

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	OF	
Product Name:	Mobile PC	
Brand Name:	FLYTECH	
Model No.:	P265(D41)	
Model Different:	N/A	
FCC ID:	XHM-P265D41	
Report No.:	ER/2017/60139	
Issue Date:	Jul. 21, 2017	
FCC Rule Part:	§15.225	
Prepared for:	FLYTECH TECHNOLOGY CO.,LTD. No. 168, Sing-ai Rd., Neihu District, Taipei City 11494, Taiwan, R.O.C.	
Prepared by:	SGS Taiwan Ltd.	
	Electronics & Communication Laboratory	
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	
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VERIFICATION OF COMPLIANCE

Applicant:	FLYTECH TECHNOLOGY CO.,LTD.
	No. 168, Sing-ai Rd., Neihu District, Taipei City 11494, Taiwan,
	R.O.C.
Product Name:	Mobile PC
Brand Name:	FLYTECH
Model No.:	P265(D41)
Model Difference:	N/A
FCC ID:	XHM-P265D41
File Number:	ER/2017/60139
Date of test:	Jun. 27, 2017~ Jul. 13, 2017
Date of EUT Received:	Jun. 27, 2017

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.225.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Louis Chen	Date:	Jul. 21, 2017
	Louis Chen/ Engineer		
Prepared By:	Stefanle Yu	Date:	Jul. 21, 2017
	Stefanie Yu/ Clerk		
Approved By	Jun Chang	Date:	Jul. 21, 2017
	Jim Chang / Asst. Manager		

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Revision History

Report Number	Revisio n	Description	Issue Date
ER/2017/60142	Rev.00	Initial creation of document	Jul. 21, 2017

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GENERAL INFORMATION 1

1.1 Product Description

General:

Product Name:	Mobile P0	C		
Brand Name:	FLYTECH			
Model No.:	P265(D41	P265(D41)		
Model Difference:	N/A			
Hardware Version:	N/A			
Software Version:	N/A			
	3.7V from rechargeable Li-Polymer battery Or 5Vdc from AC/DC Adapter			
Power Supply:	Battery: Model No.: BA800000, Supplier: FLYTECH			
	Adapter:	Model No.: EA1012AVRS-050, Supplier: EDACPOWER ELEC.		

NFC:

Operating Frequency	13.56MHz
Transmit Power	< 123.9dBuV/m at 3m.
Number of Channels	1
Antenna Type	Loop Antenna
Modulation Type	ASK

This report complies with FCC regulatory radio rule with respect to NFC that operates on 13.56MHz.

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1.2 Test Methodology

FCC Part 15, Supbpart C §15.225

ANSI C63.10:2013 Note: All test items have been performed and record as per the above standards..

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers are: 509634

1.4 Special Accessories

There is no special accessory used while test was conducted.

1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. **2.3.2 Radiated Emissions**

The EUT is a placed on as turn table which is 0.8 m above ground plan. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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2.5 Configuration of Tested System



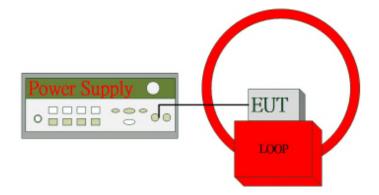


Fig. 2-2 Radiated Emission & AC Power Line Conducted Emission

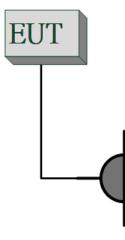


 Table 2-1 Equipment Used in Tested System

ltem	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	NFC Test software	N/A	N/A	N/A	N/A	N/A
2.	DC Power Supply	Agilent	E3634A	MY53180030	N/A	Unshielded

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SUMMARY OF TEST RESULTS 3

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.225 (a)-(d)	Radiated Emission	Compliant
§15.209	Radiated Emission Limits, general requirement	Compliant
§15.225 (e)	Frequency Stability	Compliant
§2.1049 §15.215 (c)	20 dB OCCUPIED BANDWIDTH	Compliant
§15.203	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

The EUT stay in continuous transmitting mode. The frequency 13.56MHz is the default channel to test, where it is the only manipulative channel as this application supports.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for Bluetooth Transmitter for channel Low, Mid and High the worst case H position was reported.

The data rate as the lowest supported is selected while tests are conducted.

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Frequency Stability	+/- 123.36 Hz
20 dB OCCUPIED BANDWIDTH	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty	9kHz - 30MHz: +/- 2.3dB
model of the another tanky	

	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty (Polarization : Vertical)	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB

Measurement uncertainty (Polarization : Horizontal)	30MHz - 167MHz: +/- 4.22dB				
	167MHz -500MHz: +/- 3.44dB				
	0.5GHz-1GHz: +/- 3.39dB				

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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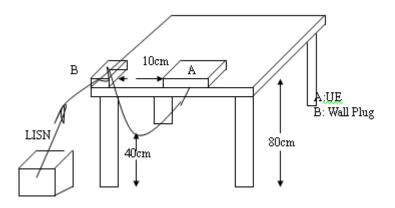


6 CONDUCTED EMISSIONS TEST

6.1 Measurement Procedure:

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Sweep frequency starting from 150 kHz to 30 MHz for phase L1.
- 4. Repeating the measurement as lists above for phase neutral.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Equipment Used:

Conducted Emission Test Site									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
EMI Test Receiver	R&S	ESCI7	100760		05/10/2018				
LISN	SCHWARZBE CK	NSLK 8127	8127-649	05/22/2017	05/21/2018				
LISN	MESS TEC	FCC-LISN-50/2 50-25-2-01	4034	03/19/2017	03/18/2018				
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2016	11/25/2017				

6.4 Measurement Result:

Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit

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AC POWER LINE CONDUCTED EMISSION TEST DATA

		00010	tion Mo	ode				le	st by:	Aken
Site	e Conduction Re	oom			Phase	:	L1		Tempe	rature: 20 °C
Lin	nit: FCC Class E	3 Conducti	on(QP)		Power	AC 1	20V/60Hz		Humid	ity: 58 %
Мо	de: Operation m	node								
No	te: ADAPTER :	EA1012A	/RS-050							
				Cond	ducted I	Emissi	on			
	File:飛捷		0	Data :#7		Date	: 2017/7/3		Time: 下午 0	3:33:05
	100.0 dBuV									
						-				
						_				
								FCC Class	s B Conduct	ion(OP)
	11									
	50			v Xv			F	CC Class	B Conduction	on(AVG)
	111111	Marchala	dia di culti	whether Mart		1011.11	× III.			
	1111	lo in i dila	ה מניקר וו	l II li i	. a Million	Hr.	1994	Williams	Mummida	marw
	0.0		0.5		(MHz)		5			30.000
	0.0		0.5	Magaura	(MHz)		5			30.000
No.		Reading Level	0.5 Correct Factor	Measure- ment	(MHz) Limit	Over	5			30.000
No.	0.150	Reading	Correct			Over dB	5 Detector	Comme	nt	30.000
No. 1	0.150 Mk. Freq. MHz	Reading Level	Correct Factor	ment	Limit			Comme	nt	30.000
	0.150 Mk. Freq. MHz	Reading Level dBuV	Correct Factor dB	ment dBuV	Limit dBuV	dB	Detector	Comme	nt	30.000
1	0.150 Mk. Freq. MHz * 0.1660	Reading Level dBuV 52.30	Correct Factor dB 0.12	ment dBuV 52.42	Limit dBuV 65.16	dB -12.74	Detector	Comme	nt	30.000
1	0.150 Mk. Freq. MHz • 0.1660 0.1660	Reading Level dBuV 52.30 34.50	Correct Factor dB 0.12 0.12	ment dBuV 52.42 34.62	Limit dBuV 65.16 55.16	dB -12.74 -20.54	Detector QP AVG	Comme	nt	30.000
1 2 3	0.150 Mk. Freq. MHz * 0.1660 0.1660 0.9460	Reading Level dBuV 52.30 34.50 42.00	Correct Factor dB 0.12 0.12 0.12	ment dBuV 52.42 34.62 42.12	Limit dBuV 65.16 55.16 55.00	dB -12.74 -20.54 -13.88	Detector QP AVG QP	Comme	nt	30.000
1 2 3 4	0.150 Mk. Freq. MHz 0.1660 0.9460 0.9460	Reading Level dBuV 52.30 34.50 42.00 31.00	Correct Factor dB 0.12 0.12 0.12 0.12 0.12	ment dBuV 52.42 34.62 42.12 31.12	Limit dBuV 65.16 55.16 56.00 46.00	dB -12.74 -20.54 -13.88 -14.88	Detector QP AVG QP AVG	Comme	nt	30.000
1 2 3 4 5	0.150 Mk. Freq. MHz 0.1660 0.1660 0.9460 0.9460 1.1620	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12	ment dBuV 52.42 34.62 42.12 31.12 43.22	Limit dBuV 65.16 55.16 56.00 46.00 56.00	dB -12.74 -20.54 -13.88 -14.88 -12.78	Detector QP AVG QP AVG QP	Comme	nt	30.000
1 2 3 4 5 6	0.150 Mk. Freq. MHz 0.1660 0.9460 0.9460 1.1620 1.1620	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10 32.10	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12	ment dBuV 52.42 34.62 42.12 31.12 43.22 32.22	Limit dBuV 65.16 55.16 56.00 46.00 56.00 46.00	dB -12.74 -20.54 -13.88 -14.88 -12.78 -13.78	Detector QP AVG QP AVG	Comme	nt	30.000
1 2 3 4 5 6 7	0.150 Mk. Freq. MHz 0.1660 0.9460 0.9460 1.1620 1.1620 1.3220	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10 32.10 41.50	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.13	ment dBuV 52.42 34.62 42.12 31.12 43.22 32.22 41.63	Limit dBuV 65.16 55.16 56.00 46.00 56.00 46.00 56.00	dB -12.74 -20.54 -13.88 -14.88 -12.78 -13.78 -14.37	Detector QP AVG QP AVG QP AVG	Comme	nt	30.000
1 2 3 4 5 6 7 8	0.150 Mk. Freq. MHz 0.1660 0.9460 0.9460 1.1620 1.1620 1.3220	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10 32.10 41.50 31.00	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.13 0.13	ment dBuV 52.42 34.62 42.12 31.12 43.22 32.22 41.63 31.13	Limit dBuV 65.16 55.16 56.00 46.00 56.00 46.00 56.00 46.00	dB -12.74 -20.54 -13.88 -14.88 -12.78 -13.78 -13.78 -14.87	Detector QP AVG QP AVG QP AVG QP AVG	Comme	nt	30.000
1 2 3 4 5 6 7 8 9	0.150 Mk. Freq. MHz 0.1660 0.9460 0.9460 1.1620 1.1620 1.3220 1.3220 1.3220	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10 32.10 41.50 31.00 40.20	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.13 0.13	ment dBuV 52.42 34.62 42.12 31.12 43.22 32.22 41.63 31.13 40.33	Limit dBuV 65.16 55.16 56.00 46.00 56.00 46.00 56.00 46.00 56.00	dB -12.74 -20.54 -13.88 -14.88 -12.78 -13.78 -13.78 -14.37 -14.87 -15.67	Detector QP AVG AVG AVG AVG QP AVG QP	Comme	nt	30.000
1 2 3 4 5 6 7 8 9 10	0.150 Mk. Freq. MHZ * 0.1660 0.9460 0.9460 1.1620 1.1620 1.3220 1.3220 1.5180	Reading Level dBuV 52.30 34.50 42.00 31.00 43.10 32.10 41.50 31.00 40.20 30.40	Correct Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.13 0.13 0.13 0.13	ment dBuV 52.42 34.62 42.12 31.12 43.22 32.22 41.63 31.13 40.33 30.53	Limit dBuV 65.16 55.16 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	dB -12.74 -20.54 -13.88 -14.88 -12.78 -13.78 -14.37 -14.87 -15.67 -15.47	Detector QP AVG QP AVG QP AVG QP AVG QP AVG	Comme	nt	30.000

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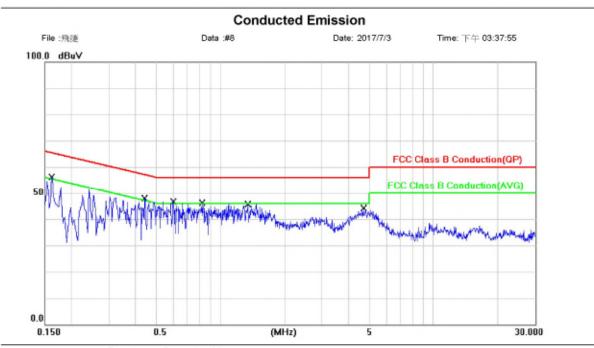
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 Site Conduction Room
 Phase:
 N
 Temperature:
 20 °C

 Limit: FCC Class B Conduction(QP)
 Power:
 AC 120V/60Hz
 Humidity:
 58 %

 Mode: Operation mode
 Note:
 ADAPTER :EA1012AVRS-050
 V
 V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	49.70	0.07	49.77	65.36	-15.59	QP	
2		0.1620	36.40	0.07	36.47	55.36	-18.89	AVG	
3		0.4420	39.70	0.08	39.78	57.02	-17.24	QP	
4		0.4420	30.10	0.08	30.18	47.02	-16.84	AVG	
5		0.6020	40.40	0.08	40.48	56.00	-15.52	QP	
6		0.6020	32.40	0.08	32.48	46.00	-13.52	AVG	
7		0.8180	40.40	0.09	40.49	56.00	-15.51	QP	
8		0.8180	32.30	0.09	32.39	46.00	-13.61	AVG	
9		1.3500	40.50	0.10	40.60	56.00	-15.40	QP	
10	•	1.3500	32.40	0.10	32.50	46.00	-13.50	AVG	
11		4.6900	37.90	0.24	38.14	56.00	-17.86	QP	
12		4.6900	31.50	0.24	31.74	46.00	-14.26	AVG	

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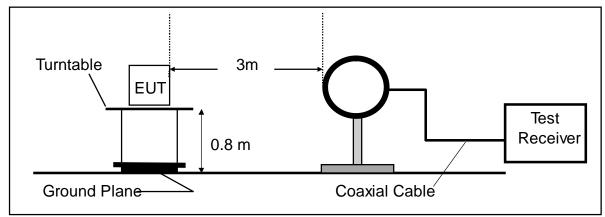
7 RADIATED EMISSION TEST

7.1 Measurement Procedure

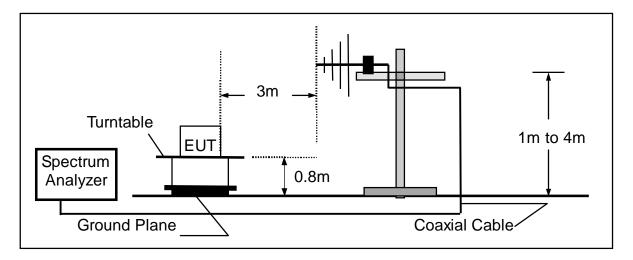
- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

7.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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7.3 Measurement Equipment Used:

	SGS 966 Chamber No.C										
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due						
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018						
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018						
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2016	09/19/2017						
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017						
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017						
Pre-Amplifier	Agilent	8447D	2944A07676	01/05/2017	01/04/2018						
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/05/2017	01/04/2018						
Turn Table	HD	DT420	N/A	N.C.R	N.C.R						
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R						
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R						
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018						
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018						
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018						

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7.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

7.5 Field Strength of Fundamental Emission

7.5.1 Limit

Field strength of fundamental emissions limit:

The field strength of fundamental emissions shall not exceed 15848 micorvolts/meter at 30 meters. The Limit is converted to 123.90dBuV/m by offsetting the distance extrapolation factor as measurement distance is taken place at 3 meters.

Distance extrapolation = 40 *log (30/3) = 40 dB

Limit is re-adjusted in terms of limit taken in 3m = 20 *log (15848 uV/m) + 40 = 124.00 dBuV/m

Note:

Actual FS(dBµV/m) = Spectrum. Reading level(dBµV) + Factor(dB) Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB) Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency. "E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

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SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路



Funda	ation Mo	Frequency	:NFC :13.56 MHz :MAIN :H Plane	<u>.</u>		Test Date Temp./Humi. Engineer Measurement	t Antenna	:: :	2017-06-30 21 deg_C / 62 RH Mike VERTICAL
407	Level (dBu	V/m)							
12/	1						; ; ;		
100							15.225(1)	3.56M)MA SK	
80							· · · · · · · · · · · · · · · · · · ·	 	-
60				1				- - - - - - - - - - - - - - - - - - -	
40							· • • • • • • • • • • • • • • • • • • •		
20									
C	13.51	13.53	;	13.55 Frequency	13.57 (MHz)	1	3.59	13	61
Fr	eq.	Note	Detector Mode	Spectrum Reading Lev		tor Actu FS		Limit @3m	Safe Margin
M	Hz	F/H/E/S	PK/QP/AV	dBµV	dE	B dBµ∖	//m (dBµV/m	dB
13	.56	F	Peak	41.27	11.4	43 52.7	70	123.90	-71.20

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Funda	ation Mo	Frequency	:NFC :13.56 MHz :MAIN :H Plane	:		Test Date Temp./Humi. Engineer Measuremer	nt Antenna	:2 :N	2017-06-30 21 deg_C / 62 RH Mike HORIZONTAL
407	Level (dBu	V/m)							
127							- - 		
100							15.225(1	3.56M)MASK	
80									
60					1				
40									
20							-		
0									
-	13.51	13.53	i	13.55 Frequen	13.57 cy (MHz)		13.59	13.	61
Fr	eq.	Note	Detector Mode	Spectru Reading L		ctor Act		Limit @3m	Safe Margin
Μ	Hz	F/H/E/S	PK/QP/AV	dBµV		lB dBµ'	V/m o	dBµV/m	dB
13	.56	F	Peak	39.90	11	.43 51.	33	123.90	-72.57

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7.5.2 Radiated Mask

- (a) 15.848 millivolts/m (84 dBµV/m) at 30 m, within the band 13.553-13.567 MHz.
- (b) 334 microvolts/m (50.5 dBµV/m) at 30 m, within the bands 13.410-13.553 MHz and 13.567-13.710 MHz.
- (c) 106 microvolts/m (40.5 dBµV/m) at 30 m, within the bands 13.110-13.410 MHz and 13.710-14.010 MHz.

Distance extrapolation = 40 *log (30/3) = 40 dB

Limit is re-adjusted in terms of limit taken in 3m for the following frequency segment of the interest:

- a) 20 *log (15848uV/m) + 40dB = 124.00dBuV/m
- b) 20 *log(334uV/m) + 40dB = 90.47dBuV/m
- c) 20*log(106uV/m) + 40dB = 80.50dBuV/m

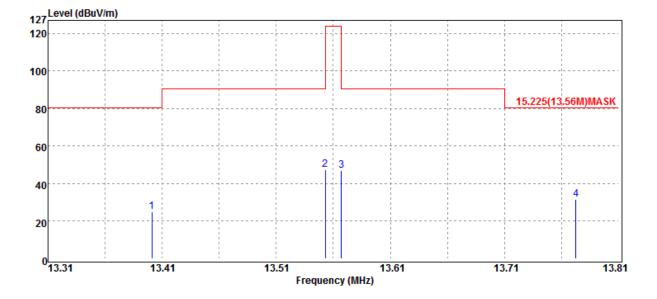
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Operation Band	:NFC	Engineer	:2017-06-30
Fundamental Frequency	:13.56 MHz		:21 deg_C / 62 RH
Operation Mode	:MASK		:Mike
EUT Pol.	:H Plane		:VERTICAL
		mededicinent / menna i ol.	



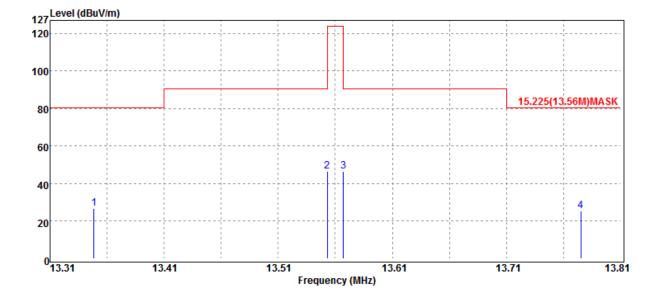
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
13.40	S	Peak	13.41	11.43	24.84	80.50	-55.66
13.55	S	Peak	35.92	11.43	47.35	90.47	-43.12
13.57	S	Peak	35.68	11.43	47.11	90.47	-43.36
13.77	S	Peak	20.34	11.45	31.79	80.50	-48.71

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Operation Band:NFCFundamental Frequency:13.56 MHzOperation Mode:MASKEUT Pol.:H Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2017-06-30 :21 deg_C / 62 RH :Mike :HORIZONTAL
--	--	--



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
13.35	S	Peak	15.40	11.43	26.83	80.50	-53.67
13.55	S	Peak	35.27	11.43	46.70	90.47	-43.77
13.57	S	Peak	35.06	11.43	46.49	90.47	-43.98
13.78	S	Peak	14.08	11.45	25.53	80.50	-54.97

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7.5.3 Radiated Emission -

Limit:

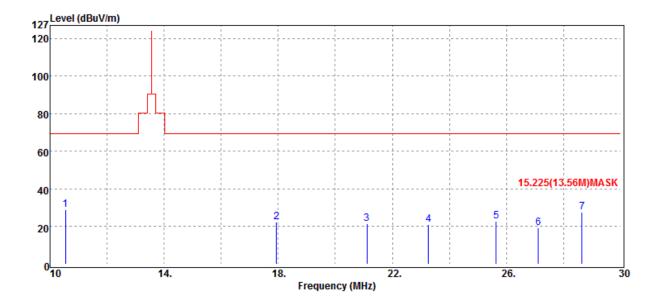
§15.225

(d) 30 microvolts/m (29.4 dBµV/m) at 30 m, outside the band 13.110-14.010 MHz. Limit is converted by adding the distance extrapolation factor as the measurement distance was taken place at 3m.

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:NFC :13.56 MHz :Tx CH MID :H Plane Test Date:2017Temp./Humi.:21 deEngineer:MikeMeasurement Antenna Pol.:VER

:2017-06-30 :21 deg_C / 62 RH :Mike :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10.54	S	Peak	17.58	11.35	28.93	69.54	-40.61
17.94	S	Peak	10.98	11.53	22.51	69.54	-47.03
21.10	S	Peak	10.43	11.25	21.68	69.54	-47.86
23.26	S	Peak	10.43	10.63	21.06	69.54	-48.48
25.64	S	Peak	12.68	10.05	22.73	69.54	-46.81
27.12	Н	Peak	9.54	9.70	19.24	69.54	-50.30
28.64	S	Peak	18.25	9.37	27.62	69.54	-41.92

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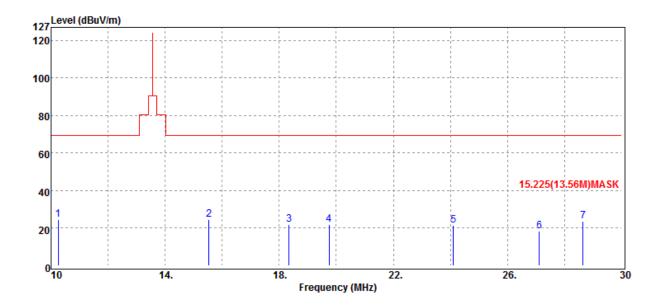
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Operation Band :NFC **Fundamental Frequency** :13.56 MHz **Operation Mode** :Tx CH MID EUT Pol. :H Plane

Test Date :2017-06-30 Temp./Humi. :21 deg_C / 62 RH Engineer :Mike Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10.26	S	Peak	13.42	11.34	24.76	69.54	-44.78
15.54	S	Peak	13.05	11.47	24.52	69.54	-45.02
18.34	S	Peak	10.50	11.55	22.05	69.54	-47.49
19.74	S	Peak	10.45	11.58	22.03	69.54	-47.51
24.10	S	Peak	10.93	10.41	21.34	69.54	-48.20
27.12	Н	Peak	8.95	9.70	18.65	69.54	-50.89
28.64	S	Peak	14.50	9.37	23.87	69.54	-45.67

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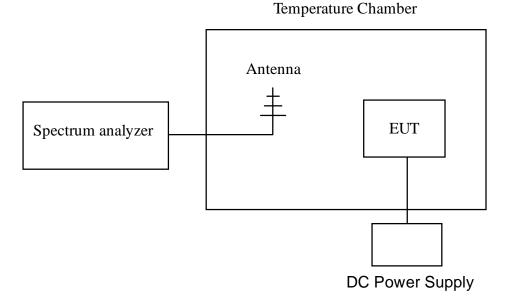


8 FREQUENCY TOLERANCE

8.1 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Set EUT as normal operation
- Set SPA Center Frequency = fundamental frequency, RBW, VBW = 10kHz, Span =100kHz.
- 4. Set SPA Max hold. Mark peak.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Equipment Used:

Conducted Emission Test Site							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018		
Temperature Chamber	TERCHY	MHG-120L F	911009	05/19/2017	05/18/2018		
AC Power Supply	APW-105N	887592	All Power	N/A	N/A		

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8.4 Measurement Results

A. Temperature Variation

Power Supply	Environment	Frequency		
Vdc	Temperature (°C)	(MHz)	Delta (Hz)	Limit (KHz)
3.7	-20	13.55931246	687.53700	+/- 1.356
3.7	-10	13.55924432	755.68000	+/- 1.356
3.7	0	13.56012984	-129.84000	+/- 1.356
3.7	10	13.56023374	-233.74000	+/- 1.356
3.7	20	13.56	0.00000	+/- 1.356
3.7	30	13.56028376	-283.76100	+/- 1.356
3.7	40	13.56099432	-994.32000	+/- 1.356
3.7	50	13.56017329	-173.29000	+/- 1.356

B. Supply Voltage Variation

Power Supply	Environment	Frequency		Limit (KHz)	
Vdc	Temperature (°C)	(MHz)	Delta (Hz)	Limit (KHz)	
3.33	20	13.56015941	-159.41110	+/- 1.356	
3.7	20	13.56	0.00000	+/- 1.356	
4.07	20	13.56018422	-184.21584	+/- 1.356	

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9 20 dB OCCUPIED BANDWIDTH MEASUREMENT

9.1 Standard Applicable:

§2.1049 & §15.215 (c)

9.2 Limit:

None

9.3 Test Set-up

Refer to section 6.2 in this report

9.4 Measurement Procedure

20dB bandwidth

- 1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak mode.
- 2. 20dB Bandwidth the resolution bandwidth of 1 kHz and the video bandwidth of 1 kHz were used.
- 3. Measured the spectrum width with power higher than 20dB below carrier.

9.5 Measurement Equipment Used:

Refer to section 6.3 in this report

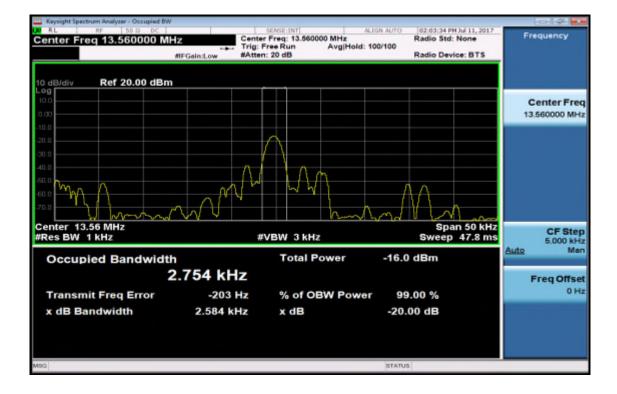
-20dB Bandwidth

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10 ANTENNA REQUIREMENT

10.1 Standard Applicable:

According to §15.203, Antenna 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 shall be considered sufficient to comply with the provisions of this Section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

10.2 Antenna Connected Construction:

The antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

~ End of Report ~

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