FCC Test Report

APPLICANT	:	Sony Mobile Communications Inc.
EQUIPMENT	:	Wireless Headset
BRAND NAME	:	Sony
FCC ID	:	PY7-37030I
STANDARD	:	FCC Part 15 Subpart C
CLASSIFICATION	:	Low Power Communication Device Transmitter (DXX)

The product was received on Oct. 06, 2017 and completely tested on Nov. 13, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR7O0619-01	Rev. 01	Initial issue of report	Jan. 04, 2018
FR7O0619-01	Rev. 02	Revising the test description in section 2.1 and 3.2.7, and add accessories in section 2.3.	Jan. 09, 2018
FR7O0619-01	Rev. 03	Add test panels description in section 2.1 and remove support equipment test data.	Jan. 16, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049	20dB Bandwidth	-	-	Reporting Only
3.1	-	99% Occupied Bandwidth	-	-	Reporting Only
3.2	15.209	Radiated Emission	15.209(a)	Pass	Under limit 10.50 dB at 953.800 MHz
3.3	15.203	Antenna Requirements	Non Standard Type	Pass	-
Remark: The FR7O0619-01 report test data referred to the FR7O0620-01C report.					

1. General Description

1.1. Applicant

Sony Mobile Communications Inc.
4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

1.2. Manufacturer

Sony Mobile Communications Inc.
4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

1.3. Feature of Equipment Under Test

10.579 MHz

Product Specification subjective to this standard	
Antenna Type	Coil Antenna

EUT Information List			
HW Version	SW Version	S/N	Performed Test Item
A	0.0.26	N/A	RF conducted measurement Radiated Spurious Emission

1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	10.579MHz
Channel Number	1
Type of Modulation	ADPCM

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.5. Modification of EUT

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

1.6. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH03-HY	03CH07-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

1.7. Applied Standards

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

- FCC Part 15 Subpart C
- ANSI C63.10-2013

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

2. Test Configuration of Equipment Under Test

2.1. Test Mode

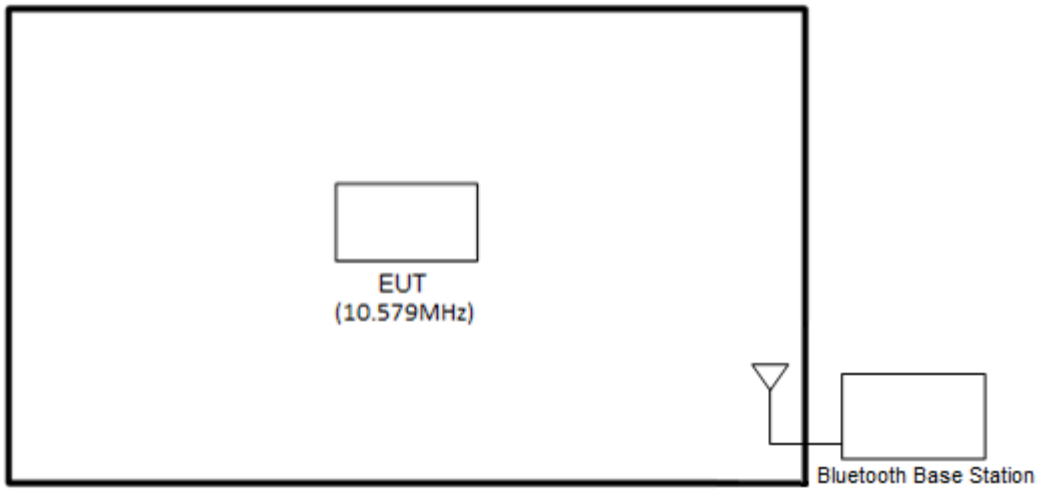
The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation (9 kHz to the 1000MHz).

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report,

Test Items	Function Type
Radiated Emission	Mode 1 : 10.579 MHz Link with between the EUT and support equipment
Remark: For radiated emission test items, Bluetooth base station link with the support equipment which connects with the EUT using the 10.579 MHz technology for continuous transmitting.	

2.2. Connection Diagram of Test System



Note: Bluetooth base station is only use support equipment for 10.579 MHz link

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
2.	Wireless Headset	Sony	N/A	PY7-13007N	N/A	N/A

3. Test Result

3.1. 20dB and 99% Occupied Bandwidth Measurement

3.1.1 Limit of 20dB and 99% Occupied Bandwidth

Reporting only

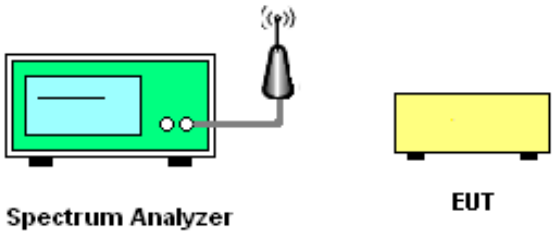
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT in peak Max hold mode.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
3. For Bandwidth measurement, the RBW= 10kHz, and VBW = 30kHz. Sweep = 20ms;
4. Measure and record the results in the test report.

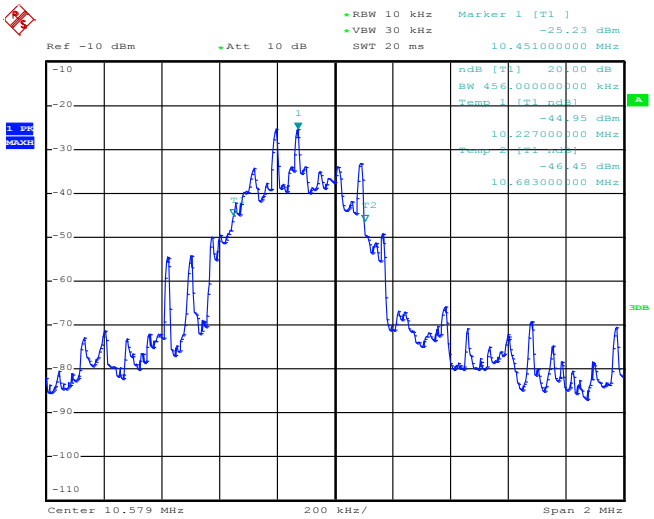
3.1.4 Test Setup



3.1.5 Test Result of 20dB and 99% Bandwidth

Test Engineer :	Bill Kuo	Temperature :	25~26℃
		Relative Humidity :	45~48%

20 dB Bandwidth Plot



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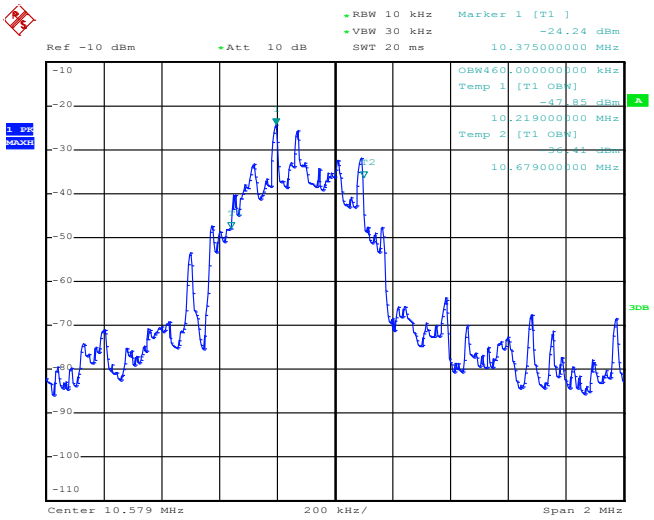
99% Occupied Bandwidth Plot



Date: 27.OCT.2017 09:57:20

3.2. Radiated Emission

3.2.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3. Measuring Instrument Setting

The following table is the setting of receiver.

Receiver Parameter	Setting
Attenuation	Auto
Frequency Range: 9kHz~150kHz	RBW 200Hz for QP
Frequency Range: 150kHz~30MHz	RBW 9kHz for QP
Frequency Range: 30MHz~1000MHz	RBW 120kHz for Peak

Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.2.4. Test Procedures

<9kHz-30MHz>

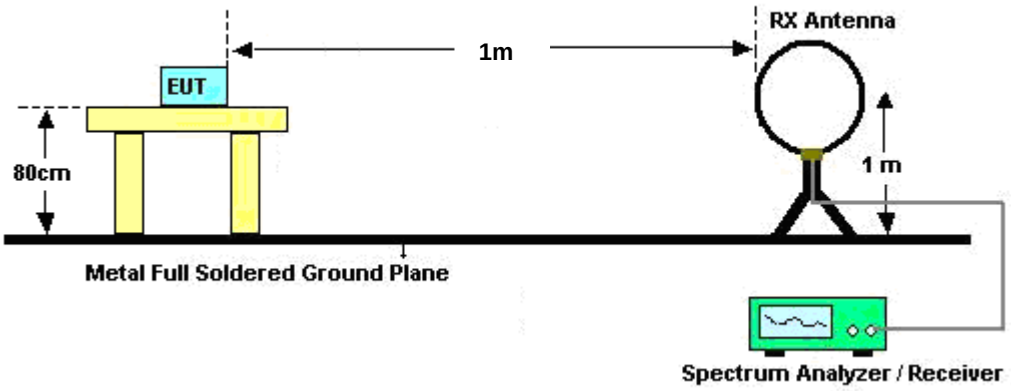
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 1 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. For emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver.
5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

<30MHz-1GHz>

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

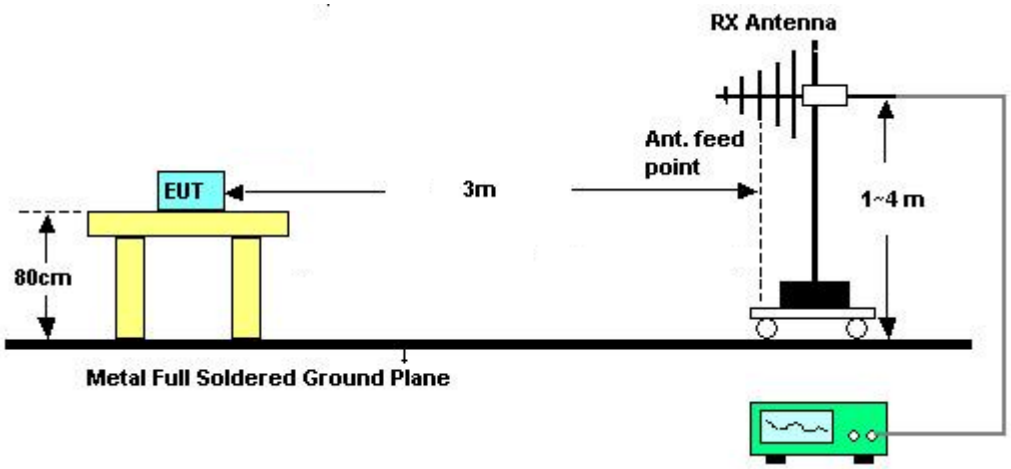
3.2.5. Test Setup of Radiated Emission

For radiated emissions below 30MHz



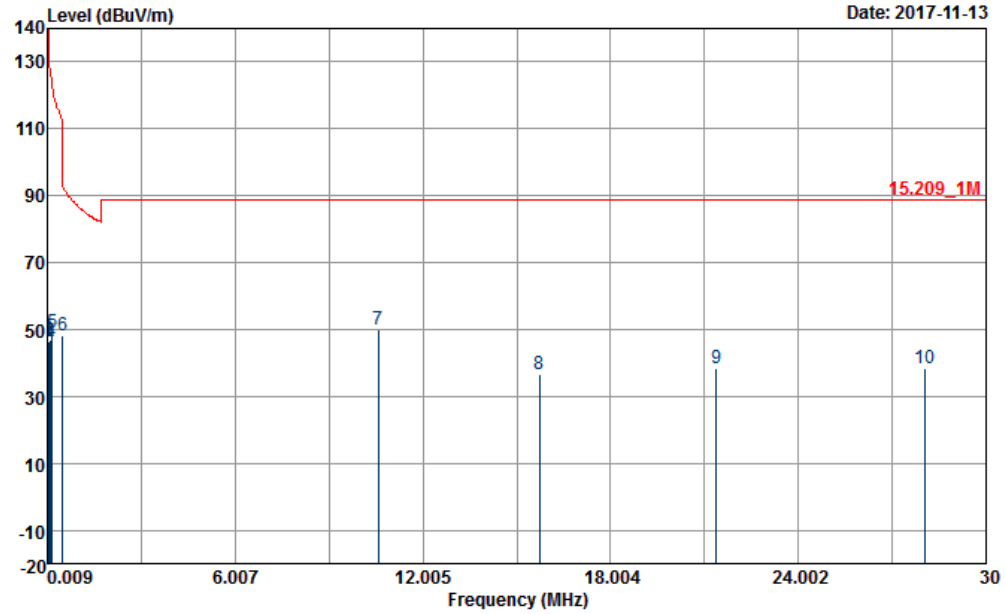
Note: There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

For radiated emissions above 30MHz



3.2.6. Test Result of Radiated Emission (9kHz ~ 30MHz)

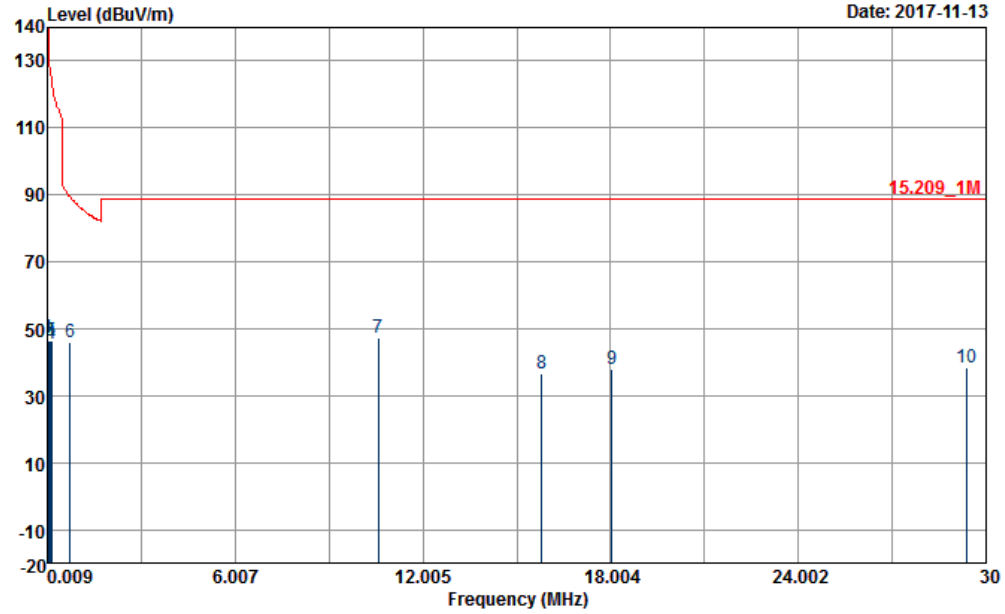
Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Jesse Wang and Stan Hsieh	Relative Humidity :	51~53%
Test Distance :	1m	Polarization :	Horizontal
Function Type :	10.579 MHz Link with between the EUT and support equipment		
Remark:	#7 is fundamental signal.		



Site : 03CH07-HY
Condition : 15.209_1M 3m LOOP-ANT(H)100488 HORIZONTAL
Project : 7o0619-01
Mode : 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	0.01	47.69	-98.65	146.34	26.92	20.05	0.72	---	---	Average
2	0.06	46.53	-84.29	130.82	25.75	20.06	0.72	---	---	Average
3	0.09	46.90	-80.48	127.38	26.17	20.01	0.72	---	---	QP
4	0.13	46.47	-77.82	124.29	25.75	20.00	0.72	---	---	Average
5	0.15	48.89	-74.13	123.02	28.18	19.99	0.72	---	---	Average
6	0.49	48.00	-44.88	92.88	27.31	19.97	0.72	---	---	QP
7	10.58	50.02	-38.56	88.58	29.18	20.12	0.72	---	---	QP
8	15.74	36.78	-51.80	88.58	15.89	20.17	0.72	---	---	QP
9	21.39	38.26	-50.32	88.58	16.08	20.47	1.71	---	---	QP
10	28.06	38.56	-50.02	88.58	16.59	20.26	1.71	100	0	QP

Test Mode :	Mode 1	**Temperature :**	22~24°C
Test Engineer :	Jesse Wang and Stan Hsieh	**Relative Humidity :**	51~53%
Test Distance :	1m	**Polarization :**	Vertical
Function Type :	10.579 MHz Link with between the EUT and support equipment		
Remark:	#7 is fundamental signal.		

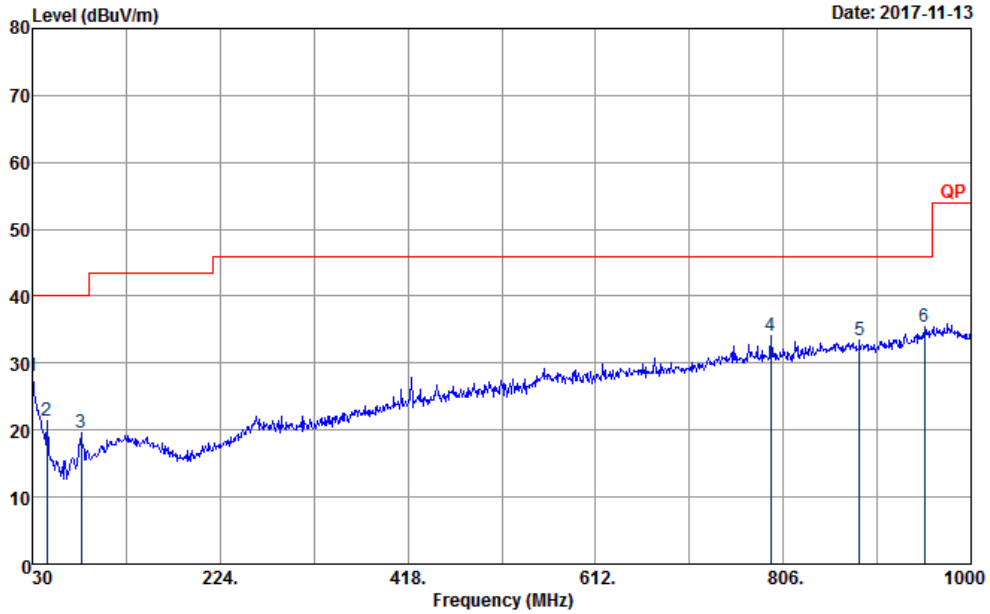


Site : 03CH07-HY
Condition : 15.209_1M 3m LOOP-ANT(V)100488 VERTICAL
Project : 7o0619-01
Mode : 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	0.01	47.27	-100.02	147.29	26.50	20.05	0.72	---	---	Average
2	0.06	46.31	-84.76	131.07	25.53	20.06	0.72	---	---	Average
3	0.09	46.37	-81.06	127.43	25.64	20.01	0.72	---	---	QP
4	0.11	45.32	-80.52	125.84	24.60	20.00	0.72	---	---	Average
5	0.15	46.25	-76.91	123.16	25.54	19.99	0.72	---	---	Average
6	0.75	45.82	-43.43	89.25	25.12	19.98	0.72	---	---	QP
7	10.58	47.50	-41.08	88.58	26.66	20.12	0.72	---	---	QP
8	15.79	36.39	-52.19	88.58	15.49	20.18	0.72	---	---	QP
9	18.04	37.79	-50.79	88.58	16.82	20.25	0.72	---	---	QP
10	29.39	38.52	-50.06	88.58	16.90	19.91	1.71	100	0	QP

3.2.7. Test Result of Radiated Emission (30MHz ~ 1000MHz)

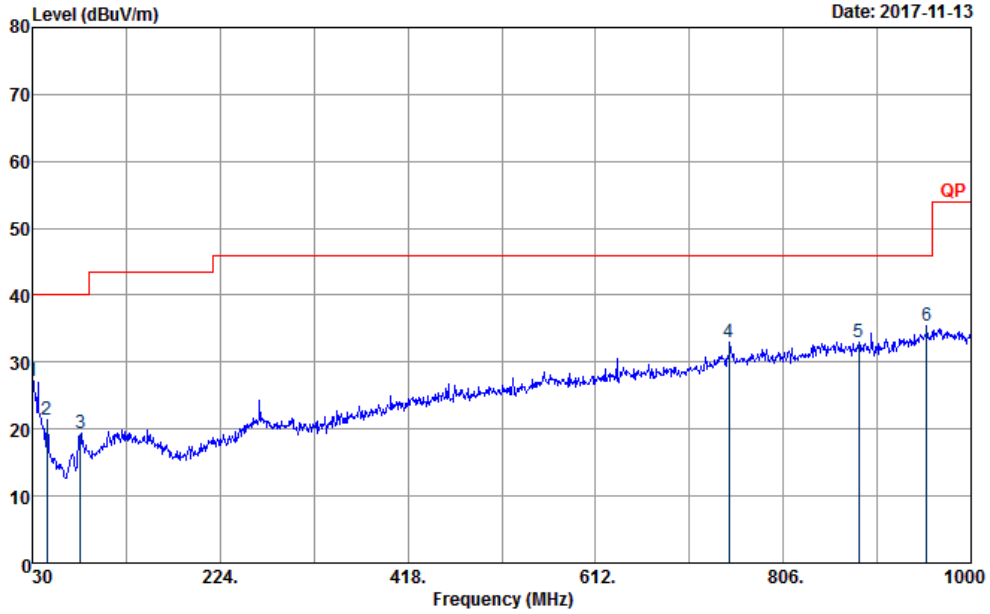
Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Jesse Wang and Stan Hsieh	Relative Humidity :	51~53%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	10.579 MHz Link with between the EUT and support equipment		
Remark :	#4, 5 and 6 are test site noise floor.		



Site : 03CH07-HY
Condition : QP 3m LF-ANT-35419(6) HORIZONTAL
Project : 7o0619-01
Mode : 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	28.10	-11.90	40.00	33.02	24.72	1.71	31.35	---	---	Peak
2	45.12	21.38	-18.62	40.00	34.98	16.24	1.71	31.55	---	---	Peak
3	80.49	19.67	-20.33	40.00	35.81	13.33	2.11	31.58	---	---	Peak
4	792.80	34.17	-11.83	46.00	31.81	27.98	4.98	30.60	---	---	Peak
5	884.50	33.41	-12.59	46.00	29.67	29.00	5.27	30.53	---	---	Peak
6	951.70	35.47	-10.53	46.00	30.01	30.57	5.40	30.51	100	0	Peak

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Jesse Wang and Stan Hsieh	Relative Humidity :	51~53%
Test Distance :	3m	Polarization :	Vertical
Function Type :	10.579 MHz Link with between the EUT and support equipment		
Remark :	#4, 5 and 6 are test site noise floor.		



Site : 03CH07-HY
Condition : QP 3m LF-ANT-35419(6) VERTICAL
Project : 7o0619-01
Mode : 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.27	27.17	-12.83	40.00	32.09	24.72	1.71	31.35	---	---	Peak
2	45.39	21.36	-18.64	40.00	34.97	16.24	1.71	31.56	---	---	Peak
3	79.95	19.29	-20.71	40.00	35.57	13.19	2.11	31.58	---	---	Peak
4	750.10	33.05	-12.95	46.00	30.90	27.90	4.88	30.63	---	---	Peak
5	883.80	33.00	-13.00	46.00	29.25	29.01	5.27	30.53	---	---	Peak
6	953.80	35.50	-10.50	46.00	29.94	30.67	5.40	30.51	100	0	Peak

3.3. Antenna Requirements

3.3.1 Standard Applicable

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

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 FCC rule.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz~30GHz	Jun. 26, 2017	Oct. 27, 2017	Jun. 25, 2018	Conducted (TH03-HY)
Hygrometer	Testo	608-H1	34893241	N/A	Nov. 16, 2016	Oct. 27, 2017	Nov. 15, 2017	Conducted (TH03-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	1GHz~26GHz	Dec. 02, 2016	Oct. 27, 2017	Dec. 01, 2017	Conducted (TH03-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800N1D01N-06	35419&03	30MHz to 1GHz	Jan. 07, 2017	Nov. 13, 2017	Jan. 06, 2018	Radiation (03CH07-HY)
Hygrometer	Testo	HTC-2	1	N/A	Jun. 27, 2017	Nov. 13, 2017	Jun. 26, 2018	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1GHz	Mar. 14, 2017	Nov. 13, 2017	Mar. 13, 2018	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	Y84209521+MY84209521	9KHz~30MHz	Jan. 03, 2017	Nov. 13, 2017	Jan. 02, 2018	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	30MHz~1GHz	Jan. 03, 2017	Nov. 13, 2017	Jan. 02, 2018	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Nov. 13, 2017	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Nov. 13, 2017	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Nov. 13, 2017	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 13, 2017	N/A	Radiation (03CH07-HY)
Loop Cable	Rohde & Schwarz	N/A	N/A	9KHz~30MHz	Jan. 03, 2017	Nov. 13, 2017	Jan. 02, 2018	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Oct. 20, 2016	Nov. 13, 2017	Oct. 19, 2018	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz to 26.5GHz	Jan. 12, 2017	Nov. 13, 2017	Jan. 11, 2018	Radiation (03CH07-HY)

5. Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.70**