Davis Instruments

TEST REPORT FOR

EnviroMonitor Ethernet Gateway, Model: 6805
AC/DC Adapter, Model: DSA-6PFG-05 FUS 050 100
RFID Omni Fiberglass Antenna, Model: AMXF-9092-8

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.247
(FHSS 902-928 MHz)

Report No.: 100904-16

Date of issue: February 28, 2019

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Test Certificate # 803.06

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Davis Instruments
3465 Diablo Avenue
Hayward CA 94545

Representative: Bruce Walter
Customer Reference Number: 90369

REPORT PREPARED BY:

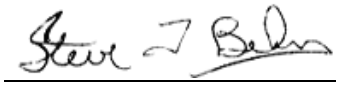
Terri Rayle
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 100904

DATE OF EQUIPMENT RECEIPT: November 19, 2018
DATE(S) OF TESTING: November 19-20, and 26-27, 2018

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11

Site Registration & Accreditation Information

Location	NIST CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont, CA	US0082	SL2-IN-E-1148R	3082B-1	US1023	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C - 15.247 (FHSS 902-928MHz)

Test Procedure	Description	Modifications	Results
15.247(a)(1)(i)	Occupied Bandwidth	NA	Pass
15.247(a)(1)	Carrier Separation	NA	Pass
15.247(a)(1)(i)	Number of Hopping Channels	NA	Pass
15.247(a)(1)(i)	Average Time of Occupancy	NA	Pass
15.247(b)(2)	Output Power	NA	Pass
15.247(d)	RF Conducted Emissions & Band Edge	NA	Pass
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted Emissions	NA	Pass

NA = Not Applicable

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 2

Equipment Tested:

Device	Manufacturer	Model #	S/N
AC/DC Adapter	Davis Instruments	DSA-6PFG-05 FUS 050 100	NA
EnviroMonitor Ethernet Gateway	Davis Instruments	6805	FL-109
RFID Omni Fiberglass Antenna	Ameison	AMXF-9092-8	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Router	Linksys	WRT54G	CDFD1F910025
ISS Transmitter	Davis Instruments	6322C	BC180823004
Laptop	Dell	Latitude E 6530	NA

Configuration 4

Equipment Tested:

Device	Manufacturer	Model #	S/N
EnviroMonitor Ethernet Gateway	Davis Instruments	6805	FL-108
AC/DC Adapter	Davis Instruments	DSA-6PFG-05 FUS 050 100	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Laptop	Dell	Latitude E 6530	NA

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	FHSS
Operating Frequency Range:	902-928MHz
Number of Hopping Channels:	50
Modulation Type(s):	GFSK
Maximum Duty Cycle:	100%
Number of TX Chains:	1
Number of RX Chains:	1
Antenna Type(s) and Gain:	8dBi
Beamforming Type:	NA
Antenna Connection Type:	External Connector
Nominal Input Voltage:	120VAC/60Hz
Firmware / Software used for Test:	Tera-Term version 4.97 as a terminal Program

FCC Part 15 Subpart C

15.247(a) Transmitter Characteristics

Test Setup/Conditions			
Test Location:	Fremont Lab C3	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2013)	Test Date(s):	11/21/2018
Configuration:	4		
Test Setup:	The EUT is placed non-conducted table. It is operated as intended.		

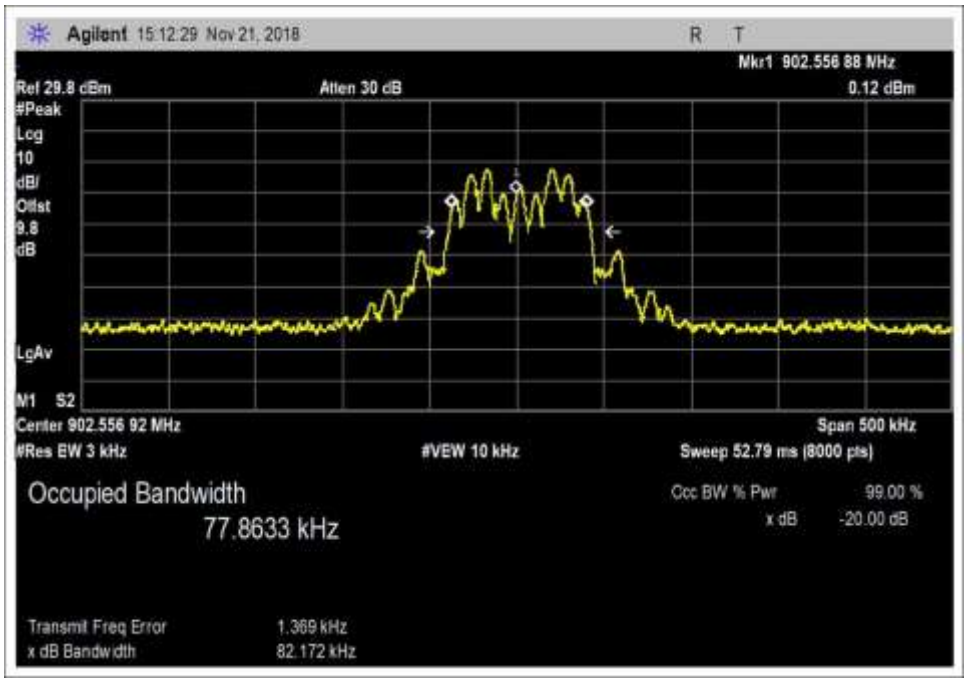
Environmental Conditions			
Temperature (ºC)	21.5	Relative Humidity (%):	48.5

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
P05411	Attenuator	Weinschel	54A-10	1/19/2018	1/19/2020
P06903	Cable	Astrolab	32022-29094K-29094K-36TC	1/4/2018	1/4/2020
02660	Spectrum Analyzer	Agilent	E4446A	10/19/2018	10/19/2020

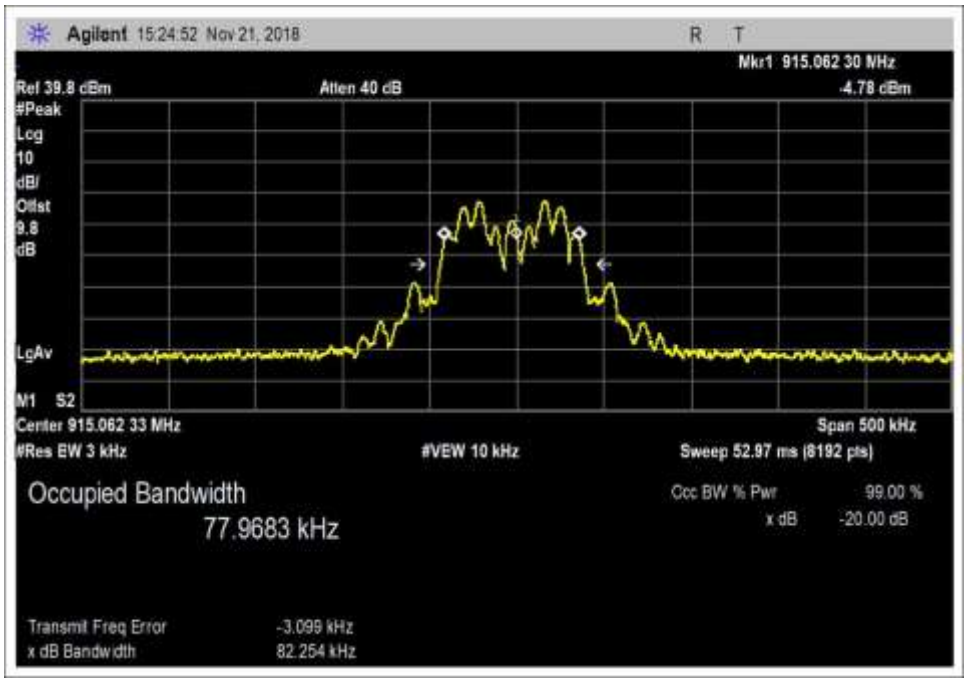
15.247(a)(1) 20 dB Bandwidth

Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
902.55	1	GFSK	82.172	≤500	Pass
915	1	GFSK	82.254	≤500	Pass
927	1	GFSK	82.192	≤500	Pass

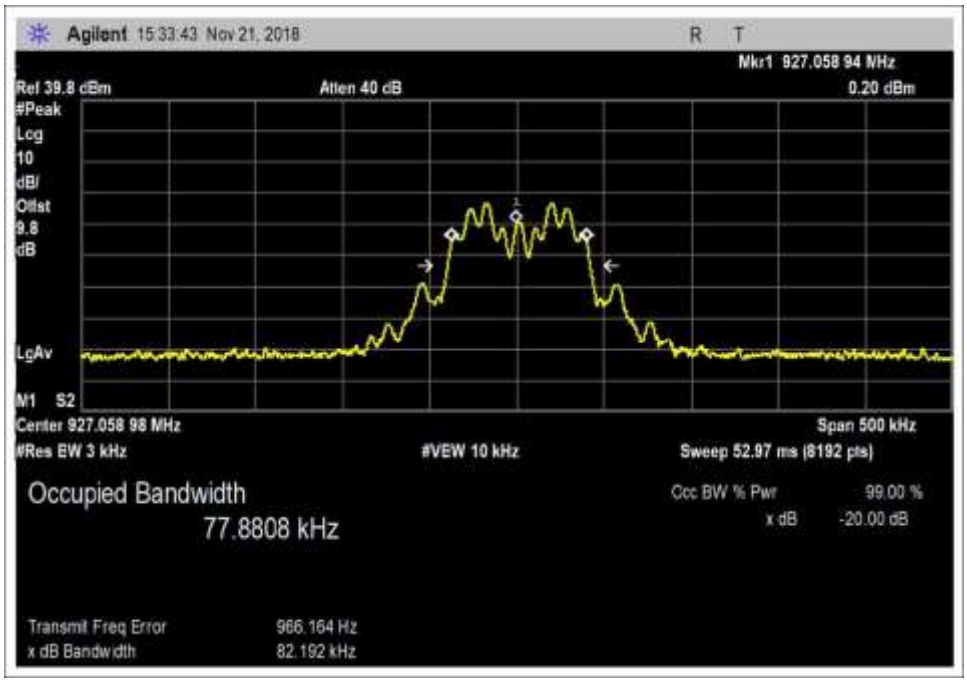
Plot(s)



Low Channel



Middle Channel

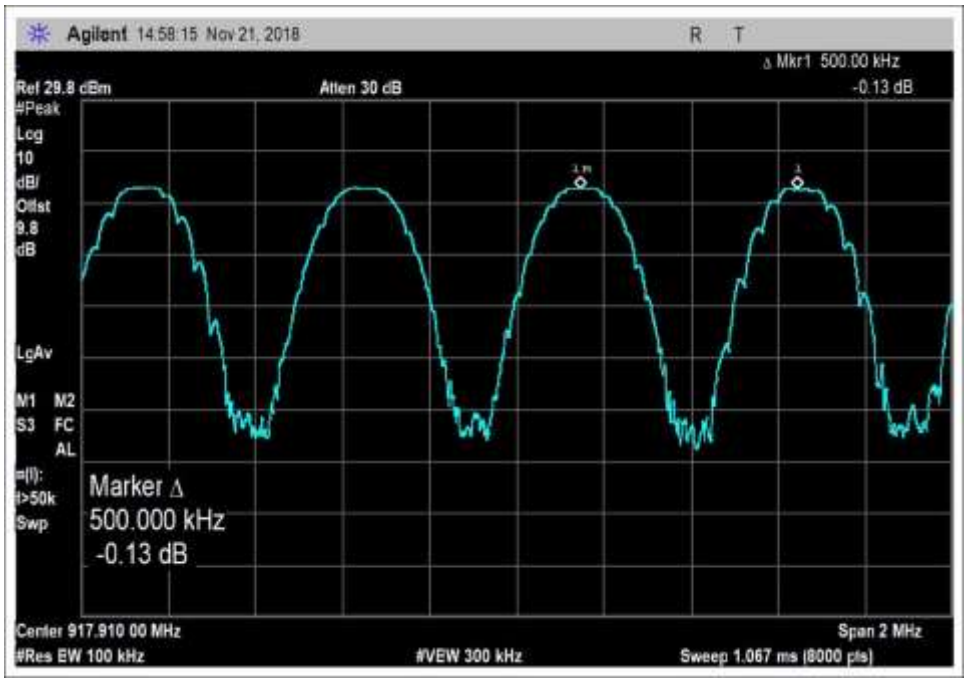


High Channel

15.247(a)(1) Carrier Separation

Test Data Summary				
Limit applied: 20dB bandwidth of the hopping channel.				
Antenna Port	**Operational Mode**	**Measured (kHz)**	**Limit (kHz)**	**Results**
1	Hopping	500	>82.254	Pass

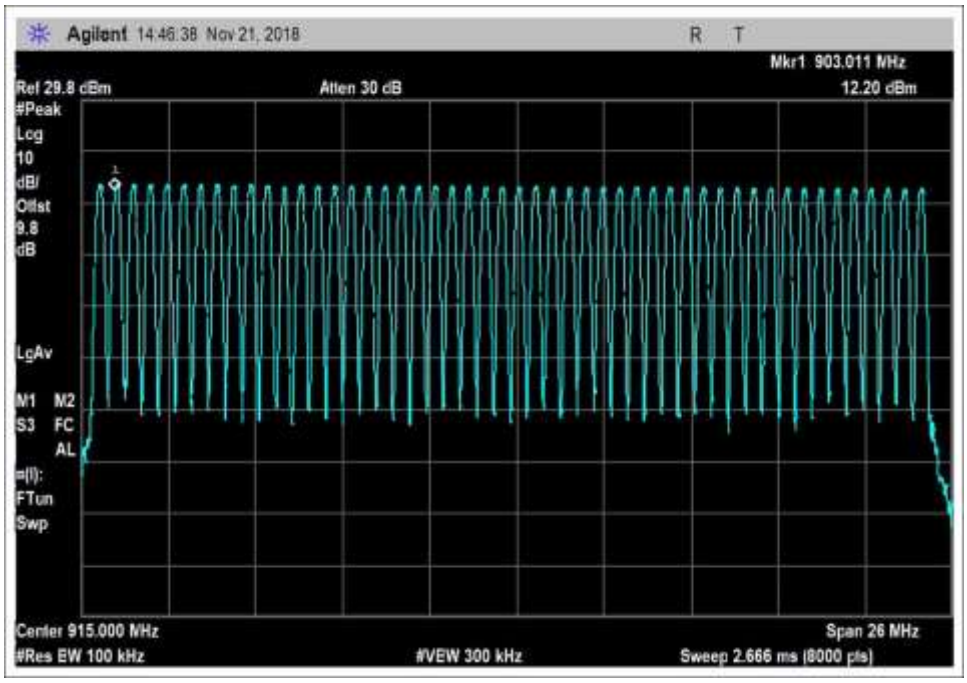
Plot(s)



15.247(a)(1)(iii) Number of Hopping Channels

Test Data Summary				
$Limit = \begin{cases} 50\ Channels \mid 20\ dB\ BW < 250kHz \\ 25\ Channels \mid 20\ dB\ BW \geq 250kHz \end{cases}$				
Antenna Port	**Operational Mode**	**Measured (Channels)**	**Limit (Channels)**	**Results**
1	Hopping	50	≥50	Pass

Plot(s)



15.247(a)(1)(iii) Time of Occupancy

Test Data Summary				
Observation Period, P_{obs} is derived from the following: $P_{Obs} = \begin{cases} 20\ Seconds & 20\ dB\ BW < 250kHz \\ 10\ Seconds & 20\ dB\ BW \geq 250kHz \end{cases}$				
Antenna Port	**Operational Mode**	**Measured (ms)**	**Limit (ms/P_{obs})**	**Results**
1	Hopping	15.3282	≤400	Pass

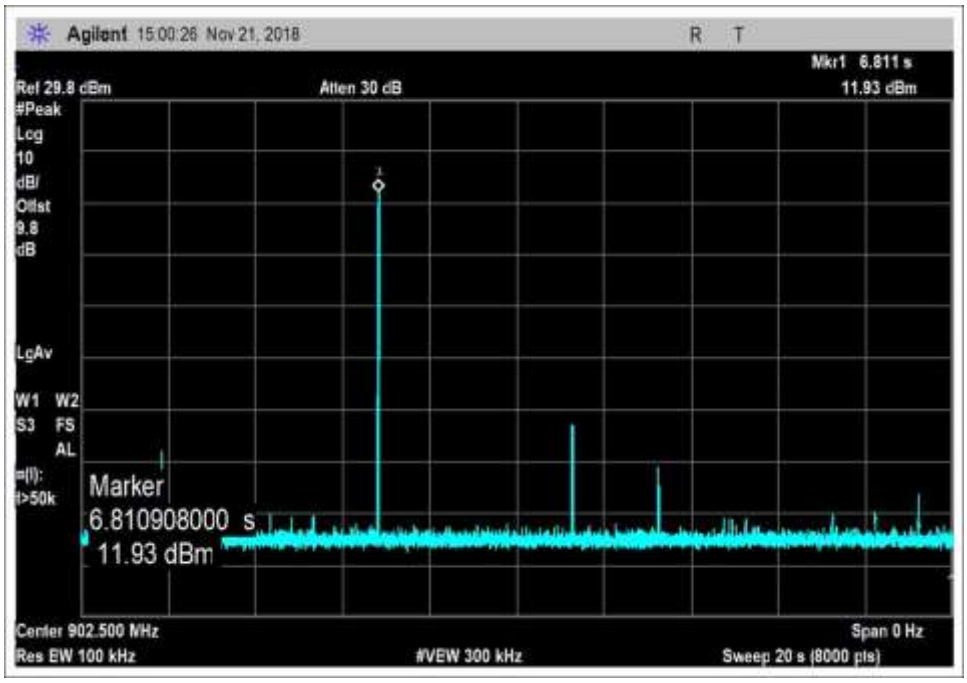
Measured results are calculated as follows:

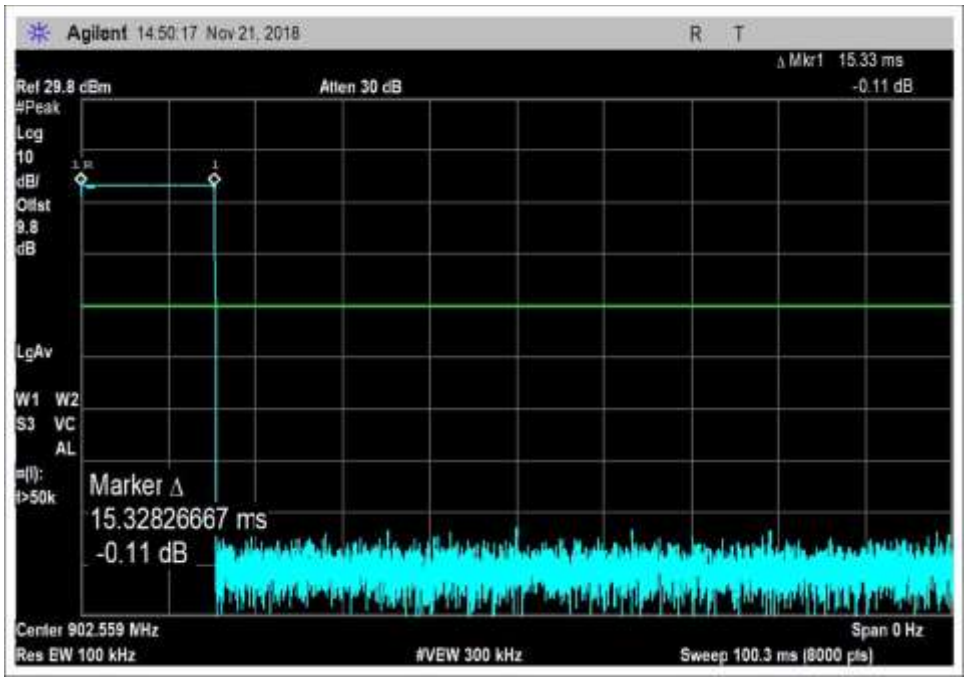
$$Dwell\ time = \left(\sum_{Bursts} RF\ Burst\ On\ Time + \sum_{Control} Control\ Signal\ On\ time \right)\Big|_{P_{obs}}$$

Actual Calculated Values:

Parameter	Value
Observation Period (P_{obs}):	20s
Number of RF Bursts / P_{obs}:	1
On time of RF Burst:	15.3283ms
Number of Control or other signals / P_{obs}:	0
On time of Control or other Signals:	0
Total Measured On Time:	15.3283ms

Plot(s)


Agilent 15:00:26 Nov 21, 2018
R T
Mkr1 6.811 s
Ref 29.8 dBm
Atten 30 dB
11.93 dBm
#Peak
Log
10
dB/
Offst
9.8
dB
LgAv
W1 W2
S3 FS
AL
#(!):
#>50k
Marker
6.810908000 s
11.93 dBm
Center 902.500 MHz
Span 0 Hz
Res BW 100 kHz
#VBW 300 kHz
Sweep 20 s (8000 pts)


Agilent 14:50:17 Nov 21, 2018
R T
Δ Mkr1 15.33 ms
Ref 29.8 dBm
Atten 30 dB
-0.11 dB
#Peak
Log
10
dB/
Offst
9.8
dB
LgAv
W1 W2
S3 VC
AL
#(!):
#>50k
Marker Δ
15.32826667 ms
-0.11 dB
Center 902.559 MHz
Span 0 Hz
Res BW 100 kHz
#VBW 300 kHz
Sweep 100.3 ms (8000 pts)

Test Setup Photo(s)

15.247(b)(1) Output Power

Test Setup/Conditions			
Test Location:	Fremont Lab C3	Test Engineer:	Hieu Song Nguyenpham
Test Method:	ANSI C63.10 (2013)	Test Date(s):	11/21/2018
Configuration:	4		
Test Setup:	The EUT is placed non-conducted table. It is operated as intended.		

Environmental Conditions			
Temperature (ºC)	21.5	Relative Humidity (%):	48.5

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
P05411	Attenuator	Weinschel	54A-10	1/19/2018	1/19/2020
P06903	Cable	Astrolab	32022-29094K-29094K-36TC	1/4/2018	1/4/2020
02660	Spectrum Analyzer	Agilent	E4446A	10/19/2018	10/19/2020

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation / Ant Port**	**$V_{Minimum}$ (dBm)**	**$V_{Nominal}$ (dBm)**	**$V_{Maximum}$ (dBm)**	**Max Deviation from $V_{Nominal}$ (dB)**
902.55	GFSK/External	13.25	13.26	13.26	0.1
915	GFSK/External	12.87	12.87	12.88	0.1
927	GFSK/External	12.38	12.37	12.37	0.1

Test performed using operational mode with the highest output power, representing worst case.

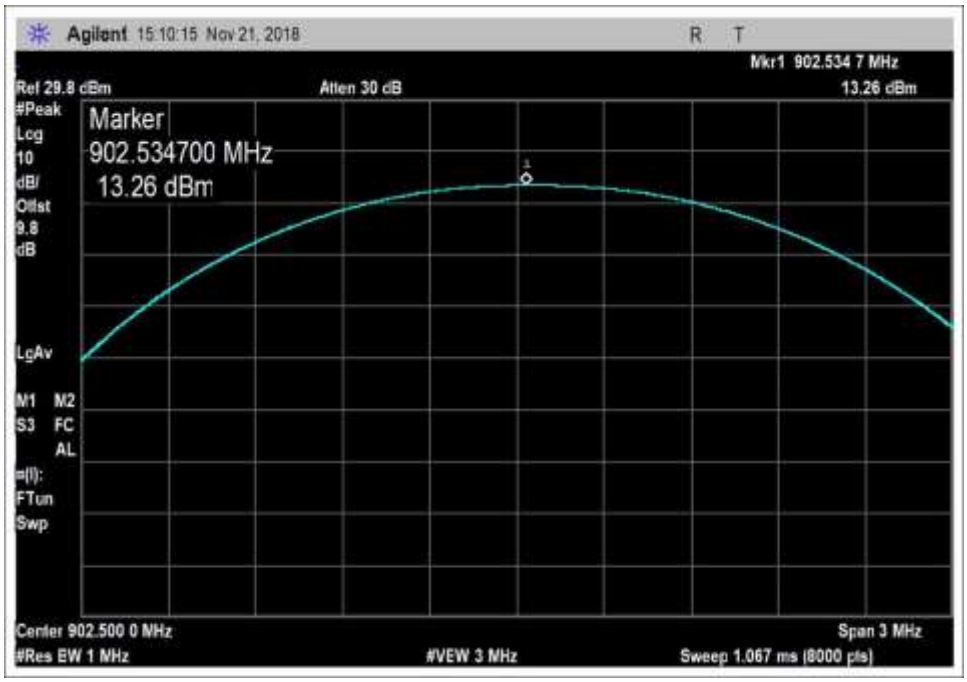
Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

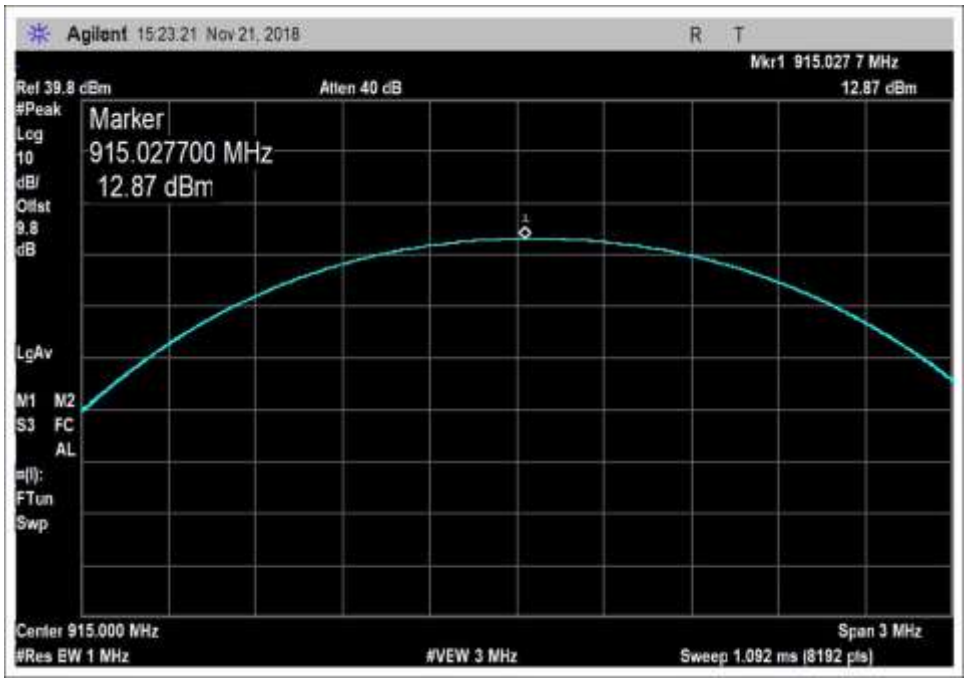
Parameter	Value
$V_{Nominal}$:	120VAC
$V_{Minimum}$:	102VAC
$V_{Maximum}$:	138VAC

Test Data Summary - RF Conducted Measurement					
$Limit = \begin{cases} 30dBm\ Conducted/36dBm\ EIRP \mid \geq 50\ Channels \\ 24dBm\ Conducted/30dBm\ EIRP \mid < 50\ Channels\ (\min 25) \end{cases}$					
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**Measured (dBm)**	**Limit (dBm)**	**Results**
902.55	GFSK	External/8	13.26	≤30	Pass
915	GFSK	External/8	12.87	≤30	Pass
927	GFSK	External/8	12.37	≤30	Pass

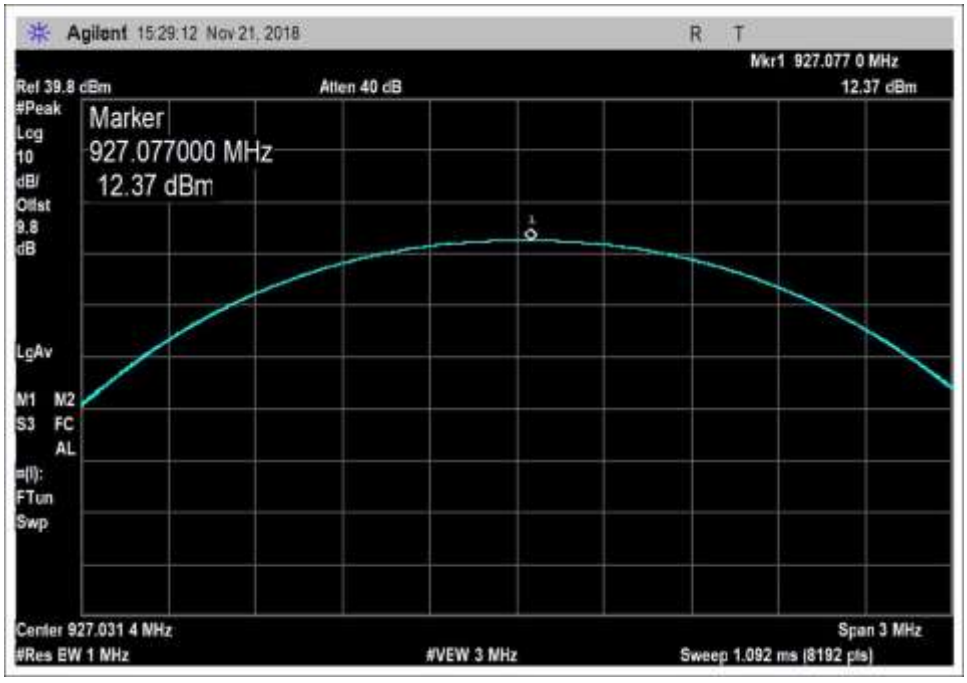
Plots



Low Channel

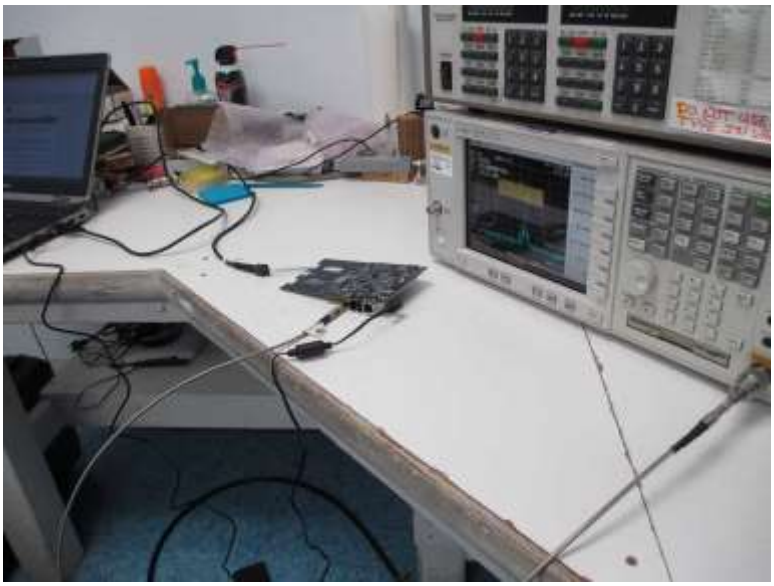


Middle Channel



High Channel

Test Setup Photo(s)



15.247(d) RF Conducted Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100904**	Date:	11/19/2018
Test Type:	**Conducted Spurious Emission**	Time:	11:09:38 AM
Tested By:	Hieu Song Nguyenpham	Sequence#:	2
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range:9kHz to 10000MHz

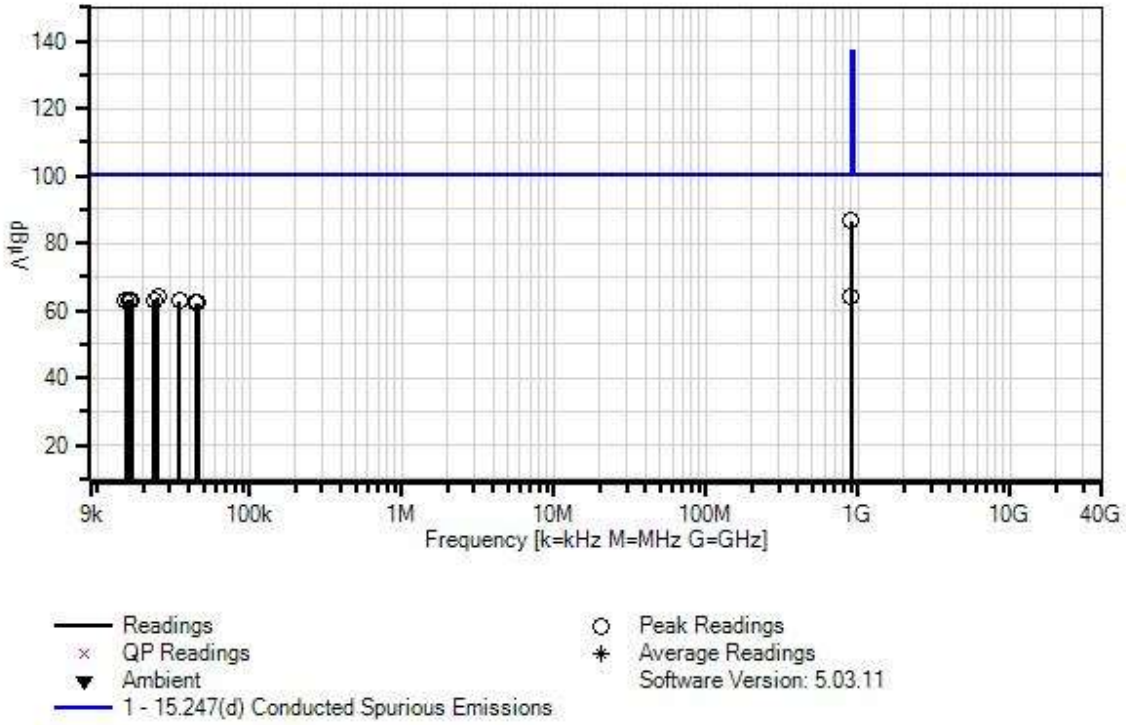
Application: Tera-Term version 4.97 as a terminal Program for ISM radio
Temperature (ºC) 22.1
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz for ISM
Gain of the antenna for ISM= 8dBi

RBW=100kHz
VBW=300kHz

The EUT is placed on the table and set as set continuously transmitting or receiving as intended.

Note
Low Channel

Davis Instruments WO#: 100904 Sequence#: 2 Date: 11/19/2018
15.247(d) Conducted Spurious Emissions Test Distance: None



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05411	Attenuator	54A-10	1/19/2018	1/19/2020
T2	ANP07192	Cable	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	901.862M	76.7	+9.3	+0.5			+0.0	86.5	100.2	-13.7	None
2	899.423M	54.2	+9.3	+0.5			+0.0	64.0	100.2	-36.2	None
3	25.045k	54.7	+9.2	+0.0			+0.0	63.9	100.2	-36.3	None
4	16.035k	54.0	+9.2	+0.0			+0.0	63.2	100.2	-37.0	None
5	23.609k	53.9	+9.2	+0.0			+0.0	63.1	100.2	-37.1	None
6	16.759k	53.9	+9.2	+0.0			+0.0	63.1	100.2	-37.1	None
7	15.497k	53.7	+9.2	+0.0			+0.0	62.9	100.2	-37.3	None
8	34.700k	53.6	+9.2	+0.0			+0.0	62.8	100.2	-37.4	None
9	44.371k	53.0	+9.2	+0.0			+0.0	62.2	100.2	-38.0	None
10	45.975k	52.9	+9.2	+0.0			+0.0	62.1	100.2	-38.1	None

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100904**	Date:	11/19/2018
Test Type:	**Conducted Spurious Emission**	Time:	11:26:45 AM
Tested By:	Hieu Song Nguyenpham	Sequence#:	3
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range:9kHz to 10000MHz

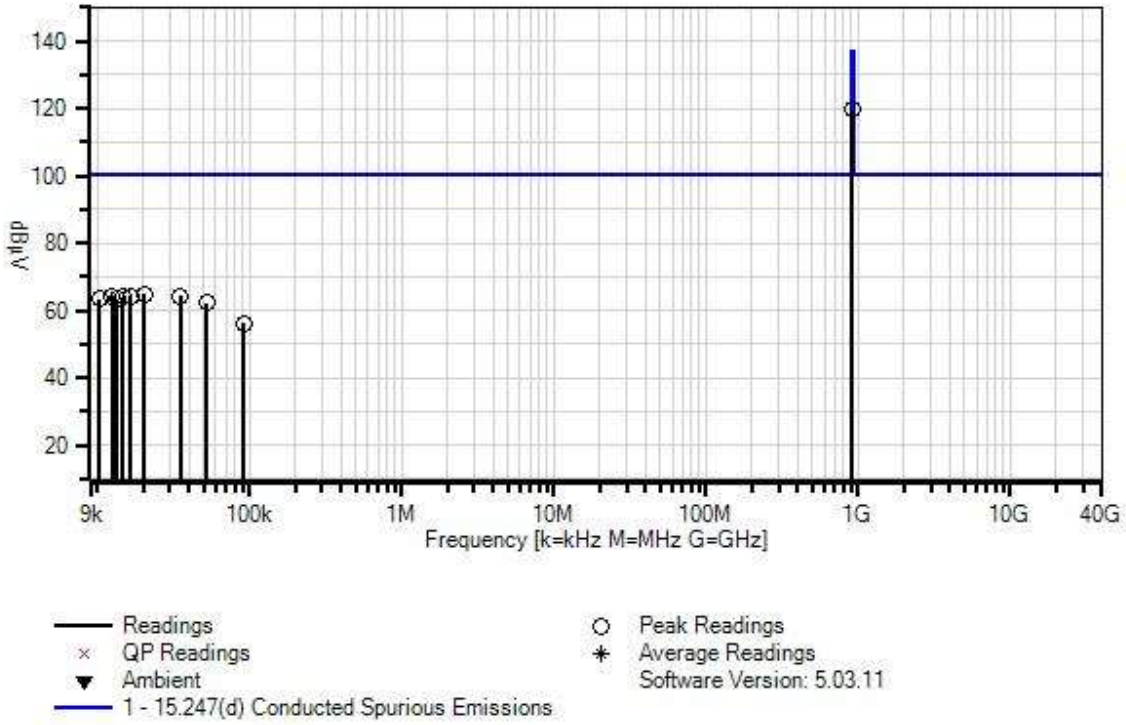
Application: Tera-Term version 4.97 as a terminal Program for ISM radio
Temperature (ºC) 22.1
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz for ISM
Gain of the antenna for ISM= 8dBi

RBW=100kHz
VBW=300kHz

The EUT is placed on the table and set as set continuously transmitting or receiving as intended.

Note
Middle Channel

Davis Instruments WO#: 100904 Sequence#: 3 Date: 11/19/2018
15.247(d) Conducted Spurious Emissions Test Distance: None



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05411	Attenuator	54A-10	1/19/2018	1/19/2020
T2	ANP07192	Cable	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	915.273M	110.1	+9.3	+0.5			+0.0	119.9	137.0	-17.1	None
2	20.275k	55.6	+9.2	+0.0			+0.0	64.8	100.2	-35.4	None
3	12.611k	55.2	+9.2	+0.0			+0.0	64.4	100.2	-35.8	None
4	16.655k	55.0	+9.2	+0.0			+0.0	64.2	100.2	-36.0	None
5	35.191k	55.0	+9.2	+0.0			+0.0	64.2	100.2	-36.0	None
6	14.773k	54.8	+9.2	+0.0			+0.0	64.0	100.2	-36.2	None
7	10.316k	54.2	+9.2	+0.0			+0.0	63.4	100.2	-36.8	None
8	13.600k	54.2	+9.2	+0.0			+0.0	63.4	100.2	-36.8	None
9	52.752k	52.9	+9.2	+0.0			+0.0	62.1	100.2	-38.1	None
10	91.537k	46.8	+9.2	+0.0			+0.0	56.0	100.2	-44.2	None

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100904**	Date:	11/19/2018
Test Type:	**Conducted Spurious Emission**	Time:	11:45:10 AM
Tested By:	Hieu Song Nguyenpham	Sequence#:	4
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Conducted Spurious Emission
Frequency Range:9kHz to 10000MHz

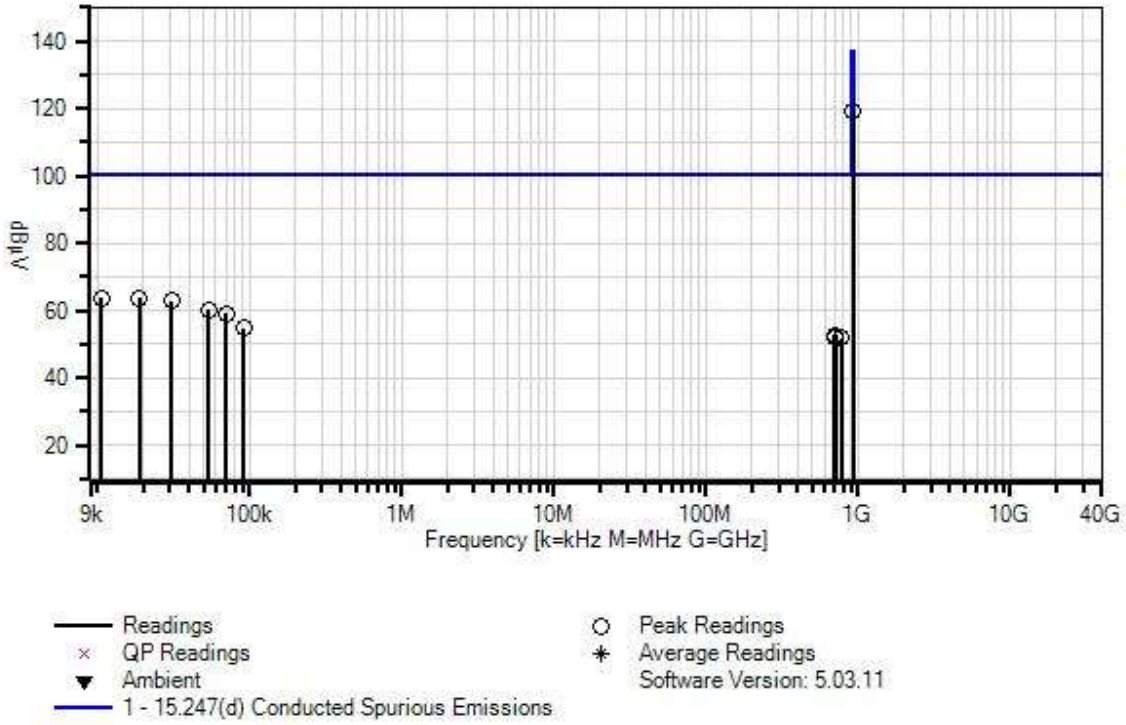
Application: Tera-Term version 4.97 as a terminal Program for ISM radio
Temperature (ºC) 22.1
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz for ISM
Gain of the antenna for ISM= 8dBi

RBW=100kHz
VBW=300kHz

The EUT is placed on the table and set as set continuously transmitting or receiving as intended.

Note
High Channel

Davis Instruments WO#: 100904 Sequence#: 4 Date: 11/19/2018
15.247(d) Conducted Spurious Emissions Test Distance: None



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05411	Attenuator	54A-10	1/19/2018	1/19/2020
T2	ANP07192	Cable	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020

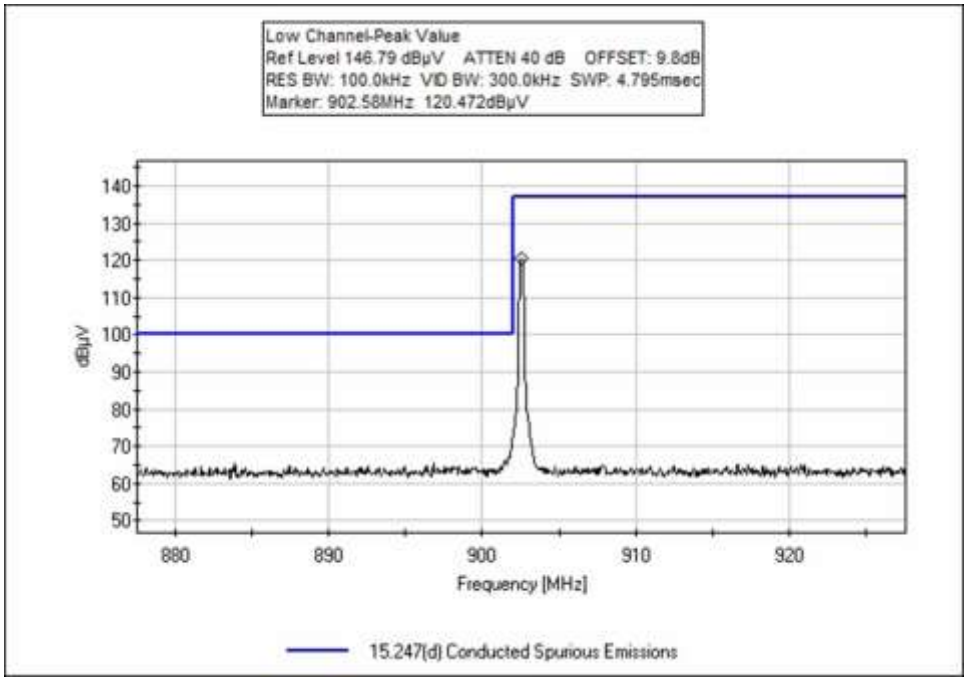
Measurement Data: Reading listed by margin. Test Distance: None

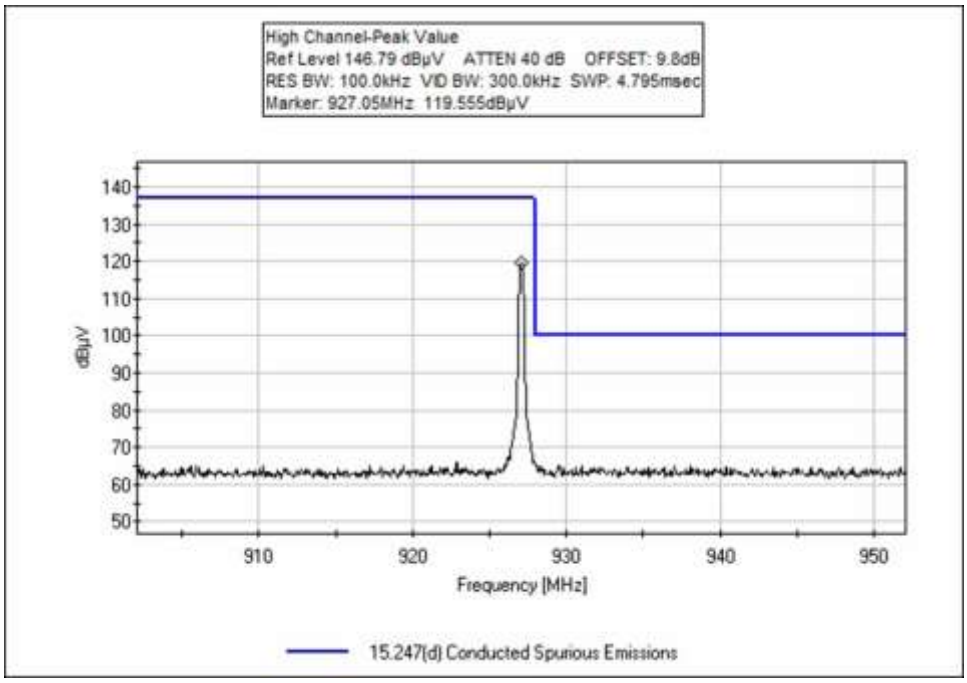
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	926.856M	109.6	+9.3	+0.5			+0.0	119.4	137.0	-17.6	None
2	10.619k	54.5	+9.2	+0.0			+0.0	63.7	100.2	-36.5	None
3	19.070k	54.4	+9.2	+0.0			+0.0	63.6	100.2	-36.6	None
4	30.623k	53.7	+9.2	+0.0			+0.0	62.9	100.2	-37.3	None
5	53.758k	51.0	+9.2	+0.0			+0.0	60.2	100.2	-40.0	None
6	70.485k	49.8	+9.2	+0.0			+0.0	59.0	100.2	-41.2	None
7	92.210k	45.4	+9.2	+0.0			+0.0	54.6	100.2	-45.6	None
8	713.311M	43.0	+9.3	+0.5			+0.0	52.8	100.2	-47.4	None
9	702.787M	42.3	+9.3	+0.5			+0.0	52.1	100.2	-48.1	None
10	768.737M	42.1	+9.3	+0.5			+0.0	51.9	100.2	-48.3	None

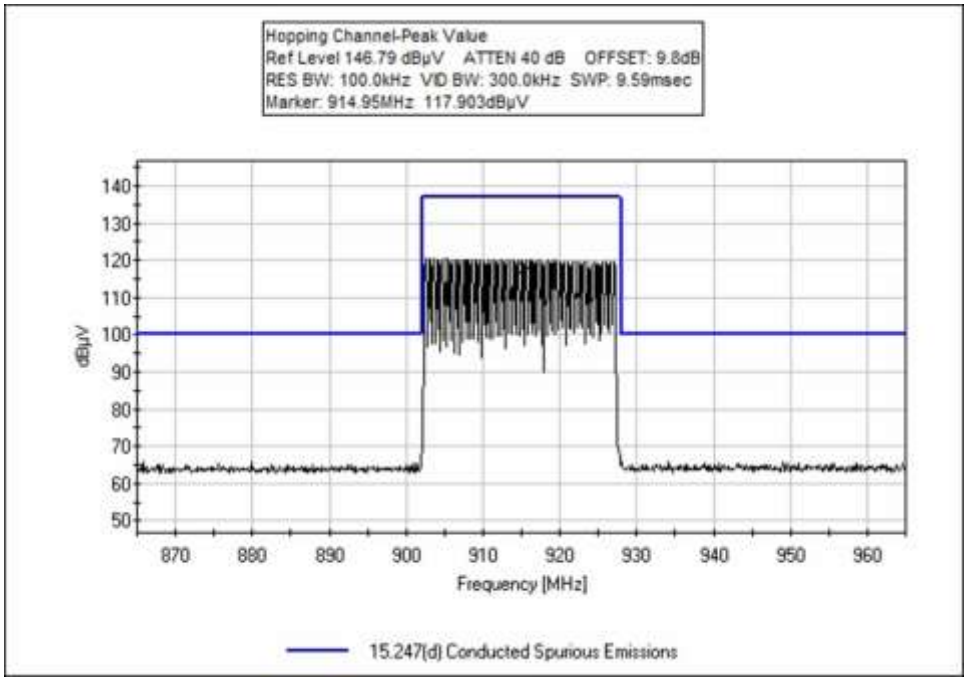
Band Edge

Band Edge Summary				
Limit applied: Max Power/100kHz - 20dB.				
Frequency (MHz)	**Modulation**	**Measured (dBuV)**	**Limit (dBuV)**	**Results**
902	GFSK	81.2	< 100	Pass
928	GFSK	71.1	<100	Pass

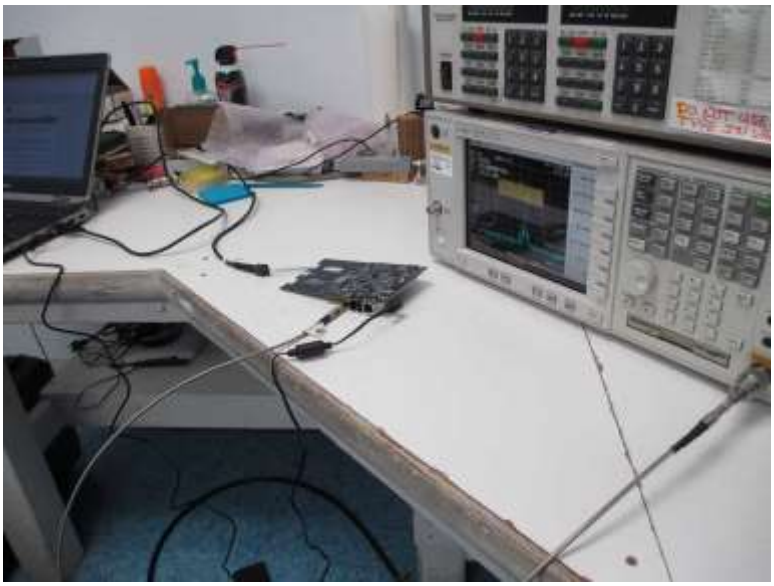
Band Edge Plots




High Channel-Peak Value
Ref Level 146.79 dBµV ATTEN 40 dB OFFSET: 9.8dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 4.795msec
Marker: 927.05MHz 119.555dBµV
dBµV
140
130
120
110
100
90
80
70
60
50
910
920
930
940
950
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Hopping Channel-Peak Value
Ref Level 146.79 dBµV ATTEN 40 dB OFFSET: 9.8dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 9.59msec
Marker: 914.95MHz 117.903dBµV
dBµV
140
130
120
110
100
90
80
70
60
50
870
880
890
900
910
920
930
940
950
960
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

Test Setup Photo(s)



15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/26/2018
Test Type:	**Radiated Scan**	Time:	09:59:19
Tested By:	Hieu Song Nguyenpham	Sequence#:	24
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

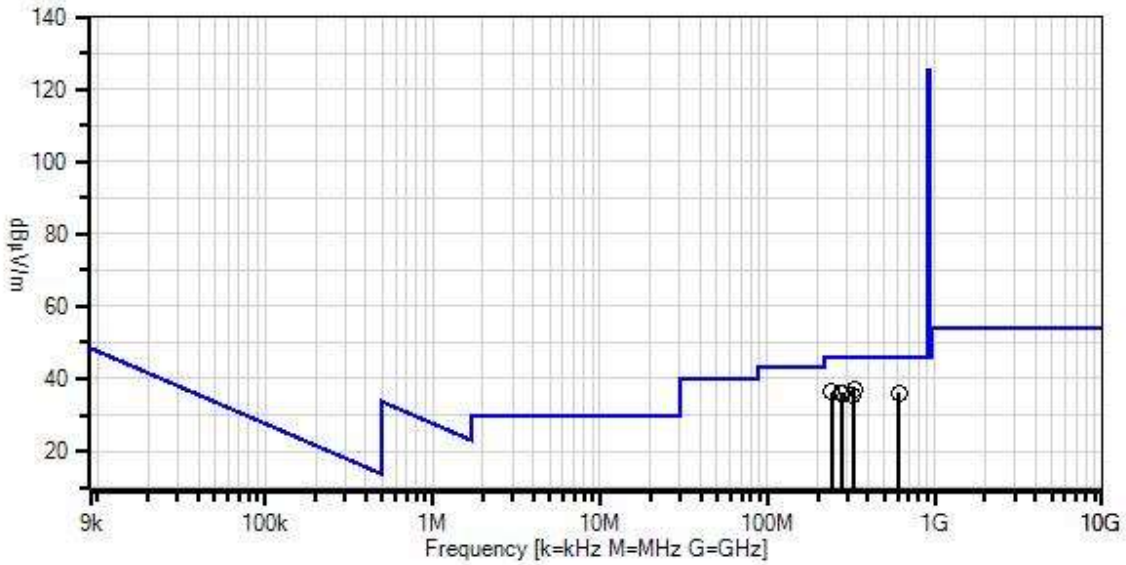
Radiated Emission
Frequency Range: 9kHz to 1000MHz

Application: Tera-Term version 4.97 as a terminal Program
Temperature: 21.0°C
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
Low Channel

Davis Instruments WO#: 100904 Sequence#: 24 Date: 11/26/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07508	Preamp	310N	10/15/2018	10/15/2020
T2	ANP06049	Attenuator	PE7002-6	5/14/2018	5/14/2020
T3	ANP00880	Cable	RG214U	5/14/2018	5/14/2020
T4	ANP01187	Cable	CNT-195	8/20/2018	8/20/2020
T5	ANP06691	Cable	PE3062-180	5/14/2018	5/14/2020
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T6	AN00852	Biconilog Antenna	CBL 6111C	5/1/2018	5/1/2020
	AN00226	Loop Antenna	6502	6/1/2018	6/1/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	327.900M	46.4	-32.0 +0.7	+5.9 +14.1	+1.8	+0.4	+0.0	37.3	46.0	-8.7	Vert
2	240.453M	47.9	-32.0 +0.6	+6.0 +12.0	+1.5	+0.3	+0.0	36.3	46.0	-9.7	Horiz
3	612.825M	38.3	-32.1 +0.9	+6.0 +19.8	+2.6	+0.6	+0.0	36.1	46.0	-9.9	Vert
4	279.372M	46.6	-32.0 +0.6	+5.9 +13.0	+1.7	+0.3	+0.0	36.1	46.0	-9.9	Vert
5	274.927M	46.4	-32.0 +0.6	+6.0 +13.0	+1.6	+0.3	+0.0	35.9	46.0	-10.1	Horiz
6	325.017M	44.5	-32.0 +0.7	+5.9 +14.0	+1.8	+0.4	+0.0	35.3	46.0	-10.7	Horiz

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/27/2018
Test Type:	**Radiated Scan**	Time:	09:29:37
Tested By:	Hieu Song Nguyenpham	Sequence#:	51
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

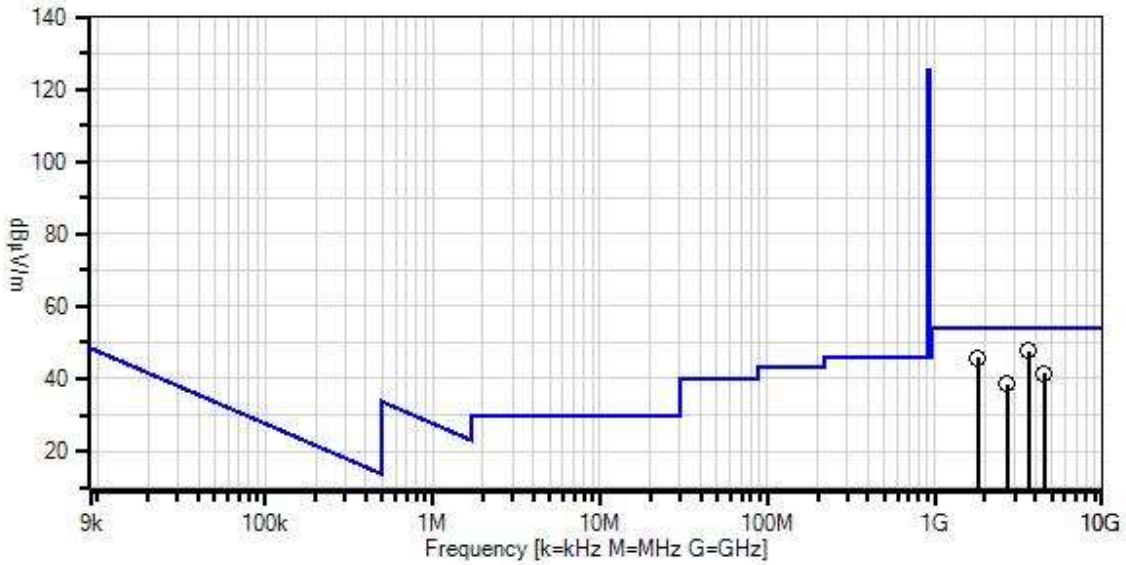
Radiated Emission
Frequency Range: 1000MHz to 10000MHz

Application: Tera-Term version 4.97 as a terminal Program for ISM
Temperature:22.3°C
Relative Humidity: 45.7 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
Low Channel

Davis Instruments WO#: 100904 Sequence#: 51 Date: 11/27/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T1	AN03607	Preamp	AMF-7D-00101800-30-10P	6/6/2017	6/6/2019
T2	AN02157	Horn Antenna-ANSI C63.5	3115	2/6/2017	2/6/2019
T3	AN03302	Cable	32026-29094K-29094K-72TC	1/15/2018	1/15/2020
T4	ANP01210	Cable	FSJ1P-50A-4A	1/16/2017	1/16/2019
T5	ANP06903	Cable	32022-29094K-29094K-36TC	1/4/2018	1/4/2020
T6	AN03172	High Pass Filter	HM1155-11SS	4/5/2018	4/5/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3610.608M	69.5	-58.8 +0.8	+31.2 +0.1	+1.6	+3.4	+0.0	47.8	54.0	-6.2	Horiz
2	1805.000M	72.5	-58.1 +0.5	+27.0 +0.3	+1.1	+2.4	+0.0	45.7	54.0	-8.3	Vert
3	4512.760M	61.9	-59.0 +0.9	+32.0 +0.2	+1.8	+3.8	+0.0	41.6	54.0	-12.4	Vert
4	2707.740M	62.9	-58.4 +0.7	+28.7 +0.2	+1.4	+2.9	+0.0	38.4	54.0	-15.6	Vert

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/26/2018
Test Type:	**Radiated Scan**	Time:	10:19:13
Tested By:	Hieu Song Nguyenpham	Sequence#:	27
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

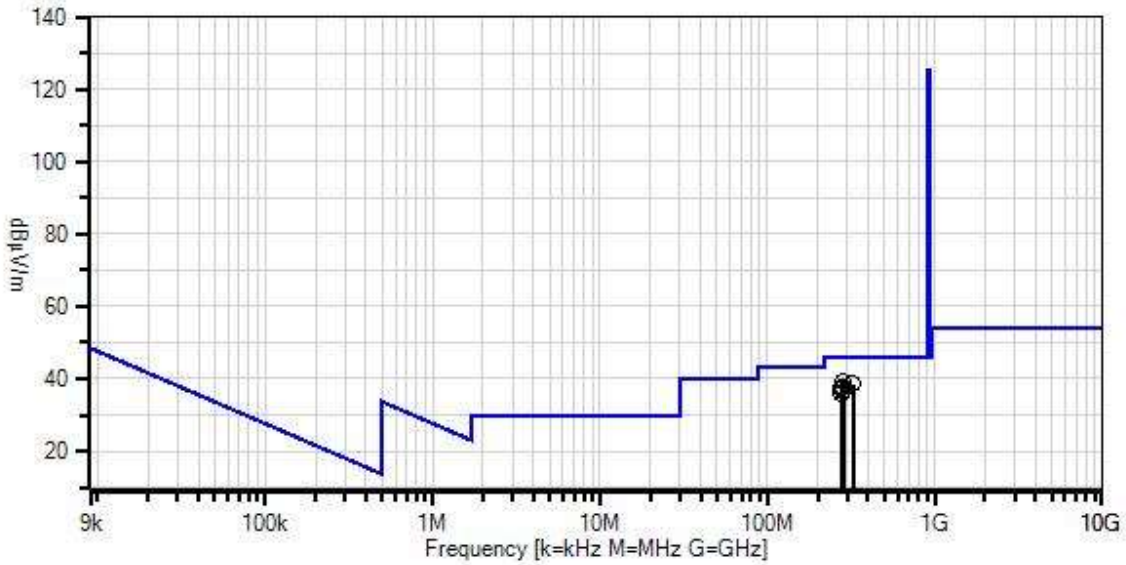
Radiated Emission
Frequency Range: 9kHz to 1000MHz

Application: Tera-Term version 4.97 as a terminal Program
Temperature: 21.0°C
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
Middle Channel

Davis Instruments WO#: 100904 Sequence#: 27 Date: 11/26/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07508	Preamp	310N	10/15/2018	10/15/2020
T2	ANP06049	Attenuator	PE7002-6	5/14/2018	5/14/2020
T3	ANP00880	Cable	RG214U	5/14/2018	5/14/2020
T4	ANP01187	Cable	CNT-195	8/20/2018	8/20/2020
T5	ANP06691	Cable	PE3062-180	5/14/2018	5/14/2020
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T6	AN00852	Biconilog Antenna	CBL 6111C	5/1/2018	5/1/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	279.612M	49.7	-32.0 +0.6	+5.9 +13.0	+1.7	+0.3	+0.0	39.2	46.0	-6.8	Horiz
2	325.064M	47.6	-32.0 +0.7	+5.9 +14.0	+1.8	+0.4	+0.0	38.4	46.0	-7.6	Vert
3	274.927M	48.3	-32.0 +0.6	+6.0 +13.0	+1.6	+0.3	+0.0	37.8	46.0	-8.2	Horiz
4	282.855M	48.0	-32.0 +0.6	+5.9 +13.1	+1.7	+0.3	+0.0	37.6	46.0	-8.4	Horiz
5	281.329M	46.7	-32.0 +0.6	+5.9 +13.1	+1.7	+0.3	+0.0	36.3	46.0	-9.7	Vert
6	275.011M	46.6	-32.0 +0.6	+6.0 +13.0	+1.6	+0.3	+0.0	36.1	46.0	-9.9	Vert

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/27/2018
Test Type:	**Radiated Scan**	Time:	09:48:18
Tested By:	Hieu Song Nguyenpham	Sequence#:	54
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

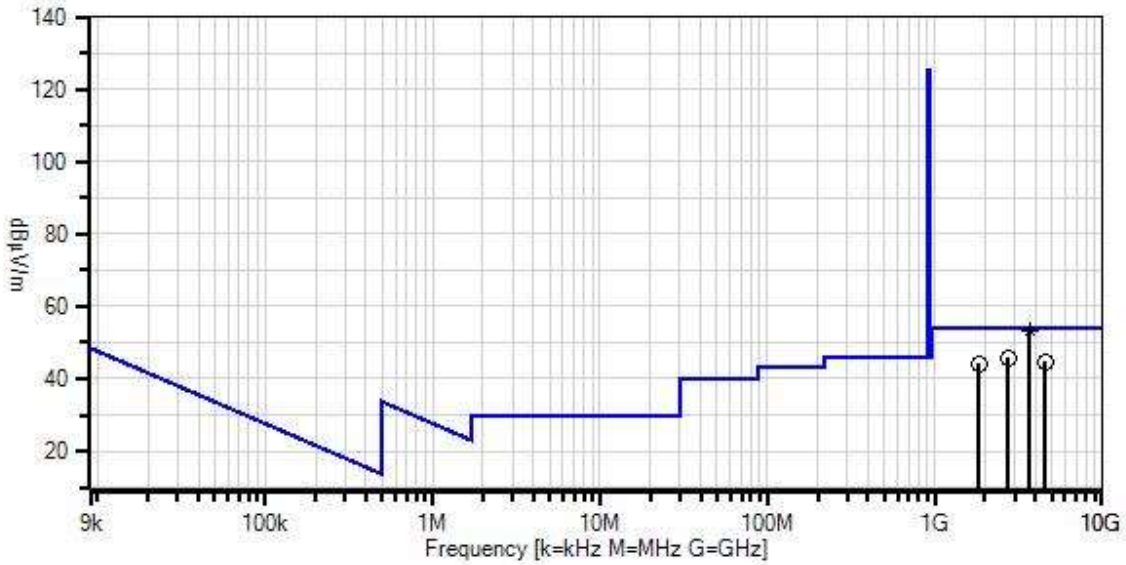
Radiated Emission
Frequency Range: 1000MHz to 10000MHz

Application: Tera-Term version 4.97 as a terminal Program for ISM
Temperature:22.3°C
Relative Humidity: 45.7 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
Middle Channel

Davis Instruments WO#: 100904 Sequence#: 54 Date: 11/27/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T1	AN03607	Preamp	AMF-7D-00101800-30-10P	6/6/2017	6/6/2019
T2	AN02157	Horn Antenna-ANSI C63.5	3115	2/6/2017	2/6/2019
T3	AN03302	Cable	32026-29094K-29094K-72TC	1/15/2018	1/15/2020
T4	ANP01210	Cable	FSJ1P-50A-4A	1/16/2017	1/16/2019
T5	ANP06903	Cable	32022-29094K-29094K-36TC	1/4/2018	1/4/2020
T6	AN03172	High Pass Filter	HM1155-11SS	4/5/2018	4/5/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3660.215M Ave	74.8	-58.8 +0.8	+31.3 +0.1	+1.6	+3.4	+0.0	53.2	54.0	-0.8	Horiz
^	3660.215M	76.2	-58.8 +0.8	+31.3 +0.1	+1.6	+3.4	+0.0	54.6	54.0	+0.6	Horiz
3	2745.694M	70.4	-58.5 +0.7	+28.8 +0.2	+1.4	+2.9	+0.0	45.9	54.0	-8.1	Horiz
4	4574.969M	64.8	-59.0 +0.9	+32.2 +0.2	+1.8	+3.8	+0.0	44.7	54.0	-9.3	Horiz
5	1829.487M	70.8	-58.1 +0.5	+27.1 +0.3	+1.1	+2.4	+0.0	44.1	54.0	-9.9	Horiz

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/26/2018
Test Type:	**Radiated Scan**	Time:	10:43:56
Tested By:	Hieu Song Nguyenpham	Sequence#:	30
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

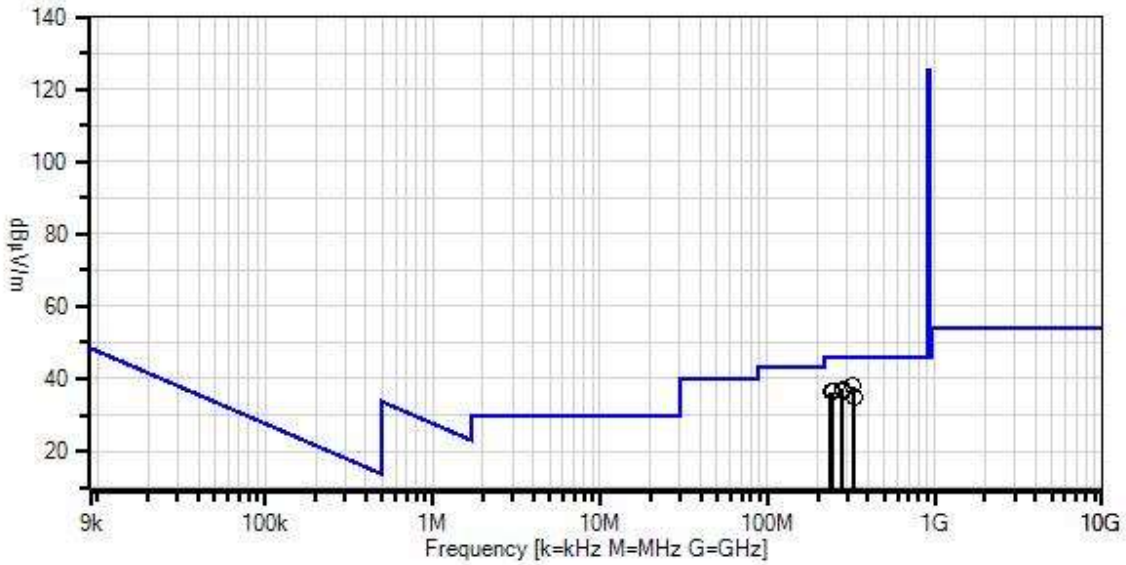
Radiated Emission
Frequency Range: 9kHz to 1000MHz

Application: Tera-Term version 4.97 as a terminal Program
Temperature: 21.0°C
Relative Humidity: 48 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
High Channel

Davis Instruments WO#: 100904 Sequence#: 30 Date: 11/26/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP07508	Preamp	310N	10/15/2018	10/15/2020
T2	ANP06049	Attenuator	PE7002-6	5/14/2018	5/14/2020
T3	ANP00880	Cable	RG214U	5/14/2018	5/14/2020
T4	ANP01187	Cable	CNT-195	8/20/2018	8/20/2020
T5	ANP06691	Cable	PE3062-180	5/14/2018	5/14/2020
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T6	AN00852	Biconilog Antenna	CBL 6111C	5/1/2018	5/1/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	326.765M	47.2	-32.0 +0.7	+5.9 +14.0	+1.8	+0.4	+0.0	38.0	46.0	-8.0	Vert
2	281.086M	47.8	-32.0 +0.6	+5.9 +13.0	+1.7	+0.3	+0.0	37.3	46.0	-8.7	Horiz
3	279.142M	47.1	-32.0 +0.6	+5.9 +13.0	+1.7	+0.3	+0.0	36.6	46.0	-9.4	Vert
4	240.023M	48.1	-32.0 +0.6	+6.0 +11.9	+1.5	+0.3	+0.0	36.4	46.0	-9.6	Vert
5	244.396M	47.7	-32.0 +0.6	+6.0 +12.2	+1.5	+0.3	+0.0	36.3	46.0	-9.7	Horiz
6	329.437M	43.8	-31.9 +0.7	+5.9 +14.1	+1.8	+0.4	+0.0	34.8	46.0	-11.2	Horiz

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100904**	Date:	11/27/2018
Test Type:	**Radiated Scan**	Time:	10:08:29
Tested By:	Hieu Song Nguyenpham	Sequence#:	57
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

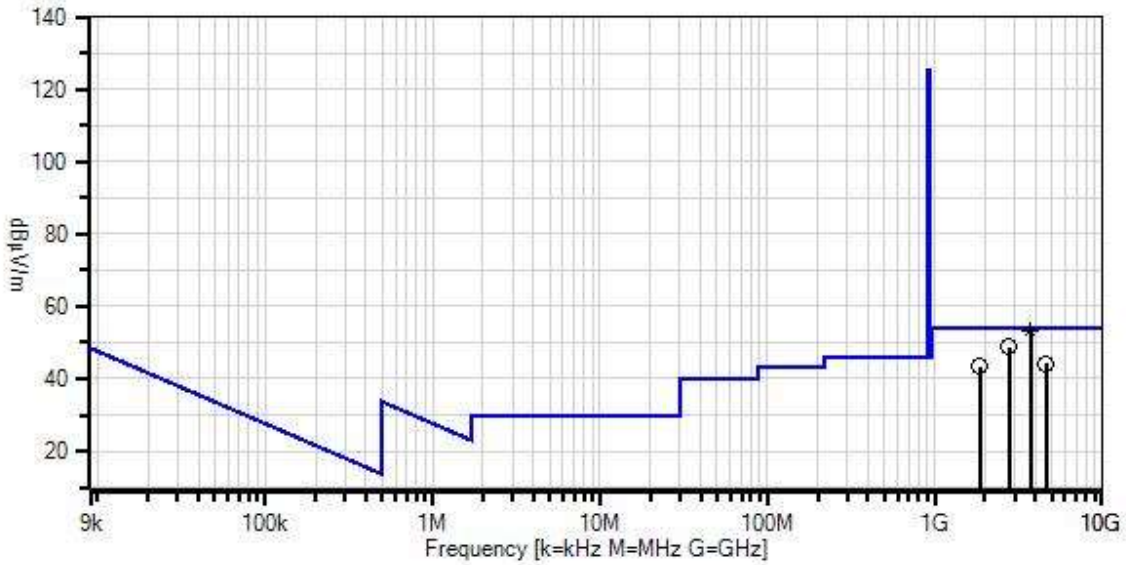
Radiated Emission
Frequency Range: 1000MHz to 10000MHz

Application: Tera-Term version 4.97 as a terminal Program for ISM
Temperature:22.3°C
Relative Humidity: 45.7 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM Band on TX
High Channel

Davis Instruments WO#: 100904 Sequence#: 57 Date: 11/27/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T1	AN03607	Preamp	AMF-7D-00101800-30-10P	6/6/2017	6/6/2019
T2	AN02157	Horn Antenna-ANSI C63.5	3115	2/6/2017	2/6/2019
T3	AN03302	Cable	32026-29094K-29094K-72TC	1/15/2018	1/15/2020
T4	ANP01210	Cable	FSJ1P-50A-4A	1/16/2017	1/16/2019
T5	ANP06903	Cable	32022-29094K-29094K-36TC	1/4/2018	1/4/2020
T6	AN03172	High Pass Filter	HM1155-11SS	4/5/2018	4/5/2020

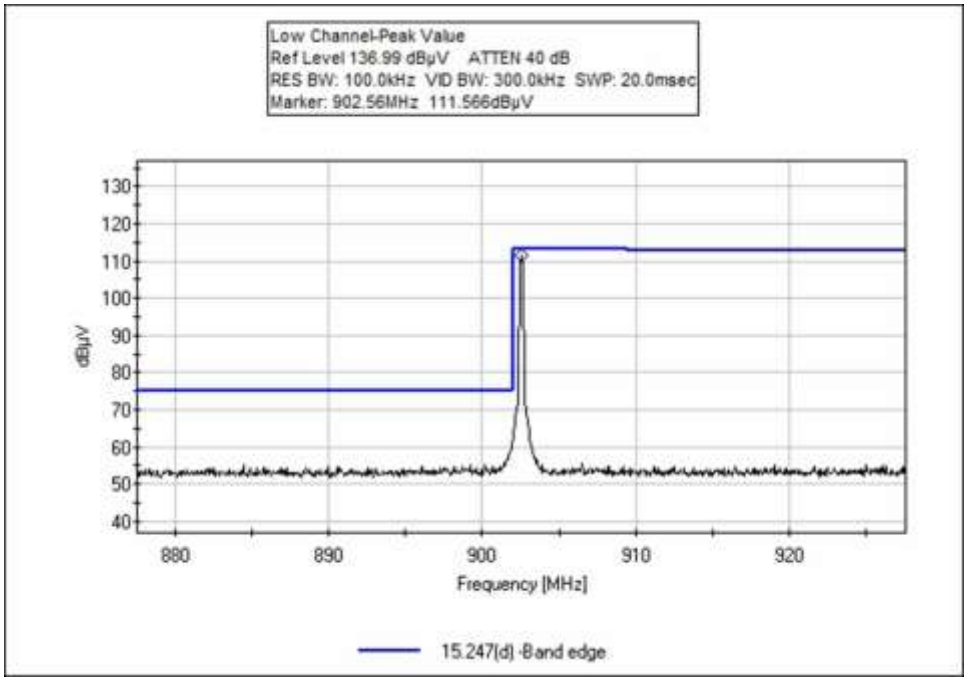
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

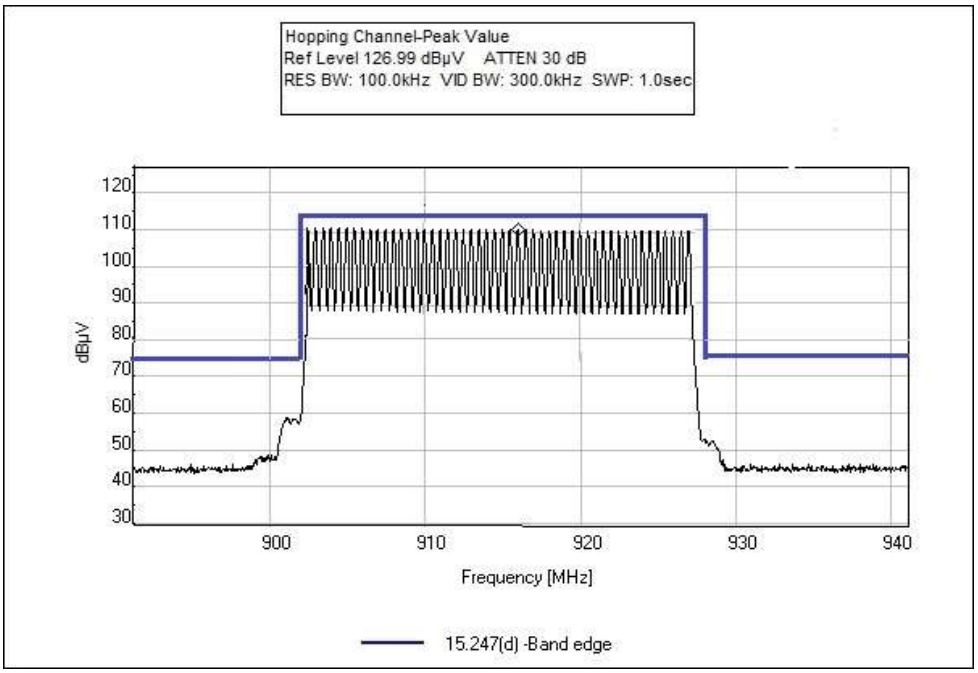
#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3708.235M Ave	74.4	-58.6 +0.8	+31.5 +0.1	+1.6	+3.4	+0.0	53.2	54.0	-0.8	Vert
^	3708.235M	75.4	-58.6 +0.8	+31.5 +0.1	+1.6	+3.4	+0.0	54.2	54.0	+0.2	Vert
3	2781.678M	73.0	-58.5 +0.7	+29.0 +0.2	+1.4	+3.0	+0.0	48.8	54.0	-5.2	Horiz
4	4634.037M	64.0	-58.9 +0.9	+32.4 +0.2	+1.8	+3.9	+0.0	44.3	54.0	-9.7	Horiz
5	1854.399M	69.9	-58.0 +0.5	+27.2 +0.3	+1.1	+2.4	+0.0	43.4	54.0	-10.6	Horiz

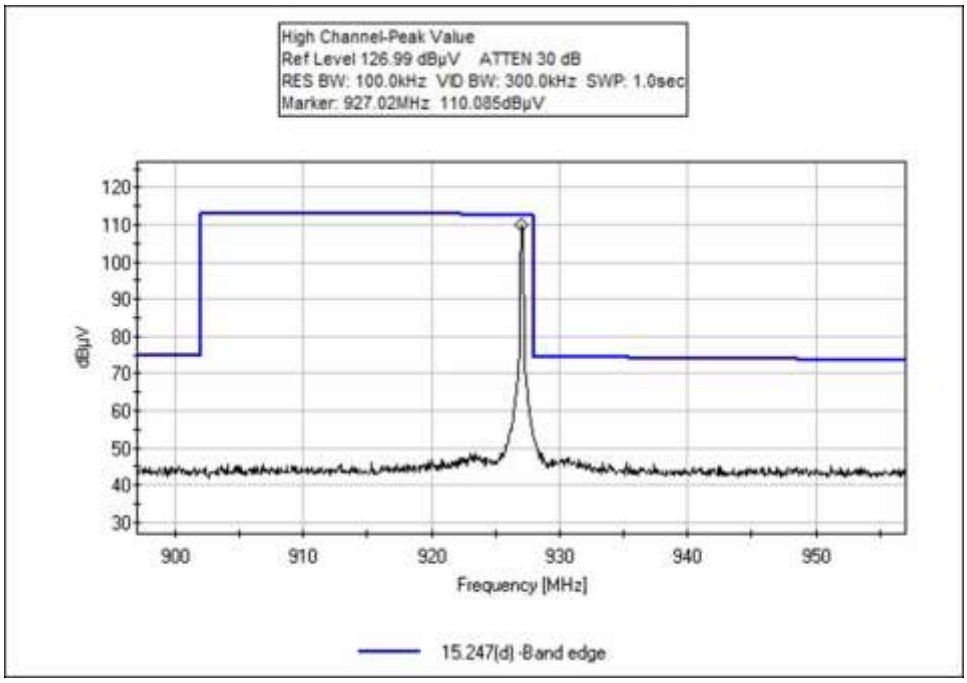
Band Edge

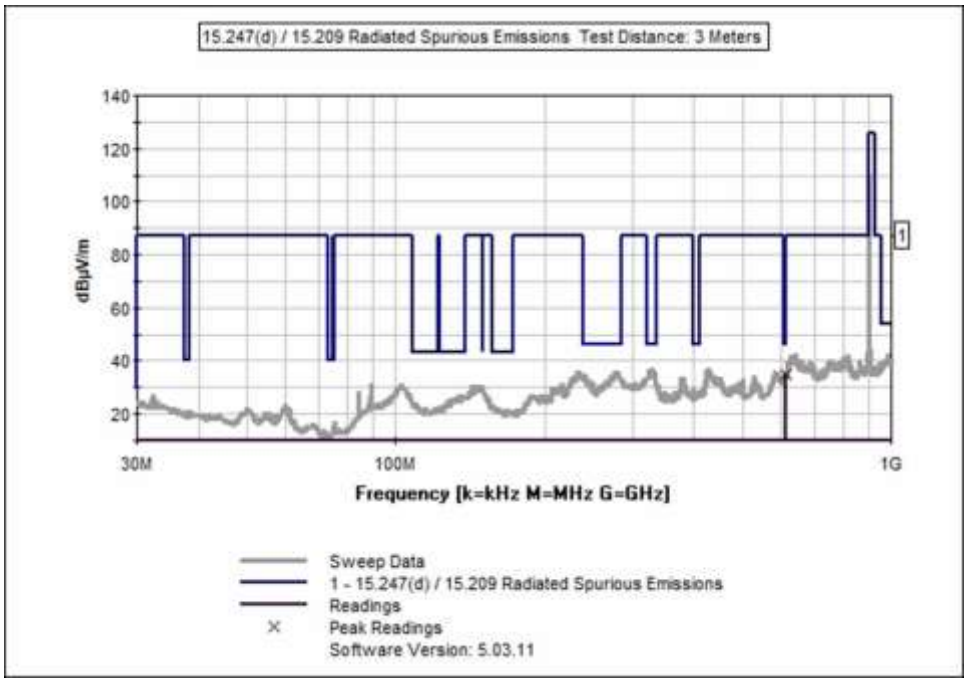
Band Edge Summary					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	GFSK	External	46.0	<54	Pass
902	GFSK	External	76.4	<87	Pass
928	GFSK	External	71.3	<87	Pass
960	GFSK	External	35.2	<54	Pass

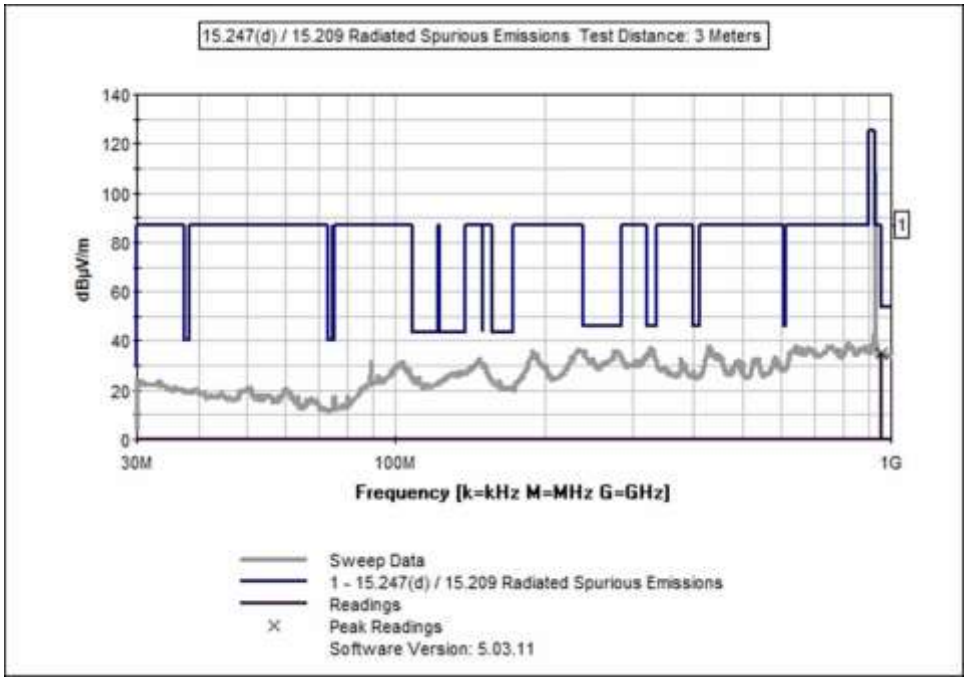
Band Edge Plots




Hopping Channel-Peak Value
Ref Level 126.99 dBµV ATTEN 30 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0sec
dBµV
120
110
100
90
80
70
60
50
40
30
900
910
920
930
940
Frequency [MHz]
15.247(d) -Band edge

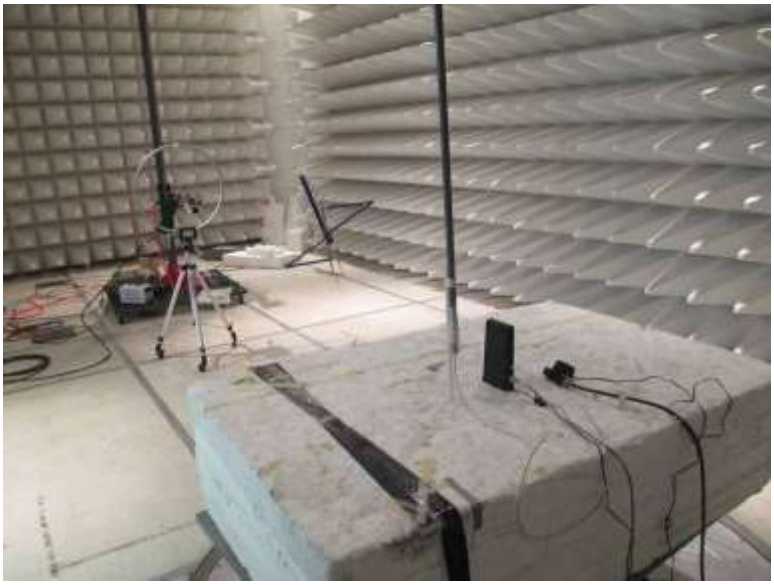

High Channel-Peak Value
Ref Level 126.99 dBµV ATTEN 30 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0sec
Marker: 927.02MHz 110.085dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
900
910
920
930
940
950
Frequency [MHz]
15.247(d) -Band edge


15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters
140
120
100
80
60
40
20
dBµV/m
30M
100M
1G
Frequency [k=kHz M=MHz G=GHz]
1
Sweep Data
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Readings
Peak Readings
Software Version: 5.03.11

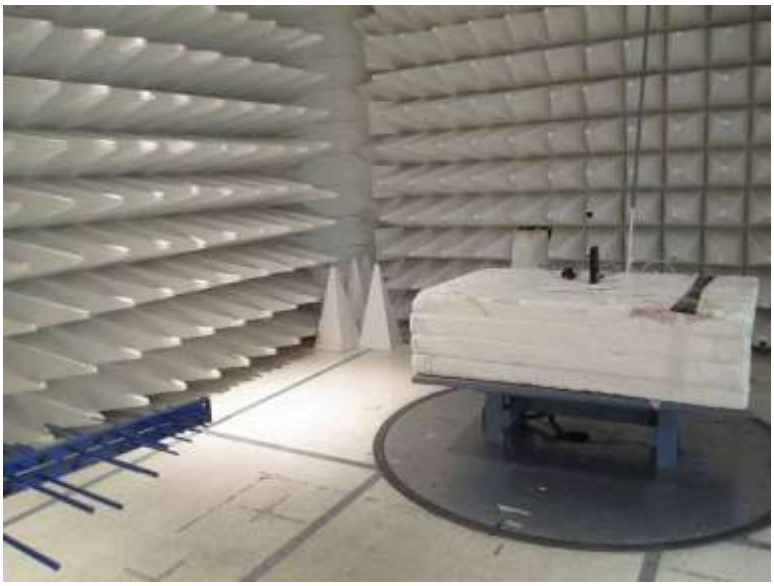

15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters
140
120
100
80
60
40
20
0
dBµV/m
30M
100M
1G
Frequency [k=kHz M=MHz G=GHz]
1
Sweep Data
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Readings
Peak Readings
Software Version: 5.03.11

Test Setup Photo(s)

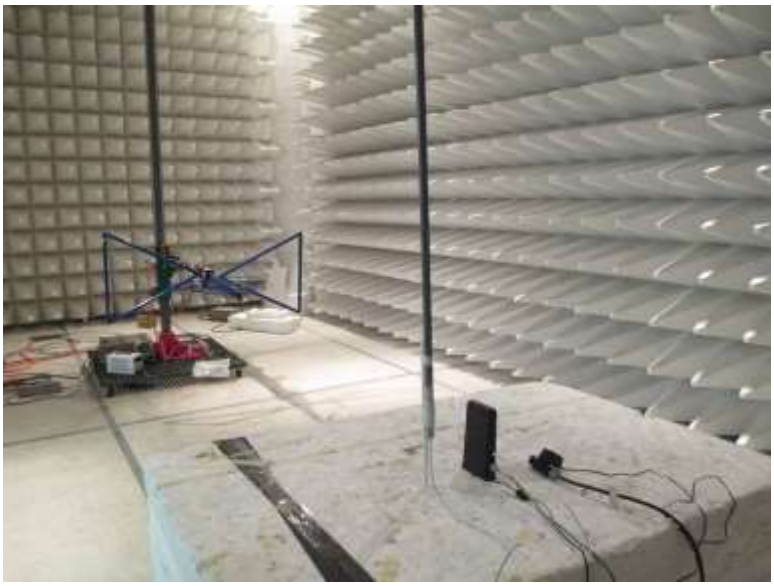
9kHz – 30MHz



9kHz – 30MHz

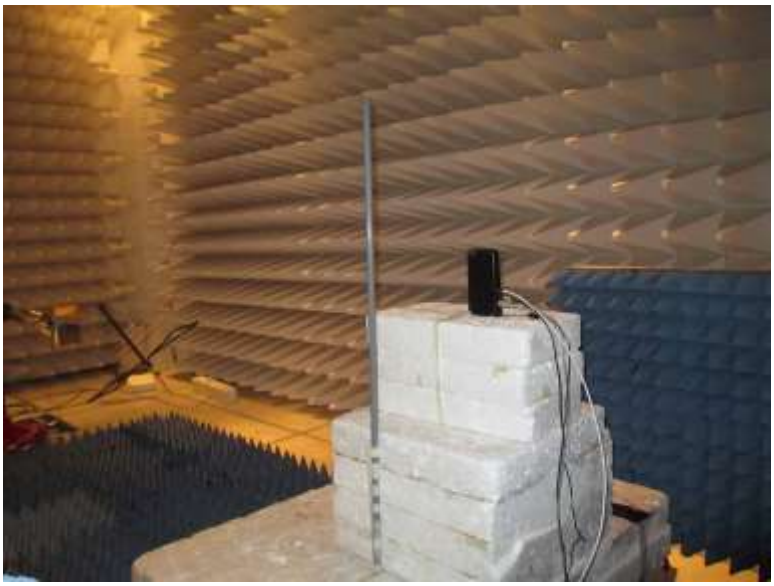


30MHz – 1GHz



30MHz – 1GHz

1 – 10GHz, Cone placement



1 – 10GHz, Cone placement

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**100904**	Date:	11/20/2018
Test Type:	**Conducted Emissions**	Time:	3:41:32 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	14
Software:	EMITest 5.03.11		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

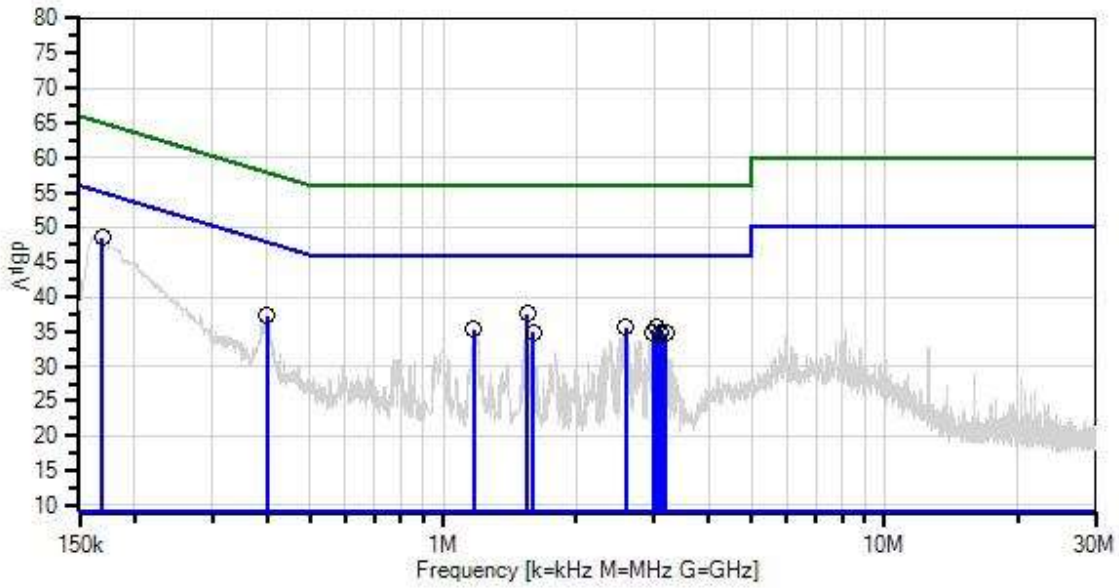
Conducted Emission
Frequency Range: 150kHz to 30MHz

Application: Tera-Term version 4.97 as a terminal Program for ISM
Temperature: 20.5° C
Relative Humidity: 46.5
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM on TX Mode at Middle Channel

Davis Instruments WO#: 100904 Sequence#: 14 Date: 11/20/2018
15.207 AC Mains - Average Test Lead: 120V 60Hz



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	23-10-34	2/20/2017	2/20/2019
T2	ANP00880	Cable	RG214U	5/14/2018	5/14/2020
T3	ANP06691	Cable	PE3062-180	5/14/2018	5/14/2020
T4	AN00494	50uH LISN-Line Loss (dB)	3816/NM	3/1/2017	3/1/2019
	AN00494	50uH LISN-Return Loss (dB)	3816/NM	3/1/2017	3/1/2019
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	9/19/2018	9/19/2020

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	168.907k	38.2	+9.9 +0.3	+0.0	+0.0	+0.1	+0.0	48.5	55.0	-6.5	Line
2	1.553M	27.3	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	37.5	46.0	-8.5	Line
3	2.587M	25.3	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	35.6	46.0	-10.4	Line
4	3.059M	25.3	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	35.6	46.0	-10.4	Line
5	399.431k	27.3	+9.9 +0.1	+0.0	+0.0	+0.0	+0.0	37.3	47.9	-10.6	Line
6	1.171M	25.1	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	35.3	46.0	-10.7	Line
7	1.596M	24.7	+9.9 +0.1	+0.1	+0.0	+0.1	+0.0	34.9	46.0	-11.1	Line
8	2.987M	24.6	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.9	46.0	-11.1	Line
9	3.110M	24.5	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.8	46.0	-11.2	Line
10	3.191M	24.5	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.8	46.0	-11.2	Line

Test Location:	CKC Laboratories Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510 249-1170		
Customer:	**Davis Instruments**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**100904**	Date:	11/20/2018
Test Type:	**Conducted Emissions**	Time:	3:53:04 PM
Tested By:	Hieu Song Nguyenpham	Sequence#:	15
Software:	EMITest 5.03.11		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

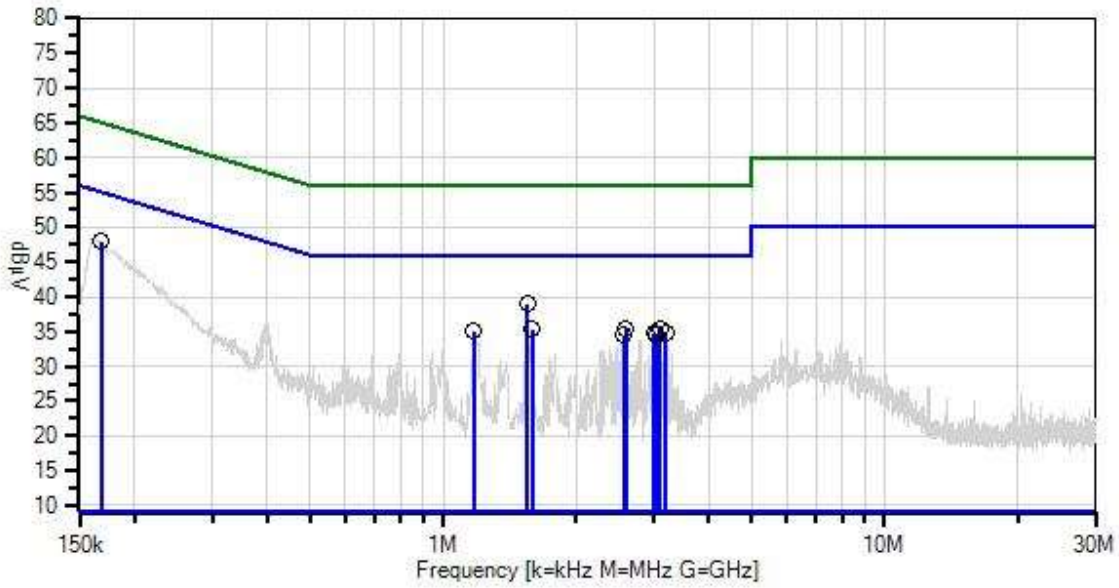
Conducted Emission
Frequency Range: 150kHz to 30MHz

Application: Tera-Term version 4.97 as a terminal Program for ISM
Temperature:20.5°C
Relative Humidity: 46.5 %
Atmospheric Pressure: 101.18 kPa
High Clock: 40MHz
Transmitting operating frequency= 902.5, 915 and 927MHz
Gain of the antenna for ISM= 8dBi
Method: ANSI C 63.10 2013

The EUT is placed on the table and set as continuously transmitting or receiving as intended. The EUT is connected to the Router and ISS Transmitter which is outside of the chamber through RJ45 and RJ11 cables to active all the function of the EUT

Note
ISM on TX Mode at Middle Channel

Davis Instruments WO#: 100904 Sequence#: 15 Date: 11/20/2018
15.207 AC Mains - Average Test Lead: 120V 60Hz



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
✳ Average Readings
1 - 15.207 AC Mains - Average
○ Peak Readings
▼ Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	23-10-34	2/20/2017	2/20/2019
T2	ANP00880	Cable	RG214U	5/14/2018	5/14/2020
T3	ANP06691	Cable	PE3062-180	5/14/2018	5/14/2020
	AN00494	50uH LISN-Line Loss (dB)	3816/NM	3/1/2017	3/1/2019
T4	AN00494	50uH LISN-Return Loss (dB)	3816/NM	3/1/2017	3/1/2019
	AN03470	Spectrum Analyzer	E4440A	1/3/2018	1/3/2020
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	9/19/2018	9/19/2020

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	168.180k	37.8	+9.9 +0.3	+0.0	+0.0	+0.0	+0.0	48.0	55.0	-7.0	Neutr
2	1.553M	28.9	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	39.0	46.0	-7.0	Neutr
3	2.591M	25.3	+9.9 +0.1	+0.1	+0.1	+0.0	+0.0	35.5	46.0	-10.5	Neutr
4	3.106M	25.2	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	35.5	46.0	-10.5	Neutr
5	1.592M	25.2	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	35.3	46.0	-10.7	Neutr
6	1.171M	24.9	+9.9 +0.1	+0.1	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Neutr
7	3.195M	24.6	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.9	46.0	-11.1	Neutr
8	2.999M	24.5	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.8	46.0	-11.2	Neutr
9	3.042M	24.3	+9.9 +0.1	+0.1	+0.1	+0.1	+0.0	34.6	46.0	-11.4	Neutr
10	2.570M	24.3	+9.9 +0.1	+0.1	+0.1	+0.0	+0.0	34.5	46.0	-11.5	Neutr

Test Setup Photo(s)

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret (“^”) was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.