

FCC Radio Test Report

FCC ID : 2BEVK-CME350RFID2
Equipment : RFID Reader
Brand Name : CME Manufacturing and Logistics AB
Model Name : CME350RFID2-RevA
Applicant : CME Manufacturing and Logistics AB
Teknikvagen 11, Odsmal, Vastra
Gotaland, 44495 SWEDEN.
Manufacturer : CME Manufacturing and Logistics AB
Teknikvagen 11, Odsmal, Vastra
Gotaland, 44495 SWEDEN.
Standard : 47 CFR FCC Part 15.247

The product was received on Jan. 04, 2024, and testing was started from Feb. 25, 2024 and completed on Mar. 08, 2024. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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PHOTOGRAPHS OF EUT V02



Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	20dB Bandwidth	PASS	15.247(a)
3.2	15.247(a)	Carrier Frequency Separation	PASS	15.247(a)
3.3	15.247(b)	Maximum Conducted Output Power	PASS	15.247(b)
3.4	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	PASS	15.247(a)
3.5	15.247(a)	Time of Occupancy (Dwell Time)	PASS	15.247(a)
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	15.247(d)
3.7	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

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: Barry Hsiao

Report Producer: Ann Hou



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number
902 - 928	ASK	903.24-926.76	50

Channel list			
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	903.24	26	915.24
2	903.72	27	915.72
3	904.20	28	916.20
4	904.68	29	916.68
5	905.16	30	917.16
6	905.64	31	917.64
7	906.12	32	918.12
8	906.60	33	918.60
9	907.08	34	919.08
10	907.56	35	919.56
11	908.04	36	920.04
12	908.52	37	920.52
13	909.00	38	921.00
14	909.48	39	921.48
15	909.96	40	921.96
16	910.44	41	922.44
17	910.92	42	922.92
18	911.40	43	923.40
19	911.88	44	923.88
20	912.36	45	924.36
21	912.84	46	924.84
22	913.32	47	925.32
23	913.80	48	925.80
24	914.28	49	926.28
25	914.76	50	926.76



Band	Mode	BWch (MHz)	Nant
902 - 928 MHz	RFID	0.2	1TX

Note:

- ♦ 902 - 928 MHz Band uses as a system using ASK modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	CME30RFID2	CME30RFID2-RevA	PCB	N/A	-9.23

1.1.3 Type of EUT

Operational Condition	
EUT Power Type	From Host system
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint <input type="checkbox"/> Point-to-point
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

Mode	DC	DCF (dB)	T (s)	VBW (Hz)_1/T
RFID	0.573	2.42	233.438u	10k

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 558074 D01 v05r02

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
<input checked="" type="checkbox"/> 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. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Daniel Lin	20.4~22.9°C / 49~56%	25/Feb/2024
RF Conducted	TH07-HY	Xun Hsieh	24.2~25.5°C / 52~55%	08/Mar/2024
<input checked="" type="checkbox"/> Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)			
	TEL: 886-3-327-0868			
Test site Designation No. TW0036 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH25-HY	Simon Cheng	20.2~22.3°C / 51~53%	26/Feb/2024~27/Feb/2024
<input type="checkbox"/> 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
AC Power-line Conducted Emissions	4.53 dB	Confidence levels of 95%
Bandwidth	3 MHz	Confidence levels of 95%
Maximum Conducted Output Power	2 dB	Confidence levels of 95%
Power Spectral Density	2 dB	Confidence levels of 95%
Emissions in Non-restricted Frequency Bands	0.14 dB	Confidence levels of 95%
Emissions in Restricted Frequency Bands	4.8 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

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	5V

2.2 Test Channel Mode




Test Software Version	docklight_V1.9
-----------------------	----------------

Mode	Power Setting
RFID	-
903.24MHz	default
915.24MHz	default
926.76MHz	default

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	CTX
1	USB mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, 20dB Bandwidth, Carrier Frequency Separation (ChS) Number of Hopping Frequencies (N), Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	USB mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	



2.4 Accessories

Accessories Information				
Data Cable	Brand Name	JOGTEK CORP.	Model Name	CME350RFID2
	Manufacturer	JOGTEK CORP.	SN	NA
	Signal Line	0.7 meter, non-shielded cable, w/o ferrite core		

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

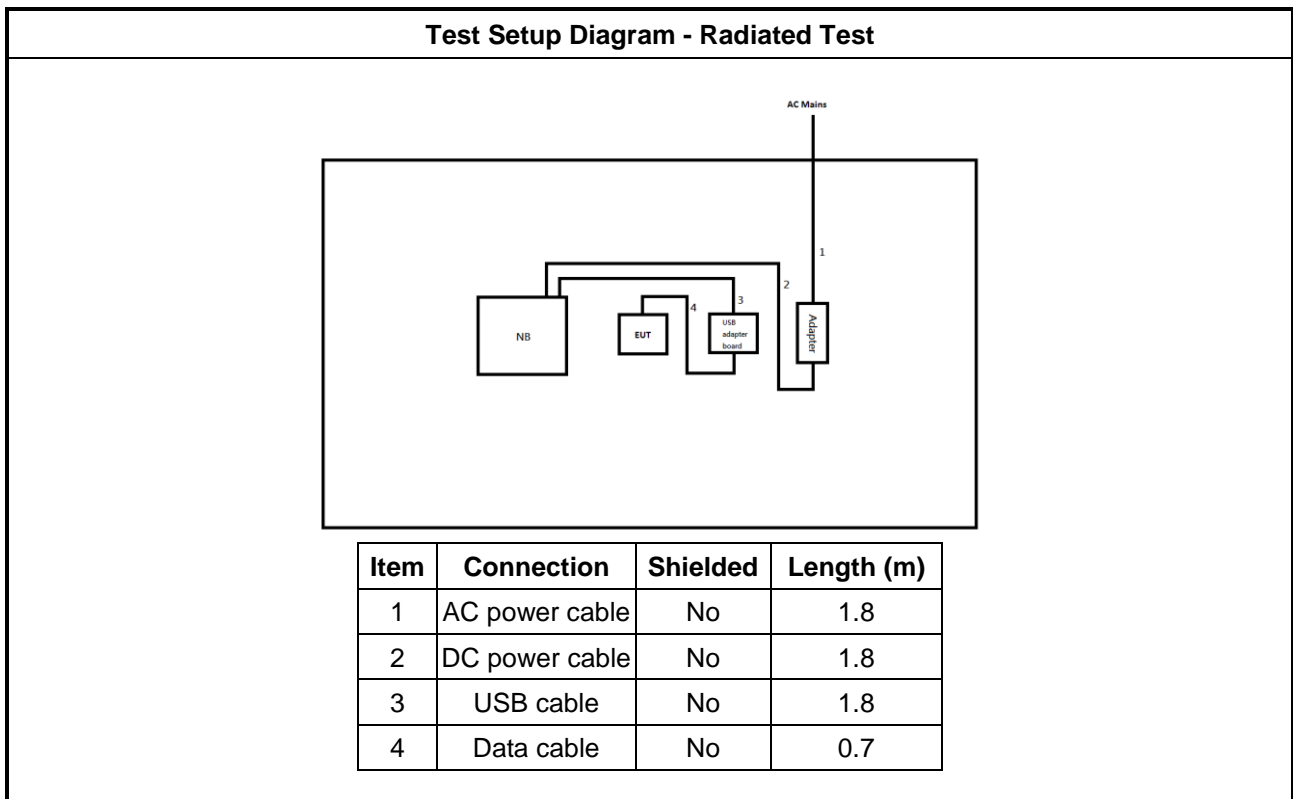
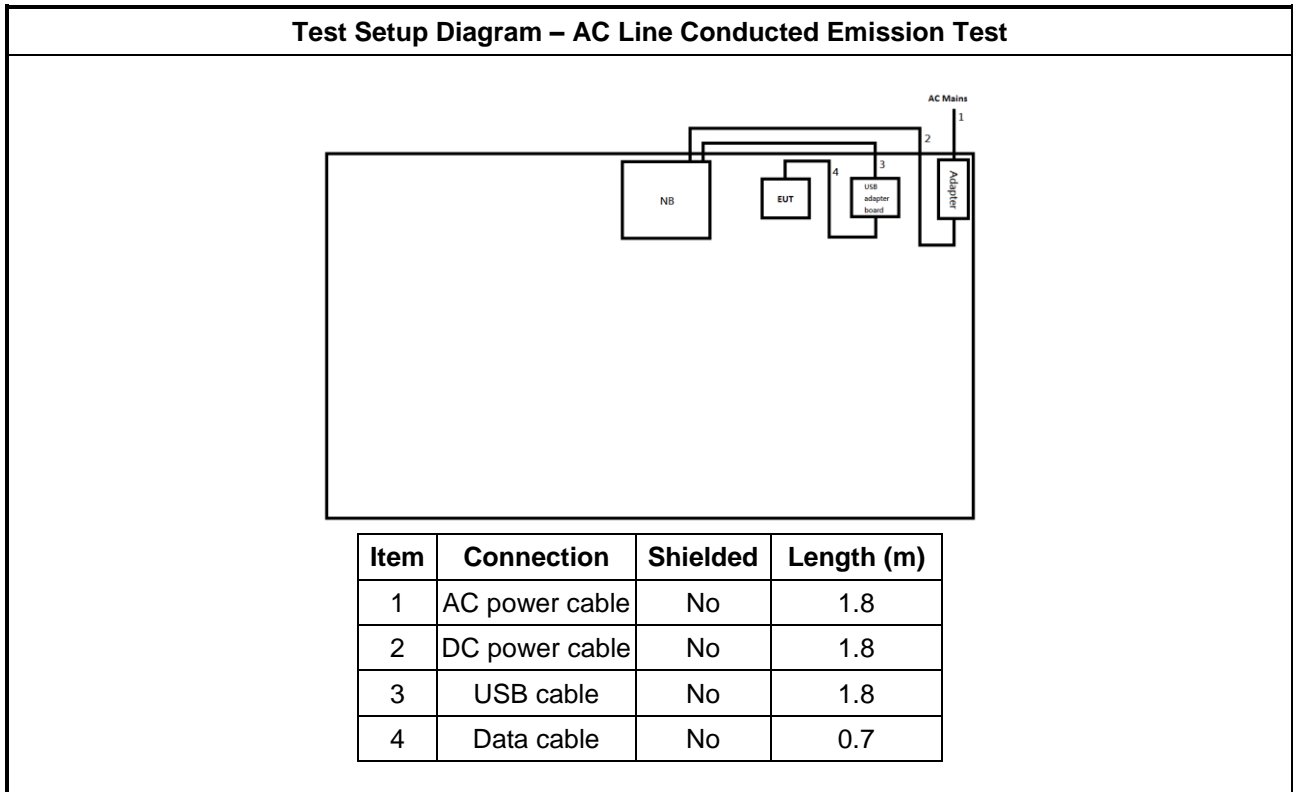
2.5 Support Equipment

Support Equipment - AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	USB Bridge (Customer provide)	JOGTEK CORP.	CME350RFID2	-
2	AC Power cable	Power sync	PW-GPC180-3	-
3	AC Adapter for NB	HP	HSTNN-CA40	-
4	Notebook	HP	HSTNN-142C	-

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	-
2	Adapter for NB	DELL	HA65NM130	-
3	USB Bridge (Customer provide)	JOGTEK CORP.	CME350RFID2	-
4	UHF Tag (Customer provide)	JOGTEK CORP.	CME350RFID2	-

Support Equipment - Radiated				
No.	Equipment	Brand Name	Model Name	FCC ID
1	USB Bridge (Customer provide)	JOGTEK CORP.	CME350RFID2	-
2	AC Power cable	Power sync	PW-GPC180-3	-
3	AC Adapter for NB	HP	HSTNN-CA40	-
4	Notebook	HP	HSTNN-142C	-

2.6 Test Setup Diagram





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

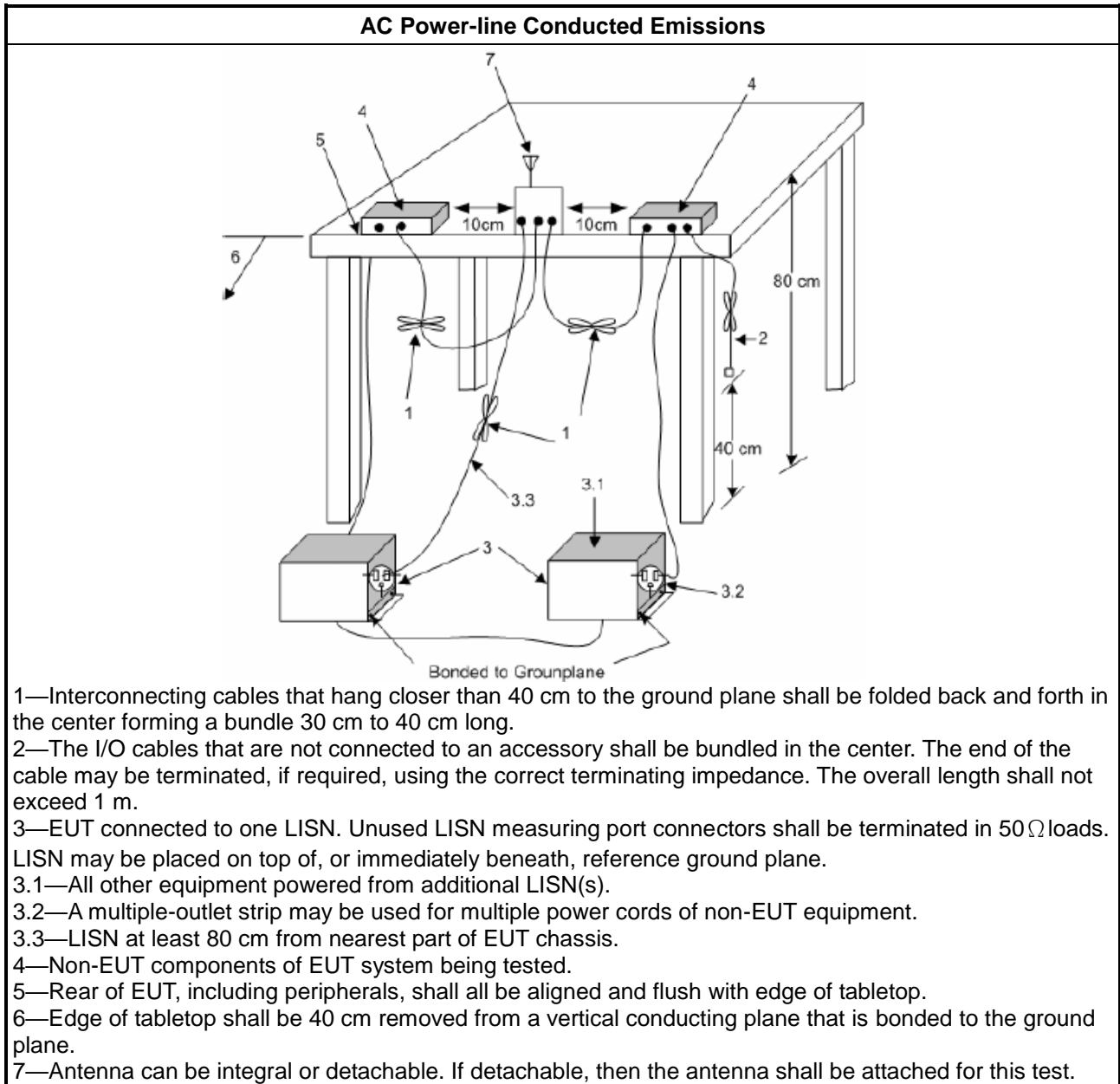
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

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



Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
<ul style="list-style-type: none"> ▪ 902-928 MHz Band: <ul style="list-style-type: none"> ▪ $N \geq 50$ and $ChS \geq \text{MAX}(20 \text{ dB bandwidth}, 25 \text{ kHz})$; $20 \text{ dB bandwidth} \leq 250 \text{ kHz}$. ▪ $50 > N \geq 25$ and $ChS \geq \text{MAX}(20 \text{ dB bandwidth}, 25 \text{ kHz})$; $20 \text{ dB bandwidth} > 250 \text{ kHz}$. 	
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

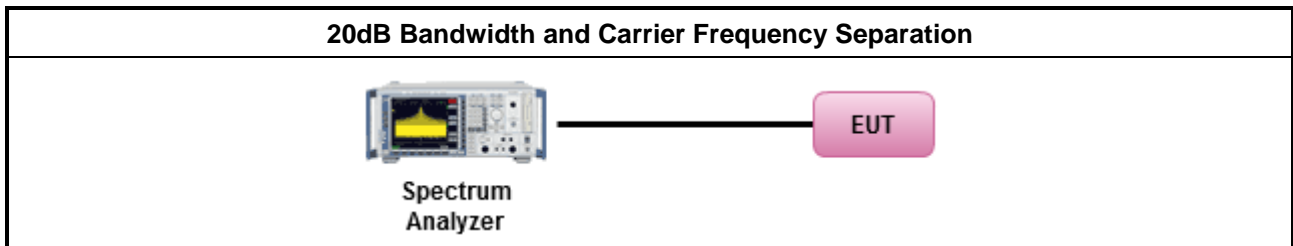
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.9.2 for 20 dB bandwidth measurement.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 7.8.2 for carrier frequency separation measurement.

3.2.4 Test Setup



3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
<ul style="list-style-type: none"> 902-928 MHz Band: 	
	<ul style="list-style-type: none"> $N \geq 50$; Power 30dBm; EIRP 36dBm
	<ul style="list-style-type: none"> $50 > N \geq 25$; Power 24dBm; EIRP 30dBm
N: Number of Hopping Frequencies	

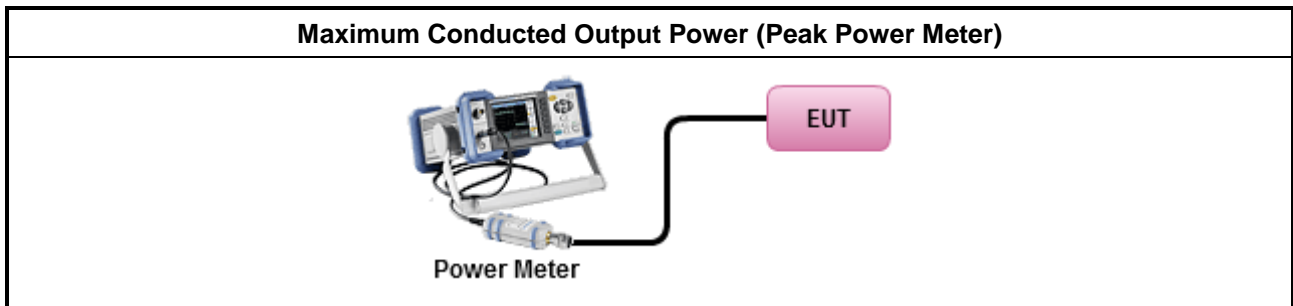
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Number of Hopping Frequencies and Hopping Bandedge

3.4.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit for Frequency Hopping Systems	
<ul style="list-style-type: none"> ▪ 902-928 MHz Band: 	
	<ul style="list-style-type: none"> ▪ $N \geq 50$ and $ChS \geq MAX(20 \text{ dB bandwidth}, 25 \text{ kHz})$; $20 \text{ dB bandwidth} \leq 250 \text{ kHz}$.
	<ul style="list-style-type: none"> ▪ $50 > N \geq 25$ and $ChS \geq MAX(20 \text{ dB bandwidth}, 25 \text{ kHz})$; $20 \text{ dB bandwidth} > 250 \text{ kHz}$.
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

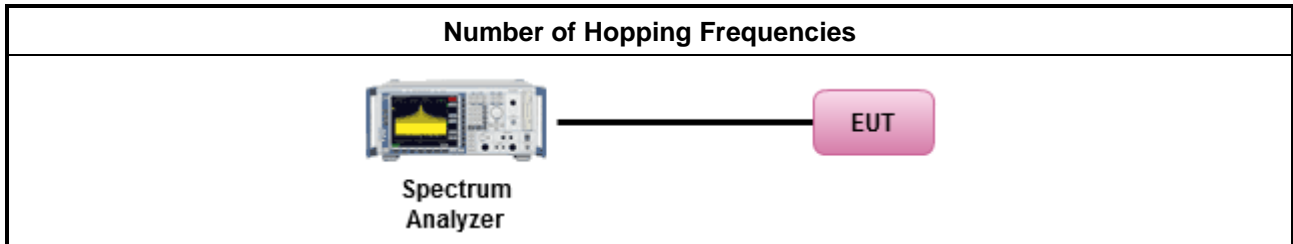
3.4.2 Measuring Instruments

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 7.8.3 for number of hopping frequencies measurement.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 7.8.6 for hopping frequencies Bandedge measurement.

3.4.4 Test Setup



3.4.5 Test Result of Number of Hopping Frequencies

Refer as Appendix D

3.4.6 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

3.5 Time of Occupancy (Dwell Time)

3.5.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems	
<ul style="list-style-type: none"> ▪ 902-928 MHz Band: 	
	<ul style="list-style-type: none"> ▪ $N \geq 50$; 0.4s in 20s period
	<ul style="list-style-type: none"> ▪ $50 > N \geq 25$; 0.4s in 10s period
N: Number of Hopping Frequencies	

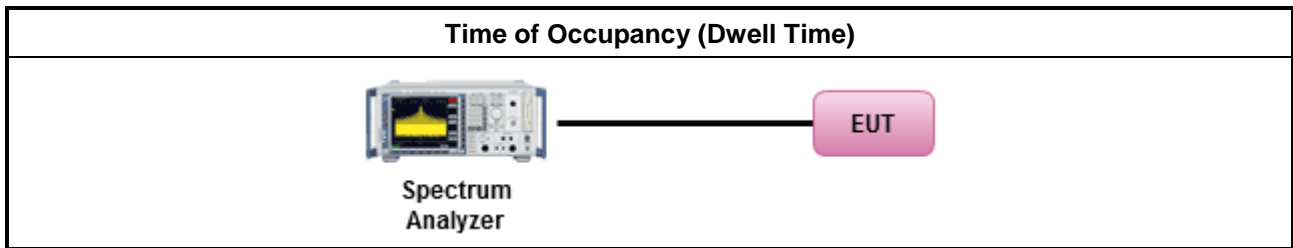
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 7.8.4 for dwell time measurement.

3.5.4 Test Setup



3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

3.6 Emissions in Non-restricted Frequency Bands

3.6.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.	

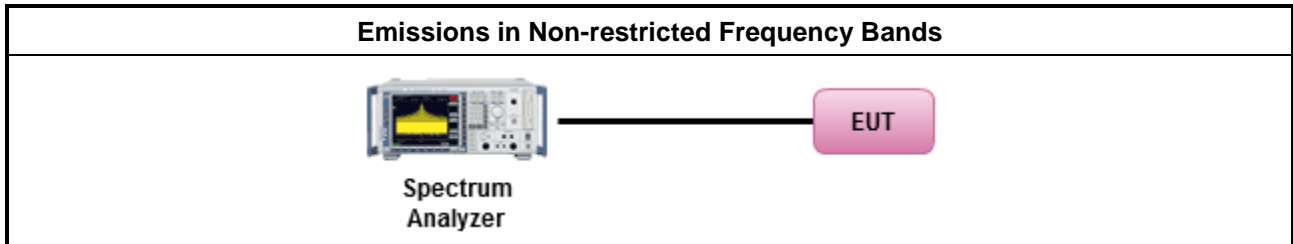
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.

3.6.4 Test Setup



3.6.5 Transmitter Radiated Bandedge Emissions

Refer as Appendix F

3.7 Emissions in Restricted Frequency Bands

3.7.1 Emissions in Restricted Frequency Bands Limit

Restricted Band 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.

3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

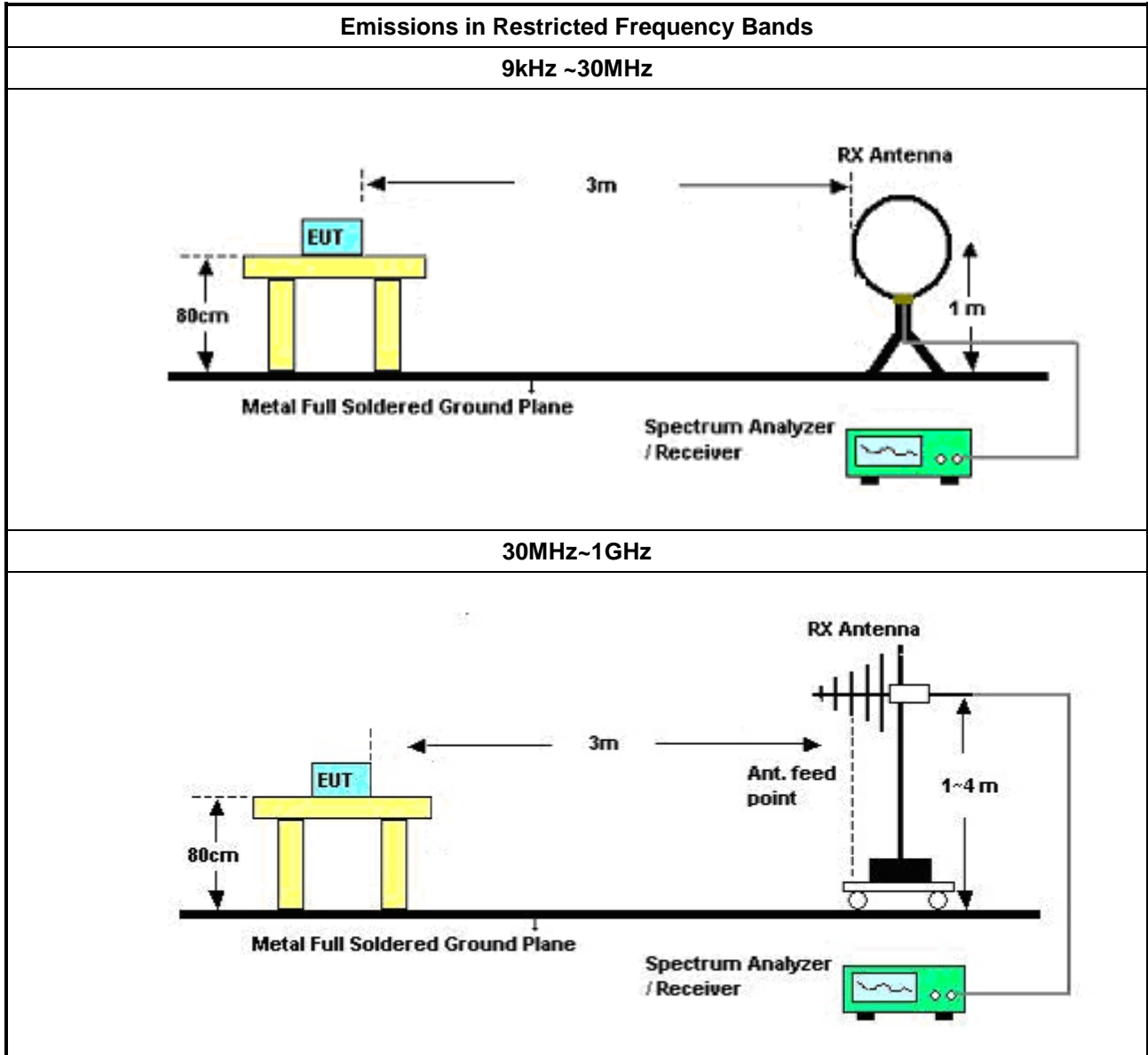
Test Method	
	<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [hopping duty factor].
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10; clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below:
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.

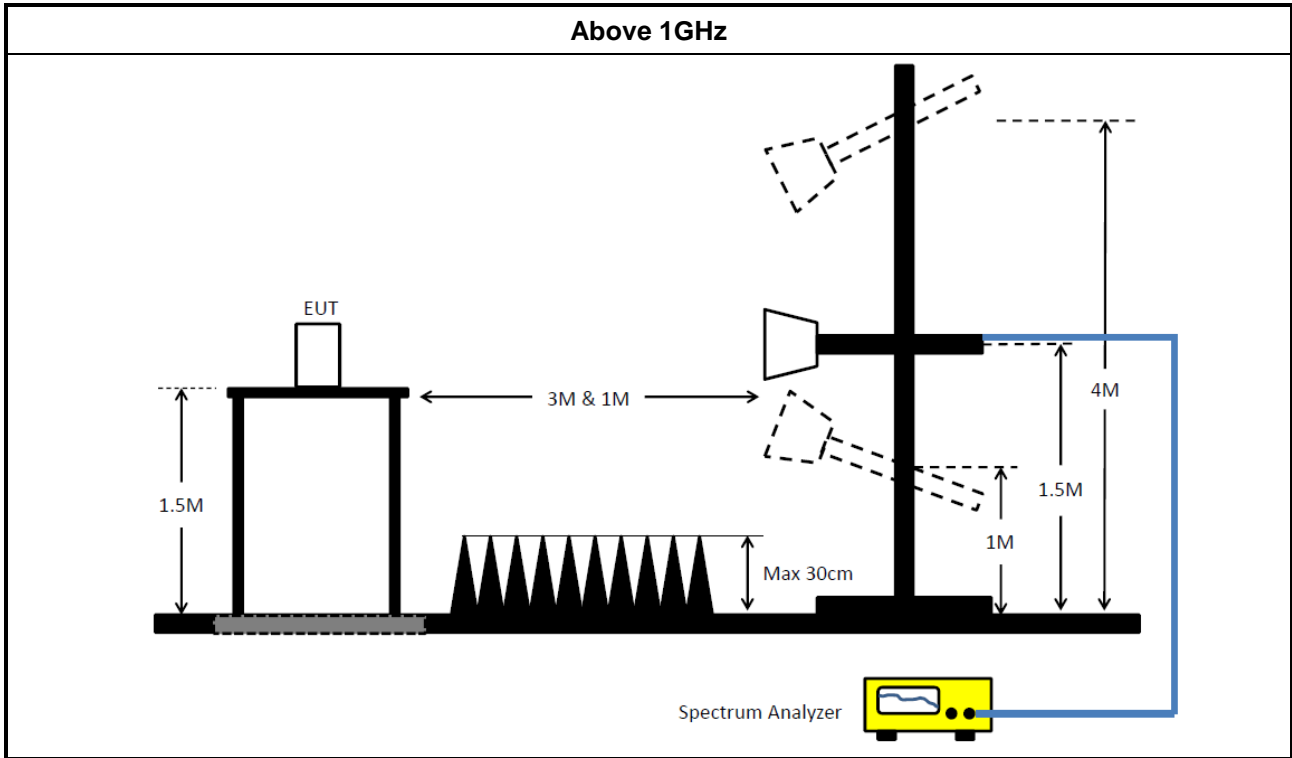
3.7.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.7.5 Test Setup





3.7.6 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.7.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G



4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR	102051	9kHz ~ 3.6GHz	16/May/2023	15/May/2024
TWO-LINE V-NETWORK	R&S	ENV 216	101295	9kHz-30MHz	05/Feb/2024	04/Feb/2025
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	28/Feb/2023	27/Feb/2024
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	18/Oct/2023	17/Oct/2024
Software	Sporton	SENSE-EMI	V5.11.3	-	NCR	NCR

NCR: No Calibration Required.

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101515	9kHz~40GHz	02/Feb/2024	01/Feb/2025
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	20/Oct/2023	19/Oct/2024
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	15/Dec/2023	14/Dec/2024
Pulse Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	15/Dec/2023	14/Dec/2024
SENSE-15247_FS	Sporton	V5.11.15	N/A	N/A	N/A	N/A

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH25-HY	30MHz~1GHz 3m	03/Aug/2023	02/Aug/2024
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH25-HY	1GHz~18GHz 3m	09/Aug/2023	08/Aug/2024
EMI Test Receiver	ROHDE & SCHWARZ	ESR	102318	9kHz~3.6GHz	27/Dec/2023	26/Dec/2024
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101410	10Hz~44GHz	17/Nov/2023	16/Nov/2024
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	23/Mar/2023	22/Mar/2024
Bilog Antenna & 6dB Attenuator	TESEQ & VGT	CBL 6111D & VFA 04002-06	63537/001	30MHz~1GHz	31/May/2023	30/May/2024
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02876	1GHz~18GHz	12/Jul/2023	11/Jul/2024
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB007	9kHz~1GHz	24/Apr/2023	23/Apr/2024
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB007	1GHz~40GHz	24/Apr/2023	23/Apr/2024
Preamplifier	SGH	PRAMP 903	20230515-1	30MHz~1GHz	25/May/2023	24/May/2024
Preamplifier	SGH	PRAMP 118-H	20230515-3	1GHz ~18GHz	25/May/2023	24/May/2024
SENSE-15247-DTS	Sporton	V5.16	NA	NA	NA	NA



Summary

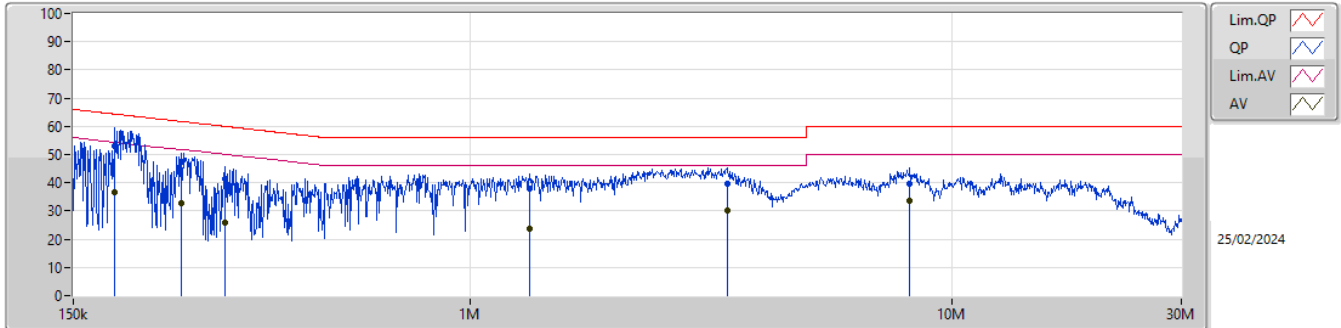
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	186.085k	53.87	64.20	-10.33	Neutral



Result

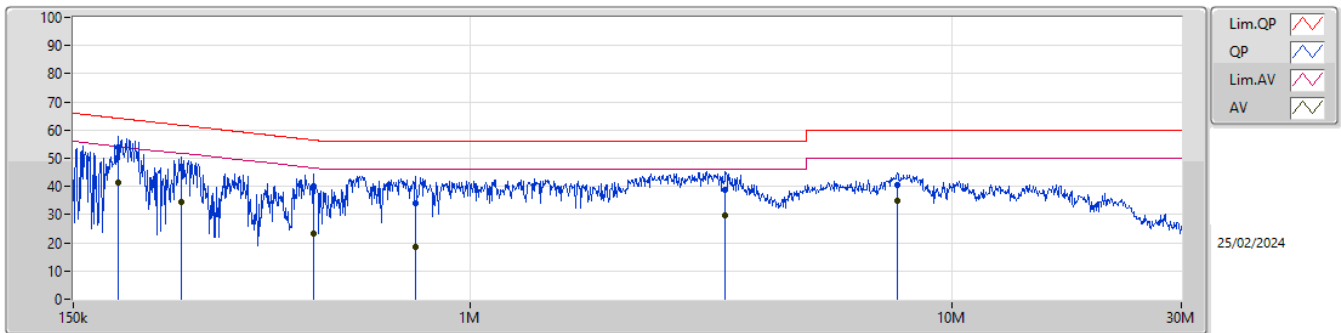
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	183.137k	52.87	64.34	-11.47	Line	-
Mode 1	Pass	AV	183.137k	36.47	54.34	-17.87	Line	-
Mode 1	Pass	QP	251.038k	47.46	61.72	-14.26	Line	-
Mode 1	Pass	AV	251.038k	32.64	51.72	-19.08	Line	-
Mode 1	Pass	QP	310.189k	41.53	59.96	-18.43	Line	-
Mode 1	Pass	AV	310.189k	25.70	49.96	-24.26	Line	-
Mode 1	Pass	QP	1.326M	37.82	56.00	-18.18	Line	-
Mode 1	Pass	AV	1.326M	23.82	46.00	-22.18	Line	-
Mode 1	Pass	QP	3.417M	39.79	56.00	-16.21	Line	-
Mode 1	Pass	AV	3.417M	30.35	46.00	-15.65	Line	-
Mode 1	Pass	QP	8.19M	39.64	60.00	-20.36	Line	-
Mode 1	Pass	AV	8.19M	33.74	50.00	-16.26	Line	-
Mode 1	Pass	QP	186.085k	53.87	64.20	-10.33	Neutral	-
Mode 1	Pass	AV	186.085k	41.45	54.20	-12.75	Neutral	-
Mode 1	Pass	QP	252.043k	46.91	61.70	-14.79	Neutral	-
Mode 1	Pass	AV	252.043k	34.69	51.70	-17.01	Neutral	-
Mode 1	Pass	QP	473.588k	40.10	56.46	-16.36	Neutral	-
Mode 1	Pass	AV	473.588k	23.16	46.46	-23.30	Neutral	-
Mode 1	Pass	QP	770.75k	34.02	56.00	-21.98	Neutral	-
Mode 1	Pass	AV	770.75k	18.72	46.00	-27.28	Neutral	-
Mode 1	Pass	QP	3.389M	38.95	56.00	-17.05	Neutral	-
Mode 1	Pass	AV	3.389M	29.83	46.00	-16.17	Neutral	-
Mode 1	Pass	QP	7.714M	40.57	60.00	-19.43	Neutral	-
Mode 1	Pass	AV	7.714M	34.81	50.00	-15.19	Neutral	-

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	183.137k	52.87	64.34	-11.47	19.34	Line	-	33.53	9.61	0.03	9.70
AV	183.137k	36.47	54.34	-17.87	19.34	Line	-	17.13	9.61	0.03	9.70
QP	251.038k	47.46	61.72	-14.26	19.35	Line	-	28.11	9.61	0.03	9.71
AV	251.038k	32.64	51.72	-19.08	19.35	Line	-	13.29	9.61	0.03	9.71
QP	310.189k	41.53	59.96	-18.43	19.38	Line	-	22.15	9.61	0.04	9.73
AV	310.189k	25.70	49.96	-24.26	19.38	Line	-	6.32	9.61	0.04	9.73
QP	1.326M	37.82	56.00	-18.18	19.47	Line	-	18.35	9.61	0.06	9.80
AV	1.326M	23.82	46.00	-22.18	19.47	Line	-	4.35	9.61	0.06	9.80
QP	3.417M	39.79	56.00	-16.21	19.55	Line	-	20.24	9.64	0.12	9.79
AV	3.417M	30.35	46.00	-15.65	19.55	Line	-	10.80	9.64	0.12	9.79
QP	8.19M	39.64	60.00	-20.36	19.62	Line	-	20.02	9.66	0.17	9.79
AV	8.19M	33.74	50.00	-16.26	19.62	Line	-	14.12	9.66	0.17	9.79

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	186.085k	53.87	64.20	-10.33	19.34	Neutral	-	34.53	9.61	0.03	9.70
AV	186.085k	41.45	54.20	-12.75	19.34	Neutral	-	22.11	9.61	0.03	9.70
QP	252.043k	46.91	61.70	-14.79	19.35	Neutral	-	27.56	9.61	0.03	9.71
AV	252.043k	34.69	51.70	-17.01	19.35	Neutral	-	15.34	9.61	0.03	9.71
QP	473.588k	40.10	56.46	-16.36	19.42	Neutral	-	20.68	9.61	0.04	9.77
AV	473.588k	23.16	46.46	-23.30	19.42	Neutral	-	3.74	9.61	0.04	9.77
QP	770.75k	34.02	56.00	-21.98	19.45	Neutral	-	14.57	9.61	0.05	9.79
AV	770.75k	18.72	46.00	-27.28	19.45	Neutral	-	-0.73	9.61	0.05	9.79
QP	3.389M	38.95	56.00	-17.05	19.55	Neutral	-	19.40	9.64	0.12	9.79
AV	3.389M	29.83	46.00	-16.17	19.55	Neutral	-	10.28	9.64	0.12	9.79
QP	7.714M	40.57	60.00	-19.43	19.64	Neutral	-	20.93	9.68	0.17	9.79
AV	7.714M	34.81	50.00	-15.19	19.64	Neutral	-	15.17	9.68	0.17	9.79



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
RFID	62.15k	102.363k	102KD1D	59.95k	83.96k

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth



Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
RFID	-	-	-	-
903.24MHz	Pass	500k	62.15k	102.363k
915.24MHz	Pass	500k	59.95k	83.96k
926.76MHz	Pass	500k	61.6k	91.795k

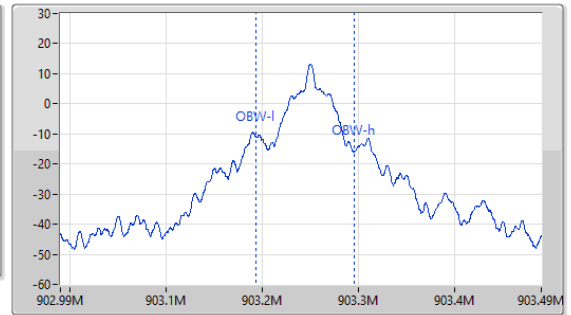
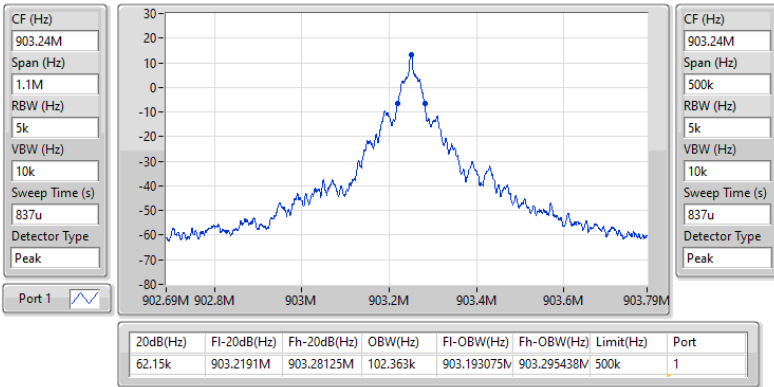
Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

902-928MHz_RFID

EBW-FS

903.24MHz

08/03/2024

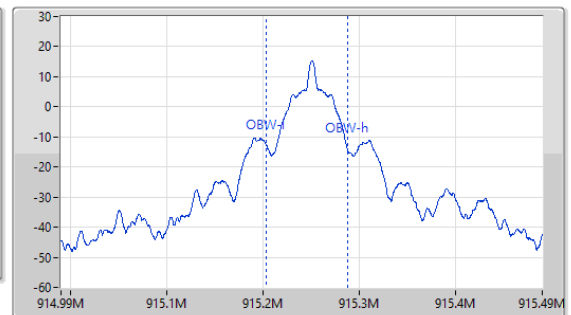
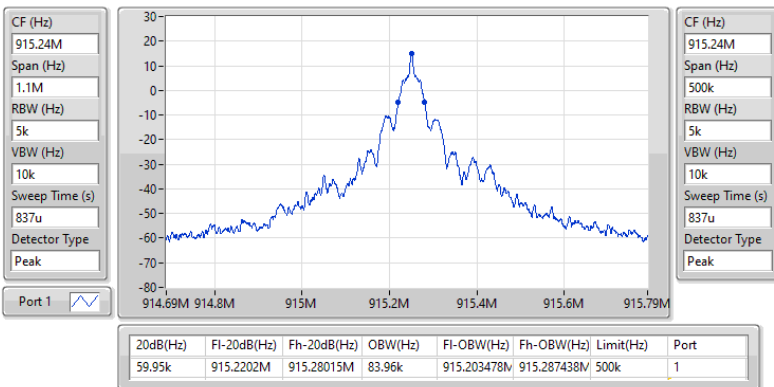


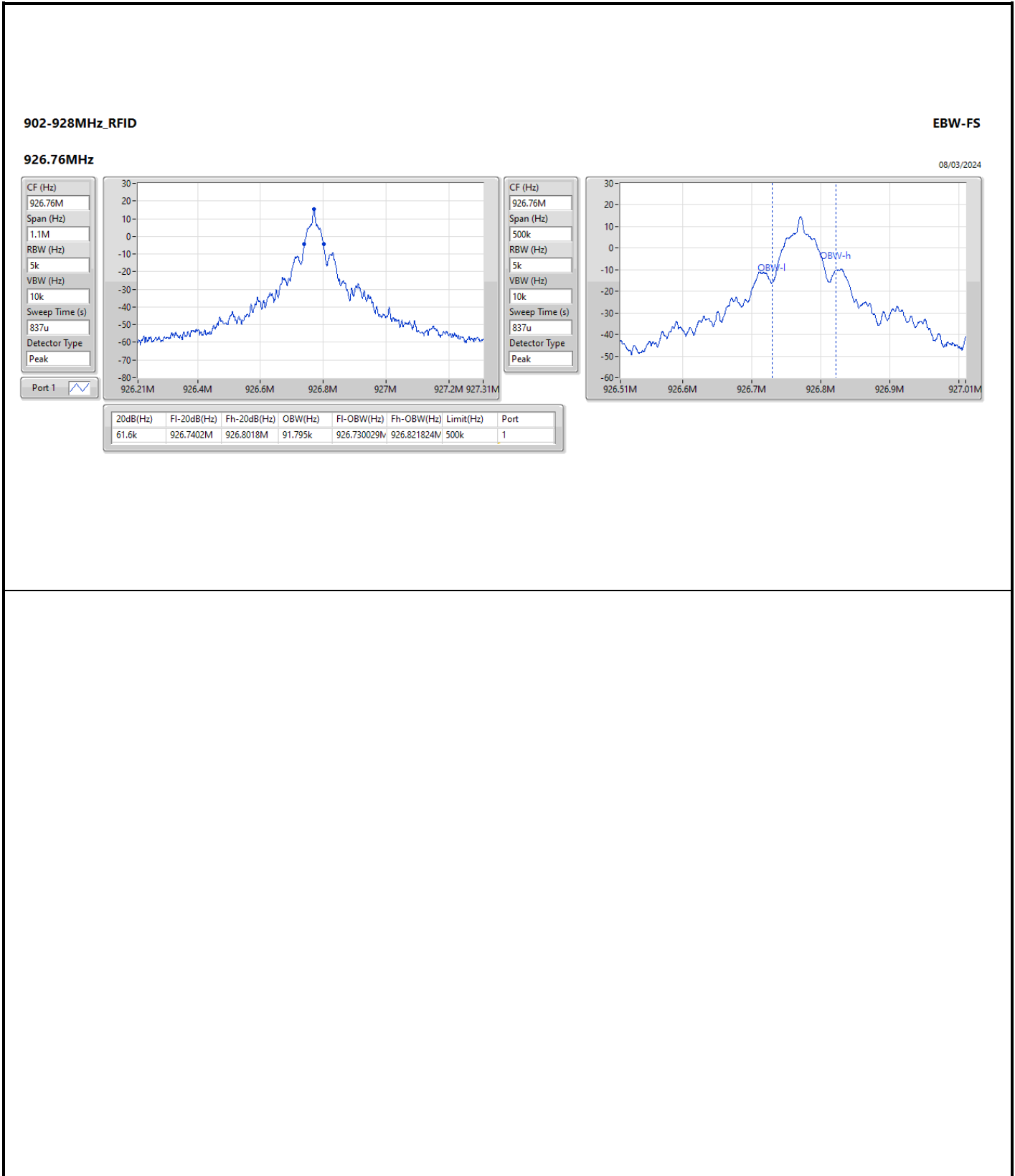
902-928MHz_RFID

EBW-FS

915.24MHz

08/03/2024







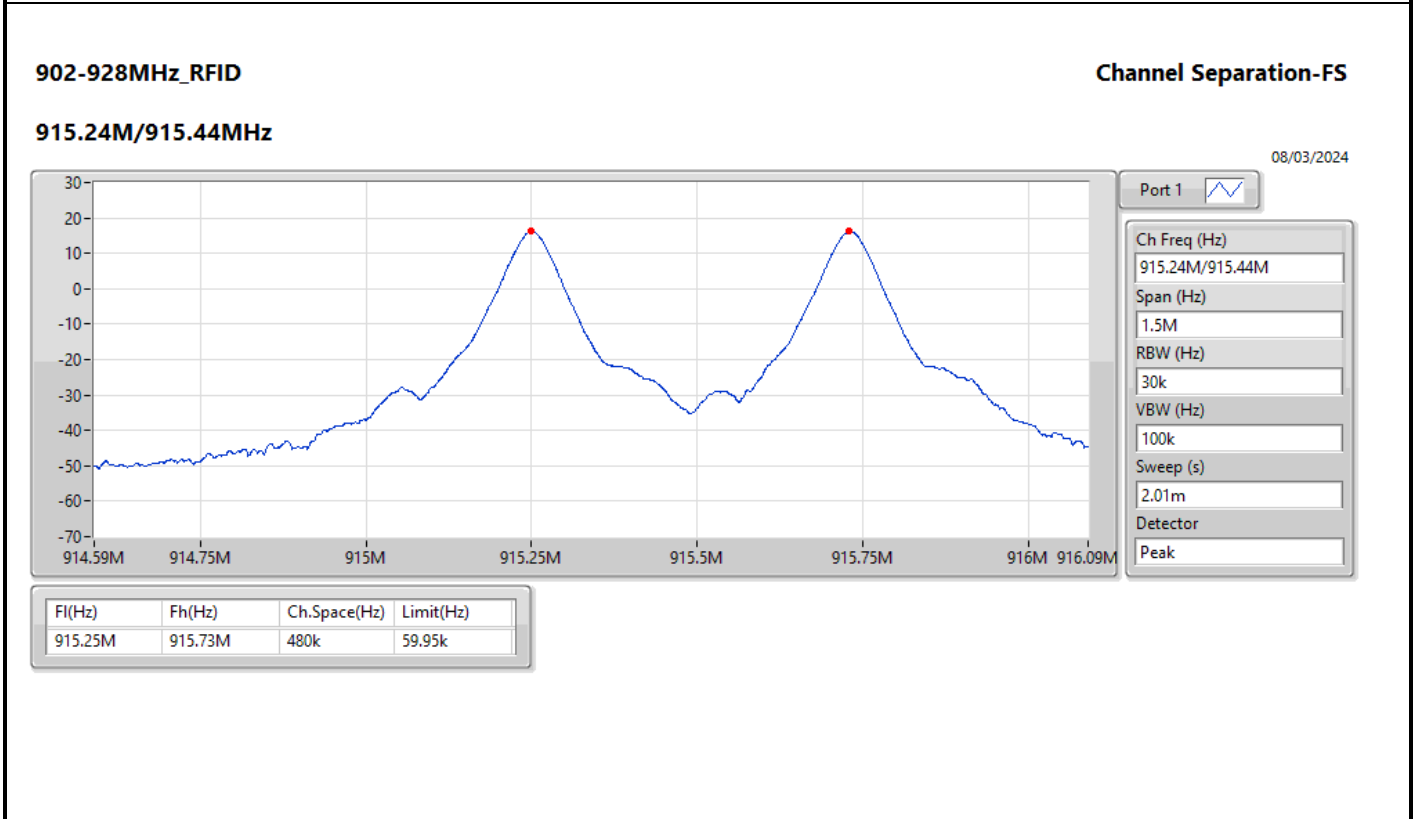
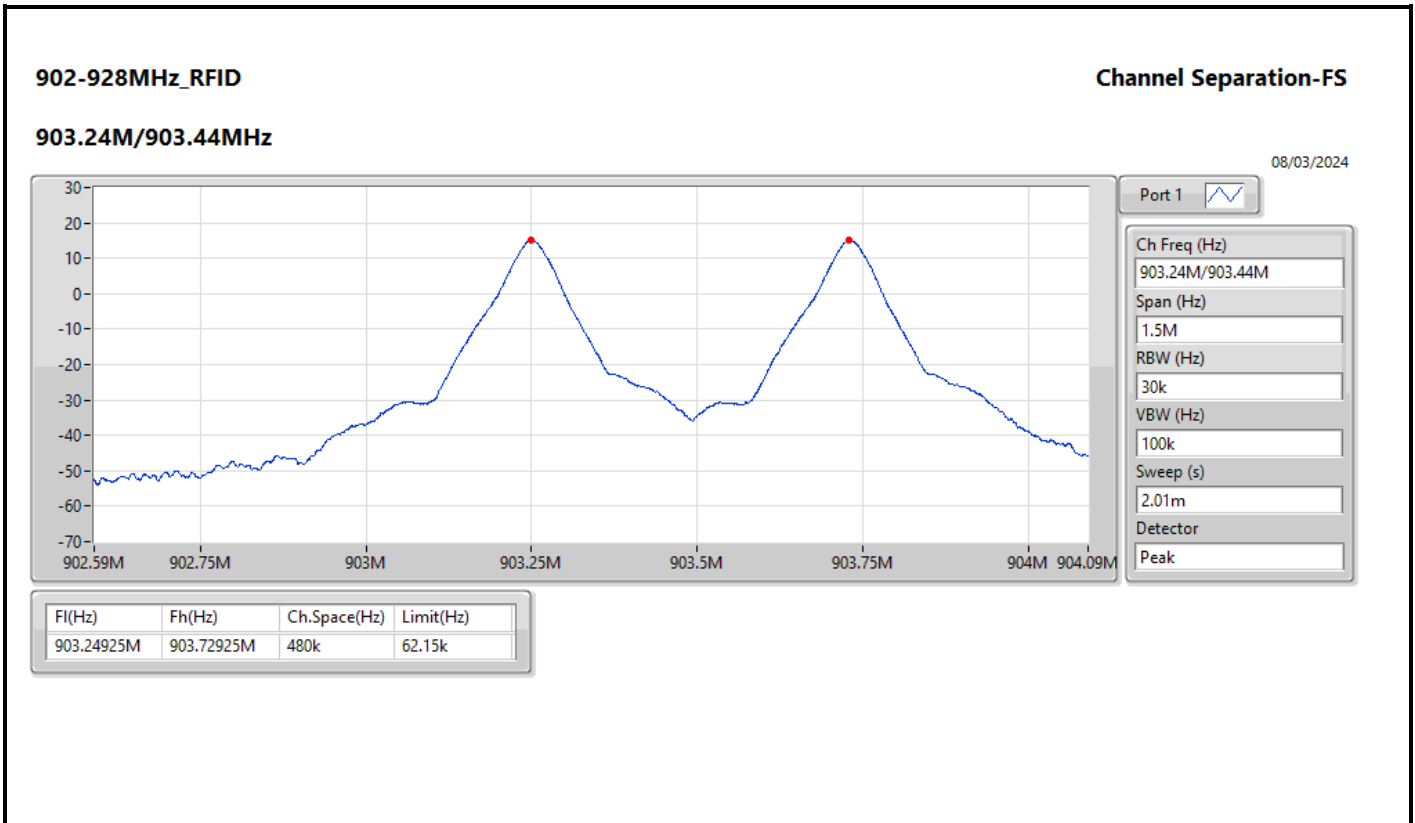
Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
RFID	480k	480k



Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
RFID	-	-	-	-	-
903.24MHz	Pass	903.24925M	903.72925M	480k	62.15k
915.24MHz	Pass	915.25M	915.73M	480k	59.95k
926.76MHz	Pass	926.29025M	926.77025M	480k	61.6k



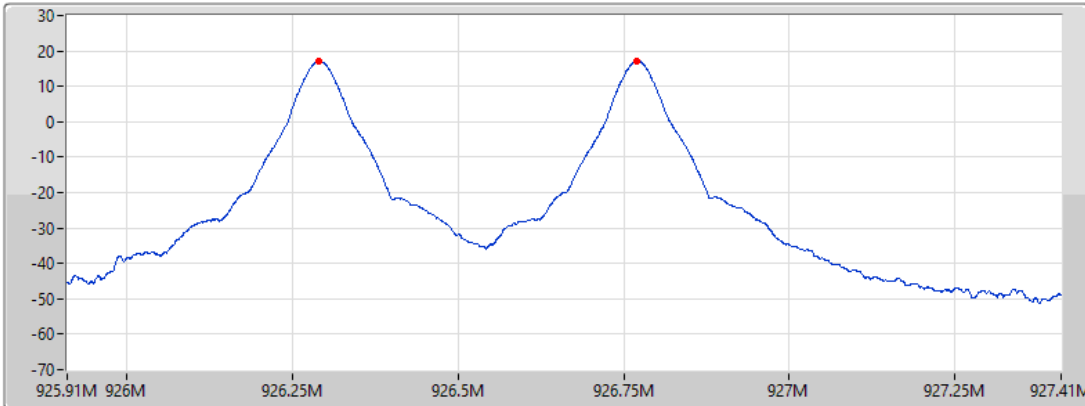


902-928MHz_RFID

Channel Separation-FS

926.76M/926.56MHz

08/03/2024



Port 1

Ch Freq (Hz)
926.76M/926.56M

Span (Hz)
1.5M

RBW (Hz)
30k

VBW (Hz)
100k

Sweep (s)
2.01m

Detector
Peak

F1(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
926.29025M	926.77025M	480k	61.6k



Summary

Mode	Total Power (dBm)	Total Power (W)
902-928MHz	-	-
RFID	17.26	0.05321



Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
RFID	-	-	-	-
903.24MHz	Pass	-9.23	15.33	30.00
915.24MHz	Pass	-9.23	16.35	30.00
926.76MHz	Pass	-9.23	17.26	30.00

DG = Directional Gain; Port X = Port X output power



Summary

Mode	Total Power (dBm)	Total Power (W)
902-928MHz	-	-
RFID	14.79	0.03013



Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
RFID	-	-	-	-
903.24MHz	Pass	-9.23	12.94	30.00
915.24MHz	Pass	-9.23	14.11	30.00
926.76MHz	Pass	-9.23	14.79	30.00

DG = Directional Gain; Port X = Port X output power



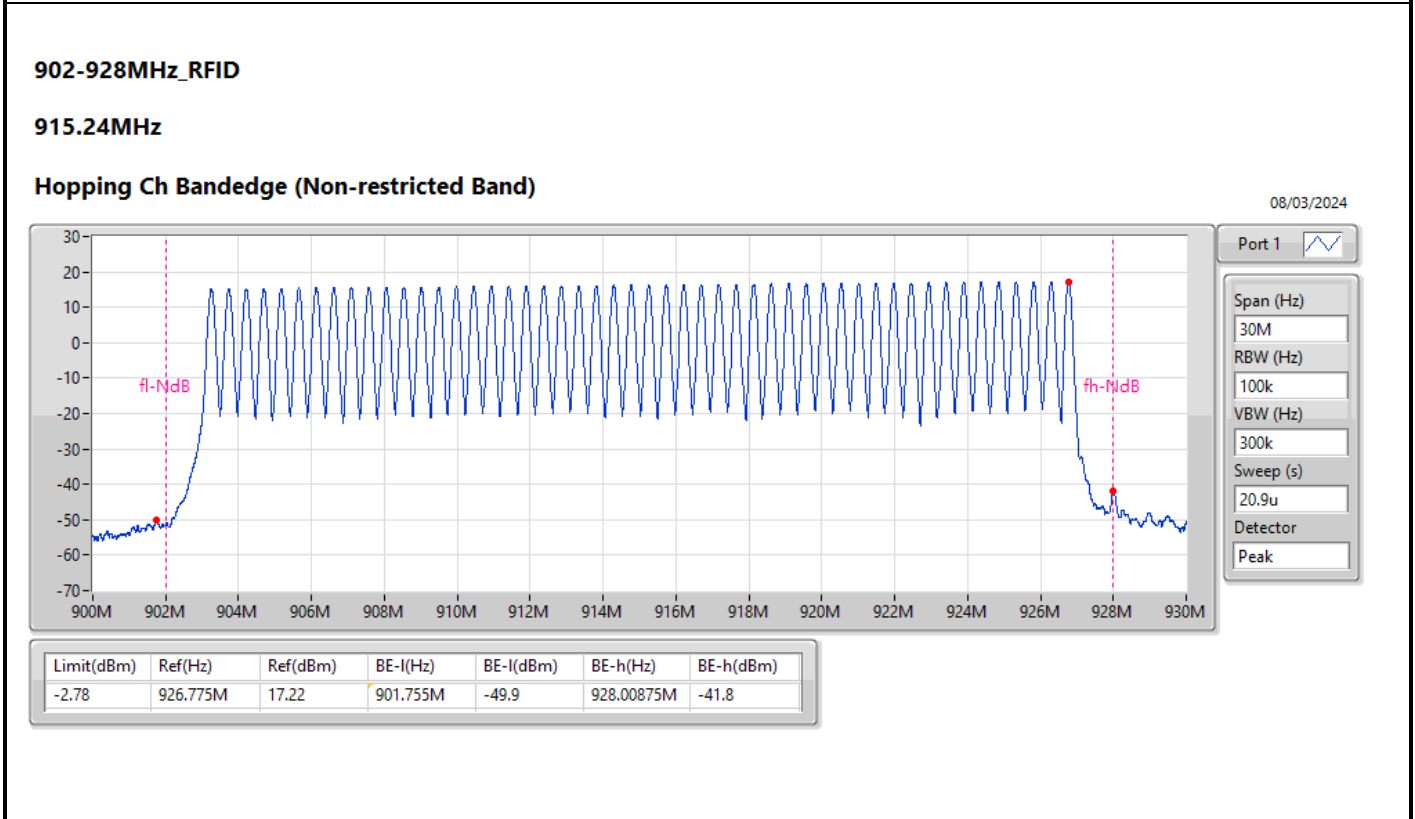
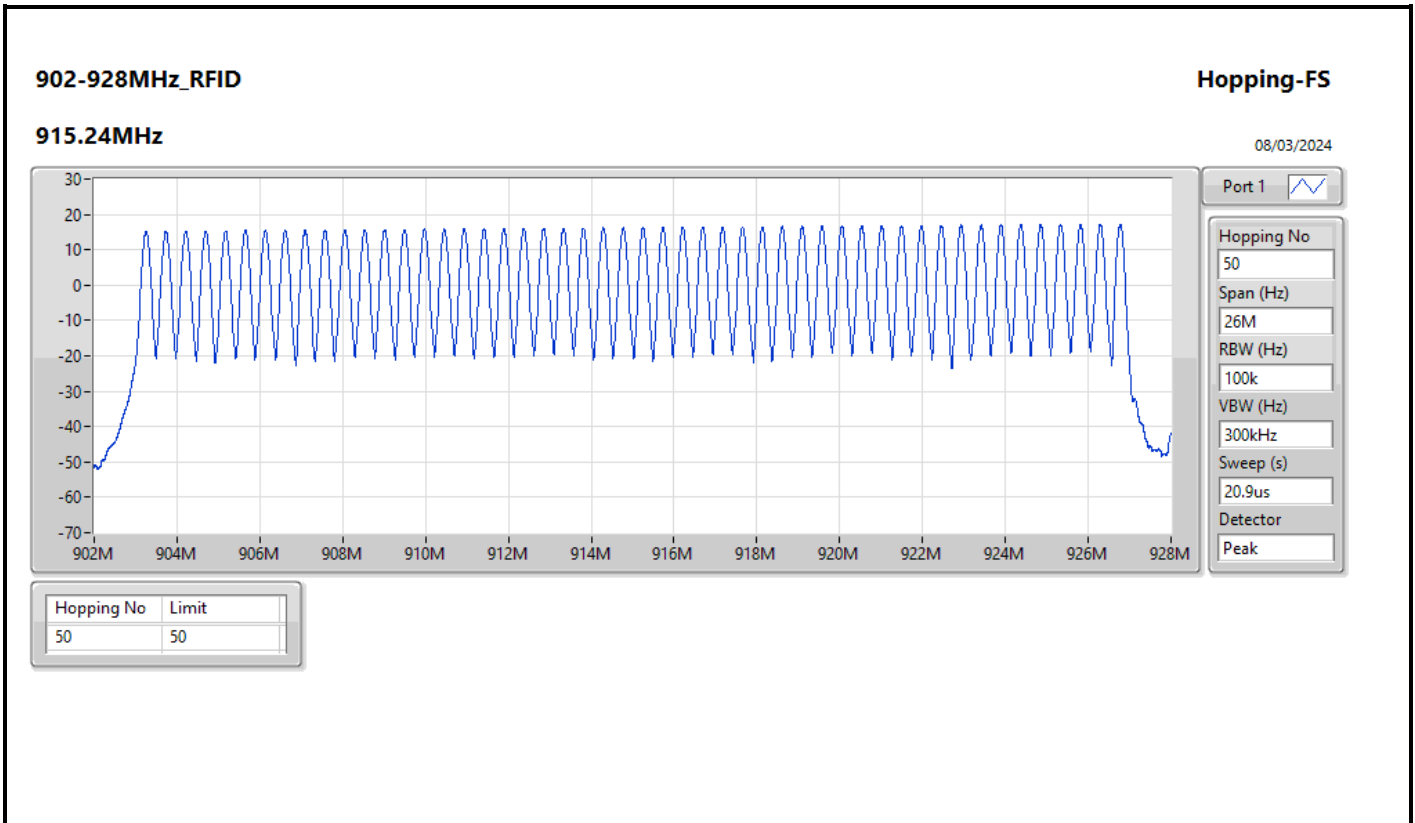
Summary

Mode	Max-Hop No
902-928MHz	-
RFID	50



Result

Mode	Result	Hopping No	Limit
RFID		-	-
915.24MHz	Pass	50	50





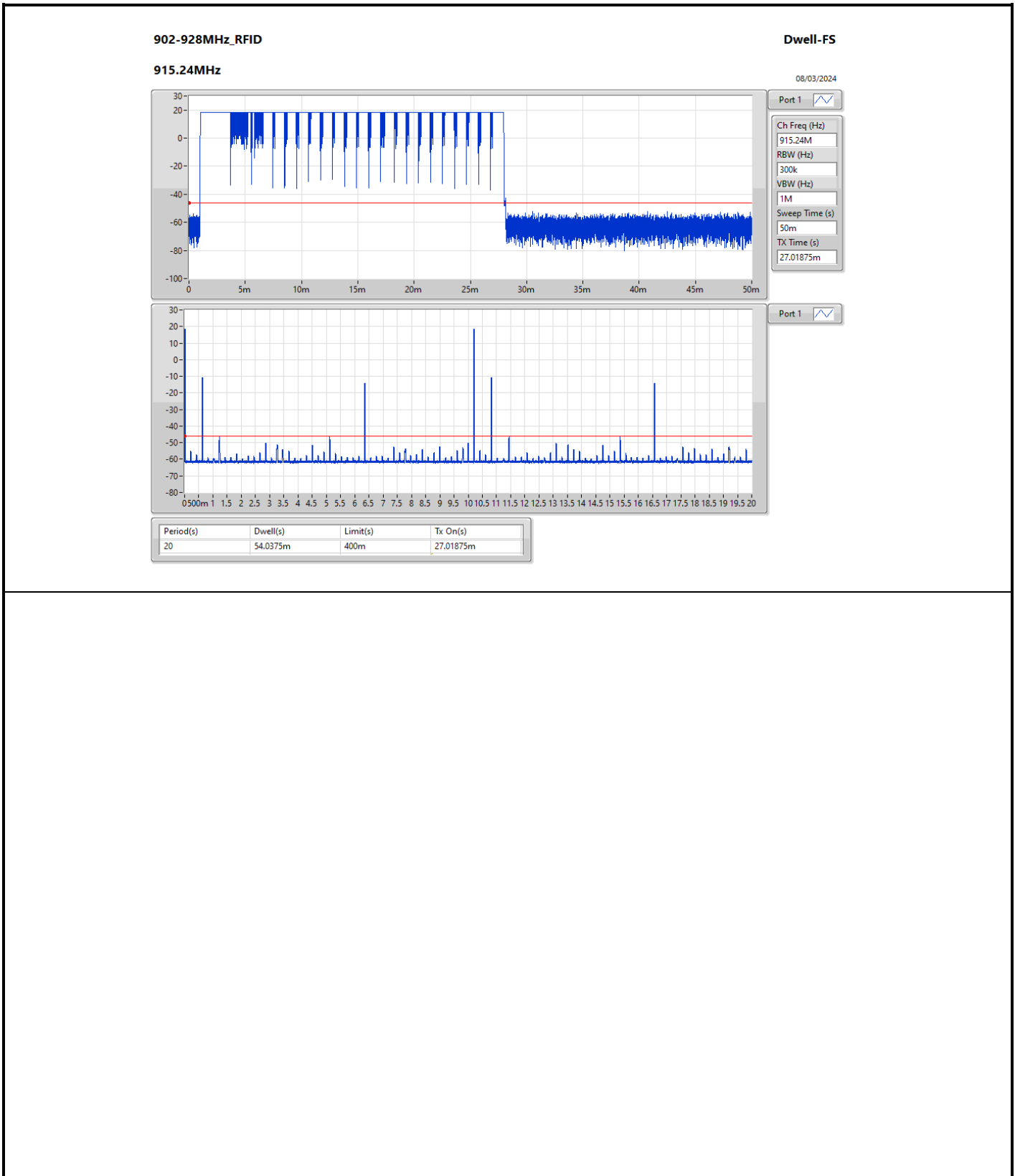
Summary

Mode	Max-Space (Hz)
902-928MHz	-
RFID	54.0375m



Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
RFID	-	-	-	-	-
915.24MHz	Pass	20	54.0375m	400m	27.01875m





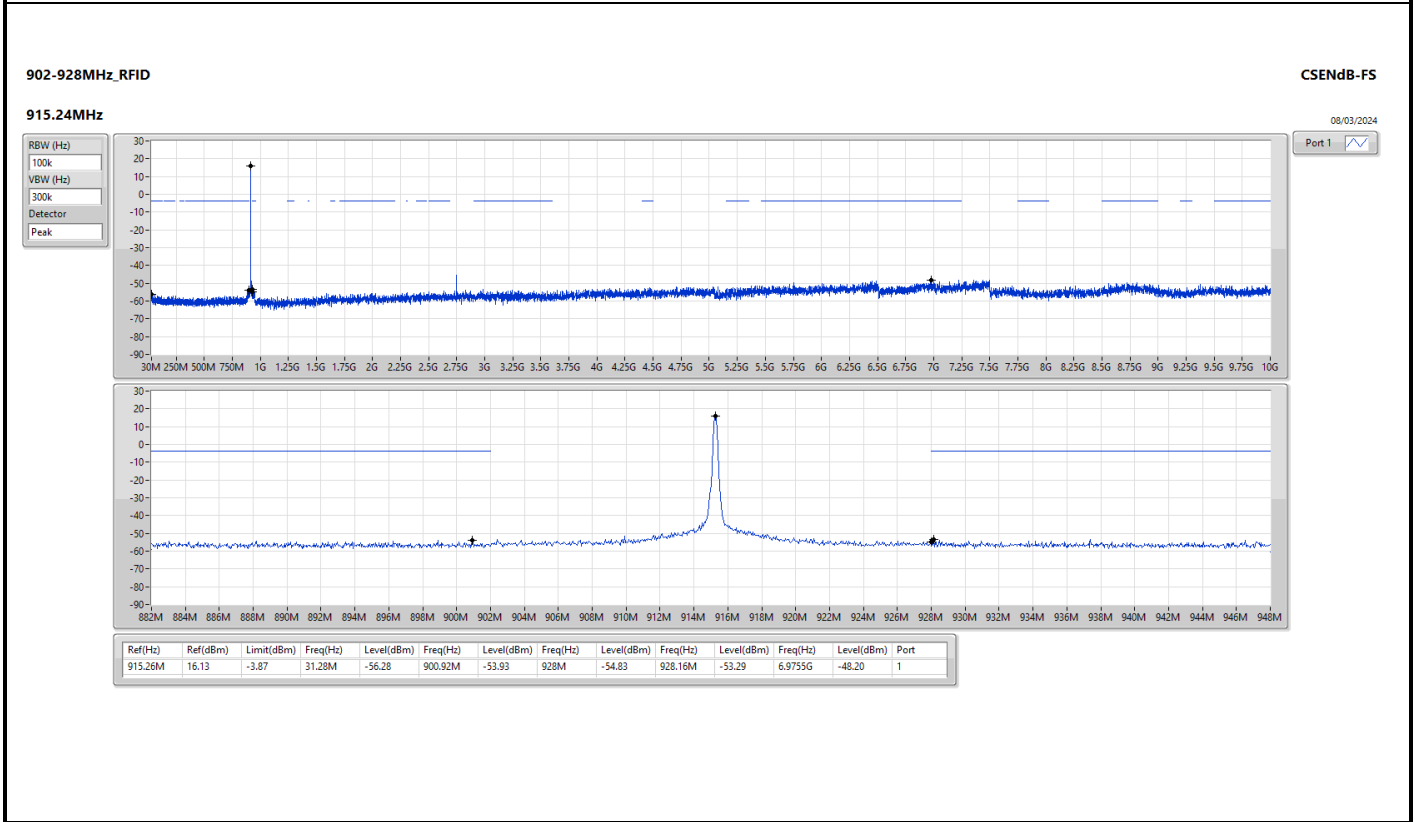
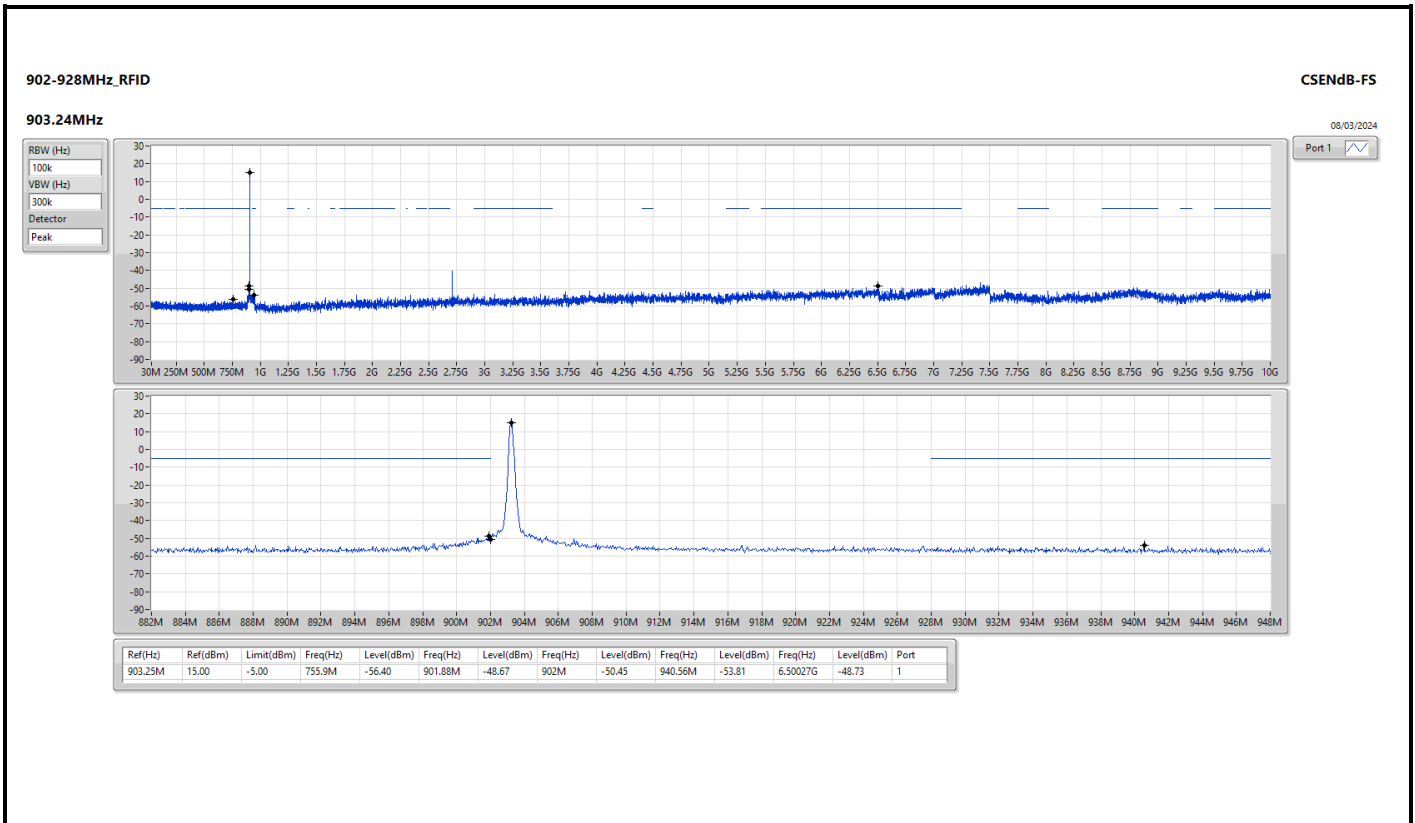
Summary

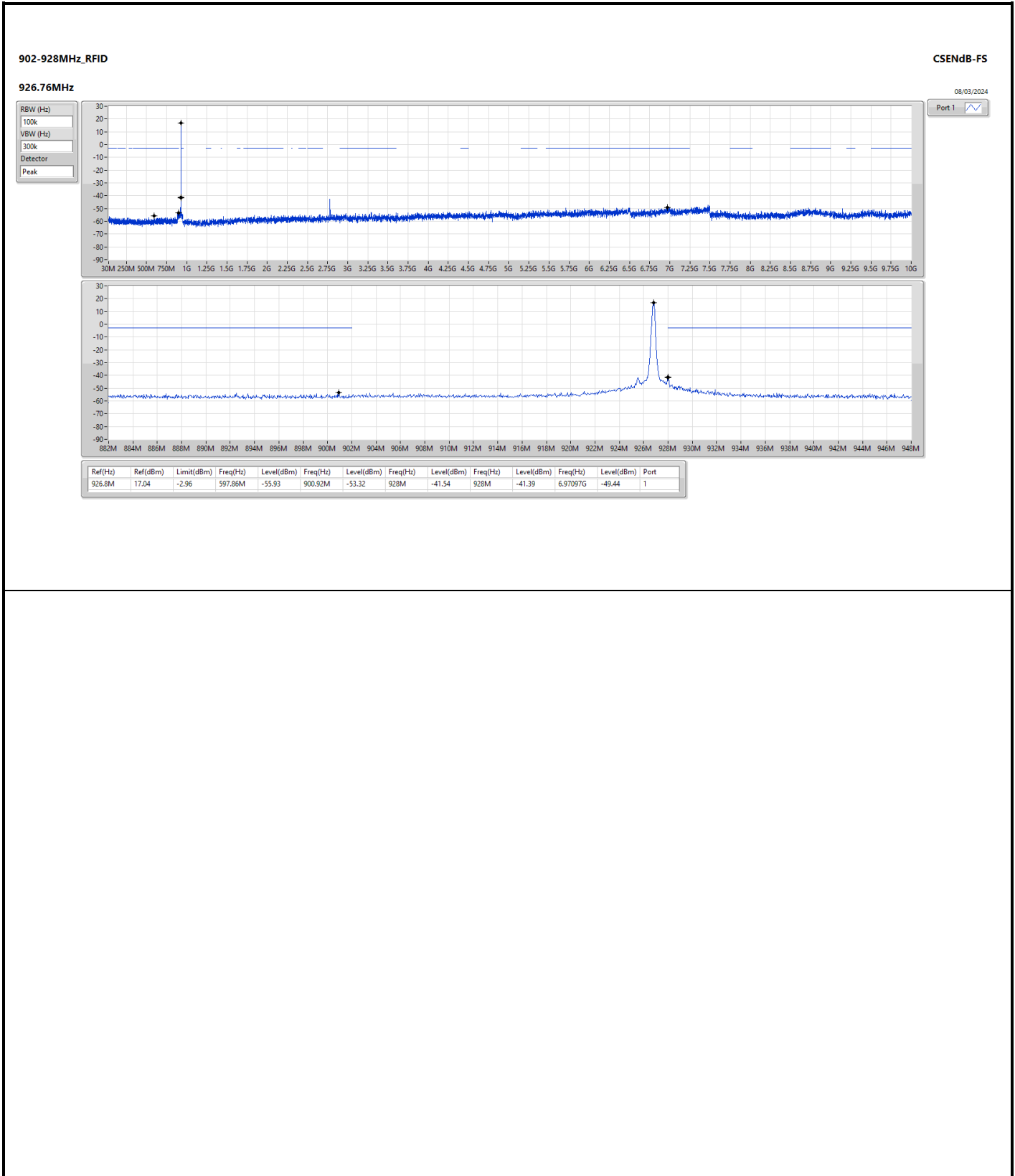
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RFID	Pass	926.8M	17.04	-2.96	597.86M	-55.93	900.92M	-53.32	928M	-41.54	928M	-41.39	6.97097G	-49.44	1



Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
RFID	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
903.24MHz	Pass	903.25M	15.00	-5.00	755.9M	-56.40	901.88M	-48.67	902M	-50.45	940.56M	-53.81	6.50027G	-48.73	1
915.24MHz	Pass	915.26M	16.13	-3.87	31.28M	-56.28	900.92M	-53.93	928M	-54.83	928.16M	-53.29	6.9755G	-48.20	1
926.76MHz	Pass	926.8M	17.04	-2.96	597.86M	-55.93	900.92M	-53.32	928M	-41.54	928M	-41.39	6.97097G	-49.44	1







Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
902-928MHz	-	-	-	-	-	-	-	-	-	-
RFID	Pass	PK	30M	36.72	40.00	-3.28	3	Vertical	360	1.00

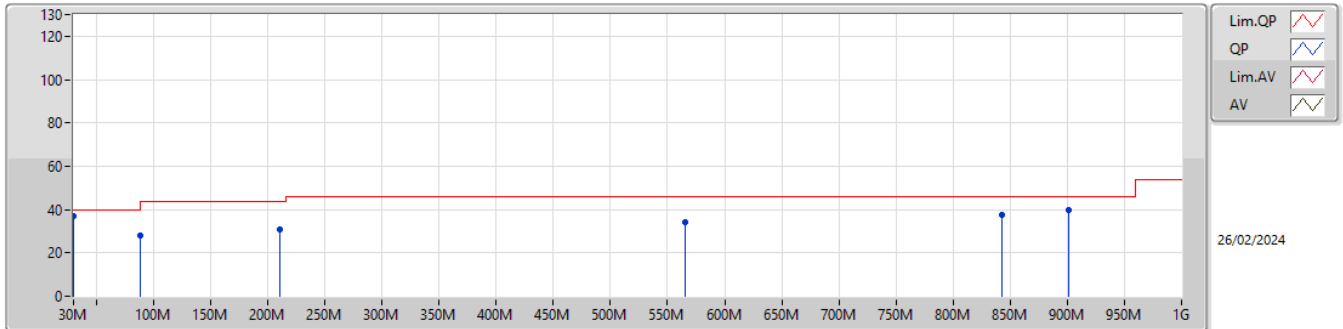


Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
RFID	-	-	-	-	-	-	-	-	-	-
903.24MHz	Pass	PK	30M	36.72	40.00	-3.28	3	Vertical	360	1.00
903.24MHz	Pass	PK	88M	28.25	43.50	-15.25	3	Vertical	360	1.00
903.24MHz	Pass	PK	210.42M	31.06	43.50	-12.44	3	Vertical	360	1.00
903.24MHz	Pass	PK	565.44M	34.32	46.00	-11.68	3	Vertical	360	1.00
903.24MHz	Pass	PK	842.86M	37.75	46.00	-8.25	3	Vertical	360	1.00
903.24MHz	Pass	PK	901.06M	39.79	46.00	-6.21	3	Vertical	360	1.00
903.24MHz	Pass	PK	30M	30.56	40.00	-9.44	3	Horizontal	0	1.00
903.24MHz	Pass	PK	88M	30.17	43.50	-13.33	3	Horizontal	0	1.00
903.24MHz	Pass	PK	109.54M	34.78	43.50	-8.72	3	Horizontal	0	1.00
903.24MHz	Pass	PK	165.8M	33.34	43.50	-10.16	3	Horizontal	0	1.00
903.24MHz	Pass	PK	210.42M	33.44	43.50	-10.06	3	Horizontal	0	1.00
903.24MHz	Pass	PK	941.8M	39.41	46.00	-6.59	3	Horizontal	0	1.00
915.24MHz	Pass	PK	31.94M	32.10	40.00	-7.90	3	Vertical	0	1.00
915.24MHz	Pass	PK	92.08M	29.43	43.50	-14.07	3	Vertical	0	1.00
915.24MHz	Pass	PK	210.42M	32.00	43.50	-11.50	3	Vertical	0	1.00
915.24MHz	Pass	PK	390.84M	30.70	46.00	-15.30	3	Vertical	0	1.00
915.24MHz	Pass	PK	485.9M	32.71	46.00	-13.29	3	Vertical	0	1.00
915.24MHz	Pass	PK	594.54M	34.48	46.00	-11.52	3	Vertical	0	1.00
915.24MHz	Pass	PK	30M	30.45	40.00	-9.55	3	Horizontal	360	1.00
915.24MHz	Pass	PK	88M	30.97	43.50	-12.53	3	Horizontal	360	1.00
915.24MHz	Pass	PK	210.42M	33.49	43.50	-10.01	3	Horizontal	360	1.00
915.24MHz	Pass	PK	297.72M	34.10	46.00	-11.90	3	Horizontal	360	1.00
915.24MHz	Pass	PK	557.68M	34.81	46.00	-11.19	3	Horizontal	360	1.00
915.24MHz	Pass	PK	738.1M	36.52	46.00	-9.48	3	Horizontal	360	1.00
926.76MHz	Pass	PK	33.88M	34.97	40.00	-5.03	3	Vertical	0	1.00
926.76MHz	Pass	PK	90.14M	29.54	43.50	-13.96	3	Vertical	0	1.00
926.76MHz	Pass	PK	210.42M	31.50	43.50	-12.00	3	Vertical	0	1.00
926.76MHz	Pass	PK	332.64M	30.88	46.00	-15.12	3	Vertical	0	1.00
926.76MHz	Pass	PK	474.26M	32.82	46.00	-13.18	3	Vertical	0	1.00
926.76MHz	Pass	PK	672.14M	37.15	46.00	-8.85	3	Vertical	0	1.00
926.76MHz	Pass	PK	30M	31.22	40.00	-8.78	3	Horizontal	360	1.00
926.76MHz	Pass	PK	109.54M	34.07	43.50	-9.43	3	Horizontal	360	1.00
926.76MHz	Pass	PK	210.42M	32.95	43.50	-10.55	3	Horizontal	360	1.00
926.76MHz	Pass	PK	297.72M	34.17	46.00	-11.83	3	Horizontal	360	1.00
926.76MHz	Pass	PK	468.44M	31.91	46.00	-14.09	3	Horizontal	360	1.00
926.76MHz	Pass	PK	676.02M	36.93	46.00	-9.07	3	Horizontal	360	1.00

902-928MHz_RFID

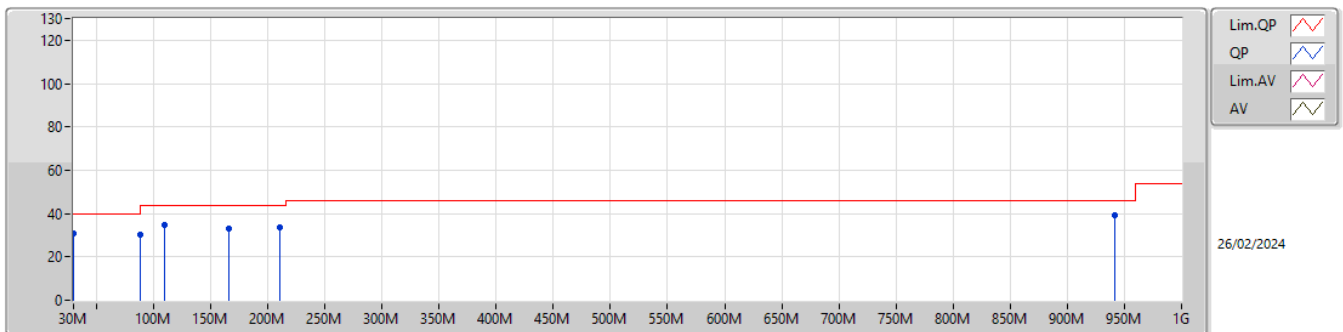
903.24MHz_USB



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	36.72	40.00	-3.28	-18.70	3	Vertical	360	1.00	55.42	25.10	0.41	44.21
PK	88M	28.25	43.50	-15.25	-28.91	3	Vertical	360	1.00	57.16	14.90	0.61	44.42
PK	210.42M	31.06	43.50	-12.44	-27.80	3	Vertical	360	1.00	58.86	15.46	0.98	44.24
PK	565.44M	34.32	46.00	-11.68	-15.54	3	Vertical	360	1.00	49.86	26.58	1.61	43.73
PK	842.86M	37.75	46.00	-8.25	-11.79	3	Vertical	360	1.00	49.54	29.66	1.95	43.40
PK	901.06M	39.79	46.00	-6.21	-11.89	3	Vertical	360	1.00	51.68	29.50	1.99	43.38

902-928MHz_RFID

903.24MHz_USB



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	30.56	40.00	-9.44	-18.70	3	Horizontal	0	1.00	49.26	25.10	0.41	44.21
PK	88M	30.17	43.50	-13.33	-28.91	3	Horizontal	0	1.00	59.08	14.90	0.61	44.42
PK	109.54M	34.78	43.50	-8.72	-26.51	3	Horizontal	0	1.00	61.29	17.20	0.69	44.40
PK	165.8M	33.34	43.50	-10.16	-27.27	3	Horizontal	0	1.00	60.61	16.18	0.86	44.31
PK	210.42M	33.44	43.50	-10.06	-27.80	3	Horizontal	0	1.00	61.24	15.46	0.98	44.24
PK	941.8M	39.41	46.00	-6.59	-10.16	3	Horizontal	0	1.00	49.57	31.11	2.11	43.38



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
902-928MHz	-	-	-	-	-	-	-	-	-	-
RFID	Pass	AV	3.70708G	43.42	54.00	-10.58	3	Vertical	144	1.51

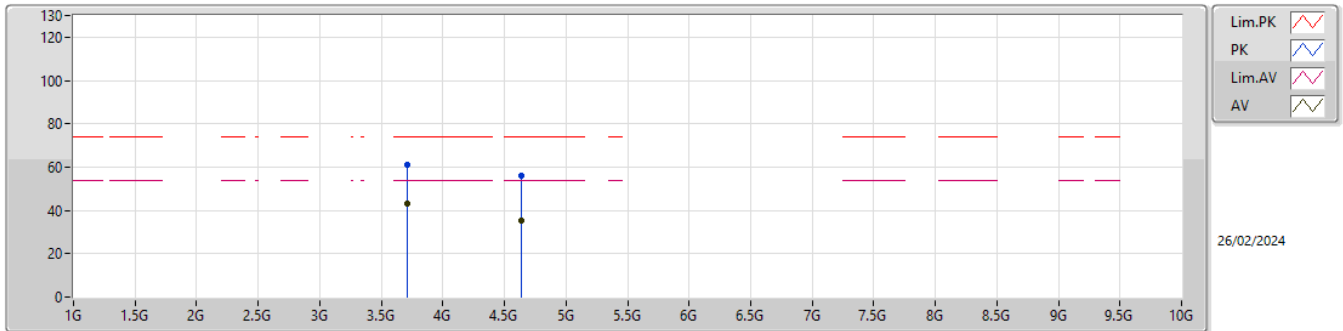


Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
RFID	-	-	-	-	-	-	-	-	-	-
903.24MHz	Pass	AV	3.61299G	38.01	54.00	-15.99	3	Vertical	201	1.43
903.24MHz	Pass	AV	4.51627G	38.94	54.00	-15.06	3	Vertical	201	1.09
903.24MHz	Pass	PK	3.61302G	55.98	74.00	-18.02	3	Vertical	201	1.43
903.24MHz	Pass	PK	4.51626G	60.58	74.00	-13.42	3	Vertical	201	1.09
903.24MHz	Pass	AV	3.61301G	39.23	54.00	-14.77	3	Horizontal	161	1.09
903.24MHz	Pass	AV	4.51629G	39.86	54.00	-14.14	3	Horizontal	175	3.00
903.24MHz	Pass	PK	3.61297G	57.07	74.00	-16.93	3	Horizontal	161	1.09
903.24MHz	Pass	PK	4.51626G	61.27	74.00	-12.73	3	Horizontal	175	3.00
915.24MHz	Pass	AV	3.66097G	41.38	54.00	-12.62	3	Vertical	146	1.39
915.24MHz	Pass	AV	4.57626G	41.63	54.00	-12.37	3	Vertical	199	1.07
915.24MHz	Pass	PK	3.66097G	58.55	74.00	-15.45	3	Vertical	146	1.39
915.24MHz	Pass	PK	4.57626G	58.80	74.00	-15.20	3	Vertical	199	1.07
915.24MHz	Pass	AV	3.66098G	39.65	54.00	-14.35	3	Horizontal	166	2.58
915.24MHz	Pass	AV	4.57631G	41.85	54.00	-12.15	3	Horizontal	161	1.00
915.24MHz	Pass	PK	3.66098G	56.82	74.00	-17.18	3	Horizontal	166	2.58
915.24MHz	Pass	PK	4.57631G	59.02	74.00	-14.98	3	Horizontal	161	1.00
926.76MHz	Pass	AV	3.70708G	43.42	54.00	-10.58	3	Vertical	144	1.51
926.76MHz	Pass	AV	4.63378G	35.39	54.00	-18.61	3	Vertical	194	1.00
926.76MHz	Pass	PK	3.70711G	61.04	74.00	-12.96	3	Vertical	144	1.51
926.76MHz	Pass	PK	4.63384G	55.98	74.00	-18.02	3	Vertical	194	1.00
926.76MHz	Pass	AV	3.70708G	42.22	54.00	-11.78	3	Horizontal	162	1.00
926.76MHz	Pass	AV	4.63389G	34.90	54.00	-19.10	3	Horizontal	168	3.00
926.76MHz	Pass	PK	3.70707G	59.96	74.00	-14.04	3	Horizontal	162	1.00
926.76MHz	Pass	PK	4.63388G	55.33	74.00	-18.67	3	Horizontal	168	3.00

902-928MHz_RFID

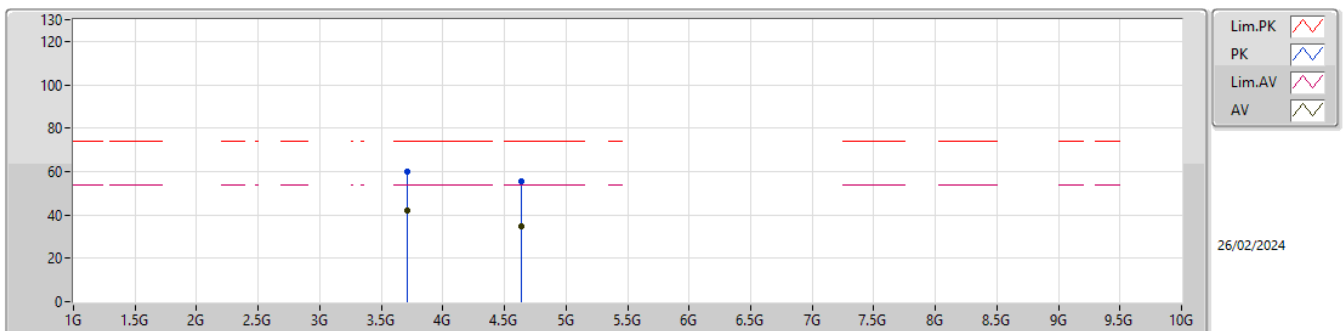
926.76MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	3.70708G	43.42	54.00	-10.58	-9.18	3	Vertical	144	1.51	52.60	30.13	4.34	43.65
AV	4.63378G	35.39	54.00	-18.61	-7.04	3	Vertical	194	1.00	42.43	32.04	4.90	43.98
PK	3.70711G	61.04	74.00	-12.96	-9.18	3	Vertical	144	1.51	70.22	30.13	4.34	43.65
PK	4.63384G	55.98	74.00	-18.02	-7.04	3	Vertical	194	1.00	63.02	32.04	4.90	43.98

902-928MHz_RFID

926.76MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	3.70708G	42.22	54.00	-11.78	-9.18	3	Horizontal	162	1.00	51.40	30.13	4.34	43.65
AV	4.63389G	34.90	54.00	-19.10	-7.04	3	Horizontal	168	3.00	41.94	32.04	4.90	43.98
PK	3.70707G	59.96	74.00	-14.04	-9.18	3	Horizontal	162	1.00	69.14	30.13	4.34	43.65
PK	4.63388G	55.33	74.00	-18.67	-7.04	3	Horizontal	168	3.00	62.37	32.04	4.90	43.98