

# FCC Test Report

**FCC ID** : U4GSX5WB  
**Equipment** : Rugged mobile computer with barcode reader  
**Brand Name** : Datalogic  
**Model Name** : Skorpion X5  
**Applicant** : Datalogic S.r.l.  
Via S. Vitalino 13, 40012 Lippo di Calderara di  
Reno (BO) - Italy  
**Manufacturer** : Datalogic S.r.l.  
Via S. Vitalino 13, 40012 Lippo di Calderara di  
Reno (BO) - Italy  
**Standard** : 47 CFR FCC Part 15.225

The product was received on Jun. 08, 2020, and testing was started from Aug. 17, 2020 and completed on Aug. 18, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



# Table of Contents

**HISTORY OF THIS TEST REPORT .....3**

**SUMMARY OF TEST RESULT .....4**

**1 GENERAL DESCRIPTION .....5**

1.1 Information.....5

1.2 Testing Applied Standards .....7

1.3 Testing Location Information .....7

1.4 Measurement Uncertainty .....7

**2 TEST CONFIGURATION OF EUT.....8**

2.1 Test Condition .....8

2.2 The Worst Case Configuration .....8

2.3 The Worst Case Measurement Configuration .....9

2.4 Accessories .....10

2.5 Support Equipment.....10

2.6 Test Setup Diagram .....11

**3 TRANSMITTER TEST RESULT .....13**

3.1 AC Power-line Conducted Emissions .....13

3.2 Emission Bandwidth .....15

3.3 Field Strength of Fundamental Emissions and Spectrum Mask .....16

3.4 Transmitter Radiated Unwanted Emissions .....18

3.5 Frequency Stability .....21

**4 TEST EQUIPMENT AND CALIBRATION DATA .....22**

**APPENDIX A. TEST RESULT OF AC POWER-LINE CONDUCTED EMISSIONS**

**APPENDIX B. TEST RESULT OF EMISSION BANDWIDTH**

**APPENDIX C.1. TEST RESULT OF FIELD STRENGTH OF FUNDAMENTAL EMISSIONS AND SPECTRUM MASK, TRANSMITTER RADIATED UNWANTED EMISSIONS (BELOW 30MHZ)**

**APPENDIX C.2. TEST RESULT OF TRANSMITTER RADIATED UNWANTED EMISSIONS (ABOVE 30MHZ)**

**APPENDIX D. TEST RESULT OF FREQUENCY STABILITY**

**APPENDIX E. TEST PHOTOS**

**PHOTOGRAPHS OF EUT v01**



### History of this test report

Report No.	Version	Description	Issued Date
FR9N0606-03AR	01	Initial issue of report	Oct. 19, 2020



### Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.215(c)	Emission Bandwidth	PASS	-
3.3	15.225(a)~(d)	Field Strength of Fundamental Emissions and Spectrum Mask	PASS	-
3.4	15.225(d)	Transmitter Radiated Unwanted Emissions	PASS	-
3.5	15.225(e)	Frequency Stability	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: Ann Hou

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

RF General Information				
Frequency Range	Modulation Mode	Ch. Frequency (MHz)	Channel Number	Field Strength (dBuV/m)
13.553 – 13.567 MHz	NFC-A (ISO 14443-3A)	13.56	1	70.01
Note 1: Field strength performed peak level at 3m.				

### 1.1.2 Antenna Information

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	Temporary RF connector provided
<input checked="" type="checkbox"/>	No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information			
No.	Brand Name	Model Name	Ant. Type
1	Datalogic	Skorpio X5 NFC Antenna	FPC Loop antenna

### 1.1.3 EUT Information

Operational Condition	
EUT Power Type	From AC Adapter / Battery
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:
<input type="checkbox"/>	Other:



1.1.4 Test Signal Duty Cycle

Duty Cycle Operation Restriction	
The transmitter is used for	The transmitter is operated
<input checked="" type="checkbox"/> Inductive applications	<input checked="" type="checkbox"/> Automatically triggered
<input type="checkbox"/> Duty cycle fixed mode	<input checked="" type="checkbox"/> Duty cycle random mode
<input checked="" type="checkbox"/> <b>Duty cycle mode - NFC-A (ISO 14443-3A)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input checked="" type="checkbox"/> <b>Duty cycle mode - NFC-B (ISO 14443-3B)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input checked="" type="checkbox"/> <b>Duty cycle mode - NFC-F (ISO 18092)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input checked="" type="checkbox"/> <b>Duty cycle mode - NFC-V (ISO 15693)</b>	
Declare transmitter duty cycle / 1 hour =	100%

1.1.5 Table for Multiple Listing

Form factor	Dock connection	2.4G	5G	Bluetooth	NFC	WPC	Description
Handheld	Wired (Pogo pin)	√	√	√	√		Handheld type with wired charging
Handheld	WLC (wireless)	√	√	√	√	√	Handheld type with wireless charging
Pistol (with handle)	Wired (Pogo pin)	√	√	√	√		Pistol type with wired charging
Pistol	WLC (wireless)	√	√	√	√	√	Pistol type with wireless charging

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

## 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ◆ 47 CFR FCC Part 15
- ◆ 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

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, 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
AC Conduction	CO04-HY	Edward	21.9~24.5°C / 56~64%	18/Aug/2020
RF Conducted	TH01-HY	Barry	23.5~26.2°C / 55~63%	17/Aug/2020
Radiated Emission	03CH02-HY	Streak	21.3~25.6°C / 51~59%	17/Aug/2020~ 18/Aug/2020

## 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
Frequency Stability	Tnom	20°C
-	Tmin	-20°C
-	Tmax	50°C
-	Vnom	-120V
-	Vmin	-138V
-	Vmax	-102V

### 2.2 The Worst Case Configuration




Modulation Used for Conformance Testing		
Mode	Test Channel Frequencies (MHz)	Field Strength (dBuV/m at 3 m)
NFC	13.56	70.01



### 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral
<b>Operating Mode</b>	CTX
	<input checked="" type="checkbox"/> 1. Adapter Mode (Wired Handheld)
	<input checked="" type="checkbox"/> 2. USB Mode (Wired Handheld)
"Wired Handheld" configuration was tested and found to be the worst case and measured during the test.	

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Emission Bandwidth, Frequency Stability
<b>Test Condition</b>	Conducted measurement

The Worst Case Mode for Following Conformance Tests			
<b>Tests Item</b>	Field Strength of Fundamental Emissions Spectrum Mask, Transmitter Radiated Unwanted Emissions		
<b>Test Condition</b>	Radiated measurement		
<b>Pretest Mode</b>	<input checked="" type="checkbox"/> 1. NFC-A (ISO 14443-3A)		
	<input checked="" type="checkbox"/> 2. NFC-B (ISO 14443-3B)		
	<input checked="" type="checkbox"/> 3. NFC-F (ISO 18092)		
	<input checked="" type="checkbox"/> 4. NFC-V (ISO 15693)		
Mode 1 configuration was pretested and found to be the worst case and measured during the test.			
<b>Operating Mode</b>	CTX		
	<input checked="" type="checkbox"/> 1. Adapter Mode (Wired Handheld)		
	<input checked="" type="checkbox"/> 2. USB Mode (Wired Handheld)		
"Wired Handheld" configuration was tested and found to be the worst case and measured during the test.			
<b>Orthogonal Planes of EUT</b>	<b>X Plane</b>	<b>Y Plane</b>	<b>Z Plane</b>
			
<b>Worst Planes of EUT</b>	V		

## 2.4 Accessories

Accessories				
AC Adapter	<b>Brand Name</b>	BI	<b>Model Name</b>	BI24-050300-I
	<b>Power Rating</b>	I/P: 100-240Vac, 0.8A, O/P: 5Vdc, 3A		
	<b>Power Cord</b>	1.5 meter, Shielded cable, with ferrite core		
Battery 1	<b>Brand Name</b>	Zhuhai Gushine Electronic Technology Co.Ltd.	<b>Model Name</b>	BY-07
	<b>Power Rating</b>	3.7Vdc, 3460mAh	<b>Type</b>	Li-ion
Battery 2	<b>Brand Name</b>	Zhuhai Gushine Electronic Technology Co.Ltd.	<b>Model Name</b>	BY-08
	<b>Power Rating</b>	3.635Vdc, 6080mAh	<b>Type</b>	Li-ion
USB Cable	<b>Power Cord</b>	1.5 meter, Shielded cable, w/o ferrite core		

Reminder: Regarding to more detail and other information, please refer to user manual.

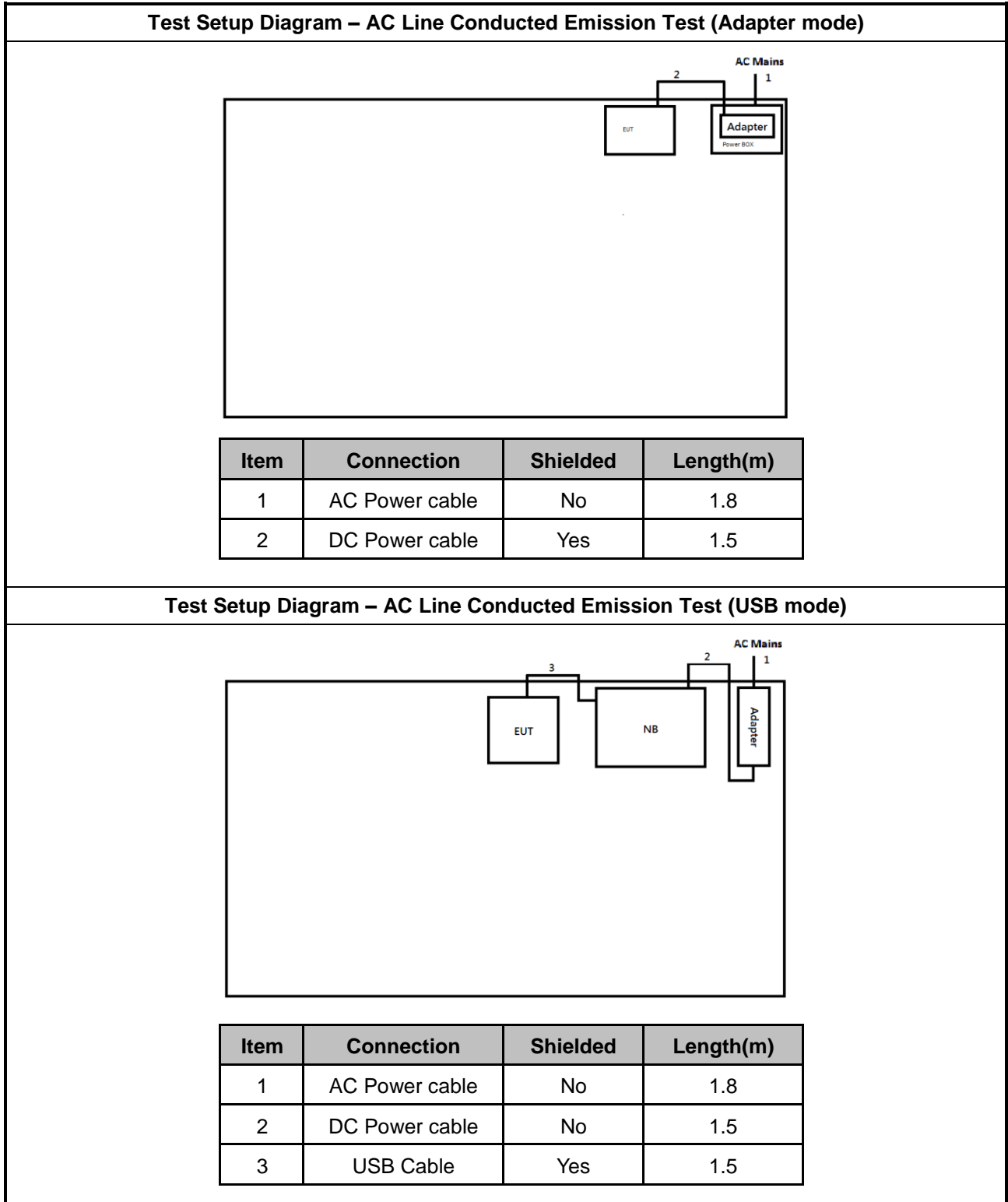
## 2.5 Support Equipment

Support Equipment - AC Conduction			
No.	Equipment	Brand Name	Model Name
1	Notebook	Dell	PP13S
2	AC adapter for NB	Dell	AA90PM111

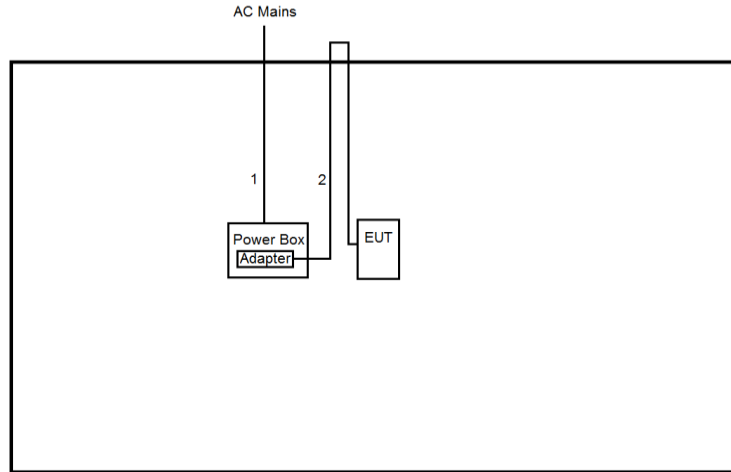
Support Equipment - RF Conducted			
No.	Equipment	Brand Name	Model Name
1	Notebook	DELL	E5410
2	AC adapter for NB	DELL	HA65NM130

Support Equipment - Radiated			
No.	Equipment	Brand Name	Model Name
1	Notebook	DELL	E5410
2	AC adapter for NB	DELL	HA65NM130

## 2.6 Test Setup Diagram

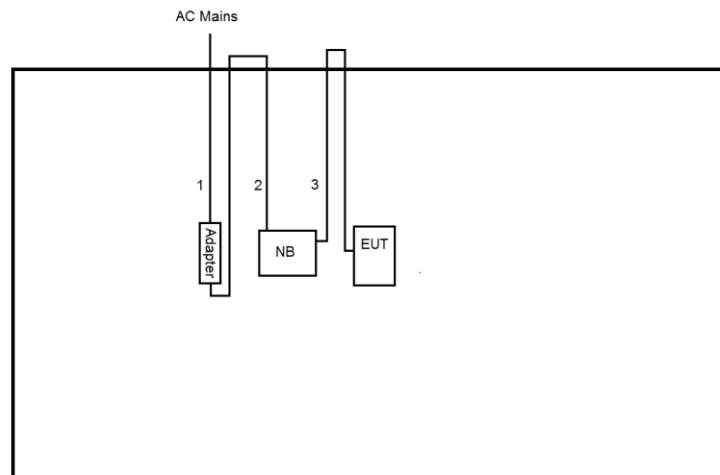


**Test Setup Diagram - Radiated Test (Adapter mode)**



Item	Connection	Shielded	Length(m)
1	AC Power cable	No	1.8
2	DC Power cable	Yes	1.5

**Test Setup Diagram - Radiated Test (USB mode)**



Item	Connection	Shielded	Length(m)
1	AC Power cable	No	1.8
2	DC Power cable	No	1.8
3	USB Cable	Yes	1.5

### 3 Transmitter Test Result

#### 3.1 AC Power-line Conducted Emissions

##### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: \* Decreases with the logarithm of the frequency.

##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

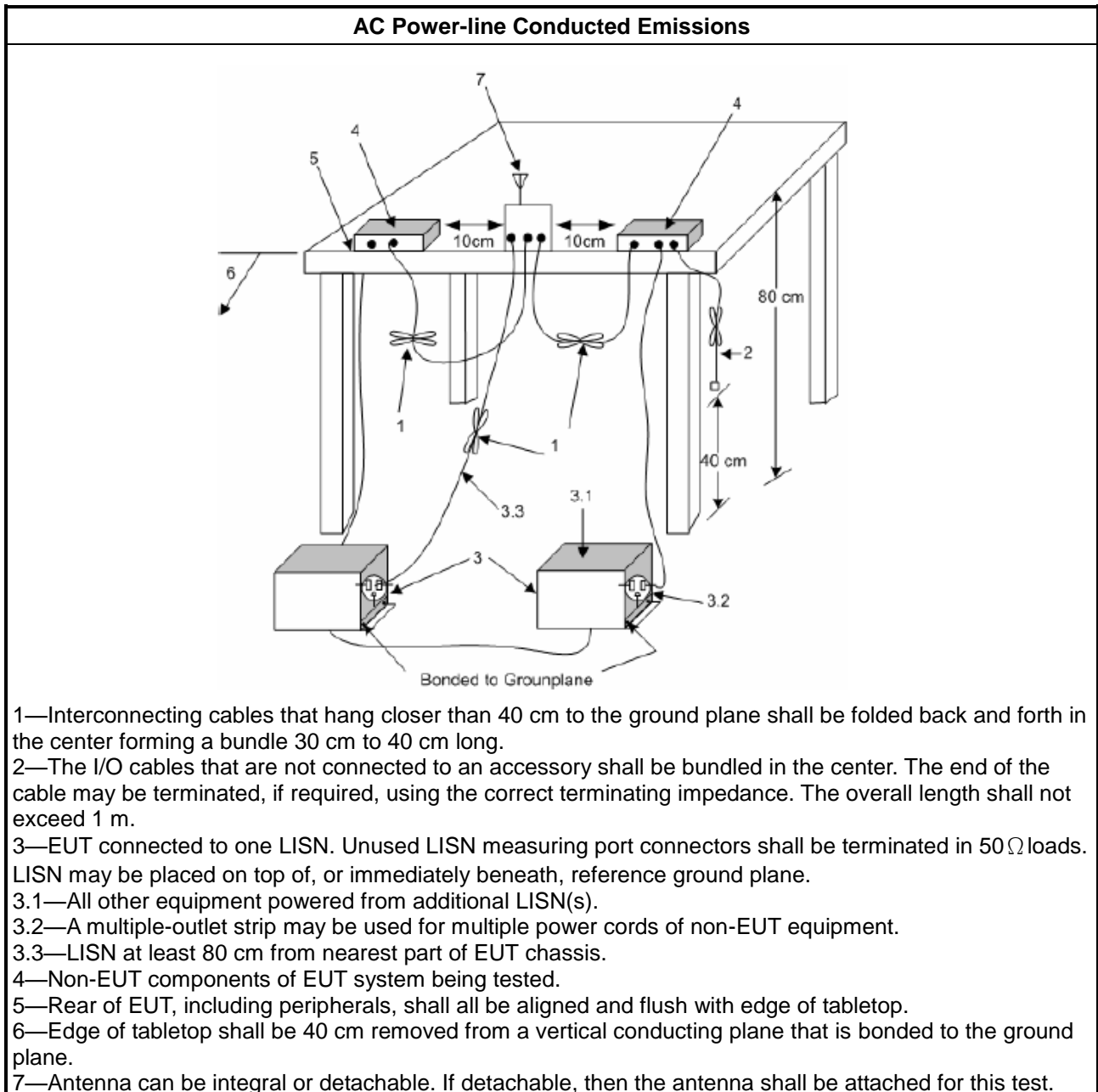
Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.
<input checked="" type="checkbox"/>	If AC conducted emissions fall in operating band, then following below test method confirm final result.
<input type="checkbox"/>	Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band.
<input checked="" type="checkbox"/>	For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band.

##### 3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

### 3.1.5 Test Setup



### 3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

### 3.2 Emission Bandwidth

#### 3.2.1 Emission Bandwidth Limit

20dB Bandwidth Limit	
<input checked="" type="checkbox"/>	Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567 MHz).

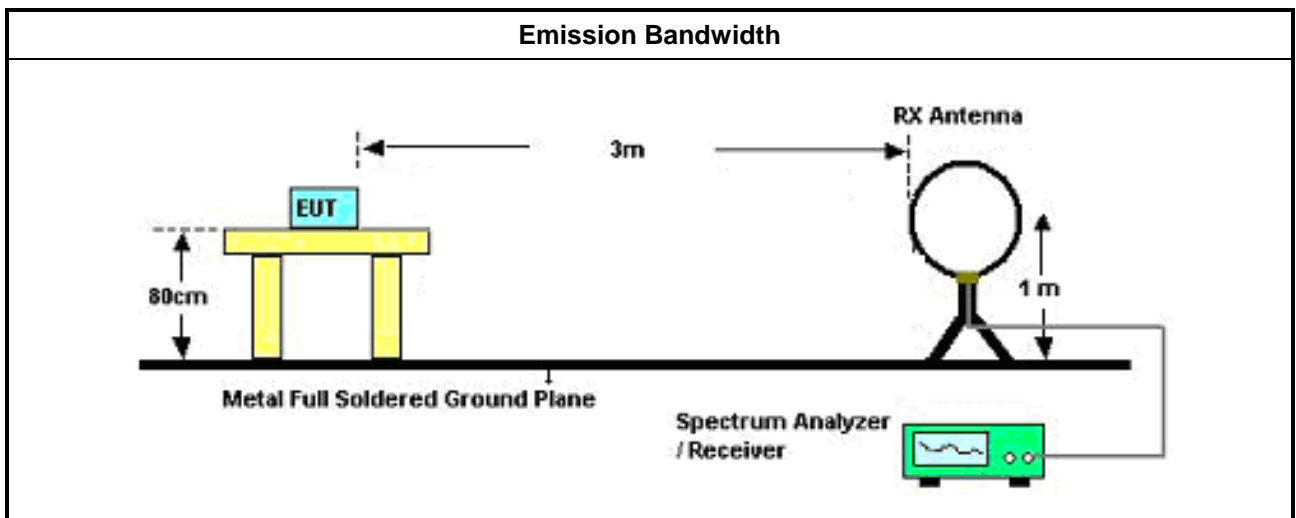
#### 3.2.2 Measuring Instruments

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

#### 3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	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



#### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

### 3.3 Field Strength of Fundamental Emissions and Spectrum Mask

#### 3.3.1 Field Strength of Fundamental Emissions and Spectrum Mask Limit

Field Strength of Fundamental Emissions For FCC					
Emissions	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
fundamental	15848	84.0	103.1	124.0	143.1
Quasi peak measurement of the fundamental.					

Spectrum Mask For FCC					
Freq. of Emission (MHz)	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
1.705~13.110	30	29.5	48.6	69.5	88.6
13.110~13.410	106	40.5	59.6	80.5	99.6
13.410~13.553	334	50.5	69.6	90.5	109.6
13.553~13.567	15848	84.0	103.1	124.0	143.1
13.567~13.710	334	50.5	69.6	90.5	109.6
13.710~14.010	106	40.5	59.6	80.5	99.6
14.010~30.000	30	29.5	48.6	69.5	88.6

#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
<input checked="" type="checkbox"/>	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.

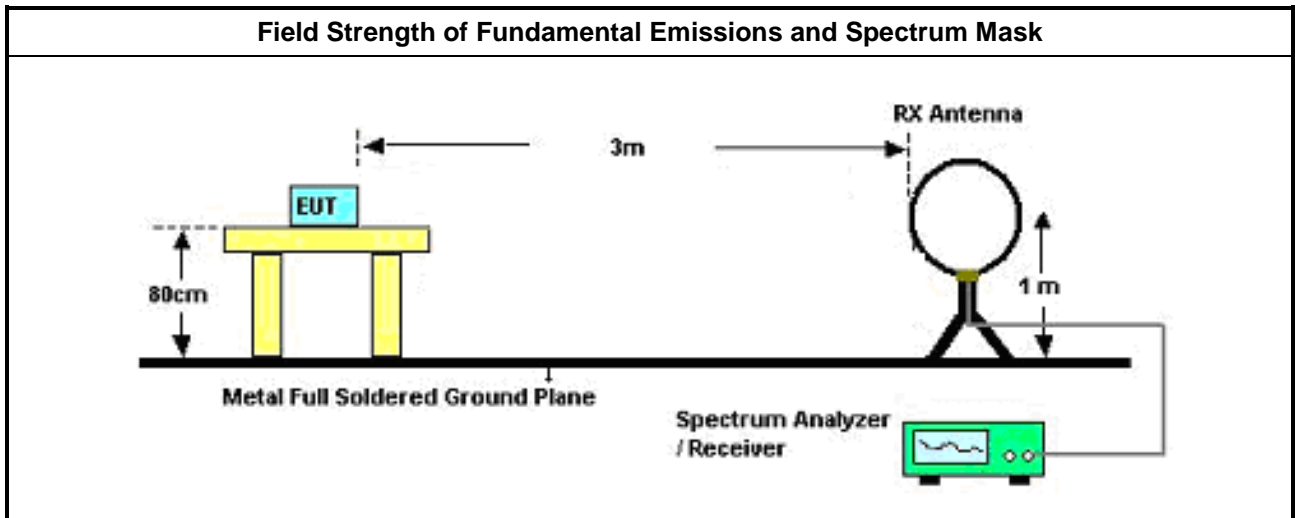
#### 3.3.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor).



### 3.3.5 Test Setup



### 3.3.6 Test Result of Field Strength of Fundamental Emissions and Spectrum Mask

Refer as Appendix C.1

### 3.4 Transmitter Radiated Unwanted Emissions

#### 3.4.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted 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.

#### 3.4.2 Measuring Instruments

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



### 3.4.3 Test Procedures

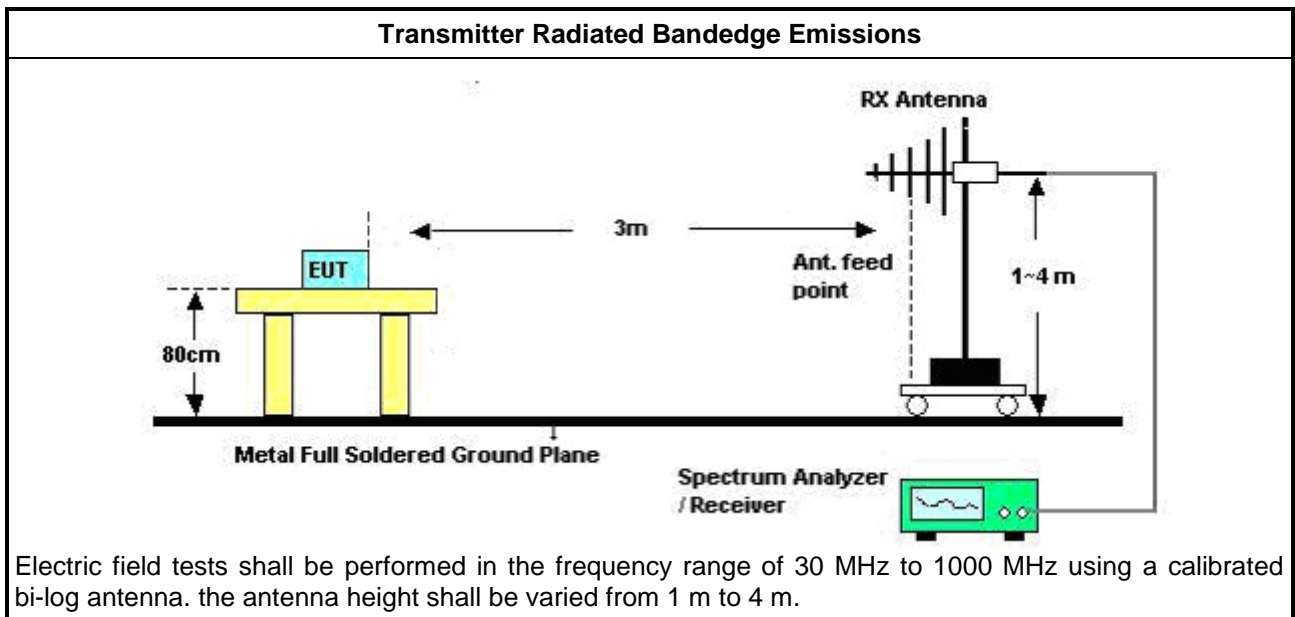
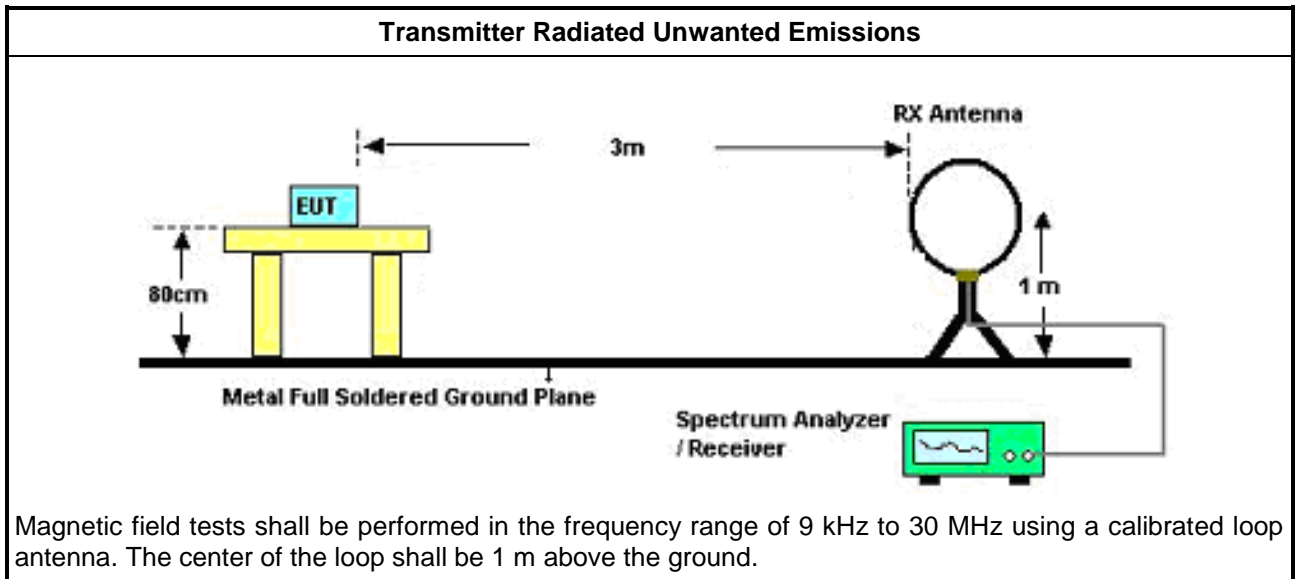
Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/>	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
<input checked="" type="checkbox"/>	KDB 414788 D01 v01r01 Open-Field Test Sites and Chamber Correlation Justification.
<input type="checkbox"/>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>
<input type="checkbox"/>	<ul style="list-style-type: none"> <li>▪ Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.</li> </ul>

### 3.4.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor)

### 3.4.5 Test Setup



### 3.4.6 Transmitter Radiated Unwanted Emissions (Below 30MHz)

Refer as Appendix C.1

### 3.4.7 Transmitter Radiated Unwanted Emissions (Above 30MHz)

Refer as Appendix C.2

### 3.5 Frequency Stability

#### 3.5.1 Frequency Stability Limit

Frequency Stability Limit	
<input checked="" type="checkbox"/>	Carrier frequency stability shall be maintained to $\pm 0.01\%$ ( $\pm 100$ ppm).

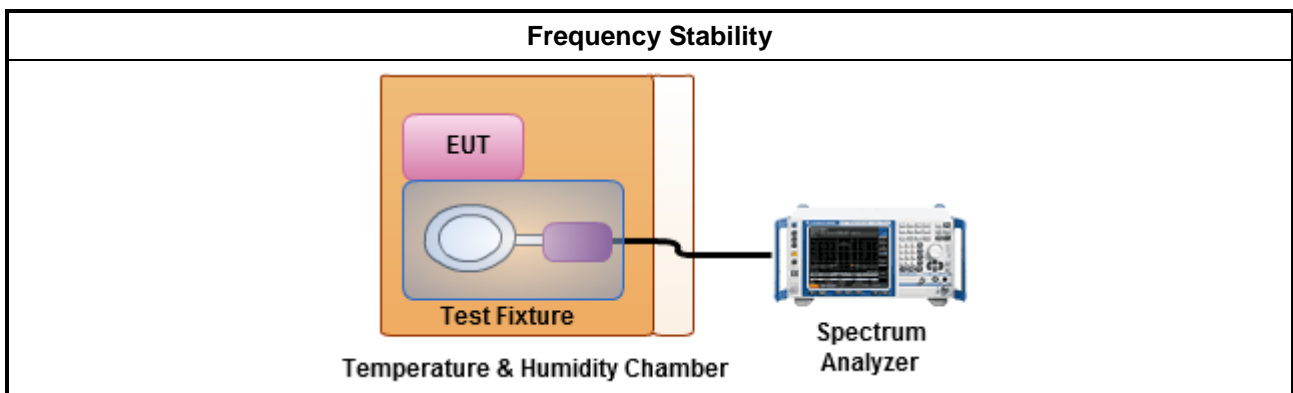
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.8 for frequency stability tests
<input checked="" type="checkbox"/>	Frequency stability with respect to ambient temperature
<input checked="" type="checkbox"/>	Frequency stability when varying supply voltage
<input type="checkbox"/>	For conducted measurement.
<input checked="" type="checkbox"/>	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.

#### 3.5.4 Test Setup



#### 3.5.5 Test Result of Frequency Stability

Refer as Appendix D



## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	29/May/2020	28/May/2021
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	05/Nov/2019	04/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	31/Aug/2020	30/Aug/2021
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	24/Sep/2019	23/Sep/2020

### Instrument for Conducted Test

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

### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz~1GHz 3m	29/Aug/2019	28/Aug/2020
Signal Analyzer	R&S	FSP40	100593	9kHz~40GHz	27/Feb/2020	26/Feb/2021
Amplifier	Agilent	8447D	2944A11149	100kHz~1.3GHz	30/Jun/2020	29/Jun/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	28/Feb/2020	27/Feb/2021
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz~30MHz	20/Jun/2020	19/Jun/2021
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz~1GHz	25/Mar/2020	24/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



**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	462.379k	28.14	46.65	-18.51	Line
Mode 2	Pass	QP	189.08k	51.32	64.07	-12.75	Line



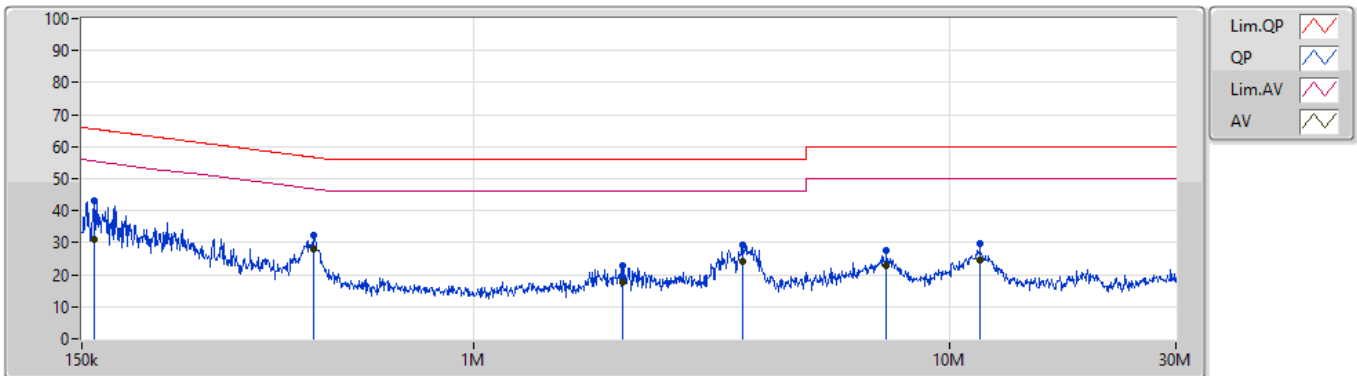
Mode Configure

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	159.256k	43.20	65.50	-22.30	Line	-
Mode 1	Pass	AV	159.256k	31.17	55.50	-24.33	Line	-
Mode 1	Pass	QP	462.379k	32.31	56.65	-24.34	Line	-
Mode 1	Pass	AV	462.379k	28.14	46.65	-18.51	Line	"Worst"
Mode 1	Pass	QP	2.058M	22.70	56.00	-33.30	Line	-
Mode 1	Pass	AV	2.058M	17.64	46.00	-28.36	Line	-
Mode 1	Pass	QP	3.671M	29.51	56.00	-26.49	Line	-
Mode 1	Pass	AV	3.671M	23.95	46.00	-22.05	Line	-
Mode 1	Pass	QP	7.382M	27.57	60.00	-32.43	Line	-
Mode 1	Pass	AV	7.382M	22.95	50.00	-27.05	Line	-
Mode 1	Pass	QP	11.591M	29.55	60.00	-30.45	Line	-
Mode 1	Pass	AV	11.591M	24.47	50.00	-25.53	Line	-
Mode 1	Pass	QP	153.636k	44.18	65.81	-21.63	Neutral	"Worst"
Mode 1	Pass	AV	153.636k	31.66	55.81	-24.15	Neutral	-
Mode 1	Pass	QP	389.447k	23.00	58.08	-35.08	Neutral	-
Mode 1	Pass	AV	389.447k	17.97	48.08	-30.11	Neutral	-
Mode 1	Pass	QP	2.229M	25.15	56.00	-30.85	Neutral	-
Mode 1	Pass	AV	2.229M	18.62	46.00	-27.38	Neutral	-
Mode 1	Pass	QP	3.671M	29.12	56.00	-26.88	Neutral	-
Mode 1	Pass	AV	3.671M	23.68	46.00	-22.32	Neutral	-
Mode 1	Pass	QP	7.037M	26.65	60.00	-33.35	Neutral	-
Mode 1	Pass	AV	7.037M	22.15	50.00	-27.85	Neutral	-
Mode 1	Pass	QP	11.182M	27.96	60.00	-32.04	Neutral	-
Mode 1	Pass	AV	11.182M	23.08	50.00	-26.92	Neutral	-
Mode 2	Pass	QP	189.08k	51.32	64.07	-12.75	Line	"Worst"
Mode 2	Pass	AV	189.08k	35.65	54.07	-18.42	Line	-
Mode 2	Pass	QP	249.042k	45.30	61.79	-16.49	Line	-
Mode 2	Pass	AV	249.042k	30.02	51.79	-21.77	Line	-
Mode 2	Pass	QP	320.256k	38.67	59.71	-21.04	Line	-
Mode 2	Pass	AV	320.256k	24.52	49.71	-25.19	Line	-
Mode 2	Pass	QP	3.092M	33.02	56.00	-22.98	Line	-
Mode 2	Pass	AV	3.092M	24.96	46.00	-21.04	Line	-
Mode 2	Pass	QP	15.024M	33.86	60.00	-26.14	Line	-
Mode 2	Pass	AV	15.024M	23.90	50.00	-26.10	Line	-
Mode 2	Pass	QP	23.778M	31.98	60.00	-28.02	Line	-
Mode 2	Pass	AV	23.778M	26.45	50.00	-23.55	Line	-
Mode 2	Pass	QP	191.358k	50.66	63.97	-13.31	Neutral	"Worst"
Mode 2	Pass	AV	191.358k	34.18	53.97	-19.79	Neutral	-
Mode 2	Pass	QP	253.051k	43.63	61.66	-18.03	Neutral	-
Mode 2	Pass	AV	253.051k	28.13	51.66	-23.53	Neutral	-
Mode 2	Pass	QP	375.703k	30.80	58.37	-27.57	Neutral	-
Mode 2	Pass	AV	375.703k	17.10	48.37	-31.27	Neutral	-
Mode 2	Pass	QP	7.807M	28.61	60.00	-31.39	Neutral	-
Mode 2	Pass	AV	7.807M	23.72	50.00	-26.28	Neutral	-
Mode 2	Pass	QP	14.786M	37.26	60.00	-22.74	Neutral	-
Mode 2	Pass	AV	14.786M	30.66	50.00	-19.34	Neutral	-
Mode 2	Pass	QP	24.549M	30.35	60.00	-29.65	Neutral	-
Mode 2	Pass	AV	24.549M	25.48	50.00	-24.52	Neutral	-



### Conducted Emissions at Powerline\_Mode 1

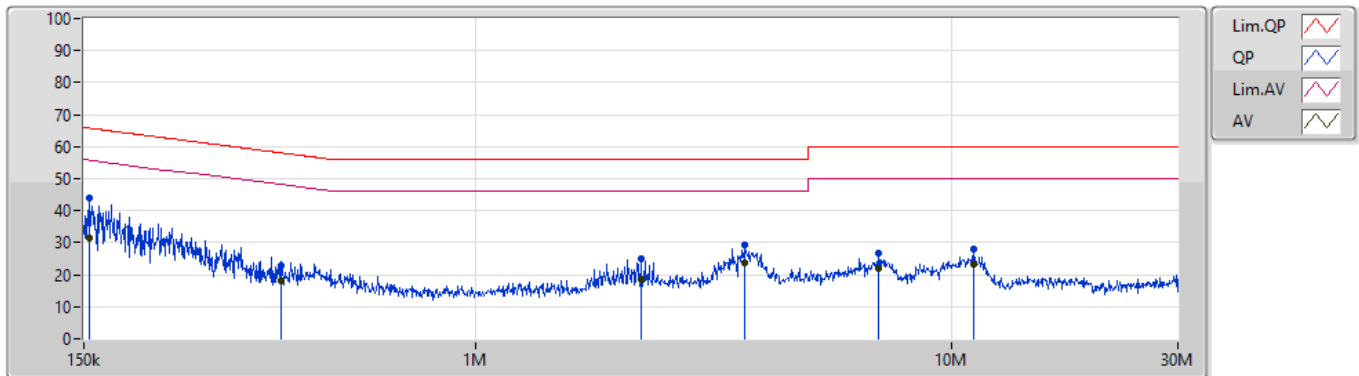
18/08/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	159.256k	43.20	65.50	-22.30	19.64	Line	-	23.56	9.66	0.11	9.87
AV	159.256k	31.17	55.50	-24.33	19.64	Line	-	11.53	9.66	0.11	9.87
QP	462.379k	32.31	56.65	-24.34	19.64	Line	-	12.67	9.64	0.13	9.87
AV	462.379k	28.14	46.65	-18.51	19.64	Line	"Worst"	8.50	9.64	0.13	9.87
QP	2.058M	22.70	56.00	-33.30	19.66	Line	-	3.04	9.65	0.14	9.87
AV	2.058M	17.64	46.00	-28.36	19.66	Line	-	-2.02	9.65	0.14	9.87
QP	3.671M	29.51	56.00	-26.49	19.72	Line	-	9.79	9.66	0.18	9.88
AV	3.671M	23.95	46.00	-22.05	19.72	Line	-	4.23	9.66	0.18	9.88
QP	7.382M	27.57	60.00	-32.43	19.80	Line	-	7.77	9.68	0.24	9.88
AV	7.382M	22.95	50.00	-27.05	19.80	Line	-	3.15	9.68	0.24	9.88
QP	11.591M	29.55	60.00	-30.45	19.84	Line	-	9.71	9.68	0.28	9.88
AV	11.591M	24.47	50.00	-25.53	19.84	Line	-	4.63	9.68	0.28	9.88

Conducted Emissions at Powerline\_Mode 1

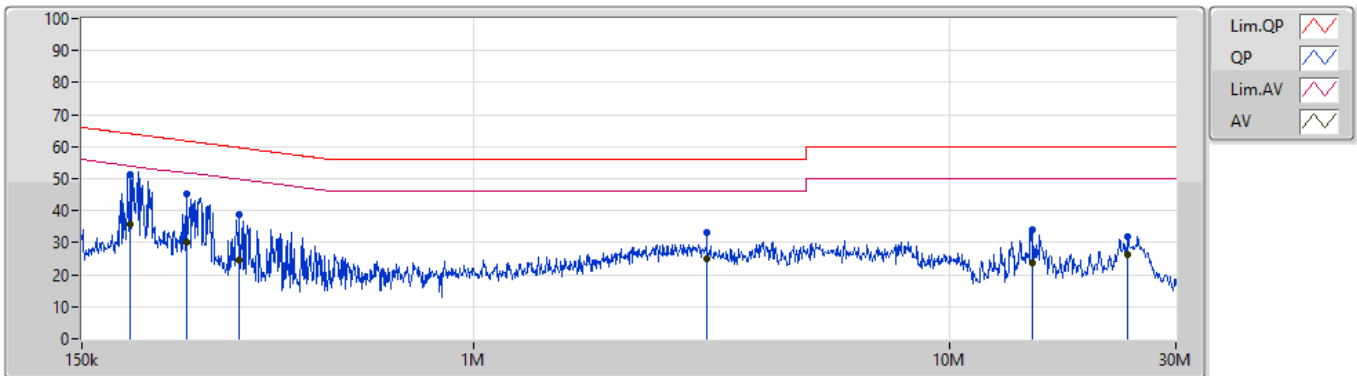
18/08/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	153.636k	44.18	65.81	-21.63	19.63	Neutral	"Worst"	24.55	9.65	0.11	9.87
AV	153.636k	31.66	55.81	-24.15	19.63	Neutral	-	12.03	9.65	0.11	9.87
QP	389.447k	23.00	58.08	-35.08	19.63	Neutral	-	3.37	9.63	0.13	9.87
AV	389.447k	17.97	48.08	-30.11	19.63	Neutral	-	-1.66	9.63	0.13	9.87
QP	2.229M	25.15	56.00	-30.85	19.67	Neutral	-	5.48	9.65	0.15	9.87
AV	2.229M	18.62	46.00	-27.38	19.67	Neutral	-	-1.05	9.65	0.15	9.87
QP	3.671M	29.12	56.00	-26.88	19.72	Neutral	-	9.40	9.66	0.18	9.88
AV	3.671M	23.68	46.00	-22.32	19.72	Neutral	-	3.96	9.66	0.18	9.88
QP	7.037M	26.65	60.00	-33.35	19.80	Neutral	-	6.85	9.68	0.24	9.88
AV	7.037M	22.15	50.00	-27.85	19.80	Neutral	-	2.35	9.68	0.24	9.88
QP	11.182M	27.96	60.00	-32.04	19.86	Neutral	-	8.10	9.70	0.28	9.88
AV	11.182M	23.08	50.00	-26.92	19.86	Neutral	-	3.22	9.70	0.28	9.88

### Conducted Emissions at Powerline\_Mode 2

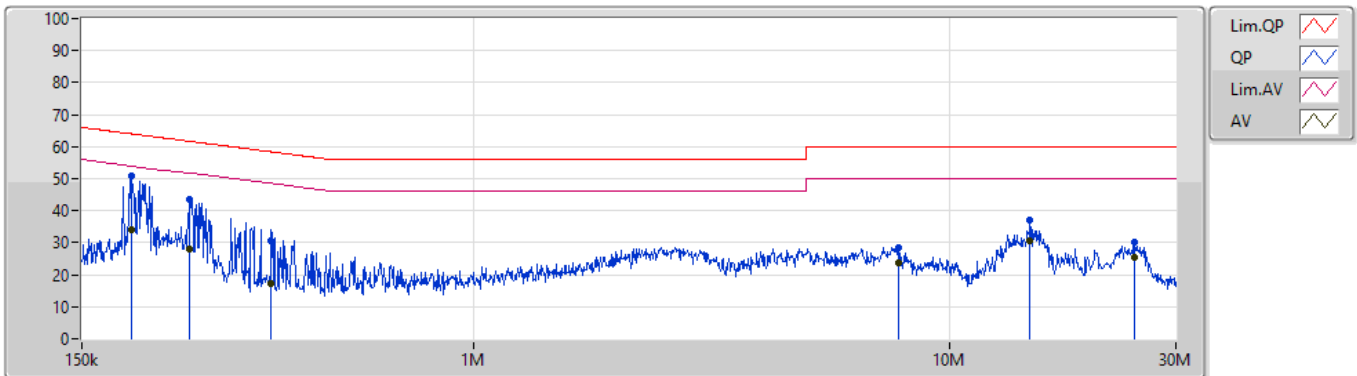
18/08/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	189.08k	51.32	64.07	-12.75	19.63	Line	"Worst"	31.69	9.65	0.11	9.87
AV	189.08k	35.65	54.07	-18.42	19.63	Line	-	16.02	9.65	0.11	9.87
QP	249.042k	45.30	61.79	-16.49	19.64	Line	-	25.66	9.65	0.12	9.87
AV	249.042k	30.02	51.79	-21.77	19.64	Line	-	10.38	9.65	0.12	9.87
QP	320.256k	38.67	59.71	-21.04	19.63	Line	-	19.04	9.64	0.12	9.87
AV	320.256k	24.52	49.71	-25.19	19.63	Line	-	4.89	9.64	0.12	9.87
QP	3.092M	33.02	56.00	-22.98	19.71	Line	-	13.31	9.66	0.17	9.88
AV	3.092M	24.96	46.00	-21.04	19.71	Line	-	5.25	9.66	0.17	9.88
QP	15.024M	33.86	60.00	-26.14	19.85	Line	-	14.01	9.66	0.31	9.88
AV	15.024M	23.90	50.00	-26.10	19.85	Line	-	4.05	9.66	0.31	9.88
QP	23.778M	31.98	60.00	-28.02	19.86	Line	-	12.12	9.58	0.40	9.88
AV	23.778M	26.45	50.00	-23.55	19.86	Line	-	6.59	9.58	0.40	9.88

Conducted Emissions at Powerline\_Mode 2

18/08/2020



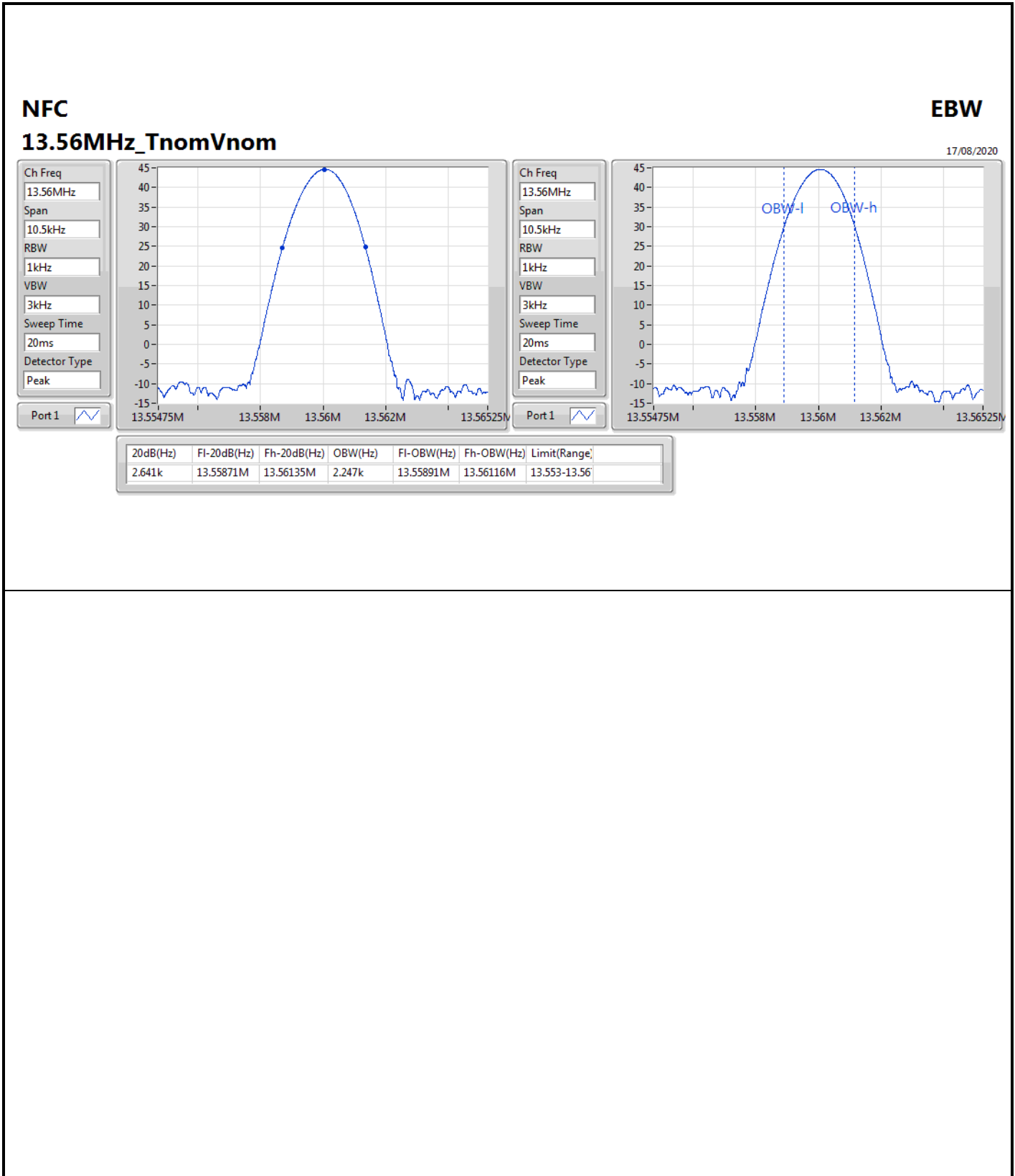
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	191.358k	50.66	63.97	-13.31	19.62	Neutral	"Worst"	31.04	9.64	0.11	9.87
AV	191.358k	34.18	53.97	-19.79	19.62	Neutral	-	14.56	9.64	0.11	9.87
QP	253.051k	43.63	61.66	-18.03	19.63	Neutral	-	24.00	9.64	0.12	9.87
AV	253.051k	28.13	51.66	-23.53	19.63	Neutral	-	8.50	9.64	0.12	9.87
QP	375.703k	30.80	58.37	-27.57	19.63	Neutral	-	11.17	9.63	0.13	9.87
AV	375.703k	17.10	48.37	-31.27	19.63	Neutral	-	-2.53	9.63	0.13	9.87
QP	7.807M	28.61	60.00	-31.39	19.82	Neutral	-	8.79	9.69	0.25	9.88
AV	7.807M	23.72	50.00	-26.28	19.82	Neutral	-	3.90	9.69	0.25	9.88
QP	14.786M	37.26	60.00	-22.74	19.90	Neutral	-	17.36	9.71	0.31	9.88
AV	14.786M	30.66	50.00	-19.34	19.90	Neutral	-	10.76	9.71	0.31	9.88
QP	24.549M	30.35	60.00	-29.65	19.98	Neutral	-	10.37	9.69	0.41	9.88
AV	24.549M	25.48	50.00	-24.52	19.98	Neutral	-	5.50	9.69	0.41	9.88

**Summary**

Mode	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Limit (Range)
13.553-13.567MHz	-	-	-	-	-
NFC	2.641k	13.55871M	13.56135M	2.247k	13.553-13.567

**Result**

Mode	Result	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	FI-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
NFC	-	-	-	-	-	-	-	-
13.56MHz_TnomVnom	Pass	2.641k	13.55871M	13.56135M	2.247k	13.55891M	13.56116M	13.553-13.567





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Azimuth (°)	Height (m)	Comments
13.553-13.567MHz	-	-	-	-	-	-	-	-	-	-	-
NFC	Pass	PK	2.359M	54.39	69.50	-15.11	20.15	3	360	1.00	-



Result

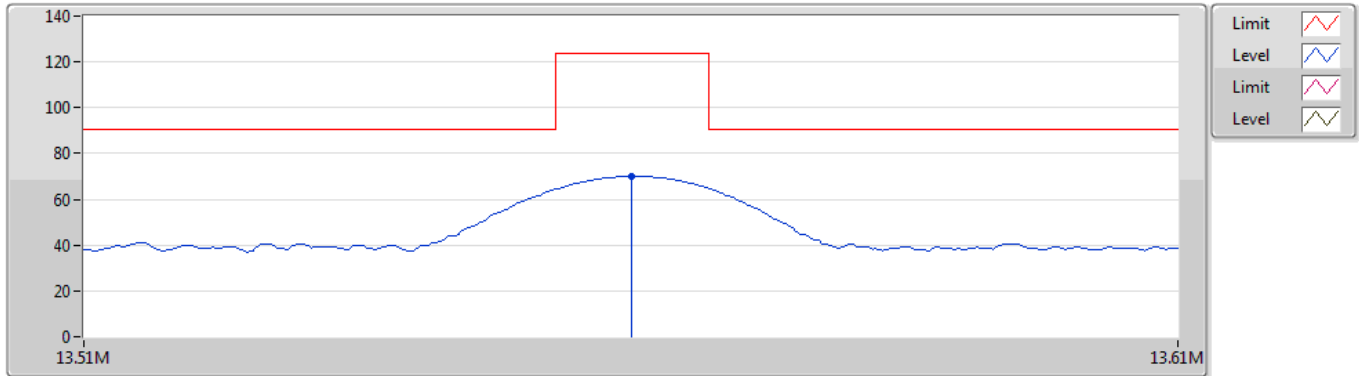
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Azimuth (°)	Height (m)	Comments
NFC	-	-	-	-	-	-	-	-	-	-	-
13.56MHz_Mode 1	Pass	PK	13.56M	70.01	124.00	-53.99	22.92	3	0	1.00	-
13.56MHz_Mode 1	Pass	PK	24.792k	54.69	119.71	-65.02	20.96	3	0	1.00	-
13.56MHz_Mode 1	Pass	PK	59.76k	60.39	112.07	-51.68	20.92	3	0	1.00	-
13.56MHz_Mode 1	Pass	PK	120.108k	52.25	105.99	-53.74	20.04	3	0	1.00	-
13.56MHz_Mode 1	Pass	PK	388.8k	54.49	95.80	-41.31	20.54	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	2.359M	54.39	69.50	-15.11	20.15	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	9.523M	40.88	69.50	-28.62	22.39	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	20.28k	51.59	121.44	-69.85	20.67	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	35.226k	57.79	116.65	-58.86	21.25	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	93.882k	51.39	108.13	-56.74	20.07	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	388.8k	54.29	95.80	-41.51	20.54	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	2.12M	52.12	69.50	-17.38	20.20	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	9.224M	42.12	69.50	-27.38	22.32	3	0	1.00	-



### NFC Operating below 30MHz

17/08/2020

#### 13.56MHz\_Mode 1

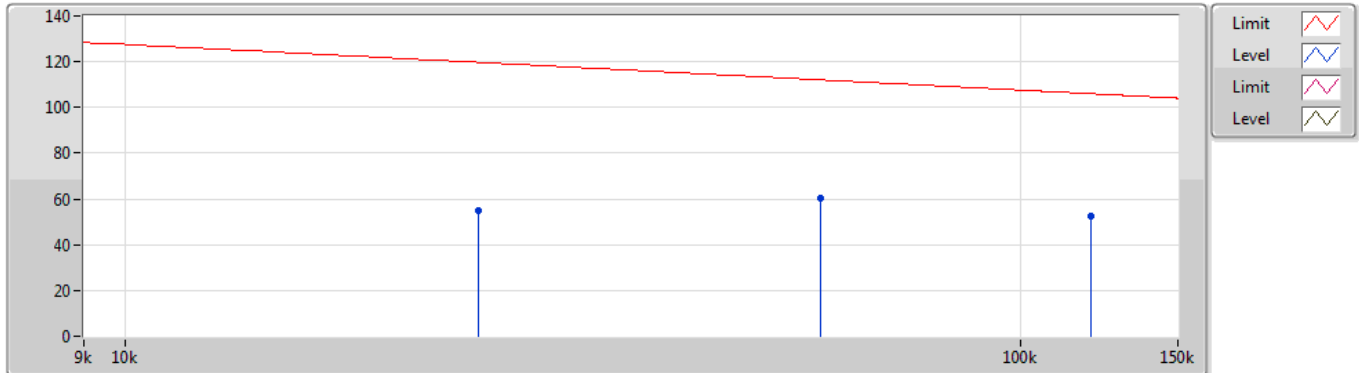


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	13.56M	70.01	124.00	-53.99	22.92	3	Vertical	0	1.00	-	47.09	22.35	0.57	-

### NFC Operating below 30MHz

17/08/2020

#### 13.56MHz\_Mode 1

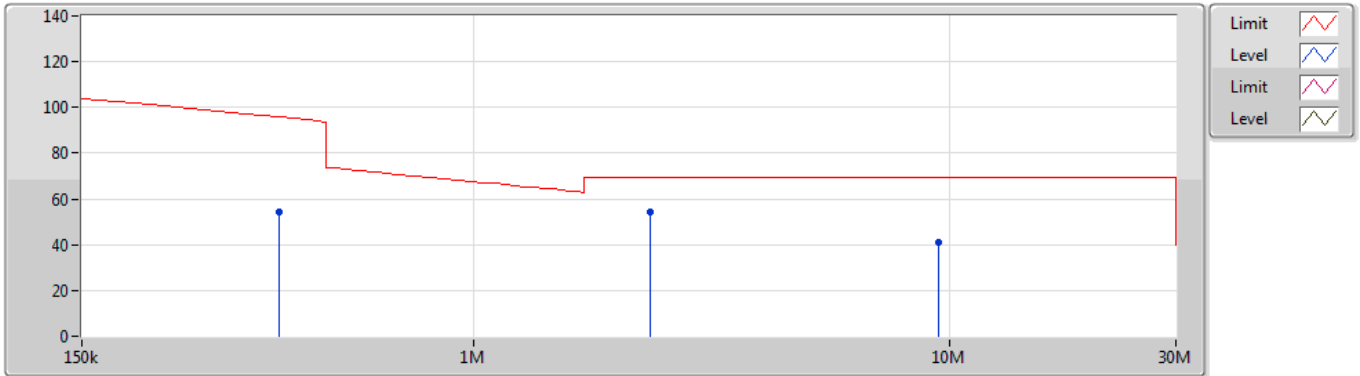


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	24.792k	54.69	119.71	-65.02	20.96	3	Vertical	0	1.00	-	33.73	20.92	0.04	-
PK	59.76k	60.39	112.07	-51.68	20.92	3	Vertical	0	1.00	-	39.47	20.87	0.05	-
PK	120.108k	52.25	105.99	-53.74	20.04	3	Vertical	0	1.00	-	32.21	19.98	0.06	-

### NFC Operating below 30MHz

17/08/2020

#### 13.56MHz\_Mode 1

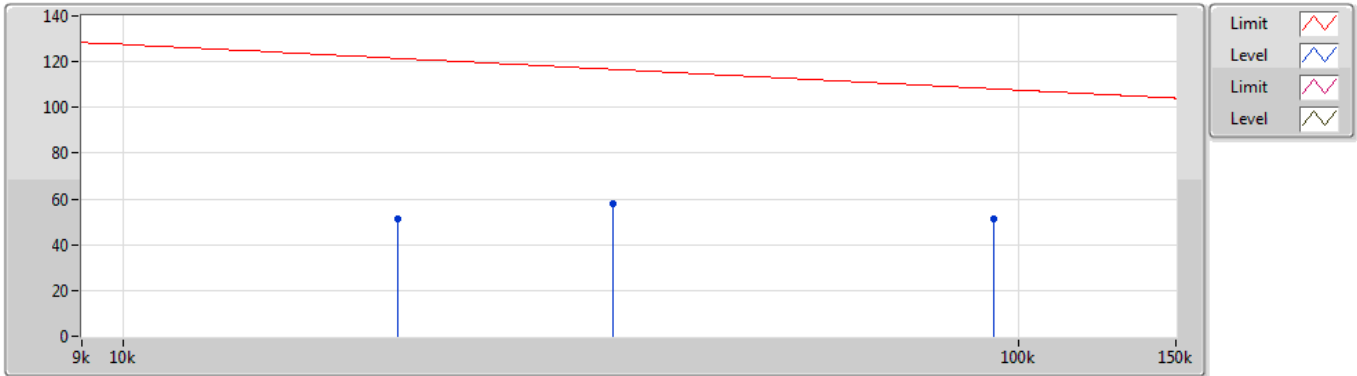


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	388.8k	54.49	95.80	-41.31	20.54	3	Vertical	360	1.00	-	33.95	20.45	0.09	-
PK	2.359M	54.39	69.50	-15.11	20.15	3	Vertical	360	1.00	-	34.24	19.93	0.22	-
PK	9.523M	40.88	69.50	-28.62	22.39	3	Vertical	360	1.00	-	18.49	21.91	0.48	-

### NFC Operating below 30MHz

17/08/2020

#### 13.56MHz\_Mode 2

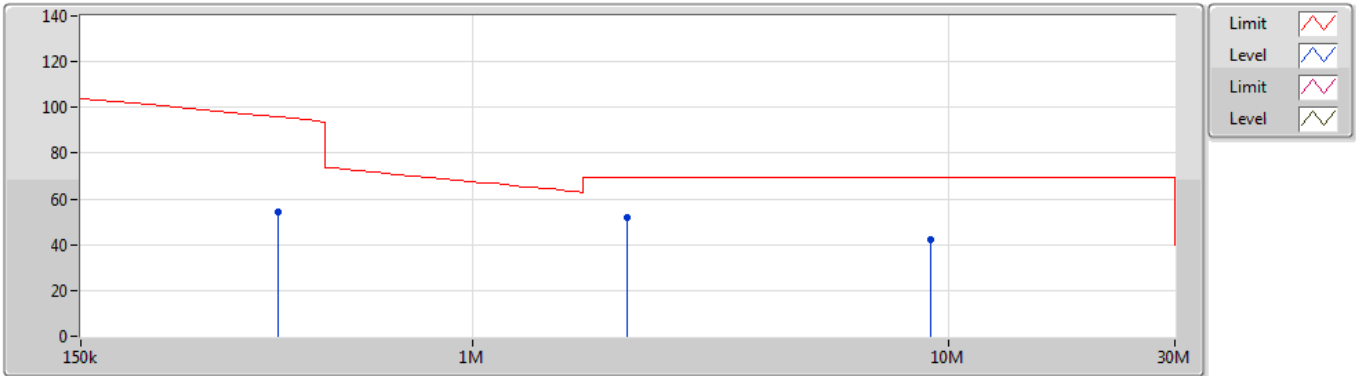


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	20.28k	51.59	121.44	-69.85	20.67	3	Vertical	360	1.00	-	30.92	20.63	0.04	-
PK	35.226k	57.79	116.65	-58.86	21.25	3	Vertical	360	1.00	-	36.54	21.20	0.05	-
PK	93.882k	51.39	108.13	-56.74	20.07	3	Vertical	360	1.00	-	31.32	20.02	0.05	-

### NFC Operating below 30MHz

17/08/2020

#### 13.56MHz\_Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	388.8k	54.29	95.80	-41.51	20.54	3	Vertical	0	1.00	-	33.75	20.45	0.09	-
PK	2.12M	52.12	69.50	-17.38	20.20	3	Vertical	0	1.00	-	31.92	19.99	0.21	-
PK	9.224M	42.12	69.50	-27.38	22.32	3	Vertical	0	1.00	-	19.80	21.85	0.47	-



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Azimuth (°)	Height (m)	Comments
13.553-13.567MHz	-	-	-	-	-	-	-	-	-	-	-
NFC	Pass	QP	35.82M	36.48	40.00	-3.52	-6.05	3	360	1.12	-



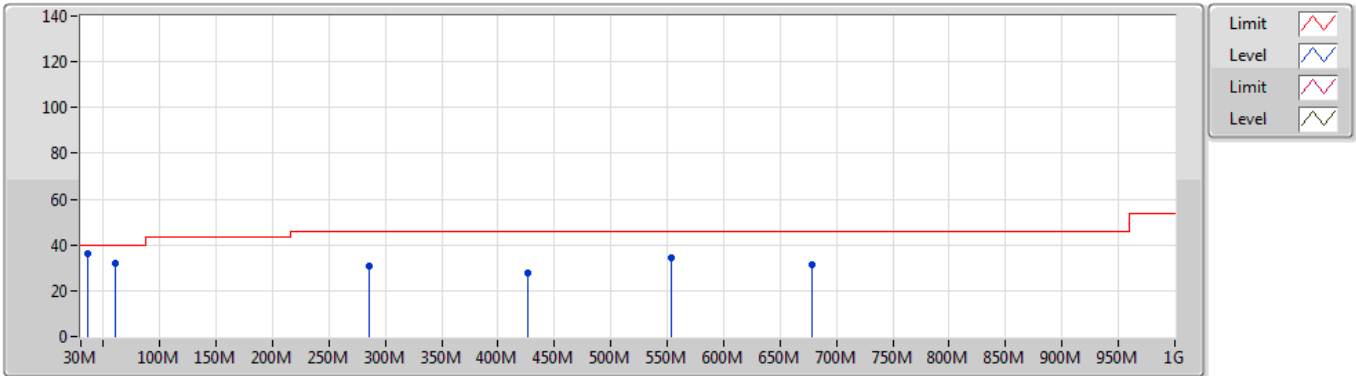
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Azimuth (°)	Height (m)	Comments
NFC	-	-	-	-	-	-	-	-	-	-	-
13.56MHz_Mode 1	Pass	PK	61.04M	31.92	40.00	-8.08	-15.25	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	286.08M	30.74	46.00	-15.26	-6.32	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	425.76M	27.90	46.00	-18.10	-3.01	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	553.8M	34.39	46.00	-11.61	-0.69	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	677.96M	31.68	46.00	-14.32	-0.01	3	360	1.00	-
13.56MHz_Mode 1	Pass	QP	35.82M	36.48	40.00	-3.52	-6.05	3	360	1.12	-
13.56MHz_Mode 1	Pass	PK	70.74M	30.11	40.00	-9.89	-15.15	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	150.28M	31.69	43.50	-11.81	-10.32	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	460.68M	28.47	46.00	-17.53	-2.67	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	571.26M	33.09	46.00	-12.91	-0.66	3	360	1.00	-
13.56MHz_Mode 1	Pass	PK	693.48M	32.74	46.00	-13.26	0.08	3	360	1.00	-
13.56MHz_Mode 1	Pass	QP	35.82M	34.41	40.00	-5.59	-6.05	3	0	2.35	-
13.56MHz_Mode 2	Pass	PK	121.18M	26.14	43.50	-17.36	-8.77	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	251.16M	28.89	46.00	-17.11	-7.00	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	532.46M	39.44	46.00	-6.56	-1.75	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	800.18M	32.28	46.00	-13.72	1.60	3	0	1.00	-
13.56MHz_Mode 2	Pass	PK	937.92M	34.94	46.00	-11.06	3.42	3	0	1.00	-
13.56MHz_Mode 2	Pass	QP	49.4M	32.14	40.00	-7.86	-13.33	3	105	1.00	-
13.56MHz_Mode 2	Pass	PK	130.88M	33.91	43.50	-9.59	-9.15	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	206.54M	28.86	43.50	-14.64	-10.81	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	301.6M	34.56	46.00	-11.44	-5.98	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	666.32M	34.29	46.00	-11.71	-0.09	3	360	1.00	-
13.56MHz_Mode 2	Pass	PK	800.18M	36.58	46.00	-9.42	1.60	3	360	1.00	-
13.56MHz_Mode 2	Pass	QP	49.4M	33.98	40.00	-6.02	-13.33	3	190	1.55	-

### NFC Operating above 30MHz

18/08/2020

#### 13.56MHz\_Mode 1



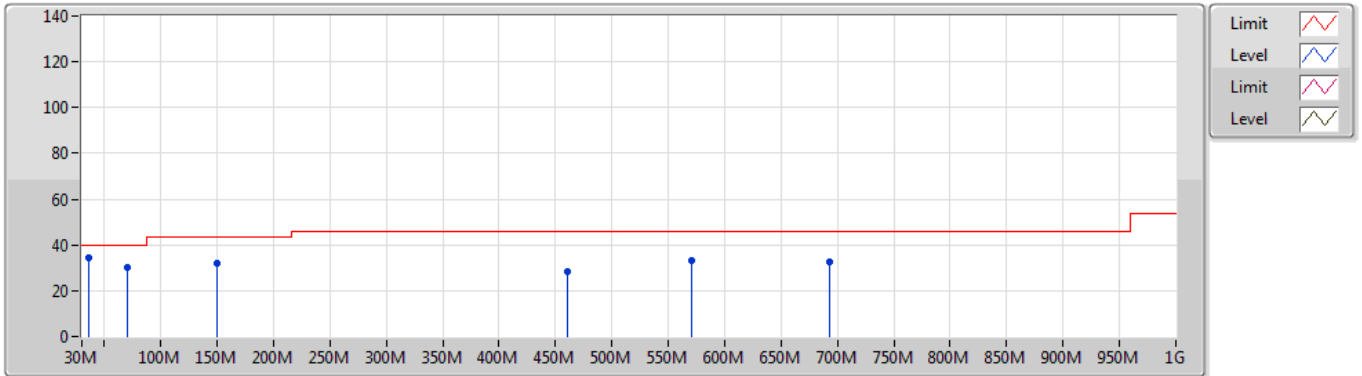
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	61.04M	31.92	40.00	-8.08	-15.25	3	Vertical	360	1.00	-	47.17	11.44	1.10	27.79
PK	286.08M	30.74	46.00	-15.26	-6.32	3	Vertical	360	1.00	-	37.06	18.18	2.54	27.04
PK	425.76M	27.90	46.00	-18.10	-3.01	3	Vertical	360	1.00	-	30.91	21.80	3.10	27.91
PK	553.8M	34.39	46.00	-11.61	-0.69	3	Vertical	360	1.00	-	35.08	24.05	3.62	28.36
PK	677.96M	31.68	46.00	-14.32	-0.01	3	Vertical	360	1.00	-	31.69	24.06	4.11	28.18
QP	35.82M	36.48	40.00	-3.52	-6.05	3	Vertical	360	1.12	-	42.53	20.10	0.82	26.97



### NFC Operating above 30MHz

18/08/2020

#### 13.56MHz\_Mode 1

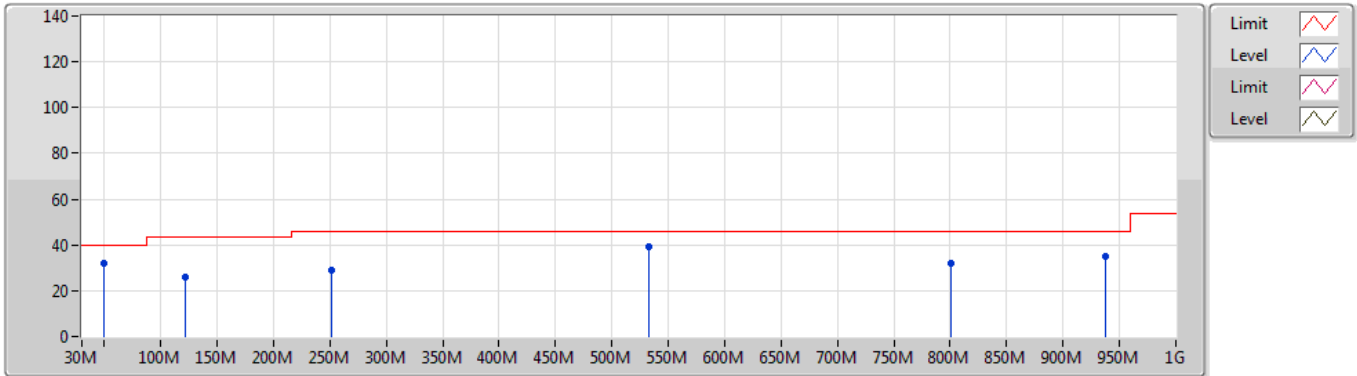


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	70.74M	30.11	40.00	-9.89	-15.15	3	Horizontal	360	1.00	-	45.26	11.49	1.20	27.84
PK	150.28M	31.69	43.50	-11.81	-10.32	3	Horizontal	360	1.00	-	42.01	15.51	1.75	27.58
PK	460.68M	28.47	46.00	-17.53	-2.67	3	Horizontal	360	1.00	-	31.14	22.18	3.26	28.11
PK	571.26M	33.09	46.00	-12.91	-0.66	3	Horizontal	360	1.00	-	33.75	23.99	3.69	28.34
PK	693.48M	32.74	46.00	-13.26	0.08	3	Horizontal	360	1.00	-	32.66	24.04	4.17	28.13
QP	35.82M	34.41	40.00	-5.59	-6.05	3	Horizontal	0	2.35	-	40.46	20.10	0.82	26.97

### NFC Operating above 30MHz

17/08/2020

#### 13.56MHz\_Mode 2

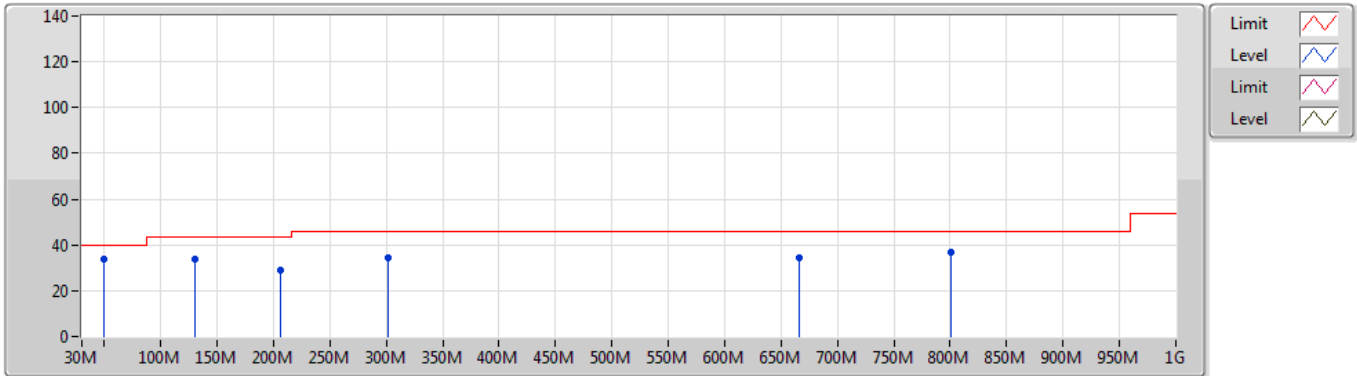


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	121.18M	26.14	43.50	-17.36	-8.77	3	Vertical	0	1.00	-	34.91	17.32	1.61	27.70
PK	251.16M	28.89	46.00	-17.11	-7.00	3	Vertical	0	1.00	-	35.89	17.65	2.40	27.05
PK	532.46M	39.44	46.00	-6.56	-1.75	3	Vertical	0	1.00	-	41.19	23.02	3.56	28.33
PK	800.18M	32.28	46.00	-13.72	1.60	3	Vertical	0	1.00	-	30.68	24.88	4.50	27.78
PK	937.92M	34.94	46.00	-11.06	3.42	3	Vertical	0	1.00	-	31.52	25.83	4.88	27.29
QP	49.4M	32.14	40.00	-7.86	-13.33	3	Vertical	105	1.00	-	45.47	13.37	0.99	27.69

### NFC Operating above 30MHz

17/08/2020

#### 13.56MHz\_Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	130.88M	33.91	43.50	-9.59	-9.15	3	Horizontal	360	1.00	-	43.06	16.86	1.65	27.66
PK	206.54M	28.86	43.50	-14.64	-10.81	3	Horizontal	360	1.00	-	39.67	14.31	2.14	27.26
PK	301.6M	34.56	46.00	-11.44	-5.98	3	Horizontal	360	1.00	-	40.54	18.46	2.61	27.05
PK	666.32M	34.29	46.00	-11.71	-0.09	3	Horizontal	360	1.00	-	34.38	24.06	4.07	28.22
PK	800.18M	36.58	46.00	-9.42	1.60	3	Horizontal	360	1.00	-	34.98	24.88	4.50	27.78
QP	49.4M	33.98	40.00	-6.02	-13.33	3	Horizontal	190	1.55	-	47.31	13.37	0.99	27.69



**Summary**

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
13.553-13.567MHz	-	-	-	-	-	-	-
NFC	Pass	13.56M	13.560088M	6.5173	100	1	0 min



Result

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
NFC	-	-	-	-	-	-	-
13.56MHz_-20°C	Pass	13.56M	13.560086M	6.3237	100	1	0 min
13.56MHz_-20°C	Pass	13.56M	13.560087M	6.3883	100	1	2 min
13.56MHz_-20°C	Pass	13.56M	13.560086M	6.3237	100	1	5 min
13.56MHz_-20°C	Pass	13.56M	13.560086M	6.3237	100	1	10 min
13.56MHz_-10°C	Pass	13.56M	13.560086M	6.3237	100	1	0 min
13.56MHz_-10°C	Pass	13.56M	13.560085M	6.2592	100	1	2 min
13.56MHz_-10°C	Pass	13.56M	13.560086M	6.3237	100	1	5 min
13.56MHz_-10°C	Pass	13.56M	13.560085M	6.2592	100	1	10 min
13.56MHz_0°C	Pass	13.56M	13.560085M	6.2592	100	1	0 min
13.56MHz_0°C	Pass	13.56M	13.560086M	6.3237	100	1	2 min
13.56MHz_0°C	Pass	13.56M	13.560085M	6.2592	100	1	5 min
13.56MHz_0°C	Pass	13.56M	13.560086M	6.3237	100	1	10 min
13.56MHz_10°C	Pass	13.56M	13.560088M	6.4528	100	1	0 min
13.56MHz_10°C	Pass	13.56M	13.560087M	6.3883	100	1	2 min
13.56MHz_10°C	Pass	13.56M	13.560088M	6.4528	100	1	5 min
13.56MHz_10°C	Pass	13.56M	13.560088M	6.4528	100	1	10 min
13.56MHz_20°C	Pass	13.56M	13.560088M	6.5173	100	1	0 min
13.56MHz_20°C	Pass	13.56M	13.560088M	6.5173	100	1	2 min
13.56MHz_20°C	Pass	13.56M	13.560088M	6.4528	100	1	5 min
13.56MHz_20°C	Pass	13.56M	13.560088M	6.5173	100	1	10 min
13.56MHz_30°C	Pass	13.56M	13.560086M	6.3237	100	1	0 min
13.56MHz_30°C	Pass	13.56M	13.560085M	6.2592	100	1	2 min
13.56MHz_30°C	Pass	13.56M	13.560085M	6.2592	100	1	5 min
13.56MHz_30°C	Pass	13.56M	13.560085M	6.2592	100	1	10 min
13.56MHz_40°C	Pass	13.56M	13.560084M	6.1947	100	1	0 min
13.56MHz_40°C	Pass	13.56M	13.560084M	6.1947	100	1	2 min
13.56MHz_40°C	Pass	13.56M	13.560083M	6.1302	100	1	5 min
13.56MHz_40°C	Pass	13.56M	13.560082M	6.0656	100	1	10 min
13.56MHz_50°C	Pass	13.56M	13.560074M	5.4849	100	1	0 min
13.56MHz_50°C	Pass	13.56M	13.560074M	5.4204	100	1	2 min
13.56MHz_50°C	Pass	13.56M	13.560074M	5.4204	100	1	5 min
13.56MHz_50°C	Pass	13.56M	13.560074M	5.4204	100	1	10 min
13.56MHz_20°C-138V	Pass	13.56M	13.560088M	6.4528	100	1	0 min
13.56MHz_20°C-138V	Pass	13.56M	13.560087M	6.3883	100	1	2 min
13.56MHz_20°C-138V	Pass	13.56M	13.560088M	6.4528	100	1	5 min
13.56MHz_20°C-138V	Pass	13.56M	13.560088M	6.4528	100	1	10 min
13.56MHz_20°C-120V	Pass	13.56M	13.560088M	6.4528	100	1	0 min
13.56MHz_20°C-120V	Pass	13.56M	13.560088M	6.5173	100	1	2 min
13.56MHz_20°C-120V	Pass	13.56M	13.560088M	6.4528	100	1	5 min
13.56MHz_20°C-120V	Pass	13.56M	13.560088M	6.4528	100	1	10 min
13.56MHz_20°C-102V	Pass	13.56M	13.560087M	6.3883	100	1	0 min
13.56MHz_20°C-102V	Pass	13.56M	13.560086M	6.3237	100	1	2 min
13.56MHz_20°C-102V	Pass	13.56M	13.560086M	6.3237	100	1	5 min



## Frequency Stability

## Appendix D

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
13.56MHz_20°C-102V	Pass	13.56M	13.560086M	6.3237	100	1	10 min