

FCC Report

Applicant: M-Labs Technologies, LLC

Address of Applicant: 4740 Von Karman, Suite 150 Newport Beach, CA 92660, United States

Manufacturer: Asiatelco Technologies Co.

Address of Manufacturer: #289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park, Pudong, Shanghai, 201204 China

Equipment Under Test (EUT)

Product Name: GPS Tracker

Model No.: CDMA, CDMA-B, CDMA-BA, CDMA-G, CDMA-B-G, CDMA-BA-G

Marketing Name: S4000, S4000-B, S4000-BA, S4100, S4100-B, S4100-BA, S2000, V4000, V4000-B, V4000-BA, V4100, V4100-B, V4100-BA

FCC ID: 2AAQ6AC05

Applicable standards: FCC CFR Title 47 Part 2:2016
FCC CFR Title 47 Part 22 Subpart H:2016
FCC CFR Title 47 Part 24 Subpart E:2016

Date of sample receipt: March 21, 2017

Date of Test: March 22-23, 2017

Date of report issued: March 24, 2017

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	March 24, 2017	Original

Prepared By:

Edward Pan

Date:

March 24, 2017

Project Engineer

Check By:

Andy Wu

Date:

March 24, 2017

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	GPS Tracker
Model No.:	CDMA, CDMA-B, CDMA-BA, CDMA-G, CDMA-B-G, CDMA-BA-G
Support Networks:	1xRTT
Support Bands:	CDMA Cellular / CDMA PCS
TX Frequency:	CDMA2000 BC0: 824.70MHz ~ 848.31MHz CDMA2000 BC1: 1851.25MHz ~ 1908.75MHz
Modulation type:	QPSK
Hardware Version:	P5
Antenna type:	Spring loaded antenna GPS ceramic antenna
Antenna gain:	2dBi(Spring loaded antenna) 5dBi(GPS ceramic antenna)
Adaptor Information:	DC 12V

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
SWTEC	AC/DC Adapter	SW012S120100C1	N/A	Verification

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Room 301-309, 3th Floor, Block A, Huafeng Jinyuan Business Building, No. 300 Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 29 2016	June 28 2017
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 29 2016	June 28 2017
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2016	June 28 2017
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 29 2016	June 28 2017
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June 29 2016	June 28 2017
9	Coaxial Cable	GTS	N/A	GTS211	June 29 2016	June 28 2017
10	Coaxial cable	GTS	N/A	GTS210	June 29 2016	June 28 2017
11	Coaxial Cable	GTS	N/A	GTS212	June 29 2016	June 28 2017
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 29 2016	June 28 2017
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 29 2016	June 28 2017
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2016	June 28 2017
15	Band filter	Amindeon	82346	GTS219	June 29 2016	June 28 2017
16	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	June 29 2016	June 28 2017
17	Signal Generator	Rohde & Schwarz	SML03	GTS236	June 29 2016	June 28 2017
18	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	GTS248	June 29 2016	June 28 2017
19	D.C. Power Supply	Instek	PS-3030	GTS232	NA	NA
20	Splitter	Agilent	11636B	GTS237	June 29 2016	June 28 2017
21	Power meter	Rohde & Schwarz	NRVS	GTS238	June 29 2016	June 28 2017
22	Spectrum Analyzer	Agilent	E4440A	GTS533	June 29 2016	June 28 2017

7 System test configuration

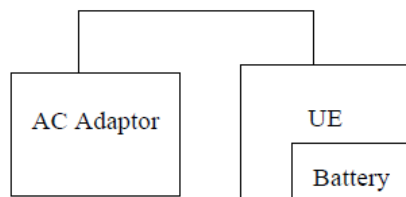
7.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

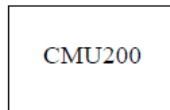
7.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

7.3 Configuration of Tested System



Remote Side



7.4 Description of Test modes

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

30 MHz to 10000 MHz for CDMA2000 BC0.

30 MHz to 20000 MHz for CDMA2000 BC1.

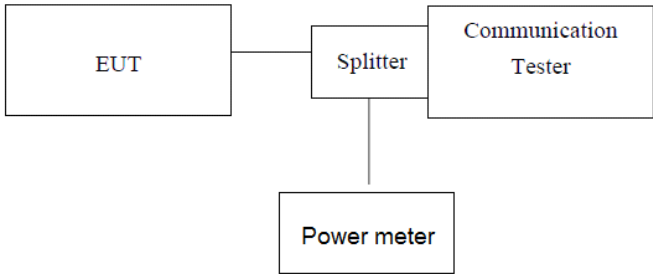
Test modes		
Band	Radiated	Conducted
CDMA2000 BC0	1XRTT Link Mode	1XRTT Link Mode
CDMA2000 BC1	1XRTT Link Mode	1XRTT Link Mode

Note: The maximum RF output power levels are 1xRTT RC1 SO55 mode for CDMA2000 BC0 and 1xRTT RC1 SO55 mode for CDMA2000 BC1 on QPSK Link; only these modes were used for all tests.

The conducted power tables are as follows:

Conducted Power (dBm)						
Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency (MHz)	824.70	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1 SO55	24.08	24.74	24.80	24.32	23.78	23.96
1xRTT RC3 SO32	24.06	24.69	24.78	24.24	23.72	23.84
1xRTT RC3 SO32 (+F-SCH)	24.05	24.64	24.72	24.23	23.64	23.79
1xRTT RC3 SO32 (+SCH)	24.05	24.59	24.70	24.12	23.62	23.79

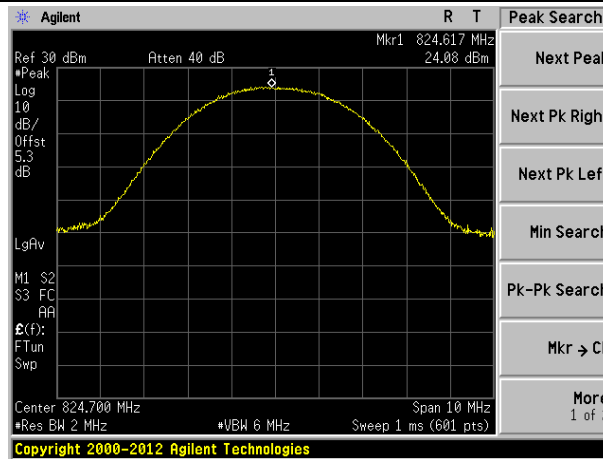
7.5 Conducted Peak Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.4 for details
Test results:	Pass

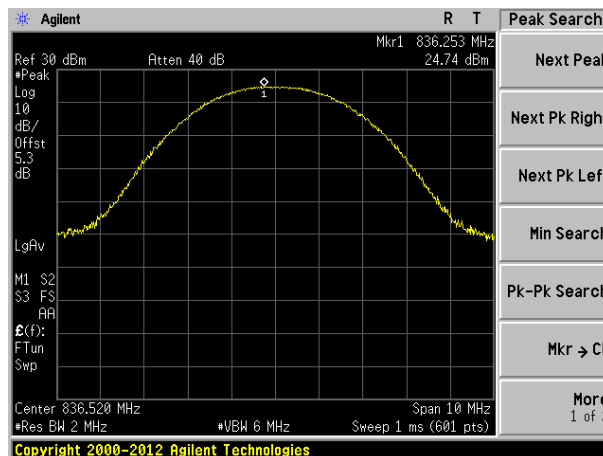
Measurement Data

EUT Mode	Channel	Frequency (MHz)	PK power (dBm)
CDMA2000 BC0	1013	824.70	24.08
	384	836.52	24.74
	777	848.31	24.80
CDMA2000 BC1	25	1851.25	24.32
	600	1880.00	23.78
	1175	1908.75	23.96

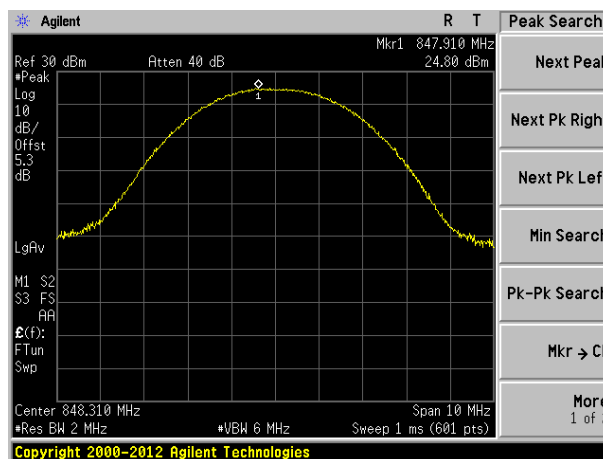
Test band: CDMA2000 BC0 (1xRTT RC1 SO55)



Lowest channel

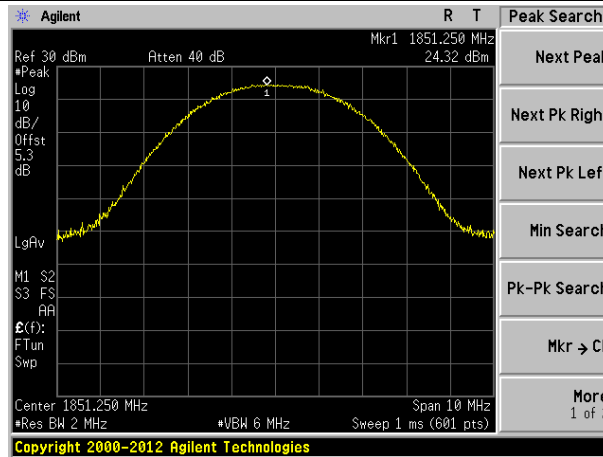


Middle channel

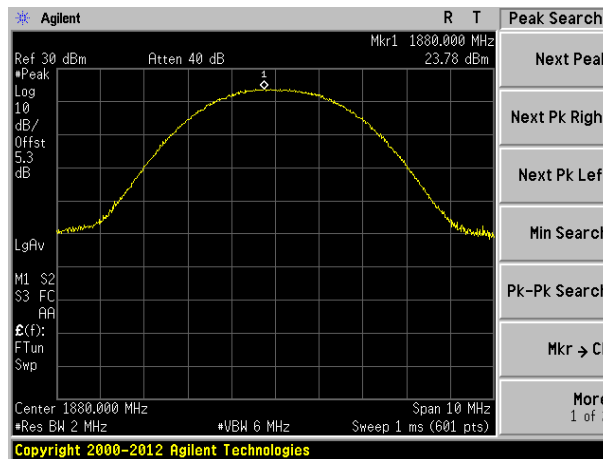


Highest channel

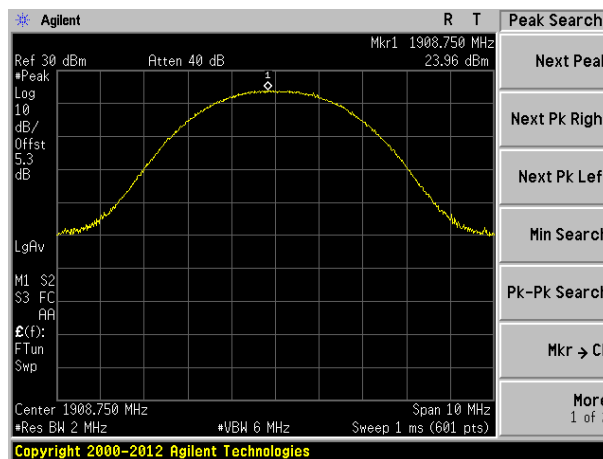
Test band: CDMA2000 BC1 (1xRTT RC1 SO55)



Lowest channel

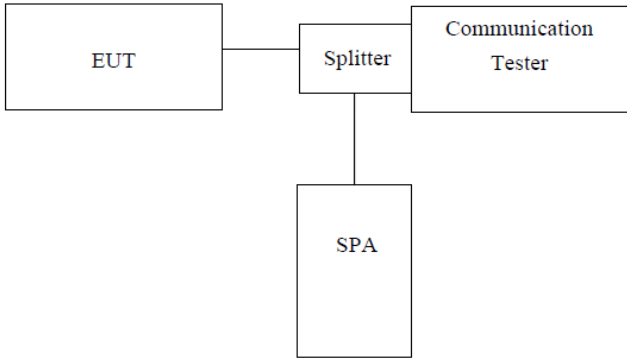


Middle channel



Highest channel

7.6 Occupy Bandwidth

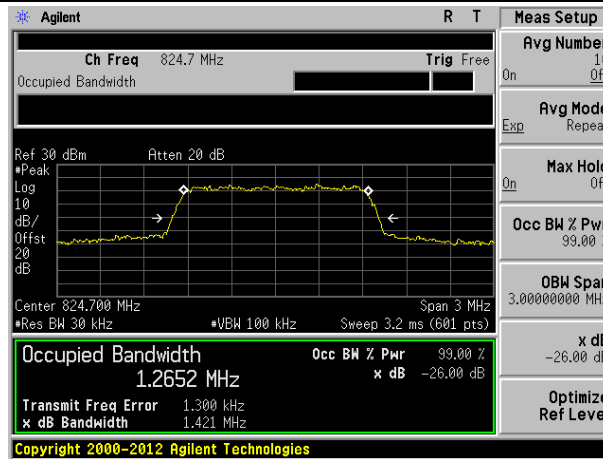
Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

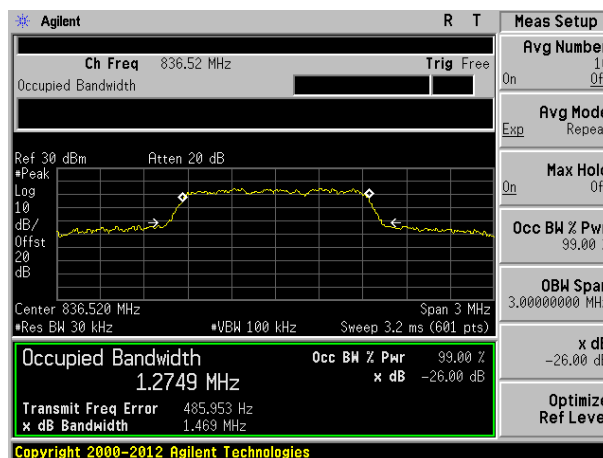
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (MHz)	-26dB bandwidth (MHz)
CDMA2000 BC0	1013	824.70	1.2652	1.421
	384	836.52	1.2749	1.469
	777	848.31	1.2685	1.429
CDMA2000 BC1	25	1851.25	1.2762	1.442
	600	1880.00	1.2676	1.443
	1175	1908.75	1.2727	1.492

Test plot as follows:

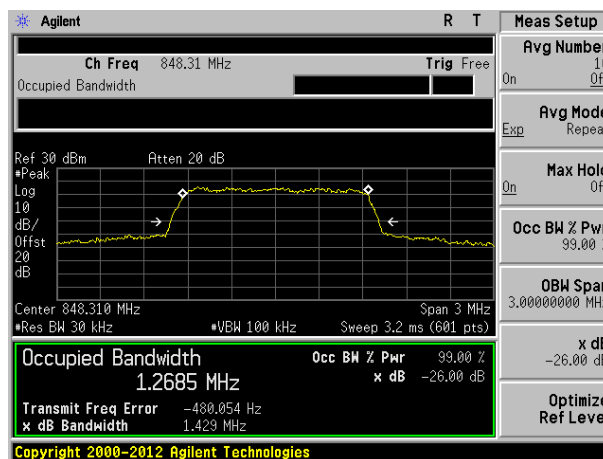
Test band: CDMA2000 BC0 (1xRTT RC1 SO55)



Lowest channel

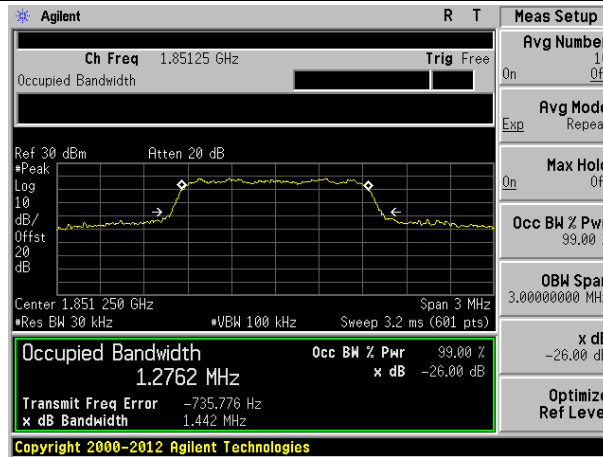


Middle channel

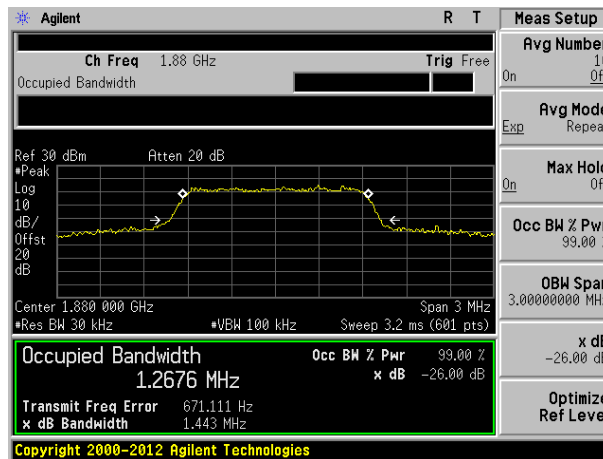


Highest channel

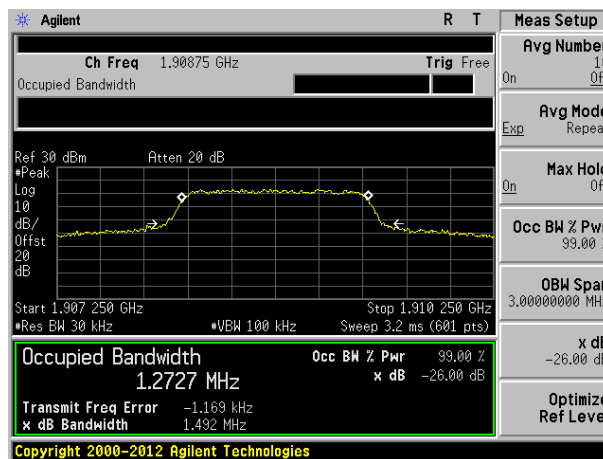
Test band: CDMA2000 BC1 (1xRTT RC1 SO55)



Lowest channel



Middle channel

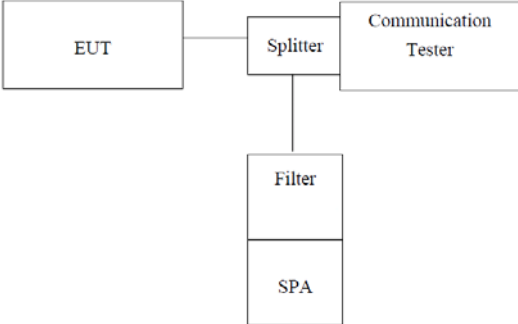


Highest channel

7.7 MODULATION CHARACTERISTIC

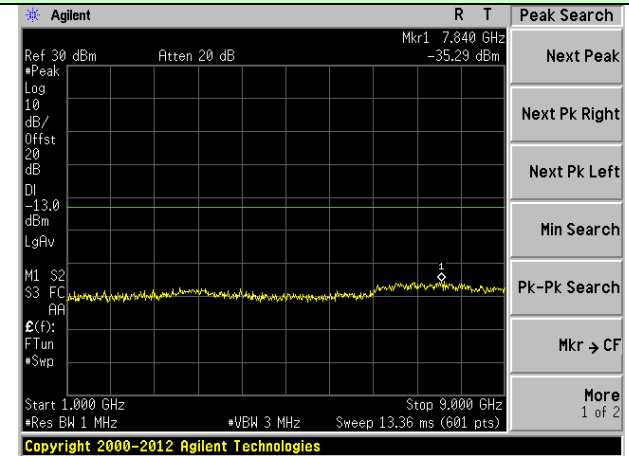
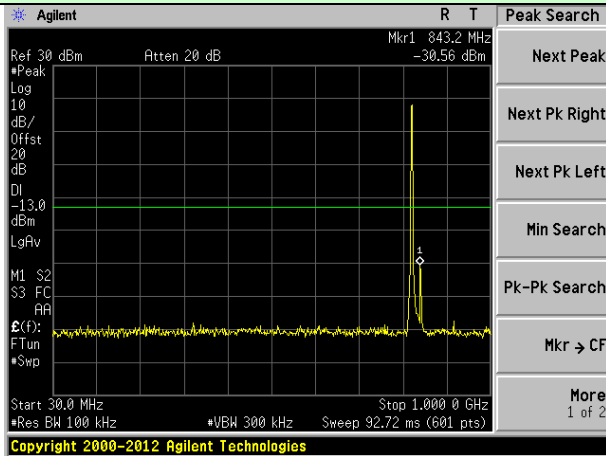
According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

7.8 Out of band emission at antenna terminals

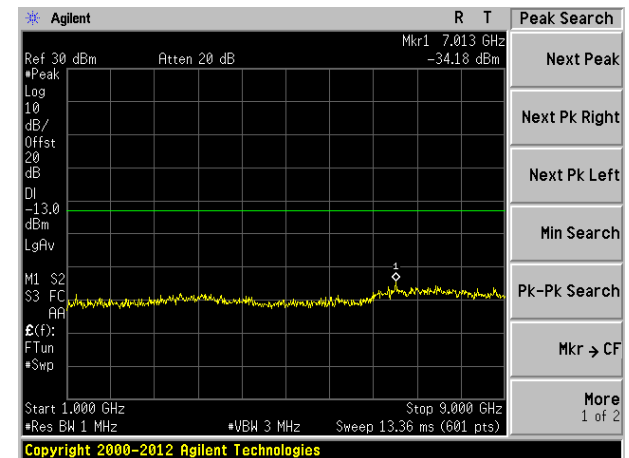
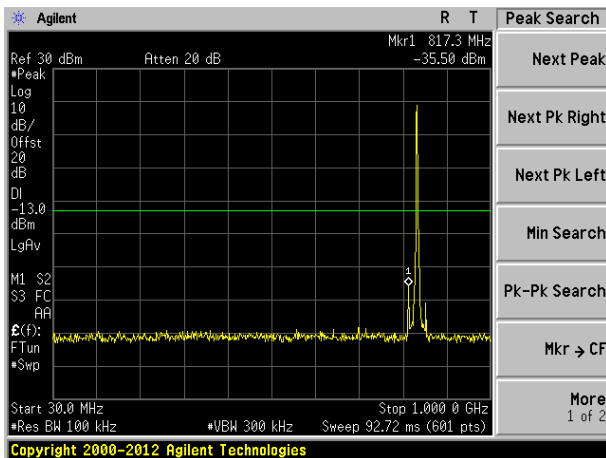
Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	 <p style="text-align: center;"><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

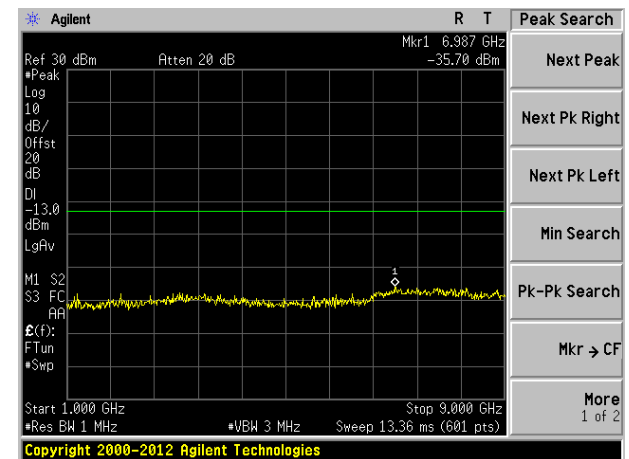
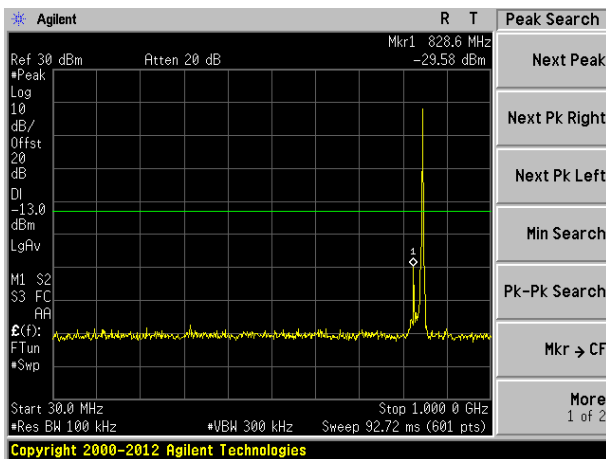
Test Mode: 1xRTT RC3 SO32 (+F-SCH)	CDMA2000 BC0
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Lowest channel

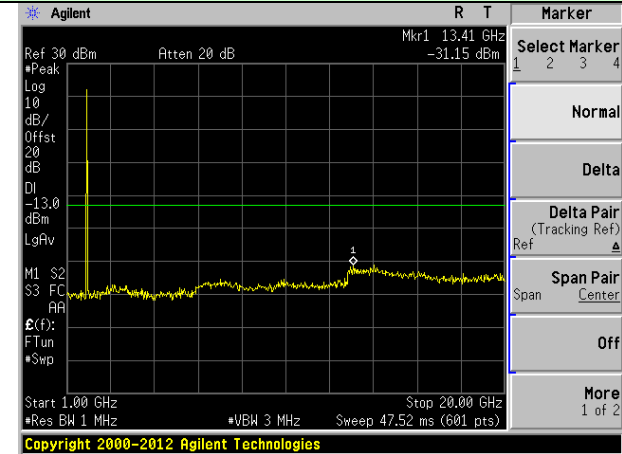
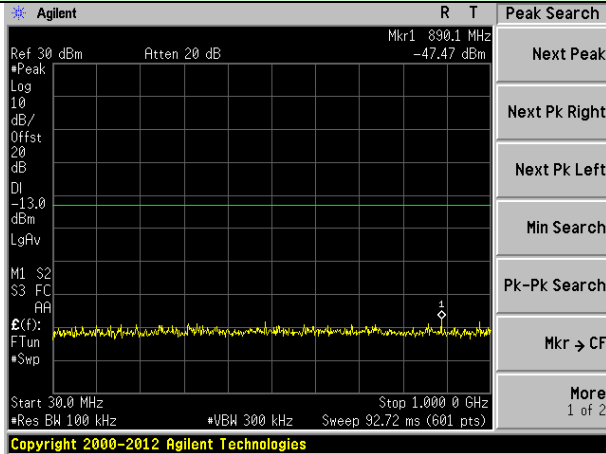


Middle channel

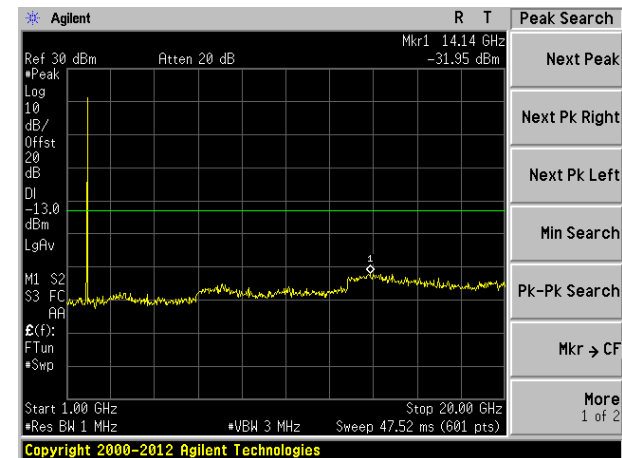
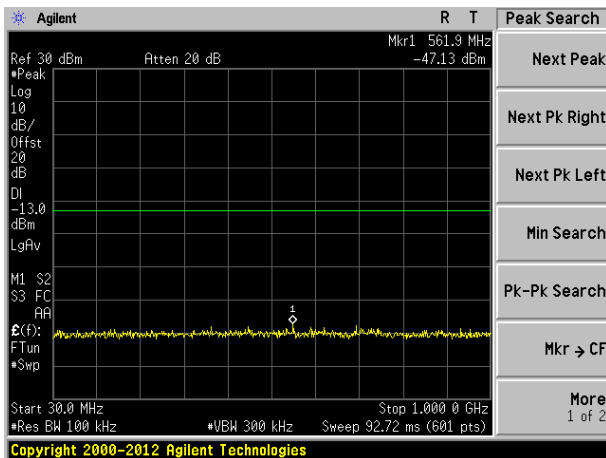


Highest channel

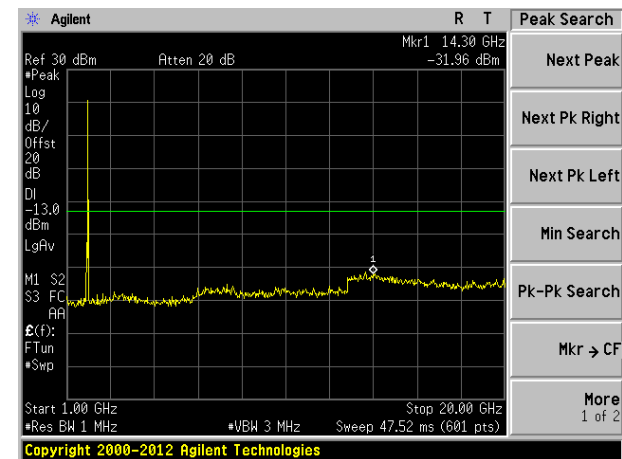
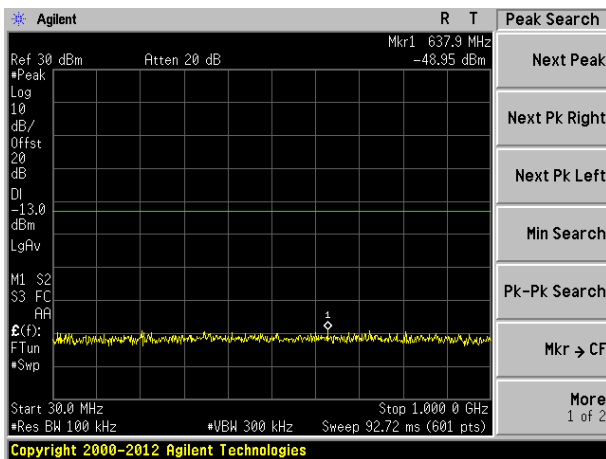
Test Mode: 1xRTT RC1 SO55 CDMA2000 BC1



Lowest channel

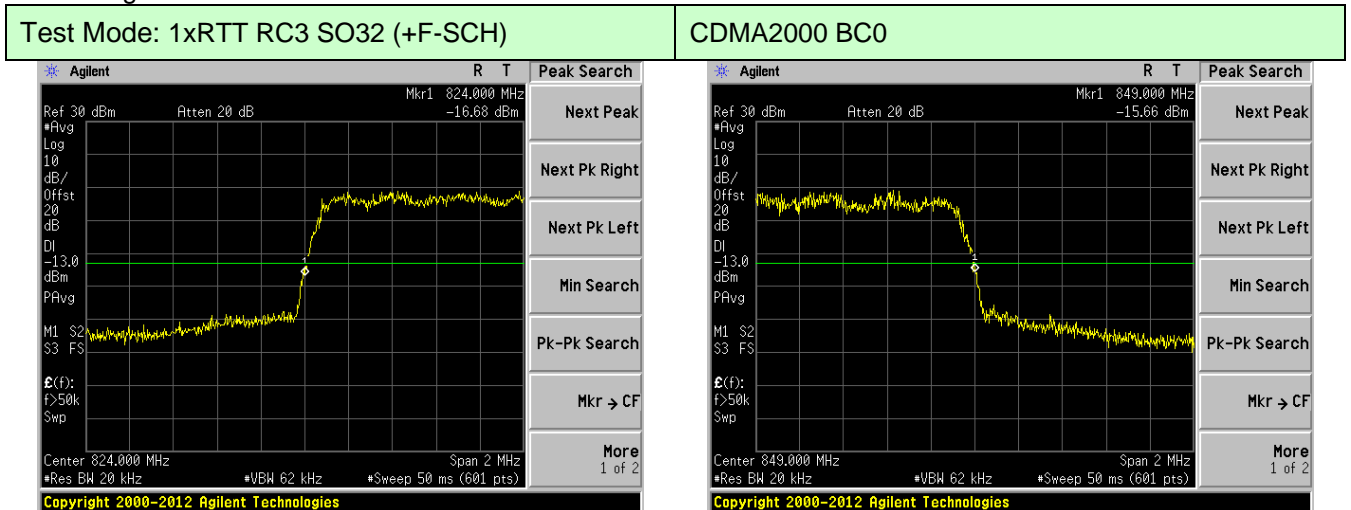


Middle channel



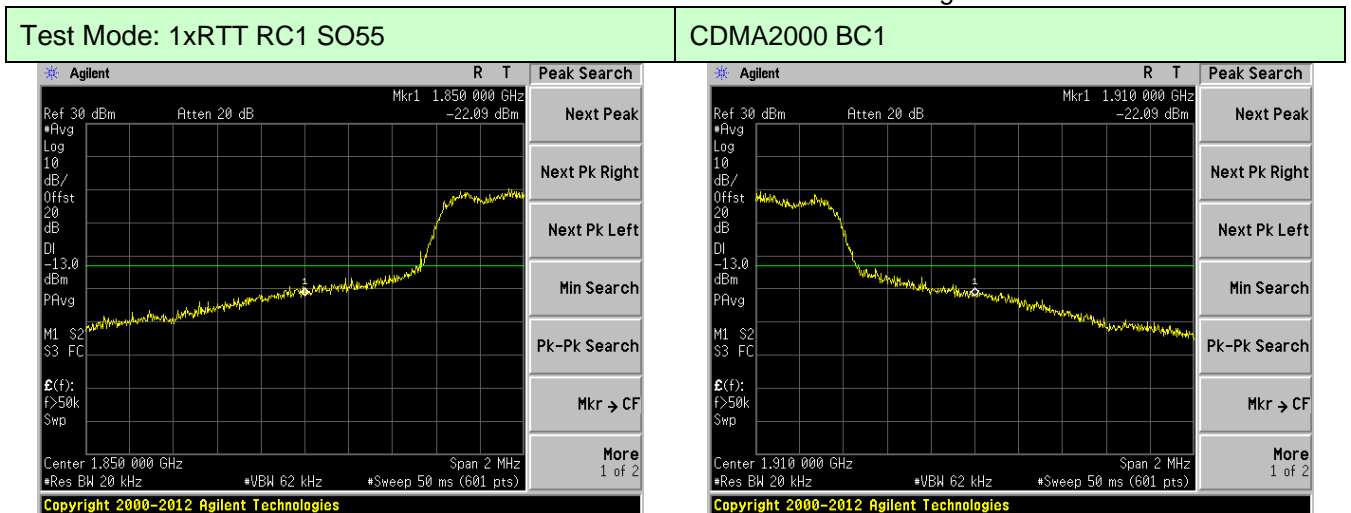
Highest channel

Band Edge:



Lowest channel

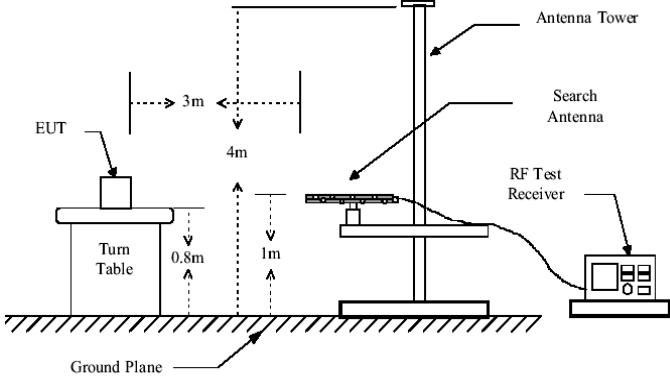
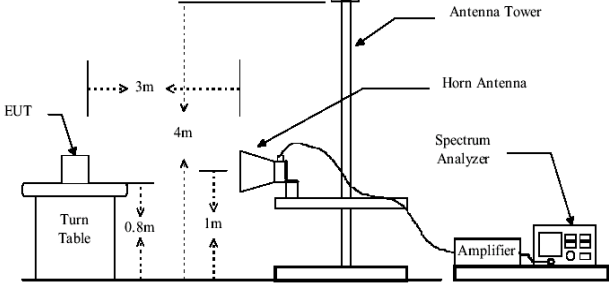
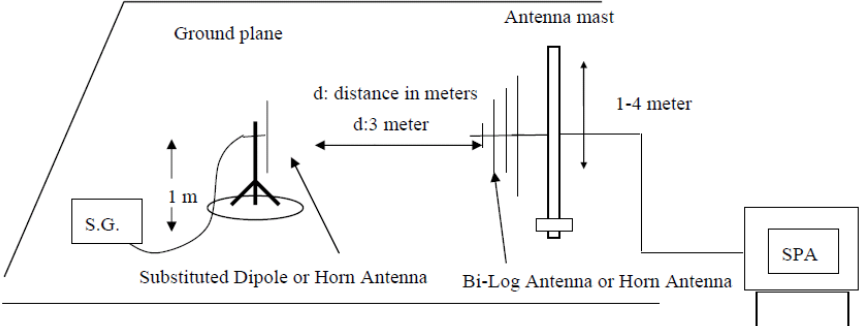
Highest channel



Lowest channel

Highest channel

7.9 ERP, EIRP Measurement

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	CDMA2000 BC0 7W ERP CDMA2000 BC1 2W EIRP
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

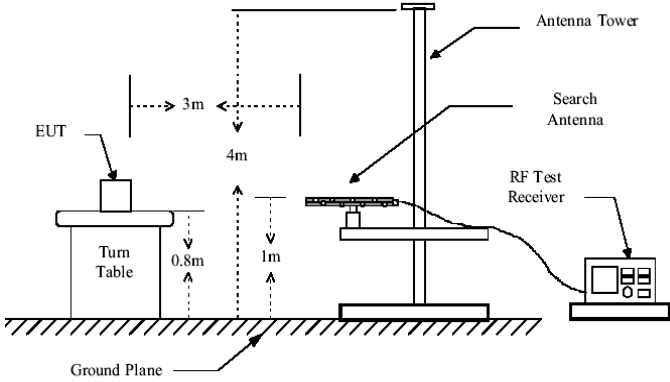
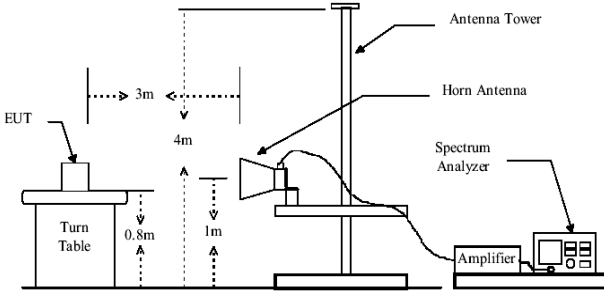
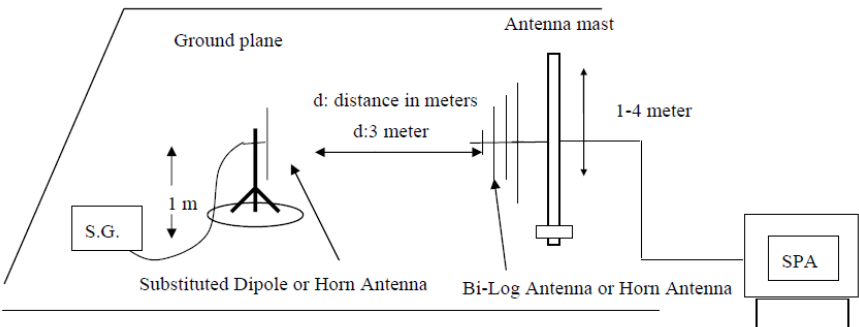
<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated asfollows: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>
<p>Test results:</p>	<p>Pass</p>

Measurement Data

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
CDMA2000 BC0 (1xRTT RC1 SO55)	Lowest	H	V	24.33	38.45	Pass
			H	22.31		
		E1	V	18.84		
			H	22.35		
		E2	V	18.19		
			H	20.77		
	Middle	H	V	24.28	38.45	Pass
			H	22.20		
		E1	V	18.78		
			H	22.31		
		E2	V	19.30		
			H	21.20		
	Highest	H	V	23.17	38.45	Pass
			H	20.74		
		E1	V	17.46		
			H	20.33		
		E2	V	16.94		
			H	20.35		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
CDMA2000 BC1 (1xRTT RC1 SO55)	Lowest	H	V	23.92	33.00	Pass
			H	21.84		
		E1	V	18.32		
			H	21.78		
		E2	V	17.56		
			H	20.09		
	Middle	H	V	23.68	33.00	Pass
			H	21.48		
		E1	V	18.00		
			H	21.47		
		E2	V	18.60		
			H	20.44		
	Highest	H	V	23.58	33.00	Pass
			H	20.10		
		E1	V	16.77		
			H	19.59		
		E2	V	16.44		
			H	19.79		

7.10 Field strength of spurious radiation measurement

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1053
Limit:	-13dBm
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>
<p>Test results:</p>	<p>Pass</p>

Measurement Data

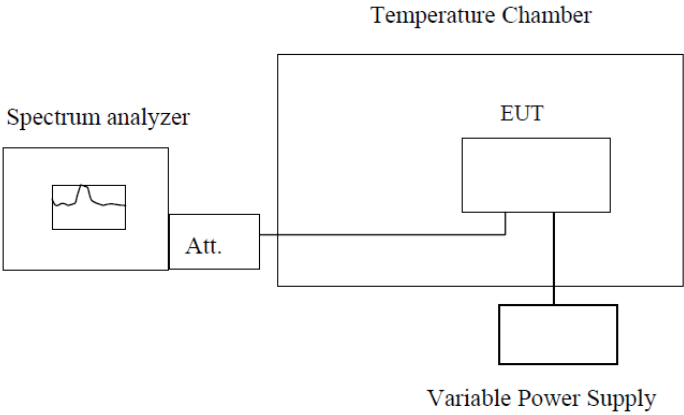
Test mode:		CDMA2000 BC0 (1xRTT RC1 SO55)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1649.40	Vertical	-35.77	-13.00	Pass	
2474.10	V	-38.52			
3298.80	V	-40.79			
4123.50	V	-42.95			
4948.20	V	---			
1649.40	Horizontal	-41.03	-13.00	Pass	
2474.10	H	-44.91			
3298.80	H	-46.48			
4123.50	H	-49.23			
4948.20	H	---			
Test mode:		CDMA2000 BC0 (1xRTT RC1 SO55)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1673.04	Vertical	-37.17	-13.00	Pass	
2509.56	V	-39.46			
3346.08	V	-41.35			
4182.60	V	-43.16			
5019.12	V	---			
1673.04	Horizontal	-41.56	-13.00	Pass	
2509.56	H	-44.79			
3346.08	H	-46.10			
4182.60	H	-48.39			
5019.12	H	---			
Test mode:		CDMA2000 BC0 (1xRTT RC1 SO55)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1696.62	Vertical	-37.43	-13.00	Pass	
2544.93	V	-39.47			
3393.24	V	-41.15			
4241.55	V	-42.76			
5089.86	V	---			
1696.62	Horizontal	-41.33	-13.00	Pass	
2544.93	H	-44.21			
3393.24	H	-45.37			
4241.55	H	-47.41			
5089.86	H	---			

Test mode:		CDMA2000 BC1 (1xRTT RC1 SO55)		Test channel:		Lowest		
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result				
	Polarization	Level (dBm)						
3702.50	Vertical	-36.72	-13.00	Pass				
5553.75	V	-39.11						
7405.00	V	-41.10						
9256.25	V	-43.00						
11107.50	V	---						
3702.50	Horizontal	-41.32	-13.00	Pass				
5553.75	H	-44.71						
7405.00	H	-46.08						
9256.25	H	-48.47						
11107.50	H	---						
Test mode:		CDMA2000 BC1 (1xRTT RC1 SO55)		Test channel:		Middle		
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result				
	Polarization	Level (dBm)						
3760.00	Vertical	-34.27	-13.00	Pass				
5640.00	V	-36.75						
7520.00	V	-38.81						
9400.00	V	-40.78						
11280.00	V	---						
3760.00	Horizontal	-39.04	-13.00	Pass				
5640.00	H	-42.55						
7520.00	H	-43.98						
9400.00	H	-46.46						
11280.00	H	---						
Test mode:		CDMA2000 BC1 (1xRTT RC1 SO55)		Test channel:		Highest		
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result				
	Polarization	Level (dBm)						
3817.50	Vertical	-35.53	-13.00	Pass				
5726.25	V	-37.93						
7635.00	V	-39.93						
9543.75	V	-41.83						
11452.50	V	---						
3817.50	Horizontal	-40.14	-13.00	Pass				
5726.25	H	-43.55						
7635.00	H	-44.93						
9543.75	H	-47.33						
11452.50	H	---						

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

7.11 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	 <p style="text-align: center;">Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Reference Frequency: CDMA2000 BC0 (1xRTT RC1 SO55) Middle channel=384 channel=836.52MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.0	-30	38	0.0455	2.5	Pass
	-20	42	0.0502		
	-10	37	0.0439		
	0	31	0.0376		
	10	35	0.0423		
	20	31	0.0376		
	30	47	0.0565		
	40	43	0.0518		
	50	42	0.0502		
Reference Frequency: CDMA2000 BC1 (1xRTT RC1 SO55) Middle channel=600 channel=1880.00MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.0	-30	77	0.0411	2.5	Pass
	-20	95	0.0507		
	-10	77	0.0411		
	0	62	0.0331		
	10	77	0.0411		
	20	65	0.0347		
	30	116	0.0619		
	40	98	0.0523		
	50	92	0.0491		

7.12 Frequency stability V.S. Voltage measurement

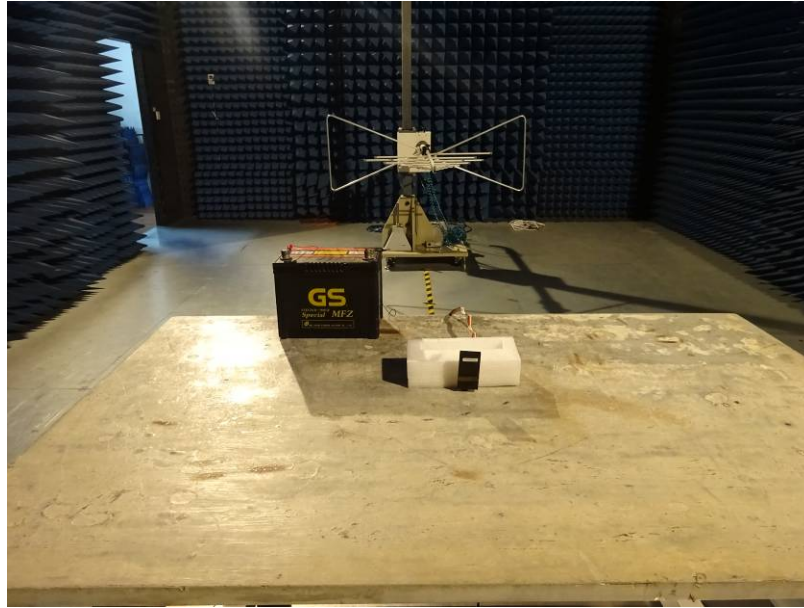
Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	<p style="text-align: center;">Temperature Chamber</p> <p style="text-align: center;">Spectrum analyzer Att. EUT</p> <p style="text-align: center;">Variable Power Supply</p> <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

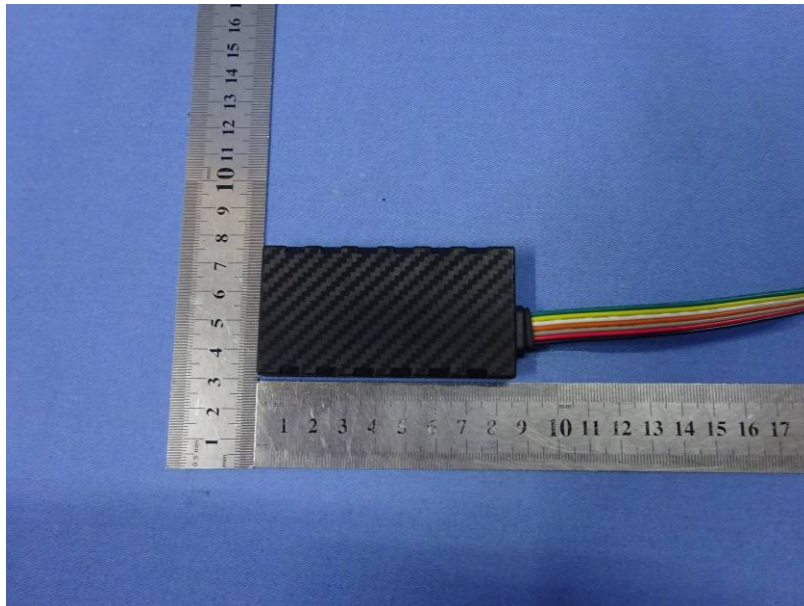
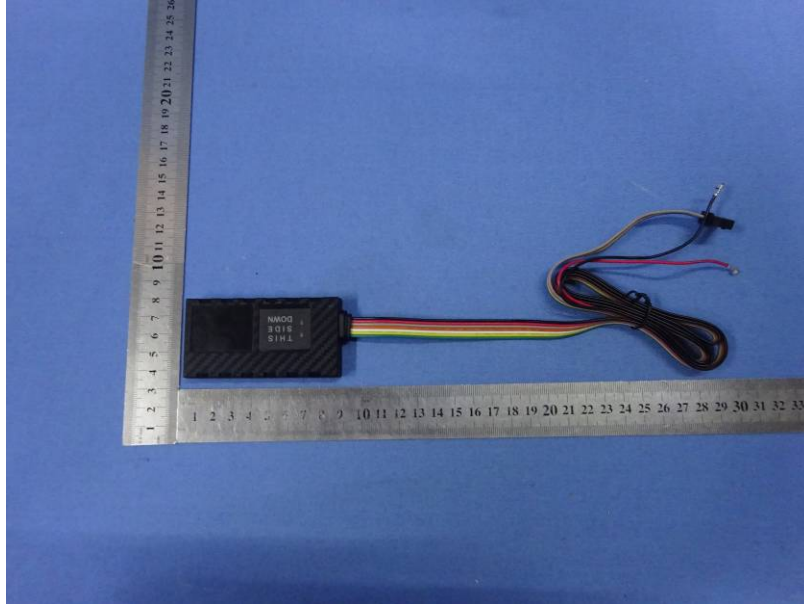
Reference Frequency: CDMA2000 BC0 (1xRTT RC1 SO55) Middle channel=384 channel=836.52MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	10	41	0.0489	2.5	Pass
	12	45	0.0541		
	30	50	0.0592		
Reference Frequency: CDMA2000 BC1 (1xRTT RC1 SO55) Middle channel=600 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	10	59	0.0314	2.5	Pass
	12	70	0.0371		
	30	70	0.0371		

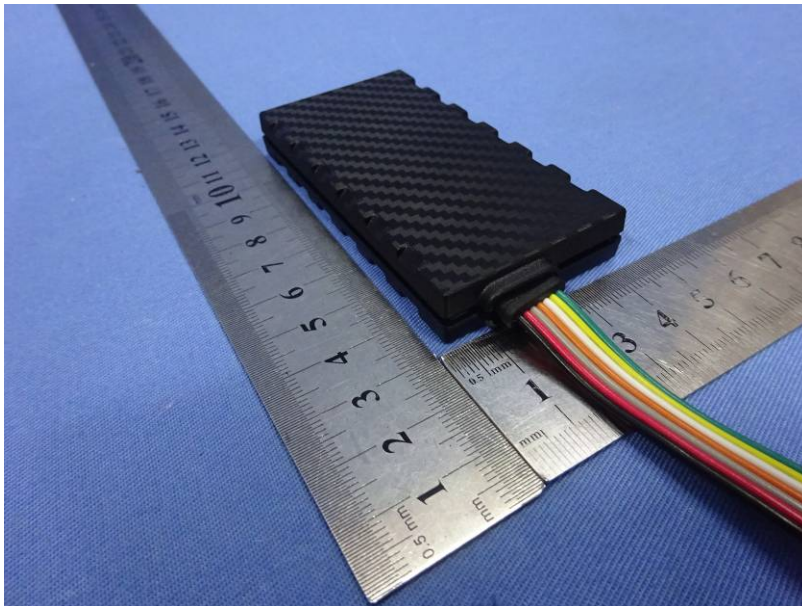
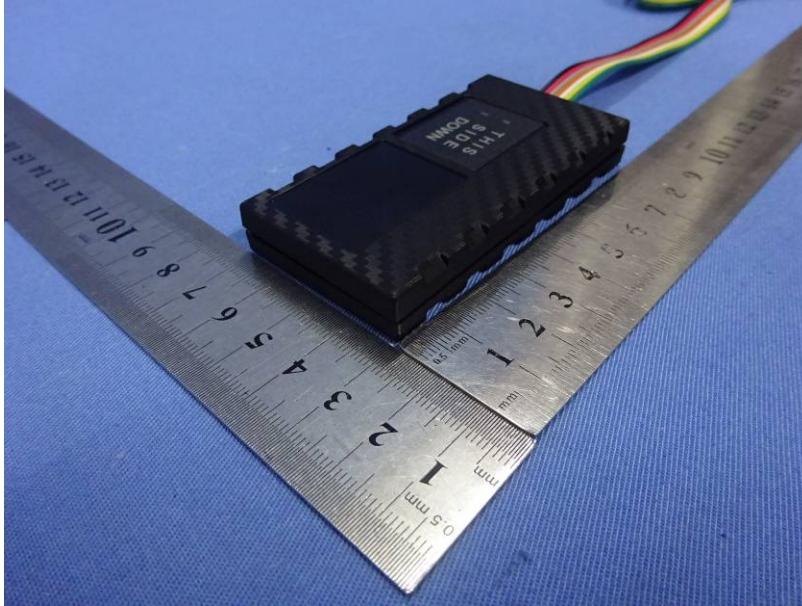
8 Test Setup Photo

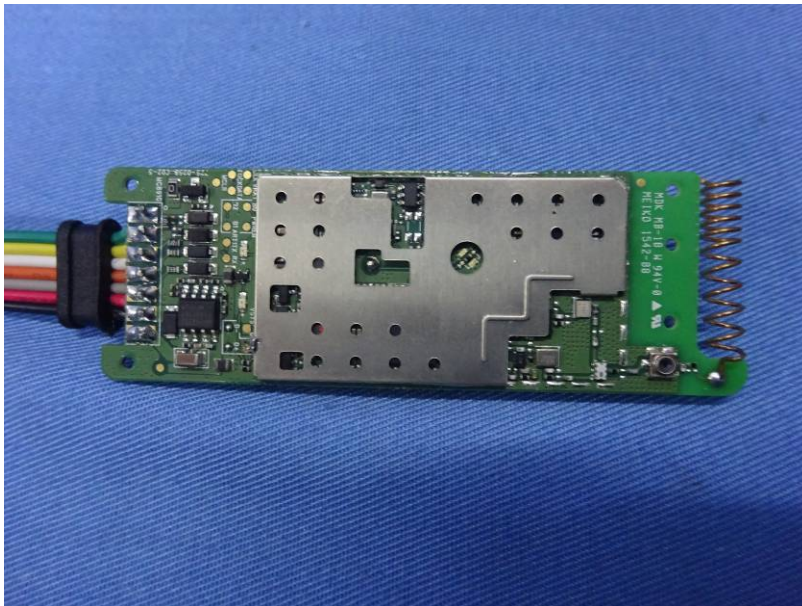
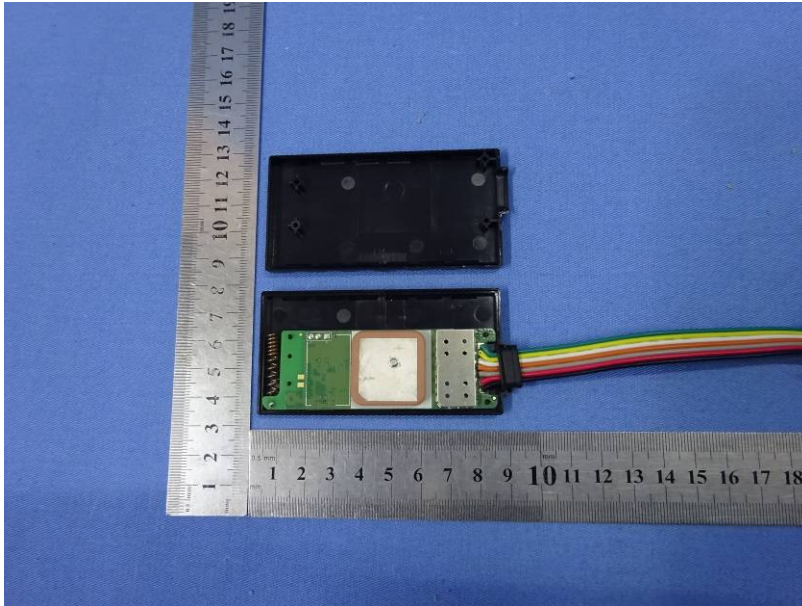
Radiated Emission

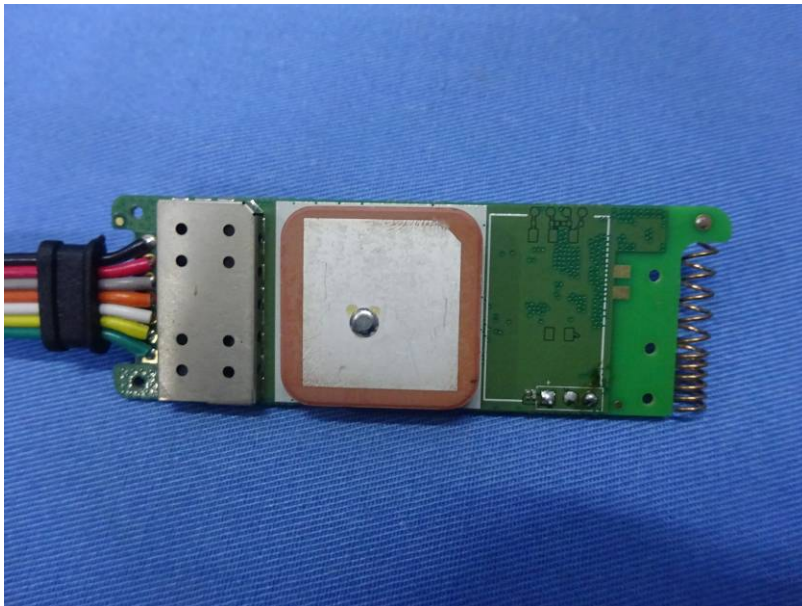
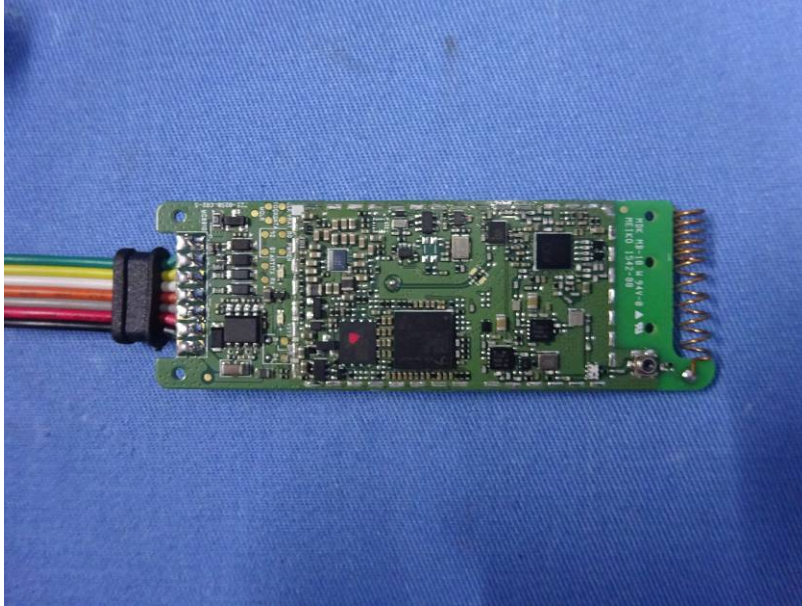


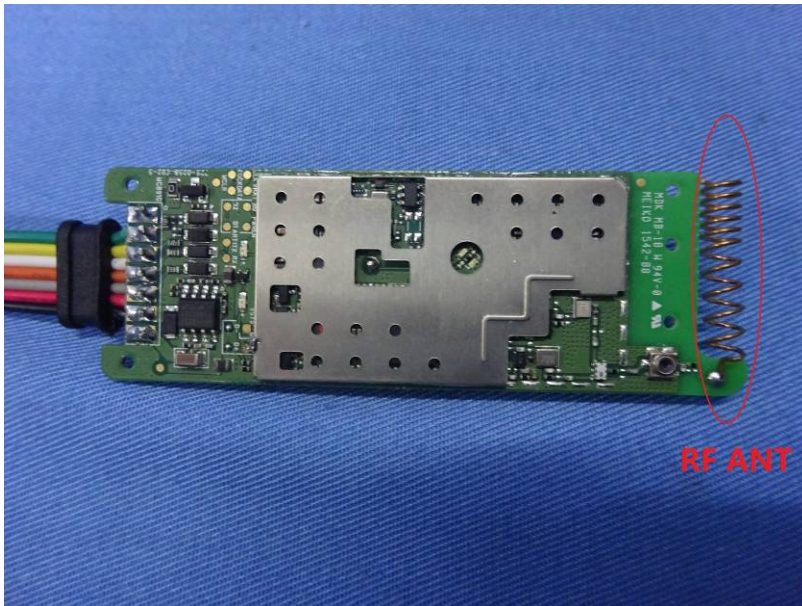
9 EUT Constructional Details











-----End-----