APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
REALTRACE

Pet Scan RT250 Electronic RFID Reader
Model No.: ZR004

FCC ID: BSO-ZR004

Prepared for	:	REALTRACE
Address	:	2, rue Georges Pompidou, 91140 VILLEBON SUR YVETTE, France
Prepared by	:	ACCURATE TECHNOLOGY CO., LTD
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Report No.	:	ATE20161944
Date of Test	:	September 18, 2016
Date of Report	:	September 20, 2016

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Description Page

Test Report Certification

Applicant	:	REALTRACE
Manufacturer	:	SHENZHEN MARKTRACE CO., LTD
EUT Description	:	Pet Scan RT250 Electronic RFID Reader
Model No.	:	ZR004
Trade Mark	:	N/A

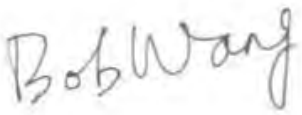
Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2015
ANSI C63.10: 2013

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : September 18, 2016
Date of Report: September 20, 2016

Prepared by : 
(Bob Wang, Engineer)

Approved & Authorized Signer : 
(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Pet Scan RT250 Electronic RFID Reader
Model Number	:	ZR004
Trade Mark	:	N/A
Bluetooth version	:	BT 2.0+EDR
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain	:	0dBi
Antenna type	:	Integral Antenna
Power Supply	:	DC 3.7V & DC 5V(Power by USB port)
Modulation mode	:	GFSK, π/4 DQPSK, 8DPSK
Applicant	:	REALTRACE
Address	:	2, rue Georges Pompidou, 91140 VILLEBON SUR YVETTE, France
Manufacuter	:	SHENZHEN MARKTRACE CO., LTD
Address	:	F5, Blog, 7, Changyuan New Material Port, Keyuan Rd, Science & Industry Park, Nanshan District, Shenzhen, 518057, P.R.C
Date of sample received	:	September 10, 2016
Date of Test	:	September 18, 2016

1.2.Accessory and Auxiliary Equipment

N/A

1.3.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen Listed by FCC The Registration Number is 752051 Listed by Industry Canada The Registration Number is 5077A-2 Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.4.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 9, 2016	Jan. 09, 2017
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 9, 2016	Jan. 09, 2017
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 9, 2016	Jan. 09, 2017
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 9, 2016	Jan. 09, 2017
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 14, 2016	Jan. 13, 2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 14, 2016	Jan. 13, 2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 14, 2016	Jan. 12, 2017
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 14, 2016	Jan. 13, 2017
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 9, 2016	Jan. 09, 2017
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 9, 2016	Jan. 09, 2017
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 9, 2016	Jan. 09, 2017
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 9, 2016	Jan. 09, 2017

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode
Low Channel: 2402MHz
Middle Channel: 2441MHz
High Channel: 2480MHz
Hopping

3.2.Configuration and peripherals

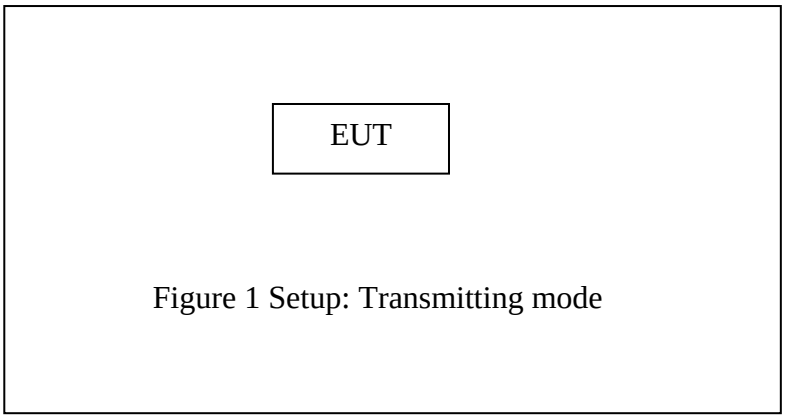


Figure 1 Setup: Transmitting mode

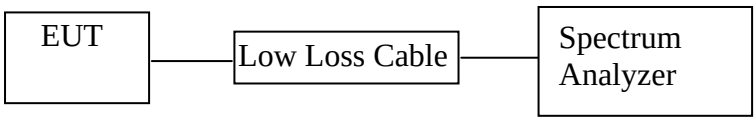
(EUT: Pet Scan RT250 Electronic RFID Reader)

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

5.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

5.5.Test Procedure

5.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

5.5.3.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

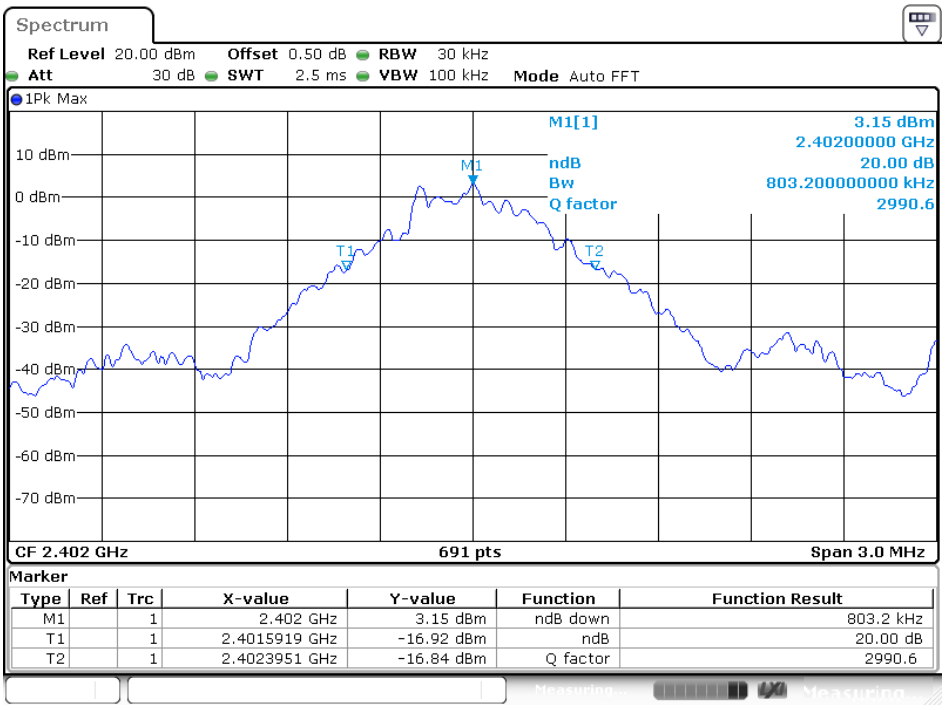
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.803	1.220	1.207	Pass
Middle	2441	0.803	1.220	1.207	Pass
High	2480	0.803	1.224	1.211	Pass

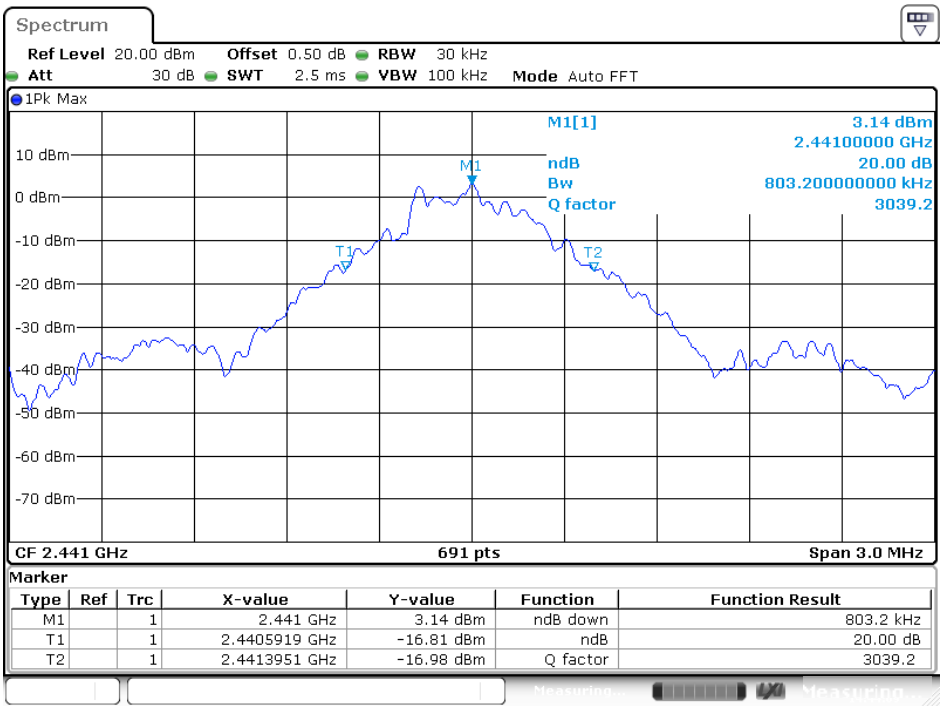
The spectrum analyzer plots are attached as below.

GFSK Mode

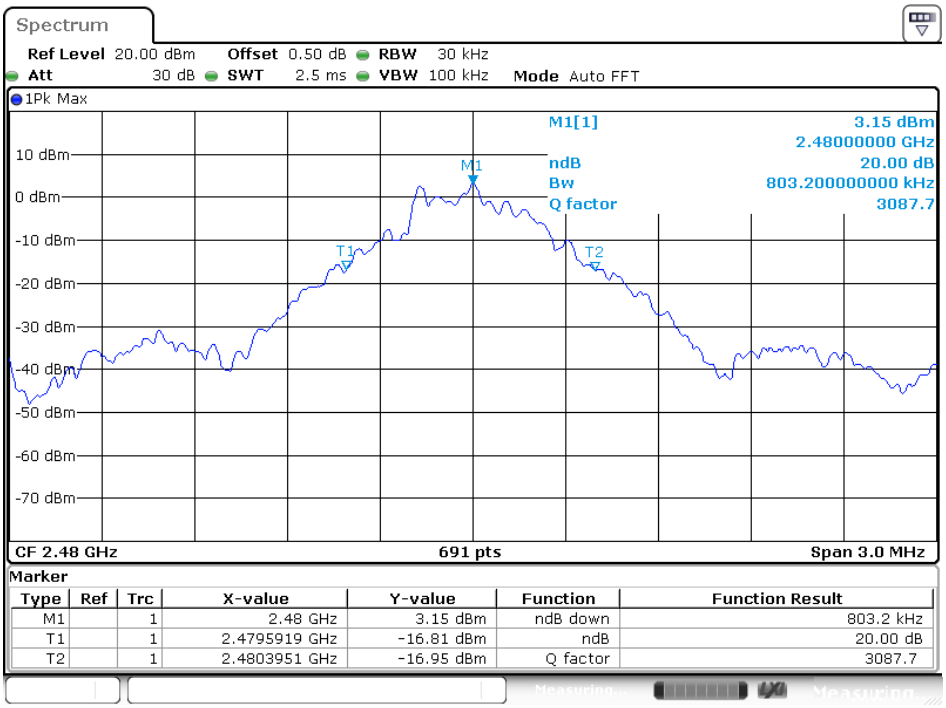
Low channel



Middle channel

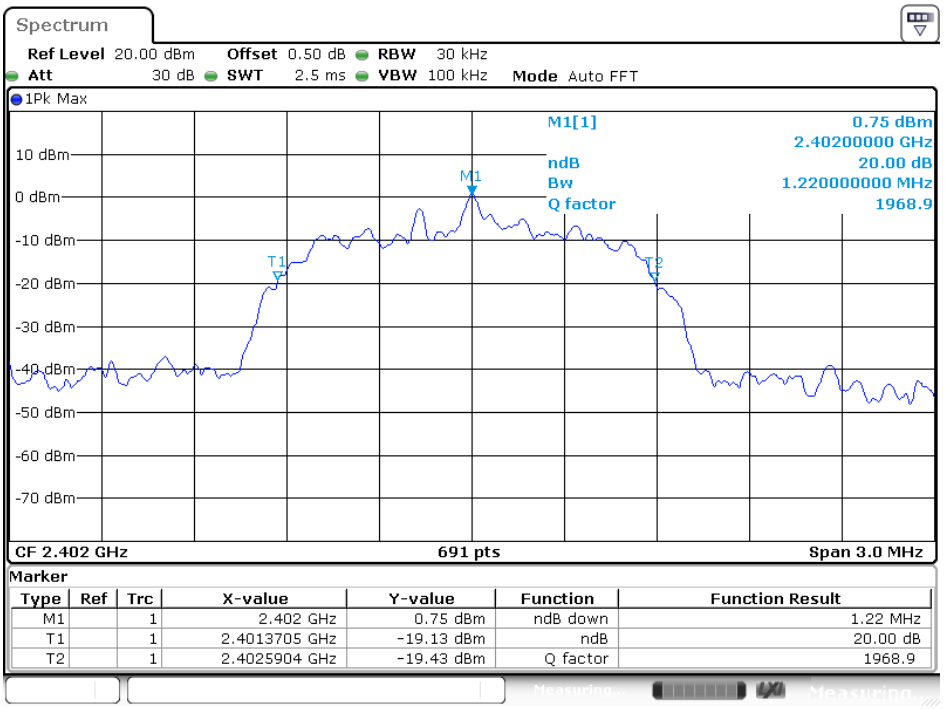


High channel

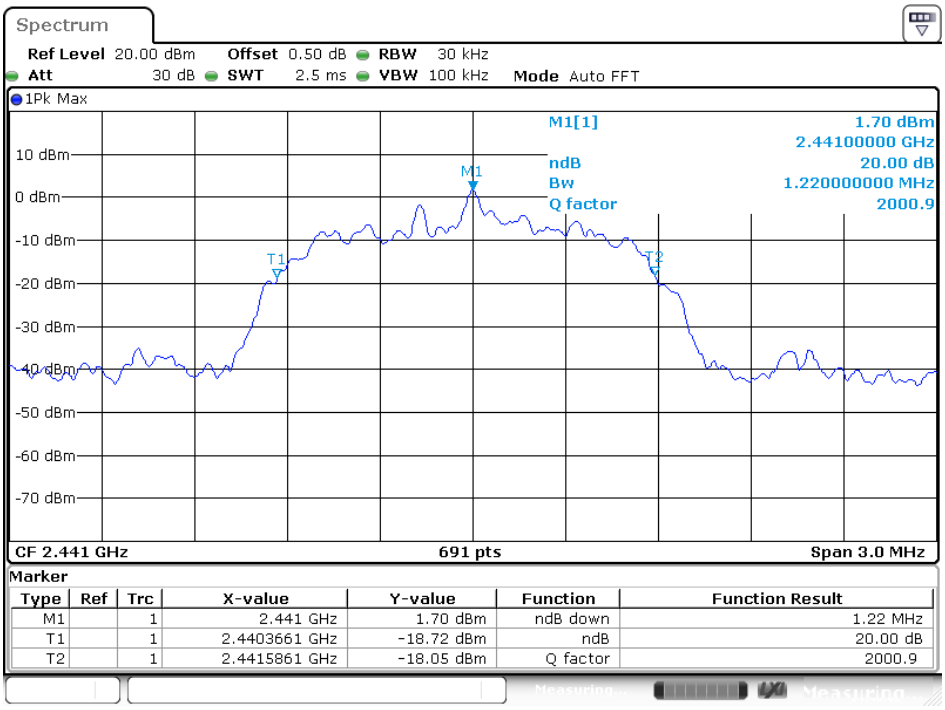


Π/4-DQPSK Mode

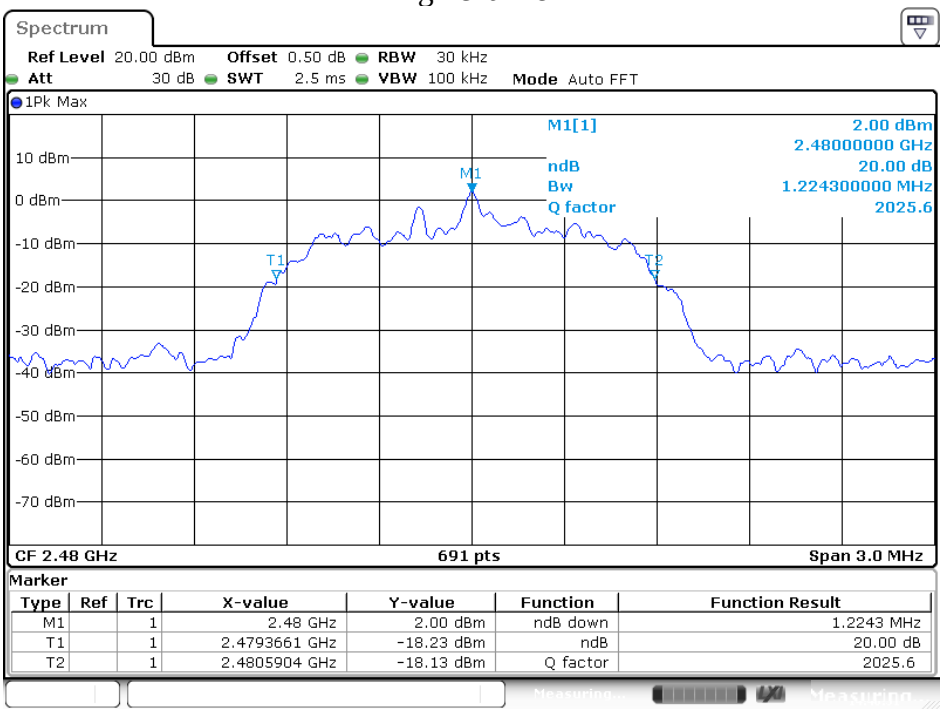
Low channel



Middle channel

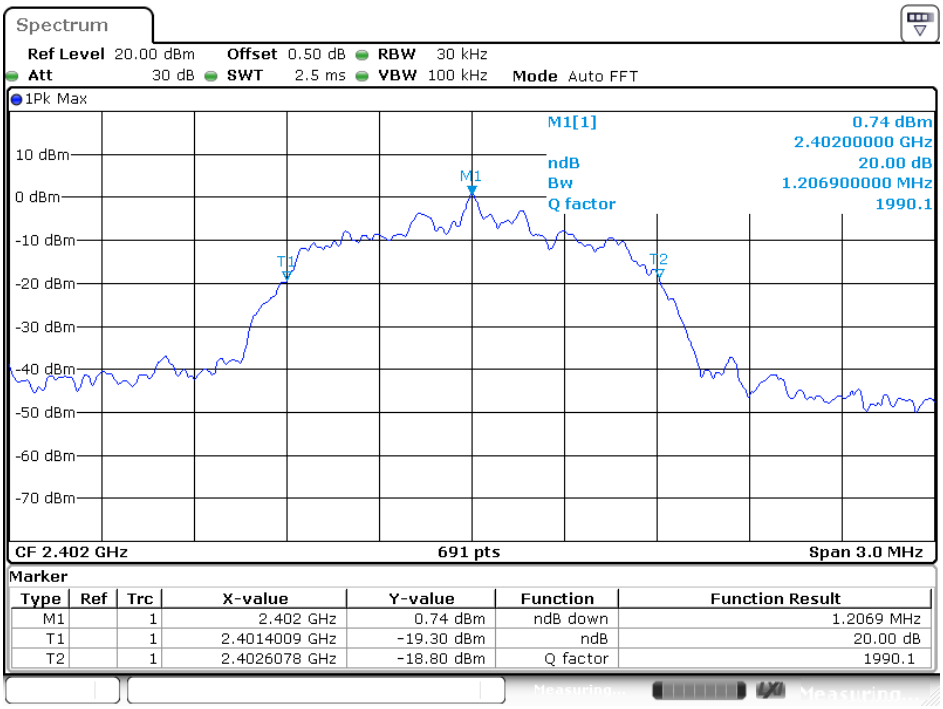


High channel

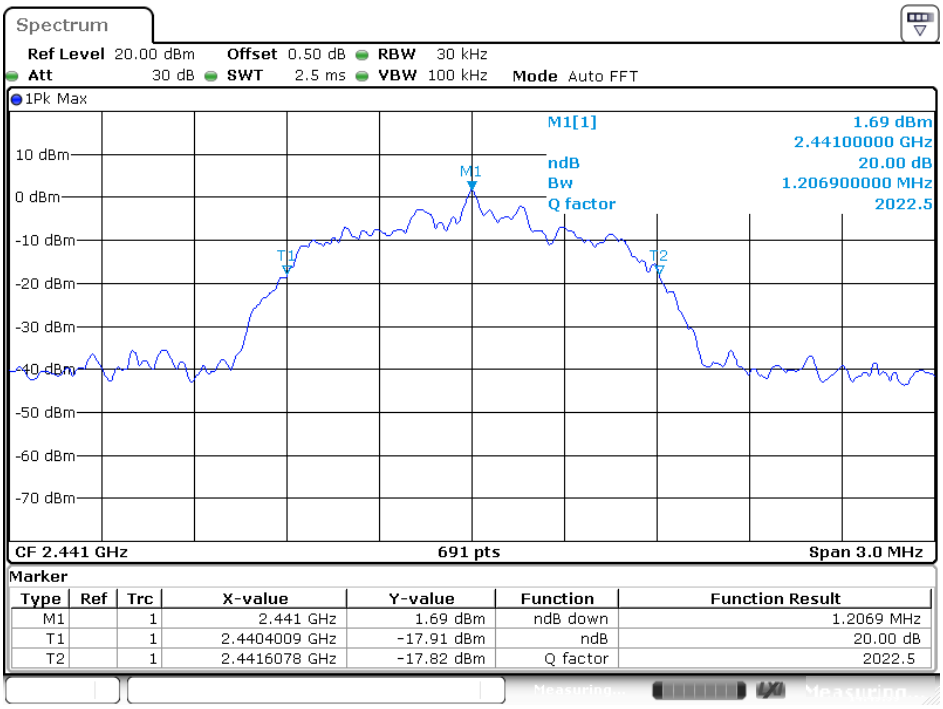


8DPSK Mode

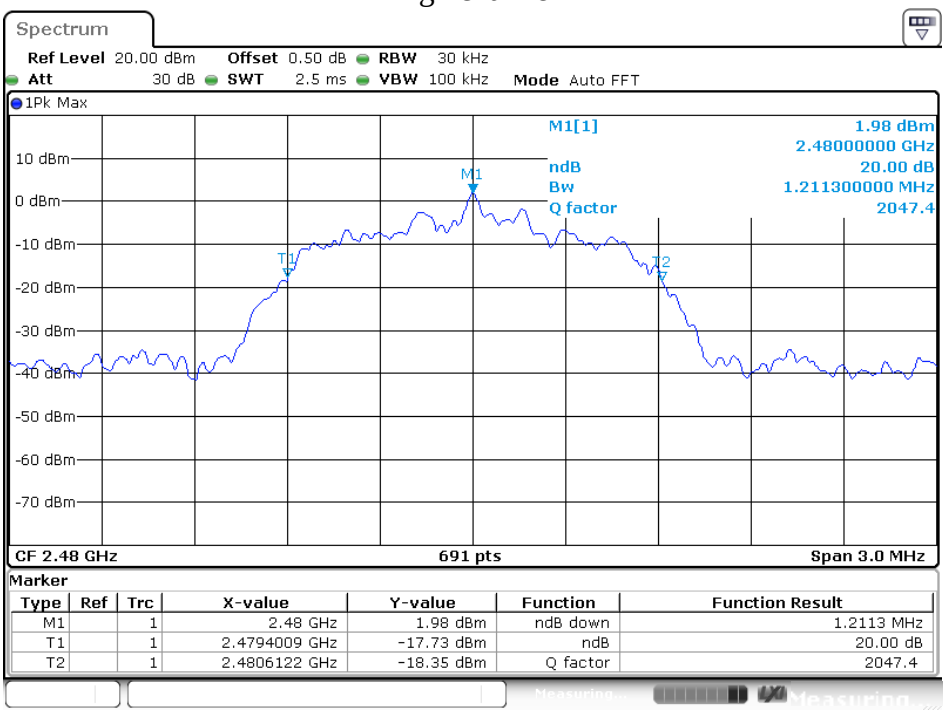
Low channel



Middle channel

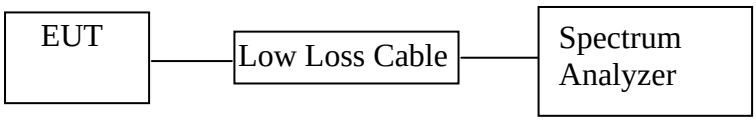


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

6.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

6.5.Test Procedure

6.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz. Adjust Span to 2 MHz.

6.5.3.Set the adjacent channel of the EUT maxhold another trace.

6.5.4.Measurement the channel separation

6.6.Test Result

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0014	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.0014	25KHz or20dB bandwidth	PASS
	2441			
High	2479	1.0014	25KHz or 20dB bandwidth	PASS
	2480			

Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2480			

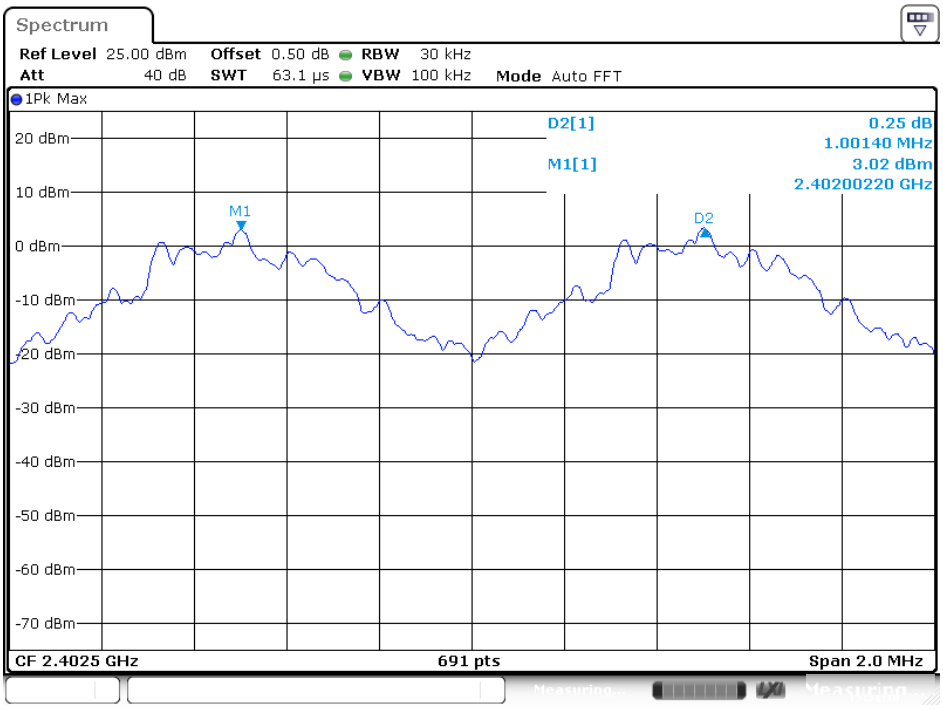
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	PASS
	2480			

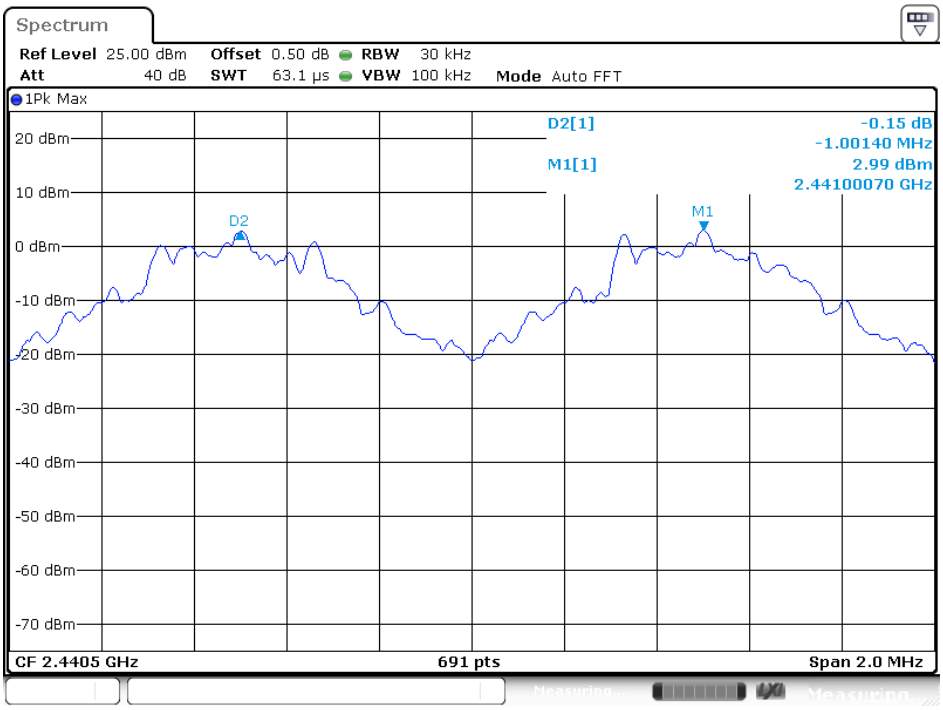
The spectrum analyzer plots are attached as below.

GFSK Mode

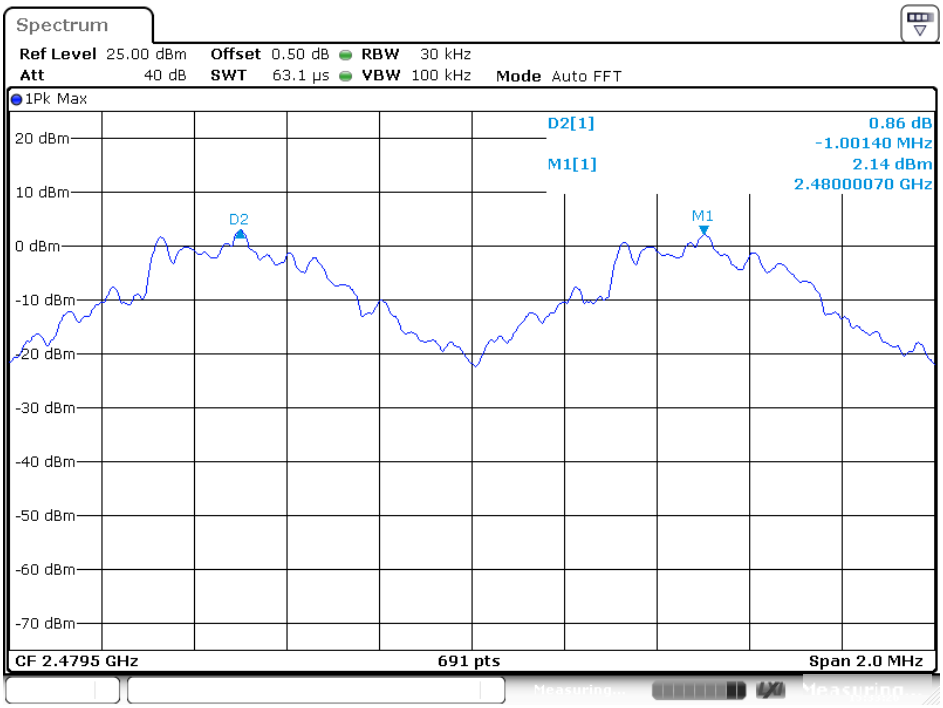
Low channel



Middle channel

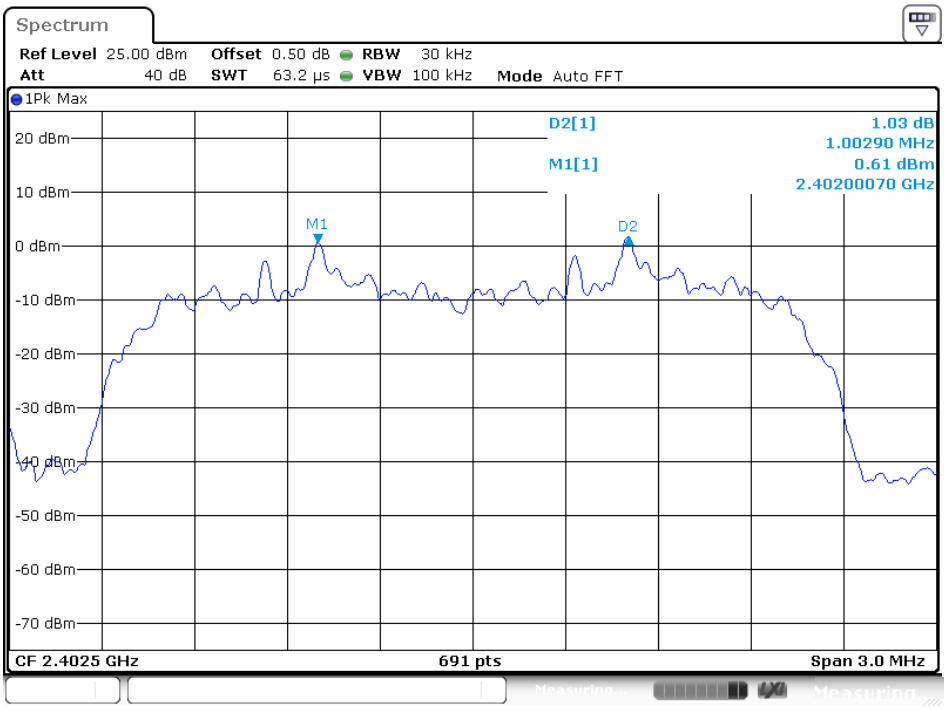


High channel

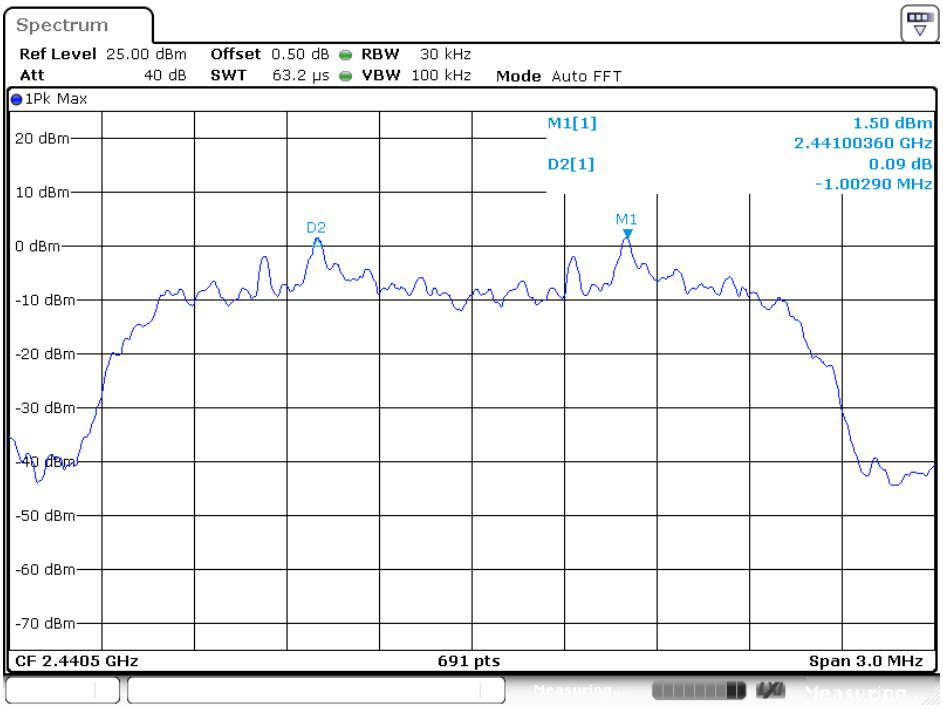


Π/4-DQPSK Mode

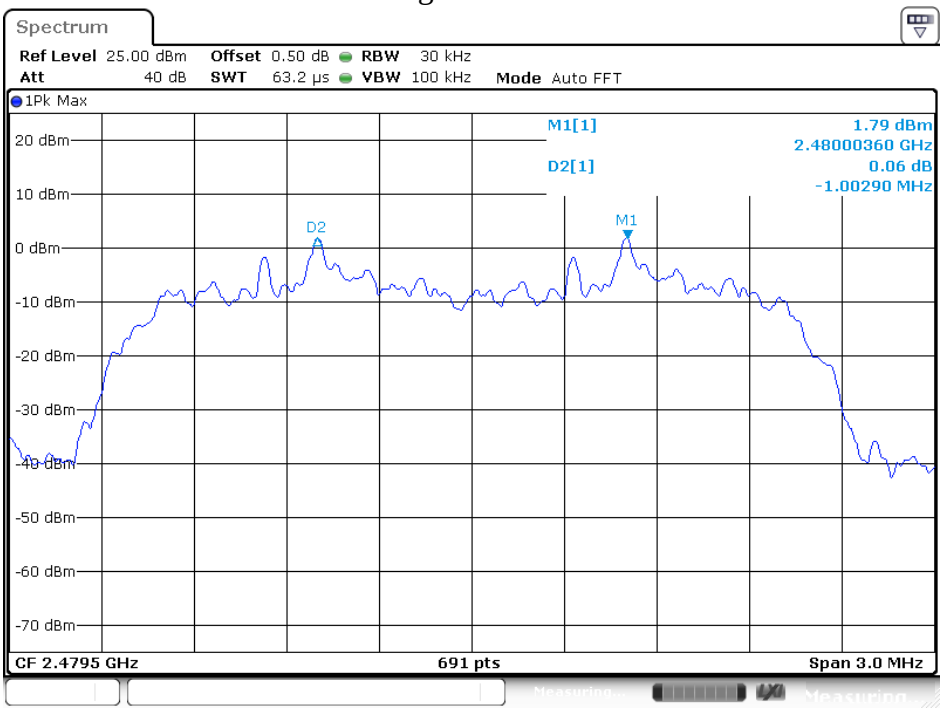
Low channel



Middle channel

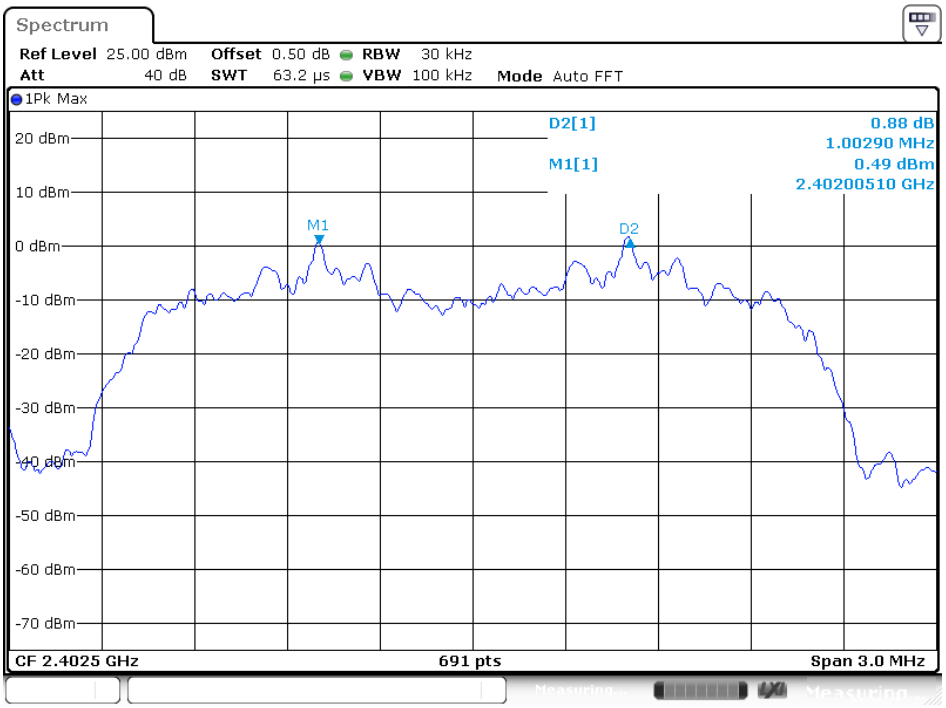


High channel

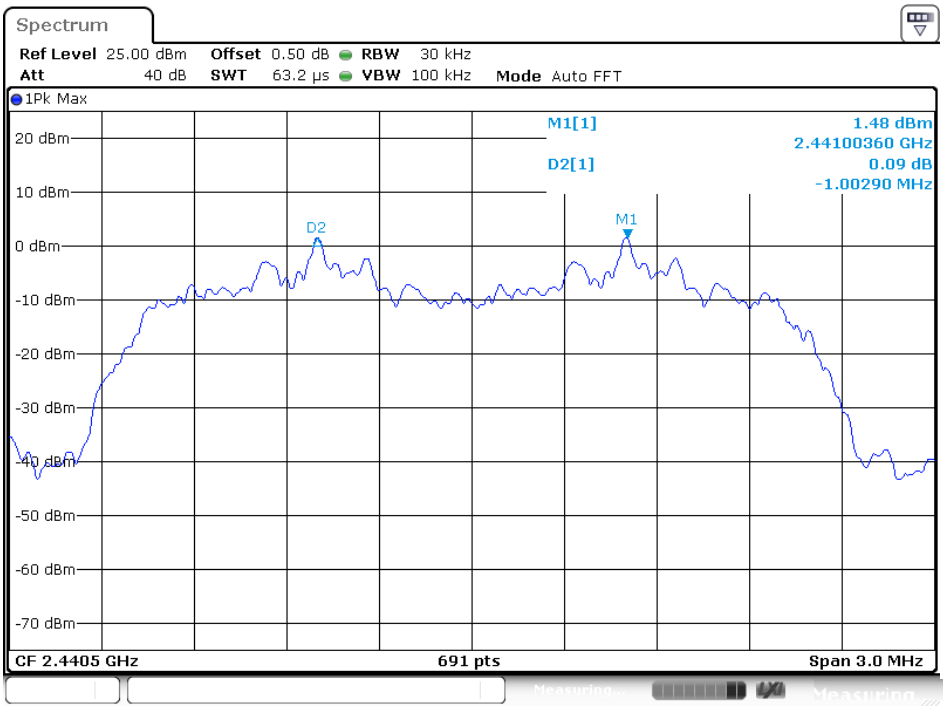


8DPSK Mode

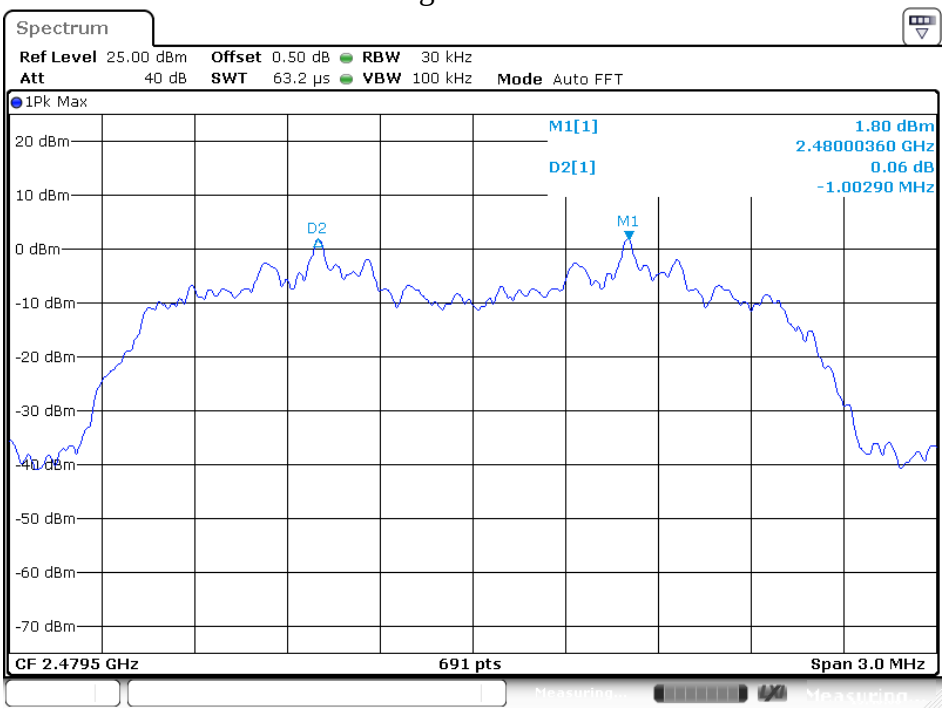
Low channel



Middle channel

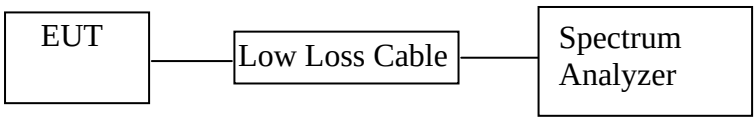


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

7.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4.Operating Condition of EUT

7.4.1.Setup the EUT and simulator as shown as Section 7.1.

7.4.2.Turn on the power of all equipment.

7.4.3.Let the EUT work in TX (Hopping on) modes measure it.

7.5.Test Procedure

7.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2.Set the spectrum analyzer as Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.

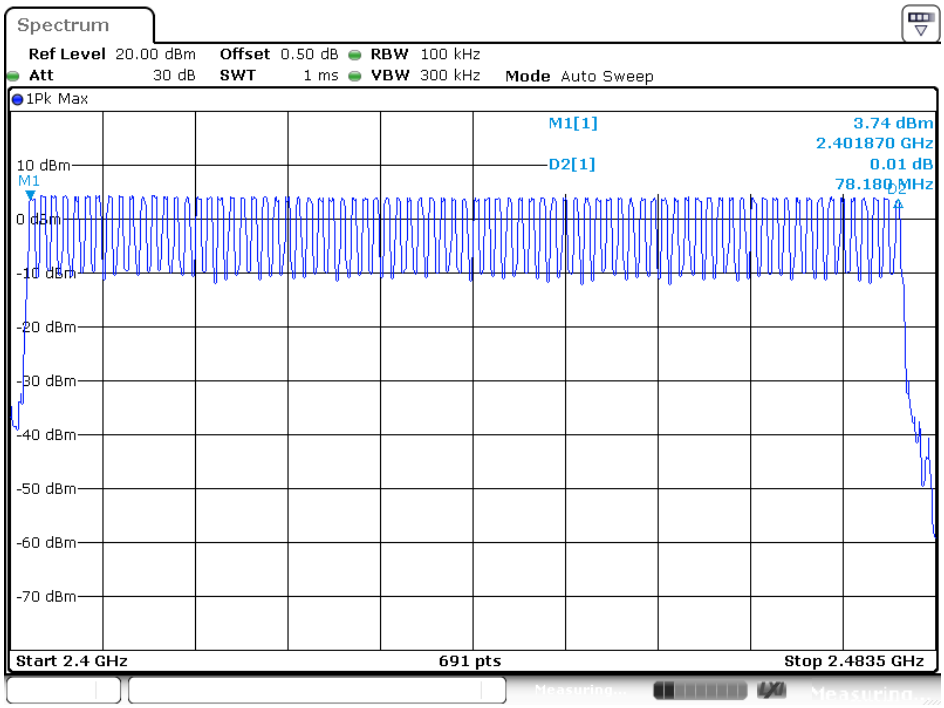
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

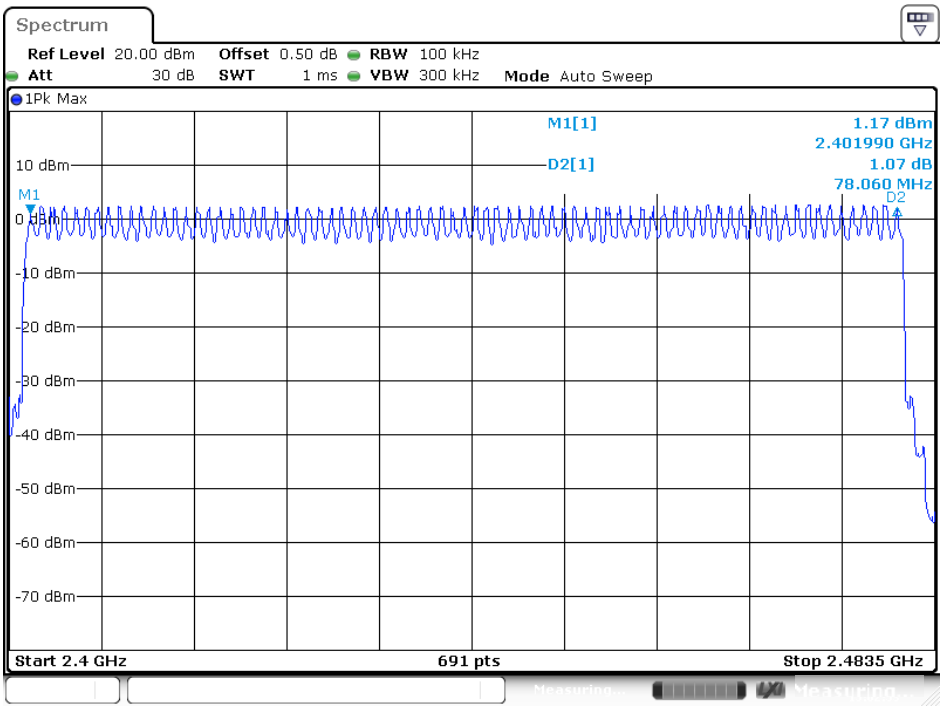
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

The spectrum analyzer plots are attached as below.

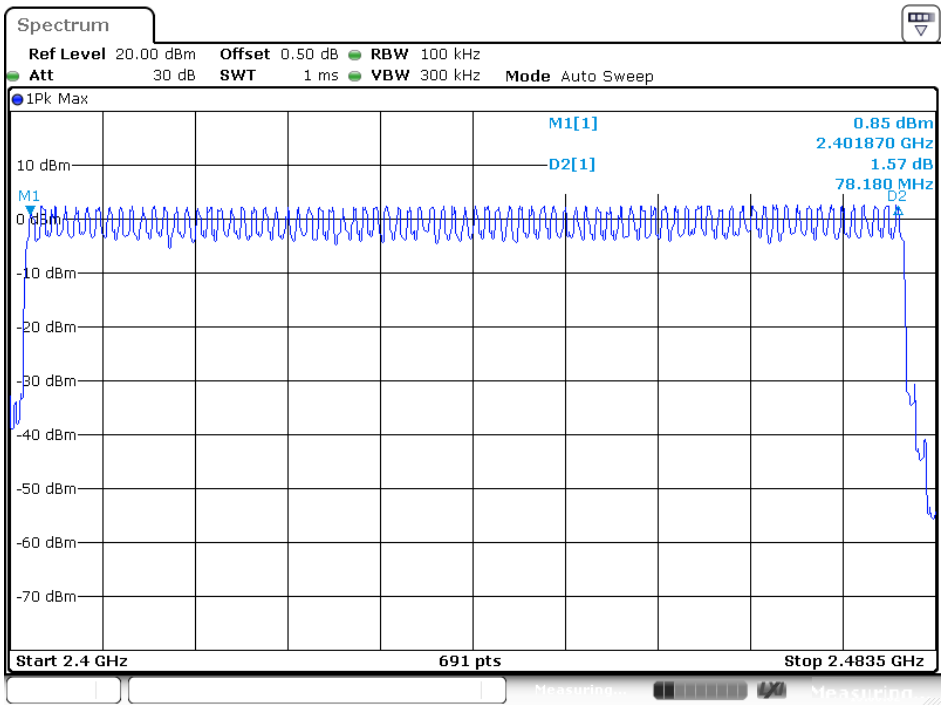
Number of hopping channels(GFSK)



Number of hopping channels(Π/4-DQPSK)

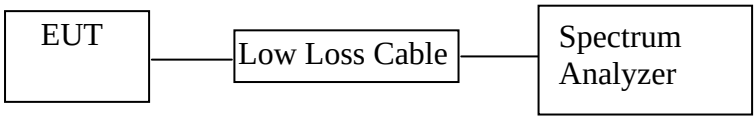


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

8.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2.Set center frequency of spectrum analyzer = operating frequency.

8.5.3.Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

8.5.4.Repeat above procedures until all frequency measured were complete.

8.6.Test Result

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.428	136.96	400
	2441	0.438	140.16	400
	2480	0.442	141.44	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.746	279.36	400
	2441	1.790	286.40	400
	2480	1.761	281.76	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.978	317.65	400
	2441	2.978	317.65	400
	2480	3.000	320.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

Π/4-DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.446	142.72	400
	2441	0.442	141.44	400
	2480	0.438	140.16	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.714	274.24	400
	2441	1.714	274.24	400
	2480	1.728	276.48	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.000	320.00	400
	2441	3.022	322.35	400
	2480	2.978	317.65	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

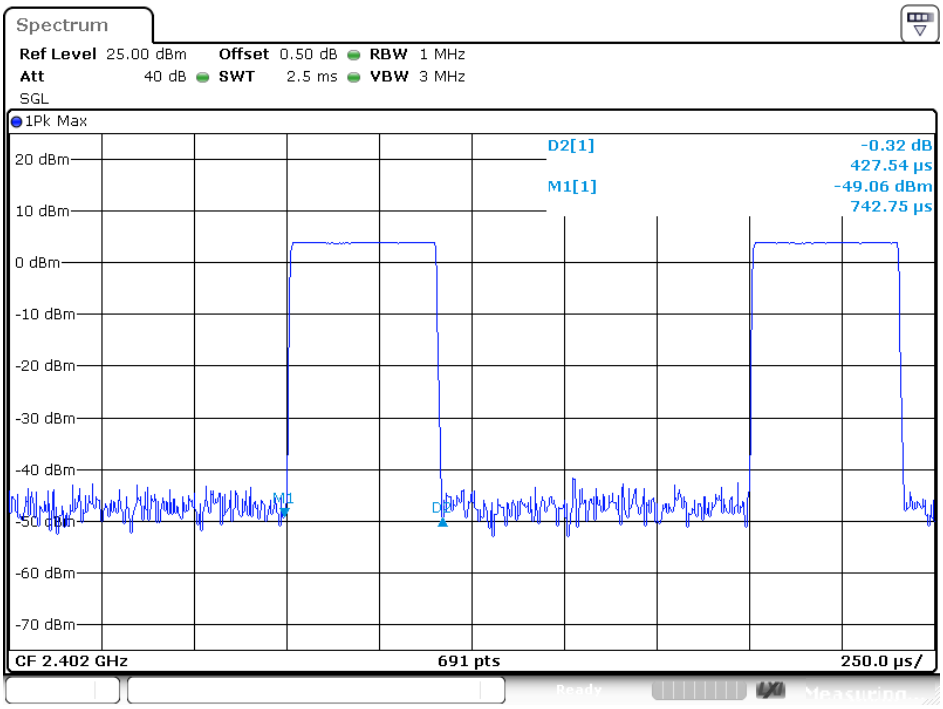
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.449	143.68	400
	2441	0.446	142.72	400
	2480	0.446	142.72	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.736	277.76	400
	2441	1.721	275.36	400
	2480	1.736	277.76	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.040	324.27	400
	2441	2.975	317.33	400
	2480	3.062	326.61	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

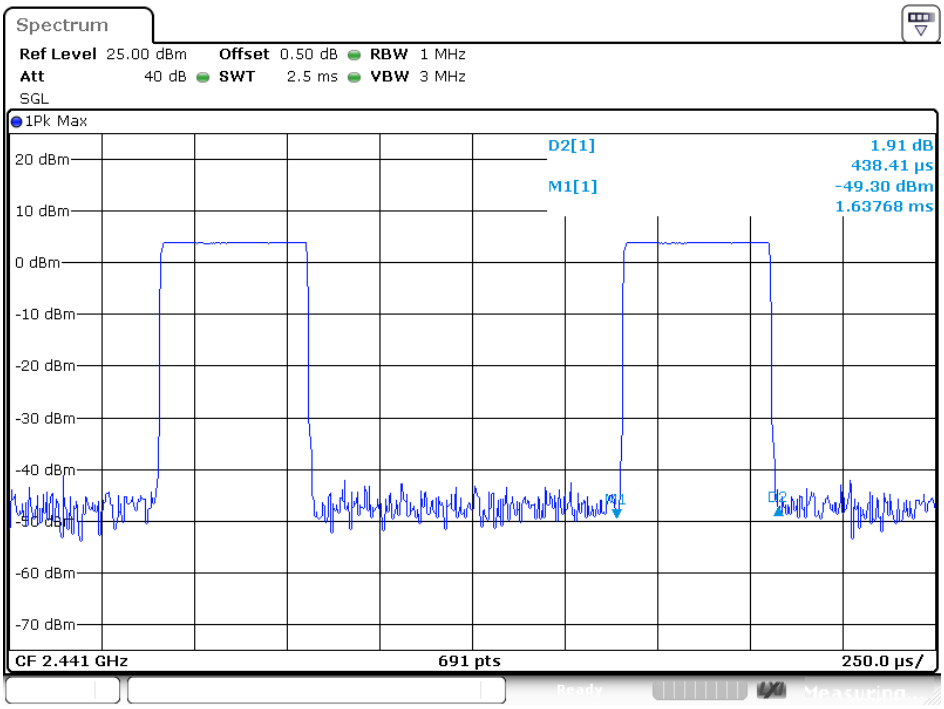
The spectrum analyzer plots are attached as below.

GFSK Mode

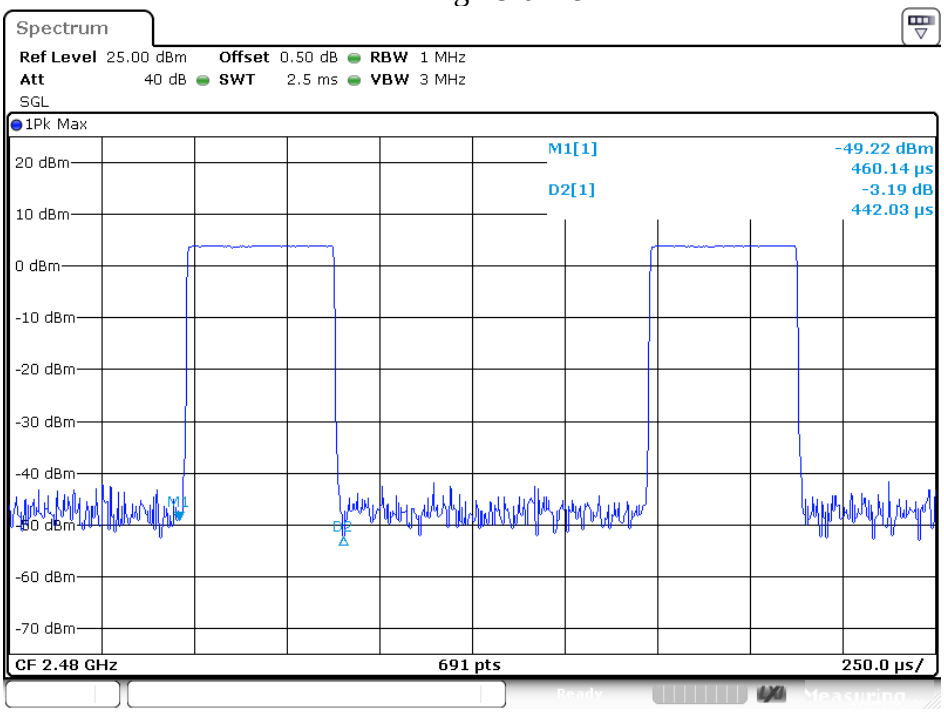
DH1 Low channel



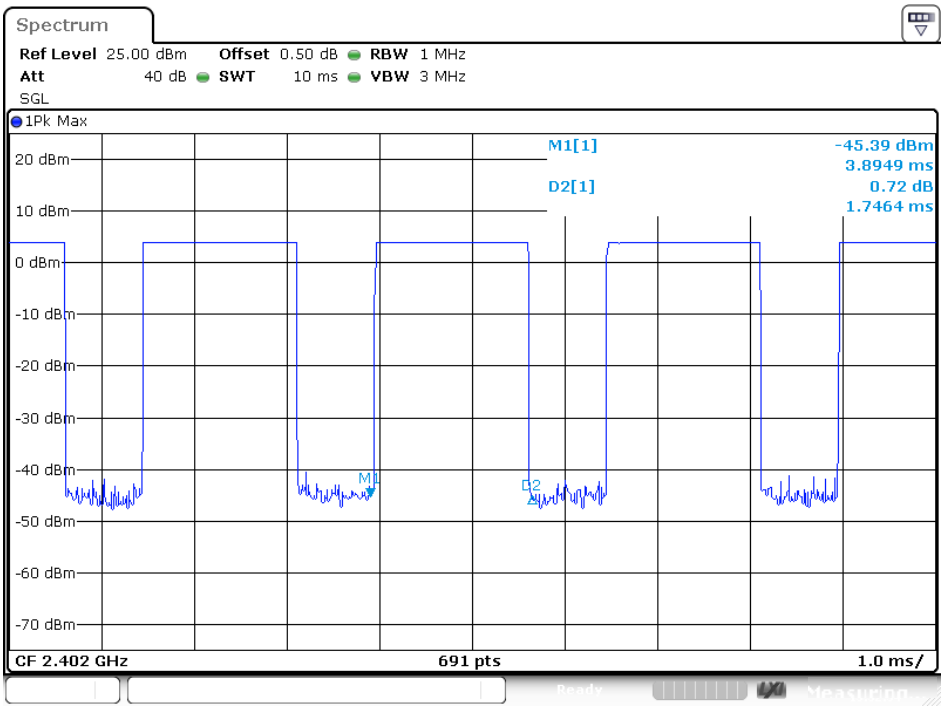
DH1 Middle channel



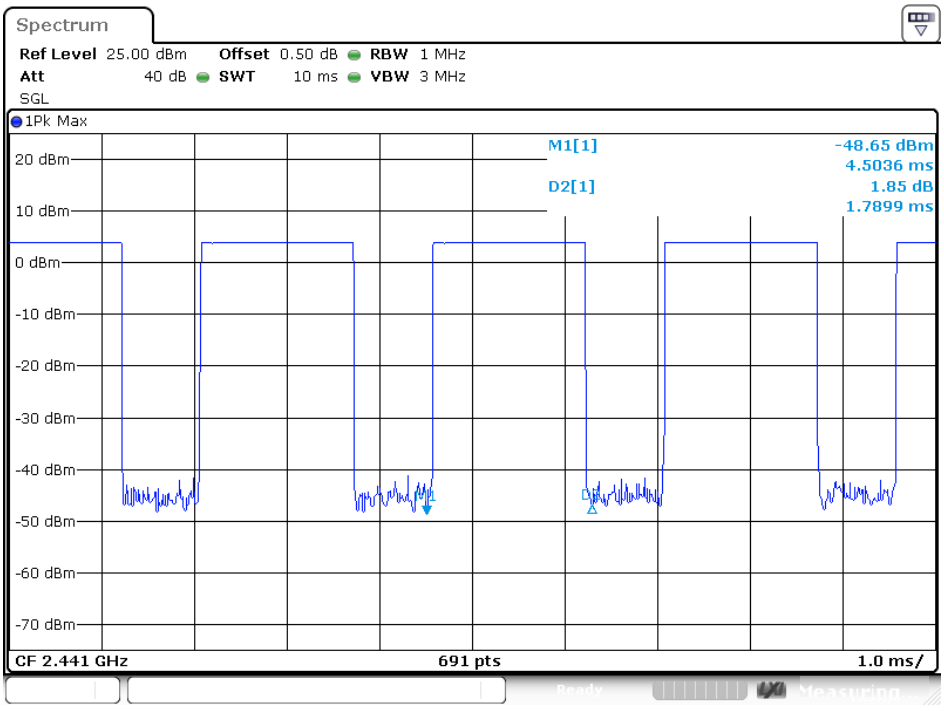
DH1 High channel



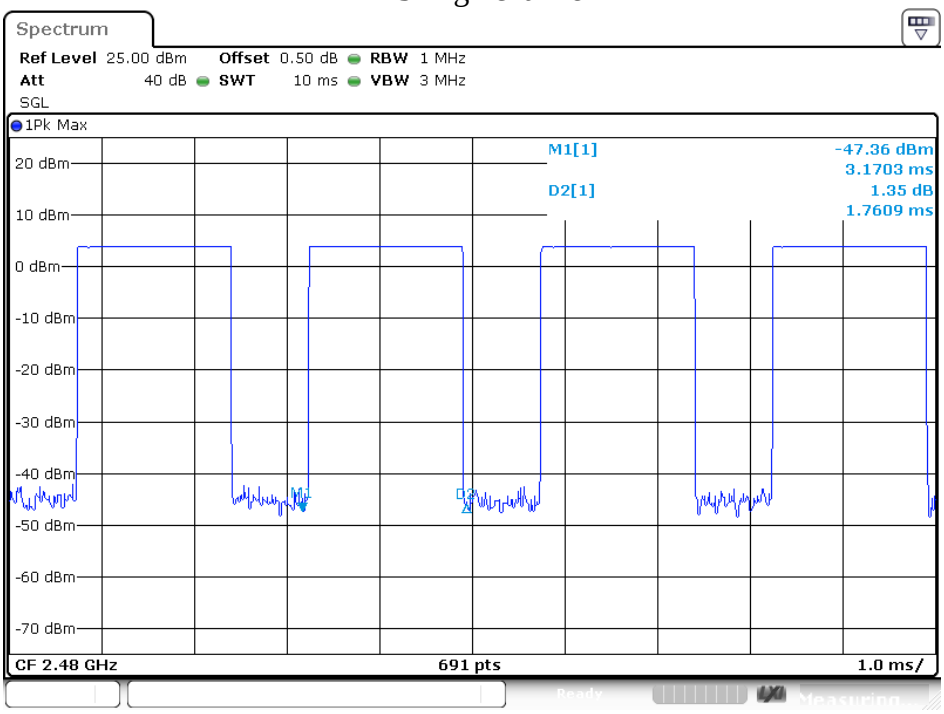
DH3 Low channel



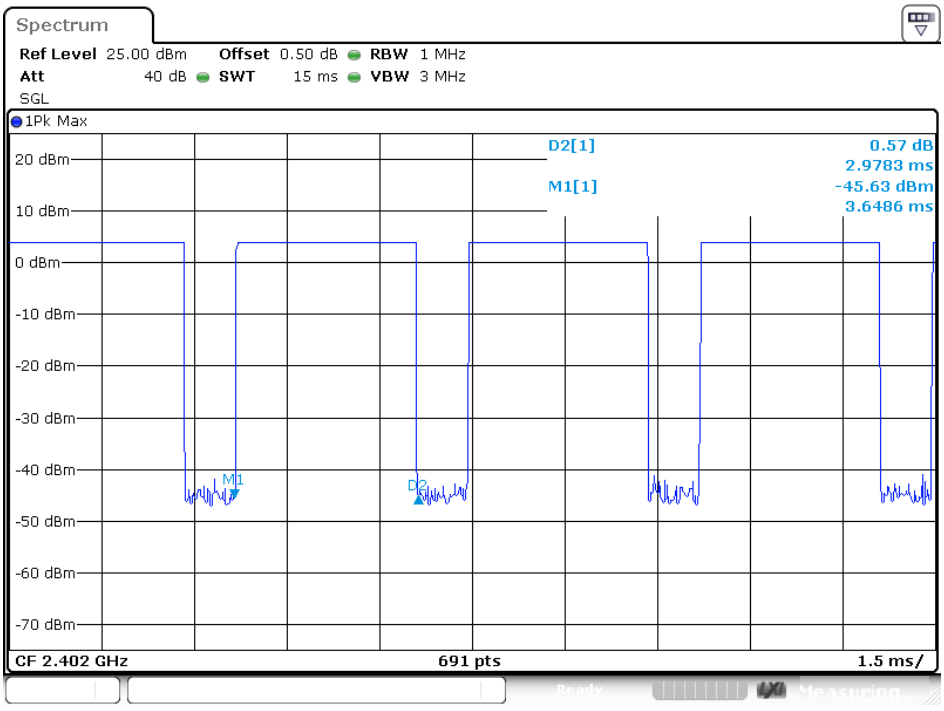
DH3 Middle channel



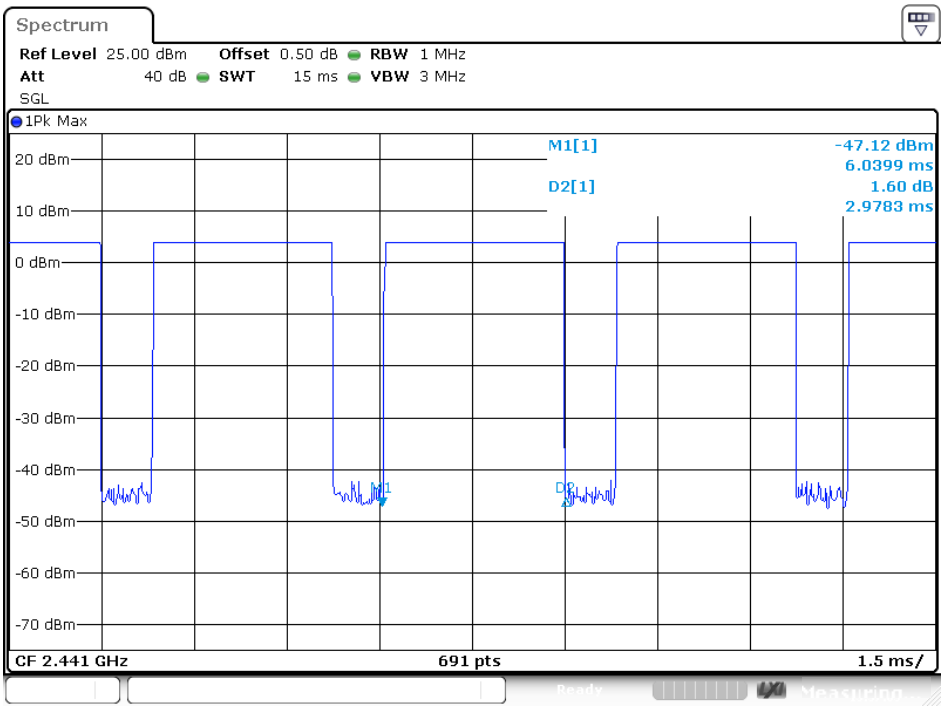
DH3 High channel



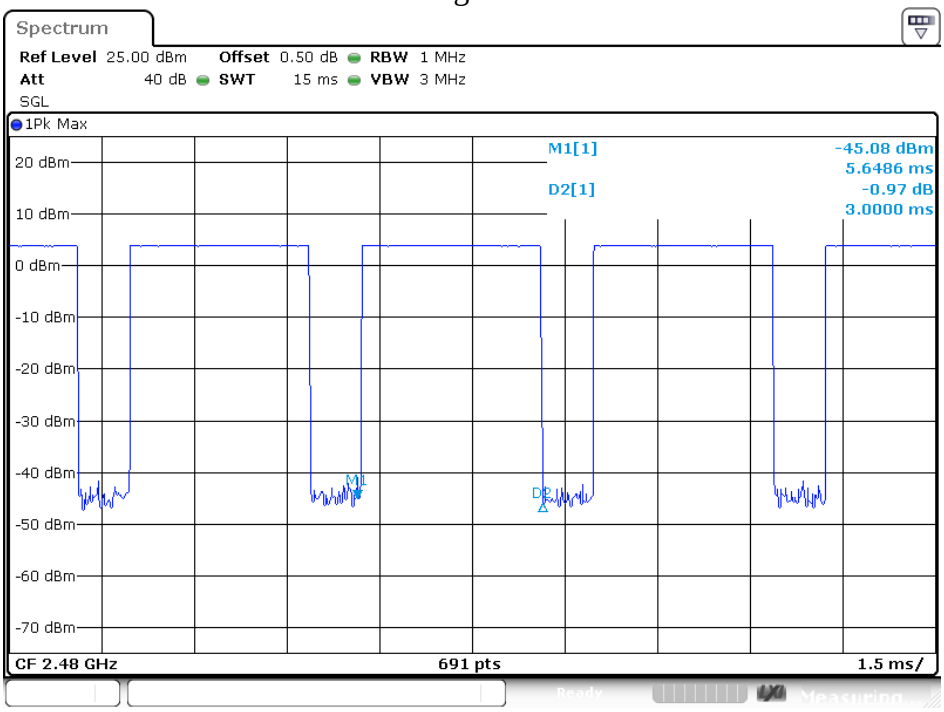
DH5 Low channel



DH5 Middle channel

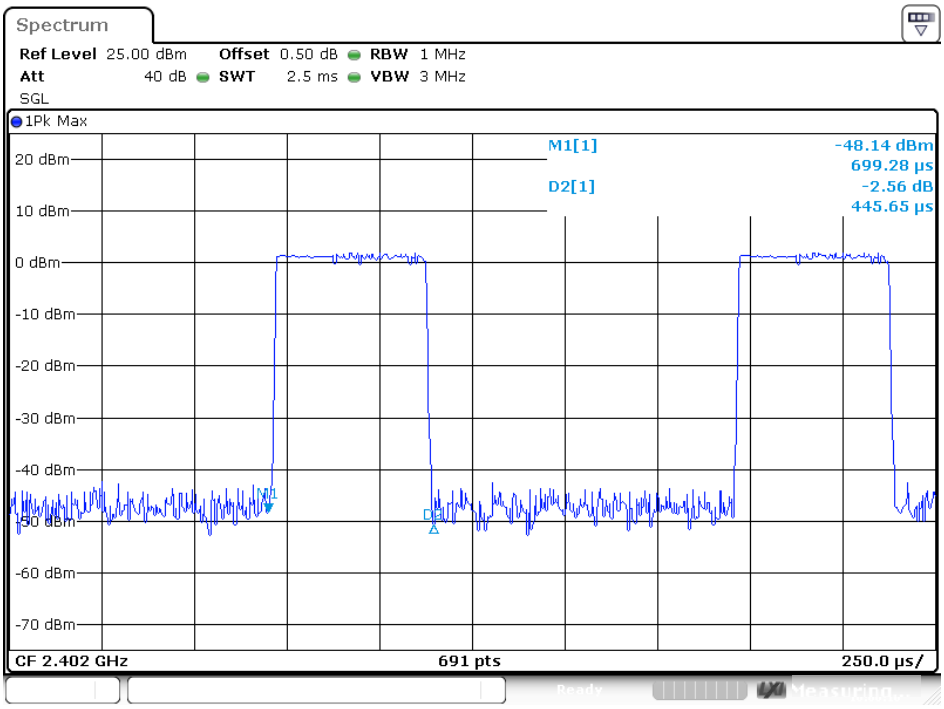


DH5 High channel

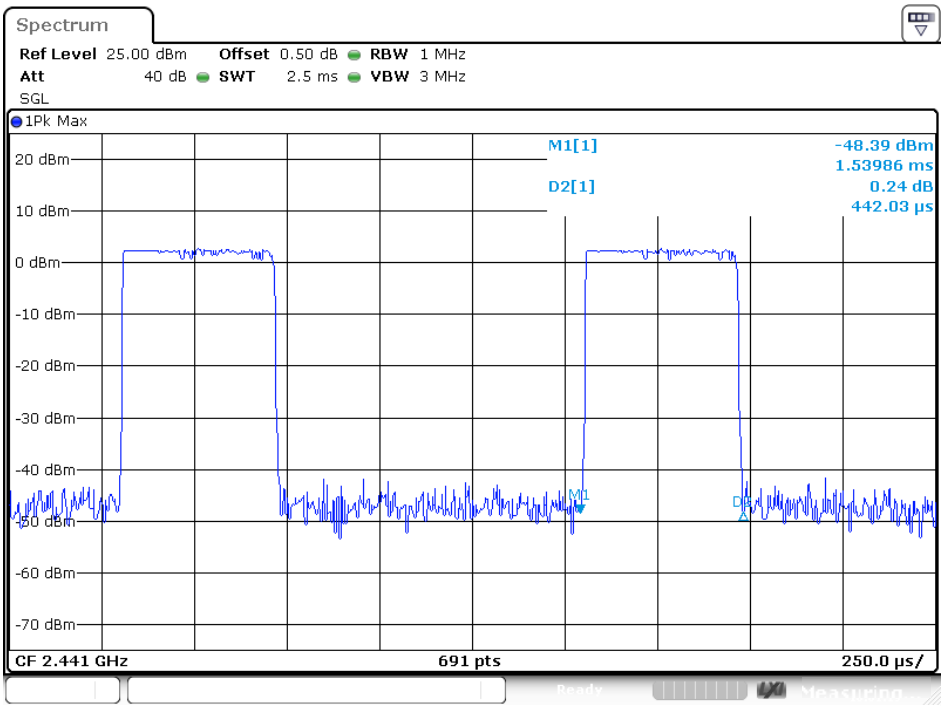


Π/4-DQPSK

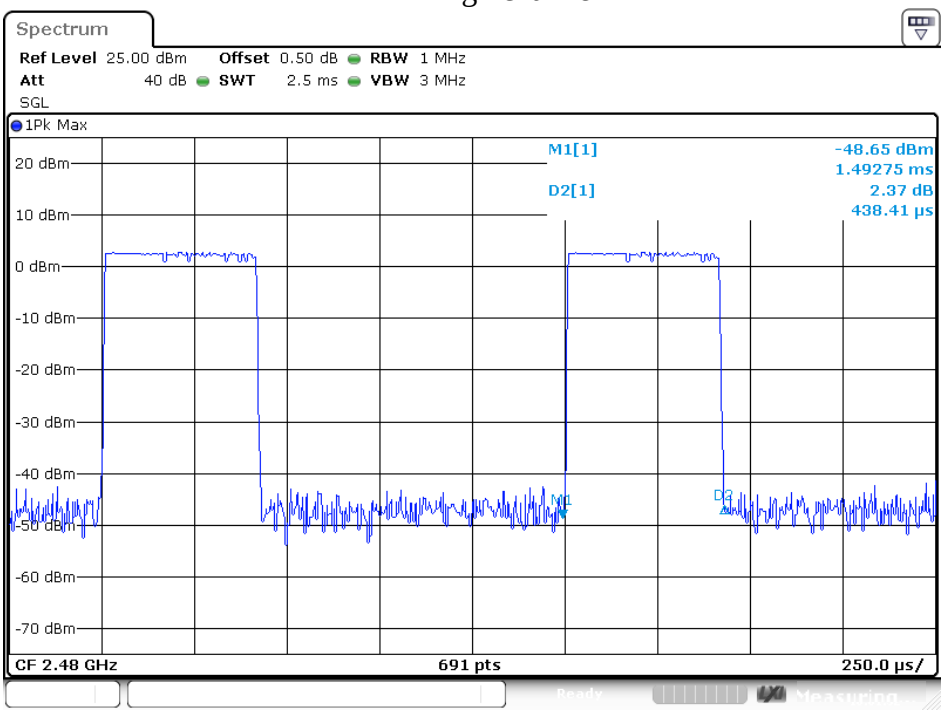
2DH1 Low channel



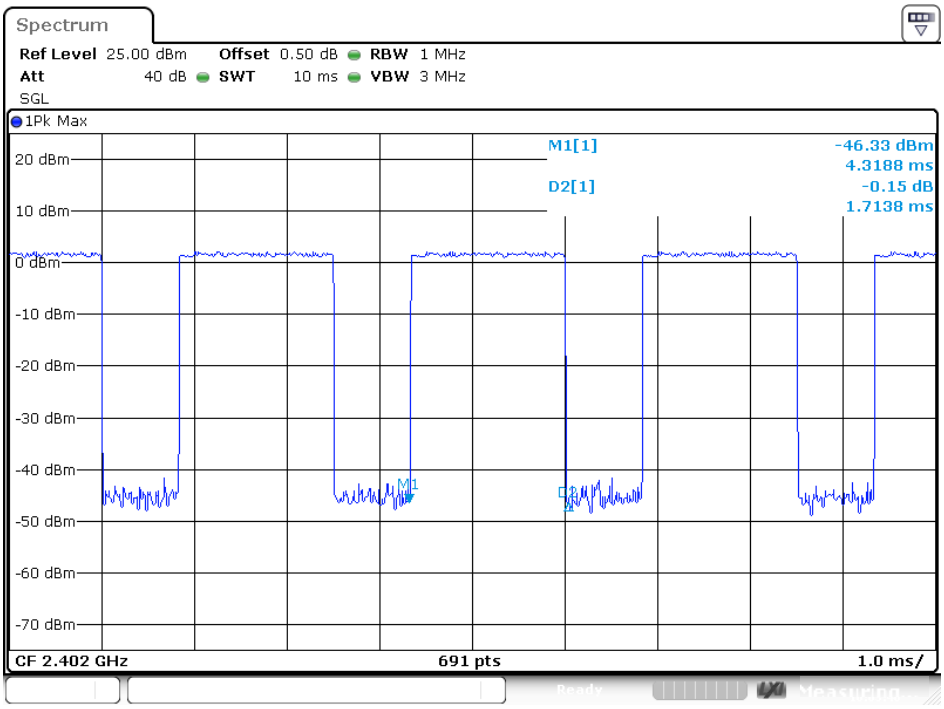
2DH1 Middle channel



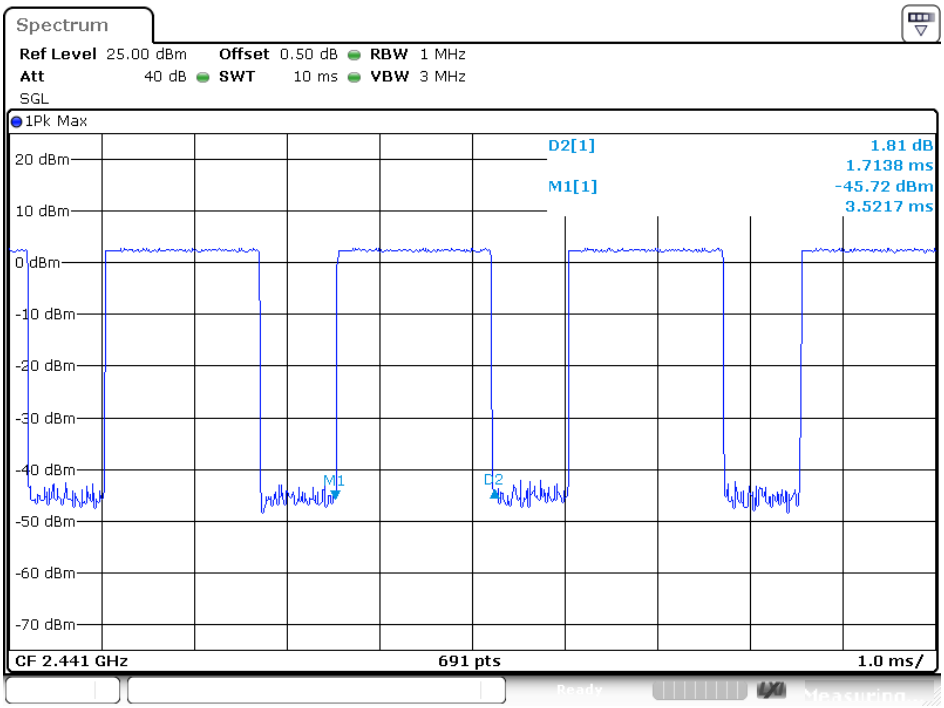
2DH1 High channel



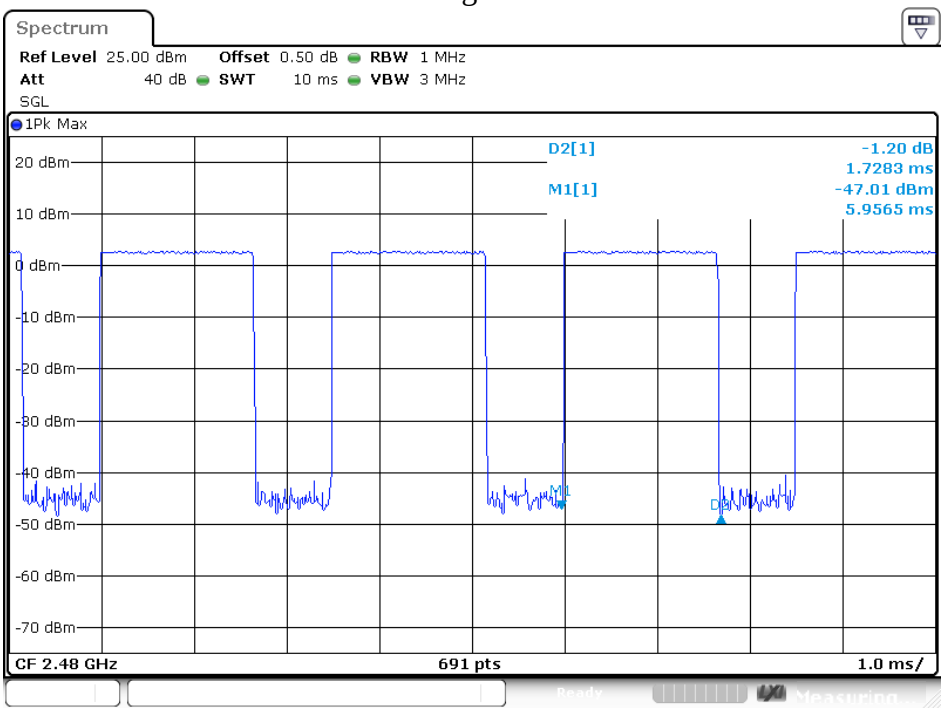
2DH3 Low channel



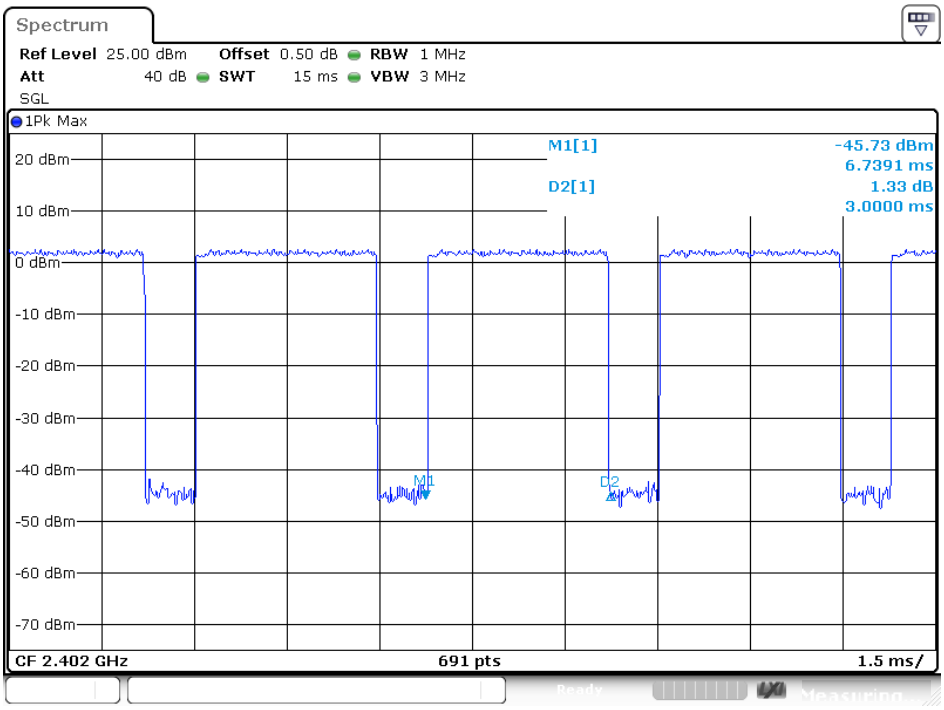
2DH3 Middle channel



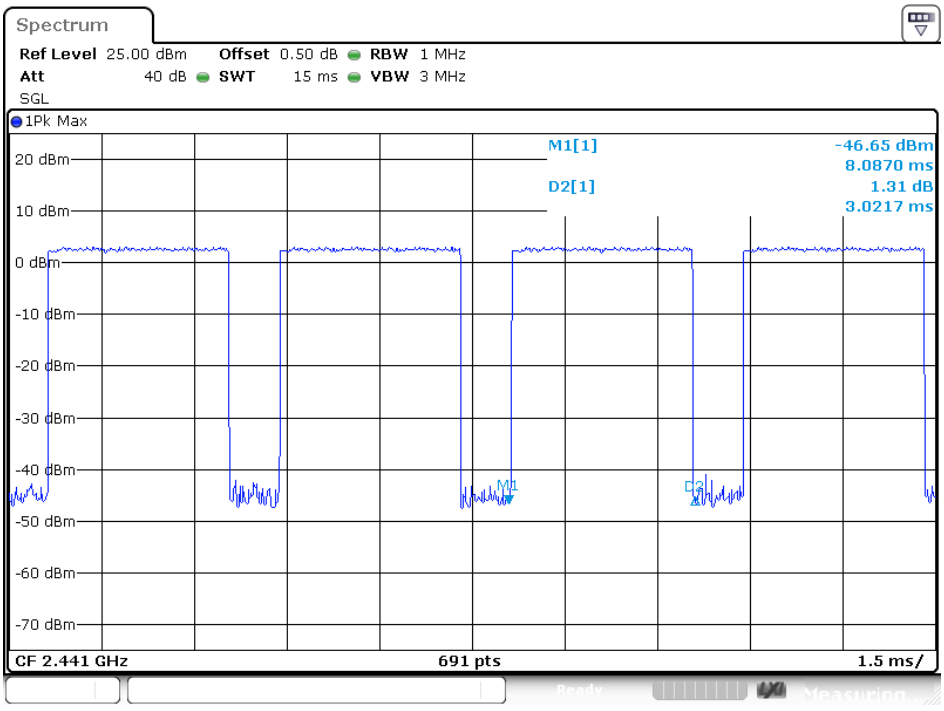
2DH3 High channel



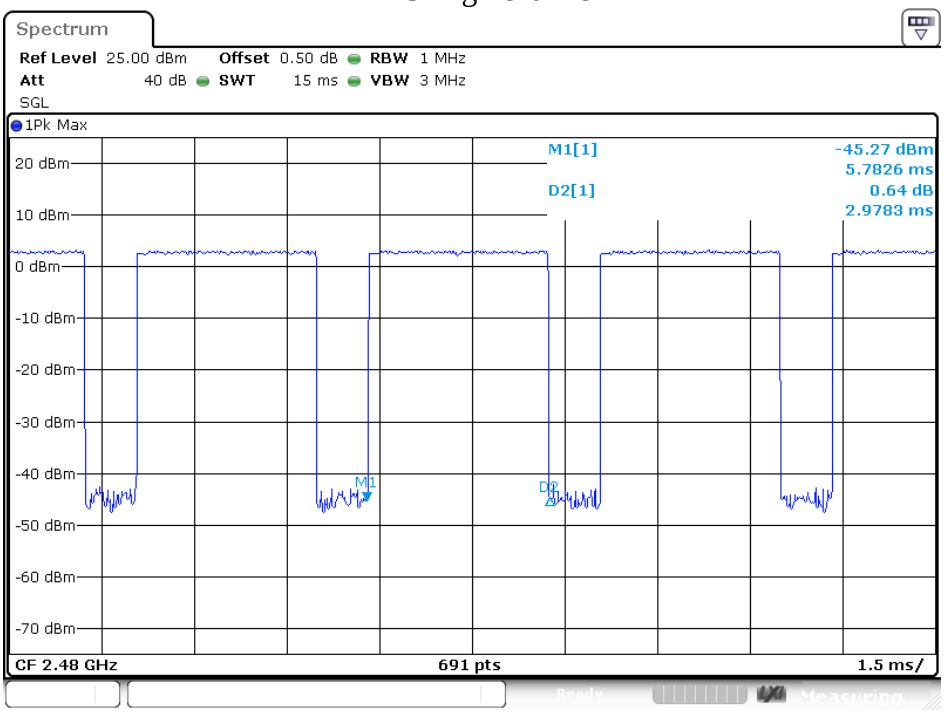
2DH5 Low channel



2DH5 Middle channel

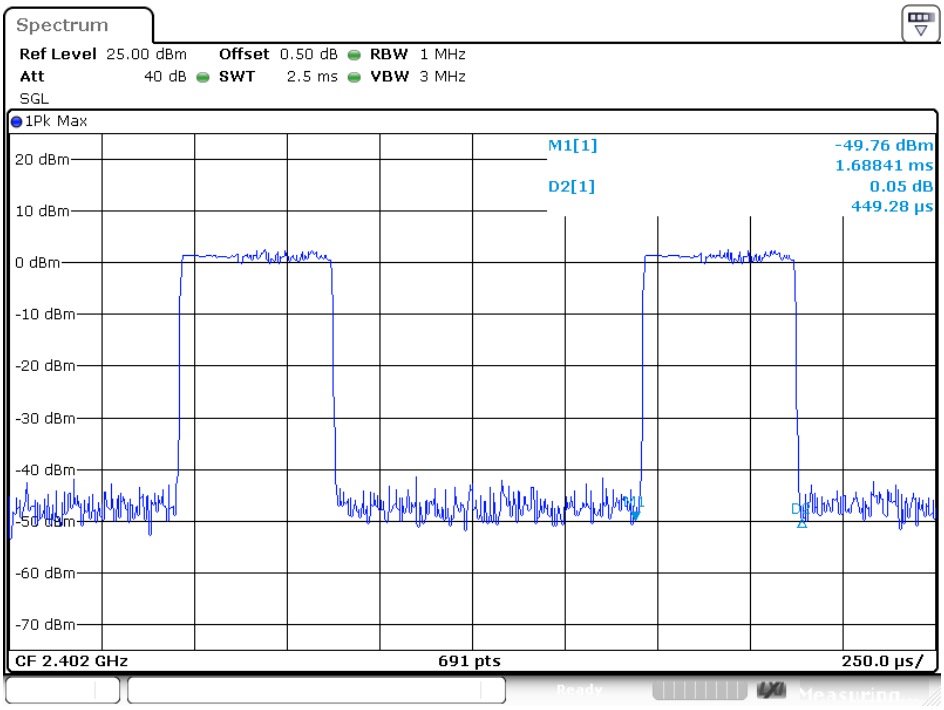


2DH5 High channel

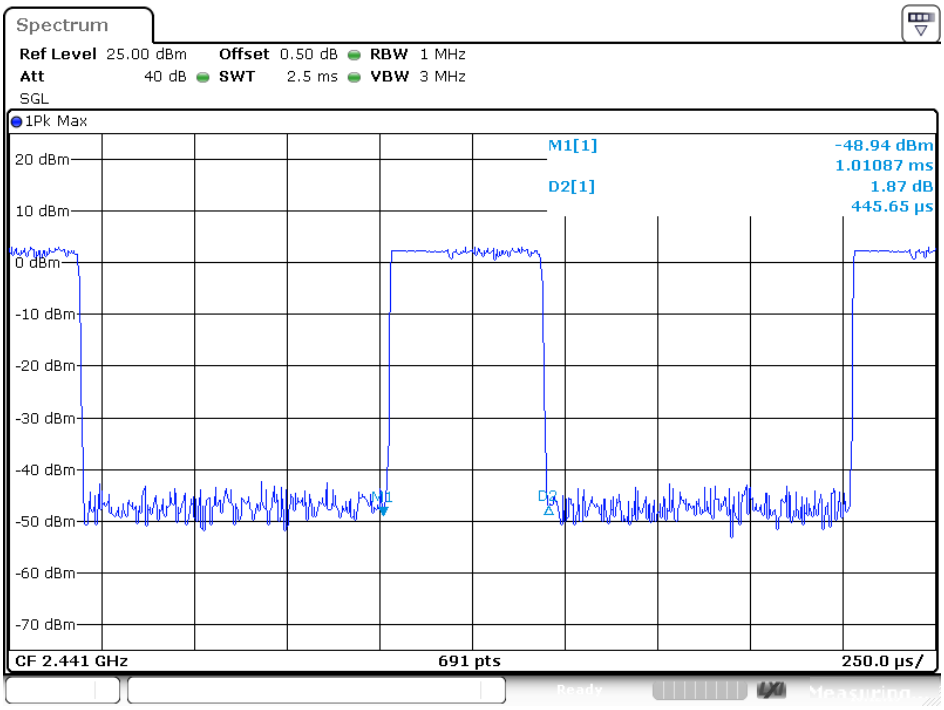


8DPSK Mode

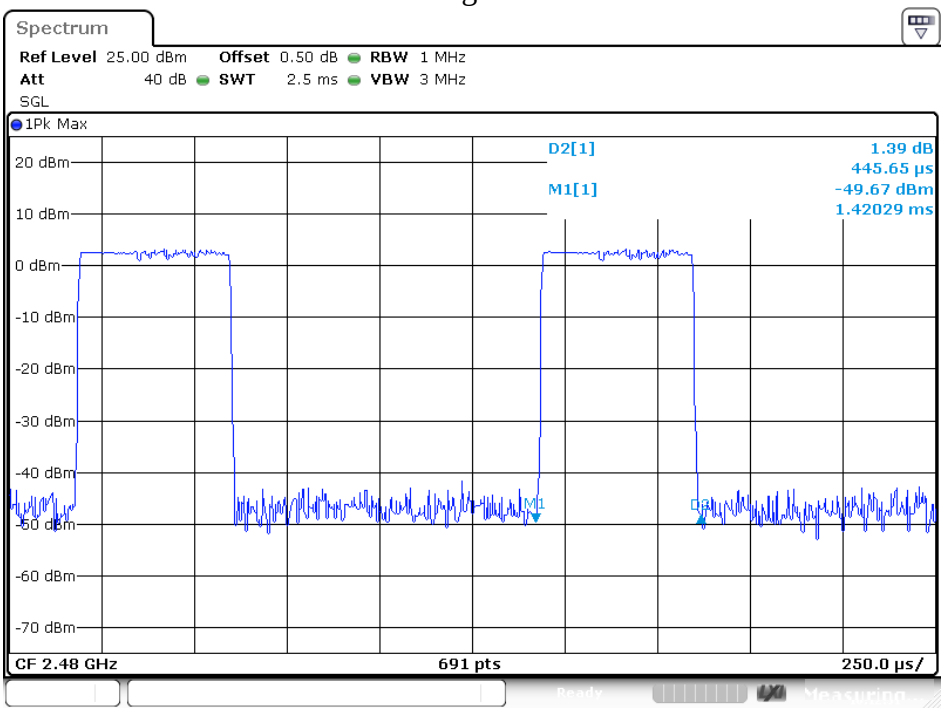
3DH1 Low channel



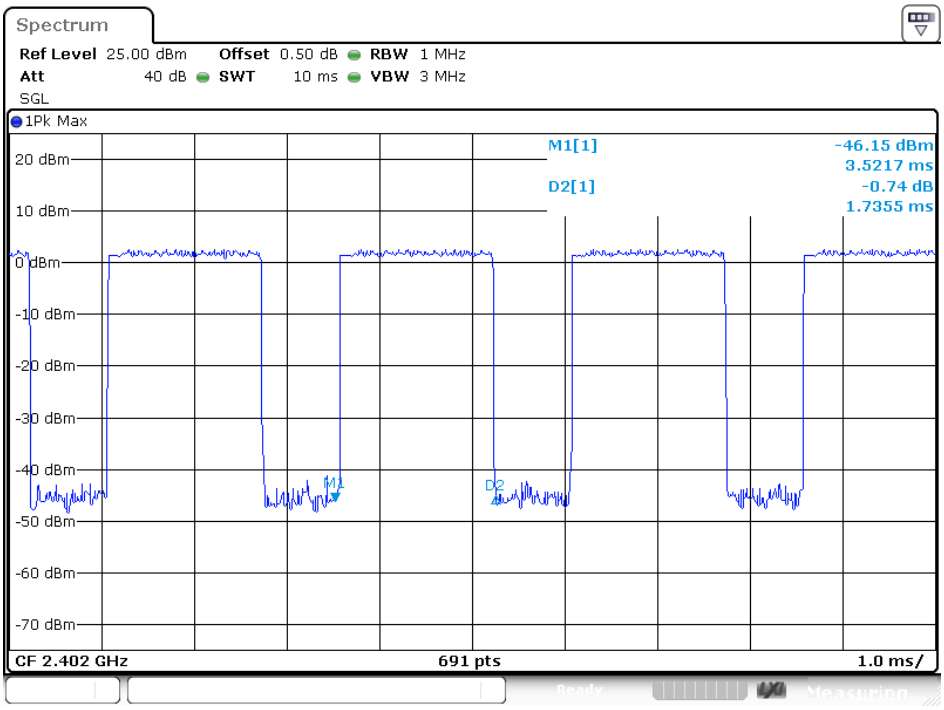
3DH1 Middle channel



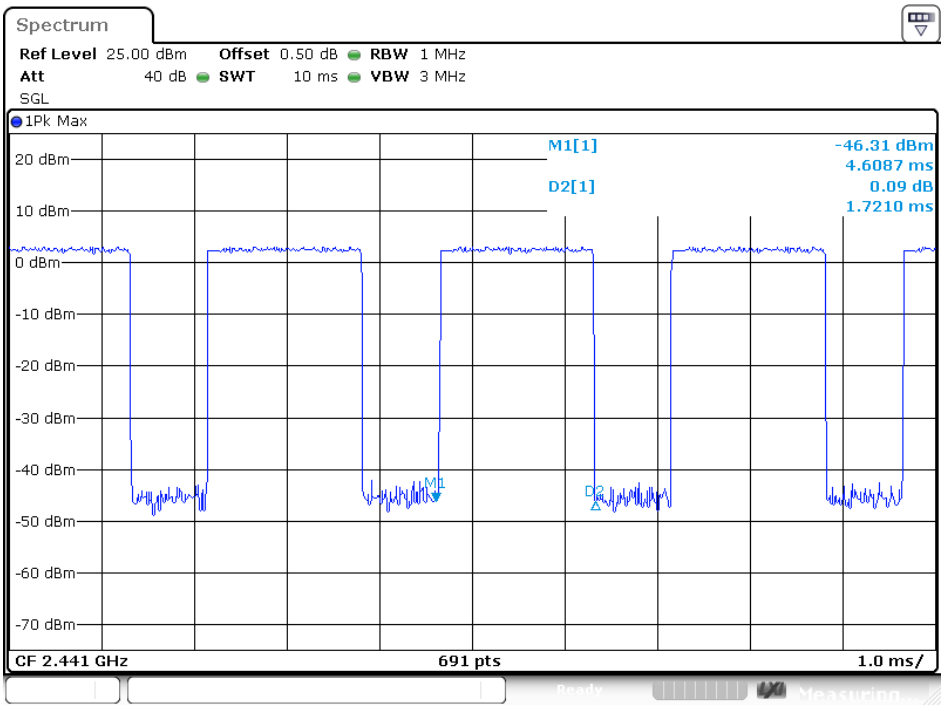
3DH1 High channel



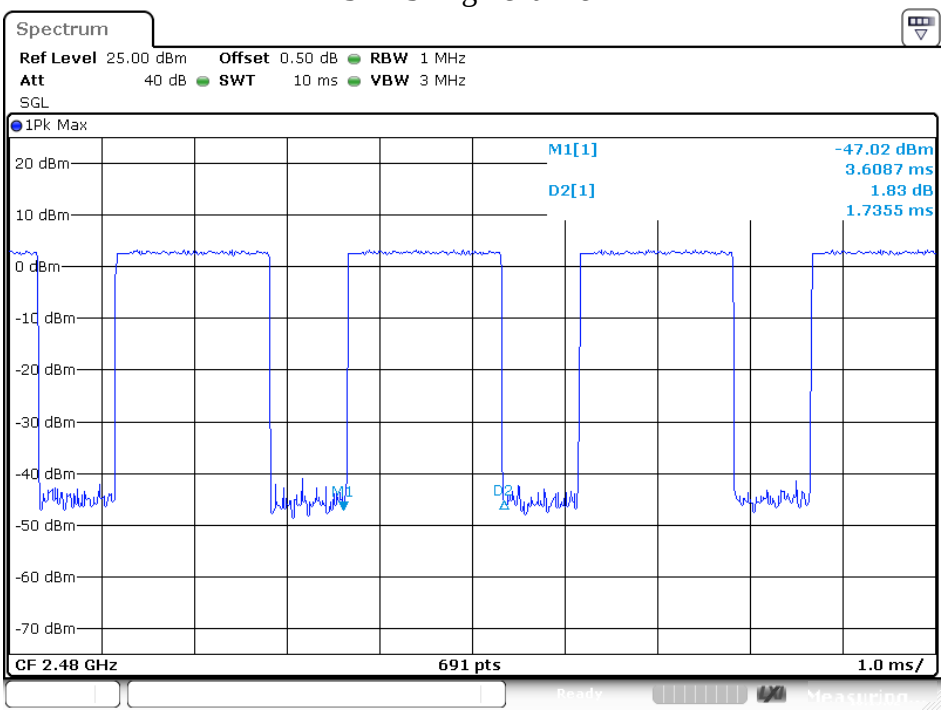
3DH3 Low channel



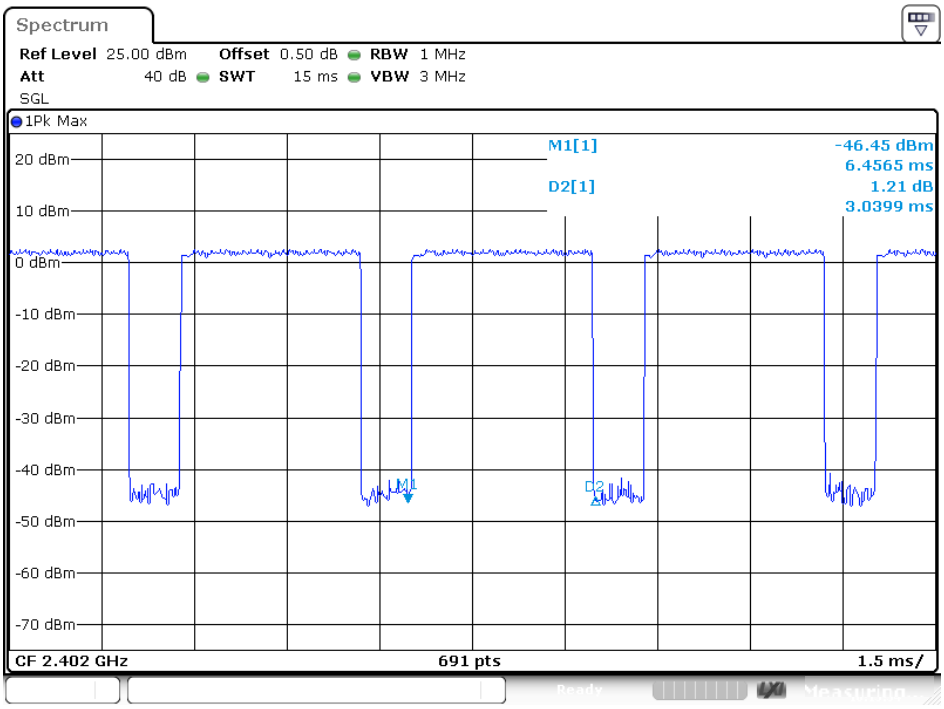
3DH3 Middle channel



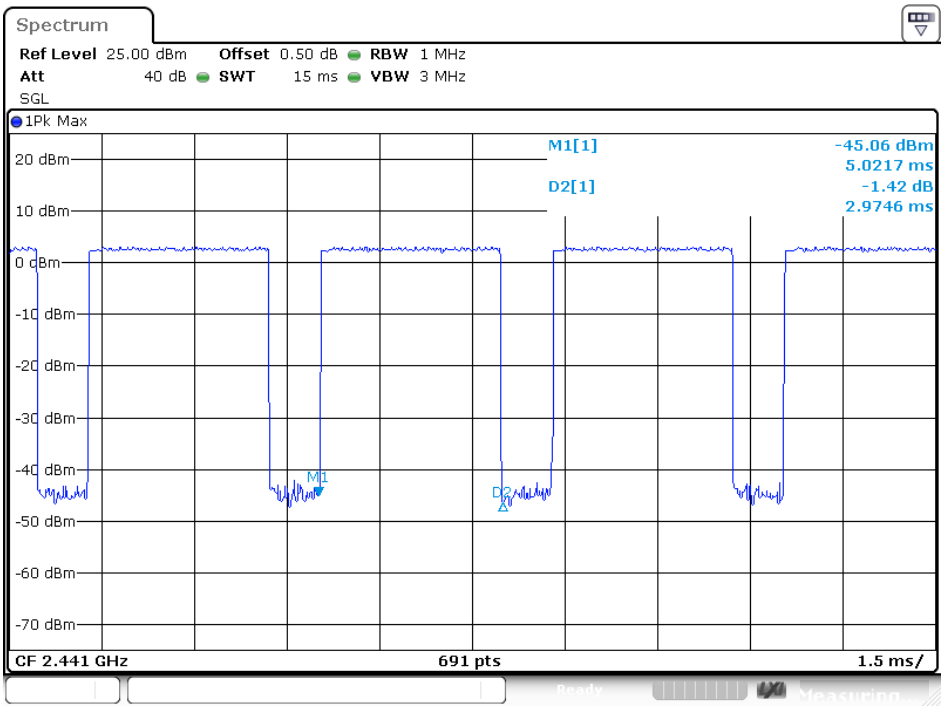
3DH3 High channel



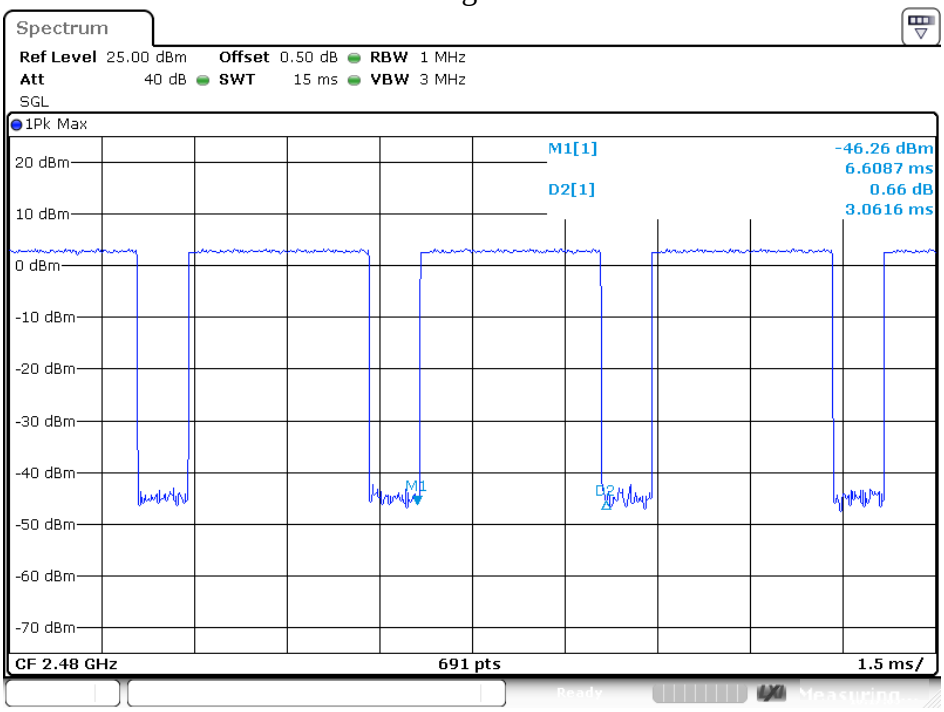
3DH5 Low channel



3DH5 Middle channel

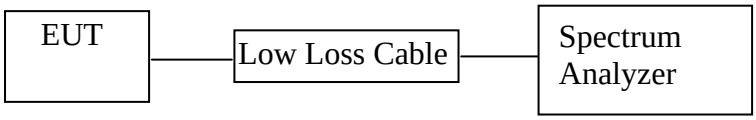


3DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

9.2.The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz for GFSK mode

9.5.3.Set RBW of spectrum analyzer to 3MHz and VBW to 10MHz for other mode

9.5.4.Measurement the maximum peak output power.

9.6.Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	4.28/0.0027	30 / 1.0
Middle	2441	4.24/0.0027	30 / 1.0
High	2480	4.10/0.0026	30 / 1.0

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	3.36/0.0022	21 / 0.125
Middle	2441	3.78/0.0024	21 / 0.125
High	2480	4.06/0.0025	21 / 0.125

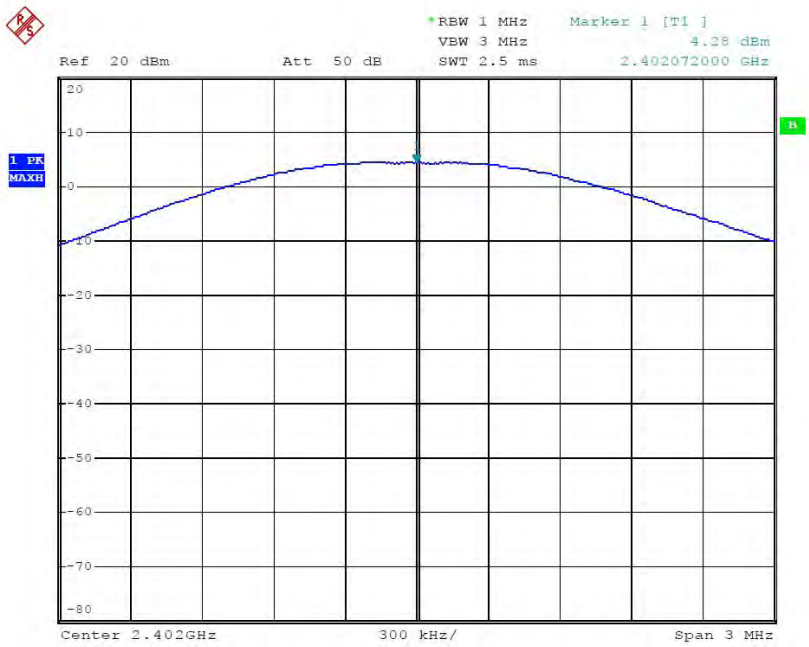
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	3.78/0.0024	21 / 0.125
Middle	2441	3.94/0.0025	21 / 0.125
High	2480	4.15/0.0026	21 / 0.125

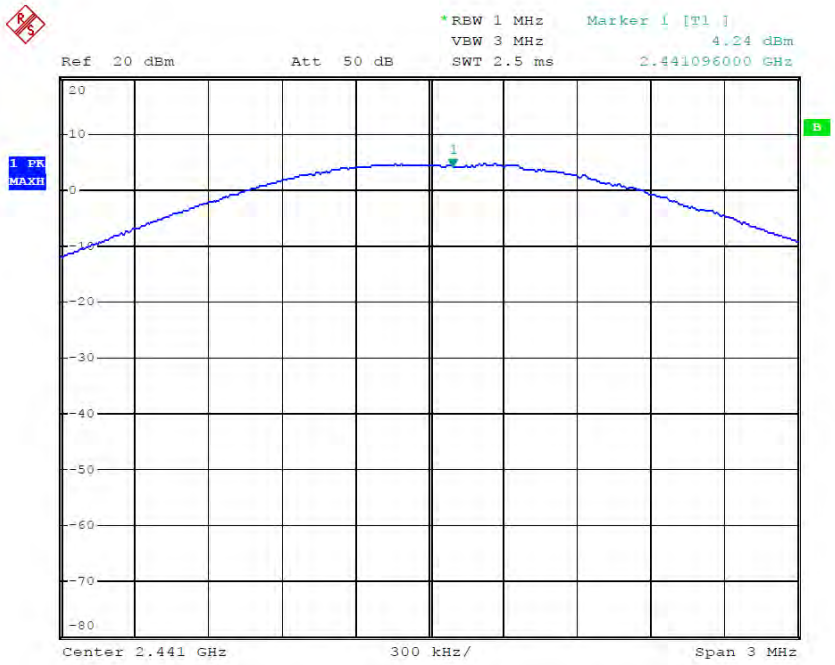
The spectrum analyzer plots are attached as below.

GFSK Mode

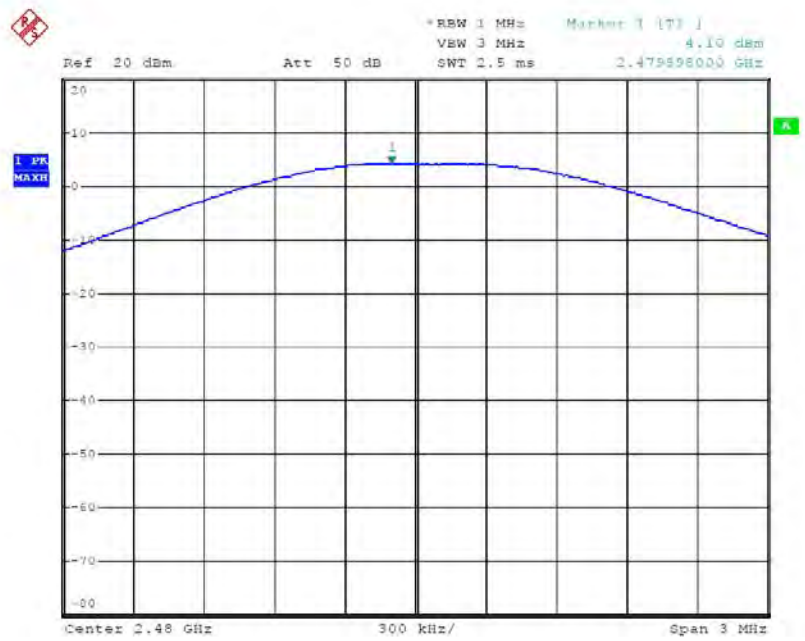
Low channel



Middle channel

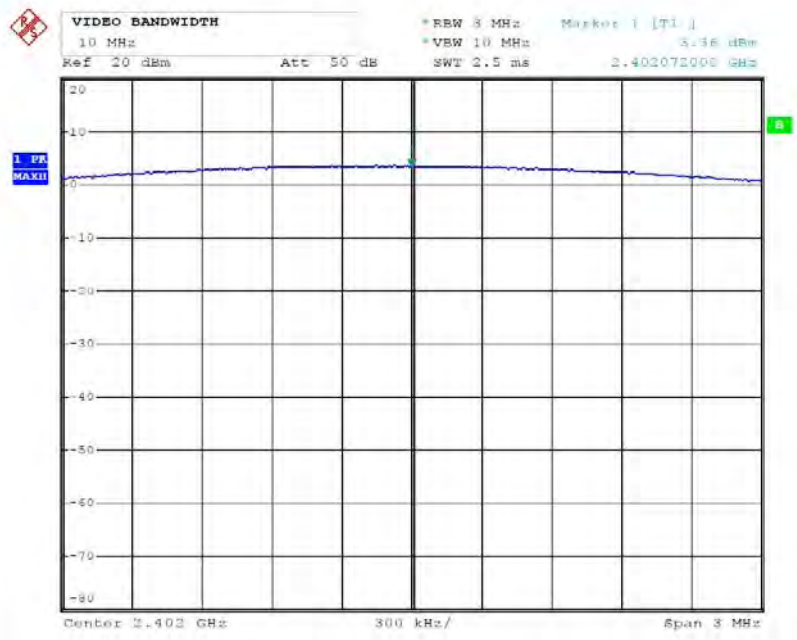


High channel

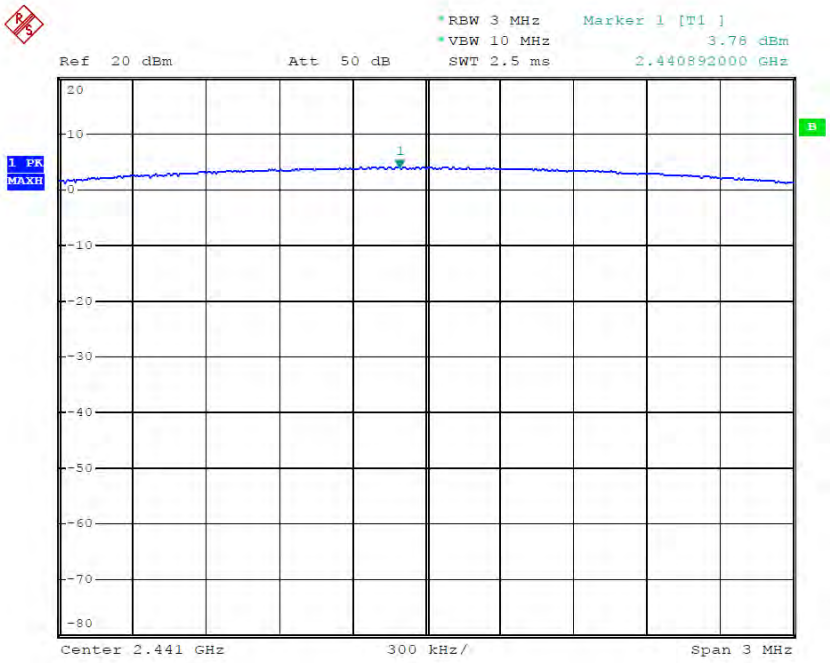


Π/4-DQPSK Mode

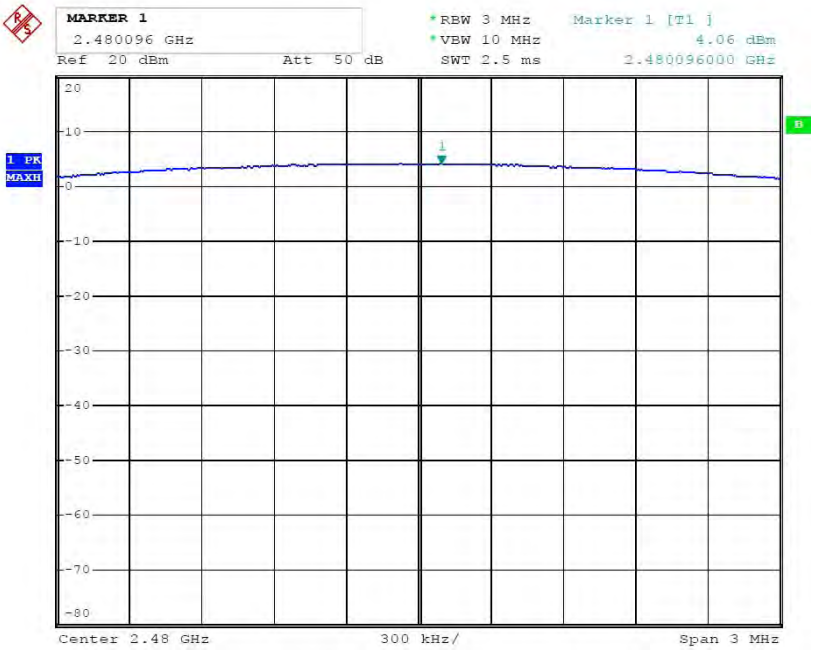
Low channel



Middle channel

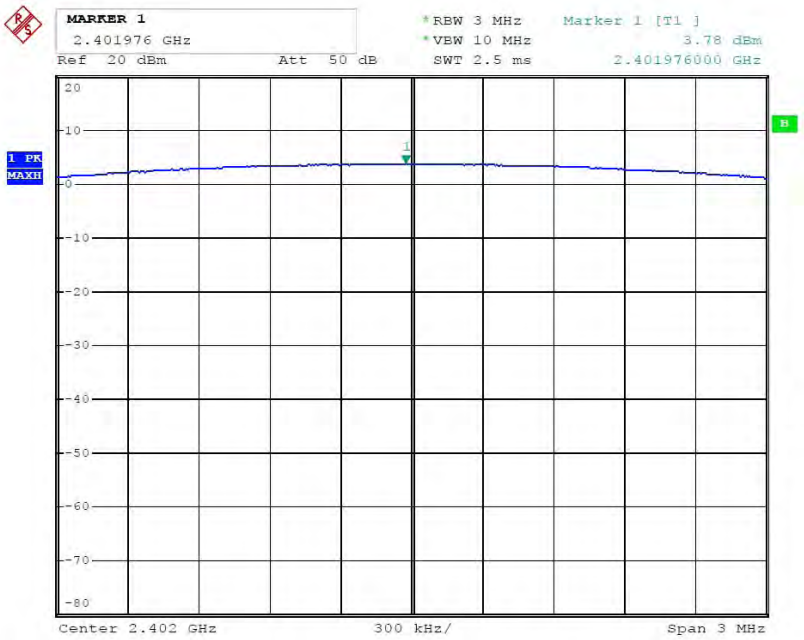


High channel

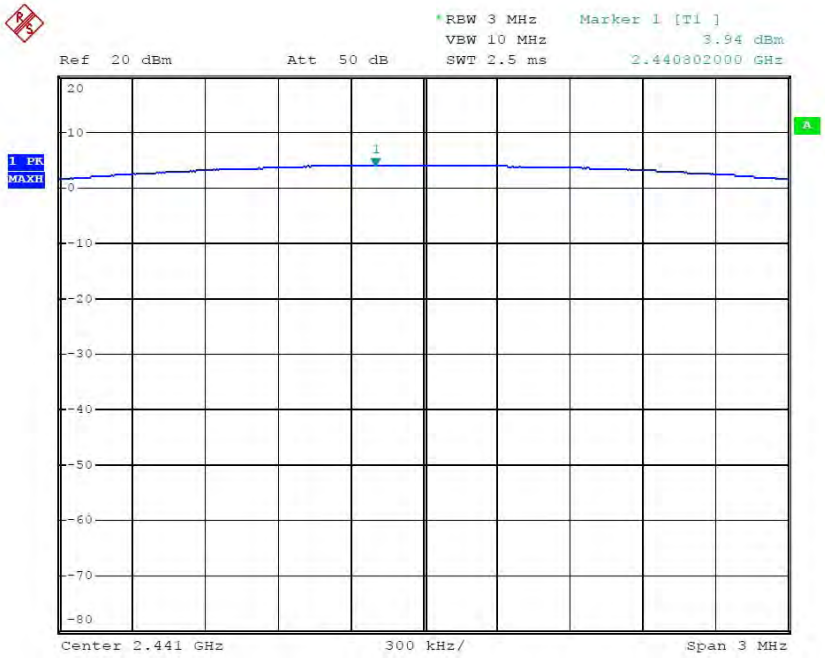


8DPSK Mode

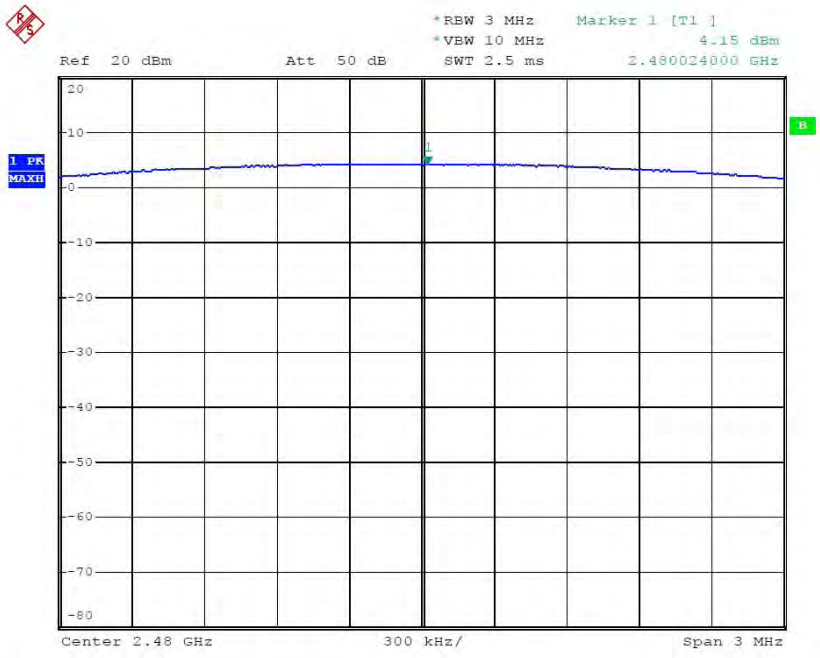
Low channel



Middle channel



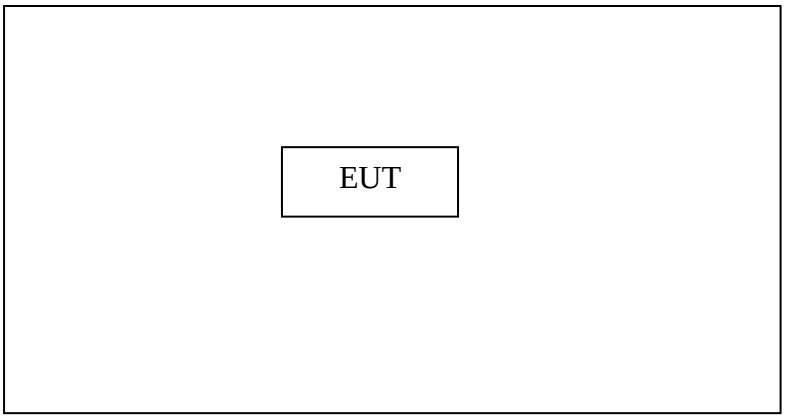
High channel



10.RADIATED EMISSION TEST

10.1.Block Diagram of Test Setup

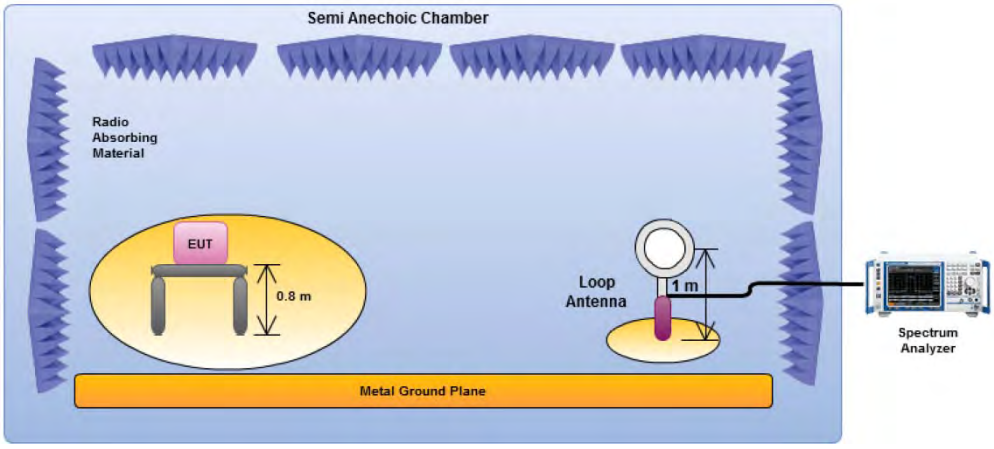
10.1.1.Block diagram of connection between the EUT and peripherals



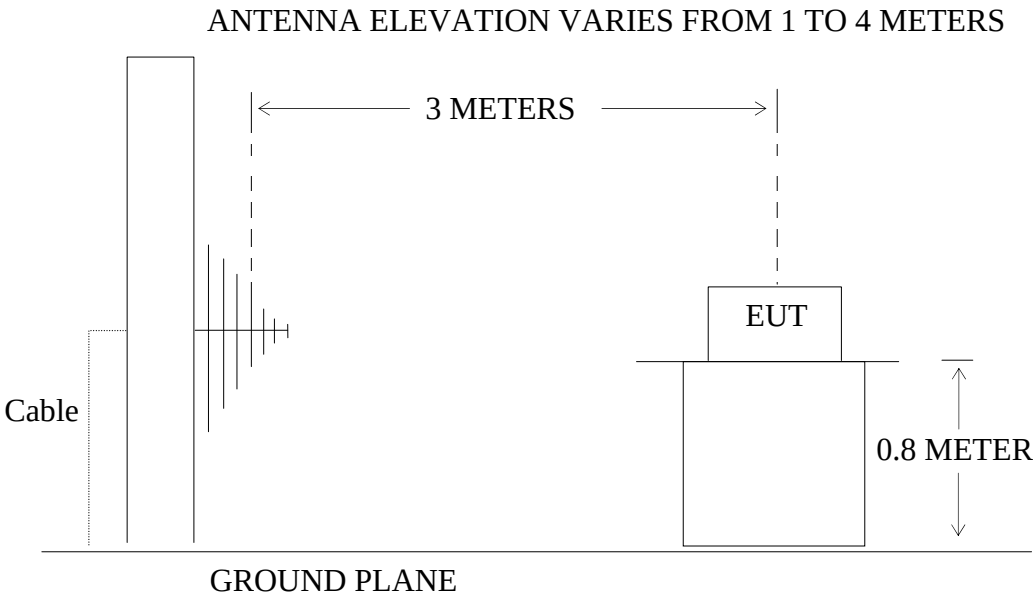
Setup: Transmitting mode

10.1.2. Semi-Anechoic Chamber Test Setup Diagram

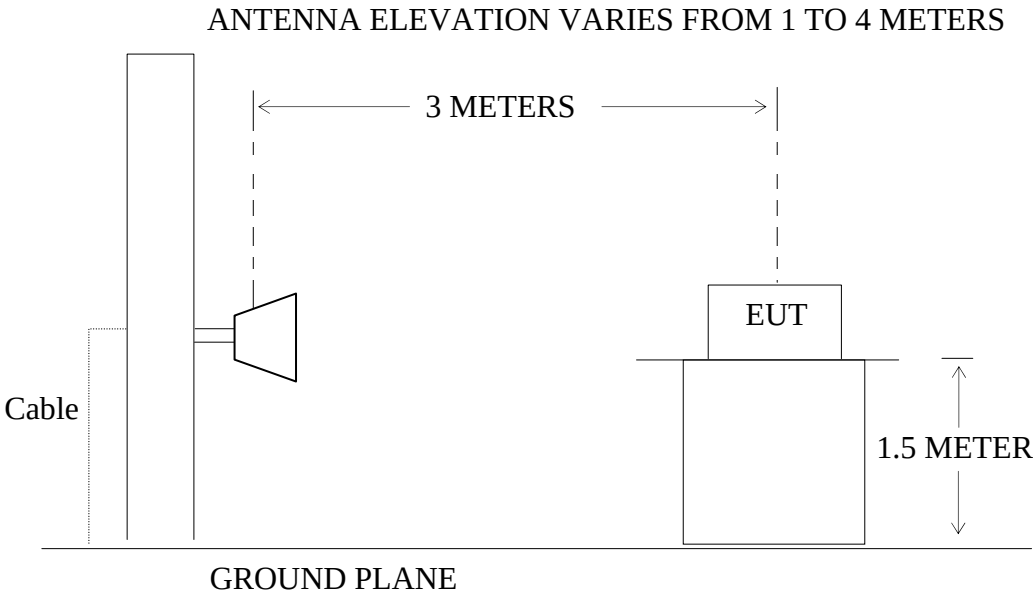
Below 30MHz



30MHz-1GHz



Above 1GHz



10.2.The Limit For Section 15.247(d)

Section 15.247(d): 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation

required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.6.The Field Strength of Radiation Emission Measurement Results

Note:

1.We tested GFSK mode, Π/4-DQPSK Mode & 8QPSK mode and recorded the worst case data

(GFSK mode) for all test mode.

2. The test frequency is from 30MHz to 25GHz, The 18-25GHz emissions are not reported, because the levels are too low against the limit.

Below 1GHz

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Site: 1# Chamber
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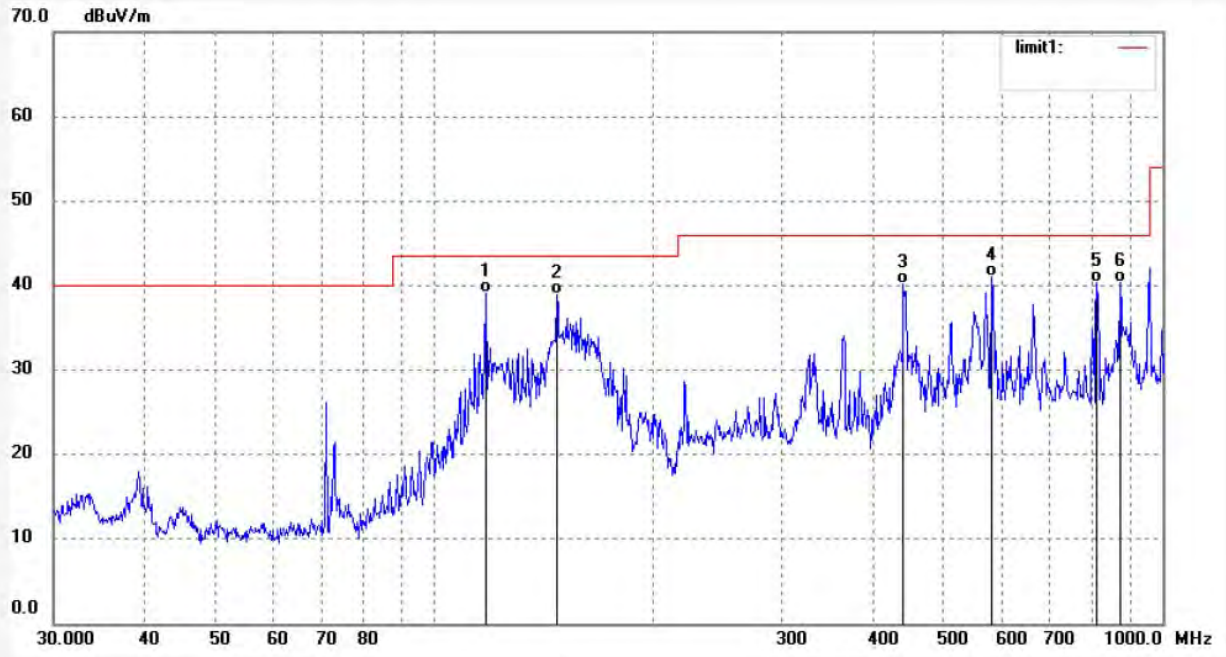
Job No.: DING #2351
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 2016/09/18
Time: 12:43:53
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	117.6815	60.43	-21.27	39.16	43.50	-4.34	QP			
2	147.3560	61.20	-22.27	38.93	43.50	-4.57	QP			
3	441.0199	53.37	-13.24	40.13	46.00	-5.87	QP			
4	582.1122	51.31	-10.33	40.98	46.00	-5.02	QP			
5	812.7745	45.95	-5.67	40.28	46.00	-5.72	QP			
6	875.0133	44.89	-4.61	40.28	46.00	-5.72	QP			

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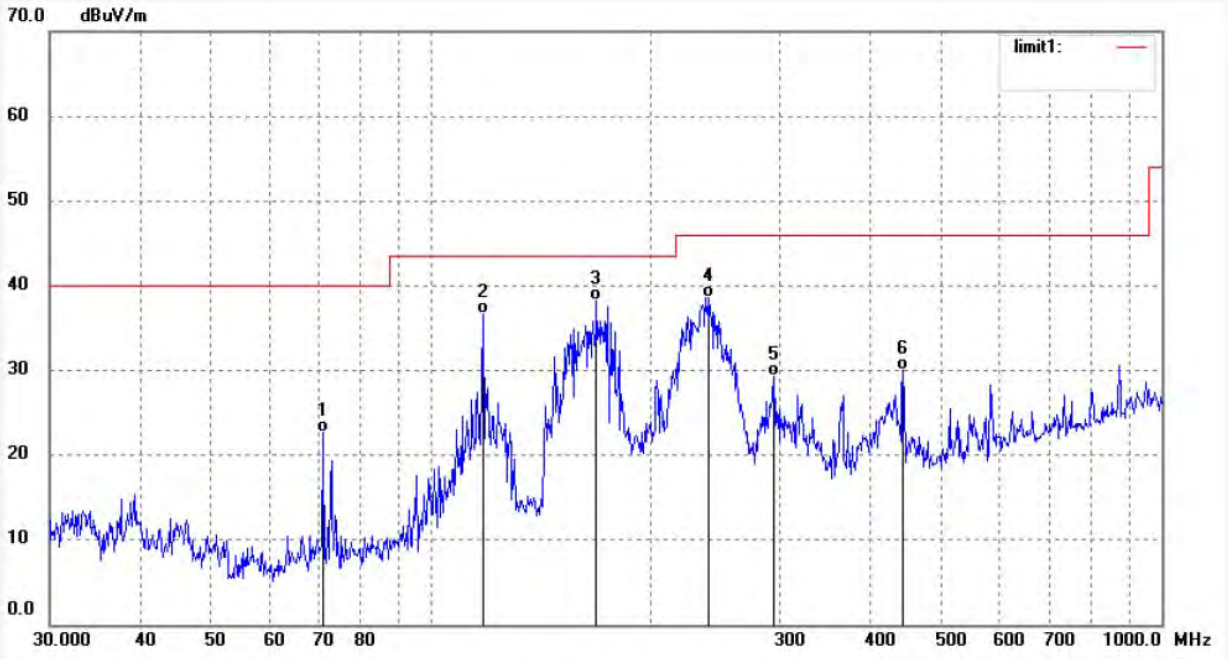
Job No.: DING #2352
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 2016/09/18
Time: 12:45:28
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	70.9536	45.52	-22.90	22.62	40.00	-17.38	QP			
2	117.6815	58.00	-21.27	36.73	43.50	-6.77	QP			
3	168.4043	58.65	-20.45	38.20	43.50	-5.30	QP			
4	239.3020	56.88	-18.25	38.63	46.00	-7.37	QP			
5	294.4260	45.73	-16.38	29.35	46.00	-16.65	QP			
6	442.5722	43.23	-13.19	30.04	46.00	-15.96	QP			

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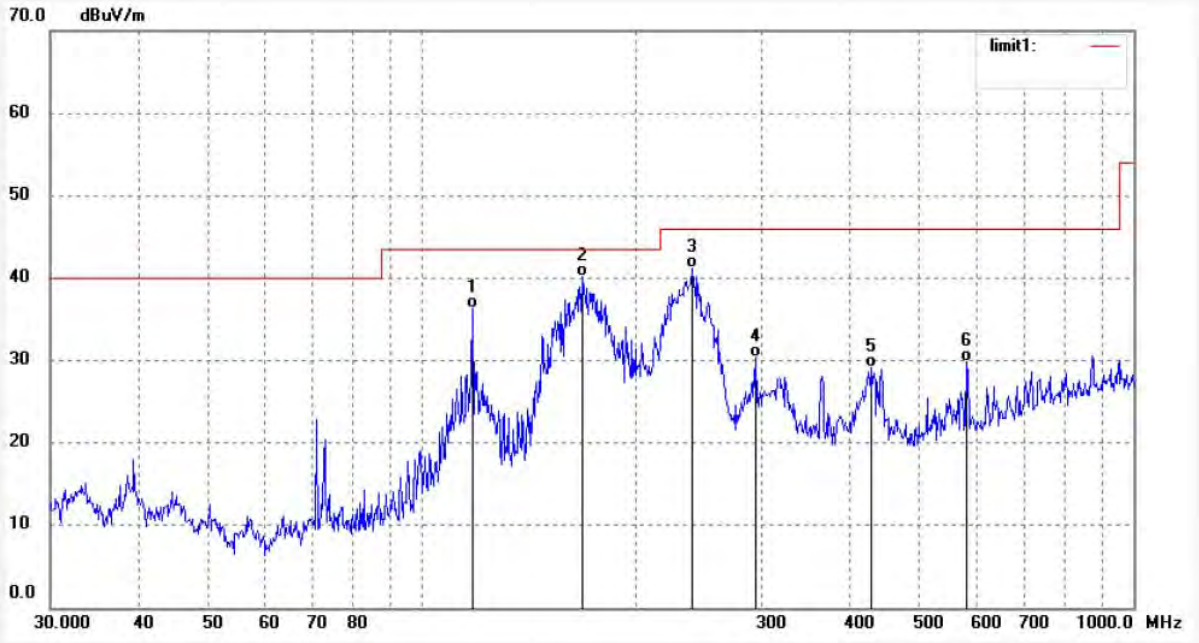
Job No.: DING #2353
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2441MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 2016/09/18
Time: 12:47:25
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	117.6815	57.55	-21.27	36.28	43.50	-7.22	QP			
2	167.8136	60.73	-20.52	40.21	43.50	-3.29	QP			
3	239.3020	59.55	-18.25	41.30	46.00	-4.70	QP			
4	294.4260	46.77	-16.38	30.39	46.00	-15.61	QP			
5	428.7960	42.66	-13.55	29.11	46.00	-16.89	QP			
6	582.1122	40.18	-10.33	29.85	46.00	-16.15	QP			

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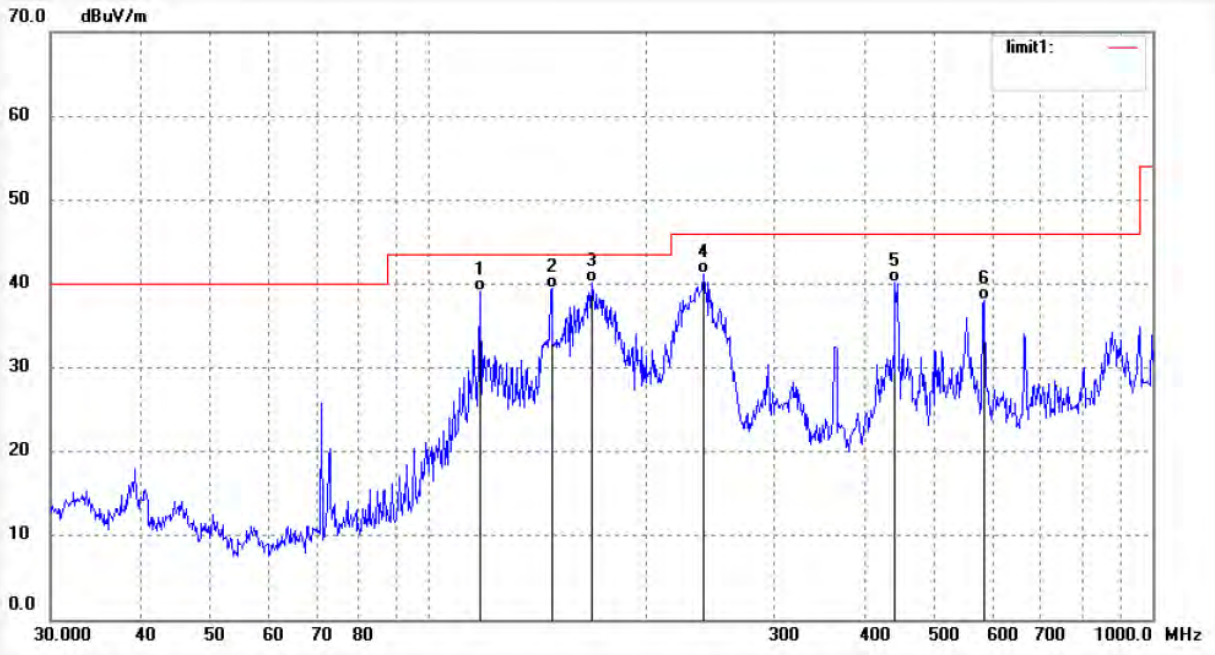
Job No.: DING #2354	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2016/09/18
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:50:09
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature: DING
Mode: TX 2441MHz	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	117.6815	60.30	-21.27	39.03	43.50	-4.47	QP			
2	147.8747	61.79	-22.28	39.51	43.50	-3.99	QP			
3	167.8136	60.73	-20.52	40.21	43.50	-3.29	QP			
4	239.3020	59.55	-18.25	41.30	46.00	-4.70	QP			
5	441.0199	53.43	-13.24	40.19	46.00	-5.81	QP			
6	586.2172	48.37	-10.23	38.14	46.00	-7.86	QP			

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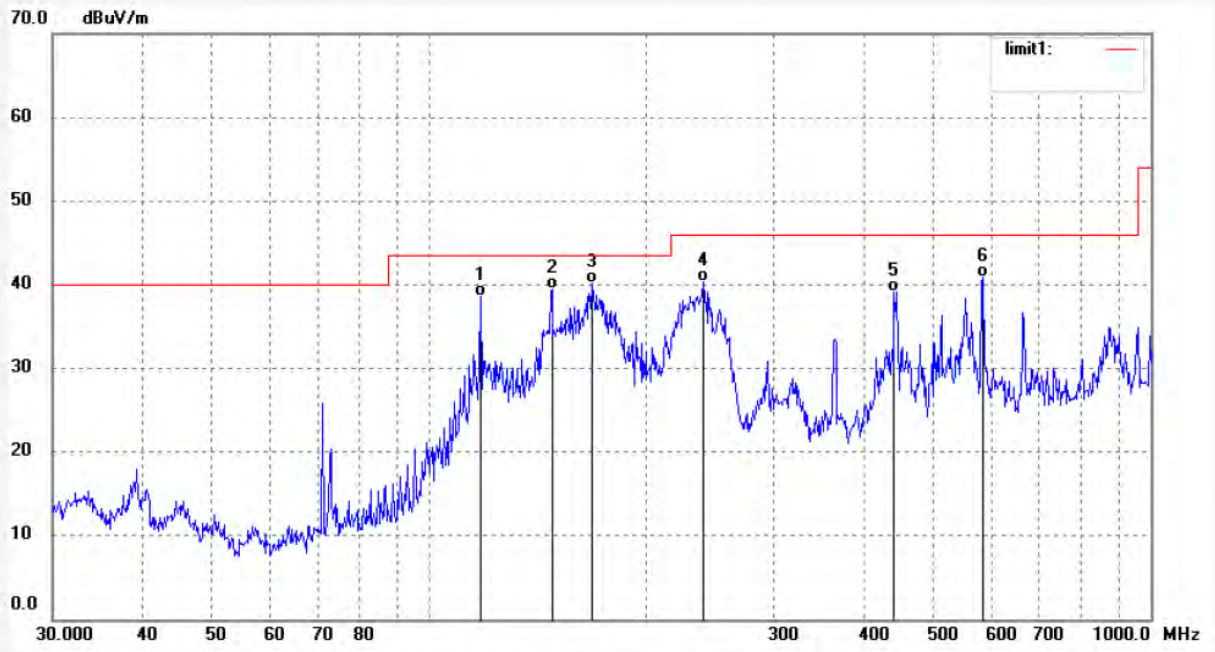
Job No.: DING #2355	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2016/09/18
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:51:56
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature: DING
Mode: TX 2480MHz	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	117.6815	59.80	-21.27	38.53	43.50	-4.97	QP			
2	147.8747	61.79	-22.28	39.51	43.50	-3.99	QP			
3	167.8136	60.73	-20.52	40.21	43.50	-3.29	QP			
4	239.3020	58.55	-18.25	40.30	46.00	-5.70	QP			
5	441.0199	52.43	-13.24	39.19	46.00	-6.81	QP			
6	586.2172	51.10	-10.23	40.87	46.00	-5.13	QP			

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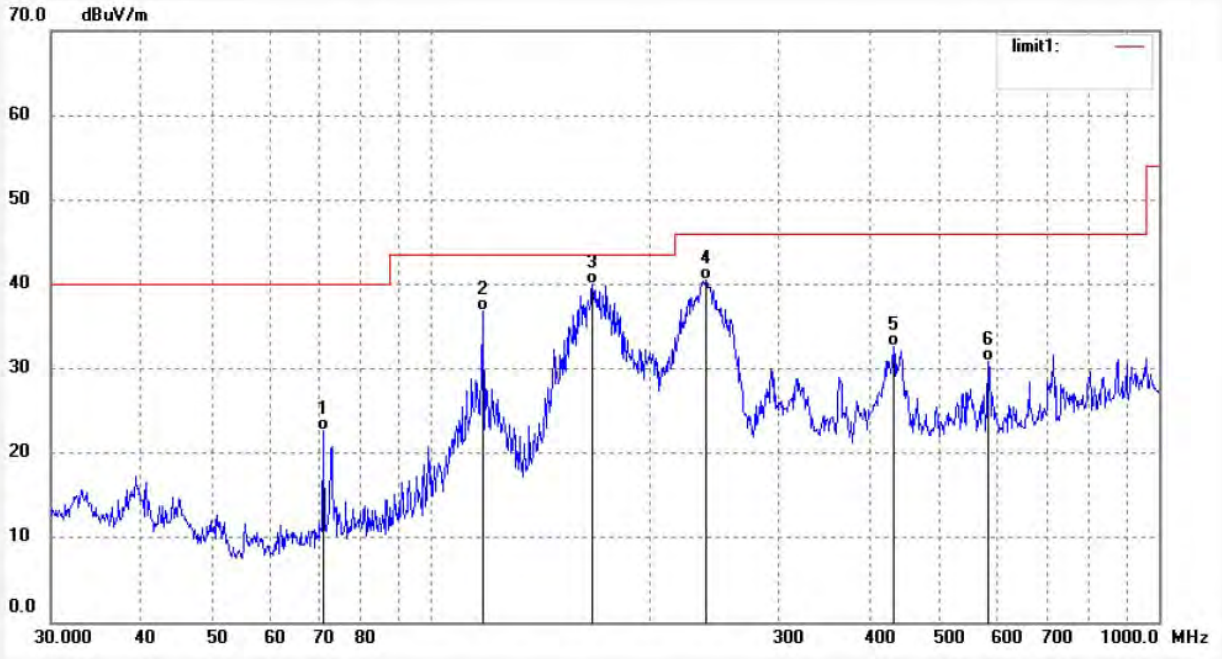
Job No.: DING #2356	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2016/09/18
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:58:01
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature: DING
Mode: TX 2480MHz	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	70.9536	45.59	-22.90	22.69	40.00	-17.31	QP			
2	117.6815	58.19	-21.27	36.92	43.50	-6.58	QP			
3	166.6385	60.69	-20.64	40.05	43.50	-3.45	QP			
4	238.4626	58.74	-18.26	40.48	46.00	-5.52	QP			
5	431.8198	46.13	-13.45	32.68	46.00	-13.32	QP			
6	582.1122	41.25	-10.33	30.92	46.00	-15.08	QP			

Above 1GHz

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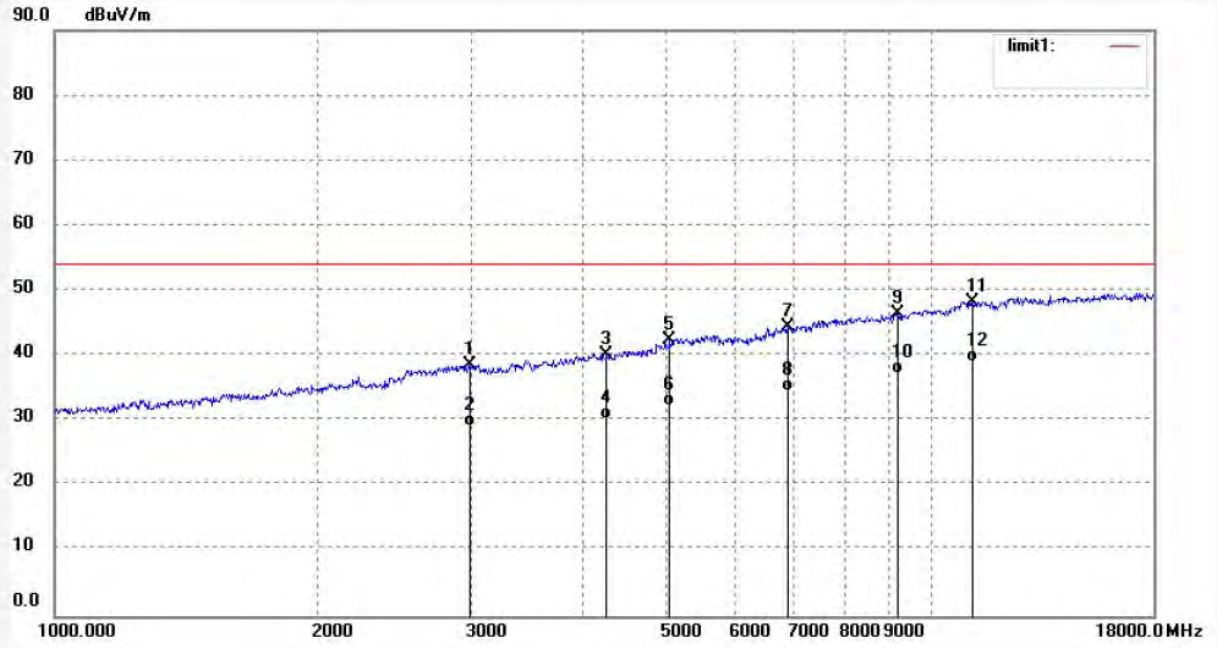
Job No.: DING #2362
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 2016/09/18
Time: 13:55:20
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2978.829	44.02	-5.35	38.67	74.00	-35.33	peak			
2	2978.829	34.60	-5.35	29.25	54.00	-24.75	AVG			
3	4273.626	41.66	-1.49	40.17	74.00	-33.83	peak			
4	4273.626	31.74	-1.49	30.25	54.00	-23.75	AVG			
5	5044.887	40.96	1.39	42.35	74.00	-31.65	peak			
6	5044.887	30.85	1.39	32.24	54.00	-21.76	AVG			
7	6868.285	39.17	5.34	44.51	74.00	-29.49	peak			
8	6868.285	29.29	5.34	34.63	54.00	-19.37	AVG			
9	9188.835	37.25	9.22	46.47	74.00	-27.53	peak			
10	9188.835	27.94	9.22	37.16	54.00	-16.84	AVG			
11	11200.070	37.36	10.98	48.34	74.00	-25.66	peak			
12	11200.070	28.10	10.98	39.08	54.00	-14.92	AVG			

Note: Average measurement with peak detection at No.2

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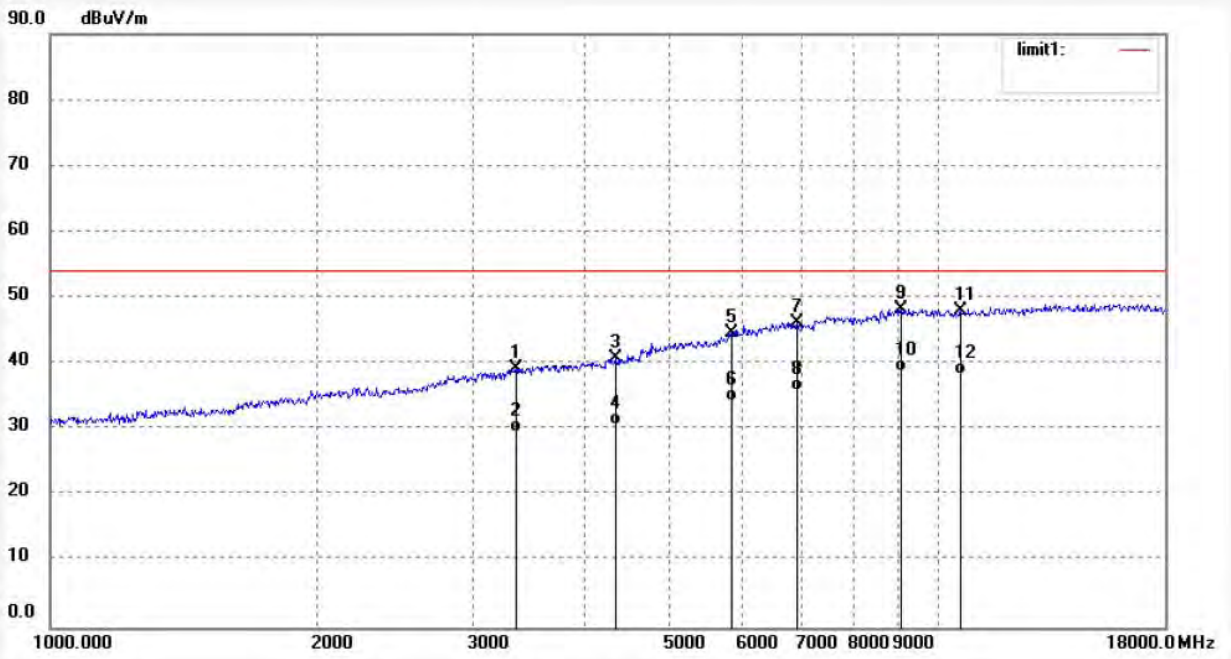
Fax:+86-0755-26503396

Job No.: DING #2361
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 2016/09/18
Time: 13:53:32
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3346.651	43.25	-3.99	39.26	74.00	-34.74	peak			
2	3346.651	33.50	-3.99	29.51	54.00	-24.49	AVG			
3	4336.279	42.28	-1.49	40.79	74.00	-33.21	peak			
4	4336.279	32.14	-1.49	30.65	54.00	-23.35	AVG			
5	5852.234	41.68	2.97	44.65	74.00	-29.35	peak			
6	5852.234	31.29	2.97	34.26	54.00	-19.74	AVG			
7	6928.524	40.68	5.46	46.14	74.00	-27.86	peak			
8	6928.524	30.40	5.46	35.86	54.00	-18.14	AVG			
9	9082.470	39.14	9.04	48.18	74.00	-25.82	peak			
10	9082.470	29.84	9.04	38.88	54.00	-15.12	AVG			
11	10597.475	38.20	9.75	47.95	74.00	-26.05	peak			
12	10597.475	28.69	9.75	38.44	54.00	-15.56	AVG			

Note: Average measurement with peak detection at No.2

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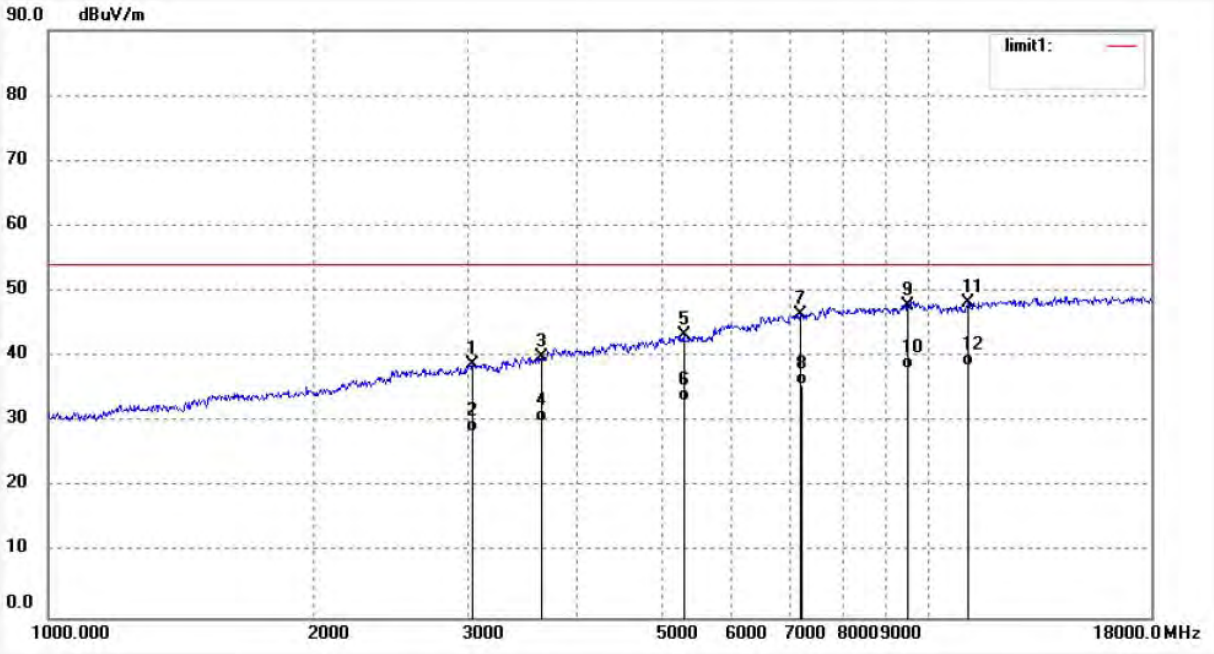
Job No.: DING #2360
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2441MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 2016/09/18
Time: 13:49:14
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3040.145	43.81	-4.93	38.88	74.00	-35.12	peak			
2	3040.145	33.50	-4.93	28.57	54.00	-25.43	AVG			
3	3641.412	42.40	-2.47	39.93	74.00	-34.07	peak			
4	3641.412	32.48	-2.47	30.01	54.00	-23.99	AVG			
5	5285.395	41.41	1.79	43.20	74.00	-30.80	peak			
6	5285.395	31.42	1.79	33.21	54.00	-20.79	AVG			
7	7174.806	41.91	4.50	46.41	74.00	-27.59	peak			
8	7174.806	31.24	4.50	35.74	54.00	-18.26	AVG			
9	9515.463	37.30	10.60	47.90	74.00	-26.10	peak			
10	9515.463	27.64	10.60	38.24	54.00	-15.76	AVG			
11	11135.058	37.48	10.86	48.34	74.00	-25.66	peak			
12	11135.058	27.79	10.86	38.65	54.00	-15.35	AVG			

Note: Average measurement with peak detection at No.2

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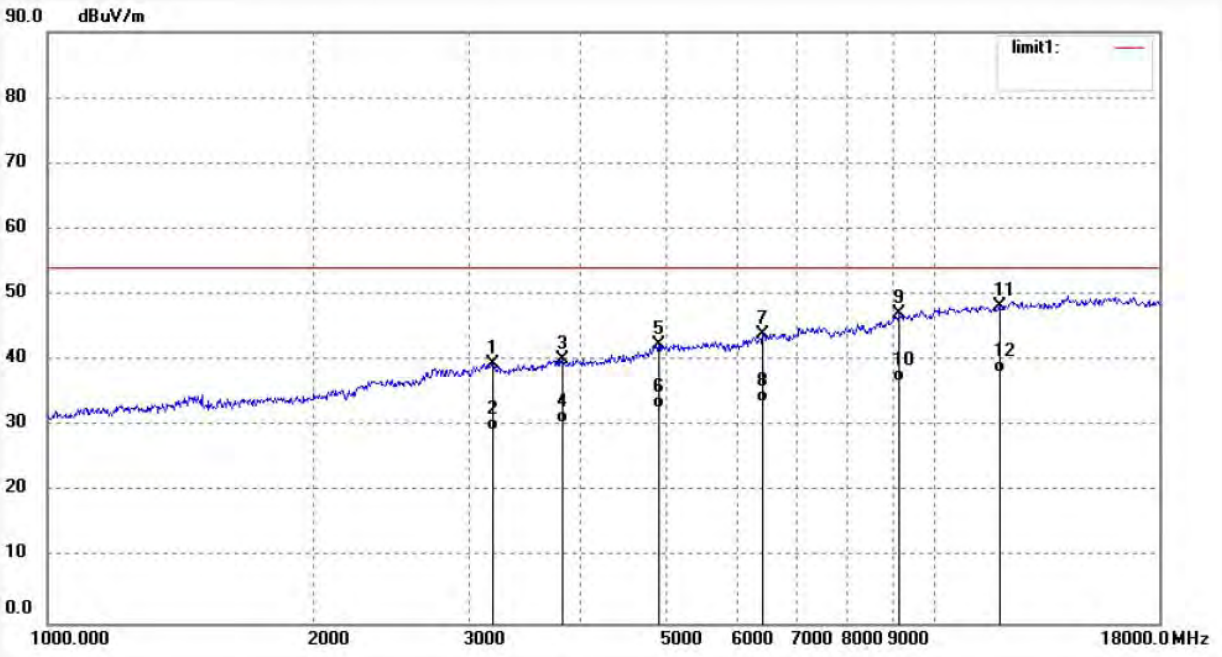
Job No.: DING #2359
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2441MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 2016/09/18
Time: 13:46:34
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3185.080	43.84	-4.28	39.56	74.00	-34.44	peak			
2	3185.080	33.71	-4.28	29.43	54.00	-24.57	AVG			
3	3815.011	42.01	-1.94	40.07	74.00	-33.93	peak			
4	3815.011	32.40	-1.94	30.46	54.00	-23.54	AVG			
5	4900.160	41.30	1.06	42.36	74.00	-31.64	peak			
6	4900.160	31.59	1.06	32.65	54.00	-21.35	AVG			
7	6423.527	39.48	4.45	43.93	74.00	-30.07	peak			
8	6423.527	29.18	4.45	33.63	54.00	-20.37	AVG			
9	9162.128	37.86	9.17	47.03	74.00	-26.97	peak			
10	9162.128	27.64	9.17	36.81	54.00	-17.19	AVG			
11	11906.038	35.76	12.58	48.34	74.00	-25.66	peak			
12	11906.038	25.61	12.58	38.19	54.00	-15.81	AVG			

Note: Average measurement with peak detection at No.2

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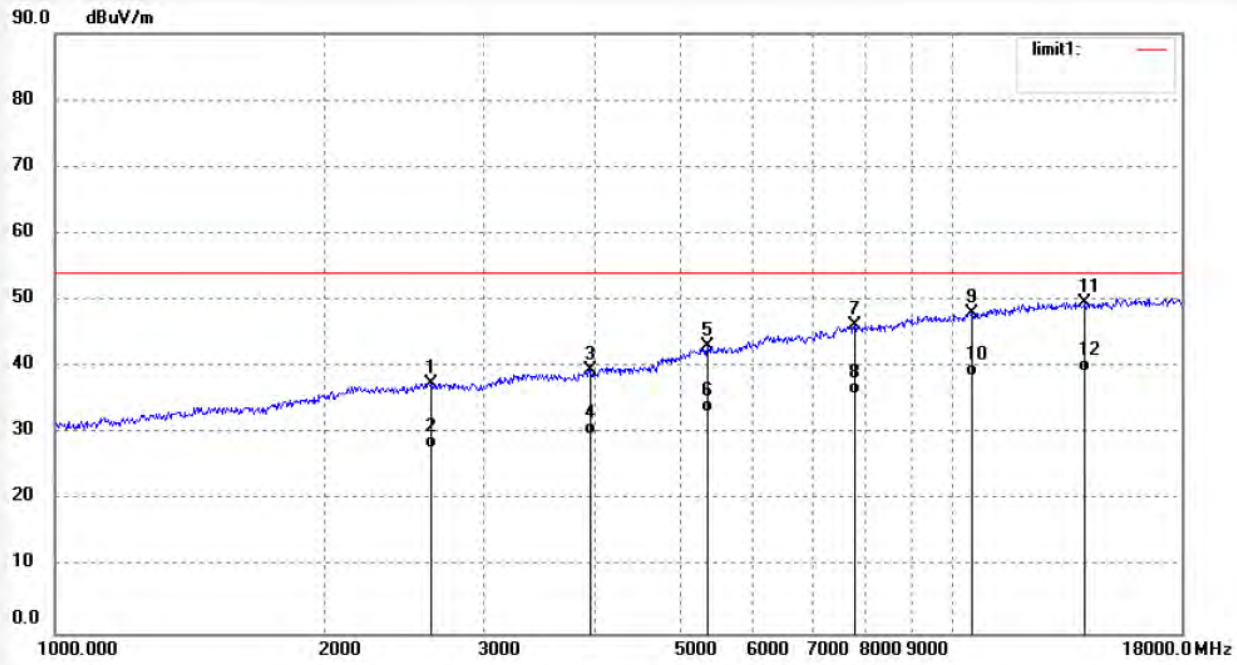
Job No.: DING #2358	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2016/09/18
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 13:44:12
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature: DING
Mode: TX 2480MHz	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2620.741	44.30	-6.73	37.57	74.00	-36.43	peak			
2	2620.741	34.50	-6.73	27.77	54.00	-26.23	AVG			
3	3950.620	41.12	-1.54	39.58	74.00	-34.42	peak			
4	3950.620	31.26	-1.54	29.72	54.00	-24.28	AVG			
5	5331.750	41.29	1.76	43.05	74.00	-30.95	peak			
6	5331.750	31.50	1.76	33.26	54.00	-20.74	AVG			
7	7784.049	39.63	6.54	46.17	74.00	-27.83	peak			
8	7784.049	29.36	6.54	35.90	54.00	-18.10	AVG			
9	10505.339	38.25	9.89	48.14	74.00	-25.86	peak			
10	10505.339	28.75	9.89	38.64	54.00	-15.36	AVG			
11	14054.720	1.44	48.18	49.62	74.00	-24.38	peak			
12	14054.720	-8.94	48.18	39.24	54.00	-14.76	AVG			

Note: Average measurement with peak detection at No.2

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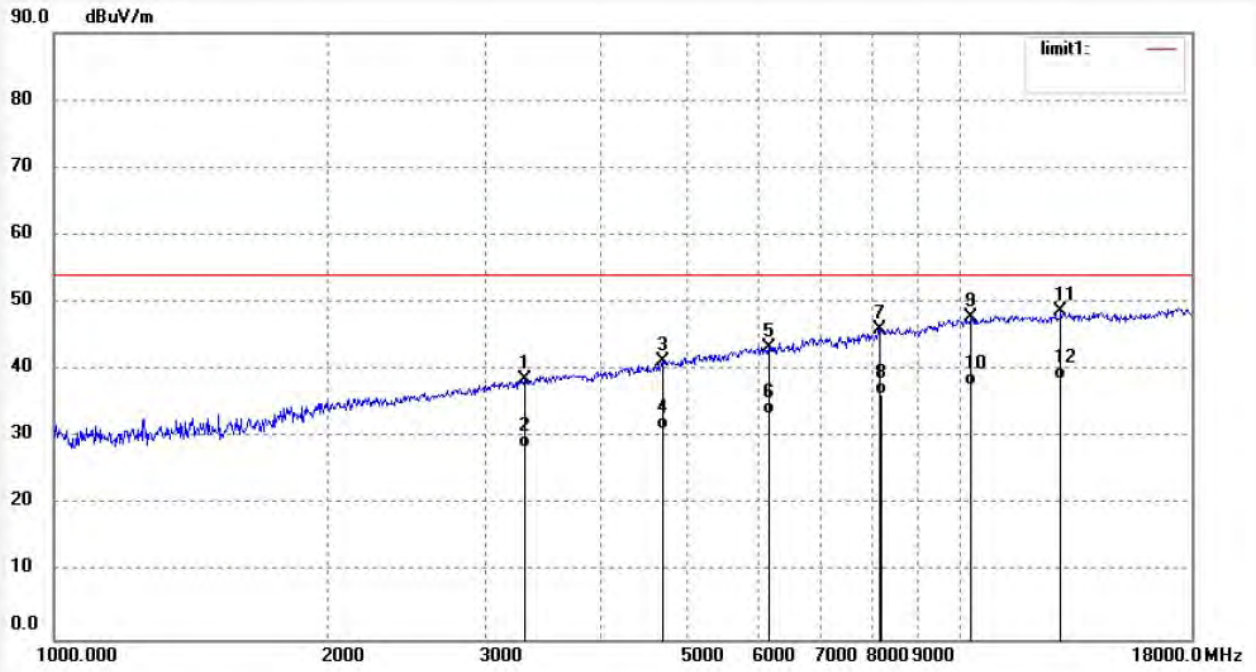
Job No.: DING #2357
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2480MHz
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 2016/09/18
Time: 13:41:11
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20161944

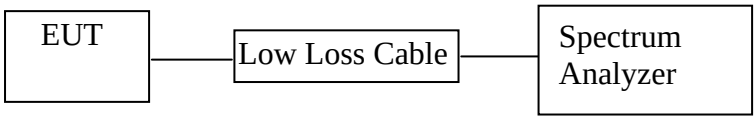


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3307.912	42.71	-4.21	38.50	74.00	-35.50	peak			
2	3307.912	32.58	-4.21	28.37	54.00	-25.63	AVG			
3	4690.816	41.55	-0.24	41.31	74.00	-32.69	peak			
4	4690.816	31.49	-0.24	31.25	54.00	-22.75	AVG			
5	6149.102	39.74	3.56	43.30	74.00	-30.70	peak			
6	6149.102	29.84	3.56	33.40	54.00	-20.60	AVG			
7	8155.141	37.39	8.63	46.02	74.00	-27.98	peak			
8	8155.141	27.64	8.63	36.27	54.00	-17.73	AVG			
9	10293.456	37.47	10.28	47.75	74.00	-26.25	peak			
10	10293.456	27.39	10.28	37.67	54.00	-16.33	AVG			
11	12917.030	2.59	46.07	48.66	74.00	-25.34	peak			
12	12917.030	-7.48	46.07	38.59	54.00	-15.41	AVG			

Note: Average measurement with peak detection at No.2

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

11.2.The Requirement For Section 15.247(d)

Section 15.247(d): 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

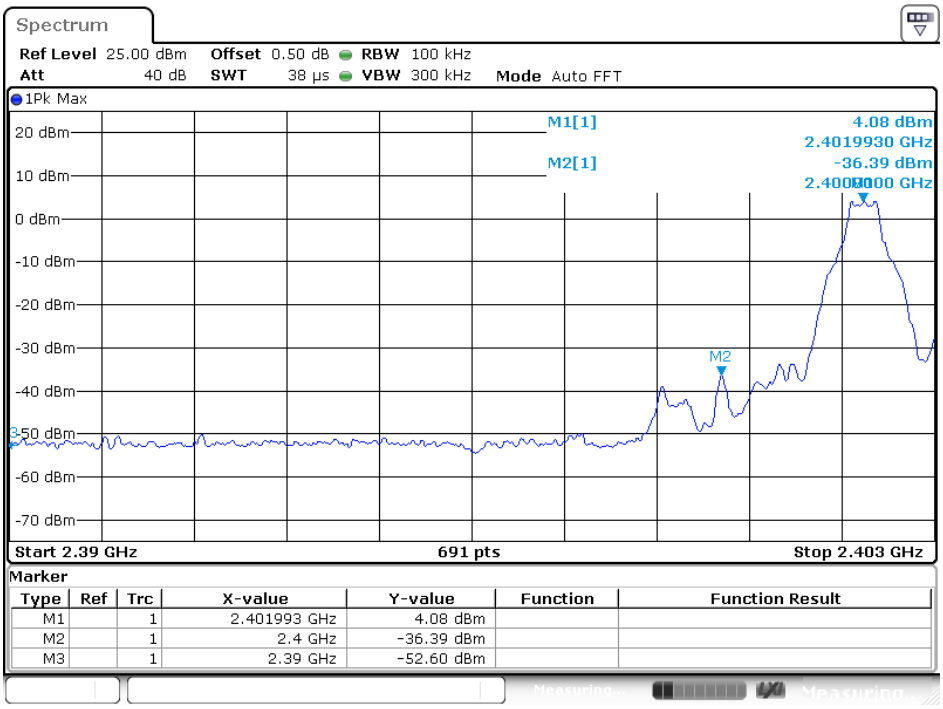
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

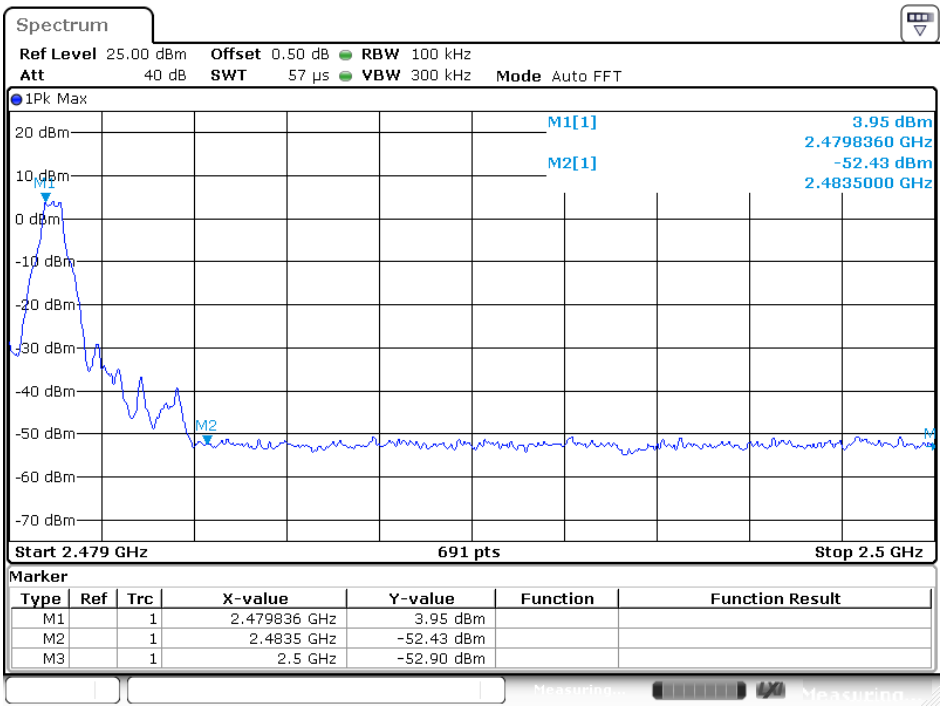
11.5.3.The band edges was measured and recorded.

11.6.Test Result

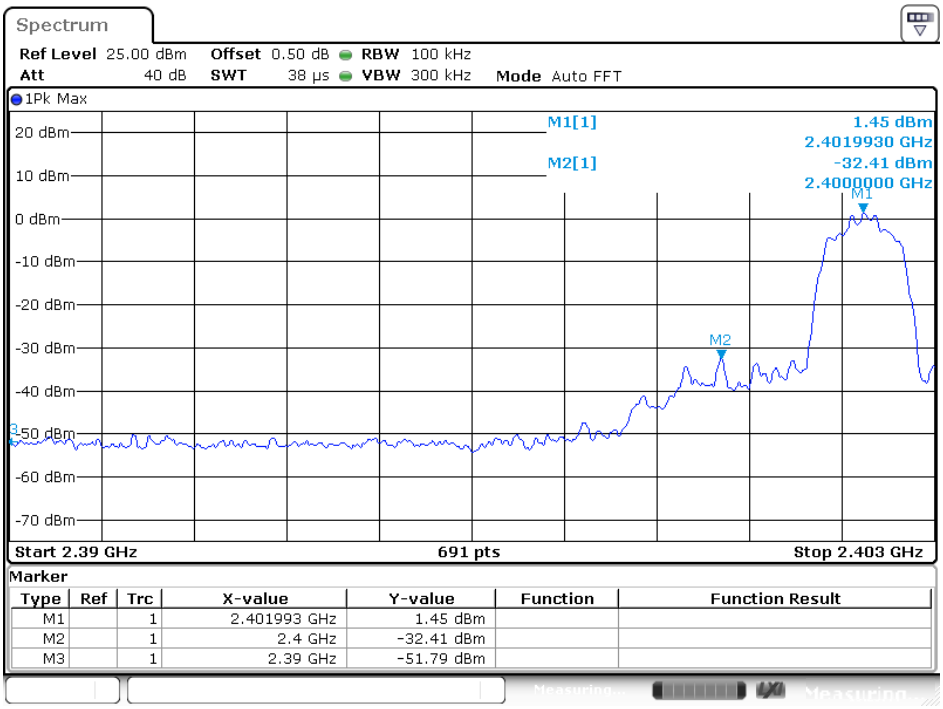
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2400.00	40.47	> 20dBc
2483.50	56.38	> 20dBc
Π/4-DQPSK Mode		
2400.00	33.86	> 20dBc
2483.50	53.11	> 20dBc
8DPSK		
2400.00	34.13	> 20dBc
2483.50	51.72	> 20dBc

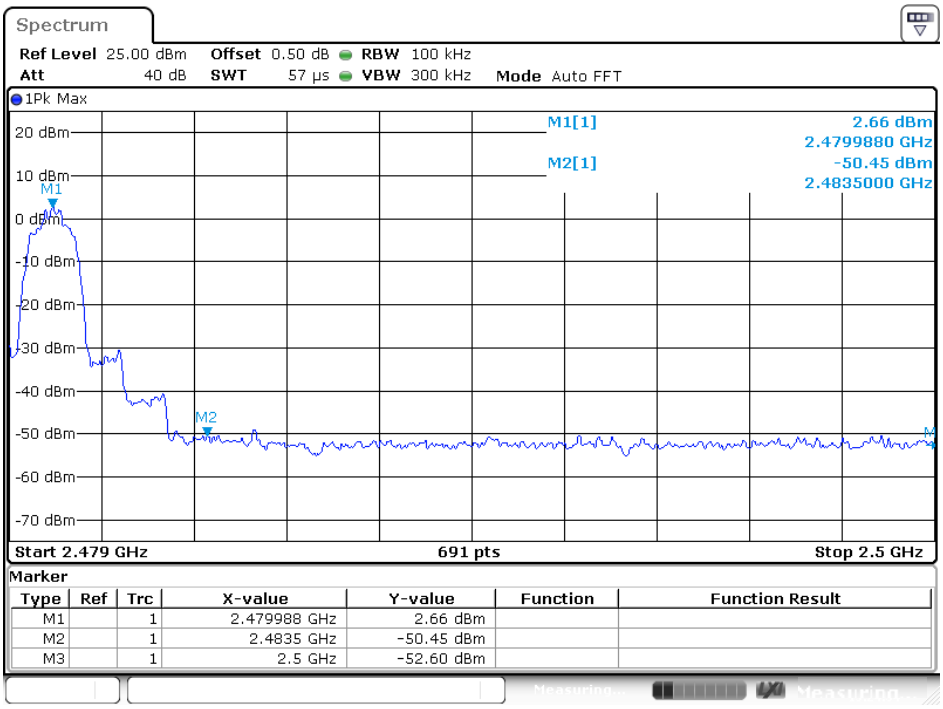
GFSK


Spectrum
Ref Level 25.00 dBm Offset 0.50 dB RBW 100 kHz
Att 40 dB SWT 38 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] 4.08 dBm
2.4019930 GHz
M2[1] -36.39 dBm
2.4000000 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.39 GHz
691 pts
Stop 2.403 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.401993 GHz 4.08 dBm
M2 1 2.4 GHz -36.39 dBm
M3 1 2.39 GHz -52.60 dBm

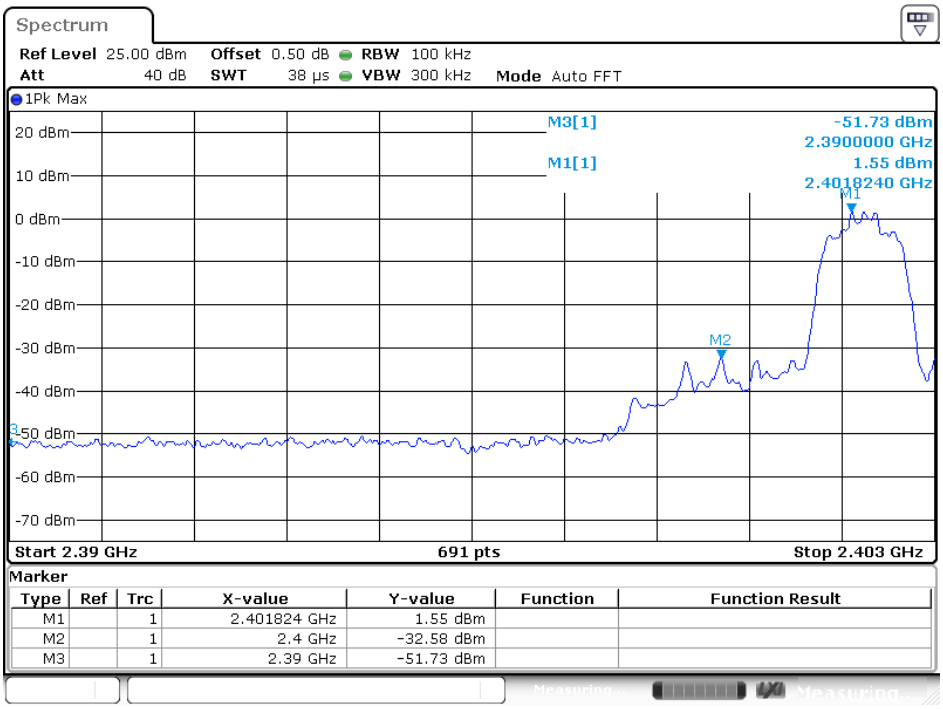

Spectrum
Ref Level 25.00 dBm Offset 0.50 dB RBW 100 kHz
Att 40 dB SWT 57 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M1[1] 3.95 dBm
2.4798360 GHz
M2[1] -52.43 dBm
2.4835000 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.479 GHz
691 pts
Stop 2.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479836 GHz 3.95 dBm
M2 1 2.4835 GHz -52.43 dBm
M3 1 2.5 GHz -52.90 dBm

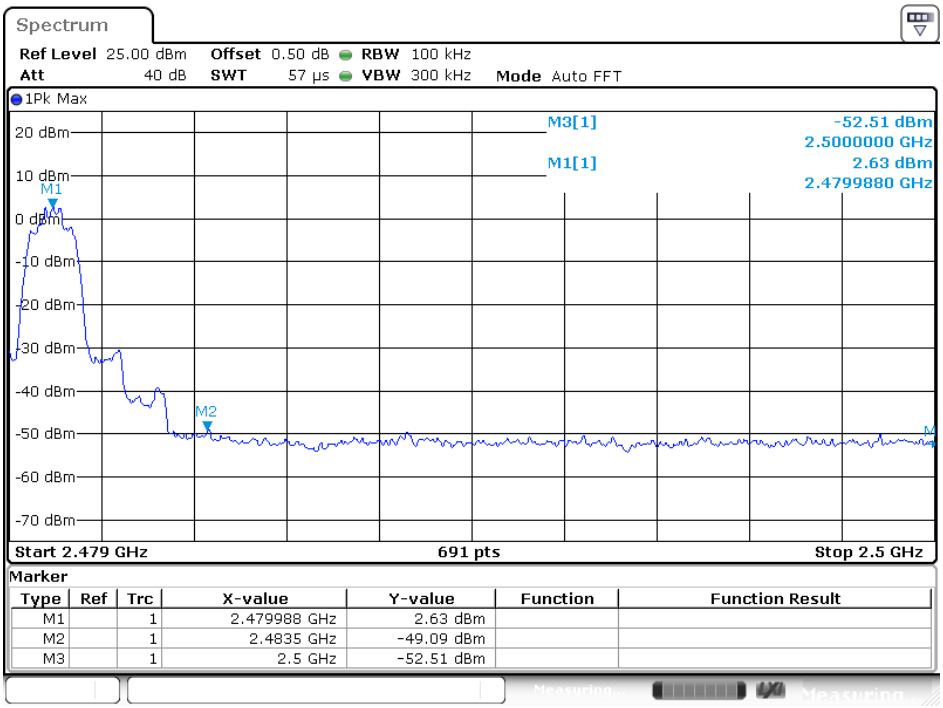
Π/4-DQPSK Mode





8DPSK


Spectrum
Ref Level 25.00 dBm Offset 0.50 dB RBW 100 kHz
Att 40 dB SWT 38 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M3[1] -51.73 dBm
2.3900000 GHz
M1[1] 1.55 dBm
2.4018240 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.39 GHz
691 pts
Stop 2.403 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.401824 GHz 1.55 dBm
M2 1 2.4 GHz -32.58 dBm
M3 1 2.39 GHz -51.73 dBm


Spectrum
Ref Level 25.00 dBm Offset 0.50 dB RBW 100 kHz
Att 40 dB SWT 57 µs VBW 300 kHz Mode Auto FFT
1Pk Max
M3[1] -52.51 dBm
2.5000000 GHz
M1[1] 2.63 dBm
2.4799880 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.479 GHz
691 pts
Stop 2.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479988 GHz 2.63 dBm
M2 1 2.4835 GHz -49.09 dBm
M3 1 2.5 GHz -52.51 dBm

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX (Hopping off, Hopping on) modes measure it.
We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).
We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:
1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
3.All modes of operation were investigated and the worst-case emissions are reported.

Non-hopping mode

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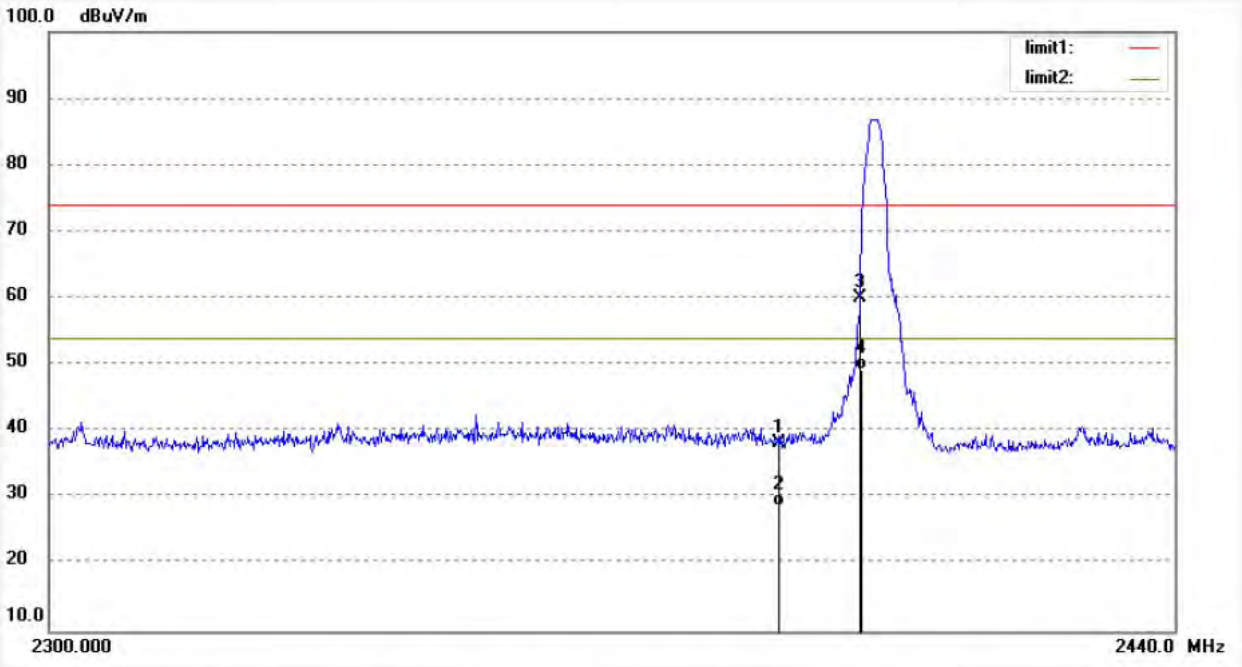
Job No.: DING2015 #437
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz(GFSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/10/02
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	45.86	-7.53	38.33	74.00	-35.67	peak			
2	2390.000	36.22	-7.53	28.69	54.00	-25.31	AVG			
3	2400.000	67.51	-7.46	60.05	74.00	-13.95	peak			
4	2400.000	56.79	-7.46	49.33	54.00	-4.67	AVG			

Note: Average measurement with peak detection at No.2&4

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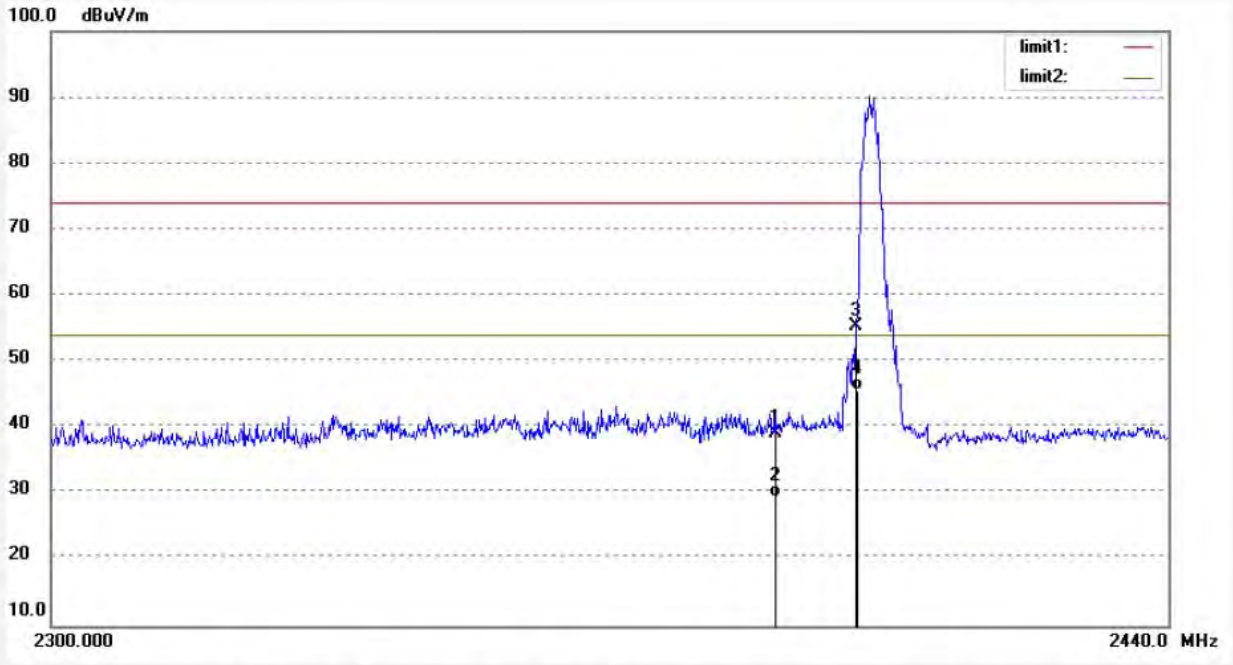
Fax:+86-0755-26503396

Job No.: DING2015 #438
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz(GFSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 16/09/18
Time: 18/12/10
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.68	-7.53	39.15	74.00	-34.85	peak			
2	2390.000	36.97	-7.53	29.44	54.00	-24.56	AVG			
3	2400.000	62.85	-7.46	55.39	74.00	-18.61	peak			
4	2400.000	53.16	-7.46	45.70	54.00	-8.30	AVG			

Note: Average measurement with peak detection at No.2&4

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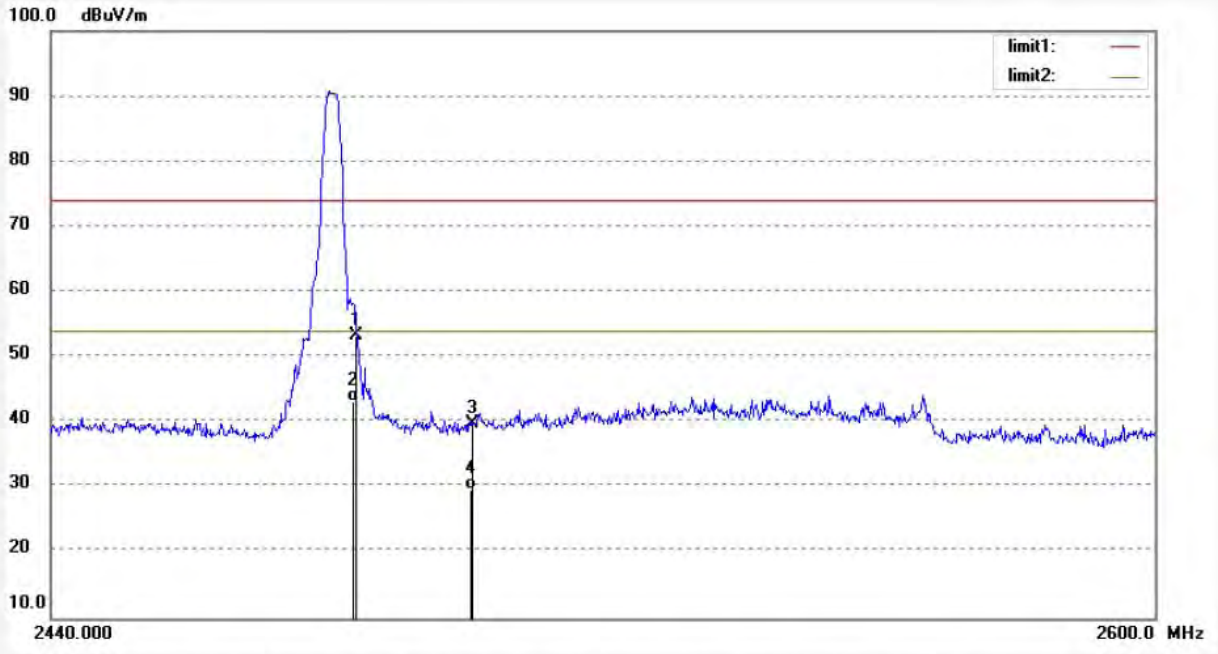
Job No.: DING2015 #439	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/14/18
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: TX 2480MHz(GFSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	60.78	-7.37	53.41	74.00	-20.59	peak			
2	2483.500	50.67	-7.37	43.30	54.00	-10.70	AVG			
3	2500.000	47.31	-7.40	39.91	74.00	-34.09	peak			
4	2500.000	36.98	-7.40	29.58	54.00	-24.42	AVG			

Note: Average measurement with peak detection at No.2&4

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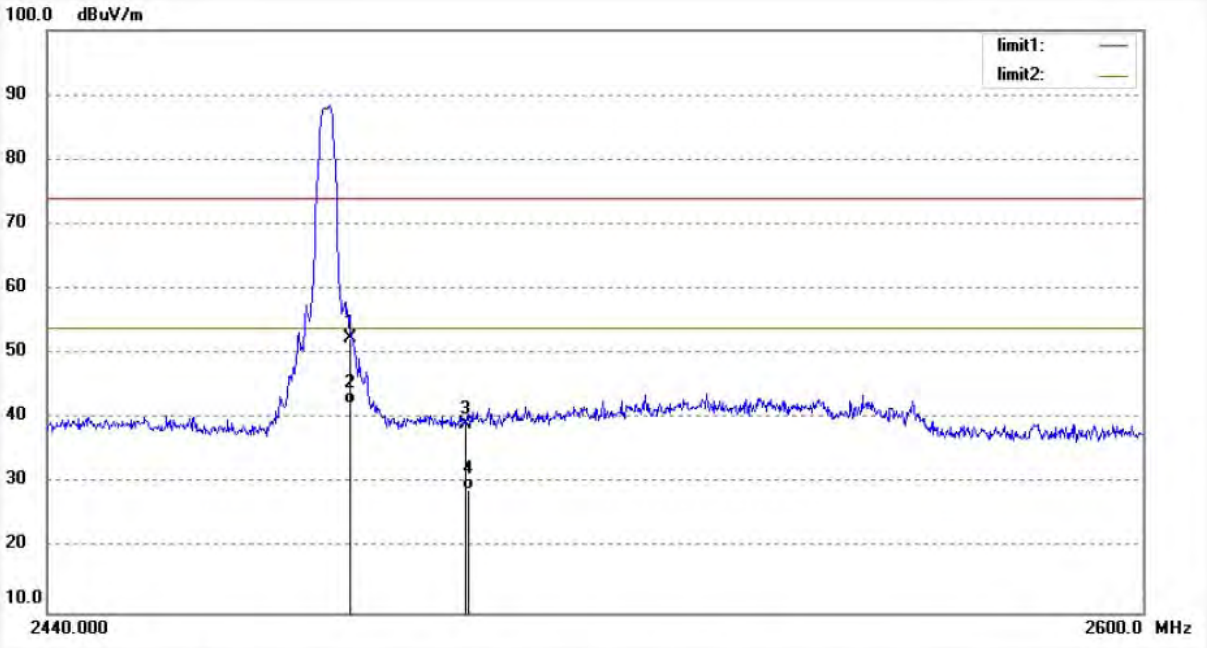
Job No.: DING2015 #440
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2480MHz(GFSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/15/42
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.76	-7.37	52.39	74.00	-21.61	peak			
2	2483.500	49.67	-7.37	42.30	54.00	-11.70	AVG			
3	2500.000	46.51	-7.40	39.11	74.00	-34.89	peak			
4	2500.000	36.33	-7.40	28.93	54.00	-25.07	AVG			

Note: Average measurement with peak detection at No.2&4

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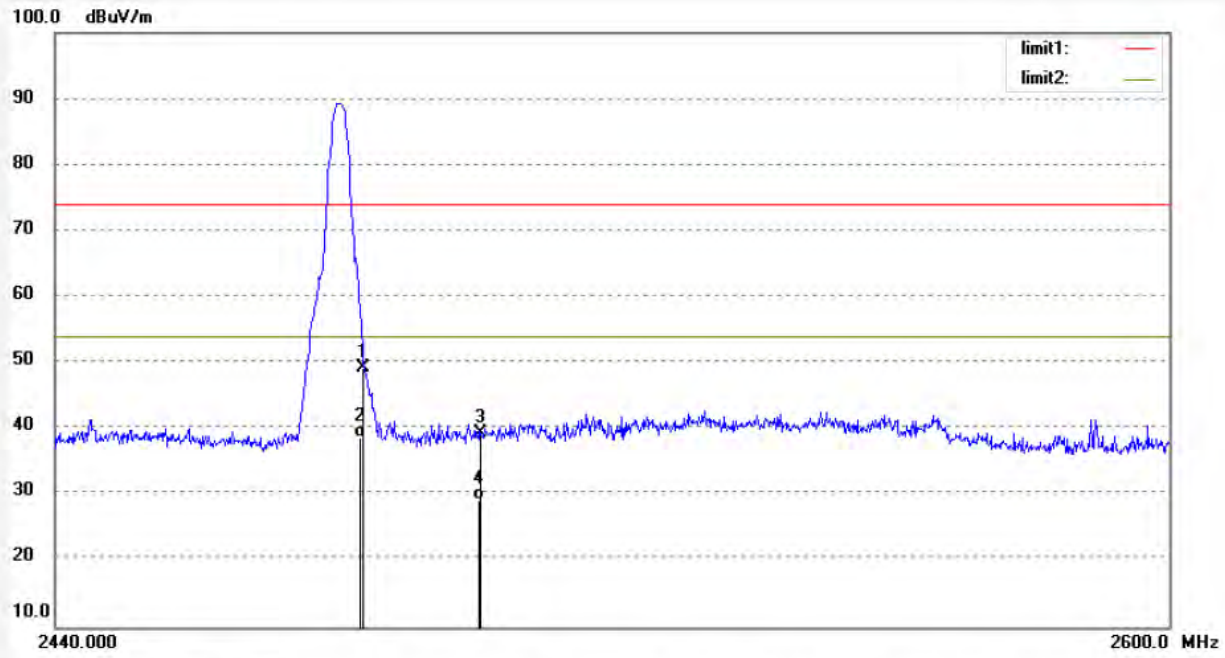
Job No.: DING2015 #441
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2480MHz(∏/4-DQPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 16/09/18
Time: 18/18/18
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	56.61	-7.37	49.24	74.00	-24.76	peak			
2	2483.500	46.13	-7.37	38.76	54.00	-15.24	AVG			
3	2500.000	46.87	-7.40	39.47	74.00	-34.53	peak			
4	2500.000	36.72	-7.40	29.32	54.00	-24.68	AVG			

Note: Average measurement with peak detection at No.2&4

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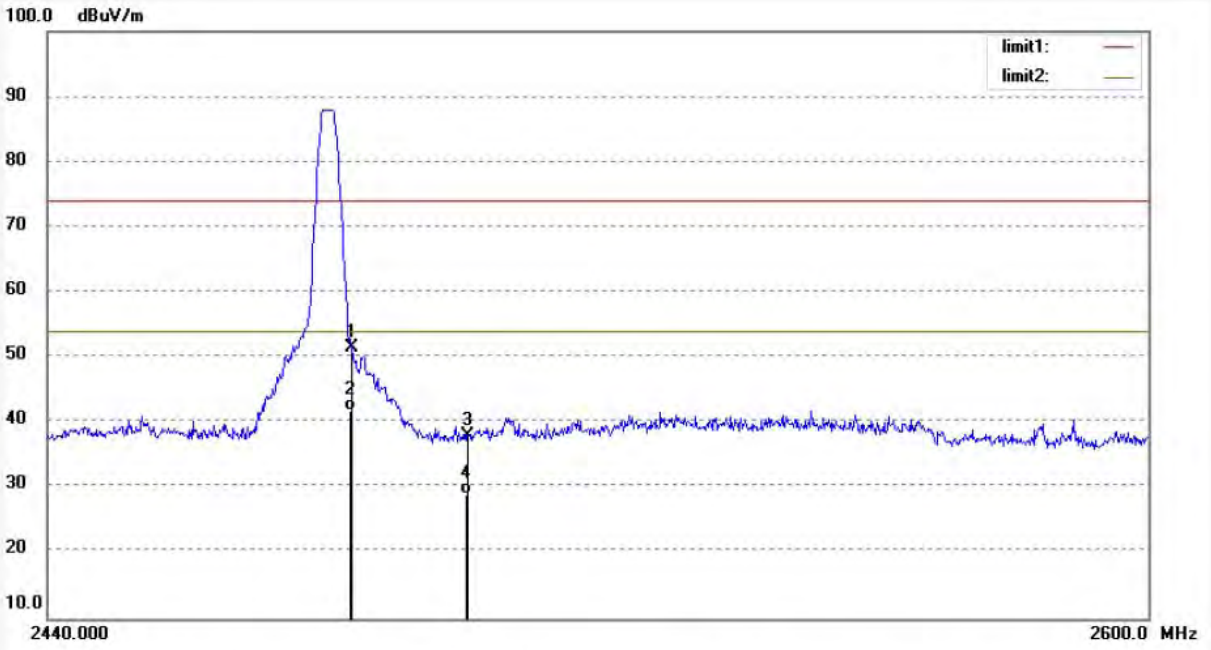
Job No.: DING2015 #442	Polarization: Vertical
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/19/35
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: TX 2480MHz(∏/4-DQPSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	58.83	-7.37	51.46	74.00	-22.54	peak			
2	2483.500	49.30	-7.37	41.93	54.00	-12.07	AVG			
3	2500.000	45.36	-7.40	37.96	74.00	-36.04	peak			
4	2500.000	36.46	-7.40	29.06	54.00	-24.94	AVG			

Note: Average measurement with peak detection at No.2&4

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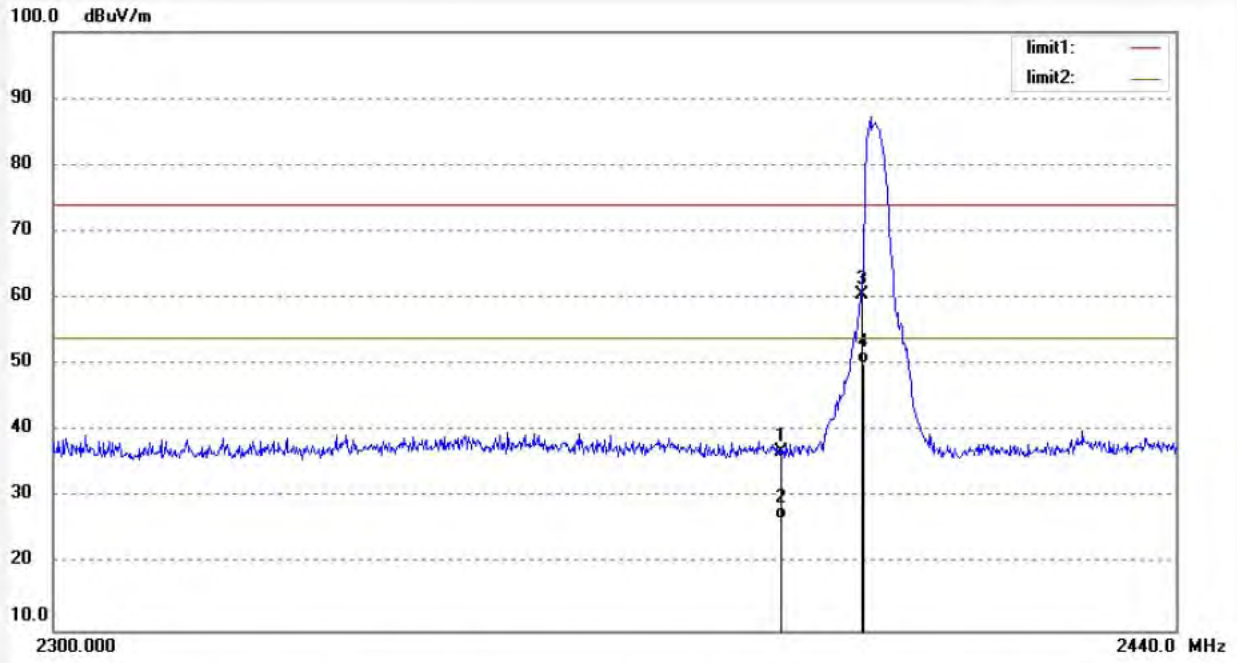
Job No.: DING2015 #443	Polarization: Vertical
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/22/26
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: TX 2402MHz(∏/4-DQPSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.51	-7.53	36.98	74.00	-37.02	peak			
2	2390.000	34.28	-7.53	26.75	54.00	-27.25	AVG			
3	2400.000	67.99	-7.46	60.53	74.00	-13.47	peak			
4	2400.000	57.64	-7.46	50.18	54.00	-3.82	AVG			

Note: Average measurement with peak detection at No.2&4

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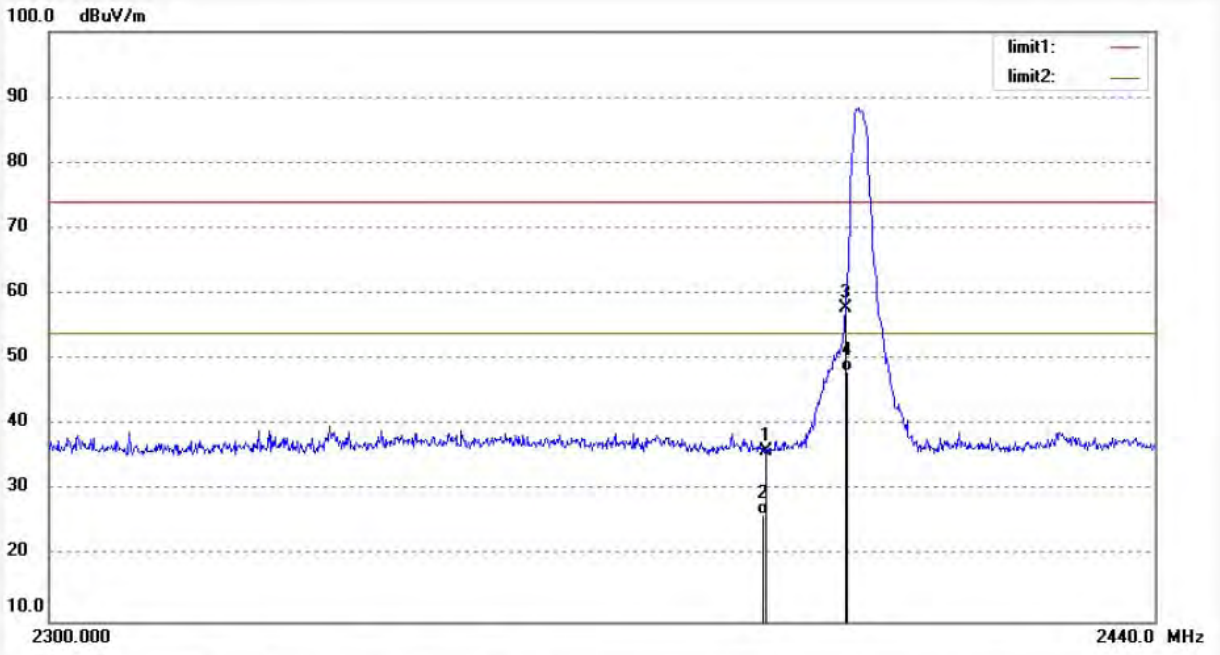
Fax:+86-0755-26503396

Job No.: DING2015 #444	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/25/30
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: TX 2402MHz(∏/4-DQPSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.53	-7.53	36.00	74.00	-38.00	peak			
2	2390.000	33.76	-7.53	26.23	54.00	-27.77	AVG			
3	2400.000	65.33	-7.46	57.87	74.00	-16.13	peak			
4	2400.000	55.64	-7.46	48.18	54.00	-5.82	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.
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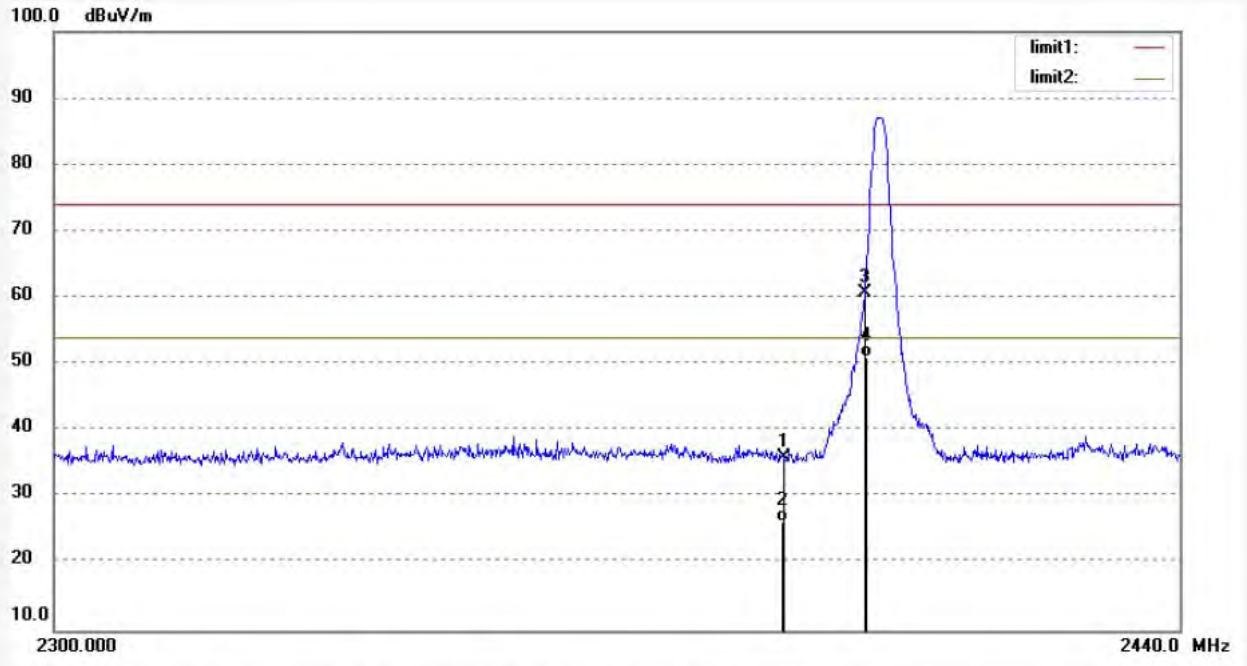
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: DING2015 #445
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz(8QPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 16/09/18
Time: 18/27/57
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.55	-7.53	36.02	74.00	-37.98	peak			
2	2390.000	33.81	-7.53	26.28	54.00	-27.72	AVG			
3	2400.000	68.21	-7.46	60.75	74.00	-13.25	peak			
4	2400.000	58.43	-7.46	50.97	54.00	-3.03	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.
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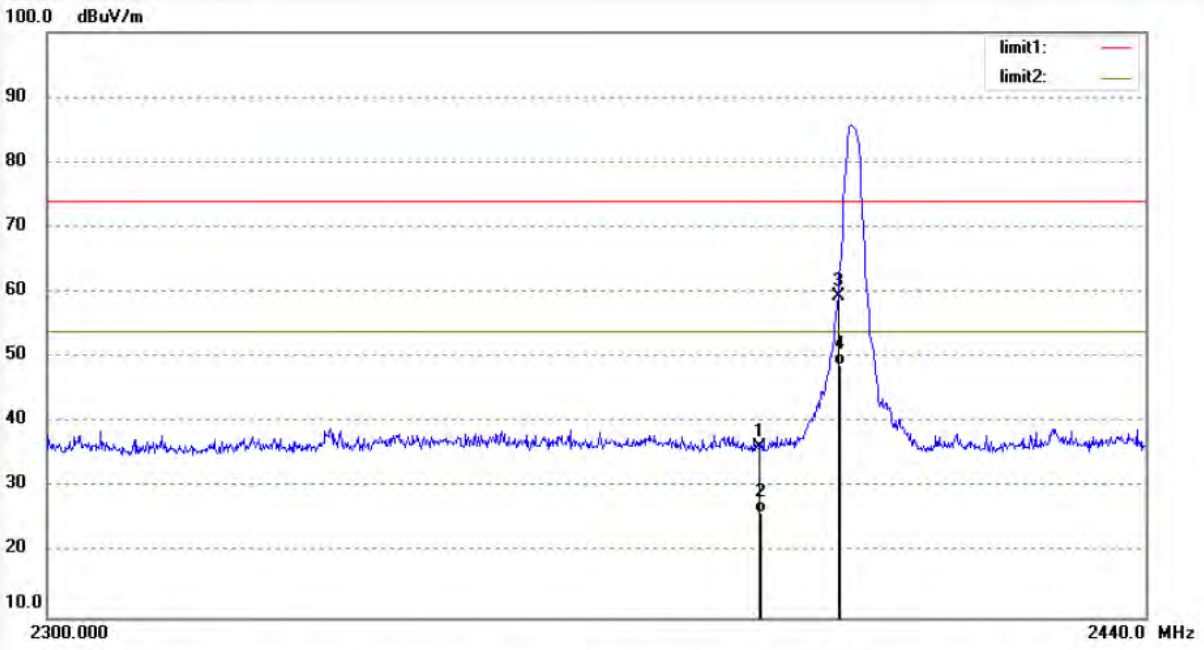
Fax:+86-0755-26503396

Job No.: DING2015 #446
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2402MHz(8QPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/29/04
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.78	-7.53	36.25	74.00	-37.75	peak			
2	2390.000	33.70	-7.53	26.17	54.00	-27.83	AVG			
3	2400.000	66.96	-7.46	59.50	74.00	-14.50	peak			
4	2400.000	56.30	-7.46	48.84	54.00	-5.16	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.
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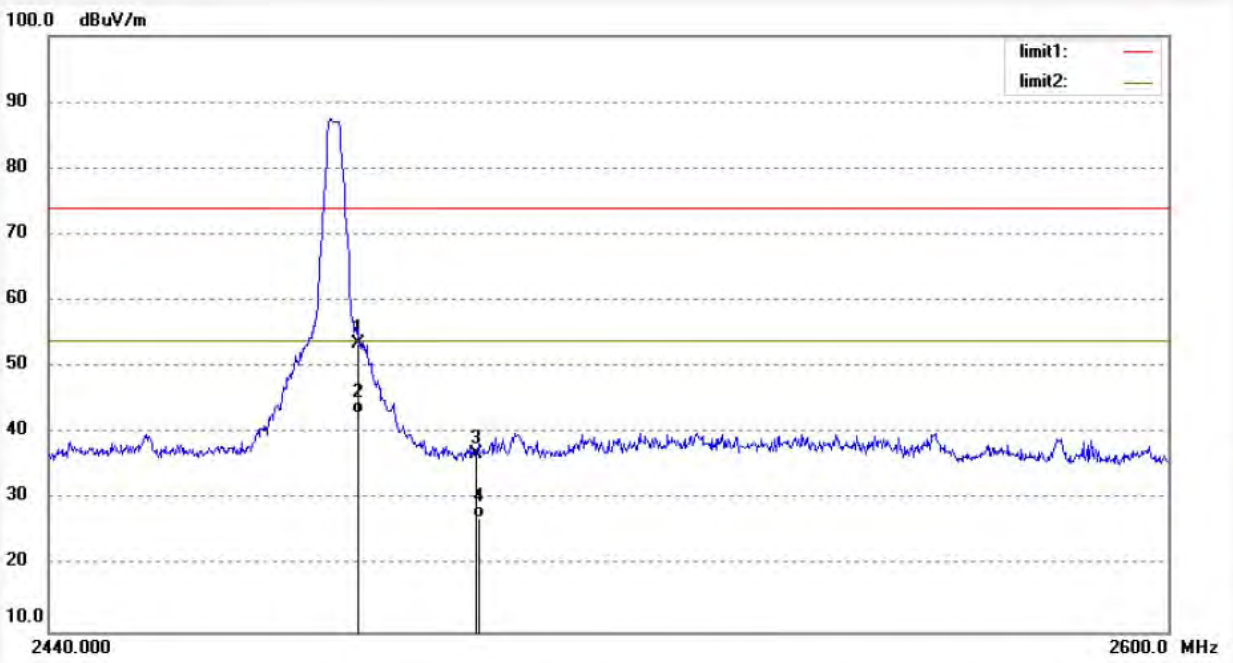
Fax:+86-0755-26503396

Job No.: DING2015 #447
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: TX 2480MHz(8QPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/31/26
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	60.83	-7.37	53.46	74.00	-20.54	peak			
2	2483.500	50.40	-7.37	43.03	54.00	-10.97	AVG			
3	2500.000	44.36	-7.40	36.96	74.00	-37.04	peak			
4	2500.000	34.69	-7.40	27.29	54.00	-26.71	AVG			

Note: Average measurement with peak detection at No.2&4

ACCURATE TECHNOLOGY CO., LTD.
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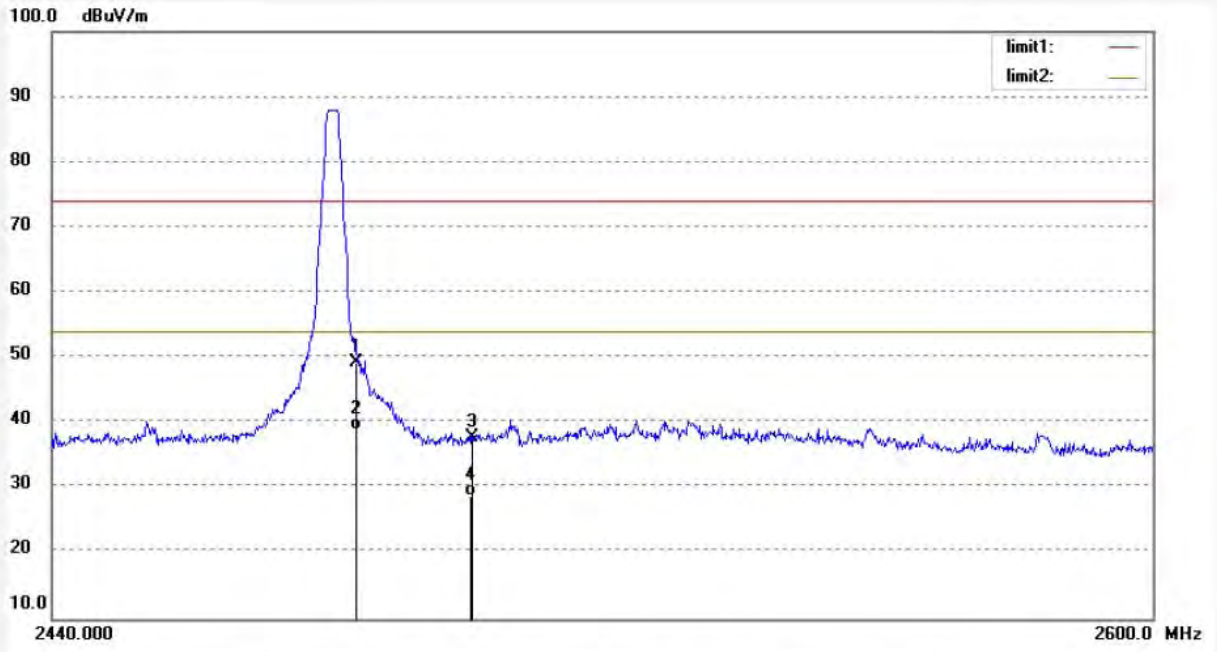
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: DING2015 #448	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/32/57
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: TX 2480MHz(8QPSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	56.54	-7.37	49.17	74.00	-24.83	peak			
2	2483.500	46.28	-7.37	38.91	54.00	-15.09	AVG			
3	2500.000	45.16	-7.40	37.76	74.00	-36.24	peak			
4	2500.000	36.10	-7.40	28.70	54.00	-25.30	AVG			

Note: Average measurement with peak detection at No.2&4

Hopping mode

ACCURATE TECHNOLOGY CO., LTD.
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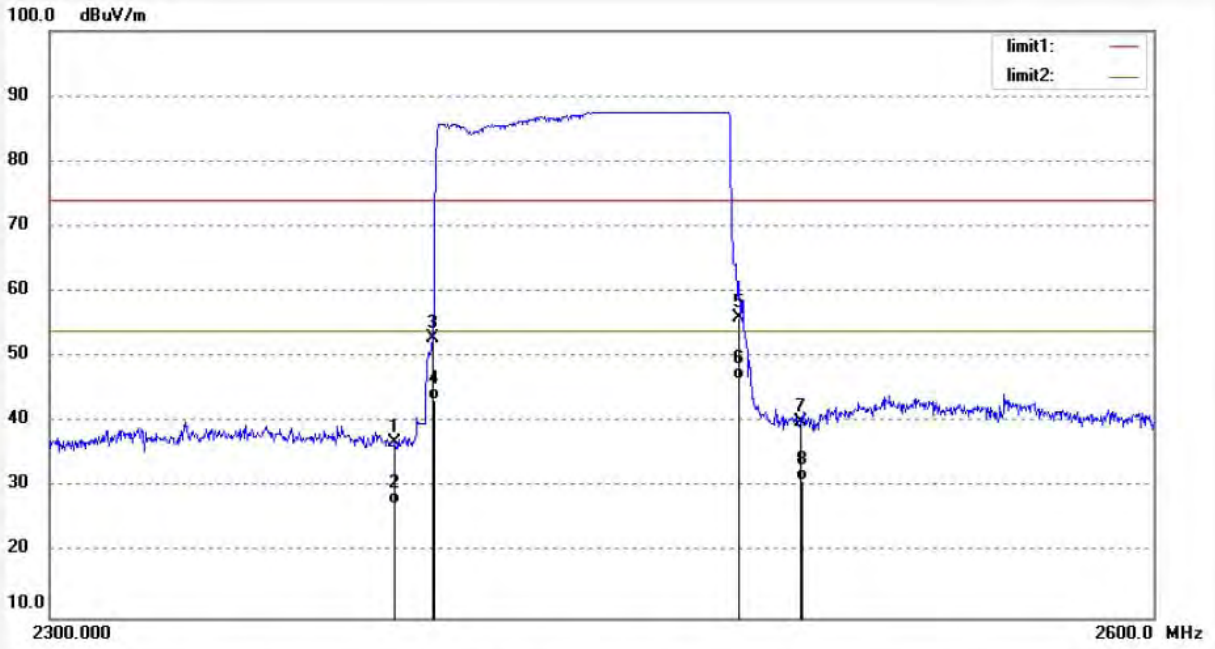
Fax:+86-0755-26503396

Job No.: DING2015 #449	Polarization: Vertical
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/37/00
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: HOPPING (GFSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.36	-7.53	36.83	74.00	-37.17	peak			
2	2390.000	34.89	-7.53	27.36	54.00	-26.64	AVG			
3	2400.000	60.26	-7.46	52.80	74.00	-21.20	peak			
4	2400.000	50.79	-7.46	43.33	54.00	-10.67	AVG			
5	2483.500	63.32	-7.37	55.95	74.00	-18.05	peak			
6	2483.500	53.97	-7.37	46.60	54.00	-7.40	AVG			
7	2500.000	47.45	-7.40	40.05	74.00	-33.95	peak			
8	2500.000	38.37	-7.40	30.97	54.00	-23.03	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

ACCURATE TECHNOLOGY CO., LTD.
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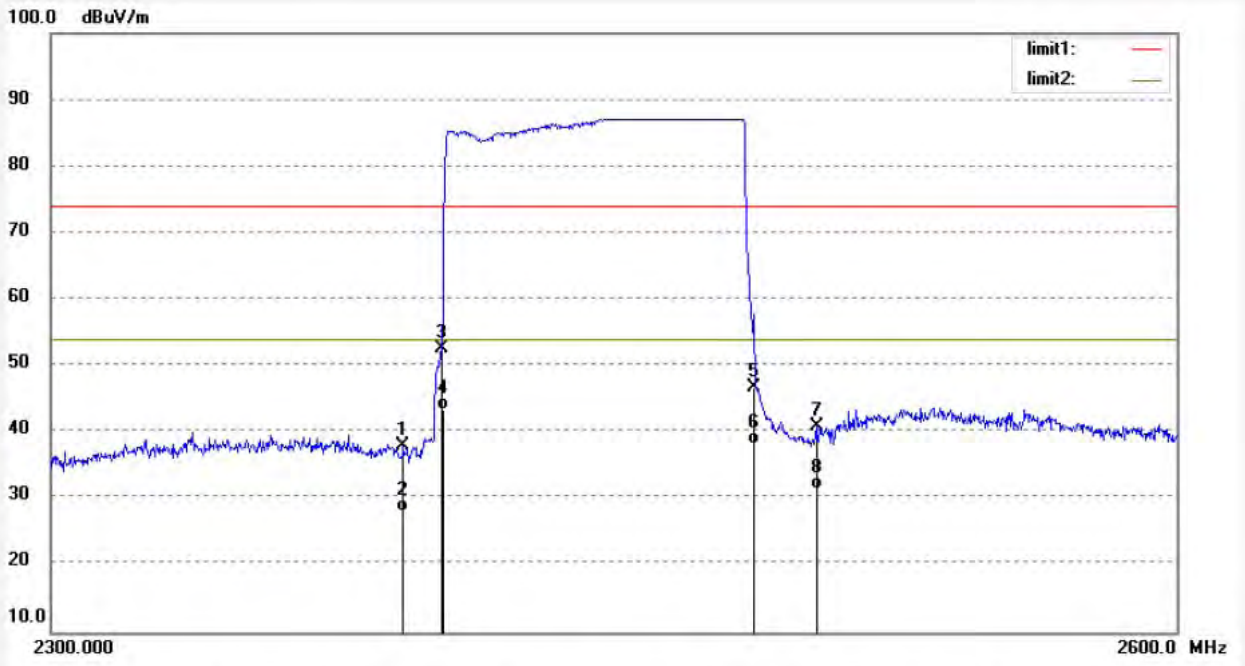
Job No.: DING2015 #450	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 5V
Test item: Radiation Test	Date: 16/09/18
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 18/38/50
EUT: Pet Scan RT250 Electronic RFID Reader	Engineer Signature:
Mode: HOPPING (GFSK)	Distance: 3m
Model: ZR004	
Manufacturer: MARKTRACE	

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	45.48	-7.53	37.95	74.00	-36.05	peak			
2	2390.000	35.69	-7.53	28.16	54.00	-25.84	AVG			
3	2400.000	60.00	-7.46	52.54	74.00	-21.46	peak			
4	2400.000	50.88	-7.46	43.42	54.00	-10.58	AVG			
5	2483.500	54.24	-7.37	46.87	74.00	-27.13	peak			
6	2483.500	45.67	-7.37	38.30	54.00	-15.70	AVG			
7	2500.000	48.28	-7.40	40.88	74.00	-33.12	peak			
8	2500.000	38.88	-7.40	31.48	54.00	-22.52	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

ACCURATE TECHNOLOGY CO., LTD.
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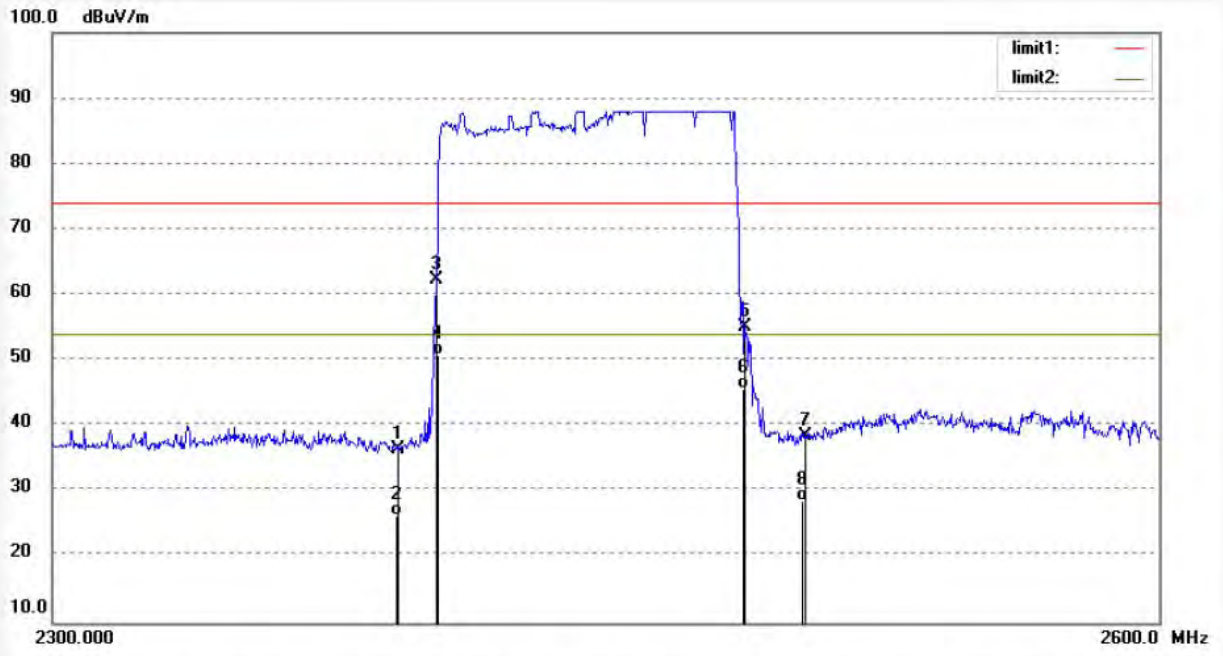
Fax:+86-0755-26503396

Job No.: DING2015 #451
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: HOPPING (∏/4-DQPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 16/09/18
Time: 18/41/25
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.96	-7.53	36.43	74.00	-37.57	peak			
2	2390.000	33.76	-7.53	26.23	54.00	-27.77	AVG			
3	2400.000	69.87	-7.46	62.41	74.00	-11.59	peak			
4	2400.000	58.30	-7.46	50.84	54.00	-3.16	AVG			
5	2483.500	62.38	-7.37	55.01	74.00	-18.99	peak			
6	2483.500	52.97	-7.37	45.60	54.00	-8.40	AVG			
7	2500.000	45.96	-7.40	38.56	74.00	-35.44	peak			
8	2500.000	35.99	-7.40	28.59	54.00	-25.41	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

ACCURATE TECHNOLOGY CO., LTD.
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Science & Industry Park,Nanshan Shenzhen,P.R.China
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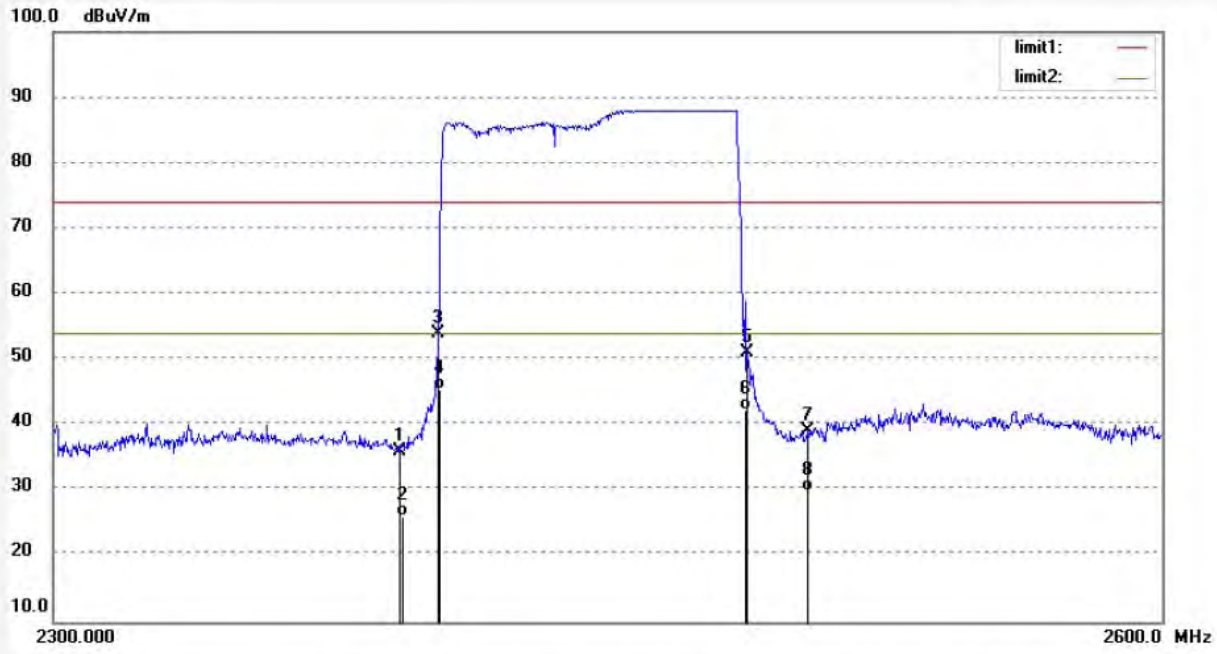
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: DING2015 #452
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: HOPPING (∏/4-DQPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/43/09
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.49	-7.53	35.96	74.00	-38.04	peak			
2	2390.000	33.69	-7.53	26.16	54.00	-27.84	AVG			
3	2400.000	61.55	-7.46	54.09	74.00	-19.91	peak			
4	2400.000	52.79	-7.46	45.33	54.00	-8.67	AVG			
5	2483.500	58.47	-7.37	51.10	74.00	-22.90	peak			
6	2483.500	49.64	-7.37	42.27	54.00	-11.73	AVG			
7	2500.000	46.56	-7.40	39.16	74.00	-34.84	peak			
8	2500.000	37.38	-7.40	29.98	54.00	-24.02	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

ACCURATE TECHNOLOGY CO., LTD.
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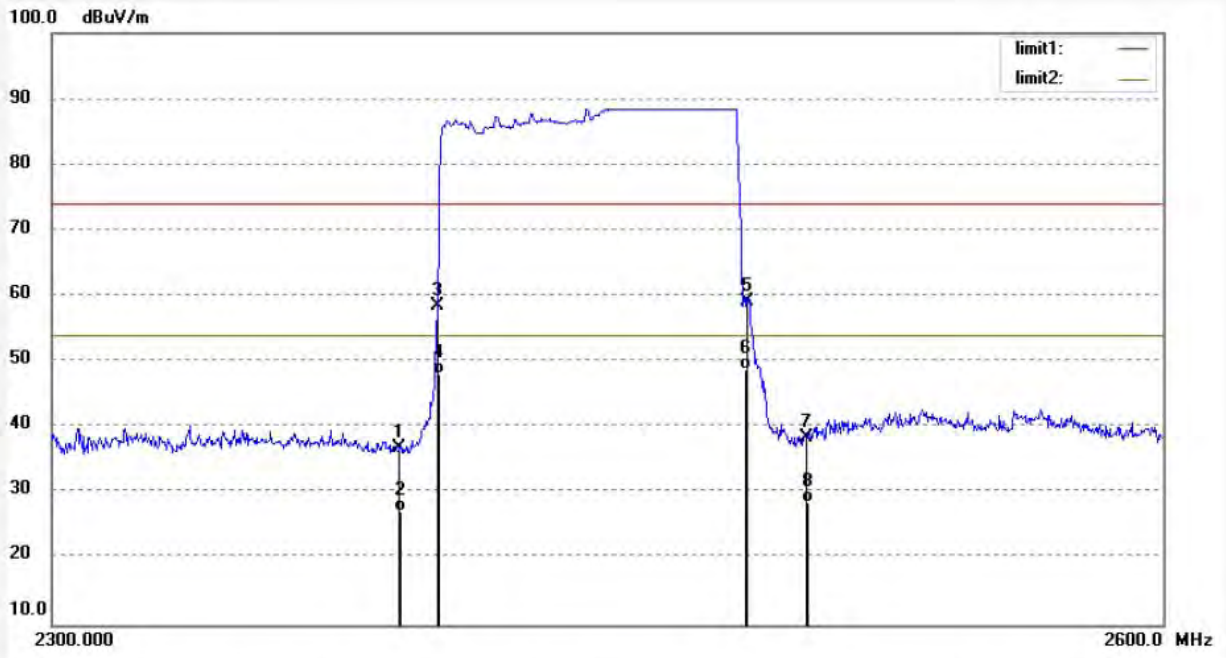
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: DING2015 #453
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: HOPPING (8QPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Vertical
Power Source: DC 5V
Date: 16/09/18
Time: 18/45/59
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.31	-7.53	36.78	74.00	-37.22	peak			
2	2390.000	34.69	-7.53	27.16	54.00	-26.84	AVG			
3	2400.000	65.84	-7.46	58.38	74.00	-15.62	peak			
4	2400.000	55.55	-7.46	48.09	54.00	-5.91	AVG			
5	2483.500	66.61	-7.37	59.24	74.00	-14.76	peak			
6	2483.500	56.17	-7.37	48.80	54.00	-5.20	AVG			
7	2500.000	45.87	-7.40	38.47	74.00	-35.53	peak			
8	2500.000	35.88	-7.40	28.48	54.00	-25.52	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

ACCURATE TECHNOLOGY CO., LTD.
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Science & Industry Park,Nanshan Shenzhen,P.R.China
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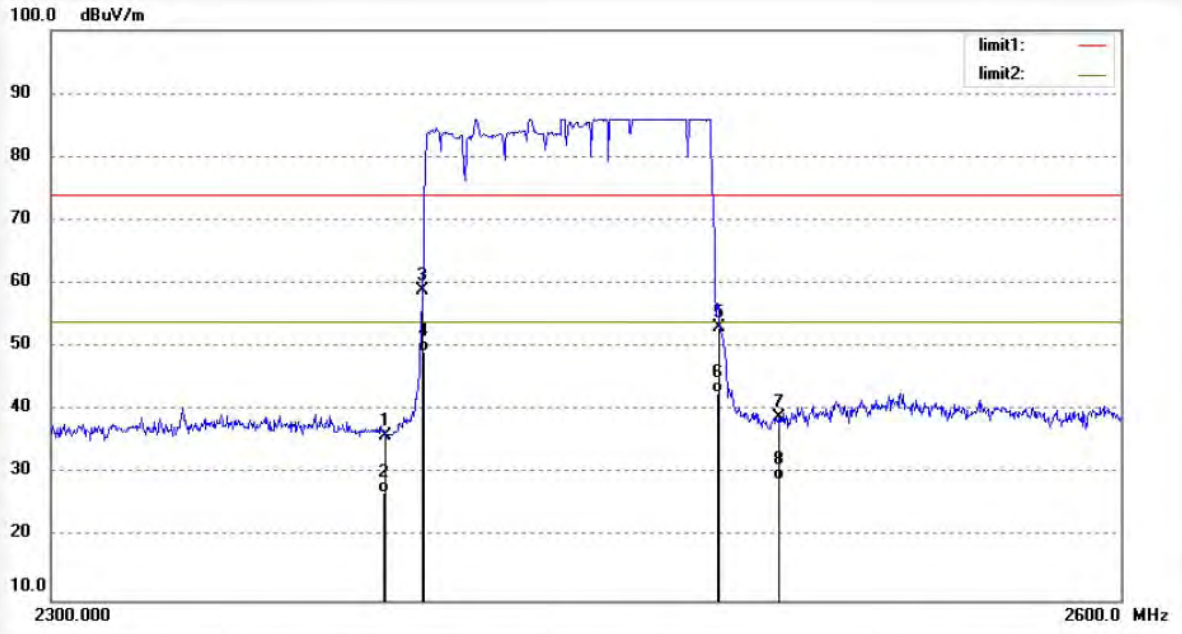
Fax:+86-0755-26503396

Job No.: DING2015 #454
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Pet Scan RT250 Electronic RFID Reader
Mode: HOPPING (8QPSK)
Model: ZR004
Manufacturer: MARKTRACE

Polarization: Horizontal
Power Source: DC 5V
Date: 16/09/18
Time: 18/47/18
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20161944

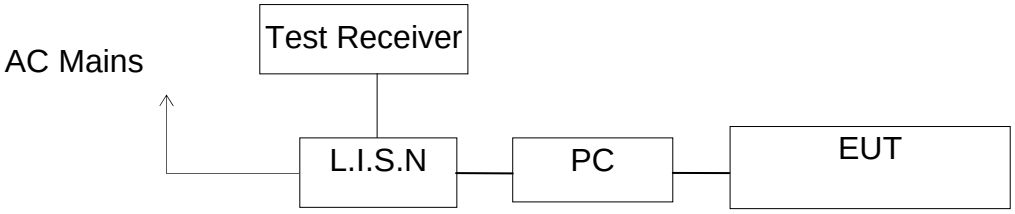


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.55	-7.53	36.02	74.00	-37.98	peak			
2	2390.000	34.62	-7.53	27.09	54.00	-26.91	AVG			
3	2400.000	66.47	-7.46	59.01	74.00	-14.99	peak			
4	2400.000	56.79	-7.46	49.33	54.00	-4.67	AVG			
5	2483.500	60.54	-7.37	53.17	74.00	-20.83	peak			
6	2483.500	50.22	-7.37	42.85	54.00	-11.15	AVG			
7	2500.000	46.21	-7.40	38.81	74.00	-35.19	peak			
8	2500.000	36.43	-7.40	29.03	54.00	-24.97	AVG			

Note: Average measurement with peak detection at No.2, 4, 6, 8

12. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

12.1. Block Diagram of Test Setup



(EUT: Pet Scan RT250 Electronic RFID Reader)

12.2. Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

12.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

12.4. Operating Condition of EUT

12.4.1. Setup the EUT and simulator as shown as Section 5.1.

12.4.2. Turn on the power of all equipment.

12.4.3. Let the EUT work in test mode and measure it.

12.5.Test Procedure

The EUT is put on the plane 0.1m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2014 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

12.6.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Test mode : Charging (AC 120V/60Hz)
EUT mode : ZR004

MEASUREMENT RESULT: "FS-0918-01_fin"

2016-9-18 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.176000	54.50	10.5	65	10.2	QP	L1	GND
0.406000	39.00	11.3	58	18.7	QP	L1	GND
1.866000	35.80	11.7	56	20.2	QP	L1	GND
3.417500	37.70	11.7	56	18.3	QP	L1	GND
5.465000	32.10	11.8	60	27.9	QP	L1	GND
28.545500	32.20	12.0	60	27.8	QP	L1	GND

MEASUREMENT RESULT: "FS-0918-01_fin2"

2016-9-18 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.198000	34.60	10.6	54	19.1	AV	L1	GND
0.526000	27.40	11.5	46	18.6	AV	L1	GND
2.058500	27.00	11.7	46	19.0	AV	L1	GND
3.147500	29.50	11.7	46	16.5	AV	L1	GND
5.465000	25.20	11.8	50	24.8	AV	L1	GND
18.672500	28.70	11.9	50	21.3	AV	L1	GND

MEASUREMENT RESULT: "FS-0918-02_fin"

2016-9-18 9:20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172000	52.40	10.5	65	12.5	QP	N	GND
0.418000	38.60	11.3	58	18.9	QP	N	GND
2.000000	36.00	11.7	56	20.0	QP	N	GND
2.873000	39.40	11.7	56	16.6	QP	N	GND
5.442500	34.90	11.8	60	25.1	QP	N	GND
28.518500	30.90	12.0	60	29.1	QP	N	GND

MEASUREMENT RESULT: "FS-0918-02_fin2"

2016-9-18 9:20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.178000	38.50	10.5	55	16.1	AV	N	GND
0.532000	26.30	11.5	46	19.7	AV	N	GND
2.103500	27.30	11.7	46	18.7	AV	N	GND
3.215000	29.80	11.7	46	16.2	AV	N	GND
5.442500	27.50	11.8	50	22.5	AV	N	GND
18.677000	29.10	11.9	50	20.9	AV	N	GND

Test mode : Charging (AC 240V/60Hz)
EUT mode : ZR004

MEASUREMENT RESULT: "FS-0918-03_fin"

2016-9-18 9:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.174000	53.20	10.5	65	11.6	QP	N	GND
0.408000	38.20	11.3	58	19.5	QP	N	GND
2.067500	36.80	11.7	56	19.2	QP	N	GND
3.039500	38.60	11.7	56	17.4	QP	N	GND
5.348000	34.50	11.8	60	25.5	QP	N	GND
18.524000	35.80	11.9	60	24.2	QP	N	GND

MEASUREMENT RESULT: "FS-0918-03_fin2"

2016-9-18 9:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.188000	38.50	10.6	54	15.6	AV	N	GND
0.526000	26.50	11.5	46	19.5	AV	N	GND
2.099000	27.60	11.7	46	18.4	AV	N	GND
3.084500	29.80	11.7	46	16.2	AV	N	GND
5.312000	27.70	11.8	50	22.3	AV	N	GND
18.731000	29.70	11.9	50	20.3	AV	N	GND

MEASUREMENT RESULT: "FS-0918-04_fin"

2016-9-18 9:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.176000	55.50	10.5	65	9.2	QP	L1	GND
0.428000	40.20	11.3	57	17.1	QP	L1	GND
2.040500	35.90	11.7	56	20.1	QP	L1	GND
3.291500	38.10	11.7	56	17.9	QP	L1	GND
5.402000	32.30	11.8	60	27.7	QP	L1	GND
18.425000	34.80	11.9	60	25.2	QP	L1	GND

MEASUREMENT RESULT: "FS-0918-04_fin2"

2016-9-18 9:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.184000	38.60	10.5	54	15.7	AV	L1	GND
0.522000	29.20	11.5	46	16.8	AV	L1	GND
2.085500	27.00	11.7	46	19.0	AV	L1	GND
3.395000	27.80	11.7	46	18.2	AV	L1	GND
5.271500	26.10	11.8	50	23.9	AV	L1	GND
18.276500	28.40	11.9	50	21.6	AV	L1	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD

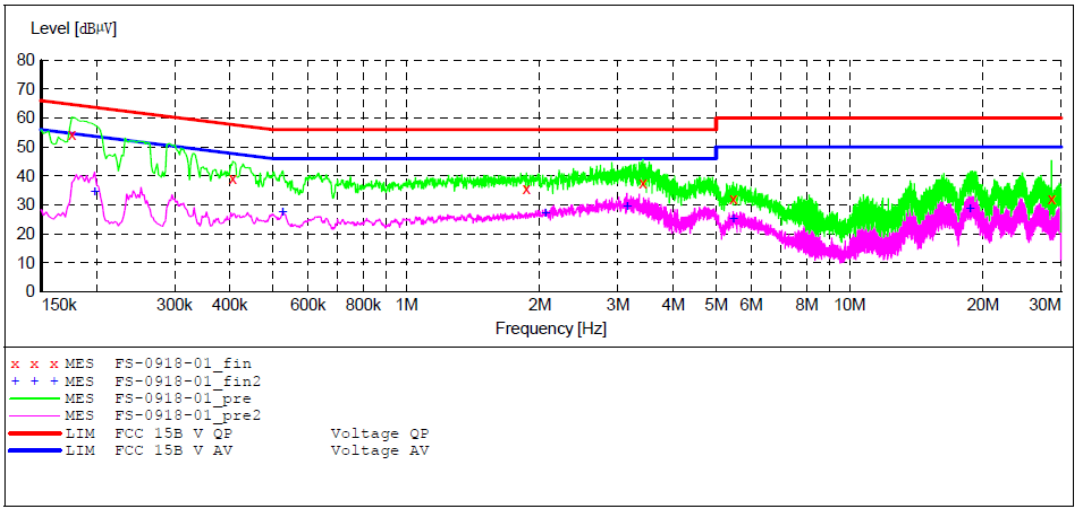
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Pet Scan RT250 Electronic RFID Reader M/N:ZR004
Manufacturer: MARKTRACE
Operating Condition: Charging
Test Site: 2#Shielding Room
Operator: DING
Test Specification: L 120V/60Hz
Comment: Report NO.:ATE20161944
Start of Test: 2016-9-18 / 9:25:30

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "FS-0918-01_fin"

2016-9-18 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.176000	54.50	10.5	65	10.2	QP	L1	GND
0.406000	39.00	11.3	58	18.7	QP	L1	GND
1.866000	35.80	11.7	56	20.2	QP	L1	GND
3.417500	37.70	11.7	56	18.3	QP	L1	GND
5.465000	32.10	11.8	60	27.9	QP	L1	GND
28.545500	32.20	12.0	60	27.8	QP	L1	GND

MEASUREMENT RESULT: "FS-0918-01_fin2"

2016-9-18 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.198000	34.60	10.6	54	19.1	AV	L1	GND
0.526000	27.40	11.5	46	18.6	AV	L1	GND
2.058500	27.00	11.7	46	19.0	AV	L1	GND
3.147500	29.50	11.7	46	16.5	AV	L1	GND
5.465000	25.20	11.8	50	24.8	AV	L1	GND
18.672500	28.70	11.9	50	21.3	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

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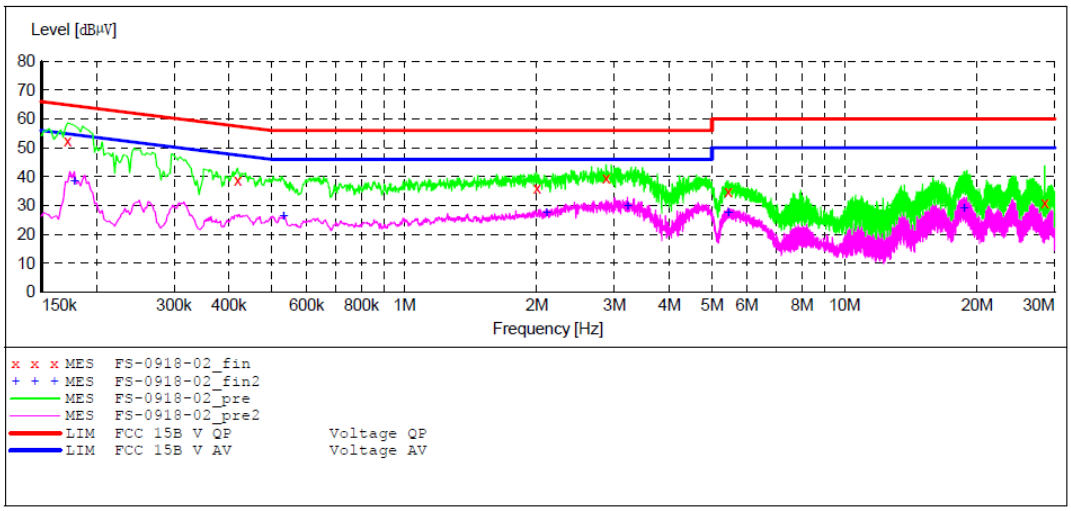
EUT:                  Pet Scan RT250 Electronic RFID Reader M/N:ZR004
Manufacturer:         MARKTRACE
Operating Condition:  Charging
Test Site:            2#Shielding Room
Operator:             DING
Test Specification:   N 120V/60Hz
Comment:              Report NO.:ATE20161944
Start of Test:        2016-9-18 / 9:19:08
```

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "FS-0918-02_fin"

2016-9-18 9:20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172000	52.40	10.5	65	12.5	QP	N	GND
0.418000	38.60	11.3	58	18.9	QP	N	GND
2.000000	36.00	11.7	56	20.0	QP	N	GND
2.873000	39.40	11.7	56	16.6	QP	N	GND
5.442500	34.90	11.8	60	25.1	QP	N	GND
28.518500	30.90	12.0	60	29.1	QP	N	GND

MEASUREMENT RESULT: "FS-0918-02_fin2"

2016-9-18 9:20

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.178000	38.50	10.5	55	16.1	AV	N	GND
0.532000	26.30	11.5	46	19.7	AV	N	GND
2.103500	27.30	11.7	46	18.7	AV	N	GND
3.215000	29.80	11.7	46	16.2	AV	N	GND
5.442500	27.50	11.8	50	22.5	AV	N	GND
18.677000	29.10	11.9	50	20.9	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

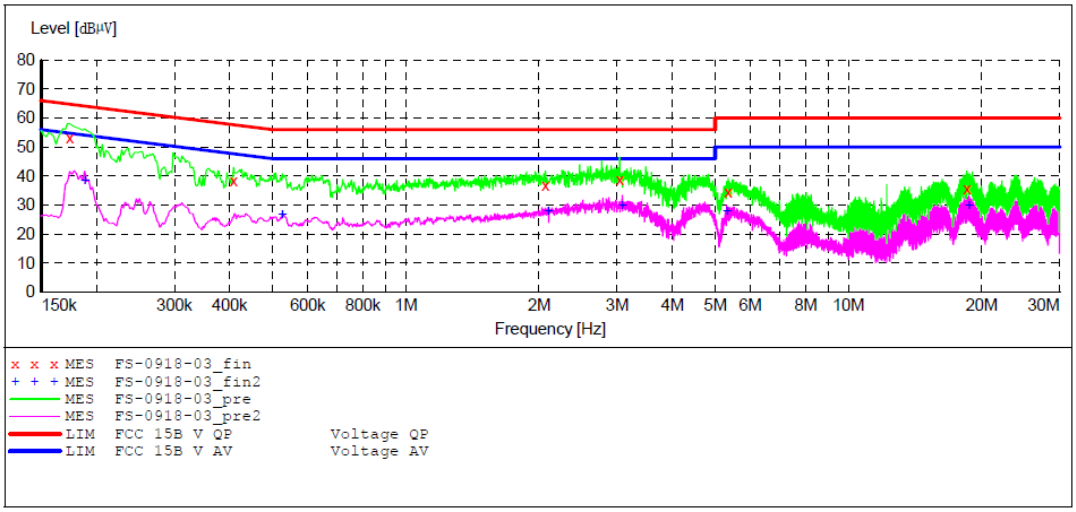
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Pet Scan RT250 Electronic RFID Reader M/N:ZR004
Manufacturer: MARKTRACE
Operating Condition: Charging
Test Site: 2#Shielding Room
Operator: DING
Test Specification: N 240V/60Hz
Comment: Report NO.:ATE20161944
Start of Test: 2016-9-18 / 9:21:01

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "FS-0918-03_fin"

2016-9-18 9:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.174000	53.20	10.5	65	11.6	QP	N	GND
0.408000	38.20	11.3	58	19.5	QP	N	GND
2.067500	36.80	11.7	56	19.2	QP	N	GND
3.039500	38.60	11.7	56	17.4	QP	N	GND
5.348000	34.50	11.8	60	25.5	QP	N	GND
18.524000	35.80	11.9	60	24.2	QP	N	GND

MEASUREMENT RESULT: "FS-0918-03_fin2"

2016-9-18 9:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.188000	38.50	10.6	54	15.6	AV	N	GND
0.526000	26.50	11.5	46	19.5	AV	N	GND
2.099000	27.60	11.7	46	18.4	AV	N	GND
3.084500	29.80	11.7	46	16.2	AV	N	GND
5.312000	27.70	11.8	50	22.3	AV	N	GND
18.731000	29.70	11.9	50	20.3	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

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EUT:                  Pet Scan RT250 Electronic RFID Reader M/N:ZR004
Manufacturer:         MARKTRACE
Operating Condition:  Charging
Test Site:            2#Shielding Room
Operator:             DING
Test Specification:   L  240V/60Hz
Comment:              Report NO.:ATE20161944
Start of Test:        2016-9-18 / 9:28:19
```
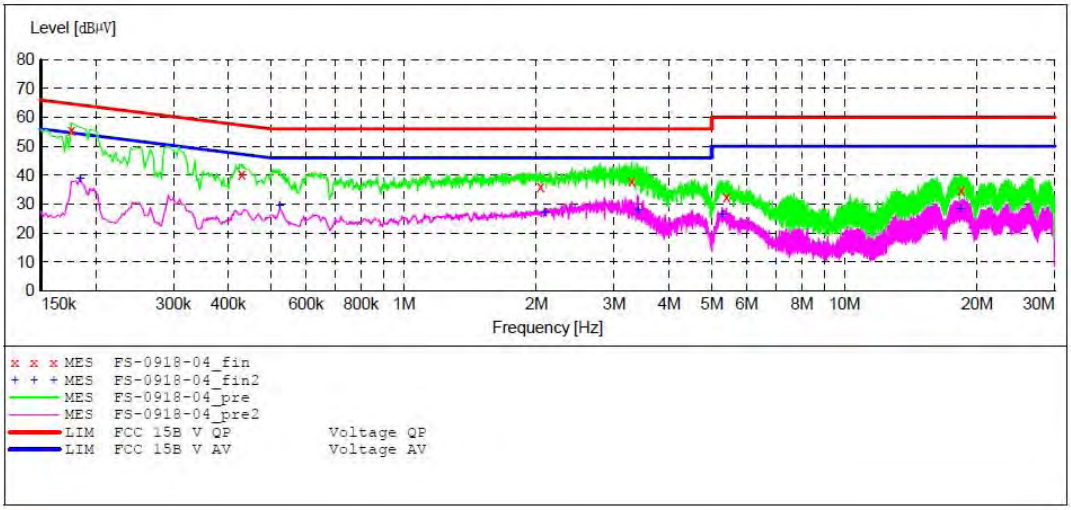

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "FS-0918-04_fin"

2016-9-18 9:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.176000	55.50	10.5	65	9.2	QP	L1	GND
0.428000	40.20	11.3	57	17.1	QP	L1	GND
2.040500	35.90	11.7	56	20.1	QP	L1	GND
3.291500	38.10	11.7	56	17.9	QP	L1	GND
5.402000	32.30	11.8	60	27.7	QP	L1	GND
18.425000	34.80	11.9	60	25.2	QP	L1	GND

MEASUREMENT RESULT: "FS-0918-04_fin2"

2016-9-18 9:30

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.184000	38.60	10.5	54	15.7	AV	L1	GND
0.522000	29.20	11.5	46	16.8	AV	L1	GND
2.085500	27.00	11.7	46	19.0	AV	L1	GND
3.395000	27.80	11.7	46	18.2	AV	L1	GND
5.271500	26.10	11.8	50	23.9	AV	L1	GND
18.276500	28.40	11.9	50	21.6	AV	L1	GND

13. ANTENNA REQUIREMENT

13.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.