



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
3919ERM.003A1

Test report

**USA FCC Part 15.249, 15.209
CANADA RSS-210, RSS-Gen
Radio Frequency Devices. Operation within the bands 902 - 928
MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.**

(*) Identification of item tested	Alarm Control Panel with integrated security and automation support
(*) Trademark	JCI/Tyco
(*) Model and /or type reference tested	IQ Pro
Other identification of the product	FCC ID: F5322IQPRO IC ID: 160A-IQPRO; HVIN: IQ Pro IMEI: 86139404 Hw version: QB94Hx Rev. 0C / UA746 Rev. 01 Sw version: 4.2.0n
(*) Features	Wi-Fi 2.4GHz/5GHz, BLE, PowerG, Z-Wave, LTE
Manufacturer	Tyco Safety Products Canada Ltd. 3301 Langstaff Rd., Concord, ON L4K 4L2 Canada
Test method requested, standard	USA FCC Part 15.249 10-1-20 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz. USA FCC Part 15.209 10-1-20 Edition: Radiated emission limits; general requirements. CANADA RSS-210 Issue 10 (December 2019). CANADA RSS-Gen Issue 5 (April 2018). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	05-28-2023
Report template No	FDT08_23 (*) "Data provided by the client"

Index

Competences and guarantees3

General conditions3

Uncertainty3

Data provided by the client.....4

Usage of samples4

Test sample description5

Identification of the client.....6

Testing period and place6

Document history7

Environmental conditions7

Remarks and comments7

Testing verdicts.....7

Summary8

List of equipment used during the test.....9

Appendix A: Test results (Z-wave)10

Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Certification Inc.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U ($k=2$)	Units
Occupied Bandwidth	908-916	1.87	%
Radiated Spurious Emission	30-180	4.27	dB
	180-1000	3.14	dB
	1000-18000	3.30	dB
	18000-40000	3.49	dB

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of The Alarm Control Panel supports wireless and wired initiating devices, communication with supervising station using cellular LTE and Ethernet communication paths. There are two configurations available: IQ Pro using metal enclosure and IQ Pro P using plastic enclosure, only differences are the use of antennas mounted outside the metal enclosure.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples used for test have been selected by: The client.

Sample S/01 is composed of the following elements:

Id	Control Number	Description	Manufacturer/ Model	Serial N°	Date of Reception	Application
S/01	3919/09	Sample + Power supply Adapter	JCI / IQ PRO	QPR005A002235B00018M00	01/31/2023	Element Under Test

1. Sample S/01 was used for the following test(s):
All conducted and Radiated tests indicated in appendix A.

Test sample description

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded	Coupled to patient		
	18VDC+/- (DC input)	6	☒	☐	☐		
	BELL +/- (Bell output)	6	☒	☐	☐		
	CORBUS (RED/BLK/YEL/GRN) (System communication bus)	6	☒	☐	☐		
	AUX1/AUX2 +/- (two auxiliary power outputs)	6	☒	☐	☐		
	PGM1-PGM4 (four programmable outputs)	6	☒	☐	☐		
	Z1/COM- Z8/COM (Eight zone Inputs)	6	☒	☐	☐		
			☐	☐	☐		
		☐	☐	☐			
Supplementary information to the ports..... :	use quad wires, 22AWG connected to all ports on UA746 Rev. 01						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 120 Vac/60 Hz	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 18Vdc/2.2A					
	☐	DC:					
Rated Power	40W						
Clock frequencies.....	12MHz, 24MHz, 39MHz						
Other parameters	No Data Provided						
Software version	4.2.0n						
Hardware version	QB94Hx Rev. 0C/UA746 Rev. 01						
Dimensions in cm (W x H x D)	34cm X 48cm X 12.5cm						
Mounting position	☐	Table top equipment					
	☒	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					

Modules/parts.....:	Module/parts of test item	Type	Manufacturer
	QB94Hx Rev. A (motherboard)	PCB	Tyco
	UA746 Rev. 01 (hardwired zone inputs)	PCB	Tyco
	UA757 Rev. 01/UA758 Rev. 02 (PSU/connections)	PCB	Tyco
	UA762 Rev. 02 (external antennas board)	PCB	Tyco
Accessories (not part of the test item)	Description	Type	Manufacturer
	Power Adapter HS40WPSNA	Power Adapter	SOY
Documents as provided by the applicant	Description	File name	Issue date
	Declaration Equipment Data	FDT30_18 Declaration Equipment Data signed	04/12/2023
	Block Diagram and Technical Description		
	Parts List		
	Schematics		
	FCC/ISED applications		
Copy of marking plate:			
			

Identification of the client

Tyco Safety Products Canada Ltd.
3301 Langstaff Rd., Concord, ON L4K 4L2, Canada.

Testing period and place

Test Location	DEKRA Certification Inc.
Date (Start)	04-03-2023
Date (Finish)	04-18-2023

Document history

Report number	Date	Description
3919ERM.003	05-09-2023	First release
3919ERM.003A1	05-28-2023	Second release. Typo error in the standard information; it was updated in the Test method requested, standard section of the cover page. HVIN information has been added in the cover page. This modification of test report cancels and replaces the test report 3919ERM.003

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Lakshmi Gollamudi, Koji Nishimoto and Qi Zhang.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

FCC PART 15.249 PARAGRAPH / RSS-249 (Z-wave)					
Report Section	FCC Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
A.1	§ 2.1049	RSS-Gen 6.7	99% Occupied Bandwidth	P	N/A
A.2	§ 15.249 (a) 6 dB Bandwidth	RSS-210 B.10 (a)	Field Strength of fundamental	P	N/A
A.3	§ 15.249 (d)	RSS-210 B.10 (b)	Emission limitations radiated (Transmitter)	P	N/A
<u>Supplementary information and remarks:</u> None.					

List of equipment used during the test

Conducted Measurements

Control Number	Description	Manufacturer	Model	Last Calibration	Next Calibration
1391	FSW50 Signal analyzer	Rohde & Schwarz	FSW50	2022/05	2024/05
1107	Ethernet SNMP Thermometer	HW Group	HWg-STE Plain	2022/10	2024/10

Radiated Measurements

Control Number	Description	Manufacturer	Model	Last Calibration	Next Calibration
982	Low Noise Preamplifier (18-40GHz)	Bonn Elektronik	BLMA1840-1M	2023/03	2025/03
1012	ESR26 EMI Test Receiver	Rohde & Schwarz	ESR26	2022/04	2024/02
1014	FSV40 Signal Analyzer	Rohde & Schwarz	FSV40	2021/05	2023/05
1055	Double-Ridged Waveguide Horn Antennas	ETS Lindgren	3116C	2023/02	2026/02
1057	Double-ridge Waveguide Horn antenna	ETS Lindgren	3115	2020/06	2023/06
1065	Biconical log Antenna	ETS Lindgren	3142E	2020/08	2023/08
1108	Ethernet SNMP Thermometer- CR Room	HW Group	HWg-STE Plain	2022/10	2024/10
1111	Ethernet SNMP Thermometer- SAC	HW Group	HWg-STE Plain	2022/10	2024/10
1179	Semi-Anechoic Chamber	Frankonia	SAC 3plus 'L'	N/A	N/A
1217	Frankonia Transparent Test Table 1	Frankonia	FFT-Square	N/A	N/A
1314	Wireless measurement software EMC 32	Rohde & Schwarz	-	N/A	N/A
1461	Low Noise Preamplifier (1-18GHz)	Bonn Elektronik	BLMA0118-4A	2022/06	2024/06

Appendix A: Test results (Z-wave)

Appendix A Content

PRODUCT INFORMATION12

DESCRIPTION OF TEST CONDITIONS13

TEST A.1: 99% OCCUPIED BANDWIDTH14

TEST A.2: FUNDAMENTAL FIELD STRENGTH16

TEST A.3: EMISSION LIMITATIONS RADIATED (TRANSMITTER).....20

PRODUCT INFORMATION

The following information is provided by the client

Information	Description
Modulation	FHSS
Operation mode	
- Operating Frequency Range	908-916 MHz
- RF Output Power	14 dBm
Extreme operating conditions	
- Temperature range	25 °C
Antenna type	Integral Antenna
Antenna gain	908.4 MHz: +1.7 dBi 916.0 MHz: +1.4 dBi
Nominal Voltage	
- Supply Voltage	18 Vdc
- Type of power source	DC Voltage
Equipment type	Z-wave
Geo-location capability	No

DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01	<u>Power supply (V):</u> $V_{\text{nominal}} = 18 \text{ Vdc}$ <u>Test Frequencies for Conducted/ Radiated tests:</u> Lowest channel: 908.4 MHz Highest channel: 916.0 MHz

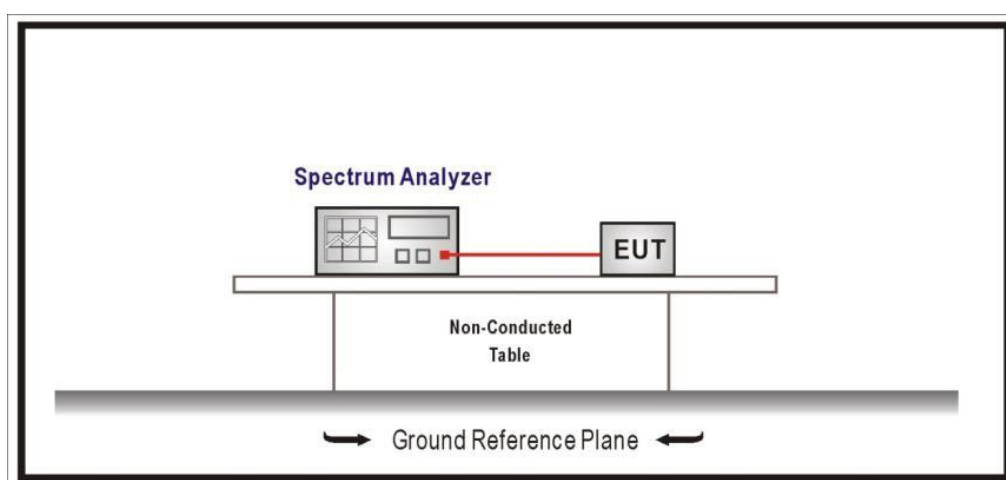
TEST A.1: 99% OCCUPIED BANDWIDTH

LIMITS:	Product standard:	§ 2.1049 and RSS-Gen
	Test standard:	§ 2.1049 and RSS-Gen 6.7

LIMITS

The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs

TEST SETUP

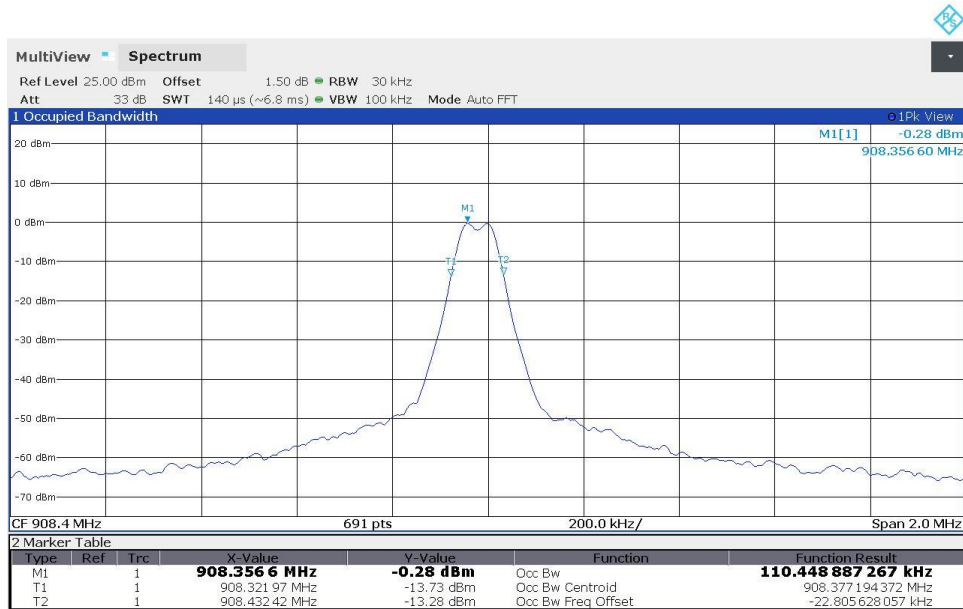


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

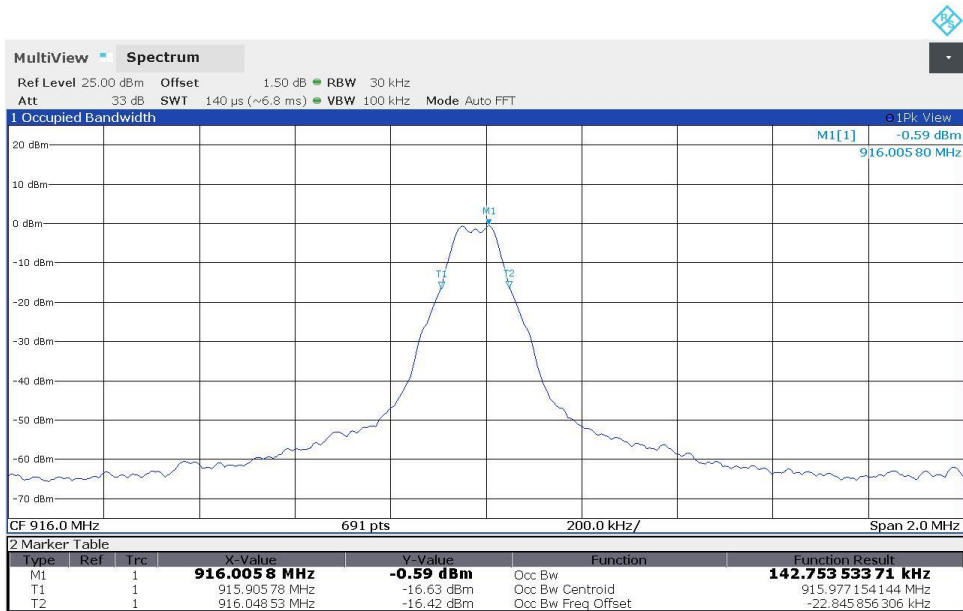
Test case	Lowest frequency 908.4 MHz	Highest frequency 916 MHz
99% bandwidth (kHz)	110.45	142.75

TEST RESULTS (Cont.):

Lowest Channel



Highest Channel



TEST A.2: FUNDAMENTAL FIELD STRENGTH

LIMITS:	Product standard:	Part 15 Subpart C §15.249 and RSS-210
	Test standard:	Part 15 Subpart C §15.249(a) and RSS-210 B.10(a)

LIMITS

The field strength of emissions in this band shall not exceed 2500 millivolts/meter. The field strength of emissions from intentional radiators shall comply with the following

Frequency Range (MHz)	Field strength of fundamental (mV/m)	Field strength (dBμV/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

RSS-210. The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively. Attenuation below the general field strength limits specified in RSS-Gen is not required

TEST SETUP

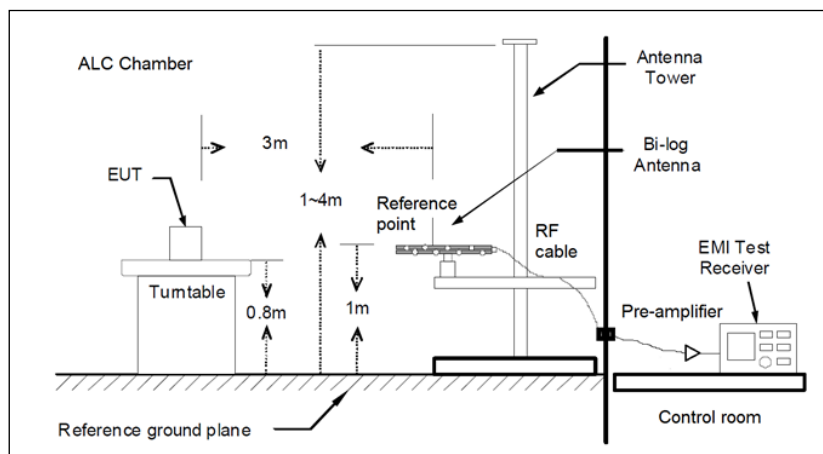
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 30-1000 MHz (Bilog antenna).

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor and cable loss.

Radiated measurements setup $f < 1$ GHz

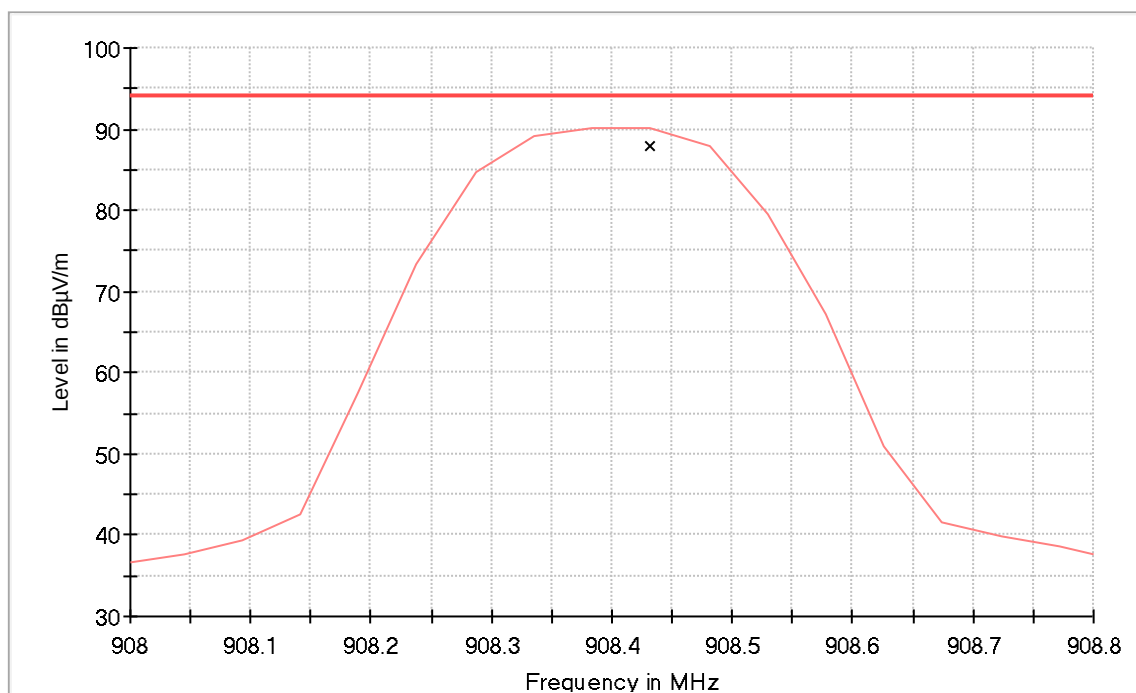


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Test case	Lowest frequency 908.4 MHz	Highest frequency 916 MHz
Field strength peak (dB μ V/m)	88.0	91.1

TEST RESULTS (Cont.):	
-----------------------	--

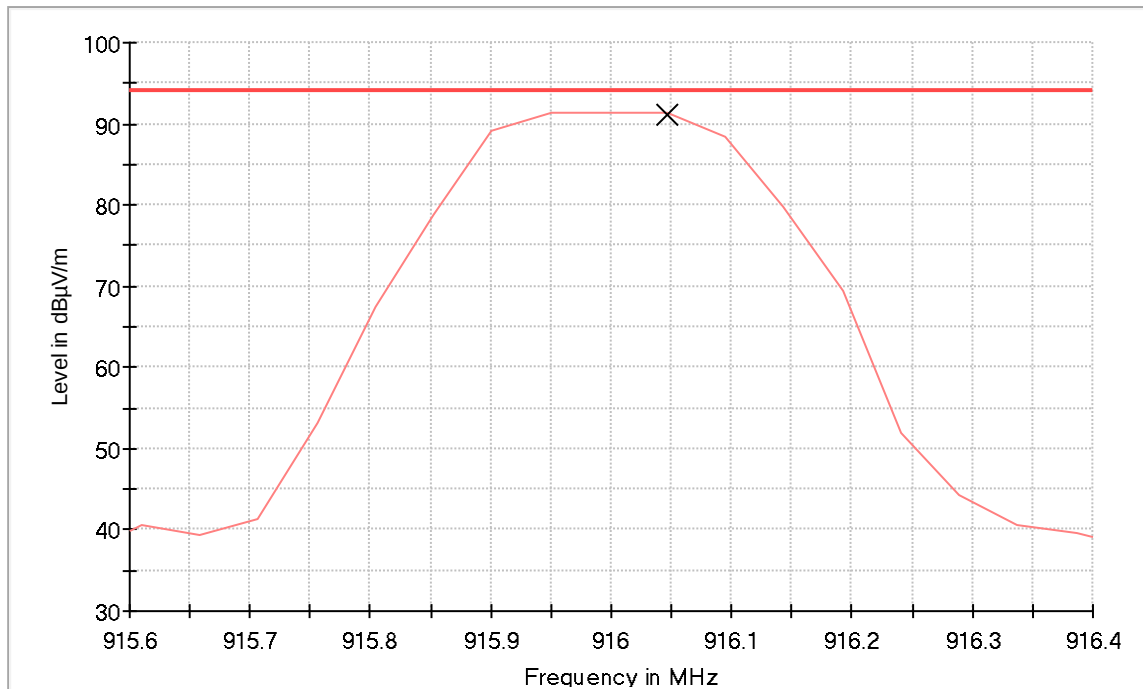
Lowest Channel



— PK+_MAXH
 — TX limits to Spurious Emission FCC15.249 (30MHz to 1GHz) 902-928MHz+15.209 QPK Limit
 x QuasiPeak-QPK (Single)

TEST RESULTS (Cont.):

Highest Channel



- PK+_MAXH
- TX limits to Spurious Emission FCC15.249 (30MHz to 1GHz) 902-928MHz+15.209 QPK Limit
- x QuasiPeak-QPK (Single)

TEST A.3: EMISSION LIMITATIONS RADIATED (TRANSMITTER)

LIMITS:	Product standard:	Part 15 Subpart C §15.249 and RSS-210
	Test standard:	Part 15 Subpart C §15.249(b), RSS-210 and RSS-Gen 8.9 and 8.10

LIMITS

The field strength of harmonics from intentional radiators shall comply with section 15.249 mentioned as the following:

Frequency Range (MHz)	Field strength of fundamental (mV/m)	Field strength (dBµV/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

Radiated emissions outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

TEST SETUP

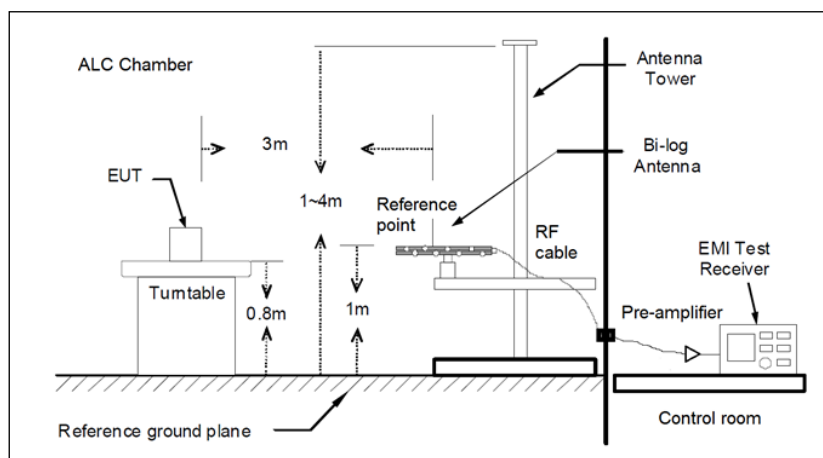
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30-1000 MHz (Bilog antenna) and 1 GHz-18 GHz (Double ridge horn antenna).

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

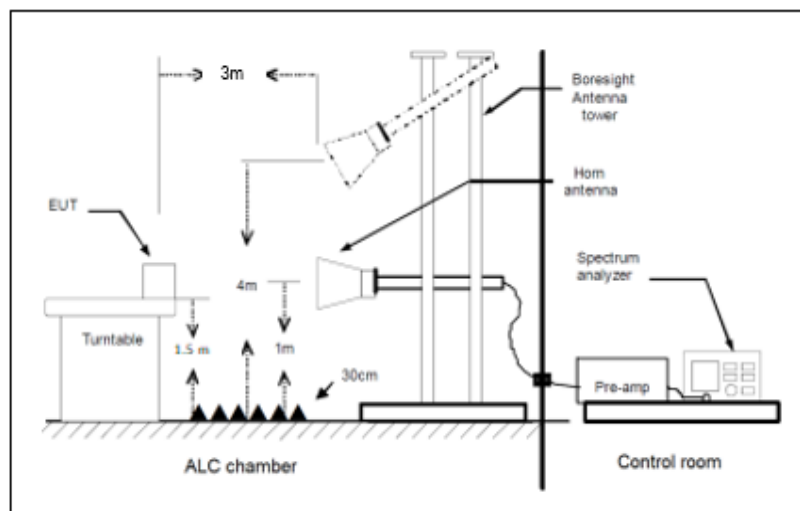
Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Radiated measurements Setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



TESTED SAMPLES:

S/01

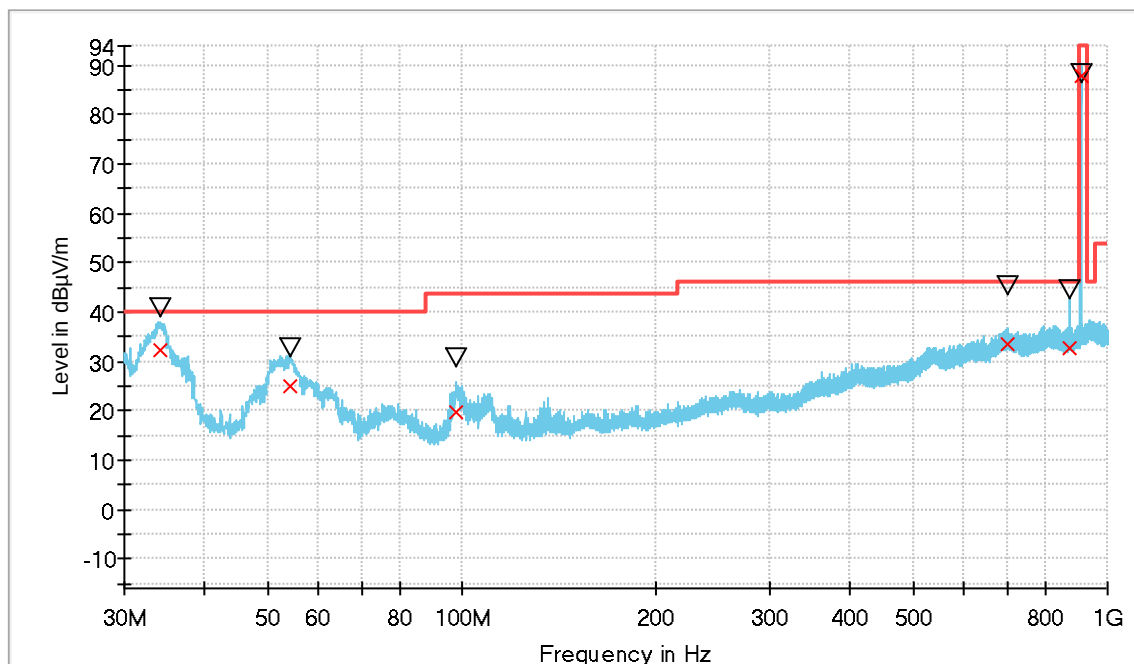
TESTED CONDITIONS MODES:

TC#01

TEST RESULTS:

PASS

Frequency range 30 MHz – 1000 MHz (Lowest Channel)



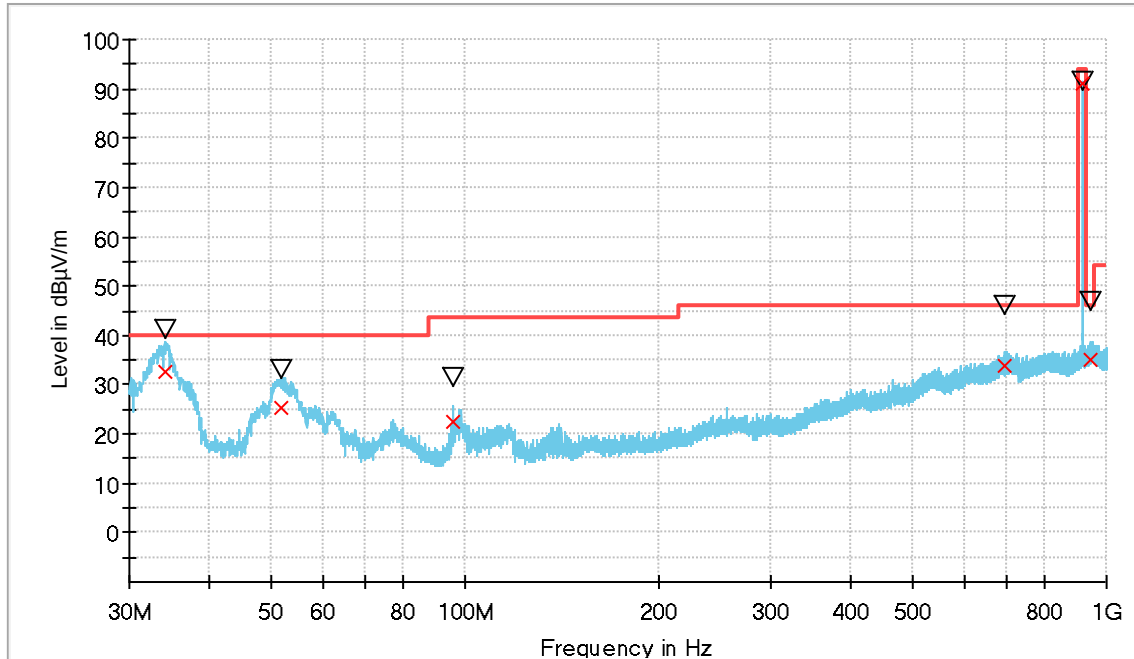
— PK+ MAXH
— TX limits to Spurious Emission FCC15.249 (30MHz to 1GHz) 902-928MHz+15.209 QPK Limit
▽ MaxPeak-PK+ (Single)
× QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	MaxPeak (dBμV/m)	QuasiPeak (dBμV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBμV/m)	Comment
34.025500	40.9	32.5	V	7.5	40.0	
54.104500	32.9	25.1	V	14.9	40.0	
97.997000	30.6	19.9	V	23.6	43.5	
701.628000	45.5	33.7	H	12.3	46.0	
874.773000	44.4	32.5	H	13.5	46.0	
908.432000	88.4	88.0	H	6.0	94.0	Fundamental

TEST RESULTS (Cont.):

30-1000 MHz (Highest Channel)



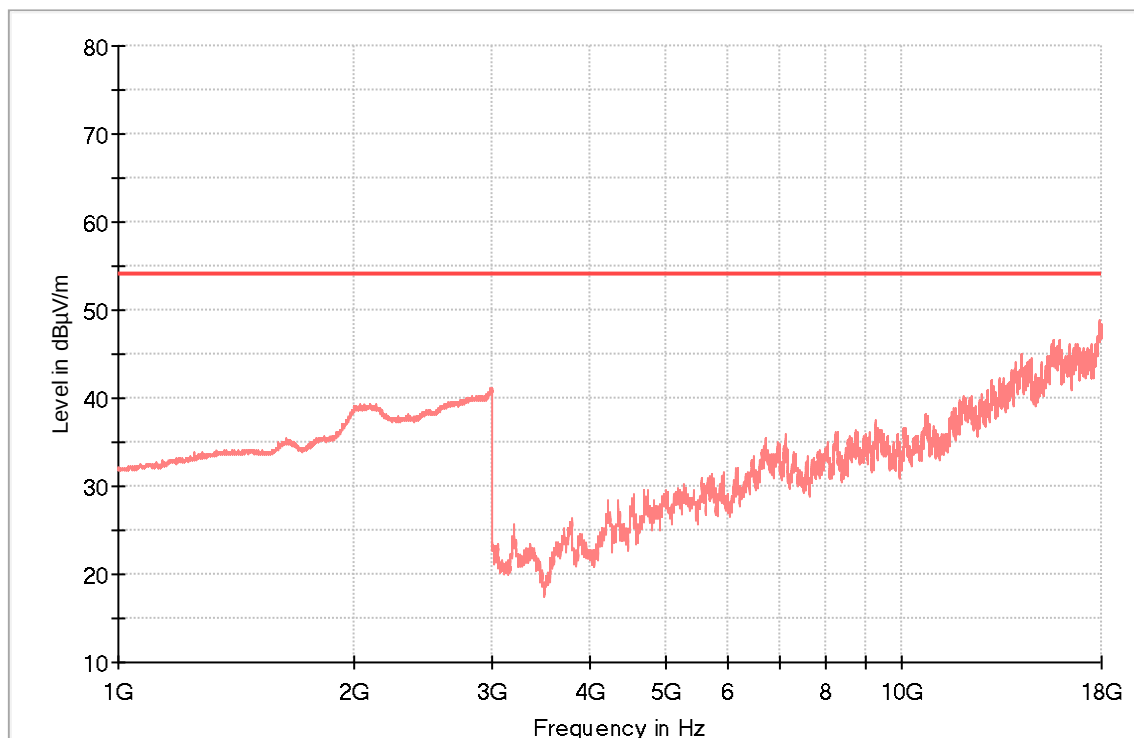
PK+ MAXH
 TX limits to Spurious Emission FCC15.249 (30MHz to 1GHz) 902-928MHz+15.209 QPK Limit
 ▽ MaxPeak-PK+ (Single)
 × QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	MaxPeak (dBμV/m)	QuasiPeak (dBμV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBμV/m)	Comment
34.171000	41.3	32.7	V	7.3	40.0	
51.873500	32.9	25.2	V	14.8	40.0	
95.960000	31.2	22.3	V	21.2	43.5	
694.498500	45.9	33.7	H	12.3	46.0	
916.046500	91.6	91.1	H	2.9	94.0	Fundamental
945.777000	46.7	35.1	H	10.9	46.0	

TEST RESULTS (Cont.):

1-18 GHz (Lowest Channel)



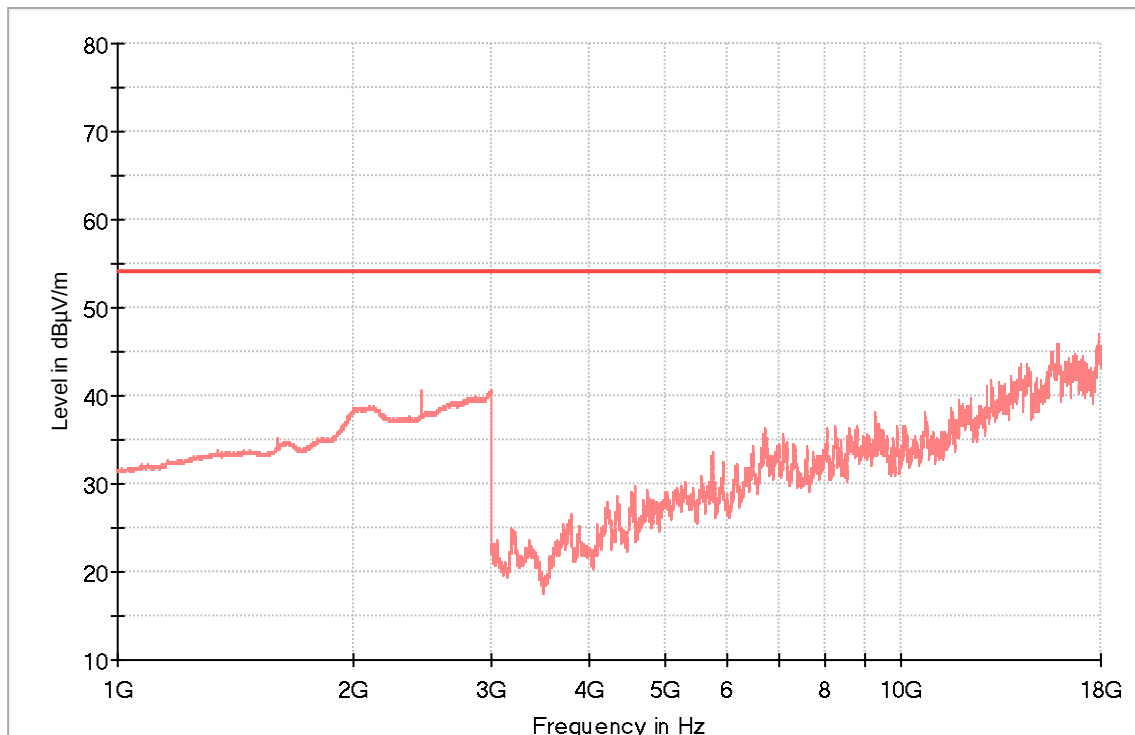
— AVG_MAXH — TX limits to Spurious Emission FCC15.249 (Above 1GHz) 902-928MHz_Average

Maximizations

Frequency (MHz)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2990.000000	41.0	H	13.0	54.0
15556.000000	45.3	V	8.7	54.0
17917.000000	48.7	H	5.3	54.0

TEST RESULTS (Cont.):

1-18 GHz (Highest Channel)



— AVG_MAXH — TX limits to Spurious Emission FCC15.249 (Above 1GHz) 902-928MHz_Average

Maximizations

Frequency (MHz)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)
2444.000000	40.6	V	13.4	54.0
9284.500000	38.3	H	15.7	54.0
17863.000000	47.0	V	7.0	54.0