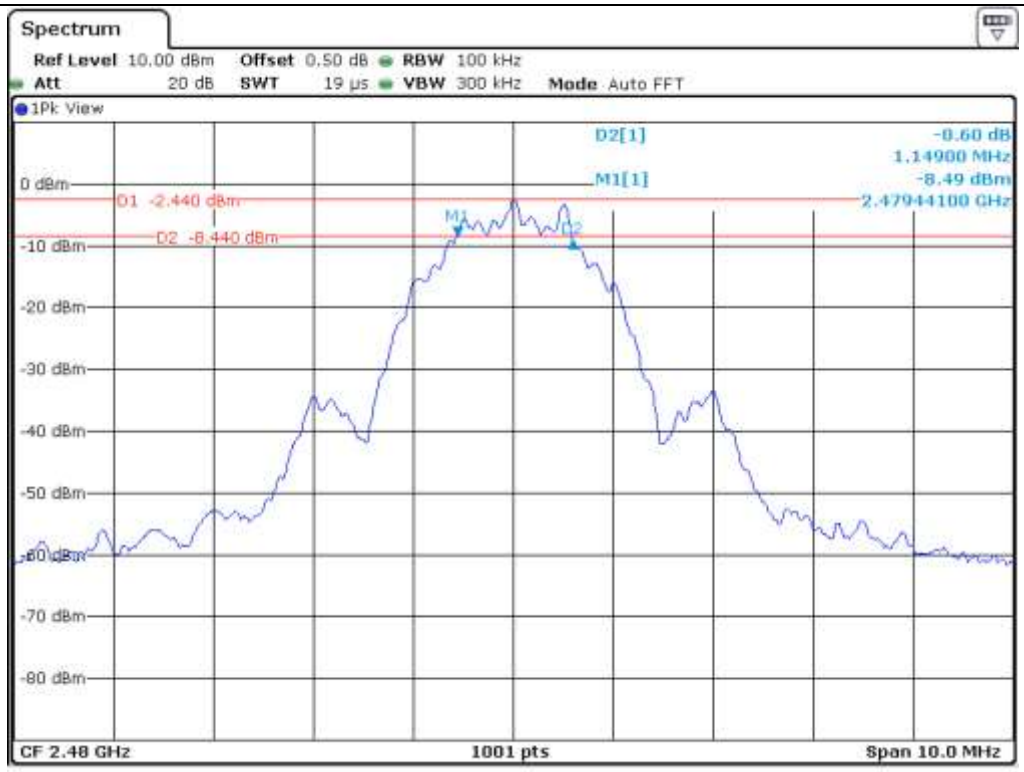
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

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7.4.3 Test data for Coded (125 kHz)

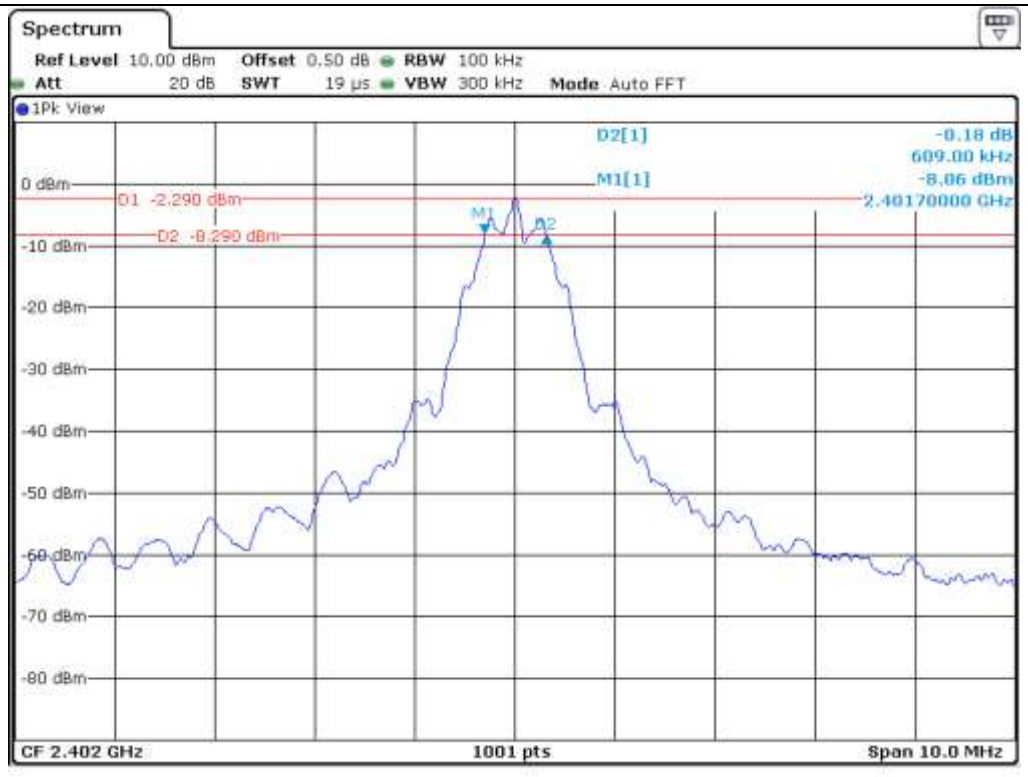
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

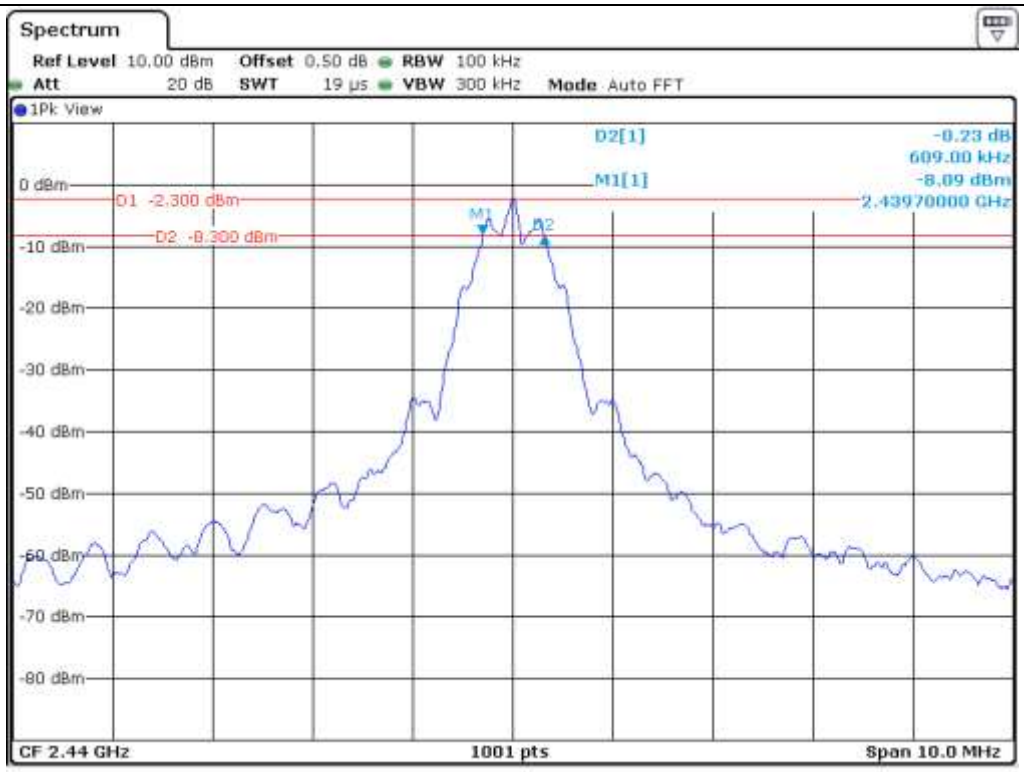
CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	609.0	500.0	109.0
Middle	2 440.00	609.0	500.0	109.0
High	2 480.00	609.0	500.0	109.0

Remark. Margin = Measured Value – Limit

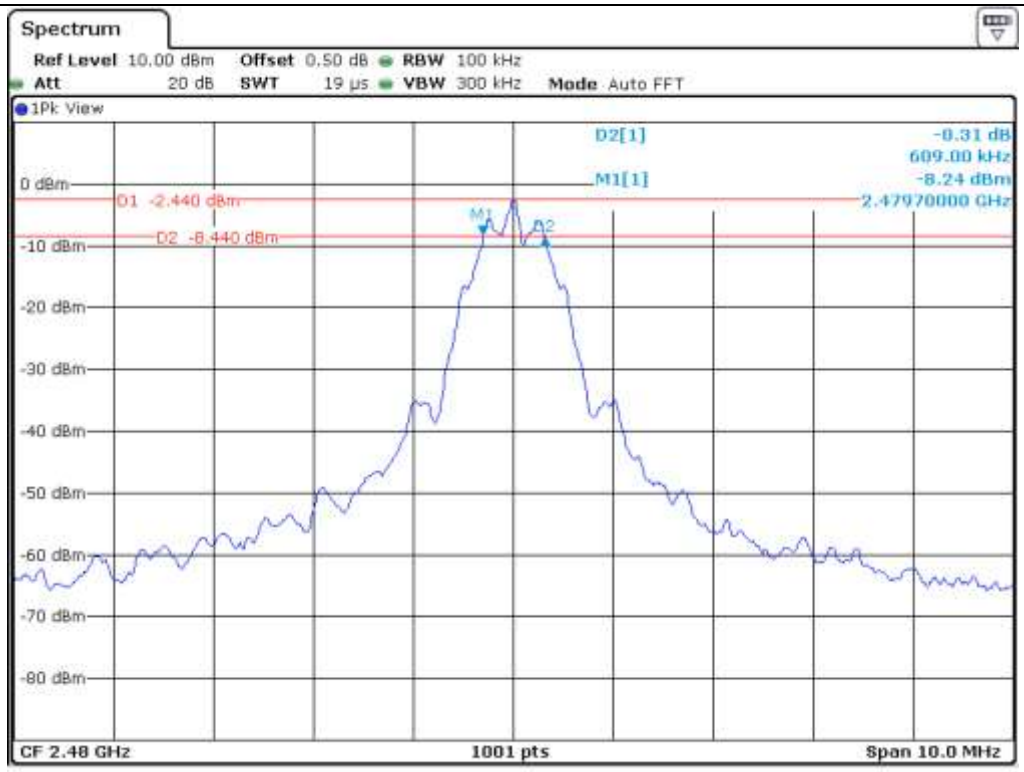
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

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7.4.4 Test data for Coded (500 kHz)

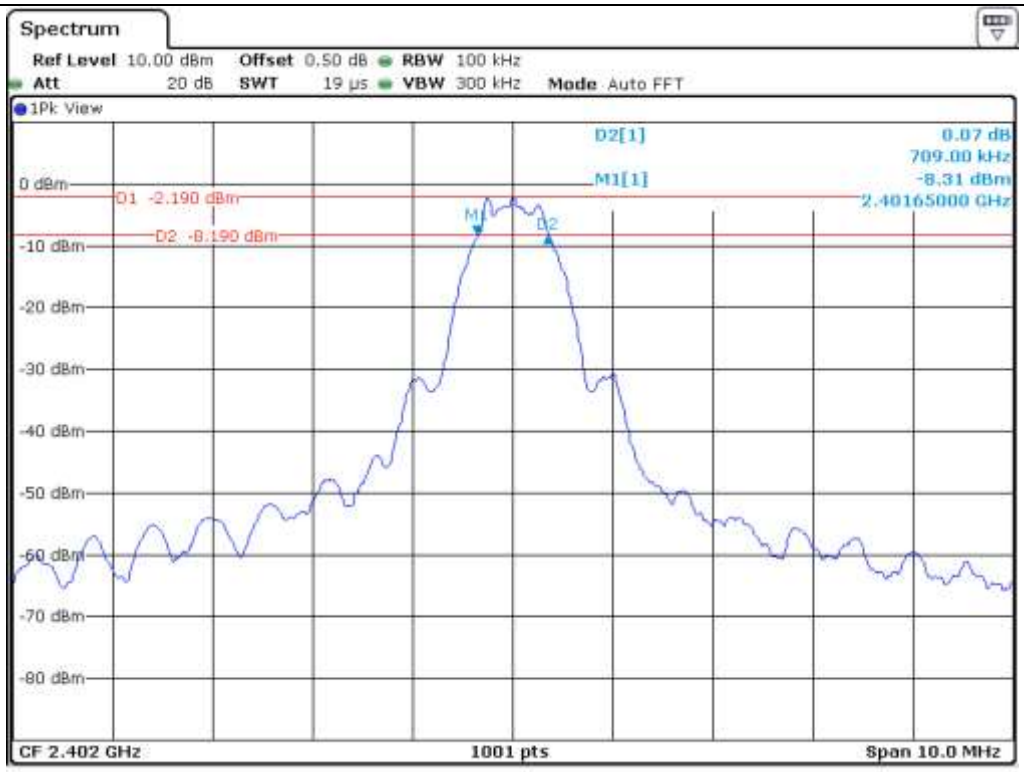
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	709.0	500.0	209.0
Middle	2 440.00	699.0	500.0	199.0
High	2 480.00	709.0	500.0	209.0

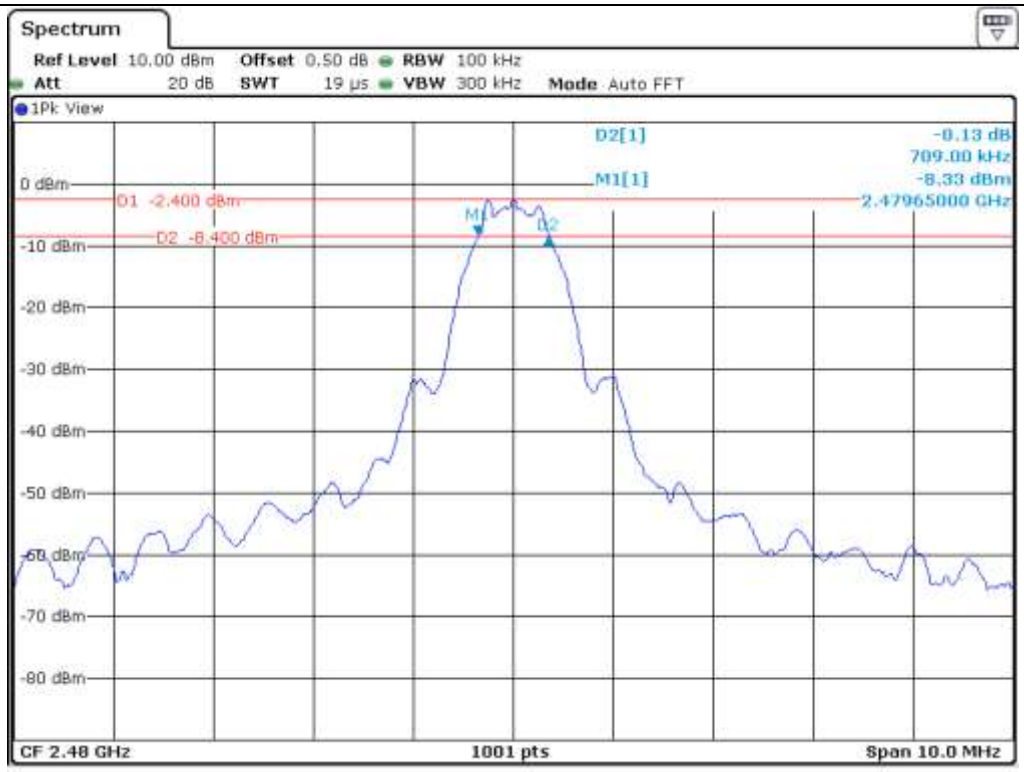
Remark. Margin = Measured Value – Limit

Tested by: Ha-Ram Lee / Manager



Low Channel

Middle Channel



High Channel

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8. MAXIMUM PEAK OUTPUT POWER

8.1 Operating environment

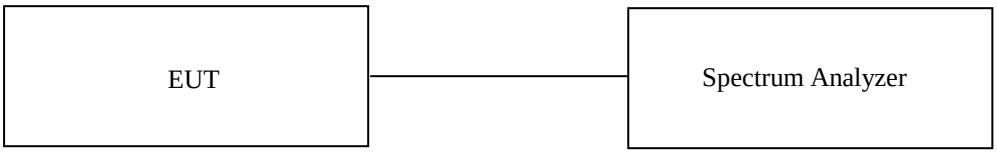
Temperature : 24 ℃

Relative humidity : 48 % R.H.

8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to ≥DTS Bandwidth, the video bandwidth is set to 3 times the resolution bandwidth.



8.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	Mar. 11, 2019 (1Y)

All test equipment used is calibrated on a regular basis.

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8.4 Test data

8.4.1 Test data for 1 Mbps

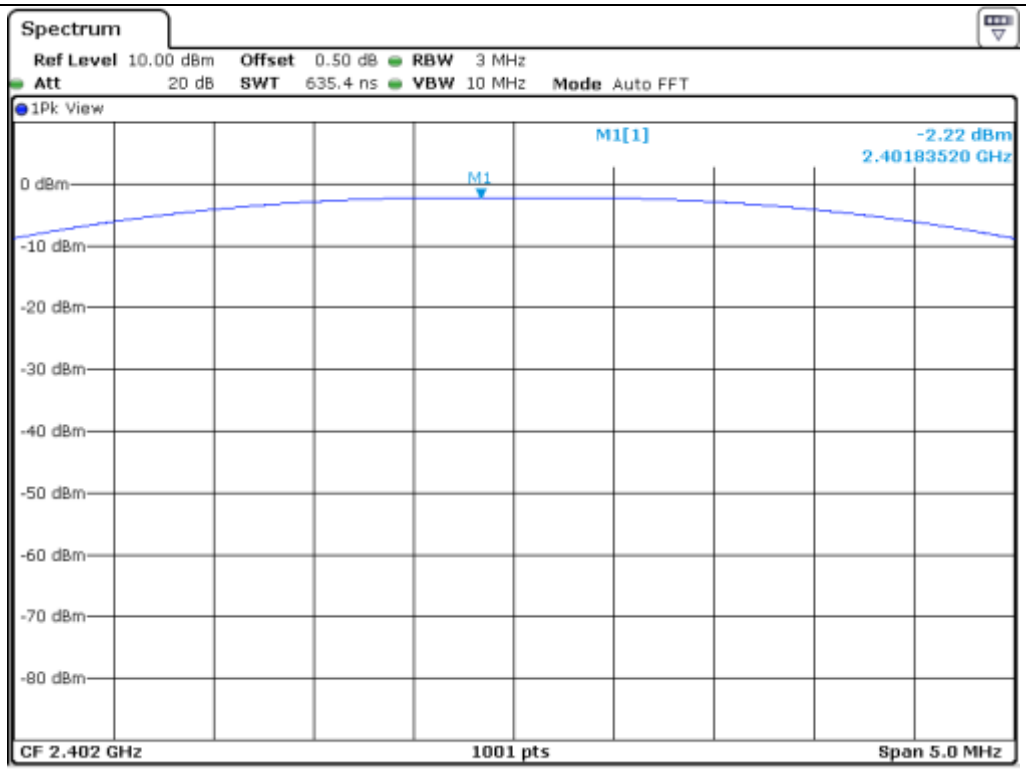
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	-2.22	30.00	32.22
MIDDLE	2 440.00	-2.30	30.00	32.30
HIGH	2 480.00	-2.42	30.00	32.42

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Tested by: Ha-Ram Lee / Manager



Low Channel

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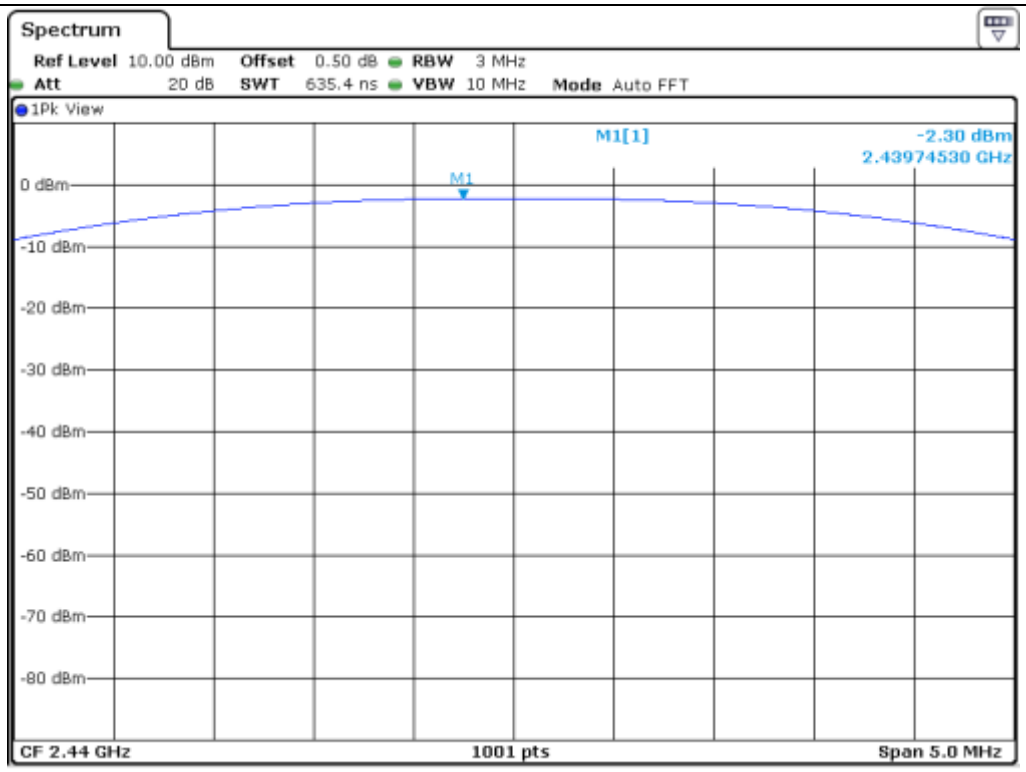
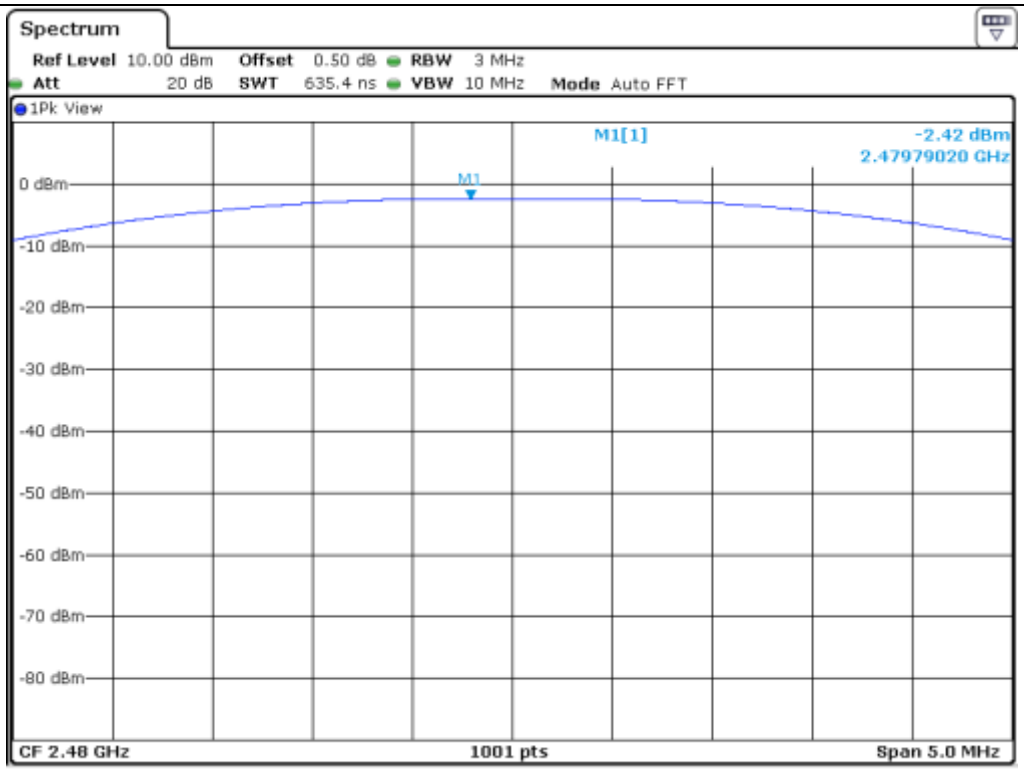


Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4.2 Test data for 2 Mbps

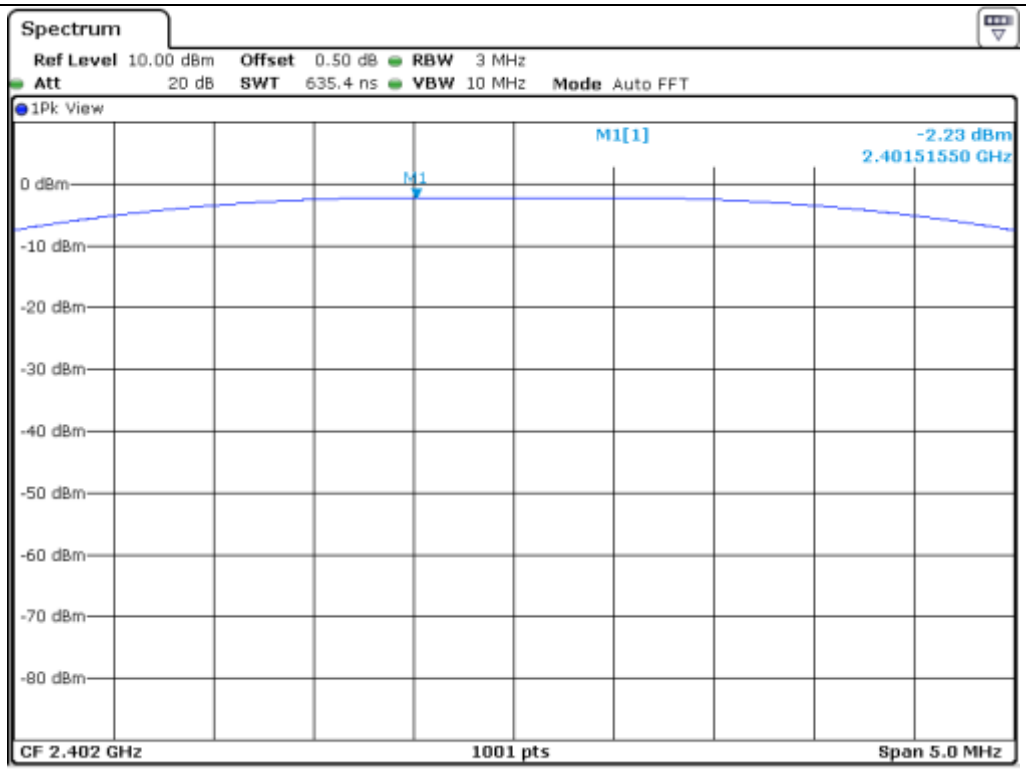
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

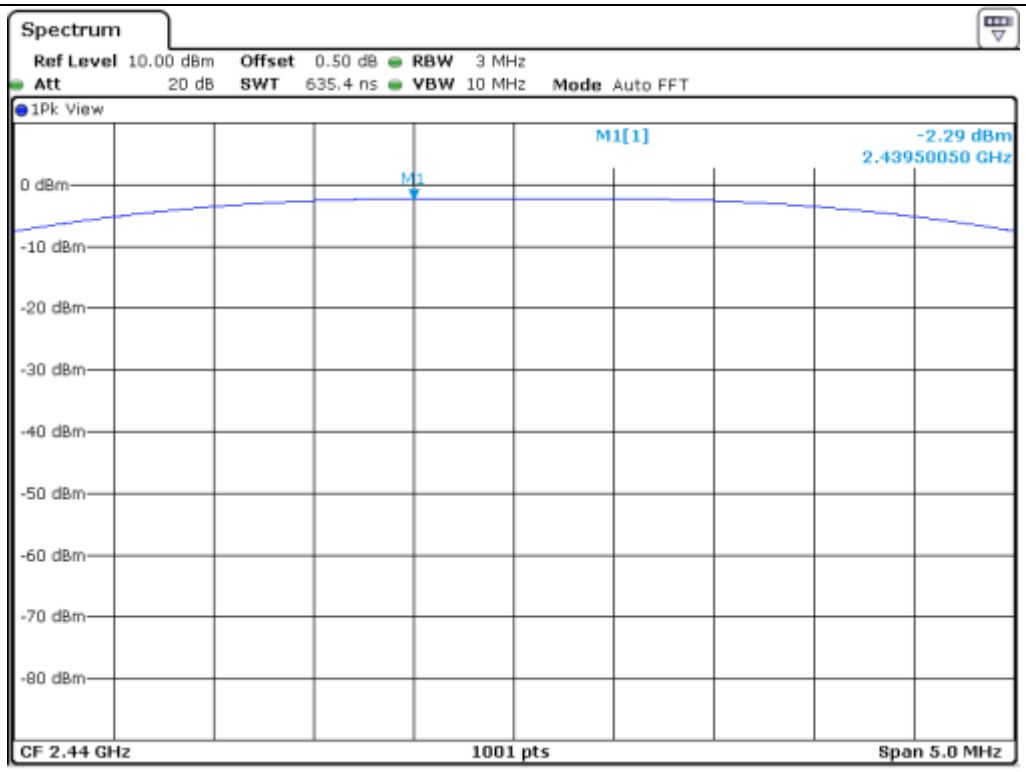
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	-2.23	30.00	32.23
MIDDLE	2 440.00	-2.29	30.00	32.29
HIGH	2 480.00	-2.41	30.00	32.41

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

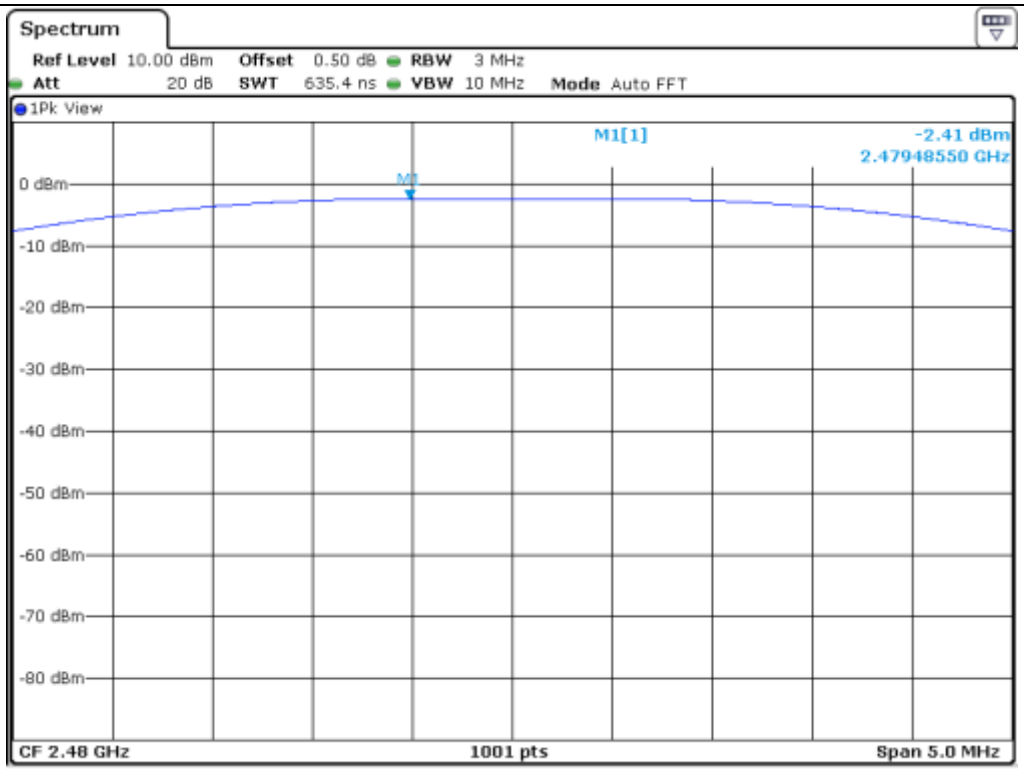
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4.3 Test data for Coded (125 kHz)

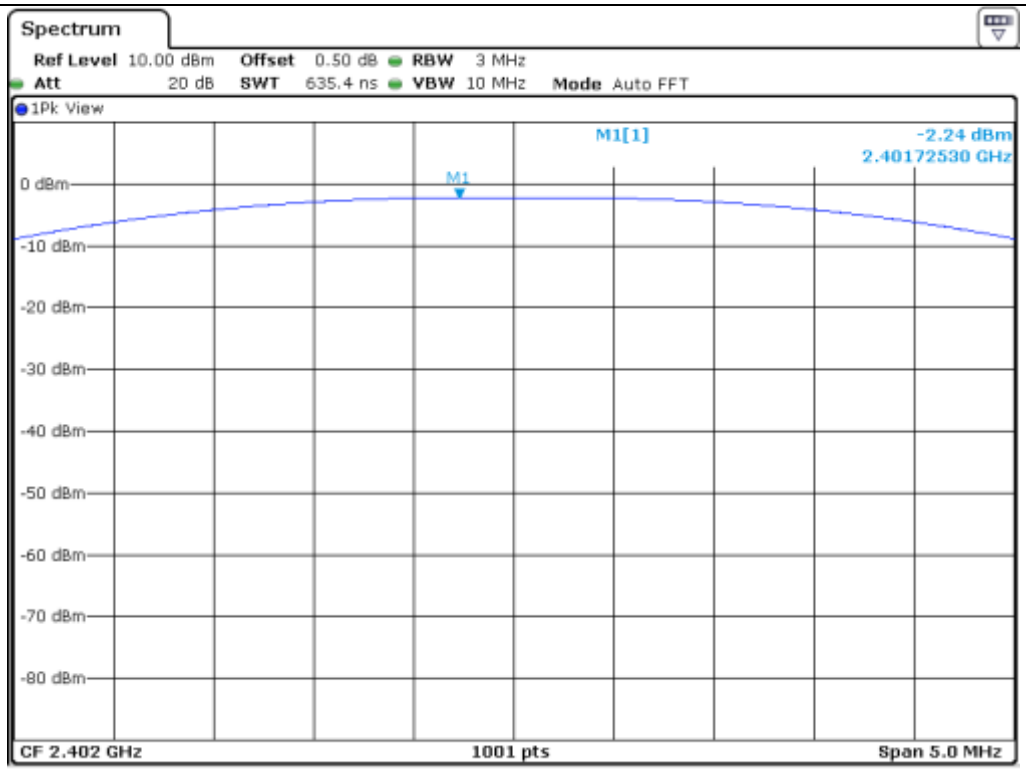
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

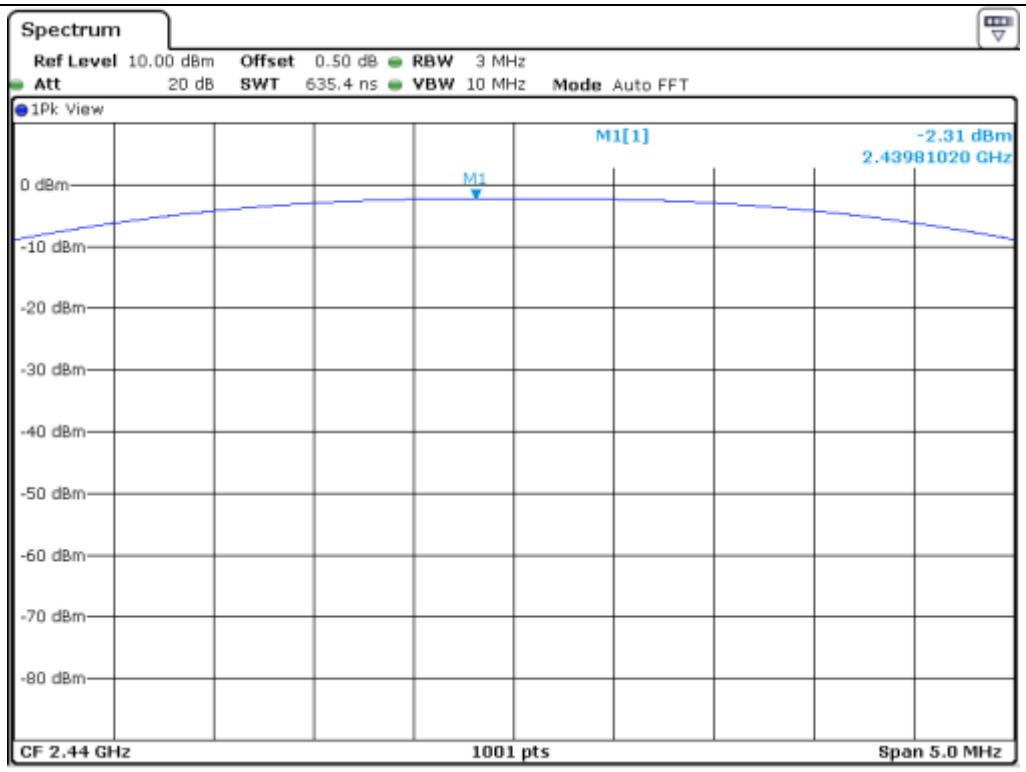
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	-2.24	30.00	32.24
MIDDLE	2 440.00	-2.31	30.00	32.31
HIGH	2 480.00	-2.42	30.00	32.42

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

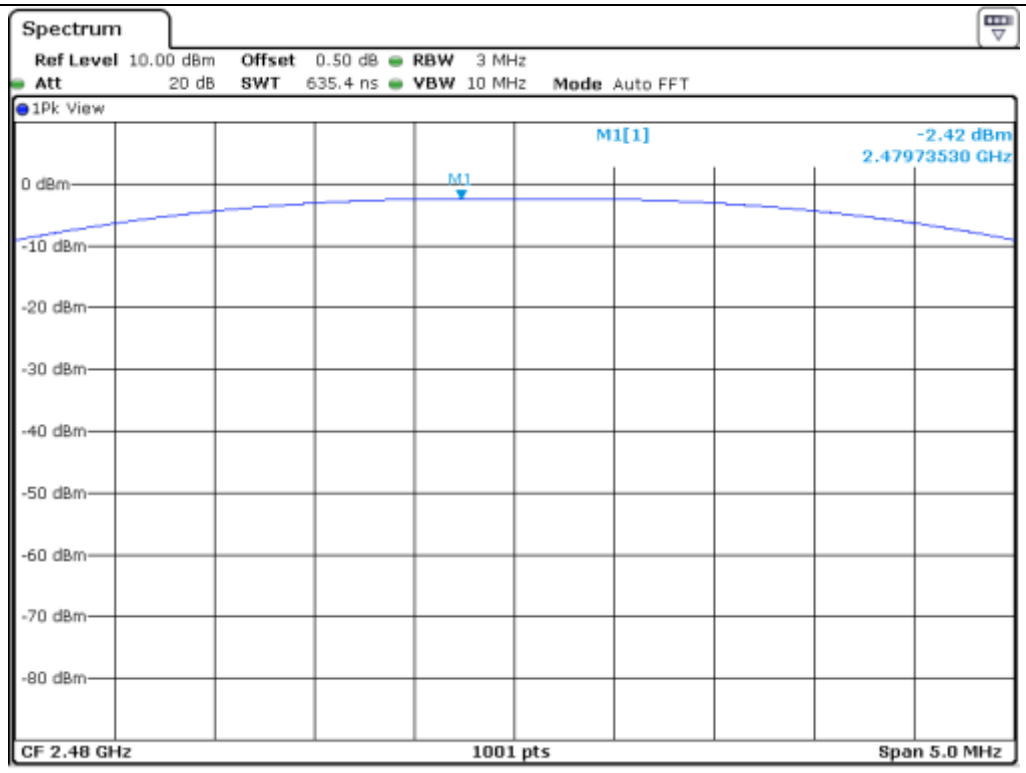
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

8.4.4 Test data for Coded (500 kHz)

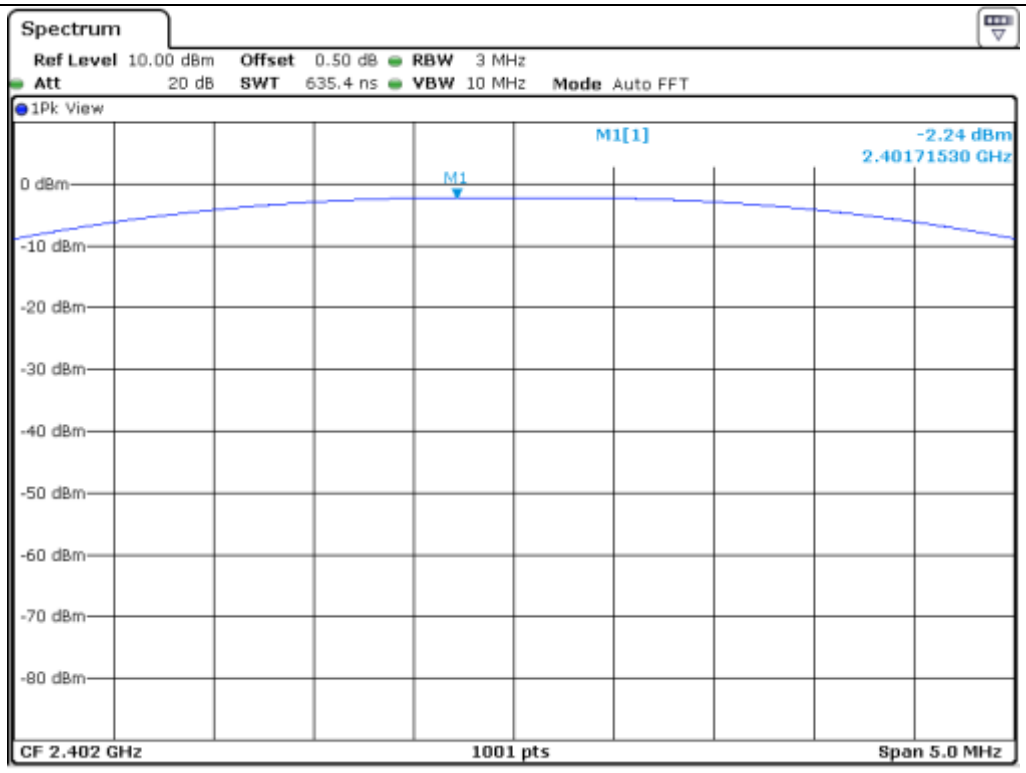
-. Test Date : February 11, 2020 ~ February 12, 2020

-. Test Result : Pass

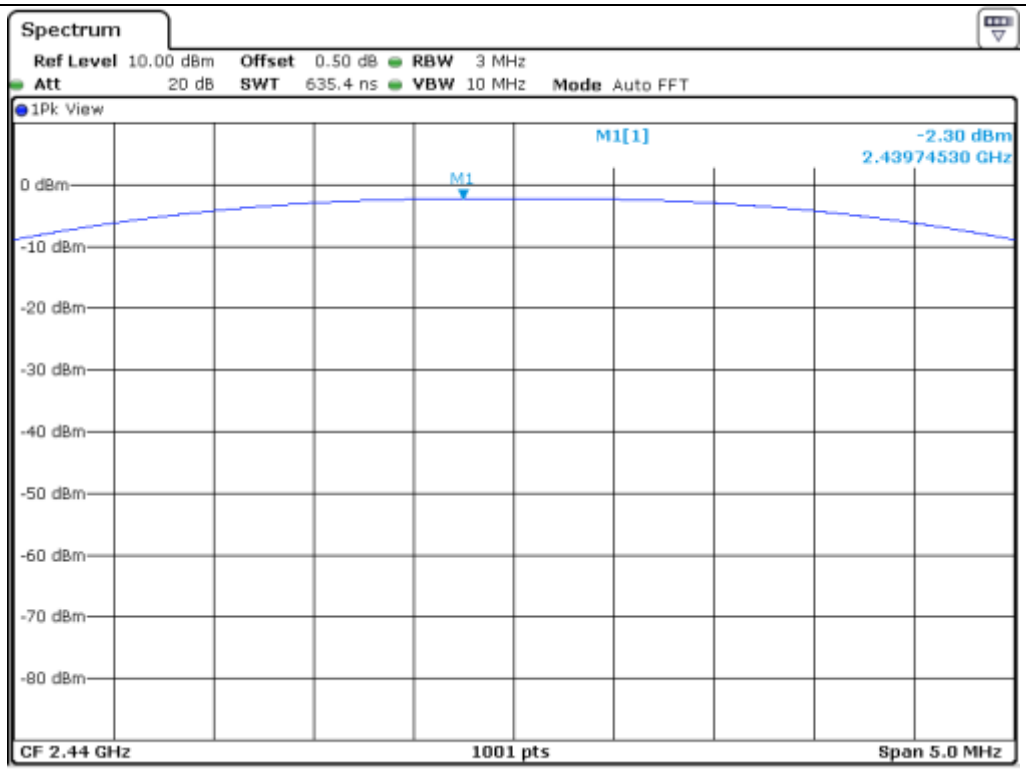
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	-2.24	30.00	32.24
MIDDLE	2 440.00	-2.30	30.00	32.30
HIGH	2 480.00	-2.43	30.00	32.43

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

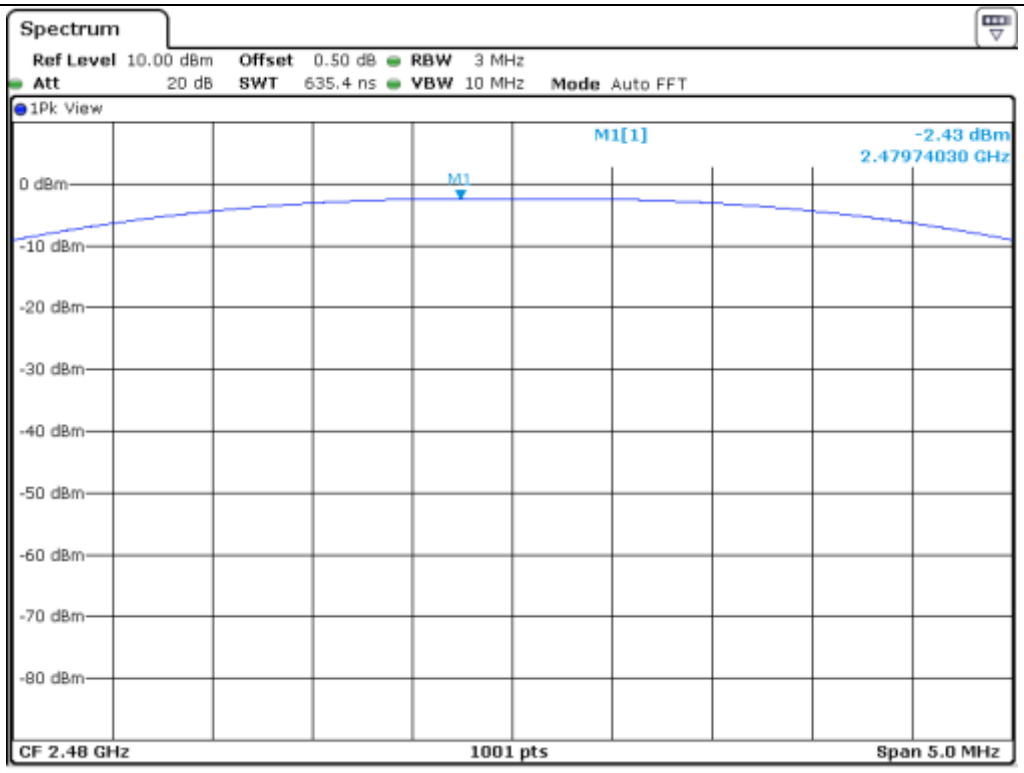
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

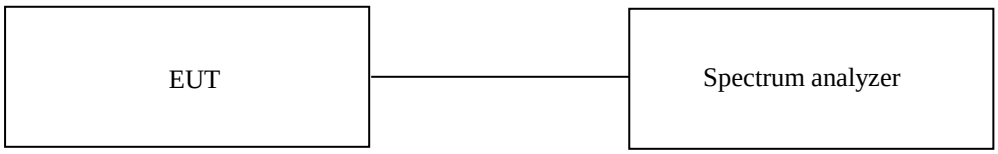
9.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % R.H.

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz, and peak detection was used.



9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

9.4 Test equipment used

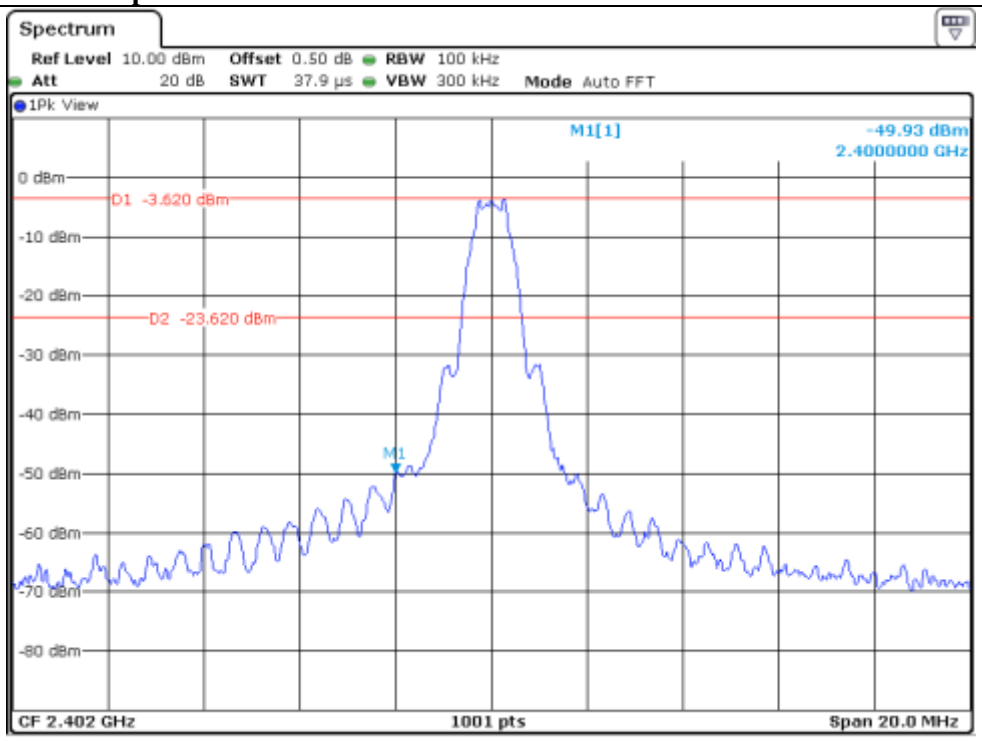
	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESR	Rohde & Schwarz	EMI Test Receiver	101470	Oct. 22, 2019 (1Y)
■ -	310N	Sonoma Instrument	AMPLIFIER	312544	Mar. 18, 2019 (1Y)
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	Feb. 20, 2020 (1Y)
■ -	SCU18	Rohde & Schwarz	Pre-Amplifier	102266	Jul. 24, 2019 (1Y)
■ -	MA240	HD GmbH	Antenna Master	N/A	N/A
■ -	HD100	HD GmbH	Position Controller	N/A	N/A
■ -	DS420S	HD GmbH	Turn Table	N/A	N/A
■ -	FMZB 1513	Schwarzbeck	LOOP ANTENNA	1513-235	May. 13, 2018 (2Y)
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-255	Jun. 05, 2018 (2Y)
■ -	3115	ETS-LINDGREN	Horn Antenna	34823	Aug. 26, 2019 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 07, 2020 (1Y)
■ -	SCU40A	Rohde & Schwarz	Pre-Amplifier	100436	Mar. 11, 2019 (1Y)

All test equipment used is calibrated on a regular basis.

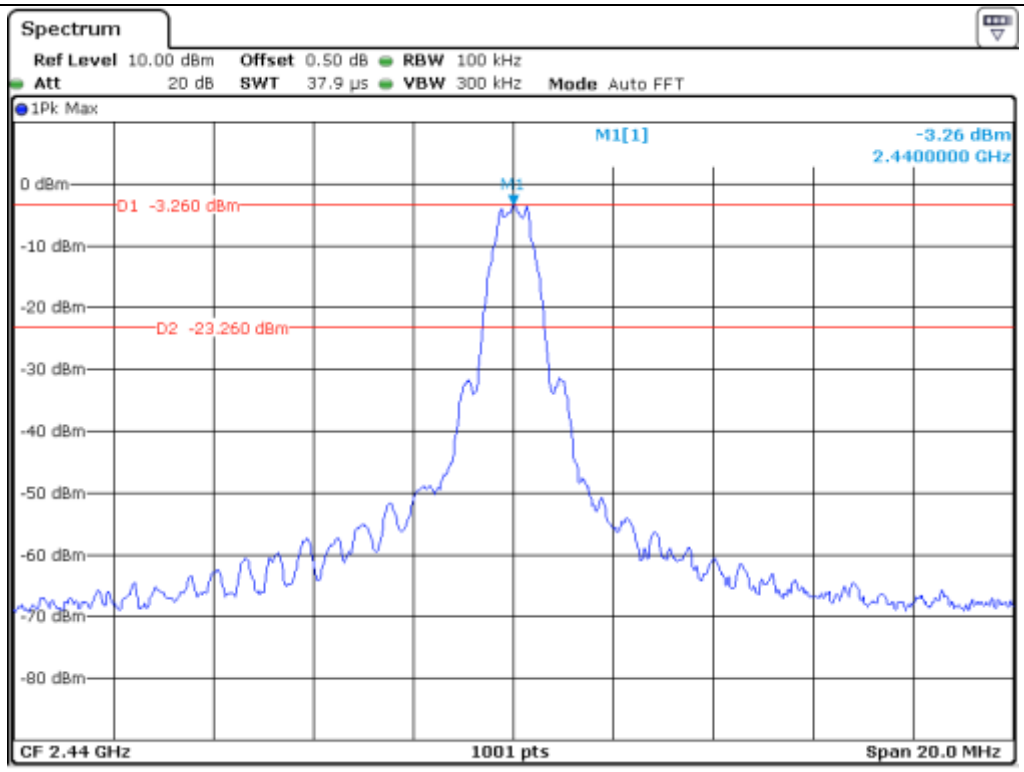
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.5 Test data for conducted emission

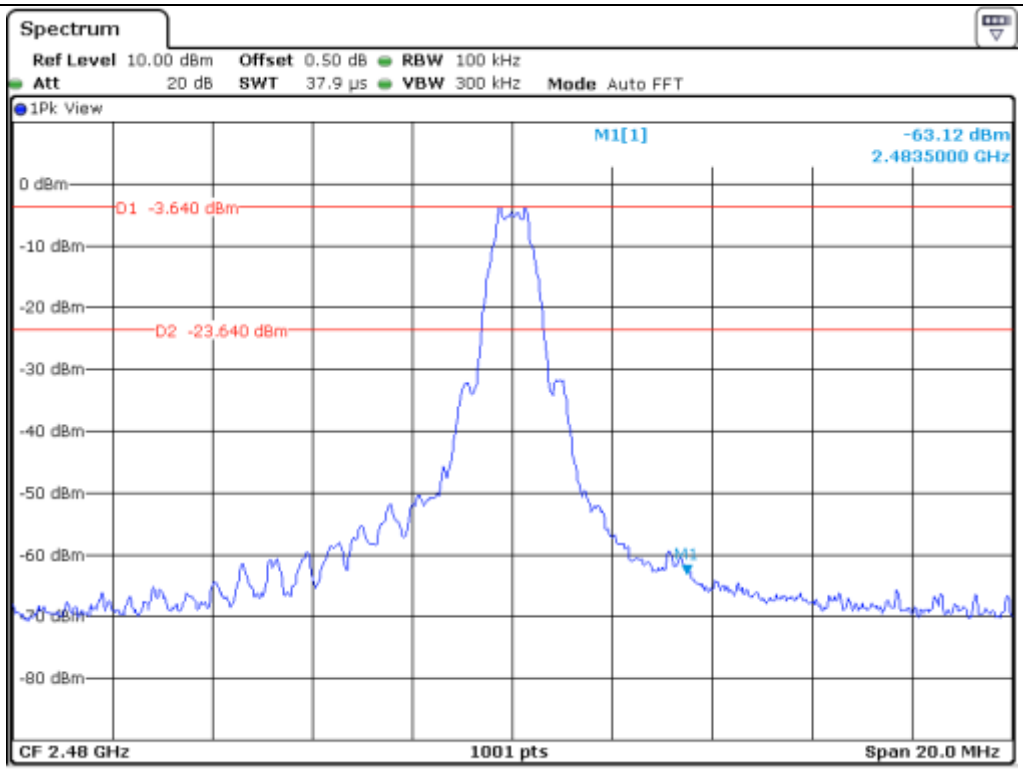
9.5.1 Test data for 1 Mbps



Low Channel

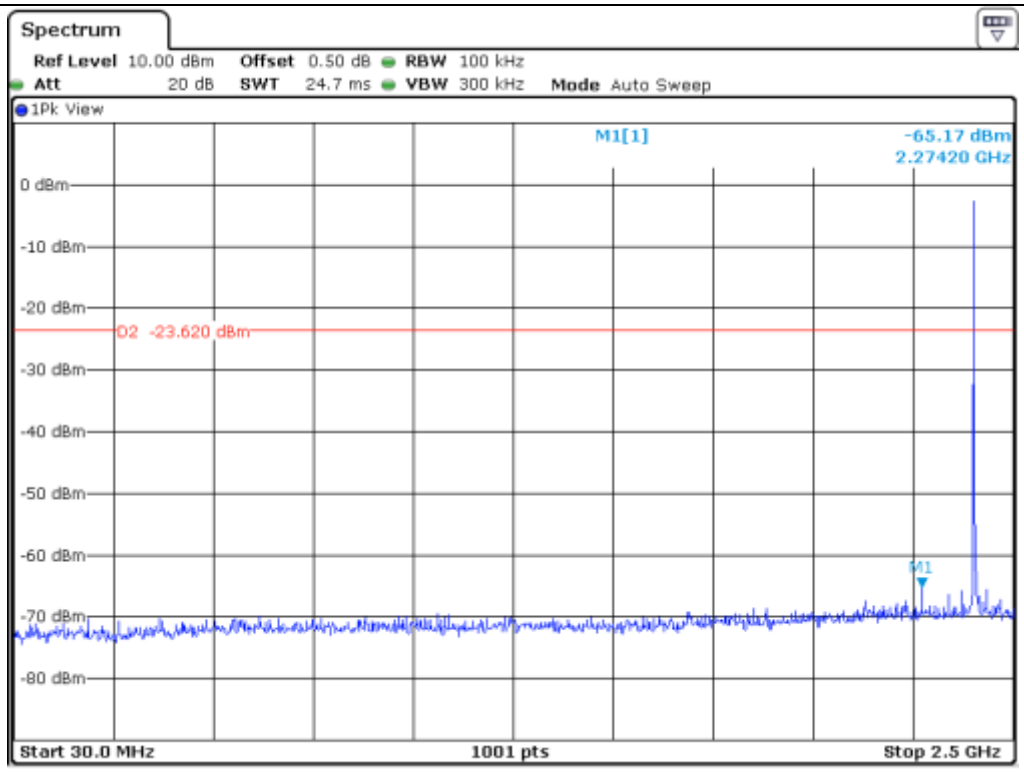


Middle Channel

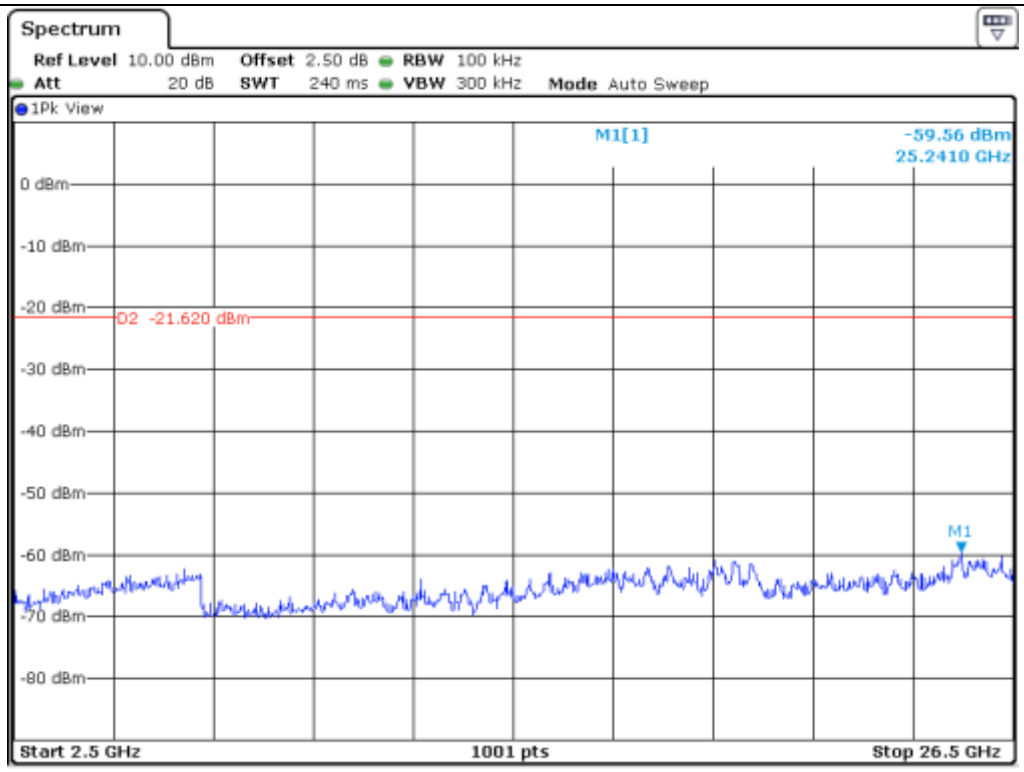


High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

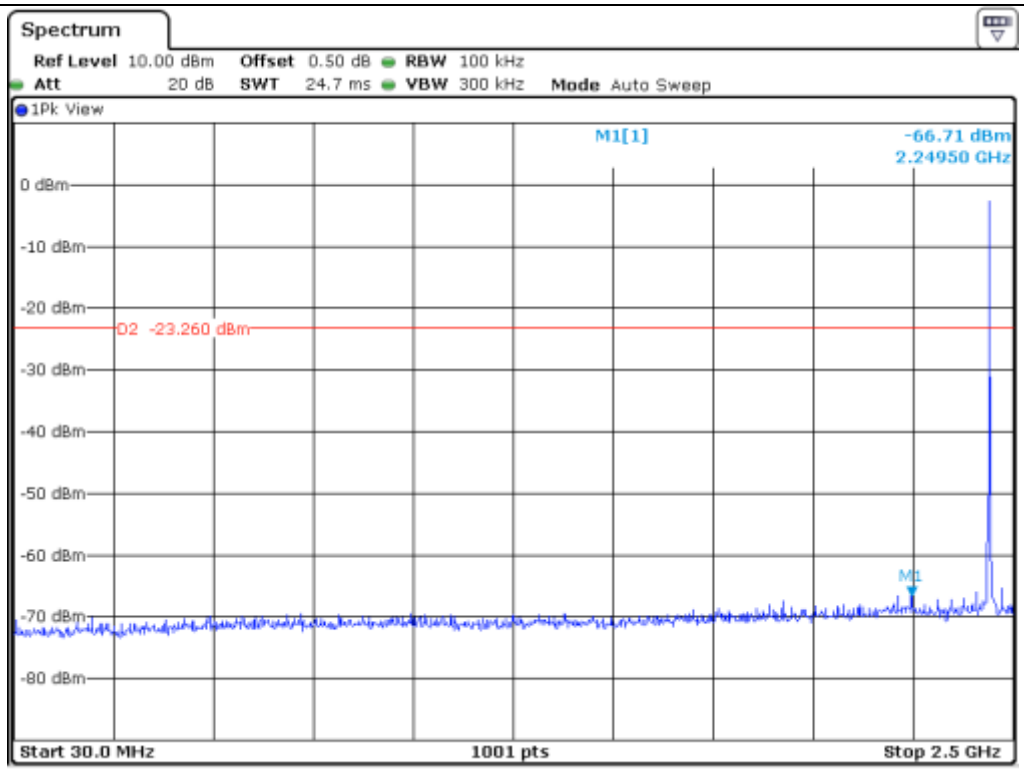


Low Channel

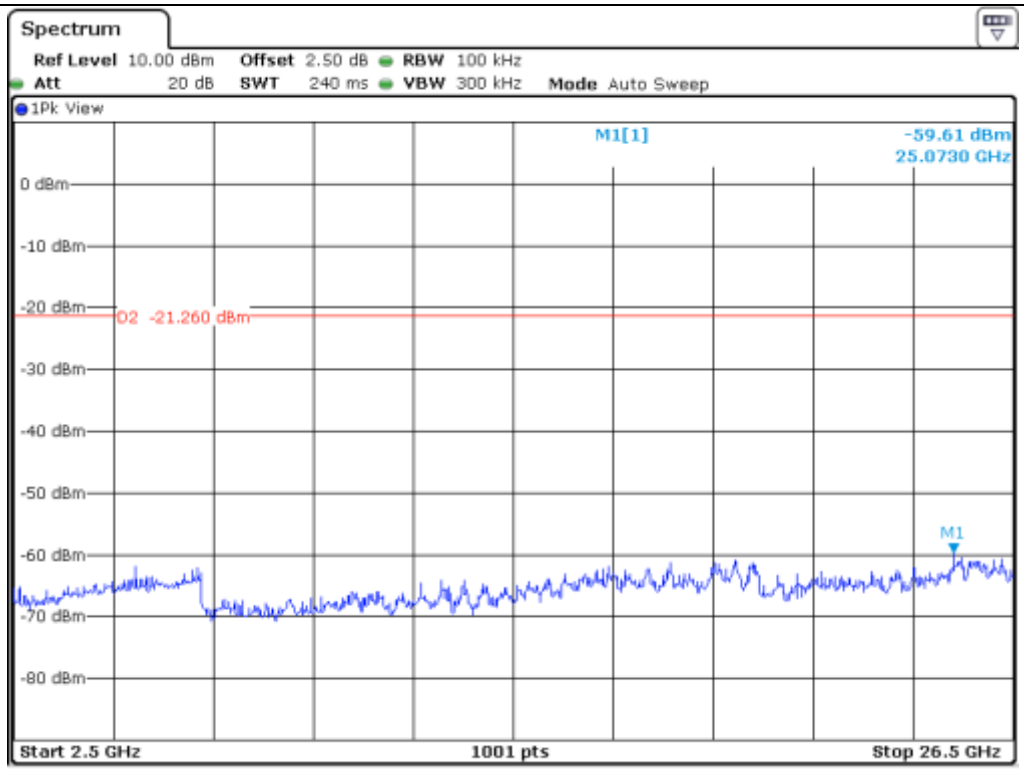


Low Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

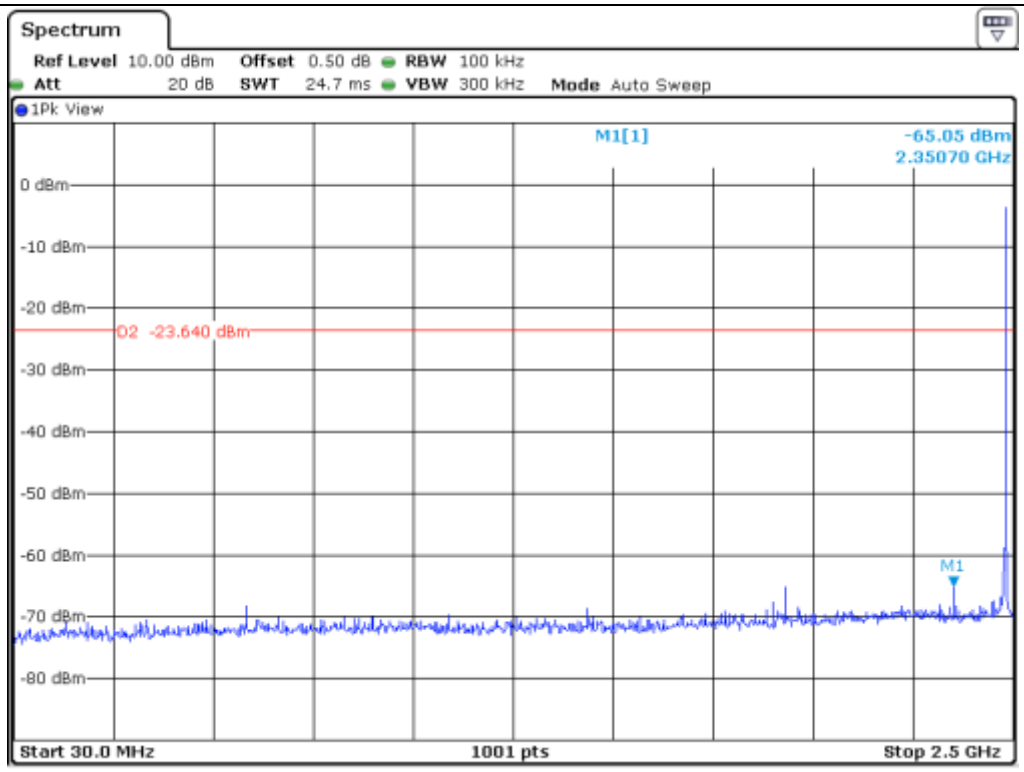


Middle Channel

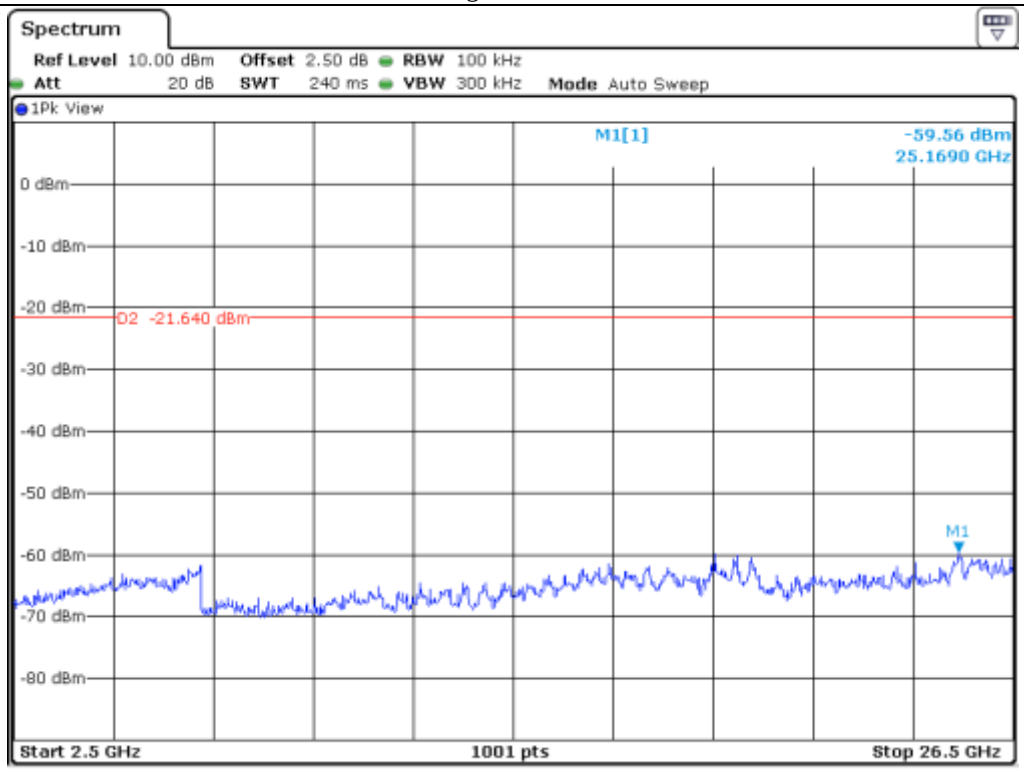


Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



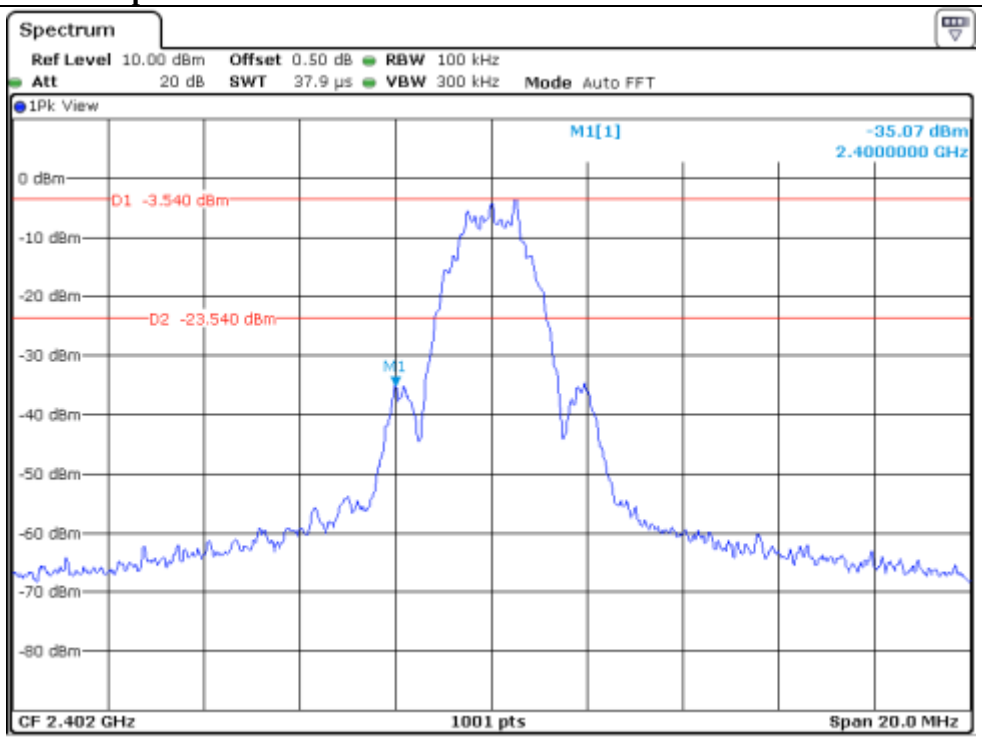
High Channel



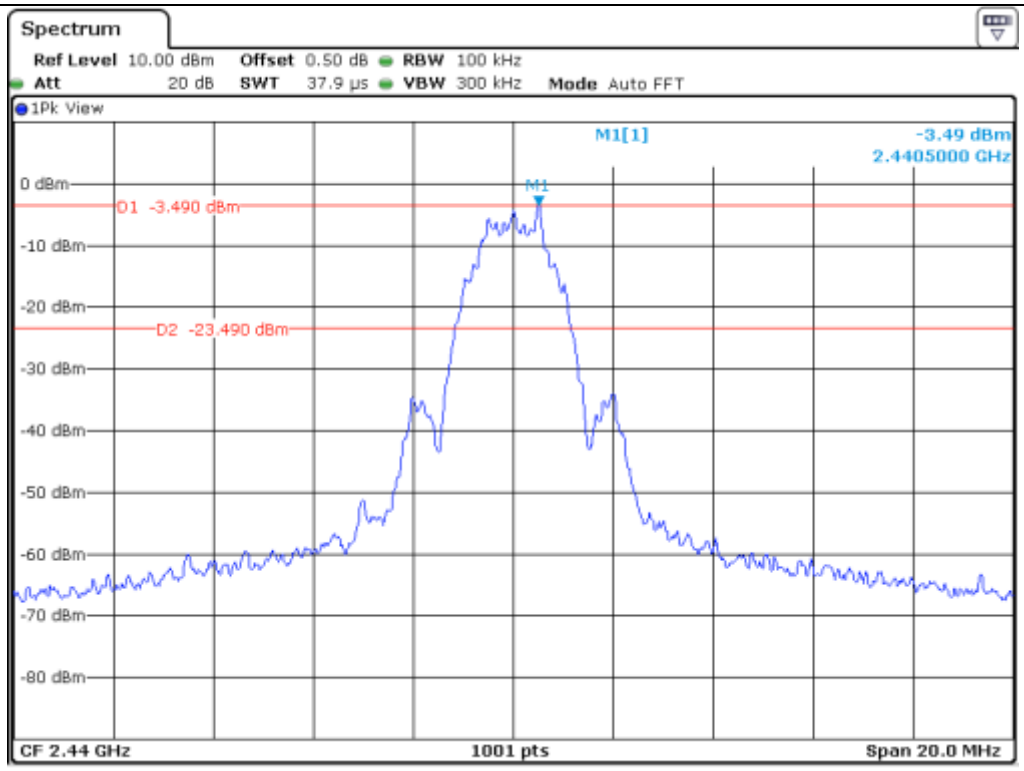
High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.5.2 Test data for 2 Mbps

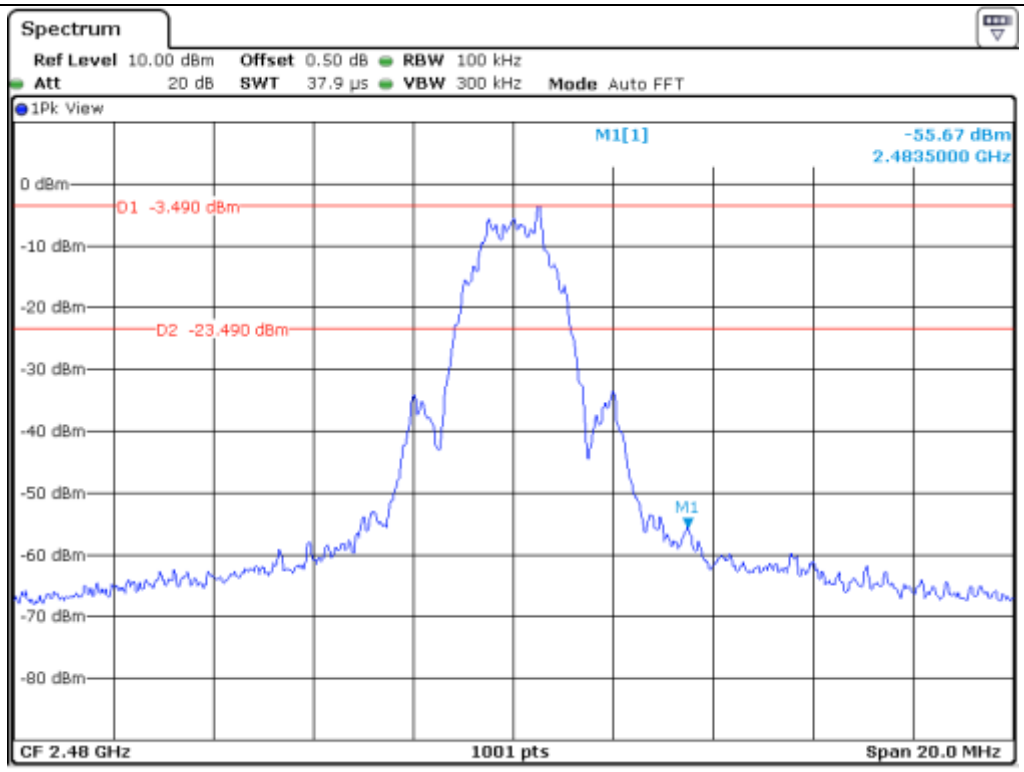


Low Channel



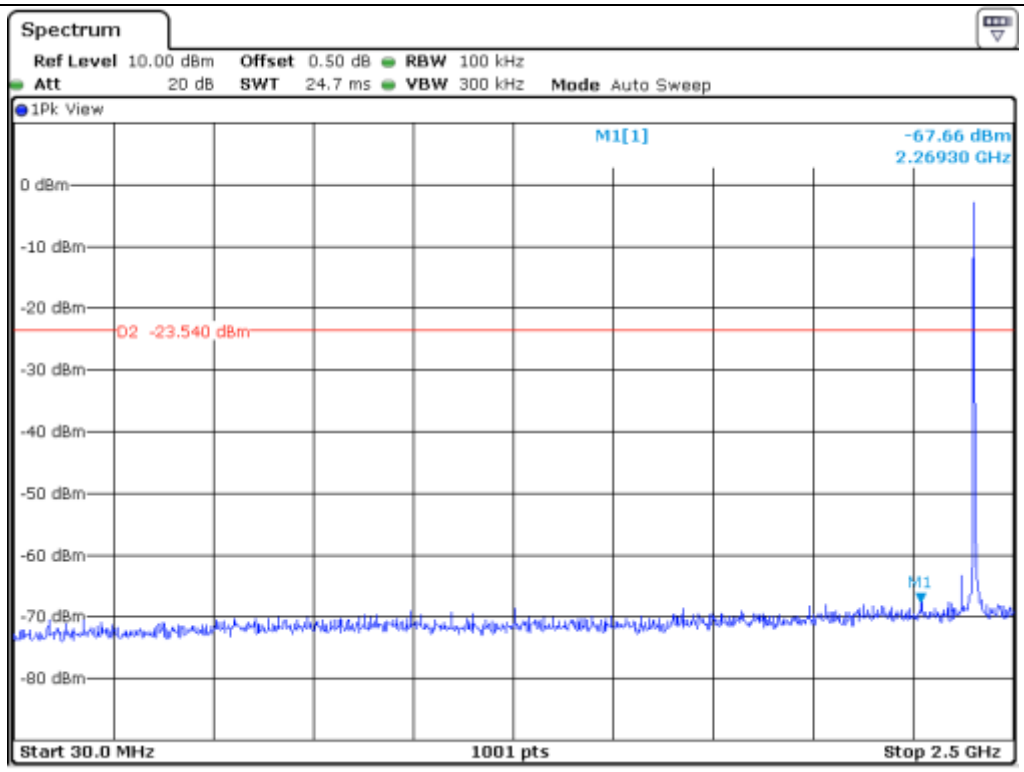
Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

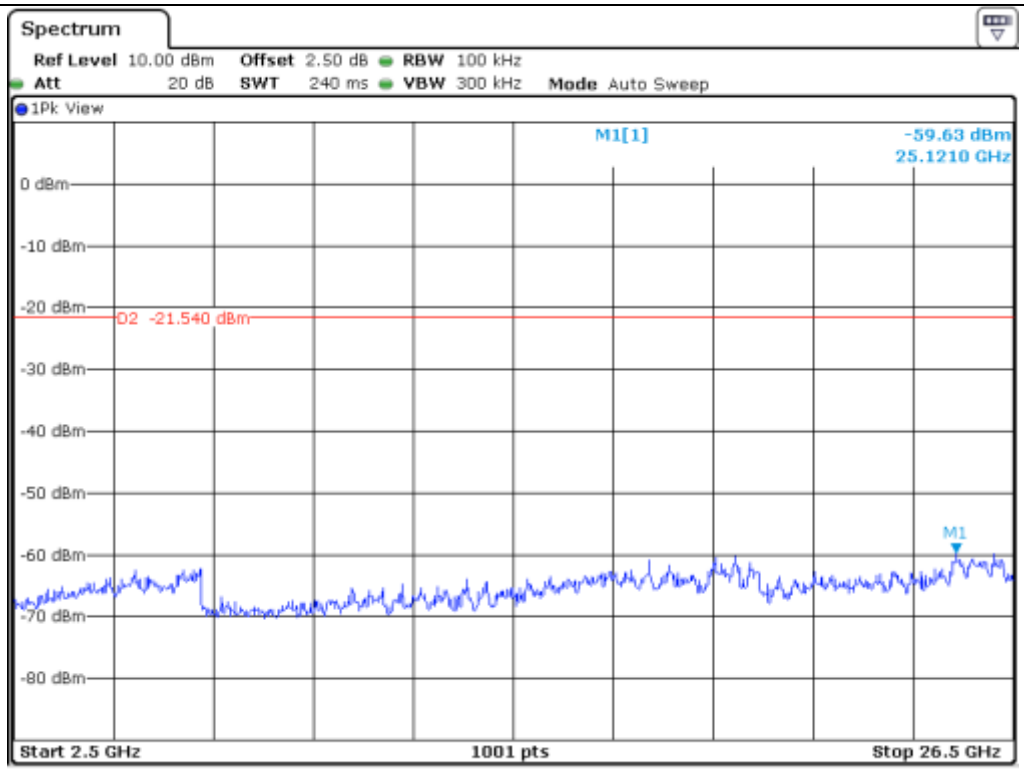


High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

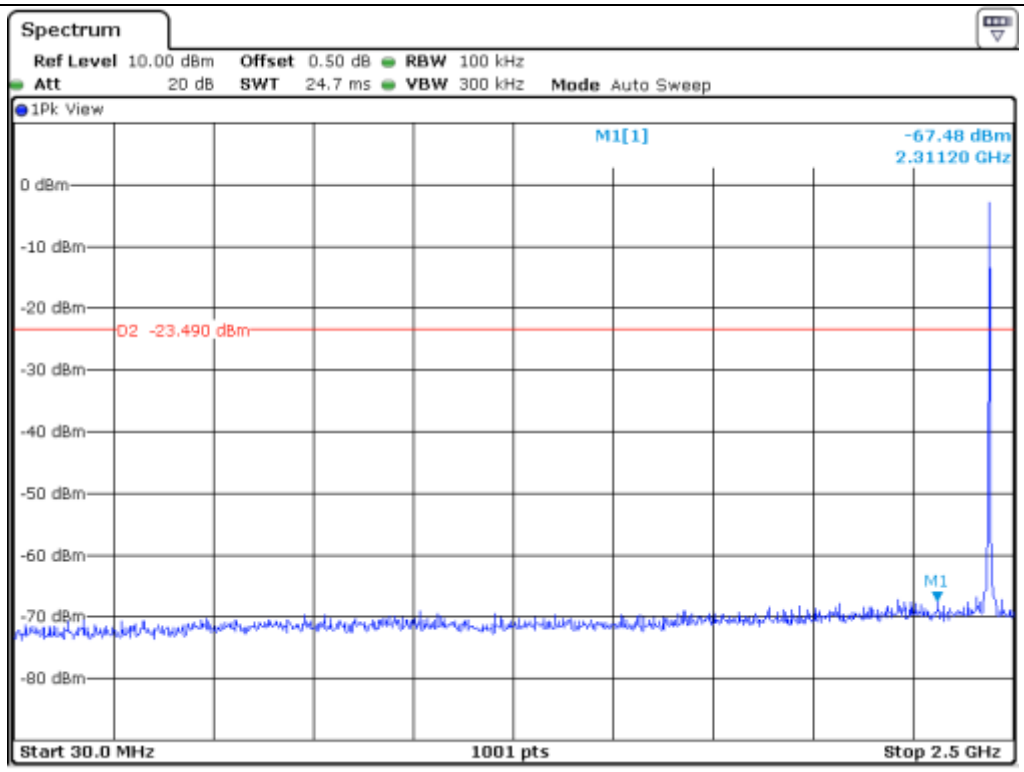


Low Channel

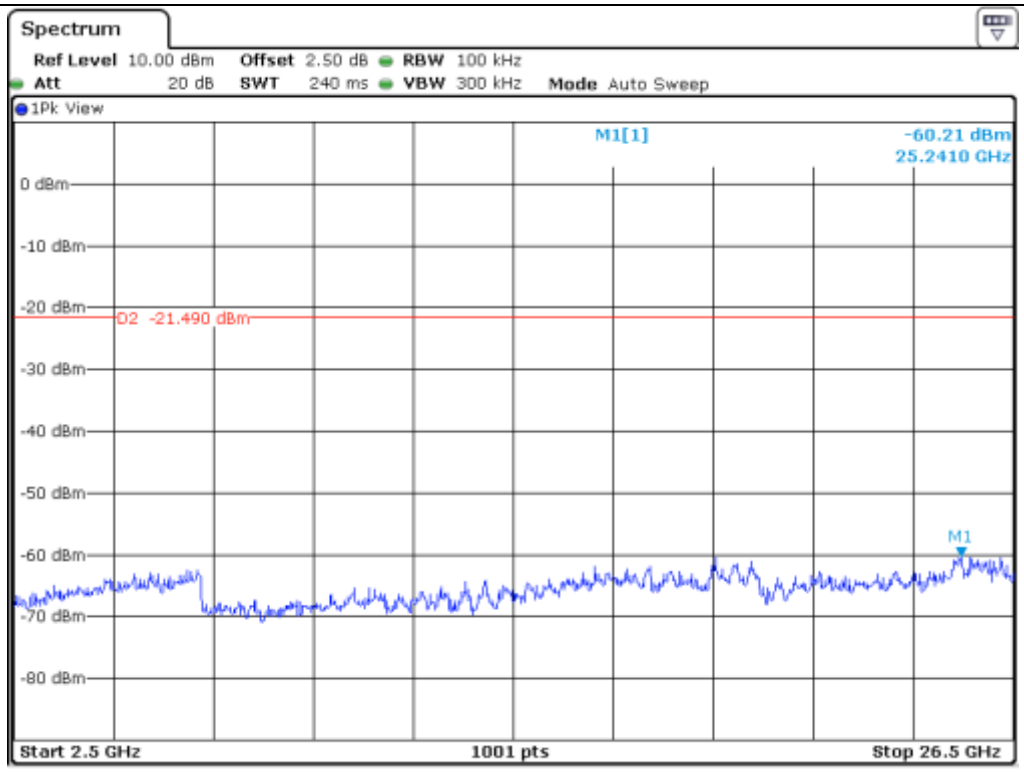


Low Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

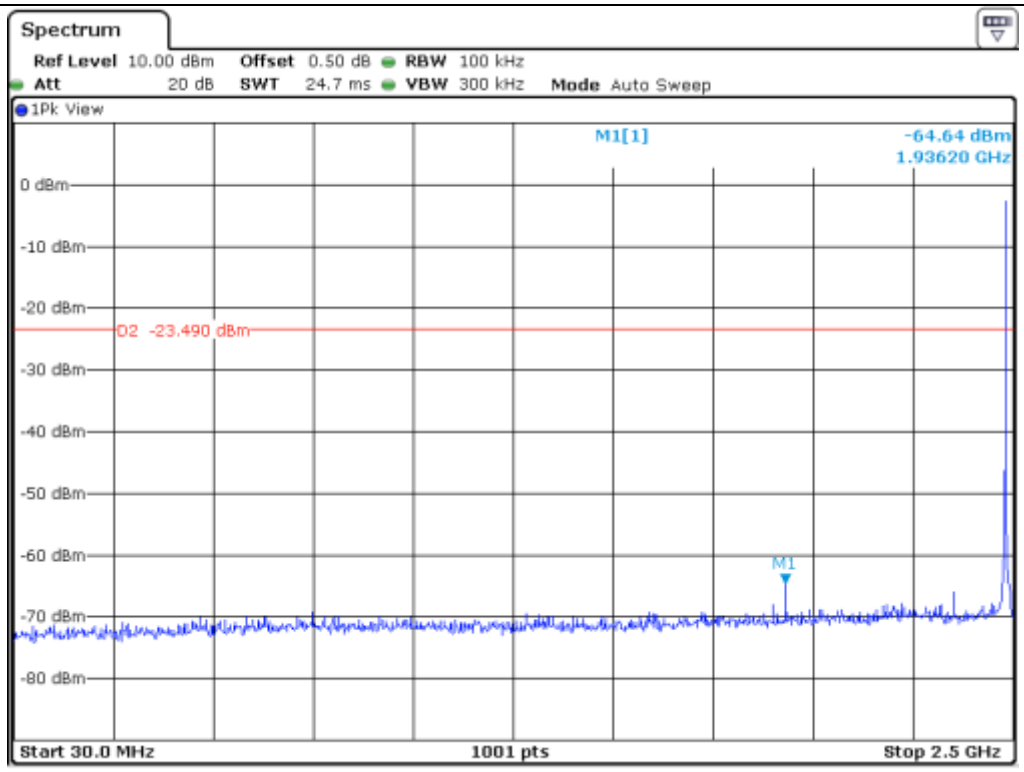


Middle Channel

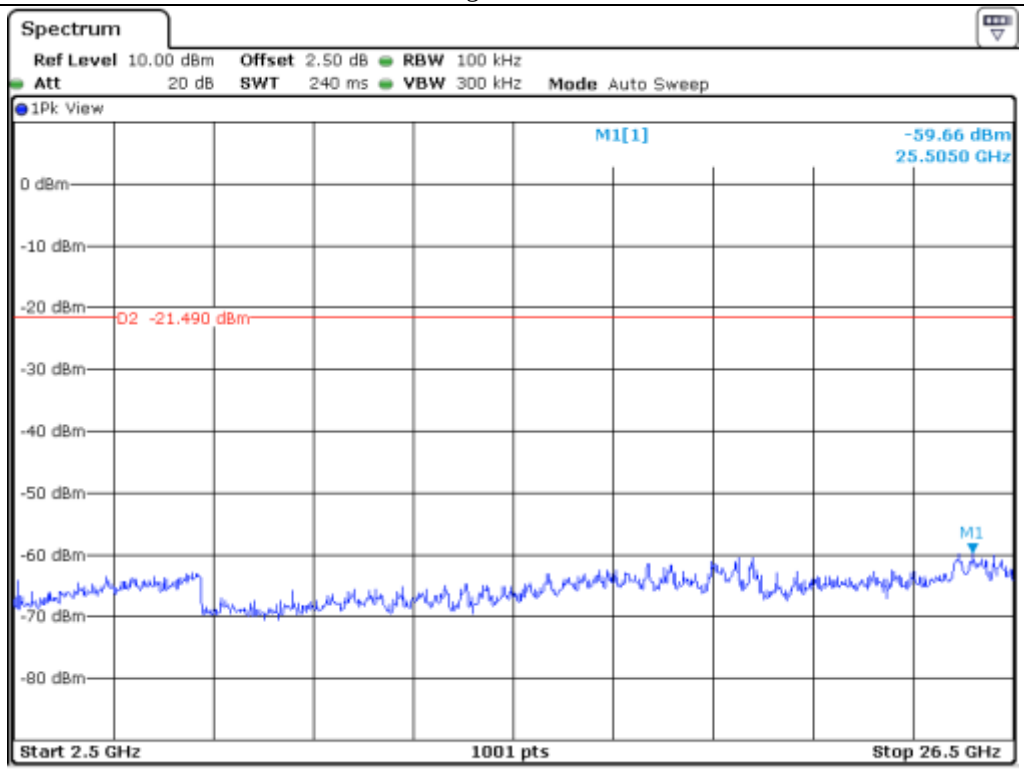


Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



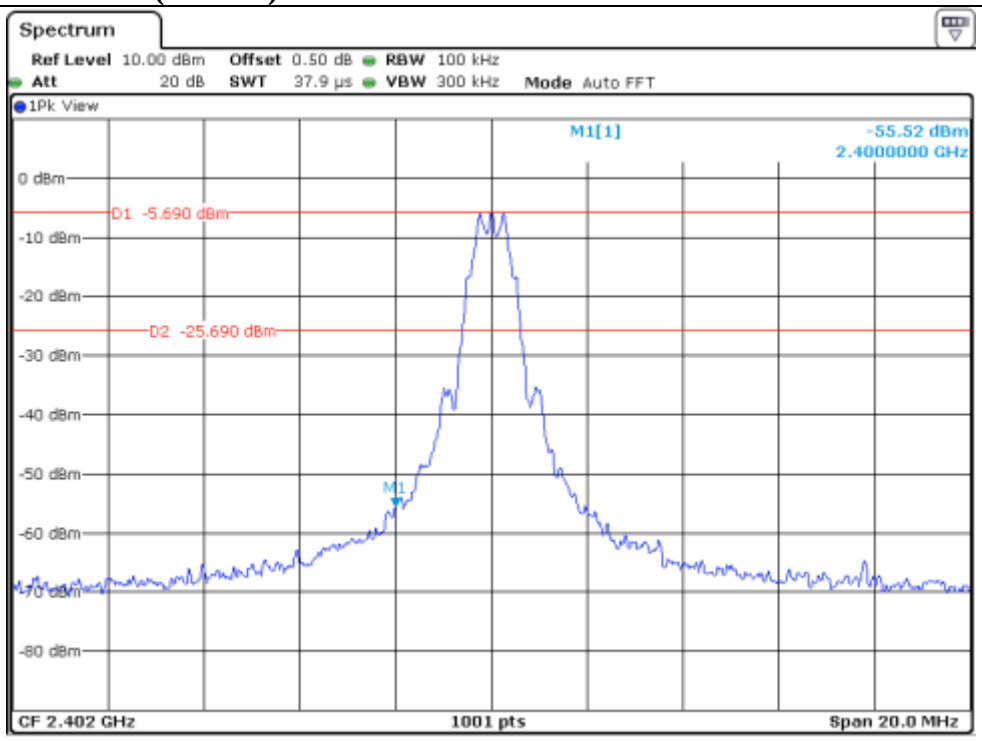
High Channel



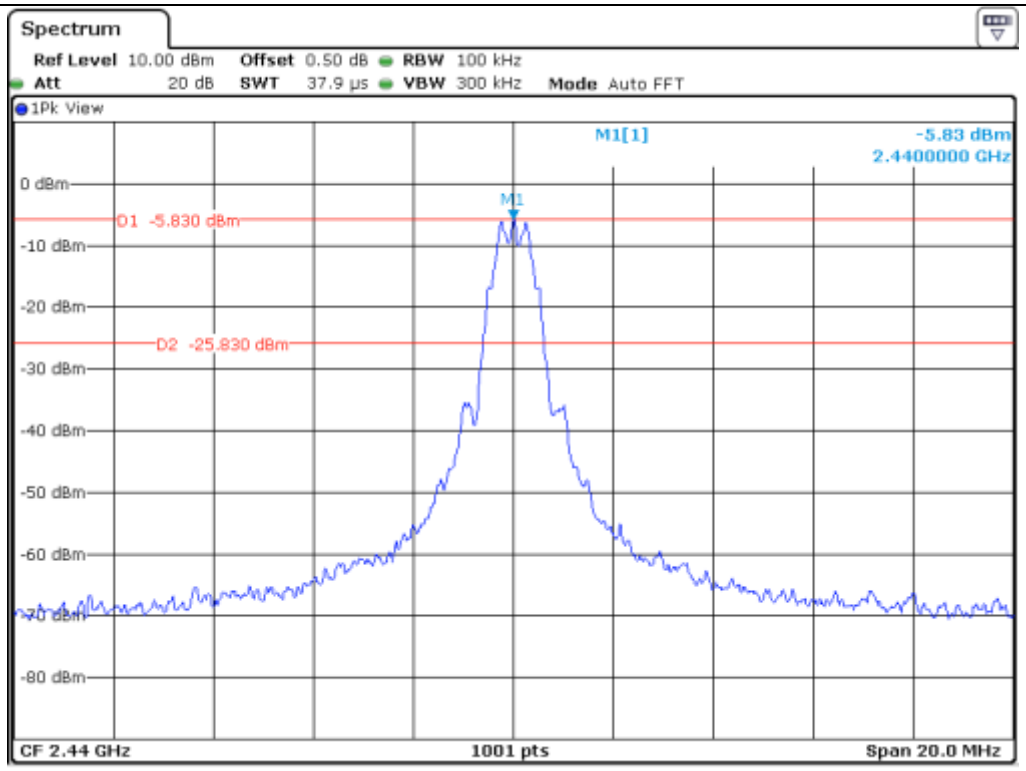
High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.5.3 Test data for Coded (125 kHz)

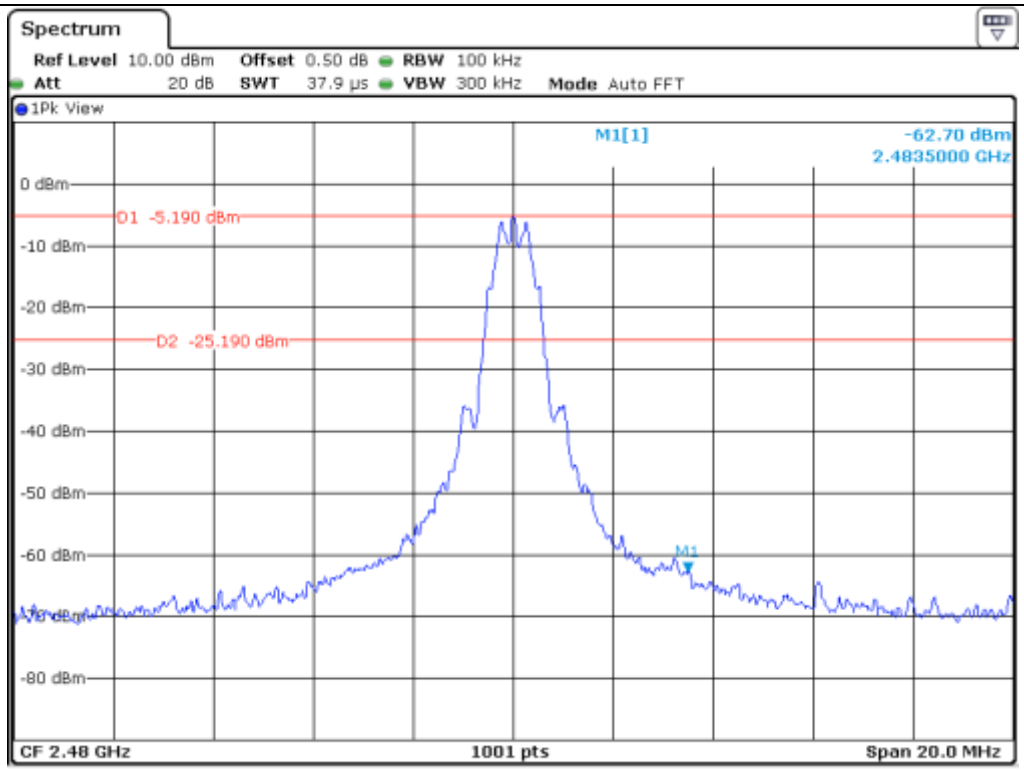


Low Channel



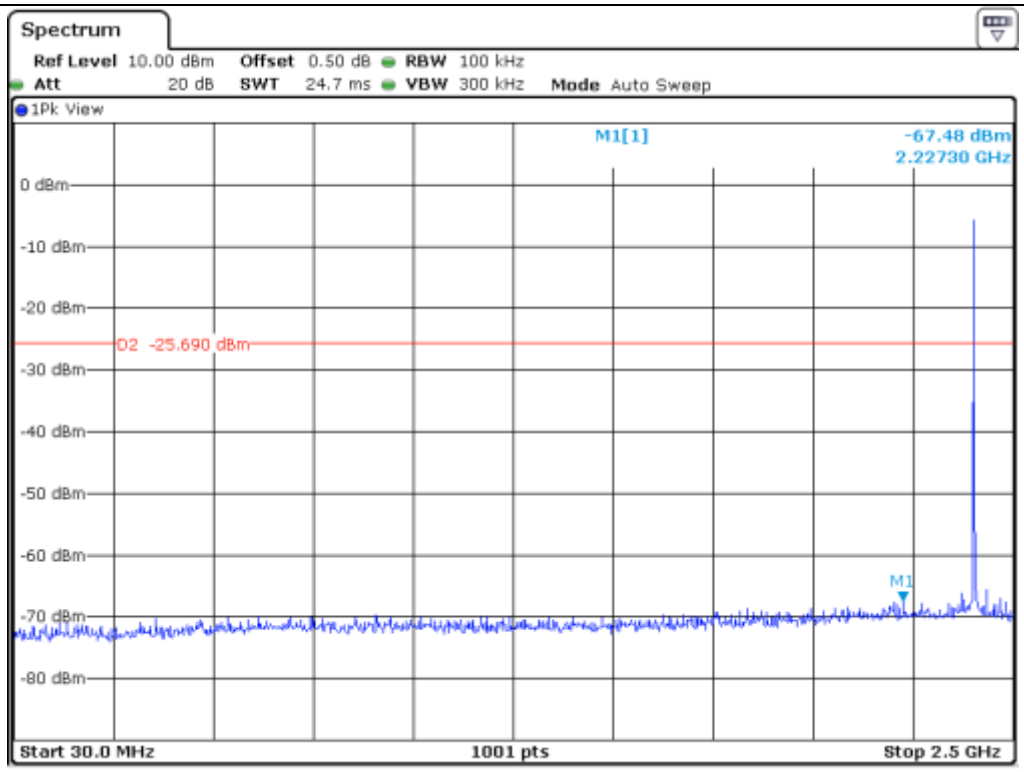
Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

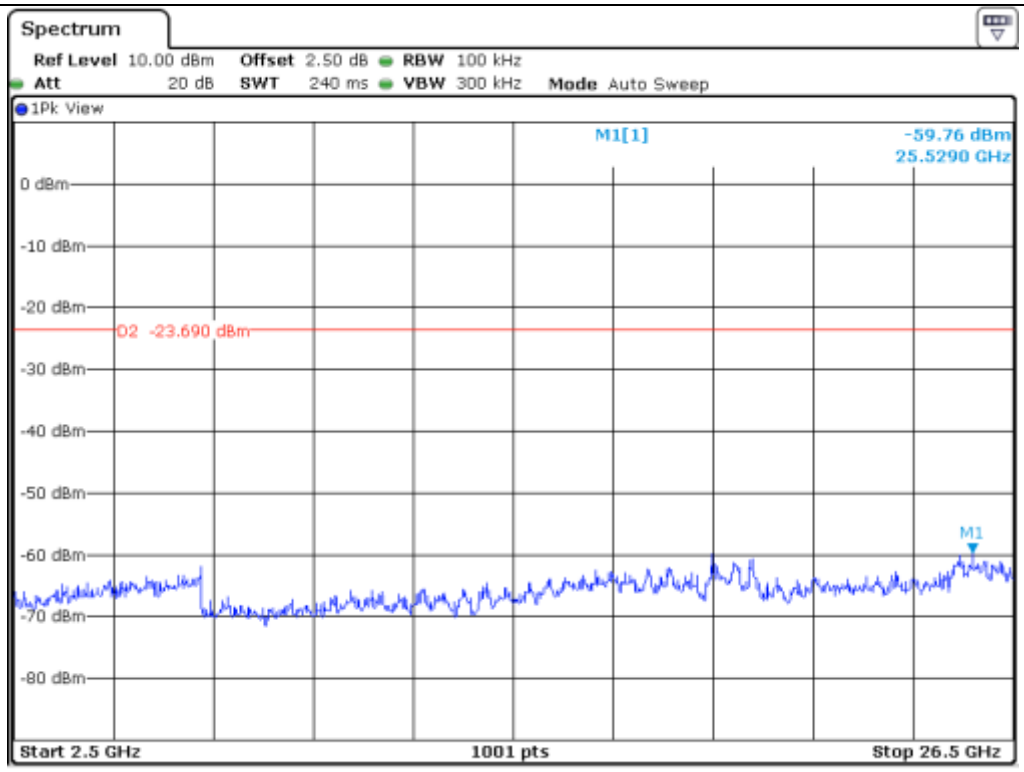


High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

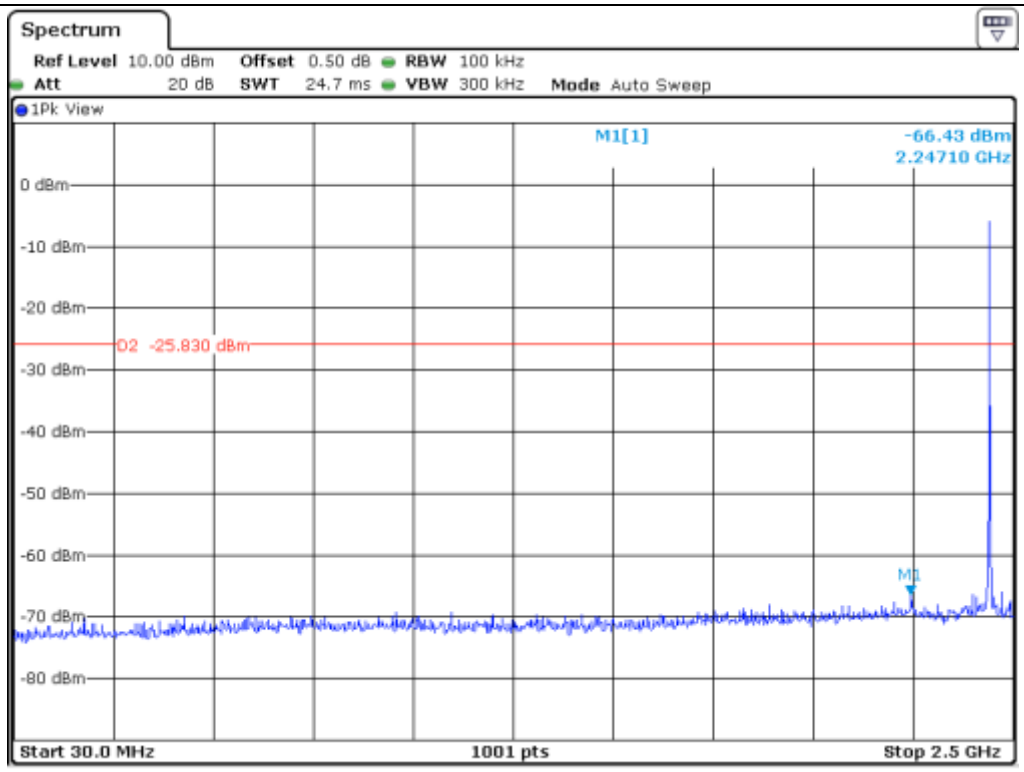


Low Channel

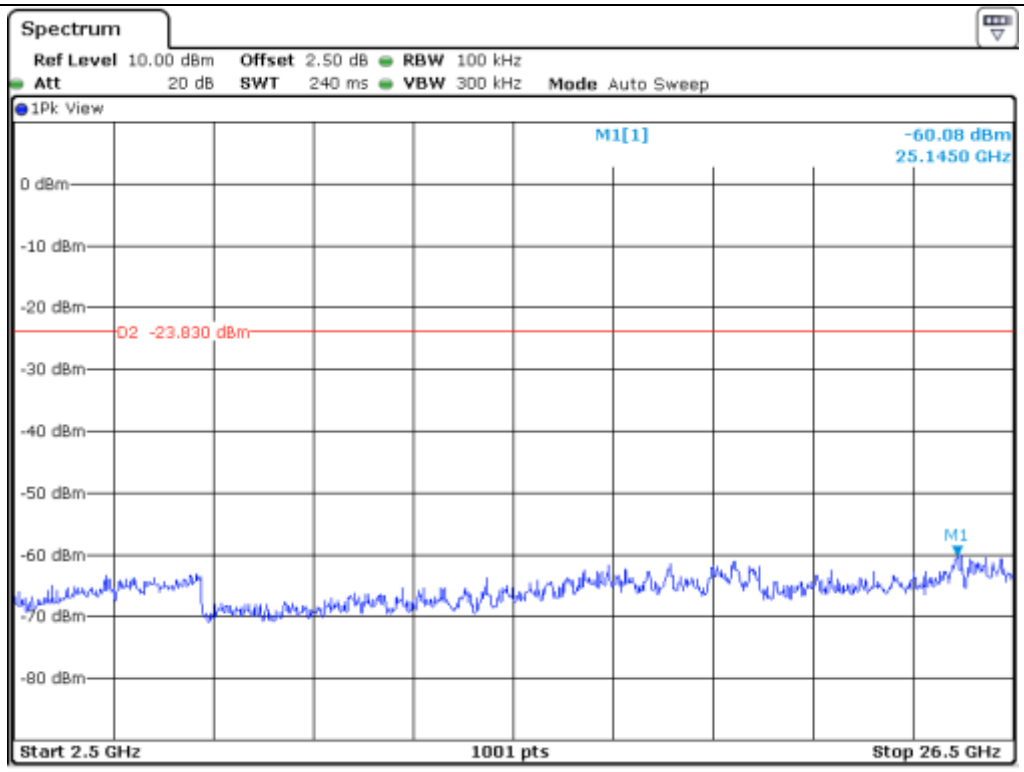


Low Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

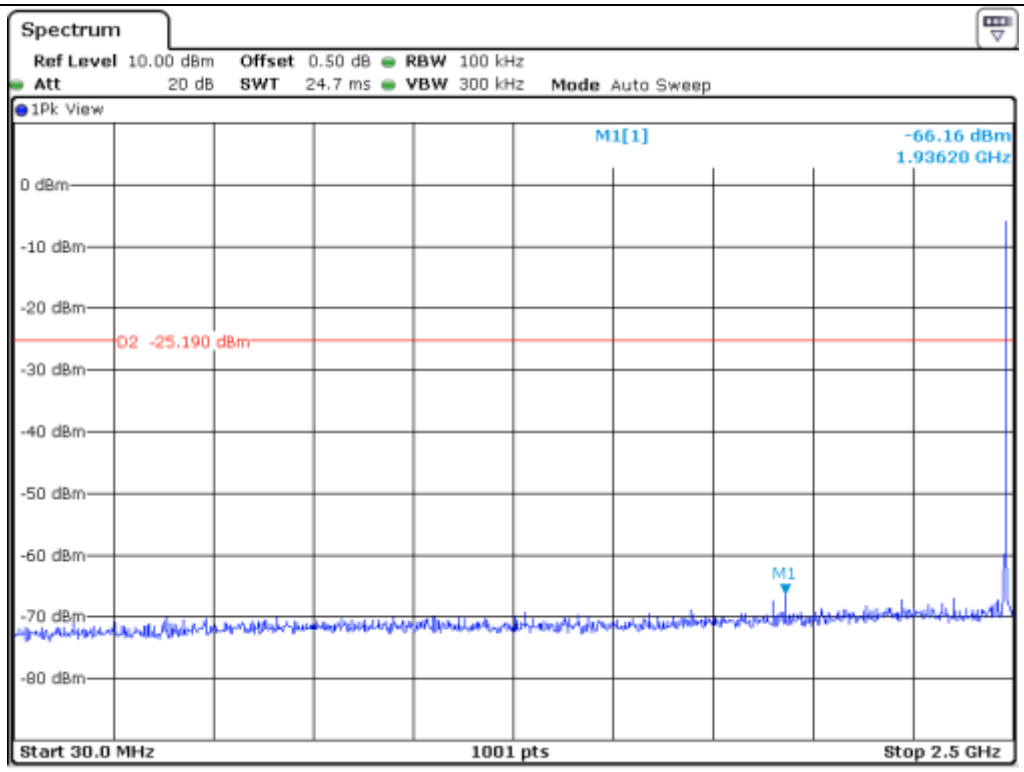


Middle Channel

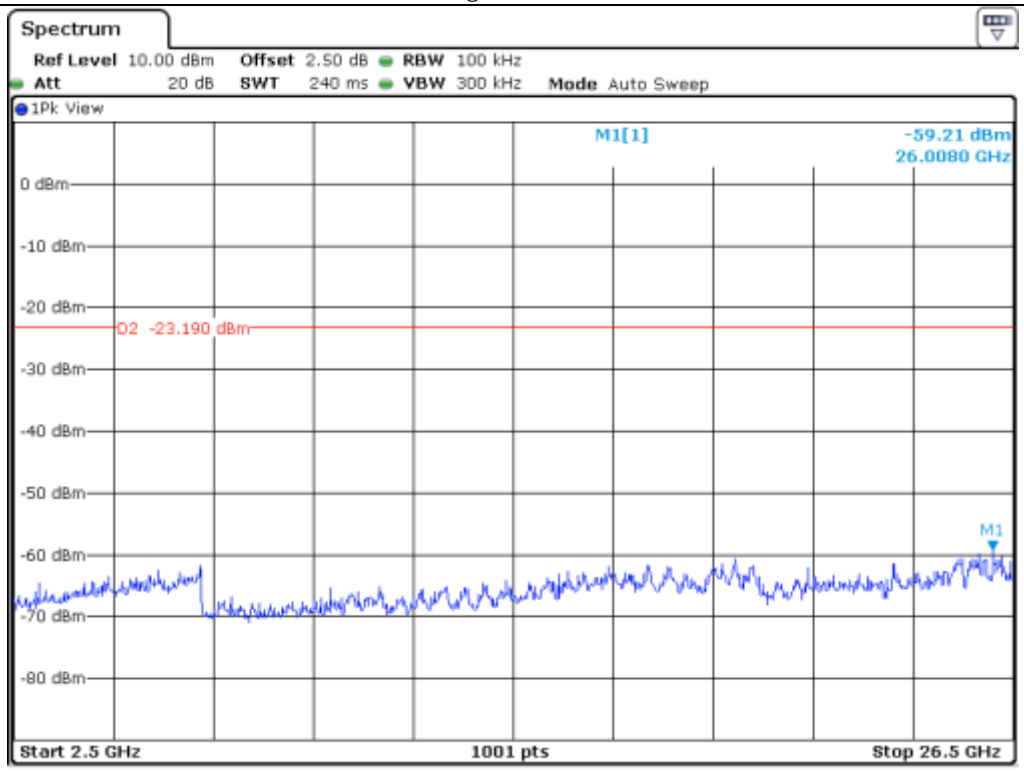


Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



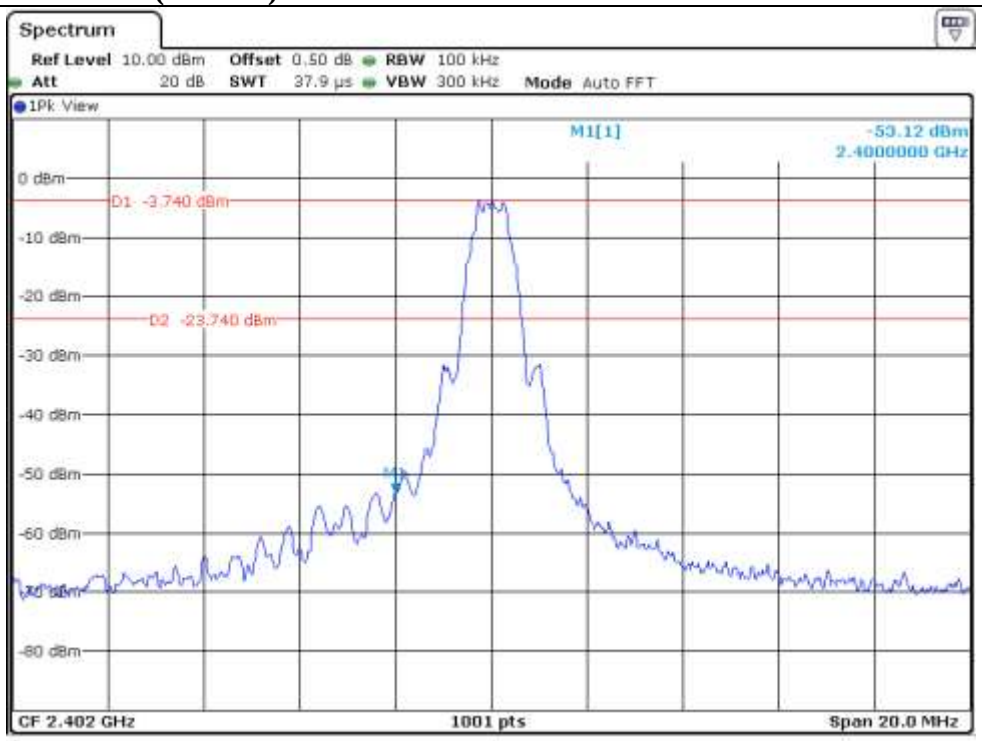
High Channel



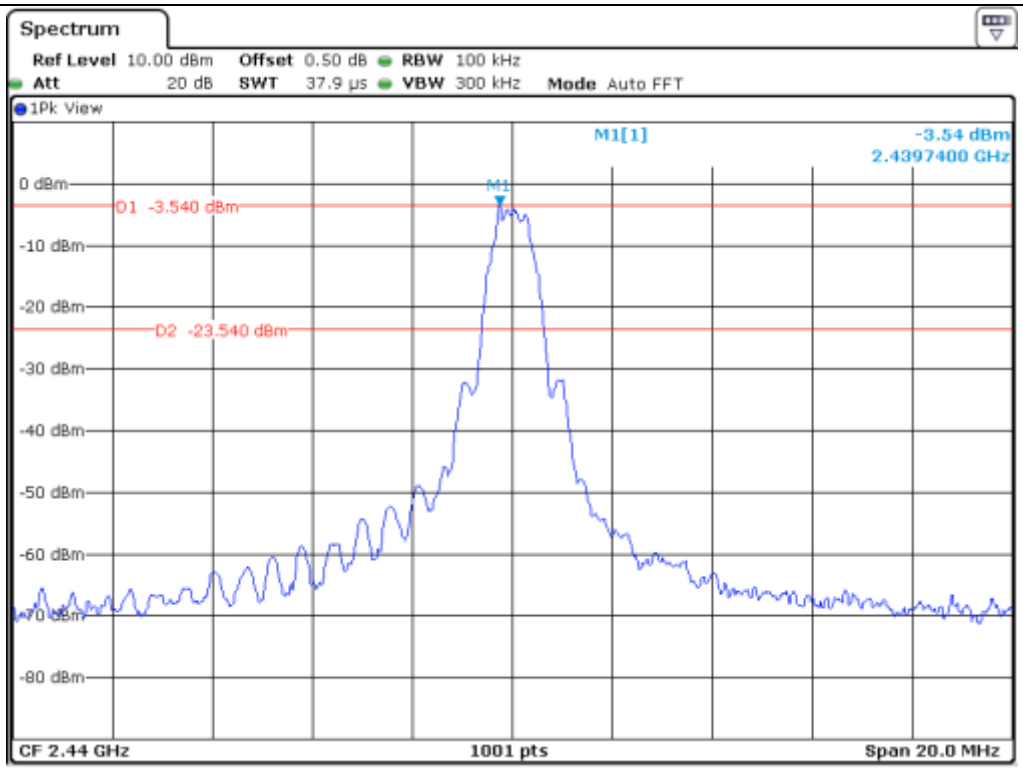
High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.5.4 Test data for Coded (500 kHz)

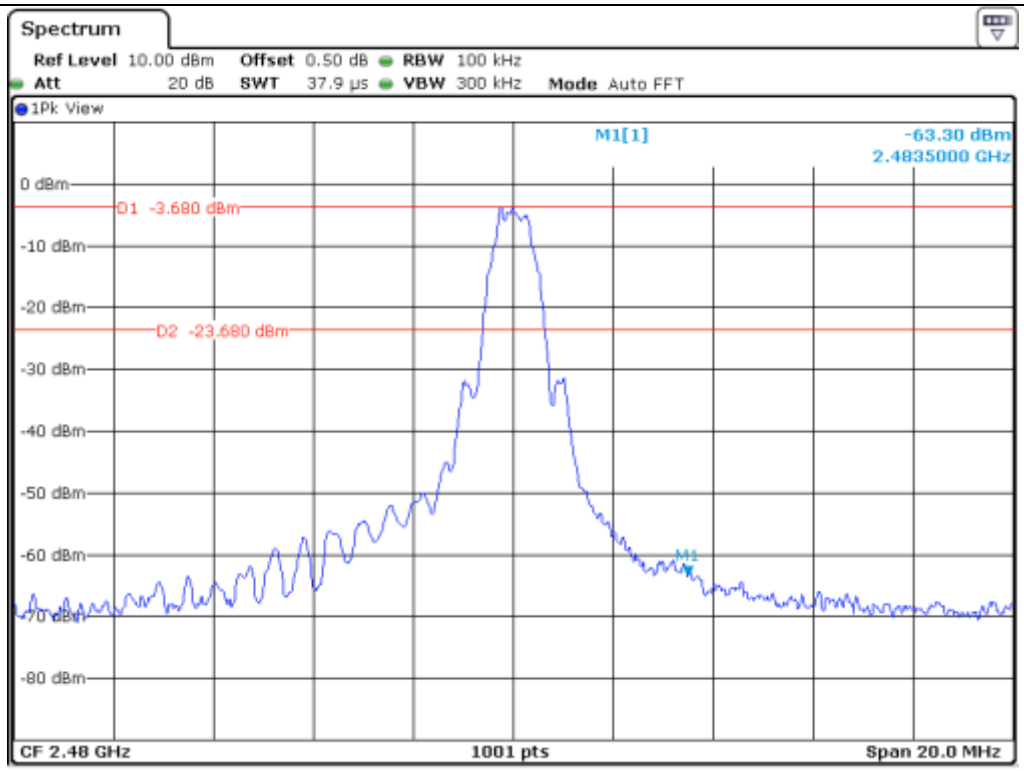


Low Channel



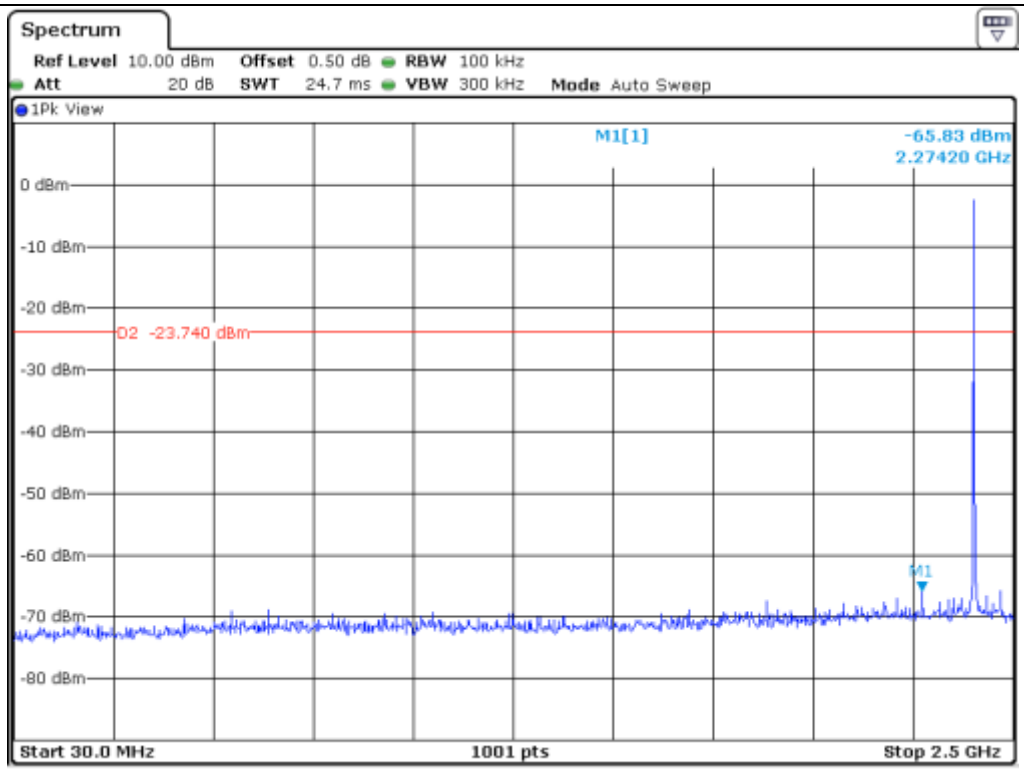
Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

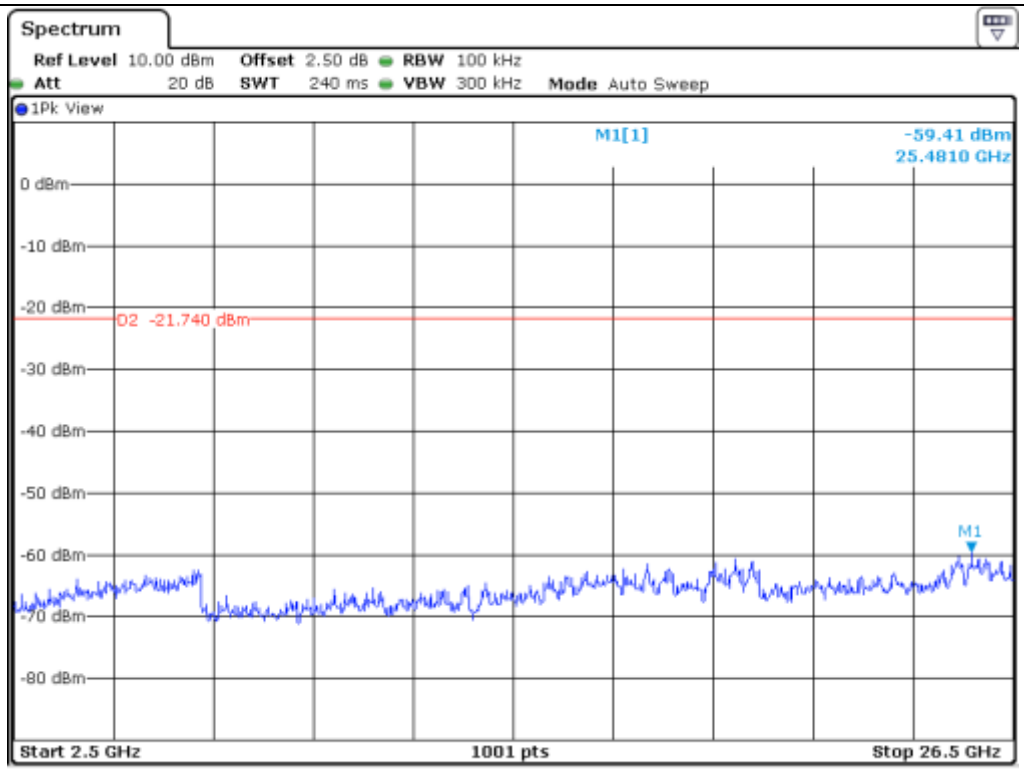


High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

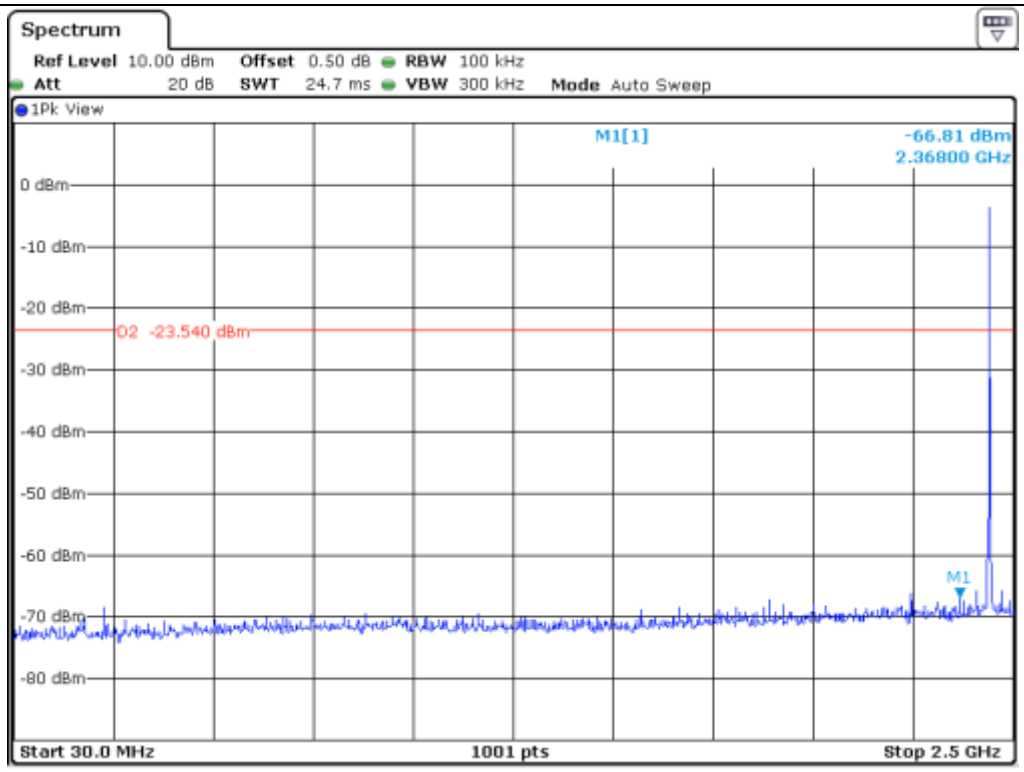


Low Channel

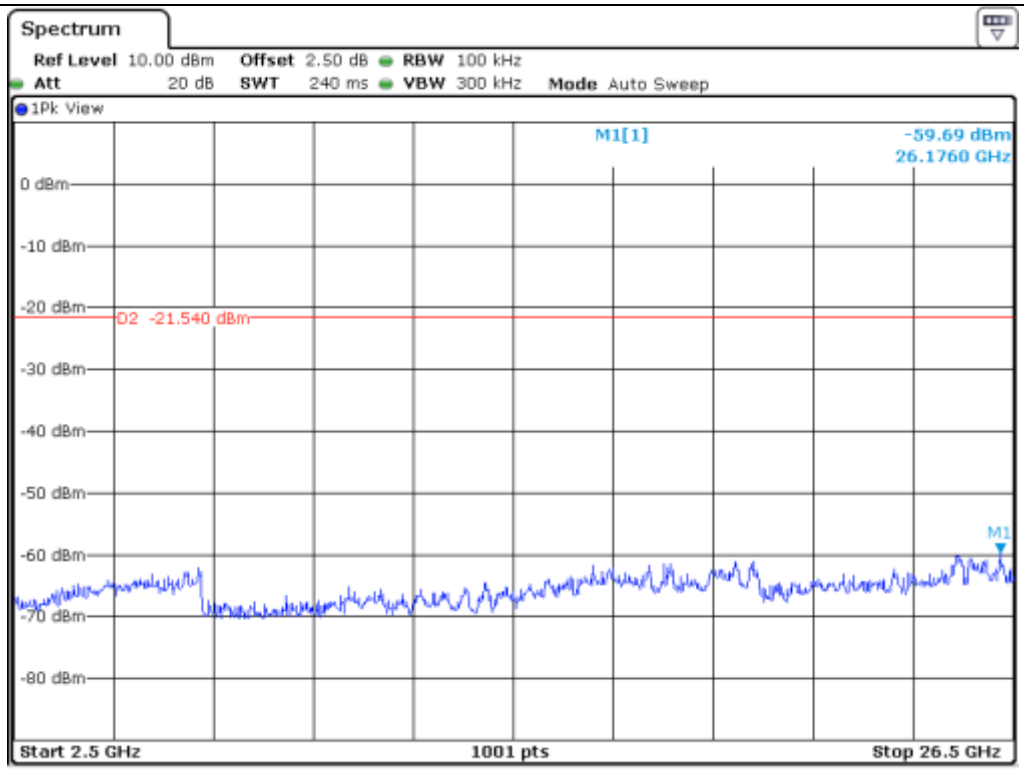


Low Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

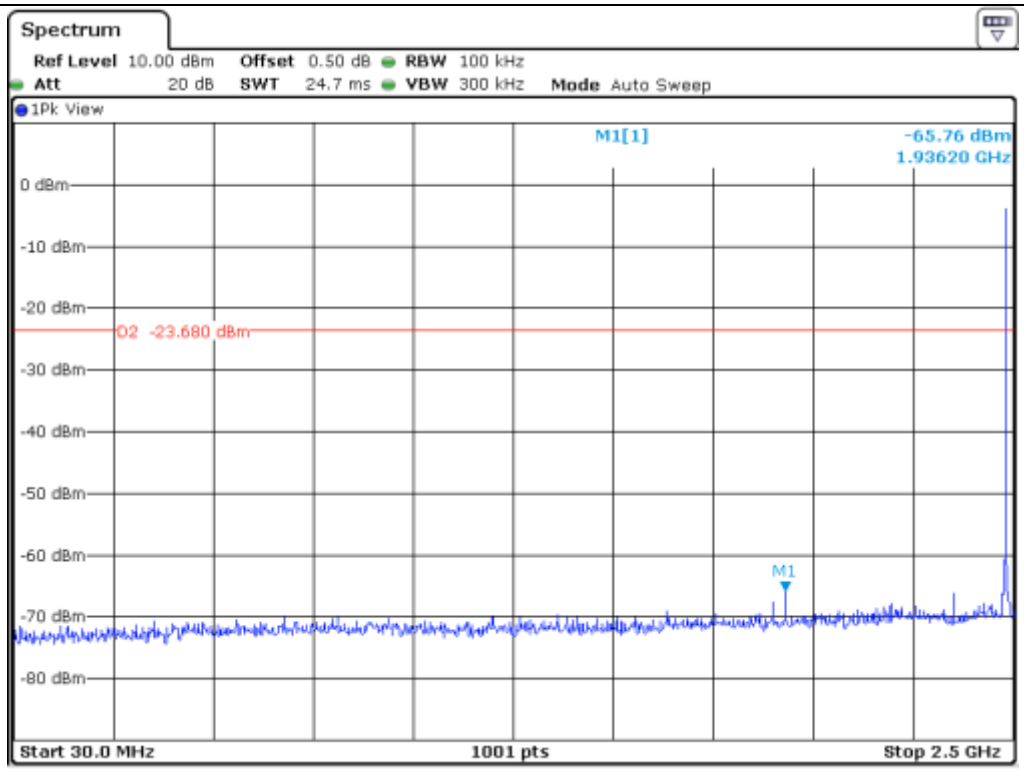


Middle Channel

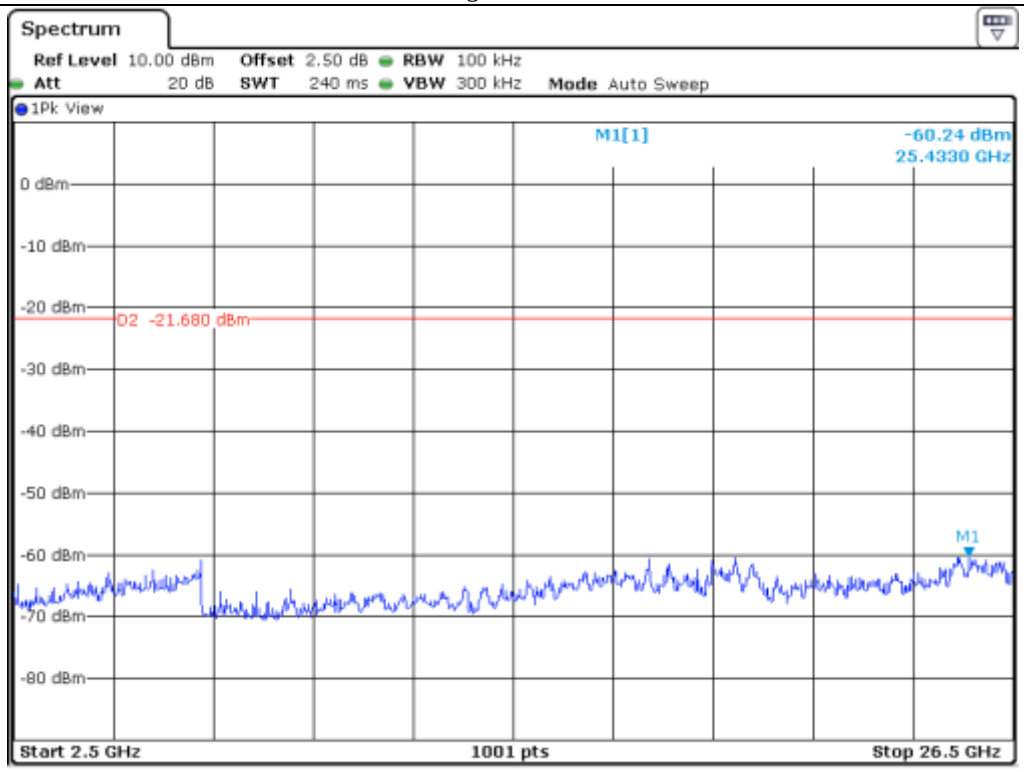


Middle Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6 Test data for radiated emission

9.6.1 Radiated Emission which fall in the Restricted Band

9.6.1.1 Test data for 1 Mbps

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 362.55	14.28	Peak	H	27.90	5.10	-	-	47.28	74.00	26.72
2 389.64	5.19	Average	H				0.70	38.89	54.00	15.11
2 334.34	14.38	Peak	V				-	47.38	74.00	26.62
2 337.37	5.40	Average	V				0.70	39.10	54.00	14.90
Test Data for High Channel										
2 483.51	14.59	Peak	H	28.40	5.20	-	-	48.19	74.00	25.81
2 483.51	4.88	Average	H				0.70	39.18	54.00	14.82
2 483.51	14.01	Peak	V				-	47.61	74.00	26.39
2 483.51	5.34	Average	V				0.70	39.64	54.00	14.36

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.1.2 Test data for 2 Mbps

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 375.97	14.81	Peak	H	27.90	5.10	-	-	47.81	74.00	26.19
2 387.32	5.35	Average	H				2.42	40.77	54.00	13.23
2 356.71	14.95	Peak	V				-	47.95	74.00	26.05
2 337.05	5.24	Average	V				2.42	40.66	54.00	13.34
Test Data for High Channel										
2 483.51	14.55	Peak	H	28.40	5.20	-	-	48.15	74.00	25.85
2 483.51	5.74	Average	H				2.42	41.76	54.00	12.24
2 483.51	17.54	Peak	V				-	51.14	74.00	22.86
2 483.51	6.12	Average	V				2.42	42.14	54.00	11.86

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.1.3 Test data for Coded (125 kHz)

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 362.55	14.46	Peak	H	27.90	5.10	-	-	47.46	74.00	26.54
2 389.64	5.50	Average	H				0.11	38.61	54.00	15.39
2 334.34	14.81	Peak	V				-	47.81	74.00	26.19
2 337.37	5.52	Average	V				0.11	38.63	54.00	15.37
Test Data for High Channel										
2 483.51	14.56	Peak	H	28.40	5.20	-	-	48.16	74.00	25.84
2 483.51	5.26	Average	H				0.11	38.97	54.00	15.03
2 483.51	14.61	Peak	V				-	48.21	74.00	25.79
2 483.51	5.43	Average	V				0.11	39.14	54.00	14.86

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.1.4 Test data for Coded (500 kHz)

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 375.97	14.39	Peak	H	27.90	5.10	-	-	47.39	74.00	26.61
2 387.32	5.01	Average	H				0.40	38.41	54.00	15.59
2 356.71	14.83	Peak	V				-	47.83	74.00	26.17
2 337.05	5.14	Average	V				0.40	38.54	54.00	15.46
Test Data for High Channel										
2 483.51	14.22	Peak	H	28.40	5.20	-	-	47.82	74.00	26.18
2 483.51	5.81	Average	H				0.40	39.81	54.00	14.19
2 483.51	14.79	Peak	V				-	48.39	74.00	25.61
2 483.51	5.15	Average	V				0.40	39.15	54.00	14.85

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.2 Spurious & Harmonic Radiated Emission

9.6.2.1 Test data for 1 Mbps

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	16.30	Peak	H	32.90	7.10	-	-	56.30	74.00	17.70
	6.81	Average	H				0.70	47.51	54.00	6.49
	16.15	Peak	V				-	56.15	74.00	17.85
	6.58	Average	V				0.70	47.28	54.00	6.72
Test Data for Middle Channel										
4 880.00	16.03	Peak	H	33.10	7.10	-	-	56.23	74.00	17.77
	6.39	Average	H				0.70	47.29	54.00	6.71
	16.16	Peak	V				-	56.36	74.00	17.64
	6.40	Average	V				0.70	47.30	54.00	6.70
Test Data for High Channel										
4 960.00	16.50	Peak	H	33.10	7.00	-	-	56.60	74.00	17.40
	6.47	Average	H				0.70	47.27	54.00	6.73
	16.79	Peak	V				-	56.89	74.00	17.11
	6.91	Average	V				0.70	47.71	54.00	6.29

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.2.2 Test data for 2 Mbps

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	16.83	Peak	H	32.90	7.10	-	-	56.83	74.00	17.17
	6.89	Average	H				2.42	49.31	54.00	4.69
	16.46	Peak	V				-	56.46	74.00	17.54
	6.37	Average	V				2.42	48.79	54.00	5.21
Test Data for Middle Channel										
4 880.00	16.85	Peak	H	33.10	7.10	-	-	57.05	74.00	16.95
	6.48	Average	H				2.42	49.10	54.00	4.90
	16.71	Peak	V				-	56.91	74.00	17.09
	6.44	Average	V				2.42	49.06	54.00	4.94
Test Data for High Channel										
4 960.00	16.74	Peak	H	33.10	7.00	-	-	56.84	74.00	17.16
	7.01	Average	H				2.42	49.53	54.00	4.47
	16.93	Peak	V				-	57.03	74.00	16.97
	7.18	Average	V				2.42	49.70	54.00	4.30

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.2.3 Test data for Coded (125 kHz)

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	16.24	Peak	H	32.90	7.10	-	-	56.24	74.00	17.76
	6.15	Average	H				0.11	46.26	54.00	7.74
	16.20	Peak	V				-	56.20	74.00	17.80
	6.58	Average	V				0.11	46.69	54.00	7.31
Test Data for Middle Channel										
4 880.00	16.13	Peak	H	33.10	7.10	-	-	56.33	74.00	17.67
	6.78	Average	H				0.11	47.09	54.00	6.91
	16.35	Peak	V				-	56.55	74.00	17.45
	6.46	Average	V				0.11	46.77	54.00	7.23
Test Data for High Channel										
4 960.00	16.75	Peak	H	33.10	7.00	-	-	56.85	74.00	17.15
	6.96	Average	H				0.11	47.17	54.00	6.83
	16.69	Peak	V				-	56.79	74.00	17.21
	6.82	Average	V				0.11	47.03	54.00	6.97

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

9.6.2.4 Test data for Coded (500 kHz)

-. Test Date : February 13, 2020 ~ February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Detector : Peak Mode(Peak), Average Mode(RMS)

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	C.F (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	16.32	Peak	H	32.90	7.10	-		56.32	74.00	17.68
	6.36	Average	H				0.40	46.76	54.00	7.24
	16.65	Peak	V					56.65	74.00	17.35
	6.53	Average	V				0.40	46.93	54.00	7.07
Test Data for Middle Channel										
4 880.00	16.49	Peak	H	33.10	7.10	-		56.69	74.00	17.31
	7.06	Average	H				0.40	47.66	54.00	6.34
	16.39	Peak	V					56.59	74.00	17.41
	6.62	Average	V				0.40	47.22	54.00	6.78
Test Data for High Channel										
4 960.00	16.51	Peak	H	33.10	7.00	-		56.61	74.00	17.39
	6.76	Average	H				0.40	47.26	54.00	6.74
	16.89	Peak	V					56.99	74.00	17.01
	7.41	Average	V				0.40	47.91	54.00	6.09

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Amp Gain + Correction Factor

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

10. PEAK POWER SPECTRAL DENSITY

10.1 Operating environment

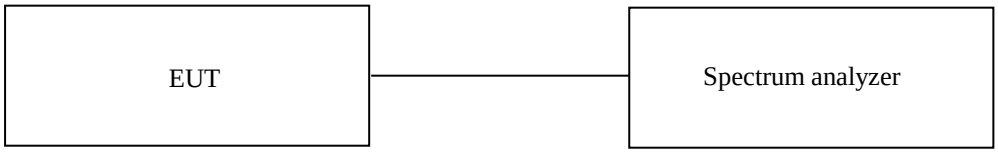
Temperature : 24 ℃

Relative humidity : 48 % R.H.

10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to 3 kHz ≤ RBW ≤100 kHz , the video bandwidth is set to 3 times the resolution bandwidth.



10.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	Mar. 11, 2019 (1Y)

All test equipment used is calibrated on a regular basis.

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10.4 Test data

10.4.1 Test data for 1 Mbps

-. Test Date : February 11, 2020 ~ February 12, 2020

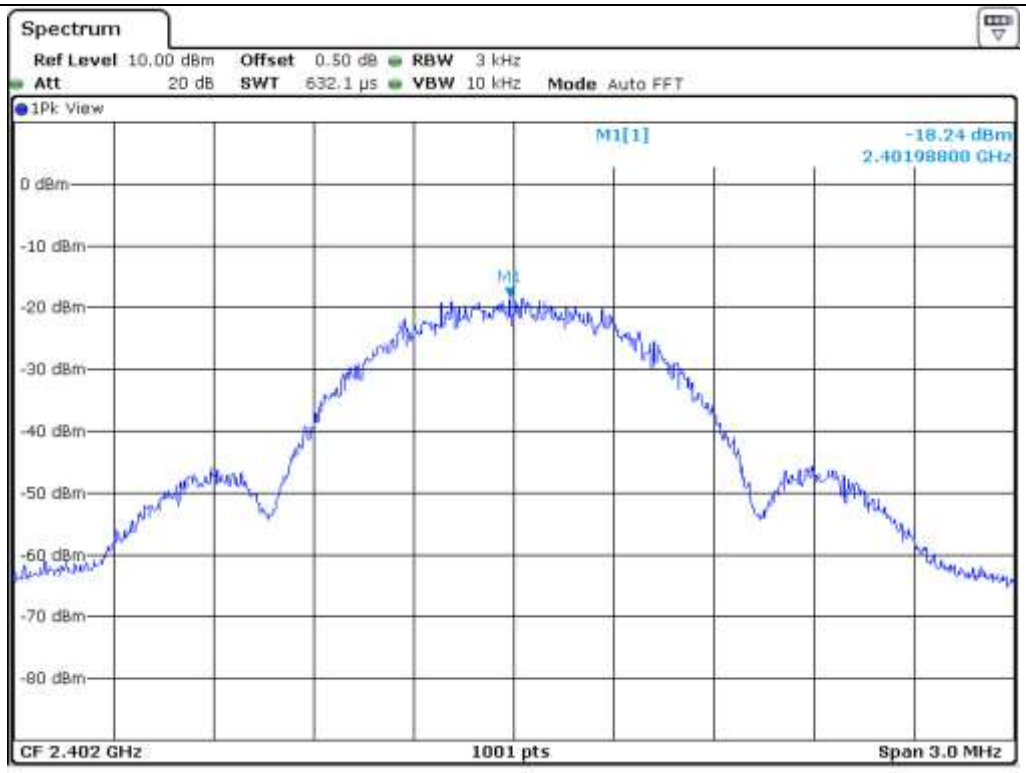
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-18.24	8.00	26.24
Middle	2 440.00	-18.27	8.00	26.27
High	2 480.00	-18.43	8.00	26.43

Remark. Margin = Limit – Measured value

Tested by: Ha-Ram Lee / Manager



Low Channel

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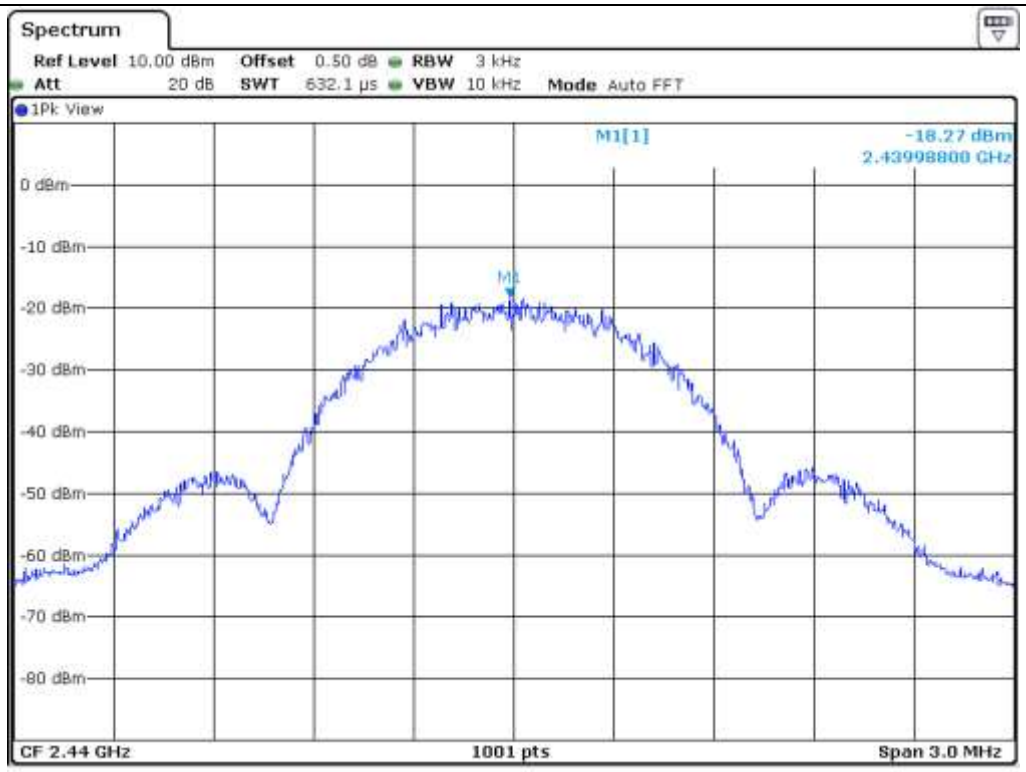
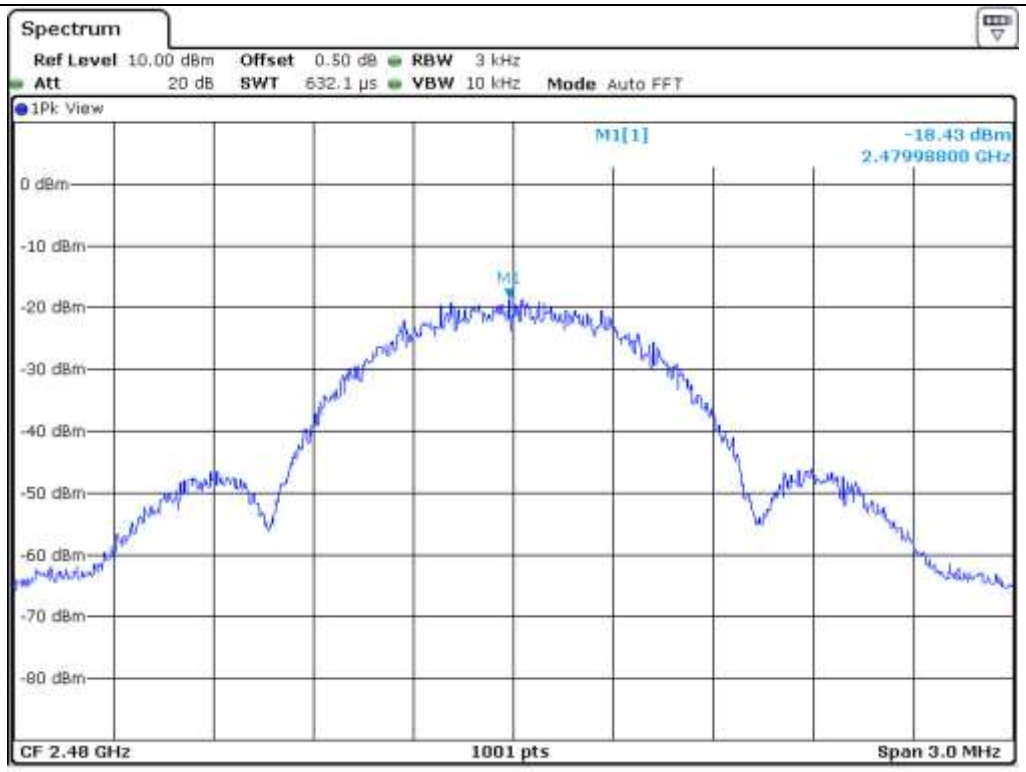


Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

10.4.2 Test data for 2 Mbps

-. Test Date : February 11, 2020 ~ February 12, 2020

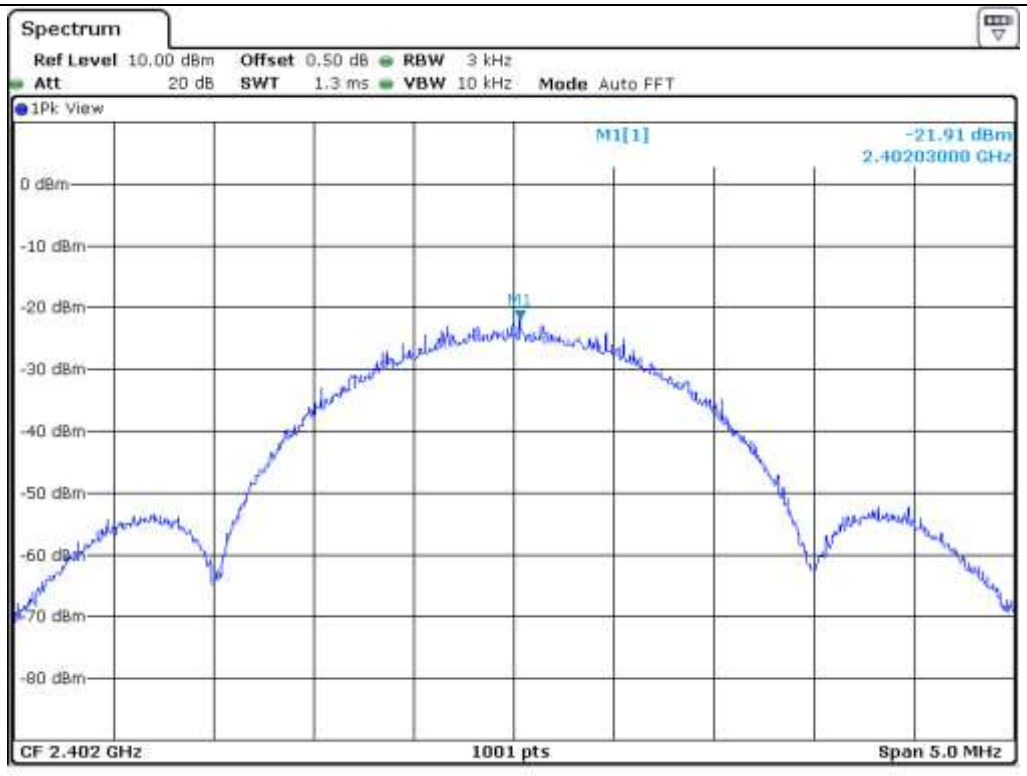
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-21.91	8.00	29.91
Middle	2 440.00	-22.11	8.00	30.11
High	2 480.00	-22.46	8.00	30.46

Remark. Margin = Limit – Measured value

Tested by: Ha-Ram Lee / Manager



Low Channel

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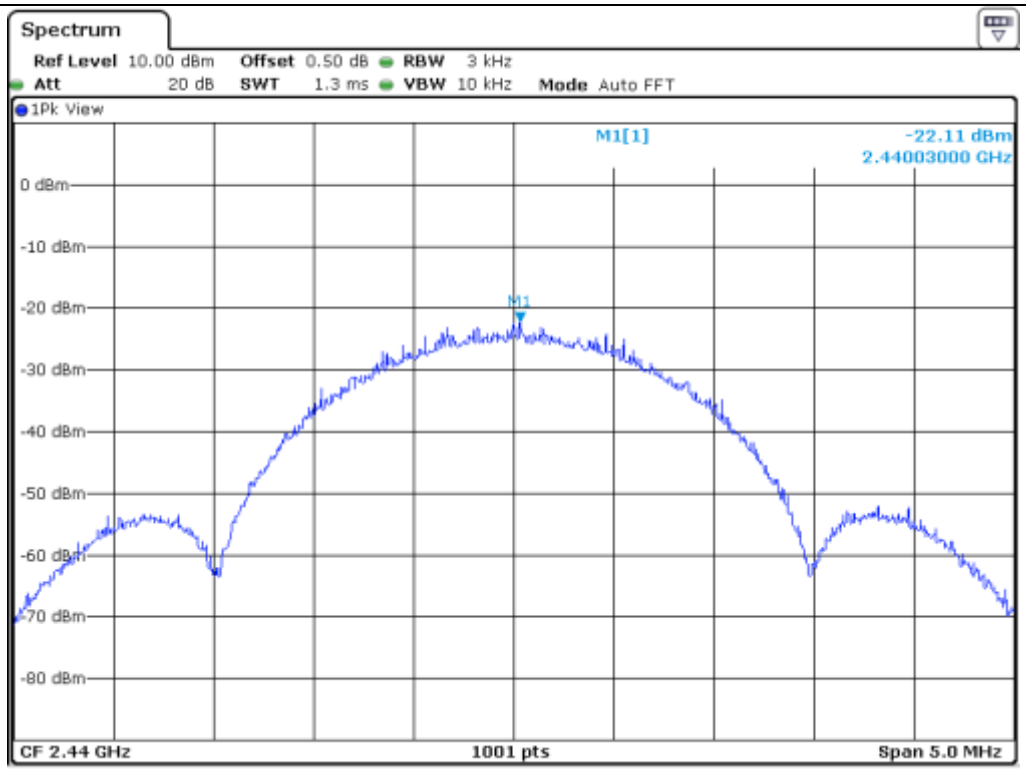
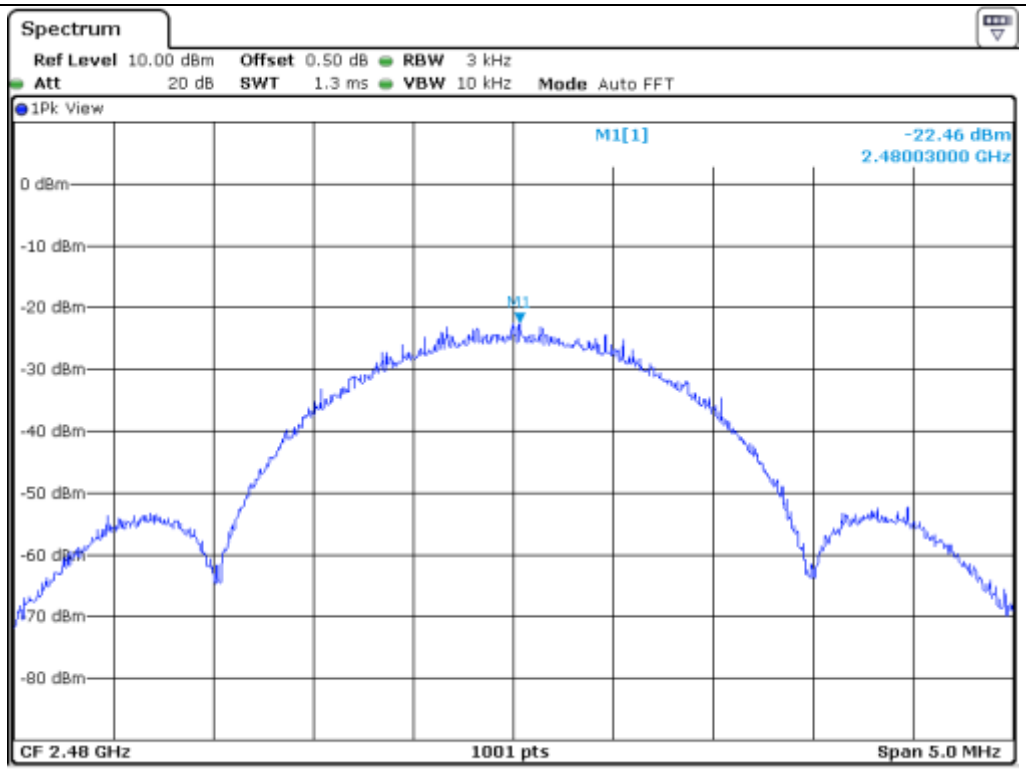


Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

10.4.3 Test data for Coded (125 kHz)

-. Test Date : February 11, 2020 ~ February 12, 2020

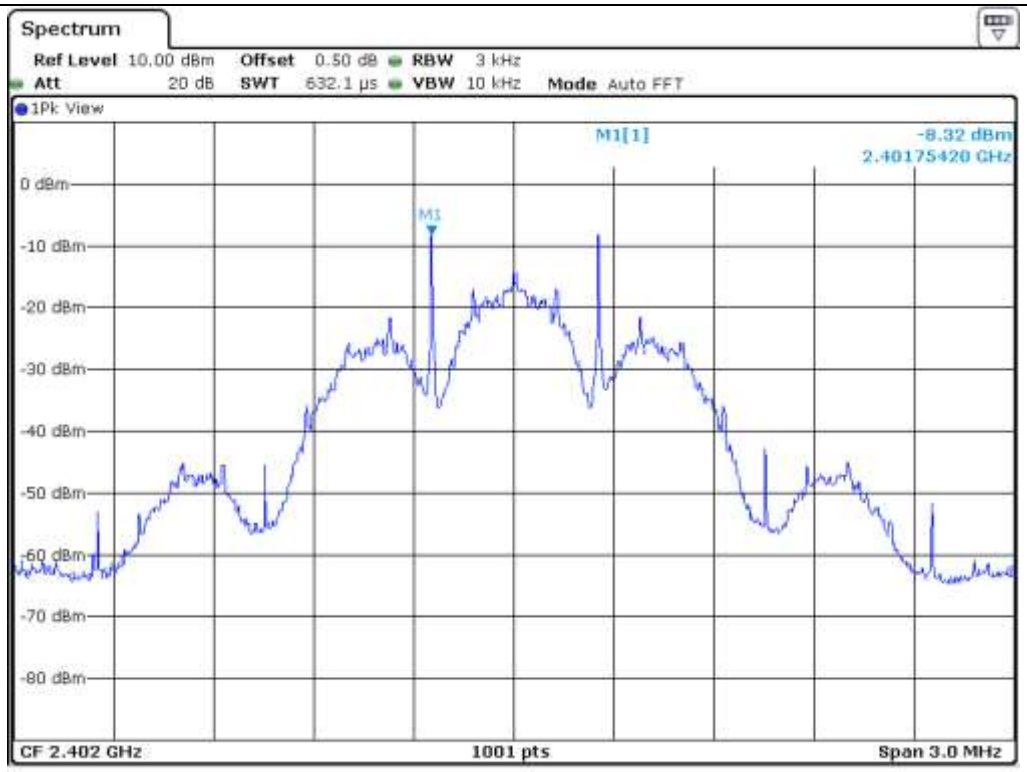
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

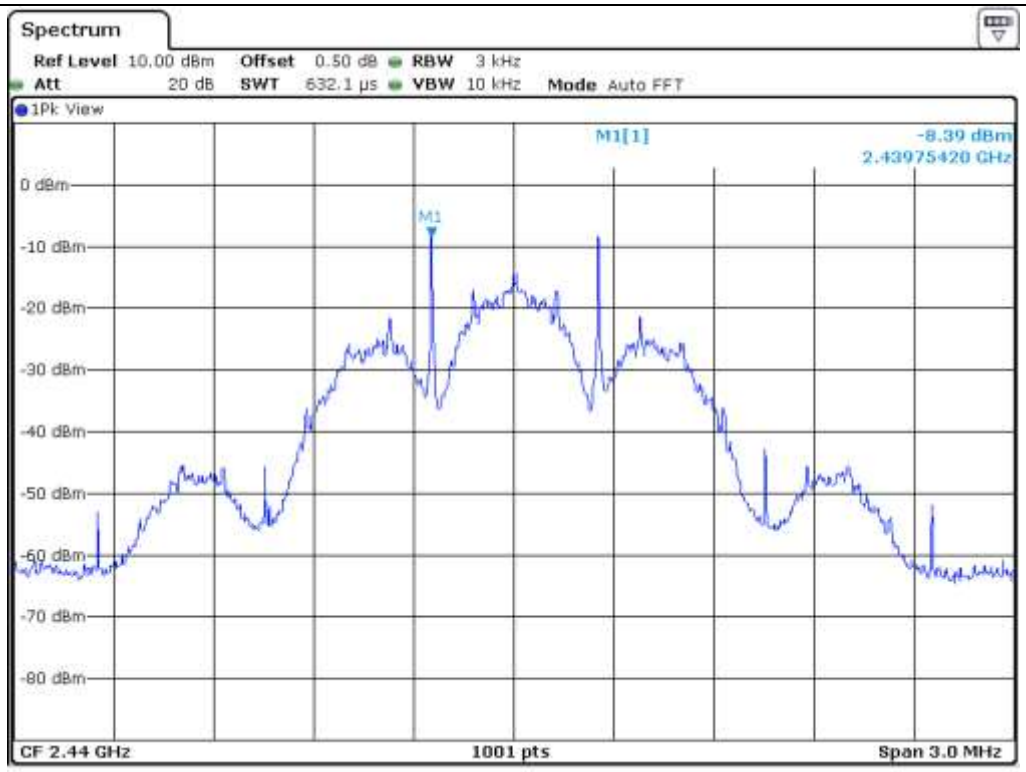
CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-8.32	8.00	16.32
Middle	2 440.00	-8.39	8.00	16.39
High	2 480.00	-8.50	8.00	16.50

Remark. Margin = Limit – Measured value

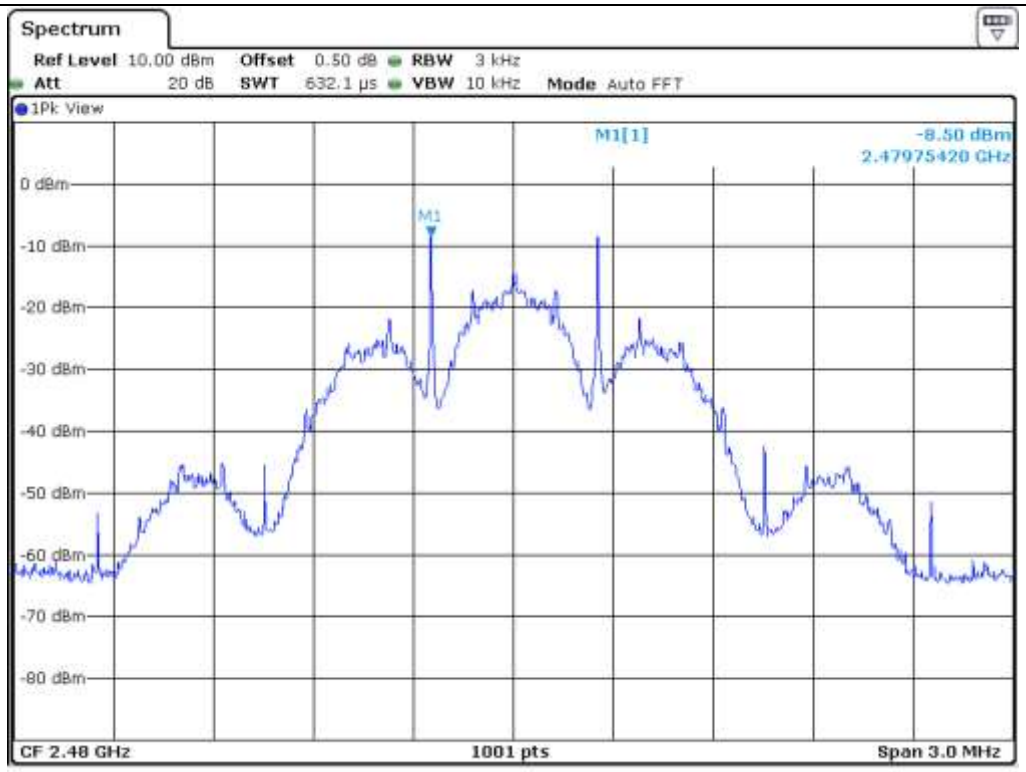
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

10.4.4 Test data for Coded (500 kHz)

-. Test Date : February 11, 2020 ~ February 12, 2020

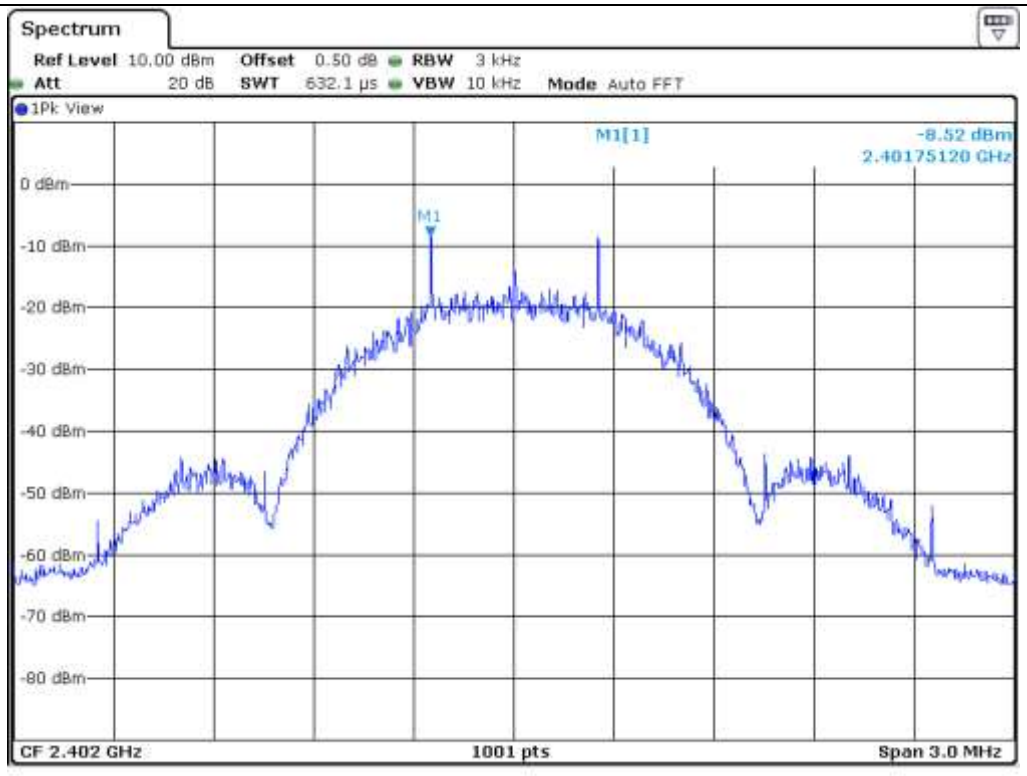
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

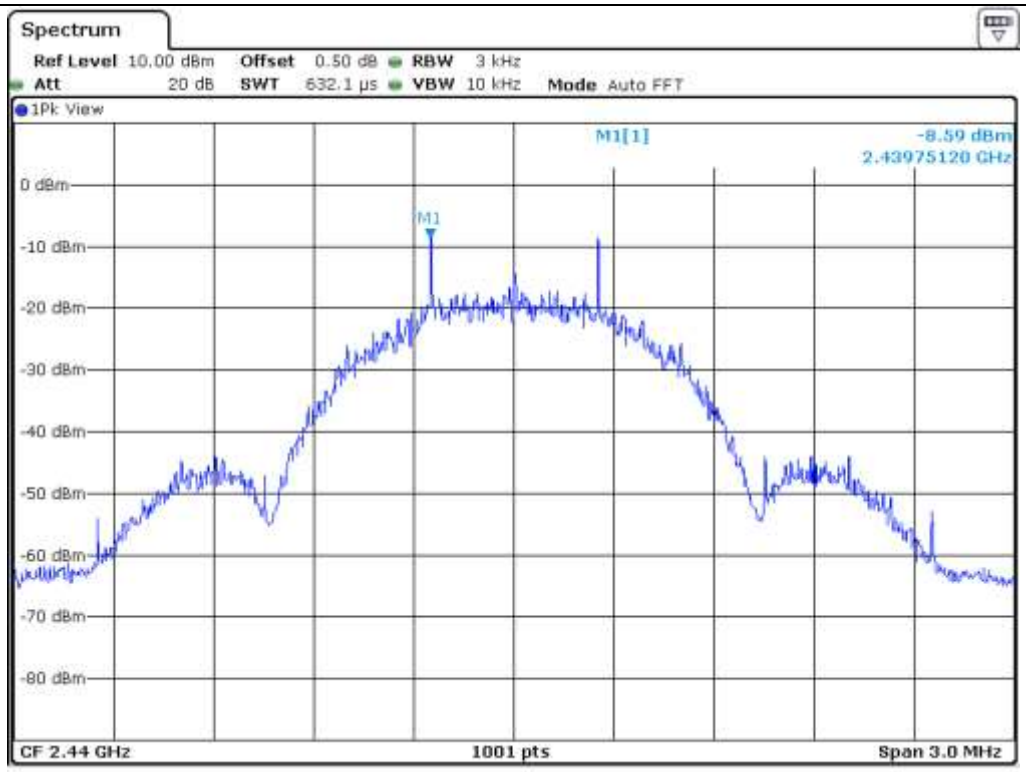
CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-8.52	8.00	16.52
Middle	2 440.00	-8.59	8.00	16.59
High	2 480.00	-8.68	8.00	16.68

Remark. Margin = Limit – Measured value

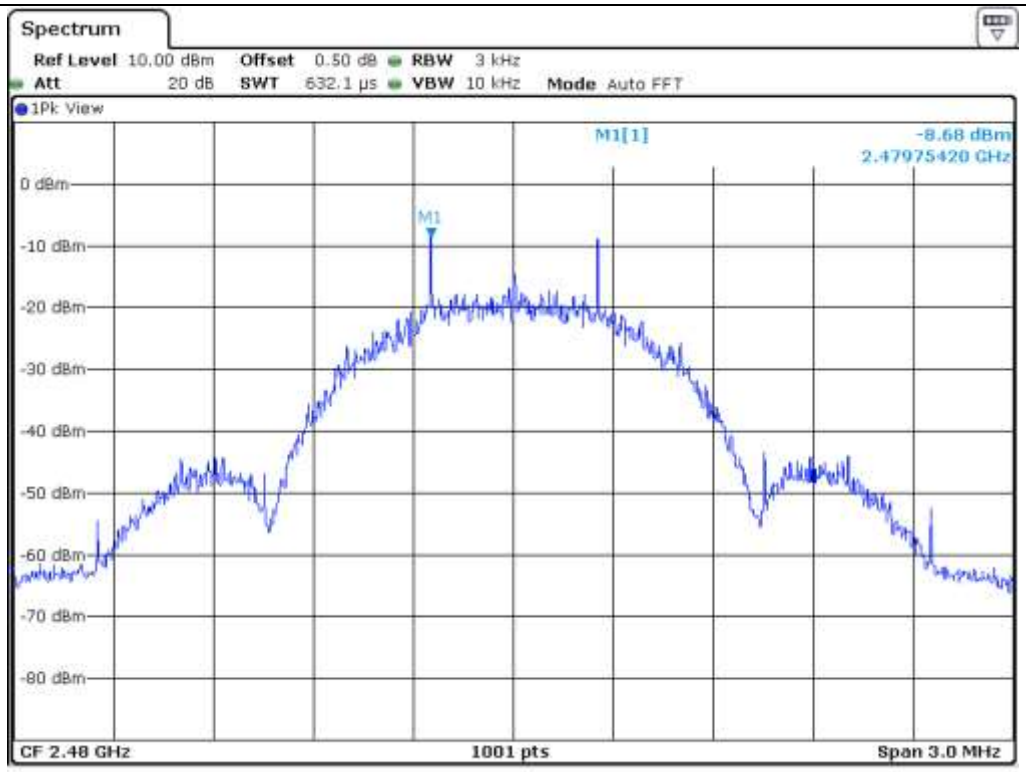
Tested by: Ha-Ram Lee / Manager



Low Channel



Middle Channel



High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % R.H.

11.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

11.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESR	Rohde & Schwarz	EMI Test Receiver	101470	Oct. 22, 2019 (1Y)
■ -	310N	Sonoma Instrument	AMPLIFIER	312544	Mar. 18, 2019 (1Y)
■ -	FSV30	Rohde & Schwarz	Signal Analyzer	101199	Feb. 20, 2020 (1Y)
■ -	SCU18	Rohde & Schwarz	Pre-Amplifier	102266	Jul. 24, 2019 (1Y)
■ -	MA240	HD GmbH	Antenna Master	N/A	N/A
■ -	HD100	HD GmbH	Position Controller	N/A	N/A
■ -	DS420S	HD GmbH	Turn Table	N/A	N/A
■ -	FMZB 1513	Schwarzbeck	LOOP ANTENNA	1513-235	May. 13, 2018 (2Y)
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-255	Jun. 05, 2018 (2Y)
■ -	3115	ETS-LINDGREN	Horn Antenna	34823	Aug. 26, 2019 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 07, 2020 (1Y)
■ -	SCU40A	Rohde & Schwarz	Pre-Amplifier	100436	Feb. 20, 2020 (1Y)

All test equipment used is calibrated on a regular basis.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4 Test data for Transmitting Mode

11.4.1 Test data for Bluetooth LE (Connected to adapter)

11.4.1.1 Test data for 30 MHz ~ 1 GHz

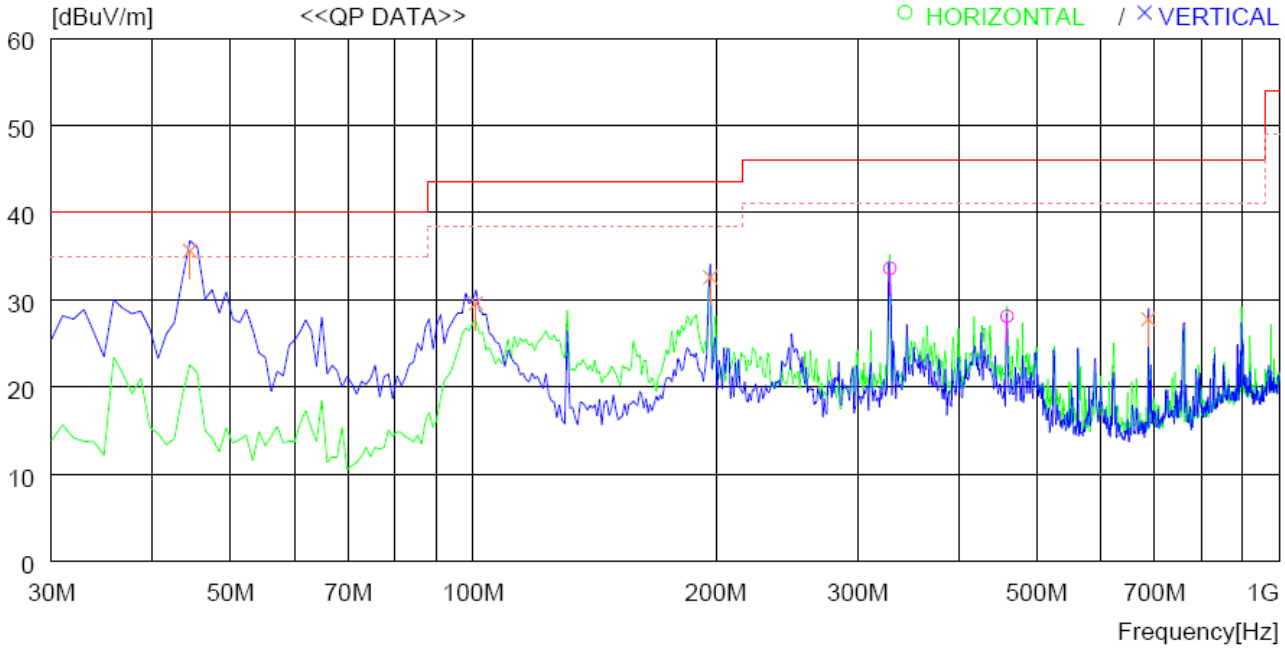
Humidity Level : 48 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: February 17, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	328.760	50.3	13.8	2.2	32.7	33.6	46.0	12.4	100	94
2	459.711	42.4	16.0	2.5	32.8	28.1	46.0	17.9	100	85
----- Vertical ------										
3	44.550	53.5	13.9	0.9	32.7	35.6	40.0	4.4	100	212
4	100.810	49.1	11.9	1.3	32.7	29.6	43.5	13.9	100	359
5	196.840	52.9	10.5	1.8	32.6	32.6	43.5	10.9	100	166
6	687.655	38.1	19.2	3.4	32.9	27.8	46.0	18.2	200	0

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.1.2 Test data for Below 30 MHz

-. Test Date : February 17, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.1.3 Test data for above 1 GHz

-. Test Date : February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.2 Test data for Bluetooth LE (Connected to USB cable)

11.4.2.1 Test data for 30 MHz ~ 1 GHz

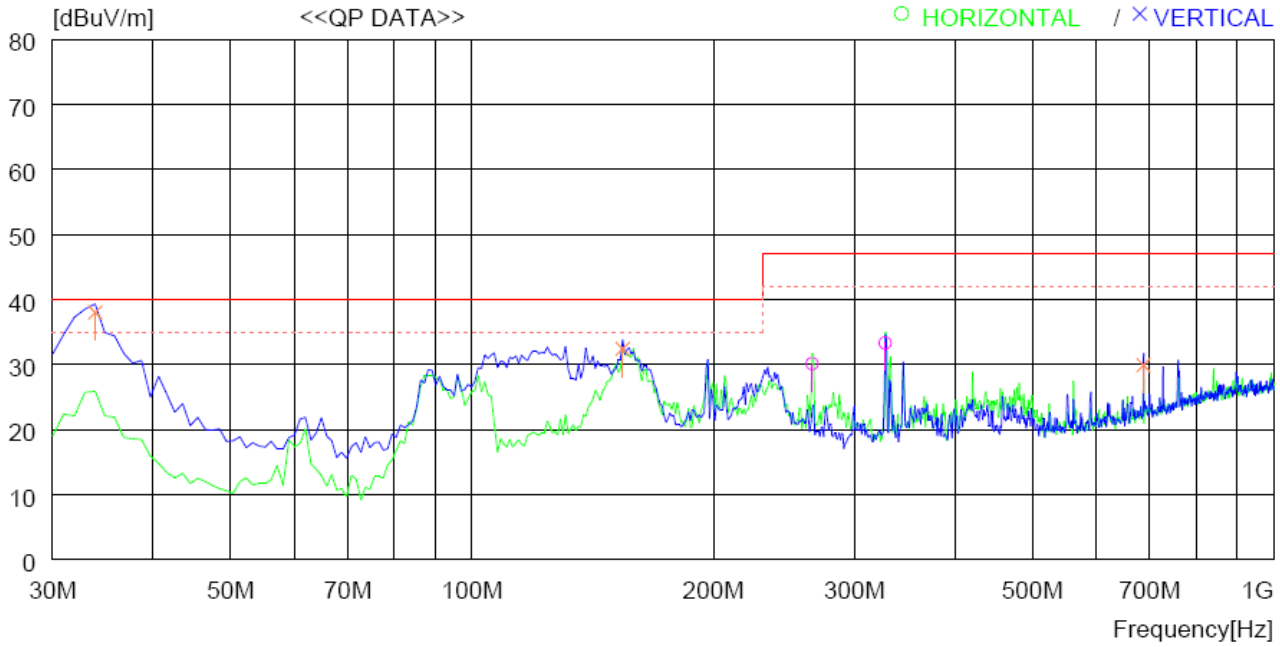
Humidity Level : 48 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: April 09, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	265.710	42.6	18.2	2.0	32.7	30.1	47.0	16.9	100	239
2	327.790	44.2	19.6	2.2	32.7	33.3	47.0	13.7	100	115
----- Vertical ------										
3	33.880	50.2	19.5	0.9	32.6	38.0	40.0	2.0	100	249
4	154.160	45.1	18.4	1.5	32.6	32.4	40.0	7.6	200	296
5	687.655	34.0	25.4	3.4	32.9	29.9	47.0	17.1	100	322

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.2.2 Test data for Below 30 MHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.2.3 Test data for above 1 GHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.3 Test data for Bluetooth LE (PoE adapter)

11.4.3.1 Test data for 30 MHz ~ 1 GHz

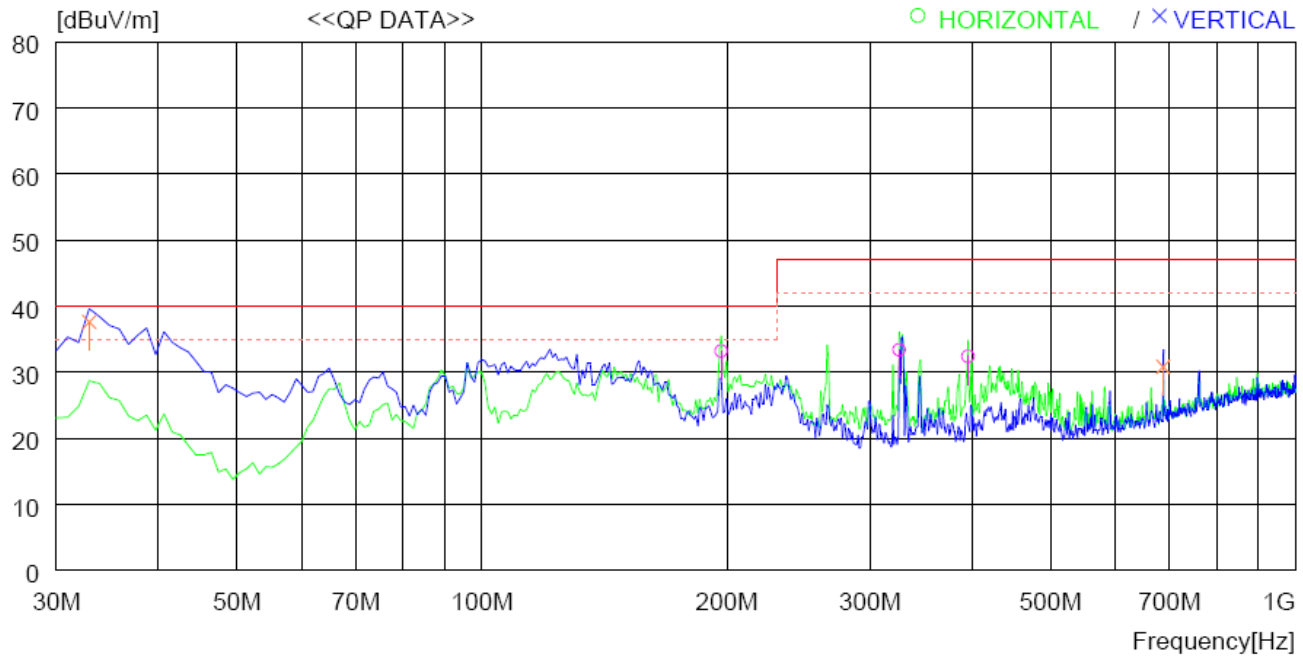
Humidity Level : 48 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: April 09, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	196.840	48.2	15.8	1.8	32.6	33.2	40.0	6.8	200	359
2	325.850	44.3	19.6	2.2	32.7	33.4	47.0	13.6	100	0
3	395.690	42.1	20.6	2.4	32.7	32.4	47.0	14.6	100	32
----- Vertical ------										
4	32.910	49.5	19.9	0.8	32.6	37.6	40.0	2.4	100	359
5	687.655	34.9	25.4	3.4	32.9	30.8	47.0	16.2	100	320

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.3.2 Test data for Below 30 MHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.3.3 Test data for above 1 GHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.4 Test data for Bluetooth LE + WLAN 2.4 GHz Intermodulation mode (Connected to adapter)

11.4.4.1 Test data for 30 MHz ~ 1 GHz

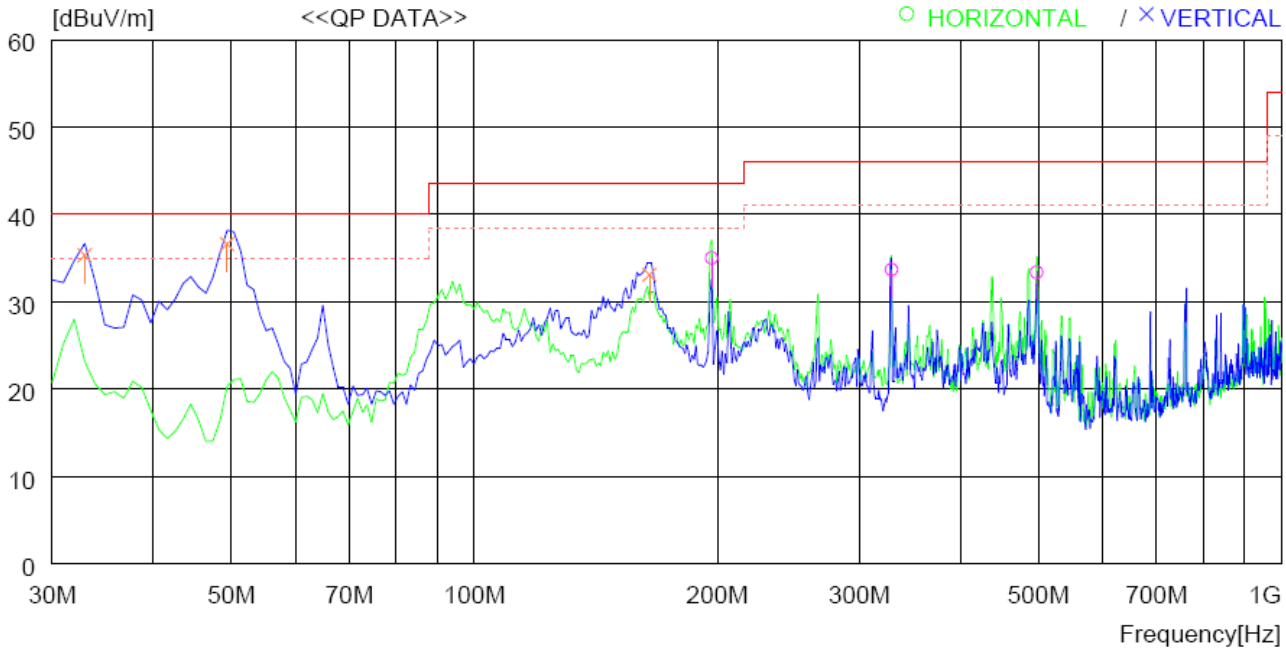
Humidity Level : 49 % R.H. Temperature: 22 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: February 17, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	196.840	55.3	10.5	1.8	32.6	35.0	43.5	8.5	200	359
2	328.760	50.4	13.8	2.2	32.7	33.7	46.0	12.3	100	5
3	497.541	46.5	17.2	2.6	32.9	33.4	46.0	12.6	100	0
----- Vertical ------										
4	32.910	55.1	12.0	0.8	32.6	35.3	40.0	4.7	100	284
5	49.400	54.8	13.6	0.9	32.7	36.6	40.0	3.4	100	359
6	164.830	55.6	8.5	1.6	32.6	33.1	43.5	10.4	100	235

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.4.2 Test data for Below 30 MHz

-. Test Date : February 17, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.4.3 Test data for above 1 GHz

-. Test Date : February 17, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.5 Test data for Bluetooth LE + WLAN 2.4 GHz Intermodulation mode (Connected to USB cable)

11.4.5.1 Test data for 30 MHz ~ 1 GHz

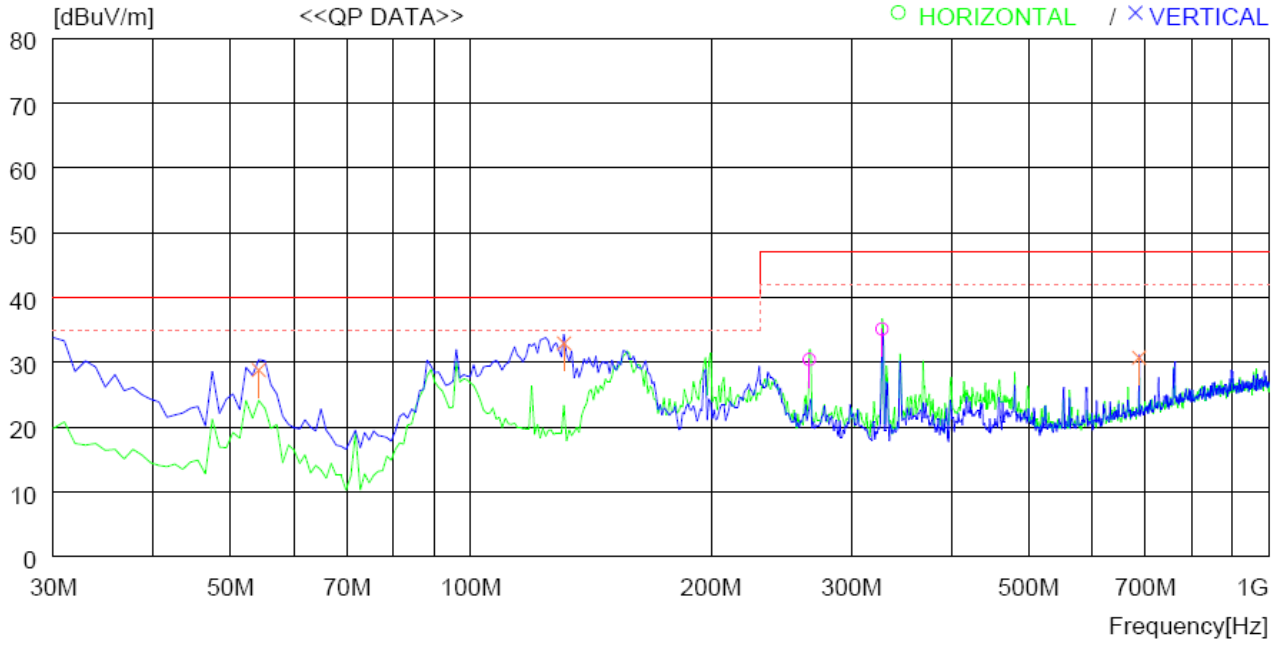
Humidity Level : 48 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: April 09, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	265.710	42.9	18.2	2.0	32.7	30.4	47.0	16.6	100	0
2	327.790	46.0	19.6	2.2	32.7	35.1	47.0	11.9	100	0
----- Vertical ------										
3	54.250	47.9	12.7	0.9	32.7	28.8	40.0	11.2	100	259
4	130.880	45.1	19.1	1.4	32.7	32.9	40.0	7.1	100	359
5	687.655	34.8	25.4	3.4	32.9	30.7	47.0	16.3	100	326

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.5.2 Test data for Below 30 MHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.5.3 Test data for above 1 GHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.6 Test data for Bluetooth LE + WLAN 2.4 GHz Intermodulation mode (PoE adpater)

11.4.6.1 Test data for 30 MHz ~ 1 GHz

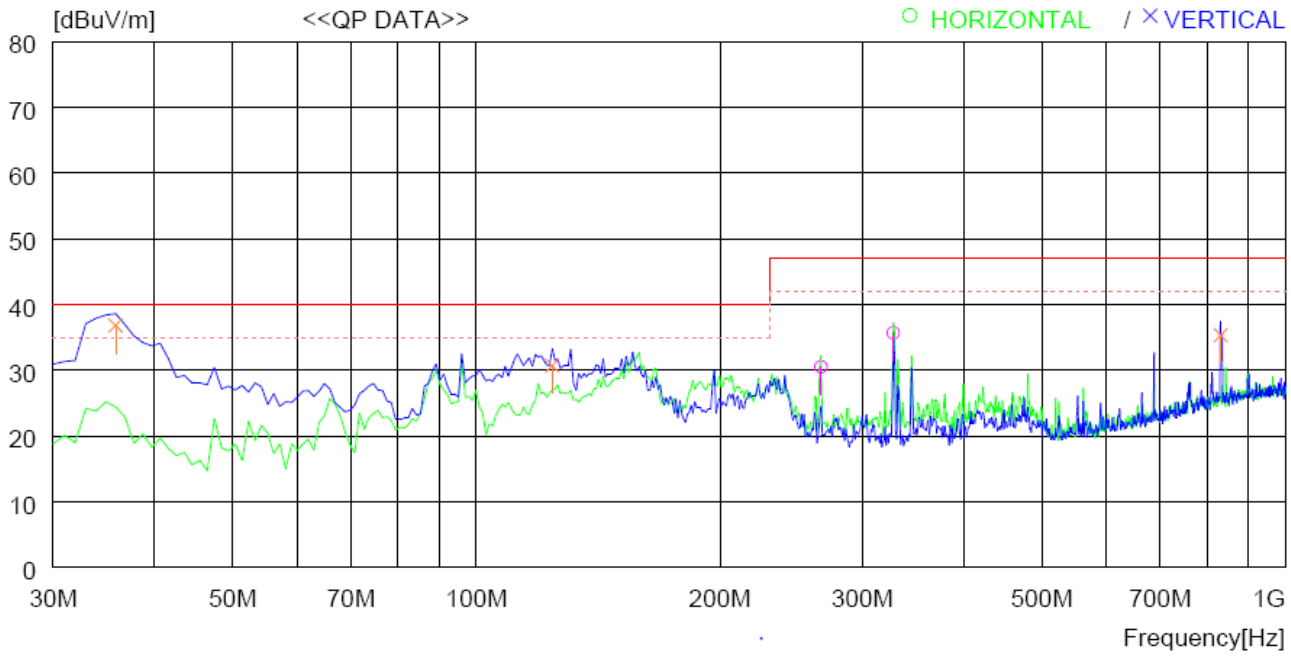
Humidity Level : 48 % R.H. Temperature: 24 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Healthcare IoT Gateway Date: April 09, 2020

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	266.680	42.9	18.3	2.0	32.7	30.5	47.0	16.5	100	244
2	327.790	46.5	19.6	2.2	32.7	35.6	47.0	11.4	100	250
----- Vertical ------										
3	35.820	49.8	18.8	0.9	32.7	36.8	40.0	3.2	100	359
4	124.090	43.2	18.8	1.4	32.7	30.7	40.0	9.3	100	359
5	831.211	36.4	27.2	4.1	32.4	35.3	47.0	11.7	300	359

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

11.4.6.2 Test data for Below 30 MHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

11.4.6.3 Test data for above 1 GHz

-. Test Date : April 09, 2020

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Bluetooth LE + WLAN 2.4 GHz Intermodulation mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
All emissions observed were 20dB below the limit.									

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

12. CONDUCTED EMISSION TEST

12.1 Operating environment

Temperature : 24 ℃

Relative humidity : 48 % R.H.

12.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

12.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101012	Oct. 22, 2019 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Mar. 19, 2019 (1Y)
■ -	3825/2	EMCO	AMN	9109-1867	Mar. 27, 2019 (1Y)

All test equipment used is calibrated on a regular basis.

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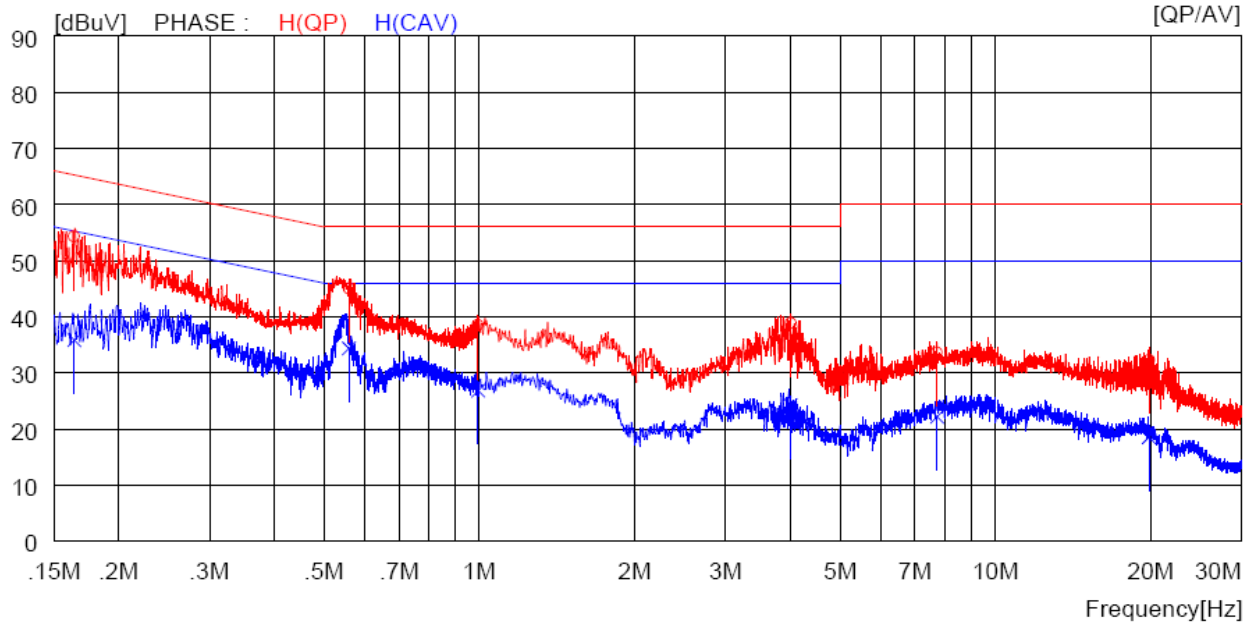
12.4 Test data (Connection to adapter)

-. Test Date : February 20, 2020

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.16400	44.3	----	10.0	54.3	----	65.3	----	11.0	----	H(QP)
2	0.55900	35.0	----	10.0	45.0	----	56.0	----	11.0	----	H(QP)
3	0.99400	28.5	----	10.0	38.5	----	56.0	----	17.5	----	H(QP)
4	4.01200	28.8	----	10.1	38.9	----	56.0	----	17.1	----	H(QP)
5	7.71000	23.4	----	10.2	33.6	----	60.0	----	26.4	----	H(QP)
6	19.88000	21.9	----	10.4	32.3	----	60.0	----	27.7	----	H(QP)
7	0.16400	----	25.9	10.0	----	35.9	----	55.3	----	19.4	H(CAV)
8	0.55900	----	24.4	10.0	----	34.4	----	46.0	----	11.6	H(CAV)
9	0.99400	----	16.9	10.0	----	26.9	----	46.0	----	19.1	H(CAV)
10	4.01200	----	14.2	10.1	----	24.3	----	46.0	----	21.7	H(CAV)
11	7.71000	----	12.0	10.2	----	22.2	----	50.0	----	27.8	H(CAV)
12	19.88000	----	8.2	10.4	----	18.6	----	50.0	----	31.4	H(CAV)

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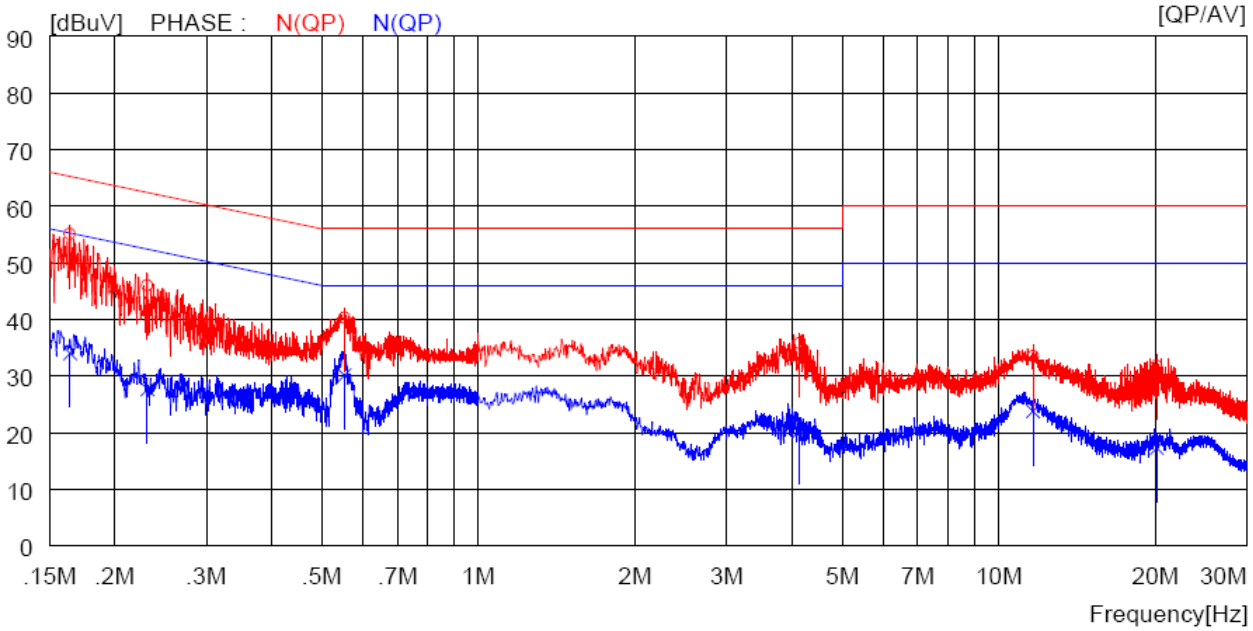
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.16400	45.1	----	10.0	55.1	----	65.3	----	10.2	----	N(QP)
2	0.23100	36.0	----	10.0	46.0	----	62.4	----	16.4	----	N(QP)
3	0.55300	30.3	----	10.0	40.3	----	56.0	----	15.7	----	N(QP)
4	4.14400	25.7	----	10.1	35.8	----	56.0	----	20.2	----	N(QP)
5	11.65000	23.3	----	10.2	33.5	----	60.0	----	26.5	----	N(QP)
6	20.12000	21.4	----	10.4	31.8	----	60.0	----	28.2	----	N(QP)
7	0.16400	----	24.0	10.0	----	34.0	----	55.3	----	21.3	N(CAV)
8	0.23100	----	17.7	10.0	----	27.7	----	52.4	----	24.7	N(CAV)
9	0.55300	----	20.2	10.0	----	30.2	----	46.0	----	15.8	N(CAV)
10	4.14400	----	10.3	10.1	----	20.4	----	46.0	----	25.6	N(CAV)
11	11.65000	----	13.6	10.2	----	23.8	----	50.0	----	26.2	N(CAV)
12	20.12000	----	6.9	10.4	----	17.3	----	50.0	----	32.7	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

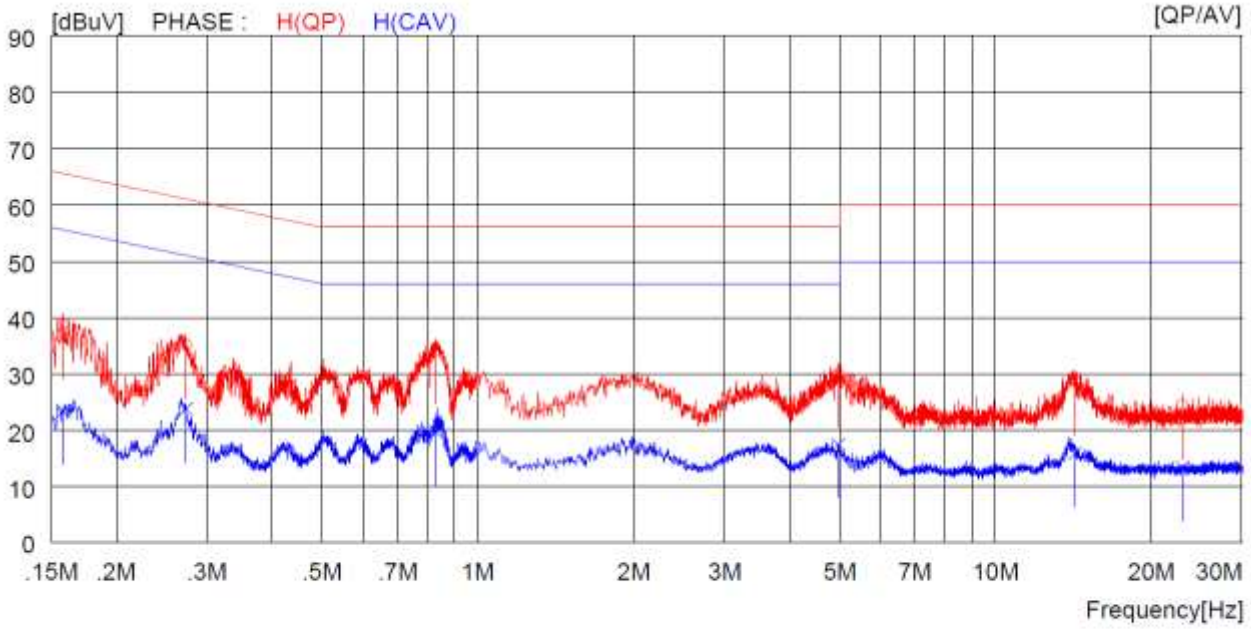
12.5 Test data (Connection to USB cable)

-. Test Date : April 07, 2020

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

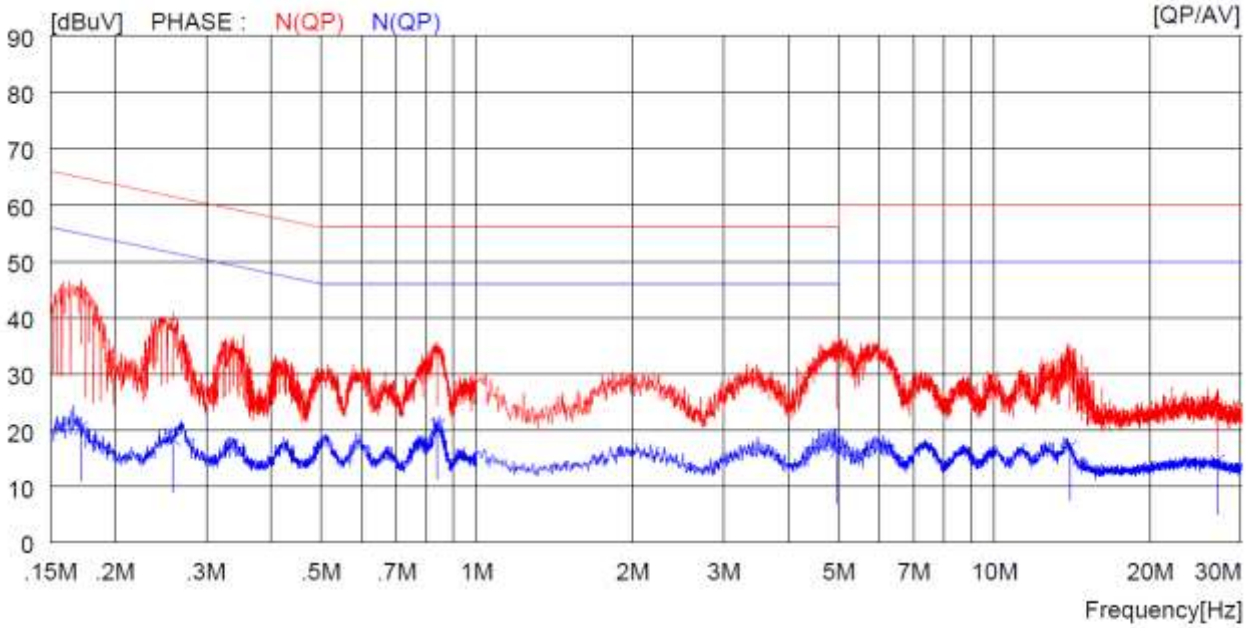
-. Tested Line : HOT LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15800	28.6	----	10.0	38.6	----	65.6	----	27.0	----	H(QP)
2	0.27300	25.2	----	9.9	35.1	----	61.0	----	25.9	----	H(QP)
3	0.82900	24.1	----	10.0	34.1	----	56.0	----	21.9	----	H(QP)
4	4.97200	19.8	----	10.1	29.9	----	56.0	----	26.1	----	H(QP)
5	14.23000	18.5	----	10.2	28.7	----	60.0	----	31.3	----	H(QP)
6	22.99000	13.9	----	10.5	24.4	----	60.0	----	35.6	----	H(QP)
7	0.15800	----	13.5	10.0	----	23.5	----	55.6	----	32.1	H(CAV)
8	0.27300	----	13.9	9.9	----	23.8	----	51.0	----	27.2	H(CAV)
9	0.82900	----	9.7	10.0	----	19.7	----	46.0	----	26.3	H(CAV)
10	4.97200	----	7.4	10.1	----	17.5	----	46.0	----	28.5	H(CAV)
11	14.23000	----	5.7	10.2	----	15.9	----	50.0	----	34.1	H(CAV)
12	22.99000	----	2.8	10.5	----	13.3	----	50.0	----	36.7	H(CAV)

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

-. Tested Line : NEUTRAL LINE



NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.17200	34.7	----	10.0	44.7	----	64.9	----	20.2	----	N(QP)
2	0.25900	28.9	----	9.9	38.8	----	61.5	----	22.7	----	N(QP)
3	0.84000	23.7	----	10.0	33.7	----	56.0	----	22.3	----	N(QP)
4	4.96800	23.4	----	10.1	33.5	----	56.0	----	22.5	----	N(QP)
5	14.01000	23.0	----	10.2	33.2	----	60.0	----	26.8	----	N(QP)
6	26.92000	14.4	----	10.5	24.9	----	60.0	----	35.1	----	N(QP)
7	0.17200	----	10.4	10.0	----	20.4	----	54.9	----	34.5	N(CAV)
8	0.25900	----	8.5	9.9	----	18.4	----	51.5	----	33.1	N(CAV)
9	0.84000	----	10.9	10.0	----	20.9	----	46.0	----	25.1	N(CAV)
10	4.96800	----	6.3	10.1	----	16.4	----	46.0	----	29.6	N(CAV)
11	14.01000	----	6.8	10.2	----	17.0	----	50.0	----	33.0	N(CAV)
12	26.92000	----	4.0	10.5	----	14.5	----	50.0	----	35.5	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

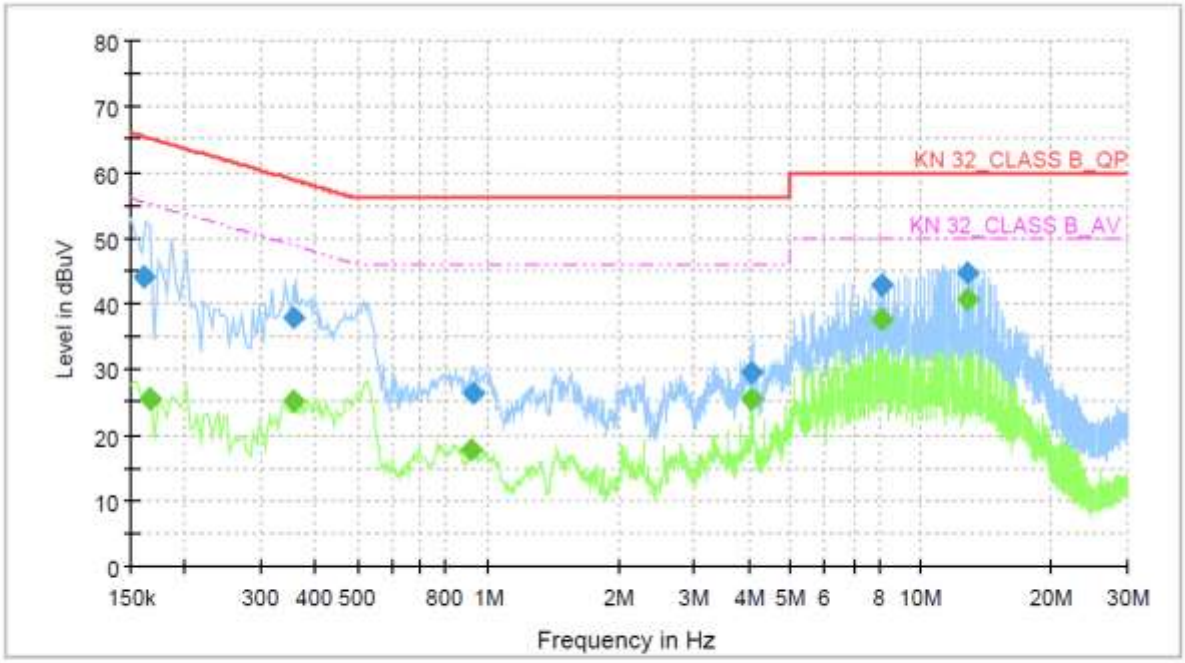
12.6 Test data (PoE adapter)

-. Test Date : April 14, 2020

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.161500	44.02	---	65.39	21.36	3000.0	9.000	L1	9.9
0.165500	---	25.38	55.18	29.81	3000.0	9.000	L1	9.9
0.357500	---	25.00	48.79	23.78	3000.0	9.000	L1	9.9
0.357500	37.76	---	58.79	21.03	3000.0	9.000	L1	9.9
0.912860	---	17.74	46.00	28.26	3000.0	9.000	L1	10.0
0.928780	26.23	---	56.00	29.77	3000.0	9.000	L1	10.0
4.077180	---	25.31	46.00	20.69	3000.0	9.000	L1	10.1
4.077220	29.58	---	56.00	26.42	3000.0	9.000	L1	10.1
8.153260	---	37.39	50.00	12.61	3000.0	9.000	L1	10.2
8.156380	42.78	---	60.00	17.22	3000.0	9.000	L1	10.2
12.746500	44.67	---	60.00	15.33	3000.0	9.000	L1	10.4
12.746900	---	40.60	50.00	9.40	3000.0	9.000	L1	10.4

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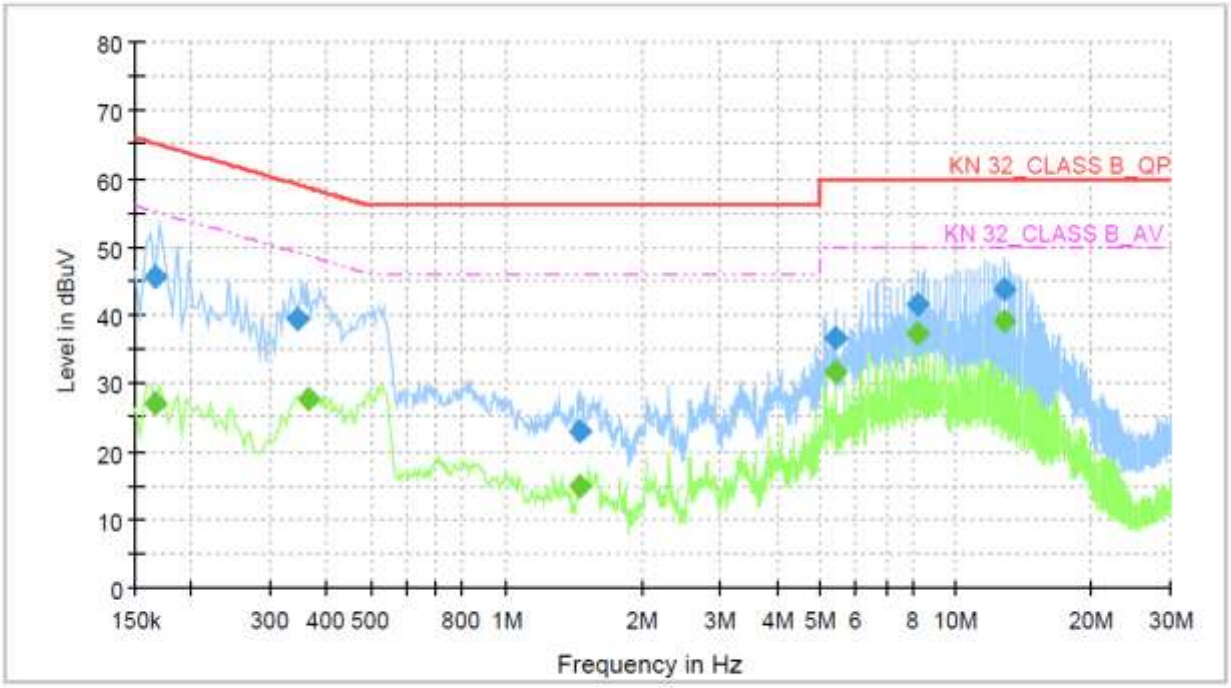
-. Tested Line : NEUTRAL LINE



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165500	---	26.94	55.18	28.24	3000.0	9.000	N	9.9
0.165500	45.61	---	65.18	19.58	3000.0	9.000	N	9.9
0.345500	39.41	---	59.07	19.66	3000.0	9.000	N	9.9
0.362500	---	27.72	48.67	20.96	3000.0	9.000	N	9.9
1.455380	23.07	---	56.00	32.93	3000.0	9.000	N	10.0
1.455380	---	14.73	46.00	31.27	3000.0	9.000	N	10.0
5.360220	---	31.57	50.00	18.43	3000.0	9.000	N	10.1
5.360300	36.64	---	60.00	23.36	3000.0	9.000	N	10.1
8.164180	---	37.31	50.00	12.69	3000.0	9.000	N	10.3
8.172100	41.50	---	60.00	18.50	3000.0	9.000	N	10.3
12.754220	---	39.22	50.00	10.78	3000.0	9.000	N	10.5
12.758060	43.75	---	60.00	16.25	3000.0	9.000	N	10.5

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Ha-Ram Lee / Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)