Supplementary FCC Test Report

Report No.: RF970612H01I-1 R2

FCC ID: H9PMC1790

Test Model: MC1790

Received Date: June 12, 2008

Test Date: Feb. 05 to May 08, 2015

Issued Date: May 27, 2015

Applicant: Symbol Technolgies, Inc.

Address: 1 Zebra Plaza, Holtsville, NY 11742

Manufacturer: Symbol Technologies, Inc.

Address: 1 Zebra Plaza, Holtsville, NY 11742

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Report Issue History Record of EUT (MC1790)

Attachment No.	Issue Date	Description
970612H01	Aug. 28, 2008	Original
970612H01I R2	May 27, 2015	1. Upgrade the versions of the standard to section 15.407 under new rule. 2. Changed the version of EUT information.

Release Control Record

Issue No.	Description	Date Issued
RF970612H01I-1	Original release.	May 12, 2015
RF970612H01I-1 R1	1. Revised NOTE on sec. 2. 2. Revised sec. 3.1.	May 20, 2015
RF970612H01I-1 R2	1. Revised sec. 3.1.	May 27, 2015

1 Certificate of Conformity

Product: PERSONAL SHOPPING SYSTEM-BARCODE SCANNER

Brand: Symbol

Test Model: MC1790

Sample Status: MASS PRODUCTION

Applicant: Symbol Technolgies, Inc.

Test Date: Feb. 05 to May 08, 2015

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** May 27, 2015
Lori Chung / Specialist

Approved by : _____ , **Date:** May 27, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -18.82dB at 0.57578MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.9dB at 17475.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

NOTE: 1. For WLAN: The EUT was operating in 2.4~2.4835GHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.725~5.850GHz.

2. The DFS report was recorded in another test report.

3. This report is prepared for FCC Class II change. (Upgrade the versions of the standard to section 15.407 under new rule).

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.37 dB
	200MHz ~1000MHz	3.72 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	PERSONAL SHOPPING SYSTEM-BARCODE SCANNER
Brand	Symbol
Test Model	MC1790
Status of EUT	MASS PRODUCTION
Power Supply Rating	DC 12V from charge or DC 3.7V from battery
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to11Mbps 802.11g / a: up to 54Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.7GHz, 5.745~5.825GHz **For 15.247** 2.412 ~ 2.462GHz
Number of Channel	**For 15.407** 24 for 802.11a **For 15.247** 13 for 802.11b, 802.11g
Output Power	802.11a: 34.277 mW
Antenna Type	PIFA antenna without Connector (for 2.4GHz antenna gain: 2.04dBi, for 5GHz antenna gain: 4.08dBi)
Antenna Connector	NA
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II change. The difference compared with the Report No.: RF970612H01-1 design is as the following:

   - Upgrade the versions of the standard to section 15.407 under new rule.
   - Changed the version of EUT information as below:

Mobile Computer	
OS Version	05.00.1400
OEM Version	04.35.0014
Wireless(Fusion)	
Part Number	31-FUSION-01
Version	3.00.2.0.019R

2. According to above conditions, all test items of U-NII band 3 and Dynamic Frequency Selection test item need to be performed. And all data was verified to meet the requirements.
3. 2.4GHz and 5GHz technology cannot transmit at same time.

4. The EUT could be supplied with the a charge, power adapter and Li-ion battery as below:

Charger (only for test, not for sale together)	
Brand:	Symbol Technologies Inc.
Model No.:	PSS-3CR01
Input power :	+12V-----9.0A
Output power :	12V-----1.5A
Adapter (only for charger use, not for sale together)	
Brand:	Symbol Technologies Inc.
Model No.:	50-14000-241R
Input power :	100-240V, 50-60Hz, 3.0A
Output power :	+12V-----9.0A
Li-ion Battery	
Brand:	Symbol Technologies Inc.
Model No.:	82-97131-01
RATING:	3.7V, 2400mAh, 8.88Wh

5. The EUT incorporates a SISO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	1TX	1RX
802.11g	1 ~ 11Mbps	1TX	1RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	1TX	1RX

6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

For 5745 ~ 5825MHz

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: 1. In original report, the EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-plane**.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	165	OFDM	BPSK	6

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6

Test Condition:

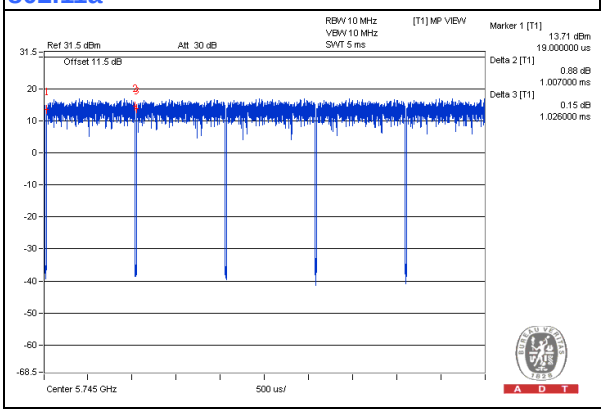
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	26deg. C, 71%RH	120Vac, 60Hz	Gary Cheng
RE<1G	24deg. C, 71%RH	120Vac, 60Hz	Gary Cheng
PLC	26deg. C, 67%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11a: Duty cycle = 1.007 ms/1.026 ms = 0.981

802.11a



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	Charger	Symbol Technologies Inc.	PSS-3CR01	NA	NA	Supplied by Client
B	Adapter	Symbol Technologies Inc.	50-14000-241R	NA	NA	Supplied by Client

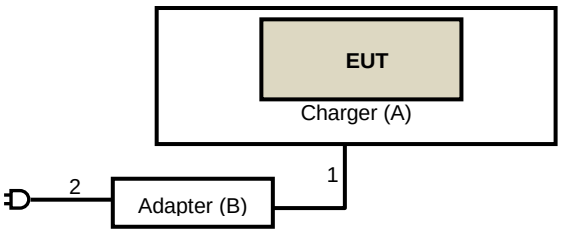
NOTE:

1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	0.4	No	0	Supplied by Client
2	AC	1	1.8	No	0	Supplied by Client

3.4.1 Configuration of System under Test

For conducted emission test:



For other test items:

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
789033 D02 General UNII Test Procedures New Rules v01
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	**LIMIT**	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	**EIRP LIMIT**	**EQUIVALENT FIELD STRENGTH AT 3m**
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) *1 PK:-17 (dBm/MHz) *2	PK: 68.2(dBμV/m) *1 PK:78.2 (dBμV/m) *2

NOTE: *1 beyond 10MHz of the band edge *2 within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.2 Test Instruments

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Power Meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power Sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Feb. 05, 2015

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 09, 2015	Feb. 08, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Apr. 23, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna 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.

d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

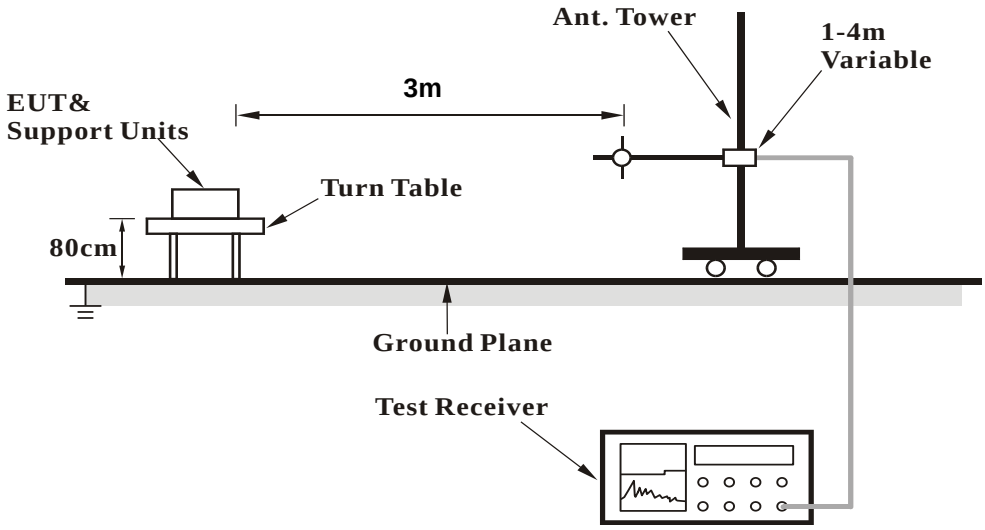
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

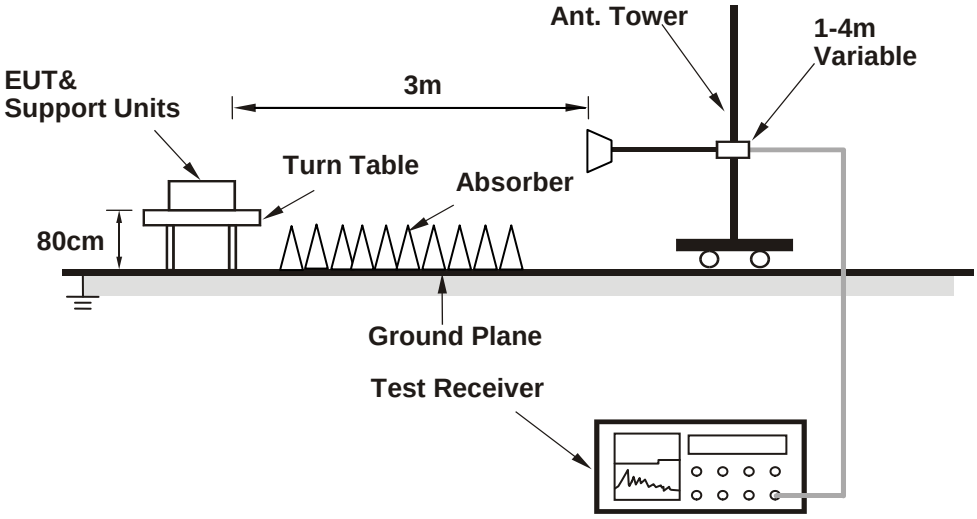
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

Controlling software (CEcTxRx.exe ver1.4.0.4) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	66.3 PK	74.0	-7.7	1.01 H	146	61.40	4.90
2	#5715.00	51.2 AV	54.0	-2.8	1.01 H	146	46.30	4.90
3	#5725.00	73.7 PK	78.2	-4.5	1.01 H	146	68.77	4.93
4	*5745.00	107.3 PK			1.01 H	146	102.38	4.92
5	*5745.00	97.8 AV			1.01 H	146	92.88	4.92
6	11490.00	56.9 PK	74.0	-17.1	1.00 H	135	46.25	10.65
7	11490.00	44.2 AV	54.0	-9.8	1.00 H	135	33.55	10.65
8	#17235.00	65.2 PK	74.0	-8.8	1.35 H	141	45.75	19.45
9	#17235.00	51.6 AV	54.0	-2.4	1.35 H	141	32.15	19.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	59.3 PK	74.0	-14.7	1.24 V	105	54.40	4.90
2	#5715.00	45.5 AV	54.0	-8.5	1.24 V	105	40.60	4.90
3	#5725.00	66.0 PK	78.2	-12.2	1.24 V	105	61.07	4.93
4	*5745.00	100.8 PK			1.24 V	105	95.88	4.92
5	*5745.00	91.4 AV			1.24 V	105	86.48	4.92
6	11490.00	56.3 PK	74.0	-17.7	1.12 V	135	45.65	10.65
7	11490.00	43.8 AV	54.0	-10.2	1.12 V	135	33.15	10.65
8	#17235.00	64.3 PK	74.0	-9.7	1.02 V	100	44.85	19.45
9	#17235.00	50.2 AV	54.0	-3.8	1.02 V	100	30.75	19.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	57.7 PK	74.0	-16.3	1.01 H	145	52.80	4.90
2	#5715.00	45.6 AV	54.0	-8.4	1.01 H	145	40.70	4.90
3	#5725.00	57.5 PK	78.2	-20.7	1.01 H	145	52.57	4.93
4	*5785.00	106.7 PK			1.01 H	145	101.75	4.95
5	*5785.00	97.2 AV			1.01 H	145	92.25	4.95
6	#5850.00	43.4 PK	78.2	-34.8	1.01 H	145	38.38	5.02
7	#5860.00	55.7 PK	74.0	-18.3	1.01 H	145	50.66	5.04
8	#5860.00	43.6 AV	54.0	-10.4	1.01 H	145	38.56	5.04
9	11570.00	57.1 PK	74.0	-16.9	1.08 H	138	46.42	10.68
10	11570.00	44.3 AV	54.0	-9.7	1.08 H	138	33.62	10.68
11	#17355.00	65.9 PK	74.0	-8.1	1.38 H	128	46.14	19.76
12	#17355.00	52.0 AV	54.0	-2.0	1.38 H	128	32.24	19.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	56.4 PK	74.0	-17.6	1.22 V	100	51.50	4.90
2	#5715.00	42.3 AV	54.0	-11.7	1.22 V	100	37.40	4.90
3	#5725.00	64.3 PK	78.2	-13.9	1.22 V	100	59.37	4.93
4	*5785.00	100.9 PK			1.22 V	100	95.95	4.95
5	*5785.00	91.5 AV			1.22 V	100	86.55	4.95
6	#5850.00	63.4 PK	78.2	-14.8	1.22 V	100	58.38	5.02
7	#5860.00	53.3 PK	74.0	-20.7	1.22 V	100	48.26	5.04
8	#5860.00	41.2 AV	54.0	-12.8	1.22 V	100	36.16	5.04
9	11570.00	55.9 PK	74.0	-18.1	1.14 V	126	45.22	10.68
10	11570.00	43.5 AV	54.0	-10.5	1.14 V	126	32.82	10.68
11	#17355.00	64.1 PK	74.0	-9.9	1.07 V	102	44.34	19.76
12	#17355.00	49.7 AV	54.0	-4.3	1.07 V	102	29.94	19.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.4 PK			1.00 H	143	101.42	4.98
2	*5825.00	97.2 AV			1.00 H	143	92.22	4.98
3	#5850.00	69.1 PK	78.2	-9.1	1.00 H	143	64.08	5.02
4	#5860.00	60.1 PK	74.0	-13.9	1.00 H	143	55.06	5.04
5	#5860.00	48.0 AV	54.0	-6.0	1.00 H	143	42.96	5.04
6	11650.00	56.6 PK	74.0	-17.4	1.10 H	130	46.01	10.59
7	11650.00	44.1 AV	54.0	-9.9	1.10 H	130	33.51	10.59
8	#17475.00	65.5 PK	74.0	-8.5	1.32 H	148	45.55	19.95
9	**#17475.00**	**52.1 AV**	**54.0**	**-1.9**	**1.32 H**	**148**	**32.15**	**19.95**

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	101.1 PK			1.20 V	103	96.12	4.98
2	*5825.00	91.6 AV			1.20 V	103	86.62	4.98
3	#5850.00	66.4 PK	78.2	-11.8	1.20 V	103	61.38	5.02
4	#5860.00	56.6 PK	74.0	-17.4	1.20 V	103	51.56	5.04
5	#5860.00	43.4 AV	54.0	-10.6	1.20 V	103	38.36	5.04
6	11650.00	56.4 PK	74.0	-17.6	1.14 V	150	45.81	10.59
7	11650.00	43.9 AV	54.0	-10.1	1.14 V	150	33.31	10.59
8	#17475.00	63.6 PK	74.0	-10.4	1.02 V	111	43.65	19.95
9	#17475.00	49.8 AV	54.0	-4.2	1.02 V	111	29.85	19.95

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Data

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CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	22.2 QP	40.0	-17.8	1.00 H	243	35.26	-13.09
2	62.30	27.6 QP	40.0	-12.4	1.50 H	274	41.91	-14.28
3	76.27	21.7 QP	40.0	-18.3	1.50 H	355	38.44	-16.78
4	115.99	18.0 QP	43.5	-25.5	1.50 H	360	33.39	-15.36
5	311.98	29.3 QP	46.0	-16.7	1.00 H	170	40.98	-11.66
6	697.41	32.1 QP	46.0	-13.9	1.00 H	0	34.88	-2.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.48	25.5 QP	40.0	-14.5	2.00 V	306	38.99	-13.47
2	51.58	27.7 QP	40.0	-12.3	1.00 V	288	40.91	-13.21
3	62.88	21.5 QP	40.0	-18.5	1.50 V	1	35.77	-14.23
4	76.80	31.3 QP	40.0	-8.7	1.50 V	349	48.29	-17.00
5	120.16	28.4 QP	43.5	-15.1	1.50 V	0	43.53	-15.16
6	206.01	25.4 QP	43.5	-18.2	1.00 V	255	41.44	-16.09

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	22.1 QP	40.0	-17.9	1.10 H	240	35.19	-13.09
2	62.30	27.6 QP	40.0	-12.4	1.10 H	270	41.88	-14.28
3	76.27	21.6 QP	40.0	-18.4	1.51 H	345	38.38	-16.78
4	115.95	18.1 QP	43.5	-25.4	1.10 H	340	33.48	-15.36
5	311.98	29.3 QP	46.0	-16.7	1.10 H	180	40.96	-11.66
6	697.40	32.1 QP	46.0	-13.9	1.10 H	10	34.93	-2.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.48	25.5 QP	40.0	-14.5	1.80 V	300	38.97	-13.47
2	51.58	27.9 QP	40.0	-12.1	1.20 V	248	41.07	-13.21
3	62.80	21.6 QP	40.0	-18.5	1.40 V	11	35.78	-14.23
4	76.80	31.3 QP	40.0	-8.7	1.10 V	350	48.32	-17.00
5	120.17	28.4 QP	43.5	-15.1	1.20 V	10	43.58	-15.16
6	206.00	25.4 QP	43.5	-18.1	1.10 V	215	41.51	-16.09

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.19	22.1 QP	40.0	-17.9	1.00 H	210	35.21	-13.09
2	62.32	27.7 QP	40.0	-12.3	1.00 H	210	41.96	-14.28
3	76.32	21.8 QP	40.0	-18.3	1.11 H	315	38.55	-16.80
4	115.91	18.1 QP	43.5	-25.4	1.00 H	310	33.47	-15.37
5	311.94	29.4 QP	46.0	-16.7	1.30 H	180	41.01	-11.66
6	697.42	32.1 QP	46.0	-13.9	1.00 H	110	34.93	-2.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.42	25.5 QP	40.0	-14.5	1.10 V	310	38.99	-13.47
2	51.60	27.9 QP	40.0	-12.1	1.10 V	218	41.13	-13.21
3	62.82	21.6 QP	40.0	-18.4	1.10 V	101	35.79	-14.23
4	76.82	31.3 QP	40.0	-8.7	1.00 V	360	48.31	-17.01
5	120.17	28.4 QP	43.5	-15.1	1.10 V	110	43.56	-15.16
6	206.18	25.4 QP	43.5	-18.1	1.00 V	205	41.50	-16.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Apr. 24, 2015

4.2.3 Test Procedure

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

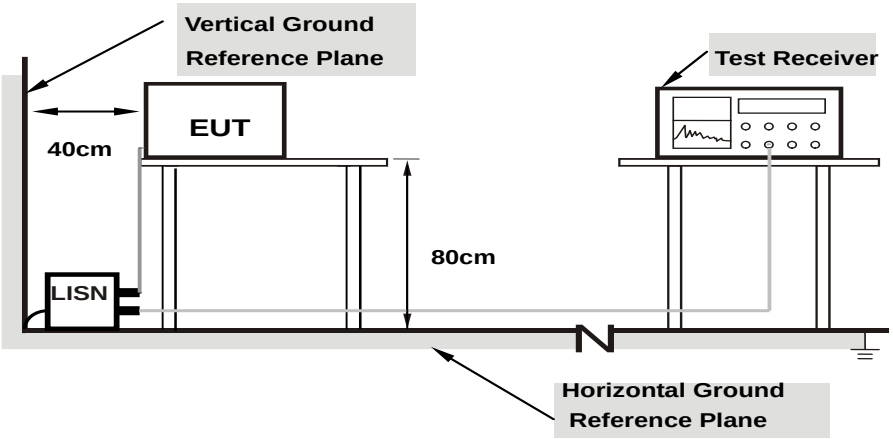
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Condition

Same as 4.1.6.

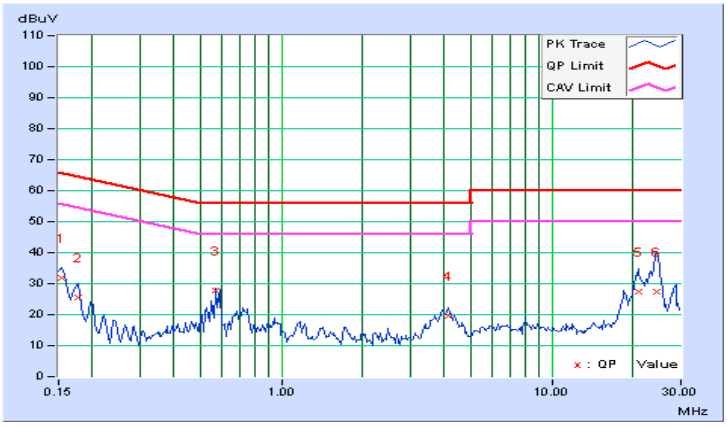
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.08	31.65	30.86	31.73	30.94	65.79	55.79	-34.06	-24.85
2	0.17734	0.09	25.50	24.56	25.59	24.65	64.61	54.61	-39.02	-29.96
3	0.57191	0.11	27.54	26.94	27.65	27.05	56.00	46.00	-28.35	-18.95
4	4.12109	0.22	19.31	12.08	19.53	12.30	56.00	46.00	-36.47	-33.70
5	20.91406	0.72	26.54	21.02	27.26	21.74	60.00	50.00	-32.74	-28.26
6	24.30078	0.79	26.73	20.17	27.52	20.96	60.00	50.00	-32.48	-29.04

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

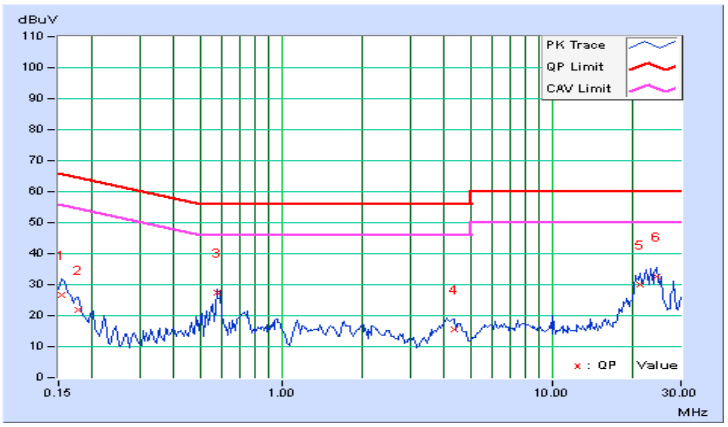


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.08	26.65	23.15	26.73	23.23	65.79	55.79	-39.06	-32.56
2	0.17734	0.08	21.77	16.20	21.85	16.28	64.61	54.61	-42.76	-38.33
3	**0.57578**	**0.11**	**27.35**	**27.07**	**27.46**	**27.18**	**56.00**	**46.00**	**-28.54**	**-18.82**
4	4.33984	0.24	15.45	12.27	15.69	12.51	56.00	46.00	-40.31	-33.49
5	21.11328	0.77	29.14	22.49	29.91	23.26	60.00	50.00	-30.09	-26.74
6	24.44922	0.85	31.88	23.88	32.73	24.73	60.00	50.00	-27.27	-25.27

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.3 Transmit Power Measurment

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	--	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	--		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	--		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

4.3.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power Sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Feb. 05 and May 08, 2015

4.3.4 Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

FOR AVERAGE POWER

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Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
149	5745	31.696	15.01	30	Pass
157	5785	33.497	15.25	30	Pass
165	5825	34.277	15.35	30	Pass

※Add test for each data rate output power (require by manufacturer):

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)							
		Data rate							
		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
149	5745	15.01	14.84	14.96	14.90	14.98	14.91	14.87	14.96
157	5785	15.25	15.06	15.24	15.11	15.08	15.22	15.22	15.24
165	5825	15.35	15.19	15.26	15.23	15.22	15.28	15.25	15.23

For Reference only – PEAK POWER

FOR PEAK POWER

802.11a

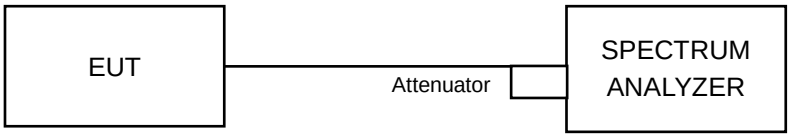
Chan.	Chan. Freq. (MHz)	Peak Power (dBm)	Peak Power (mW)
149	5745	127.35	21.05
157	5785	131.22	21.18
165	5825	135.831	21.33

4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	--	Mobile and Portable client device	11dBm/ MHz
U-NII-2A	--		11dBm/ MHz
U-NII-2C	--		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6

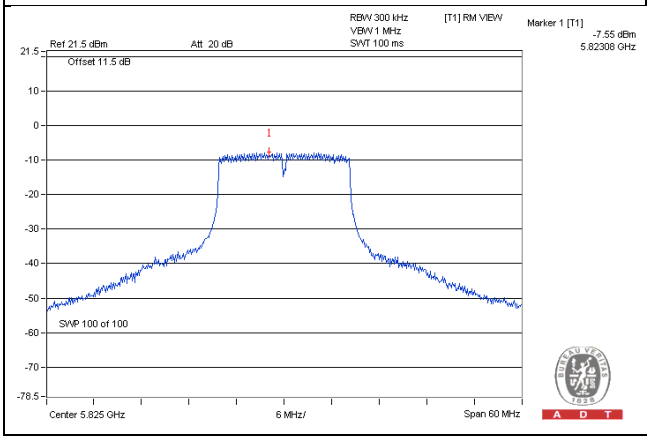
4.4.7 Test Results

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-8.30	-6.08	30	Pass
157	5785	-8.00	-5.78	30	Pass
165	5825	-7.55	-5.33	30	Pass

Spectrum Plot of Worst Value

802.11a / CH165

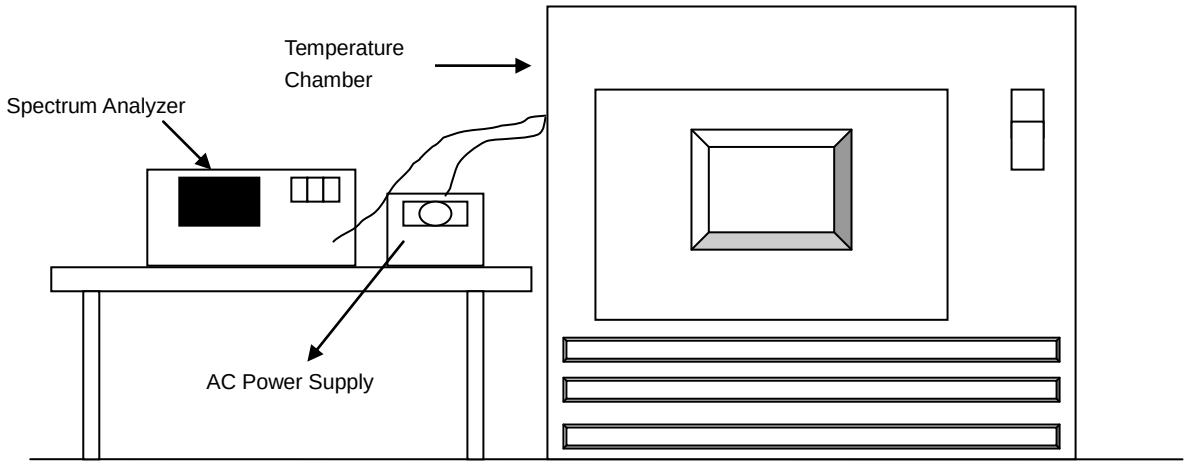


4.5 Frequency Stability Measurement

4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Set the EUT transmit at un-modulation mode to test frequency stability.

4.5.7 Test Results

Frequemcy Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5744.9855	-0.00025	5744.9826	-0.00030	5744.9832	-0.00029	5744.9865	-0.00023
40	120	5745.0008	0.00001	5745.0004	0.00001	5745.002	0.00003	5745.0018	0.00003
30	120	5744.9927	-0.00013	5744.9914	-0.00015	5744.9896	-0.00018	5744.99	-0.00017
20	120	5744.9835	-0.00029	5744.9853	-0.00026	5744.9868	-0.00023	5744.9871	-0.00022
10	120	5745.0083	0.00014	5745.011	0.00019	5745.0093	0.00016	5745.0102	0.00018
0	120	5744.9826	-0.00030	5744.982	-0.00031	5744.9806	-0.00034	5744.9827	-0.00030
-10	120	5745.0122	0.00021	5745.0133	0.00023	5745.0126	0.00022	5745.0139	0.00024
-20	120	5745.0265	0.00046	5745.0241	0.00042	5745.0249	0.00043	5745.0274	0.00048
-30	120	5745.0052	0.00009	5745.0056	0.00010	5745.0053	0.00009	5745.008	0.00014

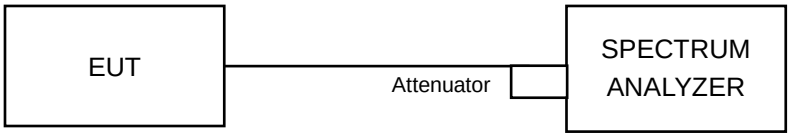
Frequemcy Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5744.983	-0.00030	5744.9843	-0.00027	5744.986	-0.00024	5744.9878	-0.00021
	120	5744.9835	-0.00029	5744.9853	-0.00026	5744.9868	-0.00023	5744.9871	-0.00022
	102	5744.9826	-0.00030	5744.9854	-0.00025	5744.987	-0.00023	5744.9863	-0.00024

4.6 6dB Bandwidth Measurment

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedures

MEASUREMENT PROCEDURE REF

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

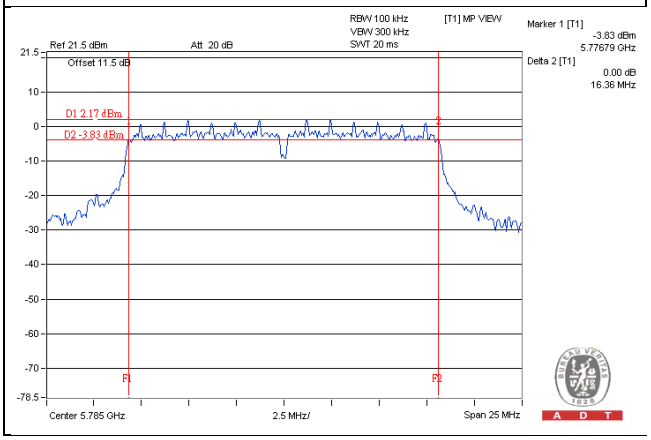
4.6.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.37	0.5	Pass
157	5785	16.36	0.5	Pass
165	5825	16.37	0.5	Pass

Spectrum Plot of Worst Value

802.11a / CH157



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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