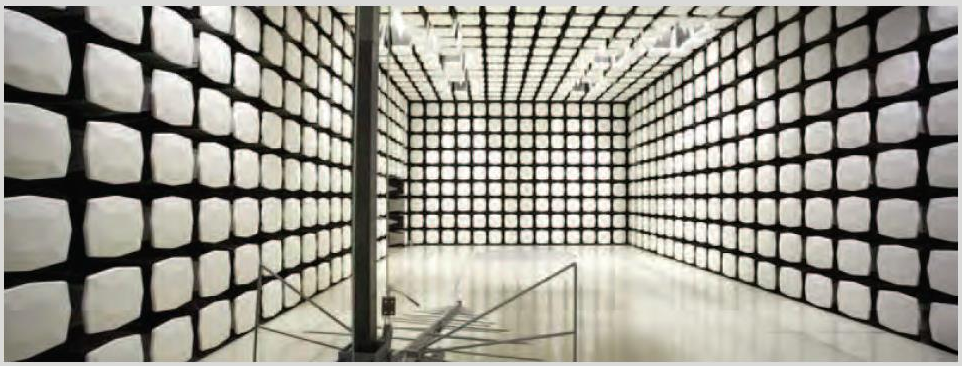
Nytec Inc.

XI Access Panel

FCC 15.249:2018

902 – 928 MHz Transceiver

Report # NYTE0025



NVLAP LAB CODE: 200629-0

CERTIFICATE OF TEST

Last Date of Test: September 26, 2018
Nytec Inc.
Model: XI Access Panel

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2018	ANSI C63.10:2013
FCC 15.249:2018	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Field Strength of Harmonics and Spurious Radiated Emissions	Yes	Pass	
6.5	Field Strength of Fundamental	Yes	Pass	
7.5	Duty Cycle	Yes	N/A	Characterization of radio operation.

Deviations From Test Standards

None

Approved By:

Rod Munro, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

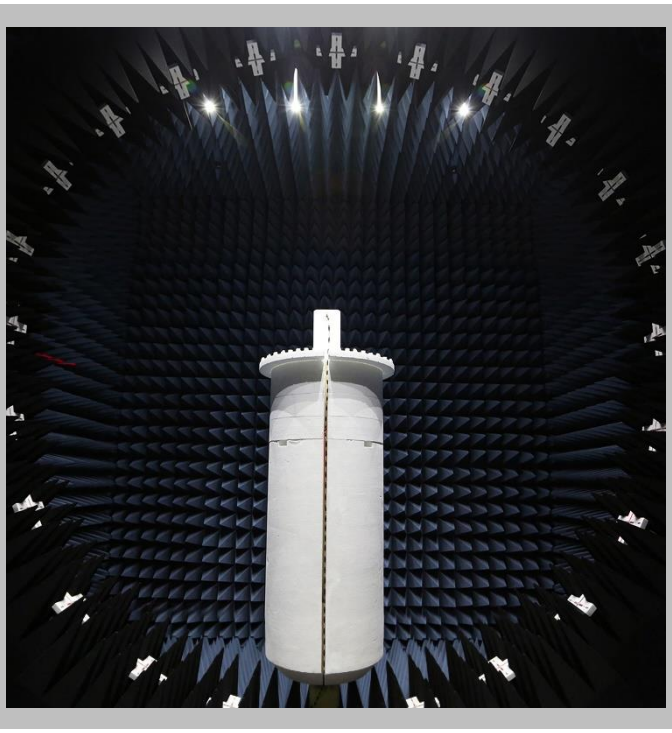
MIC – Recognized by MIC as a CAB for the acceptance of test data.

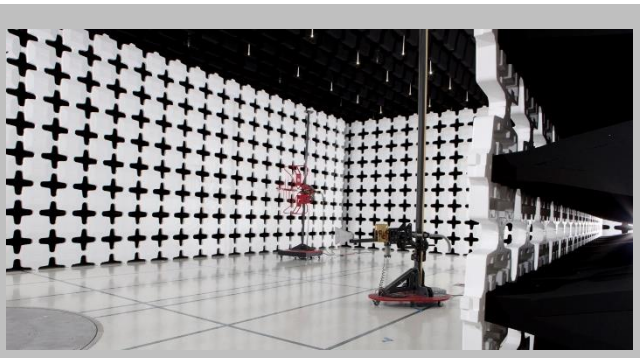
SCOPE

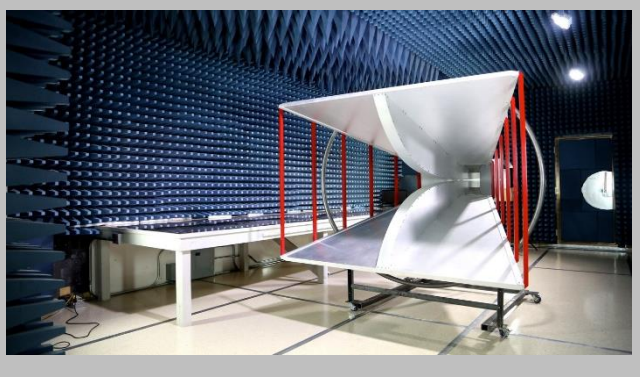
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

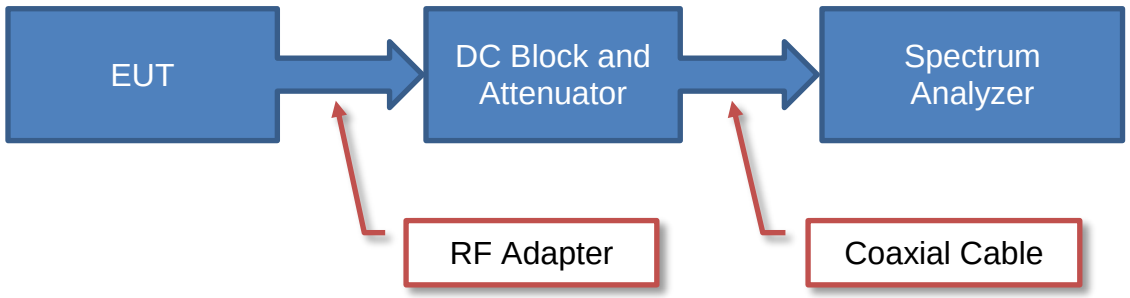
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

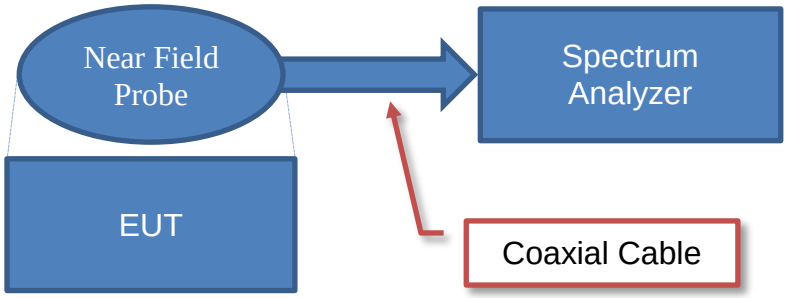
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	0	0
AC Powerline Conducted Emissions (dB)	0	0

Test Setup Block Diagrams

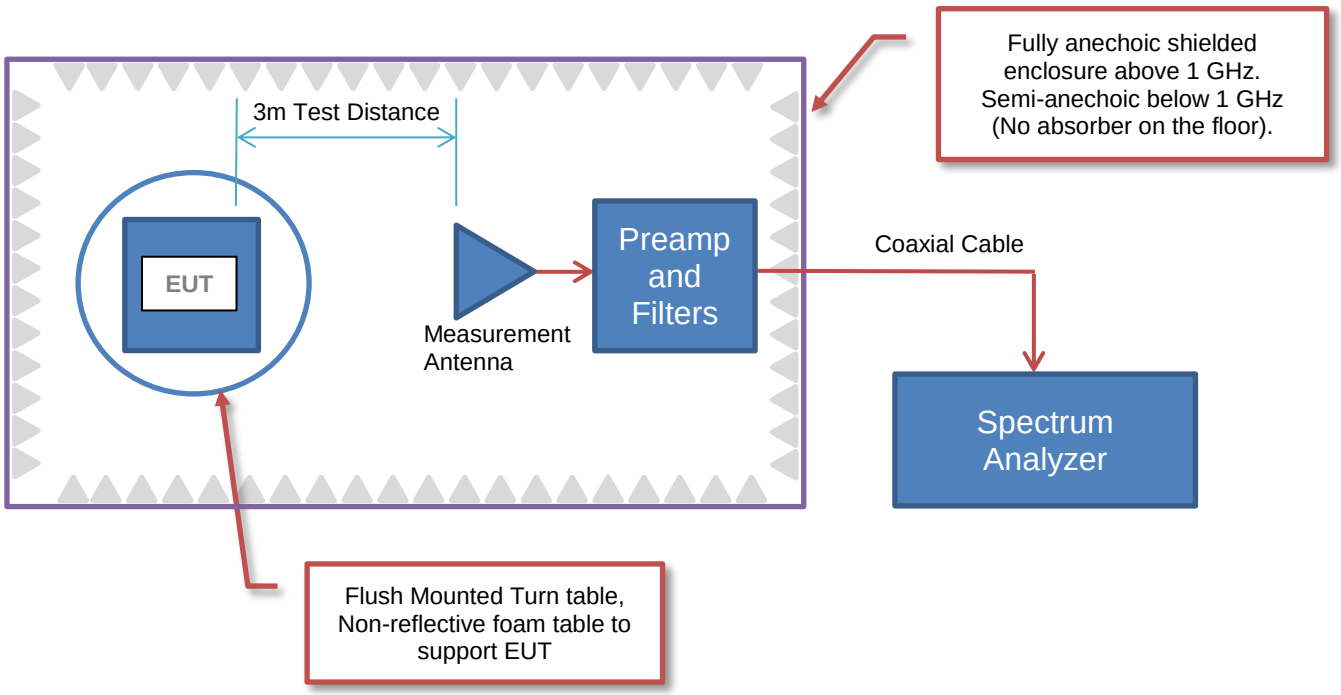
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Nytec Inc.
Address:	416 6th Street South
City, State, Zip:	Kirkland, WA 98033
Test Requested By:	Sam Richardson
Model:	XI Access Panel
First Date of Test:	September 12, 2018
Last Date of Test:	September 26, 2018
Receipt Date of Samples:	September 12, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Not Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
ISM band SRD radio (Region 2 ISM) is one of the radios used in the Door Lock Panel. A visual, interactive interface for guests entering and leaving the ship staterooms. It identifies users, either guests or crew, wirelessly using the Medallion over BLE or NFC, communicating and controlling the lock mechanism via an ISM radio to provide access to the stateroom. Facial recognition can as well be used to grant access to the room. It also provides audio interaction capabilities between the hallway and cabin. The Door Lock Panel is mounted as a wall panel display and interfaces to the central control of the ship over a single Ethernet connection which also powers the device. The panel can also work with battery power for several hours. The purpose of this testing is to determine if changes to the antenna matching network qualify as either a Class 1 or 2 Permissive Change.

Testing Objective:
Seeking to demonstrate compliance under FCC 15.249:2018 for operation in the 902 - 928 MHz Band.

CONFIGURATIONS

Configuration NYTE0025- 1

Software/Firmware Running during test	
Description	**Version**
FCC Test	v1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
XI Access Panel	Carnival	40-10146	EV3-27

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Router	D-Link	DIR 601	None
Laptop PC	Lenovo	P50s	None
POE Injector	TP-Link	TL-POE150S	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	3.0m	No	XI Access Panel	POE Injector
Ethernet	No	1.0m	No	POE Injector	Router
Ethernet	No	1.0m	No	Router	Laptop PC

CONFIGURATIONS

Configuration NYTE0026- 1

Software/Firmware Running during test	
Description	**Version**
Firmware (EUT) FccIsmRx.hex	None

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
XI Access Panel	Nytec Inc.	40-10146	EV3-27

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
PoE Injector	TP-Link	TL-POE15S(UN) Ver:4.0	2178454007510
T.T.E. Power Supply	TP-Link	T480050	179234
Modem	D-Link	DIR-601B1	QBF91BA009830

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	0.7m	No	PoE Injector	XI Access Panel
DC Power	No	1.44m	No	T.T.E. Power Supply	PoE Injector

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2018-09-12	Field Strength of Harmonics and Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2018-09-12	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT was taken home by the client before the next scheduled test.
3	2018-09-26	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

In the FCC-TCBC Conference Call Meeting Minutes from April 12, 2005, the FCC stated:

> "We are willing to accept measurements on a 13.56 MHz transmitter done with a dummy load under the following conditions. First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the 15.207 limits outside the transmitter's fundamental emission band, and then retest with a dummy load to make sure the device complies with the 15.207 limits inside the transmitter's fundamental emission band. For the second portion of these tests, only the fundamental emission band of the transmitter needs to be retested."

This procedure was followed for the AC powerline conducted emissions testing documented on the following pages.

Per the FCC Guidance, the FCC will accept measurements on a 13.56 MHz transmitter done with a dummy load under the following conditions. (1) First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the 15.207 limits outside the transmitter's fundamental emission band, and then retest with a dummy load to make sure the device complies with the 15.207 limits inside the transmitter's fundamental emission band. (2) For the second portion of these tests, only the fundamental emission band of the transmitter needs to be retested.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARE	8/28/2018	8/28/2019
Cable - Conducted Cable Assembly	Northwest EMC	NC4, HHF, TYL	NC4A	3/23/2018	3/23/2019
LISN	Solar Electronics	9252-50-R-24-BNC	LIK	7/16/2018	7/16/2019
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	7/16/2018	7/16/2019

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

NYTE0026-1

MODES INVESTIGATED

906MHz 2-GFSK Tx

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	XI Access Panel	Work Order:	NYTE0026
Serial Number:	EV3-27	Date:	09/26/2018
Customer:	Nytec Inc.	Temperature:	23.5°C
Attendees:	Tyler Bannon	Relative Humidity:	43.6%
Customer Project:	None	Bar. Pressure:	1027 mb
Tested By:	Mark Horna	Job Site:	NC05
Power:	48 VDC POE via 110VAC/60Hz	Configuration:	NYTE0026-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	1	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

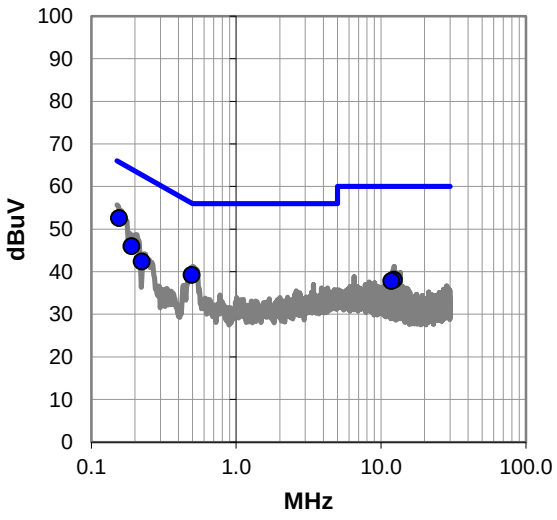
EUT OPERATING MODES

906MHz 2-GFSK Tx

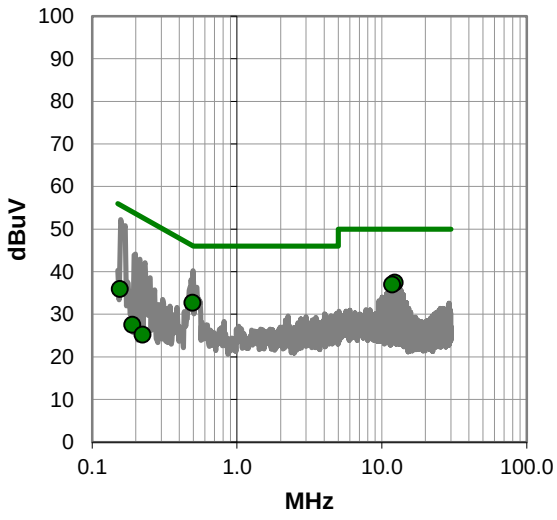
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #1

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.155	32.5	20.1	52.6	65.7	-13.1
0.494	19.3	19.9	39.2	56.1	-16.9
0.189	26.0	20.0	46.0	64.1	-18.1
0.223	22.4	20.0	42.4	62.7	-20.3
12.293	17.2	20.9	38.1	60.0	-21.9
11.791	16.9	20.9	37.8	60.0	-22.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
12.293	16.5	20.9	37.4	50.0	-12.6
11.791	16.1	20.9	37.0	50.0	-13.0
0.494	12.8	19.9	32.7	46.1	-13.4
0.155	15.8	20.1	35.9	55.7	-19.8
0.189	7.5	20.0	27.5	54.1	-26.6
0.223	5.2	20.0	25.2	52.7	-27.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	XI Access Panel	Work Order:	NYTE0026
Serial Number:	EV3-27	Date:	09/26/2018
Customer:	Nytec Inc.	Temperature:	23.5°C
Attendees:	Tyler Bannon	Relative Humidity:	43.6%
Customer Project:	None	Bar. Pressure:	1027 mb
Tested By:	Mark Horna	Job Site:	NC05
Power:	48 VDC POE via 110VAC/60Hz	Configuration:	NYTE0026-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	2	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

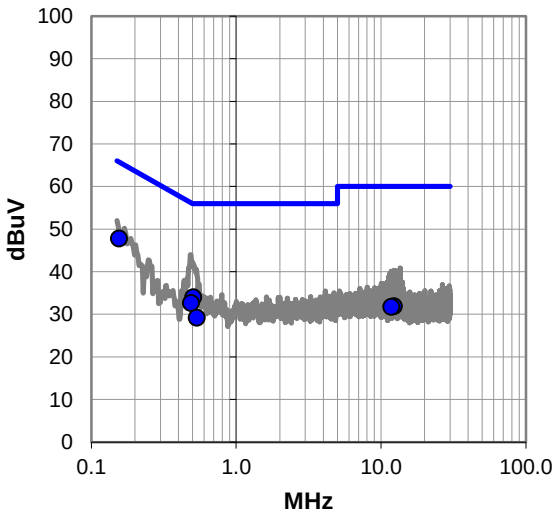
EUT OPERATING MODES

906MHz 2-GFSK Tx

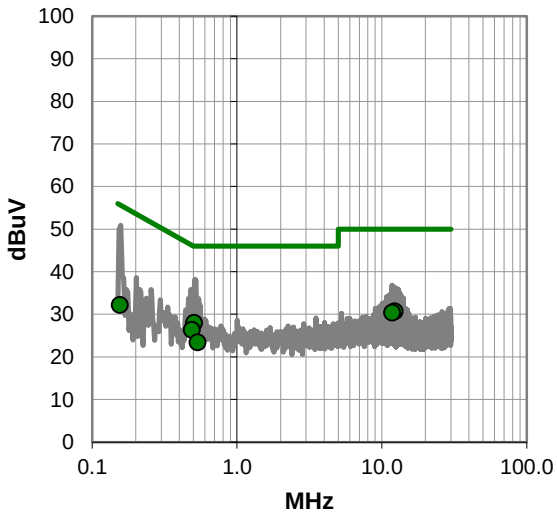
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #2

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.155	27.7	20.1	47.8	65.7	-17.9
0.506	14.1	19.9	34.0	56.0	-22.0
0.488	12.7	19.9	32.6	56.2	-23.6
0.536	9.3	19.9	29.2	56.0	-26.8
12.293	11.0	20.9	31.9	60.0	-28.1
11.791	10.8	20.9	31.7	60.0	-28.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.506	8.1	19.9	28.0	46.0	-18.0
12.293	9.8	20.9	30.7	50.0	-19.3
11.791	9.5	20.9	30.4	50.0	-19.6
0.488	6.4	19.9	26.3	46.2	-19.9
0.536	3.5	19.9	23.4	46.0	-22.6
0.155	12.1	20.1	32.2	55.7	-23.5

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2018.05.04

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuously Transmitting Single Channel, 906 MHz, 50 kbps, Power Setting = +13dBm

POWER SETTINGS INVESTIGATED

POE

CONFIGURATIONS INVESTIGATED

NYTE0025 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	10 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	5-Jul-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	25-Jul-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	4-May-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	14-Jun-2018	12 mo
Cable	Element	Standard Gain Horn Cable	NC3	4-May-2018	12 mo
Cable	Element	3115 Horn Cable	NC2	4-May-2018	12 mo
Cable	Element	Bilog Cables	NC1	14-Jun-2018	12 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHM	11-Jun-2018	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.
For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions. If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

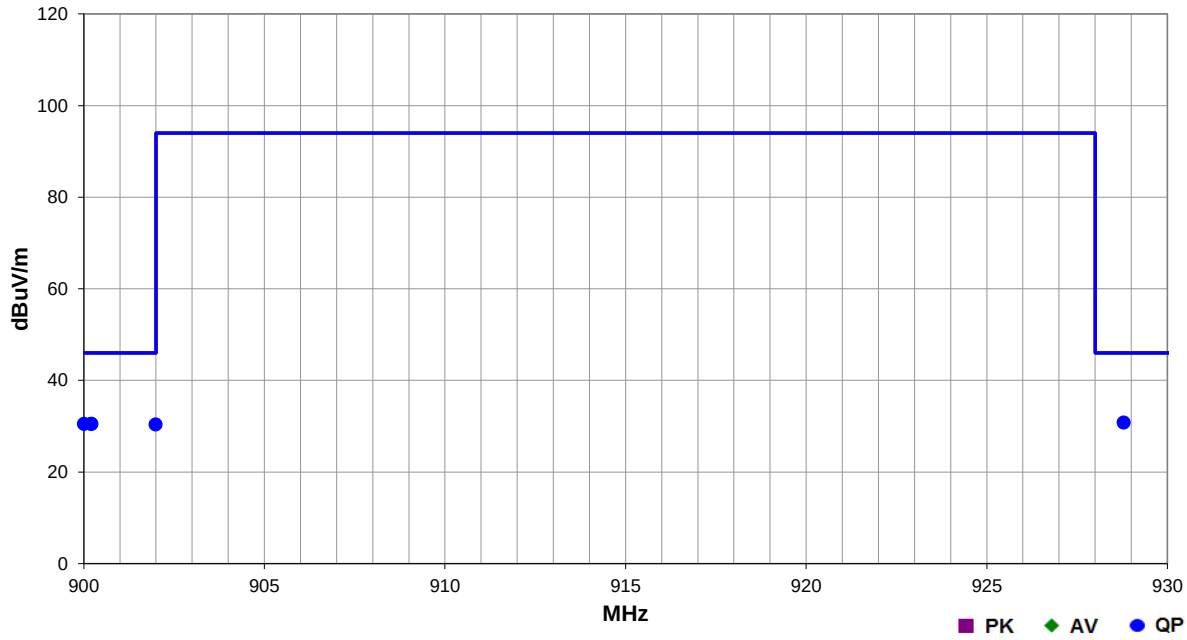
FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	NYTE0025	**Date:**	12-Sep-2018		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	NC01	**Humidity:**	47.8% RH		
Serial Number:	EV3-27	**Barometric Pres.:**	1017 mbar	**Tested by:**	Richard Mellroth
EUT:	XI Access Panel				
Configuration:	1				
Customer:	Nytec Inc.				
Attendees:	Sam Richardson, Tyler Bannon				
EUT Power:	POE				
Operating Mode:	Continuously Transmitting Single Channel, 906 MHz, 50 kbps, Power Setting = +13dBm				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2018	ANSI C63.10:2013

Run #	2	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
930.001	16.2	14.7	1.0	197.0	3.0	0.0	Vert	QP	0.0	30.9	46.0	-15.1	EUT Vertical
928.787	16.1	14.7	1.0	131.0	3.0	0.0	Horz	QP	0.0	30.8	46.0	-15.2	EUT Vertical
900.004	16.3	14.2	1.7	238.0	3.0	0.0	Horz	QP	0.0	30.5	46.0	-15.5	EUT Vertical
900.205	16.3	14.2	1.0	60.0	3.0	0.0	Vert	QP	0.0	30.5	46.0	-15.5	EUT Vertical
900.207	16.3	14.2	1.0	330.0	3.0	0.0	Horz	QP	0.0	30.5	46.0	-15.5	EUT Horizontal
901.986	16.2	14.2	1.9	258.0	3.0	0.0	Vert	QP	0.0	30.4	46.0	-15.6	EUT Flat
899.877	16.2	14.0	2.9	312.0	3.0	0.0	Vert	QP	0.0	30.2	46.0	-15.8	EUT Horizontal
899.977	16.2	14.0	2.8	205.0	3.0	0.0	Horz	QP	0.0	30.2	46.0	-15.8	EUT Flat

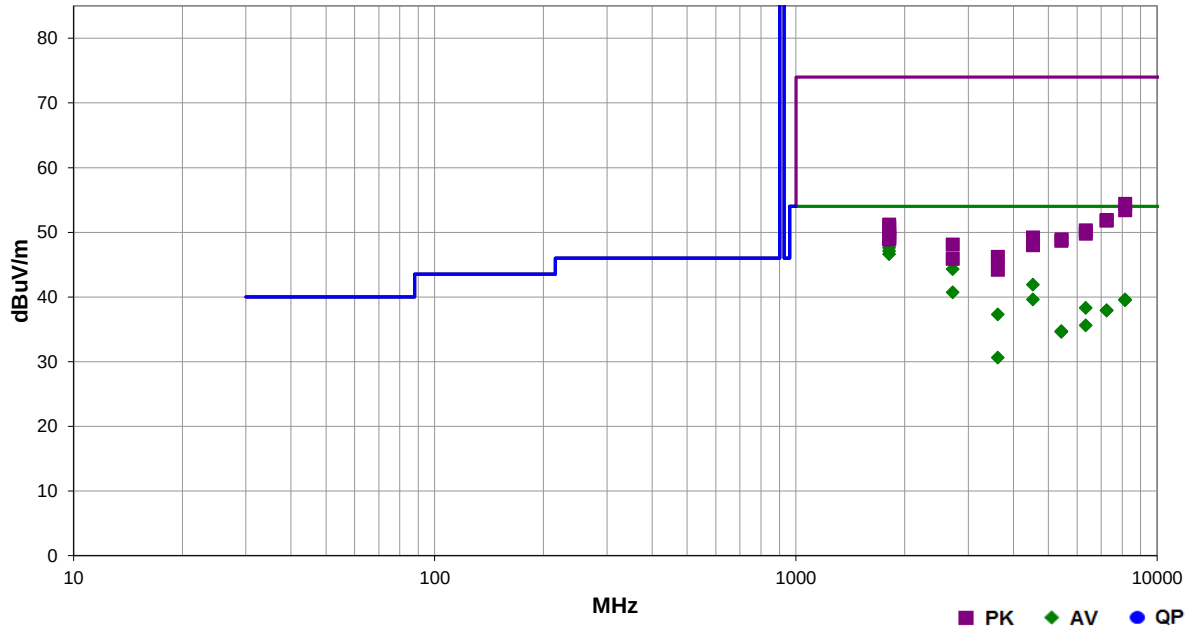
FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	NYTE0025	**Date:**	12-Sep-2018		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	NC01	**Humidity:**	47.8% RH		
Serial Number:	EV3-27	**Barometric Pres.:**	1017 mbar	**Tested by:**	Richard Mellroth
EUT:	XI Access Panel				
Configuration:	1				
Customer:	Nytec Inc.				
Attendees:	Sam Richardson, Tyler Bannon				
EUT Power:	POE				
Operating Mode:	Continuously Transmitting Single Channel, 906 MHz, 50 kbps, Power Setting = +13dBm				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2018	ANSI C63.10:2013

Run #	5	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
1812.085	52.6	-2.6	3.9	202.0	3.0	0.0	Vert	AV	0.0	50.0	54.0	-4.0	EUT Flat
1811.965	51.3	-2.6	2.4	22.0	3.0	0.0	Horz	AV	0.0	48.7	54.0	-5.3	EUT Vertical
1811.995	50.7	-2.6	1.8	30.0	3.0	0.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Horizontal
1811.990	50.2	-2.6	3.8	284.0	3.0	0.0	Horz	AV	0.0	47.6	54.0	-6.4	EUT Flat
1811.970	49.7	-2.6	3.9	309.0	3.0	0.0	Vert	AV	0.0	47.1	54.0	-6.9	EUT Vertical
1811.980	49.2	-2.6	4.0	41.0	3.0	0.0	Horz	AV	0.0	46.6	54.0	-7.4	EUT Horizontal
2717.955	44.2	0.1	1.6	353.0	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	EUT Vertical
4529.975	34.3	7.6	1.1	0.0	3.0	0.0	Horz	AV	0.0	41.9	54.0	-12.1	EUT Vertical
2717.995	40.6	0.1	1.7	334.0	3.0	0.0	Vert	AV	0.0	40.7	54.0	-13.3	EUT Flat
4529.945	32.0	7.6	3.1	265.0	3.0	0.0	Vert	AV	0.0	39.6	54.0	-14.4	EUT Flat
8153.860	24.4	15.2	1.6	13.0	3.0	0.0	Horz	AV	0.0	39.6	54.0	-14.4	EUT Vertical
8153.880	24.3	15.2	1.6	189.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5	EUT Flat
6341.880	27.3	11.0	1.7	360.0	3.0	0.0	Horz	AV	0.0	38.3	54.0	-15.7	EUT Vertical
7246.950	24.7	13.2	1.6	97.0	3.0	0.0	Vert	AV	0.0	37.9	54.0	-16.1	EUT Flat
7248.135	24.7	13.2	1.6	341.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	EUT Vertical
3623.975	33.8	3.5	1.6	300.0	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7	EUT Vertical
6341.925	24.6	11.0	1.6	256.0	3.0	0.0	Vert	AV	0.0	35.6	54.0	-18.4	EUT Flat
5434.790	24.1	10.6	1.1	317.0	3.0	0.0	Horz	AV	0.0	34.7	54.0	-19.3	EUT Vertical

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5434.890	24.0	10.6	1.6	269.0	3.0	0.0	Vert	AV	0.0	34.6	54.0	-19.4	EUT Flat
8153.040	39.2	15.2	1.6	189.0	3.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	EUT Flat
8154.790	38.1	15.3	1.6	13.0	3.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	EUT Vertical
7248.980	38.7	13.2	1.6	341.0	3.0	0.0	Horz	PK	0.0	51.9	74.0	-22.1	EUT Vertical
7246.655	38.6	13.2	1.6	97.0	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	EUT Flat
1811.905	53.8	-2.6	3.9	202.0	3.0	0.0	Vert	PK	0.0	51.2	74.0	-22.8	EUT Flat
1811.975	53.3	-2.6	2.4	22.0	3.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	EUT Vertical
3623.995	27.1	3.5	1.6	232.0	3.0	0.0	Vert	AV	0.0	30.6	54.0	-23.4	EUT Flat
6341.920	39.3	11.0	1.7	360.0	3.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	EUT Vertical
1812.050	52.5	-2.6	1.8	30.0	3.0	0.0	Vert	PK	0.0	49.9	74.0	-24.1	EUT Horizontal
6343.460	38.8	11.0	1.6	256.0	3.0	0.0	Vert	PK	0.0	49.8	74.0	-24.2	EUT Flat
1811.940	51.9	-2.6	3.8	284.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	EUT Flat
4530.000	41.6	7.6	1.1	0.0	3.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	EUT Vertical
1811.785	51.7	-2.6	3.9	309.0	3.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	EUT Vertical
1812.045	51.5	-2.6	4.0	41.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	EUT Horizontal
5437.475	38.3	10.6	1.1	317.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	EUT Vertical
5434.850	38.1	10.6	1.6	269.0	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3	EUT Flat
2717.945	48.0	0.1	1.6	353.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	EUT Vertical
4529.950	40.4	7.6	3.1	265.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	EUT Flat
3623.505	42.7	3.5	1.6	300.0	3.0	0.0	Horz	PK	0.0	46.2	74.0	-27.8	EUT Vertical
2718.045	45.8	0.1	1.7	334.0	3.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	EUT Flat
3624.180	40.7	3.5	1.6	232.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	EUT Flat

FIELD STRENGTH OF FUNDAMENTAL

PSA-ESCI 2018.05.04

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuously Transmitting Single Channel, 906 MHz, 50 kbps, Power Setting = +13dBm

POWER SETTINGS INVESTIGATED

POE

CONFIGURATIONS INVESTIGATED

NYTE0025 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	902 MHz	Stop Frequency	928 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	5-Jul-2018	12 mo
Cable	Element	Bilog Cables	NC1	14-Jun-2018	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The antenna(s) to be used with the EUT were tested. The EUT was set to a constant transmit mode, with modulation, while set at the EUT's single transmit channel. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT and EUT antenna in 3 orthogonal planes.

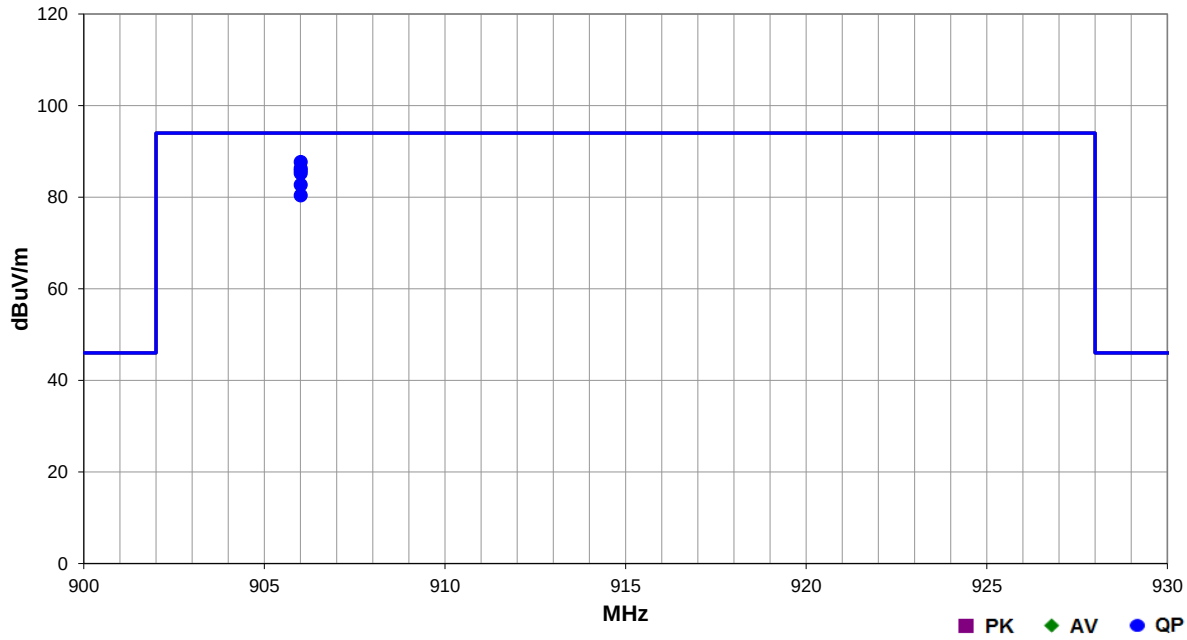
FIELD STRENGTH OF FUNDAMENTAL

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	NYTE0025	**Date:**	12-Sep-2018		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	NC01	**Humidity:**	47.8% RH		
Serial Number:	EV3-27	**Barometric Pres.:**	1017 mbar	**Tested by:**	Richard Mellroth
EUT:	XI Access Panel				
Configuration:	1				
Customer:	Nytec Inc.				
Attendees:	Sam Richardson, Tyler Bannon				
EUT Power:	POE				
Operating Mode:	Continuously Transmitting Single Channel, 906 MHz, 50 kbps, Power Setting = +13dBm				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2018	ANSI C63.10:2013

Run #	1	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
906.008	53.0	34.7	1.3	25.0	3.0	0.0	Vert	QP	0.0	87.7	94.0	-6.3	EUT Horizontal
906.008	51.6	34.7	1.6	24.0	3.0	0.0	Horz	QP	0.0	86.3	94.0	-7.7	EUT Vertical
906.007	51.1	34.7	1.3	2.0	3.0	0.0	Vert	QP	0.0	85.8	94.0	-8.2	EUT Vertical
906.008	50.5	34.7	1.7	359.0	3.0	0.0	Horz	QP	0.0	85.2	94.0	-8.8	EUT Horizontal
906.008	48.0	34.7	2.8	347.0	3.0	0.0	Horz	QP	0.0	82.7	94.0	-11.3	EUT Flat
906.008	45.7	34.7	1.4	249.0	3.0	0.0	Vert	QP	0.0	80.4	94.0	-13.6	EUT Flat

DUTY CYCLE

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.