

# TEST REPORT

**Based On SGS EMC Test Report No.: E1/2016/40145-01****Applicant: Texas Instruments Incorporated****Address: 12500 TI BLVD., Dallas Texas, 75243, USA****Manufacturer: Texas Instruments Incorporated****Address: 12500 TI BLVD., Dallas Texas, 75243, USA****Equipment Under Test (EUT):****Name: BLE and 802.15.4 module****Brand Name: Texas Instruments Incorporated****Model No.: CC2650MODA****Added Model(s): N/A****Standards:**

EN 55032 : 2015+A11:2020	
EN 55035 : 2017+AC:2019	
IEC 61000-4-2 : 2008	IEC 61000-4-8 : 2009
IEC 61000-4-3 : 2006+A1:2007+A2:2010	

**Date of Sample Receipt : Nov. 09, 2020****Date of Test : Dec. 14, 2020 ~ Jan. 14, 2021****Date of Issue : Feb. 25, 2021****Remarks:**

All reported results in test report are applicable to the sample EUT received with the shown model name. This report shall not be reproduced except in full, without approval of the SGS Taiwan Electromagnetic Compatibility Laboratory in writing. This document may be altered or revised by SGS Taiwan Electromagnetic Compatibility Laboratory personnel only. The applicant should not use it to claim product endorsement by TAF or any other Government agencies.

**Disclaimer**

Variants information between/among model numbers / trademarks is provided by the applicant, test results of this test report are applicable to the sample EUT received of main test model name

**Approved By****Date**

Feb. 25, 2021

**Eddy Cheng (Asst. Supervisor)**

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## Revision History

Revision	Report Number	Description	Issue Date
00	E1/2016/40145	Original.	Aug. 04, 2016
01	E1/2016/40145-01	See the following note Rev.(01)	Jun. 12, 2017
02	MH/2020/B0073	See the following note Rev.(02)	Feb. 25, 2021

**Note:**

## Rev.(01):

1. Update Standards to EN 55032. Spot check CE, Below RE, Above RE, RS.

## Rev.(02):

1. The Electromagnetic Compatibility Laboratory of SGS Taiwan Ltd. was split from the Electronics & Communication Laboratory of SGS Taiwan Ltd. , it undertakes the original EMC test data and test report of Electronics & Communication Laboratory, this report is based on Electronics & Communication Laboratory report number E1/2016/40145-01 to remake it.
2. Update standards except PFMF.
3. Change information of applicant & manufacturer as follows.

Applicant	Original:	Texas Instruments Norway AS Postboks 264 Skøyen Oslo N-0213 Norway
	Modified:	Texas Instruments Incorporated 12500 TI BLVD., Dallas Texas, 75243, USA
Manufacturer	Original:	JORJIN Technologies Inc. 17F,No.239, Sec.1, Datong Rd., Xizhi Dist., New Taipei City
	Modified:	Texas Instruments Incorporated 12500 TI BLVD., Dallas Texas, 75243, USA

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# 1. General Description

## 1.1 General Description of EUT

Name of EUT	BLE and 802.15.4 module
Brand Name	Texas Instruments Incorporated
Model No.(s)	CC2650MODA
Added Model(s)	N/A
Variant Description	N/A

## 1.2 Details of EUT

Power Supply	DC 5V From PC
Adapter	N/A
Highest internal frequency	2400MHz

### Accessories Cable List

Cable Type	Core	Length	Shielding/Non-shielding
N/A	N/A	N/A	N/A

## 1.3 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
Notebook	DELL	Latitude E6440	CYRVQ32
Test Kit 1	TI	CC1352R1	N/A
Test Kit 2	TI	CC1352R1	N/A
Mouse	Logitech	M90	1738HS05FHF8
Notebook (EMS)(Win7)	Lenovo	L430	PK-0CGFB
Dongle	N/A	N/A	N/A
Testkit	N/A	N/A	N/A

### Support Equipment Used in Tested Cable

Cable Type	Core	Length	Shielding/Non-shielding
USB cable	N/A	1.5m	Shielding
USB cable	Near EUT	0.6m	Shielding
Test Kit cable	Near EUT	0.1m	Non-shielding

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#### 1.4 I/O Port Description

I/O Port Types	Q'TY
1). USB Port	1

#### 1.5 Decision of Test Mode

The test configuration/ modes are as the following:

Mode 1. BT Link

Mode 2. Zigbee Link

Mode 3. Worst BT Standby

#### 1.6 The Final Test Mode of the EUT

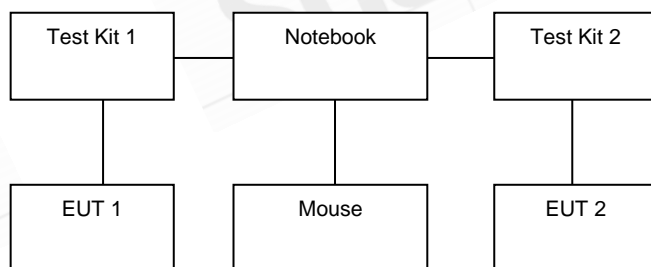
After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode	
Conducted Emission	Mode 2
ISN	N/A
Radiated Emission Below 1GHz	Mode 1
Radiated Emission Above 1GHz	Mode 2
Harmonics & Flicker	N/A
Immunity	Mode 2

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

#### 1.7 Configuration of Tested System

Mode1 & 2



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## 1.8 Operation Procedure

Mode 1 & 2:

1. Let EUT\_1 & EUT\_2 connect to the fixture, NB with USB Cable and turn it on.
2. Turn on SmartRF Studio 7.exe on NB, you can find two EUTs, click EUT directly to select BT/Zigbee according to Test Mode, set one Tx / one Rx, and press Start, Rx can see the message sent by Tx.
3. Start the test.

## 1.9 Summary of Results

Emission		
Standard	Test Type	Result
EN 55032 : 2015+A11:2020	Conducted Emission	PASS
	ISN	N/A
	Radiated Emission	PASS
EN 61000-3-2 : 2014	Harmonic current emissions	N/A
EN 61000-3-3 : 2013+A1:2019	Voltage changes, voltage fluctuations & flicker	N/A

Immunity			
Standard	Test Type	Result	Performance Criteria
IEC 61000-4-2 : 2008	ESD	PASS	B
IEC 61000-4-3 : 2006+A1:2007+A2:2010	RS	PASS	A
IEC 61000-4-4 : 2012	EFT	N/A	B
IEC 61000-4-5 : 2014+A1:2017	Surge	N/A	B
IEC 61000-4-6 : 2013	CS	N/A	A
IEC 61000-4-8 : 2009	PFMF	PASS	A
IEC 61000-4-11 : 2004+A1:2017	DIP	N/A	C/C/B

## 1.10 Reporting Statements of Conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

## 1.11 Deviation

No deviation from the mentioned test methods and applicable standards.

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## 2.EMISSION

### 2.1 Limit

#### Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class A(dBuV)		Class B(dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: The lower limit shall apply at the transition frequency.

#### Maximum permissible level of Common Mode Conducted Emission (Telecommunication Ports)

##### Class A

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	97 - 87	84 - 74	53 - 43	40 - 30
0.5 - 30.0	87	74	43	30

##### Class B

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	84 - 74	74 - 64	40 - 30	30 - 20
0.5 - 30.0	74	64	30	20

Note: The lower limit shall apply at the transition frequency.

#### Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	40	30
230 - 1000	47	37

Note: The lower limit shall apply at the transition frequency.

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**Maximum permissible level of Radiated Emission measured at 3 meter**

Frequency range (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	50	40
230 - 1000	57	47

Note: The lower limit shall apply at the transition frequency.

**Limits above 1 GHz****Limits for radiated disturbance of Class A ITE at a measurement distance of 3m**

Frequency range (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 - 3	56	76
3 - 6	60	80

Note: The lower limit applies at the transition frequency.

**Limits for radiated disturbance of Class B ITE at a measurement distance of 3m**

Frequency range (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 - 3	50	70
3 - 6	54	74

Note: The lower limit applies at the transition frequency.

**Requirements for radiated emissions from FM receivers**

Frequency range (MHz)	Measurement				Class B Limit dB(μV/m)
	Facility	Distance (m)	Detector type / Bandwidth	Fundamental	Harmonics
30 - 230	OATS/SAC	10	Quasi Peak / 120 kHz	50	42
230 - 300					42
300 - 1000					46
30 - 230	OATS/SAC	3	Quasi Peak / 120 kHz	60	52
230 - 300					52
300 - 1000					56

These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the LO. Signals at all other frequencies shall be compliant with the limits

Note: SAC: Semi Anechoic Chamber

OATS: Open Area Test Site

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## 2.2 Conducted Emission

### 2.2.1 Test Instruments

SGS Conducted_Emission HWAYA Conducted Room No.A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 3	101311	2020/7/8	2021/7/7
Coaxial Cables	EMC Instruments Corp.	HY-CE-CABLE	HYCE-2000-01	2020/5/19	2021/5/18
LISN	Schwarzbeck	NSLK 8127	8127-648	2020/7/14	2021/7/13
LISN	Schwarzbeck	NSLK 8128	NSLK8128-300	2020/9/10	2021/9/9
Test Software	Farad	EZ-EMC	Ver. SGS-03A2-5	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					
Measurement Uncertainty of Conducted Emission					
Expanded uncertainty U <sub>lab</sub> (k=2) of Conducted Emission is 2.28 dB.					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Conducted Emission measurement is 3.44 dB.					

### 2.2.2 Measurement Level Calculation

Factor = LISN insertion loss + Cable loss + Pulse Limiter insertion loss

Measurement Level = Reading Level + Factor

Over (Margin) = Measurement Level – Limit

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## 2.2.3 Measurement Data (CE)

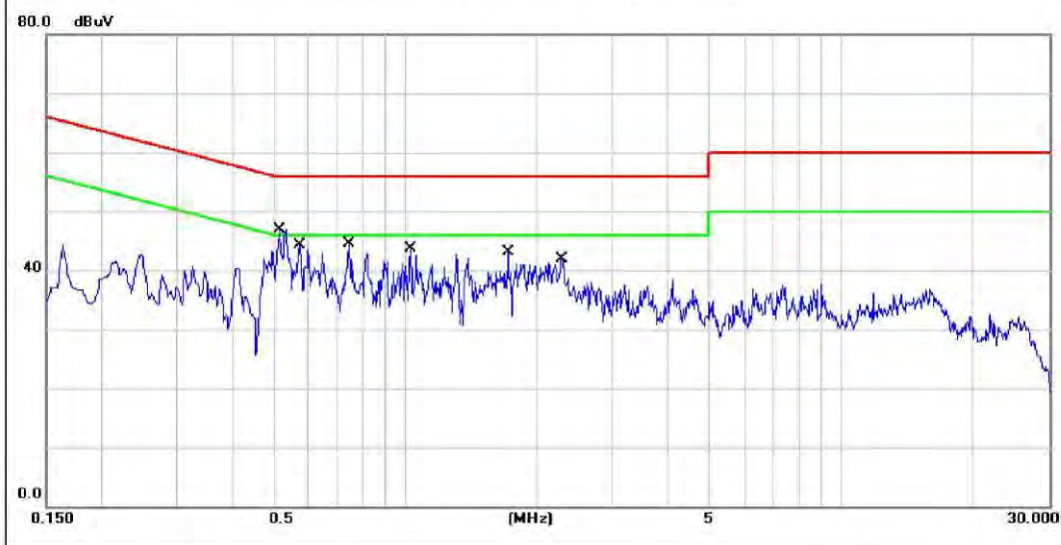
Model No.: CC2650MODA

Mode\_2\_L

Site: : Conduction Room A	Date: 2020/12/15	Time: 下午 01:39:38
Limit: EN 55032 Class B Conduction(QP)	Phase: L1	Temperature: 20 ℃
Mode: Mode 2	Power: AC230V/50Hz	Humidity: 63 %RH
Report: MH-2020-B0073		Air Pressure: 990 hpa
Tester: Stan Lin		

Note:

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No.	Mk	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.5144	42.89	0.01	42.90	56.00	-13.10	QP	
2		0.5144	29.09	0.01	29.10	46.00	-16.90	AVG	
3	*	0.5730	44.49	0.01	44.50	56.00	-11.50	QP	
4		0.5730	32.59	0.01	32.60	46.00	-13.40	AVG	
5		0.7440	38.58	0.02	38.60	56.00	-17.40	QP	
6		0.7440	31.68	0.02	31.70	46.00	-14.30	AVG	
7		1.0275	38.38	0.02	38.40	56.00	-17.60	QP	
8		1.0275	27.42	0.02	27.44	46.00	-18.56	AVG	
9		1.7250	38.20	0.10	38.30	56.00	-17.70	QP	
10		1.7250	32.90	0.10	33.00	46.00	-13.00	AVG	
11		2.2920	37.36	0.14	37.50	56.00	-18.50	QP	
12		2.2920	29.96	0.14	30.10	46.00	-15.90	AVG	

\*:Maximum data x:Over limit !:over margin

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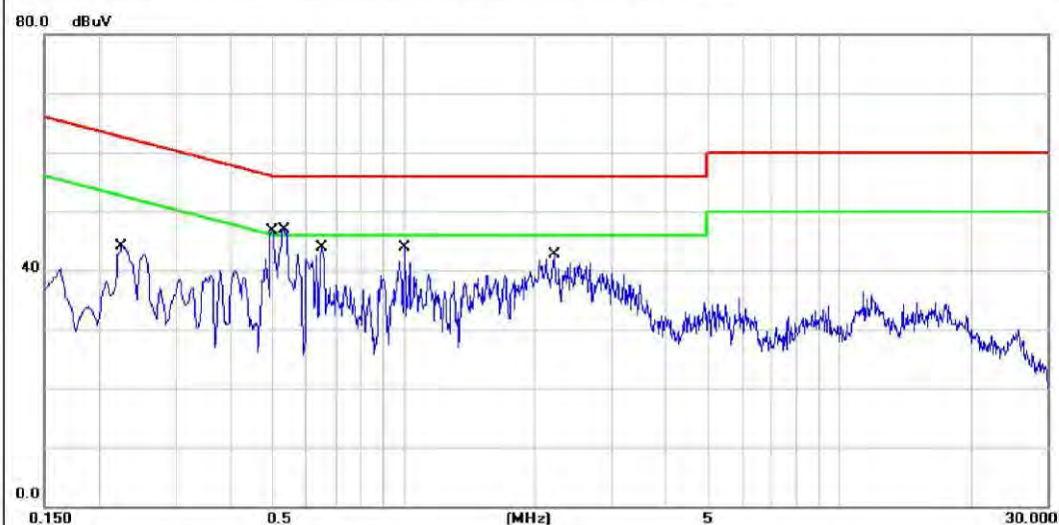
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## Mode\_2\_N

Site: : Conduction Room A	Date: 2020/12/15	Time: 下午 01:43:49
Limit: EN 55032 Class B Conduction(QP)	Phase: N	Temperature: 20 ℃
Mode: Mode 2	Power: AC230V/50Hz	Humidity: 63 %RH
Report: MH-2020-B0073		Air Pressure: 990 hpa
Tester: Stan Lin		
Note:		

SGS Taiwan Ltd.-Electromagnetic Compatibility Laboratory Address: No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333



No.	Mk	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.2265	40.69	0.01	40.70	62.58	-21.88	QP	
2		0.2265	32.39	0.01	32.40	52.58	-20.18	AVG	
3		0.5010	44.78	0.01	44.79	56.00	-11.21	QP	
4		0.5010	32.89	0.01	32.90	46.00	-13.10	AVG	
5	*	0.5325	45.29	0.01	45.30	56.00	-10.70	QP	
6		0.5325	31.89	0.01	31.90	46.00	-14.10	AVG	
7		0.6495	41.13	0.01	41.14	56.00	-14.86	QP	
8		0.6495	30.79	0.01	30.80	46.00	-15.20	AVG	
9		1.0095	38.08	0.02	38.10	56.00	-17.90	QP	
10		1.0095	27.38	0.02	27.40	46.00	-18.60	AVG	
11		2.2290	37.66	0.14	37.80	56.00	-18.20	QP	
12		2.2290	32.56	0.14	32.70	46.00	-13.30	AVG	

\*:Maximum data x:Over limit !:over margin

Page: 1

## 2.2.4 Measurement Data (ISN)

N/A, without wired telecommunication port exist in this EUT, no necessary to perform the test.

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## 2.3 Radiated Emission

### 2.3.1 Test Instruments

#### Below 1GHz

SGS Radiated_Below_1GHz HWAYA 10m_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 7	100950	2020/11/30	2021/11/29
EMI Test Receiver	R&S	ESCI 3	101343	2020/2/17	2021/2/16
Broadband Antenna	SCHWAZBECK	VULB9168	9168-628	2020/9/8	2021/9/7
Broadband Antenna	SCHWAZBECK	VULB9168	9168-629	2020/9/14	2021/9/13
Loop Antenna	COM-POWER	AL-130	121060	2020/5/8	2021/5/7
Pre Amplifier	EMC Instruments	EMC330	980178	2020/3/31	2021/3/30
Pre Amplifier	EMC Instruments	EMC330	980179	2020/3/31	2021/3/30
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150917	2020/9/18	2021/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150919	2020/9/18	2021/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150820	2020/9/18	2021/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150918	2020/9/18	2021/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150821	2020/9/18	2021/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150822	2020/9/18	2021/9/17
Site NSA	SGS	10m Chamber	10M SAC	2020/12/31	2021/12/30
Test S/W	Farad	EZ-EMC	Ver. SGS 10m-03A2-5	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					
Measurement Uncertainty of Radiated Emission					
Expanded uncertainty U <sub>lab</sub> (k=2) of Radiated Emission is 4.43 dB.(30MHz-1000MHz)					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.22 dB.(30MHz-1000MHz)					

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### Above 1GHz

SGS Radiated_Above_1GHz HWAYA 966A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	2020/4/6	2021/4/5
EMI Test Receiver	R&S	ESR 7	101459	2020/2/24	2021/2/23
Horn Antenna	Schwarzbeck	BBHA9120D	BBHA9120D285	2020/4/29	2021/4/28
Pre Amplifier	EMC Instruments	EMC012645B	980216	2020/4/25	2021/4/24
Coaxial Cable	JUNFLOW	MWX221-NMSNMS	J0778929	2020/4/23	2021/4/22
Coaxial Cable	Huber+Suhner	SUCOFLEX 104PEA	30255/4PEA	2020/4/23	2021/4/22
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2020/4/23	2021/4/22
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	520415/2	2020/6/5	2021/6/4
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2153/2	2020/6/5	2021/6/4
Site VSWR	SGS	966 Chamber A	SAC-A	2020/1/12	2021/1/11
Test Software	Farad	EZ-EMC	Ver. SGS-03A2-5	N.C.R.	N.C.R.

Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan  
Measurement Uncertainty of Radiated Emission  
Expanded uncertainty U<sub>lab</sub> (k=2) of Radiated Emission measurement is 4.90 dB.(1-6GHz)  
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.18 dB.(1-6GHz)

### 2.3.2 Measurement Level Calculation

Correction Factor = Antenna Factor + Cable loss- Amplifier Gain  
Measurement Level = Reading Level + Correction Factor  
Over (Margin) = Measurement Level – Limit

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## 2.3.3 Measurement Data

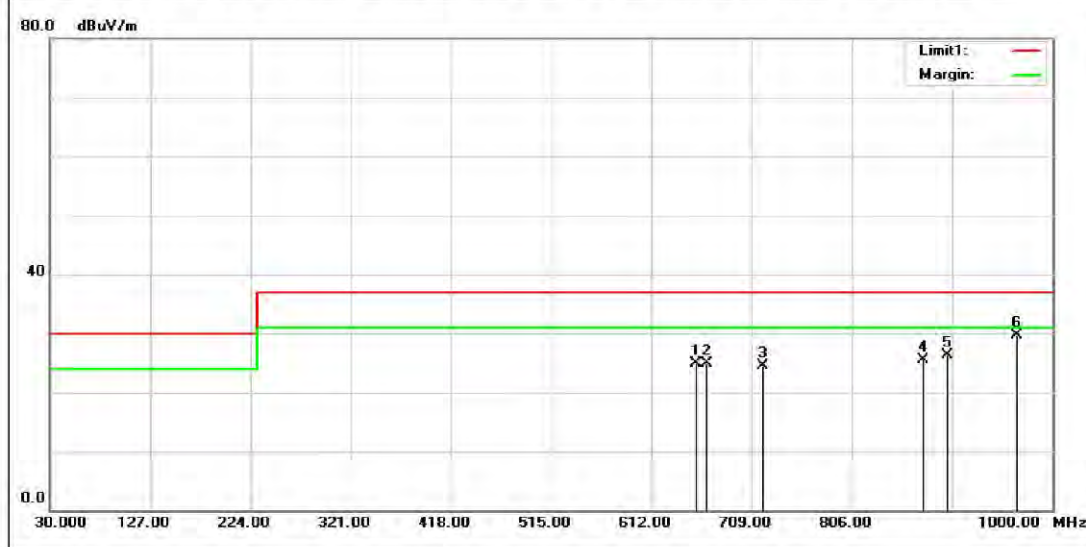
## Below 1GHz

Model No.: CC2650MODA

Mode\_1\_H

Site: SGS 10m Chamber	Date: 2021/1/12	Time: 下午 07:45:15
Limit: EN55032 Class B 10m Radiation	Polarization: <b>Horizontal</b>	Temperature: 15 °C
Mode: Mode 1	Power: AC230V/50Hz	Humidity: 46 %RH
Report: File :MH-2020-B0073	Distance: 10m	Air Pressure: 990 hpa
Tester: Moore Cheng		
Note:		

SGS Taiwan Ltd.-Electromagnetic Compatibility Laboratory Address: No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333



No.	Mk	Freq. MHz	Reading (dBuV)	Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Height (cm)	Degree (deg.)	Detector	Comment
1		654.6800	26.09	-1.19	24.90	37.00	-12.10			QP	
2		665.3500	26.06	-1.14	24.92	37.00	-12.08			QP	
3		719.6700	24.72	-0.31	24.41	37.00	-12.59			QP	
4		874.8700	23.82	1.70	25.52	37.00	-11.48			QP	
5		898.1500	24.28	1.99	26.27	37.00	-10.73			QP	
6	*	964.9400	26.86	2.79	29.65	37.00	-7.35	136	20	QP	

\*:Maximum data x:Over limit !:over margin

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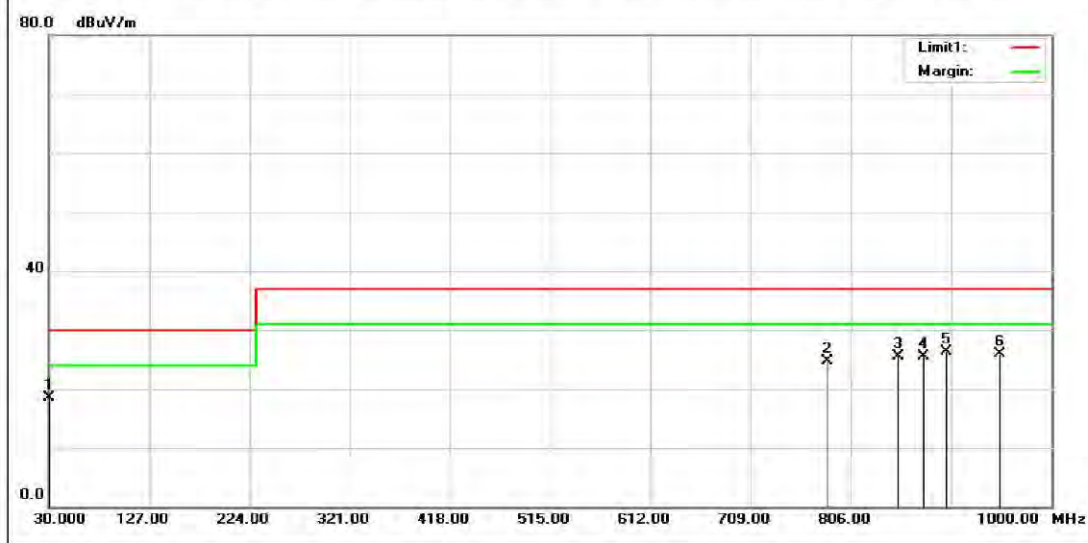
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## Mode\_1\_V

Site: SGS 10m Chamber	Date: 2021/1/12	Time: 下午 07:45:14
Limit: EN55032 Class B 10m Radiation	Polarization: <b>Vertical</b>	Temperature: 15 °C
Mode: Mode 1	Power: AC230V/50Hz	Humidity: 46 %RH
Report: File :MH-2020-B0073	Distance: 10m	Air Pressure: 990 hpa
Tester: Moore Cheng		
Note:		

SGS Taiwan Ltd.-Electromagnetic Compatibility Laboratory Address: No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Height	Degree	Detector	Comment
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)		
1		30.9700	30.84	-12.28	18.56	30.00	-11.44			QP	
2		782.7200	23.06	1.72	24.78	37.00	-12.22			QP	
3		851.5900	23.29	2.19	25.48	37.00	-11.52			QP	
4		875.8400	23.41	2.19	25.60	37.00	-11.40			QP	
5	*	898.1500	24.06	2.21	26.27	37.00	-10.73	220	5	QP	
6		950.5300	23.31	2.69	26.00	37.00	-11.00			QP	

\*:Maximum data x:Over limit l:over margin

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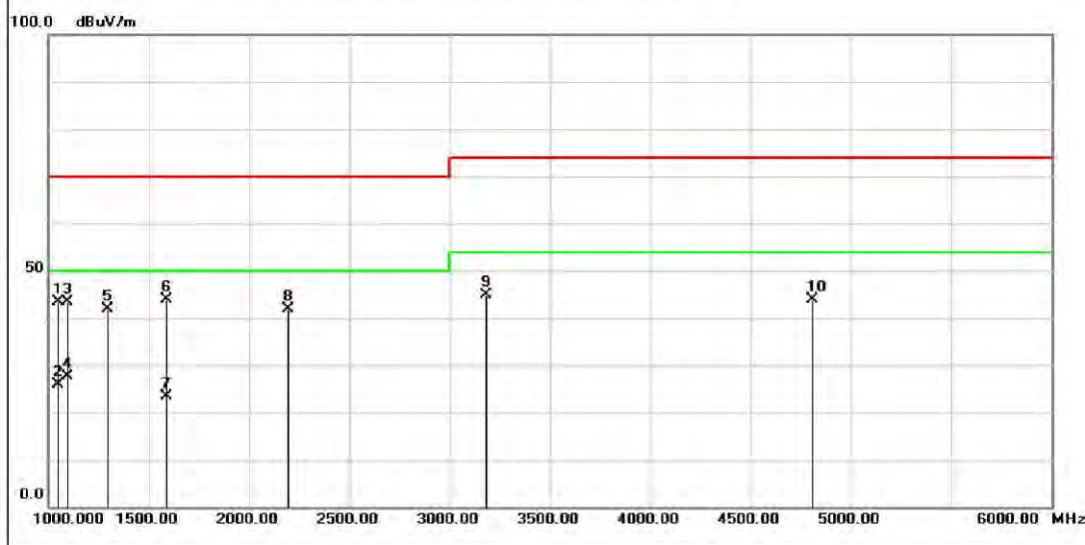
Above 1GHz

Model No.: CC2650MODA

Mode\_2\_H

Site: SGS 966 Chamber A	Date: 2020/12/14	Time: 下午 07:04:52
Limit: EN 55032 Class B 1G-6G(Peak)	Polarization: <b>Horizontal</b>	Temperature: 20 ℃
Mode: Mode 2	Power: AC 230V/50Hz	Humidity: 69 %RH
Report: MH-2020-B0073	Distance: 3m	Air Pressure: 990 hpa
Tester: Boris Liao		
Note:		

SGS Taiwan Ltd.-Electromagnetic Compatibility Laboratory Address: No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333



No.	Mk	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Height (cm)	Degree (deg.)	Detector	Comment
1		1050.000	68.06	-24.64	43.42	70.00	-26.58			peak	
2		1050.000	50.41	-24.64	25.77	50.00	-24.23			AVG	
3		1095.000	67.74	-24.37	43.37	70.00	-26.63	100	134	peak	
4	*	1095.000	51.95	-24.37	27.58	50.00	-22.42	100	134	AVG	
5		1295.000	64.94	-23.10	41.84	70.00	-28.16			peak	
6		1590.000	66.86	-23.03	43.83	70.00	-26.17			peak	
7		1590.000	46.44	-23.03	23.41	50.00	-26.59			AVG	
8		2195.000	60.71	-18.79	41.92	70.00	-28.08			peak	
9		3185.000	62.56	-17.79	44.77	74.00	-29.23			peak	
10		4810.000	58.21	-14.29	43.92	74.00	-30.08			peak	

\*:Maximum data x:Over limit !:over margin

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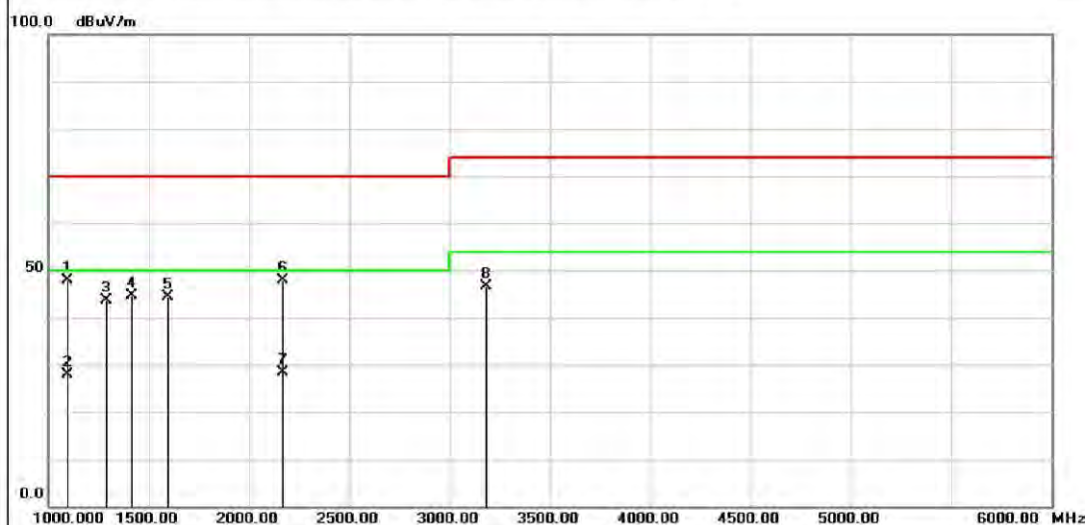
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## Mode\_2\_V

Site: SGS 966 Chamber A	Date: 2020/12/14	Time: 下午 07:19:30
Limit: EN 55032 Class B 1G-6G(Peak)	Polarization: <b>Vertical</b>	Temperature: 20 ℃
Mode: Mode 2	Power: AC 230V/50Hz	Humidity: 69 %RH
Report: MH-2020-B0073	Distance: 3m	Air Pressure: 990 hpa
Tester: Boris Liao		
Note:		

SGS Taiwan Ltd.-Electromagnetic Compatibility Laboratory Address: No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333.



No.	Mk	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Height (cm)	Degree (deg.)	Detector	Comment
1		1095.000	72.31	-24.37	47.94	70.00	-22.06			peak	
2		1095.000	52.32	-24.37	27.95	50.00	-22.05			AVG	
3		1290.000	66.70	-23.14	43.56	70.00	-26.44			peak	
4		1415.000	67.34	-22.67	44.67	70.00	-25.33			peak	
5		1595.000	67.53	-23.03	44.50	70.00	-25.50			peak	
6		2170.000	67.06	-19.09	47.97	70.00	-22.03	101	0	peak	
7	*	2170.000	47.53	-19.09	28.44	50.00	-21.56	101	0	AVG	
8		3185.000	64.30	-17.79	46.51	74.00	-27.49			peak	

\* Maximum data x: Over limit !: over margin

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## 3. Harmonics

### 3.1 Test Instruments

SGS Harmonic EN61000-3-2 HWAYA_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2017/3/20	2018/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2017/3/20	2018/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.5.8	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 3.2 Measurement Data

N/A, the EUT power from system, no necessary to perform the test.

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## 4. Flicker

### 4.1 Test Instruments

SGS Flicker EN61000-3-3 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2017/3/20	2018/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2017/3/20	2018/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.5.8	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 4.2 Measurement Data

N/A, the EUT power from system, no necessary to perform the test.

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## 5. IMMUNITY

### 5.1 Standard Performance Criteria Description

Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

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## 5.2 Special Performance Criteria Description

### 5.2.1 Performance Criteria Description for Print function

Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the disturbance:

- change of operating state;
- unintended pausing of the print operation;
- a change of print quality or legibility, as appropriate to the test pattern;
- change of character font;
- unintended line feed;
- unintended page feed;
- paper feed failure.

Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations. Paper feed failures are allowed only if, after removal of the jammed sheets, the job is automatically recovered and there is no loss of printed information. Any low-quality print output caused by the application of the disturbance shall not continue beyond the sheet of media being printed, or beyond the typical length of a finished page or sheet printed from continuous roll media. False indicators are permitted during the test provided that a normal operator response to that false indicator is simple (such as pressing a button). False indicators are not acceptable if they would cause the user to discard printing supplies such as ink, toner or paper, when those supplies are actually not empty or faulty. Any false indicator shall either clear automatically or after the operator's response. After the disturbance, the print function may print the remainder of the print job at a quality level within the manufacturer's specifications. Alternately, the print function may halt processing of a print job as a result of the disturbance, but only if the operator is capable of reprinting the job (for example, a fax printing job where the image to be printed still resides in local memory). Automatically restarting the print job from the beginning is also acceptable. In any scenario, the pairing of front and back images during double-sided printing shall be correct.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

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### 5.2.2 Performance Criteria Description for Scan function

Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the test:

- change of settings, such as which side(s) of the page to be scanned, colour or monochrome, and resolution;
- corruption of the image, for example stretching, compressing or change in colour;
- paper feed failures;
- errors in the reading of bar codes.

Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations.

- Document feed failures are allowed only if the original documents are undamaged and, after removal of the jammed sheets, the job is automatically recovered and there is no loss of scanned information.
- During the test, the representation of the image shall not be degraded such that reading mistakes occur.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.2.3 Performance Criteria Description for Display and display output function

Criterion A - Apply criterion A as defined in 8.2. Additionally, an increase in any degradation greater than just perceptible by observation of the image shall not occur as a consequence of the application of the test.

Examples of such degradations are:

- superimposed patterning;
- positional disturbances due to synchronisation errors;
- geometric distortion;
- change of contrast or brightness;
- picture artefacts;
- freezing or disturbance of motion;
- image loss;
- video data or decoding errors.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

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#### 5.2.4 Performance Criteria Description for Musical tone generating function

Criterion A - Performance criterion A is subdivided according to the type of equipment and its use. Three subgroups corresponding to different equipment types are defined in Table E.1 and have corresponding performance criteria A1, A2 and A3. The relevant subgroup shall be selected by the manufacturer in accordance with the product specification. The description of criteria A1, A2 and A3 are presented in Table E.2.

Criterion B - During the test, degradation of performance beyond that defined in criterion A1 of Table E.2 is allowed. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed. After the test, normal operation of the EUT shall be self-recovered. In the case of unintended tone holding caused by a MIDI protocol communication error, the EUT can be re-initialised by the operation of the controls by the user controls in accordance with the manufacturer's instructions. Due to the nature of the MIDI protocol, it is necessary to modify the performance criterion B to allow user intervention when the unintended tone holding is caused by a missing MIDI communication error (for example missing a 'NOTE OFF' message).

Criterion C - Degradation of the performance beyond that defined in criterion A1 of Table E.2 is permitted provided that the normal operation of the EUT can be restored after the test by operator intervention. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed.

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### 5.2.5 Performance Criteria Description for Networking function

Criterion A - Where relevant, during the application of the test the network function shall, as a minimum, operate ensuring that:

- established connections shall be maintained throughout the application of the test;
- no change of operational state or corruption of stored data occurs;
- no increase in error rate above the figure defined by the manufacturer occurs. The manufacturer should select the most appropriate performance measurement criteria for the product or system, for example bit error rate, block error rate;
- no request for retry above the figure defined by the manufacturer;
- the data transmission rate does not reduce below the figure defined by the manufacturer;
- no protocol failure occurs;
- the audio noise level at a two-wire analogue interface (supporting telephony) shall satisfy the requirements of Table G.3. The audio level measurements shall be performed at the demodulated frequency of the disturbance using a narrowband filter with a 3 dB bandwidth of 100 Hz using the method defined in table clause G.1.4. See G.6.1. As described in the example given in J.3.5 the networking function is monitored during testing using direct functions specified elsewhere in this document. If needed to verify the operation of the protocol, the following functions shall be verified as described in Table H.1 when performing the additional spot frequency tests contained in Clause 5:
- ability to establish a connection,
- ability to clear a connection.

Where an EUT has supervisory functions they shall not be affected.

Elements that should be monitored include, but are not limited to:

- alarms,
- signalling lamps,
- printer output errors,
- network traffic rates,
- network monitor errors,
- measured network parameters.

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Criterion B - Established connections shall be maintained throughout the test, or shall self-recover in a way and timescale that is imperceptible to the user.

The error rate, request for retry and data transmission rates may be degraded during the application of the test. Degradation of the performance as described in criterion A is permitted, provided that the normal operation of the EUT is self-recoverable to the condition established prior to the application of the test. Where required, as defined in Clause 5, the acceptable operation of the function shall be verified at the completion of the test as described in Table H.1, by confirming the following:

- the EUT's ability to establish a connection,
- the EUT's ability to clear a connection.

During surge testing disconnection is allowed on the analogue/digital data port being tested. If the EUT is a supervisory equipment, it shall not impact the normal operation of the network being monitored. In addition, any supervisory functions impacted during the period of the test shall return to the state prior to the test. Elements to consider include:

- alarms,
- signalling lamps,
- printer output,
- network traffic rates,
- network monitoring. is used as intended.

Criterion C - Degradation of performance as described in criteria A and B is permitted provided that the normal operation of the EUT is self-recoverable to the condition immediately before the application of the test, or can be restored after the test by the operator.

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**5.2.6 Performance Criteria Description for Audio output function**

- Criterion A - The interference ratio (electrical or acoustic) shall meet the limits in column 3; or,  
the acoustic level of the demodulated audio shall be less than the limits in column 4; or,  
the digitally coded level of demodulated audio shall be less than limits in column 5; or,  
the analogue level of the demodulated audio shall be less than the limits in column 6.
- Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

**5.2.7 Performance Criteria Description for Telephony function**

Function to be exercised	Performance criteria		
	A	B	C
Establish new communication	At the additional spot frequency tests a, c	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance
Maintain established communication	Yes In addition, the requirements of Annex G for the audio output function shall be satisfied c	Yes b	No
Terminate established communication	At the additional spot frequency tests a, c	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance

Communication refers to a telephone call or other form of voice connection.

a Applicable to TTE with a dial function that provides dedicated emergency service/safety of life call capability. Where the EUT does not provide this functionality, this limitation shall be stated in the equipment user manual.

b Communication shall be established prior to the application of the disturbance, the communication shall be maintained and the quality of that communication (for example, volume setting, the level of background noise) shall be maintained after completion of the test or disturbance.

c Where defined in Clause 5 (for the tests in Table 1 to Table 4), these functional tests shall be performed during the additional spot frequency tests.

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### 5.3 Test of IEC 61000-4-2

#### 5.3.1 Test Instruments

SGS ESD EN61000-4-2 HwaYa No.1_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
ESD Simulator	NoiseKen	ESS-B3011	ESS12Z5075	2020/9/21	2021/9/20
HCP	N/A	1.6 x 0.8 m	N/A	N.C.R.	N.C.R.
VCP	N/A	0.5 x 0.5 m	N/A	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

#### 5.3.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
24 °C	54 %RH	990 hpa

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### 5.3.3 Results of Electrostatic Discharge Test (ESD)

**Model No.: CC2650MODA**

Tested By	: Ricky Chen
Tested Date	: Dec. 18, 2020
Test Mode	: Mode 2
Basic Standard	: IEC 61000-4-2
Discharge Impedance	: 330 ohm / 150 pF
Discharge Voltage	: Air Discharge: $\pm 2, 4, 8$ kV Contact Discharge: $\pm 2, 4$ kV HCP/VCP: $\pm 2, 4$ kV
Polarity	: Positive/Negative
Number of Discharge	: 10 times at each test point
Discharge Mode	: Single Discharge
Discharge Period	: 1 second

### A. Observations:

**Test points:** N/A

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8 (Air.)	+/-	N/A	N/A	N/A
2, 4 (Cont.)	+/-	N/A	N/A	N/A

**Remark:** N/A: Not Applicable.

### B. Observations:

**Test points:** 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2, 4	+/-	1~4	A	A

**Remark:** A: No degradation of performance or loss of function.

N/A: Not Applicable.

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## 5.4 Test of IEC 61000-4-3

### 5.4.1 Test Instruments

SGS RS EN61000-4-3 HWAYA SAC-F EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
RS Test Site	Chance Most	8*5*3 Chamber	SAC-F	2020/2/24	2021/2/23
Signal Generator	R&S	SMB 100A	114674	2020/11/6	2021/11/5
Power Sensor	R&S	NRP-Z11	112186	2020/4/13	2021/4/12
Power Sensor	R&S	NRP-Z11	111682	2020/4/15	2021/4/14
Power Amplifier	R&S	BBA100	101075	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA100	101021	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA150	102229	N.C.R.	N.C.R.
E-Field Generating Antenna	ifi	EFG-3	U2137-0217	N.C.R.	N.C.R.
High Gain Log-Per. Antenna	R&S	HL046E	100112	N.C.R.	N.C.R.
Calibrated Broadband Log-Per. Test-Antenna	Schwarzbeck	STLP 9149	9149-151	N.C.R.	N.C.R.
Electric Field Probes	AR	FL7006+FI7000	0330722+0330847	2020/7/24	2021/7/23
Test Software	R&S	EMC 32	V10.20.01	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 5.4.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
21 °C	55 %RH	990 hpa

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## 5.4.3 Results of Radiated Radio Frequency Electromagnetic (RS)

## Model No.: CC2650MODA

Tested By : James Ho  
 Tested Date : Jan. 14, 2021  
 Test Mode : Mode 2  
 Basic Standard : IEC 61000-4-3  
 Frequency range : 80 MHz - 1000 MHz  
 Frequency range : 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz ( $\pm 1\%$ )  
 Field strength : 3 V/m  
 Modulation : 80% AM (1kHz)  
 Frequency step : 1 % of fundamental  
 Polarity of Antenna : Horizontal and Vertical  
 Dwell Time : 3 seconds  
 Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	0 degree
2	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	90 degree
3	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	180 degree
4	1800, 2600, 3500, 5000 ( $\pm 1\%$ )	Vertical/Horizontal	A	270 degree

**Remark:** A: No degradation of performance or loss of function.

N/A: Not Applicable.

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## 5.5 Test of IEC 61000-4-4

### 5.5.1 Test Instruments

SGS EFT EN61000-4-4 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Burst Generator	TESEQ	NSG 3025	35177	2015/12/2	2016/12/1
EFT Clamp	Thermo	CCL	612359	2015/12/2	2016/12/1
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 5.5.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
N/A °C	N/A %RH	990 hpa

### 5.5.3 Results of Electrical Fast Transient (EFT)

Tested By : N/A  
 Tested Date : N/A  
 Test Mode : N/A  
 Basic Standard : IEC 61000-4-4  
 Test Voltage : AC Input:  $\pm 1$  kV  
                   DC Input:  $\pm 0.5$  kV  
 Signal/Comm. :  $\pm 0.5$  kV  
 Polarity : Positive/Negative  
 Impulse Frequency : 5 kHz  
 Tr/Th : 5/50ns  
 Burst : 15ms/300ms

**Observation:**

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	N/A
N	+/-	1	N/A
PE	+/-	1	N/A
L-N	+/-	1	N/A
L-PE	+/-	1	N/A
N-PE	+/-	1	N/A
L-N-PE	+/-	1	N/A
DC Input	+/-	0.5	N/A
Signal/Comm.	+/-	0.5	N/A

**Remark:** N/A : The EUT power from system and no signal/Comm. port cable exist, no necessary to perform test.

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## 5.6 Test of IEC 61000-4-5

### 5.6.1 Test Instruments

SGS Surge EN61000-4-5 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Surge Tester	EMC Partner	MIG0603IN2 S-T	1515	2016/5/17	2017/5/16
Universal Surge CDN	EMC Partner	CDN-UTP8	CDN-UTP8-1516	2016/5/25	2017/5/24
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 5.6.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
N/A °C	N/A %RH	990 hpa

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## 5.6.3 Results of Surge Test

Tested By : N/A  
 Tested Date : N/A  
 Test Mode : N/A  
 Basic Standard : IEC 61000-4-5  
 Test Rate : 1 pulse every minute  
 No. of Tests : 5 positive and 5 negative pulses  
 Waveform : 1.2/50 $\mu$ s (8/20 $\mu$ s)

**Observation Description**

AC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	90, 270	+/-	1	N/A
L – PE	90, 270	+/-	2	N/A
N – PE	90, 270	+/-	2	N/A

**Remark:** N/A : The EUT power from system and no signal/Comm. port cable exist, no necessary to perform test.

DC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
DC input	No phase angle (degree)	+/-	0.5	N/A

**Remark:** N/A : The EUT power from system, no necessary to perform test.

Signal line:

Test Rate : 1 pulse every minute  
 No. of Tests : 5 positive and 5 negative pulses  
 Waveform : 10/700 $\mu$ s

**Observation Description**

Signal line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
Signal I/O	No phase angle (degree)	+/-	1	N/A

**Remark:** N/A : No signal I/O port and POE LAN cable exist, no necessary to perform test.

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## 5.7 Test of IEC 61000-4-6

## 5.7.1 Test Instruments

SGS CS EN61000-4-6 HwaYa_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Signal Generator	R&S	SMB 100A	102920	2016/5/10	2017/5/9
Power Sensor	R&S	NRP-Z91	100373	2015/12/3	2016/12/2
Power Sensor	R&S	NRP-Z91	100547	2016/2/15	2017/2/14
Power Amplifier	R&S	BBA150	102118	N.C.R.	N.C.R.
CDN	LUTHI	CDN M2	P1317118042	2016/5/26	2017/5/25
CDN	LUTHI	CDN M3	P1318118505	2016/5/20	2017/5/19
CDN	FCC	FCC-801-T2-RJ11	5032	2016/2/26	2017/2/25
CDN	FCC	FCC-801-T8-RJ45	5034	2016/2/26	2017/2/25
EM Injection Clamp	LUTHI	EM 101	36158	2016/5/18	2017/5/17
CDN	Frankonia	CDN M2+M3	A3011070	N.C.R.	N.C.R.
Test Software	R&S	EMC 32	V9.25.00	N.C.R.	N.C.R.
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

## 5.7.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
N/A °C	N/A %RH	990 hpa

## 5.7.3 Results of Immunity to Conducted Disturbances (CS)

Tested By : N/A  
 Tested Date : N/A  
 Test Mode : N/A  
 Basic Standard : IEC 61000-4-6  
 Frequency range : 0.15 MHz -10 MHz  
 Field strength : 3 Vrms  
 Frequency range : 10 MHz - 30 MHz  
 Field strength : 3 V to 1Vrms  
 Frequency range : 30 MHz - 80 MHz  
 Field strength : 1 Vrms  
 Modulation : 80% AM, 1 kHz Sinewave  
 Frequency step : 1 % of fundamental  
 Dwell Time : 3 seconds  
 Coupling Method : N/A

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	N/A
DC input	0.15 – 80	N/A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	N/A

**Remark:** N/A : The EUT power from system, no signal/Comm. port exist, no necessary to perform test.

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## 5.8 Test of IEC 61000-4-8

### 5.8.1 Test Instruments

SGS PFMF EN61000-4-8 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Magnetic Field Generator	Narda S.T.S.	PMM 1008	0100X30601	2015/11/10	2016/11/9
AC CLAMP METER	CHAUVIN ARNOUX	96	12002769	2015/9/1	2016/8/31
Triax Elf Magnetic Field Meter	F.W. BELL	4180	1248004	2015/7/1	2016/6/30
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

### 5.8.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
21 °C	50 %RH	990 hpa

### 5.8.3 Result of Immunity to Power Frequency Magnetic Field

Model No.: CC2650MODA

Tested By : Allen Chang  
 Tested Date : Jun. 28, 2016  
 Test Mode : Mode 1-2  
 Basic Standard : IEC 61000-4-8  
 Power Frequency : 50/60 Hz  
 Magnetic Field : 1 A/m(r.m.s)  
 Coil Orientation : X, Y, Z Axis  
 Observation : A

**Remark:** A: No degradation of performance or loss of function.

N/A: Not Applicable.

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## 5.9 Test of IEC 61000-4-11

## 5.9.1 Test Instruments

SGS DIP EN61000-4-11 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMCPRO-PLUS Immunity Test System	Thermo	EMCPRO	612355	2015/6/30	2016/6/29
Testing Site : No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan					

## 5.9.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
N/A °C	N/A %RH	990 hpa

## 5.9.3 Results of Voltage Dips Immunity Test

Tested By : N/A  
 Tested Date : N/A  
 Test Mode : N/A  
 Basic Standard : IEC 61000-4-11  
 EUT Rated Voltage : 100/240 Volts.  
 Reduction Voltage : 30, >95 % Ut  
 Phase Angle : 0,180 degree  
 Total events : 3 dropouts  
 Event interval : 10 seconds

Test Power: 100Vac, 50Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	N/A
Voltage dips	>95	0.5	N/A
	30	25	N/A

Test Power: 240Vac, 50Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	N/A
Voltage dips	>95	0.5	N/A
	30	25	N/A

**Remark:** N/A : The EUT power from system, not apply for Voltage Dips and interruption test.

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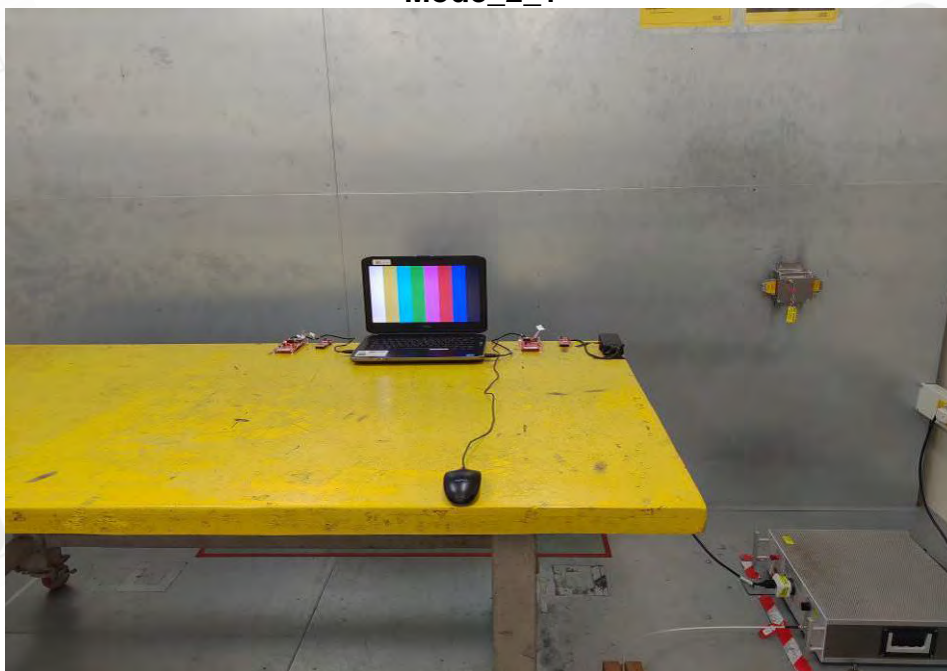
## APPENDIX

### Photograph of Testing General Set-up

#### CE Testing Set-up

Model No.: CC2650MODA

Mode\_2\_+



Mode\_2\_-



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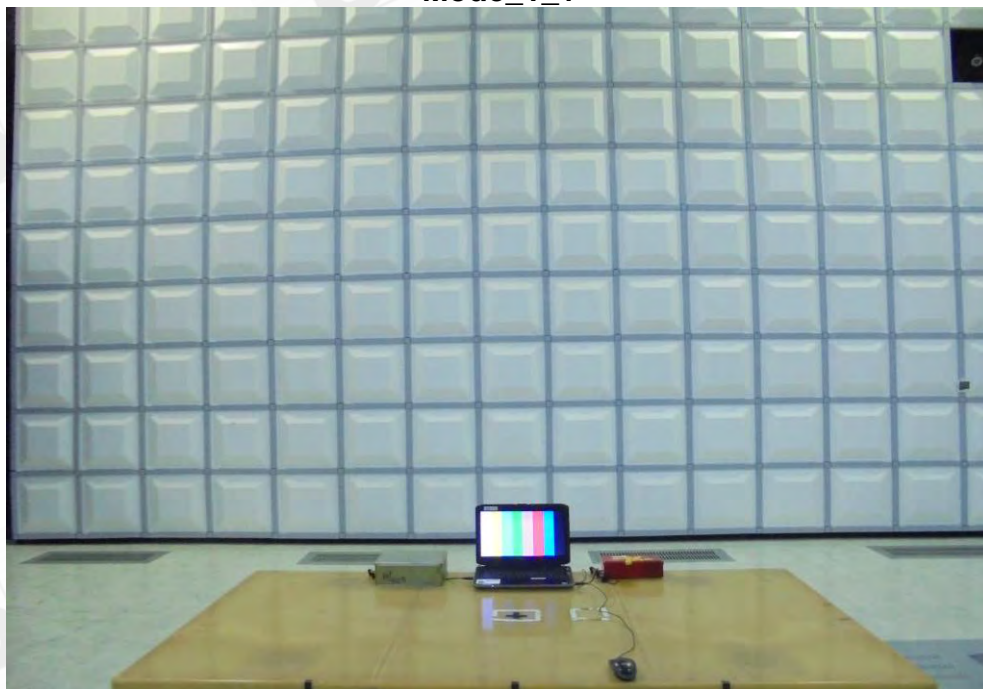
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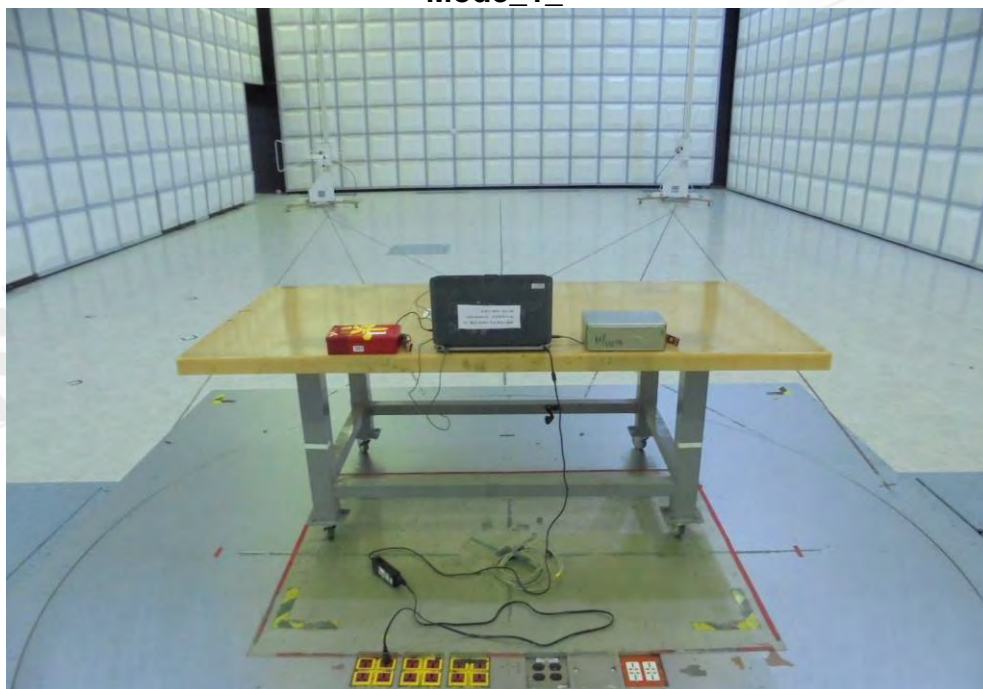
## RE Testing Set-up Below 1GHz

Model No.: CC2650MODA

Mode\_1\_+



Mode\_1\_-



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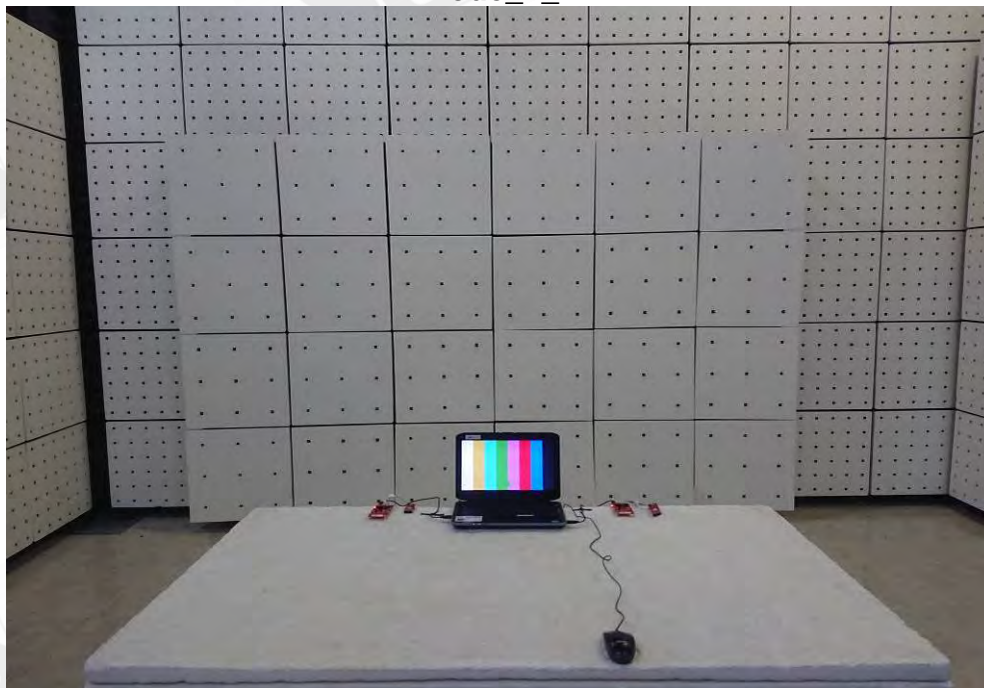
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## Model No.: CC2650MODA

### Mode\_2\_+



### Mode\_2\_-



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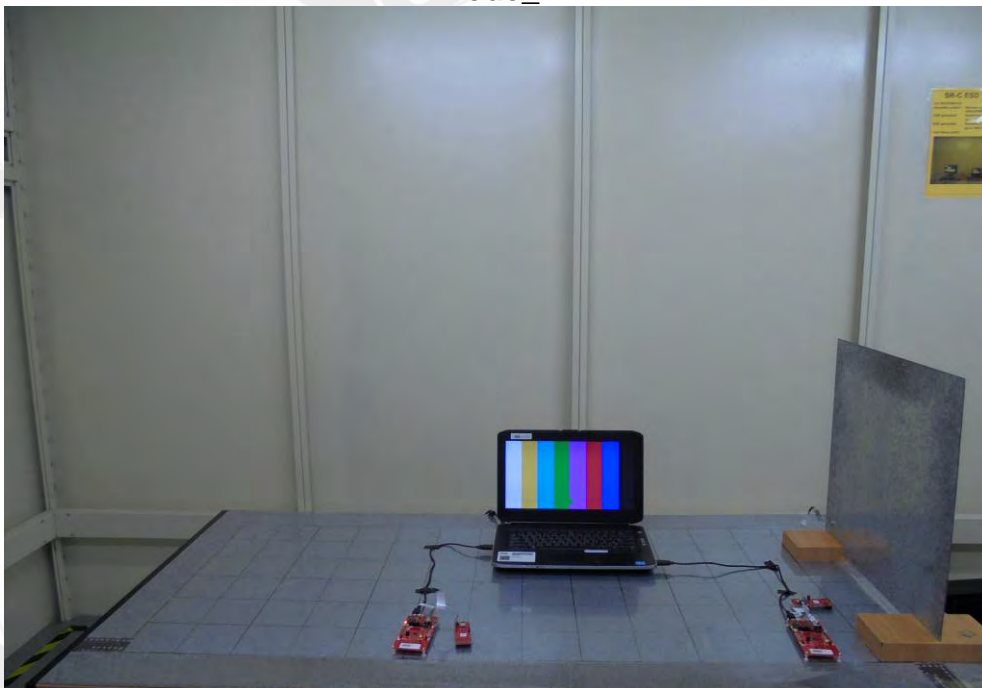
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## ESD Testing Set-up

Model No.: CC2650MODA

Mode\_2



## RS Testing Set-up

Model No.: CC2650MODA

Mode\_2



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## PFMF Testing Set-up

Model No.: CC2650MODA  
Mode\_1



Mode\_2



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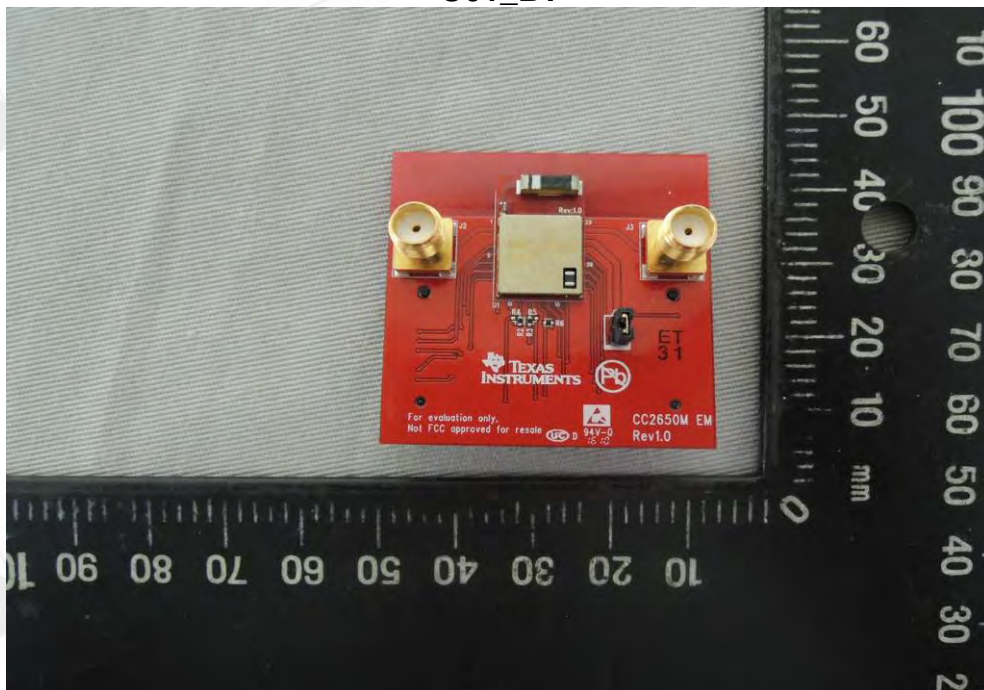
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## Photographs of EUT Unit

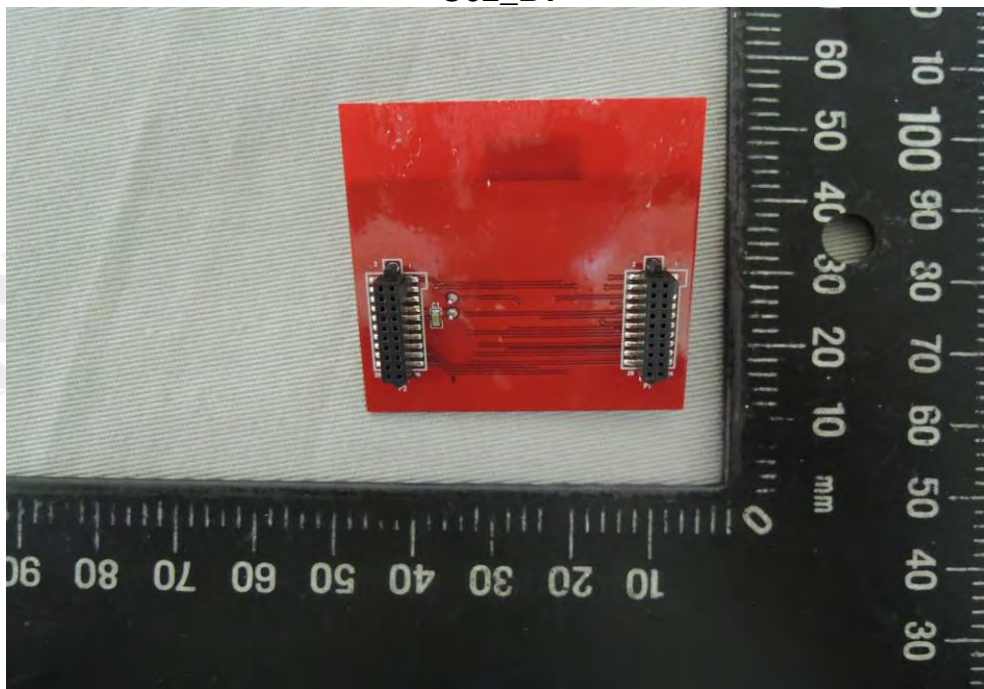
## Exterior

Model No.: CC2650MODA

O01\_BT



O02\_BT



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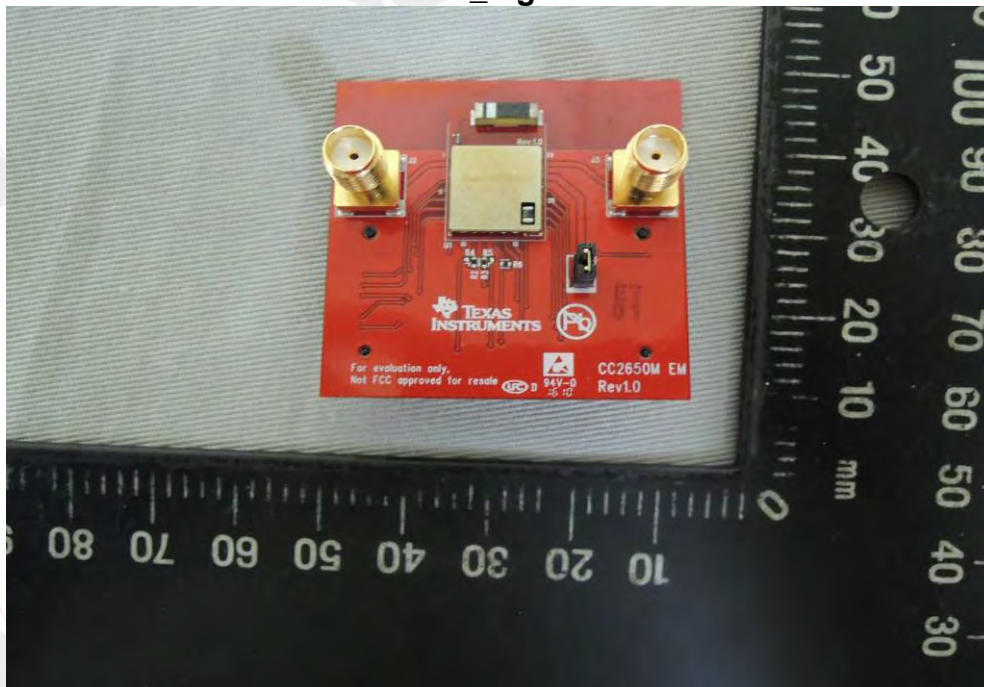
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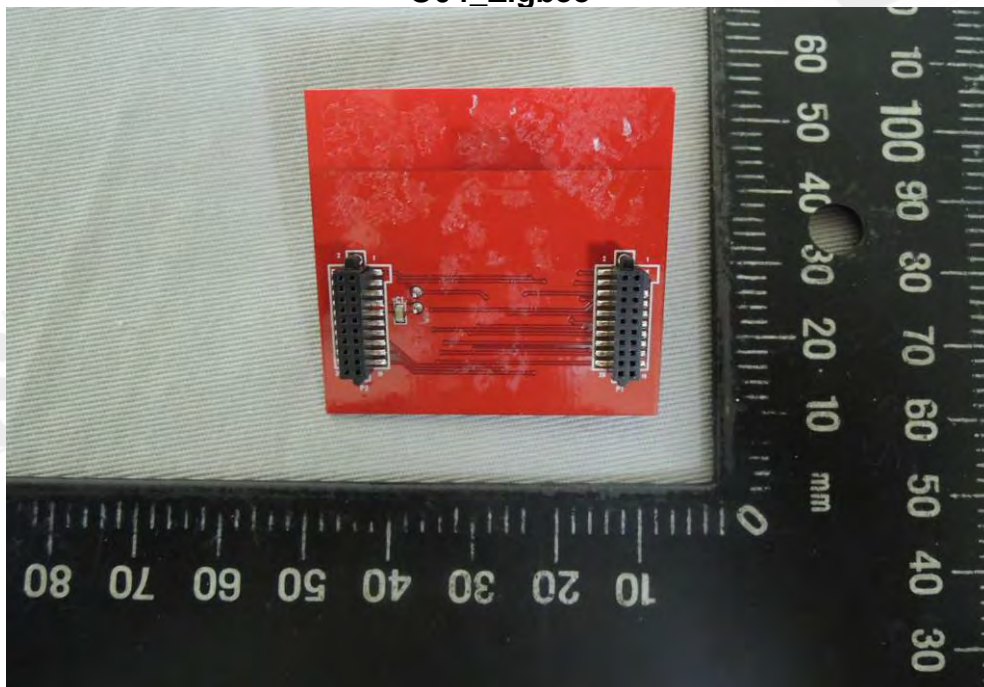
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O03\_Zigbee



O04\_Zigbee



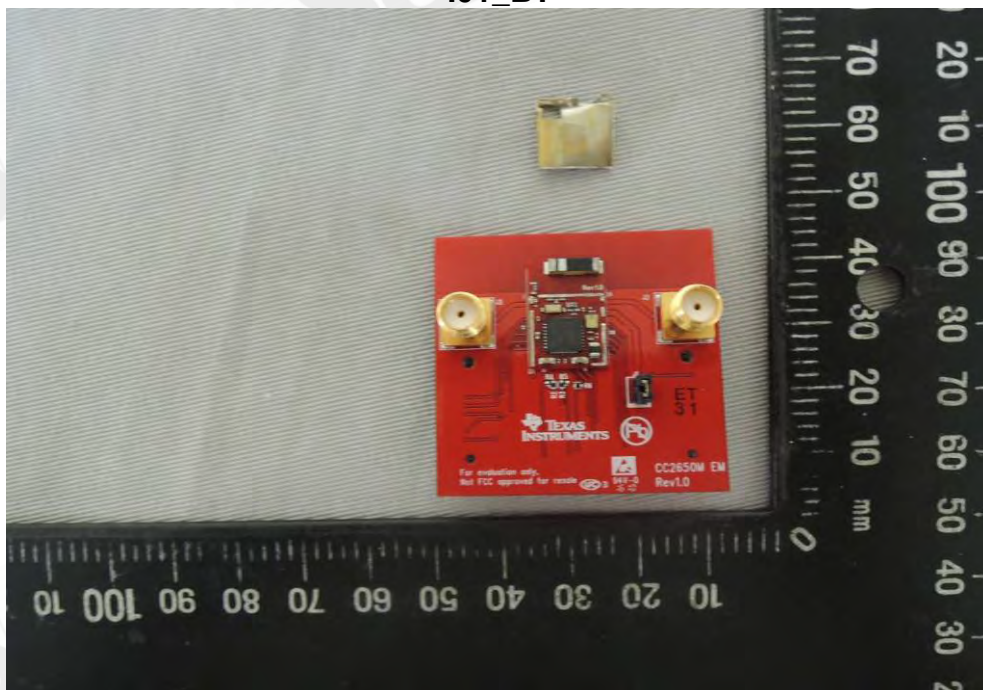
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Model No.: CC2650MODA

I01\_BT



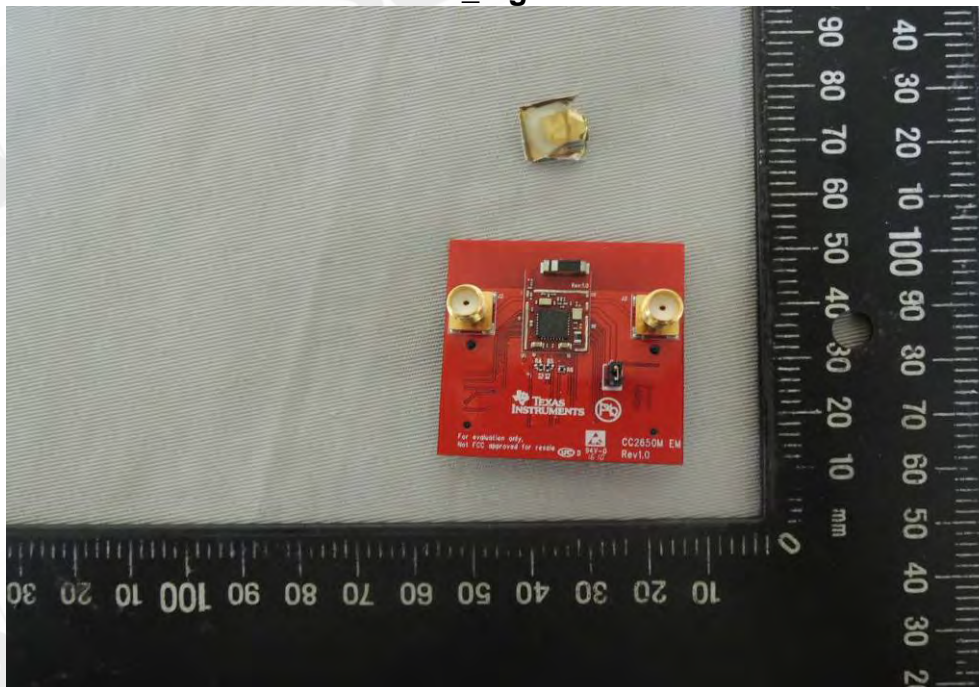
I02\_BT



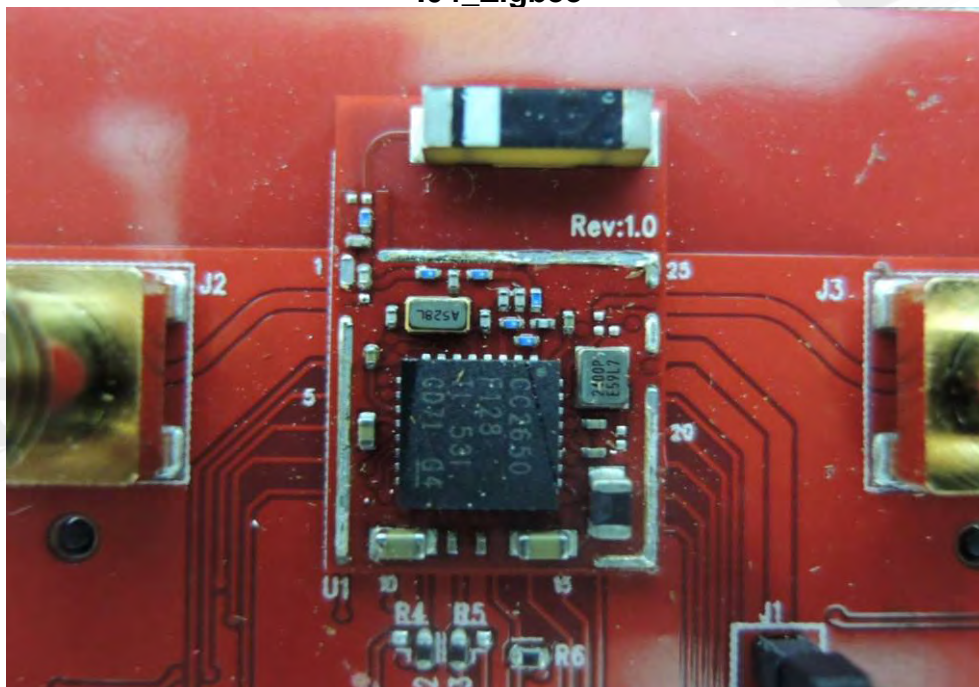
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I03\_Zigbee



I04\_Zigbee



**\*\* End of Report \*\***

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