

FCC REPORT

Applicant: Lightcomm Technology Co., Ltd.

Address of Applicant: RM1708-10,17/F,PROSPERITY CENTRE, 25 CHONG YIP STREET,KWUN TONG, KOWLOON, HONG KONG

Equipment Under Test (EUT)

Product Name: PORTABLE DVD PLAYER WITH TABLET

MDT7001-L, MDT7002-L, MDT7003-L, MDT7004-L,

Model No.: MDT7005-L, MDT7006-L, MDT7007-L, MDT7008-L,
MDT7009-L, PLTDVD7200

FCC ID: XMF-MDT7001

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2014

Date of sample receipt: January 11, 2016

Date of Test: January 12, 2016

Date of report issued: January 13, 2016

Test Result : PASS *

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

Authorized Signature:



Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS or testing done by GTS in connection with, distribution or use of the product described in this report must be approved by GTS in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	June 29, 2015	Original
01	January 13, 2016	Change adapter

Prepared By:

Edward.Pan

Date:

January 13, 2016

Project Engineer

Check By:

Hank.yan

Date:

January 13, 2016

Reviewer

3 Contents

	Page
1 COVER PAGE.....	1
2 VERSION.....	2
3 CONTENTS	3
4 TEST SUMMARY	4
4.1 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION.....	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF EUT	5
5.3 TEST MODE	6
5.4 DESCRIPTION OF SUPPORT UNITS	7
5.5 TEST FACILITY.....	7
5.6 TEST LOCATION	7
5.7 DESCRIPTION OF SUPPORT UNITS	7
5.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER.....	7
6 TEST INSTRUMENTS LIST	8
7 TEST RESULTS AND MEASUREMENT DATA.....	9
7.1 ANTENNA REQUIREMENT.....	9
7.2 CONDUCTED EMISSIONS	10
7.3 RADIATED EMISSION METHOD	13
7.3.1 Spurious emissions.....	15
8 TEST SETUP PHOTO	16
9 EUT CONSTRUCTIONAL DETAILS	17

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	N/A
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	N/A
20dB Occupied Bandwidth	15.215 (c)	N/A

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

N/A: Not applicable.

4.1 Measurement Uncertainty

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

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

Remark: Test according to ANSI C63.4:2014 and ANSI C63.10:2013

5 General Information

5.1 Client Information

Applicant:	Lightcomm Technology Co., Ltd.
Address of Applicant:	RM1708-10,17/F,PROSPERITY CENTRE, 25 CHONG YIP STREET,KWUN TONG, KOWLOON, HONG KONG
Manufacturer/Factory:	Huizhou Hengdu Electronics Co., Ltd
Address of Manufacture/Factory:	DIP South Area, Huiao Highway, Huizhou, Guangdong, China

5.2 General Description of EUT

Product Name:	PORTABLE DVD PLAYER WITH TABLET
Model No.:	MDT7001-L, MDT7002-L, MDT7003-L, MDT7004-L, MDT7005-L, MDT7006-L, MDT7007-L, MDT7008-L, MDT7009-L, PLTDVD7200
Test Model No.:	MDT7001-L
<i>Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is the model name for commercial purpose.</i>	
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK, Pi/4DQPSK, 8DPSK
Antenna Type:	PIFA antenna
Antenna gain:	2.5dBi (declare by Applicant)
Power supply:	Model No.: TEKA012-0502000UK Input: 100-240V~50/60Hz 0.35A MAX Output: 5.0V 2A DC 3.7V Li-ion Battery

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

Final Test Mode:
The EUT was tested in GFSK, Pi/4 QPSK, 8DPSK modulation, and found the GFSK modulation is the worst case.
According to ANSI C63.4 2009 standards, the test results are both the “worst case” and “worst setup”: Y axis (see the test setup photo)

5.4 Description of Support Units

None

5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

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

Tel: 0755-27798480

Fax: 0755-27798960

5.7 Description of Support Units

None.

5.8 Other Information Requested by the Customer

None.

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 28 2015	Mar. 27 2016
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 30 2015	June 29 2016
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 30 2015	June 29 2016
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 30 2015	June 29 2016
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 26 2015	June 24 2016
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 27 2015	Mar. 26 2016
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	Mar. 28 2015	Mar. 27 2016
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 28 2015	Mar. 27 2016
11	Coaxial cable	GTS	N/A	GTS210	Mar. 28 2015	Mar. 27 2016
12	Coaxial Cable	GTS	N/A	GTS212	Mar. 28 2015	Mar. 27 2016
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 30 2015	June 29 2016
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 30 2015	June 29 2016
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 26 2015	June 24 2016
16	Band filter	Amindeon	82346	GTS219	Mar. 28 2015	Mar. 27 2016

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	June 30 2015	June 29 2016
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	June 30 2015	June 29 2016
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	June 30 2015	June 29 2016
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 30 2015	June 29 2016
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	June 30 2015	June 29 2016
6	Coaxial Cable	GTS	N/A	GTS227	June 30 2015	June 29 2016
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	July 07 2015	July 06 2016

7 Test results and Measurement Data

7.1 Antenna requirement

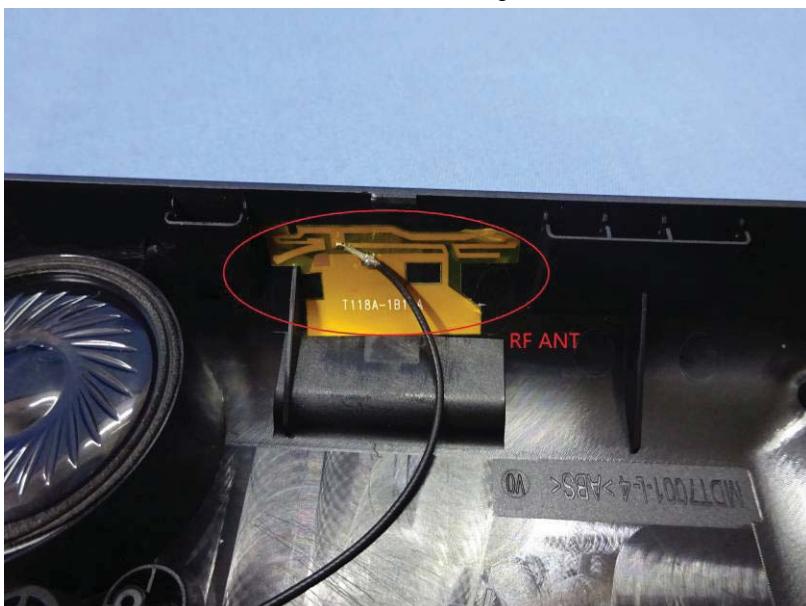
Standard requirement:	FCC Part15 C Section 15.203
-----------------------	-----------------------------

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

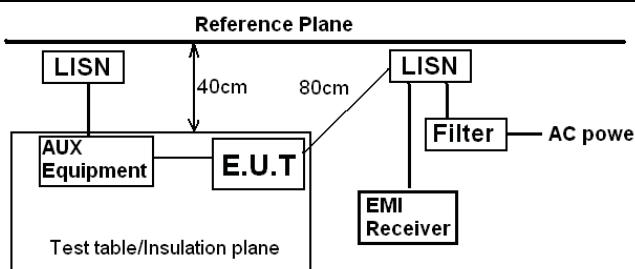
The antenna is PIFA antenna, the best case gain of the antenna is 2.5dBi



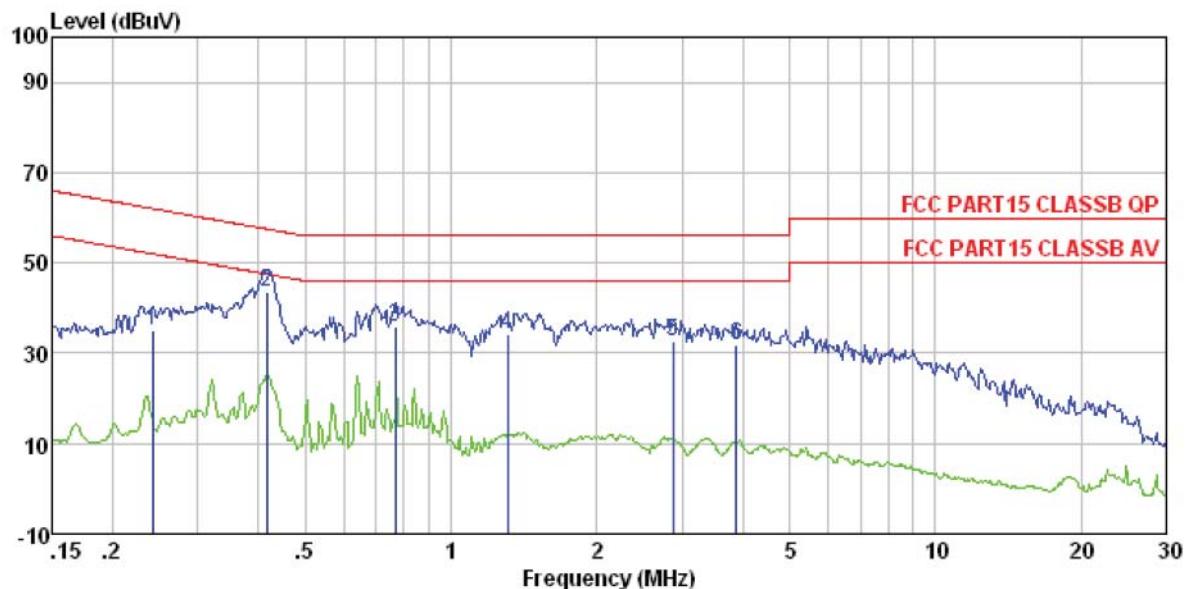
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50

* Decreases with the logarithm of the frequency.

Test setup:	 <p><i>Remark:</i> <i>E.U.T:</i> Equipment Under Test <i>LISN:</i> Line Impedance Stabilization Network <i>Test table height=0.8m</i></p>
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement data:

Line:


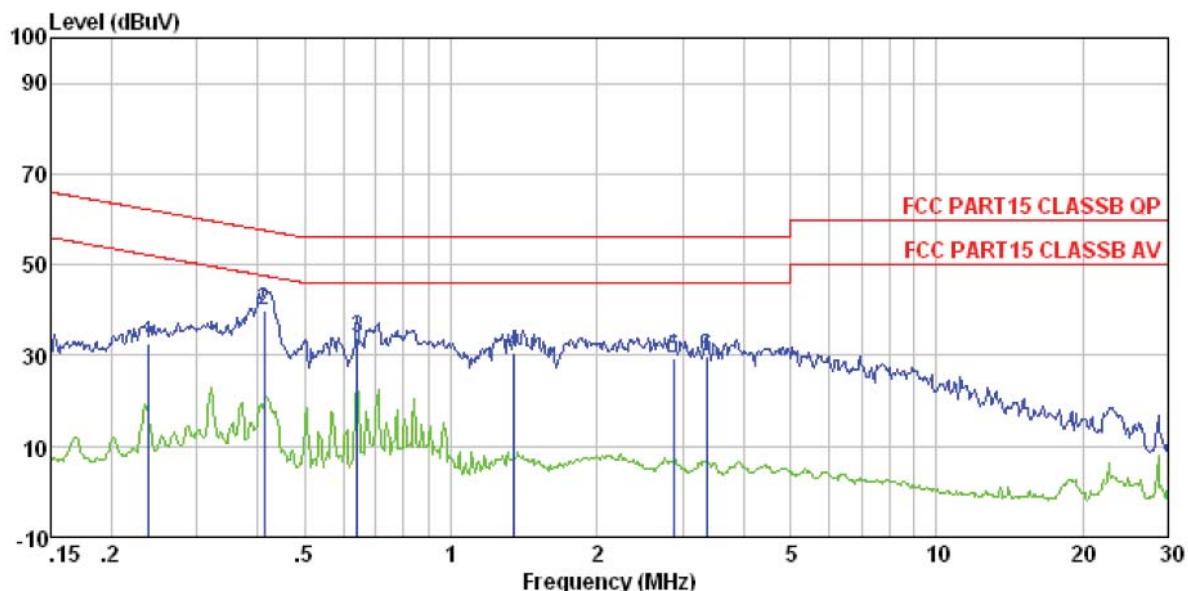
Condition : FCC PART15 CLASSB QP LISN-2013 LINE

Job No. : 0017

Test mode : Bluetooth 3.0 mode

Test Engineer: Arslan

Freq	Read	LISN	Cable	Limit	Over	Remark
	MHz	Level	Level Factor	Loss	Line	
1	0.242	35.01	35.25	0.12	0.12	62.04 -26.79 QP
2	0.417	43.39	43.62	0.12	0.11	57.51 -13.89 QP
3	0.767	35.72	35.99	0.14	0.13	56.00 -20.01 QP
4	1.310	33.97	34.22	0.12	0.13	56.00 -21.78 QP
5	2.869	32.35	32.65	0.15	0.15	56.00 -23.35 QP
6	3.881	31.50	31.85	0.20	0.15	56.00 -24.15 QP

Neutral:


Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL

Job No. : 0017

Test mode : Bluetooth 3.0 mode

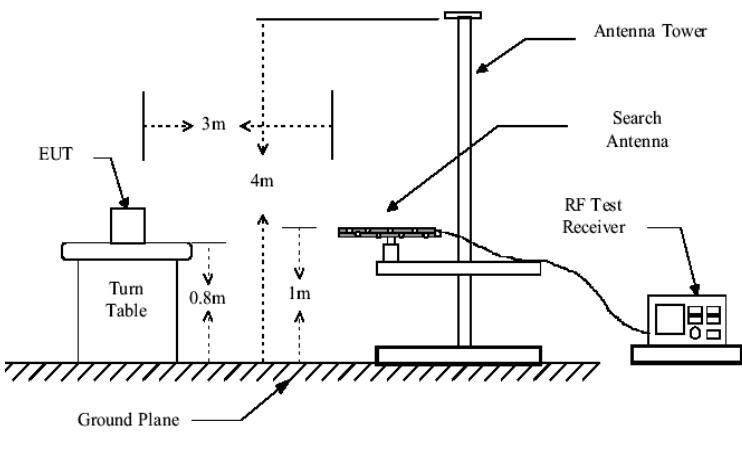
Test Engineer: Arslan

	Read Freq	Level MHz	LISN Level dBuV	Cable Factor	Limit Loss dB	Over Line dBuV	Over Limit dB	Remark
1	0.239	32.29	32.47	0.06	0.12	62.13	-29.66	QP
2	0.413	39.62	39.79	0.06	0.11	57.59	-17.80	QP
3	0.641	33.68	33.88	0.07	0.13	56.00	-22.12	QP
4	1.352	30.31	30.53	0.09	0.13	56.00	-25.47	QP
5	2.869	29.26	29.52	0.11	0.15	56.00	-26.48	QP
6	3.364	29.30	29.58	0.13	0.15	56.00	-26.42	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209								
Test Method:	ANSI C63.10:2013								
Test Frequency Range:	30MHz-1GHz								
Test site:	Measurement Distance: 3m								
Receiver setup:	Frequency	Detector	RBW	VBW	Value				
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak				
	Above 1GHz	Peak	1MHz	3MHz	Peak				
		Peak	1MHz	10Hz	Average				
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark				
	2400MHz-2483.5MHz		94.00		Average Value				
			114.00		Peak Value				
Limit: (Spurious Emissions)	Frequency	Limit (uV/m)	Value		Measurement Distance				
	0.009MHz-1.705MHz	2400/F(KHz)	QP (except 9-90 kHz, 110-490 kHz)		300m				
	0.490MHz-1.705MHz	24000/F(KHz)	QP		30m				
	1.705MHz-30MHz	30	QP		30m				
	30MHz-88MHz	100	QP		3m				
	88MHz-216MHz	150	QP						
	216MHz-960MHz	200	QP						
	960MHz-1GHz	500	QP						
	Above 1GHz	500	Average						
		5000	Peak						
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.								
Test setup:	Below 1GHz  Above 1GHz								

Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement data:

7.3.1 Spurious emissions

Note: Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

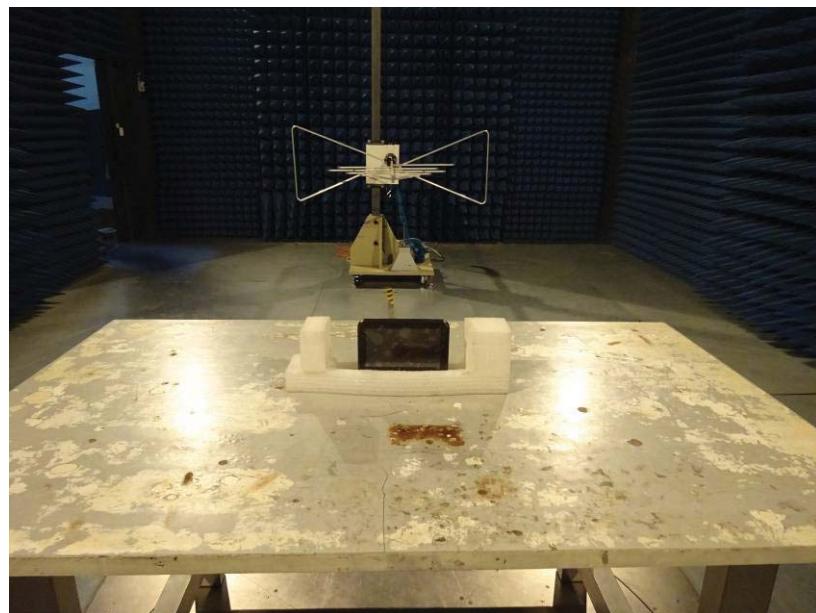
■ Below 1GHz

Remark: The test was performed at the lowest, middle and highest channel of GFSK, PI/4 DQPSK, 8DPSK. The data of lowest channel of GFSK was found as the worst, so only the data of that channel is reported.

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
46.50	36.26	15.46	0.74	30.01	22.45	40.00	-17.55	Vertical
104.17	37.69	14.78	1.23	29.67	24.03	43.50	-19.47	Vertical
155.91	46.65	10.51	1.60	29.38	29.38	43.50	-14.12	Vertical
269.43	46.58	14.34	2.22	29.79	33.35	46.00	-12.65	Vertical
364.26	41.47	16.46	2.69	29.67	30.95	46.00	-15.05	Vertical
729.36	34.67	21.19	4.19	29.20	30.85	46.00	-15.15	Vertical
48.84	48.40	15.32	0.76	30.00	34.48	40.00	-5.52	Horizontal
103.81	39.51	14.78	1.22	29.68	25.83	43.50	-17.67	Horizontal
143.83	47.56	10.22	1.53	29.44	29.87	43.50	-13.63	Horizontal
287.99	41.54	14.84	2.31	29.92	28.77	46.00	-17.23	Horizontal
443.29	41.54	17.57	3.06	29.41	32.76	46.00	-13.24	Horizontal
906.48	40.21	23.15	4.88	29.10	39.14	46.00	-6.86	Horizontal

8 Test Setup Photo

Radiated Emission



Conducted Emissions



9 EUT Constructional Details

Reference to the test report No. GTSE15060107601

-----End-----