CE Radio Test Report

APPLICANT	:	Texas Instruments Incorporated
EQUIPMENT	:	CC2564 Bluetooth HCI Module
BRAND NAME	:	Texas Instruments
MODEL NAME	:	CC2564MODN
MARKETING NAME	:	CC2564MODN Bluetooth® Host Controller Interface (HCI) Module
STANDARD	:	ETSI EN 300 328 V2.1.1 (2016-11)
TEST DATE(S)	:	May 23, 2017 ~ Jun. 11, 2017

The measurement shown in this test report is tested in accordance with the test procedures given in ETSI EN 300 328 V2.1.1 (2016-11).

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: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
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TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
ER741325	Rev. 01	Initial issue of report	Jun. 15, 2017

SUMMARY OF TEST RESULT

CLAUSE (EN 300 328)	TEST PARAMETER	PASS/FAIL	REMARK
Transmitter Parameters			
4.3.1.2 4.3.2.2	Maximum Transmit Power	PASS	-
4.3.2.3	Maximum Equivalent Isotropically Radiated Power (E.I.R.P.) Spectral Density	PASS	Only applicable for modulations other than FHSS
4.3.1.8 4.3.2.7	Occupied Channel Bandwidth	PASS	-
4.3.1.4 4.3.1.5	Frequency Hopping Requirements	PASS	Only applicable for FHSS
4.3.1.9 4.3.2.8	Transmitter spurious emissions in OOB	PASS	-
4.3.1.10 4.3.2.9	Transmitter spurious emissions	PASS	Under limit 12.80 dB at 11880.000 MHz
Receiver Parameters			
4.3.1.11 4.3.2.10	Receiver spurious emissions	PASS	Under limit 8.77 dB at 119.880 MHz
Adaptive Test Item			
4.3.1.7 4.3.2.6	Adaptivity	Not Required	Only applicable for adaptive equipment Output Power >10dBm
4.3.1.12 4.3.2.11	Receiver Blocking	PASS	
Non-Adaptive Test Item			
4.3.1.3 4.3.2.4	Duty cycle, Tx-Sequence, Tx-gap	Not Required	Only applicable for non-adaptive equipment Output Power >10dBm
4.3.1.6 4.3.2.5	Medium Utilisation (MU) factor	Not Required	

1 General Description

1.1 Applicant

Texas Instruments Incorporated
12500 TI BLVD., Dallas Texas, 75243

1.2 Manufacturer

Texas Instruments Incorporated
12500 TI BLVD., Dallas Texas, 75243

1.3 Product Feature of Equipment Under Test

1.3.1 Specification of the Equipment under Test

RF General Information					
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Frequency (MHz)**	**Channel Number**	**Data Rate**	**Power Setting**
2400-2483.5	BR V2.1	2402-2480	0-78 [79]	1 Mbps	0x18
2400-2483.5	EDR V2.1	2402-2480	0-78 [79]	2 Mbps	0x14
2400-2483.5	EDR V2.1	2402-2480	0-78 [79]	3 Mbps	0x14
2400-2483.5	LE V4.1	2402-2480	0-39 [40]	1 Mbps	0x18
Note 1: Bluetooth BR uses a GFSK modulation Note 2: Bluetooth EDR uses a combination of /4-DQPSK and 8DPSK. Note 3: Bluetooth LE (Low energy) uses GFSK modulation.					

1.3.2 Antenna Details

Antenna information				
	Brand	**Antenna Type**	**Model**	**2.4GHz ~2.5GHz Gain**
1	Mag Layers	Chip	LTA-5320-2G4S3-A1	-1.38

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Facility

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd.,Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No. :** TH05-HY ; DFS02-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Kwei-Shan District, Tao Yuan City, Taiwan R.O.C. TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No. :** 05CH05-HY ;03CH15-HY

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of **ETSI EN 300 328 V2.1.1 (2016-11).**

Note: All test items were verified and recorded according to the standards and without any deviation during the test.

1.7 Test Condition

Normal Voltage	DC 3.6V
Normal Temperature	25℃
Extreme Temperature	-30℃ and 85℃

Note: The test temperature was between -30°C ~ 85°C by manufacturer request.

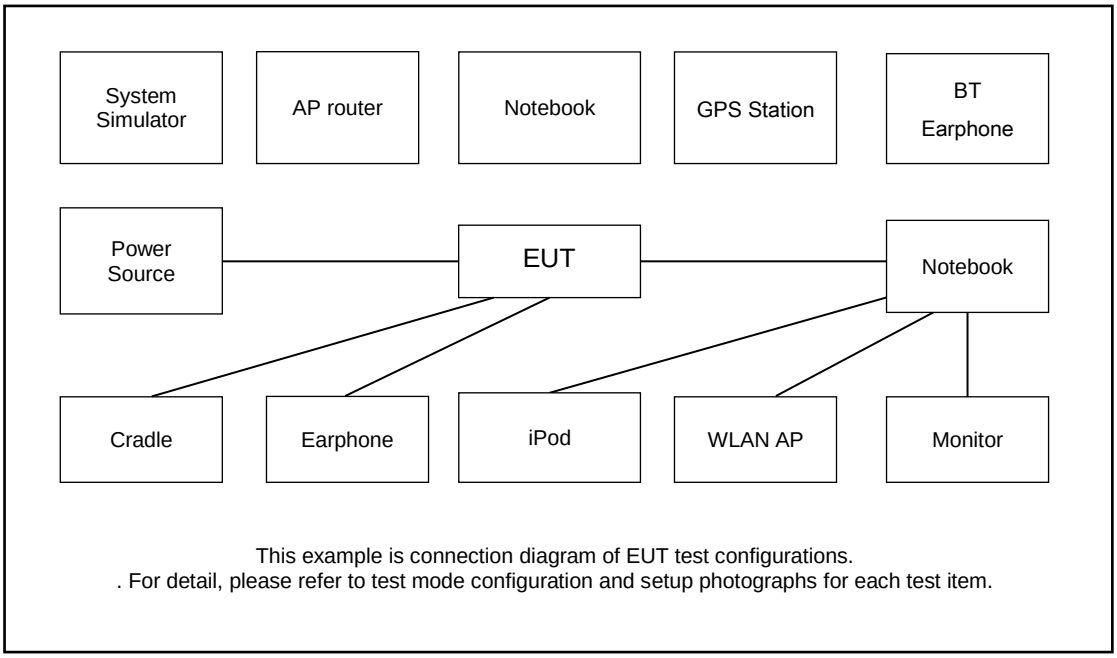
2 Test Configuration of Equipment under Test

2.1 Descriptions of Test Mode

a. During testing, the interface cables and equipment positions were varied according to ETSI EN 300 328 V2.1.1 (2016-11).
b. The complete test system included EUT for RF test.
c. Preliminary tests were checked in different data rate and recorded worse in the following tables:

Test Modes		
RF	**Bluetooth 1Mbps GFSK**	**Bluetooth 4.1 - LE GFSK**
Tx	Bluetooth (1Mbps) CH00 (2402MHz) Bluetooth (1Mbps) CH78 (2480MHz)	Bluetooth 4.1 - LE CH00 (2402MHz) Bluetooth 4.1 - LE CH39 (2480MHz)
Rx	Bluetooth (1Mbps) CH78 (2480MHz)	Bluetooth 4.1 - LE CH39 (2480MHz)

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.
. For detail, please refer to test mode configuration and setup photographs for each test item.

2.3 Supported Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	E335	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.4 EUT Operation Test Setup

For Bluetooth test items, an engineering test program (HCITester) was provided and enabled to make EUT contact with Bluetooth base station for continuous transmitting and receiving signals.

For Bluetooth 4.1 – LE test items, an engineering test program (HCITester) was provided and enabled to make EUT continuous transmitting and receiving signals

3 Transmitter Parameters

3.1 Maximum Transmit Power

3.1.1 Limit of Effective Isotropic Radiated Power

SUBCLAUSE 4.3.1.2.3 and 4.3.2.2.3	
TEST CONDITION	**LIMIT**
Normal and Extreme Temperature Conditions	20dBm (e.i.r.p)

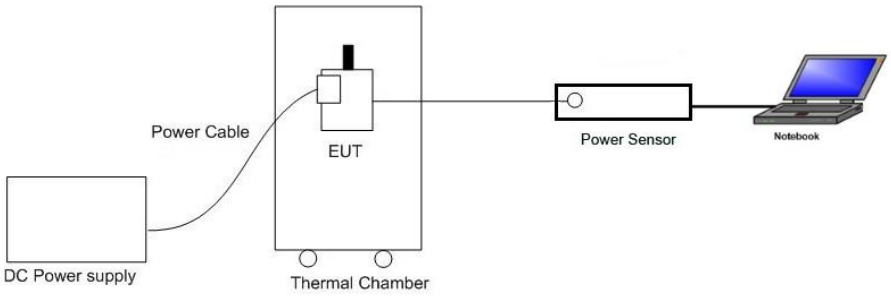
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.1.3 Test Procedure

1. The measurement procedure follows the clause 5.4.2.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. Placing the EUT in thermal chamber.
3. The EUT is connected to external power supply.
4. Setting thermal chamber temperature and power supply voltage at suitable values.
5. The EIRP = A+G+Y, where A is the power measured, G is the assembly gain of the individual antenna of the EUT in dBi and Y is the additional beamforming gain of the EUT in dB if applicable, here, Y=0.
6. The measurement duration is at least 1 second to ensure a minimum number of bursts (at least 10) are captured.

3.1.4 Test Setup



3.1.5 Test Results

Please refer to Appendix A.

3.2 Maximum Equivalent Isotropically Radiated Power (E.I.R.P.) Spectral Density

3.2.1 Limit of Maximum Power Spectral Density

SUBCLAUSE 4.3.2.3.3	
TEST CONDITION	**LIMIT**
Normal and Extreme Temperature Conditions	10dBm / MHz

Remark: Maximum spectral power density is not applicable to FHSS system device.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.2.3 Test Procedure

1. The measurement procedure follows the clause 5.4.3.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. These measurements shall only be performed at normal test conditions.
3. The measurement shall be repeated for the equipment being configured to operate at the lowest, the middle, and the highest frequency of the stated frequency range.
4. The test procedure shall be as follows:

Step 1:

Connect the EUT to the spectrum analyzer and use the following settings:

Start Frequency	2400MHz
Stop Frequency	2483.5MHz
Resolution BW	10kHz
Video BW	30kHz
Sweep Points	8350
Detector	RMS
Trace Mode	Max Hold
Sweep time	10 sec

Step 2:

Add up the values for amplitude (power) for all the samples in the file.

Step 3:

Normalize the individual values for amplitude so that the sum is equal to the RF Output Power (e.i.r.p.) measured.

Step 4:

Starting from the first sample in the file (lowest frequency), add up the power of the following samples representing a 1 MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p.) for the first 1 MHz segment which shall be recorded.

Step 5:

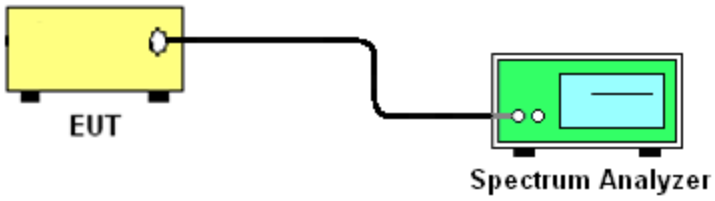
Shift the start point of the samples added up in step 4 by 1 sample and repeat the procedure in step 4 (i.e. sample #2 to #101).

Step 6:

Repeat step 5 until the end of the data set and record the radiated Power Spectral Density values for each of the 1 MHz segments.

From all the recorded results, the highest value is the maximum Power Spectral Density for the EUT. This value shall be recorded in the test report.

3.2.4 Test Setup



3.2.5 Test Results

Please refer to Appendix A.

3.3 Occupied Channel Bandwidth

3.3.1 Limit of Occupied Channel Bandwidth

Occupied Channel Bandwidth fall completely within 2.4 GHz – 2.4835 GHz

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.3.3 Test Procedure

1. The measurement procedure follows the clause 5.4.7.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The measurement shall be performed only on the lowest and the highest frequency within the stated frequency range.
3. The test procedure shall be as follows:

Step 1:

Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	Channel under test
Resolution BW	1 % of the span
Video BW	3 × RBW
Frequency Span	2 × Nominal Channel Bandwidth
Detector	RMS
Trace Mode	Max Hold
Sweep Time	1 s

Step 2:

Wait until the trace is completed.

Find the peak value of the trace and place the analyzer marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyzer to measure the Occupied Channel Bandwidth of the EUT.

3.3.4 Test Setup

3.3.5 Test Results

Please refer to Appendix A.

3.4 Frequency Hopping Requirements

3.4.1 Dwell Time and Minimum Frequency Occupation Time

3.4.1.1 Limit of Dwell Time

SUBCLAUSE 4.3.1.4.3	
TEST CONDITION	**LIMIT**
Non-Adaptive Frequency Hopping Systems	15 ms within 15ms * hopping frequencies (N)
Adaptive Frequency Hopping Systems	0.4s within 0.4s * hopping frequencies (N)

Limit of Minimum Frequency Occupation Time

SUBCLAUSE 4.3.1.4.3	
TEST CONDITION	**LIMIT**
Normal Condition	Option1: The Minimum Frequency Occupation Time shall be equal to one dwell time within a period not exceeding four times the product of the dwell time per hop and the number of hopping frequencies in use.

Remark: This test item is not applicable to DSSS/OFDM device.

3.4.1.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.4.1.3 Test Procedures

1. The measurement shall be performed on a minimum of 2 hopping frequencies chosen arbitrary from the actual hopping sequence. The results as well as the frequencies on which the test was performed shall be recorded in the test report.
2. The measurement procedure follows the clause 5.4.4.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
3. The analyzer shall be set as follows:

Center Frequency	Channel under test
Frequency Span	0 Hz
Resolution BW	300kHz
Video BW	300kHz
Detector	RMS
Sweep time	Equal to the Dwell Time × Minimum number of hopping frequencies (N)
Number of sweep points	30000
Trace Mode	Clear / Write
Trigger	Free Run

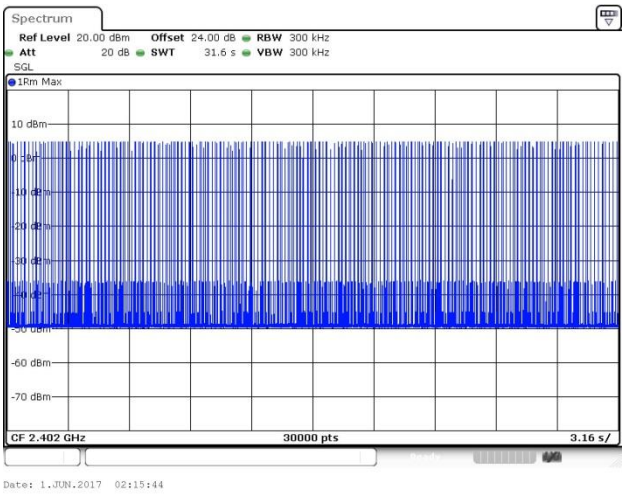
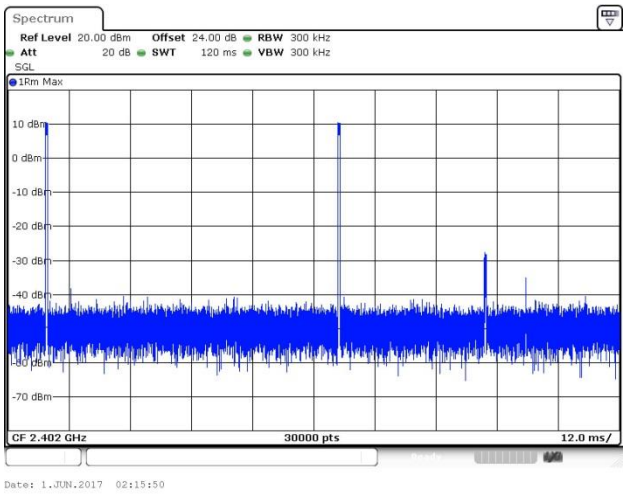
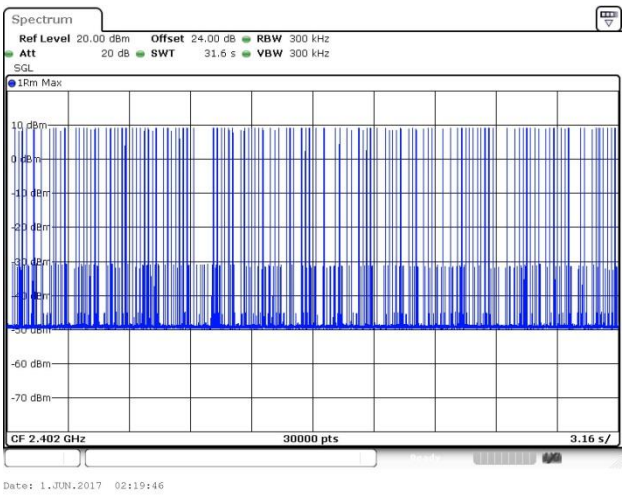
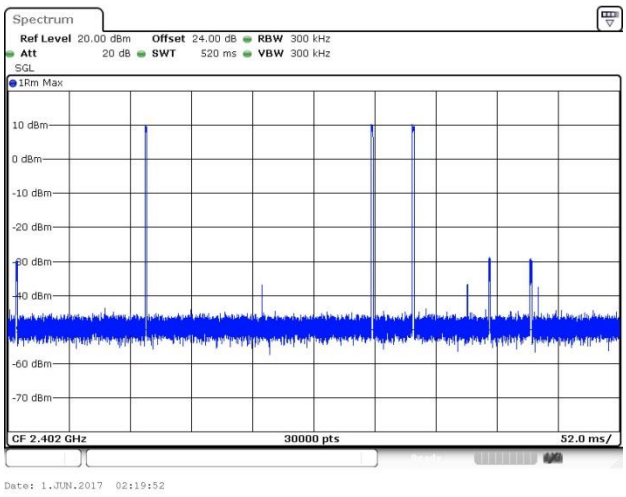
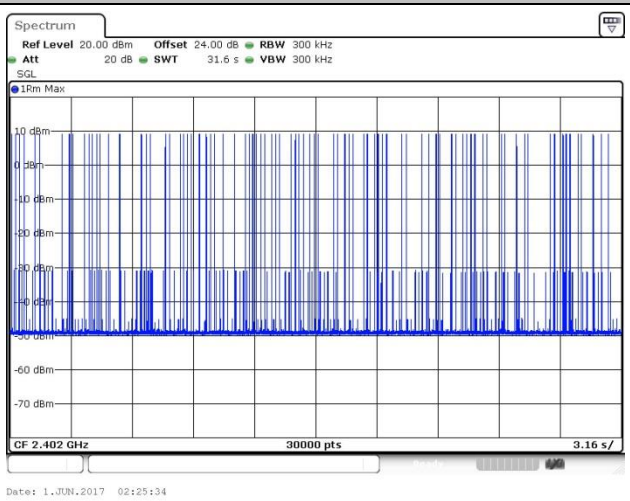
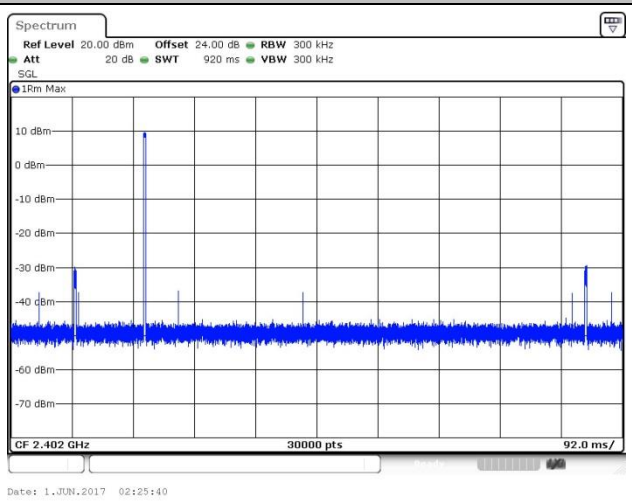
4. For accuracy measurement, the sweep time would be zoomed in and verify the dwell time which is from the dwell time per hop across the total number of hopping channel. Then record test result.
5. Make the following changes on the analyzer to get Minimum Frequency Occupation Time
   Sweep time: Equal to 4 × Dwell Time × Actual number of hopping frequencies in use

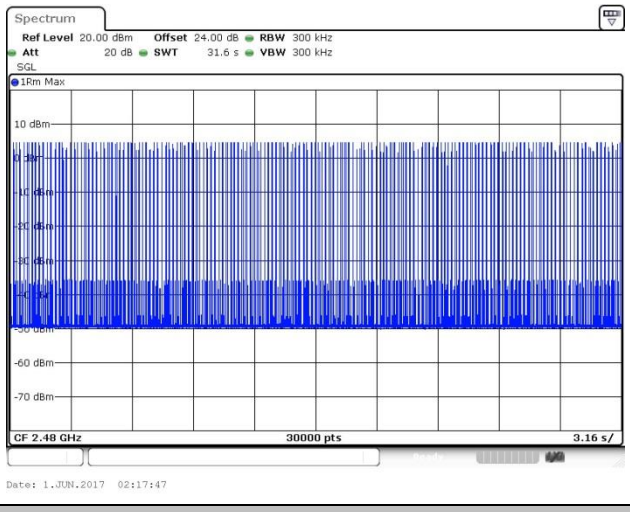
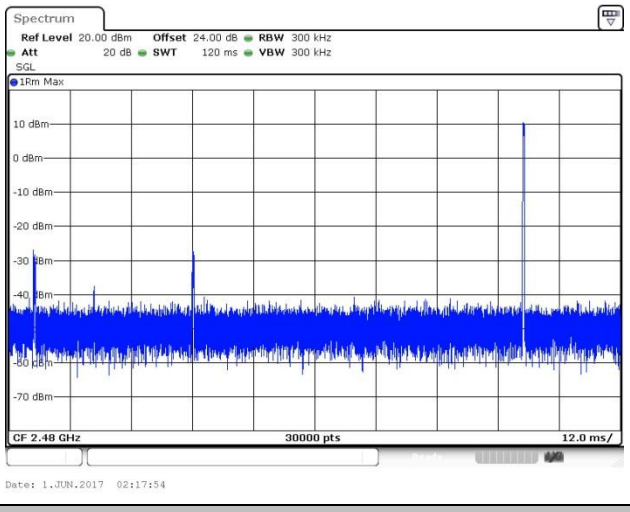
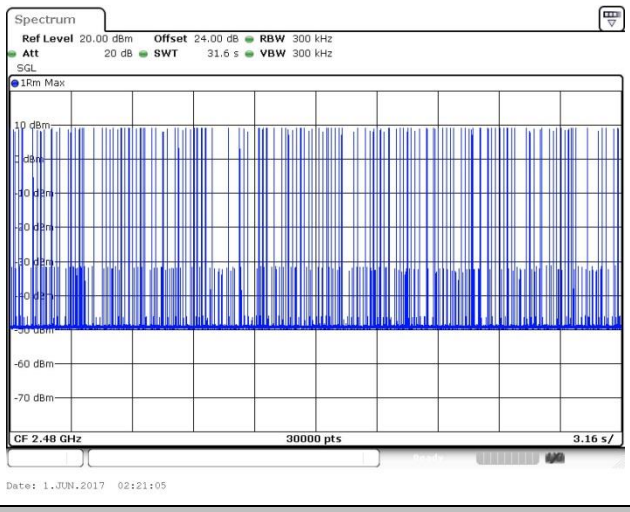
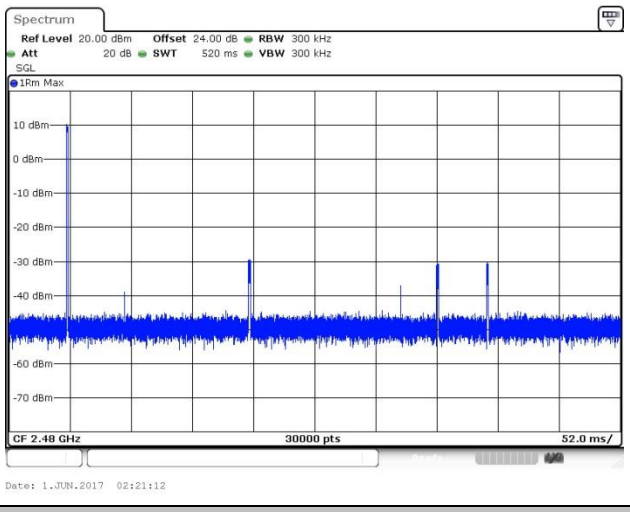
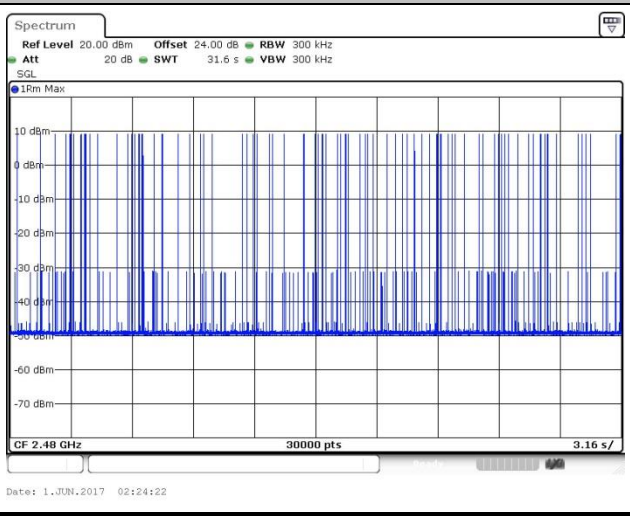
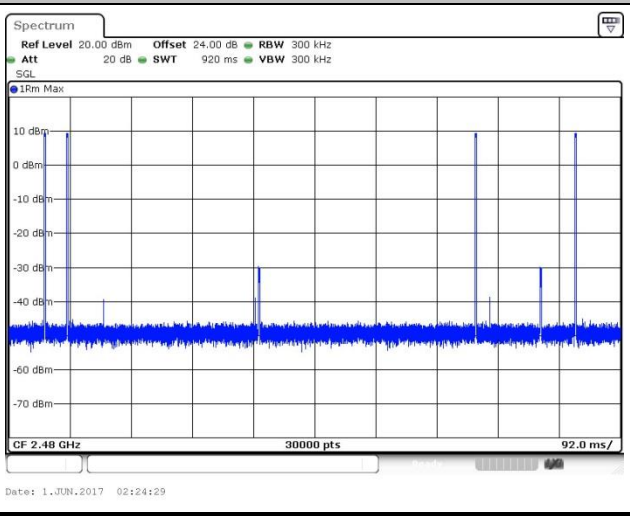
3.4.1.4 Test Setup

3.4.1.5 Test Results

Please refer to Appendix A.

3.4.1.6 Test Plots

Dwell Time - Channel 00 DH1	Frequency Occupation Time - Channel 00 DH1
	
Dwell Time - Channel 00 DH3	**Frequency Occupation Time - Channel 00 DH3**
	
Dwell Time - Channel 00 DH5	**Frequency Occupation Time - Channel 00 DH5**
	

Dwell Time - Channel 78 DH1	Frequency Occupation Time - Channel 78 DH1
	
Dwell Time - Channel 78 DH3	**Frequency Occupation Time - Channel 78 DH3**
	
Dwell Time - Channel 78 DH5	**Frequency Occupation Time - Channel 78 DH5**
	

3.4.2 Hopping Sequence

3.4.2.1 Limit of Hopping Sequence

SUBCLAUSE 4.3.1.4.3	
TEST CONDITION	**LIMIT**
Non-Adaptive Frequency Hopping Systems	N
Adaptive Frequency Hopping Systems	N Ch 70% of band

N= 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

Remark: Hopping Sequence is not applicable to DSSS/OFDM device.

3.4.2.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.4.2.3 Test Procedures

The measurement procedure follows the clause 5.4.4.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).

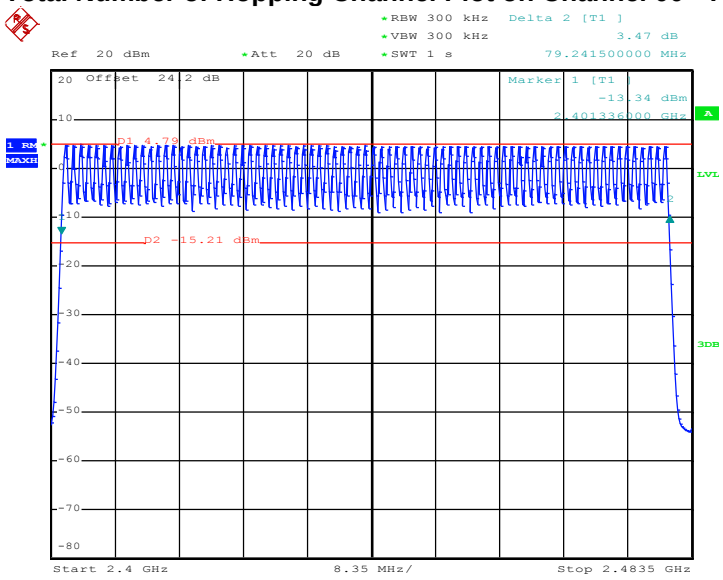
3.4.2.4 Test Setup

3.4.2.5 Test Results

Please refer to Appendix A.

3.4.2.6 Test Plots

Total Number of Hopping Channel Plot on Channel 00 - 78



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3.4.3 Hopping Frequency Separation

3.4.3.1 Limit of Hopping Frequency Separation

SUBCLAUSE 4.3.1.5.3.	
TEST CONDITION	**LIMIT**
Non-Adaptive Frequency Hopping Systems	MAX [OBW, 100kHz]
Adaptive Frequency Hopping Systems	100kHz

Remark: Hopping Frequency Separation is not applicable to DSSS/OFDM device.

3.4.3.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.4.3.3 Test Procedures

1. These measurements shall only be performed at normal test conditions.
2. The measurement shall be performed on 2 adjacent hopping frequencies.
3. The frequencies on which the test was performed shall be recorded.
4. The measurement procedure follows the clause 5.4.5.2.1.3 Option 2 of the ETSI EN 300 328 V2.1.1 (2016-11).

3.4.3.4 Test Setup

3.4.3.5 Test Results

Please refer to Appendix A.

3.5 Transmitter unwanted emissions in the out-of-band domain

3.5.1 Transmitter unwanted emissions in the out-of-band domain limit

out-of-band domain limit

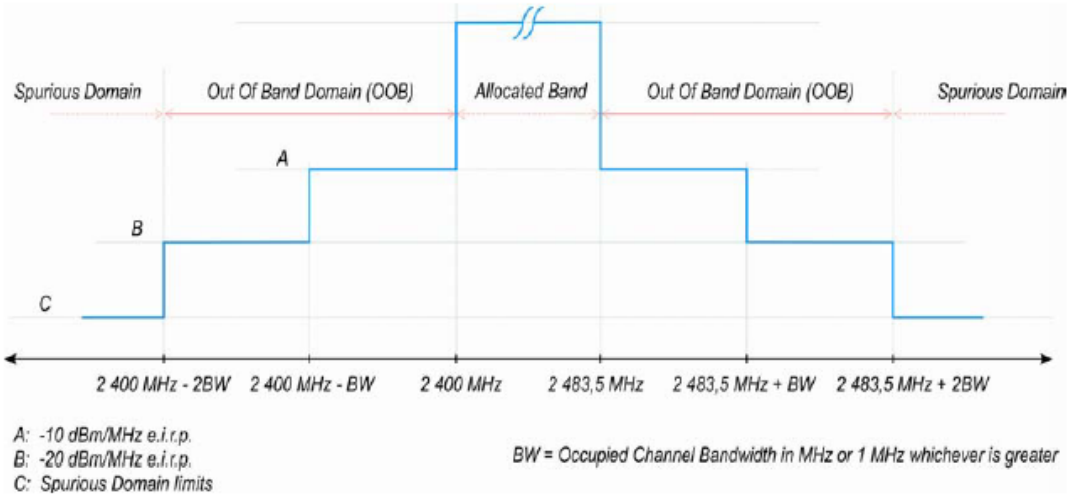


Figure 1: Transmit mask

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.5.3 Test Procedures

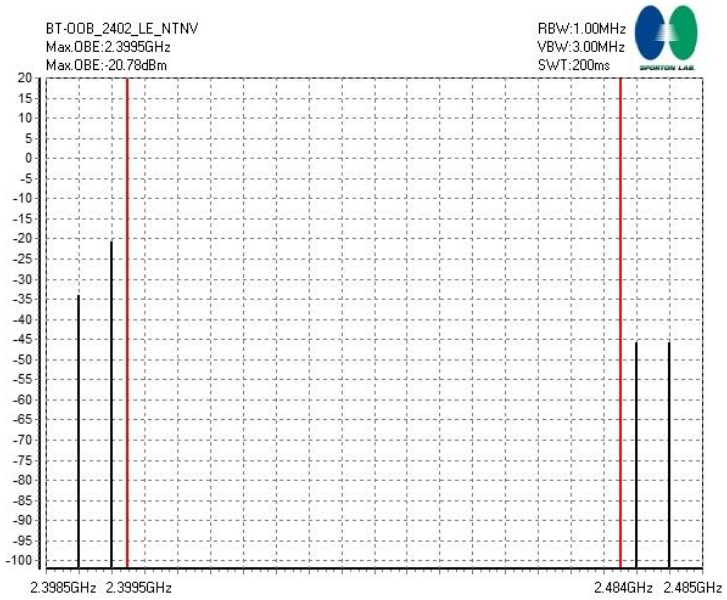
1. The measurement procedure follows the clause 5.4.8.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. These measurements shall only be performed at normal test conditions.
3. For conducted measurements on devices with multiple transmit chains using the results for each of the transmit chains for the corresponding 1 MHz segments shall be added and compared with the transmit mask limit.

3.5.4 Test Setup

3.5.5 Test Results

Please refer to Appendix A.

Bluetooth Normal mode and Bluetooth 4.1 – LE OOB worse case



3.6 Transmitter spurious emissions

3.6.1 Limit of Transmitter spurious emissions

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

SUBCLAUSE 4.3.1.10.3 and 4.3.2.9.3		
FREQUENCY RANGE	**MAXIMUM POWER**	**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

3.6.2 Measuring Instruments

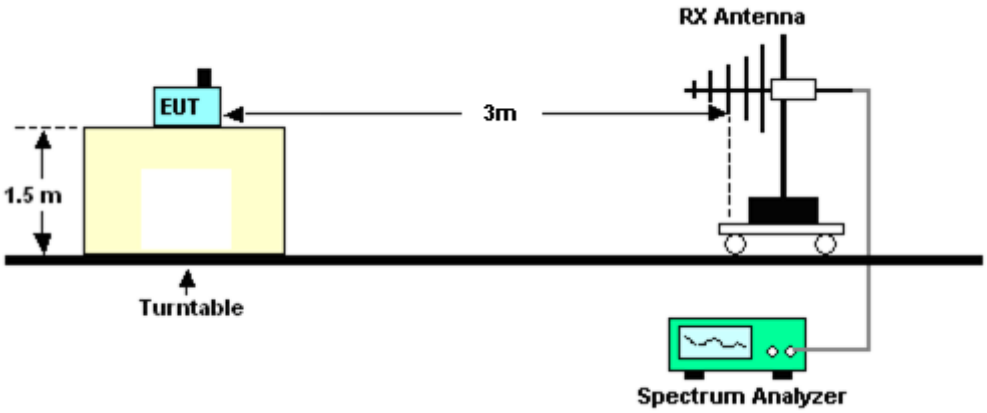
The measuring equipment is listed in the section 8 of this test report.

3.6.3 Test Procedures

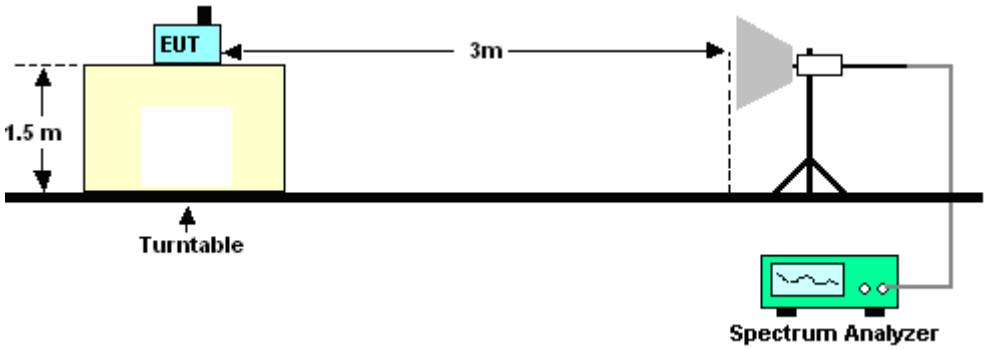
1. The measurement procedure follows the clause 5.4.9.2.2 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The EUT was placed on a turntable with 1.5m height.
3. The test distance between the receiving antenna and the EUT is 3meter below 1GHz frequency range, and 3 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
4. Set EUT in continuous transmitting with maximum output power.
5. The table was rotated from 0 to 360 degree to search the highest radiated emission.
6. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
7. The results obtained are compared to the limits in order to prove compliance with the requirement.

3.6.4 Test Setup

<Below 1GHz>



<Above 1GHz>



3.6.5 Test Results

Please refer to Appendix B.

4 Receiver Parameters

4.1 Receiver spurious emissions

4.1.1 Limit of Receiver spurious emissions

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

SUBCLAUSE 4.3.1.11.3 and 4.3.2.10.3		
FREQUENCY RANGE	**MAXIMUM POWER**	**BANDWIDTH**
30 MHz to 1 GHz	-57 dBm	100kHz
1 GHz to 12,75 GHz	-47 dBm	1MHz

4.1.2 Measuring Instruments

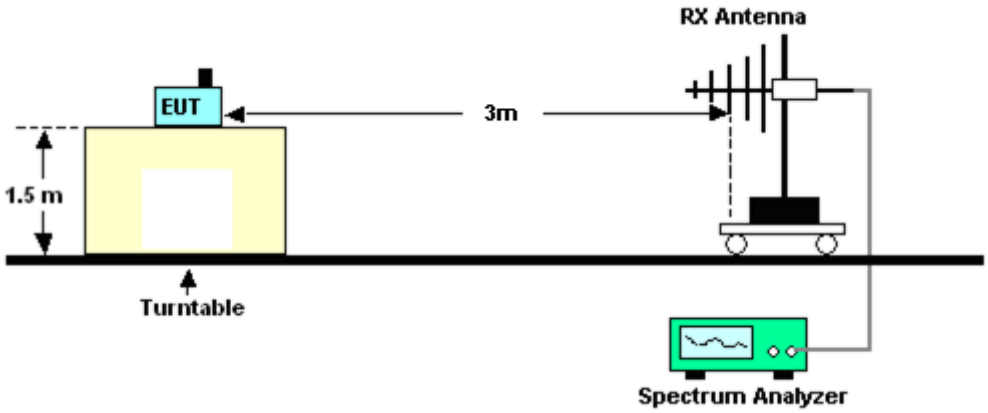
The measuring equipment is listed in the section 8 of this test report.

4.1.3 Test Procedures

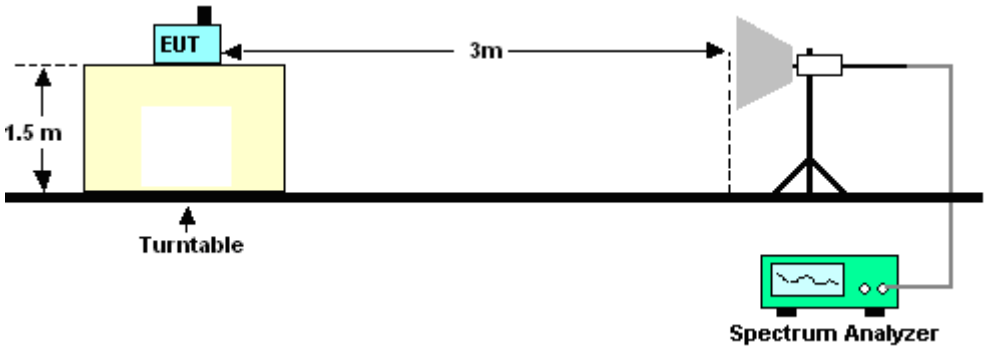
1. The measurement procedure follows the clause 5.4.10.2.2 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. The EUT was placed on a turntable with 1.5m height.
3. The test distance between the receiving antenna and the EUT is 3meter below 1GHz frequency range, and 3 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
4. Set EUT in receiving mode.
5. The table was rotated from 0 to 360 degree to search the highest radiated emission.
6. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
7. The results obtained are compared to the limits in order to prove compliance with the requirement.

4.1.4 Test Setup

<Below 1GHz>



<Above 1GHz>



4.1.5 Test Results

Please refer to Appendix B.

4.2 Receiver Blocking Test

4.2.1 Limit of Receiver Blocking Test

Receiver category 1

1. Adaptive equipment with maximum RF output power > 10dBm e.i.r.p. (EX: WiFi)

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-53	CW
P_{min} + 6 dB	2 300 2 330 2 360	-47	CW
P_{min} + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-47	CW
NOTE 1: P_{min} is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver category 2

1. Non-adaptive equipment with MU 1% ~ 10%
2. Adaptive equipment with Maximum RF output power < 10dBm e.i.r.p. (EX: Bluetooth)

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-57	CW
P_{min} + 6 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver category 3

1. Non-adaptive equipment with MU < 1%
2. Adaptive equipment with Maximum RF output power < 0dBm e.i.r.p.

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 12 dB	2 380 2 503,5	-57	CW
P_{min} + 12 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

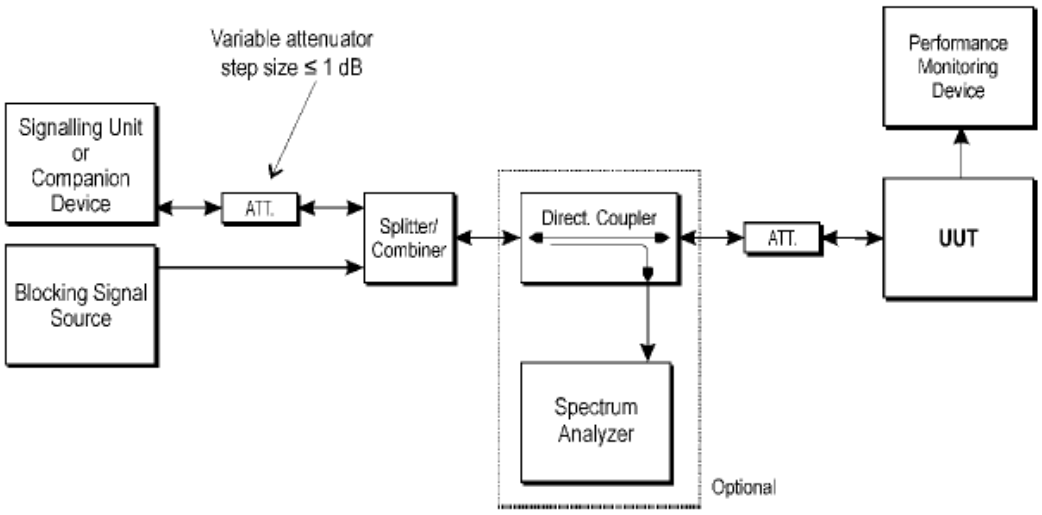
4.2.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

4.2.3 Test Procedures

1. The measurement procedure follows the clause 5.4.11.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. For systems using multiple receive chains only one chain (antenna port) need to be tested. All other receiver inputs shall be terminated.

4.2.4 Test Setup



Test Set-up for receiver blocking

4.2.5 Test Results of Receiver Blocking

Pmin = CMW500 burst power - path cable loss - attenuator.

Bluetooth 1Mbps hopping mode			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-57	0
Pmin + 6dB	2503.5	-57	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2583.5	-47	0
PER = 8.76 % when Pmin= -97 dBm before blocker is injected.			

Note:

1. Antenna gain is -1.38 dBi.
2. Blocking signal power level has offset antenna gain -1.38 dBi.

Bluetooth BLE Channel 00			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-57	0
Pmin + 6dB	2503.5	-57	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2583.5	-47	0
PER = 4.44 % when Pmin= -95 dBm before blocker is injected.			

Note:

1. Antenna gain is -1.38 dBi.
2. Blocking signal power level has offset antenna gain -1.38 dBi.

Bluetooth BLE Channel 39			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	2380	-57	0
Pmin + 6dB	2503.5	-57	0
Pmin + 6dB	2300	-47	0
Pmin + 6dB	2583.5	-47	0
PER = 5.55 % when Pmin= -95 dBm before blocker is injected.			

Note:

1. Antenna gain is -1.38 dBi.
2. Blocking signal power level has offset antenna gain -1.38 dBi.

5 Adaptivity Test

5.1 Adaptivity

5.1.1 Limit of Adaptivity

Only for adaptive systems and RF Output Power > 10 dBm
LBT based Detect and Avoid (Load Based Equipment with spectrum sharing mechanism IEEE Std.):
LBT based spectrum sharing mechanism may implement in IEEE Std. 802.11-2012 clauses 9, clause 10, clause 16, clause 17, clause 19 and clause 20, or in IEEE Std. IEEE 802.15.4-2011, clause 4, clause 5 and clause 8.
Short Control Signaling Transmissions shall have a maximum TxOn / (TxOn + TxOff) ratio of 10 % within an observation period of 50 ms.

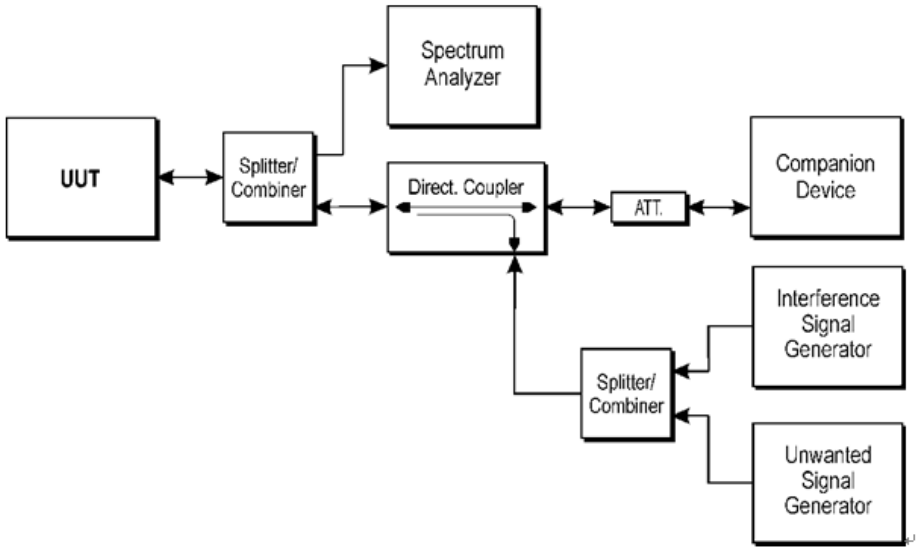
5.1.2 Measurement Instruments

The measuring equipment is listed in the section 8 of this test report.

5.1.3 Test Procedures

1. The measurement procedure follows the clause 5.4.6.2.1 of the ETSI EN 300 328 V2.1.1 (2016-11).
2. For conducted measurements on devices with multiple transmit chains and receive chains. The power splitter/combiner shall be used to combine all the transmit/receive chains (antenna outputs) into a single test point. The insertion loss of the power splitter/combiner shall be taken into account.

5.1.4 Test Setup



5.1.5 Support Unit used in test configuration and system

Item	Instrument	Manufacturer	Model No.	Characteristics
1.	WLAN AP	D-LINK	DIR-855	Dual Band AP
2.	Notebook	Lenovo	E335	FTP / LAN

5.1.6 Test Results of Adaptivity Test

Not Applicable.

6 Geo-location Capability

6.1 Geo-location

6.1.1 Definition and Requirement

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.

The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

The geographical location determined by the equipment shall not be accessible to the user.

6.1.2 Description

This device does not support this capability declared by the manufacturer.

7 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Sensor	DARE	RPR3006W	13I00030SNO31	10MHz~6GHz	Sep. 21, 2016	May 23, 2017 ~ Jun. 26, 2017	Sep. 22, 2017	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	100895	9kHz~30GHz	May 02, 2017	May 23, 2017 ~ Jun. 26, 2017	May 01, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	May 23, 2017 ~ Jun. 26, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 01, 2016	May 23, 2017 ~ Jun. 26, 2017	Aug. 31, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Agilent	E4445A	MY41000161	3Hz~13.2GHz	Nov. 28,2016	May 23, 2017 ~ May 25, 2017	Nov. 27,2017	Conducted (DFS02-HY)
Base Station	Rohde & Schwarz	CMW500	132247	GSM/GPRS/WCDMA/FD-LTE/TD-LTE/MIMO	Dec. 14, 2016	May 23, 2017 ~ May 25, 2017	Dec. 13, 2017	Conducted (DFS02-HY)
Signal Generator	Agilent	E8247C	MY43321356	CW Signal Generator	Sep. 30, 2016	May 23, 2017 ~ May 25, 2017	Sep. 29, 2017	Conducted (DFS02-HY)
Bilog Antenna	Teseq GmbH	CBL6112D	35379	30MHz~2GHz	Oct. 15, 2016	Jun. 10, 2017	Oct. 14, 2017	Radiation (05CH05-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Jul. 14, 2016	Jun. 10, 2017	Jul. 13, 2017	Radiation (05CH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV 30	101749	10Hz~30GHz	Jan. 04, 2017	Jun. 10, 2017	Jan. 03, 2018	Radiation (05CH05-HY)
Preamplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Dec. 27, 2016	Jun. 10, 2017	Dec. 26, 2017	Radiation (05CH05-HY)
Amplifier	EMCI	EMC001830	980191	10MHz~8GHz	Jan. 17, 2017	Jun. 10, 2017	Jan. 16, 2018	Radiation (05CH05-HY)
Antenna Mast	ChainTek	MD-200	1308055	1m~4m	N/A	Jun. 10, 2017	N/A	Radiation (05CH05-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	Jun. 10, 2017	N/A	Radiation (05CH05-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 23, 2017	Jun. 11, 2017	Mar. 22, 2018	Radiation (03CH15-HY)
BT Base Station	Rohde & Schwarz	CBT	101135	BT 3.0	Sep. 08, 2016	Jun. 11, 2017	Sep. 07 2018	Radiation (03CH15-HY)

Note: Test equipment calibration is traceable to the procedure of ISO17025.

8 Uncertainty Evaluation

Test Item	Uncertainty
Occupied Channel Bandwidth	± 0.49 %
RF output power, conducted	±0.61 dB
Power density, conducted	±0.60 dB
Radiated emissions	±2.86 dB
Temperature	±0.8 °C
Humidity	±3 %

Report Number : ER741325

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Derek Hsu	Temperature:	24~25	°C
Test Date:	2017/05/23~2017/06/06	Relative Humidity:	54~56	%

TEST RESULTS DATA
EIRP Power

Conducted Power (dBm)								
Mod.	Data Rate	NTX	Channe	Freq. (MHz)	Temperature Nomal	Extreme Temperature Low	Extreme Temperature High	Gain (dBi)
					25 °C	-30 °C	85 °C	
BTNom	1Mbps	1	hopping		10.70	10.70	11.20	-1.38
BTNom	2Mbps	1	hopping		8.20	8.20	8.50	-1.38
BTNom	3Mbps	1	hopping		8.20	8.20	8.50	-1.38
BLE	1Mbps	1	0	2402	10.60	10.50	11.30	-1.38
BLE	1Mbps	1	19	2440	10.40	10.20	11.10	-1.38
BLE	1Mbps	1	39	2480	10.30	10.20	11.10	-1.38

EIRP Power (dBm)									
Mod.	Data Rate	NTX	Channe	Freq. (MHz)	Temperature Nomal	Temperature Low	Temperature High	Limit (dBm)	Pass/Fail
BTNom	1Mbps	1	hopping		9.32	9.32	9.82	20	Pass
BTNom	2Mbps	1	hopping		6.82	6.82	7.12	20	Pass
BTNom	3Mbps	1	hopping		6.82	6.82	7.12	20	Pass
BLE	1Mbps	1	0	2402	9.22	9.12	9.92	20	Pass
BLE	1Mbps	1	19	2440	9.02	8.82	9.72	20	Pass
BLE	1Mbps	1	39	2480	8.92	8.82	9.72	20	Pass

Report Number : ER741325

TEST RESULTS DATA
EIRP Power Density

Power Density							
Mod.	Data Rate	N_{TX}	Channe	Freq. (MHz)	EIRP Power Density (dBm/MHz)	EIRP Limit (dBm /MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	9.17	10	Pass
BLE	1Mbps	1	19	2440	8.97	10	Pass
BLE	1Mbps	1	39	2480	8.87	10	Pass

Report Number : ER741325

TEST RESULTS DATA
99% Occupied Bandwidth

Occupied Bandwidth									
Mod.	Data Rate	NTx	Channe	Freq. (MHz)	99% Occupied BW (MHz)	Freq. Low (MHz)	Freq. High (MHz)	Limit (Within operating Band)	Pass/Fail
BTNom	1Mbps	1	0	2402	0.83	2401.58	2402.41		Pass
BTNom	1Mbps	1	78	2480	0.83	2479.58	2480.41		Pass
BTNom	2Mbps	1	0	2402	1.19	2401.39	2402.58		Pass
BTNom	2Mbps	1	78	2480	1.19	2479.39	2480.58		Pass
BTNom	3Mbps	1	0	2402	1.17	2401.41	2402.58		Pass
BTNom	3Mbps	1	78	2480	1.17	2479.41	2480.58		Pass
BLE	1Mbps	1	0	2402	1.02	2401.49	2402.51		Pass
BLE	1Mbps	1	39	2480	1.02	2479.49	2480.51		Pass

Report Number : ER741325

TEST RESULTS DATA
OOB Emission Level

Mod.	Data Rate	NTX	Channe	Freq. (MHz)	OOB Emission Worst Level (dBm/MHz)	Limit (dBm /MHz)	Pass/Fail
BTNom	1Mbps	1	hopping		-28.46	-10,-20	Pass
BTNom	2Mbps	1	hopping		-31.34	-10,-20	Pass
BTNom	3Mbps	1	hopping		-30.93	-10,-20	Pass
BLE	1Mbps	1	0	2402	-20.78	-10,-20	Pass
BLE	1Mbps	1	39	2480	-34.72	-10,-20	Pass

Report Number : ER741325

TEST RESULTS DATA
Bluetooth Test Items

Dwell Time of each Frequency Measurement

BT (Hopping Mode)		Dwell Time per hop(ms)	Dwell Time(ms)	Dwell Time Max. Limit (ms)	Frequency Occupation		Frequency Occupation Time min. Limit (ms)	Pass /Fail
					Hop#	Time (ms)		
DH1	2402 MHz	0.39	123.77	400	2	0.78	0.39	Pass
	2480 MHz	0.39	123.38	400	1	0.39	0.39	Pass
DH3	2402 MHz	1.65	224.36	400	3	4.95	1.65	Pass
	2480 MHz	1.65	251.75	400	1	1.65	1.65	Pass
DH5	2402 MHz	2.90	287.56	400	1	2.90	2.90	Pass
	2480 MHz	2.90	252.80	400	4	11.60	2.90	Pass

Hopping Sequence Measurement

Total Number of Hopping Frequency	20dBc Operating Range (MHz)	Limit of operating range (at least 70% of band) (MHz)	Minimum Number of Adaptive Frequency Hopping	Limit of hopping frequencies at all times
79	79.2415	58.45	20	15

Hopping Channel Separation Measurement

BT	Separation(MHz)	Limit(MHz)	Pass /Fail
CH 00	0.999	>0.1	Pass
CH 39	0.999	>0.1	Pass
CH 78	0.999	>0.1	Pass

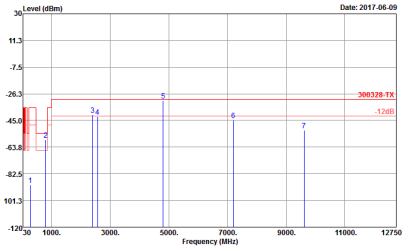
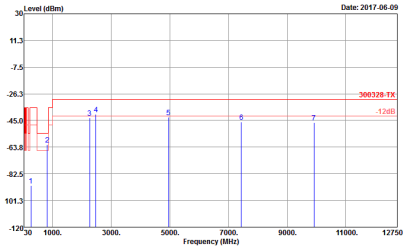
Appendix B. Conducted Spurious Emission Plots

BT TX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	**Temperature :**	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BT

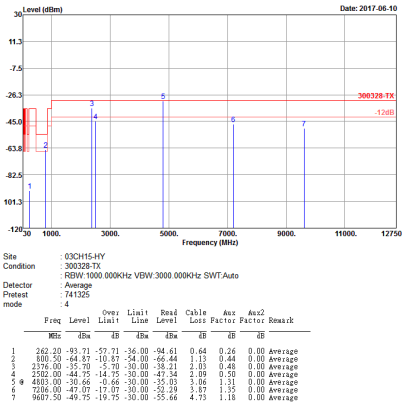
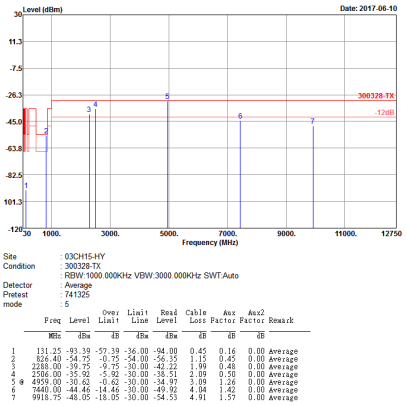
BT	**2.4GHz 2400~2483.5MHz**	
ANT	**BT**	
1	**CH00 2402MHz**	**CH78 2480MHz**
TX	 Site : 03CH15-HY Condition : 300328-TX RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Average Pretest mode : 1 Freq / Level / Over Limit / Limit Line / Read Level / Cable Loss / Aux Factor / Aux2 Factor / Remark MHz / dBm / dB / dBm / dBm / dB / dB / dB 1 288.66 -90.33 -54.33 -36.00 -94.27 0.67 0.24 3.03 Average 2 800.50 -58.52 -4.52 -54.00 -63.52 1.13 0.44 3.43 Average 3 2398.00 -41.05 -11.05 -30.00 -47.41 2.04 0.47 3.85 Average 4 2578.00 -42.41 -12.41 -30.00 -48.46 2.13 0.51 3.43 Average 5 * 4803.00 -30.89 -0.89 -30.00 -39.10 3.06 1.31 3.84 Average 6 7206.00 -44.68 -14.68 -30.00 -54.29 3.87 1.35 4.39 Average 7 9607.50 -51.84 -21.84 -30.00 -64.18 4.73 1.18 6.43 Average	 Site : 03CH15-HY Condition : 300328-TX RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Average Pretest mode : 2 Freq / Level / Over Limit / Limit Line / Read Level / Cable Loss / Aux Factor / Aux2 Factor / Remark MHz / dBm / dB / dBm / dBm / dB / dB / dB 1 270.03 -90.74 -54.74 -36.00 -94.30 0.64 0.26 2.66 Average 2 * 826.40 -61.95 -7.95 -54.00 -66.91 1.15 0.45 3.36 Average 3 2266.00 -43.33 -13.33 -30.00 -49.69 1.98 0.48 3.90 Average 4 2486.00 -40.51 -10.51 -30.00 -46.74 2.09 0.50 3.64 Average 5 4959.00 -42.87 -12.87 -30.00 -50.99 3.09 1.26 3.77 Average 6 7440.00 -45.94 -15.94 -30.00 -54.63 4.04 1.42 3.23 Average 7 9918.75 -46.52 -16.52 -30.00 -57.50 4.91 1.57 4.50 Average

BLE TX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BLE

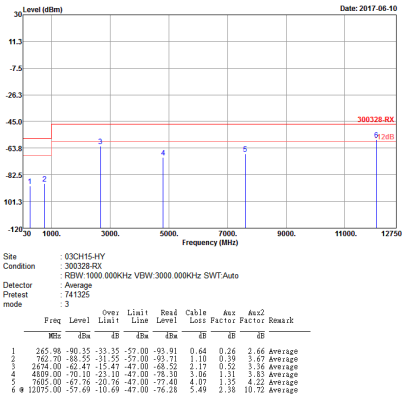
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE	
1	CH00 2402MHz	CH39 2480MHz
TX		

BT RX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BT

BT	2.4GHz 2400~2483.5MHz	
ANT	BT	
1	CH00 2402MHz	-
TX.		Left blank

Site : 03CH15-HY
Condition : 300328-RX
RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Detector : Average
Pretest mode : 741325
: 3

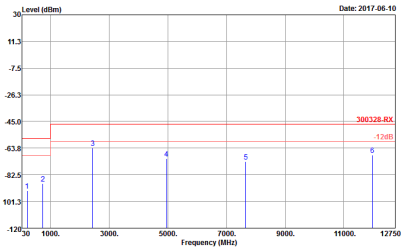
	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Aux Factor	Aux2 Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	
1	265.98	-90.35	-33.35	-57.00	-93.91	0.64	0.26	2.66	Average
2	762.70	-88.55	-31.55	-57.00	-93.71	1.10	0.39	3.67	Average
3	2674.00	-62.47	-15.47	-47.00	-68.52	2.17	0.52	3.36	Average
4	4809.00	-70.10	-23.10	-47.00	-78.30	3.06	1.31	3.83	Average
5	7605.00	-67.76	-20.76	-47.00	-77.40	4.07	1.35	4.22	Average
6	12075.00	-57.69	-10.69	-47.00	-76.28	5.49	2.38	10.72	Average

BLE RX Conducted Spurious Emission Plots

Test Engineer :	Karl Hou	**Temperature :**	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BLE

BLE	**2.4GHz 2400~2483.5MHz**	
ANT	**BLE**	
1	**CH39 2480MHz**	**-**
TX.	 Site : 03CH15-HY Condition : 300328-RX RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Average Pretest mode : 741325 : 6 Freq / Level / Over Limit / Limit Line / Read Level / Cable Loss / Aux Factor / Aux2 Factor / Remark MHz / dBm / dB / dBm / dBm / dB / dB / dB 1 207.12 -93.61 -36.61 -57.00 -94.41 0.55 0.25 0.00 Average 2 746.60 -88.77 -31.77 -57.00 -90.24 1.10 0.37 0.00 Average 3 @ 2440.00 -63.76 -16.76 -47.00 -66.32 2.07 0.49 0.00 Average 4 4959.00 -71.05 -24.05 -47.00 -75.40 3.09 1.26 0.00 Average 5 7662.00 -73.34 -26.34 -47.00 -78.79 4.08 1.37 0.00 Average 6 11981.25 -68.53 -21.53 -47.00 -76.36 5.44 2.39 0.00 Average	Left blank

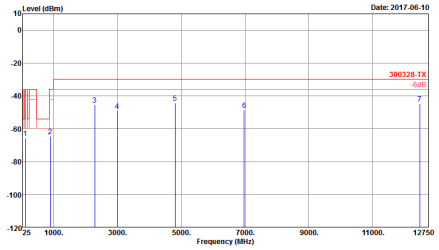
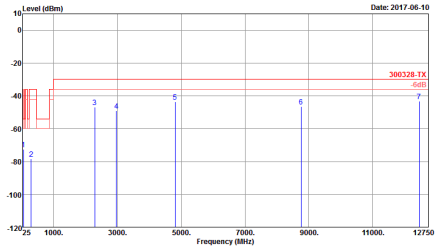
Appendix C. Cabinet Radiation Plots

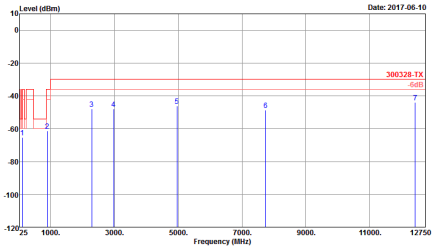
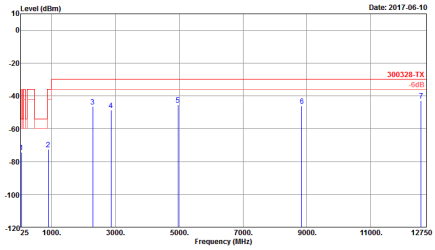
BT TX Radiated Spurious Emission Plots

Test Engineer :	Nick Chang	**Temperature :**	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BT

BT	**2.4GHz 2400~2483.5MHz**	
ANT	**BT CH00 2402MHz**	
1	**Horizontal**	**Vertical**
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741325 Mode : 1 Freq Level Over Limit Limit Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 119.88 -65.69 -29.69 -36.00 -49.80 -15.89 HORIZONTAL 2 894.30 -64.53 -28.53 -36.00 -57.10 -7.43 HORIZONTAL 3 2292.00 -45.44 -15.44 -30.00 -58.92 13.48 HORIZONTAL 4 2998.00 -48.90 -18.90 -30.00 -63.28 14.38 HORIZONTAL 5 @ 4806.00 -44.19 -14.19 -30.00 -63.81 19.62 HORIZONTAL 6 6972.00 -48.64 -18.64 -30.00 -71.05 22.41 HORIZONTAL 7 12476.25 -44.52 -14.52 -30.00 -71.74 27.22 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741325 Mode : 1 Freq Level Over Limit Limit Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 59.93 -72.63 -18.63 -54.00 -51.42 -21.21 VERTICAL 2 300.00 -78.44 -42.44 -36.00 -64.73 -13.71 VERTICAL 3 2292.00 -46.67 -16.67 -30.00 -60.11 13.44 VERTICAL 4 2966.00 -48.96 -18.96 -30.00 -63.24 14.28 VERTICAL 5 4806.00 -43.57 -13.57 -30.00 -63.23 19.66 VERTICAL 6 8757.00 -46.67 -16.67 -30.00 -71.08 24.41 VERTICAL 7 @ 12457.50 -43.13 -13.13 -30.00 -71.74 28.61 VERTICAL

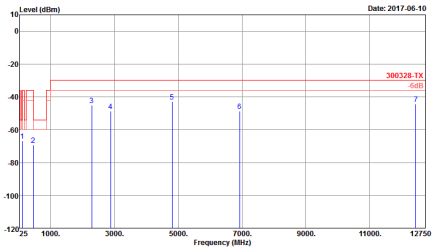
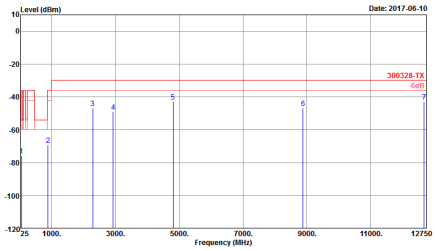
BT	2.4GHz 2400~2483.5MHz	
ANT	BT CH78 2480MHz	
1	Horizontal	Vertical
TX	 Site : 05CH05-HY Condition : 300328-TX HORIZONTAL Power : From System Project : ER 741325 Mode : 2 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 119.88 -65.31 -29.31 -36.00 -49.42 -15.89 HORIZONTAL 2 894.30 -61.32 -25.32 -36.00 -53.89 -7.43 HORIZONTAL 3 2292.00 -47.84 -17.84 -30.00 -61.32 13.48 HORIZONTAL 4 2982.00 -47.82 -17.82 -30.00 -62.19 14.37 HORIZONTAL 5 4962.00 -46.10 -16.10 -30.00 -65.35 19.25 HORIZONTAL 6 7734.00 -48.51 -18.51 -30.00 -70.87 22.36 HORIZONTAL 7 @ 12435.00 -43.99 -13.99 -30.00 -71.18 27.19 HORIZONTAL	 Site : 05CH05-HY Condition : 300328-TX VERTICAL Power : From System Project : ER 741325 Mode : 2 Freq Level Over Limit Limit Line Read Level Factor Pol/Phase MHz dBm dB dBm dBm dB 1 59.93 -74.50 -20.50 -54.00 -53.29 -21.21 VERTICAL 2 896.40 -72.38 -36.38 -36.00 -64.91 -7.47 VERTICAL 3 2292.00 -46.42 -16.42 -30.00 -59.86 13.44 VERTICAL 4 2864.00 -48.67 -18.67 -30.00 -62.81 14.14 VERTICAL 5 4962.00 -45.55 -15.55 -30.00 -65.01 19.46 VERTICAL 6 8847.00 -46.14 -16.14 -30.00 -70.72 24.58 VERTICAL 7 @ 12585.00 -42.87 -12.87 -30.00 -71.87 29.00 VERTICAL

BLE TX Radiated Spurious Emission Plots

Test Engineer :	Nick Chang	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BLE

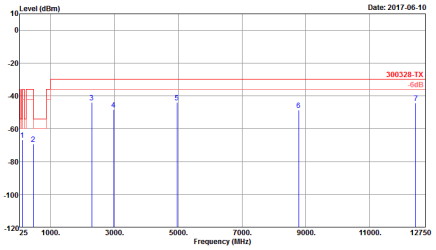
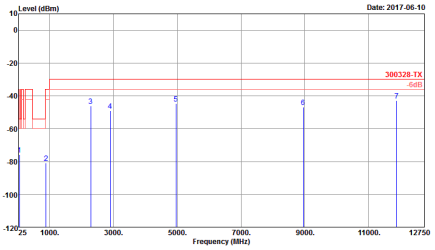
BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE CH00 2402MHz	
1	Horizontal	Vertical
TX		

Site : 05CH05-HY
Condition : 300328-TX HORIZONTAL
Power : From System
Project : ER 741325
Mode : 4

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	119.88	-66.89	-30.89	-36.00	-51.00	-15.89	HORIZONTAL
2	456.10	-69.29	-33.29	-36.00	-58.23	-11.06	HORIZONTAL
3	2290.00	-44.96	-14.96	-30.00	-58.44	13.48	HORIZONTAL
4	2880.00	-48.62	-18.62	-30.00	-62.93	14.31	HORIZONTAL
5 @	4806.00	-43.00	-13.00	-30.00	-62.62	19.62	HORIZONTAL
6	6930.00	-48.64	-18.64	-30.00	-71.02	22.38	HORIZONTAL
7	12450.00	-44.34	-14.34	-30.00	-71.54	27.20	HORIZONTAL

Site : 05CH05-HY
Condition : 300328-TX VERTICAL
Power : From System
Project : ER 741325
Mode : 4

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	59.93	-75.79	-21.79	-54.00	-54.58	-21.21	VERTICAL
2	885.20	-69.33	-33.33	-36.00	-61.99	-7.34	VERTICAL
3	2290.00	-46.90	-16.90	-30.00	-60.34	13.44	VERTICAL
4	2934.00	-48.97	-18.97	-30.00	-63.20	14.23	VERTICAL
5	4806.00	-42.99	-12.99	-30.00	-62.65	19.66	VERTICAL
6	8883.00	-46.87	-16.87	-30.00	-71.50	24.63	VERTICAL
7 @	12682.50	-42.82	-12.82	-30.00	-72.16	29.34	VERTICAL

BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
TX		

Site : 05CH05-HY
Condition : 300328-TX HORIZONTAL
Power : From System
Project : ER 741325
Mode : 5

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	119.88	-66.85	-30.85	-36.00	-50.96	-15.89	HORIZONTAL
2	456.10	-69.34	-33.34	-36.00	-58.28	-11.06	HORIZONTAL
3 @	2290.00	-43.87	-13.87	-30.00	-57.35	13.48	HORIZONTAL
4	2982.00	-48.46	-18.46	-30.00	-62.83	14.37	HORIZONTAL
5	4962.00	-44.05	-14.05	-30.00	-63.30	19.25	HORIZONTAL
6	8775.00	-48.78	-18.78	-30.00	-71.31	22.53	HORIZONTAL
7	12453.75	-44.47	-14.47	-30.00	-71.67	27.20	HORIZONTAL

Site : 05CH05-HY
Condition : 300328-TX VERTICAL
Power : From System
Project : ER 741325
Mode : 5

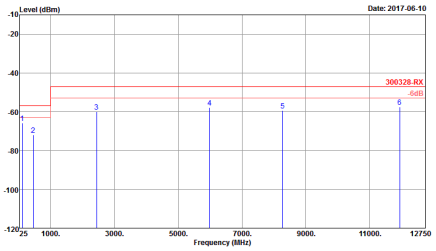
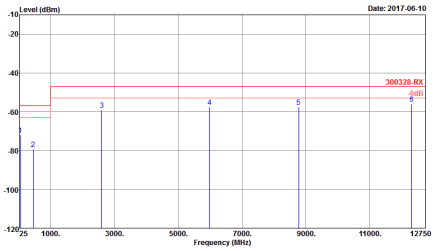
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	59.93	-75.87	-21.87	-54.00	-54.66	-21.21	VERTICAL
2	892.20	-80.95	-44.95	-36.00	-73.53	-7.42	VERTICAL
3	2290.00	-46.29	-16.29	-30.00	-59.73	13.44	VERTICAL
4	2902.00	-49.09	-19.09	-30.00	-63.28	14.19	VERTICAL
5	4962.00	-44.84	-14.84	-30.00	-64.30	19.46	VERTICAL
6	8949.00	-46.94	-16.94	-30.00	-71.68	24.74	VERTICAL
7 @	11880.00	-42.80	-12.80	-30.00	-70.73	27.93	VERTICAL

BT RX Radiated Spurious Emission Plots

Test Engineer :	Nick Chang	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BT

BT	2.4GHz 2400~2483.5MHz	
ANT	BT CH78 2480MHz	
1	Horizontal	Vertical
RX		

Site : 05CH05-HY
Condition : 300328-RX HORIZONTAL
Power : From System
Project : ER 741325
Mode : 3

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	119.88	-65.77	-8.77	-57.00	-49.88	-15.89	HORIZONTAL
2	456.10	-71.97	-14.97	-57.00	-60.91	-11.06	HORIZONTAL
3	2446.00	-59.83	-12.83	-47.00	-46.97	-12.86	HORIZONTAL
4	5979.00	-57.94	-10.94	-47.00	-50.95	-6.99	HORIZONTAL
5	8268.00	-59.32	-12.32	-47.00	-53.97	-5.35	HORIZONTAL
6	11943.75	-57.62	-10.62	-47.00	-56.22	-1.40	HORIZONTAL

Site : 05CH05-HY
Condition : 300328-RX VERTICAL
Power : From System
Project : ER 741325
Mode : 3

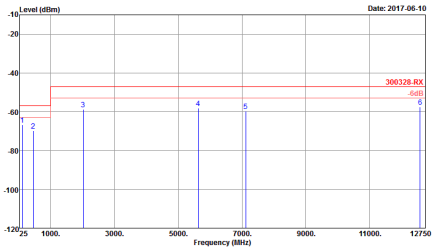
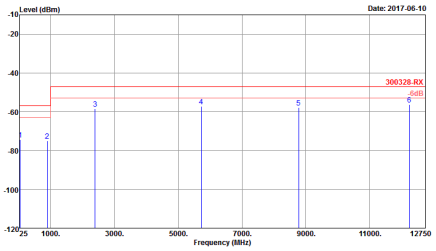
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	57.45	-71.98	-14.98	-57.00	-51.61	-20.37	VERTICAL
2	456.10	-79.12	-22.12	-57.00	-67.93	-11.19	VERTICAL
3	2606.00	-59.10	-12.10	-47.00	-46.18	-12.92	VERTICAL
4	5985.00	-57.52	-10.52	-47.00	-50.92	-6.60	VERTICAL
5	8775.00	-57.60	-10.60	-47.00	-54.49	-3.11	VERTICAL
6 @	12311.25	-55.90	-8.90	-47.00	-56.56	0.66	VERTICAL

BLE RX Radiated Spurious Emission Plots

Test Engineer :	Nick Chang	Temperature :	21~22℃
		Relative Humidity :	45~46%

2.4GHz 2400~2483.5MHz

BLE

BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
RX		

Site : 05CH05-HY
Condition : 300328-RX HORIZONTAL
Power : From System
Project : ER 741325
Mode : 6

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1 @	119.88	-66.79	-9.79	-57.00	-50.90	-15.89	HORIZONTAL
2	456.10	-69.74	-12.74	-57.00	-58.68	-11.06	HORIZONTAL
3	2026.00	-58.58	-11.58	-47.00	-44.96	-13.62	HORIZONTAL
4	5625.00	-58.21	-11.21	-47.00	-50.52	-7.69	HORIZONTAL
5	7116.00	-59.77	-12.77	-47.00	-54.05	-5.72	HORIZONTAL
6	12585.00	-57.40	-10.40	-47.00	-56.50	-0.90	HORIZONTAL

Site : 05CH05-HY
Condition : 300328-RX VERTICAL
Power : From System
Project : ER 741325
Mode : 6

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	52.78	-74.19	-17.19	-57.00	-54.95	-19.24	VERTICAL
2	896.40	-74.89	-17.89	-57.00	-67.42	-7.47	VERTICAL
3	2396.00	-58.39	-11.39	-47.00	-45.42	-12.97	VERTICAL
4	5721.00	-57.29	-10.29	-47.00	-50.20	-7.09	VERTICAL
5	8778.00	-57.86	-10.86	-47.00	-54.79	-3.07	VERTICAL
6 @	12247.50	-56.12	-9.12	-47.00	-56.82	0.70	VERTICAL

Appendix D. Photographs of Radiated Emission Test Configuration