FCC TEST REPORT

FCC ID	:	**SL6-NUC600**
Equipment	:	**identiFuel Nozzle Unit Gen 3**
Brand Name	:	**HID**
Model Name	:	**FNU900**
Applicant	:	**HID Global Corporation** **611 Center Ridge Drive Austin TX 78753 United States Of America**
Manufacturer	:	**HID Global Corporation** **47B Gillits Road, Westmead, Durban 3610, South Africa**
Standard	:	**47 CFR FCC Part 15.209**

The product was received on Dec. 09, 2020, and testing was started from Mar. 05, 2021 and completed on Mar. 11, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR0N2465AO	01	Initial issue of report	Mar. 29, 2021

Summary of Test Result

Test Standard: 47 CFR FCC PART 15.209			
Report Clause	**Test Items**	**Result (PASS/FAIL)**	**Remark**
1.1.2	Antenna Requirement	PASS	-
-	AC Power-line Conducted Emissions	Not Required	Only employ battery power.
3.1	Transmitter Radiated Emissions	PASS	-
3.2	Emission Bandwidth	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
None.

Reviewed by: Sam Tsai
Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information			
Modulation	**Ch. Frequency (kHz)**	**Channel Number**	**Field Strength (dBuV/m)**
FSK	125	1	89.99
Note 1: Field strength performed peak level at 3m.			

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	MFG Rafid Technology	DWG-06-0142	Air-core wire coil antenna	N/A

1.1.3 Type of EUT

Operational Condition	
EUT Power Type	From Battery
Type of EUT	
☒	Stand-alone
☐	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:
☐	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:
☐	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
☐	Operated normal mode for worst duty cycle
☒	Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)	
☒	100.00%

1.2 Testing Applied Standards

Test standard	47 CFR FCC Part 15
Test Method	ANSI C63.10-2013 The following reference test guidance is not within the scope of accreditation of TAF: KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab.：Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua **(TAF:** 3785**)**	**ADD:** No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
	TEL: 886-3-327-3456		**FAX:** 886-3-327-0973	
Test site Designation No. TW1190 with FCC.				
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
RF Conducted	TH01-HY	Vivi	20.1~26.9°C / 53~60%	11/Mar/2021
Radiated	03CH03-HY	Edward	20.1~22.2°C / 50~60%	05/Mar/2021~09/Mar/2021
☐ Wen 33rd.St. **(TAF:** 3785**)**	**ADD:** No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)			
	TEL: 886-3-318-0787		**FAX:** 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	**Uncertainty**	**Remark**
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
TnomVnom	Tnom	20°C
-	Vnom	2.7V

2.2 The Worst Case Modulation Configuration

Transmitter Mode	Test Channel Frequencies(kHz)	Field Strength (dBuV/m@3m)
RFID	125	89.99

2.3 The Worst Case Measurement Configuration

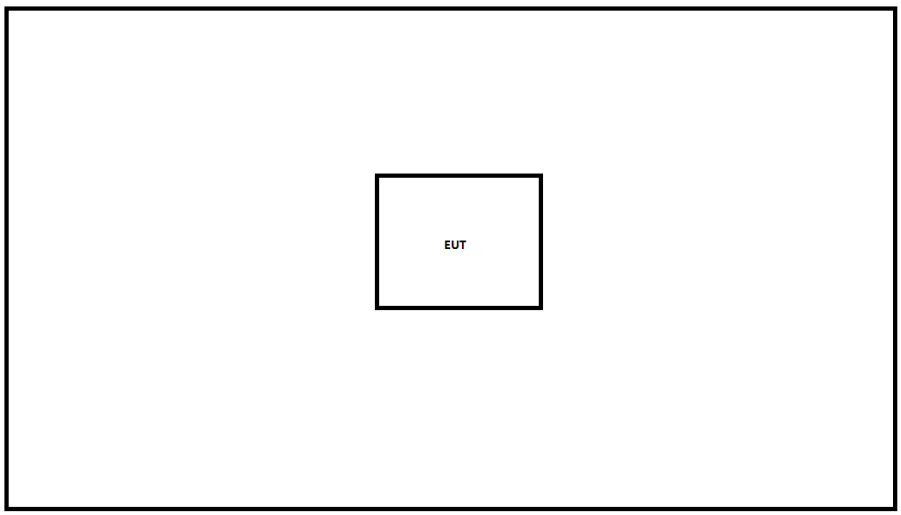
The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Field Strength of Fundamental Emissions Transmitter Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	☐ EUT will be placed in fixed position.		
	☒ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes.		
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.		
Operating Mode	CTX		
1	Battery Mode		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			
Worst Planes of EUT	V		

2.4 Support Equipment

Support Equipment – Conducted					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Tag	-	-	-	Provided by Customer

2.5 Test Setup Diagram

Test Setup Diagram – Radiated Test



3 Transmitter Test Result

3.1 Transmitter Radiated Emissions

3.1.1 Transmitter Radiated Emissions Limit

Transmitter Radiated Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

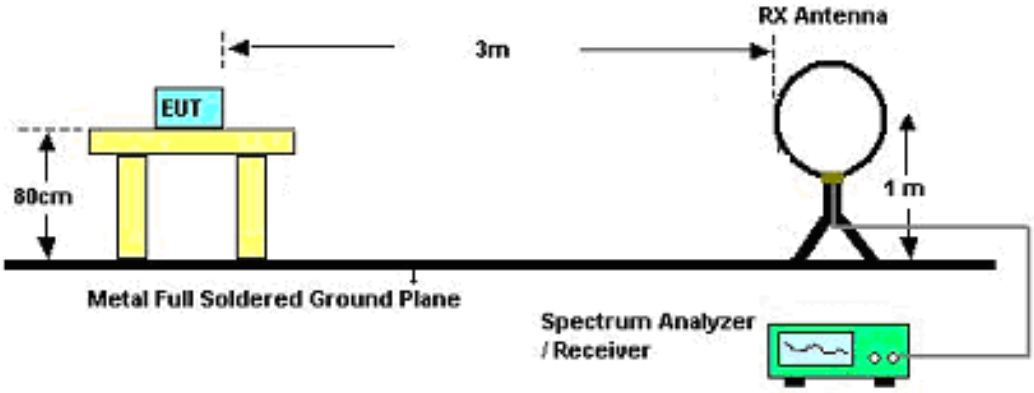
Test Method		
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.	
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. The frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3m.	
☒	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. Note: If fundamental emission level is smaller than noise at 3m, we will change distance to 1m.	
	☐	The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
	☒	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
☒	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.	
☒	The any unwanted emissions level shall not exceed the fundamental emission level.	
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.	
☒	KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.	
	▪	Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	▪	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

3.1.4 Measurement Results Calculation

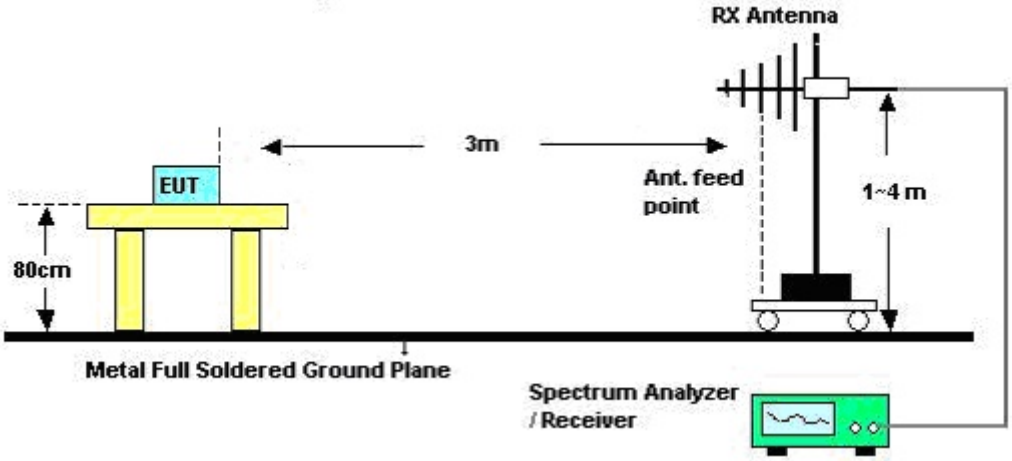
The measured Level is calculated using:
Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

3.1.5 Test Setup

Transmitter Radiated Emissions



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. The center of the loop shall be 1 m above the ground.



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna. the antenna height shall be varied from 1 m to 4 m.

3.1.6 Test Result of Transmitter Radiated Emissions_*below 30MHz*

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD	-	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_TX	Pass	PK	125k	89.99	105.65	-15.66	20.07	3	Horizontal	360	1.00	-

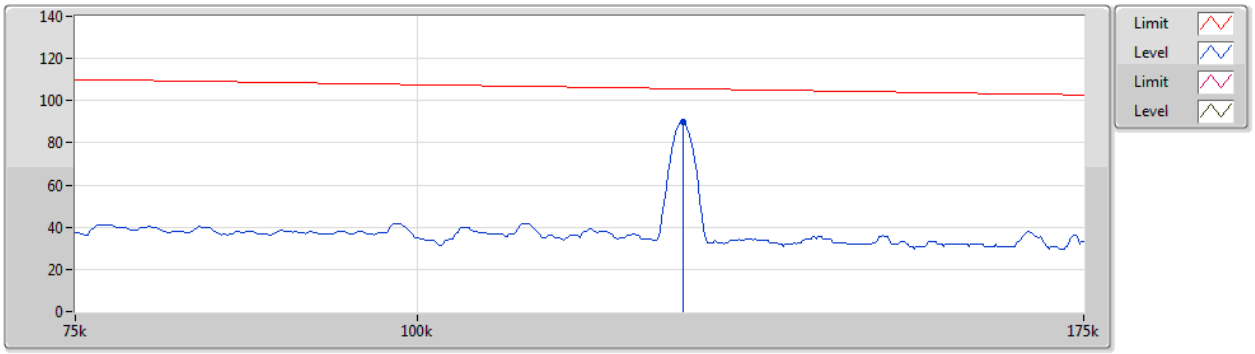
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD	-	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_TX	Pass	PK	125k	89.99	105.65	-15.66	20.07	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	29.868k	52.83	118.09	-65.26	21.23	3	Horizontal	0	1.00	-
0.125MHz_TX	Pass	PK	38.328k	57.15	115.91	-58.76	21.25	3	Horizontal	0	1.00	-
0.125MHz_TX	Pass	PK	49.326k	51.58	113.73	-62.15	21.25	3	Horizontal	0	1.00	-
0.125MHz_TX	Pass	PK	388.8k	50.03	95.80	-45.77	20.55	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	1.822M	48.66	69.50	-20.84	20.27	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	13.583M	39.22	69.50	-30.28	22.90	3	Horizontal	360	1.00	-

SRD

0.125MHz_TX

09/03/2021

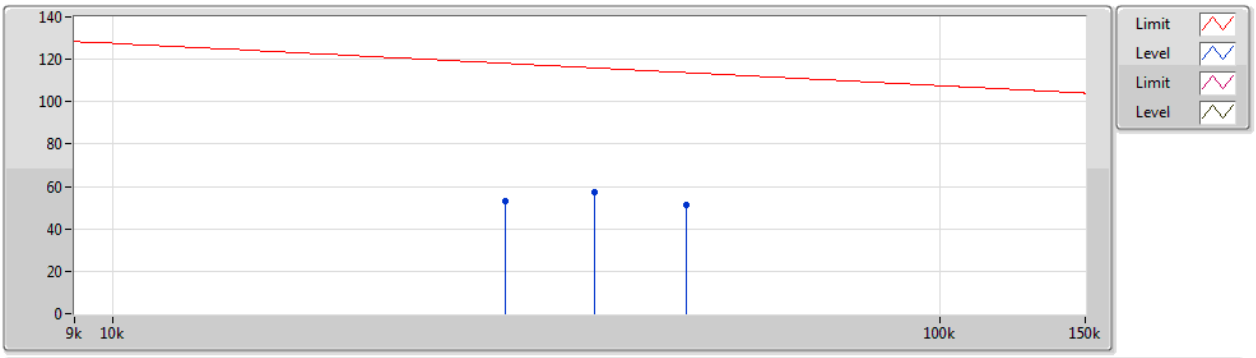


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	125k	89.99	105.65	-15.66	20.07	3	Horizontal	360	1.00	-	69.92	20.00	0.07	-

SRD

09/03/2021

0.125MHz_TX

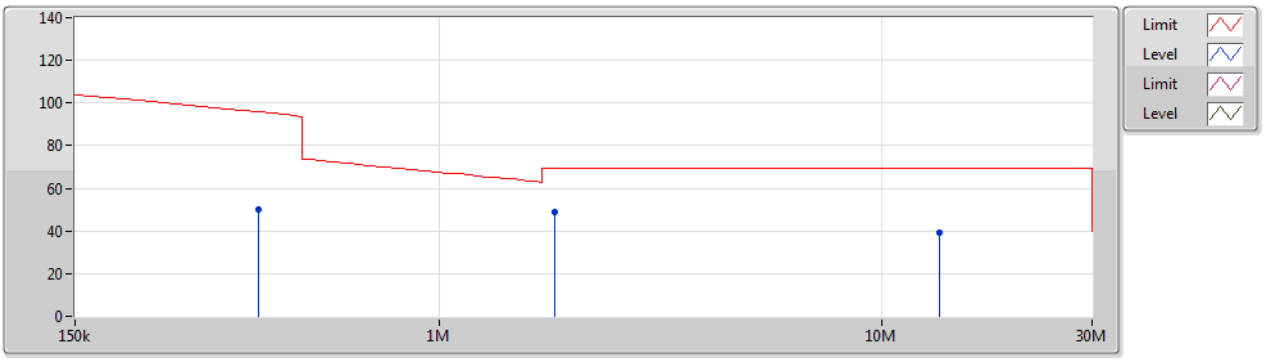


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	29.868k	52.83	118.09	-65.26	21.23	3	Horizontal	0	1.00	-	31.60	21.19	0.04	-
PK	38.328k	57.15	115.91	-58.76	21.25	3	Horizontal	0	1.00	-	35.90	21.20	0.05	-
PK	49.326k	51.58	113.73	-62.15	21.25	3	Horizontal	0	1.00	-	30.33	21.20	0.05	-

SRD

09/03/2021

0.125MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	388.8k	50.03	95.80	-45.77	20.55	3	Horizontal	360	1.00	-	29.48	20.45	0.10	-
PK	1.822M	48.66	69.50	-20.84	20.27	3	Horizontal	360	1.00	-	28.39	20.07	0.20	-
PK	13.583M	39.22	69.50	-30.28	22.90	3	Horizontal	360	1.00	-	16.32	22.35	0.55	-

3.1.7 Test Result of Transmitter Radiated Emissions_Above 30MHz

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD	-	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_TX	Pass	PK	955.38M	31.52	46.00	-14.48	4.53	3	Vertical	0	1.00	-

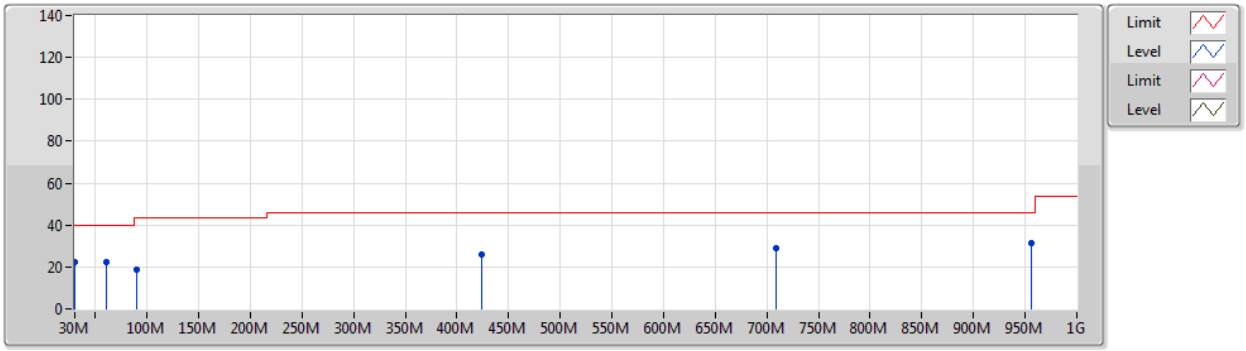
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD	-	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_TX	Pass	PK	30M	22.47	40.00	-17.53	-3.17	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	61.04M	22.34	40.00	-17.66	-14.77	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	90.14M	18.69	43.50	-24.81	-11.68	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	423.82M	25.74	46.00	-20.26	-2.27	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	709M	28.96	46.00	-17.04	1.03	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	955.38M	31.52	46.00	-14.48	4.53	3	Vertical	0	1.00	-
0.125MHz_TX	Pass	PK	30M	22.48	40.00	-17.52	-3.17	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	90.14M	17.18	43.50	-26.32	-11.68	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	154.16M	16.61	43.50	-26.89	-9.87	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	367.56M	24.46	46.00	-21.54	-3.78	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	542.16M	27.45	46.00	-18.55	0.36	3	Horizontal	360	1.00	-
0.125MHz_TX	Pass	PK	689.6M	28.94	46.00	-17.06	0.72	3	Horizontal	360	1.00	-

SRD

09/03/2021

0.125MHz_TX

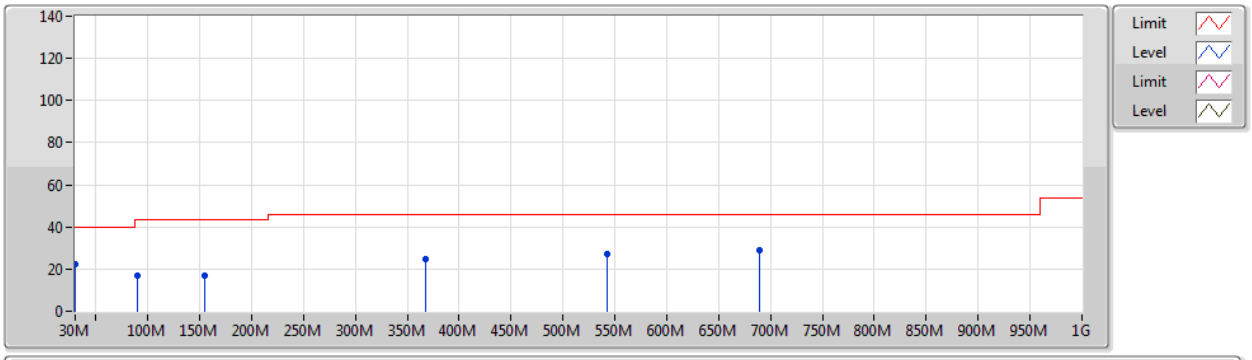


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	30M	22.47	40.00	-17.53	-3.17	3	Vertical	0	1.00	-	25.64	23.51	0.90	27.58
PK	61.04M	22.34	40.00	-17.66	-14.77	3	Vertical	0	1.00	-	37.11	11.50	1.22	27.49
PK	90.14M	18.69	43.50	-24.81	-11.68	3	Vertical	0	1.00	-	30.37	14.24	1.50	27.42
PK	423.82M	25.74	46.00	-20.26	-2.27	3	Vertical	0	1.00	-	28.01	21.84	3.35	27.46
PK	709M	28.96	46.00	-17.04	1.03	3	Vertical	0	1.00	-	27.93	24.58	4.44	27.99
PK	955.38M	31.52	46.00	-14.48	4.53	3	Vertical	0	1.00	-	26.99	26.47	5.40	27.34

SRD

09/03/2021

0.125MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	30M	22.48	40.00	-17.52	-3.17	3	Horizontal	360	1.00	-	25.65	23.51	0.90	27.58
PK	90.14M	17.18	43.50	-26.32	-11.68	3	Horizontal	360	1.00	-	28.86	14.24	1.50	27.42
PK	154.16M	16.61	43.50	-26.89	-9.87	3	Horizontal	360	1.00	-	26.48	15.32	1.97	27.16
PK	367.56M	24.46	46.00	-21.54	-3.78	3	Horizontal	360	1.00	-	28.24	20.10	3.17	27.05
PK	542.16M	27.45	46.00	-18.55	0.36	3	Horizontal	360	1.00	-	27.09	24.47	3.87	27.98
PK	689.6M	28.94	46.00	-17.06	0.72	3	Horizontal	360	1.00	-	28.22	24.34	4.38	28.00

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A

3.2.2 Measuring Instruments

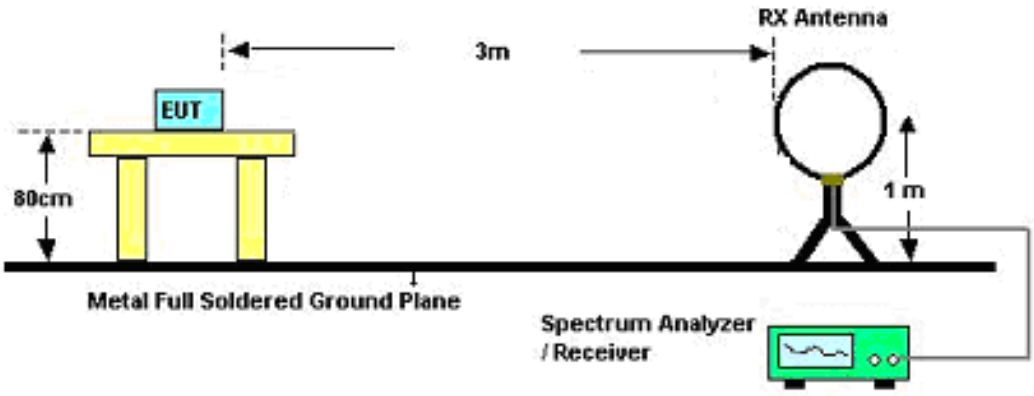
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method
☒ Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.
☒ For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

3.2.4 Test Setup

Emission Bandwidth



3.2.5 Test Result of Emission Bandwidth

Summary

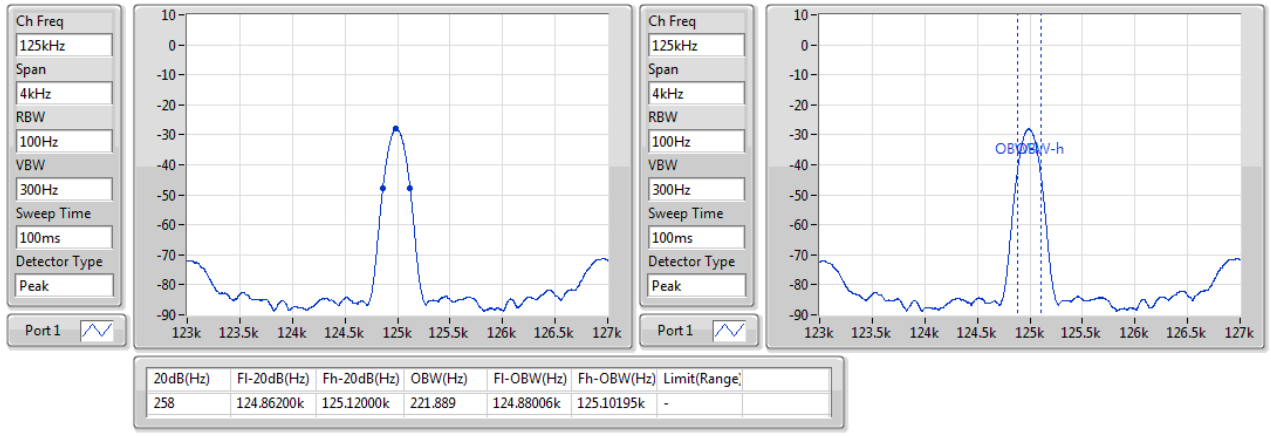
Mode	20dB (Hz)	Fl-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Limit (Range)
100-148.5kHz	-	-	-	-	-
SRD_Nss1_1TX	258	124.86200k	125.12000k	221.889	-

Result

Mode	Result	20dB (Hz)	Fl-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Fl-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
SRD_Nss1_1TX	-	-	-	-	-	-	-	-
0.125MHz_TnomVnom	Pass	258	124.86200k	125.12000k	221.889	124.88006k	125.10195k	-

RFID_Nss1_1TX **EBW**

0.125MHz_TnomVnom



4 Test Equipment and Calibration Data

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101013	10Hz~40GHz	19/Mar/2020	18/Mar/2021

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	06/Aug/2020	05/Aug/2021
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	19/Aug/2020	18/Aug/2021
Amplifier	HP	8447D	2944A08033	10kHz~1.3GHz	14/Apr/2020	13/Apr/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	06/Sep/2020	05/Sep/2021
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~30MHz	19/Jun/2020	18/Jun/2021
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	18/Mar/2020	17/Mar/2021
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2020	15/Mar/2021
EMI Test Receiver	R&S	ESR3	102051	9kHz~3.6GHz	29/May/2020	28/May/2021