

Test report no.: <i>Prüfbericht-Nr.:</i>	CN24VWTK 001	Order No.: <i>Auftragsnr.:</i>	168479722	Page 1 of 22 <i>Seite 1 von 22</i>
Client reference no.: <i>Kunden-Referenz-Nr.:</i>	N/A	Order date: <i>Auftragsdatum:</i>	2024-04-17	
Client: <i>Auftraggeber:</i>	Honeywell International Inc. 12 Clintonville Road, Northford, CT 06472, United States			
Test item: <i>Prüfgegenstand:</i>	INNCOM DX47 Controller-X47			
Identification / Type no.: <i>Bezeichnung / Typ-Nr.:</i>	D-X47-24			
Order content: <i>Auftrags-Inhalt:</i>	Test Report			
Test specification <i>Prüfgrundlage:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 RSS-247 Issue 3 August 2023			
Date of sample receipt: <i>Wareneingangsdatum:</i>	2024-04-17	Please refer to Photo Document		
Test sample no: <i>Prüfmuster-Nr.:</i>	A003636915-001 A003646592-002 A003699806-001			
Testing period: <i>Prüfzeitraum:</i>	2024-05-04 - 2024-05-16			
Place of testing: <i>Ort der Prüfung:</i>	Refer to section 2.1			
Testing laboratory: <i>Prüflaboratorium:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Test result*: <i>Prüfergebnis*:</i>	Pass			
tested by: <i>geprüft von:</i>	authorized by: <i>genehmigt von:</i>			
Date: 2024-06-12 <i>Datum:</i>	Issue date: 2024-06-12 <i>Ausstellungsdatum:</i>			
Position / Stellung:	Expert/Sachverständige(r)	Position / Stellung:	Expert/Sachverständige(r)	
Other: <i>Sonstiges:</i>	FCC ID: 2A8LT-24DX47 IC: 1609A-24DX47 HVIN: D-X47-24 PMN: D-X47-24			
Condition of the test item at delivery: <i>Zustand des Prüfgegenstandes bei Anlieferung:</i>	Test item complete and undamaged Prüfmuster vollständig und unbeschädigt			
* Legend: <i>* Legende:</i>	P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet			
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark. <i>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</i>				

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Remarks
Anmerkungen

- | | |
|----------|--|
| 1 | <p>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</p> <p><i>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</i></p> <p><i>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i></p> |
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| 3 | <p>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</p> <p><i>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</i></p> |
| 4 | <p>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</p> <p><i>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</i></p> |

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 6dB BANDWIDTH

RESULT: Pass

5.1.5 99% BANDWIDTH

RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH

RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

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1 GENERAL REMARKS

1.1 COMPLEMENTARY MATERIALS

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Zigbee

2 TEST SITES

2.1 TEST FACILITIES

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China.

FCC Registration No.: 694916

ISED wireless device testing laboratory: 25069

2.2 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997-R&S)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
Wireless Connectivity Tester	R&S	CMW270	101375	25.07.2024
Signal Analyzer	R&S	FSV 40	101441	25.07.2024
Vector Signal Generator	R&S	SMBV100A	263301	25.07.2024
Signal Generator	R&S	SMB100A	115186	25.07.2024
OSP	R&S	OSP 150	101017	13.11.2024
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	13.11.2024
Power Sensor	R&S	NRP-Z81	105677	25.07.2024
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	15.03.2024
Shielding Room 8#	Albatross	SR8	APC17151-SR8	22.06.2024
Unwanted Emission Testing (TS9975)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2024-07-25
Signal Analyzer	R&S	FSV 40	101439	2024-07-25
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2024-07-25
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2024-07-25
Amplifier	R&S	SCU-18F	180070	2024-07-25
Amplifier	R&S	SCU40A	100475	2024-07-25
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-08-06
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-08-27

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Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2024-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22

Conducted Emission

Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102680	2025-02-22
Artificial Mains Network	R&S	ENV216	101445	2025-02-22
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 TRACEABILITY

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 CALIBRATION

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 MEASUREMENT UNCERTAINTY

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power (conducted)	± 2.5 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 6 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 6 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB
Temperature	± 1 °C
Humidity	± 5 %
Voltage (DC)	± 1 %
Voltage (AC, <10kHz)	± 2 %

2.6 LOCATION OF ORIGINAL DATA

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

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2.7 STATUS OF FACILITY USED FOR TESTING

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 GENERAL PRODUCT INFORMATION

3.1 PRODUCT FUNCTION AND INTENDED USE

The Product is wireless controller, which supports 2.4GHz Zigbee technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 RATINGS AND SYSTEM DETAILS

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	INNCOM DX47 Controller-X47
Type Designation:	D-X47-24
FCC ID:	2A8LT-24DX47
IC:	1609A-24DX47
HVIN:	D-X47-24
PMN:	D-X47-24
Operating Voltage:	AC 24V
Testing Voltage:	AC 24V via AC/AC transformer
Operating Temperature Range:	0°C - 40°C
Technical Specification of Zigbee	
Operating Frequency:	2405 - 2480 MHz
Type of Modulation:	OQPSK
Channel Number:	16 channels
Channel Separation:	5 MHz
Antenna Type:	External Antenna
Number of Antenna:	1
Antenna Gain:	1.93 dBi

Table 3: Marketed Accessories

Description	Model	Manufacturer
Ferrite Ring	WRC-140A-G	Dongguan CiFeng Electronics
Ferrite Ring	WRC-170B	Dongguan CiFeng Electronics

Both ferrite rings are assessed, only the worse result is showed in this report.

Table 4: RF Channel and Frequency

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

Test frequencies are lowest channel: 2405 MHz, middle channel: 2440 MHz and highest channel: 2480 MHz.

3.3 INDEPENDENT OPERATION MODES

The basic operation modes are:

- A. On, Zigbee wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- B. On, Normal operation (Zigbee Link)
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 SUBMITTED DOCUMENTS

- Application Form
- Operation Description
- Schematics
- PCB Layout
- User Manual
- Block Diagram
- Rating Label
- Parts List

4 TEST SET-UP AND OPERATION MODES

4.1 PRINCIPLE OF CONFIGURATION SELECTION

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 TEST OPERATION AND TEST SOFTWARE

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model D-X47-24 in this report.

4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT

Table 5: Auxiliary Equipment Used during Test

Description	Model	Manufacturer
Laptop	T480	Lenovo
Transformer (AC 120V - AC 24V)	N/A	N/A
Thermostat	D1-529-6V	Honeywell

4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 TEST SETUP DIAGRAM

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

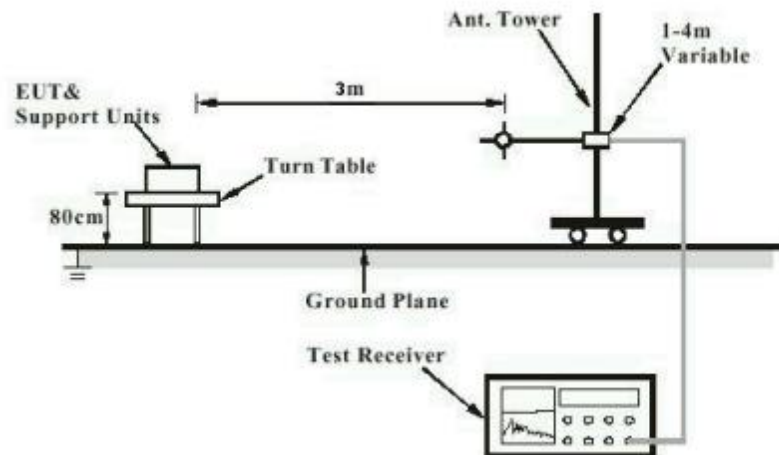


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

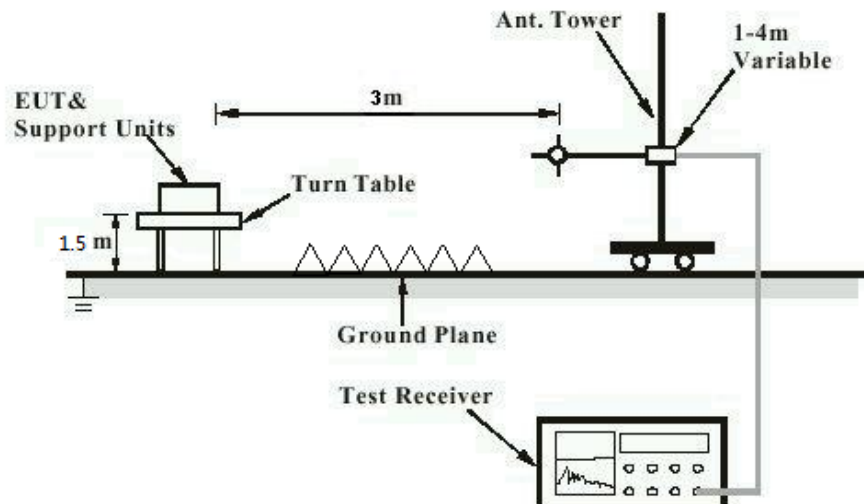


Diagram of Measurement Configuration for Mains Conduction Measurement

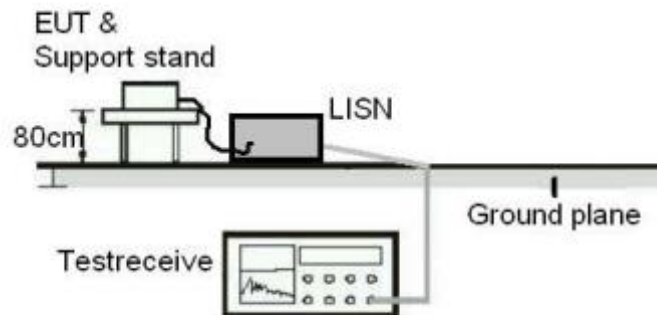
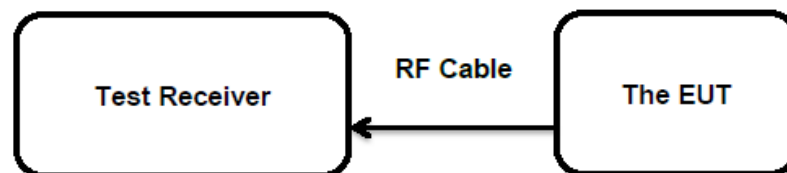


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 TEST RESULTS

5.1 TRANSMITTER REQUIREMENT & TEST SUITES

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 6.8

The EUT has an external antenna with SMA connector. The Antenna gain as listed in section 3.2 table 2. Only professional installation will be permitted. The installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Manufacturers ensure that their designs will not be modified by the user or third parties arbitrary antenna parameters and performance. The EUT complies with the requirement of §15.203.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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5.1.2 Maximum peak conducted output power

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(b)(3)
RSS-247 Clause 5.4(d)
Basic standard : ANSI C63.10: 2013
Limits : 1.0 Watts
Kind of test site : Shielded Room

Test Setup

Date of testing : 2024-05-06
Input voltage : AC 24V
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 22.5 °C
Relative humidity : 53 %
Atmospheric pressure : 101 kPa

Table 6: Test Result of Maximum Peak Conducted Output Power

Test Mode	Test Channel (MHz)	Measured Peak Conducted Power		Limit (W)
		(dBm)	(W)	
Zigbee	2405	20.3	0.1072	< 1.0
	2440	19.5	0.0891	
	2480	18.4	0.0692	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 1.93 dBi,
e.i.r.p.= $P_{(\text{Peak power})} + G$, which is far below the 4 W

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5.1.3 Conducted Power Spectral Density

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.247(e)
	: RSS-247 Clause 5.2(b)
Basic standard	: ANSI C63.10: 2013
Limits	: < 8 dBm / 3kHz
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-05-06
Input voltage	: AC 24V by transformer
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 22.5 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendixes B.

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5.1.4 6dB Bandwidth

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(a)(2)
RSS-247 Clause 5.2(a)
Basic standard : ANSI C63.10: 2013
Limits : > 500 kHz
Kind of test site : Shielded Room

Test Setup

Date of testing : 2024-05-06
Input voltage : AC 24V by transformer
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 22.5 °C
Relative humidity : 53 %
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendixes B.

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5.1.5 99% Bandwidth

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(a)
RSS-Gen Clause 6.7
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded Room

Test Setup

Date of testing : 2024-05-06
Input voltage : AC 24V by transformer
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 22.5 °C
Relative humidity : 53 %
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendixes B.

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5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:**Pass**

Test Specification

Test standard	: FCC Part 15.247(d) RSS-247 Clause 5.1(b)
Basic standard	: ANSI C63.10: 2013
Limits	: If the tested output power based on peak test: At least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. If the tested output power based on RMS averaging over a time interval: At least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-05-06
Input voltage	: AC 24V by transformer
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 22.5 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendixes B.

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5.1.7 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 5
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 2024-05-06 to 2024-05-10
Input voltage	: AC 24V by transformer
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: Refer to test result
Relative humidity	: Refer to test result
Atmospheric pressure	: 101 kPa

Remark:

For the measurement records, refer to the appendixes B.

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5.1.8 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a)
	: RSS-GEN clause 8.8
Basic standard	: ANSI C63.10: 2013
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-05-15
Input voltage	: AC 120V, 60Hz
Operation mode	: B
Earthing	: Not connected
Ambient temperature	: 21.3 °C
Relative humidity	: 50.8 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendixes B.

6 PHOTOGRAPHS OF THE TEST SET-UP

For photographs of the test set-up, refer to the appendix A.

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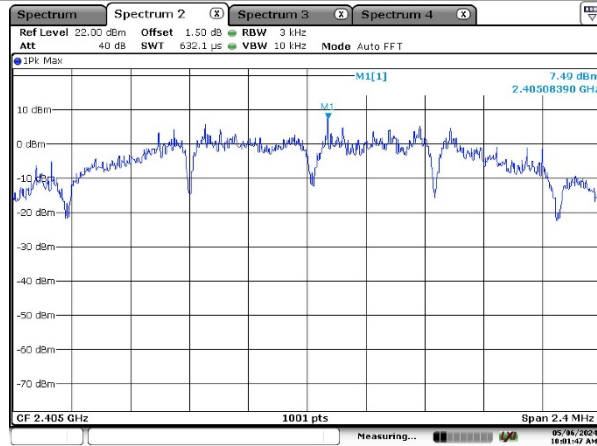
APPENDIX B: TEST RESULTS

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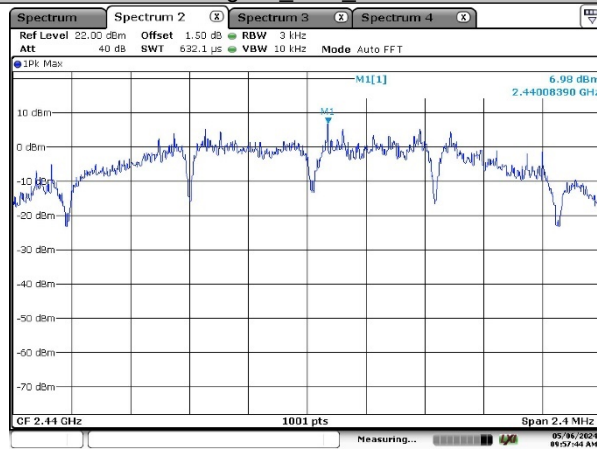
APPENDIX B.1: CONDUCTED PEAK POWER SPECTRAL DENSITY

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
Zigbee	Ant1	2405	7.49	≤8.00	PASS
		2440	6.98	≤8.00	PASS
		2480	5.17	≤8.00	PASS

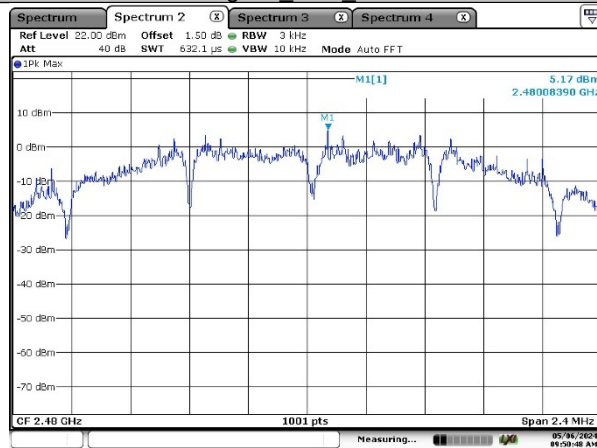
Zigbee Ant1 2405



Zigbee Ant1 2440



Zigbee Ant1 2480



APPENDIX B.2: 6dB BANDWIDTH

Minimum Emission Bandwidth 6 dB (2405 MHz; 20.000 dBm; 5 MHz)

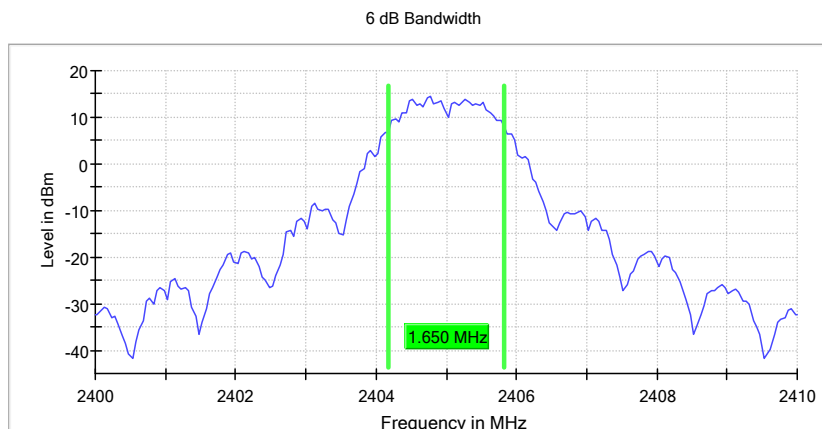
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	1.650000	0.500000	---	2404.175000	2405.825000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2405.000000	14.6	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
Sweeptime	37.969 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	13 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.09 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2440 MHz; 20.000 dBm; 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

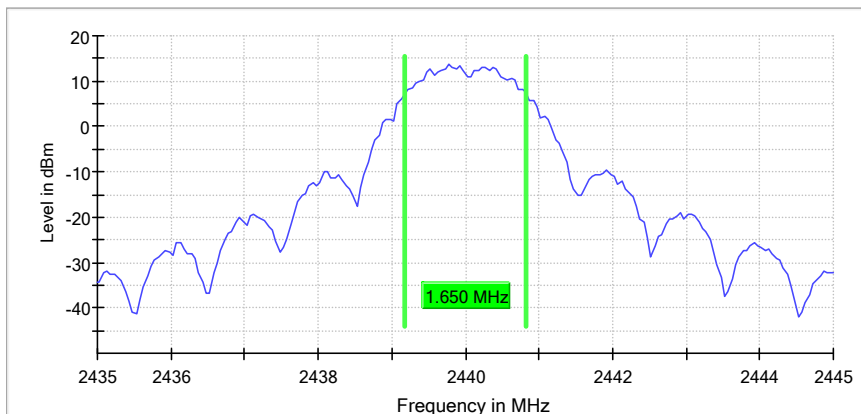
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.650000	0.500000	---	2439.175000	2440.825000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	13.6	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43500 GHz	2.43500 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
Sweeptime	37.969 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	24 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2480 MHz; 20.000 dBm; 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

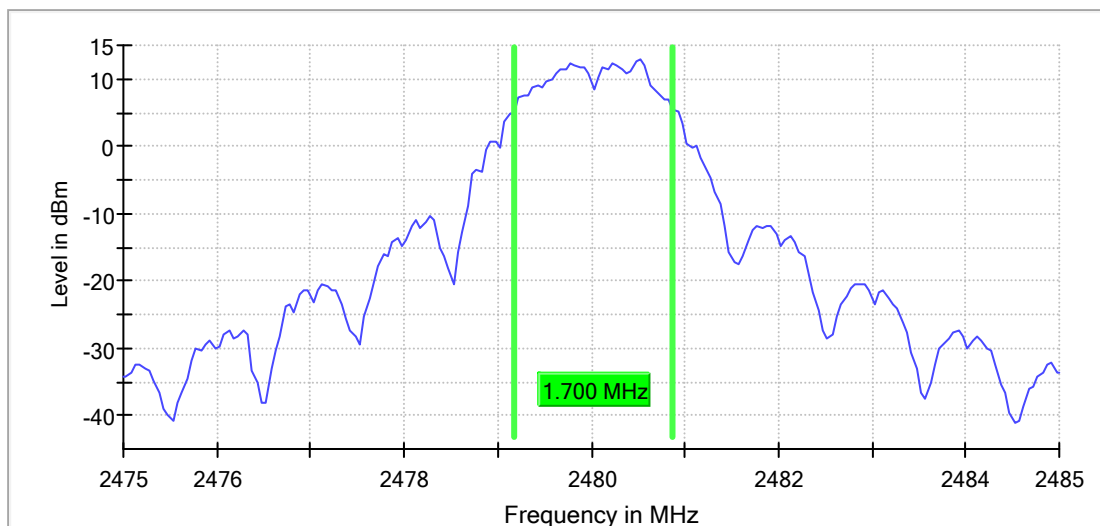
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.700000	0.500000	---	2479.175000	2480.875000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	12.8	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
Sweeptime	37.969 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	24 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

APPENDIX B.3: 99% BANDWIDTH

Occupied Channel Bandwidth 99% (2405 MHz; 20.000 dBm; 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

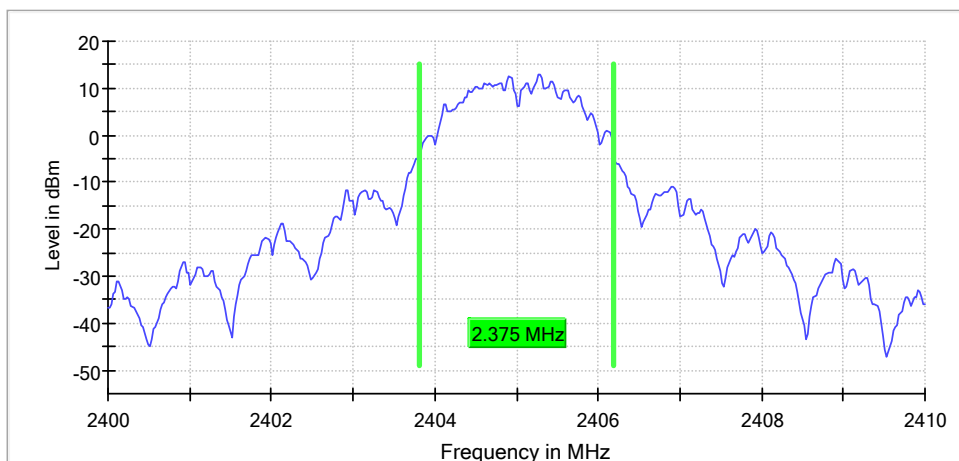
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	2.375000	---	---	2403.812500	2406.187500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2405.000000	PASS

99 % Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	75.781 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	43 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

Occupied Channel Bandwidth 99% (2440 MHz; 20.000 dBm; 5 MHz)

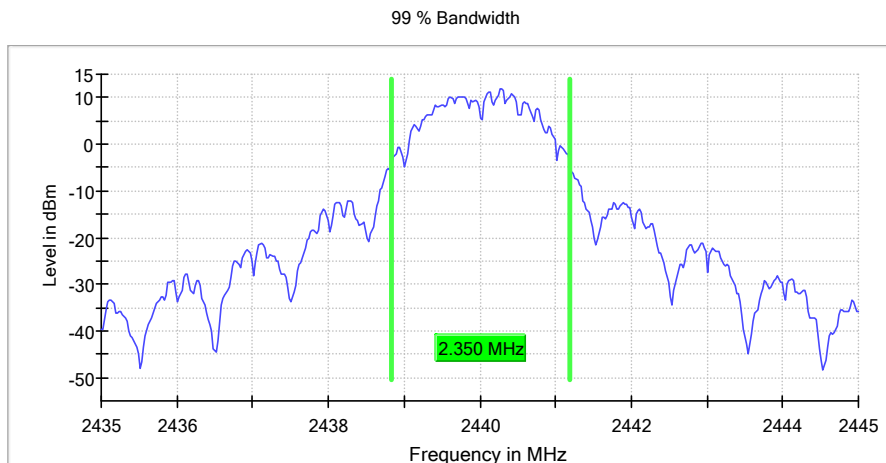
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	2.350000	---	---	2438.837500	2441.187500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43500 GHz	2.43500 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	75.781 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	28 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

Occupied Channel Bandwidth 99% (2480 MHz; 20.000 dBm; 5 MHz)

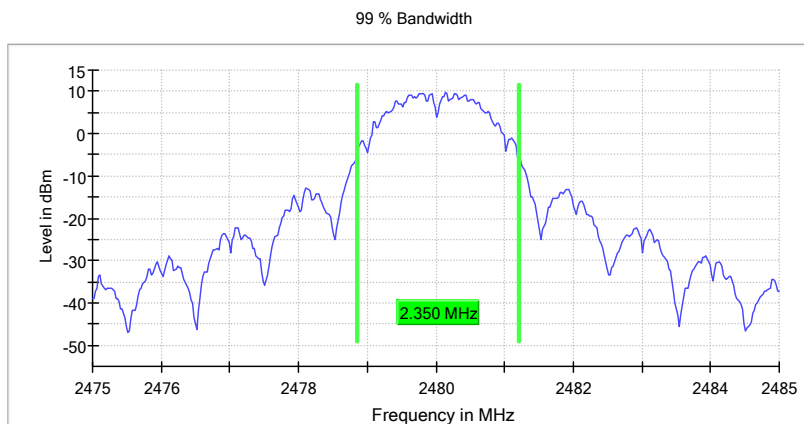
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	2.350000	---	---	2478.862500	2481.212500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



Measurement

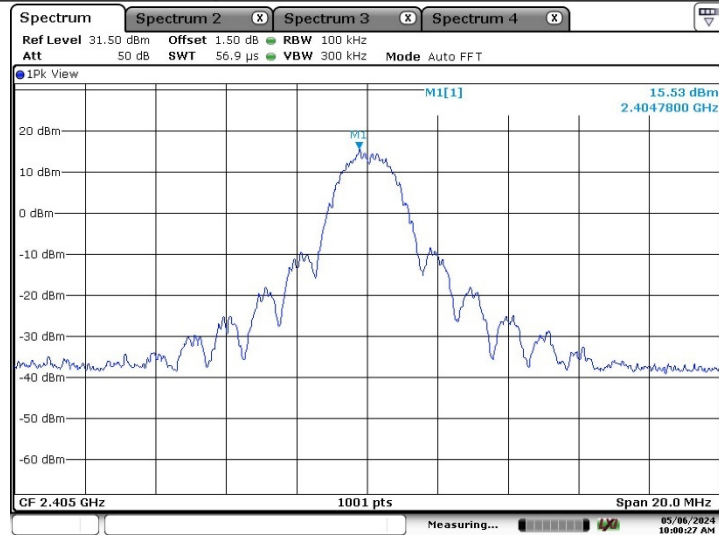
Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
Sweptime	75.781 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	40 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.17 dB	0.30 dB

APPENDIX B.4: CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

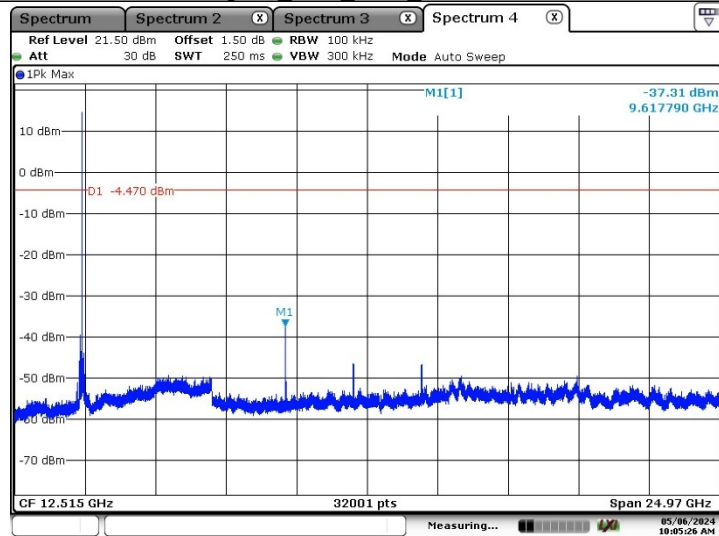
Conducted Spurious Emission

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
Zigbee	Ant1	2405	Reference	15.53	/	---	PASS
			30~25000	/	-37.31	≤-4.47	PASS
		2440	Reference	15.96	/	---	PASS
			30~25000	/	-34.07	≤-4.04	PASS
		2480	Reference	12.74	/	---	PASS
			30~25000	/	-32.72	≤-7.26	PASS

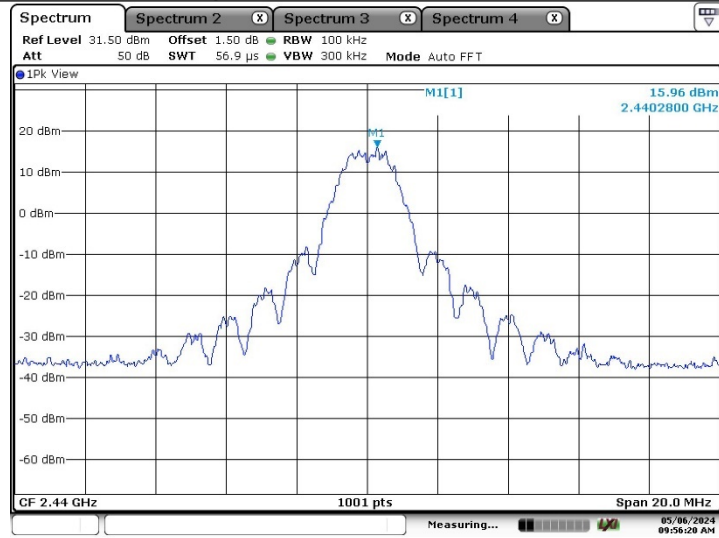
Zigbee Ant1 2405 0~Reference



Zigbee Ant1 2405 30~25000

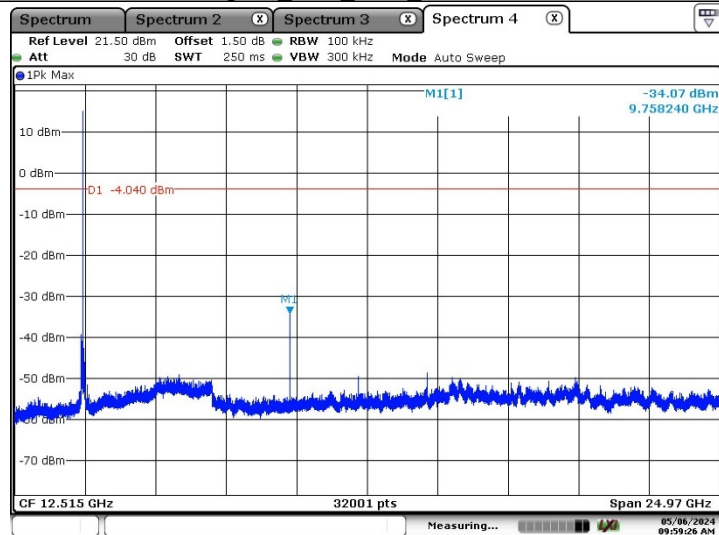


Zigbee Ant1_2440_0~Reference



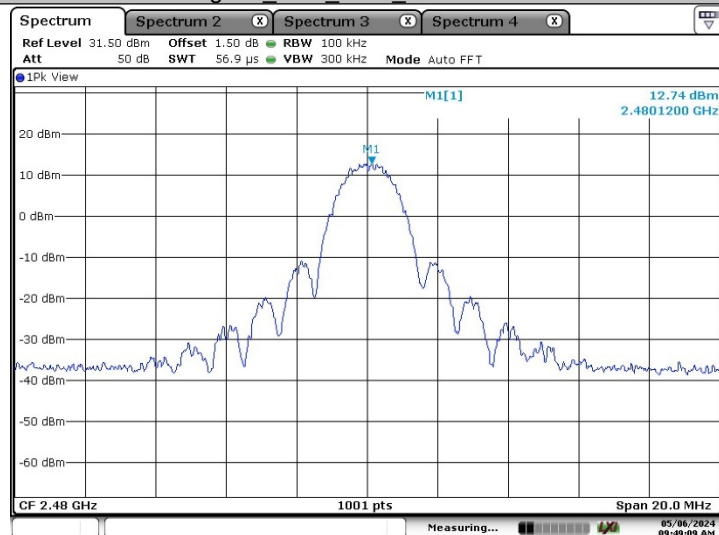
Date: 6.MAY.2024 09:56:19

Zigbee Ant1_2440_30~25000



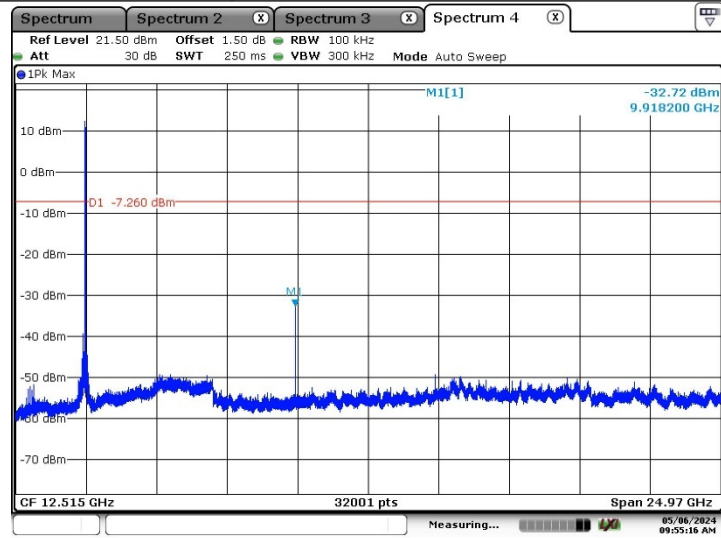
Date: 6.MAY.2024 09:59:26

Zigbee Ant1_2480_0~Reference



Date: 6.MAY.2024 09:49:09

Zigbee_Ant1_2480_30~25000

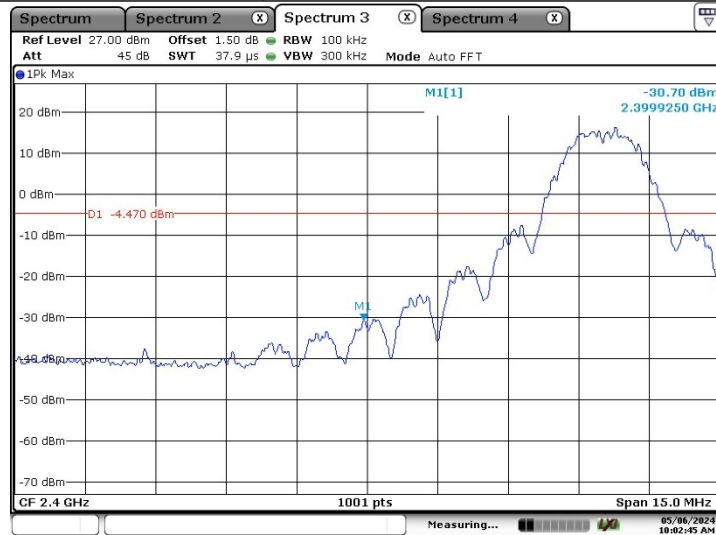


Date: 6.MAY.2024 09:55:16

Band Edge

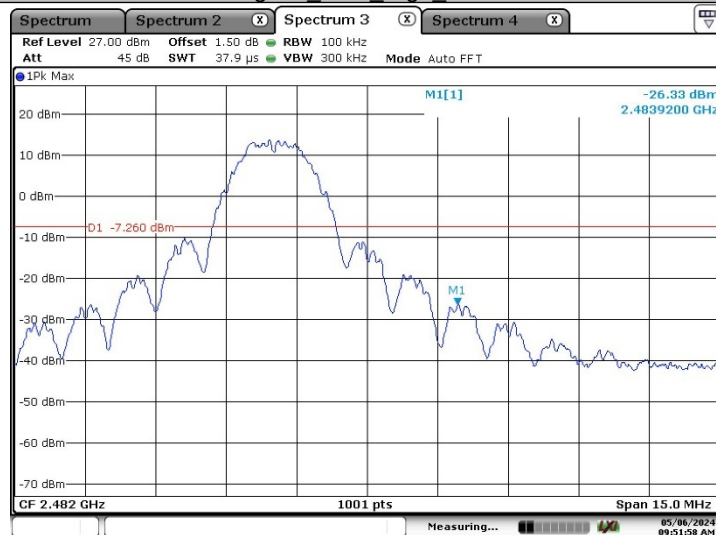
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
Zigbee	Ant1	Low	2405	15.53		≤-4.47	PASS
		High	2480	12.74		≤-7.26	PASS

Zigbee_Ant1_Low 2405



Date: 6.MAY.2024 10:02:45

Zigbee_Ant1_High 2480



Date: 6.MAY.2024 09:51:58

APPENDIX B.5: RADIATED SPURIOUS EMISSIONS

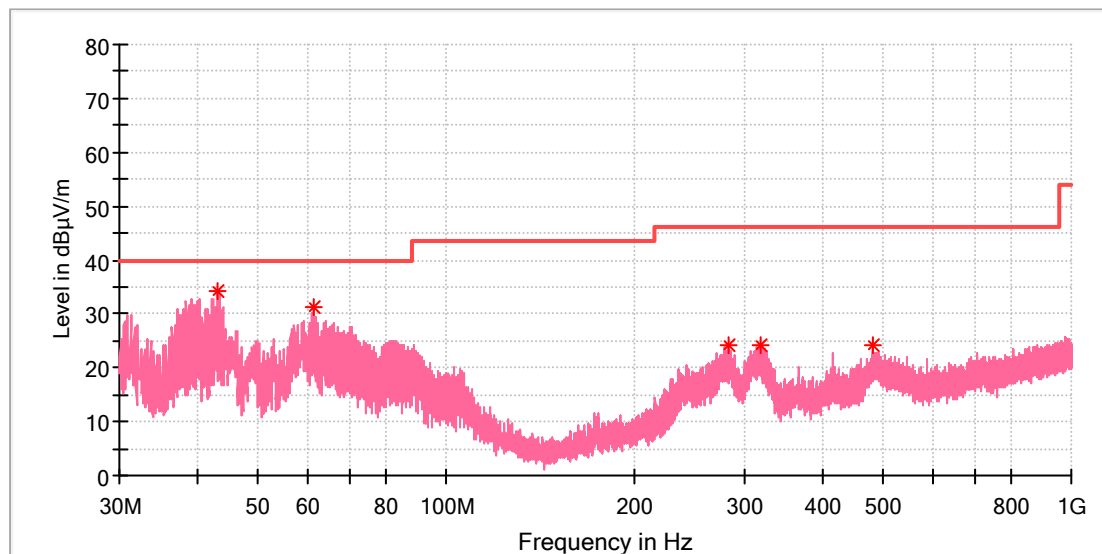
Note: 1. Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

2. Both the ferrite ring WRC-140A-G and WRC-170B configurations have been considered in test, only the Worst-case reported.

30MHz - 1GHz (Worst case)

EUT Information

EUT Name:	INNCOM DX47 Controller-X47
Model:	D-X47-24
Test Mode:	Middle channel
Order No/Sample No:	168476662/A003701545-008
Test Voltage::	AC 24V
Remark:	Temp 23 Humi:58%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

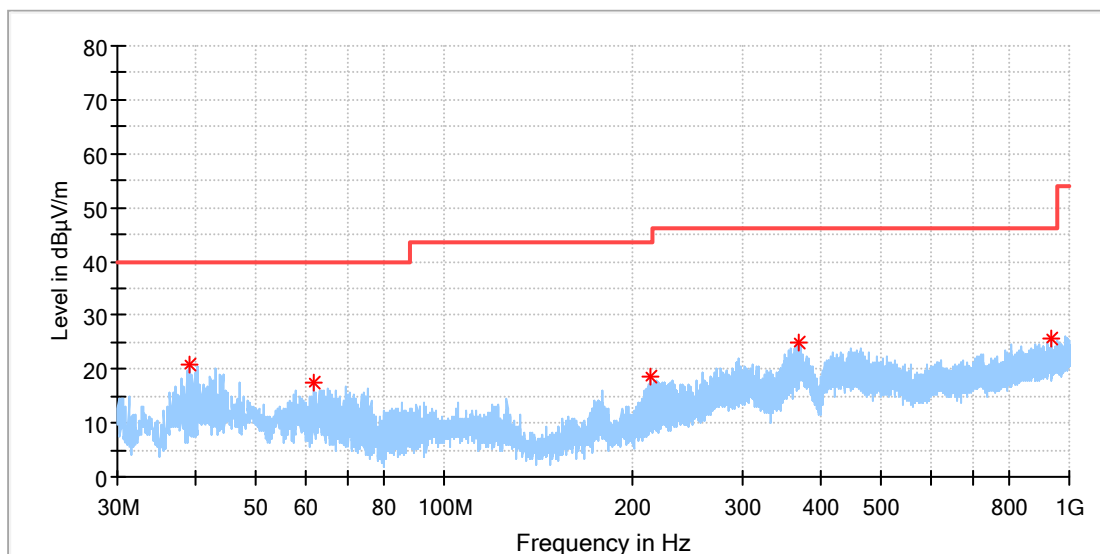
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.095000	34.15	40.00	5.85	100.0	V	0.0	-19.6
61.487692	31.21	40.00	8.79	100.0	V	353.0	-19.6
282.237308	24.33	46.00	21.67	100.0	V	207.0	-17.0
318.612308	24.31	46.00	21.69	100.0	V	85.0	-16.1
480.042692	24.13	46.00	21.87	100.0	V	11.0	-12.6

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Middle channel
Order No/Sample No: 168476662/A003701545-008
Test Voltage:: AC 24V
Remark: Temp 23 Humi:58%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.140385	20.73	40.00	19.27	100.0	H	15.0	-20.7
61.860769	17.66	40.00	22.34	100.0	H	114.0	-19.7
214.225385	18.54	43.50	24.96	100.0	H	63.0	-19.1
369.798462	24.94	46.00	21.06	100.0	H	203.0	-14.8
935.606923	25.70	46.00	20.30	100.0	H	247.0	-5.1

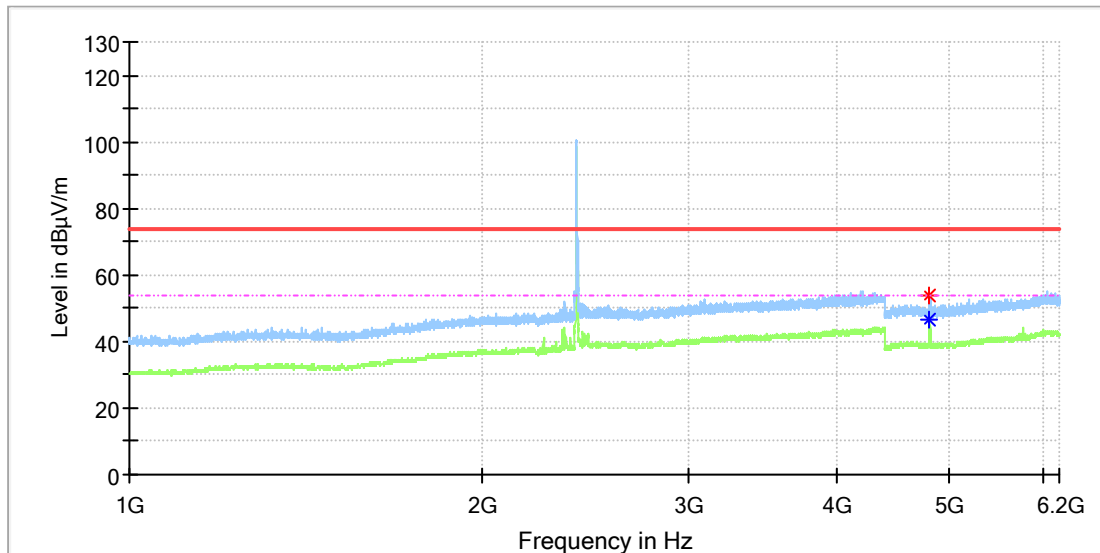
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

1GHz-18GHz

EUT Information

EUT Name:	INNCOM DX47 Controller-X47
Model:	D-X47-24
Test Mode:	Low Channel
Order No/Sample No:	168479722/A003699806-001
Test Voltage::	AC 24V
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

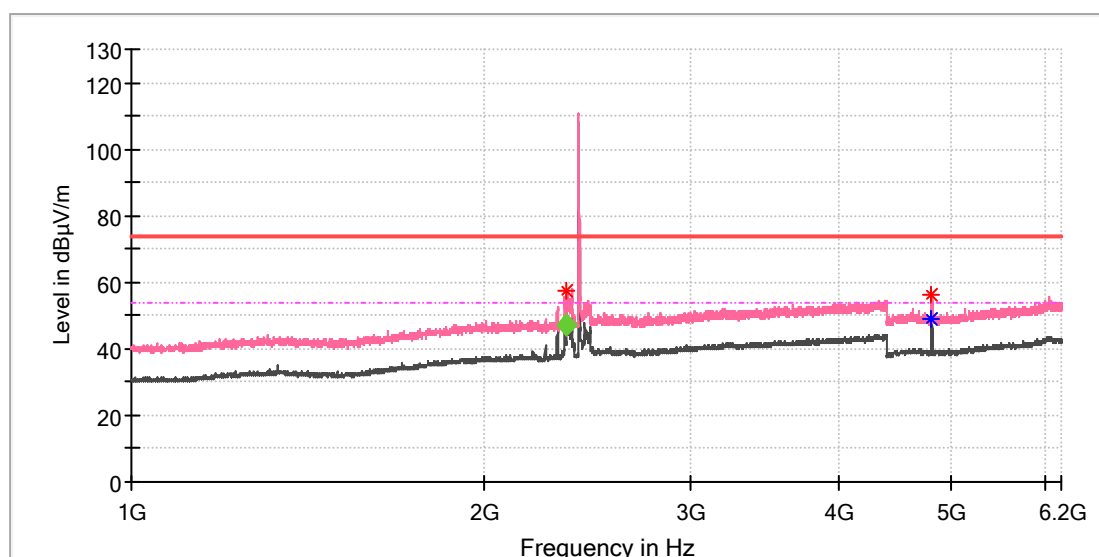
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4809.000000	53.61	---	74.00	20.39	150.0	H	10.0	11.8
4809.000000	---	46.33	54.00	7.67	150.0	H	10.0	11.8

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Low Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

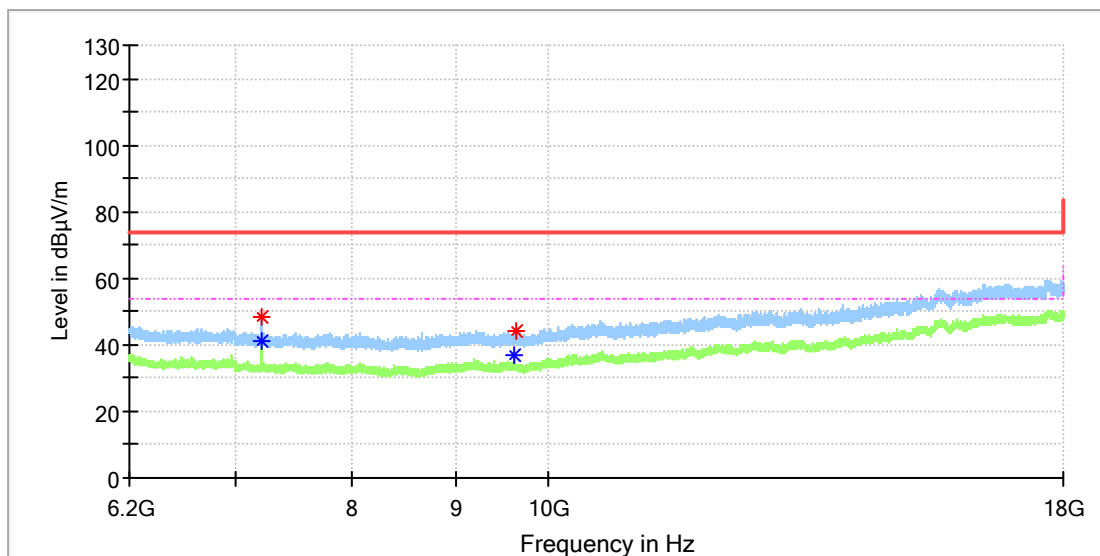
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2351.500000	57.32	---	74.00	16.68	150.0	V	247.0	6.9
4810.500000	---	49.22	54.00	4.78	150.0	V	304.0	11.8
4811.000000	56.42	---	74.00	17.58	150.0	V	304.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2349.961765	47.34	54.00	6.66	145.0	V	245.0	6.9

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Low Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

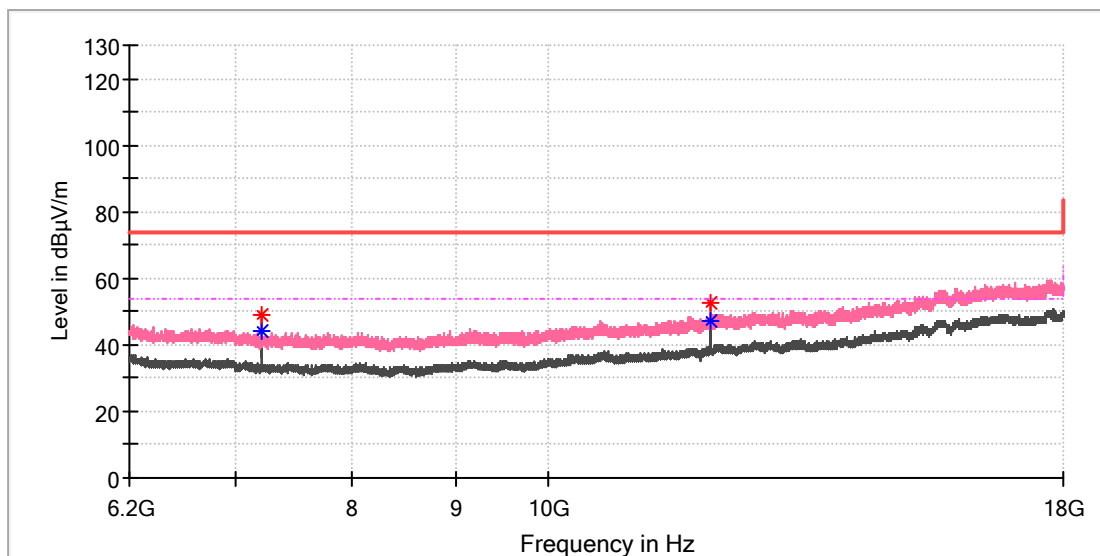
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7213.325000	---	41.17	54.00	12.83	150.0	H	84.0	8.7
7213.325000	48.48	---	74.00	25.52	150.0	H	84.0	8.7
9622.000000	---	37.13	54.00	16.87	150.0	H	107.0	10.4
9640.683333	44.17	---	74.00	29.83	150.0	H	264.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Low Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

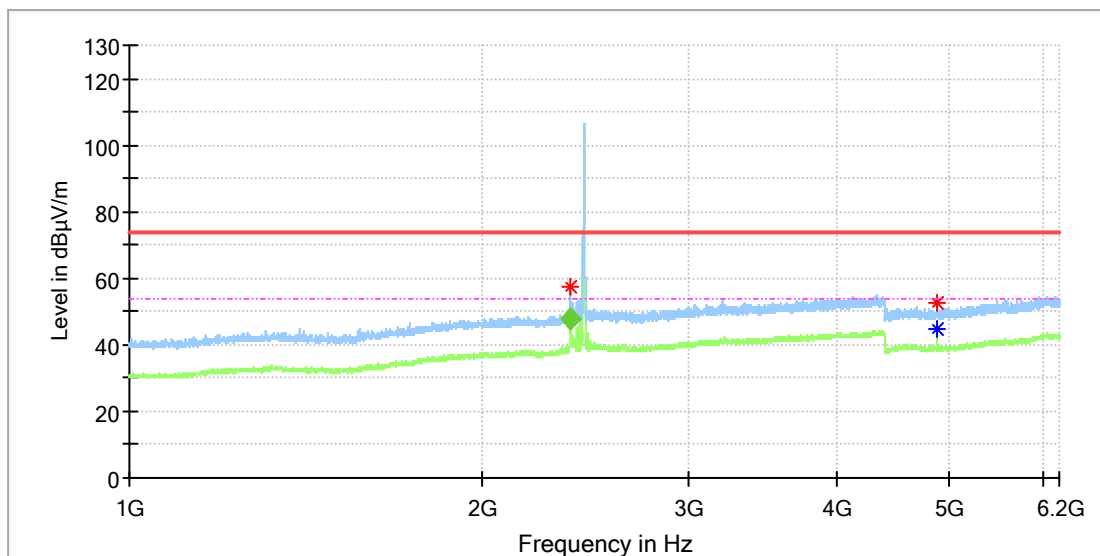
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7213.816667	49.16	---	74.00	24.84	150.0	V	19.0	8.7
7216.275000	---	43.95	54.00	10.05	150.0	V	19.0	8.7
12022.808333	52.41	---	74.00	21.59	150.0	V	42.0	14.0
12027.725000	---	47.22	54.00	6.78	150.0	V	42.0	14.0

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Middle Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

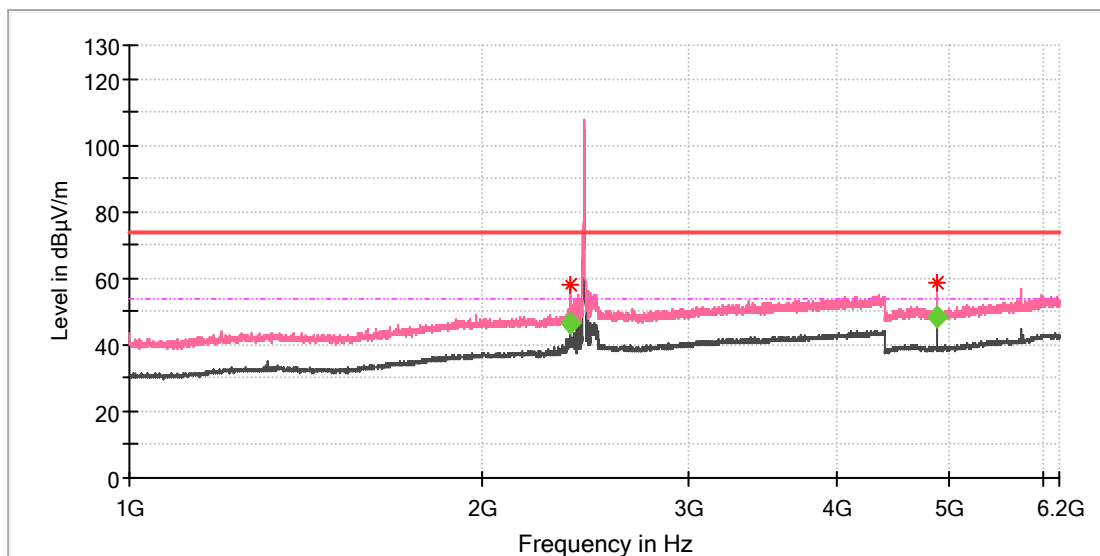
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2376.500000	57.72	---	74.00	16.28	150.0	H	14.0	6.9
4879.000000	---	44.46	54.00	9.54	150.0	H	152.0	11.8
4881.000000	52.87	---	74.00	21.13	150.0	H	152.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2374.386765	47.53	54.00	6.47	148.0	H	9.0	6.9

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Middle Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

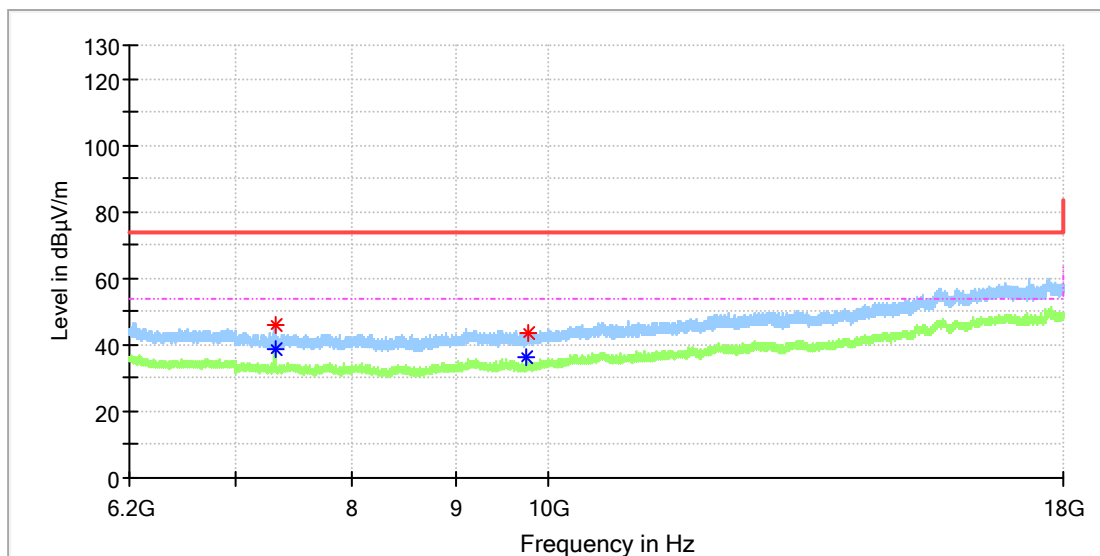
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2376.000000	58.05	---	74.00	15.95	150.0	V	332.0	6.9
4879.000000	58.48	---	74.00	15.52	150.0	V	319.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2376.535294	46.83	54.00	7.17	148.0	V	327.0	6.9
4879.302778	48.67	54.00	5.33	148.0	V	314.0	11.8

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Middle Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

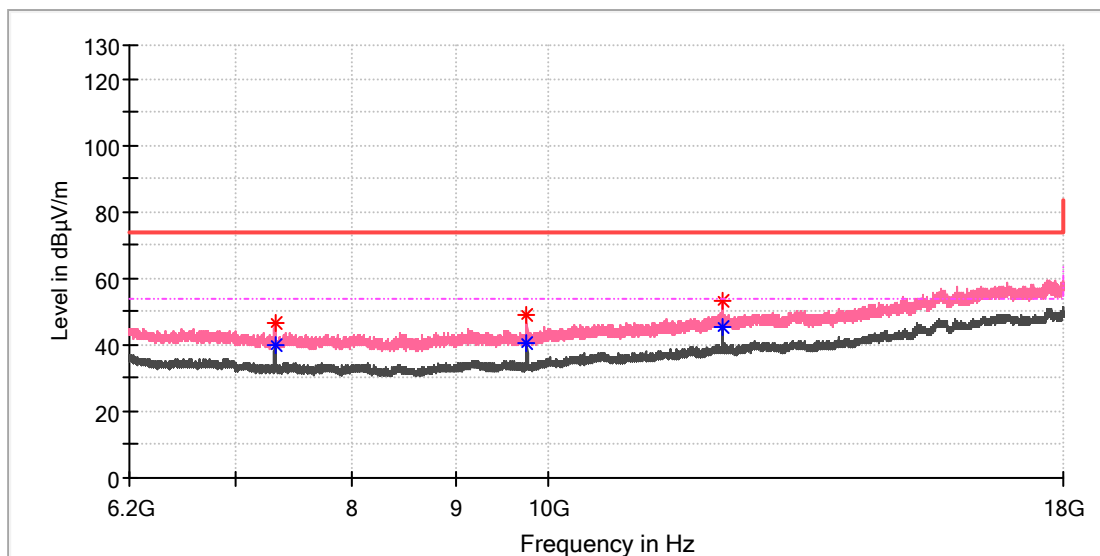
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7321.000000	46.14	---	74.00	27.86	150.0	H	46.0	8.2
7321.000000	---	38.95	54.00	15.05	150.0	H	46.0	8.2
9762.125000	---	36.41	54.00	17.59	150.0	H	328.0	10.4
9765.566667	43.74	---	74.00	30.26	150.0	H	154.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Middle Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

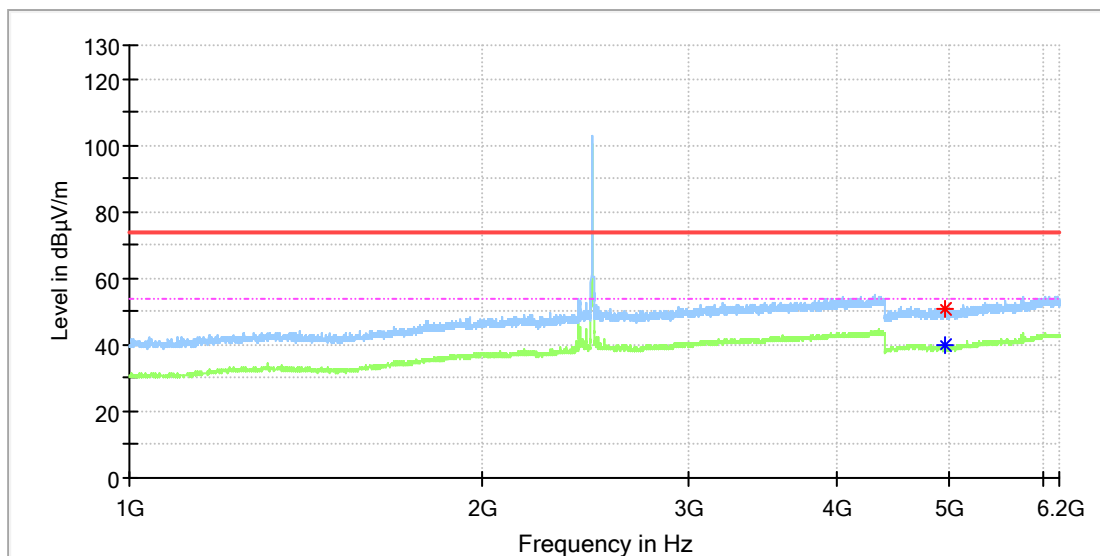
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7321.491667	---	39.91	54.00	14.09	150.0	V	96.0	8.2
7321.491667	46.81	---	74.00	27.19	150.0	V	96.0	8.2
9758.191667	48.77	---	74.00	25.23	150.0	V	32.0	10.4
9758.191667	---	40.53	54.00	13.47	150.0	V	32.0	10.4
12197.841667	52.97	---	74.00	21.03	150.0	V	329.0	14.6
12203.250000	---	45.16	54.00	8.84	150.0	V	329.0	14.7

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

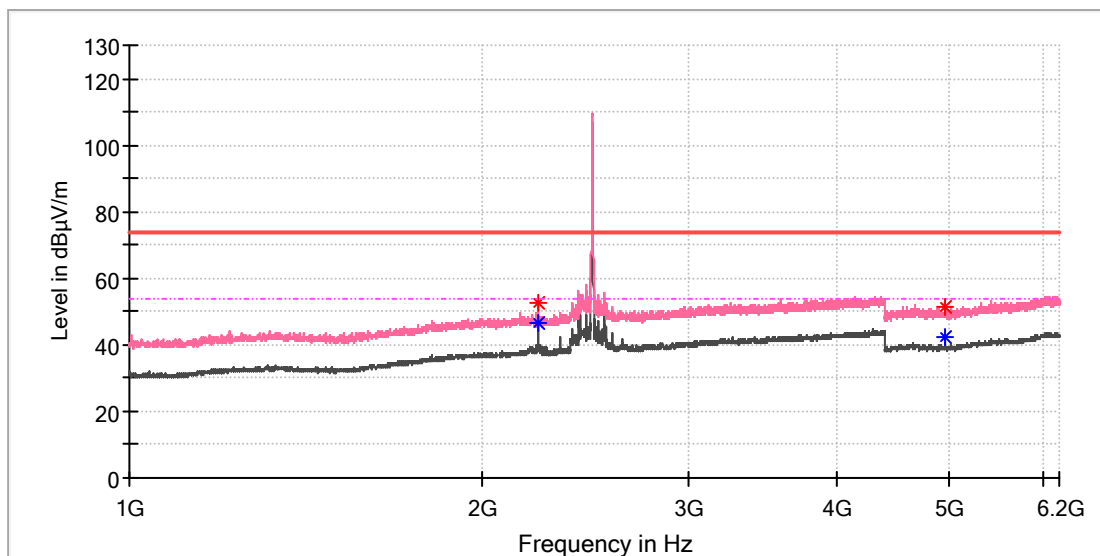
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.500000	---	40.12	54.00	13.88	150.0	H	338.0	11.8
4961.500000	50.77	---	74.00	23.23	150.0	H	357.0	11.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

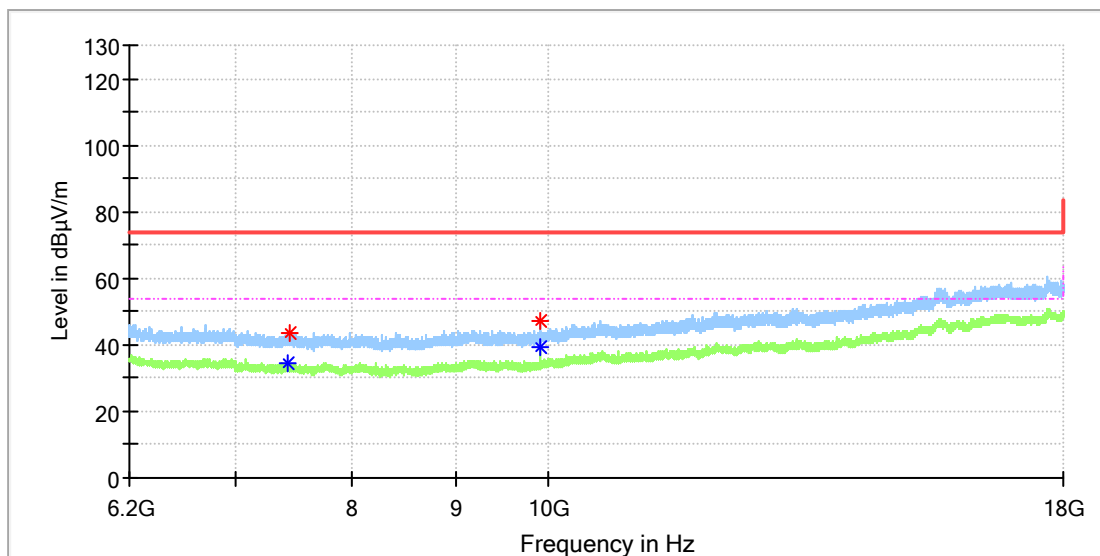
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2231.500000	52.67	---	74.00	21.33	150.0	V	338.0	6.4
2232.000000	---	46.51	54.00	7.49	150.0	V	338.0	6.4
4959.500000	51.23	---	74.00	22.77	150.0	V	131.0	11.8
4960.000000	---	42.14	54.00	11.86	150.0	V	61.0	11.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

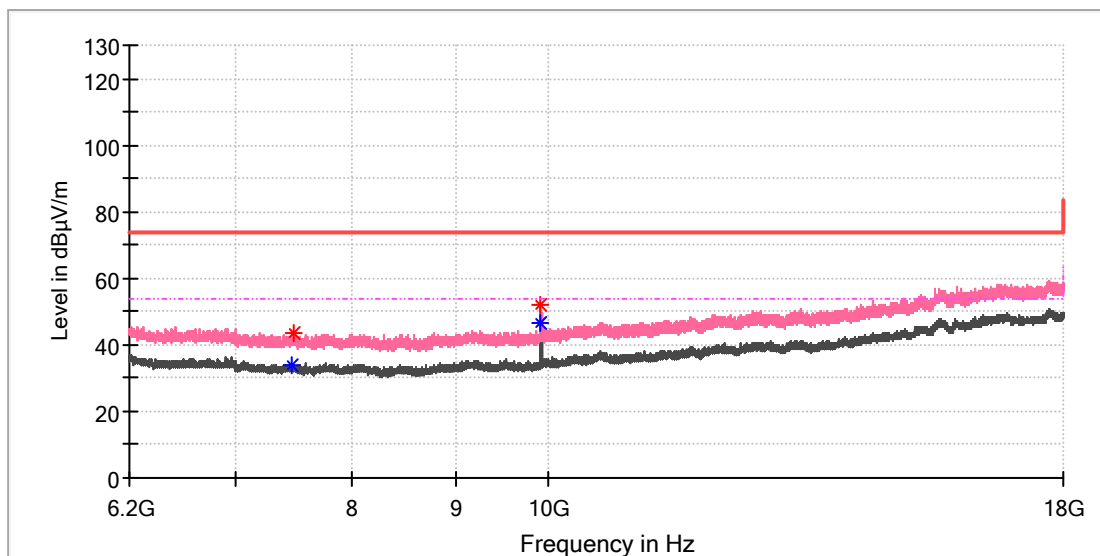
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7419.825000	---	34.25	54.00	19.75	150.0	H	352.0	8.4
7438.016667	43.58	---	74.00	30.42	150.0	H	277.0	8.4
9917.491667	46.94	---	74.00	27.06	150.0	H	338.0	10.8
9917.983333	---	39.53	54.00	14.47	150.0	H	338.0	10.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7468.991667	---	34.05	54.00	19.95	150.0	V	331.0	8.6
7474.400000	43.24	---	74.00	30.76	150.0	V	283.0	8.6
9917.983333	---	46.39	54.00	7.61	150.0	V	331.0	10.8
9917.983333	51.97	---	74.00	22.03	150.0	V	331.0	10.8

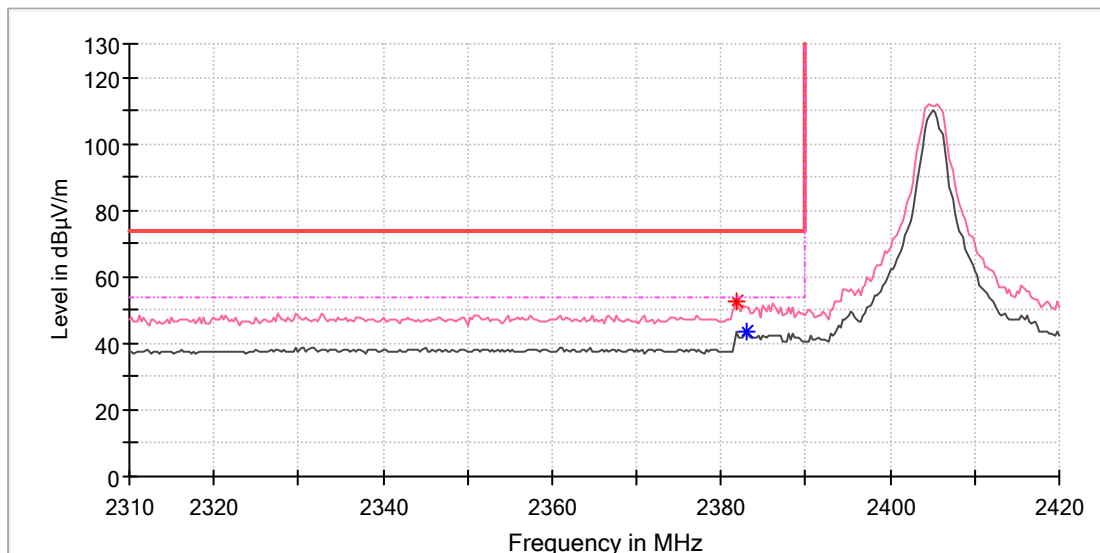
Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

APPENDIX B.6: RADIATED EMISSIONS IN RESTRICTED BANDS

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Low Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

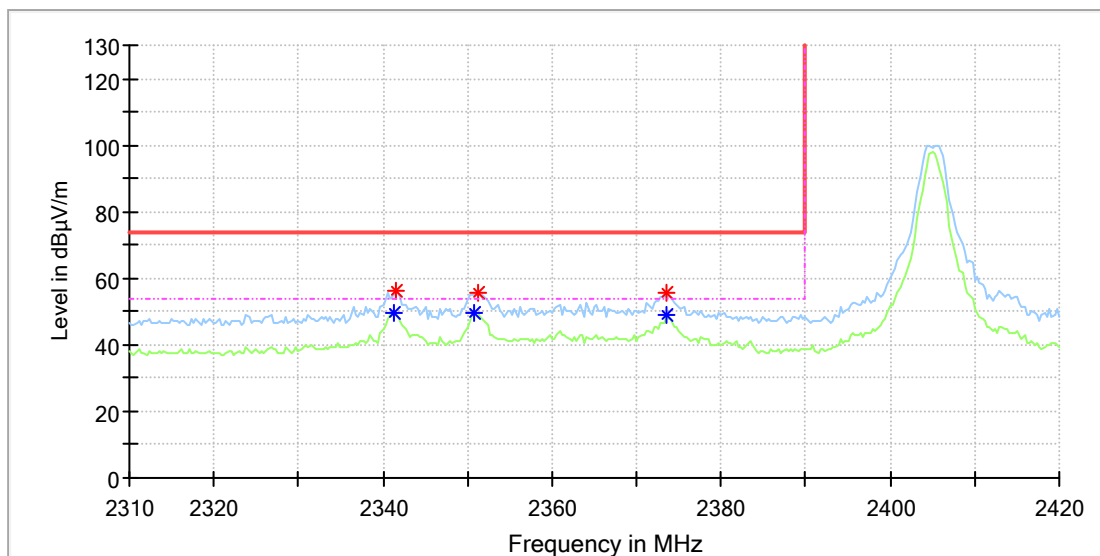
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2381.764706	52.81	---	74.00	21.19	150.0	V	0.0	7.0
2382.941177	---	43.59	54.00	10.41	150.0	V	0.0	7.0

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: Low Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

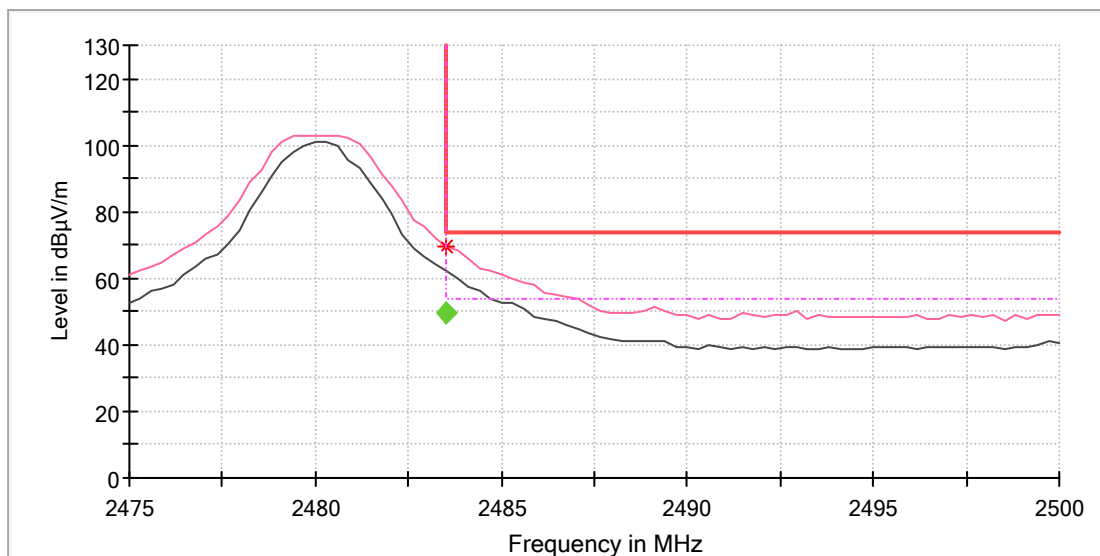
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2341.176471	---	49.75	54.00	4.25	150.0	H	21.0	6.8
2341.470588	56.01	---	74.00	17.99	150.0	H	21.0	6.8
2350.882353	---	49.52	54.00	4.48	150.0	H	21.0	6.9
2351.176471	55.41	---	74.00	18.59	150.0	H	21.0	6.9
2373.529412	55.35	---	74.00	18.65	150.0	H	42.0	6.9
2373.529412	---	49.27	54.00	4.73	150.0	H	42.0	6.9

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

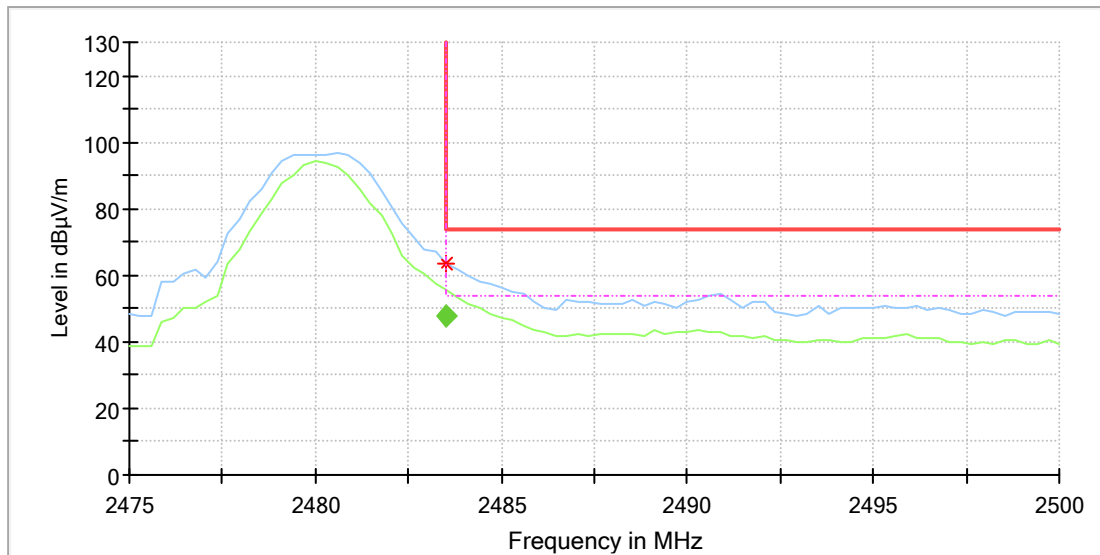
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.529412	69.48	---	74.00	4.52	150.0	V	266.0	7.4

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.529412	49.56	54.00	4.44	145.0	V	264.0	7.4

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Model: D-X47-24
Test Mode: High Channel
Order No/Sample No: 168479722/A003699806-001
Test Voltage:: AC 24V
Remark: Temp 24 Humi:50%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.529412	63.61	---	74.00	10.39	150.0	H	229.0	7.4

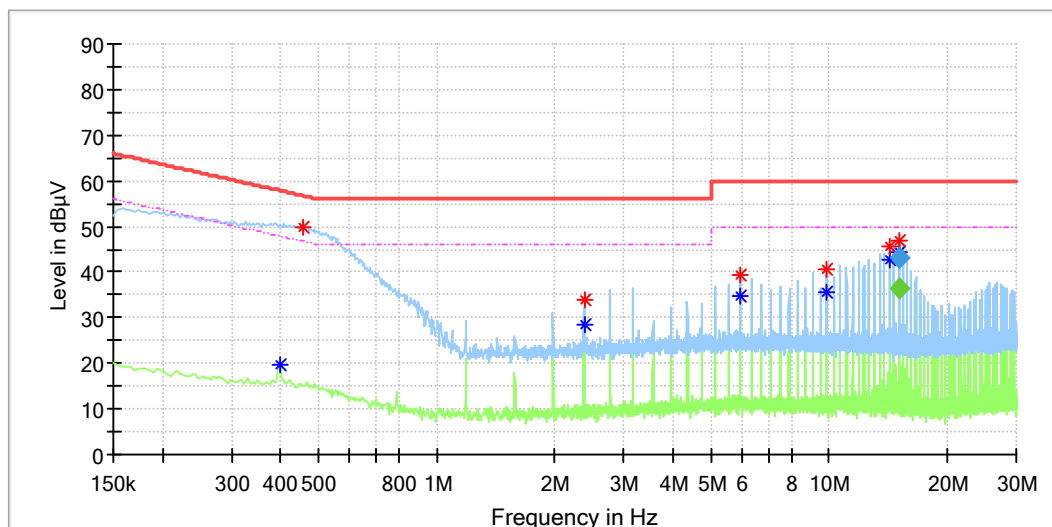
Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.529412	47.92	54.00	6.08	150.0	H	228.0	7.4

APPENDIX B.7: CONDUCTED EMISSION ON AC MAINS

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Order Number: 168479722 20
Model: D-X47-24
Test Mode: Normal working with ZigBee Connected
Test Voltage: AC 24V
Test Standard: FCC Part 15C
Test By:/Review By: Junhua/ Shower Dai
Tem./Hum./Pressure: 24.3°C/52.2%/101kPa
Remark: SR2



Critical_Freqs

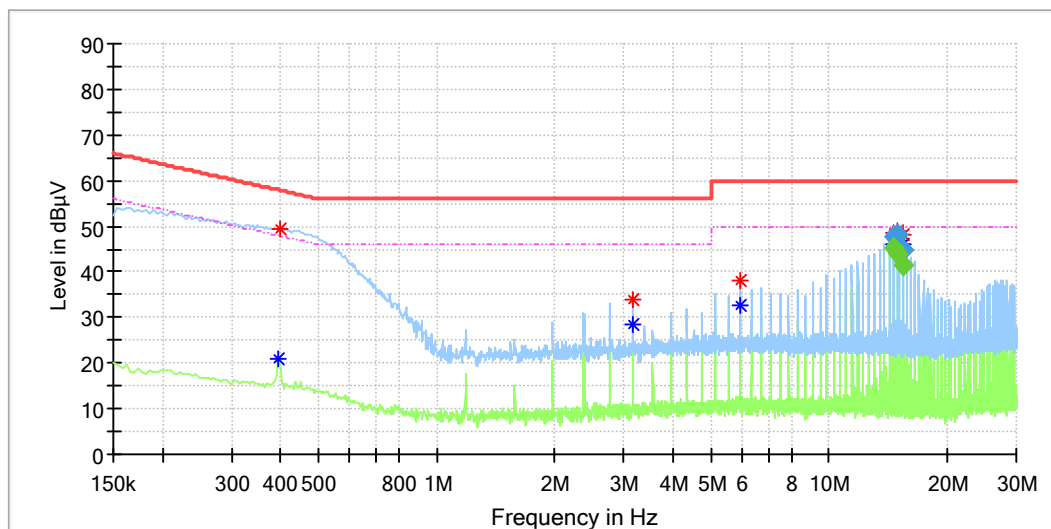
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.398000	---	19.77	47.90	28.13	L1	9.9
0.458000	49.93	---	56.73	6.80	L1	10.0
2.374000	---	28.41	46.00	17.59	L1	10.2
2.374000	33.79	---	56.00	22.21	L1	10.2
5.934000	39.17	---	60.00	20.83	L1	10.3
5.938000	---	34.63	50.00	15.37	L1	10.3
9.894000	---	35.39	50.00	14.61	L1	10.3
9.894000	40.62	---	60.00	19.38	L1	10.3
14.246000	---	42.61	50.00	7.39	L1	10.4
14.246000	45.71	---	60.00	14.29	L1	10.4
15.033500	47.02	---	60.00	12.98	L1	10.4
15.033500	---	44.31	50.00	5.69	L1	10.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
15.033500	---	36.45	50.00	13.55	1000.0	9.000	L1	10.4
15.033500	43.08	---	60.00	16.92	1000.0	9.000	L1	10.4

EUT Information

EUT Name: INNCOM DX47 Controller-X47
Order Number: 168479722 20
Model: D-X47-24
Test Mode: Normal working with ZigBee Connected
Test Voltage: AC 24V
Test Standard: FCC Part 15C
Test By:/Review By: Junhua/ Shower Dai
Tem./Hum./Pressure: 24.3°C/52.2%/101kPa
Remark: SR2



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.394000	---	20.98	47.98	27.00	N	9.8
0.398000	49.23	---	57.90	8.66	N	9.8
3.162000	---	28.51	46.00	17.49	N	9.9
3.162000	34.10	---	56.00	21.90	N	9.9
5.930000	---	32.53	50.00	17.47	N	9.9
5.930000	38.22	---	60.00	21.78	N	9.9
14.617500	---	46.00	50.00	4.00	N	10.1
14.617500	48.62	---	60.00	11.38	N	10.1
15.013500	49.10	---	60.00	10.90	N	10.1
15.013500	---	47.01	50.00	2.99	N	10.1
15.409500	48.02	---	60.00	11.98	N	10.1
15.409500	---	46.10	50.00	3.90	N	10.1

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
14.617500	---	45.09	50.00	4.91	1000.0	9.000	N	10.1
14.617500	47.58	---	60.00	12.42	1000.0	9.000	N	10.1
15.013500	---	43.89	50.00	6.11	1000.0	9.000	N	10.1
15.013500	48.06	---	60.00	11.94	1000.0	9.000	N	10.1
15.409500	---	41.56	50.00	8.44	1000.0	9.000	N	10.1
15.409500	44.84	---	60.00	15.16	1000.0	9.000	N	10.1