ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No. : **OT-214-RWD-011**

Reception No. : **2102000816**

Applicant : **ZTACOM Co.,Ltd**

Address : **103-510, KT Daeduk 2 Research Center, 70, Yuseong-daero-1689beon-gil, Yuseong-gu, Daejeon, 34047, South Korea**

Manufacturer : **ZTACOM Co.,Ltd**

Address : **Unit1301, 165, Magokjungang-ro, Gangseo-gu, Seoul, Republic of Korea**

Type of Equipment : **GPS Tracker & Messenger**

FCC ID. : **2AUFQZLD-300UA**

Model Name : **ZLD-300U**

Multiple Model Name : **N/A**

Serial number : **N/A**

Total page of Report : **38 pages (including this page)**

Date of Incoming : **March 02, 2021**

Date of issue : **April 07, 2021**

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.

Tested by	Reviewed by	Approved by
Hyung-Kwon, Oh / Manager	Tae-Ho, Kim / Senior Manager	Ki-Hong, Nam / General Manager
ONETECH Corp.	ONETECH Corp.	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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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-214-RWD-011	April 07, 2021	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

Applicant : ZTACOM Co.,Ltd

Address : 103-510, KT Daeduk 2 Research Center, 70, Yuseong-daero-1689beon-gil, Yuseong-gu, Daejeon, 34047, South Korea

Contact Person : Byungmin Park / Director of Technology

Telephone No. : +82-10-3620-7652

FCC ID : 2AUFQZLD-300UA

Model Name : ZLD-300U

Brand Name : -

Serial Number : N/A

Date : April 07, 2021

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	GPS Tracker & Messenger
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2020
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 558074 D01 15.247 Meas Guidance v05r02
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.

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: 2020. 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-20122/ C-14617/ G-10666/ T-11842

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 ZTACOM Co.,Ltd, Model ZLD-300U (referred to as the EUT in this report) is an GPS Tracker & Messenger, Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	GPS Tracker & Messenger		
Temperature Range	-20 °C ~ +80 °C		
Rated Supply Voltage	DC 3.7 V		
OPERATING FREQUENCY	LoRa	125 kHz	902.3 MHz ~ 914.9 MHz
		500 kHz	903.0 MHz ~ 914.2 MHz
	Bluetooth LE	2 402 MHz ~ 2 480 MHz	
MODULATION TYPE	LoRa	125 kHz	GFSK
		500 kHz	CSS
	Bluetooth LE	GFSK	
RF OUTPUT POWER	LoRa	125 kHz	16.94 dBm
		500 kHz	16.44 dBm
	Bluetooth LE	-0.56 dBm	
NUMBER OF CHANNEL	LoRa	125 kHz	64 Channel
		500 kHz	8 Channel
	Bluetooth LE	40 Channel	
ANTENNA TYPE	LoRa	FPCB Antenna	
	Bluetooth LE	Chip Antenna	
ANTENNA GAIN	LoRA	-2.90 dBi	
	Bluetooth	3.10 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	32.768 kHz, 32 MHz		

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	ZTACOM Co.,Ltd	IM_PLUS_Rev1.3	N/A
DC Battery	Shenzhen BENZO Energy technology Co., Ltd	UF 502535	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
ZLD-300U	ZTACOM Co.,Ltd	GPS Tracker & Messenger (EUT)	-
CP2102 MODULES	N/A	Jig Board	EUT
HP Probook	HP	Notebook PC	-
PPP009L-E	LIE-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 903 MHz, 909.4 MHz, and 914.2 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 “XZ” axis, but the worst data was recorded in this report.

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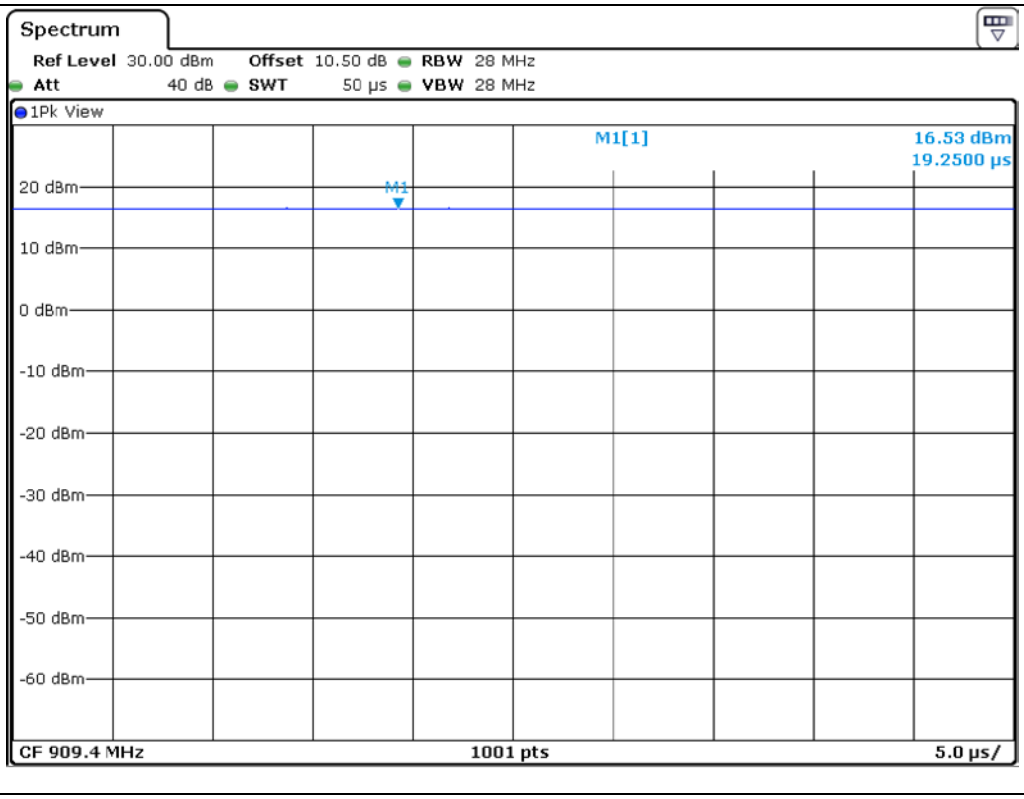
-. Duty Cycle

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
LoRa	-	-	100.00	-

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

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

-. Test Plot



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-. Channel List

LoRa_125 kHz					
Channel	**Frequency [MHz]**	**Channel**	**Frequency [MHz]**	**Channel**	**Frequency [MHz]**
0	902.3	1	902.5	2	902.7
3	902.9	4	903.1	5	903.3
6	903.5	7	903.7	8	903.9
9	904.1	10	904.3	11	904.5
12	904.7	13	904.9	14	905.1
15	905.3	16	905.5	17	905.7
18	905.9	19	906.1	20	906.3
21	906.5	22	906.7	23	906.9
24	907.1	25	907.3	26	907.5
27	907.7	28	907.9	29	908.1
30	908.3	31	908.5	32	908.7
33	908.9	34	909.1	35	909.3
36	909.5	37	909.7	38	909.9
39	910.1	40	910.3	41	910.5
42	910.7	43	910.9	44	911.1
45	911.3	46	911.5	47	911.7
48	911.9	49	912.1	50	912.3
51	912.5	52	912.7	53	912.9
54	913.1	55	913.3	56	913.5
57	913.7	58	913.9	59	914.1
60	914.3	61	914.5	62	914.7
63	914.9	-	-	-	-

LoRa_500 kHz					
Channel	**Frequency [MHz]**	**Channel**	**Frequency [MHz]**	**Channel**	**Frequency [MHz]**
64	903.0	65	904.6	66	906.2
67	907.8	68	909.4	69	911.0
70	912.6	71	914.2	-	-

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Bluetooth LE			
Channel	**Frequency [MHz]**	**Channel**	**Frequency [MHz]**
0	2 402.00	21	2 444.00
1	2 404.00	22	2 446.00
2	2 406.00	23	2 448.00
3	2 408.00	24	2 450.00
4	2 410.00	25	2 452.00
5	2 412.00	26	2 454.00
6	2 414.00	27	2 456.00
7	2 416.00	28	2 458.00
8	2 418.00	29	2 460.00
9	2 420.00	30	2 462.00
10	2 422.00	31	2 464.00
11	2 424.00	32	2 466.00
12	2 426.00	33	2 468.00
13	2 428.00	34	2 470.00
14	2 430.00	35	2 472.00
15	2 432.00	36	2 474.00
16	2 434.00	37	2 476.00
17	2 436.00	38	2 478.00
18	2 438.00	39	2 480.00
19	2 440.00	-	-
20	2 442.00	-	-

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5.4 Configuration of Test System

Line Conducted Test: The EUT was tested in a Charging & Transmitter mode. The EUT was connected to USB and the Power of USB was Connected to DC Adaptor. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2020 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2020 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

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 FPCB Antenna on the main board in the EUT, so no consideration of replacement by the user.

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6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Charging & Transmitter Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

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

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7. MIMIMUM 6 dB BANDWIDTH

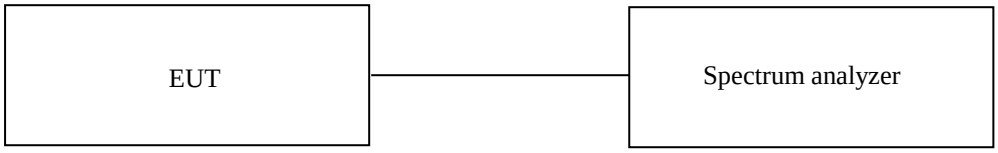
7.1 Operating environment

Temperature : 23 °C

Relative humidity : 43 % 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 Date

March 29, 2021 ~ April 01, 2021

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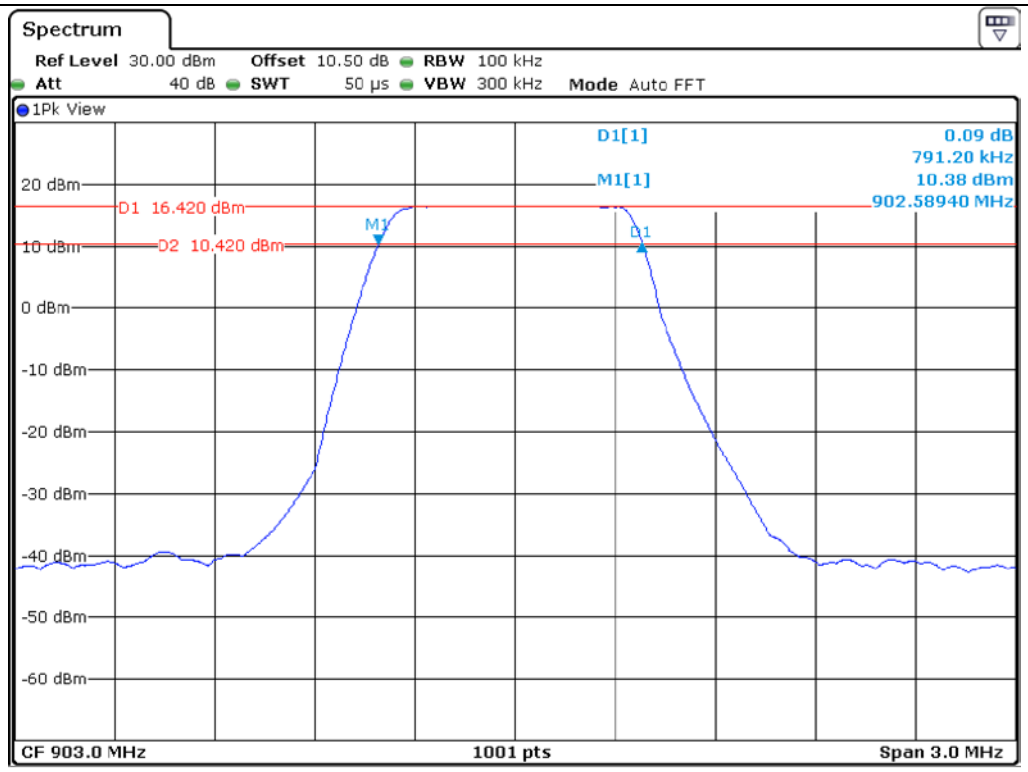
7.4 Test Data

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (kHz)	LIMIT (kHz)	Margin (kHz)
Low	903.00	791.20	500.00	291.20
Middle	909.40	782.20	500.00	282.20
High	914.20	779.20	500.00	279.20

Remark. Margin = Measured Value - Limit



Low Channel

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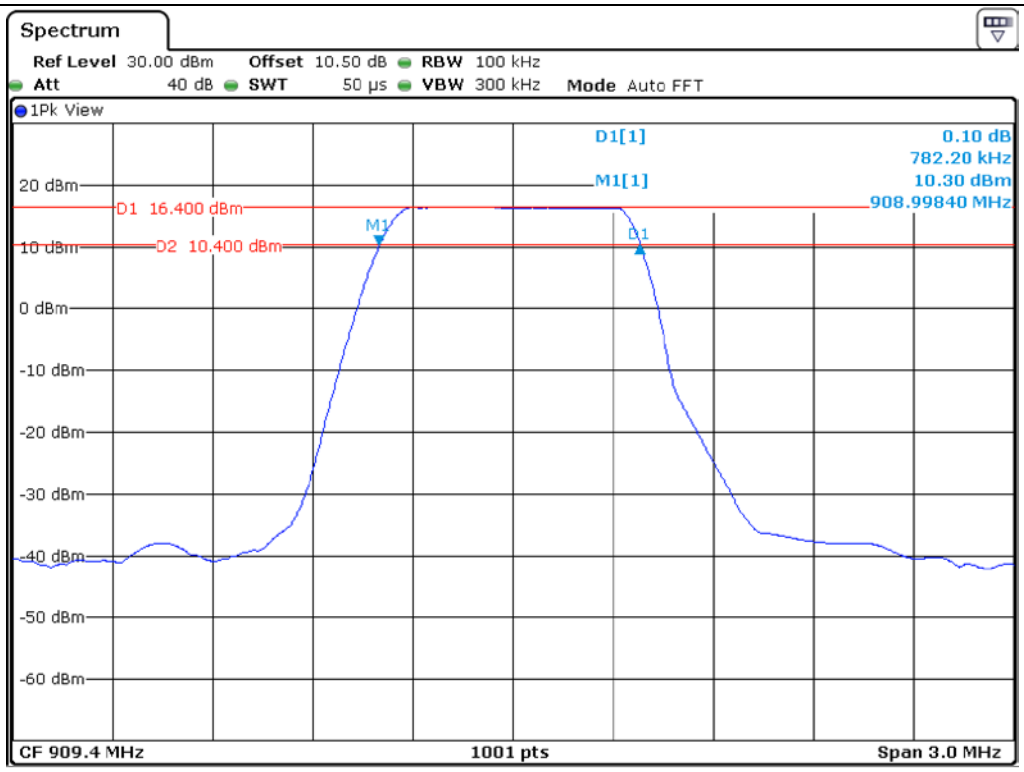
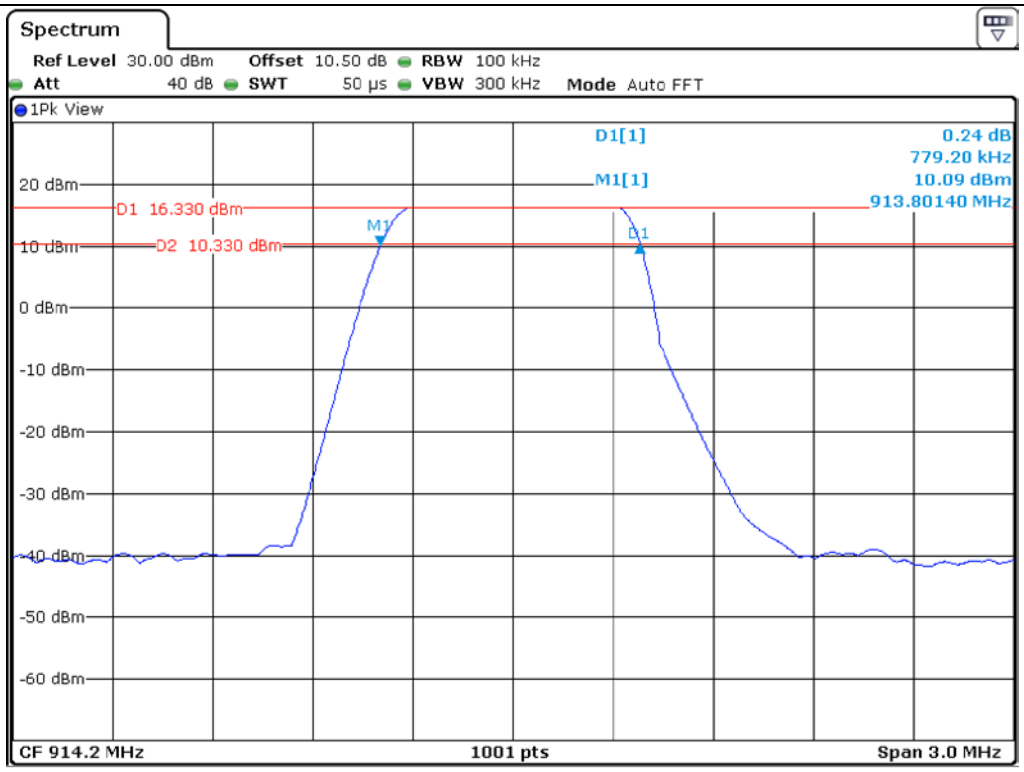


Middle Channel



High Channel

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8. MAXIMUM PEAK OUTPUT POWER

8.1 Operating environment

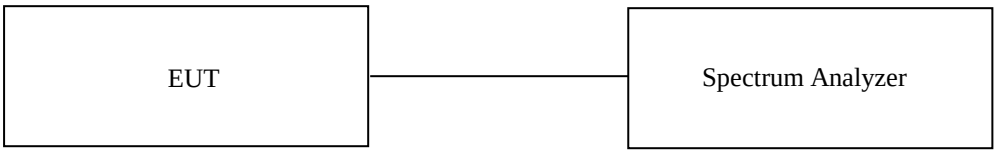
Temperature : 23 °C

Relative humidity : 43 % 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 Date

March 29, 2021 ~ April 01, 2021

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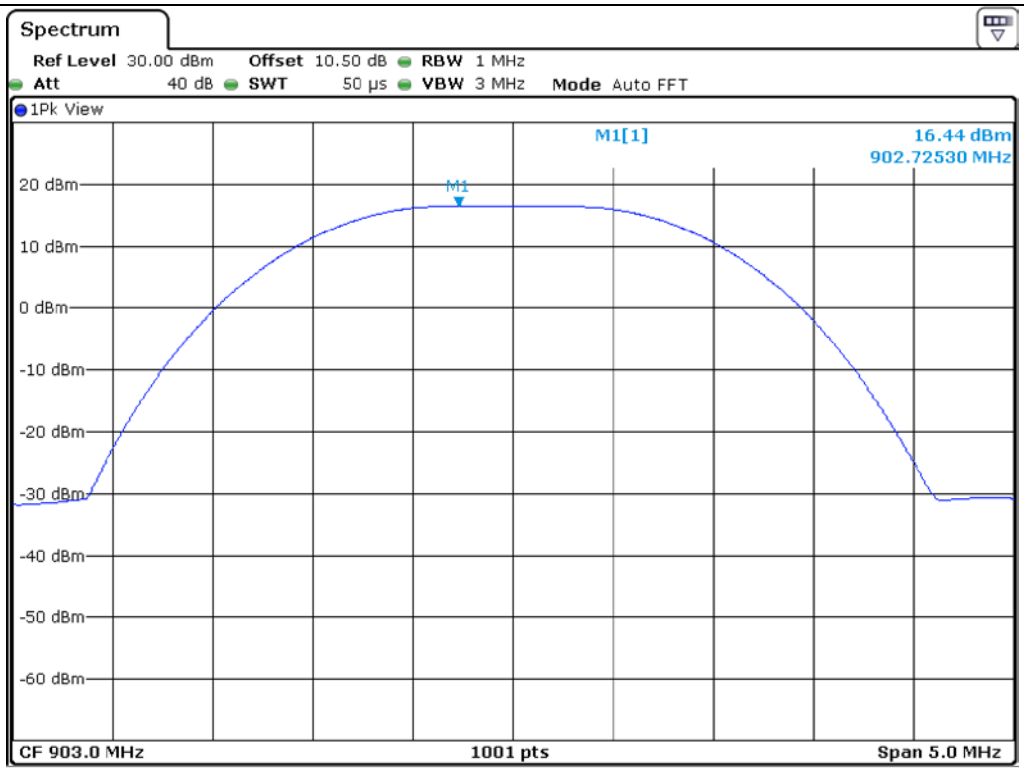
8.4 Test Data

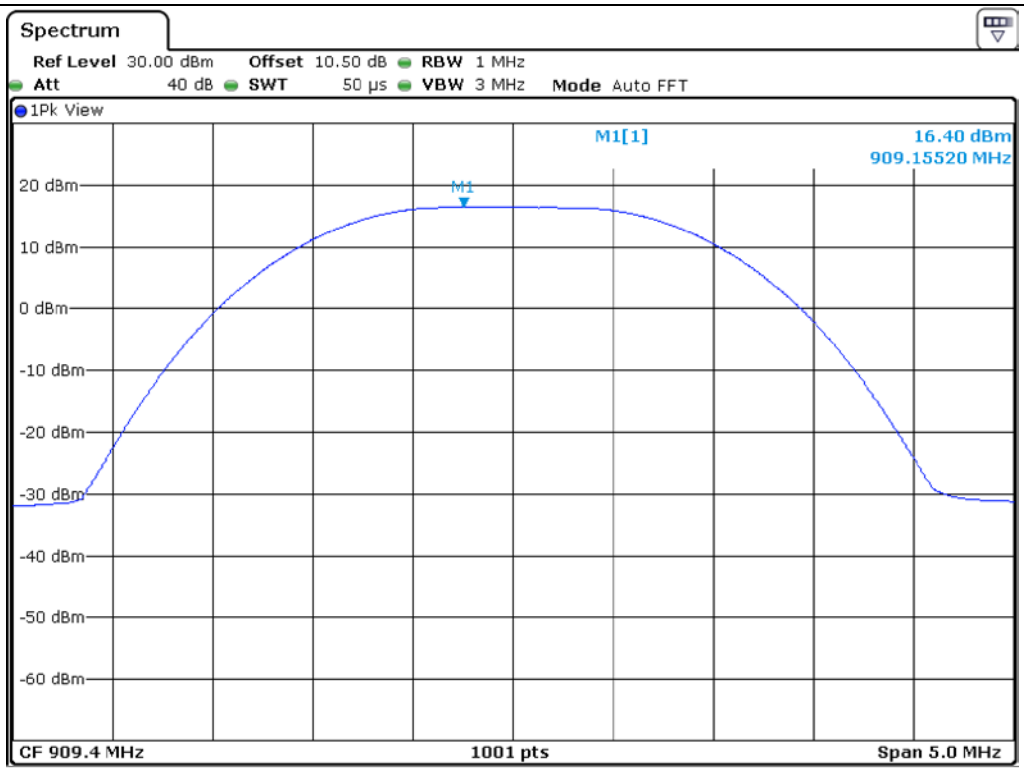
-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	903.00	16.44	30.00	13.56
Middle	909.40	16.40	30.00	13.60
High	914.20	16.35	30.00	13.65

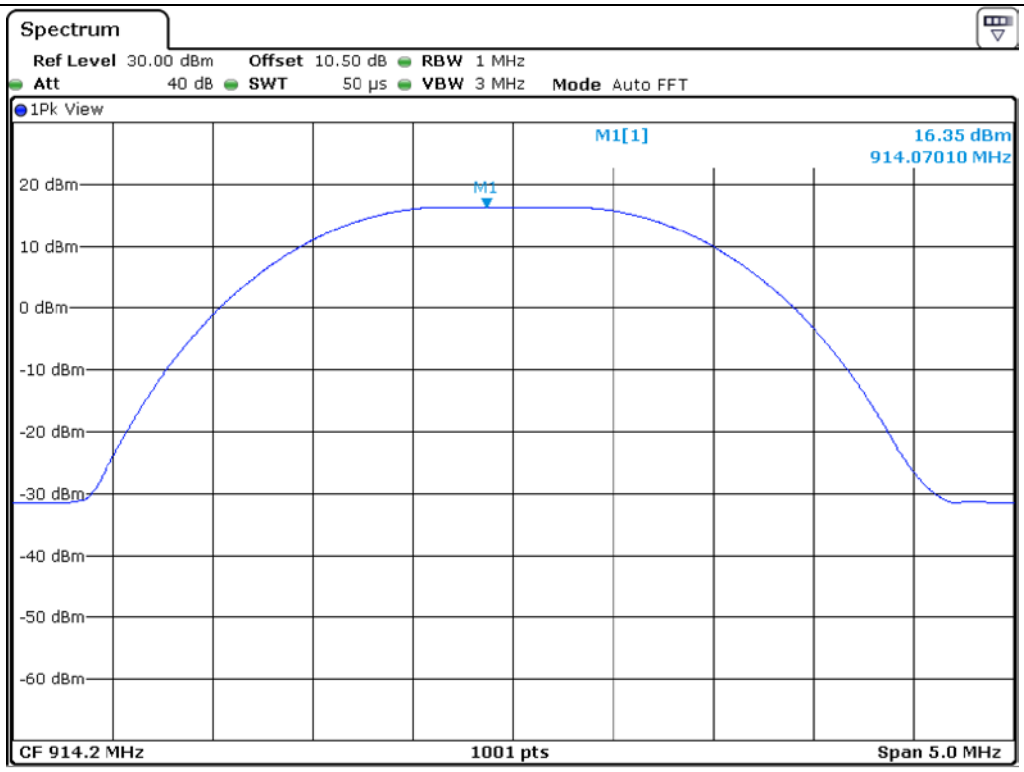
Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



Low Channel



Middle Channel



High Channel

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9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

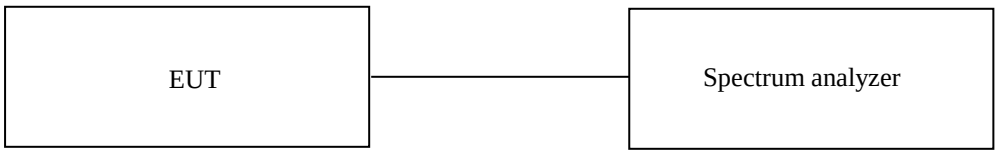
9.1 Operating environment

Temperature : 23 °C

Relative humidity : 43 % R.H.

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, the video bandwidth is set to 3 times the resolution bandwidth and peak detection was used.



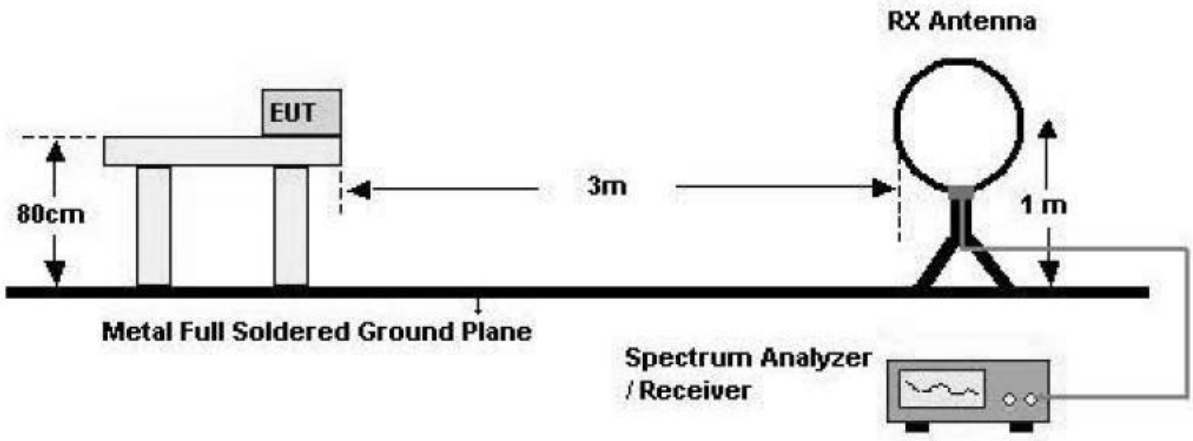
9.3 Test set-up for radiated measurement

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 10 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.

- Test Configuration

1. Below 30 MHz



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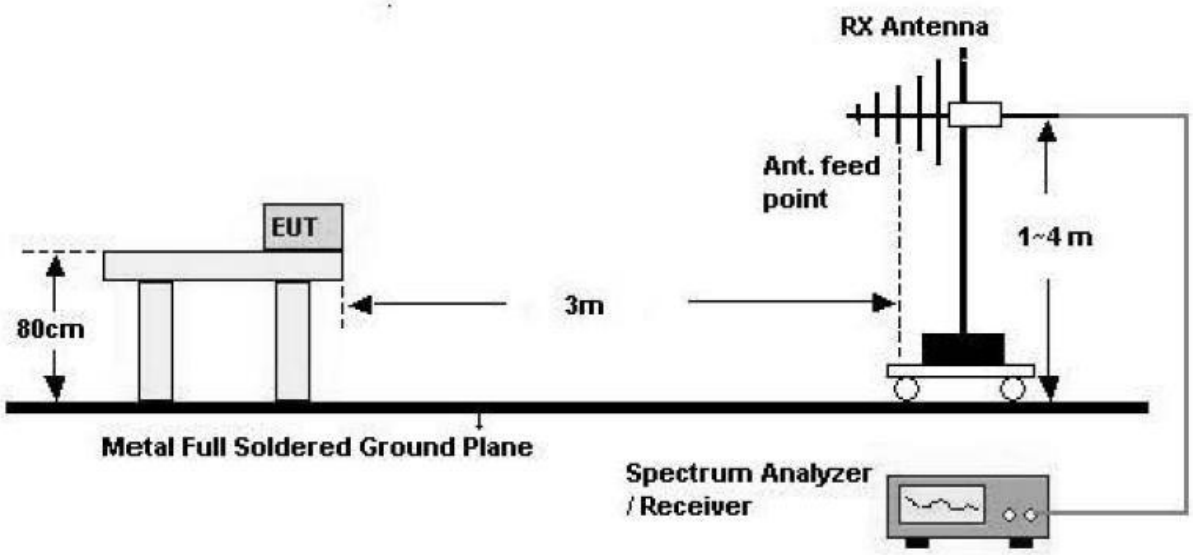
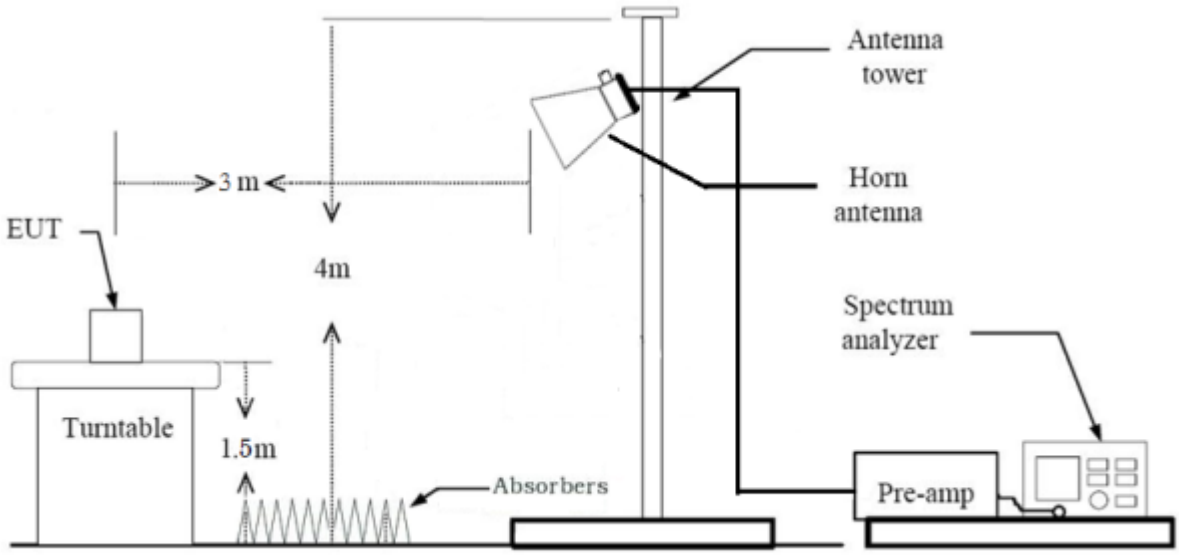
2. 30 MHz - 1 GHz



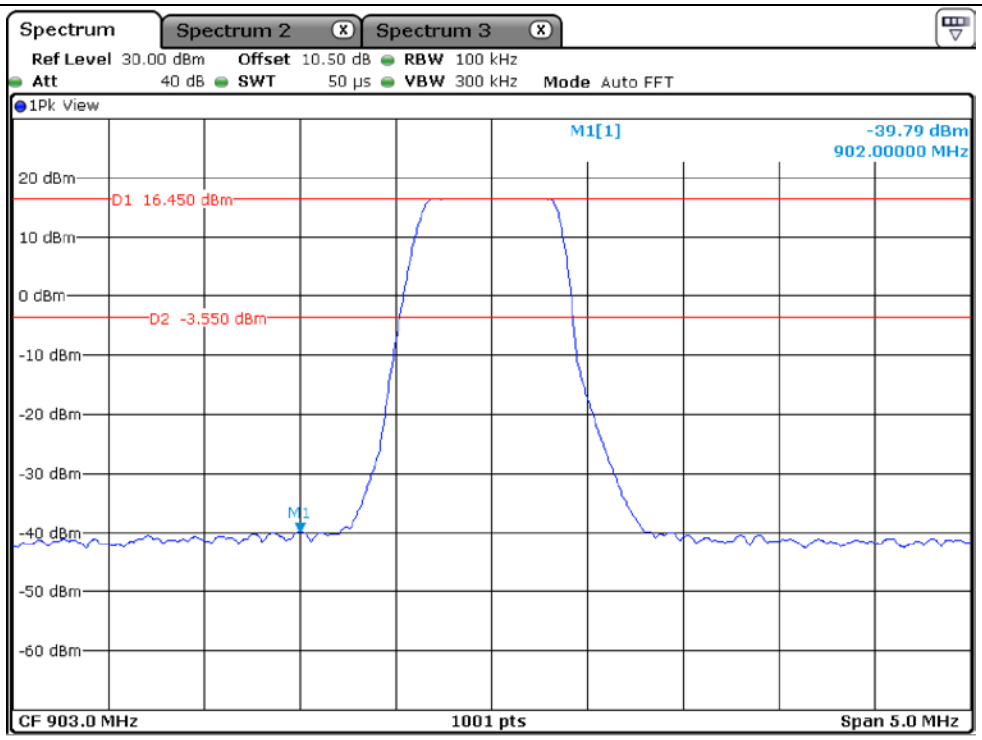
3. Above 1 GHz



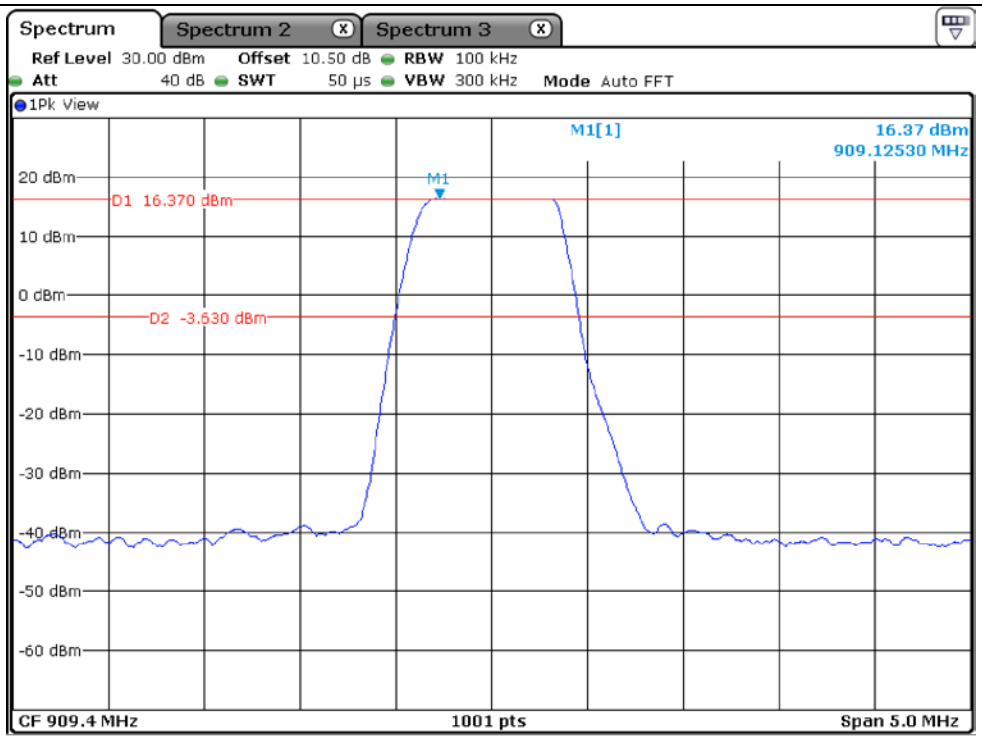
9.4 Test Date

March 29, 2021 ~ April 01, 2021

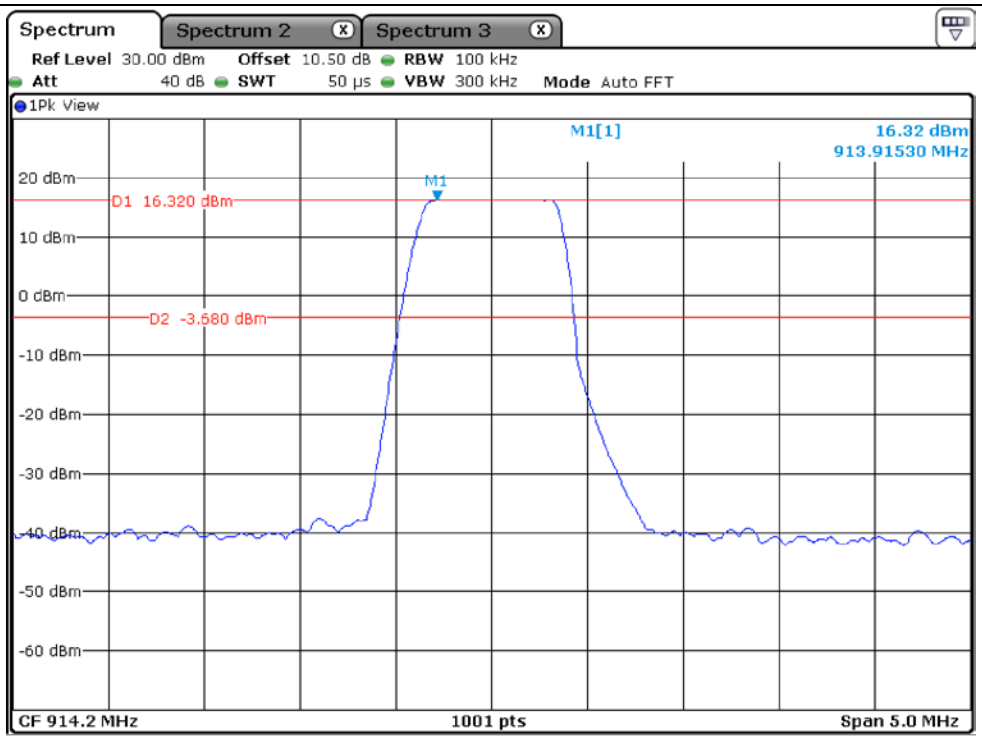
9.5 Test Data for conducted emission



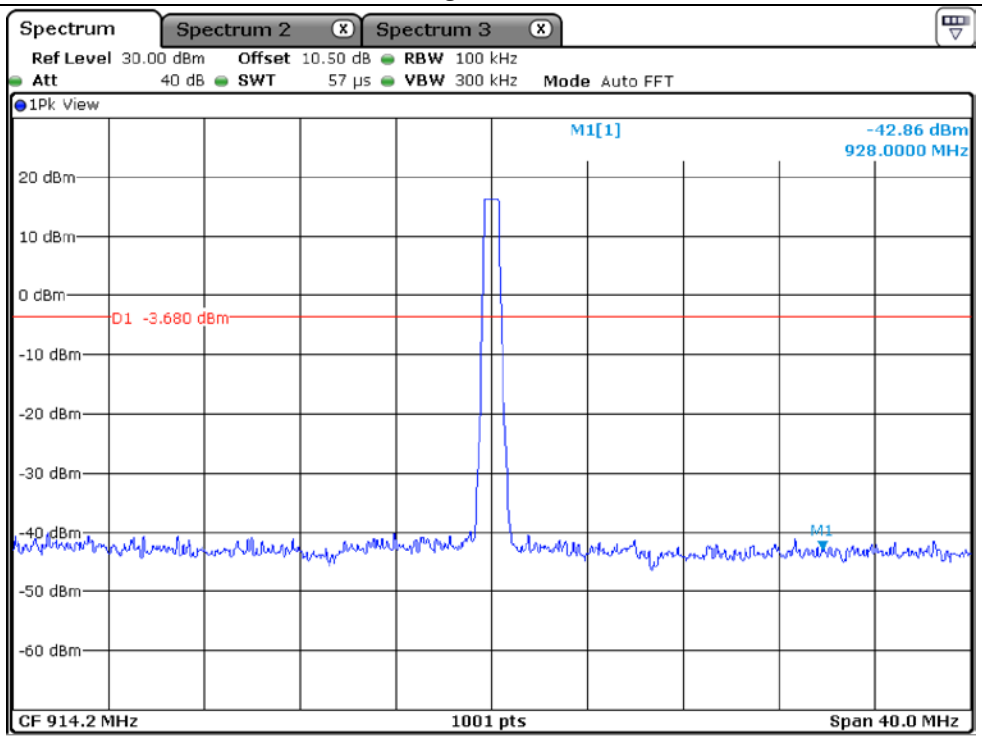
Low Channel



Middle Channel



High Channel



High Channel_1

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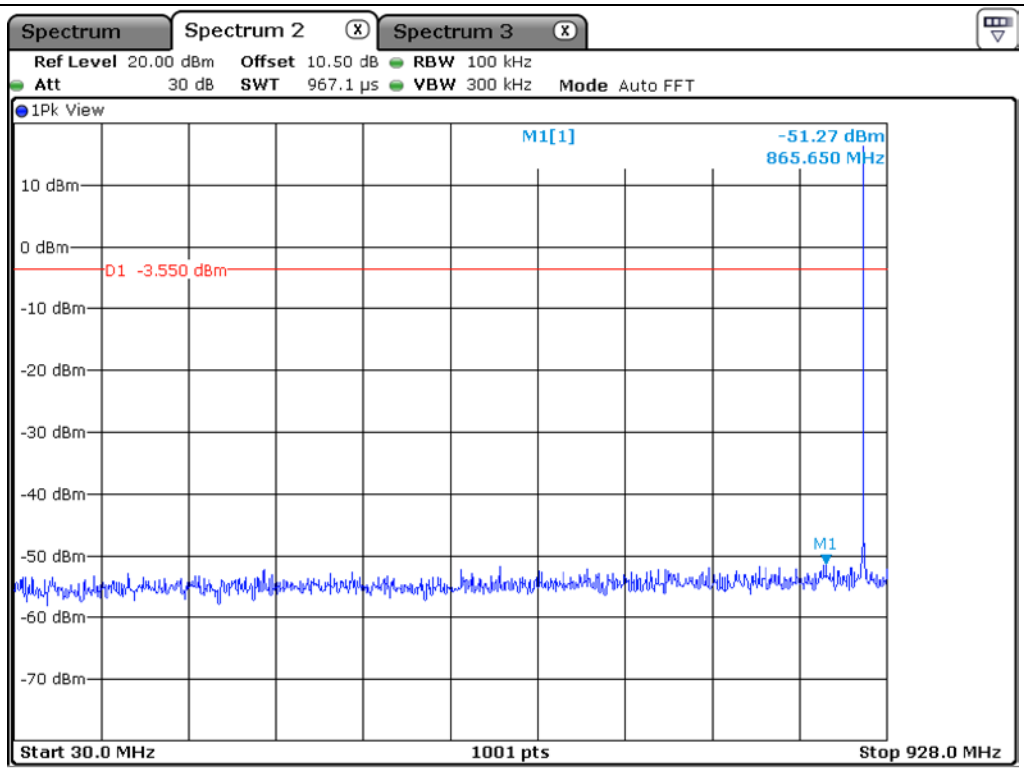
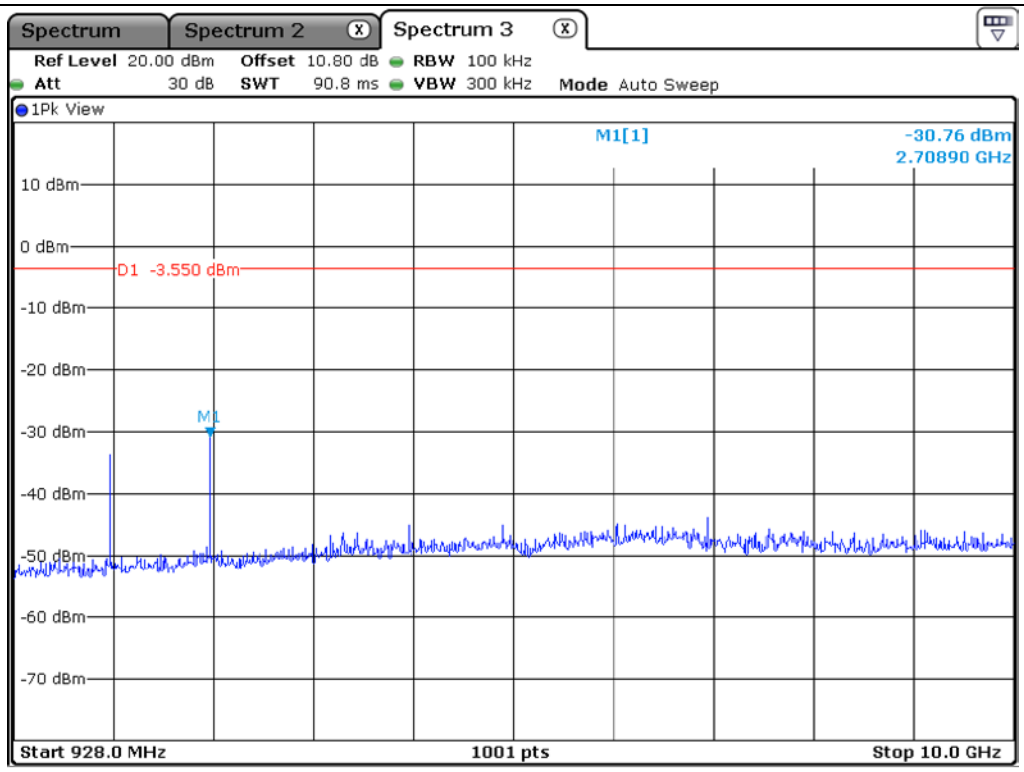


Low Channel



Low Channel

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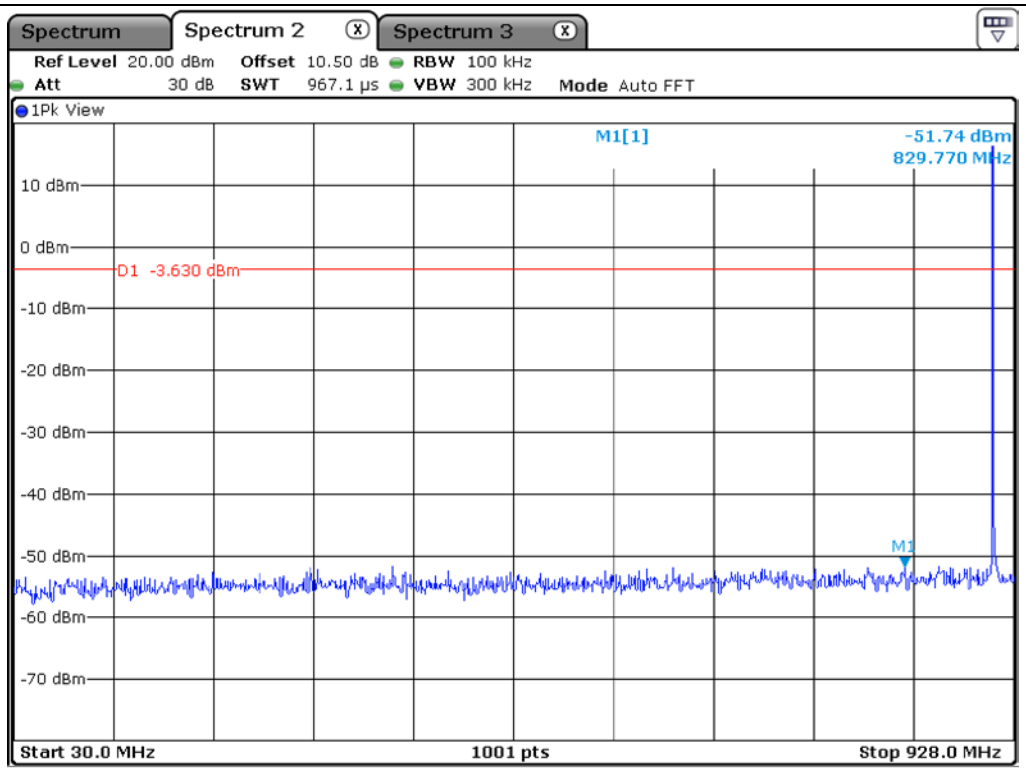
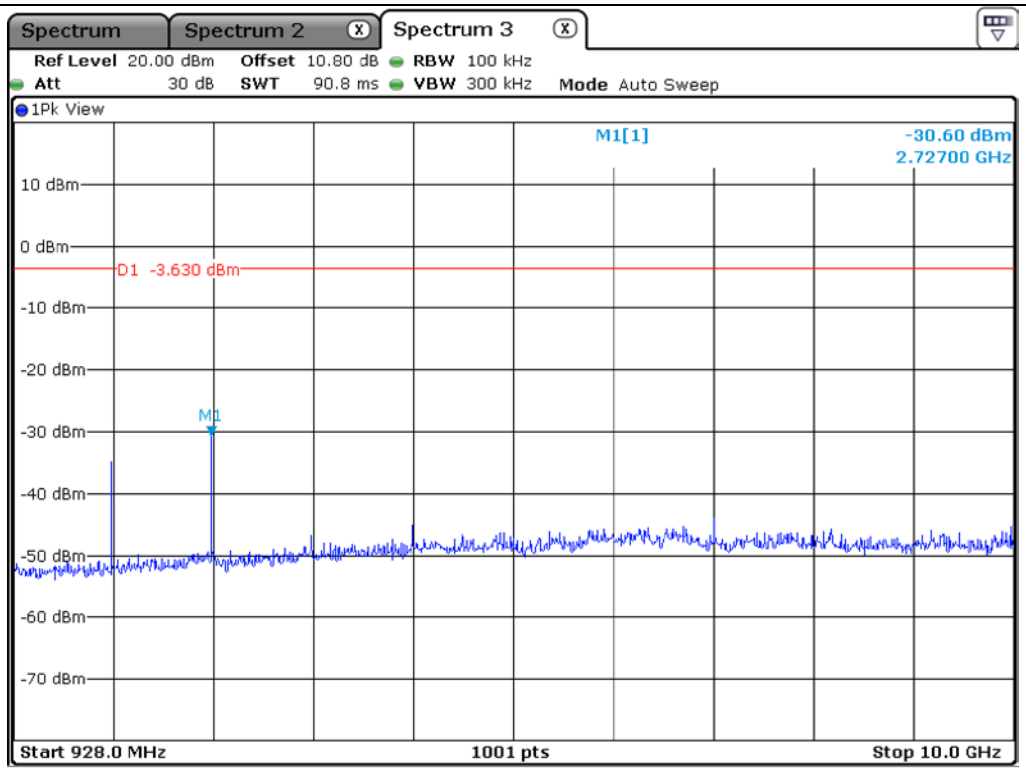


Middle Channel



Middle Channel

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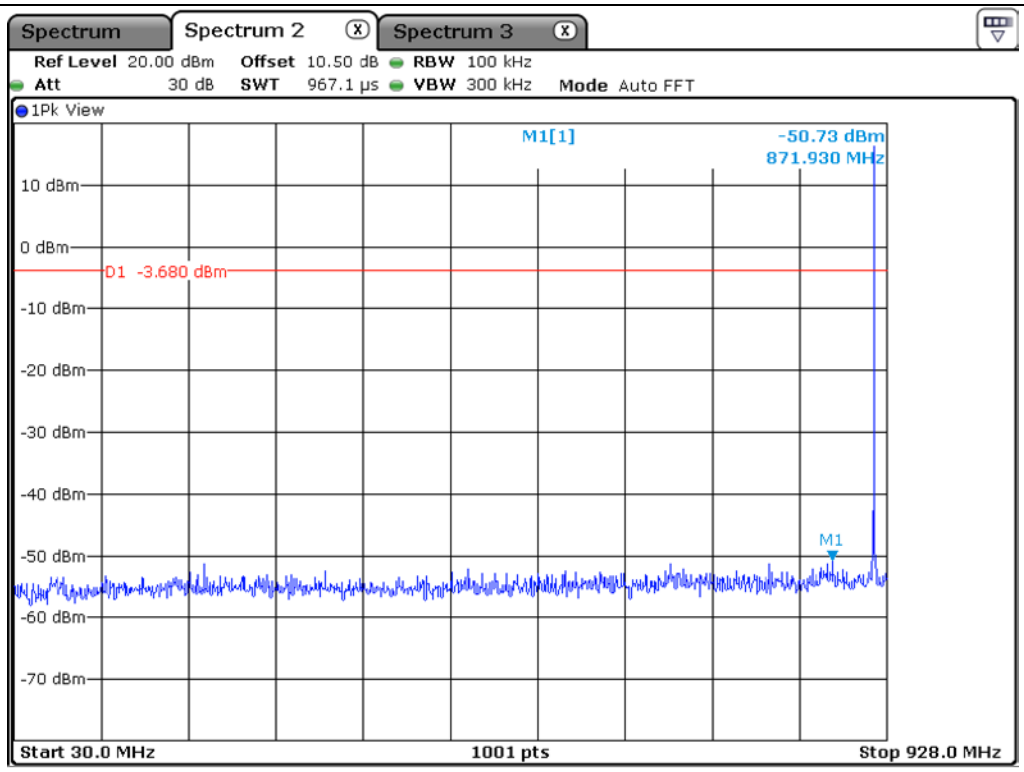
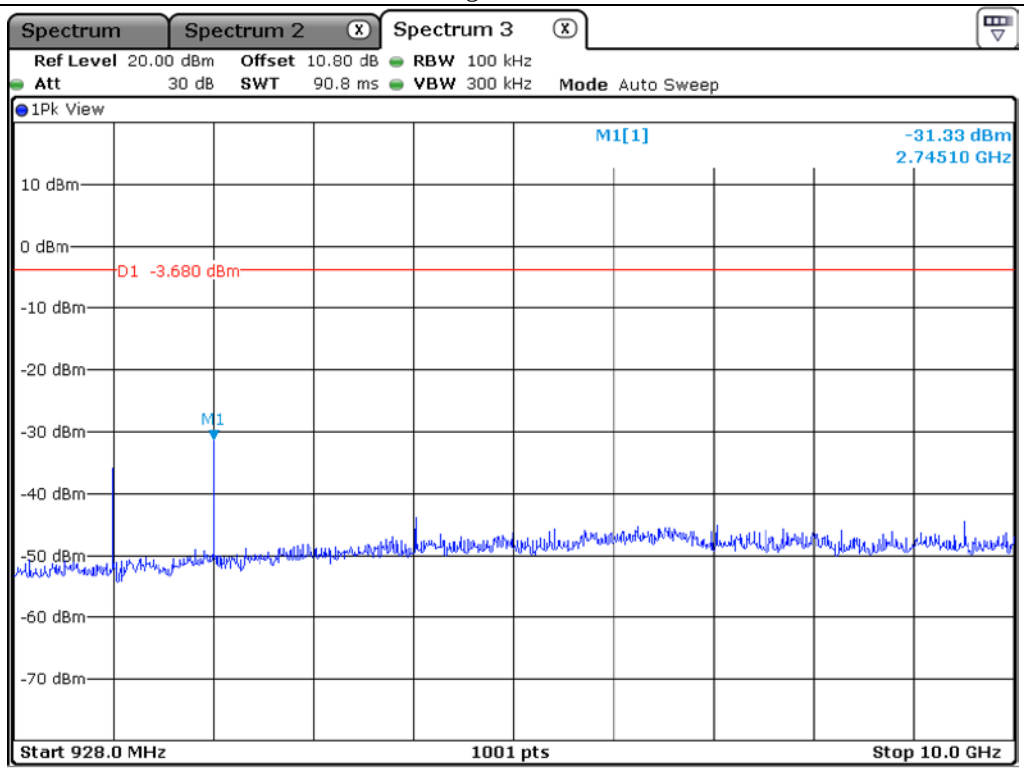


High Channel



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 Spurious & Harmonic Radiated Emission

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 100 %

-. Result : PASSED

Channel	Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
Low	1 806.000	34.76	Peak	H	25.30	4.66	64.72	74.00	9.28
		18.96	Average	H			48.92	54.00	5.08
		32.66	Peak	V			62.62	74.00	11.38
		18.39	Average	V			48.35	54.00	5.65
	2 709.000	25.05	Peak	H	28.20	5.70	58.95	74.00	15.05
		12.83	Average	H			46.73	54.00	7.27
		25.14	Peak	V			59.04	74.00	14.96
		12.89	Average	V			46.79	54.00	7.21
Middle	1 818.800	34.89	Peak	H	25.30	4.66	64.85	74.00	9.15
		18.81	Average	H			48.77	54.00	5.23
		35.09	Peak	V			65.05	74.00	8.95
		20.43	Average	V			50.39	54.00	3.61
	2 728.200	25.3	Peak	H	28.20	5.70	59.20	74.00	14.80
		9.59	Average	H			43.49	54.00	10.51
		26.34	Peak	V			60.24	74.00	13.76
		13.51	Average	V			47.41	54.00	6.59
High	1 828.400	34.56	Peak	H	25.30	4.66	64.52	74.00	9.48
		18.76	Average	H			48.72	54.00	5.28
		32.78	Peak	V			62.74	74.00	11.26
		19.98	Average	V			49.94	54.00	4.06
	2 742.600	25.51	Peak	H	28.20	5.70	59.41	74.00	14.59
		11.54	Average	H			45.44	54.00	8.56
		26.54	Peak	V			60.44	74.00	13.56
		10.39	Average	V			44.29	54.00	9.71

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

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

Total Level = Reading + Antenna Factor + Cable Loss

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10. PEAK POWER SPECTRUL DENSITY

10.1 Operating environment

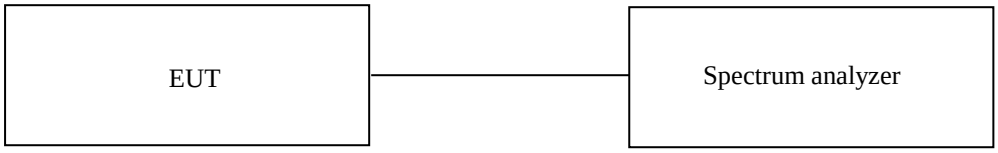
Temperature : 23 °C

Relative humidity : 43 % 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 Date

March 29, 2021 ~ April 01, 2021

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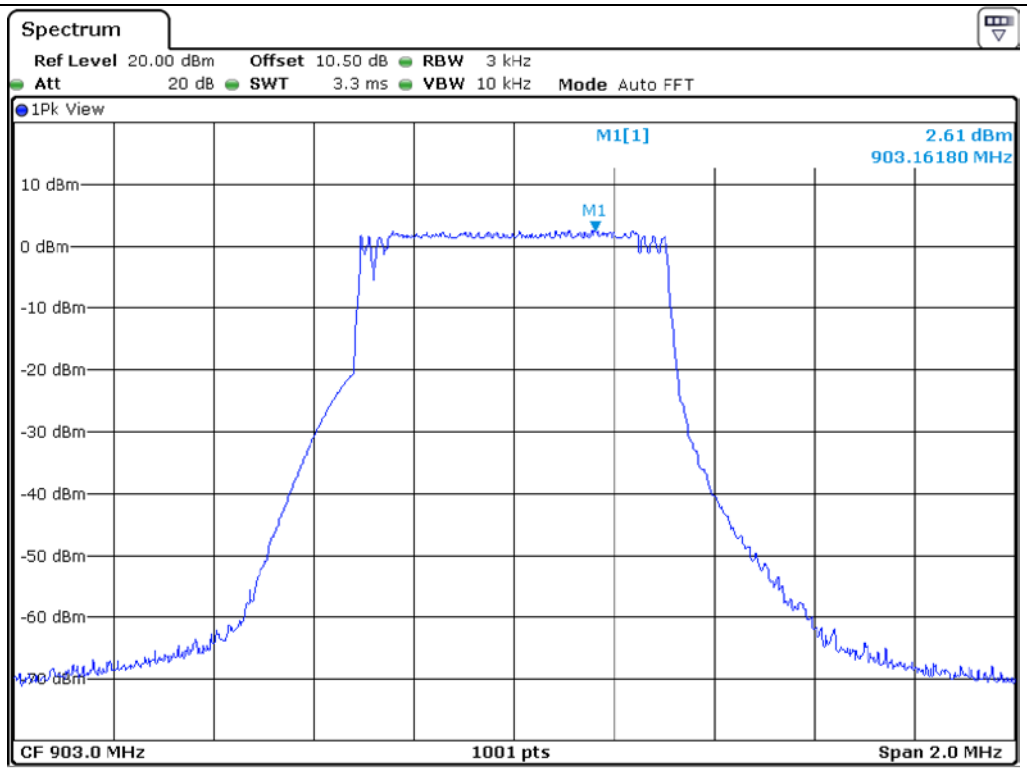
10.4 Test Data

-. Test Result : Pass

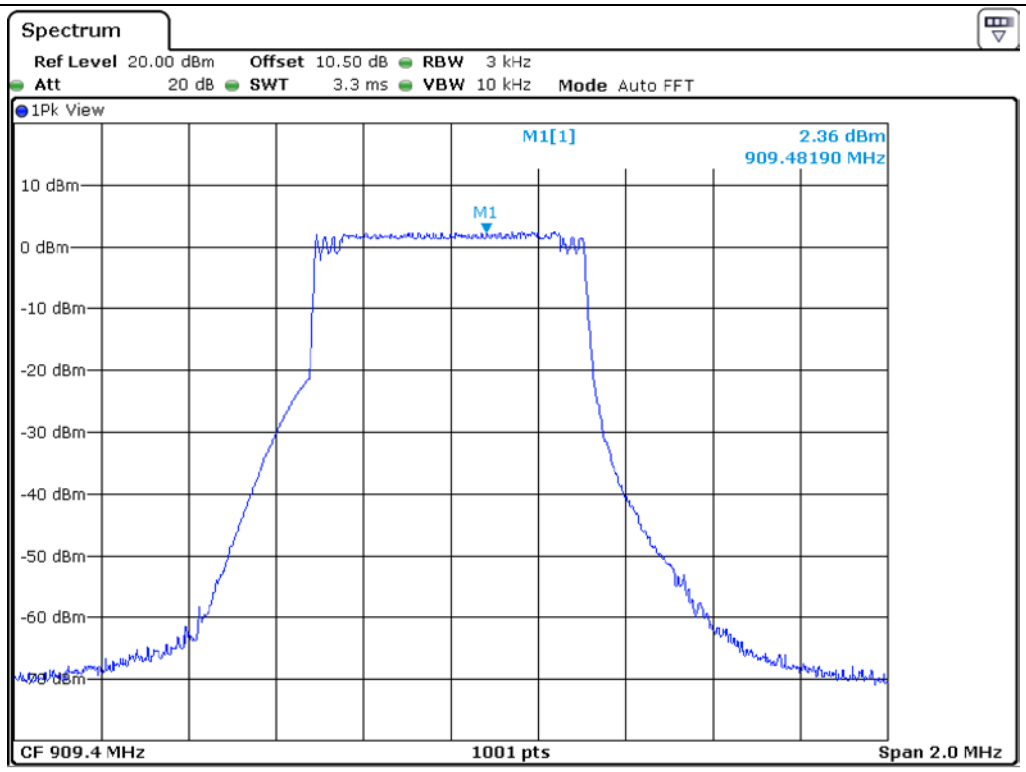
-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	903.00	2.61	8.00	5.39
Middle	909.40	2.36	8.00	5.64
High	914.20	2.40	8.00	5.60

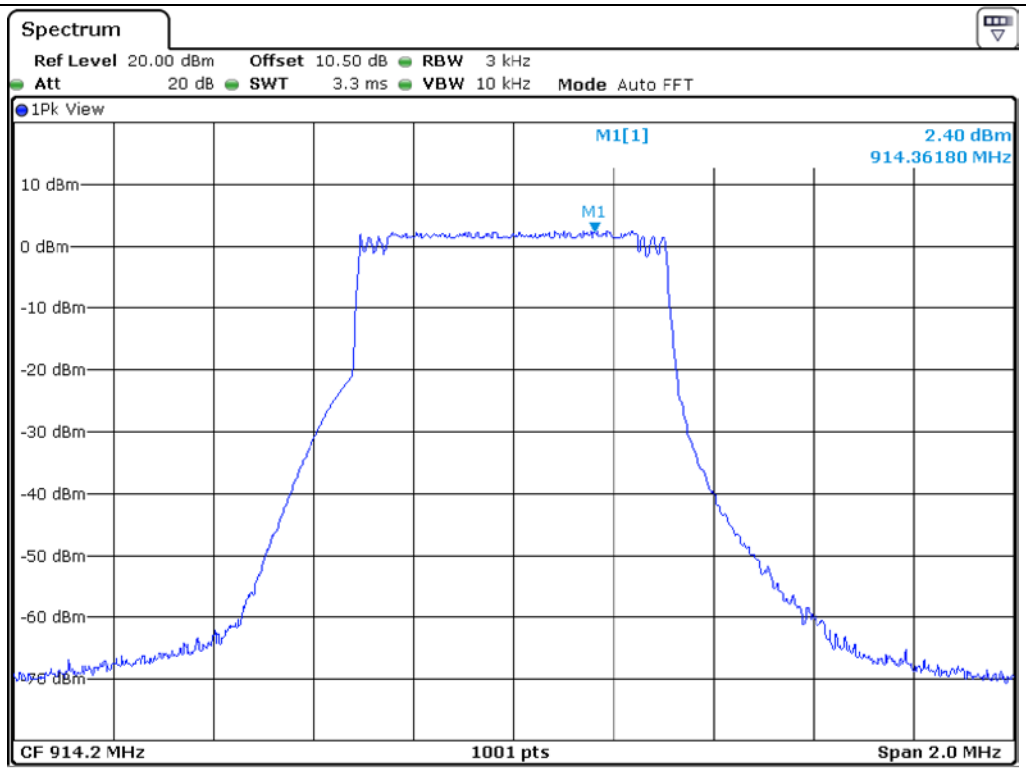
Remark. Margin = Limit – Measured value



Low Channel



Middle Channel



High Channel

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11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature : 23 °C

Relative humidity : 43 % R.H.

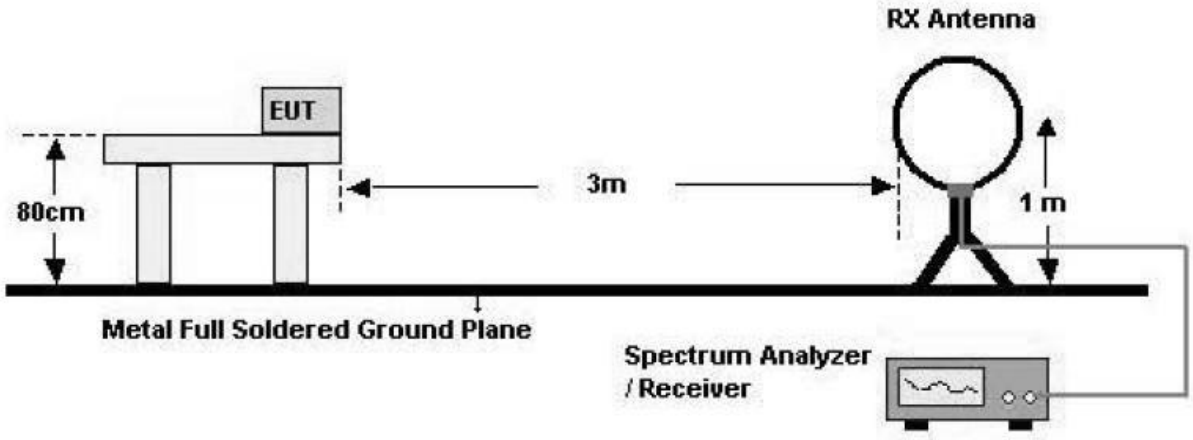
11.2 Test set-up

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.

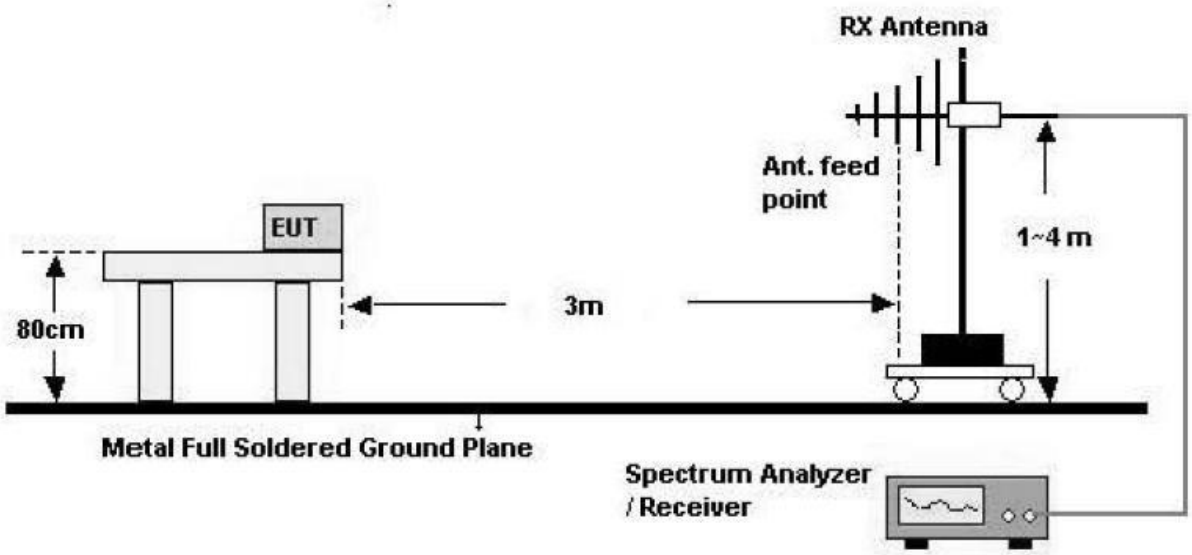
The frequency spectrum from 30 MHz to 10 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

- Test Configuration

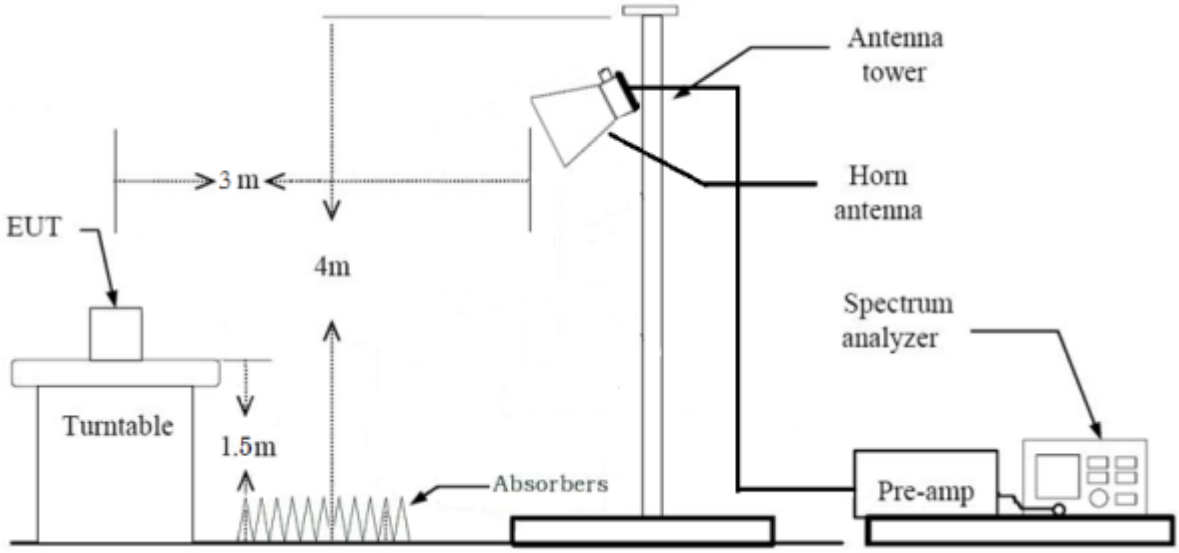
1. Below 30 MHz



2. 30 MHz - 1 GHz



3. Above 1 GHz



11.3 Test Date

March 29, 2021 ~ April 01, 2021

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

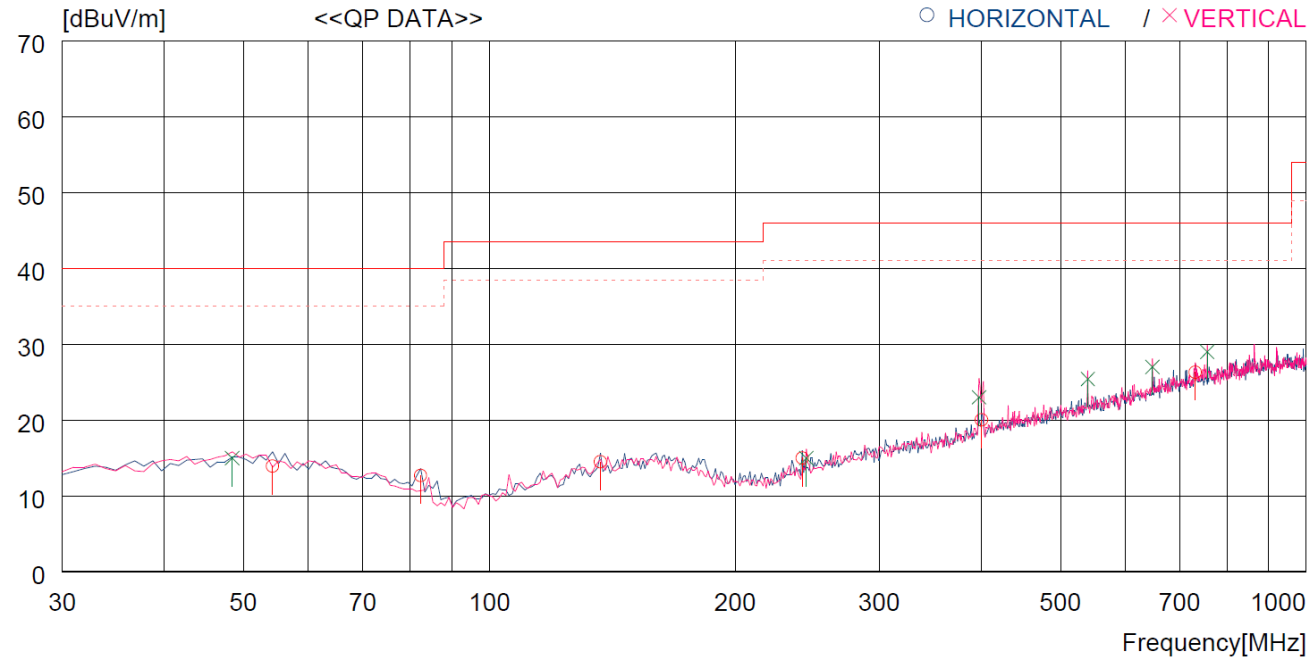
11.4.1 Test data for 30 MHz ~ 1 GHz

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

Result : PASSED

EUT : GPS Tracker & Messenger

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	54.250	25.8	19.6	1.2	32.7	13.9	40.0	26.1	200	359
2	82.380	29.1	14.7	1.5	32.6	12.7	40.0	27.3	300	0
3	136.700	27.0	18.1	2.0	32.6	14.5	43.5	29.0	200	289
4	241.460	27.6	17.3	2.6	32.5	15.0	46.0	31.0	100	0
5	400.540	27.4	21.5	3.4	32.3	20.0	46.0	26.0	200	201
6	731.304	26.8	27.2	4.7	32.4	26.3	46.0	19.7	200	359
----- Vertical ------										
7	48.430	26.9	19.7	1.1	32.7	15.0	40.0	25.0	100	359
8	244.370	27.5	17.4	2.6	32.5	15.0	46.0	31.0	100	359
9	397.630	30.5	21.5	3.4	32.4	23.0	46.0	23.0	400	0
10	540.220	29.4	24.4	4.0	32.4	25.4	46.0	20.6	100	177
11	647.887	28.9	26.2	4.4	32.5	27.0	46.0	19.0	200	323
12	756.523	29.0	27.6	4.8	32.4	29.0	46.0	17.0	100	359

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11.4.2 Test Data for Below 30 MHz

-. 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)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

11.4.3 Test Data for above 1 GHz

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 10 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)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

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12. CONDUCTED EMISSION TEST

12.1 Operating environment

Temperature : 23 °C

Relative humidity : 43 % 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 Date

March 29, 2021 ~ April 01, 2021

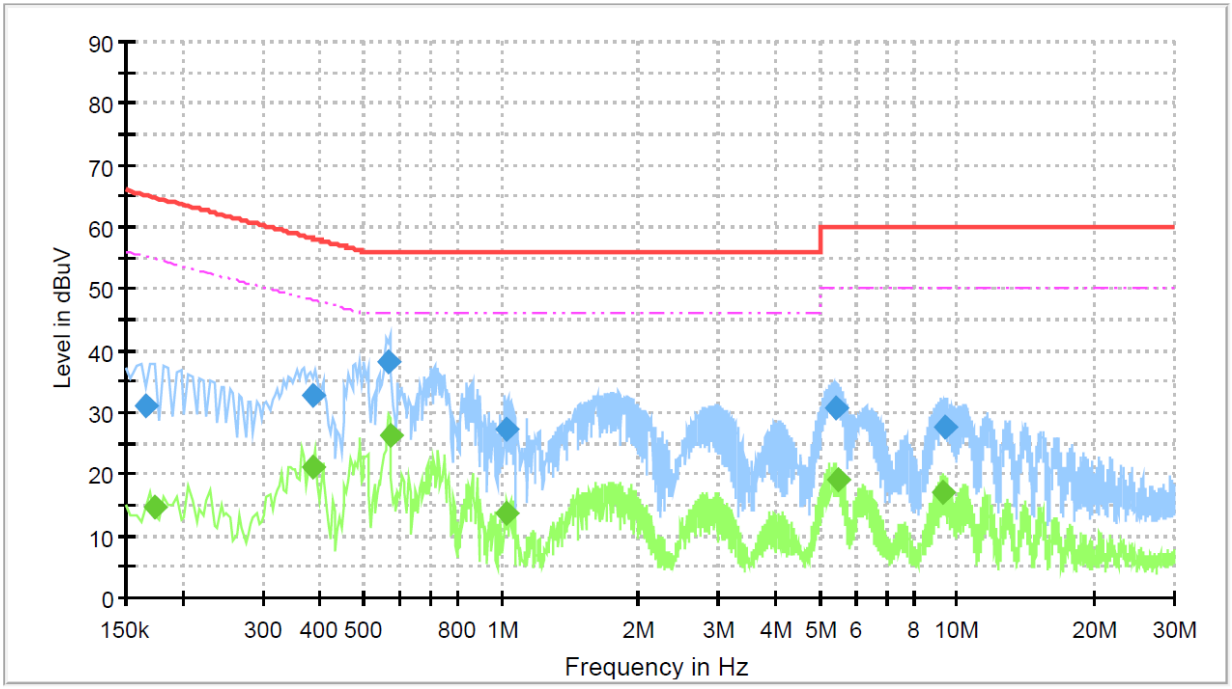
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

12.4 Test data

-. 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)
0.167	31.15	---	65.13	33.99	3000.0	9.0	L1	9.93
0.175	---	14.51	54.74	40.23	3000.0	9.0	L1	9.92
0.385	---	21.05	48.16	27.11	3000.0	9.0	L1	9.93
0.385	32.76	---	58.16	25.40	3000.0	9.0	L1	9.93
0.564	38.31	---	56.00	17.69	3000.0	9.0	L1	9.94
0.572	---	26.15	46.00	19.85	3000.0	9.0	L1	9.94
1.028	27.31	---	56.00	28.69	3000.0	9.0	L1	9.99
1.028	---	13.69	46.00	32.31	3000.0	9.0	L1	9.99
5.399	30.81	---	60.00	29.19	3000.0	9.0	L1	10.10
5.472	---	19.15	50.00	30.85	3000.0	9.0	L1	10.10
9.313	---	17.19	50.00	32.81	3000.0	9.0	L1	10.29
9.392	27.72	---	60.00	32.28	3000.0	9.0	L1	10.29

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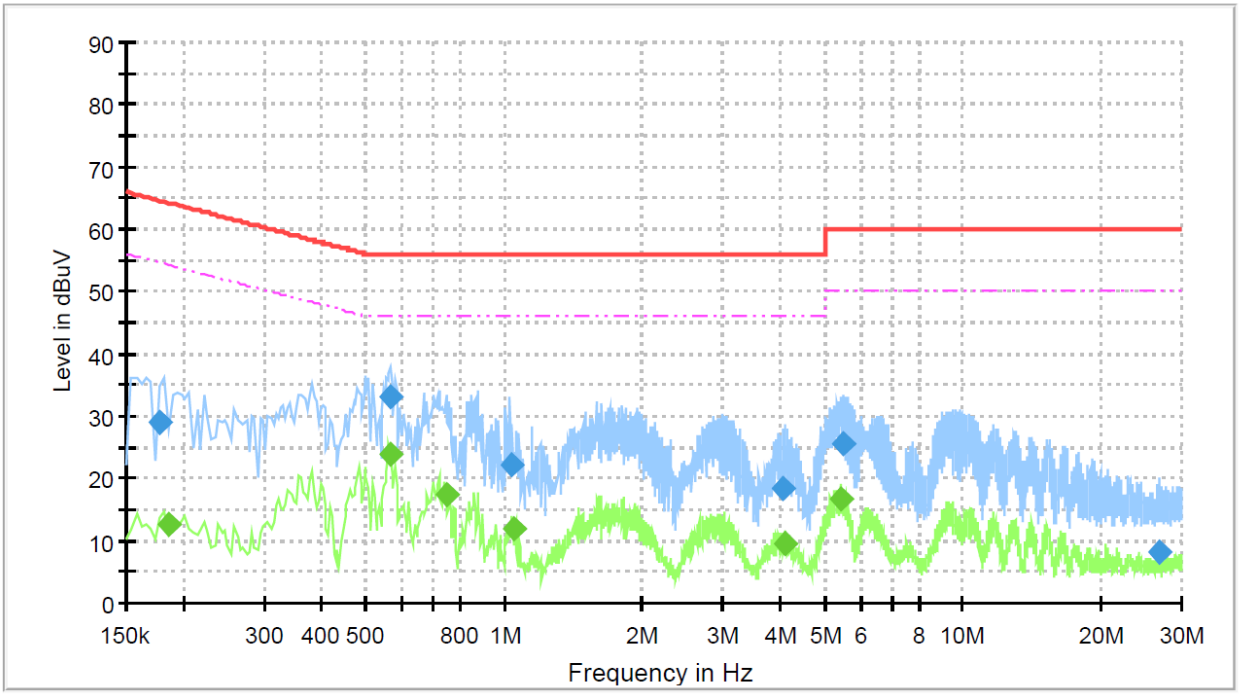
-. Tested Line : NEUTRAL LINE



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.178	28.97	---	64.60	35.63	3000.0	9.0	N	9.93
0.186	---	12.52	54.24	41.71	3000.0	9.0	N	9.93
0.564	---	23.92	46.00	22.08	3000.0	9.0	N	9.95
0.564	33.08	---	56.00	22.92	3000.0	9.0	N	9.95
0.749	---	17.28	46.00	28.72	3000.0	9.0	N	9.96
1.036	21.99	---	56.00	34.01	3000.0	9.0	N	9.99
1.052	---	11.91	46.00	34.09	3000.0	9.0	N	9.99
4.073	18.41	---	56.00	37.59	3000.0	9.0	N	10.08
4.113	---	9.63	46.00	36.37	3000.0	9.0	N	10.08
5.408	---	16.63	50.00	33.37	3000.0	9.0	N	10.13
5.483	25.52	---	60.00	34.48	3000.0	9.0	N	10.13
26.795	8.10	---	60.00	51.90	3000.0	9.0	N	10.77

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.

13. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV40-N	Rohde & Schwarz	Signal Analyzer	101546	Jun. 24, 2020 (1Y)
ESW	Rohde & Schwarz	EMI Test Receiver	101851	Mar. 22, 2021 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	392756	Oct. 16, 2020 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 15, 2020 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 15, 2020 (1Y)
DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
CO3000	Innco Systems GmbH	Controller	N/A	N/A
VULB9168	Schwarzbeck	Hybrid Antenna	01088	Dec. 09, 2019 (2Y)
AH-118	Com-Power	Horn Antenna	10050061	Oct. 15, 2020 (1Y)
VULB9163	Schwarzbeck	TRILOG Broadband Antenna	777	Apr. 08, 2020 (2Y)
BBHA 9120D	Schwarzbeck	Horn Antenna	9120D-1366	Jul. 23, 2020 (1Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 07, 2021 (1Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 24, 2020 (2Y)
ESR3	Rohde & Schwarz	EMI TEST RECEIVER	102602	Mar. 15, 2021 (1Y)
NSLK8126	Schwarzbeck	AMN	8126-404	Mar. 15, 2021 (1Y)
ESH3Z2	Rohde & Schwarz	PULSE LIMITER	357.8810.52	Mar. 15, 2021 (1Y)