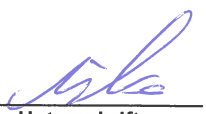
TÜVRheinland®

Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**14045640 001**		**Seite 1 von 21** *Page 1 of 21*
Auftraggeber: *Client:*	**Megabyte Limited** **Unit 507, Building 12W** **No. 12 Science Park West Avenue** **Hong Kong Science Park, Shatin, N.T.** **Hong Kong**		
Gegenstand der Prüfung: *Test Item:*	**UHF Portable RFID Reader**		
Bezeichnung: *Identification:*	**H3B-01-MB, H3B-01-39, H3B-01-PH**	**Serien-Nr.:** *Serial No.:*	**Engineering sample**
Wareneingangs-Nr.: *Receipt No.:*	**A000386196-003** **A000460455-001**	**Eingangsdatum:** *Date of Receipt:*	**30.06.2016** **15.11.2016**
Prüfort: *Testing Location:*	**TÜV Rheinland Hong Kong Ltd.** 3/F., Fou Wah Industrial Building, 10-16 Pun Shan Street, Tsuen Wan, Hong Kong **Hong Kong Productivity Council** HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of test item at delivery:*	Test sample(s) is/are not damaged and suitable for testing.		
Prüfgrundlage: *Test Specification:*	**FCC Part 15 Subpart B and C** **ANSI C63.4-2014** **ANSI C63.10-2013**		
Prüfergebnis: *Test Results:*	**Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage.** The above mentioned product was tested and **passed**.		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 3-4, 11/F., Fou Wah Industrial Building, 10-16 Pun Shan Street, Tsuen Wan, Hong Kong		

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
12.12.2016	Mika Chan Project Manager		12.12.2016	Sharon Li Department Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges: **FCC ID: XEK-MHANDH3**
Other Aspects

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

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Product information

Manufacturers declarations

	Transceiver
Operating frequency range	902.75 - 927.25 MHz
Type of modulation	DSB-ASK
Number of channels	50
Channel separation	500 KHz
Type of antenna	Circularly polarized panel antenna, Left-Hand
Antenna gain (dBi)	6 dBiC
Power level	fix
Type of equipment	stand alone radio device
Connection to public utility power line	No
Nominal voltage	V_{nor}: 100-240VAC and 3.7 VDC
Independent Operation Modes	Transmit and receive

Product function and intended use

The equipment under test (EUT) is a UHF Portable RFID Reader with Bluetooth (dual mode) and NFC function.

The manufacturer declared that the model: H3B-01-39 and H3B-01-PH are identical to the model H3B-01-MB except the logo plate.

FCC ID: XEK-MHANDH3

Models	Product description
H3B-01-MB, H3B-01-39, H3B-01-PH	UHF Portable RFID Reader

Submitted documents

Circuit Diagram
Block Diagram
Technical Description
Bill of materials
User manual
Rating label

Independent Operation Modes

The basic operation modes are:

- Transmitting mode.

For further information refer to User Manual

Related Submittal(s) Grants

This is a composite device, for NFC (13.56 MHz) portion please refer to test report No. 14045643 001.
For Bluetooth low energy portion please refer to test report No. 14045641 001.
For classic Bluetooth portion please refer to test report No. 14045642 001.

This is a single application for certification of the RFID transmitter.

Remark

This is a composite device, simultaneous transmission was investigated and no new emissions were found.

The test results in this test report are only relevant to the tested sample and does not involve any assessment in the production.

Test Set-up and Operation Mode

Principle of Configuration Selection

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

Test Operation and Test Software

Test operation should refer to test methodology.

1) Special software is provided by the applicant to set the device to operate in a fixed frequency channel and maximum RF output power level. The setting of the maximum RF output power shall be fixed on the final product.
2) Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- AC-DC adaptor model: EA1024AR-050 (Provided by Appliant)

Countermeasures to achieve EMC Compliance

- none

Test Methodology

Radiated Emission

The radiated emission measurements of the transmitter part were performed according to the procedures in ANSI C63.10-2013. The radiated emission measurements of the battery pack charging part were performed according to the procedures in ANSI C63.4-2014.

For measurement below 1GHz - the equipment under test (EUT) was placed at the middle of the 80 cm height turntable. For measurement above 1GHz - the EUT was placed at the middle of the 1.5 m height turntable and RF absorbing material was placed on ground plane between turntable and measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360 ° , the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

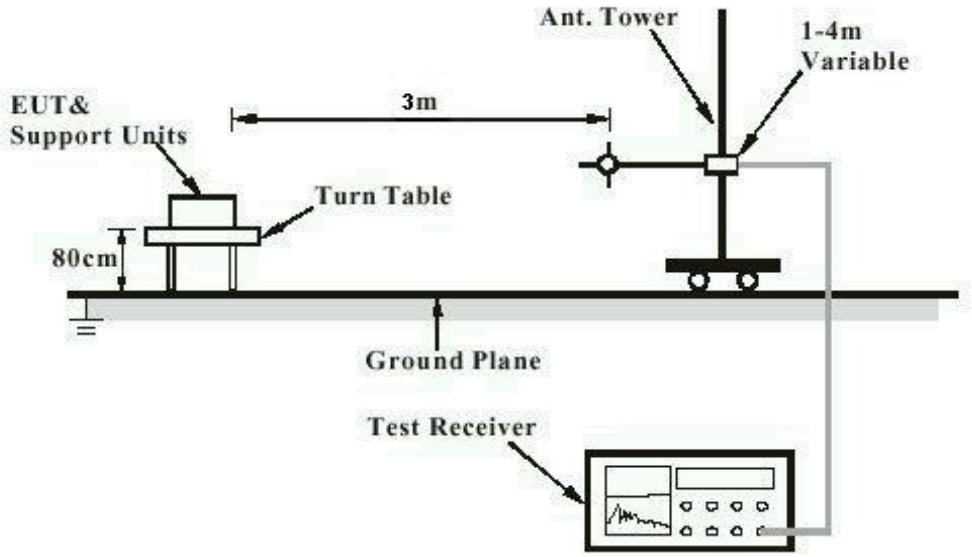
FS = R + AF + CF + FA – PA

Where FS = Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

Test Setup Diagram

Diagram of Measurement Configuration for Radiated Emission Test



Note: Measurements above 1 GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

Diagram of Measurement Equipment Configuration for Mains Conduction Measurement (if applicable)

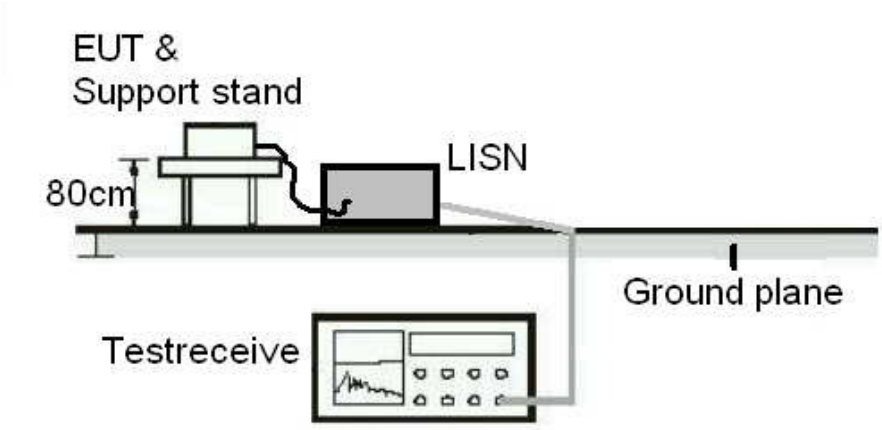
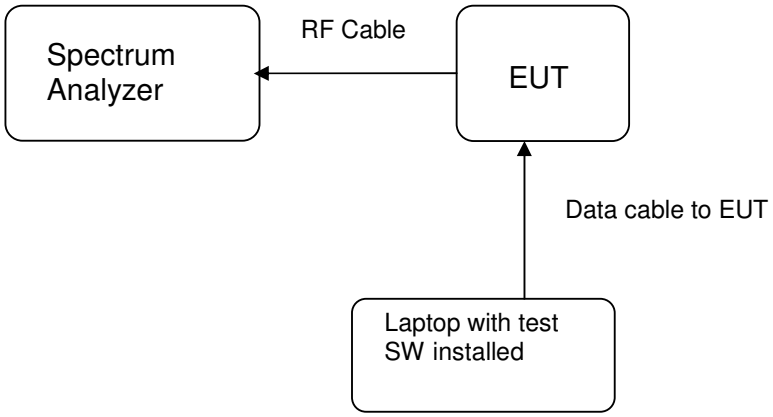


Diagram of Equipment Configuration for Antenna-port Conducted Measurement (if applicable)



List of Test and Measurement Instruments

Hong Kong Productivity Council (FCC Registration number: 90656)

Radiated Emission

Equipment	Manufacturer	Type	Cal. Date	Due Date
Semi-anechoic Chamber	Frankonia	Nil	25-Apr-16	25-Apr-17
New Fully Ancheonic Chamber	TDK	N/A	19-Apr-16	19-Apr-17
Cable	Hubersuhner	SUCOFLEX 104	31-Mar-16	31-Mar-18
Test Receiver	R & S	ESU40	26-Jul-16	26-Jul-17
Bi-conical Antenna	R & S	HK116	1-Sep-15	01-Sep-17
Log Periodic Antenna	R & S	HL223	1-Sep-15	01-Sep-17
Coaxial cable	Harbour	LL335	10-Jun-16	10-Jun-18
Microwave amplifer 0.5-26.5GHz, 25dB gain	HP	83017A	18-Jul-16	18-Jul-18
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	28-Oct-15	28-Oct-17
Horn Antenna	EMCO	3115	26-Aug-15	26-Aug-17
Active Loop Antenna	EMCO	6502	27-Oct-16	27-Oct-17

AC Mains Conducted Emission

Equipment	Manufacturer	Type	Cal. Date	Due Date
Test Receiver	R & S	ESU40	26-Jul-16	26-Jul-17
RF Voltage Probe	Schwarzbeck	TK9416	11-Feb-16	11-Feb-17
LISN	R&S	ESH3-Z5	15-Jun-16	15-Jun-17
Double Shield Cable	Radiall	RG142	14-Sep-15	14-Sep-17
Pulse Limiter	R&S	ESH3-Z2	03-Jun-16	03-Jun-18

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Radio Test

Equipment	Manufacturer	Type	Cal. Date	Due Date
Spectrum Analyzer	R & S	FSP30	12-Jan-15	12-Jan-2017

Measurement Uncertainty

The estimated combined standard uncertainty for power-line conducted emissions measurements is ±3.43dB.

The estimated combined standard uncertainty for radiated emissions measurements is ±5.10dB (30MHz to 200MHz) and ±5.08dB (200MHz to 1000MHz) and is ±5.10dB (30MHz to 200MHz) and ±5.08dB (above 1GHz).

The estimated combined standard uncertainty for antenna conducted emission is ±1.56dB

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for the level of confidence is approximately 95%.

Results FCC Part 15 – Subpart C

FCC 15.203 – Antenna Requirement 1		**Pass**
FCC Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
Results:	a) Antenna type: b) Manufacturer and model no: c) Peak Gain:	Circularly Polarized Panel Antenna Laird / PEL90206-MY1 6 dBiC
Verdict:	Pass	

FCC 15.204 – Antenna Requirement 2		**N/A**
FCC Requirement:	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.	
Results:	Only one integral antenna can be used.	
Verdict:	N/A	

FCC 15.207 – Conducted Emission on AC Mains **Pass**

Test Specification : ANSI C63.10 – 2013
Mode of operation : TX mode
Port of testing : AC Mains input port of power supply
Detector : Quasi-peak and Average
RBW : 9 kHz
Supply voltage : 120Vac 60Hz
Temperature : 23ºC
Humidity : 50%

Requirement: 15.207(a)

Results: Pass

Live measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict
0,15 – 0,5	0.166	53.1	29.7	66 - 56	56 - 46	Pass
	0.194	55.2	36.5	66 - 56	56 - 46	Pass
	0.266	44.4	26.9	66 - 56	56 - 46	Pass
> 0,5 - 5	no peak found	---	---	56	46	Pass
> 5 - 30	no peak found	---	---	60	50	Pass

Neutral measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict

0,15 – 0,5	0.150	51.5	30.6	66 - 56	56 - 46	Pass
	0.170	51.4	30.0	66 - 56	56 - 46	Pass
	0.190	54.6	35.7	66 - 56	56 - 46	Pass
> 0,5 - 5	no peak found	---	---	56	46	Pass
> 5 - 30	no peak found	---	---	60	50	Pass

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate.

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz does not exceed the limits. For test Results plots refer to Appendix 1, page 2.

FCC 15.247 (a)(1) – 20 dB Bandwidth

FCC Requirement: For frequency hopping systems operating in the 902-928 MHz band:
The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (902.75MHz, 915.25MHz, 927.25MHz)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 3 kHz / 10 kHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.

For test protocols refer to Appendix 1.

Frequency (MHz)	20 dB left (MHz)	20 dB right (MHz)	20dB bandwidth (MHz)
902.75	902.7196	902.7828	0.0632
915.25	915.2200	915.2832	0.0632
927.25	927.2204	927.2832	0.0628

FCC 15.247 (a)(1) – Carrier Frequency Separation	Pass

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

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (hopping on)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 kHz / 100 kHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.

The centre frequencies of the hopping channels are separated by more than the 20dB bandwidth. For test Results plots refer to Appendix 1.

Verdict: Pass

Test Frequency (MHz)	Channel separation (MHz)	20dB bandwidth (MHz)
915.25	0.504	0.0628

FCC 15.247 (a)(1)(iii) – Number of hopping channels	Pass

FCC Requirement: For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (hopping on)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 30 KHz / 100 KHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

Results: The total number of hopping frequencies is 50. For test Results plots refer to Appendix 1.

Verdict: Pass

FCC 15.247 (a)(1)(iii) – Time of Occupancy (Dwell Time)	**Pass**

FCC Requirement: For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (hopping on)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 KHz / 300 KHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

Results: Time period = 20s
Dwell time = $1 \times 361.2 \times 10^{-3} = 361.2 \times 10^{-3}$ s
$<= 400 \times 10^{-3}$ s

For test protocols please refer to Appendix 1.

Verdict: Pass

FCC 15.247 (a) – Hopping Sequence	**Pass**

FCC Requirement: The system radio frequency (RF) bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset, while the long-term distribution appears evenly distributed.

As stated in the technical description, This system is controlled by microchip to generate pseudorandom frequency hopping sequence and distributed it over 50 hopping channels. The hopping sequence is generated by a 9-bit maximum length sequence with a polynomial x^9+x^4+1, initially seeded with a random number, resulting in repeating 511-bit hopping sequence that hops are randomly distributed in both direction and magnitude of change in the hop set which meet the requirement specified in the definition of FCC part 2 section 2.1.

FCC 15.247 (a) – Equal Hopping Frequency Use	**Pass**

FCC Requirement: Each of the transmitter's hopping channels is used equally on average.

The system radio frequency (RF) bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset, while the long-term distribution appears evenly distributed.

As stated in the technical description, the formula will generate a pseudorandom repeating hopping sequence which each hopping channels is used equally on average in long term.

FCC 15.247 (a) – Receiver Input Bandwidth	**Pass**
FCC Requirement:	The associated receiver(s) complies with the requirement that its input bandwidth matches the bandwidth of the transmitted signal.
As stated in the technical description, the associated receiver is the RFID tag which has a very broad receiving bandwidth to response to all the reader CW within the operating frequency range.	

FCC 15.247 (a) – Receiver Hopping Capability	**Pass**
FCC Requirement:	The associated receiver has the ability to shift frequencies in synchronisation with the transmitted signals.
As stated in the technical description, the associated receiver is the RFID tag which has a very broad receiving bandwidth to response to all the reader CW within the operating frequency range. And the backscatter will be in the same frequency channel as the reader CW so the receiver portion can synchronize with the backscatter.	

FCC 15.247 (b)(1) – Peak Output Power **Pass**

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (902.75MHz, 915.25MHz, 927.25MHz)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 KHz / 300 KHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

FCC Requirement: For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

Results: For test protocols please refer to Appendix 1.

Frequency (MHz)	Maximum peak output power (dBm)	Cable (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
902.75	28.02	0	28.02	1 / 30.0	Pass
915.25	27.99	0	27.99	1 / 30.0	Pass
927.25	27.88	0	27.88	1 / 30.0	Pass

FCC 15.247 (d) – Spurious Conducted Emissions **Pass**

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (902.75MHz, 915.25MHz, 927.25MHz)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 kHz / 300 kHz
Supply voltage : 3.7VDC
Temperature : 23 ºC
Humidity : 50 %

FCC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.

All three transmit frequency modes comply with the limit stated in subclause 15.247(d). For test protocols refer to Appendix 1.

Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
902.75	7.424	-10.69	28.03	-38.72	Pass
915.25	7.424	-10.43	27.99	-38.42	Pass
927.25	7.424	-11.11	27.91	-39.02	Pass

FCC 15.247 (d) – Spurious Radiated Emissions **Pass**

Test Specification : ANSI C63.10 – 2013
Mode of operation : Tx mode (902.75MHz, 915.25MHz, 927.25MHz)
Port of testing : Enclosure
Detector : Peak
RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz
1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 100-240VAC and 3.7 VDC
Temperature : 23ºC
Humidity : 50%

FCC Requirement: In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section15.205(a), must also comply with the radiated emission limits specified in section 15.205(c).

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.

All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.

Tx frequency 902.75MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
87.150	31.1	40.0 / QK
2708.250	56.76	74.0 / PK
2708.137	51.56	54.0 / AV

Tx frequency 902.75MHz Horizontal Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
648.010	42.8	46.0 / QP
2708.282	55.55	74.0 / PK
2708.442	49.90	54.0 / AV

Tx frequency 915.25MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2745.862	53.83	74.0 / PK
2745.701	47.26	54.0 / AV
3660.823	53.52	74.0 / PK
3660.983	43.17	54.0 / AV

Tx frequency 915.25MHz Horizontal Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2745.830	54.13	74.0 / PK
2745.750	47.75	54.0 / AV

Tx frequency 927.25MHz Vertical Polarization

Freq	Level	Limit/ Detector

MHz	dBuV/m	dBuV/m
2781.878	53.97	74.0 / PK
2781.717	46.31	54.0 / AV
4636.217	55.20	74.0 / PK
4636.250	45.26	54.0 / AV
Tx frequency 927.25MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2781.814	55.33	74.0 / PK
2781.717	48.93	54.0 / AV

FCC 15.247 (d) – Band edge compliance of conducted emissions **Pass**

Test Specification : FCC KDB DA 00-705
Mode of operation : Tx mode (902.75MHz, 915.25MHz, 927.25MHz)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 kHz / 300 kHz
Supply voltage : 3.7VDC
Temperature : 23ºC
Humidity : 50%

FCC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.

There is no peak found outside any 100 kHz bandwidth of the operating frequency band. For test protocols refer to Appendix 1.

Frequency	Emission frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
Lower band, hopping on	898.020	-21.45	28.03	-49.48	Pass
Upper band, hopping on	931.860	-21.13	28.03	-49.16	Pass
Lower band, hopping off	898.820	-21.06	28.03	-49.09	Pass
Upper band, hopping off	932.140	-21.38	28.03	-49.41	Pass

Results FCC Part 15 – Subpart B

FCC 15.107 – Conducted Emission on AC Mains **Pass**

Test Specification : ANSI C63.4 – 2014
Mode of operation : RFID RX mode
Port of testing : AC Mains input port of power supply
Detector : Quasi-peak and Average
RBW : 9 kHz
Supply voltage : 120Vac 60Hz
Temperature : 23ºC
Humidity : 50%

Requirement: 15.107(a)

Results: Pass

Live measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict
0,15 – 0,5	0.174	51.2	35.8	66 - 56	56 - 46	Pass
	0.219	44.7	30.3	66 - 56	56 - 46	Pass
	0.226	38.9	19.6	66 - 56	56 - 46	Pass
> 0,5 - 5	No peak found	---	---	56	46	Pass
> 5 - 30	No peak found	---	---	60	50	Pass

Neutral measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict
0,15 – 0,5	0.182	50.6	36.5	66 - 56	56 - 46	Pass
	0.222	44.2	29.8	66 - 56	56 - 46	Pass
> 0,5 - 5	No peak found	---	---	56	46	Pass
> 5 - 30	No peak found	---	---	60	50	Pass

FCC 15.109 – Radiated Emission **Pass**

Test Specification : ANSI C63.4 – 2014
Mode of operation : RFID RX mode
Port of testing : Enclosure
Detector : QP
RBW/VBW : 120 kHz for f < 1 GHz
1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 120VAC
Temperature : 23ºC
Humidity : 50%

FCC Requirement: 15.109(a)

Results: Pass

Rx frequency 902.75MHz Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
672.758	35.1	46.0 / QP
911.998	40.7	46.0 / QP

Rx frequency 902.75MHz Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
672.016	35.0	46.0 / QP
912.000	45.2	46.0 / QP

Rx frequency 915.25MHz Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
672.020	37.9	46.0 / QP

Rx frequency 915.25MHz Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	46.0 / PK

Rx frequency 927.25MHz Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK

Rx frequency 927.25MHz Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / PK