ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test Report No. : **OT-216-RED-128**

Reception No. : **2104002892**

Applicant : **LG Electronics USA, Inc.**

Address : **111 Sylvan Ave, North Building, Englewood Cliffs, New Jersey, 07632, United States**

Manufacturer : **LG Electronics Inc.**

Address : **222 LG-ro Jinwi-myeon, Pyeongtaek-si,Gyeonggi-do, Korea**

Type of Equipment : **Bluetooth Earbud (Cradle)**

Model Names : **TONE-FP9C**

Multiple Model Name : **TONE-FP9WC, TONE-FP9EC**
TONE-TFP9C, TONE-TFP9WC, TONE-TFP9EC
TONE-UFP9C, TONE-UFP9WC, TONE-UFP9EC
TONE-DFP9C, TONE-DFP9WC, TONE-DFP9EC
TONE-FP9AC, TONE-FP9WAC, TONE-FP9EAC

Serial number : **N/A**

Total page of Report : **24 pages (including this page)**

Date of Incoming : **June 01, 2021**

Test Period : **June 02, 2021 ~ June 08, 2021**

Date of Issuing : **June 23, 2021**

SUMMARY

The equipment complies with the requirement of

FCC CFR 47 PART 15 SUBPART B, Section 15.101 and IC ICES-003 Issue 7

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

Reviewed by:

Seung-Hyun, Park / Manager
EMC Testing Div.
ONETECH Corp.

Approved by:

Gea-Won, Lee / Managing Director
EMC Testing Div.
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)

Revision History

Rev. No.	Issued Report No.	Issued Date	Revisions	Section Affected
0	OT-216-RED-128	June 23, 2021	Initial Issue	All

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1. VERIFICATION OF COMPLIANCE

-. Applicant : LG Electronics USA, Inc.

-. Address : 111 Sylvan Ave, North Building, Englewood Cliffs, New Jersey, 07632, United States

-. Manufacturer : LG Electronics Inc.

-. Address : 222 LG-ro Jinwi-myeon, Pyeongtaek-si,Gyeonggi-do, Korea

-. Factory : BLUECOM

-. Address : C5-4, Area CN1, Trang Due Industrial Park, An Duong District, Haiphong City, Vietnam

-. MODEL NAME : TONE-FP9C

-. SERIAL NUMBER : N/A

-. BRAND/TRADE NAME : LG

-. DATE : June 23, 2021

EQUIPMENT CLASS	Other Class B digital devices & peripherals
E.U.T. DESCRIPTION	Bluetooth Earbud (Cradle)
MEASUREMENT PROCEDURES	Original Grant
TYPE OF EQUIPMENT TESTED	ANSI C63.4: 2014 and ICES-003 ISSUE 7
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Supplier's Declaration of Conformity (SDoC)
STANDARDS	FCC PART 15 (Class B) ICES-003 ISSUE 7 Class B Apparatus
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	None
FINAL TEST WAS CONDUCTED ON	10 m Semi anechoic chamber

ONETECH Corp. tested the above equipment in accordance with the requirements set forth in the above standard. The test results show that equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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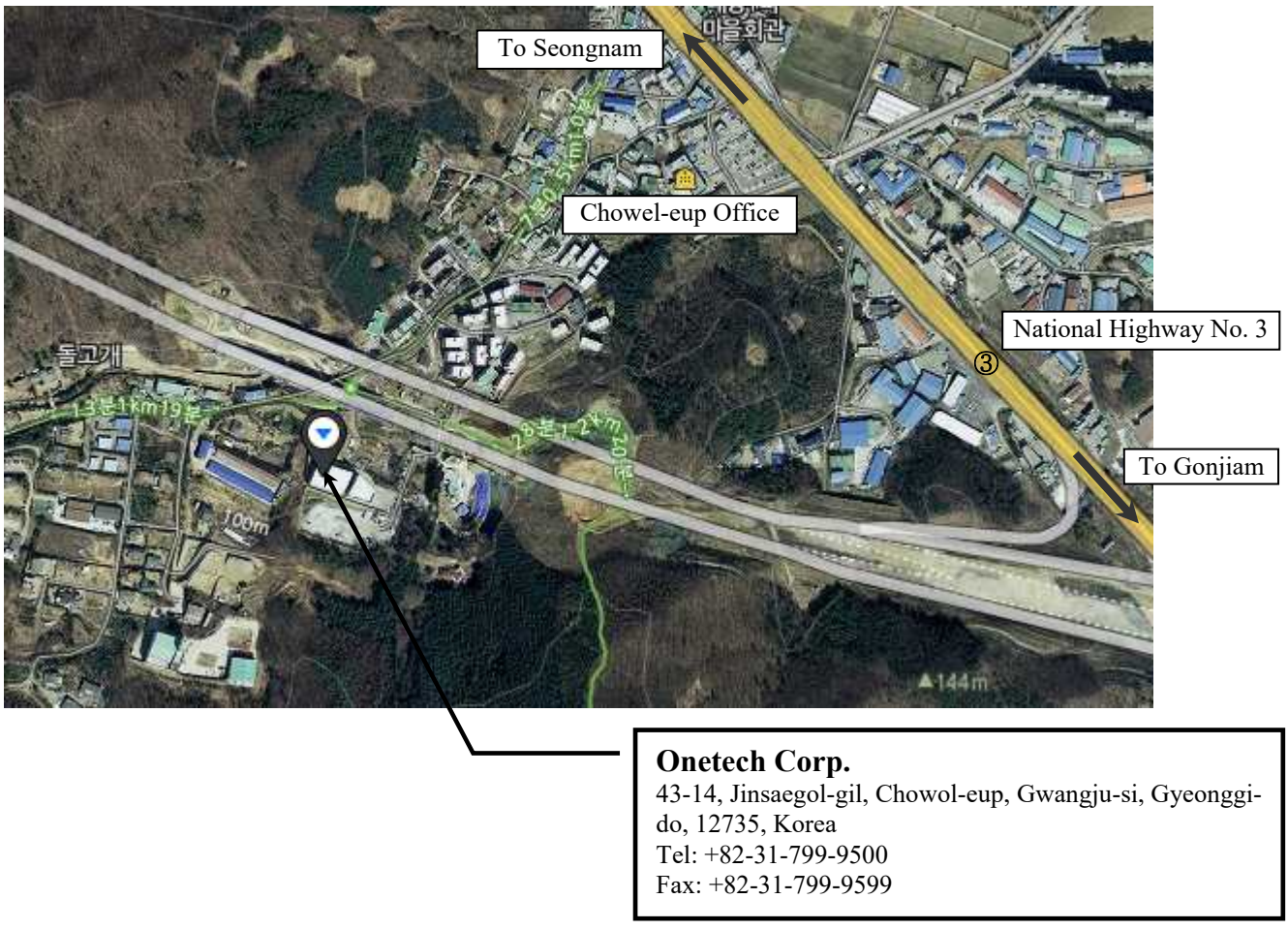
2. TEST FACILITY

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025 by Radio Research Agency as accreditation body. The Onetech Corp. is accredited for measuring devices subject to Declaration of Conformity (DOC) under Parts 15 & 18 as a Conformity Assessment Body (CAB) with designation number KR0013.

These measurement tests were conducted at Onetech Corp.

The 10 m semi anechoic chamber and conducted measurement facilities are located at

1) 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.
2) 12-5, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.



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3. PRODUCT INFORMATION

3.1 Description of EUT

The LG Electronics USA, Inc., Model TONE-FP9C (referred to as the EUT in this report) is a Bluetooth Earbud (Cradle). Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. or CRY. FREQ. (FREQ. >= 1 MHz)	40 MHz
RF FREQ.	2 402 MHz ~ 2 480 MHz
ELECTRICAL RATING	Charging case: DC 5 V, 500 mA Lithium ion battery of cradle: 3.7 Vdc, 390 mAh
NUMBER OF PCB LAYERS	-
EXTERNAL CONNECTOR	Charging case : Charging terminals, Charge port(USB Type C)
Temperature Range	0 °C ~ 40 °C

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3.2 Model Differences

-. The following lists consist of the added model and their differences.

Model Name	Differences	Tested
TONE-FP9C	Basic Model	☑
TONE-FP9WC	This model is identical to the basic model except for the Color (White) and model name.	☐
TONE-FP9EC	This model is identical to the basic model except for the Color (Beige) and model name.	☐
TONE-TFP9C	This model is identical to the basic model except for the Marketing area (KOREA) and model name.	☐
TONE-TFP9WC	This model is identical to the basic model except for the Color(White), Marketing area (KOREA) and model name.	☐
TONE-TFP9EC	This model is identical to the basic model except for the Color(Beige), Marketing area (KOREA) and model name.	☐
TONE-UFP9C	This model is identical to the basic model except for the Marketing area (United Kingdom) and model name.	☐
TONE-UFP9WC	This model is identical to the basic model except for the Color(White), Marketing area (United Kingdom) and model name.	☐
TONE-UFP9EC	This model is identical to the basic model except for the Color(Beige), Marketing area (United Kingdom) and model name.	☐
TONE-DFP9C	This model is identical to the basic model except for the Marketing area (Germany) and model name.	☐
TONE-DFP9WC	This model is identical to the basic model except for the Color(White), Marketing area (Germany) and model name.	☐
TONE-DFP9EC	This model is identical to the basic model except for the Color(Beige), Marketing area (Germany) and model name.	☐
TONE-FP9AC	This model is identical to the basic model except for the Marketing area (Australia) and model name.	☐
TONE-FP9WAC	This model is identical to the basic model except for the Color(White), Marketing area (Australia) and model name.	☐
TONE-FP9EAC	This model is identical to the basic model except for the Color(Beige), Marketing area (Australia) and model name.	☐

Note: 1. Applicant consigns only basic model to test. Therefore, this test report just guarantees the units, which have been tested.

2. The Applicant/manufacturer is responsible for the compliance of all variants.

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3.3 Support Equipment

The model numbers for all the equipments that were used in the tested system is:

Description	Model	Manufacturer	Connected to
Bluetooth Earbud (Cradle) (EUT)	TONE-FP9C	LG Electronics Inc.	Adapter
Adapter	MCS-H06KR	Sunlin Vina Electronics Co., Ltd.	EUT
Bluetooth Earbud	TONE-FP9	LG Electronics Inc.	-
Smartphone	SM-N916S	SAMSUNG	EUT

3.4 System Configuration

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Bluetooth Earbud (Cradle)	LG Electronics Inc.	TONE-FP9C	ZNFTONEFP9C

3.5 Cable Description for the EUT

Cable		Shielded	Ferrite Bead	Metal Shell	Length (m)	Connected to
Bluetooth Earbud (Cradle)	Charging terminals	-	-	-	-	Earbud
	Charge port(USB Type C)	Y	N	N	0.5	Adapter
	* Charge port(USB Type C)	Y	N	N	0.5	Smartphone
Bluetooth Earbud (Cradle)	Charging terminals	-	-	-	-	EUT (Cradle)

*** AUX+BT Mode**

3.6 Equipment Modifications

-. None

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4. DESCRIPTION OF TESTS

4.1 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2014.

Radiated testing was performed at a distance of 3 m from EUT to the antenna.

4.2 Test Condition

The test conditions of the noted test mode(s) in this test report are;

1) Test Voltage / Frequency

-. AC 120 V / 60 Hz

2) Test Mode(s)

Test Mode		Operating States
1	Charging	a) The USB Type C port on the EUT was connected to the adapter and then the Earbud was charging operate.
2	AUX + BT	a) The USB Type C port on the EUT was connected to the Smartphone and then the EUT was pairing the Earbud operate.

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4.3 Conducted Emission

The EUT was placed on a non-conductive 1.0 m × 1.5 m table, which is 0.8 m in height above the reference ground plane and 0.4 m away from the vertical conducting plane (over 2 m × 2 m) that is bonded to the reference ground plane.
The power of EUT is fed through a 50 Ω/ 50 μH + 5 Ω LISN and all support equipment is powered from another LISN. Powers to the LISN are filtered by high-current high insertion loss power line filter.
Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.
The RF output of the LISN was connected to the EMI test receiver.
Exploratory measurements were conducted to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.
Based on exploratory measurements, the final measurements were conducted at the worst test conditions.
Exploratory measurements were scanned using Peak mode of EMI Test receiver from 150 kHz to 30 MHz with 20 ms sweep time. The final measurements were measured with Quasi-Peak and CISPR Average mode.
The bandwidth of EMI Test Receiver was set to 9 kHz. Interface cables were connected to the available interface ports of the test unit. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

4.4 Radiated Emission

Exploratory Radiated measurements were conducted at the 3 m semi anechoic chamber in order to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.
Based on exploratory measurements, the final measurements were conducted at the worst test conditions.
Final measurements were made at 10 m semi anechoic chamber that complies with CISPR 16/ANSI C63.4/ ICES-003.
Exploratory measurements were scanned using Peak mode of EMI Test receiver and final measurements were measured with Quasi-Peak mode (Below 1 GHz) and Peak & CISPR Average mode (Above 1 GHz).
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.

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5. FINAL RESULT OF MEASUREMENT

Exploratory measurement was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

5.1.1 Operating Environment

Ambient temperature : 22.8 °C
Relative humidity : 48.8 % R.H.

5.1.2 Test Setup

The EUT and other support equipment were placed on a non-conductive table, 0.8 m height above the reference ground plane. The power of EUT was fed through a 50 Ω/ 50 μH + 5 Ω LISN. The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

5.1.3 Measurement uncertainty

Conducted emission, quasi-peak detection : ± 3.9 dB
Conducted emission, CISPR-average detection : ± 3.9 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2. The measurement uncertainty is given with a confidence of 95 % with the coverage factor, k = 2.

5.1.4 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	CISPR Average
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50
* Decreases with the logarithm of the frequency		

5.1.5 Test Equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101420	Mar. 23, 2021 (1Y)
■ -	LT32C/10	Afj Instruments	LISN	32032039322	Oct. 22, 2020 (1Y)
□ -	3825/2	EMCO	AMN	9109-1867	Mar. 22, 2021 (1Y)
■ -	11947A	Hewlett Packard	Transient Limiter	3107A02762	Mar. 22, 2021(1Y)

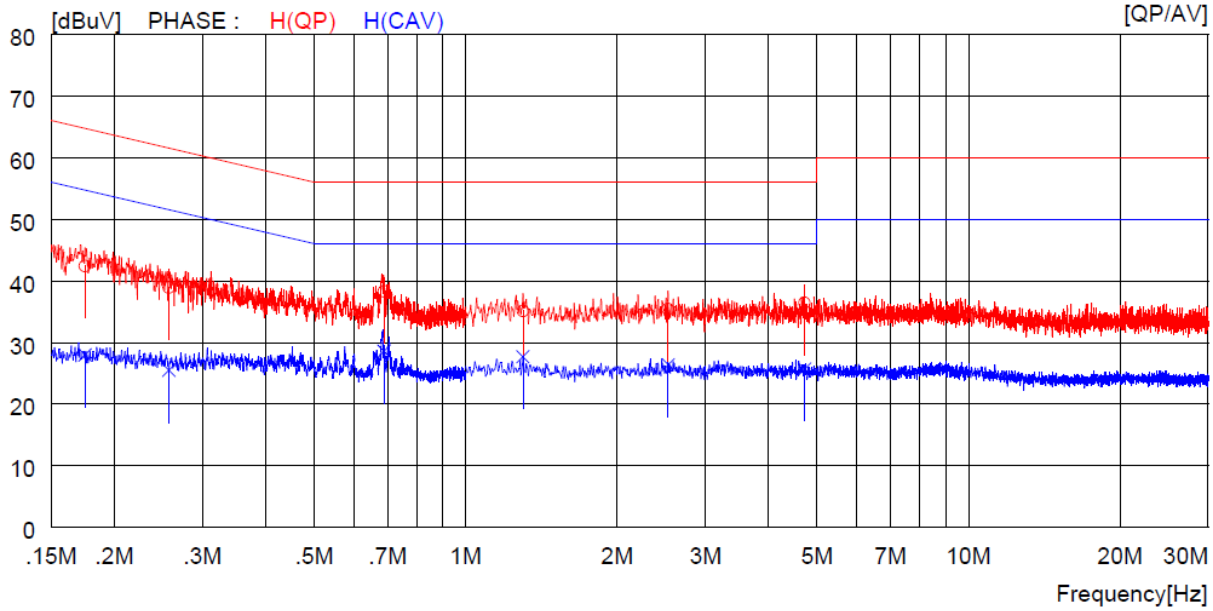
All test equipment used is calibrated on a regular basis.

5.1.6 Test Data

. Test Result : Pass

Tested by: Young-Rak, Kim / Project Engineer

Test Mode 1 (Charging)			
Frequency range	: 0.15 MHz ~ 30 MHz	Test Date	: June 02, 2021
Resolution bandwidth	: 9 kHz	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	0.17500	20.9	----	21.5	42.4	----	64.7	----	22.3	----	H(QP)
2	0.25700	17.4	----	21.5	38.9	----	61.5	----	22.6	----	H(QP)
3	0.68800	16.8	----	21.5	38.3	----	56.0	----	17.7	----	H(QP)
4	1.30000	13.5	----	21.6	35.1	----	56.0	----	20.9	----	H(QP)
5	2.52800	13.8	----	21.6	35.4	----	56.0	----	20.6	----	H(QP)
6	4.72000	14.7	----	21.7	36.4	----	56.0	----	19.6	----	H(QP)
7	0.17500	----	6.5	21.5	----	28.0	----	54.7	----	26.7	H(CAV)
8	0.25700	----	4.0	21.5	----	25.5	----	51.5	----	26.0	H(CAV)
9	0.68800	----	7.1	21.5	----	28.6	----	46.0	----	17.4	H(CAV)
10	1.30000	----	6.1	21.6	----	27.7	----	46.0	----	18.3	H(CAV)
11	2.52800	----	4.8	21.6	----	26.4	----	46.0	----	19.6	H(CAV)
12	4.72000	----	4.0	21.7	----	25.7	----	46.0	----	20.3	H(CAV)

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

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

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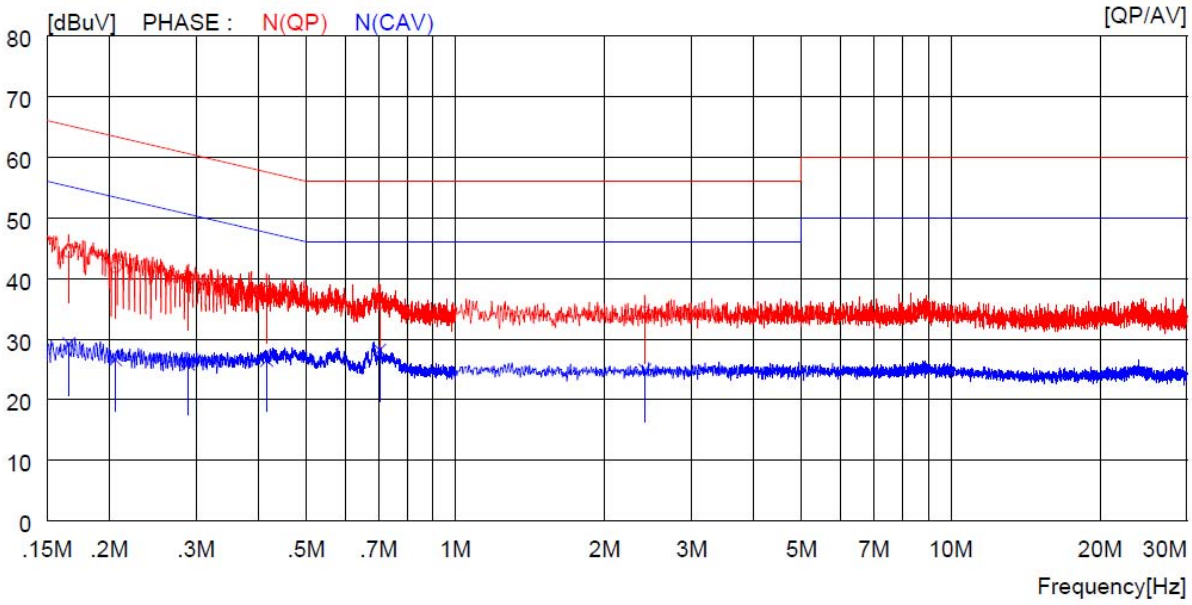
Test Mode 1 (Charging)			
Frequency range	: 0.15 MHz ~ 30 MHz	Test Date	: June 02, 2021
Resolution bandwidth	: 9 kHz	Tested Line	: NEUTRAL LINE



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	0.16600	22.9	----	21.5	44.4	----	65.2	----	20.8	----	N(QP)
2	0.20600	20.4	----	21.5	41.9	----	63.4	----	21.5	----	N(QP)
3	0.28900	18.5	----	21.5	40.0	----	60.6	----	20.6	----	N(QP)
4	0.41600	16.3	----	21.5	37.8	----	57.5	----	19.7	----	N(QP)
5	0.70300	14.4	----	21.5	35.9	----	56.0	----	20.1	----	N(QP)
6	2.41200	12.8	----	21.6	34.4	----	56.0	----	21.6	----	N(QP)
7	0.16600	----	7.7	21.5	----	29.2	----	55.2	----	26.0	N(CAV)
8	0.20600	----	5.1	21.5	----	26.6	----	53.4	----	26.8	N(CAV)
9	0.28900	----	4.4	21.5	----	25.9	----	50.6	----	24.7	N(CAV)
10	0.41600	----	5.0	21.5	----	26.5	----	47.5	----	21.0	N(CAV)
11	0.70300	----	6.7	21.5	----	28.2	----	46.0	----	17.8	N(CAV)
12	2.41200	----	3.3	21.6	----	24.9	----	46.0	----	21.1	N(CAV)

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

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

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5.2 Radiated Emission Test

5.2.1 Operating Environment

Ambient temperature : 22.7 °C
Relative humidity : 49.2 % R.H.

5.2.2 Test Setup

The radiated emissions measurements were on the 3 m, in 10 m semi anechoic chamber. The EUT and all local support equipments were placed on a non-conductive turntable approximately 0.8 m above the ground plane.

The frequency spectrum from 30 MHz to 18 000 MHz 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.

5.2.3 Measurement uncertainty

Radiated emission electric field intensity, 30 MHz ~ 1 000 MHz : ± 4.6 dB
Radiated emission electric field intensity, 1 GHz ~ 18 GHz : ± 6.0 dB
Measurement uncertainty is calculated in accordance with CISPR 16-4-2. The measurement uncertainty is given with a confidence of 95 % with the coverage factor, $k = 2$.

5.2.4 Limit

-. FCC Part 15 Subpart B

Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBμV/m)	
		Quasi-peak	
30 ~ 88	120 kHz	40.0	
88 ~ 216		43.5	
216 ~ 230		46.0	
230 ~ 960		46.0	
960 ~ 1 000		54.0	
		Peak Limit	CISPR Average Limit
> 1 000	1 MHz	74.0	54.0

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-. ICES-003

Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBµV/m)	Field strength @ 10 m (dBµV/m)
		Quasi-peak	Quasi-peak
30 ~ 88	120 kHz	40.0	30.0
88 ~ 216		43.5	33.1
216 ~ 230		46.0	35.6
230 ~ 960		47.0	37.0
960 ~ 1 000		54.0	43.5
Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBµV/m)	
		Peak Limit	CISPR Average Limit
> 1 000	1 MHz	74.0	54.0

5.2.5 Test Equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ - ESW	Rohde & Schwarz	Test Receiver	101851	Mar. 23, 2021 (1Y)
■ - ESR	Rohde & Schwarz	Test Receiver	102190	Oct. 16, 2020 (1Y)
■ - 8447D	Hewlett Packard	Amplifier	2944A07777	Mar. 15, 2021 (1Y)
■ - VULB9163	Schwarzbeck	Trilog Broadband Antenna	9163-225	Sep. 14, 2020 (2Y)
■ - 3115	ETS-LINDGREN	Horn Antenna	34823	Aug. 14, 2020 (1Y)
■ - PAM-118A	Com-Power	Amplifier	18040081	Oct. 12, 2020 (1Y)
■ - CO3000	Innco Systems GmbH	Controller	CO3000/1015	N/A
■ - DT5000	Innco Systems GmbH	Turn Table	DT5000/3t	N/A
■ - MA4000-EP	Innco Systems GmbH	Antenna Master	MA4000/508	N/A
■ - MA-4640-XPET	Innco Systems GmbH	Antenna Master	MA4640/592	N/A

All test equipment used is calibrated on a regular basis.

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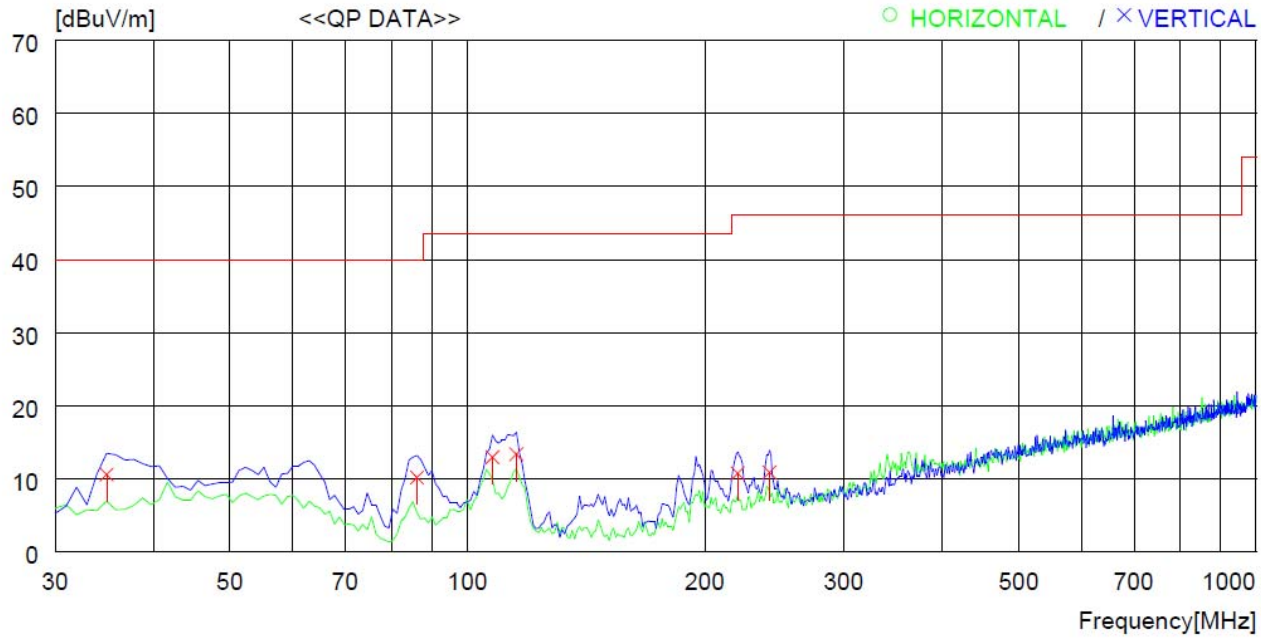
5.2.6 Test Data

. Test Result : Pass

Tested by: Young-Rak, Kim / Project Engineer

Test Mode 1 (Charging)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: FCC Part 15 Subpart B
Resolution bandwidth	: 120 kHz	Test Date	: June 08, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 3 m



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]
----- Vertical ------										
1	34.850	28.3	12.4	1.9	32.0	10.6	40.0	29.4	100	0
2	86.260	30.0	9.1	3.1	32.0	10.2	40.0	29.8	100	85
3	107.600	30.5	11.1	3.4	32.0	13.0	43.5	30.5	100	100
4	115.360	31.8	10.1	3.5	32.0	13.4	43.5	30.1	100	126
5	220.120	26.1	11.5	5.2	32.0	10.8	46.0	35.2	100	60
6	241.460	25.4	12.3	5.2	32.0	10.9	46.0	35.1	100	0

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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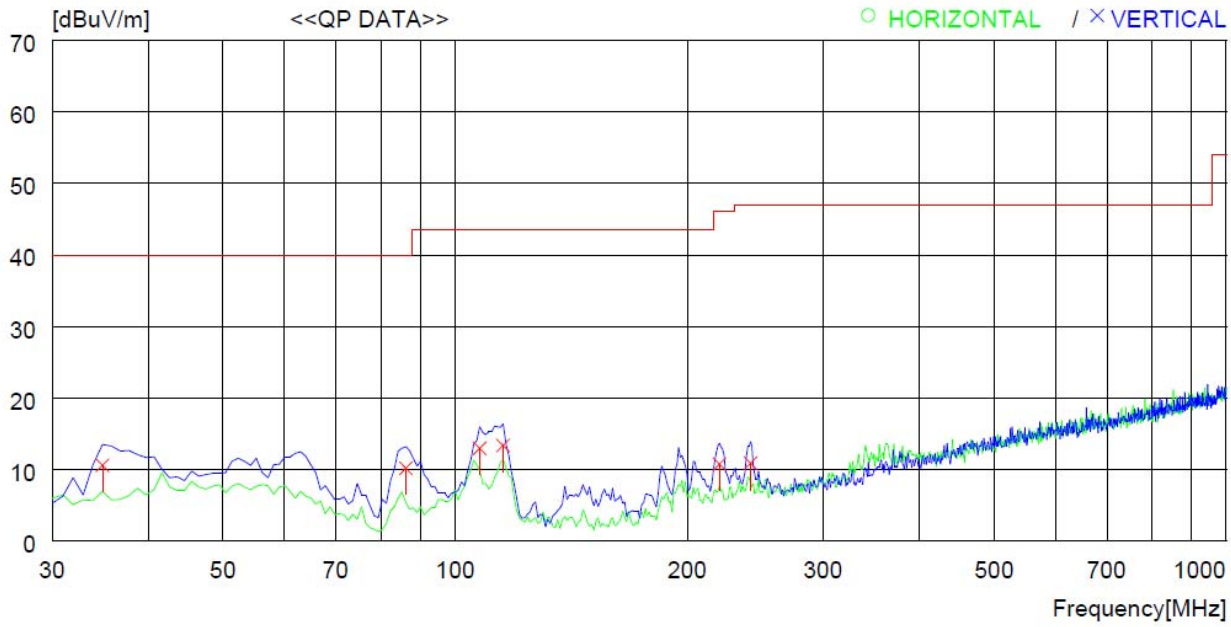
Test Mode 1 (Charging)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: ICES-003 Issue 7
Resolution bandwidth	: 120 kHz	Test Date	: June 08, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 3 m



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]
----- Vertical ------										
1	34.850	28.3	12.4	1.9	32.0	10.6	40.0	29.4	100	0
2	86.260	30.0	9.1	3.1	32.0	10.2	40.0	29.8	100	85
3	107.600	30.5	11.1	3.4	32.0	13.0	43.5	30.5	100	100
4	115.360	31.8	10.1	3.5	32.0	13.4	43.5	30.1	100	126
5	220.120	26.1	11.5	5.2	32.0	10.8	46.0	35.2	100	60
6	241.460	25.4	12.3	5.2	32.0	10.9	47.0	36.1	100	0

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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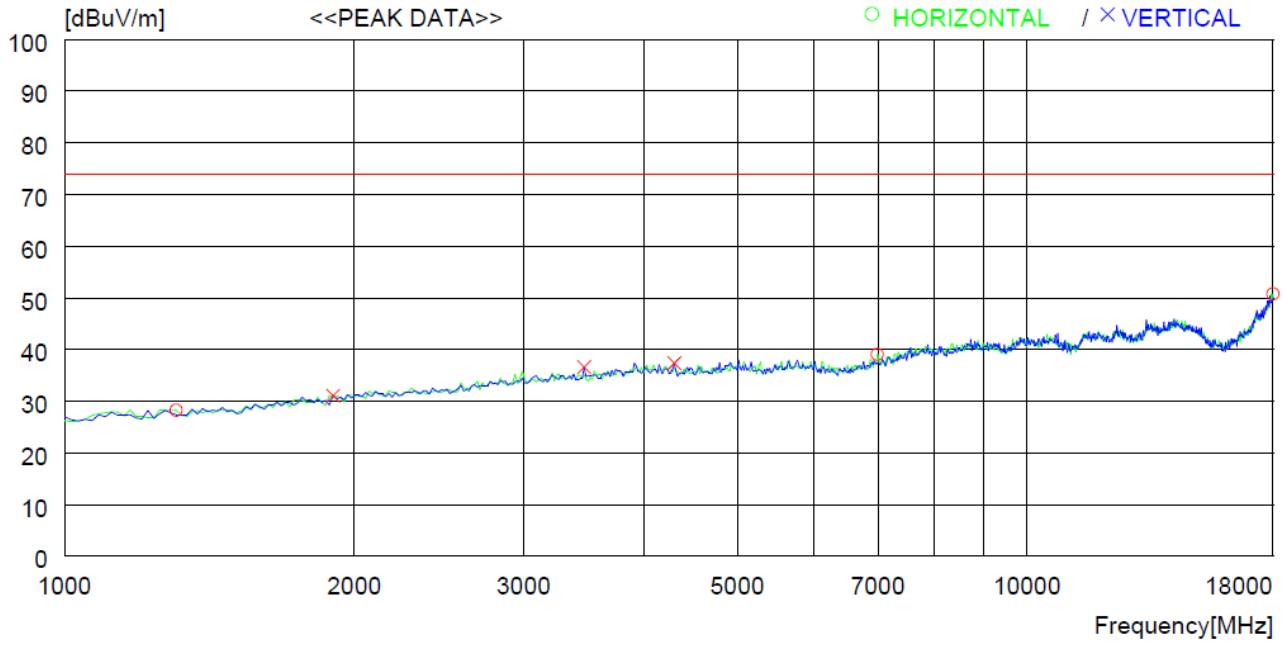
Test Mode 1 (Charging)			
Frequency range	: 1 GHz ~ 18 GHz	Test Date	: June 08, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: Peak		



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1306.000	46.1	24.8	2.4	45.0	28.3	74.0	45.7	100	114
2	6984.000	44.1	35.3	5.8	46.1	39.1	74.0	34.9	100	357
3	18000.000	39.6	47.4	9.7	45.9	50.8	74.0	23.2	100	146
----- Vertical ------										
4	1901.000	46.3	27.1	3.0	45.3	31.1	74.0	42.9	100	18
5	3465.000	47.5	31.0	4.1	46.0	36.6	74.0	37.4	100	347
6	4298.000	46.6	32.5	4.6	46.3	37.4	74.0	36.6	100	0

Remark: Margin (dB) = Limit – Result

Result = Reading Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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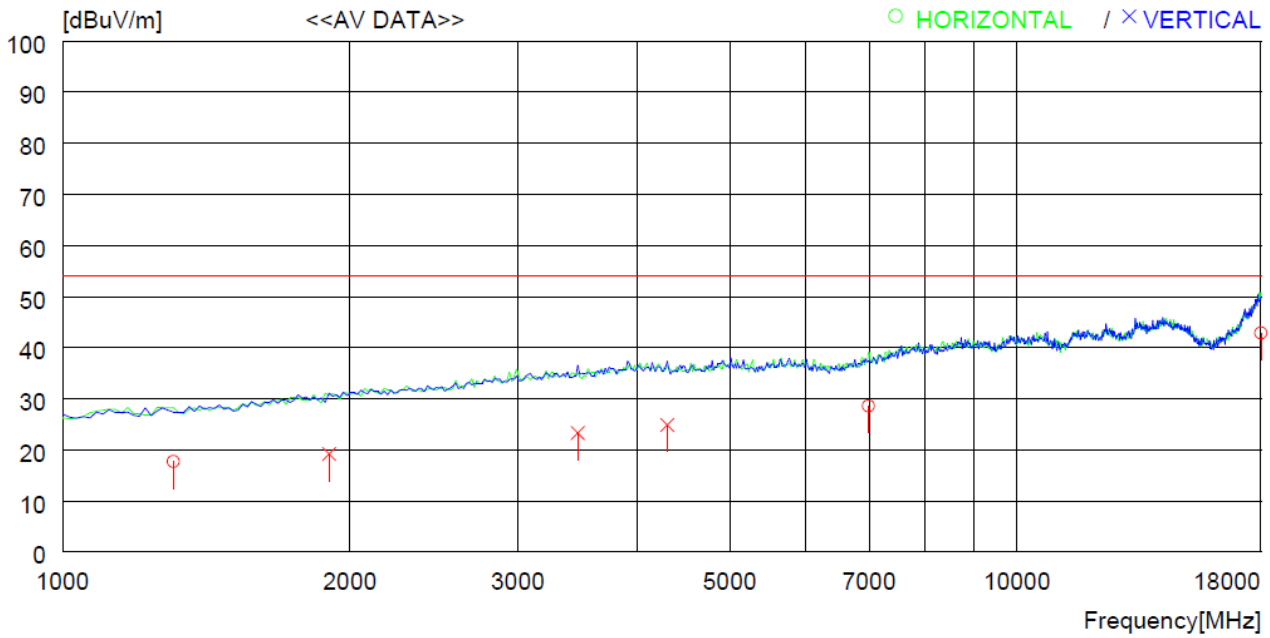
Test Mode 1 (Charging)			
Frequency range	: 1 GHz ~ 18 GHz	Test Date	: June 08, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: CISPR-Average		



No.	FREQ	READING AV	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	1306.034	35.5	24.8	2.4	45.0	17.7	54.0	36.3	100	114
2	6984.661	33.6	35.3	5.8	46.1	28.6	54.0	25.4	100	357
3	18000.000	31.7	47.4	9.7	45.9	42.9	54.0	11.1	100	146
----- Vertical ------										
4	1901.432	34.4	27.1	3.0	45.3	19.2	54.0	34.8	100	18
5	3465.156	34.2	31.0	4.1	46.0	23.3	54.0	30.7	100	347
6	4298.342	34.1	32.5	4.6	46.3	24.9	54.0	29.1	100	0

Remark: Margin (dB) = Limit – Result

Result = Reading CISPR-Average + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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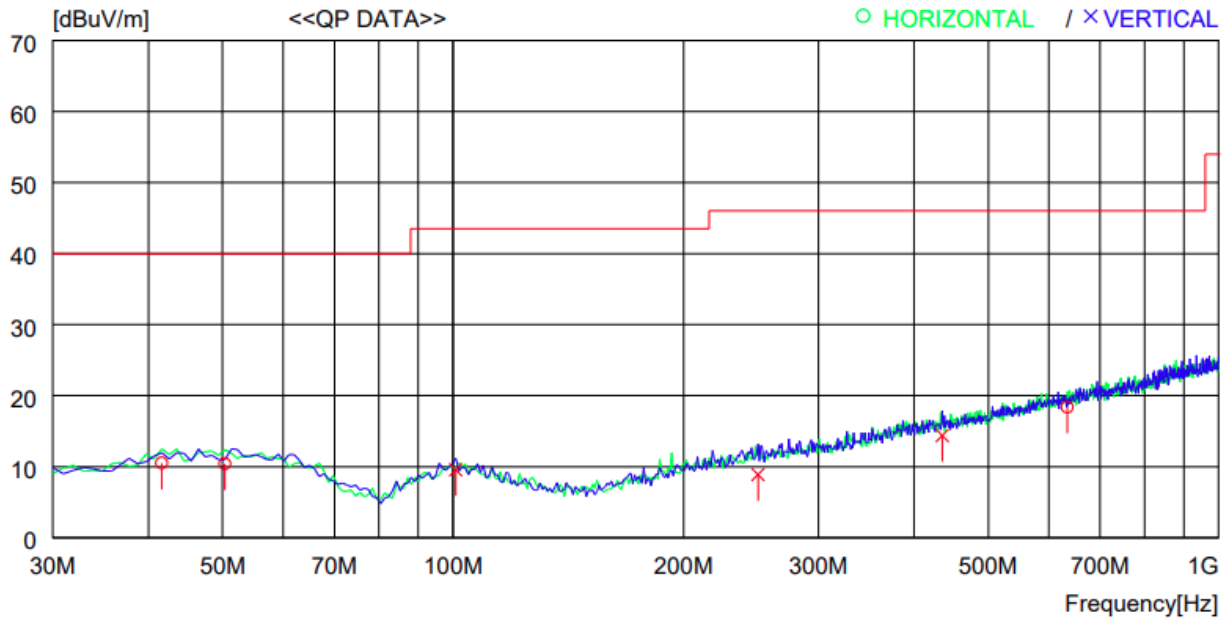
Test Mode 2 (AUX + BT)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: FCC Part 15 Subpart B
Resolution bandwidth	: 120 kHz	Test Date	: June 08, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 3 m



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	41.640	22.9	**13.8**	2.1	28.3	10.5	40.0	29.5	300	213
2	50.370	22.5	**14.0**	2.2	28.3	10.4	40.0	29.6	300	0
3	634.307	18.3	**19.2**	9.6	28.7	18.4	46.0	27.6	400	359
----- Vertical ------										
4	100.810	22.6	**11.9**	3.3	28.2	9.6	43.5	33.9	200	0
5	250.190	18.6	**12.6**	5.3	27.6	8.9	46.0	37.1	200	111
6	435.461	18.7	**16.3**	7.8	28.4	14.4	46.0	31.6	100	359

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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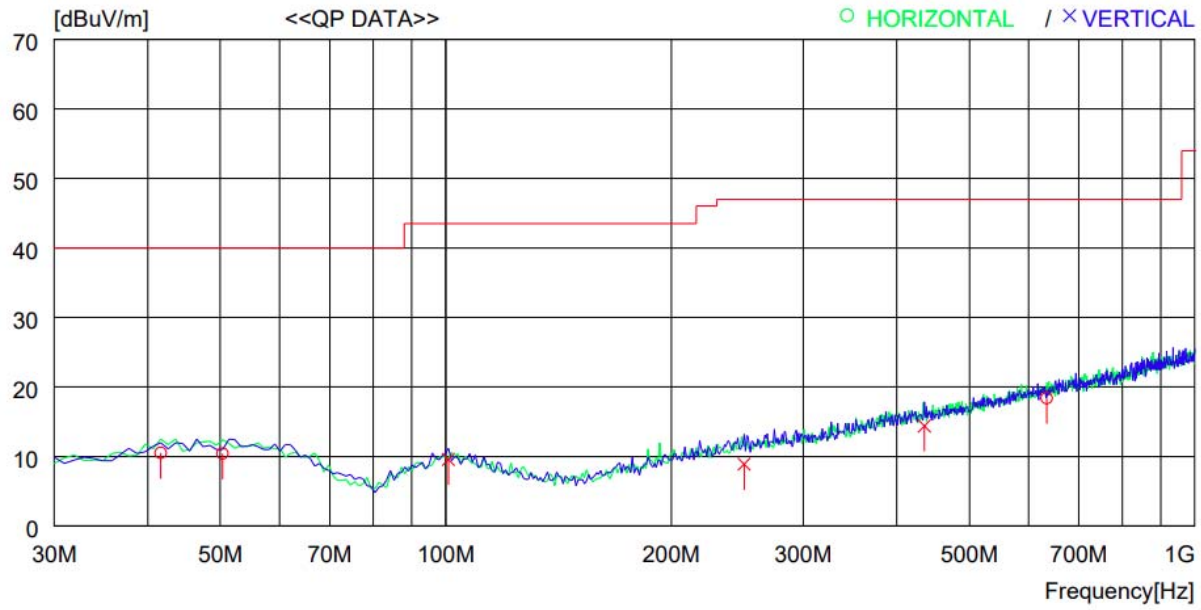
Test Mode 2 (AUX + BT)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: ICES-003 Issue 7
Resolution bandwidth	: 120 kHz	Test Date	: June 08, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 3 m



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	41.640	22.9	13.8	2.1	28.3	10.5	40.0	29.5	300	213
2	50.370	22.5	14.0	2.2	28.3	10.4	40.0	29.6	300	0
3	634.307	18.3	19.2	9.6	28.7	18.4	47.0	28.6	400	359
----- Vertical ------										
4	100.810	22.6	11.9	3.3	28.2	9.6	43.5	33.9	200	0
5	250.190	18.6	12.6	5.3	27.6	8.9	47.0	38.1	200	111
6	435.461	18.7	16.3	7.8	28.4	14.4	47.0	32.6	100	359

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

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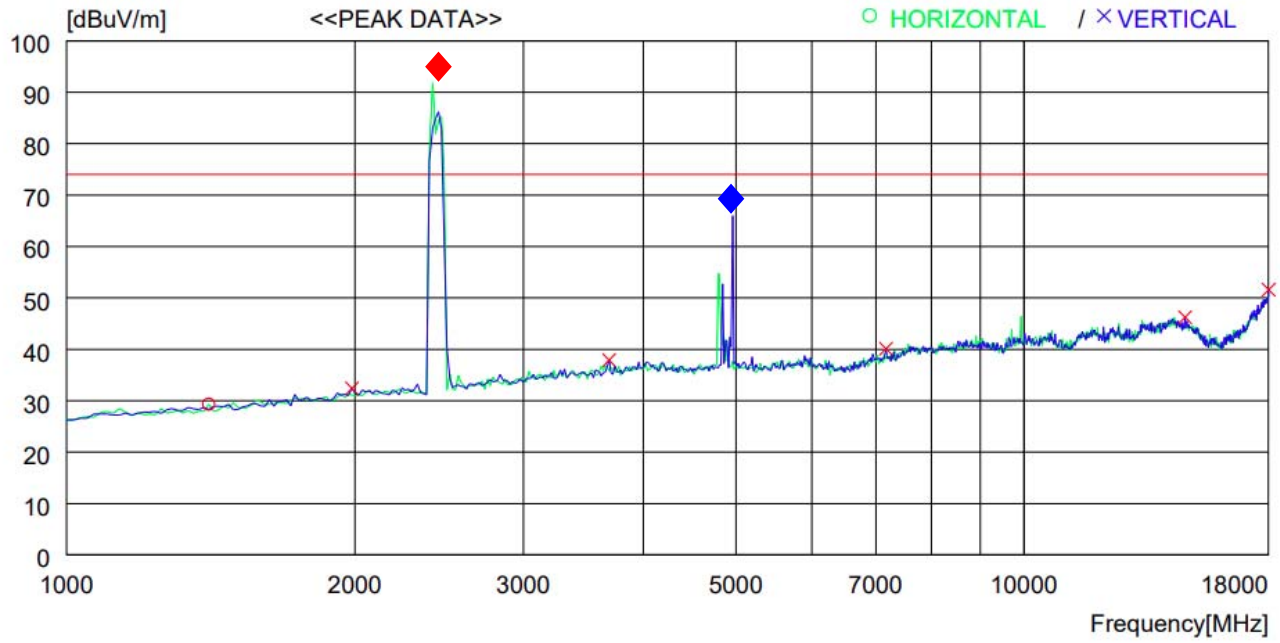
Test Mode 2 (AUX + BT)			
Frequency range	: 1 GHz ~ 18 GHz	Test Date	: June 08, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: Peak		



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1408.000	46.8	25.0	2.5	45.0	29.3	74.0	44.7	100	270
----- Vertical ------										
2	1986.000	47.2	27.5	3.0	45.3	32.4	74.0	41.6	100	5
3	3686.000	48.2	31.6	4.2	46.1	37.9	74.0	36.1	100	241
4	7171.000	44.6	35.7	5.9	46.1	40.1	74.0	33.9	100	359
5	14719.000	42.6	41.2	8.6	46.2	46.2	74.0	27.8	100	109
6	18000.000	40.4	47.4	9.7	45.9	51.6	74.0	22.4	100	68

Remark: Margin (dB) = Limit – Result

Result = Reading Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

Bluetooth: 2 402 ~ 2 480 MHz

* ◆- Exclusion band Carrier Frequency, ◆- Exclusion band Harmonic Frequency

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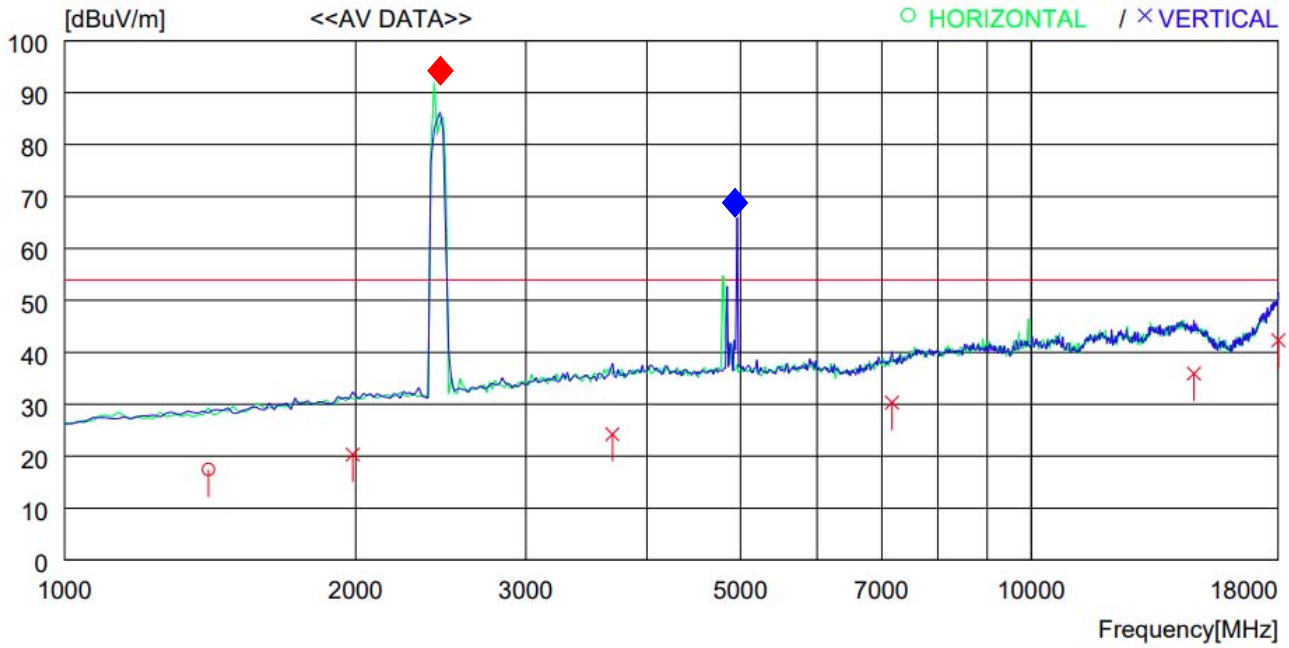
Test Mode 2 (AUX + BT)			
Frequency range	: 1 GHz ~ 18 GHz	Test Date	: June 08, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: CISPR-Average		



No.	FREQ [MHz]	READING AV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1408.540	34.9	**25.0**	2.5	45.0	17.4	54.0	36.6	100	270
----- Vertical ------										
2	1986.870	35.1	**27.5**	3.0	45.3	20.3	54.0	33.7	100	5
3	3686.645	34.6	**31.6**	4.2	46.1	24.3	54.0	29.7	100	241
4	7171.350	34.8	**35.7**	5.9	46.1	30.3	54.0	23.7	100	359
5	14719.560	32.3	**41.2**	8.6	46.2	35.9	54.0	18.1	100	109
6	18000.000	31.1	**47.4**	9.7	45.9	42.3	54.0	11.7	100	68

Remark: Margin (dB) = Limit – Result

Result = Reading CISPR-Average + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

Bluetooth: 2 402 ~ 2 480 MHz

* ◆- Exclusion band Carrier Frequency, ◆- Exclusion band Harmonic Frequency

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6. SAMPLE CALCULATIONS

$dB\mu V = 20 \log_{10} (\mu V)$

Margin = Limit - Result

-. Example 1: 0.68800 MHz

Class B Limit	= 46.0 dBμV (CISPR-Average)
Reading	= 7.1 dBμ
Correction Factor	= Cable Loss + Pulse Limiter
	= 21.5 dB
Total	= 28.6 dBμV
Margin	= 46.0 dBμV – 28.6 dBμV
	= 17.4 dB

-. Example 2: 18000.000 MHz

Class B Limit	= 54.0 dBμV/m (Quasi-peak)
Reading	= 31.7 dBμV
Correction Factor	= Antenna Factor (47.4 dB/m) + Cable Loss (9.7 dB) - Amp. Gain (45.9 dB)
	= 11.2 dB
Total	= 42.9 dBμV/m
Margin	= 54.0 dBμV/m – 42.9 dBμV/m
	= 11.1 dB

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