

VERIFICATION OF COMPLIANCE

● **Equipment** : SiP
Model No. : M904
Applicant : MtM Technology Corporation
8F, No. 178, Sec 3, MinQuan E. Rd., Taipei City,
Taiwan (R.O.C.)



I HEREBY

DECLARE THAT :

The following technical requirements and test specifications are relevant to the presumption of conformity under article 3.2 of the **R&TTE Directive 1999/5/EC**

The equipment was **Passed** the test performed according to **ETSI EN 300 328 V1.9.1 (2015-02)**

The test was carried out on **Sep. 10, 2015** at **SPORTON INTERNATIONAL INC. LAB.**

A handwritten signature in blue ink that reads 'Kevin Liang'. The signature is written in a cursive style with a horizontal line underneath the name.
Kevin Liang
Assistant Manager

CE Test Report

Equipment : SiP
Brand Name : MtM
Model No. : M904
Standard : EN 300 328 V1.9.1 (2015-02)
Operating Band : 2400 MHz – 2483.5 MHz
Applicant : MtM Technology Corporation
8F, No. 178, Sec 3, MinQuan E. Rd.,
Taipei City, Taiwan (R.O.C.)
Manufacturer : ASE
No.26, Chin 3rd Rd., N.E.P.Z., Nantze,
Kaohsiung, Taiwan (R.O.C.)

The product sample received on Aug. 25, 2015 and completely tested on Sep. 10, 2015. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN 300 328 V1.9.1 (2015-02) and shown compliance with the applicable technical standards. The equipment under R&TTE Directive 1999/5/EC of article 3.2 harmonized essential for the radio spectrum requirements.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Kevin Liang / Assistant Manager





Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Accessories and Support Equipment.....	8
1.3	Testing Applied Standards	8
1.4	Testing Location Information.....	9
1.5	Measurement Uncertainty	9
2	TEST CONFIGURATION OF EUT	10
2.1	The Worse Case Modulation Configuration	10
2.2	Test Channel Frequencies Configuration.....	10
2.3	The Worse Case Power Setting Parameter	10
2.4	The Worst Case Measurement Configuration.....	11
2.5	Test Setup Diagram	12
3	TRANSMITTER TEST RESULT	13
3.1	RF Output Power.....	13
3.2	Power Density	15
3.3	Occupied Channel Bandwidth.....	17
3.4	Transmitter Unwanted Emissions in the Out-of-band Domain.....	19
3.5	Transmitter Unwanted Emissions in the Spurious Domain.....	22
4	RECEIVER TEST RESULT	30
4.1	Receiver Spurious Emissions.....	30
5	TEST EQUIPMENT AND CALIBRATION DATA	37

APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT

Summary of Test Result

Harmonized Standard Requirements and Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
3.1	4.3.1.1	RF Output Power	EIRP (dBm) LE: 5.09	DSSS - 20 dBm	Complied
3.2	4.3.2.2	Power Density	EIRP PSD [dBm/MHz] LE:4.46	10 dBm/MHz	N/A
-	4.3.1.2	Duty cycle, Tx-Sequence, Tx-gap	Power ≤ 10dBm and Adaptive w/o test	EN 300 328 Clause 4.3.1.2.2	N/A
-	4.3.1.5	Medium Utilisation	Power ≤ 10dBm and Adaptive w/o test	MU > 10%	N/A
-	4.3.1.6	Adaptivity	Power ≤ 10dBm and Adaptive w/o test	EN 300 328 Clause 4.3.1.6.1	N/A
3.3	4.3.1.7	Occupied Channel Bandwidth	OCB fall in band	Fall in band	Complied
3.4	4.3.1.8	Transmitter unwanted emissions in the OOB domain	2397.36MHz -50.79dBm (Margin 30.79dB)	EN 300 328 Figure 1	Complied
3.5	4.3.1.9	Transmitter unwanted emissions in the spurious domain	[e.r.p.]: 191.990MHz -59.61dBm (Margin 5.61dB)	EN 300 328 Table 1	Complied
4.1	4.3.1.10	Receiver spurious emissions	[e.r.p.]: 191.990MHz -60.27dBm (Margin 3.27dB)	EN 300 328 Table 2	Complied
-	4.3.1.11	Receiver Blocking	Power ≤ 10dBm and Adaptive w/o test	EN 300 328 Clause 4.3.1.6.1	N/A

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	EIRP - Output Power (dBm)
2400-2483.5	LE	2402-2480	0-39 [40]	5.09
Note 1: Bluetooth LE uses a GFSK (1Mbps) modulation for wide band modulations other than FHSS.				

1.1.2 Antenna Information

Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input checked="" type="checkbox"/>	Temporary RF connector provided
<input type="checkbox"/>	No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.

Antenna General Information			
No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	Integral	PIFA	1.70

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input checked="" type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input checked="" type="checkbox"/> Operated normally hopping mode for worst duty cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 84.13% - normally mode - LE	0.75

1.1.5 Medium Access Protocol

Medium Access Protocol	
Medium Access Protocol:	<input type="checkbox"/> IEEE Std. 802.11-2007
	<input type="checkbox"/> IEEE Std. 802.11n-2009
	<input type="checkbox"/> IEEE Std. 802.15.4-2006
	<input checked="" type="checkbox"/> IEEE Std. 802.15.1-2005
	<input type="checkbox"/> Other:
<p>A medium access protocol has been implemented by the equipment. With mechanism designed to facilitate spectrum sharing with other devices in a wireless network. The equipment implements an adequate spectrum sharing mechanism and users will be equal access wireless network.</p>	

1.1.6 EUT Operational Condition

Supply Voltage	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	-
Type of DC Source	<input type="checkbox"/> External DC adapter	<input checked="" type="checkbox"/> From system	<input type="checkbox"/> Li-ion Battery
Test Voltage	<input checked="" type="checkbox"/> Vnom (230 V)		
Test Climatic	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (75°C)	<input checked="" type="checkbox"/> Tmin (-25°C)

1.1.7 Adaptive Equipment

Adaptive Equipment	
<input checked="" type="checkbox"/>	non-Adaptive Equipment:
	The maximum RF Output Power (e.i.r.p.): 5.09 dBm
	The maximum (corresponding) Duty Cycle: ... %
<input type="checkbox"/>	Adaptive Equipment without the possibility to switch to a non-adaptive mode:
<input type="checkbox"/>	The equipment has implemented an LBT based DAA mechanism:
<input type="checkbox"/>	The equipment has implemented a non-LBT based DAA mechanism
<input type="checkbox"/>	The equipment can operate in more than one adaptive mode
<input type="checkbox"/>	Adaptive Equipment which can also operate in a non-adaptive mode

1.2 Support Equipment

Support Equipment - RF Conducted & Radiation				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	Lenovo	X250	DoC
2	Adapter for Notebook	Lenovo	ADLX45NCC3A	DoC
3	Test Fixture	-	-	-
4	Adapter for Fixture	ECOPAC	3A-181WP05A	DoC
5	RS-232 to USB Cable	-	-	-
		1.8 meter, non-shielded cable		

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ EN 300 328 V1.9.1 (2015-02)

1.4 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test Condition	Test Site No.	Test Engineer	Test Environment
RF Conducted	TH01-HY	Howard	23°C / 63%
Radiated Emission	05CH01-HY	Sam	24.2°C / 52.3%

1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Measurement Uncertainty			
Test Item		Uncertainty	Limit
Radio Frequency		$\pm 8.7 \times 10^{-7}$	$\pm 1 \times 10^{-5}$
RF output power, conducted		± 0.6 dB	± 1.5 dB
Power density, conducted		± 1.2 dB	± 3 dB
Unwanted emissions, conducted	30 – 1000 MHz	± 0.5 dB	± 3 dB
	1 – 12.75 GHz	± 0.6 dB	± 3 dB
All emissions, radiated	30 – 1000 MHz	± 2.2 dB	± 6 dB
	1 – 12.75 GHz	± 2.5 dB	± 6 dB
Temperature		± 0.8 °C	± 1 °C
Humidity		± 3 %	± 5 %
DC and low frequency voltages		± 3 %	± 3 %

2 Test Configuration of EUT

2.1 The Worse Case Modulation Configuration

Worst Modulation Used for Conformance Testing					
Bluetooth Mode	Transmit Chains (N _{TX})	Data Rate	Modulation Mode	Conducted Power (dBm) [V _{nom} T _{nom}]	Worst Mode
LE	1	1 Mbps	LE-1Mbps	3.39	LE-1Mbps

Note 1: Bluetooth LE (Low Energy) uses as a low-power and low-latency using GFSK modulation for wide band modulations other than FHSS.

2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Bluetooth Mode	Test Channel Freq. (MHz)
LE	2402-(F1), 2440-(F2), 2480-(F3)




2.3 The Worse Case Power Setting Parameter

The Worst Case Power Setting Parameter			
Test Software	nRFGO studio		
Modulation Mode	2402 MHz	2440 MHz	2480 MHz
LE, 1Mbps	Default	Default	Default

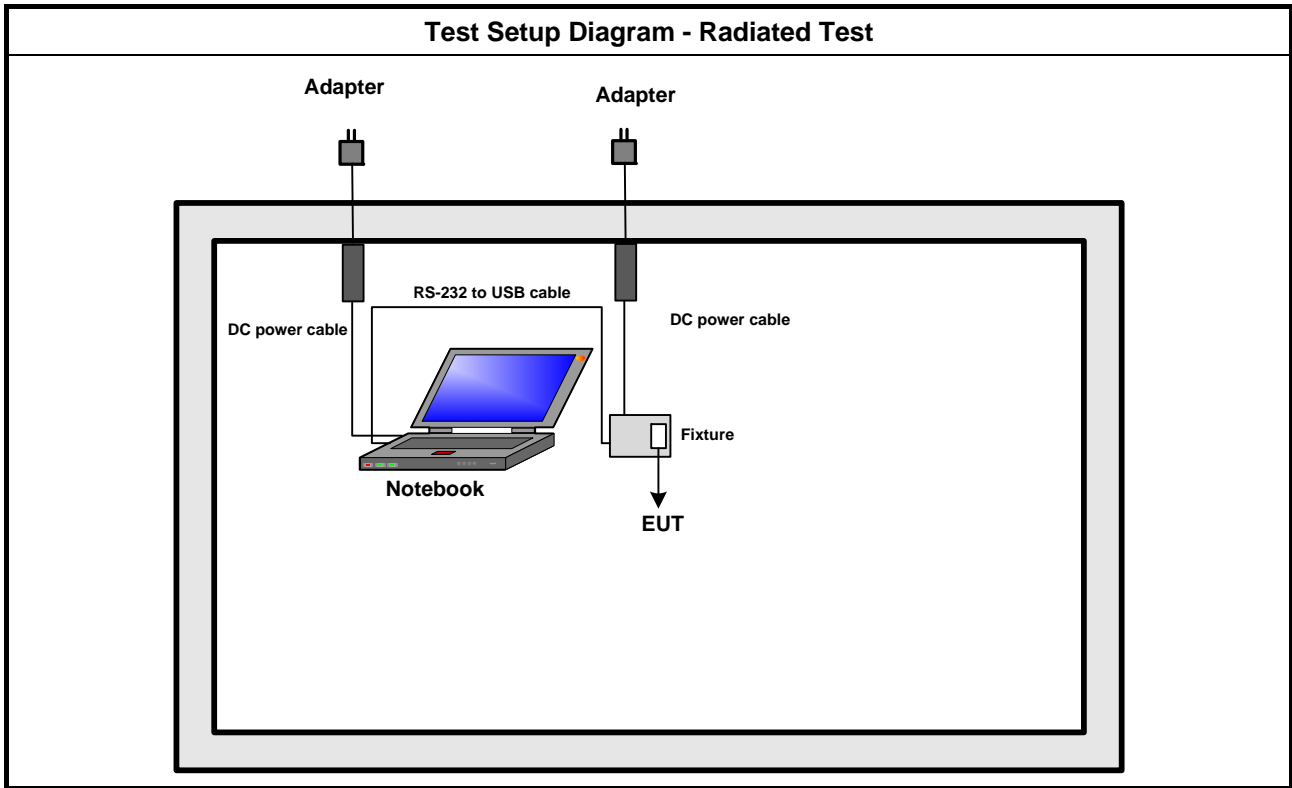
2.4 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, Occupied Channel Bandwidth, Transmitter unwanted emissions in the OOB domain
Test Condition	Conducted measurement at transmit chains <input checked="" type="checkbox"/> Non-adaptive frequency hopping systems (Non-AFH) <input type="checkbox"/> adaptive frequency hopping systems (AFH)
Modulation Mode	LE-1Mbps

The Worst Case Mode for Following Conformance Tests	
Tests Item	Power Density
Test Condition	Conducted measurement at transmit chains. FHSS w/o test.
Modulation Mode	LE-1Mbps

The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Unwanted Emissions in The Spurious Domain, Receiver Spurious Emissions		
Test Condition	Radiated measurement		
User Position	<input type="checkbox"/> EUT will be placed in fixed position.		
	<input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is Y.		
	<input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.		
Operating Mode	<input checked="" type="checkbox"/> 1. Transmit / Receive		
Modulation Mode	LE-1Mbps		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	

2.5 Test Setup Diagram



3 Transmitter Test Result

3.1 RF Output Power

3.1.1 RF Output Power Limit

RF Output Power Limit	
Type of Frequency Hopping Equipment:	
<input type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) \leq 20 dBm
Type of Equipment Using Wide Band Modulations Other than FHSS:	
<input checked="" type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) \leq 20 dBm

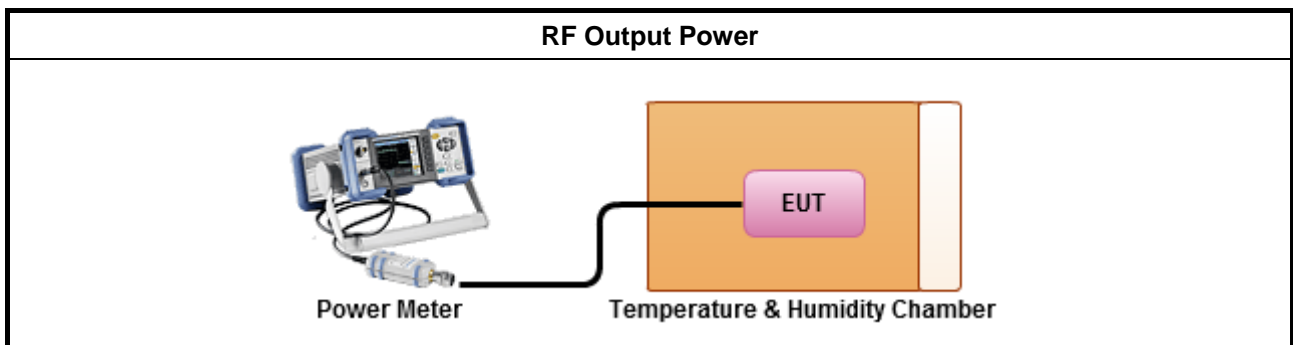
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	The measurements shall be performed at both normal environmental conditions and at the extremes of the operating temperature range.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.2.2.1 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.2.2.2 for radiated measurement.

3.1.4 Test Setup





3.1.5 Test Result of RF Output Power

Test Date: Aug. 25, 2015		RF Output Power Result			
Gain (dBi)		1.70	RF Output Power (dBm)		
Condition	Modulation Mode	Freq. (MHz)	Conducted Power	EIRP Power	EIRP Limit
TnomVnom	LE-1Mbps	2402	2.88	4.58	20
TminVnom	LE-1Mbps	2402	3.39	5.09	20
TmaxVnom	LE-1Mbps	2402	1.85	3.55	20
TnomVnom	LE-1Mbps	2440	2.13	3.83	20
TminVnom	LE-1Mbps	2440	2.72	4.42	20
TmaxVnom	LE-1Mbps	2440	0.90	2.60	20
TnomVnom	LE-1Mbps	2480	0.72	2.42	20
TminVnom	LE-1Mbps	2480	1.55	3.25	20
TmaxVnom	LE-1Mbps	2480	-0.45	1.25	20
Result		Complied			

3.2 Power Density

3.2.1 Power Density Limit

Power Density Limit	
Type of Equipment Using Wide Band Modulations Other than FHSS:	
<input checked="" type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) density ≤ 10 dBm/MHz

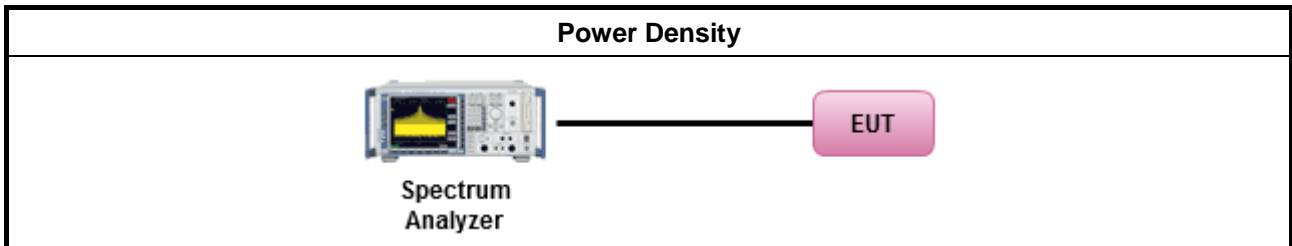
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.3.2.1 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.3.2.2 for radiated measurement.

3.2.4 Test Setup





3.2.5 Test Result of Power Density

Test Date: Aug. 25, 2015		Maximum e.i.r.p. Spectral Density Result			
Modulation Mode	Freq. (MHz)	PD (dBm/MHz)	Max. Gain (dBi)	EIRP PD (dBm/MHz)	EIRP Limit (dBm/MHz)
LE-1Mbps	2402	2.76	1.70	4.46	10
LE-1Mbps	2440	2.06	1.70	3.76	10
LE-1Mbps	2480	0.65	1.70	2.35	10
Result		Complied			

3.3 Occupied Channel Bandwidth

3.3.1 Occupied Channel Bandwidth Limit

Occupied Channel Bandwidth Limit	
Type of Frequency Hopping Equipment:	
<input type="checkbox"/>	Occupied Channel Bandwidth for each hopping frequency fall completely within 2.4 GHz – 2.4835 GHz.
<input type="checkbox"/>	For non-adaptive equipment with e.i.r.p greater than 10 dBm, Occupied Channel Bandwidth \leq 5 MHz.
Type of Equipment Using Wide Band Modulations Other than FHSS:	
<input checked="" type="checkbox"/>	Occupied Channel Bandwidth fall completely within 2.4 GHz – 2.4835 GHz.
<input type="checkbox"/>	For non-adaptive equipment with e.i.r.p greater than 10 dBm, Occupied Channel Bandwidth \leq 20 MHz.

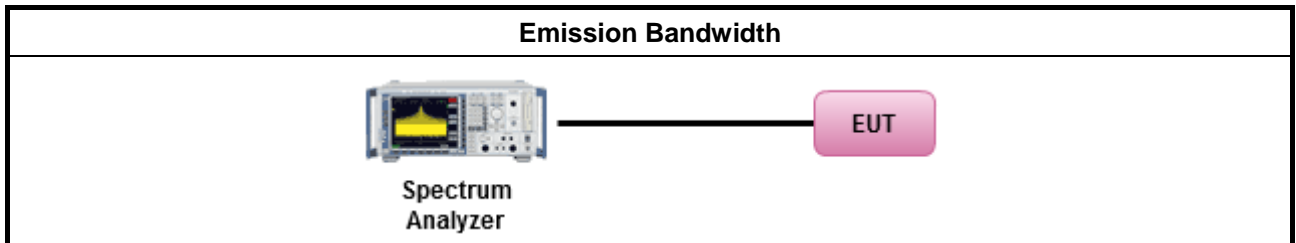
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.8.2.1 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.8.2.2 clause 5.3.8.2.2 for radiated measurement.

3.3.4 Test Setup



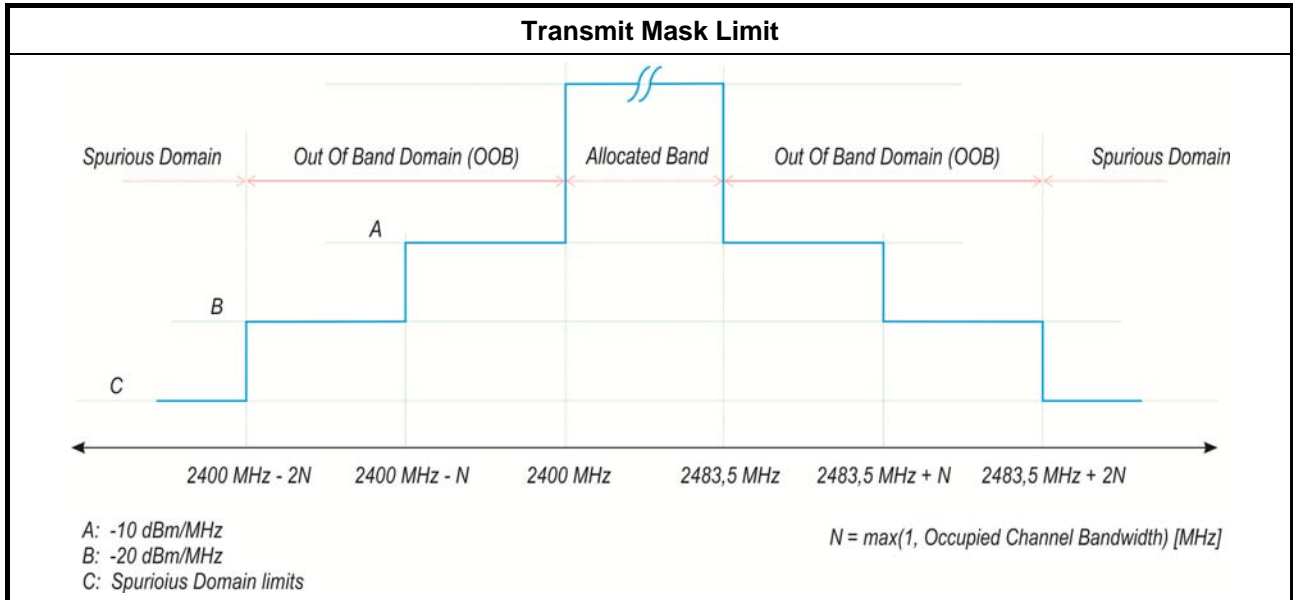


3.3.5 Test Result of Occupied Channel Bandwidth

Test Date: Aug. 25, 2015		Occupied Channel Bandwidth Result			
Modulation Mode	Frequency (MHz)	99% Bandwidth (MHz)	F _L at 99% BW (MHz)	F _H at 99% BW (MHz)	6dB Bandwidth (MHz)
LE-1Mbps	2402	2.145427	2400.829	2402.975	0.7455
LE-1Mbps	2480	1.074963	2479.457	2480.532	0.6840
Limit		N/A	2400	2483.5	Fall in band
Result		Complied			

3.4 Transmitter Unwanted Emissions in the Out-of-band Domain

3.4.1 Transmitter Unwanted Emissions in the Out-of-band Domain Limit



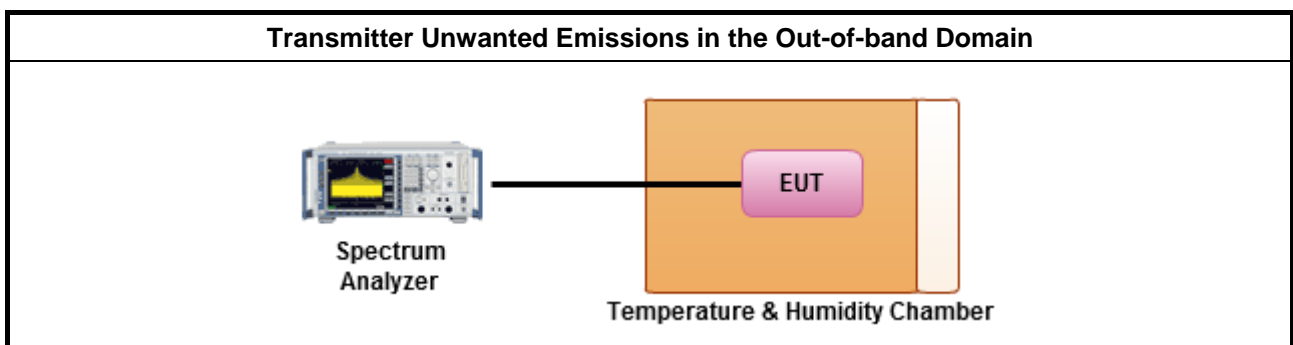
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

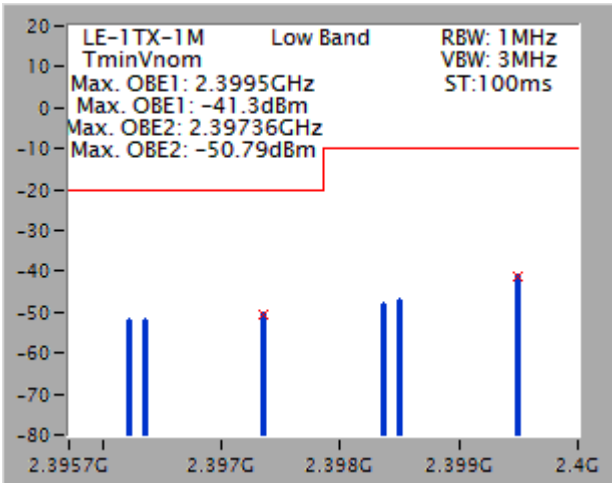
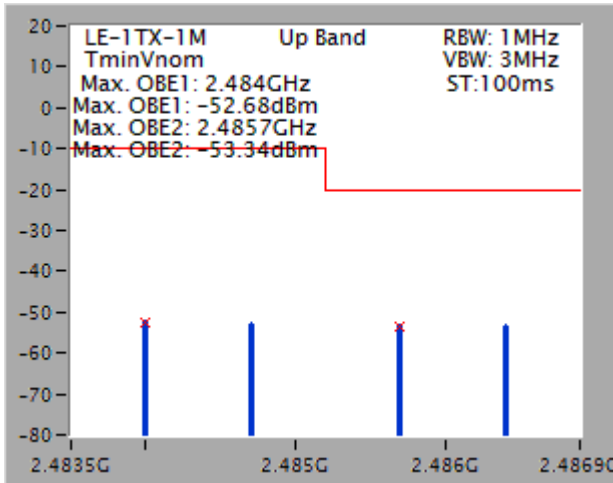
3.4.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	The measurements shall be performed at both normal environmental conditions and at the extremes of the operating temperature range.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.9.2.1 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.9.2.2 for radiated measurement.

3.4.4 Test Setup



3.4.5 Test Result of Transmitter Unwanted Emissions in the Out-of-band Domain

Transmitter Unwanted Emissions in the Out-of-band Domain Result					
Test Date: Aug. 25, 2015					
Gain (dBi)		1.70	OOB Emissions (dBm/MHz)		
Condition	Modulation Mode	Freq. (MHz)	OOB Freq. (MHz)	OOB Emissions	Limit
TnomVnom	LE-1Mbps	2402	2399.50	-41.66	-10
TminVnom	LE-1Mbps	2402	2399.50	-41.30	-10
TmaxVnom	LE-1Mbps	2402	2399.50	-41.96	-10
TnomVnom	LE-1Mbps	2480	2484.00	-53.17	-10
TminVnom	LE-1Mbps	2480	2484.00	-52.68	-10
TmaxVnom	LE-1Mbps	2480	2484.00	-53.51	-10
Low Band			Up Band		
 <p>LE-1TX-1M Low Band RBW: 1MHz TminVnom VBW: 3MHz Max. OBE1: 2.3995GHz ST:100ms Max. OBE1: -41.3dBm Max. OBE2: 2.39736GHz Max. OBE2: -50.79dBm</p>			 <p>LE-1TX-1M Up Band RBW: 1MHz TminVnom VBW: 3MHz Max. OBE1: 2.484GHz ST:100ms Max. OBE1: -52.68dBm Max. OBE2: 2.4857GHz Max. OBE2: -53.34dBm</p>		
Result			Complied		



Transmitter Unwanted Emissions in the Out-of-band Domain Result					
Test Date: Aug. 25, 2015					
Gain (dBi)		1.70	OOB Emissions (dBm/MHz)		
Condition	Modulation Mode	Freq. (MHz)	OOB Freq. (MHz)	OOB Emissions	Limit
TnomVnom	LE-1Mbps	2402	2397.36	-51.31	-20
TminVnom	LE-1Mbps	2402	2397.36	-50.79	-20
TmaxVnom	LE-1Mbps	2402	2397.36	-51.62	-20
TnomVnom	LE-1Mbps	2480	2485.70	-53.84	-20
TminVnom	LE-1Mbps	2480	2485.70	-53.34	-20
TmaxVnom	LE-1Mbps	2480	2485.70	-54.12	-20
Low Band			Up Band		
Result			Complied		

3.5 Transmitter Unwanted Emissions in the Spurious Domain

3.5.1 Transmitter Unwanted Emissions in the Spurious Domain Limit

Frequency Range	Maximum Power e.r.p. (≤ 1 GHz) ; e.r.p. (>1 GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

Note 1: spurious domain $\leq (2400 \text{ MHz} - 2N)$ and spurious domain $\geq (2483.5 \text{ MHz} + 2N)$;
 $N = \text{MAX}(1, \text{Occupied Channel Bandwidth}) \text{ MHz}$

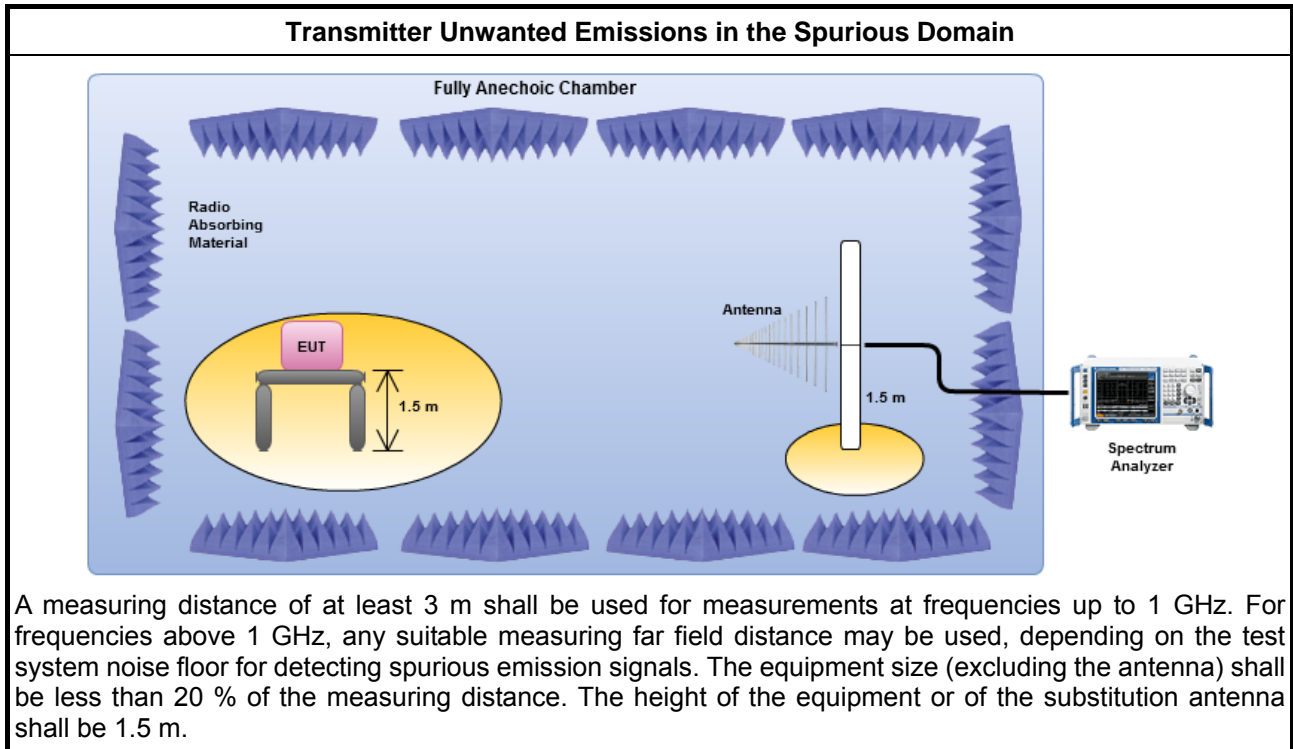
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

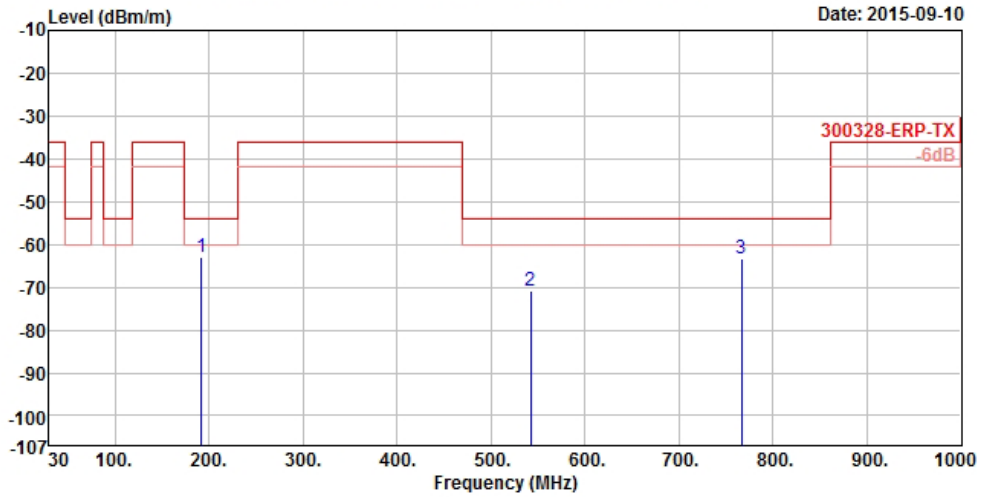
Test Method	
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.10.2.1 for conducted measurement. Conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation).
<input type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.10.2.2 for radiated measurement.

3.5.4 Test Setup



3.5.5 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Spurious Emissions (Below 1GHz)			
Modulation Mode	LE-1Mbps	Polarization	V
Operating Mode	1	Operating Function	Transmit



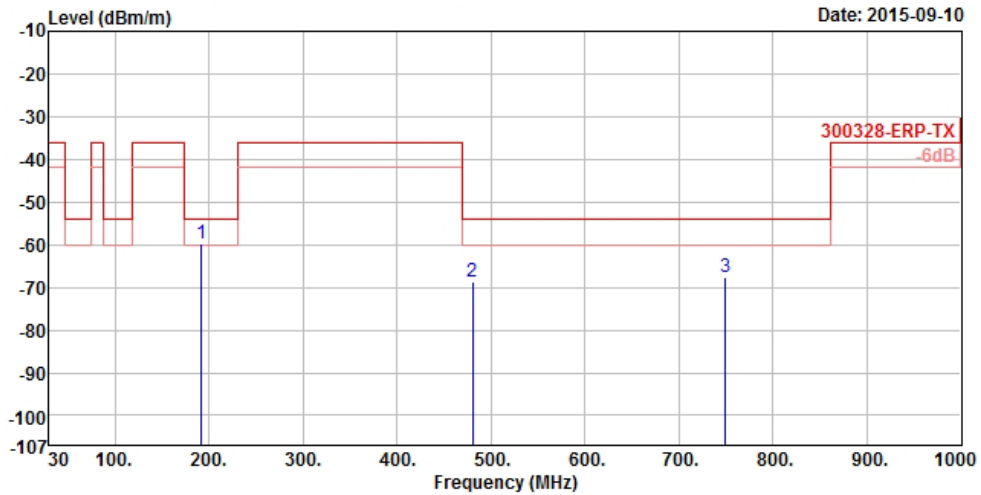
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	191.990	-63.12	-9.12	-54.00	-57.30	-5.82
2	542.160	-70.77	-16.77	-54.00	-73.65	2.88
3	766.230	-63.35	-9.35	-54.00	-68.90	5.55

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Spurious Emissions (Below 1GHz)

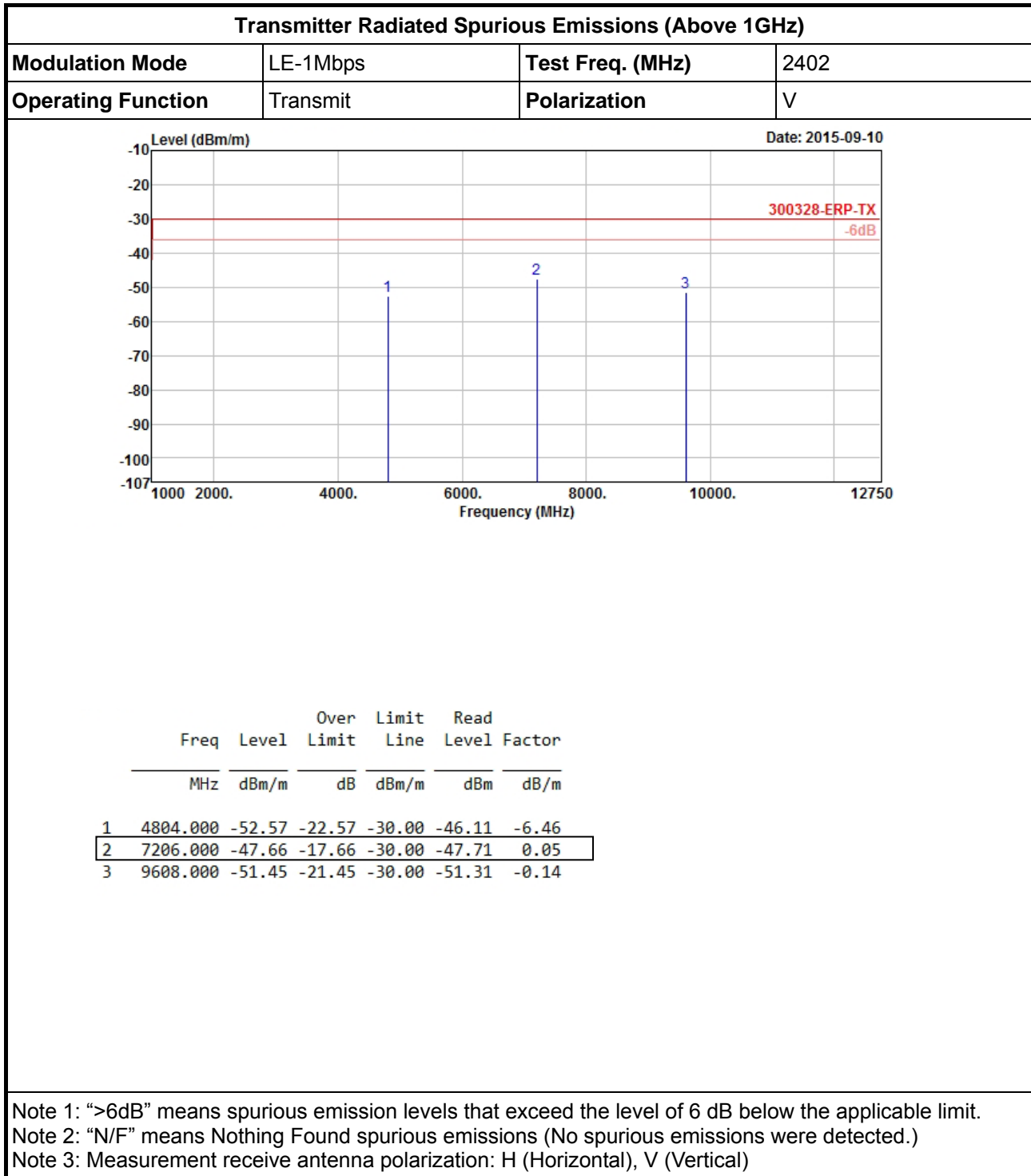
Modulation Mode	LE-1Mbps	Polarization	H
Operating Mode	1	Operating Function	Transmit



	Freq	Level	Over Limit	Limit Line	Read Level	Factor
	MHz	dBm/m	dB	dBm/m	dBm	dB/m
1	191.990	-59.61	-5.61	-54.00	-53.25	-6.36
2	480.080	-68.76	-14.76	-54.00	-71.26	2.50
3	749.740	-67.58	-13.58	-54.00	-73.20	5.62

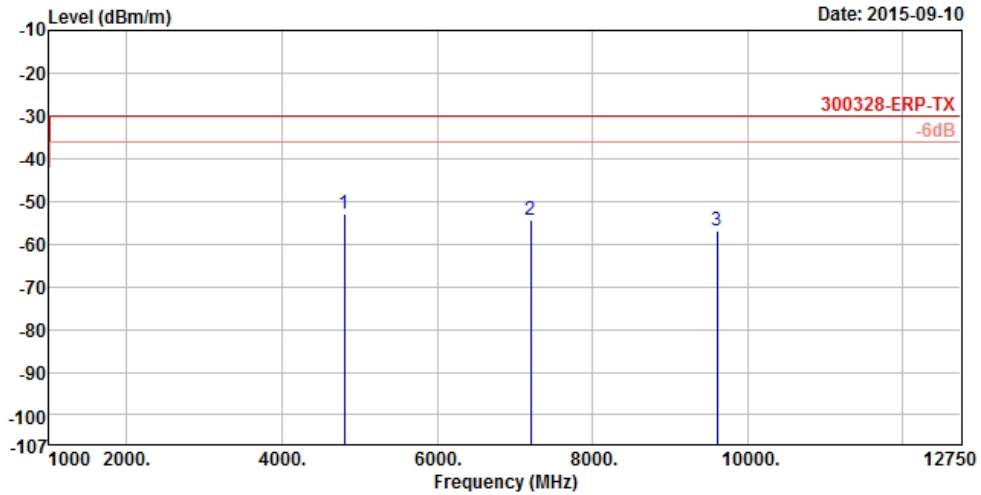
Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz)



Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2402
Operating Function	Transmit	Polarization	H



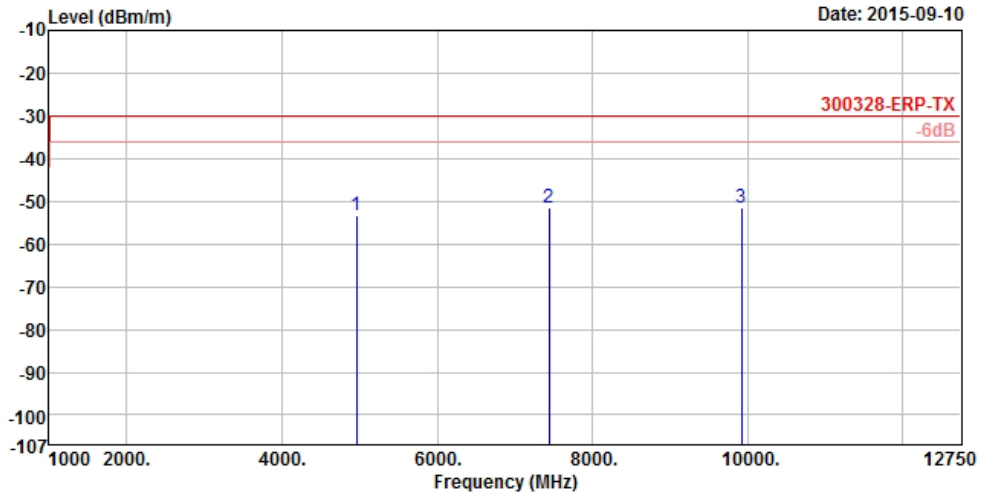
	Freq	Level	Over Limit	Limit	Read	
	MHz	dBm/m	dB	dBm/m	dBm	dB/m
1	4804.000	-52.81	-22.81	-30.00	-45.57	-7.24
2	7206.000	-54.24	-24.24	-30.00	-51.77	-2.47
3	9608.000	-56.77	-26.77	-30.00	-52.45	-4.32

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2480
Operating Function	Transmit	Polarization	V



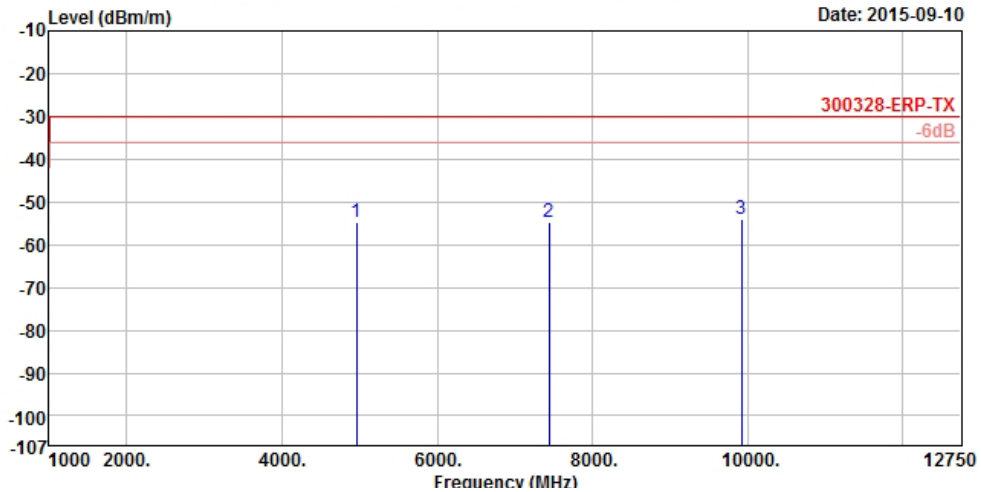
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	4960.000	-53.32	-23.32	-30.00	-47.13	-6.19
2	7440.000	-51.55	-21.55	-30.00	-50.77	-0.78
3	9920.000	-51.35	-21.35	-30.00	-51.64	0.29

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2480
Operating Function	Transmit	Polarization	H



	Over	Limit	Read			
Freq	Level	Limit	Line	Level	Factor	
MHz	dBm/m	dB	dBm/m	dBm	dB/m	
1	4960.000	-54.80	-24.80	-30.00	-47.72	-7.08
2	7440.000	-54.90	-24.90	-30.00	-52.56	-2.34
3	9920.000	-54.01	-24.01	-30.00	-51.59	-2.42

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

4 Receiver Test Result

4.1 Receiver Spurious Emissions

4.1.1 Receiver Spurious Emissions Limit

Frequency Range	Maximum Power e.r.p. (≤ 1 GHz) ; e.r.p. (>1 GHz)	Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

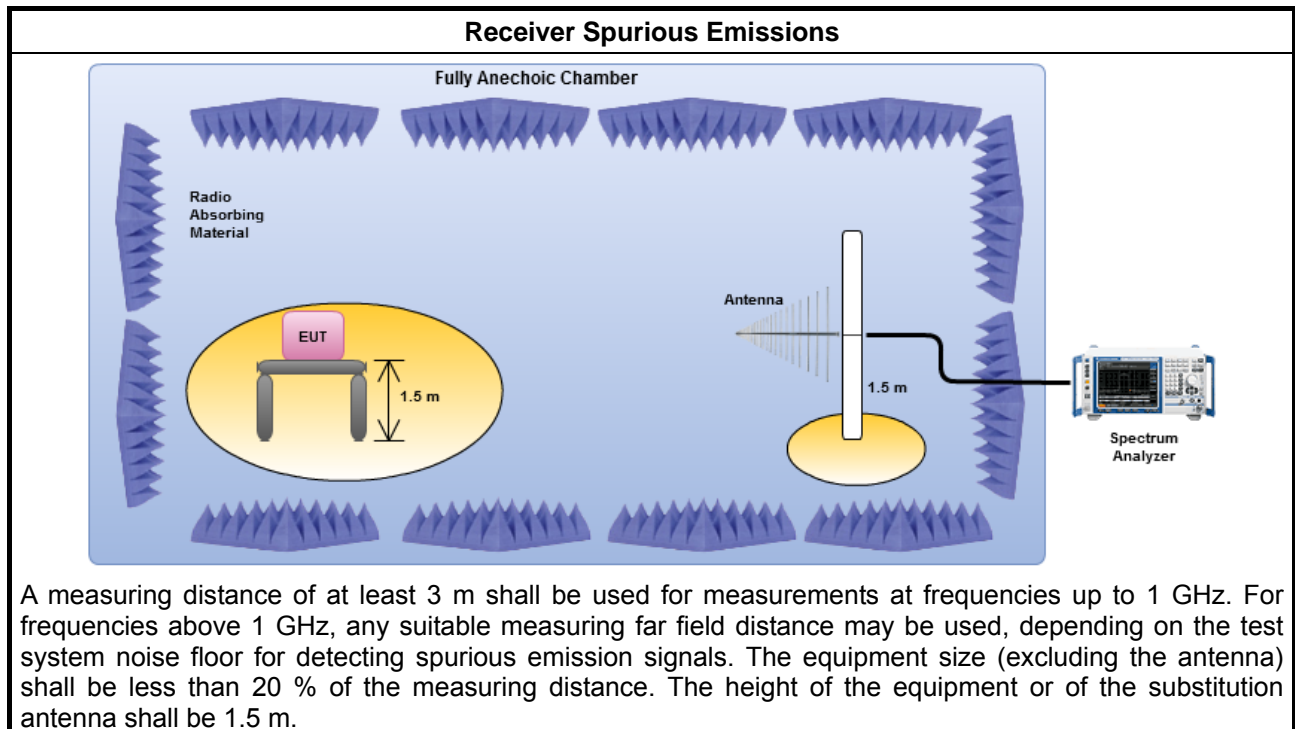
4.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

4.1.3 Test Procedures

Test Method	
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.11.2.1 for conducted measurement. Conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation).
<input type="checkbox"/>	The EUT supports single receive chain and measurements performed on this receive chain.
<input type="checkbox"/>	The EUT supports diversity receiving and the results on receive chain port 1 is the worst case.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.11.2.2 for radiated measurement.

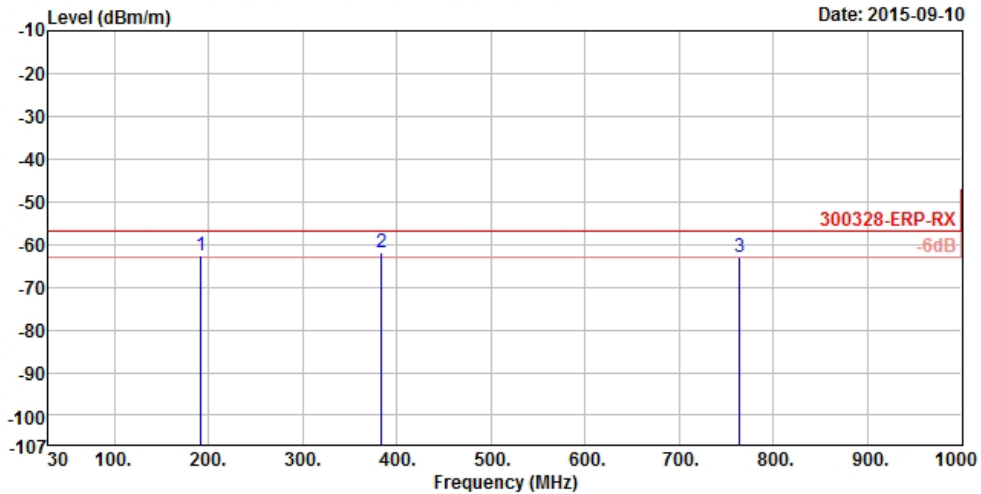
4.1.4 Test Setup





4.1.5 Receiver Radiated Spurious Emissions (Below 1GHz)

Receiver Radiated Spurious Emissions (Below 1GHz)			
Modulation Mode	LE-1Mbps	Polarization	V
Operating Mode	1	Operating Function	Receive



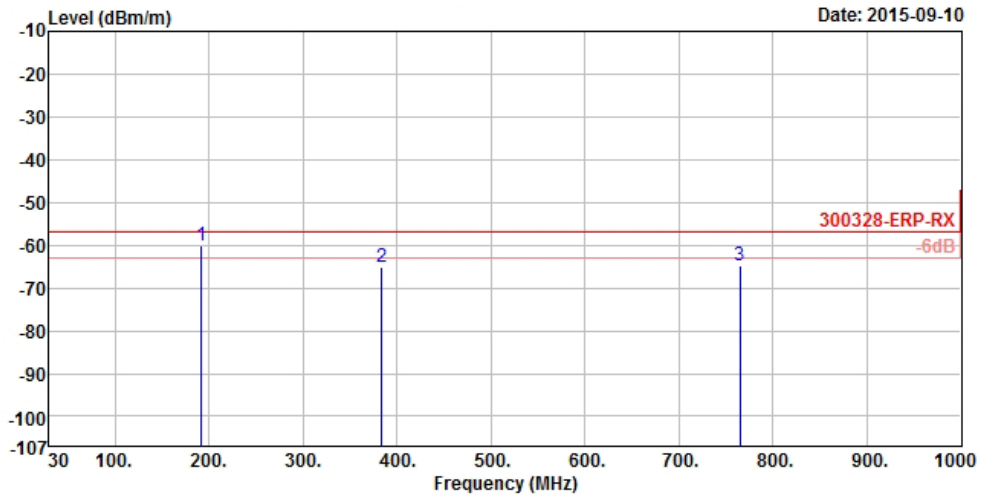
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	191.990	-62.50	-5.50	-57.00	-56.68	-5.82
2	384.050	-62.07	-5.07	-57.00	-64.61	2.54
3	764.290	-62.82	-5.82	-57.00	-68.33	5.51

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Receiver Radiated Spurious Emissions (Below 1GHz)

Modulation Mode	LE-1Mbps	Polarization	H
Operating Mode	1	Operating Function	Receive



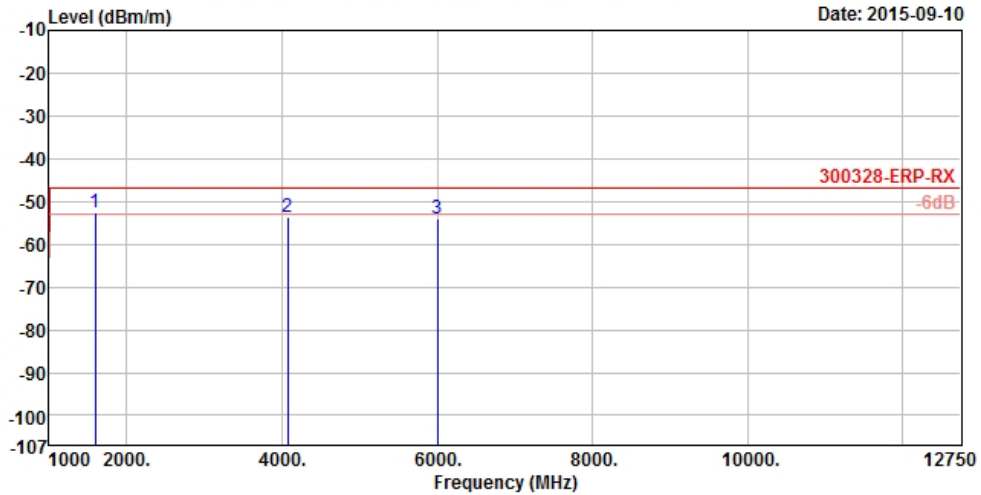
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	191.990	-60.27	-3.27	-57.00	-53.91	-6.36
2	384.050	-64.95	-7.95	-57.00	-68.01	3.06
3	765.260	-64.81	-7.81	-57.00	-70.72	5.91

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



4.1.6 Receiver Radiated Spurious Emissions (Above 1GHz)

Receiver Radiated Spurious Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2402
Operating Function	Receive	Polarization	V

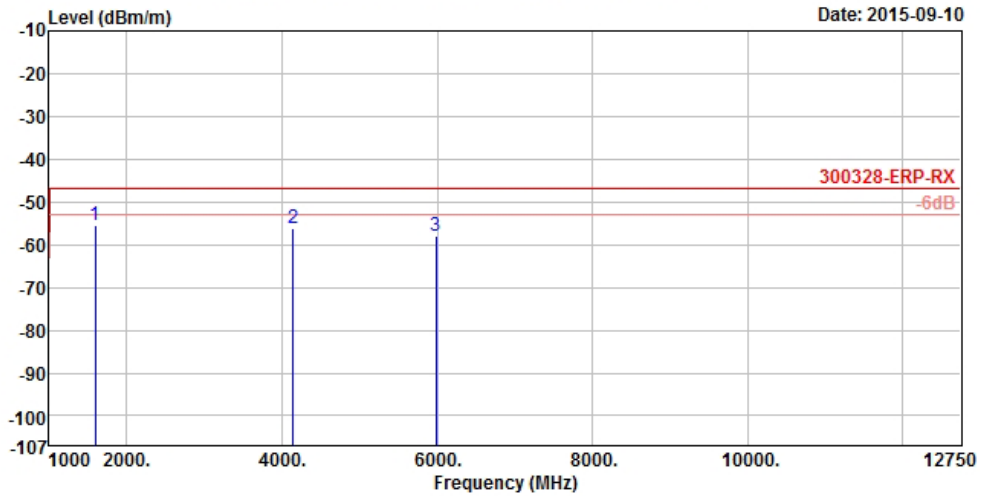


	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	1594.000	-52.56	-5.56	-47.00	-36.96	-15.60
2	4072.000	-53.79	-6.79	-47.00	-45.16	-8.63
3	6000.000	-53.94	-6.94	-47.00	-50.11	-3.83

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2402
Operating Function	Receive	Polarization	H



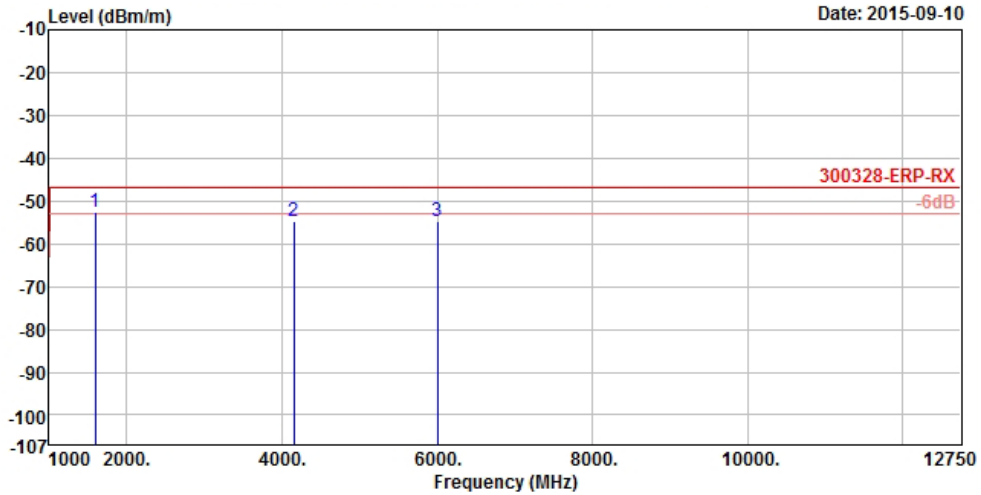
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	1598.000	-55.37	-8.37	-47.00	-40.04	-15.33
2	4142.000	-56.15	-9.15	-47.00	-47.54	-8.61
3	5980.000	-57.96	-10.96	-47.00	-51.68	-6.28

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2480
Operating Function	Receive	Polarization	V



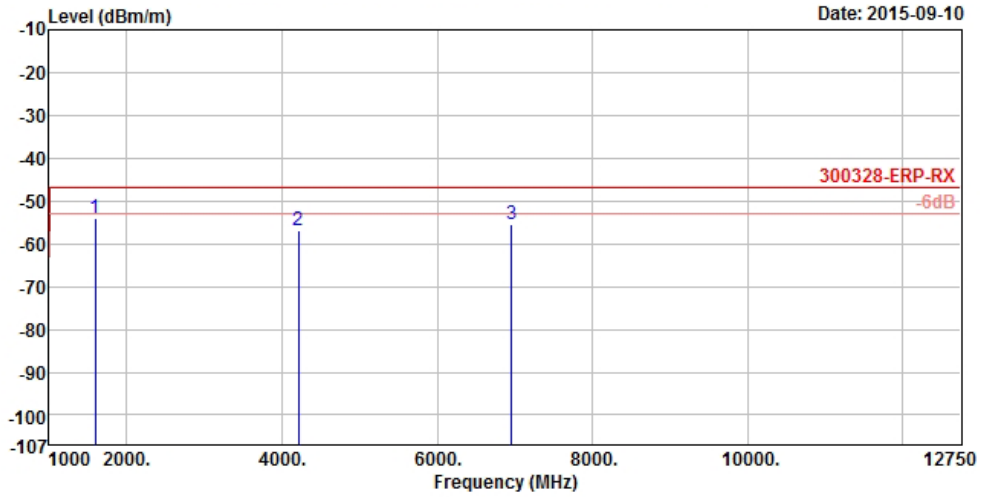
	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	1598.000	-52.67	-5.67	-47.00	-37.07	-15.60
2	4154.000	-54.72	-7.72	-47.00	-46.41	-8.31
3	6000.000	-54.63	-7.63	-47.00	-50.80	-3.83

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (MHz)	2480
Operating Function	Receive	Polarization	H



	Freq	Level	Over	Limit	Read	
	MHz	dBm/m	Limit	Line	Level	Factor
			dB	dBm/m	dBm	dB/m
1	1598.000	-53.98	-6.98	-47.00	-38.65	-15.33
2	4212.000	-57.06	-10.06	-47.00	-48.65	-8.41
3	6956.000	-55.39	-8.39	-47.00	-52.57	-2.82

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

5 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 06, 2015	RF Conducted
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100℃	Apr. 07, 2015	RF Conducted
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	RF Conducted
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 17, 2015	RF Conducted
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 17, 2015	RF Conducted

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101500	10Hz ~ 40GHz	May 06, 2015	Radiation
Amplifier	EMCINSTRUMENT	EMC9135	980209	0.1M ~ 1G	Jan. 22 2015	Radiation
Amplifier	EMCI	EMC051845BE	980241	1GHz ~ 18GHz	Mar. 09, 2015	Radiation
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Sep 20, 2014	Radiation
Horn Antenna	COM-POWER	AH-118	10094	1GHz ~ 18GHz	May 21, 2015	Radiation
RF Cable-R01m for Low Frequency	HUBER+SUHNER	SUCOFLEX_104	CB001	25MHz ~ 1GHz	Aug. 05, 2015	Radiation
RF Cable-R03m for Low Frequency	Jye Bao	RG142	CB002	25MHz ~ 1GHz	Aug. 05, 2015	Radiation
RF Cable-R06m for Low Frequency	Jye Bao	RG142	CB004	25MHz ~ 1GHz	Aug. 05, 2015	Radiation
RF Cable-10m for High Frequency	HUBER+SUHNER	SUCOFLEX_104	MY17685/4	1GHz ~ 40GHz	Jul. 25, 2015	Radiation
RF Cable-2m for High Frequency	HUBER+SUHNER	SUCOFLEX_104	MY25919/4	1GHz ~ 40GHz	Jul. 25, 2015	Radiation
Turn Table	Chaintek Instruments	3000	MF780208275	0 ~ 360degree	N/A	Radiation
Antenna Mast	HD	100	HD1000203311	1 ~ 4m	N/A	Radiation

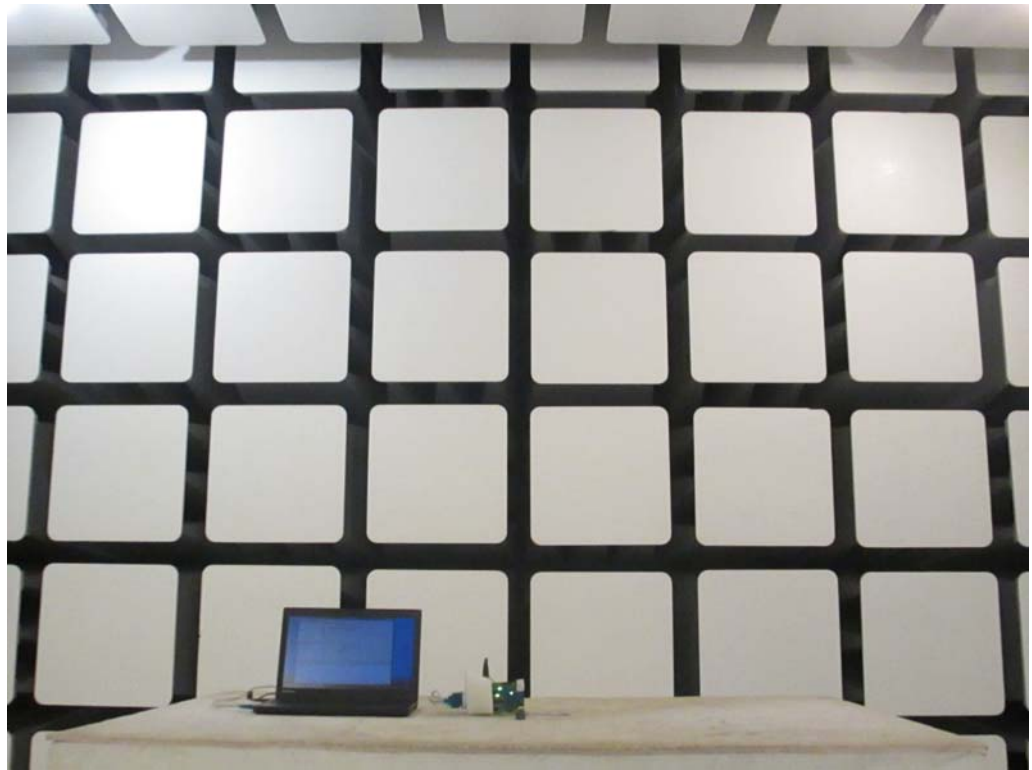
Note: Calibration Interval of instruments listed above is one year.



Appendix A. Test Photos

1 Photographs of Radiated Emissions Test Configuration

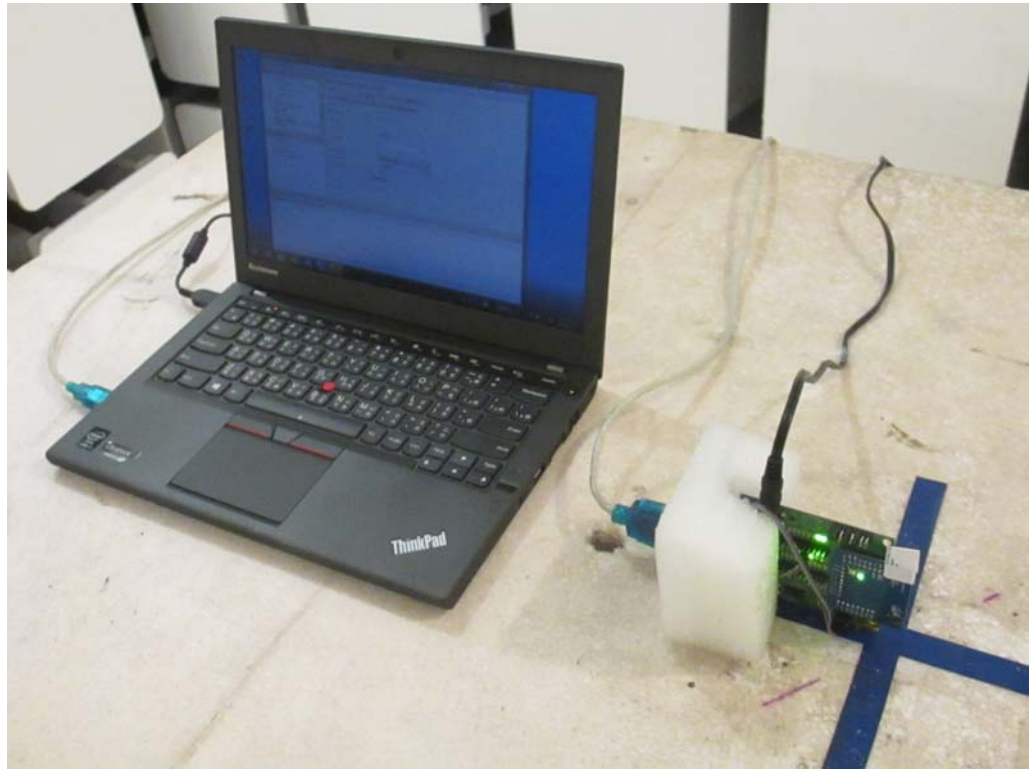
Front View



Rear View



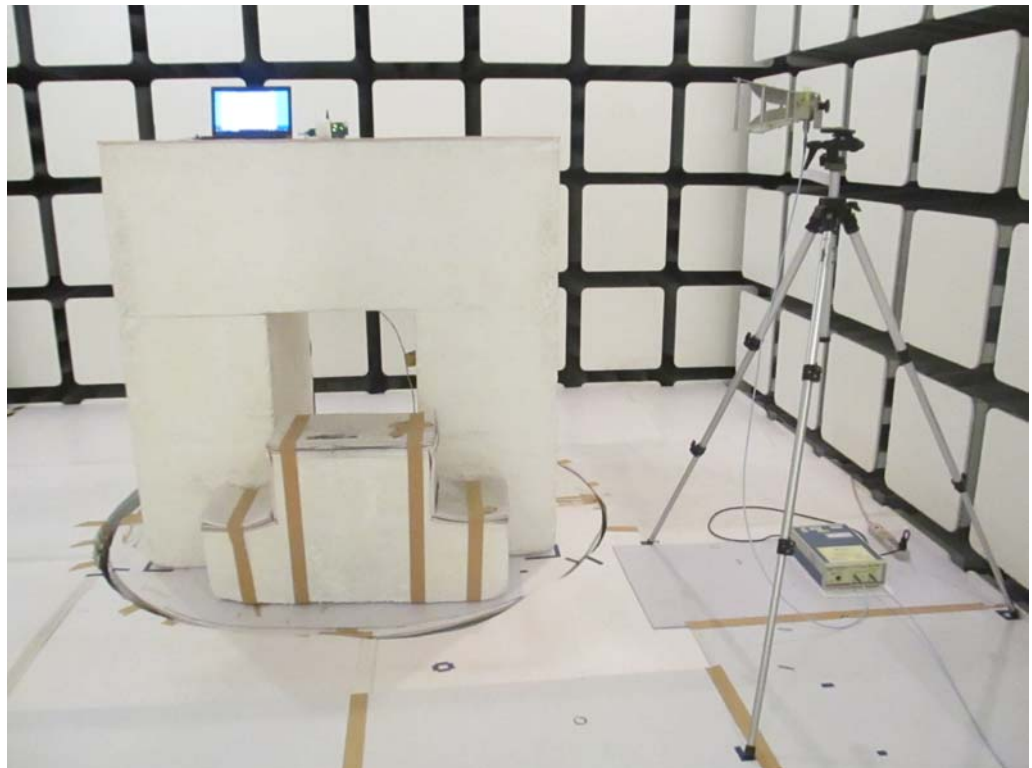
EUT take a close-up



Below 1GHz



Above 1GHz



APPENDIX B. Photographs of EUT

