



FCC Radio Test Report

Equipment : STYLISTIC Q series Tablet PC
Brand Name : FUJITSU
Model No. : Q738
FCC ID : EJE-WB0104
Standard : 47 CFR FCC Part 15.255
Applicant : FUJITSU LIMITED
1-1, Kamikonadaka 4-chome, Nakahara-ku,
Kawasaki, 211-8588 Japan
Manufacturer : FUJITSU LIMITED
1-1, Kamikodanaka 4-chome, Nakahara-ku,
Kawasaki, 211-8588 Japan

The product sample received on Dec. 04, 2017 and completely tested on Dec. 20, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013, 47 CFR FCC Part 15.255 and Millimeter Wave Test Procedures and shown 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.


Cliff Chang
SPORTON INTERNATIONAL INC.





Table of Contents

1 GENERAL DESCRIPTION5

1.1 Information.....5

1.2 Additional Information Provided by the Submitter7

1.3 Accessories7

1.4 Support Equipment.....7

1.5 EUT Operation during Test7

1.6 Test Setup Diagram8

1.7 Testing Applied Standards10

1.8 Testing Location10

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST11

2.1 Test Channel Frequencies11

2.2 Conformance Tests and Related Test Frequencies11

2.3 Far Field Boundary Calculations12

3 TRANSMITTER TEST RESULT13

3.1 AC Power Conducted Emissions13

3.2 Occupied Bandwidth18

3.3 EIRP Power21

3.4 Peak Conducted Power.....24

3.5 Transmitter Spurious Emissions.....26

3.6 Frequency Stability34

3.7 Operation Restriction and Group Installation37

4 TEST EQUIPMENT AND CALIBRATION DATA38

5 MEASUREMENT UNCERTAINTY40

APPENDIX A. TEST PHOTOS.....A1 ~ A5

PHOTOGRAPHS OF EUT V01



Summary of Test Result

Standard Requirements and Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Result	Remark
3.1	FCC 15.207	AC Power Conducted Emissions	Complied	-
3.2	FCC 15.255(d)	Occupied Bandwidth	Complied	-
3.3	FCC 15.255(b)(1)	EIRP Power	Complied	-
3.4	FCC 15.255(d)	Peak Conducted Power	Complied	-
3.5	FCC 15.255(c)	Transmitter Spurious Emissions	Complied	-
3.6	FCC 15.255(e)	Frequency Stability	Complied	-
3.7	FCC 15.255(a),(g)	Operation Restriction and Group Installation	Complied	-



1 General Description

1.1 Information

1.1.1 The Channel Plan(s)

Frequency Range	57-71GHz
Operation Frequency	60.48 GHz

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	SiBEAM	SB6212	Integral Antenna	N/A	0



1.1.3 Power Levels

Applicable power levels	<input type="checkbox"/> Conducted <input checked="" type="checkbox"/> EIRP		
Antenna gain	0 dBi		
Frequency (GHz)	Highest setting (P _{high}): (dBm)		
	Modulation	AV Power	Peak Power
60.48	OOK	-1.08	7.71

1.1.4 Extreme Operating

The Extreme Operating Temperature Range that Apply to the Equipment	
<input type="checkbox"/> -20 °C to +50 °C	
<input type="checkbox"/> 0 °C to +40 °C	
<input checked="" type="checkbox"/> Other: -5 °C to +35 °C	
EUT Power Type	From Power Adapter or Li-Polymer
Supply Voltage	<input checked="" type="checkbox"/> AC State AC voltage 120 V
Supply Voltage	<input type="checkbox"/> DC State DC voltage V

1.1.5 Equipment Use Condition

Equipment Use Condition
<input type="checkbox"/> Fixed field disturbance sensors at 61-61.5GHz
<input type="checkbox"/> Except fixed field disturbance sensors at 61-61.5GHz
<input checked="" type="checkbox"/> Except fixed field disturbance sensors

1.1.6 User Condition

Intended Operation
<input checked="" type="checkbox"/> Indoor
<input type="checkbox"/> Outdoor



1.2 Additional Information Provided by the Submitter

1.2.1 Modulation

Modulation	
The modulation is OOK.	
Can the transmitter operate un-modulated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

1.2.2 Duty Cycle

Duty Cycle	Duty Cycle Factor
The transmitter is intended for 100%	0

1.3 Accessories

Accessories				
No.	Equipment Name	Brand Name	Model Name	Rating
1	Adapter	Delta	ADP-65MD B	INPUT: 100-240V ~ 1.5A, 50-60Hz OUTPUT: 19V, 3.42A
2	Li-Polymer	Fujitsu	FPB0326S	3450mAh, 11.1V (38Wh)

1.4 Support Equipment

For AC Power Conducted Emissions test

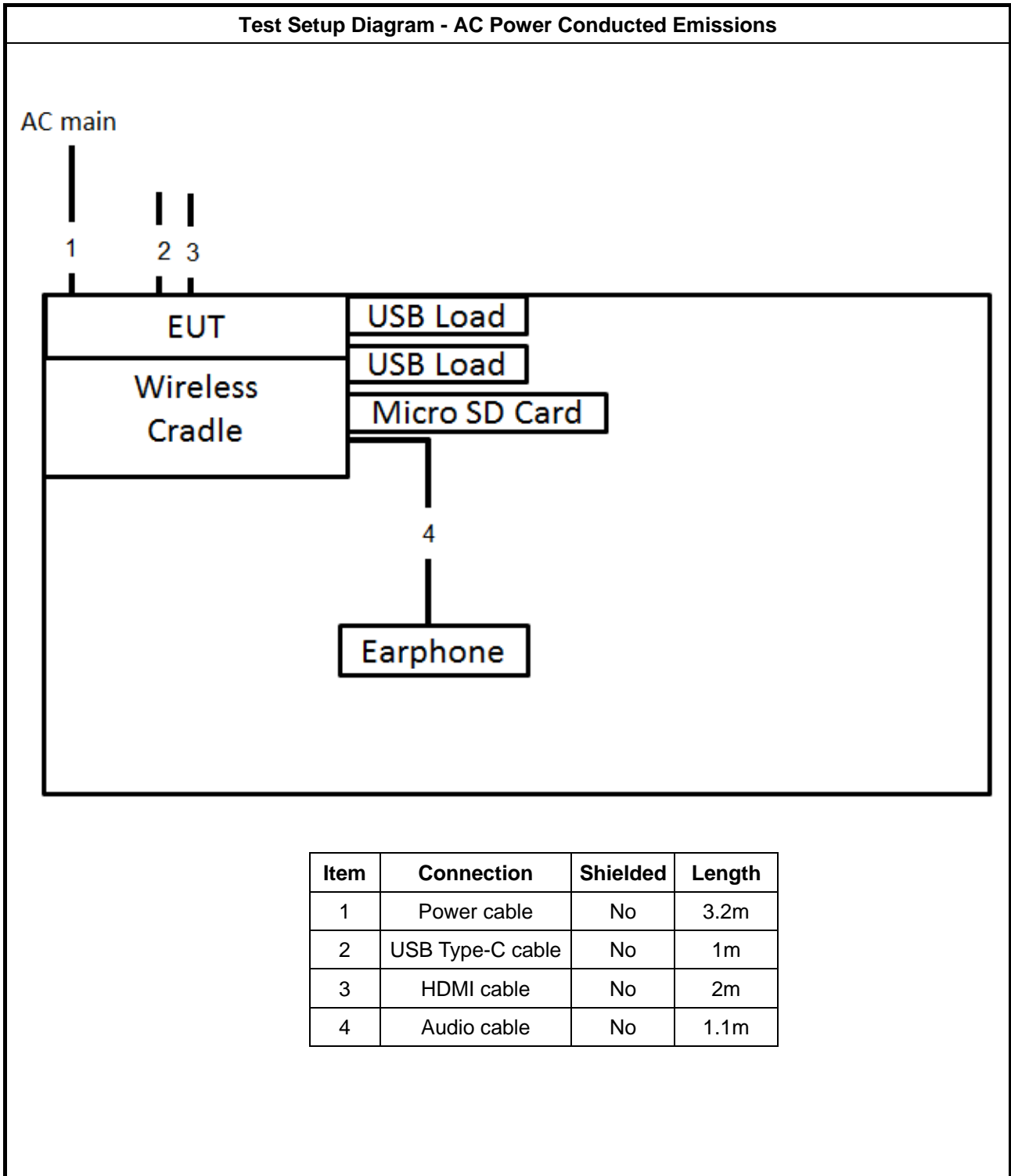
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Flash disk	Transcend	604108 8255	DoC
2	Flash disk3.0	Transcend	JetFlash-700	DoC
3	Micro SD Card	Transcend	TS16GUSDHC10	N/A
4	Earphone	e-Power	S90W	N/A
5	Wireless Cradle	Fujitsu Australia	Wireless Cradle	DoC

For others test: N/A

1.5 EUT Operation during Test

During the test, executed the test program to control the EUT continuously transmit RF signal.

1.6 Test Setup Diagram





Test Setup Diagram - Transmitter Spurious Emissions

A simple rectangular box with a black border, containing the text "EUT" in the center. This box is positioned within a larger, empty rectangular frame that represents the test setup area.

EUT



1.7 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15.255
- ♦ ANSI C63.10-2013 Section 9. "Procedures for testing millimeter-wave systems"

1.8 Testing Location

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085
Test Site No.		
CO01-CB	03CH01-CB	TH01-CB

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



2 Test Configuration of Equipment under Test

2.1 Test Channel Frequencies

Nominal Channel Bandwidth
60.48

2.2 Conformance Tests and Related Test Frequencies

Test Item	Test Frequencies (GHz)
AC Power Conducted Emissions	CTX
Occupied Bandwidth	60.48
EIRP Power	60.48
Peak Conducted Power	60.48
Transmitter Spurious Emissions (below 1 GHz)	CTX
Transmitter Spurious Emissions (1 GHz-40 GHz)	60.48
Transmitter Spurious Emissions (above 40 GHz)	60.48
Frequency Stability	Un-Modulation



2.3 Far Field Boundary Calculations

The far-field boundary is given as:

$$\text{far field} = (2 * L^2) / \lambda$$

where:

L = Largest Antenna Dimension, including the reflector, in meters

λ = wavelength in meters

Far Field (m)				
Frequency (GHz)	L (m)	Lambda (m)	d(Far Field) (m)	d(Far Field) (cm)
60.48	0.02	0.0049603	0.161	16.13



3 Transmitter Test Result

3.1 AC Power Conducted Emissions

3.1.1 Limit of AC Power Conducted Emissions

AC Power Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note: * Decreases with the logarithm of the frequency.

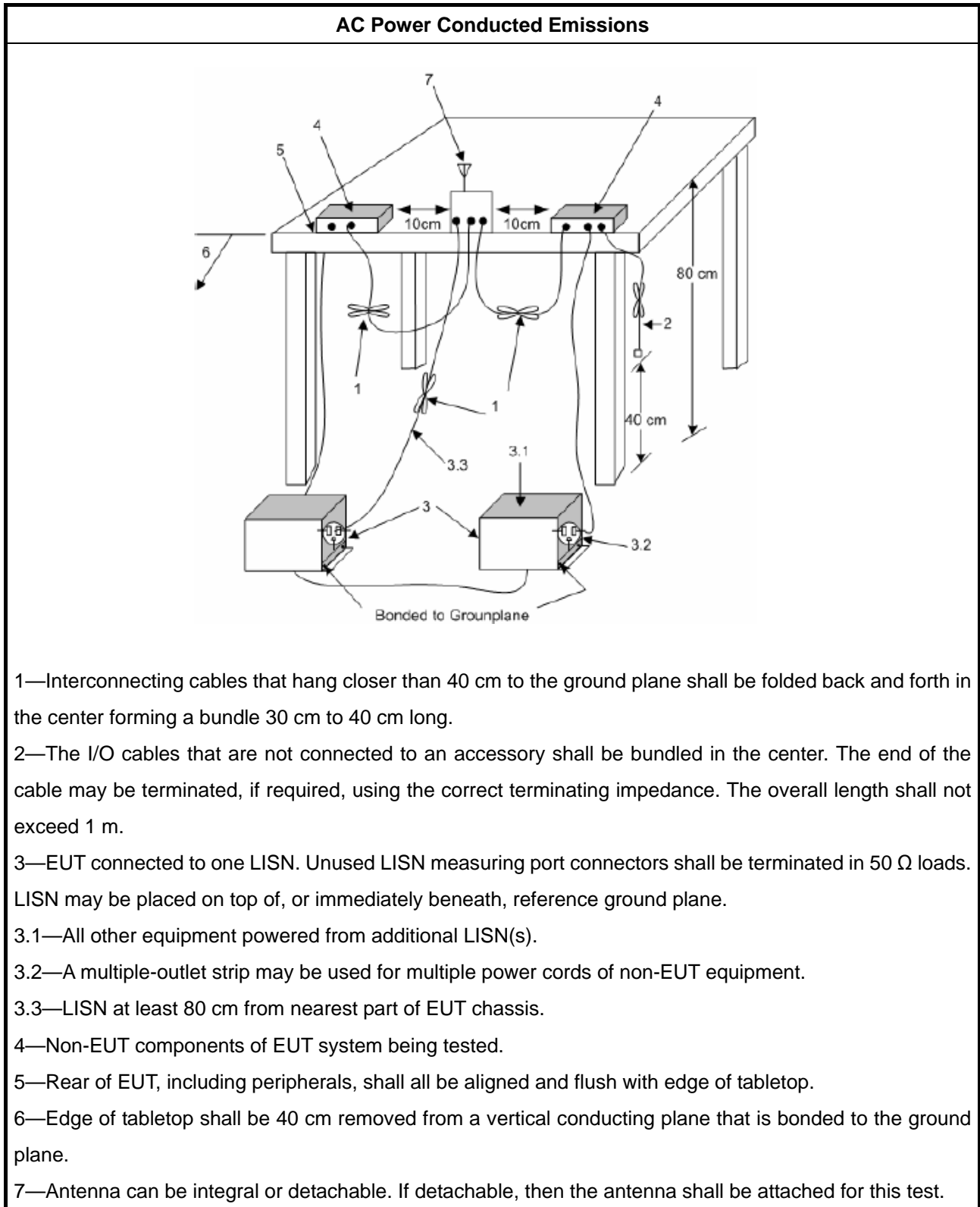
3.1.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.1.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013, clause 6.2.

3.1.4 Test Setup



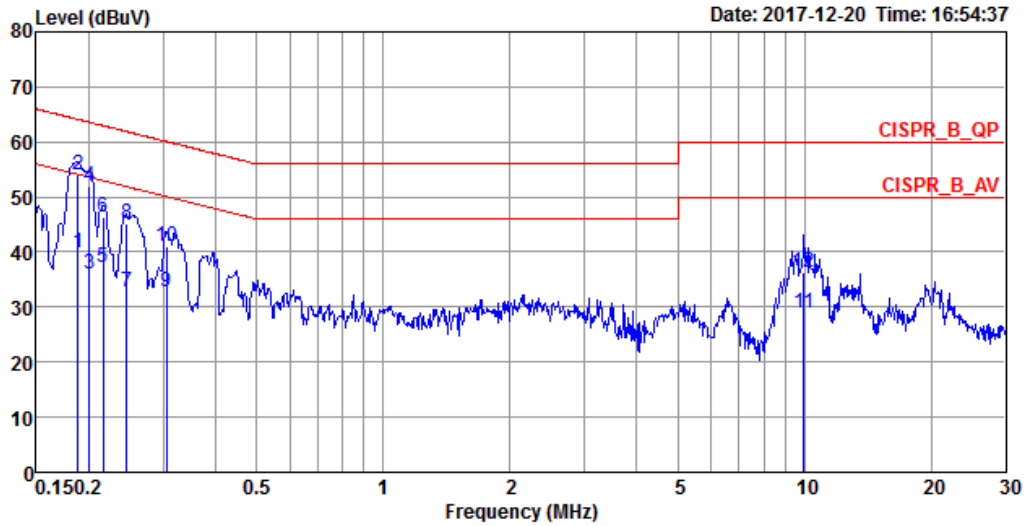


3.1.5 Test Result of AC Power Conducted Emissions

Test Conditions	see ANSI C63.10, clause 5.11
Test Setup	see ANSI C63.10, clause 6.2.3
<p>NOTE 1: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes. If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.12 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing.</p> <p>NOTE 2: ">20dB" means the tables in this clause should only list values of spurious emissions that exceed the level of 20 dB below the applicable limit, see ANSI C63.4, clause 10.1.8.1.</p>	



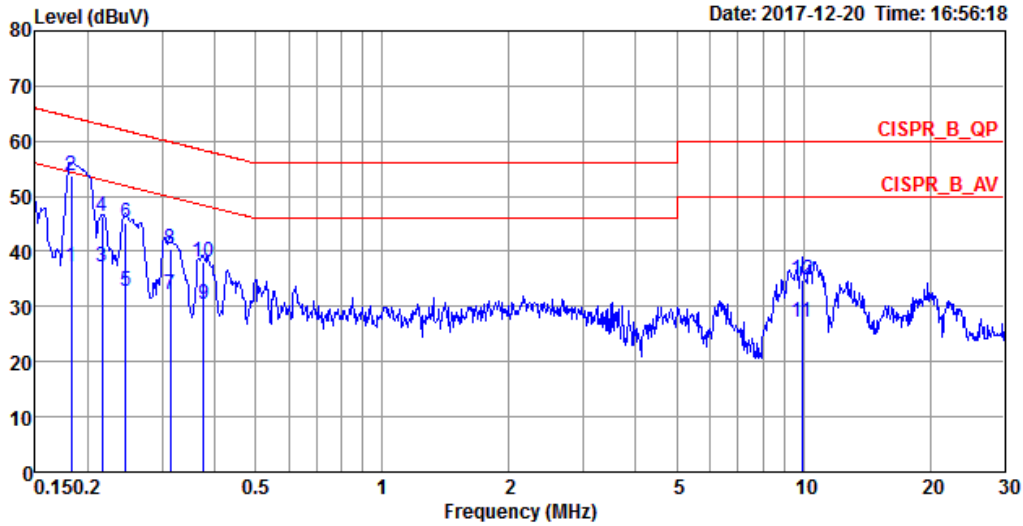
Temp	24°C	Humidity	56%
Test Engineer	Max Lin	Phase	Line
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1884	39.75	-14.36	54.11	29.70	9.91	0.14	Average	LINE
2	0.1884	53.88	-10.23	64.11	43.83	9.91	0.14	QP	LINE
3	0.2007	35.91	-17.67	53.58	25.87	9.91	0.13	Average	LINE
4	0.2007	51.95	-11.63	63.58	41.91	9.91	0.13	QP	LINE
5	0.2162	37.21	-15.75	52.96	27.17	9.92	0.12	Average	LINE
6	0.2162	46.49	-16.47	62.96	36.45	9.92	0.12	QP	LINE
7	0.2455	32.88	-19.03	51.91	22.87	9.92	0.09	Average	LINE
8	0.2455	45.30	-16.61	61.91	35.29	9.92	0.09	QP	LINE
9	0.3051	32.68	-17.42	50.10	22.69	9.93	0.06	Average	LINE
10	0.3051	40.95	-19.15	60.10	30.96	9.93	0.06	QP	LINE
11	9.9657	28.88	-21.12	50.00	18.60	10.13	0.15	Average	LINE
12	9.9657	36.42	-23.58	60.00	26.14	10.13	0.15	QP	LINE



Temp	24°C	Humidity	56%
Test Engineer	Max Lin	Phase	Neutral
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1825	37.33	-17.04	54.37	27.18	10.01	0.14	Average	NEUTRAL
2	0.1825	53.60	-10.77	64.37	43.45	10.01	0.14	QP	NEUTRAL
3	0.2162	37.33	-15.63	52.96	27.16	10.05	0.12	Average	NEUTRAL
4	0.2162	46.46	-16.50	62.96	36.29	10.05	0.12	QP	NEUTRAL
5	0.2455	32.89	-19.02	51.91	22.72	10.08	0.09	Average	NEUTRAL
6	0.2455	45.10	-16.81	61.91	34.93	10.08	0.09	QP	NEUTRAL
7	0.3133	32.26	-17.62	49.88	22.06	10.15	0.05	Average	NEUTRAL
8	0.3133	40.52	-19.36	59.88	30.32	10.15	0.05	QP	NEUTRAL
9	0.3771	30.42	-17.92	48.34	20.18	10.22	0.02	Average	NEUTRAL
10	0.3771	38.19	-20.15	58.34	27.95	10.22	0.02	QP	NEUTRAL
11	9.9130	27.20	-22.80	50.00	16.85	10.20	0.15	Average	NEUTRAL
12	9.9130	34.80	-25.20	60.00	24.45	10.20	0.15	QP	NEUTRAL

3.2 Occupied Bandwidth

3.2.1 Limit of Occupied Bandwidth

6dBc Bandwidth (see Note 1)	None
26dBc Bandwidth	None
99% Occupied Bandwidth (see Note 2)	None

NOTE 1: The 6dBc bandwidth is the frequency bandwidth of the signal power at the -6 dBc points when measured with a 100 kHz resolution bandwidth. These measurements shall also be performed at normal test conditions.

NOTE 2: The 99% occupied bandwidth is the frequency bandwidth of the signal power at the 99% channel power of occupied bandwidth when resolution bandwidth should be approximately 1 % to 5 % of the occupied bandwidth (OBW). These measurements shall also be performed at normal test conditions.

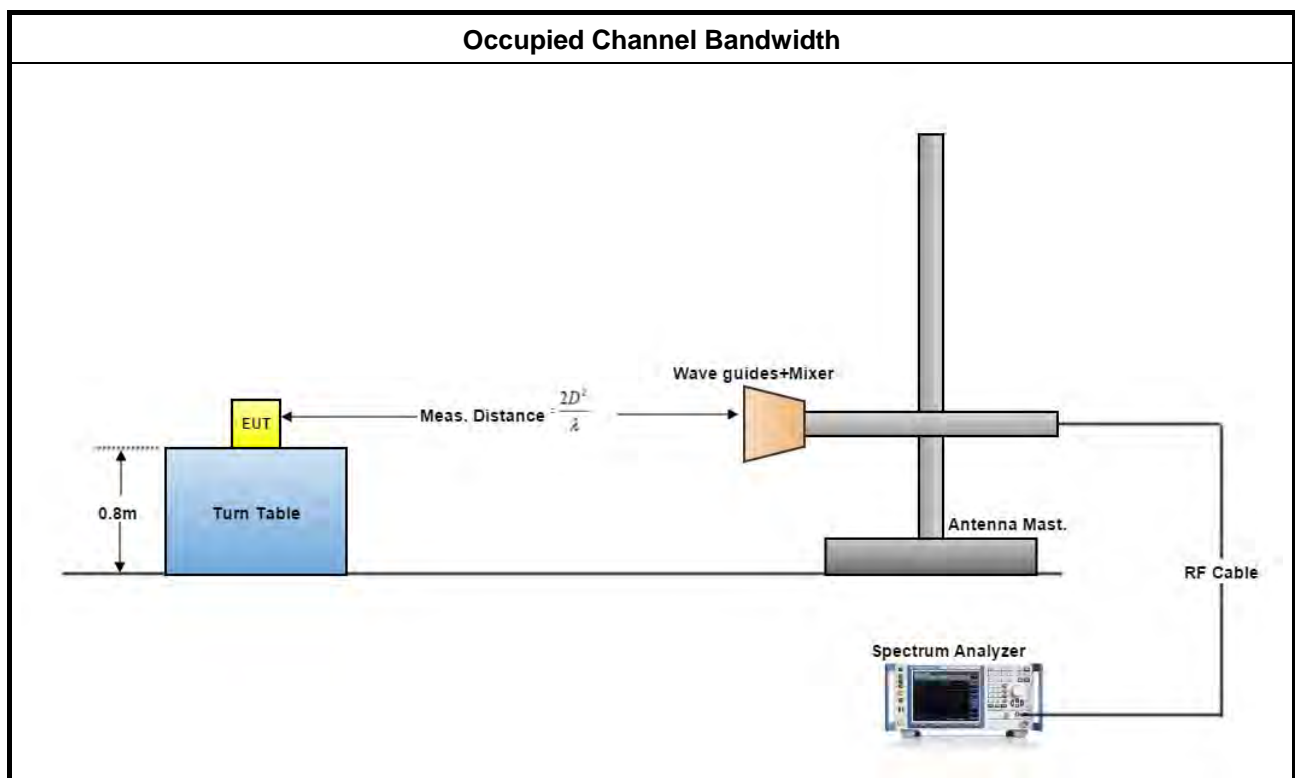
3.2.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.2.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013, clauses 6.9.2.

3.2.4 Test Setup





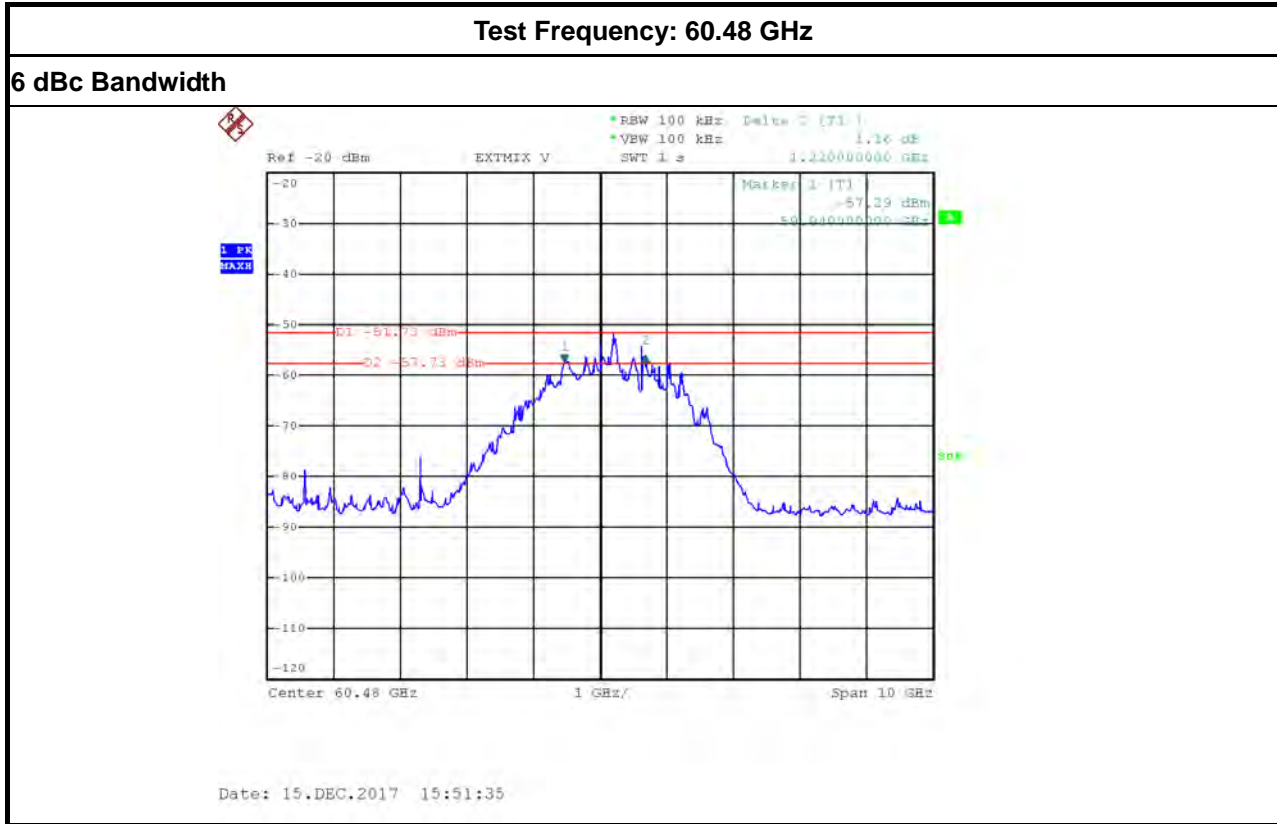
3.2.5 Test Result of Occupied Bandwidth

Test Conditions	see ANSI C63.10, clause 5.11
Test Setup	see ANSI C63.10, clause 6.9.2
<p>NOTE: If equipment having different transmit operating modes (see test report clause 1.1.2), the measurements are uninfluenced by different transmit operating modes, may not need to be repeated for all the operating modes. Similar, if the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worse case combination to be used for the conformance testing. Refer as ANSI C63.10, clause 15, observe and record with plotted graphs or photographs the worst-case (i.e., widest) occupied bandwidth produced by these different modulation sources.</p>	

Temp	22°C	Humidity	54%	
Test Engineer	Gary Chu			
Test Results				
Test Freq. (GHz)	6 dBc Bandwidth (MHz)	Occupied Bandwidth (MHz)	26 dBc Bandwidth (MHz)	Limit (MHz)
60.48	1220.00	4510.00	7520.00	N/A



3.2.5.1 Bandwidth Plots





3.3 EIRP Power

3.3.1 Limit of EIRP Power

EIRP Power Limit		
Use Condition	EIRP Average Power	EIRP Peak Power
Fixed field disturbance sensors at within the frequency band 61-61.5GHz	40 dBm	43 dBm
Fixed field disturbance sensors at outside of the band 61-61.5GHz	10 dBm	13 dBm
Except fixed field disturbance sensors at 61-61.5GHz	N/A	10 dBm
Except fixed field disturbance sensors(indoor)	40 dBm	43 dBm
Except fixed field disturbance sensors(outdoor)	82 dBm	85 dBm

NOTE: For the applicable limit, see FCC 15.255 (b)

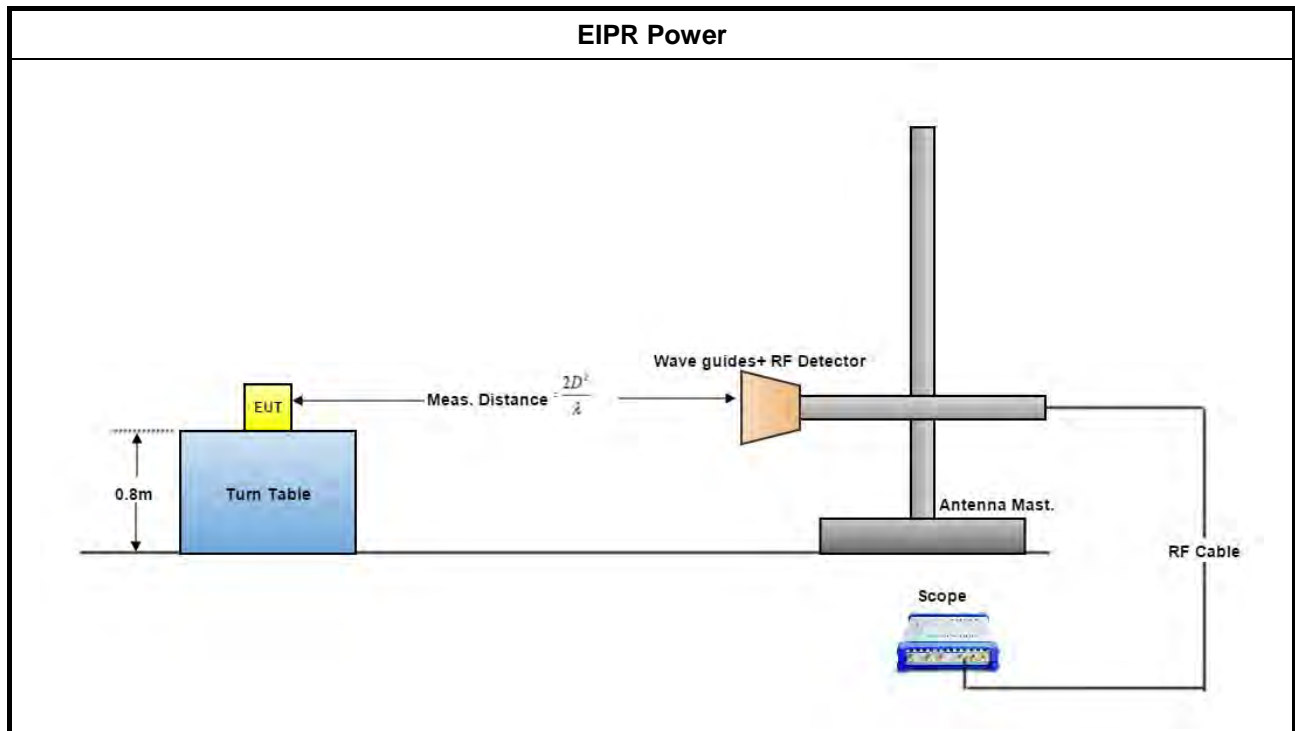
3.3.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.3.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013 clause 9.3 & 9.5.

3.3.4 Test Setup



3.3.5 Test Result of EIRP Power

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.11
<p>NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worst case combination to be used for the conformance testing.</p>	



3.3.5.1 Test Result of EIRP Power

Temp		22°C				Humidity		54%			
Test Engineer		Gary Chu				Test Distance		0.5 m			
Test Results											
Test Freq. (GHz)	RX Gain (dBi)	DSO (mV)		Power Measured (dBm)		E _{Meas} (dBuV/m)		EIRP (dBm)		EIRP Limit (dBm) (note 1)	
		Peak	AV	Peak	AV	Peak	AV	Peak	AV	Peak	AV
60.48	23	1.56	0.338	-31.36	-40.15	118.53	109.74	7.71	-1.08	43	40
<p>The measured power level is converted to EIRP using the Friis equation: For radiated emissions, calculate the field strength (E) in dBµV/meter. $E = 126.8 - 20\log(\lambda) + P - G$ where: E : is the field strength of the emission at the measurement distance, in dBµV/m P : is the power measured at the output of the test antenna, in dBm λ : is the wavelength of the emission under investigation [300/fMHz], in m G : is the gain of the test antenna, in dBi For radiated emissions, calculate the EIRP (dBm). If the measurement was performed in the far field, calculate the EIRP. $EIRP = E\text{-meas} + 20\log(d\text{-meas}) - 104.7$ where: EIRP : is the equivalent isotopically radiated power, in dBm E-meas. : is the field strength of the emission at the measurement distance, in dBµV/m d-meas. : is the measurement distance, in m NOTE 1: For the applicable limit, see FCC 15.255 (b) NOTE 2: The comparison method which replaces EUT with a signal generator is used to find the correct conversion factor between “DSO(mV)” & “Power Measured(dBm)”.</p>											



3.4 Peak Conducted Power

3.4.1 Limit of Peak Conducted Power

Peak Conducted Power Limit	
6dBc Bandwidth	Peak Conducted Power (note 1)
> 100MHz	500mW
≤ 100MHz	500mW x (BW/100) (see note 2)

NOTE 1: For the applicable limit, see FCC 15.255(d)
NOTE 2: BW= 6dB bandwidth (measured at RBW 100kHz)

3.4.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.4.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013, clause 9.5

3.4.4 Test Result of Peak Conducted Power

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.11

NOTE: If the equipment supports different modulations and/or data rates, the measurements described in ANSI C63.10, clause 5.11 may not need to be repeated for all these modulations and data rates. Simple comparison of engineering test across all operating modes, modulations and data rates may need to be performed to define the worst case combination to be used for the conformance testing.



3.4.4.1 Peak Conducted Power

Temp	22°C	Humidity	54%			
Test Engineer	Gary Chu					
Test Date	Dec. 14, 2017 ~ Dec. 15, 2017					
Test Results						
Test Freq. (GHz)	EIRP (dBm)	Max. Ant. Gain (dBi)	Peak Power (dBm) (note1)	Peak Power (mW)	6dBc BW (MHz) (note2)	Peak Power Limit (mW) (note3)
60.48	7.71	0	7.71	5.901	1220	500
<p>NOTE 1: Because EUT used for the integral antenna without temporary RF connector provided. Therefore peak conducted power is equal to EIRP power subtract the antenna gain.</p> <p>NOTE 2: For the 6dBc bandwidth, see test report clause 3.2.5.</p> <p>NOTE 3: For the applicable limit, see FCC 15.255(d)</p> <p>NOTE 4: For radiated emission measurements, calculate conducted transmitter output power P(cond)(dBm)</p> <p>$P(\text{cond}) = \text{EIRP} - G(\text{dBi})$</p> <p>where:</p> <p>G(dBi) is gain of EUT antenna.</p>						



3.5 Transmitter Spurious Emissions

3.5.1 Limit of Transmitter Spurious Emissions

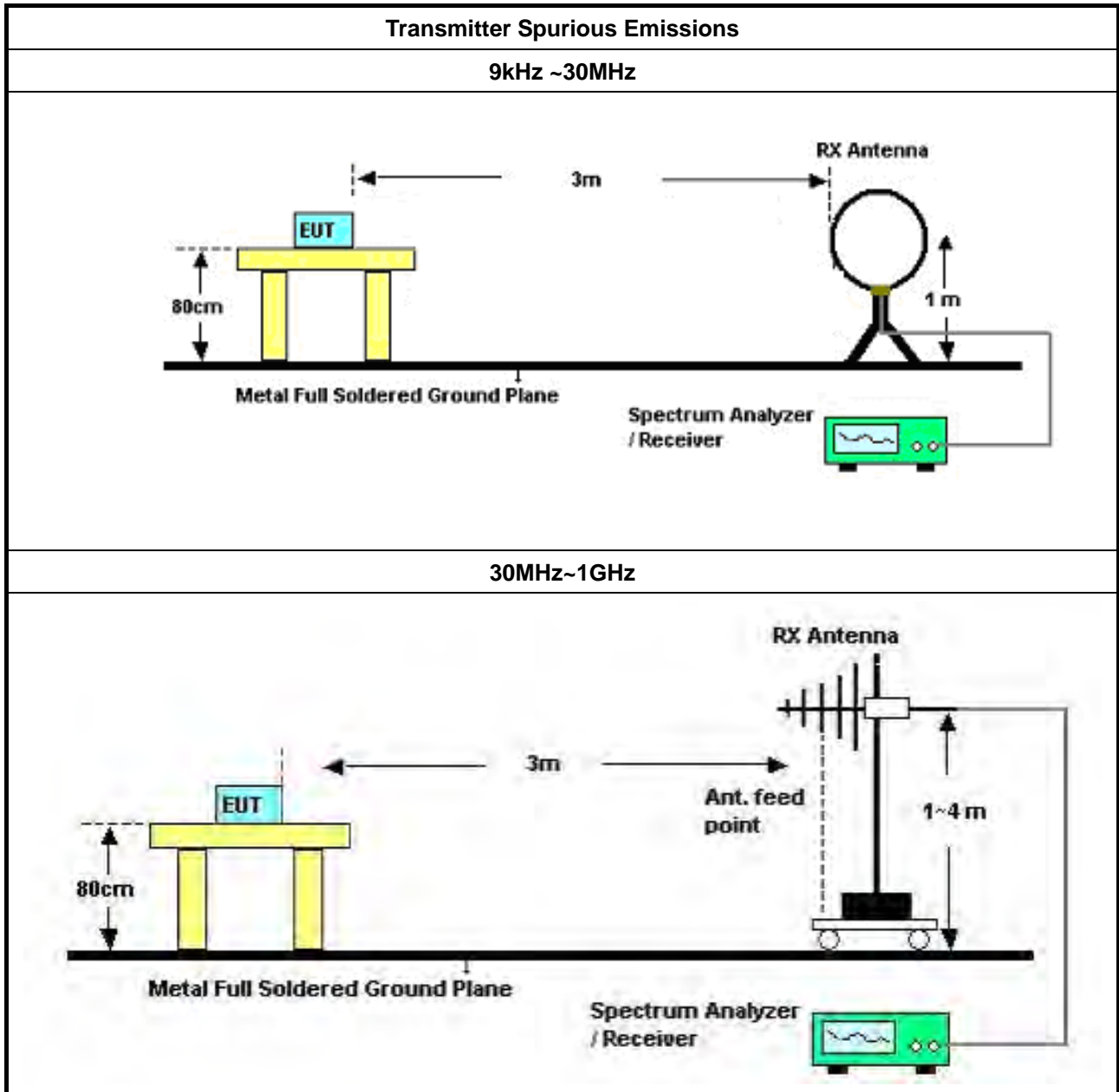
Frequency Range	Limit
Radiated emissions below 40 GHz	FCC 15.209
Radiated emissions above 40 GHz – 200GHz	90 pW/cm ² @ 3 m (Equivalent EIRP 102 μW, -9.91dBm)

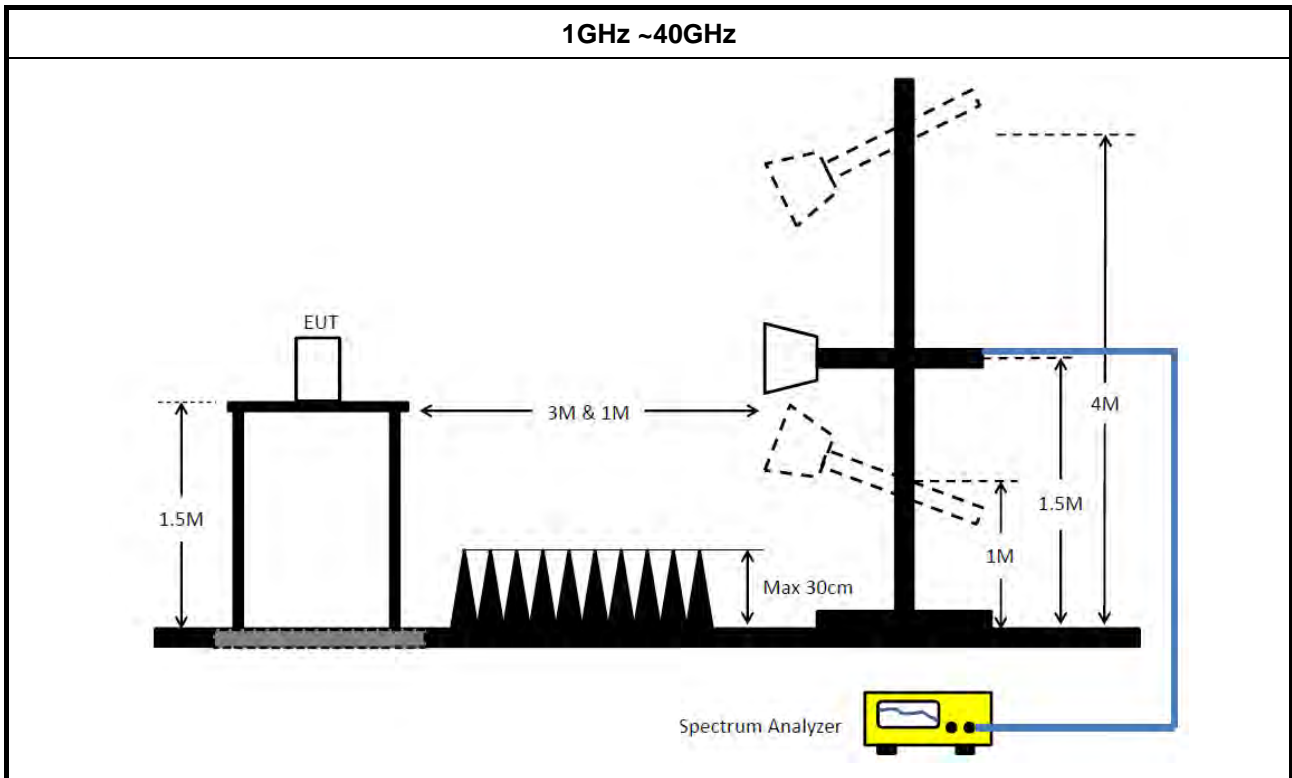
NOTE 1: For the applicable limit, see FCC 15.255(c)
NOTE 2: Spurious emissions shall not exceed the level of the fundamental emission.

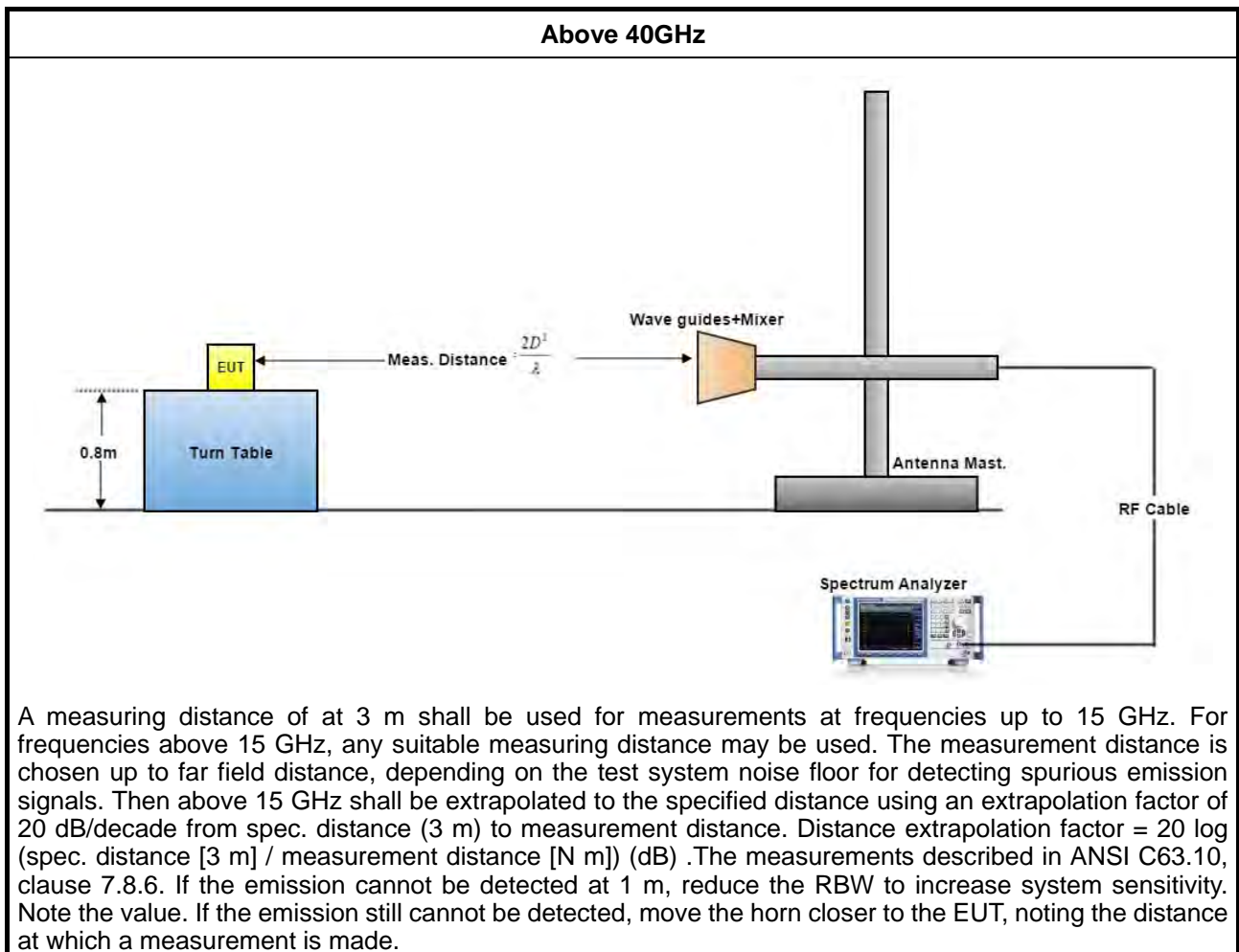
3.5.2 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013, clause 9.12

3.5.3 Test Setup







3.5.4 Test Result of Transmitter Spurious Emissions

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.12 ~ 9.13
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

3.5.4.1 Test Result of Transmitter Spurious Emissions (Below 30MHz)

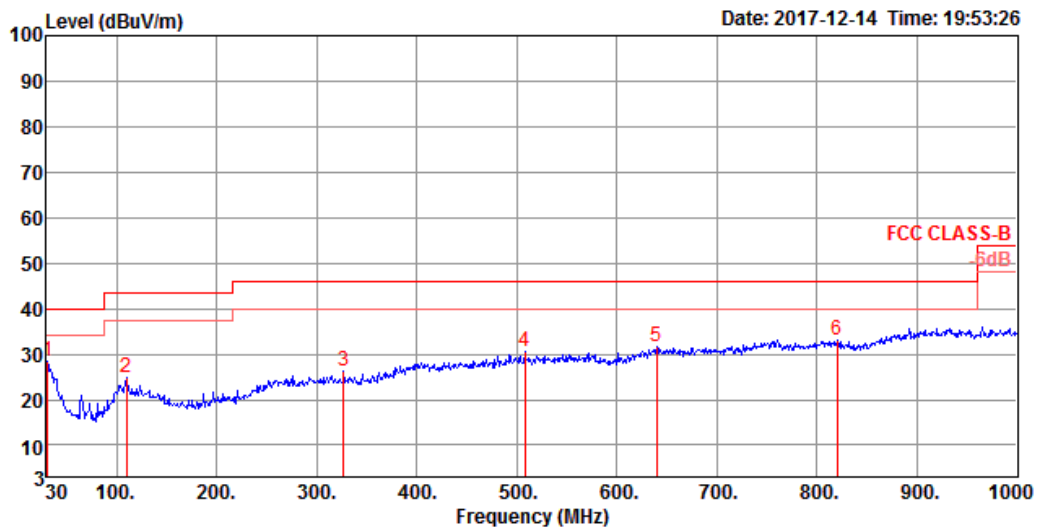
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.



3.5.4.2 Test Result of Transmitter Spurious Emissions

Temp	22°C	Humidity	54%
Test Engineer	DK Chang	Test Distance	3 m
Test Range	30 MHz – 1000 MHz	Test Configuration	CTX

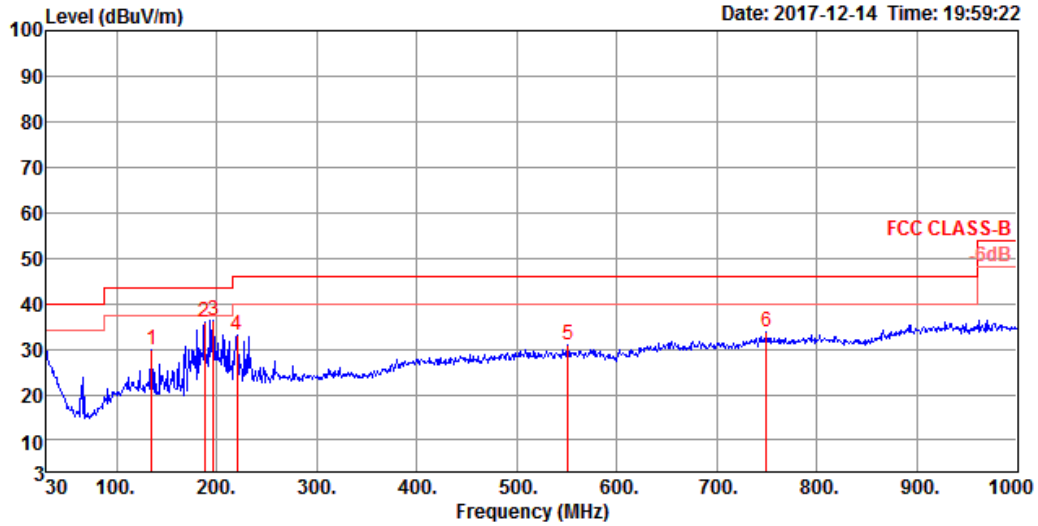
Vertical



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	30.97	28.25	40.00	-11.75	34.69	0.98	25.01	32.43	150	101 Peak	VERTICAL
2	109.54	24.85	43.50	-18.65	38.11	0.99	18.12	32.37	200	358 Peak	VERTICAL
3	326.82	26.33	46.00	-19.67	36.21	1.94	20.46	32.28	200	14 Peak	VERTICAL
4	508.21	30.40	46.00	-15.60	35.91	2.91	23.92	32.34	100	266 Peak	VERTICAL
5	640.13	31.49	46.00	-14.51	35.25	3.30	25.31	32.37	300	343 Peak	VERTICAL
6	820.55	33.05	46.00	-12.95	35.15	3.03	26.87	32.00	300	107 Peak	VERTICAL



Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor	cm	deg	
			dBuV/m	dB	dBuV	dB	dB/m	dB			
1	134.76	29.95	43.50	-13.55	43.02	1.16	18.12	32.35	200	97 Peak	HORIZONTAL
2	188.11	35.79	43.50	-7.71	50.82	1.69	15.60	32.32	150	360 Peak	HORIZONTAL
3	196.84	36.36	43.50	-7.14	50.73	1.87	16.07	32.31	150	120 Peak	HORIZONTAL
4	220.12	33.05	46.00	-12.95	46.82	2.13	16.40	32.30	150	82 Peak	HORIZONTAL
5	550.89	30.80	46.00	-15.20	35.93	2.73	24.50	32.36	100	29 Peak	HORIZONTAL
6	749.74	33.75	46.00	-12.25	36.10	3.78	26.10	32.23	300	144 Peak	HORIZONTAL



Temp	22°C	Humidity	54%
Test Engineer	DK Chang	Test Distance	3 m
Test Range	1 GHz – 40 GHz	Test Freq. (GHz)	60.48
Test Date	Dec. 14, 2017		

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	3499.11	45.70	74.00	-28.30	43.40	7.31	28.70	33.71	230	158	Peak	VERTICAL
2	3500.40	32.61	54.00	-21.39	30.31	7.31	28.70	33.71	230	158	Average	VERTICAL

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	3504.00	33.23	54.00	-20.77	30.89	7.32	28.72	33.70	168	113	Average	HORIZONTAL
2	3504.40	45.72	74.00	-28.28	43.38	7.32	28.72	33.70	168	113	Peak	HORIZONTAL



Temp	22°C	Humidity	54%
Test Engineer	DK Chang	Test Date	Dec. 14, 2017
Test Range	40GHz – 200GHz		

Test Frequency (GHz)	Rx Antenna Gain (dBi)	Measurement Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)
60.48	23	0.5	48.09	-81.71
EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm ²)	Limit (pW/cm ²)	Test Result
-44.65	3	0.0303	90	Complied

Note:

$EIRP = Prx - Grx + \text{Free Space Path Loss} = Prx - Grx + 20\text{Log}(4\pi d / \lambda)^2$

Which

Prx = Read Level.

Grx = Rx Antenna Gain.

A distance factor is offset and the formula is $20\text{LOG}(D1/D2)$

Which

D1 = Specification Distance

D2 = Measurement Distance

3.6 Frequency Stability

3.6.1 Limit of Frequency Stability

Frequency Stability	Limit
Refer as FCC 15.255(e) and ANSI C63.10-2013, clause 9.14	within the frequency bands
Note: These measurements shall also be performed at normal and extreme test conditions.	

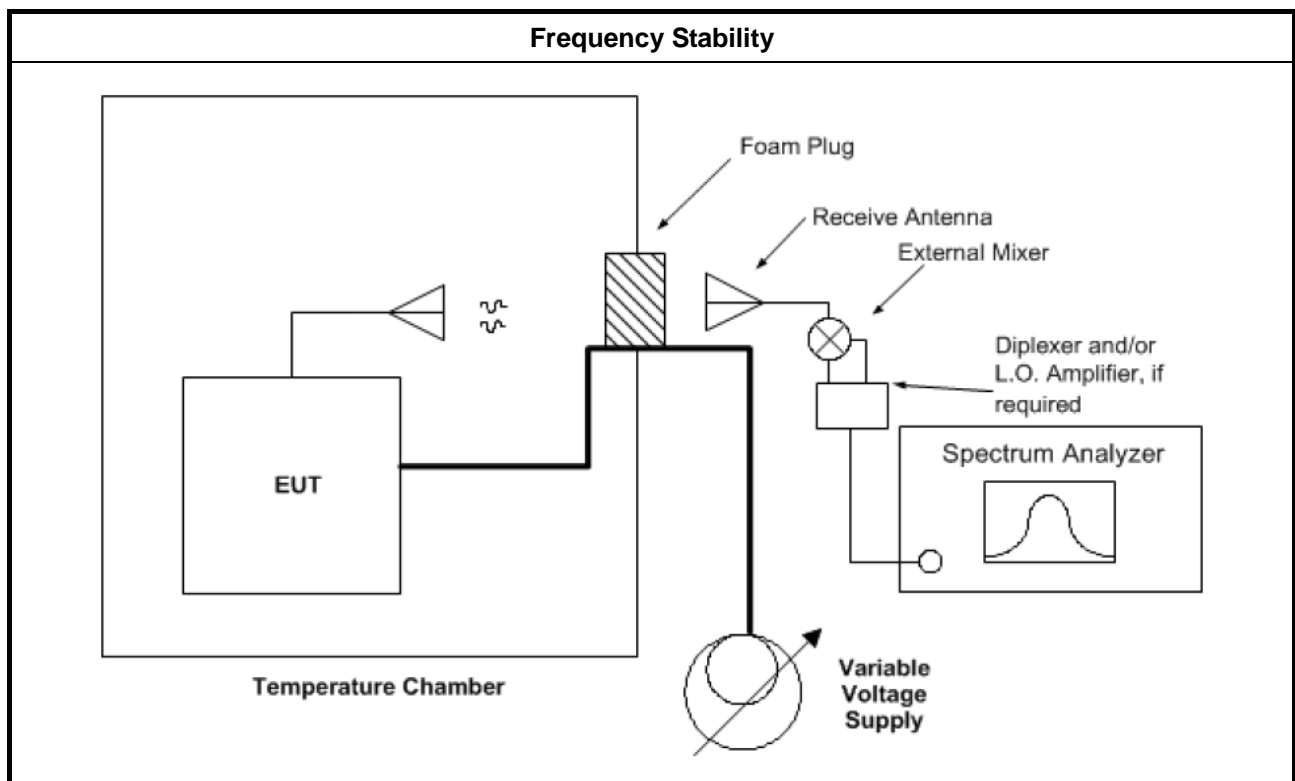
3.6.2 Measuring Instruments

Refer a measuring instruments list in this test report.

3.6.3 Test Procedures

Method of measurement: Refer as ANSI C63.10-2013, clauses 9.14.

3.6.4 Test Setup





3.6.5 Test Result of Frequency Stability

Test Conditions	see ANSI C63.10, clause 5.11 & clause 9
Test Setup	see ANSI C63.10, clause 9.14
NOTE: If equipment having different channel plan and nominal channel bandwidth modes (see test report clause 1.1.1), the measurements are uninfluenced by different channel plan and nominal channel bandwidth modes, may not need to be repeated for all modes.	

3.6.5.1 Frequency Stability with Respect to Ambient Temperature

Frequency Stability with Respect to Ambient Temperature			
Temp	22°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Dec. 14, 2017 ~ Dec. 15, 2017
Test Results			
Test Temperature (°C)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
-5	60479.6181	263.70	within band
0	60479.6953	340.90	within band
10	60479.4824	128.00	within band
20	60479.3544	Reference	within band
30	60479.5327	178.31	within band
35	60479.5771	222.70	within band
NOTE: The manufacturer's specified temperature range of -5 to 35°C.			



3.6.5.2 Frequency Stability When Varying Supply Voltage

Frequency Stability When Varying Supply Voltage			
Temp	22°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Dec. 14, 2017 ~ Dec. 15, 2017
Test Results			
Test Voltage: (Vac)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
102	60479.5741	142.60	within band
120	60479.4315	Reference	within band
138	60479.5917	160.20	within band

3.7 Operation Restriction and Group Installation

3.7.1 Limit of Operation Restriction and Group Installation

Item	Limit
Operation Restriction	Operation is not permitted for the following products: <ul style="list-style-type: none">♦ Equipment used on aircraft or satellites. (Refer as FCC 15.255 (a))♦ Field disturbance sensors, including vehicle radar systems, unless the field disturbance sensors are employed for fixed operation. (Refer as FCC 15.255 (a))
Group Installation	Operation is not permitted for the following products: <ul style="list-style-type: none">♦ External phase-locking (Refer as FCC 15.255(g))

3.7.2 Result of Operation Restriction

Manufacturer declares that EUT will not be used on aircraft or satellites. Then user manual will include a statement to caution EUT is not permitted for use on aircraft or satellites. EUT is a wireless video area network (WVAN) for the connection of consumer electronic (CE) audio and video devices.

3.7.3 Result of Group Installation

The frequency, amplitude and phase of the transmit signal are set within the EUT. There are no external phase-locking inputs or any other means of combining two or more units together to realize a beam-forming array.



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 23, 2017	Jan. 22, 2018	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-1 6-2	04083	150kHz ~ 100MHz	Dec. 20, 2017	Dec. 19, 2018	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 13, 2017	Nov. 12, 2018	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	May 22, 2018	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Aug. 29, 2018	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Mar. 15, 2018*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 20, 2017	Nov. 19, 2018	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Jul. 04, 2018	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	May 01, 2018	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Jan. 15, 2018	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Jul. 09, 2018	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	May 05, 2018	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Test Software	Audix	E3	6.2009-10-7	N/A	N/A	N/A	Radiation (03CH01-CB)
Mixer	OML	M19HW/A	U91113-1	40 ~ 60 GHz	Oct. 12, 2017	Oct. 11, 2018	Radiation (03CH01-CB)
Mixer	OML	M15HW/A	V91113-1	50 ~ 75 GHz	Oct. 12, 2017	Oct. 11, 2018	Radiation (03CH01-CB)
Mixer	OML	M12HW/A	E91113-1	60 ~ 90 GHz	Oct. 12, 2017	Oct. 11, 2018	Radiation (03CH01-CB)
Mixer	OML	M08HW/A	F91113-1	90 ~ 140 GHz	Oct. 12, 2017	Oct. 11, 2018	Radiation (03CH01-CB)
Mixer	OML	M05HW/A	G91113-1	140 ~ 220 GHz	Oct. 12, 2017	Oct. 11, 2018	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	M19RH	U91113-A	40 ~ 60 GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	M15RH	V91113-A	50 ~ 75 GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	M12RH	E91113-A	60 ~ 90 GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	M08RH	F91113-A	90 ~ 140 GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Standard Horn Antenna	Custom Microwave	M05RH	G91113-A	140 ~ 220 GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Detector	Millitech	DET-15-RPFW0	#A16473(067)	50 ~ 75 GHz	Mar. 06, 2017	Mar. 05, 2018	Radiation (03CH01-CB)
Pico Scope	Pico	Pico Scope 6402C	CX372/002	N/A	Jul. 26, 2017	Jul. 25, 2018	Radiation (03CH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2017	Jun. 01, 2018	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

*Calibration Interval of instruments listed above is two year.

N.C.R. means Non-Calibration required.



5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Radiated Emission (40GHz ~ 220GHz)	4.7 dB	Confidence levels of 95%
Temperature	0.7°C	Confidence levels of 95%