

FCC C2PC Test Report

FCC ID : SQG-CL4490

Equipment : ConnexLink 900MHz 1W RS232
ConnexLink 900MHz 1W RS485
ConnexLink 900MHz 1W RS232/422/485
Refer to section 1.1.1 for more details

Model No. : CL4490-1000-232 ; CL4790-1000-232
CL4490-1000-485 ; CL4790-1000-485
CL4490-1000-PRO
Refer to section 1.1.1 for more details

Brand Name : Ezurio

Applicant : Ezurio LLC

Address : W66N220 Commerce Court, Cedarburg, WI
53012 United States Of America

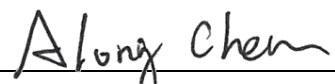
Standard : 47 CFR FCC Part 15.247

Received Date : Aug. 24, 2023

Tested Date : Sep. 07 ~ Sep. 25, 2023

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:

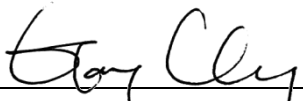

Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
FR232903-02	Rev. 01	Initial issue	May 17, 2024

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 23.845MHz 36.57 (Margin -13.43dB) - AV	Pass
15.247(d) 15.209	TX Unwanted Emissions	[dBuV/m at 3m]: 368.53MHz 41.65 (Margin -4.35dB) - PK	Pass
15.247(d)	Band Edge	Meet the requirement of limit	Pass
15.247(b)(2)(3)	Conducted Output Power	Power [dBm]: 27.96	Pass
15.247(a)(1)(i)	Number of Hopping Channels	Meet the requirement of limit	Pass
15.247(a)(1)	Hopping Channel Separation	Meet the requirement of limit	Pass
15.247(a)(1)(i)	20 dB and Occupied Bandwidth	Meet the requirement of limit	Pass
15.247(f)	Dwell Time	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	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:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

This is a Class II Permissive Change report (C2PC).

This report is issued as a supplementary report to the original project no. FR232903, FR232903-01. The modification is concerned with following items:

- ✧ Change is power amplifier is replacing
- ✧ Relative PCB layout is modified
- ✧ Changing the brand and applicant name

Therefore, related test items had been performed and presented in the following sections.

1.1.1 Product Details

The following models are provided to this EUT.

Model Name	Product Name	Description
CL4490-1000-232	ConnexLink 900MHz 1W RS232	DB-9 Male (RS232)
CL4790-1000-232	ConnexLink 900MHz 1W RS232	DB-9 Male (RS232) / SW different
CL4490-1000-485	ConnexLink 900MHz 1W RS485	Terminal Block (RS485)
CL4790-1000-485	ConnexLink 900MHz 1W RS485	Terminal Block (RS485) / SW different
CL4490-1000-PRO	ConnexLink 900MHz 1W RS232/422/485	DB-9 Female/DIP Switch

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	Ch. Freq. (MHz)	Channel List	Data Rate	Channel Bandwidth (kHz)
902 ~ 928	902 ~ 928	50 channels	76.8kbps	145
Note 1: RF output power specifies that Maximum Peak Conducted Output Power. Note 2: The device uses FSK modulation. Note 3: The device supports FHSS mode.				

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Gain (dBi)
1	S467AH-915S	dipole	R-SMA	2.0
2	S331AH-915	dipole	R-SMA	2.0

Note: Antenna 1 with worst gain was chosen for final test

1.1.4 Power Supply Type of Equipment under Test (EUT)

HW Version	2.0
Power Supply Type	12Vdc from adapter 7.5Vdc from adapter (For Model CL4490-1000-PRO only)

1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: ITE Model: MU12AY120100-A1 I/P: 100-240Vac, 50/60Hz, 0.3A O/P: 12Vdc, 1A Power Line: 1.48m non-shielded without core
2	RS232 (for CL4x90-1000-PRO)	1.85m non-shielded without core
3	RS232 (for CL4x90-1000-232)	1.85m non-shielded without core
4	AC adapter (For CL4490-1000-PRO only)	Brand: GlobTek Model: GT-41052-1509-1.5 I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 7.5Vdc, 2.0A, 15.0W Power Line: 1.9m non-shielded with one core
5	AC adapter	Brand: CWT Model: 2AEA012FA3A I/P: 100-240Vac, 50/60Hz, 0.35A O/P: 12Vdc, 1A Power Line: 1.51m non-shielded without core

1.1.6 Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	902.213	13	909.06	26	915.903	39	922.751
1	902.74	14	909.585	27	916.431	40	923.278
2	903.267	15	910.111	28	916.958	41	923.805
3	903.795	16	910.638	29	917.486	42	924.333
4	904.321	17	911.167	30	918.012	43	924.858
5	904.846	18	911.692	31	918.538	44	925.385
6	905.375	19	912.217	32	919.063	45	925.911
7	905.9	20	912.743	33	919.591	46	926.439
8	906.428	21	913.27	34	920.116	47	926.965
9	906.952	22	913.7	35	920.643	48	927.492
10	907.478	23	914.325	36	921.172	49	927.256
11	908.01	24	914.852	37	921.697	---	---
12	908.532	25	915.378	38	922.223	---	---

1.1.7 Test Tool and Duty Cycle

Test Tool	Laird Technologies Config, Version: V6.07	
Mode	Duty Cycle (%)	Duty Factor (dB)
FSK	100.00%	0.00

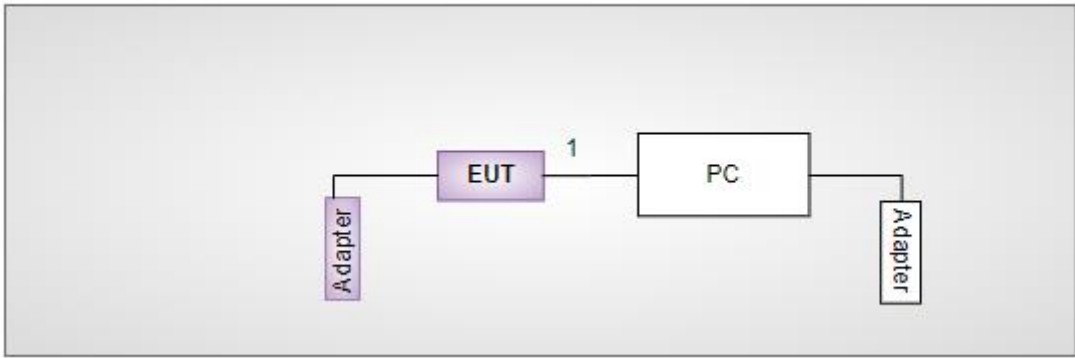
1.1.8 Power Index of Test Tool

Test Frequency (MHz)	Power Index
902.213	0x0D
915.378	0x0D
927.492	0x0B

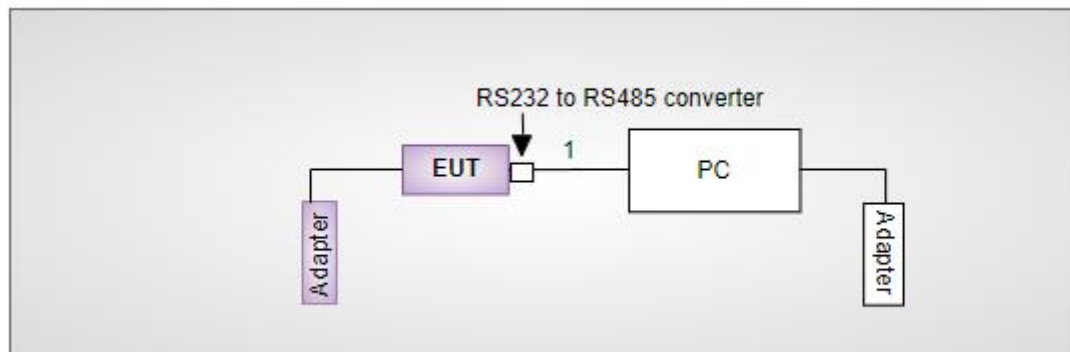
1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	PC	MSI	Cubi B164	---	Provided by applicant.
2	RS232 to RS485 converter	UTEK	UT-2201	---	Provided by applicant.
3	PC adapter	AcBel	ADC027	---	Provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram (Model: CL4490-1000-PRO / CL4490-1000-232)	
 <pre> graph LR Adapter1[Adapter] --- EUT[EUT] EUT --- 1[1] --- PC[PC] PC --- Adapter2[Adapter] </pre>	
No.	Signal cable / Length (m)
1	RS232, 1.85m non-shielded.

Test Setup Diagram (Model: CL4490-1000-485)



No.	Signal cable / Length (m)
1	RS232, 1.85m non-shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Sep. 21, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 17, 2023	Feb. 16, 2024
LISN	R&S	ENV216	101579	May 09, 2023	May 08, 2024
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127667	Jan. 03, 2023	Jan. 02, 2024
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 17, 2022	Oct. 16, 2023
50 ohm terminal (Support Unit)	NA	50	01	Jun. 14, 2023	Jun. 13, 2024
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Sep. 25, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
Attenuator	Pasternack	PE7005-20	20-1	Oct. 06, 2022	Oct. 05, 2023
BANDREJECT FILTER 800-1000	K&L	3TNF-800/1000-0.2-O/O	17	Oct. 11, 2022	Oct. 10, 2023
HIGHPASS FILTER 1.5-15G	WHK	WHK1.5/15G-10ST	21	Oct. 06, 2022	Oct. 05, 2023
Measurement Software	Sporton	SENSE-15247_FS	V5.10.8	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Sep. 07 ~ Sep. 12, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024
Spectrum Analyzer	R&S	FSV40	101498	Nov. 21, 2022	Nov. 20, 2023
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 31, 2023	Jul. 30, 2024
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Nov. 25, 2022	Nov. 24, 2023
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 27, 2022	Oct. 26, 2023
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2023	Jun. 27, 2024
Preamplifier	EMC	EMC118A45SE	980898	Jul. 14, 2023	Jul. 13, 2024
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 2024
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 04, 2022	Oct. 03, 2023
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 04, 2022	Oct. 03, 2023
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 04, 2022	Oct. 03, 2023
RF Cable	EMC	EMC104-35M-35M- 8000	210920	Oct. 04, 2022	Oct. 03, 2023
RF Cable	EMC	EMC104-35M-35M- 3000	210922	Oct. 04, 2022	Oct. 03, 2023
Attenuator	Pasternack	PE7005-10	10-1	Oct. 06, 2022	Oct. 05, 2023
HIGHPASS FILTER 1.5-15G	WHK	WHK1.5/15G-10ST	21	Oct. 06, 2022	Oct. 05, 2023
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Power density	± 0.583 dB
TX Unwanted Emission ≤ 1 GHz	± 3.41 dB
TX Unwanted Emission > 1 GHz	± 4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Radiated / Conducted Measurement	Test Configuration	Mode
AC Power Line Conducted Emission	FSK	902.213 / 915.378 / 927.492	Conducted	1, 2, 3	Tx
TX Unwanted Emissions ≤ 1GHz	FSK	902.213 / 915.378 / 927.492	Radiated	1, 2, 3	Tx
TX Unwanted Emissions >1GHz	FSK	902.213 / 915.378 / 927.492	Radiated	1, 3	Tx
Conducted Output Power Hopping Channel Separation 20dB and Occupied bandwidth	FSK	902.213 / 915.378 / 927.492	Conducted	1, 3	Tx

NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
- Test configurations are listed as below:
 - Configuration 1: Model: CL4490-1000-232
 - Configuration 2: Model: CL4490-1000-485
 - Configuration 3: Model: CL4490-1000-PRO
- Three adapters (ITE, GlobTek and CWT) had been covered during the pretest, and found that **ITE adapter** was the worst case and was selected for final test.

3 Transmitter Test Results

3.1 TX Unwanted Emissions into Restricted Frequency Bands

3.1.1 Limit of TX Unwanted Emissions into Restricted Frequency Bands

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:
Qusai-Peak value is measured for frequency below 1GHz except for 9~90 kHz, 110~490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.1.2 Test Procedures

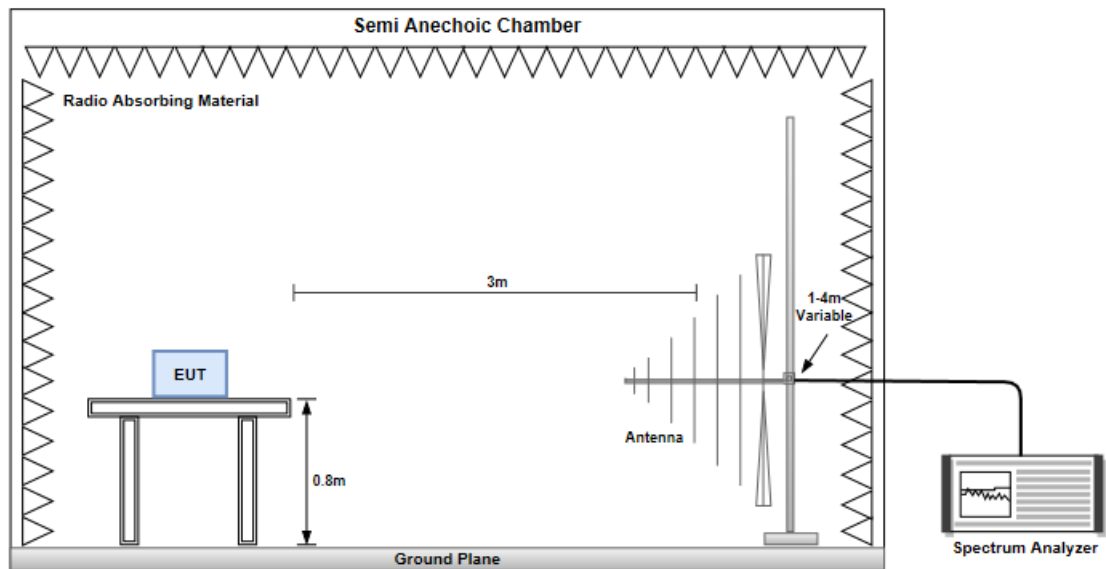
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

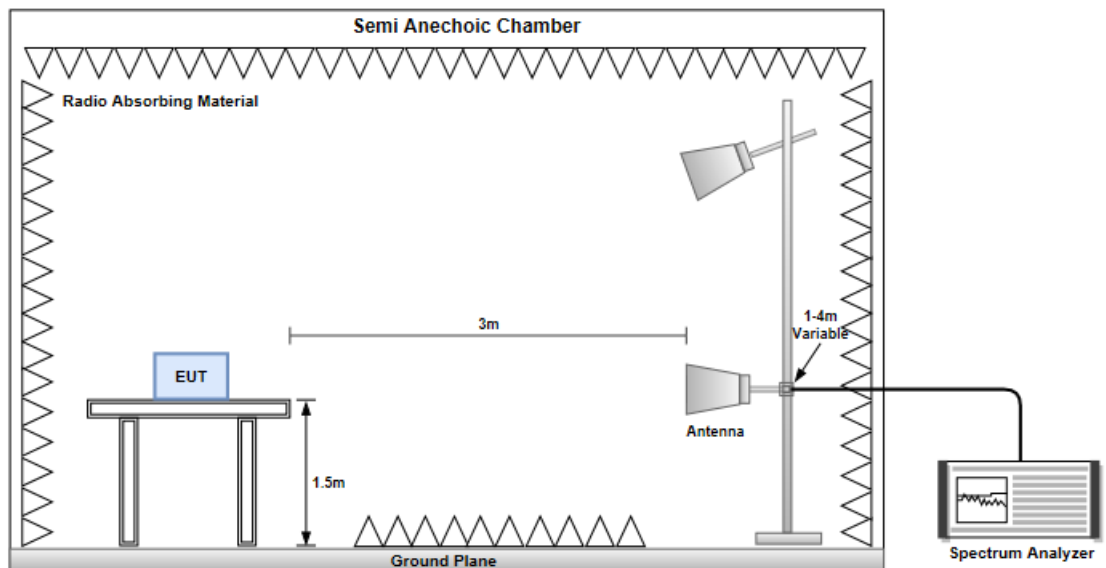
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.1.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.1.4 Test Results

Refer to Appendix A.

3.2 TX Unwanted Emissions into Non-Restricted Frequency Bands

3.2.1 Limit of TX Unwanted Emissions into Non-Restricted Frequency Bands

The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.2.2 Test Procedures

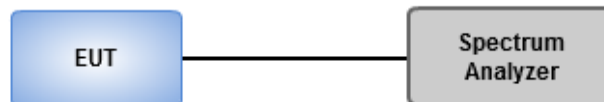
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

Unwanted Emissions Level Measurement

1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	24°C / 64%	Tested By	Brad Wu
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Refer to Appendix B.

3.3 Conducted Output Power

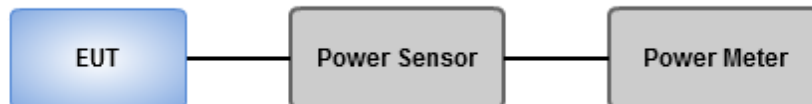
3.3.1 Limit of Conducted Output Power

1W

3.3.2 Test Procedures

1. A wideband power meter is used for power measurement. Bandwidth of power sensor and meter is 50MHz
2. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	24°C / 64%	Tested By	Brad Wu
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Refer to Appendix C.

3.4 20dB and Occupied Bandwidth

3.4.1 Test Procedures

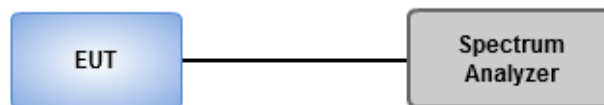
20dB Bandwidth

1. Set RBW=3kHz, VBW=10kHz, Sweep time=Auto, Detector=Peak Trace max hold.
2. Allow trace to stabilize.
3. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set RBW=3kHz, VBW=10kHz, Sweep time = Auto, Detector=Peak, Trace max hold
2. Allow trace to stabilize
3. Use Occupied bandwidth function of spectrum analyzer to measuring 99% occupied bandwidth

3.4.2 Test Setup



3.4.3 Test Results

Ambient Condition	24°C / 64%	Tested By	Brad Wu
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Refer to Appendix D.

3.5 Channel Separation

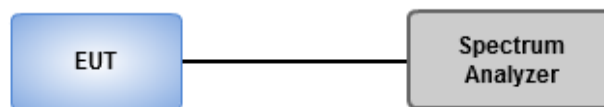
3.5.1 Limit of Channel Separation

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

3.5.2 Test Procedures

1. Set RBW=10kHz, VBW=30kHz, Sweep time=Auto, Detector=Peak Trace max hold.
2. Allow trace to stabilize.
3. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The EUT shall show compliance with the appropriate regulatory limit

3.5.3 Test Setup



3.5.4 Test Results

Ambient Condition	24°C / 64%	Tested By	Brad Wu
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Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

3.6.1 Limit of AC Power Line Conducted Emissions

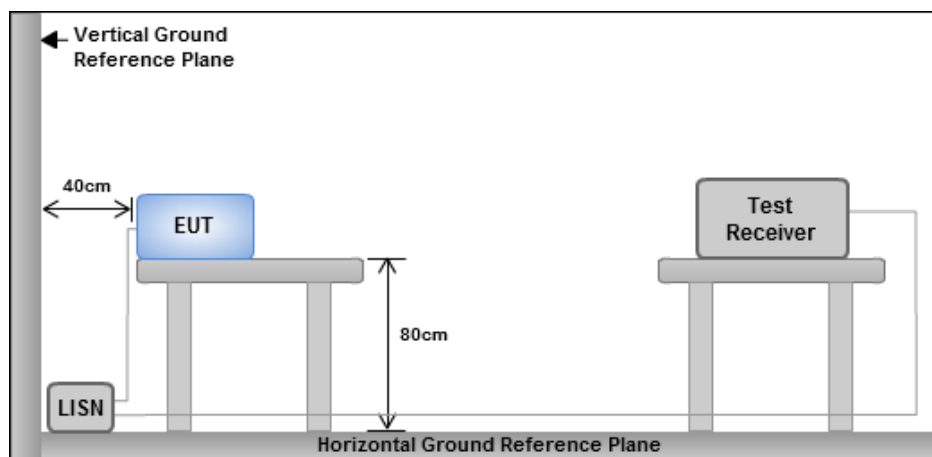
Conducted Emissions Limit		
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.6.3 Test Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.6.4 Test Result of Conducted Emissions

Refer to Appendix F.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan
(R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

==END==



Model: CL4490-1000-232

TX Unwanted Emissions (Below 1GHz)

Modulation	FSK	Test Freq. (MHz)	902.213
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):25 Humidity(%):62			
Level (dBuV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		902.213	
Polarization	Vertical					
Test By :Sean Yu Temperature(°C):25 Humidity(%):62						
Level (dBUV/m)						



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):25 Humidity(%):62			
Level (dBuV/m) <			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		915.378		
Polarization	Vertical						
Test By		:Sean Yu		Temperature(°C):25		Humidity(%):62	
Level (dBuV/m)							



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):25 Humidity(%):62			
Level (dBuV/m) </			



TX Unwanted Emissions (Above 1GHz)

Modulation	FSK		Test Freq. (MHz)	902.213	
Polarization	Horizontal				
Test By :Sean Yu		Temperature(°C):23		Humidity(%):65	
Level (dBUV/m) <					



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	902.213
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBuV/m) <			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m) </			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



Model: CL4490-1000-485

TX Unwanted Emissions (Below 1GHz)

Modulation	FSK		Test Freq. (MHz)		902.213				
Polarization	Horizontal								
Test By :Paul Lin			Temperature(°C):24			Humidity(%):65			
Level (dBUV/m) </									



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		902.213	
Polarization	Vertical					
Test By :Paul Lin Temperature(°C):24 Humidity(%):65						
Level (dBuV/m) </						



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		915.378				
Polarization	Horizontal								
Test By :Paul Lin			Temperature(°C):24			Humidity(%):65			
Level (dBUV/m)									



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		915.378	
Polarization	Vertical					
Test By :Paul Lin Temperature(°C):24 Humidity(%):65						
Level (dBUV/m) </						



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		927.492	
Polarization	Horizontal					
Test By :Paul Lin Temperature(°C):24 Humidity(%):65						
Level (dBuV/m) <						



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Vertical		
Test By :Paul Lin Temperature(°C):24 Humidity(%):65			
Level (dBUV/m)			



Model: CL4490-1000-PRO

TX Unwanted Emissions (Below 1GHz)

Modulation	FSK		Test Freq. (MHz)		902.213																																																																										
Polarization	Horizontal																																																																														
Test By :Sean Yu			Temperature(°C):25			Humidity(%):62																																																																									
Level (dBuV/m) Frequency (MHz) <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>225.94</td><td>34.95</td><td>46.00</td><td>-11.05</td><td>46.91</td><td>-11.96</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>2</td><td>286.08</td><td>39.61</td><td>46.00</td><td>-6.39</td><td>47.99</td><td>-8.38</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>367.56</td><td>40.84</td><td>46.00</td><td>-5.16</td><td>47.27</td><td>-6.43</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>434.49</td><td>34.76</td><td>46.00</td><td>-11.24</td><td>39.22</td><td>-4.46</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>614.00</td><td>29.28</td><td>46.00</td><td>-16.72</td><td>29.78</td><td>-0.50</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>960.00</td><td>34.39</td><td>46.00</td><td>-11.61</td><td>29.29</td><td>5.10</td><td>Peak</td><td>---</td><td>---</td></tr></table>											Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg	1	225.94	34.95	46.00	-11.05	46.91	-11.96	Peak	---	---	2	286.08	39.61	46.00	-6.39	47.99	-8.38	Peak	---	---	3	367.56	40.84	46.00	-5.16	47.27	-6.43	Peak	---	---	4	434.49	34.76	46.00	-11.24	39.22	-4.46	Peak	---	---	5	614.00	29.28	46.00	-16.72	29.78	-0.50	Peak	---	---	6	960.00	34.39	46.00	-11.61	29.29	5.10	Peak	---	---
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg																																																																						
1	225.94	34.95	46.00	-11.05	46.91	-11.96	Peak	---	---																																																																						
2	286.08	39.61	46.00	-6.39	47.99	-8.38	Peak	---	---																																																																						
3	367.56	40.84	46.00	-5.16	47.27	-6.43	Peak	---	---																																																																						
4	434.49	34.76	46.00	-11.24	39.22	-4.46	Peak	---	---																																																																						
5	614.00	29.28	46.00	-16.72	29.78	-0.50	Peak	---	---																																																																						
6	960.00	34.39	46.00	-11.61	29.29	5.10	Peak	---	---																																																																						
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.																																																																															



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		902.213				
Polarization	Vertical								
Test By :Sean Yu			Temperature(°C):25			Humidity(%):62			
Level (dBUV/m) </									



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):25 Humidity(%):62			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		915.378		
Polarization	Vertical						
Test By		:Sean Yu		Temperature(°C):25		Humidity(%):62	
Level (dBuV/m)							



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		927.492		
Polarization	Horizontal						
Test By		:Sean Yu		Temperature(°C):25		Humidity(%):62	
Level (dBuV/m)							



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK		Test Freq. (MHz)		927.492		
Polarization	Vertical						
Test By		:Sean Yu		Temperature(°C):25		Humidity(%):62	
Level (dBuV/m) <							



TX Unwanted Emissions (Above 1GHz)

Modulation	FSK		Test Freq. (MHz)	902.213	
Polarization	Horizontal				
Test By :Sean Yu Temperature(°C):23 Humidity(%):65					
Level (dBUV/m)					



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	902.213
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	915.378
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m) <			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			



TX Unwanted Emissions into Restricted Frequency Bands Appendix A

Modulation	FSK	Test Freq. (MHz)	927.492
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):23 Humidity(%):65			
Level (dBUV/m) <			

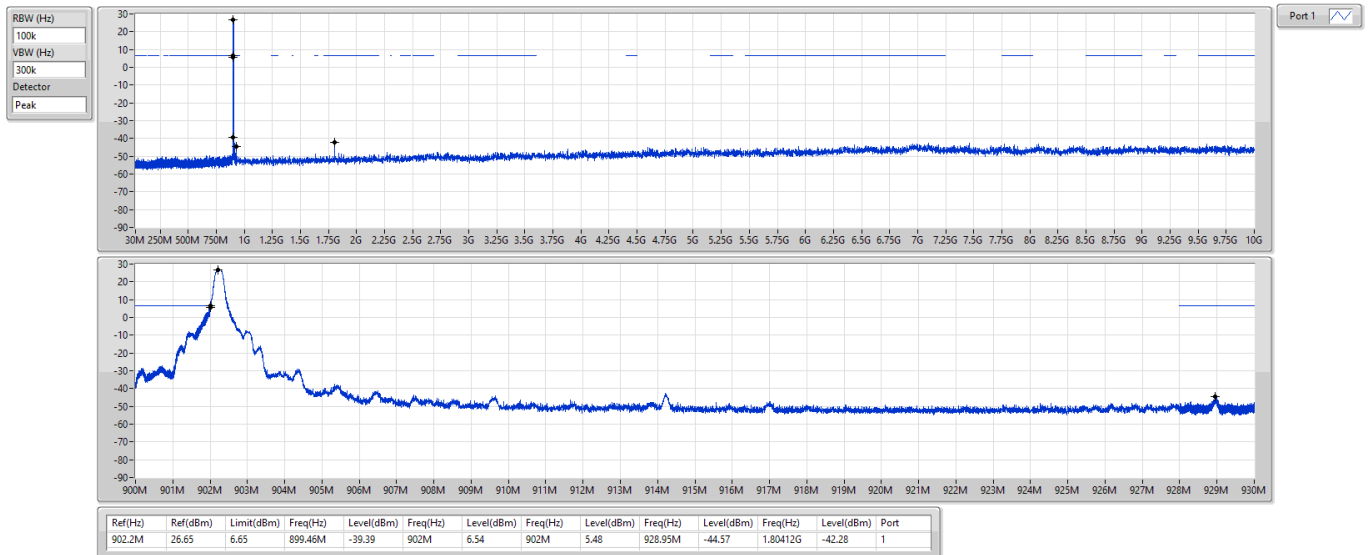


Model: CL4490-1000-232

902-928MHz_FSK-145k

CSEndB-FS

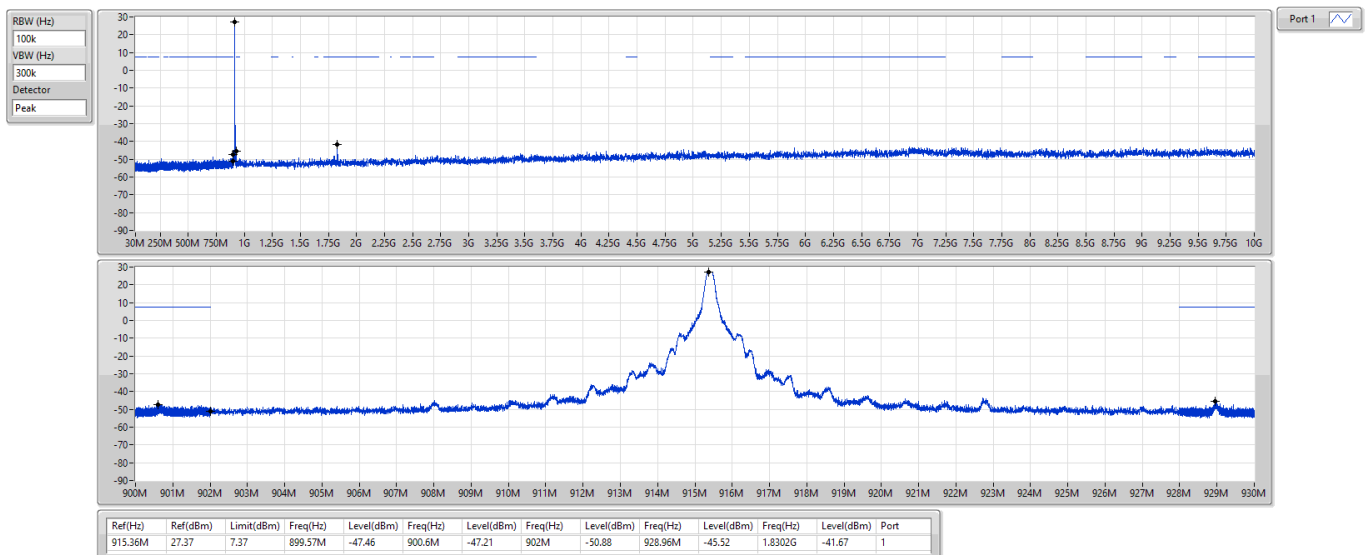
902.213MHz



902-928MHz_FSK-145k

CSEndB-FS

915.378MHz

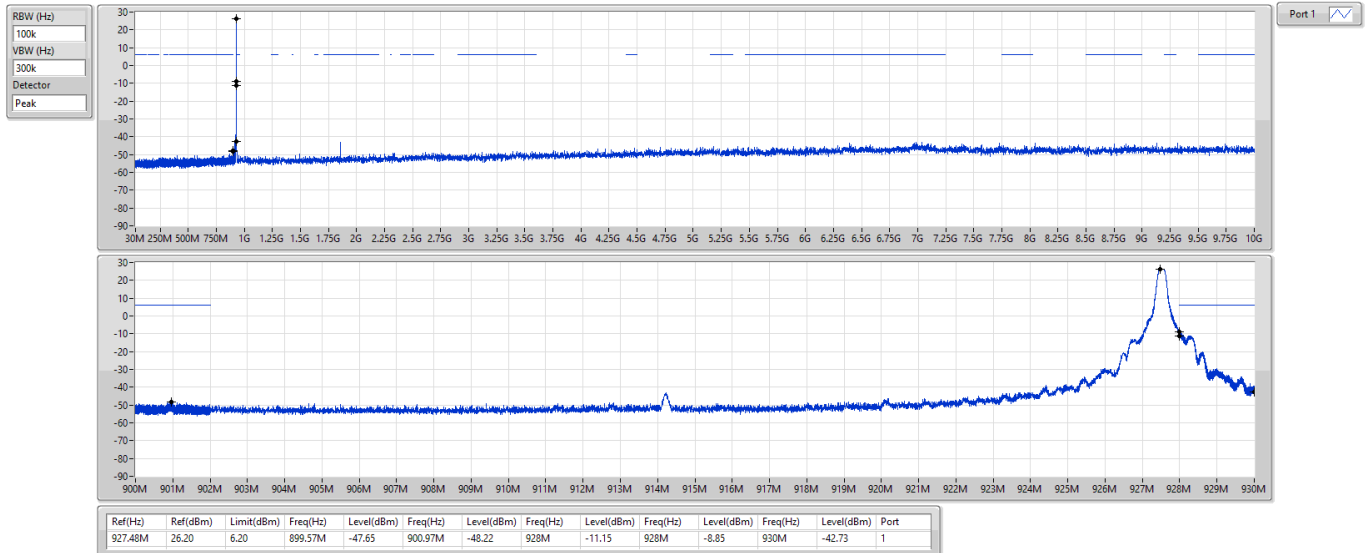




902-928MHz_FSK-145k

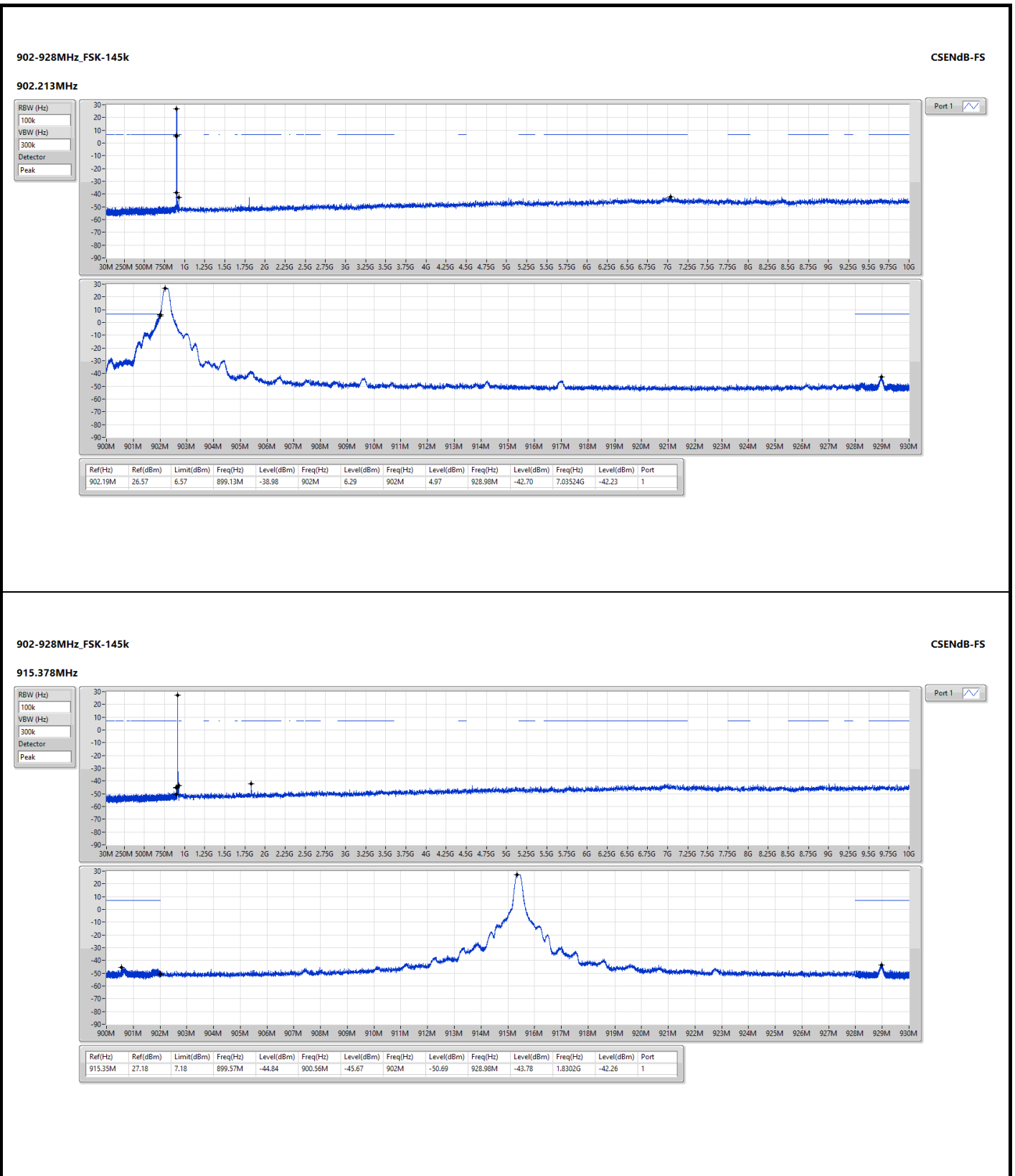
CSEndB-FS

927.492MHz





Model: CL4490-1000-PRO

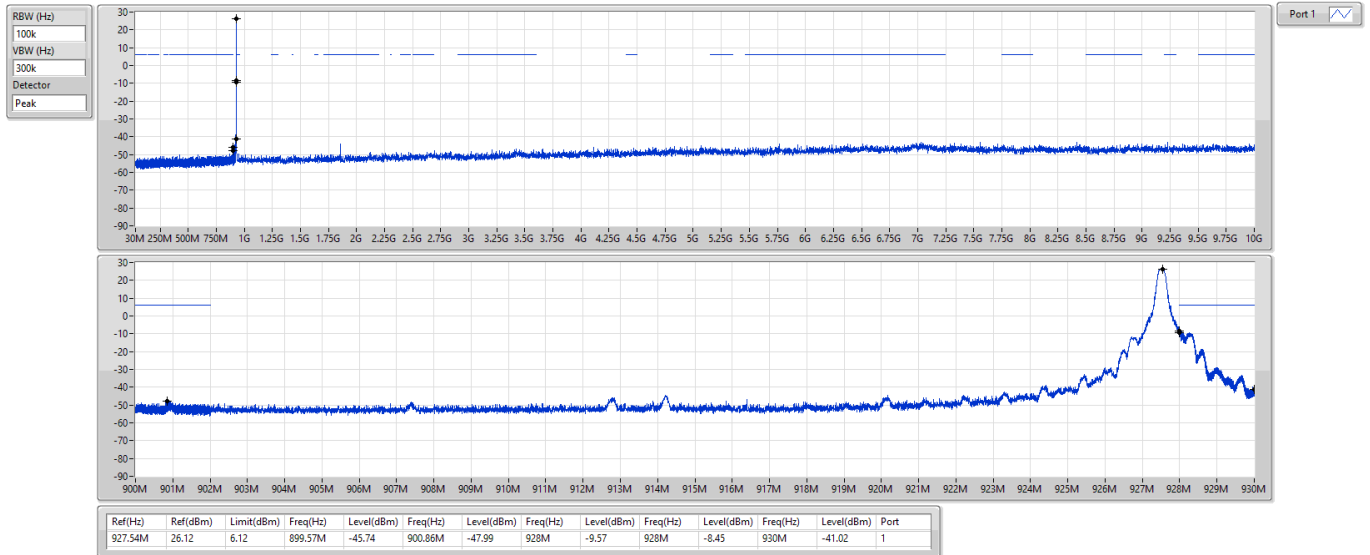




902-928MHz_FSK-145k

CSEndB-FS

927.492MHz



**Model: CL4490-1000-232****Summary**

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
FSK-145k	27.96	0.62517

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
FSK-145k	-	-	-	-	-	-
902.213MHz	Pass	2.00	27.17	30.00	29.17	36.00
915.378MHz	Pass	2.00	27.96	30.00	29.96	36.00
927.492MHz	Pass	2.00	26.78	30.00	28.78	36.00

Model: CL4490-1000-PRO**Summary**

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
FSK-145k	27.54	0.56754

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
FSK-145k	-	-	-	-	-	-
902.213MHz	Pass	2.00	27.17	30.00	29.17	36.00
915.378MHz	Pass	2.00	27.54	30.00	29.54	36.00
927.492MHz	Pass	2.00	26.54	30.00	28.54	36.00

**Model: CL4490-1000-232****Summary**

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
FSK-145k	27.82	0.60534

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
FSK-145k	-	-	-	-	-	-
902.213MHz	Pass	2.00	27.10	-	29.10	-
915.378MHz	Pass	2.00	27.82	-	29.82	-
927.492MHz	Pass	2.00	26.43	-	28.43	-

Note: Average power is for reference only.

Model: CL4490-1000-PRO**Summary**

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
FSK-145k	27.47	0.55847

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
FSK-145k	-	-	-	-	-	-
902.213MHz	Pass	2.00	27.03	-	29.03	-
915.378MHz	Pass	2.00	27.47	-	29.47	-
927.492MHz	Pass	2.00	26.44	-	28.44	-

Note: Average power is for reference only.

**Model: CL4490-1000-232****Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
FSK-145k	183.75k	311.094k	311KF1D	166.875k	204.273k

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

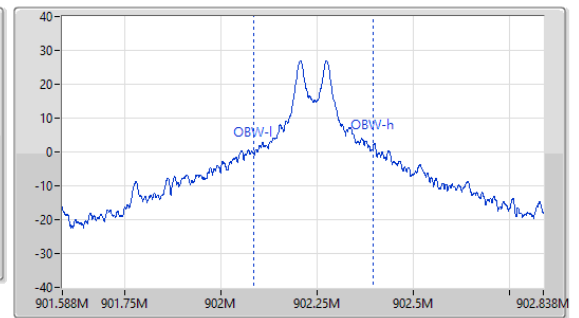
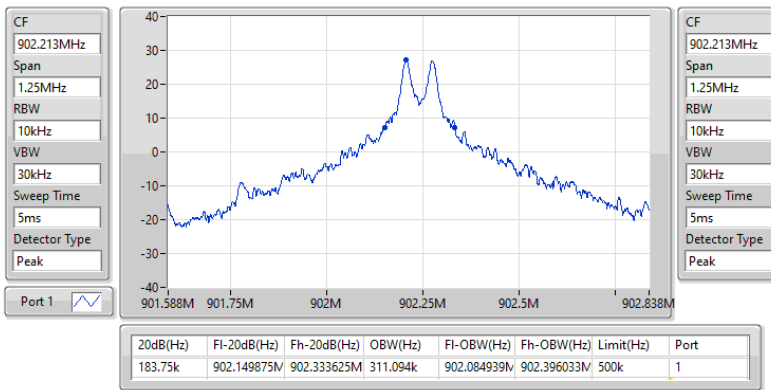
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
FSK-145k	-	-	-	-
902.213MHz	Pass	500k	183.75k	311.094k
915.378MHz	Pass	500k	168.125k	302.974k
927.492MHz	Pass	500k	166.875k	204.273k

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

902-928MHz_FSK-145k

EBW-FS

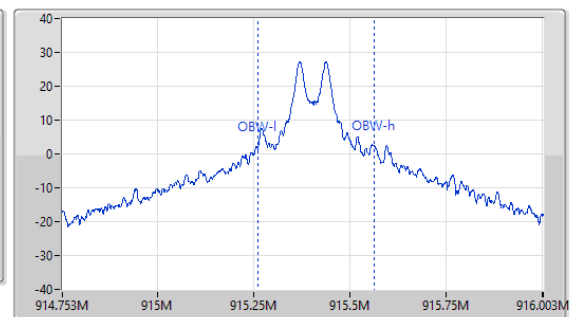
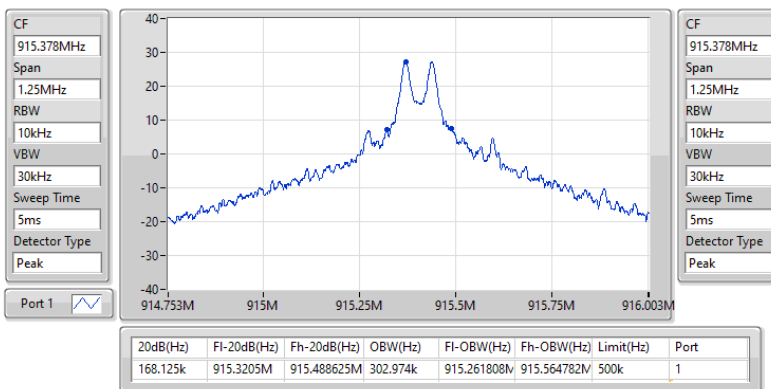
902.213MHz



902-928MHz_FSK-145k

EBW-FS

915.378MHz

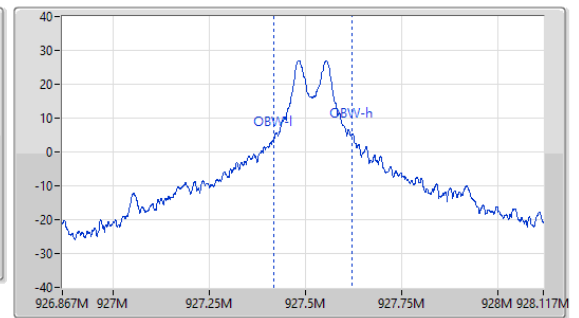
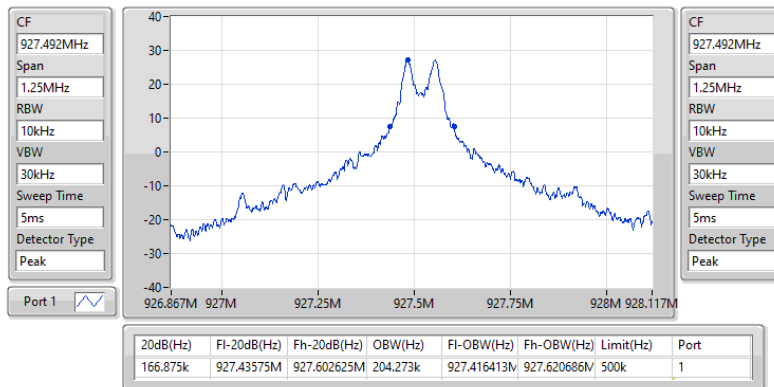




902-928MHz_FSK-145k

EBW-FS

927.492MHz



**Model: CL4490-1000-PRO****Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
FSK-145k	164.375k	314.218k	314KF1D	148.75k	168.666k

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)
FSK-145k	-	-	-	-
902.213MHz	Pass	500k	164.375k	314.218k
915.378MHz	Pass	500k	148.75k	168.666k
927.492MHz	Pass	500k	163.75k	240.505k

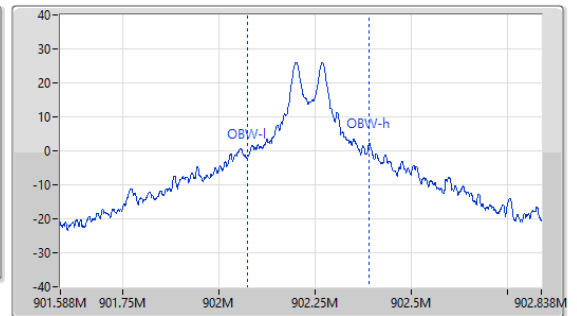
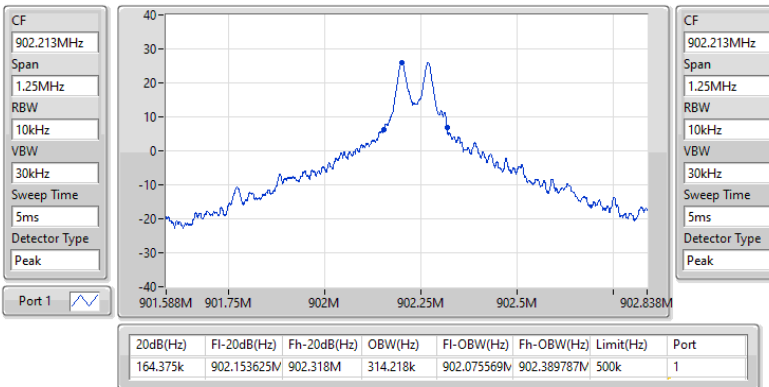
Port X-N dB = Port X 20dB down bandwidth;

Port X-OBW = Port X 99% occupied bandwidth

902-928MHz_FSK-145k

EBW-FS

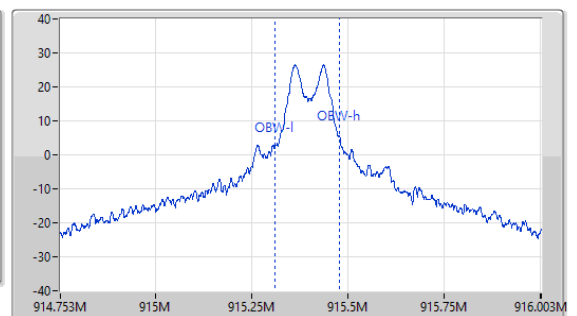
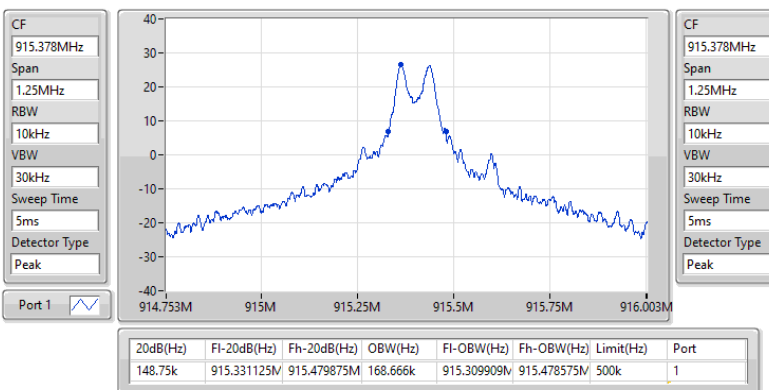
902.213MHz



902-928MHz_FSK-145k

EBW-FS

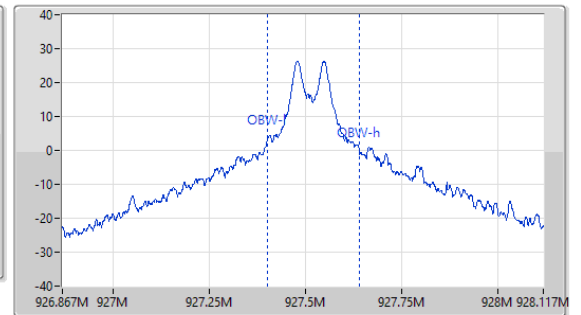
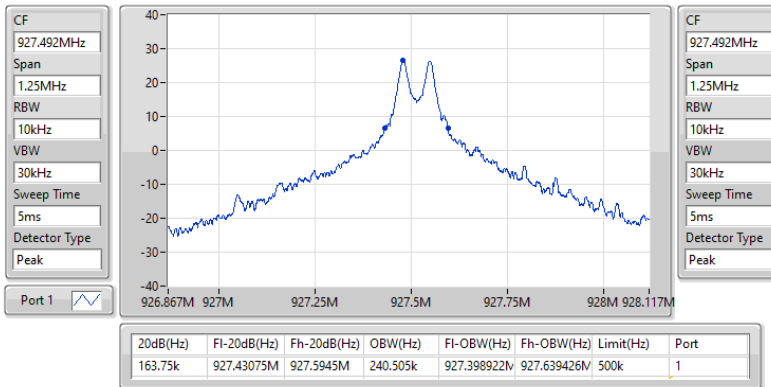
915.378MHz



902-928MHz_FSK-145k

EBW-FS

927.492MHz

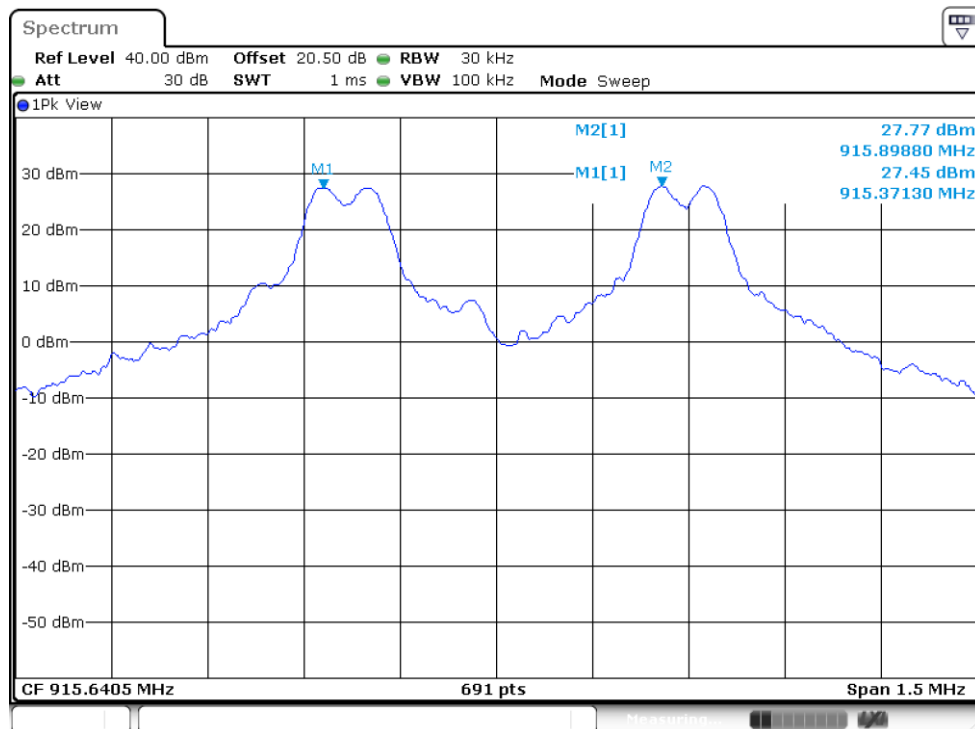
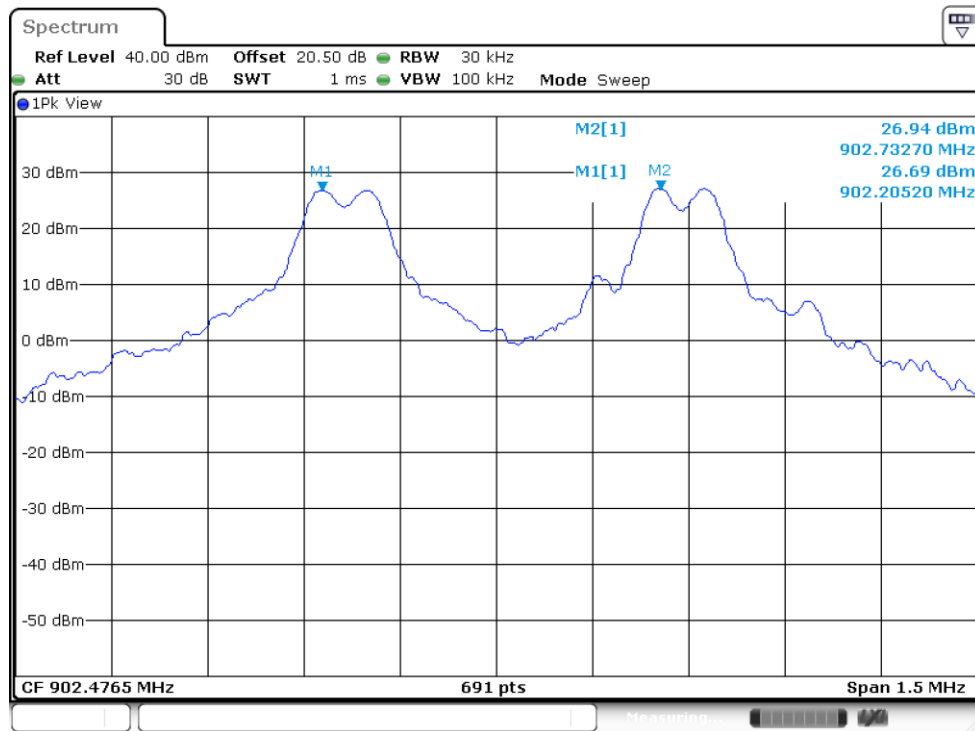


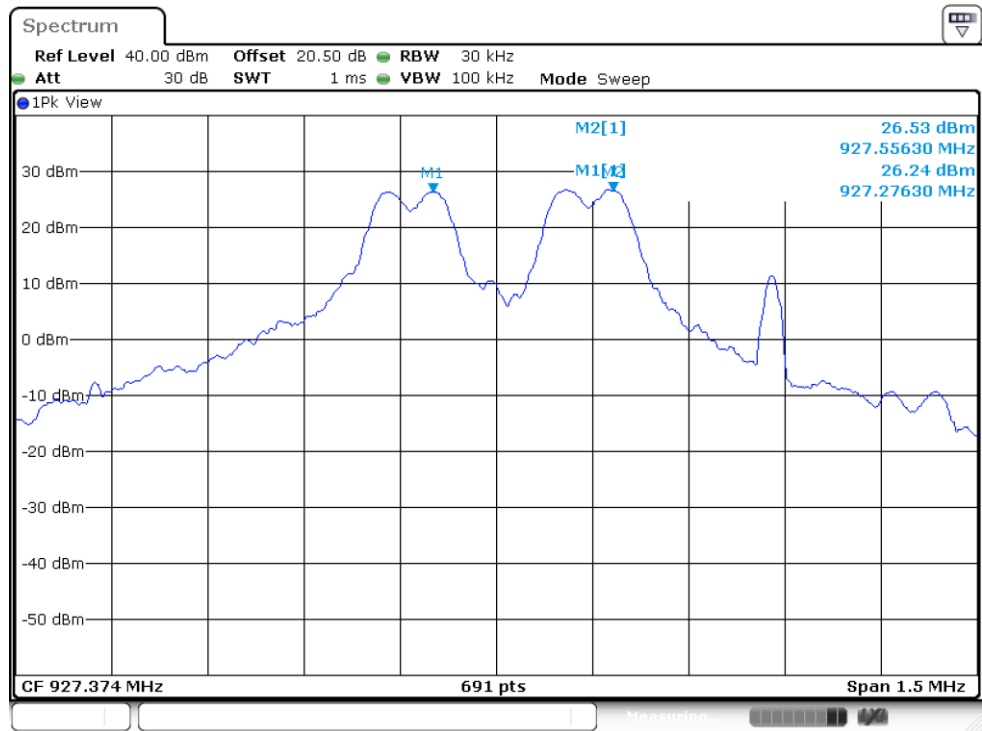
**Model: CL4490-1000-232****Summary**

Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
FSK-145k	527.5k	280k

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
FSK-145k	-	-	-	-	-
902.213MHz	Pass	902.2052M	902.7327M	527.5k	183.75k
915.378MHz	Pass	915.3713M	915.8988M	527.5k	168.125k
927.492MHz	Pass	927.2763M	927.5563M	280k	166.875k



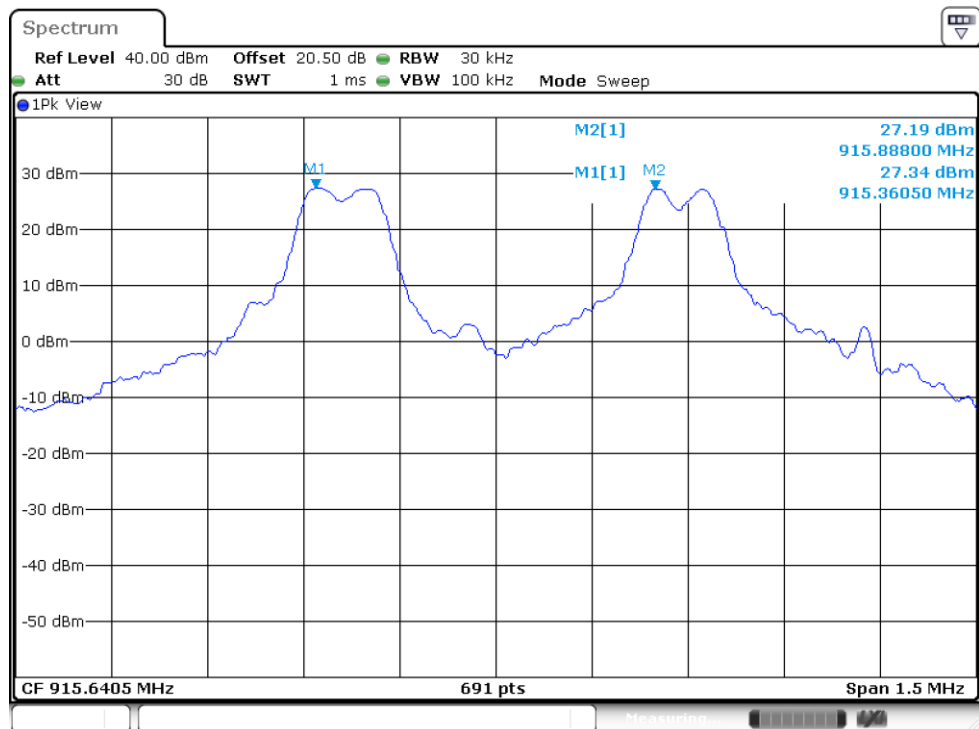
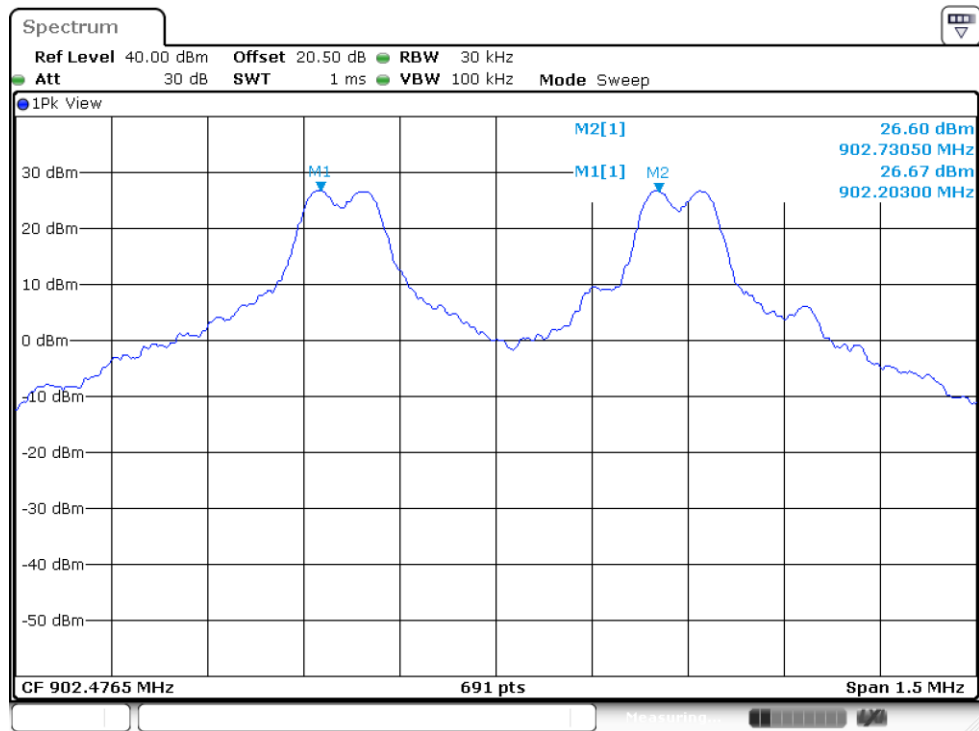


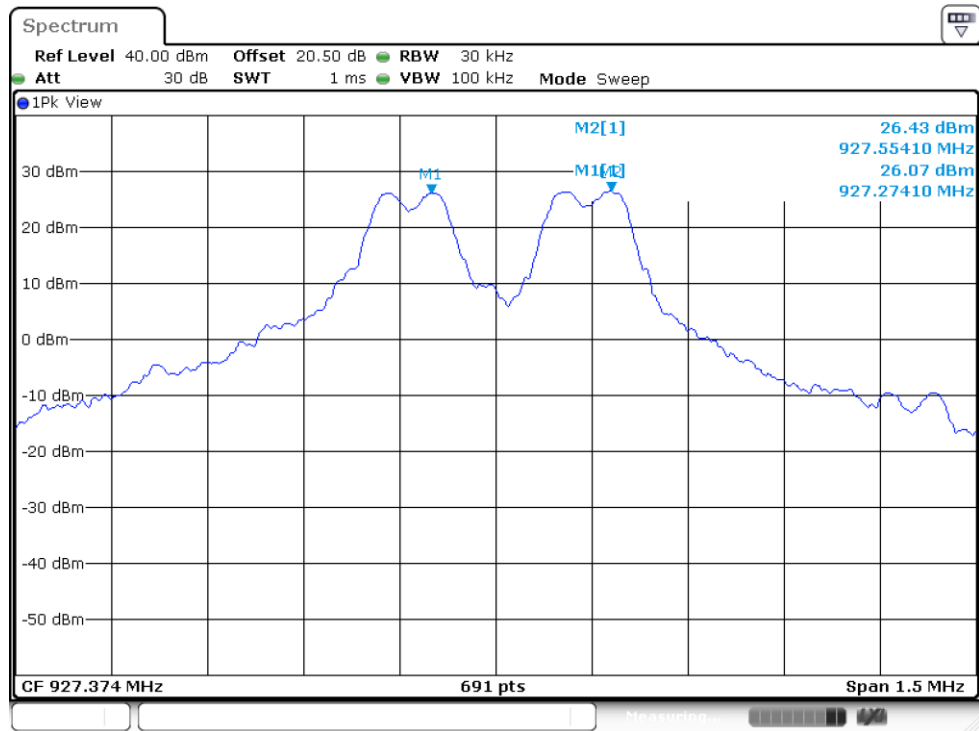
**Model: CL4490-1000-PRO****Summary**

Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
FSK-145k	527.5k	280k

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
FSK-145k	-	-	-	-	-
902.213MHz	Pass	902.203M	902.7305M	527.5k	164.375k
915.378MHz	Pass	915.3605M	915.888M	527.5k	148.75k
927.492MHz	Pass	927.2741M	927.5541M	280k	163.75k







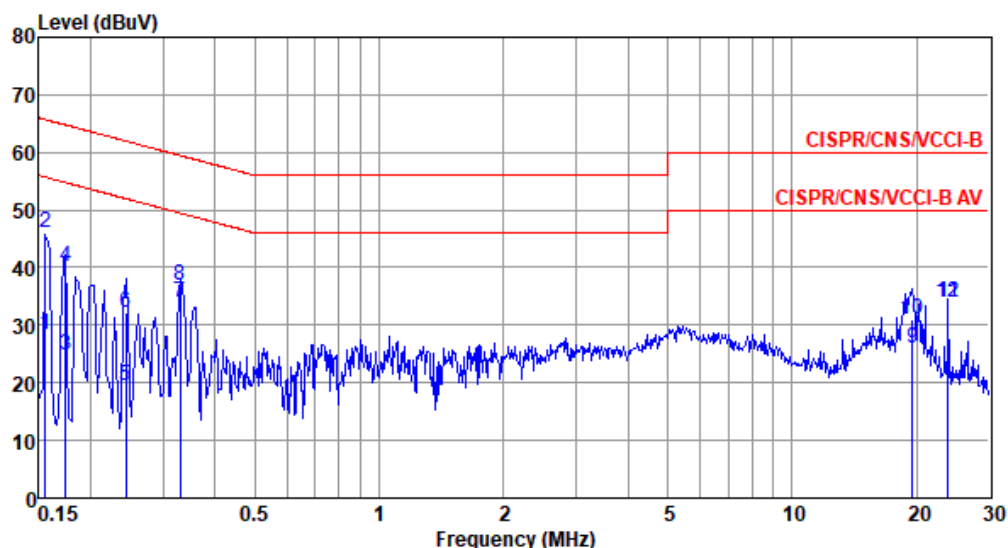
Model: CL4490-1000-232

Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	Remark
			dBuV	dB	dBuV		dB		
1	0.156	28.29	55.69	-27.40	18.42	9.63	0.06	0.18	Average
2	0.156	45.93	65.69	-19.76	36.06	9.63	0.06	0.18	QP
3	0.174	24.72	54.77	-30.05	14.85	9.62	0.06	0.19	Average
4	0.174	40.14	64.77	-24.63	30.27	9.62	0.06	0.19	QP
5	0.243	19.55	52.00	-32.45	9.65	9.62	0.06	0.22	Average
6	0.243	32.04	62.00	-29.96	22.14	9.62	0.06	0.22	QP
7*	0.330	33.83	49.44	-15.61	23.88	9.62	0.06	0.27	Average
8	0.330	36.83	59.44	-22.61	26.88	9.62	0.06	0.27	QP
9	19.532	26.09	50.00	-23.91	15.39	9.68	0.50	0.52	Average
10	19.532	31.07	60.00	-28.93	20.37	9.68	0.50	0.52	QP
11	23.846	33.87	50.00	-16.13	23.08	9.65	0.53	0.61	Average
12	23.846	33.93	60.00	-26.07	23.14	9.65	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) - Limit Line (dBuV).

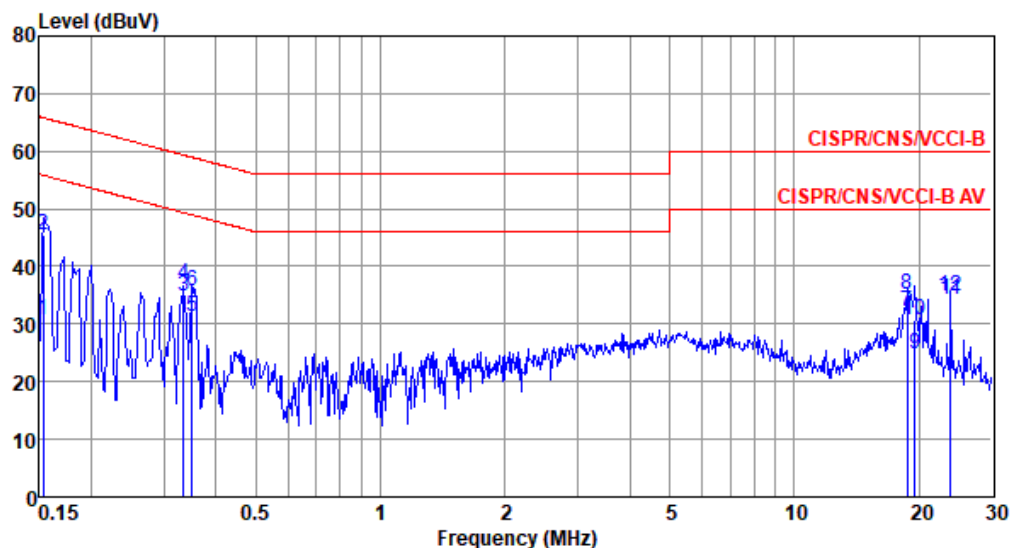


Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	30.72	55.82	-25.10	20.85	9.63	0.06	0.18	Average
2	0.153	45.54	65.82	-20.28	35.67	9.63	0.06	0.18	QP
3*	0.334	34.74	49.35	-14.61	24.79	9.62	0.06	0.27	Average
4	0.334	36.78	59.35	-22.57	26.83	9.62	0.06	0.27	QP
5	0.350	31.22	48.96	-17.74	21.26	9.62	0.06	0.28	Average
6	0.350	35.68	58.96	-23.28	25.72	9.62	0.06	0.28	QP
7	18.721	32.32	50.00	-17.68	21.53	9.79	0.49	0.51	Average
8	18.721	35.27	60.00	-24.73	24.48	9.79	0.49	0.51	QP
9	19.532	24.65	50.00	-25.35	13.83	9.80	0.50	0.52	Average
10	19.532	30.61	60.00	-29.39	19.79	9.80	0.50	0.52	QP
11	23.845	34.31	50.00	-15.69	23.38	9.79	0.53	0.61	Average
12	23.845	34.75	60.00	-25.25	23.82	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

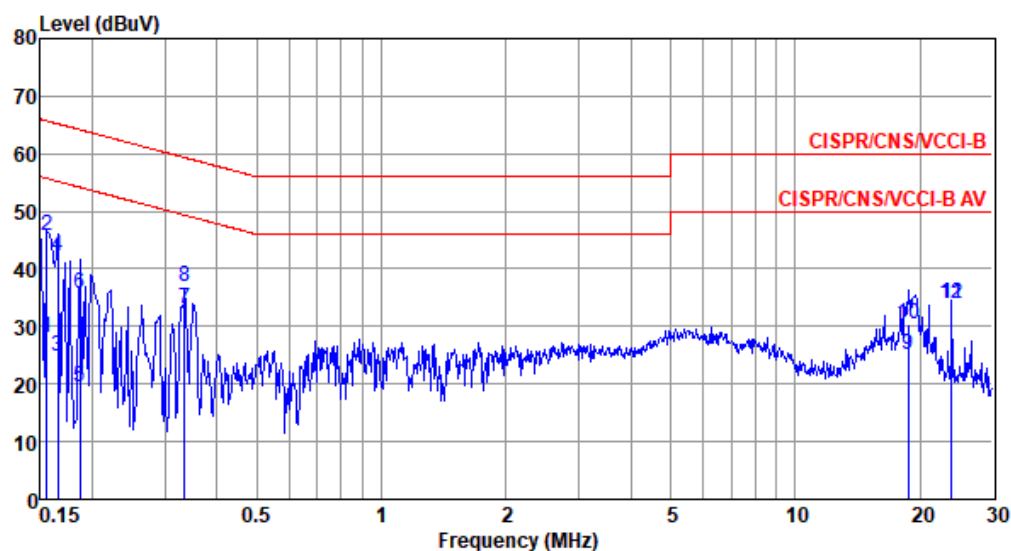


Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	Remark
			dBuV	dB	dBuV				
1	0.156	28.16	55.69	-27.53	18.29	9.63	0.06	0.18	Average
2	0.156	45.79	65.69	-19.90	35.92	9.63	0.06	0.18	QP
3	0.165	24.74	55.21	-30.47	14.87	9.63	0.06	0.18	Average
4	0.165	42.28	65.21	-22.93	32.41	9.63	0.06	0.18	QP
5	0.186	19.52	54.20	-34.68	9.65	9.62	0.06	0.19	Average
6	0.186	35.72	64.20	-28.48	25.85	9.62	0.06	0.19	QP
7	0.334	32.95	49.35	-16.40	23.00	9.62	0.06	0.27	Average
8	0.334	36.94	59.35	-22.41	26.99	9.62	0.06	0.27	QP
9	18.721	25.18	50.00	-24.82	14.50	9.68	0.49	0.51	Average
10	18.721	30.33	60.00	-29.67	19.65	9.68	0.49	0.51	QP
11*	23.846	33.89	50.00	-16.11	23.10	9.65	0.53	0.61	Average
12	23.846	33.93	60.00	-26.07	23.14	9.65	0.53	0.61	QP

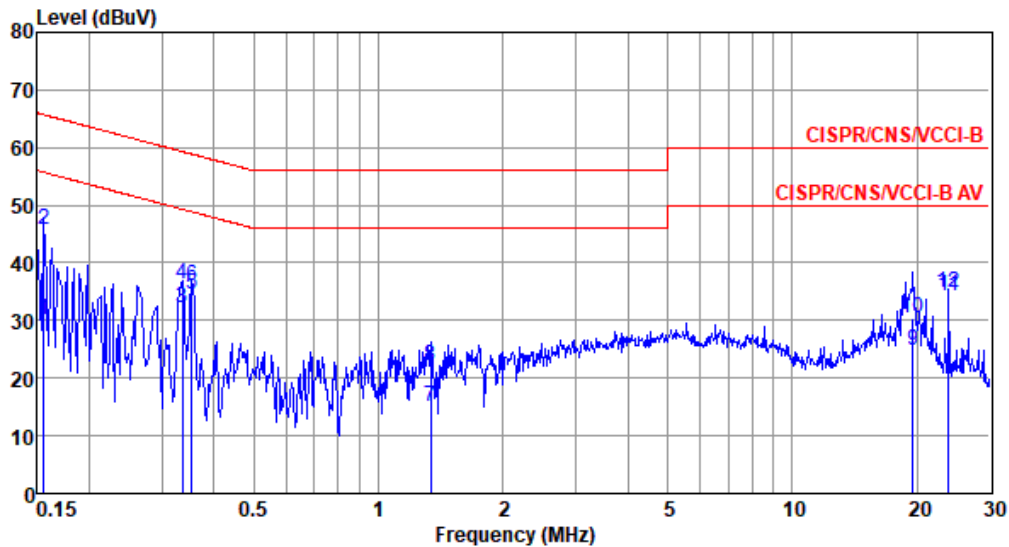
Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) - Limit Line (dBUV).



Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Neutral		

Test by : Joe Liao Temperature: 23°C Humidity: 64%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	Remark
1	0.156	30.16	55.69	-25.53	20.29	9.63	0.06	0.18	Average
2	0.156	45.76	65.69	-19.93	35.89	9.63	0.06	0.18	QP
3	0.336	32.20	49.31	-17.11	22.25	9.62	0.06	0.27	Average
4	0.336	36.25	59.31	-23.06	26.30	9.62	0.06	0.27	QP
5*	0.354	34.53	48.87	-14.34	24.57	9.62	0.06	0.28	Average
6	0.354	36.16	58.87	-22.71	26.20	9.62	0.06	0.28	QP
7	1.338	14.96	46.00	-31.04	4.87	9.63	0.12	0.34	Average
8	1.338	22.20	56.00	-33.80	12.11	9.63	0.12	0.34	QP
9	19.532	24.84	50.00	-25.16	14.02	9.80	0.50	0.52	Average
10	19.532	30.49	60.00	-29.51	19.67	9.80	0.50	0.52	QP
11	23.845	34.35	50.00	-15.65	23.42	9.79	0.53	0.61	Average
12	23.845	34.77	60.00	-25.23	23.84	9.79	0.53	0.61	QP

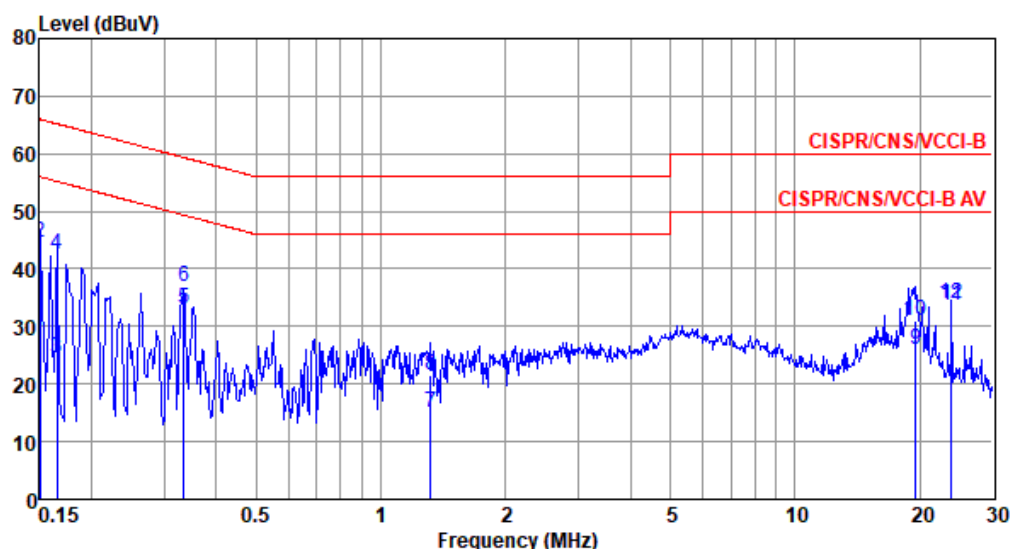
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).



Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Line		

Test by : Joe Liao Temperature: 23°C Humidity: 64%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	Remark
1	0.150	29.09	56.00	-26.91	19.22	9.63	0.06	0.18	Average
2	0.150	44.46	66.00	-21.54	34.59	9.63	0.06	0.18	QP
3	0.165	24.53	55.21	-30.68	14.66	9.63	0.06	0.18	Average
4	0.165	42.48	65.21	-22.73	32.61	9.63	0.06	0.18	QP
5	0.334	32.98	49.35	-16.37	23.03	9.62	0.06	0.27	Average
6	0.334	36.93	59.35	-22.42	26.98	9.62	0.06	0.27	QP
7	1.317	15.02	46.00	-30.98	4.93	9.63	0.12	0.34	Average
8	1.317	21.63	56.00	-34.37	11.54	9.63	0.12	0.34	QP
9	19.532	25.97	50.00	-24.03	15.27	9.68	0.50	0.52	Average
10	19.532	30.95	60.00	-29.05	20.25	9.68	0.50	0.52	QP
11*	23.845	33.71	50.00	-16.29	22.92	9.65	0.53	0.61	Average
12	23.845	33.85	60.00	-26.15	23.06	9.65	0.53	0.61	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

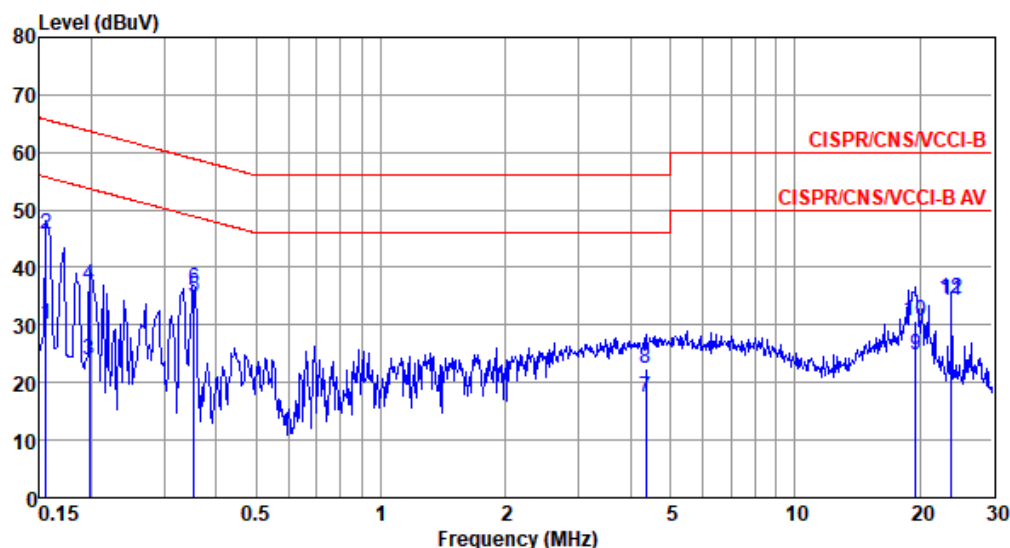


Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.156	30.06	55.69	-25.63	20.19	9.63	0.06	0.18	Average
2	0.156	45.75	65.69	-19.94	35.88	9.63	0.06	0.18	QP
3	0.198	23.96	53.71	-29.75	14.08	9.63	0.06	0.19	Average
4	0.198	36.77	63.71	-26.94	26.89	9.63	0.06	0.19	QP
5*	0.354	34.78	48.87	-14.09	24.82	9.62	0.06	0.28	Average
6	0.354	36.17	58.87	-22.70	26.21	9.62	0.06	0.28	QP
7	4.361	17.30	46.00	-28.70	7.02	9.66	0.20	0.42	Average
8	4.361	22.58	56.00	-33.42	12.30	9.66	0.20	0.42	QP
9	19.532	24.90	50.00	-25.10	14.08	9.80	0.50	0.52	Average
10	19.532	30.62	60.00	-29.38	19.80	9.80	0.50	0.52	QP
11	23.845	34.32	50.00	-15.68	23.39	9.79	0.53	0.61	Average
12	23.845	34.67	60.00	-25.33	23.74	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).



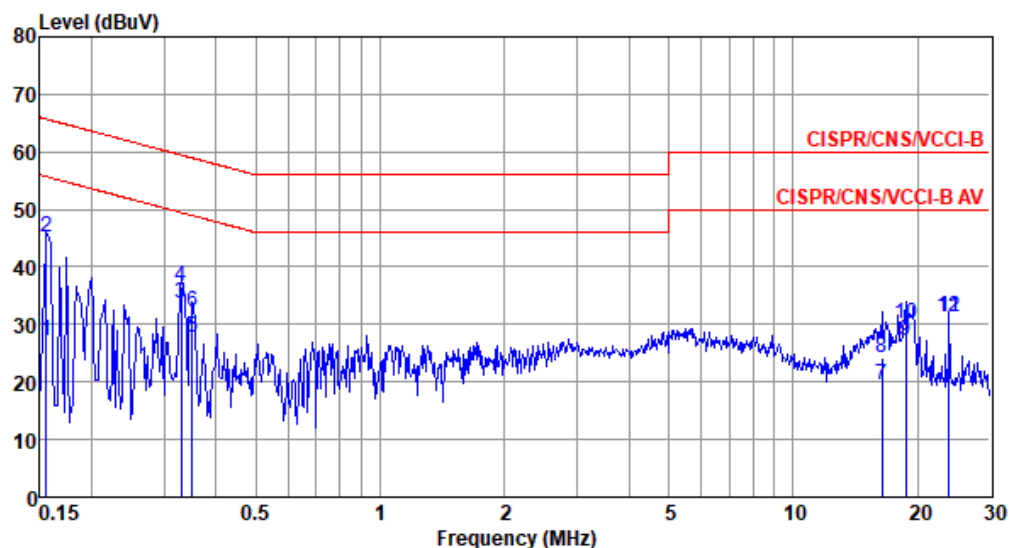
Model: CL4490-1000-485

Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.156	27.19	55.69	-28.50	17.32	9.63	0.06	0.18	Average
2	0.156	45.05	65.69	-20.64	35.18	9.63	0.06	0.18	QP
3*	0.330	33.67	49.44	-15.77	23.72	9.62	0.06	0.27	Average
4	0.330	36.55	59.44	-22.89	26.60	9.62	0.06	0.27	QP
5	0.350	27.70	48.96	-21.26	17.74	9.62	0.06	0.28	Average
6	0.350	32.27	58.96	-26.69	22.31	9.62	0.06	0.28	QP
7	16.398	19.51	50.00	-30.49	8.87	9.68	0.46	0.50	Average
8	16.398	24.10	60.00	-35.90	13.46	9.68	0.46	0.50	QP
9	18.721	27.16	50.00	-22.84	16.48	9.68	0.49	0.51	Average
10	18.721	30.00	60.00	-30.00	19.32	9.68	0.49	0.51	QP
11	23.845	31.34	50.00	-18.66	20.55	9.65	0.53	0.61	Average
12	23.845	31.42	60.00	-28.58	20.63	9.65	0.53	0.61	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) - Limit Line (dBUV).

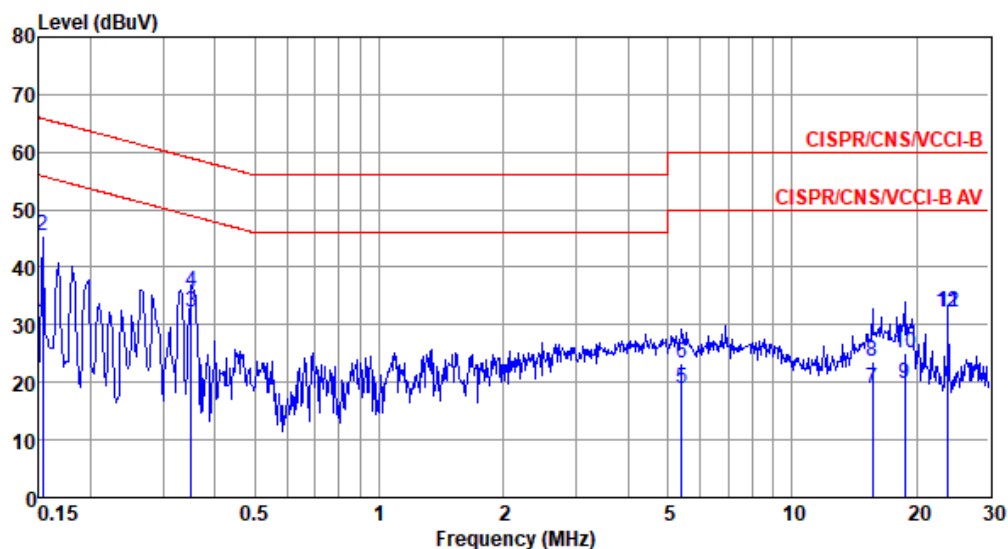


Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	30.44	55.82	-25.38	20.57	9.63	0.06	0.18	Average
2	0.153	45.55	65.82	-20.27	35.68	9.63	0.06	0.18	QP
3*	0.350	32.16	48.96	-16.80	22.20	9.62	0.06	0.28	Average
4	0.350	35.82	58.96	-23.14	25.86	9.62	0.06	0.28	QP
5	5.390	18.80	50.00	-31.20	8.46	9.67	0.24	0.43	Average
6	5.390	23.38	60.00	-36.62	13.04	9.67	0.24	0.43	QP
7	15.635	18.82	50.00	-31.18	8.11	9.77	0.45	0.49	Average
8	15.635	23.58	60.00	-36.42	12.87	9.77	0.45	0.49	QP
9	18.721	19.84	50.00	-30.16	9.05	9.79	0.49	0.51	Average
10	18.721	24.96	60.00	-35.04	14.17	9.79	0.49	0.51	QP
11	23.845	32.29	50.00	-17.71	21.36	9.79	0.53	0.61	Average
12	23.845	32.32	60.00	-27.68	21.39	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

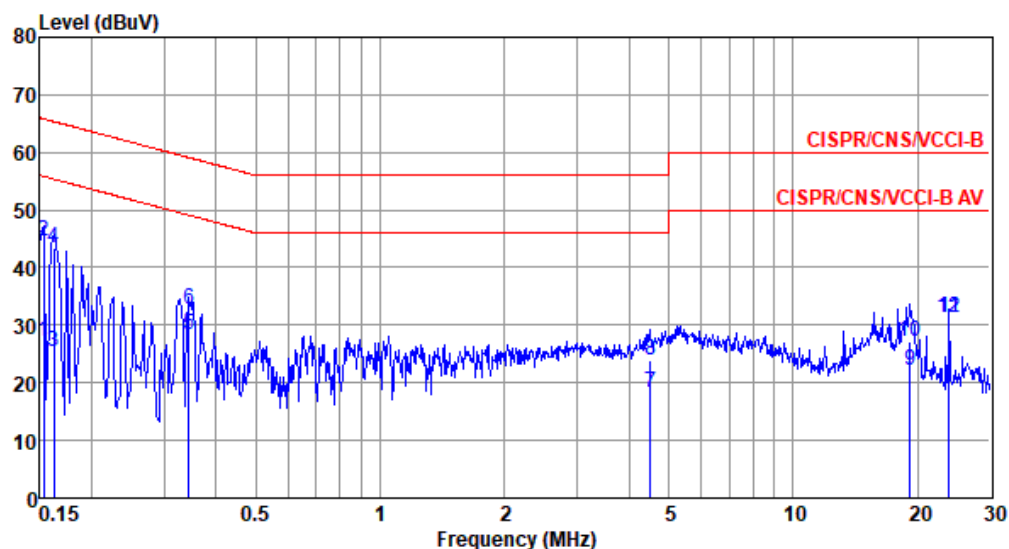


Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	27.10	55.82	-28.72	17.23	9.63	0.06	0.18	Average
2	0.153	44.44	65.82	-21.38	34.57	9.63	0.06	0.18	QP
3	0.162	25.42	55.34	-29.92	15.55	9.63	0.06	0.18	Average
4	0.162	43.37	65.34	-21.97	33.50	9.63	0.06	0.18	QP
5	0.345	28.36	49.09	-20.73	18.40	9.62	0.06	0.28	Average
6	0.345	32.84	59.09	-26.25	22.88	9.62	0.06	0.28	QP
7	4.501	18.40	46.00	-27.60	8.12	9.66	0.20	0.42	Average
8	4.501	23.84	56.00	-32.16	13.56	9.66	0.20	0.42	QP
9	19.224	22.07	50.00	-27.93	11.37	9.68	0.50	0.52	Average
10	19.224	27.11	60.00	-32.89	16.41	9.68	0.50	0.52	QP
11*	23.845	31.36	50.00	-18.64	20.57	9.65	0.53	0.61	Average
12	23.845	31.43	60.00	-28.57	20.64	9.65	0.53	0.61	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) - Limit Line (dBUV).

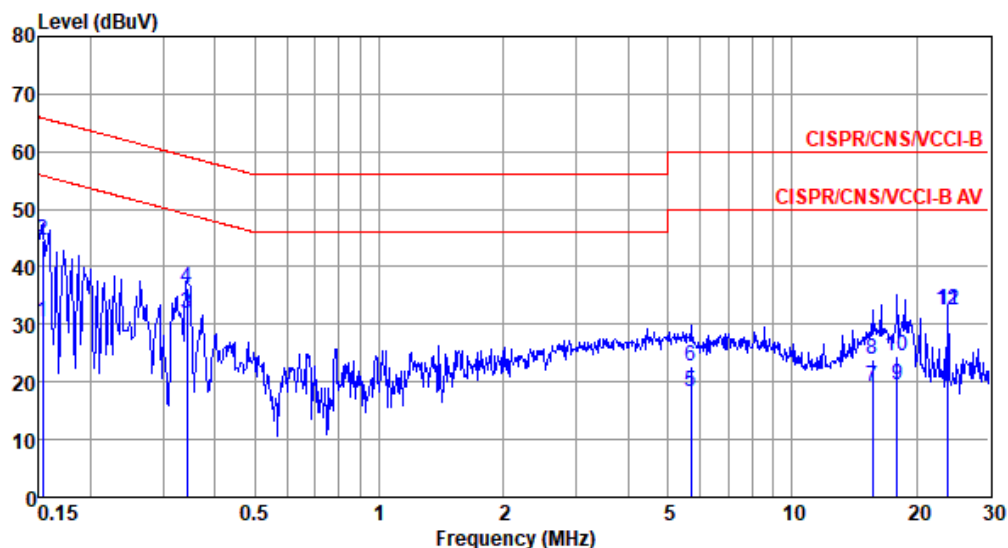


Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	Remark
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	
1	0.153	30.32	55.82	-25.50	20.45	9.63	0.06	0.18	Average
2	0.153	44.62	65.82	-21.20	34.75	9.63	0.06	0.18	QP
3*	0.343	31.95	49.13	-17.18	21.99	9.62	0.06	0.28	Average
4	0.343	36.23	59.13	-22.90	26.27	9.62	0.06	0.28	QP
5	5.683	18.39	50.00	-31.61	8.04	9.67	0.25	0.43	Average
6	5.683	22.75	60.00	-37.25	12.40	9.67	0.25	0.43	QP
7	15.635	19.33	50.00	-30.67	8.62	9.77	0.45	0.49	Average
8	15.635	23.94	60.00	-36.06	13.23	9.77	0.45	0.49	QP
9	17.944	19.60	50.00	-30.40	8.82	9.79	0.48	0.51	Average
10	17.944	24.52	60.00	-35.48	13.74	9.79	0.48	0.51	QP
11	23.845	32.36	50.00	-17.64	21.43	9.79	0.53	0.61	Average
12	23.845	32.40	60.00	-27.60	21.47	9.79	0.53	0.61	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) - Limit Line (dBUV).

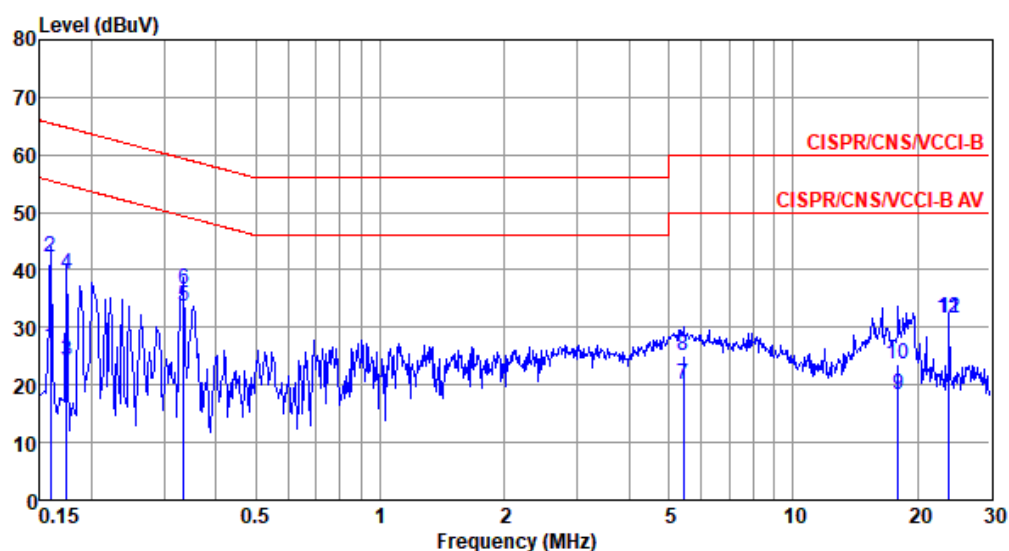


Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBUV	Limit dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.159	26.71	55.52	-28.81	16.84	9.63	0.06	0.18	Average
2	0.159	42.10	65.52	-23.42	32.23	9.63	0.06	0.18	QP
3	0.174	24.23	54.77	-30.54	14.36	9.62	0.06	0.19	Average
4	0.174	39.31	64.77	-25.46	29.44	9.62	0.06	0.19	QP
5*	0.334	33.61	49.35	-15.74	23.66	9.62	0.06	0.27	Average
6	0.334	36.75	59.35	-22.60	26.80	9.62	0.06	0.27	QP
7	5.419	20.14	50.00	-29.86	9.81	9.66	0.24	0.43	Average
8	5.419	25.17	60.00	-34.83	14.84	9.66	0.24	0.43	QP
9	17.944	18.24	50.00	-31.76	7.57	9.68	0.48	0.51	Average
10	17.944	23.61	60.00	-36.39	12.94	9.68	0.48	0.51	QP
11	23.845	31.63	50.00	-18.37	20.84	9.65	0.53	0.61	Average
12	23.845	31.71	60.00	-28.29	20.92	9.65	0.53	0.61	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

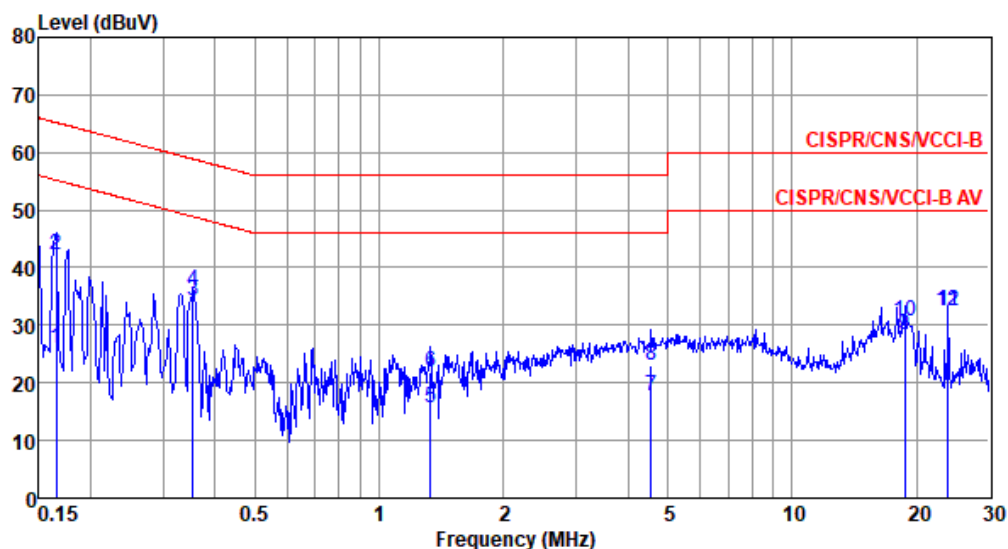


Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.165	25.96	55.21	-29.25	16.09	9.63	0.06	0.18	Average
2	0.165	42.08	65.21	-23.13	32.21	9.63	0.06	0.18	QP
3*	0.354	34.32	48.87	-14.55	24.36	9.62	0.06	0.28	Average
4	0.354	35.96	58.87	-22.91	26.00	9.62	0.06	0.28	QP
5	1.331	15.53	46.00	-30.47	5.44	9.63	0.12	0.34	Average
6	1.331	21.92	56.00	-34.08	11.83	9.63	0.12	0.34	QP
7	4.549	17.68	46.00	-28.32	7.39	9.66	0.21	0.42	Average
8	4.549	22.94	56.00	-33.06	12.65	9.66	0.21	0.42	QP
9	18.721	28.36	50.00	-21.64	17.57	9.79	0.49	0.51	Average
10	18.721	30.79	60.00	-29.21	20.00	9.79	0.49	0.51	QP
11	23.845	32.50	50.00	-17.50	21.57	9.79	0.53	0.61	Average
12	23.845	32.59	60.00	-27.41	21.66	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) - Limit Line (dBuV).



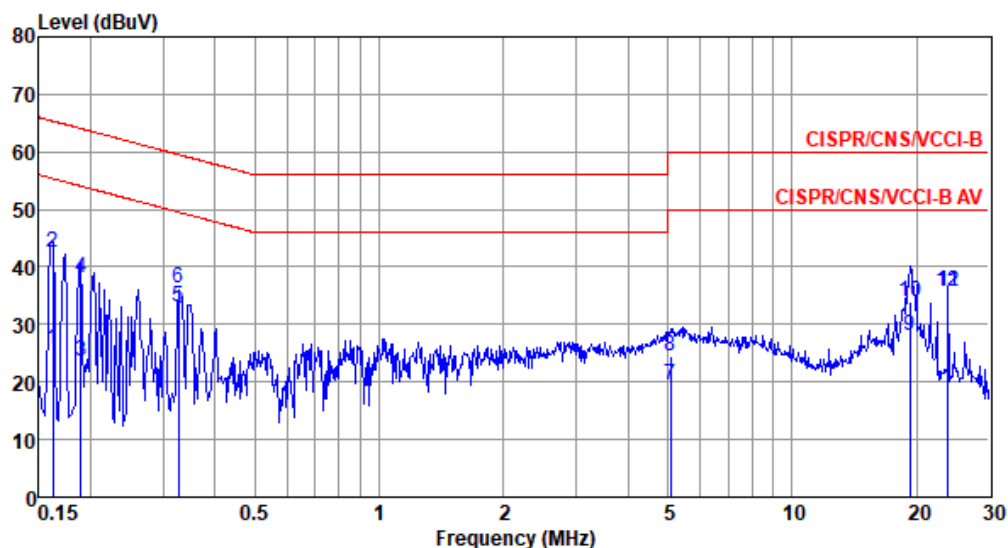
Model: CL4490-1000-PRO

Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.162	25.59	55.34	-29.75	15.72	9.63	0.06	0.18	Average
2	0.162	42.61	65.34	-22.73	32.74	9.63	0.06	0.18	QP
3	0.189	23.53	54.06	-30.53	13.66	9.62	0.06	0.19	Average
4	0.189	38.22	64.06	-25.84	28.35	9.62	0.06	0.19	QP
5	0.327	33.11	49.53	-16.42	23.16	9.62	0.06	0.27	Average
6	0.327	36.22	59.53	-23.31	26.27	9.62	0.06	0.27	QP
7	5.085	19.52	50.00	-30.48	9.20	9.66	0.23	0.43	Average
8	5.085	24.56	60.00	-35.44	14.24	9.66	0.23	0.43	QP
9	19.326	28.03	50.00	-21.97	17.33	9.68	0.50	0.52	Average
10	19.326	33.98	60.00	-26.02	23.28	9.68	0.50	0.52	QP
11*	23.845	35.66	50.00	-14.34	24.87	9.65	0.53	0.61	Average
12	23.845	35.66	60.00	-24.34	24.87	9.65	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) - Limit Line (dBuV).

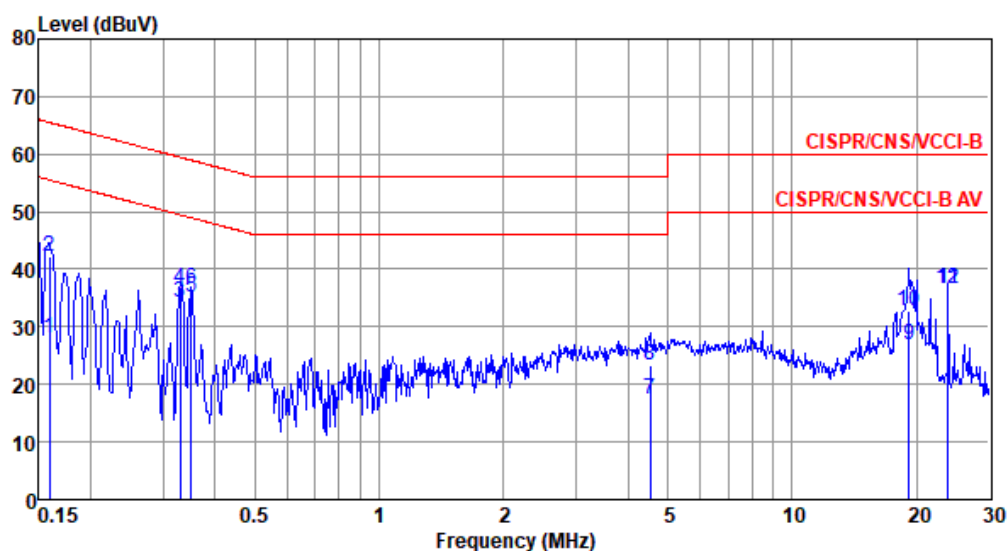


Modulation Mod	FSK	Test Freq. (MHz)	902.213
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.159	28.00	55.52	-27.52	18.13	9.63	0.06	0.18	Average
2	0.159	42.22	65.52	-23.30	32.35	9.63	0.06	0.18	QP
3	0.330	34.29	49.44	-15.15	24.34	9.62	0.06	0.27	Average
4	0.330	36.60	59.44	-22.84	26.65	9.62	0.06	0.27	QP
5	0.350	35.02	48.96	-13.94	25.06	9.62	0.06	0.28	Average
6	0.350	36.58	58.96	-22.38	26.62	9.62	0.06	0.28	QP
7	4.525	17.53	46.00	-28.47	7.25	9.66	0.20	0.42	Average
8	4.525	23.30	56.00	-32.70	13.02	9.66	0.20	0.42	QP
9	19.224	26.75	50.00	-23.25	15.94	9.79	0.50	0.52	Average
10	19.224	32.70	60.00	-27.30	21.89	9.79	0.50	0.52	QP
11*	23.845	36.50	50.00	-13.50	25.57	9.79	0.53	0.61	Average
12	23.845	36.49	60.00	-23.51	25.56	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

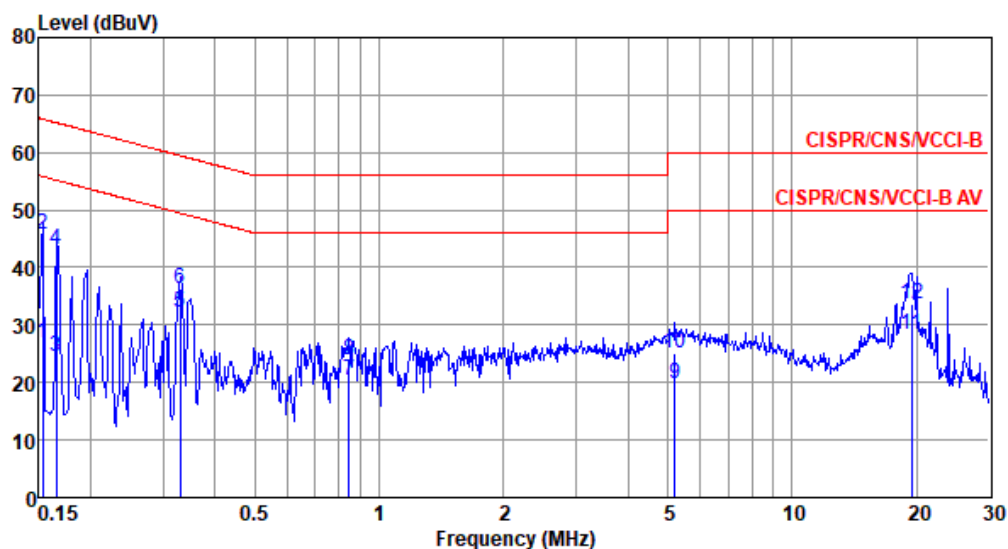


Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	26.99	55.82	-28.83	17.12	9.63	0.06	0.18	Average
2	0.153	45.72	65.82	-20.10	35.85	9.63	0.06	0.18	QP
3	0.165	24.62	55.21	-30.59	14.75	9.63	0.06	0.18	Average
4	0.165	43.15	65.21	-22.06	33.28	9.63	0.06	0.18	QP
5*	0.330	32.15	49.44	-17.29	22.20	9.62	0.06	0.27	Average
6	0.330	36.40	59.44	-23.04	26.45	9.62	0.06	0.27	QP
7	0.844	20.37	46.00	-25.63	10.32	9.63	0.10	0.32	Average
8	0.844	23.97	56.00	-32.03	13.92	9.63	0.10	0.32	QP
9	5.194	19.91	50.00	-30.09	9.59	9.66	0.23	0.43	Average
10	5.194	24.96	60.00	-35.04	14.64	9.66	0.23	0.43	QP
11	19.428	28.20	50.00	-21.80	17.50	9.68	0.50	0.52	Average
12	19.428	33.71	60.00	-26.29	23.01	9.68	0.50	0.52	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

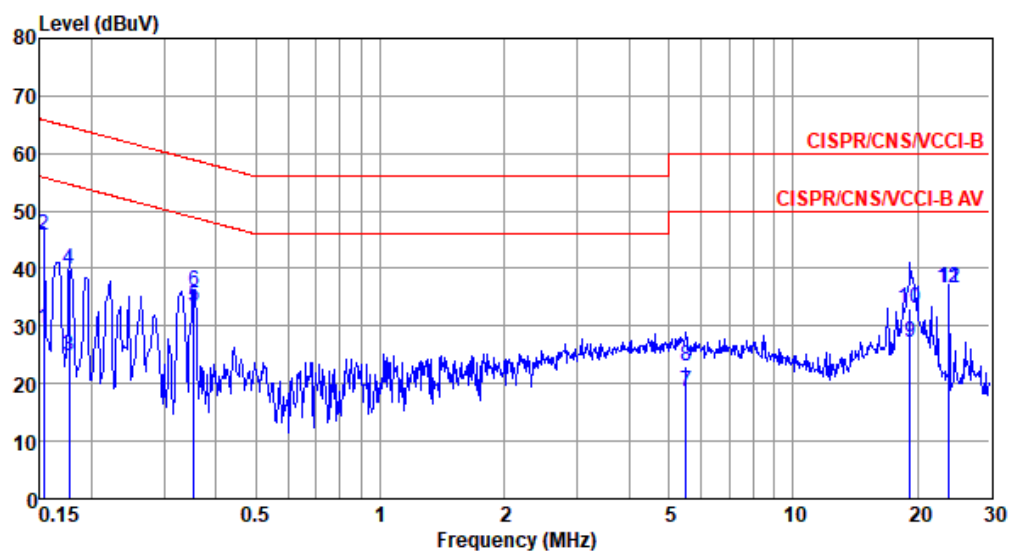


Modulation Mod	FSK	Test Freq. (MHz)	915.378
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	29.49	55.82	-26.33	19.62	9.63	0.06	0.18	Average
2	0.153	45.89	65.82	-19.93	36.02	9.63	0.06	0.18	QP
3	0.177	24.91	54.64	-29.73	15.03	9.63	0.06	0.19	Average
4	0.177	40.00	64.64	-24.64	30.12	9.63	0.06	0.19	QP
5	0.354	33.50	48.87	-15.37	23.54	9.62	0.06	0.28	Average
6	0.354	36.15	58.87	-22.72	26.19	9.62	0.06	0.28	QP
7	5.505	18.55	50.00	-31.45	8.21	9.67	0.24	0.43	Average
8	5.505	22.96	60.00	-37.04	12.62	9.67	0.24	0.43	QP
9	19.224	27.17	50.00	-22.83	16.36	9.79	0.50	0.52	Average
10	19.224	33.10	60.00	-26.90	22.29	9.79	0.50	0.52	QP
11*	23.845	36.51	50.00	-13.49	25.58	9.79	0.53	0.61	Average
12	23.845	36.52	60.00	-23.48	25.59	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

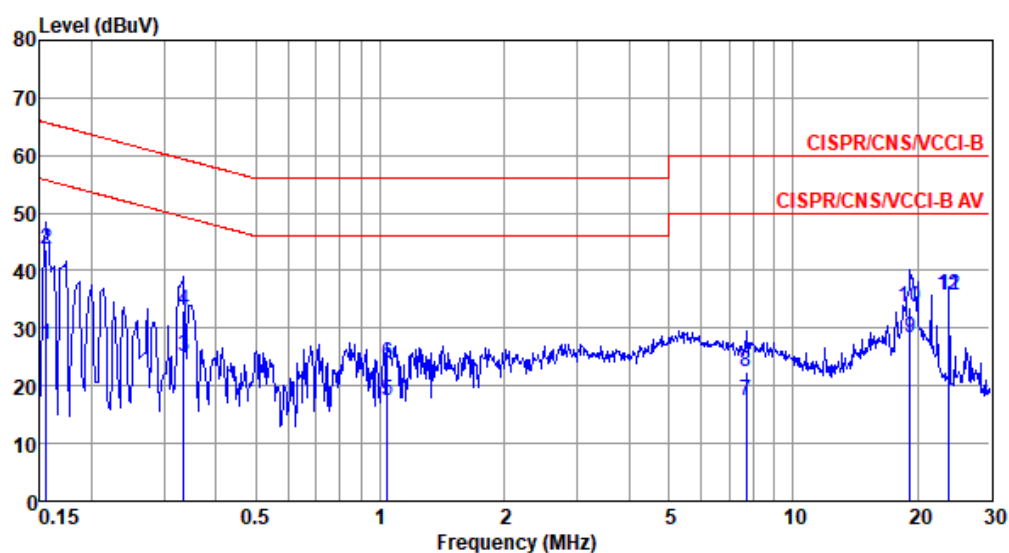


Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Line		

Test by : Joe Liao

Temperature: 23°C

Humidity: 64%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.156	27.19	55.69	-28.50	17.32	9.63	0.06	0.18	Average
2	0.156	43.67	65.69	-22.02	33.80	9.63	0.06	0.18	QP
3	0.334	24.99	49.35	-24.36	15.04	9.62	0.06	0.27	Average
4	0.334	33.15	59.35	-26.20	23.20	9.62	0.06	0.27	QP
5	1.043	17.47	46.00	-28.53	7.40	9.63	0.11	0.33	Average
6	1.043	24.06	56.00	-31.94	13.99	9.63	0.11	0.33	QP
7	7.687	17.34	50.00	-32.66	6.92	9.68	0.31	0.43	Average
8	7.687	22.43	60.00	-37.57	12.01	9.68	0.31	0.43	QP
9	19.224	28.30	50.00	-21.70	17.60	9.68	0.50	0.52	Average
10	19.224	33.74	60.00	-26.26	23.04	9.68	0.50	0.52	QP
11*	23.845	35.61	50.00	-14.39	24.82	9.65	0.53	0.61	Average
12	23.845	35.77	60.00	-24.23	24.98	9.65	0.53	0.61	QP

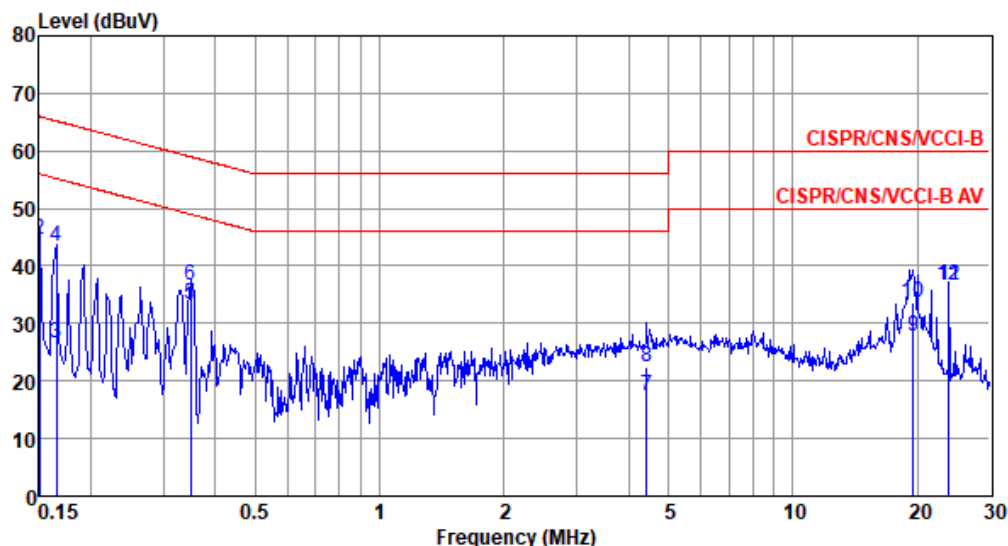
Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).



Modulation Mod	FSK	Test Freq. (MHz)	927.492
Power Phase	Neutral		

Test by : Joe Liao Temperature: 23°C Humidity: 64%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.150	29.51	56.00	-26.49	19.64	9.63	0.06	0.18	Average
2	0.150	44.58	66.00	-21.42	34.71	9.63	0.06	0.18	QP
3	0.165	26.60	55.21	-28.61	16.73	9.63	0.06	0.18	Average
4	0.165	43.49	65.21	-21.72	33.62	9.63	0.06	0.18	QP
5	0.348	33.23	49.00	-15.77	23.27	9.62	0.06	0.28	Average
6	0.348	36.52	59.00	-22.48	26.56	9.62	0.06	0.28	QP
7	4.430	17.34	46.00	-28.66	7.06	9.66	0.20	0.42	Average
8	4.430	22.55	56.00	-33.45	12.27	9.66	0.20	0.42	QP
9	19.532	27.76	50.00	-22.24	16.94	9.80	0.50	0.52	Average
10	19.532	33.65	60.00	-26.35	22.83	9.80	0.50	0.52	QP
11*	23.845	36.57	50.00	-13.43	25.64	9.79	0.53	0.61	Average
12	23.845	36.63	60.00	-23.37	25.70	9.79	0.53	0.61	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).